

**FAG**



## **Tapered Roller Bearings in X-life Design**

**SCHAEFFLER**



# Contents

	Page
<b>Features</b>	
X-life.....	2
Operating temperature.....	4
Cages .....	4
Suffixes .....	4
Compensation of angular misalignments.....	4
Product range .....	5
Areas of application.....	5
Products for mounting, maintenance and monitoring.....	5
<b>Design and safety guidelines</b>	
Matched bearings .....	6
Minimum radial load.....	6
Speeds.....	6
<b>Accuracy</b>	
Tapered roller bearings in metric sizes .....	6
Tapered roller bearings to ANSI/ABMA .....	12
<b>Dimension tables</b>	
Tapered roller bearings, single row, series 302, 303, 313, T4CB120 .....	14
Tapered roller bearings, single row, series 322, 323 .....	18
Tapered roller bearings, single row, series 320 .....	22

# Tapered roller bearings in X-life design

**Features** Tapered roller bearings comprise solid inner and outer rings with tapered raceways and tapered rollers in a window cage.

The classification and designation of tapered roller bearings is based on:

- DIN 720
- ISO 355
- ANSI/ABMA metric
- ANSI/ABMA inch.

Open bearings are not self-retaining. As a result, the inner ring with the rollers and the cage can be mounted separately from the outer ring.

Metric and inch size bearings are available.

**X-life** X-life is the premium brand that identifies particularly high performance products under the FAG and INA brands. They are characterised by longer rating life and operating life – due to higher basic dynamic load ratings – compared to the previous standard, *Figure 1*, page 3.

This higher performance results from the use of state of the art manufacturing techniques and improved internal constructions, *Figure 2*, page 3. They lead to better and more uniform surfaces and contact areas and thus optimised load distribution in the bearing.

This opens up expanded design possibilities:

- Under the same load and with an unchanged design envelope, X-life bearings have a longer rating life and maintenance intervals can be extended.
- Conversely, an X-life bearing in the same design envelope and with the same rating life can support higher loads.
- Where the rating life and load remain unchanged, X-life bearings allow higher performance density, facilitating optimisation of the design envelope and reductions in mass.

As a result, the X-life bearing makes a significant contribution to improved overall cost-efficiency under the philosophy of Total Cost of Ownership (TCO).

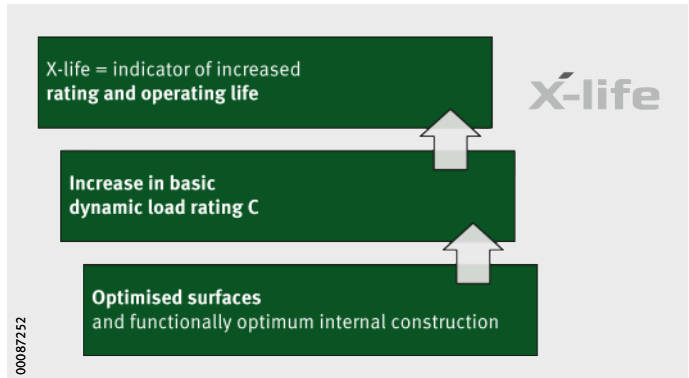


Figure 1  
Key features of X-life

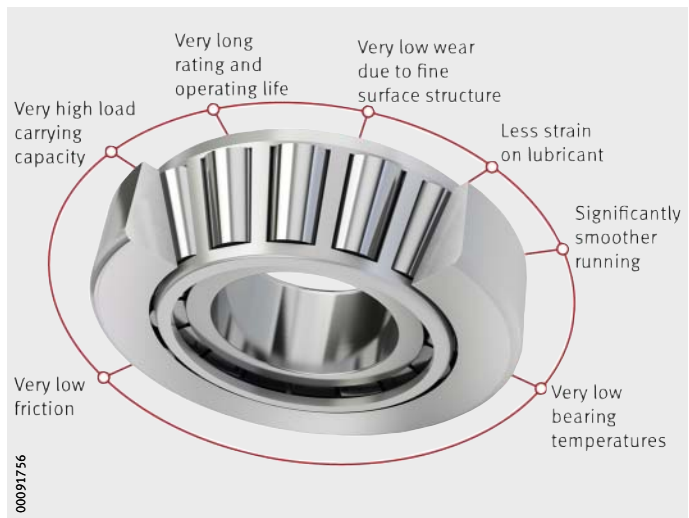


Figure 2  
Product characteristics of X-life

In comparison with standard tapered roller bearings, tapered roller bearings in X-life quality have up to:

- 20% higher basic dynamic load rating
- 70% longer rating life
- 50% reduced friction (in the case of tapered roller bearings with a steep taper, up to 75%)
- 20% lower operating temperatures.

# Tapered roller bearings in X-life design

**Operating temperature** Open tapered roller bearings with an outside diameter  $D \leq 220$  mm can be used at operating temperatures from  $-30$  °C to  $+120$  °C.  
Open tapered roller bearings with an outside diameter  $D > 220$  mm can be used at operating temperatures from  $-30$  °C to  $+200$  °C, see table.

## Material characteristics

Feature	Outside diameter	
	$D \leq 220$ mm	$D > 220$ mm
Material	Optimised rolling bearing steel	
Heat treatment	Martensitic or bainitic	
Maximum operating temperature	$+120$ °C	$+200$ °C
Dimensional stability	By agreement, up to $+200$ °C	$+200$ °C

The special heat treatment is identified by a suffix.

**Cages** Open tapered roller bearings have sheet steel cages.

**Suffixes** Suffixes for available designs: see table.

## Available designs

Suffix	Description	Design
XL	X-life	–
DF	Two tapered roller bearings in X arrangement	–
DB	Two tapered roller bearings in O arrangement	–
DT	Two tapered roller bearings in tandem arrangement	–
B	Increased contact angle	–
X	External dimensions matched to international standards	–
P5	Increased accuracy	Special design <sup>1)</sup>

<sup>1)</sup> Available by agreement and in certain series.

**Compensation of angular misalignments** The modified line contact between the tapered rollers and the raceways ensures optimum stress distribution at the contact points, prevents edge stresses and allows the bearings to undergo angular adjustment.

At a load ratio  $P/C_r \leq 0,2$ , the tilting of the bearing rings relative to each other must not exceed  $4''$ . For higher loads or tilting angles, please contact us.

**Product range** An overview of the X-life focus series is shown below, *Figure 3*.

① Bearing series  
② Bore code

*Figure 3*  
X-life focus series

①	320			42	47	55	62	68	75	77	90	95	100	110	115	125	130		
	322				52	62	72	80	85	90	100	110	120	125	130	140	150		
	302	35	40	47	52	62	72	80	85	90	100	110	120	125	130	140	150		
				02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
				②															
①	320	140	145	150	160	170	180	200	210	225	240	260	280	290	310	340	360		
	322	160	170	180	190	200	215	230	250	270	290	310	320	340	360	400	440		
	302	160	170	180	190	200	215	230	250	270	290	310	320	340	360	400	440		
				18	19	20	21	22	24	26	28	30	32	34	36	38	40	44	48
				②															

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## Operating limits

Tapered roller bearings are used in:

- axial piston and orbital motors (mobile hydraulics)
- wheel bearings and gearboxes (tractors)
- grinding rolls (vertical mills)
- work rolls in roll stands (hot and cold strip mills)
- oil and gas plates
- gearboxes (onshore and offshore wind turbines)
- road rollers (construction machinery)
- drill head bearings (construction machinery).

## Products for mounting, maintenance and monitoring

In order to ensure that the high performance capability of FAG tapered roller bearings in X-life quality can be exploited to the full, particular attention must be paid to their mounting and dismantling, lubrication, sealing and maintenance.

In those cases where a production stoppage can incur heavy costs, monitoring of rolling bearings is both advisable and cost-effective. The methods used in mounting and dismantling are comprehensively described in publication MH 1, Mounting of Rolling Bearings. An overview of suitable tools, measuring devices and diagnostic equipment can be found in Catalogue IS 1, Mounting and Maintenance of Rolling Bearings.

# Tapered roller bearings in X-life design

## Design and safety guidelines

### Matched bearings

Information on bearings matched in pairs is given in TPI 245, Matched Tapered Roller Bearings.

### Minimum radial load

In order to prevent damage due to slippage, the bearings must be subjected to a minimum load  $F_{\min}$ . This applies particularly in the case of high speeds and high accelerations. For continuous operation, roller bearings with cage must therefore be subjected to a minimum radial load of the order of  $C_0/P = 60$ .

### Speeds



The limiting speeds  $n_G$  given in the dimension tables should not be exceeded even under favourable operating conditions with prior consultation with the Schaeffler advisory service.

### Accuracy

#### Tapered roller bearings in metric sizes

The main dimensions conform to ISO 355 and DIN 720, while the dimensional and running tolerances conform to ISO 492:2014, see tables, page 7 to page 13.

#### Width tolerance to tolerance class Normal

Single row tapered roller bearings 302, 303, 313, 322, 323, T2EE, T4CB, T4DB, T5ED and T7FC correspond to the tolerance class Normal.

Bearings 320, 329, 330, 331 and 332 for shaft diameters over 200 mm have width tolerances to tolerance class Normal.



### Inner ring tolerances

Bore d mm		Bore deviation $t_{\Delta dmp}$ $\mu m$		Variation		Runout $t_{Kia}$ $\mu m$
over	incl.	max.	min.	$t_{Vdsp}$ $\mu m$ max.	$t_{VDmp}$ $\mu m$ max.	max.
–	10	0	–12	12	9	15
10	18	0	–12	12	9	15
18	30	0	–12	12	9	18
30	50	0	–12	12	9	20
50	80	0	–15	15	11	25
80	120	0	–20	20	15	30
120	180	0	–25	25	19	35
180	250	0	–30	30	23	50
250	315	0	–35	35	26	60
315	400	0	–40	40	30	70
400	500	0	–45	45	34	80
500	630	0	–60	60	40	90
630	800	0	–75	75	45	100
800	1 000	0	–100	100	55	115
1 000	1 250	0	–125	125	65	130
1 250	1 600	0	–160	160	80	150
1 600	2 000	0	–200	200	100	170

### Outer ring tolerances

Outside diameter D mm		Outside diameter deviation $t_{\Delta Dmp}$ $\mu m$		Variation		Runout $t_{Kea}$ $\mu m$
over	incl.	max.	min.	$t_{VDsp}$ $\mu m$ max.	$t_{VDmp}$ $\mu m$ max.	max.
–	18	0	–12	12	9	18
18	30	0	–12	12	9	18
30	50	0	–14	14	11	20
50	80	0	–16	16	12	25
80	120	0	–18	18	14	35
120	150	0	–20	20	15	40
150	180	0	–25	25	19	45
180	250	0	–30	30	23	50
250	315	0	–35	35	26	60
315	400	0	–40	40	30	70
400	500	0	–45	45	34	80
500	630	0	–50	60	38	100
630	800	0	–75	80	55	120
800	1 000	0	–100	100	75	140
1 000	1 250	0	–125	130	90	160
1 250	1 600	0	–160	170	100	180
1 600	2 000	0	–200	210	110	200
2 000	2 500	0	–250	265	120	220

# Tapered roller bearings in X-life design

## Width tolerances

Bore		Deviation of inner ring width		Width deviation					
d mm		$t_{\Delta B_s}$ $\mu\text{m}$		$t_{\Delta T_s}$ $\mu\text{m}$		$t_{\Delta T_{1s}}$ $\mu\text{m}$		$t_{\Delta T_{2s}}$ $\mu\text{m}$	
over	incl.	max.	min.	max.	min.	max.	min.	max.	min.
-	10	0	-120	+200	0	+100	0	+100	0
10	18	0	-120	+200	0	+100	0	+100	0
18	30	0	-120	+200	0	+100	0	+100	0
30	50	0	-120	+200	0	+100	0	+100	0
50	80	0	-150	+200	0	+100	0	+100	0
80	120	0	-200	+200	-200	+100	-100	+100	-100
120	180	0	-250	+350	-250	+150	-150	+200	-100
180	250	0	-300	+350	-250	+150	-150	+200	-100
250	315	0	-350	+350	-250	+150	-150	+200	-100
315	400	0	-400	+400	-400	+200	-200	+200	-200
400	500	0	-450	+450	-450	+225	-225	+225	-225
500	630	0	-500	+500	-500	-	-	-	-
630	800	0	-750	+600	-600	-	-	-	-
800	1 000	0	-1000	+750	-750	-	-	-	-
1 000	1 250	0	-1250	+900	-900	-	-	-	-
1 250	1 600	0	-1600	+1050	-1050	-	-	-	-
1 600	2 000	0	-2000	+1200	-1200	-	-	-	-

The width tolerance  $\Delta_{C_s}$  is identical to  $\Delta_{B_s}$  for the inner ring of the same bearing.

## Width tolerance to 6X

Tapered roller bearings 320, 329, 330, 331 and 332 for shaft diameters up to 200 mm and bearings with the code KJ have restricted width tolerances to tolerance class 6X.

## Width tolerances

Bore		Deviation of inner ring width		Width deviation							
d mm		$t_{\Delta B_s}$ $\mu\text{m}$		$t_{\Delta C_s}$ $\mu\text{m}$		$t_{\Delta T_s}$ $\mu\text{m}$		$t_{\Delta T_{1s}}$ $\mu\text{m}$		$t_{\Delta T_{2s}}$ $\mu\text{m}$	
over	incl.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.
-	10	0	-50	0	-100	+100	0	+50	0	+50	0
10	18	0	-50	0	-100	+100	0	+50	0	+50	0
18	30	0	-50	0	-100	+100	0	+50	0	+50	0
30	50	0	-50	0	-100	+100	0	+50	0	+50	0
50	80	0	-50	0	-100	+100	0	+50	0	+50	0
80	120	0	-50	0	-100	+100	0	+50	0	+50	0
120	180	0	-50	0	-100	+150	0	+50	0	+100	0
180	250	0	-50	0	-100	+150	0	+50	0	+100	0
250	315	0	-50	0	-100	+200	0	+100	0	+100	0
315	400	0	-50	0	-100	+200	0	+100	0	+100	0
400	500	0	-50	0	-100	+200	0	+100	0	+100	0

**Restricted tolerance 5** We can by agreement supply tapered roller bearings with restricted tolerances to tolerance class 5 to ISO 492:2014.

**Inner ring tolerances**

Bore d mm		Bore deviation $t_{\Delta dmp}$ μm		Variation		Runout
over	incl.	max.	min.	$t_{VDsp}$ μm	$t_{VDmp}$ μm	$t_{Kia}$ μm
				max.	max.	max.
–	10	0	–7	5	5	5
10	18	0	–7	5	5	5
18	30	0	–8	6	5	5
30	50	0	–10	8	5	6
50	80	0	–12	9	6	7
80	120	0	–15	11	8	8
120	180	0	–18	14	9	11
180	250	0	–22	17	11	13
250	315	0	–25	19	13	13
315	400	0	–30	23	15	15
400	500	0	–35	28	17	20
500	630	0	–40	35	20	25
630	800	0	–50	45	25	30
800	1 000	0	–60	60	30	37
1 000	1 250	0	–75	75	37	45
1 250	1 600	0	–90	90	45	55

**Outer ring tolerances**

Outside diameter D mm		Outside diameter deviation $t_{\Delta Dmp}$ μm		Variation		Runout
over	incl.	max.	min.	$t_{VDsp}$ μm	$t_{VDmp}$ μm	$t_{Kea}$ μm
				max.	max.	max.
–	18	0	–8	6	5	6
18	30	0	–8	6	5	6
30	50	0	–9	7	5	7
50	80	0	–11	8	6	8
80	120	0	–13	10	7	10
120	150	0	–15	11	8	11
150	180	0	–18	14	9	13
180	250	0	–20	15	10	15
250	315	0	–25	19	13	18
315	400	0	–28	22	14	20
400	500	0	–33	26	17	24
400	500	0	–38	30	20	30
500	630	0	–45	38	25	36
630	800	0	–60	50	30	43
800	1 000	0	–80	65	38	52
1 000	1 250	0	–100	90	50	62
1 250	1 600	0	–125	120	65	73

# Tapered roller bearings in X-life design

## Width tolerances

Bore		Deviation of			
		inner ring width		bearing width	
d mm		$t_{\Delta B_s}$ $\mu\text{m}$		$t_{\Delta T_s}$ $\mu\text{m}$	
		over	incl.	max.	min.
–	10	0	–200	+200	–200
10	18	0	–200	+200	–200
18	30	0	–200	+200	–200
30	50	0	–240	+200	–200
50	80	0	–300	+200	–200
80	120	0	–400	+200	–200
120	180	0	–500	+350	–250
180	250	0	–600	+350	–250
250	315	0	–700	+350	–250
315	400	0	–800	+400	–400
400	500	0	–900	+450	–450
500	630	0	–1 100	+500	–500
630	800	0	–1 600	+600	–600
800	1 000	0	–2 000	+750	–750
1 000	1 250	0	–2 000	+750	–750
1 250	1 600	0	–2 000	+900	–900

**Chamfer dimensions  
for tapered roller bearings  
in metric sizes**

The limit values for the chamfer dimensions  $r$  are only valid for tapered roller bearings in metric sizes to ISO 582:1995.

**Limit values  
for chamfer dimensions**

Nominal chamfer dimension $r^{1)}$ mm	Diameter		Chamfer dimension		
	d, D mm		$r_1$ to $r_4$ mm	$r_1, r_3$ mm	$r_2, r_4$ mm
	over	incl.	min.	max.	max.
0,3	–	40	0,3	0,7	1,4
	40	–	0,3	0,9	1,6
0,6	–	40	0,6	1,1	1,7
	40	–	0,6	1,3	2
1	–	50	1	1,6	2,5
	50	–	1	1,9	3
1,5	–	120	1,5	2,3	3
	120	250	1,5	2,8	3,5
	250	–	1,5	3,5	4
2	–	120	2	2,8	4
	120	250	2	3,5	4,5
	250	–	2	4	5
2,5	–	120	2,5	3,5	5
	120	250	2,5	4	5,5
	250	–	2,5	4,5	6
3	–	120	3	4	5,5
	120	250	3	4,5	6,5
	250	400	3	5	7
	400	–	3	5,5	7,5
4	–	120	4	5	7
	120	250	4	5,5	7,5
	250	400	4	6	8
	400	–	4	6,5	8,5
5	–	180	5	6,5	8
	180	–	5	7,5	9
6	–	180	6	7,5	10
	180	–	6	9	11

<sup>1)</sup> The nominal chamfer dimension  $r$  is identical to the smallest permissible chamfer dimension  $r_{\min}$ .

# Tapered roller bearings in X-life design

## Tapered roller bearings to ANSI/ABMA

Tapered roller bearings of series K are manufactured as standard with normal tolerances based on ANSI/ABMA.

Exception: series KJ = 6X. The width  $\Delta_{B5}$  and radial runout correspond to tolerance class Normal to ISO 492:2014.

The bore and outside diameters of bearings in inch sizes have plus tolerances.

### Inner ring tolerances

Bore d mm		Bore deviation $t_{\Delta dmp}$ $\mu m$		Runout $t_{kia}$ $\mu m$
over	incl.	max.	min.	
10	18	13	0	15
18	30	13	0	18
30	50	13	0	20
50	81	13	0	25
81	120	25	0	30
120	180	25	0	35
180	305	25	0	50
305	400	50	0	50

### Outer ring tolerances

Outside diameter D mm		Deviation of outside diameter $t_{\Delta Dmp}$ $\mu m$		Runout $t_{kea}$ $\mu m$
over	incl.	max.	min.	
18	30	+25	0	18
30	50	+25	0	20
50	81	+25	0	25
81	120	+25	0	35
120	150	+25	0	40
150	180	+25	0	45
180	250	+25	0	50
250	305	+25	0	50
305	400	+50	0	50

### Width tolerances

Bore		Deviation of			
		inner ring width (in relation to bore)		bearing width	
d		$t_{\Delta Bs}$		$t_{\Delta Ts}$	
mm		$\mu\text{m}$		$\mu\text{m}$	
over	incl.	max.	min.	max.	min.
10	50	0	-120	+200	0
50	81	0	-150	+200	0
81	102	0	-200	+200	0
102	120	0	-200	+350	-250
120	180	0	-250	+350	-250
180	250	0	-300	+350	-250
250	305	0	-350	+350	-250
305	315	0	-350	+375	-375
315	400	0	-400	+375	-375

### Chamfer dimensions for tapered roller bearings in inch sizes

The limit values for the chamfer dimensions  $r$  are only valid for tapered roller bearings based on ANSI/ABMA.

#### Limit values for chamfer dimensions $r_{\max}$ for the inner ring

Nominal bearing bore diameter		Chamfer dimension <sup>1)</sup>	
		$r_1$	$r_2$
d		mm	mm
over	incl.		
-	50,8	+0,4	+0,9
50,8	101,6	+0,5	+1,25
101,6	254	+0,65	+1,8

<sup>1)</sup>  $r_{\min}$ , see dimension tables.

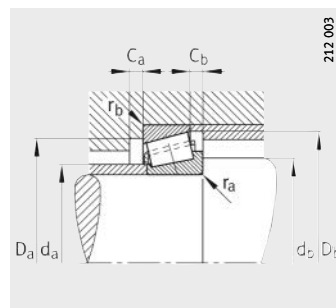
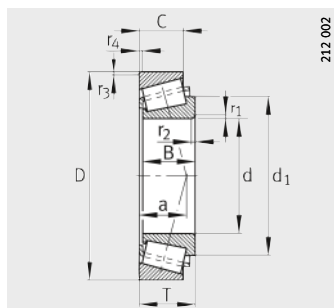
#### Limit values for chamfer dimensions $r_{\max}$ for the outer ring

Nominal outside diameter		Chamfer dimension <sup>1)</sup>	
		$r_3$	$r_4$
D		mm	mm
over	incl.		
-	101,6	+0,6	+1,05
101,6	168,3	+0,65	+1,15
168,3	266,7	+0,85	+1,35
266,7	355,6	+1,7	+1,7

<sup>1)</sup>  $r_{\min}$ , see dimension tables.

# Tapered roller bearings

Single row  
Series 302, 303, 313



Mounting dimensions

Dimension table - Dimensions in mm

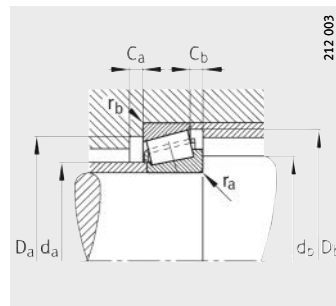
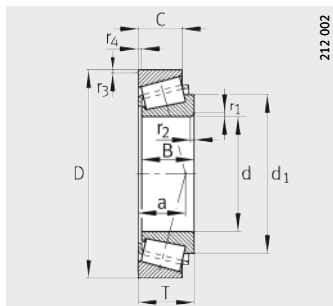
Designation	Mass m ≈ kg	Dimensions			Mounting dimensions									
		d	D	B	T	C	r <sub>1</sub> , r <sub>2</sub>	r <sub>3</sub> , r <sub>4</sub>	a	d <sub>1</sub>	d <sub>a</sub>	d <sub>b</sub>	D <sub>a</sub>	
							min.	min.			max.	min.	min.	max.
30202-XL	0,055	15	35	11	11,75	10	0,6	0,6	9	25,8	20	19	29	29
30203-XL	0,079	17	40	12	13,25	11	1	1	10	29,5	23	23	34	34
30204-XL	0,121	20	47	14	15,25	12	1	1	12	34,7	27	26	40	41
30205-XL	0,154	25	52	15	16,25	13	1	1	13	38,5	31	31	44	46
30206-XL	0,238	30	62	16	17,25	14	1	1	14	46,2	37	36	53	56
30207-XL	0,336	35	72	17	18,25	15	1,5	1,5	15	53,4	44	42	62	65
30208-XL	0,476	40	80	18	19,75	16	1,5	1,5	17	59,1	49	47	69	73
31308-XL	0,723	40	90	23	25,25	17	2	1,5	30	67,7	51	49	71	81
30209-XL	0,487	45	85	19	20,75	16	1,5	1,5	18	64,8	54	52	74	78
31309-XL	0,969	45	100	25	27,25	18	2	1,5	32	74,7	56	54	79	91
30210-XL	0,564	50	90	20	21,75	17	1,5	1,5	20	69,7	58	57	79	83
30211-XL	0,728	55	100	21	22,75	18	2	1,5	21	76	64	64	88	91
30212-XL	0,95	60	110	22	23,75	19	2	1,5	22	82,4	70	69	96	101
30213-XL	1,16	65	120	23	24,75	20	2	1,5	24	90,6	77	74	106	111
30214-XL	1,31	70	125	24	26,25	21	2	1,5	25	95,2	81	79	110	116
31314-XL	3,25	70	150	35	38	25	3	2,5	47	110,4	84	82	118	138
30215-XL	1,4	75	130	25	27,25	22	2	1,5	27	100,4	86	84	115	115
30216-XL	1,68	80	140	26	28,25	22	2,5	2	28	106,4	91	90	124	130
31316-XL	4,16	80	170	39	42,5	27	3	2,5	53	124,4	97	92	134	158
30217-XL	2,13	85	150	28	30,5	24	2,5	2	30	112,9	97	95	132	140
30218-XL	2,61	90	160	30	32,5	26	2,5	2	32	120	103	100	140	150
30219-XL	3,13	95	170	32	34,5	27	3	2,5	34	127,3	110	107	149	158



					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Reference speed	Interchange designation to ISO 355
D <sub>b</sub>	C <sub>a</sub>	C <sub>b</sub>	r <sub>a</sub>	r <sub>b</sub>	dyn. C <sub>r</sub> N	stat. C <sub>0r</sub> N	e	Y	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>	
min.	min.	min.	max.	max.									
32	2	1,5	0,6	0,6	17 700	14 400	0,35	1,73	0,95	1 740	23 400	13 400	–
37	2	2	1	1	22 900	19 000	0,35	1,74	0,96	2 490	20 100	12 100	T2DB017
43	2	3	1	1	32 000	27 500	0,35	1,74	0,96	3 800	16 800	10 500	T2DB020
48	2	3	1	1	38 500	35 500	0,37	1,6	0,88	5 000	14 900	9 100	T3CC025
57	2	3	1	1	52 000	48 500	0,37	1,6	0,88	7 200	12 400	7 400	T3DB030
67	3	3	1,5	1,5	64 000	59 000	0,37	1,6	0,88	8 900	10 700	6 400	T3DB035
74	3	3,5	1,5	1,5	73 000	67 000	0,37	1,6	0,88	10 100	9 600	5 900	T3DB040
86	4	8	2	1,5	89 000	83 000	0,83	0,73	0,4	12 100	8 000	5 200	T7FB040
80	3	4,5	1,5	1,5	84 000	83 000	0,4	1,48	0,81	12 600	8 800	5 400	T3DB045
95	4	9	2	1,5	114 000	108 000	0,83	0,73	0,4	16 000	7 100	4 650	T7FB045
85	3	4,5	1,5	1,5	94 000	97 000	0,42	1,43	0,79	14 700	8 200	5 000	T3DB050
94	4	4,5	2	1,5	109 000	109 000	0,4	1,48	0,81	16 200	7 400	4 550	T3DB055
103	4	4,5	2	1,5	122 000	123 000	0,41	1,48	0,81	18 400	6 800	4 200	–
113	4	4,5	2	1,5	142 000	143 000	0,4	1,48	0,81	21 500	6 100	3 850	T3EB065
118	4	5	2	1,5	155 000	162 000	0,42	1,43	0,79	24 500	5 800	3 700	T3EB070
141	5	13	3	2,5	221 000	219 000	0,83	0,73	0,4	33 000	4 700	3 400	T7GB070
124	4	5	2	1,5	160 000	169 000	0,43	1,38	0,76	26 000	5 500	3 600	T4DB075
132	4	6	2,5	2	184 000	193 000	0,42	1,43	0,79	28 500	5 200	3 350	T3EB080
159	6	15	3	2,5	270 000	270 000	0,83	0,73	0,4	38 500	4 150	3 100	T7GB080
141	5	6,5	2,5	2	212 000	226 000	0,42	1,43	0,79	33 000	4 850	3 200	T3EB085
150	5	6,5	2,5	2	239 000	260 000	0,42	1,43	0,79	37 500	4 550	3 000	T3FB090
159	5	7,5	3	2,5	265 000	285 000	0,42	1,43	0,79	41 500	4 250	2 900	T3FB095

# Tapered roller bearings

Single row  
Series 302, 303, 313, T4CB



Mounting dimensions

Dimension table (continued) · Dimensions in mm

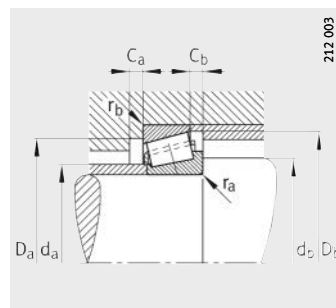
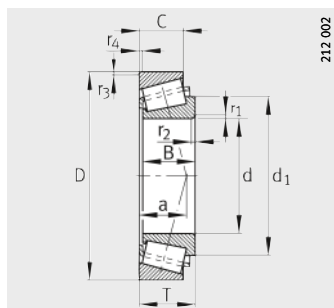
Designation	Mass m ≈ kg	Dimensions			Mounting dimensions											
		d	D	B	T	C	r <sub>1</sub> , r <sub>2</sub>		r <sub>3</sub> , r <sub>4</sub>		a	d <sub>1</sub>	d <sub>a</sub> max.	d <sub>b</sub> min.	D <sub>a</sub>	
							min.	min.	min.	min.					min.	max.
<b>30220-XL</b>	3,76	<b>100</b>	180	34	37	29	3	2,5	3	2,5	36	134,2	116	112	157	168
<b>30221-XL</b>	4,46	<b>105</b>	190	36	39	30	3	2,5	3	2,5	38	141,6	122	117	165	178
<b>30321-XL</b>	10,5	<b>105</b>	225	49	53,5	41	4	3	4	3	44	156,7	132	119	193	211
<b>31321-X-XL</b>	10	<b>105</b>	225	53	58	36	4	3	4	3	70	165,3	127	119	176	211
<b>30222-XL</b>	5,68	<b>110</b>	200	38	41	32	3	2,5	3	2,5	40	149,3	129	122	174	188
<b>K64450-64700-XL<sup>1)</sup></b>	3,63	114,3	177,8	41,275	41,275	30,162	3,6	3,3	3,3	3,3	43	147,3	125	131	160	166
<b>T4CB120-XL</b>	1,74	<b>120</b>	170	25	27	19,5	3	3	3	3	35	144,6	130	132	157	157
<b>30224-XL</b>	6,26	<b>120</b>	215	40	43,5	34	3	2,5	3	2,5	44	162	140	132	187	203
<b>30226-XL</b>	7,08	<b>130</b>	230	40	43,75	34	4	3	4	3	46	174,4	152	144	203	216
<b>30228-XL</b>	8,93	<b>140</b>	250	42	45,75	36	4	3	4	3	48	188	163	154	219	236
<b>30328-XL</b>	20,5	<b>140</b>	300	62	67,75	53	5	4	5	4	52	204	176	158	255	282
<b>30230-XL</b>	11,2	<b>150</b>	270	45	49	38	4	3	4	3	52	201,5	175	164	234	256
<b>30232-XL</b>	14,8	<b>160</b>	290	48	52	40	4	3	4	3	56	220,5	189	174	252	276
<b>30234-XL</b>	17	<b>170</b>	310	52	57	43	5	4	5	4	60	232	203	188	269	292
<b>30236-XL</b>	17,7	<b>180</b>	320	52	57	43	5	4	5	4	62	241	211	198	278	302
<b>30238-XL</b>	21,4	<b>190</b>	340	55	60	46	5	4	5	4	64	255,5	224	207	298	322
<b>30240-XL</b>	25,5	<b>200</b>	360	58	64	48	5	4	5	4	69	270	237	217	315	342
<b>30244-XL</b>	34,9	<b>220</b>	400	65	72	54	5	4	5	4	75	296	255	237	348	382
<b>30248-XL</b>	47,5	<b>240</b>	440	72	79	60	5	4	5	4	76	322,5	285	257	383	420
<b>30252-XL</b>	62,2	<b>260</b>	480	80	89	67	6	5	6	5	89	353,5	310	280	419	457
<b>30256-XL</b>	66,5	<b>280</b>	500	80	89	67	6	5	6	5	97	369,5	330	300	433	477
<b>30260-XL</b>	83,7	<b>300</b>	540	85	96	71	6	5	6	5	103	395	340	352	468	517
<b>30264-XL</b>	105	<b>320</b>	580	92	104	75	6	5	6	5	112	432,5	380	340	501	556

<sup>1)</sup> Bearing in inch size.

					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Reference speed	Interchange designation to ISO 10317 and ISO 355
D <sub>b</sub>	C <sub>a</sub>	C <sub>b</sub>	r <sub>a</sub>	r <sub>b</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>	
min.	min.	min.	max.	max.	N	N				N	min <sup>-1</sup>	min <sup>-1</sup>	
168	5	8	3	2,5	295 000	325 000	0,42	1,43	0,79	46 500	4 000	2 800	T3FB100
177	6	9	3	2,5	330 000	370 000	0,42	1,43	0,79	52 000	3 800	2 700	T3FB105
206	7	12,5	4	3	530 000	560 000	0,35	1,74	0,96	76 000	3 250	2 600	T2GB105
211	7	22	4	3	480 000	510 000	0,83	0,73	0,4	70 000	3 050	2 410	T7GB105
187	6	9	3	2,5	375 000	420 000	0,42	1,43	0,79	59 000	3 550	2 550	T3FB110
172	5	9	3,6	3,3	285 000	395 000	0,52	1,16	0,64	57 000	3 750	–	–
164	5	7,5	3	3	181 000	238 000	0,47	1,27	0,7	33 000	4 000	2 420	–
201	6	9,5	3	2,5	395 000	445 000	0,43	1,38	0,76	62 000	3 300	2 460	T4FB120
217	7	9,5	4	3	420 000	470 000	0,43	1,38	0,76	63 000	3 050	2 300	T4FB130
234	9	9,5	4	3	490 000	560 000	0,43	1,38	0,76	74 000	2 850	2 030	T4FB140
273	8	14,5	5	4	690 000	730 000	0,28	2,18	1,2	93 000	2 500	1 980	–
250	9	11	4	3	550 000	630 000	0,43	1,38	0,76	82 000	2 650	1 870	T4GB150
269	9	12	4	3	630 000	790 000	0,43	1,38	0,76	101 000	2 420	1 630	T4GB160
288	8	14	5	4	690 000	810 000	0,43	1,38	0,76	101 000	2 280	1 590	T4GB170
297	9	14	5	4	720 000	850 000	0,45	1,33	0,73	105 000	2 200	1 500	T4GB180
318	9	14	5	4	800 000	930 000	0,43	1,38	0,76	113 000	2 060	1 400	T4GB190
336	9	16	5	4	900 000	1 060 000	0,43	1,38	0,76	127 000	1 940	1 300	T4GB200
371	10	18	5	4	1 120 000	1 330 000	0,42	1,43	0,79	150 000	1 750	1 130	–
410	10	19	5	4	1 030 000	1 260 000	0,36	1,68	0,92	141 000	1 640	1 120	–
447	10	22	6	5	1 730 000	2 090 000	0,4	1,48	0,81	224 000	1 440	860	–
465	12	22	6	5	1 740 000	2 130 000	0,45	1,33	0,73	229 000	1 380	820	–
500	15	25	6	5	2 020 000	2 440 000	0,43	1,38	0,76	255 000	1 280	740	–
536	12	29	6	5	2 310 000	3 000 000	0,43	1,38	0,76	305 000	1 180	650	–

# Tapered roller bearings

Single row  
Series 322, 323, 332



Mounting dimensions

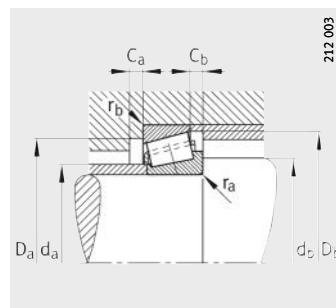
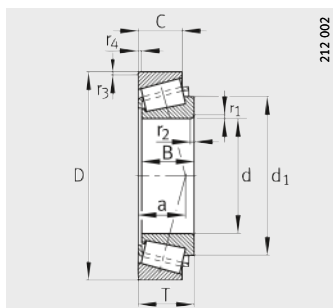
Dimension table · Dimensions in mm

Designation	Mass m ≈ kg	Dimensions			Mounting dimensions											
		d	D	B	T	C	r <sub>1</sub> , r <sub>2</sub>		r <sub>3</sub> , r <sub>4</sub>		a	d <sub>1</sub>	d <sub>a</sub> max.	d <sub>b</sub> min.	D <sub>a</sub>	
							min.	min.	min.	max.						
<b>32203-XL</b>	0,105	<b>17</b>	40	16	17,25	14	1	1	1	1	11	29,3	22	23	34	34
<b>32204-B-XL</b>	0,186	<b>20</b>	47	18	19,25	15	1	1	1	1	15	36,2	26	27	37	41
<b>32204-XL</b>	0,165	<b>20</b>	47	18	19,25	15	1	1	1	1	13	33,9	26	26	39	41
<b>32205-B-XL</b>	0,2	<b>25</b>	52	18	19,25	15	1	1	1	1	16	41,3	30	31	41	46
<b>32205-XL</b>	0,186	<b>25</b>	52	18	19,25	16	1	1	1	1	14	39,5	31	31	44	46
<b>32206-B-XL</b>	0,28	<b>30</b>	62	20	21,25	17	1	1	1	1	18	48,5	36	36	50	56
<b>32206-XL</b>	0,283	<b>30</b>	62	20	21,25	17	1	1	1	1	16	46,8	37	36	52	56
<b>32207-B-XL</b>	0,464	<b>35</b>	72	23	24,25	19	1,5	1,5	1,5	1,5	21	56	42	42	56	65
<b>32207-XL</b>	0,449	<b>35</b>	72	23	24,25	19	1,5	1,5	1,5	1,5	18	53,9	43	42	61	65
<b>32208-B-XL</b>	0,55	<b>40</b>	80	23	24,75	19	1,5	1,5	1,5	1,5	22	61,1	48	47	65	73
<b>32208-XL</b>	0,6	<b>40</b>	80	23	24,75	19	1,5	1,5	1,5	1,5	19	60	48	47	68	73
<b>32209-B-XL</b>	0,626	<b>45</b>	85	23	24,75	19	1,5	1,5	1,5	1,5	24	66,8	53	52	70	78
<b>32209-XL</b>	0,592	<b>45</b>	85	23	24,75	19	1,5	1,5	1,5	1,5	20	65,6	53	52	73	78
<b>32210-B-XL</b>	0,591	<b>50</b>	90	23	24,75	19	1,5	1,5	1,5	1,5	25	71,2	57	57	76	83
<b>32210-XL</b>	0,702	<b>50</b>	90	23	24,75	19	1,5	1,5	1,5	1,5	21	70,1	58	57	78	83
<b>32211-B-XL</b>	0,884	<b>55</b>	100	25	26,75	19	2	1,5	1,5	1,5	26	78	61	64	85	91
<b>32211-XL</b>	0,87	<b>55</b>	100	25	26,75	21	2	1,5	1,5	1,5	23	76,7	63	64	87	91
<b>33211-XL</b>	1,17	<b>55</b>	100	35	35	27	2	1,5	1,5	1,5	26	79,4	62	64	85	91
<b>32212-B-XL</b>	1,2	<b>60</b>	110	28	29,75	21	2	1,5	1,5	1,5	29	85,3	69	69	92	104
<b>32212-XL</b>	1,18	<b>60</b>	110	28	29,75	24	2	1,5	1,5	1,5	24	83,2	69	69	95	101
<b>32213-B-XL</b>	1,58	<b>65</b>	120	31	32,75	23	2	1,5	1,5	1,5	31	92,1	74	74	101	111
<b>32213-XL</b>	1,57	<b>65</b>	120	31	32,75	27	2	1,5	1,5	1,5	27	91,6	76	74	104	111
<b>32214-B-XL</b>	1,68	<b>70</b>	125	31	33,25	23,5	2	1,5	1,5	1,5	34	97,5	78	79	105	116
<b>32214-XL</b>	1,81	<b>70</b>	125	31	33,25	27	2	1,5	1,5	1,5	28	96,4	80	79	108	116
<b>32215-XL</b>	1,76	<b>75</b>	130	31	33,25	27	2	1,5	1,5	1,5	30	101,6	85	84	115	121
<b>33215-XL</b>	2,25	<b>75</b>	130	41	41	31	2	1,5	1,5	1,5	32	104,2	83	84	111	121

					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Reference speed	Interchange designation to ISO 10317 and ISO 355
D <sub>b</sub>	C <sub>a</sub>	C <sub>b</sub>	r <sub>a</sub>	r <sub>b</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>	
min.	min.	min.	max.	max.	N	N				N	min <sup>-1</sup>	min <sup>-1</sup>	
37	3	3	1	1	34 500	30 000	0,31	1,92	1,06	4 300	19 500	10 800	T2DD017
44	2	4	1	1	39 000	37 000	0,52	1,16	0,64	5 600	16 000	9 600	T5DD020
43	3	4	1	1	40 500	36 500	0,33	1,81	1	5 400	16 700	9 600	T2DD020
49	2	4	1	1	44 500	46 000	0,58	1,03	0,57	6 800	14 100	8 000	T5CD025
48	3	3	1	1	47 500	45 000	0,36	1,67	0,92	6 700	14 500	8 000	T2CD025
60	3	4	1	1	62 000	65 000	0,56	1,07	0,59	9 700	11 800	6 700	T5DC030
59	3	4	1	1	63 000	62 000	0,37	1,6	0,88	9 700	12 100	6 700	T3DC030
68	3	5	1,5	1,5	75 000	80 000	0,58	1,03	0,57	12 400	10 100	6 100	T5DC035
67	3	5,5	1,5	1,5	84 000	85 000	0,37	1,6	0,88	13 300	10 300	5 900	T3DC035
76	4	5,5	1,5	1,5	87 000	88 000	0,55	1,1	0,6	13 700	9 100	5 400	T5DC040
75	3	5,5	1,5	1,5	94 000	94 000	0,37	1,6	0,88	14 700	9 200	5 300	T3DC040
82	4	5,5	1,5	1,5	93 000	99 000	0,59	1,01	0,56	15 600	8 400	4 900	T5DC045
80	3	5,5	1,5	1,5	97 000	100 000	0,4	1,48	0,81	15 700	8 500	4 900	T3DC045
87	4	6,5	1,5	1,5	98 000	102 000	0,59	1,02	0,56	16 100	7 800	4 550	T5DC050
85	3	5,5	1,5	1,5	104 000	110 000	0,42	1,43	0,79	17 200	8 000	4 450	T3DC050
96	4	7,5	2	1,5	124 000	130 000	0,57	1,05	0,58	20 100	7 100	4 100	-
95	4	5,5	2	1,5	130 000	137 000	0,4	1,48	0,81	21 200	7 200	4 050	T3DC055
96	6	8	2	1,5	164 000	194 000	0,4	1,5	0,83	31 500	6 900	4 400	T3DE055
105	5	8,5	2	1,5	151 000	162 000	0,57	1,05	0,58	25 000	6 400	3 850	-
104	4	5,5	2	1,5	158 000	171 000	0,4	1,48	0,81	27 000	6 600	3 800	T3EC060
114	5	9,5	2	1,5	174 000	185 000	0,56	1,07	0,59	29 000	5 900	3 700	-
115	4	5,5	2	1,5	185 000	202 000	0,4	1,48	0,81	32 000	5 900	3 600	T3EC065
120	5	9,5	2	1,5	179 000	196 000	0,59	1,02	0,56	31 000	5 600	3 500	-
119	4	6	2	1,5	194 000	216 000	0,42	1,43	0,79	34 000	5 700	3 400	T3EC070
124	4	6	2	1,5	201 000	227 000	0,43	1,38	0,76	36 000	5 400	3 200	T4DC075
125	7	10	2	1,5	245 000	310 000	0,43	1,4	0,77	50 000	5 200	3 350	T3EE075

# Tapered roller bearings

Single row  
Series 322, 323, 329, 330



Mounting dimensions

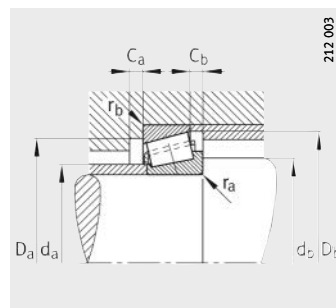
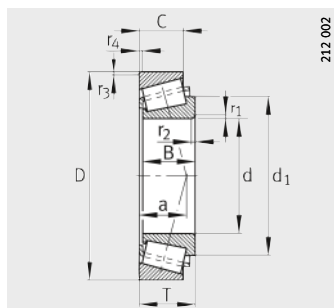
Dimension table (continued) - Dimensions in mm

Designation	Mass m ≈ kg	Dimensions			Mounting dimensions											
		d	D	B	T	C	r <sub>1</sub> , r <sub>2</sub>		r <sub>3</sub> , r <sub>4</sub>		a	d <sub>1</sub>	d <sub>a</sub> max.	d <sub>b</sub> min.	D <sub>a</sub>	
							min.	min.	min.	min.					min.	max.
32216-XL	2,15	80	140	33	35,25	28	2,5	2	31	107,7	90	90	122	130		
32217-XL	2,71	85	150	36	38,5	30	2,5	2	34	114,7	96	95	130	140		
32317-B-XL	7,75	85	180	60	63,5	49	4	3	52	133,5	102	99	138	166		
32218-XL	3,44	90	160	40	42,5	34	2,5	2	36	121,8	102	100	138	150		
32219-XL	4,59	95	170	43	45,5	37	3	2,5	39	129	108	107	145	158		
32220-XL	5,21	100	180	46	49	39	3	2,5	42	136,5	114	112	154	168		
32221-XL	6,3	105	190	50	53	43	3	2,5	45	143,6	120	117	161	178		
32222-XL	7,2	110	200	53	56	46	3	2,5	46	151,4	126	122	170	188		
32224-XL	9,31	120	215	58	61,5	50	3	2,5	51	164,3	136	132	181	203		
32226-XL	11,4	130	230	64	67,75	54	4	3	56	176,5	146	144	193	216		
32228-XL	14,5	140	250	68	71,75	58	4	3	60	191,5	159	154	210	236		
33030-XL	8,1	150	225	59	59	46	3	2,5	48	189,5	164	162	200	213		
32230-XL	18,1	150	270	73	77	60	4	3	64	205,5	171	164	226	256		
32232-XL	23,1	160	290	80	84	67	4	3	69	221	183	174	242	276		
32234-XL	28,8	170	310	86	91	71	5	4	74	237	196	188	259	292		
32236-XL	29,9	180	320	86	91	71	5	4	77	246,5	204	198	267	302		
32238-XL	39	190	340	92	97	75	5	4	81	261	216	207	286	322		
32240-XL	42,8	200	360	98	104	82	5	4	83	269,5	226	217	302	342		
32244-XL	59,7	220	400	108	114	90	5	4	95	305	258	237	336	382		
32248-XL	80,5	240	440	120	127	100	5	4	105	334,5	286	257	372	422		
32952-XL	18,7	260	360	63,5	63,5	48	3	2,5	70	307,5	279	272	328	348		
32252-XL	104	260	480	130	137	106	6	5	113	366	306	280	401	458		
32256-XL	111	280	500	130	137	106	6	5	118	384,5	322	300	418	477		
32260-XL	139	300	540	140	149	115	6	5	127	412,5	346	320	453	517		
32264-XL	170	320	580	150	159	125	6	5	136	443	372	340	486	556		

					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Reference speed	Interchange designation to ISO 10317 and ISO 355
D <sub>b</sub>	C <sub>a</sub>	C <sub>b</sub>	r <sub>a</sub>	r <sub>b</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>	
min.	min.	min.	max.	max.	N	N				N	min <sup>-1</sup>	min <sup>-1</sup>	
134	5	7	2,5	2	234 000	265 000	0,42	1,43	0,79	40 500	5 000	3 000	T3EC080
142	5	8,5	2,5	2	270 000	305 000	0,42	1,43	0,79	46 500	4 700	2 900	T3EC085
169	7	14,5	4	3	480 000	590 000	0,55	1,1	0,6	85 000	3 850	2 950	T5GD085
152	5	8,5	2,5	2	310 000	360 000	0,42	1,43	0,79	51 000	4 350	2 800	T3FC090
161	5	8,5	3	2,5	355 000	420 000	0,42	1,43	0,79	63 000	4 100	2 650	T3FC095
171	5	10	3	2,5	400 000	475 000	0,42	1,43	0,79	71 000	3 850	2 600	T3FC100
180	5	10	3	2,5	455 000	550 000	0,42	1,43	0,79	82 000	3 650	2 490	T3FC105
190	6	10	3	2,5	490 000	590 000	0,42	1,43	0,79	86 000	3 450	2 380	T3FC110
204	7	11,5	3	2,5	570 000	730 000	0,43	1,38	0,76	105 000	3 150	2 120	T4FD120
219	7	13,5	4	3	660 000	850 000	0,43	1,38	0,76	120 000	2 900	1 950	T4FD130
238	8	13,5	4	3	760 000	990 000	0,43	1,38	0,76	137 000	2 700	1 740	T4FD140
217	8	13	3	2,5	550 000	890 000	0,36	1,65	0,9	124 000	2 850	1 920	T2EE150
254	8	17	4	3	870 000	1 150 000	0,43	1,38	0,76	156 000	2 490	1 570	T4GD150
274	10	17	4	3	1 030 000	1 380 000	0,43	1,38	0,76	184 000	2 300	1 410	T4GD160
294	10	20	5	4	1 160 000	1 560 000	0,43	1,38	0,76	204 000	2 130	1 310	T4GD170
303	10	20	5	4	1 190 000	1 640 000	0,45	1,33	0,73	213 000	2 060	1 230	T4GD180
323	10	22	5	4	1 340 000	1 820 000	0,43	1,38	0,76	231 000	1 930	1 150	T4GD190
340	11	22	5	4	1 570 000	2 080 000	0,41	1,48	0,81	255 000	1 850	1 060	T3GD200
380	12	24	5	4	1 820 000	2 550 000	0,43	1,38	0,76	305 000	1 630	910	–
415	14	27	5	4	2 190 000	3 100 000	0,43	1,38	0,76	365 000	1 480	800	–
347	11	15,5	3	2,5	890 000	1 500 000	0,41	1,48	0,81	183 000	1 780	990	T3EC260
455	14	31	6	5	2 650 000	3 800 000	0,43	1,39	0,77	430 000	1 340	690	–
475	14	31	6	5	2 700 000	3 950 000	0,45	1,34	0,73	445 000	1 290	650	–
510	16	34	6	5	3 150 000	4 550 000	0,43	1,38	0,76	500 000	1 190	590	–
555	16	34	6	5	3 550 000	5 200 000	0,43	1,38	0,76	620 000	1 100	530	–

# Tapered roller bearings

Single row  
Series 320



Mounting dimensions

**Dimension table** · Dimensions in mm

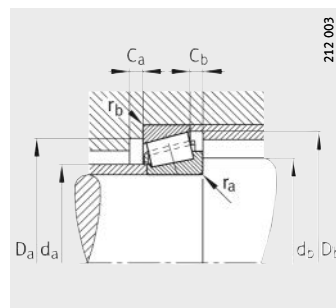
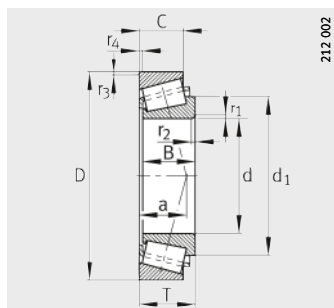
Designation	Mass m ≈ kg	Dimensions			Mounting dimensions											
		d	D	B	T	C	r <sub>1</sub> , r <sub>2</sub>		r <sub>3</sub> , r <sub>4</sub>		a	d <sub>1</sub>	d <sub>a</sub> max.	d <sub>b</sub> min.	D <sub>a</sub>	
							min.	min.	max.	min.					max.	
<b>32004-X-XL</b>	0,111	<b>20</b>	42	15	15	12	0,6	0,6	10	33,1	25	25	36	37		
<b>32005-X-XL</b>	0,117	<b>25</b>	47	15	15	11,5	0,6	0,6	12	38,5	30	30	40	42		
<b>32006-X-XL</b>	0,174	<b>30</b>	55	17	17	13	1	1	14	43,9	35	36	48	49		
<b>32007-X-XL</b>	0,225	<b>35</b>	62	18	18	14	1	1	15	50,1	40	41	54	56		
<b>32008-X-XL</b>	0,28	<b>40</b>	68	19	19	14,5	1	1	15	55,2	46	46	60	62		
<b>32009-X-XL</b>	0,355	<b>45</b>	75	20	20	15,5	1	1	17	62,2	51	51	67	69		
<b>32010-X-XL</b>	0,39	<b>50</b>	80	20	20	15,5	1	1	18	67,3	56	56	72	74		
<b>32011-X-XL</b>	0,57	<b>55</b>	90	23	23	17,5	1,5	1,5	20	75,1	63	62	81	83		
<b>32012-X-XL</b>	0,61	<b>60</b>	95	23	23	17,5	1,5	1,5	21	79,6	67	67	85	88		
<b>32013-X-XL</b>	0,64	<b>65</b>	100	23	23	17,5	1,5	1,5	23	85,1	72	72	90	93		
<b>32014-X-XL</b>	0,88	<b>70</b>	110	25	25	19	1,5	1,5	24	91,7	78	77	98	103		
<b>32015-X-XL</b>	0,92	<b>75</b>	115	25	25	19	1,5	1,5	26	97	83	82	103	108		
<b>32016-X-XL</b>	1,29	<b>80</b>	125	29	29	22	1,5	1,5	27	104,2	89	87	112	117		
<b>32017-X-XL</b>	1,36	<b>85</b>	130	29	29	22	1,5	1,5	29	109,1	94	92	117	122		
<b>32018-X-XL</b>	1,76	<b>90</b>	140	32	32	24	2	1,5	30	115,8	100	99	125	131		
<b>32019-X-XL</b>	1,86	<b>95</b>	145	32	32	24	2	1,5	32	121,4	105	104	130	136		



					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Reference speed	Interchange designation to ISO 10317 and ISO 355
D <sub>b</sub>	C <sub>a</sub>	C <sub>b</sub>	r <sub>a</sub>	r <sub>b</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>	
min.	min.	min.	max.	max.	N	N				N	min <sup>-1</sup>	min <sup>-1</sup>	
39	3	3	0,6	0,6	28 500	29 000	0,37	1,6	0,88	3 950	18 100	10 900	T3CC020
44	3	3,5	0,6	0,6	31 500	34 000	0,43	1,39	0,77	4 700	15 700	9 200	T4CC025
52	3	4	1	1	46 000	47 000	0,43	1,39	0,77	7 000	13 300	7 900	T4CC030
59	4	4	1	1	54 000	57 000	0,45	1,32	0,73	8 800	11 600	6 900	T4CC035
65	4	4,5	1	1	63 000	71 000	0,38	1,58	0,87	10 800	10 600	6 200	T3CD040
72	4	4,5	1	1	72 000	86 000	0,39	1,53	0,84	13 300	9 400	5 500	T3CC045
77	4	4,5	1	1	75 000	94 000	0,42	1,42	0,78	14 400	8 700	5 000	T3CC050
86	4	5,5	1,5	1,5	96 000	118 000	0,41	1,48	0,81	18 800	7 700	4 700	T3CC055
91	4	5,5	1,5	1,5	97 000	124 000	0,43	1,39	0,77	19 700	7 300	4 400	T4CC060
97	4	5,5	1,5	1,5	97 000	125 000	0,46	1,31	0,72	20 100	6 800	4 200	T4CC065
105	5	6	1,5	1,5	123 000	159 000	0,43	1,38	0,76	25 500	6 300	3 800	T4CC070
110	5	6	1,5	1,5	124 000	165 000	0,46	1,31	0,72	26 500	6 000	3 600	T4CC075
120	6	7	1,5	1,5	162 000	212 000	0,42	1,42	0,78	33 500	5 500	3 450	T3CC080
125	6	7	1,5	1,5	167 000	224 000	0,44	1,36	0,75	35 000	5 200	3 300	T4CC085
134	6	8	2	1,5	195 000	255 000	0,42	1,42	0,78	40 000	4 850	3 200	T3CC090
140	6	8	2	1,5	201 000	275 000	0,44	1,36	0,75	42 500	4 650	3 000	T4CC095

# Tapered roller bearings

Single row  
Series 320



Mounting dimensions

Dimension table (continued) · Dimensions in mm

Designation	Mass m ≈ kg	Dimensions			Mounting dimensions											
		d	D	B	T	C	r <sub>1</sub> , r <sub>2</sub>		r <sub>3</sub> , r <sub>4</sub>		a	d <sub>1</sub>	d <sub>a</sub> max.	d <sub>b</sub> min.	D <sub>a</sub>	
							min.	min.	max.	min.					max.	
32020-X-XL	1,94	100	150	32	32	24	2	1,5	33	126,3	109	109	134	141		
32021-X-XL	2,45	105	160	35	35	26	2,5	2	35	133,7	116	115	143	150		
32022-X-XL	3,06	110	170	38	38	29	2,5	2	37	141,2	122	120	152	160		
32024-X-XL	3,29	120	180	38	38	29	2,5	2	40	151,2	131	130	161	170		
32026-X-XL	4,83	130	200	45	45	34	2,5	2	44	165,9	144	140	178	190		
32028-X-XL	5,4	140	210	45	45	34	2,5	2	46	175,6	153	150	187	200		
32030-X-XL	6,5	150	225	48	48	36	3	2,5	50	187,8	164	162	200	213		
32032-X-XL	7,8	160	240	51	51	38	3	2,5	53	200,4	175	172	213	228		
32034-X-XL	10,5	170	260	57	57	43	3	2,5	57	214,5	187	182	230	248		
32036-X-XL	14	180	280	64	64	48	3	2,5	60	228	199	192	247	268		
32038-X-XL	14,6	190	290	64	64	48	3	2,5	63	239	209	202	257	278		
32040-X-XL	18,7	200	310	70	70	53	3	2,5	67	253	221	212	273	298		
32044-X-XL	24,1	220	340	76	76	57	4	3	73	277,5	243	234	300	326		
32048-X-XL	25,8	240	360	76	76	57	4	3	79	298,5	261	254	318	346		
32052-X-XL	41,1	260	400	87	87	65	5	4	86	327,5	287	278	352	382		
32056-X-XL	40,6	280	420	87	87	65	5	4	91	347	305	298	370	402		
32060-X-XL	58,1	300	460	100	100	74	5	4	98	375	329	318	404	442		
32064-X-XL	60,8	320	480	100	100	74	5	4	104	398,5	350	338	424	462		

					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Reference speed	Interchange designation to ISO 10317 and ISO 355
D <sub>b</sub>	C <sub>a</sub>	C <sub>b</sub>	r <sub>a</sub>	r <sub>b</sub>	dyn. C <sub>r</sub>	stat. C <sub>0r</sub>	e	Y	Y <sub>0</sub>	C <sub>ur</sub>	n <sub>G</sub>	n <sub>B</sub>	
min.	min.	min.	max.	max.	N	N				N	min <sup>-1</sup>	min <sup>-1</sup>	
144	6	8	2	1,5	205 000	285 000	0,46	1,31	0,72	43 500	4 500	2 900	T4CC100
154	6	9	2,5	2	238 000	330 000	0,44	1,35	0,74	49 000	4 200	2 800	T4DC105
163	7	9	2,5	2	285 000	395 000	0,43	1,39	0,77	59 000	3 950	2 650	T4DC110
173	7	9	2,5	2	295 000	420 000	0,46	1,31	0,72	61 000	3 700	2 460	T4DC120
192	8	11	2,5	2	385 000	550 000	0,43	1,38	0,76	79 000	3 300	2 330	T4EC130
202	8	11	2,5	2	400 000	590 000	0,46	1,31	0,72	84 000	3 150	2 170	T4DC140
216	8	12	3	2,5	455 000	680 000	0,46	1,31	0,72	93 000	2 900	1 980	T4EC150
231	8	13	3	2,5	500 000	740 000	0,46	1,31	0,72	102 000	2 700	1 850	T4EC160
249	10	14	3	2,5	600 000	880 000	0,44	1,35	0,74	119 000	2 500	1 690	T4EC170
267	10	16	3	2,5	740 000	1 100 000	0,42	1,42	0,78	144 000	2 330	1 510	T3FD180
279	10	16	3	2,5	740 000	1 120 000	0,44	1,36	0,75	147 000	2 230	1 450	T4FD190
297	11	17	3	2,5	900 000	1 380 000	0,43	1,39	0,77	176 000	2 090	1 290	T4FD200
326	12	19	4	3	1 060 000	1 640 000	0,43	1,39	0,77	204 000	1 890	1 130	T4FD220
346	12	19	4	3	1 060 000	1 680 000	0,46	1,31	0,72	207 000	1 780	1 060	T4FD240
383	14	22	5	4	1 360 000	2 140 000	0,43	1,38	0,76	255 000	1 600	920	T4FC260
402	14	22	5	4	1 420 000	2 300 000	0,46	1,31	0,72	270 000	1 510	840	T4FC280
439	15	26	5	4	1 780 000	2 850 000	0,43	1,38	0,76	330 000	1 380	750	T4GD300
461	15	26	5	4	1 850 000	3 050 000	0,46	1,31	0,72	350 000	1 310	690	T4GD320

# Notes



# Notes



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