

Axial spherical roller bearings



Matrix for bearing preselection 1117

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Matrix for bearing preselection

The matrix gives an overview of the types and design features of axial spherical roller bearings.

It can be used to make a preliminary assessment of whether a bearing is fundamentally suitable for the envisaged application.

The additional information provided in the product chapter (see column "detailed information") and in the Technical principles must, however, be observed in addition to this overview in selection of the bearing.

Design features and suitability			Axial spherical roller bearings	
+++ extremely suitable ++ highly suitable + suitable (+) suitable with restrictions - not suitable/not applicable ✓ available				1118
Load carrying capacity	radial		+	➤ 1120 1.2
	axial, one direction		+++	➤ 1120 1.2
	axial, both directions		-	➤ 1120 1.2
	moments		-	
Compensation of angular misalignments	static		+++	➤ 1121 1.3
	dynamic		+	➤ 1121 1.3
Bearing design	cylindrical bore		✓	➤ 1118 1.1
	tapered bore		-	
	separable		✓	➤ 1128 1.17
Lubrication	greased		-	➤ 1121 1.4
Sealing	open		✓	➤ 1122 1.5
	non-contact		-	➤ 1122 1.5
	contact		-	➤ 1122 1.5
Operating temperature in °C		from to	-30 +200	➤ 1123 1.8
Suitability for	high speeds		+	➤ 1122 1.6
	high running accuracy		+	➤ 1123 1.11 ➤ 114
	low-noise running		(+)	➤ 1122 1.7 ➤ 27
	high rigidity		++	➤ 54
	reduced friction		++	➤ 56
	length compensation within bearing		-	
	non-locating bearing arrangement		-	
	locating bearing arrangement		(+)	➤ 139
X-life bearings		X-life	✓	➤ 1119
Bearing bore d in mm		from to	60 1600	➤ 1130
Product tables		from page	1130	



1 Axial spherical roller bearings



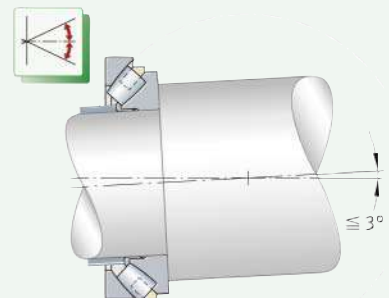
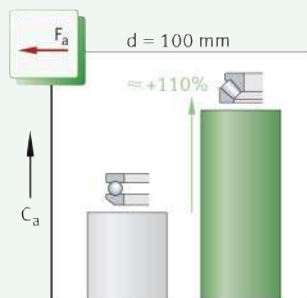
Axial spherical roller bearings are suitable where:

- bearing arrangements are subjected to high and very high axial loads ➤ 1120 | 1.2
- dynamic or static misalignments of the shaft relative to the housing, or deflections of the shaft, must be compensated by the bearing under axial loads ➤ 1121 | 1.3
- radial loads occur in addition to axial forces (maximum 55% of F_a) ➤ 1120 | 1.2
- a relatively high speed suitability is required in addition to a high load carrying capacity ➤ 1122 | 1.6
- high shock type loads must be supported
- bearing parts are to be mounted separately (the bearings are not self-retaining) ➤ 1118 | 1.1.

For an overview of other product-specific features, see the Matrix for bearing preselection ➤ 1117.

1
Axial spherical roller bearing:
comparison of load carrying
capacity with axial deep groove
ball bearing, compensation of
misalignments

F_a = axial load
 C_a = basic axial dynamic
load rating



1.1 Bearing design

Design variants

Axial spherical roller bearings are available in the basic design as:

- an increased capacity design with sheet steel cage or solid brass cage ➤ 1119 | 2.

X-life bearings

The bearings are available in the majority of sizes as X-life bearings ➤ 1119 | 3.



The bearing design is dependent on the bearing series and the bearing size. It essentially differs in the configuration and guidance of the cage ➤ 1123 | 1.9.

☞ *The raceway in the housing locating washer has a curved form*

☞ *Roller contact design*

☞ *Bearings with sheet steel cage*

☞ *Bearings with solid brass cage*

Bearings of basic design

Axial spherical roller bearings are part of the group of axial roller bearings. These single row, non-self-retaining rolling bearings comprise solid shaft and housing locating washers with raceways for the rolling elements. Cages guide the large number of asymmetrical barrel rollers ➤ 1123|1.9. The cage, roller and cage assembly, and shaft locating washer form a self-retaining unit. The raceways are arranged oblique to the bearing axis, the raceway in the housing locating washer is of a concave design. This design allows these bearings to combine a range of characteristics, which are essential to many applications, in one bearing, such as angular adjustability for example ➤ 1121|1.3.

The stress distribution at the contact points between the rollers and raceways is determined by the contact surface of the rollers. As a result, the roller geometry is matched to the raceway. This gives a favourable load distribution over the entire length of the roller and thus prevents both edge stresses and stress peaks at the ends of the roller.

Increased capacity design with sheet steel cage or solid brass cage

Bearings without a cage suffix have coated sheet steel cages, which are guided by rollers ➤ 1119|☐ 2 and ➤ 1123|1.9. These designs are available as X-life bearings ➤ 1119.

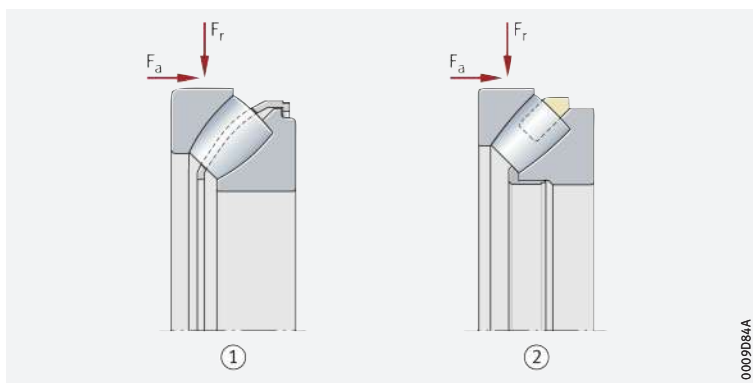
Bearings with the cage suffix MB have solid brass cages that are guided on the shaft locating washer or by the rollers ➤ 1119|☐ 2 and ➤ 1123|1.9. The MB design is also available in numerous sizes as X-life bearings ➤ 1119.

2 Axial spherical roller bearings of basic design

F_r = radial load

F_a = axial load

- ① Increased capacity design, with sheet steel cage
- ② Increased capacity design, with solid brass cage



X-life

X-life premium quality

X-life bearings exhibit considerably higher performance than conventional axial spherical roller bearings. This is achieved, for example, through the modified internal construction, the optimised contact geometry between the rollers and raceways, the new cage design, a higher steel quality, better surface quality and optimised roller guidance and lubricant film formation.

3 Axial spherical roller bearing in X-life design

- ① Cage
- ② Barrel roller
- ③ Housing locating washer
- ④ Shaft locating washer



☞ *Increased customer benefits due to X-life*

Advantages

These technical enhancements offer a range of advantages, such as:

- a more favourable load distribution in the bearing and thus a higher dynamic load carrying capacity of the bearings
- downsizing possible, increased performance density
- a higher fatigue limit load
- a higher running accuracy and smooth running
- running with reduced friction and greater energy efficiency
- lower heat generation in the bearing
- higher possible speeds
- lower lubricant consumption and therefore longer maintenance intervals if relubrication is carried out
- a measurably longer operating life of the bearings
- high operational security
- compact, environmentally-friendly bearing arrangements.

☞ *Lower operating costs, higher machine availability*

In conclusion, these advantages improve the overall cost-efficiency of the bearing position significantly and thus bring about a sustainable increase in the efficiency of the machine and equipment.

☞ *Suffix XL*

X-life axial spherical roller bearings include the suffix XL in the designation ► 1124|1.12 and ► 1130|.

☞ *Wide application range*

Areas of application

Due to their special technical features, X-life axial spherical roller bearings are highly suitable for bearing arrangements in:

- refiners and worm extruders in the pulp and paper industry
- drilling rigs and roll pressers in the cement industry, mining and raw material processing
- work rolls and back-up rolls in cold rolling mills
- extruder gearboxes in chemical plant and refineries
- air preheaters in thermal power stations
- POD and azimuth drives in marine propulsion systems.



X-life indicates a high product performance density and thus a particularly significant benefit to the customer. Further information on X-life ► 10.

1.2

Load carrying capacity

☞ *Designed for very high axial loads and high radial loads*

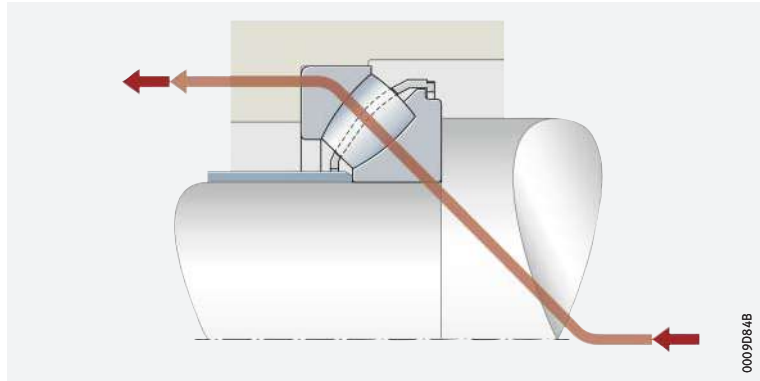
Axial spherical roller bearings can support very high axial loads in one direction and – since the raceways are inclined relative to the bearing axis – radial loads acting simultaneously. They are designed for very high load carrying capacity and, since they have the maximum possible number of large and long barrel rollers, are also suitable for the heaviest loads. As a result of the inclined raceways, the load is transmitted from one raceway to the other oblique to the bearing axis ► 1121| 4. Due to the optimised osculation conditions between the rollers and raceways, uniform stress distribution is achieved in the bearing.



The radial load (F_r , F_{0r}) must not exceed 55% of the axial load ► 1125| 1 and ► 1125| 2.

4 Force flow under axial load

The load is transmitted from one raceway to the other oblique to the bearing axis.



1.3

Axial spherical roller bearings compensate dynamic and static angular misalignments

Due to the concave rolling element raceway in the housing locating washer, axial spherical roller bearings are capable of angular adjustment. As a result, they permit skewing between the shaft locating washer and housing locating washer within certain limits, without causing damage to the bearings or impairing their function. In this way, they can compensate misalignment, shaft deflection and housing deformation ► 1121 1. The extent to which these table values can be used in practice is, however, essentially dependent on the design of the bearing arrangement, the type of seal and other factors.

Permissible adjustment angle

The adjustment angles given in the table are permissible under the following conditions:

- P or $P_0 \leq 0,05 \cdot C_{0a}$
- The angular deviation is constant (static angular misalignment).
- The rotating component is the shaft locating washer.



1 Permissible skewing under static misalignment

D = bearing outside diameter

Bearing series	Permissible skewing	
	$D < 320 \text{ mm}$	$D \geq 320 \text{ mm}$
292..-E1	1,5°	1°
293..-E1	2,5°	1,5°
294..-E1	3°	2°



If the rotating component is the housing locating washer or the shaft locating washer undergoes tumbling motion, the angular adjustment facility is smaller. In such cases, please consult Schaeffler.

1.4

Oil lubrication is predominantly used

Pay attention to the pumping action in bearings with oil lubrication

Axial spherical roller bearings are not greased. They are generally lubricated using oil. In some cases, lubrication with greases containing EP additives is also possible. In this instance, however, it must be ensured that the contact points between the rollers and the guidance rib are always adequately supplied with grease. This is best achieved if the bearing is completely filled with grease and regularly relubricated.

Due to their internal construction, a pumping action occurs in bearings with an asymmetrical cross-section. This pumping action, which is heavily dependent on the circumferential speed, can be used under certain conditions to generate oil recirculation in the bearing ► 1122 5. The pumping action is present in bearing arrangements with a horizontal and vertical shaft and must be taken into account when selecting the lubrication and sealing method.



The volume flow generated by the bearings can easily reach a throughput of $> 50 \text{ l/min}$. In order to give appropriate possibilities for compensation, ducts for the purposes of oil return must therefore be included in the housing [► 1122](#) | [5](#).

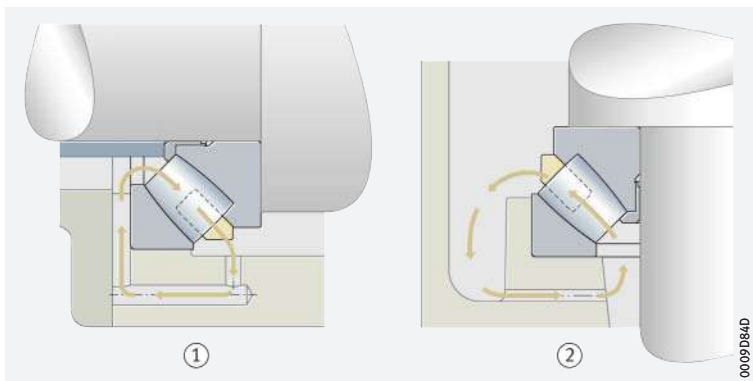


If there is any uncertainty regarding the suitability of the selected lubricant for the application, please consult Schaeffler or the lubricant manufacturer.



Oil recirculation by means of pumping action, ducts for the purposes of oil return

- ① Bearing arrangement with horizontal shaft
- ② Bearing arrangement with vertical shaft



1.5

Sealing

The bearings are of an open design; provide seals in the adjacent construction

Axial spherical roller bearings are supplied without seals. In the case of unsealed bearings, sealing of the bearing position must be carried out in the adjacent construction. The sealing system should reliably prevent:

- moisture and contaminants from entering the bearing
- the egress of lubricant from the bearing position.

1.6

Speeds

Speeds in the product tables

The achievable operating speed is dependent on the application, the associated loads and the lubrication. The product tables generally give two speeds for the bearings [► 1130](#) | [66](#):

- the kinematic limiting speed n_G
- the thermal speed rating $n_{\vartheta r}$.

Limiting speeds



The limiting speed n_G is the kinematically permissible speed of the bearing. Even under favourable mounting and operating conditions, this value should not be exceeded without prior consultation with Schaeffler [► 64](#).

Reference speeds

$n_{\vartheta r}$ is used to calculate n_{ϑ}

The thermal speed rating $n_{\vartheta r}$ is not an application-oriented speed limit, but is a calculated ancillary value for determining the thermally safe operating speed n_{ϑ} [► 64](#).

1.7

Noise

Schaeffler Noise Index

The Schaeffler Noise Index (SGI) is not yet available for this bearing type [► 69](#). The data for these bearing series will be introduced and updated in stages.

Further information:

- **medias** [► https://medias.schaeffler.com](https://medias.schaeffler.com).

1.8 Temperature range

Limiting values

The operating temperature of the bearings is limited by:

- the dimensional stability of the bearing rings and rolling elements
- the cage
- the lubricant.

Possible operating temperatures of axial spherical roller bearings
➤ 1123 | 2.

Permissible temperature ranges

Operating temperature	Axial spherical roller bearings with sheet steel or brass cage
	–30 °C to +200 °C, limited by the lubricant



In the event of anticipated temperatures which lie outside the stated values, please contact Schaeffler.



1.9 Cages

Sheet steel cages or solid brass cages are used as standard

Axial spherical roller bearings essentially differ in terms of their cage design ➤ 1119 | 2. The design is dependent on the bearing series and the bearing size ➤ 1123 | 3. Sheet steel cages do not have a cage suffix in the designation ➤ 1123 | 3. The cages have a high strength. They are suitable for high temperatures and all conventional lubricants.



If there is any uncertainty regarding cage suitability for a specific application, please consult Schaeffler.

Cage, cage suffix, bore code

Bearing series	Sheet steel cage	Solid brass cage MB
	Bore code	
292..-E1	–	30 to /1180
293..-E1-XL	17 to 64	68 to /800
293..-E1	–	/850 to /1600
294..-E1-XL	12 to 68	72 to /710
294..-E1	–	/750 to /1060

1.10 Internal clearance

The possible preload is determined by the application

In the case of axial spherical roller bearings, the axial preload is achieved when the bearings are mounted. The requisite preload is dependent on the application and must take account of the conditions in the bearing arrangement while warm from operation and subjected to load. It must always be ensured that no slippage occurs in operation between the rolling elements and raceways. A specific minimum axial load $F_{a\min}$ must be acting on axial spherical roller bearings at all times ➤ 1126 | 1.15.



If there is any uncertainty regarding preload, please consult Schaeffler.

1.11 Dimensions, tolerances

Dimension standards



The main dimensions of axial spherical roller bearings correspond to ISO 104:2015 and DIN 728:1991.

Chamfer dimensions



The limiting dimensions for chamfer dimensions correspond to DIN 620-6:2004. Overview and limiting values ➤ 138. Nominal value of chamfer dimension ➤ 1130 | 2.

Tolerances



The dimensional and running tolerances of shaft and housing locating washers correspond to the tolerance class Normal in accordance with ISO 199:2014 ➤ 133 | 25 to ➤ 135 | 28.

🔗 *Restricted section height tolerance*

The tolerances for section height T are considerably restricted for all axial spherical roller bearings compared to the standard values ➤ 1124 | 4 and ➤ 1130 | 4.

4
Tolerances
for bearing section height

Nominal bore diameter mm		Deviation of bearing section height T µm	
over	incl.	upper	lower
50	80	0	-100
80	120	0	-100
120	180	0	-125
180	250	0	-125
250	315	0	-150
315	400	0	-200
400	500	0	-420
500	630	0	-500
630	800	0	-630
800	1 000	0	-800
1 000	1 250	0	-1 000
1 250	1 600	0	-1 200

1.12

Suffixes

For a description of the suffixes used in this chapter ➤ 1124 | 5 and **medias** interchange ➤ <https://www.schaeffler.de/std/1D52>.

5
Suffixes and
corresponding descriptions

Suffix	Description of suffix	
E1	Increased capacity design	Standard
MB	Solid brass cage	
N1	One retaining slot in the housing locating washer	
N2	Two retaining slots offset by 180° in the housing locating washer	
THI	3 uniformly distributed threaded holes in one end face of the shaft locating washer	
THIE	3 uniformly distributed threaded holes in one end face of the shaft locating washer, incl. suitable eye bolts	
THO	3 uniformly distributed threaded holes in one end face of the housing locating washer	
THOE	3 uniformly distributed threaded holes in one end face of the housing locating washer, incl. suitable eye bolts	
XL	X-life bearing	

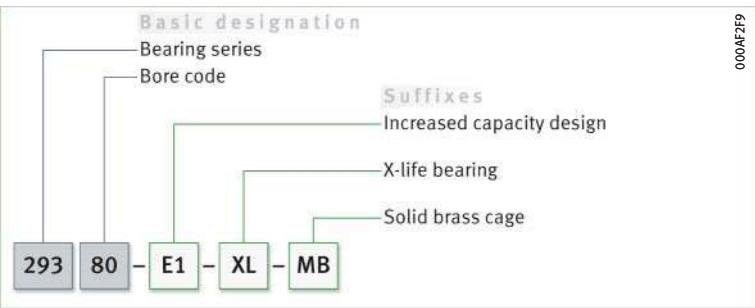
1.13

Structure of bearing designation

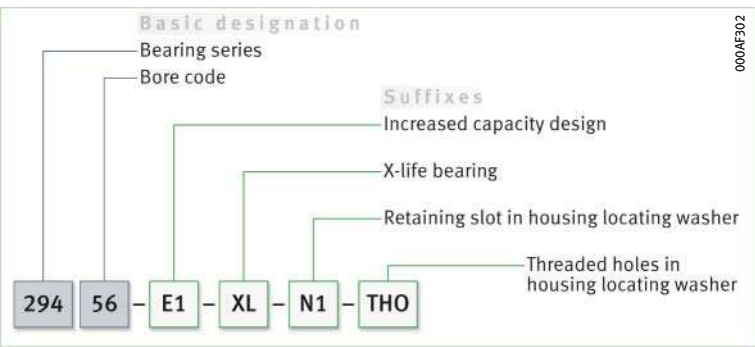
Examples of composition of bearing designation

The designation of bearings follows a set model. Examples ➤ 1125 | 6 and ➤ 1125 | 7. The composition of designations is subject to DIN 623-1 ➤ 102 | 10.

6
Axial spherical roller bearing, X-life design: designation structure



7
Axial spherical roller bearing, X-life design, with retaining slot and threaded holes: designation structure



1.14

Dimensioning

P = a substitute force for combined load and various load cases

Equivalent dynamic bearing load

The basic rating life equation $L = (C/P)^P$ used in the dimensioning of bearings under dynamic load assumes a load of constant magnitude and direction. In axial bearings, this is a purely axial and concentrically acting load. If this condition is not met, an equivalent dynamic bearing load P must be determined for the rating life calculation. In the case of axial bearings, this is a concentrically acting axial load of constant magnitude and direction, which has the same effect on the rating life as the load occurring in practice. Calculation ➤ 1125 | 1.

f1
Equivalent dynamic load

$$P = F_a + 1,2 \cdot F_r$$

Legend

P	N	Equivalent dynamic bearing load
F_r	N	Radial load
F_a	N	Axial load.



The radial bearing load F_r must not exceed 55% of the axial load F_a :
 $F_r \leq 0,55 \cdot F_a$

Equivalent static bearing load

For axial spherical roller bearings subjected to static load ➤ 1125 | 2.

f2
Equivalent static load

$$P_0 = F_{0a} + 2,7 \cdot F_{0r}$$

Legend

P_0	N	Equivalent static bearing load
F_{0r}, F_{0a}	N	Largest radial or axial load present (maximum load).



The radial bearing load F_{0r} must not exceed 55% of the axial load F_{0a} :
 $F_{0r} \leq 0,55 \cdot F_{0a}$

Static load safety factor



In addition to the basic rating life L_{10h} , it is also always necessary to check the static load safety factor S_0 . The following values must be observed here ➤ 1126 | 6. Calculation of S_0 ➤ 1126 | 3.

3
Static load safety factor

$$S_0 = \frac{C_0}{P_0}$$

Legend

S_0	–	Static load safety factor
C_0	N	Basic static load rating
P_0	N	Equivalent static bearing load.

6
Values for static load safety factor

Static load safety factor S_0	Conditions
$S_0 \geq 8$	Axial support by the abutment shoulders in accordance with the product tables (d_a and D_a) ➤ 1130 6
$S_0 \geq 6$	Full axial support of the housing and shaft locating washers by the entire mating surface, dimensions D_1 and d_1 ➤ 1130 6
$S_0 \geq 4$	Full axial support, dimensions D_1 and d_1 ➤ 1130 6 together with good radial support of the housing locating washer (housing tolerance K7)

1.15

Minimum load

Rolling bearings under low loads are particularly prone to slippage

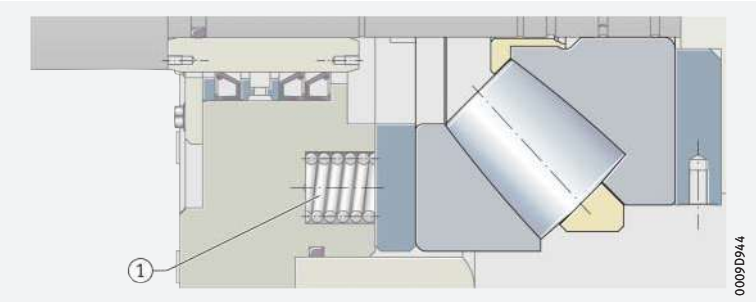
If the lubricant film is interrupted between the rolling elements and raceways as a result of slippage, the contact partners will come into contact at high relative velocity and the wear in the bearing will increase abruptly. The risk of slippage is particularly high where bearings are subjected to low loads. In order to prevent slippage damage and guarantee kinematics, a minimum axial load $F_{a \min}$ must therefore be applied to the bearing ➤ 1126 | 4 and ➤ 1127 | 7.

Preload the bearings, if the minimum axial load is not achieved

In vertical bearing arrangements in particular, the requisite minimum axial load $F_{a \min}$ is normally already achieved by the weight of the supported parts and the external forces. If this is not the case, the bearing arrangement must be preloaded, for example by means of springs or a shaft nut ➤ 1126 | 8 and ➤ 1123 | 1.10. The minimum axial load must be ensured in all operating modes.

8
Minimum axial load applied to an axial spherical roller bearing by means of spring preload

1 Pressure springs distributed uniformly around the circumference of the housing locating washer



4
Minimum axial load

$$F_{a \min} = 0,0005 \cdot C_{0a} + k_a \left(\frac{C_{0a} \cdot n}{10^8} \right)^2$$

Legend

$F_{a \min}$	N	Minimum axial load
C_{0a}	N	Basic static load rating ➤ 1130 6
k_a	–	Factor for determining the minimum load ➤ 1127 7
n	min^{-1}	Speed.

 **Factor k_a for calculating the minimum axial load**

Bearing series	Factor k_a
292..-E1	0,6
293..-E1	0,9
294..-E1	0,7

1.16 Design of bearing arrangements

Design of adjacent parts

 **Support bearing washers over the circumference and width**

The adjacent parts to the shaft and housing locating washers must be rigid, flat and perpendicular to the axis of rotation. They must be configured such that the bearing washers are supported over the whole circumference and over the whole raceway width; in particular, this must be observed under high loads. The axial runout tolerances of the contact surfaces for axial spherical roller bearings should be designed to IT5 or better  8.



The housing bore must have a recess with a diameter $D_{b \min}$ above the housing locating washer, otherwise the rollers may graze the housing in the event of shaft misalignments  9. Dimensions for $D_{b \min}$  1130 .

 **E1 = bearings with new internal construction**

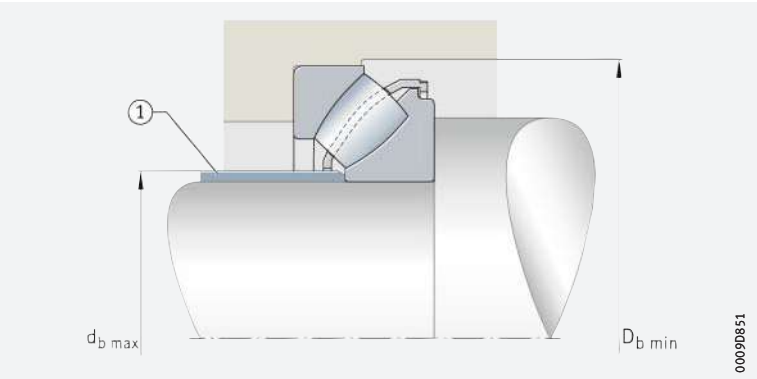
Due to the new internal construction of the E1 bearings, attention must be paid to the mounting dimensions. This also applies to the configuration of the spacer sleeve on the shaft locating washer (dimensions d_b , d_{b1})  1130 .



 **Release in the housing and maximum height of spacer sleeve**

$D_{b \min}$ = minimum dimension of recess in the housing
 $d_{\max}$ = maximum height of spacer sleeve

① Spacer sleeve



 **Numerical values for ISO standard tolerances (IT grades) to ISO 286-1:2010**

IT grade	Nominal dimension in mm						
	over	50	80	120	180	250	315
	incl.	80	120	180	250	315	400
	Values in μm						
IT5	13	15	18	20	23	25	
							continued ▼

 **Numerical values for ISO standard tolerances (IT grades) to ISO 286-1:2010**

IT grade	Nominal dimension in mm						
	over	400	500	630	800	1000	1250
	incl.	500	630	800	1000	1250	1600
Values in μm							
IT5	27	32	36	40	47	55	
							continued ▲

🔍 *Observe point or circumferential load of bearing washers*

Tolerances for shaft and housing bore

Fits for the bearing rings of axial spherical roller bearings, as a function of the condition of rotation ➤ 1128 | 9. The conditions of rotation for shaft and housing locating washers must be taken into consideration when defining the fits (point or circumferential load).

9
Conditions of rotation and fits

Adjacent part	Type of load	Operating conditions	Tolerance class ¹⁾
Shaft	Combined load	Point load for shaft locating washer	j6
		Circumferential load for shaft locating washer, shaft diameter up to 200 mm	j6 (k6)
		Circumferential load for shaft locating washer, shaft diameter from 200 mm	k6 (m6)
Housing	Axial load	Normal load	E8
		High load	G7
	Combined load	Point load for housing locating washer	H7
		Circumferential load for housing locating washer	K7

1) The envelope requirement @ applies.



If there is any uncertainty regarding the design of adjacent parts, please consult Schaeffler.

1.17 Mounting and dismounting



🔍 *As the bearings are not self-retaining, they are easy to mount*

The mounting and dismounting options for the bearings must be taken into consideration in the design of the bearing position.

Axial spherical roller bearings are not self-retaining. As a result, the bearing parts can be mounted separately from each other. This gives simplified mounting of the bearings.

🔍 *Rolling bearings must be handled with great care*

Schaeffler Mounting Handbook

Rolling bearings are well-proven precision machine elements for the design of economical and reliable bearing arrangements, which offer high operational security. In order that these products can function correctly and achieve the envisaged operating life without detrimental effect, they must be handled with care.



The Schaeffler Mounting Handbook MH 1 gives comprehensive information about the correct storage, mounting, dismounting and maintenance of rotary rolling bearings ➤ <https://www.schaeffler.de/std/1D53>. It also provides information which should be observed by the designer, in relation to the mounting, dismounting and maintenance of bearings, in the original design of the bearing position. This book is available from Schaeffler on request.

1.18

Legal notice regarding data freshness

 *The further development of products may also result in technical changes to catalogue products*

Of central interest to Schaeffler is the further development and optimisation of its products and the satisfaction of its customers. In order that you, as the customer, can keep yourself optimally informed about the progress that is being made here and with regard to the current technical status of the products, we publish any product changes which differ from the printed version in our electronic product catalogue.



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Link to electronic product catalogue



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1.19

Further information

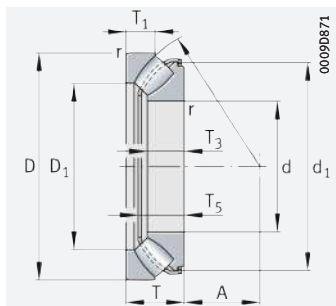


In addition to the data in this chapter, the following chapters in Technical principles must also be observed in the design of bearing arrangements:

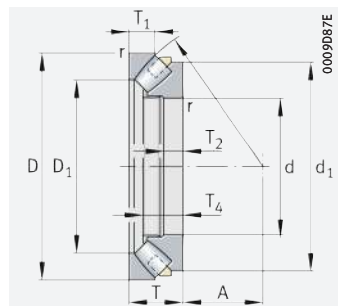
- Determining the bearing size ► 34
- Rigidity ► 54
- Friction and increases in temperature ► 56
- Speeds ► 64
- Bearing data ► 97
- Lubrication ► 70
- Sealing ► 182
- Design of bearing arrangements ► 139
- Mounting and dismounting ► 191.



Axial spherical roller bearings



With sheet steel cage

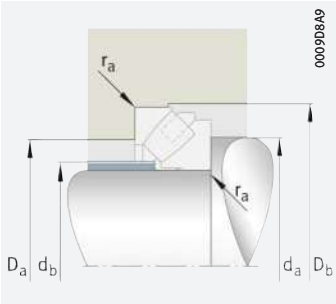


With solid brass cage

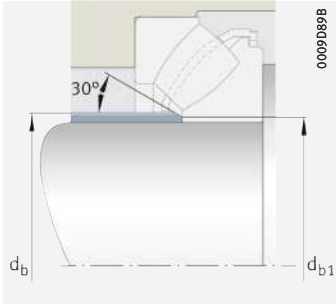
d = 60 – 190 mm

Main dimensions			Basic load ratings		Fatigue limit load	Limiting speed	Speed rating	Mass	Designation
d	D	T	dyn. C_a	stat. C_{0a}	C_{ua}	n_G	n_{Gr}	m	▶ 1124 1.12 ▶ 1125 1.13 X-life ▶ 1119
			N	N	N	min^{-1}	min^{-1}	≈ kg	
60	130	42	410 000	940 000	114 000	6 000	2 850	2,5	29412-E1-XL
65	140	45	495 000	1 160 000	135 000	5 500	2 600	3,1	29413-E1-XL
70	150	48	550 000	1 290 000	150 000	5 000	2 430	3,8	29414-E1-XL
75	160	51	650 000	1 540 000	174 000	4 700	2 260	4,6	29415-E1-XL
80	170	54	720 000	1 720 000	194 000	4 350	2 140	5,5	29416-E1-XL
85	150	39	420 000	1 110 000	154 000	4 850	2 260	2,7	29317-E1-XL
	180	58	800 000	1 910 000	218 000	4 100	2 010	6,5	29417-E1-XL
90	155	39	420 000	1 130 000	160 000	4 650	2 140	2,8	29318-E1-XL
	190	60	880 000	2 130 000	238 000	3 850	1 920	7,5	29418-E1-XL
100	170	42	495 000	1 340 000	189 000	4 200	1 960	3,6	29320-E1-XL
	210	67	1 060 000	2 600 000	285 000	3 400	1 740	10,1	29420-E1-XL
110	190	48	620 000	1 760 000	229 000	3 750	1 830	5,2	29322-E1-XL
	230	73	1 260 000	3 150 000	340 000	3 100	1 600	12,8	29422-E1-XL
120	210	54	800 000	2 210 000	285 000	3 350	1 700	7,2	29324-E1-XL
	250	78	1 470 000	3 700 000	390 000	2 800	1 460	15,9	29424-E1-XL
130	225	58	900 000	2 600 000	320 000	3 100	1 590	8,8	29326-E1-XL
	270	85	1 700 000	4 350 000	445 000	2 600	1 360	21	29426-E1-XL
140	240	60	1 010 000	2 900 000	355 000	2 900	1 490	10,3	29328-E1-XL
	280	85	1 720 000	4 500 000	480 000	2 460	1 290	22,1	29428-E1-XL
150	215	39	425 000	1 720 000	202 000	3 150	1 540	4,4	29230-E1-MB
	250	60	1 020 000	2 900 000	375 000	2 750	1 400	10,5	29330-E1-XL
	300	90	2 000 000	5 300 000	550 000	2 290	1 180	27,2	29430-E1-XL
160	225	39	420 000	1 720 000	212 000	3 000	1 450	4,7	29232-E1-MB
	270	67	1 220 000	3 550 000	435 000	2 500	1 320	14	29332-E1-XL
	320	95	2 240 000	6 000 000	620 000	2 120	1 090	32,1	29432-E1-XL
170	240	42	470 000	1 940 000	237 000	2 800	1 390	5,8	29234-E1-MB
	280	67	1 230 000	3 500 000	445 000	2 390	1 260	14,2	29334-E1-XL
	340	103	2 550 000	6 900 000	680 000	1 990	1 020	39,6	29434-E1-XL
180	250	42	485 000	2 070 000	250 000	2 650	1 350	6,1	29236-E1-MB
	300	73	1 460 000	4 300 000	510 000	2 240	1 170	18,4	29336-E1-XL
	360	109	2 850 000	7 700 000	750 000	1 860	940	47,6	29436-E1-XL
190	270	48	600 000	2 500 000	295 000	2 440	1 300	8,5	29238-E1-MB
	320	78	1 680 000	4 850 000	590 000	2 070	1 090	22,3	29338-E1-XL
	380	115	3 100 000	8 500 000	850 000	1 750	910	54,6	29438-E1-XL

medias ▶ <https://www.schaeffler.de/std/1E95>



Mounting dimensions

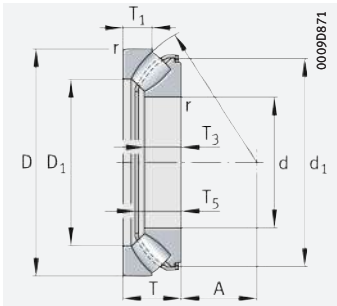


With sheet steel cage
Mounting dimensions

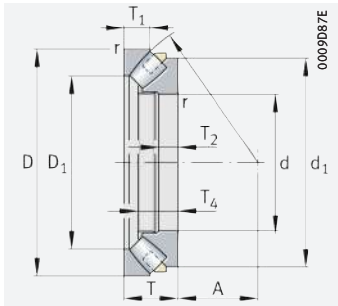
Dimensions										Mounting dimensions					
d	D ₁	d ₁	r	T ₁	T ₂	T ₃	T ₄	T ₅	A	d _a	D _a	D _b	d _b	d _{b1}	r _a
			min.					≈		min.	max.	min.	max.	max.	max.
60	85,5	116,5	1,5	21	–	27	–	37,5	38	95	107	133	67	–	1,5
65	91,5	125,2	2	22	–	29,5	–	40,5	42	100	115	143	72	–	2
70	99	133,8	2	23,8	–	31	–	42,5	44,8	110	124	153	78,5	–	2
75	105,5	142,3	2	24,5	–	33,5	–	46	47	115	132	163	82,5	–	2
80	112,5	150,9	2,1	26,5	–	35	–	48,5	50	125	141	173	88	–	2,1
85	109,5	138,5	1,5	20	–	24,5	–	34,5	50	120	129	153	92	–	1,5
	121	159,3	2,1	28	–	37	–	51	54	130	150	183	94	–	2,1
90	115	142,3	1,5	19,5	–	24,5	–	34,5	52	125	135	158	97	–	1,5
	127,5	167,7	2,1	28,5	–	39	–	54	56	135	158	193	99,5	–	2,1
100	127,5	156	1,5	20,5	–	26,2	–	37,5	58	135	148	173	107	–	1,5
	141,5	184,5	3	32	–	43	–	59,5	62	150	175	214	110,5	–	2,5
110	140	175,6	2	24,8	–	30,3	–	42	64	150	165	193	120	–	2
	155,5	201,9	3	34,7	–	47	–	64,5	69	165	192	234	129	121	2,5
120	154	192,6	2,1	27	–	34	–	48	70	165	182	213	129	–	2,1
	171	218,8	4	36,5	–	50,5	–	70	74	180	210	254	142	132	3
130	165,5	207,9	2,1	30,1	–	36,7	–	50,5	76	180	195	228	143	139	2,1
	184,5	240	4	40,9	–	54	–	75	81	195	227	275	153	143	3
140	177	220,6	2,1	30	–	38,5	–	53,5	82	190	208	244	154	149	2,1
	194,5	251,1	4	41	–	54	–	74,5	86	205	237	285	162	154	3
150	176	200	1,5	20,5	14	25	37	–	82	185	193	219	157	–	1,5
	190	228,4	2,1	28	–	38	–	54,5	87	195	220	254	163	159	2,1
	207,5	267,4	4	43,4	–	58	–	80,5	92	220	253	306	175	164	3
160	188	210	1,5	20	14	25	37	–	87	195	204	229	168	–	1,5
	203	248	3	33	–	42	–	59,5	92	215	236	274	176	170	2,5
	223,5	283,5	5	45,5	–	60,5	–	84,5	99	235	271	326	189	176	4
170	201	225	1,5	22	15	26	40	–	93	205	218	244	180	–	1,5
	215	255,7	3	30,5	–	42,2	–	60,5	96	220	247	284	188	180	2,5
	236	305	5	50	–	65,5	–	89,5	104	250	288	346	199	186	4
180	208	235	1,5	22	15	26	40	–	97	215	226	254	190	–	1,5
	227	274,5	3	35,5	–	46	–	64,5	103	235	263	304	195	190	2,5
	250	315,5	5	53	–	69,5	–	96	110	265	305	366	210	197	4
190	226	255	2	25,5	17	29	45	–	103	230	243	274	203	–	2
	243,5	290,1	4	36	–	49	–	70	110	250	281	325	211	201	3
	264,5	340	5	55,5	–	73	–	100,9	117	280	322	386	223	209	4



Axial spherical roller bearings



With sheet steel cage

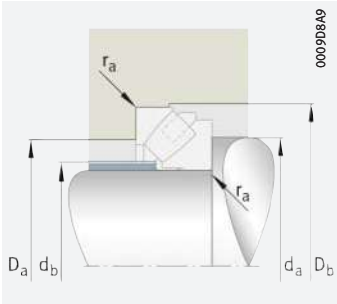


With solid brass cage

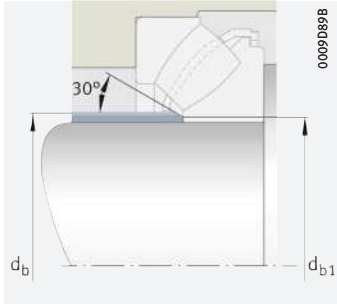
d = 200 – 380 mm

Main dimensions			Basic load ratings		Fatigue limit load	Limiting speed	Speed rating	Mass	Designation
d	D	T	dyn. C _a	stat. C _{0a}	C _{ua}	n _G	n _{gr}	m	X-life ▶ 1119
			N	N	N	min ⁻¹	min ⁻¹	≈ kg	
200	280	48	650 000	2 650 000	315 000	2 340	1 280	9	29240-E1-MB
	340	85	1 900 000	5 600 000	650 000	1 940	1 030	27,3	29340-E1-XL
	400	122	3 450 000	9 500 000	920 000	1 660	860	63,7	29440-E1-XL
220	300	48	690 000	3 000 000	350 000	2 170	1 160	9,8	29244-E1-MB
	360	85	1 990 000	6 200 000	710 000	1 820	950	30,6	29344-E1-XL
	420	122	3 500 000	10 000 000	990 000	1 560	790	69	29444-E1-XL
240	340	60	1 010 000	4 150 000	460 000	1 890	1 060	16,9	29248-E1-MB
	380	85	2 040 000	6 500 000	750 000	1 710	880	32,8	29348-E1-XL
	440	122	3 600 000	10 500 000	1 060 000	1 470	740	74,1	29448-E1-XL
260	360	60	1 040 000	4 550 000	495 000	1 780	970	17,6	29252-E1-MB
	420	95	2 550 000	8 300 000	910 000	1 540	790	45,8	29352-E1-XL
	480	132	4 400 000	13 200 000	1 280 000	1 350	660	96,6	29452-E1-XL
280	380	60	1 020 000	4 700 000	520 000	1 670	900	19	29256-E1-MB
	440	95	2 650 000	8 800 000	960 000	1 460	740	49,1	29356-E1-XL
	520	145	5 200 000	15 800 000	1 470 000	1 230	600	126	29456-E1-XL
300	420	73	1 400 000	6 200 000	650 000	1 500	830	29,9	29260-E1-MB
	480	109	3 200 000	10 500 000	1 130 000	1 320	680	65,1	29360-E1-XL
	540	145	5 200 000	16 200 000	1 510 000	1 180	570	130	29460-E1-XL
320	440	73	1 410 000	6 500 000	680 000	1 420	780	31,6	29264-E1-MB
	500	109	3 350 000	11 000 000	1 180 000	1 260	650	72,4	29364-E1-XL
	580	155	6 000 000	19 100 000	1 750 000	1 090	530	163	29464-E1-XL
340	460	73	1 410 000	6 600 000	710 000	1 350	740	33,3	29268-E1-MB
	540	122	3 750 000	12 600 000	1 320 000	1 150	600	101	29368-E1-XL-MB
	620	170	7 200 000	23 100 000	2 040 000	1 020	475	208	29468-E1-XL
360	500	85	1 870 000	8 500 000	870 000	1 230	690	49	29272-E1-MB
	560	122	3 750 000	13 000 000	1 310 000	1 110	570	105	29372-E1-XL-MB
	640	170	6 800 000	21 900 000	2 010 000	970	470	230	29472-E1-XL-MB
380	520	85	2 000 000	9 000 000	920 000	1 180	660	50,3	29276-E1-MB
	600	132	4 500 000	15 400 000	1 540 000	1 030	530	136	29376-E1-XL-MB
	670	175	7 200 000	24 200 000	2 140 000	930	445	260	29476-E1-XL-MB

medias ▶ <https://www.schaeffler.de/std/1E96>



Mounting dimensions

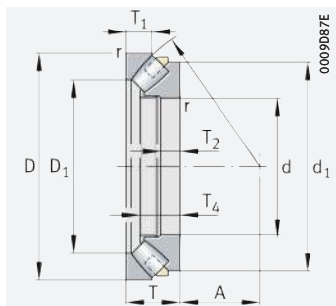


With sheet steel cage
Mounting dimensions

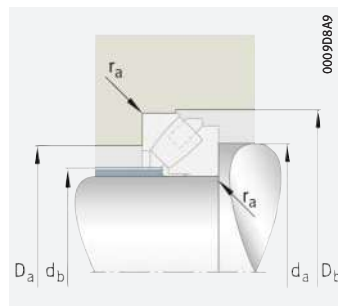
Dimensions										Mounting dimensions					
d	D ₁	d ₁	r	T ₁	T ₂	T ₃	T ₄	T ₅	A	d _a	D _a	D _b	d _b	d _{b1}	r _a
			min.					≈		min.	max.	min.	max.	max.	max.
200	232,5	265	2	24	17	30	45	–	108	240	258	284	209	–	2
	257	308,8	4	40	–	53,5	–	75,5	116	265	298	348	224	213	3
	277,5	360	5	59,4	–	77	–	106,9	122	295	338	406	234	220	4
220	251,5	285	2	24,5	17	30	45	–	117	260	277	304	229	–	2
	275,5	331,8	4	41	–	55	–	75,8	125	285	316	368	240	231	3
	300	379,8	6	58,5	–	77	–	107,5	132	315	360	428	254	241	5
240	283	320	2,1	30	22	37	57	–	130	290	311	344	250	–	2,1
	295,5	350,6	4	40,5	–	54	–	76,1	135	305	337	390	259	252	3
	322	400	6	59	–	76	–	106,9	142	335	381	448	276	261	5
260	302	340	2,1	30	22	38	57	–	139	310	331	365	271	–	2
	324	387,7	5	46	–	61	–	85,2	148	340	372	430	286	275	4
	346	435	6	63	–	86	–	118,9	154	365	419	488	296	280	5
280	323	360	2,1	30	22	38	57	–	150	330	351	385	293	–	2
	343	406,5	5	45,5	–	62	–	86,1	158	355	394	450	305	293	4
	372	473,1	6	70	–	95	–	130,5	166	395	446	530	320	302	5
300	353	395	3	38	26	44	69	–	162	360	386	426	315	–	2,5
	372	439,6	5	51	–	70	–	97,9	168	385	429	490	329	318	4
	392	490	6	70	–	95	–	129,5	175	420	471	550	340	324	5
320	372	415	3	38	26	44,5	69	–	172	380	406	450	336	–	2,5
	391	460	5	53	–	68	–	96,6	180	405	449	510	347	333	4
	422	534,4	7,5	74,5	–	102	–	139,7	191	445	507	590	367	346	6
340	395	435	3	37	26	45	69	–	183	400	427	470	356	–	2,5
	428	500	5	59,5	44	75	117	–	192	440	484	550	365	–	4
	445	564,9	7,5	84	–	112	–	151,3	201	480	541	630	386	364	6
360	423	470	4	44	31	51	81	–	194,5	430	461	510	379	–	3
	448	520	5	59,5	44	75	117	–	202	455	504	572	385	–	4
	474	585	7,5	83,5	63	110	164	–	210	500	560	650	388	–	6
380	441	490	4	42	31	51,5	81	–	202	445	480	530	394	–	3
	477	555	6	63,5	48	83	127	–	216	485	538	612	404	–	5
	494	615	7,5	87,5	67	115	168	–	222	530	587	682	413	–	6



Axial spherical roller bearings



With solid brass cage



Mounting dimensions

d = 400 – 670 mm

Main dimensions			Basic load ratings		Fatigue limit load	Limiting speed	Speed rating	Mass	Designation ► 1124 1.12 ► 1125 1.13 X-life ► 1119
d	D	T	dyn. C _a	stat. C _{0a}	C _{ua}	n _G	n _{dr}	m	
			N	N	N	min ⁻¹	min ⁻¹	≈ kg	
400	540	85	2 040 000	9 600 000	970 000	1 130	620	52,6	29280-E1-MB
	620	132	4 550 000	16 300 000	1 640 000	990	500	142	29380-E1-XL-MB
	710	185	8 200 000	26 500 000	2 390 000	870	425	308	29480-E1-XL-MB
420	580	95	2 460 000	11 100 000	1 110 000	1 040	600	70,3	29284-E1-MB
	650	140	5 000 000	17 500 000	1 650 000	940	480	163	29384-E1-XL-MB
	730	185	8 200 000	28 500 000	2 490 000	840	395	325	29484-E1-XL-MB
440	600	95	2 500 000	12 400 000	1 170 000	1 010	560	77,1	29288-E1-MB
	680	145	5 200 000	18 300 000	1 660 000	890	470	185	29388-E1-XL-MB
	780	206	9 700 000	32 500 000	2 850 000	780	375	418	29488-E1-XL-MB
460	620	95	2 550 000	12 200 000	1 210 000	970	540	77,6	29292-E1-MB
	710	150	5 900 000	21 400 000	2 060 000	850	430	207	29392-E1-XL-MB
	800	206	9 800 000	33 500 000	2 950 000	760	360	435	29492-E1-XL-MB
480	650	103	2 650 000	13 700 000	1 300 000	920	520	97,5	29296-E1-MB
	730	150	5 800 000	21 400 000	1 940 000	820	415	219	29396-E1-XL-MB
	850	224	11 700 000	39 500 000	3 350 000	710	335	531	29496-E1-XL-MB
500	670	103	2 750 000	14 700 000	1 370 000	890	495	102	292/500-E1-MB
	750	150	5 900 000	22 000 000	1 950 000	800	400	228	293/500-E1-XL-MB
	870	224	11 600 000	40 000 000	3 450 000	690	325	551	294/500-E1-XL-MB
530	710	109	3 000 000	15 400 000	1 480 000	830	475	120	292/530-E1-MB
	800	160	6 800 000	25 500 000	2 280 000	740	375	274	293/530-E1-XL-MB
	920	236	12 700 000	44 500 000	3 750 000	650	305	653	294/530-E1-XL-MB
560	750	115	3 450 000	18 100 000	1 670 000	790	440	142	292/560-E1-MB
	980	250	14 600 000	51 000 000	4 200 000	610	285	783	294/560-E1-XL-MB
600	800	122	3 650 000	19 400 000	1 810 000	730	415	167	292/600-E1-MB
	900	180	8 700 000	34 000 000	2 950 000	660	325	392	293/600-E1-XL-MB
	1 030	258	15 200 000	56 000 000	4 550 000	580	265	889	294/600-E1-XL-MB
630	850	132	4 650 000	23 600 000	2 140 000	690	390	208	292/630-E1-MB
	950	190	9 700 000	37 500 000	3 250 000	620	305	462	293/630-E1-XL-MB
	1 090	280	17 300 000	62 000 000	5 100 000	540	250	1 073	294/630-E1-XL-MB
670	900	140	4 750 000	24 900 000	2 250 000	640	370	247	292/670-E1-MB
	1 000	200	10 600 000	41 000 000	3 350 000	580	285	526	293/670-E1-XL-MB
	1 150	290	18 400 000	66 000 000	5 400 000	510	241	1 214	294/670-E1-XL-MB

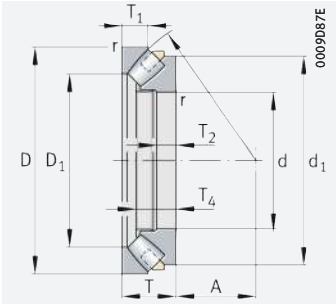
medias ► <https://www.schaeffler.de/std/1E97>



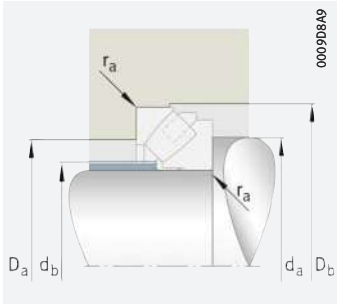
Dimensions									Mounting dimensions				
d	D ₁	d ₁	r	T ₁	T ₂	T ₃	T ₄	A	d _a	D _a	D _b	d _b	r _a
			min.						min.	max.	min.	max.	max.
400	460	510	4	42	31	53,5	81	212	465	500	550	414	3
	494	575	6	64	48	83	127	225	510	557	634	429	5
	525	650	7,5	89,5	69	120	178	234	555	622	722	434	6
420	489	545	5	46	34	58,5	91	225	495	534	590	439	4
	520	600	6	67,5	50	85	135	235	530	585	664	449	5
	545	670	7,5	90,5	70	124	178	244	580	643	742	457	6
440	508	570	5	49	34	61	91	235	520	554	610	458	4
	540	631,5	6	70,5	52	87	140	245	555	614	695	473	5
	577	715	9,5	101	77	134	199	257	610	684	794	477	8
460	530	585	5	46	34	59	91	245	535	575	632	479	4
	567	660	6	72,5	54	94,5	144	257	585	638	726	491	5
	596	735	9,5	101,5	77	135	199	268	630	704	815	497	8
480	556	620	5	55	37	62	99	259	565	603	662	507	4
	591	680	6	73,5	54	94	144	270	605	660	746	511	5
	625	780	9,5	108	88	147	216	280	660	744	865	516	8
500	574	640	5	55	37	65	99	268	585	622	682	524	4
	611	700	6	74	54	92	144	280	625	683	768	534	5
	648	800	9,5	110	86,6	147	216	290	685	765	886	539	8
530	608	675	5	57	39	64	105	285	620	661	722	561	4
	648	745	7,5	76	58	101,5	154	295	660	724	818	564	6
	686	845	9,5	116	89	156	228	308	725	810	937	570	8
560	644	715	5	60	41	71	111	302	655	697	762	587	4
	727	900	12	122	99	168	241	328	770	860	997	602	10
600	688	760	5	65	44	71,5	117	321	700	744	814	634	4
	720	840	7,5	89	65	113,5	174	335	745	815	920	634	6
	769	950	12	128	99	172	249	349	820	900	1055	649	10
630	723	805	6	67	48	80	127	338	735	789	864	658	5
	761	885,5	9,5	92	68	122	183	345	785	856	970	666	8
	815	1000	12	137	107	183	270	365	860	960	1115	678	10
670	773	855	6	74	50	81	135	361	785	836	915	707	5
	809	930	9,5	96	72	126	193	372	825	906	1020	703	8
	864	1060	15	141	110	191	280	387	910	1015	1175	723	12



Axial spherical roller bearings



With solid brass cage



Mounting dimensions

d = 710 – 1 600 mm

Main dimensions			Basic load ratings		Fatigue limit load	Limiting speed	Speed rating	Mass	Designation
d	D	T	dyn. Ca	stat. C0a	Cua	nG	nθr	m	
			N	N	N	min ⁻¹	min ⁻¹	≈ kg	
710	950	145	5 500 000	29 500 000	2 550 000	610	335	281	292/710-E1-MB
	1 060	212	11 800 000	46 000 000	3 700 000	550	265	635	293/710-E1-XL-MB
	1 220	308	21 000 000	76 000 000	6 100 000	475	220	1 469	294/710-E1-XL-MB
750	1 000	150	5 700 000	31 500 000	2 750 000	570	320	326	292/750-E1-MB
	1 120	224	12 700 000	50 000 000	3 850 000	510	250	735	293/750-E1-XL-MB
	1 280	315	19 000 000	84 000 000	6 600 000	455	206	1 654	294/750-E1-MB
800	1 060	155	6 400 000	35 500 000	3 050 000	540	300	365	292/800-E1-MB
	1 180	230	13 500 000	54 000 000	4 050 000	485	237	824	293/800-E1-XL-MB
	1 360	335	20 600 000	93 000 000	7 400 000	425	191	1 964	294/800-E1-MB
850	1 120	160	7 100 000	40 500 000	3 400 000	510	275	422	292/850-E1-MB
	1 250	243	12 900 000	62 000 000	4 600 000	455	218	972	293/850-E1-MB
	1 440	354	24 000 000	110 000 000	8 400 000	400	174	2 348	294/850-E1-MB
900	1 180	170	7 700 000	42 000 000	3 250 000	475	265	478	292/900-E1-MB
	1 520	372	25 500 000	120 000 000	8 900 000	375	166	2 744	294/900-E1-MB
950	1 250	180	8 800 000	48 500 000	3 900 000	445	248	577	292/950-E1-MB
	1 600	390	28 500 000	132 000 000	9 900 000	355	155	3 170	294/950-E1-MB
1 000	1 320	190	9 600 000	55 000 000	4 450 000	420	233	689	292/1000-E1-MB
	1 670	402	30 500 000	146 000 000	10 600 000	340	145	3 575	294/1000-E1-MB
1 060	1 400	206	10 700 000	62 000 000	4 850 000	395	219	852	292/1060-E1-MB
	1 770	426	33 000 000	155 000 000	11 600 000	315	139	4 201	294/1060-E1-MB
1 120	1 460	206	10 700 000	64 000 000	4 650 000	375	207	896	292/1120-E1-MB
1 180	1 520	206	10 700 000	67 000 000	4 750 000	360	196	945	292/1180-E1-MB
1 250	1 800	330	23 700 000	125 000 000	8 100 000	305	142	2 654	293/1250-E1-MB
1 600	2 280	408	36 000 000	192 000 000	10 900 000	233	107	5 137	293/1600-E1-MB

medias ► <https://www.schaeffler.de/std/1E98>



Dimensions										Mounting dimensions				
d	D ₁	d ₁	r	T ₁	T ₂	T ₃	T ₄	A		d _a	D _a	D _b	d _b	r _a
			min.							min.	max.	min.	max.	max.
710	815	900	6	75	52	88	140	380		825	882	966	741	5
	855	985	9,5	103	76	132,5	205	394		875	962	1 082	746	8
	917	1 120	15	149	117	202	298	415		960	1 073	1 250	762	12
750	858	950	6	81	54	89	144	409		875	930	1 017	789	5
	910	1 040	9,5	109	81	140	216	415		925	1 015	1 142	790	8
	964	1 180	15	153	121	210	305	436		1 015	1 130	1 310	811	12
800	911	1 010	7,5	81	56	94	149	434		925	987	1 078	837	6
	965	1 100	9,5	111	83	145,5	222	440		980	1 070	1 202	840	8
	1 034	1 255	15	165	123	219	324	462		1 085	1 200	1 390	870	12
850	967	1 070	7,5	82	58	101,5	154	455		985	1 043	1 138	886	6
	1 021	1 165	12	118	87	152	235	468		1 045	1 137	1 273	896	10
	1 077	1 325	15	172	142,9	239	342	490		1 145	1 275	1 470	915	12
900	1 023	1 120	7,5	84	61	102,5	167	477		1 025	1 089	1 198	933	6
	1 137	1 405	15	186	147	251	360	518		1 215	1 345	1 555	969	12
950	1 081	1 190	7,5	90	65	110	174	507		1 090	1 147	1 268	985	6
	1 209	1 475	15	191	153	260	377	546		1 275	1 372	1 635	1 020	12
1 000	1 139	1 255	9,5	98	68	117,5	182	540		1 155	1 216	1 340	1 042	8
	1 250	1 540	15	200	160	277	390	581		1 340	1 435	1 705	1 071	12
1 060	1 211	1 336,3	9,5	108	74	124	199	566		1 225	1 290	1 422	1 106	8
	1 349	1 630	15	207	192	280	412	610		1 410	1 521	1 815	1 141	12
1 120	1 272	1 395	9,5	108	74	125	199	601		1 285	1 350	1 482	1 168	8
1 180	1 331	1 455	9,5	108	74	125	199	625		1 345	1 415	1 542	1 227	8
1 250	1 465	1 690,5	15	161	119	208	319	690		1 515	1 640	1 823	1 315	12
1 600	1 885	2 135,5	19	195	147	255	395	894		1 915	2 090	2 303	1 675	15