Tapered roller bearings

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Tapered roller bearings

Definition and capabilities

Definition

Tapered roller bearings with a single row of rollers are always mounted opposing another bearing of the same type to provide rigid assemblies, particularly when preloaded.

Cages

Tapered roller bearings are usually equipped with a pressed steel cage. In some cases with a synthetic material cage.

Contact angle

The rings of this bearing are detachable: the outer ring (cup) is not joined to the rest of the bearing which is made up of the inner ring (cone) and rollers held on the cone by the cage. A tapered roller bearing can accept axial loads in one direction only. It must be mounted in opposition with a bearing of the same type.

ISO 355 Standard defines the different series of tapered roller bearings with contact angles of 10 to 30°. For a given radial load, the greater the angle of the cup, the greater the axial load that the bearing can withstand. SNR has adopted designations in accordance with this standard for the new "intermediate" series and has kept the former designations for the other series.

Capabilities

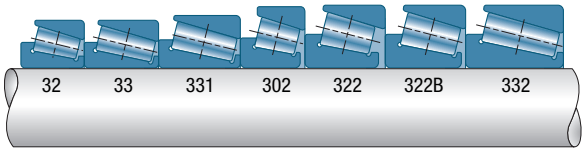
Loads and speeds

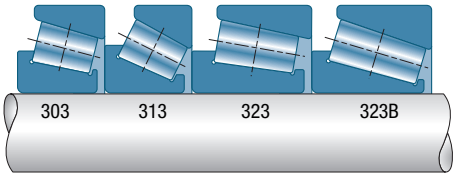
The tapered roller bearing is an angular contact bearing that can withstand high radial and axial loads.

Misalignment

The shape of the contacting profiles allows misalignment in the range of 0.06°.

Series

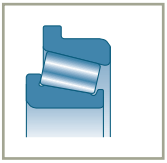




Variants

Special chamfer

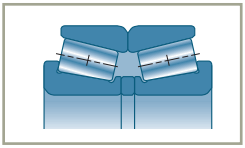
Special chamfer on the large face of the cone to adapt to the large fillet radius of the shoulders of shafts such as those of wheel axles.



Flange on cup

Matched bearings

They are made up of two bearings and usually two spacers to form a single assembly. The elements of a given matched assembly cannot be exchanged with those of another assembly.



Tapered roller bearings *(continued)*

Tolerances and clearance

Tolerances

These bearings are supplied in standard precision with tolerances in accordance with ISO 492 Standard. They can be supplied on request with specific tolerances on one or more dimensions or characteristics.

Clearances

Axial clearance

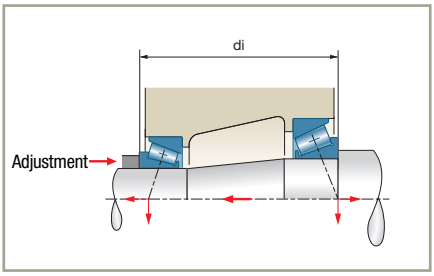
As these bearings are always mounted in opposition, the axial clearance is determined by the adjustment of the bearings at installation. That is to say by the adjustment of the relative initial position of the cones with respect to the cups. The adjustment determines a mechanical clearance (positive clearance) or a pre-load (negative clearance).

Types of assembly

Face-to-face assembly (O)

This arrangement is to be used in applications involving temperature variations, or when the points of load application of the two bearings need to be as far apart as possible. It more specifically enables the creation of compact assemblies with either pre-loading or clearance.

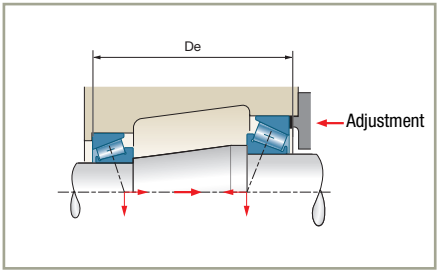
The adjustment is made on the distance di between the cones of the two bearings which is determined by either a spacer length or an adjustment nut.



Back-to-back assembly (X)

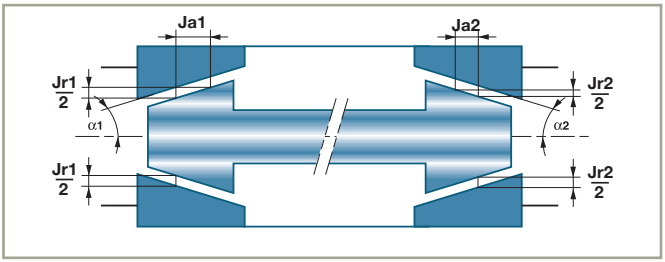
To install a shaft fully equipped with the bearings in a housing.

The adjustment is made on the distance De between the cups of the two bearings, and is determined by shims or an adjustment nut.



Relation between the axial clearance J_a and the radial clearance J_r of a bearing

$$J_a = 1.25\ Y\ .\ J_r$$

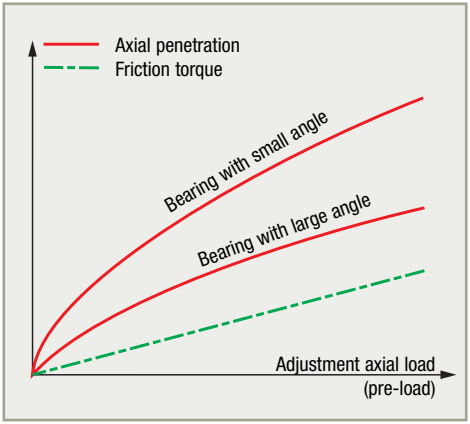


Pre-load

Tapered roller bearings are preloaded whenever one wants to ensure the axial stiffness of the assembly (bevel gear bearings. machine-tool spindle bearings. etc.). The nominal value of the pre-load is fixed for each application according to the loading conditions and the characteristics of the chosen bearings.

Consult SNR for the preparation of a preloaded bearing file.

SNR establishes two characteristic curves for each bearing reference:



- The axial penetration curve that characterises the bearing stiffness which depends on the contact angle, the number of rollers, and their effective length.
- The friction torque curve which enables to check that the pre-loading adjustment is correct using a torque gauge

Axial clearance on assembly for two separate bearings

As these bearings are always mounted in opposition. their internal clearance is determined by the adjustment on assembly that determines the axial clearance of the shaft.

For information. the relation between the axial clearance
and the corresponding radial clearance is given by the formula:

$$J_r = 0{,}8\ /\ Y\ .\ J_a \quad (Y = 0.4\ \cot g\alpha)$$

These bearings can be mounted with a pre-load if necessary to secure an axial stiffness of an assembly. The maximum speed in this case is reduced and depends on the pre-load value.

Consult SNR.

Tapered roller bearings *(continued)*

Design criteria

Bearing life

Shaft mounted on two single bearings

Equivalent dynamic load

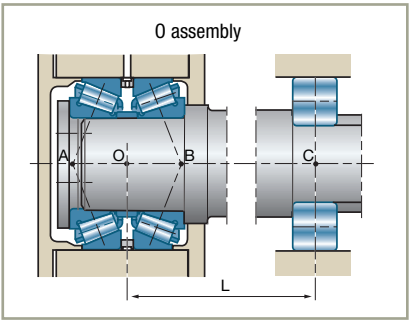
The axial balance of the shaft depends not only on the forces applied, but also on the forces induced by the radial loads applied on each bearing.

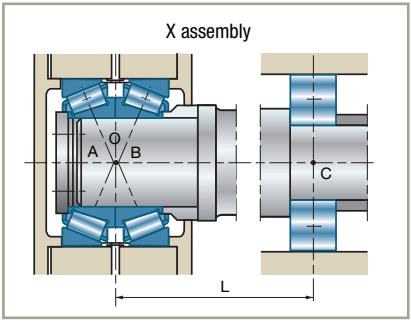
Equivalent static load

Its value Po is the greater of the two values obtained using the following formula:

$$P_0 = F_r$$
$$P_0 = 0.5\ F_r + Y_0 \cdot F_a$$

Shaft with one of its two assemblies made up by two matched non-preloaded bearings assembled in an O or X arrangement





This assembly is considered as a single double-row roller bearing which centre O is the mid-point of the distance AB between the load application points. The assembly of a shaft with this type of assembly is hyperstatic (3 seating points: A. B. C) and can only be likened approximately to an arrangement of two assemblies if the distance AB is less than L/5 and the stiffness of the assembly is satisfactory (misalignment < 0.06°). In all other cases, consult SNR.

Equivalent dynamic load of the double pillow block (ISO 281 Standard)

$P = F_r + 1.1\ Y.\ F_a$ if $F_a / F_r \leq e$

$P = 0.67\ F_r + 1.68\ Y.\ F_a$ if $F_a / F_r > e$

Basic dynamic capacity of the double bearing

The basic dynamic capacity of an assembly of two identical bearings is:

$C_e = 1.715\ C$

Equivalent static capacity of the double pillow block

$P_0 = F_r + 1.1\ Y\ .\ F_a$

Basic static capacity of the double pillow block

The static capacity of the assembly of two identical bearings is twice that of a single bearing.

$C_{0e} = 2\ C_0$

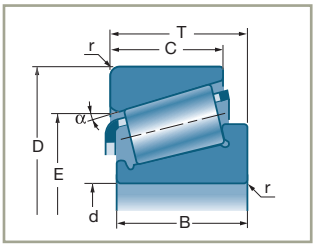
Calculation of preloaded bearings

The values of the induced forces involved in the axial equilibrium of two bearings depend on the applied pre-load and the bearing stiffness characteristics. Consequently, the calculation of the equivalent load on each bearing is complex and must be performed by the SNR Technical Service.

Tapered roller bearings *(continued)*

Installation/assembly criteria

Interchangeability of elements of the same reference



As the cones and cups of tapered roller bearings are separable, ISO has established:.

- the nominal dimensions of the small diameter of the cup raceway (E)
- the contact angle (α)

Interchangeability of SNR elements

The cones and cups of the same reference are totally interchangeable. with the total width of the bearing (dimension T) remaining within the standard tolerances (ISO 492).

Interchangeability of an SNR element with an element of another make

Interchangeability is possible if the non-SNR elements comply with ISO 355 Standard, particularly dimensions α and E. However, as the tolerances on these dimensions, the raceway profile shapes, the quality of steel and the surface conditions are specific to each manufacturer. The performance of such assemblies risks can be significantly reduced. Such assemblies should therefore be avoided.

Some SNR references in old designs are not interchangeable with other makes. They are identified in the "List of Standard Bearings".

Adjustment parameters

The assembly of standard bearings always requires an adjustment due to the fact that their elements can be separated.

The adjustment depends on the assembly dimensions and their tolerances, which are:

The functional dimensions of the bearing

- Bore d
- Outer diameter D
- The distance between the cone and cup faces of a given bearing: dimension T

The functional dimensions of the assembly

- The distance between the cup shoulders (De)
- The distance between the cone shoulders (di)
- The diameters of the shaft and housing seating surfaces

The generally accepted tolerance for a given clearance (positive or negative) makes it necessary to repeat the adjustment operation for each assembly, taking in consideration amplitude of standard bearing tolerances and the assembly dimensions.

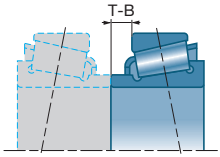
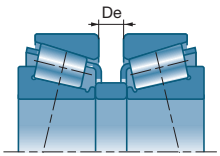
One then adjusts one of the shoulder distances (De) or (di) at each operation to compensate for the variations in the other dimensions of the assembly.

Adjustment is a relatively long and repetitive operation that has to be performed by specialised personnel capable of ensuring its precision and reliability.

Installation without adjustment

In many high volume production assembly operations, the dimensional tolerances have a reduced normal statistical distribution. In such cases, by using bearings which also have reduced tolerances, mountings will have a 99.73% probability that no further adjustment will be required, which is suitable for most applications.
Main applications: vehicle wheels and gear boxes.
The bearings are usually fitted close to each other in an O arrangement.

The two possibilities of adjustment-free assembly are:

Type of assembly	Pre-adjusted bearings	Matched assembly
Adjustment schematic		
Bearing characteristics	◗ Reduced tolerance on the position of the cone with respect to the large face of the cup (dimension T - B). ◗ Interchangeable cone and cup. ◗ Cone usually extended to avoid the need for a spacer.	◗ Set of two pre-adjusted bearings with a reduced tolerance on the distance of the 2 cups (0.03 mm approximately.). ◗ Elements not interchangeable with those of another assembly.
Assembly characteristics	◗ Assembly of large series in O arrangement. ◗ Tolerance of about 0.05 mm max. on the distance (De) of the cup shoulders.	◗ Assembly of large or medium series. ◗ Tolerance of about 0.05 mm max. on the distance (De) of the cup shoulders.
Axial clearance tolerances	◗ Tolerance of the order of 0.15 / 0.20 mm with a probability of 99.7%. The clearances outside this probability (0.3%) lie within a theoretical range of 0.4 to 0.6 mm approx.	◗ Tolerance of the order of 0.10 / 0.15 mm with a probability of 99.7%. The clearances outside this probability (0.3 %) lie within a theoretical range of 0.25 to 0.4 mm approx.

Prefixes and suffixes

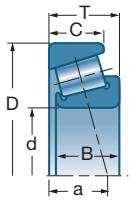
Prefixes

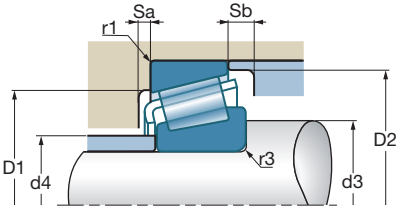
R	Special chamfer on the large face of the inner ring (cone)

Suffixes

B	Suffix for series 322 and 323 with increased angle
A. C	Internal design indices
T	Flange on outer ring (cup)
P6X	Bearing whose tolerance on dimension T complies with precision class 6X

Tapered roller bearings *(continued)*



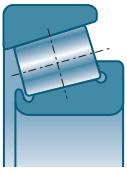


d		D	B	C	T	a			e	Y	Yo		
							C	C_0					
mm	Ref.	mm	mm	mm	mm	mm	10^3N	10^3N				rpm*	rpm*
15	30202A	35	11	10,0	11,75	8,40	15,80	14,50	0,32	1,88	1,03	10000	15000
17	30203A	40	12	11,0	13,25	9,90	21,2	21,3	0,35	1,74	0,96	9500	13000
	32203A	40	16	14,0	17,25	11,25	31,0	31,0	0,31	1,92	1,06	9200	12000
	30303A	47	14	12,0	15,25	10,40	29,7	27,2	0,29	2,11	1,16	8400	11000
20	30204A	47	14	12,0	15,25	11,20	28,2	30,6	0,35	1,74	0,96	8000	11000
	30304A	52	15	13,0	16,25	11,20	34,7	33,2	0,30	2,00	1,10	7500	10000
	32304A	52	21	18,0	22,25	13,60	44,6	46,3	0,30	2,00	1,10	7700	10000
25	32005V	47	15	11,5	15,00	11,50	28,5	31,5	0,43	1,39	0,77	7600	10000
	30205A	52	15	13,0	16,25	12,60	35,4	39,4	0,37	1,60	0,88	7100	10000
	32205B	52	18	15,0	19,25	16,75	41,5	49,0	0,58	1,03	0,57	7200	9500
	33205A	52	22	18,0	22,00	14,00	52,5	57,5	0,35	1,71	0,94	7300	9800
	30305A	62	17	15,0	18,25	13,00	49,2	48,1	0,30	2,00	1,10	6200	8600
	32305A	62	24	20,0	25,25	15,90	64,6	68,8	0,30	2,00	1,10	6300	8200
30	32006C	55	17	13,0	17,00	13,50	38,5	45,0	0,43	1,39	0,77	6400	8000
	30206A	62	16	14,0	17,25	13,80	45,4	50,5	0,37	1,60	0,88	5900	8400
	32206C	62	20	17,0	21,25	14,75	50,0	55,0	0,37	1,60	0,88	5800	8100
	33206A	62	25	19,5	25,00	16,00	71,9	77,0	0,34	1,76	0,97	6300	8400
	30306A	72	19	16,0	20,75	15,30	61,7	63,1	0,31	1,90	1,05	5300	7400
	31306A	72	19	14,0	20,75	23,10	52,5	60,3	0,83	0,73	0,40	5100	7000
	32306A	72	27	23,0	28,75	18,90	85,5	96,4	0,32	1,90	1,05	5400	7000
35	32007C	62	18	14,0	18,00	15,00	46,5	56,0	0,45	1,32	0,73	5600	7900
	30207A	72	17	15,0	18,25	15,25	58,0	62,0	0,37	1,60	0,88	5100	7200
	32207C	72	23	19,0	24,25	18,25	70,0	80,0	0,37	1,60	0,88	4900	6900
	32207B	72	23	19,0	24,25	21,75	66,0	81,0	0,58	1,03	0,57	5200	6900
	33207A	72	28	22,0	28,00	18,50	96,8	109,0	0,35	1,70	0,94	5500	7400
	30307A	80	21	18,0	22,75	16,90	78,8	82,6	0,31	1,90	1,05	4700	6600
	31307A	80	21	15,0	22,75	25,80	68,5	76,3	0,83	0,73	0,40	4500	6200
	32307A	80	31	25,0	32,75	20,50	103,6	118,3	0,31	1,90	1,05	4800	6300
	32307B	80	31	25,0	32,75	25,25	95,0	112,0	0,55	1,10	0,60	4600	6300
40	32008C	68	19	14,5	19,00	15,00	53,0	65,0	0,38	1,58	0,87	5000	7000
	33108A	75	26	20,5	26,00	18,00	84,8	110,3	0,35	1,69	0,93	4600	6400
	30208A	80	18	16,0	19,25	16,90	63,0	74,0	0,37	1,60	0,88	4500	6500
	32208C	80	23	19,0	24,75	19,75	78,0	88,0	0,37	1,60	0,88	4300	6100
	33208A	80	32	25,0	32,00	21,00	113,9	132,0	0,36	1,68	0,92	4900	6600
	30308A	90	23	20,0	25,25	19,50	95,2	107,5	0,35	1,74	0,96	4100	5800
	31308A	90	23	17,0	25,25	29,10	84,9	95,8	0,83	0,73	0,40	3900	5500
	32308A	90	33	27,0	35,25	23,40	120,8	147,1	0,35	1,74	0,96	4200	5500

* These are the speed limits according to the SNR concept (see pages 85 to 87).

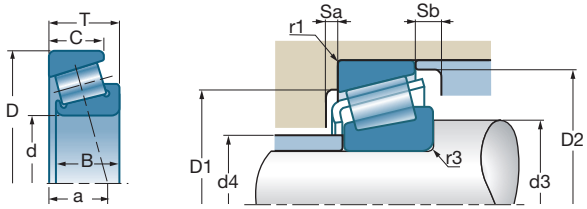
Characteristics

Single-row tapered roller bearings (mm)



Ref.	D1 min mm	D1 max mm	D2 min mm	d3 min mm	d4 max mm	Sa min mm	Sb min mm	r1 max mm	r3 max mm	kg	ISO
30202A	29,0	29,0	32,0	19,0	20,0	2,0	1,8	1,0	1,0	0,053	
30203A	34,0	34,0	37,0	23,0	23,0	2,0	2,3	1,0	1,0	0,076	2DB
32203A	33,6	34,2	37,9	23,8	22,1	3,1	0,5	1,0	1,0	0,103	2DD
30303A	40,0	41,0	42,0	23,0	25,0	2,0	3,2	1,0	1,0	0,121	2FB
30204A	40,0	41,0	43,0	26,0	27,0	2,0	3,3	1,0	1,0	0,125	2DB
30304A	44,0	45,0	47,0	27,0	28,0	2,0	3,2	1,5	1,5	0,179	2FB
32304A	43,0	45,0	47,0	27,0	27,0	3,0	4,0	1,5	1,5	0,238	2FD
32005V	40,0	42,0	44,0	30,0	30,0	3,0	3,5	0,6	0,6	0,110	4CC
30205A	44,0	46,0	48,0	31,0	31,0	2,0	3,3	1,0	1,0	0,154	3CC
32205B	41,0	46,0	49,0	31,0	30,0	3,2	4,0	1,0	1,0	0,192	5CD
33205A	43,0	46,0	49,0	31,0	30,0	4,0	4,0	1,0	1,0	0,222	2DE
30305A	54,0	55,0	57,0	32,0	34,0	2,0	3,2	1,5	1,5	0,265	2FB
32305A	53,0	55,0	57,0	32,0	33,0	3,0	5,0	1,5	1,5	0,378	2FD
32006C	48,0	49,0	52,0	36,0	35,0	3,7	4,0	1,0	1,0	0,165	4CC
30206A	53,0	56,0	57,0	36,0	37,0	2,0	3,2	1,0	1,0	0,238	3DB
32206C	52,0	56,0	59,0	36,0	37,0	3,2	4,0	1,0	1,0	0,282	3DC
33206A	53,0	56,0	59,0	36,0	36,0	5,0	5,5	1,0	1,0	0,353	2DE
30306A	62,0	65,0	66,0	37,0	40,0	3,0	4,5	1,5	1,5	0,400	2FB
31306A	55,0	65,0	68,0	37,0	40,0	3,0	6,5	1,5	1,5	0,395	7FB
32306A	59,0	65,0	66,0	37,0	39,0	4,0	5,5	1,5	1,5	0,579	2FD
32007C	54,0	56,0	59,0	41,0	40,0	4,0	4,0	1,0	1,0	0,219	4CC
30207A	62,0	65,0	67,0	42,0	44,0	3,0	3,0	1,5	1,5	0,328	3DB
32207C	61,0	65,0	67,0	42,0	43,0	3,6	5,5	1,5	1,5	0,430	3DC
32207B	56,0	65,0	68,0	42,0	42,0	3,0	5,0	1,5	1,5	0,436	5DC
33207A	61,0	65,0	68,0	42,0	42,0	5,0	6,0	1,5	1,5	0,542	2DE
30307A	70,0	71,0	74,0	44,0	45,0	3,0	4,5	1,5	2,0	0,550	2FB
31307A	62,0	71,0	76,0	44,0	44,0	4,0	7,5	1,5	2,0	0,526	7FB
32307A	66,0	71,0	74,0	44,0	44,0	4,0	7,5	1,5	2,0	0,827	2FE
32307B	61,0	71,0	76,0	44,0	42,0	5,3	7,5	1,5	2,0	0,741	5FE
32008C	60,0	62,0	65,0	46,0	46,0	4,7	4,5	1,0	1,0	0,265	3CD
33108A	65,0	68,0	71,0	47,0	47,0	4,0	5,5	1,5	1,5	0,505	2CE
30208A	69,0	73,0	74,0	47,0	49,0	3,0	3,8	1,5	1,5	0,422	3DB
32208C	68,0	73,0	75,0	47,0	48,0	5,1	5,5	1,5	1,5	0,508	3DC
33208A	67,0	73,0	76,0	47,0	47,0	5,0	7,0	1,5	1,5	0,733	2DE
30308A	77,0	81,0	82,0	49,0	52,0	3,0	5,0	1,5	2,0	0,759	2FB
31308A	71,0	81,0	86,0	49,0	51,0	4,0	8,0	1,5	2,0	0,747	7FB
32308A	73,0	81,0	82,0	49,0	50,0	4,0	8,0	1,5	2,0	1,040	2FD

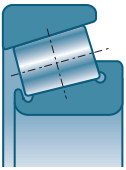
Tapered roller bearings *(continued)*



d		D	B	C	T	a			e	Y	Yo		
							C	C_0					
mm	Ref.	mm	mm	mm	mm	mm	10^3N	10^3N				rpm*	rpm*
45	32009V	75	20	15,5	20,00	16,50	59,0	73,0	0,39	1,53	0,84	4500	6300
	33109A	80	26	20,5	26,00	19,10	87,0	117,0	0,38	1,57	0,86	4200	5900
	30209C	85	19	16,0	20,75	17,75	67,0	74,0	0,40	1,48	0,81	4200	6000
	32209A	85	23	19,0	24,75	20,10	84,1	103,0	0,40	1,48	0,81	4000	5600
	32209B	85	23	19,0	24,75	23,75	87,0	104,0	0,59	1,01	0,56	4300	5700
	33209A	85	32	25,0	32,00	22,00	118,4	141,0	0,39	1,56	0,86	4400	5900
	30309A	100	25	22,0	27,25	21,30	114,1	129,8	0,35	1,74	0,96	3700	5200
	31309A	100	25	18,0	27,25	32,50	106,2	109,0	0,83	0,73	0,40	3500	4600
	32309A	100	36	30,0	38,25	25,60	152,2	189,3	0,35	1,74	0,96	3700	4900
	32309B	100	36	30,0	38,25	29,75	152,0	187,0	0,55	1,10	0,60	3700	5100
50	32010A	80	20	15,5	20,00	18,00	69,0	95,0	0,42	1,42	0,78	4100	5800
	33110A	85	26	20,0	26,00	20,50	87,0	125,0	0,41	1,46	0,80	3900	5400
	30210C	90	20	17,0	21,75	19,25	76,0	89,0	0,42	1,43	0,79	3100	4500
	32210A	90	23	19,0	24,75	21,00	96,8	109,0	0,42	1,43	0,79	4000	5300
	33210A	90	32	24,5	32,00	23,50	127,2	158,0	0,41	1,45	0,80	4000	5300
	30310A	110	27	23,0	29,25	23,00	147,1	152,0	0,35	1,74	0,96	3600	4800
	31310A	110	27	19,0	29,25	35,00	125,0	130,0	0,83	0,73	0,40	3200	4200
	32310A	110	40	33,0	42,25	28,20	177,5	236,1	0,35	1,73	0,95	3400	4500
55	32011A	90	23	17,5	23,00	19,80	79,7	115,6	0,41	1,48	0,81	3600	5100
	33011A	90	27	21,0	27,00	19,50	101,2	138,0	0,31	1,92	1,06	4000	5400
	33111A	95	30	23,0	30,00	22,00	122,8	155,0	0,37	1,60	0,88	3900	5200
	30211A	100	21	18,0	22,75	21,00	94,6	112,8	0,40	1,48	0,81	3500	5000
	32211A	100	25	21,0	26,75	22,80	112,7	141,5	0,40	1,48	0,81	3400	4700
	33211A	100	35	27,0	35,00	25,50	152,7	188,0	0,40	1,50	0,83	3600	4900
	30311A	120	29	25,0	31,50	24,50	155,0	179,0	0,35	1,74	0,96	3300	4400
	31311A	120	29	21,0	31,50	38,00	146,0	154,0	0,83	0,73	0,40	2900	3800
	32311A	120	43	35,0	45,50	30,40	212,7	271,3	0,35	1,74	0,96	3100	4100
	32311B	120	43	35,0	45,50	36,00	206,0	275,0	0,55	1,10	0,60	3000	4200
60	32012A	95	23	17,5	23,00	20,80	83,8	121,5	0,83	0,73	0,40	3400	4900
	33012A	95	27	21,0	27,00	20,50	103,4	145,0	0,33	1,83	1,00	3700	4900
	33112A	100	30	23,0	30,00	23,50	113,0	164,0	0,40	1,51	0,83	3600	4700
	30212A	110	22	19,0	23,75	22,30	103,3	130,0	0,40	1,48	0,81	3200	4600
	32212A	110	28	24,0	29,75	25,00	138,7	178,8	0,40	1,48	0,81	3100	4400
	33212A	110	38	29,0	38,00	27,50	161,0	223,0	0,40	1,48	0,81	3400	4500
	30312A	130	31	26,0	33,50	26,50	180,0	210,0	0,35	1,74	0,96	3000	4000
	31312A	130	31	22,0	33,50	40,50	165,9	176,0	0,83	0,73	0,40	2700	3600
	32312A	130	46	37,0	48,50	32,00	244,0	315,0	0,35	1,74	0,96	3000	4000

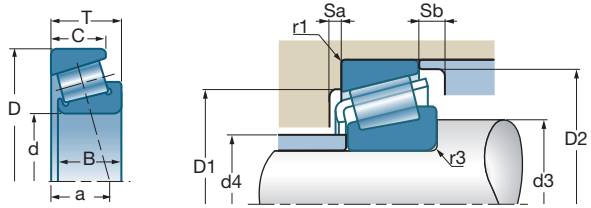
* These are the speed limits according to the SNR concept (see pages 85 to 87).

Single-row tapered roller bearings (mm) *(continued)*



	D1 min	D1 max	D2 min	d3 min	d4 max	Sa min	Sb min	r1 max	r3 max		ISO
Ref.	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
32009V	67,0	69,0	72,0	49,0	51,0	4,0	4,5	1,0	1,0	0,320	3CC
33109A	69,0	73,0	77,0	52,0	52,0	4,0	5,5	1,5	1,5	0,551	3CE
30209C	74,0	78,0	80,0	52,0	54,0	3,2	4,5	1,5	1,5	0,463	3DB
32209A	73,0	78,0	80,0	52,0	53,0	3,0	5,5	1,5	1,5	0,641	3DC
32209B	70,0	78,0	82,0	52,0	53,0	4,0	5,5	1,5	1,5	0,576	5DC
33209A	72,0	78,0	81,0	52,0	52,0	5,0	7,0	1,5	1,5	0,803	3DE
30309A	86,0	91,0	92,0	54,0	59,0	3,0	5,0	1,5	2,0	1,030	2FB
31309A	79,0	91,0	95,0	54,0	56,0	4,0	9,0	1,5	2,0	0,951	7FB
32309A	82,0	91,0	93,0	54,0	56,0	4,0	8,0	1,5	2,0	1,400	2FD
32309B	76,0	91,0	94,0	54,0	55,0	5,0	8,0	1,5	2,0	1,400	5FD
32010A	72,0	74,0	77,0	56,0	56,0	4,0	4,5	1,0	1,0	0,360	3CC
33110A	74,0	78,0	82,0	57,0	56,0	4,0	6,0	1,5	1,5	0,574	3CE
30210C	79,0	83,0	85,0	57,0	58,0	3,3	4,5	1,5	1,5	0,527	3DB
32210A	78,0	83,0	85,0	57,0	58,0	3,0	5,5	1,5	1,5	0,667	3DC
33210A	77,0	83,0	87,0	57,0	57,0	5,0	7,5	1,5	1,5	0,875	3DE
30310A	95,0	100,0	102,0	60,0	65,0	4,0	6,0	2,0	2,5	1,290	2FB
31310A	87,0	100,0	104,0	60,0	62,0	4,0	10,0	2,0	2,5	1,240	7FB
32310A	90,0	100,0	102,0	60,0	62,0	5,0	9,0	2,0	2,5	1,860	2FD
32011A	81,0	83,0	86,0	62,0	63,0	4,0	5,5	1,5	1,5	0,592	3CC
33011A	81,0	83,0	86,0	62,0	63,0	5,0	6,0	1,5	1,5	0,667	2CE
33111A	83,0	88,0	91,0	62,0	62,0	5,0	7,0	1,5	1,5	0,863	3CE
30211A	88,0	91,0	94,0	64,0	64,0	4,0	4,5	1,5	2,0	0,732	3DB
32211A	87,0	91,0	95,0	64,0	63,0	4,0	5,5	1,5	2,0	0,915	3DC
33211A	85,0	91,0	96,0	64,0	62,0	6,0	8,0	1,5	2,0	1,160	3DE
30311A	104,0	110,0	111,0	65,0	71,0	4,0	6,5	2,0	2,5	1,610	2FB
31311A	94,0	110,0	113,0	65,0	68,0	4,0	10,5	2,0	2,5	1,580	7FB
32311A	99,0	110,0	111,0	65,0	68,0	5,0	10,5	2,0	2,5	2,350	2FD
32311B	91,0	110,0	112,0	65,0	65,0	5,0	10,5	2,0	2,5	2,320	5FD
32012A	85,0	88,0	91,0	67,0	67,0	4,0	5,5	1,5	1,5	0,632	4CC
33012A	85,0	88,0	90,0	67,0	67,0	5,0	6,0	1,5	1,5	0,715	2CE
33112A	88,0	93,0	96,0	67,0	67,0	5,0	7,0	1,5	1,5	0,917	3CE
30212A	96,0	101,0	103,0	69,0	70,0	4,0	4,5	1,5	2,0	0,967	3EB
32212A	95,0	101,0	104,0	69,0	69,0	4,0	5,5	1,5	2,0	1,170	3EC
33212A	93,0	101,0	105,0	69,0	69,0	6,0	9,0	1,5	2,0	1,540	3EE
30312A	112,0	118,0	120,0	72,0	77,0	5,0	7,5	2,5	3,0	2,030	2FB
31312A	103,0	118,0	123,0	72,0	73,0	5,0	11,5	2,5	3,0	2,000	7FB
32312A	107,0	118,0	120,0	72,0	74,0	6,0	11,5	2,5	2,0	2,924	2FB

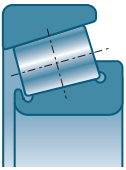
Tapered roller bearings *(continued)*



d		D	B	C	T	a	C	C_0	e	Y	Yo		
mm	Ref.	mm	mm	mm	mm	mm	10^3N	10^3N				rpm*	rpm*
65	32013A	100	23	17,5	23,00	22,50	83,0	128,0	0,46	1,31	0,72	3400	4600
	33013A	100	27	21,0	27,00	21,50	107,9	156,0	0,35	1,72	0,95	3400	4600
	33113A	110	34	26,5	34,00	26,00	159,3	211,0	0,39	1,55	0,85	3300	4400
	30213A	120	23	20,0	24,75	23,80	126,3	152,7	0,40	1,48	0,81	2900	4100
	32213A	120	31	27,0	32,75	27,30	168,7	221,8	0,40	1,48	0,82	2800	3900
	33213A	120	41	32,0	41,00	29,50	202,0	280,0	0,39	1,54	0,85	2800	4000
	30313A	140	33	28,0	36,00	28,50	203,0	238,0	0,35	1,74	0,96	2800	3700
	31313A	140	33	23,0	36,00	44,00	191,4	204,0	0,83	0,73	0,40	2500	3300
	32313A	140	48	39,0	51,00	34,50	273,0	350,0	0,35	1,74	0,96	2800	3700
	32313B	140	48	39,0	51,00	41,50	275,0	375,0	0,55	1,10	0,60	2600	3500
70	32014A	110	25	19,0	25,00	24,00	105,0	160,0	0,43	1,38	0,76	3200	4200
	33014A	110	31	25,5	31,00	22,50	127,0	204,0	0,28	2,11	1,16	3200	4200
	30214A	125	24	21,0	26,25	25,90	138,3	173,7	0,42	1,43	0,79	2800	4000
	32214A	125	31	27,0	33,25	28,90	173,1	237,1	0,42	1,43	0,79	2700	3800
	33214A	125	41	32,0	41,00	31,00	201,0	282,0	0,41	1,47	0,81	2900	3900
	30314A	150	35	30,0	38,00	30,00	230,0	272,0	0,35	1,74	0,96	2600	3500
	31314A	150	35	25,0	38,00	47,00	213,5	229,0	0,83	0,73	0,40	2300	3000
	32314A	150	51	42,0	54,00	36,50	310,0	405,0	0,35	1,74	0,96	2600	3500
	32314B	150	51	42,0	54,00	44,00	305,0	405,0	0,55	1,10	0,60	2400	3300
75	32015A	115	25	19,0	25,00	25,50	106,0	167,0	0,46	1,31	0,72	3000	4000
	33015A	115	31	25,5	31,00	23,00	111,0	186,0	0,30	2,01	1,11	3000	4000
	33115A	125	37	29,0	37,00	29,00	188,1	252,0	0,40	1,51	0,83	2800	3700
	30215A	130	25	22,0	27,25	27,00	153,8	175,0	0,44	1,38	0,76	2700	3600
	32215A	130	31	27,0	33,25	30,00	168,0	224,0	0,44	1,38	0,76	2700	3600
	33215A	130	41	31,0	41,00	32,00	208,0	298,0	0,43	1,40	0,77	2700	3600
	30315A	160	37	31,0	40,00	32,00	255,0	305,0	0,35	1,74	0,96	2400	3200
	32315A	160	55	45,0	58,00	39,00	355,0	470,0	0,35	1,74	0,96	2400	3200
	32315B	160	55	45,0	58,00	46,50	325,0	415,0	0,55	1,10	0,60	2300	3100
80	32016A	125	29	22,0	29,00	27,00	139,0	216,0	0,42	1,42	0,78	2800	3700
	33016A	125	36	29,5	36,00	25,00	173,0	284,0	0,28	2,16	1,19	2800	3700
	33116A	130	37	29,0	37,00	30,50	179,0	276,0	0,42	1,44	0,79	2600	3500
	30216A	140	26	22,0	28,25	27,50	160,0	200,0	0,42	1,43	0,79	2500	3400
	32216A	140	33	28,0	35,25	31,00	199,0	265,0	0,42	1,43	0,79	2500	3400
	33216A	140	46	35,0	46,00	35,00	250,0	365,0	0,43	1,41	0,78	2500	3400
	30316A	170	39	33,0	42,50	34,00	291,0	350,0	0,35	1,74	0,96	2300	3000
85	32017A	130	29	22,0	29,00	28,50	142,0	224,0	0,44	1,36	0,75	2600	3500
	33017A	130	36	29,5	36,00	26,00	176,0	296,0	0,29	2,06	1,13	2600	3500
	33117A	140	41	32,0	41,00	33,00	211,0	330,0	0,41	1,48	0,81	2400	3300
	30217A	150	28	24,0	30,50	30,00	202,4	232,0	0,42	1,43	0,79	2400	3200

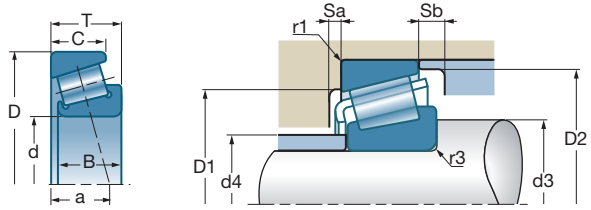
* These are the speed limits according to the SNR concept (see pages 85 to 87).

Single-row tapered roller bearings (mm) *(continued)*



	D1 min	D1 max	D2 min	d3 min	d4 max	Sa min	Sb min	r1 max	r3 max		ISO
Ref.	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
32013A	90,0	93,0	97,0	72,0	72,0	4,0	5,5	1,5	1,5	0,675	4CC
33013A	89,0	93,0	96,0	72,0	72,0	5,0	6,0	1,5	1,5	0,757	2CE
33113A	96,0	103,0	106,0	72,0	73,0	6,0	7,5	1,5	1,5	1,300	3DE
30213A	106,0	111,0	113,0	74,0	77,0	4,0	4,5	1,5	2,0	1,160	3EB
32213A	104,0	111,0	115,0	74,0	76,0	4,0	5,5	1,5	2,0	1,550	3EC
33213A	102,0	111,0	115,0	74,0	74,0	6,0	9,0	1,5	2,0	2,020	3EE
30313A	122,0	128,0	130,0	77,0	83,0	5,0	8,0	2,5	3,0	2,520	2GB
31313A	111,0	128,0	132,0	77,0	79,0	5,0	13,0	2,5	3,0	2,500	7GB
32313A	117,0	128,0	130,0	77,0	80,0	6,0	12,0	2,5	3,0	3,400	2GD
32313B	109,0	128,0	77,0	133,0	77,0	6,0	12,0	2,5	3,0	3,460	5GD
32014A	98,0	103,0	105,0	77,0	78,0	5,0	6,0	1,5	1,5	0,867	4CC
33014A	99,0	103,0	105,0	77,0	78,0	5,0	5,5	1,5	1,5	1,080	2CE
30214A	110,0	116,0	118,0	79,0	81,0	4,0	5,0	1,5	2,0	1,300	3EB
32214A	108,0	116,0	119,0	79,0	80,0	4,0	6,0	1,5	2,0	1,730	3EC
33214A	107,0	116,0	120,0	79,0	79,0	7,0	9,0	1,5	2,0	2,120	3EE
30314A	130,0	138,0	140,0	82,0	89,0	5,0	8,0	2,5	3,0	3,050	2GB
31314A	118,0	138,0	141,0	82,0	84,0	5,0	13,0	2,5	3,0	2,950	7GB
32314A	125,0	138,0	140,0	82,0	86,0	6,0	12,0	2,5	3,0	4,400	2GD
32314B	117,0	138,0	143,0	82,0	83,0	7,0	12,0	2,5	3,0	4,250	5GD
32015A	103,0	108,0	110,0	82,0	83,0	5,0	6,0	1,5	1,5	0,858	4CC
33015A	104,0	108,0	110,0	82,0	83,0	6,0	5,5	1,5	1,5	1,150	2CE
33115A	109,0	116,0	120,0	84,0	84,0	6,0	8,0	1,5	2,0	1,810	3DE
30215A	115,0	121,0	124,0	84,0	86,0	4,0	5,0	1,5	2,0	1,390	4DB
32215A	115,0	121,0	124,0	84,0	85,0	4,0	6,0	1,5	2,0	1,760	4DC
33215A	111,0	121,0	125,0	84,0	83,0	7,0	10,0	1,5	2,0	2,230	3EE
30315A	139,0	148,0	149,0	87,0	95,0	5,0	9,0	2,5	3,0	3,700	2GB
32315A	133,0	148,0	149,0	87,0	91,0	7,0	13,0	2,5	3,0	5,370	2GD
32315B	124,0	148,0	151,0	87,0	90,0	7,0	14,0	2,5	3,0	5,200	5GD
32016A	112,0	117,0	120,0	87,0	89,0	6,0	7,0	1,5	1,5	1,300	3CC
33016A	112,0	117,0	119,0	87,0	90,0	6,0	6,5	1,5	1,5	1,630	2CE
33116A	114,0	121,0	126,0	89,0	89,0	6,0	8,0	1,5	2,0	1,930	3DE
30216A	124,0	130,0	132,0	90,0	91,0	4,0	6,0	2,0	2,5	1,690	3EB
32216A	122,0	130,0	134,0	90,0	90,0	5,0	7,0	2,0	2,5	2,150	3EC
33216A	119,0	130,0	135,0	90,0	89,0	7,0	11,0	2,0	2,5	2,940	3EE
30316A	148,0	158,0	159,0	92,0	102,0	5,0	9,5	2,5	3,0	4,360	2GB
32017A	117,0	122,0	125,0	92,0	94,0	6,0	7,0	1,5	1,5	1,410	4CC
33017A	118,0	122,0	125,0	92,0	94,0	6,0	6,5	1,5	1,5	1,700	3CE
33117A	122,0	130,0	135,0	95,0	95,0	7,0	9,0	2,0	2,5	2,440	3DE
30217A	132,0	140,0	141,0	95,0	97,0	5,0	6,5	2,0	2,5	2,160	3EB

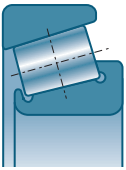
Tapered roller bearings *(continued)*



d		D	B	C	T	a	C	C_0	e	Y	Yo		
mm	Ref.	mm	mm	mm	mm	mm	10^3N	10^3N				rpm*	rpm*
85	32217A	150	36	30,0	38,50	33,50	224,0	300,0	0,42	1,43	0,79	2400	3200
	33217A	150	49	37,0	49,00	37,50	284,0	420,0	0,42	1,43	0,79	2400	3200
	32317A	180	60	49,0	63,50	43,00	405,0	525,0	0,35	1,74	0,96	2100	2900
90	32018A	140	32	24,0	32,00	30,00	168,0	270,0	0,41	1,42	0,78	2500	3300
	33018A	140	39	32,5	39,00	28,00	215,0	360,0	0,27	2,23	1,23	2500	3300
	33118A	150	45	35,0	45,00	35,50	253,0	400,0	0,40	1,51	0,83	2300	3100
	30218A	160	30	26,0	32,50	32,00	208,0	267,0	0,42	1,43	0,79	2200	3000
	32218A	160	40	34,0	42,50	36,00	262,0	360,0	0,42	1,43	0,79	2200	3000
	32318A	190	64	53,0	67,50	45,50	450,0	595,0	0,35	1,74	0,96	2000	2700
95	32019A	145	32	24,0	32,00	31,50	171,0	280,0	0,44	1,36	0,75	2300	3100
	33019A	145	39	32,5	39,00	28,50	242,3	375,0	0,28	2,16	1,19	2300	3100
	30219A	170	32	27,0	34,50	34,00	226,0	290,0	0,42	1,43	0,79	2100	2800
	32219A	170	43	37,0	45,50	39,00	299,0	415,0	0,42	1,43	0,79	2100	2800
100	32020A	150	32	24,0	32,00	32,50	170,0	281,0	0,46	1,31	0,72	2200	3000
	33020A	150	39	32,5	39,00	29,50	224,0	390,0	0,29	2,09	1,15	2200	3000
	30220A	180	34	29,0	37,00	36,00	258,0	335,0	0,42	1,43	0,79	2000	2700
	32220A	180	46	39,0	49,00	41,50	330,0	465,0	0,42	1,43	0,79	2000	2700
105	32021A	160	35	26,0	35,00	34,50	201,0	335,0	0,44	1,35	0,74	2100	2800
	33021A	160	43	34,0	43,00	31,00	245,0	420,0	0,28	2,12	1,17	2100	2800
	30221A	190	36	30,0	39,00	38,00	287,0	380,0	0,42	1,43	0,79	1900	2500
	32221A	190	50	43,0	53,00	44,00	380,0	540,0	0,42	1,43	0,79	1900	2500
110	32022A	170	38	29,0	38,00	36,50	236,0	390,0	0,43	1,39	0,77	2000	2700
	33022A	170	47	37,0	47,00	33,50	288,0	500,0	0,29	2,09	1,15	2000	2700
	30222A	200	38	32,0	41,00	40,00	325,0	435,0	0,42	1,43	0,79	1800	2400
	32222A	200	53	46,0	56,00	47,00	420,0	605,0	0,42	1,43	0,79	1800	2400
120	T4CB120	170	25	19,5	27,00	34,00	150,0	235,0	0,47	1,27	0,70	1900	2600
	32024A	180	38	29,0	38,00	39,00	245,0	420,0	0,46	1,31	0,72	1800	2500
	33024A	180	48	38,0	48,00	36,00	293,0	520,0	0,31	1,97	1,08	1800	2400
	30224A	215	40	34,0	43,50	44,00	345,0	470,0	0,44	1,38	0,76	1700	2200
	32224A	215	58	50,0	61,50	51,50	460,0	680,0	0,44	1,38	0,76	1700	2200
130	T4CB130	185	27	21,0	29,00	38,00	180,0	280,0	0,47	1,27	0,70	1700	2400
	32026A	200	45	34,0	45,00	43,50	320,0	545,0	0,43	1,38	0,76	1700	2200
	30226A	230	40	34,0	43,75	45,50	375,0	505,0	0,44	1,38	0,76	1500	2000
	32226A	230	64	54,0	67,75	57,00	530,0	815,0	0,44	1,38	0,76	1500	2000

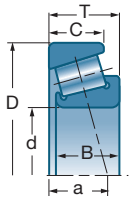
* These are the speed limits according to the SNR concept (see pages 85 to 87).

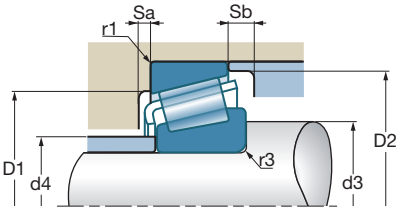
Single-row tapered roller bearings (mm) *(continued)*



	D1 min	D1 max	D2 min	d3 min	d4 max	Sa min	Sb min	r1 max	r3 max		ISO
Ref.	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
32217A	130,0	140,0	142,0	95,0	96,0	5,0	8,5	2,0	2,5	2,750	3EC
33217A	128,0	140,0	144,0	95,0	95,0	7,0	12,0	2,0	2,5	3,620	3EE
32317A	150,0	166,0	167,0	99,0	103,0	8,0	14,5	3,0	4,0	7,450	2GD
32018A	125,0	131,0	134,0	99,0	100,0	6,0	8,0	1,5	2,0	1,691	3CC
33018A	127,0	131,0	135,0	99,0	100,0	7,0	6,5	1,5	2,0	2,200	2CE
33118A	130,0	140,0	144,0	100,0	100,0	7,0	10,0	2,0	2,5	3,220	3DE
30218A	140,0	150,0	150,0	100,0	103,0	5,0	6,5	2,0	2,5	2,700	3FB
32218A	138,0	150,0	152,0	100,0	102,0	5,0	8,5	2,0	2,5	3,500	3FC
32318A	157,0	176,0	177,0	104,0	108,0	8,0	14,5	3,0	4,0	8,780	2GD
32019A	130,0	136,0	140,0	104,0	105,0	6,0	8,0	1,5	2,0	1,784	4CC
33019A	131,0	136,0	139,0	104,0	104,0	7,0	6,5	1,5	2,0	2,300	2CE
30219A	149,0	158,0	159,0	107,0	110,0	5,0	7,5	2,5	3,0	3,160	3FB
32219A	145,0	158,0	161,0	107,0	108,0	5,0	8,5	2,5	3,0	4,200	3FC
32020A	134,0	141,0	144,0	109,0	109,0	6,0	8,0	1,5	2,0	1,880	4CC
33020A	135,0	141,0	143,0	109,0	108,0	7,0	6,5	1,5	2,0	2,310	2CE
30220A	157,0	168,0	168,0	112,0	116,0	5,0	8,0	2,5	3,0	3,700	3FB
32220A	154,0	168,0	171,0	112,0	114,0	5,0	10,0	2,5	3,0	5,200	3FC
32021A	143,0	150,0	154,0	115,0	116,0	6,0	9,0	2,0	2,5	2,500	4DC
33021A	145,0	150,0	153,0	115,0	116,0	7,0	9,0	2,0	2,5	3,060	2DE
30221A	165,0	178,0	177,0	117,0	122,0	6,0	9,0	2,5	3,0	4,500	3FB
32221A	161,0	178,0	180,0	117,0	120,0	5,0	10,0	2,5	3,0	6,250	3FC
32022A	152,0	160,0	163,0	120,0	122,0	7,0	9,0	2,0	2,5	3,100	4DC
33022A	152,0	160,0	161,0	120,0	123,0	7,0	10,0	2,0	2,5	3,800	2DE
30222A	174,0	188,0	187,0	122,0	129,0	6,0	9,0	2,5	3,0	5,230	3FB
32222A	170,0	188,0	190,0	122,0	126,0	6,0	10,0	2,5	3,0	7,352	3FC
T4CB120	154,0	157,0	164,0	132,0	130,0	4,3	7,5	3,0	3,0	1,540	4CB
32024A	161,0	170,0	173,0	130,0	131,0	7,0	9,0	2,0	2,5	3,183	4DC
33024A	160,0	170,0	171,0	130,0	132,0	6,0	10,0	2,0	2,5	4,140	2DE
30224A	187,0	203,0	201,0	132,0	140,0	6,0	9,5	2,5	3,0	6,270	4FB
32224A	181,0	203,0	204,0	132,0	136,0	7,0	11,5	2,5	3,0	9,270	4FD
T4CB130	171,0	171,0	179,0	144,0	141,0	6,2	8,0	3,0	3,0	2,300	4CB
32026A	178,0	190,0	192,0	140,0	144,0	8,0	11,0	2,0	2,5	5,060	4EC
30226A	203,0	216,0	217,0	144,0	152,0	7,0	9,5	3,0	4,0	7,070	4FB
32226A	193,0	216,0	219,0	144,0	146,0	7,0	13,5	3,0	4,0	11,500	4FD

Tapered roller bearings *(continued)*

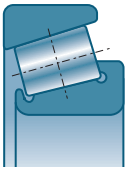




d		D	B	C	T	a	C	C_0	e	Y	Yo		
mm	Ref.	mm	mm	mm	mm	mm	10^3N	10^3N				rpm*	rpm*
140	T4CB140	195	27	21,0	29,00	40,00	204,0	340,0	0,50	1,19	0,66	1700	2300
	32028A	210	45	34,0	45,00	46,00	330,0	580,0	0,46	1,31	0,72	1600	2100
	30228A	250	42	36,0	45,75	47,00	440,0	580,0	0,44	1,38	0,76	1400	2000
	32228A	250	68	58,0	71,75	61,00	610,0	920,0	0,44	1,38	0,76	1400	1900
150	32030A	225	48	36,0	48,00	49,00	370,0	640,0	0,46	1,31	0,72	1400	2000
	30230A	270	45	38,0	49,00	51,50	450,0	605,0	0,44	1,38	0,76	1300	1700
	32230A	270	73	60,0	77,00	64,50	700,0	1070,0	0,44	1,38	0,76	1300	1700
160	T4DB160	220	30	23,0	32,00	44,80	237,0	390,0	0,49	1,23	0,68	1500	2000
	32032A	240	51	38,0	51,00	52,50	435,0	790,0	0,46	1,31	0,72	1400	1800
	32232A	290	80	67,0	84,00	70,00	890,0	1420,0	0,44	1,38	0,76	1200	1600
170	32034A	260	57	43,0	57,00	56,00	500,0	895,0	0,44	1,35	0,74	1300	1700
	32234A	310	86	71,0	91,00	75,00	1000,0	1600,0	0,44	1,38	0,76	1100	1500
180	32036A	280	64	48,0	64,00	59,50	713,5	1170,0	0,42	1,42	0,78	1200	1600
	32236A	320	86	71,0	91,00	77,50	1030,0	1690,0	0,45	1,33	0,73	1100	1400
190	32038A	290	64	48,0	64,00	62,50	655,0	1210,0	0,44	1,36	0,75	1100	1500
200	32940A	280	51	39,0	51,00	54,00	525,0	960,0	0,39	1,52	0,84	1100	1600
	32040A	310	70	53,0	70,00	67,00	750,0	1350,0	0,43	1,39	0,77	1000	1400
240	32048A	360	76	57,0	76,00	78,00	1028,8	1760,0	0,46	1,31	0,72	870	1200
280	32056A	420	87	65,0	87,00	90,50	1250,0	2350,0	0,46	1,31	0,72	700	1000
320	32064A	480	100	74,0	100,00	104,00	1520,0	2940,0	0,46	1,31	0,72	630	840

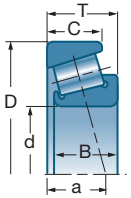
* These are the speed limits according to the SNR concept (see pages 85 to 87).

Single-row tapered roller bearings (mm) *(continued)*



Ref.	D1 min	D1 max	D2 min	d3 min	d4 max	Sa min	Sb min	r1 max	r3 max	kg	ISO
	mm	mm	mm	mm	mm	mm	mm	mm	mm		
T4CB140	180,0	181,0	189,0	152,0	151,0	5,0	8,0	3,0	3,0	2,400	4CB
32028A	187,0	200,0	202,0	150,0	153,0	8,0	11,0	2,0	2,5	5,200	4DC
30228A	219,0	236,0	234,0	154,0	163,0	9,0	9,5	3,0	4,0	9,000	4FB
32228A	210,0	236,0	238,0	154,0	159,0	8,0	13,5	3,0	4,0	14,200	4FD
32030A	200,0	213,0	216,0	162,0	164,0	8,0	12,0	2,5	3,0	6,310	4EC
30230A	234,0	256,0	250,0	164,0	175,0	9,0	11,0	3,0	4,0	11,100	4GB
32230A	226,0	256,0	254,0	164,0	171,0	8,0	17,0	3,0	4,0	18,500	4GD
T4DB160	204,0	206,0	213,0	172,0	172,0	6,0	9,0	3,0	3,0	3,200	4DB
32032A	213,0	228,0	231,0	172,0	175,0	8,0	13,0	2,5	3,0	7,700	4EC
32232A	242,0	276,0	274,0	174,0	183,0	10,0	17,0	3,0	4,0	22,500	4GD
32034A	230,0	248,0	249,0	182,0	187,0	10,0	14,0	2,5	3,0	10,300	4EC
32234A	259,0	292,0	294,0	188,0	196,0	10,0	20,0	4,0	5,0	29,300	4GD
32036A	247,0	268,0	267,0	192,0	199,0	10,0	16,0	2,5	3,0	14,200	3FD
32236A	267,0	302,0	303,0	198,0	204,0	10,0	20,0	4,0	5,0	30,700	4GD
32038A	257,0	278,0	279,0	202,0	209,0	10,0	16,0	2,5	3,0	14,800	4FD
32940A	257,0	268,0	271,0	212,0	216,0	9,0	12,0	2,5	3,0	9,380	
32040A	273,0	298,0	297,0	212,0	221,0	11,0	17,0	2,5	3,0	19,100	4FD
32048A	318,0	346,0	346,0	254,0	261,0	12,0	19,0	3,0	4,0	26,000	4FD
32056A	370,0	402,0	402,0	298,0	305,0	14,0	22,0	4,0	5,0	39,500	4FC
32064A	424,0	462,0	461,0	338,0	350,0	15,0	26,0	4,0	5,0	59,100	4GD

Tapered roller bearings *(continued)*



■ Single-row tapered roller bearings (inch)

d		D	B	C	T	a					
inch	Ref.	mm	mm	mm	mm	mm	10^3N	10^3N	rpm*	rpm*	kg
75,987	HM215249/210	131,975	39,000	32,000	39,00	29,00	205,0	285,0	2500	3500	2,190
89,974	HM218248/210	146,975	40,000	32,500	40,00	31,40	251,1	340,0	2400	3200	2,550
88,900	HM518445/410	152,400	39,688	30,163	39,688	33,70	278,8	365,0	2300	3100	2,900
100,000	JHM720249/210	160,000	40,000	32,000	41,00	38,60	260,0	370,0	2200	2900	3,050
50,000	JLM104945N910Z	82,000	27,700	17,000	21,50	22,20	72,0	95,0	4000	5700	0,444
38,000	JL69349/310A	63,000	17,000	13,500	17,00	14,00	41,5	56,0	5300	7500	0,200
80,000	JM515649/610	130,000	34,000	28,500	35,00	30,10	183,6	249,0	2700	3600	1,730
17,462	LM11749/710	39,878	14,605	10,668	13,843	8,80	22,3	22,8	9800	13000	0,085
19,050	LM11949/910	45,237	16,637	12,065	15,494	9,90	29,0	30,3	8400	11000	0,121
21,986	LM12749/710	45,237	16,637	12,065	15,494	10,20	27,8	33,4	8200	10000	0,117
21,986	LM12749/711	45,974	16,637	12,065	15,494	10,20	27,8	33,4	8200	10000	0,122
38,100	LM29749/710	65,088	18,288	13,970	18,034	13,70	43,3	56,8	5200	7300	0,231
34,925	LM48548/510	65,088	18,288	13,970	18,034	13,70	45,7	58,0	5400	7600	0,251
41,275	LM501349/310	73,431	19,812	14,732	19,558	16,30	56,1	69,5	4700	6600	0,328
45,987	LM503349/310	74,976	18,000	14,000	18,00	15,80	53,1	74,8	4400	6200	0,297
45,987	LM503349A/310	74,976	18,000	14,000	18,00	15,80	53,1	74,8	4400	6200	0,297
45,242	LM603049/011	77,788	19,842	15,08	19,842	17,60	57,5	73,5	4400	6100	0,355
31,750	LM67048/010	59,131	16,764	11,811	15,875	12,80	35,3	42,5	5900	8400	0,177
26,988	L44649/610	50,292	14,732	10,668	14,224	10,90	26,7	32,5	6900	9800	0,119
29,000	L45449/410	50,292	14,732	10,668	14,224	10,90	30,0	37,8	7100	9600	0,109
196,850	L540049/010	254,00	27,783	21,433	28,275	42,60	198,0	413,0	1200	1600	3,500
34,988	L68149/110	59,131	16,764	11,938	15,875	13,30	33,3	44,4	5900	7800	0,167

* These are the speed limits according to the SNR concept (see pages 85 to 87).