GENERAL CATALOGUE

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This catalogue includes information related to bearings of about 2500 types and sizes, produced by the plants of EPK in accordance with the Russian and International Standards.

CONTENTS

INTRODUCTION

EPK, the largest bearing producer in CIS, manufactures bearings of all structural groups with an outer diameter ranging from 20 up to 2500 mm. The Corporation has an extensive service-wide distribution network with regional subdivisions and warehouses, which covers the entire territory of the CIS countries. By volume of turnover EPK is one of the 400 largest private companies in Russia.

The Corporation owns the large plants – OJSC «Moscow bearing», OJSC «Volzhskiy Bearing Plant», JSC «Stepnogorskiy Bearing Plant» (Kazakhstan), OJSC «Saratovskiy Bearing Plant» as well as production enterprises of EPK' Special Production Division OJSC «Aviation Bearing Plant». The Corporation has its own Engineering Centre.

The quality management system of the plants and Trading House in EPK is certificated for compliance with the standard ISO 9001:2008.

Due to the reconstruction of EPK' plants carried out in 2007–2010 the modern technologies were introduced, production sites were rebuilt and new equipment was installed that meets the level of European producers and has no analogues in Russia. The Corporation annually makes record investments in the domestic bearing industry to modernize their production facilities (up to $ 20 million per year) that allows improving of product quality and reducing costs continuously.

The Corporation offers customers the widest range of bearings in Russia, from mass types to small-scale and unique, thanks to necessary equipment available and extensive experience to manufacture bearings of the most complex designs.

EPK is a leader in bearing production for railway car building enterprises and railway applications throughout the former USSR, for machine tool and automotive plants in Russia. The Corporation also provides integrated bearing products for the largest enterprises:

- civil aviation;
- military-industrial complex;
- agricultural machine building;
- metallurgy;
- energy sector;
- oil and gas production and processing industries;
- mining industry;
- heavy machine buildings etc.

The EPK Technical Service provides services in the field of diagnostics of technical condition, mounting and dismounting of bearings, as well as training of specialists from enterprises-consumers in the proper handling of bearings that allows to increase the bearing operation life, to avoid the losses coursed by emergency downtime of the equipment due to bearing assemblies failure, as well as it helps the customers to reduce costs for repair-operation needs.

This catalogue contains the data for about 2500 bearing types and sizes produced by EPK in accordance with the national and the International Standards.

Basic bearing types and sizes in the catalogue according to the agreement with a customer can be produced with special requirements (for radial or axial clearance, tolerance class, cage material, vibration, frictional moment and taking into account other additional technical requirements).

The new edition of the catalogue contains data practically for all standard rolling bearings, which are essential for both the producers of industrial equipment and for the customers for repair purposes.

For continuous improvement of product quality EPK reserves the right to make necessary changes in materials, design and production methods, as well as to make changes resulting from improved technology.

EPK reserves the right to make continuing improvements to EPK product quality with respect to materials, designing and manufacturing methods, as well as changes necessitated by technological developments.

For products manufactured according to the special technical specifications it is necessary to apply to the service-sales department of Aviation Bearings Plant. The most complete information for a customer is available at the corporation web-site **www.epkgroup.ru.**

Keeping close relationship with customers, EPK accepts applications for manufacturing of rolling bearings of any design.

GENERAL

CLASSIFICATION OF BEARINGS

Rolling bearings are classified according to following main features:

- according to the direction of the load with respect to the shaft axis;
- according to the form of rolling elements;
- according to the number of rows of rolling elements;
- according to flexibility to misalignment;
- according to sealing devices of the bearing;
- according to the method of bearing mounting in a unit.

Rolling bearings are subdivided into four main groups according to the direction of the load applied:

- bearings accommodating radial load;
- bearings accommodating combined radial/axial load ;
- bearings accommodating combined axial/radial load;
- bearings accommodating axial load.

According to rolling elements the bearings are subdivided into:

- ball bearings;
- roller bearings;
- combined bearings.

Rolling elements of roller bearings have different design variants:

- cylindrical (short and long) rollers;
- tapered rollers;
- convex roller (symmetrical and asymmetrical);
- needle rollers;
- spiral rollers.

According to a number of rows of rolling elements the bearings are subdivided into:

- single-row bearings;
- double-row bearings;
- four-row bearings;
- multiple-row bearings.

According to flexibility to misalignment the bearings are subdivided into:

- self-aligning bearings (allow up to 3° misalignment);
- nonself-aligning bearings

According to sealing devices the bearing are subdivided into:

- bearings with shields;
- bearings with seals.

According to the method of bearing mounting in a unit bearings are subdivided into:

- bearings with snap ring in outer ring;
- bearings with flanged outer ring;
- bearings with adapter or withdrawal sleeve.

SYSTEM OF BEARING DESIGNATION

Designation of a bearing consists of basic designation and supplementary designation.

Supplementary designation (a prefix) is followed by the basic designation, and supplementary designation (a suffix) is preceded by the basic designation.

Basic designation of bearing specified by numerical symbols characterizes its type, bore diameter, diameter and width series, a design variant. This designation characterizes the basic variant of a bearing, which means that the bearing is produced:

- with boundary dimensions according to GOST 3478-79 «Rolling bearings. Boundary dimensions»;
- with rings and rolling elements made of bearing steel;
- according to the normal tolerance class (GOST 520-2002 «Rolling bearings. General technical specifications»;
- with internal radial clearance for the normal group (GOST 24810-81 «Rolling bearings. Clearances»);
- with a cage, specified for the basic variant in manufacturer's documentation;
- without requirements for vibration.

Supplementary designation of a bearing specified by numerical and alphabetical symbols denotes tolerance class, radial clearance and other technical requirements.

Combination of the basic and supplementary designations compose a complete bearing designation, which is regulated by GOST 3189-89 «Ball and roller bearings. System of designations».

STRUCTURING OF A BASIC BEARING DESIGNATION

The symbol order for basic bearing designation with bore diameter up to 10 mm excluding the bearings with bore diameter 0,6; 1,5 and 2,5 mm is shown in fig. 1, and for bearings with bore diameter over 10 mm excluding the bearings with a bore diameter 22; 28; 32; equal or more 500 mm) is shown in fig. 2. The symbols are located from the right to the left.

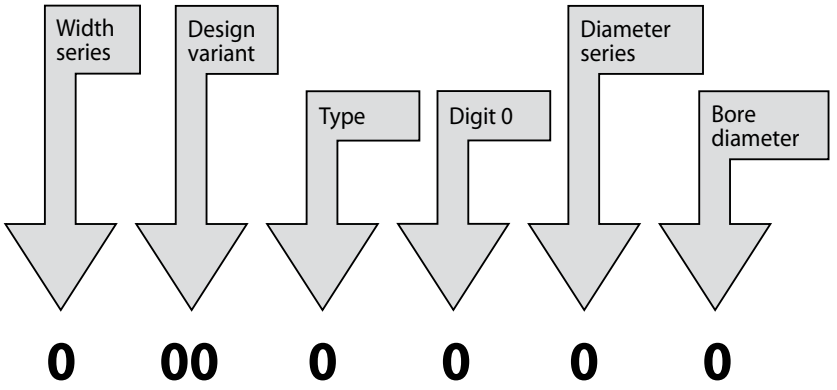


Fig. 1 – **Basic designation of bearings with bore diameter up to 10 mm (excluding the bearings with a bore diameter 0,6; 1,5 and 2,5 mm)**

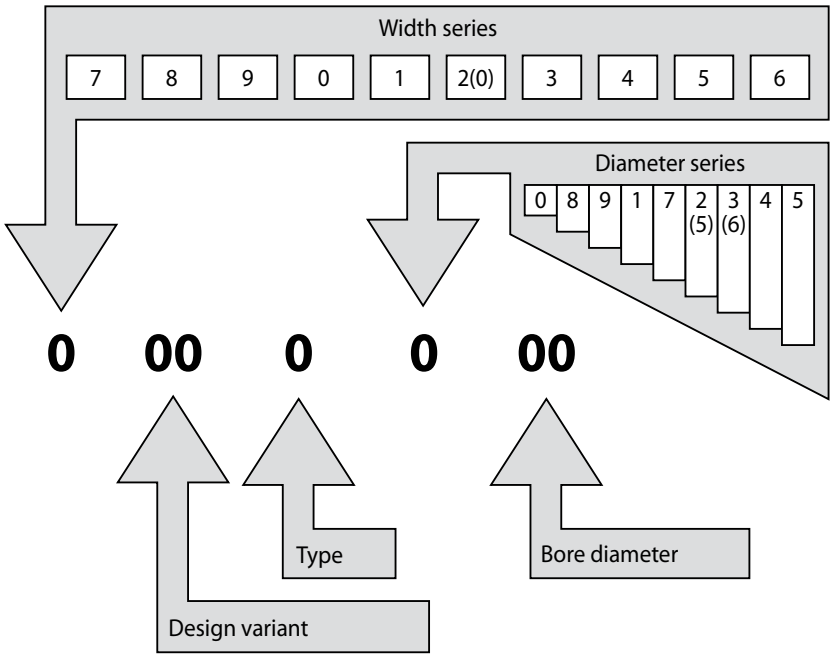


Fig. 2 – **Basic designation of bearings with bore diameter equal or more than 10 mm**

DESIGNATION OF BORE DIAMETER

A bore size is designated by symbols for nominal diameter of a cylindrical or tapered bore of a bearing.

Bore diameters from 1 up to 9 mm expressed by a whole number are designated by characters identical to nominal diameter; bore diameters 10, 12, 15, 17 mm are designated by figures 00, 01, 02, 03 respectively; bore diameters from 20 up to 495 mm, that is multiples of 5, are designated by two figures, obtained by dividing a nominal diameter by 5; bore diameters, 0.6; 1.5; 2.5; 22; 32 mm, as well as bore diameters from 500 up to 2000 mm are designated by numerals identical to nominal diameter, separated from the other characters of main (basic) bearing designation by a oblique stroke (/) (for example, 184009/1,5).

If a bore diameter is a fraction up to 10 mm, it is denoted by the nearest whole number; in this case the figure 5 is put in the second position of a basic bearing designation (see fig. 1). If bore diameter within the range of 10…19 mm differs from above-mentioned, it is denoted by the nearest of these diameters, in this case the figure 9 is put in the third position of a basic bearing designation (see fig. 2).

If a bore diameter within the range of 20…495 mm presented by a fraction or an integer, but not a multiple of 5, it is assigned the designation of a diameter, equal to the nearest whole number resulting from dividing nominal diameter by 5. In this case numeral 9 is put in the third position of a basic bearing designation (see fig. 2).

DESIGNATION OF DIMENSIONAL SERIES

Bearing dimensional series consists of diameters series and width series. The symbol of diameters series is located in the second (see fig. 1) or in the third (see fig. 2) position and the symbol of width series is located in the seventh position of the basic bearing designation.

Diameters series and width series depending on a bearing type are regulated by GOST 3478-89 «Rolling bearings. Boundary dimensions». Table 1 describes corresponding diameter series and related width series of bearings.

Table 1 – **Width series for bearings depending on diameters series**

Diameter series								
0	**8**	**9**	**1**	**7**	**2(5)**	**3(6)**	**4**	**5**
	7	7	7	7	7	7	7	
					8	8		
		9	9		9	9	9	9
			0		0	0	0	
1	1	1		1	1	1		
	2	2	2	2	(0)	(0)	2	
3	3	3	3	3	3	3		
	4	4	4	4	4			
	5	5	5					
	6	6	6					

Note – Designation of width series (0) refers to the bearings of diameters series (5) and (6).

Bearings, with non-standard bore diameter or outer diameter or width (dimensions do not correspond to GOST 3478-79 «Rolling bearings. Boundary dimensions»), are assigned 7, 8 or 9 symbol in the position of diameter series designation, in this case the width series is not designated.

TYPE DESIGNATION

Bearing type is designated by a symbol located in the fourth position of the basic designation in accordance with table 2.

Table 2 – **Symbols indicating the bearing type**

Bearing type	Symbol
Deep groove ball bearing	**0**
Self-aligning ball bearing	**1**
Radial cylindrical roller bearing	**2**
Spherical roller bearing	**3**
Radial roller bearing with long cylindrical or needle rollers	**4**
Radial roller bearing with spiral wound rollers	**5**
Angular contact ball bearing	**6**
Taper roller bearing	**7**
Thrust ball bearing	**8**
Thrust roller bearing	**9**

DESIGNATION OF STRUCTURAL VARIETIES (Design variant designations (see ISO 10317)

The fifth and the sixth numerals from 00 up to 99 (see fig. 1, 2) identify a bearing design variant. Basic design variants of bearings are regulated by GOST 3395-89 «Ball and roller bearings. Types and design variants».

In the basic designation of a bearing the designations of width series, design variants and type of a bearing, including character 0, standing to the left of the last significant numeral, are omitted. In this case the designation of a bearing will be composed of six, five, four, three or two numerals.

Examples of a basic bearing designation:

184009/1.5 identifies a single row radial ball bearing with flanged outer ring having bore diameter 1,5 mm, where 1,5 denotes a bore diameter, 9 denotes diameters series, 0 – 0 in fig. 1, 0 denotes bearing type, 84 denotes design variant, 1 denotes width series.

32205 – a radial roller bearing with cylindrical rollers, having, bore diameter 25 mm, where 05 identifies bore diameter, 2 identifies diameters series, 2 identifies bearing type, 03 identifies design variant, 0 identifies width series, respectively.

STRUCTURING OF SUPPLEMANTARY BEARING DESIGNATINS

The order of supplementary symbols included in a complete designation of a bearing and characterizing additional bearing technical requirements is given below in fig.3:

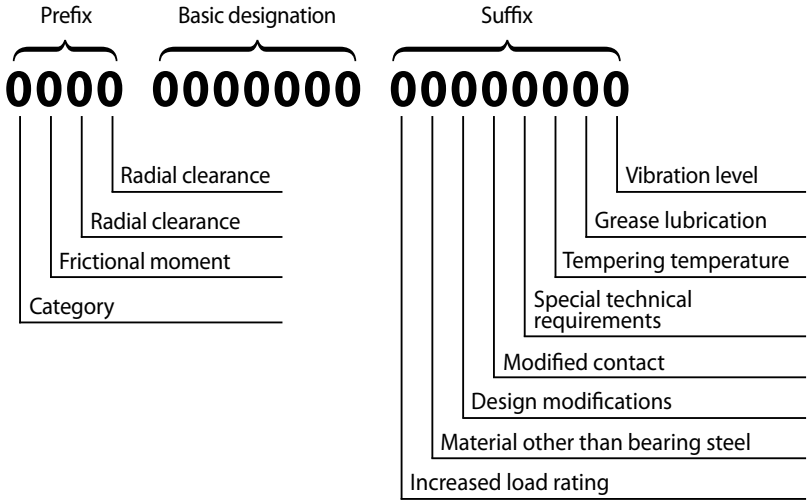


Fig. 3 – Complete bearing designation

Depending on the values of limit deviations of sizes, shapes, relative bearing surface location rotational accuracy the following tolerance classes are specified for bearings, which are listed in accordance with their increasing accuracy:

- normal tolerance class, 6, 5, 4, T, 2 are for deep groove ball bearings, angular contact ball bearings and radial roller bearings;
- 0, normal tolerance class, 6X, 6, 5, 4, 2 are for taper roller bearings;
- normal tolerance class, 6, 5, 4, 2 are for thrust bearings.

A symbol «0» is used to designate normal tolerance class for all bearings, excluding taper bearings. For taper bearings a symbol 0 is used to identify zero tolerance class, for normal tolerance class a symbol «N» is used, symbol X is used to identify tolerance class «X».

Symbol «0» is only marked in the case, when a marking symbol is to the left from it.

Normal radial clearance is not designated. Clearances different from normal clearance are identified by numerals 1, 2, 3, …, 9 followed by a symbol for bearing tolerance class. Frictional moment is designated by numerals 1, 2, 3, … 9 in accordance with its rank. In this case the bearings with normal clearance, for which a designation is not used, include letter «M» instead of a clearance designation.

Increased load carrying capacity of a bearing is designated by letter A.

Bearings, components of which are produced of materials, not provided for basic design variant, include additional symbols in accordance with table 3, moreover with following design variant of the same bearing numerical symbol is added to an alphabetic symbol, for example Г1, Г2 and so forth.

Table 3 – Designations of bearings, components of which are produced from other materials than for basic variant are used

Material for components	Symbol	Cage material	Symbol
		solid cage:	
high-temperature steel:	**Р**	bronze cage	**Б**
stainless steel	**Ю**	steel or ferromagnetic alloy cage	**Г**
case-hardening steel	**Х**		
high speed steel	**Р**	brass cage	**Л**
bearing steel with special additives (vanadium, cobalt, molybdenum etc.) heat resistant steel	**Н**	light alloys	**Д**
		textolite, polyamide or plastic	**Е**
plastic, glass, ceramic	**Я**		

Table 4 – Designations for stabilizing tempering temperature for rings

Stabilizing tempering temperature, C°	200	225	250	300	350	400	450
Designation symbol for temperature	T	T1	T2	T3	T4	T5	T6

Designation symbols of grease grade are given in table 5.

Table 5 – Designation of grease grade used for capped bearings

Grade of a lubricant	Symbol	Grade of a lubricant	Symbol
ЦИАТИМ-201	-	ШРУС-4	**C23**
ОКБ-122-7	**C1**	СЭДА	**C24**
ЦИАТИМ-221	**C2**	ИНДА	**C25**
ВНИИНП-210	**C3**	ЛДС-3	**C26**
ЦИАТИМ-221С	**C4**	ФАНОЛ	**C27**
ЦИАТИМ-202	**C5**	ШЕВРОН SRI-2	**C28**
ПФМС-4С	**C6**	РОБОТЕМП	**C29**
ВНИИНП-271	**C7**	ЮНОЛА	**C30**
ВНИИНП-235	**C8**	Литин 2	**C31**
Л3-31	**C9**	№ 158М	**C32**
№ 158	**C10**	ФИОЛ-2МР	**C33**
ВНИИНП-262	**C11**	ШРУС-4М	**C34**
ВНИИНП-260	**C12**	BERUTOX FE 18 EP	**C35**
ВНИИНП-281	**C13**	ВН-14	**C36**
ФИОЛ-2У	**C14**	МС-1000	**C37**
ВНИИНП-207	**C15**	МС-1000Т	**C38**
ВНИИНП-246	**C16**	МЕТАЛЛПЛАКС-П	**C39**
ЛИТОЛ-24	**C17**	ВНИИНП-559	**C40**
ВНИИНП-233	**C18**	ЭЛМА	**C41**
ВНИИНП-286	**C19**		**C42**
ВНИИНП-274	**C20**	Буксол	**C43**
ВНИИНП-286М	**C21**	Kluberplex BEM 41-132	**C44**
СВЭМ	**C22**	Mobilith SHC 221	**C45**

Vibration level of bearing is designated when the level is regulated. Symbols Ш, Ш1, Ш2 and so forth are used for vibration categories in the order of stiffening of the requirements for vibration parameters.

Example of a complete bearing designation:

B526-2080907ЮТС2Ш2 identifies single-row radial deep groove ball bearings with bore diameter 35 mm, where

07 – bore diameter,
9 –diameter series,
0 – bearing type,
08 – design variant,
2 – width series,
6 – tolerance class,
2 – group of radial clearance,
5 – frictional moment for rank 5,
B – bearing category,
Ю – bearing components made of stainless steel,
T – additional tempering at 400 °C,
С2 – grease ЦИАТИМ **221**,
Ш2 – vibration level.

Bearings listed in the catalogue referring their boundary dimensions, technical requirements and operation characteristics are in line with the requirements of the relevant ISO standards, and are interchangeable with the listed analogues bearings produced by foreign companies.

Tables 6 and 7 show the comparison of bearing designations used by SKF (Sweden) and FAG (Germany) with the designation of analogues bearings produced at domestic enterprises.

Table 6 – Comparison of designations of types and design variants of rolling bearings

Bearing type	Design variants		Bearing designation			
			Country	Russia	Sweden	Germany
			Company	EPK	SKF	FAG
Deep groove radial ball bearing	Single-row			1000800 1000900 100 7000100 200 300	61800 61900 6000 6000 6200 6300	61800 61900 6000 16000 6200 6300
		with snap ring groove		50200 50300	6200N 6300N	6200N 6300N
		with one shield		60200 60300	6200 Z 6300 Z	6200.Z 6300.Z
		with two shields		80200 80300	6200 2Z 6300 2Z	6200.2Z 6300.2Z
		with two seals		180200 180500 180300	6200 2RS 62200 2RS 6300 2RS	6200.2RS 62200.2RS 6300.2RS
Radial self-aligning ball bearing	Double-row	with cylindrical bore		1200 1300 1600	1200 1300 2300	1200 1300 2300
		with tapered bore		111200 111300	1200K 1300K	1200K 1300K
		with adapter sleeve		11200 11300	1200K+H200 1300K+H3OO	1200K+H200 1300K+H3OO
Cylindrical roller bearing	Single-row	without ribs on outer ring		2002800 2100 2200 2500 2300 2600	N2800 N1000 N200 N2200 N300 N2300	N2800 N1000 N200 N2200 N300 N2300
		with single-rib outer ring		12500 12300	NF2200 NF300	NF2200 NF300
		ribbless inner ring		1032800 1032900 2032100 32100 32200 32500 32300 32600 32400	NU1800 NU1900 NU2000 NU1000 NU200 NU2200 NU300 NU2300 NU400	NU1800 NU1900 NU2000 NU1000 NU200 NU2200 NU300 NU2300 NU400

Table 6 (continued)

Bearing type	Design variants		Bearing designation			
			Country	Russia	Sweden	Germany
			Company	EPK	SKF	FAG
Cylindrical roller bearings	Single-row	with a single-rib inner ring		42100 42200 42500 42300 42600 42400	NJ1000 NJ200 NJ2200 NJ300 NJ2300 NJ400	NJ1000 NJ200 NJ2200 NJ300 NJ2300 NJ400
		with ribbless inner ring and thrust collar		52300 52600	NU300+HJ300 NU2300+HJ2300	NU300+HJ300 NU2300+HJ2300
		with single-rib inner ring and thrust collar		62500 62300 62600 62400	NJ2200+HJ2200 NJ300+HJ300 NJ2300+HJ2300 NJ400+HJ400	NJ2200+HJ2200 NJ300+HJ300 NJ2300+HJ2300 NJ400+HJ400
		with single-rib inner ring and loose rib of inner ring		1092900 92100 92200 92500 92300 92600 92400	NUP1900 NUP1000 NUP200 NUP2200 NUP300 NUP2300 NUP400	NUP1900 NUP1000 NUP200 NUP2200 NUP300 NUP2300 NUP400
	Double-row	with tapered bore: – with ribs on inner ring; – with ribs on outer ring		3182100 4162900 4162800	NN3000K NNU4900BK NNU4800K	NN3000AK NNU4900K NNU4800K
		with cylindrical bore: – with ribs on inner ring; – with ribs on outer ring		3282100 4262800 4262900	NN3000 NNU4800 NNU4900	NN3000A NNU4800 NNU4900
Radial spherical roller bearing	Double-row	with cylindrical bore		4003800 3003900 3053900 3003100 4003100 3003700 4003700 4053700 3500 3003200 3600 53600 3003300	24800 23900 23900C 23000 24000 23100 24100 24100C 22200 23200 22300 22300C 23300	24800 23900 23900E 23000 24000 23100 24100 24100E 22200 23200 22300 22300E 23300
		with tapered bore		3113100 4113100 3113700 4153700 3113200	23000K 24000K 23100K 24100K 23200K	23000K 24000K 23100K 24100K 23200K

Table 6 (continued)

Bearing type	Design variants		Bearing designation							
			Country	Russia	Sweden		Germany	
			Company	EPK	SKF		FAG	
Radial spherical roller bearing	Double-row	with tapered bore		113500 113600	22200K 22300K		22200K 22300K	
		with adapter sleeve		3013100 3013700 3013200 13600	23000K+H3000 23100K+H3100 23200K+H3200 22300K+H2300		23000K+H3000 23100K+H3100 23200K+H3200 22300K+H2300	
Angular contact ball bearings	Single-row	contact angle 12° (15°)		1036800 1036900 36100 36200	71800C 71900C 7000C 7200C	15°	71800C 71900C 7000C 7200C	15°
		contact angle 26° (25°)		1046800 1046900 46100 46200 46300 46400	71800AC 71900AC 7000AC 7200AC 7300AC 7400AC	25°	71800C 71900E 7000E 7200E 7300E 7400E	25°
		contact angle 36° (40°)		1066800 1066900 66100 66200 66300 66400	71800B 71900B 7000B 7200B 7300B 7400B	40°	71800B 71900B 7000B 7200B 7300B 7400B	40°
		four-point contact bearing with two-piece inner ring		176100 176200 176300	QJ1000 QJ200 QJ300		QJ1000 QJ200 QJ300	
	Matched bearings pairs	back-to-back arrangement		266100	7000B/DB			
		face-to-face arrangement		346300 366200 366300 366400	7300AC/DF 7200B/DF 7300B/DF 7400B/DF			
		tandem arrangement		436200 446300 466100 466300 466400	7200C/DT 7300AC/DT 7000B/DT 7300B/DT 7400B/DT			
	Double-row			3056200	3200		3200	
		with two-piece inner ring		3086300	3300D		3300D	

Table 6 (continued)

Bearing type	Design variants		Bearing designation			
			Country	Russia	Sweden	Germany
			Company	EPK	SKF	FAG
Taper roller bearings	Single-row	contact angle 10°... 18°		2007900(A) 2007100(A) 7200(A) 7500A 7300A 7600A 3007100A 3007200A 3007700A	32900 32000X 30200 32200 30300 32300 33000 33200 33100	32900 32000X(XA) 30200(A) 32200(A) 30300A 32300(A) 33000 33200 33100
		contact angle 20°...30°		27300 27600A 1027300A	31300X 32300B 31300	31300X 32300B 31300A
		with flanged outer ring		67200 67500A	30200RX 32200RA	
Thrust ball bearings	Single-row			9008100 8100 8200 8300 8400	59100 51100 51200 51300 51400	59100 51100 51200 51300 51400
		with spherical seating washer		18200 18300 18400	53200+U200 53300+U300 53400+U400	53200+U200 53300+U300 53400+U400
	Double direction			38200	52200	52200
Thrust roller bearings	Spherical			9039200 9039300 9039400	29200 29300 29400	29200MS 29300MS 29400MS
Cylindrical thrust roller bearings	Single direction			9009100 9009400 9200	89100 94008 81000	89100 94008 81000

Table 7 – Comparison of supplementary designations for bearings

Country		Russia	Sweden	Germany
Company		EPK	SKF	FAG
Designation of tolerance class		0 6 5 4 2	PO P6 P5 P4 P2	PO P6 P5 P4 P2
Bearing type		**Designation of radial clearance group**		
Single raw deep groove ball bearing with d < 200 mm		6 Normal 7 8 9	C2 Normal C3 C4 C5	C2 CO normal C3 C4 C5
Radial cylindrical roller bearings, with non-interchangeable components	With cylindrical (tapered) bore d < 50 mm	0 5 Normal (6) 7 8 9	C1 C2 Normal C3 C3 (C5)	C1NA C2 CO normal C3 C3 (C5)
Double-row radial spherical roller bearing with cylindrical (tapered bore)		1 2 Normal 3 4 5	– C2 Normal C3 C4 C5	– C2 CO normal C3 C4 C5
Designation of design modification of roller bearings				
Modified internal design		A	–	A
Boundary dimensions changed to conform to ISO standards		–	X	X
Modified contact		M	–	–
Circular groove and lubrication holes in the outer ring		H	W33	S
Material of solid cage		**Designation of cage material**		
Machined steel or special cast iron cage		Г	F	F
Aluminium alloyed cage		Д	L	L
Brass cage		Л	M	M
Cage of glass fibre reinforced polyamide		E	TN	TV (TN)
Cage of fabric reinforced phenolic rasin		E	T	TP

SELECTION OF BEARINGS

SELECTION OF BEARING TYPE

Rolling bearings are classified as follows:

- according to the direction of the load with respect to the shaft axis (radial load, radial/axial load, axial/radial load and axial load);
- according to the form of rolling elements (ball, roller, needle roller);
- according to a number of rows of rolling elements (single-row, double-row etc.);
- according to flexibility to misalignment (self-aligning and non-self-aligning) and other features.

The detailed classification is contained in the existing standards. However, this classification is to some extent conventional only, since a lot of bearing types are able to satisfy various applications. For example, single-row deep groove ball bearings are able to carry not only a radial load but also a moderate axial load; for this reason at high speed of rotation its use is preferable to thrust bearings. So, there are no strict rules in selecting of bearing type.

Besides, a machinery designer has often to make decision in terms of mutually exclusive requirements. So, boundary dimensions of bearing outer and bore diameters shall be sometimes specified considering housing bore diameter or shaft diameter. Space limitation in radial direction brings to use a needle roller bearing, and sometimes even a needle roller and cage assembly, using housing parts of the machine as outer and inner rings. In case of space limitation in axial direction bearings with short cylindrical rollers are applied.

Value and direction of load is a governing factor when selecting type and size of a bearing. In case with light loads and small shaft diameters ball bearings are applied and for heavy loads and large shaft diameters roller bearings are applied since they are more rigid and are capable to carry heavy loads being of the same boundary dimensions as ball bearings are. Needle roller bearings, cylindrical roller bearings without ribs on any ring, and toroidal bearings are designed to carry purely radial load only. Other radial bearings are capable to some extent to carry axial load.

Thrust bearings with axial contact are designed to accommodate purely axial loads only. Single direction thrust ball bearings are designed to carry axial load in one direction, and double direction thrust ball bearings are designed to carry axial load in both directions.

In the case when combined loads are applied radial angular contact ball bearings and taper roller bearings can be preferably selected. In this case the value of axial load applied to a bearing depends on a contact angle. With the increasing of a contact angle in a bearing its axial load capacity increases.

In case of shaft and housing misalignment caused by technological errors or shaft deflection under working loads self-aligning ball bearings and spherical roller bearings are applied.

Bearing shall be selected taking into consideration above mentioned factors. But for quick selection of bearing types table 8 can be used, by which, knowing the conditions of loading and operating requirements, you can choose the most appropriate design of a bearing.

SELECTION OF BEARINGS

Table 8 – Compliance of bearings characteristics with operating conditions

Suitability:

- ■ very good
- ◪ good
- ◧ satisfactory
- ◩ with limitations
- □ unsuitable
- → taking a load in one direction

Типы подшипников		Design				Bearing suitability											
		separable	taper bore	One- or both-sided seal		purely radial load	purely axial load	combined load	high speed	high running accuracy	high stiffness	quite running	low friction	compensation for misalignment	compensation of thermal expansion of the shaft within the bearing	Compensation of temperature shaft elongation in loose fit	location bearing arrangement
Ball	single-row radial deep groove ball bearing	□	□	■		◪	◧	◪	■	◧	◧	■	■	◩	□	◧	◪
	angular contact bearing	□	□	□		◪	→◪	■	■	◧	◧	◪	◪	□	□	◧	■
	double-row angular contact or matched single row ball bearing	□	□	◧		◪	◪	◪	◧	◧	◪	◧	◧	□	□	◧	◪
	double-row self-aligning ball bearing	□	■	■		◧	◩	◩	◪	□	◩	◧	◪	■	□	◧	◧
	single direction thrust ball bearing	■	□	□		□	→◪	□	◧	◪	◧	◩	◧	□	□	□	◧
	single-row thrust angular contact ball bearing	□	□	□		◩	→◪	◧	◪	◪	◧	◧	◧	◩	□	□	◪
	multiple-row thrust angular contact ball bearing	■	□	□		◩	■	◩	◩	□	◪	□	◩	◩	□	□	◧
Roller	radial cylindrical roller bearings fixed by ribs	■	◧	□		■	◧	◧	■	◪	■	◧	◪	◩	□	□	◪
	radial cylindrical roller bearings free of fixation	■	□	□		■	□	◩	■	◧	■	◩	◪	◩	■	◧	□
	radial needle roller bearing	■	□	■		■	□	□	◧	◧	◪	◧	◩	□	■	□	□
	single-row radial spherical roller bearing	□	■	□		■	◧	◧	◧	□	◪	◩	◧	■	□	◧	◪
	double-row radial spherical roller bearing	□	■	◧		■	◧	◪	◧	□	◪	◩	◧	■	□	◧	◪
	taper roller bearing	■	□	□		◪	→◪	■	◧	◪	◪	◩	◧	◩	□	◧	■
	spherical roller thrust bearing	■	□	□		□	■	◩	◩	□	◪	□	◩	■	□	□	◪
	cylindrical roller thrust bearing	■	□	□		□	→◪	□	◩	◧	◪	◩	◩	□	□	□	◪

BEARING LIFE

For selection of rolling bearing it is worse to know specified operational conditions that are the value and the direction of load; loading conditions; rotational speed of one or both rings; required bearing life; working temperature of the unit and other requirements, determined by the machine design.

The bearing life is considered as a number of revolutions, which one of the bearing rings makes in relation to the other ring before the first evidence of fatigue develops in the material of one of the rings or one of the rolling elements.

Life can be expressed in million of revolutions or hours of operation at given constant speed of rotation. The basic rating life associated with 90% of reliability for a particular bearing or group of identical rolling bearings operating under identical conditions, usually manufactured with commonly high quality material, with good manufacturing quality and operating under conventional operating conditions.

Main feature of a bearing is a basic dynamic radial (axial) load rating, designated as Cr, – (Ca). Load rating is a constant stationary radial (axial) load, which a rolling bearing can theoretically endure for a basic rating life of one million revolutions.

Depending on the bearing design basic dynamic load rating is calculated using equations given in GOST 18855-94 «Rolling bearings. Dynamic load rating and rating life (durability)».

Values for dynamic load carrying capacity are given in the tables of the catalogue.

BASIC RATING LIFE

Relations between basic rating life, dynamic load rating and actual bearing load of a bearing are given by the equations:

$$L_{10} = \left(\frac{C_r}{P_r}\right)^p \text{ or} \quad (1)$$

$$L_{10n} = \left(\frac{G_r}{P_r}\right)^p \frac{10^6}{60n}, \text{ hr}, \quad (2)$$

where

L_{10} – basic rating life, million revolutions;

C_r – basic dynamic load rating, N;

P_r – dynamic equivalent radial load, N;

p – exponent (for ball bearings $p = 3$, for roller bearings $p = 10/3$);

n – rotational speed, min^{-1}.

The equations (1) and (2) are valid for rotational speed, not exceeding the limit speed, but no less than 10 min^{-1}. At rotational speed $n = 1…10$ min^{-1} the calculation is provided with $n = 10$ min^{-1}.

With $n < 1$ min^{-1} the actual load is considered as static load and is compared with static load rating for bearing of a given type and size.

For vehicles the basic bearing life of wheel hubs sometimes is reasonable to express in kilometres:

$$L_{10S} = \frac{\pi D_1}{1000} L_{10}, \quad (3)$$

where

L_{10S} – basic rating life, mln. km;

D_1 – wheel diameter, m.

For many applications it is desirable to calculate bearing life for various reliability levels and/or for specific bearing properties and operational conditions, which are different from conventional conditions, so their influence should be considered. Adjusted rating life ($L_{n\,a}$), i.e. basic rating life, adjusted on (100-n) % reliability for specific bearing properties and specific operational conditions is calculated according to the given equation::

$$L_{10a} = a_1 a_2 a_3 L_{10}.$$

For calculation of adjusted rating life L_{10a} in hours its value is multiplied by the value

$$\frac{10^6}{60n},$$

where n – rotational speed of inner ring, min^{-1}.

Values of life adjustment factor for reliability (a_1) are given in table 9.

Table 9 – Life adjustment factor for reliability, a_1

Reliability, %	L_{na}	a_1	Reliability, %	L_{na}	a_1
90	L_{10a}	1	99,4	$L_{0,6a}$	0,19
95	L_{5a}	0,64	99,6	$L_{0,4a}$	0,16
96	L_{4a}	0,55	99,8	$L_{0,2a}$	0,12
97	L_{3a}	0,47	99,9	$L_{0,1a}$	0,093
98	L_{2a}	0,37	99,92	$L_{0,08a}$	0,087
99	L_{1a}	0,25	99,94	$L_{0,06a}$	0,080
99,2	$L_{0,8a}$	0,22	99,95	$L_{0,05a}$	0,077

Table 9 is based on constant value of Weibull slope $e = 1,5$. It is possible to make calculations also for other factors of reliability using the equation (4):

$$a_1 = \left(\frac{\ln \frac{100}{n}}{\ln \frac{100}{90}} \right)^{\frac{1}{e}}$$

Bearing acquires special properties, which is expressed by modification, thanks to using special materials, and/or special production processes, and/or special construction designs. These special properties shall be taken into consideration by applying life adjustment factor (a_2).

Values $a_2 > 1$ are used only for steels with extremely low content of non-metallic inclusions. While selecting values a_2, special design must be also considered, which cause an increase or decrease in the homogeneity of stresses in of contact areas between rolling elements and raceways.

Conformity of lubricant referring to the rotational speed and increased temperature), existence of foreign particles and conditions, which cause changes in material properties (for example, high temperature causes a decrease in hardness) are referred to the working conditions, which must be also considered. The influence of these conditions on bearing life must be considered when introducing a factor a_3. If there is no misalignment between inner and outer rings and grease in the bearing contact area is of sufficient thickness, the factor a_3 can be greater than 1 (one). However, factor a_3 is assumed less than 1 in cases of low lubricant viscosity in contact area between raceway and rolling elements, at high temperature of a bearing, in cases of ingress of water or foreign particles in the lubricant, and significant misalignment of inner and outer rings.

Taking into account that the factors are interrelated, in practice it is necessary to use the factor $a_{23} = a_2 a_3$.

Factor a_{23} shall be selected from table 10 applying the ratio of the normative and the actual kinematic viscosity of the lubricant applied:

$$\chi = \frac{v}{v_1},$$

where

χ – viscosity ratio;

v – actual kinematic viscosity of the lubricant, used in the unit with specified working temperature, mm²/s;

v_1 – reference kinematic viscosity of the lubricant, minimal required for lubrication conditions at specified speed, mm²/s.

Table 10 – Values of factor a_{23}

Bearing type	Vacuum-treated steel				
	Values of viscosity ratio $\chi = v/v_1$				
	0.1–0.2	0.2–0.5	0.5–1	1–2	2–3
	Values of factor a_{23}				
Deep groove, angular contact ball bearings	0,1–0,3	0,3–0,7	0,7–1,0	1,0–1,5	1,5–2
Double-row spherical roller bearings	0,1–0,2	0,2–0,4	0,4–0,7	0,7–1	1,1–2
Cylindrical or needle roller bearings	0,1–0,4	0,4–0,6	0,6–1	1–1,5	1,5–1,8
Spherical roller thrust bearings	0,1–0,2	0,2–0,4	0,4–0,7	0,7–1	1,1–2

Notes:
1. In case when electroslag remelting steel and pure lubricant are applied the factor a_{23} may be increased with $\chi > 2$.
2. With considerable lubricant contamination by solid particles or with inadequate lubricant feeding the factor a_{23} is assumed as 0,1.

Values of actual kinematic viscosity v, that is kinematic viscosity of lubricant at specified operational temperature of unit, are determined using the nomogram below (see fig. 4). For determining the operational viscosity it is necessary to know bearing temperature and initial kinematic viscosity of oil applied. For example, if the oil *И*-20A is used in the unit at temperature 90°C, which at temperature 50°C has kinematic viscosity $v = 23\ mm^2/s$ and temperature of 50°C along the line indicated by the arrow, we approach the temperature line of 90°C and on the ordinate axis read out the value $v = 6,7\ mm^2/s$ of operational viscosity.

Values of reference kinematic viscosity v1 are determined from nomogram, made on the base of elastohydrodynamic conditions of lubricant (see Fig. 5). This reference kinematic viscosity of oil is selected depending on rotational speed of elements in contact, as determined by two parameters of a bearing: mean diameter and rotational speed. For example, for calculation of reference kinematic viscosity of oil, v1, for a bearing with rotational speed $N = 200\ min^{-1}$ and mean diameter $d_m = 150$ mm, the abscissa axis of mean diameters should be applied to determine the appropriate rotational speed, marked by inclined line, and relevant value v_1 on the ordinate axis should be taken (in Fig. 2 the value $v_1 = 44$ mm²/s is indicated by the arrow).

This method for determination of viscosity ratio is related to mineral oils. For greases this ratio must be determined for dispersion medium that is for kinematic viscosity of base oil, contained in grease. However, lubrication with grease has its own features.

The designer often knows the required life of machine units. If such data are not available, basic (nominal) bearing life can be recommended in table 11.

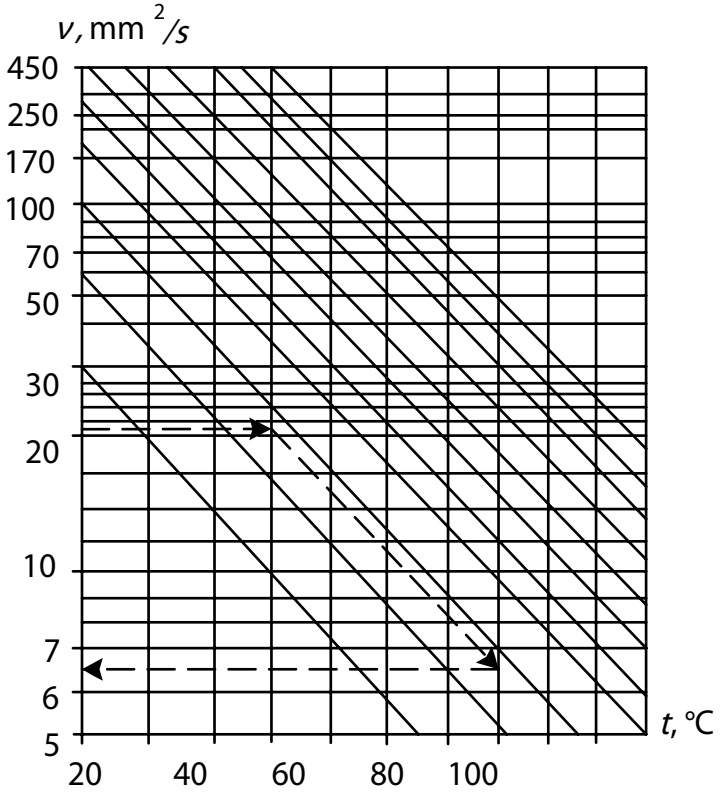


Fig. 4 – **Nomogram for determination of oil viscosity at working temperature applying known viscosity of lubricant at reference temperature obtained for mineral oil.**

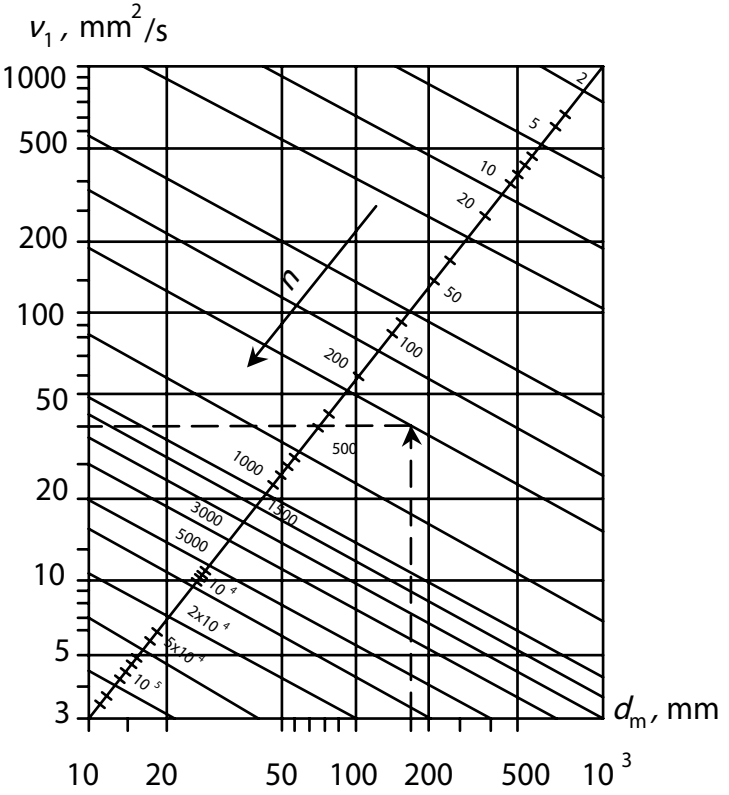


Fig. 5 – **Nomogram for determination of the standard viscosity, v_1.**

Table 11 – **Recommended values of basic rating life for bearing designed for various applications**

Machine type and type of service	L_{10h}, hours	L_{10s}, mln. km
Devices and mechanisms, used from time to time, agricultural machines, household equipment	500–4000	
Mechanisms, used within short periods of time, erecting cranes, construction machinery	4000–8000	
Important mechanisms, operating with intervals (auxiliary mechanisms in power stations, conveyors for flow-line production, elevators, rarely used metal-working machines)	8000–12000	
Machines for one-shift operation with partial load (stationary electric engines, reduction gear boxes, crushers)	12000–20000	
Machines for one-shift operation with full load (cutting machines tools, woodworking machines, general mechanical engineering equipment. Cranes, fans, separators, centrifuges, printing equipment)	20000–30000	
Machines for day and night use (compressors, pumps, mine hoists, stationary electric machines, marine drives, rolling mills, textile machines)	40000–50000	
Hydroelectric power stations, rotary furnaces, marine vessels engines	60000–100000	
Continuously operating machines with high load (equipment in paper mills, power plants, mining pumps, propeller shafts of sea ships)	100000	
Wheel hubs of cars		0,2–0,3
Wheel hubs of buses, industrial transport vehicles		0,3–0,5
Axle-boxes of freight wagons		0,8
Axle-boxes of suburban trains, trams		1,5
Passenger wagon axle-boxes		3,0
Locomotive axle-boxes		3,0–5,0

CALCULATION OF DYNAMIC EQUIVALENT RADIAL LOAD

Dynamic equivalent radial load (P_r) is a constant stationary radial load, under the influence of which a rolling bearing should have the same life, as it would attain under the actual load conditions.

Dynamic equivalent radial load (P_r) for deep groove radial and angular contact ball bearings with constant radial and axial loads is equal to:

$$P_r = (XVF_r + YF_a)K_\sigma K_T, \quad (5)$$

where

P_r – dynamic equivalent radial load, N;

F_r – bearing radial load or radial component of actual bearing load, N;

F_a – bearing axial load or axial component of actual bearing load, N;

X – dynamic radial load factor;

Y – dynamic axial load factor;

V – rotational factor; in case of outer ring rotation with respect to the direction of load $V = 1,2$; in other cases $V = 1$.

K_σ – loading factor;

K_T – temperature factor;

In case when $F_a/F_r < e$, it is assumed that

$$P_r = F_r K_\sigma K_T, \quad (6)$$

where

e – value limit of ratio F_a/F_r, providing the selection of factors X and Y.

Values X, Y and e are given in GOST 18855-94 «Rolling bearings. Dynamic load rating and rating life (durability)».

CALCULATION OF DYNAMIC EQUIVALENT AXIAL LOAD

Dynamic equivalent axial load (P_a) is a constant centric axial load under the influence of which a bearing would have the same life, as it would attain under the actual load conditions.

Dynamic equivalent axial load (P_a) for thrust ball bearings with contact angle $\alpha \neq 90°$ with constant radial and axial loads is equal to:

$$P_a = (XVF_r + YF_a)K_\sigma K_T. \quad (7)$$

Thrust ball bearings with contact angle $\alpha = 90°$ can accommodate only axial loads. Dynamic equivalent load for these bearings is equal to:

$$P_a = F_a K_\sigma K_T. \quad (8)$$

In some cases it is difficult to make exact calculation of loading for bearings. For example, axle-boxes of the rolling stock of vehicles are designed to carry not only the load correspondent to weight force of the wagon, which is easily to calculate. While rotating at different speeds, bearings endue impact loads at the joints of the rails when passing through the railway points, the inertial loads on turns and on in case of the emergency brake. If the exact calculation of these factors is not possible, the experience of the earlier designs of the machines is applied. Based on

an analysis of their operation the so-called loading factor $K\sigma$ was derived. For quiet loads without impacts in mechanisms such as low-power kinematic gearboxes and drives, rollers of belt conveyors, hoists, grapplers, hand winches, control drives and other similar mechanisms, the value of loading factor $K\sigma = 1$. The same value of this factor is used, when there is assurance in strict compliance of calculated load values with the actual values.

Table 12 shows recommended values of loading factor $K\sigma$.

After calculation of equivalent load (P_r, P_a),), basic rating life (L_{10})), basic dynamic load rating is calculated and using the catalogue the required type and sizes of a bearing are selected.

The resultant load, acting on the bearings, can be exactly specified based on the laws of mechanics when the external forces are known. For example, loads, transmitted by machine parts to the shafts, are calculated by assuming support reactions applying the statics equations for the beam. The shaft is considered as a simple double-seat beam with bearings in supports.

Using the equation of the moments and the sum of the forces acting on the beam, the responses of the supports are determined, which, when taken with opposite sign, represent a bearing load. The load can be produced by forces of weight, carried by a bearing; forces arising from the transfer of power by gear and belt drives; cutting forces in metal-cutting machines, inertial forces, impact loads etc. The resultant load on bearing F, directed at any angle to the axis of bearing rotation, can be decomposed as radial (F_r) and axial (F_a) components.

Sometimes the value of this load is difficult to determine because of the variety of power factors and random effects of forces. Therefore, any mathematical methods are suitable for the calculation. For practical calculations may be recommended certain approved methods of calculating the resultant force F.

When the load on bearings is changed from P_{min} to P_{max} according to linear law, then the value F can be determined as:

$$F = \frac{P_{min} + 2P_{max}}{3}. \quad (9)$$

If the operation has a variable nature, that is, during the time t_1 at rotational speed n_1 the load F_1 acts, during the time t_2 with rotation speed n_2 the load F_2 acts etc., then value F is determined as follows:

$$F = \left(\frac{n_1 t_1 F_1^P + n_2 t_2 F_2^P + \ldots + n_i t_i F_i^P}{n_1 t_1 + n_2 t_2 + \ldots + n_i t_i} \right)^{\frac{1}{P}}, \quad (10)$$

where
$p = 3$ for ball bearings,
$p = 10/3$ for roller bearings.

Table 12 – Values of loading factor Kσ depending on loading type and bearing application

Loading type	$K\sigma$	Application
Quiet load (without impacts)	1,0	Low-power kinematic gearboxes and drives. Rollers of belt conveyors. Mechanisms of manual cranes and blocks. Jacks, grapplers, hand winch. Control drives.
Light impacts; short-term overloads up to 125% of nominal rating load	1,0–1,2	Precision gears. Metal cutting stations (planning, slotting and grinding). Gyroscopes. Crane lifting mechanisms. Electric hoists and monorail trolley. Winches with mechanical drive. Electric motors of low and medium power. Light fans and air blowers.
Medium impacts; vibration load; short-term overloads up to 150% of nominal (specified) load	1,2–1,5	Gears. Gearboxes of all types. Axle-boxes of rail rolling stock. Mechanisms for movement of crane carriages. Mechanisms for cranes turning and luffing. Spindles of grinders. Electrical spindles. The wheels of cars, buses, motorcycles, motor-scooters. Agricultural machines.
The same as above, but under conditions of increased reliability	1,5–1,8	Centrifuges and separators. Axle-boxes and traction engines of electric locomotives. Mechanisms of crane travel. Wheels of trucks, tractors, tractive vehicles, locomotives, cranes and road machines. Powerful electrical machines. Power generating equipment.
Loads with considerable impacts and vibration; short-term overloads up to 200% of nominal (specified) load	1,8–2,5	Gears. Crushers and pile drivers. Crank-and-rod mechanisms. Ball and impact mills. Mill rolls. Powerful fans and exhausters.
Loads with strong impacts and short-term overloads up to 300% of nominal (specified) load	2,5–3,0	Heavy forging machines. Sawing machines. Refrigeration equipment. Working roller conveyors of heavy-mills, blooming and slabbing mills. Hammer mills, crushers.

Calculation of the average values of load according to the above mentioned relations is valid not only for radial, but also for any load with constant direction of action with respect to bearing radial plane. Radial acting load is calculated for radial deep groove bearings, and load, directed along bearing axis is calculated for thrust bearings. Radial and axial components of a load are calculated, when the force caused by the load is applied at the angle to bearing radial plane. Equivalent load (radial for radial bearings and axial for thrust bearings) is calculated considering these components.

If the bearing is subjected to rotating load, then the value of rotating force is determined as follows:

$$F = mr\omega^2, \quad (11)$$

where
m – mass of the rotating body, kg;
r – distance between bearing axis and a gravity centre of the rotating body, m;
ω – angular velocity of rotating body, rad/s.

BEARINGS SELECTION WITH STATIC LOADING

For bearings, working with slow rotation ($n < \text{min}^{-1}$), as well as in oscillatory mode of motion, operability is not determined by metal fatigue, but by the residual deformation of surfaces in contact.

Basic static radial load rating (C_{0r}) is a radial load which corresponds to a calculated contact stress at the centre of the most heavily loaded rolling element/raceway contact of:

- 4600 MPa for self aligning ball bearings;
- 4200 MPa for all other types of radial and angular contact ball bearings;
- 4000 MPa for all radial roller bearings.

In the case of a single-row angular contact bearing, the radial load rating refers to the radial component of that load which causes a purely radial displacement of the bearing rings in relation to each other.

For these contact stresses, under static load, a total permanent deformation of rolling element and raceway occurs which is approximately 0,000 1 of the rolling element diameter.

Basic static axial load rating (C_{0a}) is a static centric axial load which corresponds to a calculated contact stress at the centre of the most heavily loaded rolling element/raceway contact of:

- 4200 MPa for thrust ball bearings;
- 4000 MPa for all thrust roller bearings.

For these contact stresses, under static load, a total permanent deformation of rolling element and raceway takes place and approximately equal 0,000 1 of the rolling element diameter.

CALCULATION OF STATIC EQUIVALENT RADIAL LOAD

Static load is a load acting on a bearing when the speed of rotation of its rings in relation to each other is zero or is very slow.

Static equivalent radial load (P_{0r}) is a static radial load which would cause the same contact stress at the centre of the most heavily loaded rolling/raceway contact as that which occurs under the actual load conditions.

Static equivalent radial load (P_{0r}) for radial ball bearings equals to the larger of two values, obtained from the equations:

$$P_{0r} = X_0 F_r + Y_0 F_a, \tag{12}$$

$$P_{0r} = F_r, \tag{13}$$

where
P_{0r} – static equivalent radial load, N;
F_r – radial load or radial component of actual load, acting on a bearing, N;
F_a – axial load of a bearing or axial component of actual load, acting on a bearing, N;
X_0 – static radial load factor;
Y_0 – static axial load factor.

Values of factors X_0 and Y_0 are given in table 13.

Table 13 – Values of factors X_0 and Y_0 for radial ball bearings

Bearing type		Single-row bearings		Double-row bearings	
		X_0	Y_0	X_0	Y_0
Radial contact ball bearings [a]		0,6	0,5	0,6	0,5
Angular contact ball bearings α =	5°	0,5	0,52	1,0	1,04
	10°	0,5	0,5	1,0	1
	15°	0,5	0,46	1,0	0,92
	20°	0,5	0,42	1,0	0,84
	25°	0,5	0,38	1,0	0,76
	30°	0,5	0,33	1,0	0,66
	35°	0,5	0,29	1,0	0,58
	40°	0,5	0,26	1,0	0,52
	45°	0,5	0,22	1,0	0,44
Self-aligning ball bearing, $\alpha \neq 0°$		0,5	0,22 ctg α	1,0	0,44 ctg α

[a] The permissible maximum value of F_a/C_{0r} depends on bearing design (internal clearance and raceway groove depth).

CALCULATION OF STATIC EQUIVALENT AXIAL LOAD

Static equivalent axial load (P_{0a}) is a static centric axial load, which would cause the same contact stress at the centre of the most heavily loaded rolling element/raceway contact as that which occurs under the actual load conditions.

Static equivalent axial load (P_{0a}) of thrust ball - bearings is calculated from the following equation:

$$P_{0a} = 2{,}3 F_r tg\,\alpha + F_a, \tag{14}$$

where
P_{0a} – static equivalent axial load, N;
F_r – radial load or radial component of actual bearing load, N;
F_a – axial load or axial component of actual bearing load, N;
α – nominal contact angle, in degrees.

This equation is valid for all ratios of radial load to axial load in the case of double-direction bearings. For single-direction bearings, it is valid where $F_r/F_a \leq 0{,}44\ \mathrm{ctg}\alpha$, and gives satisfactory but less conservative values of P_{0a} for F_r/F_a up to $0{,}67\mathrm{ctg}\alpha$.

Thrust roller bearings with $\alpha = 90^\circ$ can support axial loads only. The static equivalent axial load for this type of bearing is given by the equation:

$$P_{0a} = F_a. \tag{15}$$

STATIC SAFETY FACTOR

Static safety factor is the ratio between the basic static load rating and static equivalent load, providing a margin of safety against inadmissible residual deformation of rolling elements and raceways.

Suitability of a bearing, selected for heavy load applications, should be checked to make sure that its basic static load rating corresponds to the type of the application. This can be determined by static safety factor S_0, which is calculated from the equations as follows:

$$S_0 = \frac{C_{0r}}{P_{0r}}, \tag{16}$$

$$S_0 = \frac{C_{0a}}{P_{0a}}. \tag{17}$$

Equation (14) applies to radial bearings and Equation (15) to thrust bearings.

Where the bearing is dynamically loaded and the selection has been made on the basis of life, it is also advisable to check that the basic static load rating is adequate for attaining the performance requirements of the application.

Values of static safety factor S_0 for ball bearing are shown in table 14.

Table 14 – Values of static safety factor S_0 for ball bearings

Type of operation	S_0, minimum
Quiet-running applications: smooth-running, vibration-free, high rotational accuracy	2
Normal-running applications: smooth-running, vibration-free, normal rotational accuracy	1
Applications subjected to shock loads: pronounced shock loads [a]	1,5
[a] Where the magnitude of the load is not known, values of S_0 which are at least 1,5 should be used. If the magnitude of the shock loads is known exactly, smaller values of S_0 can be applied.	

Values for static safety factor S_0 for roller bearings are shown in table 15.

Table 15 Values for static safety factor S_0 for roller bearings

Type of operation	S_0, minimum
Quiet-running applications: smooth-running, vibration-free, high rotational accuracy	3
Normal-running applications: smooth-running, vibration-free, normal rotational accuracy [a]	1,5
Applications subjected to shock loads: pronounced shock loads [a]	3
For thrust spherical roller bearings, a minimum S_0 of 4 is recommended for all types of operation. For case-hardened, drawn cup needle roller bearings a minimum S_0 of 3 is recommended for all types of operation.	
[a] Where the magnitude of the load is not known, values of S_0 which are at least 3 should be used. If the magnitude of the shock loads is known exactly, smaller values of S_0 can be applied.	

The guideline values of S_0, given in 14 and 15 for various types of operation and application requirements regarding smooth and vibration-free running are applicable to rotating bearings and are based on experience.

For other specific operating conditions, the bearing manufacturer should be consulted for guidance on the applicable S_0 values.

CONSIDERATION OF HIGH TEMPERATURE EFFECT

If the bearings are designed for operation at high temperatures, then due to the reduction of hardness, impact viscosity fluctuations, their life is somewhat reduced. To prevent any change in component dimensions, their additional tempering is carried out at a higher temperature, than the maximum working temperatures of bearings. For this purpose in calculating of dynamic load, temperature factor K_T is introduced, numerical value of which is given in table 16. These bearings have additional marking on the right side from the bearing designation.

Table 16 – Values of temperature factor K_T

Supplementary symbols	Operating temperature of a bearing, °C	Temperature factor K_T
T	160	1,11
T1	180	1,18
T2	200	1,25
T3	250	1,41
T4	300	1,67

LIMITED OF ROTATIONAL SPEED

Permissible rotational speed is shown in the catalogue for two types of lubricant: grease and oil. However, it does not mean that maximum rotational speed is acceptable for any load. In high-speed operational modes ($n_{rot} > 0{,}6n_{limit}$) the loads for each type of bearings are limited by heat removal conditions and are often characterized by the relation ($P/C < 0{,}06$). The final factor limiting the speed is temperature, which depends on the friction in the bearing and the possibility of heat removal. When working on speed, corresponding to limit values of the catalogue, it is assumed that the working radial clearance is sufficient to compensate the difference of linear expansion of outer and inner rings because of their different temperatures; rigid shafts and housings are used in the assembly: lubricant is selected in the proper way.

Changes in the loading and lubrication conditions allow in some cases exceeding the limit of rotational speed specified in the catalogue. In this case the amount, quantity of properly chosen lubricant should be strictly regulated and removal of heat released from the friction should be provided.

Further significant excess of specified limit of rotational speed is related to the bearing design improvement, first of all of cages, improvement of lubricating conditions etc. If you have problems related to bearing operation with increased rotational speed, you should consult with EPK specialists.

At high rotational speeds and high accelerations, there is a danger of rings skidding relatively to rolling elements. Therefore, for radial bearings the minimum value of radial load is equal to 0,02C.

CLEARANCES IN BEARINGS

There are two types of clearances in bearings: radial internal clearance and axial internal clearance.

Radial internal clearance (G_r) is the arithmetical mean of the radial distances through which one of the rings may be displaced relative to the other from one eccentric extreme position to the diametrically opposite extreme position, in different angular directions and without being subjected to any external load.

The mean value includes the displacements with the rings in different angular positions relative to each other and with a set of rolling elements in different angular positions in relation to the rings.

Theoretical radial internal clearance and radial internal clearance, measured under load are distinguished.

Theoretical radial internal clearance is the difference between the diameters of outer and inner ring raceway contacts, mines twice the rolling element diameter.

Radial internal clearance, measured under the load is the arithmetical mean of the radial distances through which one of the rings may be displaced relative to the other from one eccentric extreme position to the diametrically opposite extreme position, in different angular directions and being subjected to specified external load.

At each eccentric extreme position of the rings relative to each other their relative axial position and the position of rolling elements with respect to the raceways must be such that one ring is really taken an eccentric extreme position relative to the other ring.

The mean value is the average value of all displacements with the rings in different angular positions relative to each other and with a set of rolling elements in different angular positions in relation to the rings.

Axial internal clearance (G_a) is the arithmetic mean of the axial distances through which one of the rings may be displaced relative to the other from one axial extreme position to the opposite extreme position and without being subjected to any external load.

The mean value includes displacements with the rings in different angular positions relative to each other and with the set of rolling elements in different angular positions in relation to the rings.

For different design groups of radial bearings radial clearance groups (series) are specified. Each group is limited by minimum and maximum values of permissible radial clearance and is designated by a numeral (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, normal). Symbol of clearance group is placed on a bearing and a packing to the left of the symbol of bearing accuracy class. The most common group of radial clearances is called normal. It is not designated by a numeral and is not included into bearing designation. Normal clearances are applied for greater part of radial ball and roller bearings, which provide satisfactory operation of the bearing (unit) in most cases with a normal fit.

Radial clearance of mounted bearing is a clearance, set after bearing mounting. The reasons for its change are the elastic deformation of rings caused by fit tensions of seats.

Working radial clearance is a clearance in a bearing at steady-state temperature and operating cycles of the machine. At the same time due to temperature differences working radial clearance can increases or decreases due to the different heating temperature of the rings. The approximate difference in heating temperature of outer and inner rings, affecting the change in the internal clearance can be calculated by the given equation:

$$\Delta e = \Delta t \times \alpha \times \left(\frac{d + D}{2} \right), \qquad (18)$$

where

$\alpha = 1{,}2 \times 10^{-5}$ – coefficient of linear expansion for steel;

d – bearing bore diameter, mm;

D – bearing outer diameter, mm;

Δt – difference of temperature between a shaft and a housing, degrees.

Thermal elongation of the shaft results in increase or decrease of the clearance depending on bearing design and mounting arrangement. Clearance increases proportionally to the bearing load. Taking into consideration these factors corresponding group of bearing radial clearance is selected. Groups of radial clearances, values of radial clearances for bearing types and sizes produced

according to this catalogue, are given in tables 17–22 in accordance with GOST 24810-81 «Rolling bearings. Clearances». The most suitable working clearance for radial ball bearings is a clearance close to zero, and even the minimum tension can be considered as sufficient. But if these bearings are subjected only axial loads, then they should have increased clearance, which allows increasing of the working contact angle and thereby to the increasing of the axial load carrying capacity.

Roller bearings with cylindrical, taper and spherical rollers, as a rule, should have a small working clearance in general use assemblies. But in some cases they are installed also with preload as, for example, roller bearings with cylindrical rollers for precise spindle in machines or taper roller bearings in axle drive gear of a vehicle. For satisfactory operation the roller spherical bearings should always have a positive working clearance.

Bearing with taper bore has a slightly larger initial radial clearance than bearing with cylindrical bore. This is due to specific features of required fit tension when mounting bearings on conical shaft neck or on adapter and withdrawal sleeves.

Table 17 – Single-row deep groove ball bearings with cylindrical bore without filling slots for insertion of balls

Nominal diameter of bore d, mm	Clearance G_r, µm									
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group									
	6		normal		7		8		9	
Over 10 up to 18 incl.	0	9	3	18	11	25	18	33	25	45
« 18 « 24 «	0	10	5	20	13	28	20	36	28	48
« 24 « 30 «	1	11	5	20	13	28	23	41	30	53
« 30 « 40 «	1	11	6	20	15	33	28	46	40	64
« 40 « 50 «	1	11	6	23	18	36	30	51	45	73
« 50 « 65 «	1	15	8	28	23	43	38	61	55	90
« 65 « 80 «	1	15	10	30	25	51	46	71	65	105
« 80 « 100 «	1	18	12	36	30	58	53	84	75	120
« 100 « 120 «	2	20	15	41	36	66	61	97	90	140
« 120 « 140 «	2	23	18	48	41	81	71	114	105	160
« 140 « 160 «	2	23	18	53	46	91	81	130	120	180
« 160 « 180 «	2	25	20	61	53	102	91	147	125	200
« 180 « 200 «	2	30	25	71	63	117	107	163	150	215
« 200 « 225 «	2	35	30	80	73	130	120	180	167	230
« 225 « 250 «	2	40	34	90	82	145	135	195	180	245
« 250 « 280 «	3	45	39	100	92	160	150	215	200	275
« 280 « 315 «	3	50	44	110	100	170	160	235	218	300
« 315 « 355 «	3	55	47	120	110	185	175	250	230	320
« 355 « 400 «	3	60	50	130	120	205	195	280	260	355
« 400 « 450 «	4	65	55	145	135	230	220	315	295	400
« 450 « 500 «	4	70	60	160	150	255	245	350	325	450

Table 17 – Continue

Nominal diameter of bore d, mm	Clearance G_r, µm									
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group									
	6		normal		7		8		9	
« 500 « 560 «	4	75	75	175	175	275	275	375	375	490
« 560 « 630 «	5	80	80	195	195	305	305	415	415	540
« 630 « 710 «	5	90	90	215	215	340	340	460	460	590
« 710 « 800 «	5	100	100	235	235	370	370	500	500	640
« 800 « 900 «	6	115	115	260	260	410	410	550	550	700
« 900 «1000 «	6	130	130	290	290	460	460	610	610	770

Table 18 – Self-aligning ball bearings with cylindrical bore

Nominal diameter of bearing bore d, mm	Clearance G_r, µm									
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group									
	6		normal		7		8		9	
Over 2.5 up to 6 incl.	1	8	5	15	10	20	15	25	21	33
« 6 « 10 «	2	9	6	17	12	25	19	33	27	42
« 10 « 14 «	2	10	6	19	13	26	21	35	30	48
« 14 « 18 «	3	12	8	21	15	28	23	37	32	50
« 18 « 24 «	4	14	10	23	17	30	25	39	34	52
« 24 « 30 «	5	16	11	24	19	35	29	46	40	58
« 30 « 40 «	6	18	13	29	23	40	34	53	46	66
« 40 « 50 «	6	19	14	31	25	44	37	57	50	71
« 50 « 65 «	7	21	16	36	30	50	45	69	62	88
« 65 « 80 «	8	24	18	40	35	60	54	83	76	108
« 80 « 100 «	9	27	22	48	42	70	64	96	89	124
«100 « 120 «	10	31	25	56	50	83	75	114	105	145
«120 « 140 «	10	38	30	68	60	100	90	133	125	175
«140 « 160 «	15	44	35	80	70	120	110	161	150	210

Table 19 – Self-aligning ball bearings with taper bore

Nominal diameter of bearing bore d, mm	Clearance size G_r, µm									
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group									
	2		normal		3		4		5	
Over 3 up to 10 incl.	3	7	7	12	12	19	19	27	27	36
« 10 « 18 «	6	10	10	16	16	22	22	30	30	40
« 18 « 24 «	7	17	13	26	20	33	28	42	37	55
« 24 « 30 «	9	20	15	28	23	39	33	50	44	62

Table 19 – Continue

Nominal diameter of bearing bore d, mm	Clearance size G_r, µm									
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group									
	2		normal		3		4		5	
« 30 « 40 «	12	24	19	35	29	46	40	59	52	72
« 40 « 50 «	14	27	22	39	33	52	45	65	58	79
« 50 « 65 «	18	32	27	47	41	61	56	80	73	99
« 65 « 80 «	23	39	35	57	50	75	69	98	91	123
« 80 « 100 «	29	47	42	68	62	90	84	116	109	144
« 100 « 120 «	35	56	50	81	75	108	100	139	130	170
« 120 « 140 «	40	68	60	98	90	130	120	165	155	205
« 140 « 160 «	45	74	65	110	100	150	140	191	180	240

Table 20 – Cylindrical roller bearings with cylindrical bore. Radial needle roller bearings with cage

Nominal diameter of bearing bore d, mm	Clearance size G_r, µm									
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group									
	1		6		2		3		4	
Over 10 up to 24 incl.	0	30	10	40	25	55	35	65	55	85
« 24 « 30 «	0	30	10	45	30	65	40	70	60	90
« 30 « 40 «	0	35	15	50	35	70	45	80	70	105
« 40 « 50 «	5	40	20	55	40	75	55	90	85	120
« 50 « 65 «	5	45	20	65	45	90	65	105	100	140
« 65 « 80 «	5	55	25	75	55	105	75	125	115	165
« 80 « 100 «	10	60	30	80	65	115	90	140	145	195
« 100 « 120 «	10	65	35	90	80	135	105	160	165	220
« 120 « 140 «	10	75	40	105	90	155	115	180	185	250
« 140 « 160 «	15	80	50	115	100	165	130	195	210	275
« 160 « 180 «	20	85	60	125	110	175	150	215	235	300
« 180 « 200 «	25	95	65	135	125	195	165	235	260	330
« 200 « 225 «	30	105	75	150	140	215	180	255	290	365
« 225 « 250 «	40	115	90	165	155	230	205	280	320	395
« 250 « 280 «	45	125	100	180	175	255	230	310	355	435
« 280 « 315 «	50	135	110	195	195	280	235	340	400	485
« 315 « 355 «	55	145	125	215	215	305	280	370	440	530
« 355 « 400 «	65	160	140	235	245	340	320	415	500	595
« 400 « 450 «	70	190	155	275	270	390	355	465	555	675
« 450 « 500 «	85	205	180	300	300	420	395	515	620	740
« 500 « 560 «	90	225	195	330	335	470	440	575	710	825
« 560 « 630 «	100	245	215	360	375	520	490	635	785	925
« 630 « 710 «	115	275	245	405	420	580	550	710	885	1045

Table 21 – Double-row radial spherical roller bearings with cylindrical bore

Nominal diameter of bearing bore d, mm	Clearance size G_r, µm											
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group											
	1		2		normal		3		4		5	
Over 10 up to 24 incl.	0	10	10	20	20	35	35	45	45	60	60	75
« 24 » 30»	0	15	15	25	25	40	40	55	55	75	75	95
« 30 » 40»	0	15	15	30	30	45	45	60	60	80	80	100
« 40 » 50»	0	20	20	35	35	55	55	75	75	100	100	125
« 50 » 65»	0	20	20	40	40	65	65	90	90	120	120	150
« 65 » 80»	5	30	30	50	50	80	80	110	110	145	145	180
« 80 » 100»	5	35	35	60	60	100	100	135	135	180	180	225
« 100 » 120»	5	40	40	75	75	120	120	160	160	210	210	260
« 120 » 140»	5	50	50	95	95	145	145	190	190	240	240	300
« 140 » 160»	10	60	60	110	110	170	170	220	220	280	280	350
« 160 » 180»	10	65	65	120	120	180	180	240	240	310	310	390
« 180 » 200»	10	70	70	130	130	200	200	260	260	340	340	430
« 200 » 225»	10	80	80	140	140	220	220	290	290	380	380	470
« 225 » 250»	15	90	90	150	150	240	240	320	320	420	420	520
« 250 » 280»	15	100	100	170	170	260	260	350	350	460	460	570
« 280 » 315»	15	110	110	190	190	280	280	370	370	500	500	630
« 315 » 355»	20	120	120	200	200	310	310	410	410	550	550	690
« 355 » 400»	20	130	130	220	220	340	340	450	450	600	600	760
« 400 » 450»	20	140	140	240	240	370	370	500	500	660	660	820
« 450 » 500»	20	140	140	260	260	410	410	550	550	720	720	900
« 500 » 560»	20	150	150	280	280	440	440	600	600	780	780	1000
« 560 » 630»	30	170	170	310	310	480	480	650	650	850	850	1100
« 630 » 710»	30	190	190	350	350	530	530	700	700	920	920	1190
« 710 » 800»	30	210	210	390	390	580	580	770	770	1010	1010	1300
« 800 » 900»	30	230	230	430	430	650	650	860	860	1120	1120	1440
« 900 » 1000»	40	260	260	480	480	710	710	930	930	1220	1220	1570

Table 22 – **Double-row radial spherical roller bearings with tapered bore**

Nominal diameter of bearing bore d, mm	Clearance size G_r, µm											
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	Clearance group											
	1		2		normal		3		4		5	
Over 18 up to 24 incl.	5	15	15	25	25	35	35	45	45	60	60	75
« 24 » 30»	10	20	20	30	30	40	40	55	55	75	75	95
« 30 » 40»	15	25	25	35	35	50	50	65	65	85	85	105
« 40 » 50»	15	30	30	45	45	60	60	80	80	100	100	130
« 50 » 65»	25	40	40	55	55	75	75	95	95	120	120	160
« 65 » 80»	30	50	50	70	70	95	95	120	120	150	150	200
« 80 » 100»	30	55	55	80	80	110	110	140	140	180	180	230
« 100 » 120»	40	65	65	100	100	135	135	170	170	220	220	280
« 120 » 140»	50	80	80	120	120	160	160	200	200	260	260	330
« 140 » 160»	55	90	90	130	130	180	180	230	230	300	300	380
« 160 » 180»	65	100	100	140	140	200	200	260	260	340	340	430
« 180 » 200»	70	110	110	160	160	220	220	290	290	370	370	470
« 200 » 225»	70	120	120	180	180	250	250	320	320	410	410	520
« 225 » 250»	90	140	140	200	200	270	270	350	350	450	450	570
« 250 » 280»	90	150	150	220	220	300	300	390	390	490	490	620
« 280 » 315»	100	170	170	240	240	330	330	430	430	540	540	680
« 315 » 355»	120	190	190	270	270	360	360	470	470	590	590	740
« 355 » 400»	130	210	210	300	300	400	400	520	520	650	650	820
« 400 » 450»	140	230	230	330	330	440	440	570	570	720	720	910
« 450 » 500»	160	260	260	370	370	490	490	630	630	790	790	1000
« 500 » 560»	180	290	290	410	410	540	540	680	680	870	870	1100
« 560 » 630»	200	320	320	460	460	600	600	760	760	980	980	1230
« 630 » 710»	210	350	350	510	510	670	670	850	850	1090	1090	1360
« 710 » 800»	230	390	390	570	570	750	750	960	960	1220	1220	1500
« 800 » 900»	250	440	440	640	640	840	840	1070	1070	1370	1370	1690
« 900 » 1000»	280	490	490	710	710	930	930	1190	1190	1520	1520	1860

DIMENSIONS AND PERMISSIBLE DEVIATIONS

Boundary dimensions of bearings correspond to GOST 3478-79 «Rolling bearings. Boundary dimensions».

Depending on permissible limit deviations for dimensions and form tolerances relative position of bearing surfaces, rotational accuracy the following tolerance classes of bearings, are specified and given in the order of increasing accuracy:

- normal, 6, 5, 4, T, 2 – for deep groove ball bearings, radial roller bearings and angular contact ball bearings
- 0, normal, 6X, 6, 5, 4, 2 – for taper roller bearings;
- normal, 6, 5, 4, 2 – for thrust bearings.

Symbols of dimensional parameters for bearings:

B_m – mean inner ring width;
B_s – single inner ring width;
V_{Bs} – variation of inner ring width;
Δ_{Bs} – deviation of inner ring single width;
C_m – mean outer ring width;
C_s – mean outer ring width;
C_{1s} – single outer ring flange width;
V_{Cs} – variation of outer ring width;
Δ_{Cs} – deviation of single outer ring width;
V_{C1s} – variation of outer ring flange width;
Δ_{C1s} – deviation of a single outer ring flange width;
D_m – mean outside diameter;
D_{mp} – mean outside diameter in a single plane;
D_s – single outside diameter;
D_{sp} – single outside diameter in a single plane;
D_1 – outside diameter of outer ring flange;
Δ_{Ds} – deviation of a single outside;
V_{Ds} – variation of outside diameter;
V_{Dsp} – variation outside diameter in a single plane;
V_{Dmp} – variation of mean outside diameter;
Δ_{Dm} – deviation of mean outside diameter;
Δ_{Dmp} – deviation of outside diameter in a single plane;
Δ_{D1s} – deviation of a single outside diameter of outer ring flange;
d_m – mean bore diameter;
d_{mp} – mean bore diameter in a single plane;
d_s – single bore diameter;
d_{sp} – single bore diameter in a single plane;
V_{ds} – variation of bore diameter;
Δ_{ds} – deviation of single bore diameter;
Δ_{dm} – deviation of mean bore diameter;
V_{dmp} – variation of mean bore diameter;
Δ_{dmp} – deviation of mean bore diameter in a single plane (for taper bore it applies only to the theoretically smaller bore diameter);
V_{dsp} – variation of bore diameter in a single plane;
Δ_{d1mp} – deviation of mean taper bore diameter in a single plane from a theoretically larger bore diameter;
K_e – variation in thickness between outer ring raceway and outside surface;
K_{ea} – radial runout of outer ring of assembled bearing;
K_i – variation in thickness between of inner ring raceway and bore;
K_{ia} – radial runout of inner ring of assembled bearing;

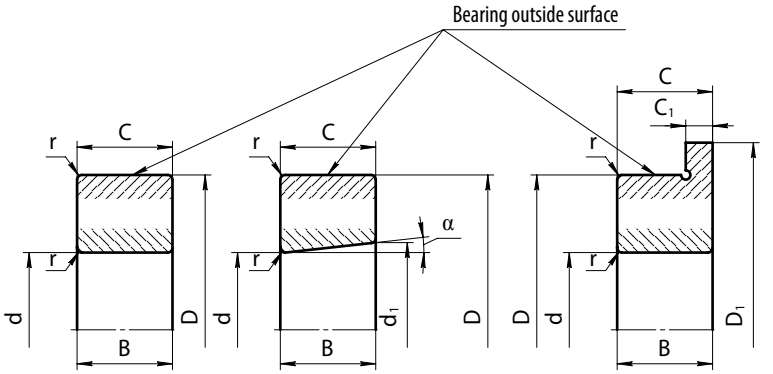
S_D – perpendicularity of outer ring outside surface with respect to the face;
S_{D1} – perpendicularity of outer ring outside surface with respect to the flange back face;
S_d – perpendicularity of inner ring face with respect to the bore;
S_e – parallelism of outer ring raceway with respect to the face;
S_{e1} – parallelism of outer ring raceway with respect to flange back face of radial ball bearing;
S_{ea} – axial runout of outer ring of assembled bearing;
S_{ea1} – axial runout of outer ring flange back face of of assembled bearing;
S_i – parallelism of inner ring raceway with respect to the face of radial bearing;
S_{ia} – axial runout of inner ring of assembled bearing;
r_s – single chamfer dimension;
$r_{s\,min}$ – smallest single chamfer dimension;
$r_{s\,max}$ – largest single chamfer dimension.
T_s – the actual (assembled) bearing width;
T_{1s} – the actual effective width of inner subunit of tapered roller bearing;
T_{2s} – the actual effective width of outer ring of tapered roller bearing;
ΔT_s – deviation of the actual (assembled) bearing width of tapered roller bearing;
ΔT_{1s} – deviation of the actual effective width of inner subunit of tapered roller bearing;
ΔT_{2s} – deviation of the actual effective width of outer ring of tapered roller bearing;
S_i – variation in thickness between shaft washer raceway and back face;
V_{Dsp} – variation of outside single diameter of a housing washer in a single plane;
V_{dsp} – variation of single bore diameter of a shaft washer of a single direction bearing in a single plane;
V_{d2sp} – variation of bore diameter in a single plane of central shaft washer, double-direction bearing;
Δ_{Dmp} – deviation of mean outside diameter in a single plane of housing washer;
Δ_{dmp} – deviation of mean bore diameter in a single plane of shaft washer, single-direction bearing;
Δ_{d2mp} – deviation of mean bore diameter in a single plane of central shaft washer, double-direction bearing.

Note. Applicable only to thrust ball bearings and thrust cylindrical roller bearings with contact angle 90°;

S_e – variation in thickness between housing washer raceway and back face.

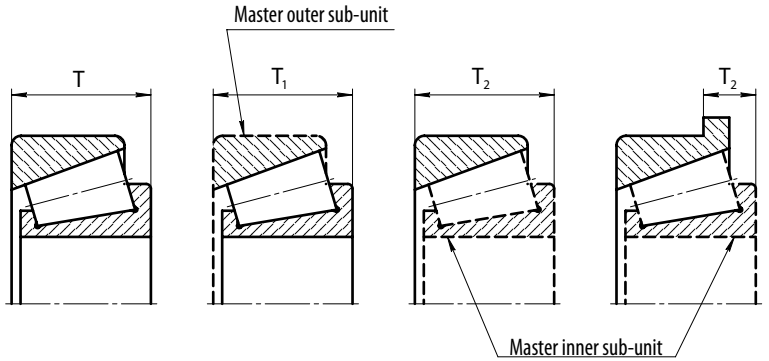
Note. Applicable only to thrust ball bearings and thrust cylindrical roller bearings with contact angle 90°;

Δ_{Ts} – deviation of the actual bearing height, single-direction bearing;
Δ_{T1s} – deviation of the actual bearing height, double-direction bearing.



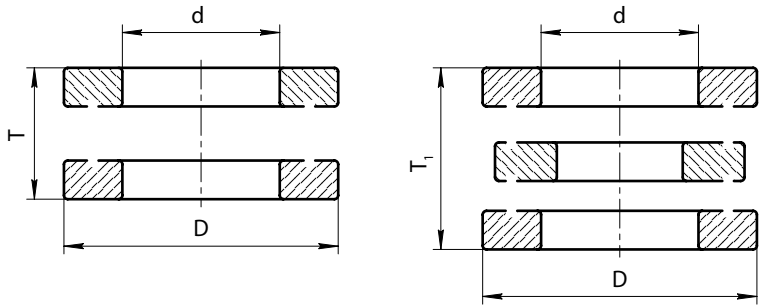
d – nominal bore diameter;
D – nominal outside diameter;
D_1 – nominal diameter of outer ring flange;
d_1 – diameter at the theoretical large end of a basically tapered bore;
B – nominal inner ring width;
C – nominal outer ring width;
C_1 – nominal width of outer ring flange;
a – angle of taper (half the cone angle) of inner ring bore;
r – nominal chamfer dimension

Fig. 6 – Symbols for boundary dimensions of radial bearings



T – nominal width of assembled bearing;
T_1 – nominal effective width of inner subunit;
T_2 – nominal effective width of outer ring

Fig. 7 – Additional symbols of boundary dimensions for taper roller bearings



d – bore diameter of a shaft washer in a single direction bearing;
d_2 – bore diameter of shaft washer in a double direction bearing;
D – outer diameter of a housing washer;
T – height of single direction bearing;
T_1 – height of double direction bearing

Fig. 8 – Symbols for boundary dimensions of thrust roller bearings

RADIAL BEARINGS EXCEPT TAPERED ROLLER BEARINGS

Normal tolerance class (see tables 23 and 24)

Table 23 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp} Diameter series			V_{dmp}	K_{ia}	S_d	S_{ia} 1) S_i 1)	Δ_{Bs} Bearing			V_{Bs}
			0, 8, 9	1, 7	2, 3, 4, 5, 6					all	normal	modified 2)	
	high	low	max.							high	low		max.
Up to 0.6 and incl.	0	-8	10	8	6	6	10	20	24	0	-40	–	12
Over 0.6 up to 2.5	0	-8	10	8	6	6	10	20	24	0	-40	–	12
» 2,5 » 10 »	0	-8	10	8	6	6	10	20	24	0	-120	-250	15
» 10 » 18 »	0	-8	10	8	6	6	10	20	24	0	-120	-250	20
» 18 » 30 »	0	-10	13	10	8	8	13	20	24	0	-120	-250	20
» 30 » 50 »	0	-12	15	12	9	9	15	20	24	0	-120	-250	20
» 50 » 80 »	0	-15	19	19	11	11	20	25	30	0	-150	-380	25
» 80 » 120 »	0	-20	25	25	15	15	25	25	30	0	-200	-380	25
» 120 » 180 »	0	-25	31	31	19	19	30	30	35	0	-250	-500	30
» 180 » 250 »	0	-30	38	38	23	23	40	30	35	0	-300	-500	30
» 250 » 315 »	0	-35	44	44	26	26	50	35	42	0	-350	-500	35
» 315 » 400 »	0	-40	50	50	30	30	60	40	48	0	-400	-630	40
» 400 » 500 »	0	-45	56	56	34	34	65	45	54	0	-450	–	50
» 500 » 630 »	0	-50	63	63	38	38	70	–	–	0	-500	–	60
» 630 » 800 »	0	-75	–	–	–	–	80	–	–	0	-750	–	70
» 800 » 1000 »	0	-100	–	–	–	–	90	–	–	0	-1000	–	80
» 1000 » 1200 »	0	-125	–	–	–	–	100	–	–	0	-1250	–	100
» 1200 » 1600 »	0	-160	–	–	–	–	120	–	–	0	-1600	–	120
» 1600 » 2000 »	0	-200	–	–	–	–	140	–	–	0	-2000	–	140

1) Applies to groove ball bearings only.
2) Applies to inner rings and outer rings of single bearings made for paired and stack assemblies. Also applies to inner rings with tapered bore with a diameter not less than 50 mm.

Table 24 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp} 1) Open bearing Diameter series			Capped bearing Diameter series	V_{Dmp} 1)	K_{ea}	S_{ea} 2) S_e 2)	Δ_{Cs}, Δ_{C1s} 3)		V_{Cs}, V_{C1s} 3)
			0, 8, 9	1, 7	2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6, 7, 8						
	high	low	max.							high	low	max.
Up to 2.5 and incl.	0	-8	10	8	6	10	6	15	40	Identical to Δ_{Bs} and V_{Bs} of inner ring of the same bearing as the outer ring		
Over 2.5 up to 6	0	-8	10	8	6	10	6	15	40			
» 6 » 18 »	0	-8	10	8	6	10	6	15	40			
» 18 » 30 »	0	-9	12	9	7	12	7	15	40			
» 30 » 50 »	0	-11	14	11	8	16	8	20	40			
» 50 » 80 »	0	-13	16	13	10	20	10	25	40			
» 80 » 120 »	0	-15	19	19	11	26	11	35	45			
» 120 » 150 »	0	-18	23	23	14	30	14	40	50			
» 150 » 180 »	0	-25	31	31	19	38	19	45	60			
» 180 » 250 »	0	-30	38	38	23	–	23	50	70			
» 250 » 315 »	0	-35	44	44	26	–	26	60	80			
» 315 » 400 »	0	-40	50	50	30	–	30	70	90			
» 400 » 500 »	0	-45	56	56	34	–	34	80	100			
» 500 » 630 »	0	-50	63	63	38	–	38	100	120			
» 630 » 800 »	0	-75	94	94	55	–	55	120	140			
» 800 » 1000 »	0	-100	125	125	75	–	75	140	160			
» 1000 » 1250 »	0	-125	–	–	–	–	–	160	–			
» 1250 » 1600 »	0	-160	–	–	–	–	–	190	–			
» 1600 » 2000 »	0	-200	–	–	–	–	–	220	–			
» 2000 » 2500 »	0	-250	–	–	–	–	–	250	–			

1) Applies before mounting and after removal of internal or external snap ring.
2) Applies to groove ball bearings only.
3) Applies to ball bearings only.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Tolerance class 6 (see tables 25 and 26)

Table 25 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp} Diameter series			V_{dmp}	K_{ia}	S_d	S_{ia} 1) S_i 1)	Δ_{Bs} Bearing			V_{Bs}
			0, 8, 9	1, 7	2, 3, 4, 5, 6					all	normal	modified 2)	
	high	low	max.							high	low		max.
Up to 0.6 and incl.	0	-7	9	7	5	5	5	10	12	0	-40	–	12
Over 0.6 up to 2.5	0	-7	9	7	5	5	5	10	12	0	-40	–	12
» 2,5 » 10 »	0	-7	9	7	5	5	6	10	12	0	-120	-250	15
» 10 » 18 »	0	-7	9	7	5	5	7	10	12	0	-120	-250	20
» 18 » 30 »	0	-8	10	8	6	6	8	10	12	0	-120	-250	20
» 30 » 50 »	0	-10	13	10	8	8	10	10	12	0	-120	-250	20
» 50 » 80 »	0	-12	15	15	9	9	10	12	15	0	-150	-380	25
» 80 » 120 »	0	-15	19	19	11	11	13	12	15	0	-200	-380	25
» 120 » 180 »	0	-18	23	23	14	14	18	15	18	0	-250	-500	30
» 180 » 250 »	0	-22	28	28	17	17	20	15	18	0	-300	-500	30
» 250 » 315 »	0	-25	31	31	19	19	25	17	21	0	-350	-500	35
» 315 » 400 »	0	-30	38	38	23	23	30	20	24	0	-400	-630	40
» 400 » 500 »	0	-35	44	44	26	26	35	22	27	0	-450	–	45
» 500 » 630 »	0	-40	50	50	30	30	40	25	–	0	-500	–	50

1) Applies to groove ball bearings only.
2) Applies to inner rings and outer rings of single bearings made for paired and stack assemblies. Also applies to inner rings with tapered bore with a diameter not less than 50 mm.

Table 26 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp} 1) Open bearing Diameter series			Capped bearing	V_{Dmp} 1)	K_{ea}	S_{ea} 2) S_e 2)	Δ_{Cs}, Δ_{C1s} 3)		V_{Cs}, V_{C1s} 3)
			0, 8, 9	1, 7	2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6, 7, 8						
	high	low	max.							high	low	max.
Up to 2.5 and incl.	0	-7	9	7	5	9	5	8	20	Identical to Δ_{Bs} and V_{Bs} of inner ring of the same bearing		
Over 2.5 up to 6	0	-7	9	7	5	9	5	8	20			
» 6 » 18 »	0	-7	9	7	5	9	5	8	20			
» 18 » 30 »	0	-8	10	8	6	10	6	9	20			
» 30 » 50 »	0	-9	11	9	7	13	7	10	20			
» 50 » 80 »	0	-11	14	11	8	16	8	13	20			
» 80 » 120 »	0	-13	16	16	10	20	10	18	22			
» 120 » 150 »	0	-15	19	19	11	25	11	20	25			
» 150 » 180 »	0	-18	23	23	14	30	14	23	30			
» 180 » 250 »	0	-20	25	25	15	–	15	25	35			
» 250 » 315 »	0	-25	31	31	19	–	19	30	40			
» 315 » 400 »	0	-28	35	35	21	–	21	35	45			
» 400 » 500 »	0	-33	41	41	25	–	25	40	50			
» 500 » 630 »	0	-38	48	48	29	–	29	50	60			
» 630 » 800 »	0	-45	56	56	34	–	34	60	70			
» 800 » 1000 »	0	-60	75	75	45	–	45	75	80			

1) Applies before mounting and after removal of internal or external snap ring.
2) Applies to groove ball bearings only.
3) Applies to ball bearings only.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Tolerance class 5 (see tables 27 and 28)

Table 27 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp} Diameter series		V_{dmp}	K_{ia}	S_d	S_{ia} [1] S_i [1]	Δ_{Bs} Bearing			V_{Bs}
			0, 8, 9	1, 2, 3, 4, 5, 6, 7					all	normal	modified [2]	
	high	low	max.						high	low		max.
Up to 0.6 and incl.	0	-5	5	4	3	4	7	7	0	-40	-250	5
Over 0.6 up to 2.5	0	-5	5	4	3	4	7	7	0	-40	-250	5
» 2,5 » 10 »	0	-5	5	4	3	4	7	7	0	-40	-250	5
» 10 » 18 »	0	-5	5	4	3	4	7	7	0	-80	-250	5
» 18 » 30 »	0	-6	6	5	3	4	8	8	0	-120	-250	5
» 30 » 50 »	0	-8	8	6	4	5	8	8	0	-120	-250	5
» 50 » 80 »	0	-9	9	7	5	5	8	8	0	-150	-250	6
» 80 » 120 »	0	-10	10	8	5	6	9	9	0	-200	-380	7
» 120 » 180 »	0	-13	13	10	7	8	10	10	0	-250	-380	8
» 180 » 250 »	0	-15	15	12	8	10	11	13	0	-300	-500	10
» 250 » 315 »	0	-18	18	14	9	13	13	15	0	-350	-500	13
» 315 » 400 »	0	-23	23	18	12	15	15	20	0	-400	-630	15

[1] Applies to groove ball bearings only.
[2] Also applies to inner rings with tapered bore with a diameter not less than 50 mm.

Table 28 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp} Diameter series		V_{Dmp}	K_{ea}	S_D [1] S_{D1} [2]	S_{ea} [1], [2]	S_{ea1} [2]	Δ_{Cs}, Δ_{C1s} [2]		V_{Cs}, V_{C1s} [2]
			0, 8, 9	1, 2, 3, 4, 5, 6, 7								
	high	low	max.							high	low	max.
Up to 2.5 incl.	0	-5	5	4	3	5	8	8	11	Identical to Δ_{Bs} of inner ring of the same bearing		5
Over 2.5 up to 6	0	-5	5	4	3	5	8	8	11			5
» 6 » 18 »	0	-5	5	4	3	5	8	8	11			5
» 18 » 30 »	0	-6	6	5	3	6	8	8	11			5
» 30 » 50 »	0	-7	7	5	4	7	8	8	11			5
» 50 » 80 »	0	-9	9	7	5	8	8	10	14			6
» 80 » 120 »	0	-10	10	8	5	10	9	11	16			8
» 120 » 150 »	0	-11	11	8	6	11	10	13	18			8
» 150 » 180 »	0	-13	13	10	7	13	10	14	20			8
» 180 » 250 »	0	-15	15	11	8	15	11	15	21			10
» 250 » 315 »	0	-18	18	14	9	18	13	18	25			11
» 315 » 400 »	0	-20	20	15	10	20	13	20	28			13
» 400 » 500 »	0	-23	23	17	12	23	15	23	33			15
» 500 » 630 »	0	-28	28	21	14	25	18	25	35			18
» 630 » 800 »	0	-35	35	26	18	30	20	30	42			20

[1] Applies to flanged outer ring.
[2] Applies to groove ball bearings only.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Tolerance class 4 (see tables 29 and 30)

Table 29 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp} Δ_{ds} [1]		V_{dsp} Diameter series		V_{dmp}	K_{ia}	S_d	S_{ia} [2]	Δ_{Bs} Bearing			V_{Bs}
			0, 8, 9	1, 2, 3, 4, 5, 6, 7					all	normal	modified [2]	
	high	low	max.						high	low		max.
Up to 0.6 and incl.	0	-4	4	3	2	2,5	3	3	0	-40	-250	2,5
Over 0.6 up to 2.5	0	-4	4	3	2	2,5	3	3	0	-40	-250	2,5
» 2,5 » 10 »	0	-4	4	3	2	2,5	3	3	0	-40	-250	2,5
» 10 » 18 »	0	-4	4	3	2	2,5	3	3	0	-80	-250	2,5
» 18 » 30 »	0	-5	5	4	2,5	3	4	4	0	-120	-250	2,5
» 30 » 50 »	0	-6	6	5	3	4	4	4	0	-120	-250	3
» 50 » 80 »	0	-7	7	5	3,5	4	5	5	0	-150	-250	4
» 80 » 120 »	0	-8	8	6	4	5	5	5	0	-200	-380	4
» 120 » 180 »	0	-10	10	8	5	6	6	7	0	-250	-380	5
» 180 » 250 »	0	-12	12	9	6	8	7	8	0	-300	-500	6

[1] Applies to diameters series 1, 2, 3, 4, 5, 6 and 7 only.
[2] Applies to groove ball bearings only.

Table 30 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}, Δ_{Ds} [1]		V_{Dsp} Diameter series		V_{Dmp}	K_{ea}	S_D [2] S_{D1} [3]	S_{ea} [2,3]	S_{ea1} [3]	Δ_{Cs}, Δ_{C1s} [3]		V_{Cs}, V_{C1s} [3]
			0, 8, 9	1, 2, 3, 4, 5, 6, 7								
	high	low	max.							high	low	max.
Up to 2.5 incl.		high	low.	3	2	3	4	5	7	Identical to Δ_{Bs} of inner ring of the same bearing.		2,5
Over 2.5 up to 6	0	-4	4	3	2	3	4	5	7			2,5
» 6 » 18 »	0	-4	4	3	2	3	4	5	7			2,5
» 18 » 30 »	0	-5	5	4	2,5	4	4	5	7			2,5
» 30 » 50 »	0	-6	6	5	3	5	4	5	7			2,5
» 50 » 80 »	0	-7	7	5	3,5	5	4	5	7			3
» 80 » 120 »	0	-8	8	6	4	6	5	6	8			4
» 120 » 150 »	0	-9	9	7	5	7	5	7	10			5
» 150 » 180 »	0	-10	10	8	5	8	5	8	11			5
» 180 » 250 »	0	-11	11	8	6	10	7	10	14			7
» 250 » 315 »	0	-13	13	10	7	11	8	10	14			7
» 315 » 400 »	0	-15	15	11	8	13	10	13	18			8

[1] Applies to diameters series 1, 2, 3, 4, 5, 6 and 7 only.
[2] Does not apply to bearings with flanged outer ring.
[3] Applies to groove ball bearings only.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Tolerance class T (see tables 31 and 32)

Table 31 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}, Δ_{ds} [1]		V_{dsp} [1]	V_{dmp}	K_{ia}, K_i	S_d	S_{ia} [2]	Δ_{Bs}		V_{Bs}
	high	low	max.					high	low	max.
Up to 0.6 incl.	0	-4	4	2,5	2	2	2	0	-40	2
Over 0.6 » 2,5 »	0	-4	4	2,5	2	2	2	0	-40	2
» 2,5 » 10 »	0	-4	4	2,5	2	2	2	0	-40	2
» 10 » 18 »	0	-4	4	2,5	2	2	2	0	-80	2
» 18 » 30 »	0	-4	4	2,5	2,5	2	2,5	0	-120	2
» 30 » 50 »	0	-4	4	2,5	2,5	2	2,5	0	-120	2
» 50 » 80 »	0	-5	5	2,5	2,5	2	2,5	0	-125	2
» 80 » 120 »	0	-5	5	2,5	2,5	2,5	2,5	0	-125	2,5
» 120 » 150 »	0	-7	7	3,5	2,5	2,5	2,5	0	-125	2,5
» 150 » 180 »	0	-7	7	3,5	5	4	5	0	-125	4
» 180 » 250 »	0	-9	9	4,5	6	5	7	0	-150	5

[1] Applied to diameters series 1, 2, 3, 4, 5, 6 and 7 only.
[2] Applies to groove ball bearings only.

Table 32 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}, Δ_{Ds} [1]		V_{Dsp} [1]	V_{Dmp}	K_{ea}, K_e	S_D [2] S_{D1} [3]	S_{ea} [2,3], S_e [2,3]	Δ_{Cs}, Δ_{C1s} [3]		V_{Cs}, V_{C1s} [3]
	high	low	max.					high	low	max.
Up to 2,5 incl.	0	-3	3	2	2	2	2	Identical to Δ_{Bs} of inner ring of the same bearing		1,5
Over 2,5 to 6 »	0	-3	3	2	2	2	2			1,5
» 6 » 18 »	0	-3	3	2	2	2	2			1,5
» 18 » 30 »	0	-4	4	2	2,5	2	2,5			2
» 30 » 50 »	0	-4	4	2	2,5	2	2,5			2
» 50 » 80 »	0	-4	4	2	4	2	4			2
» 80 » 120 »	0	-5	5	2,5	5	2,5	5			2,5
» 120 » 150 »	0	-5	5	2,5	5	2.5	5			2,5
» 150 » 180 »	0	-7	7	3,5	5	2.5	5			2,5
» 180 » 250 »	0	-8	8	4	7	4	7			4
» 250 » 315 »	0	-10	10	5	8	6	8			5
» 315 » 400 »	0	-12	12	6	10	7	10			6

[1] Applies to diameters series 1, 2, 3, 4, 5, 6 and 7 only.
[2] Does not apply to bearings with flanged outer ring.
[3] Applies to groove ball bearings only.

Note. Tolerance for outside diameter of outer ring flange D_1 is given in table 55.

Tolerance class 2 (see tables 33 and 34)

Table 33 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}, Δ_{ds} [1]		V_{dsp} [1]	V_{dmp}	K_{ia}	S_d	S_{ia} [2]	Δ_{Bs} Bearing			V_{Bs}
								all	normal	modified[2]	
	high	low	max.					high	low		max.
Up to 0,6 incl.	0	2,5	2,5	1,5	1,5	1,5	1,5	0	-40	-250	1,5
Over 0,6 to 2,5 »	0	2,5	2,5	1,5	1,5	1,5	1,5	0	-40	-250	1,5
» 2,5 » 10 »	0	2,5	2,5	1,5	1,5	1,5	1,5	0	-40	-250	1,5
» 10 » 18 »	0	2,5	2,5	1,5	1,5	1,5	1,5	0	-80	-250	1,5
» 18 » 30 »	0	2,5	2,5	1,5	2,5	1,5	2,5	0	-120	-250	1,5
» 30 » 50 »	0	2,5	2,5	1,5	2,5	1,5	2,5	0	-120	-250	1,5
» 50 » 80 »	0	-4	4	2	2,5	1,5	2,5	0	-150	-250	1,5
» 80 » 120 »	0	-5	5	2,5	2,5	2,5	2,5	0	-200	-380	2,5
» 120 » 150 »	0	-7	7	3,5	2,5	2,5	2,5	0	-250	-380	2,5
» 150 » 180 »	0	-7	7	3,5	5	4	5	0	-250	-380	4
» 180 » 250 »	0	-8	8	4	5	5	5	0	-300	-500	5

[1] Applied to diameters series 1, 2, 3, 4, 5, 6 and 7 only.
[2] Applies to groove ball bearings only.

Table 34 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}, Δ_{Ds} [1]		V_{Dsp} [1]	V_{Dmp}	K_{ea}	S_D [2], S_{D1} [3]	S_{ea} [2,3]	S_{ea1} [3]	Δ_{Cs}, Δ_{C1s} [3]	V_{Cs}, V_{C1s} [3]
	high	low	max.					high	low	max.
Up to 2,5 incl.	0	-2,5	2,5	1,5	1,5	1,5	1,5	3	Identical to Δ_{Bs} of inner ring of the same bearing.	1,5
Over 2,5 to 6 »	0	-2,5	2,5	1,5	1,5	1,5	1,5	3		1,5
» 6 » 18 »	0	-2,5	2,5	1,5	1,5	1,5	1,5	3		1,5
» 18 » 30 »	0	-4	4	2	2,5	1,5	2,5	4		1,5
» 30 » 50 »	0	-4	4	2	2,5	1,5	2,5	4		1,5
» 50 » 80 »	0	-4	4	2	4	1,5	4	6		1,5
» 80 » 120 »	0	-5	5	2,5	5	2,5	5	7		2,5
» 120 » 150 »	0	-5	5	2,5	5	2,5	5	7		2,5
» 150 » 180 »	0	-7	7	3,5	5	2,5	5	7		2,5
» 180 » 250 »	0	-8	8	4	7	4	7	10		4
» 250 » 315 »	0	-8	8	4	7	5	7	10		5
» 315 » 400 »	0	-10	10	5	8	7	8	11		7

[1] Applies to diameters series 1, 2, 3, 4, 5, 6 and 7 only.
[2] Does not apply to bearings with flanged outer ring.
[3] Applies to groove ball bearings only.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

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Tolerance class 0 (see tables 35–37)

Table 35 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp}	V_{dmp}	K_{id}, K_i	S_d
	high	low	max.			
From 10 to 18 incl.	0	-12	12	9	15	20
Over 18 » 30 »	0	-12	12	9	18	20
» 30 » 50 »	0	-12	12	9	20	20
» 50 » 80 »	0	-15	15	11	25	25
» 80 » 120 »	0	-20	20	15	30	25
» 120 » 180 »	0	-25	25	19	35	30
» 180 » 250 »	0	-30	30	23	50	30
» 250 » 315 »	0	-35	35	26	60	35
» 315 » 400 »	0	-40	40	30	70	40

Table 36 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	V_{Dmp}	K_{ea}, K_e
	high	low	max.		
From 18 to 30 incl.	0	-12	12	9	18
Over 30 » 50 »	0	-14	14	11	20
» 50 » 80 »	0	-16	16	12	25
» 80 » 120 »	0	-18	18	14	35
» 120 » 150 »	0	-20	20	15	40
» 150 » 180 »	0	-25	25	19	45
» 180 » 250 »	0	-30	30	23	50
» 250 » 315 »	0	-35	35	26	60
» 315 » 400 »	0	-40	40	30	70
» 400 » 500 »	0	-45	45	34	80
» 500 » 630 »	0	-50	50	38	100

Note. Tolerance for outside diameter of outer ring flange , D_1, is given in table 55.

Table 37 – Width –Inner and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
From 10 to 18 incl.	0	-200	0	-200	+250	-250	+125	-125	+125	-125
Over 18 » 30 »	0	-200	0	-200	+250	-250	+125	-125	+125	-125
» 30 » 50 »	0	-240	0	-240	+250	-250	+125	-125	+125	-125
» 50 » 80 »	0	-300	0	-300	+250	-250	+125	-125	+125	-125
» 80 » 20 »	0	-400	0	-400	+500	-500	+250	-250	+250	-250
» 120 » 180 »	0	-500	0	-500	+750	-750	+375	-375	+375	-375
» 180 » 250 »	0	-600	0	-600	+750	-750	+375	-375	+375	-375
» 250 » 315 »	0	-700	0	-700	+750	-750	+375	-375	+375	-375
» 315 » 400 »	0	-800	0	-800	+1000	-1000	+500	-500	+500	-500

Normal tolerance class (see tables 38–40)

Table 38 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp}	V_{dmp}	K_{ia}, K_i	S_d [1]
	high	low	max.			
Up to 10 incl.	0	-12	12	9	15	20
Over 10 » 18 »	0	-12	12	9	15	20
» 18 » 30 »	0	-12	12	9	18	20
» 30 » 50 »	0	-12	12	9	20	20
» 50 » 80 »	0	-15	15	11	25	25
» 80 » 120 »	0	-20	20	15	30	25
» 120 » 180 »	0	-25	25	19	35	30
» 180 » 250 »	0	-30	30	23	50	30
» 250 » 315 »	0	-35	35	26	60	35
» 315 » 400 »	0	-40	40	30	70	40
» 400 » 500 »	0	-45	45	34	80	–
» 500 » 630 »	0	-60	60	40	90	–
» 630 » 800 »	0	-75	75	45	100	–
» 800 » 1000 »	0	-100	100	55	115	–
» 1000 » 1250 »	0	-125	125	65	130	–
» 1250 » 1600 »	0	-160	160	80	150	–
» 1600 » 2000 »	0	-200	200	100	170	–

[1] Applies on customer request only.

Table 39 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	V_{Dmp}	K_{ea}
	high	low	max.		
Up to 18 incl.	0	-12	12	9	18
Over 18 – 30	0	-12	12	9	18
» 30 » 50 »	0	-14	14	11	20
» 50 » 80 »	0	-16	16	12	25
» 80 » 120 »	0	-18	18	14	35
» 120 » 150 »	0	-20	20	15	40
» 150 » 180 »	0	-25	25	19	45
» 180 » 250 »	0	-30	30	23	50
» 250 » 315 »	0	-35	35	26	60
» 315 » 400 »	0	-40	40	30	70
» 400 » 500 »	0	-45	45	34	80
» 500 » 630 »	0	-50	50	38	100
» 630 » 800 »	0	-75	80	55	120
» 800 » 1000 »	0	-100	100	75	140
» 1000 » 1250 »	0	-125	130	90	160
» 1250 » 1600 »	0	-160	170	100	180
» 1600 » 2000 »	0	-200	210	110	200
» 2000 » 2500 »	0	-250	265	120	220

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Table 40 – Width – Internal and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
Up to 10 incl.	0	-120	0	-120	+200	0	+100	0	+100	0
Over 10 to 18	0	-120	0	-120	+200	0	+100	0	+100	0
» 18 » 30 »	0	-120	0	-120	+200	0	+100	0	+100	0
» 30 » 50 »	0	-120	0	-120	+200	0	+100	0	+100	0
» 50 » 80 »	0	-150	0	-150	+200	0	+100	0	+100	0
» 80 » 120 »	0	-200	0	-200	+200	-200	+100	- 100	+100	-100
» 120 » 180 »	0	-250	0	-250	+350	-250	+150	- 150	+200	-100
» 180 » 250 »	0	-300	0	-300	+350	-250	+150	- 150	+200	-100
» 250 » 315 »	0	-350	0	-350	+350	-250	+150	- 150	+200	-100
» 315 » 400 »	0	-400	0	-400	+400	-400	+200	- 200	+200	-200
» 400 » 500 »	0	-450	0	-450	+450	-450	+225	- 225	+225	-225
» 500 » 630 »	0	-500	0	-500	+500	-500	–	–	–	–
» 630 » 800 »	0	-750	0	-750	+600	-600	–	–	–	–
» 800 » 1000 »	0	-1000	0	-1000	+750	-750	–	–	–	–
» 1000 » 1250 »	0	-1250	0	-1250	+900	-900	–	–	–	–
» 1250 » 1600 »	0	-1600	0	-1600	+1050	-1050	–	–	–	–
» 1600 » 2000 »	0	-2000	0	-2000	+1200	-1200	–	–	–	–

Tolerance class 6X

Tolerances for bearing inner and outer rings of tolerance class 6X correspond to the tolerances given in tables 38 and 39 for bearings of normal tolerance class.

Tolerances for bearing ring width are given in table 41.

Table 41 – Width –Inner and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
Up to 10 incl.	0	-50	0	-100	+100	0	+50	0	+50	0
Over 10 to 18	0	-50	0	-100	+100	0	+50	0	+50	0
» 18 » 30 »	0	-50	0	-100	+100	0	+50	0	+50	0
» 30 » 50 »	0	-50	0	-100	+100	0	+50	0	+50	0
» 50 » 80 »	0	-50	0	-100	+100	0	+50	0	+50	0
» 80 » 120 »	0	-50	0	-100	+100	0	+50	0	+50	0
» 120 » 180 »	0	-50	0	-100	+150	0	+50	0	+100	0
» 180 » 250 »	0	-50	0	-100	+150	0	+50	0	+100	0
» 250 » 315 »	0	-50	0	-100	+200	0	+100	0	+100	0
» 315 » 400 »	0	-50	0	-100	+200	0	+100	0	+100	0
» 400 » 500 »	0	-50	0	-100	+200	0	+100	0	+100	0

Tolerance class 6 (see tables 42–44)

Table 42 – Outer ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp}	V_{dmp}	K_{ia}, K_i	S_d
	high	low	max.			
From 10 up to 18 incl.	0	-7	7	5	7	10
Over 18 to 30	0	-8	8	6	8	10
» 30 » 50 »	0	-10	10	8	10	10
» 50 » 80 »	0	-12	12	9	10	12
» 80 » 120 »	0	-15	15	11	13	12
» 120 » 180 »	0	-18	18	14	18	15
» 180 » 250 »	0	-22	22	16	20	15
» 250 » 315 »	0	-25	–	–	25	17
» 315 » 400 »	0	-30	–	–	30	20

Table 43 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	V_{Dmp}	K_{ea}, K_e
	high	low	max.		
From 18 up to 30 incl.					
Over 30 » 50 »	0	-9	9	7	10
» 50 » 80 »	0	-11	11	8	13
» 80 » 120 »	0	-13	13	10	18
» 120 » 150 »	0	-15	15	11	20
» 150 » 180 »	0	-18	18	14	23
» 180 » 250 »	0	-20	20	15	25
» 250 » 315 »	0	-25	25	19	30
» 315 » 400 »	0	-28	28	21	35
» 400 » 500 »	0	-33	–	–	40
» 500 » 630 »	0	-38	–	–	50

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Table 44 – Width –Inner and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
From 10 up to 18 incl.	0	-200	0	-200	+250	-250	+125	-125	+125	-125
Over 18 » 30 »	0	-200	0	-200	+250	-250	+125	-125	+125	-125
» 30 » 50 »	0	-240	0	-240	+250	-250	+125	-125	+125	-125
» 50 » 80 »	0	-300	0	-300	+250	-250	+125	-125	+125	-125
» 80 » 120 »	0	-400	0	-400	+500	-500	+250	-250	+250	-250
» 120 » 180 »	0	-500	0	-500	+750	-750	+375	-375	+375	-375
» 180 » 250 »	0	-600	0	-600	+750	-750	+375	-375	+375	-375
» 250 » 315 »	0	-700	0	-700	+750	-750	+375	-375	+375	-375
» 315 » 400 »	0	-800	0	-800	+1000	-1000	+500	-500	+500	-500

Tolerance class 5 (see tables 45–47)

Table 45 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}		V_{dsp}	V_{dmp}	K_{ia}	S_d
	high	low	max.			
Up to 10 incl.	0	-7	5	5	5	7
Over 10 to 18	0	-7	5	5	5	7
» 18 » 30 »	0	-8	6	5	5	8
» 30 » 50 »	0	-10	8	5	6	8
» 50 » 80 »	0	-12	9	6	7	8
» 80 » 120 »	0	-15	11	8	8	9
» 120 » 180 »	0	-18	14	9	11	10
» 180 » 250 »	0	-22	17	11	13	11
» 250 » 315 »	0	-25	19	13	13	13
» 315 » 400 »	0	-30	23	15	15	15
» 400 » 500 »	0	-35	28	17	20	17
» 500 » 630 »	0	-40	35	20	25	20
» 630 » 800 »	0	-50	45	25	30	25
» 800 » 1000 »	0	-60	60	30	37	30
» 1000 » 1250 »	0	-75	75	37	45	40
» 1250 » 1600 »	0	-90	90	45	55	50

Table 46 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	V_{Dmp}	K_{ea}	S_D [1], S_{D1}
	high	low	max.			
Up to 18 incl.	0	-8	6	5	6	8
Over 18 to 30 »	0	-8	6	5	6	8
» 30 » 50 »	0	-9	7	5	7	8
» 50 » 80 »	0	-11	8	6	8	8
» 80 » 120 »	0	-13	10	7	10	9
» 120 » 150 »	0	-15	11	8	11	10
» 150 » 180 »	0	-18	14	9	13	10
» 180 » 250 »	0	-20	15	10	15	11
» 250 » 315 »	0	-25	19	13	18	13
» 315 » 400 »	0	-28	22	14	20	13
» 400 » 500 »	0	-33	26	17	24	17
» 500 » 630 »	0	-38	30	20	30	20
» 630 » 800 »	0	-45	36	25	36	25
» 800 » 1000 »	0	-60	45	30	43	30
» 1000 » 1250 »	0	-80	65	38	52	38
» 1250 » 1600 »	0	-100	90	50	62	50
» 1600 » 2000 »	0	-125	120	65	73	65

[1] Does not apply to bearings with flanged outer ring.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Table 47 – Width –Inner and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
Up to 10 incl.	0	-200	0	-200	+200	-200	+100	-100	+100	-100
Over 10 to 18	0	-200	0	-200	+200	-200	+100	-100	+100	-100
» 18 » 30 »	0	-200	0	-200	+200	-200	+100	-100	+100	-100
» 30 » 50 »	0	-240	0	-240	+200	-200	+100	-100	+100	-100
» 50 » 80 »	0	-300	0	-300	+200	-200	+100	-100	+100	-100
» 80 » 120 »	0	-400	0	-400	+200	-200	+100	-100	+100	-100
» 120 » 180 »	0	-500	0	-500	+350	-250	+150	-150	+200	-100
» 180 » 250 »	0	-600	0	-600	+350	-250	+150	-150	+200	-100
» 250 » 315 »	0	-700	0	-700	+350	-250	+150	-150	+200	-100
» 315 » 400 »	0	-800	0	-800	+400	-400	+200	-200	+200	-200
» 400 » 500 »	0	-900	0	-900	+450	-450	+225	-225	+225	-225
» 500 » 630 »	0	-1100	0	-1100	+500	-500	–	–	–	–
» 630 » 800 »	0	-1600	0	-1600	+600	-600	–	–	–	–
» 800 » 1000 »	0	-2000	0	-2000	+750	-750	–	–	–	–
» 1000 » 1250 »	0	-2000	0	-2000	+750	-750	–	–	–	–
» 1250 » 1600 »	0	-2000	0	-2000	+900	-900	–	–	–	–

Tolerance class 4 (see tables 48–50)

Table 48 – Inner ring

Tolerances in micrometers

d, mm	Δ_{dmp}, Δ_s		V_{dsp}	V_{dmp}	K_{ia}	S_d	S_{ia}
	high	low	max.				
Up to 10 incl.	0	-5	4	4	3	3	3
Over 10 to 18	0	-5	4	4	3	3	3
» 18 » 30 »	0	-6	5	4	3	4	4
» 30 » 50 »	0	-8	6	5	4	4	4
» 50 » 80 »	0	-9	7	5	4	5	4
» 80 » 120 »	0	-10	8	5	5	5	5
» 120 » 180 »	0	-13	10	7	6	6	7
» 180 » 250 »	0	-15	11	8	8	7	8
» 250 » 315 »	0	-18	12	9	9	8	9

Table 49 – Outer ring

Tolerances in micrometers

D, mm	Δ_{Dmp}, Δ_{Ds}		V_{Dsp}	V_{Dmp}	K_{ea}	S_D [1], S_{D1}	S_{ea} [1]	S_{ea1}
	high	low	max.					
Up to 18 incl.	0	-6	5	4	4	4	5	7
Over 18 » 30 »	0	-6	5	4	4	4	5	7
» 30 » 50 »	0	-7	5	5	5	4	5	7
» 50 » 80 »	0	-9	7	5	5	4	5	7
» 80 » 120 »	0	-10	8	5	6	5	6	8
» 120 » 150 »	0	-11	8	6	7	5	7	10
» 150 » 180 »	0	-13	10	7	8	5	8	11
» 180 » 250 »	0	-15	11	8	10	7	10	14
» 250 » 315 »	0	-18	14	9	11	8	10	14
» 315 » 400 »	0	-20	15	10	13	10	13	18

[1] Does not apply to bearings with flanged outer ring.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Table 50 – Width – inner and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
Up to 10 incl.	0	-200	0	-200	+200	-200	+100	-100	+100	-100
Over 10 to 18 »	0	-200	0	-200	+200	-200	+100	-100	+100	-100
» 18 » 30 »	0	-200	0	-200	+200	-200	+100	-100	+100	-100
» 30 » 50 »	0	-240	0	-240	+200	-200	+100	-100	+100	-100
» 50 » 80 »	0	-300	0	-300	+200	-200	+100	-100	+100	-100
» 80 » 120 »	0	-400	0	-400	+200	-200	+100	-100	+100	-100
» 120 » 180 »	0	-500	0	-500	+350	-250	+150	-150	+200	-100
» 180 » 250 »	0	-600	0	-600	+350	-250	+150	-150	+200	-100
» 250 » 315 »	0	-700	0	-700	+350	-250	+150	-150	+200	-100

Tolerance class 2 (see tables 51–53)

Table 51 – Inner ring, tolerance class 2

Limit deviations in micrometers

d, mm	Δ_{dmp}, Δ_s		V_{dsp}	V_{dmp}	K_{ia}	S_d	S_{ia}
	high	low	max.				
Up to 10 incl.	0	-4	2,5	1,5	2	1,5	2
Over 10 to 18 »	0	-4	2,5	1,5	2	1,5	2
» 18 » 30 »	0	-4	2,5	1,5	2,5	1,5	2,5
» 30 » 50 »	0	-5	3	2	2,5	2	2,5
» 50 » 80 »	0	-5	4	2	3	2	3
» 80 » 120 »	0	-6	5	2,5	3	2,5	3
» 120 » 180 »	0	-7	7	3,5	4	3,5	4
» 180 » 250 »	0	-8	7	4	5	5	5
» 250 » 315 »	0	-8	8	5	6	5,5	6

Table 52 – Outer ring, tolerance class 2

Tolerances in micrometers

D, mm	Δ_{Dmp}, Δ_{Ds}		V_{Dsp}	V_{Dmp}	K_{ea}	S_D [1], S_{D1}	S_{ea} [1]	S_{ea1}
	high	low	max.					
Up to 18 incl.	0	-5	4	2,5	2,5	1,5	2,5	4
Over 18 » 30 »	0	-5	4	2,5	2,5	1,5	2,5	4
» 30 » 50 »	0	-5	4	2,5	2,5	2	2,5	4
» 50 » 80 »	0	-6	4	2,5	4	2,5	4	6
» 80 » 120 »	0	-6	5	3	5	3	5	7
» 120 » 150 »	0	-7	5	3,5	5	3,5	5	7
» 150 » 180 »	0	-7	7	4	5	4	5	7
» 180 » 250 »	0	-8	8	5	7	5	7	10
» 250 » 315 »	0	-9	8	5	7	6	7	10
» 315 » 400 »	0	-10	10	6	8	7	8	11

[1] Does not apply to bearings with flanged outer ring.

Note. Tolerance for outside diameter of outer ring flange, D_1, is given in table 55.

Table 53 – Width –Inner and outer rings, single-row bearings and single-row sub-units

Tolerances in micrometers

d, mm	Δ_{Bs}		Δ_{Cs}		Δ_{ts}		Δ_{T1s}		Δ_{T2s}	
	high	low	high	low	high	low	high	low	high	low
Up to 10 incl.	0	-200	0	-200	+200	-200	+100	-100	+100	-100
Over 10 to 18 »	0	-200	0	-200	+200	-200	+100	-100	+100	-100
» 18 » 30 »	0	-200	0	-200	+200	-200	+100	-100	+100	-100
» 30 » 50 »	0	-240	0	-240	+200	-200	+100	-100	+100	-100
» 50 » 80 »	0	-300	0	-300	+200	-200	+100	-100	+100	-100
» 80 » 120 »	0	-400	0	-400	+200	-200	+100	-100	+100	-100
» 120 » 180 »	0	-500	0	-500	+200	-250	+100	-100	+100	-150
» 180 » 250 »	0	-600	0	-600	+200	-300	+100	-150	+100	-150
» 250 » 315 »	0	-700	0	-700	+200	-300	+100	-150	+100	-150

Effective height of multiple-row taper roller bearings (see table 54)

Table 54 – Effective height

Tolerances in micrometers

d, mm	Δ_{Ts}			
	Bearing			
	double-row		four-row	
	high	low	high	low
From 18 to 30 incl.	low	high	low	–
Over 30 » 50 »	+375	-375	–	–
» 50 » 80 »	+375	-375	–	–
» 80 » 120 »	+750	-750	+1000	-1000
» 120 » 180 »	+750	-750	+1000	-1000
» 180 » 250 »	+1000	-1000	+1500	-1500
» 250 » 315 »	+1000	-1000	+1500	-1500
» 315 » 400 »	+1000	-1000	+1500	-1500
» 400 » 500 »	+1000	-1000	+1500	-1500
» 500 » 630 »	+1500	-1500	+2000	-2000
» 630 » 800 »	+1500	-1500	+2000	-2000
» 800 » 1000 »	+2000	-2000	–	–

Outer ring flange

Flange outside diameter tolerances given in Table 55 apply to radial ball bearings and tapered roller bearings of all tolerance classes.

Table 55 – Outside diameter of a flange

Tolerances in micrometers

D_1, mm	Δ_{D1s}			
	Locating flange		Non-locating flange	
	high	low	high	low
Up to 6 incl.	0	-36	+220	-36
Over 6 to 10 »	0	-36	+220	-36
» 10 » 18 »	0	-43	+270	-43
» 18 » 30 »	0	-52	+330	-52
» 30 » 50 »	0	-62	+390	-62
» 50 » 80 »	0	-74	+460	-74
» 80 » 120 »	0	-87	+540	-87
» 120 » 180 »	0	-100	+630	-100
» 180 » 250 »	0	-115	+720	-115
» 250 » 315 »	0	-130	+810	-130
» 315 » 400 »	0	-140	+890	-140
» 400 » 500 »	0	-155	+970	-155
» 500 » 630 »	0	-175	+1100	-175
» 630 » 800 »	0	-200	+1250	-200
» 800 » 1000 »	0	-230	+1400	-230
» 1000 » 1250 »	0	-260	+1650	-260
» 1250 » 1600 »	0	-310	+1950	-310
» 1600 » 2000 »	0	-370	+2300	-370
» 2000 » 2500 »	0	-440	+2800	-440

TAPERED BORES

Nominal dimensions of tapered bore are shown in fig. 9. Actual tapered bore, mean diameters and size deviations are shown in fig. 10

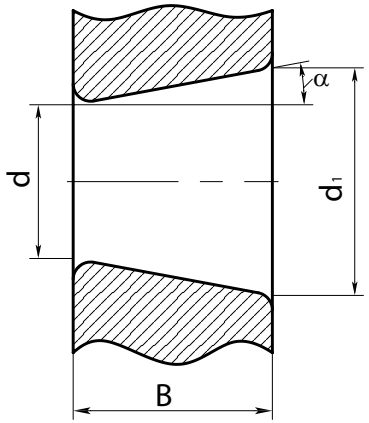


Fig. 9 – **Nominal tapered bore**

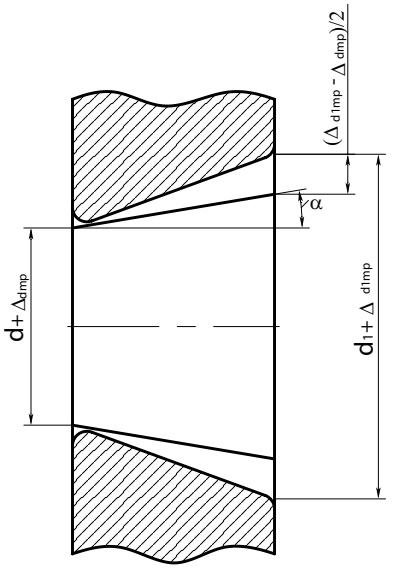


Fig. 10 – **Actual tapered bore**

For taper 1:12 the taper angle (half the cone angle) is:

$\alpha = 2^o23'9{,}4'' = 2{,}38594^o = 0{,}041643\ rad.$

The diameter at the theoretical large end of the bore is (19):

$$d_1 = d + \frac{1}{12}B. \qquad (19)$$

For taper 1:30 the taper angle (half the cone angle) is:

$\alpha = 57'17{,}4'' = 0{,}95484^o = 0{,}016665\ rad.$

The diameter at the theoretical large end of the bore is:

$$d_1 = d + \frac{1}{30}B. \qquad (20)$$

The tolerances for a tapered bore comprise:

- a mean diameter tolerance, given by limits for the mean diameter deviation at the theoretical small end of the bore Δ_{dmp};
- a taper tolerance, given by limits for the difference between the mean diameter deviations at the two ends of the bore $\Delta_{d1mp} - \Delta_{dmp}$;
- a tolerance for the diameter variation, V_{dsp}, given by a maximum value applying in any radial plane of the bore.

Values of tolerances Δ_{dmp}, $\Delta_{d1mp} - \Delta_{dmp}$, V_{dsp} are given in tables 56–61. Limit deviations for cone angle of tapered bore $\Delta_{d1mp} - \Delta_{dmp}$, are given for nominal ring width.

Table 56 – **Tapered bore, bore taper 1:12, normal tolerance class**

Tolerances in micrometers

d, mm	Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} 1), 2)
	high	low	high	low	max.
Up to 10 incl.	+22	0	+15	0	9
Over 10 » 18 »	+27	0	+18	0	11
» 18 » 30 »	+33	0	+21	0	13
» 30 » 50 »	+39	0	+25	0	16
» 50 » 80 »	+46	0	+30	0	19
» 80 » 120 »	+54	0	+35	0	22
» 120 » 180 »	+63	0	+40	0	40
» 180 » 250 »	+72	0	+46	0	46
» 250 » 315 »	+81	0	+52	0	52
» 315 » 400 »	+89	0	+57	0	57
» 400 » 500 »	+97	0	+63	0	63
» 500 » 630 »	+110	0	+70	0	70
» 630 » 800 »	+125	0	+80	0	–
» 800 » 1000 »	+140	0	+90	0	–
» 1000 » 1250 »	+165	0	+105	0	–
» 1250 » 1600 »	+195	0	+125	0	–

1) Applies in any single radial plane of the bore.
2) Does not apply to diameter series 0 and 8.

Table 57 – Tapered bore, bore taper 1:12, tolerance class 6

Tolerances in micrometers

d, mm	Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [1), 2)]
	high	low	high	low	high
Up to 10 incl.	+15	0	+9	0	9
Over 10 » 18 »	+18	0	+11	0	11
» 18 » 30 »	+21	0	+13	0	13
» 30 » 50 »	+25	0	+16	0	16
» 50 » 80 »	+30	0	+19	0	19
» 80 » 120 »	+35	0	+22	0	25
» 120 » 180 »	+40	0	+25	0	31
» 180 » 250 »	+46	0	+29	0	38
» 250 » 315 »	+52	0	+32	0	44
» 315 » 400 »	+57	0	+36	0	50
» 400 » 500 »	+63	0	+40	0	56
» 500 » 630 »	+70	0	+43	0	–

[1)] Applies in any single radial plane of the bore.
[2)] Does not apply to diameter series 0 and 8.

Table 58 – Tapered bore, bore taper, 1:12, tolerance class 5

Tolerances in micrometers

d, mm	Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [1), 2)]
	high	low	high	low	high
Up to 10 incl.	+9	0	+6	0	9
Over 10 » 18 »	+11	0	+8	0	11
» 18 » 30 »	+13	0	+9	0	13
» 30 » 50 »	+16	0	+11	0	16
» 50 » 80 »	+19	0	+13	0	19
» 80 » 120 »	+22	0	+15	0	22
» 120 » 180 »	+25	0	+18	0	25
» 180 » 250 »	+29	0	+20	0	29
» 250 » 315 »	+32	0	+23	0	32
» 315 » 400 »	+36	0	+25	0	36
» 400 » 500 »	+40	0	+27	0	–

[1)] Applies in any single radial plane of the bore.
[2)] Does not apply to diameter series 0 and 8.

Table 59 – Tapered bore, bore taper, 1:12, tolerance class 4

Tolerances in micrometers

d, mm	Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [1), 2)]
	high	low	high	low	high
Up to 10 incl.	+9	0	+4	0	4
Over 30 » 50 »	+11	0	+6	0	6
» 50 » 80 »	+13	0	+6	0	6
» 80 » 120 »	+15	0	+8	0	8
» 120 » 180 »	+18	0	+8	0	8
» 180 » 250 »	+20	0	+10	0	10
» 250 » 315 »	+32	0	+12	0	12
» 315 » 400 »	+36	0	+12	0	12
» 400 » 500 »	+40	0	+14	0	–

[1)] Applies in any single radial plane of the bore.
[2)] Does not apply to diameter series 0 and 8.

Table 60 – Tapered bore, bore taper 1:12, tolerance class 2

Tolerances in micrometers

d, mm	Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [1), 2)]
	high	low	high	low	high
From 18 up to 30 incl.	+6	0	+2	0	2
Over 30 » 50 »	+7	0	+3	0	3
» 50 » 80 »	+8	0	+3	0	3
» 80 » 120 »	+10	0	+4	0	4
» 120 » 180 »	+12	0	+4	0	4
» 180 » 250 »	+14	0	+5	0	5

[1)] Applies in any single radial plane of the bore.
[2)] Does not apply to diameter series 0 and 8.

Table 61 – Tapered bore, bore taper 1:30, normal tolerance class

Tolerances in micrometers

d, mm	Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [1), 2)]
	high	low	high	low	high
Up to 50 incl.	+15	0	+30	0	19
Over 50 » 80 »	+15	0	+30	0	19
» 80 » 120 »	+20	0	+35	0	22
» 120 » 180 »	+25	0	+40	0	40
» 180 » 250 »	+30	0	+46	0	46
» 250 » 315 »	+35	0	+52	0	52
» 315 » 400 »	+40	0	+57	0	57
» 400 » 500 »	+45	0	+63	0	63
» 500 » 630 »	+50	0	+70	0	70

[1)] Applies in any single radial plane of the bore.
[2)] Does not apply to diameter series 0 and 8.

SINGLE AND DOUBLE DIRECTION THRUST BEARINGS

Normal tolerance class (see tables 62 and 63)

Table 62 – Shaft washers and central washers, bearing height

Tolerances in micrometers

d, d_2, mm	Δ_{dmp}, Δ_{d2mp}		V_{dsp}, V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
	high	low	max.		high	low	high	low
Up to 18 incl.	0	-8	6	10	+20	-250	+150	-400
Over 18 » 30 »	0	-10	8	10	+20	-250	+150	-400
» 30 » 50 »	0	-12	9	10	+20	-250	+150	-400
» 50 » 80 »	0	-15	11	10	+20	-300	+150	-500
» 80 » 120 »	0	-20	15	15	+25	-300	+200	-500
» 120 » 180 »	0	-25	19	15	+25	-400	+200	-600
» 180 » 250 »	0	-30	23	20	+30	-400	+250	-600
» 250 » 315 »	0	-35	26	25	+40	-400	–	–
» 315 » 400 »	0	-40	30	30	+40	-500	–	–
» 400 » 500 »	0	-45	34	30	+50	-500	–	–
» 500 » 630 »	0	-50	38	35	+60	-600	–	–
» 630 » 800 »	0	-75	55	40	+70	-750	–	–
» 800 » 1000 »	0	-100	75	45	+80	-1000	–	–
» 1000 » 1250 »	0	-125	95	50	+100	-1400	–	–
» 1250 » 1600 »	0	-160	120	60	+120	-1600	–	–
» 1600 » 2000 »	0	-200	150	75	+140	-1900	–	–
» 2000 » 2500 »	0	-250	190	90	+160	-2300	–	–

Note. For double-direction bearings, the values apply only up to and including d_2 = 190 mm.

Table 63 – Housing washer

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	S_e
	high	low	max.	
From 10 to 18 incl.	0	-11	8	Identical to S_i of a shaft washer of the same bearing
Over 18 » 30 »	0	-13	10	
» 30 » 50 »	0	-16	12	
» 50 » 80 »	0	-19	14	
» 80 » 120 »	0	-22	17	
» 120 » 180 »	0	-25	19	
» 180 » 250 »	0	-30	23	
» 250 » 315 »	0	-35	26	
» 315 » 400 »	0	-40	30	
» 400 » 500 »	0	-45	34	
» 500 » 630 »	0	-50	38	
» 630 » 800 »	0	-75	55	
» 800 » 1000 »	0	-100	75	
» 1000 » 1250 »	0	-125	95	
» 1250 » 1600 »	0	-160	120	
» 1600 » 2000 »	0	-200	150	
» 2000 » 2500 »	0	-250	190	
» 2500 » 2850 »	0	-300	225	

Note. For double-direction bearings, the values apply only up to and including D = 360 mm.

Tolerance class 6 (see tables 64 and 65)

Table 64 – Shaft washers and central washers, bearing height

Tolerances in micrometers

d, d_2, mm	$\Delta_{dmp}, \Delta_{d2mp}$		V_{dsp}, V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
	high	low	max.		high	low	high	low
Up to 18 incl.	0	-8	6	5	+20	-250	+150	-400
Over 18 to 30 »	0	-10	8	5	+20	-250	+150	-400
» 30 » 50 »	0	-12	9	6	+20	-250	+150	-400
» 50 » 80 »	0	-15	11	7	+20	-300	+150	-500
» 80 » 120 »	0	-20	15	8	+25	-300	+200	-500
» 120 » 180 »	0	-25	19	9	+25	-400	+200	-600
» 180 » 250 »	0	-30	23	10	+30	-400	+250	-600
» 250 » 315 »	0	-35	26	13	+40	-400	–	–
» 315 » 400 »	0	-40	30	15	+40	-500	–	–
» 400 » 500 »	0	-45	34	18	+50	-500	–	–
» 500 » 630 »	0	-50	38	21	+60	-600	–	–
» 630 » 800 »	0	-75	55	25	+70	-750	–	–
» 800 » 1000 »	0	-100	75	30	+80	-1000	–	–
» 1000 » 1250 »	0	-125	95	35	+100	-1400	–	–
» 1250 » 1600 »	0	-160	120	40	+120	-1600	–	–
» 1600 » 2000 »	0	-200	150	45	+140	-1900	–	–
» 2000 » 2500 »	0	-250	190	50	+160	-2300	–	–

Note. For double-direction bearings, the values apply only up to and including d_2 = 190 mm.

Table 65 – Housing washers

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	S_e
	high	low	max.	
From 10 to 18 incl.	0	-11	8	Identical to S_i of a shaft washer of the same bearing
Over 18 » 30 »	0	-13	10	
» 30 » 50 »	0	-16	12	
» 50 » 80 »	0	-19	14	
» 80 » 120 »	0	-22	17	
» 120 » 180 »	0	-25	19	
» 180 » 250 »	0	-30	23	
» 250 » 315 »	0	-35	26	
» 315 » 400 »	0	-40	30	
» 400 » 500 »	0	-45	34	
» 500 » 630 »	0	-50	38	
» 630 » 800 »	0	-75	55	
» 800 » 1000 »	0	-100	75	
» 1000 » 1250 »	0	-125	95	
» 1250 » 1600 »	0	-160	120	
» 1600 » 2000 »	0	-200	150	
» 2000 » 2500 »	0	-250	190	
» 2500 » 2850 »	0	-300	225	

Note. For double-direction bearings, the values apply only up to and including D = 360 mm.

Tolerance class 5 (see tables 66 and 67)

Table 66 – Shaft washers and central washers, bearing height

Tolerances in micrometers

d, d_2, mm	$\Delta_{dmp}, \Delta_{d2mp}$		V_{dsp}, V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
	high	low	max.		high	low	high	low
Up to 18 incl.	0	-8	6	3	+20	-250	+150	-400
Over 18 » 30 »	0	-10	8	3	+20	-250	+150	-400
» 30 » 50 »	0	-12	9	3	+20	-250	+150	-400
» 50 » 80 »	0	-15	11	4	+20	-300	+150	-500
» 80 » 120 »	0	-20	15	4	+25	-300	+200	-500
» 120 » 180 »	0	-25	19	5	+25	-400	+200	-600
» 180 » 250 »	0	-30	23	5	+30	-400	+250	-600
» 250 » 315 »	0	-35	26	7	+40	-400	–	–
» 315 » 400 »	0	-40	30	7	+40	-500	–	–
» 400 » 500 »	0	-45	34	9	+50	-500	–	–
» 500 » 630 »	0	-50	38	11	+60	-600	–	–
» 630 » 800 »	0	-75	55	13	+70	-750	–	–
» 800 » 1000 »	0	-100	75	15	+80	-1000	–	–
» 1000 » 1250 »	0	-125	95	18	+100	-1400	–	–
» 1250 » 1600 »	0	-160	120	25	+120	-1600	–	–
» 1600 » 2000 »	0	-200	150	30	+140	-1900	–	–
» 2000 » 2500 »	0	-250	190	40	+160	-2300	–	–

Note. For double-direction bearings, the values apply only up to and including d_2 = 190 mm.

Table 67 – Housing washers

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	S_e
	high	low	max.	
From 10 to 18 incl.	0	-11	8	Identical to S_i of a shaft washer of the same bearing
Over 18 » 30 »	0	-13	10	
» 30 » 50 »	0	-16	12	
» 50 » 80 »	0	-19	14	
» 80 » 120 »	0	-22	17	
» 120 » 180 »	0	-25	19	
» 180 » 250 »	0	-30	23	
» 250 » 315 »	0	-35	26	
» 315 » 400 »	0	-40	30	
» 400 » 500 »	0	-45	34	
» 500 » 630 »	0	-50	38	
» 630 » 800 »	0	-75	55	
» 800 » 1000 »	0	-100	75	
» 1000 » 1250 »	0	-125	95	
» 1250 » 1600 »	0	-160	120	
» 1600 » 2000 »	0	-200	150	
» 2000 » 2500 »	0	-250	190	
» 2500 » 2850 »	0	-300	225	

Note. For double-direction bearings, the values apply only up to and including D = 360 mm.

Tolerance class 4 (see tables 68 and 69)

Table 68 – Shaft washers and central washers, bearing height

Tolerances in micrometers

d, d_2, mm	$\Delta_{dmp}, \Delta_{d2mp}$		V_{dsp}, V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
	high	low	max.		high	low	high	low
Up to 18 incl.	0	-7	5	2	+20	-250	+150	-400
Over 18 » 30 »	0	-8	6	2	+20	-250	+150	-400
» 30 » 50 »	0	-10	8	2	+20	-250	+150	-400
» 50 » 80 »	0	-12	9	3	+20	-300	+150	-500
» 80 » 120 »	0	-15	11	3	+25	-300	+200	-500
» 120 » 180 »	0	-18	14	4	+25	-400	+200	-600
» 180 » 250 »	0	-22	17	4	+30	-400	+250	-600
» 250 » 315 »	0	-25	19	5	+40	-400	–	–
» 315 » 400 »	0	-30	23	5	+40	-500	–	–
» 400 » 500 »	0	-35	26	6	+50	-500	–	–
» 500 » 630 »	0	-40	30	7	+60	-600	–	–
» 630 » 800 »	0	-50	40	8	+70	-750	–	–

Note. For double-direction bearings, the values apply only up to and including $d_2 = 190$ mm.

Table 69 – Housing washers

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	S_e
	high	low	max.	
From 10 to 18 incl.	0	-7	5	Identical to S_i of a shaft washer of the same bearing
Over 18 » 30 »	0	-8	6	
» 30 » 50 »	0	-9	7	
» 50 » 80 »	0	-11	8	
» 80 » 120 »	0	-13	10	
» 120 » 180 »	0	-15	11	
» 180 » 250 »	0	-20	15	
» 250 » 315 »	0	-25	19	
» 315 » 400 »	0	-28	21	
» 400 » 500 »	0	-33	25	
» 500 » 630 »	0	-38	29	
» 630 » 800 »	0	-45	34	
» 800 » 1000 »	0	-60	45	

Note. For double-direction bearings, the values apply only up to and including $D = 360$ mm.

Tolerance class 2 (see tables 70 and 71)

Table 70 – Shaft washers and central washers

Tolerances in micrometers

d, d_2, mm	$\Delta_{dmp}, \Delta_{d2mp}$		V_{dsp}, V_{d2sp}	S_i
	high	low	max.	
Up to 18 incl.	0	- 7	5	1
Over 18 » 30 »	0	- 8	6	1,2
» 30 » 50 »	0	- 10	8	1,5
» 50 » 80 »	0	- 12	9	2
» 80 » 120 »	0	- 15	11	2
» 120 » 180 »	0	- 18	14	3
» 180 » 250 »	0	- 22	17	3
» 250 » 315 »	0	- 25	19	4
» 315 » 400 »	0	- 30	23	4
» 400 » 500 »	0	- 35	26	–
» 500 » 630 »	0	- 40	30	–
» 630 » 800 »	0	- 50	–	–

Note. For double direction bearing the permissible value S_i is identical to S_i of corresponding (with the same outside diameter) single direction bearing. Corresponding bore diameters for *d* are given in GOST 3478.

Table 71 – Housing washer

Tolerances in micrometers

D, mm	Δ_{Dmp}		V_{Dsp}	S_e
	high	low	max.	
From 10 to 18 incl.	0	- 7	5	Identical to S_i of a shaft washer of the same bearing
Over 18 » 30 »	0	- 8	6	
» 30 » 50 »	0	- 9	7	
» 50 » 80 »	0	- 11	8	
» 80 » 120 »	0	- 13	10	
» 120 » 180 »	0	- 15	11	
» 180 » 250 »	0	- 20	17	
» 250 » 315 »	0	- 25	19	
» 315 » 400 »	0	- 28	21	
» 400 » 500 »	0	- 33	25	
» 500 » 630 »	0	- 38	29	
» 630 » 800 »	0	- 45	34	

Note. For double direction bearing the permissible value S_e is identical to S_e of corresponding (with the same outside diameter) single direction bearing. Corresponding bore diameters for *d* are given in GOST 3478.

FITS

The effective work of the bearings is largely associated with the seating fit, that is, type of bearing engagement with the housing and the shaft. Seating fit specifies radial positions of bearing outer and inner rings, as well as their restrain from turning with respect to housing components. Mounting surface of a housing component should be in a close contact with the bearing surface so, projections, burrs, irregularities are not permitted, for they reduce bearing load carrying capacity.

In case of an unallowable clearance between locating surfaces of a bearing and a housing, sliding may occur between them, which results in rapid wear or failure of the bearing locating surface. Bearings must be mounted in such a way that temperature differences will not cause their jamming or unallowable clearances. This is usually solved by using of the ("floating") bearing moving in the axial direction. Finally, in the most applications easy mounting and dismounting of bearings can be required.

The direction of load relative to bearing ring is of a great importance when selecting fits. If a bearing ring is stationary relative to the load direction, this load is called stationary load. If the bearing ring rotates relative to the load direction, the load applied to a ring is called rotating load. In this case, the ring carry load successively by the whole circumferential raceway surface. When a bearing ring is simultaneously subjected to a load constant in direction (for example, weight force) and a variable load (for example, a rotating mass) this load is called an oscillating load. Thus, with the same direction of loads the outer and inner bearing rings are subjected to different loading depending on which of the ring is rotating. If the ring for some time is under the circulating load, and the rest of time it is under the local or oscillating load, this load is called undetermined load.

When the stationary load on the ring is applied a clearance fit is used, unless interference fit is required for other reasons. Excessive clearance increase does not lead to turning of the ring on the shaft or in the housing, but makes worse load distribution.

With rotating, oscillating and undetermined load on the ring are applied the interference fits are used for rotating bearing rings. The tightness of ring interaction with shaft or housing (fit interference) should be as greater as severe bearing operation mode, characterized by the ratio of the equivalent and dynamic load ratings, and as greater the bearing size.

As a rule more tight fits are specified for roller bearing than that for ball bearing.

Recommended tolerance class for shafts and housings are shown in tables 72–75.

Rolling bearings are mounted on a shaft in hole-basis system with the only difference that tolerance for the boundary ring dimensions is set as negative one relative to zero line, that is, the upper deviation is always equal to zero.

Tolerance class for bearing bore diameter is designated as L_{dmp}, that is, for bearing tolerance classes such as normal, 6, 5, 4, 2 tolerance class designations of fit bore diameter l0, l6, l5, l4, l2 must be used. For example, fit for bearing of tolerance class 6 with bore diameter 30 mm along the shaft of class h6 is designated as follows:

$$Ø30\frac{L6}{h6}\ (or\ Ø30L6/h6).$$

Rolling bearings are mounted in housing bore in the shaft-basis system. Tolerance class for mean outside diameter of bearing is designated as L_{Dmp}, that is, for different bearing tolerance classes the designations of tolerance class for fit outside diameter L0, L6, L5, L4, L2 are used. For example, fit for bearing tolerance class 6 with outside diameter 72 mm in the bore of tolerance class h7 is designated as follows:

$$Ø72\frac{N7}{I6}\ (or\ Ø72N7/I6).$$

For shaft and housing mounting the fit system shown in fig. 11 is used. In practice among the presented wide range of fits on a shaft tolerance classes g6, h6, j6, k6, m6, n6, p6, r6 are mostly used and for high running accuracy, tolerance classes h5, j5, k5, m5 are used. For housing fits, tolerance classes G7, H8, H7, J7, K7, M7, N7, P7 are often used, and for high running accuracy tolerance classes J6, K6, M6, N6, P6 are used.

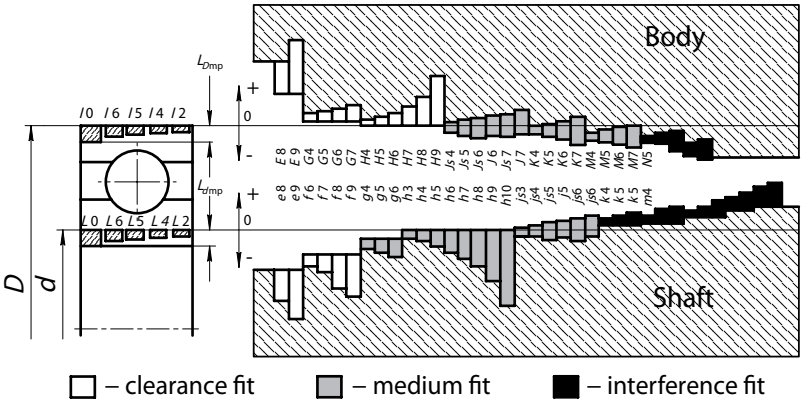


Fig. 11 – Fits for rolling bearings

For compliance with different bearing tolerance classes the following shaft grades are used: for bearings of normal tolerance class and tolerance class 6 shaft tolerance grade 6 is used; for tolerance classes 5 and 4 shaft tolerance grade 5 is used; for tolerance class 2 and 4 shaft tolerance grade 3 is used

For compliance with different tolerance classes of bearings the following hole tolerance grades are used: for bearings of normal tolerance class and tolerance class 6 hole tolerance grade 7 is used, for tolerance classes 5 and 4 hole tolerance grade 6 is used; for tolerance class 2 hole tolerance grades 5 and 4 are used.

Recommended bearing fits on solid steel shafts depending on load value and direction, as well as shaft limit deviations for used tolerance range are given in tables 72 and 73.

Table 72 – Recommended bearing fits on solid steel shafts

Load type	Bearing type	Shaft diameter	Loading conditions	Examples of recommended fits
Stationary loading of inner ring	Deep groove ball bearing and, needle roller bearings	All diameters	Bearing with movable inner ring	L0/g6, L6/g6, L5/g5 L0/h6, L6/h6, L0/j6, L6/j6
Inner ring rotating load or undetermined load	Ball bearings	Up to 40 mm	Normal loads P < 0, 1C	L0/j6, L6/j6, L5(L4)/j5
		Up to 100 mm	Light loads P < 0,08C	L0/j6, L6/j6
			Normal and heavy loads P > 0,08C	L0/κ6, L6/κ6
		Up to 200 mm	Light loads P > 0,1C	L0/κ6, L6/κ6
			Normal and heavy loads P > 0,1C	L0/m6, L6/m6, L5/m5
		Over 200 mm	Normal and heavy loads P > 0,1C	L0/m6, L6/m6, L5/m5
			Heavy loads, impacts	L0/n6, L6/n6, L5/n5
Inner ring rotating load or undetermined load	Roller bearings including needle roller bearings	Up to 60 mm	Light loads P > 0,08C	L0/j6, L6/j6, L5(L4)/j5
			Normal and heavy loads P > 0,08C	L0/k6, L6/k6, L5(L4)/k5
		Up to 200 mm	Light loads P < 0,1C	L0/k6, L6/k6, L5(L4)/k5
			Normal loads P = (0,1 – 0,15)C	L0/m6, L6/m6, L5/m5
			Heavy loads P > 0,15C	L0/n6, L6/n6, L5/n5
Inner ring rotating load or undetermined load	Roller bearings including needle roller bearings	Up to 500 mm	Normal loads P < 0,15C	L0/m6, L6/n6, L6/m6
			Heavy loads P > 0,15C	L0/p6, L6/p6
		Over 500 mm	Normal loads P < 0,2C	L0/n6, L6/n6
			Heavy loads P > 0,2C	L0/p6
Local load of a shaft washer	Thrust spherical roller bearings	All diameters		L0/j6, L6/j6
Rotating load on of a shaft washer		Up to 200 mm		L0/j6, L0/k6, L6/j6, L6/k6
		Over 200 mm		L0/k6, L0/m6, L6/k6, L6/m6

Recommended bearing fits in steel or cast iron housings, as well as hole limit deviations for applicable tolerance classes are given in tables 74 and 75.

Bearing operation mode regarding to the loading rate is conventionally evaluated by relations of the load to the dynamic load rating and called as light (P ≤ 0,07C), normal (P ≤ 0,15), heavy (P > 0,15). Fits for bearings, operating under impact and vibration loads (in railway and tram axle-boxes, crankshafts for engines, crusher units, presses, excavators etc.), are selected as for heavy operation mode independent on a load value.

While selecting interference fits (part of medium and press fits) it must be considered that the clearance in a bearing can be reduced from 50 to 80% of the measured interference fit, depending on the bearing ring hardness and the material of mating parts which result in inner rings extension and outer rings compression. This especially applies to small non-rigid ball bearings having small radial clearance. Consequently, in such cases it is desirable to select fits with minimum interference fit or without it.

Interference fit is applied to thrust bearings rotating rings, clearance fit is applied to movable rings, moreover the mounting surfaces of mating parts must be perpendicular to the axis of rotation to make the load be distributed evenly over all rolling elements. For spherical roller bearings, which besides radial load carry axial load, the fits are selected according the similar parameters as for radial bearings.

Tables 72 and 75 give recommendations for selecting of the fits depending on loading type conditions and operation mode. In this case, it is assumed that shafts are produced from steel, and housings are produced from steel and cast iron, shafts and housings are solid or thick-walled (for thick-walled cast iron or steel are assumed those shafts and housings, for which the relations $d/d_2 \geq 1,25$ and $D_k/D \geq 1,25$, are valid, where d, d_2 are diameters of bearing bore and hollow shaft respectively; D_k and D are housing and bearing outside diameters); working temperature of bearings is about ≤ 100°C.

SELECTION OF BEARINGS

Table 73 – Limit deviations of mating diameters for fitting ball and roller radial bearings and angular contact ball bearings on the shaft Normal tolerance class

Intervals of nominal diameters d, mm	Deviations of bearing bore diameter Δ_{dmp}, mm		Limit shaft deviations, mm, for tolerance class						Limit shaft deviations, mm, for tolerance class									
			n6		m6		k6		js6		j6		h6		g6		f6	
	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low
From 0,6 to 3 incl.	0	-8	+10	+4	+8	+2	+6	0	+3,0	-3,0	+4	-2	0	-6	-2	-8	-6	-12
Over 3 « 6 «	0	-8	+16	+8	+12	+4	+9	+1	+4,0	-4,0	+6	-2	0	-8	-4	-12	-10	-18
« 6 « 10 «	0	-8	+19	+10	+15	+6	+10	+1	+4,5	-4,5	+7	-2	0	-9	-5	-14	-13	-22
« 10 « 18 «	0	-8	+23	+12	+18	+7	+12	+1	+5,5	-5,5	+8	-3	0	-11	-6	-17	-16	-27
« 18 « 30 «	0	-10	+28	+15	+21	+8	+15	+2	+6,5	-6,5	+9	-4	0	-13	-7	-20	-20	-33
« 30 « 50 «	0	-12	+33	+17	+25	+9	+18	+2	+8,0	+11	+11	-5	0	-16	-25	-25	-25	-41
« 50 « 80 «	0	-15	+39	+20	+30	+11	+21	+2	+9,5	-9,5	+12	-7	0	-19	-10	-29	-30	-49
« 80 « 120 «	0	-20	+45	+23	+35	+13	+25	+3	+11,0	-11,0	+13	-9	0	-22	-12	-34	-36	-58
« 120 « 180 «	0	-25	+52	+27	+40	+15	+28	+3	+12,5	-12,5	+14	-11	0	-25	-14	-39	-43	-68
« 180 « 250 «	0	-30	+60	+31	+46	+17	+33	+4	+14,5	-14,5	+16	-13	0	-29	-15	-44	-50	-79
« 250 « 315 «	0	-35	+66	+34	+52	+20	+36	+4	+16,6	-16,6	+16	-16	0	-32	-17	-49	-56	-88
« 315 « 400 «	0	-40	+73	+37	+57	+21	+40	+4	+18,0	-18,0	+18	-18	0	-36	-18	-54	-62	-98
« 400 « 500 «	0	-45	+80	+40	+63	+23	+45	+5	+20,0	-20,0	+20	-20	0	-40	-20	-60	-68	-108

Table 74 – Limit deviations of mating diameters for fitting ball and roller radial bearings and angular contact ball bearings in housing Normal tolerance class

Intervals of nominal diameters D, mm	Deviations of bearing hole outside diameter Δ_{Dmp}, mm		Limit deviations of the bore, mm, for tolerance class						Limit deviations of the bore, mm, for tolerance class									
			p7		N7		M7		K7		Js7		J7		H7		G7	
	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low
From 2,5 to 3 incl.	0	-8	-6	-16	-4	-14	-2	-12	0	-10	+5	-5	+4	-6	+10	0	+12	+2
Over 3 « 7 «	0	-8	-8	-20	-4	-16	0	-12	+3	-9	+6	-6	+6	-6	+12	0	+16	+4
« 6 « 10 «	0	-8	-9	-24	-4	-19	0	-15	+5	-10	+7	-7	+8	-7	+15	0	+20	+5
« 10 « 18 «	0	-8	-11	-29	-5	-23	0	-18	+6	-12	+9	-9	+10	-8	+18	0	+24	+6
« 18 « 30 «	0	-9	-14	-35	-7	-28	0	-21	+6	-15	+10	-10	+12	-9	+21	0	+28	+7
« 30 « 50 «	0	-11	-17	-42	-8	-33	0	-25	+7	-18	+12	-12	+14	-11	+25	0	+34	+9
« 50 « 80 «	0	-13	-21	-51	-9	-39	0	-30	+9	-21	+15	-15	+18	-12	+30	0	+40	+10
« 80 « 120 «	0	-15	-24	-59	-10	-45	0	-35	+10	-25	+17	-17	+22	-13	+35	0	+47	+12
« 120 « 150 «	0	-18	-28	-68	-12	-52	0	-40	+12	-28	+20	-20	+26	-14	+40	0	+54	+14
« 150 « 180 «	0	-25	-28	-68	-12	-52	0	-40	+12	-28	+20	-20	+26	-14	+40	0	+54	+14
« 180 « 250 «	0	-30	-33	-79	-14	-60	0	-46	+13	-33	+23	-23	+30	-16	+46	0	+61	+15
« 250 « 315 «	0	-35	-36	-88	-14	-66	0	-52	+16	-36	+26	-26	+36	-16	+52	0	+69	+17
« 315 « 400 «	0	-40	-41	-98	-16	-73	0	-57	+17	-40	+28	-28	+39	-18	+57	0	+75	+18
« 400 « 500 «	0	-45	-45	-408	-17	-80	0	-63	+18	-45	+31	-31	+43	-20	+63	0	+83	+20
« 500 « 630 «	0	-50	-78	-148	-44	-114	-26	-96	0	-70	+35	-35	–	–	+70	0	+92	+22
« 630 « 800 «	0	-75	-88	-168	-50	-130	-30	-110	0	-80	+40	-40	–		+80	0	+104	+24
« 800 «1000 «	0	-100	-100	-190	-56	-146	-34	-124	0	-90	+45	-45	–	–	+90	0	+116	+26

When using light-alloy housings more tight fits are required than those for steel and cast iron housings, due to the lower hardness and the greater thermal expansion coefficient. Table 74 basically provides the fits in single-piece solid housing. In some cases, when mounting a bearing into separable housing interference fit is not recommended due to possible outer ring jamming which may lead to its ring deformation and abnormal distribution of forces in the bearing.

Selection of fits using the experience for similar existing bearing assemblies, operating under equal or similar conditions, is the most common and proven. Mounting and dismounting of bearings with a clearance fit is easier than with an interference fit. However, this should not be a reason for refusal from an interference fit, if this is required for other reasons.

Bearings with tapered bore are mounted directly on tapered shaft or by means of the adapter sleeves or adapter-withdrawal sleeves with adequate tapered surface. The use of such designs makes easier mounting and dismantling; mounting with the help of sleeves allows to fix bearings on a smooth shaft, and sometimes to adjust the value of radial clearance.

Table 75 – Recommended bearing fits in steel and cast iron housings

Load type of outer ring	Additional characteristic	Recommended fits
Radial bearings		
Stationary load (rotating shaft)	Bearing with highly movable outer ring in the axial direction	P7/l0, H7/l6
	Necessary high accuracy (outer ring is often movable)	P6/l5, js6/l5
Rotating load (rotating housing) or undetermined load	Light load P ≤ 0.07C	K7/l0, K7/l6
	Normal and impact load	M7/l0, M7/l6
	Heavy and impact load	N7/l0, N7/l6
	Heavy and severe impact load, thin-walled housings P > 0.15C	P7/l0, P7/l6
	Heavy and severe impact load, thin-walled housings P > 0.15C, P7/10, P7/16	
Thrust bearings		
Spherical roller thrust bearings:		
Axial load	– normal load	E8/l0, E8/l6
	– heavy load	G7/l0, G7/l6
Combined load		
– stationary load of a housing washer		H7/l0, H7/l6
– rotating load of housing washer		K7/l0, K7/l6

LUBRICATION AND STORAGE OF BEARINGS

SELECTION OF LUBRICANT

One of the most important factors determining the serviceability (performance) of the bearing is the selection of the right type and grade of lubricant, the conditions of its application. Inadequate quantity of lubricant or improper lubricant selection inevitably leads to early wear of bearings, to reduction of its service life.

Lubricant in roller bearings fulfils the following basic functions:

- forms the required elastic hydrodynamic oil film between the working surfaces, which also softens the impacts of the rolling elements against the rings and cages, thus increasing bearing life and reducing noise in its operation;
- reduces the sliding friction that occurs between the contacting bearing elements;
- protects the bearings against corrosion.

The determining factors in lubricant selection are working conditions that is the load, operating temperature and rotational speed. Environmental conditions must be considered as well.

For rolling bearing lubrication two types of lubricants are mainly used: liquid lubricant (oil) and grease. Each of these types of lubricant has its advantages and disadvantages. The selection of any type depends on the bearing operating conditions and mechanism as a whole.

LIQUID LUBRICANT (OIL)

Usually oil is used to lubricate rolling bearings when, due to high speeds or operating temperatures, the use of grease is impossible, in cases when removal of heat arising during friction or removal of external heat from bearing location is required, or when the adjacent parts (gear wheels, etc.) are lubricated with oil.

When circulating and separate methods of lubrication are used the section of lubricant removing channels should be sufficient to remove lubricant flow coming out of the bearing unit.

To increase bearing life any method of lubrication is used, provided the use of the refined lubricant, for example circulating with filtration, injection or separate method with lubricant and air filtration.

Purified mineral (petroleum) oils are used as liquid lubricant, the main technical factor of which for determining their service properties and their suitability for the unit is viscosity. Therefore, viscosity index is the primary criterion to select liquid lubricant for the bearing assembly. Kinematic viscosity of liquid lubricants is measured at a specified temperature, usually at 40°C or 100°C, and is expressed in mm^2/s (cCт). The higher is the lubricant viscosity, the greater is the breaking load which the lubricant film can withstand, however, viscous lubricants have great resistance to movement of parts, causing increased power consumption, worsen heat exchange between lubricant and the bearing, etc.

Taking into consideration above mentioned, viscous lubricants should be used for bearings operating under heavy loads at low rotational speeds. For high-speed bearings low-viscosity lubricants is recommended to use.

The viscosity is not a constant value for a given lubricant; it changes relative to temperature changes, determining the viscosity-temperature characteristics of the lubricant which is of the great importance factor a key for bearings operating at low and variable temperatures. Low-viscosity lubricants are recommended at low operating temperatures of the bearing, and high viscosity lubricants are recommended at higher temperatures.

For high-speed bearings the lubricant viscosity determines also the amount of heat release in the bearing. All other things being equal, heat emission in the bearing is increased with the increasing of lubricant viscosity.

For large and medium-sized bearings operating under normal conditions, it is recommended to use lubricants which at the operating temperatures have a viscosity 12 mm^2/s, for all types of ball and roller bearings with the exception of double-row spherical roller bearings, taper roller bearings and thrust roller bearings. For spherical roller bearings lubricant of viscosity 20 mm^2/s is recommended, for taper roller bearings– 20–30 mm^2/s and for thrust roller bearings – 30 mm^2/s.

For small high-speed bearings, especially when small starting forces are required, the oil viscosity less than 11 mm^2/s is recommended to use.

To facilitate the selection of the required lubricant viscosity for bearings of different sizes, operating at different rotational speeds and temperatures, nomograms is usually used.

A method for selecting of kinematic viscosity using nomograms dependant on the mean diameter and the rotational speed is given in a section related to determination of life when choosing a factor a_{23}.

Among other technical data for lubricant selection their solidifying point and flash point of lubricant should be regarded, which approximately allow judging the temperature limits of the lubricant usage.

The main technical data of mineral oils and synthetic fluids, which are commonly used for lubrication of rolling bearings, are given in table 76.

LUBRICATION AND STORAGE OF BEARINGS

Table 76 – Liquid oil characteristics

Oil description	Normative documentation	Kinematic viscosity, mm²/s, at temperature, °C			Temperature, °C		Example of bearing application field
			100		flash (no lower than)	solidifying point (no more than)	
Motor-car oil M-8 B1	ГОСТ 10541-78		7,5...8,5		207	-25	Carburetor engines
Car-oil (М-4з/6В1)	ГОСТ 10541-78	–	5,5...6,5		165	-42	Engines at -35°C
Motor diesel M-10 B2	ГОСТ8581-78	–	10,5...11,5		205	-15	Diesels, pumping units
Transmission oil:							
ТСп-10	ГОСТ 23652-79		≥10		128	-40	Vehicles' gears
ТАп-15 В	ГОСТ 23652-79		14,0...16,0		185	-20	
ТАД-17и (nigrol):	ГОСТ 23652-79	110...120**	≥17,5		200	-25	
winter	ТУ 38.101110-86	–	18,0...22,0		170	-20	Gears of vehicles, industrial, lifting-transport equipment
summer	ТУ 38.101110-86		27,0...34,0		180	-5	
Turbine oil:							
Тп-30	ГОСТ 9972-74	41,4...5,06	–		190	-10	Turbines, turbine units, ventilators, smoke exhausters
Тп-46	ГОСТ 9972-74	61,2...74,8	–		220	-10	Ship steam turbines, mechanisms with hydraulic drive
Compressor oil:							
К-12	ГОСТ 1861-73	76**	11,0...14,0		216	-25	Compressors
КС-19	ГОСТ 9243-75	–	18,0...22,0		260	-15	
Cylinder oil:							
light 11	ОСТ 380185-75	–	9,0…13,0		215	5	Steam generating machines, heavy-duty mechanisms
light 24 (viscosine)	ОСТ 380185-75	–	22,0...28,0		240	20	Reducers of roller tables
heavy 38	ГОСТ 6411-76		32,0...5,0		300	17	Heavy-duty and low-speed transmission operating at high ambient temperatures
heavy 52 (steam cylinder oil)	ГОСТ 6411-76		50,0...7,0		310	-5	
Industrial oils of general purpose without additives							
И-5А	ГОСТ 20799-88	6...8			140	-18	Light-loaded high-speed mechanisms
И-8А	ГОСТ 20799-88	9...11			150	-15	
И-12А	ГОСТ 20799-88	13...17			170	-15	
И-20А	ГОСТ 20799-88	29...35			200	-15	Hydraulic machinery equipment, low-and medium-loaded transmission, rolling and sliding rails of machines
И-30А	ГОСТ 20799-88	41...51			210	-15	
И-40А	ГОСТ 20799-88	61...75			220	-15	
И-50А	ГОСТ 20799-88	90...110	–		225	-15	

* In brackets the grade of oil used previously.
** Kinematic viscosity at 50°C.
*** Kinematic viscosity at 20°C.

LUBRICATION AND STORAGE OF BEARINGS

Table 76 – cont'd

Oil description	Normative documentation	Kinematic viscosity, mm²/s, at temperature, °C			Temperature, °C		Example of bearing application field
			100		flash (no lower than)	solidifying point (no more than)	
Alloyed industrial oil of general purposes (with additives)							
ИГП-2	ТУ 38.1011191*88	2,2...2,6**	-		90	-15	Spindle assemblies
Instrument oil							
МВП	ГОСТ 1805-76	6,5...8,0**	-		125	-60	Instrumentation
МП-601	ТУ 38.101787-79	40,0***	9,0		230	-70	Bearings for micro electric machines
Instrument oil							
И-Л-С-5 (ИГП-6)	ТУ 38.101413-97	4,1...5,1			110	-15	Light-loaded high-speed mechanisms
И-Л-С-10(ИГП-8)	ТУ 38.101413-97	9,0...11,0			143	-15	
И-Л-С-22 (ИГП-6)	ТУ 38.101413-97	19,8...24,0			170	-15	
ИГП-18	ТУ 38.101413-97	24...30	-		180	-15	Gear boxes, reducers, coupling, bearing assemblies
ИГП-30	ТУ 38.101413-97	39...50	-		200	-15	
ИГП-38	ТУ 38.101413-97	55...65	-		210	-15	
ИГП-49	ТУ 38.101413-97	76...85	-		215	-15	
ИГП-72	ТУ 38.101413-97	110...125	-		220	-15	Gear transmission, medium-loaded toothed and worm gears, gear boxes
ИГП-91	ТУ 38.101413-97	148...165	-		225	-15	
ИГП-114	ТУ 38.101413-97	186...205	-		230	-15	
И-Т-Д-32 (ИРп-40, ИСП-40)*	ТУ 38.1011337-90	61,2...74,8			200	-18	Transmissions at moderate and heavy loads
И-Т-Д-100(ИРп-75, ИСП-65)*	ТУ 38.1011337-90	90...110			210	-18	
И-Т-Д-100(ИРп-75, ИСП-65)*	ТУ 38.1011337-90	9,...110			210	-18	
И-Т-Д-220 (ИРп-150, ИСП-110)*	ТУ 38.1011337-90	198...242			210	-18	
И-Т-Д-32 (ИСП-25)*	ТУ 38.1011337-90	28,8...35,2**	-		190	-18	Gear transmission and worm gearing
ИГП-152	ТУ 38.101413-97	265...280	-		230	-15	Loaded Gear transmission and worm gearing of reducer speed gearboxes
ИГП-182	ТУ 38.101413-97	320...348	-		240	-15	Heavy-loaded bearing assemblies at high temperatures
И-Т-Д-460 (ИТП-200)*	ТУ 38.1011337-90	414...506	-		210	-15	
И-Т-Д-680 (ИТП-300)*	ТУ 38.1011337-90	612...748	-		210	-5	
И-Т-С-320(мт) (ИМТ-160)*	ТУ 0252-008-00151911-94	288...352			210	-10	Supports for roll mills; for lubrication by oil mist (МТ)
ИТп-500	ТУ 38.101450-76	470...620**	-		275	-10	Bearings for calender rollers in the rubber industry
Synthetic liquids							
Synthetic ИПМ-10	ТУ 38.101299-90	-	≥3,0		190	-50	Heavy-loaded and high-speed bearings
Synthetic ВТ-301	ТУ 38.101657-85	-	≥8,5		250	-60	High-temperature bearings
Polyethylsiloxane ПЭС-5	ГОСТ 13004-77	100**	-		265	-60	–
Silicon organic ПМФС	ГОСТ 15866-70	600...1000**	28		300	-20	Slow-speed bearings
Ether № 2	ТУ 38.101272-72	17...20**	4,4		240	-60	–

* In brackets the grade of oil used previously.
** Kinematic viscosity at 50°C.
*** Kinematic viscosity at 20°C.

Intervals of oil change depend on the method of lubrication and operating conditions. Thus, when lubricating in oil bath it is usually sufficient to replace the oil once a year provided that the bearing temperature does not exceed 50°C. More simply, we may assume that the temperature rise for each 10°C reduces the oil life twice, for example at 30°C the oil life is 30 years, at 40°C it reduces up to 15 years, etc. At temperature of about 100°C the life of mineral oil is only three months and its regular replacement is required or it must be replaced by synthetic oil.

With circulating lubrication the oil change intervals are determined on the basis of the quality control of the oil. Therefore, a periodic monitoring of the oil can significantly increase the efficiency of the bearing operation.

GREASE LUBRICATION

Grease can be used for lubrication of rolling bearings operating under normal conditions and is suitable in most cases. The advantage of the grease over the oil is that it is easier to hold in the bearing unit cavity, especially on sloping or vertical shafts. In addition, it helps to seal the bearing unit and prevents penetration of dirt and moisture.

Grease consists of mineral or synthetic oil and a thickener. As a thickener, sodium, calcium or lithium soaps are usually used. Thickener provides a structural framework of intertwined fibers, which provides grease with plasticity, and in the cells of which grease is retained.

Grease is well kept in the bearing, it does not leak under the influence of gravity and resists to the action of centrifugal forces, pushing it out of the bearing during the rotation. Properties of grease are determined by the thickener composition.

Typically, bearing in whole and the free space in the housing are filled with grease only partially from 30% up to 50%. However, when using lithium grease for supports, not subjected to strong vibrations, free space of housing may be filled up to 90%, without fear of excessive temperature rise. When the support is filled with larger than normal quantity of grease, this increases the reliability of protection from dirt ingression and prolongs grease life.

Excessive quantity of grease causes rapid increase in bearing operating temperature, especially at high rotational speeds. As a general rule, before the bearing starts only the bearing should be filled with grease, while free space in the housing should be filled with grease only partially.

Before you operate the bearing at the operating rotational speed, allow grease excess to settle or leak from during run-in period. At the end of the run-in period the working temperature will be reduced significantly, which means that the grease was distributed in the cavity of the bearing unit.

However, in cases when the bearing rotates at low speed and a good protection against dirt and corrosion is desired, it is recommended to fill the cavity of the housing with grease completely.

Filling of rolling bearings with grease should be made directly before the assembling of the unit due to purity requirements. The later the bearing will be filled with grease, the lower the risk of contamination.

Later filling with grease may be associated with a type of a bearing or a feature of the assembly design. So, if the value of clearance in tapered bore bearings is required to be adjusted, the relevant measurements can be made only prior to grease filling. It is impractical to fill grease in advance and in case, when the bearing assembly should be heated prior to mounting. Preliminary filling of a bearing with grease is recommended only in cases, when it is impossible to distribute lubricant between rolling elements and raceways after mounting.

High-speed rolling bearings, for example, spindle assemblies of metal-cutting tools should be lubricated with a small amount of grease to minimize the temperature of the unit. In the supports subjected to strong vibrations, such as in the wheel hubs and axle-boxes of cars and railway wheels, as well as in vibration machines, grease should not fill more than 60% of free volume.

Method for filling bearing with grease is selected depending on the type of bearing.

For separable bearings (cylindrical, taper, thrust) the filling with grease is carried out in sequence of mounting, lubricating the raceway with a thin layer.

For non-separable bearings, such as deep groove radial and thrust ball bearings, grease should be placed at both faces. Self-aligning ball bearings and spherical roller bearings can be filled with grease by turning the ring and placing the grease between the rolling elements. The basic assortment of grease and technical characteristics are given in table 77.

Supplementary symbols for grease in a complete designation of closed type bearings are listed in table 5.

LUBRICATION AND STORAGE OF BEARINGS

Table 77 – Plastic antifriction materials for rolling bearings

Lubricant description	Normative documentation	Temperature applied, °C	Penetration at 25°C, Pa	Strength limit, at 20°C, Pa		Viscosity at 0°C and 10°C^{-1}, Pa•s, max	Colloid stability, %, max	Brief characteristic
Calcium								
Solid oil C cup grease	ГОСТ 4366-76	-25...+65	260...310	300...700		200	5	Relatively coarse friction units for general machines and mechanisms
Solid oil Ж cup grease	ГОСТ 1033-79	-25...+65	230...290	300...600		250	13	Friction units of general use
ИП-1 summer	ТУ 0254-010-05766706-2003	0...+70	280...310	250...450		250	10	Bearings for metallurgical equipment
ИП-1 winter		-10...+70	310...360	250...450		250	10	
КБС	ТУ38.1011019-85	-30...+110	190...250	≥400		350	15	Roller bearings for coordinate boring machines
Complex calcium								
Униол-2М/1	ТУ 38.5901243-92	-40...+160	280...320	200...500		160	10	Friction units of industrial equipment, tunnel furnaces, hot conveyors, tractors and agricultural machinery
Униол-2М/2	ТУ 38.5901243-92	+30...+160	330...380	≥410		110	12	Friction units of metallurgical and ore-dressing equipment
ЦИАТИМ-221	ГОСТ 9433-80	-60...+150	280...360	250...450		80...200	7	Rolling bearings for control system electric machines, devices with rotational speed up to 10000 min^{-1}
ВНИИНП-247	ТУ 38.401325-81	-40...+180	220...250	690		20	8	Rolling bearings, gears of for electrical fans with rotation speed up to 20000 min^{-1}, micro electrical machines of different power
ВНИИНП-207	ГОСТ 19774-74	-60...+200	220...245	250...500		180	7	Rolling bearings for electrical machines and starter-generators with rotation speed up to 10000 min^{-1}
ВНИИНП-219	ТУ 38.101471-74	-50...+200	355...380	250...500		180	7	Rolling bearings for electrical machines and starter-generators with increased loads and rotation speed up to 9000 min^{-1}
САПФИР (ВНИИНП-261)*	ТУ 38.1011051-87	-40...+150	265...295	240...420		70	5	Taper roller bearings, continuously operating at sharp varying loads and rapid rotational speeds
Sodium and sodium-calcium								
1-13	ТУ 38.401-58-142-95	-20...+110	180...250	500...1000		500	20	Washed with water. Electric motors, wheel hubs
ВНИИНП-223	ГОСТ 12030-80	-45...+150	320...370	≥150		60	15	Instrument grease. Special high-speed ball bearings with rotation speed up to 60000 min^{-1} , bearings of sensitive supports of precise mechanisms and friction units of computing machines
ВНИИНП-228	ОСТ 38.01438-87	-45...+150	320...370	≥110		40	14	Instrument grease. Special high-speed ball bearings with rotation speed up to 60000 min^{-1}, sensitive supports of precise mechanisms and friction units of computing machines
ВНИИНП-260	ГОСТ 19832-87	-50...+180	320...360	110...170		Б100	8	Instrument grease. High-speed ball bearings with rotation speed up to 60000 min^{-1}
ЛЗ-ЦНИИ	ГОСТ 19791-74	-40...+100	200...260	700...1000		450	23	Roller bearings of railway rolling stock
Конталин	ГОСТ 1957-73	-20...+110	225...272	150...300		500	20	Friction units of fans in casting machines, blast furnaces and cement kilns

* In brackets the designation of analogue grade of lubricant used earlier.

LUBRICATION AND STORAGE OF BEARINGS

Table 77 – cont'd

Lubricant description	Normative documentation	Temperature applied, °C	Penetration at 25°C, Pa	Strength limit, at 20°C, Pa		Viscosity at 0°C and 10°C^{-1}, Pa•s, max	Colloid stability, %, max	Brief characteristic
Lithium grease or their mixtures								
ЦИАТИМ-201	ГОСТ 6267-74	-60...+90	265...310	350...500		80...170	26	Friction units of aircraft and helicopters. Not recommended for use at high specific loads.
ЭРА	ТУ 38.101950-83	-60...+120	310...370	200...400		115	35	Control systems of aircrafts, apparatus
ВНИИНП-286	ТУ 38.101181-77	-60...+120	210...250	500...600		110	35	Bearings for gyroscope rotors
ВНИИНП-242	ГОСТ 20421-75	-30...+110	220...250	500...1200		500	10	Rolling bearings for ship horizontal electrical machines
Литол-24	ГОСТ 21150-87	-40...+120	220...250	500...1000		280	12	Multipurpose grease. Main friction units of wheel and tracked transport vehicles, tractors, industrial machinery, electrical machinery, etc.
Фиол-1	ТУ 38 УССР 201247-80	-40...+120	310...340	≥250		200	25	Light-loaded small-sized rolling bearings
Фиол-2	ТУ 38 УССР 201188-79	-40...+120	265...295	≥300		250	16	Rolling bearings, plain bearings and gears for industrial machinery and mechanisms
Фиол-2М	ТУ 38101233-75	-40...+120	265...295	≥300		170	12	Light-loaded small-sized rolling and plain bearings of vehicle electrical equipment
ЛС-1П	ТУ 38 УССР 201145-77	-40...+130	310...340	≥110		40	25	Heavy-loaded friction units casting, forging and other equipment with a centralized lubrication supply
ЛСЦ-15	ТУ 38 УССР 201224-80	-40...+120	250...280	≥500		280	15	Grease can be used as general-purpose lubricant in friction units of medium-and low-loaded industrial equipment
ЖРО	ТУ 32ЦТ520-83	-40...+120	190...250	800...1000		370	12	Rolling bearings for axle-boxes in railway locomotive, traction electric motors
Л3-31	ТУ 38.1011144-88	-40...+120	22.000250	500...620		280	12	Multipurpose, long-running grease. Electrical motors of general purpose.
ШРУС-4	ТУ 38 УССР 201312-81	-40...+120	250...280	300...700		250	16	Constant velocity joints of four-wheel drive vehicles and other friction units
ЛДС-3	ТУ 38 УССР 201473-87	-50...+130	230...280	≥200 при 800С		200	18	Electric motors of general purpose with increased life
БН3-3	ТУ 38 УССР 201357-80	-30...+110	230...280	550...700		500	15	Closed roller supports of conveyors in mine industry
№158	ТУ 38.101320-77	-30...+110	310...340	150...500		400	23	Bearings of automobile and tractor electrical equipment, needle bearings of gimbal gear
ВНИИНП-293	ТУ 38.101604-76	-60...+150	–	140...170		180	31	Instrument small-sized bearings
ОКБ-122-7	ГОСТ 17179-72	-40...+100	175...205	1000... 1500		500	10	Friction units of devices and precise mechanisms
СВЭМ (ВНИИНП-288*)	ТУ 38.101982-86	-50...+120	265...295	560...60		110	10	Rolling bearings of ship electrical machines with vertical and horizontal shaft position
АТЛАНТА (ВНИИНП-254*)	ТУ 38.101104-85	-60...+150	31.000340	300...400		50	25	Sliding friction units, needle bearings and screw mechanisms
ЛКС-2	ТУ 38.1011015-85	-40...+150	265...295	≥300		180	12	Scuff-resistance grease. The main spindles of metal-cutting machines.
ЛИТИН-2	ТУ 0254-311-00148820-96	-40...+120	265...295	–		–	10	Needle bearings of cardan gimbals and other automobile assemblies.
ИНДА	ТУ 38.101991-84	0...300	–	≤200 (при50°С)		≤5 (при 50 °С)	15	High-temperature grease. Low-speed conveyors, load carrier.
ЮНОЛА	ТУ 38.401-58-124-95	-50... 160	250...290	–		≥8(при50 °С)	–	Friction units of textile finishing equipment. Resistant to aggressive media, high humidity
РОБОТЕМП	ТУ 0254-004-25766706-98	-50...150	265...295	300...900		≤180	–	Heavy-loaded units of industrial equipment

* In brackets the designation of analogue grade of lubricant used earlier.

BEARING STORAGE

The working surfaces of rolling bearings are of high quality. Any violation of surface quality leads to early wear and reduced bearing life.

Bearings are basically made of ferrous metal, so the main danger for them is corrosion, which is completely unallowable in the working surfaces of the bearing. In order to prevent corrosion during storage and transportation the bearings are subjected to preservation. Bearings are supplied to a customer being preserved, that is, washed from the pollution, lubricated with corrosion-resistant lubricant, that is mineral oil with an inhibitor, and packed in a special package.

Warranty period of storage, within which preservative agent can prevent the bearing from corrosion, depends on methods of preservation and packaging, and on the storage conditions. The task of the customer is to keep the bearings according to manufacturer instructions.

Corrosion initiation of bearings during storage depends on two main factors:

1) relative air humidity, in which bearings are stored: the lower is humidity, the less intensive is the process of corrosion. Practically, when the relative humidity is below 40% corrosion does not occur;

2) temperature differences in the room during the day. The less is a difference, the more favourable conditions are for the storage of bearings. Considerable temperature differences high relative humidity is extremely dangerous.

In this case, moisture may condense on bearing surfaces, which dramatically increases the risk of corrosion. These factors determine the requirements for the warehouse for the storage of bearings.

The storage area must be dry, heated, ventilated, located away from places where the air contains impurities of substances causing corrosion to metals, to which belong chemical, etching and electroplating shops.

Room temperature should be, if possible, within the range from 15 up to 25°C. Daily temperature variances should not be exceeded 5°C. Relative humidity in the room must not exceed 60%. It is desirable to be probably lower. During the storage in warehouse conditions of bearings storage (humidity and temperature) must be monitored.

Registration of air temperature and humidity shall be provided twice a day.

Warehouse for bearings storage must be equipped with special open-type racks, shelves of which should be covered by sheet iron. Racks should be of different cell sizes, depending on the nomenclature of bearings used in the enterprise.

The floors in the warehouse should be cemented, tiled, parqueted or wooden with tight fitting planks, without gaps. Wooden floors should be painted. The floor shall be placed at height no less than 0.20 m from the ground.

Water installations must not be located in the warehouse, with the exception of fire cocks. Leakage of water and steam out of heating systems is not allowed.

Large bearings with internal diameter of 200 mm are recommended to place in storage on against (upon) the face to avoid possible deformation of thin-walled rings.

Supplied bearings must be utilized by a customer during the warranty period of preservation (storage), specified in specifications for bearings or in supporting documents while their delivery.

In case of damage to a bearing package by a consumer re-preservation according to the requirements specified in supporting documents should be recommended.

Re-preservation of bearings by a customer is forbidden. In the case of bearings re-preservation by a consumer the manufacturer guarantee s expired.

SINGLE ROW DEEP GROOVE BALL BEARINGS

Single-row deep groove ball bearings are designed to carry radial loads as well as axial loads in both directions, especially with increased radial clearance. At the same time the axial loads may compose 70% of unused radial load.

Deep groove ball bearings of the relevant design, with relevant cage material, with relevant lubrication operate at extremely high speeds.

Deep groove ball bearings hold fixed a shaft position relative to the housing in both directions. The bearings, not being a self-aligning, allow only small shaft misalignment in support (up to 10), the value of which depends on the internal clearances, without decreasing the life. In this case the bearings must rotate at low rotational speed. The number of design variants of these bearings is large enough, and most of them are standardized.

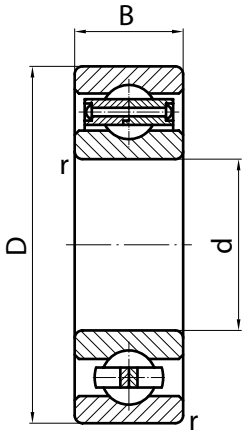
To simplify axial mounting the bearing can be designed with the snap ring groove in on outer ring, in which a snap ring is inserted during the mounting.

In order to simplify and reduce the maintenance costs the bearings are produced with seals and greased-for-life. Deep groove ball bearings are produced in two design variants: with metal shields and rubber-metal seals. Seals can also be installed on one side.

There are also various designs of cages for deep groove ball bearings. The most common type is the ribbon-type cage of two steel semi-cages connected by rivets.

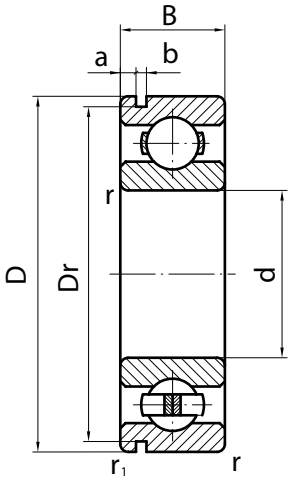
For special operating conditions solid brass, textolite and polyamide cages are used.

SINGLE ROW DEEP GROOVE BALL BEARINGS



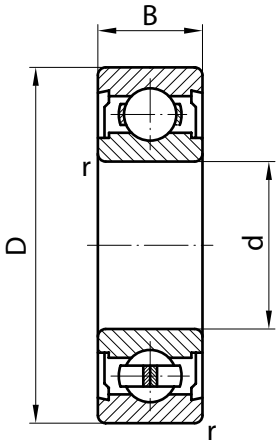
0000, 1000000, 7000000

with grooves
on outer rings



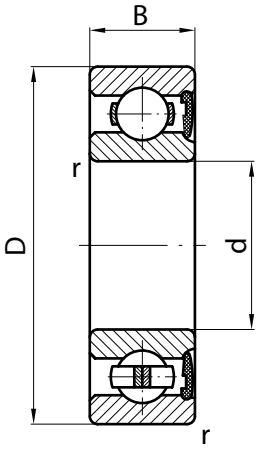
50000, 170000

with two shields



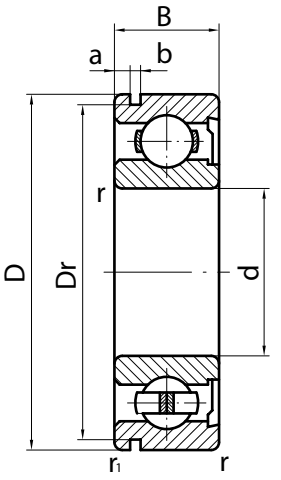
80000

with seal on one side



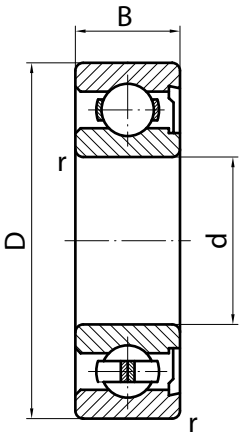
160000, 1160000

with grooves on outer rings
and with one shield



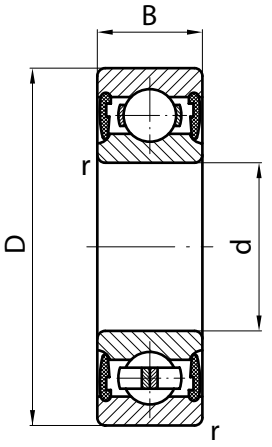
150000

with one
shield



60000

with seals on both sides



180000, 1180000

SINGLE ROW DEEP GROOVE BALL BEARINGS

TYPE 0000, 50000, 60000, 80000, 150000,160000, 170000, 180000, 1000000, 7000000,1160000, 1180000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	Dr	a	b	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
7	22	7				0,3		27		3250	1350	30000	36000	0,011	27	627
7	22	7				0,3		80027		3250	1350	30000		0,011	80027	627-2Z
8	22	7				0,3		18		3250	1340	32000	38000	0,011	18	608
8	22	7				0,3		80018		3250	1340	32000		0,012	80018	608-2Z
9	26	8				0,3		29		4620	1960	28000	34000	0,020	29	629
9	26	8				0,3		80029		4620	1960	28000		0,018	80029	629-2Z
12	32	10				0,6		201		6890	3100	22000	28000	0,038	201	6201
12	32	10				0,6		201E5		6890	3100	11000	14000	0,037	201E5	6201TN
12	32	10				0,6		60201		6890	3100	22000		0,039	60201	6201-Z
12	32	10				0,6		80201		6890	3100	22000		0,040	80201	6201-2Z
15	35	11				0,6		202		7800	3750	19000	24000	0,046	202	6202
15	35	11				0,6		202E5		7800	3750	10000	12000	0,044	202E5	6202TN
15	35	11				0,6		60202		7800	3750	19000		0,050	60202	6202-Z
15	35	11				0,6		80202		7800	3750	19000		0,052	80202	6202-2Z
17	40	12				0,6		203		9560	4750	17000	20000	0,060	203	6203
17	40	12				0,6		203E5		9560	4750	8500	10000	0,048	203E5	6203TN
17	40	12				0,6		203A		9560	4750	17000	20000	0,065	203A	6203
17	40	12	38,1	2,06	1,35	0,6	0,5	50203A		9560	4750	17000	20000	0,064	50203A	6203N
17	40	12				0,6		60203		9560	4750	17000		0,061	60203	6203-Z
17	40	12				0,6		60203A		9560	4750	17000		0,064	60203A	6203-Z
17	40	12				0,6		80203A		9560	4750	17000		0,064	80203A	6203-2Z
17	40	12				0,6		160203A		9560	4750	12000		0,065	160203A	6203-RS
17	40	12				0,6		180203A		9560	4750	12000		0,067	180203A	6203-2RS
20	42	12				0,6		104A		12170	5000	17000	20000	0,067	104A	6004
20	47	14				1,0		204		12700	6550	15000	18000	0,100	204	6204
20	47	14				1,0		204E5		12700	6550	7500	9000	0,094	204E5	6204TN
20	47	14				1,0		204A		12700	6550	15000	18000	0,107	204A	6204
20	47	14				1,0		60204E5		12700	6550	7500		0,102	60204E5	6204-ZTN
20	47	14				1,0		60204		12700	6550	15000		0,101	60204	6204-Z
20	47	14				1,0		60204A		12700	6550	15000		0,106	60204A	6204-Z
20	47	14				1,0		80204AT		12700	6550	15000		0,108	80204AT	6204-2Z.S1
20	47	14				1,0		160204		12700	6550	15000		0,102	160204	6204-RS
20	47	14				1,0		160204A		12700	6550	10000		0,108	160204A	6204-RS
20	47	14				1,0		180204		12700	6550	15000		0,120	180204	6204-2RS
20	47	14				1,0		180204A		12700	6550	10000		0,110	180204A	6204-2RS
20	52	18				1,1		1160304		16000	7800	13000		0,174	1160304	
20	52	18				1,1		1160304AK		15900	7800	9500		0,157	1160304AK	
20	52	18				1,1		1180304AK2		15900	7800	9500		0,162	1180304AK2	
25	37	7				0.3		1000805E5		3550	2800	8500	10000	0,016	1000805E5	
25	52	15				1,0		205		14000	7800	12000	15000	0,116	205	6205
25	52	15				1,0		205E5		14000	7800	6000	7500	0,119	205E5	6205TN
25	52	15				1,0		205AE5У		18200	7800	6000	7500	0,110	205AE5У	6205TN
25	52	15				1,0		205A		14000	7800	12000	15000	0,125	205A	6205
25	52	15	49,73	2,46	1,35	1,0	0,5	50205AE5У		18200	7800	12000	15000	0,108	50205AE5У	6205NTN
25	52	15				1,0		60205		14000	7800	12000		0,101	60205	6205-Z
25	52	15				1,0		60205A		14000	7800	12000		0,129	60205A	6205-Z
25	52	15				1,0		60205ЮТ		14000	7800	12000		0,120	60205ЮТ	S6205-Z.S1
25	52	15				1,0		80205		14000	7800	12000		0,100	80205	6205-2Z
25	52	15				1,0		80205A		14000	7800	12000		0,127	80205A	6205-2Z
25	52	15				1,0		160205A		14000	7800	8500		0,132	160205A	6205-RS
25	52	15				1,0		180205		14000	7800	8500		0,128	180205	6205-2RS
25	52	15				1,0		180205A		14000	7800	8500		0,129	180205A	6205-2RS
25	62	17				1,3		305		22500	11600	11000	14000	0,229	305	6305

SINGLE ROW DEEP GROOVE BALL BEARINGS

TYPE 0000, 50000, 60000, 80000, 150000,160000, 170000, 180000, 1000000, 7000000,1160000, 1180000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	Dr	a	b	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
25	62	17				1,1		305A		22500	11600	11000	14000	0,226	305A	6305
25	62	17				1,1		305Б		22500	11600	11000	14000	0,277	305Б	6305M
25	62	17				1,1		305Е5		22500	11400	5500	7000	0,300	305Е5	6305TN
25	62	17				1,1		305Ю		22500	11600	11000	14000	0,229	305Ю	S6305
25	62	17				1,3		305Ю1Т		22500	11600	11000	14000	0,307	305Ю1Т	S6305MS1
25	62	17	59,61	3,28	1,90	1,1	0,3	50305A		22500	11600	11000	14000	0,226	50305A	6305N
25	62	17	59,61	3,28	1,90	1,1	0,3	50305A1E		25600	13600	11000	14000	0,222	50305A1E	6305NTN
25	62	17	59,61	3,28	1,90	1,1	0,5	50305A2E		29250	11600	11000	14000	0,216	50305A2E	6305NTN
25	62	17	59,61	3,28	1,90	1,1	0,5	50305E5		22500	11600	11000	14000	0,295	50305E5	6305TN
25	62	17				1,1		60305		22500	11600	11000		0,225	60305	6305-Z
25	62	17				1,1		80305A		22500	11600	11000		0,215	80305A	6305-2Z
25	62	17				1,1		180305A		22500	11600	7500		0,217	180305A	6305-2RS
25	62	21				1,1		1160305		22400	11400	7500		0,275	1160305	
25	62	21				1,1		1160305A		22500	11600	7500		0,259	1160305A	
30	55	13				1,0		106		13300	8300	12000	15000	0,120	106	6006
30	55	13				1,0		60106		13300	8300	12000		0,121	60106	6006-Z
30	62	16				1,0		206АК		25350	11200	10000	13000	0,200	206АК	6206
30	62	16				1,0		206Е5		19500	11200	5000	6500	0,197	206Е5	6206TN
30	62	16				1,0		206К		19500	11200	10000	13000	0,200	206К	6206
30	62	16				1,0		206К1		19500	11200	10000	13000	0,214	206К1	6206
30	62	16	59,61	3,28	1,90	1,0	0,5	50206АК		25350	11200	10000	13000	0,200	50206АК	6206N
30	62	16				1,0		60206АК		25350	11200	10000		0,190	60206АК	6206-Z
30	62	16				1,0		60206К		19500	11200	10000		0,190	60206К	6206-Z
30	62	16				1,0		60206К1		19500	11200	10000		0,212	60206К1	6206-Z
30	62	16				1,0		80206К		19500	11200	10000		0,193	80206К	6206-2Z
30	62	16				1,0		80206К1		19500	11200	10000		0,208	80206К1	6206-2Z
30	62	16	59,61	3,28	1,90	1,0	0,5	150206АК		25000	13000	7500		0,191	150206АК	6206-ZN
30	62	16				1,0		180206А		19500	11200	7500		0,211	180206А	6206-2RS
30	62	16				1,0		180206АК		25350	11200	10000		0,193	180206АК	6206-2RS
30	72	19				1,3		306		28100	16000	9000	11000	0,351	306	6306
30	72	19				1,1		306А		28100	16000	9000	11000	0,358	306А	6306
30	72	19				1,1		306АЕ5		36500	16000	10000	13000	0,340	306АЕ5	6306TN
30	72	19				1,3		306К		28100	16000	9000		0,351	306К	6306
30	72	19	68,81	3,28	1,90	1,1	0,5	50306АЕ5		35100	16000	9000	11000	0,330	50306АЕ5	6306NTN
30	72	19	68,81	3,28	1,90	1,1	0,5	50306АЕ5У		36500	16000	9000	11000	0,330	50306АЕ5У	6306NTN
30	72	19	68,81	3,28	1,90	1,1	0,3	50306АК2У		28100	16000	9000	11000	0,337	50306АК2У	6306N
30	72	19				1,1		60306А		36530	16000	9000		0,325	60306А	6306-Z
30	72	19				1,1		60306К		28100	16000	9000		0,340	60306К	6306-Z
30	72	19				1,1		80306А		36530	16000	9000		0,340	80306А	6306-2Z
30	72	19				1,1		180306А		28100	16000	6300		0,357	180306А	6306-2RS
30	75	19	71,83	3,28	1,90	1,1	0,3	50706АЕУ		26000	17600	8000	10000	0,384	50706АЕУ	6706NTN
30	75	19	71,83	3,28	1,90	1,1	0,3	50706УШ1		33000	17850	9000	11000	0,388	50706УШ1	
35	62	14				1.0		107		15900	10200	5000	6000	0,132	107	6007
35	72	17				1,1		207		25500	15300	9000	11000	0,289	207	6207
35	72	17	68,81	3,28	1,90	1,1	0,5	50207		25500	15800	9000	11000	0,290	50207	6207N
35	72	17				1,1		60207		25500	15300	9000		0,288	60207	6207-Z
35	72	17				1,1		80207		25500	15300	9000		0,286	80207	6207-2Z
35	72	17				1,1		180207		25500	15300	6300		0,279	180207	6207-2RS
35	80	21				1,5		307		33200	19000	8500	10000	0,441	307	6307
35	80	21				1,5		307А1		33200	19000	8500	10000	0,440	307А1	6307
35	80	21				1,5		307Е5		33200	19000	8500	10000	0,422	307Е5	6307TN
35	80	21	76,81	3,28	1,90	1,5	0,5	50307		33200	19000	8500	10000	0,430	50307	6307N
35	80	21	76,81	3,28	1,90	1,5	0,5	50307А1		33200	19000	8500	10000	0,428	50307А1	6307N
35	80	21	76,81	3,28	1,90	1,5	0,5	50307АКШ		33200	19000	8500	10000	0,428	50307АКШ	6307N
35	80	21				1,5		60307А1		33200	19000	8500		0,434	60307А1	6307-Z
35	80	21				1,5		80307А1		33200	19000	8500		0,456	80307А1	6307-2Z
35	100	25	96,80	3,28	2,70	1,5	0,5	50407		55300	31000	7000	8500	0,926	50407	6407N

SINGLE ROW DEEP GROOVE BALL BEARINGS

TYPE 0000, 50000, 60000, 80000, 150000,160000, 170000, 180000, 1000000, 7000000,1160000, 1180000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	Dr	a	b	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
40	80	18				1,1		208		32000	19000	8500	10000	0,358	208	6208
40	80	18				1,1		208A		30700	19000	8500	10000	0,363	208A	6208
40	80	18				1,1		208E5		32000	19000	8500	10000	0,344	208E5	6208TN
40	80	18				1,1		208Ю		30700	19000	8500	10000	0,359	208Ю	S6208
40	80	18	76,81	3,28	1,90	1,1	0,5	50208		32000	19000	8500	10000	0,357	50208	6208N
40	80	18	76,81	3,28	1,90	1,1	0,5	50208A		30700	19000	8500	10000	0,357	50208A	6208N
40	80	18	76,81	3,28	1,90	1,1	0,5	50208E5		32000	19000	8500	10000	0,342	50208E5	6208NTN
40	80	18				1,1		60208		32000	19000	8500		0,360	60208	6208-Z
40	80	18				1,1		60208A		30700	19000	8500		0,356	60208A	6208-Z
40	80	18				1,1		80208		30700	19000	8500		0,345	80208	6208-2Z
40	90	23				1,5		308		41000	24000	7500	9000	0,635	308	6308
40	90	23				1,5		308A1		41000	24000	7500	9000	0,635	308A1	6308
40	90	23				1,5		308A1У		41000	24000	7500	9000	0,635	308A1У	6308
40	90	23				1,5		308E		41000	24000	7500	9000	0,638	308E	6308TN
40	90	23				1,5		308E5		41000	24000	7500	9000	0,610	308E5	6308TN
40	90	23				1,5		308Л		41000	24000	7500	9000	0,700	308Л	6308M
40	90	23				1,5		308У		41000	24000	7500	9000	0,635	308У	6308
40	90	23				1,5		60308		41000	24000	7500		0,640	60308	6308-Z
40	90	23				1,5		60308A1		41000	24000	7500		0,646	60308A1	6308-Z
40	90	23				1,5		80308		41000	24000	7500		0,646	80308	6308-2Z
40	90	23				1,5		80308A1		41000	24000	7500		0,650	80308A1	6308-2Z
40	90	23	86,79	3,28	2,70	1,5	0,5	150308A		41000	24000	7500		0,637	150308A	6308-ZN
40	90	23				1,5		170308E**		41000	24000	7500	9000	0,640	170308E**	
40	90	23				1,5		180308		41000	24000	7500		0,651	180308	6308-2RS
45	85	19				1,1		209		33200	21600	7500	9000	0,410	209	6209
45	85	19				1,3		209A		33200	21600	7500	9000	0,411	209A	6209
45	85	19				1,1		209A2		33200	21600	7500	9000	0,407	209A2	6209
45	85	19				1,1		209E5		33200	21600	7500	9000	0,405	209E5	6209TN
45	85	19				1,1		209Ю		33200	21600	7500	9000	0,406	209Ю	S6209
45	85	19	81,81	3,28	1,90	1,1	0,5	50209A		33200	21600	7500	9000	0,401	50209A	6209N
45	85	19	81,81	3,28	1,90	1,1	0,5	50209A2		33200	21600	7500	9000	0,401	50209A2	6209N
45	85	19				1,1		60209A2		33200	21600	7500		0,410	60209A2	6209-Z
45	85	19				1,1		80209		33200	21600	7500		0,406	80209	6209-2Z
45	100	25				1,5		309		52700	31500	6700	8000	0,821	309	6309
45	100	25	96,80	3,28	2,70	1,5	0,5	50309		52700	31500	6700	8000	0,820	50309	6309N
45	100	25				1,5		180309		52700	31500	4500		0,823	180309	6309-2RS
45	120	29				2,0		409AK		76100	45000	6000	7000	1,550	409AK	6409
45	120	29	115,21	4,06	3,10	2,0	0,5	50409		76100	45000	6000	7000	1,600	50409	6409N
45	120	29	115,21	4,06	3,10	2,0	0,5	50409AK		76100	45000	6000	7000	1,520	50409AK	6409N
45	120	29	115,21	4,06	3,10	2,0	0,5	150409AK		76100	45000	6000		1,480	150409AK	6409-ZN
50	80	16				1,0		110E5		21600	16000	8500	10000	0,251	110E5	6010TN
50	90	20				1,1		210		35100	23200	7000	8500	0,461	210	6210
50	90	20				1,1		210A		35100	23200	7000	8500	0,432	210A	6210
50	90	20				1,1		210AK		35100	23200	7000	8500	0,393	210AK	6210
50	90	20				1,1		210K		35100	23500	7000	8500	0,466	210K	6210
50	90	20				1,1		210Ю		35100	23200	7000	8500	0,534	210Ю	S6210
50	90	20				1,1		210Ю1		35100	23200	7000	8500	0,461	210Ю1	S6210
50	90	20	86,79	3,28	2,70	1,1	0,5	50210A		35100	23200	7000	8500	0,426	50210A	6210N
50	90	20	86,79	3,28	2,70	1,1	0,5	50210K		35100	23500	7000	8500	0,457	50210K	6210N
50	90	20				1,1		60210A		35100	23200	7000		0,456	60210A	6210-Z
50	90	20				1,1		60210K		35100	23500	7000		0,477	60210K	6210-Z
50	90	20				1,1		80210A		35100	23200	7000		0,457	80210A	6210-2Z
50	110	27				2,0		310		61800	38000	6300	7500	1,110	310	6310
50	110	27				2,0		310A		61800	38000	6300	7500	1,100	310A	6310

** Bearings with retaining notch on outer ring mounting surface without snap ring groove.

SINGLE ROW DEEP GROOVE BALL BEARINGS

TYPE 0000, 50000, 60000, 80000, 150000,160000, 170000, 180000, 1000000, 7000000, 1160000, 1180000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	Dr	a	b	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
50	110	27				2,0		310E5		61800	38000	6300	7500	1,030	310E5	6310TN
50	110	27	99,06	3,28	2,70	2,0	0,5	50310		61800	38000	6300	7500	1,060	50310	6310N
50	110	27	106,81	3,28	2,70	2,0	0,5	50310A		61800	38000	6300	7500	1,100	50310A	6310N
50	110	27				2,0		60310A		61800	38000	6300		1,080	60310A	6310-Z
50	110	27				2,0		80310A		61800	38000	6300		1,090	80310A	6310-2Z
50	110	27				2,0		80310Ш2У		61800	38000	6300		1,090	80310Ш2У	6310Q7-2Z
50	110	27				2,0		170310E**		61800	38000	6300	7500	1,080	170310E**	
55	100	21				1,5		211		43600	29000	6300	7500	0,606	211	6211
55	100	21				1,5		211A		43600	29000	6300	7500	0,606	211A	6211
55	100	21				1,5		211Д1		43600	29000	6300	7500	0,632	211Д1	6211L
55	100	21				1,5		211Ю		43600	29000	6300	7500	0,601	211Ю	S6211
55	100	21				1,5		80211K		43600	29000	6300		0,641	80211K	6211-2Z
60	95	18				1,1		112		29600	23200	6700	8000	0,394	112	6012
60	110	22				1,5		212		52000	32500	6000	7000	0,797	212	6212
60	130	31				2,1		312		81900	52000	5000	6000	1,700	312	6312
60	130	31				2,1		312A		81900	52000	5000	6000	1,700	312A	6312
60	130	31				2,1		312E		81900	52000	5000	6000	1,700	312E	6312TN
60	130	31				2,1		312K		81900	52000	5000	6000	1,700	312K	6312
60	130	31				2,5		312Ш2У		81900	52000	5000	6000	1,700	312Ш2У	6312 Q7
60	130	31				2,1		312Ю		81900	52000	5000	6000	1,700	312Ю	S6312
60	130	31				2,1		60312		81900	52000	5000		1,690	60312	6312-Z
60	130	31				2,1		80312A		81900	52000	5000		1,670	80312A	6312-2Z
60	130	31				2,1		80312Ш2У		81900	52000	5000		1,670	80312Ш2У	6312Q7-2Z
60	130	31				2,1		180312AK		81900	52000	3400		1,800	180312AK	6312-2RS
60	150	35	145,24	4,90	3,10	2,1	0,5	50412AK		108000	69500	4800	5600	2,870	50412AK	6412N
60	150	35	145,24	4,90	3,10	2,1	0,5	170412AKЛ		138400	101000	4800	5600	3,100	170412AKЛ	
65	100	18				1,1		113		30700	25000	6300	7500	0,435	113	6013
65	120	23				1,5		213		56000	40500	5300	6300	0,995	213	6213
65	140	33				2,1		313		92300	60000	4800	5600	2,110	313	6313
65	140	33				2,1		313A		95690	60000	4800	5600	2,170	313A	6313
65	140	33				2,1		313E		92300	60000	4800	5600	2,140	313E	6313TN
65	140	33				2,1		313Л		92300	60000	4800	5600	2,670	313Л	6313M
65	140	33				2,1		313Ю2		92300	60000	4800	5600	2,320	313Ю2	S6313TN
65	140	33	135,53	4.9	3,1	2,1	0,5	50313A		120000	60000	4800	5600	2,140	50313A	6313N
65	160	37	155,22	4.9	3,1	2,1	0,5	50413		119000	78100	4500	5300	3,400	50413	6413N
65	140	33				2,1		313Ш2У		92300	60000	4800	5600	2,110	313Ш2У	6313Q7
65	140	33				2,1		170313E**		92300	60000	4800	5600	2,110	170313E**	
65	160	37				2,1		413*		119000	78000	4500	5300	3,410	413*	6413
70	110	20				1,1		114		37700	31000	6000	7000	0,592	114	6014
70	110	20				1,1		114A		37700	31000	6000	7000	0,595	114A	6014
70	125	24				1,5		214		60500	45000	5000	6000	1,060	214	6214
70	125	24				1,5		214K		61800	45000	5000	6000	1,100	214K	6214
70	125	24				1,5		214Ш2У		60500	45000	5000	6000	1,060	214Ш2У	6214Q7
70	125	24				1,5		214Ю		60500	45000	5000	6000	1,380	214Ю	S6214
70	125	24				1,5		214Ю1		60500	45000	5000	6000	1,350	214Ю1	S6214
70	125	24				1,5		60214		60500	45000	5000		1,080	60214	6214-Z
70	125	24				1,5		60214K		61800	45000	5000		1,100	60214K	6214-Z
70	125	24				1,5		80214K		61800	45000	5000		1,150	80214K	6214-2Z
70	150	35				2,1		314		104000	68000	4500	5300	2,530	314	6314
70	150	35				2,1		60314Ш		104000	68000	4500		2,530	60314Ш	6314-Z
70	150	35	145,24	4,9	3,1	2,1		170314Л		115500	102200	3800	4700	3,200	170314Л	
75	115	20				1,1		115A		51600	33500	5600	6700	0,671	115A	6015
75	130	25				1,5		215		66300	49000	4800	5600	1,180	215	6215

* Bearings are used in axle-boxes of railway transport and underground railway.
** Bearings with retaining notch on outer ring mounting surface, without snap ring groove.

SINGLE ROW DEEP GROOVE BALL BEARINGS

TYPE 0000, 50000, 60000, 80000, 150000,160000, 170000, 180000, 1000000, 7000000,1160000, 1180000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	Dr	a	b	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
80	140	26				2,0		216		70200	55000	4500	5300	1,400	216	6216
80	140	26				2,0		60216		70200	55000	4500		1,410	60216	6216-Z
80	140	26				2,0		80216		70200	55000	4500		1,410	80216	6216-2Z
85	150	28				2,0		217		83200	64000	4300	5000	1,800	217	6217
90	140	24				1,5		118		58500	50000	4800	5600	1,200	118	6018
90	160	30				2,0		218		95600	73500	3800	4500	2,150	218	6218
90	190	43				3,0		318		143000	108000	3400	4000	5,050	318	6318
90	190	43				3,0		318Л		143000	108000	3400	5300	6,360	318Л	6318M
90	190	43				3,0		318АЛ1*		143000	108000	3400	4000	7,010	318АЛ1*	6318MA
95	170	32				2,1		219		108000	81500	3600	4300	2,700	219	6219
95	170	32				2,1		219Л		108000	81500	3600	4300	3,320	219Л	6219M
100	180	34				2,1		220А		161200	93000	3400	4000	2,920	220А	6220
100	180	34				2,1		60220		124000	93000	3400		3,150	60220	6220-Z
100	180	34				2,1		80220		124000	93000	3400		3,170	80220	6220-2Z
100	215	47				3,0		320		174000	140000	3000	3600	7,000	320	6320
100	215	47				3,0		320Е		174000	140000	3000	3600	7,280	320Е	6320TN
100	215	47				3,0		320Л		174000	140000	3000	3600	8,930	320Л	6320M
105	145	20				1,1		1000921		44200	44000	4300	5000	0,820	1000921	61921
105	225	49				3,0		321		182000	153000	2800	3400	8,140	321	6321
105	225	49				3,0		321Л		182000	153000	2800	3400	10,130	321Л	6321M
110	200	38				2,1		222		146000	118000	3000	3600	4,500	222	6222
110	200	38				2,1		222Л		146000	118000	3000	3600	5,650	222Л	6222M
120	165	22				2,0		1000924Л		53300	40000	3200	4000	1,460	1000924Л	61924M
120	215	40				2,1		224Л		156000	131000	2800	3400	6,690	224Л	6224M
120	260	55				3,0		324		208000	186000	2400	3000	12,300	324	6324
130	180	24				1,5		1000926Л		65000	67000	3400	4000	1,860	1000926Л	61926M
130	230	40				3,0		226Л		156000	135000	2600	3200	7,720	226Л	6226M
140	190	24				1,5		1000928Л		66300	72000	3200	3800	2,130	1000928Л	61928M
150	190	20				1,1		1000830Л		48800	61000	3000	3600	1,450	1000830Л	61830M
150	210	28				2,0		1000930Л		88400	93000	2800	3400	3,540	1000930Л	61930M
150	320	65				4,0		330Л		276000	285000	1900	2400	27,600	330Л	6330M
160	200	20				2,0		1000832ЛТ1		49400	45500	2800	3400	1,490	1000832ЛТ1	61832MS1
160	220	28				2,0		1000932Л		92300	98000	2600	3200	3,220	1000932Л	61932M
160	240	38				2,1		132Л		143000	143000	2400	3000	6,400	132Л	6032M
160	290	48				3,0		232		200000	186000	1900	2400	15,000	232	6232
160	290	48				3,0		232Л*		200000	186000	1900	2400	15,000	232Л*	6232M
165	250,5	35				2,5		733ЛТ		147000	143000	2400	3000	6,430	733ЛТ	
170	215	14				0,6		7000834Л		28500	40100	2600	3200	1,330	7000834Л	
170	215	22				1,1		1000834Л		61800	78000	2600	3200	2,030	1000834Л	61834M
170	260	42				2,1		134Л		168000	173000	2200	2800	8,600	134Л	6034MA
170	310	52				4,0		234		212000	224000	1900	2400	15,000	234	6234
180	280	46				2,1		136Л		190000	200000	2000	2600	11,000	136Л	6036M
180	320	52				4,0		236Л		229000	240000	1800	2200	18,500	236Л	6236M
190	290	46				2,1		138Л		195000	216000	2000	2600	11,000	138Л	6038M
190	340	55				4,0		238Л		255000	280000	1700	2000	23,300	238Л	6238M
200	250	24				1,5		1000840Б		76100	102000	2200	2800	2,860	1000840Б	61840M
200	250	24				1,5		1000840Л		76100	102000	2200	2800	2,860	1000840Л	61840M
200	310	51				2,1		140Л*		216000	245000	1900	2400	14,600	140Л*	6040M
201	310	51				2,1		840Л*		218000	245000	1900	2400	14,600	840Л*	

* Bearings are used in axle-boxes of railway transport and underground railway.

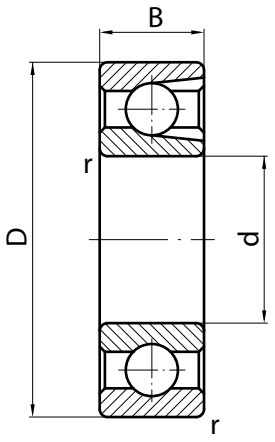
SINGLE ROW DEEP GROOVE BALL BEARINGS

TYPE 0000, 50000, 60000, 80000, 150000,160000, 170000, 180000, 1000000, 7000000,1160000, 1180000

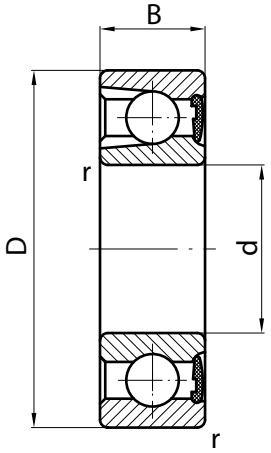
Dimensions, mm								Bearing designation		Load ratings, N, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	Dr	a	b	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
220	300	38				2,1		**1000944Л**		151000	180000	1900	2400	8,330	**1000944Л**	61944M
220	340	37				2,1		**7000144Л**		174000	204000	1800	2200	13,800	**7000144Л**	16044M
220	340	56				3,0		**144Л**		247000	290000	1800	2200	19,800	**144Л**	6044M
240	320	38				2,1		**1000948Л**		159000	200000	1800	2200	9,600	**1000948Л**	61948M
240	360	56				3,0		**148Л**		255000	315000	1700	2000	22,400	**148Л**	6048M
250	335	41				4,0		**750Л**		241000	216000	1700	2000	10,700	**750Л**	
260	360	46				2,1		**1000952Л**		212000	270000	1600	1900	14,700	**1000952Л**	61952M
260	400	65				4,0		**152Л**		291000	375000	1500	1800	31,500	**152Л**	6052M
280	350	33				2,0		**1000856Л1**		138000	200000	1600	1900	7,340	**1000856Л1**	61856MA
280	380	46				2,1		**1000956Л1**		216000	285000	1500	1800	14,900	**1000956Л1**	61956MB
300	420	56				3,0		**1000960Л**		270000	375000	1300	1600	25,200	**1000960Л**	61960M
320	440	56				3,0		**1000964Л**		276000	400000	1200	1500	26,000	**1000964Л**	61964M
340	420	38				2,1		**1000868Л**		178000	275000	1200	1500	12,320	**1000868Л**	61868MA
340	460	56				3,0		**1000968Л**		281000	425000	1100	1400	27,000	**1000968Л**	61968M
360	540	82				5,0		**172Л**		462000	735000	1000	1300	71,500	**172Л**	6072M
380	520	44				3,0		**7000976Л**		265000	298000	1000	1300	31,200	**7000976Л**	
380	520	44				3,0		**7000976Л1**		265000	298000	1000	1300	31,200	**7000976Л1**	
460	580	56				3,0		**1000892**		319000	570000	900	1100	36,300	**1000892**	61892F
500	720	100				6,0		**1/500АЛ**		605000	1140000	750	900	137,000	**1/500АЛ**	60/500M
560	680	56				3,0		**10008/560Л**		345000	695000	700	850	44,370	**10008/560Л**	618/560MA
560	820	115				6,0		**1/560АЛ**		663000	1470000	630	750	210,600	**1/560АЛ**	60/560M

* Bearings are used in axle-boxes of railway transport and underground railway.

SINGLE-ROW DEEP GROOVE FULL COMPLEMENT BALL BEARINGS WITH FILLING SLOTS NONSTANDARD



710134У, 970000



970000K

TYPE 710314У, 970000, 970000K

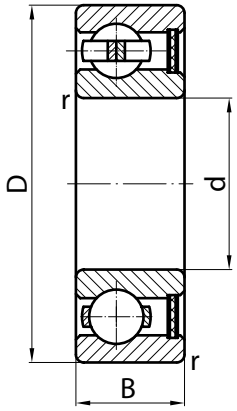
Dimensions, mm				Bearing designation		Load ratings, N		Mass, kg	Bearing designation
						dynamic	static		
d	D	B	r min			Cr	Cor	m	epk
17	62	17	1,1	**970403**		17 000	12 350	0,3127	**970403**
30	62	16	1,1	**970206K**		27000	19000	0,220	**970206K**
40	80	18	1,3	**970208P**		43000	31500	0,387	**970208P**
55	90	10	0,6	**970711**		25000	26000	0,261	**970711**
170	260	42	2,1	**710134У***		200205	286535	7,150	**710134У***

* Groove on outer ring.

SINGLE ROW DEEP GROOVE BALL BEARINGS

SINGLE ROW DEEP GROOVE BALL BEARINGS

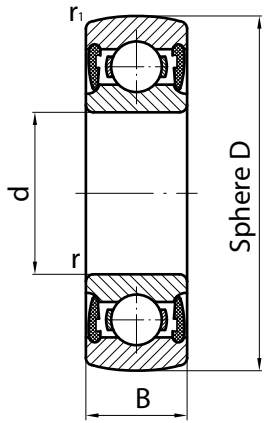
SINGLE-ROW DEEP GROOVE BALL BEARINGS WITH ONE-SIDED SEAL NONSTANDARD



TYPE 20000

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
						dynamic	static	lubricant			
d	D	B	r min			Cr	Cor	grease	oil	m	epk
17	40	14	1,1	**20703A2**		9560	4750	12000		0,078	**20703A2**
17	47	16	1,1	**20803AK2**		12700	6550	11000		0,129	**20803AK2**
17	47	16	1,1	**20803AK2Y**		12700	6550	11000		0,129	**20803AK2Y**

SINGLE-ROW DEEP GROOVE BALL BEARINGS WITH SPHERICAL OUTSIDE DIAMETER, WITH DOUBLE-SIDED SEAL

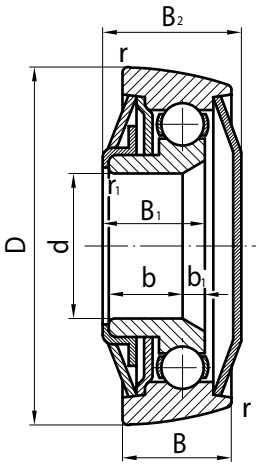


TYPE 580000, 1580000

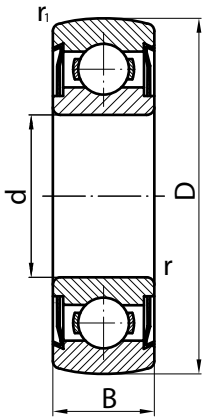
Dimensions, mm					Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
							dynamic	static	lubricant			
d	D	B	r min	r_1 min			Cr	Cor	grease	oil	m	epk
20	47	14	1,0	0,3	**580204AK**		12700	6550	10000		0,106	**580204AK**
45	85	21	1,1	0,3	**1580209K**		33200	21600	5000		0,451	**1580209K**

SINGLE ROW DEEP GROOVE BALL BEARINGS

SINGLE-ROW DEEP GROOVE BALL BEARINGS CAPPED TYPE OF A SPECIAL DESIGN



260000*



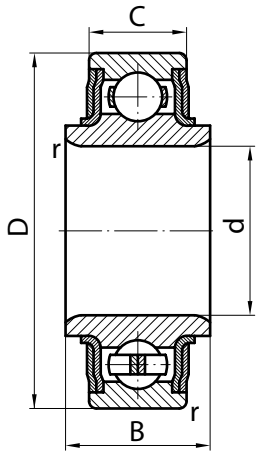
260000

TYPE 260000

Dimensions, mm									Bearing designation		Load ratings, N		Mass, kg	Bearing designation	
											dynamic	static			
d	D	B	B_1	B_2	b	b_1	r min	r_1 min			Cr	Cor	m	epk	analogue
17	62	20	19,5	23	13,5	5,5	1,5	0,5	**260703K***		14000	8000	0,306	**260703K***	
17	60	20	19,5	23	13,5	5,5	1,5	0,5	**260903***		14000	8000	0,286	**260903***	
35	85	17					1,1	1,0	**260807**		25500	15300	0,499	**260807**	LR207
55	109,2	21					1,5	1,0	**260811**		43600	29000	0,817	**260811**	LR211

SINGLE ROW DEEP GROOVE BALL BEARINGS

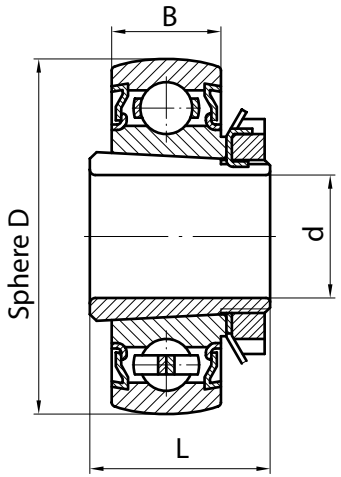
SINGLE-ROW DEEP GROOVE BALL BEARINGS WITH DOUBLE-SIDED SEAL OF A SPECIAL DESIGN



TYPE 530000

Dimensions, mm					Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
							dynamic	static	lubrication			
d	D	B	C	r min			Cr	Cor	grease	oil	m	epk
30	62	24	16	1,1	**530206**		19500	11300	3200		0,265	**530206**
30	62	24	16	1,1	**530206AK**		19500	11300	3200		0,238	**530206AK**
45	85	29	21	1,3	**530209K**		33200	21600	7500		0,470	**530209K**
55	100	27	21	1,5	**530211**		43600	29000	6300		0,690	**530211**

SINGLE-ROW DEEP GROOVE BALL BEARINGS WITH SEALS WITH SPHERICAL OUTSIDE DIAMETER ON ADAPTER SLEEVE

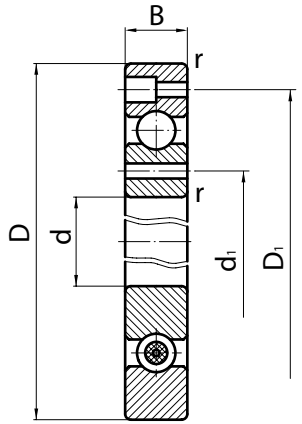


TYPE 1680000

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
						dynamic	static	lubricant			
d	D	B	L			Cr	Cor	grease	oil	m	epk
40	85	21	39	1680208		30700	19000	5000		0,655	1680208

SINGLE ROW DEEP GROOVE BALL BEARINGS

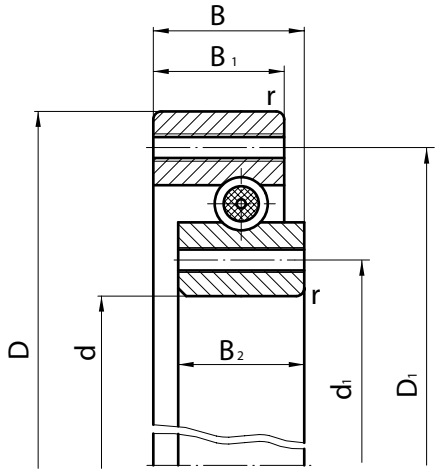
SINGLE-ROW DEEP GROOVE BALL BEARINGS OF A SPECIAL DESIGN



TYPE 540000

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic	static		
d	D	B	d_1	D_1	r min			Cr	Cor	m	epk
460	580	21	484	556	2,1	540792X1		76000	127000	14	540792X1

SINGLE-ROW DEEP GROOVE BALL BEARINGS OF A SPECIAL DESIGN



TYPE 540000

Dimensions, mm								Bearing designation		Load ratings, N		Mass, kg	Bearing designation
										dynamic	static		
d	D	B	d_1	D_1	B_1	B_2	r min			Cr	Cor	m	epk
180	290	35	200	270	28	29	0,6	540836		63000	67000	7,2	540836

DOUBLE-ROW SELF-ALIGNING BALL BEARINGS

Double-row self-aligning ball bearings are designed to carry radial and slight axial loads. The bearings are not intended for accommodation of intense axial load; in such a case a bearing load rating decreases because only one row of balls will carry the load. These bearings are more suitable for operation with oscillatory motion, than single-row deep groove ball bearings.

Bearings fix shaft position in both axial directions. According to their design these bearings have two rows of balls, inner ring with two raceways and outer ring with one spherical raceway allowing inner ring with a set of balls to turn around the centre of the bearing, i.e. to be self-aligned. This ability makes deep groove ball bearings be suitable with large misalignment of seats and large deflections of the shafts. Depending on dimension series of bearing axes misalignment may be in the range from 2° to 3°.

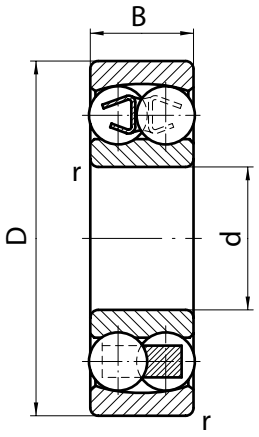
Double-row self-aligning ball bearings may have inner rings with cylindrical or tapered bores. Bearings with tapered bores, completed with adapter sleeves, can be mounted on smooth shafts without shoulders.

As a rule these bearings have steel pressed cages. In the bearings of large sizes and increased tolerance classes brass solid cages are used.

DOUBLE-ROW SELF-ALIGNING BALL BEARINGS

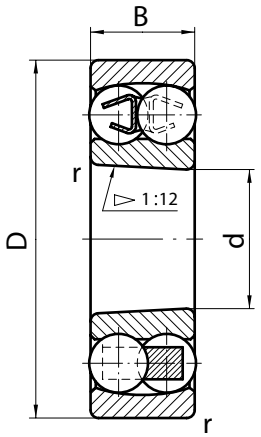
DOUBLE ROW SELF-ALIGNING BALL BEARINGS

With cylindrical bore



1000

With tapered bore



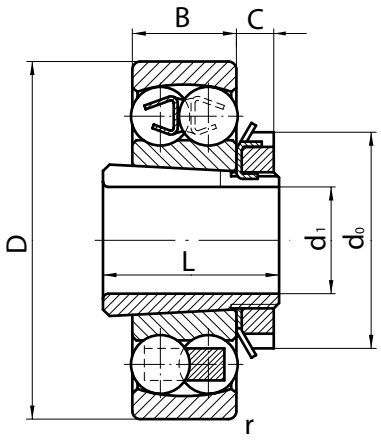
111000

TYPE 1000, 111000

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
						dynamic	static	lubricant				
d	D	B	r min			Cr	Cor	grease	oil	m	epk	analogue
80	170	39	2,1	**1316**		88400	33500	3600	4300	4,41	**1316**	1316
80	170	39	2,1	**1316Л**		88400	33500	3600	4300	4,70	**1316Л**	1316M
80	170	39	2,1	**111316Л**		88400	33500	3600	4300	4,63	**111316Л**	1316KM
80	170	58	2,1	**1616Л**		135000	49000	3200	3800	5,95	**1616Л**	2316M
85	180	41	3,0	**1317Л**		97500	38000	3400	4000	5,35	**1317Л**	1317M
90	190	43	3,0	**1318**		117000	44000	3200	3800	5,71	**1318**	1318
90	190	43	3,0	**1318Л**		117000	44000	3200	3800	6,17	**1318Л**	1318M
90	190	43	3,0	**111318Л**		117000	44000	3200	3800	6,07	**111318Л**	1318KM
95	170	32	2,1	**1219**		63700	27000	3600	4300	3,08	**1219**	1219
95	170	32	2,1	**1219Л**		63700	27000	3600	4300	3,22	**1219Л**	1219M
95	170	32	2,1	**111219**		63700	27000	3600	4300	3,04	**111219**	1219K
95	170	32	2,1	**111219Л**		63700	27000	3600	4300	3,17	**111219Л**	1219KM
100	180	34	2,1	**1220**		68900	30000	3400	4000	3,68	**1220**	1220
100	180	34	2,1	**1220Л**		68900	30000	3400	4000	3,83	**1220Л**	1220M
100	180	34	2,1	**111220Л**		68900	30000	3400	4000	3,74	**111220Л**	1220KM
100	215	47	3,0	**1320**		143000	57000	2800	3400	8,44	**1320**	1320
100	215	47	3,0	**1320Л**		143000	57000	2800	3400	9,11	**1320Л**	1320M
100	215	47	3,0	**111320**		143000	57000	2800	3400	8,32	**111320**	1320K
105	190	36	2,1	**1221Л**		74100	32500	3200	3800	4,64	**1221Л**	1221M
110	200	38	2,1	**111222**		88400	39000	3000	3600	5,09	**111222**	1222K
110	200	38	2,1	**111222Л**		88400	39000	3000	3600	5,32	**111222Л**	1222KM
110	240	50	3,0	**111322Л**		163000	72000	2400	3000	12,00	**111322Л**	1322KM
150	235	36	3,0	**1730Л**		223000	115000	2200	2800	6,20	**1730Л**	

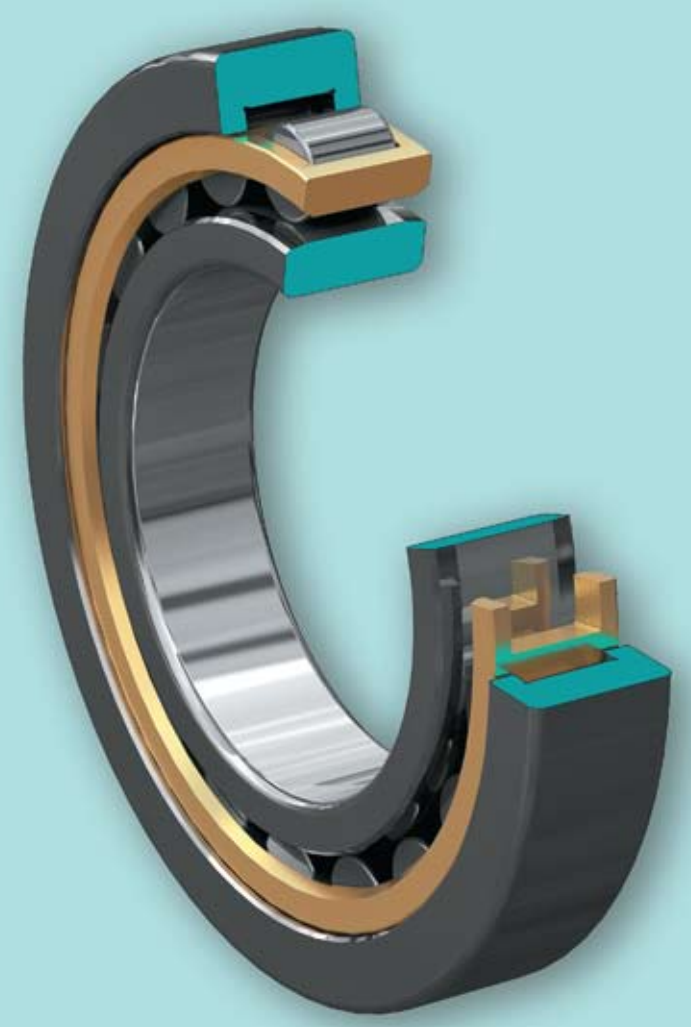
DOUBLE-ROW SELF-ALIGNING BALL BEARINGS

DOUBLE ROW SELF-ALIGNING RADIAL BALL BEARINGS WITH ADAPTER SLEAVE



TYPE 11000

Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	B	d_0	C	L	r min			Cr	Cor	grease	oil	m	epk	analogue
70	170	39	105	16,8	59	2,1	**11314К**		88400	33500	3600	4300	5,33	**11314К**	1316К + Н316
70	170	39	105	16,8	59	2,1	**11314Л**		88400	33500	3600	4300	5,65	**11314Л**	1316КМ + Н316
80	190	43	120	17,8	65	3,0	**11316К**		117000	44000	3200	3800	6,98	**11316К**	1318К + Н318
85	170	32	125	18,8	55	2,1	**11217**		63700	27000	3600	4300	4,37	**11217**	1219К + Н219
85	170	32	125	18,8	55	2,1	**11217ЛК**		63700	27000	3600	4300	4,51	**11217ЛК**	1219КМ + Н219
90	180	34	130	19,8	58	2,1	**11218ЛК**		68900	30000	3400	4000	5,24	**11218ЛК**	1220КМ + Н220
90	215	47	130	19,8	71	3,0	**11318К**		143000	57000	2800	3400	10,00	**11318К**	1320К + Н320
90	215	47	130	19,8	71	3,0	**11318Л**		143000	57000	2800	3400	10,70	**11318Л**	1320КМ + Н320
95	225	49	140	19,8	74	3,0	**11319ЛК**		157000	64900	2000	2600	12,30	**11319ЛК**	1321КМ + Н321
100	200	38	145	20,8	63	2,1	**11220К**		88400	39000	3000	3600	7,03	**11220К**	1222К + Н222
100	200	38	145	20,8	63	2,1	**11220Л**		88400	39000	3000	3600	7,30	**11220Л**	1222КМ + Н222
100	240	50	145	20,8	77	3,0	**11320ЛК**		163000	72000	2400	3000	14,20	**11320ЛК**	1322КМ + Н322



CYLINDRICAL ROLLER BEARINGS

Cylindrical roller bearings are designed to accommodate heavy radial loads, and only some of them can additionally accommodate light short-term axial loads. As for high speed ratings these bearings are as good as single-row deep grove ball bearings. They require precise alignment of seatings.

Design of the bearings with cylindrical rollers can be different depending on the presence and location of the flanges on outer and inner rings.

Single-row, double-row or multiple-row bearings are produced with cylindrical rollers with pressed, solid, plastic cages or of full complement design. Pressed cages are made of low-alloyed steel, solid cages are made of brass or aluminium alloy, plastic cages are made of polyamide.

Relieved end rollers and rollers having convex profile (barrel-shaped) of generatrix of rolling surface are applied for reduction of edge stresses.

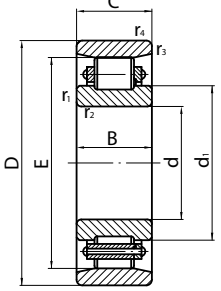
Full complement bearings possess the maximum load rating due to the complete filling with rollers.

Cylindrical roller bearings are produced with tolerance classes: normal, 6, and 5 and are applied in units and mechanisms for general mechanical engineering, automotive industry and metallurgy.

Bearing of 3182000, 4162000, 3282000 and 4262000 types are produced with 2 and 4 tolerance classes and are applied in machine tool industry.

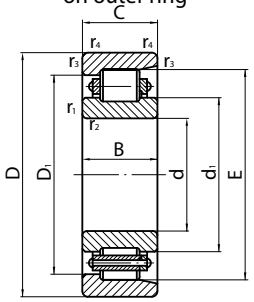
RADIAL CYLINDRICAL ROLLER BEARINGS

With ribbless outer ring



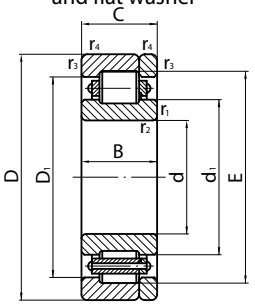
2000, 2002000, 7002000, 3002000

With one rib on outer ring



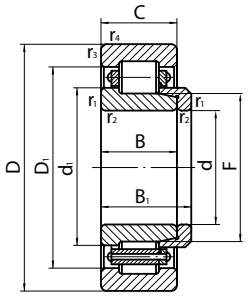
12000

With one rib on outer and flat washer



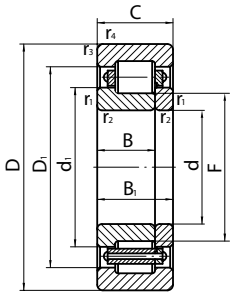
22000

With one rib on inner ring and thrust collar



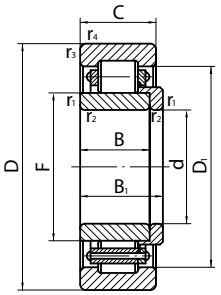
62000

With one rib on inner ring and flat washer



92000, 3092000

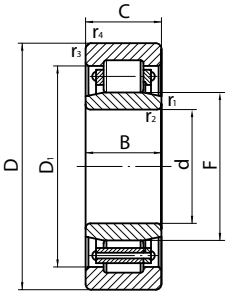
With ribbless inner ring and thrust collar



152000

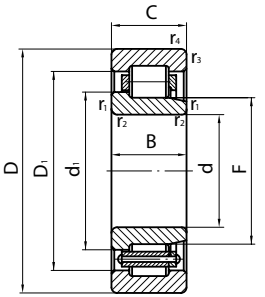
* Bearings with pressed cages are not shown in sketches.

With ribbless inner ring



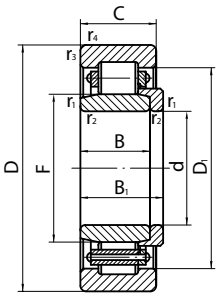
32000, 1032000, 2032000, 7032000

With one rib on inner ring



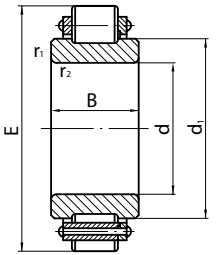
42000

With ribbless inner and thrust collar



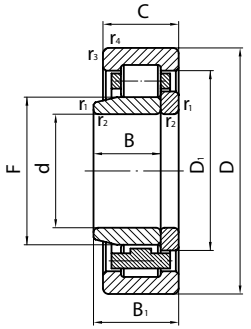
52000

Without outer ring



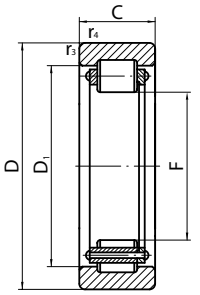
502000

With ribbless inner ring and flat thrust collar



232000, 2232000

Without inner ring



292000, 1292000

CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
20	47	14	14	27	29,9	36,8		1,0	1,0	42204ЕШ1		17700	15200	13000	16000	0,116	42204ЕШ1	NJ204	SKF
	47	14		26,5		38,8			1,0	292204АЕ		25700	20600	12000	16000	0,084	292204АЕ	RNU204TN	
	47	14		27		36,8			1,0	292204КМ		25700	20600	12000	16000	0,086	292204КМ	RNU204	
25	52	15	15	31,5	34,9	43,3		1,0	1,0	42205А1Е1УШ1		29300	27700	11000	14000	0,132	42205А1Е1УШ1	NJ205EC	SKF
25	52	15	15		35,0	41,8		1,0	1,0	42205КМ		28600	27000	11000	14000	0,142	42205КМ	NJ205	
	52	15		32		42,2			1,0	292205Е		25100	24700	12000	15000	0,110	292205Е	RNU205TN	SKF
	52	15		32		41,8			1,0	292205КМ		13400	8490	10000	13000	0,102	292205КМ	RNU205	
25	52	18	18	45	35,0			1,0	1,0	2505АЕУ		34100	34000	11000	14000	0,171	2505АЕУ	N2205TN	
25	52	18	18	45	38,5			1,0	1,0	2505КМ		34100	34000	11000	14000	0,189	2505КМ	N2205	
25	55	18	13,5	31,5	34,9	43,3		1,0	1,0	92705АЕУШ1		29300	27700	12000	15000	0,195	92705АЕУШ1		
25	62	17	17		38,6	49,4		1,1	1,1	42305АЕ		40200	36500	9500	12000	0,262	42305АЕ	NJ305TN	
25	62	17	17		38,6	49,4		1,1	1,1	42305М		40200	36500	9500	12000	0,297	42305М	NJ305M	
25	62	17	17		38,6	49,4		1,1	1,1	42305КМ		40200	36500	9500	12000	0,270	42305КМ	NJ305	
25	62	17	17		37,92	49,4		1,1	1,1	42305ЛМ		40200	36500	9500	12000	0,295	42305ЛМ	NJ305M	
25	62	17	17	34	38,6	49,4		1,1	1,1	42305АЕ1УШ1		44300	40800	9000	11000	0,247	42305АЕ1УШ1	NJ305EC	SKF
	62	17		35		49,5			1,1	292305АЕМ		38200	37400	10000	13000	0,192	292305АЕМ	RNU305TN	SKF
25	62	17	17		38,6	49,4		1,1	1,1	92305КМ		40200	36500	9500	12000	0,270	92305КМ	NUP305	
25	62	24	24	35		48,9		1,1	1,1	32605М		56100	55000	9000	11000	0,353	32605М	NU2305M	SKF
25	62	24	24	35		49,4		1,1	1,1	32605КМ		42700	41000	9000	11000	0,334	32605КМ	NU2305	SKF
	62	24		35		48,9			1,1	292605КМ		31900	22700	8000	9000	0,261	292605КМ	RNU2305	SKF
27	47	14				36,8			1,0	292204КМ		14400	11800	15000	18000	0,088	292204КМ		
30	62	16	16	53,5	42,1			0,7	0,7	2206ЕМ		38000	36500	10000	13000	0,210	2206ЕМ	N206TN	
30	62	16	16	53,5	42,1			0,7	0,7	2206КМ		38000	36500	10000	13000	0,215	2206КМ	N206	
35	72	17	17	43,8		58,2		1,1	1,1	32207М		48400	48000	8500	10000	0,352	32207М	NU207M	
35	72	17	17	43,8		58,2		1,1	1,1	32207КМ		48400	48000	8500	10000	0,317	32207КМ	NU207	
35	72	17	17		47,13	58,2		1,1	1,1	42207ЛМ		48400	48000	8500	10000	0,367	42207ЛМ	NJ207M	
35	72	17	17		47,13	58,2		1,1	1,1	42207КМ		48400	48000	8500	10000	0,326	42207КМ	NJ207	
35	72	23	23	61,8	47,6	56,9		1,1	1,1	12507АЕУ		52000	55500	8500	10000	1,421	12507АЕУ		
35	80	21	21	68,2	51,5			1,5	1,5	2307КМ		64400	63000	8000	9500	0,478	2307КМ	N307	
35	80	21	21		51,5	64,3		1,5	1,5	12307КМ		64400	63000	8000	9500	0,497	12307КМ	NF307	
35	80	21	21	46,2		63,3		1,5	1,5	32307ЛМ		64400	63000	8000	9500	0,542	32307ЛМ	NU307M	
35	80	21	21	46,2		63,3		1,5	1,5	32307КМ		64400	63000	8000	9500	0,484	32307КМ	NU307	
35	80	21	21		50,8	63,3		1,5	1,5	42307М		64400	63000	8000	9500	0,549	42307М	NJ307M	
35	80	21	21		50,8	63,3		1,5	1,5	42307КМ		64400	63000	8000	9500	0,499	42307КМ	NJ307	
35	80	21	21		50,8	63,3		1,5	1,5	42307ЛМ		64400	63000	8000	9500	0,557	42307ЛМ	NJ307M	
35	80	31	31	46,2		63,0		1,5	1,5	32607ЛМ		91300	98000	7000	8500	0,822	32607ЛМ	NU2307M	
35	80	31	31	46,2		64,3		1,5	1,5	32607КМ		91300	98000	7000	8500	0,693	32607КМ	NU2307	
40	80	18	18	70	54,5			1,1	1,1	2208ЛМ		53900	53000	7500	9000	0,439	2208ЛМ	N208M	
40	80	18	18	70	54,5			1,1	1,1	2208КМ		53900	53000	7500	9000	0,388	2208КМ	N208	
40	80	18	18	70	54,8	66,5		1,1	1,1	12208КМ		53900	53000	7500	9000	0,414	12208КМ	NF208	
40	80	18	18		54,2	65,2		1,1	1,1	42208Л1		53900	53000	7500	9000	0,460	42208Л1	NJ208M	
	80	18		50		65,6			1,1	292208		46200	46200	8500	10000	0,348	292208	RNU208	SKF
40	90	23	23	77,5	58,4			1,5	1,5	2308М		80900	78000	6700	8000	0,718	2308М	N308M	
40	90	23	23		58,4	72,9		1,5	1,5	12308ЛМ		80900	78000	6700	8000	0,767	12308ЛМ	NF308M	
40	90	23	23	53,5		71,9		1,5	1,5	32308КМ		80900	78000	6700	8000	0,699	32308КМ	NU308	
40	90	23	23	53,5		71,9		1,5	1,5	32308М		80900	78000	6700	8000	0,770	32308М	NU308M	
40	90	23	23	53,5		71,9		1,5	1,5	32308ЛМ		80900	78000	6700	8000	0,778	32308ЛМ	NU308M	
40	90	23	23		57,8	71,9		1,5	1,5	42308КМ		80900	78000	6700	8000	0,725	42308КМ	NJ308	
40	90	23	23		57,8	71,9		1,5	1,5	42308ЛМ		80900	78000	6700	8000	0,725	42308ЛМ	NJ308M	
	90	23		53,5		71,9			1,5	292308КМ		51000	35000	6300	8000	0,533	292308КМ	RNU308	SKF
40	90	33	33	53,5		71,9		1,5	1,5	32608ЛМ		112000	120000	6300	7500	1,139	32608ЛМ	NU2308M	
40	90	33	33	53,5		71,9		1,5	1,5	32608КМ		112000	120000	6300	7500	1,003	32608КМ	NU2308	

CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
45	75	16	12,5	52,5	55,8	64,1		1,0	1,0	**92109ЕМШ1**		38100	43900	8000	10000	0,269	**92109ЕМШ1**		
45	100	25	25	86,5	64,0			1,8	1,8	**2309КМ**		75900	74000	6300	7500	0,859	**2309КМ**	N309	SKF
45	100	25	25	86,5	64,0			1,5	1,5	**2309ЛМ**		99000	100000	6300	7500	1,040	**2309ЛМ**	N309M	SKF
45	100	25	25	86,5	64,0	81,4		1,5	1,5	**12309КМ**		75900	74000	6300	7500	0,886	**12309КМ**	NF309	NSK
45	100	25	25		64,0	81		2,5	2,5	**12309ЛМ**		99000	100000	6300	7500	1,061	**12309ЛМ**	NF309M	NSK
45	100	25	25	58,5		81		1,5	1,5	**32309КМ**		75900	74000	6300	7500	0,875	**32309КМ**	NU309	SKF
45	100	25	25	58,5		81		1,5	1,5	**32309ЛМ**		99000	100000	6300	7500	1,090	**32309ЛМ**	NU309M	SKF
45	100	25	25		63,0	81		1,5	1,5	**42309ЛМ**		99000	100000	6300	7500	1,078	**42309ЛМ**	NJ309M	
45			25	86,5	64,0			1,8		**502309М**		75900	74000	6300	7500	0,612	**502309М**		
45	120	29	29		71,6	92,1		2,0	2,0	**42409М**		106000	102000	5600	6700	1,940	**42409М**	NJ409M	
50	90	20	20	80,4	64,6			1,1	1,1	**2210КМ**		64400	69500	6300	7500	0,524	**2210КМ**	N210	SKF
50	90	20	20	80,4	64,6			1,1	1,1	**2210ЛМ**		64400	69500	6300	7500	0,605	**2210ЛМ**	N210M	SKF
50	90	20	20	60,4		76,2		1,1	1,1	**32210ЕМ**		64400	69500	6300	7500	0,496	**32210ЕМ**	NU210TN	SKF
50	90	20	20		64,1	76,25		1,1	1,1	**42210М**		64400	69500	6300	7500	0,589	**42210М**	NJ210M	SKF
50	90	20	20		64,1	76,25		1,1	1,1	**42210ЛМ**		64400	69500	6300	7500	0,585	**42210ЛМ**	NJ210M	SKF
50	90	20	20		64,1	76,25		1.1	1,1	**42210Л3М**		64400	69500	6300	7500	0,585	**42210Л3М**	NJ210M	SKF
50	90	20	20		64,1	76,25		1.1	1,1	**42210К3М**		64400	69500	6300	7500	0,589	**42210К3М**	NJ210M	SKF
	90	20		60,4		76,2			1,1	**292210**		53000	57800	7000	8500	0,428	**292210**	RNU210	SKF
50	110	27	27	95	71,0			2,2	2,2	**2310КМ**		110000	112000	5000	6000	1,120	**2310КМ**	N310	SKF
50	110	27	27	95	71,0			2,2	2,2	**2310ЕМ**		110000	112000	5000	6000	1,110	**2310ЕМ**	N310TN	SKF
50	110	27	27		71,0	91,2		2,2	2,2	**12310КМ**		110000	112000	5000	6000	1,170	**12310КМ**	NF310	NSK
50	110	27	27		71,0	91,2		2,2	2,2	**12310ЕМ**		110000	112000	5000	6000	1,150	**12310ЕМ**	NF310TN	NSK
50	110	27	27	65		89,6		2,0	2,0	**32310АЛ1**		110000	112000	5000	6000	1,330	**32310АЛ1**	NU310M	SKF
50	110	27	27	65		89,6		2,0	2,0	**32310ЕМ**		110000	112000	5000	6000	1,170	**32310ЕМ**	NU310TN	SKF
50	110	27	27	65		89,6		2,0	2,0	**32310М**		110000	112000	5000	6000	1,330	**32310М**	NU310M	SKF
50	110	27	27	65		89,6		2,0	2,0	**32310АЕ**		110000	112000	5000	6000	1,300	**32310АЕ**	NU310TN	SKF
50	110	27	27		70,2	89,6		2,0	2,0	**42310ЕМ**		110000	112000	5000	6000	1,190	**42310ЕМ**	NJ310TN	SKF
50	110	27	27		70,2	89,6		2,0	2,0	**42310М**		110000	112000	5000	6000	1,360	**42310М**	NJ310M	SKF
50	110	27,35	22	65	70,2	89,6		2,0	2,0	**92710АЛ1**		110000	112000	5000	6000	1,490	**92710АЛ1**		
50	110	40	40	65		89,6		2,0	2,0	**32610М**		161000	186000	5000	6000	2,000	**32610М**	NU2310M	SKF
50	110	40	40		70,7	89,6		2,0	2,0	**42610М**		161000	186000	5000	6000	2,050	**42610М**	NJ2310M	SKF
50	130	31	31		78,5	103,6		3,5	3,5	**12410КМ**		130000	127000	5000	6000	2,070	**12410КМ**	NF410	SKF
50	130	31	31	70,8		101,6		2,1	2,1	**32410М**		130000	127000	5000	6000	2,290	**32410М**	NU410M	SKF
50	130	31	31		77,5	101,6		2,1	2,1	**42410М**		130000	127000	5000	6000	2,330	**42410М**	NJ410M	SKF
50	130	31	31		77,5	101,6		2,1	2,1	**42410К3М**		130000	127000	5000	6000	2,330	**42410К3М**	NJ410M	SKF
55	100	21	21	88,5	71,8			1,5	1,5	**2211М**		84200	95000	6000	7000	0,729	**2211М**	N211M	
55	100	21	21	88,5	71,8			1,5	1,5	**2211КМ**		84200	95000	6000	7000	0,683	**2211КМ**	N211	
55	100	21	21		71,8	84,5		1,5	1,5	**12211КМ**		84200	95000	6000	7000	0,699	**12211КМ**	NF211	
55	100	21	21		71,0	83,3		1,5	1,5	**42211М**		84200	95000	6000	7000	0,753	**42211М**	NJ211M	
55	100	21	21		71,0	83,3		1,5	1,5	**42211КМ**		84200	95000	6000	7000	0,709	**42211КМ**	NJ211	
	100	21		66,5		83,3			1,5	**292211КМ**		51000	34000	5600	7000	0,506	**292211КМ**	RNU211	
55	120	29	29	70,5		97,5		2,0	2,0	**32311КМ**		138000	143000	4800	5600	1,550	**32311КМ**	NU311	
55	120	29	29	70,5		98,1		2,0	2,0	**32311М**		138000	143000	4800	5600	1,660	**32311М**	NU311M	
55	120	29	29	106,5	77,5	100,0		2,0	2,0	**12311КМ**		113000	111000	5000	6300	1,505	**12311КМ**		
55	120	43	43	104,5	77,0			2,0	2,0	**2611М**		201000	232000	4800	5600	2,420	**2611М**	N2311M	
55	120	43	43		77,0	98,4		2,0	2,0	**12611М**		201000	232000	4800	5600	2,429	**12611М**	NF2311M	
55	140	33	33	117,2	85,2			2,1	2,1	**2411КМ**		142000	140000	4800	5600	2,490	**2411КМ**	N411	
55	140	33	33	117,2	85,2			2,1	2,1	**2411М**		142000	140000	4800	5600	2,840	**2411М**	N411M	
55	140	33	33	117,2	85,2			2,1	2,1	**2411ЛМ**		142000	140000	4800	5600	2,810	**2411ЛМ**	N411M	
55	140	33	33	77,2		108		2,1	2,1	**32411М**		142000	140000	4800	5600	3,040	**32411М**	NU411M	
55	140	33	33		83,9	108		2,1	2,1	**42411М**		142000	140000	4800	5600	3,090	**42411М**	NJ411M	

CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r1,_2$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
60	110	22	22		79,2	93,2		2,5	2,5	**12212КМ**		93500	102000	5600	6700	0,860	**12212КМ**	NF212	
60	110	22	22	73		91,9		1,5	1,5	**32212КМ**		93500	102000	5300	6300	0,878	**32212КМ**	NU212	
60	110	22	22		75,6	93,9		1,5	1,5	**42212АЕ**		93500	102000	5600	6300	0,839	**42212АЕ**	NJ212TN	
60	110	22	22		77,6	91,9		1,5	1,5	**42212КМ**		93500	102000	5600	6300	0,900	**42212КМ**	NJ212	
	110	22		73,5		91,9			1,5	**292212КМ**		62000	43000	5000	6300	0,640	**292212КМ**	RNU212	
60	110	28	28	72	77,7	95,1		1,5	1,5	**42512**		122000	142000	5300	6300	1,270	**42512**	NJ2212EC	
60	130	31	31	113	82,6			2,1	2,1	**2312Л1**		151000	160000	4300	5000	2,060	**2312Л1**	N312M	
60	130	31	31	77		106,5		2,1	2,1	**32312ЛМ**		151000	160000	4300	5000	2,280	**32312ЛМ**	NU312M	
60	130	31	31	77		106,5		2,1	2,1	**32312М**		151000	160000	4300	5000	2,150	**32312М**	NU312M	
60	130	31	31		84,2	106,5		2,1	2,1	**42312ЛМ**		151000	160000	4300	5000	2,330	**42312ЛМ**	NJ312M	
60	130	46	46	77		106,5		2,1	2,1	**32612М**		224000	265000	4300	5000	3,160	**32612М**	NU2312M	
60	130	46	46	77		105,9		2,1	2,1	**32612КМ**		224000	265000	4300	5000	2,870	**32612КМ**	NU2312	
60	130	46	46	77	82,0	106,5	55	2,1	2,1	**62612**		224000	265000	4300	5000	3,410	**62612**	NJ2312M +HJ2312	
60	130	46	46	77	82,0	106,5	55	2,1	2,1	**62612К**		224000	265000	4300	5000	2,980	**62612К**	NJ2312J +HJ2312	
60	130	46	46	77	82,0	106,5	55,5	2,1	2,1	**62612К2**		224000	265000	4300	5000	3,087	**62612К2**	NJ2312J +HJ2312	
60	140	51	51	122	86,0			2,5	2,5	**2712КМ**		224000	242000	4000	4800	3,500	**2712КМ**		
60	150	35	35		91,0	118,8		2,1	2,1	**42412КМ**		168000	173000	4300	5000	3,170	**42412КМ**	NJ412	
60	150	35	35		91,0	118,8		2,1	2,1	**42412ЛМ**		168000	173000	4300	5000	3,500	**42412ЛМ**	NJ412M	
60	150	35	35		91,0	119,3		2,1	2,1	**92412Л1**		168000	106000	4300	5000	3,450	**92412Л1**	NU412M	
65	120	23	23	105,6	84,8			1,5	1,5	**2213КМ**		84300	95300	5300	6300	1,066	**2213КМ**	N213	SKF
65	120	23	23	105,6	84,8			1,5	1,5	**2213М**		106000	118000	4800	5600	1,250	**2213М**	N213M	SKF
65	120	23	23	105	84,8			1,5	1,5	**2213Л1**		106000	118000	4800	5600	1,250	**2213Л1**	N213M	SKF
65	120	63	23	105,6	84,8	100		2,0	2,0	**12213КМ**		106000	118000	4800	5600	1,140	**12213КМ**	NF213	NSK
65	120	23	23	79,6		100		1,5	1,5	**32213КМ**		84300	95300	5300	6300	1,089	**32213КМ**	NU213	SKF
65	120	23	23		84,0	100,5		1,5	1,5	**42213М**		106000	118000	4800	5600	1,280	**42213М**	NJ213M	SKF
65	120	23	23		84,0	100		1,5	1,5	**42213К3М**		106000	118000	4800	5600	1,260	**42213К3М**	NJ213M	SKF
	120	23		79,6		100			1,5	**292213КМ**		84300	95300	5300	6300	0,799	**292213КМ**	RNU213	SKF
	120	23		79,6		100,5			1,5	**292213М**		76500	51000	5300	6300	0,765	**292213М**	RNU213M	SKF
	120	23		79,6		100			1,5	**292213К1М**		106000	118000	5000	6000	0,757	**292213К1М**	RNU213	SKF
65	140	33	33	83,5		114,6		2,1	2,1	**32313М**		183000	196000	4000	4800	2,590	**32313М**	NU313M	SKF
65	140	33	33		91,0	114,6		2,1	2,1	**42313М**		183000	196000	4000	4800	2,640	**42313М**	NJ313M	SKF
65	140	33	33		91,0	114,6	43	2,1	2,1	**62313М**		183000	196000	4000	4800	2,940	**62313М**	NJ313M+HJ313	SKF
65	140	48	48	83,5		114,6		2,1	2,1	**32613ЕМ**		251000	290000	4000	4800	3,450	**32613ЕМ**	NU2313TN	SKF
65	140	48	48	83,5		114,6		2,1	2,1	**32613М***		251000	290000	4000	4800	3,650	**32613М***	NU2313M	SKF
65	140	48	48	83,5	91,0	114,6		2,1	2,1	**42613М**		251000	290000	4000	4800	3,680	**42613М**	NJ2313M	SKF
65	140	48	48		91,0	114,6	58	2,1	2,1	**62613М**		251000	290000	4800	3250	4,010	**62613М**	NJ2313M+HJ2313	SKF
65	160	37	37	135,3	98,5			2,1	2,1	**2413М**		183000	190000	4000	4800	4,320	**2413М**	N413M	SKF
65	160	37	37	89,3		127		2,1	2,1	**32413ЛМ**		183000	190000	4000	4800	4,278	**32413ЛМ**	NU413M	SKF
65	160	37	37	89,3		127		2,1	2,1	**32413ЕМ**		183000	190000	4000	4800	4,270	**32413ЕМ**	NU413TN	SKF
65	160	37	37	89,3		127		2,1	2,1	**32413М**		183000	190000	4000	4800	4,540	**32413М**	NU413M	SKF
65	160	37	37	89,3		127		2,1	2,1	**32413КМ**		183000	190000	4000	4800	3,900	**32413КМ**	NU413	SKF
65	160	37	37	89,3	97,6	127		2,1	2,1	**42413М**		183000	190000	4000	4800	4,600	**42413М**	NJ413M	SKF
70	125	24	24	110,5	89,6			1,5	1,5	**2214КМ**		119000	137000	4500	5300	1,130	**2214КМ**	N314	SKF
70	150	51	51	130	97,8			2,5	2,5	**2614КМУ**		210000	242000	3800	4500	3,930	**2614КМУ**	N2314	SKF
70	150	35	35	90		212,6		2,1	2,1	**32314ЛМУ**		160000	170000	3800	4800	2,813	**32314ЛМУ**	NU314MPA.P63	KRW
70	150	51	51	90		122,6		2,1	2,1	**32614АЛМ**		275000	325000	3600	4300	4,730	**32614АЛМ**	NU2314M	
70	150	51	51		97,0	122,8		2,1	2,1	**42614ЛМ**		275000	325000	3600	4300	4,530	**42614ЛМ**	NJ2314M	
70	150	51	51		97,0	122,8		2,1	2,1	**42614КМ**		275000	325000	3600	4300	4,350	**42614КМ**	NJ2314	
70	150	51	51		97,0	122,8		2,1	2,1	**92614КМ**		275000	325000	3600	4300	4,450	**92614КМ**	NUP2314	
70	150	51	51		97,0	122,8		2,1	2,1	**92614М**		275000	325000	3600	4300	4,828	**92614М**	NUP2314M	
70	150	51	51,7	90		122,8	51,7	2,1	2,1	**232614ЛМ**		275000	325000	3600	4300	4,530	**232614ЛМ**		
70	150	51	51,7	90		122,8	51,7	2,1	2,1	**232614КМ**		275000	325000	3600	4300	4,350	**232614КМ**		

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CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
75	130	25	25	88,5		110,4		1,5	1,5	**32215ЛМ**		130000	156000	4500	5300	1,460	**32215ЛМ**	NU215M	SKF
75	130	25	25	88,5		110,4		1,5	1,5	**32215КМ**		130000	156000	4500	5300	1,300	**32215КМ**	NU215	SKF
75	130	25	25		92,9	110,4		1,5	1,5	**42215КМ**		130000	156000	4500	5300	1,330	**42215КМ**	NJ215	
75	130	25	25		92,9	110,4		1,5	1.5	**42215ЛМ**		130000	156000	4800	5600	1,490	**42215ЛМ**	NJ215M	
	130	25		88.5		110,4			1.5	**292215КМ**		130000	156000	4800	5600	0,972	**292215КМ**	RNU215	
75	160	37	37	139,5	105,4			2,1	2,1	**2315КМШ**		242000	265000	3400	4000	3,217	**2315КМШ**	N315	SKF
75	160	37	37	139,5	105,4	129,6		2,1	2,1	**12315КМ**		242000	265000	3400	4000	3,370	**12315КМ**	NF315	NSK
75	160	37	37	95,0		135,0		2,1	2,1	**32315АЛ2МУ**		240200	263000	4000	4800	3,768	**32315АЛ2МУ**	NU315E.M1.C4.F1	FAG
75	160	37	37	95,5		129,9		2,1	2,1	**32315КМ***		242000	265000	3400	4000	3,295	**32315КМ***	NU315	SKF
75	160	37	37	95,5		129,6		2,1	2,1	**32315М***		242000	265000	3400	4000	3,780	**32315М***	NU315M	SKF
75	160	37	37	95,5		129,6		2,1	2,1	**32315ЛМ***		242000	265000	3400	4000	3,780	**32315ЛМ***	NU315M	SKF
75	160	37	37	95,5	103,9	129,9		2,1	2,1	**42315КМ**		242000	265000	3400	4000	3,500	**42315КМ**	NJ315	SKF
75	160	37	37	95,5	103,9	129,9	48	2,5	2,5	**62315КМ**		242000	265000	3400	4000	3,920	**62315КМ**	NJ315+HJ315	SKF
75	160	37	29,5	95,5	103,9	129,9		2,1	2,1	**92315КМ**		242000	265000	3400	4000	3,490	**92315КМ**	NUP315	SKF
75	160	55	55	95		134,5		2,1	2,1	**32615АМ**		330000	400000	3400	4000	5,719	**32615АМ**	NU2315EMA	FAG
75	160	55	55	95,5		129,6		2,1	2,1	**32615К1М**		330000	400000	3400	4000	5,162	**32615К1М**	NU2315	SKF
75	160	55	55	95,5	103,9	129,6		2,1	2,1	**42615К1М**		330000	400000	3400	4000	5,330	**42615К1М**	NJ2315	SKF
75	160	55	44,5	95,5	103,9	136		2,5	2,5	**92615КМ**		330000	400000	3400	4000	6,040	**92615КМ**	NUP2315	SKF
75	190	45	45	104,5	115,0	147,5		3,0	3,0	**42415**		264000	280000	3400	4000	7,710	**42415**	NJ415M	SKF
75	190	45	45		115,0	146.8		3,0	3,0	**42415КМ**		264000	280000	3400	4000	6,250	**42415КМ**	NJ415	SKF
75	190	45	45	104,5	115,0	147,5	58	3,0	3,0	**62415М**		264000	280000	3400	4000	8,420	**62415М**	NJ415M+HJ415	SKF
80	140	26	26	125,3	101,2			2,0	2,0	**2216КМ**		138000	166000	4000	4800	1,490	**2216КМ**	N216	SKF
80	140	33	33	95,3		118,3		2,0	2,0	**32516ЛМ**		187000	245000	4000	4800	2,270	**32516ЛМ**	NU2216M	SKF
80	140	33	33		101,2	118,3		2,0	2,0	**42516ЛМ**		187000	245000	4000	4800	2,320	**42516ЛМ**	NJ2216M	SKF
80	140	33	33		95,3	118,3	33	2,1	2,1	**232516ЛМ**		187000	245000	4000	4800	2,320	**232516ЛМ**		
80	170	39	39	147	111,8			2,1	2,1	**2316КМ**		260000	290000	3200	3800	3,890	**2316КМ**	N316	
80	170	39	39	147	111,8			2,1	2,1	**2316М**		260000	290000	3200	3800	4,310	**2316М**	N316M	
80	170	39	39		111,8	140,5		2,1	2,1	**12316КМ**		260000	290000	3200	3800	4,072	**12316КМ**	NF316	
80	170	58	58	103		139		2,1	2,1	**32616М**		358000	440000	3200	3800	6,330	**32616М**	NU2316M	SKF
80	170	58	58		111,0	139		2,1	2,1	**42616КМ**		358000	440000	3200	3800	6,500	**42616КМ**	NJ2316	SKF
80	170	58	58		111,0	139		2,1	2,1	**92616КМ**		358000	440000	3200	3800	6,580	**92616КМ**	NUP2316	SKF
	170	58		103		139			2,1	**292616М**		358000	440000	3200	3800	5,340	**292616М**	RNU2316M	SKF
85	150	28	28	133,8	108,2			2,0	2,0	**2217М**		165000	200000	3800	4500	1,900	**2217М**	N217	SKF
85	150	28	28	101,8		126		2,0	2,0	**32217М**		165000	200000	4300	5000	2,150	**32217М**	NU217M	SKF
85	150	28	28	101,8		126		2,0	2,0	**32217КМ**		165000	200000	4300	5000	1,950	**32217КМ**	NU217	SKF
85	150	28	28		107,1	126		2,0	2,0	**42217М**		165000	200000	4300	5000	2,220	**42217М**	NJ217M	SKF
85	150	28	28		107,1	126		2,0	2,0	**42217КМ**		165000	200000	4300	5000	2,020	**42217КМ**	NJ217	SKF
85	150	28	28		107,0	126		2,0	2,0	**92217КМ**		165000	200000	3800	4500	2,060	**92217КМ**	NUP217	SKF
85	180	41	41	156	117,0			3,0	3,0	**2317М**		297000	335000	3000	3600	5,710	**2317М**	N317M	SKF
85	180	41	41	158,5	115,9			3,0	3,0	**2317АЕ**		297000	335000	3000	3600	4,890	**2317АЕ**	N317TN	SKF
85	180	41	41	156	117,0			3,0	3,0	**2317ЕМ**		297000	335000	3000	3600	4,620	**2317ЕМ**	N317TN	SKF
85	180	41	41	108		145		3,0	3,0	**32317М**		297000	335000	3000	3600	5,300	**32317М**	NU317M	SKF
85	180	41	41	106,5		150,7		3,0	3,0	**32317АЕ**		297000	335000	3000	3600	4,620	**32317АЕ**	NU317TN	SKF
85	180	41	41	108		145		3,0	3,0	**32317ЕМ**		297000	335000	3000	3600	5,370	**32317ЕМ**	NU317TN	SKF
85	180	41	41	108		144,3		3,0	3,0	**32317КМ**		297000	335000	3000	3600	4,900	**32317КМ**	NU317	SKF
85	180	41	41	108		145		3,0	3,0	**32317ЛМ**		297000	335000	3000	3600	5,370	**32317ЛМ**	NU317M	SKF
85	180	41	41		117,0	145		3,0	3,0	**42317М**		297000	335000	3000	3600	5,400	**42317М**	NJ317M	SKF
85	180	41	41		115,9	150,7		3,0	3,0	**42317АЕ**		297000	335000	3000	3600	4,710	**42317АЕ**	NJ317TN	SKF
85	180	41	41		117,0	144,3		3,0	3,0	**42317КМ**		297000	335000	3000	3600	5,000	**42317КМ**	NJ317	SKF
85	180	41	41		117,0	145		3,0	3,0	**42317ЕМ**		297000	335000	3000	3600	5,400	**42317ЕМ**	NJ317TN	SKF

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CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
85	180	41	41		117,0	145		3,0	3,0	**92317EM**		297000	335000	3000	3600	5,600	**92317EM**	NUP317TN	SKF
85	180	41	41		117,0	145		3,0	3,0	**92317M**		297000	335000	3000	3600	5,600	**92317M**	NUP317M	SKF
85	180	41	41		115,9	150,7		3,0	3,0	**92317AE**		297000	335000	3000	3600	4,800	**92317AE**	NUP317TN	SKF
85	180	60	60	108		145		3,0	3,0	**32617ЛМ**		396000	490000	3000	3600	8,190	**32617ЛМ**	NU2317M	SKF
85	210	52	52	113		165		4,0	4,0	**32417M***		332000	351000	3000	3600	9,550	**32417M***	NU417M	SKF
85	210	52	52	113		165		4,0	4,0	**32417ГМ**		332000	351000	3000	3600	9,690	**32417ГМ**	NU417F	SKF
85	210	52	52	113	125,0	165		4,0	4,0	**42417M**		319000	335000	3000	3600	10,100	**42417M**	NJ417M	SKF
85	210	52	52	113	125,0	177	66	4,0	4,0	**62417E1M***		319000	335000	3000	3600	9,820	**62417E1M***	NJ417TN+HJ417	
85	210	52	52	113	125,0	165	66	4,0	4,0	**62417K1M***		319000	335000	3000	3600	10,600	**62417K1M***	NJ417M+HJ417	SKF
85	210	52	52	113	125,0	177	66	4,0	4,0	**62417K1МУ***		319000	335000	3000	3600	10,600	**62417K1МУ***		
85	210	52	42	113	125,0	165		4,0	4,0	**92417E1M***		319000	335000	3000	3600	10,500	**92417E1M***	NUP417TN	
85	210	52	42	113	125,0	165		4,0	4,0	**92417K2M***		319000	335000	3000	3600	10,500	**92417K2M***	NUP417M	SKF
85	210	52	42	113	125,0	165		4,0	4,0	**92417K2МУ***		319000	335000	3000	3600	10,500	**92417K2МУ***	NUP417M	SKF
	210	52		113		165			4,0	**292417ЛМ**		319000	335000	3000	3600	9,900	**292417ЛМ**	RNU417M	SKF
90	160	30	30		115,4	136,4		2,0	2,0	**12218KM**		183000	220000	3600	4300	2,370	**12218KM**	NF218	SKF
90	160	40	40	107		134,5		2,0	2,0	**32518ЛМ**		242000	315000	3600	4300	3,600	**32518ЛМ**	NU2218M	SKF
90	160	40	40	107		134,5		2.0	2,0	**32518EM**		242000	315000	3600	4300	3,260	**32518EM**	NU2218TN	SKF
90	190	43	43	165	125,0			3,0	3,0	**2318EM**		319000	360000	2800	3400	5,490	**2318EM**	N318TN	SKF
90	190	43	43	165	125,0			3,0	3,0	**2318KM**		319000	360000	2800	3400	5,570	**2318KM**	N318	SKF
90	190	43	43	165	125,0			3,0	3,0	**2318M**		319000	360000	2800	3400	6,080	**2318M**	N318M	SKF
90	190	43	43		125,0	157		3,0	3,0	**12318KM**		319000	360000	2800	3400	5,660	**12318KM**	NF318M	SKF
90	190	43	43	115		154,8		3,0	3,0	**32318KM**		257000	291000	3200	3800	5,714	**32318KM**	NU318	SKF
90	190	43	43	115	124,0	154,8		3,0	3,0	**42318KM**		257000	291000	3200	3800	5,870	**42318KM**	NJ318	SKF
90	190	43	55		124,0	155,5	55	3,0	3,0	**62318M**		319000	360000	3200	3800	6,970	**62318M**	NJ318M+HJ318	SKF
90	190	43	43	165	125			3.0	3.0	**102409M**		230000	256000	3200	3800	5,508	**102409M**	N318	SKF
90	190	64	64	115	124,0	155,5		3,0	3,0	**42618ЛМ**		440000	540000	2800	3400	8,890	**42618ЛМ**	NJ2318M	SKF
90	190	64	64	115		155,5	76	3,0	3,0	**52618ЛМ**		440000	540000	2800	3400	9,360	**52618ЛМ**	NU2318M+HJ2318	SKF
90	225	54	54	123,5		177,9		4,0	4,0	**32418M**		380000	415000	2800	3400	11,800	**32418M**	NU418M	SKF
95	200	45	45	173,5	132,0			3,0	3,0	**2319KM**		341000	390000	2600	3200	6,930	**2319KM**	N319	SKF
95	200	45	45	173,5	132,0			3,0	3,0	**2319M**		341000	390000	2600	3200	7,210	**2319M**	N319M	SKF
95	200	45	45	121,5		163,5		3,0	3,0	**32319M**		341000	390000	2600	3200	7,270	**32319M**	NU319M	SKF
95	200	45	45	121,5		163,5		3,0	3,0	**32319ЛМ**		341000	390000	2600	3200	7,300	**32319ЛМ**	NU319M	SKF
95	200	45	45		130,5	163,5		3,0	3,0	**42319M**		341000	390000	2600	3200	7,430	**42319M**	NJ319M	SKF
95	200	67	67	121.5		161,5		3,0	3,0	**32619ЛМ**		468000	585000	2600	3200	11,000	**32619ЛМ**	NU2319M	SKF
95	240	55	55	133,5		186		4,0	4,0	**32419M***		413000	455000	2600	3200	13,500	**32419M***	NU419M	SKF
95	240	55	55	133,5		186		4,0	4,0	**32419E1M***		413000	455000	2600	3200	12,400	**32419E1M***	NU419TN	SKF
100	180	34	34	120		152		3,5	3,5	**32220ЛМ**		251000	305000	3200	3800	3,600	**32220ЛМ**	NU320M	SKF
100	180	46	46	120		152		2,1	2,1	**32520EM**		336000	450000	3200	3800	4,840	**32520EM**	NU2220TN	SKF
100	180	46	46	120		152		2,1	2,1	**32520ЛМ**		336000	450000	3200	3800	5,890	**32520ЛМ**	NU2220M	SKF
100	180	46	46	120		152		2,1	2,1	**32520M**		336000	450000	3200	3800	5,620	**32520M**	NU2220M	SKF
100	180	46	46		128,0	152		2,1	2,1	**42520M**		336000	450000	3200	3800	5,740	**42520M**	NJ2220M	SKF
100	180	46	46		128,0	152		2,1	2,1	**42520EM**		336000	450000	3200	3800	4,980	**42520EM**	NJ2220TN	SKF
100	180	46	46		128,0	152		2,1	2,1	**42520ЛМ**		336000	450000	3200	3800	6,000	**42520ЛМ**	NJ2220M	SKF
100	215	47	47	185,5	140,5			3,0	3,0	**2320M**		391000	440000	2400	3000	8,480	**2320M**	N320M	SKF
100	215	47	47		140,5	175,4		3,0	3,0	**12320M**		391000	440000	2400	3000	8,532	**12320M**	NF320M	SKF
100	215	37	47	185,5	140,5	176,5		3,0	3,0	**22320M**		391000	440000	2400	3000	8,910	**22320M**	NP320M	SKF
100	215	47	47	129,5		175		3,0	3,0	**32320K1M***		391000	440000	2400	3000	8,430	**32320K1M***	NU320M	SKF
100	215	47	47	129,5	137,8	175		3,0	3,0	**42320M**		391000	440000	2400	3000	8,600	**42320M**	NJ320M	SKF
100	215	47	47	129,5		175	60	3,0	3,0	**52320M**		391000	440000	2400	3000	9,337	**52320M**	NU320M+HJ320	SKF
100	215	47	47	129,5	137,8	175	60	3,0	3,0	**62320M**		391000	440000	2400	3000	9,500	**62320M**	NJ320M+HJ320	SKF
100	215	47	37,5	129,5	139,0	175		3,0	3,0	**92320K1M***		391000	440000	2400	3000	8,780	**92320K1M***	NUP320M	SKF

* Bearings are used in axle-box assemblies of railway transport and underground railway.

CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
100	215	47	37,5	129,5	139,0	175		3,0	3,0	**92320БКМ***		391000	440000	2400	3000	8,660	**92320БКМ***	NUP320M	SKF
100	215	73	73	129,5		175		3,0	3,0	**32620M**		583000	735000	2400	3000	13,800	**32620M**	NU2320M	SKF
100	215	73	73	129,5	139,0	175		3,0	3,0	**42620M**		583000	735000	2400	3000	19,400	**42620M**	NJ2320M	SKF
100	250	58	58	139	153,5	195		4,0	4,0	**42420M**		429000	475000	2400	3000	16,300	**42420M**	NJ420M	SKF
105	190	36	36	128,5	137,0	151		2,1	2,1	**42221Л**		264000	315000	3000	36000	4,790	**42221Л**	NJ221MA	SKF
105	260	60	60	144,5		206		4,0	4,0	**32421M**		501000	570000	2200	2800	17,400	**32421M**	NU421M	SKF
105	260	60	60	144,5	159,5	206	76	4,0	4,0	**62421M***		501000	570000	2200	2800	19,200	**62421M***	NJ421M+HJ421	SKF
110	200	38	38	178,5	143,0			2,0	2,0	**2222KM**		292000	365000	2800	3400	4,800	**2222KM**	N222	
110	200	38	38	178,5	143,0			2,0	2,0	**2222M**		292000	365000	2800	3400	5,290	**2222M**	N222M	
110	200	38	38	132,5		168		2,0	2,0	**32222M**		292000	365000	2800	3400	5,400	**32222M**	NU222M	
110	200	38	38		141,5	168		2,1	2,1	**92222M**		292000	365000	2800	3400	5,650	**92222M**	NUP222M	
110	215	76	76	134,5	145,1	177,9		3,0	3,0	**42822E2M***		510000	705000	2600	3200	11,800	**42822E2M***		
110	215	76	63,7	134,5		177,9	76,7	3,0	3,0	**232822E1M***		510000	705000	2600	3200	11,800	**232822E1M***		
110	215	76	63,7	134,5		177,9	76,7	3,0	3,0	**232822E2M***		510000	705000	2600	3200	11,800	**232822E2M***		
110	215	76	63,7	134,5		177,9	76,7	3,0	3,0	**232822Л1M***		510000	705000	2600	3200	13,300	**232822Л1M***		
110	215	76	63,7	134,5		177,9	76,7	3,0	3,0	**232822Л2M***		510000	705000	2600	3200	13,300	**232822Л2M***		
110	215	76	63,7	134,5		177,9	76,7	3,0	3,0	**232822Л3M**		510000	705000	2600	3200	13,300	**232822Л3M**		
110	215	76	63,7	134,5		177,9	76,7	3,0	3,0	**232822Л4M***		510000	705000	2600	3200	13,300	**232822Л4M***		
110	240	50	50	211	155,9			3,0	3,0	**2322M**		426000	487000	2400	3000	11,828	**2322M**	N322E.M1	FAG
110	240	50	50	207	155,2			3,0	3,0	**2322ЛМ**		468000	540000	2000	2600	13,270	**2322ЛМ**	N322M	SKF
110	240	50	50	143		194,1		3,0	3,0	**32322M***		468000	540000	2000	2600	12,300	**32322M***	NU322M	SKF
110	240	50	50	143	153,0	195,0		3,0	3,0	**42322ЛМ**		468000	540000	2000	2600	12,500	**42322ЛМ**	NJ322MA	SKF
110	240	80	80	143		195,0		3,0	3,0	**32622ЛМ**		682000	900000	2000	2600	18,700	**32622ЛМ**	NU2322M	SKF
110	240	80	80		153,0	195,0		3,0	3,0	**42622ЛМ**		682000	900000	2000	2600	19,100	**42622ЛМ**	NJ2322M	SKF
110	280	65	65	155		217,0		4,0	4,0	**32422M**		523000	658000	2000	2600	22,600	**32422M**	NU422M	SKF
110	280	65	65	155	170,5	217,0		4,0	4,0	**42422M**		523000	585000	2000	2600	23,000	**42422M**	NJ422M	SKF
110	280	65	65	155	170,5	217,0	82	4,0	4,0	**62422M**		523000	585000	2000	2600	25,200	**62422M**	NJ422M+HJ422	SKF
120	165	22	22	131,5		149,0		2,0	1,5	**1032924K1M**		75500	67000	2800	3600	1,251	**1032924K1M**		
120	180	28	28	165	142,0			2,0	2,0	**2124ЛМ**		134000	183000	3400	4000	2,540	**2124ЛМ**	N1024M	SKF
120	180	28	28	135	141,0	158,6		2,0	2,0	**42124**		139000	191000	3400	4000	2,680	**42124**	NJ1024	SKF
120	215	40	40	191,5	154,5			2,1	2,1	**2224KM**		341000	430000	2400	3000	5,810	**2224KM**	N224	SKF
120	215	40	40	191,5	154,5			2,1	2,1	**2224M**		341000	430000	2400	3000	6,410	**2224M**	N224M	SKF
120	215	40	40	191,5	154,5			2,1	2,1	**2224ЛМ**		341000	430000	2400	3000	5,740	**2224ЛМ**	N224M	SKF
120	215	40	40	143,5		182,5		2,1	2,1	**32224ЛМ**		341000	430000	2400	3000	6,550	**32224ЛМ**	NU224M	SKF
120	215	40	40	143,5	153,0	182,5		2,1	2,1	**42224Л**		341000	430000	2400	3000	6,900	**42224Л**	NJ224MA	SKF
120	215	40	40		153,0	182,5		2,1	2,1	**92224ЛМ**		341000	430000	2400	3000	6,750	**92224ЛМ**	NUP224M	SKF
120	215	58	58	143,5	153,0	182,5		2,1	2,1	**42524M**		457000	630000	2400	3000	9,540	**42524M**	NJ2224M	SKF
120	215	58	58	143,5		182,5		2,1	2,1	**32524M**		457000	630000	2400	3000	9,330	**32524M**	NU2224M	SKF
120	215	58	58	143,5		182,1		2,1	2,1	**32524E**		457000	630000	2400	3000	8,508	**32524E**	NU2224TN	SKF
120	215	58	58	143,5		182,1		2,1	2,1	**32524ЛМ**		457000	630000	2400	3000	9,800	**32524ЛМ**	NU2224M	SKF
120	240	80	80	150	161,0	199,0		3,0	3,0	**42724M***		520000	900000	2000	2600	17,110	**42724M***	WJ 120/240M	Romania
120	240	80	64,23	150		199,0	80	3,0	3,0	**232724M***		520000	900000	2000	2600	17,110	**232724M***	WJP 120/240	Romania
120	260	55	55	226	170,5			3,0	3,0	**2324M**		539000	620000	1900	2400	15,400	**2324M**	N324M	SKF
120	260	55	55	154		212,6		3,0	3,0	**32324M**		539000	620000	1900	2400	15,100	**32324M**	NU324M	SKF
120	260	55	55	154	168,0	212,6		3,0	3,0	**42324M**		539000	620000	1900	2400	15,400	**42324M**	NJ324M	SKF
120	260	86	86	154		217,0		3,0	3,0	**32624AM**		782000	1010000	2000	2600	24,053	**32624AM**	NU2324EMA	FAG
120	260	86	86	154		212,6		3,0	3,0	**32624ЛМ**		792000	1040000	1900	2400	23,700	**32624ЛМ**	NU2324M	FAG
120	260	86	86		164,5	212,6		3,0	3,0	**42624ЛМ**		792000	1040000	1900	2400	23,700	**42624ЛМ**	NJ2324M	FAG
120	260	86	86		154,0	212,6	100	3,0	3,0	**52624ЛМ**		792000	1040000	1900	2400	25,100	**52624ЛМ**	NU2324M+HJ2324	FAG
120	310	72	72	170		243,1		5,0	5,0	**32424M***		644000	735000	1900	2400	29,200	**32424M***	NU424M	SKF

* Bearings are used in axle-box assemblies of railway transport and underground railway.

CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
130	165	22	22		143,5	155,5		2,0	1,0	**2002826ЛМ**		72700	67700	3200	4000	1,150	**2002826ЛМ**		
130	230	40	40	156		193,0		3,0	3,0	**32226M**		358000	455000	2200	2800	7,460	**32226M**	NU226M	SKF
130	230	64	64	204	167,0	195,0		3,0	3,0	**12526M**		528000	735000	2200	2800	11,900	**12526M**	NF2226M	SKF
130	230	64	64	156	165,5	193,0		3,0	3,0	**42526M**		528000	735000	2200	2800	12,000	**42526M**	NJ2226M	SKF
130	240	80	80	157	168,0	200,0		3,0	3,0	**42926***		548000	793000	2200	2800	17,000	**42926***	WJ130/240M	Romania
130	240	80	80	157	168,0	200,0		3,0	3,0	**232926***		548000	793000	2200	2800	17,000	**232926***	WJP130/240M	Romania
130	250	80	80	158	173,0	205,0		3,0	3,0	**42726E2M***		584000	774000	2000	2500	17,140	**42726E2M***	BCIB32880AB	
130	250	80	80	158	173,0	205,0		3,0	3,0	**42726E9M***		584000	774000	2000	2500	17,200	**42726E9M***		
130	250	80	80	158	173,0	205,0		3,0	3,0	**42726Л4M***		554000	722000	2000	2500	18,900	**42726Л4M***	BCIB32880	
130	250	80	80	158		205,0	96	3,0	3,0	**52726ЛМ2**		554000	722000	2000	2500	19,300	**52726ЛМ2**		
130	250	80	67,2	158		205,0	81,2	3,0	3,0	**232726E2M***		584000	774000	2000	2500	17,140	**232726E2M***	BCIB32881AB	
130	250	80	67,2	158		205,0	81,2	3,0	3,0	**232726Л4M***		554000	722000	2000	2500	18,900	**232726Л4M***	BCIB32881	
130	280	58	58	167		231,0		4,0	4,0	**32326M**		627000	750000	1800	2200	18,200	**32326M**	NU326M	SKF
130	280	58	58	167	180,8	231,0		4,0	4,0	**42326M**		627000	750000	1800	2200	18,600	**42326M**	NJ326M	SKF
130	280	93	93	243	182,38			4,0	4,0	**2626M**		935000	1250000	1800	2200	29,900	**2626M**	N2326M	SKF
130	280	93	93	167		231,0		4,0	4,0	**32626M**		935000	1250000	1800	2200	31,050	**32626M**	NU2326M	SKF
130	280	93	93	167	178,5	231,0		4,0	4,0	**42626M**		935000	1250000	1800	2200	31,550	**42626M**	NJ2326M	SKF
130	280	93	93	167		231,0	107	4,0	4,0	**52626M**		935000	1250000	1800	2200	32,850	**52626M**	NU2326M+HJ2326	SKF
130	340	78	78	185		265,0		5,0	5,0	**32426M***		745000	947000	1600	2000	39,200	**32426M***	NU426M	SKF
130	340	78	78	185	201,6	265,0		5,0	5,0	**42426M**		745000	947000	1600	2000	39,200	**42426M**	NJ426M	SKF
130	340	78	65	185	201,6	265,0		5,0	5,0	**92426M***		745000	947000	1600	2000	40,000	**92426M***	NUP426M	SKF
135	280	93	93	174	188,0	230,0		4,0	4,0	**42927ГМ**		671000	877000	1800	2200	28,700	**42927ГМ**		
135	280	93	93	174		230,0	107	4,0	4,0	**52927ГМ**		671000	877000	1800	2200	30,600	**52927ГМ**		
140	215	50	45	196,5	167,0	189,0		2,0	2,0	**12728M**		214000	217000	2600	3200	6,500	**12728M**		
140	250	42	42		181,0	211.5		3,0	3,0	**12228M**		308000	400000	2400	3000	9,700	**12228M**	NF228M	SKF
140	250	42	42	169		209,0		3,0	3,0	**32228M**		391000	510000	2000	2600	9,520	**32228M**	NU228M	SKF
140	250	42	34	169	180,0	210,0		3,0	3,0	**92228M1***		391000	510000	2000	2600	8,940	**92228M1***	NUP228M	SKF
	250	42		169		209,0			4,0	**292228MT**		391000	510000	2000	2600	7,220	**292228MT**	RNU228M	SKF
140	250	68	68	169		213,0		3,0	3,0	**32528M***		342000	780000	1800	2200	13,600	**32528M***	NU 2228M	SKF
140	260	80	80	168	183,0	215,0		3,0	3,0	**42728ЛМ***		625000	832000	1800	2200	19,900	**42728ЛМ***		
140	260	80	80	168	183,0	215,0		3,0	3,0	**42728Л4M***		625000	833000	1800		19,900	**42728Л4M***		
140	260	80	67,2	168		215,0	81,2	3,0	3,0	**232728Л1M**		625000	832000	1800	2000	19,900	**232728Л1M**		
140	260	80	67,2	168		215,0	81,2	3,0	3,0	**232728Л4M***		625000	833000	1800		19,900	**232728Л4M***		
140	300	62	62	180		245,0		4,0	4,0	**32328M***		682000	830000	1800	2200	22,400	**32328M***	NU328M	SKF
140	300	62	62	180	194,3	245,0		4,0	4,0	**42328Л1M***		682000	830000	1800	2200	22,800	**42328Л1M***	NJ328MA	SKF
140	300	62	62	180		245,0	77	4,0	4,0	**52328M**		628000	830000	1800	2200	24,400	**52328M**	NU328M+HJ328	SKF
140	300	62	51	180	195,5	245,0		4,0	4,0	**92328ЛМ**		682000	830000	1800	2200	23,400	**92328ЛМ**	NUP328MA	SKF
140	360	82	82	196		279,4		5,0	5,0	**32428M**		913000	1230000	1300	1600	47,900	**32428M**	NU428M	SKF
140	360	82	82	196	217,0	279,4		5,0	5,0	**42428M***		913000	1230000	1300	1600	47,900	**42428M***	NJ428M	SKF
150	225	35	35	168,5	175,7	225		2,1	2,1	**42130K3M****		214000	307000	2600	3200	5,270	**42130K3M****	NJ1030MA	SKF
	250	42		181		209			3,0	**292830ЛМТ**		286000	399000	1900	2300	6,598	**292830ЛМТ**		
150	270	45	36,5	182	193,0	225		3,0	3,0	**92230K1M**		446000	600000	1900	2400	12,800	**92230K1M**	NUP230M	SKF
150	270	45	36,5	182	193,0	225		3,0	3,0	**92230ЛМ**		446000	600000	1900	2400	12,700	**92230ЛМ**	NUP230MA	SKF
150	270	45	36,5	182	193,0	225		3,0	3,0	**92230M**		446000	600000	1900	2400	12,800	**92230M**	NUP230M	SKF
150	320	65	65	193		262,3		4,0	4,0	**32330АЛ***		781000	965000	1700	2000	26,800	**32330АЛ***	NU330M1	SKF
150	320	65	65	193		262,3		4,0	4,0	**32330ЕМ***		675000	777000	1700	2000	24,300	**32330ЕМ***		
150	320	65	65	193		262,3		4,0	4,0	**32330M***		675000	777000	1700	2000	26,800	**32330M***	NU330M	SKF
150	320	65	65	193		262,3		4,0	4,0	**32330МУ1***		675000	777000	1700	2000	26,800	**32330МУ1***	NU330M	SKF
150	320	65	65	193	209,0	264		4,0	4,0	**42330АЛ***		675000	777000	1700	2000	27,030	**42330АЛ***	NJ330M1	SKF

* Bearings are used in axle-box assemblies of railway transport and underground railway.

** Retaining notch is on outer ring.

CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
150	320	65	65	193	209,0	264		4,0	4,0	**42330ЕМ***		675000	777000	1700	2000	24,670	**42330ЕМ***		
150	320	65	65	193	209,0	264		4,0	4,0	**42330Л1М***		675000	777000	1700	2000	27,030	**42330Л1М***		
150	320	65	65	193	209,0	264	80	4,0	4,0	**62330М***		675000	777000	1700	2000	29,600	**62330М***	NJ330M+HJ330	SKF
150	320	65	65	193	209,0	264	80	4,0	4,0	**62330ЕМ***		675000	777000	1700	2000	27,080	**62330ЕМ***		
160	215	30	30	198	180,3			3,0	3,0	**2732**		152000	160000	2600	3200	3,260	**2732**		
160	240	38	38	220	189,3			2,1	1,5	**2132М**		229000	325000	2400	3000	6,200	**2132М**	N1032M	
160	240	48	48	180		215,1		2,1	2,1	**2032132А**		403000	635000	2400	3000	8,060	**2032132А**	NU2032E	SKF
160	290	48	48	255	208,8			3,0	3,0	**2232М**		501000	680000	1800	2200	14,500	**2232М**	N232M	
160	290	48	48	195		242,1		3,0	3,0	**32232ЛМ**		501000	680000	1800	2200	13,900	**32232ЛМ**	NU232MA	
160	290	48	48	195	206,5	241,5		3,0	3,0	**42232М**		501000	680000	1800	2200	14,500	**42232М**	NJ232M	
160	290	48	48	195	206,0	250		3,0	3,0	**42232М1***		501000	680000	1800	2200	14,800	**42232М1***	NJ232M	SKF
160	290	48	48	195	206,0	250		3,0	3,0	**92232М1**		501000	680000	1800	2200	15,600	**92232М1**	NUP232M	SKF
160	290	80	80	193		241		3,0	3,0	**32532ЕМ***		809000	957000	1800	2200	24,500	**32532ЕМ***		
160	290	80	80	193		241		3,0	3,0	**32532Л1М***		809000	957000	1800	2200	24,500	**32532Л1М***	NU2232ECMA	
160	340	68	68	208		273		4,0	4,0	**32332М***		880000	1080000	1500	1800	32,300	**32332М***	NU332M	SKF
160	340	68	68	205		275		4,0	4,0	**32332К2М***		880000	1080000	1500	1800	31,200	**32332К2М***	NU332M	SKF
160	340	68	68	208		273	83	4,0	4,0	**52332М**		880000	1080000	1500	1800	35,200	**52332М**	NU332+HJ332	SKF
170	260	42	42	193		229		2,1	2,1	**32134М1***		275000	400000	2200	2800	8,050	**32134М1***	NU1034M	SKF
170	260	42	42	193		229		2,1	2,1	**32134М2***		275000	400000	2200	2800	8,050	**32134М2***	NU1034M	SKF
170	260	42	42	192		227		2,1	2,1	**32134ЛМ**		275000	400000	2200	2800	8,620	**32134ЛМ**	NU1034M	
170	310	52	52	208		260		4,0	4,0	**32234М***		616000	815000	1800	2200	18,000	**42234М***	NJ234MA	SKF
170	310	52	52	208		260		4,0	4,0	**32234М***		616000	815000	1800	2200	18,000	**32234М***	NU234MA	
170	310	52	52	208	220,16	260		4,0	4,0	**42234ЛМ***		616000	815000	1800	2200	19,800	**42234ЛМ***	NJ234MA	
170	310	52	52	208	220,16	260		4,0	4,0	**42234ЛМ1***		616000	815000	1800	2200	19,800	**42234ЛМ1***	NJ234MA	
170	360	72	72	220		290		4,0	4,0	**32334М**		809000	1040000	1600	1900	37,700	**32334М**	NU334M	
170	360	120	120	316	237,0			4,0	4,0	**2634АМ**		1440000	2030000	1400	1700	63,500	**2634АМ**	N2334M	
170	360	120	120	217		294		4,0	4,0	**32634М**		1440000	2030000	1400	1700	62,430	**32634М**	NU2334M	
180	280	46	46	205		243,7		2,1	2,1	**32136ЛМ**		336000	475000	2000	2600	11,100	**32136ЛМ**	NU1036MA	
180	280	55	50	255	216,6	245,5		2,0	2,0	**12736М**		360000	347000	1600	2000	12,700	**12736М**		
180	320	52	52	216	229,0	270		4,0	4,0	**42236М**		627000	850000	1700	2000	19,100	**42236М**	NJ236M	
180	320	52	52	216	229,0	272	64	4,0	4,0	**62236М1***		627000	850000	1700	2000	20,100	**62236М1***	NJ236M+HJ236	
180	320	86	86	216	229,0	268		4,0	4,0	**42536ЕМ***		1010000	1094000	1600	1900	28,900	**42536ЕМ***		
180	320	86	86	216	229,0	268		4,0	4,0	**42536ЛМ***		1010000	1094000	1600	1900	31,800	**42536ЛМ***	NJ2236ECMA	
180	320	86	86	216		268	98	4,0	4,0	**52536ЕМ***		1010000	1094000	1600	1900	30,300	**52536ЕМ***		
180	320	86	86	216		268	98	4,0	4,0	**52536ЛМ***		1010000	1094000	1600	1900	33,100	**52536ЛМ***	NU2236ECMA+ HJ2236EC	
180	320	86	86	216	229,0	268	98	4,0	4,0	**62536ЛМ***		1010000	1500000	1700	2000	31,100	**62536ЛМ***	NJ2236MA+ HJ2236	
180	320	86	86	216		268	100	4,0	4,0	**152536ЛМ***		1010000	1500000	1700	2000	33,400	**152536ЛМ***		
180	320	86	86	216		268	100	4,0	4,0	**152536ЛМУ***		1010000	1500000	1700	2000	33,400	**152536ЛМУ***		
180	320	86	86	216		268	100	4,0	4,0	**152536ЛМУ1***		1010000	1500000	1700	2000	33,400	**152536ЛМУ1***		
180	320	86	90	216	229,0	268		4,0	4,0	**42836ЛМУ***		1010000	1500000	1700	2000	32,100	**42836ЛМУ***		
180	320	86	100	216	229,0	268		4,0	4,0	**42836ЛМ***		1010000	1500000	1700	2000	32,900	**42836ЛМ***		
180	380	75	75	230		308		4,0	4,0	**32336М**		913000	1180000	1500	1800	44,300	**32336М**	NU336M	SKF
180	380	75	75	230	249,0	308		4,0	4,0	**42336Г**		913000	1180000	1500	1800	45,300	**42336Г**	NJ336F	SKF
180	380	75	75	230	249,0	308		4,0	4,0	**42336ГМ**		913000	1180000	1500	1800	45,300	**42336ГМ**	NJ336F	SKF
190	290	46	46	215		253,7		2,1	2,1	**32138К3М****		347000	500000	2000	2600	11,900	**32138К3М****	NU1038M	SKF
190	340	55	55	230		293,6		4,0	4,0	**32238ЛМ**		693000	965000	1600	1900	26,200	**32238ЛМ**	NU238MA	SKF

* Bearings are used in axle-box assemblies of railway transport and underground railway.

** Retaining notch is on outer ring.

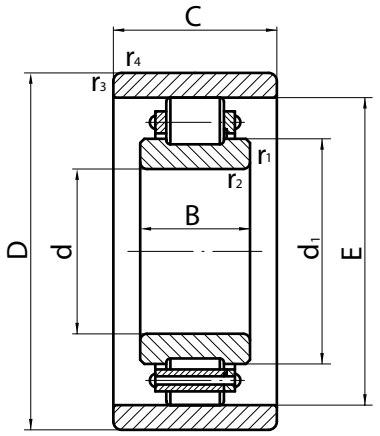
CYLINDRICAL ROLLER BEARINGS

TYPE 2000, 12000,22000, 32000, 42000, 52000, 62000, 92000,152000, 502000, 232000, 292000, 1032000, 1292000, 2002000, 2032000, 2232000, 3002000, 3092000, 7002000, 7032000

Dimensions, mm										Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	C	B	F/E	d_1	D_1	B_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
190	340	55	55	230		293,6		4,0	4,0	**42238Л1М***		693000	965000	1600	1900	26,200	**42238Л1М***	NJ238MA	SKF
200	310	34	34	243	277,0			2,0	2,0	**7002140М**		284000	495000	1600	2000	10,300	**7002140М**		
200	310	51	51	227		270		2,1	2,1	**32140Л4***		380000	570000	1900	2400	15,000	**32140Л4***	NU1040M	SKF
200	310	51	51	227		270		2,1	2,1	**32140М**		380000	570000	1900	2400	14.370	**32140М**	NU1040M	SKF
200	310	51	39,5	227	238,0	270		2,1	2,1	**92140М**		380000	570000	1900	2400	14,800	**92140М**	NUP1040M	SKF
200	310	51	39,5	227	238,0	270		2,1	2,1	**92140Л3М***		380000	570000	1900	2400	15,760	**92140Л3М***	NUP1040M	SKF
200	360	58	58	244	258,0	300		4,0	4,0	**42240М**		765000	1060000	1500	1800	28,100	**42240М**	NJ240M	SKF
200	360	58	58	244	258,0	300		4,0	4,0	**42240М1**		765000	1060000	1500	1800	27,700	**42240М1**	NJ240M	SKF
200	360	58	58	244	258,0	300	72	4,0	4,0	**62240М***		765000	1060000	1500	1800	30,800	**62240М***	NJ240M+HJ240	SKF
200	360	58	47	244	258,0	300		4,0	4,0	**92240К1М**		765000	1060000	1500	1800	27,900	**92240К1М**	NUP240M	SKF
200	360	98	98	241		311,5		4,0	4,0	**32540**		1170000	1770000	1500	1800	47,320	**32540**	NU2240E.M1	FAG
200	420	80	80	256		339		5,0	5,0	**32340М**		990000	1320000	1300	1600	57,400	**32340М**	NU340M	
220	340	56	56	250		296		3,0	3,0	**32144М***		495000	735000	1800	2200	18,900	**32144М***	NU1044M	SKF
220	400	65	65	270		334		4,0	4,0	**32244М***		765000	1080000	1500	1800	37,700	**32244М***	NU244M	SKF
220	400	65	65	270	286,0	334		4,0	4,0	**42244М**		758000	1080000	1500	1800	38,400	**42244М**	NJ244M	SKF
220	400	108	108	270		334		4,0	4,0	**32544М**		1570000	2280000	1300	1600	61,500	**32544М**	NU2244M	SKF
220	400	144	144	359	282,0			4,0	4,0	**3002244КМ**		1890000	3230000			88,500	**3002244КМ**		
230	370	80	80	334	282,0			4,0	4,0	**2746М**		1337000	828000	1300	1600	41,300	**2746М**		
	320	38		260		291			2,5	**1292948ЛМТ2**		265000	465000	1300	1600	5,460	**1292948ЛМТ2**		
	320	38		260		291			2,5	**1292948М**		265000	465000	1300	1600	6,110	**1292948М**		
240	360	37	37	286	325,0			2,1	2,1	**7002148М**		380300	696000	1300	1600	14,100	**7002148М**		
240	360	37	37	275		313		2,1	2,1	**7032148ЛМ**		380300	696000	1300	1600	14,550	**7032148ЛМ**		
240	360	72	72	270		316		3,0	3,0	**2032148М**		756000	1300000	1300	1600	27,100	**2032148М**	NU2048M	SKF
240	440	72	72	295		365		4,0	4,0	**32248**		952000	1370000	1300	1600	51,300	**32248**	NU248M	SKF
250	410	111	111	370	308,0			3,7	3,7	**2750М**		989000	1127000	800	1000	55,000	**2750М**		
260	360	46	46	285		324		2,1	2,1	**1032952М**		389000	720000	1300	1600	14,500	**1032952М**	NU1952MA	
260	400	65	65	290		352		4,0	4,0	**32152М**		627000	965000	1500	1800	30,200	**32152М**	NU1052M	
260	400	65	65	290		352		4,0	4,0	**32152ЛМ***		627000	965000	1500	1800	29,300	**32152ЛМ***	NU1052M	
260	400	65	65	290	306,0	352		4,0	4,0	**42152М**		627000	965000	1500	1800	30,900	**42152М**	NJ1052M	
260	400	65	52,5	290	306,0	352		4,0	4,0	**92152ЛМ***		627000	965000	1500	1800	31,700	**92152ЛМ***	NUP1052MA	
260	400	65	52,5	290	306,0	352		4,0	4,0	**92152М**		627000	965000	1500	1800	31,700	**92152М**	NUP1052M	
	400	65		290		352			4,0	**292152М**		627000	965000	1500	1800	23,600	**292152М**	RNU1052M	
260	440	82	82	305		374		4,0	4,0	**1032752М**		1040000	1550000	1100	1400	50,600	**1032752М**		
280	500	165,1	165,1	334		420,8		4,0	4,0	**32856ЛМ**		2660000	4600000	900	1000	151,400	**32856ЛМ**	56NUT50165R	KOYO
280	380	46	35,5	305		343,5		2,1	2,1	**232956ЛМ**		404000	770000	1250	1500	16,300	**232956ЛМ**		
280	380	46	46	305		343,5		2,1	2,1	**1032956ЛМ**		404000	770000	1250	1500	15,900	**1032956ЛМ**	NU1956M	SKF
280	380	46	46	305		343,5		2,1	2,1	**1032956М**		404000	770000	1250	1500	15,400	**1032956М**	NU1956M	SKF
300	460	74	74	340		406,2		4,0	4,0	**32160Г2М**		858000	1370000	1200	1500	46,100	**32160Г2М**	NU1060F	SKF
300	460	74	74	340		406,2		4,0	4,0	**32160ЛМ***		858000	1370000	1200	1500	45,200	**32160ЛМ***	NU1060MA	SKF
300	460	74	74	340	356,0	406,2	93	4,0	4,0	**62160ЛМ***		858000	1370000	1200	1500	51,700	**62160ЛМ***	NJ1060MA+ HJ1060	SKF
320	440	56	56	350		396		3,0	3,0	**1032964ЛМ**		546000	1050000	1000	1300	26,300	**1032964ЛМ**	NU1964MA	SKF
320	440	56	43	350	361,5	396		3,0	3,0	**1092964ЛМ**		546000	1050000	1000	1300	27,700	**1092964ЛМ**	NUP1964MA	SKF
320	440	56	43	350	361,5	396		3,0	3,0	**1092964М**		546000	1050000	1000	1300	27,700	**1092964М**	NUP1964M	SKF
340	420	38	38	360		391		2,5	2,5	**1032868М**		345000	710000	1000	1300	12,300	**1032868М**	527455	FAG
360	440	48	48	389	432,0			2,1	2,1	**2002872М**		450000	1124000	800	1000	16,800	**2002872М**	N2872M	SKF
360	440	48	39	380		411		2,1	2,1	**2232872М**		450000	1124000	800	1000	16,600	**2232872М**		
360	440	48	39	380		411		2,1	2,1	**2232872МК***		450000	1124000	800	1000	16,500	**2232872МК***		
630	780	112	112	663	679,0	728		4,0	4,0	**30928/630АМ**		2630000	6870000	500	650	130,000	**30928/630АМ**	NUP38/630M	SKF
630	780	112	112	665	680,2	727		4,0	4,0	**30928/630ЛМ**		1882000	4582000	500	650	130,700	**30928/630ЛМ**	NUP38/630M	SKF

* Bearings are used in axle-box assemblies of railway transport and underground railway.

RADIAL CYLINDRICAL ROLLER BEARINGS WITH EXTENDED RIBBLESS OUTER RING

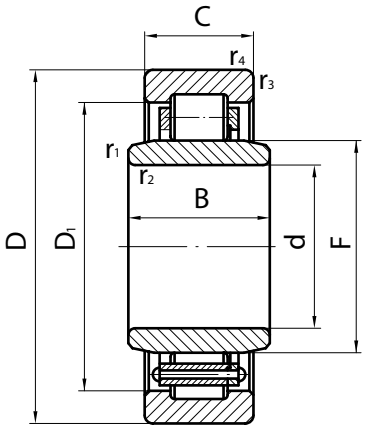


The bearings can accommodate radial load only In the process of mounting and operation the bearings are allowed making double-direction axial movement of the inner ring relative to the outer one.

TYPE 272000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
										dynamic	static	lubricant			
d	D	B	C	E	d_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk
65	140	33	44	121,5	92,3	2,5	2,5	272313M		143000	152000	4500	5300	2,860	272313M
70	150	51	57	130,0	97,8	2,5	2,5	272614KMУ		210000	242000	3800	4500	4,180	272614KMУ

RADIAL CYLINDRICAL ROLLER BEARINGS
EXTENDED RIBBLESS INNER RING



The bearings can accommodate radial load only. In the process of mounting and operation the bearings are allowed making double-direction axial movement of the inner ring relative to the outer one.

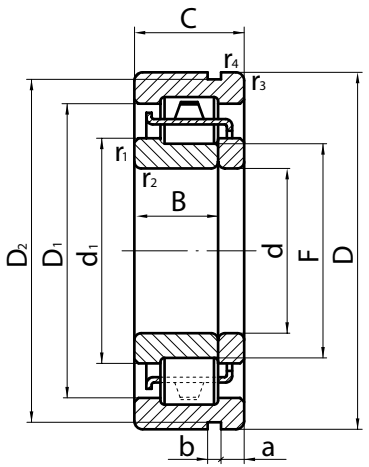
TYPE 672000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
										dynamic	static	lubricant			
d	D	B	C	F	D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk
110	240	80	50	143	194,1	3,0	3,0	**672322M***		468000	640000	2000	2600	13,500	**672322M***
150	270	73	45	182	230,8	3,0	3,0	**672230M***		450000	645000	1900	2400	13,600	**672230M***
198	310	66	51	227	270,0	2,1	2,1	**672140Л**		380000	570000	1900	2400	16,000	**672140Л**
200	310	66	51	227	270,0	2,1	2,1	**672140Л1**		380000	570000	1900	2400	16,100	**672140Л1**

* Bearings are used in axle-box assemblies of railway transport and underground railway.

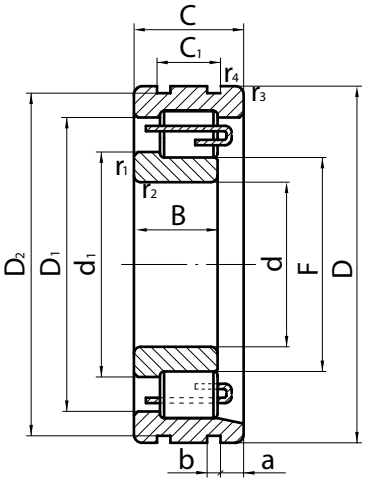
RADIAL CYLINDRICAL ROLLER BEARINGS WITH ONE RIB INNER RING *(WO)*

With groove in outer ring, flat washer



692000

With grooves on outer ring



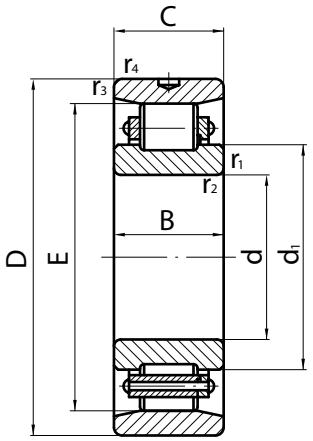
692000KM

The bearings can accommodate only radial and one direction axial load. Groove on outer ring is used for mounting of retaining snap rings, intended for bearings fixation

TYPE 692000

Dimensions, mm													Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
															dynamic	static	lubricant				
d	D	B	C	F	d_1	D_1	D_2	C_1	a	b	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue
65	120	18	23	79,6	84,8	100	115,21		4,06	3,1	1,5	1,5	**692213KM**		76700	84100	5300	6300	1,030	**692213KM**	NUP213N
75	160	29,5	37	95,5	103,9	129,6	155,22	29	4,90	3,1	2,1	0,6	**692315KM**		190000	205000	3800	4500	3,338	**692315KM**	
75	160	29,5	37	95,5	103,9	129,9	155,22		4,90	3,1	2,5	2,5	**692315KM1**		190000	205000	3800	4500	3,480	**692315KM1**	NUP315N

RADIAL CYLINDRICAL ROLLER BEARINGS WITH RETAINING NOTCH ON RIBBLESS OUTER RING

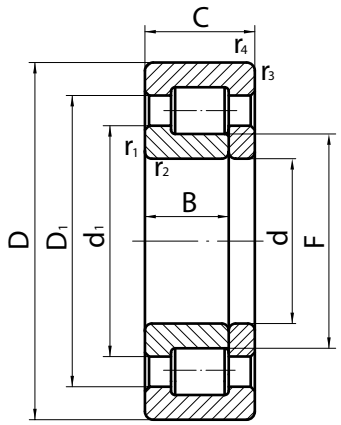


The bearings can accommodate only radial loads. In the process of mounting and operation the bearings are allowed to make double-direction axial movement of the inner ring relative to the outer. Retaining notch is used for fixing the outer ring in the unit.

TYPE 402000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
										dynamic	static	lubricant			
d	D	B	C	E	d_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk
55	120	43	43	104,5	77	2,0	2,0	**402611КМУ**		148000	162000	4800	5600	2,120	**402611КМУ**
55	140	33	33	117,2	85,2	2,1	2,1	**402411КМУ**		139000	138000	4800	5600	2,500	**402411КМУ**
120	260	55	55	226	170,5	3,0	3,0	**402324М**		539000	620000	1900	2400	15,188	**402324М**

RADIAL CYLINDRICAL ROLLER FULL COMPLEMENT BEARINGS WITH ONE RIB INNER RING AND FLAT WASHER, SEPARABLE



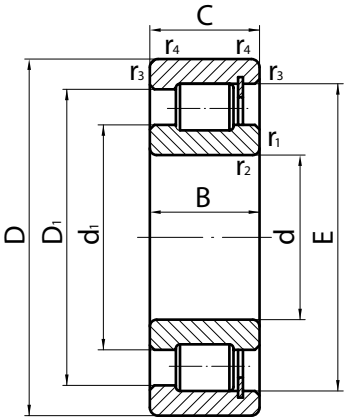
The bearings can accommodate radial and double direction short-term axial load. Bearings are allowed making one-direction axial movement of the inner ring relative to the outer one in the process of mounting, prior to inserting of flat washers. Bearings provide double-sided axial shaft fixation at light axial loads. The bearings of dimension series 592000 are of full complement and separable.

TYPE 592000

Dimensions, mm									Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
											dynamic	static	lubricant			
d	D	B	C	F	d_1	D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk
30	62	17	20	36,16	40,8	51,2	1,0	1,0	**592506**		56400	59100	9500	12000	0,284	**592506**
40	77,5	18,5	23	49,5	53,5	63,3	1,1	1,1	**592708M1**		71500	87100	8000	10000	0,494	**592708M1**

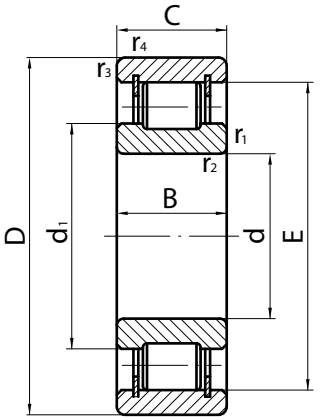
RADIAL CYLINDRICAL ROLLER FULL COMPLEMENT BEARINGS, NONSEPARABLE

With one rib outer ring and one retaining ring



612000, 1612000, 2612000, 3612000

with ribbless outer ring and two retaining rings



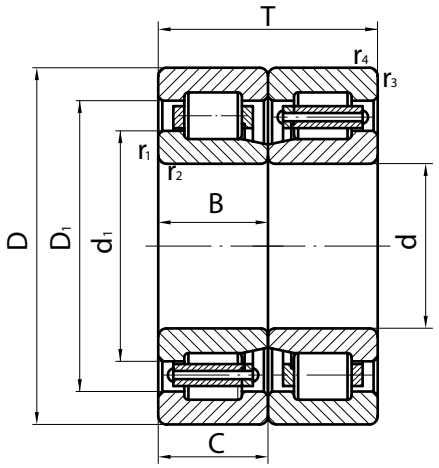
102000

The bearings can accommodate radial and short-term single-directional axial load. In the process of mounting and operation the bearings are allowed making single-direction axial movement of the inner ring relative to the outer, they provide single-sided fixation of the shaft at light axial loads. Nonseparable bearing design is provided by retaining ring installed in the groove on the outer ring raceway.

TYPE 102000, 612000, 1612000, 2612000, 3612000

Dimensions, mm									Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
											dynamic	static	lubricant					
d	D	B	C	E	d_1	D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
20	47	14	14	41,5	29,55		1,0	1,0	**102204M**		31600	26400	6500	8000	0,118	**102204M**		
20	52	15	15	44,5	31,2		1,1	0,6	**102304M**		33100	29700	3150	4000	0,165	**102304M**	N304V	SKF
25	62	17	17	53	39,3		1,1	1,1	**102305M**		31000	30000	2500	3000	0,259	**102305M**		
25	62	24	24	53	39		1,1	1,1	**102605M**		57800	61400	2500	3200	0,376	**102605M**	N2305V	SKF
30	62	16	16	53,5	42,1		1,1	1,1	**102206M**		22400	12000	2600	3200	0,225	**102206M**		
35	80	21	21	68,2	51,5		1,1	1,1	**102307M**		45550	33300	2000	2500	0,510	**102307M**		
35	100	25	25	83	59		1,5	1,5	**102407M**		96900	96500	1600	2000	1,037	**102407M**	N407V	SKF
45	120	29	29	99,5	71,6		3,0	3,0	**102409M**		128650	129580	1300	1600	1,770	**102409M**		
50	90	20	20	80,8	64,6		1,1	1,1	**102210M**		50203	40656	1600	2000	0,520	**102210M**		
55	100	21	21	89,1	70		1,5	1,1	**102211M**		81900	92700	1600	2000	0,670	**102211M**	N211V	SKF
60	110	22	22	97,5	79,2		1,5	1,5	**102212M**		68145	55736	1300	1600	0,900	**102212M**		
60	140	51	51	122	86		2,5	2,5	**102712KM**		272000	315000	4000	4800	3,730	**102712KM**		
70	110	30	30	100	81,5	95	1,1	1,1	**3612114**		131000	177000	2700	3100	1,000	**3612114**	SL183014	INA
75	130	31	31	116	92	109,5	1,5	1,5	**612515**		181000	254000	1900	2300	1,760	**612515**	SL182215	INA
80	170	39	39	146	111,8		2,1	2,1	**102316M**		187635	170280	800	1000	4,100	**102316M**		
80	200	48	48	170	120,5		3,0	3,0	**102416M**		303000	464000	670	800	7,760	**102416M**	N416V	SKF
85	150	36	36	133	104,5	126	2,0	2,0	**612517**		244000	325000	900	1800	2,730	**612517**	SL182217	INA
110	170	45	45	156	127,5	148,5	2,0	2,0	**3612122**		305000	492000	1700	2000	3,630	**3612122**	SL183022	INA
130	180	30	30	166	146	161	1,5	1,5	**2612926**		202000	377000	1500	1800	2,220	**2612926**	SL182926	INA
170	230	36	36	218	191	210,5	2,0	2,0	**2612934**		327000	543000	1100	1300	4,090	**2612934**	SL182934	INA
220	270	24	24	258	237,5	251,5	1,5	1,5	**1612844**		200000	394000	530	1000	2,846	**1612844**	SL181844	INA
260	320	28	28	305	282	298	2,0	2,0	**1612852M**		223000	473000	820	950	4,521	**1612852M**	SL181852	INA
280	380	60	60	358	314	346,5	2,1	2,1	**2612956**		922000	1850000	670	800	19,880	**2612956**	SL182956	INA
380	480	46	46	453	414,5	442,5	2,1	2,1	**1612876**		614000	1340000	520	600	19,494	**1612876**	SL181876	INA

RADIAL CYLINDRICAL ROLLER BEARINGS
PAIRED MOUNTING

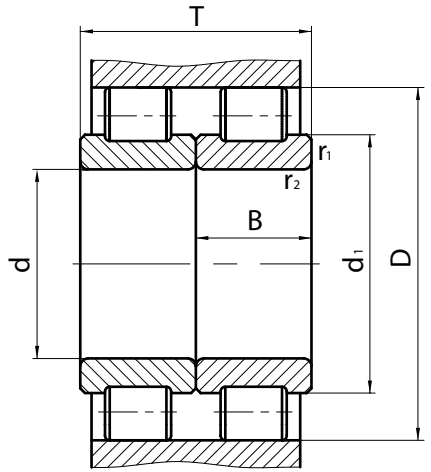


The bearings are intended for accommodation of increased radial loads. Permissible radial load is 1.7 times higher than that of corresponding single-row bearing. Bearings are selected during the manufacturing process so as to ensure an equal distribution of load in the bearing unit. They are delivered by sets.

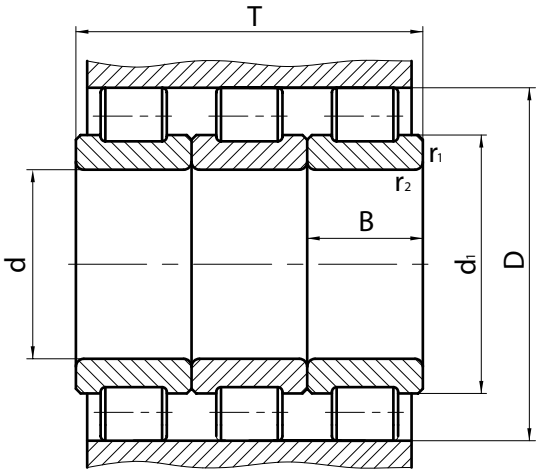
TYPE 42000У2

Dimensions, mm									Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
											dynamic	static	lubricant					
d	D	B	C	T	d_1	D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
60	110	28	28	56	77,7	95,1	1,5	1,5	**42512У2**		209000	285000	5300	6300	2,62	**42512У2**	NJ2212EC/DR	SKF

RADIAL CYLINDRICAL ROLLER BEARINGS WITHOUT OUTER RING, PAIRED AND STACK MOUNTING, SPECIAL DESIGN



712000У2



712000У3, 3712000У3

The bearings are applied when the reduced radial dimensions of the unit are required. Hardness and accuracy treatment of the housing surface in contact with the raceway surface of rollers must be the same as that of the bearing rings.

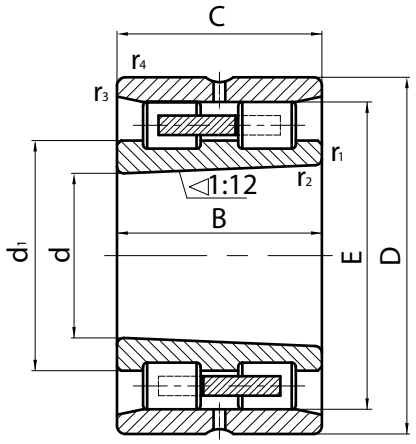
TYPE 712000У2, 712000У3, 3712000У3

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
								dynamic	static				
d	D for rollers	B	T	d_1	$r_{1,2}$ min			Cr	Cor	m	epk	analogue	
30	55	20	40	40,8	1,0	**712506У2**		104000	128000	0,334	**712506У2**	RSL182206-2S	INA
35	64	23	46	47	1,1	**712507У2**		129000	165000	0,530	**712507У2**	RSL182207-2S	INA
45	74,5	23	69	57,6	1,1	**712509У3**		201000	306000	0,990	**712509У3**	RSL182209-3S	INA
55	83,5	26	78	67,7	1,1	**3712111У3**		243000	420000	1,278	**3712111У3**	RSL183011-3S	INA
110	156	45	135	127,5	2,0	**3712122У3**		716000	1480000	6,780	**3712122У3**	RSL183022-3S	INA

PRECISION DOUBLE-ROW RADIAL CYLINDRICAL ROLLER BEARINGS

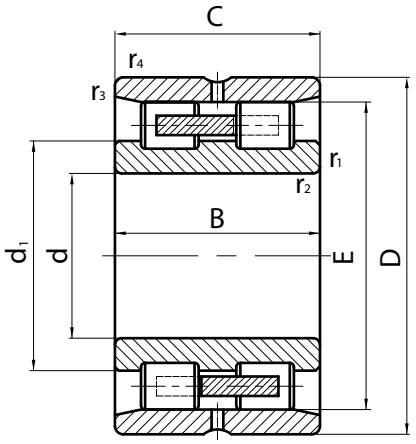
The bearings can accommodate radial load only. In the process of operation they are allowed to make double-direction relative axial movement of the rings. Bearings of 3182000 and 4162000 types are allowed to regulate radial clearance by axial movement of inner ring in shaft tapered neck.

With ribbless outer ring with taper mounting bore



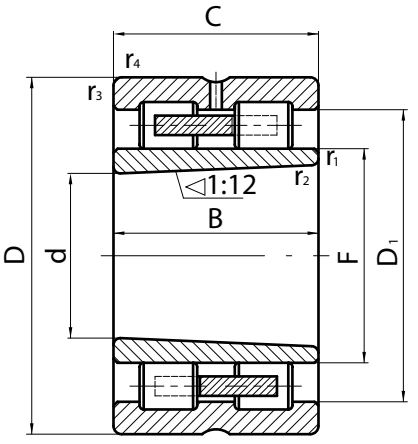
3182000K

With ribbless outer ring with cylindrical mounting bore



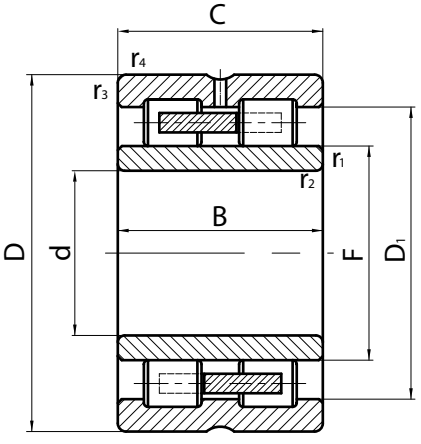
3282000K

With ribbless inner ring with taper mounting bore



4162000K

With ribbless inner ring with cylindrical mounting bore



4262000K

TYPE 3182000K, 3282000K, 4162000K, 4262000K

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	C	F/E	d_1/D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue
30	55	19	19	49	39,4	1,0	1,0	3182106K		36800	44200	10000	13000	0,174	3182106K	NN3006K W33
35	62	20	20	55,5	45,5	1,0	1,0	3182107K		40000	51500	14000	16000	0,251	3182107K	NN3007K W33
40	68	21	21	61	50,6	1,0	1,0	3182108K		44000	57000	12000	14000	0,294	3182108K	NN3008K W33
45	75	23	23	67,5	56,3	1,0	1,0	3182109K		51800	68600	6300	8000	0,394	3182109K	NN3009K W33
50	80	23	23	73,3	61,3	1,0	1,0	3182110K		54000	73600	10000	12000	0,426	3182110K	NN3010K W33
55	90	26	26	81	68,2	1,1	1,1	3182111K		70500	97500	9500	11000	0,623	3182111K	NN3011K W33
55	90	26	26	81	68,2	1,1	1,1	3182111KE		70500	97500	9500	11000	0,596	3182111KE	NN3011KTN W33
55	90	26	26	81	68,2	1,1	1,1	3282111K		70500	97500	9500	11000	0,623	3282111K	NN3011 W33
60	95	26	26	86,1	73,3	1,1	1,1	3182112K		75500	111000	6300	8000	0,640	3182112K	NN3012K W33
60	95	26	26	86	73,3	1,1	1,1	3182112KE		73300	106000	6300	8000	0,611	3182112KE	NN3012KTN W33
65	100	26	26	91	78,2	1,1	1,1	3182113K		74800	111000	6300	8000	0,700	3182113K	NN3013K W33
65	100	26	26	91	78,2	1,1	1,1	3182113KE		78500	116000	8500	9500	0,665	3182113KE	NN3013KTN W33
70	110	30	30	100	85,6	1,1	1,1	3182114K		99500	150000	7500	8500	1,040	3182114K	NN3014K W33
70	110	30	30	100	85,6	1,1	1,1	3182114KE		99500	150000	7500	8500	0,970	3182114KE	NN3014KTN W33
75	115	30	30	105	90,6	1,1	1,1	3182115K		99500	150000	7000	8000	1,100	3182115K	NN3015K W33
75	115	30	30	105	90,6	1,1	1,1	3182115KE		99500	150000	7000	8000	1,040	3182115KE	NN3015KTN W33
80	125	34	34	113	97	1,1	1,1	3182116K		129000	207000	4500	5600	1,492	3182116K	NN3016K W33
80	125	34	34	113	97	1,1	1,1	3182116KE		129000	207000	4500	5600	1,400	3182116KE	NN3016KTN W33
85	130	34	34	118	102	1,1	1,1	3182117K		128000	199000	6300	7000	1,620	3182117K	NN3017K W33
90	140	37	37	127	109,4	1,5	1,5	3182118K		140000	222000	4000	5000	2,130	3182118K	NN3018K W33
90	140	37	37	127	109,4	1,5	1,5	3182118KE		140000	222000	4000	5000	2,024	3182118KE	NN3018KTN W33

CYLINDRICAL ROLLER BEARINGS

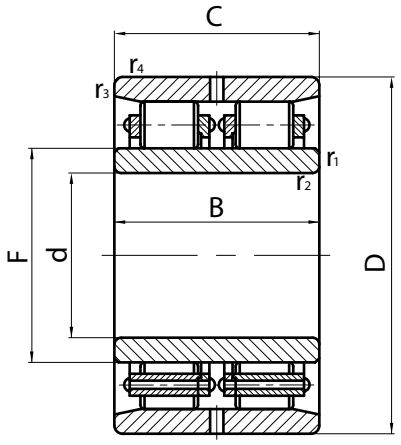
TYPE 3182000K, 3282000K, 4162000K, 4262000K

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	C	F/E	d_1/D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue
95	145	37	37	132	114,4	1,5	1,5	**3182119K**		143000	232000	4000	5000	2,149	**3182119K**	NN3019K W33
95	145	37	37	132	114,4	1,5	1,5	**3182119KE**		143000	232000	4000	5000	2,042	**3182119KE**	NN3019KTN W33
100	150	37	37	138	119	1,5	1,5	**3182120K**		167000	268000	3400	4300	2,050	**3182120K**	NN3020K W33
100	150	37	37	137	119,4	1,5	1,5	**3182120KE**		160000	247000	5300	6000	1,980	**3182120KE**	NN3020KTN W33
100	150	37	37	137	119,4	1,5	1,5	**3182120КУ**		160000	247000	5300	6000	2,170	**3182120КУ**	NN3020K W33
100	150	37	37	137	119,4	1,5	1,5	**3282120K**		160000	247000	5300	6000	2,260	**3282120K**	NN3020 W33
100	140	40	40	113	127,3	1,1	1,1	**4162920K**		129000	243000	3800	4800	1,780	**4162920K**	NNU4920BK W33
105	160	41	41	146,5	125,7	2,0	2,0	**3182121K**		202000	305000	5000	5600	2,840	**3182121K**	NN3021K W33
110	170	45	45	155	132,6	2,0	2,0	**3182122K**		212000	345000	3150	4000	3,461	**3182122K**	NN3022K W33
120	180	46	46	165	141	2,0	2,0	**3182124K**		244000	383000	4500	5000	3,860	**3182124K**	NN3024K W33
130	200	52	52	182	156,4	2,0	2,0	**3182126K**		284000	476000	2600	3200	5,630	**3182126K**	NN3026K W33
130	200	52	52	182	156,4	2,0	2,0	**3182126KE**		273000	459000	2500	3150	5,270	**3182126KE**	NN3026KTN W33
130	180	50	50	146	163	1,5	1,5	**4162926K**		203000	398000	3000	3800	3,560	**4162926K**	NNU4926K W33
140	210	53	53	193,3	166,4	2,0	2,0	**3182128K**		305000	515000	3800	4300	5,700	**3182128K**	NN3028K W33
140	210	53	53	193,3	166,4	2,0	2,0	**3282128K**		305000	515000	3800	4300	6,300	**3282128K**	NN3028 W33
140	190	50	50	156	173,6	1,5	1,5	**4162928K**		190000	400000	3800	4500	4,000	**4162928K**	NNU4928BK W33
150	225	56	56	205,5	178,3	2,1	2,1	**3182130K**		340000	570000	3600	4000	7,560	**3182130K**	NN3030K W33
150	225	56	56	205,5	178,3	2,1	2,1	**3282130K**		340000	570000	3600	4000	7,810	**3282130K**	NN3030 W33
150	210	60	60	168,5	191,1	2,0	2,0	**4162930K**		325000	655000	3600	4300	5,980	**4162930K**	NNU4930BK W33
160	240	60	60	219	190,2	2,1	2,1	**3182132K**		380000	635000	3400	3800	8,220	**3182132K**	NN3032K W33
160	240	60	60	219	190,2	2,1	2,1	**3182132KE**		380000	670000	2000	2600	7,870	**3182132KE**	NN3032KTN W33
160	240	60	60	219	190,2	2,1	2,1	**3182132K1***		380000	670000	2000	2600	8,410	**3182132K1***	NN3032K W33
170	260	67	67	236	204	2,1	2,1	**3182134K**		460000	791000	3000	3400	12,200	**3182134K**	NN3034K W33
170	260	67	67	236	204	2,1	2,1	**3282134K**		460000	791000	3000	3400	12,900	**3282134K**	NN3034 W33
170	230	60	60	188,5	211,1	2,0	2,0	**4162934K**		340000	695000	3200	3800	6,630	**4162934K**	NNU4934BK W33
180	280	74	74	255	218,2	2,1	2,1	**3182136K**		575000	994000	2800	3200	16,750	**3182136K**	NN3036K W33
190	290	75	75	265	228,2	2,1	2,1	**3182138K**		605000	1020000	2600	3200	17,400	**3182138K**	NN3038K W33
190	260	69	69	211,5	237,4	2,0	2,0	**4162938K**		405000	856000	2800	3400	9,850	**4162938K**	NNU4938BK W33
190	260	69	69	211,5	237,4	2,0	2,0	**4262938K**		405000	856000	2800	3400	9,850	**4262938K**	NNU4938B W33
200	310	82	82	282	242	2,1	2,1	**3182140K**		665000	1140000	2400	2800	21,900	**3182140K**	NN3040K W33
200	310	82	82	282	242	2,1	2,1	**3182140K1***		706000	1250000	1600	2000	21,780	**3182140K1***	NN3040K W33
200	310	82	82	282	242	2,1	2,1	**3282140K**		665000	1140000	2400	28000	23,100	**3282140K**	NN3040 W33
220	340	90	90	310	265	3,0	3,0	**3182144K**		830000	1440000	2200	2800	29,400	**3182144K**	NN3044K W33
240	360	92	92	330	285,2	3,0	3,0	**3182148K**		870000	1560000	2000	2600	32,000	**3182148K**	NN3048K W33
260	400	104	104	364	312,8	4,0	4,0	**3182152K**		1050000	1910000	1900	2400	47,000	**3182152K**	NN3052K W33
280	420	106	106	384	332,8	4,0	4,0	**3182156K**		1080000	2060000	1800	2200	48,600	**3182156K**	NN3056K W33
280	420	106	106	384	332,8	4,0	4,0	**3282156K**		1080000	2060000	1800	2200	51,900	**3282156K**	NN3056 W33
280	350	69	69	303	329	1,1	2,0	**4162856K**		454000	1050000	1300	1700	14,000	**4162856K**	NNU4856K W33
280	350	69	69	303	329	1,1	2,0	**4262856K**		454000	1050000	1300	1700	14,000	**4262856K**	NNU4856 W33
320	480	121	121	438	380	4,0	4,0	**3182164K1***		1320000	2580000	1600	1900	73,700	**3182164K1***	NN3064K W33
500	670	170	170	554	612	5,0	5,0	**42629/500У**		2320000	5860000	870	1100	172,00	**42629/500У**	NNU49/500B SPW33X

* Bearing is equipped with two cages.

Note: On a customer request the bearings are produced without grooves for lubrication in outer ring, in this case the bearing designation does not include the index «K».

DOUBLE-ROW RADIAL CYLINDRICAL ROLLER BEARINGS WITH RIBBLESS INNER AND OUTER RINGS

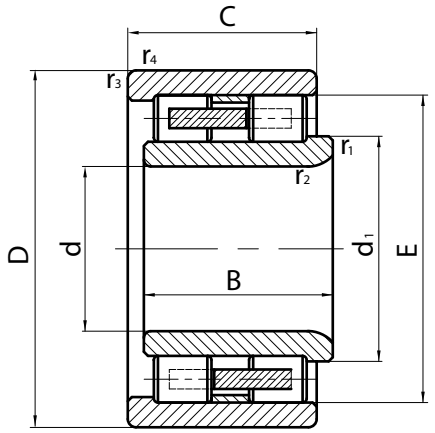


The bearings can accommodate radial load only. They are allowed making double-direction relative to axial movement of the rings. Each row of rollers includes its own cage.

TYPE 782000

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation
									dynamic	static		
d	D	B	C	F	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	m	epk
180	310	135	135	217	2,3	2,3	**782736**		1060000	1970000	49,074	**782736**
280	460	200	200	330	6,0	6,0	**782756M**		1060000	1970000	49,074	**782756M**

DOUBLE-ROW RADIAL CYLINDRICAL ROLLER BEARINGS SPECIAL DISIGN

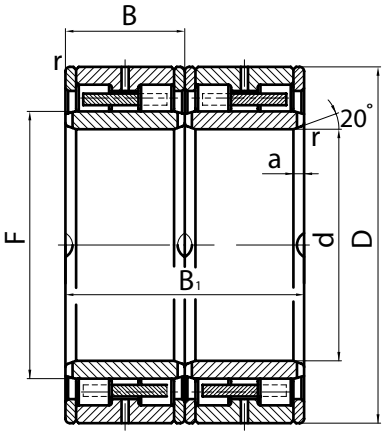


The bearings can accommodate radial load and short-term light axial load, with shaft fixation in both directions.

TYPE 772000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
										dynamic	static	lubricant			
d	D	B	C	E	d_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk
170	320	153	154	281	223	12,0	2,7	772734M		1510000	2630000	560	1100	61,20	772734M
170	320	154	154	281	222,7	12,0	4,0	772734M1		1510000	2630000	560	1100	58,97	772734M1

RADIAL CYLINDRICAL ROLLER BEARINGS (SET OF DOUBLE-ROW BEARINGS) OF SPECIAL DESIGN



The bearings can accommodate radial load only. They are allowed making double-direction relative axial movement of the rings.

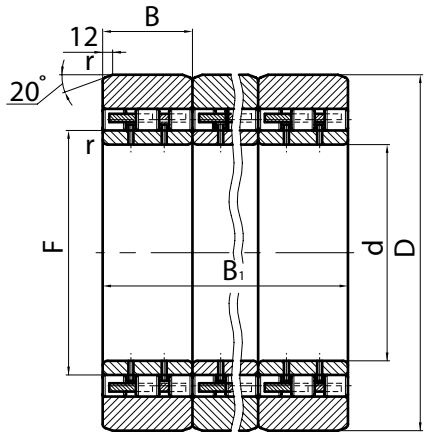
TYPE 442000, 462000, 6462000

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation
									dynamic	static		
d	D	B	B_1	F	a	r min			Cr	Cor	m	epk
120	165	45	90	131		1,8	**442924У2**		284000	557000	6,14	**442924У2**
180	260	90	180	200	8	2,1	**462736МУ2**		1000000	2246400	31,40	**462736МУ2**
190	290	90	180	216	7	1,1	**6462138КУ**		1278000	2703000	52,94	**6462138КУ**
240	360	140	280	274	10	3,0	**462748У2**		2217000	5464000	99,60	**462748У2**
630	850	265	530	690	15	6,0	**4627/630ХУ2**		8277000	25920000	880,00	**4627/630ХУ2**

CYLINDRICAL ROLLER BEARINGS

CYLINDRICAL ROLLER BEARINGS

THREE-ROW RADIAL CYLINDRICAL ROLLER BEARINGS (AND THEIR SETS)

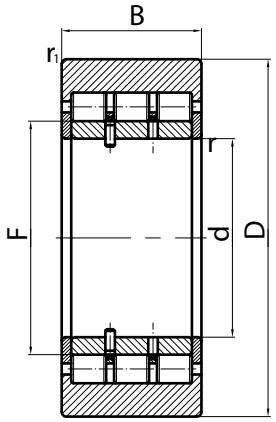


TYPE 462000

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic	static		
d	D	B	B_1	F	r min			Cr	Cor	m	epk
100	225	120		120	2,3	**462820**		747000	1432000	28,75	**462820**
100	225	120	480	120	2,3	**462820У4**		2196000	5727000	115,00	**462820У4**
130	300	150		160,5	1,1	**462826У**		1277000	5148000	62,10	**462826У**
130	300	150	900	160,5	1,1	**462826У6**		2322000	13935000	372,60	**462826У6**

Note: Bearings, with supplementary designations У4 and У6 include 4 or 6 of matched three-row bearings respectively.

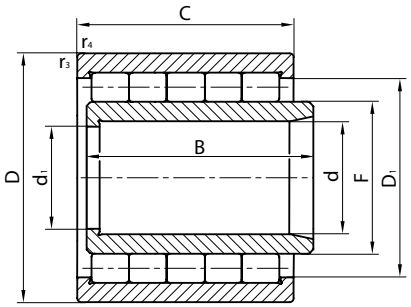
PRECISION THREE-ROW FULL COMPLEMENT RADIAL CYLINDRICAL ROLLER BEARINGS



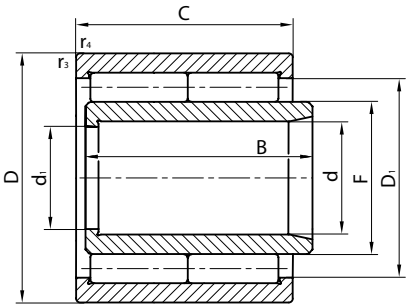
TYPE 762000

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic	static		
d	D	B	F	r min	r_1 min			Cr	Cor	m	epk
90	220	120	120	0,7	1,3	**762718У**		2620000	7200000	29,3	**762718У**

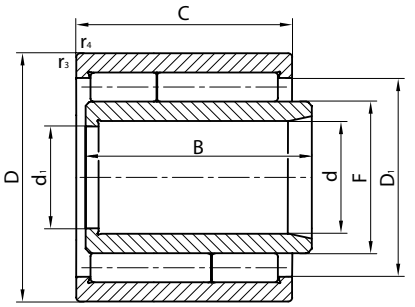
RADIAL CYLINDRICAL ROLLER BEARINGS WITH DOUBLE-RIB OUTER RING AND WITH A FLANGED INNER RING OF A SPECIAL DESIGN



6622947



6624947

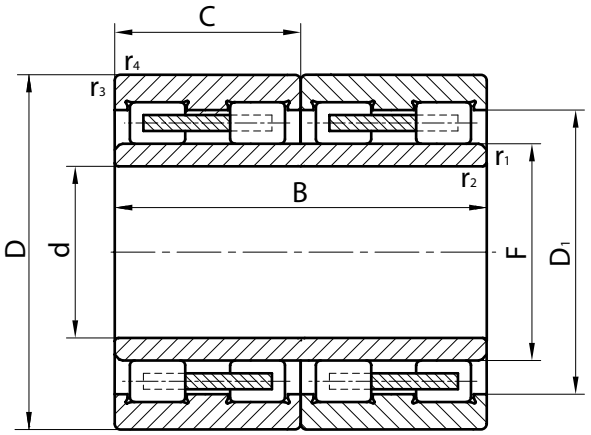


6624947K

TYPE 6622000, 6624000

Dimensions, mm								Bearing designation		Load ratings, N		Mass, kg	Bearing designation
										dynamic	static		
d	D	B	C	F	d_1	D_1	r3, 4 min			Cr	Cor	m	epk
237	309,17	136	124,56	261,72	230	280	2,1	**6622947**		1120000	3800000	28,34	**6622947**
237	309,17	136	124,56	261,72	230	280	2,1	**6624947**		1110000	3940000	28,34	**6624947**
237	309,17	136	124,56	261,72	230	280	2,1	**6624947K1**		1110000	3940000	28,34	**6624947K1**

FOUR-ROW RADIAL CYLINDRICAL ROLLER BEARINGS WITH RIBBLESS INNER RING OF A SPECIAL DESIGN



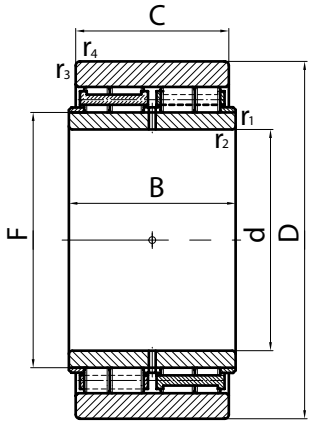
The bearings can accommodate radial load only. They are allowed making double-direction relative axial movement of the rings.

TYPE 582000

Dimensions, mm								Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
										dynamic	static				
d	D	B	C	F	D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	m	epk	analogue	
265	370	234	117	300	336	2,1	2,1	**582753Л**		1960000	5370000	80,37	**582753Л**	517423	FAG

CYLINDRICAL ROLLER BEARINGS

FOUR-ROW RADIAL CYLINDRICAL ROLLER BEARINGS (AND THEIR SETS), OF A SPECIAL DESIGN



The bearings can accommodate radial load only. They are allowed making double direction relative axial movement of the rings.

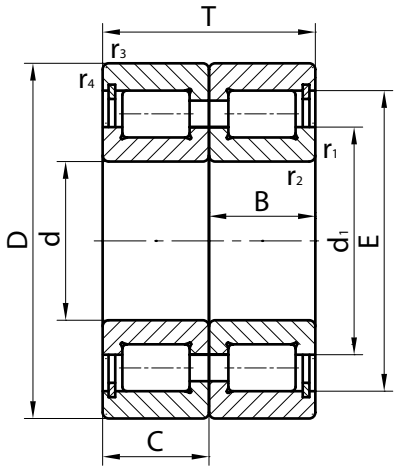
TYPE 372000, 462000

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation
									dynamic	static		
d	D	B	C	F	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	m	epk
50	120	82	78	65	2,3	1,3	**372710XУ4**		647000	1472000	19,8	**372710XУ4**
75	180	94	90	95	3,0	2,0	**462815У**		355000	578000	13,8	**462815У**
75	180	94	90	95	3,0	2,0	**462815XУ**		355000	578000	13,8	**462815XУ**
75	180	94	90	95	3,0	2,0	**462815У4**		1045000	2312000	55,2	**462815У4**
75	180	94	90	95	3,0	2,0	**462815XУ6**		1430000	3468000	82,8	**462815XУ6**

Note: Bearings with supplementary designations У4 and У6 include 4 or 6 sets (stack mounting) of three-row bearings respectively.

CYLINDRICAL ROLLER BEARINGS

FULL COMPLEMENT CYLINDRICAL ROLLER BEARINGS PARED MOUNTING



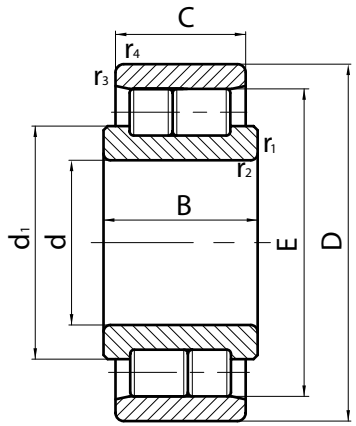
The bearings are intended to carry increased radial loads. Permissible radial load is 1.7 times higher than that of corresponding single-row bearing. Bearings are selected during the manufacturing process to ensure even distribution of load in the bearing unit and are supplied by sets.

TYPE 612000У2

Dimensions, mm									Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
											dynamic	static	lubricant					
d	D	B	C	T	E	d_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
75	130	31	31	62	116	92	1,5	1,5	**612515У2**		311000	509000	1900	2300	3,52	**612515У2**	SL182215-2S	INA
85	150	36	36	72	133	104,5	2,0	2,0	**612517У2**		419000	649000	900	1800	5,46	**612517У2**	SL182217-2S	INA

CYLINDRICAL ROLLER BEARINGS

DOUBLE-ROW FULL COMPLEMENT RADIAL CYLINDRICAL ROLLER BEARINGS WITH RIBBLEES OUTER RING

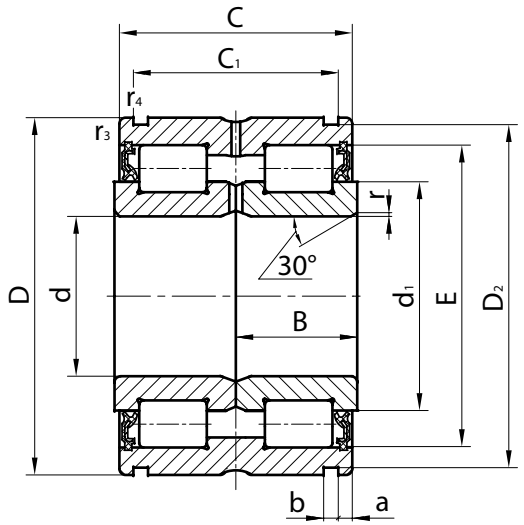


The bearings are applied in supports with increased radial load. They cannot operate at the same high speeds as bearings with cages due to the friction of the contacting rollers.

TYPE 3222000

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
										dynamic	static	lubricant			
d	D	B	C	E	d_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk
35	72	27	23	62	49,6	1,3	0,3	**3222207**		87500	120000	1700	2100	0,518	**3222207**
50	90	30,2	24	77,4	65	1,3	0,3	**3222210**		111000	177000	1400	1700	0,810	**3222210**
55	100	33,3	26	85	72,6	1,8	0,5	**3222211**		128000	218000	1300	1600	1,028	**3222211**
60	110	36,5	28	92,8	79	1,8	0,5	**3222212**		156000	267000	1100	1400	1,470	**3222212**
60	130	54	42	108,3	86,6	2,5	1,3	**3222312**		276000	423000	1100	1400	3,390	**3222312**
65	120	38,1	32	104,3	85,7	1,8	0,9	**3222213**		202000	313000	900	1200	1,910	**3222213**
65	140	58,7	46	118,6	93,8	2,1	1,1	**3222313**		333000	504000	1000	1300	4,300	**3222313**
80	170	68,3	54	142,4	116,1	2,5	1,3	**3222316**		447000	750000	700	850	7,380	**3222316**
95	200	78	64	167,5	136,5	3,0	1,3	**3222319**		577500	980000	800	1400	11,800	**3222319**
100	215	82,6	70	177	143	3,0	1,3	**3222320**		689000	1170000	700	1200	14,970	**3222320**
110	240	92	72	200,8	160,5	3,0	1,3	**3222322**		819000	1350000	650	1000	19,900	**3222322**
120	260	106	82	216,3	172,9	3,0	1,3	**3222324**		970000	1630000	600	850	26,300	**3222324**
140	300	118	92	251,8	199,1	3,7	1,8	**3222328**		1262000	2096000	530	700	38,800	**3222328**

DOUBLE-ROW RADIAL FULL COMPLEMENT CYLINDRICAL ROLLER BEARINGS SEALED ON BOTH SIDES, SPECIAL GESIGN

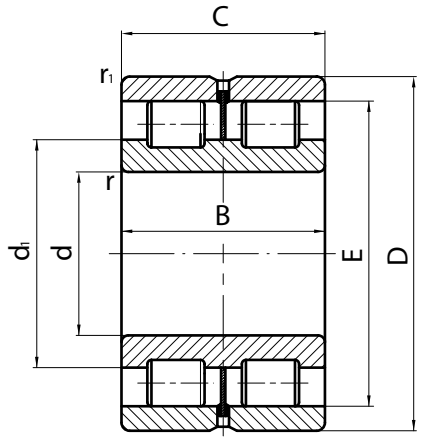


The bearings have maximum load rating due to complete filling with rollers. The bearings are sealed on both sides. They are installed in the housing using snap rings.

TYPE 982000

Dimensions, mm												Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}	Mass, kg	Bearing designation		
														dynamic	static	lubricant				
d	D	B	C	E	d_1	D_2	C_1	a	b	r	$r_{3,4}$ min			Cr	Cor	grease grease	m	epk	analogue	
130	200	47,5	94	183,5	154	196	83,2	5,4	4,2	1,8	0,6	982826K		581000	1090000	630	10,58	982826K	NNF5026 ADA-2LSV	SKF

THE BEARINGS HAVE MAXIMUM LOAD RATING DUE TO COMPLETE FILLING WITH ROLLERS. THE BEARINGS ARE SEALED ON BOTH SIDES. THEY ARE INSTALLED IN THE HOUSING USING SNAP RINGS.



The bearings are applied in supports with increased radial load. They operate with lower rotational speeds than bearings with cages due to the friction of contacting rollers.

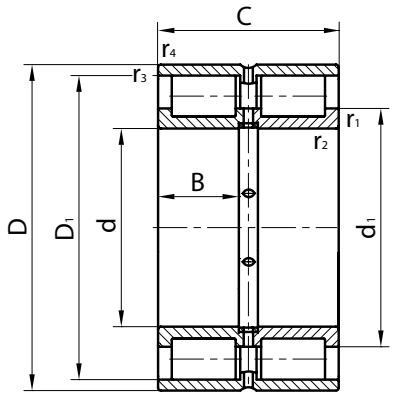
TYPE 1 OK 450

Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	B	C	E	d_1	r min	r_1 min			Cr	Cor	grease	oil	m	epk	analogue
220	300	80	80	276	248	2,1	2,1	1 OK 450		682000	1600000	500	950	16,4	1 OK 450	SL02 4944A

CYLINDRICAL ROLLER BEARINGS

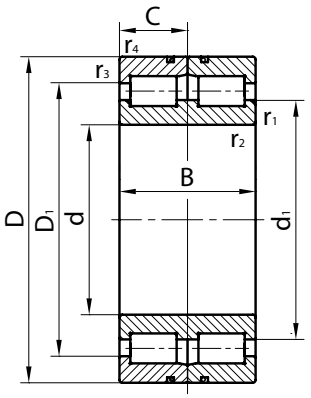
DOUBLE-ROW FULL COMPLEMENT RADIAL CYLINDRICAL ROLLER BEARINGS, NONSEPARABLE SPECIAL DESIGN

with clamping ring



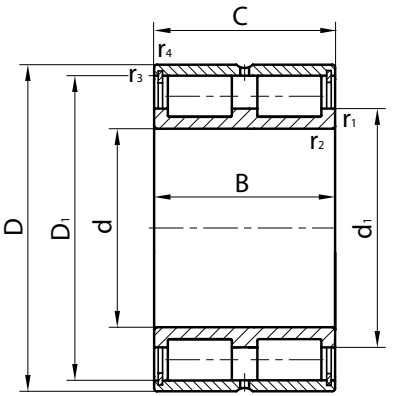
972000

with snap ring



4722000

with retaining shields



4822000

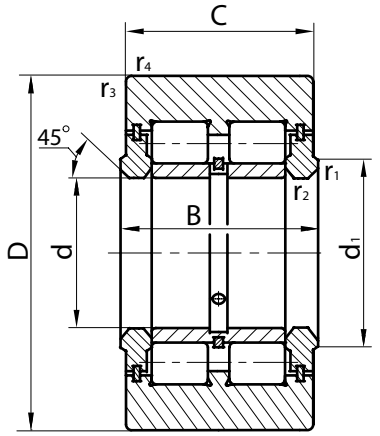
The bearings have maximum load rating due to complete fill with rollers. The snap ring connecting together two outer rings provides non-separable design of 4722000 bearing type; clamping ring connecting together two inner rings provides non-separable design of 972000 bearing type; retaining shields provide non-separable design of 4822000 bearing type.

TYPE 972000, 4722000, 4822000

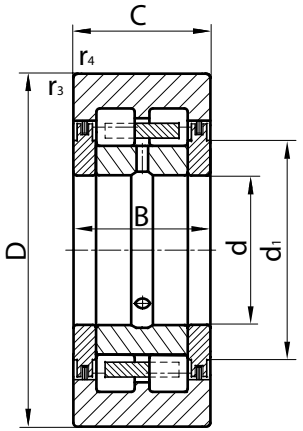
Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
										dynamic	static	lubricant					
d	D	B	C	d_1	D_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	grease	oil	m	epk	analogue	
80	110	30	15	92	96	1,0	1,0	**4722916**		111000	219000	2900	2500	0,903	**4722916**	SL014916	INA
160	220	60	30	181	199,5	2,0	2,0	**4722932**		412000	811000	1700	1100	5,610	**4722932**	SL014932	INA
220	300	80	40	248	268,5	2,1	2,1	**4722944**		689000	1610000	1200	750	16,900	**4722944**	SL014944	INA
240	320	80	40	271	291	2,1	2,1	**4722948**		722000	1760000	1200	700	17,915	**4722948**	SL014948	INA
260	360	100	50	296,3	321	2,1	2,1	**4722952M**		1050000	2530000	1000	600	31,815	**4722952M**	SL014952	INA
260	400	95	190	304	376	4,0	4,0	**972852MУ**		2720000	5270000	380	700	81,400	**972852MУ**	NNCL5052 DA.V	SKF
360	480	118	118	404	447	3,0	3,0	**4822972**		1740000	4520000	350	650	59,600	**4822972**	SL024972	INA

DOUBLE-ROW TRACK ROLLERS OF A SPECIAL DESIGN

full complement bearing



862000



862000Л

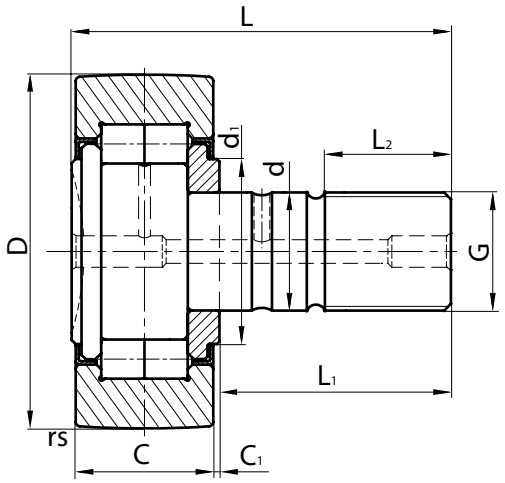
The rollers can accommodate a radial load and short-term axial load in both directions. Track rollers are protected with seals on both sides and greased.

TYPE 862000

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation
									dynamic	static		
d	D	B	C	d_1	$r_{1,2}$ min	$r_{3,4}$ min			Cr	Cor	m	epk
50	130	65,06	63	66	0,5	2,3	**862710**		220000	292000	5,287	**862710**
70	190	85	83	95	2,5	3,0	**862714**		358000	526000	13,615	**862714**
75	200	78,45	78	107,5	1,5	4,0	**862715ЛТ2**		355000	446000	15,074	**862715ЛТ2**
110	320	94,5	94	154	1,5	4,0	**862722ХЛТ**		558000	770000	49,286	**862722ХЛТ**

CYLINDRICAL ROLLER BEARINGS

YOKE-TYPE TRACK ROLLERS OF A SPECIAL DESIGN

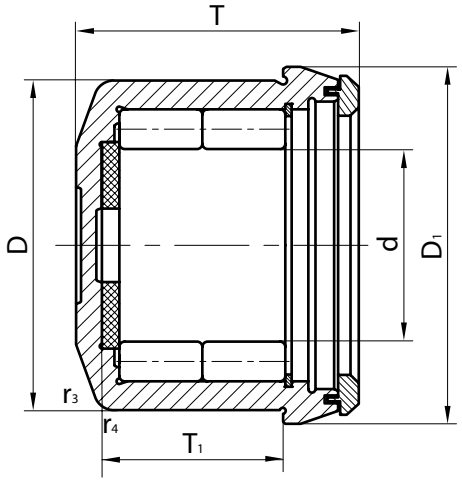


The track rollers have maximum load rating owing to complete filling with rollers. They can accommodate high radial loads and short-term axial load in both directions. The rollers are protected with shields from both sides and greased. They are fixed to load-carrying structure with conventional nuts.

TYPE OP

Dimensions, mm										Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
												dynamic	static				
d	D	C	r_s min	L	L_1	L_2	d_1	C_1	G			Cr	Cor	m	epk	analogue	
30	80	35	1,1	100	63	32	47	1	M30	**OP80x35**		98900	121000	1,63	**OP80x35**	NUKR80	SKF
30	90	35	1,1	100	63	32	47	1	M30	**OP90x35**		98900	121000	2,00	**OP90x35**	NUKR90	SKF

DOUBLE-ROW CYLINDRICAL ROLLER BEARINGS WITH CLOSED END OUTER RING, CARDAN OF A SPECIAL DESIGN

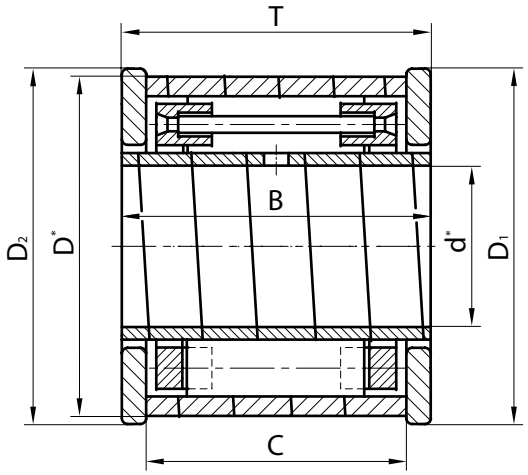


The set of rollers inserted in a ring is selected to make the bearing being non-separable during transportation and mounting
The shaft surface contacting with the raceway surface of rollers must have the same hardness and machining accuracy as the bearings rings have. They are used in units with oscillating motion.

TYPE 812000

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic	static		
d for rollers	D	D_1	T	T_1	$r_{3,4}$ min			Cr	Cor	m	epk
51,5	83	90	71,23	44,5	3,0	**812810**		170000	268000	1,574	**812810**

RADIAL CYLINDRICAL ROLLER BEARINGS WITH WINDING RINGS SPECIAL DESIGN



The bearings can accommodate radial load only. They are applied in rolls of continuous casting device for blooms and slabs in the metallurgical industry. Winding rings compensate thermal expansion of the shaft and housing.

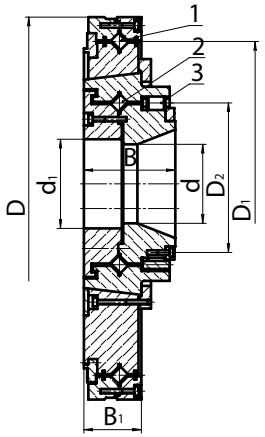
TYPE ПВК

SERIES ПВК

Dimensions, mm							Bearing designation		Mass, kg	Bearing designation
d*	D*	B	C	D_1	D_2	T			m	epk
37,5	73,5	57	47	71	75	57	ПВК 40/71-864909Т4		0,98	ПВК 40/71-864909Т4
37,5	73,5	80	70	75	75	80	ПВК 40/71-864809Т4		1,35	ПВК 40/71-864809Т4

* Shaft and housing dimensions.

THREE-ROW COMBINED ANGULAR CONTACT ROLLER BEARINGS OF SPECIAL DESIGN (BEARING UNIT OF «SWIVEL»TYPE)



Bearing consists of 3 rows, the first raw of which is with cylindrical rollers located with crossed axes and the second row is with taper rollers and the third row is with cylindrical rollers, rotating relative to the first row with eccentricity. Taper rollers of the second row are also placed with crossed axes. Rollers in the first and the second rows are separated by plastic separating elements.

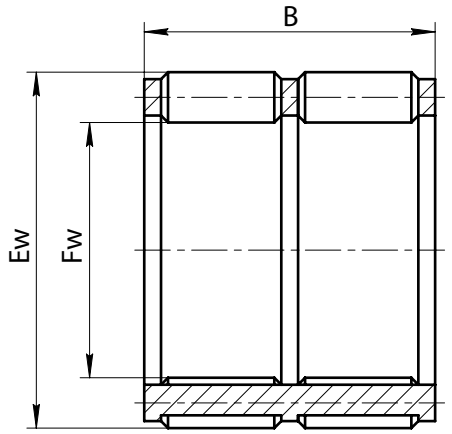
TYPE 20.012, 20.025

Dimensions, mm								Bearing designation		Mass, kg	Bearing designation
d	d_1	D	D_1	D_2	D_3	B	B_1			m	epk
765	800	1480	1440	1385	920	228	125	**20.012**		1300	**20.012**
765	800	1480	1440	1385	920	225	125	**20.025***		1300	**20.025***

* Bearing differs by mounting dimensions for working tool.

CYLINDRICAL ROLLER BEARINGS

DOUBLE-ROW RADIAL CYLINDRICAL ROLLER AND CAGE ASSEMBLY

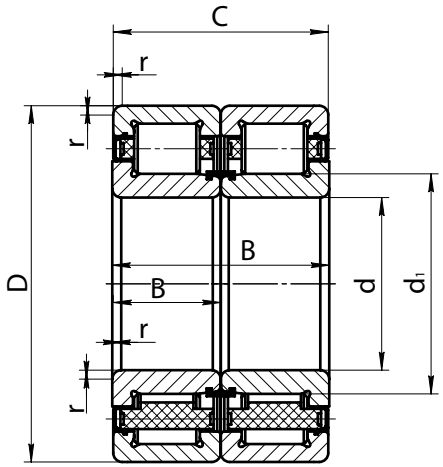


TYPE 252000

Dimensions, mm			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
					dynamic	static	lubricant			
F_w	E_w	B			Cr	Cor	grease	oil	m	epk
38	54	40	252908Л		80600	102300			0,267	252908Л

CYLINDRICAL ROLLER BEARINGS

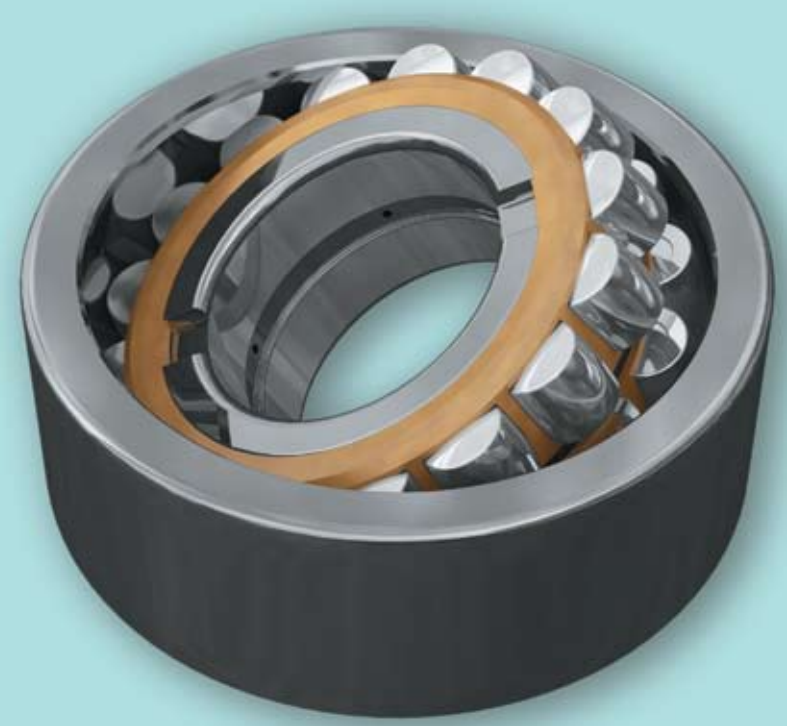
CYLINDRICAL ROLLER RADIAL BEARINGS WITH SEALS PARED MOUNTING



The bearings are intended to carry increased radial loads. Permissible radial load is 1.7 times higher than that of the corresponding single-row bearing. Bearings are selected during the manufacturing process to ensure even distribution of load in the bearing unit and are supplied by sets.

TYPE 882000

Dimensions, mm					Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
							dynamic	static	lubricant				
d	D	B	C	r			Cr	Cor	grease	oil	m	epk	analogue
129,96	250	161,2	160	4,0	**882726E2MC43**		1001000	1548000			34,956	**882726E2MC43**	



DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS

Spherical roller bearings are intended for accommodation of radial load, but they simultaneously can accommodate axial load, acting in both directions and not exceeding 25% of unused permissible value of radial load.

They are self-aligning bearings and they are able to compensate considerable misalignment, caused by shaft deflection under load and technical errors during the machining of seatings, or unit assembling. Bearings performance is kept when misalignment of the inner ring axes relative to the outer ring axes is about two degrees. They fix shaft in both sides of axial direction within existing axial clearances.

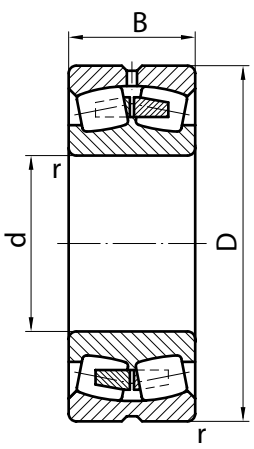
Bearings are made with asymmetric (3000 type and their modifications) and symmetric (53000 type and their modifications) rollers with cylindrical and tapered bore of inner ring, with adapter and withdrawal sleeves..

Bearings are used in support of units and mechanisms, where large radial loads take place and where misalignment of the seatings is inevitable. They are applied in powerful pumps, fans, gearboxes, as well as in sawing machines, propeller shafts and rolling mills.

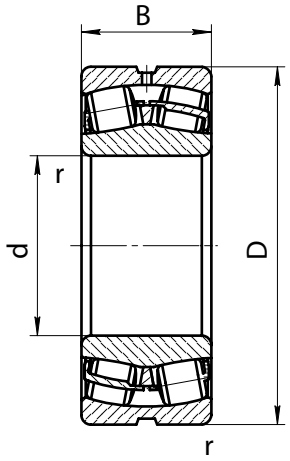
On a customer request the bearings are produced without grooves for lubrication on outer ring, in this case the bearing designation does not contain the symbol «H».

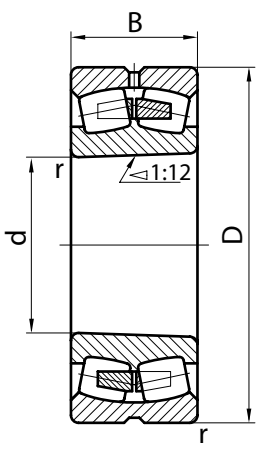
DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS

DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS



3000H, 53000H, 2003000H, 3003000H, 3053000H, 4003000H, 4053000H





113000H, 3113000H, 4113000H, 4153000H

The bearings are installed on long shafts with heavy deflections, or on the individual housing supports. Bearings with tapered bore are installed on end supports of shafts and axis, with tapered neck or on adapter or withdrawal sleeve. Tapered bore makes easier their mounting and dismounting.

TYPE 3000H, 53000H, 113000H, 2003000H, 3003000H, 3053000H, 3113000H, 4003000H, 4113000H, 4053000H , 4153000H

Dimensions, mm				Loading factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
					Y					dynamic	static	lubricant				
d	D	B	r min	e	$\frac{F_a}{F_r} \le e$	$\frac{F_a}{F_r} > e$	Y_0			Cr	Cor	grease	oil	m	epk	analogue
70	150	51	2,1	0,34	1,98	2,95	1,94	**53614AH**		325000	375000	2400	3200	4,370	**53614AH**	22341W33
75	160	55	2,1	0,35	1,95	2,90	1,90	**53615AH**		375000	440000	2200	3000	5,430	**53615AH**	22315W33
80	170	58	2,1	0,34	1,94	2,92	1,92	**53616AH***		415000	500000	2200	3000	6,470	**53616AH***	22316 W33
90	190	64	3,0	0,36	1,87	2,79	1,83	**53618ЛН**		510000	620000	1900	2600	8,880	**53618ЛН**	22318MBW33
95	170	43	2,1	0,24	2,72	4,04	2,65	**53519AH***		315000	400000	2400	3200	4,160	**53519AH***	22219W33
100	215	73	3,0	0,35	1,88	2,81	10,84	**53620ЛН**		655000	815000	1700	2200	13,280	**53620ЛН**	22320MBW33
110	200	53	2,1	0,26	2,58	3,84	2,52	**53522ЛН**		455000	585000	2000	2800	7,480	**53522ЛН**	22222MBW33
110	240	80	3,0	0,37	1,83	2,72	1,79	**3622H**		950000	1120000	1500	1900	17,760	**3622H**	22322MW33
110	240	80	3,0	0,37	1,83	2,72	1,79	**3622KH**		950000	1120000	1500	1900	17,760	**3622KH**	22322MAW33
110	240	80	3,0	0,37	1,83	2,72	1,79	**3622Ю**		950000	1120000	1500	1900	17,500	**3622Ю**	S22322M
110	240	80	3,0	0,37	1,83	2,72	1,79	**113622**		950000	1120000	1500	1900	17,300	**113622**	22322KM
120	215	58	2,1	0,29	2,36	3,51	2,31	**3524AH**		630000	765000	1900	2600	9,250	**3524AH**	22224MW33
120	215	58	2,1	0,26	2,55	3,79	2,90	**53524ЛН**		540000	720000	1950	2650	9,300	**53524ЛН**	22224MBW33
120	260	86	3,0	0,36	1,85	2,76	1,81	**3624H**		1120000	1400000	1400	1800	23,200	**3624H**	22324MW33
120	260	86	3,0	0,36	1,85	2,76	1,81	**113624H**		1120000	1400000	1400	1800	22,700	**113624H**	22324KMW33

* Bearings with a pressed cage, ribbless inner ring and with floating flange.

DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS

TYPE 3000H, 53000H, 113000H, 2003000H, 3003000H, 3053000H, 3113000H, 4003000H, 4113000H, 4053000H , 4153000H

Dimensions, mm				Loading factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
					Y					dynamic	static	lubricant				
d	D	B	r min	e	$\frac{F_a}{F_r} \le e$	$\frac{F_a}{F_r} > e$	Y_0			Cr	Cor	grease	oil	m	epk	analogue
130	230	64	3,0	0,29	2,31	3,44	2,26	**3526H**		735000	930000	1800	2400	11,800	**3526H**	22226MW33
130	230	64	3,0	0,29	2,31	3,44	2,26	**3526Ю**		735000	930000	1800	2400	11,200	**3526Ю**	S22226M
130	230	64	3,0	0,27	2,48	3.70	2.43	**53526ЛН**		630000	880000	1850	2450	11,580	**53526ЛН**	22226MBW33
130	230	64	3,0	0,29	2,31	3,44	2,26	**113526**		735000	930000	1800	2400	11,700	**113526**	22226KM
130	280	93	4,0	0,37	1,84	2,74	1,80	**3626AH**		1120000	1320000	1300	1700	28,500	**3626AH**	22326MW33
130	280	93	4,0	0,37	1,84	2,74	1,80	**3626AHK**		1120000	1320000	1300	1700	29,900	**3626AHK**	22326MAW33
140	240	80	3,0	0,34	2,00	2,98	1,96	**113728**		540000	880000	1400	1800	15,500	**113728**	
140	250	68	3,0	0,26	2,55	3,79	2,49	**53528ЛН**		735000	1020000	1600	2000	14,760	**53528ЛН**	22228MBW33
150	270	73	3,0	0,29	2,35	3,50	2,30	**3530AH**		850000	1080000	1500	1900	18,600	**3530AH**	22230MW33
150	270	73	3,0	0,26	2,55	3,79	2,49	**53530ЛН**		850000	1200000	1570	1985	18,580	**53530ЛН**	22230MBW33
150	320	108	4,0	0,38	1,78	2,64	1,74	**3630H**		1460000	1760000	1100	1500	43,100	**3630H**	22330MW33
150	320	108	4,0	0,38	1,78	2,64	1,74	**113630H**		1460000	1760000	1100	1500	42,300	**113630H**	22330KMW33
160	240	60	2,1	0,23	2,87	4,27	2,80	**3053132ЛН**		523000	895000	1700	2200	9,680	**3053132ЛН**	23032MBW33
160	265	84	2,1	0,32	2,12	3,15	2,07	**113732**		640000	700000	950	1300	18,500	**113732**	
160	270	86	2,1	0,33	2,06	3,07	2,02	**3003732AH**		980000	1370000	1300	1700	20,000	**3003732AH**	23132MW33
160	240	86	2,1	0,33	2,06	3,07	2,02	**3113732AH**		980000	1370000	1300	1700	19,400	**3113732AH**	23132KMW33
160	270	86	2,1	0,30	2,30	3,40	2,20	**3053732ЛН**		900000	1460000	1300	1700	20,350	**3053732ЛН**	23132MBW33
160	290	80	3,0	0,26	2,60	3,90	2,50	**53532ЛН**		965000	1370000	140	1800	23,780	**53532ЛН**	22232MBW33
160	290	104	3,0	0,35	1,90	2,90	1,80	**3053232ЛН**		1107000	1722000	1000	1400	30,440	**3053232ЛН**	23232MBW33
160	340	114	4,0	0,38	1,79	2,67	1,75	**3632H**		1600000	1960000	950	1300	51,000	**3632H**	22332MW33
160	340	114	4,0	0,38	1,79	2,67	1,75	**3632X****		1600000	1960000	950	1300	51,000	**3632X****	22332M
160	340	114	4,0	0,38	1,79	2,67	1,75	**113632**		1600000	1960000	950	1300	49,000	**113632**	22332KM
170	260	67	2,1	0.23	2,84	4,23	2,77	**3053134ЛН**		660000	1165000	1600	2000	13,220	**3053134ЛН**	23034MBW33
170	290	88	2,1	0,32	2,12	3,15	2,07	**3934**		857000	1460000	950	1300	25,700	**3934**	
170	310	110	4,0	0,36	1,88	2,79	1,83	**3003234**		1400000	1930000	950	1300	37,100	**3003234**	23234M
170	360	120	5,0	0,37	1,81	2,69	1,77	**3634AH**		1220000	1930000	950	1300	60,400	**3634AH**	22334MW33
180	280	74	2,1	0,24	2,80	4,20	2,80	**3053136ЛН**		1400000	1930000	950	1300	17,180	**3053136ЛН**	23036MBW33
180	380	126	4,0	0,37	1,82	2,71	1,78	**3636H**		762000	1310000	1400	1800	68,600	**3636H**	22336MW33
180	380	126	4,0	0,37	1,82	2,71	1,78	**3636У1**		2000000	2450000	900	1200	70,080	**3636У1**	22336M
180	380	126	4,0	0,37	1,82	2,71	1,78	**113636H**		2000000	2450000	900	1200	68,800	**113636H**	22336KMW33
200	310	82	2,1	0,27	2,53	3,76	2,46	**3003140AH**		2000000	2450000	900	1200	23,700	**3003140AH**	23040MW33
200	360	98	4,0	0,29	2,31	3,44	2,26	**3540AH**		1000000	1530000	1200	1800	44,100	**3540AH**	22240MW33
200	420	138	5,0	0.36	1,87	2,78	1,83	**3640AH**		1460000	1930000	1100	1400	94,200	**3640AH**	22340MW33
220	320	76	3,0	0,26	2,60	3,87	2,54	**3844**		2320000	2900000	850	1100	20,700	**3844**	
220	340	90	3,0	0,26	2,60	3,87	2,54	**3003144**		586000	779000	800	1000	31,000	**3003144**	23044M
220	365	120	4,0	0,37	1,80	2,69	1,77	**3744**		1220000	1860000	900	1300	53,600	**3744**	
220	370	120	4,0	0,37	1,80	2,69	1,77	**3003744H**		1350000	2500000	700	900	56,300	**3003744H**	23144MW33
220	370	120	4,0	0,37	1,80	2,69	1,77	**3113744H**		1800000	2750000	800	1000	56,300	**3113744H**	23144KMW33
220	400	108	4,0	0,29	2,31	3,44	2,26	**3544H**		1800000	2750000	800	1000	62,300	**3544H**	22244MW33
220	400	108	4,0	0,29	2,31	3,44	2,26	**113544**		1760000	2360000	950	1300	61,300	**113544**	22244KM
220	460	145	5,0	0,31	2,20	3,30	2,20	**3644AH**		1800000	2750000	950	1300	117,000	**3644AH**	22344MW33
220	460	145	5,0	0,31	2,20	3,30	2,20	**113644AH**		2360000	3470000	750	950	114,600	**113644AH**	22344KMW33
239,85	395	124	4,0	0,34	2,01	2,99	1,96	**3948**		2360000	3470000	750	950	50,000	**3948**	
240	360	92	3,0	0,24	2,76	4,10	2,69	**3003148H**		1568000	2738000	750	950	35,300	**3003148H**	23048MW33
240	360	92	3,0	0,24	2,76	4,10	2,69	**3113148H**		1290000	2080000	800	1000	34,300	**3113148H**	23048KMW33
240	360	92	3,0	0,24	2,76	4,10	2,69	**3003148Ю**		1290000	2080000	800	1000	36,300	**3003148Ю**	S23048M
240	360	92	3,0	0,24	2,76	4,10	2,69	**3113148Ю**		1290000	2080000	800	1000	34,900	**3113148Ю**	S23048KM
240	400	128	4,0	0,37	1,80	2,69	1,77	**3003748K**		2080000	3200000	670	850	65,100	**3003748K**	23148M

** Bearings without holes and groove for lubrication.

DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS

TYPE 3000H, 53000H, 113000H, 2003000H, 3003000H, 3053000H, 3113000H, 4003000H, 4113000H, 4053000H , 4153000H

Dimensions, mm				Loading factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
					Y					dynamic	static	lubricant				
d	D	B	r min	e	$\frac{F_a}{F_r} \le e$	$\frac{F_a}{F_r} > e$	Y_0			Cr	Cor	grease	oil	m	epk	analogue
250	365	87	3,0	0,26	2,60	3,87	2,54	**3850**		1000000	2000000	630	800	31,300	**3850**	
260	400	104	4,0	0,25	2,75	4,09	2,69	**3003152A**		1600000	2550000	750	950	48,900	**3003152A**	23052M
280	380	75	2,1					**3003956***		845000	1760000	1000	1400	25,6	**3003956***	
280	420	106	4,0	0,25	2,70	4,02	2,64	**3003156A**		1730000	2850000	700	900	53,100	**3003156A**	23056M
280	420	106	4,0	0,25	2,70	4,02	2,64	**3113156AH**		1730000	2850000	700	900	51,200	**3113156AH**	23056KMW33
280	500	130	5,0	0,28	2,39	3,56	2,34	**3556**		2700000	3750000	700	950	123,000	**3556**	22256M
280	500	130	5,0	0,28	2,39	3,56	2,34	**3556У**		2700000	3750000	700	950	123,000	**3556У**	22256M
280	580	175	6,0	0,34	2,02	2,98	1,96	**3656**		4000000	5200000	530	700	233,000	**3656**	22356M
280	580	175	6,0	0,34	2,02	2,98	1,96	**113656**		4000000	5200000	530	700	231,000	**113656**	22356KM
300	460	118	4,0	0,26	2,64	3,93	2,58	**3003160A**		2120000	3450000	630	800	72,900	**3003160A**	23060M
300	500	160	5,0	0,32	2,09	3,11	2,05	**3003760AH**		3200000	5100000	670	850	142,000	**3003760AH**	23160MW33
320	480	121	4,0	0,26	2,56	3,81	2,50	**3003164H**		2240000	3800000	600	750	79,200	**3003164H**	23064MW33
320	480	121	4,0	0,26	2,56	3,81	2,50	**3113164H**		2240000	3800000	600	750	73,100	**3113164H**	23064KMW33
320	540	176	5,0	0,33	2,05	3,04	2,00	**3003764AH**		3750000	6000000	630	800	170,000	**3003764AH**	23164MW33
320	580	150	5,0	0,28	2,40	3,57	2,34	**3564**		3600000	4900000	500	750	186,000	**3564**	22264M
320	580	208	5,0	0,37	1,80	2,69	1,77	**3003264AH**		4400000	6700000	500	630	244,000	**3003264AH**	23264MW33
320	580	208	5,0	0,37	1,80	2,69	1,77	**3003264AK****		4400000	6700000	500	630	244,000	**3003264AK****	23264MA
340	500	120	4,0	0,26	2,60	3,87	2,54	**3768Г**		1430000	1970000	600	750	82,300	**3768Г**	
340	520	133	5,0	0,26	2,55	3,80	2,50	**3003168**		2700000	4550000	500	700	109,000	**3003168**	23068M
340	520	133	5,0	0,26	2,55	3,80	2,50	**3113168**		2700000	4550000	500	700	106,000	**3113168**	23068KM
360	540	134	5,0	0,26	2,60	3,87	2,54	**3003172H**		2750000	4800000	530	670	114,000	**3003172H**	23072MW33
360	540	134	5,0	0,26	2,60	3,87	2,54	**3113172H**		2750000	4800000	530	670	108,000	**3113172H**	23072KMW33
360	650	170	6,0	0,29	2,37	3,52	2,31	**3572**		4300000	6200000	500	600	266,000	**3572**	22272M
380	620	194	5,0	0,33	2,10	2,90	1,88	**3003776**		4400000	7100000	400	500	240,000	**3003776**	23176M
380	620	194	5,0	0,33	2,10	2,90	1,88	**3113776**		4400000	7100000	400	500	233,000	**3113776**	23176KM
400	590	142	5,0	0,26	2,60	3,87	2,54	**3880**		1840000	2780000	400	500	140,000	**3880**	
400	600	148	5,0	0,25	2,69	4,00	2,63	**3003180H**		3250000	5700000	450	550	152,400	**3003180H**	23080MW33
400	600	148	5,0	0,25	2,69	4,00	2,63	**3003180У**		3250000	5700000	450	550	154,000	**3003180У**	23080M
400	650	200	6,0	0,31	2,10	3,13	2,06	**3003780H**		4650000	7650000	450	650	271,000	**3003780H**	23180MW33
400	650	200	6,0	0,31	2,10	3,13	2,06	**3113780H**		4650000	7650000	450	650	261,000	**3113780H**	23180KMW33
400	670	216	9,5	0,32	2,10	3,13	2,06	**3980H**		4040000	8100000	315	400	343,900	**3980H**	
400	720	185	6,0	0,28	2,41	3,59	2,36	**3580**		4300000	7100000	340	430	338,000	**3580**	22280M
400	720	256						**3113280A1H**		5750000	1040000	340	430		**3113280A1H**	23280MB K30 C2W33
400	820	243	7,5	0,33	2,06	3,07	2,02	**3680XH**		7500000	1040000	350	470	690,000	**3680XH**	22380MW33
440	650	157	6,0	0,24	2,85	4,24	2,78	**3003188**		3650000	6550000	430	530	187,000	**3003188**	23088M
440	650	157	6,0	0,24	2,85	4,24	2,78	**3113188**		3650000	6550000	430	530	181,000	**3113188**	23088KM
460	620	118	4,0	0,16	4,20	6,30	4,00	**3003992AH**		2500000	5000000	600	1000	105,000	**3003992AH**	23992BMBW33
460	680	163	6,0	0,23	2,92	4,35	2,86	**3003192**		3900000	6950000	400	500	215,800	**3003192**	23092M
460	680	163	6,0	0,23	2,92	4,35	2,86	**3113192**		3900000	6950000	400	500	210,000	**3113192**	23092KM
460	760	240	7,5	0,33	2,10	3,13	2,06	**3003792H**		6400000	10800000	320	400	470,000	**3003792H**	23192MW33
460	760	240	7,5	0,33	2,10	3,13	2,06	**3113792H**		6400000	10800000	320	400	456,000	**3113792H**	23192KMW33
480	700	165	6,0	0,24	2,83	4,21	2,76	**3003196**		3900000	6800000	380	480	230,000	**3003196**	23096M
480	870	310	7,5	0,37	1,80	2,69	1,77	**3003296X**		9300000	15000000	260	340	851,000	**3003296X**	23296MW20
480	870	310	7,5	0,37	1,80	2,69	1,77	**3003296HX**		9300000	15000000	260	340	851,000	**3003296HX**	23296MW33
500	830	264	7,5	0,32	2,10	2,06	2,06	**30037/500X**		7650000	12900000	280	360	606,000	**30037/500X**	231/500M
500	830	325	7,5	0,37	1,80	2,7	1,80	**40037/500AH**		9800000	17160000	320	600	750,000	**40037/500AH**	241/500BMBW33
530	780	185	6,0	0,23	2,90	4,31	2,83	**30031/530НУ**		5100000	9300000	315	430	315,000	**30031/530НУ**	230/530MW33
530	980	355	9,5	0,38	1,76	2,62	1,72	**31132/530**		11100000	20400000	220	300	1202,000	**31132/530**	232/530KMW20

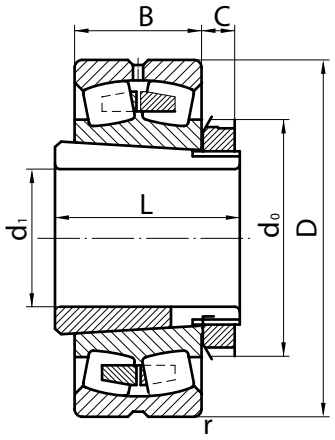
** Bearings without holes and groove for lubrication.

DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS

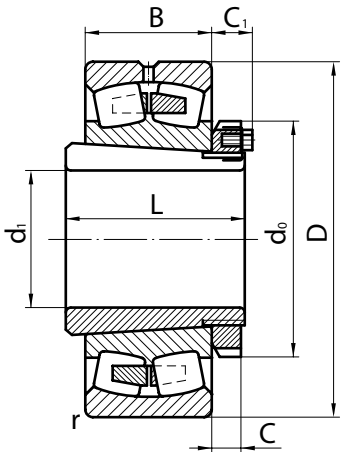
TYPE 3000H, 53000H, 113000H, 2003000H, 3003000H, 3053000H, 3113000H, 4003000H, 4113000H, 4053000H , 4153000H

Dimensions, mm				Loading factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
					Y					dynamic	static	lubricant				
d	D	B	r min	e	$\frac{F_a}{F_r} \le e$	$\frac{F_a}{F_r} > e$	Y_0			Cr	Cor	grease	oil	m	epk	analogue
560	820	195	6,0	0,24	2,83	4,21	2,76	**30031/560H**		5600000	10200000	320	400	365,000	**30031/560H**	230/560MW33
596,5	870	200	6,0	0,23	2,94	4,37	2,87	**30031/597HXP**		5700000	12500000	300	380	434,000	**30031/597HXP**	
599	980	300	7,5	0,32	2,10	3,13	2,05	**30037/599НЛ**		8542000	18434000	200	280	954,000	**30037/599НЛ**	
600	870	200	6,0	0,23	2,94	4,37	2,87	**30031/600HX**		6000000	11400000	300	380	432,000	**30031/600HX**	230/600MW33
600	870	200	6,0	0,23	2,94	4,37	2,87	**31131/600HX**		6000000	11400000	300	380	397,000	**31131/600HX**	230/600KMW33
600	980	300	7,5	0,32	2,10	3,13	2,05	**30037/600Г**		10200000	18434000	200	280	950,000	**30037/600Г**	231/600M
600	980	300	7,5	0,32	2,10	3,13	2,05	**30037/600НЛ**		10200000	18434000	200	280	954,000	**30037/600НЛ**	231/600MW33
670	1090	412	7,5	0,36	1,87	2,79	1,83	**40537/670HX**		13800000	29000000	95	130	1530,000	**40537/670HX**	241/670MW33
680	920	153	6,0	0,20	3,10	4,50	3,30	**37/680Г**		3542000	9006000	200	250	323,000	**37/680Г**	
680	920	153	6,0	0,20	3,10	4,50	3,30	**1137/680Г**		3542000	9006000	200	250	315,000	**1137/680Г**	
710	1150	438	9,5	0,36	1,87	2,79	1,83	**40537/710XH**		14595000	32129000	80	110	1947,000	**40537/710XH**	241/710MW33
710	1150	438	9,5	0,36	1,87	2,79	1,83	**41537/710XH**		14595000	32129000	80	110	1932,000	**41537/710XH**	241/710K30MW33
750	920	170	5,0	0,20	3,10	4,50	3,30	**40038/750H**		3590000	11050000	200	300	288,000	**40038/750H**	238/750MW33
750	1000	185	6,0	0,17	4,01	5,97	3,92	**30539/750HX**		6000000	13200000	260	340	410,000	**30539/750HX**	239/750MW33
750	1220	450	9,5	0,37	1,80	2,69	1,76	**537/750X**		17000000	33000000	180	240	1755,600	**537/750X**	
850	1220	365	7,5	0,29	2,32	3,48	2,26	**40031/850X1H**		12700000	31500000	170	240	1441,000	**40031/850X1H**	240/850MW33
850	1500	515	15,0	0,36	1,87	2,79	1,83	**30032/850X**		21000000	44400000	110	150	4079,000	**30032/850X**	232/850MW20
1060	1580	480	9,5	0,31	2,15	3,20	2,10	**2538/1060K1X**		18600000	44000000	100	140	3295,000	**2538/1060K1X**	
1180	1660	272	9,5	0,15	4,47	6,65	4,37	**20031/1180X**		12800000	29020000	100	160	1935,700	**20031/1180X**	
1320	1720	350	7,5	0,18	3,66	5,46	3,58	**37/1320X**		14700000	41160000	90	130	2183,000	**37/1320X**	
1320	1950	500	9,5	0,24	2,84	4,23	2,78	**538/1320X**		28100000	69400000	70	100	5268,000	**538/1320X**	

DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS WITH ADAPTER SLEEVE



13000H



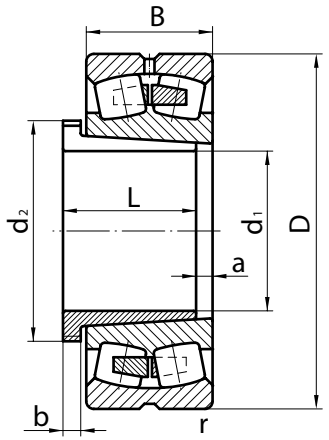
3013000H

Bearings are installed on smooth (without shoulders) multisupporting shafts for carrying of radial loads. Adapter sleeve allows mounting of bearings with tapered bore of cylindrical neck of the shaft.

TYPE 13000H, 3013000H

Dimensions, mm								Loading factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									Y					dynamic	static	lubricant				
d_1	D	B	L	C	C_1	d_0	r min	e	$\frac{F_a}{F_r} \le e$	$\frac{F_a}{F_r} > e$	Y_0			Cr	Cor	grease	oil	m	epk	analogue
100	240	80	105	21		145	3,0	0,37	1,83	2,72	1,79	**13620H**		950000	1120000	1500	1900	20,30	**13620H**	22322KMW33 + H2322
140	340	114	147	28		210	4,0	0,38	1,79	2,67	1,75	**13628HK**		1600000	1960000	950	1300	59,30	**13628HK**	22332KMW33+ H2332
160	380	126	161	30		230	4,0	0,37	1,82	2,71	1,78	**13632HK**		2000000	2450000	900	1200	80,18	**13632HK**	22336KMW33 + H2336
200	370	120	161	32,9	44	280	4,0	0,37	1,80	2,69	1,77	**3013740H**		1800000	2750000	800	1000	72,60	**3013740H**	23144KMW33 + H3144
220	360	92	133	34,9	46	290	3,0	0,24	2,76	4,10	2,69	**3013144H**		1290000	2080000	800	1000	47,60	**3013144H**	23048KMW33 + H3048
220	400	128	172	33,9	45	300	4,0	0,37	1,80	2,69	1,77	**3013744H**		2080000	3200000	670	850	80,36	**3013744H**	23148KMW33 + H3148
300	580	208	258	42	56,5	400	5,0	0,35	1,30	2,90	1,80	**3013260H1**		4400000	6700000	500	630	281,00	**3013260H1**	23264KMBW33+H3264HG
360	680	240	310	61,5	77	490	6,0	0,37	1,80	2,69	1,76	**3013272**		5060000	9150000	380	480	451,00	**3013272**	23276KMW20+H3276

DOUBLE-ROW RADIAL SPHERICAL ROLLER BEARINGS WITH WITHDRAWAL SLEEVE



Bearings with withdrawal sleeve are installed in the end supports of shafts and axis in various heavy loaded mechanisms. Available withdrawal sleeve allows mounting of bearings with tapered bore on cylindrical neck of the shaft.

TYPE 73000H, 93000H, 3073000H

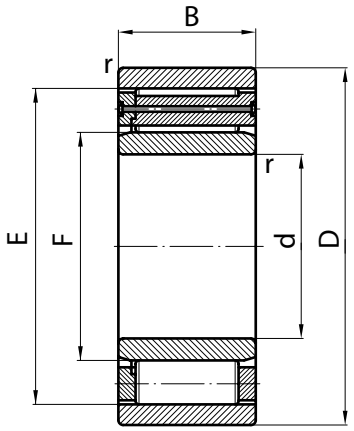
Dimensions, mm								Loading factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									Y					dynamic	static	lubricant				
d_1	D	B	d_2	L	a	b	r min	e	$\frac{F_a}{F_r} \le e$	$\frac{F_a}{F_r} > e$	Y_0			Cr	Cor	grease	oil	m	epk	analogue
100	240	80	M130x2	98	4	16	3,0	0,37	1,83	2,72	1,79	**73620H**		950000	1120000	1500	1900	19,700	**73620H**	22322KMW33+AH322
110	240	80	M140x2	98	4	16	3,0	0,37	1,85	2,75	1,81	**93722**		610000	470000	1600	2000	19,000	**93722**	
115	260	86	M135x2	105	4	17	3,0	0,36	1,85	2,76	1,81	**73623**		1120000	1400000	1400	1800	24,500	**73623**	22324KM+AHX2324
150	320	108	M180x3	135	5	24	4,0	0,38	1,78	2,64	1,74	**73930**		1100000	870000	900	1300	46,800	**73930**	
150	340	114	M180x3	140	6	24	4,0	0,38	1,79	2,67	1,75	**73630**		1600000	1960000	950	1300	55,000	**73630**	22332KM+AH2332
170	380	126	M200x3	154	6	26	4,0	0,37	1,82	2,71	1,78	**73634H**		2000000	2450000	900	1200	74,180	**73634H**	22336KMW33+AH2336
190	420	138	Tr220x4	170	7	30	5,0	0,36	1,87	2,78	1,83	**73638**		2320000	2900000	850	1100	99,700	**73638**	22340KM+AH2340
220	500	155	Tr260x4	189	8	30	5,0	0,35	1,93	2,88	1,89	**73644**		2461000	2745000	670	850	167,000	**73644**	22348KM+AH2348
300	480	121	Tr345x5	149	8	27	4,0	0,23	2,90	4,40	2,80	**3073160KV**		2240000	3800000	600	750	96,200	**3073160KV**	23064KMAW33+AOH3064
380	650	200	Tr440x5	240	10	38	6,0	0,31	2,17	3,24	2,12	**3073776K**		4650000	7650000	450	650	314,000	**3073776K**	23180KMW33+AH3180H
570	870	200	Tr630x6	245	14	45	6,0	0,23	2,94	4,37	2,87	**30731/570HX**		6000000	11400000	300	380	529,000	**30731/570HX**	230/600KMW33+AH30/600AH

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

The bearings being of minimum sizes show maximum radial load rating. Needle roller bearings cannot accommodate for axial loads. The limiting rotational speed of these bearings is smaller than that of conventional roller bearings. However, these bearings operate well at high rolling speed of one of the rings. The bearings require precise alignment of seatings in a support unit.

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL ROLLERS

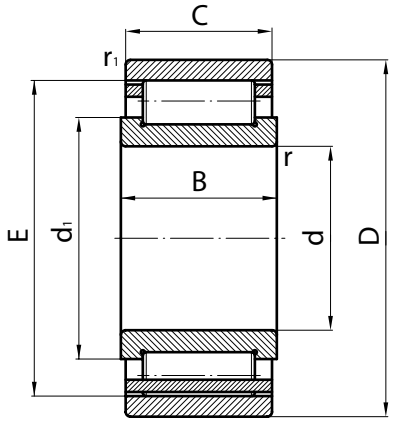


TYPE 3004000

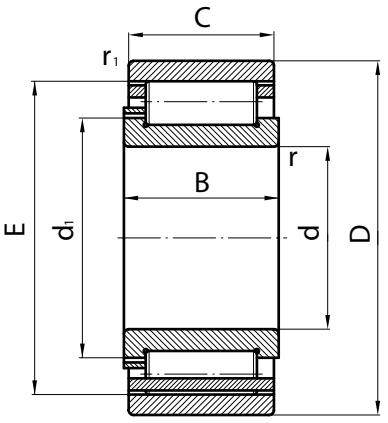
Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic	static		
d	D	B	F	E	r min			Cr	Cor	m	epk
220	400	144	269	395	4,0	**3004244M**		1890000	3230000	86,3	**3004244M**
260	440	144	305	395	4,0	**3004752M**		2030000	3650000	105,8	**3004752M**

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL ROLLERS WITH RIBBLESS OUTER RING



954712K1 954712K8



954712K4

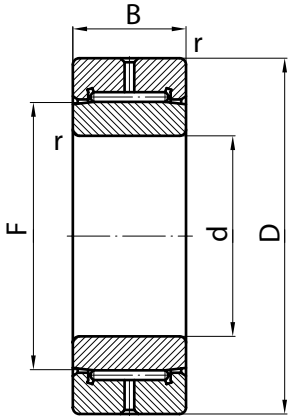
The bearings are designed to carry only radial loads. Axial movement of shaft (or housing) is not limited. Misalignment of the inner ring relative to the outer ring is not permitted, as in this case the linear contact of rollers with raceways is violated.

TYPE 954000

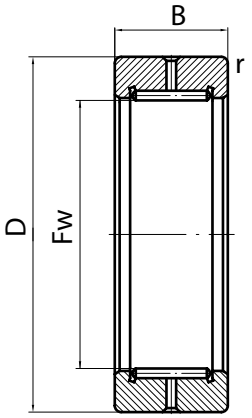
Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
										dynamic	static	lubricant			
d	D	B	C	E	d_1	r min	r_1 min			Cr	Cor	grease	oil	m	epk
60	120	60	58	106	78,5	2,5	0,7	954712K1		247000	327000	3800	4800	2,940	954712K1
60	120	60	58	106	78,5	2,5	0,7	954712K4		247000	327000	3800	4800	3,020	954712K4
60	120	60	64	106	78,5	2,5	0,7	954712K8		247000	327000	3800	4800	3,132	954712K8

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

SINGLE-ROW RADIAL FULL COMPLEMENT NEEDLE ROLLER BEARINGS



3074000, 4074000



4024000

The bearings are designed to carry only radial load. The absence of cage considerably increases their load ratings.

TYPE 3074000, 4024000, 4074000

Dimensions, mm					Bearing designation		Load ratings, N		Limiting rotational speed with grease lubrication, min^{-1}	Mass, kg	Bearing designation
							dynamic	static			
d	D	B	F/Fw	r			Cr	Cor		m	epk
20	37	17	25	0,3	**4024904**		19000	15300	6300	0,081	**4024904**
20	37	17	25	0,3	**4074904**		19000	15300	6300	0,096	**4074904**
25	42	30	17	0,3	**4024905**		21000	17000	5000	0,084	**4024905**
25	42	30	17	0,3	**4074905**		21000	17000	5000	0,084	**4074905**
25	47	22	34	0,6	**4024105**		25000	21700	5000	0,126	**4024105**
25	47	22	34	0,6	**4074105**		25000	21700	5000	0,197	**4074105**
35	55	20	42	0,6	**4024907**		29000	28500	4000	0,206	**4024907**
35	55	20	42	0,6	**4074907**		29000	28500	4000	0,206	**4074907**
45	75	30	58	1,0	**4024109**		42000	54500	3200	0,415	**4024109**
45	75	30	58	1,0	**4074109**		42000	54500	3200	0,415	**4074109**
55	90	35	70	1,1	**4024111**		59000	72000	2600	0,600	**4024111**
55	90	35	70	1,1	**4074111**		59000	72000	2600	0,965	**4074111**
60	85	25	68	1,0	**4074912**		58500	58500	3200	0,528	**4074912**
65	90	25	72	1,0	**4024913**		58500	68000	2500	0,400	**4024913**
65	90	25	72	1,0	**4074913**		58500	68000	2500	0,577	**4074913**
65	100	35	80	1,1	**4024113**		65000	82500	2000	0,727	**4024113**
65	100	35	80	1,1	**4074113**		65000	82500	2000	1,183	**4074113**
70	110	40	88	1,1	**4024114**		89000	117000	1800	0,530	**4024114**
70	110	40	88	1,1	**4074114**		89000	117000	1800	1,720	**4074114**

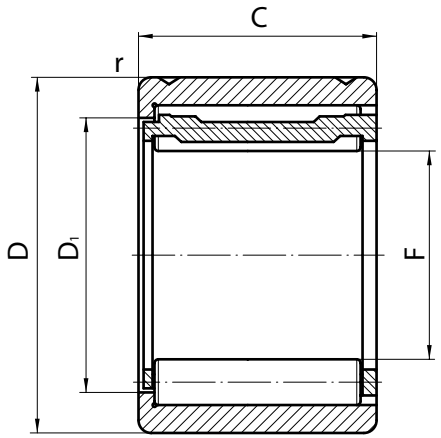
RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

TYPE 3074000, 4024000, 4074000

Dimensions, mm					Bearing designation		Load ratings, N		Limiting rotational speed with grease lubrication, min^{-1}	Mass, kg	Bearing designation
							dynamic	static			
d	D	B	F/Fw	r			Cr	Cor		m	epk
75	105	30	85	1,0	**4024915**		80000	86500	2200	0,573	**4024915**
75	105	30	85	1,0	**4074915**		80000	86500	2200	0,867	**4074915**
75	115	40	92	1,1	**4024115**		92000	122000	1600	1,100	**4024115**
75	115	40	92	1,1	**4074115**		92000	122000	1600	1,795	**4074115**
80	110	30	90	1,0	**4024916**		83000	110000	2200	0,688	**4024916**
80	110	30	90	1,0	**4074916**		83000	110000	2200	1,000	**4074916**
80	125	45	100	1,1	**4024116**		97600	132000	1300	1,472	**4024116**
80	125	45	100	1,1	**4074116**		97600	132000	1300	2,470	**4074116**
85	120	35	100	1,1	**4024917**		100000	120000	2000	0,919	**4024917**
85	120	35	100	1,1	**4074917**		100000	120000	2000	1,492	**4074917**
85	130	45	105	1,1	**4024117**		100000	139000	1300	1,216	**4024117**
85	130	45	105	1,1	**4074117**		100000	139000	1300	2,270	**4074117**
90	125	35	105	1,1	**4024918**		104000	124000	2000	0,911	**4024918**
90	125	35	105	1,1	**4074918**		104000	124000	2000	1,530	**4074918**
95	130	35	110	1,1	**4074919**		106000	132000	1800	1,610	**4074919**
100	140	40	115	1,1	**4074920**		127000	156000	1600	2,260	**4074920**
110	150	40	125	1,1	**4024922**		134000	166000	1300	1,590	**4024922**
110	150	40	125	1,1	**4074922**		134000	166000	1300	2,440	**4074922**
120	165	45	135	1,1	**4074924**		160000	185000	1000	3,350	**4074920**
130	180	50	150	1,5	**4024926**		190000	275000	800	2,797	**4024926**
130	180	50	150	1,5	**4074926**		190000	275000	800	4,500	**4074926**
140	190	50	160	1,5	**4074928**		193000	290000	800	5,120	**4074928**
150	210	60	175	2,0	**4024930**		236000	360000	800	4,090	**4024930**
150	210	60	175	2,0	**4074930**		236000	360000	800	7,070	**4074930**
170	230	60	195	2,0	**4074934**		280000	420000	720	8,570	**4074934**
180	225	45	195	1,1	**4024836**		150000	260000	700	3,310	**4024836**
180	225	45	195	1,1	**4074836**		150000	260000	700	4,820	**4074836**
340	420	60	375	3,5	**3074868**		385000	2260000	350	22,400	**3074868**

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL ROLLERS WITHOUT INNER RING



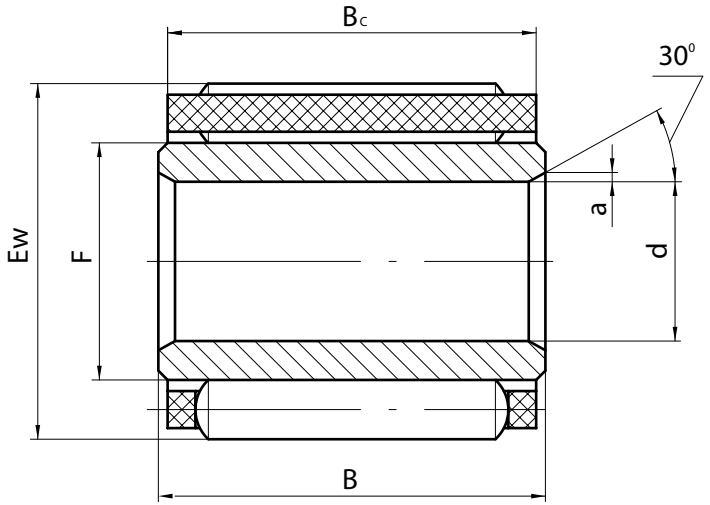
The bearings are designed to carry radial load only. The bearings are used, when decreased radial sizes of the unit is required, in this case another rolling surface is provided on the shaft. Hardness and accuracy of the rolling surface shall be the same as for bearing rings.

TYPE 154000

Dimensions, mm					Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
							dynamic	static	lubricant			
d for rollers	D	C	D_1	r min			Cr	Cor	grease	oil	m	epk
60	82	51	71	1,0	154912K		128000	216000		400	0,823	154912K

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL NEEDLE ROLLER BEARINGS WITHOUT OUTER RING

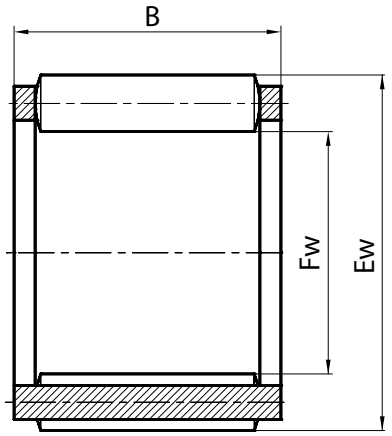


TYPE 834000

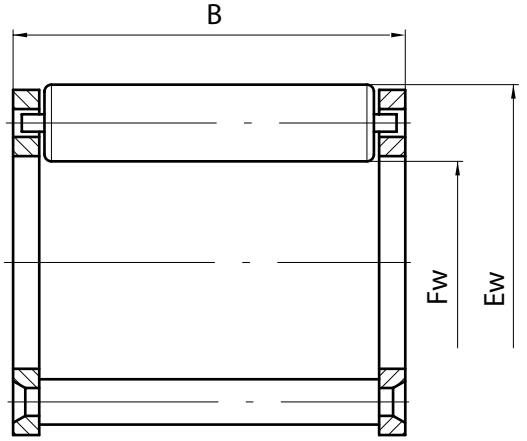
Dimensions, mm						Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
								dynamic	static	lubricant			
d	Ew	B	Bc	F	a			Cr	Cor	grease	oil	m	epk
19	33	35	34,7	25	1	834904E						0,105	834904E

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL BEARINGS WITH LONG CYLINDRICAL AND NEEDLE ROLLERS WITHOUT RINGS



With struts



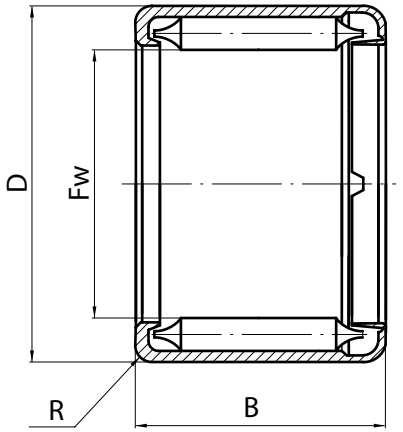
The bearings are used, The bearings are used, when decreased radial sizes of the unit is required. Rolling surfaces are provided directly on the shaft or in the boring of the housing. Hardness and accuracy of rolling surfaces shall be the same as for bearing rings.

TYPE 64000, 264000, 464000, 864000, K00x00x00

Dimensions, mm			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
					dynamic	static	lubricant			
Fw	Ew	B			Cr	Cor	grease	oil	m	epk
8	11	10	464078E		3800	4250	19000	32000	0,004	464078E
8	12	12	464068E		5500	5300	19000	32000	0,007	464068E
16	20	10	K16x20x10		7800	9900	15000	24000	0,014	K16x20x10
19	25,3	20	464904E		20000	28000	14000	22000	0,022	464904E
20	30	18	64704E		22500	25750			0,024	64704E
20,612	33,325	35	864904		54000	62000			0,096	864904
20,612	33,325	35	864904E		54000	62000			0,081	864904E
25	30	25	464705E		27000	35000	10000	18000	0,040	464705E
29,96	43,98	33	264706		68000	84000			0,125	264706
29,96	43,98	33	264706E		74000	103000			0,099	264706E
29,96	43,98	33	264706EM		67900	83800			0,109	264706EM
29,975	42	44	64706		74000	103000			0,154	64706
29,975	42	44	64706E		74000	103000			0,112	64706E
30	36	25	K30x36x25		24000	44000	8500	14000	0,035	K30x36x25
31,675	46,814	44	864906		91000	119000			0,222	864906
32	37	13	464906Г		13500	255000	8000	14000	0,017	464906Г
32	52	49	64907K		112000	132000	7500	12000	0,339	64907K
32	52	49	64907K1		112000	132000	7500	12000	0,350	64907K1
37	42	22	K37x42x22		22400	43000	7000	12000	0,022	K37x42x22
38	52	33	264708E		100500	120000			0,115	264708E
40	50	17	864708ДМ		30700	40100	7500	11000	0,045	864708ДМ
45	50	39	5KK45x50x39E		39500	105000	6300	9500	0,053	5KK45x50x39E
55	63	24	464811Д		44000	88000	5000	8500	0,143	464811Д

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL NEEDLE ROLLER FULL COMOLEMENT BEARINGS WITH A SINGLE DRAWN CUP



TYPE 940/00, НКД 000000, НК 000000

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
						dynamic	static	lubricant					
Fw	D	B	R min			Cr	Cor	grease	oil	m	epk	analogue	
6	10	7	0.8	**941/6**		2136	2031	10000		0.002	**941/6**		
7	12	8	1.0	**941/7**		2694	2471	9300		0.004	**941/7**		
8	14	12	1.2	**942/8**		5623	6029	7700		0.007	**942/8**		
10	16	10	1.2	**941/10**		4618	4901	5600		0.008	**941/10**		
10	16	17	1.2	**943/10**		10764	14529	5600		0.011	**943/10**		
12	17	12	1.2	**941/12**		6983	10436	5000		0.009	**941/12**		
15	20	12	1.2	**941/15**		7749	13058	6250		0.011	**941/15**		
15	20	16	1.2	**942/15**		11395	21331	5000		0.014	**942/15**		
17	23	14	1.2	**941/17**		11644	18672	4500		0.015	**941/17**		
20	26	14	1.2	**941/20**		12551	22015	4000		0.022	**941/20**		
20	26	20	1.2	**942/20**		19300	38282	4000		0.028	**942/20**	F-2020	TORRINGTON
20	26	25	1.2	**943/20**		24354	51626	4000		0.035	**943/20**		
22	28	12	1.2	**HK222812**		10548	18260	4170		0.020	**HK222812**	F-2212	TORRINGTON
25	32	16	1.2	**941/25**		16730	29791	3200		0.033	**941/25**	F-2516	TORRINGTON
25	32	22	1.2	**942/25**		25060	50084	3200		0.046	**942/25**		
25	32	25	1.2	**943/25**		29035	60522	3200		0.048	**943/25**		

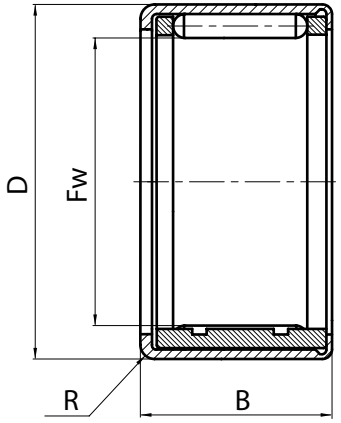
RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

TYPE 940/00, НКД 000000, НК 000000

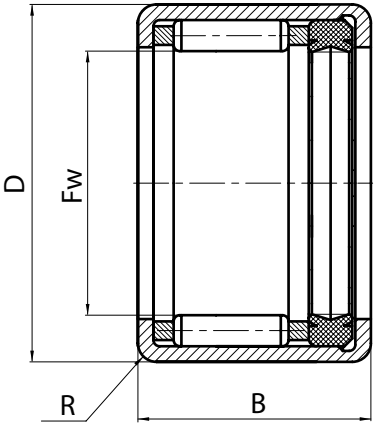
Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
						dynamic	static	lubricant					
Fw	D	B	R min			Cr	Cor	grease	oil	m	epk	analogue	
30	37	20	1.5	**НК303720**		26040	53298	2800		0.049	**НК303720**	F-3020	TORRINGTON
30	38	16	1.5	**941/30**		18155	30430	2600		0.045	**941/30**		
30	38	24	1.5	**942/30**		32088	63288	2800		0.064	**942/30**		
30	38	32	1.5	**943/30**		44421	96145	2600		0.085	**943/30**		
32	40	24	1.5	**942/32**		33802	67904	2600		0.071	**942/32**		
35	43	25	1.5	**942/35**		37001	79026	2600		0.075	**942/35**		
35	43	32	1.5	**943/35**		48774	112726	3410		0.096	**943/35**		
38.1	47.5	31.75	1.5	**НКД242720**		55457	118163	3200		0.125	**НКД242720**		
40	50	32	2.0	**942/40**		57403	123407	2000		0.151	**942/40**		
40	50	38	2.0	**943/40**		69109	156664	2000		0.162	**943/40**		
45	52	20	1.2	**НК455220**		32964	79897	2600		0.064	**НК455220**	F-4520	TORRINGTON
45	55	38	2.0	**943/45**		73938	176951	1600		0.181	**943/45**		
50	60	38	2.0	**943/50**		77461	196185	2000		0.216	**943/50**		
70	78	32	2.0	**НК707832**		69351	225832	1300		0.186	**НК707832**		

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

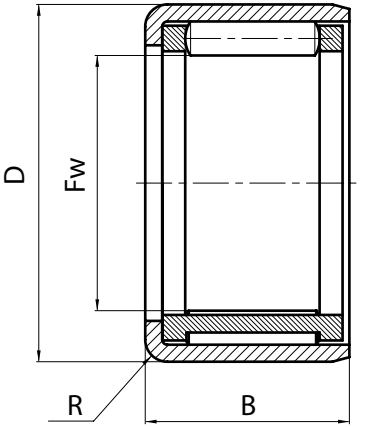
RADIAL NEEDLE ROLLER BEARINGS WITH A SINGLE DRAWN CUP, WITH OPEN ENDS



CK000000



604000

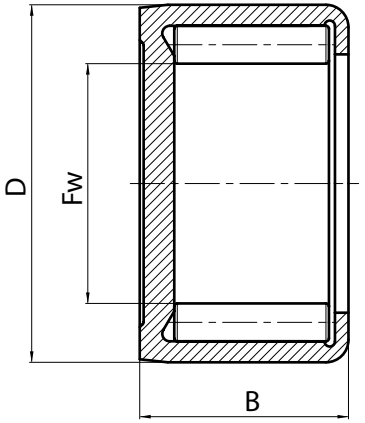


134000

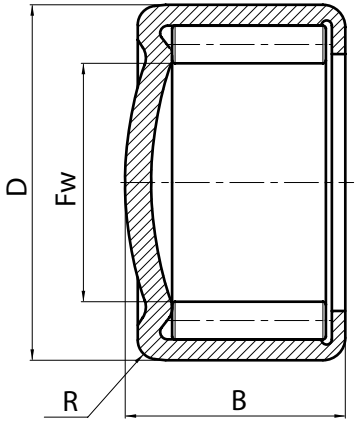
TYPE CK000000, 604000, 134000

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
						dynamic	static	lubricant					
Fw	D	B	R min			Cr	Cor	grease	oil	m	epk	analogue	
5	9	9	0,4	CK050909E		2800	2700	48000		0,004	CK050909E	HK0509TN	INA
5	10	10	0,4	CK051010E		2800	2700	48000		0,004	CK051010E	HK0510TN	INA
8	12	8	0,8	CK081208E		3100	2400	30000		0,002	CK081208E		
8	12	10	1,0	CK081210E		3800	3950	29000		0,003	CK081210E	HK0810TN	INA
10	14	12	0,8	CK101412E		5500	6800	24000		0,004	CK101412E	HK1012TN	INA
11,11	17,46	13	1,5	604901E		4400	4800	24000		0,009	604901E		
12	16	10	1,0	CK121610E		4950	6200	21000		0,004	CK121610E	HK1210TN	INA
12	18	12	1,0	CK121812E		6500	7300	20000		0,009	CK121812E	HK1212TN	INA
12	18	12	1,3	134901E		6500	7300	20000		0,008	134901E		
14	20	12	1,2	CK142012E		7540	9100	18000		0,008	CK142012E	HK1412TN	INA
15	20	16	1,0	CK152016E		8100	13300	16000		0,008	CK152016E		
15	21	12	1,3	134902E		7900	9400	16000		0,010	134902E		
17	23	15	1,2	604703E		9300	8600	10000		0,013	604703E	HK1715TN-RS	INA
18	24	16	1,2	CK182416E		11600	17300	14000		0,016	CK182416E	HK1816TN	INA
20	26	14	1,2	CK202614E		7400	10700	13000		0,011	CK202614E	HK2014TN	INA
20	26	25	1,2	CK202625E		15300	28200	12000		0,028	CK202625E		
20	26	25	1,2	CK202625EK		15300	28200	12000		0,028	CK202625EK		
28	35	16	1,5	CK283516E		16400	26500	9000		0,028	CK283516E	HK2816TN	INA
30	37	20	1,5	CK303720E		22000	32500	8500		0,038	CK303720E	HK3020TN	INA
32	42	28	1,5	CK324228E		67250	75500	8000		0,015	CK324228E		
35	42	20	1,5	CK354220E		23800	46000	7500		0,041	CK354220E	HK3520TN	INA
40	47	20	1,5	CK404720E		25500	52000	6500		0,041	CK404720E	HK4020TN	INA
50	58	22	2,0	CK505822E		30000	66500	5000		0,076	CK505822E	HK5022TN-RS	INA

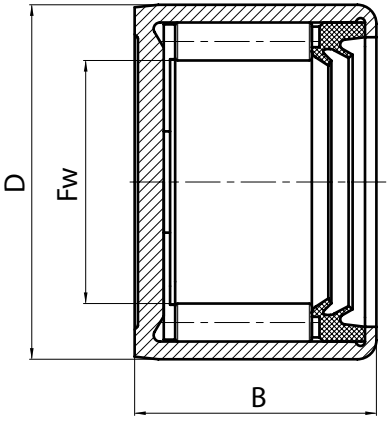
FULL COMPLEMENT RADIAL NEEDLE ROLLER BEARINGS WITH A SINGLE DRAWN CUP WITH PROFILED END



CH000000



904900



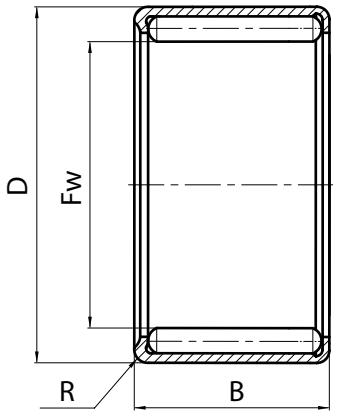
CH000000P

TYPE 904900, CH000000, CH000000P

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
						dynamic	static	lubricant					
Fw	D	B	R min			Cr	Cor	grease	oil	m	epk	analogue	
6	10	7	0,8	CH061007		2200	2170			0,002	CH061007		
10	16	8,95	1,1	904900		5000	7000			0,007	904900	CNS1009	INA
16	23,803	13,9		CH162414		13200	19600			0,025	CH162414	BBV16x23,803x13,9	INA
19,05	28	19,1		CH192819P		17100	24500			0,042	CH192819P	BBV19,05x28x19,1	INA
38,2	50	37		CH385037РП		62300	131400			0,204	CH385037РП		

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

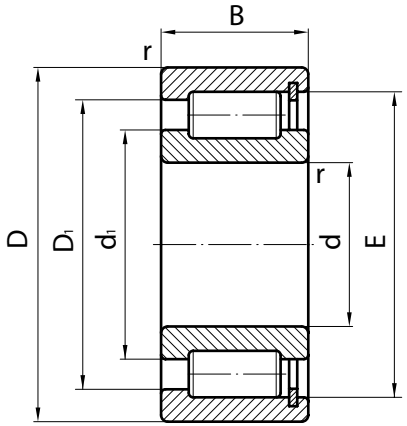
RADIAL NEEDLE ROLLER BEARINGS WITH A SINGLE DRAWN CUP WITH ROUNDED ENDS



TYPE СЛ000000

Dimensions, mm				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation
						dynamic	static	lubricant			
Fw	D	B	R min			Cr	Cor	grease	oil	m	epk
30	38	32	1,5	СЛ303832		32000	22000	3000		0,083	СЛ303832
32	39	20		СЛ323920		33600	76300	4000		0,097	СЛ323920
45	52	20	1,5	СЛ455220		40700	108000	2700		0,130	СЛ455220
45	55	38	2,0	СЛ455538		88000	211200	2700		0,191	СЛ455538

RADIAL FULL COMPLEMENT ROLLER BEARINGS WITH LONG CYLINDRICAL ROLLERS WITH ONE RIB OUTER RING



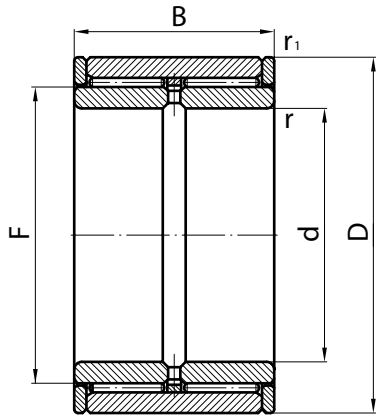
These bearings are designed for carrying radial load only. The bearings of nonseparable design are provided with retaining shields, installed in a groove of the outer ring raceway.

TYPE 4614000

Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
									dynamic	static	lubricant					
d	D	B	E	d_1	D_1	r min			Cr	Cor	grease	oil	m	epk	analogue	
30	47	17	42,65	36,5	40,6	0,3	**4614906**		32700	49200	5600	6500	0,1116	**4614906**		
45	68	22	61,3	53,6	59	0,6	**4614909**		48900	80000	3900	4600	0,2574	**4614909**		

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

DOUBLE-ROW RADIAL FULL COMPLEMENT NEEDLE ROLLER BEARINGS

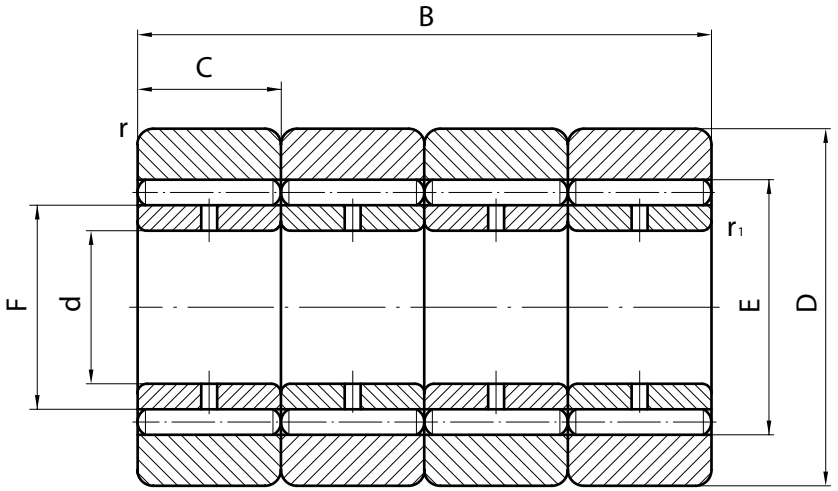


TYPE 884000

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic.	static		
d	D	B	F	r min	r_1 min			Cr	Cor	m	epk
120	165	115	140	1,1	0,3	**884724**		410000	1730000	8,58	**884724**

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL PRECISION FULL COMPLEMENT NEEDLE ROLLER BEARINGS

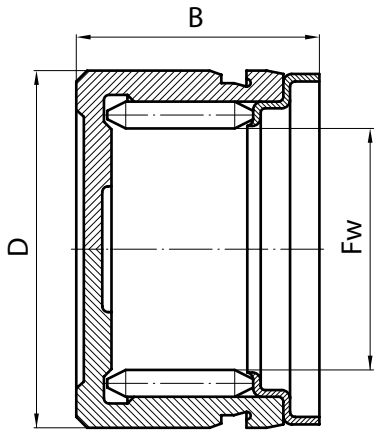


TYPE 444000

Dimensions, mm								Bearing designation		Load ratings, N		Mass, kg	Bearing designation
										dynamic.	static		
d	D	B	C	F	E	r min	r_1 min			Cr	Cor	m	epk
25	60	120	30	32,3	39,3	0,6	0,3	**444705XУ4**		180000	470000	2,1	**444705XУ4**

RADIAL ROLLER BEARINGS WITH LONG CYLINDRICAL OR NEEDLE ROLLERS

RADIAL ROLLER BEARINGS
CARDAN DESIGN



TYPE 704000

Dimensions, mm			Bearing designation		Load ratings, N		Mass, kg	Bearing designation
					dynamic.	static		
Fw	D	B			Cr	Cor	m	epk
15,2	28	22	**704902K2**		9500		0,060	**704902K2**
16,305	30	25	**704702K**		11000		0,071	**704702K**

RADIAL SPIRAL ROLLER BEARINGS

Radial spiral roller bearings are designed to carry only radial loads, without fixing the shaft in the axial direction. They can accommodate impact loads and are not very sensitive to contamination. Their load rating is twice less than that of bearings with cylindrical rollers. They can operate at low rotational speed.

The limiting speed of rotation depends on radial load and requires the consultation with bearing manufacturer

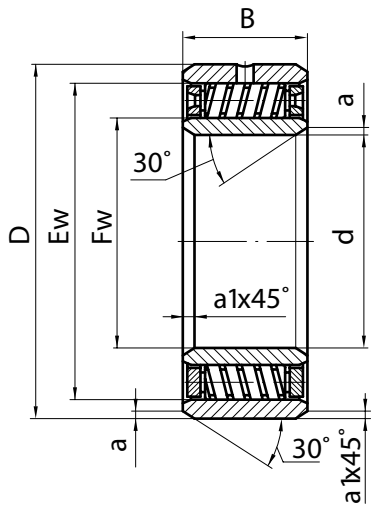
Bearings with spiral rollers are manufactured with outer, inner rings and cage with a set of rollers of 5000, 3005000, 15000, 3015000 types. Bearings of 5000, 3005000 types are manufactured with extended inner ring, with a slot for fixing the bearing on the shaft, which makes bearing mounting (dismounting) easier and also prevents inner ring turning on the shaft. Rollers are produced by winding on a belt with rectangular cross section. Adjacent rollers have usually the opposite winding for better lubricant distribution and to avoid axial displacement. The cage usually consists of two washers with pins which simultaneously serve as rollers axes.

Bearings of 5000, 3005000, 15000, 3015000 types can be supplied either completed or without inner ring (35000 type), or without inner and outer rings (65000 type). Designation of 35000 and 65000 types is specified by manufacturer.

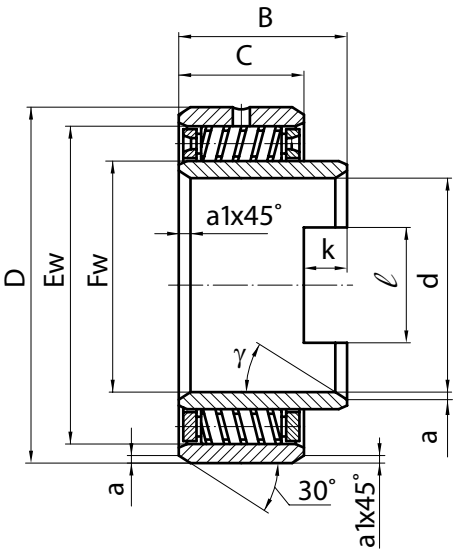
In case of using the bearings without inner ring or without rings hardness of the shaft and housing surfaces must not be less than 46…51 HRC.

Bearings with spiral rollers are applied in low-speed units which do not require running accuracy: in pipe follower roller assembly of rolling mills, agricultural machinery units, on the transmission shafts of metallurgical equipment.

RADIAL ROLLER BEARINGS WITH SPIRAL ROLLERS



5000, 3005000



15000, 3015000

Bearings with spiral rollers can accommodate radial loads only, without fixing the shaft in the axial direction. They may carry impact loads and are not very sensitive to contamination.

TYPE 5000, 15000, 3005000, 3015000

Dimensions, mm										γ, degree	Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
													dynamic	static				
d	D	B	C	Fw	Ew	k	l	a	a_1				Cr	Cor	m	epk	analogue	
50	90	44		59,63	80			2,0	0,5		**5210K**		31000	77600	1,26	**5210K**		
50	90	44		60	80			2,0	0,5		**5210**		31000	77600	1,26	**5210**	50F2	Eich
60	110	49		75	100			2,5	0,5		**5212**		42400	106100	2,11	**5212**	60F2	Eich
75	130	67		100	115			2,5	0,5		**5215**		72900	183000	3,86	**5215**	75F2	Eich
80	140	67		95	125			3,0	0,5		**5216**		76800	192700	4,21	**5216**	80F2	Eich
85	150	70		100	135			3,0	0,5		**5217**		75000	186700	5,08	**5217**	85F2	Eich
87,313	160	80	52,4	107,95	142,95	8,8	25,8	3,0	0,5	45	**15917**		60400	151400	5,75	**15917**	87P1	Eich
90	160	52		107,95	142,95			3,0	0,5		**3005218**		60400	151400	4,80	**3005218**	90F1	Eich
90	160	70		110	145			3,0	0,5		**5218**		89500	224400	6,03	**5218**	90F2	Eich
100	180	60		120	160			3,5	0,8		**3005220**		74200	186100	6,90	**3005220**	100F1	Eich
100	180	82		120	160			3,5	0,8		**5220**		113300	284000	8,98	**5220**	100F2	Eich
100,013	180	92	60,0	120	160	9,5	25,8	3,5	0,8	45	**3015220**		74200	186100	9,41	**3015220**	100P1	Eich
110	200	89		135	180			3,5	0,8		**5222**		141600	354900	11,90	**5222**	110F2	Eich
120	215	98		145	190			4,0	0,8		**5224**		168900	423100	14,80	**5224**	120F2	Eich
125	230	120	80,0	154,6	205,4	11	26	5,0	2,0	45	**15725**		136000	341100	16,80	**15725**	125P1	Eich
140	225	68		161,5	203,5			3,5	0,8		**3005728**		137600	347700	10,60	**3005728**	140F1	Eich
150	270	120		180	240			4,5	1,0		**5230**		248000	621400	29,80	**5230**	150F2	Eich
150,813	270	136	89	179,38	239,38	11,5	35,8	5,0	1,0	45	**15930**		171100	428700	23,98	**15930**	150P1	Eich

RADIAL SPIRAL ROLLER BEARINGS

TYPE 5000, 15000, 3005000, 3015000

Dimensions, mm										γ, degree	Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
													dynamic	static				
d	D	B	C	Fw	Ew	k	l	a	a_1				Cr	Cor	m	epk	analogue	
160	290	124		195	255			5,0	1,0		**5232**		282400	707800	35,90	**5232**	160F2	Eich
160	290	170	124	195	255	15,0	40,0	5,0	1,0	30	**15832**		282400	707800	41,10	**15832**	160P	Eich
163,513	290	140	98	193,67	253,67	11,5	38,9	5,0	1,2	45	**15933**		210900	528400	33,90	**15933**	163P1	Eich
180	320	149		215	285			5,0	1,0		**5236**		378800	949500	52,20	**5236**	180F	Eich
180	320	215	149	215	285	10,0	45,0	5,0	1,0	30	**15236**		378800	949500	57,70	**15236**	180P	Eich
200	340	175		235	305			6,0	1,2		**5740**		498000	1249000	67,80	**5740**	200F2	Eich
200	340	240	175	235	305	15,0	40,0	6,0	1,2	30	**15740**		498000	1249800	73,80	**15740**	200P	Eich
220	380	175		265	335			8,0	2,0		**5744**		541900	1362100	87,30	**5744**	220F1	Eich
220	380	240	175	265	335	15,0	40,0	8,0	2,0	45	**15744**		541900	1362100	96,00	**15744**	220P	Eich
280	420	127		315	385			4,0	3,0		**5756**		445400	1121600	61,20	**5756**	280F	Eich

epk

epk

ANGULAR CONTACT BALL BEARINGS

Bearings are designed to carry combined loads (radial and axial). Their ability to carry axial load depends on contact angle α between a plane crossing ball centres and a line passing through the ball centre and a point of the ball contact with raceway. With increasing of contact angle the axial load rating increased due to the decreasing of the radial load rating.

Referring to speed characteristics angular contact bearings are as good as radial single-row bearings. With the increase of a contact angle permissible rotational speed decreases and of single-direction axial load of a bearing increases.

Bearings of 36000, 46000, 66000 types are capable to carry axial load only in one direction. Angular contact ball bearings with three-and four-point contact are capable to carry axial loads in both directions.

Angular contact bearings mainly operate at average and high speeds.

The bearings are provided with standard contact angles between balls and ring grooves: α = 12° (36000 type), α = 26° (46000 type) and α = 36° (66000 type).

Contact angle for bearings of 36000K6 type is α=15°, the bearings are also referred to high-speed bearings with axial load acting in one direction.

Outer and inner rings in separable bearings (magneto) of 6000 type can be mounted and dismounted separately. In nonseparable bearings of 36000, 46000, 66000 and 136000 types the bevel in one ring is required for assembling at the manufacturer plant. During installation and operation the bearing splitting-up is prevented by a locking device between the raceway and the bevel.

In bearings with bevel on outer ring a cage is aligned along the double-flange inner ring, but with a bevel on the inner ring

it is aligned on the double-flange outer ring. In the latter case the higher speed characteristics are achieved.

Angular contact ball bearings, carrying axial loads in a single direction only, require installation of one more bearing for fixing the shaft in the opposite direction.

The solution is often achieved by mounting of a specially matched pairs of bearings, which have equally adjusted clearance or interference fit.

They can be arranged according to: back-to-back (arrangement O), face-to-face (arrangement X), tandem (arrangement T).

When bearings are arranged back-to-back (266000 type) the support has increased stiffness. It can be applied to the «floating» supports without fixing the outer rings in the axial direction.

When bearings are arranged face-to-face (346000, 366000 types), it is permitted radial load for a pair to be 1,8 times higher, than that of for corresponding single-row bearings, axial load in both directions is the same as that for the single-row bearings.

Arrangement tandem is for bearings (436000, 446000, 466000, 576000 types). The bearing set can accommodate axial loads in one direction. The arrangement is used in the units with considerable axial forces and high rotation speed, when thrust bearings are not suitable.

Matched stacks modifications may contain three, four and more single-row bearings.

Double-direction axial load can be also carried by other design variants of bearings.

Nonseparable double-row angular contact ball bearing of 56000 type has filling slots on one side of the rings for ball insertion. The bearing can accommodate a moment load in axial plane and double-direction axial loads.

The bearings of 126000 type with separable outer or inner rings have raceway profiles formed by the radii coming out from different centres, resulting in formation of four-point contact in a bearing. The bearings are applied in units in which high support stiffness is not required. Split bearing ring allows filling the bearing with a greater number of balls thereby to provide high load rating. Optimal operating conditions for such bearings are the cases when axial load prevails over radial load.

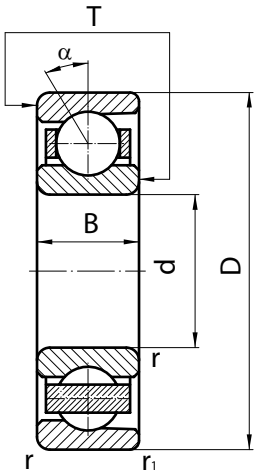
Cages in angular contact ball bearings are produced of nonferrous metals, textolite and plastic, and stamped of steel tape.

Temperature limits of these materials must be considered when cages manufactured from fibre reinforced phenolic resin or glass fibre reinforced polyamide are applied. However, attention should be paid to additives for lubricant, which can shorten polyamide cage service life during long-term operation of a bearing at temperature above 100°C. At this temperature oil aging also becomes a negative factor that should be considered while determining intervals for lubricant change.

ANGULAR CONTACT BALL BEARINGS

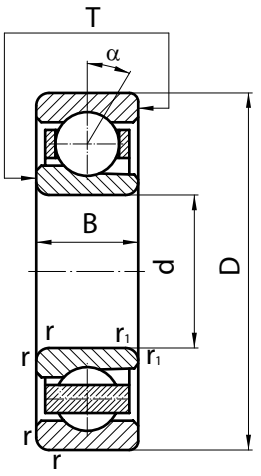
SINGLE-ROW ANGULAR CONTACT BALL BEARINGS

With low shoulder outer ring



36000, 46000,66000, 146000, 1036000, 1046000, 1066000, 7036000

With low shoulder on inner ring



36000*, 1046000*

TYPE 36000, 46000, 66000, 146000, 1036000, 1046000, 1066000, 7036000

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	B	T	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
17	35	10	10	0,3	0,15	12	**36103E**		7280	3510	19000	24000	0,040	**36103E**	7003C.TN
17	35	10	10	0,3	0,15	12	**36103K7**		7280	3510	19000	24000	0,040	**36103K7**	7003C.TN
20	42	12	12	0,6	0,3	15	**36104K**		8720	5200	28800	38000	0,065	**36104K**	7004C.T
25	47	12	12	0,6	0,3	12	**36105E**		9000	6000	125000	16300	0,076	**36105E**	7005C.T
25	47	12	12	0,6	0,3	15	**36105K**		9560	6300	25000	35000	0,085	**36105K**	7005C.T
25	52	15	15	1,0	0,6	15	**36205K6E4****		16700	9100	13000	17000	0,128	**36205K6E4****	7205C.TN
25	52	15	15	1,0	0,6	12	**36205E5**		15600	9600	10000	13000	0,122	**36205E5**	7205C.TN
25	52	15	15	1,0	0,6	12	**36205Л**		15600	9600	12000	16300	0,144	**36205Л**	7205C.M
25	52	15	15	1,0	0,6	26	**46205Л**		14500	10000	10000	15000	0,144	**46205Л**	7205AC.M
25	52	15	15	1,0	0,6	26	**46205E5**		14500	10000	10000	13000	0,122	**46205E5**	7205AC.TN
25	62	17	17	1,1	0,6	26	**46305Л**		26900	16000	9600	13400	0,279	**46305Л**	7305AC.M
30	55	13	13	1,0	0,6	12	**36106E**		15300	10400	10000	15000	0,116	**36106E**	7006C.T
30	55	13	13	1,0	0,6	15	**36106K**		14300	8650	21000	31000	0,130	**36106K**	7006C.T
30	55	13	13	1,0	0,6	26	**46106E**		14500	10100	10000	15000	0,116	**46106E**	7006AC.T
30	55	13	13	1,0	0,6	26	**46106Л**		14500	10100	10000	15000	0,140	**46106Л**	7006AC.M
30	62	16	16	1,0	0,3	18	**36206E4****		22000	12000	11000	16000	0,190	**36206E4****	7206C.TN
30	62	16	16	1,0	0,6	12	**36206E**		23800	14100	9000	12000	0,195	**36206E**	7206C.T

** Bearings are produced according to 2 and 4 tolerance classes.

ANGULAR CONTACT BALL BEARINGS

TYPE 36000, 46000, 66000, 146000, 1036000, 1046000, 1066000, 7036000

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	B	T	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
30	62	16	16	1,0	0,6	12	**36206E5**		22900	14800	8500	12000	0,195	**36206E5**	7206C.TN
30	62	16	16	1,0	0,6	12	**36206Л**		23800	14100	9000	12000	0,232	**36206Л**	7206C.M
30	62	16	16	1,0	0,6	15	**36206K**		24200	12000	19200	29000	0,198	**36206K**	7206C.T
30	62	16	16	1,0	0,6	26	**46206E5**		23800	14100	9000	12000	0,195	**46206E5**	7206AC.TN
30	62	16	16	1,0	0,6	26	**46206Л**		22900	14800	8500	12000	0,232	**46206Л**	7206AC.M
30	72	19	19	1,1	0,6	26	**46306АЛ**		42400	26400	8600	11500	0,398	**46306АЛ**	7306AC.M
30	72	19	19	1,1	0,6	26	**46306AE5**		42400	26400	8600	11500	0,345	**46306AE5**	7306AC.TN
35	62	14	14	1,0	0,6	15	**36107K**		15600	10600	19200	27000	0,159	**36107K**	7007C.T
35	72	17	17	1,1	0,6	15	**36207K6E4****		30800	17800	10000	12000	0,300	**36207K6E4****	7207C.TN
35	72	17	17	1,1	0,6	12	**36207E5**		30700	20800	7600	10200	0,289	**36207E5**	7207C.TN
35	72	17	17	1,1	0,6	12	**36207Л**		30700	20800	7700	10600	0,337	**36207Л**	7207C.M
35	72	17	17	1,1	0,6	12	**36207K**		31900	15600	17300	25000	0,290	**36207K**	7207C.T
35	72	17	17	1,1	0,6	26	**46207E5**		29000	19300	8600	10600	0,289	**46207E5**	7207AC.TN
35	72	17	17	1,1	0,6	26	**46207Л**		29000	19300	8600	10600	0,337	**46207Л**	7207AC.M
35	80	21	21	1,5	1,0	26	**46307Л**		42600	25700	8000	10000	0,525	**46307Л**	7307AC.M
40	68	15	15	1,0	0,6	15	**36108K**		16800	12200	17300	24000	0,196	**36108K**	7008C.T
40	68	15	15	1,0	0,6	15	**36108KE5**		16800	12200	10800	13000	0,193	**36108KE5**	7008C.TN
40	68	15	15	1,0	0,6	12	**36108Л**		19900	15200	7200	9900	0,217	**36108Л**	7008C.M
40	68	15	15	1,0	0,6	15	**36108КУ**		16800	12200	17300	24000	0,193	**36108КУ**	7008C.T
40	68	15	15	1,0	0,6	26	**46108Л**		18900	14100	9000	13000	0,217	**46108Л**	7008AC.M
40	68	15	15	1,0	0,6	26	**46108E5**		18900	14100	9000	13000	0,188	**46108E5**	7008AC.TN
40	80	18	18	1,1	0,6	12	**36208E2****		30800	17800	10000	12000	0,360	**36208E2****	7208C.TN
40	80	18	18	1,1	0,6	15	**36208K**		41000	20000	15400	21000	0,370	**36208K**	7208C.T
40	80	18	18	1,1	0,6	12	**36208E5**		38900	26100	6700	9000	0,360	**36208E5**	7208C.TN
40	80	18	18	1,1	0,6	12	**36208Л**		38900	26100	6700	9000	0,436	**36208Л**	7208C.M
40	80	18	18	1,1	0,6	26	**46208E5**		36800	25500	6700	8800	0,360	**46208E5**	7208AC.TN
40	80	18	18	1,1	0,6	26	**46208Л**		36800	25500	6700	8800	0,436	**46208Л**	7208AC.M
40	90	23	23	1,5	1,0	12	**36308E5**		53900	36000	6700	8800	0,654	**36308E5**	7308C.TN
40	90	23	23	1,5	1,0	12	**36308Л**		53900	36000	6700	8800	0,747	**36308Л**	7308C.M
40	90	23	23	1,5	1,0	26	**46308Л**		50800	33600	6700	9000	0,747	**46308Л**	7308AC.M
40	90	23	23	1,5	1,0	26	**46308E5**		50800	33600	6700	9000	0,654	**46308E5**	7308AC.TN
45	75	16	16	1,0	0,6	15	**36109K**		23200	16000	15400	21000	0,261	**36109K**	7009C.T
45	75	16	16	1,0	0,6	26	**46109E5**		27600	17200	8000	10000	0,243	**46109E5**	7009AC.TN
45	85	19	19	1,1	0,6	12	**36209Л**		37700	28000	6500	8600	0,487	**36209Л**	7209C.M
45	85	19	19	1,1	0,6	26	**46209E**		38700	27100	6500	8600	0,404	**46209E**	7209AC.T
45	85	19	19	1,1	0,6	26	**46209Л**		38700	27100	6500	8600	0,487	**46209Л**	7209AC.M
50	90	20	20	1,1	0,6	12	**36210E****		43200	27000	8000	11000	0,450	**36210E****	7210C.TN
50	90	20	20	1,1	0,6	12	**36210E5**		43200	31700	6500	8600	0,446	**36210E5**	7210C.TN
50	90	20	20	1,1	0,6	26	**46210E5**		40600	29300	5800	7600	0,446	**46210E5**	7210AC.TN
50	90	20	20	1,1	0,6	26	**46210Л**		40600	29300	5800	7600	0,529	**46210Л**	7210AC.M
50	110	27	27	2,0	1,0	26	**46310Л**		71800	48800	5400	7200	0,954	**46310Л**	7310AC.M
50	110	27	27	2,0	1,0	26	**46310Л1**		71800	48800	5400	7200	1,320	**46310Л1**	7310AC.M
50	110	27	27	2,0	1,0	40	**66310E5**		64300	46000	4100	5400	1,070	**66310E5**	7310B.TN
50	130	31	31	2,1	1,1	36	**66410E**		98900	61000	4000	4800	1,990	**66410E**	7410B.TN
50	130	31	31	2,1	1,1	36	**66410Л**		98900	61000	4000	4800	2,260	**66410Л**	7410B.MB
55	90	18	18	1,1	0,6	15	**36111K**		34000	25000	12500	17300	0,416	**36111K**	7011C.T
55	90	18	18	1,1	0,6	12	**36111E**		34500	28900	6300	8500	0,370	**36111E**	7011C.T
55	90	18	18	1,1	0,6	26	**46111Л**		32600	24800	6000	8200	0,444	**46111Л**	7011AC.M
55	90	18	18	1,1	0,6	26	**46111E5**		32600	24800	6000	8200	0,370	**46111E5**	7011AC.TN
55	90	18	18	1,1	0,6	26	**46111E**		32600	24800	6000	8200	0,370	**46111E**	7011AC.T
55	100	21	21	1,1	0,6	15	**36211K6****		58400	34200	7000	9500	0,630	**36211K6****	7211C.T

** Bearings are produced according to 2 and 4 tolerance classes.

ANGULAR CONTACT BALL BEARINGS

TYPE 36000, 46000, 66000, 146000, 1036000, 1046000, 1066000, 7036000

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	B	T	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
55	100	21	21	1,5	1,0	12	**36211E5**		48800	34200	5400	7200	0,613	**36211E5**	7211C.TN
55	100	21	21	1,5	1,0	12	**36211Л**		48800	34200	5400	7200	0,720	**36211Л**	7211C.M
55	100	21	21	1,5	1,0	26	**46211E5**		50300	37100	5400	7200	0,613	**46211E5**	7211AC.TN
55	100	21	21	1,5	1,0	26	**46211Л**		50300	37100	5400	7200	0,720	**46211Л**	7211AC.M
55	100	21	21	1,5	1,0	36	**66211Л1**		46300	35100	5300	7000	0,745	**66211Л1**	7211B.M
60	95	18	18	1,1	0,6	15	**36112K**		35500	26500	13000	16300	0,460	**36112K**	7012C.T
60	95	18	18	1,1	0,6	26	**46112Л**		37400	31100	5800	7200	0,474	**46112Л**	7012AC.M
60	95	18	18	1,1	0,6	26	**46112E5**		37400	31100	5800	7200	0,388	**46112E5**	7012AC.TN
60	95	18	18	1,1	0,6	26	**46112K**		33500	25500	11000	16000	0,460	**46112K**	7012AC.T
60	110	22	22	1,1	0,6	12	**36212E**		61500	39300	6300	8500	0,780	**36212E**	7212C.TN
60	110	22	22	1,5	1,0	12	**36212Л**		61500	46200	4800	6600	0,954	**36212Л**	7212C.M
60	110	22	22	1,5	1,0	26	**46212Л**		60800	44000	4800	6600	0,954	**46212Л**	7212AC.M
60	130	31	31	2,1	1,1	26	**46312Л**		100000	72400	4600	6000	2,000	**46312Л**	7312AC.M
60	130	31	31	2,1	1,1	26	**46312Л1**		100000	72400	4600	6000	2,100	**46312Л1**	7312AC.M
60	130	31	31	2,1	1,1	40	**66312E5**		84900	58800	3500	4600	1,760	**66312E5**	7312B.TN
60	150	35	35	2,1	1,1	36	**66412Б**		125000	79500	3400	4000	3,240	**66412Б**	7412B.MB
60	150	35	35	2,1	1,1	36	**66412Л**		125000	79500	3400	4000	3,370	**66412Л**	7412B.MB
60	150	35	35	2,1	1,1	36	**66412ЕШ**		125000	79500	3400	4000	2,950	**66412ЕШ**	7412B.TN
60	150	35	35	2,1	1,1	36	**66412ЕШ1**		125000	79500	3400	4000	2,950	**66412ЕШ1**	7412B.TN Q6
65	100	18	18	1,1	0,6	15	**36113K**		36000	28500	11000	16000	0,460	**36113K**	7013C.T
65	100	18	18	1,1	0,6	26	**46113K**		34000	27500	10000	15000	0,460	**46113K**	7013AC.T
65	120	23	23	1,1	0,6	12	**36213E****		62000	48000	5300	7000	1,000	**36213E****	7213C.TN
65	120	23	23	1,5	1,0	15	**36213КУ**		73000	59200	10000	15000	1,035	**36213КУ**	7213C.T
65	120	23	23	1,5	1,0	12	**36213Л**		70400	54800	4600	6000	1,180	**36213Л**	7213C.M
65	120	23	23	1,5	1,0	26	**46213E**		69400	54000	4600	6000	0,990	**46213E**	7213AC.T
65	120	23	23	1,5	1,0	26	**46213Л**		69400	54000	4600	6000	1,180	**46213Л**	7213AC.M
65	120	23	23	1,5	1,0	26	**46213E5**		69400	45900	4600	6000	0,990	**46213E5**	7213AC.TN
65	140	33	33	2,1	1,1	26	**46313Л**		113000	75000	4000	5000	2,490	**46313Л**	7313AC.MB
70	110	20	20	1,1	0,6	26	**46114Л**		46100	36500	4600	6000	0,717	**46114Л**	7014AC.M
70	125	24	24	1,5	1,0	12	**36214Л**		80200	64400	4100	5400	1,280	**36214Л**	7214C.M
70	150	35	35	2,1	1,1	26	**46314Л**		127000	94500	4000	5300	3,300	**46314Л**	7314AC.M
70	150	35	35	2,1	1,1	36	**66314Л**		119000	90000	3600	4800	3,100	**66314Л**	7314B.M
70	180	42	42	3,0	1,1	36	**66414Г**		152000	109000	2900	3400	5,700	**66414Г**	7414B.FB
70	180	42	42	3,0	1,1	36	**66414Л**		152000	109000	2900	3400	5,630	**66414Л**	7414B.MB
75	115	20	20	1,1	0,6	26	**46115Л**		47300	42800	4600	6000	0,829	**46115Л**	7015AC.M
75	130	25	25	1,1	0,6	12	**36215E****		80000	57000	4800	3600	1,170	**36215E****	7215C.TN
75	130	25	25	1,5	1,0	26	**46215E5**		78400	63300	4800	5800	1,200	**46215E5**	7215AC.TN
75	130	25	25	1,5	1,0	26	**46215Л**		78400	63300	4800	5800	1,390	**46215Л**	7215AC.M
75	130	25	25	1,5	1,0	36	**66215Л**		71500	49000	4000	5800	1,420	**66215Л**	7215B.M
80	125	22	22	1,1	0,6	26	**46116Л**		59200	52000	4100	5800	1,010	**46116Л**	7016AC.M
80	140	26	26	2,0	1,0	12	**36216Л**		93600	65000	3600	4800	1,680	**36216Л**	7216C.M
80	140	26	26	2,0	1,0	26	**46216Л**		88400	75300	3600	4800	1,680	**46216Л**	7216AC.M
80	140	26	26	2,0	1,0	26	**46216E**		88400	75300	3600	4800	1,440	**46216E**	7216AC.T
80	200	48	48	3,0	1,1	26	**46416E**		196000	160000	2600	3400	7,250	**46416E**	7416AC.TN
80	200	48	48	3,0	1,1	26	**46416Л**		196000	160000	2600	3400	8,000	**46416Л**	7416AC.MB
85	130	22	22	1,1	0,6	26	**46117Л**		57400	54100	3400	4600	1,040	**46117Л**	7017AC.M
85	150	28	28	2,0	1,0	12	**36217Л**		104000	86400	3400	4600	2,200	**36217Л**	7217C.M
85	150	28	28	2,0	1,0	26	**46217Л**		98000	81000	3400	4600	2,200	**46217Л**	7217AC.M
90	140	24	24	1,5	1,2	26	**46118Л**		68000	57000	3800	5000	1,400	**46118Л**	7018AC.M
90	140	24	24	1,5	1,0	26	**46118E5**		68000	57000	3800	5000	1,160	**46118E5**	7018AC.TN

** Bearings are produced according to 2 and 4 tolerance classes.

ANGULAR CONTACT BALL BEARINGS

TYPE 36000, 46000, 66000, 146000, 1036000, 1046000, 1066000, 7036000

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	B	T	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
90	160	30	30	2,0	1,0	12	**36218Л**		118000	97500	3600	5000	2,640	**36218Л**	7218C.M
90	160	30	30	2,0	1,0	26	**46218Л**		114000	89700	3600	5000	2,640	**46218Л**	7218AC.M
90	190	43	43	3,0	1,1	12	**36318Л**		174200	146400	3400	4800	6,100	**36318Л**	7318C.M
90	190	43	43	3,0	1,1	26	**46318Л**		165000	142200	3400	4800	6,100	**46318Л**	7318AC.M
90	225	54	54	4,0	1,5	26	**46418Л**		221000	187000	2400	3200	11,300	**46418Л**	7418AC.MB
90	225	54	54	4,0	1,5	36	**66418Л**		208000	162000	2200	2700	11,400	**66418Л**	7418B.MB
90	225	54	54	4,0	1,5	36	**66418Л1**		208000	162000	2200	2700	11,700	**66418Л1**	7418B.MB
95	170	32	32	2,1	1,1	12	**36219Л**		134000	111600	3200	4500	3,200	**36219Л**	7219C.M
100	150	24	24	1,5	1,0	12	**36120ЛУ**		76400	77800	3600	4800	1,560	**36120ЛУ**	7020C.M
100	150	24	24	1,5	1,0	26	**46120E5**		80500	67000	3500	4600	1,280	**46120E5**	7020AC.TN
100	150	24	24	1,5	1,0	26	**46120Л**		80500	67000	3500	4600	1,560	**46120Л**	7020AC.M
100	180	34	34	2,1	1,1	12	**36220АЛ**		202800	153300	3200	4300	3,730	**36220АЛ**	7220C.M
100	180	34	34	2,1	1,1	26	**46220АЛ**		192400	133700	3200	4300	3,730	**46220АЛ**	7220AC.M
100	215	47	47	3,0	1,1	26	**46320E**		213000	177000	2400	3400	7,050	**46320E**	7320AC.TN
100	215	47	47	3,0	1,1	26	**46320Л**		213000	177000	2400	3400	7,820	**46320Л**	7320AC.MB
110	170	28	28	2,0	1,0	26	**46122Л**		96300	94400	3200	4300	2,400	**46122Л**	7022AC.M
110	200	38	38	2,1	2,1	26	**46222Л**		174000	158900	2600	3600	5,470	**46222Л**	7222AC.M
110	240	50	50	3,0	1,1	26	**46322Л**		230000	225000	2200	3200	10,90	**46322Л**	7322AC.MB
110	240	50	50	3,0	1,1	36	**66322E**		225000	224000	2200	3200	9,830	**66322E**	7322B.TN
110	240	50	50	3,0	1,1	36	**66322E5**		225000	224000	2200	3200	9,960	**66322E5**	7322B.TN
110	240	50	50	3,0	1,1	36	**66322Л1**		225000	224000	2200	3200	11,200	**66322Л1**	7322B.MB
110	240	50	50	3,0	1,1	36	**66322ЛУ**		225000	224000	2200	3200	10,900	**66322ЛУ**	7322B.MB
110	240	50	50	3,0	1,1	36	**66322Л**		225000	224000	2200	3200	11,200	**66322Л**	7322B.MB
120	180	28	28	2,0	1,0	26	**46124Л**		101000	103700	3000	4000	2,420	**46124Л**	7024AC.M
120	180	28	28	2,0	1,0	26	**46124ЛУ**		101000	103700	3000	4000	2,420	**46124ЛУ**	7024AC.M
120	215	40	40	2,1	1,1	26	**46224Л**		188000	177600	2600	3400	6,450	**46224Л**	7224AC.M
120	260	55	55	3,0	1,1	26	**46324Л**		242000	218000	2000	3000	14,600	**46324Л**	7324AC.MB
130	200	33	33	2,0	1,0	26	**46126Л**		127000	132300	2500	3500	3,820	**46126Л**	7026AC.M
130	230	40	40	3,0	1,1	26	**46226Л**		186700	192000	2400	3200	7,360	**46226Л**	7226AC.M
150	225	35	35	2,1	1,1	26	**46130Л**		146000	154000	2500	3000	4,980	**46130Л**	7030AC.M
150	270	45	45	3,0	1,1	26	**46230Л**		233000	244800	2000	2800	12,880	**46230Л**	7230AC.M
150	320	65	65	4,0	1,5	26	**46330E6**		357000	370000	1600	2200	24,300	**46330E6**	
150	320	65	65	4,0	1,5	26	**46330Л**		357000	370000	1600	2200	26,500	**46330Л**	7330AC.MB
150	320	65	65	4,0	1,5	36	**66330Л**		313000	307000	1600	2200	26,600	**66330Л**	7330B.MB
160	240	38	38	2,1	1,1	26	**46132Л**		162000	176000	2200	2800	6,050	**46132Л**	7032AC.M
160	400	88	88	5,0	2,0	40	**66432Л1**		383000	492000	1300	1900	59,800	**66432Л1**	7432B.MB
160	400	88	88	5,0	2,0	40	**66432Л2**		383000	492000	1300	1900	59,800	**66432Л2**	7432B.MB
170	260	42	42	2,1	1,1	26	**46134Л**		195000	169000	2000	2600	8,200	**46134Л**	7034AC.M
170	310	52	52	4,0	1,5	12	**36234Л**		170000	164000	2000	2800	16,900	**36234Л**	7234C.MB
170	310	52	52	4,0	1,5	26	**46234Л**		260000	320000	2000	2800	16,900	**46234Л**	7234AC.MB
320	400	25	25	1,5	1,0	12	**7036864Л**		135000	225000	1100	1500	7,960	**7036864Л**	
320	400	25	25	1,5	1,0	12	**7036864Ю**		135000	225000	1100	1500	7,700	**7036864Ю**	
360	540	82	82	5,0	2,0	26	**146172Г*** **		530000	910000	900	1200	64,300	**146172Г*** **	7072AC.FB
460	600	50	50	4,0	2,5	26	**146792Л*** **		380000	520000	750	1000	37,300	**146792Л*** **	
460	600	50	50	4,0	2,5	26	**46792Л**		380000	520000	750	1000	37,800	**46792Л**	
500	620	56	56	3,0	1,1	36	**10668/500Л**		324000	485000	700	1000	37,900	**10668/500Л**	718/500B.MB
530	710	82	82	5,0	2,0	26	**10469/530Л**		572000	941000	650	900	90,000	**10469/530Л**	719/530AC.MB
600	730	60	60	3,0	1,1	26	**10468/600Л1**		447000	770000	600	800	54,600	**10468/600Л1**	718/600AC.MB
670	820	69	69	4,0	1,5	26	**10468/670Г**		534000	1260000	550	700	75,200	**10468/670Г**	718/670AC.FB
710	870	74	74	4,0	4.0	26	**10468/710Л**		605000	1630000	500	800	103,000	**10468/710Л**	718/710AC.MB

** Bearings are produced according to 2 and 4 tolerance classes.

*** Separable bearing (without low shoulder).

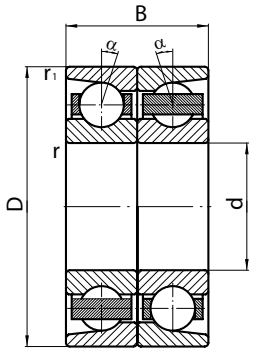
ANGULAR CONTACT BALL BEARINGS

TYPE 36000, 46000, 66000, 146000, 1036000, 1046000, 1066000, 7036000

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	B	T	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
750	920	54	54	4,0	1,5	26	**70468/750Л**		440000	950000	510	800	85,500	**70468/750Л**	708/750AC.M
800	1060	115	115	6.0	6.0	26	**10469/800Л**		1040000	2600000	300	450	285,000	**10469/800Л**	719/800AC.MB
850	1030	57	57	4,0	1,5	26	**70468/850Л**		510000	109000	500	800	107,200	**70468/850Л**	708/850AC.M
900	1090	85	85	5.0	5.0	26	**10468/900Л**		772000	2166000	300	550	168,000	**10468/900Л**	718/900AC.MB
1060	1280	100	100	6,0	3,0	26	**10468/1060**		893000	2730000	340	470	246,000	**10468/1060**	718/1060AC.FB
1250	1500	112	112	6,0	3,0	26	**10468/1250**		1135000	3770000	290	400	387,000	**10468/1250**	718/1250AC.FB
1250	1500	112	112	6,0	3,0	26	**10468/1250У**		1135000	3770000	290	400	387,000	**10468/1250У**	718/1250AC.FB
1250	1500	112	112	6,0	3,0	26	**10468/1250Ю**		1135000	3770000	290	400	387,000	**10468/1250Ю**	S718/1250AC.MB

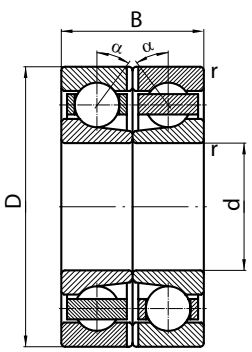
ANGULAR CONTACT BALL BEARINGS
PARED MOUNTING

Bearing arrangement back-to-back, low shoulder on outer ring



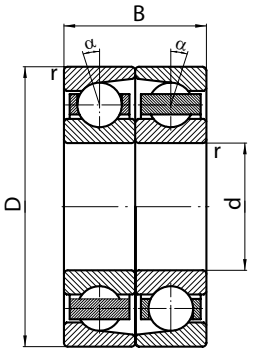
266000

Bearing arrangement back-to-back, low shoulder on inner ring



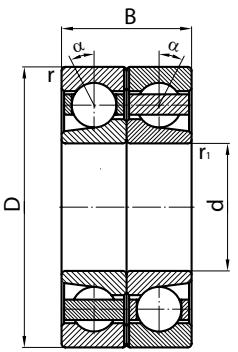
266000*

Bearing arrangement face-to-face, low shoulder on outer ring



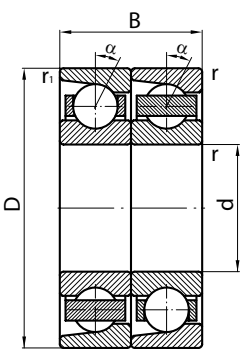
346000

Bearing arrangement face-to-face, low shoulder on inner ring



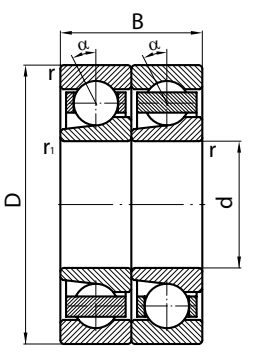
366000*

Bearing arrangement tandem



436000, 466000, 576000

Bearing arrangement tandem, low shoulder on inner ring



436000*, 466000*, 576000*

TYPE 266000, 346000, 366000, 436000, 466000, 576000

Dimensions, mm					α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
								dynamic	static	lubricant				
d	D	B	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
17	40	24	0,6	0,3	15	**436203K6**		19500	12200	13000	18000	0,132	**436203K6**	7203C.TPA/DT
20	42	24	0,6	0,3	15	**436104K**		14100	10400	24000	32000	0,130	**436104K**	7004C.T/DT
25	47	24	0,6	0,3	12	**436105E**		14600	12000	10400	13600	0,150	**436105E**	7005C.T/DT
25	47	24	0,6	0,3	15	**436105K**		15500	12600	20800	28800	0,170	**436105K**	7005C.T/DT
25	52	30	1,0	0,6	15	**436205K6**		27200	18100	11000	16000	0,256	**436205K6**	7205C.TPA/DT
25	52	30	1,0	0,6	12	**436205K6E4**		27200	18100	11000	16000	0,289	**436205K6E4**	7205C.TN/DT
25	52	30	1,0	0,6	12	**236205E5**		25300	19200	10000	13600	0,244	**236205E5**	7205C.TN/DB
25	52	30	1,0	0,6	12	**436205E5**		27200	19200	10000	13600	0,240	**436205E5**	7205C.TN/DT
25	52	30	1,0	0,6	12	**436205ЯК6E4****		27200	18100	11000	16000	0,289	**436205ЯК6E4****	XC7205C.TN/DTP4S
25	62	34	1,1	0,6	26	**246305Л**		43800	32000	8000	11200	0,560	**246305Л**	7305AC.M/DB
30	55	26	1,0	0,6	15	**436106K**		23200	17300	17600	25600	0,260	**436106K**	7006C.T/DT
30	62	32	1,0	0,6	12	**236206E5**		35600	28200	7500	10000	0,390	**236206E5**	7206C.TN/DB
30	62	32	1,0	0,3	18	**436206E1***		37700	26100	10000	13000	0,392	**436206E1***	7206C.T/DT
30	62	32	1,0	0,3	18	**436206E4***		37700	26100	10000	13000	0,372	**436206E4***	7206C.T/DT
30	62	32	1,0	0,6	12	**436206E5**		35600	28200	7500	10000	0,390	**436206E5**	7206C.TN/DT
30	62	32	1,0	0,6	15	**436206K**		39200	24000	16000	24000	0,400	**436206K**	7206C.T/DT
30	72	38	1,1	0,6	26	**446306АЛ**		84800	52800	7200	9600	0,800	**446306АЛ**	7306AC.AM/DT

** Bearing with ceramic balls.

ANGULAR CONTACT BALL BEARINGS

TYPE 266000, 346000, 366000, 436000, 466000, 576000

Dimensions, mm					α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
								dynamic	static	lubricant				
d	D	B	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
35	62	28	1,0	0,6	15	**436107K**		25300	21200	16000	22400	0,318	**436107K**	7007C.T/DT
35	62	28	1,0	0,6	15	**436107KE5**		25300	21200	10000	10400	0,318	**436107KE5**	7007C.TN/DT
35	72	34	1,1	0,6	12	**236207E5**		50700	41500	6300	8500	0,580	**236207E5**	7207C.TN/DB
35	72	34	1,1	0,6	26	**246207E5**		47000	38600	7200	8800	0,580	**246207E5**	7207AC.TN/DB
35	72	34	1,1	0,6	15	**436207K**		51700	31200	14400	20800	0,500	**436207K**	7207C.T/DT
35	72	34	1,1	0,6	12	**436207E5**		49700	41600	6400	8800	0,580	**436207E5**	7207C.TN/DT
35	72	34	1,1	0,6	26	**446207E5**		47000	38600	7200	8800	0,580	**446207E5**	7207AC.TN/DT
35	72	34	1,1	0,6	15	**436207K6**		50000	35500	9500	12000	0,593	**436207K6**	7207C.TPA/DT
40	68	30	1,0	0,6	15	**436108K**		27200	24400	14400	20000	0,390	**436108K**	7008C.T/DT
40	68	30	1,0	0,6	15	**436108KE5**		27200	24400	9000	13000	0,390	**436108KE5**	7008C.TN/DT
40	80	36	1,1	0,6	15	**436208E2***		63400	46400	9000	11000	0,738	**436208E2***	7208C.T/DT
40	80	36	1,1	0,6	12	**436208E5**		63000	52200	5600	7500	0,720	**436208E5**	7208C.TN/DT
40	80	36	1,1	0,6	15	**436208K**		66400	40000	12800	17600	0,700	**436208K**	7208C.T/DT
40	80	36	1,1	0,6	15	**436208Л**		63400	46400	9000	11000	0,872	**436208Л**	7208C.M/DT
40	90	46	1,5	1,0	26	**446308Л**		82300	67200	5600	7200	1,500	**446308Л**	7308AC.M/DT
45	75	32	1,0	0,6	15	**236109K**		37600	32000	12800	17600	0,520	**236109K**	7009C.T/DB
45	75	32	1,0	0,6	15	**436109K**		37600	32000	12800	17600	0,520	**436109K**	7009C.T/DT
45	85	38	1,1	0,6	26	**246209Л**		67000	54200	5400	7200	0,970	**246209Л**	7209AC.M/DB
45	85	38	1,1	0,6	12	**436209Л**		61100	56000	5400	7200	0,970	**436209Л**	7209C.M/DT
50	90	40	1,1	0,6	12	**236210E5**		70000	63400	4800	6300	0,892	**236210E5**	7210C.TN/DB
50	90	40	1,1	0,6	12	**436210E**		70200	54200	7000	9000	0,893	**436210E**	7210C.T/DT
50	90	40	1,1	0,6	12	**436210E4***		70200	54200	7000	9000	0,874	**436210E4***	7210C.TN/DT
50	90	40	1,1	0,6	12	**436210E5**		70000	63400	4800	6300	0,910	**436210E5**	7210C.TN/DT
50	110	54	2,0	2,0	26	**346310Л1**		117000	97600	4500	6000	2,640	**346310Л1**	7310AC.M/DF
50	110	54	2,0	2,0	26	**346310Л**		117000	97600	4500	6000	2,640	**346310Л**	7310AC.M/DF
50	110	54	2,0	2,0	40	**366310E5**		108500	92000	3400	4500	2,140	**366310E5**	7310B.TN/DF
55	90	36	1,1	0,6	26	**246111Л**		52800	49600	5000	6800	0,890	**246111Л**	7011AC.M/DB
55	90	36	1,1	0,6	15	**436111K**		55100	50000	10400	14400	0,830	**436111K**	7011C.T/DT
55	100	42	1.5	1.0	12	**236211E5**		94600	68400	4500	6000	1,200	**236211E5**	7211C.TN/DB
55	100	42	1.5	1.0	12	**436211E5**		86800	68500	4500	6000	1,226	**436211E5**	7211C.TN/DT
55	100	42	1,5	1,0	15	**436211K6**		86800	68500	6700	8500	1,250	**436211K6**	7211C.T/DT
60	95	36	1,1	0,6	26	**246112K**		54200	51000	8800	12800	0,920	**246112K**	7012AC.T/DB
60	95	36	1,1	0,6	15	**436112K**		57500	53000	9600	13600	0,710	**436112K**	7012C.T/DT
60	95	36	2,0	1,0	26	**446112E5**		60500	62200	4800	6000	0,780	**446112E5**	7012AC.TN/DT
60	110	44	1.5	1.0	12	**236212Л**		99700	92400	4000	5300	1,910	**236112Л**	7212C.M/DB
60	110	44	1,5	1,0	12	**436212E**		100000	78600	6000	7500	1,530	**436212E**	7212C.T/DT
60	130	62	2,1	2,1	26	**346312Л**		162000	144800	3800	5000	4,000	**346312Л**	7312AC.M/DF
60	130	62	2,1	2,1	26	**346312Л1**		162000	144800	3800	5000	4,200	**346312Л1**	7312AC.M/DF
60	130	62	2,1	2,1	40	**366312E5**		152000	117600	2900	3800	3,520	**366312E5**	7312B.TN/DF
60	150	70	2,1	2,1	36	**266412ЛШ1**		198000	159000	2600	3200	5,900	**266412ЛШ1**	7412B.MB/DB
60	150	70	2,1	1,1	36	**466412E**		198000	159000	2600	3200	5,900	**466412E**	7412B.TN/DT
60	150	70	2,1	2,1	36	**366412E**		198000	159000	2600	3200	5,900	**366412E**	7412B.TN/DF
60	150	70	2,1	2,1	36	**366412Л**		198000	159000	2600	3200	6,740	**366412Л**	7412B.MA/DF
65	100	36	1,1	0,6	26	**246113K**		55100	55000	8000	12000	0,930	**246113K**	7013AC.T/DB
65	120	46	1,5	1,0	26	**246213Л**		113000	108000	3800	4900	2,340	**246213Л**	7213AC.M/DB
65	120	46	1,5	1,0	12	**436213E**		115000	93300	5000	6300	2,000	**436213E**	7213C.T/DT
65	140	66	2,1	1,1	26	**446313Л**		152000	105000	3500	4500	4,980	**446313Л**	7313AC.MB/DT
65	140	66	2,1	2,1	26	**346313Л**		183000	166000	3800	5300	4,980	**346313Л**	7313AC.MB/DF
70	110	40	1,1	0,6	26	**246114Л**		76000	73000	3800	5000	1,430	**246114Л**	7014AC.M/DB
70	110	60	1,1	0,6	26	**246114ЛУ12**		76000	73000	4000	5350	2,150	**246114ЛУ12**	7014AC.M/DB
70	125	48	1,5	1,0	12	**236214Л**		130000	128800	3400	4500	2,560	**236214Л**	7214C.M/DB
70	125	48	1,5	1,0	12	**436214Л**		130000	128800	3400	4500	2,560	**436214Л**	7214C.M/DT

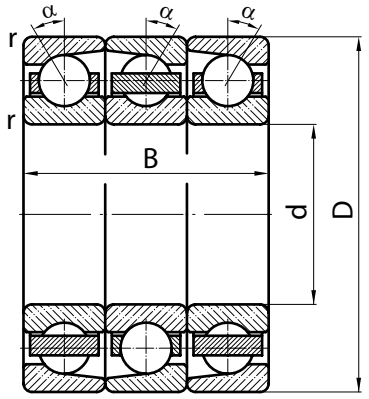
ANGULAR CONTACT BALL BEARINGS

TYPE 266000, 346000, 366000, 436000, 466000, 576000

Dimensions, mm					α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
								dynamic	static	lubricant				
d	D	B	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
75	115	40	1,1	0,6	26	**246115Л**		76600	85600	3800	5000	1,660	**246115Л**	7015AC.M/DB
75	130	50	1,5	1,0	26	**246215E5**		127700	126600	3200	4300	2,490	**246215E5**	7215AC.TN/DB
75	130	50	1,5	1,0	26	**246215Л**		127700	126600	3600	4800	2,560	**246215Л**	7215AC.M/DB
75	130	50	1,5	1,0	12	**436215E**		117000	137000	4000	5000	2,340	**436215E**	7215C.T/DT
80	125	44	1,1	0,6	26	**246116Л**		85000	104000	3400	4800	2,020	**246116Л**	7016AC.M/DB
80	140	52	2,0	1,0	26	**246216Л**		143200	150600	3000	4000	3,360	**246216Л**	7216AC.M/DB
80	140	52	2,0	1,0	26	**446216Л**		143200	150600	3000	4000	3,360	**446216Л**	7216AC.M/DT
80	140	52	2,0	1,0	26	**446216E**		143200	150600	3000	4000	2,860	**446216E**	7216AC.TN/DT
85	130	44	1,1	0,6	26	**246117Л**		93000	108200	3200	4300	2,060	**246117Л**	7017AC.M/DB
85	130	44	1,1	0,6	26	**446117Л**		93000	108200	2800	3800	2,060	**446117Л**	7017AC.M/DT
85	150	56	2,0	1,0	12	**236217Л**		168500	172800	2800	3800	4,400	**236217Л**	7217C.M/DB
90	140	48	1,5	1,0	26	**246118Л**		110200	114000	3000	4200	2,800	**246118Л**	7018AC.M/DB
90	190	86	3,0	1,1	26	**246318Л**		267300	284400	2600	3400	12,200	**246318Л**	7318AC.M/DB
90	225	108	4,0	4,0	36	**366418ЛУ**		340000	380000	2200	2900	22,800	**366418ЛУ**	7418B.MB/DF
100	150	48	1,5	1,0	26	**246120Л**		130400	134000	2900	3800	3,110	**246120Л**	7020AC.M/DB
100	150	48	1,5	1,0	26	**246120E5**		130400	134000	2900	3800	2,550	**246120E5**	7020AC.TN/DB
100	215	94	3,0	4,0	26	**346320Л**		344000	394000	2600	3200	15,600	**346320Л**	7320AC.MB/DF
110	200	76	2,1	2,1	26	**346222Л**		285000	317800	2200	3000	10,520	**346222Л**	7222AC.M/DF
110	240	100	3,0	1,1	36	**466322Л1**		364000	380000	2000	2600	22,300	**466322Л1**	7322B.MB/DT
110	240	100	3,0	3,0	36	**576322Л***		364000	380000	2000	2600	24,200	**576322Л***	7322B.MB/DT
110	240	100	3,0	3,0	36	**366322Л1***		364000	380000	2000	2600	24,100	**366322Л1***	7322B.M/DF
130	200	66	2,0	1,0	26	**246126Л**		205700	264600	2100	2900	7,640	**246126Л**	7030AC.M/DB
130	280	116	4,0	1,5	36	**366326Л1***		423000	470000	1600	2000	36,400	**366326Л1***	7326B.MA/DF
150	225	70	2,1	1,1	36	**266130Л2**		214000	290200	1600	2200	9,800	**266130Л2**	7030B.M/DB
150	320	130	4,0	1,5	36	**466330Г**		510000	614000	1300	1700	59,600	**466330Г**	7330B.F/DT
150	320	130	4,0	1,5	36	**466330Л**		510000	614000	1300	1700	53,200	**466330Л**	7330B.MB/DT
150	320	130	4,0	4,0	26	**346330Л**		580000	740000	1300	1700	53,000	**346330Л**	7330AC.MB/DF
160	240	76	2,1	1,1	36	**266132Л2**		225800	316000	1500	2100	12,200	**266132Л2**	7032B.M/DB
160	400	176	5,0	2,0	40	**466432Л1**		644000	857000	1000	1300	123,800	**466432Л1**	7432B.MB/DT
160	400	176	5,0	2,0	40	**466432Л2***		644000	857000	1000	1300	123,800	**466432Л2***	7432B.MB/DT
170	260	84	2,1	2,1	36	**266134Л2***		276000	406000	1600	2000	16,460	**266134Л2***	7034B.M/DB
170	260	84	2,1	2,1	40	**266134Л2У***		276000	406000	1600	2000	16,460	**266134Л2У***	7034B.M/DB
170	310	104	4,0	4,0	26	**346234Л**		358000	540000	1200	1700	37,600	**346234Л**	7234AC.MB/DF
200	310	102	2,1	2,1	36	**266140Л2***		355000	590000	1300	1600	29,600	**266140Л2***	7040B.M/DB
200	310	102	2,1	2,1	36	**466140Л2***		355600	590000	1300	1600	29,600	**466140Л2***	7040B.M/DT
220	340	112	3,0	3,0	36	**266144КЛ3**		426000	718000	1100	1400	35,800	**266144КЛ3**	7044B.M/DB
240	360	112	3,0	3,0	36	**266148КЛ1***		432000	743000	1000	1300	40,700	**266148КЛ1***	7048B.M/DB
260	400	130	4,0	4,0	36	**266152КЛ1***		510000	940000	950	1200	60,600	**266152КЛ1***	7052B.M/DB
280	500	160	5,0	5,0	36	**366256Л2***		1300000	2560000	800	1000	135,000	**366256Л2***	7256B.MA/DF

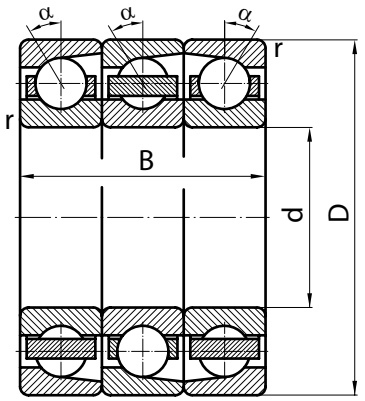
SET OF THREE ANGULAR CONTACT BALL BEARINGS (MATCHED STACK)

Bearing arrangement «У12»



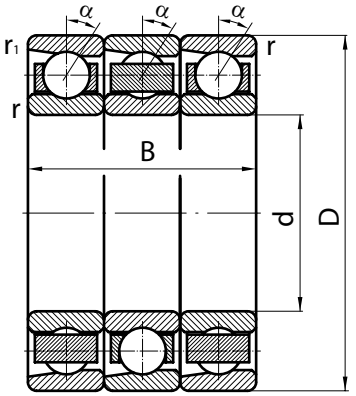
346000У12

Bearing arrangement «У21»



466000У21

Bearing arrangement «У3»



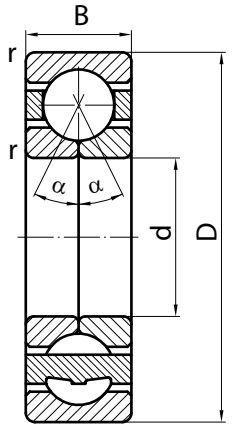
466000У3

TYPE 346000, 466000

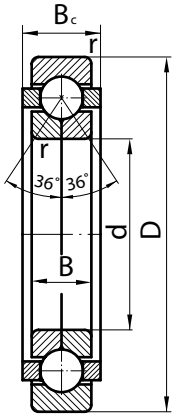
Dimensions, mm					α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
								dynamic	static	lubricant				
d	D	B	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
60	150	105	2,1	2,1	36	**466412ЛУ21**		270000	270000	2000	2600	10,12	**466412ЛУ21**	7412B.M/TFT
110	240	150	3,0	3,0	36	**466322ЛУ21**		438000	540000	1800	2700	33,50	**466322ЛУ21**	7322B.MB/TFT
110	240	150	3,0	1,1	36	**466322Е1У3**		438000	540000	1800	2700	29,50	**466322Е1У3**	7322B.T/TT
110	240	150	3,0	1,1	36	**466322Л1У3**		438000	540000	1800	2700	33,60	**466322Л1У3**	7322B.MB/TT
150	320	195	4,0	4,0	26	**346330ЛУ12**		770000	1110000	1400	2000	79,50	**346330ЛУ12**	7330AC.MB/TFT
160	400	264	5,0	2,0	40	**466432Л2У3**		825000	147000	750	1100	186,00	**466432Л2У3**	7432B.MB/TT

ANGULAR CONTACT BALL BEARINGS

SINGLE-ROW ANGULAR CONTACT BALL BEARINGS WITH TWO-PIECE INNER RING



126000, 176000, 276000



176268Д3

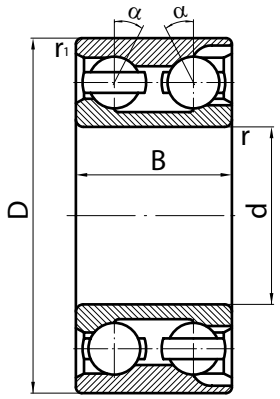
TYPE 126000, 176000, 276000

Dimensions, mm				α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
							dynamic	static	lubricant					
d	D	B/Bc	r min				Cr	Cor	grease	oil	m	epk	analogue	
25	62	17	1,3	26	126305Р*		24900	13100	13000	16000	0,287	126305Р*		
35	72	17	1,1	26	126207Б*		29000	16300	12000	15000	0,345	126207Б*		
35	72	17	1,3	26	126207Р*		29000	16300	12000	15000	0,373	126207Р*		
35	72	17	1,3	16	276207Б1Т*		30500	20500	12000	15000	0,345	276207Б1Т*		
40	90	23	2,5	26	176308Е		61400	30100	8000	10000	0,674	176308Е	QJ308	
45	85	19	1,3	26	126209Ю1*		38700	23100	9500	12000	0,449	126209Ю1*		
50	90	20	1,3	26	126210Р1*		40600	24900	8500	11000	0,621	126210Р1*		
55	100	21	1,8	26	126211Р1*		50300	31500	8000	10000	0,805	126211Р1*		
65	140	33	2,1	26	176313Л		113000	75000	5000	6300	1,866	176313Л	QJ313MPA	
70	150	35	3,5	26	126314Л		122000	80000	4800	6000	3,150	126314Л		
70	150	35	3,5	26	176314Л1		122000	80000	4800	6000	3,100	176314Л1	QJ314MPA	
100	180	34	3,5	26	176220БТ		184600	120600	4000	5000	3,650	176220БТ	QJ220	
110	200	38	2,5	26	176222Л		234000	171500	3200	4000	5,900	176222Л	QJ222	
170	260	42	3,2	26	176134Л		253500	219000	2600	3200	8,270	176134Л	QJ134	
220	340	56	3,0	26	176144Л		306000	320000	2000	2600	20,400	176144Л	QJ1044MPA	
260	480	90	5,0	36	176252Л1		490000	600000	1200	1600	81,000	176252Л1	QJ1252 MA /344524	SKF
340	620	92/99	6,0	36	176268Д3		710000	1020000	1000	1300	129,230	176268Д3		

* Bearings of 12600, 276000 types have 3-point contact, bearings of 176000 types have 4-point contact.

ANGULAR CONTACT BALL BEARINGS

DOUBLE-ROW ANGULAR CONTACT BALL BEARINGS



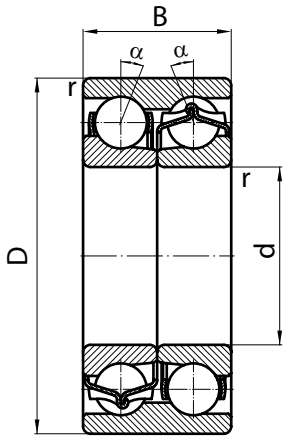
TYPE 56000, 256000, 3056000

Dimensions, mm					α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
								dynamic	static	lubricant				
d	D	B	r min	r_1 min				Cr	Cor	grease	oil	m	epk	analogue
25	57	24	1,0	1,0	35	**56705У**		30000	23000	8000	10000	0,281	**56705У**	
25	62	26	1,1	1,1	26	**3056305**		31000	21000	7500	10000	0,378	**3056305**	3305J
35	72	27	1,1	1,1	26	**3056207К***		47000	32700	6300	8000	0,445	**3056207К***	3507J
35	72	27	1,0	1,0	26	**3056207Л**		47000	32700	6300	8000	0,525	**3056207Л**	3207MA
41.995	82.01	40	3,2	0,2	26	**2560/42ЕК12Ш1**		57200	52300	5600	7500	0,880	**2560/42ЕК12Ш1**	
45	85	30	1,1	0,6	26	**3056209Л**		54100	40800	5000	6700	0,718	**3056209Л**	3209MA
45	85	30	1,1	0,6	26	**3056209НЛ**		54100	40800	5000	6700	0,718	**3056209НЛ**	3209MA
55	100	33	1,5	1,0	26	**3056211Л**		71500	56900	4300	5600	1,140	**3056211Л**	3211MA
70	125	40	1,5	1,0	26	**3056214Л**		80000	85200	3200	4300	1,850	**3056214Л**	3214MA
75	130	41	1,5	1,5	32	**3056215Л**		97000	110000	3000	4000	2,100	**3056215Л**	3215MA
80	140	44	1,1	1,1	26	**3056216Л**		126000	108000	2800	3800	2,730	**3056216Л**	3216MA

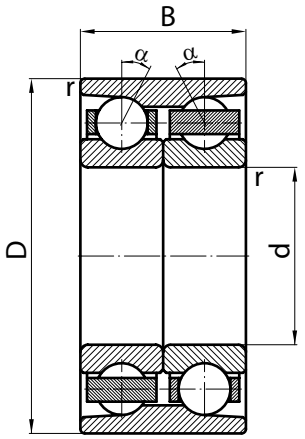
* With retaining notch on outer ring.

ANGULAR CONTACT BALL BEARINGS

DOUBLE-ROW ANGULAR CONTACT BALL BEARINGS WITH TWO INNER RINGS



3086313

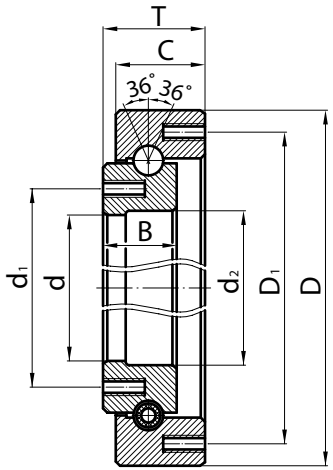


286896Д

TYPE 3086000, 286000

Dimensions, mm				α degree	Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
							dynamic	static	lubricant				
d	D	B	r min				Cr	Cor	grease	oil	m	epk	analogue
65	140	59	2,1	26	**3086313**		140000	135000	4300	5000	4,06	**3086313**	3313DAJ
480	620	106	3,0	40	**286896Д**		7550000	2890000	700	950	76,8	**286896Д**	

SINGLE-ROW ANGULAR CONTACT BALL BEARINGS, SPECIAL DESIGN

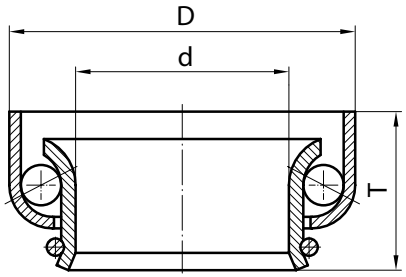


TYPE 186000

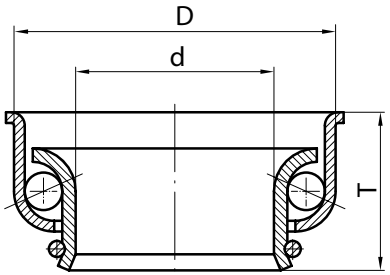
Dimensions, mm								Bearing designation		Mass, kg	Bearing designation
d	D	T	d_1	d_2	D_1	B	C			m	epk
1100	1220	50	1125	1102	1190	48	36	1869/1100У		63,8	1869/1100У

ANGULAR CONTACT BALL BEARINGS

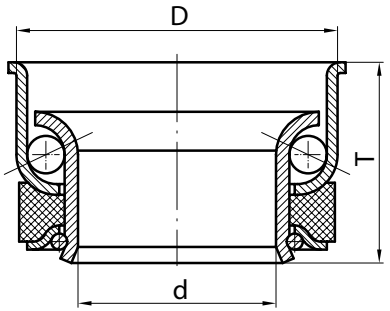
SINGLE-ROW ANGULAR CONTACT BALL BEARINGS, STAMPED



636905



636906C17



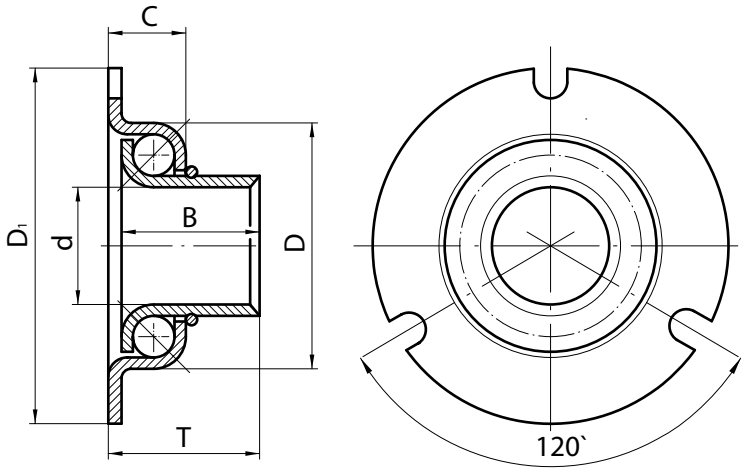
836906

TYPE 636000, 836000

Dimensions, mm			Bearing designation		Limiting rotational speed, min^{-1} lubricant		Mass, kg	Bearing designation
d	D	T			grease	oil	m	epk
23,5	36,5	15	**636905**		800	1000	0,030	**636905**
28	42	22	**636906C17**		630	800	0,049	**636906C17**
28	42	26	**836906**		630	800	0,057	**836906**

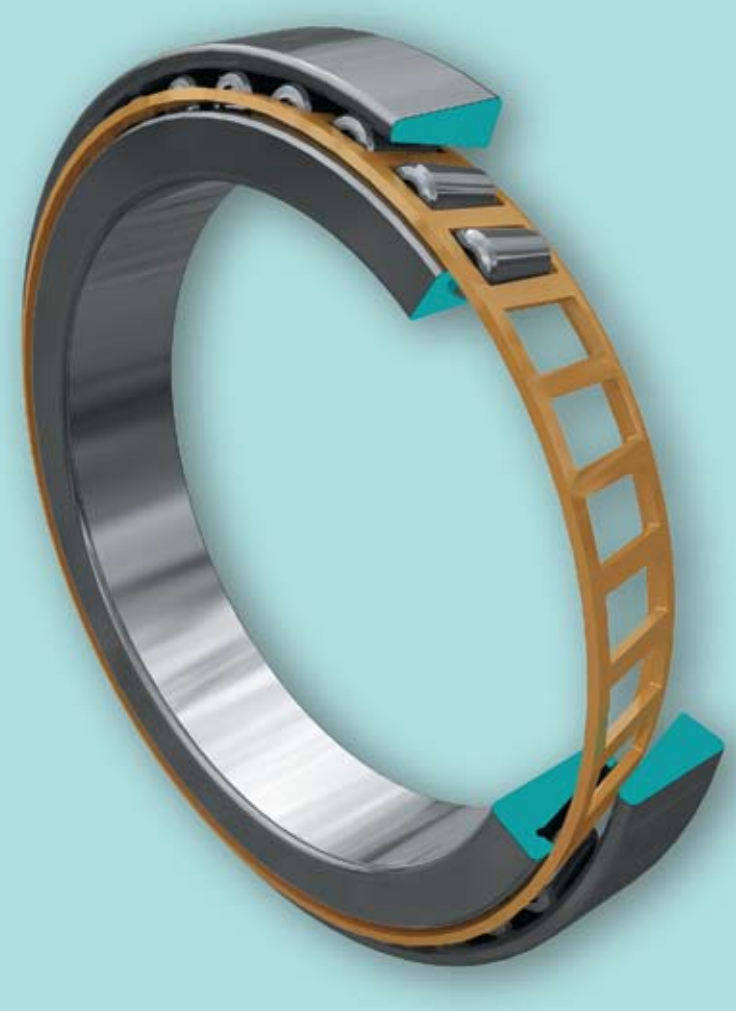
ANGULAR CONTACT BALL BEARINGS

SINGLE-ROW ANGULAR CONTACT BALL BEARINGS STAMPED



TYPE 96000

Dimensions, mm						Bearing designation		Mass, kg	Bearing designation
d	D	T	D_1	B	C			m	epk
9	22	13	38	12	7,5	**96079**		0,017	**96079**
12	25	13	38	12	7,5	**96801**		0,023	**96801**



TAPER ROLLER BEARINGS

Taper roller bearings are designed for carrying radial and axial loads. Ability to carry axial loads depends on contact angle of outer ring raceway. The larger contact angle, the higher axial load rating and lower radial load rating.

Permissible rotational speeds of taper roller bearings compared with that of cylindrical roller bearing is considerably lower. Permissible rotational speeds are nearly the same as for spherical roller bearings. Taper roller bearings are separable, that allows separate mounting and dismounting of the outer and inner rings with a set of rollers.

Besides the main design (7000 type) there are other design variants of taper roller bearings:

- Type 67000 – bearings with a flange on outer ring that allows providing through boring of housing, without making shoulders;
- Type 27000 – bearings with large cone angle of outer rings; the bearings successfully operate at high axial loads;
- Type 97000 – double-row bearings;
- Type 537000 – double-row bearings with extended width of outer ring, they are used as track rollers of rolling, casting and other equipment;
- Type 77000 – four-row bearings.

Single-row bearings of 7000 and 27000 types are designed for carrying radial and single- direction axial loads. Separate mounting of the rings, as well as axial clearance adjustment are allowed both during installation and during operation. Bearings can be mounted with preload which is created when installing a pair of bearings in the same support.

Bearings of 67000 type are applied, when fixing or supporting shoulders in housings to fix the position of outer rings undesirable to provide, and when support width must be reduced.

Careful adjustment of axial clearance is required during mounting and operation of single-row roller taper bearings. However, too small and excessive large clearances must be avoided, because they can lead to impermissible increasing of working temperature and even damage of bearing components.

Single-row bearings of the main modifications are widely used in gears for general mechanical engineering, the transmissions of motor vehicles and tractors (in crawler tractor rollers), the wheel hubs of different vehicles (in wheels of air planes, cars, trucks and cranes). Usually they are installed in pairs, allowing the adjustment of bearing clearances both while manufacturing the products and during their operation.

Single-row precision bearings of main modifications and modifications with a flange on the outer ring are used in spindles of lathes, milling machines and other types of metal-working machine tools.

Large-sized bearings are used in heavy engineering and machine-tool industry.

Double-row bearings of 97000 type are designed for carrying radial and double-direction axial loads. Specified axial clearance in the bearing is provided by additional grinding of spacer ring placed between the inner rings. Allowable radial load is 1.7 times higher than the radial load at the appropriate single-row bearing. Axial load for bearings type 97000 (α = 10°...17°) shall not exceed 40% of unused permissible radial load, i. e. $F_a \leq F'_r$.

Double-row bearings of small and medium-size are used in gears of general machine building projects (in the working and transport roller conveyors, powerful gears, supports of drums and other units) when increased life and stiffness are required.

Large-sized double-row and four-row bearings are mainly used in heavy engineering industry and rolling-mill machinery. These modifications do not require clearance adjustments and, if necessary, they are capable to fix the position of the shaft relative to the housing and to carry double-direction axial loads.

Four-row bearings of 77000 type are designed to carry heavy radial and relatively light double-direction axial loads. It is allowed to adjust the axial clearance between adjacent rows of rollers by additional grinding or replacement of spacer rings installed between the outer and the inner rings. Permissible radial load is 3 times higher than for the corresponding single-row bearing. Axial load shall not exceed 20% of unused permissible radial load, i. e. $F_a \leq 0{,}2F'_r$.

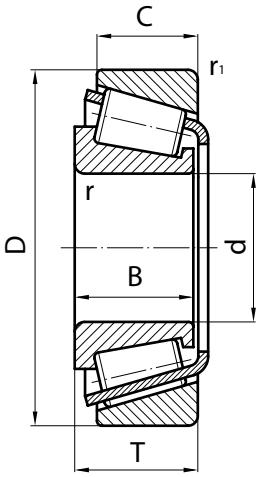
Double-row and four-row bearings fix the shaft axial position relative to the housing in both directions.

Roller bearings with tapered rollers of tolerance classes 0, normal, 6X, 6 and 5 are produced for general engineering industry and automobile industry, and of higher tolerance classes for machine-tool industry.

Bearings are available with metric series (in the «minus») and inch series (in the «plus») systems of tolerances class.

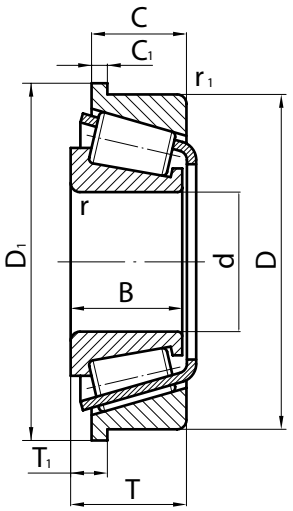
SINGLE-ROW TAPER ROLLER BEARINGS

With contact angle α = 10°. . . 17°



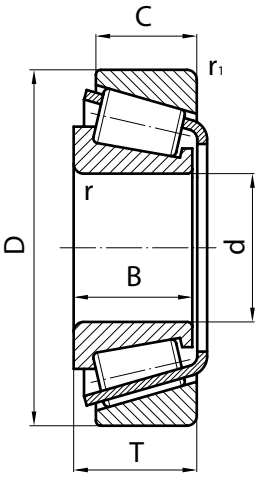
7000, 137000, 147000, 807000, 1007000, 2007000, 3007000

With a flange on outer ring



67000, 2067000

With contact angle α ≥ 20°



27000, 1027000

The bearings are intended to carry radial and single-direction axial loads. Permissible axial load Fa ≤ 0,7Fr' (Fr' is unused permissible radial load). The bearings during the installation and operation require careful adjustment of axial clearances.
Bearings of 27000, 1027000 types are applied when large axial loads acting simultaneously with heavy radial loads. Permissible axial load Fa ≤ 1,5Fr' (Fr' is unused permissible radial load).
Bearings of 67000 type are designed to carry radial and axial loads acting simultaneously. Flanged outer ring permits to simplify bearing unit design, to improve machining technology of seating bores in the housing, reduce its metal consumption.

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0			dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
15	35		11,75		11	9		0,6	0,6	0,45	1,33	0,73	**7202**		12200	11400	10000	14000	0,054	**7202**	30202X		
17	40		13,25		12	11		1,0	1,0	0,31	1,97	1,05	**7203**		19000	18600	9000	13000	0,070	**7203**	30203X		
17	40		13,25		12	11		1,0	1,0	0,35	1,7	0,9	**7203A**		20300	20000	9000	13000	0,083	**7203A**	30203	SKF	T2DB017
17	47		15,25		14	12		1,0	1,0	0,35	1,7	0,96	**147303A**		27700	28200	8000	11000	0,137	**147303A**	30303A	SKF	T2FD017
17,462*	39,878*		13,843		14,605	10,67		1,3	1,3	0,28	2,1	1,1	**7703A**		23400	23700	9000	13000	0,085	**7703A**	LM11749/ LM11710*	TIMKEN	
19,05*	45,237*		15,494		16,637	12,065		1,3	1,3	0,30	2,0	1,1	**7804У**		28400	28800	8500	12000	0,129	**7804У**	LM11949/ LM11910*	TIMKEN	
19,987*	47*	50,861	14,381	6,038	14,381	11,112	2,769	1,5	1,0	0,35	1,74	0,96	**67404AP**		27700	28200	8000	11000	0,129	**67404AP**	05079-05185B*	TIMKEN	
20	42		15		15	12		0,6	0,6	0,37	1,6	0,9	**2007104A**		27000	30200	9000	13000	0,104	**2007104A**	32004X	SKF	T3CC020
20	47		15,25		14	12		1,0	1,0	0,35	1,7	0,9	**7204A**		27700	28200	8000	11000	0,127	**7204A**	30204	SKF	T2DB020
20	47	51	15,25	6,25	14	12	3,0	1,0	1,0	0,36	1,67	0,92	**67204A**		27700	28200	8000	11000	0,134	**67204A**			
20	52		16,25		15	13		1,5	1,5	0,30	2,0	1,1	**7304A**		34300	32700	8000	11000	0,153	**7304A**	30304	SKF	T2FB020
25	47		15		15	11,5		0,6	0,6	0,43	1,4	0,8	**2007105A**		30000	36000	8000	11000	0,115	**2007105A**	32005X	SKF	T4CC025
25	47		17		17	14		0,6	0,6	0,29	2,1	1,1	**3007105A**		34000	43000	8000	11000	0,135	**3007105A**	33005Jg	KBC	T2CE025
25	52		16,25		15	13		1,0	1,0	0,37	1,6	0,9	**7205A**		34100	37500	7500	10000	0,156	**7205A**	30205	SKF	T3CC025

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

TAPER ROLLER BEARINGS

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation	Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0		dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
25	52		16,25		15	13		3,0	1,0	0,37	1,6	0,9	**137205A**	34100	37500	7500	10000	0,156	**137205A**			
25	52		22		22	18		1,0	1,0	0,35	1,7	0,9	**3007205A**	49000	62700	7500	10000	0,225	**3007205A**	33205	SKF	T2DE025
25	62		18,25		17	15		1,5	1,5	0,3	2,0	1,1	**7305A**	48200	46900	6700	9000	0,271	**7305A**	30305	SKF	T2FB025
25	62		18,25		17	13		1,5	1,5	0,83	0,72	0,4	**1027305A**	39400	43800	6000	8000	0,258	**1027305A**	31305	SKF	T7FB025
25	62		18,25		17	13		0,6	1,5	0,55	1,1	0,6	**27705A**	43700	47300	6000	8000	0,264	**27705A**			
25	62	67	18,25	7,25	17	15	4,0	1,5	1,5	0,30	2,0	1,0	**67305A**	48200	46900	6300	8000	0,286	**67305A**			
25	62		25,25		24	20		1,5	1,5	0,3	2,0	1,1	**7605A**	64900	69200	6000	8000	0,383	**7605A**	32305	SKF	T2FD025
25,4*	50,292*		14,224		14,732	10,668		1,3	1,3	0,37	1,6	0,9	**2007405A1**	28000	33000	7500	10000	0,133	**2007405A1**	L44643/L44610*	TIMKEN	
25,4*	51,994*	55,855	15,011	5,08	14,260	12,700	2,769	1,0	1,0	0,37	1,6	0,88	**67405A1P**	34100	37500	7500	10000	0,156	**67405A1P**	07100/07204B	TIMKEN	
26	57,15		17,462		17,462	14		3,2	1,3	0,35	1,73	0,95	**7805Y**	40200	46300	7500	10000	0,226	**7805Y**		512786	FAG
26,988*	50,292*		14,224		14,732	10,668		3,5	1,3	0,37	1,6	0,9	**2007406A1**	28000	33000	7500	10000	0,125	**2007406A1**	L44649/L44610*	TIMKEN	
28	52		16		16	12		1,0	1,0	0,43	1,4	0,8	**20071/28A**	35600	43300	7000	9500	0,145	**20071/28A**	320/28X	SKF	T4CC028
28	58		17,25		16	14		3,0	1,1	0,4	1,5	0,82	**7706**	32900	35700	6300	8000	0,205	**7706**	HR302/28	NSK	
28	67		20,5		20,5	16		0,8	1,3	0,4	1,5	0,82	**7705A**	57800	68300	6300	8000	0,375	**7705A**			
29*	50,292*		14,224		14,732	10,668		3,5	1,3	0,37	1,6	0,9	**7006A**	28500	36900	7000	9500	0,114	**7006A**	L45449/L45410*	TIMKEN	
30	55		17		17	13		1,0	1,0	0,43	1,4	0,8	**2007106A**	37400	49600	6700	9000	0,179	**2007106A**	32006X	SKF	T4CC030
30	62		17,25		16	14		1,0	1,0	0,37	1,6	0,9	**7206A**	41000	44200	6300	8500	0,232	**7206A**	30206	SKF	T3DB030
30	62		21,25		20	17		1,0	1,0	0,37	1,6	0,9	**7506A**	55000	64700	6300	8500	0,295	**7506A**	32206	SKF	T3DC030
30	72		20,75		19	16		1,5	1,5	0,31	1,9	1,1	**7306A**	62000	63500	5600	7500	0,409	**7306A**	30306	SKF	T2FB030
30	72		28,75		27	23		1,5	1,5	0,31	1,9	1,1	**7606A**	80800	89500	5300	7000	0,559	**7606A**	32306	SKF	T2FD030
30	72		20,75		19	14		2,0	2,0	0,55	1,1	0,6	**27706A**	56100	54700	5000	6000	0,370	**27706A**	31306	SKF	T7FB030
30	72		24,5		24	17,6		3,0	1,3	0,59	1,02	0,56	**27706K1**	57000	64000	5000	6000	0,470	**27706K1**			
30	72		28,75		29	23		1,5	1,5	0,55	1,1	0,6	**27606A**	73600	100000	5300	7000	0,622	**27606A**			
30,162*	64,292*		21,433		21,433	16,670		1,5	1,5	0,38	1,6	0,88	**7106P**	55000	64700	6000	8000	0,330	**7106P**	M86649/M86610*	TIMKEN	
30,174*	64,316*		21,25		20	17		1,1	1,1	0,37	1,6	0,88	**7406A**	55000	64700	6300	8000	0,309	**7406A**			
30,238	63,527		20,25		20,5	17		1,0	2,5	0,37	1,62	0,89	**7906**	49000	55000	6000	7500	0,320	**7906**			
31,75*	59,131*		15,875		16,76	11,81		3,56	1,3	0,41	1,46	0,8	**7906A1**	37300	45600	6300	8500	0,191	**7906A1**	LM67048/ LM67010*	TIMKEN	
31,75*	62*		18,161		19,05	14,288		3,56	1,3	0,35	1,71	0,9	**1007706A**	49300	56800	6000	8000	0,248	**1007706A**	15123/15245*	TIMKEN	
31,75*	69,012*		19,845		19,583	15,875		3,5	1,3	0,38	1,57	0,86	**1007806A**	53000	64300	5600	7500	0,366	**1007806A**	14125A/14276*	TIMKEN	
32	72		29,75		28,5	15		5,0	1,5	0,37	1,6	0,88	**7806A**	52100	56700	5300	7000	0,444	**7806A**			
33	62		16		16,5	12		2,5	2,5	0,36	1,67	0,92	**7707Y**	39600	46800	5000	6300	0,217	**7707Y**			
33,338*	68,262*		22,225		22,225	17,462		0,8	1,5	0,54	1,1	0,6	**3007306**	53000	64300	5600	7500	0,367	**3007306**	M88048-M88010*	TIMKEN	
34,925*	65,088*		18,034		18,288	13,97		3,6	1,3	0,4	1,5	0,82	**7907AK**	46100	58300	5600	7500	0,263	**7907AK**	LM48548/ LM48510*	TIMKEN	
34,938	73,03		26,987		26,975	22,225		1,8	1,3	0,37	1,62	0,89	**7807Y**	76600	92800	4800	6000	0,540	**7807Y**	HM88649A/ HM88613*	TIMKEN	
34,988*	59,131*		15,875		16,764	11,938		3,5	1,3	0,43	1,4	0,8	**2007707A1**	36300	49400	6000	8000	0,179	**2007707A1**	K-L68149/ K-L68110*	SKF	
34,988*	59,975*		15,875		16,764	11,938		3,56	1,3	0,43	1,4	0,8	**2007407A1**	36000	49000	6000	8000	0,187	**2007407A1**	L68149/L68111*	TIMKEN	
35	60		15,875		18,461	11,938		2,0	1,3	0,43	1,4	0,8	**2007407A1K**	36300	49400	5000	8000	0,192	**2007407A1K**	JL68145/JL68111	TIMKEN	
35	62		16		17	13,6		3,56	1,5	0,44	1,35	0,7	**2007807A**	41700	55800	6000	8000	0,215	**2007807A**	LM78349/ LM78310A*	TIMKEN	
35	62		16		17	13,6		3,6	1,5	0,45	1,3	0,7	**2007807AK**	44400	55400	6000	8000	0,212	**2007807AK**	LM78349/ LM78310A*	TIMKEN	
35	62		18		18	14		1,0	1,0	0,46	1,3	0,7	**2007107A**	44400	55400	6000	8000	0,223	**2007107A**	32007X	SKF	T4CC035
35	65		18		18,3	14		1,1	1,1	0,4	1,49	0,82	**7407A**	46100	58300	4500	6000	0,263	**7407A**			
35	70		24,25		23	18		1,5	1,5	0,58	1,03	0,57	**27907A**	64800	81600	5000	6300	0,426	**27907A**			
35	72		18,25		17	15		1,9	1,5	0,37	1,6	0,9	**7207A**	52100	56700	5300	7000	0,329	**7207A**	30207	SKF	T3DB035
35	72	77	18,25	7,25	17	15	4	1,5	1,5	0,37	1,62	0,89	**67207**	51200	56000	5300	6700	0,340	**67207**	30207RX		
35	72		24,25		23	19		1,5	1,5	0,37	1,6	0,88	**7507A1**	72900	87800	5300	7000	0,458	**7507A1**	32207	SKF	T3DC035
35	80		22,75		21	18		2,0	1,5	0,31	1,9	1,1	**7307A**	78000	81400	5000	6700	0,536	**7307A**	30307	SKF	T2FB035

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

TAPER ROLLER BEARINGS

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation	Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0		dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
35	80		32,75		31	25		2,0	1,5	0,31	1,9	1,1	**7607A**	105000	120000	4800	6300	0,758	**7607A**	32307	SKF	T2FE035
35	80		32,75		31	25		2,0	1,5	0,54	1,1	0,6	**27607A**	96500	126000	4800	6300	0,812	**27607A**	32307B	SKF	T5FE035
36,512*	76,2*		29,37		28,575	23,02		0,8	3,3	0,37	1,6	0,89	**7107P**	76600	92800	4800	6300	0,616	**7107P**	HM89448/HM89410*	TIMKEN	
36,513*	80		29,37		29,771	23,813		0,8	0,8	0,32	1,9	1,05	**7007A**	105000	120000	4800	6300	0,700	**7007A**	1173391EC8944-50	IBO	
38	63		17		17	13,5		3,6	1,3	0,42	1,44	0,79	**20070/38A**	40400	57000	6000	8000	0,204	**20070/38A**	JL69349/JL69310	TIMKEN	
38	68		19		19	14,5		1,0	1,0	0,38	1,58	0,87	**20071/38A**	51800	70900	5300	7000	0,296	**20071/38A**			
38	80		24		22	16		1,0	1,0	0,83	0,72	0,4	**27908A**	68500	80900	5000	6700	0,552	**27908A**			
40	68		19		19	14,5		1,0	1,0	0,37	1,6	0,9	**2007108A**	51800	70900	5300	7000	0,278	**2007108A**	32008X	SKF	T3CD040
40	80		21		22,403	17,826		3,5	1,3	0,37	1,6	0,9	**7008**	64700	72000	4800	6300	0,472	**7008**			
40	80		19,75		18	16		1,5	1,5	0,37	1,6	0,9	**7208A**	64700	72000	4800	6300	0,423	**7208A**	30208	SKF	T3DB040
40	80		24,75		23	19		1,5	1,5	0,37	1,6	0,9	**7508A**	80100	94800	4800	6300	0,541	**7508A**	32208	SKF	T3DC040
40	85		33		32,5	28		2,5	2,0	0,35	1,7	0,9	**7808A**	123000	157000	4500	6000	0,916	**7808A**	T2EE040	SKF	T2EE040
40	90		25,25		23	17		2,0	2,0	0,79	0,76	0,42	**27308AK**	77900	89100	4000	5000	0,737	**27308AK**			
40	90		35,25		33	27		2,0	1,5	0,35	1,7	0,9	**7608A**	124000	152000	4000	5300	1,043	**7608A**	32308	SKF	T2FD040
40,987*	67,975*		17,5		18	13,5		1,5	1,5	0,35	1,72	0,95	**2007808A**	47100	66100	5300	7000	0,257	**2007808A**	LM300849/ LM300811*	TIMKEN	
41,275	76,2	80,963	22,254	9,525	23,02	17,463	4,763	3,0	0,9	0,33	1,82	1,0	**2067708A****	71600	93800		4800	0,463	**2067708A****			
44,45*	82,931*		23,812		25,4	19,05		3,5	0,8	0,33	1,79	1,0	**7009A**	81500	109000	4500	6000	0,577	**7009A**	25580/25520*	TIMKEN	
44,461	83,082		24,75		23	19		1,3	1,3	0,4	1,51	0,83	**7409A**	83200	101000	4500	6000	0,556	**7409A**			
45	75		20		19	16		1,0	1,0	0,3	1,99	1,1	**2007109****	58300	80000	4800	6300	0,330	**2007109****	32009X	SKF	
45	75		20		20	15,5		1,0	1,0	0,4	1,5	0,8	**2007109A**	62200	88400	4800	6300	0,340	**2007109A**	32009X	SKF	T3CC045
45	80	86	30,1	8,1	19	26	4	1,0	1,5	0,3	2	1,1	**67709****	53300	68000		4800	0,539	**67709****			
45*	85*	89,76	20,63	7,93	24,5	17,46	4,76	2,0	0,9	0,3	2,03	1,11	**67809ЛК****	61200	67500		6300	0,556	**67809ЛК****	112045/112085C*	GAMET	
45	85		20,75		19	16		1,5	1,5	0,4	1,5	0,8	**7209A**	73800	87600	4500	6000	0,482	**7209A**	30209	SKF	T3DB045
45	85		24,75		23	19		1,5	1,5	0,4	1,5	0,8	**7509A**	86400	107000	4500	6000	0,570	**7509A**	32209	SKF	T3DC045
45	85		24,75		23,5	20		2,0	0,3	0,4	1,51	0,83	**127509AK**	75100	98800	4500	6000	0,614	**127509AK**			
45	90		38,25		40	32,5		2,0	2,0	0,29	2,06	1,13	**7809A**	149000	208000	3200	4000	1,158	**7809A**			
45	100		27,25		25	18		2,0	1,5	0,83	0,72	0,4	**27309A**	99000	114000	4000	5300	0,958	**27309A**	31309	SKF	T7FB045
45	100		31,75		29	20,5		2,0	2,0	0,72	0,84	0,46	**27709**	100000	110000	3150	4000	1,100	**27709**			
45	100		31,75		29	20,5		1,5	1,5	0,72	0,84	0,46	**27709K1**	100000	110000	3150	4000	1,100	**27709K1**			
45	100		31,75		29	20,5		1,5	1,5	0,72	0,84	0,46	**27709K1У**	100000	110000	3150	4000	1,100	**27709K1У**			
45	100		32		29	20,5		2,0	2,0	0,72	0,84	0,46	**27709У**	100000	110000	3150	4000	1,100	**27709У**			
45	100		27,25		25	22		2,0	1,5	0,35	1,7	0,9	**7309A**	117000	133800	4000	5300	0,979	**7309A**	30309	SKF	T2FB045
45	100		38,25		36	30		2,0	1,5	0,35	1,7	0,9	**7609A**	151000	187000	3600	4800	1,390	**7609A**	32309	SKF	T2FD045
45	100	106	38,25	15,25	36	30	7	2,0	1,5	0,35	1,74	0,96	**67609A1**	151000	187000	3600	4800	1,460	**67609A1**			
45,23*	79,985*		19,842		20,638	15,08		2,0	1,3	0,3	2,0	1,1	**7109P**	53400	68000	4500	6000	0,407	**7109P**	17887/17831*	TIMKEN	
45,242*	73,431*		19,558		19,812	15,748		3,5	0,8	0,3	2,0	1,1	**1007409**	53300	68000	4000	6300	0,310	**1007409**	LM102949/ LM102910*	TIMKEN	
45,242*	77,788*		19,842		19,842	15,08		3,5	0,8	0,3	1,99	1,1	**2007809**	53300	68000	4800	6300	0,371	**2007809**	LM603049/ LM603011*	TIMKEN	
46*	75*		18		18	14		2,3	1,5	0,3	2,0	1,1	**2007409**	52300	68000	4000	6300	0,300	**2007409**	LM503349/ LM503310*	TIMKEN	
47	100		42,75		43	36		2,0	2,0	0,31	1,94	1,06	**7909K1**	160000	205000	3200	4000	1,580	**7909K1**			
50	82		21,5		21,5	17		2,3	1,3	0,3	2,0	1,1	**7710A**	73900	103000	4500	6000	0,427	**7710A**	JLM104948/ JLM104910	TIMKEN	T3DB050
50	90		21,75		20	17		1,5	1,5	0,43	1,4	0,8	**7210A**	83100	102000	4300	5600	0,558	**7210A**	30210	SKF	
50	90	95	24,75	10,25	23	19	4,5	1,5	1,5	0,42	1,43	0,78	**67510A**	82500	100000	4000	5000	0,651	**67510A**	32210R		
50	90		24,75		23	19		1,5	1,5	0,43	1,4	0,8	**7510A**	91600	116000	4300	5600	0,615	**7510A**	32210	SKF	T3DC050
50*	90*	94,76	26,75	11,11	29	20,4	4,76	2,0	0,9	0,3	1,97	1,08	**67810ЛК****	74800	86800		5700	0,750	**67810ЛК****	111050/111090C*	GAMET	
50	90		32		32	24,5		1,5	1,5	0,4	1,5	0,6	**3007210A**	112000	163000	4300	5600	0,869	**3007210A**	33210	SKF	T3DE050
50	110		29,25		27	23		2,5	2,5	0,35	1,7	0,9	**7310A**	138000	160000	3600	4800	1,304	**7310A**	30310	SKF	T2FB050
50	110		29,25		27	19		2,5	2,5	0,83	0,72	0,4	**27310A**	110000	131000	3200	4300	1,230	**27310A**	31310	SKF	T7FB050

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).
** Precision bearings.

TAPER ROLLER BEARINGS

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation	Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0		dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
50,8	93,264	97,937	30,162	11,112	30,302	23,812	4,762	2,5	2,5	0,34	1,76	0,97	**67910A**	121000	155000	4000	5300	0,894	**67910A**	3780/3720B*	TIMKEN	
50,811	101,624		34,925		36,07	26,99		0,9	2,3	0,28	2,1	1,1	**7410A**	126000	156000	3200	4000	1,240	**7410A**	529/522*	TIMKEN	
52,388	92,075		24,608		25,4	19,845		2,5	2,5	0,38	1,58	0,87	**7810A**	100000	132000	3200	4000	0,650	**7810A**	28584/28521*	TIMKEN	
53,975	123,825		39,5		36,7	26		4,0	2,5	0,87	0,69	0,38	**27911A**	156000	205000	3000	4000	2,230	**27911A**			
55	90		23		23	17,5		1,5	1,5	0,41	1,48	0,81	**2007111A**	84000	115000	4000	5300	0,540	**2007111A**	32011X	SKF	
55	90		23		22	19		1,5	1,5	0,33	1,8	0,99	**2007111**	63000	86000	4000	5300	0,540	**2007111**	32011X		
55	100		22,75		21	18		2,0	1,5	0,4	1,5	0,8	**7211A**	91500	108000	3800	5000	0,710	**7211A**	30211A		
55	100		26,75		25	21		2,0	1,5	0,4	1,5	0,8	**7511A**	110000	137000	3800	5000	0,851	**7511A**	32211A		
55	115		34		31	23,5		3,0	3,0	0,87	0,69	0,38	**27711A1**	132000	186000	3000	4000	1,658	**27711A1**	T7FC055	SKF	T7FC055
55	120		31,5		29	25		2,5	2,0	0,35	1,7	0,9	**7311A**	156000	181000	3200	4300	1,640	**7311A**	30311	SKF	T2FB055
55	120		45,5		43	35		2,5	2,0	0,35	1,7	0,9	**7611A**	212000	270000	3000	4000	2,420	**7611A**	32311A		
55	120		45,5		43	35		2,5	2,0	0,35	1,7	0,9	**7611AK**	213000	272000	3000	4000	2,379	**7611AK**	32311	SKF	T2FD055
60	95	100	22,8	8,8	25	18,5	4,5	1,3	1,3	0,25	2,41	1,33	**67912Л****	77100	102000		3200	0,630	**67912Л****			
60	95		23		23	17,5		1,5	1,5	0,43	1,4	0,8	**2007112A****	83000	125000	3600	4800	0,602	**2007112A****	32012X	SKF	T4CC060
60	100	104,5	25,4	10	26,5	19,84	4,5	1,3	1,3	0,35	1,73	0,95	**67712Л****	80800	100000		5100	0,896	**67712Л****	113060/113100C	GAMET	
60	110		23,75		22	19		2,0	1,5	0,4	1,5	0,8	**7212A**	110000	134000	3400	4500	0,908	**7212A**	30212	SKF	T3EB060
60	110		23,75		23	19		2,0	1,5	0,35	1,71	0,94	**7212X1**	91000	103000	3400	4500	0,890	**7212X1**	30212X		
60	110	116	29,75	10,8	28	24	5	2,0	1,5	0,4	1,5	0,8	**67512A**	138000	178000	3400	4500	1,233	**67512A**			
60	110		29,75		28	24		2,0	1,5	0,4	1,5	0,8	**7512A**	134000	170000	3400	4500	1,180	**7512A**	32212A		
60	110		38		38	29		2,0	1,5	0,4	1,5	0,8	**3007212A**	173000	245000	3400	4500	1,568	**3007212A**	33212	SKF	T3EE060
60	130		33,5		31	26		3,0	2,5	0,35	1,7	0,9	**7312A**	180000	211000	3000	4000	1,930	**7312A**	30312	SKF	T2FB060
60	130		48,5		46	37		3,0	2,5	0,35	1,7	0,9	**7612A**	250000	323000	2600	3600	2,980	**7612A**	32312	SKF	T2FD060
60,325	100	103,962	25,4	9,525	25,4	19,845	3,97	3,0	3,0	0,35	1,73	0,95	**2067712A****	106000	143000		3800	0,777	**2067712A****	28985/28921B	TIMKEN	
65	90		17		17	14		1,0	1,0	0,35	1,7	0,9	**2007913A**	47900	87100	3800	5000	0,340	**2007913A**	32913	SKF	T2BC065
65	100		23		23	17,5		1,5	1,5	0,46	1,3	0,7	**2007113A**	87000	140000	3400	4500	0,653	**2007113A**	32013X	SKF	T4CC065
65	100		27		27	21		1,5	1,5	0,35	1,7	0,9	**3007113A**	96100	162000	3400	4500	0,745	**3007113A**	33013	SKF	T2CE065
65	110		30,5		30	24		3,0	2,0	0,4	1,5	0,8	**807813A**	128000	198000	3200	4000	1,171	**807813A**			
65	120		32,75		31	27		2,0	1,5	0,4	1,5	0,8	**7513A**	164000	214000	3000	4000	1,583	**7513A**	32213	SKF	T3EC065
65	120	127	32,75	11,75	31	27	6	2,0	1,5	0,40	1,50	0,80	**67513A**	164000	214000	2800	3800	1,702	**67513A**			
65	120		41		41	32		2,0	1,5	0,4	1,5	0,8	**3007213A**	202000	274000	2800	3800	1,956	**3007213A**	33213	SKF	T3EE065
65	140		36		33	28		3,0	2,5	0,35	1,7	0,9	**7313AK**	212000	252000	2600	3600	2,480	**7313AK**	30313	SKF	T2GB065
65	140		36		33	28		3,0	2,5	0,55	1,1	0,6	**27313A1**	189000	239000	2600	3600	2,550	**27313A1**			
65	140		51		48	39		3,0	2,5	0,35	1,7	0,9	**7613A**	270000	345000	2400	3400	3,610	**7613A**	32313A		
65	150		53,5		54	44,5		2,5	2,5	0,36	1,65	0,9	**807713**	288000	388000	2000	3200	4,800	**807713**			
70	110		25		25	19		1,5	1,5	0,43	1,4	0,8	**2007114A****	107000	165000	3200	4300	0,881	**2007114A****	32014X	SKF	T4CC070
70	115		35		33	31		2,0	1,3	0,35	1,72	0,95	**7814XM**	151000	145000	2800	3800	1,470	**7814XM**			
70	120	127	29,79	11,56	32	24,23	6	1,8	1,8	0,3	1,98	1,09	**67814Л****	117000	158000		3200	1,710	**67814Л****			
70*	120*	125,55	29,79	11,11	32	24,23	5,55	2,5	2,0	0,3	1,98	1,09	**67814ЛК****	117000	158000		3200	1,426	**67814ЛК****	130070/130120C*	GAMET	
70	120	125	44,5	13,5	42	37	6	2,0	1,5	0,39	1,53	0,84	**67714**	140000	204000	2600	3200	2,000	**67714**			
70	125		26,25		24	21		2,0	1,5	0,43	1,4	0,8	**7214A**	126000	154000	3000	4000	1,250	**7214A**	30214	SKF	T3EB070
70	140		39		35,5	27		3,0	3,0	0,87	0,69	0,38	**27714A1**	184000	264000	2200	3200	2,679	**27714A1**	T7FC070	SKF	T7FC070
70	150		38		35	25		3,0	2,5	0,83	0,72	0,4	**1027314A**	204000	258000	2400	3400	2,969	**1027314A**	31314	SKF	T7GB070
70	150		38		35	30		3,0	2,5	0,35	1,7	0,9	**7314A**	237000	284000	2400	3400	3,018	**7314A**	30314	SKF	T2GB070
70	150		53,5		52,5	41		3,0	2,5	0,55	1,1	0,6	**827914АУ**	300000	425000	2000	3000	4,570	**827914АУ**			
70	150		54		51	42		3,0	2,5	0,35	1,7	0,9	**7614A**	313000	407000	2200	3200	4,410	**7614A**	32314	SKF	T2GD070
75	115		25		25	19		1,5	1,5	0,46	1,31	0,72	**2007115A**	108000	171000	3000	4000	0,876	**2007115A**	32015X	SKF	
75	115		25		24	20		1,5	1,5	0,3	1,99	1,1	**2007115**	106000	163000	3000	4000	0,910	**2007115**	32015X		
75	120		31		29,5	25		3,0	2,5	0,44	1,35	0,8	**7915A**	148000	227000	2800	3800	1,300	**7915A**	K-JM714249/ K-JM714210		
75	130		27,25		25	22		2,0	1,5	0,43	1,40	0,8	**7215A**	140000	178000	2800	3800	1,391	**7215A**	30215	SKF	
75	135		44,25		45	35		2,5	2,5	0,4	1,49	0,82	**7815A**	219000	367000	2000	3200	2,807	**7815A**		SKF	T4DB075

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).
** Precision bearings.

TAPER ROLLER BEARINGS

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0			dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
75	145		51		51	39		3,0	2,5	0,35	1,7	0,96	**3007015A1**		313000	407000	2400	3400	3,672	**3007015A1**			
75	150		42		38	29		3,0	3,0	0,88	0,68	0,4	**27715A**		205000	295000	2000	3000	3,310	**27715A**	T7FC075	SKF	T7FC075
75	160		40		37	31		3,0	2,5	0,35	1,7	0,9	**7315A**		258000	308000	2200	3200	3,580	**7315A**	30315	SKF	T2GB075
75	160		58		55	45		3,0	2,5	0,35	1,7	0,9	**7615A**		364000	483000	2000	3000	5,400	**7615A**	32315	SKF	T2GD075
80	110		20		20	16		1,0	1,0	0,35	1,71	0,9	**2007916A**		77000	133000	3200	4300	0,640	**2007916A**	32916	SKF	T2EC080
80	125		29		29	22		1,5	1,5	0,43	1,4	0,8	**2007116A****		138000	214000	2600	3600	1,261	**2007116A****	32016X	SKF	T3CC080
80	130	140	36	12	36	29,5	5,5	1,5	1,5	0,30	2,06	1,13	**67716АУ**		184000	313000	1600	2600	1,987	**67716АУ**			
80	139,992	150	36,512	14,287	36,098	28,575	6,350	2,0	3,2	0,42	1,43	0,79	**67816АУ**		198000	262000	1600	2600	2,282	**67816АУ**			
80	140		35,25		33	28		2,5	2,0	0,43	1,4	0,8	**7516A****		198000	262000	2400	3400	2,110	**7516A****	32216	SKF	T3EC080
80	140	147	35,25	13,25	33	28	6	2,5	2,0	0,43	1,4	0,8	**67516AK**		198000	262000	2600	3200	2,184	**67516AK**			
80	170		61,5		58	48		3,0	2,5	0,35	1,74	0,96	**7616AKM**		392200	518000	1900	2800	6,210	**7616AKM**	32316	SKF	
85	130		29		29	22		1,5	1,5	0,44	1,35	0,8	**2007117A**		141000	223000	2400	3400	1,350	**2007117A**	32017X	SKF	T4CC085
85	150		30,5		28	24		2,5	2,0	0,42	1,43	0,8	**7217A**		170000	212000	2200	3200	2,100	**7217A**	30217	SKF	T3EB 085
85	150		38,5		36	30		2,5	2,0	0,43	1,4	0,8	**7517A**		229000	309000	2200	3200	2,657	**7517A**	32217	SKF	T3EC085
85	180		44,5		41	30		4,0	4,0	0,76	0,78	0,43	**27317**		242000	285000	1700	2400	4,700	**27317**	31317		
85	180		63,5		60	49		4,0	3,0	0,55	1,1	0,6	**27617A**		395000	605000	1800	2600	7,800	**27617A**	32317B	SKF	T5GD085
85,025	200,025		52,2		49,2	34,5		2,5	2,5	0,69	0,87	0,48	**7717**		316000	370000	1600	2000	1,540	**7717**			
90	140	147	25,29	14,29	30,5	19	8,05	1,8	0,5	0,26	2,33	1,28	**67818Л****		112000	146000		3300	1,430	**67818Л****			
90	140		32		32	24		2,0	1,5	0,43	1,4	0,8	**2007118A****		163000	253000	2200	3200	1,720	**2007118A****	32018X	SKF	T3CC090
90	140		39		39	32,5		2,0	1,5	0,27	2,2	1,3	**3007118A**		214000	348000	2200	3200	2,200	**3007118A**	33018	SKF	T2CE090
90	160		32,5		30	26		2,5	2,0	0,43	1,4	0,8	**7218A**		208000	268000	2000	3000	2,600	**7218A**	30218	SKF	T3FB090
90	160		42,5		40	34		2,5	2,0	0,43	1,4	0,8	**7518A**		274000	380000	2000	3000	3,354	**7518A**	32218	SKF	T3FC090
90	190		46,5		43	30		4,0	3,0	0,83	0,72	0,4	**1027318A**		278000	361000	1700	2400	5,660	**1027318A**	31318	SKF	T7GB090
93,663*	152,4*	158,4	35	12,5	33,75	28,5	6	2,5	0,9	0,25	2,37	1,3	**67719ЛК****		149000	201000		3400	2,319	**67719ЛК****	131093X/131152XC*	GAMET	
95	130		26		26	21,5		1,5	1,5	0,36	1,68	0,9	**7819A**		115000	228000	2200	3200	1,043	**7819A**			
95	152,4		39,687		36,32	30,163		1,5	2,0	0,44	1,36	0,75	**127919A**		194000	305000	2000	3000	2,570	**127919A**			
95	170		34,5		32,0	27,0		3,0	2,5	0,42	1,43	0,8	**7219A**		234000	304000	1900	2800	3,108	**7219A**	30219X		
95	170		45,5		45,5	37		3,0	2,5	0,38	1,6	0,86	**7519**		230000	225000	1900	2800	4,290	**7519**	32219X		
95	200		49,5		45	38		4,0	3,0	0,35	1,7	0,9	**7319A****		376000	459000	1800	2600	6,730	**7319A****	30319	SKF	T2GB095
95,25	128,588		15,875		15	11,908		1,3	1,3	0,35	1,7	0,9	**7919A****		57500	99400	2200	3200	0,562	**7919A****	LL319349/ LL319310*	TIMKEN	
96,838*	188,912*		50,8		46,038	31,75		3,5	3,3	0,87	0,69	0,38	**27719A**		298000	437000	1600	2000	6,052	**27719A**	90381/90744*	TIMKEN	
98,425	152,4	159,5	38,1	15	42	30	7,3	1,8	1,8	0,25	2,41	1,33	**67920Л****		194000	279000		3000	2,480	**67920Л****	160098X/160152XC*	GAMET	
100	150		32		32	24		2,0	1,5	0,46	1,3	0,7	**2007120A****		173000	283000	2000	3000	1,902	**2007120A****	32020X	SKF	T4CC100
100	180		37		34	29		3,0	2,5	0,43	1,4	0,8	**7220A****		271000	360000	1900	2800	3,780	**7220A**	30220	SKF	T3FB100
100	180		49		46	39		3,0	2,5	0,43	1,4	0,8	**7520A**		341000	483000	1800	2600	5,060	**7520A**	32220	SKF	T3FC100
105	160		35		35	26		2,5	2,0	0,44	1,35	0,74	**2007121A**		207600	340000	1800	2600	2,436	**2007121A**	32021X	SKF	
105	190		39		36	30		3,0	2,5	0,43	1,4	0,8	**7221A**		286000	377000	2600	1800	4,328	**7221A**	30221	SKF	T3FB105
107,95*	158,75*		23,02		21,438	15,875		3,5	3,3	0,6	1	0,6	**7921A**		98300	160000	1900	2800	1,330	**7921A**	37425/37625*	TIMKEN	
110	170		38		38	29		2,5	2,0	0,43	1,4	0,8	**2007122A**		240000	392000	1800	2600	3,080	**2007122A**	32022X	SKF	T4DC110
110	180		56		56	43		2,5	2,0	0,43	1,4	0,8	**3007722A****		358000	631000	1700	2400	5,490	**3007722A****	33122	SKF	T3EE110
110	200		56		53	46		3,0	2,5	0,43	1,4	0,8	**7522A**		402000	570000	1700	2400	7,370	**7522A**	32222A	SKF	
110	240		54,5		50	42		4,0	3,0	0,35	1,7	1	**7322A**		503000	626000	1500	2000	11,040	**7322A**	30322A	SKF	T2GB110
114,3	152,4		21,433		21,433	17		1,8	1,8	0,71	1,46	0,8	**7923A****		87200	179000	1400	1900	1,080	**7923A****	L623143/L-623110	TIMKEN	
115	190		48,5		49	35		3,0	3,0	0,40	1,49	0,82	**7723A**		318000	515100	1800	2000	5,215	**7723A**			
120	215		61,5		58	50		3,0	2,5	0,44	1,38	0,76	**7524AKM**		505000	767000	1600	2200	9,110	**7524AKM**	32224	SKF	
120	165		36		36	30		1,5	1,5	0,3	1,97	1,08	**3007924A**		206000	423000	1700	2400	2,330	**3007924A**			
120	180		38		38	29		2,5	2,0	0,46	1,3	0,7	**2007124A****		243000	408000	1700	2400	3,250	**2007124A****	32024X	SKF	T4DC120
120	180		41		40	33		2,3	0,7	0,31	1,97	1,08	**7824AXM**		293000	462000	1600	2000	3,400	**7824AXM**			
129,96	230		68,75		71,5	54,5		4,0	3,0	0,26	2,27	1,25	**7726XM**		574000	866000	1500	2000	11,740	**7726XM**			
130	230		67,75		64	54		4,0	3,0	0,43	1,4	0,8	**7526A**		567000	924000	1500	2000	11,830	**7526A**	32226	SKF	T4FD130

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).
** Precision bearings.

TAPER ROLLER BEARINGS

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation	Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0		dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
133,35	173,038		19,05		17,5	14,288		1,3	1,3	0,35	1,73	0,95	**7927A****	96900	173000	1600	2200	1,033	**7927A****	LL327049/ LL327010	TIMKEN	
140	190		32		32	25		2,0	1,5	0,36	1,67	0,9	**2007928A**	211000	403000	1600	2200	2,560	**2007928A**	32928	SKF	T2CC140
140	190		38,25		35	33		1,8	1,8	0,33	1,83	1,0	**3007928XM**	199000	402000	1700	2400	3,025	**3007928XM**			
140	190		44		43	37		1,8	1,8	0,33	1,8	0,99	**807928A1XM**	239000	518000	1600	2200	3,600	**807928A1XM**			
140	210		45		42	36		2,5	2,0	0,37	1,62	0,89	**2007128****	292000	476000	1600	2200	5,046	**2007128****	32028	SKF	
140	210		45		45	34		2,5	2,0	0,46	1,31	0,72	**2007128A**	330000	585000	1600	2200	5,250	**2007128A**	32028X	SKF	
140	210	218	40,59	15	46	32,5	7	2,3	2,3	0,22	2,73	1,5	**67928Л1****	289000	471000		2700	5,019	**67928Л1****			
150	225		48		48	36		3,0	2,5	0,46	1,3	0,7	**2007130A**	380000	666000	1500	2000	6,460	**2007130A**	32030X	SKF	T4EC150
150	270		77		73	60		4,0	3,0	0,43	1,4	0,8	**7530A**	735000	1210000	1200	1700	18,640	**7530A**	32230	SKF	T4GD150
160	240	248	47,625	17	50	38,625	8	2,5	3,0	0,25	2,39	1,31	**67732Л****	321000	567000		2400	7,436	**67732Л****			
160	240		51		48	41		3,0	2,5	0,37	1,62	0,89	**2007132****	396000	669000	1300	1800	7,919	**2007132****	32032	SKF	
165,1*	336,55*		92,075		95,25	69,85		3,3	6,4	0,37	1,62	0,9	**7433M**	1160000	1730000	800	1000	38,100	**7433M**	HH437549/ HH437510*	TIMKEN	
170	230		38		36	31		2,5	2,0	0,46	1,29	0,71	**2007934**	286000	585000	1400	1900	4,400	**2007934**	32934		
170	230		38		35	31		2,5	2,5	0,46	1,29	0,71	**2007934K1****	228000	437000	1400	1900	4,300	**2007934K1****	32934	SKF	
170	310		57		52	43		5,0	4,0	0,43	1,4	0,8	**7234A**	625000	877000	1000	1500	16,950	**7234A**	30234	SKF	T4GB170
180	250		47		45	37		3,0	2,5	0,48	1,25	0,69	**1007936Л****	286000	549000	1200	1700	6,254	**1007936Л****	JM736149/ JM736110	TIMKEN	
180	280		64		60	52		2,5	2,5	0,28	2,16	1,19	**2007136****	540000	903000	1100	1600	13,400	**2007136****	32036	SKF	
185	235		39		38	31		2,0	2,0	0,38	1,57	0,9	**7737**	259000	583000	1250	1600	3,924	**7737**			
185	235		39		45	31		2,0	2,0	0,38	1,6	0,86	**7737Л****	242000	534000	1250	1600	5,319	**7737Л****			
190	260		45		42	36		2,5	2,0	0,38	1,56	0,86	**2007938****	335000	633000	1100	1600	6,540	**2007938****	32938	SKF	
190	260		45		45	34		2,5	2,0	0,45	1,25	0,7	**2007938A**	350000	650000	1100	1600	6,650	**2007938A**	32938		
190	260	273	45,5	17,5	49	36	8	2,5	2,5	0,28	2,12	1,17	**67738Л****	329000	610000		1800	7,580	**67738Л****			
190	290		64		64	48		3,0	2,5	0,29	2,06	1,13	**2007138K**	568000	983000	1000	1500	14,500	**2007138K**	32038X	SKF	T4FD190
190	290		64		60	52		2,5	2,5	0,29	2,06	1,13	**2007138****	568000	983000	1000	1500	14,400	**2007138****	32038	SKF	
190	340		97		92,	75		5,0	4,0	0,44	1,38	0,8	**7538A**	1160000	1910000	900	1300	36,850	**7538A**	32238	SKF	T4GD190
196,85*	241,3*		23,812		23,017	17,462		0,7	0,7	0,43	1,38	0,76	**7939A**	150000	311000	1000	1250	2,107	**7939A**	LL639249/ LL639210*	TIMKEN	
200	310		70		66	56		2,5	2,5	0,38	1,59	0,88	**2007140****	653000	1180000	950	1400	18,500	**2007140****	32040	SKF	
200	420		107		97	66		5,0	5,0	0,83	0,73	0,40	**1027340M**	1200000	1680000	630	800	61,620	**1027340M**			
206,375	336,550		98,425		100,012	77,788		3,3	3,3	0,33	1,82	1,00	**7441M**	1170000	2200000	900	1300	34,645	**7441M**	H242649- H242610	SKF	
210	300		40		40	32		2,1	2,1	0,27	2,22	1,22	**2007442Л****	269000	476000	1000	1500	9,137	**2007442Л****			
220	300		51		51	39		3,0	2,5	0,43	1,4	0,8	**2007944A****	487000	983000	1000	1500	10,000	**2007944A****	32944	FAG	T3EC220
220	300	314	51,5	19,5	56	41	9	2,5	2,5	0,31	1,94	1,06	**67744Л****	406000	811000		1600	11,900	**67744Л****			
220	340		76	72	62			4,0	4,0	0,35	1,73	0,95	**2007144ЛМУ**	790000	1300000	900	1400	25,270	**2007144ЛМУ**	32044.MPS.P6	KRW	
228,6	400,05		88,9		87,312	63,5		10,5	3,3	0,44	1,36	0,75	**7846Л****	1100000	1750000	830	1100	42,870	**7846Л****	EE430900/ 431575	TIMKEN	
240	300		28		28	28		2,0	2,0	0,36	1,65	0,9	**1007748Л****	134000	298000	1200	1700	4,840	**1007748Л****			
240	320		51		51	39		3,0	2,5	0,46	1,3	0,7	**2007948A****	516000	1090000	900	1300	10,850	**2007948A****	32948	SKF	T4EC240
240	320		51		48	41		3,0	2,5	0,45	1,34	0,74	**2007948**	512000	1080000	850	1200	10,900	**2007948**	32948		
240	320	334	51,5	19,5	56	41	9	3,0	3,0	0,33	1,8	0,99	**67848Л****	425000	884000		1500	11,650	**67848Л****			
240	360		76		72	62		3,0	3,0	0,31	1,89	1,04	**2007148****	802000	1500000	850	1200	26,000	**2007148****	32048X	SKF	
240	360		76		76	57		3,0	3,0	0,31	1,89	1,04	**2007148KM**	802000	1500000	850	1200	25,600	**2007148KM**			
241,3*	327,025*		52,388		56	41		6,4	3,3	0,33	1,8	0,99	**7948Л1****	425000	884000	940	1300	12,270	**7948Л1****	8578/8520	TIMKEN	
247,56*	368,3*		63,5		63,5	48		6,4	3,3	0,41	1,47	0,81	**2007850**	743000	1630000	800	1100	23,318	**2007850**			
257,175*	342,9*		57,15		57,15	44,45		6,4	3,3	0,35	1,7	0,9	**7952A**	621000	1340000	850	1200	14,640	**7952A**	M349549- M349510*	TIMKEN	

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).
** Precision bearings.

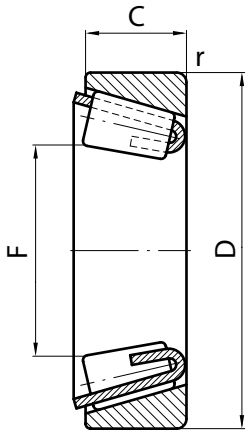
TAPER ROLLER BEARINGS

TYPE 7000, 27000, 67000, 137000, 147000, 807000, 1007000, 1027000, 2007000, 2067000, 3007000

Dimensions, mm										Load factor			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T	T_1	B	C	C_1	r min	r_1 min	e	Y	Y_0			dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
260	325,438		36		38	30		2,5	2,5	0,3	2,01	1,1	**3007752Л2****		233000	508000	700	950	6,200	**3007752Л2****			
260	360		63,5		63,5	48		3,0	2,5	0,41	1,5	0,8	**2007952A****		743000	1630000	850	1200	19,094	**2007952A****	32952	FAG	
260	360	377	64,5	22,5	67	52	10	2,5	2,5	0,37	1,62	0,89	**67852Л1****		630000	1230000		1400	23,200	**67852Л1****			
270	310		22		21,8	19		1,3	1,3	0,33	1,8	0,99	**7754M**		141000	361000	800	1100	2,430	**7754M**			
285	330		24		23	19		1,3	1,3	0,35	1,72	0,95	**7757A**		162000	431000	800	1100	3,160	**7757A**			
304,8*	444,5*		63,5		61,912	39,688		8,0	1,5	0,37	1,6	0,88	**7961**		756000	1450000	400	500	30,000	**7961**	EE291201/291750*	TIMKEN	
330	375		24		23,4	18		1,3	1,3	0,4	1,5	0,9	**7866A**		173000	496000	630	800	3,530	**7866A**			
360	530		79,25		66	58,5		4,7	4,7	0,4	1,49	0,8	**7772Л2****		1010000	1750000	400	500	52,180	**7772Л2****			
406,4*	508*		61,912		61,912	47,625		3,3	3,3	0,37	1,6	0,9	**7781M**		842000	2010000	560	750	27,320	**7781M**	L467549/L467510*	SKF	
415,925*	590,55		114,3		114,3	88,9		6,4	6,4	0,33	1,82	1,0	**7983**		2090000	4550000	315	400	95,900	**7983**	M268749-M268710*	TIMKEN	
500	670		85		78	60		6,0	6,0	0,43	1,4	0,76	**10079/500M**		1365000	3950000	250	400	76,000	**10079/500M**			
539,75*	635*		50,8		50,8	38,1		6,4	6,4	0,4	1,48	0,81	**79/540**		711000	1820000	315	400	26,720	**79/540**	LL575349/LL575310*	TIMKEN	
710	950		114		106	80		6,0	6,0	0,457	1,31	0,72	**10079/710M**		2584000	6108000	160	200	210,000	**10079/710M**			

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).
** Precision bearings.

SINGLE-ROW TAPER ROLLER BEARINGS WITHOUT INNER RINGS



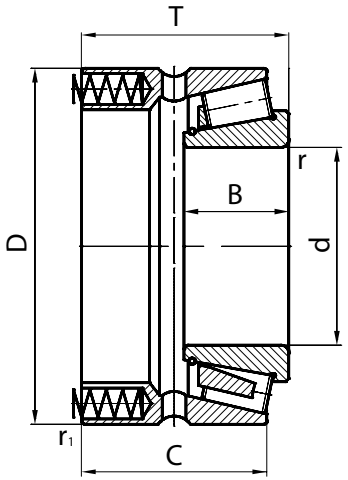
The bearings are applied, when the reduction radial unit dimensions is needed. The raceway is machined directly on the shaft. Hardness and accuracy of the raceway surface must be the same as that of the bearing ring.

Dimensions, mm				Load factor			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
D	C	F	r min	e	Y	Y_0			Cr	Cor	grease	oil	m	epk	analogue
44,477	9,6	28,07	1,0	0,48	1,25	0,69	**977906K1**		15700	14700	6300	8000	0,059	**977906K1**	
49,225*	11	33,02	1,0	0,55	1,1	0,6	**977907K1**		15200	14800	6300	8000	0,081	**977907K1**	
58	17	33,02	0,6	0,55	1,1	0,6	**877907**		15200	14800	5000	6300	0,214	**877907**	
66	12	40,62	1,0	0,57	1,1	0,58	**977908K**		29600	28900	4000	5000	0,176	**977908K**	
72	14	46,673	1,3	0,76	0,79	0,43	**977909**		40700	40800	4000	5000	0,251	**977909**	
72	14	46,673	1,3	0,76	0,79	0,43	**977909K1**		39200	39200	4000	5000	0,250	**977909K1**	

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

TAPER ROLLER BEARINGS

PRECISION SINGLE-ROW TAPER ROLLER BEARINGS WITH SPRINGS ON OUTER RING



The bearings are designed for accommodation of radial and axial loads simultaneously. They are equipped with extended outer ring with holes for springs. The springs allow keeping of specified pre-load of bearing in the assembled unit. The value of pre-load is provided by installation of required number of springs. Extended outer ring permits to reduce possible misalignment of the ring in the housing.
The bearings are mounted in rear spindle support in combination with single- or double-row bearings in the front support.

TYPE 17000

Dimensions, mm							Load factor			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	T	B	C	r min	r_1 min	e	Y	Y_0			Cr	Cor	grease	oil	m	epk	analogue	
50	90	57,70	28,5	51,30	1,5	0,3	0,30	1,97	1,08	**17810Л**		74800	86800		5700	1,210	**17810Л**	111050/111090P*	GAMET
60*	100*	52,44	26,5	46,88	2 ,0	0,9	0,35	1,73	0,95	**17712ЛК**		81000	101000		4500	1,200	**17712ЛК**	113060/113100P*	GAMET
65	120	65,44	32,0	59,88	1,8	0,5	0,30	1,98	1,09	**17713Л**		117000	158000		4400	2,670	**17713Л**	130065/130120P*	GAMET
70	120	65,44	32,0	59,88	2,0	0,5	0,30	1,98	1,09	**17814Л**		117000	158000		4400	2,540	**17814Л**	130070/130120P*	GAMET
75*	130*	66,75	33,5	60,5	2,5	0,3	0,21	2,84	1,56	**17715ЛК**		135000	167000		4100	2,522	**17715ЛК**	133075/133130P*	GAMET
80	140	77,07	38,5	69,14	3,0	0,5	0,24	2,46	1,35	**17716Д4**		153000	211000		3800	2,990	**17716Д4**	140080/140140P*	GAMET
80	140	77,07	38,5	45,64	2,3	0,5	0,24	2,46	1,35	**17716Л4**		153000	211000		3800	3,110	**17716Л4**	140080/140140P*	GAMET
85	135	67,00	38,5	59,00	2,5	0,5	0,24	2,46	1,35	**17917Л1**		160000	223000		3800	2,606	**17917Л1**		
85*	140*	77,07	38,5	69,14	2,3	0,5	0,24	4,11	2,70	**17717Л**		153000	211000		3800	3,230	**17717Л**	140085/140140P*	GAMET
90	140	62	30,5	56	2,0	0,5	0,26	2,3	1,28	**17818Л**		112000	146000		3700	2,880	**17818Л**		
95*	152,4*	68,5	33,75	62	2,0	0,5	0,25	2,37	1,30	**17819Л**		149000	201000		3400	3,450	**17819Л**	131095/131152XP*	GAMET
95*	152,4*	83,9	42	75,8	2,5	0,6	0,25	2,41	1,33	**17719ЛК**		194000	279000		3400	4,274	**17719ЛК**	160095/160152XP*	GAMET
98,425	152,4	83,9	42	76	0,7	0,5	0,25	2,41	1,33	**17920Л**		194000	279000		3300	4,110	**17920Л**	160098X/ 160152XP*	GAMET

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

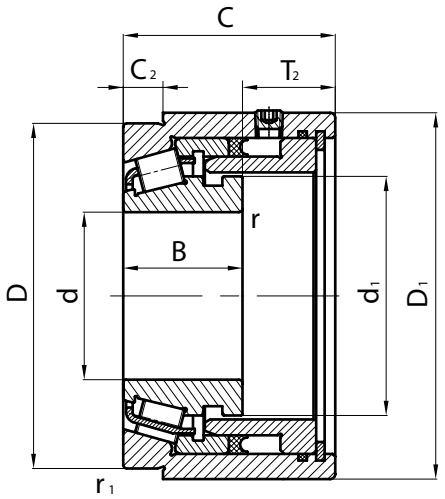
TAPER ROLLER BEARINGS

TYPE 17000

Dimensions, mm							Load factor			Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
												dynamic	static	lubricant					
d	D	T	B	C	r min	r_1 min	e	Y	Y_0			Cr	Cor	grease	oil	m	epk	analogue	
100	180	92	46	84	1,8	0,7	0,18	3,33	1,83	**17720Л**		246000	354000		3000	8,407	**17720Л**	180100/180180P*	GAMET
110	170	73	39,5	63,5	2,3	0,7	0,30	2,00	1,10	**17722Л1**		175000	273000		3000	4,822	**17722Л1**		
115*	165*	60	31	55	2,5	1,0	0,26	2,31	1,27	**17723Л**		113000	171000		3000	2,600	**17723Л**		
120	180	88,65	44	80,5	2,5	0,6	0,30	2,03	1,11	**17724Л1**		216000	341000		2800	6,290	**17724Л1**		
120	190	98,4	50	88,8	2,5	0,6	0,27	2,23	1,23	**17824Л**		267000	413000		2700	7,780	**17824Л**		
140	190	80	38	73	2,0	0,5	0,33	1,81	1,00	**17828Л**		154000	291000		2600	5,344	**17828Л**		
170	230	90,35	35	83	2,3	0,7	0,43	1,40	0,77	**17934**		228000	437000		1900	8,300	**17934**		
180	235	77,55	37	70	2,0	0,5	0,22	2,77	1,52	**17836Л**		198000	367000		2100	6,690	**17836Л**		
190	290	119,09	52	108	2,5	0,9	0,38	1,58	0,87	**17838Л**		406000	657000		1800	23,730	**17838Л**		
220	300	100	56	89,5	2,5	0,5	0,31	1,94	1,06	**17744Л**		406000	811000		2000	23,800	**17744Л**		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

PRECISION SINGLE-ROW TAPER ROLLER BEARINGS WITH ADJUSTING PRE-LOAD, SPECIAL DESIGN

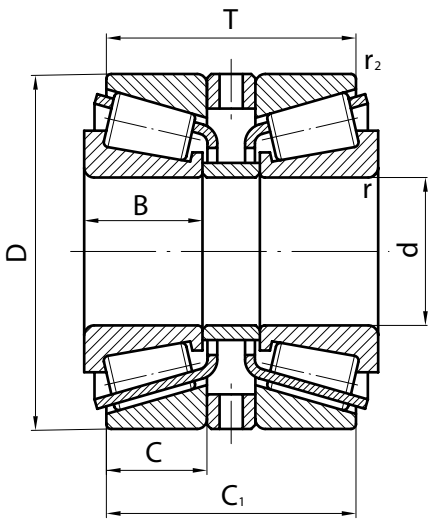


Adjustment of the pre-load value in the bearings is achieved with hydraulic method, by means of changing the value of operating pressure of oil injected into a pre-load adjustment cell. When keeping up the oil pressure at a constant level pre-load is not changed, even when various thermal expansion is observed in the bearings, in a spindle and in the housing during operation.
Pressure adjustment during operational cycle allows adjusting bearing pre-load, depending on the rotational speed and load. The bearings are installed in the rear support of high-precision spindle unit, in the working tools operating in a wide range of speeds and loads.

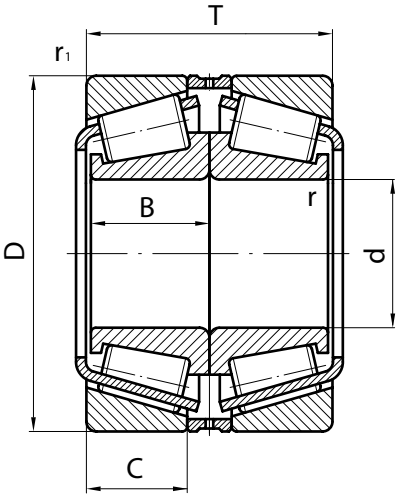
TYPE 117000

Dimensions, mm										Load factor			Bearing designation	Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation			
d	D	D_1	T_2	B	C	C_2	d_1	r min	r_1 min	e	Y	Y_0		dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue		ISO 355
70	122	132	33	37	69	13	91,4	2,0	1,0	0,30	1,98	1,09	**117714**	130000	182000		4000	3,315	**117714**			
160	227	235	35	45	80	15	187	1,1	1,1	0,42	1,43	0,78	**117732K**	153000	263000		2000	9,544	**117732K**	JP16049P/JP16019HR	TIMKEN	
219	300	315	39	69,5	106	20	260,5	3,0	3,0	0,31	1,94	1,06	**117944**	482000	1020000		1500	22,127	**117944**			

PAIRED SINGLE-ROW TAPER ROLLER BEARINGS



7000У2, 897000, 20071000АУ2У, 3007000АУ2



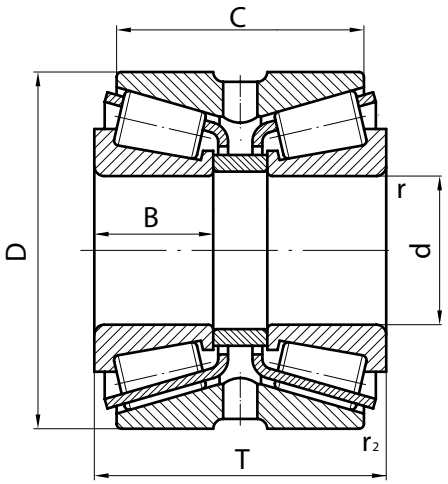
1027000АУ2/Х, 3007000АУ2/Х

The bearing of a special design, consisting of two single-row bearings. When mounting into the unit the adjustment of axial clearance is not required.

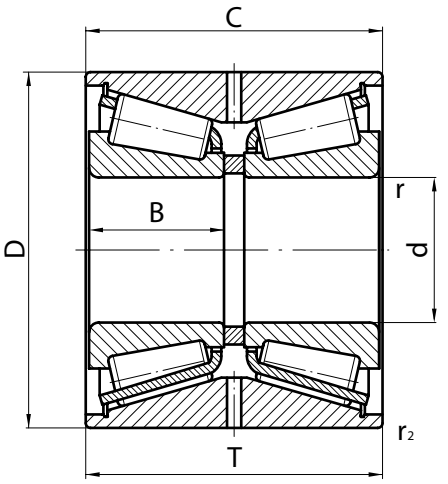
TYPE 7000У2, 897000, 20071000АУ2У, 3007000АУ2, 1027000АУ2/Х, 3007000АУ2/Х

Dimensions, mm									Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}	Mass, kg	Bearing designation		
d	D	T	B	C	C_1	r min	r_1 min	r_2 min	e	Y_1	Y_2	Y_0			dynamic Cr	static Cor	lubricant grease	m	epk	analogue	
60	110	83,1	38	29		2,0		0,5	0,4	1,67	2,49	1,63	3007212АУ2		297000	491000	2000	3,330	3007212АУ2		
65	140	115	33	28	99	2,5		0,9	0,34	1,91	2,91	1,96	897713АК		356000	492000	2600	5,890	897713АК		
90	140	78	39	32,5		0,5	1,5		0,27	2,51	3,70	2,45	3007118АУ2/Х		367000	696000	1600	4,540	3007118АУ2/Х	33018К11	SKF
90	190	93	43	30		1,0	3,0		0,83	0,81	1,20	0,8	1027318АУ2/Х		477000	722000	1400	11,990	1027318АУ2/Х	31318К11	SKF
120	180	89	38	29	71	2,5	2,0	2,0	0,46	1,47	2,19	1,44	2007124АУ2У		417000	815000	1250	8,220	2007124АУ2У		
185	235	85	38	31	69	2,0		0,3	0,38	1,76	2,62	1,72	7737У2		443000	1170000	1600	8,448	7737У2		

DOUBLE-ROW TAPER ROLLER BEARINGS



57000, 97000, 1097000, 2097000



597000

The bearings are designed to accommodate radial and double-direction axial loads. The contact angle of the outer ring raceways α = 10°...17°. Permissible axial load of bearings Fa ≤ 0,4Fr' (Fr' – unused permissible radial load). The value of permissible radial load is 1.7 times higher than it can be for corresponding single-row bearing. During mounting into the unit the adjustment of axial clearance is not required.

TYPE 57000, 97000, 597000, 1097000, 2097000

Dimensions, mm							Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
													dynamic	static	lubricant					
d	D	T	B	C	r min	r_2 min	e	Y_1	Y_2	Y_0			Cr	Cor	grease	oil	m	epk	analogue	
30	62	49,625	20	41	1,0	0,3	0,36	1,85	2,75	1,81	**97506A**		94400	129000	5000	6300	0,661	**97506A**		
30	72	63,5	27	52	1,5	0,5	0,31	2,14	3,2	2,09	**97606АУ**		139000	179000	4000	5000	1,220	**97606АУ**		
35	80	57	23,3	45	1,5	0,3	0,55	1,24	1,84	1,2	**57707АУ**		118000	171000	4500	5800	1,267	**57707АУ**		
45	85	54,625	23	45	1,5	0,5	0,42	1,62	2,42	1,59	**97509A**		148000	214000	4000	5000	1,089	**97509A**		
50	90	54,625	23	45	1,5	0,5	0,42	1,6	2,4	1,57	**97510A**		157000	232000	3200	4000	1,360	**97510A**		
50	90	64	28,5	51,3	1,5	0,3	0,31	2,21	3,29	2,16	**97810Л1****		125000	168000		5700	1,649	**97810Л1****	111050/111090E	GAMET
60	110	54	22	44	1,8	0,5	0,4	1,57	2,45	1,55	**97212A**		189000	267000	2300	2900	1,970	**97212A**		
60	110	64,625	28	55	2,0	0,5	0,4	1,67	2,5	1,63	**97512A1**		237000	357000	2800	3600	2,537	**97512A1**		
66,675*	110*	52,388	26,194	46,038	0,8	0,3	0,43	1,55	2,3	1,52	**97913A**		183000	330000	2800	3600	1,980	**97913A**	395A-394D*	TIMKEN
75	130	74,625	31	62	2,0	0,5	0,44	1,55	2,3	1,52	**97515A1**		295000	463000	2600	3200	3,732	**97515A1**		
75	130	79	37	66	1,8	0,5	0,22	3,07	4,57	3	**97815Л****		268000	412000		2400	3,905	**97815Л****		
80	140	79,625	33	65	2,5	0,6	0,4	1,68	2,5	1,64	**97516A**		339000	525000	2200	2800	4,574	**97516A**		
90	140	68	30,5	56	2,0	0,5	0,41	1,64	2,43	1,62	**97818Л****		192000	292000		3000	3,410	**97818Л****		
90	145	84	38	69	2,0	0,5	0,26	2,58	3,85	2,53	**97718Л****		280000	473000		2500	5,600	**97718Л****		
90	160	77,25	30	64	2,5	0,6	0,35	1,78	2,54	1,89	**97218A**		357000	536000	1600	2000	5,870	**97218A**		
90	160	95,25	40	78	2,5	0,5	0,42	1,6	2,4	1,57	**97518A**		470000	761000	2000	2600	7,220	**97518A**		
95	145	84	38	69	1,8	0,5	0,4	1,57	2,55	1,42	**97919Л****		280000	471000		2500	5,110	**97919Л****		
95	170	47,675	20,638	43	1,5	0,5	0,59	1,14	1,7	1,11	**97921P**		169000	321000	1500	1900	4,785	**97921P**		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

** Precision bearings.

TAPER ROLLER BEARINGS

TYPE 57000, 97000, 597000, 1097000, 2097000

Dimensions, mm							Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
d	D	T	B	C	r min	r_2 min	e	Y_1	Y_2	Y_0			dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue	
100	150	92	42	76	2,0	0,5	0,4	1,56	2,45	1,39	**97920Л****		327000	545000		2400	5,260	**97920Л****		
100	180	111,25	46	92	3,0	0,9	0,42	1,6	2,4	1,57	**97520А**		585000	967000	1700	2200	11,070	**97520А**		
101,6*	165,1*	106,35	49,5	114,3	2,0	0,9	0,26	2,56	3,8	2,5	**597820ЛКУ**		421000	783000	2000	2500	10,273	**597820ЛКУ**		
105	190	117,25	50	96	3,0	0,9	0,42	1,6	2,4	1,57	**97521А**		629000	1110000	1500	2000	13,470	**97521А**		
110	180	103	38	84,37	3,0	0,8	0,46	1,47	2,19	1,44	**97822У**		417000	815000	1500	2000	9,880	**97822У**		
120	180	96,8	44	80,5	2,5	0,6	0,2	2,8	3,9	2,5	**97724Л1****		364000	668000		2500	8,020	**97724Л1****		
120	195	126	57,15	131,35	3,0	1,1	0,26	2,55	3,8	2,5	**597824МУ**		668000	1330000	1600	2000	14,624	**597824МУ**		
129,96	230	149,25	71,5	150	4,0	1,1	0,26	2,55	3,8	2,49	**597826ХКМ1У**		984000	1730000	1300	1600	25,192	**597826ХКМ1У**		
129,96	250	149,25	71,5	156,8	4,0	1,1	0,26	2,55	3,8	2,5	**597026ХМУ**		984000	1730000	1300	1600	34,712	**597026ХМУ**		
129,96	250	149,25	71,5	160	4,0	1,1	0,26	2,55	3,8	2,5	**597726ХМУ**		984000	1730000	1300	1600	35,012	**597726ХМУ**		
129,96	250	160	71,5	160	4,0	1,1	0,26	2,55	3,8	2,5	**597126ХМУ**		984000	1730000	1300	1600	37,800	**597126ХМУ**		
130	210	109,25	42	90	2,5	0,6	0,37	1,83	2,7	1,8	**2097726КМ**		501000	951000	1000	1300	13,546	**2097726КМ**		
130	230	149,25	64	120	4,0	1,0	0,44	1,55	2,3	1,52	**97526А**		972000	1850000	1250	1600	25,380	**97526А**		
140	210	88,25	42	69	2,5	0,6	0,31	1,83	2,72	1,77	**2097128М**		501000	951000	1000	1300	9,980	**2097128М**		
150	250	137,25	60	112	3,0	0,9	0,24	2,76	4,1	2,7	**2097730КМ**		918000	1710000	1250	1600	24,787	**2097730КМ**		
150	250	175	72,6	175	3,0	1,7	0,26	2,55	3,8	2,5	**597830ХМУ**		943000	1940000	1300	1600	33,268	**597830ХМУ**		
158,75*	225,425*	85,725	39,687	69,85	3,5	0,5	0,37	1,8	2,7	1,76	**97432М**		446000	1060000	1600	2000	10,900	**97432М**	46780-46720CD*	TIMKEN
160	220	66	30	66	2,0	1,0	0,35	1,95	2,9	1,9	**597832Л**		231000	481000	1300	1800	7,690	**597832Л**		
160	270	87,25	41	86	2,0	2,0	0,38	1,76	2,62	1,72	**97938Р**		575000	1270000	1100	1400	21,458	**97938Р**		
177,8*	288,925*	142,875	52	111,125	2,5	0,9	0,38	1,78	2,65	1,74	**97936Л****		697000	1310000		1800	31,140	**97936Л****	HM237545/ HM237510CD*	TIMKEN
180	280	134	64	108	3,0	0,9	0,42	1,6	2,4	1,56	**2097136А**		1070000	2180000	1000	1250	29,290	**2097136А**		
180	300	163,25	72	134	4,0	1,0	0,26	2,62	3,9	2,56	**2097736М**		1310000	2620000	800	1250	42,500	**2097736М**		
200	250	70	30	70	1,5	1,0	0,41	1,65	2,5	1,6	**597840Л**		257000	588000	1000	1500	8,150	**597840Л**		
200	310	151	66	123	2,5	0,9	0,37	1,82	2,65	1,75	**2097140****		1120000	2350000		1300	39,200	**2097140****		
200	310	151	70	123	3,0	0,9	0,29	1,57	2,3	1,53	**2097140АМ**		1300000	2750000	1000	1250	39,390	**2097140АМ**		
200	340	151	66	123	3,0	1,0	0,37	1,82	2,65	1,75	**2097740М**		1700000	3380000	670	1000	63.884	**2097740М**		
209,550*	282,575*	101,6	46,038	82,55	3,5	0,8	0,51	1,34	1,99	1,31	**97842**		680000	1730000		1000	17.376	**97842**	67989/67920CD*	TIMKEN
220	300	126	56	105	2,5	0,5	0,16	4,32	6,51	4,25	**97944Л****		696000	1620000		1000	25,900	**97944Л****		
220	340	164	76	130	4,0	1,0	0,43	1,57	2,3	1,53	**2097144АМ**		1530000	3260000	800	1000	51,940	**2097144АМ**		
228,6*	358,775*	152,4	67	117,47	3,5	1,5	0,33	2,03	3,02	1,62	**97945К**		1270000	3260000	800	1000	56,800	**97945К**	M249732/ M249710CD*	TIMKEN
230	330	122	61	90,24	2,3	0,9	0,33	2,03	3,02	1,98	**97846Л****		729000	1770000		1500	31,529	**97846Л****		
231,775*	358,775*	152,4	67	117,47	6,4	1,5	0,33	2,03	3,02	1,62	**97946К**		1270000	3260000	630	1000	55,400	**97946К**	M249734/ M249710CD*	TIMKEN
240	320	110	55	90	3,0	0,9	0,33	2,03	3,02	1,98	**2097948Л1****		729000	1770000		1500	22,870	**2097948Л1****		
240	320	128	56	107	3,0	0,9	0,33	2,03	3,02	1,98	**97848ЛУ****		721000	1740000		1500	26,450	**97848ЛУ****		
240	360	165	76	130	4,0	1.0	0.32	2,13	3,17	2,08	**2097148КМ**		1375000	2998000	800	1000	54.160	**2097148КМ**		
240	360	164	72	130	4,0	1,1	0,34	2,13	3,17	2,08	**2097148М**		1351000	2932000	800	1000	53,800	**2097148М**		
240	400	209	95	168	4,0	1,5	0,31	2,21	3,30	2,16	**2097748М**		2290000	4590000	630	800	98,146	**2097748М**		
254*	358,775*	152,4	67	117,47	3,5	1,5	0,33	2,03	3,02	1,62	**97951**		1270000	3260000	630	1000	45,300	**97951**	M249749/ M249710CD*	TIMKEN
260	360	112	56	112	2,1	1,1	0,37	1,82	2,7	1,8	**597852Л**		869000	1860000	630	800	32,560	**597852Л**		
260	360	133	67	109	2,5	0,9	0,37	1,82	2,71	1,78	**2097952Л****		1080000	2450000		800	39,400	**2097952Л****		
260	360	134	63,5	109	3,0	0,5	0,4	1,66	2,47	1,62	**2097952А**		1270000	3260000	630	800	39,632	**2097952А**		
260	400	185	87	146	5,0	1,5	0,43	1,55	2,3	1,52	**2097152АМ**		1990000	4310000	630	800	79,680	**2097152АМ**		
260,35*	419,1*	184,15	92,075	136,525	6,4	1,5	0,59	1,14	1,69	1,1	**927952Л****		1080000	2460000		800	93,030	**927952Л****	EE435102/ 435165DC*	TIMKEN
280	380	112	51	112	2,1	1,1	0,43	1,56	2,30	1,53	**597856Л**		826000	1900000	630	800	35,700	**597856Л**		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

** Precision bearings.

TAPER ROLLER BEARINGS

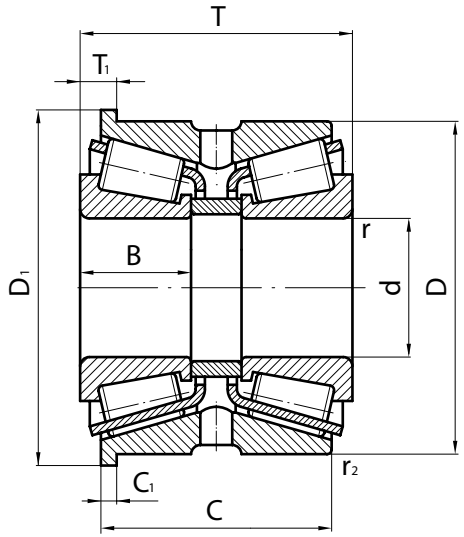
TYPE 57000, 97000, 597000, 1097000, 2097000

Dimensions, mm							Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
d	D	T	B	C	r min	r_2 min	e	Y_1	Y_2	Y_0			dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue	
300,038*	422,275*	174,625	82,55	136,52	6,4	1,5	0,33	2	3	1,99	**97960**		1920000	4790000	500	630	71,540	**97960**	HM256849/ HM256810CD*	TIMKEN
317,5*	444,5*	146,05	61,912	98,425	8,0	1,5	0,38	1,79	2,66	1,76	**97963**		1300000	2900000	500	630	61,300	**97963**	EE291250/291751CD*	TIMKEN
330,2*	482,6*	177,8	80,167	127	6,4	1,5	0,39	1,73	2,57	1,69	**97966M**		1960000	4270000	400	500	96,900	**97966M**	EE526130/526191CD*	TIMKEN
346,075*	488,95*	200,025	95,25	158,75	6,4	1,5	0,33	2,02	3	2	**97969Л****		2340000	5920000		500	112,500	**97969Л****	HM262749/ HM262710CD*	TIMKEN
368,249*	523,875*	214,312	101,6	169,86	6,4	1,5	0,32	2,13	3,17	2,08	**97974**		2940000	7220000	400	500	142,470	**97974**	HM265049/ HM265010CD*	TIMKEN
380	620	241	106	170	6,0	2,0	0,46	1,47	2,19	1,44	**1097776M**		3278000	6440000	320	400	243,920	**1097776M**		
406,4*	574,675*	157,162	78,581	106,36	6,4	1,5	0,49	1,36	2,03	1,33	**97981**		1660000	3760000	350	450	110,550	**97981**	NA285160/285228D*	TIMKEN
415,925*	590,55*	244,475	114,3	193,67	6,4	1,5	0,33	2,05	3,05	2	**97983**		3590000	9110000	320	400	197,740	**97983**	M268749/M268710CD*	TIMKEN
420	700	274	122	200	6,0	3,0	0,32	2,12	3,15	2,07	**1097784M**		4593000	4593000	300	300	402.000	**1097784M**		
479,425*	679,45*	276,225	125,588	222,25	6,4	1,5	0,33	2,04	3,0	2,0	**97996**		4710000	12300000	250	315	300,580	**97996**	M272749/M272710D*	TIMKEN
500	670	179	78	130	6,0	2,0	0,44	1,55	2,31	1,52	**10979/500M**		2341000	5900000	260	320	166,000	**10979/500M**		
560	820	258,5	115	185	6,0	3,0	0,39	1,71	2,54	1,67	**971/560M**		4716000	10650000	180	240	414,000	**971/560M**		
710	950	238	106	175	6,0	3,0	0,46	1,47	2,19	1,44	**10979/710M**		4430000	12220000	160	200	445,000	**10979/710M**		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

** Precision bearings.

DOUBLE-ROW TAPER ROLLER BEARINGS WITH FLANGED OUTER RING



697000, 2697000

The bearings are designed to accommodate radial and double-direction axial loads. The bearings are produced with a predetermined axial clearance. The flange on outer ring allows to simplifying the design of bearing unit, machining of mounting holes in the housing. Different number of rollers in bearing rows facilitates damping of resonant vibration of a spindle. Extended outer ring and increased cross section allow mounting without press fitting which quicken mounting and dismounting of the bearing.

TYPE 697000, 2697000

Dimensions, mm										Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
d	D	D1	T	T1	B	C	C_1	r min	r_2 min	e	Y_1	Y_2	Y_0			dynamic Cr	static Cor	lubricant grease	lubricant oil	m	epk	analogue	
45	75	81	77,588	9	20	69	4,95	1,0	0,3	0,39	1,72	2,56	1,68	**2697709A**		107000	177000		5000	1,078	**2697709A**		
50	90	100	54,625	10,8	23	45	6,0	1,5	0,5	0,42	1,6	2,39	1,57	**697510АШ2**		157000	232000		5600	1,432	**697510АШ2**		
50*	90*	94,76	64	11,11	29	51,3	4,76	2,0	0,3	0,3	2,23	3,32	2,18	**697810ЛК****		125000	168000		3200	1,643	**697810ЛК****	111050/111090H*	GAMET
55*	100*	104,5	65	10	29,5	54	4,5	2,0	0,3	0,34	2,0	2,99	1,96	**697711ЛКУ****		152000	224000		3200	2,050	**697711ЛКУ****	110055/110100HEO*	GAMET
60	100	104,5	58	10	26,5	47	4,7	1,3	0,3	0,35	1,95	2,9	1,9	**697712Л****		138000	200000		3200	1,690	**697712Л****	113060/113100H	GAMET
70	120	125,55	71,24	11,11	32	59,88	5,55	1,8	0,5	0,3	2,23	3,32	2,18	**697814Л****		200000	315000		3200	3,612	**697814Л****	130070/130120HE	GAMET
75	130	136	79	12	37	66	5,5	1,8	0,5	0,22	3,07	4,57	3,0	**697815Л****		268000	412000		2400	4,015	**697815Л****		
80	140	147	85	13,93	38,5	69,14	6,2	2,3	0,5	0,24	2,76	4,11	2,7	**697716Л****		268000	434000		2800	5,110	**697716Л****	140080/140140H	GAMET
85	140	146,34	85	14,28	38,5	69,14	6,35	2,3	0,5	0,24	2,76	4,11	2,7	**697817Л****		268000	434000		2700	4,725	**697817Л****	140085/140140HE	GAMET

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

** Precision bearings.

TAPER ROLLER BEARINGS

TYPE 697000, 2697000

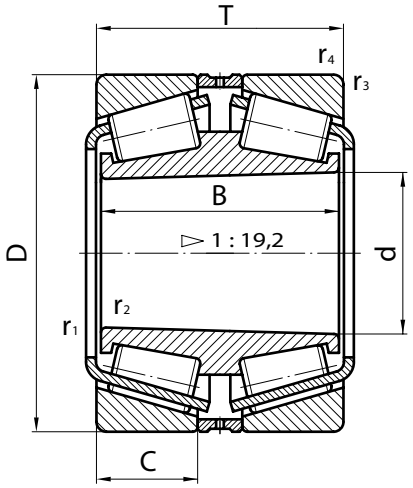
Dimensions, mm										Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
d	D	D1	T	T1	B	C	C_1	r min	r_2 min	e	Y_1	Y_2	Y_0			dynamic	static	lubricant					
																Cr	Cor	grease	oil	m	epk	analogue	
98,425	152,4	159,34	92	15	42	76	7,3	0,7	0,5	0,25	2,71	4,04	2,65	**697920Л1У****		327000	545000		2400	5,490	**697920Л1У****		
120	180	188	96,8	15,15	44	80,5	7,0	2,5	0,6	0,3	2,28	3,39	2,23	**697724Л1****		364000	668000		2000	8,000	**697724Л1****		
120	190	198	108	17,6	50	88,8	8,0	2,5	0,6	0,27	2,54	3,74	2,45	**697824Л****		450000	807000		2000	10,500	**697824Л****	184120/184190H	GAMET
120	200	208	84,05	19,86	38	64	10	2,3	0,3	0,46	1,47	2,19	1,44	**697924У****		417000	815000		2000	10,044	**697924У****		
127*	215,9*	224	110	17	47	92	8,0	2,5	1,0	0,22	3,07	4,57	3,0	**697725Л****		490000	926000		1800	14,300	**697725Л****	200127X/200215XH*	GAMET
133,35*	196,85*	204	92	18	38	76	10	2,5	0,6	0,33	2,04	3,04	1,99	**697927Л****		261000	574000		1800	8,393	**697927Л****		
140	190	198	87	12,7	38	73	5,9	2,0	0,5	0,33	2,04	3,04	2,0	**697828Л****		261000	574000		2000	6,880	**697828Л****		
140	210	218	100	15	46	84	7,0	2,3	0,7	0,22	3,07	4,57	3,0	**697928Л1****		489000	923000		2000	11,250	**697928Л1****		
160	240	248	110	17	50	92	8,0	2,5	0,9	0,25	2,69	4,0	2,63	**697732Л****		544000	1110000		1600	16,400	**697732Л****		
185	235	243	85	14	37	70	6,55	2,0	0,5	0,22	3,11	4,64	3,04	**697737Л****		337000	725000		1600	7,920	**697737Л****		
185	240	248	84,9	14	37	70	6,55	2,0	0,5	0,22	3,11	4,64	3,04	**697837Л**		338000	727000		1200	8,684	**697837Л**		
190	290	304	130	23	52	108	12,0	2,5	0,9	0,38	1,78	2,65	1,74	**697838Л****		697000	1310000		1300	28,040	**697838Л****		
234,95*	327,025*	336,55	122	25,4	61	90.24	9,52	6,0	1,5	0,33	2,03	3,02	1,98	**697847Л**		720000	1700000		1500	28.690	**697847Л**	244234X/244327XH*	GAMET
240	320	334	128,8	19,5	56	107	9,0	3,0	0,5	0,33	2,03	3,02	1,98	**697848ЛУ****		721000	1740000		1000	26,950	**697848ЛУ****		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

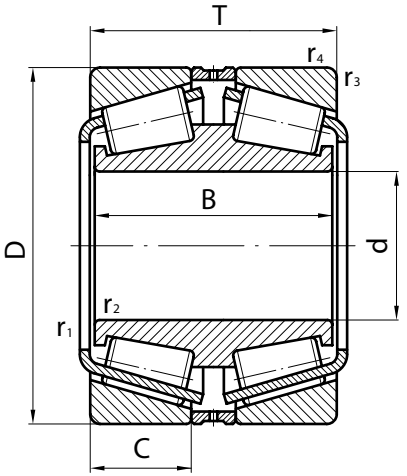
** Precision bearings.

TAPER ROLLER BEARINGS

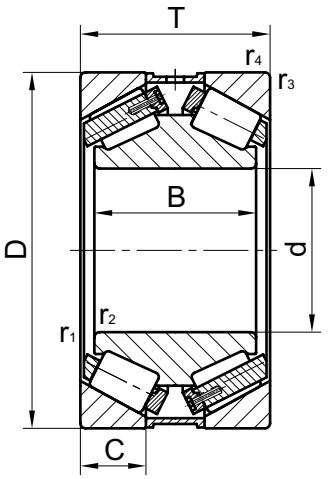
DOUBLE-ROW TAPER ROLLER BEARINGS WITH OUTER SPACER RING



347000



847000



40471000

The bearings are intended for accommodation of radial and double direction axial loads. Permissible radial load is 1.7 times higher than it can be for corresponding single-row bearing. During mounting into the unit the adjustment of axial clearance is not required.

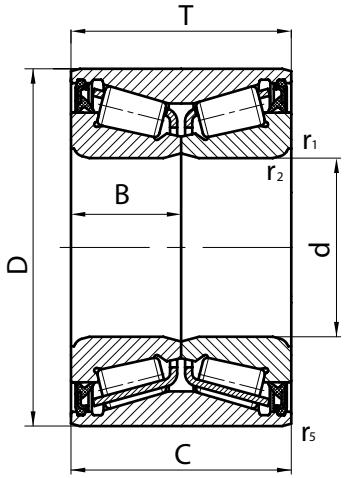
TYPE 347000, 847000

Dimensions, mm							Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}	Mass, kg	Bearing designation		
d	D	T	B	C	$r_{1,2}$ min	$r_{3,4}$ min	e	Y_1	Y_2	Y_0			dynamic Cr	static Cor	lubricant grease	m	epk	analogue	
66,675*	177,8*	114,3	107,95	37,308	1,0	3,3	0,8	0,85	1,26	0,83	**847713**		578000	828000	2000	14,890	**847713**		
95,25*	190,5*	114,3	115,062	44,45	0,5	3,3	0,42	1,61	2,4	1,58	**847719**		614000	1260000	1900	16,260	**847719**		
100,211*	168,275*	95,25	95,25	30,162	0,8	3,3	0,47	1,43	2,12	1,4	**347920M**		429000	797000	1600	8,730	**347920M**	688TD/672*	TIMKEN
219,075*	358,775*	196,85	200,025	85,725	1,5	6,4	0,33	2,03	3,02	2,03	**347944M**		2240000	4880000	700	86,770	**347944M**	H244848TD/ H244810*	TIMKEN
333,375*	469,9*	166,688	166,688	71,438	3,3	3,3	0,33	2	3	1,97	**847967XMУ**		2400000	5910000	630	91,732	**847967XMУ**	HM261049DW/ HM261010*	TIMKEN
333,375*	469,9*	166,688	166,688	71,438	3,3	3,3	0,33	2	3	1,97	**847967ЛМУ**		2150000	5220000	630	94,700	**847967ЛМУ**	HM261049DW/ HM261010*	TIMKEN
500	720	217	185	75	6,0	6,0	0,82	0,82	1,23	0,81	**40471/ 500ХЛМ**		2846000	6807000	260	236,420	**40471/500ХЛМ**		

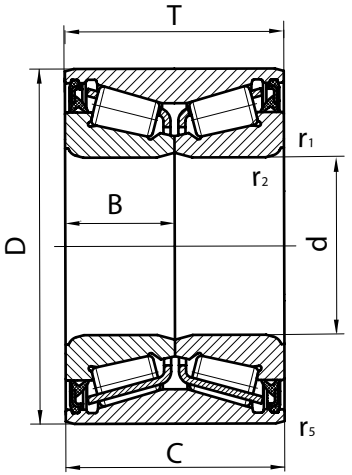
* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

TAPER ROLLER BEARINGS

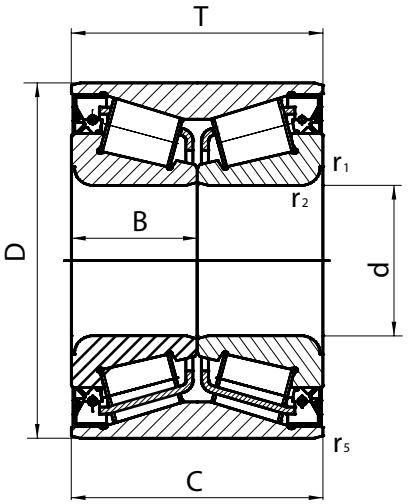
DOUBLE-ROW TAPER ROLLER BEARINGS WITH PREADJUSTED AXIAL CLEARANCE, GREASED AND SEALED



537000



537000K, 537000K1



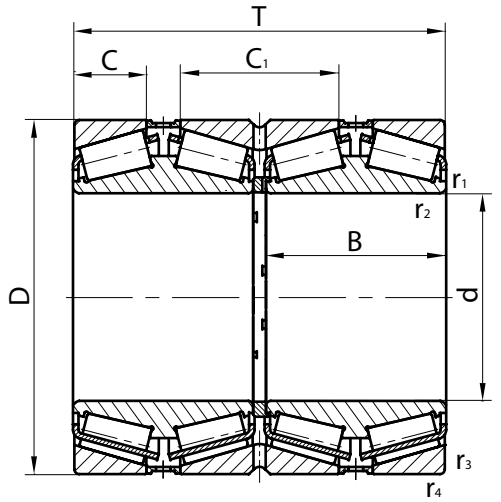
537000K2

The bearings have maximum load carrying capacity and minimum boundary dimensions. Selected clearance, lubricant, and its volume guarantee rating life of bearing.
Special seals protect bearings against loss of grease and from dust ingress. The bearings are mainly used in wheel hubs of front-wheel drive vehicle, they are also recommended for fan drives, drive shaft supports, and pulleys.

TYPE 537000, 537000K, 537000K1, 537000K2

Dimensions, mm							Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}	Mass, kg	Bearing designation		
d	D	T	B	C	r min	r_2 min	e	Y_1	Y_2	Y_0			dynamic Cr	static Cor	lubricant grease	m	epk	analogue	
25	52	37	18,5	37	0,60	1,0	0,37	1,80	2,68	1,76	**537905C17**		58500	75000	5000	0,367	**537905C17**	JRM2525	TIMKEN
30	60	37	18,5	37	3,10	0,2	0,43	1,55	2,30	1,50	**537906E1C35**		64800	90100	5000	0,476	**537906E1C35**		
34	64	37	18,5	37	3,30	1,0	0,47	2,21	3,29	2,16	**537907C17**		68600	99800	3700	0,556	**537907C17**	JRM3534	TIMKEN
35	64	37	18,5	37	3,56	1,2	0,47	1,43	2,13	1,40	**537707C17**		68600	99800	3700	0,556	**537707C17**	JRM3535/3564XD	TIMKEN
35	68	37	18,5	37	2,50	1,0	0,51	1,33	1,97	1,30	**537807C17**		69800	105000	3700	0,614	**537807C17**	JRM3935A/ JRM3968XD	TIMKEN
37	72	37	18,5	37	3,30	1,0	0,43	1,57	2,34	1,53	**537908C17**		81600	112000	3700	0,718	**537908C17**		
39	68	37	18,5	37	2,80	1,0	0,51	1,33	1,97	1,30	**537808C17**		69800	105000	3700	0,546	**537808C17**	JRM3939/ JRM3968XD	TIMKEN
39	72	37	18,5	37	3,80	1,0	0,50	1,30	1,97	1,29	**537708C17**		69800	105000	3700	0,673	**537708C17**		
49	84	43	21,5	43	3,3	1,5	0,46	1,47	2,19	1,44	**537909K1C17**		108000	156000	3200	0,941	**537909K1C17**		
49	84	43	21,5	43	3,3	1,5	0,46	1,47	2,19	1,44	**537909K2C17**		108000	156000	3200	0,941	**537909K2C17**		
49	84	43	21,5	43	3,3	1,0	0,45	1,49	2,23	1,46	**537909KC17**		108000	156000	3200	0,941	**537909KC17**	JXC25469C	TIMKEN
50	84	54	27	54	4,5	1,0	0,5	1,47	2,20	1,44	**537910C17**		108000	156000	3200	1,041	**537910C17**		
50	92	55	27,5	55	1,5	1,2	0,42	1,61	2,39	1,57	**537810AC17**		157000	232000	3200	1,543	**537810AC17**		

FOUR-ROW TAPER ROLLER BEARINGS



77000,1077000, 2077000, 3077000

The bearings are intended for accommodation of high radial and relatively light double- direction axial loads. Permissible radial loads are 3 times higher than it can be for corresponding single-row bearing. Permissible axial load Fa ≤ 0,2Fr' (Fr' – unused permissible radial load). During mounting into the unit the adjustment of axial clearance is not required, but it requires keeping strict sequence of rings mounting, mentioned in the bearing certificate.

Pressed cages with pins are made of steel.

They are used in metallurgical industry in supports of mill rollers.

TYPE 77000, 1077000, 2077000, 3077000

Dimensions, mm								Load factor				Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
														dynamic	static				
d	D	T	B	C	C_1	$r_{1,2}$ min	$r_{3,4}$ min	e	Y_1	Y_2	Y_0			Cr	Cor	m	epk	analogue	
200	310	273,5	132	56	123	2,1	2,1	0,43	1,57	2,34	1,53	**2077140AM**		2240000	5490000	75,016	**2077140AM**		
205	320	205	96	36	85	4,0	4,4	0,46	1,46	2,17	1,42	**77741M**		1600000	3430000	56,800	**77741M**	512055	FAG
220	340	303,5	146,5	59	130	4,0	3,0	0,43	1,57	2,34	1,53	**2077144AM**		2630000	6530000	100,000	**2077144AM**	BT4B328003/HA1	SKF
220,662*	314,325*	239,712	115,888	49,212	106,362	1,5	3,3	0,35	1,94	2,88	1,89	**77744XMУ**		1830000	4890000	57,530	**77744XMУ**	M2442490W-210-210D	TIMKEN
260	400	253,5	119	47	111	5,0	4,0	0,41	1,66	2,47	1,62	**77752M**		2260000	5290000	110,690	**77752M**	512056	FAG
269,875*	381*	282,575	141,3	59,5	119	3,3	3,3	0,34	1,97	2,94	1,93	**77754XM**		2690000	7360000	100,130	**77754XM**	M252349D-M252310-M252310D*	TIMKEN
287,375	440,000	282,500	87,0		128,0	5,0	1,5	0,55	1,24	1,84	1,21	**477752XЛМ**		2890000	6790000	192,660	**477752XЛМ**		
300	460	388,500	188,0	82,0	178	5,0	5,0	0,33	2,03	3,02	1,98	**2077160M**		4400000	10700000	225,400	**2077160M**		
300	500	348,5	167	57,5	131	5,0	5,0	0,7	0,96	1,44	0,94	**77760M**		3948000	9210000	270,000	**77760M**	534753	FAG
343,052	457,098	252,500	122,238	49,212	107,948	1,5	3,3	0,48	1,41	2,09	1,37	**77968XM**		2500000	7510000	116,300	**77968XM**	330661C	SKF
380	620	388	184	69,5	159	5,0	5,0	0,43	1,57	2,34	1,53	**3077776M**		3210000	6380000	463,000	**3077776M**	523695	FAG
384,175*	546,100*	400,05	191,5	82,55	182,15	3,3	6,4	0,33	2,04	3,03	1,99	**77877XKM**		5620000	16900000	307,750	**77877XKM**	HM266449D-410-410D*	TIMKEN
384,175*	546,100*	400,05	191,5	82,55	182,15	3,3	6,4	0,33	2,04	3,03	1,99	**77877XM**		5620000	16900000	307,750	**77877XM**	HM266449D-410-410D*	TIMKEN
395,000	545,000	287,500	120,000	55,000	119,000	2,0	4,0	0,54	1,26	1,87	1,23	**77779XM**		3430000	9330000	196,300	**77779XM**		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

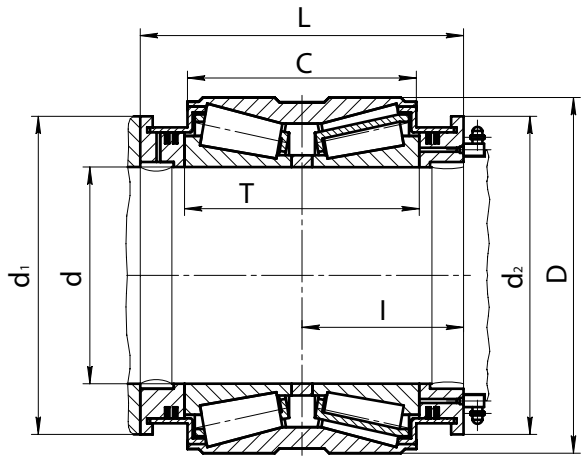
TAPER ROLLER BEARINGS

TYPE 77000, 1077000, 2077000, 3077000

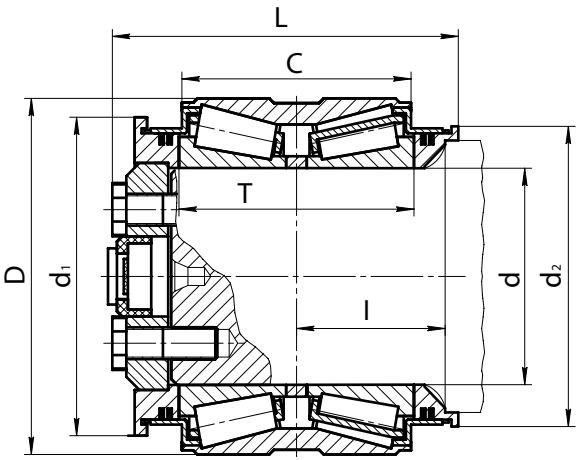
Dimensions, mm								Load factor				Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
														dynamic	static				
d	D	T	B	C	C_1	$r_{1,2}$ min	$r_{3,4}$ min	e	Y_1	Y_2	Y_0			Cr	Cor	m	epk	analogue	
431,8000*	635*	355,6	173,02	67,46	144,48	6,4	6,4	0,33	2,07	3,09	2,03	**77887XM**		5180000	14800000	339,600	**77887XM**	332060	SKF
447,675*	635*	463,55	223,84	95,25	206,375	3,3	6,4	0,33	2,03	3,02	1,99	**77890XKM**		6780000	20800000	488,840	**77890XKM**	176TQ09680BA1254*	TORRINGTON
450	595	368	178	75	162	3,0	6,0	0,33	2,07	3,09	2,03	**77790XM**		4690000	14580000	270,700	**77790XM**	M270448DW-410-410D	TIMKEN
480	700	418	200	80	180	6,0	6,0	0,32	2,10	3,13	2,05	**77196M**		6500000	17000000	577,000	**77196M**	549928	FAG
500	720	420	200	79	178	6,0	6,0	0,33	2,04	3,04	2	**771/500XM**		5660000	9050000	581,000	**771/500XM**		
500	830	568,5	272	104	234	7,5	7,5	0,34	1,80	2,68	1,76	**10777/500M**		11440000	28140000	1264,000	**10777/500M**	537904	FAG
530	880	542	260	100	222	7,5	7,5	0,46	1,47	2,19	1,44	**30777/530M**		10840000	29906000	1430,000	**30777/530M**		
560	920	618	300	115	250	7,5	7,5	0,4	1,68	2,5	1,64	**10777/560M**		13036000	33050000	1602,000	**10777/560M**	539193	FAG
585,788	196,3	479,425	230,188	96,838	212,725	3,3	6,4	0,33	2,07	3,08	2,02	**778/586XM**		10011300	29460000	596,550	**778/586XM**	567392	FAG
620	800	363	171,5	71	164	2,5	6	0,32	2,12	3,15	2,07	**777/620M**		6038000	18971000	479,000	**777/620M**	539110	FAG
630	920	515	245	94	213	7,5	7,5	0,43	1,57	2,34	1,53	**771/630M**		10899000	29261500	1079,000	**771/630M**	T360/630	TIMKEN
650	1030	558	273	107,5	229	7,5	12	0,32	2,12	3,15	2,07	**777/650M**		15949000	39184000	1775,000	**777/650M**	517237	FAG
750	1220	840	405	152	354	9,5	9,5	0,318	2,12	3,15	2,07	**10777/750M**		40400000	70000000	3952,000	**10777/750M**		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

AXLE-BOXES DOUBLE ROW TAPER ROLLER BEARINGS, CASSETTE TYPE



TBU 120



TBU

TYPE TBU

Dimensions, mm									Load factor				Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}	Mass, kg	Bearing designation		
															dynamic	static	lubricant				
d	D	T	C	L	I	d_1	d_2	d_3	e	Y_1	Y_2	Y_0			Cr	Cor	grease	m	epk	analogue	
120	195	126	131,35	180	90	175	175		0,26	2,55	3,8	2,5	**TBU 120**		654000	1297000	1600	19,00	**TBU 120**	TBU 120	SKF
129,96	230	149,25	150	240	100	194	194	165	0,26	2,55	3,8	2,5	**TBU 130**		971000	1704000	1100	35,00	**TBU 130**		
129,96	230	149,25	150	240	100	194	194		0,26	2,55	3,8	2,5	**TBU 130/1**		971000	1704000	1100	35,90	**TBU 130/1**		
129,96	250	149,25	160	240	100	194	182	165	0,26	2,55	3,8	2,5	**TBU 130x250**		984000	1730000	1100	44,23	**TBU 130x250**		
129,96	250	149,25	156,8	238	100	194	182	165	0,26	2,55	3,8	2,5	**TBU 130x250/3**		984000	1730000	1100	43,93	**TBU 130x250/3**		
150	250	160	160	255	104,8	222	222	185	0,26	2,55	3,8	2,5	**TBU150x250x160**		943000	1940000	700	44,10	**TBU150x250x160**		
150	250	175	175	272	112,5	222	222	185	0,26	2,55	3,8	2,5	**TBU 150**		1047000	1850000	700	46,40	**TBU 150**		

THRUST BALL BEARINGS

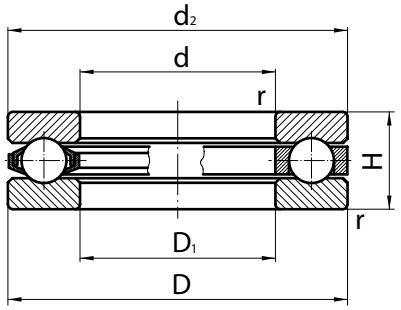
Thrust ball bearings allow for significantly lower rotation speed as compared with other types of ball bearings, since raceways can accommodate only limited centrifugal forces arising during the movement of balls. Bearings are produced with pressed or solid cages of the following design variants:

- Type 8000 (808000, 1008000, 903000) – single direction bearings, which accommodate axial load, acting in one direction.
- Type 38000 – double direction bearings, which accommodate axial load, acting in both directions.
- Type 18000 – single direction bearings with a seating washer. It compensates technological errors which occur during housing seating surfaces treatment.
- Type 48000 – double direction bearings with seating washers

Thrust ball bearings are used in low-speed gearboxes, spindles and rotating centre of metal-cutting machines, jacks, triggers, rotary devices, etc.

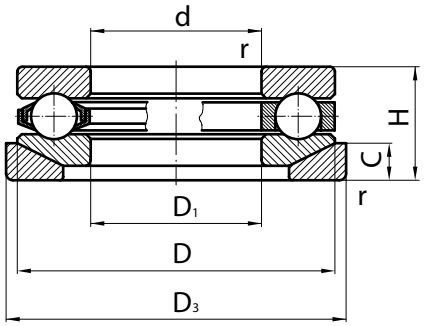
Angular contact thrust ball bearings serve as rotary supports. They are able to support radial, axial and moment loads. The bearings are produced with outer and inner rings having holes for their fixing in the support unit, as well as having external or internal gear.

SINGLE DIRECTION THRUST BALL BEARINGS



8000, 88000, 808000, 1008000, 9008000

With seating washer



18000

The bearings can accommodate axial load in one direction. Seating washer in the bearings of 18000 type allow compensating the technological errors which occur during housing seating surface treatment.

TYPE 8000, 18000, 88000, 808000, 1008000, 9008000

Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	H	D_1	D_3	C	r min			Ca	Coa	grease	oil	m	epk	analogue
100	150	38	100,2			1,1	**8220К**		124000	320000	1300	1800	2,228	**8220К**	51220
100	150	38	100,2			1,1	**8220Л**		124000	320000	1300	1800	2,490	**8220Л**	51220M
100	150	45	100,2	155	14	1,1	**18220К**		124000	320000	1300	1800	2,631	**18220К**	53220+U220
100	150	45	100,2	155	14	1,1	**18220Л**		124000	320000	1300	1800	2,800	**18220Л**	53220M+U220
100	170	55	100,2			1,5	**8320К**		229000	560000	1000	1500	5,110	**8320К**	51320
100	170	55	100,2			1,5	**8320Л**		229000	560000	1000	1500	5,630	**8320Л**	51320M
100	170	55	103			1,5	**8320НГ**		229000	560000	1000	1500	5,470	**8320НГ**	51320F
100	170	55	103			1,5	**8320НЕ**		229000	560000	1000	1500	4,710	**8320НЕ**	51320TN
100	170	55	103			1,5	**8320НЛ**		229000	560000	1000	1500	5,570	**8320НЛ**	51320M
100	170	64	100,2	175	18	1,5	**18320**		229000	560000	950	1400	6,600	**18320**	53320M+U320
100	172	57	100,2			1,5	**808320К**		245000	600000	1000	1500	5,490	**808320К**	
100	172	57	100,2			1,5	**808320Л**		245000	600000	1000	1500	6,040	**808320Л**	
100	210	85	100,5			3,0	**8420Г2**		371000	965000	700	950	15,000	**8420Г2**	51420F
100	210	85	100,5			3,0	**8420Л**		371000	965000	700	950	14,600	**8420Л**	51420M
100	210	85	103			3,0	**8420НЛ**		371000	965000	700	950	14,220	**8420НЛ**	51420M
110	160	38	110,2			1,1	**8222**		130000	360000	1200	1700	2,520	**8222**	51222
110	160	38	110,2			1,1	**8222Г**		130000	360000	1200	1700	2,660	**8222Г**	51222F
110	160	38	110,2			1,1	**8222Л**		130000	360000	1200	1700	2,693	**8222Л**	51222M
110	160	38	110,2			1,1	**8222Ю**		130000	360000	1200	1700	2,660	**8222Ю**	S51222M
110	160	45	113	165	14	1,1	**18222**		130000	360000	1200	1700	3,030	**18222**	53222+U222
110	160	45	113	165	14	1,1	**18222Л**		130000	360000	1200	1700	3,200	**18222Л**	53222M+U222

THRUST BALL BEARINGS

TYPE 8000, 18000, 88000, 808000, 1008000, 9008000

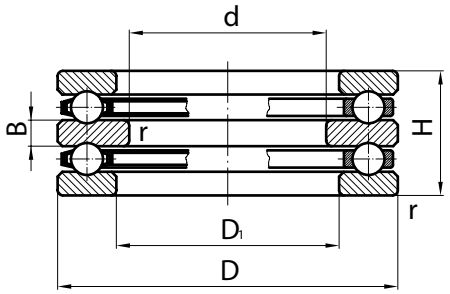
Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	H	D_1	D_3	C	r min			Ca	Coa	grease	oil	m	epk	analogue
110	190	63	110,2			2,0	**8322**		276000	720000	850	1200	7,330	**8322**	51322
110	190	63	110,2			2,0	**8322Л**		276000	720000	850	1200	7,880	**8322Л**	51322M
110	190	72	110,2	195	20,5	2,0	**18322К**		276000	720000	850	1200	8,380	**18322К**	53322+U322
110	190	72	110,2	195	20,5	2,0	**18322Л**		276000	720000	850	1200	8,930	**18322Л**	53322M+U322
120	155	25	120,2			1,0	**8124**		88400	310000	1600	2200	1,124	**8124**	51124
120	155	25	120,2			1,0	**8124Л**		88400	310000	1600	2200	1,250	**8124Л**	51124M
120	170	46	120,2	175	15	1,1	**18224**		140000	400000	1100	1600	3,320	**18224**	53224+U224
120	170	46	120,2	175	15	1,1	**18224Л**		140000	400000	1100	1600	3,510	**18224Л**	53224M+U224
120	210	70	120,2			2,1	**8324**		325000	915000	800	1100	9,660	**8324**	51324
120	210	70	120,2			2,1	**8324Г**		325000	915000	800	1100	10,500	**8324Г**	51324F
120	210	80	123	220	22	2,1	**18324**		325000	915000	800	1100	11,600	**18324**	53324+U324
120	210	80	123	220	22	2,1	**18324К**		325000	915000	800	1100	11,616	**18324К**	53324+U324
130	170	30	130,3			1,0	**8126К**		111000	390000	1400	1900	1,730	**8126К**	51126
130	170	30	130,3			1,0	**8126Л**		111000	390000	1400	1900	1,930	**8126Л**	51126M
130	190	45	130,3			1,5	**8226**		186000	540000	950	1400	4,200	**8226**	51226
130	190	45	130,3			1,5	**8226Л**		186000	540000	950	1400	4,540	**8226Л**	51226M
130	190	53	130,3	195	17	1,5	**18226**		186000	540000	950	1400	4,980	**18226**	53226+U226
130	190	53	130,3	195	17	1,5	**18226Л**		186000	540000	950	1400	5,290	**18226Л**	53226M+U226
130	225	75	130,3			2,1	**8326Л**		358000	1060000	750	1000	13,400	**8326Л**	51326M
130	225	75	134			2,1	**8326НГ**		358000	1060000	750	1000	12,830	**8326НГ**	51326F
130	225	75	134			2,1	**8326НЛ**		358000	1060000	750	1000	12,960	**8326НЛ**	51326M
130	270	110	130,3			4,0	**8426Л**		520000	1600000	560	750	30,500	**8426Л**	51426M
130	270	128	134	280	38	4,0	**18426Л**		520000	1600000	600	800	35,000	**18426Л**	53426M+U426
140	180	31	140,3			1,0	**8128Л**		111000	400000	1300	1800	2,140	**8128Л**	51128M
140	200	46	140,3			1,5	**8228**		190000	570000	950	1400	4,610	**8228**	51228
140	200	46	140,3			1,5	**8228Г**		190000	570000	950	1400	4,860	**8228Г**	51228F
140	200	46	140,3			1,5	**8228Л**		190000	570000	950	1400	4,920	**8228Л**	51228M
140	200	55	143	210	17	1,5	**18228**		190000	570000	950	1400	5,760	**18228**	53228+U228
150	215	50	150,3			1,5	**8230Л**		238000	735000	900	1300	6,350	**8230Л**	51230M
150	215	50	153			1,5	**8230НГ**		238000	735000	900	1300	6,100	**8230НГ**	51230F
150	215	50	153			1,5	**8230НЛ**		238000	735000	900	1300	6,160	**8230НЛ**	51230M
150	250	80	150,3			2,1	**8330Л**		410000	1290000	670	900	16,100	**8330Л**	51330M
160	200	31	160,3			1,0	**8132Л**		112000	425000	1200	1700	2,420	**8132Л**	51132M
160	200	31	160,3			1,0	**8132НЛ**		112000	425000	1200	1700	2,420	**8132НЛ**	51132M
170	215	34	170,3			1,1	**8134Г**		133000	500000	1100	1600	3,060	**8134Г**	51134F
170	215	34	170,3			1,1	**8134К**		133000	500000	1100	1600	2,866	**8134К**	51134
170	215	34	170,3			1,1	**8134Л**		133000	500000	1100	1600	3,100	**8134Л**	51134M
180	225	34	180,3			1,1	**8136К**		135000	530000	1000	1500	3,019	**8136К**	51136
180	225	34	180,3			1,1	**8136Л**		135000	530000	1000	1500	3,240	**8136Л**	51136M
180	225	34	183			1,1	**8136НГ**		135000	530000	1000	1500	3,050	**8136НГ**	51136F
180	250	56	180,3			1,5	**8236**		296000	1000000	800	1100	8,440	**8236**	51236
180	250	56	180,3			1,5	**8236Л**		296000	1000000	800	1100	8,640	**8236Л**	51236M
180	300	95	180,3			3,0	**8336АЛ**		520000	1830000	560	750	27,500	**8336АЛ**	51336M
180	300	95	184			3,0	**8336НГ**		520000	1830000	560	750	25,660	**8336НГ**	51336F
180	300	95	184			3,0	**8336НЛ**		520000	1830000	560	750	25,900	**8336НЛ**	51336M
200	250	37	203			1,1	**8140НГ**		168000	655000	950	1400	4,080	**8140НГ**	57140F
200	250	37	203			1,1	**8140НЛ**		168000	655000	950	1400	4,130	**8140НЛ**	57140M
200	250	37	200,3			1,1	**8140Ю**		168000	655000	950	1400	4,290	**8140Ю**	S57140M
200	280	62	200,3			2,0	**8240Л**		338000	1220000	750	1000	12,400	**8240Л**	51240M
200	280	62	204			2,0	**8240НГ**		338000	1220000	750	1000	12,100	**8240НГ**	51240F
200	340	110	200,3			4,0	**8340Л**		624000	2400000	480	630	42,800	**8340Л**	51340M
200	340	110	205			4,0	**8340НГ**		624000	2400000	480	630	41,900	**8340НГ**	51340F

THRUST BALL BEARINGS

TYPE 8000, 18000, 88000, 808000, 1008000, 9008000

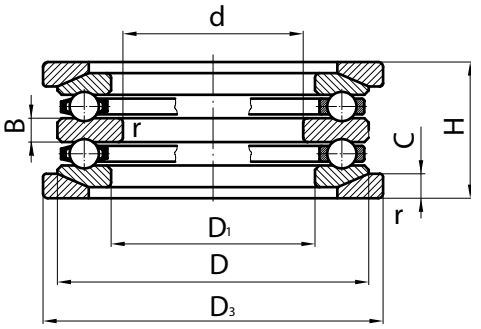
Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	H	D_1	D_3	C	r min			Ca	Coa	grease	oil	m	epk	analogue
220	270	37	223			1,1	**8144НГ**		178000	735000	900	1300	4,450	**8144НГ**	51144F
220	270	37	223			1,1	**8144НЛ**		178000	735000	900	1300	4,450	**8144НЛ**	51144M
220	270	37	220,3			1,1	**8144Ю**		178000	735000	900	1300	4,700	**8144Ю**	S51144M
220	300	63	220,3			2,0	**8244Л**		351000	1320000	700	950	13,600	**8244Л**	51244M
238	340	70	238,3			2,1	**8948Л**		340000	1375000	630	800	20,300	**8948Л**	
240	300	45	240,3			1,5	**8148Л**		234000	965000	800	1100	7,500	**8148Л**	51148M
260	320	45	260,3			1,5	**8152Л**		238000	1020000	800	1100	7,930	**8152Л**	51152M
260	320	45	263			1,5	**8152НГ**		238000	1020000	800	1100	7,580	**8152НГ**	51152F
260	320	45	263			1,5	**8152НЛ**		238000	1020000	800	1100	7,660	**8152НЛ**	51152M
280	350	53	280,3			1,5	**8156Л**		319000	1340000	700	950	12,000	**8156Л**	51156M
280	350	53	283			1,5	**8156НГ**		319000	1340000	700	950	11,420	**8156НГ**	51156F
280	350	53	283			1,5	**8156НЛ**		319000	1340000	700	950	11,650	**8156НЛ**	51156M
280	380	80	280,3			2,1	**8256Л**		494000	2160000	560	750	27,400	**8256Л**	51256M
300	420	95	300,3			3,0	**8260Г**		605000	2750000	480	360	43,300	**8260Г**	51260F
300	420	95	300,3			3,0	**8260Л**		605000	2750000	480	360	44,200	**8260Л**	51260M
300	435	104	305			4,0	**8760Г**		533000	2555000	480	630	54,000	**8760Г**	
300	435	104	305			4,0	**8760К**		533000	2555000	480	630	53,800	**8760К**	
320	400	63	320,4			2,0	**8164Л**		371000	1700000	600	800	18,700	**8164Л**	51164M
340	420	64	340,4			2,0	**8168Г**		377000	1800000	600	800	20,500	**8168Г**	51168F
340	440	50	340,4			2,0	**8768**		265000	1265000	480	630	18,289	**8768**	
340	460	96	340,2			3,0	**8268Л**		605000	2900000	450	600	49,000	**8268Л**	51268M
340	540	160	341			5,0	**8368Г**		1040000	4300000	280	380	148,000	**8368Г**	51368F
360	440	65	360,4			2,0	**8172Л**		390000	1900000	560	750	21,500	**8172Л**	51172M
360	440	65	364			2,0	**8172НГ**		390000	1900000	560	750	20,200	**8172НГ**	51172F
360	500	110	360,4			4,0	**8272Г**		741000	3800000	400	530	70,200	**8272Г**	51272F
360	500	110	360,4			4,0	**8272Л**		741000	3800000	400	530	71,000	**8272Л**	51272M
400	480	65	400,4			2,0	**8180**		403000	2120000	530	700	22,900	**8180**	51180M
430	580	150	430	610	44	4,0	**18786**		910000	5100000	200	260	132,700	**18786**	
430	580	150	430	610	44	4,0	**18786К**		910000	5100000	200	260	134,000	**18786К**	
440	540	60	442			2,5	**9008188Л**		425000	2410000	530	700	29,200	**9008188Л**	
455	650	120	457			5,0	**8791**		935000	5540000	200	260	116,000	**8791**	
460	620	130	460,5			5,0	**8292Г**		915000	5230000	320	430	118,000	**8292Г**	51292F
460	620	130	460,5			5,0	**8292Л**		915000	5230000	320	430	119,000	**8292Л**	51292M
480	650	135	480,5			5,0	**8296Л**		1020000	5200000	300	400	138,500	**8296Л**	51296M
500	600	80	500,5			2,1	**81/500Г**		553000	3350000	430	560	46,600	**81/500Г**	511/500F
600	650	38	600,6			1,1	**10089/600**		220000	1350000	600	800	13,000	**10089/600**	
630	850	175	630,6			6,0	**82/630**		1460000	8800000	190	280	251,800	**82/630**	512/630M
630	850	175	630,6			6,0	**82/630Л**		1460000	8800000	190	280	246,000	**82/630Л**	512/630M
670	800	105	672			4,0	**81/670Г**		852000	6100000	300	400	105,000	**81/670Г**	511/670F
670	1000	200	670,7			9,5	**90083/670**		1970000	12900000	170	240	479,000	**90083/670**	
780	930	100	782			4,0	**87/780**		950000	5800000	150	200	136,300	**87/780**	
1180	1280	80	1182			2,1	**10089/1180**		690000	6310000	220	320	130,300	**10089/1180**	
1180	1280	80	1182			2,1	**10089/1180К**		690000	6310000	220	320	105,000	**10089/1180К**	
1315	1425	62,6	1315,5			4,0	**887/1315ЛУ**		590000	6510000	70	100	101,400	**887/1315ЛУ**	

DOUBLE DIRECTION THRUST BALL BEARINGS



38000

With seating washers



48000

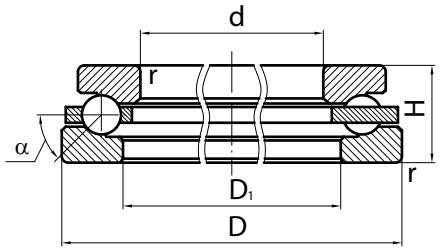
The bearings can accommodate axial load in both directions. Seating washer in the bearings of 48000 type allows compensating the technological errors which occur during housing seating surface treatment.

TYPE 38000, 48000

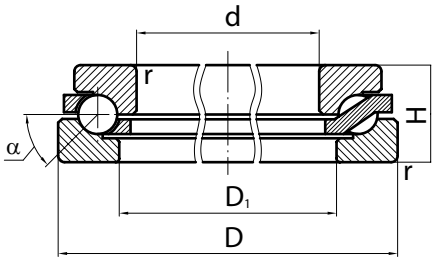
Dimensions, mm								Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
										dynamic	static	lubricant				
d	D	H	D_1	D_3	C	B	r min			C	Co	grease	oil	m	epk	analogue
100	170	68	120			15	1,1	**38224**		158000	405000	1200	1700	5,15	**38224**	52224
100	210	123	120,2			27	2,1	**38324**		325000	915000	800	1100	19,70	**38324**	52324
100	210	143	123	220	27	160	2,1	**48324**		325000	915000	800	1100	21,80	**48324**	54324+U324
150	250	98	180,3			21	1,5	**38236**		296000	1000000	800	1100	16,80	**38236**	52236

THRUST BALL BEARINGS

SINGLE DIRECTION ANGULAR CONTACT THRUST BALL BEARINGS



1687/770X, 1688/710, 1688/770X

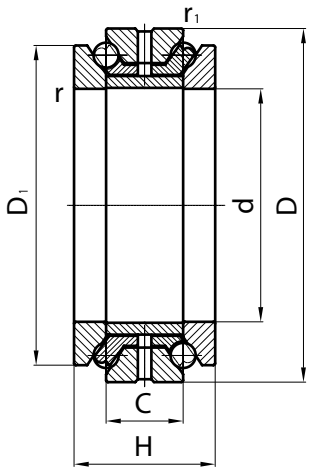


1687/660, 31688/630, 11689/1060Л, 11689/1060

TYPE 168000, 1168000, 3168000

Dimensions, mm					α degree	Bearing designation		Load ratings, N		Mass, kg	Bearing designation
								dynamic	static		
d	D	H	D_1	r min				C	Co	m	epk
630	880	112	632	5,0	45	**31688/630**		667000	3777000	112,000	**31688/630**
660	810	69,5	670	3,0	45	**1687/660**		362000	2047000	75,000	**1687/660**
710	850	84	720	2,0	45	**1688/710**		429000	2601000	104,000	**1688/710**
770	900	90	788	5,0	35	**1688/770X**		682000	4591000	92,500	**1688/770X**
770	1000	150	798	8,0	35	**1687/770X**		1253000	8478000	292,000	**1687/770X**
1060	1160	70	1064	3,5	45	**11689/1060**		438000	3275000	74,500	**11689/1060**
1060	1160	70	1064	3,5	45	**11689/1060Л**		438000	3275000	75,400	**11689/1060Л**

DOUBLE-ROW ANGULAR CONTACTTHRUST BALL BEARINGS

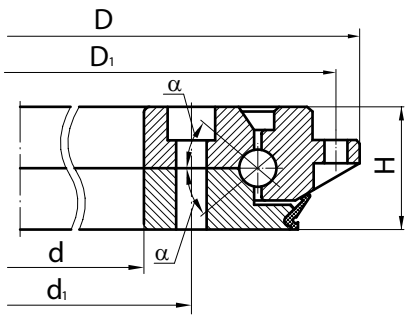


The bearings having a contact angle 60o can accommodate high axial loads in both directions and light radial loads. Large contact angle allows eliminating the main disadvantage of thrust bearings: that is a skidding occurred at high rotational speed of rolling elements under the action of centrifugal and gyroscopic forces.

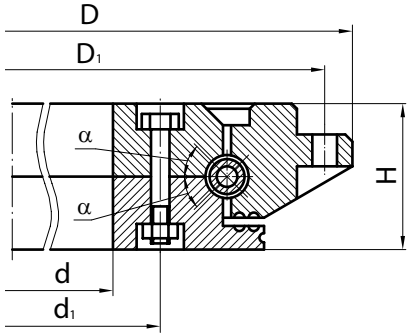
TYPE 178000

Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation	
									dynamic	static	lubricant				
d	D	H	C	D_1	r min	r_1 min			C	Co	grease	oil	m	epk	analogue
50	80	38	19	70	1,5	0,3	**178810Л2**		24000	42500	5000	6700	0,656	**178810Л2**	234410
55	90	44	22	78	2,0	0,5	**178811Л2**		34000	58500	4300	5600	0,913	**178811Л2**	234411
60	95	44	22	83	2,0	0,5	**178812Л2**		33500	58500	4000	5300	1,060	**178812Л2**	234412
65	100	44	22	88	2,0	0,5	**178813Л2**		36500	65000	3800	5000	1,130	**178813Л2**	234413
75	115	48	24	102	2,0	0,5	**178815Л2**		44000	85500	3400	4500	1,618	**178815Л2**	234415
80	125	54	27	110	2,0	0,5	**178816Л2**		52000	102000	3200	4300	2,150	**178816Л2**	234416
85	130	54	27	115	2,0	0,5	**178817Л2**		52500	106000	3000	4000	2,500	**178817Л2**	234417
95	145	60	30	128	1,5	0,3	**178819Л1**		61000	129000	2600	3600	3,010	**178819Л1**	234419M.SP

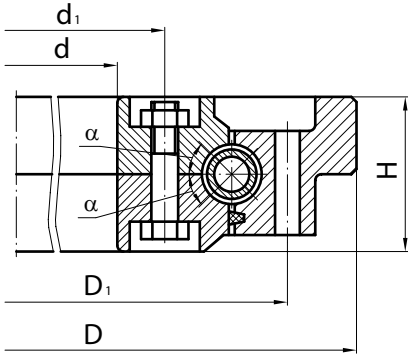
SINGLE-ROW ANGULAR CONTACT THRUST BALL BEARINGS WITH TWO-PIECE INNER RING, SPECIAL DESIGN



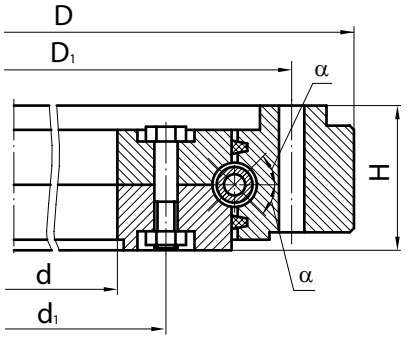
3587/1380K1



3587/1380K



3587/1390K



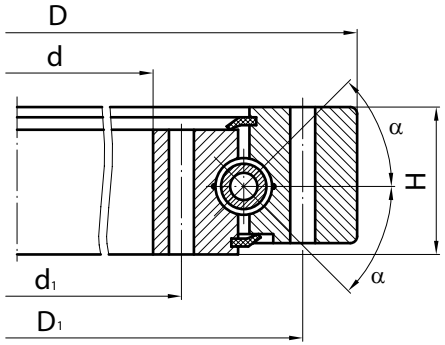
3587/1820

TYPE 358000

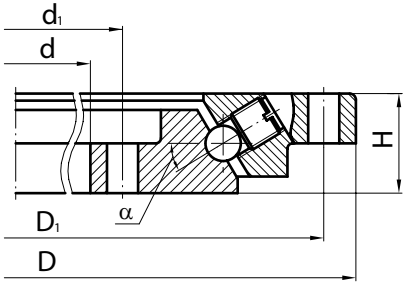
Dimensions, mm					α degree	Bearing designation		Mass, kg	Bearing designation
d	D	H	d_1	D_1				m	epk
1380	1690	90	1430	1650	45	3587/1380K1*		393	3587/1380K1*
1380	1690	90	1430	1650	45	3587/1380K		398	3587/1380K
1390	1690	90	1440	1600	45	3587/1390K		328	3587/1390K
1820	2272	130	1895	2125	45	3587/1820		1055	3587/1820

* With separating plastic elements.

SINGLE-ROW ANGULAR CONTACT THRUST BALL BEARINGS OF A SPECIAL DESIGN



1 OK 441

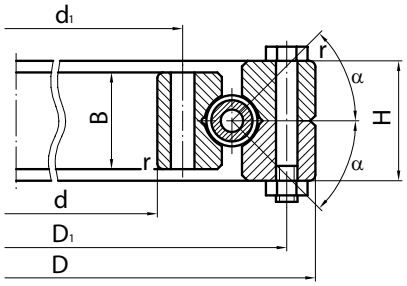


6587/550XУ

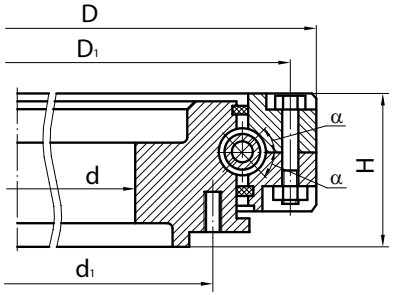
TYPE 658000, 1 OK 441

Dimensions, mm					α degree	Bearing designation		Mass, kg	Bearing designation
d	D	H	d_1	D_1				m	epk
413	688	90	448	590	45	1 OK 441		125,9	1 OK 441
550	850	50	590	810	45	6587/550XУ		94,2	6587/550XУ

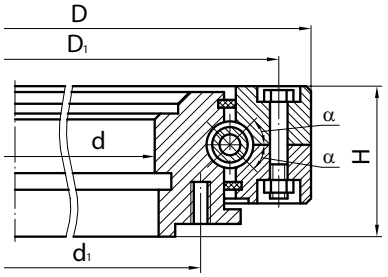
SINGLE-ROW ANGULAR CONTACT THRUST BALL BEARINGS WITH TWO-PIECE OUTER RING, SPECIAL DESIGN



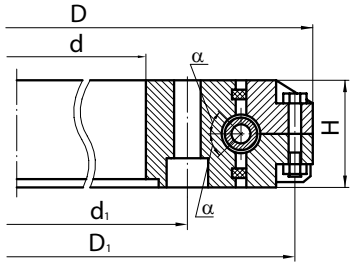
3687/1345K



3687/1788



3687/1860

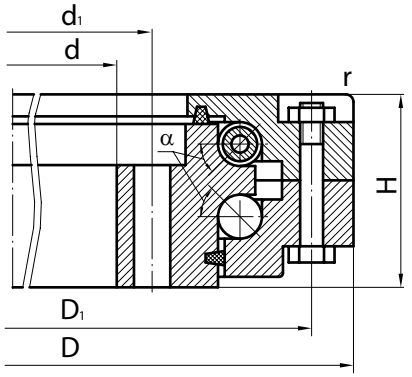


3689/1085

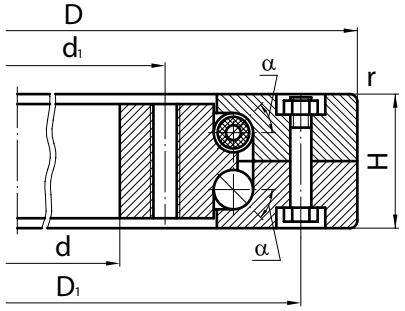
TYPE 368000

Dimensions, mm						α degree	Bearing designation		Mass, kg	Bearing designation
d	D	H	d_1	D_1	r min				m	epk
1084,8	1300	70	1140	1272		45	3689/1085		180,0	3689/1085
1345	1625	90	1390	1575	3	45	3687/1345K		353,0	3687/1345K
1345	1625	90	1390	1575	3	45	3687/1345K1У		353,0	3687/1345K1У
1788	2050	98	1920	2020		45	3687/1788		400,0	3687/1788
1860	2050	98	1920	2020		45	3687/1860		316,5	3687/1860

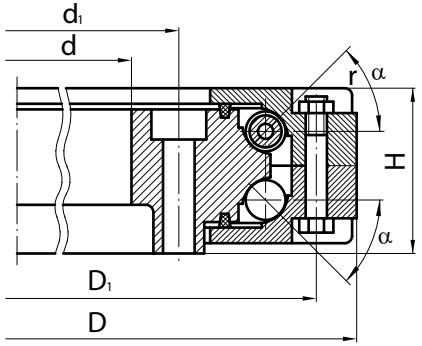
SINGLE-ROW ANGULAR CONTACT THRUST BALL BEARINGS WITH TWO-PIECE OUTER RING, SPECIAL DESIGN



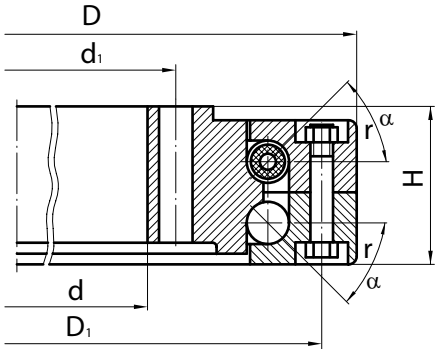
3780/515Ю



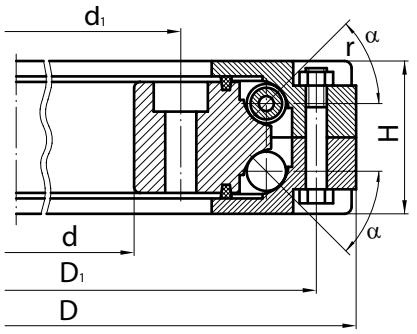
3687/1300K



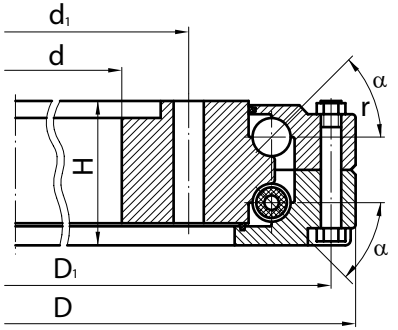
3689/1112



3689/765, 3687/810



3687/1148



3789/1696

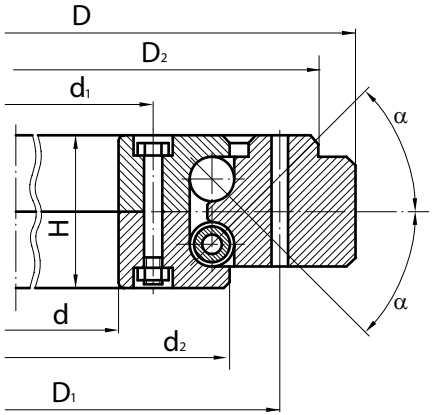
THRUST BALL BEARINGS

TYPE 378000, 368000

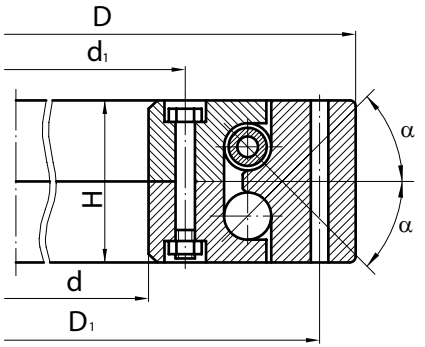
Dimensions, mm						α degree	Bearing designation		Mass, kg	Bearing designation
d	D	H	d_1	D_1	r min				m	epk
515	735	85	550	700	5	45	**3780/515HO**		103,00	**3780/515HO**
764,5	1000	75	840	965	3	45	**3689/765**		143,50	**3689/765**
810	1000	75	840	965	3	45	**3687/810**		119,50	**3687/810**
1112	1400	120	1194	1364	5	45	**3687/1112**		385,33	**3687/1112**
1148	1400	110	1194	1364	5,5	45	**3687/1148**		328,00	**3687/1148**
1300	1650	108	1350	1545		45	**3687/1300K**		330,00	**3687/1300K**
1696,88	2200	165	1850	2150		45	**3789/1696**		1500,00	**3789/1696**

THRUST BALL BEARINGS

DOUBLE-ROW ANGULAR CONTACT THRUST BALL BEARINGS WITH TWO-PIECE INNER RING, SPECIAL DESIGN



3687/1300K1



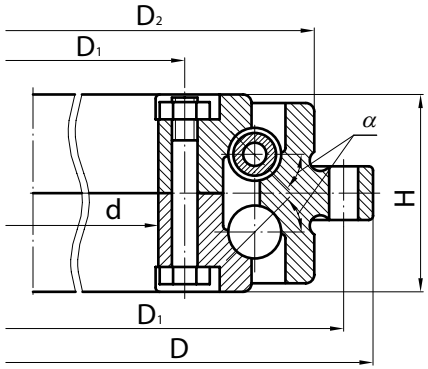
13589/1600

TYPE 368000, 1358000

Dimensions, mm							α degree	Bearing designation		Mass, kg	Bearing designation
d	D	H	d_1	d_2	D_1	D_2				m	epk
1300	1650	108	1350	1465	1545	1600	45	3687/1300K1		514,6	3687/1300K1
1600	2060	200	1678		1985		45	13589/1600		1744	13589/1600

THRUST BALL BEARINGS

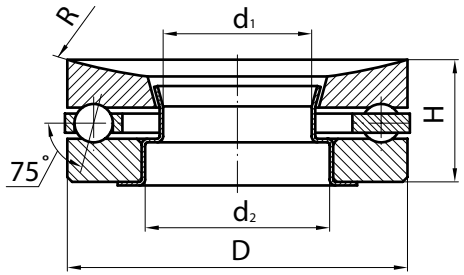
DOUBLE-ROW ANGULAR CONTACT RADIAL BALL BEARING, SPECIAL DESIGN



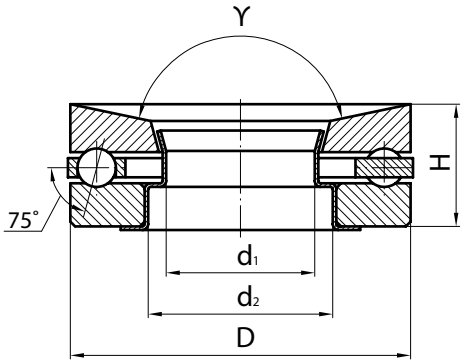
TYPE 358000

Dimensions, mm						α degree	Bearing designation		Mass, kg	Bearing designation
d	D	H	d_1	D_1	D_2				m	epk
900	1110	122	930	1150	1110	36	**3587/900**		201,0	**3587/900**

ANGULAR CONTACT THRUST BALL BEARINGS WITH RETAINER, SPECIAL DESIGN



68809Б, 268713Б2



268813Б1

TYPE 68000, 268000

Dimensions, mm					γ degree	Bearing designation		Mass, kg	Bearing designation
d_1	d_2	D	H	R				m	epk
44	53	84	26,3	133,5		68809Б		0,64	68809Б
55	68	102	27,7		150	268813Б1		0,94	268813Б1
57,5	69	106	29,5	167		268713Б2		1,02	268713Б2

THRUST ROLLER BEARING

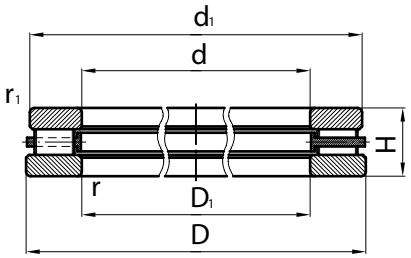
Thrust roller bearings can accommodate heavy axial loads. Bearings of some structural groups can additionally accommodate slight radial load. They allow much lower rotational speeds as it is compared with other types of bearings.

Thrust roller bearings are available of the following design variants:

- Type 9000 – single direction bearings with cylindrical rollers and a solid cage.
- Type 889000 – single direction double-row bearings with cylindrical rollers and a solid cage. Two short rollers of varying lengths are installed into the pocket of the cage instead of one long roller in order to reduce the slippage occurring between the rollers and ring raceways due to the difference of linear velocities.
- Type 899000 – bearings with cylindrical rollers without rings and with a solid cage. Hardness and accuracy of rolling surface in contact with the rolling surface of the rollers should be the same as that of the bearing rings.
- Type 109000 – bearings with needle rollers with one ring and a pressed cage. Hardness and accuracy of rolling surface in contact with the rolling surface of the rollers should be the same as that of the bearing rings.
- Type 59000 – double direction bearings with cylindrical rollers and a solid cage. Axial load in both directions is applied.
- Type 19000 – single direction taper roller bearings with ribs on shaft washer and housing washer with a solid cage.
- Type 29000 – single direction full complement taper roller bearings installed into the housing. The bearings have one flanged ring and one flat ring. Having minimum dimensions the bearings are subjected to maximum load. Metal housing provides nonseparability of a bearing, which simplifies mounting during bearing unit assembling.
- Type 39000 – bearings with spherical rollers and solid or pressed cage. The bearings are subjected to heavy axial and light radial loads. They allow higher rotational speeds as compared with thrust roller bearings of other types. The bearings are self-aligned relative to the centre of spherical housing washer raceway. Solid cages are produced of nonferrous metal or steel.

Thrust roller bearings are used in rolling mills, globoid gears (cone-worm units), machine tool tables, swivel of oil-producing machines.

SINGLE DIRECTION THRUST CYLINDRICAL ROLLER BEARINGS



The bearings are intended for accommodation of axial load, acting in one direction. Solid cage is made of steel or non-ferrous metal.

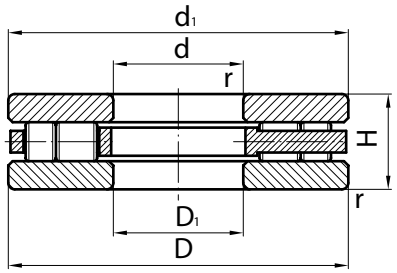
TYPE 9000, 709000, 9009000, 9809000

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
									dynamic	static				
d	D	H	d_1	D_1	r min	r_1 min			Ca	Coa	m	epk	analogue	
20,2	38	12	37	20,5	0,5	0,5	**9104K1**		18900	44600	0,067	**9104K1**		
114,732	177,8	44,577	165,2	120,5	2,0	2,0	**709723**		320000	510000	3,930	**709723**	F1741B	IBO
115,163	177,8	44,577	165,2	120,5	2,0	2,0	**709823**		320000	510000	3,930	**709823**	F1740B	IBO
160	225	51	222	163	1,5	1,5	**9232**		472000	1711000	6,710	**9232**	81232	FAG
165,1	241,338	57,277	239,7	166,7	3,0	3,0	**9733**		570000	1017000	9,300	**9733**	F1937B	IBO
260	420	95	420	260	5,0	5,0	**9809352***		1225000	6060000	57,100	**9809352***		
600	710	67	705	604	3,0	3,0	**90091/600**		1640000	11530000	49,600	**90091/600**	891/600	
950	1120	103	1120	955	5,0	5,0	**90091/950**		2710000	22100000	221,000	**90091/950**	891/950	

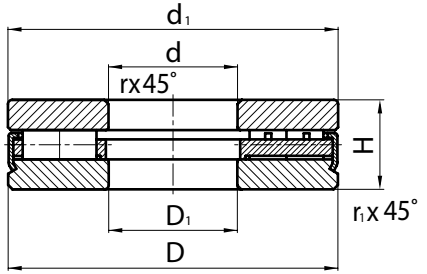
* Ring and cage are separable.

THRUST ROLLER BEARING

DOUBLE-ROW THRUST CYLINDRICAL ROLLER BEARING



9009000



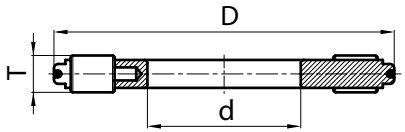
889000

Two short rollers located in one cage pocket decrease slipping between roller and ring rolling surfaces, arising due to the differences in linear velocities. In the bearings of 889000 type a set of rollers with cage and housing washer, joined together by housing, form nonseparable unit simplifying their mounting and dismounting.

TYPE 889000, 9009000

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation	
									dynamic	static			
d	D	H	d_1	D_1	r min	r_1 min			Ca	Coa	m	epk	analogue
70	125	24	125	70,0	1,1	1,1	**889814**		157000	739000	1,45	**889814**	
90	155	27	155	90,0	1,5	1,5	**889818**		221000	1140000	2,40	**889818**	
110	230	73	230	110,2	3,0		**9009422**		1000000	3400000	16,10	**9009422**	89422
200	400	122	400	200,3	5,0		**9009440**		2700000	10200000	79,40	**9009440**	89440

THRUST CYLINDRICAL ROLLER BEARINGS WITHOUT RINGS

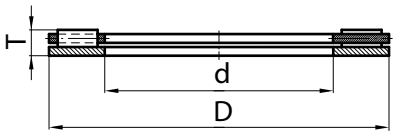


The bearings are applied, if necessary, to reduce axial unit dimensions. Hardness and accuracy of raceway surfaces of housing, contacting with raceway surfaces of rollers, must be the same as that of for bearing rings.

TYPE 899000

Dimensions, mm			Bearing designation		Load ratings, N		Mass, kg	Bearing designation
					dynamic	static		
d	D	T			Ca	Coa	m	epk
220	254	5,5	**899944**		93000	630000	0,503	**899944**

THRUST NEEDLE ROLLER BEARINGS WITH ONE RING



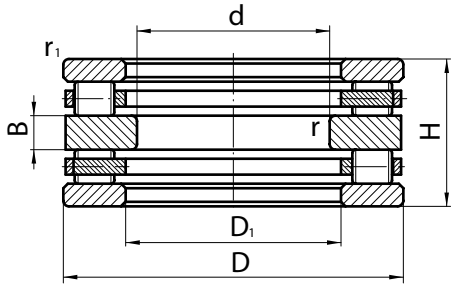
The bearings are applied, if necessary, to reduce axial unit dimensions. Hardness and accuracy of raceway surfaces of housing, contacting with raceway surfaces of rollers, must be the same as that of for bearing rings.

TYPE 109000

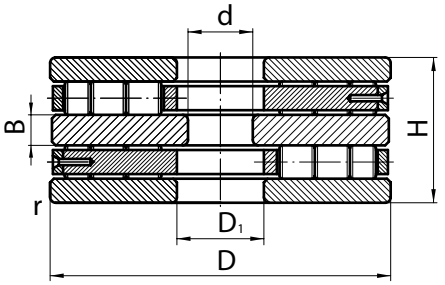
Dimensions, mm			Bearing designation		Load ratings, N		Mass, kg	Bearing designation
					dynamic	static		
d	D	T			Ca	Coa	m	epk
190	230	4	**109738K**		54000	458000	0,754	**109738K**

epk

DOUBLE DIRECTION THRUST CYLINDRICAL ROLLER BEARINGS



59891



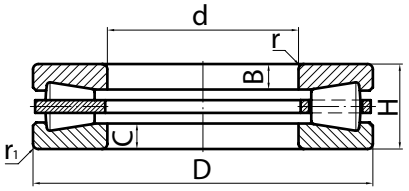
59920

The bearings are intended for accommodation of axial load in both directions. Solid cage of separable design made of brass.

TYPE 59891, 59920

Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
									dynamic	static				
d	D	B	H	D_1	r min	r_1 min			Ca	Coa	m	epk	analogue	
76,2	203,2	25	97	101,6	1,1		**59920**		590000	1400000	18,50	**59920**		
400	570	36	152	454	3,0	6,0	**59891**		1562000	4144000	97,80	**59891**	2Y400-2	IBO

SINGLE DIRECTION THRUST TAPER ROLLER BEARINGS



The bearings are designed for accommodation of heavy axial loads at the moderate rotational speeds. Cages are made of non-ferrous metal or steels.

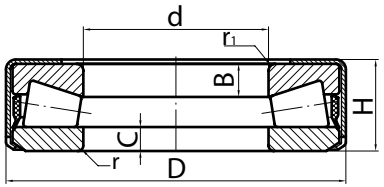
TYPE 19000, 9019000

Dimensions, mm							Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}		Mass, kg	Bearing designation		
									dynamic	static	lubricant					
d	D	H	B	C	r min	r_1 min			Ca	Coa	grease	oil	m	epk	analogue	
120	250	78	27,3	27,3	4,0	4,0	**9019424**		760000	3616000	200	260	20,10	**9019424**		
120	250	78	27,3	27,3	4,0	4,0	**9019424K****		760000	3616000	200	260	20,00	**9019424K****		
180	360	109	37	37	5,0	5,0	**9019436**		1570000	6466000	160	200	58,00	**9019436**		
180	360	109	37	37	5,0	5,0	**9019436K****		1570000	6466000	160	200	55,40	**9019436K****		
220	500	125	48,5	48,5	7,5	2,0	**19744XУ**		3790000	18000000	125	160	133,5	**19744XУ**		
254*	539,75	117,475	47,5	47,5	12,0	12,0	**19951XГК1****		5480000	19300000	125	160	144,30	**19951XГК1****	T1011*	TIMKEN
260	480	132	44	44	6,0	6,0	**9019452**		2150000	12314000	125	160	112,80	**9019452**		
260	480	132	44	44	6,0	6,0	**9019452K****		2150000	12314000	125	160	114,00	**9019452K****		

* Design variant of seating surfaces corresponds to inch tolerance system (plus deviation).

** A cage with lubrication slots.

SINGLE DIRECTION THRUST FULL COMPLEMENT ROLLER BEARINGS GREASED-FOR-LIFE WITH RETAINER



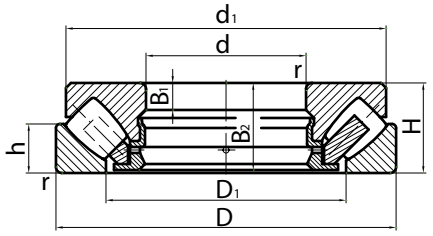
The bearings have maximum load rating being of minimum boundary dimensions. They are intended for accommodation of axial loads at slight rotational speeds. Metal pressed retainer provides nonseparability of a bearing, simplifying mounting during bearing unit assembling.

TYPE 29000

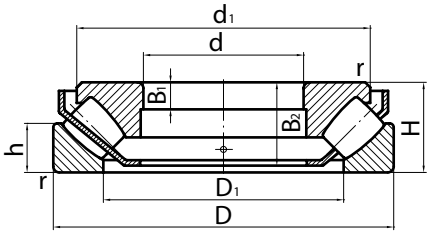
Dimensions, mm							Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
									dynamic	static				
d	D	H	B	C	r min	r_1 min			Ca	Coa	m	epk	analogue	
50	78	22	6	9,85	1,5	0,5	**29910K4C17**		104700	371000	0,426	**29910K4C17**	BFSB 353056E	SKF
50	78,5	17,5	6	5	1,0	1,0	**29910C17**		104700	371000	0,343	**29910C17**		

THRUST ROLLER BEARING

SPHERICAL ANGULAR CONTACT THRUST ROLLER BEARINGS



9039000



9039000K

The bearings are subjected to heavy axial and light radial loads. They allow higher rotation speeds as compared with that of thrust roller bearings of other types. The bearings are self-aligned relative to the centre of spherical housing washer raceway. Pressed or solid cages are made of steel or non-ferrous metal. Solid cage is aligned and supported by sleeve, pressed into the shaft washer.

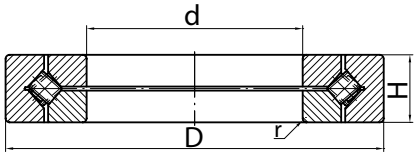
TYPE 9039000, 9039000K

Dimensions, mm									Bearing designation		Load ratings, N		Limiting rotational speed, min^{-1}	Mass, kg	Bearing designation	
											dynamic	static	lubricant			
d	d_1	D	D_1	H	B_1	B_2	h	r min			Ca	Coa	oil	m	epk	analogue
100	163	170	129	42	14	40	20,8	1,5	**9039320**		313000	993000	2000	4,06	**9039320**	29320E
110	176	190	143	48	16	45,5	23	2,0	**9039322**		381000	1203000	1800	5,75	**9039322**	29322E
120	198	210	154	54	18	48,5	27	2,1	**9039324K**		574000	1803000	1600	7,48	**9039324K**	29324E
140	268	280	199	85	31	81	41	4,0	**9039428**		1400000	4300000	1200	25,00	**9039428**	29428MS
180	282	300	224	73	25	65	38	3,0	**9039336K**		1110000	3880000	1100	17,19	**9039336K**	29336E
240	357	380	289	85	29	81	41	4,0	**9039348K**		1450000	5340000	900	32,64	**9039348K**	29348E
260	405	420	329	95	32	91	45	5,0	**9039352**		2220000	8300000	800	52,60	**9039352**	29352MS
260	405	420	329	95	32	91	45	5,0	**9039352K***		1900000	7100000	800	51,60	**9039352K***	29352MS
260	460	480	357	132	48	127	64	6,0	**9039452**		3510000	12900000	670	109,00	**9039452**	29452MS
260	460	480	357	132	48	127	64	6,0	**9039452X**		3510000	12900000	670	111,90	**9039452X**	29452MS
300	405	420	353	73	21	69	38	3,0	**9039260**		1070000	4800000	900	32,40	**9039260**	29260MS
320	482	500	399	109	37	105	53	5,0	**9039364X**		2880000	11200000	670	83,30	**9039364X**	29364MS
360	610	640	480	170	61	164	82	7,5	**9039472X**		5350000	21200000	500	28,00	**9039472X**	29472MS
400	526	540	460	85	27	81	42	4,0	**9039280**		1610000	8000000	700	56,50	**9039280**	29280MS
440	655	680	548	145	49	140	70	6,0	**9039388**		4490000	19300000	480	196,00	**9039388**	29388MS
500	830	870	661	224	81	216	107	9,5	**90394/500X**		9370000	41800000	330	577,00	**90394/500X**	294/500MS
710	1165	1220	925	308	113	298	144	15,0	**90394/710X**		17600000	76500000	220	1543,00	**90394/710X**	294/710MS

* Bearing with massive cage.

THRUST ROLLER BEARING

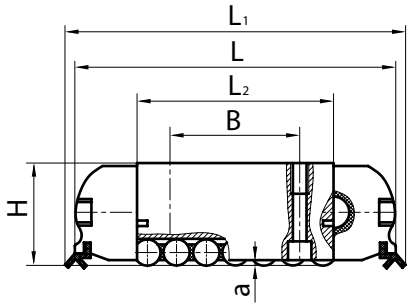
SPECIAL ANGULAR CONTACT THRUST CROSSED ROLLER BEARINGS



TYPE 669000, 7669000

Dimensions, mm				Bearing designation		Load ratings, N		Mass, kg	Bearing designation
						dynamic	static		
d	D	H	r min			Ca	Coa	m	epk
330	457	63	2,0	**7669266**		280000	500000	25,8	**7669266**
460	610	64	2,1	**7669892У**		593000	970000	63,6	**7669892У**
460	620	73	2,1	**7669292**		593000	970000	69,0	**7669892**
560	750	85	2,1	**76692/560**		732000	1490000	110,0	**76692/560**
670	900	103	2,1	**76692/670**		1218000	2240000	169,0	**76692/670**
900	1120	82	2,1	**6697/900**		1303000	2850000	195,0	**6697/900**
1240	1530	130	2,0	**6997/1240**		2824000	22814000	485,0	**6997/1240**

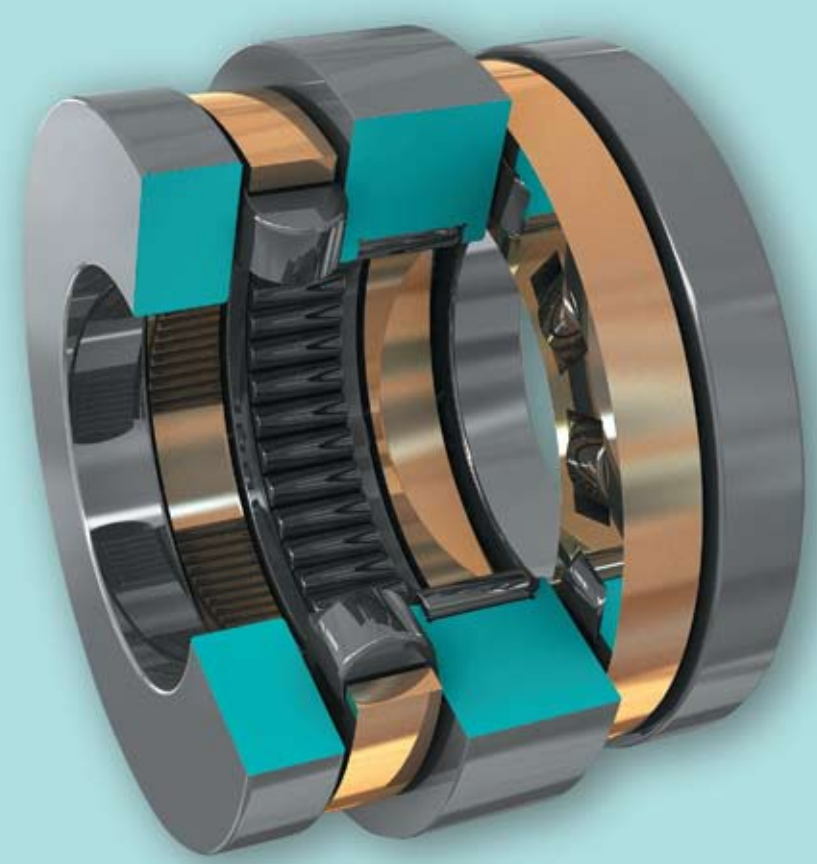
LINEAR MOTION BEARINGS
ROLLER SHOES



The bearing unit provides a linear motion of unlimited length. These bearing are used in machine tools guideways with high accuracy of the direction and positioning at large displacement length.

TYPE БР

Dimensions, mm						Bearing designation		Load ratings, N		Mass, kg	Bearing designation		
								dynamic	static				
H	L	B	L_1	L_2	a			Ca	Coa	m	epk	analogue	
26	126	68	132	93	0,2	**БР 26x126**		122000	103000	0,7	**БР 26x126**	RUS 26126	INA



COMBINED RADIAL/THRUST BEARINGS

Combined radial/thrust bearing consists of a radial needle roller bearing and of one or two thrust roller bearings or combination of a radial needle roller bearing and a thrust ball bearing.

To provide axial clearance shaft washers of thrust roller bearings include a spacer ring, which simultaneously serves as an inner ring of the radial section. The faces of the outer ring of the radial section serve as the raceways of thrust roller bearings. Lubricant supply is provided through the groove and the holes in outer ring.

Combined bearings consisting of a radial needle roller bearing and two thrust roller bearings are intended for accommodation of both radial and axial loads in both directions.

Combined bearings consisting of a radial needle roller bearing and a thrust ball bearing are intended for accommodation of both radial and axial loads in a single direction.

Combined bearings consisting of a radial needle roller bearing and two thrust roller bearings refer to the bearings of РИК (RIK) type.

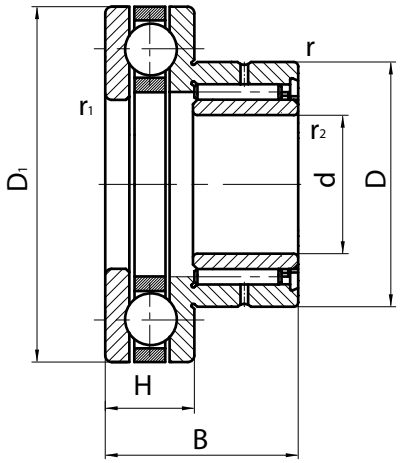
Combined bearings consisting of a radial needle roller bearing and a thrust roller bearing refer to the roller bearings series 584000, 544000 and 594000.

Combined bearings consisting of a radial needle roller bearing and a thrust ball bearing refer to bearings series 484000 and 564000.

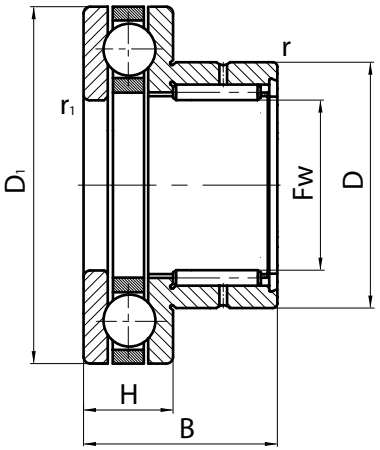
Bearings may be produced with and without inner rings; in this case a shaft serves as a raceway.

COMBINED RADIAL/THRUST BEARINGS

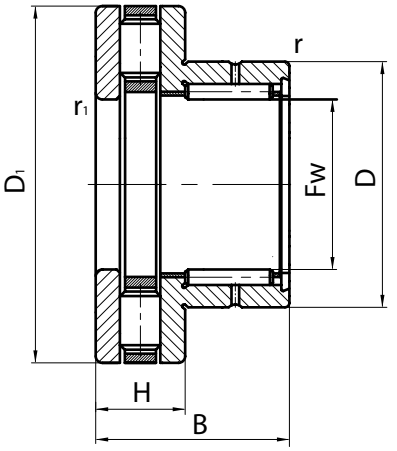
COMBINED RADIAL/THRUST BEARINGS



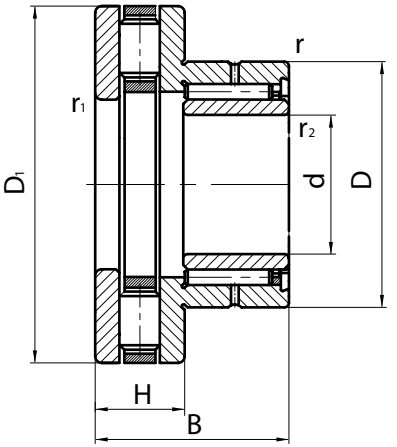
484000



564000



584000



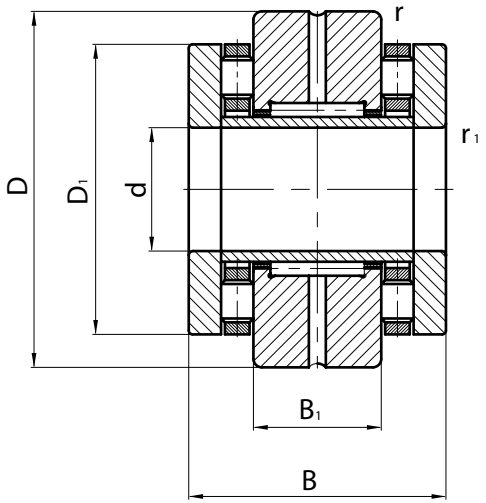
544000, 594000

TYPE 484000, 544000, 564000, 584000, 594000

Dimensions, mm								Bearing designation		Radial load rating, N		Axial load rating, N		Limiting rotational speed, min^{-1}	Mass, Kg	Bearing designation		
										dynamic	static	dynamic	static					
d	Fw	D	D_1	B	H	r, r_1 min	r_2 min			Cr	Cor	Ca	Coa		m	epk	analogue	
	20	30	34	30	10	0,3	0,3	**564803**		16400	23800	14300	21400	7500	0,090	**564803**	NKX20	INA
	20	30	35	30	10	0,3	0,3	**584803**		14300	20400	13100	21700	7500	0,090	**584803**	NKXR20	INA
	30	42	47	30	11	0,6	0,3	**584805**		19600	28000	19300	34000	5000	0,162	**584805**	NKXR30	INA
	30	42	47	30	11	0,6	0,3	**564805**		22600	36000	20400	36500	5000	0,162	**564805**	NKX30	INA
	35	58	65	32	14	0,6	0,3	**564808**		23900	45500	27500	63000	3600	0,360	**564808**	NKX45	INA
20		37	42	40	11	0,6	0,3	**484804**		16400	27500	16400	31500	6000	0,146	**484804**	NKX25+JR	INA
35		52	60	31	13	0,6	0,3	**544207**		22600	43000	24800	56000	4000	0,288	**544207**	NKXR40Z+JR	INA
40		58	65	32	14	0,3	0,3	**594808**		23900	45500	27500	63000	3600	0,360	**594808**	NKXR45+JR	INA
40		58	65	32	14	0,6	0,3	**544308**		23900	45500	27500	63000	3600	0,360	**544308**	NKXR45+JR	INA
45		62	35	35	14	0,6	0,6	**594809**		33000	48500	39000	69000	3300	0,432	**594809**	NKXR50+JR	INA

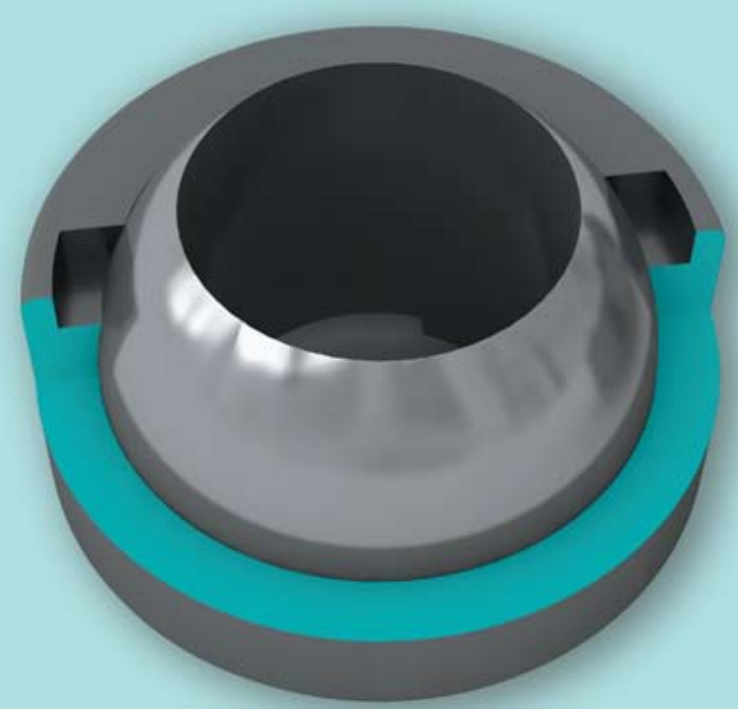
COMBINED RADIAL/THRUST BEARINGS

DOUBLE DIRECTION COMBINED RADIAL/THRUST ROLLER BEARINGS



TYPE РИК000000

Dimensions, mm							Bearing designation		Radial load rating, N		Axial load rating, N		Limiting rotational speed, min-1	Mass, Kg	Bearing designation		
									dynamic	static	dynamic	static					
d	D	B	B1	D1	r min	r1 min			Cr	Cor	Ca	Coa		m	epk	analogue	
20	52	46	16	42	1,0	1,0	**РИК2052**		33500	76000	14900	22400	7020	0,460	**РИК2052**	ZARN2052	INA
25	57	50	20	47	1,0	1,0	**РИК2557**		35500	86000	22600	36000	6000	0,530	**РИК2557**	ZARN2557	INA
25	72	60	20	62	1,0	1,0	**РИК2572**		80000	199000	243000	41500	4920	1,290	**РИК2572**	ZARN2572	INA
30	62	50	20	52	1,0	1,0	**РИК3062**		39000	101000	24300	41500	5460	0,660	**РИК3062**	ZARN3062	INA
30	80	66	20	68	1,5	1,0	**РИК3080**		107000	265000	26000	47000	4440	1,650	**РИК3080**	ZARN3080	
35	70	54	20	60	1,5	1,0	**РИК3570**		56000	148000	26000	47000	4800	0,810	**РИК3570**	ZARN3570	INA
35	85	66	20	73	1,5	1,0	**РИК3585**		110000	285000	27500	53000	4020	1,820	**РИК3585**	ZARN3585	INA
40	75	54	20	65	1,5	1,0	**РИК4075**		59000	163000	275000	53000	4380	0,980	**РИК4075**	ZARN4075	INA
45	80	60	25	70	1,5	1,0	**РИК4580**		61000	177000	38000	74000	4020	1,230	**РИК4580**	ZARN4580	INA
45	105	82	25	90	1,5	1,0	**РИК45105**		154000	405000	40000	82000	3300	3,300	**РИК45105**	ZARN45105	INA
50	90	60	25	78	1,5	1,0	**РИК5090**		90000	300000	40000	82000	3600	1,550	**РИК5090**	ZARN5090	INA
50	110	82	25	95	2,0	1,0	**РИК50110**		172000	480000	42000	90000	3120	3,200	**РИК50110**	ZARN50110	INA
55	115	82	25	100	2,0	1,0	**РИК55115**		177000	500000	44000	92000	2940	3,500	**РИК55115**	ZARN55115	INA
60	120	82	25	105	2,0	1,0	**РИК60120**		187000	553000	44500	98000	2740	4,100	**РИК60120**	ZARN60120	INA
65	125	82	25	110	2,0	1,0	**РИК65125**		159000	455000	54000	104000	2640	4,400	**РИК65125**	ZARN65125	INA
70	130	82	25	115	2,0	1,0	**РИК70130**		201000	630000	56000	119000	2400	4,500	**РИК70130**	ZARN70130	INA



SPHERICAL PLAIN BEARINGS

Spherical plain bearings are sliding bearings, inner and outer rings of which have sliding surfaces of spherical shape.

Spherical plain bearings are intended to transfer radial, axial and combined loads in movable or unmovable joints of machine and mechanisms. The following must be taken into account:

- movable joint – connection, in which spherical plain bearings operate due to the motion of one ring relative to the other at relatively low sliding speed;
- unmovable joint – mounting joint, in which spherical plain bearings operate due to single periodic shifts of one ring relative to the other; they are mainly intended to compensate misalignment of the shaft and housing.

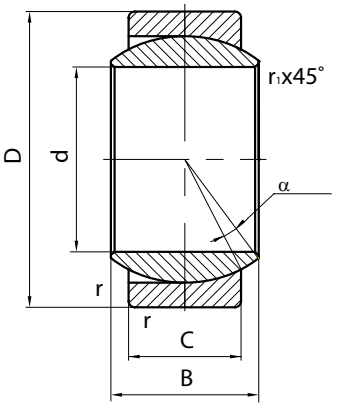
Spherical plain bearings with steel/steel sliding surface require lubricant supply.

Spherical plain bearings with steel/steel sliding surfaces are intended for accommodation of alternating heavy, impact or static loads. They are produced of high-quality bearing steel ШХ15, ШХ15СГ or stainless steel 95Х18Ш (ГОСТ 801).

Serial bearings are serviceable at temperatures up to +120°C. The short-term operation of bearing at temperature +150°C is allowed. For more severe temperature conditions the bearings are produced of special design variants.

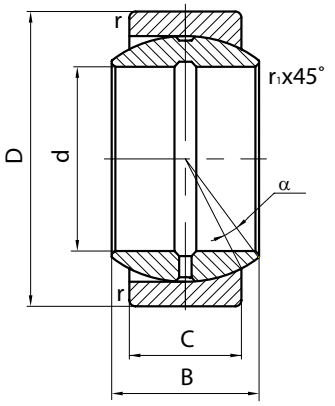
SPHERICAL PLAIN BEARINGS
STEEL-ON-STEEL

Bearings for movable (unmovable) joints without holes and grooves for lubrication



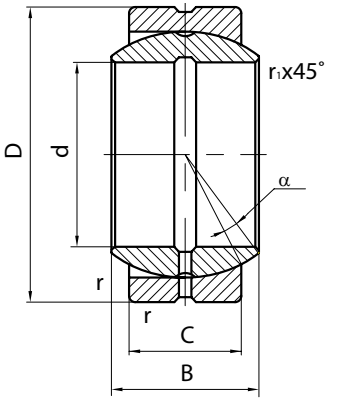
Ш (ШМ)

Bearings for movable joints with holes and grooves in inner ring for lubrication



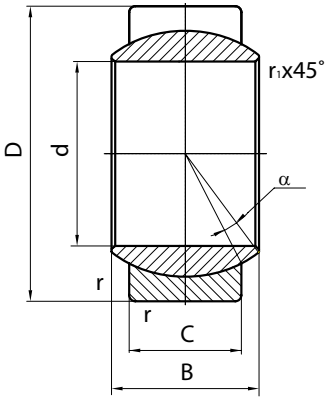
ШС

Bearings for movable joints with holes and grooves for lubrication in inner and outer rings



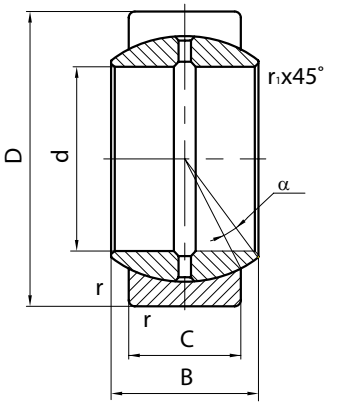
ШС ...К

Bearings for movable (fixed) joints without holes and grooves for lubrication and with split on outer ring



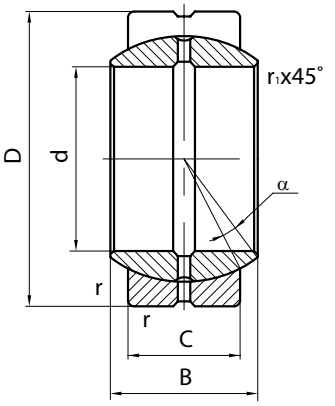
ШП (ШМП)

Bearings for movable joints with holes and grooves for lubrication in inner ring and with a split on outer ring



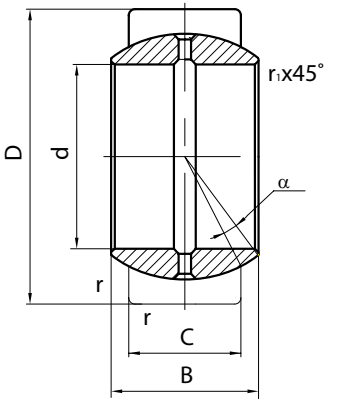
ШСП

Bearings for movable joints with holes and grooves for lubrication in inner and outer rings and with a split on outer ring



ШСП...К

Bearings for movable joints with holes and grooves for lubrication in inner ring and with a split on outer ring



ШСЛ

SPHERICAL PLAIN BEARINGS

TYPE Ш(ШМ), ШС, ШС…К, ШП(ШМП), ШСП, ШСП…К, ШСЛ

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Mass, Kg	Bearing designation
									dynamic	static		
d	D	C	B	r min	r_1 min				Cr	Cor	m	epk
5	14	4	6	0,5	0,5	13	Ш5		2060	17000	0,005	Ш5
5	14	4	6	0,5	0,5	13	ШМ5			17000	0,005	ШМ5
5	14	4	6	0,5	0,5	13	ШС5		2060	17000	0,005	ШС5
6	14	4	6	0,5	0,5	13	Ш6		2060	17000	0,005	Ш6
6	14	4	6	0,5	0,5	13	ШМ6			17000	0,005	ШМ6
6	14	4	6	0,5	0,5	13	ШС6		2060	17000	0,005	ШС6
6	14	4	6	0,5	0,5	13	ШСП6		3400	17000	0,004	ШСП6
8	17	5	8	0,5	0,5	15	Ш8		3300	27500	0,008	Ш8
8	17	5	8	0,5	0,5	15	ШМ8			27500	0,008	ШМ8
8	17	5	8	0,5	0,5	15	ШП8		5500	27500	0,008	ШП8
8	17	5	8	0,5	0,5	15	ШС8		3300	27500	0,008	ШС8
8	17	5	8	0,5	0,5	15	ШСП8		5500	27500	0,008	ШСП8
9	20	6	9	0,5	0,5	12	Ш9		5040	40500	0,013	Ш9
9	20	6	9	0,5	0,5	12	ШМ9			40500	0,013	ШМ9
9	20	6	9	0,5	0,5	12	ШС9		5040	40500	0,013	ШС9
10	20	6	9	0,5	0,5	12	ШМП10			40500	0,013	ШМП10
10	20	6	9	1,0	0,5	12	ШСП10		8150	40500	0,012	ШСП10
10	30	10	14	1,0	0,5	11	2Ш10		11300	107900	0,052	2Ш10
10	30	10	14	1,0	0,5	11	2ШМ10			107900	0,052	2ШМ10
10	30	10	14	0,6	0,5	12	2ШС10		11300	107900	0,052	2ШС10
12	22	7	10	1,0	0,5	11	ШМП12			54000	0,017	ШМП12
12	22	7	10	1,0	0,5	11	ШСП12		10800	54000	0,016	ШСП12
12	32	12	16	1,0	0,5	11	2Ш12		14830	141200	0,065	2Ш12
12	32	12	16	1,0	0,5	11	2ШМ12			141200	0,065	2ШМ12
12	32	12	16	0,6	0,5	11	2ШС12		14830	141200	0,065	2ШС12
15	28	8	12	1,0	0,5	11	ШМП15			85000	0,036	ШМП15
15	28	8	12	1,0	0,5	11	ШП15		17000	85000	0,036	ШП15
15	28	8	12	1,0	0,5	11	ШСП15		17000	85000	0,035	ШСП15
15	35	14	18	1,0	0,5	11	2Ш15		19400	184400	0,082	2Ш15
15	35	14	18	1,0	0,5	11	2ШМ15			184400	0,082	2ШМ15
15	35	14	18	1,0	0,5	11	2ШС15		19400	184400	0,082	2ШС15
17	32	10	14	1,0	0,5	10	ШМП17			106500	0,049	ШМП17
17	32	10	14	1,0	0,5	10	ШП17		21200	106500	0,049	ШП17
17	32	10	14	1,0	0,5	10	ШСП17		21200	106500	0,048	ШСП17
17	40	14	21	1,0	0,5	15	2Ш17		22240	211800	0,148	2Ш17
17	40	14	21	1,0	0,5	15	2ШМ17			211800	0,148	2ШМ17
20	35	12	16	1,0	0,5	9	ШМП20			146000	0,066	ШМП20
20	35	12	16	1,0	0,5	9	ШП20		30000	146000	0,066	ШП20
20	47	15	26	1,5	0,5	22	2Ш20		27000	256900	0,190	2Ш20
20	47	15	26	1,0	0,5	22	2ШМ20			256900	0,190	2ШМ20
20	47	15	26	0,6	0,5	22	2ШС20		27000	256900	0,190	2ШС20
25	42	16	20	1,0	0,5	7	ШМП25			240000	0,114	ШМП25
25	42	16	20	1,0	0,5	7	ШП25		48000	240000	0,117	ШП25
25	52	15	28	1,0	0,5	22	2ШМ25			294200	0,262	2ШМ25
25	52	15	28	1,0	0,5	22	2ШС25		31000	294200	0,262	2ШС25
30	47	18	22	1,0	0,5	6	ШМП30			310000	0,159	ШМП30
30	47	18	22	1,0	0,5	6	ШП30		62000	310000	0,159	ШП30
35	55	15	22	1,0	0,5	9	9ШМ35			345000	0,190	9ШМ35
35	55	21	26	1,5	0,5	7	ШМП35			400000	0,238	ШМП35
35	55	21	26	1,5	0,5	7	ШП35		80000	400000	0,238	ШП35
35	55	21	26	1,5	0,5	7	ШСП35		80000	400000	0,236	ШСП35
40	62	22	28	1,5	0,5	7	ШМП40			500000	0,332	ШМП40
40	62	22	28	1,5	0,5	7	ШП40		100000	500000	0,332	ШП40

SPHERICAL PLAIN BEARINGS

TYPE Ш(ШМ), ШС, ШС…К, ШП(ШМП), ШСП, ШСП…К, ШСЛ

Dimensions, mm						α degree	Bearing designation		Load ratings, N		Mass, Kg	Bearing designation
									dynamic	static		
d	D	C	B	r min	r_1 min				Cr	Cor	m	epk
45	70	25	32	2,0	0,5	7	**ШМП45**			640000	0,462	**ШМП45**
45	70	25	32	2,0	0,5	7	**ШП45**		127000	640000	0,462	**ШП45**
45	70	25	32	2,0	0,5	7	**ШСП45**		127000	640000	0,460	**ШСП45**
50	75	28	35	2,0	0,5	6	**ШМП50**			780000	0,562	**ШМП50**
50	75	28	35	2,0	0,5	6	**ШП50**		156000	780000	0,562	**ШП50**
55	85	32	40	2,0	0,8	7	**Ш55**		122000	1085000	0,880	**Ш55**
55	85	32	40	2,0	0,8	7	**ШМ55**			1085000	0,880	**ШМ55**
55	85	32	40	2,0	0,8	7	**ШМП55**			1085000	0,871	**ШМП55**
55	85	32	40	2,0	0,8	7	**ШСП55**		217000	1085000	0,863	**ШСП55**
60	90	34	44	2,0	0,8	7	**ШМЛ60**			1220000	0,980	**ШМЛ60**
60	90	34	44	2,0	0,8	6	**ШСЛ60**		245000	1220000	0,940	**ШСЛ60**
60	105	40	63	1,1	1,0	17	**GШСЛ60**		336000	1680000	2,130	**GШСЛ60**
60	110	34	60	2,0	0,8	19	**2ШСЛ60**		267000	1337000	2,184	**2ШСЛ60**
60	130	70	85	2,0	0,8	20	**6ШСЛ60**		693000	3463500	6,000	**6ШСЛ60**
70	105	40	49	2,0	0,8	6	**ШСЛ70**		315000	1560000	1,560	**ШСЛ70**
70	120	45	70	1,1	1,0	16	**GШСЛ70**		435000	2173000	3,000	**GШСЛ70**
70	125	35	70	2,5	0,8	22	**2ШСЛ70**		314000	1571000	2,410	**2ШСЛ70**
75	105	41	52	1,1	0,8	7	**ШС75**		205000	1947500	1,320	**ШС75**
80	125	70	76	2,0	0,8	6	**ШСЛ80**		400000	2000000	3,780	**ШСЛ80**
90	130	50	60	2,0	0,8	5	**ШСЛ90**		490000	2450000	2,820	**ШСЛ90**
90	160	50	80	3,0	0,8	15	**2ШСЛ90**		555500	2779000	6,100	**2ШСЛ90**
100	125	25	30	1,5	0,8	2	**8ШС100**		150000	1425000	0,920	**8ШС100**
100	150	55	70	2,0	1,0	7	**ШСЛ100**		610000	3050000	5,120	**ШСЛ100**
100	180	70	115	2,0	1,0	20	**2ШЛ100**		957500	4788000	11,500	**2ШЛ100**
110	150	35	40	2,0	1,0	2	**9ШС110**		242550	2310000	1,900	**9ШС110**
110	160	55	70	1,1	1,0	6	**ШСЛ110**		655000	3250000	4,900	**ШСЛ110**
120	180	70	85	2,0	1,0	6	**ШСЛ120**		950000	4750000	8,090	**ШСЛ120**
120	215	90	130	3,0	1,0	14	**2ШСЛ120**		1462000	7310000	19,700	**2ШСЛ120**
130	200	52	95	3,0	1,0	16	**ШСЛ130**		730000	3750000	8,930	**ШСЛ130**
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