

# Radial spherical plain bearings requiring maintenance

2

Dimensions.....	100
Tolerances.....	101
Radial internal clearance.....	102
Materials.....	102
Permissible operating temperature range.....	102
<b>Product tables .....</b>	<b>104</b>
2.1 Radial spherical plain plain bearings, steel/steel, metric sizes.....	104
2.2 Radial spherical plain plain bearings, steel/steel, inch sizes .....	110
2.3 Radial spherical plain plain bearings with an extended inner ring, steel/steel, metric sizes ..	116
2.4 Radial spherical plain plain bearings with an extended inner ring, steel/steel, inch sizes.....	120

## 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  $D \geq 150$  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

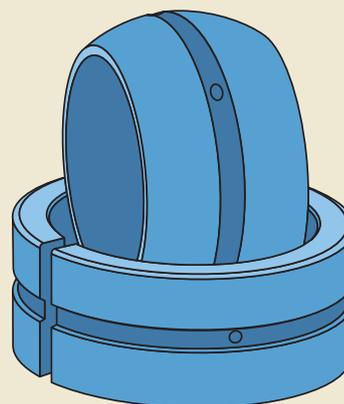


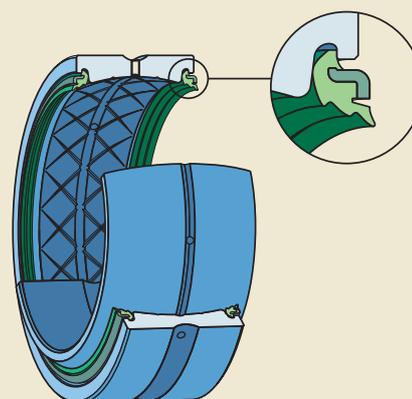
Fig. 2

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

Table 1

### Dimensional tolerances for metric radial spherical plain bearings requiring maintenance

Nominal diameter d, D over incl.	GE, GEH and GEM series				GEG series				All series				
	Inner ring $\Delta_{dmp}$ high low		$\Delta_{Bs}$ high low		Inner ring $\Delta_{dmp}$ high low		$\Delta_{Bs}$ high low		Outer ring $\Delta_{Dmp}$ high low		$\Delta_{Cs}$ high low		
mm	$\mu\text{m}$		$\mu\text{m}$		$\mu\text{m}$		$\mu\text{m}$		$\mu\text{m}$		$\mu\text{m}$		
–	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 spherical plain bearings requiring maintenance

### 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  $d \geq 320$  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				Outer ring		$\Delta_{Cs}$	
d, D	incl.	Inner ring $\Delta_{dmp}$		$\Delta_{Bs}$		$\Delta_{Dmp}$		high	low
over		high	low	high	low	high	low	high	low
in		$\mu\text{m}$							
–	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				C3	
d	incl.	C2		Normal		min	max
over		min	max	min	max	min	max
mm		$\mu\text{m}$					
–	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.

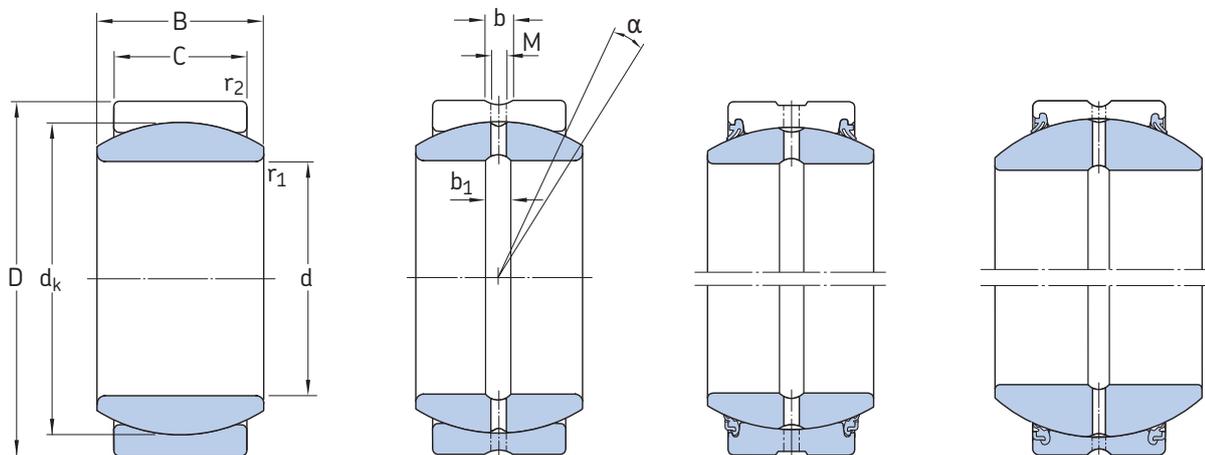
Table 4

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

Bore diameter		Radial internal clearance				C3	
d	incl.	C2		Normal		min	max
over		min	max	min	max	min	max
in		$\mu\text{m}$					
–	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

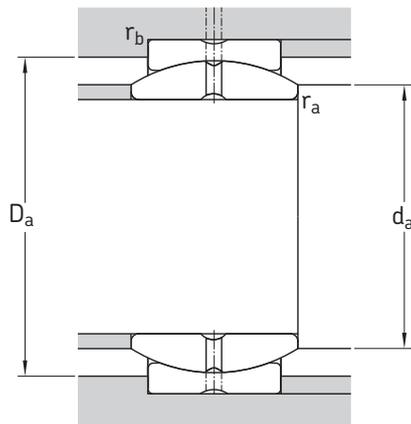
GE .. ES-2RS  
GE .. ES-2LS

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

Principal dimensions				Angle of tilt <sup>1)</sup>	Basic load ratings		Mass	Designations <sup>2)</sup>	
d	D	B	C		dynamic	static		without seals	with standards seals
mm				degrees	C	C <sub>0</sub>	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

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be made larger than d<sub>a max</sub>.

<sup>2)</sup> 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).

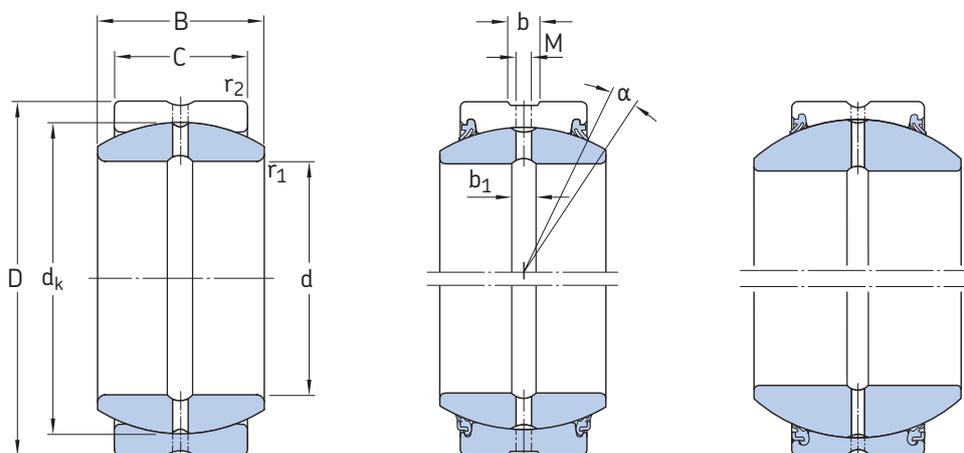


Dimensions

Abutment and fillet dimensions

d	d <sub>k</sub>	b	b <sub>1</sub>	M	r <sub>1</sub> min	r <sub>2</sub> min	d <sub>a</sub> min	d <sub>a</sub> max	D <sub>a</sub> min	D <sub>a</sub> max	r <sub>a</sub> max	r <sub>b</sub> 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

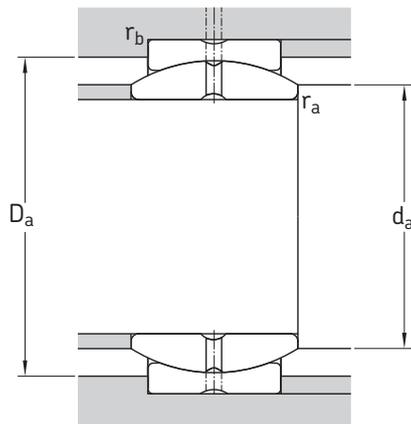
GE .. ES-2RS  
GE .. ES-2LS

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

Principal dimensions				Angle of tilt <sup>1)</sup> $\alpha$	Basic load ratings		Mass	Designations <sup>2)</sup>	
d	D	B	C		dynamic	static		without seals	with standard seals
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

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be made larger than  $d_{a \max}$ .

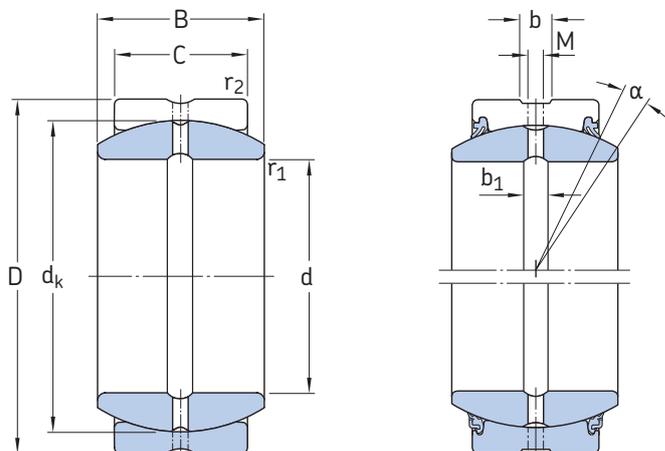
<sup>2)</sup> Bearings with an outside diameter  $D \geq 150$  mm have the multi-groove system in the outer ring as standard. Bearings with an outside diameter  $D < 150$  mm can be supplied with the multi-groove system on request (designation suffix ESL).



2.1

Dimensions							Abutment and fillet dimensions						
d	d <sub>k</sub>	b	b <sub>1</sub>	M	r <sub>1</sub> min	r <sub>2</sub> min	d <sub>a</sub> min	d <sub>a</sub> max	D <sub>a</sub> min	D <sub>a</sub> max	r <sub>a</sub> max	r <sub>b</sub> 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	

Radial spherical plain bearings, steel/steel, metric sizes  
d 140 – 300 mm



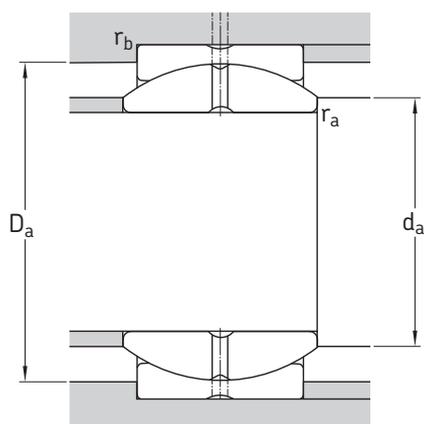
GE .. ES

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

Principal dimensions				Angle of tilt <sup>1)</sup>	Basic load ratings		Mass	Designations <sup>2)</sup>	
d	D	B	C		dynamic	static		without seals	with standard seals
mm				degrees	C	C <sub>0</sub>	kg	-	
<b>140</b>	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
<b>160</b>	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
<b>180</b>	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
<b>200</b>	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
<b>220</b>	320	135	100	8	2 320	11 600	35,5	GE 220 ES-2RS	-2LS
<b>240</b>	340	140	100	8	2 550	12 700	40,0	GE 240 ES-2RS	-2LS
<b>260</b>	370	150	110	7	3 050	15 300	51,5	GE 260 ES-2RS	-2LS
<b>280</b>	400	155	120	6	3 550	18 000	65,0	GE 280 ES-2RS	-2LS
<b>300</b>	430	165	120	7	3 800	19 000	78,5	GE 300 ES-2RS	-2LS

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be made larger than d<sub>a max</sub>.

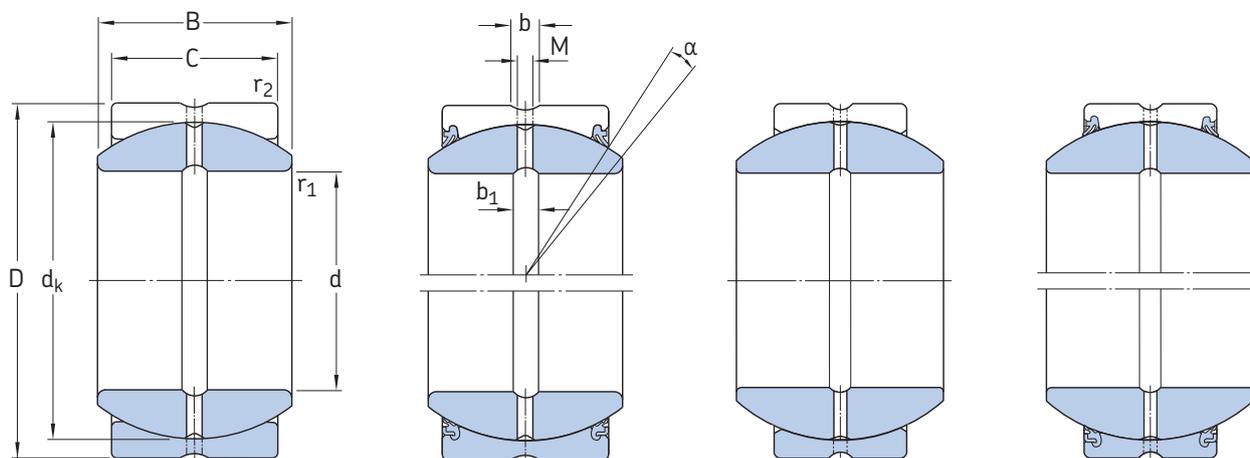
<sup>2)</sup> Bearings with an outside diameter D ≥ 150 mm have the multi-groove system in the outer ring as standard.



2.1

Dimensions							Abutment and fillet dimensions						
d	d <sub>k</sub>	b	b <sub>1</sub>	M	r <sub>1</sub> min	r <sub>2</sub> min	d <sub>a</sub> min	d <sub>a</sub> max	D <sub>a</sub> min	D <sub>a</sub> max	r <sub>a</sub> max	r <sub>b</sub> max	
mm							mm						
<b>140</b>	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	
<b>160</b>	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	
<b>180</b>	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	
<b>200</b>	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	
<b>220</b>	275	15,5	15,5	7	1,1	1,1	232,5	239,5	271	309,5	1	1	
<b>240</b>	300	15,5	15,5	7	1,1	1,1	252,5	265	298	329,5	1	1	
<b>260</b>	325	15,5	15,5	7	1,1	1,1	273	288	321,5	359	1	1	
<b>280</b>	350	15,5	15,5	7	1,1	1,1	294	313,5	344,5	388,5	1	1	
<b>300</b>	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

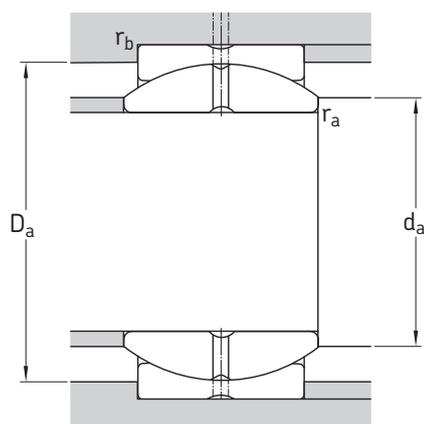
GEZ .. ES-2RS  
GEZ .. ES-2LS

GEZH .. ES

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

Principal dimensions				Angle of tilt <sup>1)</sup> $\alpha$	Basic load ratings dynamic static		Mass	Designations		
d	D	B	C		C	$C_0$		without seals	suffix for seal variants standard heavy-duty	
in/mm				degrees	lbf/kN		lb/kg	-		
<b>0.5</b> 12,700	0.8750 22,225	0.437 11,10	0.375 9,53	6	3 150 14	9 340 41,5	0.044 0,020	<b>GEZ 008 ES</b>	-	-
<b>0.625</b> 15,875	1.0625 26,988	0.547 13,89	0.469 11,91	6	4 840 21,5	14 740 65,5	0.077 0,035	<b>GEZ 010 ES</b>	-	-
<b>0.75</b> 19,050	1.2500 31,750	0.656 16,66	0.562 14,28	6	7 090 31,5	20 930 93	0.12 0,055	<b>GEZ 012 ES</b>	<b>-2RS</b>	-
<b>0.875</b> 22,225	1.4375 36,513	0.765 19,43	0.656 16,66	6	9 560 42,5	28 580 127	0.19 0,085	<b>GEZ 014 ES</b>	-	-
<b>1</b> 25,400	1.6250 41,275	0.875 22,23	0.750 19,05	6	12 600 56	37 350 166	0.26 0,12	<b>GEZ 100 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.25</b> 31,750	2.0000 50,800	1.093 27,76	0.937 23,80	6	19 460 86,5	58 500 260	0.51 0,23	<b>GEZ 104 ES</b>	<b>-2RS</b>	<b>-2LS</b>
	2.4375 61,913	1.390 35,31	1.125 28,58	8	28 125 125	84 375 375	1.20 0,54	<b>GEZH 104 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.375</b> 34,925	2.1875 55,563	1.187 30,15	1.031 26,19	6	23 400 104	69 750 310	0.77 0,35	<b>GEZ 106 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.5</b> 38,100	2.4375 61,913	1.312 33,33	1.125 28,58	6	28 130 125	84 380 375	0.93 0,42	<b>GEZ 108 ES</b>	<b>-2RS</b>	<b>-2LS</b>
	2.8125 71,438	1.580 40,13	1.312 33,33	7	38 250 170	114 750 510	1.75 0,79	<b>GEZH 108 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.75</b> 44,450	2.8125 71,438	1.531 38,89	1.312 33,33	6	38 250 170	114 750 510	1.40 0,64	<b>GEZ 112 ES</b>	<b>-2RS</b>	<b>-2LS</b>
	3.1875 80,963	1.820 46,23	1.500 38,10	7	50 400 224	150 750 670	2.50 1,13	<b>GEZH 112 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>2</b> 50,800	3.1875 80,963	1.750 44,45	1.500 38,10	6	50 400 224	150 750 670	2.05 0,93	<b>GEZ 200 ES</b>	<b>-2RS</b>	<b>-2LS</b>
	3.5625 90,488	2.070 52,58	1.687 42,85	8	63 000 280	191 250 850	3.50 1,60	<b>GEZH 200 ES</b>	<b>-2RS</b>	<b>-2LS</b>

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be larger than  $d_{a\max}$ .



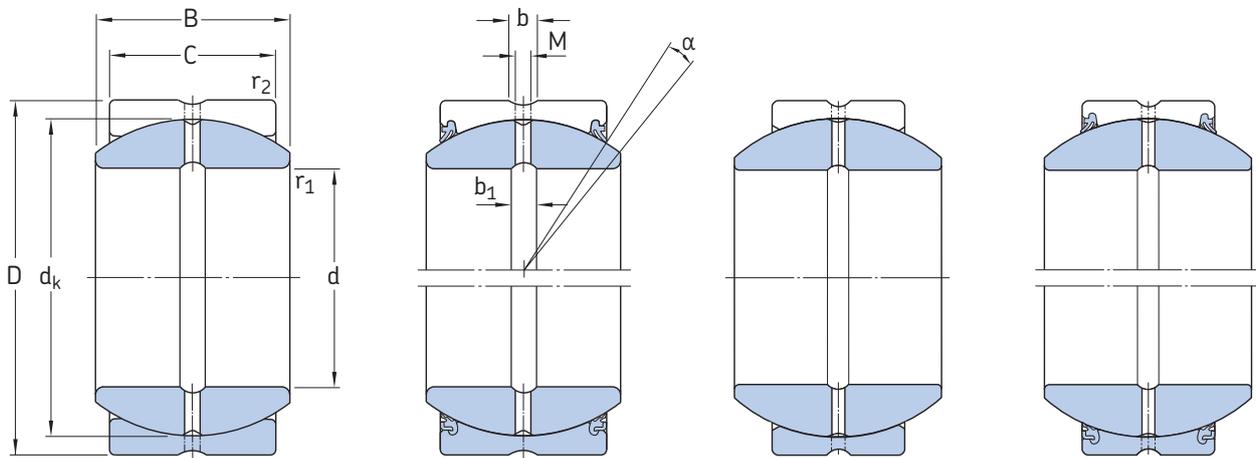
## Dimensions

## Abutment and fillet dimensions

d	d <sub>k</sub>	b	b <sub>1</sub>	M	r <sub>1</sub> <sup>1)</sup> min	r <sub>2</sub> <sup>2)</sup> min	d <sub>a</sub> min	d <sub>a</sub> max	D <sub>a</sub> min	D <sub>a</sub> <sup>sealed</sup> min	D <sub>a</sub> max	r <sub>a</sub> max	r <sub>b</sub> max
in/mm							in/mm						
<b>0.5</b> 12,700	0.7190 18,263	0.102 2,6	0.098 2,5	0.059 1,5	0.006 0,2	0.024 0,6	0.54 13,7	0.57 14,5	0.68 17,3	–	0.78 19,9	0.006 0,2	0.024 0,6
<b>0.625</b> 15,875	0.8990 22,835	0.126 3,2	0.118 3	0.098 2,5	0.006 0,2	0.039 1	0.67 17	0.71 18,1	0.85 21,7	–	0.93 23,6	0.006 0,2	0.039 1
<b>0.75</b> 19,050	1.0800 27,432	0.126 3,2	0.118 3	0.098 2,5	0.012 0,3	0.039 1	0.82 20,9	0.86 21,8	1.03 26,1	1.1 27,9	1.11 28,3	0.012 0,3	0.039 1
<b>0.875</b> 22,225	1.2580 31,953	0.126 3,2	0.118 3	0.098 2,5	0.012 0,3	0.039 1	0.95 24,2	1 25,4	1.2 30,4	–	1.3 33	0.012 0,3	0.039 1
<b>1</b> 25,400	1.4370 36,500	0.126 3,2	0.118 3	0.098 2,5	0.012 0,3	0.039 1	1.08 27,5	1.14 29	1.37 34,7	1.39 35,2	1.48 37,7	0.012 0,3	0.039 1
<b>1.25</b> 31,750	1.7950 45,593	0.189 4,8	0.197 5	0.157 4	0.024 0,6	0.039 1	1.37 34,8	1.43 36,2	1.7 43,3	1.76 44,8	1.85 47	0.024 0,6	0.039 1
	2.1550 54,737	0.189 4,8	0.197 5	0.157 4	0.039 1	0.039 1	1.43 36,2	1.65 41,8	2.05 52	2.06 52,3	2.28 58	0.039 1	0.039 1
<b>1.375</b> 34,925	1.9370 49,200	0.189 4,8	0.197 5	0.157 4	0.024 0,6	0.039 1	1.5 38,1	1.53 38,9	1.84 46,7	1.85 47,1	2.035 51,7	0.024 0,6	0.039 1
<b>1.5</b> 38,100	2.1550 54,737	0.189 4,8	0.197 5	0.157 4	0.024 0,6	0.039 1	1.63 41,4	1.71 43,4	2.05 52	2.06 52,3	2.28 58	0.024 0,6	0.039 1
	2.5150 63,881	0.189 4,8	0.197 5	0.157 4	0.039 1	0.039 1	1.69 42,8	1.96 49,7	2.39 60,7	2.41 61,3	2.65 67,4	0.039 1	0.039 1
<b>1.75</b> 44,450	2.5150 63,881	0.189 4,8	0.197 5	0.157 4	0.024 0,6	0.039 1	1.91 48,5	2 50,7	2.39 60,7	2.41 61,3	2.65 67,4	0.024 0,6	0.039 1
	2.8750 73,025	0.189 4,8	0.197 5	0.157 4	0.059 1,5	0.039 1	2.00 50,9	2.22 56,5	2.73 69,4	2.85 72,4	2.99 75,9	0.059 1,5	0.039 1
<b>2</b> 50,800	2.8750 73,025	0.189 4,8	0.197 5	0.157 4	0.024 0,6	0.039 1	2.17 55,1	2.28 57,9	2.73 69,4	2.85 72,4	2.99 75,9	0.024 0,6	0.039 1
	3.2350 82,169	0.224 5,7	0.197 5	0.157 4	0.059 1,5	0.039 1	2.26 57,5	2.48 63,1	3.07 78,1	3.11 79	3.36 85,3	0.059 1,5	0.039 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 2.25 – 4 in



GEZ .. ES

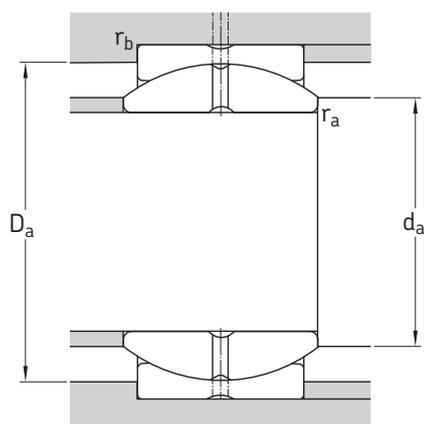
GEZ .. ES-2RS  
GEZ .. ES-2LS

GEZH .. ES

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

Principal dimensions				Angle of tilt <sup>1)</sup>	Basic load ratings		Mass	Designations		
d	D	B	C		C	C <sub>0</sub>		without seals	suffix for seal variants	
				α				standard	heavy-duty	
in/mm				degrees	lbf/kN		lb/kg	-		
2.25 57,150	3.5625	1.969	1.687	6	63 000	191 250	2.85	GEZ 204 ES	-2RS	-2LS
	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 63,500	3.9375	2.187	1.875	6	77 630	234 000	4.10	GEZ 208 ES	-2RS	-2LS
	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 69,850	4.3750	2.406	2.062	6	95 630	285 750	5.30	GEZ 212 ES	-2RS	-2LS
	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 76,200	4.7500	2.625	2.250	6	112 500	337 500	6.85	GEZ 300 ES	-2RS	-2LS
	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 82,550	5.1250	2.844	2.437	6	131 630	396 000	8.40	GEZ 304 ES	-2RS	-2LS
	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 88,900	5.5000	3.062	2.625	6	153 000	459 000	10.5	GEZ 308 ES	-2RS	-2LS
	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 95,250	5.8750	3.281	2.812	6	175 500	531 000	13.0	GEZ 312 ES	-2RS	-2LS
	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			
4 101,600	6.2500	3.500	3.000	6	202 500	596 250	15.5	GEZ 400 ES	-2RS	-2LS
	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			

<sup>1)</sup>To fully utilize the angle of tilt, the shaft shoulder should not be larger than d<sub>a max</sub>.



2.2

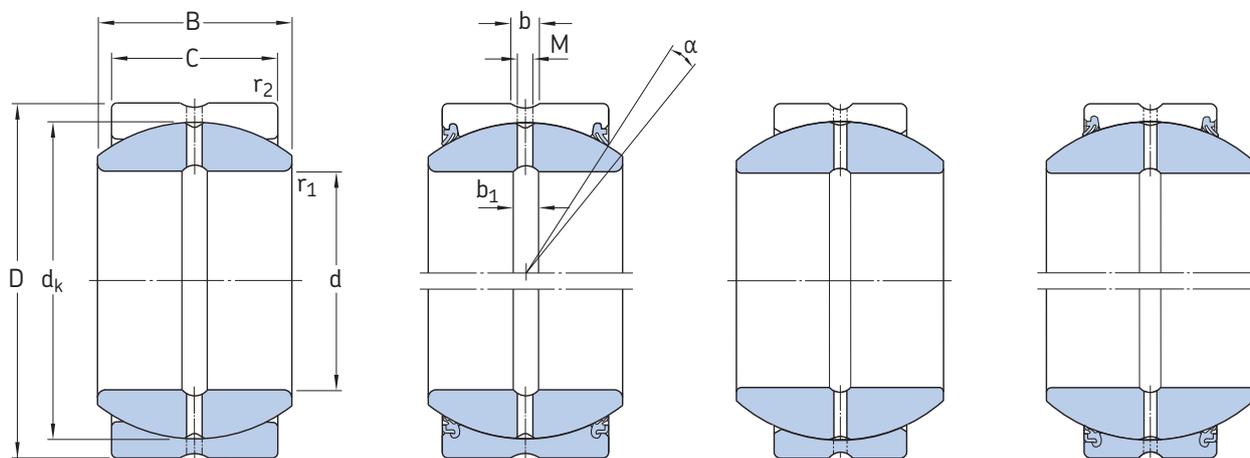
Dimensions

Abutment and fillet dimensions

d	d <sub>k</sub>	b	b <sub>1</sub>	M	r <sub>1</sub> <sup>1)</sup> min	r <sub>2</sub> <sup>2)</sup> min	d <sub>a</sub> min	d <sub>a</sub> max	D <sub>a</sub> min	D <sub>a</sub> <sup>sealed</sup> min	D <sub>a</sub> max	r <sub>a</sub> max	r <sub>b</sub> max
in/mm							in/mm						
<b>2.25</b> 57,150	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
	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
<b>2.5</b> 63,500	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
	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
<b>2.75</b> 69,850	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
	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
<b>3</b> 76,200	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
	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
<b>3.25</b> 82,550	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
	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
<b>3.5</b> 88,900	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
	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
<b>3.75</b> 95,250	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
	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
<b>4</b> 101,600	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
	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<sub>a</sub> max.  
 2) Equal to maximum housing fillet radius r<sub>b</sub> max.

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



GEZ .. ES

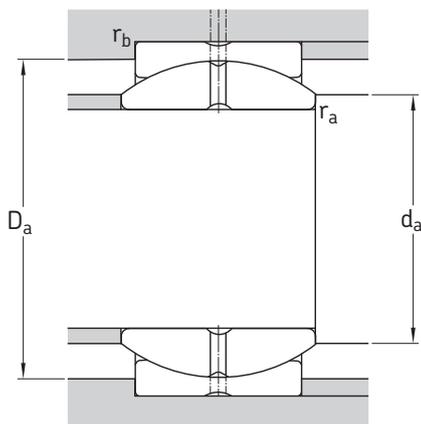
GEZ .. ES-2RS  
GEZ .. ES-2LS

GEZH .. ES

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

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

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be larger than  $d_{a \max}$ .

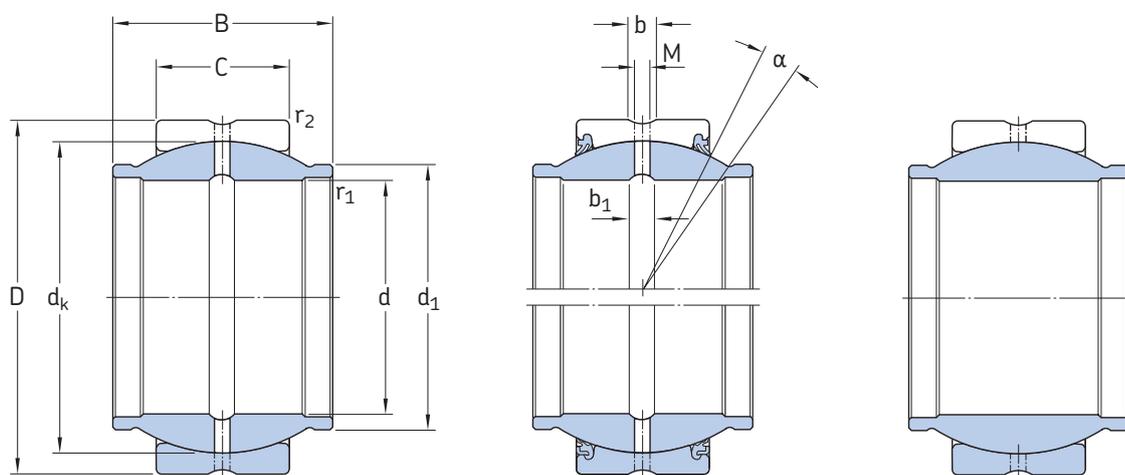


2.2

Dimensions						Abutment and fillet dimensions								
d	d <sub>k</sub>	b	b <sub>1</sub>	M	r <sub>1</sub> <sup>1)</sup> min	r <sub>2</sub> <sup>2)</sup> min	d <sub>a</sub> min	d <sub>a</sub> max	D <sub>a</sub> min	D <sub>a</sub> <sup>sealed</sup> min	D <sub>a</sub> max	r <sub>a</sub> max	r <sub>b</sub> max	
in/mm							in/mm							
<b>4.5</b>	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	
<b>4.75</b>	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	
<b>5</b>	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	
<b>5.5</b>	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	
<b>6</b>	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<sub>a</sub> max.  
 2) Equal to maximum housing fillet radius r<sub>b</sub> max.

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



GEG .. ES

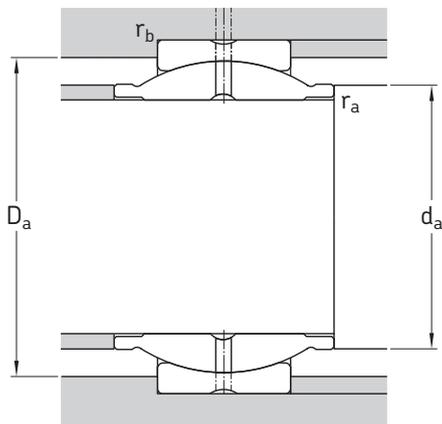
GEM .. ES-2RS  
GEM .. ES-2LS

GEG .. ESA

Principal dimensions				Angle of tilt $\alpha$	Basic load ratings		Mass	Designations <sup>1)</sup>	
d	D	B	C		dynamic	static		without seals	with standard seals
mm				degrees	kN		kg	-	
12	22	12	7	4	10,8	54	0,020	GEG 12 ESA <sup>2)</sup>	-
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	-

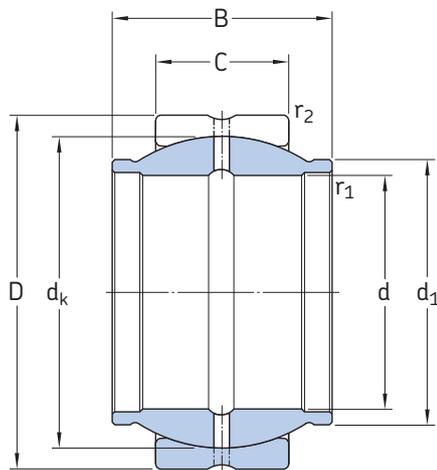
<sup>1)</sup> Bearings with an outside diameter  $D \geq 150$  mm have the multi-groove system in the outer ring as standard. Bearings with an outside diameter  $D < 150$  mm can be supplied with the multi-groove system on request (designation suffix ESL).

<sup>2)</sup> Can only be relubricated via the outer ring.



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

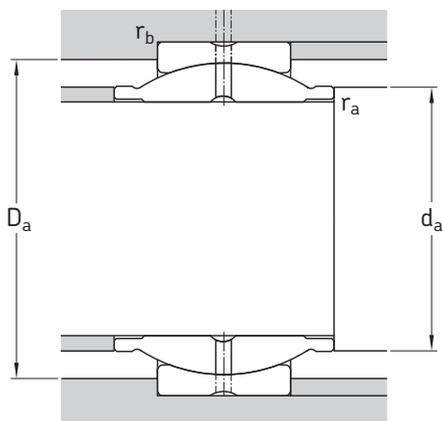
Radial spherical plain bearings with an extended inner ring, steel/steel, metric sizes  
d 160 – 200 mm



GEG .. ES

Principal dimensions				Angle of tilt $\alpha$	Basic load ratings		Mass	Designation <sup>1)</sup> without seals
d	D	B	C		dynamic	static		
mm				degrees	kN		kg	–
<b>160</b>	230	160	80	4	1 370	6 800	16,5	<b>GEG 160 ES</b>
<b>200</b>	290	200	100	4	2 120	10 600	32,0	<b>GEG 200 ES</b>

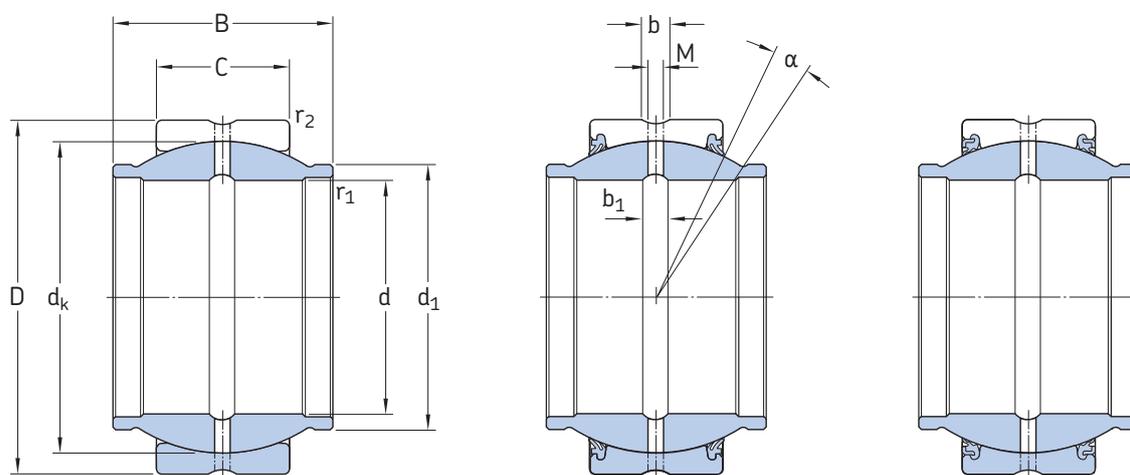
<sup>1)</sup> Bearings with an outside diameter  $D \geq 150$  mm have the multi-groove system in the outer ring as standard.



2.3

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



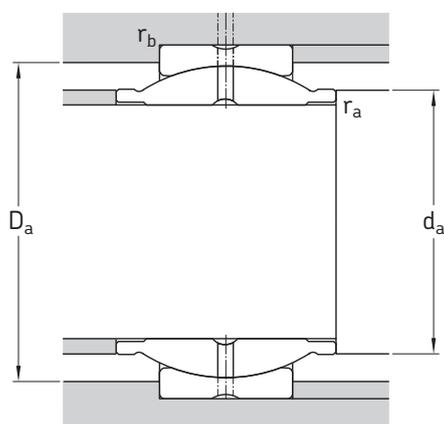
GEZM .. ES

GEZM .. ES-2RS

GEZM .. ES-2LS

Principal dimensions				Angle of tilt <sup>1)</sup>		Basic load ratings		Mass	Designations		
d	D	B	C	$\alpha$	$\alpha$ sealed	C	C <sub>0</sub>		without seals	suffix for seal variants	
				degrees		lbf/kN		lb/kg	-		
in/mm											
<b>0.5</b> 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	<b>GEZM 008 ES</b>	-	-
<b>0.625</b> 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	<b>GEZM 010 ES</b>	-	-
<b>0.75</b> 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	<b>GEZM 012 ES</b>	<b>-2RS</b>	-
<b>0.875</b> 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	<b>GEZM 014 ES</b>	-	-
<b>1</b> 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	<b>GEZM 100 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.25</b> 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	<b>GEZM 104 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.375</b> 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	<b>GEZM 106 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.5</b> 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	<b>GEZM 108 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>1.75</b> 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	<b>GEZM 112 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>2</b> 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	<b>GEZM 200 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>2.25</b> 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	<b>GEZM 204 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>2.5</b> 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	<b>GEZM 208 ES</b>	<b>-2RS</b>	<b>-2LS</b>

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be larger than  $d_{a\max}$ .



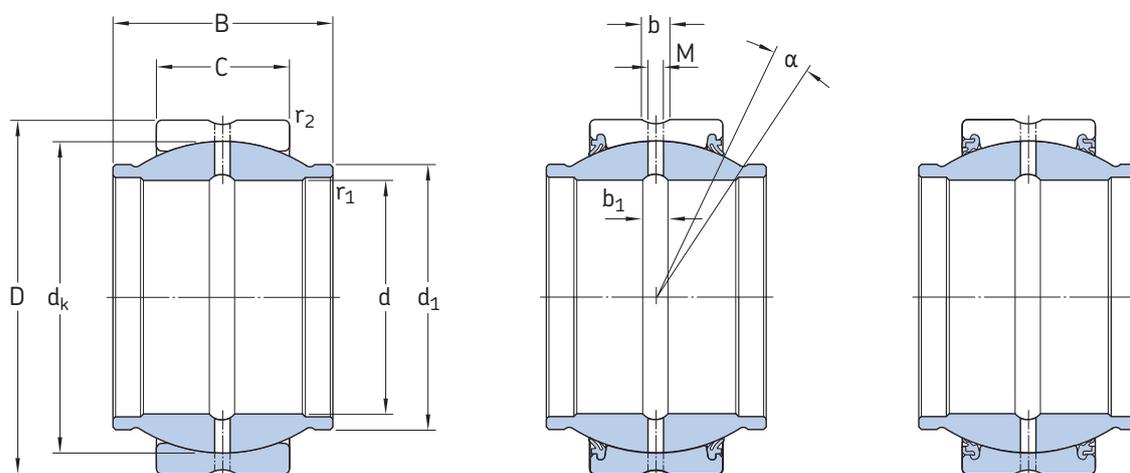
**Dimensions**

**Abutment and fillet dimensions**

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

1) Equal to maximum shaft fillet radius r<sub>a</sub> max.  
2) Equal to maximum housing fillet radius r<sub>b</sub> 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 <sup>1)</sup>		Basic load ratings		Mass	Designations		
d	D	B	C	$\alpha$	$\alpha$ sealed	C	C <sub>0</sub>		without seals	suffix for seal variants	
				degrees		lbF/kN		lb/kg	-		
<b>2.75</b> 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	<b>GEZM 212 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>3</b> 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	<b>GEZM 300 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>3.25</b> 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	<b>GEZM 304 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>3.5</b> 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	<b>GEZM 308 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>3.75</b> 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	<b>GEZM 312 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>4</b> 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	<b>GEZM 400 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>4.5</b> 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	<b>GEZM 408 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>5</b> 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	<b>GEZM 500 ES</b>	<b>-2RS</b>	<b>-2LS</b>
<b>6</b> 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	<b>GEZM 600 ES</b>	<b>-2RS</b>	<b>-2LS</b>

<sup>1)</sup> To fully utilize the angle of tilt, the shaft shoulder should not be larger than  $d_{a\max}$ .



