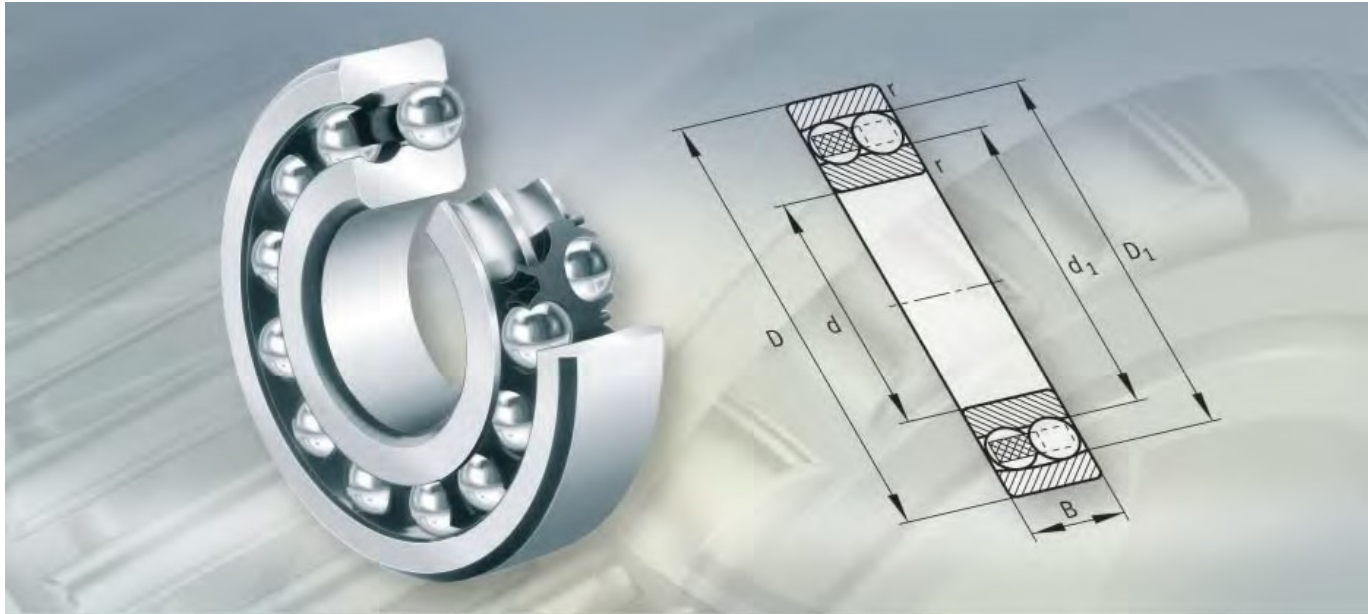


**FAG**



**Self-aligning ball bearings**

# Self-aligning ball bearings

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# Product overview Self-aligning ball bearings

**With cylindrical or tapered bore**

10, 12, 13,  
22, 23



12..-K, 13..-K,  
22..-K, 23..-K



**Lip seals**

22..-2RS, 22..-K-2RS,  
23..-2RS

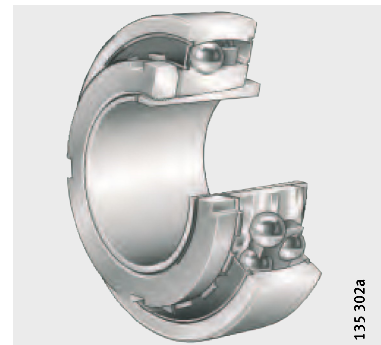


**With adapter sleeve**  
Without or with lip seals

12..-K + H, 13..-K + H,  
22..-K + H, 23..-K + H



22..-K-2RS + H



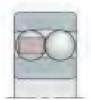
**With extended inner ring**

112



# Self-aligning ball bearings

<b>Features</b>	Self-aligning ball bearings are double row, self-retaining units comprising outer rings with a concave raceway, inner rings with a cylindrical or tapered bore and ball and cage assemblies. The bearings are available in open and sealed designs.
<b>Radial and axial load capacity</b>	Self-aligning ball bearings can support axial forces in both directions as well as radial forces.
<b>With cylindrical or tapered bore</b>	Bearings of series 12, 13, 22 and 23 are available with a cylindrical or tapered bore. Bearings with a tapered bore have a bore taper of 1:12 and the suffix K.
<b>With adapter sleeve</b>	Self-aligning ball bearings with a tapered bore are also available with an adapter sleeve, locknut and tab washer. Adapter sleeves must be ordered in addition to the bearing.
<b>With extended inner ring</b>	Bearings of series 112 have an extended inner ring, a locating slot on one side of the inner ring and are located by means of dowel pins. These bearings are intended for simple bearing arrangements with conventional shafts. Due to the bearing bore tolerance (J7), they are very easy to fit.
<b>Sealing</b>	Self-aligning ball bearings of series 12, 13, 22 and 23 are also available in sealed designs. Sealed bearings have contact seals on both sides and the suffix 2RS.
<b>Lubrication</b>	Sealed bearings are greased with a high quality grease and are maintenance-free.
<b>Compensation of angular misalignments</b>	Under normal operating conditions and with a rotating inner ring, self-aligning ball bearings can swivel approx. $4^\circ$ about their central position; sealed bearings can swivel by max. $1,5^\circ$ . As a result, they permit skewing between the inner and outer ring and can thus compensate misalignments, shaft deflections and housing deformations. If the outer ring rotates or the inner ring undergoes tumbling motion, the angular adjustment facility is smaller. In this case, please contact us.
<b>Operating temperature</b>	Open bearings with brass cages can be used at operating temperatures from $-30^\circ\text{C}$ to $+150^\circ\text{C}$ .  Bearings with cages made from glass fibre reinforced polyamide are suitable for operating temperatures up to $+120^\circ\text{C}$ . Sealed self-aligning ball bearings are suitable for operating temperatures from $-30^\circ\text{C}$ to $+100^\circ\text{C}$ , restricted by the grease and seal material.





# Self-aligning ball bearings

**Cages** The standard cages for self-aligning ball bearings are shown in the table Cage and bore code.

Self-aligning ball bearings with cages made from glass fibre reinforced polyamide 66 have the suffix TVH.

Ball-guided solid brass cages are indicated by the suffix M.



Check the chemical resistance of polyamide to synthetic greases and oils and lubricants with EP additives.

Aged oil and additives in the oil can impair the operating life of plastic cages at high temperatures.

The oil change intervals must be observed.

## Cage and bore code

Series	Solid polyamide cage <sup>1)</sup>	Solid brass cage <sup>1)</sup>
	Bore code	
10	8	–
12	up to 18	from 19
13	up to 13	from 14
22	up to 13, 15, 16, 18	14, 17, from 19
23	up to 13	from 14
112	04 to 12	–

<sup>1)</sup> Other cage designs available by agreement. In such cages, suitability for high speeds and temperatures as well as the basic load ratings may differ from the values for bearings with standard cages.

## Suffixes

Suffixes for available designs: see table.

## Available designs

Suffix	Description	Design
C3	Radial internal clearance larger than normal	Standard for tapered bore
K	Tapered bore	
M	Solid brass cage	
TVH	Solid cage made from glass fibre reinforced polyamide 66	
2RS	Contact seals on both sides	

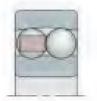
**Design and safety guidelines**  
**Equivalent dynamic bearing load**

**Load ratio and equivalent dynamic load**

For bearings under dynamic loading, the following applies:

Load ratio	Equivalent dynamic load
$\frac{F_a}{F_r} \leq e$	$P = F_r + Y_1 \cdot F_a$
$\frac{F_a}{F_r} > e$	$P = 0,65 \cdot F_r + Y_2 \cdot F_a$

P N  
 Equivalent dynamic bearing load for combined load  
 $F_a$  N  
 Axial dynamic bearing load  
 $F_r$  N  
 Radial dynamic bearing load  
 $e, Y_1, Y_2$  –  
 Factors from dimension tables.



**Equivalent static bearing load**

For bearings under static loading, the following applies:

$$P_0 = F_{0r} + Y_0 \cdot F_{0a}$$

$P_0$  N  
 Equivalent static bearing load for combined load  
 $F_{0a}$  N  
 Axial static bearing load  
 $F_{0r}$  N  
 Radial static bearing load  
 $Y_0$  –  
 Factor from dimension tables.

**Minimum load**

In order to ensure slippage-free operation, the bearings must be subjected to sufficient load. If insufficient load is applied (for example at high speeds during a test run), slippage can occur that may lead to bearing damage if lubrication is inadequate. The minimum load should be  $P/C_r = 0,01$ .

**Speeds**



If the reference speed  $n_B$  in the dimension tables is higher than the limiting speed  $n_G$ , the higher value cannot be used. In bearings with contact seals (suffix 2RS), the speed is limited by the permissible sliding speed of the sealing lips, so only the limiting speed  $n_G$  is given in the tables.

# Self-aligning ball bearings

## Design of bearing arrangements Shaft and housing tolerances

Recommended shaft tolerances for radial bearings with cylindrical bore, see table, page 150.

Recommended housing tolerances for radial bearings, see table, page 152.

## Mounting dimensions

The dimension tables give the maximum dimension of the radius  $r_a$  and the diameters of the abutment shoulders  $D_a$  and  $d_a$ .

Bearings with a tapered inner ring bore are:

- located either directly on tapered shaft seats or
- located on a cylindrical shaft seat using an adapter sleeve, locknut and tab washer.

If high axial forces are present, a support ring can be used.

For fitting, attention must be paid to the support ring dimensions given in the dimension tables.

## Ball projection

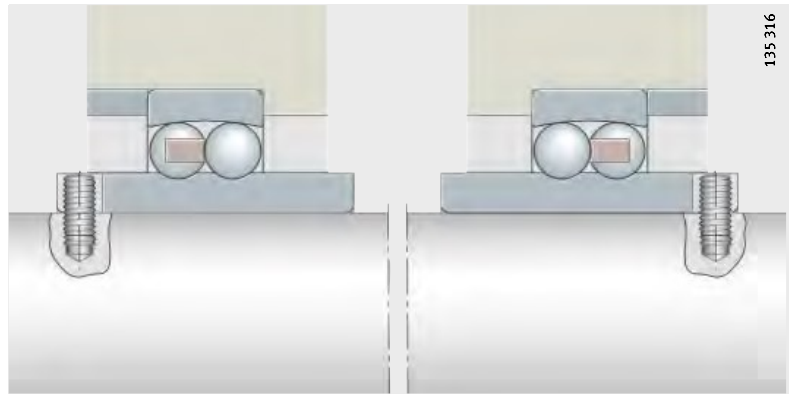


In some bearings with a brass cage, the balls project to a certain extent at the sides. The projection  $C_1$  must be taken into consideration when designing the adjacent construction. Values for  $C_1$ : see dimension tables page 380 and page 389.

## Location of series 122

These bearings are axially located by means of thread studs that engage in the slot in the inner ring, *Figure 1*. The studs also prevent the inner rings creeping on the shaft.

If a shaft is to be supported by two bearings, the locating slots must be arranged on the sides of the bearing facing towards or away from each other, *Figure 1*.



*Figure 1*  
Location and arrangement of bearings

## Accuracy

The main dimensions of the bearings conform to DIN 630.

The dimensional and geometrical tolerances of the bearings correspond to tolerance class PN to DIN 620-2.

In series 112, the bearing bore has a J7 tolerance.

## Radial internal clearance of bearings with cylindrical bore

The radial internal clearance is CN in accordance with DIN 620-4.

### Radial internal clearance

Bore		Radial internal clearance			
d mm		CN μm		C3 μm	
over	incl.	min.	max.	min.	max.
–	6	5	15	10	20
6	10	6	17	12	25
10	14	6	19	13	26
14	18	8	21	15	28
18	24	10	23	17	30
24	30	11	24	19	35
30	40	13	29	23	40
40	50	14	31	25	44
50	65	16	36	30	50
65	80	18	40	35	60
80	100	22	48	42	70
100	120	25	56	50	83
120	140	30	68	60	100
140	160	35	80	70	120



## Radial internal clearance of bearings with tapered bore

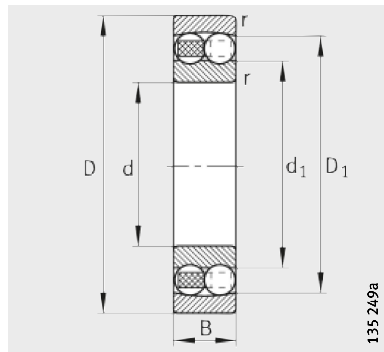
Bearings with a tapered bore have the internal clearance group C3 in accordance with DIN 620-4.

### Radial internal clearance

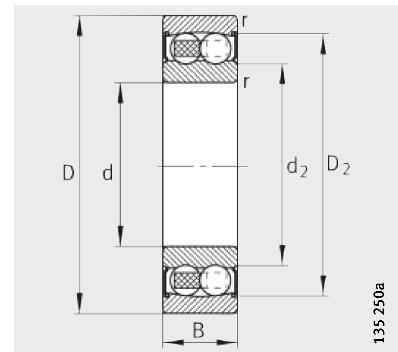
Bore		Radial internal clearance			
d mm		CN μm		C3 μm	
over	incl.	min.	max.	min.	max.
18	24	13	26	20	33
24	30	15	28	23	39
30	40	19	35	29	46
40	50	22	39	33	52
50	65	27	47	41	61
65	80	35	57	50	75
80	100	42	68	62	90
100	120	50	81	75	108
120	140	60	98	90	130
140	160	65	110	100	150

# Self-aligning ball bearings

With cylindrical bore  
Open or sealed



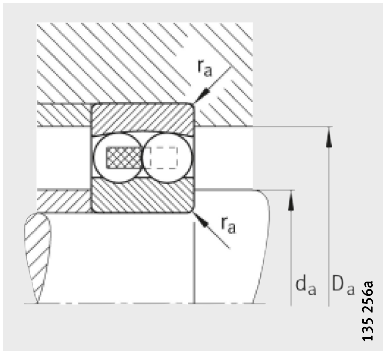
Cylindrical bore



Cylindrical bore  
Seal 2RS

Dimension table · Dimensions in mm

Designation	Mass m ≈kg	Dimensions							
		d	D	B	r min.	D <sub>1</sub> ≈	D <sub>2</sub> ≈	d <sub>1</sub> ≈	d <sub>2</sub> ≈
<b>135-TVH</b>	0,01	<b>5</b>	19	6	0,3	14,5	–	10,1	–
<b>126-TVH</b>	0,009	<b>6</b>	19	6	0,3	14,5	–	10,1	–
<b>127-TVH</b>	0,014	<b>7</b>	22	7	0,3	16,8	–	12,4	–
<b>108-TVH</b>	0,014	<b>8</b>	22	7	0,3	16,8	–	12,4	–
<b>129-TVH</b>	0,022	<b>9</b>	26	8	0,6	20	–	14,5	–
<b>1200-TVH</b>	0,034	<b>10</b>	30	9	0,6	23,5	–	16,3	–
<b>2200-2RS-TVH</b>	0,053	<b>10</b>	30	14	0,6	–	25,9	–	14,1
<b>2200-TVH</b>	0,045	<b>10</b>	30	14	0,6	24,2	–	15,1	–
<b>1201-TVH</b>	0,041	<b>12</b>	32	10	0,6	25,4	–	18,2	–
<b>2201-2RS-TVH</b>	0,058	<b>12</b>	32	14	0,6	–	27,9	–	16,2
<b>2201-TVH</b>	0,05	<b>12</b>	32	14	0,6	26,2	–	17,1	–
<b>1202-TVH</b>	0,048	<b>15</b>	35	11	0,6	29,2	–	20,2	–
<b>2202-2RS-TVH</b>	0,061	<b>15</b>	35	14	0,6	–	31	–	19
<b>2202-TVH</b>	0,057	<b>15</b>	35	14	0,6	29,5	–	20,3	–
<b>2302-TVH</b>	0,111	<b>15</b>	42	17	1	34,8	–	22,5	–
<b>1203-TVH</b>	0,073	<b>17</b>	40	12	0,6	32,3	–	23,7	–
<b>2203-2RS-TVH</b>	0,098	<b>17</b>	40	16	0,6	–	34,3	–	21,7
<b>2203-TVH</b>	0,054	<b>17</b>	40	16	0,6	34,1	–	23,9	–
<b>1303-TVH</b>	0,065	<b>17</b>	47	14	1	37,3	–	26,7	–
<b>2303-2RS-TVH</b>	0,175	<b>17</b>	47	19	1	–	40,3	–	23,9
<b>2303-TVH</b>	0,155	<b>17</b>	47	19	1	37,3	–	26,2	–



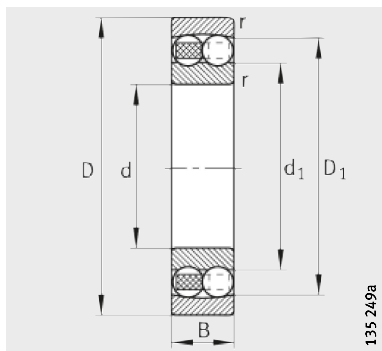
Mounting dimensions



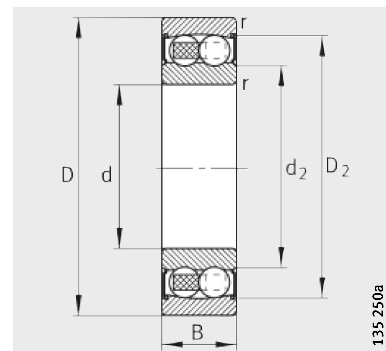
Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
d <sub>a</sub>	D <sub>a</sub>	r <sub>a</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
7,4	16,6	0,3	2 600	475	0,35	1,82	2,82	1,91	29,5	36 000	34 500
8,4	16,6	0,3	2 600	475	0,35	1,82	2,82	1,91	29,5	36 000	41 500
9,4	19,6	0,3	2 750	560	0,33	1,92	2,97	2,01	34,5	36 000	36 000
10,6	19,4	0,3	2 750	560	0,33	1,92	2,97	2,01	34,5	36 000	–
13,2	21,8	0,6	3 950	800	0,32	1,95	3,01	2,04	50	32 000	32 500
14,2	25,8	0,6	5 700	1 180	0,32	1,95	3,02	2,05	73	30 000	30 000
14,2	25,8	0,6	5 700	1 180	0,32	1,95	3,02	2,05	73	18 000	–
14,2	25,8	0,6	8 800	1 730	0,58	1,09	1,69	1,14	107	28 000	29 000
16,2	27,8	0,6	5 700	1 260	0,37	1,69	2,62	1,77	78	30 000	29 000
16,2	27,8	0,6	5 700	1 260	0,37	1,69	2,62	1,77	78	17 000	–
16,2	27,8	0,6	9 400	1 920	0,53	1,2	1,85	1,25	120	26 000	26 000
19,2	30,8	0,6	7 700	1 730	0,34	1,86	2,88	1,95	108	26 000	26 000
19,2	30,8	0,6	7 700	1 730	0,34	1,86	2,88	1,95	108	15 000	–
19,2	30,8	0,6	9 600	2 080	0,46	1,37	2,13	1,44	130	24 000	21 900
20,6	36,4	1	17 000	3 700	0,51	1,23	1,91	1,29	232	18 000	18 600
21,2	35,8	0,6	8 100	2 000	0,33	1,93	2,99	2,03	124	22 000	23 600
21,2	35,8	0,6	8 100	2 000	0,33	1,93	2,99	2,03	124	14 000	–
21,2	35,8	0,6	11 800	2 750	0,46	1,37	2,12	1,43	171	19 000	19 300
22,6	41,4	1	12 900	3 150	0,32	1,94	3	2,03	197	18 000	18 500
22,6	41,4	1	12 900	3 150	0,32	1,94	3	2,03	197	11 000	–
22,6	41,4	1	13 900	3 150	0,53	1,19	1,85	1,25	197	17 000	16 900

# Self-aligning ball bearings

With cylindrical or tapered bore  
Open or sealed



Cylindrical bore

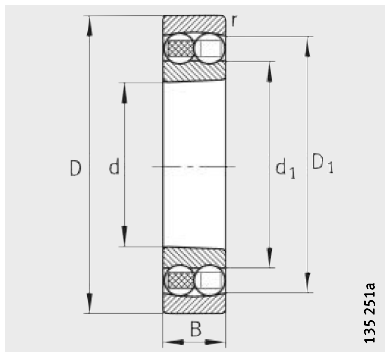


Cylindrical bore  
Seal 2RS

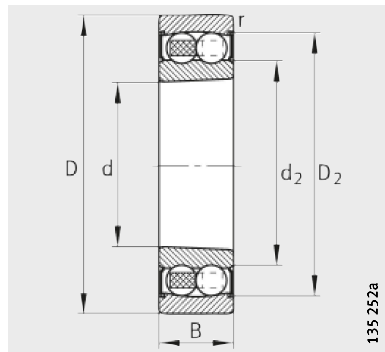
**Dimension table** (continued) · Dimensions in mm

Designation	Mass m ≈kg	Dimensions							
		d	D	B	r min.	D <sub>1</sub> ≈	D <sub>2</sub> ≈	d <sub>1</sub> ≈	d <sub>2</sub> ≈
<b>1204-K-TVH-C3</b>	0,116	<b>20</b>	47	14	1	38,1	–	29,2	–
<b>1204-TVH</b>	0,118	<b>20</b>	47	14	1	38,1	–	29,2	–
<b>2204-2RS-TVH</b>	0,151	<b>20</b>	47	18	1	–	41,7	–	25,9
<b>2204-TVH</b>	0,134	<b>20</b>	47	18	1	39,5	–	28	–
<b>1304-TVH</b>	0,163	<b>20</b>	52	15	1,1	41,9	–	31,6	–
<b>2304-2RS-TVH</b>	0,23	<b>20</b>	52	21	1,1	–	45,2	–	27,2
<b>2304-TVH</b>	0,206	<b>20</b>	52	21	1,1	41,5	–	29,1	–
<b>1205-K-TVH-C3</b>	0,135	<b>25</b>	52	15	1	43,9	–	33,3	–
<b>1205-TVH</b>	0,138	<b>25</b>	52	15	1	43,9	–	33,3	–
<b>2205-2RS-TVH</b>	0,161	<b>25</b>	52	18	1	–	46,3	–	30,7
<b>2205-K-2RS-TVH-C3</b>	0,157	<b>25</b>	52	18	1	–	46,3	–	30,7
<b>2205-K-TVH-C3</b>	0,152	<b>25</b>	52	18	1	44,7	–	32,3	–
<b>2205-TVH</b>	0,156	<b>25</b>	52	18	1	44,7	–	32,3	–
<b>1305-K-TVH-C3</b>	0,254	<b>25</b>	62	17	1,1	50,8	–	38,1	–
<b>1305-TVH</b>	0,258	<b>25</b>	62	17	1,1	50,8	–	38,1	–
<b>2305-2RS-TVH</b>	0,367	<b>25</b>	62	24	1,1	–	53,2	–	33,5
<b>2305-K-TVH-C3</b>	0,328	<b>25</b>	62	24	1,1	50,1	–	35,5	–
<b>2305-TVH</b>	0,335	<b>25</b>	62	24	1,1	50,1	–	35,5	–
<b>1206-K-TVH-C3</b>	0,217	<b>30</b>	62	16	1	51,9	–	40,1	–
<b>1206-TVH</b>	0,221	<b>30</b>	62	16	1	51,9	–	40,1	–
<b>2206-2RS-TVH</b>	0,274	<b>30</b>	62	20	1	–	54,3	–	37,3
<b>2206-K-2RS-TVH-C3</b>	0,268	<b>30</b>	62	20	1	–	54,3	–	37,3
<b>2206-K-TVH-C3</b>	0,246	<b>30</b>	62	20	1	54	–	38,5	–
<b>2206-TVH</b>	0,252	<b>30</b>	62	20	1	54	–	38,5	–
<b>1306-K-TVH-C3</b>	0,379	<b>30</b>	72	19	1,1	59,4	–	45	–
<b>1306-TVH</b>	0,384	<b>30</b>	72	19	1,1	59,4	–	45	–
<b>2306-2RS-TVH</b>	0,554	<b>30</b>	72	27	1,1	–	63	–	40,6
<b>2306-K-TVH-C3</b>	0,476	<b>30</b>	72	27	1,1	59,3	–	41,5	–
<b>2306-TVH</b>	0,488	<b>30</b>	72	27	1,1	59,3	–	41,5	–

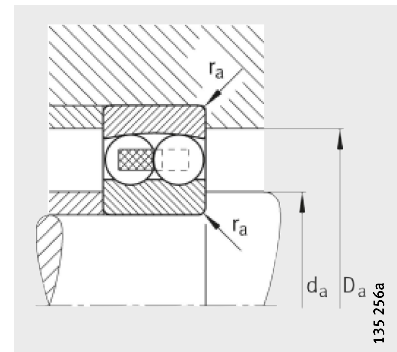




Tapered bore  
K = taper 1:12



Tapered bore  
K = taper 1:12  
Seal 2RS



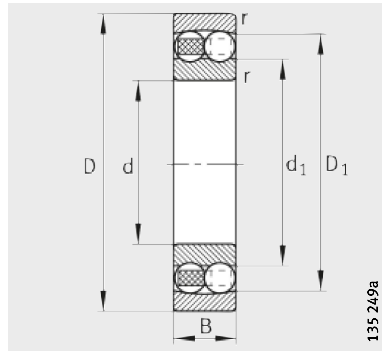
Mounting dimensions

Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
da	Da	ra	dyn. Cr	stat. C0r	e	Y1	Y2	Y0	Cur	nG	nB
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
25,6	41,4	1	10 100	2 600	0,28	2,24	3,46	2,34	161	18 000	20 700
25,6	41,4	1	10 100	2 600	0,28	2,24	3,46	2,34	161	18 000	20 700
25,6	41,4	1	10 100	2 600	0,28	2,24	3,46	2,34	161	11 000	–
25,6	41,4	1	14 700	3 500	0,44	1,45	2,24	1,51	219	17 000	17 400
27	45	1	12 700	3 300	0,29	2,17	3,35	2,27	206	16 000	16 100
27	45	1	12 700	3 300	0,29	2,17	3,35	2,27	206	10 000	–
27	45	1	17 600	4 250	0,51	1,23	1,9	1,29	265	16 000	16 400
30,6	46,4	1	12 300	3 250	0,27	2,37	3,66	2,48	203	16 000	18 100
30,6	46,4	1	12 300	3 250	0,27	2,37	3,66	2,48	203	16 000	18 100
30,6	46,4	1	12 300	3 250	0,27	2,37	3,66	2,48	203	9 500	–
30,6	46,4	1	12 300	3 250	0,27	2,37	3,66	2,48	203	9 500	–
30,6	46,4	1	17 300	4 400	0,35	1,78	2,75	1,86	275	15 000	14 900
30,6	46,4	1	17 300	4 400	0,35	1,78	2,75	1,86	275	15 000	14 900
32	55	1	18 300	4 950	0,28	2,29	3,54	2,4	310	14 000	13 900
32	55	1	18 300	4 950	0,28	2,29	3,54	2,4	310	14 000	13 900
32	55	1	18 300	4 950	0,28	2,29	3,54	2,4	310	8 000	–
32	55	1	25 000	6 500	0,48	1,32	2,04	1,38	405	13 000	14 100
32	55	1	25 000	6 500	0,48	1,32	2,04	1,38	405	13 000	14 100
35,6	56,4	1	15 900	4 600	0,25	2,53	3,91	2,65	285	14 000	15 400
35,6	56,4	1	15 900	4 600	0,25	2,53	3,91	2,65	285	14 000	15 400
35,6	56,4	1	15 900	4 600	0,25	2,53	3,91	2,65	285	8 000	–
35,6	56,4	1	15 900	4 600	0,25	2,53	3,91	2,65	285	8 000	–
35,6	56,4	1	26 000	6 900	0,3	2,13	3,29	2,23	430	12 000	12 700
35,6	56,4	1	26 000	6 900	0,3	2,13	3,29	2,23	430	12 000	12 700
37	65	1	21 700	6 300	0,26	2,39	3,71	2,51	390	11 000	12 200
37	65	1	21 700	6 300	0,26	2,39	3,71	2,51	390	11 000	12 200
37	65	1	21 700	6 300	0,26	2,39	3,71	2,51	390	6 700	–
37	65	1	32 500	8 700	0,45	1,4	2,17	1,47	540	10 000	12 300
37	65	1	32 500	8 700	0,45	1,4	2,17	1,47	540	10 000	12 300

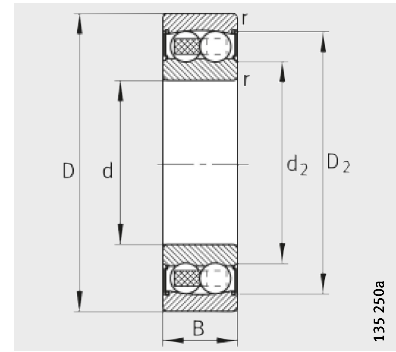


# Self-aligning ball bearings

With cylindrical or tapered bore  
Open or sealed



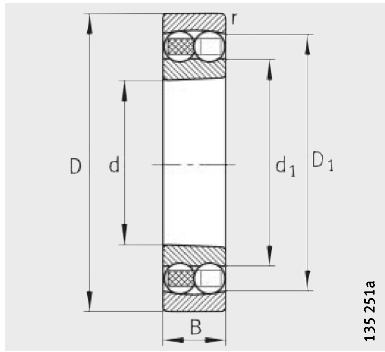
Cylindrical bore



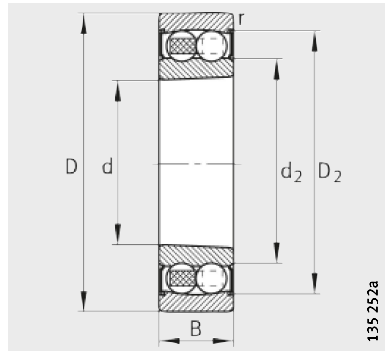
Cylindrical bore  
Seal 2RS

Dimension table (continued) · Dimensions in mm

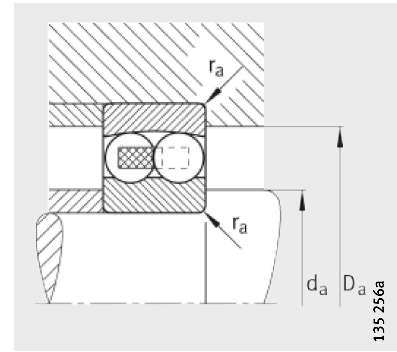
Designation	Mass m ≈kg	Dimensions							
		d	D	B	r min.	D <sub>1</sub> ≈	D <sub>2</sub> ≈	d <sub>1</sub> ≈	d <sub>2</sub> ≈
1207-K-TVH-C3	0,319	35	72	17	1,1	59,6	–	47,7	–
1207-TVH	0,324	35	72	17	1,1	59,6	–	47,7	–
2207-2RS-TVH	0,442	35	72	23	1,1	–	64,3	–	43,5
2207-K-2RS-TVH-C3	0,432	35	72	23	1,1	–	64,3	–	43,5
2207-K-TVH-C3	0,38	35	72	23	1,1	62,9	–	45,7	–
2207-TVH	0,389	35	72	23	1,1	62,9	–	45,7	–
1307-K-TVH-C3	0,5	35	80	21	1,5	67,5	–	51,3	–
1307-TVH	0,507	35	80	21	1,5	67,5	–	51,3	–
2307-2RS-TVH	0,744	35	80	31	1,5	–	69,1	–	44,9
2307-K-TVH-C3	0,96	35	80	31	1,5	66,8	–	46,9	–
2307-TVH	0,975	35	80	31	1,5	66,8	–	46,9	–
1208-K-TVH-C3	0,408	40	80	18	1,1	67,8	–	54	–
1208-TVH	0,414	40	80	18	1,1	67,8	–	54	–
2208-2RS-TVH	0,528	40	80	23	1,1	–	71,1	–	49,2
2208-K-2RS-TVH-C3	0,517	40	80	23	1,1	–	71,1	–	49,2
2208-K-TVH-C3	0,465	40	80	23	1,1	70,7	–	52,5	–
2208-TVH	0,476	40	80	23	1,1	70,7	–	52,5	–
1308-K-TVH-C3	0,698	40	90	23	1,5	75,3	–	57,8	–
1308-TVH	0,708	40	90	23	1,5	75,3	–	57,8	–
2308-2RS-TVH	1,01	40	90	33	1,5	–	78	–	51
2308-K-TVH-C3	0,899	40	90	33	1,5	75	–	53,7	–
2308-TVH	0,922	40	90	33	1,5	75	–	53,7	–
1209-K-TVH-C3	0,454	45	85	19	1,1	72,7	–	57,7	–
1209-TVH	0,462	45	85	19	1,1	72,7	–	57,7	–
2209-2RS-TVH	0,548	45	85	23	1,1	–	75,4	–	53,8
2209-K-2RS-TVH-C3	0,535	45	85	23	1,1	–	75,4	–	53,8
2209-K-TVH-C3	0,505	45	85	23	1,1	75,9	–	59	–
2209-TVH	0,517	45	85	23	1,1	75,9	–	59	–
1309-K-TVH-C3	0,939	45	100	25	1,5	84,1	–	64,1	–
1309-TVH	0,953	45	100	25	1,5	84,1	–	64,1	–
2309-2RS-TVH	1,34	45	100	36	1,5	–	86,6	–	57,5
2309-K-TVH-C3	1,19	45	100	36	1,5	84,2	–	60,1	–
2309-TVH	1,22	45	100	36	1,5	84,2	–	60,1	–



Tapered bore  
K = taper 1:12

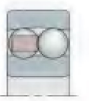


Tapered bore  
K = taper 1:12  
Seal 2RS



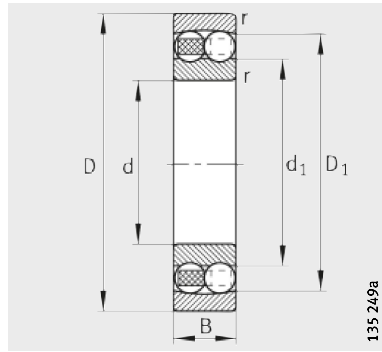
Mounting dimensions

Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
da	Da	ra	dyn. Cr	stat. C0r	e	Y1	Y2	Y0	Cur	nG	nB
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
42	65	1	16 000	5 100	0,22	2,8	4,34	2,94	315	12 000	13 200
42	65	1	16 000	5 100	0,22	2,8	4,34	2,94	315	12 000	13 200
42	65	1	16 000	5 100	0,22	2,8	4,34	2,94	315	7 000	–
42	65	1	16 000	5 100	0,22	2,8	4,34	2,94	315	7 000	–
42	65	1	33 000	8 900	0,3	2,13	3,29	2,23	560	9 500	11 500
42	65	1	33 000	8 900	0,3	2,13	3,29	2,23	560	9 500	11 500
44	71	1,5	25 500	7 800	0,26	2,47	3,82	2,59	485	9 500	10 900
44	71	1,5	25 500	7 800	0,26	2,47	3,82	2,59	485	9 500	10 900
44	71	1,5	25 500	7 800	0,26	2,47	3,82	2,59	485	6 000	–
44	71	1,5	40 500	11 100	0,47	1,35	2,1	1,42	690	9 000	11 600
44	71	1,5	40 500	11 100	0,47	1,35	2,1	1,42	690	9 000	11 600
47	73	1	19 400	6 500	0,22	2,9	4,49	3,04	400	10 000	11 600
47	73	1	19 400	6 500	0,22	2,9	4,49	3,04	400	10 000	11 600
47	73	1	19 400	6 500	0,22	2,9	4,49	3,04	400	6 300	–
47	73	1	19 400	6 500	0,22	2,9	4,49	3,04	400	6 300	–
47	73	1	32 500	9 400	0,26	2,43	3,76	2,54	580	9 000	9 700
47	73	1	32 500	9 400	0,26	2,43	3,76	2,54	580	9 000	9 700
49	81	1,5	30 000	9 600	0,25	2,52	3,9	2,64	600	8 500	10 000
49	81	1,5	30 000	9 600	0,25	2,52	3,9	2,64	600	8 500	10 000
49	81	1,5	30 000	9 600	0,25	2,52	3,9	2,64	600	5 300	–
49	81	1,5	46 000	13 400	0,43	1,45	2,25	1,52	830	8 000	10 300
49	81	1,5	46 000	13 400	0,43	1,45	2,25	1,52	830	8 000	10 300
52	78	1	22 000	7 300	0,21	3,04	4,7	3,18	455	9 000	11 100
52	78	1	22 000	7 300	0,21	3,04	4,7	3,18	455	9 000	11 100
52	78	1	22 000	7 300	0,21	3,04	4,7	3,18	455	5 600	–
52	78	1	22 000	7 300	0,21	3,04	4,7	3,18	455	5 600	–
52	78	1	28 500	8 900	0,26	2,43	3,76	2,54	550	8 500	8 700
52	78	1	28 500	8 900	0,26	2,43	3,76	2,54	550	8 500	8 700
54	91	1,5	38 500	12 600	0,25	2,5	3,87	2,62	780	7 500	9 300
54	91	1,5	38 500	12 600	0,25	2,5	3,87	2,62	780	7 500	9 300
54	91	1,5	38 500	12 600	0,25	2,5	3,87	2,62	780	4 800	–
54	91	1,5	55 000	16 500	0,43	1,48	2,29	1,55	1 030	7 000	9 400
54	91	1,5	55 000	16 500	0,43	1,48	2,29	1,55	1 030	7 000	9 400

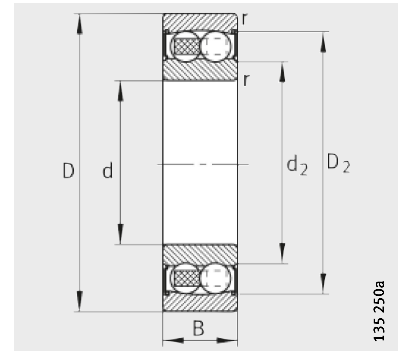


# Self-aligning ball bearings

With cylindrical or tapered bore  
Open or sealed



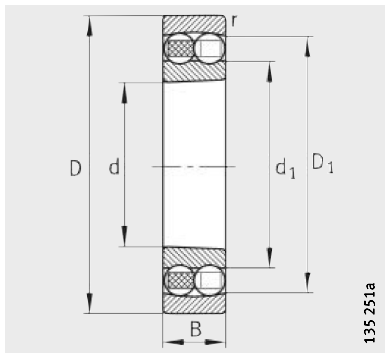
Cylindrical bore



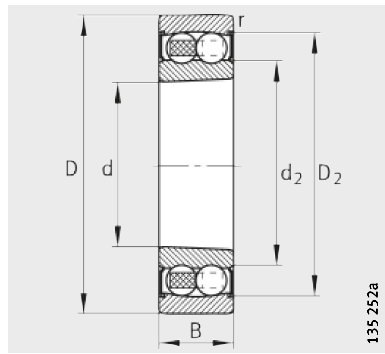
Cylindrical bore  
Seal 2RS

**Dimension table** (continued) · Dimensions in mm

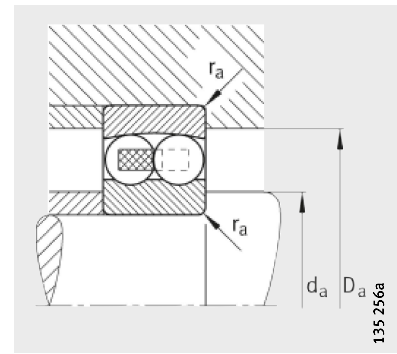
Designation	Mass m ≈kg	Dimensions							
		d	D	B	r min.	D <sub>1</sub> ≈	D <sub>2</sub> ≈	d <sub>1</sub> ≈	d <sub>2</sub> ≈
<b>1210-K-TVH-C3</b>	0,516	<b>50</b>	90	20	1,1	77,6	–	62,7	–
<b>1210-TVH</b>	0,526	<b>50</b>	90	20	1,1	77,6	–	62,7	–
<b>2210-2RS-TVH</b>	0,606	<b>50</b>	90	23	1,1	–	80	–	60,6
<b>2210-K-2RS-TVH-C3</b>	0,593	<b>50</b>	90	23	1,1	–	80	–	60,6
<b>2210-K-TVH-C3</b>	0,543	<b>50</b>	90	23	1,1	81	–	64	–
<b>2210-TVH</b>	0,556	<b>50</b>	90	23	1,1	81	–	64	–
<b>1310-K-TVH-C3</b>	1,52	<b>50</b>	110	27	2	91,9	–	71,2	–
<b>1310-TVH</b>	1,54	<b>50</b>	110	27	2	91,9	–	71,2	–
<b>2310-2RS-TVH</b>	1,82	<b>50</b>	110	40	2	–	96	–	65,9
<b>2310-TVH</b>	1,64	<b>50</b>	110	40	2	92	–	66,9	–
<b>1211-K-TVH-C3</b>	0,682	<b>55</b>	100	21	1,5	86,9	–	69,5	–
<b>1211-TVH</b>	0,693	<b>55</b>	100	21	1,5	86,9	–	69,5	–
<b>2211-2RS-TVH</b>	0,825	<b>55</b>	100	25	1,5	–	88,9	–	68
<b>2211-K-2RS-TVH-C3</b>	0,808	<b>55</b>	100	25	1,5	–	88,9	–	68
<b>2211-K-TVH-C3</b>	0,73	<b>55</b>	100	25	1,5	90	–	69,6	–
<b>2211-TVH</b>	0,746	<b>55</b>	100	25	1,5	90	–	69,6	–
<b>1311-K-TVH-C3</b>	1,55	<b>55</b>	120	29	2	101,6	–	78	–
<b>1311-TVH</b>	1,57	<b>55</b>	120	29	2	101,6	–	78	–
<b>2311-2RS-TVH</b>	2,28	<b>55</b>	120	43	2	–	107	–	70,5
<b>2311-K-TVH-C3</b>	2,02	<b>55</b>	120	43	2	100,7	–	71,7	–
<b>2311-TVH</b>	2,07	<b>55</b>	120	43	2	100,7	–	71,7	–



Tapered bore  
K = taper 1:12

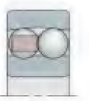


Tapered bore  
K = taper 1:12  
Seal 2RS



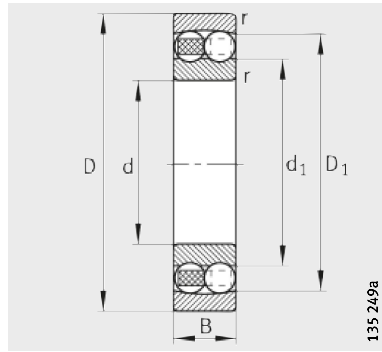
Mounting dimensions

Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
da	Da	ra	dyn. Cr	stat. C0r	e	Y1	Y2	Y0	Cur	nG	nB
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
57	83	1	22 900	8 000	0,2	3,17	4,9	3,32	500	8 500	10 500
57	83	1	22 900	8 000	0,2	3,17	4,9	3,32	500	8 500	10 500
57	83	1	22 900	8 000	0,2	3,17	4,9	3,32	500	5 300	–
57	83	1	22 900	8 000	0,2	3,17	4,9	3,32	500	5 300	–
57	83	1	28 500	9 400	0,24	2,61	4,05	2,74	580	8 000	8 000
57	83	1	28 500	9 400	0,24	2,61	4,05	2,74	580	8 000	8 000
61	99	2	42 000	14 100	0,24	2,6	4,03	2,73	880	6 700	8 700
61	99	2	42 000	14 100	0,24	2,6	4,03	2,73	880	6 700	8 700
61	99	2	42 000	14 100	0,24	2,6	4,03	2,73	880	4 300	–
61	99	2	66 000	19 900	0,43	1,47	2,27	1,54	1 240	6 300	9 000
64	91	1,5	27 000	9 900	0,19	3,31	5,12	3,47	620	7 500	9 300
64	91	1,5	27 000	9 900	0,19	3,31	5,12	3,47	620	7 500	9 300
64	91	1,5	27 000	9 900	0,19	3,31	5,12	3,47	620	4 800	–
64	91	1,5	27 000	9 900	0,19	3,31	5,12	3,47	620	4 800	–
64	91	1,5	39 000	12 400	0,22	2,92	4,52	3,06	770	6 700	7 500
64	91	1,5	39 000	12 400	0,22	2,92	4,52	3,06	770	6 700	7 500
66	109	2	52 000	17 700	0,24	2,66	4,12	2,79	1 100	6 000	8 100
66	109	2	52 000	17 700	0,24	2,66	4,12	2,79	1 100	6 000	8 100
66	109	2	52 000	17 700	0,24	2,66	4,12	2,79	1 100	3 800	–
66	109	2	77 000	23 800	0,42	1,51	2,33	1,58	1 480	5 600	8 500
66	109	2	77 000	23 800	0,42	1,51	2,33	1,58	1 480	5 600	8 500

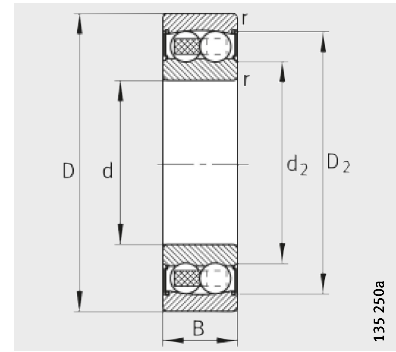


# Self-aligning ball bearings

With cylindrical or tapered bore  
Open or sealed



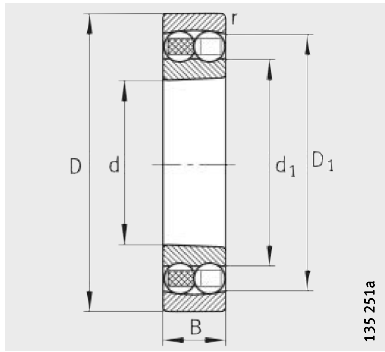
Cylindrical bore



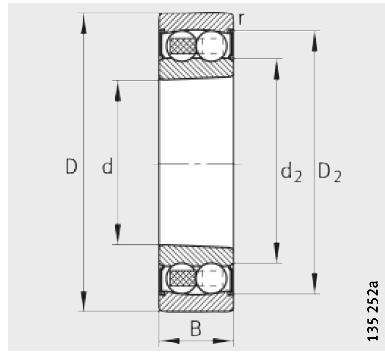
Cylindrical bore  
Seal 2RS

Dimension table (continued) · Dimensions in mm

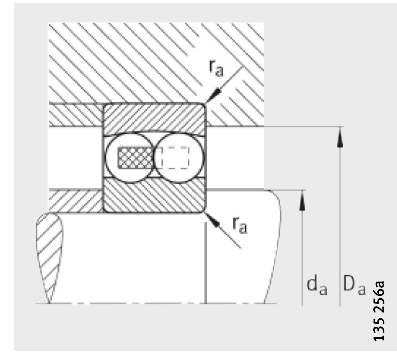
Designation	Mass m ≈kg	Dimensions							
		d	D	B	r min.	D <sub>1</sub> ≈	D <sub>2</sub> ≈	d <sub>1</sub> ≈	d <sub>2</sub> ≈
1212-K-TVH-C3	0,88	60	110	22	1,5	95,8	–	78	–
1212-TVH	0,894	60	110	22	1,5	95,8	–	78	–
2212-2RS-TVH	1,13	60	110	28	1,5	–	98,5	–	70,4
2212-K-2RS-TVH-C3	1,13	60	110	28	1,5	–	98,5	–	70,4
2212-K-TVH-C3	1,03	60	110	28	1,5	98,8	–	76,6	–
2212-TVH	1,06	60	110	28	1,5	98,8	–	76,6	–
1312-K-TVH-C3	1,94	60	130	31	2,1	112,2	–	87	–
1312-TVH	1,97	60	130	31	2,1	112,2	–	87	–
2312-K-TVH-C3	2,52	60	130	46	2,1	109,1	–	77	–
2312-TVH	2,58	60	130	46	2,1	109,1	–	77	–
1213-K-TVH-C3	1,13	65	120	23	1,5	103,2	–	85,2	–
1213-TVH	1,14	65	120	23	1,5	103,2	–	85,2	–
2213-2RS-TVH	1,53	65	120	31	1,5	–	106,6	–	78
2213-K-2RS-TVH-C3	1,5	65	120	31	1,5	–	106,6	–	78
2213-K-TVH-C3	1,33	65	120	31	1,5	107,5	–	82,4	–
2213-TVH	1,36	65	120	31	1,5	107,5	–	82,4	–
1313-K-TVH-C3	2,41	65	140	33	2,1	118,8	–	92,7	–
1313-TVH	2,44	65	140	33	2,1	118,8	–	92,7	–
2313-K-TVH-C3	3,16	65	140	48	2,1	118,9	–	85,6	–
2313-TVH	3,23	65	140	48	2,1	118,9	–	85,6	–
1214-K-TVH-C3	1,23	70	125	24	1,5	106,6	–	87,7	–
1214-TVH	1,25	70	125	24	1,5	106,6	–	87,7	–
2214-2RS-TVH	1,59	70	125	31	1,5	–	111,4	–	84,7
2214-M	1,69	70	125	31	1,5	108,9	–	87,6	–
1314-M	3,22	70	150	35	2,1	126,4	–	97,7	–
2314-M	4,38	70	150	51	2,1	127,2	–	91,5	–
1215-K-TVH-C3	1,32	75	130	25	1,5	114,1	–	93,7	–
1215-TVH	1,34	75	130	25	1,5	114,1	–	93,7	–
2215-K-TVH-C3	1,6	75	130	31	1,5	114,3	–	93,3	–
2215-TVH	1,6	75	130	31	1,5	114,3	–	93,3	–
1315-K-M-C3	3,81	75	160	37	2,1	134,8	–	104,4	–
1315-M	3,86	75	160	37	2,1	134,8	–	104,4	–
2315-K-M-C3	5,21	75	160	55	2,1	136,7	–	100,5	–
2315-M	5,33	75	160	55	2,1	136,7	–	100,5	–



Tapered bore  
K = taper 1:12

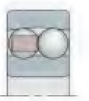


Tapered bore  
K = taper 1:12  
Seal 2RS



Mounting dimensions

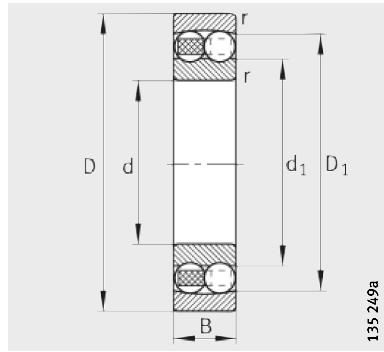
Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
da	Da	ra	dyn. Cr	stat. C0r	e	Y1	Y2	Y0	Cur	nG	nB
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
69	101	1,5	30 500	11 400	0,18	3,47	5,37	3,64	710	6 700	8 500
69	101	1,5	30 500	11 400	0,18	3,47	5,37	3,64	710	6 700	8 500
69	101	1,5	30 500	11 400	0,18	3,47	5,37	3,64	710	4 300	–
69	101	1,5	30 500	11 400	0,18	3,47	5,37	3,64	710	4 300	–
69	101	1,5	48 000	16 300	0,23	2,69	4,16	2,82	1 020	6 300	7 100
69	101	1,5	48 000	16 300	0,23	2,69	4,16	2,82	1 020	6 300	7 100
72	118	2,1	58 000	20 600	0,23	2,77	4,28	2,9	1 280	5 300	7 300
72	118	2,1	58 000	20 600	0,23	2,77	4,28	2,9	1 280	5 300	7 300
72	118	2,1	89 000	28 000	0,41	1,55	2,4	1,62	1 740	5 000	8 000
72	118	2,1	89 000	28 000	0,41	1,55	2,4	1,62	1 740	5 000	8 000
74	111	1,5	31 000	12 400	0,18	3,57	5,52	3,74	770	6 300	7 900
74	111	1,5	31 000	12 400	0,18	3,57	5,52	3,74	770	6 300	7 900
74	111	1,5	31 000	12 400	0,18	3,57	5,52	3,74	770	4 000	–
74	111	1,5	31 000	12 400	0,18	3,57	5,52	3,74	770	4 000	–
74	111	1,5	58 000	19 000	0,23	2,78	4,31	2,92	1 190	5 300	6 900
74	111	1,5	58 000	19 000	0,23	2,78	4,31	2,92	1 190	5 300	6 900
77	128	2,1	63 000	22 700	0,23	2,75	4,26	2,88	1 380	5 000	7 100
77	128	2,1	63 000	22 700	0,23	2,75	4,26	2,88	1 380	5 000	7 100
77	128	2,1	98 000	32 000	0,39	1,62	2,51	1,7	1 980	4 800	7 300
77	128	2,1	98 000	32 000	0,39	1,62	2,51	1,7	1 980	4 800	7 300
79	116	1,5	35 000	13 700	0,19	3,36	5,21	3,52	850	6 000	7 900
79	116	1,5	35 000	13 700	0,19	3,36	5,21	3,52	850	6 000	7 900
79	116	1,5	35 000	13 700	0,19	3,36	5,21	3,52	850	3 800	–
79	116	1,5	44 000	16 900	0,27	2,34	3,62	2,45	1 050	8 500	6 600
82	138	2,1	75 000	27 500	0,23	2,79	4,32	2,93	1 620	7 000	6 900
82	138	2,1	112 000	37 000	0,38	1,65	2,55	1,73	2 210	6 300	6 900
84	121	1,5	39 000	15 500	0,19	3,32	5,15	3,48	950	5 600	7 400
84	121	1,5	39 000	15 500	0,19	3,32	5,15	3,48	950	5 600	7 400
84	121	1,5	44 500	17 600	0,26	2,47	3,82	2,59	1 080	5 300	6 200
84	121	1,5	44 500	17 600	0,26	2,47	3,82	2,59	1 080	5 300	6 200
87	148	2,1	80 000	29 500	0,23	2,77	4,29	2,9	1 690	6 300	6 600
87	148	2,1	80 000	29 500	0,23	2,77	4,29	2,9	1 690	6 300	6 600
87	148	2,1	124 000	42 000	0,38	1,64	2,54	1,72	2 420	6 000	6 700
87	148	2,1	124 000	42 000	0,38	1,64	2,54	1,72	2 420	6 000	6 700



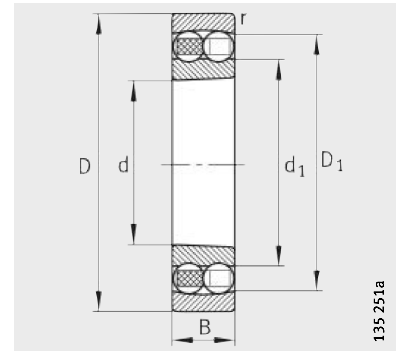


# Self-aligning ball bearings

With cylindrical or tapered bore  
Open



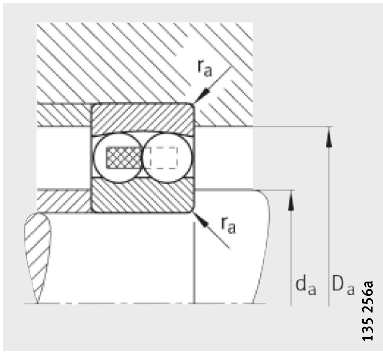
Cylindrical bore



Tapered bore  
K = taper 1:12

**Dimension table** (continued) · Dimensions in mm

Designation	Mass m ≈kg	Dimensions					
		d	D	B	r min.	D <sub>1</sub> ≈	d <sub>1</sub> ≈
1216-K-TVH-C3	1,62	80	140	26	2	122,1	102
1216-TVH	1,65	80	140	26	2	122,1	102
2216-K-TVH-C3	1,97	80	140	33	2	120,8	99,5
2216-TVH	2,01	80	140	33	2	120,8	99,5
1316-K-M-C3	4,5	80	170	39	2,1	144,3	110,2
1316-M	4,56	80	170	39	2,1	144,3	110,2
2316-K-M-C3	6,18	80	170	58	2,1	144,5	107,6
2316-M	6,31	80	170	58	2,1	144,5	107,6
1217-K-TVH-C3	2,03	85	150	28	2	130,4	107,5
1217-TVH	2,07	85	150	28	2	130,4	107,5
2217-K-M-C3	2,73	85	150	36	2	130	105,2
2217-M	2,79	85	150	36	2	130	105,2
1317-K-M-C3	5,32	85	180	41	3	152	117,2
1317-M	5,39	85	180	41	3	152	117,2
2317-K-M-C3	7,36	85	180	60	3	153,3	114
2317-M	7,35	85	180	60	3	153,3	114
1218-K-TVH-C3	2,48	90	160	30	2	138,7	112,7
1218-TVH	2,52	90	160	30	2	138,7	112,7
2218-K-TVH-C3	3,18	90	160	40	2	139,4	111,5
2218-TVH	3,18	90	160	40	2	139,4	111,5
1318-K-M-C3	6,27	90	190	43	3	159,9	124,4
1318-M	6,35	90	190	43	3	159,9	124,4
2318-K-M-C3	8,6	90	190	64	3	161	115,7
2318-M	8,78	90	190	64	3	161	115,7



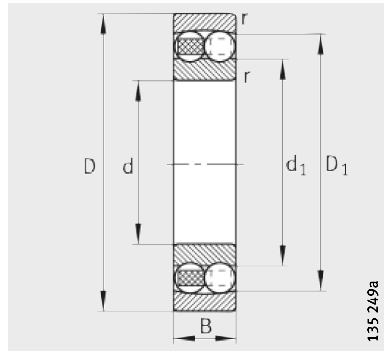
Mounting dimensions



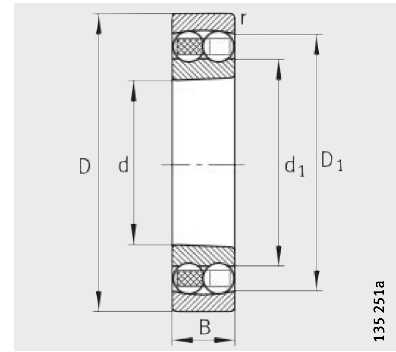
Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
d <sub>a</sub>	D <sub>a</sub>	r <sub>a</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
91	129	2	40 000	16 800	0,16	3,9	6,03	4,08	990	5 000	6 800
91	129	2	40 000	16 800	0,16	3,9	6,03	4,08	990	5 000	6 800
91	129	2	49 500	19 800	0,25	2,48	3,84	2,6	1 180	5 000	6 000
91	129	2	49 500	19 800	0,25	2,48	3,84	2,6	1 180	5 000	6 000
92	158	2,1	89 000	33 000	0,22	2,87	4,44	3	1 810	6 000	6 300
92	158	2,1	89 000	33 000	0,22	2,87	4,44	3	1 810	6 000	6 300
92	158	2,1	139 000	48 500	0,37	1,7	2,62	1,78	2 700	5 600	6 400
92	158	2,1	139 000	48 500	0,37	1,7	2,62	1,78	2 700	5 600	6 400
96	139	2	49 500	20 600	0,17	3,73	5,78	3,91	1 180	4 800	6 700
96	139	2	49 500	20 600	0,17	3,73	5,78	3,91	1 180	4 800	6 700
96	139	2	59 000	23 400	0,26	2,46	3,81	2,58	1 340	7 000	5 800
96	139	2	59 000	23 400	0,26	2,46	3,81	2,58	1 340	7 000	5 800
99	166	2,5	99 000	37 500	0,22	2,88	4,46	3,02	2 010	5 600	6 000
99	166	2,5	99 000	37 500	0,22	2,88	4,46	3,02	2 010	5 600	6 000
99	166	2,5	143 000	51 000	0,37	1,68	2,61	1,76	2 750	5 300	6 100
99	166	2,5	143 000	51 000	0,37	1,68	2,61	1,76	2 750	5 300	6 100
101	149	2	57 000	23 300	0,17	3,74	5,79	3,92	1 300	4 500	6 600
101	149	2	57 000	23 300	0,17	3,74	5,79	3,92	1 300	4 500	6 600
101	149	2	71 000	28 500	0,27	2,33	3,61	2,44	1 580	4 300	5 700
101	149	2	71 000	28 500	0,27	2,33	3,61	2,44	1 580	4 300	5 700
104	176	2,5	109 000	42 500	0,22	2,83	4,38	2,97	2 230	5 300	5 800
104	176	2,5	109 000	42 500	0,22	2,83	4,38	2,97	2 230	5 300	5 800
104	176	2,5	156 000	57 000	0,39	1,63	2,53	1,71	3 000	5 000	5 900
104	176	2,5	156 000	57 000	0,39	1,63	2,53	1,71	3 000	5 000	5 900

# Self-aligning ball bearings

With cylindrical or tapered bore  
Open



Cylindrical bore

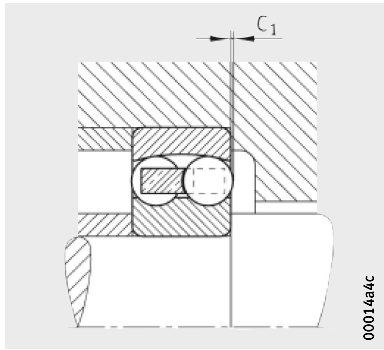


Tapered bore  
K = taper 1:12

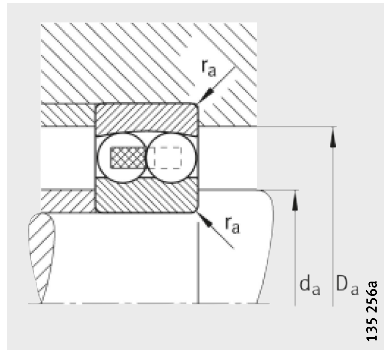
Dimension table (continued) · Dimensions in mm

Designation	Mass m ≈kg	Dimensions						
		d	D	B	r min.	D <sub>1</sub> ≈	d <sub>1</sub> ≈	C <sub>1</sub> <sup>1)</sup>
1219-K-M-C3	3,28	95	170	32	2,1	148,2	120,5	–
1219-M	3,32	95	170	32	2,1	148,2	120,5	–
2219-K-M-C3	4,24	95	170	43	2,1	148,6	118,9	–
2219-M	4,33	95	170	43	2,1	148,6	118,9	–
1319-K-M-C3	7,2	95	200	45	3	170,5	127,7	1,6
1319-M	7,29	95	200	45	3	170,5	127,6	1,6
2319-K-M-C3	9,97	95	200	67	3	168,5	121,6	–
2319-M	10,2	95	200	67	3	168,5	121,6	–
1220-K-M-C3	3,94	100	180	34	2,1	155,2	127,7	–
1220-M	3,99	100	180	34	2,1	155,2	127,7	–
2220-K-M-C3	5,1	100	180	46	2,1	156,9	124,4	–
2220-M	5,21	100	180	46	2,1	156,9	124,4	–
1320-K-M-C3	8,95	100	215	47	3	182,6	135,5	2,4
1320-M	9,06	100	215	47	3	182,6	135,5	2,4
2320-K-M-C3	12,7	100	215	73	3	183	130,8	–
2320-M	12,9	100	215	73	3	183	130,8	–
1221-M	4,75	105	190	36	2,1	164,4	133,9	–
1321-M	10,3	105	225	49	3	191,3	143,2	2,5
1222-K-M-C3	5,49	110	200	38	2,1	173,9	140,7	–
1222-M	5,57	110	200	38	2,1	173,9	140,7	–
2222-K-M-C3	7,27	110	200	53	2,1	174,1	136,9	–
2222-M	7,45	110	200	53	2,1	174,1	136,9	–
1322-K-M-C3	12,2	110	240	50	3	203,2	154,7	2,7
1322-M	12,3	110	240	50	3	203,2	154,5	2,7
2322-K-M-C3	17,5	110	240	80	3	203	145,5	–
2322-M	18,1	110	240	80	3	203	145,5	–
1224-M	7,13	120	215	42	2,1	187,3	149	1,8
1226-M	8,67	130	230	46	3	200,1	161,5	0,6
1228-M	11,2	140	250	50	3	221,2	175	2,7
1230-M	14,6	150	270	54	3	237,9	186,7	3,8

<sup>1)</sup> The projection must be taken into consideration when designing the adjacent construction.

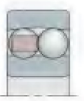


Ball projection  $C_1$



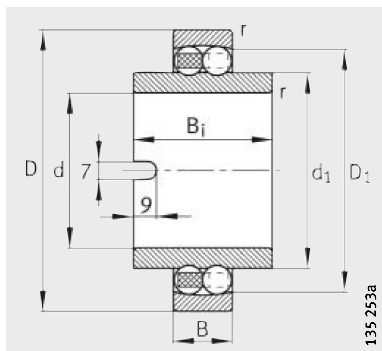
Mounting dimensions

Mounting dimensions			Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
$d_a$	$D_a$	$r_a$	dyn. $C_r$	stat. $C_{0r}$	$e$	$Y_1$	$Y_2$	$Y_0$	$C_{ur}$	$n_G$	$n_B$
min.	max.	max.	N	N					N	min <sup>-1</sup>	min <sup>-1</sup>
107	158	2,1	64 000	27 000	0,17	3,73	5,78	3,91	1 450	6 000	6 200
107	158	2,1	64 000	27 000	0,17	3,73	5,78	3,91	1 450	6 000	6 200
107	158	2,1	84 000	34 000	0,27	2,32	3,59	2,43	1 840	6 000	5 600
107	158	2,1	84 000	34 000	0,27	2,32	3,59	2,43	1 840	6 000	5 600
109	186	2,5	134 000	50 000	0,23	2,73	4,23	2,86	2 550	5 000	5 700
109	186	2,5	134 000	50 000	0,23	2,73	4,23	2,86	2 550	5 000	5 700
109	186	2,5	167 000	63 000	0,38	1,66	2,57	1,74	3 250	4 800	5 600
109	186	2,5	167 000	63 000	0,38	1,66	2,57	1,74	3 250	4 800	5 600
112	168	2,1	70 000	29 500	0,18	3,58	5,53	3,75	1 550	5 600	6 100
112	168	2,1	70 000	29 500	0,18	3,58	5,53	3,75	1 550	5 600	6 100
112	168	2,1	98 000	40 000	0,27	2,33	3,61	2,44	2 120	5 600	5 400
112	168	2,1	98 000	40 000	0,27	2,33	3,61	2,44	2 120	5 600	5 400
114	201	2,5	145 000	57 000	0,24	2,68	4,15	2,81	2 800	4 800	5 400
114	201	2,5	145 000	57 000	0,24	2,68	4,15	2,81	2 800	4 800	5 400
114	201	2,5	196 000	78 000	0,38	1,67	2,58	1,75	3 900	4 500	5 200
114	201	2,5	196 000	78 000	0,38	1,67	2,58	1,75	3 900	4 500	5 200
117	178	2,1	75 000	32 000	0,18	3,54	5,48	3,71	1 640	5 300	5 900
119	211	2,5	158 000	64 000	0,23	2,75	4,25	2,88	3 100	4 500	5 200
122	188	2,1	89 000	38 000	0,17	3,61	5,59	3,78	1 900	5 000	5 700
122	188	2,1	89 000	38 000	0,17	3,61	5,59	3,78	1 900	5 000	5 700
122	188	2,1	126 000	51 000	0,28	2,23	3,45	2,33	2 550	5 000	5 200
122	188	2,1	126 000	51 000	0,28	2,23	3,45	2,33	2 550	5 000	5 200
124	226	2,5	165 000	71 000	0,23	2,79	4,32	2,92	3 300	4 500	4 700
124	226	2,5	165 000	71 000	0,23	2,79	4,32	2,92	3 300	4 500	4 700
124	226	2,5	221 000	94 000	0,37	1,69	2,62	1,77	4 400	4 300	4 600
124	226	2,5	221 000	94 000	0,37	1,69	2,62	1,77	4 400	4 300	4 600
132	203	2,1	121 000	52 000	0,2	3,11	4,81	3,25	2 500	4 800	5 600
144	216	2,5	125 000	55 000	0,19	3,24	5,02	3,4	2 550	4 500	5 400
154	236	2,5	163 000	74 000	0,21	3,05	4,71	3,19	3 300	4 300	4 950
164	256	2,5	180 000	86 000	0,22	2,9	4,49	3,04	3 700	3 800	4 550

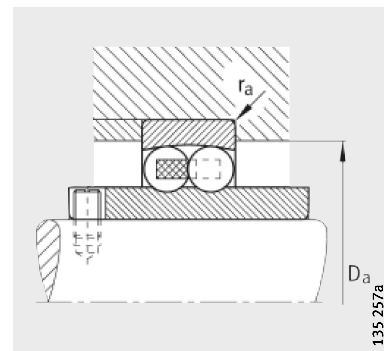


# Self-aligning ball bearings

With extended inner ring



Extended inner ring



Mounting dimensions

Dimension table · Dimensions in mm

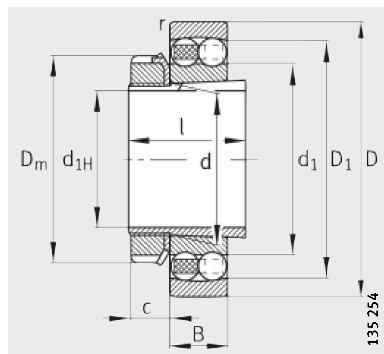
Designation	Mass m ≈kg	Dimensions							Mounting dimensions	
		d	D	B	r	B <sub>i</sub>	D <sub>1</sub>	d <sub>1</sub>	D <sub>a</sub>	r <sub>a</sub>
					min.		≈	≈	max.	max.
<b>11204-TVH</b>	0,085	<b>20</b>	47	14	1	40	38,1	29,2	41,4	1
<b>11205-TVH</b>	0,226	<b>25</b>	52	15	1	44	43,9	33,3	46,4	1
<b>11206-TVH</b>	0,364	<b>30</b>	62	16	1	48	51,9	40,1	56,4	1
<b>11207-TVH</b>	0,554	<b>35</b>	72	17	1,1	52	59,6	47,7	65	1
<b>11208-TVH</b>	0,722	<b>40</b>	80	18	1,1	56	67,8	54	73	1
<b>11209-TVH</b>	0,78	<b>45</b>	85	19	1,1	58	72,7	57,7	78	1
<b>11210-TVH</b>	0,866	<b>50</b>	90	20	1,1	58	77,6	62,7	83	1
<b>11211-TVH</b>	1,13	<b>55</b>	100	21	1,5	60	86,9	69,5	91	1,5
<b>11212-TVH</b>	1,51	<b>60</b>	110	22	1,5	62	95,8	78	101	1,5



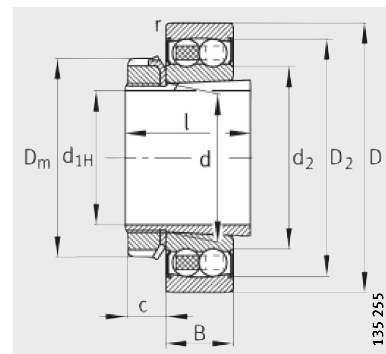
Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed
dyn. $C_r$ N	stat. $C_{0r}$ N	e	$Y_1$	$Y_2$	$Y_0$	$C_{ur}$ N	$n_G$ $\text{min}^{-1}$
10 100	2 600	0,28	2,24	3,46	2,34	161	13 000
12 300	3 250	0,27	2,37	3,66	2,48	203	10 000
15 900	4 600	0,25	2,53	3,91	2,65	285	8 500
16 000	5 100	0,22	2,8	4,34	2,94	315	7 500
19 400	6 500	0,22	2,9	4,49	3,04	400	6 700
22 000	7 300	0,21	3,04	4,7	3,18	455	6 000
22 900	8 000	0,2	3,17	4,9	3,32	500	5 600
27 000	9 900	0,19	3,31	5,12	3,47	620	5 000
30 500	11 400	0,18	3,47	5,37	3,64	710	4 500

# Self-aligning ball bearings

With adapter sleeve  
Open or sealed



Open

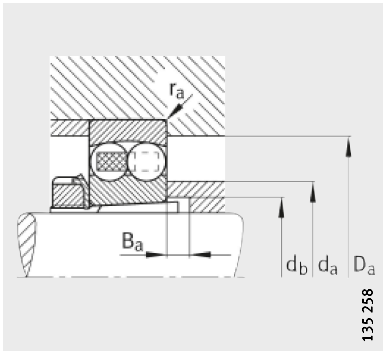


Seal 2RS

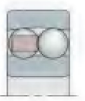
Dimension table · Dimensions in mm

Designation		Mass m		Dimensions									
Bearing	Adapter sleeve	Bearing	Adapter sleeve	d <sub>1H</sub>	d	D	B	r	D <sub>1</sub>	D <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	D <sub>m</sub>
		≈kg	≈kg					min.	≈	≈	≈	≈	
1204-K-TVH-C3	H204	0,116	0,041	17	20	47	14	1	38,1	–	29,2	–	32
1205-K-TVH-C3	H205	0,135	0,069	20	25	52	15	1	43,9	–	33,3	–	38
2205-K-2RS-TVH-C3	H305	0,157	0,075	20	25	52	18	1	–	46,3	–	30,7	38
2205-K-TVH-C3	H305	0,152	0,075	20	25	52	18	1	44,7	–	32,3	–	38
1305-K-TVH-C3	H305	0,254	0,075	20	25	62	17	1,1	50,8	–	38,1	–	38
2305-K-TVH-C3	H2305	0,328	0,085	20	25	62	24	1,1	50,1	–	35,5	–	38
1206-K-TVH-C3	H206	0,217	0,091	25	30	62	16	1	51,9	–	40,1	–	45
2206-K-2RS-TVH-C3	H306	0,268	0,099	25	30	62	20	1	–	54,3	–	37,3	45
2206-K-TVH-C3	H306	0,246	0,099	25	30	62	20	1	54	–	38,5	–	45
1306-K-TVH-C3	H306	0,379	0,099	25	30	72	19	1,1	59,4	–	45	–	45
2306-K-TVH-C3	H2306	0,476	0,116	25	30	72	27	1,1	59,3	–	41,5	–	45
1207-K-TVH-C3	H207	0,319	0,129	30	35	72	17	1,1	59,6	–	47,7	–	57
2207-K-2RS-TVH-C3	H307	0,432	0,147	30	35	72	23	1,1	–	64,3	–	43,5	57
2207-K-TVH-C3	H307	0,38	0,147	30	35	72	23	1,1	62,9	–	45,7	–	57
1307-K-TVH-C3	H307	0,5	0,147	30	35	80	21	1,5	67,5	–	51,3	–	57
2307-K-TVH-C3	H2307	0,96	0,171	30	35	80	31	1,5	66,8	–	46,9	–	52
1208-K-TVH-C3	H208	0,408	0,17	35	40	80	18	1,1	67,8	–	54	–	58
2208-K-2RS-TVH-C3	H308	0,517	0,185	35	40	80	23	1,1	–	71,1	–	49,2	58
2208-K-TVH-C3	H308	0,465	0,185	35	40	80	23	1,1	70,7	–	52,5	–	58
1308-K-TVH-C3	H308	0,698	0,185	35	40	90	23	1,5	75,3	–	57,8	–	58
2308-K-TVH-C3	H2308	0,899	0,222	35	40	90	33	1,5	75	–	53,7	–	58
1209-K-TVH-C3	H209	0,454	0,216	40	45	85	19	1,1	72,7	–	57,7	–	65
2209-K-2RS-TVH-C3	H309	0,535	0,246	40	45	85	23	1,1	–	75,4	–	53,8	65
2209-K-TVH-C3	H309	0,505	0,246	40	45	85	23	1,1	75,9	–	59	–	65
1309-K-TVH-C3	H309	0,939	0,246	40	45	100	25	1,5	84,1	–	64,1	–	65
2309-K-TVH-C3	H2309	1,19	0,283	40	45	100	36	1,5	84,2	–	60,1	–	65





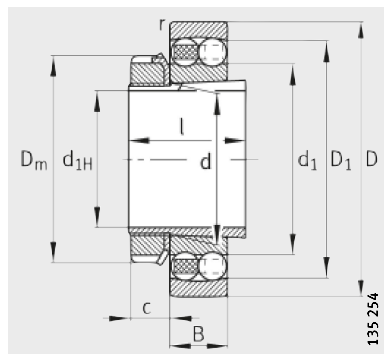
Mounting dimensions



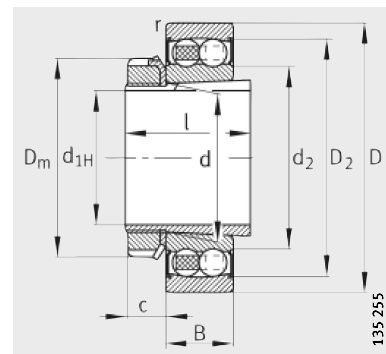
		Mounting dimensions					Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
l	c ≈	d <sub>a</sub>	D <sub>a</sub>	d <sub>b</sub>	B <sub>a</sub>	r <sub>a</sub>	dyn. C <sub>r</sub> N	stat. C <sub>0r</sub> N	e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>	C <sub>ur</sub> N	n <sub>G</sub> min <sup>-1</sup>	n <sub>B</sub> min <sup>-1</sup>
		max.	max.	min.	min.	max.									
24	7	27	41,4	23	5	1	10 100	2 600	0,28	2,24	3,46	2,34	161	18 000	20 700
26	9	32	46,4	28	5	1	12 300	3 250	0,27	2,37	3,66	2,48	203	16 000	18 100
29	9	32	46,4	28	5	1	12 300	3 250	0,27	2,37	3,66	2,48	203	9 500	–
29	9	32	46,4	28	5	1	17 300	4 400	0,35	1,78	2,75	1,86	275	15 000	14 900
29	9	35	55	28	6	1	18 300	4 950	0,28	2,29	3,54	2,4	310	14 000	13 900
35	9	34	55	30	5	1	25 000	6 500	0,48	1,32	2,04	1,38	405	13 000	14 100
27	9	38	56,4	33	5	1	15 900	4 600	0,25	2,53	3,91	2,65	285	14 000	15 400
31	9	38	56,4	33	5	1	15 900	4 600	0,25	2,53	3,91	2,65	285	8 000	–
31	9	38	56,4	33	5	1	26 000	6 900	0,3	2,13	3,29	2,23	430	12 000	12 700
31	9	42	65	33	6	1	21 700	6 300	0,26	2,39	3,71	2,51	390	11 000	12 200
38	9	40	65	35	5	1	32 500	8 700	0,45	1,4	2,17	1,47	540	10 000	12 300
29	10	45	65	38	5	1	16 000	5 100	0,22	2,8	4,34	2,94	315	12 000	13 200
35	10	45	65	38	5	1	16 000	5 100	0,22	2,8	4,34	2,94	315	7 000	–
35	10	44	65	39	5	1	33 000	8 900	0,3	2,13	3,29	2,23	560	9 500	11 500
35	10	49	71	39	8	1,5	25 500	7 800	0,26	2,47	3,82	2,59	485	9 500	10 900
43	10	45	71	40	5	1,5	40 500	11 100	0,47	1,35	2,1	1,42	690	9 000	11 600
31	11	52	73	43	5	1	19 400	6 500	0,22	2,9	4,49	3,04	400	10 000	11 600
36	11	52	73	43	5	1	19 400	6 500	0,22	2,9	4,49	3,04	400	6 300	–
36	11	50	73	44	5	1	32 500	9 400	0,26	2,43	3,76	2,54	580	9 000	9 700
36	11	55	81	44	5	1,5	30 000	9 600	0,25	2,52	3,9	2,64	600	8 500	10 000
46	11	51	81	45	5	1,5	46 000	13 400	0,43	1,45	2,25	1,52	830	8 000	10 300
33	12	57	78	48	5	1	22 000	7 300	0,21	3,04	4,7	3,18	455	9 000	11 100
39	12	57	78	48	5	1	22 000	7 300	0,21	3,04	4,7	3,18	455	5 600	–
39	12	56	78	50	8	1	28 500	8 900	0,26	2,43	3,76	2,54	550	8 500	8 700
39	12	61	91	50	5	1,5	38 500	12 600	0,25	2,5	3,87	2,62	780	7 500	9 300
50	12	57	91	50	5	1,5	55 000	16 500	0,43	1,48	2,29	1,55	1 030	7 000	9 400

# Self-aligning ball bearings

With adapter sleeve  
Open or sealed



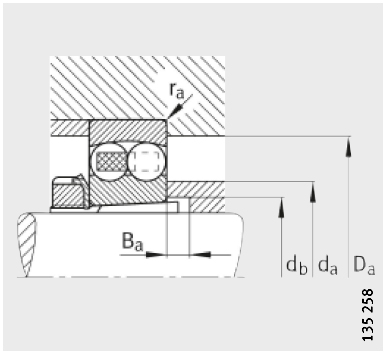
Open



Seal 2RS

Dimension table (continued) · Dimensions in mm

Designation		Mass m		Dimensions									
Bearing	Adapter sleeve	Bearing	Adapter sleeve	d <sub>1H</sub>	d	D	B	r	D <sub>1</sub>	D <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	D <sub>m</sub>
		≈kg	≈kg										
1210-K-TVH-C3	H210	0,516	0,264	45	50	90	20	1,1	77,6	-	62,7	-	70
2210-K-2RS-TVH-C3	H310	0,593	0,301	45	50	90	23	1,1	-	80	-	60,6	70
2210-K-TVH-C3	H310	0,543	0,301	45	50	90	23	1,1	81	-	64	-	70
1310-K-TVH-C3	H310	1,52	0,301	45	50	110	27	2	91,9	-	71,2	-	70
1211-K-TVH-C3	H211	0,682	0,292	50	55	100	21	1,5	86,9	-	69,5	-	75
2211-K-2RS-TVH-C3	H311	0,808	0,35	50	55	100	25	1,5	-	88,9	-	68	75
2211-K-TVH-C3	H311	0,73	0,35	50	55	100	25	1,5	90	-	69,6	-	75
1311-K-TVH-C3	H311	1,55	0,35	50	55	120	29	2	101,6	-	78	-	75
2311-K-TVH-C3	H2311	2,02	0,426	50	55	120	43	2	100,7	-	71,7	-	75
1212-K-TVH-C3	H212	0,88	0,325	55	60	110	22	1,5	95,8	-	78	-	80
2212-K-2RS-TVH-C3	H312	1,13	0,373	55	60	110	28	1,5	-	98,5	-	70,4	80
2212-K-TVH-C3	H312	1,03	0,373	55	60	110	28	1,5	98,8	-	76,6	-	80
1312-K-TVH-C3	H312	1,94	0,373	55	60	130	31	2,1	112,2	-	87	-	80
2312-K-TVH-C3	H2312	2,52	0,464	55	60	130	46	2,1	109,1	-	77	-	80
1213-K-TVH-C3	H213	1,13	0,393	60	65	120	23	1,5	103,2	-	85,2	-	92
2213-K-2RS-TVH-C3	H313	1,5	0,452	60	65	120	31	1,5	-	106,6	-	78	92
2213-K-TVH-C3	H313	1,33	0,452	60	65	120	31	1,5	107,5	-	82,4	-	92
1313-K-TVH-C3	H313	2,41	0,452	60	65	140	33	2,1	118,8	-	92,7	-	92
2313-K-TVH-C3	H2313	3,16	0,553	60	65	140	48	2,1	118,9	-	85,6	-	92
1214-K-TVH-C3	H214	1,23	0,603	60	70	125	24	1,5	106,6	-	87,7	-	98
1215-K-TVH-C3	H215	1,32	0,693	65	75	130	25	1,5	114,1	-	93,7	-	98
2215-K-TVH-C3	H315	1,6	0,826	65	75	130	31	1,5	114,3	-	93,3	-	104
1315-K-M-C3	H315	3,81	0,826	65	75	160	37	2,1	134,8	-	104,4	-	104
2315-K-M-C3	H2315	5,21	1,05	65	75	160	55	2,1	136,7	-	100,5	-	98
1216-K-TVH-C3	H216	1,62	0,876	70	80	140	26	2	122,1	-	102	-	105
2216-K-TVH-C3	H316	1,97	1,01	70	80	140	33	2	120,8	-	99,5	-	105
1316-K-M-C3	H316	4,5	1,01	70	80	170	39	2,1	144,3	-	110,2	-	105
2316-K-M-C3	H2316	6,18	1,27	70	80	170	58	2,1	144,5	-	107,6	-	105
1217-K-TVH-C3	H217	2,03	0,995	75	85	150	28	2	130,4	-	107,5	-	110
2217-K-M-C3	H317	2,73	1,16	75	85	150	36	2	130	-	105,2	-	110
1317-K-M-C3	H317	5,32	1,16	75	85	180	41	3	152	-	117,2	-	110
2317-K-M-C3	H2317	7,36	1,44	75	85	180	60	3	153,3	-	114	-	110



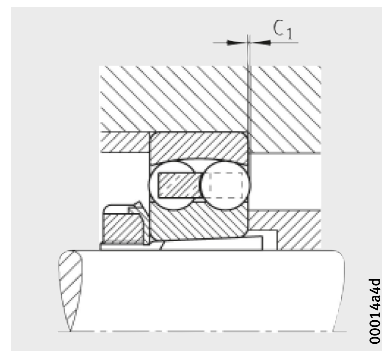
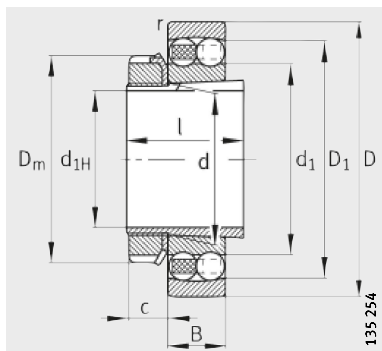
Mounting dimensions



		Mounting dimensions					Basic load ratings		Calculation factors				Fatigue limit load	Limiting speed	Reference speed
l	c ≈	d <sub>a</sub>	D <sub>a</sub>	d <sub>b</sub>	B <sub>a</sub>	r <sub>a</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>	C <sub>ur</sub> N	n <sub>G</sub> min <sup>-1</sup>	n <sub>B</sub> min <sup>-1</sup>
		max.	max.	min.	min.	max.	N	N							
35	13	62	83	53	5	1	22 900	8 000	0,2	3,17	4,9	3,32	500	8 500	10 500
42	13	62	83	53	5	1	22 900	8 000	0,2	3,17	4,9	3,32	500	5 300	–
42	13	61	83	55	10	1	28 500	9 400	0,24	2,61	4,05	2,74	580	8 000	8 000
42	13	68	99	55	5	2	42 000	14 100	0,24	2,6	4,03	2,73	880	6 700	8 700
37	13	69	91	60	6	1,5	27 000	9 900	0,19	3,31	5,12	3,47	620	7 500	9 300
45	13	69	91	60	6	1,5	27 000	9 900	0,19	3,31	5,12	3,47	620	4 800	–
45	13	68	91	60	10	1,5	39 000	12 400	0,22	2,92	4,52	3,06	770	6 700	7 500
45	13	74	109	60	6	2	52 000	17 700	0,24	2,66	4,12	2,79	1 100	6 000	8 100
59	13	69	109	61	6	2	77 000	23 800	0,42	1,51	2,33	1,58	1 480	5 600	8 500
38	13	75	101	64	5	1,5	30 500	11 400	0,18	3,47	5,37	3,64	710	6 700	8 500
47	13	75	101	64	5	1,5	30 500	11 400	0,18	3,47	5,37	3,64	710	4 300	–
47	13	73	101	65	8	1,5	48 000	16 300	0,23	2,69	4,16	2,82	1 020	6 300	7 100
47	13	83	118	65	5	2,1	58 000	20 600	0,23	2,77	4,28	2,9	1 280	5 300	7 300
62	13	74	118	66	5	2,1	89 000	28 000	0,41	1,55	2,4	1,62	1 740	5 000	8 000
40	14	83	111	70	5	1,5	31 000	12 400	0,18	3,57	5,52	3,74	770	6 300	7 900
50	14	83	111	70	5	1,5	31 000	12 400	0,18	3,57	5,52	3,74	770	4 000	–
50	14	79	111	70	8	1,5	58 000	19 000	0,23	2,78	4,31	2,92	1 190	5 300	6 900
50	14	89	128	70	5	2,1	63 000	22 700	0,23	2,75	4,26	2,88	1 380	5 000	7 100
65	14	82	128	72	5	2,1	98 000	32 000	0,39	1,62	2,51	1,7	1 980	4 800	7 300
41	14	86	116	75	5	1,5	35 000	13 700	0,19	3,36	5,21	3,52	850	6 000	7 900
43	15	92	121	80	5	1,5	39 000	15 500	0,19	3,32	5,15	3,48	950	5 600	7 400
55	15	90	121	80	12	1,5	44 500	17 600	0,26	2,47	3,82	2,59	1 080	5 300	6 200
55	15	100	148	80	5	2,1	80 000	29 500	0,23	2,77	4,29	2,9	1 690	6 300	6 600
73	15	94	148	82	5	2,1	124 000	42 000	0,38	1,64	2,54	1,72	2 420	6 000	6 700
46	17	99	129	85	5	2	40 000	16 800	0,16	3,9	6,03	4,08	990	5 000	6 800
59	17	96	129	85	12	2	49 500	19 800	0,25	2,48	3,84	2,6	1 180	5 000	6 000
59	17	107	158	85	5	2,1	89 000	33 000	0,22	2,87	4,44	3	1 810	6 000	6 300
78	17	100	158	88	5	2,1	139 000	48 500	0,37	1,7	2,62	1,78	2 700	5 600	6 400
50	18	105	139	90	6	2	49 500	20 600	0,17	3,73	5,78	3,91	1 180	4 800	6 700
63	18	102	139	91	12	2	59 000	23 400	0,26	2,46	3,81	2,58	1 340	7 000	5 800
63	18	114	166	91	6	2,5	99 000	37 500	0,22	2,88	4,46	3,02	2 010	5 600	6 000
82	18	106	166	94	6	2,5	143 000	51 000	0,37	1,68	2,61	1,76	2 750	5 300	6 100

# Self-aligning ball bearings

With adapter sleeve  
Open



Ball projection  $C_1$ <sup>1)</sup>

**Dimension table** (continued) · Dimensions in mm

Designation		Mass m		Dimensions									
Bearing	Adapter sleeve	Bearing	Adapter sleeve	$d_{1H}$	d	D	B	r	$D_1$	$d_1$	$D_m$	l	c
		≈kg	≈kg										
<b>1218-K-TVH-C3</b>	<b>H218</b>	2,48	1,17	<b>80</b>	90	160	30	2	138,7	112,7	126	52	18
<b>2218-K-TVH-C3</b>	<b>H318</b>	3,18	1,36	<b>80</b>	90	160	40	2	139,4	111,5	126	65	18
<b>1318-K-M-C3</b>	<b>H318</b>	6,27	1,36	<b>80</b>	90	190	43	3	159,9	124,4	126	65	18
<b>2318-K-M-C3</b>	<b>H2318</b>	8,6	1,68	<b>80</b>	90	190	64	3	161	115,7	126	86	18
<b>1219-K-M-C3</b>	<b>H219</b>	3,28	1,32	<b>85</b>	95	170	32	2,1	148,2	120,5	125	55	19
<b>2219-K-M-C3</b>	<b>H319</b>	4,24	1,51	<b>85</b>	95	170	43	2,1	148,6	118,9	125	68	19
<b>1319-K-M-C3</b>	<b>H319</b>	7,2	1,51	<b>85</b>	95	200	45	3	170,5	127,7	125	68	19
<b>2319-K-M-C3</b>	<b>H2319</b>	9,97	1,89	<b>85</b>	95	200	67	3	168,5	121,6	133	90	19
<b>1220-K-M-C3</b>	<b>H220</b>	3,94	1,48	<b>90</b>	100	180	34	2,1	155,2	127,7	130	58	20
<b>2220-K-M-C3</b>	<b>H320</b>	5,1	1,69	<b>90</b>	100	180	46	2,1	156,9	124,4	130	71	20
<b>1320-K-M-C3</b>	<b>H320</b>	8,95	1,69	<b>90</b>	100	215	47	3	182,6	135,5	130	71	20
<b>2320-K-M-C3</b>	<b>H2320</b>	12,7	2,17	<b>90</b>	100	215	73	3	183	130,8	142	97	20
<b>1222-K-M-C3</b>	<b>H222</b>	5,49	1,9	<b>100</b>	110	200	38	2,1	173,9	140,7	145	63	21
<b>2222-K-M-C3</b>	<b>H322</b>	7,27	2,15	<b>100</b>	110	200	53	2,1	174,1	136,9	154	77	21
<b>1322-K-M-C3</b>	<b>H322</b>	12,2	2,15	<b>100</b>	110	240	50	3	203,2	154,7	154	77	21
<b>2322-K-M-C3</b>	<b>H2322</b>	17,5	2,74	<b>100</b>	110	240	80	3	203	145,5	154	105	21

<sup>1)</sup> The projection must be taken into consideration when designing the adjacent construction.