Tapered Roller Bearings

Single row tapered roller bearing

Double row tapered roller bearing

1. Types, design features, and characteristics

Tapered roller bearings are designed so the tapered vertex of the raceway surfaces of the inner and outer rings and rollers converge at one point on the centerline of the bearing (see **Fig. 1**).

The tapered rollers are guided by the compound force of the inner and outer raceway surfaces which keep the rollers pressed up against the large rib on the inner ring.

A large variety of these bearings, including single, double, and four row arrangements, are available in both metric and inch series. Each type and associated characteristics are shown in **Table 1**. For four-row tapered roller bearings, see section "C. Special application bearings."

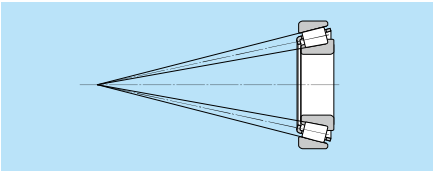


Fig. 1

Table 1 Tapered roller bearing types and characteristics

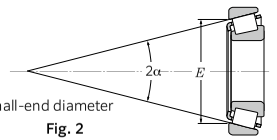
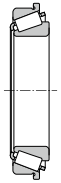
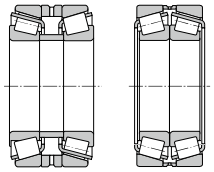
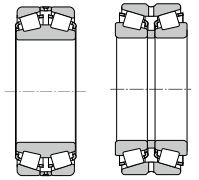
Type	Characteristics
Single row tapered roller bearings	(1) There are both metric and inch series adhering to the standards shown in **the following table.** **Dimension series** Metric series: ●JIS B 1534 ●JIS B 1512 ●ISO 355 Inch series: ●ABMA (includes metric J-series) Standard Basic number: Example, 30210 ＊T2EE040 Inner ring no. / outer ring no. ("J" appears at the beginning of the basic number in the case of J-series.) ＊Dimension series previously not covered by 3XX are regulated under JIS B 1512; dimensions previously missing from 3XX will henceforth use the bearing number. (2) In addition to the standard design, there are also medium contact angle and large contact angle types, denoted by the contact angle codes at the end of the part numbers (C and D, respectively). (3) Subunits Tapered roller bearings can be disassembled into parts: the inner ring, rollers, and cage (collectively known as the "CONE") and the outer ring (known as the "CUP"). These are the bearing's "subunits". Subunit dimensions are standardized under ISO or ABMA standards, and unified subunits are interchangeable within each dimensional standard. **However, high precision grade bearings are generally not interchangeable, and these subunits must be used by assembling only subunits with identical manufacturing numbers.** Aside from any cautionary notes that may appear, the single row tapered roller bearings listed in the dimension tables have subunits standardized for both metric and inch systems (including J series). (Refer to **Fig. 2**) Subunit dimensions  E : Outer ring (cup) nominal small-end diameter α : Nominal contact angle **Fig. 2** Continued to the next page

Table 1 (continued)

Type	Characteristics	
Single row tapered roller bearings	(4) These bearings are constructed to have a high capacity for radial loads, axial loads, and combined loads. The larger the contact angle, the greater the axial load capacity. When a pure radial load is applied to a tapered roller bearing, an induced load in the axial direction is also generated, so these bearings are generally used in pairs. (5) Single row tapered roller bearings are separable, so both the inner and outer rings can be used with tight fits. (6) Tapered roller bearings are also manufactured with flanges attached to the outer rings. For more details, contact **NTN** Engineering. (Refer to **Fig. 3**)	 Fig. 3
Duplex tapered roller bearings	(1) When two single-row tapered roller bearings are to be used in combination, the bearing clearance and preload are adjusted by the inner ring spacer or the outer ring spacer (see **Fig. 4**). (2) A product number and a combination code are indicated on inner rings, outer rings, and spacers. Parts displaying the same number and code must be used in combination. (3) See A-96 **Table 8.14** for the axial internal clearance.	 Back-to-back (DB) Face-to-face (DF) Fig. 4
Double row tapered roller bearings	(1) Back-to-back arrangement (using double row outer rings) and face-to-face arrangement (using double row inner rings) are both available. The assemblies have been adjusted so that each type's internal clearance values are fixed. Only parts with identical manufacturing numbers can be used and they must be assembled according to their code numbers. (Refer to **Fig. 5**) (2) See A-96 **Table 8.14** for the axial internal clearance of double-row and duplex bearings.	 Face-to-face Back-to-back Fig. 5

2. Standard cage type

In general, pressed cages (see **Fig. 6**) are used in tapered roller bearings. For large sized bearings, machined or pin type cages may also be used, while resin cages may also be used for smaller sized bearings.

Fig. 6 Pressed steel cage

3. Allowable misalignment

In order to avoid edge loading and potential for premature failure, the maximum allowable misalignment based on bearing series can be found below.

The allowable misalignment of combined bearings is influenced by the load center position, so please consult **NTN** Engineering.

- Single row (standard) ····· 1/ 2 000
- Single row (ULTAGE) ····· 1/ 600

4. Precautions

If bearing load is light during operation, or if the ratio of axial to radial load for duplex and double row bearings exceeds the value of e, slipping may develop between the rollers and raceway surface, sometimes resulting in smearing. The mass of rollers and cages particularly tends to be large for large tapered roller bearings. For additional details, please contact **NTN** Engineering.

In tapered roller bearings, the cage may protrude beyond the inner and/or outer ring side faces. Care should be taken when designing the housing and shaft to ensure contact with the cage does not occur.

5. Tapered roller bearing (ULTAGE) series

The ULTAGE tapered roller bearings have been developed for "long operating life," "improved load capacity," and "higher speed" required for various types of industrial machinery.

For details, see the **special catalog (CAT. No. 3035/E)**.

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355	355 / 354A	B-167
355	358 / 354A	B-169
355	359A / 354A	B-169
355	359S / 352	B-169
365	365 / 362A	B-171
365	366 / 362A	B-171
365	367 / 362A	B-169
365	368 / 362A	B-171
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365	368S / 362A	B-173
365	369A / 362A	B-169
365	370A / 362A	B-171
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385	387 / 382A	B-175
385	387A / 382A	B-175
385	387AS / 382A	B-175
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385	388A / 382A	B-175
385	389 / 382A	B-175
385	389A / 382A	B-173
395	390 / 394A	B-175
395	390A / 394A	B-177
395	392 / 394A	B-177
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395	396 / 394A	B-171
395	397 / 394A	B-179
395	399A / 394A	B-179
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415	420 / 414	B-165
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435	438 / 432	B-167
455	455 / 453X	B-173
455	460 / 453X	B-167
455	462 / 453X	B-175
455	463 / 453X	B-169
455	469 / 453A	B-175
455	469 / 453X	B-175
455	469 / 454	B-175
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475	480 / 472	B-179
475	482 / 472	B-179
475	483 / 472	B-177
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495	495 / 493	B-183
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495	495AS / 493	B-183
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565	565 / 563	B-177
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565	567 / 563	B-181
565	567A / 563	B-181
565	568 / 563	B-181
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595	598A / 592A	B-185
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635	643 / 632	B-179
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Tapered Roller Bearings
NTN
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Inch Series Tapered Roller Bearings (Single Row) Index

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28900	28995 / 28920	B-177
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33800	33890 / 33821	B-173
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72000C	72218C / 72487	B-175
72000C	72225C / 72487	B-175
LM72800	LM72849 / LM72810	B-157
74000	74500 / 74850	B-189
74000	74525 / 74850	B-191
74000	74550 / 74850	B-191
78000	78225 / 78551	B-175
78000	78250 / 78551	B-177
78000C	78214C / 78551	B-173
LM78300	LM78349 / LM78310C	B-163
LM78300	LM78349A / LM78310A	B-163
M84500	M84548 / M84510	B-157
M86600	M86643 / M86610	B-157
M86600	M86647 / M86610	B-159
M86600	M86649 / M86610	B-159
M88000	M88048 / M88010	B-161
HM88500	JHM88540 / JHM88513	B-159
HM88500	HM88542 / HM88510	B-161
HM88500	HM88542 / HM88512	B-161
HM88500	HM88547 / HM88510	B-161
HM88600	HM88648 / HM88610	B-163
HM88600	HM88648 / HM88611AS	B-163
HM88600	HM88649 / HM88610	B-161
HM89200	HM89249 / HM89210	B-163
HM89400	HM89440 / HM89410	B-161
HM89400	HM89443 / HM89410	B-161
HM89400	HM89444 / HM89410	B-161
HM89400	HM89446 / HM89410	B-163
HM89400	HM89448 / HM89410	B-163
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HH221400	HH221440 / HH221410	B-187
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HH224300	HH224335 / HH224310	B-187
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LM522500	LM522548 / LM522510	B-189
HM522600	JHM522649 / JHM522610	B-189
HM534100	JHM534149 / JHM534110	B-191
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L610500	L610549 / L610510	B-177
M612900	JM612949 / JM612910	B-179
HM617000	HM617049 / HM617010	B-185
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LL639200	LL639249 / L639210	B-191
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LM710900	JLM710949 / JLM710910	B-177
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M714200	JM714249 / JM714210	B-181
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M716600	JM716648 / JM716610	B-185
M718100	JM718149 / JM718110	B-185
M719100	JM719149 / JM719113	B-185
M720200	JM720249 / JM720210	B-187
L724300	JL724348 / JL724314	B-189
M736100	JM736149 / JM736110	B-191
M738200	JM738249 / JM738210	B-191
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HM803100	HM803149 / HM803110	B-167
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HM804800	HM804840 / HM804810	B-167
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HM804800	M804846 / M804810	B-169
HM804800	M804848 / M804810	B-171
HM804800	M804849 / M804810	B-171
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HM807000	HM807044 / HM807010	B-171
HM807000	HM807046 / HM807010	B-173
HM807000	HM807048 / HM807010	B-173
HM807000	HM807049 / HM807010	B-173
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HM813800	HM813844 / HM813810	B-179
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HM903200	HM903249 / HM903210	B-167
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HM911200	HM911242 / HM911210	B-173
HM911200	HM911245 / HM911210	B-177
HM911200	HM911244 / JHM911211	B-177
H913800	H913840 / H913810	B-175
H913800	H913842 / H913810	B-177
H913800	JH913848 / JH913811	B-181
H917800	H917840 / H917810	B-183
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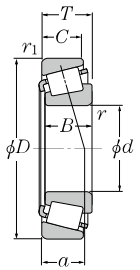
Tapered Roller Bearings
NTN
Inch Series Tapered Roller Bearings (Single Row) Index

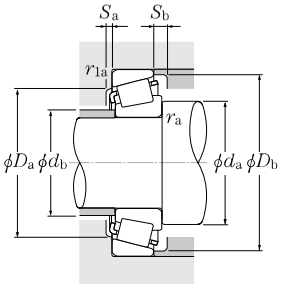
Metric series



d 15 ~ 30mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min^{-1}		Bearing number 2)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
15	42	14.25	13	11	1	1	25.8	20.8	—	9 900	13 000	**4T-30302**
17	40	13.25	12	11	1	1	22.7	20.3	—	9 900	13 000	**4T-30203**
	40	17.25	16	14	1	1	30.5	28.3	—	9 900	13 000	**4T-32203**
	40	17.25	16	14	1	1	29.1	28.2	—	9 900	13 000	○ **4T-32203R**
	47	15.25	14	12	1	1	32.0	26.3	—	9 000	12 000	**4T-30303**
20	42	15	15	12	0.6	0.6	27.6	27.9	—	9 500	13 000	**4T-32004X**
	47	15.25	14	12	1	1	31.0	28.7	—	8 800	12 000	**4T-30204**
	47	19.25	18	15	1	1	40.5	39.5	—	8 800	12 000	**4T-32204**
	52	16.25	16	13	1.5	1.5	39.0	34.0	—	8 000	11 000	**4T-30304A**
	52	16.25	16	12	1.5	1.5	34.5	31.0	—	7 600	10 000	**4T-30304CA**
	52	22.25	21	18	1.5	1.5	51.5	48.5	—	8 000	11 000	**4T-32304**
22	44	15	15	11.5	0.6	0.6	30.0	31.5	—	8 900	12 000	**4T-320/22X**
25	47	15	15	11.5	0.6	0.6	31.0	33.5	—	7 900	11 000	**4T-32005X**
	47	17	17	14	0.6	0.6	36.0	40.5	—	8 000	11 000	**4T-33005**
	52	16.25	15	13	1	1	35.0	34.0	—	7 300	9 800	**4T-30205**
	52	19.25	18	16	1	1	46.5	47.0	—	7 300	9 800	**4T-32205**
	52	19.25	18	15	1	1	42.0	43.0	—	7 300	9 800	○ **4T-32205R**
	52	19.25	18	15	1	1	42.5	46.5	—	7 100	9 400	**4T-32205C**
	52	19.25	18	15	1	1	38.0	42.0	—	7 100	9 400	○ **4T-32205CR**
	52	22	22	18	1	1	52.5	57.5	—	7 300	9 800	**4T-33205**
	62	18.25	17	15	1.5	1.5	54.0	47.5	—	6 700	8 900	**4T-30305**
	62	18.25	17	14	1.5	1.5	46.0	41.5	—	6 400	8 500	**4T-30305C**
	62	18.25	17	13	1.5	1.5	45.0	43.5	—	5 900	7 800	**4T-30305D**
	62	25.25	24	20	1.5	1.5	68.0	64.5	—	6 700	8 900	**4T-32305**
28	52	16	16	12	1	1	37.0	40.5	—	7 300	9 700	**4T-320/28X**
	58	24	24	19	1	1	64.5	69.5	—	6 700	8 900	**4T-332/28**
30	55	17	17	13	1	1	41.5	46.0	—	6 900	9 200	**4T-32006X**
	55	20	20	16	1	1	47.0	54.0	—	6 900	9 200	**4T-33006**
	62	17.25	16	14	1	1	48.5	48.0	—	6 300	8 400	**4T-30206**
	62	21.25	20	17	1	1	60.5	64.0	—	6 300	8 400	**4T-32206**
	62	21.25	20	17	1	1	55.5	60.0	—	6 100	8 100	**4T-32206C**
	62	25	25	19.5	1	1	72.0	77.0	—	6 300	8 400	**4T-33206**
	72	20.75	19	16	1.5	1.5	66.5	61.0	—	5 700	7 600	**4T-30306**

1) Smallest allowable dimension for chamfer dimension r or r_1.
2) Bearings with a ○ mark do not incorporate the subunit dimensions.



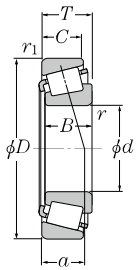
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
2FB	20.5	22	36.5	34.5	38	2	3	1	1	9.5	0.29	2.11	1.16	0.096
2DB	22.5	23	34.5	32.5	37.5	2	2	1	1	9.5	0.35	1.74	0.96	0.08
2DD	22.5	22.5	34.5	32	37.5	2	3	1	1	11.5	0.31	1.92	1.06	0.102
	22.5	22	34.5	31	37.5	2	3	1	1	11	0.35	1.74	0.96	0.105
2FB	22.5	24.5	41.5	38.5	42.5	3	3.5	1	1	10.5	0.29	2.11	1.16	0.132
3CC	24.5	25	37.5	33.5	39.5	3	3	0.6	0.6	10.5	0.37	1.6	0.88	0.097
2DB	25.5	27	41.5	38.5	44	2	3	1	1	11.5	0.35	1.74	0.96	0.124
2DD	25.5	26	41.5	37	43	2	4	1	1	12.5	0.33	1.81	1.00	0.161
2FB	28.5	28	43.5	42.5	47.5	3	3	1.5	1.5	10.5	0.30	2.00	1.10	0.172
	28.5	27.5	43.5	39.5	48	3	4	1.5	1.5	13.5	0.55	1.10	0.60	0.17
2FD	28.5	27	43.5	41	47.5	3	4	1.5	1.5	14	0.30	2.00	1.10	0.242
3CC	26.5	27	39.5	35.5	41.5	3	3.5	0.6	0.6	11	0.40	1.51	0.83	0.105
4CC	29.5	29.5	42.5	38.5	44.5	3	3.5	0.6	0.6	12	0.43	1.39	0.77	0.113
2CE	29.5	30	42.5	39	44.5	3	3	0.6	0.6	11	0.29	2.07	1.14	0.13
3CC	30.5	31	46.5	42	48.5	2	3	1	1	12.5	0.37	1.60	0.88	0.155
2CD	30.5	31	46.5	42.5	49.5	2	4	1	1	14	0.36	1.67	0.92	0.187
	30.5	30.5	46.5	41.5	49	2	4	1	1	13.5	0.37	1.60	0.88	0.185
5CD	30.5	30	46.5	38.5	50	2	4	1	1	16	0.58	1.03	0.57	0.192
	30.5	30.5	46.5	39.5	49.5	2	4	1	1	16	0.55	1.10	0.60	0.189
2DE	30.5	30.5	46.5	41	49.5	4	4	1	1	14	0.35	1.71	0.94	0.219
2FB	33.5	34	53.5	52	57.5	3	3	1.5	1.5	13	0.30	2.00	1.10	0.268
	33.5	34	53.5	48	58	3	4	1.5	1.5	16	0.55	1.10	0.60	0.264
7FB	33.5	33.5	53.5	45	59	3	5	1.5	1.5	20	0.83	0.73	0.40	0.266
2FD	33.5	33	53.5	50	57.5	3	5	1.5	1.5	16	0.30	2.00	1.10	0.377
4CC	33.5	33	46.5	43	49.5	3	4	1	1	12.5	0.43	1.39	0.77	0.146
2DE	33.5	33.5	52.5	47	55	5	5	1	1	15.5	0.34	1.77	0.97	0.293
4CC	35.5	35.5	49.5	45.5	52.5	3	4	1	1	13.5	0.43	1.39	0.77	0.172
2CE	35.5	35.5	49.5	46.5	52	3	4	1	1	13	0.29	2.06	1.13	0.201
3DB	35.5	37.5	56.5	51	58	2	3	1	1	13.5	0.37	1.60	0.88	0.236
3DC	35.5	36.5	56.5	50	58	2.5	4	1	1	15.5	0.37	1.60	0.88	0.299
5DC	35.5	36	56.5	48	59.5	2	5	1	1	18.5	0.56	1.07	0.59	0.297
2DE	35.5	36	56.5	50.5	59	5	5.5	1	1	16	0.34	1.76	0.97	0.348
2FB	38.5	40	63.5	60	65.5	3	4.5	1.5	1.5	15	0.31	1.90	1.05	0.404

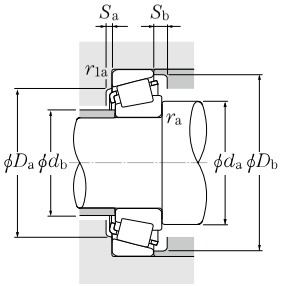
Metric series



d 30 ~ 45mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min^{-1}		Bearing number 2)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
30	72	20.75	19	15	1.5	1.5	65.0	58.5	—	5 500	7 300	**4T-30306CA**
	72	20.75	19	14	1.5	1.5	53.5	51.5	—	5 000	6 700	**4T-30306D**
	72	28.75	27	23	1.5	1.5	89.5	90.0	—	5 700	7 600	**4T-32306**
	72	28.75	27	23	1.5	1.5	88.0	94.0	—	5 500	7 300	**4T-32306C**
	72	28.75	27	23	1.5	1.5	77.5	88.5	—	5 500	7 300	○ **4T-32306CR**
32	58	17	17	13	1	1	41.0	46.5	—	6 600	8 700	**4T-320/32X**
	65	26	26	20.5	1	1	78.5	85.0	—	6 000	8 000	**4T-332/32**
	75	29.75	28	23	1.5	1.5	93.5	102	—	5 200	6 900	**4T-323/32C**
35	55	14	14	11.5	0.6	0.6	30.5	37.5	4.60	6 800	9 000	**32907XU**
	62	18	18	14	1	1	46.0	52.5	—	6 100	8 100	**4T-32007X**
	62	21	21	17	1	1	56.0	66.5	—	6 100	8 100	**4T-33007**
	72	18.25	17	15	1.5	1.5	61.5	61.5	—	5 500	7 400	**4T-30207**
	72	24.25	23	19	1.5	1.5	80.5	87.0	—	5 500	7 400	**4T-32207**
	72	24.25	23	19	1.5	1.5	75.5	85.5	—	5 300	7 100	**4T-32207C**
	72	24.25	23	18	1.5	1.5	68.5	78.5	—	5 300	7 100	○ **4T-32207CR**
	72	28	28	22	1.5	1.5	97.0	109	—	5 500	7 400	**4T-33207**
	80	22.75	21	18	2	1.5	83.0	77.0	—	5 000	6 600	**4T-30307**
	80	22.75	21	17	2	1.5	73.5	68.5	—	4 800	6 400	**4T-30307C**
	80	22.75	21	15	2	1.5	70.5	70.0	—	4 400	5 800	**4T-30307D**
	80	32.75	31	25	2	1.5	112	115	—	5 000	6 600	**4T-32307**
	80	32.75	31	25	2	1.5	103	117	—	4 800	6 400	**4T-32307C**
40	62	15	15	12	0.6	0.6	36.0	48.0	5.85	5 900	7 800	**32908XU**
	68	19	19	14.5	1	1	55.5	65.5	—	5 300	7 100	**4T-32008X**
	68	22	22	18	1	1	66.0	82.5	—	5 300	7 100	**4T-33008**
	75	26	26	20.5	1.5	1.5	88.0	103	—	5 200	6 900	**4T-33108**
	80	19.75	18	16	1.5	1.5	68.0	67.0	—	4 900	6 600	**4T-30208**
	80	24.75	23	19	1.5	1.5	88.0	93.5	—	4 900	6 600	**4T-32208**
	80	32	32	25	1.5	1.5	115	132	—	4 900	6 600	**4T-33208**
	85	33	32.5	28	2.5	2	131	144	—	4 600	6 200	**4T-T2EE040**
	90	25.25	23	20	2	1.5	101	102	—	4 400	5 900	**4T-30308**
	90	25.25	23	19	2	1.5	92.0	87.0	—	4 200	5 600	**4T-30308C**
	90	25.25	23	17	2	1.5	85.5	85.5	—	3 900	5 200	**4T-30308D**
	90	35.25	33	27	2	1.5	136	150	18.3	4 400	5 900	**32308U**
	90	35.25	33	27	2	1.5	122	140	—	4 200	5 600	**4T-32308C**
45	68	15	15	12	0.6	0.6	37.5	51.5	6.3	5 300	7 000	**32909XU**

1) Smallest allowable dimension for chamfer dimension r or r_1.
2) Bearings with a ○ mark do not incorporate the subunit dimensions.



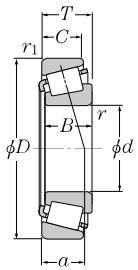
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
	38.5	39.5	63.5	58	67	3	5.5	1.5	1.5	17.5	0.47	1.27	0.70	0.399
7FB	38.5	39.5	63.5	53.5	68	3	6.5	1.5	1.5	23.5	0.83	0.73	0.40	0.394
2FD	38.5	39	63.5	57.5	66.5	3	5.5	1.5	1.5	18.5	0.31	1.90	1.05	0.577
5FD	38.5	38	63.5	52	69	2	5.5	1.5	1.5	23	0.55	1.10	0.60	0.591
	38.5	38	63.5	49.5	67.5	2	5.5	1.5	1.5	23	0.61	0.99	0.54	0.594
4CC	37.5	37.5	52.5	47.5	55.5	3	4	1	1	14.5	0.45	1.32	0.73	0.188
2DE	37.5	38	59.5	53	62	5	5.5	1	1	17	0.35	1.73	0.95	0.394
5FD	40.5	40	66.5	55	71.5	3	6.5	1.5	1.5	23	0.55	1.10	0.60	0.652
2BD	39.5	40	50.5	48	52.5	2.5	2.5	0.6	0.6	10.5	0.29	2.06	1.13	0.121
4CC	40.5	40.5	56.5	51.5	59.5	4	4	1	1	15.5	0.45	1.32	0.73	0.223
2CE	40.5	40.5	56.5	52	59	3	4	1	1	14	0.31	1.97	1.08	0.263
3DB	43.5	43.5	63.5	60.5	67.5	3	3	1.5	1.5	15	0.37	1.60	0.88	0.341
3DC	43.5	42.5	63.5	58.5	67.5	3	5	1.5	1.5	17.5	0.37	1.60	0.88	0.455
5DC	43.5	41.5	63.5	54.5	68.5	3	6	1.5	1.5	21.5	0.58	1.03	0.57	0.461
	43.5	42.5	63.5	55.5	68	3	6	1.5	1.5	20.5	0.55	1.10	0.60	0.462
2DE	43.5	42	63.5	58	68.5	5	6	1.5	1.5	18.5	0.35	1.70	0.93	0.539
2FB	45	45.5	71.5	67.5	75	3	4.5	2	1.5	17	0.31	1.90	1.05	0.535
	45	44	71.5	63.5	75.5	3	5.5	2	1.5	20.5	0.55	1.10	0.60	0.517
7FB	45	44.5	71.5	60.5	77	3	7.5	2	1.5	26	0.83	0.73	0.40	0.527
2FE	45	43.5	71.5	65	75	3	7.5	2	1.5	20.5	0.31	1.90	1.05	0.782
5FE	45	43.5	71.5	59	76	3	7.5	2	1.5	25	0.55	1.10	0.60	0.804
2BC	44.5	45.5	57.5	54	58.5	3	3	0.6	0.6	11.5	0.29	2.07	1.14	0.161
3CD	45.5	45.5	62.5	58	65	4	4.5	1	1	15	0.38	1.58	0.87	0.272
2BE	45.5	46	62.5	58.5	65	2.5	4	1	1	15	0.28	2.12	1.17	0.32
2CE	48.5	47	66.5	62.5	71.5	4	5.5	1.5	1.5	18	0.36	1.69	0.93	0.498
3DB	48.5	48.5	71.5	67.5	74.5	3	3.5	1.5	1.5	16.5	0.37	1.60	0.88	0.431
3DC	48.5	48.5	71.5	66.5	75	3	5.5	1.5	1.5	19	0.37	1.60	0.88	0.547
2DE	48.5	47	71.5	64.5	76.5	5	7	1.5	1.5	21	0.36	1.68	0.92	0.738
2EE	52	47.5	75	68	81	5	5	2	2	22.5	0.34	1.74	0.96	0.905
2FB	50	52.5	81.5	74.5	83.5	3	5	2	1.5	19.5	0.35	1.74	0.96	0.765
	50	50	81.5	72	85.5	3.5	6	2	1.5	23	0.55	1.10	0.60	0.726
7FB	50	51	81.5	68.5	86	3	8	2	1.5	29.5	0.83	0.73	0.40	0.727
2FD	50	49.5	81.5	71	83.5	3	8	2	1.5	23	0.35	1.74	0.96	1.08
5FD	50	49	81.5	65.5	84.5	3	8	2	1.5	27.5	0.55	1.10	0.60	1.1
2BC	49.5	51	63.5	59.5	64.5	3	3	0.6	0.6	12	0.32	1.88	1.04	0.187

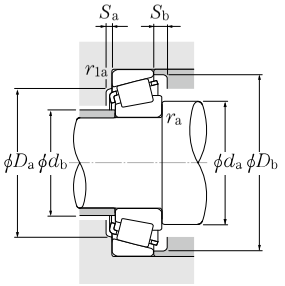
Metric series



d 45 ~ 55mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min^{-1}		Bearing number 2)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
45	75	20	20	15.5	1	1	64.0	76.5	—	4 800	6 400	**4T-32009X**
	75	24	24	19	1	1	73.5	93.5	—	4 800	6 400	**4T-33009**
	80	26	26	20.5	1.5	1.5	94.0	115	—	4 700	6 200	**4T-33109**
	85	20.75	19	16	1.5	1.5	75.0	78.5	—	4 400	5 900	**4T-30209**
	85	24.75	23	19	1.5	1.5	91.0	100	—	4 400	5 900	**4T-32209**
	85	32	32	25	1.5	1.5	119	141	—	4 400	5 900	**4T-33209**
	95	29	26.5	20	2.5	2.5	99.5	108	—	4 100	5 500	**4T-T7FC045**
	100	27.25	25	22	2	1.5	123	126	—	4 000	5 300	**4T-30309**
	100	27.25	25	18	2	1.5	106	109	—	3 500	4 600	**4T-30309D**
	100	38.25	36	30	2	1.5	170	191	23.3	4 000	5 300	**32309U**
	100	38.25	36	30	2.5	0.6	145	175	21.4	3 800	5 100	**32309CU**
50	72	15	15	12	0.6	0.6	39.5	57.0	6.95	4 700	6 300	**32910XU**
	72	15	14	12	0.6	0.6	35.0	50.5	6.15	4 700	6 300	○**32910**
	80	20	20	15.5	1	1	69.5	88.0	—	4 400	5 800	**4T-32010X**
	80	24	24	19	1	1	77.5	103	—	4 400	5 800	**4T-33010**
	85	26	26	20	1.5	1.5	96.0	121	—	4 200	5 600	**4T-33110**
	90	21.75	20	17	1.5	1.5	85.5	93.0	—	4 000	5 300	**4T-30210**
	90	24.75	23	19	1.5	1.5	97.0	109	—	4 000	5 300	**4T-32210**
	90	32	32	24.5	1.5	1.5	127	158	—	4 000	5 300	**4T-33210**
	100	36	35	30	2.5	2.5	167	190	—	3 800	5 100	**4T-T2ED050**
	105	32	29	22	3	3	119	132	—	3 400	4 500	**4T-T7FC050**
	110	29.25	27	23	2.5	2	147	152	—	3 600	4 800	**4T-30310**
	110	29.25	27	19	2.5	2	126	130	—	3 200	4 200	**4T-30310D**
	110	42.25	40	33	2.5	2	204	232	28.3	3 600	4 800	**32310U**
	110	42.25	40	33	2.5	2.5	178	220	—	3 500	4 600	**4T-32310C**
55	80	17	17	14	1	1	49.5	73.5	8.95	4 300	5 700	**32911XU**
	90	23	23	17.5	1.5	1.5	89.0	118	—	4 000	5 400	**4T-32011X**
	90	27	27	21	1.5	1.5	102	138	—	4 000	5 400	**4T-33011**
	95	30	30	23	1.5	1.5	123	155	—	3 900	5 200	**4T-33111**
	100	22.75	21	18	2	1.5	103	111	—	3 600	4 900	**4T-30211**
	100	26.75	25	21	2	1.5	120	134	—	3 600	4 900	**4T-32211**
	100	35	35	27	2	1.5	153	188	—	3 600	4 900	**4T-33211**
	115	34	31	23.5	3	3	137	156	—	3 300	4 400	**4T-T7FC055**
	120	31.5	29	25	2.5	2	172	179	—	3 300	4 400	**4T-30311**
	120	31.5	29	21	2.5	2	146	154	—	2 900	3 800	**4T-30311D**
	120	45.5	43	35	2.5	2	238	275	33.5	3 300	4 400	**32311U**
	120	45.5	43	35	2.5	2.5	204	252	30.5	3 100	4 200	**32311CU**

1) Smallest allowable dimension for chamfer dimension r or r_1.
2) Bearings with a ○ mark do not incorporate the subunit dimensions.



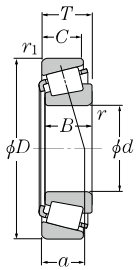
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
3CC	50.5	51	69.5	64	72.5	4	4.5	1	1	16.5	0.39	1.53	0.84	0.341
2CE	50.5	51.5	69.5	64	71.5	4	5	1	1	16	0.29	2.04	1.12	0.405
3CE	53.5	51.5	71.5	67.5	76.5	4	5.5	1.5	1.5	19.5	0.38	1.57	0.86	0.544
3DB	53.5	53.5	76.5	72	80	3	4.5	1.5	1.5	18	0.40	1.48	0.81	0.493
3DC	53.5	53.5	76.5	71	81	3	5.5	1.5	1.5	20	0.40	1.48	0.81	0.604
3DE	53.5	52	76.5	69	82	5	7	1.5	1.5	22	0.39	1.56	0.86	0.795
7FC	57	53	83	69	91	3	9	2	2	33	0.87	0.69	0.38	0.907
2FB	55	58.5	91.5	84	93.5	3	5	2	1.5	21	0.35	1.74	0.96	1.01
7FB	55	56.5	91.5	76	96.5	3	9	2	1.5	32.5	0.83	0.73	0.40	0.966
2FD	55	56.5	91.5	80.5	93.5	3	8	2	1.5	25.5	0.35	1.74	0.96	1.45
5FD	55	55.5	91.5	73.5	95	4	9	2.5	0.6	30	0.55	1.10	0.60	1.47
2BC	54.5	55	67.5	63.5	69	3	3	0.6	0.6	13.5	0.34	1.76	0.97	0.192
	54.5	56.5	67.5	63.5	69.5	3	3	0.6	0.6	14.5	0.36	1.67	0.92	0.193
3CC	55.5	55.5	74.5	68.5	77.5	4	4.5	1	1	17.5	0.42	1.42	0.78	0.373
2CE	55.5	56	74.5	69	76.5	4	5	1	1	17.5	0.32	1.90	1.04	0.44
3CE	58.5	56.5	76.5	71	81.5	4	6	1.5	1.5	20.5	0.41	1.46	0.80	0.583
3DB	58.5	58	81.5	76.5	85.5	3	4.5	1.5	1.5	19.5	0.42	1.43	0.79	0.56
3DC	58.5	57.5	81.5	76	86	3	5.5	1.5	1.5	21	0.42	1.43	0.79	0.639
3DE	58.5	56.5	81.5	73.5	87	5	7.5	1.5	1.5	23.5	0.41	1.45	0.80	0.862
2ED	62	58	88	82	94.5	6	6	2	2	25.5	0.34	1.75	0.96	1.3
7FC	64	59	91	82	94.5	4	10	2.5	2.5	36.5	0.87	0.69	0.38	1.22
2FB	62	64.5	100	92.5	103	3	6	2	2	23	0.35	1.74	0.96	1.31
7FB	62	61.5	100	83.5	104.5	3	10	2	2	35	0.83	0.73	0.40	1.25
2FD	62	61.5	100	88	102.5	3	9	2	2	28.5	0.35	1.74	0.96	1.92
5FD	62	61.5	100	80.5	104	3	9	2	2.5	33.5	0.55	1.1	0.60	1.97
2BC	60.5	61	74.5	70.5	76.5	3	3	1	1	14.5	0.31	1.94	1.07	0.274
3CC	63.5	63	81.5	77.5	87	4	5.5	1.5	1.5	20	0.41	1.48	0.81	0.56
2CE	63.5	63	81.5	78	86	5	6	1.5	1.5	19.5	0.31	1.92	1.06	0.654
3CE	63.5	62.5	86.5	80	91	5	7	1.5	1.5	22	0.37	1.60	0.88	0.858
3DB	65	64	91.5	86	95.5	4	4.5	2	1.5	21	0.40	1.48	0.81	0.725
3DC	65	63	91.5	85	96	4	5.5	2	1.5	22.5	0.40	1.48	0.81	0.873
3DE	65	62.5	91.5	82	96.5	6	8	2	1.5	25.5	0.40	1.50	0.83	1.17
7FC	69	65.5	101	83.5	110	4	10.5	2.5	2.5	43.5	0.87	0.69	0.38	1.57
2FB	67	70.5	110	101	112	4	6.5	2	2	24.5	0.35	1.74	0.96	1.65
7FB	67	67	110	91.5	113.5	4	10.5	2	2	38	0.83	0.73	0.40	1.58
2FD	67	67.5	110	96.5	111.5	4	10.5	2	2	30.5	0.35	1.74	0.96	2.44
5FD	67	67	110	88.5	113.5	4	10	2	2.5	36.5	0.55	1.10	0.60	2.47

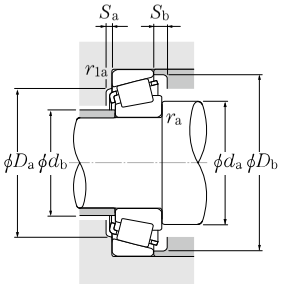
Metric series



d 60 ~ 75mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min^{-1}		Bearing number 2)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
60	85	17	17	14	1	1	56.5	83.0	10.1	4 000	5 300	○32912XA
	95	23	23	17.5	1.5	1.5	91.0	123	—	3 700	4 900	4T-32012X
	95	27	27	21	1.5	1.5	104	145	—	3 700	4 900	4T-33012
	100	30	30	23	1.5	1.5	126	164	—	3 600	4 700	4T-33112
	110	23.75	22	19	2	1.5	116	125	—	3 400	4 500	4T-30212
	110	29.75	28	24	2	1.5	144	164	20.1	3 400	4 500	32212U
	110	38	38	29	2	1.5	179	223	27.1	3 400	4 500	33212U
	115	40	39	33	2.5	2.5	209	249	—	3 200	4 300	4T-T2EE060
	125	37	33.5	26	3	3	161	186	—	2 800	3 700	4T-T7FC060
	130	33.5	31	26	3	2.5	199	210	25.6	3 000	4 000	30312U
	130	33.5	31	22	3	2.5	167	176	—	2 700	3 600	4T-30312D
	130	48.5	46	37	3	2.5	271	315	38.5	3 000	4 000	32312U
	130	48.5	46	37	3	2.5	237	296	—	2 900	3 900	4T-32312C
65	90	17	17	14	1	1	53.5	85.0	10.4	3 700	4 900	32913XU
	100	23	23	17.5	1.5	1.5	92.0	128	—	3 400	4 600	4T-32013X
	100	27	27	21	1.5	1.5	108	156	—	3 400	4 600	4T-33013
	110	34	34	26.5	1.5	1.5	160	211	—	3 300	4 400	4T-33113
	120	24.75	23	20	2	1.5	136	148	—	3 100	4 200	4T-30213
	120	32.75	31	27	2	1.5	176	206	25.1	3 100	4 200	32213U
	120	41	41	32	2	1.5	216	265	32.5	3 100	4 200	33213U
	140	36	33	28	3	2.5	225	238	28.7	2 800	3 700	30313U
	140	36	33	23	3	2.5	192	204	—	2 500	3 300	4T-30313D
	140	51	48	39	3	2.5	305	350	42.5	2 800	3 700	32313U
70	100	20	20	16	1	1	76.0	110	13.4	3 400	4 600	32914XU
	110	25	25	19	1.5	1.5	116	160	—	3 200	4 200	4T-32014X
	110	31	31	25.5	1.5	1.5	140	204	—	3 200	4 200	4T-33014
	120	37	37	29	2.5	0.6	190	251	30.5	3 100	4 100	33114U
	125	26.25	24	21	2	1.5	146	162	—	2 900	3 900	4T-30214
	125	33.25	31	27	2	1.5	184	220	26.8	2 900	3 900	32214U
	125	41	41	32	2	1.5	223	282	34.5	2 900	3 900	33214U
	140	39	35.5	27	3	3	191	231	—	2 400	3 200	4T-T7FC070
	150	38	35	30	3	2.5	255	272	32.0	2 600	3 500	30314U
	150	38	35	25	3	2.5	214	229	—	2 300	3 000	4T-30314D
	150	54	51	42	3	2.5	345	405	48.0	2 600	3 500	32314U
	150	54	51	42	3	2.5	300	380	45.0	2 500	3 300	32314CU
75	105	20	20	16	1	1	77.0	114	13.9	3 200	4 300	32915XU

1) Smallest allowable dimension for chamfer dimension r or r_1.
2) Bearings with a ○ mark do not incorporate the subunit dimensions.



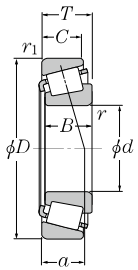
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
	65.5	66	79.5	76.5	82.5	3	3	1	1	15.5	0.33	1.80	0.99	0.281
4CC	68.5	67.5	86.5	81.5	91.5	4	5.5	1.5	1.5	21	0.43	1.39	0.77	0.596
2CE	68.5	67	86.5	82	90	5	6	1.5	1.5	20.5	0.33	1.83	1.01	0.693
3CE	68.5	67	91.5	84.5	96.5	5	7	1.5	1.5	23.5	0.40	1.51	0.83	0.913
3EB	70	69.5	101.5	94	103.5	4	4.5	2	1.5	22	0.40	1.48	0.81	0.929
3EC	70	68.5	101.5	92	105	4	5.5	2	1.5	25	0.40	1.48	0.81	1.18
3EE	70	68.5	101.5	90	105.5	6	9	2	1.5	27.5	0.40	1.48	0.82	1.53
2EE	72	69.5	103	95	109	6	7	2	2	28.5	0.33	1.80	0.99	1.86
7FC	74	71.5	111	92	120	4	11	2.5	2.5	42	0.82	0.73	0.40	2
2FB	74	77	118	109.5	121.5	4	7.5	2.5	2	26.5	0.35	1.74	0.96	2.05
7FB	74	73	118	99	124	4	11.5	2.5	2	40.5	0.83	0.73	0.40	1.95
2FD	74	73.5	118	106	121.5	4	11.5	2.5	2	32	0.35	1.74	0.96	3.01
5FD	74	73	118	96.5	122	5	11	2.5	2	39	0.55	1.10	0.60	3.07
2BC	70.5	70.5	84.5	80	86	3	3	1	1	16.5	0.35	1.70	0.93	0.315
4CC	73.5	72.5	91.5	86	97	4	5.5	1.5	1.5	22.5	0.46	1.31	0.72	0.631
2CE	73.5	72	91.5	87	95.5	5	6	1.5	1.5	21.5	0.35	1.72	0.95	0.742
3DE	73.5	73	101.5	92.5	106.5	6	7.5	1.5	1.5	26	0.39	1.55	0.85	1.27
3EB	75	77	111.5	103	114.5	4	4.5	2	1.5	23.5	0.40	1.48	0.81	1.18
3EC	75	75.5	111.5	101.5	115.5	4	5.5	2	1.5	27	0.40	1.48	0.81	1.57
3EE	75	74	111.5	99	115.5	7	9	2	1.5	29.5	0.39	1.54	0.85	2
2GB	79	83	128	119	131.5	4	8	2.5	2	28.5	0.35	1.74	0.96	2.54
7GB	79	79	128	107.5	133	4	13	2.5	2	44	0.83	0.73	0.40	2.41
2GD	79	79.5	128	115	131.5	4	12	2.5	2	34.5	0.35	1.74	0.96	3.63
2BC	75.5	76.5	94.5	90	96.5	4	4	1	1	18	0.32	1.90	1.05	0.475
4CC	78.5	78	101.5	94.5	105.5	5	6	1.5	1.5	24	0.43	1.38	0.76	0.863
2CE	78.5	79	101.5	96.5	105.5	5	5.5	1.5	1.5	22.5	0.28	2.11	1.16	1.07
3DE	80	79	111.5	101.5	115.5	6	8	2.5	0.6	28	0.38	1.58	0.87	1.68
3EB	80	81	116.5	107.5	119	4	5	2	1.5	25.5	0.42	1.43	0.79	1.3
3EC	80	79.5	116.5	105.5	120.5	4	6	2	1.5	28.5	0.42	1.43	0.79	1.68
3EE	80	78.5	116.5	104	121.5	7	9	2	1.5	31	0.41	1.47	0.81	2.12
7FC	84	81.5	126	104.5	135	5	12	2.5	2.5	47.5	0.87	0.69	0.38	2.62
2GB	84	88.5	138	128	141	4	8	2.5	2	30	0.35	1.74	0.96	3.05
7GB	84	84.5	138	115.5	142.5	4	13	2.5	2	47	0.83	0.73	0.40	2.92
2GD	84	85	138	122.5	141	4	12	2.5	2	36.5	0.35	1.74	0.96	4.44
5GD	84	85	138	112.5	143	5	12	2.5	2	44	0.55	1.10	0.60	4.53
2BC	80.5	81	99.5	94	101	4	4	1	1	19	0.33	1.80	0.99	0.508

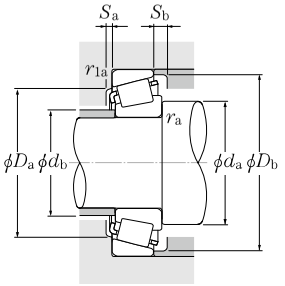
Metric series



d 75 ~ 90mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min^{-1}		Bearing number
d	D	T	B	C	$r_{s\,min}$[1]	$r_{ls\,min}$[1]	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
75	115	25	25	19	1.5	1.5	118	167	20.3	3 000	4 000	**32015XU**
	115	31	31	25.5	1.5	1.5	123	186	22.7	3 000	4 000	**33015U**
	130	27.25	25	22	2	1.5	154	175	—	2 700	3 600	**4T-30215**
	130	33.25	31	27	2	1.5	186	224	27.1	2 700	3 600	**32215U**
	130	41	41	31	2	1.5	231	298	36.0	2 700	3 600	**33215U**
	160	40	37	31	3	2.5	283	305	35.0	2 400	3 200	**30315U**
	160	40	37	26	3	2.5	238	256	29.8	2 100	2 800	**30315DU**
	160	58	55	45	3	2.5	395	470	54.5	2 400	3 200	**32315U**
	160	58	55	45	3	2.5	365	480	56.0	2 300	3 100	**32315CU**
80	110	20	20	16	1	1	79.5	121	14.8	3 000	4 000	**32916XU**
	125	29	29	22	1.5	1.5	154	216	26.1	2 800	3 700	**32016XU**
	125	36	36	29.5	1.5	1.5	192	284	34.5	2 800	3 700	**33016U**
	130	37	37	29	2.5	0.6	199	276	33.0	2 700	3 600	**33116U**
	140	28.25	26	22	2.5	2	177	200	23.7	2 500	3 400	**30216U**
	140	35.25	33	28	2.5	2	221	265	31.5	2 500	3 400	**32216U**
	140	46	46	35	2.5	2	278	365	43.5	2 500	3 400	**33216U**
	160	45	41	31	3	2	238	297	—	2 400	3 200	**4T-T7FC080**
	170	42.5	39	33	3	2.5	325	350	39.5	2 300	3 000	**30316U**
	170	42.5	39	27	3	2.5	262	283	32.5	2 000	2 700	**30316DU**
	170	61.5	58	48	3	2.5	440	525	60.0	2 300	3 000	**32316U**
	170	61.5	58	48	3	2.5	390	505	58.0	2 200	2 900	**32316CU**
85	120	23	23	18	1.5	1.5	104	157	19.1	2 800	3 800	**32917XU**
	130	29	29	22	1.5	1.5	157	224	26.7	2 600	3 500	**32017XU**
	130	36	36	29.5	1.5	1.5	195	296	35.5	2 600	3 500	**33017U**
	140	41	41	32	2.5	2.5	234	330	39.0	2 500	3 400	**33117U**
	150	30.5	28	24	2.5	2	203	232	27.0	2 400	3 200	**30217U**
	150	38.5	36	30	2.5	2	249	300	35.0	2 400	3 200	**32217U**
	150	49	49	37	2.5	2	315	420	49.0	2 400	3 200	**33217U**
	180	44.5	41	34	4	3	335	365	40.5	2 100	2 900	**30317U**
	180	44.5	41	28	4	3	274	293	33.0	1 900	2 500	**30317DU**
	180	63.5	60	49	4	3	445	525	59.0	2 100	2 900	**32317U**
	180	63.5	60	49	4	3	435	575	64.5	2 100	2 700	**32317CU**
90	125	23	23	18	1.5	1.5	108	168	20.0	2 700	3 600	**32918XU**
	140	32	32	24	2	1.5	187	270	31.5	2 500	3 300	**32018XU**
	140	39	39	32.5	2	1.5	238	360	42.0	2 500	3 300	**33018U**
	150	45	45	35	2.5	2.5	280	400	46.0	2 400	3 200	**33118U**

1) Smallest allowable dimension for chamfer dimension r or r_1.



Dynamic equivalent radial load

$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load

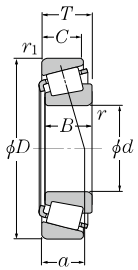
$P_{0r} = 0.5F_r + Y_0F_a$

When $P_{0r} < F_r$ use $P_{0r} = F_r$.

For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
4CC	83.5	83	106.5	99.5	111	5	6	1.5	1.5	25.5	0.46	1.31	0.72	0.912
2CE	83.5	85	106.5	101	110.5	6	5.5	1.5	1.5	23	0.30	2.01	1.11	1.11
4DB	85	85.5	121.5	112.5	124.5	4	5	2	1.5	27	0.44	1.38	0.76	1.4
4DC	85	84.5	121.5	111	126	4	6	2	1.5	30	0.44	1.38	0.76	1.74
3EE	85	83	121.5	107.5	125	7	10	2	1.5	32	0.43	1.40	0.77	2.23
2GB	89	95	148	137	150.5	4	9	2.5	2	32	0.35	1.74	0.96	3.61
7GB	89	91	148	124	152.5	6	14	2.5	2	50	0.83	0.73	0.40	3.46
2GD	89	91	148	131	150.5	4	13	2.5	2	39	0.35	1.74	0.96	5.4
5GD	89	90	148	119.5	152	6	15	2.5	2	47	0.55	1.10	0.60	5.65
2BC	85.5	86	104.5	99	106.5	4	4	1	1	20	0.35	1.71	0.94	0.54
3CC	88.5	89	116.5	108.5	120.5	6	7	1.5	1.5	27	0.42	1.42	0.78	1.28
2CE	88.5	88.5	116.5	108.5	119.5	6	6.5	1.5	1.5	25	0.28	2.16	1.19	1.61
3DE	90	88.5	121.5	110.5	126	6	15	2.5	2	30.5	0.42	1.44	0.79	1.87
3EB	92	91	130	121	133	4	6	2	2	27.5	0.42	1.43	0.79	1.71
3EC	92	90	130	119.5	134.5	4	7	2	2	31	0.42	1.43	0.79	2.17
3EE	92	89	130	116	135.5	7	11	2	2	35	0.43	1.41	0.78	2.94
7FC	94	94	146	119	153.5	6	15	2	2.5	55	0.87	0.69	0.38	3.92
2GB	94	101.5	158	145	160	4	9.5	2.5	2	34	0.35	1.74	0.96	4.41
7GB	94	97	158	131	160.5	6	15.5	2.5	2	53.5	0.83	0.73	0.40	4.17
2GD	94	97	158	138.5	161.5	4	13.5	2.5	2	41.5	0.35	1.74	0.96	6.48
5GD	94	96	158	127.5	162	4	13.5	2.5	2	50.5	0.55	1.10	0.60	6.61
2BC	93.5	92	111.5	107.5	115.5	4	5	1.5	1.5	21	0.33	1.83	1.01	0.773
4CC	93.5	93.5	121.5	113	126	6	7	1.5	1.5	28.5	0.44	1.36	0.75	1.34
2CE	93.5	94	121.5	114	125.5	6	6.5	1.5	1.5	26	0.29	2.06	1.13	1.69
3DE	97	95	130	118	135.5	7	9	2	2	33	0.41	1.48	0.81	2.44
3EB	97	96.5	140	128.5	141.5	5	6.5	2	2	30	0.42	1.43	0.79	2.13
3EC	97	96	140	127	143.5	5	8.5	2	2	33.5	0.42	1.43	0.79	2.75
3EE	97	95	140	124	144.5	7	12	2	2	37.5	0.42	1.43	0.79	3.61
2GB	103	106.5	166	153.5	168	5	10.5	3	2.5	35.5	0.35	1.74	0.96	5.01
7GB	103	102.5	166	140.5	170	6	16.5	3	2.5	56	0.83	0.73	0.40	4.74
2GD	103	103.5	166	147	169	5	14.5	3	2.5	43	0.35	1.74	0.96	7.22
5GD	103	102	166	135.5	170	7	13	2	2.5	53	0.55	1.10	0.60	7.71
2BC	98.5	97	116.5	112.5	120.5	4	5	1.5	1.5	22	0.34	1.75	0.96	0.815
3CC	100	100	131.5	121	134.5	6	8	2	1.5	30	0.42	1.42	0.78	1.78
2CE	100	100.5	131.5	123.5	135	7	6.5	2	1.5	28	0.27	2.23	1.23	2.22
3DE	102	101	140	127.5	145.5	7	10	2	2	35.5	0.40	1.51	0.83	3.1

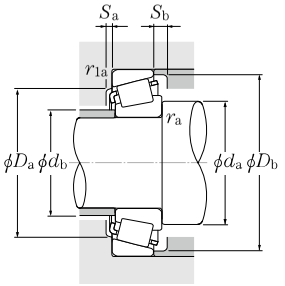
Metric series



d 90 ~ 110mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min-1		Bearing number 2)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
90	160	32.5	30	26	2.5	2	230	267	30.5	2 200	3 000	**30218U**
	160	42.5	40	34	2.5	2	291	360	41.0	2 200	3 000	**32218U**
	160	55	55	42	2.5	2.5	360	490	56.0	2 300	3 000	**33218U**
	190	46.5	43	36	4	3	375	405	44.5	2 000	2 700	**30318U**
	190	46.5	43	30	4	3	300	320	35.5	1 800	2 400	**30318DU**
	190	67.5	64	53	4	3	500	595	65.5	2 000	2 700	**32318U**
95	130	23	23	18	1.5	1.5	112	178	21.0	2 500	3 400	**32919XU**
	145	32	32	24	2	1.5	190	280	32.5	2 300	3 100	**32019XU**
	145	39	39	32.5	2	1.5	243	375	43.0	2 300	3 100	**33019U**
	170	34.5	32	27	3	2.5	250	290	32.5	2 100	2 800	**30219U**
	170	45.5	43	37	3	2.5	330	415	47.0	2 100	2 800	**32219U**
	200	49.5	45	38	4	3	405	445	48.5	1 900	2 500	**30319U**
	200	49.5	45	32	4	3	330	355	38.5	1 700	2 200	**30319DU**
	200	71.5	67	55	4	3	560	670	73.0	1 900	2 500	**32319U**
100	140	25	25	20	1.5	1.5	134	206	23.8	2 400	3 200	**32920XU**
	140	25	24	20	1.5	1.5	108	162	18.6	2 400	3 200	○**32920**
	145	24	22.5	17.5	3	3	119	153	—	1 800	2 400	**4T-T4CB100**
	150	32	32	24	2	1.5	188	281	32.0	2 200	3 000	**32020XU**
	150	39	39	32.5	2	1.5	248	390	44.5	2 200	3 000	**33020U**
	180	37	34	29	3	2.5	286	335	37.0	2 000	2 700	**30220U**
	180	49	46	39	3	2.5	365	465	51.0	2 000	2 700	**32220U**
	180	63	63	48	3	2.5	465	650	71.5	2 000	2 700	**33220U**
	215	51.5	47	39	4	3	455	500	53.0	1 800	2 400	**30320U**
	215	56.5	51	35	4	3	395	435	46.0	1 800	2 400	**31320XU**
	215	77.5	73	60	4	3	635	770	82.0	1 800	2 400	**32320U**
105	145	25	25	20	1.5	1.5	139	219	25.0	2 300	3 000	○**32921XA**
	160	35	35	26	2.5	2	223	335	37.5	2 100	2 800	**32021XU**
	160	43	43	34	2.5	2	272	420	47.0	2 100	2 800	**33021U**
	190	39	36	30	3	2.5	320	380	41.0	1 900	2 500	**30221U**
	190	53	50	43	3	2.5	420	540	59.0	1 900	2 500	**32221U**
	225	53.5	49	41	4	3	485	535	56.0	1 700	2 300	**30321U**
	225	58	53	36	4	3	420	470	49.0	1 700	2 300	**31321XU**
	225	81.5	77	63	4	3	680	825	87.0	1 700	2 300	**32321U**
110	150	25	25	20	1.5	1.5	141	226	25.5	2 200	2 900	○**32922XA**
	170	38	38	29	2.5	2	261	390	43.0	2 000	2 700	**32022XU**

1) Smallest allowable dimension for chamfer dimension r or r_1.
2) Bearings with a ○ mark do not incorporate the subunit dimensions.



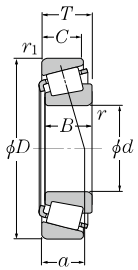
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
3FB	102	103	150	137	151	5	6.5	2	2	32	0.42	1.43	0.79	2.66
3FC	102	101.5	150	134.5	153.5	5	8.5	2	2	36	0.42	1.43	0.79	3.49
3FE	102	101.5	150	131.5	154.5	9	13	2	2.5	41	0.42	1.43	0.78	4.62
2GB	108	112.5	176	162	177.5	5	10.5	3	2.5	37.5	0.35	1.74	0.96	5.83
7GB	108	108.5	176	148.5	180.5	6	16.5	3	2.5	59	0.83	0.73	0.40	5.58
2GD	108	108.5	176	154.5	179	5	14.5	3	2.5	45.5	0.35	1.74	0.96	8.66
2BC	103.5	102	121.5	117	125.5	4	5	1.5	1.5	23.5	0.36	1.68	0.92	0.851
4CC	105	105	136.5	126	140	6	8	2	1.5	31.5	0.44	1.36	0.75	1.85
2CE	105	104.5	136.5	127.5	139.5	7	6.5	2	1.5	28.5	0.28	2.16	1.19	2.3
3FB	109	109.5	158	146.5	160.5	5	7.5	2.5	2	34	0.42	1.43	0.79	3.12
3FC	109	107.5	158	142.5	163	5	8.5	2.5	2	39	0.42	1.43	0.79	4.29
2GB	113	118	186	168	185.5	5	11.5	3	2.5	40	0.35	1.74	0.96	6.69
7GB	113	113.5	186	154.5	189	6	17.5	3	2.5	62.5	0.83	0.73	0.40	6.35
2GD	113	114.5	186	163.5	187.5	5	16.5	3	2.5	49	0.35	1.74	0.96	10.1
2CC	108.5	109	131.5	127.5	135.5	4	5	1.5	1.5	24.5	0.33	1.82	1.00	1.12
	108.5	110	131.5	127	135	4	5	1.5	1.5	25	0.35	1.73	0.95	1.08
4CB	114	108.5	131	130	140.5	4	6.5	2.5	2.5	30	0.47	1.27	0.70	1.14
4CC	110	109.5	141.5	130.5	145	6	8	2	1.5	32.5	0.46	1.31	0.72	1.91
2CE	110	108.5	141.5	132.5	144.5	7	6.5	2	1.5	29.5	0.29	2.09	1.15	2.4
3FB	114	115.5	168	154.5	169.5	5	8	2.5	2	36	0.42	1.43	0.79	3.76
3FC	114	113.5	168	151	172	5	10	2.5	2	41.5	0.42	1.43	0.79	5.11
3FE	114	113	168	147	173	10	15	2.5	2	45.5	0.40	1.48	0.82	6.76
2GB	118	126	201	181.5	199.5	5	12.5	3	2.5	41.5	0.35	1.74	0.96	8.3
7GB	118	122.5	201	165.5	203	7	21.5	3	2.5	69	0.83	0.73	0.40	8.7
2GD	118	122.5	201	174.5	201.5	5	17.5	3	2.5	53	0.35	1.74	0.96	12.8
	113.5	113.5	136.5	131.5	140.5	5	5	1.5	1.5	25	0.34	1.76	0.97	1.2
4DC	117	115.5	150	138.5	153.5	6	9	2	2	34.5	0.44	1.35	0.74	2.44
2DE	117	116	150	141.5	153.5	7	9	2	2	31	0.28	2.12	1.17	3
3FB	119	121.5	178	163	178.5	6	9	2.5	2	38	0.42	1.43	0.79	4.45
3FC	119	119	178	158.5	181.5	6	10	2.5	2	44	0.42	1.43	0.79	6.23
2GB	123	132	211	190	208.5	6	12.5	3	2.5	43.5	0.35	1.74	0.96	9.37
7GB	123	128.5	211	173.5	213.5	7	22	3	2.5	71.5	0.83	0.73	0.40	9.65
2GD	123	129	211	182.5	210.5	6	18.5	3	2.5	55	0.35	1.74	0.96	14.7
	118.5	118.5	141.5	136.5	146	5	5	1.5	1.5	26.5	0.36	1.69	0.93	1.24
4DC	122	122	160	147.5	164	7	9	2	2	36.5	0.43	1.39	0.77	3.07

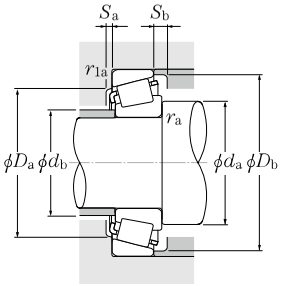
Metric series



d 110 ~ 140mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min-1		Bearing number 2) 3)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
110	170	47	47	37	2.5	2	320	500	55.5	2 000	2 700	**33022U**
	180	56	56	43	2.5	2.5	400	610	66.5	1 900	2 600	**33122UE1**
	200	41	38	32	3	2.5	360	435	46.5	1 800	2 400	**30222U**
	200	56	53	46	3	2.5	465	605	65.0	1 800	2 400	**32222U**
	240	54.5	50	42	4	3	530	585	60.0	1 600	2 200	**30322U**
	240	63	57	38	4	3	480	535	55.0	1 600	2 200	**31322XU**
	240	84.5	80	65	4	3	785	970	99.5	1 600	2 200	**32322U**
120	165	29	29	23	1.5	1.5	180	294	32.0	2 000	2 600	**32924XU**
	165	29	27	23	1.5	1.5	131	205	22.5	2 000	2 600	○**32924**
	170	27	25	19.5	3	2	171	235	—	1 900	2 600	**4T-T4CB120**
	180	38	38	29	2.5	2	272	420	45.5	1 800	2 500	**32024XU**
	180	48	48	38	2.5	2.5	325	520	56.5	1 800	2 500	**33024U**
	200	62	62	48	2.5	2.5	510	760	80.5	1 800	2 300	**33124U**
	215	43.5	40	34	3	2.5	385	470	49.0	1 700	2 200	**30224U**
	215	61.5	58	50	3	2.5	510	680	71.5	1 700	2 200	**32224U**
	260	59.5	55	46	4	3	620	695	69.5	1 500	2 000	**30324U**
	260	68	62	42	4	3	570	655	66.0	1 500	2 000	**31324XU**
	260	90.5	86	69	4	3	905	1 130	114	1 500	2 000	**32324U**
130	180	32	32	25	2	1.5	215	350	37.5	1 800	2 400	**32926XU**
	180	32	30	26	2	2	157	252	26.9	1 800	2 400	○**32926**
	200	45	45	34	2.5	2	350	545	57.0	1 700	2 200	**32026XU**
	200	55	55	43	2.5	2.5	415	660	69.5	1 700	2 300	**33026U**
	230	43.75	40	34	4	3	415	505	51.5	1 500	2 000	**30226U**
	230	67.75	64	54	4	3	585	815	83.5	1 500	2 000	**32226U**
	280	63.75	58	49	5	4	830	830	81.0	1 400	2 000	✻ **30326UUTG**
	280	72	66	44	5	4	670	780	77.0	1 400	1 800	**31326XU**
	280	98.75	93	78	4	4	1 140	1 240	122	1 400	2 000	✻ **32326UTG**
140	190	32	32	25	2	1.5	221	375	39.0	1 700	2 200	**32928XU**
	195	29	27	21	3	3	208	299	—	1 700	2 200	**4T-T4CB140**
	210	45	45	34	2.5	2	365	580	60.0	1 600	2 100	**32028XU**
	210	56	56	44	2.5	2	435	715	74.0	1 600	2 100	**33028U**
	250	45.75	42	36	4	3	465	570	57.0	1 400	1 900	**30228U**
	250	71.75	68	58	4	3	675	920	92.0	1 400	1 900	**32228U**
	300	67.75	62	53	5	4	945	950	91.5	1 300	1 800	✻ **30328UUTG**
	300	77	70	47	5	4	760	905	87.0	1 300	1 700	**31328XU**
	300	107.75	102	85	4	4	1 270	1 370	132	1 300	1 800	✻ **32328UTG**

1) Smallest allowable dimension for chamfer dimension r or r_1. 2) Bearings with a ○ mark do not incorporate the subunit dimensions.
3) Bearing numbers marked "✻" designate **ULTAGE series** bearings.



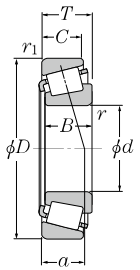
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
2DE	122	121	160	148	162	7	10	2	2	33.5	0.29	2.09	1.15	3.84
3FE	122	121.5	170	150.5	174	9	13	2	2.5	44	0.42	1.43	0.79	5.52
3FB	124	128	188	170.5	188.5	6	9	2.5	2	40	0.42	1.43	0.79	5.19
3FC	124	125.5	188	167	192	6	10	2.5	2	47	0.42	1.43	0.79	7.44
2GB	128	141	226	203	222	6	12.5	3	2.5	45.5	0.35	1.74	0.96	11.1
7GB	128	137	226	184	225.5	7	25	3	2.5	76	0.83	0.73	0.40	11.9
2GD	128	136.5	226	195	224	6	19.5	3	2.5	57.5	0.35	1.74	0.96	17.6
2CC	128.5	129.5	156.5	150	160	6	6	1.5	1.5	29.5	0.35	1.72	0.95	1.76
	128.5	129.5	156.5	147.5	159.5	6	6	1.5	1.5	31	0.37	1.60	0.88	1.65
4CB	134	128.5	156	153	165	7	7.5	2.5	2.5	35	0.47	1.27	0.70	1.69
4DC	132	131	170	156	174.5	7	9	2	2	39	0.46	1.31	0.72	3.29
2DE	132	130	170	157	172	6	10	2	2.5	36	0.31	1.97	1.08	4.14
3FE	132	132.5	190	168	193	9	14	2	2.5	48	0.40	1.51	0.83	7.67
4FB	134	139.5	203	184.5	203	6	9.5	2.5	2	44	0.44	1.38	0.76	6.32
4FD	134	135.5	203	178	206	6	11.5	2.5	2	51.5	0.44	1.38	0.76	9.08
2GB	138	153	246	218	239	6	13.5	3	2.5	49	0.35	1.74	0.96	14.1
7GB	138	147	246	200	245	9	26	3	2.5	82.5	0.83	0.73	0.40	15.2
2GD	138	146.5	246	210	240.5	6	21.5	3	2.5	61.5	0.35	1.74	0.96	22.1
2CC	140	140.5	171.5	163	174	6	7	2	1.5	31.5	0.34	1.77	0.97	2.41
	140	141.5	170	161.5	174	6	6	2	2	34	0.37	1.60	0.88	2.24
4EC	142	144	190	173.5	193.5	8	11	2	2	43.5	0.43	1.38	0.76	5
2FE	142	143	190	173.5	193	8	12	2	2.5	42.5	0.34	1.76	0.97	6.09
4FB	148	151	216	199.5	218	7	9.5	3	2.5	45.5	0.44	1.38	0.76	7.05
4FD	148	147	216	190	220.5	7	13.5	3	2.5	57	0.44	1.38	0.76	11.3
2GB	152	165.5	262	235	257.5	8	14.5	4	3	53.5	0.35	1.74	0.96	17.4
7GB	152	154	262	214.5	263	9	28	4	3	87.5	0.83	0.73	0.40	19
	148	159	262	230	264	2.4	20	3	3	67.5	0.35	1.73	0.95	27.4
2CC	150	150	181.5	172.5	184	6	6	2	1.5	34	0.36	1.67	0.92	2.5
4CB	154	149	181	176	190	5	8	2.5	2.5	40.5	0.50	1.19	0.66	2.35
4DC	152	153	200	182.5	203	8	11	2	2	46	0.46	1.31	0.72	5.32
2DE	152	152	200	182.5	203	7	12	2	2	45.5	0.36	1.67	0.92	6.59
4FB	158	163	236	214	235	7	9.5	3	2.5	48.5	0.44	1.38	0.76	8.73
4FD	158	158.5	236	207	239.5	9	13.5	3	2.5	61	0.44	1.38	0.76	14.2
2GB	162	175.5	282	252	275.5	9	14.5	4	3	56.5	0.35	1.74	0.96	21.1
7GB	162	162.5	282	232	282.5	9	30	4	3	94	0.83	0.73	0.40	22.9
	158	168.5	282	244	281	1.5	20	3	3	74.5	0.35	1.73	0.95	33.5

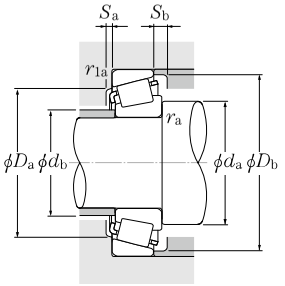
Metric series



d 150 ~ 200mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min-1		Bearing number 2) 3)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
150	210	38	38	30	2.5	2	297	490	50.0	1 600	2 100	32930XU
	225	48	48	36	3	2.5	410	655	66.0	1 400	1 900	32030XU
	270	49	45	38	4	3	500	605	59.0	1 300	1 700	30230U
	270	77	73	60	4	3	775	1 070	105	1 300	1 700	32230U
	320	72	65	55	5	4	1 060	1 070	101	1 200	1 700	✻ 30330UUTG
	320	82	75	50	5	4	860	1 030	97.5	1 200	1 600	31330XU
	320	114	108	90	4	4	1 490	1 750	166	1 200	1 700	✻ 32330UTG
160	220	38	38	30	2.5	2	305	520	52.5	1 500	1 900	32932XU
	240	51	51	38	3	2.5	485	790	78.5	1 400	1 800	32032XU
	290	52	48	40	4	3	675	720	68.5	1 200	1 700	✻ 30232UUTG
	290	84	80	67	4	3	1 140	1 420	136	1 200	1 700	✻ 32232UUTG
	340	75	68	58	5	4	1 170	1 200	110	1 100	1 600	✻ 30332UUTG
	340	121	114	95	4	4	1 580	1 840	170	1 100	1 600	✻ 32332UTG
170	230	38	38	30	2.5	2	315	560	55.0	1 400	1 800	32934XU
	260	57	57	43	3	2.5	555	895	86.5	1 300	1 700	32034XU
	310	57	52	43	5	4	780	845	79.5	1 100	1 600	✻ 30234UUTG
	310	91	86	71	5	4	1 280	1 600	150	1 100	1 600	✻ 32234UUTG
	360	80	72	62	5	4	1 290	1 320	120	1 000	1 500	✻ 30334UUTG
	360	127	120	100	4	4	1 680	1 940	177	1 000	1 500	✻ 32334UTG
180	250	45	45	34	2.5	2	390	700	68.0	1 300	1 700	32936XU
	280	64	64	48	3	2.5	825	1 170	111	1 200	1 700	✻ 32036XUUTG
	320	57	52	43	5	4	805	890	82.5	1 100	1 500	✻ 30236UUTG
	320	91	86	71	5	4	1 320	1 690	157	1 100	1 500	✻ 32236UUTG
	380	83	75	64	4	4	1 170	1 190	107	960	1 400	✻ 30336UTG
	380	134	126	106	4	4	1 850	2 150	192	960	1 400	✻ 32336UTG
190	260	45	45	34	2.5	2	390	710	68.0	1 200	1 600	32938XU
	260	45	42	36	2.5	2.5	310	525	50.5	1 200	1 600	○32938
	290	64	64	48	3	2.5	840	1 210	113	1 100	1 600	✻ 32038XUUTG
	340	60	55	46	5	4	920	1 000	91.5	1 000	1 400	✻ 30238UUTG
	340	97	92	75	5	4	1 480	1 850	169	1 000	1 400	✻ 32238UUTG
	400	86	78	65	5	5	1 200	1 200	106	900	1 300	✻ 30338UTG
	400	140	132	109	5	5	2 040	2 390	211	900	1 300	✻ 32338UTG
200	280	51	51	39	3	2.5	620	895	84.0	1 100	1 600	✻ 32940XUUTG
	310	70	70	53	3	2.5	1 030	1 470	135	1 100	1 500	✻ 32040XUUTG

1) Smallest allowable dimension for chamfer dimension r or r_1. 2) Bearings with a ○ mark do not incorporate the subunit dimensions.
3) Bearing numbers marked "✻" designate ULTAGE series bearings.



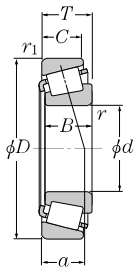
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
2DC	162	162	200	189.5	202	7	8	2	2	36.5	0.33	1.83	1.01	3.93
4EC	164	164	213	195	217.5	8	12	2.5	2	49.5	0.46	1.31	0.72	6.45
4GB	168	175	256	230	251.5	7	11	3	2.5	51.5	0.44	1.38	0.76	11
4GD	168	169	256	222	256	8	17	3	2.5	64.5	0.44	1.38	0.76	18
2GB	172	188.5	302	270	294	8	17	4	3	61	0.35	1.74	0.96	25.4
7GB	172	173.5	302	248	302	9	32	4	3	100.5	0.83	0.73	0.40	27.7
	168	182.5	302	254	298	4.3	24	3	3	80	0.37	1.60	0.88	42.1
2DC	172	172	210	199	213	7	8	2	2	38.5	0.35	1.73	0.95	4.14
4EC	174	174.5	228	208	231.5	8	13	2.5	2	52.5	0.46	1.31	0.72	7.86
4GB	178	188.5	276	248	271	8	12	3	2.5	55.5	0.44	1.38	0.76	13.4
4GD	178	181	276	238	277	10	17	3	2.5	70	0.44	1.38	0.76	23.9
2GB	182	200.5	322	286.5	312.5	10	17	4	3	64	0.35	1.74	0.96	29.8
	178	196.5	322	272	318.5	2.3	26	3	3	85	0.37	1.60	0.88	48.9
3DC	182	181	220	208	223.5	7	8	2	2	42.5	0.38	1.56	0.86	4.4
4EC	184	187	248	224.5	250	10	14	2.5	2	56	0.44	1.35	0.74	10.6
4GB	192	202	292	265.5	290.5	8	14	4	3	60.5	0.44	1.38	0.76	16.9
4GD	192	194	292	255	297	10	20	4	3	75	0.44	1.38	0.76	29.2
2GB	192	212.5	342	305	332.5	10	18	4	3	68	0.35	1.74	0.96	35.2
	188	208	342	287	336	1.5	27	3	3	89.5	0.37	1.60	0.88	56.5
4DC	192	192	240	219.5	241.5	8	11	2	2	54	0.48	1.25	0.69	6.55
3FD	194	199	268	243	269	10	16	2.5	2	59.5	0.42	1.42	0.78	14.5
4GB	202	210.5	302	274	299.5	9	14	4	3	63	0.45	1.33	0.73	17.8
4GD	202	202	302	263	305.5	10	20	4	3	77.5	0.45	1.33	0.73	30.4
	198	227.5	362	314	345	1.5	19	3	3	72.5	0.37	1.60	0.88	38.9
	198	219	362	305	357	2.4	28	3	3	95	0.37	1.60	0.88	67.7
4DC	202	201.5	250	230	251	8	11	2	2	55	0.48	1.26	0.69	6.82
	202	205	248	233	250.5	8	9	2	2	48.5	0.37	1.60	0.88	6.27
4FD	204	206.5	278	252	281	10	16	2.5	2	62.5	0.44	1.36	0.75	15
4GB	212	223	322	293	320.5	9	14	4	3	64	0.44	1.38	0.76	21.5
4GD	212	214	322	283	325.5	11	22	4	3	87.5	0.44	1.38	0.76	36.1
	212	241	378	335	366.5	2.3	21	4	4	74.5	0.37	1.60	0.88	43.6
	212	233	378	320	373.5	1.5	31	4	4	100	0.37	1.60	0.88	77
3EC	214	213.5	268	251.5	272	9	12	2.5	2	53.5	0.39	1.52	0.84	9.28
4FD	214	218.5	298	269	298.5	11	17	2.5	2	66.5	0.43	1.39	0.77	19.2

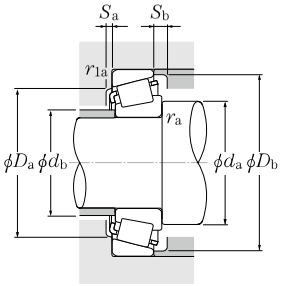
Metric series



d 200 ~ 320mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min-1		Bearing number 2) 3)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
200	360	64	58	48	5	4	1 010	1 110	99.0	950	1 300	✻ 30240UUTG
	360	104	98	82	5	4	1 690	2 130	191	950	1 300	✻ 32240UUTG
	420	89	80	67	5	5	1 340	1 370	119	850	1 200	✻ 30340UTG
	420	146	138	115	5	5	2 240	2 650	230	850	1 200	✻ 32340UTG
220	300	51	51	39	3	2.5	615	950	87.0	1 000	1 500	✻ 32944XUUTG
	300	51	48	41	2.5	2.5	385	670	61.0	1 000	1 400	○ 32944E1
	340	76	76	57	4	3	1 180	1 690	152	960	1 400	✻ 32044XUUTG
	400	72	65	54	4	4	1 050	1 220	106	840	1 200	✻ 30244UTG
	400	114	108	90	4	4	1 780	2 410	209	840	1 200	✻ 32244UTG
	460	97	88	73	5	5	1 620	1 690	142	770	1 100	✻ 30344UTG
	460	154	145	122	5	5	2 590	3 050	259	770	1 100	✻ 32344UTG
240	320	51	51	39	3	2.5	625	1 000	90.0	940	1 300	✻ 32948XUUTG
	360	76	76	57	4	3	1 190	1 760	154	870	1 200	✻ 32048XUUTG
	440	79	72	60	4	4	1 250	1 480	125	760	1 100	✻ 30248UTG
	440	127	120	100	4	4	2 180	2 750	232	760	1 100	✻ 32248UTG
	500	105	95	80	5	5	1 900	2 000	165	690	990	✻ 30348UTG
260	360	63.5	63.5	48	3	2.5	905	1 430	124	860	1 200	✻ 32952XUUTG
	400	87	87	65	5	4	1 540	2 270	193	800	1 100	✻ 32052XUUTG
	480	89	80	67	5	5	1 500	1 810	149	690	990	✻ 30252UTG
	480	137	130	106	5	5	2 410	3 350	275	690	990	✻ 32252UTG
280	380	63.5	63.5	48	3	2.5	930	1 520	129	790	1 100	✻ 32956XUUTG
	420	87	87	65	5	4	1 570	2 350	197	740	1 000	✻ 32056XUUTG
	500	89	80	67	5	5	1 590	1 910	155	630	900	✻ 30256UTG
	500	137	130	106	5	5	2 530	3 500	283	630	900	✻ 32256UTG
300	420	76	76	57	4	3	1 290	2 090	173	720	1 000	✻ 32960XUUTG
	460	100	100	74	5	4	1 920	2 830	232	680	960	✻ 32060XUUTG
	540	96	85	71	5	5	1 820	2 220	176	580	830	✻ 30260UTG
	540	149	140	115	5	5	2 950	4 100	325	580	830	✻ 32260UTG
320	440	76	76	57	4	3	1 300	2 150	176	670	960	✻ 32964XUUTG
	440	76	72	63	3	3	955	1 880	153	670	900	○ 32964E1
	480	100	100	74	5	4	1 940	2 940	237	630	900	✻ 32064XUUTG
	580	104	92	75	5	5	2 130	2 580	201	540	770	✻ 30264UTG
	580	159	150	125	5	5	3 350	4 650	360	540	770	✻ 32264UTG

1) Smallest allowable dimension for chamfer dimension r or r_1. 2) Bearings with a ○ mark do not incorporate the subunit dimensions.
3) Bearing numbers marked "✻" designate **ULTAGE series** bearings.



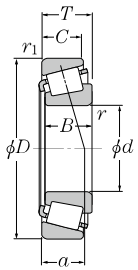
Dynamic equivalent radial load
$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load
$P_{0r} = 0.5F_r + Y_0F_a$
When $P_{0r} < F_r$ use $P_{0r} = F_r$.
For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
4GB	222	235	342	311	338	10	16	4	3	70	0.44	1.38	0.76	25.2
3GD	222	224.5	342	299	342.5	11	22	4	3	85	0.41	1.48	0.81	43.8
	222	251	398	350	382.5	5.3	22	4	4	77	0.37	1.60	0.88	51.5
	222	242	398	335	391.5	3.2	31	4	4	105	0.37	1.60	0.88	89.6
3EC	234	233.5	288	269.5	291	10	12	2.5	2	59.5	0.43	1.41	0.78	9.98
	232	238	288	270	291	10	10	2	2	57	0.39	1.55	0.85	9.47
4FD	238	239.5	326	293.5	326	12	19	3	2.5	72.5	0.43	1.39	0.77	24.9
	238	262.5	382	334	368	3.4	18	3	3	82	0.49	1.23	0.68	34.8
	238	249	382	323	380.5	4.4	24	3	3	102	0.49	1.23	0.68	59.8
	242	270	438	383	418.5	4.2	24	4	4	86.5	0.37	1.60	0.88	66.6
	242	262.5	438	371	431	1.5	32	4	4	112	0.37	1.60	0.88	110
4EC	254	252.5	308	289	312.5	10	12	2.5	2	65.5	0.46	1.31	0.72	10.9
4FD	258	258.5	346	311.5	347	12	19	3	2.5	78	0.46	1.31	0.72	26.5
	258	284.5	422	368	406	3.9	19	3	3	91	0.49	1.23	0.68	47.7
	258	270.5	422	365	421.5	4.1	27	3	3	107	0.43	1.39	0.77	78.9
	262	294.5	478	417	456	8.1	25	4	4	94	0.37	1.60	0.88	88.3
3EC	274	278	348	323	348.5	11	15	2.5	2	69.5	0.41	1.48	0.81	18.7
4FC	282	283.5	382	346	383	14	22	4	3	85.5	0.43	1.38	0.76	39
	282	307	458	396	438.5	4.2	22	4	4	99.5	0.49	1.23	0.68	63.4
	282	297	458	385	453	2.9	31	4	4	121.5	0.49	1.23	0.68	100
4EC	294	297	368	341.5	369.5	11	15	2.5	2	75	0.43	1.39	0.76	19.9
4FC	302	301	402	363	403	14	22	4	3	90.5	0.46	1.31	0.72	40.5
	302	324.5	478	422	464.5	5.9	22	4	4	102	0.49	1.23	0.68	66.5
	302	312	478	405	473	6.4	31	4	4	123.5	0.49	1.23	0.68	110
3FD	318	322	406	377.5	406.5	13	19	3	2.5	80	0.39	1.52	0.84	31.4
4GD	322	324.5	442	398.5	441.5	15	26	4	3	98	0.43	1.38	0.76	57.2
	322	349.5	518	453	498	4.9	25	4	4	111	0.49	1.23	0.68	83.5
	322	339	518	438	511.5	2.6	34	4	4	135.5	0.49	1.23	0.68	140
3FD	338	341	426	395.5	427	13	19	3	2.5	85	0.42	1.44	0.79	32.8
	334	345.5	426	392	424.5	13	13	3	2.5	85	0.39	1.55	0.85	33.2
4GD	342	344.5	462	418.5	463	15	26	4	3	104	0.46	1.31	0.72	60.2
	342	372	558	485	531.5	4.7	29	4	4	118.5	0.47	1.27	0.70	100
	342	363	558	473	551	3.9	34	4	4	142	0.47	1.27	0.70	170

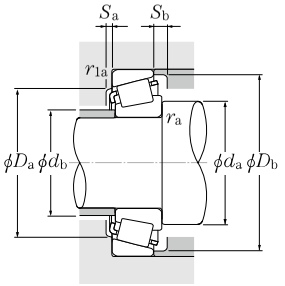
Metric series



d 340 ~ 440mm

Boundary dimensions mm							Basic load rating kN		Fatigue load limit kN	Allowable speed min^{-1}		Bearing number 2) 3)
d	D	T	B	C	$r_{s\,min}$ 1)	$r_{ls\,min}$ 1)	dynamic C_r	static C_{0r}	C_u	Grease lubrication	Oil lubrication	
340	460	76	76	57	4	3	1 340	2 270	183	630	900	✻ 32968XUUTG
	460	76	72	63	3	3	1 010	1 980	159	630	900	○ 32968E1
	520	112	106	90	5	5	2 120	3 150	249	590	840	✻ 32068UTG
360	480	76	76	57	4	3	1 350	2 330	185	590	840	✻ 32972XUUTG
	540	112	106	90	5	5	2 230	3 300	258	550	780	✻ 32072UTG
380	520	87	82	72	4	4	1 460	2 500	194	550	790	✻ 32976UTG
	560	112	106	90	5	5	2 460	3 800	292	520	740	✻ 32076UTG
400	540	87	82	71	4	4	1 530	2 710	207	520	740	✻ 32980UTG
	600	125	118	100	5	5	2 790	4 250	320	490	700	✻ 32080UTG
420	560	87	82	71	4	4	1 570	2 840	215	490	700	✻ 32984UTG
	620	125	118	100	6	5	2 920	4 550	340	460	660	✻ 32084UTG
440	600	100	95	82	4	4	2 060	3 450	258	470	670	✻ 32988UTG
	650	130	122	104	6	6	3 250	5 000	365	440	620	✻ 32088UTG

1) Smallest allowable dimension for chamfer dimension r or r_1. 2) Bearings with a ○ mark do not incorporate the subunit dimensions.
3) Bearing numbers marked "✻" designate **ULTAGE series** bearings.



Dynamic equivalent radial load

$P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leqq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	0	0.4	Y_2

Static equivalent radial load

$P_{0r} = 0.5F_r + Y_0F_a$

When $P_{0r} < F_r$ use $P_{0r} = F_r$.

For values of e, Y_2 and Y_0 see the table below.

ISO Dimension series	Installation-related dimensions mm									Load center mm	Constant	Axial load factors		Mass kg
	d_a Min.	d_b Max.	D_a Max.	D_a Min.	D_b Min.	S_a Min.	S_b Min.	r_{as} Max.	r_{1as} Max.	a	e	Y_2	Y_0	(approx.)
4FD	358	360	446	414	447.5	13	19	3	2.5	90.5	0.44	1.37	0.75	34.5
	354	364	446	413	445.5	13	13	3	2.5	87	0.39	1.55	0.85	34
	362	368.5	498	452	496	3.5	22	4	4	103.5	0.37	1.60	0.88	78.5
4FD	378	379.5	466	431.5	467.5	13	19	3	2.5	96.5	0.46	1.31	0.72	36.3
	382	388	518	476	520	5.5	22	4	4	106	0.37	1.60	0.88	83
	398	404.5	502	464.5	503	4	15	3	3	101	0.40	1.49	0.82	51.3
	402	406.5	538	495	539	6.5	22	4	4	109.5	0.37	1.60	0.88	89.1
	418	422.5	522	482	521.5	4	16	3	3	106	0.42	1.43	0.79	54
	422	428.5	578	526	575	5	25	4	4	119	0.37	1.60	0.88	110
	438	442	542	501.5	543	3.5	16	3	3	111.5	0.44	1.37	0.76	56.2
	448	449.5	598	549	598	6.5	25	4	4	120	0.37	1.60	0.88	120
	458	465.5	582	543	580.5	3.5	18	3	3	106	0.35	1.70	0.93	76
	468	469.5	622	576.5	627.5	5	26	5	5	127	0.37	1.60	0.88	140