SKF spherical plain bearings and rod ends


SKF

Radial spherical plain bearings requiring maintenance

A characteristic feature of SKF steel/steel radial spherical plain bearings is the outer ring, which is intentionally fractured so that it can be sprung apart to enable the inner ring to be inserted (→ **fig. 1**). The bearings are therefore non-separable and easy to handle.

The bearings are manganese phosphated and the sliding contact surface is then treated with a running-in lubricant. This reduces friction and wear during the running-in period. To facilitate lubrication, all bearings, with the exception of some small sizes, have an annular groove and two lubrication holes in both the inner and outer rings. Metric bearings with an outside diameter D ≥ 150 mm also have the SKF multi-groove system (→ **page 17**) in the outer ring sliding contact surface as standard (→ **fig. 2**). Upon request, SKF can also supply smaller metric and inch size bearings with the multi-groove system.

With the multi-groove system, SKF solved the problem of lubricant starvation in steel/steel bearings. Lubricant starvation is a common cause of premature bearing failure in applications where minor alignment movements are made under heavy, constant direction loads.

The multi-groove system improves lubricant distribution in the heavily loaded zone to extend bearing service life and/or maintenance intervals.

Dimensions

The dimensions of spherical plain bearings in the GE, GEH and GEG series are in accordance with ISO 12240-1:1998.

Bearings in the GEM series, which have an extended inner ring, have a non-standard inner ring width, but otherwise have the same dimensions as GE series bearings.

Inch spherical plain bearings in the GEZ series are in accordance with the American Standard ANSI/ABMA Std. 22.2-1988.

Fig. 1

The fractured outer ring enables the bearing to be assembled

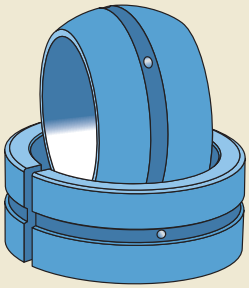
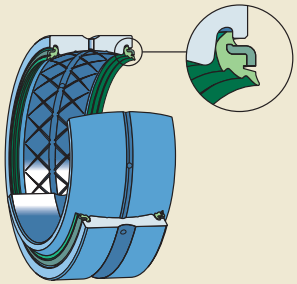


Fig. 2

Spherical plain bearing with the multi-groove system in the outer ring

Fig. 3

Spherical plain bearing with the multi-groove system, fitted with LS heavy-duty seals



Tolerances

The dimensional tolerances for metric radial spherical plain bearings requiring maintenance in the GE, GEG, GEH and GEM series are listed in **table 1**. The dimensional tolerances for inch radial spherical plain bearings in the GEZ, GEZH and GEZM series are listed in **table 2** on **page 103**. Outer ring tolerances apply to conditions before fracture and surface treatment. Accordingly, inner ring tolerances apply to rings before surface treatment.

The tolerances are in accordance with ISO 12240-1:1998 (metric bearings) and ANSI/ABMA Std. 22.2-1988 (inch bearings).

The symbols used in the tolerance tables are explained in the following:

- d nominal bore diameter
- Δ_{dmp} deviation of the mean bore diameter from the nominal
- D nominal outside diameter
- Δ_{Dmp} deviation of the mean outside diameter from the nominal
- Δ_{Bs} deviation of the single inner ring width from the nominal
- Δ_{Cs} deviation of the single outer ring width from the nominal

Table 1

Dimensional tolerances for metric radial spherical plain bearings requiring maintenance

Nominal diameter		GE, GEH and GEM series Inner ring				GEG series Inner ring				All series Outer ring			
		Δ_{dmp}		Δ_{Bs}		Δ_{dmp}		Δ_{Bs}		Δ_{Dmp}		Δ_{Cs}	
d, D over	incl.	high	low	high	low	high	low	high	low	high	low	high	low
mm		µm		µm		µm		µm		µm		µm	
–	6	0	–8	0	–120	–	–	–	–	–	–	–	–
6	10	0	–8	0	–120	–	–	–	–	0	–8	0	–240
10	18	0	–8	0	–120	+18	0	0	–180	0	–8	0	–240
18	30	0	–10	0	–120	+21	0	0	–210	0	–9	0	–240
30	50	0	–12	0	–120	+25	0	0	–250	0	–11	0	–240
50	80	0	–15	0	–150	+30	0	0	–300	0	–13	0	–300
80	120	0	–20	0	–200	+35	0	0	–350	0	–15	0	–400
120	150	0	–25	0	–250	+40	0	0	–400	0	–18	0	–500
150	180	0	–25	0	–250	+40	0	0	–400	0	–25	0	–500
180	250	0	–30	0	–300	+46	0	0	–460	0	–30	0	–600
250	315	0	–35	0	–350	–	–	–	–	0	–35	0	–700
315	400	–	–	–	–	–	–	–	–	0	–40	0	–800
400	500	–	–	–	–	–	–	–	–	0	–45	0	–900

Radial internal clearance

Steel/steel radial spherical plain bearings are produced with Normal radial internal clearance as standard. The actual values are listed in **tables 3** and **4**. Prior to ordering, check availability of bearings with a smaller (C2) or larger (C3) radial internal clearance than Normal.

The clearance values for metric bearings are in accordance with ISO 12240-1:1998.

Materials

The inner and outer rings of SKF steel/steel radial spherical plain bearings are made of bearing steel. They are through-hardened, ground and phosphated. The sliding contact surfaces are treated with a running-in lubricant.

Depending on the bore diameter, metric bearings with a 2RS suffix have a double-lip seal made of a polyester elastomer or acrylonitrile-butadiene rubber on both sides of the bearing (→ **table 6** on **page 79**). Inch bearings with a 2RS suffix have a double-lip seal made of polyurethane on both sides of the bearing.

Metric and inch bearings with the designation suffix -2LS have a sheet steel reinforced, triple-lip heavy-duty seal made of acrylonitrile-butadiene on both sides of the bearing.

Permissible operating temperature range

Open steel/steel radial spherical plain bearings have a permissible operating temperature range of –50 to +200 °C, but their load carrying capacity is reduced at temperatures above +120 °C. Bearings for higher temperature applications up to 300 °C, can be produced on request.

For sealed bearings, the permissible operating temperature range is limited by the seal material:

- –20 to +80 °C for inch RS seals
- –30 to +130 °C for metric RS seals with a bore diameter d < 320 mm
- –35 to +100 °C for metric RS seals with a bore diameter d ≥ 320 mm
- –55 to +110 °C for LS seals

The operating temperature range of the grease used to lubricate the bearings must also be taken into consideration.

Table 2

Dimensional tolerances for inch bearings

Nominal diameter		GEZ, GEZH and GEZM series							
		Inner ring				Outer ring			
d, D		Δ_{dmp}		Δ_{Bs}		Δ_{Dmp}		Δ_{Cs}	
over	incl.	high	low	high	low	high	low	high	low
in		µm							
–	2	0	–13	0	–130	0	–13	0	–130
2	3	0	–15	0	–130	0	–15	0	–130
3	3.1875	0	–20	0	–130	0	–15	0	–130
3.1875	4.75	0	–20	0	–130	0	–20	0	–130
4.75	6	0	–25	0	–130	0	–25	0	–130
6	7	–	–	–	–	0	–25	0	–130
7	8.75	–	–	–	–	0	–30	0	–130

Table 3

Radial internal clearance for steel/steel radial spherical plain bearings, metric sizes

Bore diameter		Radial internal clearance					
d		C2		Normal		C3	
over	incl.	min	max	min	max	min	max
mm		µm					
–	12	8	32	32	68	68	104
12	20	10	40	40	82	82	124
20	35	12	50	50	100	100	150
35	60	15	60	60	120	120	180
60	90	18	72	72	142	142	212
90	140	18	85	85	165	165	245
140	200	18	100	100	192	192	284
200	240	18	110	110	214	214	318
240	300	18	125	125	239	239	353

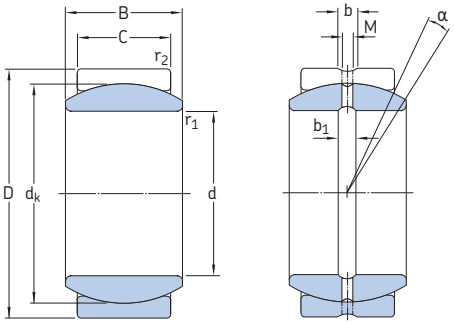
Bearings in the GEH series, with a bore diameter d = 20, 35, 60 and 90 mm, have a radial internal clearance range corresponding to the next larger diameter range.

Table 4

Radial internal clearance for steel/steel radial spherical plain bearings, inch sizes

Bore diameter		Radial internal clearance					
d		C2		Normal		C3	
over	incl.	min	max	min	max	min	max
in		µm					
–	0.625	15	75	50	150	150	200
0.625	2	25	105	80	180	180	260
2	3	30	130	100	200	200	300
3	6	40	160	130	230	230	350

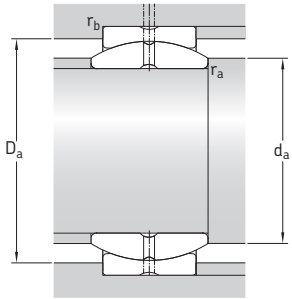
Radial spherical plain bearings, steel/steel, metric sizes
d **4 – 40** mm



GE .. E | GE .. ES | GE .. ES-2RS
GE .. ES-2LS | GEH .. ES-2RS
GEH .. ES-2LS

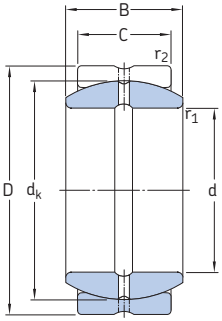
Principal dimensions				Angle of tilt[1]	Basic load ratings dynamic	static	Mass	Designations[2] without seals / with standards seals	suffix for heavy-duty seals
d	D	B	C	α	C	C_0			
mm				degrees	kN		kg	–	
4	12	5	3	16	2,04	10,2	0,003	**GE 4 E**	**–**
5	14	6	4	13	3,4	17	0,004	**GE 5 E**	**–**
6	14	6	4	13	3,4	17	0,004	**GE 6 E**	**–**
8	16	8	5	15	5,5	27,5	0,008	**GE 8 E**	**–**
10	19	9	6	12	8,15	40,5	0,012	**GE 10 E**	**–**
12	22	10	7	10	10,8	54	0,017	**GE 12 E**	**–**
15	26	12	9	8	17	85	0,032	**GE 15 ES**	**–**
	26	12	9	8	17	85	0,032	**GE 15 ES-2RS**	**–**
17	30	14	10	10	21,2	106	0,050	**GE 17 ES**	**–**
	30	14	10	10	21,2	106	0,050	**GE 17 ES-2RS**	**–**
20	35	16	12	9	30	146	0,065	**GE 20 ES**	**–**
	35	16	12	9	30	146	0,065	**GE 20 ES-2RS**	**-2LS**
	42	25	16	17	48	240	0,16	**GEH 20 ES-2RS**	**-2LS**
25	42	20	16	7	48	240	0,12	**GE 25 ES**	**–**
	42	20	16	7	48	240	0,12	**GE 25 ES-2RS**	**-2LS**
	47	28	18	17	62	310	0,20	**GEH 25 ES-2RS**	**-2LS**
30	47	22	18	6	62	310	0,16	**GE 30 ES**	**–**
	47	22	18	6	62	310	0,16	**GE 30 ES-2RS**	**-2LS**
	55	32	20	17	80	400	0,35	**GEH 30 ES-2RS**	**-2LS**
35	55	25	20	6	80	400	0,23	**GE 35 ES**	**–**
	55	25	20	6	80	400	0,23	**GE 35 ES-2RS**	**-2LS**
	62	35	22	15	100	500	0,47	**GEH 35 ES-2RS**	**-2LS**
40	62	28	22	7	100	500	0,32	**GE 40 ES**	**–**
	62	28	22	6	100	500	0,32	**GE 40 ES-2RS**	**-2LS**
	68	40	25	17	127	640	0,61	**GEH 40 ES-2RS**	**-2LS**

[1] To fully utilize the angle of tilt, the shaft shoulder should not be made larger than $d_{a\,max}$.
[2] Bearings with an outside diameter D ≥ 150 mm have the multi-groove system in the outer ring as standard. Bearings with an outside diameter D < 150 mm can be supplied with the multi-groove system on request (designation suffix ESL).

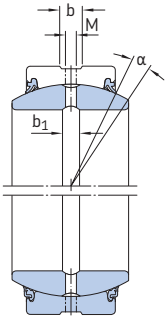


Dimensions							Abutment and fillet dimensions					
d	d_k	b	b_1	M	$r_{1\,min}$	$r_{2\,min}$	$d_{a\,min}$	$d_{a\,max}$	$D_{a\,min}$	$D_{a\,max}$	$r_{a\,max}$	$r_{b\,max}$
mm							mm					
4	8	–	–	–	0,3	0,3	5,5	6,2	7,6	10,7	0,3	0,3
5	10	–	–	–	0,3	0,3	6,6	8	9,5	12,6	0,3	0,3
6	10	–	–	–	0,3	0,3	7,5	8	9,5	12,6	0,3	0,3
8	13	–	–	–	0,3	0,3	9,6	10,2	12,3	14,5	0,3	0,3
10	16	–	–	–	0,3	0,3	11,7	13,2	17,5	15,2	0,3	0,3
12	18	–	–	–	0,3	0,3	13,8	15	17,1	20,4	0,3	0,3
15	22	2,3	2,3	1,5	0,3	0,3	16,9	18,4	20,9	24,3	0,3	0,3
	22	2,3	2,3	1,5	0,3	0,3	16,9	18,4	22,8	24,3	0,3	0,3
17	25	2,3	2,3	1,5	0,3	0,3	19	20,7	23,7	28,3	0,3	0,3
	25	2,3	2,3	1,5	0,3	0,3	19	20,7	26	28,3	0,3	0,3
20	29	3,1	3,1	2	0,3	0,3	22,1	24,2	27,6	33,2	0,3	0,3
	29	3,1	3,1	2	0,3	0,3	22,1	24,2	30,9	33,2	0,3	0,3
	35,5	3,1	3,1	2	0,3	0,6	22,7	25,2	36,9	39,2	0,3	0,6
25	35,5	3,1	3,1	2	0,6	0,6	28,2	29,3	33,7	39,2	0,6	0,6
	35,5	3,1	3,1	2	0,6	0,6	28,2	29,3	36,9	39,2	0,6	0,6
	40,7	3,1	3,1	2	0,6	0,6	28,6	29,5	41,3	44	0,6	0,6
30	40,7	3,1	3,1	2	0,6	0,6	33,3	34,2	38,7	44	0,6	0,6
	40,7	3,1	3,1	2	0,6	0,6	33,3	34,2	41,3	44	0,6	0,6
	47	3,9	3,9	2,5	0,6	1	33,7	34,4	48,5	50,9	0,6	1
35	47	3,9	3,9	2,5	0,6	1	38,5	39,8	44,6	50,9	0,6	1
	47	3,9	3,9	2,5	0,6	1	38,5	39,8	48,5	50,9	0,6	1
	53	3,9	3,9	2,5	0,6	1	38,8	39,8	54,5	57,8	0,6	1
40	53	3,9	3,9	2,5	0,6	1	43,6	45	50,3	57,8	0,6	1
	53	3,9	3,9	2,5	0,6	1	43,6	45	54,5	57,8	0,6	1
	60	4,6	4,6	3	0,6	1	44,1	44,7	61	63,6	0,6	1

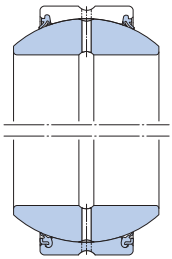
Radial spherical plain bearings, steel/steel, metric sizes
d **45 – 120** mm



GE .. ES



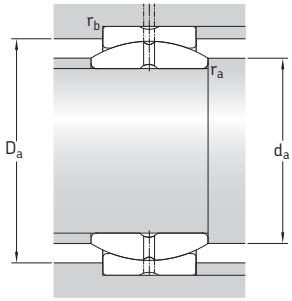
GE .. ES-2RS
GE .. ES-2LS



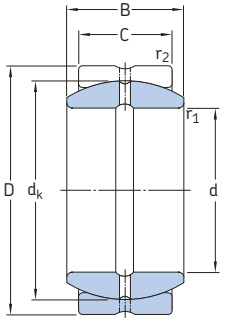
GEH .. ES-2RS
GEH .. ES-2LS

Principal dimensions				Angle of tilt[1]	Basic load ratings dynamic	static	Mass	Designations[2] without seals / with standard seals	suffix for heavy-duty seals
d	D	B	C	α	C	C_0			
mm				degrees	kN		kg	–	
45	68	32	25	7	127	640	0,46	**GE 45 ES**	–
	68	32	25	7	127	640	0,46	**GE 45 ES-2RS**	**-2LS**
	75	43	28	14	156	780	0,80	**GEH 45 ES-2RS**	**-2LS**
50	75	35	28	6	156	780	0,56	**GE 50 ES**	–
	75	35	28	6	156	780	0,56	**GE 50 ES-2RS**	**-2LS**
	90	56	36	17	245	1 220	1,60	**GEH 50 ES-2RS**	**-2LS**
60	90	44	36	6	245	1 220	1,10	**GE 60 ES**	–
	90	44	36	6	245	1 220	1,10	**GE 60 ES-2RS**	**-2LS**
	105	63	40	17	315	1 560	2,40	**GEH 60 ES-2RS**	**-2LS**
70	105	49	40	6	315	1 560	1,55	**GE 70 ES**	–
	105	49	40	6	315	1 560	1,55	**GE 70 ES-2RS**	**-2LS**
	120	70	45	16	400	2 000	3,40	**GEH 70 ES-2RS**	**-2LS**
80	120	55	45	6	400	2 000	2,30	**GE 80 ES**	–
	120	55	45	5	400	2 000	2,30	**GE 80 ES-2RS**	**-2LS**
	130	75	50	14	490	2 450	4,10	**GEH 80 ES-2RS**	**-2LS**
90	130	60	50	5	490	2 450	2,75	**GE 90 ES**	–
	130	60	50	5	490	2 450	2,75	**GE 90 ES-2RS**	**-2LS**
	150	85	55	15	610	3 050	6,30	**GEH 90 ES-2RS**	**-2LS**
100	150	70	55	7	610	3 050	4,40	**GE 100 ES**	–
	150	70	55	6	610	3 050	4,40	**GE 100 ES-2RS**	**-2LS**
	160	85	55	13	655	3 250	6,80	**GEH 100 ES-2RS**	**-2LS**
110	160	70	55	6	655	3 250	4,80	**GE 110 ES**	–
	160	70	55	6	655	3 250	4,80	**GE 110 ES-2RS**	**-2LS**
	180	100	70	12	950	4 750	11,0	**GEH 110 ES-2RS**	**-2LS**
120	180	85	70	6	950	4 750	8,25	**GE 120 ES**	–
	180	85	70	6	950	4 750	8,25	**GE 120 ES-2RS**	**-2LS**
	210	115	70	16	1 080	5 400	15,0	**GEH 120 ES-2RS**	**-2LS**

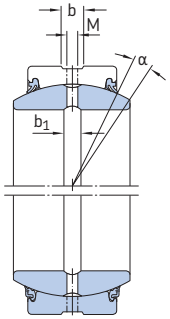
[1] To fully utilize the angle of tilt, the shaft shoulder should not be made larger than $d_{a\,max}$.
[2] Bearings with an outside diameter D ≥ 150 mm have the multi-groove system in the outer ring as standard. Bearings with an outside diameter D < 150 mm can be supplied with the multi-groove system on request (designation suffix ESL).



Dimensions							Abutment and fillet dimensions					
d	d_k	b	b_1	M	r_1 min	r_2 min	d_a min	d_a max	D_a min	D_a max	r_a max	r_b max
mm							mm					
45	60	4,6	4,6	3	0,6	1	49,4	50,8	57	63,6	0,6	1
	60	4,6	4,6	3	0,6	1	49,4	50,8	61	63,6	0,6	1
	66	4,6	4,6	3	0,6	1	49,8	50,1	66,2	70,5	0,6	1
50	66	4,6	4,6	3	0,6	1	54,6	56	62,7	70,5	0,6	1
	66	4,6	4,6	3	0,6	1	54,6	56	66,2	70,5	0,6	1
	80	6,2	6,2	4	0,6	1	55,8	57,1	79,7	84,2	0,6	1
60	80	6,2	6,2	4	1	1	66,4	66,8	76	84,2	1	1
	80	6,2	6,2	4	1	1	66,4	66,8	79,7	84,2	1	1
	92	7,7	7,7	4	1	1	67	67	92	99	1	1
70	92	7,7	7,7	4	1	1	76,7	77,9	87,4	99	1	1
	92	7,7	7,7	4	1	1	76,7	77,9	92	99	1	1
	105	7,7	7,7	4	1	1	77,5	78,3	104,4	113,8	1	1
80	105	7,7	7,7	4	1	1	87,1	89,4	99,7	113,8	1	1
	105	7,7	7,7	4	1	1	87,1	89,4	104,4	113,8	1	1
	115	9,5	9,5	5	1	1	87,2	87,2	112,9	123,5	1	1
90	115	9,5	9,5	5	1	1	97,4	98,1	109,3	123,5	1	1
	115	9,5	9,5	5	1	1	97,4	98,1	112,9	123,5	1	1
	130	11,3	11,3	5	1	1	98,2	98,4	131	143,2	1	1
100	130	11,3	11,3	5	1	1	107,8	109,5	123,5	143,2	1	1
	130	11,3	11,3	5	1	1	107,8	109,5	131	143,2	1	1
	140	11,5	11,5	5	1	1	108,1	111,2	141,5	153,3	1	1
110	140	11,5	11,5	5	1	1	118	121	133	153	1	1
	140	11,5	11,5	5	1	1	118	121	141,5	153	1	1
	160	13,5	13,5	6	1	1	119,5	124,5	157,5	172	1	1
120	160	13,5	13,5	6	1	1	129,5	135,5	152	172	1	1
	160	13,5	13,5	6	1	1	129,5	135,5	157,5	172	1	1
	180	13,5	13,5	6	1	1	130	138,5	180	202,5	1	1



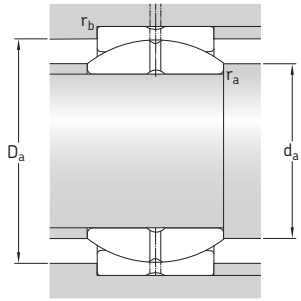
GE .. ES



GE .. ES-2RS
GE .. ES-2LS

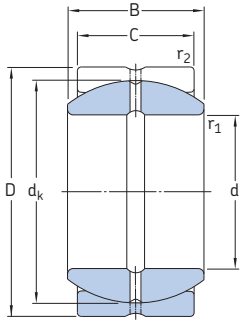
Principal dimensions				Angle of tilt[1]	Basic load ratings dynamic	static	Mass	Designations[2] without seals / with standard seals	suffix for heavy-duty seals
d	D	B	C	α	C	C_0			
mm				degrees	kN		kg	–	
140	210	90	70	7	1 080	5 400	11,0	**GE 140 ES**	**–**
	210	90	70	7	1 080	5 400	11,0	**GE 140 ES-2RS**	**-2LS**
160	230	105	80	8	1 370	6 800	14,0	**GE 160 ES**	**–**
	230	105	80	8	1 370	6 800	14,0	**GE 160 ES-2RS**	**-2LS**
180	260	105	80	6	1 530	7 650	18,5	**GE 180 ES**	**–**
	260	105	80	6	1 530	7 650	18,5	**GE 180 ES-2RS**	**-2LS**
200	290	130	100	7	2 120	10 600	28,0	**GE 200 ES**	**–**
	290	130	100	7	2 120	10 600	28,0	**GE 200 ES-2RS**	**-2LS**
220	320	135	100	8	2 320	11 600	35,5	**GE 220 ES-2RS**	**-2LS**
240	340	140	100	8	2 550	12 700	40,0	**GE 240 ES-2RS**	**-2LS**
260	370	150	110	7	3 050	15 300	51,5	**GE 260 ES-2RS**	**-2LS**
280	400	155	120	6	3 550	18 000	65,0	**GE 280 ES-2RS**	**-2LS**
300	430	165	120	7	3 800	19 000	78,5	**GE 300 ES-2RS**	**-2LS**

[1] To fully utilize the angle of tilt, the shaft shoulder should not be made larger than $d_{a\,max}$.
[2] Bearings with an outside diameter D ≥ 150 mm have the multi-groove system in the outer ring as standard.

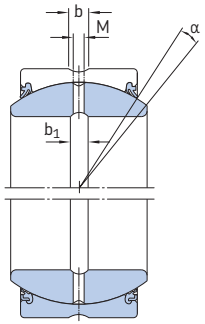


Dimensions							Abutment and fillet dimensions					
d	d_k	b	b_1	M	r_1 min	r_2 min	d_a min	d_a max	D_a min	D_a max	r_a max	r_b max
mm							mm					
140	180	13,5	13,5	6	1	1	149	155,5	171	202,5	1	1
	180	13,5	13,5	6	1	1	149	155,5	180	202,5	1	1
160	200	13,5	13,5	6	1	1	169,5	170	190	222	1	1
	200	13,5	13,5	6	1	1	169,5	170	197	222	1	1
180	225	13,5	13,5	6	1,1	1,1	191	199	214	250,5	1	1
	225	13,5	13,5	6	1,1	1,1	191	199	224,5	250,5	1	1
200	250	15,5	15,5	7	1,1	1,1	212,5	213,5	237,5	279,5	1	1
	250	15,5	15,5	7	1,1	1,1	212,5	213,5	244,5	279,5	1	1
220	275	15,5	15,5	7	1,1	1,1	232,5	239,5	271	309,5	1	1
240	300	15,5	15,5	7	1,1	1,1	252,5	265	298	329,5	1	1
260	325	15,5	15,5	7	1,1	1,1	273	288	321,5	359	1	1
280	350	15,5	15,5	7	1,1	1,1	294	313,5	344,5	388,5	1	1
300	375	15,5	15,5	7	1,1	1,1	314	336,5	371	418,5	1	1

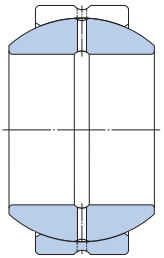
Radial spherical plain bearings, steel/steel, inch sizes
d **0.5 – 2** in



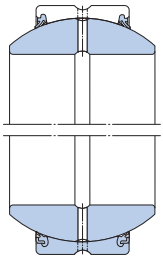
GEZ .. ES



GEZ .. ES-2RS
GEZ .. ES-2LS



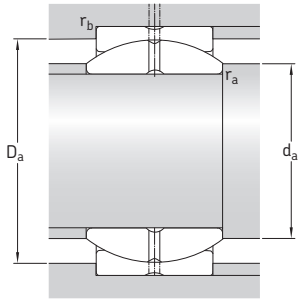
GEZH .. ES



GEZH .. ES-2RS
GEZH .. ES-2LS

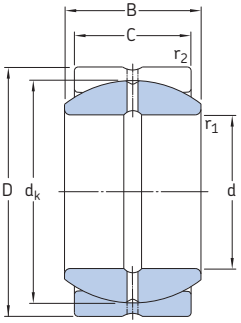
Principal dimensions				Angle of tilt[1]	Basic load ratings dynamic	static	Mass	Designations without seals	suffix for seal variants standard	heavy-duty
d	D	B	C	α	C	C_0				
in/*mm*				degrees	lbf/*kN*		lb/*kg*	–		
0.5	0.8750	0.437	0.375	6	3 150	9 340	0.044	**GEZ 008 ES**	**–**	**–**
12,700	*22,225*	*11,10*	*9,53*		*14*	*41,5*	*0,020*			
0.625	1.0625	0.547	0.469	6	4 840	14 740	0.077	**GEZ 010 ES**	**–**	**–**
15,875	*26,988*	*13,89*	*11,91*		*21,5*	*65,5*	*0,035*			
0.75	1.2500	0.656	0.562	6	7 090	20 930	0.12	**GEZ 012 ES**	**-2RS**	**–**
19,050	*31,750*	*16,66*	*14,28*		*31,5*	*93*	*0,055*			
0.875	1.4375	0.765	0.656	6	9 560	28 580	0.19	**GEZ 014 ES**	**–**	**–**
22,225	*36,513*	*19,43*	*16,66*		*42,5*	*127*	*0,085*			
1	1.6250	0,875	0,750	6	12 600	37 350	0.26	**GEZ 100 ES**	**-2RS**	**-2LS**
25,400	*41,275*	*22,23*	*19,05*		*56*	*166*	*0,12*			
1.25	2.0000	1.093	0.937	6	19 460	58 500	0.51	**GEZ 104 ES**	**-2RS**	**-2LS**
31,750	*50,800*	*27,76*	*23,80*		*86,5*	*260*	*0,23*			
	2.4375	1.390	1.125	8	28 125	84 375	1.20	**GEZH 104 ES**	**-2RS**	**-2LS**
	61,913	*35,31*	*28,58*		*125*	*375*	*0,54*			
1.375	2.1875	1.187	1.031	6	23 400	69 750	0.77	**GEZ 106 ES**	**-2RS**	**-2LS**
34,925	*55,563*	*30,15*	*26,19*		*104*	*310*	*0,35*			
1.5	2.4375	1.312	1.125	6	28 130	84 380	0.93	**GEZ 108 ES**	**-2RS**	**-2LS**
38,100	*61,913*	*33,33*	*28,58*		*125*	*375*	*0,42*			
	2.8125	1.580	1.312	7	38 250	114 750	1.75	**GEZH 108 ES**	**-2RS**	**-2LS**
	71,438	*40,13*	*33,33*		*170*	*510*	*0,79*			
1.75	2.8125	1.531	1.312	6	38 250	114 750	1.40	**GEZ 112 ES**	**-2RS**	**-2LS**
44,450	*71,438*	*38,89*	*33,33*		*170*	*510*	*0,64*			
	3.1875	1.820	1.500	7	50 400	150 750	2.50	**GEZH 112 ES**	**-2RS**	**-2LS**
	80,963	*46,23*	*38,10*		*224*	*670*	*1,13*			
2	3.1875	1.750	1.500	6	50 400	150 750	2.05	**GEZ 200 ES**	**-2RS**	**-2LS**
50,800	*80,963*	*44,45*	*38,10*		*224*	*670*	*0,93*			
	3.5625	2.070	1.687	8	63 000	191 250	3.50	**GEZH 200 ES**	**-2RS**	**-2LS**
	90,488	*52,58*	*42,85*		*280*	*850*	*1,60*			

[1] To fully utilize the angle of tilt, the shaft shoulder should not be larger than $d_{a\ max}$.

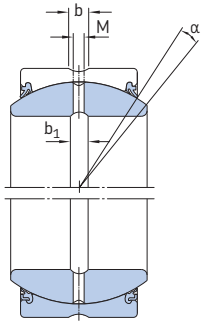


Dimensions							Abutment and fillet dimensions						
d	d_k	b	b_1	M	r_1[1] min	r_2[2] min	d_a min	d_a max	D_a min	$D_{a\ sealed}$ min	D_a max	r_a max	r_b max
in/*mm*							in/*mm*						
0.5	0.7190	0.102	0.098	0.059	0.006	0.024	0.54	0.57	0.68	–	0.78	0.006	0.024
12,700	*18,263*	*2,6*	*2,5*	*1,5*	*0,2*	*0,6*	*13,7*	*14,5*	*17,3*	–	*19,9*	*0,2*	*0,6*
0.625	0.8990	0.126	0.118	0.098	0.006	0.039	0.67	0.71	0.85	–	0.93	0.006	0.039
15,875	*22,835*	*3,2*	*3*	*2,5*	*0,2*	*1*	*17*	*18,1*	*21,7*	–	*23,6*	*0,2*	*1*
0.75	1.0800	0.126	0.118	0.098	0.012	0.039	0.82	0.86	1.03	1.1	1.11	0.012	0.039
19,050	*27,432*	*3,2*	*3*	*2,5*	*0,3*	*1*	*20,9*	*21,8*	*26,1*	*27,9*	*28,3*	*0,3*	*1*
0.875	1.2580	0.126	0.118	0.098	0.012	0.039	0.95	1	1.2	–	1.3	0.012	0.039
22,225	*31,953*	*3,2*	*3*	*2,5*	*0,3*	*1*	*24,2*	*25,4*	*30,4*	–	*33*	*0,3*	*1*
1	1.4370	0.126	0.118	0.098	0.012	0.039	1.08	1.14	1.37	1.39	1.48	0.012	0.039
25,400	*36,500*	*3,2*	*3*	*2,5*	*0,3*	*1*	*27,5*	*29*	*34,7*	*35,2*	*37,7*	*0,3*	*1*
1.25	1.7950	0.189	0.197	0.157	0.024	0.039	1.37	1.43	1.7	1.76	1.85	0.024	0.039
31,750	*45,593*	*4,8*	*5*	*4*	*0,6*	*1*	*34,8*	*36,2*	*43,3*	*44,8*	*47*	*0,6*	*1*
	2.1550	0.189	0,197	0.157	0.039	0.039	1.43	1.65	2.05	2.06	2.28	0.039	0.039
	54,737	*4,8*	*5*	*4*	*1*	*1*	*36,2*	*41,8*	*52*	*52,3*	*58*	*1*	*1*
1.375	1.9370	0.189	0.197	0.157	0.024	0.039	1.5	1.53	1.84	1.85	2.035	0.024	0.039
34,925	*49,200*	*4,8*	*5*	*4*	*0,6*	*1*	*38,1*	*38,9*	*46,7*	*47,1*	*51,7*	*0,6*	*1*
1.5	2.1550	0.189	0.197	0.157	0.024	0.039	1.63	1.71	2.05	2.06	2.28	0.024	0.039
38,100	*54,737*	*4,8*	*5*	*4*	*0,6*	*1*	*41,4*	*43,4*	*52*	*52,3*	*58*	*0,6*	*1*
	2.5150	0.189	0.197	0.157	0.039	0.039	1.69	1.96	2.39	2.41	2.65	0.039	0.039
	63,881	*4,8*	*5*	*4*	*1*	*1*	*42,8*	*49,7*	*60,7*	*61,3*	*67,4*	*1*	*1*
1.75	2.5150	0.189	0.197	0.157	0.024	0.039	1.91	2	2.39	2.41	2.65	0.024	0.039
44,450	*63,881*	*4,8*	*5*	*4*	*0,6*	*1*	*48,5*	*50,7*	*60,7*	*61,3*	*67,4*	*0,6*	*1*
	2.8750	0.189	0.197	0.157	0.059	0.039	2.00	2.22	2.73	2.85	2.99	0.059	0.039
	73,025	*4,8*	*5*	*4*	*1,5*	*1*	*50,9*	*56,5*	*69,4*	*72,4*	*75,9*	*1,5*	*1*
2	2.8750	0.189	0.197	0.157	0.024	0.039	2.17	2.28	2.73	2.85	2.99	0.024	0.039
50,800	*73,025*	*4,8*	*5*	*4*	*0,6*	*1*	*55,1*	*57,9*	*69,4*	*72,4*	*75,9*	*0,6*	*1*
	3.2350	0.224	0.197	0.157	0.059	0.039	2.26	2.48	3.07	3.11	3.36	0.059	0.039
	82,169	*5,7*	*5*	*4*	*1,5*	*1*	*57,5*	*63,1*	*78,1*	*79*	*85,3*	*1,5*	*1*

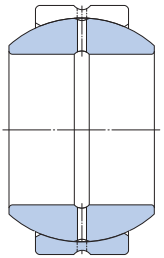
[1] Equal to maximum shaft fillet radius $r_{a\ max}$.
[2] Equal to maximum housing fillet radius $r_{b\ max}$.



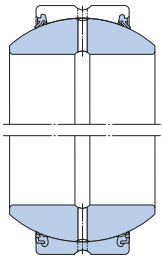
GEZ .. ES



GEZ .. ES-2RS
GEZ .. ES-2LS



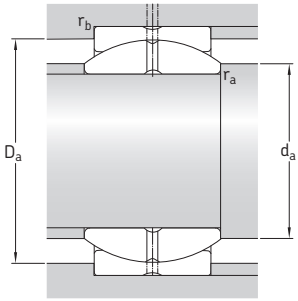
GEZH .. ES



GEZH .. ES-2RS
GEZH .. ES-2LS

Principal dimensions				Angle of tilt[1]	Basic load ratings dynamic	static	Mass	Designations without seals	suffix for seal variants standard	heavy-duty
d	D	B	C	α	C	C_0				
in/*mm*				degrees	lbf/*kN*		lb/*kg*	–		
2.25	3.5625	1.969	1.687	6	63 000	191 250	2.85	**GEZ 204 ES**	**-2RS**	**-2LS**
57,150	*90,488*	*50,01*	*42,85*		*280*	*850*	*1,30*			
	3.9375	2.318	1.875	8	77 625	234 000	4.65	**GEZH 204 ES**	**-2RS**	**-2LS**
	100,013	*58,88*	*47,63*		*345*	*1 040*	*2,10*			
2.5	3.9375	2.187	1.875	6	77 630	234 000	4.10	**GEZ 208 ES**	**-2RS**	**-2LS**
63,500	*100,013*	*55,55*	*47,63*		*345*	*1 040*	*1,85*			
	4.3750	2.545	2.062	8	95 625	285 750	6.30	**GEZH 208 ES**	**-2RS**	**-2LS**
	111,125	*64,64*	*52,38*		*425*	*1 270*	*2,85*			
2.75	4.3750	2.406	2.062	6	95 630	285 750	5.30	**GEZ 212 ES**	**-2RS**	**-2LS**
69,850	*111,125*	*61,11*	*52,38*		*425*	*1 270*	*2,40*			
	4.7500	2.790	2.250	8	112 500	337 500	8.05	**GEZH 212 ES**	**-2RS**	**-2LS**
	120,650	*70,87*	*57,15*		*500*	*1 500*	*3,65*			
3	4.7500	2.625	2.250	6	112 500	337 500	6.85	**GEZ 300 ES**	**-2RS**	**-2LS**
76,200	*120,650*	*66,68*	*57,15*		*500*	*1 500*	*3,10*			
	5.1250	3.022	2.437	8	131 625	396 000	10.0	**GEZH 300 ES**	**-2RS**	**-2LS**
	130,175	*76,76*	*61,90*		*585*	*1 760*	*4,55*			
3.25	5.1250	2.844	2.437	6	131 630	396 000	8.40	**GEZ 304 ES**	**-2RS**	**-2LS**
82,550	*130,175*	*72,24*	*61,90*		*585*	*1 760*	*3,80*			
	5.5000	3.265	2.625	9	153 000	459 000	12.3	**GEZH 304 ES**	**-2RS**	**-2LS**
	139,700	*82,93*	*66,68*		*680*	*2 040*	*5,60*			
3.5	5.5000	3.062	2.625	6	153 000	459 000	10.5	**GEZ 308 ES**	**-2RS**	**-2LS**
88,900	*139,700*	*77,78*	*66,68*		*680*	*2 040*	*4,80*			
	5.8750	3.560	2.812	9	175 500	531 000	15.0	**GEZH 308 ES**	**-2RS**	**-2LS**
	149,225	*90,42*	*71,43*		*780*	*2 360*	*6,80*			
3.75	5.8750	3.281	2.812	6	175 500	531 000	13.0	**GEZ 312 ES**	**-2RS**	**-2LS**
95,250	*149,225*	*83,34*	*71,43*		*780*	*2 360*	*5,80*			
	6.2500	3.738	3.000	9	202 500	596 250	17.9	**GEZH 312 ES**	**-2RS**	**-2LS**
	158,750	*94,95*	*76,20*		*900*	*2 650*	*8,10*			
4	6.2500	3.500	3.000	6	202 500	596 250	15.5	**GEZ 400 ES**	**-2RS**	**-2LS**
101,600	*158,750*	*88,90*	*76,20*		*900*	*2 650*	*7,00*			
	7.0000	4.225	3.375	9	252 000	765 000	30.0	**GEZH 400 ES**	**-2RS**	**-2LS**
	177,800	107,32	85,73		1 120	3 400	13,5			

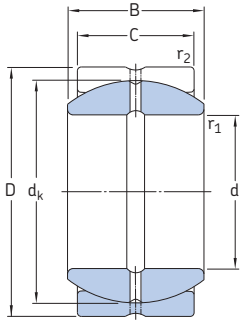
[1] To fully utilize the angle of tilt, the shaft shoulder should not be larger than $d_{a\ max}$.



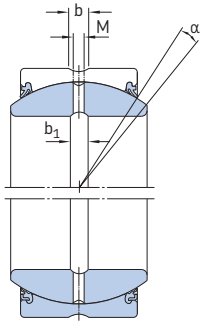
Dimensions							Abutment and fillet dimensions						
d	d_k	b	b_1	M	r_1 1) min	r_2 2) min	d_a min	d_a max	D_a min	$D_{a\ sealed}$ min	D_a max	r_a max	r_b max
in/*mm*							in/*mm*						
2.25	3.2350	0.224	0.197	0.157	0.024	0.039	2.43	2.57	3.07	3.11	3.36	0.024	0.039
57,150	*82,169*	*5,7*	*5*	*4*	*0,6*	*1*	*61,7*	*65,2*	*78,1*	*79*	*85,3*	*0,6*	*1*
	3.5900	0.354	0.315	0.256	0.059	0.039	2.52	2.74	3.41	3.43	3.73	0.059	0.039
	91,186	*9*	*8*	*6,5*	*1,5*	*1*	*64,1*	*69,6*	*86,6*	*87*	*94,7*	*1,5*	*1*
2.5	3.5900	0.354	0.315	0.256	0.024	0.039	2.69	2.85	3.41	3.43	3.73	0.024	0.039
63,500	*91,186*	*9*	*8*	*6,5*	*0,6*	*1*	*68,3*	*72,3*	*86,6*	*87*	*94,7*	*0,6*	*1*
	3.9500	0.354	0.315	0.256	0.079	0.039	2.84	3.02	3.75	3.78	4.16	0.079	0.039
	100,330	*9*	*8*	*6,5*	*2*	*1*	*72*	*76,7*	*95,3*	*96*	*105,7*	*2*	*1*
2.75	3.9500	0.354	0.315	0.256	0.024	0.039	2.95	3.13	3.75	3.78	4.16	0.024	0.039
69,850	*100,330*	*9*	*8*	*6,5*	*0,6*	*1*	*74,9*	*79,6*	*95,3*	*96*	*105,7*	*0,6*	*1*
	4.3120	0.354	0.315	0.256	0.079	0.039	3.09	3.29	4.09	4.13	4.53	0.079	0.039
	109,525	*9*	*8*	*6,5*	*2*	*1*	*78,6*	*83,5*	*104*	*104,8*	*115*	*2*	*1*
3	4.3120	0.354	0.315	0.256	0.024	0.039	3.2	3.42	4.09	4.13	4.53	0.024	0.039
76,200	*109,525*	*9*	*8*	*6,5*	*0,6*	*1*	*81,4*	*86,9*	*104*	*104,8*	*115*	*0,6*	*1*
	4.6750	0.366	0.315	0.256	0.079	0.039	3.35	3.57	4.44	4.5	4.90	0.079	0.039
	118,745	*9,3*	*8*	*6,5*	*2*	*1*	*85,1*	*90,6*	*112,8*	*114,2*	*124,4*	*2*	*1*
3.25	4.6750	0.366	0.315	0.256	0.024	0.039	3.46	3.71	4.44	4.5	4.9	0.024	0.039
82,550	*118,745*	*9,3*	*8*	*6,5*	*0,6*	*1*	*88*	*94,2*	*112,8*	*114,2*	*124,4*	*0,6*	*1*
	5.0400	0.413	0.315	0.256	0.079	0.039	3.65	3.84	4.79	4.83	5.27	0.079	0.039
	128,016	*10,5*	*8*	*6,5*	*2*	*1*	*92,7*	*97,5*	*121,6*	*122,8*	*133,8*	*2*	*1*
3.5	5.0400	0.413	0.315	0.256	0.024	0.039	3.72	4	4.79	4.83	5.27	0.024	0.039
88,900	*128,016*	*10,5*	*8*	*6,5*	*0,6*	*1*	*94,6*	*101,7*	*121,6*	*122,8*	*133,8*	*0,6*	*1*
	5.3900	0.413	0.315	0.256	0.079	0.039	3.91	4.04	5.12	5.17	5.63	0.079	0.039
	136,906	*10,5*	*8*	*6,5*	*2*	*1*	*99,3*	*102,5*	*130,1*	*131,4*	*143,1*	*2*	*1*
3.75	5.3900	0.413	0.315	0.256	0.024	0.039	3.98	4.28	5.12	5.17	5.63	0.024	0.039
95,250	*136,906*	*10,5*	*8*	*6,5*	*0,6*	*1*	*101,2*	*108,6*	*130,1*	*131,4*	*143,1*	*0,6*	*1*
	5.7500	0.413	0.394	0.315	0.079	0.039	4.17	4.37	5.47	5.49	6.00	0.079	0.039
	146,050	*10,5*	*10*	*8*	*2*	*1*	*105,8*	*110,9*	*139*	*139,5*	*152,5*	*2*	*1*
4	5.7500	0.413	0.394	0.315	0.024	0.039	4.25	4.55	5.47	5.49	6	0.024	0.039
101,600	*146,050*	*10,5*	*10*	*8*	*0,6*	*1*	*108*	*115,5*	*139*	*139,5*	*152,5*	*0,6*	*1*
	6.4750	0.433	0.394	0.315	0.079	0.043	4.45	4.9	6.16	6.18	6.73	0.079	0.043
	164,465	*11*	*10*	*8*	*2*	*1,1*	*113*	*124,5*	*156,5*	*157*	*171*	*2*	*1,1*

1) Equal to maximum shaft fillet radius $r_{a\ max}$.
2) Equal to maximum housing fillet radius $r_{b\ max}$.

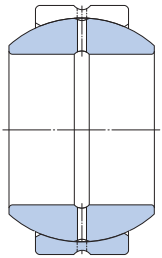
Radial spherical plain bearings, steel/steel, inch sizes
d **4.5 – 6** in



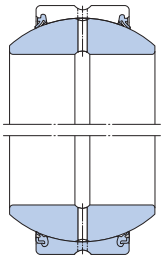
GEZ .. ES



GEZ .. ES-2RS
GEZ .. ES-2LS



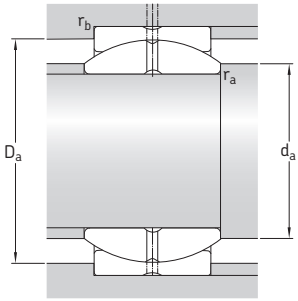
GEZH .. ES



GEZH .. ES-2RS
GEZH .. ES-2LS

Principal dimensions				Angle of tilt[1]	Basic load ratings dynamic	static	Mass	Designations without seals	suffix for seal variants standard	heavy-duty
d	D	B	C	α	C	C_0				
in/*mm*				degrees	lbf/*kN*		lb/*kg*	–		
4.5	7.0000	3.937	3.375	6	252 000	765 000	21.5	**GEZ 408 ES**	**-2RS**	**-2LS**
114,300	*177,800*	*100,00*	*85,73*		*1 120*	*3 400*	*9,80*			
	7.7500	4.690	3.750	9	315 000	933 750	36.0	**GEZH 408 ES**	**-2RS**	**-2LS**
	196,850	*119,17*	*95,25*		*1 400*	*4 150*	*16,5*			
4.75	7.3750	4.156	3.562	6	281 250	843 750	25.5	**GEZ 412 ES**	**-2RS**	**-2LS**
120,650	*187,325*	*105,56*	*90,48*		*1 250*	*3 750*	*11,5*			
5	7.7500	4.375	3.750	6	315 000	933 750	30.0	**GEZ 500 ES**	**-2RS**	**-2LS**
127,000	*196,850*	*111,13*	*95,25*		*1 400*	*4 150*	*13,5*			
5.5	8.7500	4.950	4.125	7	389 250	1 170 000	45.5	**GEZH 508 ES**	**-2RS**	**-2LS**
139,700	*222,250*	*125,73*	*104,78*		*1 730*	*5 200*	*20,5*			
6	8.7500	4.750	4.125	5	389 250	1 170 000	38.5	**GEZ 600 ES**	**-2RS**	**-2LS**
152,400	*222,250*	*120,65*	*104,78*		*1 730*	*5 200*	*17,5*			

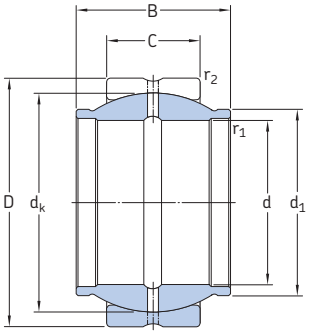
[1] To fully utilize the angle of tilt, the shaft shoulder should not be larger than $d_{a\ max}$.



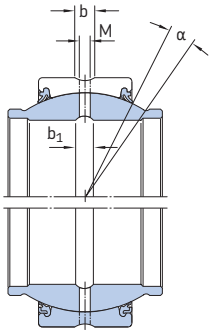
Dimensions							Abutment and fillet dimensions						
d	d_k	b	b_1	M	r_1[1] min	r_2[2] min	d_a min	d_a max	D_a min	$D_{a\ sealed}$ min	D_a max	r_a max	r_b max
in/*mm*							in/*mm*						
4.5	6.4750	0.433	0.394	0.315	0.039	0.043	4.82	5.14	6.16	6.18	6.73	0.039	0,043
114,300	*164,465*	*11*	*10*	*8*	*1*	*1,1*	*122,5*	*130,5*	*156,5*	*157*	*171*	*1*	*1,1*
	7.1900	0.433	0.394	0.315	0.079	0.043	4.96	5.45	6.83	6.91	7.42	0.079	0,043
	182,626	*11*	*10*	*8*	*2*	*1,1*	*126*	*138,4*	*173,5*	*175,5*	*188,5*	*2*	*1,1*
4.75	6.8250	0.433	0.394	0.315	0.039	0.043	5.08	5.41	6.5	6.56	7.05	0.039	0,043
120,650	*173,355*	*11*	*10*	*8*	*1*	*1,1*	*129*	*137,5*	*165*	*166,5*	*179*	*1*	*1,1*
5	7.1900	0.433	0.394	0.315	0.039	0.043	5.33	5.69	6.83	6.91	7.42	0.039	0,043
127,000	*182,626*	*11*	*10*	*8*	*1*	*1,1*	*135,5*	*144,5*	*173,5*	*175,5*	*188,5*	*1*	*1,1*
5.5	8.1560	0.591	0.433	0.315	0.079	0.043	5.98	6.46	7.76	7.78	8.41	0.079	0,043
139,700	*207,162*	*15*	*11*	*8*	*2*	*1,1*	*152*	*164*	*197*	*197,5*	*213,5*	*2*	*1,1*
6	8.1560	0.591	0.433	0.315	0.039	0.043	6.34	6.61	7.76	7.78	8.41	0.039	0,043
152,400	*207,162*	*15*	*11*	*8*	*1*	*1,1*	*161*	*168*	*197*	*197,5*	*213,5*	*1*	*1,1*

[1] Equal to maximum shaft fillet radius $r_{a\ max}$.
[2] Equal to maximum housing fillet radius $r_{b\ max}$.

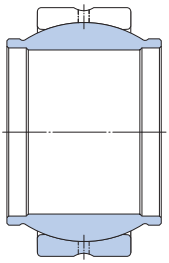
Radial spherical plain bearings with an extended inner ring, steel/steel, metric sizes
d **12 – 125** mm



GEG .. ES



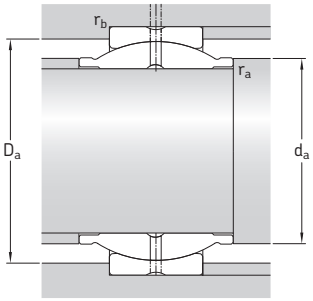
GEM .. ES-2RS
GEM .. ES-2LS



GEG .. ESA

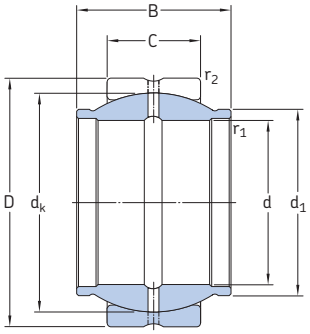
Principal dimensions				Angle of tilt	Basic load ratings dynamic	static	Mass	Designations[1] without seals with standard seals	suffix for heavy-duty seals
d	D	B	C	α	C	C_0			
mm				degrees	kN		kg	–	
12	22	12	7	4	10,8	54	0,020	**GEG 12 ESA**[2]	**–**
16	28	16	9	4	17,6	88	0,035	**GEG 16 ES**	**–**
20	35	20	12	4	30	146	0,070	**GEG 20 ES**	**–**
	35	24	12	6	30	146	0,073	**GEM 20 ES-2RS**	**-2LS**
25	42	25	16	4	48	240	0,13	**GEG 25 ES**	**–**
	42	29	16	4	48	240	0,13	**GEM 25 ES-2RS**	**-2LS**
30	47	30	18	4	62	310	0,17	**GEM 30 ES-2RS**	**-2LS**
32	52	32	18	4	65,5	325	0,17	**GEG 32 ES**	**–**
35	55	35	20	4	80	400	0,25	**GEM 35 ES-2RS**	**-2LS**
40	62	38	22	4	100	500	0,35	**GEM 40 ES-2RS**	**-2LS**
	62	40	22	4	100	500	0,34	**GEG 40 ES**	**–**
45	68	40	25	4	127	640	0,49	**GEM 45 ES-2RS**	**-2LS**
50	75	43	28	4	156	780	0,60	**GEM 50 ES-2RS**	**-2LS**
	75	50	28	4	156	780	0,56	**GEG 50 ES**	**–**
60	90	54	36	3	245	1 220	1,15	**GEM 60 ES-2RS**	**-2LS**
63	95	63	36	4	255	1 270	1,25	**GEG 63 ES**	**–**
70	105	65	40	4	315	1 560	1,65	**GEM 70 ES-2RS**	**-2LS**
80	120	74	45	4	400	2 000	2,50	**GEM 80 ES-2RS**	**-2LS**
	120	80	45	4	400	2 000	2,40	**GEG 80 ES**	**–**
100	150	100	55	4	610	3 050	4,80	**GEG 100 ES**	**–**
125	180	125	70	4	950	4 750	8,50	**GEG 125 ES**	**–**

[1] Bearings with an outside diameter D ≥ 150 mm have the multi-groove system in the outer ring as standard. Bearings with an outside diameter D < 150 mm can be supplied with the multi-groove system on request (designation suffix ESL).
[2] Can only be relubricated via the outer ring.



Dimensions								Abutment and fillet dimensions					
d	d_k	d_1	b	b_1	M	r_1 min	r_2 min	d_a min	d_a max	D_a min	D_a max	r_a max	r_b max
mm								mm					
12	18	15,5	2,3	–	1,5	0,3	0,3	14,5	15,5	17,1	20,4	0,3	0,3
16	23	20	2,3	2,3	1,5	0,3	0,3	18,7	20	21,9	26,3	0,3	0,3
20	29 29	25 24	3,1 3,1	3,1 3,1	2 2	0,3 0,3	0,3 0,3	23,1 23	25 24	27,6 30,9	33,2 33,2	0,3 0,3	0,3 0,3
25	35,5 35,5	30,5 29	3,1 3,1	3,1 3,1	2 2	0,6 0,3	0,6 0,6	29,2 28,3	30,5 29	33,7 36,9	39,2 39,2	0,6 0,3	0,6 0,6
30	40,7	34	3,1	3,1	2	0,3	0,6	33,5	34	41,3	44	0,3	0,6
32	43	38	3,9	3,9	2,5	0,6	1	36,3	38	40,9	48,1	0,6	1
35	47	40	3,9	3,9	2,5	0,6	1	38,8	40	48,5	50,9	0,6	1
40	53 53	45 46	3,9 3,9	3,9 3,9	2,5 2,5	0,6 0,6	1 1	44 44,8	45 46	54,5 50,3	57,8 57,8	0,6 0,6	1 1
45	60	52	4,6	4,6	3	0,6	1	49,6	52	61	63,6	0,6	1
50	66 66	57 57	4,6 4,6	4,6 4,6	3 3	0,6 0,6	1 1	54,8 55,9	57 57	66,2 62,7	70,5 70,5	0,6 0,6	1 1
60	80	68	6,2	6,2	4	0,6	1	65,4	68	79,7	84,2	0,6	1
63	83	71,5	6,2	6,2	4	1	1	69,7	71,5	78,9	89,2	1	1
70	92	78	7,7	7,7	4	0,6	1	75,7	78	92	99	0,6	1
80	105 105	90 91	7,7 7,7	7,7 7,7	4 4	0,6 1	1 1	86,1 88,7	90 91	104,4 99,7	113,8 113,8	0,6 1	1 1
100	130	113	11,3	11,3	5	1	1	110,1	113	123,5	143,2	1	1
125	160	138	13,5	13,5	6	1	1	136,5	138	152	172	1	1

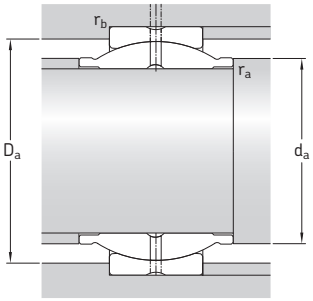
Radial spherical plain bearings with an extended inner ring, steel/steel, metric sizes
d **160 – 200** mm



GEG .. ES

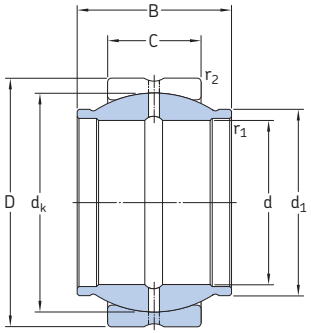
Principal dimensions				Angle of tilt	Basic load ratings dynamic	static	Mass	Designation[1] without seals
d	D	B	C	α	C	C_0		
mm				degrees	kN		kg	–
160	230	160	80	4	1 370	6 800	16,5	**GEG 160 ES**
200	290	200	100	4	2 120	10 600	32,0	**GEG 200 ES**

[1] Bearings with an outside diameter D ≥ 150 mm have the multi-groove system in the outer ring as standard.

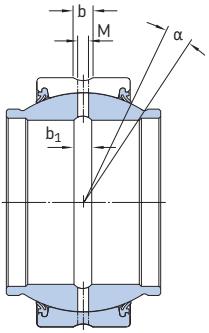


Dimensions								Abutment and fillet dimensions					
d	d_k	d_1	b	b_1	M	$r_{1\,min}$	$r_{2\,min}$	$d_{a\,min}$	$d_{a\,max}$	$D_{a\,min}$	$D_{a\,max}$	$r_{a\,max}$	$r_{b\,max}$
mm								mm					
160	200	177	13,5	13,5	6	1	1	172	177	190	222	1	1
200	250	221	15,5	15,5	7	1,1	1,1	213	221	237,5	279,5	1	1

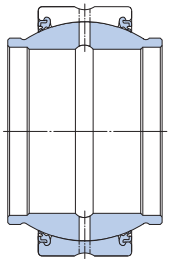
Radial spherical plain bearings with an extended inner ring, steel/steel, inch sizes
d **0.5 – 2.5** in



GEZM .. ES



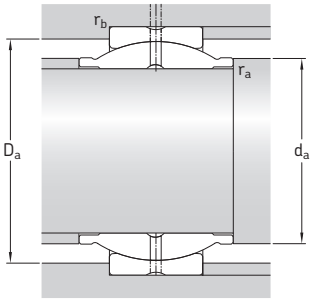
GEZM .. ES-2RS



GEZM .. ES-2LS

Principal dimensions				Angle of tilt[1]		Basic load ratings dynamic	static	Mass	Designations without seals	suffix for seal variants standard	heavy-duty
d	D	B	C	α	α sealed	C	C_0				
in/*mm*				degrees		lbf/*kN*		lb/*kg*	–		
0.5 *12,700*	0.8750 *22,225*	0.750 *19,05*	0.375 *9,53*	9	–	3 150 *14*	9 340 *41,5*	0.051 *0,023*	**GEZM 008 ES**	**–**	**–**
0.625 *15,875*	1.0625 *26,988*	0.937 *23,80*	0.469 *11,91*	9	–	4 840 *21,5*	14 738 *65,5*	0.090 *0,041*	**GEZM 010 ES**	**–**	**–**
0.75 *19,050*	1.2500 *31,750*	1.125 *28,58*	0.562 *14,28*	9	5	7 090 *31,5*	20 925 *93*	0.15 *0,068*	**GEZM 012 ES**	**-2RS**	**–**
0.875 *22,225*	1.4375 *36,513*	1.312 *33,33*	0.656 *16,66*	9	–	9 560 *42,5*	28 575 *127*	0.23 *0,11*	**GEZM 014 ES**	**–**	**–**
1 *25,400*	1.6250 *41,275*	1.500 *38,10*	0.750 *19,05*	9	5	12 600 *56*	37 350 *166*	0.34 *0,15*	**GEZM 100 ES**	**-2RS**	**-2LS**
1.25 *31,750*	2.0000 *50,800*	1.875 *47,63*	0.937 *23,80*	9	5	19 460 *86,5*	58 500 *260*	0.63 *0,29*	**GEZM 104 ES**	**-2RS**	**-2LS**
1.375 *34,925*	2.1875 *55,563*	2.062 *52,38*	1.031 *26,19*	9	5	23 400 *104*	69 750 *310*	0.81 *0,37*	**GEZM 106 ES**	**-2RS**	**-2LS**
1.5 *38,100*	2.4375 *61,913*	2.250 *57,15*	1.125 *28,58*	9	5	28 130 *125*	84 380 *375*	1.15 *0,51*	**GEZM 108 ES**	**-2RS**	**-2LS**
1.75 *44,450*	2.8125 *71,438*	2.625 *66,68*	1.312 *33,33*	9	5	38 250 *170*	114 750 *510*	1.80 *0,81*	**GEZM 112 ES**	**-2RS**	**-2LS**
2 *50,800*	3.1875 *80,963*	3.000 *76,20*	1.500 *38,10*	9	5	50 400 *224*	150 750 *670*	2.65 *1,20*	**GEZM 200 ES**	**-2RS**	**-2LS**
2.25 *57,150*	3.5625 *90,488*	3.375 *85,73*	1.687 *42,85*	9	5	63 000 *280*	191 250 *850*	3.65 *1,65*	**GEZM 204 ES**	**-2RS**	**-2LS**
2.5 *63,500*	3.9375 *100,013*	3.750 *95,25*	1.875 *47,63*	9	5	77 625 *350*	234 000 *1 040*	4.95 *2,25*	**GEZM 208 ES**	**-2RS**	**-2LS**

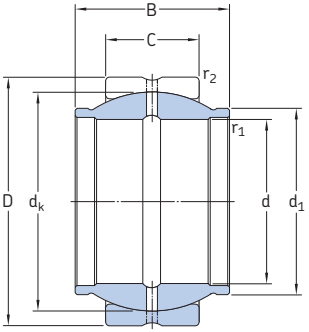
[1] To fully utilize the angle of tilt, the shaft shoulder should not be larger than $d_{a\ max}$.



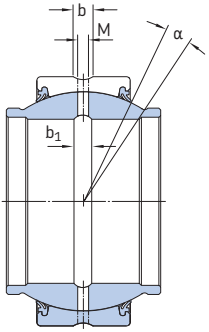
Dimensions								Abutment and fillet dimensions						
d	d_k	d_1	b	b_1	M	r_1[1] min	r_2[2] min	d_a min	d_a max	D_a min	$D_{a\ sealed}$ min	D_a max	r_a max	r_b max
in/*mm*								in/*mm*						
0.5	0.7190	0.625	0.102	0.098	0.059	0.012	0.024	0.56	0.63	0.68	–	0.78	0.012	0.024
12,700	*18,263*	*15,9*	*2,6*	*2,5*	*1,5*	*0,3*	*0,6*	*14,3*	*15,9*	*17,3*	–	*19,9*	*0,3*	*0,6*
0.625	0.8990	0.780	0.126	0.118	0.098	0.024	0.039	0.72	0.78	0.85	–	0.93	0.024	0.039
15,875	*22,835*	*19,8*	*3,2*	*3*	*2,5*	*0,6*	*1,0*	*18,4*	*19,8*	*21,7*	–	*23,6*	*0,6*	*1*
0.75	1.0800	0.920	0.126	0.118	0.098	0.024	0.039	0.85	0.92	1.03	1.1	1.11	0.024	0.039
19,050	*27,432*	*23,4*	*3,2*	*3*	*2,5*	*0,6*	*1,0*	*21,7*	*23,4*	*26,1*	*27,9*	*28,3*	*0,6*	*1*
0.875	1.2580	1.070	0.126	0.118	0.098	0.024	0.039	0.98	1.07	1.2	–	1.30	0.024	0.039
22,225	*31,953*	*27,2*	*3,2*	*3*	*2,5*	*0,6*	*1,0*	*24,9*	*27,2*	*30,4*	–	*33*	*0,6*	*1*
1	1.4370	1.220	0.126	0.118	0.098	0.024	0.039	1.11	1.22	1.37	1.39	1.48	0.024	0.039
25,400	*36,500*	*31,0*	*3,2*	*3*	*2,5*	*0,6*	*1,0*	*28,2*	*31*	*34,7*	*35,2*	*37,7*	*0,6*	*1*
1.25	1.7950	1.525	0.189	0.197	0.157	0.039	0.039	1.41	1.53	1.7	1.76	1.85	0.039	0.039
31,750	*45,593*	*38,7*	*4,8*	*5*	*4*	*1,0*	*1,0*	*35,8*	*38,7*	*43,3*	*44,8*	*47*	*1*	*1*
1.375	1.9370	1.670	0.189	0.197	0.157	0.039	0.039	1.54	1.67	1.84	1.85	2.04	0.039	0.039
34,925	*49,200*	*42,4*	*4,8*	*5*	*4*	*1,0*	*1,0*	*39,1*	*42,4*	*46,7*	*47,1*	*51,7*	*1*	*1*
1.5	2.1550	1.850	0.189	0.197	0.157	0.039	0.039	1.71	1.85	2.05	2.06	2.28	0.039	0.039
38,100	*54,737*	*47,0*	*4,8*	*5*	*4*	*1,0*	*1,0*	*43,3*	*47*	*52*	*52,3*	*58*	*1*	*1*
1.75	2.5150	2.165	0.189	0.197	0.157	0.039	0.039	1.97	2.17	2.39	2.41	2.65	0.039	0.039
44,450	*63,881*	*55,0*	*4,8*	*5*	*4*	*1,0*	*1,0*	*49,9*	*55*	*60,7*	*61,3*	*67,4*	*1*	*1*
2	2.8750	2.460	0.189	0.197	0.157	0.039	0.039	2.22	2.46	2.73	2.85	2.99	0.039	0.039
50,800	*73,025*	*62,5*	*4,8*	*5*	*4*	*1,0*	*1,0*	*56,5*	*62,5*	*69,4*	*72,4*	*75,9*	*1*	*1*
2.25	3.2350	2.760	0.224	0.197	0.157	0.039	0.039	2.48	2.76	3.07	3.11	3.36	0.039	0.039
57,150	*82,169*	*70,1*	*5,7*	*5*	*4*	*1,0*	*1,0*	*63,1*	*70,1*	*78,1*	*79*	*85,3*	*1*	*1*
2.5	3.5900	3.060	0.354	0.315	0.256	0.039	0.039	2.74	3.06	3.41	3.43	3.73	0.039	0.039
63,500	*91,186*	*77,7*	*9*	*8*	*6,5*	*1,0*	*1,0*	*69,6*	*77,7*	*86,6*	*87*	*94,7*	*1*	*1*

[1] Equal to maximum shaft fillet radius $r_{a\ max}$.
[2] Equal to maximum housing fillet radius $r_{b\ max}$.

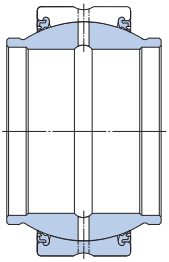
Radial spherical plain bearings with an extended inner ring, steel/steel, inch sizes
d **2.75 – 6** in



GEZM .. ES



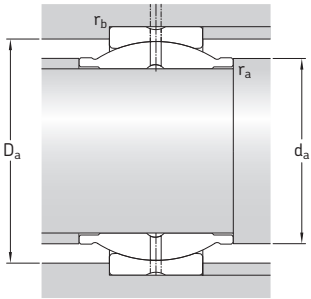
GEZM .. ES-2RS



GEZM .. ES-2LS

Principal dimensions				Angle of tilt[1]		Basic load ratings dynamic	static	Mass	Designations without seals	suffix for seal variants standard	heavy-duty
d	D	B	C	α	α sealed	C	C_0				
in/*mm*				degrees		lbf/*kN*		lb/*kg*	–		
2.75 *69,850*	4.3750 *111,125*	4.125 *104,78*	2.062 *52,38*	9	5	95 625 *430*	285 750 *1 270*	6.85 *3,10*	**GEZM 212 ES**	**-2RS**	**-2LS**
3 *76,200*	4.7500 *120,650*	4.500 *114,30*	2.250 *57,15*	9	5	112 500 *500*	337 500 *1 500*	8.80 *4,00*	**GEZM 300 ES**	**-2RS**	**-2LS**
3.25 *82,550*	5.1250 *130,175*	4.875 *123,83*	2.437 *61,90*	9	5	131 625 *590*	396 000 *1 760*	11.0 *5,00*	**GEZM 304 ES**	**-2RS**	**-2LS**
3.5 *88,900*	5.5000 *139,700*	5.250 *133,35*	2.625 *66,68*	9	5	153 000 *680*	459 000 *2 040*	14.0 *6,25*	**GEZM 308 ES**	**-2RS**	**-2LS**
3.75 *95,250*	5.8750 *149,225*	5.625 *142,88*	2.812 *71,43*	9	5	175 500 *780*	531 000 *2 360*	17.0 *7,60*	**GEZM 312 ES**	**-2RS**	**-2LS**
4 *101,600*	6.2500 *158,750*	6.000 *152,40*	3.000 *76,20*	9	5	202 500 *900*	596 250 *2 650*	20.0 *9,10*	**GEZM 400 ES**	**-2RS**	**-2LS**
4.5 *114,300*	7.0000 *177,800*	6.750 *171,45*	3.375 *85,73*	7	5	252 000 *1 120*	765 000 *3 400*	28.5 *13,0*	**GEZM 408 ES**	**-2RS**	**-2LS**
5 *127,000*	7.7500 *196,850*	7.500 *190,50*	3.750 *95,25*	7	5	315 000 *1 400*	933 750 *4 150*	38.5 *17,5*	**GEZM 500 ES**	**-2RS**	**-2LS**
6 *152,400*	8.7500 *222,250*	8.250 *209,55*	4.125 *104,78*	7	5	389 250 *1 730*	1 170 000 *5 200*	47.5 *21,5*	**GEZM 600 ES**	**-2RS**	**-2LS**

[1] To fully utilize the angle of tilt, the shaft shoulder should not be larger than $d_{a\ max}$.



Dimensions								Abutment and fillet dimensions						
d	d_k	d_1	b	b_1	M	r_1[1] min	r_2[2] min	d_a min	d_a max	D_a min	$D_{a\ sealed}$ min	D_a max	r_a max	r_b max
in/*mm*								in/*mm*						
2.75	3.9500	3.380	0.354	0.315	0.256	0.039	0.039	3.00	3.38	3.75	3.78	4.16	0.039	0.039
69,850	*100,330*	*85,9*	*9*	*8*	*6,5*	*1,0*	*1,0*	*76,2*	*85,9*	*95,3*	*96*	*105,7*	*1*	*1*
3	4.3120	3.675	0.354	0.315	0.256	0.039	0.039	3.26	3.68	4.09	4.13	4.53	0.039	0.039
76,200	*109,525*	*93,3*	*9*	*8*	*6,5*	*1,0*	*1,0*	*82,8*	*93,3*	*104*	*104,8*	*115*	*1*	*1*
3.25	4.6750	3.985	0.366	0.315	0.256	0.039	0.039	3.52	3.99	4.44	4.5	4.90	0.039	0.039
82,550	*118,745*	*101,2*	*9,3*	*8*	*6,5*	*1,0*	*1,0*	*89,4*	*101,2*	*112,8*	*114,2*	*124,4*	*1*	*1*
3.5	5.0400	4.300	0.413	0.315	0.256	0.039	0.039	3.78	4.3	4.79	4.83	5.27	0.039	0.039
88,900	*128,016*	*109,2*	*10,5*	*8*	*6,5*	*1,0*	*1,0*	*95,9*	*109,2*	*121,6*	*122,8*	*133,8*	*1*	*1*
3.75	5.3900	4.590	0.413	0.315	0.256	0.039	0.039	4.04	4.59	5.12	5.17	5.63	0.039	0.039
95,250	*136,906*	*116,6*	*10,5*	*8*	*6,5*	*1,0*	*1,0*	*102,5*	*116,6*	*130,1*	*131,4*	*143,1*	*1*	*1*
4	5.7500	4.905	0.413	0.394	0.315	0.059	0.039	4.33	4.91	5.47	5.49	6.00	0.059	0.039
101,600	*146,050*	*124,6*	*10,5*	*10*	*8*	*1,5*	*1,0*	*110*	*124,6*	*139*	*139,5*	*152,5*	*1,5*	*1*
4.5	6.4750	5.525	0.433	0.394	0.315	0.079	0.043	4.94	5.53	6.16	6.18	6.73	0.079	0.043
114,300	*164,465*	*140,3*	*11*	*10*	*8*	*2,0*	*1,1*	*125,5*	*140,3*	*156,5*	*157*	*171*	*2*	*1,1*
5	7.1900	6.130	0.433	0.394	0.315	0.079	0.043	5.45	6.13	6.83	6.91	7.42	0.079	0.043
127,000	*182,626*	*155,7*	*11*	*10*	*8*	*2,0*	*1,1*	*138,5*	*155,7*	*173,5*	*175,5*	*188,5*	*2*	*1,1*
6	8.1560	7.020	0.591	0.433	0.315	0.079	0.043	6.46	7.02	7.76	7.78	8.41	0.079	0.043
152,400	*207,162*	*178,3*	*15*	*11*	*8*	*2,0*	*1,1*	*164*	*178,3*	*197*	*197,5*	*213,5*	*2*	*1,1*

[1] Equal to maximum shaft fillet radius $r_{a\ max}$.
[2] Equal to maximum housing fillet radius $r_{b\ max}$.