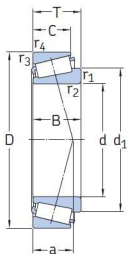


8 Tapered roller bearings

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8.2 Inch single row tapered roller bearings

d 53,975 – 60,325 mm
2.125 – 2.375 in.

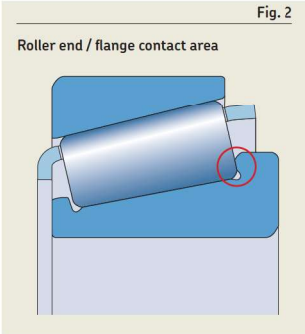


Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Series
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm/in.			kN		kN	r/min		kg	–	–
53,975 2.125	88,9 3.5	19,05 0.75	71,5	78	9	6 000	7 000	0,44	LM 806649/610	LM 806600
	95,25	27,783	129	137	16	5 600	7 000	0,81	33895/33821	33800
	3,75	1.0938								
	95,25	27,783	129	137	16	5 600	7 000	0,81	33895/33822	33800
	3,75	1.0938								
	107,95	36,512	183	190	21,6	5 300	6 300	1,45	► 539/532 X	535
	4,25	1.4375								
	111,125	38,1	183	190	21,6	5 300	6 300	1,65	► 539/532 A	535
	4,375	1.5								
	123,825	36,512	174	160	19,6	4 300	5 600	2	72212/72487	72000
	4,875	1.4375								
57,15 2.25	96,838	21	99,9	102	11,6	5 600	6 700	0,59	387 A/382 A	385
	3,8125	0.8268								
	96,838	21	99,9	102	11,6	5 600	6 700	0,59	387/382 A	385
	3,8125	0.8268								
	96,838	25,4	99,9	102	11,6	5 600	6 700	0,65	387 A/382 S	385
	3,8125	1								
	98,425	21	99,9	102	11,6	5 600	6 700	0,64	387/382	385
	3,875	0.8268								
	104,775	30,162	150	160	18,6	5 300	6 300	1,05	► 462/453 X	455
	4,125	1.1875								
	112,712	30,162	175	204	23,6	4 500	5 600	1,4	39580/39520	39500
	4,4375	1.1875								
	112,712	30,162	175	204	23,6	4 500	5 600	1,4	► 39581/39520	39500
	4,4375	1.1875								
59,987 2.3617	130,175	34,099	187	180	22	3 800	5 000	2,05	HM 911244/210	HM 911200
	5,125	1.3425								
	135,755	53,975	353	400	45,5	4 000	5 000	3,95	6391/K-6320	6300
	5,3447	2.125								
60,325 2.375	130,175	36,512	187	180	22,4	3 800	5 000	2,1	HM 911245/210	HM 911200
	5,125	1.4375								

SKF Explorer bearing
► Popular item

Bearing features

- **Low friction**
The optimized roller end design and surface finish on the flange (fig. 2) promote lubricant film formation, resulting in lower friction. This also reduces frictional heat and flange wear. In addition, the bearings can better maintain preload and run at reduced noise levels.
- **Long service life**
The crowned raceway profiles of basic design bearings and the logarithmic raceway profiles of SKF Explorer bearings optimize the load distribution along the contact surfaces, reduce stress peaks at the roller ends (fig. 3), and reduce the sensitivity to misalignment and shaft deflection compared with conventional straight raceway profiles (fig. 4).
- **Enhanced operational reliability**
Optimized surface finish on the contact surfaces of the rollers and raceways supports the formation of a hydrodynamic lubricant film.



Load distribution and stress reduction

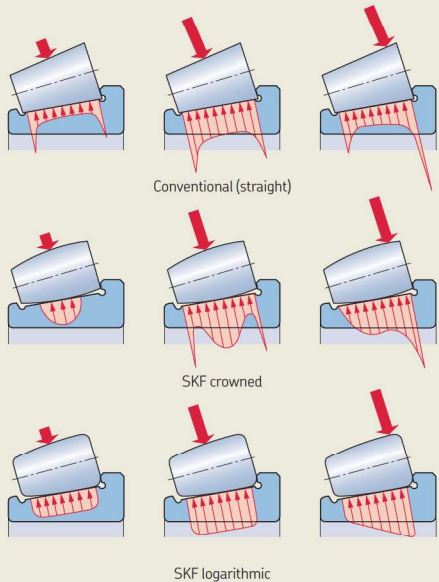


Fig. 3

Raceway profiles

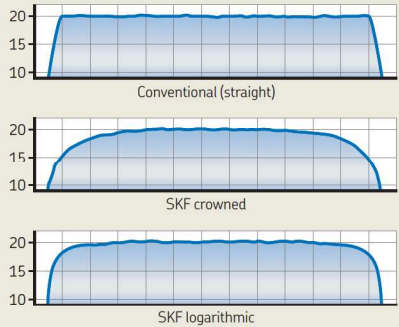
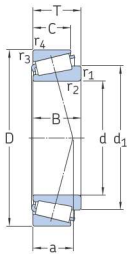


Fig. 4

8.2 Inch single row tapered roller bearings

d 46 – 50,8 mm
1.811 – 2 in.



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Series
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm/in.			kN		kN	r/min		kg	–	–
46 1.811	75 2.9528	18 0.7087	62,1	71	7,65	7 000	8 500	0,3	► LM 503349 A/310	LM 503300
	75 2.9528	18 0.7087	62,1	71	7,65	7 000	8 500	0,3	► LM 503349/310	LM 503300
46,038 1.8125	79,375 3.125	17,462 0.6875	61,1	62	6,8	7 000	8 500	0,33	► 18690/18620	18600
	85 3.3465	20,638 0.8125	87,3	81,5	9,3	6 700	8 000	0,49	359 S/354 X	355
47,625 1.875	88,9 3.5	20,638 0.8125	94	91,5	10,4	6 300	7 500	0,55	369 S/362 A	365
	95,25 3.75	30,162 1.1875	133	146	17,3	5 600	7 000	0,99	HM 804846/810	HM 804800
	101,6 4	34,925 1.375	184	190	21,6	5 600	6 700	1,3	528 R/522	525
49,212 1.9375	114,3 4.5	44,45 1.75	226	224	25	5 000	6 300	2,2	65390/65320	65300
50,8 2	82,55 3.25	21,59 0.85	88,9	100	11	6 300	8 000	0,43	LM 104949/911	LM 104900
	85 3.3465	17,462 0.6875	62,1	65,5	7,2	6 300	8 000	0,37	18790/18720	18700
	88,9 3.5	20,638 0.8125	94	91,5	10,4	6 300	7 500	0,5	368 A/362 A	365
	90 3.5433	25 0.9843	94	91,5	10,4	6 300	7 500	0,58	368 A/362 X	365
	93,264 3.6718	30,162 1.1875	134	146	17	5 600	7 000	0,87	3780/3720	3700
	104,775 4.125	36,512 1.4375	180	204	22,4	5 000	6 300	1,5	HM 807046/010	HM 807000
	104,775 4.125	39,688 1.5625	195	224	25	5 300	6 300	1,65	► 4580/4535	4500
	107,95 4.25	36,512 1.4375	183	190	21,6	5 300	6 300	1,55	► 537/532 X	535

SKF Explorer bearing
► Popular item

Designs and variants

Single row tapered roller bearings

SKF single row tapered roller bearings (fig. 6) are available in many designs and variants and in many series and sizes, including:

- basic design bearings
- application-specific bearings
- bearings with a flanged outer ring
- SKF Explorer bearings (page 675)

Basic design bearings

- have a design and internal geometry that provide long service life
- have crowned raceway profiles and an optimized surface finish of the inner ring guide flange that enables them to run cooler and consume less lubricant than conventional design bearings
- have load rating values that are in accordance with ISO and even above (product tables, page 762)
- offer a cost-effective solution for standard industrial applications

On request, SKF can also supply any inner ring with roller and cage assembly (cone) or any outer ring (cup) separately (fig. 7).

Application-specific bearings

For applications where the bearings are subjected to unique operating conditions, SKF manufactures customized single row tapered roller bearings on request. To meet the needs of these particular applications, SKF manufactures, for example, pinion or low-friction bearings with the following features:

Pinion bearings

- are designed for pinion shafts in the differentials of automotive transmissions to provide a constant, accurate gear mesh
- have very narrow geometrical tolerances and high preload capability
- have special friction characteristics and can be axially adjusted within narrow limits using the friction-torque method
- have an internal design that supports the formation of a hydrodynamic lubricant film to substantially reduce friction, and consequently the operating temperature, during the running-in period
- retain their preload setting when mounted, lubricated and maintained properly
- are identified by the designation suffix CL7C

Low-friction bearings

- are designed to meet the ever-increasing demands to reduce friction and energy use
- optimize a reduction in friction through their internal geometry, number of rollers, surface finish and redesign of their cage
- have a frictional moment that is at least 30% lower when compared with a same-sized SKF standard bearing
- normally do not need a running-in procedure because their optimized contact profiles provide optimum load distribution and they experience only a small, controlled loss of initial preload
- generate less frictional heat and therefore enable extended lubrication intervals or operation at higher speeds
- have a roller and cage assembly with a lower mass and therefore reduced inertial forces in the bearing, which reduce the risk of skidding and smearing
- are typically used in automotive and industrial transmissions

Fig. 6

Single row tapered roller bearing

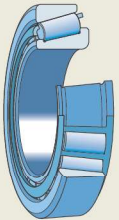


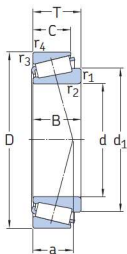
Fig. 7

Separately packed components



8.2 Inch single row tapered roller bearings

d 44,45 – 45,618 mm
1.75 – 1.796 in.



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Series
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm/in.			kN		kN	r/min		kg	–	–
44,45 1.75	82,931 3.265	23,812 0.9375	99,1	106	11,8	6 700	8 000	0,57	25580/25520	25500
	82,931 3.265	26,988 1.0625	99,1	106	11,8	6 700	8 000	0,61	25580/25522	25500
	82,931 3.265	26,988 1.0625	99,1	106	11,8	6 700	8 000	0,61	25580/25523	25500
	88,9 3.5	30,162 1.1875	116	127	14,6	6 000	7 500	0,86	HM 803149/110	HM 803000
	93,264 3.6718	30,163 1.1875	134	146	17	5 600	7 000	0,98	3782/3720	3700
	95,25 3.75	30,958 1.2188	108	96,5	11,4	5 300	7 000	0,93	► 53178/53377	53000
	95,25 3.75	30,958 1.2188	124	122	14	5 300	7 000	1	HM 903249/210	HM 903200
	104,775 4.125	36,512 1.4375	180	204	22,4	5 000	6 300	1,65	HM 807040/010	HM-807000
	107,95 4.25	36,512 1.4375	183	190	21,6	5 300	6 300	1,7	► 535/532 X	535
	111,125 4.375	38,1 1.5	183	190	21,6	5 300	6 300	1,85	► 535/532 A	535
	85 3.3465	20,638 0.8125	87,3	81,5	9,3	6 700	8 000	0,5	358 X/354 X	355
	87,312 3.4375	30,162 1.1875	126	132	15	6 300	8 000	0,78	3586/3525	3500
45,242 1.7812	73,431 2.891	19,558 0.77	66	75	8,15	7 000	8 500	0,31	► LM 102949/910	LM 102900
	77,788 3.0625	19,842 0.7812	66,8	69,5	7,65	7 000	8 500	0,37	LM 603049/011	LM 603000
	77,788 3.0625	19,842 0.7812	66,8	69,5	7,65	7 000	8 500	0,37	LM 603049/011 AA	LM 603000
	77,788 3.0625	21,43 0.8437	66,8	69,5	7,65	7 000	8 500	0,39	LM 603049/012	LM 603000
	82,931 3.265	23,812 0.9375	99,1	106	11,8	6 700	8 000	0,55	25590/25520	25500
45,618 1.796	82,931 3.265	26,988 1.0625	99,1	106	11,8	6 700	8 000	0,59	25590/25523	25500
	83,058 3.27	23,876 0.94	99,1	106	11,8	6 700	8 000	0,55	25590/25522	25500

SKF Explorer bearing
► Popular item

Matched bearings arranged in tandem

- have load lines that are parallel (fig. 12)
- share radial and axial loads equally
- are used when the load carrying capacity of a single bearing is inadequate
- can accommodate axial loads in one direction only
 - If axial loads act in both directions, a third bearing must be added and adjusted against the tandem pair.
- are supplied with intermediate inner and outer ring spacers as a set

TDO design bearings

- have one double row outer ring (double cup) and two inner rings with roller and cage assemblies (cones), usually with an intermediate ring between the two inner rings (fig. 13)
- have rows of rollers arranged back-to-back (load lines diverge toward the bearing axis), which enable stiff arrangements and accommodate considerable tilting moments
- are ready-to-mount units, manufactured with the predetermined axial clearance or preload
- can be used either as locating or non-locating bearings:
 - for non-locating arrangements, the axial displacement should take place between the outer ring and the housing bore
 - bearings with a blind hole or locating slot in the outer ring can be used with a cylindrical pin engaged in the hole or slot to prevent the outer ring from turning in its seat

SKF manufactures TDO design bearings in many variants (table 1, page 672).

Double row tapered roller bearings

SKF manufactures double row tapered roller bearings in the TDO (fig. 13) and TDI (fig. 14) designs, in many variants and with different features.

Depending on the design, these bearings can accommodate heavy radial loads, axial loads in both directions and have a high degree of stiffness. Therefore, they provide a stiff bearing arrangement and locate the shaft in both directions with a specific axial clearance or preload. Because of their second row of rollers, double row tapered roller bearings are suitable for heavy radial and axial loads.

Double row tapered roller bearings are typically used in gearboxes, hoisting equipment, rolling mills and machines in the mining industry, e.g. tunnelling machines.

Fig. 12

Matched bearings arranged in tandem

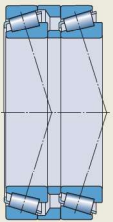


Fig. 13

TDO design

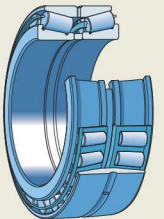
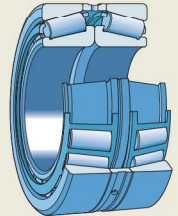


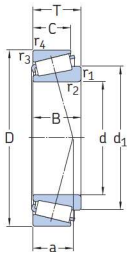
Fig. 14

TDI design



8.2 Inch single row tapered roller bearings

d 40 – 42,875 mm
1.5748 – 1.688 in.



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Series
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm/in.			kN		kN	r/min		kg	–	–
40 1.5748	80	21	87,6	80	9,15	7 000	8 500	0,47	344/332	335
	3.1496	0.8268								
	80	21	87,6	80	9,15	7 000	8 500	0,47	344/332 AA	335
	3.1496	0.8268								
41 1.6142	80	21	87,6	80	9,15	7 000	8 500	0,48	344 A/332	335
	3.1496	0.8268								
	68	17,5	53,6	58,5	6,3	8 000	9 500	0,24	► LM 300849/811	LM 300800
	2.6772	0.689								
41,275 1.625	73,025	16,667	57,7	56	6,2	7 500	9 000	0,28	► 18590/18520	18500
	2.875	0.6562								
	73,431	19,558	67,6	68	7,65	7 500	9 000	0,34	► LM 501349/310	LM 501300
	2.891	0.77								
	73,431	21,43	67,6	68	7,65	7 500	9 000	0,36	► LM 501349/314	LM 501300
	2.891	0.8437								
	76,2	18,009	55,7	56	6,1	7 000	9 000	0,34	11162/11300	11000
	3	0.709								
	76,2	18,009	55,7	56	6,1	7 000	9 000	0,34	11163/11300	11000
	3	0.709								
	76,2	22,225	84,2	86,5	9,65	7 000	9 000	0,44	► 24780/24720	24700
	3	0.875								
42,875 1.688	82,55	26,543	91,2	91,5	10,6	6 700	8 000	0,62	M 802048/011	M 802000
	3.25	1.045								
	87,312	30,162	126	132	15	6 300	8 000	0,85	3585/3525	3500
	3.4375	1.1875								
	88,9	30,162	116	127	14,6	6 000	7 500	0,91	HM 803146/110	HM 803100
	3.5	1.1875								
	101,6	34,925	184	190	21,6	5 600	6 700	1,45	526/522	525
	4	1.375								
	82,931	23,812	99,1	106	11,8	6 700	8 000	0,59	► 25577/25520	25500
	3.265	0.9375								
	82,931	26,988	99,1	106	12	6 700	8 000	0,63	25577/25523	25500
	3.265	1.0625								

SKF Explorer bearing
► Popular item

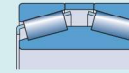
Table 2

TDI design variants and characteristics

Design variant

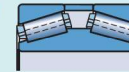
Characteristics

TDI



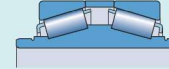
- intermediate ring between two outer rings
- steel window-type cages

TDI.1



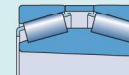
- intermediate ring between two outer rings
- steel pin-type cages (pierced rollers) for higher loads

TDIE



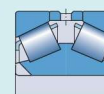
- intermediate ring between two outer rings
- steel window-type cages
- inner ring extensions at both sides
 - extensions are ground as counterface for seal lips

TDIT



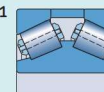
- intermediate ring between two outer rings
- tapered bore, taper 1:12
- steel window-type cages

TDIS



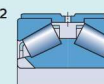
- steep contact angle α
- for applications where high axial loads in combination with radial loads occur
- intermediate ring between two outer rings
- steel window-type cages
- used in rolling mill applications with a loose fit on the roll neck and only subjected to purely axial load
- the inner ring has one or more locating slots (notches) in one or both side faces to prevent it from turning on its seat
- depending on the application, the bearings can be supplied with or without an intermediate ring between the two outer rings

TDIS.1



- steep contact angle α
- for applications where high axial loads in combination with radial loads occur
- intermediate ring between two outer rings
- steel pin-type cages (pierced rollers) for higher loads

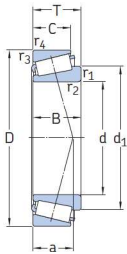
TDIS.2



- self-retaining unit with a retention sleeve over the outer rings
- the outer rings are pressed into the sleeve
- the deformation of the outer rings normally resulting from heavy axial loads is considerably reduced
 - as a consequence, the stress distribution in the rolling contacts is more favourable and extends bearing service life
- the axial internal clearance is determined by the sleeve
- preloading by means of springs is unnecessary
- steep contact angle α
- for applications where high axial loads in combination with radial loads occur
- the simplified and economic design facilitates mounting, dismounting and also maintenance inspection routines

8.2 Inch single row tapered roller bearings

d 34,987 – 39,688 mm
1.3774 – 1.5625 in.



Principal dimensions			Basic load ratings dynamic static		Fatigue load limit	Speed ratings Reference speed Limiting speed		Mass	Designation	Series
d	D	T	C	C ₀	P _u					
mm/in.			kN		kN	r/min		kg	—	—
34,987 1.3774	59,131	15,875	40,6	44	4,5	9 000	11 000	0,17	► L 68149/110	L 68100
	2.328	0.625								
	59,975	15,875	40,6	44	4,5	9 000	11 000	0,18	► L 68149/111	L 68100
	2.3612	0.625								
35,717 1.4062	72,233	25,4	83	90	10	7 500	9 000	0,49	HM 88648/610	HM 88600
	2.8438	1								
36,487 1.4365	73,025	23,812	89,1	88	9,8	8 000	9 500	0,46	25880/25820	25800
	2.875	0.9375								
36,512 1.4375	76,2	29,37	95,2	106	11,8	7 000	8 500	0,64	HM 89449/410	HM 89400
	3	1.1563								
38,1 1.5	65,088	18,034	53	57	6,1	8 000	10 000	0,23	► LM 29748/710	LM 29700
	2.5625	0.71								
	65,088	18,034	53	57	6,1	8 000	10 000	0,24	► LM 29749/710	LM 29700
	2.5625	0.71								
	65,088	19,812	53	57	6,1	8 000	10 000	0,25	LM 29749/711	LM 29700
	2.5625	0.78								
	72,238	20,638	60,3	60	6,55	8 000	9 500	0,36	► 16150/16284	16000
	2.844	0.8125								
	72,238	23,813	60,3	60	6,55	8 000	9 500	0,39	16150/16283	16000
	2.844	0.9375								
	76,2	23,812	92,1	93	10,4	7 500	9 000	0,5	2788/2720	2700
	3	0.9375								
79,375	29,37	112	110	12,5	7 000	8 500	0,68	3490/3420	3400	
3.125	1.1563									
82,55	29,37	106	118	13,4	6 700	8 000	0,77	HM 801346 X/310	HM 801300	
3.25	1.1563									
82,55	29,37	106	118	13,4	6 700	8 000	0,78	► HM 801346/310	HM 801300	
3.25	1.1563									
82,931	23,812	99,1	106	11,8	6 700	8 000	0,65	► 25572/25520	25500	
3.265	0.9375									
88,5	26,988	123	114	13,2	6 700	8 500	0,83	418/414	415	
3.4843	1.0625									
39,688 1.5625	76,2	23,812	92,1	93	10,4	7 500	9 000	0,48	2789/2729	2700
	3	0.9375								

SKF Explorer bearing
► Popular item

SKF Explorer bearings

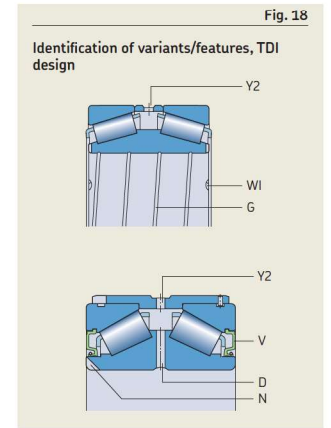
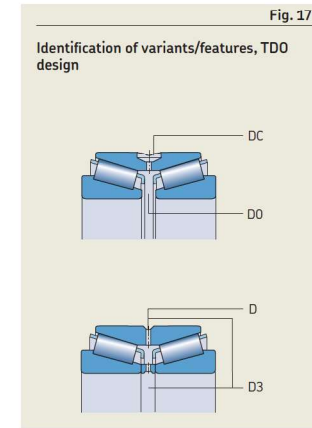
SKF continuously expands its assortment of SKF Explorer bearings (page 7). In addition to the existing SKF Explorer tapered roller bearings (product tables, page 694), SKF can also manufacture basic design tapered roller bearings as SKF Explorer bearings, on request. These SKF Explorer tapered roller bearings are identified by the designation suffix PEX.

Cages

SKF single row and matched tapered roller bearings are fitted with one, double row tapered roller bearings are fitted with two of the cages shown in table 3. The standard stamped steel cage is not identified in the bearing designation. If non-standard cages are required, check availability prior to ordering.

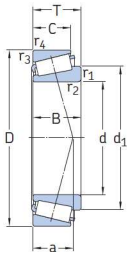
When used at high temperatures, some lubricants can have a detrimental effect on polyamide cages. For information about the suitability of cages, refer to *Cages*, page 187.

Cages for tapered roller bearings					
Single row and matched bearings			Double row bearings		
Cage Type			Window-type, roller centred	Pin-type, pierced rollers	Window-type, roller centred
Material			Stamped steel	Machined steel	PA66, glass fibre reinforced
Suffix			–	.1	TN9



8.2 Inch single row tapered roller bearings

d 28,575 – 34,925 mm
1.125 – 1.375 in.



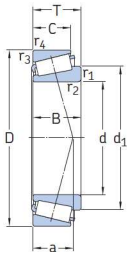
Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Series
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm/in.			kN		kN	r/min		kg	–	–
28,575 1.125	57,15	19,845	58,2	55	6	10 000	12 000	0,23	1985/1922	1900
	2,25	0,7813								
	57,15	19,845	58,2	55	6	10 000	12 000	0,23	1988/1922	1900
	2,25	0,7813								
	64,292	21,433	60,4	61	6,8	8 500	11 000	0,35	M 86647/610	M 86600
	2,5312	0,8438								
29 1.1417	50,292	14,224	31,8	32,5	3,35	11 000	13 000	0,11	L 45449/410	L 45400
	1,98	0,56								
30,162 1.1875	64,292	21,433	60,4	61	6,8	8 500	11 000	0,34	M 86649/610	M 86600
	2,5312	0,8438								
	68,262	22,225	67,1	69,5	7,8	8 000	10 000	0,41	M 88043/010	M 88000
	2,6875	0,875								
31,75 1.25	59,131	15,875	42,8	41,5	4,4	9 500	11 000	0,18	LM 67048/010	LM 67000
	2,328	0,625								
	61,912	18,161	59,5	57	6,2	9 000	11 000	0,24	15123/15243	15000
	2,4375	0,715								
	62	18,161	59,5	57	6,2	9 000	11 000	0,24	15123/15245	15000
	2,4409	0,715								
33,338 1.3125	73,025	29,37	86,5	95	10,4	7 500	9 000	0,62	HM 88542/510	HM 88500
	2,875	1,1563								
	68,262	22,225	67,1	69,5	7,8	8 000	10 000	0,38	M 88048/010	M 88000
	2,6875	0,875								
34,925 1.375	69,012	19,845	65,8	67	7,35	8 000	10 000	0,35	14131/14276	14000
	2,717	0,7813								
	65,088	18,034	58	57	6,2	8 500	10 000	0,25	LM 48548/510	LM 48500
	2,5625	0,71								
34,925 1.375	65,088	18,034	58	57	6,2	8 500	10 000	0,26	LM 48548 A/510	LM 48500
	2,5625	0,71								
	69,012	19,845	65,8	67	7,35	8 000	10 000	0,34	14137 A/14276	14000
	2,717	0,7831								
34,925 1.375	72,233	25,4	83	90	10	7 500	9 000	0,5	HM 88649 X/610	HM 88600
	2,8438	1								
	72,233	25,4	83	90	10	7 500	9 000	0,5	HM 88649/610	HM 88600
	2,8438	1								
	73,025	23,812	89,1	88	9,8	8 000	9 500	0,48	25877/25821	25800
	2,875	0,9375								
34,925 1.375	73,025	26,988	94,6	93	10,4	8 000	9 500	0,53	23690/23620	23600
	2,875	1,0625								
	76,2	29,37	95,2	106	11,8	7 000	8 500	0,66	HM 89446/410	HM 89400
	3	1,1563								

SKF Explorer bearing
► Popular item

Matched bearings	Double row bearings
Boundary dimensions: ISO 355 (single bearing)	- metric bearings: not standardized - inch bearings: cones and cups dimensions of many inch bearings → AFBMA Standard 19 (ANSI B3.19) ANSI/ABMA Standard 19.2 has replaced the above standard, but does not include dimensions.
- Normal - tighter geometrical tolerances for bearings with designation suffix CL7C - check availability of P5 Values: ISO 492 (table 5, page 41, and table 7, page 43) Total width tolerances: not standardized (table 5, page 678)	- dimensional tolerances (except for width T): Normal - geometrical tolerances: P5 Values: ISO 492 (table 5, page 41, table 7, page 43, and table 9, page 45)
Standard (table 6, page 679) Other clearance values are identified by the designation suffix C followed by a three-digit number. For clearance values not listed in the product tables, contact SKF. Values are valid for unmounted bearing sets under measuring loads of: - D ≤ 90 mm → 0,1 kN 90 < D ≤ 240 mm → 0,3 kN - D > 240 mm → 0,5 kN	- bearings are ready-to-mount units with an axial internal clearance adapted for the actual application - bearing components should be arranged in the prescribed order and may not be interchanged with components of another bearing - designations with suffix C followed by a three- or four-digit number expresses mean value of the axial internal clearance in µm (for clearance values not listed in the product tables, contact SKF)
–	–
Where misalignment cannot be avoided, SKF recommends using a face-to-face arrangement. Any misalignment increases bearing noise and reduces bearing service life.	If misalignment cannot be avoided, SKF recommends using TDI design bearings (face-to-face arrangement). For information, contact the SKF application engineering service. Any misalignment increases bearing noise and reduces bearing service life.

8.2 Inch single row tapered roller bearings

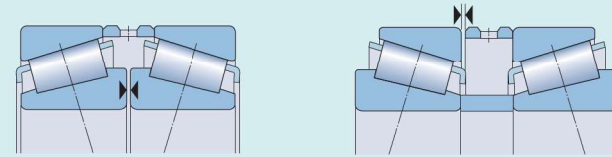
d 15 – 27,487 mm
0.5906 – 1.0822 in.



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Series
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed	kg	–	–
mm/in.			kN		kN	r/min				
15 0.5906	34,988 1.3775	10,998 0.433	16,5	13,2	1,29	17 000	22 000	0,051	A 4059/A 4138	A 4000
15,875 0.625	42,862 1.6875	14,288 0.5625	21,5	17,6	1,8	13 000	17 000	0,1	11590/11520	11500
17,462 0.6875	39,878 1.57	13,843 0.545	26,1	20,8	2,12	15 000	18 000	0,082	► LM 11749/710	LM 11700
19,05 0.75	45,237 1.781	15,494 0.61	33,8	27,5	2,9	13 000	16 000	0,12	► LM 11949/910	LM 11900
21,43 0.8437	50,005 1.9687	17,526 0.69	45,4	38	4,15	12 000	15 000	0,17	M 12649/610	M 12600
22 0.8661	45,237 1.781	15,494 0.61	33,9	31	3,2	12 000	15 000	0,12	► LM 12749/710	LM 12700
	45,974 1.81	15,494 0.61	33,9	31	3,2	12 000	15 000	0,12	LM 12749/711	LM 12700
22,225 0.875	52,388 2.0625	19,368 0.7625	51,5	44	4,8	11 000	14 000	0,2	1380/1328	1300
25,4 1	50,292 1.98	14,224 0.56	32	30	3	11 000	13 000	0,13	► L 44643/610	L 44600
	57,15 2.25	17,462 0.6875	49,1	45,5	4,9	10 000	12 000	0,22	15578/15520	15500
	57,15 2.25	19,431 0.765	48,8	45	5	10 000	12 000	0,24	M 84548/510	M 84500
	62 2.4409	19,05 0.75	59,5	57	6,2	9 000	11 000	0,3	15101/15245	15000
26,162 1.03	61,912 2.4375	19,05 0.75	59,5	57	6,2	9 000	11 000	0,29	15103 S/15243	15000
	62 2.4409	19,05 0.75	59,5	57	6,2	9 000	11 000	0,29	15103 S/15245	15000
26,988 1.0625	50,292 1.98	14,224 0.56	32	30	3	11 000	13 000	0,12	► L 44649/610	L 44600
27,487 1.0822	57,159 2.2504	19,845 0.7813	55,6	51	5,6	10 000	12 000	0,23	1982/1924 A	1900

Table 6

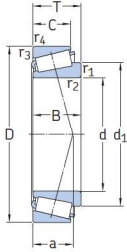
Axial internal clearance of matched metric single row tapered roller bearings, arranged face-to-face or back-to-back



Bore diameter d > ≤		Axial internal clearance of matched bearings in the series															
		329		320		330		331		302, 322		332		303, 323		313	
		min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
mm		µm															
–	30	–	–	80	120	–	–	–	–	100	140	110	150	130	170	60	100
30	40	160	200	100	140	–	–	–	120	160	130	170	140	180	70	110	
40	50	180	220	120	160	180	220	140	180	140	180	130	170	160	200	80	120
50	65	210	250	140	180	200	240	160	200	160	200	150	190	180	220	100	140
65	80	230	270	160	200	250	290	180	240	180	220	180	220	200	260	110	170
80	100	270	310	190	230	350	390	210	270	210	270	200	260	240	300	110	170
100	120	270	330	220	280	340	400	240	300	220	280	240	300	280	340	130	190
120	140	310	370	240	300	340	400	–	–	240	300	–	–	330	390	160	220
140	160	370	430	270	330	340	400	–	–	270	330	–	–	370	430	180	240
160	180	370	430	310	370	–	–	–	–	310	370	–	–	390	450	–	–
180	190	370	430	340	400	–	–	–	–	340	400	–	–	440	500	–	–
190	200	390	450	340	400	–	–	–	–	340	400	–	–	440	500	–	–
200	225	440	500	390	450	–	–	–	–	390	450	–	–	490	550	–	–
225	250	440	500	440	500	–	–	–	–	440	500	–	–	540	600	–	–
250	280	540	600	490	550	–	–	–	–	490	550	–	–	–	–	–	–
280	300	640	700	540	600	–	–	–	–	540	600	–	–	–	–	–	–
300	340	640	700	590	650	–	–	–	–	590	650	–	–	–	–	–	–

8.1 Metric single row tapered roller bearings

d 190 – 360 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
190	260	45	443	765	72	1 800	2 200	7	► 32938	4DC
	260	46	443	765	72	1 800	2 200	7,1	JM 738249/210	M 738200
	290	64	806	1 200	112	1 600	2 000	15	► 32038 X	4FD
	340	60	763	1 000	95	1 400	1 800	20,5	► 30238	4GB
	340	97	1 267	1 930	176	1 300	1 800	36	► 32238	4GD
200	270	37	401	600	57	1 700	2 200	5,45	► T4DB 200	4DB
	280	51	588	950	88	1 700	2 000	9,5	► 32940	3EC
	310	70	800	1 370	127	1 400	1 900	19	► 32040 X	4FD
	360	64	845	1 120	106	1 300	1 700	24,5	► 30240	4GB
	360	104	1 300	2 000	180	1 300	1 700	42,5	► 32240	3GD
220	285	41	489	830	75	1 600	2 000	6,45	T2DC 220	2DC
	300	51	601	1 000	91,5	1 500	1 900	10	► 32944	3EC
	340	76	955	1 660	150	1 300	1 700	24,5	► 32044 X	4FD
	400	72	1 059	1 400	127	1 200	1 600	34,5	► 30244	3GB
	400	114	1 720	2 700	232	1 100	1 500	59,5	► 32244	4GD
240	320	42	458	815	73,5	1 400	1 700	8,45	T4EB 240	4EB
	320	51	624	1 080	96,5	1 400	1 700	11	► 32948	4EC
	320	57	761	1 320	118	1 400	1 700	12,5	T2EE 240	2EE
	360	76	989	1 800	156	1 200	1 600	26,5	► 32048 X	4FD
	440	79	1 300	1 760	156	1 000	1 400	47	30248	3GB
	440	127	1 918	3 350	270	1 000	1 300	81,5	32248	4GD
260	360	63,5	910	1 530	134	1 300	1 600	19	32952	3EC
	400	87	1 241	2 200	190	1 100	1 400	38	► 32052 X	4FC
	480	137	2 340	3 650	300	900	1 200	105	32252	4GD
280	380	63,5	950	1 660	143	1 200	1 400	20	32956	4EC
	420	87	1 288	2 360	200	1 000	1 300	40,5	► 32056 X	4FC
	500	137	2 410	3 900	310	850	1 200	108	32256	4GD
300	420	76	1 126	2 240	186	950	1 300	31,5	► 32960	3FD
	460	100	1 644	3 000	245	900	1 200	58	32060 X	4GD
	540	149	2 935	4 750	365	800	1 100	140	32260	4GD
320	440	76	1 156	2 360	193	900	1 200	33,5	32964	3FD
	480	100	1 663	3 100	250	850	1 100	64	32064 X	4GD
	580	159	3 353	5 500	415	750	1 000	174	32264	4GD
340	460	76	1 163	2 400	196	850	1 200	35	32968	4FD
360	480	76	1 191	2 550	204	800	1 100	37	32972	4FD

SKF Explorer bearing
► Popular item

Calculating the axial load for bearings mounted singly or paired in tandem

When a radial load is applied to a single row tapered roller bearing, the load is transmitted from one raceway to the other at an angle to the bearing axis and an internal axial load is induced. This should be considered when calculating the equivalent bearing loads for bearing applications consisting of two single bearing arrangements and/or bearing pairs arranged in tandem.

Necessary equations for various bearing applications and load cases are provided in [table 7, page 682](#). The equations are valid under the following conditions:

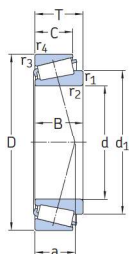
- the bearings are adjusted against each other to practically zero clearance, but without any preload
- bearing A is subjected to a radial load F_{rA} and bearing B to a radial load F_{rB}
- both F_{rA} and F_{rB} are always considered positive, even when they act in a direction opposite to that shown in the figures
- the radial loads act at the pressure centres of the bearings (distance a, refer to [product tables, page 694](#))

K_a is the external axial force acting on the shaft or on the housing. Load cases 1c and 2c are also valid when $K_a = 0$.

Values of the calculation factor Y are listed in the product tables.

8.1 Metric single row tapered roller bearings

d 140 – 180 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
140	190	32	252	390	40	2 600	3 000	2,55	► 32928	2CC
	195	29	241	325	33,5	2 400	3 000	2,4	► T4CB 140	4CB
	210	45	404	585	58,5	2 400	2 800	5,25	► 32028 X	4DC
	250	45,75	451	570	58,5	1 900	2 600	8,7	► 30228	4FB
	250	71,75	691	1 000	100	1 900	2 600	14	► 32228	4FD
	300	67,75	787	950	93	1 700	2 200	20,5	► 30328	2GB
	300	77	737	900	90	1 500	2 200	22,5	► 31328 X	7GB
	300	107,75	1 220	1 660	156	1 600	2 200	34,5	► 32328	2GD
	210	32	287	390	40	2 200	2 800	3,1	► T4DB 150	4DB
	210	38	346	530	52	2 200	2 800	3,95	► 32930	2DC
150	225	48	456	655	65,5	2 200	2 600	6,4	► 32030 X	4DC
	225	59	487	865	85	2 200	2 600	8,05	► 33030	2EE
	270	49	455	560	57	1 800	2 400	10,5	► 30230	4GB
	270	77	782	1 140	112	1 700	2 400	18	► 32230	4GD
	320	72	879	1 060	104	1 600	2 000	25	► 30330	2GB
	320	82	832	1 020	100	1 400	2 000	27	► 31330 X	7GB
	220	32	257	415	41,5	2 200	2 600	3,25	► T4DB 160	4DB
	220	38	349	540	53	2 200	2 600	4,2	► 32932	2DC
	240	51	532	780	76,5	2 000	2 400	7,8	► 32032 X	4EC
	245	61	649	980	96,5	2 000	2 400	10,5	► T4EE 160	4EE
160	290	52	566	735	72	1 600	2 200	13	► 30232	4GB
	290	84	934	1 400	132	1 600	2 200	23	► 32232	4GD
	340	75	970	1 180	114	1 500	2 000	29	► 30332	2GB
	230	32	307	440	43	2 000	2 600	3,45	► T4DB 170	4DB
	230	38	351	585	55	2 000	2 400	4,5	► 32934	3DC
	260	57	625	915	88	1 900	2 200	10,5	► 32034 X	4EC
	310	57	657	865	83	1 500	2 000	16,5	► 30234	4GB
	310	91	1 075	1 630	150	1 500	2 000	28,5	► 32234	4GD
	360	80	1 103	1 340	129	1 400	1 800	34,5	► 30334	2GB
	240	32	309	450	44	2 000	2 400	3,65	► T4DB 180	4DB
180	250	45	435	735	68	1 900	2 200	6,65	► 32936	4DC
	280	64	793	1 160	110	1 700	2 200	14	► 32036 X	3FD
	320	57	629	815	80	1 500	2 000	17	► 30236	4GB
	320	91	1 069	1 630	150	1 400	1 900	29,5	► 32236	4GD

SKF Explorer bearing
► Popular item

Calculating the radial load acting on matched bearings

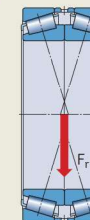
When matched tapered roller bearings, arranged face-to-face or back-to-back, are mounted together with a third bearing, the bearing arrangement is statically indeterminate. In these cases, the radial load F_r acting on the bearing pair must be calculated first.

Matched bearings arranged face-to-face

For matched bearings, where two bearings are arranged face-to-face (fig. 19), it can be assumed that the radial load acts at the geometric centre of the matched bearings, as the distance between the pressure centres of the two bearings is short when compared with the distance between the geometric centres of the set and the other bearing. In this case, it can be assumed that the bearing arrangement is statically determined.

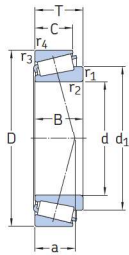
Fig. 19

Matched bearings arranged face-to-face, radial load



8.1 Metric single row tapered roller bearings

d 105 – 130 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
105	145	25	149	212	22,8	3 400	4 000	1,2	32921	2CC
	160	35	248	335	37,5	3 200	3 800	2,45	32021 X	4DC
	160	43	303	430	45,5	3 200	3 800	3	33021	2DE
	190	39	333	355	40	2 800	3 400	4,3	30221	3FB
	190	53	443	510	55	2 800	3 400	6	32221	3FC
	225	53,5	462	530	57	2 200	3 000	9,1	30321	2GB
	225	58	429	500	53	2 000	3 000	9,65	31321 X	7GB
	225	81,5	645	815	85	2 000	3 000	14	32321	2GD
	150	25	154	224	24	3 200	4 000	1,25	32922	2CC
	165	35	256	355	37,5	3 000	3 600	2,55	JM 822049/010	M 822000
110	170	38	288	390	40	3 000	3 600	3,05	32022 X	4DC
	170	47	343	500	53	3 000	3 600	3,85	33022	2DE
	180	56	455	630	65,5	2 800	3 400	5,5	33122	3EE
	200	41	327	405	43	2 600	3 200	5,05	30222	3FB
	200	56	491	570	61	2 600	3 200	7,1	32222	3FC
	240	54,5	507	585	62	2 200	2 800	11	30322	2GB
	240	63	491	585	61	1 900	2 800	12	31322 X	7GB
	240	84,5	675	830	86,5	1 900	2 800	16,5	32322	2GD
	165	29	204	305	32	3 000	3 600	1,8	32924	2CC
	170	27	195	250	26,5	2 800	3 600	1,75	T4CB 120	4CB
120	180	38	299	415	42,5	2 800	3 400	3,3	32024 X	4DC
	180	48	356	540	56	2 800	3 400	4,2	33024	2DE
	215	43,5	417	465	49	2 400	3 000	6,15	30224	4FB
	215	61,5	573	695	72	2 400	3 000	9,05	32224	4FD
	260	59,5	601	710	73,5	2 000	2 600	13,5	30324	2GB
	260	68	578	695	72	1 700	2 400	15,5	31324 X	7GB
	260	90,5	855	1 120	110	1 800	2 600	21,5	32324	2GD
	180	32	245	365	38	2 600	3 200	2,4	32926	2CC
	200	45	388	540	55	2 400	3 000	4,95	32026 X	4EC
	200	55	470	680	69,5	2 400	3 000	6,15	33026	2EE
130	230	43,75	451	490	51	2 200	2 800	6,85	30226	4FB
	230	67,75	590	830	85	2 000	2 800	11	32226	4FD
	280	63,75	679	800	81,5	1 800	2 400	17	30326	2GB
	280	72	647	780	80	1 600	2 400	18,5	31326 X	7GB
	280	98,75	1 019	1 340	132	1 600	2 400	27,5	32326	2GD

SKF Explorer bearing
► Popular item

Comparative load ratings for double row tapered roller bearings

For rolling mill applications, load ratings are not necessarily calculated according to ISO 281. Instead, they are often calculated by a different method based on a rating life of 90 million revolutions (500 r/min for 3 000 operating hours). Therefore, for double row tapered roller bearings these comparative load ratings are provided in the product tables because a direct comparison between the comparative and ISO load ratings is not possible, even if the comparative ratings are converted for 1 million revolutions (ISO life definition).

These comparative ratings may not be used to calculate an ISO rating life. They may only be used together with the comparative rating life and equivalent load equations specified as follows:

$$L_{F10} = 90 \left(\frac{C_F}{P_F} \right)^{10/3}$$

or

$$L_{F10h} = \left(\frac{C_F}{P_F} \right)^{10/3} \left(\frac{1}{n} \cdot 500\,000 \right)$$

where

L_{F10} = comparative rating life [million revolutions]

L_{F10h} = comparative rating life [operating hours]

C_F = comparative dynamic load rating to give a rating life of 90 million revolutions [kN] ([product tables](#), [page 762](#))

P_F = comparative equivalent dynamic bearing load [kN] ([table 8](#), [page 686](#))

n = constant rotational speed [r/min]

Temperature limits

The permissible operating temperature for tapered roller bearings can be limited by:

- the dimensional stability of the bearing rings and rollers
- the cages
- the seals
- the lubricant

Where temperatures outside the permissible range are expected, contact SKF.

Bearing rings and rollers

SKF single row and matched tapered roller bearings are heat stabilized up to:

- $D \leq 160$ mm $\rightarrow 120$ °C (250 °F)
- $D > 160$ mm $\rightarrow 150$ °C (300 °F)

SKF double row tapered roller bearings are heat stabilized up to 150 °C (300 °F).

Seals

The permissible operating temperature for seals depends on the seal material:

- HNBR: -40 to $+150$ °C (-40 to $+300$ °F)
- FKM: -30 to $+200$ °C (-20 to $+390$ °F)

Typically, temperature peaks are at the seal lip.

Cages

Steel or PEEK cages can be used at the same operating temperatures as the bearing rings and rollers. For temperature limits of cages made of other polymer materials, refer to *Polymer cages*, [page 188](#).

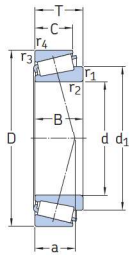
Lubricants

For temperature limits of SKF greases, refer to *Selecting a suitable SKF grease*, [page 116](#).

When using lubricants not supplied by SKF, temperature limits should be evaluated according to the SKF traffic light concept ([page 117](#)).

8.1 Metric single row tapered roller bearings

d 90 – 100 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
90	125	23	119	166	18,3	4 000	4 800	0,83	32918	2CC
	140	32	208	270	31	3 600	4 300	1,75	32018 X	3CC
	140	39	266	355	39	3 600	4 500	2,2	33018	2CE
	145	35	246	305	33,5	3 600	4 300	2,15	JM 718149 A/110	M 718100
	145	35	246	305	33,5	3 600	4 300	2,15	JM 718149/110	M 718100
	150	45	310	390	43	3 400	4 300	3,1	33118	3DE
	160	32,5	240	245	28,5	3 400	4 000	2,5	30218	3FB
	160	42,5	309	340	38	3 400	4 000	3,35	32218	3FC
	160	55	415	520	57	3 000	4 000	4,6	33218	3FE
	190	46,5	283	315	35,5	2 400	3 400	5,4	31318	7GB
	190	46,5	353	400	44	2 600	3 600	5,65	30318	2GB
	190	67,5	487	610	65,5	2 600	3 600	8,4	32318	2GD
95	190	67,5	540	630	69,5	2 800	3 400	8,95	32318 B	5GD
	130	23	121	173	18,6	3 800	4 500	0,86	32919	2CC
	145	32	206	270	30,5	3 400	4 300	1,85	32019 X	4CC
	145	39	272	375	40,5	3 400	4 300	2,3	33019	2CE
	170	34,5	266	275	31,5	3 200	3 800	3	30219	3FB
	170	45,5	348	390	43	3 200	3 800	4,1	32219	3FC
	170	58	460	560	62	2 800	3 800	5,45	33219	3FE
	200	49,5	314	355	39	2 400	3 400	6,3	31319	7GB
	200	49,5	353	390	42,5	2 600	3 400	6,45	30319	2GB
	200	71,5	535	670	72	2 400	3 400	9,8	32319	2GD
	140	25	147	204	22,4	3 400	4 300	1,15	32920	2CC
	145	24	154	190	20,8	3 400	4 300	1,2	T4CB 100	4CB
100	150	32	209	280	31	3 200	4 000	1,9	32020 X	4CC
	150	39	278	390	41,5	3 400	4 000	2,4	33020	2CE
	165	47	383	480	52	3 200	3 800	3,9	T2EE 100	2EE
	180	37	304	320	36	3 000	3 600	3,65	30220	3FB
	180	49	390	440	48	3 000	3 600	4,95	32220	3FC
	180	63	532	655	71	2 600	3 600	6,75	33220	3FE
	215	51,5	431	490	53	2 400	3 200	7,95	30320	2GB
	215	56,5	399	465	51	2 200	3 000	8,6	31320 X	7GB
	215	77,5	617	780	83	2 200	3 200	12,5	32320	2GD

SKF Explorer bearing
► Popular item

Design considerations

Single row and matched tapered roller bearings

Single row tapered roller bearings must be used either with a second bearing (fig. 21) or as a matched pair (fig. 10, page 670, and fig. 11, page 670). The bearings must be adjusted against each other until the requisite clearance or preload is obtained (*Selecting preload*, page 186).

When the operating clearance in a bearing arrangement is too large, the load carrying capacity of both bearings cannot be fully utilized. Excessive preload increases friction, which increases the amount of frictional heat and reduces bearing service life.

Adjustment procedure

When adjusting tapered roller bearings against each other, the bearings must be rotated so that the rollers assume their correct position, i.e. the large end face of the rollers must be in contact with the guide flange.

Fits

Inch bearings

In contrast to metric bearings, which are machined to a minus tolerance, inch bearings are machined to a plus tolerance (table 9, page 45). Therefore, the deviations for shaft and housing diameters for metric bearings are not applicable. Suitable shaft and housing fits for inch tapered roller bearings are provided in table 9, page 688, and table 10, page 689. These fits are valid for bearings with Normal tolerances in typical applications.

Matched bearings

The axial internal clearance of matched bearings arranged face-to-face or back-to-back (table 6, page 679) provides an appropriate operating clearance when the bearings are mounted on shafts machined to:

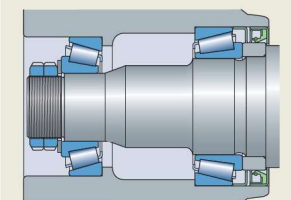
- d ≤ 50 mm → m5Ⓔ
- 50 mm < d ≤ 140 mm → m6Ⓔ
- 140 mm < d ≤ 200 mm → n6Ⓔ
- d > 200 mm → p6Ⓔ

SKF recommends these shaft seat tolerance classes for rotating loads on the inner ring where $P \leq 0,06 C$. If tighter fits are selected, be sure that the bearings are not preloaded and are able to rotate freely. The reduction of internal clearance caused by axial locating forces should also be taken into consideration.

For stationary outer ring loads, SKF recommends housing bore tolerance classes J6Ⓔ or H7Ⓔ.

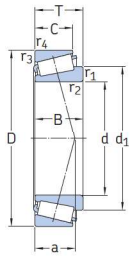
Fig. 21

Single bearings mounted back-to-back



8.1 Metric single row tapered roller bearings

d 80 – 85 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
80	110	20	89,7	125	14	4 500	5 600	0,54	32916	2BC
	125	29	168	216	24,5	4 000	5 000	1,3	32016 X	3CC
	125	36	207	285	32	4 000	5 000	1,65	33016	2CE
	130	35	216	275	31	4 000	4 800	1,75	JM 515649/610	M 515600
	130	37	221	280	31	4 000	4 800	1,85	33116	3DE
	140	28,25	184	183	21,2	3 800	4 800	1,6	30216	3EB
	140	35,25	228	245	28,5	3 800	4 500	2,05	32216	3EC
	140	46	308	375	41,5	3 400	4 500	2,9	33216	3EE
	160	45	280	315	35,5	3 000	4 000	4	T7FC 080	7FC
	170	42,5	276	265	30,5	3 000	4 000	4,05	31316	7GB
	170	42,5	333	320	36,5	3 200	4 000	4,15	30316	2GB
	170	61,5	440	520	57	3 200	3 800	6,65	32316 B	5GD
	170	61,5	404	500	56	3 200	4 000	6,2	32316	2GD
	120	23	115	156	17,6	4 000	5 000	0,78	32917	2CC
	130	29	171	224	25,5	3 800	4 800	1,35	32017 X	4CC
	130	30	172	228	26	3 800	4 800	1,4	JM 716649/610	M 716600
85	130	36	223	310	34,5	3 800	4 800	1,75	33017	2CE
	140	41	268	340	38	3 600	4 500	2,45	33117	3DE
	150	30,5	216	220	25,5	3 600	4 300	2,05	30217	3EB
	150	38,5	263	285	33,5	3 600	4 300	2,6	32217	3EC
	150	49	353	430	48	3 200	4 300	3,55	33217	3EE
	170	48	333	380	43	2 800	3 800	4,85	T7FC 085	7FC
	180	44,5	297	285	32	2 800	3 800	4,6	31317	7GB
	180	44,5	372	365	40,5	3 000	3 800	4,85	30317	2GB
	180	63,5	417	560	62	3 000	3 600	7,6	32317 B	5GD
	180	63,5	435	530	60	3 000	3 800	7,1	32317	2GD

SKF Explorer bearing
► Popular item

Table 10

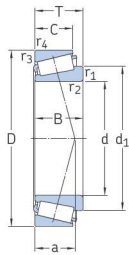
Housing bore diameter deviations for inch bearings with Normal tolerances

Nominal diameter		Deviations for fits clearance/interference in accordance with									
>	≤	F6 [Ⓔ] U	L	G6 [Ⓔ] U	L	H7 [Ⓔ] U	L	H8 [Ⓔ] U	L	J7 [Ⓔ] U	L
mm		μm									
30	50	–	–	–	–	36	25	50	25	25	14
50	80	–	–	–	–	43	25	59	25	31	13
80	120	–	–	–	–	50	25	69	25	37	12
120	150	–	–	–	–	58	25	81	25	44	11
150	180	–	–	–	–	65	25	88	25	51	11
180	250	–	–	–	–	76	25	102	25	60	9
250	304,8	–	–	104	42	87	25	116	25	71	9
304,8	315	–	–	104	68	87	51	116	51	71	35
315	400	–	–	115	69	97	51	129	51	79	33
400	500	–	–	128	71	108	51	142	51	88	31
500	609,6	196	127	142	73	120	51	160	51	–	–
609,6	630	196	152	142	98	120	76	160	76	–	–
630	800	235	156	179	100	155	76	200	76	–	–
800	914,4	276	162	216	102	190	76	240	76	–	–
914,4	1 000	276	188	216	128	190	102	240	102	–	–
1 000	1 219,2	328	200	258	130	230	102	290	102	–	–
Nominal diameter		Deviations for fits clearance/interference in accordance with									
>	≤	K7 [Ⓔ] U	L	M7 [Ⓔ] U	L	N7 [Ⓔ] U	L	P7 [Ⓔ] U	L		
mm		μm									
30	50	18	7	11	0	3	–8	–6	–17		
50	80	22	4	13	–5	4	–14	–8	–26		
80	120	25	0	15	–10	5	–20	–9	–34		
120	150	30	–3	18	–15	6	–27	–10	–43		
150	180	37	–3	25	–15	13	–27	–3	–43		
180	250	43	–8	30	–21	16	–35	–3	–54		
250	304,8	51	–11	35	–27	21	–41	–1	–63		
304,8	315	51	15	35	–1	21	–15	–1	–37		
315	400	57	11	40	–6	24	–22	–1	–47		
400	500	63	6	45	–12	28	–29	0	–57		
500	609,6	50	–19	24	–45	6	–63	–28	–97		
609,6	630	50	6	24	–20	6	–38	–28	–72		
630	800	75	–4	45	–34	25	–54	–13	–92		
800	914,4	100	–14	66	–48	44	–70	0	–114		
914,4	1 000	100	12	66	–22	44	–44	0	–88		
1 000	1 219,2	125	–3	85	–43	59	–69	5	–123		

For higher requirements on accuracy, contact the SKF application engineering service.

8.1 Metric single row tapered roller bearings

d 70 – 75 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
70	100	20	85,8	112	12,7	5 000	6 000	0,49	32914	2BC
	110	25	125	153	17,3	4 500	5 600	0,85	32014 X	4CC
	110	31	159	196	22,8	4 800	5 600	1,05	33014	2CE
	120	37	211	250	28,5	4 300	5 300	1,7	33114	3DE
	125	26,25	155	156	18	4 300	5 300	1,25	30214	3EB
	125	33,25	195	208	24,5	4 300	5 300	1,6	32214	3EC
	125	41	247	285	32,5	3 800	5 000	2,1	33214	3EE
	130	43	289	325	38	4 000	5 000	2,5	T2ED 070	2ED
	140	39	219	240	27,5	3 400	4 500	2,65	T7FC 070	7FC
	150	38	229	220	27	3 400	4 500	2,85	31314	7GB
	150	38	271	260	31	3 800	4 500	2,95	30314	2GB
	150	54	346	400	45	3 400	4 300	4,55	32314 B	5GD
	150	54	363	380	45	3 400	4 500	4,3	32314	2GD
	105	20	86,8	116	13,2	4 800	5 600	0,51	32915	2BC
	115	25	130	163	18,6	4 300	5 300	0,91	32015 X	4CC
	115	31	167	228	26	4 300	5 300	1,2	33015	2CE
75	120	31	170	216	25	4 300	5 300	1,3	JM 714249/210	M 714200
	125	37	216	265	30	4 000	5 000	1,8	33115	3DE
	130	27,25	171	176	20,4	4 000	5 000	1,4	30215	4DB
	130	33,25	197	212	24,5	4 000	5 000	1,65	32215	4DC
	130	41	255	300	34	3 600	4 800	2,2	33215	3DE
	145	51	380	450	51	3 600	4 500	3,9	JH 415647/610	H 415600
	145	52	364	450	50	3 600	4 500	3,95	T3FE 075	3FE
	150	42	249	280	31	3 200	4 300	3,25	T7FC 075	7FC
	160	40	255	245	29	3 200	4 300	3,4	31315	7GB
	160	40	301	290	34	3 400	4 300	3,5	30315	2GB
	160	58	410	475	53	3 200	4 000	5,55	32315 B	5GD
	160	58	416	440	51	3 200	4 300	5,2	32315	2GD

Bearing designations

Metric bearings

The designations of metric tapered roller bearings follow one of the following principles:

- The series designations in accordance with ISO 355 consist of a digit and two letters. The digit represents the contact angle. The two letters represent the diameter and width series, respectively. This is followed by a three-digit bore diameter d [mm]. The basic designations of SKF tapered roller bearings start with the letter T, e.g. T2ED U45.
- Designations established prior to 1977 are based on the system shown under *Basic designations*, page 31, e.g. 32206 (table 4, page 30).
- Metric bearings with the designation prefix J follow the ABMA designation system, which is used for inch bearings (ANSI/ABMA Std. 19.1).

Inch bearings

Inch tapered roller bearing designations are in accordance with ANSI/ABMA Std. 19.2.

Within a series:

- roller and cage assemblies are equal but the inner and outer rings can have different sizes and designs
- any inner ring with roller and cage assembly (cone) can be assembled with any outer ring (cup)

General:

- Cup and cone have individual designations and can be supplied separately (fig. 24).
- The designations of cups and cones, as well as the series, consist of a three- to six-digit number, which may be prefixed to characterize a bearing series from extra-light to extra-heavy.
- The complete bearing designation is an abbreviated combination of cone and cup designations. It consists of the cone designation followed by the complete or parts of the cup designation, separated by an oblique stroke (table 11).



Fig. 24

Separately packed components

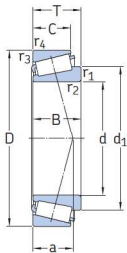
Table 11			
Examples of inch tapered roller bearing designations			
Complete bearing	Cone	Cup	Series
LM 11749/710 ¹⁾ JL 26749/710 ¹⁾ HM 89449/410 ¹⁾	LM 11749 JL 26749 HM 89449	LM 11710 JL 26710 HM 89410	LM 11700 L 26700 HM 89400
H 913842/810 ¹⁾ 4580/2/4535/2 ²⁾ 9285/9220 ²⁾	H 913842 4580/2 9285	H 913810 4535/2 9220	H 913800 4500 9200

¹⁾ Complete bearing designation abbreviated (latest ABMA designations)

²⁾ Complete bearing designation not abbreviated (earlier ABMA designations)

8.1 Metric single row tapered roller bearings

d 60 – 65 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
60	85	17	53,2	75	7,8	6 000	7 000	0,3	32912	2BC
	95	23	101	122	13,4	5 300	6 700	0,59	32012 X	4CC
	95	24	103	132	15	5 300	6 700	0,62	JLM 508748/710	LM 508700
	95	27	113	143	16	5 300	6 700	0,7	33012	2CE
	100	30	144	170	19,6	5 300	6 300	0,92	33112	3CE
	110	23,75	120	114	13,2	5 000	6 000	0,88	30212	3EB
	110	29,75	155	160	18,6	5 000	6 000	1,15	32212	3EC
	110	38	207	236	26,5	4 500	6 000	1,55	33212	3EE
	115	40	239	260	30	4 800	5 600	1,85	T2EE 060	2EE
	125	37	190	204	24,5	4 000	5 300	2,05	T7FC 060	7FC
	130	33,5	177	166	20,4	3 800	5 300	1,9	31312	7FB
	130	33,5	208	196	23,6	4 300	5 300	1,95	30312	2FB
	130	48,5	271	305	35,5	3 800	5 000	3,1	32312 B	5FD
	130	48,5	282	290	34	4 000	5 300	2,9	32312	2FD
	90	17	54,7	80	8,15	5 600	6 700	0,32	32913	2BC
	100	23	103	127	14	5 000	6 000	0,63	32013 X	4CC
	100	27	119	153	17,3	5 000	6 300	0,75	33013	2CE
	105	24	122	137	16	5 000	6 000	0,76	JLM 710949/910	LM 710900
65	110	28	152	183	21,2	4 800	5 600	1,05	JM 511946/910	M 511900
	110	31	170	193	22,4	4 800	6 000	1,15	T2DD 065	2DD
	110	34	175	208	24	4 800	5 600	1,3	33113	3DE
	120	24,75	141	134	16,3	4 500	5 600	1,1	30213	3EB
	120	32,75	186	193	22,8	4 500	5 600	1,5	32213	3EC
	120	41	239	270	30,5	4 000	5 300	2	33213	3EE
	130	37	194	216	25,5	3 800	5 000	2,2	T7FC 065	7FC
	140	36	203	193	23,6	3 600	4 800	2,35	31313	7GB
	140	36	240	228	27,5	4 000	4 800	2,4	30313	2GB
	140	51	305	345	40	3 600	4 800	3,75	32313 B	5GD
	140	51	323	335	40	3 600	4 800	3,5	32313	2GD

Group 4					
4.1	4.2	4.3	4.4	4.5	4.6

Group 4.6: Other variants

- CL7A Pinion bearing, superseded by CL7C
- CL7C High-performance design
- CLN Tighter tolerances for ring widths and total (abutment) width in accordance with ISO tolerance class 6X
- PEX SKF Explorer bearing, used only when same-sized basic design bearing and SKF Explorer bearing are available
- V001 CL7C and /2
- VA321 Optimized internal design
- VA606 Crowned raceway on the outer ring, logarithmic profile on the inner ring and special heat treatment
- VA607 Same as VA606, but other outside diameter tolerance
- VA901 Contact seal on both sides, outer ring side faces with lubrication grooves, sealing ring between the inner rings
- VA902 Contact seal on both sides, without relubrication features, sealing ring between the inner rings
- VA903 Contact seal on both sides, outer ring side faces with lubrication grooves, without sealing ring between the inner rings
- VA919 Contact seal on both sides, relubrication features in the outer rings, annular groove in the bore and lubrication holes in the inner ring guide flanges
- VA941 Contact seal on both sides, inner ring inner side faces with lubrication grooves, inner rings with annular grooves in the bore and lubrication holes in their outer shoulders
- VB022 Chamfer dimension of large outer ring side face 0,3 mm
- VB026 Chamfer dimension of large inner ring side face 3 mm
- VB061 Chamfer dimension of large inner ring side face 8 mm
- VB134 Chamfer dimension of large inner ring side face 1 mm
- VB406 Chamfer dimension of large inner ring side face 3 mm and of large outer ring side face 2 mm
- VB481 Chamfer dimension of large inner ring side face 8,5 mm
- VC027 Modified internal geometry for increased permissible misalignment
- VC068 Tighter geometrical tolerances and special heat treatment
- VE141 One locating slot (notch) in the outer ring
- VE174 One locating slot (notch) in the large side face of the outer ring, tighter geometrical tolerances
- VQ051 Modified internal geometry for increased permissible misalignment
- VQ117 Special radial and axial run-out tolerances
- VQ267 Tighter inner ring width tolerance to ± 25 µm
- VQ492 Special inner ring width tolerance
- VQ494 Tighter radial run-out tolerances
- VQ495 CL7C with tighter or shifted tolerance range for the outside diameter
- VQ506 Tighter inner ring width tolerance
- VQ507 CL7C with tighter or shifted tolerance range for the outside diameter
- VQ523 CL7C with tighter inner ring width tolerance and tighter or shifted tolerance range for the outside diameter
- VQ601 Geometrical tolerances to ABMA tolerance class 0 (inch bearing)

Group 4.5: Lubrication

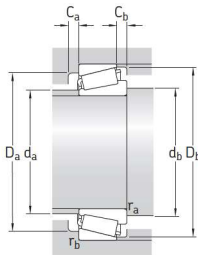
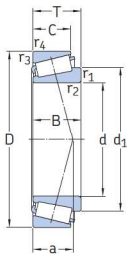
Group 4.4: Stabilization

Group 4.3: Bearing sets, matched bearings

- DB.. Two bearings matched for mounting back-to-back. A number immediately following the DB identifies the design of the ring spacers.
- DF.. Two bearings matched for mounting face-to-face. A number immediately following the DF identifies the design of the ring spacer.
- DT.. Two bearings matched for mounting in tandem. A number immediately following the DT identifies the design of the ring spacers.
- C... Special clearance
The two- or three-digit number immediately following the C is the mean axial internal clearance in µm. The range remains the same as specified in table 6, page 679.

In addition to their designation, double row bearings are also identified by their design variants/features (product tables, page 762). Some of these features may not be part of the bearing designation, but are always part of the design variants/features (variants/features, page 674).

8.1 Metric single row tapered roller bearings
d 50 – 55 mm



Principal dimensions			Basic load ratings		Fatigue load limit	Speed ratings		Mass	Designation	Dimension series to ISO 355 (ABMA)
d	D	T	C	C ₀	P _u	Reference speed	Limiting speed			
mm			kN		kN	r/min		kg	–	–
50	72	15	41,3	53	5,6	7 000	8 500	0,19	32910	2BC
	80	20	75,1	88	9,65	6 300	8 000	0,38	32010 X	3CC
	80	24	84,8	102	11,4	6 300	8 000	0,45	33010	2CE
	82	21,5	88,9	100	11	6 300	8 000	0,43	JLM 104948	LM 104900
	82	21,501	88,9	100	11	6 300	8 000	0,46	AA/910 AA	LM 104900
	85	26	106	122	13,4	6 000	7 500	0,58	JLM 104945/910	3CE
	90	21,75	93,1	91,5	10,4	6 000	7 500	0,54	33110	
	90	24,75	101	100	11,4	6 000	7 500	0,62	30210	3DB
	90	28	130	140	16	6 000	7 500	0,75	32210	3DC
	90	28	130	140	16	6 000	7 500	0,75	JM 205149/110	M 205100
	90	32	142	160	18,3	5 300	7 000	0,86	33210	3DE
	100	36	189	200	22,4	5 600	6 700	1,3	T2ED 050	2ED
	105	32	134	137	16	4 800	6 300	1,25	T7FC 050	7FC
	110	29,25	131	120	14,3	4 500	6 000	1,2	31310	7FB
	110	29,25	154	140	16,6	5 300	6 300	1,25	30310	2FB
55	110	42,25	196	216	24,5	4 500	6 000	1,95	32310 B	5FD
	110	42,25	211	212	24	4 800	6 300	1,85	32310	2FD
	80	17	51,7	69,5	7,2	6 300	7 500	0,28	32911	2BC
	90	23	99,4	116	12,9	5 600	7 000	0,56	32011 X	3CC
	90	27	111	137	15,3	5 600	7 000	0,66	33011	2CE
	95	30	136	156	17,6	5 600	6 700	0,85	33111	3CE
	100	22,75	111	106	12	5 300	6 700	0,7	30211	3DB
	100	26,75	130	129	15	5 300	6 700	0,84	32211	3DC
	100	35	170	190	21,6	4 800	6 300	1,15	33211	3DE
	110	39	220	232	26	5 000	6 000	1,7	T2ED 055	2ED
	115	34	155	163	19,3	4 300	5 600	1,6	T7FC 055	7FC
	120	31,5	149	137	16,6	4 300	5 600	1,55	31311	7FB
	120	31,5	176	163	19,3	4 800	5 600	1,55	30311	2FB
	120	45,5	233	260	30	4 300	5 600	2,5	32311 B	5FD
	120	45,5	245	250	28,5	4 300	5 600	2,35	32311	2FD

Dimensions				Abutment and fillet dimensions												Calculation factors		
d	d ₁ ±	B	C	r _{1,2} min.	r _{3,4} min.	a	d _a max.	d _b min.	D _a min.	D _a max.	D _b min.	C _a min.	C _b min.	r _a max.	r _b max.	e	Y	Y ₀
mm							mm									—		
15	25,6	11	9,25	0,6	0,6	8	20	20,5	30	30,5	32	2	2,5	0,6	0,6	0,35	1,7	0,9
	27,8	13	11	1	1	9	22	21,5	36	36,5	38	2	3	1	1	0,28	2,1	1,1
17	29	12	11	1	1	9	23	23,5	34	34,5	37	2	2	1	1	0,35	1,7	0,9
	30,5	14	12	1	1	10	25	23,5	40	41,5	42	2	3	1	1	0,28	2,1	1,1
	30,7	19	16	1	1	12	24	23,5	39	41,5	43	3	4	1	1	0,28	2,1	1,1
20	32,1	15	12	0,6	0,6	10	25	25,5	36	37,5	39	3	3	0,6	0,6	0,37	1,6	0,9
	33,7	14	12	1	1	11	28	26,5	40	41,5	43	2	3	1	1	0,35	1,7	0,9
	34,4	15	13	1,5	1,5	11	28	27,5	44	45,5	47	2	3	1,5	1,5	0,3	2	1,1
22	34,6	21	18	1,5	1,5	13	27	27,5	43	45,5	47	3	4	1,5	1,5	0,3	2	1,1
	34,3	15	11,5	0,6	0,6	10	27	27,5	38	39	41	3	3,5	0,6	0,6	0,4	1,5	0,8
25	37,5	15	11,5	0,6	0,6	11	30	31	40	42	44	3	3,5	0,6	0,6	0,43	1,4	0,8
	38	15	13	1	1	12	32	31,5	44	46	48	2	3	1	1	0,37	1,6	0,9
	41,5	18	15	1	1	15	30	32	41	46,5	50	3	4	1	1	0,57	1,05	0,6
28	38,4	18	16	1	1	13	31	32	44	46	50	3	3	1	1	0,35	1,7	0,9
	38,7	22	18	1	1	13	31	32	43	46	49	4	4	1	1	0,35	1,7	0,9
	45,8	17	13	1,5	1,5	19	34	33	47	55	59	3	5	1,5	1,5	0,83	0,72	0,4
30	41,5	17	15	1,5	1,5	12	35	33	54	55	57	2	3	1,5	1,5	0,3	2	1,1
	41,7	24	20	1,5	1,5	15	33	33	52	55	57	3	5	1,5	1,5	0,3	2	1,1
	41,3	16	12	1	1	12	34	35	45	46	49	3	4	1	1	0,43	1,4	0,8
32	42	16	14	1	1	13	35	35	50	52	54	2	3	1	1	0,37	1,6	0,9
	43,9	19	16	1	1	16	33	35	46	52	55	3	4	1	1	0,57	1,05	0,6
	43,6	17	13	1	1	13	36	37	48	49	52	3	4	1	1	0,43	1,4	0,8
34	45,3	16	14	1	1	13	38	37	53	56	57	2	3	1	1	0,37	1,6	0,9
	45,2	20	17	1	1	15	37	37	52	56	58	3	4	1	1	0,37	1,6	0,9
	45,8	25	19,5	1	1	15	37	37	53	56	59	4	5,5	1	1	0,35	1,7	0,9
36	52,7	19	14	1,5	1,5	22	40	38,5	55	65	68	3	6,5	1,5	1,5	0,83	0,72	0,4
	48,4	19	16	1,5	1,5	14	41	38	62	64	66	3	4,5	1,5	1,5	0,31	1,9	1,1
	48,7	27	23	1,5	1,5	17	39	38	59	65	66	4	5,5	1,5	1,5	0,31	1,9	1,1
38	43,6	15	11,5	3,6	1,3	11	38	44	48	46,5	50	2	3	3,6	1,3	0,33	1,8	1
	46,2	17	13	1	1	13	38	39	50	52	55	3	4	1	1	0,46	1,3	0,7