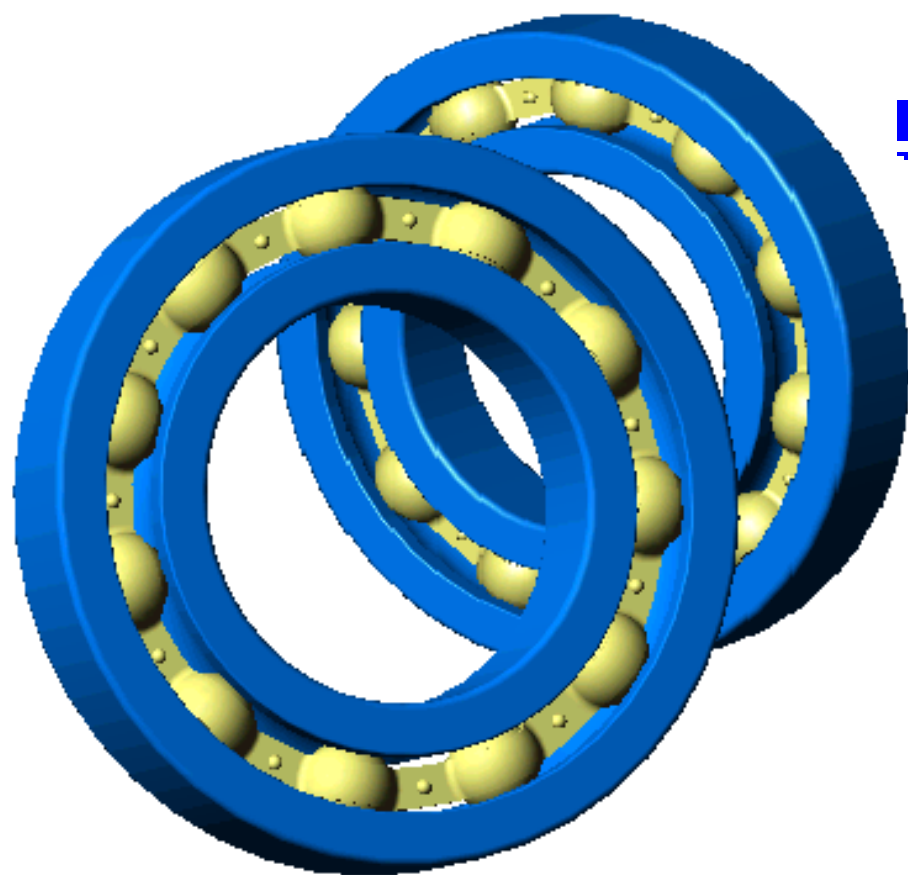


LYC

Bearings



Luoyang Bearing Factory



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Appendix:

Marketing networks and address of LYC	
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The headquarter of Luoyang Bearing Corporation Ltd.



advanced production equipments



sophisticated measurement instruments



wide variety of products

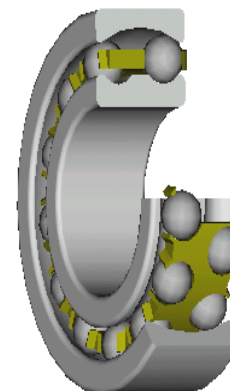
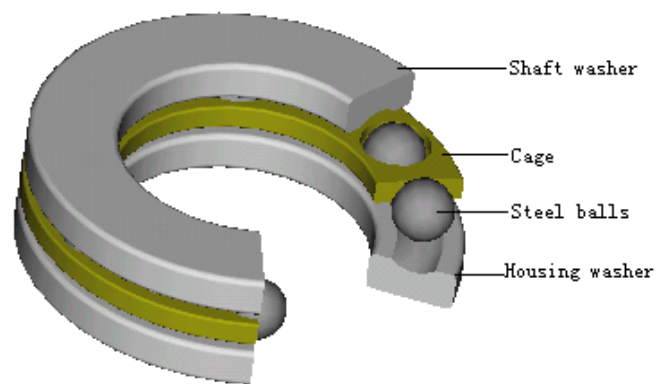
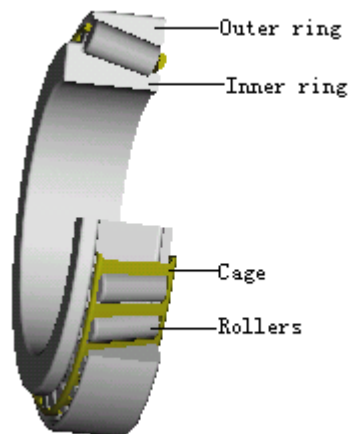


the largest bearing of LYC products

Basic Structures and Types of Rolling Bearings

A rolling bearing is generally composed of an inner ring, an outer ring, a set of rolling elements and a cage (Fig 1.1). Bearings are classified into radial bearings and thrust bearing depending on the direction of load. In addition, they also can be classified into ball bearings and roller bearings depending on the type of rolling elements and they are further segregated by their different designs or specific purpose, such as bearings without inner ring or outer ring, bearings with shield and seal, bearings with split inner ring or split outer ring and split bearings.

LYC is capable of designing the types of radial bearing and thrust bearings according to properties and directions of their subjected load, the detail types are given in the following. (Main parameters of all kinds of bearings are respectively listed in various bearing dimension tables of this catalog.)



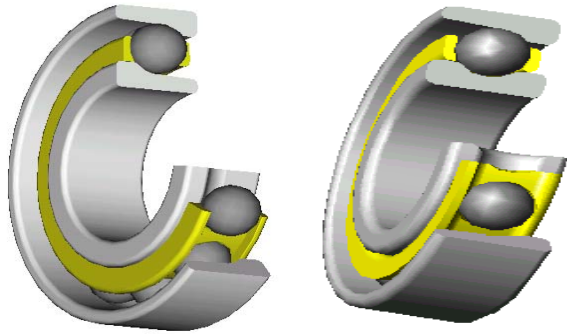
Radial bearings

Deep groove ball bearings

Single row
with shield (s) or seal(s)
with snap ring (groove) in outer ring

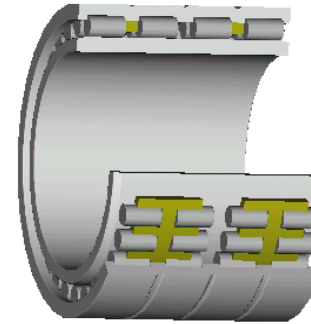
Self-aligning ball bearings

with cylindrical bore
with tapered bore



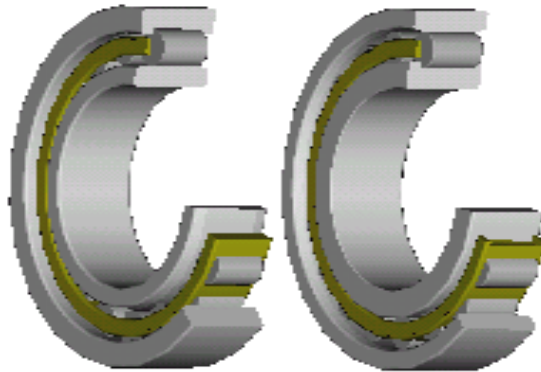
Angular contact ball bearings

single row
paired mounting or stack mounting
four-point contact ball bearings



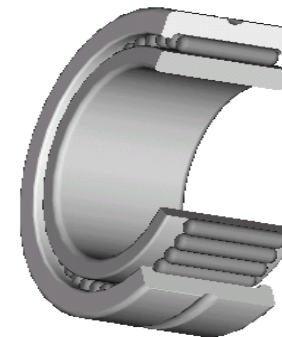
Cylindrical roller bearings

four-row



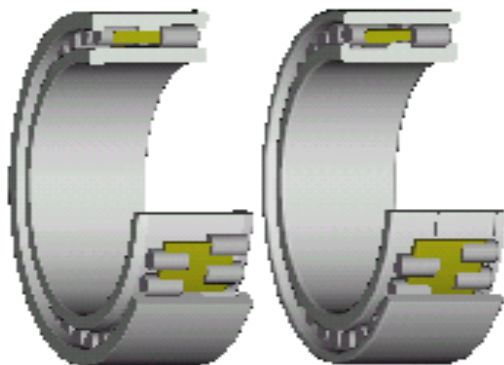
Cylindrical roller bearings

single row N type
 NU type
 NJ type
 NUP type
 RNU type



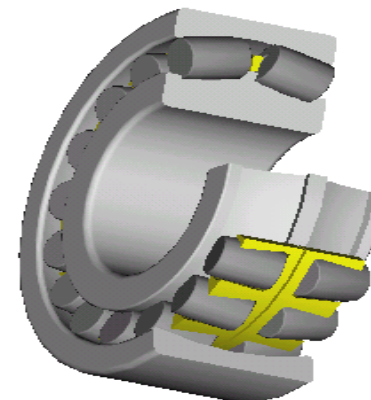
Needle roller bearings

single
double row



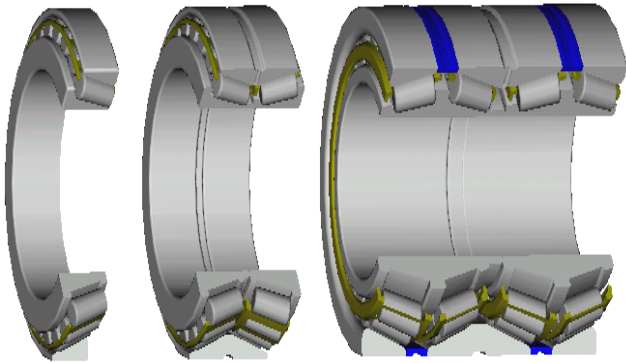
Cylindrical roller bearings

double NN type
 NNU type



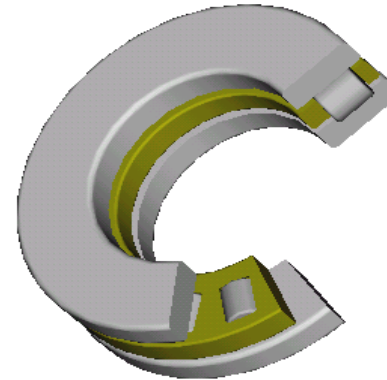
Spherical roller bearings

with cylindrical bore
with tapered bore



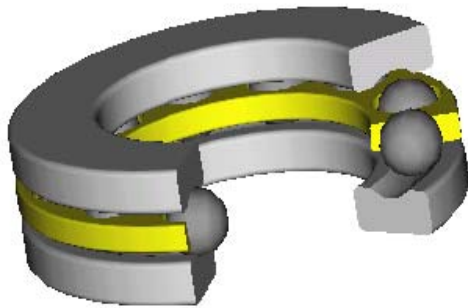
Tapered roller bearings

**single row
double row
four-row**



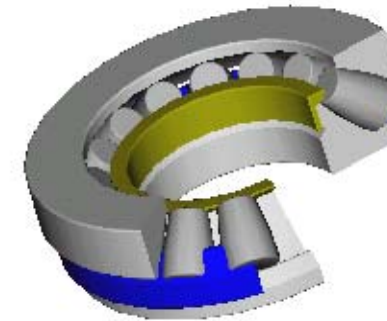
Cylindrical roller thrust bearings

**single direction
double direction**

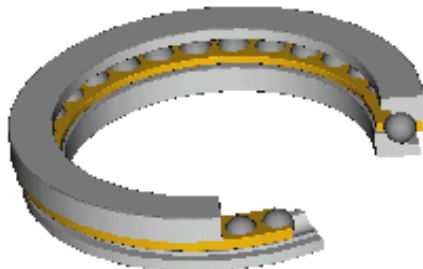


Thrust ball bearings with flat back face

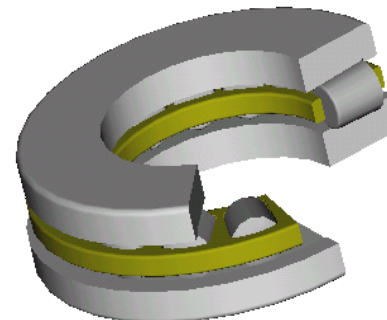
**single direction
double direction**



Spherical roller thrust bearings



Angular contact thrust ball bearing



Tapered roller thrust bearings

**single direction
double direction**

LYC Bearing Designations

LYC bearing designations consist of the prefix, the basic designation and the suffix. Generally, the basic designation consists of an identification code of the bearing type, the dimensional series code and the bore diameter identification code. The identification code of bearing type is listed in Table 2.1.

Code	Bearing type	Code	Bearing type
0	Double row angular contact ball bearings	7	Angular contact ball bearings
1	Self-aligning ball bearings	8	Cylindrical roller thrust bearings
2	Spherical roller bearings and spherical roller thrust bearings	9	Tapered roller thrust bearings
3	Single row tapered roller bearings	N	Single row roller bearings
35, 75	Double row tapered roller bearings	NN	Double row or multi cylindrical roller bearings
38	Four-row tapered roller bearings	QJ	Four-point contact ball bearings
5	Thrust ball bearings		
56	Angular contact thrust ball bearings		
6	Deep groove ball bearings		

The commonly used supplementary codes by LYC are listed in the following and their meanings are explained as:

Prefix:

- L** Removable inner or outer ring of a separable bearing
- R** Bearing without removable inner or outer ring (only suitable for needle roller bearings of type NA)
- K** Roller and cage assembly
- WS** Shaft washer of a cylindrical roller thrust bearing
- GS** Housing washer of a cylindrical roller thrust bearing
- KOW**—Thrust bearing without shaft washer

KIW—Thrust bearing without housing washer

LR Bearing with removable inner ring or outer ring and rolling elements assembly

Suffix:

Internal design

- A** Deviating or modified internal design
- B** Standard type (the design contents can be altered according to different bearing structures)
- C** Example: **B** indicates nominal contact angle $\alpha = 40^\circ$ for angular contact ball bearings, and it
- D** indicates the increased contact angle for tapered roller bearings.
- C** indicates nominal contact angle $\alpha = 15^\circ$ for angular contact ball bearings. **E** indicates the reinforced bearings
- AC** Nominal contact angle $\alpha = 25^\circ$ for angular contact ball bearings
- D** Split bearings

Codes of seals, shields and external designs

- K** Tapered bore, taper 1:12 on diameter
- K30** Tapered bore, taper 1:30 on diameter
- R** Bearing with flanged outer ring
- N** Bearing with snap ring groove in outer ring
- NR** Bearing with snap ring groove in outer ring and snap ring
- RS** Embedded case rubber seal at one side of the bearing (rubbing seal)
- 2RS** Embedded case rubber seals at both sides of the bearing (rubbing seal)
- RZ** Embedded case rubber seal at one side of the bearing (non-rubbing seal)
- 2RZ** Embedded case rubber seals at both sides of the bearing (non-rubbing seal)
- Z** Bearing with shield at one side

-ZZ Bearing with shields at both sides

Codes of bearing materials

/HE Rings, rolling elements and cages, or only rings and rolling elements, made of elector-slag refined bearing steel ZGCr15, ZGCr15SiMn

/HA Rings, rolling elements and cages, or only rings and rolling elements, made of vacuum arc-melted steel

/HU Rings, rolling elements and cages, or only rings and rolling elements, made of unble hardening stainless steel 1Cr18Ni9Ti

/HV Rings, rolling elements and cages, or only rings and rolling elements, made of hardening stainless steel (/HV-9Cr18; /HV1-9Cr18Mo)

/HN Rings, rolling elements, made of hardening bearing steel (/HN-Cr4Mo4V; /HN1-Cr14Mo4; /HN2-Cr15Mo4V; /HN3-W18Cr4V)

/HC Rings rolling elements, or only rolling elements, made of carbonized steel (/HC-20Cr2Ni4A; /HC1-20Cr2Mn2MoA; /HC2-15Mn)

/HP Rings and rolling elements, made of beryllium bronze or other anti-magnetic materials.

/HQ Rings and rolling elements, made of seldom used materials (/HQ--plastic; /HQ1---porcelain)

/HG Rings rolling elements, or only rings, made of other bearing steels (/HG-5CrMnMo; /HG1-55SiMoVA)

F Solid cage, made of steel, nodular cast iron or powder metallurgy, the additional figure indicates the different materials
F1—carbon steel, F2—graphite, F3—nodular, cast iron, F4— powder metallurgy

Q Bronze solid cage, the additional figure indicates the different materials Q1—ferro-aluminium manganese bronze, Q2—ferro-silicon zinc bronze, Q3 — nichrome silicon bronze, Q4 —

aluminium bronze

M Brass solid cage

L Light alloy solid cage, the additional figure indicates the different materials L1—LY11CZ; L2—LY12CZ

T Phonetic resin solid cage

TH Glass-fiber-reinforced phenols resin cage (basket type)

TN Molded cage with engineering plastic, the additional figure indicates the different materials
TN1—nylon, TN2—polysulfone, TN3—polyimide
TN4—polycarbonate, TN5—polyformal dehyde

J Pressed steel plate cage, the additional figure indicates the different materials

Y Pressed brass plate cage, the additional figure indicates the different materials

SZ Cage is made of spring steel wire or spring plate

V Full complement bearing(without cage)

Tolerance and clearance

/P6 Tolerance class conforms to standard group 6

/P6X Tolerance class conforms to standard group 6x

/P5 Tolerance class conforms to standard group 5

/P4 Tolerance class conforms to standard group 4

/P2 Tolerance class conforms to standard group 2

/C1 Internal clearance conforms to standard group 1

/C2 Internal clearance conforms to standard group 2

/C3 Internal clearance conforms to standard group 3

/C4 Internal clearance conforms to standard group 4

/C5 Internal clearance conforms to standard group 5

/C9 Bearing internal clearance differs from the present standard, the tolerance class and clearance can be simplified into/P63,/P43, when they need to be expressed simultaneously

Codes of bearing arrangement

/DB Back-to-back arrangement

/DF Face-to-face arrangement

/DT Tandem arrangement

Other bearing features

/Z Limited values of the vibration acceleration level, the additional figures indicate the different limited values, as Z1, Z2, Z3

/V Limited values of the vibration speed level, the additional figures express the different values, as V1, V2, V3

/S0 The bearing ring are tempered through heat treatment, and the operating temperature is up to 150°C

/S1 The bearing ring are tempered through heat treatment, and the operating temperature is up to 200°C

/S2 The bearing ring are tempered through heat treatment, and the operating temperature is up to 250°C

/S3 The bearing ring are tempered through heat treatment, and the operating temperature is up to 300°C

/S4 The bearing ring are tempered through heat treatment, and the operating temperature is up to 350°C

/W20 The bearing with three lubrication holes in outer ring

/W26 The bearing with six lubrication holes in outer ring

/W33 The bearing with a lubrication groove and three lubrication holes in outer ring

/W33X The bearing with three lubrication holes and six lubrication holes in outer ring

/AS The bearing with lubrication holes in outer ring, the additional figure shows the numbers of oil hole (used for needle roller bearings)

/IS The bearing with lubrication holes in inner ring, the additional figure shows the numbers of oil hole (used for needle roller

bearings)

When “R” is added behind AS, IS, they respectively express the inner ring or outer ring with a lubrication hole and groove

/HT The bearing is filled with special grease for high temperature, grease quantities which differ from the standard filling are identified by an additional letter

A grease quantity is less than standard filling

B grease quantity is more than standard filling

C full quantity of grease

/LT Bearing with the grease for lower temperature, the additional letter is the same meaning as HT

/MT Bearing with the grease for medium temperature, the additional letter is the same meaning as HT

/LHT Bearing with the grease for lower or higher temperature, the additional letter is the same meaning as HT

/Y Combinations of the letter Y with another letter or figure can identify differences from the standard design which are not concluded by other established suffixes

/YA Modification of structures (comprehensive expression)

/YA1 The outer surface of bearing outer ring differs from that of standard design

/YA2 The bore of the bearing inner ring differs from that of standard design

/YA3 Ring faces differ from that of standard design

/YA4 Ring raceway differs from that of standard design

/YA5 Rolling elements differ from that of standard design

/YB Alteration of specifications (comprehensive expression)

/YB1 The surface of rings with plating layer

/YB2 Alteration of bearing size and tolerance class

/YB3 Alteration of the surface roughness for bearing rings

/YB4 Alteration of heat treatment demands (e.g. hardness)

- Note:**
- 1) If suffix Y with another letter or additional figure are presented in bearing designations, the product drawings or the supplementary specifications must be looked up.**
 - 2) In this catalog, LYC designations of inch size tapered roller bearings are basically corresponding to TIMKEN designations.**

Selection of Bearing Type

Each type of bearing has characteristic properties which make it particularly suitable for certain applications. In many cases, several factors have to be taken into account when selecting bearing type. But at present, no general rules can be given. The following main factors should be considered.

Available space

In many cases, one of the principal dimensions of the bearing---usually the bore diameter---is predetermined by the machine design. Selection of bearing is always according to the diameter of the shaft. All kinds of ball bearings can be selected for small-diameter shafts. Cylindrical roller bearings, tapered roller bearings or spherical roller bearings can be selected for large-diameter shafts (ball bearings also can be selected sometimes). Available space for mounting bearing should be considered. If radial space is limited, all kinds of ball or roller bearings with low cross-sectional height (super-light or extra-light series) should be selected. If axial space is limited, all kinds of narrow or extra narrow ball or roller bearings should be selected.

Bearing loads

The magnitude of the load is the factor which usually determines the size of bearing to be used. Generally, roller bearings can carry heavier loads than ball bearings having the same external dimension. The load direction of bearings must be considered for selection bearing in addition to the magnitude of the load. When the bearings carry pure radial load, deep groove ball bearings, cylindrical roller bearings and needle roller bearings should be selected. When the bearing carry pure axial load, thrust ball bearings, cylindrical roller thrust bearings and

needle roller thrust bearings should be selected. When bearings carry combined load which comprises a radial and an axial load acting simultaneously, angular contact ball bearings or tapered roller bearings are generally selected. If radial load in combined load is larger and axial load in combined load is smaller, deep groove ball bearings or cylindrical roller bearings with ribbed rings can be selected. If axial load is considered to be principle in combined load, angular contact ball bearings or spherical roller thrust bearings should be selected.

When the load acts eccentrically on the bearing, tilting moments will arise. If moment load is not large, single row angular contact ball bearings in pair or tapered roller bearings arranged face-to-face or back-to-back are more suitable. If moment load is too large, slowing bearings are more suitable. Data relative to slowing bearings can be found in separate catalog ----LYC Slowing Bearing Catalog.

In bearing applications, when center line of the shaft relative to the center of bearing produces slight misalignment, and this misalignment is in the range of permissible misalignment errors, it does not affect the bearing operation. Permissible misalignment errors of various bearing are listed in Table 3.1. permissible misalignment errors of self-aligning ball bearings and spherical roller bearings are listed in Table 3.2.

Limiting speeds

The bearing speeds are limited by the permissible operating temperature. Bearings with low friction and correspondingly low heat generation are therefore the most suitable for high speed operation. When deep groove ball bearings and cylindrical roller bearings carry pure radial load, they are suitable for high speed application. When angular contact ball bearings carry combined load, it can operate well in high speed.

Because of difference in bearing structures, thrust bearings can not

reach the same high speed as the radial bearings.

Running accuracy

Bearings made with higher precision than normal are required for arrangements which must have high running accuracy, e.g. machine tool spindles, and for the shafts rotating at very high speeds. It is important for customers to notice that manufacturing accuracy of bearings should be matched with that of shaft and housing bore.

The values of different tolerance classes of bearings are shown in the section “Bearing data—general” in this catalog.

Stiffness

The elastic deformation in a rolling bearing under load is very small and in most cases, it can be ignored. However, bearing stiffness is of significance in some applications, e.g. machine tool spindles. Because the contact conditions between rolling elements and raceways are excellent, cylindrical roller bearings and tapered roller bearings have greater stiffness than ball bearings. And the stiffness can be enhanced by persuading. But if “persuading amount “exceeds a given optimum value, it will affect the bearing operation.

Noise and vibration

Noise and vibration of bearings used for general applications are not necessary to control. But bearings used for electric motor, electric household appliance or precision machinery, noise and vibration must be strictly controlled. In manufacturing and acceptance check, noise of bearings are ensured by controlling the value of vibration. The vibration acceleration level of bearing and the limiting value of vibration speed level can be measured by means of measuring instruments and various methods.

Axial displacement

The normal bearing arrangement for the support of a shaft consists of a locating(fixed) bearing and a non-locating (free) bearing. Non-locating bearing can be displaced axially, thus preventing axial nipping, e.g. as a result of thermal expansion of the shaft. Cylindrical roller bearings having one ring without ribs or needle roller bearings are particularly suitable for using as non-locating bearings. At this time, inner ring and outer ring should be mounted with interference fits. If non-separable bearings, e.g. deep groove ball bearings or spherical roller bearings are used as non-locating bearings, one of the bearing ring must have a loose fit.

Frictional moment

The frictional force depends on several factors, such as the bearing type and size, load and operating speed. In general, frictional force of ball bearings is smaller than that of roller bearings. When bearings carry pure radial load, the frictional force of radial bearings is smaller. When bearings carry pure axial load, the frictional force of thrust ball bearings is smaller, too. Angular contact ball bearings has the smallest frictional force under the combined load. Deep groove ball bearings or cylindrical roller bearings should be selected precedently when customers need low frictional moment bearings. All kind of sealed bearings should be selected in the case of low frictional moment, but it is necessary to notice that bearings with rubbing seal should be avoided. Oil drip-feed lubrication, oil jet lubrication or oil mist lubrication are recommended to select.

Mounting and dismounting

Separable angular contact ball bearings, cylindrical roller bearings, tapered roller bearings and thrust bearings with cylindrical bores can

be mounted on the shaft or into the housing bore independently with great facility. If mounting and dismounting are often needed in bearing applications, the bearings mentioned above should be selected precedently.

Bearings with tapered bore can be mounted directly on the tapered journal and can be easily mounted on the cylindrical shaft with appropriate adapter or withdrawal sleeve. Now, self-aligning ball bearings, spherical roller bearings or double row cylindrical roller bearings with tapered bore should be selected.

Table 3.1

Bearing type	Permissible misaligning error
Deep groove ball bearing (clearance group 0)	8′
Deep groove ball bearing (clearance group 3)	12′
Deep groove ball bearing (clearance group 4)	16′
Cylindrical roller bearing (N. NU type)	4′
Cylindrical roller bearing (other structures)	2′
Single row tapered roller bearing	2′

表 3.2

Self-aligning ball bearing		Spherical roller bearing	
Diameter series	Permissible misaligning error	Diameter series	Permissible misaligning error
12	2.5°	213	1°
13	3°	222	1.5°
14	3°	223	2°
22	2.5°	230	1.5°
23	3°	231	1.5°
		232	2.5°
		239	1.5°
		240	2°
		241	2.5°

Selection of Bearing Size

The size of a bearing to be used for an application is based on the selection of load carrying capacity, the requirements regarding life and reliability.

Selecting bearing size using the dynamic load ratings

The definition of the basic rating life is that of an individual rolling bearing, or a group of apparently identical rolling bearings operating under the same conditions, the life is associated with 90% reliability.

The basic rating life can be calculated from:

$$L_{10} = \left(\frac{C}{P} \right)^\varepsilon$$

where

L_{10} ----basic rating life, millions of revolutions

C ----basic dynamic load rating, N

P ----equivalent dynamic load rating, N

ε ----exponent of the life equation

$\varepsilon = 3$ for ball bearings

$\varepsilon = 10/3$ for roller bearings

For bearings operating at constant speed, it may be more convenient to deal with a basic rating life in operating hours using the equation:

$$L_{10h} = \frac{10^6}{60n} \left(\frac{C}{P} \right)^\varepsilon$$

or

$$L_{10h} = \frac{10^6}{60n} L_{10}$$

where

L_{10h} ----basic rating life, operating hours

n ----rotational speed, r/min

It is preferable to express the rating life of load and rail vehicle bearing, in terms of kilometers traveled. This can be obtained by using the following equations:

$$L_{10s} = \frac{\pi D}{1000} L_{10}$$

where

L_{10s} ----basic rating life, millions of kilometers

D ----where diameter, metres

For the simplified calculation, take 500 hours as the nominal life and then derive the speed factor f_n and life factor f_h

$$f_n = \left(\frac{33 \frac{1}{3}}{n} \right)^{1/\varepsilon}$$

$$f_h = \left(\frac{L_{10h}}{500} \right)^{1/\varepsilon}$$

This rating life equation is rewritten:

$$C = \frac{f_h}{f_n} P$$

Based on this rewritten life equation, corresponding to factor f_n and f_h life values can be looked out according to bearing operation speed and service life, then introduce the values into the above equation, the

requisite obtained and selected bearing sizes can be found in the catalog.

Life factor f_n and f_t will be found in Table 4.1 and 4.2.

Table4.1

Lh	fh		Lh	fh		Lh	fh		Lh	fh				
	Ball bearing	Roller bearing		Ball bearing	Roller bearing		ball bearing	Roller bearing		ball bearing	Roller bearing			
h	bearing	bearing	h	bearing	bearing	h	bearing	bearing	h	bearing	bearing			
100	0.585	0.617	700	1.12	1.11	4600	2.1	1.95	34000	4.08	3.55			
110	0.604	0.635	750	1.14	1.13	4800	2.13	1.97	36000	4.16	3.61			
120	0.622	0.652	800	1.17	1.15	5000	2.15	2	38000	4.24	3.67			
130	0.639	0.668	850	1.19	1.17	5500	2.22	2.05	40000	4.31	3.72			
140	0.654	0.683	900	1.22	1.19	6000	2.29	2.11	42000	4.38	3.78			
150	0.67	0.697	950	1.24	1.21	6500	2.35	2.16	44000	4.45	3.83			
160	0.684	0.71	1000	1.26	1.23	7000	2.41	2.21	46000	4.51	3.88			
170	0.698	0.723	1100	1.3	1.27	7500	2.47	2.25	48000	4.58	3.93			
180	0.712	0.736	1200	1.34	1.3	8000	2.52	2.3	50000	4.64	3.98			
190	0.724	0.748	1300	1.38	1.33	8500	2.57	2.34	55000	4.79	4.1			
200	0.737	0.76	1400	1.41	1.36	9000	2.62	2.38	60000	4.93	4.2			
220	0.761	0.782	1500	1.44	1.39	9500	2.67	2.42	65000	5.07	4.31			
240	0.783	0.802	1600	1.47	1.42	1000	2.71	2.46	70000	5.19	4.4			
260	0.804	0.822	1700	1.5	1.44	11000	2.8	2.53	75000	5.31	4.5			
280	0.824	0.84	1800	1.53	1.47	12000	2.88	2.59	80000	5.43	4.58			
300	0.843	0.858	1900	1.56	1.49	13000	2.96	2.66	85000	5.54	4.68			
320	0.861	0.875	2000	1.59	1.52	14000	3.04	2.72	90000	5.65	4.75			
340	0.879	0.891	2200	1.64	1.56	15000	3.11	2.77	100000	5.85	4.9			
360	0.896	0.906	2400	1.69	1.6	16000	3.17	2.83						
380	0.913	0.921	2600	1.73	1.64	17000	3.24	2.88						
400	0.928	0.935	2800	1.78	1.68	18000	3.3	2.93						
420	0.944	0.949	3000	1.82	1.71	19000	3.36	2.98						
440	0.959	0.962	3200	1.86	1.75	20000	3.42	3.02						
460	0.973	0.975	3400	1.89	1.78	22000	3.53	3.11						
480	0.987	0.988	3600	1.93	1.81	24000	3.63	3.19						
500	1	1	3800	1.97	1.84	26000	3.37	3.27						
550	1.03	1.03	4000	2	1.87	28000	3.83	3.35						
600	1.06	1.06	4200	2.03	1.89	30000	3.91	3.42						
650	1.09	1.08	4400	2.06	1.92	32000	4	3.48						

表4.2

n r/min	fn		n r/min	fn		n r/min	fn		n r/min	fn		n r/min	fn	
	Ball bearing	Roller bearing		Ball bearing	Roller bearing		Ball bearing	Roller bearing		Ball bearing	Roller bearing		Ball bearing	Roller bearing
10	1.49	1.44	70	0.781	0.800	460	0.417	0.455	3400	0.214	0.250	22000	0.115	0.143
11	1.45	1.4	75	0.763	0.784	480	0.411	0.449	3600	0.210	0.245	24000	0.112	0.139
12	1.41	1.4	80	0.747	0.769	500	0.405	0.444	3800	0.206	0.242	26000	0.109	0.136
13	1.37	1.33	85	0.732	0.755	550	0.393	0.431	4000	0.203	0.238	28000	0.106	0.133
14	1.34	1.3	90	0.718	0.742	600	0.382	0.420	4200	0.199	0.234	30000	0.104	0.130
15	1.31	1.27	95	0.705	0.730	650	0.372	0.410	4400	0.196	0.231			
16	1.28	1.25	100	0.693	0.719	700	0.362	0.401	4600	0.194	0.228			
17	1.25	1.23	110	0.672	0.699	750	0.354	0.393	4800	0.191	0.225			
18	1.23	1.2	120	0.652	0.681	800	0.347	0.385	5000	0.188	0.222			
19	1.21	1.18	130	0.635	0.665	850	0.340	0.378	5500	0.182	0.216			
20	1.19	1.17	140	0.620	0.650	900	0.333	0.372	6000	0.177	0.211			
22	1.15	1.13	150	0.606	0.637	950	0.327	0.366	6500	0.172	0.206			
24	1.12	1.1	160	0.593	0.625	1000	0.322	0.360	7000	0.168	0.201			
26	1.09	1.08	170	0.581	0.613	1100	0.312	0.350	7500	0.164	0.197			
28	1.06	1.05	180	0.570	0.603	1200	0.303	0.341	8000	0.161	0.193			
30	1.04	1.03	190	0.560	0.593	1300	0.2995	0.333	8500	0.158	0.190			
32	1.01	1.01	200	0.550	0.584	1400	0.288	0.326	9000	0.155	0.186			
34	0.994	0.994	220	0.533	0.568	1500	0.281	0.319	9500	0.152	0.183			
36	0.975	0.977	240	0.518	0.553	1600	0.275	0.313	10000	0.149	0.181			
38	0.958	0.962	260	0.504	0.540	1700	0.270	0.307	11000	0.145	0.176			
40	0.941	0.947	280	0.492	0.528	1800	0.265	0.302	12000	0.141	0.171			
42	0.926	0.933	300	0.481	0.517	1900	0.260	0.297	13000	0.137	0.167			
44	0.912	0.92	320	0.471	0.507	2000	0.255	0.293	14000	0.134	0.163			
46	0.898	0.908	340	0.461	0.498	2200	0.247	0.285	15000	0.131	0.160			
48	0.885	0.896	360	0.452	0.490	2400	0.240	0.277	16000	0.128	0.157			
50	0.874	0.886	380	0.444	0.482	2600	0.234	0.271	17000	0.125	0.154			
55	0.846	0.861	400	0.437	0.475	2800	0.228	0.265	18000	0.123	0.151			
60	0.822	0.838	420	0.430	0.468	3000	0.223	0.259	19000	0.121	0.149			
65	0.8	0.818	440	0.423	0.461	3200	0.218	0.254	20000	0.119	0.147			

Table 4.3

Operating conditions	Operating hours
Unfrequently used instruments and machines: Domestic machines, technical apparatus for medical use	300~3000
Machines used for short periods or intermittently: Electric hand tools, agricultural machines, lifting tackle in workshops, construction machines.	3000~8000
Machines to work with high operational reliability during short periods or intermittently: Lifts, cranes for packaged goods or slings of drums, bales etc.	8000~12000
Machines of use 8 hours per day but always fully utilized: Gear drives for general purposes, electric motors for industrial use, rotary crushers.	10000~25000
Machines for use 8 hours per day and fully unutilized: Machine tools, woodworking machines, machines for the engineering industry, lift cranes for dulk materials, printing equipment, separators and centrifuges	20000~30000
Machines for continuous use 24 hours per day: Compressors, pumps, medium-sized electrical machinery, rolling gear units, textile machinery.	40000~50000
Machines to work with high operational reliability 24 hours per day: Pulp and papermaking machinery, large electric machinery, power station plant, mine Pumps and mine ventilator fans.	~100000

Table 4.4

Properties	fp	Applications
Without or a slight shock	1.0~1.2	Electric motors, steam turbines, ventilator fans, pumps
Medium shock	1.2~1.8	Vehicles, machine tools, transmission drives, cranes, metallurgical internal combustion machines, engines, transmission case
Heavy shock	1.8~3.0	Crushers, rolling mills, oil misers, vibrating screens

Bearing service life

It is important for the customers to ensure the bearing service life. Both estimations of extra long and short service life will bring an unnecessary trouble and waste.

You can select the reasonable bearing service life in the following values of Table 4.3.

Calculation of equivalent dynamic bearing loads

In many cases, bearings are infrequently used to carry pure radial load or pure axial load in actual applications, they usually carry radial and axial loads simultaneously (e.g. combined loads.) Before the calculation of bearing service life, the actual bearing load should be converted into equivalent dynamic load by the equation:

$$P=XFr+YFa$$

where

P----equivalent dynamic load, N

Fr----actual radial load, N

Fa----actual axial load, N

X----radial load factor

Y----axial load factor

Depending on the types of the bearing, factor X and Y should be taken the different values, the actual values will be obtained in bearing dimension tables.

In many cases, bearings operate under the conditions of vibration

and shock, so it is very difficult to calculate the actual load exactly. In order to meet customers' calculating needs, bearing load factor f_p should be introduced into the equation of equivalent dynamic load and its values are shown in Table 4.4, then the equation of equivalent dynamic load applies:

$$P = f_p (XFr + YFa)$$

where

f_p ----shock load factor

Mean equivalent dynamic load

In actual applications, bearings are seldom used to operate under the constant load, so the mean equivalent dynamic load should be introduced into the equation. The several typical examples are listed in the following.

Fig. 4.1 shows the calculation of mean equivalent loads of which the bearings operate under the conditions of fluctuating loads and speeds.

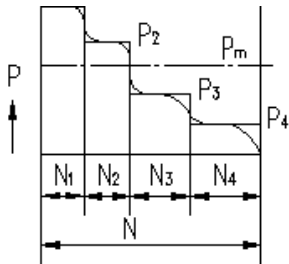


图 4.1

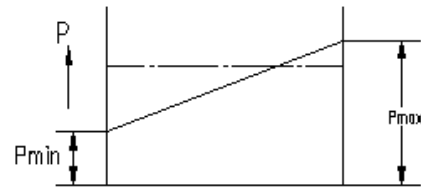


图 4.2

$$P_m = \sqrt[3]{\frac{N_1 P_1^3 + N_2 P_2^3 + N_3 P_3^3 + N_4 P_4^3 + K}{N}}$$

where

P_1 、 P_2 、 P_3 、 P_4 ····-equivalent dynamic loads during N_1 , N_2 , N_3 , N_4revolutions $N_1 + N_2 + N_3 + N_4 + \dots = N$

If bearing speed is constant and the bearing load direction is constant too, but the magnitude of the load fluctuates between P_{min} and

P_{max} (Fig. 4.2), the mean equivalent load can be obtained from:

$$P_m = \frac{P_{min} + 2P_{max}}{3}$$

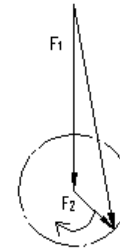


图 4.3

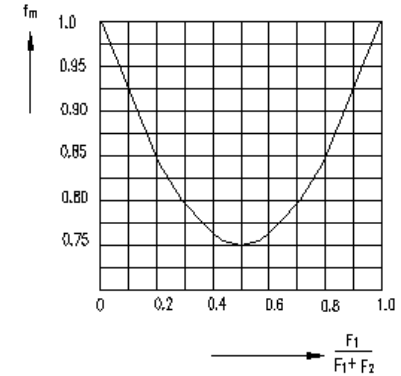


图 4.4

If, as illustrated in Fig. 4.3, the bearings carry combined actions of F_1 and F_2 , the load on the bearing consists of a load F_1 which is constant in magnitude and direction (e.g. the weight of a rotor), and a rotating constant load F_2 (e.g. a centrifugal force caused by an unbalanced load), the mean load can be obtained from:

$$F_m = f_m (F_1 + F_2)$$

Values for the factor f_m can be obtained from Fig 4.4

After F_m obtained by using the above equation, convert F_m into mean equivalent load P_m , according to horizontal direction of the combined loads F_1 and F_2 .

In addition to the above factors, bearing operating temperature and the parts hardness after heat treatment will directly influence the bearing load carrying capacity. So the temperature factor f_T and the hardness factor f_H should be brought into this equation for modifying dynamic load rating. Factor f_T changes with the operating temperature and its value is given in Table 4.5.

$$C_T = f_T C$$

where

C_T ----dynamic load rating when the operating temperature is $T^\circ\text{C}$.

f_T ----temperature factor

$C_H=f_H C$

where

C_H ----dynamic load rating after the hardness factor modified

f_H ----hardness factor

$$f_H = \left(\frac{\text{HRC}}{58} \right)^{8.6}$$

Adjusted rating life equation

In the previous life equation discussed, the influence of bearing load on life of a given bearing is considered. Where the rolling bearing listed in this catalogue are used in conventional applications, a calculation of the basic rating life L_{10} is adequate. Since the techniques of bearing lubrication, manufacture and materials smelting have constantly developed and improved, it is necessary to revise the life equation. In 1997 ISO introduced a revised life equation to this end. This adjusted rating life equation is:

Table 4.5

Operating temperature $^\circ\text{C}$	<120	125	150	175	200	225	250	300
f_T	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.60

$$L_{na} = a_1 a_2 a_3 \left(\frac{C}{P} \right)^{\epsilon} \quad \text{or simply}$$

$$L_{na} = a_1 a_2 a_3 L_{10}$$

where

L_{na} ----adjusted ratings life, millions of revolutions (the index n represents adjusted life of the requisite reliability as $(100-n) \%$)

a_1 ----life adjustment factor for reliability (see Table 4.6)

a_2 ----life adjustment factor for material

a_3 ----life adjustment factor for operating conditions

When bearings are made of standard bearing steels, the factor $a_2=1$ and when superior steels or special steels (e.g. vacuum degassing steel, arc-remelted steel etc.) are applied, the factor $a_2>1$.

In the normal operating conditions, the factor $a_3=1$, when bearings are adequately lubricated and lubricants will form elastic hydrodynamic film between surfaces of rolling contact, the factor $a_3>1$, but if bearings are inadequately lubricated, the factor $a_3<1$.

It is important to notice that compensative effectiveness for bearings life won't be satisfied by using improved materials in defective lubrication, then the factor $a_2 \leq 1$.

Table 4.6

Reliability %	L_n	a_1
90	L10	1
95	L5	0.62
96	L4	0.53
97	L3	0.44
98	L2	0.33
99	L1	0.21

Selecting bearing size using the static load ratings

When a bearing is in stationary or approximate stationary state (e.g. bearing moves or operates at very slow speeds), bearing size should be selected by using the static load carrying capacity, the results can be obtained from the following equation:

$$C_0 = S_0 P_0$$

Where C_0 ----basic static load rating, N

P_0 ----equivalent static load, N

S_0 ----static safety factor, see Table 4.7

The final selecting value of equivalent static bearings load can be calculated by the following equation and the greater value must be taken

from the twice calculating results.

$$P_o = X_o F_r + Y_o F_a$$

$$P_o = F_r$$

Where

P_o ----equivalent static load, N

F_r ----radial load, N

Type of operation	S_o
On high smooth running or pronounced shock loads	1.2~1.5
Normal	0.8~1.2
Smooth, vibration free dynamic loads	0.5~0.8

Table 4.7

Bearing operating conditions	$S_o \geq$
Dam floodgate units	1
Hanging bridge	1.5
Large sized crane tackle with Slight added dynamic loads	1
Small sized crane tackle with Heavy added dynamic loads	1.6

F_a ----radial load, N

X_o ----radial load factor

Y_o ----axial load factor

Factor X_o 、 Y_o have been given in the bearing tables, it is stressed that when a bearing carries fluctuating load or heavy shock load, the bearing size which is selected using previous dynamic load rating must be checked by means of selection of bearing using static load rating. The checked safety factor S_o can be given in Table 4.8, but for spherical roller thrust bearings, static safety factor S_o must be $S_o \geq 2$ absolutely, whether the bearings are rotating or not.

Table 4.8

Limiting Speed

Limiting speeds of bearings depend on the bearing type, size, load, lubrication, clearance etc. Appropriate conditions of limiting speed listed in this catalog are: equivalent dynamic load $P \leq 0.1C$, radial bearings carry pure radial load, thrust bearings only carry axial load, cooling condition is normal, housing and shaft are stiffness, manufacturing accuracy of bearing is ordinary class.

If bearings do not conform to the above conditions (e. g. $P > 0.1C$ or bearings carry combined load of radial and axial), the operating speed of bearings should be lower than a given limiting speed, so reduction speed factors f_1, f_2 are introduced, their values can be taken from Fig. 5.1 and Fig. 5.2.

If limiting speed listed in this catalog do not meet the requirements, the limiting speed can be increased by means of improving manufacturing accuracy, increasing clearance values and using circulating oil, mist or oil jet lubrications and selecting special materials and special design cages.

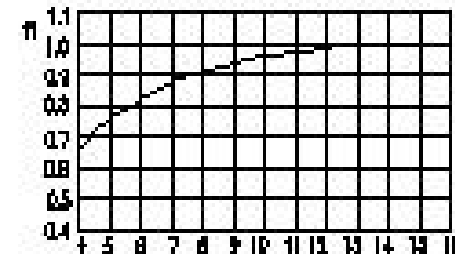


Fig 5.1

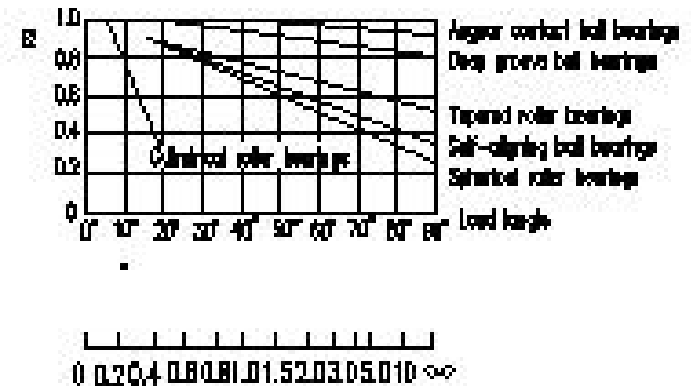


Fig 5.2

Materials

To ensure Lyc bearings with perfect performance and reliability, the bearings are made of various high quality steels.

Steels for bearing ring and rolling elements

Most bearing rings and rolling elements are all made of through-hardening steels, GCr15 or GCr15SiMn. High precision bearings of tolerance class P4 and P2 are made of electro-slag refined steels, ZGCr15 or ZGCr15SiMn. Sometimes, other materials are adopted depending on the requirements of customers. When bearings carry heavy shock loads in application, for example, bearings for freight train and rolling mill, carbonized bearing steel 20CrNi2MoA, 20Cr2Ni4A are used in addition to case-hardened bearing steels 42CrMo, 50Mn. Corrosion resisting bearings made of stainless bearing steel and temperature-resistant bearings made of heat-resisting bearing steels also can be provided for customers. Except for carbon chromium bearing steel, the bearings made of other material must be suffixed with the standard supplementary identification code. Chemical composition of steels is given in the following. Identification codes for other materials are given in the section “LYC bearing designation”.

Materials for cages

The main function of the cage is to prevent contact between the rolling elements. In separable bearings, the cage retains the rolling elements when the bearing is being mounted and dismounted. In grease-lubricated some of the grease inside the bearing will

adher to the cage forming a lubricant reservoir and ensuring good lubrication of the operating surfaces of the bearing.

Because of the difference in the bearing types and size, structures of cage are also different, the differences include structures of cage, material, manufacturing methods, production cost.

Materials are selected depending on technological procedure of cages. Steel plate 10# and brass plate are used for pressed steel cages. Steel 30#, brass HPb59-1, bronze QAL10-3-1.5, aluminium ZL102 and phenols resin are used for machined solid cage. Powder metal and nylon 66 also can be selected.

For each type of the bearings, one particular cage design can be regarded as the standard for that bearing. Except that the bearings with the standard cage do not need to identify in the bearing designations, the bearing with non-standard cage must be identified by the suffix in the section “LYC bearing designation”. Cage material symbol is not suffixed for each of the following conditions:

- Deep groove ball bearings and cylindrical roller bearings in outside diameter $D \leq 400\text{mm}$ with pressed steel or brass plate (or sheet) cage, and those in diameter $D > 400\text{mm}$ with machined brass solid cage.
- Double row cylindrical roller bearings and spherical roller bearings (asymmetrical roller) with machined brass solid cage
- Self-aligning ball bearings in outside diameter $D \leq 200\text{mm}$ with pressed steel plate (or sheet) cage, and those in diameter $D > 200\text{mm}$ with machined brass solid cage
- Spherical roller bearings (symmetrical roller bearing with floating guide ring), double row angular contact ball bearings, needle roller thrust bearings and long cylindrical roller bearings with pressed steel plate (or sheet) cage

——Needle roller bearings with pressed steel or hard aluminium plate (or sheet) cage

——Single row separable angular contact ball bearings with pressed steel or brass plate (or sheet) cage

——Single row angular contact ball bearings (three or four-point contact and two-piece inner ring or outer ring) with machined aluminium solid cage

——Single row angular contact ball bearings in outside $D \leq 250\text{mm}$, contact angle $\alpha = 40^\circ$ with pressed steel plate cage, contact angle $\alpha = 15^\circ, 25^\circ$ with cage made of phenols resin, and those in outside diameter $D > 250\text{mm}$ with machined brass or hard aluminium solid cage

——Single row angular contact ball bearings in tolerance classes P5, P4, P2 with cage made of phenols resin, and those with counterbore in inner ring and those modified with cage made of phenols resin

——Double row angular contact ball bearings (two-piece inner ring) with machined solid cage, and thrust roller (cylindrical roller, tapered roller and spherical roller) bearings with machined solid cage

——Tapered roller bearings in outside diameter $D \leq 650\text{mm}$ with pressed steel plate cage, and those in diameter $D > 650\text{mm}$ with machined steel cage

——Thrust ball bearings in outside diameter $D \leq 250\text{mm}$ with pressed steel plate (or sheet) cage, and those in outside diameter $D > 250\text{mm}$ with machined solid cage

Chemical Composition of steels

Symbol	Chemical Composition %								
	C	Si	Mn	Cr	Ni	Mo	P	S	Cu
GCr15	0.95	0.15	0.25	1.40			$\leq$	$\leq$	
	1.05	0.35	0.45	1.65	--	--	0.025	0.025	--
GCr15SiMn	0.95	0.45	0.95	1.40			$\leq$		
	1.05	0.75	1.25	1.65	--	--	0.025	0.025	--
G20CrNi2Mo	0.17	0.15	0.40	0.35	1.60	0.20	$\leq$	$\leq$	$\leq$
	0.23	0.40	0.70	0.65	2.0	0.30	0.030	0.030	0.25
G20CrNi4	0.17	0.15	0.30	1.25	3.25		$\leq$	$\leq$	
	0.23	0.40	0.60	1.75	3.75	--	0.030	0.030	0.25
50Mn	0.48	0.17	0.70				--		
	0.56	0.37	1.00	--	--	--	--	--	--
42CrMo	0.38	0.17	0.50	0.90		0.15		--	--
	0.45	0.37	0.80	1.20	--	0.25	--	--	--

GCr15 is equivalent to ASTM 52100, DIN 100 Cr6, JIS SUJ27. GCr15SiMn is equivalent to DIN 100 CrMn67. G20CrNi2MoA is equivalent to AISI 4320, JIS SNCM415. G20Cr2Ni4 is equivalent to ASTM E 3316. 50Mn is equivalent AISI 1551. 42CrMo is equivalent to JIS SCM 440, DIN 42CrMo4. DIN 42CrMo4.

Bearing Data-General

Dimensions and Tolerances

The boundary dimensions and dimension series of LYC standard bearings conform to GB273.1-87 (Equivalent to ISO355-1977) ,GB273.2-87 (Equivalent to ISO104-1979) ,GB273.3-88 (Equivalent to ISO15-1981) .Limits for chamfer dimension conform to GB274-91 (Equivalent to ISO582-1979) . A progressive series of standardised diameters for every standard radial bearing arranges in diameter series 7,8,9,0,1,2,3,4 and width series 8,0,1,2,3,4,5,6 in order of increasing width. The diameter series for thrust bearings are 0,1,2,3,4,5 the height series are 7,9,1,2. ISO355 series codes are added in dimension tables of single row tapered roller bearings. To meet customers' specific requirements, inch size tapered roller bearings and non-standard specific bearings are listed in this catalog.

The tolerances of LYC bearings conform to the tolerances of other countries according to GB307.1-84 (Equivalent to ISO492-1986, ISO199-1979) According to the dimensional and running accuracy, LYC bearings are classified into the following tolerance classes: 0, 6, 5, 4, 2.

Tolerance classes of LYC bearings, corresponding to ISO, SKF, JIS, DIN and ANSI, are shown in Table 7.1.

Table 7.1

Code	Tolerance class				
LYC	0	6	5	4	2
ISO	0	6	5	4	2
SKF	0	P6	P5	P4	
JIS	0	6	5	4	
DIN	0	P6	P5	P4	

ANSI	ABEC1 ABEC2		ABEC5 RBEC5	ABEC7	ABEC9
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Tolerance symbols

d bearing bore diameter, nominal
 Δ ds deviation of a single bore diameter
 Δ dmp single plane mean bore diameter deviation (for a tapered bore, refers only to the theoretical small end of bore)
Vdp bore diameter variation in a single radial plane
VIdmp mean bore diameter variation (only applies to a cylindrical bore)
D bearing outside diameter, nominal
 Δ Ds deviation of single outside diameter
 Δ Dmp single plane mean outside diameter deviation
VDp outside diameter variation in a single radial plane
VDmp mean outside diameter variation
B inner ring width, nominal
 Δ Bs deviation of a single width of the inner ring
VBs inner ring width variation
C deviation of a single width of the outer ring
 Δ Cs deviation of a single width of the outer ring
VCs outer ring width variation
Kia radial runout of assembled bearing inner ring
Kea radial runout of assembled bearing outer ring
Sd inner ring reference face (backface) runout with bore
S_D variation of outside surface generatrix inclination with outer ring reference face (backface)
Sia assembled bearing inner ring face (backface) runout with raceway
Sea assembled bearing outer ring face (backface) runout with raceway
Additional symbols for tapered roller bearings

D_1 outer ring flange outside diameter, nominal
 T bearing width, nominal
 ΔT_s deviation of the actual bearing width
 T_1 effective width of inner sub-unit, nominal
 ΔT_{1s} deviation of the actual effective width of inner sub-unit
 T_2 effective width of outer sub-unit, nominal
 ΔT_{2s} deviation of the actual effective width of outer sub-unit

Tolerance values

The tolerance values for radial bearings (except tapered roller bearings) and tapered roller bearing and thrust ball bearings are given in Table 7.2~7.11, 7.12~7.18, 7.19~7.21.

Table 7.2 Class 0 tolerances for radial bearings (except tapered roller bearings)

Inner ring

d mm		△dmp		Vdp			Vdmp	Kia	△Bs			V _{BS}
				Diameter series					All	Normal	Modified ¹⁾	
				8, 9	0, 1	2, 3, 4						
over	incl	high	low	max			max	max	high	low		max
0.6 ¹⁾	2.5	0	−8	10	8	6	6	10	0	−40	—	12
2.5	10	0	−8	10	8	6	6	10	0	−120	−250	15
10	18	0	−8	10	8	6	6	10	0	−120	−250	20
18	30	0	−10	13	10	8	8	13	0	−120	−250	20
30	50	0	−12	15	12	9	9	15	0	−120	−250	20
50	80	0	−15	19	19	11	11	20	0	−150	−380	25
80	120	0	−20	25	25	15	15	25	0	−200	−380	25
120	180	0	−25	31	31	19	19	30	0	−250	−500	30
180	250	0	−30	38	38	23	23	40	0	−300	−500	30
250	315	0	−35	44	44	26	26	50	0	−350	−500	35
315	400	0	−40	50	50	30	30	60	0	−400	−630	40
400	500	0	−45	56	56	34	34	65	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	1250	0	−125	—	—	—	—	100	0	−1250	—	100
1250	1600	0	−160	—	—	—	—	120	0	−1600	—	120
1600	2000	0	−200	—	—	—	—	140	0	−2000	—	140

Note: 1) This refers to the inner rings of single bearings made for paired or stack mounting.

Table 7.3 Class 0 tolerances for radial bearings (except tapered roller bearings)

Outer ring

D mm		△Dmp		V _{Dp} ²⁾				V _{Dmp} ²⁾	Kea	△Cs		Vs
				Oper bearings		Capped bearings ¹⁾						
				Diameter series								
				8, 9	0, 1	2, 3, 4	2, 3, 4					
over	incl	high	low	max				max	max	high	low	max
2.5 ¹⁾	6	0	-8	10	8	6	10	6	15	Indential to △Bs and V _{Bs} of inner ring of same bearing		
6	18	0	-8	10	8	6	10	6	15			
18	30	0	-9	12	9	7	12	7	15			
30	50	0	-11	14	11	8	16	8	20			
50	80	0	-13	16	13	10	20	10	25			
80	120	0	-15	19	19	11	26	11	35			
120	150	0	-18	23	23	14	30	14	40			
150	180	0	-25	31	31	19	38	19	45			
180	250	0	-30	38	38	23	—	23	50			
250	315	0	-35	44	44	26	—	26	60			
315	400	0	-40	50	50	30	—	30	70			
400	500	0	-45	56	56	34	—	34	80			
500	630	0	-50	63	63	38	—	38	100			
630	800	0	-75	94	94	55	—	55	120			
800	1000	0	-100	125	125	75	—	75	140			
1000	1250	0	-125	—	—	—	—	—	160			
1250	1600	0	-160	—	—	—	—	—	190			
1600	2000	0	-200	—	—	—	—	—	220			
2000	2500	0	-250	—	—	—	—	—	250			

Nots: 1) No values have been established for diameter series 8, 9, 0 and 1.

2) Applies before mounting and after removal of internal or external snap ring.

Table 7.4 Class 6 tolerances for radial bearings (except tapered roller bearings)

Inner ring

d mm		△dmp		Vdp			Vdmp	Kia	△Bs			V _{BS}
				Diameter series					All	Normal	Modified ¹⁾	
				8, 9	0, 1	2, 3, 4						
over	incl	high	low	max				max	max	high	low	max
0.6 ¹⁾	2.5	0	-7	9	7	5	5	5	0	-40	—	12
2.5	10	0	-7	9	7	5	5	6	0	-120	-250	15
10	18	0	-7	9	7	5	5	7	0	-120	-250	20
18	30	0	-8	10	8	6	6	8	0	-120	-250	20
30	50	0	-10	13	10	8	8	10	0	-120	-250	20
50	80	0	-12	15	15	9	9	10	0	-150	-380	25
80	120	0	-15	19	19	11	11	13	0	-200	-380	25
120	180	0	-18	23	23	14	14	18	0	-250	-500	30
180	250	0	-22	28	28	17	17	20	0	-300	-500	30
250	315	0	-25	31	31	19	19	25	0	-350	-500	35
315	400	0	-30	38	38	23	23	30	0	-400	-630	40
400	500	0	-35	44	44	26	26	35	0	-450	—	45
500	630	0	-40	50	50	30	30	40	0	-500	—	50

Note: 1) this refers to the inner rings of single bearings made for paired or stackmounting.

Table 7.5 Class 6 tolerances for radial bearings (except tapered roller bearings)

Outer ring

D mm		△Dmp		V _{Dp} ²⁾				V _{Dmp} ²⁾	Kea	△Cs		V _{cs}
				Oper bearings		Capped bearings ¹⁾						
				Diameter series								
				8, 9	0, 1	2, 3, 4	0,1,2,3,4					
over	incl	high	low	max				max	max	high	low	max
18	30	0	-8	10	8	6	10	6	9	Identical to △Bs and V _{Bs} inner ring of same bearing		
30	50	0	-9	11	9	7	13	7	10			
50	80	0	-11	14	11	8	16	8	13			
80	120	0	-13	16	16	10	20	10	18			
120	150	0	-15	19	19	11	25	11	20			
150	180	0	-18	23	23	14	30	14	23			
180	250	0	-20	25	25	15	—	15	25			
250	315	0	-25	31	31	19	—	19	30			
315	400	0	-28	35	35	21	—	21	35			
400	500	0	-33	41	41	25	—	25	40			
500	630	0	-33	48	48	29	—	29	50			
630	800	0	-45	56	56	34	—	34	60			
800	1000	0	-60	75	75	45	—	45	75			

Note:1) No values have been established for diameter series 8 and 9.

2) Applies before mounting and after removal of internal or external snap ring.

Table7.6Class5 tolerances for radial bearings (except tapered roller bearings)

Inner ring

d mm		△dmp		Vdp		Vdmp	Kia	Sd	Sia ¹⁾	△Bs			V _{BS}
				Diameter series						All	Normal	Modified ²⁾	
				8,9	0,1,2,3,4								
over	incl	high	low	max		max	max	max	max	high	low		max
	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

Note:1) Applies to deep groove ball bearings and angular contact ball bearings.

2) This refers to the inner rings of single bearings made for paired or stack mounting.

Table7.7Class5 tolerances for radial bearings (except tapered roller bearings)

Outer ring

D mm		△Dmp		V _{DP} ¹⁾		V _{Dmp}	Kea	S _D	Sea ²⁾	△Cs		V _{CS}
				Diameter series								
				8,9	0,1,2,3,4							
over	incl	high	low	max		max	max	max	max	high	low	max
18	30	0	−6	6	5	3	6	8	8	Identical to △Bs of inner ring of same bearing		5
30	50	0	−7	7	5	4	7	8	8			5
50	80	0	−9	9	7	5	8	8	10			6
80	120	0	−10	10	8	5	10	9	11			8
120	150	0	−11	11	8	6	11	10	13			8
150	180	0	−13	13	10	7	13	10	14			8
180	250	0	−15	15	11	8	15	11	15			10
250	315	0	−18	18	14	9	18	13	18			11
315	400	0	−20	20	15	10	20	13	20			13
400	500	0	−23	23	17	12	23	15	23			15
500	630	0	−28	28	21	14	25	18	25	18		
630	800	0	−35	35	26	18	30	20	30	20		

Note:1) No values have been established for capped bearings.

2)Applies to deep groove ball bearings and angular contact ball bearings.

Table7.8 Class4 tolerances for radial bearings (except tapered roller bearings)

 $\mu\text{ m}$

Inner ring

d mm		△dmp		△d _s ¹⁾		Vdp		Vdmp	Kia	Sd	Sia ²⁾	△Bs			V _{BS}
						Diameter series						All	Normal	Modified ³⁾	
						8,9	0,1,2,3,4								
over	incl	high	low	high	low	max		max	max	max	max	high	low		max
0.6 ¹⁾	2.5	0	−4	0	−4	4	3	2	2.5	3	3	0	−40	−250	2.5
2.5	10	0	−4	0	−4	4	3	2	2.5	3	3	0	−40	−250	2.5
10	18	0	−4	0	−4	4	4	2	2.5	3	3	0	−80	−250	2.5
18	30	0	−5	0	−5	5	4	2.5	3	4	4	0	−120	−250	2.5
30	50	0	−6	0	−6	6	5	3	4	4	4	0	−120	−250	3
50	80	0	−7	0	−7	7	5	3.5	4	5	5	0	−150	−250	4
80	120	0	−8	0	−8	8	6	4	5	5	5	0	−200	−380	4
120	180	0	−10	0	−10	10	8	5	6	6	6	0	−250	−380	5
180	250	0	−12	0	−12	12	9	6	8	7	8	0	−300	−500	6

Note:1) These deviations only apply to diameter series 0,1,2,3, and 4.

2) Applies to deep groove ball bearings and angular contact ball bearings.

3) Applies to inner rings of single bearings made for paried or stack mounting.

Table7.8 Class4 tolerances for radial bearings (except tapered roller bearings)

 $\mu\text{ m}$

Outer ring

D mm		△Dmp		△Ds ¹⁾		V _{DP}		V _{Dmp}	Kea	S _D	Sea ³⁾	△ Cs		V _{CS}
						直径系列								
						8,9	0,1,2,3,4							
over	incl	high	low	high	low	max		max	max	max	max	high	low	max
2.5 ¹⁾	6	0	−4	0	−4	4	3	2	3	4	5	Identical to △Bs of inner ring of same bearing		2.5
6	18	0	−4	0	−4	4	3	2	3	4	5			2.5
18	30	0	−5	0	−5	5	4	2.5	4	4	5			2.5
30	50	0	−6	0	−6	6	5	3	5	4	5			2.5
50	80	0	−7	0	−7	7	5	3.5	5	4	5			3
80	120	0	−8	0	−8	8	6	4	6	5	6			4
120	150	0	−9	0	−9	9	7	5	7	5	7			5
150	180	0	−10	0	−10	10	8	5	8	5	8			5
180	250	0	−11	0	−11	11	8	6	10	7	10			7
250	315	0	−13	0	−13	13	10	7	11	8	10			7
315	400	0	−15	0	−15	15	11	8	13	10	13			8

Note:1) These deviations only apply to diameter series 0,1,2,3, and 4.

2) No values have been established for capped bearings.

3) Applies to deep groove ball bearings and angular contact ball bearings.

Table7.10 Class2 tolerances for radial bearings (except tapered roller bearings)

 $\mu\text{ m}$

Inner ring

d mm		Δdmp		Δd_s		Vdp	Vdmp	Kia	Sd	Sia ¹⁾	ΔBs		V _{BS}
over	incl	high	low	high	low	max	max	max	max	max	high	low	max
0.6	2.5	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	0	-40	1.5
2.5	10	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	0	-40	1.5
10	18	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	0	-80	1.5
18	30	0	-2.5	0	-2.5	2.5	1.5	2.5	2.5	2.5	0	-120	2.5
30	50	0	-2.5	0	-2.5	2.5	1.5	2.5	2.5	2.5	0	-120	2.5
50	80	0	-4	0	-4	4	2	2.5	2.5	2.5	0	-150	2.5
80	120	0	-5	0	-5	5	2.5	2.5	2.5	2.5	0	-200	2.5
120	150	0	-7	0	-7	7	3.5	2.5	2.5	2.5	0	-250	2.5
150	180	0	-7	0	-7	7	3.5	5	4	5	0	-300	4
180	250	0	-8	0	-8	8	4	5	5	5	0	-350	5

Note:1) Applies to deep groove ball bearings and angular contact ball bearings.

Table7.11 Class2 tolerances for radial bearings (except tapered roller bearings)

 $\mu\text{ m}$

Outer ring

D mm		ΔDmp		ΔDs		V _{DP} ¹⁾	V _{Dmp}	Kea	S _D	Sea ²⁾	ΔCs		V _{CS}
over	incl	high	low	high	low	max	max	max	max	max	high	low	max
2.5 ¹⁾	6	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	Indental to ΔBs of inner ring of same bearing		1.5
6	18	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5			1.5
18	30	0	-4	0	-4	4	2	2.5	1.5	2.5			1.5
30	50	0	-4	0	-4	4	2	2.5	1.5	2.5			1.5
50	80	0	-4	0	-4	4	2	4	1.5	4			1.5
80	120	0	-5	0	-5	5	2.5	5	2.5	5			2.5
120	150	0	-5	0	-5	5	2.5	5	2.5	5			2.5
150	180	0	-7	0	-7	7	3.5	5	2.5	5			2.5
180	250	0	-8	0	-8	8	4	7	4	7			4
250	315	0	-8	0	-8	8	4	7	5	7			5
315	400	0	-10	0	-10	10	5	8	7	8			7

Note:1) No values have been established for capped bearings.

2) Aplies to deep groove ball bearings and angular contact ball bearings.

Table 7.12 Class 0 tolerances for tapered roller bearings $\mu\text{ m}$

Diameter and radial runout of inner ring

d mm		Δdmp		V_{dp}	V_{dmp}	K_{ia}
over	incl	high	low	max	max	max
10	18	0	-12	12	9	15
18	30	0	-12	12	9	18
30	50	0	-12	12	9	20
50	80	0	-15	15	11	25
80	120	0	-20	20	15	30
120	180	0	-25	25	19	35
180	250	0	-30	30	23	50
250	315	0	-35	35	26	60
315	400	0	-40	40	30	70

Table 7.13 Class 0 tolerances for tapered roller bearings $\mu\text{ m}$

Diameter and radial runout of outer ring

D mm		ΔDmp		V_{DP}	V_{Dmp}	K_{ea}
over	incl	high	low	max	max	max
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

Note: The tolerance the outside diameter D1 of an outer ring flange is h9.

Table 7.16 Class 5 tolerances for tapered roller bearings

 μm **Outer ring**

D mm		ΔD_{mp}		V_{DP}	V_{Dmp}	K_{ea}	S_D	ΔC_s	
over	incl	high	low	max	max	max	max	high	low
18	30	0	-8	6	5	6	8	Identical to ΔB_s of inner ring of same bearing	
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		

Note: The tolerance for the outside diameter D_1 of an outer ring flange is h9.

Table 7.17 Class 4 tolerances for tapered roller bearings

 μm **Inner ring and single row bearing width**

d mm		Δd_{mp}		Δd_s		V_{dp}	V_{dmp}	K_{ia}	S_d	S_{ia}	ΔB_s		ΔT_s	
over	incl	high	low	high	low	max	max	max	max	max	high	low	high	low
10	18	0	-5	0	-5	4	4	3	3	3	0	-200	+200	-200
18	30	0	-6	0	-6	5	4	3	4	4	0	-200	+200	-200
30	50	0	-8	0	-8	6	5	4	4	4	0	-240	+200	-200
50	80	0	-9	0	-9	7	5	4	5	4	0	-300	+200	-200
80	120	0	-10	0	-10	8	5	5	5	5	0	-400	+200	-200
120	180	0	-13	0	-13	10	7	6	6	7	0	-500	+350	-250
180	250	0	-15	0	-15	11	8	8	7	8	0	-600	+350	-250

Table7.14 Class0 tolerances for tapered roller bearings

 $\mu\text{ m}$

Inner and outer ring, single row bearing and sub-units width

d mm		ΔB_s		ΔC_s		ΔT_s		ΔT_{1s}		ΔT_{2s}	
over	incl	high	low	high	low	high	low	high	low	high	low
10	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

Table7.15 Class5 tolerances for tapered roller bearings

 $\mu\text{ m}$

Inner ring and single row bearing

d mm		Δd_{mp}		V _{dp}	V _{dmp}	K _{ia}	S _d	ΔB_s		ΔT_s	
over	incl	high	low	high	low	high	low	high	low	high	low
10	18	0	-7	5	5	5	7	0	-200	+200	-200
18	30	0	-8	6	5	5	8	0	-200	+200	-200
30	50	0	-10	8	5	6	8	0	-240	+200	-200
50	80	0	-12	9	6	7	8	0	-300	+200	-200
80	120	0	-15	11	8	8	9	0	-400	+200	-200
120	180	0	-18	14	9	11	10	0	-500	+350	-250
180	250	0	-22	17	11	13	11	0	-600	+350	-250

Table 7.16 Class 5 tolerances for tapered roller bearings

μ m

Outer ring

D mm		ΔDmp		V _{DP}	V _{Dmp}	K _{ea}	S _D	ΔC _s	
over	incl	high	low	max	max	max	max	high	low
18	30	0	-8	6	5	6	8	Identical to ΔBs of inner ring of same bearing	
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		

Note: The tolerance for the outside diameter D1 of an outer ring flange is h9.

Table 7.17 Class 4 tolerances for tapered roller bearings

μ m

Inner ring and single row bearing width

d mm		Δdmp		Δds		V _{dp}	V _{dmp}	K _{ia}	S _d	S _{ia}	ΔBs		ΔTs	
over	incl	high	low	high	low	max	max	max	max	max	high	low	high	low
10	18	0	-5	0	-5	4	4	3	3	3	0	-200	+200	-200
18	30	0	-6	0	-6	5	4	3	4	4	0	-200	+200	-200
30	50	0	-8	0	-8	6	5	4	4	4	0	-240	+200	-200
50	80	0	-9	0	-9	7	5	4	5	4	0	-300	+200	-200
80	120	0	-10	0	-10	8	5	5	5	5	0	-400	+200	-200
120	180	0	-13	0	-13	10	7	6	6	7	0	-500	+350	-250
180	250	0	-15	0	-15	11	8	8	7	8	0	-600	+350	-250

Table7.18 Class4 tolerances for tapered roller bearings

 $\mu\text{ m}$

Outer ring

D mm		ΔDmp		ΔDs		V_{DP}	V_{Dmp}	Kea	S_{D}	Sea	ΔCs	
over	incl	high	low	high	low	max	max	max	max	max	high	low
18	30	0	-6	0	-6	5	4	4	4	5	Identical to ΔBs of inner ring of same bearing	
30	50	0	-7	0	-7	5	5	5	4	5		
50	80	0	-9	0	-9	7	5	5	4	5		
80	120	0	-10	0	-10	8	5	6	5	6		
120	150	0	-11	0	-11	8	6	7	5	7		
150	180	0	-13	0	-13	10	7	8	5	8		
180	250	0	-15	0	-15	11	8	10	7	10		
250	315	0	-18	0	-18	14	9	11	8	10		
315	400	0	-20	0	-20	15	10	13	10	13		

Note: The tolerance for the outside diameter D1 of an outer ring flange is h9.

Table7.19 Class0,6,5 and 4 tolerances for thrust ball bearings

 $\mu\text{ m}$

d和d2 mm		0、6及5			4		
		$\Delta\text{dmpand}\Delta\text{d2mp}$		$V_{\text{dpand}}V_{\text{d2p}}$	$\Delta\text{dmpand}\Delta\text{d2mp}$		$\text{and}V_{\text{d2p}}$
over	incl	high	low	max	high	low	max
	18	0	-8	6	0	-7	5
18	30	0	-10	8	0	-8	6
30	50	0	-12	9	0	-10	8
50	80	0	-15	11	0	-12	9
80	120	0	-20	15	0	-15	11
120	180	0	-25	19	0	-18	14
180	250	0	-30	23	0	-22	17
250	315	0	-35	26	0	-25	19
315	400	0	-40	30	0	-30	23
400	500	0	-45	34	0	-35	26
500	630	0	-50	38	0	-40	30
630	800	0	-75	—	0	-50	—
800	1000	0	-100	—	—	—	—
1000	1250	0	-125	—	—	—	—

Table 7.20 Class 0, 6, 5 and 4 tolerances for thrust ball bearings μm

Housing washer

D mm		0, 6 and 5			4		
		ΔD_{mp}		V_{DP}	ΔD_{mp}		V_{DP}
over	incl	high	low	max	high	low	max
30	50	0	-16	12	0	-9	7
50	80	0	-19	14	0	-11	8
80	120	0	-22	17	0	-13	10
120	180	0	-25	19	0	-15	11
180	250	0	-30	23	0	-20	15
250	315	0	-35	26	0	-25	19
315	400	0	-40	30	0	-28	21
400	500	0	-45	34	0	-33	25
500	630	0	-50	38	0	-38	29
630	800	0	-75	55	0	-45	34
800	1000	0	-100	75	—	—	—
1000	1250	0	-1250	—	—	—	—
1250	1600	0	-160	—	—	—	—

Table 7.21 Class 0, 6, 5 and 4 tolerances for thrust ball bearings μm

Shaft washer and housing washer thickness variation

d ¹⁾ mm		Si				Se
		0	6	5	4	0, 6, 5 and 4
over	incl	max	max	max	max	max
	18	10	5	3	2	Identical to Si of shaft washer of same bearing
18	30	10	5	3	2	
30	50	10	6	3	2	
50	80	10	7	4	3	
80	120	15	8	4	3	
120	180	15	9	5	4	
180	250	20	10	5	4	
250	315	25	13	7	5	
315	400	30	15	7	5	
400	500	30	18	9	6	
500	630	35	21	11	7	
630	800	40	25	13	8	
800	1000	45	30	15	—	
1000	1250	50	35	18	—	

Note: 1) For double direction bearing, the permissible thickness variations, Si and Se are equal to those corresponding (same outside diameter) single direction bearing.

Table7.22 tolerance for tapered bore (taper 1:12) $\mu\text{ m}$

d mm		$\Delta\text{ dmp}$				$\Delta\text{ d1mp}-\Delta\text{ dmp}$				Vdp	
		Class0		Class6		Class0		Class6		Class0	Class6
over	incl	high	low	high	low	high	low	high	low	max	
	10	+15	0	+13	0	+15	0	+13	0	10	8
10	18	+18	0	+13	0	+18	0	+13	0	10	8
18	30	+21	0	+13	0	+21	0	+13	0	13	8
30	50	+25	0	+16	0	+25	0	+16	0	15	9
50	80	+30	0	+19	0	+30	0	+19	0	19	9
80	120	+35	0	+22	0	+35	0	+22	0	25	13
120	180	+40	0	+25	0	+40	0	+25	0	31	17
180	250	+46	0	+29	0	+46	0	+29	0	38	19
250	315	+52	0	+32	0	+52	0	+32	0	40	26
315	400	+57	0	+36	0	+57	0	+36	0	50	29
400	500	+63	0	+40	0	+63	0	+40	0	56	35
500	630	+70	0	+44	0	+70	0	+44	0	—	—
630	800	+80	0	+50	0	+80	0	+50	0	—	—
800	1000	+90	0	+56	0	+90	0	+56	0	—	—
1000	1250	+105	0	+66	0	+105	0	+66	0	—	—
1250	1600	+125	0	+76	0	+125	0	+76	0	—	—
1600	2000	+150	0	+92	0	+150	0	+92	0	—	—

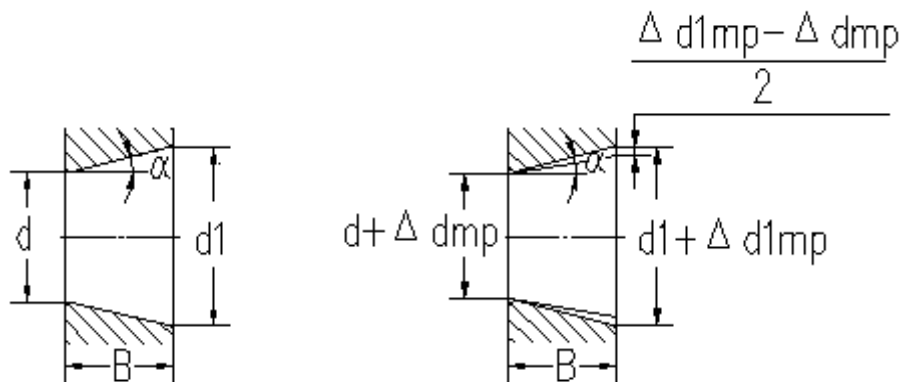


Fig7.1 Nominal tapered bore

Fig7.2 Tapered bore with actual mean diameters and their deviations

Chamfer dimension limits for radial and thrust bearings (except tapered roller bearings) are shown in Table 7.23, chamfer dimension limits for tapered roller bearings are shown in table 7.24.

Table 7.23		mm			
$r_{\min}$	d		$r_{\max}$		
			Radial bearings		Thrust bearings
	over	incl	radial	axial	radial and axial
0.3	—	40	0.6	1	0.8
0.6	40	—	0.8	1	1.5
	—	40	1	2	
1	40	—	1.3	2	2.2
	—	50	1.5	3	
1.1	50	—	1.9	3	2.7
	—	120	2	3.5	
1.5	120	—	2.5	4	3.5
	—	120	2.3	4	
2	120	—	3	5	4
	—	80	3	4.5	
	80	220	3.5	5	
2.1	220	—	3.8	6	4.5
	—	280	4	6.5	
	280	—	4.5	7	
2.5	—	100	3.8	6	—
	100	280	4.5	6	
	280	—	5	7	
3	—	280	5	8	5.5
	280	—	5.5	8	
4			6.5	9	6.5
5			8	10	8
6			10	13	10
7.5			12.5	17	12.5
9.5			15	19	15
12			18	24	18
15			21	30	21
19			25	38	25

Table 7.24

mm

Backface chamfer for cone (d) or cup (D) of tapered roller bearings				
$r_{\min}$	d or D		$r_{\max}$	
	over	incl	radial	axial
0.3	—	40	0.7	1.4
	40	—	0.9	1.6
0.6	—	40	1.1	1.7
	40	—	1.3	2
1	—	50	1.6	2.5
	50	—	1.9	3
1.5	—	120	2.3	3
	120	250	2.8	3.5
	250	—	3.5	4
2	—	120	2.8	4
	120	250	3.5	4.5
	250	—	4	5
2.5	—	120	3.5	5
	120	250	4	5.5
	250	—	4.5	6
3	—	120	4	5.5
	120	250	4.5	6.5
	250	400	5	7
	400	—	5.5	7.5
4	—	120	5	7
	120	250	5.5	7.5
	250	400	6	8
	400	—	6.5	8.5
5	—	180	6.5	8
	180	—	7.5	9
6	—	180	7.5	10
	180	—	9	11

Bearing radial internal clearance

Bearing radial internal clearance is defined as the magnitude of the movement perpendicular to the bearing axis, to which one of the rings may be displaced to the opposite position, while the other ring being held stationary.

Radial internal clearance may affect service life, temperature rise and noise significantly. Therefore, it is necessary to select the suitable clearance of the bearing according to its operating condition. Their values are given in Table 7.25-7.31.

Table 7.25 Radial internal clearance in deep groove ball bearings

$\mu\text{ m}$

Nominal bore diameter d mm		Group2		Group0		Group3		Group4		Group5	
over	incl	min	max	min	max	min	max	min	max	min	max
	10	0	7	2	13	8	23	14	29	20	37
10	18	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	135	200
180	200	2	30	25	71	63	117	107	163	150	230
200	225	2	35	25	85	75	140	125	195	175	265
225	250	2	40	30	95	85	160	145	225	205	300
250	280	2	45	35	105	90	170	155	245	225	340
280	315	2	55	40	115	100	190	175	270	245	370
315	355	3	60	45	125	110	210	195	300	275	410
355	400	3	70	55	145	130	240	225	340	315	460
400	450	3	80	60	170	150	270	250	380	350	510
450	500	3	90	70	190	170	300	280	420	390	570
500	560	10	100	80	210	190	330	310	470	440	630
560	630	10	110	90	230	210	360	340	520	490	690
630	710	20	130	110	260	240	400	380	570	540	760
710	800	20	140	120	290	270	450	430	630	600	840
800	900	20	160	140	320	300	500	480	700	670	940
900	1000	20	170	150	350	330	550	530	770	740	1040
1000	1120	20	180	160	380	360	600	580	850	820	1150
1120	1250	20	190	170	410	390	650	630	920	890	1260

Table7.26 Radial internal clearance in self-aligning ball bearings with cylindrical bore

 $\mu\text{ m}$

Nominal bore diameter d mm		Group2		Group0		Group3		Group4		Group5	
over	incl	min	max	min	max	min	max	min	max	min	max
	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	135	125	175
140	160	15	44	35	80	70	120	110	161	150	210

Table7.27 Radial internal clearance in self-aligning ball bearings with tapered bore

 $\mu\text{ m}$

Nominal bore diameter d mm		Group2		Group0		Group3		Group4		Group5	
over	incl	min	max	min	max	min	max	min	max	min	max
18	24	7	17	13	26	20	33	28	42	37	55
24	30	9	20	15	28	23	39	33	50	44	62
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 7.28 Radial internal clearance in cylindrical roller bearings with cylindrical bore

$\mu\text{ m}$

Nominal bore diameter d mm		Group 2		Group 0		Group 3		Group 4		Group 5	
over	incl	min	max	min	max	min	max	min	max	min	max
	10	0	25	20	45	35	60	50	75	—	—
10	24	0	25	20	45	35	23	50	75	65	90
24	30	0	25	20	45	35	25	50	75	70	95
30	40	5	30	25	50	45	70	60	85	80	105
40	50	5	35	30	60	50	80	70	100	95	125
50	65	10	40	40	70	60	90	80	110	110	140
6	80	10	45	40	75	65	100	90	125	130	165
80	100	15	50	50	85	75	110	105	140	155	190
100	120	15	55	50	90	85	125	125	165	180	220
120	140	15	60	60	105	100	145	145	190	200	245
140	160	20	70	70	120	115	165	165	215	225	275
160	180	25	75	75	125	120	170	170	220	250	300
180	200	35	90	90	145	140	195	195	250	275	330
200	225	45	105	105	165	160	220	220	280	305	365
225	250	45	110	110	175	170	235	235	300	330	395
250	280	55	125	125	195	190	260	260	330	370	440
280	315	55	130	130	205	200	275	275	350	410	485
315	355	65	145	145	225	225	305	305	385	455	535
355	400	100	190	190	280	280	370	370	460	510	600
400	450	110	210	210	310	310	410	410	510	565	600
450	500	110	220	220	330	330	440	440	550	625	735

Table7.29 Radial internal clearance in spherical roller bearings with cylindrical bore

 $\mu\text{ m}$

Nominal bore diameter d mm		Group2		Group0		Group3		Group4		Group5	
over	incl	min	max	min	max	min	max	min	max	min	max
14	18	10	20	20	35	35	45	45	60	60	75
18	24	10	20	20	35	35	45	45	60	60	75
24	30	15	25	25	40	40	55	55	75	75	95
30	40	15	30	30	45	45	60	60	80	80	100
40	50	20	35	35	55	55	75	75	100	100	125
50	65	20	40	40	65	65	90	90	120	120	150
65	80	30	50	50	80	80	110	110	145	145	180
80	100	35	60	60	100	100	135	135	180	180	225
100	120	40	75	75	120	120	160	160	210	210	260
120	140	50	95	95	145	145	190	190	240	240	300
140	160	60	110	110	170	170	220	220	280	280	350
160	180	65	120	120	180	180	240	240	310	310	390
180	200	70	130	130	200	200	260	260	340	340	430
200	225	80	140	140	220	220	290	290	380	380	470
225	250	90	150	150	240	240	320	320	420	420	520
250	280	100	170	170	260	260	350	350	460	460	570
280	315	110	190	190	280	280	370	370	500	500	630
315	355	120	200	200	310	310	410	410	550	550	690
355	400	130	220	220	340	340	450	450	600	600	750
400	450	140	240	240	370	370	500	500	660	660	820
450	500	140	260	260	410	410	550	550	720	720	900
500	560	150	280	280	440	440	600	600	780	780	1000
560	630	170	310	310	480	480	650	650	850	850	1100
630	710	190	350	350	530	530	700	700	920	920	1190
710	800	210	390	390	580	580	770	770	1010	1010	1300
800	900	230	430	430	650	650	860	860	1120	1120	1440
900	1000	260	480	480	710	710	930	930	1220	1220	1570

Table7.30 Radial internal clearance in spherical roller bearings with tapered bore

 $\mu\text{ m}$

Nominal bore diameter		Group2		Group0		Group3		Group4		Group5	
d	mm										
over	incl	min	max	min	max	min	max	min	max	min	max
18	24	15	25	25	35	35	45	45	60	60	75
24	30	20	30	30	40	40	55	55	75	75	95
30	40	25	35	35	50	50	65	65	85	85	105
40	50	30	45	45	60	60	80	80	100	100	130
50	65	40	55	55	75	75	95	95	120	120	160
65	80	50	70	70	95	95	120	120	150	150	200
80	100	55	80	80	110	110	140	140	180	180	230
100	120	65	100	100	135	135	170	170	220	220	280
120	140	80	120	120	160	160	200	200	260	260	330
140	160	90	130	130	180	180	230	230	300	300	380
160	180	100	140	140	200	200	260	260	340	340	430
180	200	110	160	160	220	220	290	290	370	370	470
200	225	120	180	180	250	250	320	320	410	410	520
225	250	140	200	200	270	270	350	350	450	450	570
250	280	150	220	220	300	300	390	390	490	490	620
280	315	170	240	240	330	330	430	430	540	540	680
315	355	190	270	270	360	360	470	470	590	590	740
355	400	210	300	300	400	400	520	520	650	650	820
400	450	230	330	330	440	440	570	570	720	720	910
450	500	260	370	370	490	490	630	630	790	790	1000
500	560	290	410	410	540	540	680	680	870	870	1100
560	630	320	460	460	600	600	760	760	980	980	1230
630	710	350	510	510	670	670	850	850	1090	1090	1360
710	800	390	570	570	750	750	960	960	1220	1220	1500
800	900	440	640	640	840	840	1070	1070	1370	1370	1690
900	1000	490	710	710	930	930	1190	1190	1520	1520	1860

Table7.31 Radial internal clearance in double row and four-row tapered roller bearings

μ m

Nominal bore diameter d mm		Group1		Group2		Group0		Group3		Group4		Group5	
over	incl	min	max	min	max	min	max	min	max	min	max	min	max
	30	0	10	10	20	20	30	40	50	50	60	70	80
30	40	0	12	12	25	25	40	45	60	60	75	80	95
40	50	0	15	15	30	30	45	50	65	65	80	90	110
50	65	0	15	15	30	30	50	50	70	70	90	90	120
65	80	0	20	20	40	40	60	60	80	80	110	110	150
80	100	0	20	20	45	45	70	70	100	100	130	130	170
100	120	0	25	25	50	50	80	80	110	110	150	150	200
120	140	0	30	30	60	60	90	90	120	120	170	170	230
140	160	0	30	30	65	65	100	100	140	140	190	190	260
160	180	0	35	35	70	70	110	110	150	150	210	210	280
180	200	0	40	40	80	80	120	120	170	170	230	230	310
200	225	0	40	40	90	90	140	140	190	190	260	260	340
225	250	0	50	50	100	100	150	150	210	210	290	290	380
250	280	0	50	50	110	110	170	170	230	230	320	320	420
280	315	0	60	60	120	120	180	180	250	250	350	350	460
315	355	0	70	70	140	140	210	210	280	280	400	390	510
355	400	0	70	70	150	150	230	230	310	310	440	440	580
400	450	0	80	80	170	170	260	260	350	350	490	490	650
450	500	0	90	90	190	190	290	290	390	390	540	540	720
500	560	0	100	100	210	210	320	320	430	430	590	590	790
560	630	0	112	110	230	230	350	350	480	480	660	660	880
630	710	0	130	130	260	260	400	400	540	540	740	740	910
710	800	0	140	140	290	290	450	450	610	610	830	830	1100
800	900	0	160	160	330	330	500	500	670	670	920	920	1240
900	1000	0	180	180	360	360	540	540	720	720	980	980	1300
1000	1120	0	200	200	400	400	600	600	820	—	—	—	—
1120	1250	0	220	220	450	450	670	670	900	—	—	—	—
1250	1400	0	250	250	500	500	750	750	980	—	—	—	—

Note: Axial clearance is approximately obtained from:

$$\Delta a = \Delta r \times 1.5/e$$

where

 Δa =axial clearance value Δr =radial clearance value

factor e is given in bearing dimension tables

Application of Bearings

Bearing Fits

Selecting the proper fits of inner bore with shaft, outside diameter with housing bore is one of the important factors to make bearings operate correctly. Generally, bearing fits are concerned with characteristic and magnitude of load, temperature conditions, etc. In the selection of fits, equivalent radial load is usually divided into light, normal and heavy loads, shown as Table 8.1

Tolerance zones for the shaft and housing bore which mounted on radial and angular contact ball bearings are shown in Table 8.2, 8.3. Tolerance zones for the shaft and housing bore which mounted on thrust bearings are shown in Table 8.4, 8.5.

Table 8.1

Radial loads P	Ball bearings	Roller bearings (except tapered roller bearings)	Tapered roller bearings
Light	$P \leq 0.07C$	$P \leq 0.08C$	$P \leq 0.13C$
Normal	$0.07C < P \leq 0.15C$	$0.08C < P \leq 0.18C$	$0.13C < P \leq 0.26C$
Heavy	$P > 0.15C$	$P > 0.18C$	$P > 0.26C$

Table 8.2

Working conditions of inner ring			Examples	Radial ball and angula contact ball bearings	Cylidrical roller and tapered roller bearings	Spherical roller bearings	Tolerances
Conditions of rotation	Loads			Nominal bore diameter mm			
Bearings with cylindrical bore							
	Light Loads		Electrical appliances,instruments, machine tool (spindles), precision machines pumps, ventilators, belt conveyers	≤18 >18~100 >100~200 —	— ≤40 >40~140 >140~200	— ≤40 >40~100 >100~200	h5 j6 1) k6 1) m6 1)
Inner ring is rotating or oscillating relative to the direction of load	Normal loads		Machineries, motors, pumps, turbines, gear boxes, woodworking machines pumps, ventilators,	≤18 >18~100 >100~140 >140~200 >200~280 — — —	— ≤40 >40~100 >100~140 >140~200 >200~400 — — —	— ≤40 >40~65 >65~100 >100~140 >140~280 >280~500 >500	j5 k5 2) m5 2) m6 n6 p6 r6 r7
	Heavy loads		Axie boxes of railway vehicles and trolley buses, tractors, rolling mills, crushers and heavy machineries	— — — —	>50~140 >140~200 >200 —	>50~100 >100~140 >140~200 >200	n6 3) p6 3) r6 3) r7 3)
Inner ring is rotating stationary relative to the direction of load	All loads	Easy axial displacement	All wheels on the stationary shaft	All diameters			g6 1)
		Impossible axial displacement	Tensioners, pulleys	All diameters			h6 1)
Pure axial loads			All applications	All diameters			j6或js6
Bearings with tapered bore (or with tapered sleeve)							
All loads			Axile boxes of railway and trolley buses	All diameters mounted on the with drawal sleeve			h8(IT5) 4)
			Machineries or transmission shaft	All diameters mounted on the adaptor sleeve			h9(IT5) 5)

Note:1) For bearings of higher accuracy, please use j5,k5...instead of j6,k6 etc.

2) Single row tapered roller bearings and single row angular contact ball bearings can use k6, m6 instead of k5,m5, because the effect of internal clearance is not significant.

3) Roller bearings with radial internal clearance greater than normal group of bearings should be selected.

4) For bearings of higher accuracy and higher speed rotation, please select h7, IT5 as form tolerance of journal.

5) When the size is greater than 500mm, its form tolerance is IT 7.

Table 8.3

Working conditions of outer ring				Examples	Tolerances ²⁾
Conditions of rotation	Loads	Axial displacement	Others		
Outer ring is stationary relative to the direction of load	Light, normal and heavy loads	Easy	Shaft in high temperature	Drying cylinders, large electrical machines with spherical roller bearings	G7
			Split housing		
				General engineering machines, railway axle boxes	H7 1)
	Shock loads	Possible	One-piece or split housing	Axle boxes of railway	J7 1)
Direction of oscillation	Light, normal and			Motors,pumps, crankshaff main bearings	
	Normal and heavy loads	Impossible	One-piece housings	Motors,pumps, crankshaff main bearings	K7 1)
	Heavy shock loads			Traction motors	M7 1)
	Light loads			Tension pulleys	M7
Outer ring is rotating relative to the direction of load	Normal and heavy loads			Hubs filled with ball bearing	N7
	Heavy shock loads		Thin walled one-piece housings	Hubs filled with ball bearing	P7

Note:1) For bearings of higher accuracy, please use standard tolerance P6, N6, M6, K6, J6, and H6 instead of P7, N7, M7, K7, J7 and H7 respectively, select one-piece housings at the same time.

2) For housings made of light alloy, interference should be greater than steel and cast iron housings.

Table8.4

Working conditions of bearing		Thrust ball and cylindrical thrust bearings	Spherical roller thrust bearings	Tolerances
		Nominal bore diameters		
Pure axial loads		All diameters	All diameters	j6 or js6
Combined loads of radial and axial	Shaft washer is station ary relative to the direction of load	—	≤250	j6
		—	>250	js6
	Shaft washer is rotating or oscillating relative to the direction of load	—	≤200	k6
		—	>200~400	m6
—		>400	n6	

Table8.5

Working conditions of housing		Bearing types	Tolerances	Remarks
Pure axial loads		Thrust ball bearings	H8	
		Cylindrical roller thrust bearings	H7	
		Spherical roller thrust bearings	—	The clearance between and housing is 0.001D (outside diameter)
Combined loads of radial and axial	Housing washer is stationary or oscillating relative to the direction of load	Spherical roller thrust bearings	H7	
	Housing washer is rotating relative to the direction of load		M7	

To ensure the proper fits accuracy of selected bearing with shaft and housing bore , the form tolerances of shaft and housing bores should conform to Table 8,6, Fig 8.1

Table 8.6

Nominal dimensions mm		Cylindricity t								Face runout							
		Journal				Housing bore				Shoulder				Shoulder of housing bore			
		Tolerance class															
		0	6	5	4	0	6	5	4	0	6	5	4	0	6	5	4
over	incl	Tolerance value μ m															
10	18	3	2	1.2	0.8	5	3	2	1.2	8	5	3	2	12	8	5	3
18	30	4	2.5	1.5	1	6	4	2.5	1.5	10	6	4	2.5	15	10	6	4
30	50	4	2.5	1.5	1	7	4	2.5	1.5	12	8	5	3	20	12	8	5
50	80	5	3	2	1.2	8	5	3	2	15	10	6	4	25	15	10	6
80	120	6	4	2.5	1.5	10	6	4	2.5	15	10	6	4	25	15	10	6
120	180	8	5	3.5	2	12	8	5	3.5	20	12	8	5	30	20	12	8
180	250	10	7	4.5	3	14	10	7	4.5	20	12	8	5	30	20	12	8
250	315	12	8	6	4	16	12	8	6	25	15	10	6	40	25	15	10
315	400	13	9	7	5	18	13	9	7	25	15	10	6	40	25	15	10
400	500	15	10	8	6	20	15	10	8	25	15	10	6	40	25	15	10

To prevent the inner ring or outer ring from sliding relative to the shaft or housing, it is necessary to select proper fits. In the selection of proper fitting practice, consideration should be given to the following factors:

- a.type of the load; b.magnitude of the load; c.temperatutre conditions; d.bearing internal clearance;
e.running accuracy; f.easy mounting and dismounting; g.displacement of non-locating bearing.

Fits and tolerances are listed in Table 8.7~8.14.

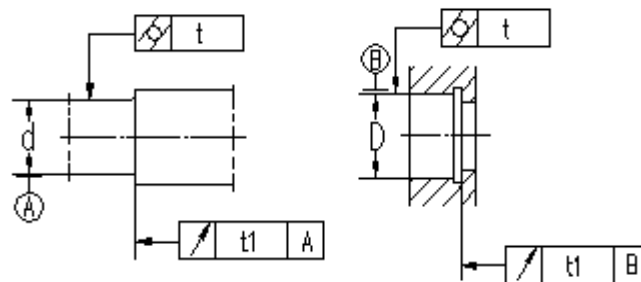


Fig 8.1

Class0, fits of inner ring with shaft are given in Table8.7, fits of outer ring with housing are given in Table8.8.

Table8.7

um

Nominal dimensions mm		Δ dmp		Tolerances for shaft																													
				g6	g5		h6		h5		j5		j6		js6		k5		k6		m5		m6		n6		p6		r6		r7		
over	incl	high	low	Limiting deviation of journal diameter																													
10	18	0	-8	-6	-17	-6	-14	0	-11	0	-8	5	-3	+8	-3	+5.5	-5.5	+9	+1	+12	+1	+15	+7	+18	+7	+23	+12	+29	+18	—	—	—	—
18	30	0	-10	-7	-20	-7	-16	0	-13	0	-9	5	-4	+9	-4	+6.5	-6.5	+11	+2	+15	+2	+17	+8	+21	+8	+28	+15	+35	+22	—	—	—	—
30	50	0	-12	-9	-25	-9	-20	0	-16	0	-11	6	-5	+11	-5	+8	-8	+13	+2	+18	+2	+20	+9	+25	+9	+33	+17	+42	+26	—	—	—	—
50	80	0	-15	-10	-29	-10	-23	0	-19	0	-13	6	-7	+12	-7	+9.5	-9.5	+15	+2	+21	+2	+24	+11	+30	+11	+39	+20	+51	+32	—	—	—	—
80	120	0	-20	-12	-34	-12	-27	0	-22	0	-15	6	-9	+13	-9	+11	-11	+18	+3	+25	+3	+28	+13	+35	+13	+45	+23	+59	+37	—	—	—	—
120	140	0	-25	-14	-39	-14	-32	0	-25	0	-18	7	-11	+14	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+88	+63	—	—
140	160	0	-25	-14	-39	-14	-32	0	-25	0	-18	7	-11	+14	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+90	+65	—	—
160	180	0	-25	-14	-83	-14	-32	0	-25	0	-18	7	-11	+14	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+93	+68	—	—
180	200	0	-30	-15	-44	-15	-35	0	-29	0	-20	7	-13	+16	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+106	+77	—	—
200	225	0	-30	-15	-44	-15	-35	0	-29	0	-20	7	-13	+16	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+109	+80	+126	+80
225	250	0	-30	-15	-44	-15	-35	0	-29	0	-20	7	-13	+16	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	50	+113	+84	+130	+84
250	280	0	-35	-17	-49	-17	-40	0	-32	0	-23	7	-16	+16	-16	+16	-16	+27	+4	+36	+4	+43	+20	+52	+20	+66	+34	+88	+56	+126	+94	+146	+94
280	315	0	-35	-17	-49	-17	-40	0	-32	0	-23	7	-16	+16	-16	+16	-16	+27	+4	+36	+4	+43	+20	+52	+20	+66	+34	+88	+56	+130	+98	+150	+98
315	355	0	-40	-18	-54	-18	-43	0	-36	0	-25	7	-18	+18	-18	+18	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+144	+108	+165	+108
355	400	0	-40	-18	-54	-18	-43	0	-36	0	-25	7	-18	+18	-18	+18	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+150	+114	+171	+114
400	450	0	-45	-20	-60	-20	-47	0	-40	0	-27	7	-20	+20	-20	+20	-20	+32	+5	+45	+5	+50	+23	+63	+23	+80	+40	+108	+68	+166	+126	+189	+126
450	500	0	-45	-20	-60	-20	-47	0	-40	0	-27	7	-20	+20	-20	+20	-20	+32	+5	+45	+5	+50	+23	+63	+23	+80	+40	+108	+68	+172	+132	+195	+132
Nominal dimensions mm				Clearance or interference														Interference															
over	incl	max Clearance	max interference	max Clearance	max interference	max Clearance	max interference	max Clearance	max interference	max Clearance	max interference	max Clearance	max interference	max Clearance	max interference	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
10	18	17	2	14	2	11	8	8	8	3	13	3	16	5.5	13.5	1	17	1	20	7	23	7	26	12	31	18	37	—	—	—	—		
18	30	20	3	16	3	13	10	9	10	4	15	4	19	6.5	16.5	2	21	2	25	8	27	8	31	15	38	22	45	—	—	—	—		
30	50	25	3	20	3	16	12	11	12	5	18	5	23	8	20	2	25	2	30	9	32	9	37	17	45	26	54	—	—	—	—		
50	80	29	5	23	5	19	15	13	15	7	21	7	27	9.5	24.5	2	30	2	36	11	39	11	45	20	54	32	65	—	—	—	—		
80	120	34	8	27	8	22	20	15	20	9	26	9	33	11	31	3	38	3	45	13	48	13	55	23	65	37	79	—	—	—	—		
120	140	39	11	32	11	25	25	18	25	11	32	11	39	12.5	31.5	3	46	3	53	15	58	15	65	27	77	43	93	63	113	—	—		
140	160	39	11	32	11	25	25	18	25	11	32	11	39	12.5	31.5	3	46	3	53	15	58	15	65	27	77	43	93	65	115	—	—		
160	180	39	11	32	11	25	25	18	25	11	32	11	39	12.5	31.5	3	46	3	53	15	58	15	65	27	77	43	93	68	118	—	—		
180	200	44	15	35	15	29	30	20	30	13	37	13	40	14.5	44.5	4	54	4	63	17	67	17	76	31	90	50	109	77	136	77	153		
200	225	44	15	35	15	29	30	20	30	13	37	13	40	14.5	44.5	4	54	4	63	17	67	17	76	31	90	50	109	80	139	80	156		
225	250	44	15	35	15	29	30	20	30	13	37	13	40	14.5	44.5	4	54	4	63	17	67	17	76	31	90	50	109	84	143	84	160		
250	280	49	18	40	18	32	35	23	35	16	42	16	51	16	51	4	62	4	71	20	78	20	87	34	101	56	123	94	161	94	181		
280	315	49	18	40	18	32	35	23	35	16	42	16	51	16	51	4	62	4	71	20	78	20	87	34	101	56	123	98	165	98	185		
315	355	54	22	43	22	36	40	25	40	18	47	18	58	18	58	4	69	4	80	21	86	21	97	37	113	62	138	108	184	108	205		
355	400	54	22	43	22	36	40	25	40	18	47	18	48	18	58	4	69	4	80	21	86	21	97	37	113	62	138	114	190	114	211		
400	450	60	25	47	25	40	45	27	45	20	52	20	65	20	65	5	77	5	90	23	95	23	108	40	125	68	153	126	211	126	234		
450	500	60	25	47	25	40	45	27	45	20	52	20	65	20	65	5	77	5	90	23	95	23	108	40	125	68	153	132	217	132	240		

Table8.8

um

Nominal dimensions mm		Δ Dmp		Tolerances for housing bore																																	
				G7		H8		H7		H6		J7		J6		Js7		Js6		K6		K7		M6		M7		N6		N7		P6		P7			
over	incl	high	low			Limiting deviation of housing bore diameter																															
18	30	0	-9	+28	+7	+33	0	+21	0	+13	0	+12	-9	+8	-5	+10.5	-10.5	+6.5	-6.5	+2	-11	+6	-15	-4	-17	0	-21	-11	-24	-7	-28	-18	-31	-14	-35		
30	50	0	-11	+34	+9	+39	0	+25	0	+16	0	+14	+11	+10	-6	+12.5	-12.5	+8	-8	+3	-13	+7	-18	-4	-20	0	-25	-12	-28	-8	-33	-21	-37	-17	-42		
50	80	0	-13	+40	+10	+46	0	+30	0	+19	0	+18	+12	+13	-6	+15	-15	+9.5	-9.5	+4	-15	+9	-21	-5	-24	0	-30	-14	-33	-9	-39	-26	-45	-21	-51		
80	120	0	-15	+47	+12	+54	0	+35	0	+22	0	+22	-13	+16	-6	+17.5	-17.5	+11	-11	+4	-18	+10	-25	-6	-28	0	-35	-16	-38	-10	-45	-30	-52	-24	-59		
120	150	0	-18	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20	+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68		
150	180	0	-25	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20	+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68		
180	250	0	-30	+61	+15	+72	0	+46	0	+29	0	+30	-16	+22	-7	+23	-23	+14.5	-14.5	+5	-24	+13	-33	-8	-37	0	-46	-22	-51	-14	-60	-41	-70	-33	-79		
250	315	0	-35	+69	+17	+81	0	+52	0	+32	0	+36	-16	+25	-7	+26	-26	+16	-16	+5	-27	+16	-36	-9	-41	0	-52	-25	-57	-14	-66	-47	-79	-36	-88		
315	400	0	-40	+75	+18	+89	0	+57	0	+36	0	+39	-18	+29	-7	+28.5	-28.5	+18	-18	+7	-29	+17	-40	-10	-46	0	-57	-26	-62	-16	-73	-51	-87	-41	-98		
400	500	0	-45	+83	+20	+97	0	+63	0	+40	0	+43	-20	+33	-7	+31.5	-31.5	+20	-20	+8	-32	+18	-45	-10	-50	0	-63	-27	-67	-17	-80	-55	-95	-45	-108		
Nominal dimensions mm				clearance		Clearance or interference																												Interence			
over		incl		max	min	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	min	max	min	max	
						clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference				
18		30		37	7	42	0	30	0	22	0	21	9	17	5	19.5	11	15.5	6.5	11	11	15	15	5	17	9	21	-2	24	2	28	9	31	5	35		
30		50		45	9	50	0	36	0	27	0	25	11	21	6	23.5	13	19	8	14	13	18	18	7	20	11	25	-1	28	3	33	10	37	6	42		
50		80		53	10	59	0	43	0	32	0	31	12	26	6	28	15	22.5	9.5	17	15	22	21	8	24	13	30	-1	33	4	39	13	45	8	51		
80		120		62	12	69	0	50	0	37	0	37	13	31	6	32.5	18	26	11	19	18	25	25	9	28	15	35	-1	38	5	45	15	52	9	59		
120		150		72	14	81	0	58	0	43	0	44	14	36	7	38	20	30.5	12.5	22	21	30	28	10	33	18	40	-2	45	6	52	18	61	10	68		
150		180		79	14	88	0	65	0	50	0	51	14	43	7	45	20	37.5	12.5	29	21	37	28	17	33	25	40	5	45	13	52	11	61	3	68		
180		250		91	15	102	0	76	0	59	0	60	16	52	7	53	23	44.5	14.5	35	24	43	33	22	37	30	46	8	51	16	60	11	70	3	79		
250		315		104	17	116	0	87	0	67	0	71	16	60	7	61	26	51	16	40	27	51	36	26	41	35	52	10	57	21	66	12	79	1	88		
315		400		115	18	129	0	97	0	76	0	79	18	69	7	68.5	29	58	18	47	29	57	40	30	46	40	57	14	62	24	73	11	87	1	98		
400		500		128	20	142	0	108	0	85	0	88	20	78	7	76.5	32	65	20	53	32	63	45	35	50	45	63	18	67	28	80	10	95	0	108		

Class6, fits of inner ring with shaft are given in Table 8,9, fits of outer ring with housing are given in Table 8.10

Table 8.9

um

Nominal dimensions mm		Δ dmp		Tolerances for shaft																													
				g6		g5		h6		h5		j5		j6		js6		k5		k6		m5		m6		n6		p6		r6		r7	
over	incl	high	low	Limiting deviation of journal diameter																													
10	18	0	-7	-6	-17	-6	-14	0	-11	0	-8	+5	-3	+8	-3	+5.5	-5.5	+9	+1	+12	+1	+15	+7	+18	+7	+23	+12	+29	+18	—	—	—	—
18	30	0	-8	-7	-20	-7	-16	0	-13	0	-9	+5	-4	+9	-4	+6.5	-6.5	+11	+2	+15	+2	+17	+8	+21	+8	+28	+15	+35	+22	—	—	—	—
30	50	0	-10	-9	-25	-9	-20	0	-16	0	-11	+6	-5	+11	-5	+8	-8	+13	+2	+18	+2	+20	+9	+25	+9	+33	+17	+42	+26	—	—	—	—
50	80	0	-12	-10	-29	-10	-23	0	-19	0	-13	+6	-7	+12	-7	+9.5	-9.5	+15	+2	+21	+2	+24	+11	+30	+11	+39	+20	+51	+32	—	—	—	—
80	120	0	-15	-12	-34	-12	-27	0	-22	0	-15	+6	-9	+13	-9	+11	-11	+18	+3	+25	+3	+28	+13	+35	+13	+45	+23	+59	+37	—	—	—	—
120	140	0	-18	-14	-39	-14	-32	0	-25	0	-18	+7	-11	+14	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+88	+63	—	—
140	160	0	-18	-14	-39	-14	-32	0	-25	0	-18	+7	-11	+14	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+90	+65	—	—
160	180	0	-18	-14	-83	-14	-32	0	-25	0	-18	+7	-11	+14	-11	+12.5	-12.5	+21	+3	+28	+3	+33	+15	+40	+15	+52	+27	+68	+43	+93	+68	—	—
180	200	0	-22	-15	-44	-15	-35	0	-29	0	-20	+7	-13	+16	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+106	+77	+123	+77
200	225	0	-22	-15	-44	-15	-35	0	-29	0	-20	+7	-13	+16	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	+50	+109	+80	+126	+80
225	250	0	-22	-15	-44	-15	-35	0	-29	0	-20	+7	-13	+16	-13	+14.5	-14.5	+24	+4	+33	+4	+37	+17	+46	+17	+60	+31	+79	50	+113	+84	+130	+84
250	280	0	-25	-17	-49	-17	-40	0	-32	0	-23	+7	-16	+16	-16	+16	-16	+27	+4	+36	+4	+43	+20	+52	+20	+66	+34	+88	+56	+126	+94	+146	+94
280	315	0	-25	-17	-49	-17	-40	0	-32	0	-23	+7	-16	+16	-16	+16	-16	+27	+4	+36	+4	+43	+20	+52	+20	+66	+34	+88	+56	+130	+98	+150	+98
315	355	0	-30	-18	-54	-18	-43	0	-36	0	-25	+7	-18	+18	-18	+18	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+144	+108	+165	+108
355	400	0	-30	-18	-54	-18	-43	0	-36	0	-25	+7	-18	+18	-18	+18	-18	+29	+4	+40	+4	+46	+21	+57	+21	+73	+37	+98	+62	+150	+114	+171	+114
400	450	0	-35	-20	-60	-20	-47	0	-40	0	-27	+7	-20	+20	-20	+20	-20	+32	+5	+45	+5	+50	+23	+63	+23	+80	+40	+108	+68	+166	+126	+189	+126
450	500	0	-35	-20	-60	-20	-47	0	-40	0	-27	+7	-20	+20	-20	+20	-20	+32	+5	+45	+5	+50	+23	+63	+23	+80	+40	+108	+68	+172	+132	+195	+132
Nominal dimensions mm				Clearance or interference												Interference																	
over	incl	max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
10	18	17	1	14	1	11	7	8	7	3	12	3	15	5.5	12.5	1	16	1	19	7	22	7	25	12	30	18	36	—	—	—	—		
18	30	20	1	16	1	13	8	9	8	4	13	4	17	6.5	14.5	2	19	2	23	8	25	8	29	15	36	22	43	—	—	—	—		
30	50	25	1	20	1	16	10	11	10	5	16	5	21	8	18	2	23	2	28	9	30	9	35	17	43	26	52	—	—	—	—		
50	80	29	2	23	2	19	12	13	12	7	18	7	24	9.5	21.5	2	27	2	33	11	36	11	42	20	51	32	63	—	—	—	—		
80	120	34	3	27	3	22	15	15	15	9	21	9	28	11	26	3	33	3	40	13	43	13	50	23	60	37	74	—	—	—	—		
120	140	39	4	32	4	25	18	18	18	11	25	11	32	12.5	30.5	3	39	3	46	15	51	15	58	27	70	43	86	63	106	—	—		
140	160	39	4	32	4	25	18	18	18	11	25	11	32	12.5	30.5	3	39	3	46	15	51	15	58	27	70	43	86	65	108	—	—		
160	180	39	4	32	4	25	18	18	18	11	25	11	32	12.5	30.5	3	39	3	46	15	51	15	58	27	70	43	86	68	111	—	—		
180	200	44	7	35	7	29	22	20	22	13	29	13	38	14.5	36.5	4	46	4	55	17	59	17	68	31	82	50	101	77	128	77	145		
200	225	44	7	35	7	29	22	20	22	13	29	13	38	14.5	36.5	4	46	4	55	17	59	17	68	31	82	50	101	80	131	80	148		
225	250	44	7	35	7	29	22	20	22	13	29	13	38	14.5	36.5	4	46	4	55	17	59	17	68	31	82	50	101	84	135	84	152		
250	280	49	8	40	8	32	25	23	25	16	32	16	41	16	41	4	52	4	61	20	68	20	77	34	91	56	113	94	151	94	171		
280	315	49	8	40	8	32	25	23	25	16	32	16	41	16	41	4	52	4	61	20	68	20	77	34	91	56	113	98	155	98	175		
315	355	54	12	43	12	36	30	25	30	18	37	18	48	18	48	4	59	4	70	21	76	21	87	37	103	62	128	108	174	108	195		
355	400	54	12	43	12	36	30	25	30	18	37	18	48	18	48	4	59	4	70	21	76	21	87	37	103	62	128	114	180	114	201		
400	450	60	15	47	15	40	35	27	35	20	42	20	55	20	55	5	67	5	80	23	85	23	98	40	115	68	143	126	201	126	224		
450	500	60	15	47	15	40	35	27	35	20	42	20	55	20	55	5	67	5	80	23	85	23	98	40	115	68	143	132	207	132	230		

Nominal dimensions mm		Δ Dmp		Tolerances for housing bore																																					
				G7		H8		H7		H6		J7		J6		Js7		Js6		K6		K7		M6		M7		N6		N7		P6		P7							
over	incl	high	low	Limiting deviation of housing bore diameter																																					
18	30	0	-8	+28	+7	+33	0	+21	0	+13	0	+12	-9	+8	-5	+10.5	-10.5	+6.5	-6.5	+2	-11	+6	-15	-4	-17	0	-21	-11	-24	-7	-28	-18	-31	-14	-35						
30	50	0	-9	+34	+9	+39	0	+25	0	+16	0	+14	+11	+10	-6	+12.5	-12.5	+8	-8	+3	-13	+7	-18	-4	-20	0	-25	-12	-28	-8	-33	-21	-37	-17	-42						
50	80	0	-11	+40	+10	+46	0	+30	0	+19	0	+18	+12	+13	-6	+15	-15	+9.5	-9.5	+4	-15	+9	-21	-5	-24	0	-30	-14	-33	-9	-39	-26	-45	-21	-51						
80	120	0	-13	+47	+12	+54	0	+35	0	+22	0	+22	-13	+16	-6	+17.5	-17.5	+11	-11	+4	-18	+10	-25	-6	-28	0	-35	-16	-38	-10	-45	-30	-52	-24	-59						
120	150	0	-15	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20	+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68						
150	180	0	-18	+54	+14	+63	0	+40	0	+25	0	+26	-14	+18	-7	+20	-20	+12.5	-12.5	+4	-21	+12	-28	-8	-33	0	-40	-20	-45	-12	-52	-36	-61	-28	-68						
180	250	0	-20	+61	+15	+72	0	+46	0	+29	0	+30	-16	+22	-7	+23	-23	+14.5	-14.5	+5	-24	+13	-33	-8	-37	0	-46	-22	-51	-14	-60	-41	-70	-33	-79						
250	315	0	-25	+69	+17	+81	0	+52	0	+32	0	+36	-16	+25	-7	+26	-26	+16	-16	+5	-27	+16	-36	-9	-41	0	-52	-25	-57	-14	-66	-47	-79	-36	-88						
315	400	0	-28	+75	+18	+89	0	+57	0	+36	0	+39	-18	+29	-7	+28.5	-28.5	+18	-18	+7	-29	+17	-40	-10	-46	0	-57	-26	-62	-16	-73	-51	-87	-41	-98						
400	500	0	-33	+83	+20	+97	0	+63	0	+40	0	+43	-20	+33	-7	+31.5	-31.5	+20	-20	+8	-32	+18	-45	-10	-50	0	-63	-27	-67	-17	-80	-55	-95	-45	-108						
Nominal dimensions mm				Clearance		Clearance or interference																																Interference			
over		low		max	min	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	min	max	min	max							
				clear- ance		clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference										
18		30		36	7	41	0	29	0	21	0	20	9	16	5	18.5	10.5	14.5	6.5	10	11	14	15	4	17	8	21	-2	24	1	28	10	31	6	35						
30		50		43	9	48	0	34	0	25	0	23	11	19	6	21.5	12.5	17	8	12	13	16	18	5	20	9	25	-3	28	1	33	12	37	8	42						
50		80		51	10	57	0	41	0	30	0	29	12	24	6	26	15	20.5	9.5	15	15	20	21	6	24	11	30	-3	33	2	39	15	45	10	5						

Class5, fits of inner ring with shaft are given in Table 8.11, fits of outer ring with housing are given in Table 8.12.

Table8.11

um

Nominal dimensions mm		Δ dmp		Tolerances for shaft													
				h5		j5		js5		k5		k6		m5		m6	
over	incl	high	low	Limiting deviation of journal diameter													
10	18	0	−5	0	−8	+5	−3	+4	−4	+9	+1	+12	+1	+15	+7	+18	+7
18	30	0	−6	0	−9	+5	−4	+4.5	−4.5	+11	+2	+15	+2	+17	+8	+21	+8
30	50	0	−8	0	−11	+6	−5	+5.5	−5.5	+13	+2	+18	+2	+20	+9	+25	+9
50	80	0	−9	0	−13	+6	−7	+6.5	−6.5	+15	+2	+21	+2	+24	+11	+30	+11
80	120	0	−10	0	−15	+6	−9	+7.5	−7.5	+18	+3	+25	+3	+28	+13	+35	+13
120	180	0	−13	0	−18	+7	−11	+9	−9	+21	+3	+28	+3	+33	+15	+40	+15
180	250	0	−15	0	−20	+7	−13	+10	−10	+24	+4	+35	+4	+37	+17	+46	+17
250	315	0	−18	0	−23	+7	−16	+11.5	−11.5	+27	+4	+36	+4	+43	+20	+52	+20
315	400	0	−23	0	−25	+7	−18	+12.5	−12.5	+29	+4	+40	+4	+46	+21	+57	+21
Nominal dimensions mm				Clearance or interference						Interference							
over		incl		max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	min	max	min	max	min	max	min	max
10		18		8	5	3	10	4	9	1	14	1	17	7	20	7	23
18		30		9	6	4	11	4.5	10.5	2	17	2	21	8	23	8	27
30		50		11	8	5	14	5.5	13.5	2	21	2	26	9	28	9	33
50		80		13	9	7	15	6.5	15.5	2	24	2	30	11	33	11	39
80		120		15	10	9	16	7.5	17.5	3	28	3	35	13	38	13	45
120		180		18	13	11	20	9	22	3	34	3	41	15	46	15	53
180		250		20	15	13	22	10	25	4	39	4	48	17	52	17	61
250		315		23	18	16	25	11.5	29.5	4	45	4	54	20	61	20	70
315		400		25	23	18	30	12.5	35.5	4	52	4	63	21	69	21	80

Table12

Nomianal dimensions mm		Δ Dmp		Tolerance for housing bore															
				G6		H6		Js5		Js6		K5		K6		M5		M6	
over	incl	high	low	Limiting deviation of journal diameter															
18	30	0	−6	+20	+7	+13	0	+4.5	−4.5	+6.5	−6.5	+1	−8	+2	−11	−5	−14	−4	−17
30	50	0	−7	+25	+9	+16	0	+5.5	+5.5	+8	−8	+2	−9	+3	−13	−5	−16	−4	−20
50	80	0	−9	+29	+10	+19	0	+6.5	+6.5	+9.5	−9.5	+3	−10	+4	−15	−6	−19	−5	−24
80	120	0	−10	+34	+12	+22	0	+7.5	−7.5	+11	−11	+2	−13	+4	−18	−8	−23	−6	−28
120	150	0	−11	+39	+14	+25	0	+9	−9	+12.5	−12.5	+3	−15	+4	−21	−9	−27	−8	−33
150	180	0	−13	+39	+14	+25	0	+9	−9	+12.5	−12.5	+3	−15	+4	−21	−9	−27	−8	−33
180	250	0	−15	+44	+15	+29	0	+10	−10	+14.5	−14.5	+2	−18	+5	−24	−11	−31	−8	−37
250	315	0	−18	+49	+17	+32	0	11.5	−11.5	+16	−16	+3	−20	+5	−27	−13	−36	−9	−41
315	400	0	−20	+54	+18	+36	0	+12.5	12.5	+18	−18	+3	−22	+7	−29	−14	−33	−10	−46
400	500	0	−23	+60	+20	+40	0	+13.5	−13.5	+20	−20	+2	−25	+8	−32	−16	−43	−10	−50
Nominal dimensions mm				Clearance		Clearance or interference													
over		incl		max	min	max	max	max	max	max	max	max	max	max	max	max	max	max	max
						clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference	clear- ance	inter- ference
18		30		26	7	19	0	10.5	4.5	12.5	6.5	7	8	8	11	1	14	2	17
30		50		32	9	23	0	12.5	5.5	15	8	9	10	10	13	2	16	3	20
50		80		38	10	28	0	15.5	6.5	18.5	9.5	12	13	13	15	3	19	4	24
80		120		44	12	32	0	17.5	7.5	21	11	12	14	14	18	2	23	4	28
120		150		50	14	36	0	20	9	23.5	12.5	14	15	15	21	2	27	3	33
150		180		52	14	38	0	22	9	25.5	12.5	16	17	17	21	4	27	5	33
180		250		59	15	44	0	25	10	29.5	14.5	17	20	20	24	4	31	7	37
250		315		67	17	50	0	29.5	11.5	34	16	21	23	23	27	5	36	9	41
315		400		74	18	56	0	32.5	12.5	38	18	23	27	27	29	6	39	10	46
400		500		83	20	63	0	36.5	13.5	43	20	25	31	31	32	7	43	13	50

Class4, fits of inner ring with shaft are given in Table8.13, fits of outer ring with housing are given in Table8.14.

Table8.13

um

Nominal dimensions mm		Δ dmp		tolerances for shaft													
				h4		h5		js4		js5		k4		k5		m5	
over	incl	high	low	Limiting deviation of journal diameter													
10	18	0	−4	0	−5	0	−8	+2. 5	−2. 5	+4	−4	+6	+1	+9	+1	+15	7
18	30	0	−5	0	−6	0	−9	+3	−3	+4. 5	−4. 5	+8	+2	+11	+2	+17	8
30	50	0	−6	0	−7	0	−11	+3. 5	−3. 5	+5. 5	−5. 5	+9	+2	+13	+2	+20	9
50	80	0	−7	0	−8	0	−13	+4	−4	+6. 5	−6. 5	+10	+2	+15	+2	+24	11
80	120	0	−8	0	−10	0	−15	+5	−5	+7. 5	−7. 5	+13	+3	+18	+3	+28	13
120	180	0	−10	0	−12	0	−18	+6	−6	+9	−9	+15	+3	+21	+3	+33	15
180	250	0	−12	0	−14	0	−20	+7	−7	+10	−10	+18	+4	+24	+4	+37	17
Nominal dimensions mm				Clearance or interference								interference					
over		incl		max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	max clear- ance	max inter- ference	min	max	min	max	min	max
10		18		5	4	8	4	2. 5	6. 5	4	8	1	10	1	13	7	19
18		30		6	5	9	5	3	8	4. 5	9. 5	2	13	2	16	8	22
30		50		7	6	11	6	3. 5	9. 5	5. 5	11. 5	2	15	2	19	9	26
50		80		8	7	13	7	4	11	6. 5	13. 5	2	17	2	22	11	31
80		120		10	8	15	8	5	13	7. 5	15. 5	3	21	3	26	13	36
120		180		12	10	18	10	6	16	9	19	3	25	3	31	15	43
180		250		14	12	20	12	7	19	10	22	4	30	4	36	17	49

Table8.14

Nominal dimensions mm		Δ Dmp		Tolerances for shaft									
				H5		Js5		K5		K6		M5	
over	incl	high	low	Limiting deviation of journal diameter									
18	30	0	−5	+9	0	+4.5	−4.5	1	−8	+2	−11	−5	−14
30	50	0	−6	+11	0	+5.5	+5.5	2	−9	+3	−13	−5	−16
50	80	0	−7	+13	0	+6.5	+6.5	3	−10	+4	−15	−6	−19
80	120	0	−8	+15	0	+7.5	−7.5	2	−13	+4	−18	−8	−23
120	150	0	−9	+18	0	+9	−9	3	−15	+4	−21	−9	−27
150	180	0	−10	+18	0	+9	−9	3	−15	+4	−21	−9	−27
180	250	0	−11	+20	0	+10	−10	2	−18	+5	−24	−11	−31
250	315	0	−13	+23	0	11.5	−11.5	3	−20	+5	−27	−13	−36
315	400	0	−15	+25	0	+12.5	12.5	3	−22	+7	−29	−14	−39
Nominal dimensions mm				Clearance or interference									
over		incl		max inter- ference	max clear ance	max inter- ference	max clear ance	max inter- ference	max clear ance	max inter- ference	max clear ance	max inter- ference	max clear ance
18		30		14	0	9.5	4.5	6	8	7	11	0	14
30		50		17	0	11.5	5.5	8	9	9	13	1	16
50		80		20	0	13.5	6.5	10	10	11	15	1	19
80		120		23	0	15.5	7.5	10	13	12	18	0	23
120		150		27	0	18	9	12	15	13	21	0	27
150		180		28	0	19	9	13	15	14	21	1	27
180		250		31	0	21	10	13	18	16	24	0	31
250		315		36	0	24.5	11.5	16	20	18	27	0	36

Table8.15

Fitting surface	Tolerance class	Nominal inner or outer diameter (mm)	
		up to 80	over80~up to 500
		Parameter of surface roughness Ra (μm) according to GB1031-83	
Journal	0	1	1.6
	6	0.63	1
	5	0.4	0.63
	4	0.25	0.4
Housing bore	0	1.6	2.5
	6	1	1.6
	5	0.63	1
	4	0.4	0.63
Shoulder and shoulder face of housing bore	0	2	2.5
	6	1.25	2
	5	1	1.6
	4	0.8	1.25

Bearing preload

Rolling bearings usually retain some internal clearance while in operation. In some cases, however, it is desirable to provide a negative clearance to keep them internally stressed. This is called “preload”. The purposes of preload are to enhance the stiffness, of the bearing, to maintain the shaft in exact position both radially and axially and to increase running accuracy, to decrease noise and vibration, to prevent sliding. Depending on the direction of the preload, the preload can be divided into radial or axial preload. In actual applications, ball bearings can be axially preloaded, cylindrical roller bearings can be radially preloaded because of the design structure.

Axial deformation of single tapered roller bearing is linear with axial load, so the stiffness of single tapered roller bearing cannot be increased by preloading. Two single row tapered roller bearings are generally mounted together with a single row angular contact ball bearing in a back-to-back or face-to-face arrangement, then preloaded. Depending on the direction of load, the preload can be divided into position preload and constant-pressure preload,

Position preload

Duplex mounted angular contact ball bearings are usually ground a certain amount of pre-deflection δ_{a0} off the inner or outer ring faces, when bearings are mounted, two bearings are in the preloaded state after mating faces are clamped by clamping device, see Fig 8.2. If the two bearings are kept a distance and their faces are not mated, the bearings can be preloaded by spacer sleeve and the necessary amount of preload can be obtained by adjusting the width of spacer sleeve, Fig 8.3.

When two angular contact ball bearings arranged face-to-face or back-to-back are duplex mounted, their axial loads and deflection curves are shown in Fig 8.4. The intersection of two curves shows that preloading deflection of two bearing are δ_{a0} under preloading loads F_{a0} . When external axial loads F_a are applied on the shaft, the shaft will move displacement δ_a along the direction of F_a . At the same time deflection of bearing I increases δ_a , while that deflection of bearing II decreases

$$\delta_{aI} = \delta_{a0} + \delta_a$$

$$\delta_{aII} = \delta_{a0} - \delta_a$$

corresponding axial loads are:

$$F_{aI} = F_{a0} + \Delta F_{aI}$$

$$F_{aII} = F_{a0} - \Delta F_{aII}$$

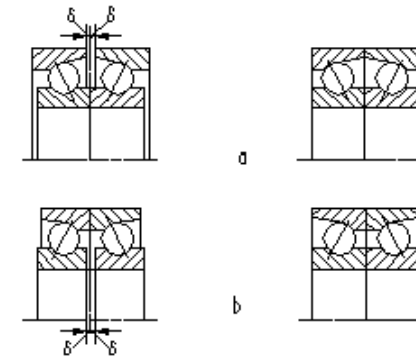


Fig 8.2

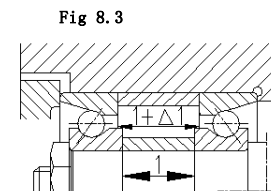


Fig 8.3

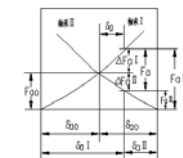


Fig 8.4

From the equilibrium offices

$$F_a = F_{aI} - F_{aII}$$

It can be seen that axial displacement of supporting system is only δa under the axial load F_a . Therefore, duplex mounted angular contact ball bearings can increase the stiffness of supporting system greatly by preload.

When two single row tapered roller bearings are duplex mounted, their axial loads and deflection curves are shown in Fig 8.5 It can be seen that the stiffness of duplex mounted tapered roller bearings may be increased by two times.

Constant-pressure preload

A constant-pressure preload is achieved using a coil or leaf spring to impose a constant preload. Even if the relative position, the magnitude of the preload remains relatively Fig 8.7 show axial load and deflection curve of duplex mounted angular contact ball bearings under constant-pressure preload.

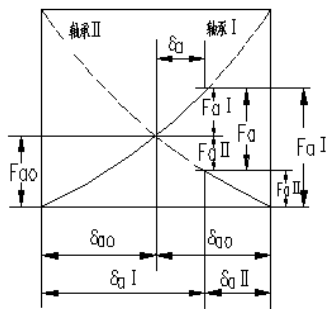


Fig 8.5

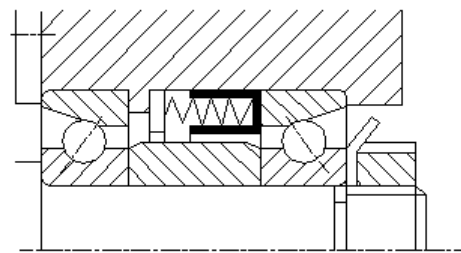


Fig 8.6

Under external axial load, deflection of bearing I will increase δa ,

and deflection and preload of bearing II will keep constant. Compared with constant-pressure preload, under the same pre-deflection, position preload increase axial stiffness of supporting system unobviously. But under position preload, axial length differences caused by temperature difference between the shaft and the bearing housing, and radial expansion caused by temperature difference between the inner and outer rings can affect pre-deflection amount. Under constant-pressure preload, they have no effect on pre-deflection amount at all. Selecting the preload method should be dependant on actual applications. Generally, position preload should be selected in high stiffness and constant-pressure preload should be selected at high speeds.

Axial location of bearings

When bearing rings are mounted, one side of inner or outer ring abuts a shoulder on the shaft or in the housing bore at one side. At the other side, they are located axially by a locking nut, a snap ring and spring washer to make bearing operate safely.

According to bearing arrangement, when supporting arrangement located at both sides is subjected to axial load of one direction, bearings should be located in diverse load direction. One side is located, the other side is moving and subjected to double direction load, the located side should be located in both directions, Moving side is different according to different bearing types, when non-separable bearings are used, one ring is located, moving ring is not located, if separable bearings are selected, e.g. cylindrical roller bearing, two rings must be located in both directions.

The types of axial location of bearings are shown in Table 8.16, 8.17.

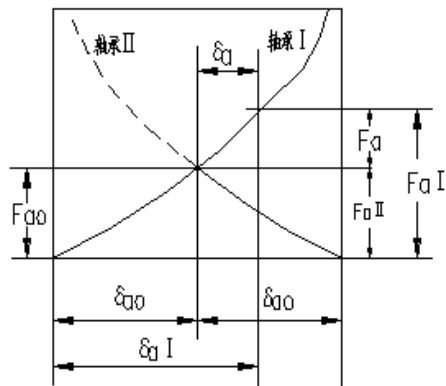
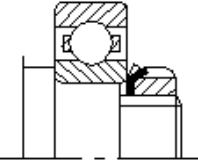
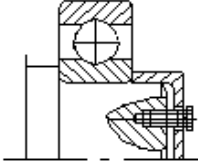
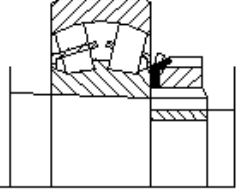
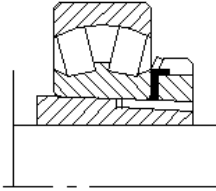
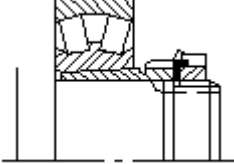


Fig 8.7

Table 8.17

Types of location	Sketches	Examples of application
Shoulder		Axial location is achieved by radial interference fit between inner ring and shoulder. Suitable for supporting arrangement at both sides. The characteristic of it is simple in structure, small size outline.
Elastic washer		Axial location is achieved by elastic washer. Light axial load of double direction can be carried. It is space-saving and also easy to mount and dismount.

Lock nut		Inner ring is axially located by shoulder and lock nut, the snap ring is used to prevent from loosening. Suitable for high speed and heavy load.
Abutment collar		Inner ring is located by shoulder and abutment collar. Abutment collar is located by nut at shaft end and can prevent from loosening. Suitable for heavy axial load and higher rotating speed.
Tapered journal		Bearings with tapered bore mounted directly on tapered journals are generally retained by a lock nut on the shaft.

Types of location	Sketches	Examples of application
Adaptor sleeve		Inner ring is radially pressed by adaptor and lock nut and located on the shaft to achieve axial location. Suitable for lower speed, steady radial load and small axial load.
Withdrawal sleeve		Similar to adaptor sleeve, and the withdrawal sleeve itself has a shaft nut, easy to mount and dismount. Suitable for heavier radial load and light axial load.
Snap ring		It is simple in structure and compact in space. When the mounting position is limited, it can be used. It is often used in radial bearings with snap ring groove in the outer ring.
Threaded ring		The outer rings are usually retained by a threaded ring. Suitable for high speed and heavier axial load.
End cover		The outer rings are retained in the housing bore by an end cover. The end cover can be designed with different types according to different applications and can also be designed with seal. Suitable for radial bra rings with high rotating speed and heavier axial load.

Lubrication

To make bearings operate safely and reliably, they have to be lubricated to prevent direct metallic contact between the rolling elements, raceways and cage, to reduce friction and wear and to protect the bearing surfaces against corrosion. When oil lubrication is used, the flow of lubricating oil can improve the dissipation of heat and decrease the temperature of bearings and make bearing operate at high temperature. The lubrication of bearings can be divided into grease and oil lubrication.

Grease lubrication

Grease has the advantage over oil, and it also contributes to sealing the arrangement against contaminants, moisture and water and make bearing operate long time without replacing lubricant, so it is widely used. The disadvantage is that when the bearing is running at high speeds, the operating temperature will rise rapidly because of greater wear, therefore, the rotating speed and temperature are limited while grease used. The most widely used lubricating greases are calcium base grease, Lithium base grease, aluminum base grease and molybdenum disulfide grease, etc. Different lubricating grease differ in physical, mechanical features and temperature. The type of grease should be properly selected to meet user's requirements according to different working conditions. Sealed bearings listed in this catalog have been filled with grease before leaving the factory and can be used directly. Generally, the bearings are filled with 3# lithium base grease. If you have special demands for it, please refer to LYC Technical Division.

In the selection of lubricating grease, working temperature, load and rotating speed should be taken into consideration. If it is selected according to working temperature, the viscosity for ball bearings

should not be lower than 13mm²/s, for roller bearings, the viscosity should not be lower than 20mm²/s because of the close relationship between viscosity and temperature. In selecting lubricating grease, dropping point, penetration and low temperature should be precedent considered. General rule is that working temperature must be lower than dropping point 10-20°C. When synthetic grease is selected, its working temperature must be lower than dropping point 20-30°C. If it is selected according to type of load, the heavier the load is, the higher the viscosity should be. If it is selected according to rotating speed, ring, rolling elements and cage will cause greater heat because of higher rotating speed, dn should be limited in a certain range according to different types, for deep groove ball bearings, self-aligning ball bearings and angular contact ball bearings, dn should be 160,000, for cylindrical roller bearings, dn should be 120,000, for tapered roller bearings, dn should be 100,000, for spherical roller bearings, dn should be 80,000, for thrust ball bearings, dn should be 40,000. Different lubricating grease should be selected according to different applications, e.g. at the moisture or water, calcium base grease should be precedent selected, because they are insoluble in water. Sodium base grease should be used at dry and little water, because they are soluble in water.

Oil lubrication

Oil is generally used for rolling bearing lubrication only when high speeds or operating temperatures preclude the use of grease, when friction or applied heat has to be removed from the bearing, or when adjacent components are lubricated with oil. Lubricating oils often used are mechanical oil, high speed mechanical oil, turbine oil, compressor oil, transformer oil, cylinder oil, etc. When oil is used, the viscosity of lubricating oil have great effects on lubricating features. In the selection of lubrication, the viscosity of oil should be

provided adequate lubrication for the bearing at operating temperature. In order to form a sufficiently thick film of oil in the contact area between rolling elements and raceways, the oil must retain a minimum viscosity at the operating temperature. Generally, low viscosity of lubrication oil should be used at high speed, high viscosity of lubricating oil should be used at heavy load. Oil lubrication can be divided into the followings.

Oil bath lubrication

Oil bath lubrication is a widely used method in the case of low or medium speeds. The oil, which is picked up by the rotating components of the bearing, is distributed within the bearing and then flows back to the oil bath. Oil should be at a level slightly below the center of the lowest rolling elements.

Drip feed lubrication

Drip feed lubrication is used when bearing parts need to be provided with quantitative lubricating oil. A drop should be provided at intervals of 3-8 seconds. Too much oil can cause the temperature rising.

Circulating oil lubrication

Operating at higher speeds will cause the operating temperature to increase and will accelerate aging of the oil. To avoid it, circulating oil lubrication is generally preferred. After the oil has passed through the bearing, it is filtered and, if required, cooled before being returned to bearing. Cooling of the oil enables the operating temperature of the bearing to be kept at low level.

Oil jet lubrication

For very high speed operation, rolling elements and cage are also rotating at very high speed, turbulence air is formed around the bearing. To provide adequate lubricating oil for high speed bearing, lubricating oil is sprayed under pressure directly into the bearing from

one side, and after the bearing is lubricated, lubricating oil will flow back into the oil bath from the other side. The position of oil jet should be placed between the inner ring and cage. The velocity of the jet must be at least 15m/s to lubricate effectively.

Oil-mist lubrication

Quantities of oil are directed at each individual bearing by compressed air at high speed and high temperature. This minimum quantity enables bearings to operate at lower temperature or at higher speeds than any other method of lubrication. The compressed air serves to cool the bearing and also produces an excess pressure in the bearing arrangement which prevents contaminants from entering.

The frequency with which it is necessary to change the oil depends mainly on the operating conditions and the quantity of oil. With oil bath lubrication it is generally sufficient to change the oil once a year, provided the operating temperature does not exceed 50°C and there is little risk of contaminant. Higher temperatures call for more frequent oil changes, e.g. for operating temperatures around 100 °C, the oil should be changed every three months. Frequent oil changes are also needed if other operating conditions are arduous. With air circulating oil lubrication, the period between two oil changes is also determined by how frequently the total oil quantity is circulated and whether or not the oil is cooled. It is generally only possible to determine a suitable interval by test runs and by regular inspection of the condition of the oil to see that it is not contaminated and is not excessively oxidized. The same applies for oil jet lubrication. With oil-mist lubrication the oil only passes through the bearing once and is not recalculated. —

Seals

Seals for bearing arrangements are used to prevent solid contaminants and moisture from penetrating into the bearing and at the same time to retain the lubricant in the bearing. Where seals for rolling bearings are concerned, a distinction is made between seals which are positioned outside the bearing. The former is sealed well before leaving the factory, further details are not included. The latter is introduced in the following. Two types of seal are non-rubbing (without contact) and rubbing (contact) seals. In the selection of seals, the following should be considered:

- a. the environment in which the bearing work;
- b. the rotating speed of the bearing;
- c. the design of bearing;
- d. type of lubricant (oil or grease);
- e. the working temperature of bearing.

Non-rubbing Seals

The effectiveness of non-rubbing seals depends mainly on the sealing action of narrow gaps between rotating and stationary components. The gaps may be arranged radial, axially, or axially and radial in combination. Non-rubbing seals have practically no friction and do not wear, particularly suitable for high speeds and temperatures. The dimensions of gap are shown in Table 10.1. Typical examples are shown in Table 10.2.

Rubbing Seals

The sealing devices contact directly with mating elements while working. The friction the seal on the sealing surface and the rise in temperature which it generates are a disadvantage and rubbing seals are therefore suitable for medium and lower speeds. Felt seals and cup seals are

frequently used, see Table 10.3.

In actual applications, the types of seal can be designed with combined seals according to different working conditions and specific requirements on sealing device. Typical structures are shown in Fig 10.1.

Table 10.1

Journal	Radial gap	Axial gap
<50	0.1~0.3	1~2
≥ 50	0.5~1.0	3~5

Table 10.2

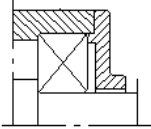
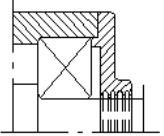
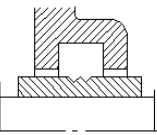
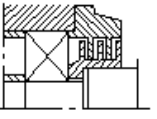
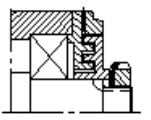
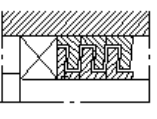
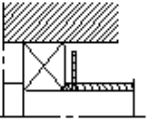
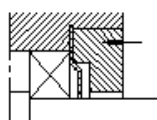
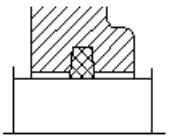
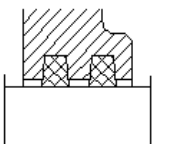
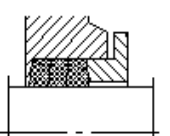
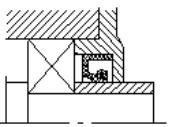
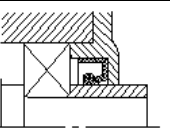
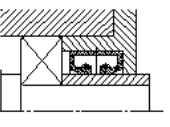
Types of seal		Sketches	Examples
Gaptypes	Narrow gap		The smaller and longer the length of gap between the shaft and end cover, the more effective will be the sealing effect.
	Helical groove		There are over three grooves on the end cover. The groove width is 3-4mm, the depth is 4-5mm (the grooves take the shape of helical groove). They are used to fill grease to improve the effect of sealing.
	W-type		Used for oil lubrication. There is W-groove on the shaft or in the housing. The oil from the flinger is collected in a channel in the housing seal bore and returned to the housing through suitable ducts.
Labyrinths	Radial		Radial labyrinth passages are composed of the gap between housing and end cover, end cover is separable. Radial labyrinth passages distribute axially, the size in axial direction is compact, the effect of sealing is better. Suitable for dirty environment, e.g. metal-cutting machine.
	Axial		Axial labyrinth passages are composed of the gap between housing and end cover. Labyrinth passages distribute radially, end cover is one-piece, easy to mount and dismount, wider use than radial
	Combined		Labyrinth passages are composed of two "Γ" shaped washers, saving space, low cost, suitable for mass production, washer should be mounted combined. The more the combination is, the better the effect of sealing is.
Washers	Rotating washer		Washer is rotating with shaft while working. The higher the rotation of shaft is, the better the effect of sealing is. The rotating washer can prevent oil from emerging and can also prevent contaminants
	Stationary washer		Washer and outer ring of bearing are fixed while working. Used to prevent dirt and contaminants from entering.

Table 10.3

Types of seal		Sketches	Examples
Felt	Single-felt		Uses for clean grease environment. Peripheral speed can not exceed 4-5m/s and working temperature is 90°C. The peripheral speed can reach up to 7-8m/s after the shaft surface is ground. Felt seals can be divided into single-felt, double-felt and multi-felt. To prevent the shaft from wearing early, the sleeve should contact directly with felt washer. The effect of sealing is not very good.
	Double-felt		
	Multi-felt		
Cup			Cup seal is made of oilproof rubber and suitable for grease or oil lubrication. Peripheral speed can not exceed 7m/s and working temperature is not over 100°C. If the main purpose of the seal is to prevent lubricant from leaving the housing, the seal should be filled with the lip facing towards (a), whereas if the main purpose of the seal is to prevent the entry of contaminants, the seal lip should face outwards (b). To improve the effect of sealing, two cups can be used pair (c).
			
			

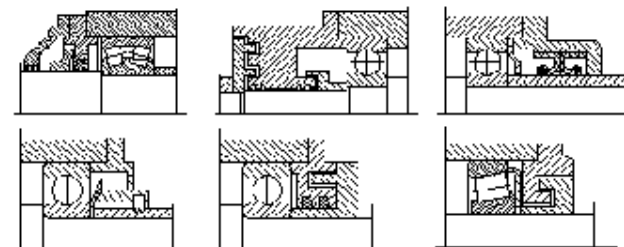


Fig10.1

Package and Storage

Package

Plastic film, Kraft paper, compound paper and plastic barrel are used for inner package of LYC bearings. After inner package, precision bearings with over tolerance class P5 should be singly packed with cartons. This is middle package. The bearings with outside diameter $\leq 250\text{mm}$ need outer package after inner and middle packages. Outer package usually used corrugated paper box or wooden box. When packed with corrugated paper box, weight of a single box can not exceed 25kg. When packed with wooden box, weight of a single box can not exceed 35kg. When bearings with outside diameter $250\text{mm} \leq D \leq 2,900\text{mm}$, special package box is needed. When bearings with outside diameter over 2,900mm, wrapped outer package can be supplied for the customers.

Special package boxes are provided for freight train and passenger train. In addition, package can be designed as requested.

Storage

LYC bearings are normally treated with a rust preventive compound and oil seal. Under normal conditions, they do not rust in twelve months. Rust-proof period of tolerance class P4 or P2 bearings can reach twenty-four months. If bearings stored do not exceed mentioned above deadline, they may be stored in original unbroken package for a long time. If exceeded rust-proof period, the bearings must be cleaned and sealed again.

To prevent the stored bearings from corroding, following points should be observed. The storage building must be kept clean and dry. A ventilation system is required to maintain its room temperature within the range of 10 to 25°C, the temperature difference within 24 hours no more than 5°C and the relative humidity of the atmosphere below 60%. The bottom of bearing package should be kept at least 30cm above the

floor. The bearings are better not stored together with chemical and corrodible cargoes.

Mounting and Dismounting

Mounting

The method used to mount a bearing depends on the bearing type and size. It is very important that the bearing rings, cages or rolling elements should not receive direct blows during mounting as this will cause damage. Before mounting, the seating surfaces should be lightly smeared with oil.

Bearings with cylindrical bore

For mounting non-separable bearings, which inner ring is mounted with tight fit and outer ring is mounted with loose fit, the bearing is mounted on the shaft with press at housing bore (Fig 12.1). Small bearings may be positioned on their seating by applying light hammer blows against the bearing ring face. But the blows must be evenly distributed around it.

When outer ring is mounted with tight fit, inner ring is mounted with loose fit, the bearing should be mounted into the housing bore first, and then on the shaft (fig 12.2).

When rings are mounting with tight fits, the bearing should be pressed on the shaft or into the housing bore at the same time by means of specific ,mounting sleeve (Fig 12.3)

With separable bearings, the inner and outer rings can be mounted on the shaft or into the housing independently and this simplifies mounting. When entering the shaft with the inner ring into the housing containing the outer ring, care must be taken that they are correctly aligned to avoid scoring the raceways and rolling elements.

Larger bearings can not always be pressed on to the shaft or into the housing in the cold state because of the heavy mounting force required. The inner ring or housing are therefore heated before being

mounted . But the requisite temperature should be strictly controlled and must not exceed 120°C. In general, the bearing should be mounted in 80-100°C. The bearings with shield(s) or seal(s), should not be heated before mounting, because this would adversely affect the lubricant. The heating methods can be electric induction, oil bath etc.

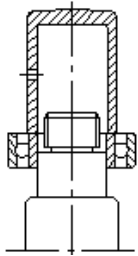


Fig 12.1
Bearings with tapered bore

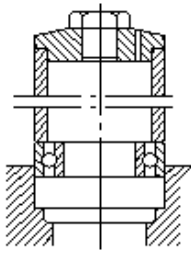


Fig 12.2

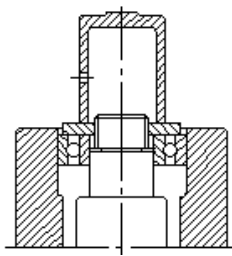


Fig12.3

Bearings with tapered bore are mounted on tapered journals or on cylindrical shafts by means of adapter or withdrawal sleeve. They are always mounted with an in terference fit. The degree of interference is determined by controlling the bearing radial internal internal clearance reduction. The lock nuts are usually used in mounting. If mounting force is larger, heating mounting is used.

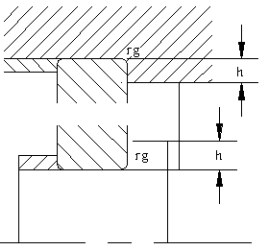
For large bearings, oil injection method can bye used. With the oil injection method, oil under high pressure is introduced between the mating surfaces. An oil film is formed and it separates the mating surfaces and appreciably reduces the friction. This method is mainly used when mounting bearings directly on to tapered journals.

For the bearing rings are ensured to be reliably fitted tightly against the shaft shoulder or housing shoulder and do not interfere with the chamfers of the shaft or housing, the chamfer rg must be less than the assembled chamfer of bearing. And shoulder height h of relative

component fitted with the bearing must keep enough fitted face while the assembled chamfer is largest. Chamfer r8 and shoulder height h are defined in bearing dimension tables. If they can not meet the customers' requirements, the recommended shoulder height h and chamfer rg are listed in Table 12.1 according to bearing assembled chamfer.

Table 12.1

mm



r min	rg max	h min	r min	rg max	h min
0.1	0.15	0.4	2.5	2	6
0.15	0.15	0.6	3	2.5	7
0.2	0.2	0.8	4	3	9
0.3	0.3	1.25	5	4	11
0.6	0.6	2.5	6	14	5
1	1	3	7.5	18	6
1.1	1	3.5	9.5	22	8
1.5	1.5	4.5	12	27	10
2	2	5	15	32	12
2.1	2	6	19	38	15

Dismounting

If bearings are to be used again after removal, the force used to dismount must not be applied through the roiling elements. Bearings and relative components must not be damaged in dismounting.

When inner ring is tight fit with the shaft and loose fit with the housing bore, such as the bearing is mounted into the separable

housing bore, the bearing and the shaft can be dismounted from the housing bore together, then the bearing is dismounted from the shaft with the press or the puller, see Fig 12.4 and Fig 12.5.

For dismounting separable bearing, the puller or the press also can be used to dismount the outer ring from the housing bore, see Fig 12.6 and 12.7.

For dismounting larger bearings where greater force is requited, the oil injection method is generally adopted. This presupposes that the necessary oil supply ducts and distributor grooves were designed into the arrangement. Besides, the bearings can also be dismounted after being heated.

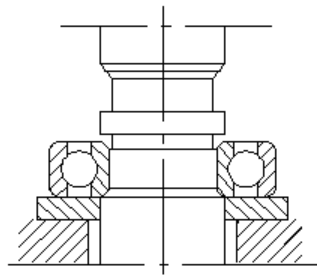


Fig 12.4

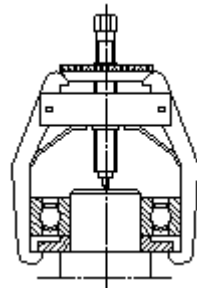


Fig 12.5

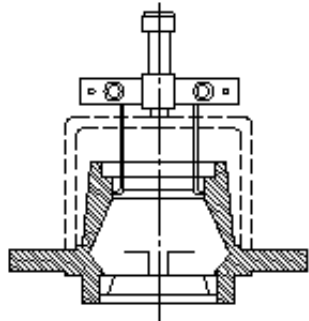


Fig 12.6

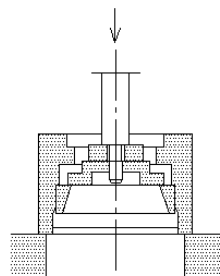


Fig 12.7



深沟球轴承

Deep Groove Ball Bearing

Deep Groove Ball Bearings

Deep Groove ball bearings are simple in design, non-separable and require little attention or maintenance in service, capable of operating at high speeds and widely used radial bearings.

The inner and outer ring of single row deep groove ball bearings have a deep groove raceway, the bearings are mainly used to carry radial loads and a part of axial loads in tow directions. This kind of bearing can carry much heavy axial loads after the increase of radial clearance, thus, it can take the place of high speed angular contact ball bearings.

LYC deep groove ball bearings have various types in structure, besides open type bearings, and bearings with shield or seal at one side, shields or seals at both sides can also be provided for user. The various sealed bearings are filled with greases and are forbidden to wash prior to mounting. The bearings with seals will provide the most reliable operation at ambient temperature between $-30+100^{\circ}\text{C}$ Deep groove ball bearings with a snap ring groove can be provided and should be precedently taken into account when the mounting position is limited, as they can be retained in the housing by a snap ring. After combined design, shields, seals and snap ring groove mentioned above can be provided according to different applicatons.

To meet users' special needs of bearing vibration levels, LYC can provide users with low vibration (or low-noise) deep groove ball bearings. The bearings are identified by suffix and their meanings are explained in "LYC" bearing designation" this catalog.

LYC deep groove ball bearings are supplied with a pressed steel cage, a machined solid cage or glass fiber reinforced polyimide and other engineering plastic cages. Different material cages are identified by suffix, see the section "LYC bearing designation".

In bearings rotating at high speeds, in order to prevent detrimental sliding movements between the rolling elements and the raceways, caused by centrifugal force of the balls and cage, minimum radial load should be applied and calculated from:

$$Fr' = Kr \left(\frac{vn}{1000} \right)^{2/3} \left(\frac{dm}{100} \right)^2$$

where

Fr——minimum radial, N

V——oil viscosity at operating temperature, mm^2/s

n ——speed, r/min

dm——mean diameter of bearing $dm=0.5(d+D)\text{mm}$

Kr——minimum load factor, relative to bearing series

Kr	Bearing series				
	618	619, 160	60, 161, 62	63	64
	15	20	25	30	35

Equivalent dynamic bearing load of deep groove ball bearings are dependant on the ratio of the axial load to the basic static load rating. They are influenced by the magnitude of the radial internal clearance, increased radial clearance enables heavier axial loads to be carried. The equivalent bearing load can be calculated from:
Equivalent dynamic load

$$P = Fr \quad \text{when } Fa/Fr \leq e$$

$$P = XFr + Yfa \quad \text{when } Fa/Fr > e$$

where

P——equivalent dynamic load, N

Fa——axial load, N

Fr——radial load,

X——radial load factor

Y——axial load factor

Fr and Fa are the forces acting on the bearing pair. The values for factor e, X and Y for different values of Fa/C_o are given in the following table.

Equivalent static load

$$P_o = 0.6Fr + 0.5Fa$$

When $P_o < Fr$, $P_o = Fr$ should be used.

To mount bearings conveniently and reliably, mounting dimensions of bearings with snap ring are shown in Table 1, shoulder height of shaft fitted with bearing inner bore and shoulder height h of housing bore fitted with bearing outside diameter and chamfer r_g are shown in Table 2.

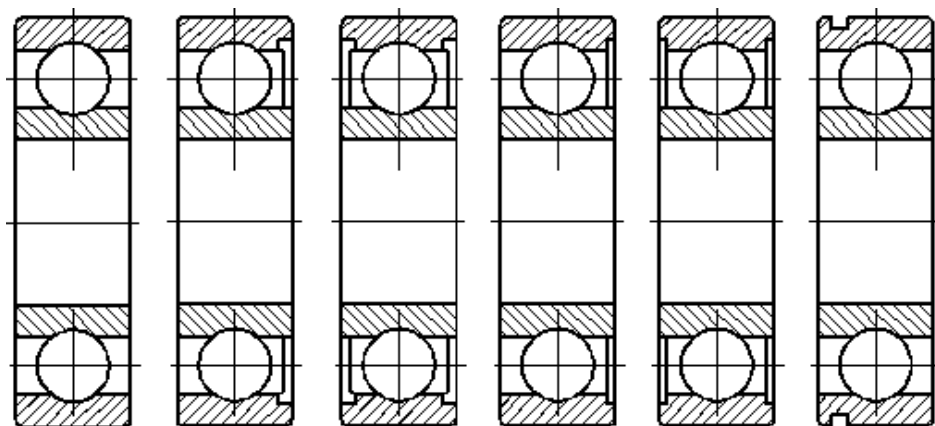
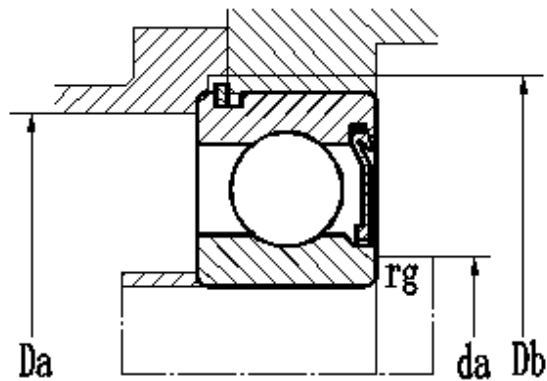


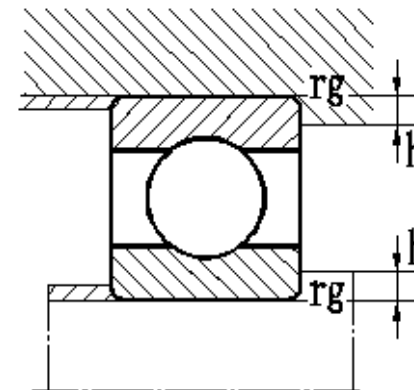
Table1 mm



D	da min	Da max	Db mir
30	14	26	36
40	21	36	46
47	22	42	54
52	26.5	45.5	59
62	31.5	55.5	69
72	36.5	65.5	80
80	43	72	88
90	48	82	98
100	53	92	108
110	59	101	118
120	64	111	131
130	71	119	141
140	76	129	151
150	81	139	162

0组				C3			C4		
Fa/Co	e	X	Y	e	X	Y	c	X	Y
0.025	0.22	0.56	2	0.31	0.46	1.75	0.4	0.44	1.42
0.04	0.24	0.56	1.8	0.33	0.46	1.62	0.42	0.44	1.36
0.07	0.27	0.56	1.6	0.36	0.46	1.46	0.44	0.44	1.27
0.13	0.31	0.56	1.4	0.41	0.46	1.3	0.48	0.44	1.16
0.25	0.37	0.56	1.2	0.46	0.46	1.14	0.53	0.44	1.05
0.5	0.44	0.56	1	0.54	0.46	1	0.56	0.44	1

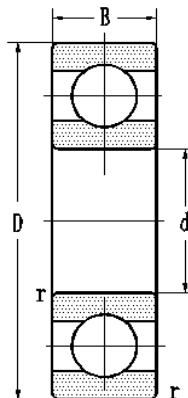
Table2 mm



r min	rg max	h min	Bearing series	
		618, 160	62, 622, 42	
		161, 60	63, 623, 43	64
0.15	0.15	0.4	0.7	
0.2	0.2	0.7	0.9	
0.3	0.3	1	1.2	
0.6	0.6	1.6	2.1	
1	1	2.3	2.8	
1.1	1	3	3.5	4.5
1.5	1.5	3.5	4.5	5.5
2	3	4.4	5.5	6.5
2.1	2.1	5.1	6	7
3	2.5	6.2	7	8
4	3	7.3	8.5	10
5	4	9	10	12

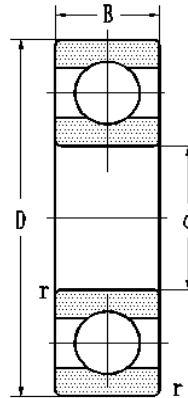
Deep groove ball bearings

d10–17mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
10	26	8	0.3	3.52	1.97	24700	31000	6000E	100E	0.0188
	30	9	0.6	5.07	2.36	24000	30000	6200E	200E	0.0311
	35	11	0.6	8.06	3.47	20000	26000	6300E	300E	0.053
12	28	8	0.3	3.93	2.39	22700	28600	6001E	101E	0.0206
	32	10	0.6	6.89	3.1	22000	28000	6201E	201E	0.0356
	32	10	0.6	6.89	3.1	22000	28000	6201E/YA	201EK1	0.0324
	37	12	1	9.75	4.65	19000	24000	6301E	301E	0.06
15	28	7	0.3	4.31	1.94	21300	27000	61902E	1000902E	0.015
	32	9	0.3	4.3	2.5	22000	28000	6002E	102E	0.0304
	32	8	0.3	4.3	2.5	19800	25000	16002E	7000 102E	0.0274
	35	11	0.6	7.8	3.75	19000	24000	6202E	202E	0.0428
	35	11	0.6	7.8	3.75	19000	24000	6202E/YA	202EK1	0.0371
	42	13	1	11.4	5.4	17000	20000	6302E	302E	0.0811
17	35	10	0.3	4.97	2.95	19000	24000	6003E	103E	0.0382
	40	12	0.6	9.56	4.75	17000	20000	6203E	203E	0.0663
	40	12	0.6	9.56	4.75	17000	20000	6203E/YA	203EK1	0.062

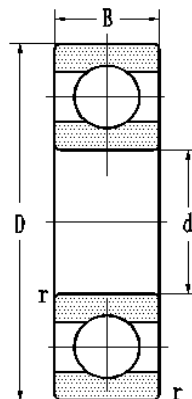
Deep groove ball bearings
d17–22mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
17	35	8	0.3	4.97	2.95	18200	23000	16003E	7000103E	0.0311
	40	12	0.6	9.56	4.75	17000	20000	6203E/C9	203EU	0.0663
	42	13	0.6	7.36	4.48	16300	20500	6203 X3		0.0831
	42	12	0.6	7.36	4.48	16300	20500	6203 X1		0.0784
	47	14	1	13.5	6.5	16000	19000	6303E	303E	0.11
19	35	8	0.3	6	3.29			66/19E		0.0285
20	42	12	0.6	7.22	4.46	17000	20000	6004E	104E	0.0686
	42	8	0.3	6.91	3.97	15600	19600	16004	7000104E	0.0486
	47	14	1	12.7	6.5	15000	18000	6204E	204E	0.105
	47	14	1	12.7	6.5	15000	18000	6204E/YA	204EK1	0.0996
	52	15	1.1	15.9	7.8	13000	16000	6304E	304E	0.144
	55	15	1.1	15.9	7.8			6304EX1		0.173
22	42	8	0.3	6.91	3.97	15100	19100	160/22X1		0.0441
	50	14	1	12.9	6.75	13600	17100	62/22 E		0.117
	56	16	1.1	16	10.5			63/22E		0.177

Deep groove ball bearings

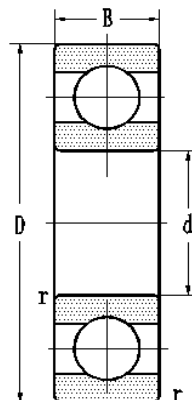
d25–32mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
25	42	9	0.3	7.02	3.63	14500	18300	61905E	1000905E	0.0424
	47	12	0.6	10.1	5.85	15000	18000	6005E	105E	0.0794
	52	15	1	14	7.8	12000	15000	6205E	205E	0.129
	52	9	1	7.31	5.81	13200	16700	6205 X2		0.0859
	52	9	0.3	10.7	6.56	13200	16700	68205 X2		0.0824
	62	17	1.1	22.5	11.6	11000	14000	6305E	305E	0.22
	62	12	0.6	16.6	9.59	11400	14300	68305		0.18
	62	16	0.6	22.4	11.5	11400	14300	6305EX2		0.217
	80	21	1.5	37.2	18.8	9500	12000	6405E	405E	0.53
28	58	16	1	17.8	9.65	11500	14500	62/28E		0.162
	68	18	1.1	26.8	14	10300	13000	63/28E		0.292
30	55	13	1	10.2	6.91	12000	15000	6006E	106E	0.113
	62	16	1	19.5	11.2	10000	13000	6206E	206E	0.2
	72	19	1.1	28.1	16	9000	11000	6306E	306E	0.349
	90	23	1.5	44.6	23	8300	10500	6406E	406E	0.715
32	65	16	0.6	23.5	13.1			62/32EX2		0.211

Deep groove ball bearings

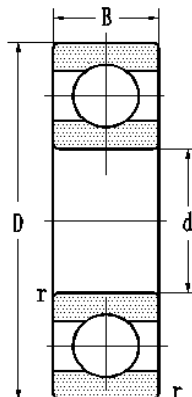
d35–50mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
35	62	14	1	16	10.3	10200	13000	6007E	107	0.149
	72	17	1.1	25.5	15.3	9000	11000	6207E	207E	0.284
35	80	21	1.5	33.2	19	8500	10000	6307E	307E	0.462
38	100	25	1.5	55.3	31	7000	8500	6407E	407E	0.931
40	80	18	1.1	29.8	18	8200	9700	6208E	208E	0.36
	68	15	1	13	11.5	9200	11600	6008 E	108	0.185
	90	23	1.5	39.8	23.3	7300	8700	6308E	308E	0.609
	110	27	2	61.8	35.4	6500	7800	6408E	408E	1.22
45	75	16	1	21	14.9	8300	10500	6009E	109E	0.236
	85	19	1.1	32.2	21	7300	8700	6209E	209E	0.408
	100	25	1.5	51.1	30.5	6500	7800	6309E	309E	0.839
	120	29	2	73.8	44.1	5800	6800	6409E	409E	1.57
50	80	16	1	22	16.2	7700	9700	6010E	110E	0.252
	90	20	1.1	34	22.5	6800	8200	6210	210E	0.463

Deep groove ball bearings

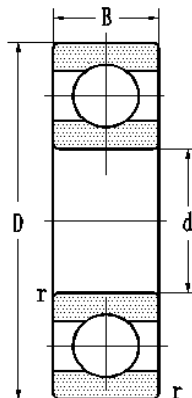
d50–65mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	r _{min}	dynamic C	static C ₀	grease	oil	present	original	
50	90	30.2	1.1	34	22.5	7100	9000	63210	3000210	0.681
	110	27	2	59.9	36.9	6100	7300	6310E	310E	1.09
30	130	31	2.1	84.5	50.4	5100	6100	6410	410	1.87
55	90	18	1.1	30.4	22	6800	8700	6011E	111E	0.365
	100	21	1.5	43.3	28.1	6100	7300	6211E	211E	0.603
	120	29	2	71.5	44.6	5400	6500	6311E	311E	1.37
55	120	29	2	71.5	44.6	5600	7100	6311EK		1.32
	140	33	2.1	101	62.4	4800	5800	6411E	411E	2.4
56	120	28.7	2	71.5	44.6	5600	7100	63/56		1.31
60	95	18	1.1	30.7	22.7	6400	8100	6012E	112E	0.385
	110	22	1.5	46.1	31.5	5400	6800	6212E	212E	0.791
	130	31	2.1	79.4	50.4	4800	5800	6312E	312E	1.75
	150	35	2.1	105	67.4	4600	5400	6412E	412E	2.8
65	120	23	1.5	54.2	39.3	5100	6100	6213E	213E	0.989

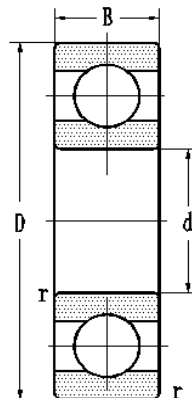
Deep groove ball bearings

d65–80mm



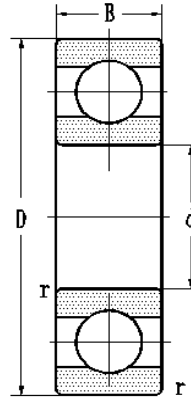
Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
65	140	33	2.1	89.5	59.7	4600	5400	6313	313	2.08
	160	37	2.1	115	75.5	4400	5100	6413E	413E	3.35
	100	18	1.1	32.1	24.9	6000	7600	6013E	113E	0.411
	100	11	0.6	20.5	18.6	6000	7600	16013E	700113E	0.292
70	125	24	1.5	58.9	43.6	4800	5800	6214E	214E	1.1
	150	35	2.1	101	66	4400	5100	6314E	314E	2.55
	180	42	3	124	86.8	3700	4400	6414E	414E	4.64
70	110	20	1.1	38.6	30.6	5500	6900	6014E	114E	0.577
75	115	20	1.1	31	33.1	5200	6500	6015 E	115	0.604
	115	13	0.6	27.6	25.3	5200	6500	16015E	700115E	0.453
	130	25	1.5	64.3	47.5	4600	5400	6215	215	1.22
	160	37	2.1	111	74.2	4200	4800	6315	315	3.01
	190	45	3	134	96	3500	4200	6415E	415E	5.69
80	125	22	1.1	47.5	39.8	4770	6000	6016E	116E	0.816
	140	26	2	68.1	53.3	4400	5100	6216	216	1.45
	170	39	2.1	120	83.9	3700	4400	6316E	316E	3.66

Deep groove ball bearings
d80–100mm



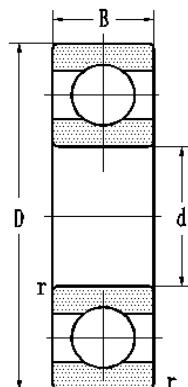
Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
80	200	48	3	158	121	3300	3900	6416E	416	7
85	150	28	2	83.2	64	4200	4800	6217E	217E	1.78
	180	41	3	133	96.5	3500	4200	6317EM	317EH	5.33
	210	52	4	169	124	3100	3700	6417E	417E	7.91
90	160	30	2	92.7	71.3	3700	4400	6218E	218E	2.17
	190	43	3	139	105	3300	3900	6318E	318E	4.93
90	225	54	4	180	145	2900	3500	6418E	418E	9.55
95	145	16	1	43.9	42	4000	5000	16019	700119E	0.816
	145	16	1	43.9	42	4000	5000	16019/YB3		0.816
	170	32	2.1	105	79.1	3500	4200	6219E	219E	2.62
	200	45	3	148	114	3100	3700	6319E	319E	5.74
100	180	34	2.1	118	88.4	3200	3800	6220E	220E	3.14
	215	47	3	165	133	2800	3400	6320E	320E	7.11
	250	58	4	223	195			6420	420	12.8

Deep groove ball bearings
d105–140mm



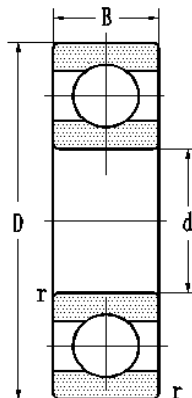
Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	r_{min}	dynamic C	static C_0	grease	oil	present	original	
105	190	36	2.1	126	98.8	3000	3600	6221E	221E	3.78
	225	49	3	173	145	2700	3200	6321E	321E	8.03
110	170	28	2	81.9	72.9	3400	4200	6022E	122E	1.89
	200	38	2.1	136	112	2800	3400	6222E	222E	4.38
	240	50	3	193	171	2500	3000	6322E	322E	9.56
120	165	22	1.1	52.9	53.9	3300	4200	61924M	1000924H	1.62
	180	28	2	88.1	79.7	3100	4000	6024E	124E	1.99
	215	40	2.1	139	112	2700	3200	6224E	224E	5.31
	260	55	3	217	196	2300	2800	6324	324	12.2
130	230	40	3	148	125	2500	3000	6226	226	6.14
	280	58	4	218	205	2100	2700	6326M	326H	16.5
	280	58	4	218	205	2100	2700	6326	326	12.7
	340	78	5	294	285	1400	1800	6426M	426H	40.9
140	175	18	1.1	43.4	49.7	3000	3800	61828		0.8
	250	42	3	158	143	2300	2800	6228E	228E	7.77

Deep groove ball bearings
d140–180mm



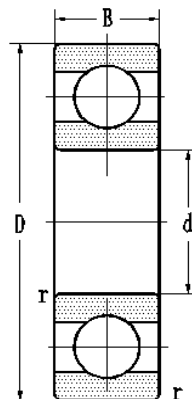
Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
140	300	62	4	238	233	1900	2500	6328M	328H	22.7
150	210	28	2	80	87	2500	3200	61930M		3.01
	225	35	2.1	132	125	2400	3000	6030EM	130E	4.88
	270	45	3	190	183	1900	2500	6230	230	10.4
	320	65	4	262	270	1800	2300	6330E	330E	21.7
160	260	25	1.5	102	113	2100	2600	16032E	700132E	3.54
160	290	48	3	215	218	1800	2300	6232E	232E	12.2
	340	68	4	262	270	1700	2100	6332E	332E	26.3
170	215	22	1.1	52.8	62	2300	2900	61834	1000834	1.63
	260	42	2.1	161	160	2000	2500	6034M	134	8.09
	310	52	4	210	213	1800	2300	6234E	234E	15.2
	360	72	4	296	323	1600	1900	6334E	334E	31.1
180	250	33	2	128	137	2000	2500	61936M	1000936H	5.04
	320	52	4	245	262	1700	2100	6236M	236H	19.4
	380	75	4	333	385	1500	1900	6336E	336E	42.5

Deep groove ball bearings
d200–300mm



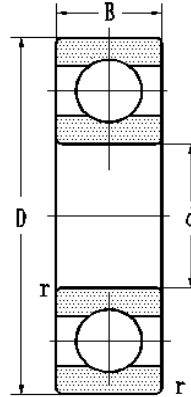
Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
200	250	24	1.5	63.7	81.1	1900	2400	61840M	1000840H	2.691
	280	38	2.1	134	155	1900	2500	61940M	1000940H	7.3
	360	58	4	256	551	1600	1900	6240E	240E	22.5
	420	80	5	569	425	1400	1700	6340M	340H	59.2
220	300	38	2.1	143	314	1800	2300	61944E	1000944E	7.6
	340	56	3	251	292	1500	1800	6044M	144H	19.4
	400	65	4	281	347	1400	1700	6244E	244E	36.5
240	320	38	2.1	143	177	1500	1800	61948M	1000948H	9.6
	360	56	3	244	296	1300	1700	6048M	148H	20.4
	440	72	4	340	451	1200	1500	6248	248	53.9
260	360	46	2.1	212	269	1500	1800	61952M	1000952H	15.86
	400	44	3	226	294	1400	1700	16052M	700152H	22.5
280	380	46	2.1	161	270	1200	1500	61956M	1000956H	15
300	380	38	2.1	164	222	1200	1500	61860M	1000860H	11.1

Deep groove ball bearings
d300–400mm



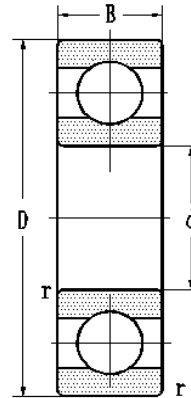
Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
300	420	56	3	256	356	1200	1600	61960	1000960	24.5
320	400	38	2.1	169	237	1200	1500	61864M	1000864H	11.8
	440	37	2.1	195	380	1300	1500	16964	7000964	16.8
	440	56	3	262	380	1100	1400	61964	1000964	27
	480	74	4	352	513	1000	1300	6064	164	48.4
340	460	56	3	267	404	1000	1300	61968	1000968	27
	520	82	5	402	608	950	1200	6068E	168E	62
360	540	82	5	439	698	950	1200	6072	172	71.6
380	480	46	2.1	230	370	950	1200	61876	1000876	20.5
	520	44	3	247	380	950	1100	16976	7000976	31.2
400	500	46	2.1	235	385	950	1200	61880	1000880	21.7
	540	65	4	333	533	700	900	61980		42.6
	600	90	5	493	809	860	1000	6080	180	107
	600	90	5	493	809	860	1000	6080B		91

Deep groove ball bearings
d440–530mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
440	540	46	2.1	242	418	860	1000	61888	1000888	23.6
	650	94	6	525	917	810	950	6088	188	107
460	580	56	3	303	541	860	1000	61892	1000892	33.5
	620	74	4	402	712	810	950	61992	1000992	65.6
	680	100	6	605	1080	530	700	6092	192	130
480	600	56	3	309	570	810	950	61896E	1000896E	36.5
	700	100	6	605	1080	710	860	6096	196	138
500	620	56	3	313	533			618/500	10008/500	36.1
	670	78	5	439	822	710	860	619/500	10009/500	79.5
	720	100	6	630	1170	710	860	60/500	1/500	140
530	650	56	3	315	632	710	860	618/530	10008/530	40
	710	82	5	464	883	670	810	619/530	10009/530	91.8
	780	112	6	680	1300	640	760	60/530	1/530	186
	760	100	6	602	1180			66/530		156

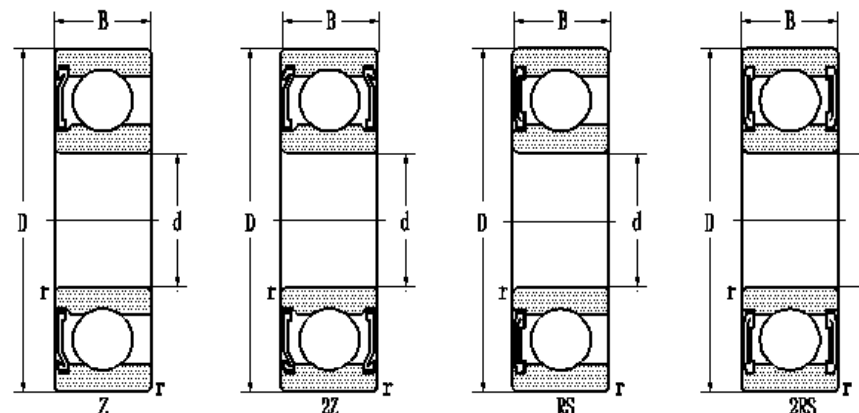
Deep groove ball bearings
d560–1180mm



Boundary dimensions mm				Basic load ratings kN		Limiting speeds r/min		Bearing		Mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present	original	
560	680	56	3	327	660	660	810	618/560E	10008/560E	42
	750	85	5	525	1040	640	760	619/560	10009/560	111
600	730	60	3	354	667			618/600	10008/600	53.1
	870	118	6	683	1440			60/600MBS		242
670	820	69	4	420	950	530	640	618/670	10008/670	81.9
	980	136	7.5	765	1730			60/670NIMAS		348
750	812	50	2.1	125	238			66/750TN		25.5
800	980	82	5	531	1300	430	500	618/800E	10008/800E	130
	1150	155	7.5	1470	2230			60/800	1/800	548
900	1090	85	5	587	1520	360	430	618/900	10008/900	164
1000	1220	100	6	605	1710	320	380	618/1000	10008/1000	266
1180	1420	106	6	1170	3230			618/1180	10008/1180	329

Deep groove ball bearings with shield(s) or seal(s)

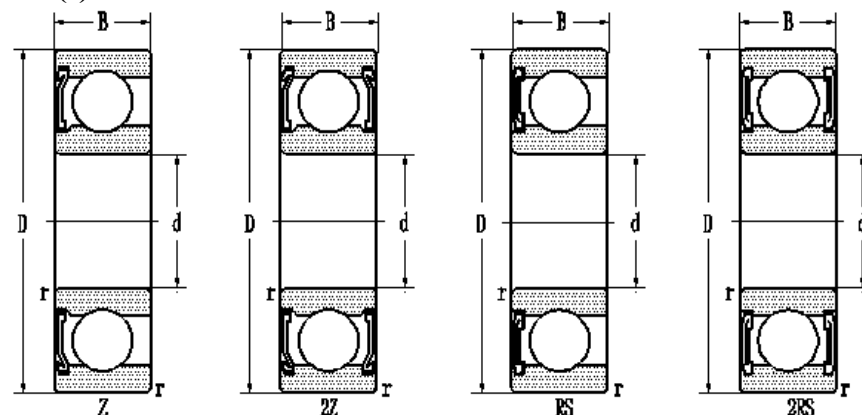
d10–15mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designation				Mass
mm				kN		r/min						kg
				dynamic	static	grease	oil	present	original			
d	D	B	r min	C	Co							
10	30	9	0.6	5.07	2.36	24000		6200-Z	6200-2Z	60200	80200	0.031
	30	9	0.6	5.7	2.36	17000		6200-RS	6200-2RS	160200	180200	0.0303
	30	9	0.6	5.07	2.36	19000		6200-RZ	6200-2RZ	160200K	180200K	0.0307
	35	11	0.6	5.88	3.47			6300 E-Z	6300 E-2Z	60300E		0.051
	35	11	0.6	5.88	3.47	14800		6300 E-RZ	6300 E-2RZ			0.0483
12	28	8	0.3	3.93	2.39	16000				80101E		0.0194
	28	8	0.3	3.93	2.39	16000		6001 E-Z	6001 E-2Z			0.02
	28	8	0.3	3.93	2.39	16000		6001 E-RZ	6001 E-2RZ	160101 EK		0.0217
	28	8	0.3	3.93	2.39	16000						0.0221
	32	10	0.6	6.89	3.1	22000		6201 E-Z	6201 E-2Z	60201E	80201E	0.0346
	32	10	0.6	6.89	3.1	15000		6201 E-RS	6201 E-2RS	160201	180201	0.0335
	32	10	0.6	6.89	3.1	18000		6201 E-RZ	6201 E-2RZ	16020K	180201EK	0.0354
	37	12	1	7.47	4.65	13000		6301 E-Z	6301 E-2Z	60301E		0.0565
	37	12	1	7.47	4.65	13000		6301 E-RS	6301 E-2RS			0.0573
15	28	7	0.3	3.32	1.94	15000		61902 E-2Z				0.0139
	32	9	0.3	4.3	2.5	14000		6002 E-Z	6002 E-2Z	60102E		0.0297
	32	9	0.3	4.3	2.5	14000				80102E		0.289

Deep groove ball bearings with shield(s) or seal(s)

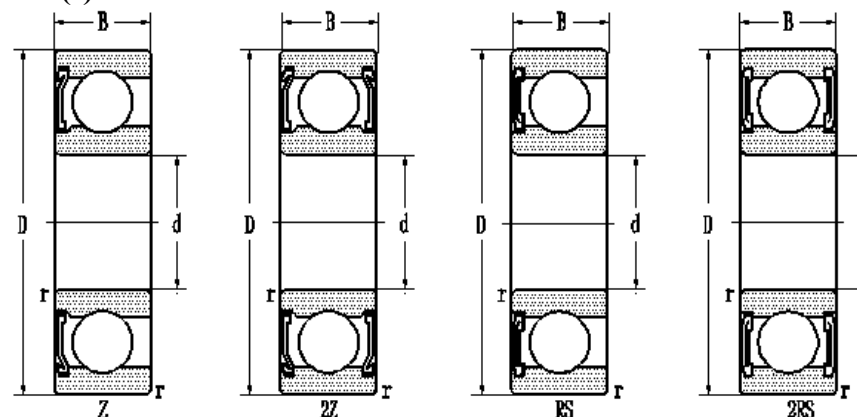
d15–20mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designation				Mass
mm				kN		r/min						kg
				dynamic	static	grease	oil	present		original		
d	D	B	r _{min}	C	C ₀							
15	32	9	0.3	4.3	2.5	14000		6002 E-2RZ		180102EK		0.0292
	35	11	0.6	7.8	3.75	19000		6202 E-Z	6202 E-2Z	60202E	80202E	0.0412
	35	11	0.6	7.8	3.75	13000		6202-RS	6202-2RS	160202	180202E	0.0393
	35	11	0.6	7.8	3.75	17000		6202-RZ	6202-2RZ	160202K	180202EK	0.0392
	42	13	1	11.4	5.4	17000		6302 E-Z	6302 E-2Z	60302E	80302E	0.0803
	42	13	1	11.4	5.4	12000		6302 E-RS	6302 E-2RS	160302E	180302E	0.08
17	35	10	0.3	4.97	2.95	13000		6003 E-Z	6003 E-2Z	60103E		0.0374
	35	10	0.3	4.97	2.95	13000				80103E		0.0366
	35	10	0.3	4.97	2.95	13000		6003 E-2RZ		180103EK		0.0364
	35	10	0.3	4.97	2.95	13000		6003 E-2RS				0.0382
	40	12	0.6	9.56	4.75	17000		6203 E-Z	6203 E-2Z	60203E	80203E	0.0657
	40	12	0.6	9.56	4.75	17000		6203 E-RZ/C9		60203EU		0.0657
	40	12	0.6	9.56	4.75	12000		6203 E-RS	6203 E-2RS	160203E	180203E	0.0667
	40	12	0.6	9.5	4.75	16000		6203 E-RZ	6203 E-2RZ	160203EK	180203EK	0.00667
20	42	12	0.6	7.22	4.46	11000				80104E		0.0677
	42	12	0.6	7.22	4.46	11000		6004 E-RZ	6004 E-2RZ	160104EK		0.068
	42	12	0.6	7.22	4.46	11000				180104EK		0.0673

Deep groove ball bearings with shield(s) or seal(s)

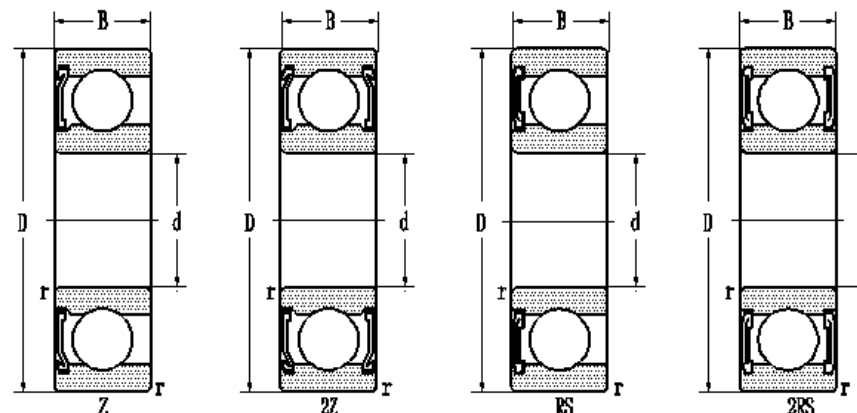
d20–25mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designation				Mass
mm				kN		r/min						kg
				dynamic	static	grease	oil	present	original			
d	D	B	r _{min}	C	C ₀							
20	42	12	0.6	7.22	4.46	11000		6004E-2RS				0.0693
	47	14	1	12.7	6.55	15000		6204 E-Z	6204 E-2Z	60204E	80204E	0.104
	47	14	1	12.7	6.55	10000		6204 E-RS	6204 E-2RS	160204E	180204E	0.1
	42	12	0.6	7.22	4.46	11000		6004 E-Z	6004 E-2Z	60104E		0.0677
	47	14	1	12.7	6.55	14000		6204 E-RZ	6204 E-2RZ	160204K	180204EK	0.103
	47	18	1	12.7	6.55	12000		62204 E-RZ				0.133
	52	15	1.1	12.3	7.81	10000		6304 E-RS	6304 E-2RS			0.147
22	47	12	0.6	7.74	4.96	10000		60/22 EX1-Z				0.0857
	50	14	1	12.9	6.75	10000		62/22E-2RS				0.119
25	47	12	0.6	7.74	4.96	15000		6005 E-Z	6005 E-2Z	60105	80105E	0.0753
	52	15	1	14	7.8	12000		6205 E-Z	6205 E-2Z	60205E	80205E	0.129
	52	15	1	14	7.8	8500		6205 E-RS	6205 E-2RS	160205E	180205E	0.128
	52	15	1	14	7.8	12000		6205 E-RZ	6205 E-2RZ	160205EK	180205EK	0.126
25	47	12	0.6	10.1	5.85	10000		6005 E-RS	6005 E-2RZ			
	62	17	1.1	22.4	11.5	8000		6305 E-RS				0.225

Deep groove ball bearings with shield(s) or seal(s)

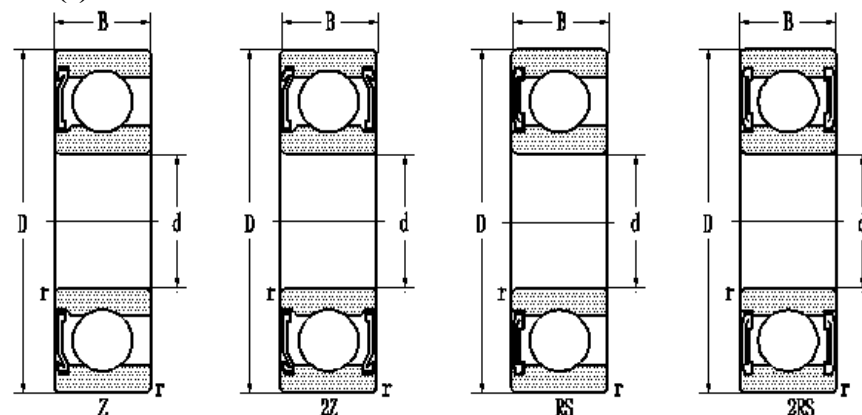
d30–40mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designation				Mass
mm				kN		r/min						kg
				dynamic	static	grease	oil	present		original		
d	D	B	r _{min}	C	C ₀							
30	55	13	1	10.2	6.91	8000		6006 E-2Z		80106E		0.111
	55	13	1	10.2	6.91	8000		6006 E-2RZ		180106EK		0.11
	55	13	1	10.2	6.91	8000		6006 E-2RS		180106EK		0.114
	62	16	1	19.5	11.2	10000		6206 E-Z	6206 E-2Z	60206E	80206E	0.198
	62	16	1	19.5	11.2	7500		6206 E-RS	6206 E-2RS	160206E	180206E	0.195
	72	19	1.1	28.1	16	9000		6306 E-RZ	6306 E-2RZ	160306EK	180306EK	0.348
32	75	20	1.1	29.8	16.8			63/32-2RS				0.408
35	62	14	1	16	10.3	7000		6007 E-2RS				0.154
	72	17	1.1	25.5	15.3	9000		6207 E-Z	6207 E-2Z	60207E	80207E	0.283
	72	17	1.1	25.5	15.3	6300		6207 E-RS	6207 E-2RS	160207E	180207E	0.27
40	68	15	1	13	11.5	6500		6008 E-Z	6008 E-2Z	60108E	80108E	0.189
	80	18	1.1	29.8	18	8300		6208 E-Z	6208 E-2Z	60208E	80208E	0.357
	80	18	1.1	29.8	18	8300		6208 E-RS	6208 E-2RS	160208E	180208E	0.364
	90	23	1.5	39.8	23.3	4900		6308 E-RZ	6308 E-2RZ	160308EK	180308EK	0.608
	90	23	1.5	40.8	24	5500		6308 E-Z				0.606

Deep groove ball bearings with shield(s) or seal(s)

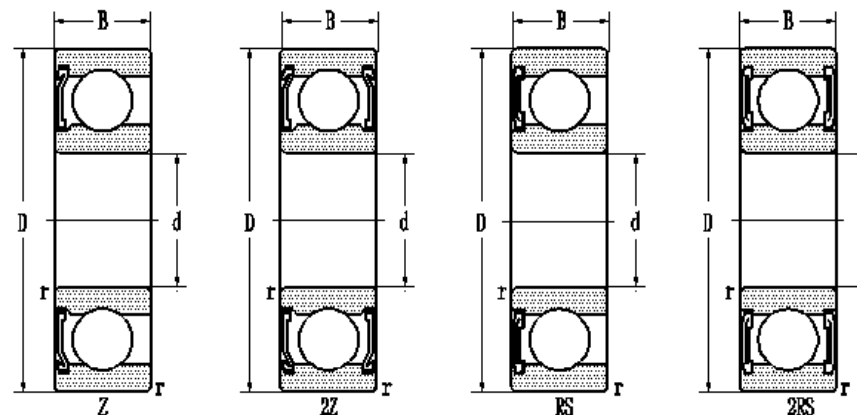
d45–65mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designation				Mass
mm				kN		r/min						kg
				dynamic	static	grease	oil	present	original			
d	D	B	r _{min}	C	Co							
45	75	16	1	21	14.9	6000		6009 E-2RZ				0.234
	75	16	1	21	14.9	6000		6009 E-Z				0.236
	85	19	1.1	32.2	21	7300		6209 E-Z	6209 E-2Z	60209E	80209E	0.407
	85	19	1.1	32.2	21	4900		6209 E-RS	6209 E-2RS	160209E	180209E	0.42
	100	25	1.5	51.1	30.5	4400		6309 E-RZ	6309 E-2RZ	160309EK	180309EK	0.845
	100	25	1.5	52.9	31.8	4400		6309 E-RS	6309 E-2RS			0.846
50	80	16	1	22	16.2	5500		6010 E-2RS				0.26
	80	16	1	22	16.2	5500		6010 E-Z				0.257
	90	20	1.1	34	22.5			6210 E-Z				0.47
	110	27	2	59.9	36.9	4500		6310 E-2RS				1.07
55	100	21	1.5	43.3	28.1			6211 E	6211 E-2Z	60211E	80211E	0.621
	120	29	2	71.5	44.6	4000		6311 E-Z				1.35
60	110	22	1.5	46.1	31.5			6212 E-Z	6212 E-2Z	60212E	80212E	0.793
65	120	23	1.5	54.2	39.3			6213 E-Z				0.988

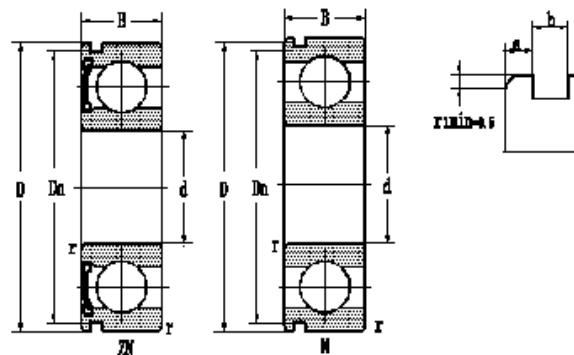
Deep groove ball bearings with shield(s) or seal(s)

d70–95mm



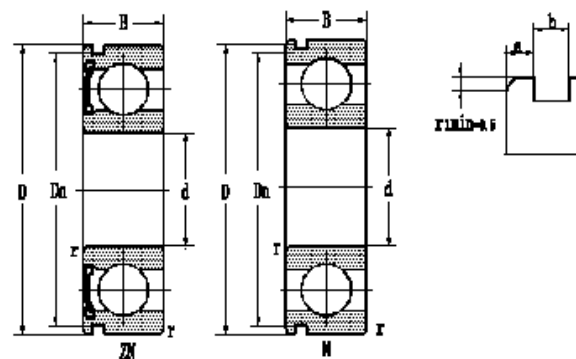
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designation				Mass
mm				kN		r/min						kg
				dynamic	static	grease	oil	present	original			
d	D	B	r _{min}	C	C ₀							
70	110	20	1.1	38.6	30.6	4000		6014 E-2RS				0.585
	125	24	1.5	58.9	43.6			6214 E-Z				1.1
75	130	25	1.5	66	49.3			6215 E-Z				1.25
80	140	26	2	72.7	53	3800		6216 E-Z	6216 E-2Z	60216E	80216E	1.47
	170	39	2.1	120	83.9			6316-RZ	6316-2RZ	160316K	180316K	3.61
85	150	28	2	83.2	64			6217 E-2Z				1.95
95	145	24	1.5	44.5	50.1	3000		6019 E-Z				1.17

Deep groove ball bearings with sanp ring groove
d17-32mm



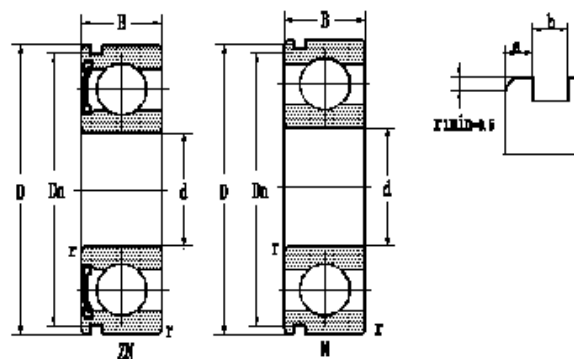
Boundary dimensions mm								Basic load ratings kN		Limiting speeds r/min		Bearing designation				Mass kg
d	D	B	rmin	Dn	a	b	ra	dynamic C	static Co	grease	oil	present		original		
17	40	12	0.6	38.1	2.06	1.35	0.4	9.56	4.75	17000	20000	6203 EN	6203 E-ZN	50203 E	105203E	0.0651
	47	14	1	44.6	2.46	1.35	0.4	13.5	6.5	16000	19000	6303 EN	6303 E-ZN	50303 E	105303E	0.109
20	47	14	1	44.6	2.46	1.35	0.4	12.7	6.55	15000	18000	6204 EN	6204 E-ZN	50204 E	105204E	0.103
	52	15	1.1	49.73	2.46	1.35	0.4	15.7	7.8	13000	16000	6304 EN	6304 E-ZN	50304 E	150304E	0.14
22	56	16	1.1	53.6	2.46	1.35	0.5	16	10.5	12500	16000	63/22 ENR				0.182
25	52	15	1	49.73	2.46	1.35	0.4	14	7.8	12000	15000	6205 EN	6205 E-ZN	50205 E	150204E	0.127
	62	17	1.1	59.61	3.28	1.9	0.6	22.5	11.6	11000	14000	6305 EN	6305 E-ZN	50305 E	150305E	0.217
28	52	12	0.5	49.73	2.06	1.35	0.6	12.4	7.37	12000	15000	60/28 EN-RS				0.0971
	68	18	1.1	64.82	3.28	1.9	0.5	26.8	14			63/28 EN-2RS				0.278
30	62	16	1	59.61	3.28	1.9	0.6	19.5	11.2	10000	13000	6206 EN	6206 E-ZN	50206 E	150206E	0.197
	72	19	1.1	68.81	3.28	1.9	0.6	28.1	16	9000	11000	6306 EN	6306 E-ZN	50306 E	150304E	0.349
32	75	20	1.1	71.83	3.28	1.9	0.5	29.8	16.8	5000	11000	63/32 EN				0.397

Deep groove ball bearings with sanp ring groove
d35-55mm



Boundary dimensions								Basic load ratings		Limiting speeds		Bearing designation				Mass
mm								kN		r/min						kg
								dynamic	static	grease	oil	present		original		
d	D	B	rmin	Dn	a	b	ra	C	Co							
35	72	17	1.1	68.81	3.28	1.9	0.6	25.5	15.3	9000	11000	6207 EN	6207 E-ZN	50207 E	150207E	0.279
	80	21	1.5	76.81	3.28	1.9	0.6	33.2	19	8500	10000	6307 EN	6307 E-ZN	50307 E	150307E	0.42
	100	25	1.5	96.8	3.28	2.7	0.6	55.3	31	7000	8500	6407 EN	6407 E-ZN	50407 E	150407E	0.917
40	80	18	1.1	76.81	3.28	1.9	0.6	29.8	18	8500	10000	6208 EN	6208 E-ZN	50208 E	150208E	0.351
	90	23	1.5	86.79	3.28	2.7	0.6	39.8	23.3	7300	8700	6308 EN	6308 E-ZN	50308 E	150308E	0.63
	110	27	2	106.81	3.28	2.7	0.6	61.8	35.4	6500	8000	6408 EN	6408 E-ZN	50408 E	150408E	1.21
45	85	19	1.1	81.81	3.28	1.9	0.6	32.2	21	7500	9000	6209 EN	6209 E-ZN	50209 E	150209E	0.402
	100	25	1.5	96.8	3.28	2.7	0.6	51.1	30.5	6500	7800	6309 EN	6309 E-ZN	50309 E	150309E	0.83
	120	29	2	115.21	4.06	3.1	0.6	73.8	44.1	5800	7000	6409 EN	6409 E-ZN	50409 E	150409E	1.55
50	90	20	1.1	86.79	3.28	2.7	0.6	34	22.5	6800	8200	6210 EN	6210 E-ZN	50210 E	150210E	0.47
	110	27	2	106.81	3.28	2.7	0.6	59.9	36.9	6100	7300	6310 EN	6310 E-ZN	50310 E	150310E	1.08
	130	31	2.1	125.22	4.06	3.1	0.6	84.5	50.4	5100	6100	6410 EN	6410 E-ZN	50410 E	150410E	1.91
55	100	21	1.5	96.8	3.28	2.7	0.6	43.3	28.1	6100	7300	6211 EN	6211 E-ZN	50211 E	150211E	0.58
	120	29	2	115.21	4.06	3.1	0.6	71.5	44.6	5600	6700	6311 EN	6311 E-ZN	50311 E	150311E	1.35
	140	33	2.1	135.23	4.9	3.1	0.6	101	62.4	4800	5800	6411 EN	6411 E-ZN	50411 E	150411E	2.3

Deep groove ball bearings with sanp ring groove
d60-70mm



Boundary dimensions mm								Basic load ratings kN		Limiting speeds r/min		Bearing designation				Mass kg
d	D	B	rmin	Dn	a	b	ra	dynamic C	static Co	grease	oil	present		original		
60	110	22	1.5	106.81	3.28	2.7	0.6	46.1	31.5	5800	6800	6212 EN	6212 E-ZN	50212 E	150212E	0.77
	130	31	2.1	125.22	4.06	3.1	0.6	79.4	50.4	4800	5800	6312 EN	6312 E-ZN	50312 E	150312E	1.71
	150	35	2.1	145.24	4.9	3.1	0.6	105	67.4	4600	5600	6412 EN	6412 E-ZN	50412 E	150412E	2.77
65	120	23	1.5	115.21	4.06	3.1	0.6	54.2	39.3	5100	6300	6213 EN	6213 E-ZN	50213 E	150213E	0.961
	140	33	2.1	135.23	4.9	3.1	0.6	89.5	59.7	4600	5400	6313 EN	6313 E-ZN	50313 E	150313E	2.09
70	125	24	1.5	120.22	4.06	3.1	0.6	58.9	43.6	4800	5800	6214 EN	6214 E-ZN	50214 E		1.04
	150	35	2.1	145.24	4.9	3.1	0.6	101	66	4400	5300	6314 EN	6314 E-ZN	50314 E		2.55



调心球轴承

Spherical Ball Bearing

Self-aligning Ball Bearings

Double row self-aligning ball bearings have a sphered raceway in the outer ring and a double raceway in the inner ring. This feature gives the bearings their self-aligning property, permitting angular misalignment of the shaft relative to the housing. They are therefore particularly suitable for applications where misalignment can arise from errors in mounting or from shaft deflection. Values for permissible misalignment errors of double row self-aligning ball bearings are given in the section "Selection of bearing type".

Double row self-aligning ball bearings are mainly used to carry radial loads and light axial loads, but they can't carry pure axial loads.

Double row self-aligning ball bearings of LYC standard design are available with a cylindrical bore and with a tapered bore (taper 1:12). Double row self-aligning ball bearings can be directly located on the tapered journal with lock nut and can also be mounted on the cylindrical shaft with suitable adaptor or withdrawal sleeve. The internal radial clearance of bearings can be adjusted by adaptor sleeve. The cages of double row self-aligning ball bearings are provided with steel pressed cage. With the great development of engineering plastic industry, double row self-aligning ball bearings with glass fibre reinforced polyimide moulded cage can be provided. They can be used at higher operating temperature and have good prospects.

In bearings rotating at high speeds, the inertia forces of balls and cage, and the friction in the lubricant can have a detrimental influence on the rolling conditions in the

bearing and may cause damaging sliding movements to occur between the balls and the raceways, minimum radial load should be applied and calculated from:

$$F_r = k_r \left(\frac{Vn}{1000} \right)^{2/3} \left(\frac{d_m}{100} \right)^2$$

where

k_r —minimum load factor $k_r=40$ for bearings of series 12, 13, 22 $k_r=50$ for bearings of series 23

V —oil viscosity at operating temperature, mm^2/s

n —speed, r/min

d_m —mean diameter of bearing,

$$d_m = 0.5(d+D), \text{ mm}$$

Equivalent load of double row self-aligning ball bearings at constant radial and axial loads are:

Equivalent dynamic load

$$P = F_r + Y_1 F_a \text{ when } F_a/F_r \leq e$$

$$P = 0.65 F_r + Y_2 F_a \text{ where } F_a/F_r > e$$

Equivalent static load

$$P_0 = F_r + Y_0 F_a$$

where

F_r —radial load, N

F_a —axial load, N

Y_1 、 Y_2 —axial load factor

Y_0 —axial static load factor

Values of e , Y_1 , Y_2 , and Y_0 are given in the bearing dimension tables.

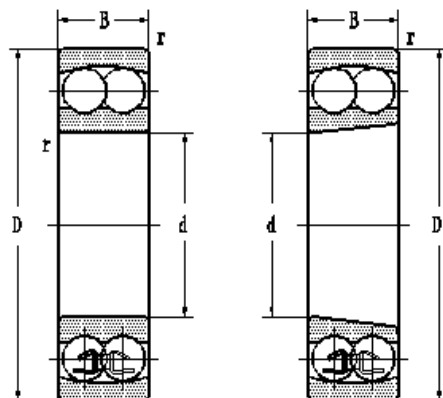
Chamfer dimensions and shoulder heights of shaft or housing fitted with double row self-aligning ball bearings

with cylindrical bore are given in the following Table.

r min	rg max	h min	轴承系列	
		10	12, 22	13, 23
			112, 113	
0.3	0.3	1	1.2	
0.6	0.6		2.1	
1	1		2.8	
1.1	1		3.5	
1.5	1.5		4.5	
2	2		5.5	
2.1	2.1		6	
2.5	2.5		7	

Self-aligning ball bearings

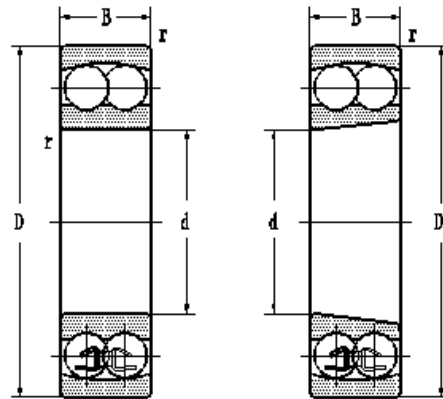
117~35mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations				Calculation				Mass kg
				kN		r/min		present		original		e	Y1	Y2	Yo	
d	D	B	rmin	dyamic C	static Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore					
17	40	12	0.6	7.93	2.45	12000	16000	1203	1203K	1203	111203	0.31	2	3.2	2.1	0.076
20	47	14	1	9.95	3.2	10000	14000	1204	1204 K	1204	111204	0.27	2.3	3.6	2.4	0.119
	52	21	1.1	18.2	4.75	9500	13000	2304	2304K	1604	111604	0.51	1.2	1.9	1.3	0.219
25	52	15	1	12.1	4.05	9000	12000	1205	1205 K	1205	111205	0.27	2.3	3.6	2.4	0.144
	52	18	1	9.62	4.28	9000	12000	2205	2205 K	1505	111505	0.41	1.5	2.3	1.5	0.187
	62	17	1.1	17.9	6	8000	10000	1305	1305 K	1305	111305	0.27	2.3	3.5	2.4	0.258
	62	24	1.1	24.4	6.55	8000	10000	2305	2305K	1605	111605	0.47	1.3	2.1	1.4	0.354
30	62	16	1	15.6	5	7500	9500	1206	1206 K	1206	111206	0.24	2.6	4	2.7	0.227
	62	20	1	11.8	5.68	7500	9500	2206	2206 K	1506	111506	0.39	1.6	2.4	1.7	0.26
	72	19	1.1	21.2	7.8	7000	9000	1306	1306 K	1306	111306	0.34	2.4	3.8	2.6	0.39
35	72	17	1.1	15.9	6.7	6700	8500	1207	1207 K	1207	111207	0.23	2.7	4.2	2.9	0.347
	72	23	1.1	16.8	8.32	6700	8500	2207	2207 K	1507	111507	0.38	1.7	2.6	1.8	0.441
	80	21	1.5	25.1	9.8	6300	8000	1307	1307 K	1307	111307	0.25	2.6	4	2.7	0.538
	80	31	1.5	39.7	12.9	6300	8000	2307	2307 K	1607	111607	0.46	1.4	2.1	1.4	0.675

Self-aligning ball bearings

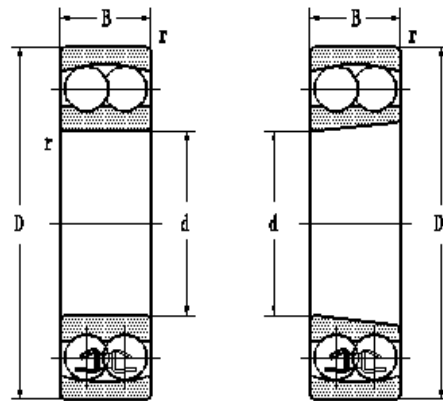
140~55mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations				Calculation				Mass
				kN		r/min		present		original						kg
				dynamic	static	grease	oil									
d	D	B	rmin	C	Co			cylindrical bore	tapered bore	cylindrical bore	tapered bore					
40	80	18	1.1	19	8.65	6300	8000	1208	1208 K	1208	111208	0.22	2.9	4.4	3	0.419
	80	23	1.1	17.2	9.45	6300	8000	2208	2208 K	1508	111508	0.34	1.9	2.9	2	0.53
	90	23	1.5	29.6	12.2	5600	7000	1308	1308 K	1308	111308	0.24	2.6	4	2.7	0.711
	90	33	1.5	44.9	15.6	5600	7000	2308	2308 K	1608	111608	0.43	1.5	2.3	1.5	0.93
45	85	19	1.1	21.6	9.65	5600	7000	1209	1209 K	1209	111209	0.21	2.9	4.6	3.1	0.493
	85	23	1.1	17.8	10.8	5600	7000	2209	2209 K	1509	111509	0.31	2.1	3.2	2.2	0.553
	100	25	1.5	37.7	16	5000	6300	1309	1309 K	1309	111309	0.25	2.5	3.9	2.6	0.96
	100	36	1.5	54	19.6	5000	6300	2309	2309 K	1609	111609	0.42	1.5	2.3	1.6	1.25
50	90	20	1.1	22.9	10.8	5300	6700	1210	1210 K	1210	111240	0.2	3.1	4.8	3.3	0.545
	90	23	1.1	17.8	11.2	5300	6700	2210	2210 K	1510	111510	0.29	2.2	3.4	2.3	0.678
	110	27	2	43.6	17.6	4800	6000	1310	1310 K	1310	111310	0.24	2.7	4.1	2.8	1.21
	110	40	2	63.7	20	4800	6000	2310	2310 K	1610	111610	0.43	1.5	2.3	1.6	1.66
55	100	21	1.5	26.5	13.4	4800	6000	1211	1211 K	1211	111211	0.2	3.2	5	3.4	0.704
	120	29	2	51.4	22.4	4300	5300	1311	1311 K	1311	111211	0.23	2.7	4.2	2.8	1.58
	120	43	2	76.1	24	4300	5300	2311	2311 K	1611	111611	0.41	1.5	2.4	1.6	2.09

Self-aligning ball bearings

60~750mr



Boundary dimensions mm				Basic load ratings		Limiting speeds		Bearing designations				Calculation				Mass kg
				kN		r/min		present		original		e	Y1	Y2	Yo	
d	D	B	rmin	dynamic C	static Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore					
60	110	22	1.5	30.2	15.6	4500	5600	1212	1212 K	1212	111212	0.19	3.4	5.3	3.6	0.896
	110	28	1.5	26.2	16.8	4500	5600	2212	2212 K	1512	111512	0.28	2.3	3.5	2.4	1.15
	130	31	2.1	57.2	26.5	4000	5000	1312	1312 K	1312	111312	0.23	2.8	4.3	2.9	1.96
	130	46	2.1	87.1	28.5	4000	5000	2312	2312K	1612	111612	0.41	1.6	2.5	1.6	2.58
65	140	33	2.1	61.9	29	3600	4500	1313	1313 K	1313	111313	0.23	2.8	4.3	2.9	2.38
70	150	35	2.1	74.1	27.5	3400	4300	1314	1314 K	1314	111314	0.22	2.8	4.4	2.9	2.98
75	160	37	2.1	79.3	30	3200	4000	1315	1315 K	1315	111315	0.22	2.8	4.4	3	3.55
	160	55	2.1	124	43	3200	4000	2315	2315 K	1615	111615	0.38	1.7	2.6	1.7	4.71
80	170	39	2.1	88.4	33.5	3000	3800	1316	1316	1316	111316	0.22	2.9	4.5	3.1	4.19
85	180	41	3	97.9	38	2800	3600	1317	1317	1317	111317	0.22	2.9	4.5	3	4.95
750	920	78	5	276	307	260	340	118/750	118/750 K	118/750	11118/750	0.059	10.6	16.4	11.1	116



角接触球轴承

Angular Contact Ball Bearing

Angular Contact Ball Bearing

Angular contact ball bearings are particularly suitable for carrying combined (axial and radial) loads. Sometimes, they also can carry pure axial load and operate in higher speed. Under radial loads, axial component force will be produced which must be counteracted. So the bearings are normally adjusted against a second bearing.

Single row angular contact ball bearings can carry axial load acting in one direction only. In many applications, angular contact ball bearings in pairs or multi-arrangement should be used. The axial load carrying capacity of angular contact ball bearings increase with increase of contact angle α .

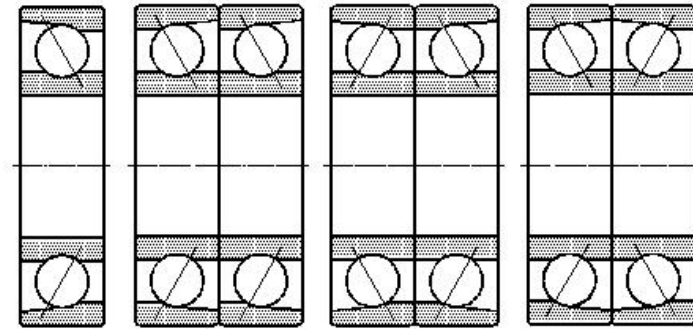
LYC standard single row angular contact ball bearings have separable and non-separable designs. Contact angle of separable bearings is 15° contact angles of non-separable bearings are 15° , 25° or 40° respectively. Separable angular contact ball bearing can be divided into removable inner ring and removable outer ring according to the internal structures. Angular contact ball bearings have a pressed outer ring and more balls filled, they have higher load carrying capacity. Mounting and dismounting of the bearings are very easy.

Stiffness of double row angular contact ball bearings with non-separable is better than that of single row angular contact ball bearings. Double row angular contact ball bearings can carry axial loads in both directions and a certain tilting moment at the same time. Double row angular contact ball bearing is similar to single row angular contact ball bearing arranged in pairs or back-to-back in their operational effect, but its width is narrower.

In order to prevent detrimental sliding movement caused by centrifugal force between ball and raceway, the requisite minimum load should be applied and calculated from: For bearings mounted singly or in tandem steel cage and machined solid cage. Solid cage is made of brass, bronze, various light alloy or phenolic resin. When angular contact ball bearings are used as high speed spindle bearings, the cages are often made of phenolic resin. Cage made of various materials

are identified by suffix.

In many cases, angular contact ball bearings can be provided in pairs or multi-arrangement. According to the mounting requirements, tandem, face-to-face or back-to-back arrangements can be selected for bearings. They can be supplied in matched sets of three or four



bearings depending on the applications.

Three or four-point contact ball bearings are single row angular contact ball bearings with two-piece inner ring or outer ring. They are separable. The bearings mounted in pairs can carry axial loads in both directions and limit axial displacements in both directions. And they take smaller space than that of double row angular contact ball bearings. Because of their two-piece inner ring or

$$F'_a = k_a \frac{C_o}{1000} \left(\frac{ndm}{100000} \right)^2$$

For bearings arranged in back-to-back or face-to-face

$$F'_r = k_r \left(\frac{vn}{1000} \right)^{2/3} \left(\frac{dm}{100} \right)^2$$

Where

F'_a —minimum axial load, N

F'_r —minimum radial load, N

C_0 —static load rating, N

v —oil viscosity at operating temperature, mm^2/s
 n —speed, r/min
 d_m —mean diameter of bearing $d=0.5 (d+D)$, mm
 k_a —minimum axial load factor
 k_r —minimum radial load factor

k_a		k_r	
Bearing series		Bearing series	
72	73	72	73
1.4	1.6	95	100

Depending on the different arrangements and contact angles, the equivalent dynamic load and equivalent static load can be calculated form:

Equivalent dynamic load

Single row angular contact ball bearings with contact angle 15°

For bearings mounted singly or in tandem

$P=Fr$ when $F_a/F_r \leq e$

$P=0.44Fr+YFa$ when $F_a/F_r > e$

For bearings arranged in back-to-back or face-to-face

$P=Fr+Y_1Fa$ 当 $F_a/F_r \leq e$

$P=0.72Fr+Y_2Fa$ 当 $F_a/F_r > e$

Values of e, Y, Y_1, Y_2 are given in Table 1.

Table 1

F_a/C_0	e	Y	Y_1	Y_2
0.015	0.38	1.47	1.65	2.39
0.029	0.4	1.4	1.57	2.28
0.058	0.43	1.3	1.46	2.11
0.087	0.46	1.23	1.38	2
0.12	0.47	1.19	1.34	1.93
0.17	0.5	1.12	1.26	1.82
0.29	0.55	1.02	1.14	1.66
0.44	0.56	1	1.12	1.63
0.58	0.56	1	1.12	1.63

Single row angular contact ball bearings with contact angle 25°

For bearings mounted singly or in tandem

Note: C_0 is basic static load rating for a single bearing.

$P=Fr$ when $F_a/F_r \leq 0.68$

$P=0.41Fr+0.87Fa$ when $F_a/F_r > 0.68$

For bearings arranged in back-to-back or face-to-face

$P=Fr+0.92Fa$ when $F_a/F_r \leq 0.68$

$P=0.67Fr+1.41Fa$ when $F_a/F_r > 0.68$

Single row angular contact ball bearings with contact angle 40°

For bearings mounted singly or in tandem

$P=Fr$ when $F_a/F_r \leq 1.14$

$P=0.35Fr+0.57Fa$ when $F_a/F_r > 1.14$

For bearings arranged in back-to-back or face-to-face

$P=Fr+0.55Fa$ when $F_a/F_r \leq 1.14$

$P=0.57Fr+0.93Fa$ when $F_a/F_r > 1.14$

For four-point angular contact ball bearings

$P=Fr+0.66Fa$ when $F_a/F_r \leq 0.95$

$P=0.6Fr+1.07Fa$ when $F_a/F_r > 0.95$

For double row angular contact ball bearings

$P=Fr+0.78Fa$ when $F_a/F_r \leq 0.8$

$P=0.63Fr+1.24Fa$ when $F_a/F_r > 0.8$

Equivalent static load

Single row angular contact ball bearings with contact angle 15°

For bearings mounted singly or in tandem

$P_0=0.5Fr+0.46Fa$ when $P_0 > Fr$ $P_0=Fr$ should be used

For bearings arranged in back-to-back or face-to-face

$P_0=Fr+0.92Fa$

Single row angular contact ball bearings with contact angle 25°

For bearings mounted singly or in tandem

$P_0=0.5Fr+0.38Fa$ when $P_0 < Fr$ $P_0=Fr$ should be used

For bearings arranged in back-to-back or face-to-face

$P_0=Fr+0.76Fa$

Single row angular contact ball bearings with contact angle 40°

For bearings mounted singly or in tandem

$P_0=0.5Fr+0.26Fa$ when $P_0 < Fr$ $P_0=Fr$ should be used

For bearings arranged in back-to-back or face-to-face

$$P_0 = Fr + 0.52Fa$$

For four-point contact ball bearings

$$P_0 = Fr + 0.58Fa$$

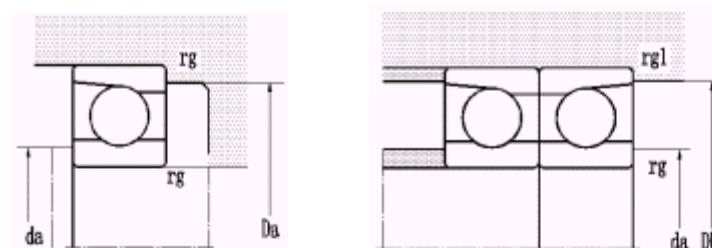
For double row angular contact ball bearings

$$P_0 = Fr + 0.66Fa$$

The shoulder height of the mating parts must be such that even for maximum bearing chamfer, an adequate abutment surface area exists. The maximum fillet radius r_g and the diameters of the abutment shoulders are shown in Table 2.

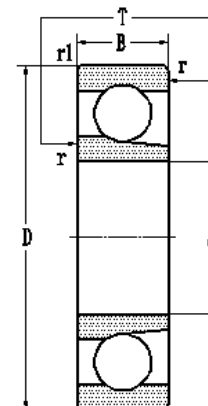
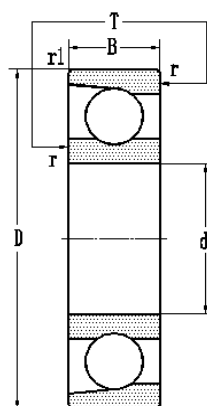
Table 2

mm



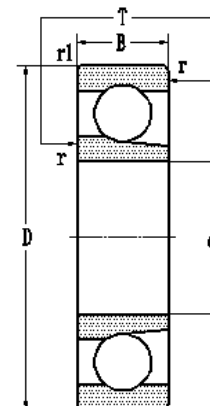
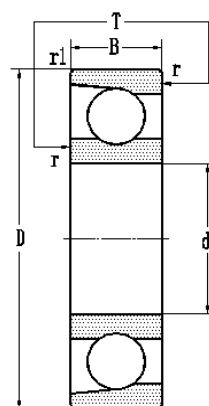
Bore code	Journ:	719C,719AC			Bearing searing 70C,70AC			72C,72AC		
		da	Da	rg max	da	Da	rg max	da	Da	rg max
0	10	12.5	19.5	0.15	13	23	0.3	14.5	25.5	0.6
1	12	14.5	21.5	0.15	15	25	0.3	16.5	27.5	0.6
2	15	17.5	25.5	0.15	18.5	28.5	0.3	19.5	30.5	0.6
3	17	19.5	27.5	0.15	21	31	0.3	22.5	34.5	0.6
4	20	23	34	0.15	25	37	0.6	26.5	40.5	1
5	25	28	39	0.15	30	42	0.6	31.5	45.5	1
6	30	33	44	0.15	36	49	1	37.5	54.5	1
7	35	39.5	50.5	0.3	41.5	55.5	1	44	63	1
8	40	44	58	0.3	47	61	1	48	72	1
9	45	49.5	63.5	0.3	51.5	68.5	1	52.5	78	1
10	50	54	68	0.3	56.5	73.5	1	57	83	1
11	55	59.5	75.5	0.3	62	83	1	63	92	1.5
12	60	64.5	80.5	0.3	67	88	1	69.5	101.5	1.5
13	65	69.5	85.5	0.3	72	93	1	75.5	109.5	1.5
14	70	75.5	94.5	0.3	78	102	1	80	115	1.5
15	75	80.5	99.5	0.3	83	107	1	85	120	1.5
16	80	85.5	105	0.3	89	116	1	91	129	2
17	85	92.5	115	0.6	94	121	1	98	138	2
18	90	96.5	119	0.6	100	130	1.5	104	147	2
19	95	102	124	0.6	105	135	1.5	111	154	2
20	100	110	132	0.6	110	140	1.5	115	165.5	2.1
21	105	113	138	0.6	116	149	2	121	174.5	2.1
22	110	117	143	0.6	122	158	2	127	183.5	2.1
24	120	128	157	0.6	132	168	2	140	195	2.1
26	130	139	171	0.6	145	186	2	148	211.5	2.5
28	140	149	182	0.6	155	196	2	163	226.5	2.5
30	150	161	199	1	166	210	2.1			
32	160	171	209	1						
34	170	181	219	1						
36	180	194	237	1						
38	190	203	247	1						
40	200	218	262	1						

Single row angular contact ball bearings
d10–17mm



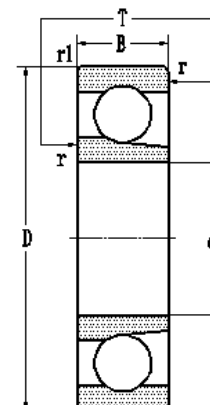
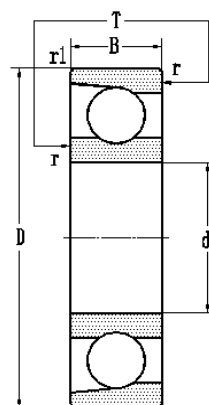
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
10	26	8	8	7.8	0.3	0.15	4.92	2.21	19000	28000	7000C	36100	0.018
	26	8	8	7.8	0.3	0.15	4.75	2.14	19000	28000	7000AC	46100	0.018
	30	9	9	8.8	0.6	0.15	5.81	2.93	18000	26000	7200C	36200	0.03
	30	9	9	8.8	0.6	0.15	5.59	2.85	18000	26000	7200AC	46200	0.03
12	28	8	8	7.7	0.3	0.15	5.41	2.6	18000	26000	7001C	36101	0.02
	28	8	8	7.7	0.3	0.15	5.21	2.53	18000	26000	7001AC	46101	0.02
	28	8	8	7.7	0.3	0.2	5.41	2.6	18000	26000	B7001C	136101	0.0205
	32	10	10	9.7	0.6	0.15	7.33	3.43	17000	24000	7201C	36201	0.035
	32	10	10	9.7	0.6	0.15	7.09	3.33	17000	24000	7201AC	46201	0.035
15	32	9	9	8.7	0.3	0.15	6.24	3.39	17000	24000	7002C	36102	0.028
	32	9	9	8.7	0.3	0.15	5.97	3.24	17000	24000	7002AC	46102	0.028
	32	9	9	8.7	0.3	0.2	6.24	3.39	16000	22000	B7002C	136102	0.0296
	35	11	11	10.7	0.6	0.15	8.68	4.57	16000	22000	7202C	36202	0.043
	35	11	11	10.7	0.6	0.15	8.35	4.39	16000	22000	7202AC	46202	0.043
17	35	10	10	9.7	0.3	0.15	6.61	3.81	16000	22000	7003C	36103	0.036
	35	10	10	9.7	0.3	0.15	8.23	4.53	16000	22000	SN7003	106103	0.0452

Single row angular contact ball bearings
d17–25mm



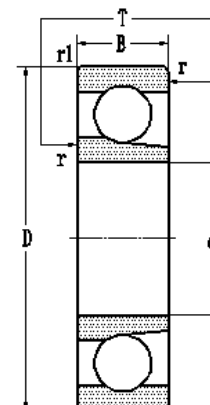
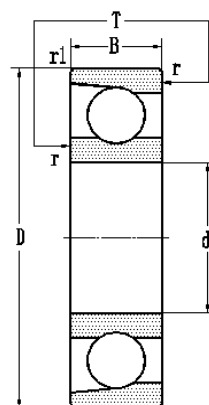
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
17	35	10	10	9.7	0.3	0.15	6.3	3.65	16000	22000	7003AC	46103	0.036
	35	10	10	9.7	0.3	0.2	6.61	3.81	16000	22000	B7003C	136103	0.0402
	40	12	12	11.7	0.6	0.3	10.8	6.13	15000	20000	7203C	36203	0.0636
	40	12	12	11.7	0.6	0.3	10.5	5.65	15000	20000	7203AC	46203	0.0636
	40	12	12	11.7	0.6	0.3	10.8	6.13	15000	20000	B7203C	136203	0.0537
20	42	12	12	11.7	0.6	0.15	10.5	6.02	14000	19000	7004C	36104	0.064
	42	12	12	11.7	0.6	0.15	10	5.74	14000	19000	7004AC	46104	0.064
	42	12	12	11.7	0.6	0.2	10.5	6.02	14000	19000	B7004C	136104	0.0712
	47	14	14	13.7	1	0.3	15.5	8.91	13000	18000	7204C	36204	0.1
	47	14	14	13.7	1	0.3	15	8.54	13000	18000	7204AC	46204	0.1
	47	14	14	13.7	1	0.3	14.1	7.81	13000	18000	7204B	66204	0.11
	52	15	15	14.6	1.1	0.6	16.2	8.71	12000	17000	7304B	66304	0.177
25	47	12	12	11.7	0.6	0.15	12.9	8.58	12000	17000	7005C	36105	0.074
	47	12	12	11.7	0.6	0.15	11.1	7.08	12000	17000	7005AC	46105	0.074
	47	12	12	11.7	0.6	0.2	12.9	8.58	12000	17000	B7005C	136105	0.077
	52	15	15	14.7	1	0.3	16.6	9.18	11000	16000	7205C	36205	0.122
	52	15	15	14.7	1	0.3	15.9	9.81	11000	16000	7205AC	46205	0.122
	52	15	15	14.7	1	0.3	15.8	9.37	11000	16000	7205B	66205	0.13

Single row angular contact ball bearings
d25–35mm



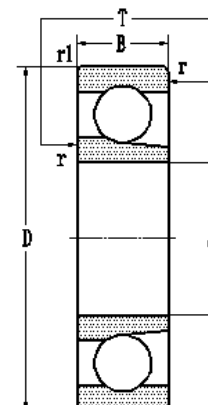
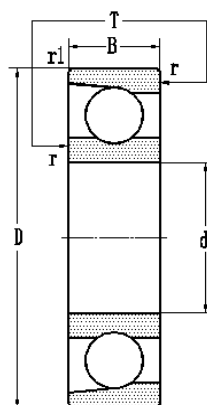
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
25	62	17	17	16.6	1.1	0.6	29.9	17.2	9500	14000	7305C	36305	0.23
	62	17	17	16.6	1.1	0.6	28.9	16.7	9500	14000	7305AC	46305	0.23
30	55	13	13	12.7	1	0.3	15.1	10.3	9500	14000	7006C	36106	0.11
	55	13	13	12.7	1	0.3	14.4	9.83	9500	14000	7006AC	46106	0.11
	55	13	13	12.7	1	0.3	15.1	10.3	9500	14000	B7006C	136106	0.117
	62	16	16	15.7	1	0.3	23	14.7	9000	13000	7206C	36206	0.198
	62	16	16	15.7	1	0.3	22.1	14.1	9000	13000	7206AC	46206	0.198
	62	16	16	15.7	1	0.3	21.9	12.5	9000	13000	7206B	66206	0.21
	62	16	16	15.7	1	0.3	23	14.7	9500	14000	B7206C	136206	0.2
	72	19	19	18.6	1.1	0.6	35.9	22.3	8500	12000	7306C	36306	0.35
	72	19	19	18.6	1.1	0.6	34.6	21.4	8500	12000	7306AC	46306	0.35
	72	19	19	18.6	1.1	0.6	31.1	19.3	8500	12000	7306B	66306	0.37
35	62	14	14	13.7	1	0.3	16.3	12.1	8500	12000	7007C	36107	0.15
	62	14	14	13.7	1	0.3	15.5	11.5	8500	12000	7007AC	46107	0.15
	62	14	14	13.7	1	0.3	16.3	12.1	8500	12000	B7007C	136107	0.144
	72	17	17	16.7	1.1	0.6	32.1	21.7	8000	11000	7207C	36207	0.305
	72	17	17	16.7	1.1	0.6	30.7	20.7	8000	11000	7207AC	46207	0.305
	72	17	17	16.7	1.1	0.6	27.1	18.4	8000	11000	7207B	66207	0.3

Single row angular contact ball bearings
d35-45mm



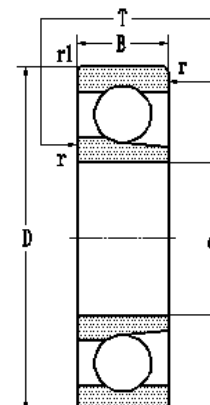
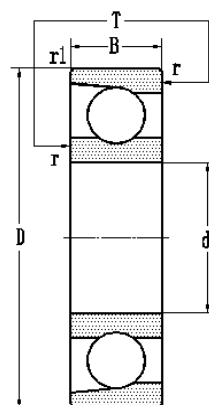
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
35	80	21	21	20.6	1.5	0.6	44.1	28	7500	10000	7307C	36307	0.47
	80	21	21	20.6	1.5	0.6	42.5	27	7500	10000	7307AC	46307	0.47
	80	21	21	20.6	1.5	0.6	38.1	24.2	7500	10000	7307B	66307	0.51
	100	25	25	24.6	1.5	0.6	70	42.2	6300	8500	7407AC	46407	0.933
40	68	15	15	14.7	1	0.3	20.1	15.2	8000	11000	7008C	36108	0.18
	68	15	15	14.7	1	0.3	19	14.4	8000	11000	7008AC	46108	0.18
	68	15	15	14.7	1	0.3	18.4	14.3	8000	11000	B7008C	136108	0.208
	80	18	18	17.7	1.1	0.6	36.9	25.6	7500	10000	7208C	36208	0.369
	80	18	18	17.7	1.1	0.6	35.2	24.4	7500	10000	7208AC	46208	0.369
	80	18	18	17.7	1.1	0.6	32.6	23.4	7500	10000	7208B	66208	0.39
	90	23	23	22.6	1.5	0.6	53.8	35	6700	9000	7308C	36308	0.673
	90	23	23	22.6	1.5	0.6	51.8	33.8	6700	9000	7308AC	46308	0.629
	90	23	23	22.6	1.5	0.6	46.4	30.3	6700	9000	7308B	66308	0.67
	110	27	27	26.6	2	1	73.6	49.7	6000	8000	7408AC	46408	1.41
45	75	16	16	15.7	1	0.3	25.9	20.4	7500	10000	7009C	36109	0.23
	75	16	16	15.7	1	0.3	24.5	19.3	7500	10000	7009AC	46109	0.23
	75	16	16	15.7	1	0.3	25.9	20.4	7500	10000	B7009C	136109	0.238

Single row angular contact ball bearings
d45–55mm



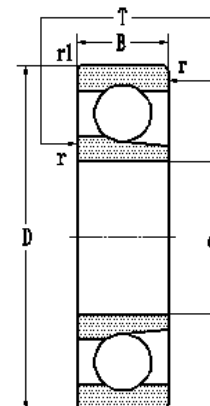
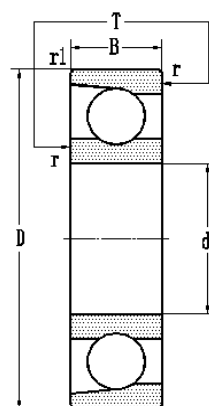
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic C	static Co	grease	oil	present	original	
45	85	19	19	18.7	1.1	0.6	38.6	28.3	6700	9000	7209C	36209	0.407
	85	19	19	18.7	1.1	0.6	36.9	27.1	6700	9000	7209AC	46209	0.41
	85	19	19	18.7	1.1	0.6	36	26.3	6700	9000	7209B	66209	0.44
	100	25	25	24.6	1.5	0.6	66.8	45.8	6000	8000	7309C	36309	0.86
	100	25	25	24.6	1.5	0.6	66.4	44	6000	8000	7309AC	46309	0.86
	100	25	25	24.6	1.5	0.6	59.7	39.7	6000	8000	7309B	66309	0.9
	120	29	29	28.6	2	1	87	55	5300	7000	7409AC	46409	1.77
50	80	16	16	15.7	1	0.3	26.6	21.9	6700	9000	7010C	36110	0.25
	80	16	16	15.7	1	0.3	25.2	21.4	6700	9000	7010AC	46110	0.257
	80	16	16	15.7	1	0.3	26.6	21.9	6700	9000	B7010C	136110	0.26
	90	20	20	19.7	1.1	0.6	42.8	31.7	6300	8500	7210C	36210	0.454
	90	20	20	19.7	1.1	0.6	40.8	30.3	6300	8500	7210AC	46210	0.46
	90	20	20	19.7	1.1	0.6	37.4	28.6	6300	8500	7210B	66210	0.49
	110	27	27	26.6	2	1	79.5	55.9	5600	7500	7310C	36310	1.08
	110	27	27	26.6	2	1	76.5	53.8	5600	7500	7310AC	46310	1.32
	110	27	27	26.6	2	1	68.2	48	5600	7500	7310B	66310	1.15
55	90	18	18	17.7	1.1	0.6	37.2	28.6	6000	8000	7011C	36111	0.38

Single row angular contact ball bearings
d55–60mm



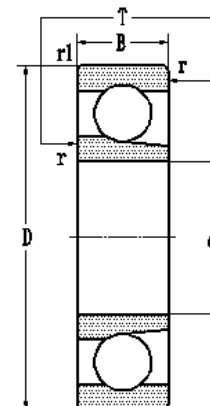
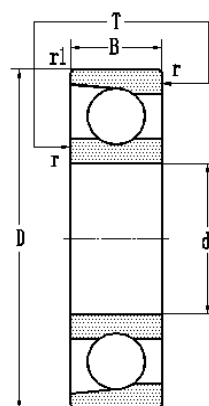
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
55	90	18	18	17.7	1.1	0.6	35.2	27.2	6000	8000	7011AC	46111	0.381
	100	21	21	20.6	1.5	0.6	53	40	5600	7500	7211C	36211	0.61
	100	21	21	20.6	1.5	0.6	50.5	38.2	5600	7500	7211AC	46211	0.61
	100	21	21	20.6	1.5	0.6	46.3	36.1	5600	7500	7211B	66211	0.65
	120	29	29	28.5	2	1	91.8	65.6	5000	6700	7311C	36311	1.71
	120	29	29	28.5	2	1	88.3	63.2	5000	6700	7311AC	46311	1.42
	120	29	29	28.5	2	1	78.7	56.4	5000	6700	7311B	66311	1.45
60	95	18	18	17.7	1.1	0.6	38.2	32.6	5600	7500	7012C	36112	0.4
	95	18	18	17.7	1.1	0.6	36.2	31.6	5600	7500	7012AC	46112	0.4
	110	22	22	21.6	1.5	0.6	61	48.3	5300	7000	7212C	36212	0.8
	110	22	22	21.6	1.5	0.6	58.2	46	5300	7000	7212AC	46212	0.8
	110	22	22	21.6	1.5	0.6	56.1	44.4	5300	7000	7212B	66212	0.84
	130	31	31	30.5	2.1	1.1	105	76.3	4800	6300	7312C	36312	1.7
	130	31	31	30.5	2.1	1.1	101	73.4	4800	6300	7312AC	46312	2.06
	130	31	31	30.5	2.1	1.1	90	65.5	4800	6300	7312B	66312	1.85
	150	35	35	34.4	2.1	1.1	132	95.3	4300	5600	7412AC	46412	3.55
	150	35	35	34.4	2.1	1.1	118	86.3	4300	5600	7412B	66412	3.56

Single row angular contact ball bearings
d65–70mm



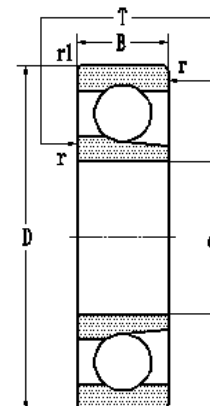
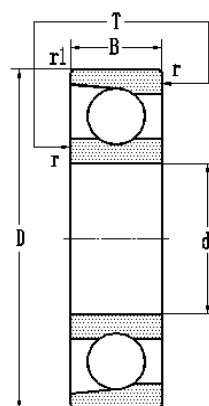
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic C	static Co	grease	oil	present	original	
65	100	18	18	17.7	1.1	0.6	40.1	35.4	5300	7000	7013C	36113	0.43
	100	18	18	17.7	1.1	0.6	38	34.1	5300	7000	7013AC	46113	0.43
	120	23	23	22.6	1.5	0.6	70	54.8	4800	6300	7213C	36213	1
	120	23	23	22.6	1.5	0.6	66.6	52.3	4800	6300	7213AC	46213	1
	120	23	23	22.6	1.5	0.6	63.4	46	4800	6300	7213B	66213	1.05
	140	33	33	32.5	2.1	1.1	121	88.9	4300	5600	7313C	36313	2.23
	140	33	33	32.5	2.1	1.1	116	85.5	4300	5600	7313AC	46313	2.23
	140	33	33	32.5	2.1	1.1	103	76.3	4300	5600	7313B	66313	2.25
70	110	20	20	19.7	1.1	0.6	48.3	43.2	500	6700	7014C	36114	0.6
	110	20	20	19.7	1.1	0.6	45.7	42.7	5000	6700	7014AC	46114	0.6
	110	20	20	19.7	1.1	0.7	45.7	42.7	5000	6700	B7014AC	146114	0.587
	125	24	24	23.6	1.5	0.6	72.9	59.8	4500	6200	7214C	36214	1.1
	125	24	24	23.6	1.5	0.6	69.4	57.1	4500	6200	7214AC	46214	1.1
	125	24	24	23.6	1.5	0.6	61.6	51	4500	6200	7214B	66214	1.15
	150	35	35	34.5	2.1	1.1	134	100	4000	5300	7314C	36314	2.67
	150	35	35	34.5	2.1	1.1	129	96.3	4000	5300	7314AC	46314	3.06
	150	35	35	34.5	2.1	1.1	114	86	4000	5300	7314B	66314	2.75
	180	42	42	41.4	3	1.1	150	131	3600	4800	7414AC	46414	5.22

Single row angular contact ball bearings
d75-80mm



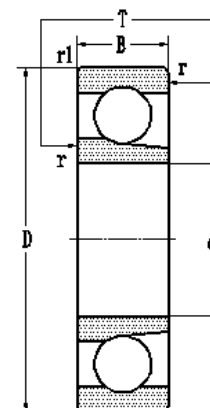
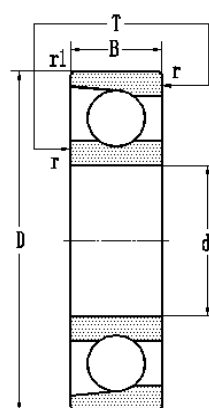
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
75	115	20	20	19.7	1.1	0.6	49.5	48	4800	6300	7015C	36115	0.63
	115	20	20	19.7	1.1	0.6	46.8	45.5	4800	6300	7015AC	46115	0.671
	130	25	25	24.6	1.5	0.6	79.2	63.7	4300	5600	7215C	36215	1.29
	130	25	25	24.6	1.5	0.6	75.4	62.8	4300	5600	7215AC	46215	1.2
	130	25	25	24.6	1.5	0.6	72.8	61.6	4300	5600	7215B	66215	1.3
	160	37	37	36.5	2.1	1.1	145	113	3800	5000	7315C	36315	3.56
	160	37	37	36.5	2.1	1.1	139	108	3800	5000	7315AC	46315	3.56
80	160	37	37	36.5	2.1	1.1	124	97.2	3800	5000	7315B	66315	3.3
	125	22	22	21.7	1.1	0.6	58.5	56.8	4500	6000	7016C	36116	0.85
	125	22	22	21.7	1.1	0.6	55.4	55.1	4500	6000	7016AC	46116	0.85
	140	26	26	25.6	2	1	89.5	76.9	4000	5300	7216C	36216	1.45
	140	26	26	25.6	2	1	85.1	73.6	4000	5300	7216AC	46216	1.43
	140	26	26	25.6	2	1	80.5	69.2	4000	5300	7216B	66216	1.55
	170	39	39	38.5	2.1	1.1	158	128	3600	4800	7316C	36316	3.59
	170	39	39	38.5	2.1	1.1	152	122	3600	4800	7316AC	46316	3.59
	170	39	39	38.5	2.1	1.1	135	109	3600	4800	7316B	66316	3.9
	200	48	48	47.4	3	1.1	182	170	3200	4300	7416AC	46416	8.72

Single row angular contact ball bearings
d85–90mm



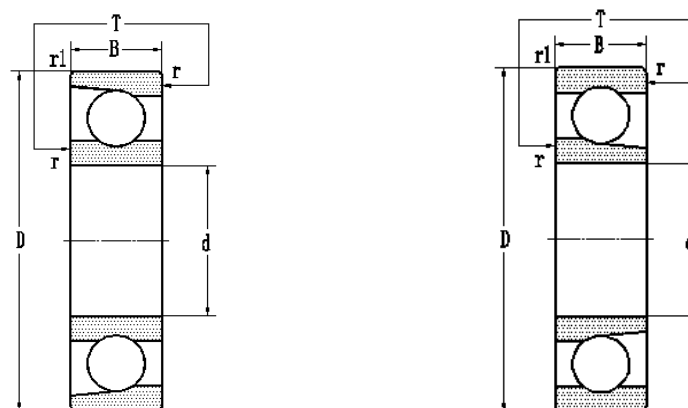
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
85	130	22	22	21.5	1.1	0.6	62.5	61.7	4300	5600	7017C	36117	0.89
	130	22	22	21.5	1.1	0.6	59.2	59.2	4300	5600	7017AC	46117	0.89
	150	28	28	27.5	2	1	99.7	84.9	3800	5000	7217C	36217	1.8
	150	28	28	27.5	2	1	94.9	81.2	3800	5000	7217AC	46217	1.8
	150	28	28	27.5	2	1	93.1	81	3800	5000	7217B	66217	1.95
	180	41	41	40.2	3	1.1	172	141	3400	4500	7317C	36317	4.38
	180	41	41	40.2	3	1.1	165	136	3400	4500	7317AC	46317	4.38
	180	41	41	40.2	3	1.1	148	122	3400	4500	7317B	66317	4.6
90	140	24	24	23.5	1.5	0.6	71.4	71.7	4000	5300	7018C	36118	1.15
	140	24	24	23.5	1.5	0.6	67.6	68.6	4000	5300	7018AC	46118	1.15
	160	30	30	29.5	2	1	123	105	3600	4800	7218C	36218	2.18
	160	30	30	29.5	2	1	117	99.9	3600	4800	7218AC	46218	2.19
	160	30	30	29.5	2	1	106	93.8	3600	4800	7218B	66218	2.4
	190	43	43	42.2	3	1.1	185	160	3200	4300	7318C	36318	4.87
	190	43	43	42.2	3	1.1	178	154	3200	4300	7318AC	46318	5.06
	190	43	43	42.2	3	1.1	158	137	3200	4300	7318B	66318	5.4
	225	54	54	53.4	4	1.5	233	214	2600	3600	7418AC	46418	12.2

Single row angular contact ball bearings
d95–110mm



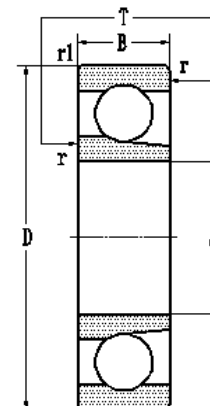
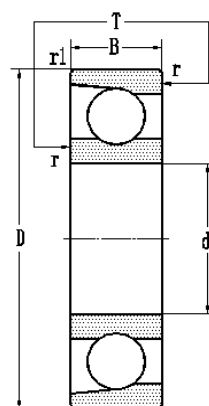
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic C	static Co	grease	oil	present	original	
95	145	24	24	23.5	1.5	0.6	73.6	77.1	3800	5000	7019C	36119	1.2
	145	24	24	23.5	1.5	0.6	69.5	71	3800	5000	7019AC	46119	1.2
	170	32	32	31.5	2.1	1.1	135	113	3400	4500	7219C	36219	2.7
	170	32	32	31.5	2.1	1.1	128	101	3400	4500	7219AC	46219	2.7
	170	32	32	31.5	2.1	1.1	121	108	3400	4500	7219B	66219	2.9
	200	45	45	44.2	3	1.1	201	180	300	4000	7319C	36319	5.98
	200	45	45	44.2	3	1.1	193	173	300	4000	7319AC	46319	5.98
	200	45	45	44.2	3	1.1	172	154	300	4000	7319B	66319	6.25
100	150	24	24	23.5	1.5	0.6	79.4	81.3	3800	5000	7020C	36120	1.25
	150	24	24	23.5	1.5	0.6	75.1	77	3800	5000	7020AC	46120	1.25
	180	34	34	33.5	2.1	1.1	149	127	3200	4300	7220C	36220	3.28
	180	34	34	33.5	2.1	1.1	142	121	3200	4300	7220AC	46220	3.25
	180	34	34	33.5	2.1	1.1	130	114	3200	4300	7220B	66220	3.45
	215	47	47	46.2	3	1.1	222	207	2600	3600	7320C	36320	7.2
	215	47	47	46.2	3	1.1	214	199	2600	3600	7320AC	46320	8.47
	215	47	47	46.2	3	1.1	190	177	2600	3600	7320B	66320	7.75
110	170	28	28	27.5	2	1	104	104	2800	3800	7022AC	46122	2.46

Single row angular contact ball bearings
d110–150mm



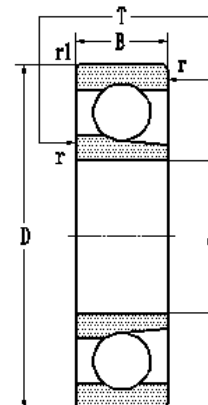
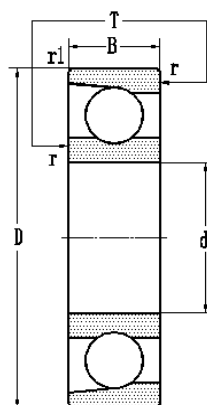
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic	static	grease	oil	present	original	
110	200	38	38	37.5	2.1	1.1	176	160	2800	3800	7222C	36222	4.55
	200	38	38	37.5	2.1	1.1	168	153	2800	3800	7222AC	46222	4.55
	200	38	38	37.5	2.1	1.1	154	144	2800	3800	7222B	66222	4.8
	240	50	50	49.2	3	1.1	253	252	2200	3200	7322AC	46322	10.7
	240	50	50	49.2	3	1.1	226	225	2200	3200	7322B	66322	10.7
120	165	22	22	21.5	1.1	0.6	51.2	52.2	2200	3200	71924C	1036924	1.51
	215	40	40	39.5	2.1	1.1	190	179	2400	3400	7224C	36224	5.4
	215	40	40	39.5	2.1	1.1	181	171	2400	3400	7224AC	46224	5.4
	215	40	40	39.5	2.1	1.1	165	161	2400	3400	7224B	66224	6.13
	260	55	55	54.2	3	1.1	279	288	2200	3200	7324C	36324	14.8
	260	55	55	54.2	3	1.1	268	277	2200	3200	7324AC	46324	14.8
130	230	40	40	39.5	2.1	1.1	180	182	2500	3200	7226AC	46226	7.46
140	210	33	33	32.5	2	1	140	150	2600	3300	7028AC	46128	3.77
140	300	62	62	61.2	4	1.5	290	334	2000	2500	7328B	66328	23
150	320	65	65	64.2	4	1.5	340	395	2000	2800	7330AC	46330	27

Single row angular contact ball bearings
d190–460mm



Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic C	static Co	grease	oil	present	original	
190	260	33	33	32.5	2	1.1	139	177	1800	2200	71938AC	1046938	4.45
220	400	65	65	64.2	4	1.5	358	507	1100	1600	7244AC	46244	38.5
260	360	46	46	45.2	2.1	1.1	212	302	1300	1600	71952B	1066952	14.3
270	330	30	30	29.5	2.1	1.1	90.8	114	1300	1700	7654B	66754	5.75
300	540	85	85	84.2	5	3	396	890	800	1000	7260B	66260	72.9
340	460	56	56	55.2	3	1.1	306	503	800	1000	71968B	1066968	27.5
380	440	25	25	24.6	3	1	110	178	960	1200	7676	6776	7.1
	520	82	82	81.2	4	1.5	407	733	700	900	72976AC	2046976	48.9
420	560	65	65	64.2	3	1.1	451	652	600	800	71984	1046984K	52.5
460	600	50	50	49	3	1.5	284	522	600	800	7692AC	46792	37.9
	620	74	74	73.2	4	1.5	439	865	550	750	71992B	1066992	64.1

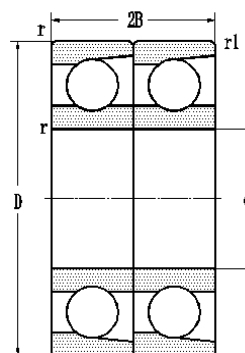
Single row angular contact ball bearings
d530–1180mm



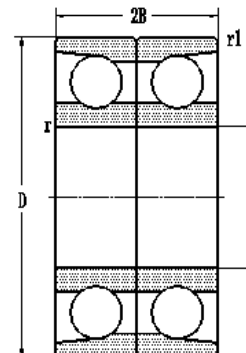
Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	Tmax	Tmin	rmin	r1min	dynamic C	static Co	grease	oil	present	original	
530	710	82	82	81.2	5	2.1	541	1136	500	700	719/530AC	10469/530	88.8
630	850	100	100		6	2.1	855	2100	350	440	719/630AC	10469/630	161
1000	1220	50	50		4	2.1	409	1178	120	150	78/1000X2AC	468/1000	155
1180	1420	106	106		6	2.5	1130	3710	110	140	S718/1180	10068/1180	307

Duplex mounted angular contact bearings

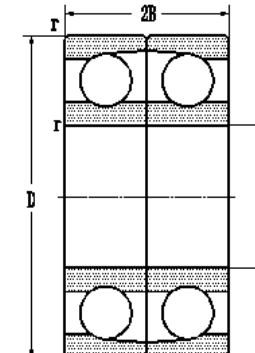
d10–17mm



串联



背对背

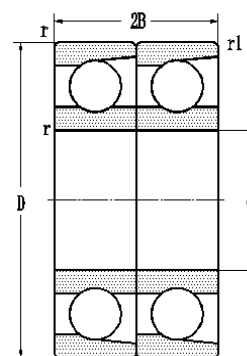


面对面

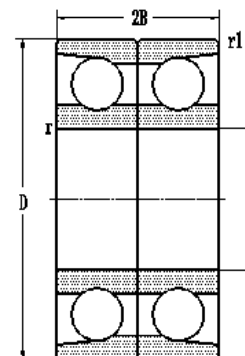
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面	
10	26	16	0.3	0.15	7.99	4.42	14000	20000	7000C/DT	7000C/DB	7000C/DF	436100	236100	336100	0.036
	26	16	0.3	0.15	7.72	4.28	14000	20000	7000AC/DT	7000AC/DB	7000AC/DF	446100	246100	346100	0.036
	30	18	0.6	0.15	9.44	5.86	13000	18000	7200C/DT	7200C/DB	7200C/DF	436200	236200	336200	0.06
	30	18	0.6	0.15	9.08	5.7	13000	18000	7200AC/DT	7200AC/DB	7200AC/DF	446200	246200	346200	0.06
12	28	16	0.3	0.15	8.8	5.28	13000	18000	7001C/DT	7001C/DB	7001C/DF	436101	236101	336101	0.04
	28	16	0.3	0.15	8.46	5.06	13000	18000	7001AC/DT	7001AC/DB	7001AC/DF	446101	246101	346101	0.04
	32	20	0.6	0.15	11.9	6.86	12000	17000	7201C/DT	7201C/DB	7201C/DF	436201	236201	336201	0.07
	32	20	0.6	0.15	11.5	6.66	12000	17000	7201AC/DT	7201AC/DB	7201AC/DF	446201	246201	346201	0.07
15	32	18	0.3	0.15	10.1	6.78	12000	17000	7002C/DT	7002C/DB	7002C/DF	436102	236102	336102	0.056
	32	18	0.3	0.15	9.7	6.48	12000	17000	7002AC/DT	7002AC/DB	7002AC/DF	446102	246102	346102	0.056
	35	22	0.6	0.15	14.1	9.14	11000	15000	7202C/DT	7202C/DB	7202C/DF	436202	236202	336202	0.086
	35	22	0.6	0.15	13.6	8.78	11000	15000	7202AC/DT	7202AC/DB	7202AC/DF	446202	246202	346202	0.086
17	35	20	0.3	0.15	10.7	7.62	11000	15000	7003C/DT	7003C/DB	7003C/DF	436103	236103	336103	0.072
	35	20	0.3	0.15	10.2	7.3	11000	15000	7003AC/DT	7003AC/DB	7003AC/DF	446103	246103	346103	0.072
	40	24	0.6	0.3	17.5	12.3	10000	14000	7203C/DT	7203C/DB	7203C/DF	436203	236203	336203	0.127
	40	24	0.6	0.3	17.1	11.3	10000	14000	7203AC/DT	7203AC/DB	7203AC/DF	446203	246203	346203	0.127

Duplex mounted angular contact bearings

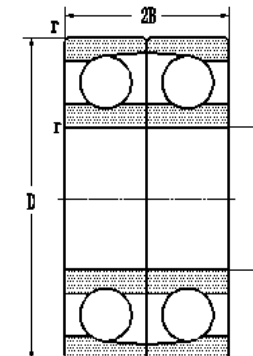
d20–30mm



串联



背对背

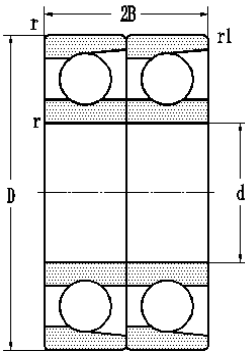


面对面

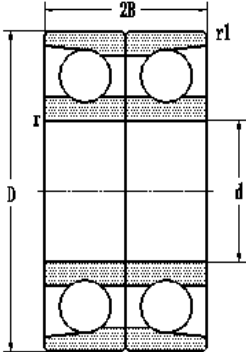
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面	
20	42	24	0.6	0.15	17.1	12	9500	13000	7004C/DT	7004C/DB	7004C/DF	436104	236104	336104	0.128
	42	24	0.6	0.15	16.2	11.5	9500	13000	7004AC/DT	7004AC/DB	7004AC/DF	446104	246104	346104	0.128
	47	28	1	0.3	25.2	17.8	9000	12000	7204C/DT	7204C/DB	7204C/DF	436204	236204	336204	0.2
	47	28	1	0.3	24.4	17.1	9000	12000	7204AC/DT	7204AC/DB	7204AC/DF	446204	246204	346204	0.2
	47	28	1	0.3	22.9	15.6	9000	12000	7204B/DT	7204B/DB	7204B/DF	466204	266204	366204	0.22
25	47	24	0.6	0.15	21	17.2	9000	12000	7005C/DT	7005C/DB	7005C/DF	436105	236105	336105	0.148
	47	24	0.6	0.15	18	14.2	9000	12000	7005AC/DT	7005AC/DB	7005AC/DF	446105	246105	346105	0.148
	52	30	1	0.3	24	18.4	8000	11000	7205C/DT	7205C/DB	7205C/DF	436205	236205	336205	0.244
	52	30	1	0.3	25.8	19.6	8000	11000	7205AC/DT	7205AC/DB	7205AC/DF	446205	236205	346205	0.244
	52	30	1	0.3	25.7	18.7	8000	11000	7205B/DT	7205B/DB	7205B/DF	466205	266205	366205	0.26
	62	34	1.1	0.6	48.6	34.4	6700	10000	7305C/DT	7305C/DB	7305C/DF	436305	236305	336305	0.46
	62	34	1.1	0.6	46.9	33.4	6700	10000	7305AC/DT	7305AC/DB	7305AC/DF	446305	246305	346305	0.46
	62	34	1.1	0.6	42.6	30.2	6700	10000	7305B/DT	7305B/DB	7305B/DF	466305	266305	366305	0.5
30	55	26	1	0.3	24.5	20.6	6700	10000	7006C/DT	7006C/DB	7006C/DF	436106	236106	336106	0.22
	55	26	1	0.3	23.4	19.7	6700	10000	7006AC/DT	7006AC/DB	7006AC/DF	446106	246106	346106	0.22
	62	32	1	0.3	37.4	29.4	6300	9500	7206C/DT	7206C/DB	7206C/DF	436206	236206	336206	0.396

Duplex mounted angular contact bearings

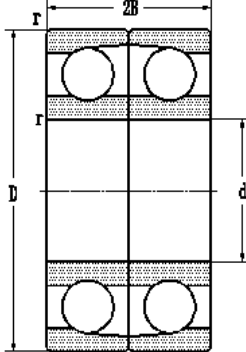
d30–40mm



串联



背对背

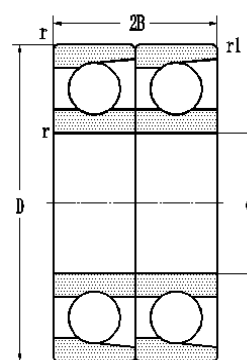


面对面

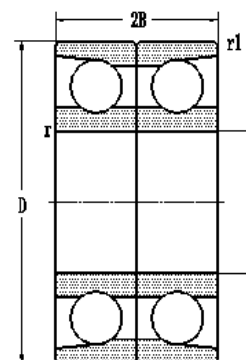
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面	
30	62	32	1	0.3	37.4	29.4	6300	9500	B7206C/DT			736206			0.234
	62	32	1	0.3	35.9	28.2	6300	9000	7206AC/DT	7206AC/DB	7206AC/DF	446206	246206	3462006	0.396
	62	32	1	0.3	33.6	25	6300	9000	7206B/DT	7206B/DB	7206B/DF	466206	266206	336206	0.42
	72	38	1.1	0.6	58.3	44.6	6000	8500	7306C/DT	7306C/DB	7306C/DF	436306	236306	336306	0.7
	72	38	1.1	0.6	56.2	42.8	6000	8500	7306AC/DT	7306AC/DB	7306AC/DB	446306	246306	346306	0.7
	72	38	1.1	0.6	50.5	38.6	6000	8500	7306B/DT	7306B/DB	7306B/DF	466306	266306	366306	0.74
35	62	28	1	0.3	26.5	24.2	6000	8500	7007C/DT	7007C/DB	7007C/DF	436107	236107	336107	0.3
	62	28	1	0.3	25.2	23	6000	8500	7007AC/DT	7007AC/DB	7007AC/DF	446107	246107	346107	0.3
	72	34	1.1	0.6	52.1	43.4	5600	7500	7207C/DT	7207C/DB	7207C/DF	436207	236207	336207	0.61
	72	34	1.1	0.6	49.9	41.4	5600	7500	7207AC/DT	7207AC/DB	7207AC/DF	446207	246207	346207	0.61
	72	34	1.1	0.6	44	36.8	5600	7500	7207B/DT	7207B/DB	7207B/DF	466207	266207	366207	0.6
40	68	30	1	0.3	32.7	30.4	5600	7500	7008C/DT	7008C/DB	7008C/DF	436108	236108	336108	0.36
	68	30	1	0.3	30.9	28.8	5600	7500	7008AC/DT	7008ACDB	7008AC/DF	446108	246108	346108	0.36
	80	36	1.1	0.6	59.9	51.2	5300	7000	7208C/DT	7208C/DB	7208C/DF	436208	236208	336208	0.737
	80	36	1.1	0.6	57.2	48.8	5300	7000	7208AC/DT	7208AC/DB	7208AC/DF	446208	246208	346208	0.74
	80	36	1.1	0.6	53	46.8	5300	7000	7208B/DT	7208B/DB	7208B/DF	466208	266208	366208	0.78

Duplex mounted angular contact bearings

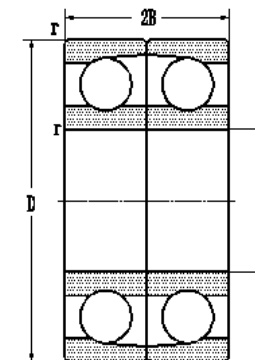
d40–50mm



串联



背对背

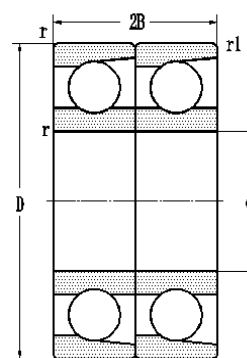


面对面

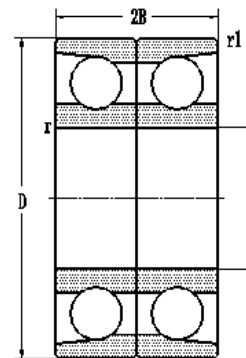
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	r _{min}	r _{1min}	C	Co			串联	背对背	面对面	串联	背对背	面对面	
40	90	46	1.5	0.6	87.4	70	4500	6300	7308C/DT	7308C/DB	7308C/DF	436308	236308	336308	1.69
	90	46	1.5	0.6	84.1	67.6	4500	6300	7308AC/DT	7308AC/DB	7308AC/DF	446308	246308	346308	1.32
	90	46	1.5	0.6	75.4	60.6	4500	6300	7308B/DT	7308B/DB	7308B/DF	466308	266308	366308	1.34
45	75	32	1	0.3	42.1	40.8	5300	7000	7009C/DT	7009C/DB	7009C/DF	436109	236109	336109	0.46
	75	32	1	0.3	39.8	38.6	5300	7000	7009AC/DT	7009AC/DB	7009AC/DF	446109	246109	346109	0.46
	75	32	1	0.3	42.1	40.8	5000	7000	B7009C/DT			736109			0.484
	85	38	1.1	0.6	62.7	56.6	4500	6300	7209C/DT	7209C/DB	7209C/DF	436209	236209	336209	0.814
	85	38	1.1	0.6	59.9	54.2	4500	6300	7209AC/DT	7209AC/DB	7209AC/DF	446209	246209	346209	0.82
	85	38	1.1	0.6	58.5	52.6	4500	6300	7209B/DT	7209B/DB	7209B/DF	466209	266209	366209	0.88
	100	50	1.5	0.6	109	91.6	4000	5600	7309C/DT	7309C/DB	7309C/DF	436309	236309	336309	1.72
	100	50	1.5	0.6	108	88	4000	5600	7309AC/DT	7309AC/DB	7309AC/DF	446309	246309	346309	1.72
	100	50	1.5	0.6	97	79.4	4000	5600	7309B/DT	7309B/DB	7309B/DF	466309	266309	366309	1.8
50	80	32	1	0.3	43.2	43.8	4500	6300	7010C/DT	7010C/DB	7010C/DF	436110	236110	336110	0.5
	80	32	1	0.3	40.9	42.8	4500	6300	7010AC/DT	7010AC/DB	7010AC/DF	446110	246110	346110	0.5
	80	32	1	0.3	43.2	43.8	4500	6500	B7010C/DT			736110			0.52
	90	40	1.1	0.6	69.5	63.4	4300	6000	7210C/DT	7210C/DB	7210C/DF	436210	236210	336210	0.92
	90	40	1.1	0.6	66.3	60.6	4300	6000	7210ACN2/DB			246210K			0.964

Duplex mounted angular contact bearings

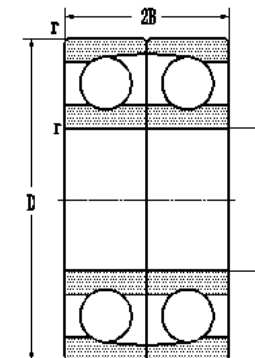
d50–60mm



串联



背对背

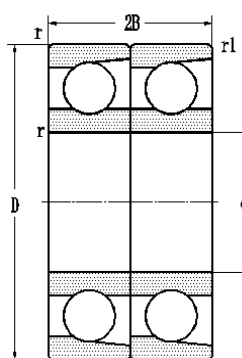


面对面

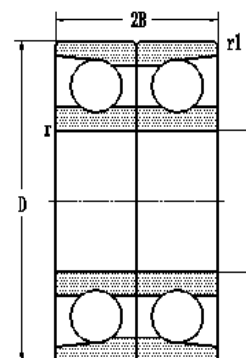
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg	
mm					kN		r / min									
					dynamic	static	grease	oil	present			original				
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面		
50	90	40	1.1	0.6	46.7	45.6	4300	6000	7210EBN2/DB						266210EK	0.997
	90	40	1.1	0.6	66.3	60.6	4300	6000	7210AC/DT	7210AC/DB	7210AC/DF	446210	246210	346210	0.92	
	90	40	1.1	0.6	60.8	57.2	4300	6000	7210B/DT	7210B/DB	7210EB/DF	466210	266210	366210	0.98	
	90	40	1.1	0.6	69.5	63.4	4300	6000	7210C/DB/YA						3-642	1.95
	110	54	2	1	129	112	3800	5300	7310C/DT	7310C/DB	7310C/DF	436310	236310	336310	2.16	
	110	54	2	1	124	108	3800	5300	7310AC/DT	7310AC/DB	7310AC/DF	446310	246310	346310	2.64	
	110	54	2	1	111	96	3800	5300	7310B/DT	7310B/DB	7310B/DF	466310	266310	366310	2.3	
55	90	36	1.1	0.6	60.4	57.2	4000	5600	7011C/DT	7011C/DB	7011C/DF	436111	236111	336111	0.76	
	90	36	1.1	0.6	57.2	54.4	4000	5600	7011AC/DT	7011AC/DB	7011AC/DF	446111	246111	346111	0.76	
	90	36	1.1	0.6	57.2	54.4	4000	5600	7011ACN2/DB						246111K	0.788
	100	42	1.5	0.6	86.1	80.8	3800	5300	7211C/DT	7211C/DB	7211C/DF	436211	236211	336211	1.22	
	100	42	1.5	0.6	82	76.4	3800	5300	7211AC/DT	7211AC/DB	7211AC/DF	446211	246211	346211	1.22	
	100	42	1.5	0.6	75.2	72.2	3800	5300	7211B/DT	7211B/DB	7211B/DF	46621	266211	366211	1.3	
	120	58	2	1	149	131	3400	4800	7311C/DT	7311C/DB	7311C/DF	436311	236311	336311	3.42	
	120	58	2	1	143	126	3400	4800	7311AC/DT	7311AC/DB	7311AC/DF	446311	246311	346311	2.84	
	120	58	2	1	128	113	3400	4800	7311B/DT	7311B/DB	7311B/DF	466311	266311	366311	2.9	
60	95	36	1.1	0.6	62.1	65.2	3800	5300	7012C/DT	7012C/DB	7012C/DF	436112	236112	336112	0.8	

Duplex mounted angular contact bearings

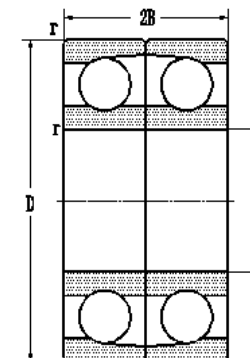
d60–65mm



串联



背对背

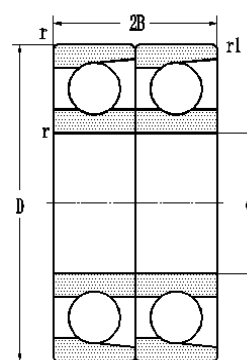


面对面

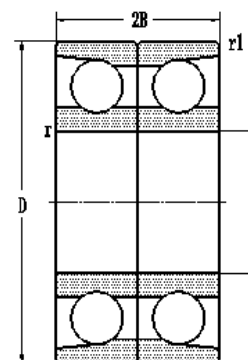
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg	
mm					kN		r / min									
					dynamic	static	grease	oil	present			original				
d	D	2B	r _{min}	r _{1min}	C	Co			串联	背对背	面对面	串联	背对背	面对面		
60	95	36	1.1	0.6	58.8	63.2	3800	5300	7012AC/DT	7012AC/DB	7012AC/DF	446112	246112	346112	0.8	
	110	44	1.5	0.6	91.1	96.6	3600	5000	7212C/DT	7212C/DB	7212C/DF	436212	236212	336212	1.6	
	110	44	1.5	0.6	94.5	92	3600	5000	7212AC/DT	7212AC/DB	7212AC/DF	446212	246212	346212	1.6	
	110	44	1.5	0.6	99.1	88.8	3600	5000	7212B/DT	7212B/DB	7212B/DF	466212	266212	366212	1.68	
	130	62	2.1	1.1	171	153	3400	4500	7312C/DT	7312C/DB	7312C/DF	436312	236312	336212	3.4	
	130	62	2.1	1.1	164	147	3400	4500	7312AC/DT	7312AC/DB	7312AC/DF	446312	246312	346312	4.12	
	130	62	2.1	1.1	146	131	3400	4500	7312B/DT	7312B/DB	7312B/DF	466312	266312	366312	3.7	
65	100	36	1.1	0.6	65.1	70.8	3600	5000	7013C/DT	7013C/DB	7013C/DF	436113	236113	336113	0.86	
	100	36	1.1	0.6	61.7	68.2	3600	5000	7013AC/DT	7013AC/DB	7013AC/DF	446113	246113	346113	0.86	
	120	46	1.5	0.6	114	110	3400	4500	7213C/DT	7213C/DB	7213C/DF	436213	236213	336213	2	
	120	46	1.5	0.6	108	105	3400	4500	7213AC/DT	7213AC/DB	7213AC/DF	446213	246213	346213	2	
	120	46	1.5	0.6	108	105	3400	4500		7213ACN2/DB			246213K		2.03	
	120	46	1.5	0.6	76.2	78.6	3400	4500		7213EBN2/DB			D266213EK		2.17	
	120	46	1.5	0.6	103	92	3400	4500	7213B/DT	7213B/DB	7213B/DF	466213	266213	366213	2.1	
	140	66	2.1	1.1	197	178	3000	4000	7313C/DT	7313C/DB	7313C/DF	436313	236313	336313	4.46	
	140	66	2.1	1.1	188	171	3000	4000	7313AC/DT		7313AC/DF		446313	246313	346313	4.46
	140	66	2.1	1.1	167	153	3000	4000	7313B/DT		7313B/DF		466313	266313	366313	4.5

Duplex mounted angular contact bearings

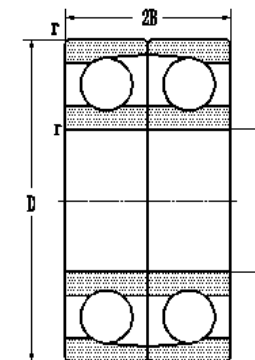
d70-75mm



串联



背对背

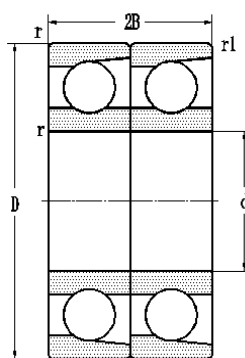


面对面

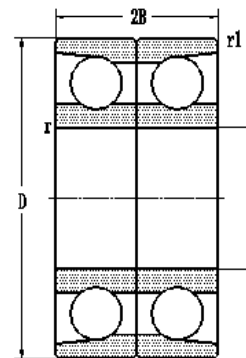
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面	
70	110	40	1.1	0.6	78.5	86	3400	4800	7014C/DT	7014C/DB	7014C/DF	436114	226114	336114	1.2
	110	40	1.1	0.6	74.2	85	3400	4800	7014AC/DT	7014AC/DB	7014AC/DF	446114	246114	346114	1.2
	110	40	1.1	1	74.2	85.4	3500	5500	B7014AC/DT			746114			1.18
	125	48	1.5	0.6	118	120	3200	4300	7214C/DT	7214C/DB	7214C/DF	436214	236214	336214	2.2
	125	48	1.5	0.6	113	114	3200	4300	7214AC/DT	7214AC/DB	7214AC/DF	446214	246214	346214	2.2
	125	48	1.5	0.6	100	102	3200	4300	7214B/DT	7214B/DB	7214B/DF	466214	266214	366214	2.3
	150	48	1.5	1.1	218	200	2800	3600	7314C/DT	7314C/DB	7314C/DF	436314	236314	336314	5.34
	150	48	1.5	1.1	210	193	2800	3600	7314AC/DT	7314AC/DB	7314AC/DF	446314	246314	346314	6.12
	150	48	1.5	1.1	185	172	2800	3600	7314B/DT	7314B/DB	7314B/DF	466314	266314	366314	5.5
75	115	40	1.1	0.6	80.4	96	3400	4500	7015C/DT	7015C/DB	7015C/DF	436115	236115	336115	1.26
	115	40	1.1	0.6	76	91	3400	4500	7015EA/DT	7015EAC/DB	7015EAC/DF	446115E	246115E	346115E	1.26
	130	50	1.5	0.6	129	131	3000	4000	7215C/DT	7215C/DB	7215C/DF	436215	236215	336215	2.4
	130	50	1.5	0.6	122	126	3000	4000	7215AC/DT	7215AC/DB	7215AC/DF	446215	246215	346215	2.4
	130	50	1.5	0.6	118	123	3000	4000	7215B/DT	7215B/DB	7215B/DF	466215	266215	366215	2.6
	160	74	2.1	1.1	236	226	2600	3400	7315C/DT	7315C/DB	7315C/DF	436315	236315	336315	7.12
	160	74	2.1	1.1	226	216	2600	3400	7315AC/DT	7315AC/DB	7315AC/DF	446315	246315	346315	7.12
	160	74	2.1	1.1	201	194	2600	3400	7315B/DT	7315B/DB	7315B/DF	466315	266315	366315	6.6

Duplex mounted angular contact bearings

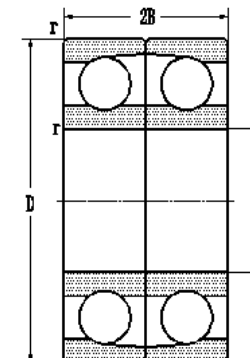
d80–85mm



串联



背对背

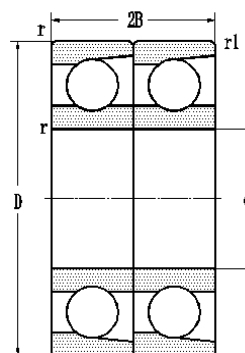


面对面

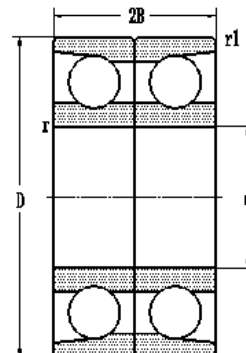
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面	
80	125	44	1.1	0.6	94.4	114	3200	4300	7016C/DT	7016C/DB	7016C/DF	436116	236116	336116	1.7
	125	44	1.1	0.6	90	110	3200	4300	7016AC/DT	7016AC/DB	7016AC/DF	446116	246116	346116	1.7
	140	52	2	1	145	154	2800	3600	7216C/DT	7216C/DB	7216C/DF	436216	236216	336216	2.9
	140	52	2	1	138	147	2800	3600	7216AC/DT	7216AC/DB	7216AC/DF	446216	246216	346216	2.9
	140	52	2	1	138	147	2800	3600		7216ACN2/DB			246216K		2.99
	140	52	2	1	100	109	2800	3600		7216EACN2/DB			266216EK		3.16
	140	52	2	1	131	138	2800	3600	7216B/DT	7216B/DB	7216B/DF	466216	266215	366216	3.1
	170	78	2.1	1.1	257	256	2400	3400	7316C/DT	7316C/DB	7316C/DF	436316	236316	336316	7.18
	170	78	2.1	1.1	247	244	2400	3400	7316AC/DT	7316AC/DB	7316AC/DF	446316	246316	346316	7.18
	170	78	2.1	1.1	219	218	2400	3400	7316B/DT	7316B/DB	7316B/DF	466316	266316	366316	7.8
85	130	44	1.1	0.6	102	123	3000	4000	7017C/DT	7017C/DB	7017C/DF	436117	236117	336117	1.78
	130	44	1.1	0.6	96.2	118	3000	4000	7017AC/DT	7017AC/DB	7017AC/DF	446117	246117	346117	1.78
	150	56	2	1	162	170	2600	3400	7217C/DT	7217C/DB	7217C/DF	436217	236217	336217	3.6
	150	56	2	1	154	162	2600	3400	7217AC/DT	7217AC/DB	7217AC/DF	446217	246217	346217	3.6
	150	56	2	1	151	162	2600	3400	7217B/DT	7217B/DB	7217B/DF	466217	266217	366217	3.9
	180	82	3	1.1	279	282	2400	3200	7317C/DT	7317C/DB	7317C/DF	436317	236317	336317	8.76
	180	82	3	1.1	268	272	2400	3200	7317AC/DT	7317AC/DB	7317AC/DF	436317	236317	346317	8.76
	180	82	3	1.1	240	244	2400	3200	7317B/DT	7317B/DB	7317B/DF	446317	266317	366317	9.2

Duplex mounted angular contact bearings

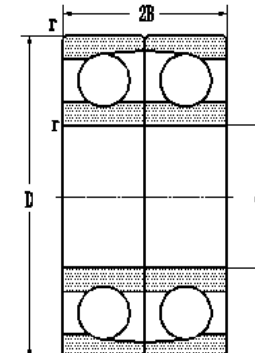
d90–100mm



串联



背对背

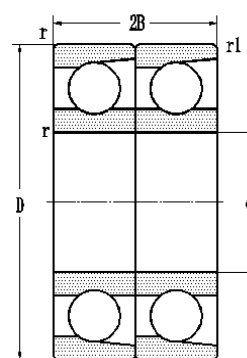


面对面

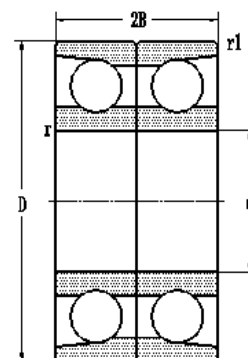
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	r _{min}	r _{1min}	C	Co			串联	背对背	面对面	串联	背对背	面对面	
90	140	48	1.5	0.6	116	143	2800	3600	7018C/DT	7018C/DB	7018C/DF	436118	236118	336118	2.3
	140	48	1.5	0.6	110	137	2800	3600	7018AC/DT	7018AC/DB	7018AC/DF	446118	246118	346118	1.62
	160	60	2	1	200	210	2400	3400	7218EC/DT	7218EC/DB	7218EC/DF	436218E	236218E	336218E	4.5
	160	60	2	1	172	188	2400	3400	7218B/DT	7218B/DB	7218B/DF	466218	266218	366218	4.8
	190	86	3	1.1	301	320	2200	3000	7318C/DT	7318C/DB	7318C/DF	436318	236318	336318	9.76
	190	86	3	1.1	289	308	2200	3000	7318AC/DT	7318AC/DB	7318AC/DF	446318	246318	346318	10.12
	190	86	3	1.1	257	274	2200	3000	7318B/DT	7318B/DB	7318B/DF	466318	266318	366318	10.8
	190	86	3	1.1	197	232	2200	3000	7318EBN2DB			266318EK			11.3
95	145	48	1.5	0.6	120	154	2600	3400	7019C/DT	7019C/DB	7019C/DF	436119	236119	336119	2.4
	145	48	1.5	0.6	113	142	2600	3400	7019AC/DT	7019AC/DB	7019AC/DF	446119	246119	346119	2.4
	170	64	2.1	1.1	219	226	2400	3200	7219C/DT	7219C/DB	7219C/DF	436219	236219	336219	5.4
	170	64	2.1	1.1	208	216	2400	3200	7219AC/DT	7219AC/DB	7219AC/DF	446219	246219	346219	5.4
	170	64	2.1	1.1	197	202	2400	3200	7219B/DT	7219B/DB	7219B/DF	466219	266219	366219	5.8
	200	90	3	1.1	327	360	2000	2800	7319C/DT	7319C/DT	7319C/DF	436319	236319	336319	12
	200	90	3	1.1	314	346	2000	2800	7319AC/DT	7319AC/DB	7319AC/DF	446319	246319	346319	12
	200	90	3	1.1	279	308	2000	2800	7319B/DT	7319B/DB	7319B/DF	466319	266319	366319	12.5
100	150	48	1.5	0.6	129	163	2600	3400	7020C/DT	7020C/DB	7020C/DF	436120	236120	336120	2.5

Duplex mounted angular contact bearings

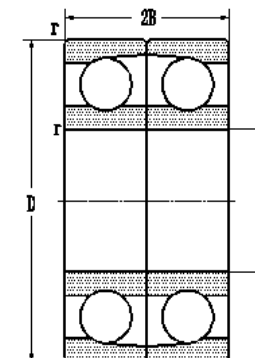
d100–110mm



串联



背对背

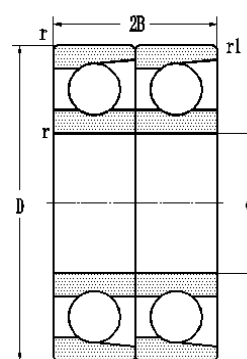


面对面

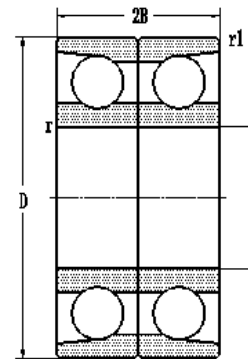
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
d	D	2B	rmin	r1min	dynamic	static	grease	oil	串联	背对背	面对面	串联	背对背	面对面	
100	150	48	1.5	0.6	122	150	2600	3400	7020AC/DT	7020AC/DB	7020AC/DF	446120	246120	346120	2.5
	180	68	2.1	1.1	242	254	2200	3000	7220C/DT	7220C/DB	7220C/DF	436220	236220	336220	6.5
	180	68	2.1	1.1	231	242	2200	3000	7220AC/DT	7220AC/DB	7220AC/DF	446220	246220	346220	6.5
	180	68	2.1	1.1	211	228	2200	3000	7220B/DT	7220B/DB	7220B/DF	466220	2662200	366220	6.9
	215	94	3	1.1	361	414	1800	2400	7320C/DT	7320C/DB	7320C/DF	436320	236320	336320	14.4
	215	94	3	1.1	348	398	1800	2400	7320AC/DT	7320AC/DB	7320AC/DF	446320	246320	346320	16.9
	215	94	3	1.1	309	354	1800	2400	7320B/DT	7320B/DB	7320B/DF	466320	266320	366320	15.5
105	160	52	2	1	144	183	2600	3400	7021C/DT	7021C/DB	7021C/DF	436121	236121	336121	3.2
	160	52	2	1	136	174	2600	3400	7021AC/DT	7021AC/DB	7021AC/DF	446121	246121	346121	3.2
	190	72	2.1	1.1	263	286	2000	2800	7221C/DT	7221C/DB	7221C/DF	436221	236221	336221	7.7
	190	72	2.1	1.1	252	274	2000	2800	7221AC/DT	7221AC/DB	7221AC/DF	446221	246221	346221	7.7
	190	72	2.1	1.1	232	258	2000	2800	7221B/DT	7221B/DB	7221B/DF	466221	266221	366221	8.2
110	170	56	2	1	174	216	2400	3400	7022C/DT	7022C/DB	7022C/DF	436122	236122	336122	4.92
	170	56	2	1	169	208	2400	3400	7022AC/DT	7022AC/DB	7022AC/DB	446122	246122	346122	4.92
	170	84	2	1	224	312	2200	3200	7022AC/TBT			946122Y			7.38
	170	84	2	1	224	312	2200	3200	B7022AC/TBT			946122			7.38

Duplex mounted angular contact bearings

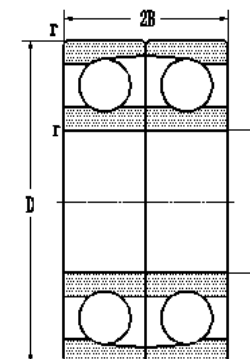
d110–190mm



串联



背对背

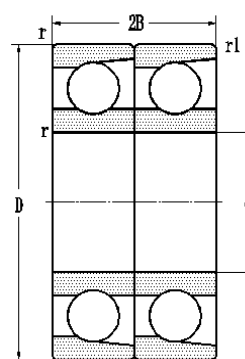


面对面

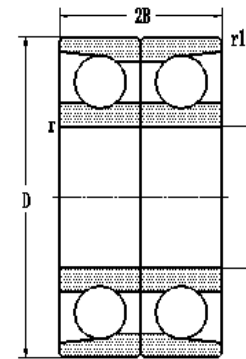
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg	
mm					kN		r / min									
d	D	2B	r _{min}	r _{1min}	dynamic	static	grease	oil	串联	背对背	面对面	串联	背对背	面对面		
110	200	76	2.1	1.1	286	320	1900	2600	7222C/DT	7222C/DB	7222C/DF	436222	236222	336222	9.1	
	200	76	2.1	1.1	273	306	1900	2600	7222AC/DT	7222AC/DB	7222AC/DF	446222	246222	346222	9.1	
	200	76	2.1	1.1	250	288	1900	2600	7222B/DT	7222B/DB	7222B/DF	466222	266222	366222	9.6	
	240	100	3	1.1	411	504	1500	2200	7322AC/DT	7322AC/DB	7322AC/DF	446322	246322	346322	19.6	
	240	100	3	1.1	367	450	1500	2200	7322B/DT	7322B/DB	7322B/DF	466322	266322	366322	20.6	
	240	100	3	1.1	411	504	1100	2200	B7322AC/DB			546322			23.5	
120	215	80	2.1	1.1	309	358	1700	2400	7224C/DT	7224C/DB	7224C/DF	436224	236224	336224	10.8	
	215	80	2.1	1.1	294	278	1700	2400	7224AC/DT	7224AC/DB	7224AC/DF	446224	246224	346224	10.8	
	215	80	2.1	1.1	268	322	1700	2400	7224B/DT	7224B/DB	7224B/DF	466224	266224	366224	12.3	
	215	160	4	2.5	268	322	1700	2400	7224B/QT			3-634			24.5	
130	200	63	2	1	117	167	1100	2200	7026TN/DBYA			246126KA			6.76	
140	250	84	2.1	1.1	281	389	1800	2300	7228C/DT	7228C/DB	7228C/DF	436228	236228	336228	19.8	
160	340	136	4	1.5	601	892	700	1600	B7332AC/DB			546332			65.3	
180	280	100	2.1	1.1	280	420	1500	1900	4036D			4286136			20.9	
190	260	66	4	2.5	226	354	1500	1900				71938AC/DF			1346938	8.9

Duplex mounted angular contact bearings

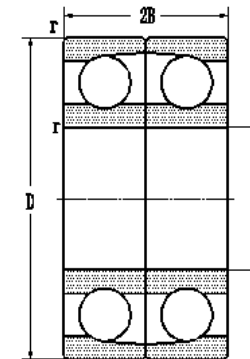
d220–420mm



串联



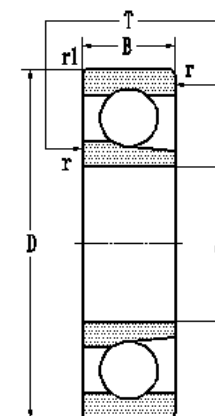
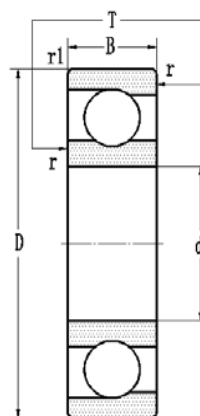
背对背



面对面

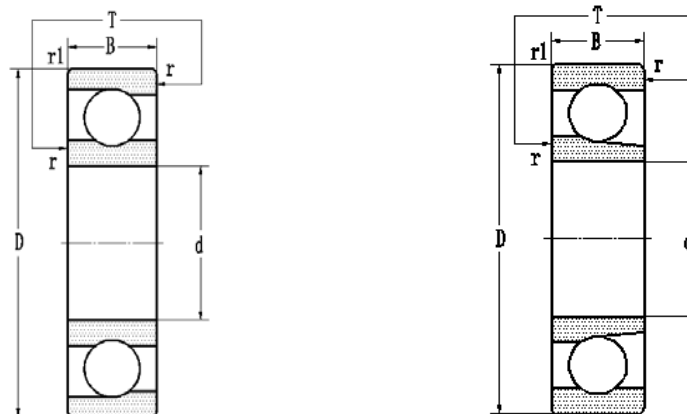
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations						Mass kg
mm					kN		r / min								
					dynamic	static	grease	oil	present			original			
d	D	2B	rmin	r1min	C	Co			串联	背对背	面对面	串联	背对背	面对面	
220	400	130	4	1.5	582	1014	750	1100	7244AC/DT	7244AC/DB	7244AC/DF	446244	246244	346244	77
420	560	130	3	1.5	733	1304	540	680			71984DF		1346984K		105

Single row angular contact ball bearings
d10–63mm



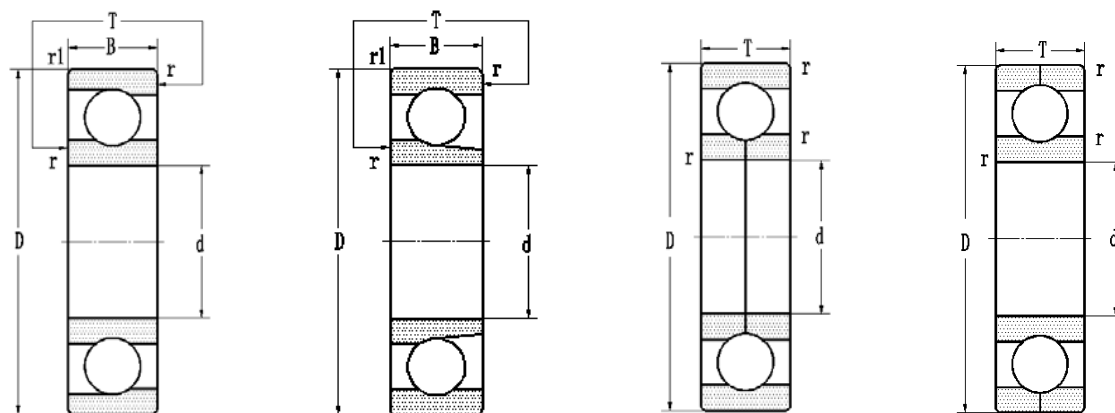
Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	T	r _{min}	r ₁	dynamic C	static C ₀	grease	oil	present	original	
10	28	8	8	0.3	0.3	5.82	2.53	24000	30000	S7600	6700	0.0227
17	35	10	10	0.3	0.3	8.23	4.53	15000	20000	S71003	106103	0.0452
20	47	12	12	1.1	0.5	15.5	8.92	15000	19000	S70204X2	6704	0.103
25	62	17	20	1.1	0.6	27	15.6	11000	14500	SN7305X2/YA	26705	0.276
	67	20.6	34	1	0.8	23.5	19.3	11000	14500	4605-2RS	186705	0.523
26	62	17	20	1.1	0.5	27	15.6	11000	14500	S76/26/YA	26905	0.281
32	72	24.5	30	1.1	0.5	32.8	20.5	18000	12000	SN76/32/YA	26706	0.454
35	80	29	33.5	1.5	0.5	40.2	24.7	9000	11000	SN72307X2/YA	26707	0.561
53	84	16.15	20	1.1	0.6	17.4	14.7	7300	9200	46/53/YA	996911K1	0.44
63	102	23	27	2	1	31.5	21.6	6000	8000	B76/63/YA	26913	0.707

Single row angular contact ball bearings
d80–800mm



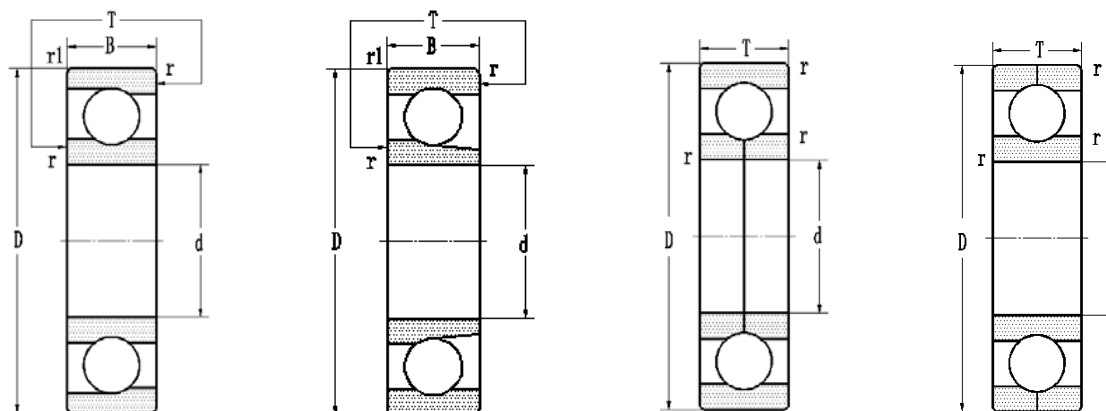
Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	T	r _{min}	r ₁	dynamic C	static C ₀	grease	oil	present	original	
80	140	21	26.5	2	1	51	48	3500	4400	S7216X2/YA	26216	1.33
120	165	34	34	1.1	0.8	85.4	131	1400	2000	3924D	3356924	2.51
160	220	45	45	2	1	125	208	1000	1500	3932D	3356932	5.41
170	230	45	45	2	1	128	220	950	1450	3934D	3356934	5.9
220	300	60	60	2.5	1.2	219	392	1900	2400	3944D	3356944	13.1
460	540	35	35	2.1	1.5	139	272	720	900	S7692	6792	15
	580	56	56	3	2	303	559	670	830	S71892AC	1006892	36.4
600	730	60	60	3	2	425	887	380	500	SN718/600	11068/600	60.7
622.3	725.487	46	46	4.5	2	304	652	400	550	76/662.3RWB1	6169/622	29.58
800	980	82	82	5	3	725	1876	250	300	SN718/800	11068/800	132

Single row angular contact ball bearings
d16–1180mm



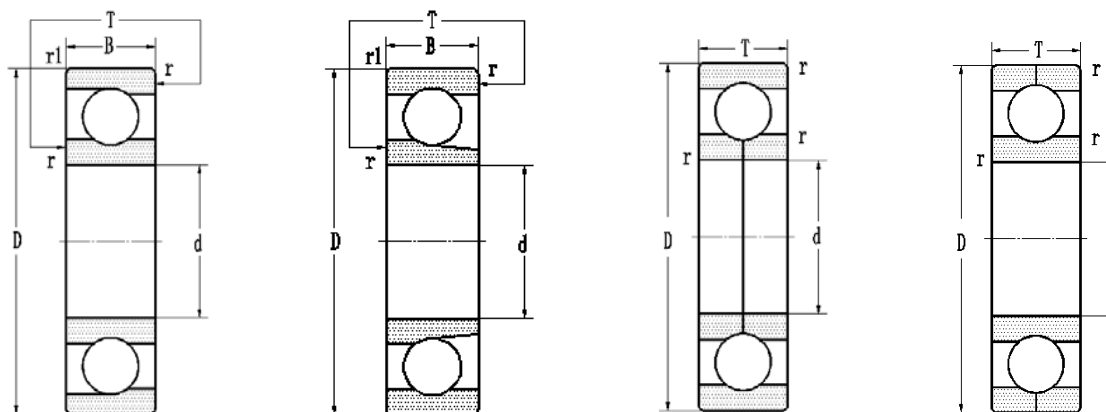
Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	T	r _{min}	r ₁	dynamic C	static C ₀	grease	oil	present	original	
850	1030	82	82	5	3	562	1473	220	280	SN718/850	11068/850	146
1000	1220	50	50	4.5	3	409	1178	120	150	SN708/1000X2	1068/1000	140
1180	1420	106	106	6	4	1100	3560	86	107	SN718/1180	11068/1180	332
16	30	106.2	106.2	1.4	1.4	11.3	6.5	7.9	5.4	WR1630106.2	3-637	0.253
35	59.482	14.5	14.5	1.1	0.5	21.4	14.9	8000	10000	LR7607	226707	0.105
63	102	23	27	2	1	139	177	6000	8000	B76/63/YA	26913	0.707
30	72	19	19	1.1		29.8	24.5	6700	9000	QJS306	176306	0.418
65	140	33	30	2.1		77.5	72.1	3800	4800	QJ313	176313	2.7
70	125	24	24	1.5		51.8	43.1	3200	4300	QJS214	276214	1.31

Single row angular contact ball bearings
d90-280mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	T	rmin	rl	dynamic C	static Co	grease	oil	present	original	
90	140	24	24	1.5		59.1	56.6	6000	7600	QJ1018	1176118	1.47
	190	43	43	3		148	162	2400	3400	QJ318	176318	6.51
120	260	55	55	3		263	365	1600	2200	QJF324	116324	15.6
140	210	33	33	2		123	136	3200	4000	QJF1028	176128	4.33
150	225	35	35	2.1		134	153	3000	3700	QJF1030	176130	5.16
170	310	52	52	4		199	315	2000	1500	QJ234N2	176234K	18.107
180	280	46	46	2.1		223	313	1300	1800	QJ1036	176136	11.4
	280	46	46	2.1		223	313	2300	2900	QJ1036N2	176136K	11.4
190	260	33	33	2		125	177	2600	3200	QJ1938	1176938	6.02
280	420	65	65	4		336	527	1400	1800	QJF1056	176156	34.3

Single row angular contact ball bearings
d320–360mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d	D	B	T	r _{min}	r ₁	dynamic C	static C ₀	grease	oil	present	original	
320	480	74	74	4		447	587	1200	1500	QJF1064	176164	50
360	540	82	82	5		491	900	1000	1300	QJF1072	176172	71.5



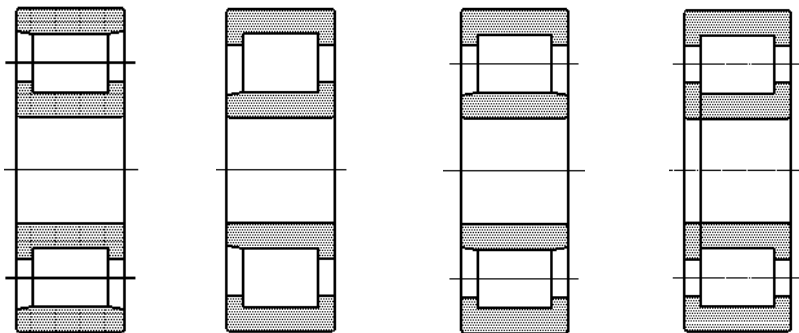
圆柱滚子轴承

Cylindrical Roller Bearing

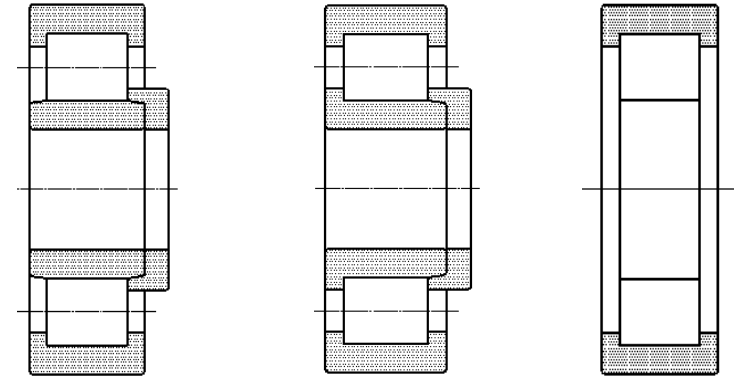
Cylindrical Roller Bearings

Cylindrical roller bearings are commonly separable and easy to mount and dismount. They can be divided into single row, double row and multi-row cylindrical roller bearings. The widely used bearings are cylindrical roller bearings with cage. There are single or double row bearings with a full complement of rollers and other bearing arrangements. Cylindrical roller bearings have high radial load carrying capacity and are also suitable for high speeds.

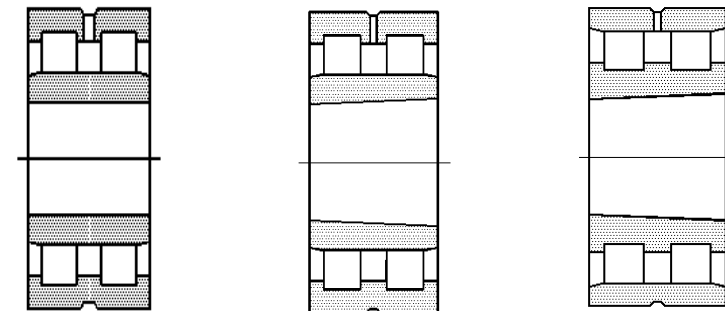
LYC single row cylindrical roller bearings of type N, have two integral ribs on the inner ring and an outer ring without ribs, and the type NU have two integral ribs on the outer ring and an inner ring without ribs according to different integral ribs, whereas, axial displacement of the shaft with respect to the housing is permitted in both directions with certain limits and the bearings are therefore suitable as non-locating bearings. The type NJ have integral ribs on the outer ring and one integral rib



On the inner ring, type NF have two integral ribs on the inner ring and one integral rib on the outer ring. The features



Of type NJ and type NF are that axial displacement can be provided for the shaft in one direction. Type NUP bearings have two integral ribs on the outer ring and the inner ring has one rib and one loose rib, enabling the bearings to locate



A shaft axially in both directions. Type NU and NJ can be used with HJ angle ring on different applications.

The cage of single row cylindrical roller bearings are supplied with a pressed steel cage and a machined solid cage.

Bearing with glass fibre reinforced plastic cage can be designed and provided according to different applications and user's demands.

The two arrangements of LYC double row cylindrical roller bearings are cylindrical bore and tapered bore. This type of bearings has compact in structure, high rigidity, high capacity and less deformation under loads, especially suitable for supporting spindles of machine tools. The bearings of type NN have two integral ribs on the inner ring and an outer ring without ribs, and the bearings of type NNU have two integral ribs on the outer ring and an inner ring without ribs. Permitting axial displacement of shaft relative to the housing, this two types of bearings are used as non-locating bearings. The cages are supplied with a machined solid cage.

Cylindrical roller bearings of the E type have an appreciably higher load carrying capacity and longer service life for the same boundary dimensions than earlier designs because of improvements to the integral design, the increasing number of roller and enlarging dimension of roller, etc. To divide with the earlier design, it is identified by suffix E.

Type FC and FCD four-row cylindrical roller bearings apply to cold, hot rolling mills, bloomers and other heavy machineries. This type of bearings are separable rings and rolling element units are easy to separate and easy to clean, inspect and dismount.

In bearings rotating at high speeds, in order to prevent detrimental sliding movements caused by centrifugal force between the rollers and the raceways, minimum radial load should be applied and calculated from:

$$F_r = K_r \left(6 + \frac{4n}{n_r} \right) \left(\frac{d_m}{100} \right)^2$$

where

F_r ——— minimum radial load, N

n ——— speed, r/min

n_r ——— speed rating for lubrication, r/min

d_m ——— mean diameter of bearing $d_m = 0.5(d+D)$, mm

K_r ——— minimum load factor

Kr	Dimension series					
	10	2	3	4	22	23
	100	150		200	250	

Axial load capacity should be calculated when selecting single row cylindrical roller bearing with ribs on the outer and inner ring, its value, to radial load lubrication, can be calculated from:

$$F_{ap} = K C_0 \left(\frac{n_g - n}{n_g + 2n} \right) \quad \text{Oil lubrication}$$

$$F_{ap} = K C_0 \left(\frac{n_g - 2.5n}{n_g - 10n} \right) \quad \text{Grease lubrication}$$

$$F_{ap} < 0.4 F_r$$

where

F_{ap} ---- maximum permissible axial load, N

K ---- a factor relative to bearing dimension series

$K=0.2$ for bearings of series 2, 3

$K=0.2$ for bearings of series 22, 33

C_0 ---- basic static load rating, N

n_g ---- limiting speed of bearings subjected to pure radial load, when $F_r > 0.1C$, limiting speed should be modified by speed reduction factor, r/min

n ---- actual speed, r/min

Equivalent dynamic load

$$P = F_r$$

For cylindrical roller bearing carrying axial load

When the size is 2, 3

$$P = F_r + 0.3 F_a$$

$$0 \leq F_a / F_r \leq 0.12$$

$$P = 0.94 F_r + 0.8 F_a$$

$$0.12 \leq F_a / F_r \leq 0.3$$

when the size series is 22, 23

$$P = F_r + 0.2 F_a$$

$$0 \leq F_a / F_r \leq 0.18$$

$$P = 0.94 F_r + 0.53 F_a$$

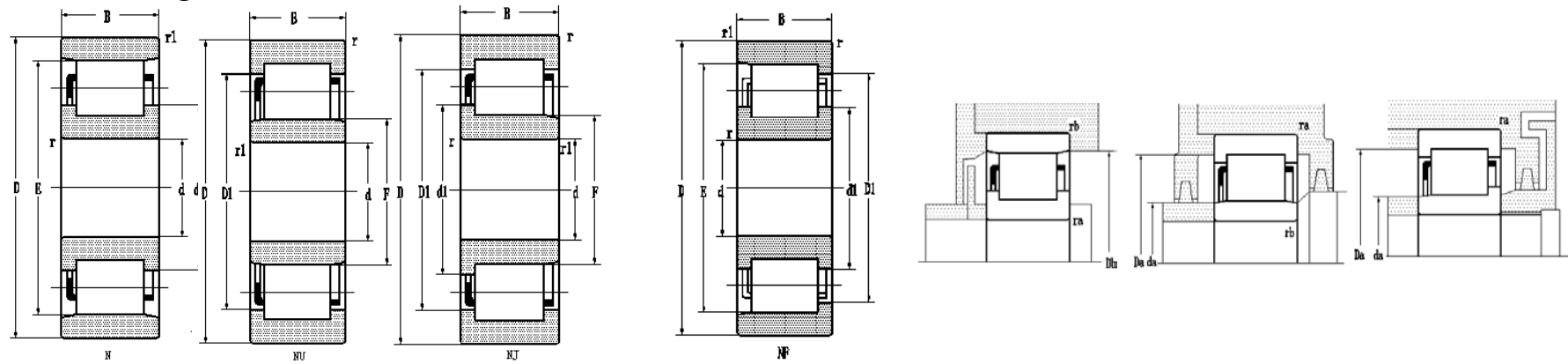
$$0.18 \leq F_a / F_r \leq 0.3$$

Equivalent static load

$$P_0 = F_r$$

Single row cylindrical bearing

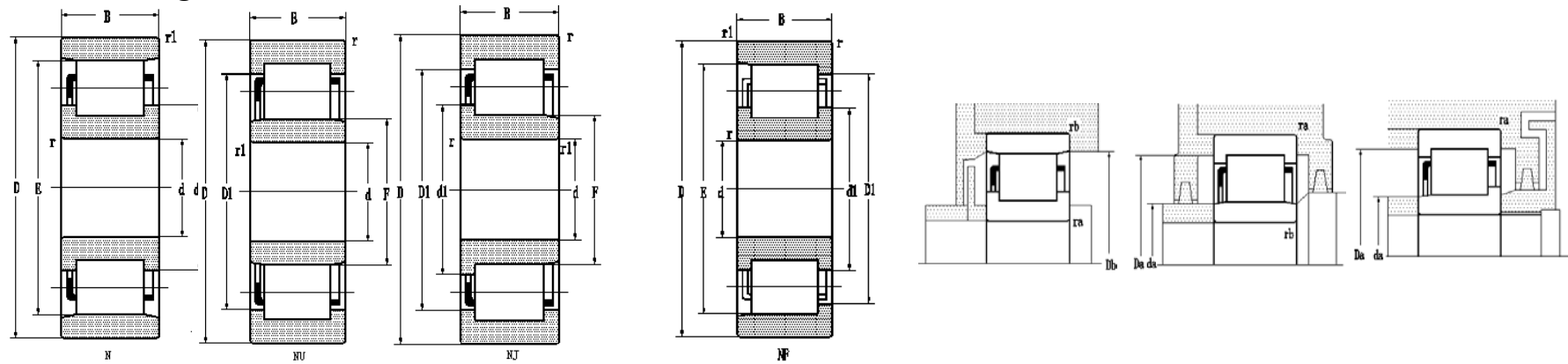
d17~25mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions						Mass		
mm					kN		r/min				mm		mm						kg		
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
17	47	14	1	0.6	14.4	8.62	14000	17000	NU 303M	32303H	17	36.8		27	25	41	41	1	0.6	0.147	
18	52	15	0.6	0.6	21.6	12.9	10000	14000	NB 3/18 JR	822903	18			25	23	47	47	0.6	0.6	0.1756	
20	47	14	1.5	1	15.8	12.7	13000	16000	N 204	2204	20	30.4		40		29	41	41	1.5	1	0.112
	47	14	1.5	1	15.8	12.7	13000	16000	NU 204M	32204H	20		36.8		27	25	41	41	1.5	1	0.112
	47	14	1.5	1	15.8	12.7	13000	16000	NJ 204M	42204H	20	30	36.8		27	25	41	41	1	0.6	0.135
	47	20.6	1.1	0.6	20.7	18.4	13000	16000	N 3204 X2	2704	20	30.4		40		25		43	1	0.6	0.127
25	52	15	1	0.6	29.3	27.7	11000	14000	NUP 205ETN1	92205EA	25	34.7	43.5		31.5	31	46	46	1	0.6	0.14
	52	15	1	0.6	29.3	27.7	11000	14000	NU 205M	32205N	25		41.8		32	31	46	46	0.6	0.6	0.168
	52	15	0.6	1	29.3	27.7	12790	16120	NJ 205 EF1		25	34.7	43.5		31.5	31	46	46	1	1	0.146
	52	15	0.6	1	29.3	27.7	12790	16120	NJ 205 ETN1	42205EA	25	34.7	43.5		31.5	31	46	46	1	0.6	0.135
	52	15	1	0.6	28.8	27.1	12790	16120	NJ 205 EM		25	34.7	43.5		31.5	31	46	46	1	0.6	0.152
	52	15	1	0.6	28.8	27.1	12790	16120	NU 205 EM		25		43.5		31.5	31	46	46	1	0.6	0.15
	52	18	1	0.6	37.8	40.2	2200	4500	NU 2205 V/C9	3-258	25		41.1		31.12	31	46	46	1	0.6	0.178
	52	18	1	0.6	29.9	25.8	12790	16120		3-258	25					31	46	46	1	0.6	0.171
	62	17	1.1	1.1	33.6	22.8	9500	12000	NJ 305 E	42305E	25	38.1	50.4		34	31	55	55	1	1	0.256
	62	17	1.1	1.1	33.6	22.8	9500	12000	NJ 305 ETN1	42305EA	25	38.1	50.4		34	31	55	55	1	1	0.251
62	17	1.1	1.1	38.2	34.7	9500	12000	NCL 305 V	102305	25	39		53		31	55	55	1	1	0.254	

Single row cylindrical bearing

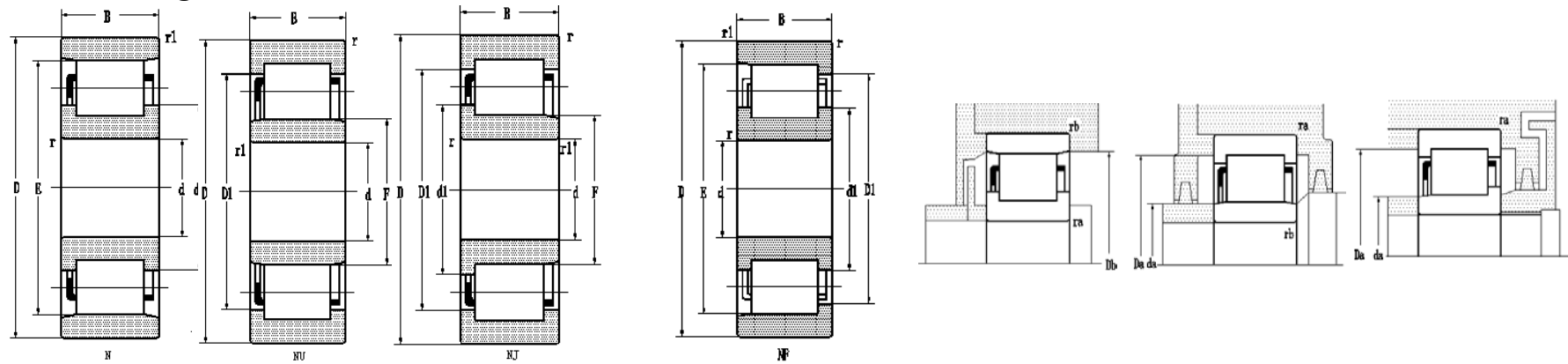
d25~35mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions								Mass
mm					kN		r/min				mm		mm								kg
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
25	62	17	1.1	1.1	36.6	22.8	11400	14370		42305EA	25	38.1	50.4		34	32	55	55	1.1	1.1	0.251
	62	17	1.1	1.1	36.9	32	11400	14370	NU 305 M		25		50.4		34	32	55	55	1	1	0.273
	62	24	1.1	1.1	40.9	41	9000	11000	NJ 2305M	42605Y	25	39	48.7		35	32	55	55	1	1	0.452
	62	24	1.1	1.1	53.3	52.3	9000	11000	NCL 2305 V	102605	25	39		53		32	55	55	1	1	0.351
30	62	16	1.5	1	23.5	21.5	9500	12000	NU 206M/YB2	652206H	30		49.9		38.5	35	56	56	1.5	1	0.296
	62	16	1	0.6	34.3	21.7	9500	12000	N 206 E	2206E	30	41.3		55.5		35	57	57	1	0.6	0.205
	62	16	1	0.6	34.3	21.7	9500	12000	NJ 206 E	42206E	30	41.3	52.3		37.5	35	57		1	0.6	0.213
	62	16	1	0.6	34.3	21.7	9500	12000	NJ 206 E	32206E	30		52.3		37.5	35	57		1	0.6	0.207
	62	16	1.5	1	21.9	21.5	9500	12000	N 206	2206	30	42.1		53.5		35	56	56	1.5	1	0.219
	62	16	1.5	1	21.9	21.5	9500	12000	NU 206M	32206H	30		49.9		38.5	35	56	56	1.5	1	0.239
	62	16	1.5	1	21.9	21.5	9500	12000	NJ 206M	42206H	30	41.8	49.9		38.5	35	56	56	1.5	1	0.247
	62	16	1	0.6	49	50.0	10810	13620	N 206 ETN1	2206EA	30	41.3		55.5		36	56	56	1	0.6	0.205
	62	16	1	0.6	49	50.0	10810	13620	NU 206 ETN2	32206EA	30		52.3		37.5	35	56	56	1	0.6	0.207
	62	16	1	0.6	49	50.0	10810	13620	NJ 206 ETN3	42206EA	30	41.3	52.3		37.5	35	56	56	1	0.6	0.213
	62	16	1	1	34.3	21.7	10810	13620	NJ 206 EF1		30	41.3	52.3		37.5	35	56	56	1	1	0.31
	72	19	1.1	1.1	47	30.2	9000	11000	NF 306 E	12306E	30	44.9	58.9	62.5		37	65	65	1	1	0.377
	72	19	1.1	1.1	43.2	43.3	9790	12330	NU 306 EM		30		58		40.5	37	65	65	1	1	0.399
	35	72	17	1.1	0.6	41.2	43.8	9340	11770	NJ 207 EM		35	48	60		44	40	65	65	1	0.6

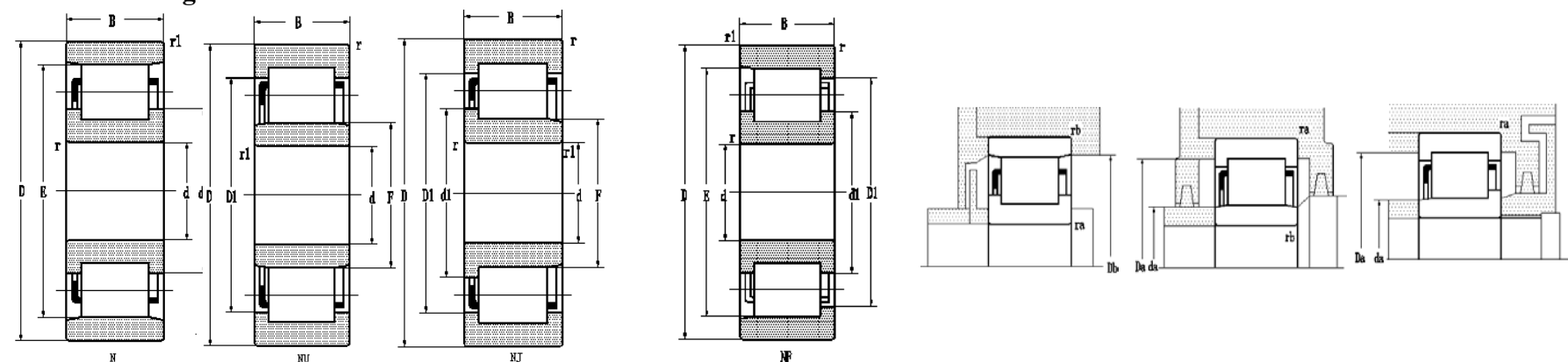
Single row cylindrical bearing

d35~40mm



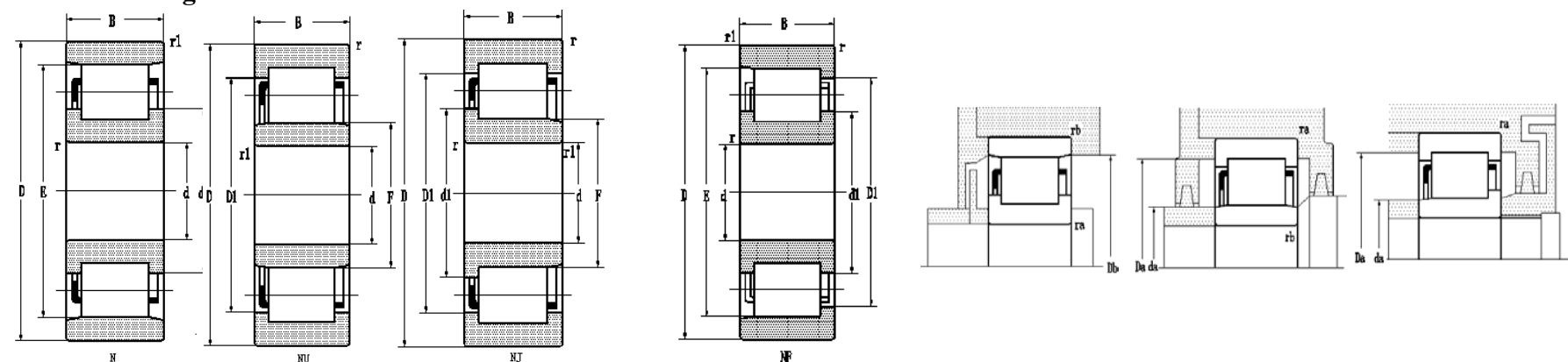
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions						Mass		
mm					kN		r/min				mm		mm						kg		
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
35	72	17	1.1	0.6	41.2	43.8	9340	11770	NU 207 EM		35	60		44	40	65	65	1	0.6	0.328	
	72	17	1.1	0.6	49.2	33.3	9340	11770	N 207 ETN1	2207 EA	35	48.3		64		42	72	72	1.1	0.6	0.296
	80	21	1.5	1.1	41.1	25.9	8000	9500	NU 307	32307H	35		63.5		46.2	43	72	72	1.5	1	0.546
	80	21	1.5	1.1	41.1	25.9	8000	9500	NF 307	12307	35	51.1	64	68.2		43	72	72	1.5	1	0.509
	80	21	1.5	1.1	41.1	25.9	8000	9500	NJ 307	42307	35	50.8	63.5		46.2	43	72	72	1.5	1	0.505
	80	21	1.5	1.1	59.1	39.2	8000	9500	NJ 307 E	42307E	35	51.1	66.3		46.2	43	72	72	1.5	1	0.482
	80	21	1.5	1.1	64.2	39.2	8700	10960	NUP307M	92307M	35	50.8	64		46.2	43	72	72	1.5	1	0.575
	80	21	1.5	1.1	64.2	39.2	8700	10960	NJ307ETN1	42307EA	35	51.1	66.3		46.2	43	72	72	1.5	1	0.482
	80	21	1.5	1.1	64.2	39.2	8700	10960	NUP307NM	192307HK	35	50.8	63.5		46.2	43	72	72	1.5	1	0.569
	80	21	1.5	1.1	70.6	66.2	8700	10960	NJ 307 EF1		35	51.1	66.3		46.2	43	72	72	1.5	1	0.676
	80	21	1.5	1.1	80.2	83.3	8700	10960	NJ307ENV/C9		35	52.2	64.4		46.2	44	72	72	1.5	1	0.531
	80	31	1.5	1.1	54.3	36.6	7000	8500	NJ 2307	42607H	35	50.8	63.5		46.2	44	72	72	1.5	1	0.876
	80	31	1.5	1.5	92.2	99.3	8700	10960	NJ2307EF1		35	55.1	66.3		46.2	44	72	72	1.5	1	0.936
	80	31	1.1	1.1	92.2	99.3	8700	10960	NU2307EF1		35		66.3		46.2	44	72	72	1.1	1	0.917
40	80	18	1.1	1.1	49.1	31.9	7500	9000	NJ 208 E	42208E	40	54.2	67.6		49.5	47	73		1	1	0.395
	80	18	1.1	1.1	49.1	31.9	7500	9000	NF 208 E	12208E	40	54.2	67.6	71.5		47		72	1	1	0.392
	80	18	1.1	1.1	49.1	31.9	7500	9000	NU 208 E	32208E	40		67.6		49.5	47	70		1	1	0.383
	80	18	1.1	1.1	49.1	43.0	7500	9000	NUP 208 ETN1	92208EA	40	54.2	65.6		50	47	73	73	1	1	0.396
	80	18	1.1	1.1	49.1	43.0	7500	9000	NUP 208 M	92208A	40	54.2	65.6		50	47	73	73	1	1	0.468

Single row cylindrical bearing
d40mm



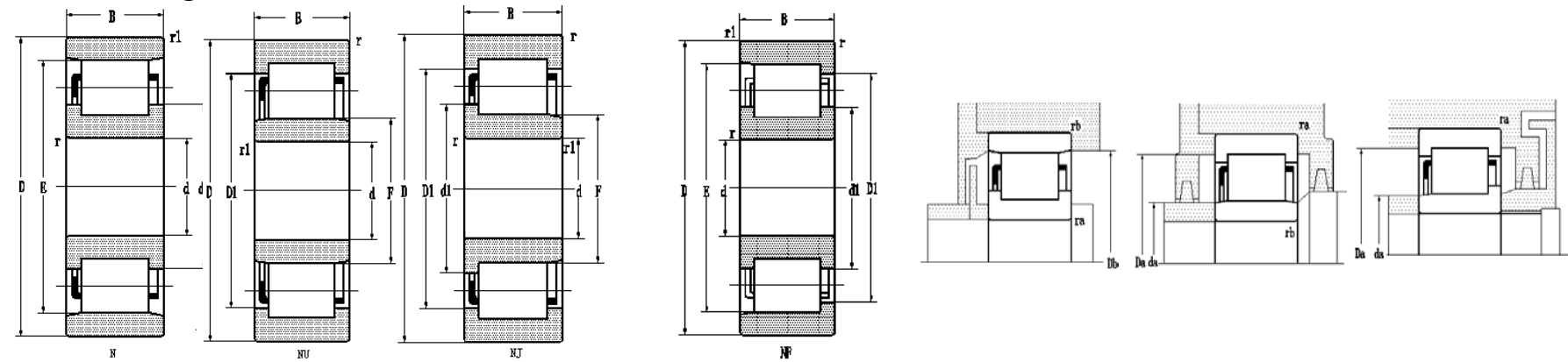
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
40	80	18	1.1	1.1	49.1	43.0	7500	9000	N 208 M	2208H	40	54.6		70	47	73	73	1	1	0.439	
	80	18	1.1	1.1	49.1	43.0	7500	9000	N 208	2208	40	54.6		70	47	47	73	1	1	0.394	
	80	18	1.1	1.1	49.1	43.0	7500	9000	NF 208	12208	40	54.6	66	70	47		73	1	1	0.404	
	80	18	1.1	1.1	49.1	43.0	7500	9000	NU 208M	32208H	40		65.6		50	47	73	73	1	1	0.448
	80	18	1.1	1.1	49.1	43.0	7500	9000	NJ 208M	42208H	40	54.2	65.6		50	47	73	73	1	1	0.458
	80	18	1.1	1.1	55.5	55.5	8330	10500	NU 208 ETN1	32208EA	40		67.6		49.5	47	73	73	1	1	0.383
	80	18	1.1	1.1	55.5	55.5	8330	10500	NJ 208 ETN1	42208EA	40	54.2	67.6		49.5	47	73	73	1	1	0.395
	80	18	1.1	1.1	55.5	55.5	8330	10500	NF 208 ETN1	12208EA	40	54.2	67.6	71.5		47	73	73	1	1	0.392
90	23	1.5	1.5	58.5	57.0	6700	8000	N 308	2308	40	58.4		77.5	48		82	1.5	1.5	0.662		
90	23	1.5	1.5	58.5	57.0	6700	8000	NU308Q1	32308Q	40		72.1		53.5	48	82	82	1.5	1.5	0.761	
90	23	1.5	1.5	58.5	57.0	6700	8000	NU 308M	32308H	40		72.1		53.5	48	82	82	1.5	1.5	0.760	
90	23	1.5	1.5	58.5	57.0	6700	8000	NU308L	32308L	40		72.1		53.5	48	82	82	1.5	1.5	0.694	
90	23	1.5	1.5	58.5	57.0	6700	8000	NJ 308M	42308H	40	57.6	72.1		53.5	48	82	82	1.5	1.5	0.750	
90	23	1.5	1.5	79.7	88.4	7690	9690	NUP308EN1	192308E	40	57.5	75		52	49	82	82	1.5	1.5	0.693	
90	23	1.5	1.5	79.7	88.4	7690	9690	NU 308 EPC/P5		40		75.5		52	49	82	82	1.5	1.5	0.638	
90	23	1.5	1.5	58.5	57	6700	8000	NJ308L	42308L2	40	57.5	72.1		53.5	48	82	82	1.5	1.5	0.684	
90	23	1.5	1.5	59.8	58.4	7690	9690	NF 308 M		40	58.4	72.5	77.5		49	82	82	1.5	1.5	0.674	
90	23	1.5	1.5	58.5	57	6700	8000	NUP308M		40	57.5	72.1		53.5	48	82	82	1.5	1.5	0.786	
90	33	1.5	1.5	111	119	7690	9690	NJ2308EF1		40	57.7	75.4		52	48	82	82	1.5	1.5	1.17	
110	27	2	2	106	102	6000	7500	N408M		40	66		92		50	100	100	2	2	1.44	

Single row cylindrical bearing
d45~50mm



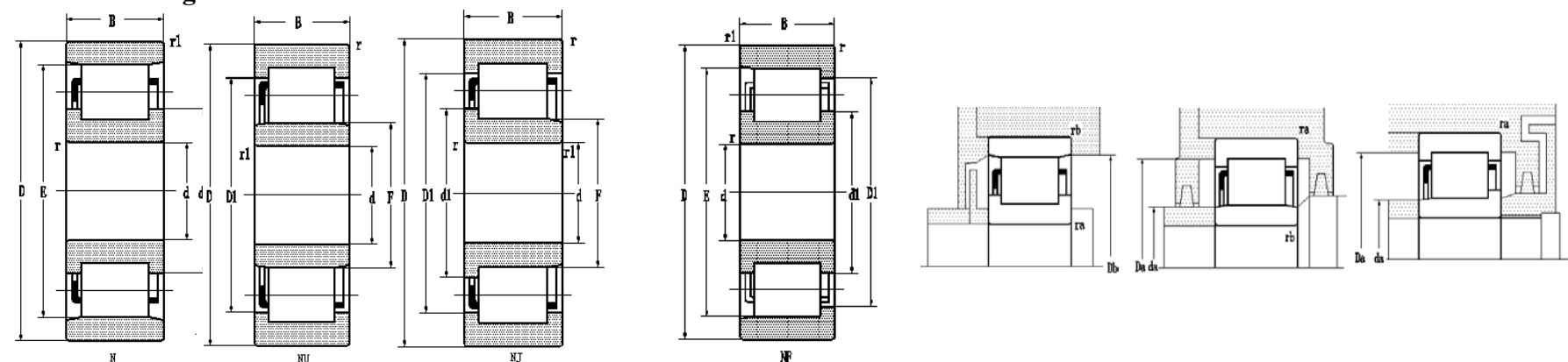
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
45	85	19	1.1	1.1	60.1	62.5	7690	9690	NJ 209 EM		45	59.2	72.6		54.5	52	78		1	1	0.49
	85	23	1.1	1.1	66.1	79.5	7690	9690	NU 2209 L1		45		72.4		54.5	52	78		1	1	0.567
	85	23	1.1	1.1	72.6	79.5	7690	9690	NJ 2209 EF1		45	59.2	72.6		54.5	52	78		1	1	0.767
	100	25	1.5	1.5	71.7	71.0	6300	7500	NF309EF1		45	64.7	83.6	90		53	92	92	1.5	1.5	1.24
	100	25	1.5	1.5	71.7	71.0	6300	7500	N 309	2309	45	64		86.5		53	92	92	1.5	1.5	0.876
	100	25	1.5	1.5	71.7	71.0	6300	7500	NU 309M	32309H	45		80.2		58.5	53	92	92	1.5	1.5	1.01
	100	25	1.5	1.5	71.7	71.0	6300	7500	NU 309L	32309L2	45		80.2		58.5	53	92	92	1.5	1.5	0.898
	100	25	1.5	1.5	71.7	71.0	6300	7500	NJ 309M	42309H	45	62.9	80.2		58.5	53	92	92	1.5	1.5	1.03
	100	25	1.5	1.5	71.7	71.0	6300	7500	NJ 309L	42309L1	45	62.9	80.2		58.5	53	92	92	1.5	1.5	0.920
	100	36	1.5	1.5	93.3	104	5600	7000	N 2309M	2609H	45	64		86.5		53	92	92	1.5	1.5	1.51
	120	29	2	2	117	115	6010	7580	NJ 409 M		45	72	94		64.5	55	110		2	2	1.85
	50	90	20	1.1	1.1	44.6	51.0	6300	7500	N 210	2210	50	64.6		80.4		56.5	83.5	83.5	1	1
90		20	1.1	1.1	44.6	51.0	6300	7500	NU 210M	32210H	50		76.3		60.4	56.5	83.5	83.5	1	1	0.51
90		20	1.1	1.1	44.6	51.0	6300	7500	NJ 210M	42210H	50	64	76.3		60.4	56.5	83.5	83.5	1	1	0.581
90		20	1.1	1.1	44.6	51	5300		NJ 2102	42210L	50	64.6	76.3		60.4	56.5	83.5	83.5	1	1	0.527
110		27	2	2	87.0	86.0	5300	6300	N 310	2310	50	71		95		59	101	101	2	2	1.15
110		27	2	2	87.0	86.0	5300	6300	NU 310	32310	50		89.6		65	59	101	101	2	2	1.14
110		27	2	2	87.0	86.0	5300	6300	NU 310M	32310A	50		89.6		65	59	101	101	2	2	1.29
110		27	2	2	87.0	86.0	5300	6300	NJ 310	42310	50	70.2	89.6		65	59	101	101	2	2	1.17

Single row cylindrical bearing
d50~55mm



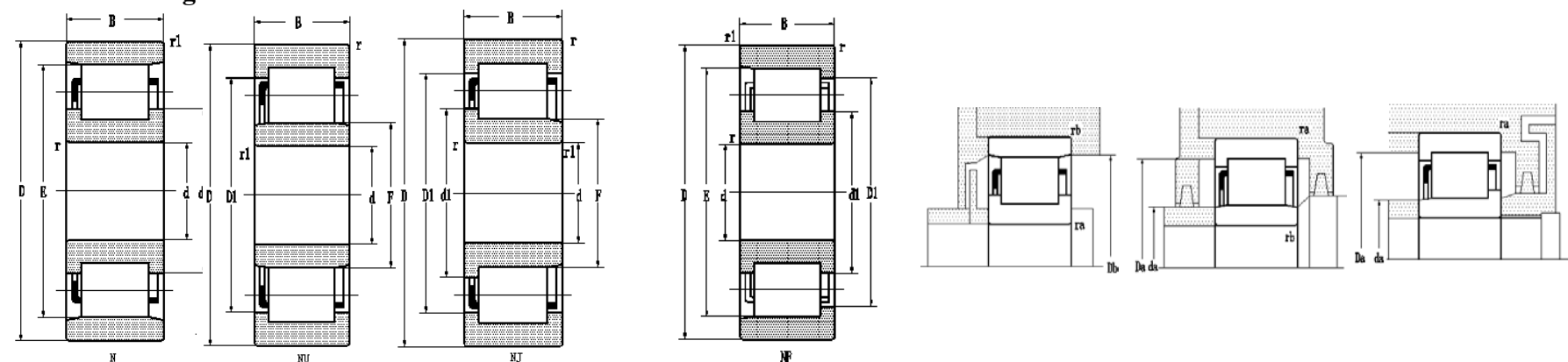
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
50	110	27	2	2	87.0	86.0	5300	6300	NU 310M	42310A	50	70.2	89.6		65	59	101	101	2	2	1.32
	110	40	2	2	121	131	5300	6300	NU 2310M	32610H	50		88.1		65	59	101	101	2	2	2.01
55	100	21	1.5	1.1	79	100	6420	8090	NJ 211 E	42211E	55	70.9	86.3		66	64	91	91	1.5	1	0.753
	100	21	1.5	1.1	79	100	6420	8090	NJ 211 EF1		55	70.9	86.3		66	64	91	91	1.5	1	0.796
	100	21	1.5	1.1	79	100	6420	8090	NF 211 E		55	70.9	86.5	91.2		64	91	91	1.5	1	0.741
	100	21	1.5	1.1	79	100	6420	8090	NUP 211 EF1		55	70.9	86.5		66	64	91	91	1.5	1	0.757
	100	21	1.5	1.1	87	100	6420	8090	NU 211 EF1		55		86.5		66	64	91	91	1.5	1	0.726
	100	21	1.5	1.1	87	100	6420	8090	NU 211 EF1		55		86.3		66	64	91	91	1.5	1.1	0.726
	120	29	2	2	110	110	4800	5600	N 311	2311	55	77		105		64	111	111	2	2	1.53
	120	29	2	2	110	110	4800	5600	N 311M	2311H	55	77		105		64	111	111	2	2	1.67
	120	29	2	2	110	110	4800	5600	NU 311	32311	55		98.5		70.5	64	111	111	2	2	1.71
	120	29	2	2	110	110	4800	5600	NJ 311	42311	55	76	98.5		70.5	64	111		2	2	1.7161
	120	29	2	2	110	110	4800	5600	NF 311	12311	55	77	99	105		64	111	111	2	2	1.54
	120	29	2	2	138	144	5650	7120	NU 311 EPC/P5		55		101		70.5	64	111	111	2	2	1.44
	120	43	2	2	148	162	4800	5600	NU 2311	32611	55		98.5		70.5	64	111	111	2	2	2.93
	120	43	2	2	148	162	4800	5600	NJ 2311	42611	55	76	98.5		70.5	64	111	111	2	2	2.928
	140	33	2.1	2.1	139	138	4800	5600	NU 411M	32411H	55		108		77.2	66	129	129	2	2	3.24
	140	33	2.1	2.1	139	138	4800	5600	NJ 411	42411	55	85	108		77.2	66	129	129	2	2	3.29

Single row cylindrical bearing
d60mm



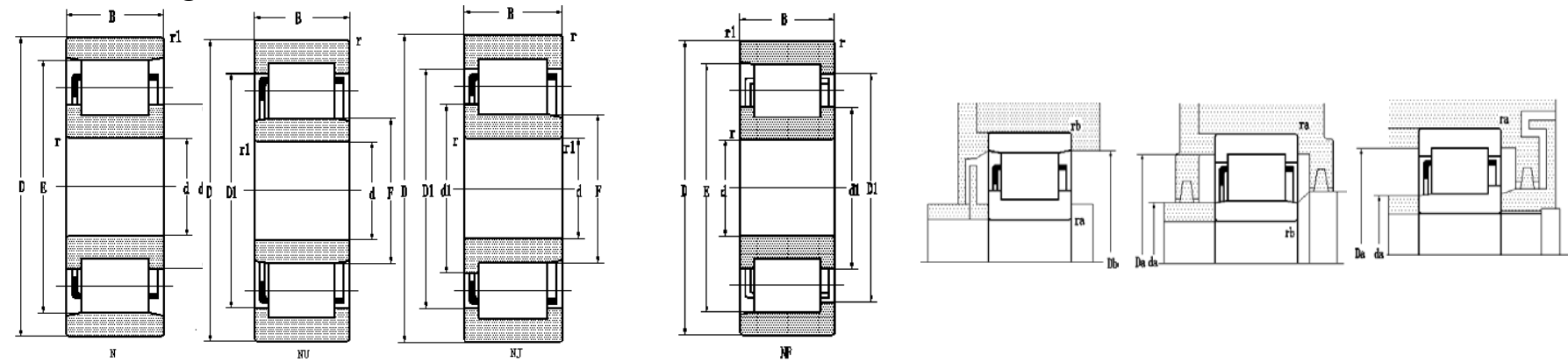
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions						Mass		
mm					kN		r/min				mm		mm						kg		
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
60	95	18	1	1.1	48.7	62.3	6420	8090	NU1012 M		60		82.2		69.5	66	88	88	1	1	0.49
	110	22	1.5	1.5	68.5	75	5300	6300	NUP 212 M	92212H	60	77.6	92.2		73.5	68	102	102	1.5	1.5	1.09
	110	22	1.5	1.5	63.1	44.9	5300	6300	N 212	2212	60	78.4		97.5		68		102	1.5	1.5	0.872
	110	22	1.5	1.5	85.5	60	5300	6300	NJ 212 E	42212E	60	77.6	95		72	68	102	102	1.5	1.5	0.705
	110	22	1.5	1.5	63.1	75	5300	6300	NU 212M	32212H	60		92.2		73.5	68	102	102	1.5	1.5	0.955
	110	22	1.5	1.5	63.1	75	5300	6300	NJ 212M	42212H	60	77.6	92.2		73.5	68	102	102	1.5	1.5	0.981
	130	31	2.1	2.1	124	126	4300	5000	N 312	2312	60	82.6		113		71	120	120	2	2	1.86
	130	31	2.1	2.1	124	126	4300	5000	N 312M	2312H	60	85.4		113		71	120	120	2	2	2.05
	130	31	2.1	2.1	124	126	4300	5000	NU 312	32312	60		107		77	71	120	120	2	2	1.86
	130	130	130	130	130	130	130	130	NU 312M	32312Q1	60		107		77	71	120	120	2	2	2.08
	130	130	130	130	130	130	130	130	NU 312Q1	32312H	60		107		77	71	120	120	2	2	2.08
	130	31	2.1	2.1	124	126	4300	5000	NJ 312	42312	60	84.2	107		77	71	120	120	2	2	1.9
	130	31	2.1	2.1	124	126	4300	5000	NJ 312M	42312H	60	84.2	107		77	71	120	120	2	2	2.12
	130	31	2.1	2.1	124	126	5180	6530	NJ 312 EF1		60	84.3	109		77	71	120	120	2	2	1.95
	130	31	2.1	2.1	175	164	5180	6530	NU 312 EPC/P5		60		110		77	71	120	120	2	2.1	1.44
	130	46	2.1	2.1	222	262	5180	6530	N2312EF1		60	84.3		117		71	120	120	2	2.1	2.9
	130	46	2.1	2.1	223	262	5180	6530	NJ2312EF1		60	84.3	108		77	71	120	120	2	2.1	2.99
	140	51	2.5	2.5	145	108	4300	5000	N 612/C9	2712J	60	86		122		72		125	2	2	3.21
	150	35	2.1	2.1	167	168	4300	5000	N 412M	2412H	60	91.7		127		71	138	138	2	2	3.52
	150	35	2.1	2.1	167	168	4300	5000	NJ 412	42412	60	91	119		83	71	138	138	2	2	3.21

Single row cylindrical bearing
d65~70mm



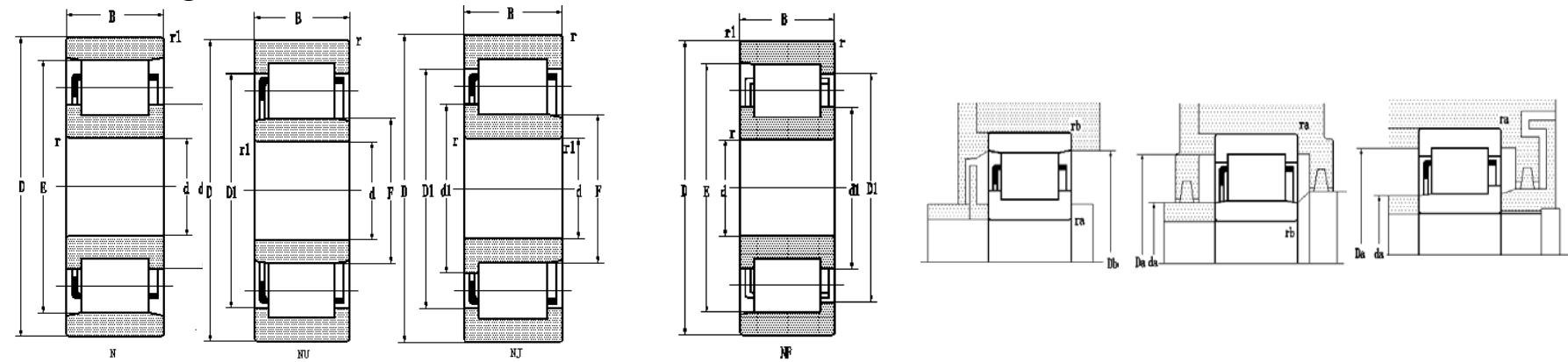
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass
mm					kN		r/min				mm		mm							kg
					dynamic	static	grease	oil	present	original										
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
65	150	35	2.1	2.1	206	220	4650	5860	NJ 412 EF1		60	91.5	121	83	72	138	138	2	2	3.14
	100	18	1.1	1	41.0	29.6	6300	7500	NU 1013	32113	65		86.6	74.5	70	92		1	1	0.522
	120	23	1.5	1.5	81.1	102	5330	6710	NJ 213 M		65	85	102	79.5	74	111		1.5	1.5	1.18
	140	33	2.1	2.1	135	139	4000	4800	N 313	2313	65	91		122	77	129	129	2	2	2.32
	140	33	2.1	2.1	135	139	4000	4800	N 313M	2313H	65	92.3		122	77	129	129		2	2.58
	140	33	2.1	2.1	135	139	4000	4800	NU 313M	32313H	65		115	83.5	77	129	129	2	2	2.51
	140	33	2.1	2.1	135	139	4000	4800	NU 313Q1	32313Q	65		115	83.5	77	129	129		2	2.53
	140	33	2.1	2.1	135	139	4000	4800	NJ 313M	42313H	65	91	115	83.5	77	129	129	2	2	2.57
	140	33	2.1	2.1	177	211	4770	6010	NJ 313 E		65	90.6	119	82.5	77	128	129	2.1	2	2.45
	140	33	2.1	2.1	177	211	4770	6010	NU 313 EF1		65		119	82.5	77	128	129	2.1	2	2.41
140	48	2.1	2.1	224	176	4000	4800	NU 2313 EM	32613EH	65		119	82.5	77	129	129	2	2	3.71	
70	125	24	1.5	1.5	83.5	95.0	4500	5300	NUP 214E	42214	70	89.6	109	83.5	78	117	117	1.5	1.5	1.32
	125	24	1.5	1.5	83.5	95.0	4500	5300	NJ 214M	42214H	70	88.6	105	84.5	78	117	117	1.5	1.5	1.36
	125	24	1.5	1.5	83.5	95.0	4500	5300	NU 214M	32214H	70		105	84.5	78	117	117	1.5	1.5	1.34
	125	24	1.5	1.5	108	79.3	4500	5300	N 214	2214E	70	89.6		114	78	117	117	1.5	1.5	1.21
	125	24	1.5	1.5	108	79.3	5040	6350	N 214 EL	2214EL	70	89.6		114	78	117	117	1.5	1.5	1.21
	125	24	4	1.5	108	79.3	5040	6350	NF 214/C9YB2		70	89.6	109	114	78	117	117	3	1.5	1.25
	125	24	1.5	1.5	108	79.3	5040	6350	NJ 214 EF1		70	89.6	109	83.5	78	117	117	1.5	1.5	1.25
	125	24	1.5	1.5	108	79.3	5040	6350	NJ 214 EF1/YB2		70	89.6	109	83.5	78	117	117	1.5	1.5	1.25

Single row cylindrical bearing
d70~75mm



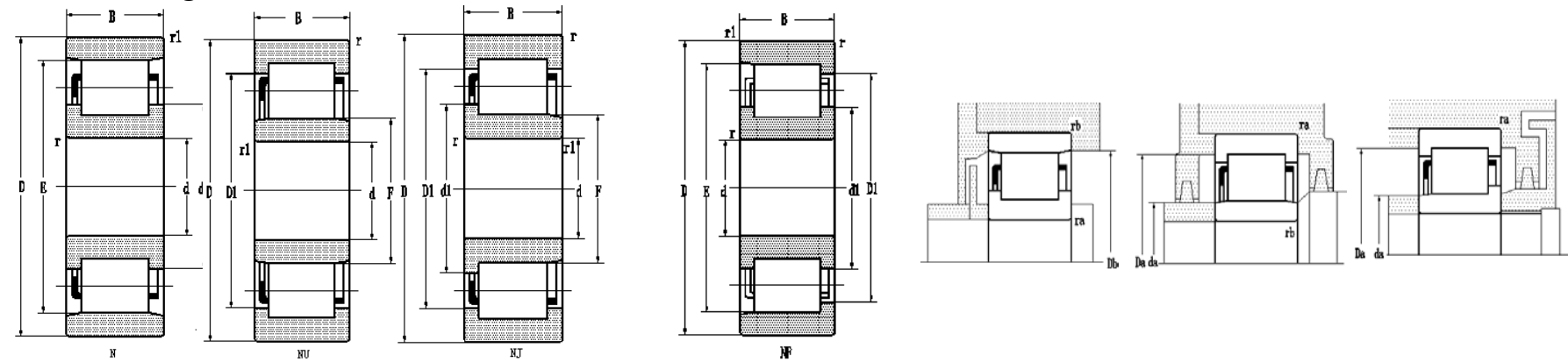
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
70	125	31	1.5	1.5	156	194	4500	5600	NJ2214EM	42514EH	70	89.4	109		83.5	78	117	117	1.5	1.5	1.93
	150	35	2.1	2.1	158	168	3600	4300	N 314	2314	70	97.8		130		81	139	139	2	2	2.73
	150	35	2.1	2.1	158	168	3600	4300	NU 314M	32314H	70		121		90	81	139	139	2	2	3.09
	150	35	2.1	2.1	158	168	3600	4300	NU 314Q1	32314Q	70		121		90	81	139	139	2	2	3.12
	150	35	2.1	2.1	158	168	3600	4300	NJ 314M	42314H	70	98	121		90	81	139	139	2	2	3.18
	150	35	2.1	2.1	158	168	3600	4300	NJ 314Q1	42314Q	70	98	121		90	81	139	139	2	2	3.12
	150	35	2.1	2.1	209	228	3600	4300	NUP 314ENM/C3 YA4		70	98	125		89	81	139	139	2	2	3.16
	150	35	2.1	2.1	209	228	3600	4300	NJ 314ENM/C3 YA4		70	98	125		89	81	139	139	2	2	3.32
	150	35	2.1	2.1	209	228	4420	5570	NJ 314 EF1		70	97.5	126		89	81	139		2	2	2.97
75	130	25	1.5	1.5	123	146	4770	6010	NJ215EQ1/P63SO		75	95	113		88.5	84	121	121	1.5	1.5	1.45
	160	55	2.1	2.1	258	300	3400	4300	NU2315M	32615M	75		136		95	86	148	148	2	2	5.58
	160	37	2.1	2.1	172	189	3400	4000	N315M	2315H	75	104		140		86	148	148	2	2	3.77
	160	37	2.1	2.1	172	189	3400	3400	N 315	2315	75	104		140		86	148	148	2	2	3.49
	160	37	2.1	2.1	172	189	3400	3400	NU315M	32315H	75		130		95.5	86	148	148	2	2	3.80
	160	37	2.1	2.1	172	189	3400	4000	NU 315	32315	75		130		95.5	86	148	148	2	2	3.34
	160	37	2.1	2.1	217	189	3400	4000	N315EF1	2315EW1	75	104		143		86	148	148	2	2	3.56
	160	37	2.1	2.1	172	172	172	172	NJ 315	42315	75	102	130		95.5	86	148	148	2	2	3.959
	160	37	2.1	2.1	172	172	172	172	NU315Q1	32315Q	75		130		95.5	86	148	148	2	2	3.68
	160	37	2.1	2.1	217	160	3400	4000	N 315 E	231E	75	104		143		86		143	2	2	3.56

Single row cylindrical bearing
d75~85mm



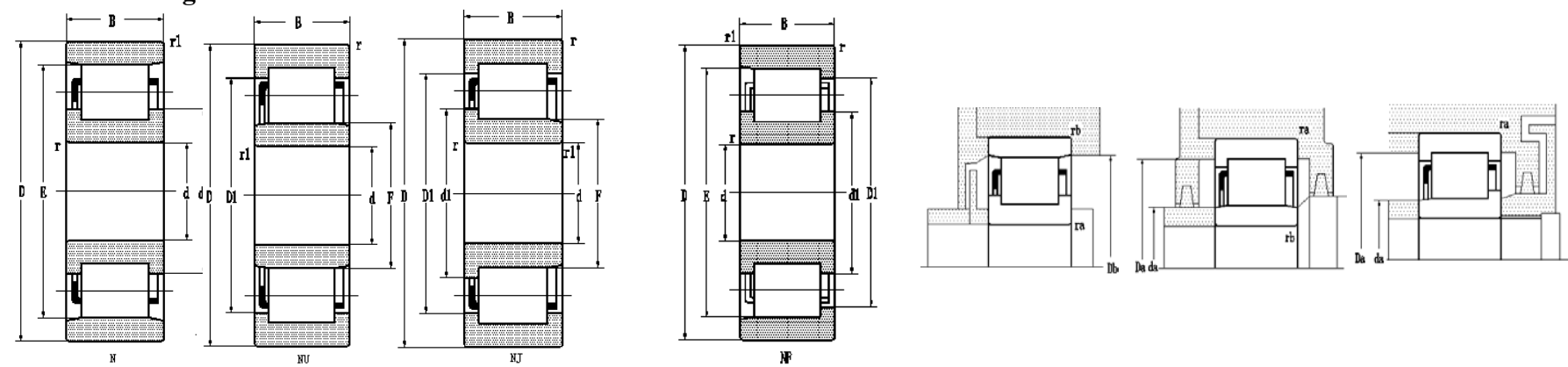
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal			Other dimensions						Mass
mm					kN		r/min				mm			mm						kg
					dynamic	static	grease	oil	present	original										
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
75	160	37	2.1	2.1	217	160	3400	4000	NU 315 E	32315E	75		137	95	86	148	148	2	2	3.71
	160	37	2.1	2.1	217	160	3400	4000	NU315EF1	32315EW1	75		137	95	86	148	148	2	2	3.71
	160	37	2.1	2.1	217	160	3400	4000	NJ 315 EF1	42315EW	75	104	137	95	86	148	148	2	2	3.63
	160	37	2.1	2.1	217	160	3400	4000	NJ315M	42315H	75		130	95.5	86	148	148	2	2	3.96
	160	68.3	2.1	2.1	321	306	2500	3000	NU 3315M	3032315H	75		130	95.5	86	148	148	2	2	7.39
	160	37	2.1	2.1	160	200	3400	4000	NJ315Q1/P63S0	3E42315QT	75	105	129	96.5	86	148	148	2	2	3.81
80	140	26	2	2	106	122	4000	4800	NJ216	42206	80	101	118	95.3	89	131	131	2	2	1.63
	140	26	2	2	101	122	4000	4800	N 216M	2216H	80	102	125	89	131	131	2	2	1.72	
	140	26	2	2	101	122	4000	4800	NU 216	32216	80		118	95.3	89	131	131	2	2	1.75
	140	26	2	2	101	122	4000	4800	NJ 216M	42216H	80	101	118	95.3	89	131	131	2	2	1.78
	140	26	2	2	127	95.8	4000	4800	NU 216 E	32216E	80		122	95.3	89	131	131	2	2	1.52
	140	26	2	2	127	95.8	4420	5570	N 216 EF1	32216 EW1	80		118	95.3	89	131	131	2	2	1.64
	170	39	2.1	2.1	262	291	3830	4830	NU316EF1		80		144	101	91	159	159	2.1	2.1	4.23
	170	58	2.1	2.1	274	330	3200	3800	NU 2316L	32616L	80		139	103	91	159	159	2	2	6.10
85	130	22	1	1.1	74	108	4530	5710	NU1017 M1		85		114	96.5	91	123	123	1	1.1	1.06
	150	28	2	2	171	204	4300	5000	NUP217ERM/YB2		85	107	130	100.5	95	140	140	2	2	2.2
	180	41	3	3	206	228	3000	3600	N 317	2317	85	116	156	98	166	166	2.5	2.5	4.73	
	180	41	3	3	220	273	3590	4530	N317L	2317L(Y)	85	116	156	99	166	166	3	3	4.73	

Single row cylindrical bearing
d85~100mm



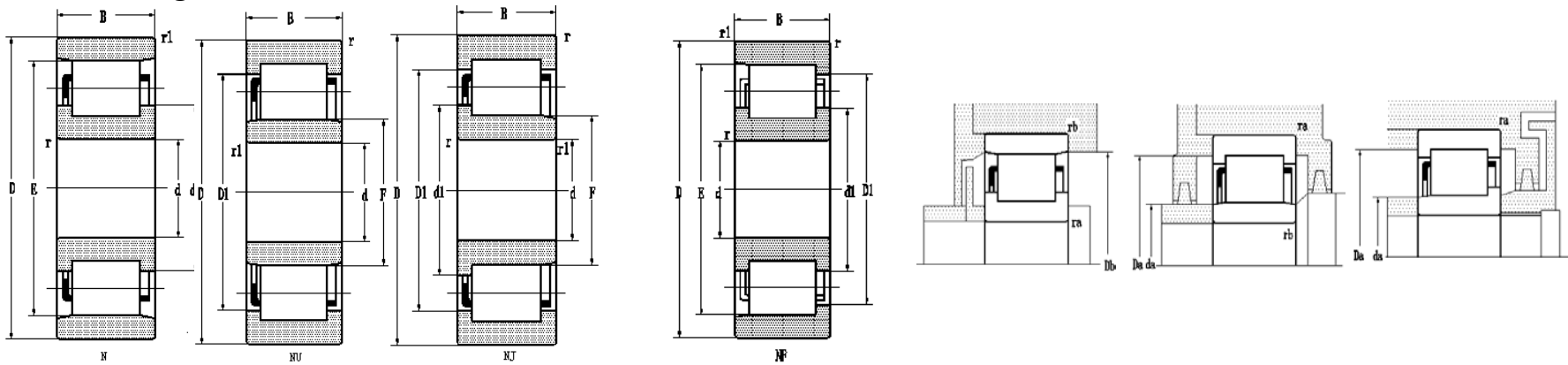
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations		Journal		Other dimensions							Mass
mm					kN		r/min				present	original	mm		mm							kg
d	D	B	rmin	r1min	C	C0	dynamic	static					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
85	180	41	4	4	220	273	3590	4530			N317L/YB2	2317L(Y)	85	116	156		103	162	158	3	3	4.7
	180	41	3	3	215	264	3590	4530			NJ317Q1/963S0	3E42317QT	85	118	146	108.5	98	166	162	2.5	2.5	5.29
	180	41	3	3	298	339	3590	4530			N317EF1		85	117		160	98	166	166	2.5	2.5	6.51
	180	60	3	3	315	380	3000	3600			NU 2317M	32617H	85		147	108	108	108	108	108	108	8.00
	180	60	3	3	315	380	3000	3600			NU2317EM	32617EH	85		153	108	108	108	108	108	108	8.1
	180	60	3	3	315	380	3000	3600			NJ 2317M	42617H	85	114	147	108	98	166	166	2.5	2.5	8.58
	180	60	3	3	359	276	3000	3600			NU 2317 EF1	32617E	85		153	108	98	166	166	2.5	2.5	8.1
	180	60	3	3	359	276	3000	3600			NU 2317 EM/YA1	32617EHY	85		153	108	98	166	166	2.5	2.5	8.1
90	160	30	2	2	163	195	4000	4800			NU218M		90		135	107	100	150	150	2	2	2.62
	190	43	3	3	170	288	3370	4250			NU 318H	32318H	90		154	115	104	176	176	2.5	2.5	6.2
	190	43	3	3	170	288	3370	4250			NU 318Q1/P63S0	3E32318QT	90		154	115	104	176	176	2.5	2.5	6.2
	190	43	3	3	322	362	3370	4250			NU318EF1		90		161	113.5	104	176	176	2.5	2.5	7.7
	190	43	3	3	219	265	2800	3400			N 318	2318	90	125		165	104	176	176	2.5	2.5	5.46
	190	64	3	3	430	530	3370	4250			NU2318M		90		159	113.5	104	176	176	2.5	2.5	8.87
95	200	45	3	3	305	220	2600	3200			N 319 E	2319EL	95	132		178	108	186	186	2.5	2.5	6.44
	200	45	3	3	320	254	3180	4010			NU319EL1		95		170	121.5	108	186	186	2.5	2.5	6.52
100	180	34	2.1	2.1	183	217	3200	3800			NJ 220M	42220H	100	128	151	120	111	169	169	2	2	3.98

Single row cylindrical bearing
d100~110mm



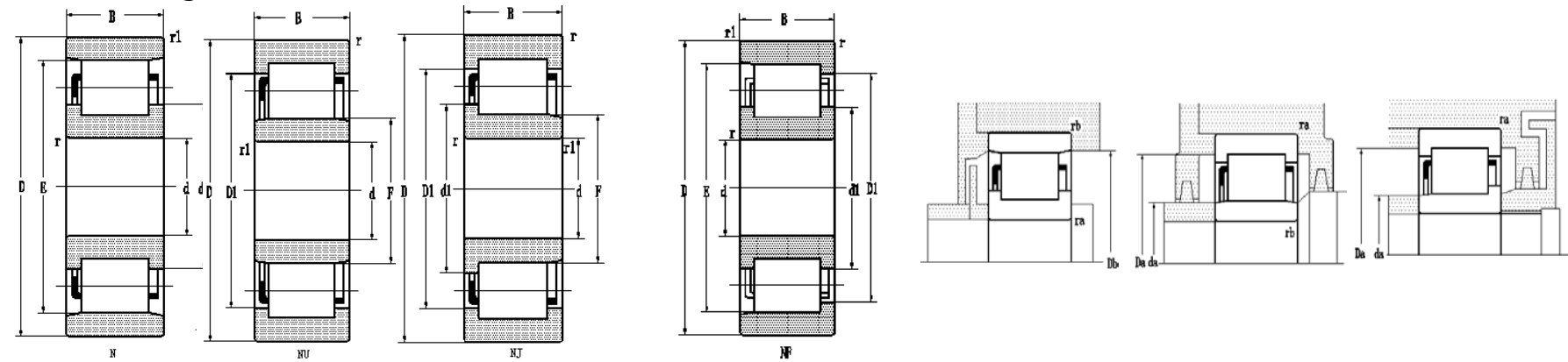
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
100	180	50	2.5	2.5	258	315	3200	3800	NJ 2220 X2M	42720H	100	128	151		120	111	169	169	2	2	5.91
	215	47	3	3	390	440	2950	3720	N320EF1		100	139		192		114	202	202	2.5	2.5	8.08
	215	73	3	3	524	505	2400	3000	N 2320 EM	2620EH	100	139		192		114	202	202	2.5	2.5	14.4
	215	73	3	3	524	505	2400	3000	NU 2320 EM	32620EH	100		182		127.5	114	202	202	2.5	2.5	14.3
	215	73	3	3	524	505	2400	3000	NU 2320 EM/YA1	32620HY	100		182		127.5	114	202	202	2.5	2.5	14.3
	215	73	3	3	536	726	2950	3720	NJ 2320EQ1/P63S0	3E42620EQT	100	140	182		127.5	114	202	202	2.5	2.5	13.3
105	160	26	1.1	2	109	149	3400	4000	NF1021M	12121H	105	125	141	146		115	150	150	1.1	2	1.99
110	170	28	2	1	144	195	3370	4250	NU1022 M		110		149		125	117	160	160	2	1	2.34
	200	38	2.1	2.1	293	365	3000	3780	NU 222 EM		110		174		132.5	122	188	188	2	2	5.19
	200	38	2.1	2.1	266	232	3000	3780	N222 EM		110	141		181		122	188	188	2	2	5.33
	240	50	3	3	414	400	2000	2600	N 322 E	2322EL	110	155		211		124	226	226	2.5	2.5	10.5
	240	50	3	3	450	545	2610	3280	NJ322EQ		110	155	198		143	124	226	226	2.5	2.5	12.7
	240	50	3	3	450	545	2610	3280	N322EM		110	155		209		124	226	226	2.5	2.5	12.1
	240	50	3	3	450	545	2610	3280	NJ322EM		110	155	198		143	124	226	226	2.5	2.5	12.9
	240	80	3	3	621	735	2000	2600	NU 2322 EM	32622EH	110		201		143	123	226	226	2.5	2.5	19.9
	240	80	3	3	621	735	2000	2600	NJ 2322 EM/YA1	32622EAY	110		201		143	123	226		2.5	2.5	19.9
	260	92	3	3	1290	695	1800	2400	NF 622	3-257	110	161	214	227			126	236	2.5	2.5	27.4

Single row cylindrical bearing
d120mm



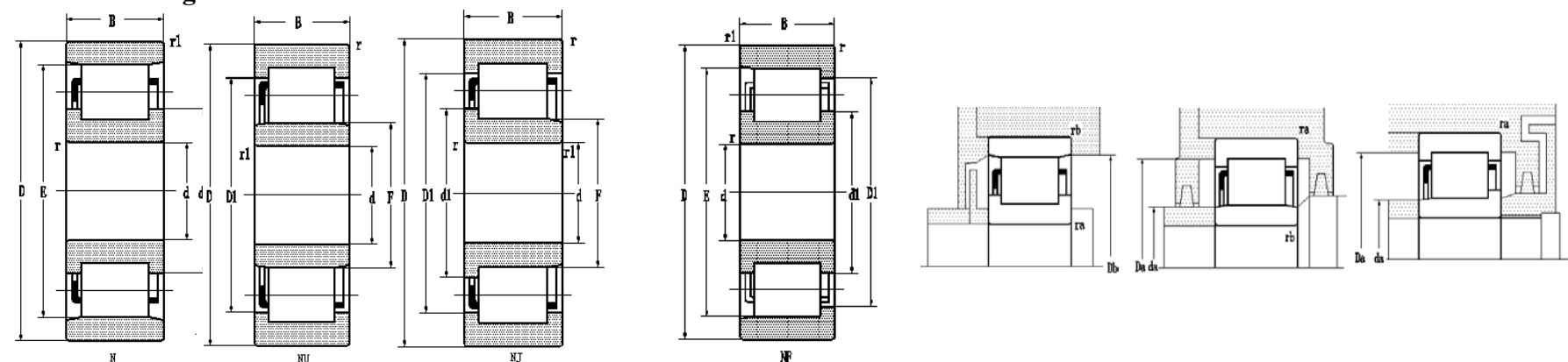
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min		present	original	mm		mm							kg	
d	D	B	rmin	r1min	C	C0	dynamic	static			grease	oil	d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax
120	215	40	2.1	2.1	250	299	299	299	N 224M	2224H	120	153		192	131	204	204	2	2	6.19	
	215	40	2.1	2.1	258	299	299	299	NUP224M	92224H	120	152	182		143.5	131	204	204	2	2	6.51
	215	40	2.1	2.1	250	299	2400	3000	NU 224M	32224H	120		182		143.5	131	204	204	2	2	6.47
	215	40	2.1	2.1	250	299	2400	3000	NJ 224M	42224H	120	152	182		143.5	131	204	204	2	2	6.48
	240	80	4	4	477	408	2400	3200	NJ624Q1/S0	42724QT	120	162	194		150	134	226	226	3	3	17.1
	240	80	3	3	477	408	2400	3200	NJ 624M	42724H	120	161	199		150	134	226	226	2.5	2.5	17.8
	240	80	4	4	477	408	2400	3200	NJ624Q1	42724Q	120	162	198		150	134	226	226	3	3	17.7
	240	80	3	3	477	408	2400	3200	NJP 624Q1	152724Q	120	162	199		150	134	246	246	2.5	2.5	17.9
	240	80	4	4	477	408	2400	3200	NJP624Q1/S0	152724QT	120	162	194		150	134	226	226	3	3	17.2
	240	80	4	4	477	408	2400	3200	NJP624M	152724H	120	152	182		150	134	226	226	3	3	17.8
	260	55	3	3	537	623	2360	2980	N324EM		120	168		230		134	226	226	2.5	2.5	14.4
	260	55	3	3	537	623	2360	2980	NU324EM		120		219		154	134	246	246	2.5	2.5	14.5
	260	86	3	3	731	920	1900	2400	NU 2324 EM	32624EH	120		219		154	134	246	246	2.5	2.5	23.8
	260	86	3	3	731	920	1900	2400	NU2324EM/YA1	32624EHY			219		154	134	246	246	2.5	2.5	2.38
	200	33	2	1.1	172	238	3200	3800	NU 1026Q1	32126Q	130		174		148	137	190	190	2	1	3.83
	200	33	2	1.1	172	238	3200	3800	NU 1026M	32126H	130		174		148	137	190	190	2	1	3.84
	230	40	3	3	371	466	2520	3180	NU 226 EM		130		202		153.5	144	216	216	2.5	2.5	7.11
	250	80	3	3	547	473	2200	3000	NJ 626M	42726H	130	170	208		158	144	236	236	2.5	2.5	18.7
	250	80	4	4	547	473	2200	3000	NJP 626Q1/SO	152726QT	130	171	208		158	148	228	228	3	3	18.69

Single row cylindrical bearing
d120~140mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass
mm					kN		r/min				mm		mm							kg
					dynamic	static	grease	oil	present	original										
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
120	250	80	3	3	547	473	2360	2980	NJP626M	152726H	130	170	208	158	148	236	236	2.5	2.5	18.7
	250	80	4	4	547	473	2360	2980	NJ 626Q1/SO	42726QT	130	171	205	158	148	232	232	3	3	18.7
	250	80	4	3	604	807	2360	2980	NJP93226X1		130	171	206	158	148	232	232	3	3	18.5
	250	80	4	4	604	807	2360	2980	NJ3226X1		130	171	206	158	152	232	232	3	2.5	18.3
	280	93	4	4	920	1230	2160	2720	NU2326EM		130		236	167	148	262	262	3	3	28.8
	340	78	5	5	825	955	1500	1900	NU 426M	32426H	130		265	183	150	320	320	4	4	41.5
	340	78	5	5	825	955	1500	1900	NJ 426M	42426H	130	203	265	183	150	150	150	150	150	41.67
	340	78	5	5	825	955	1500	1900	NU426Q1	32426Q	130	203	262	185	150	150	150	150	150	39.2
140	210	33	2	1.1	212	317	2610	3280	NU1028 M		140		185	158	147	200	200	2	1	4.03
	250	42	3	3	406	536	2290	2890	NJ 228 EF1		140	180	217	169	154	236	236	2.5	2.5	11.6
	250	42	3	3	406	536	2290	2890	NU 228 EF1		140		217	169	154	236	236	2.5	2.5	10.9
	250	42	3	3	389	507	2290	2890	NJ 228 EM		140	180	217	169	154	236	236	2.5	2.5	9.35
	250	68	3	3	535	635	2000	2600	NJ 2228 EM	42528EH	140	179	217	169	154	236	236	2.5	2.5	17
	250	42	3	3	359	296	2290	2890	NU 228 EL	32228 EL	140		217	169	154	236	236	2.5	2.5	8.97
	250	82.55	3	3	661	1060	2290	2890	NU3228X2M		140		213	169	154	236	236	2.5	2.5	18.4
	300	62	4	4	584	791	1980	2490	NJ 328Q1/P64S0	4E42328EQTY	140	194	249	180	158	282	282	3	3	21.5
	300	102	4	4	1020	1350	1980	2490	NJ2328EM		140	194	249	180	158	282	282	3	3	37.3
	300	114	4	4	1250	1100	1500	2000	NF 3328 X2	3-254	140	190	253	266		156	278	3	3	43.3
	360	82	5	5	875	1020	1400	1800	NU 428M	32428H	140		279	196	160	340	340	4	4	48

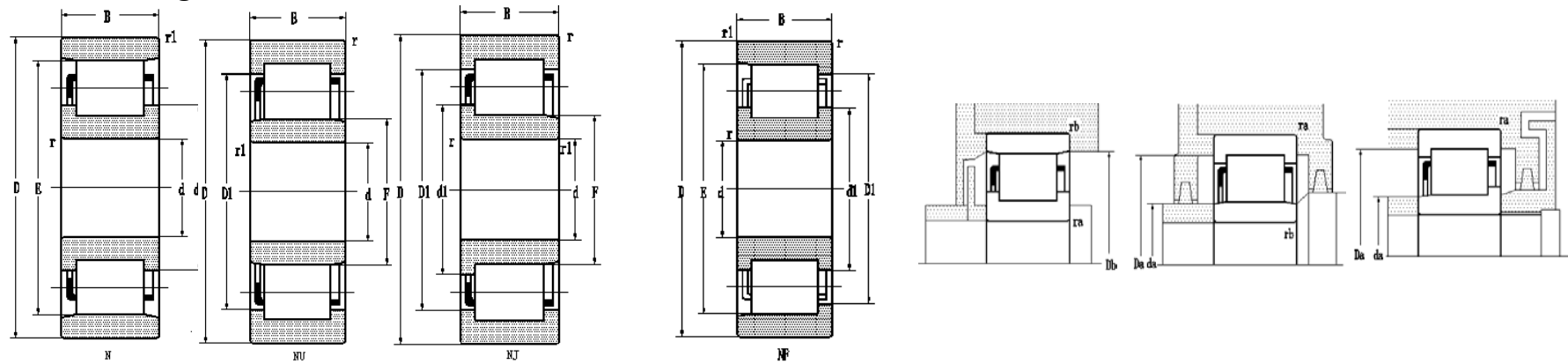
Single row cylindrical bearing
d140~170mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass
mm					kN		r/min				mm		mm							kg
					dynamic	static	grease	oil	present	original										
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
140	360	82	5	5	875	1020	1400	1800	NJ 428	42428	140	217	279	196	160	340	340	4	4	48.7
150	270	45	3	3	450	597	2090	2640	NU230EQ1/P63S0	3E32230EQT	150		233	182	164	256	256	2.5	2.5	10.4
	320	65	4.5	4.5	734	855	1820	2300	NJ330Q1/P64S0	4E42330EQT	150	209	270	193	172	298	298	3	3	25.7
	320	65	4	4	734	855	1820	2300	NU330Q1/P63S0	3E32330EQT	150		270	193	172	298	298	3	3	26.6
	320	108	4	4	1080	1400	1700	2000	NU 2330 EM	32630EH	150		270	193	166	298	298	3	3	45.7
160	290	48	3	3	720	665	1920	2420	NU 232EQ1/P63S0	3E32232EQT	160		250	195	174	276	276	2.5	2.5	14.6
	290	48	3	3	493	655	1920	2420	NJ 232 EM		160	207	250	195	174	276	276	2.5	2.5	14.9
	290	290	290	290	706	663	1800	2200	NU 2232 EM	32532EH	160		245	193	174	276	276	2.5	2.5	24.5
	290	290	290	290	786	1150	1690	2130	NU2232X2Q1/S0	652732QT	160	249		193	174	276	276	2.5	2.5	24.3
	290	290	290	290	786	1150	1690	2130	NJ2232X2Q1/S0	552732QT	160	249		193	174	276	276	2.5	2.5	25.8
	340	114	4	4	1138	1800	1690	2130	NU2332E.M1		160		285	204	178	322	322	3	3	52
170	260	42	2.1	2.1	253	415	2200	2800	NU 1034M	32134H	170		227	193	181	248	248	2	2	8.31
	310	52	4	4	605	800	1780	2240	NU 234Q1/P63S0	3E32234QT	170		263	208	188	292	292	3	3	17.8
	310	52	4	4	605	800	1780	2240	NJ234M	42234H	170	221	257	208	188	292	292	3	3	16.1
	310	52	4	4	535	776	1780	2240	NJ 234 EM		170	220	269	207	188	292	292	3	3	17.9
	310	86	4	4	829	1080	1800	2200	NU 2234 EM	32534EH	170		270	205	188	294	294	3	3	30
	360	120	4	4	1220	1750	1400	1700	NU 2334M	32634H	170		289	220	188	344	344	3	3	62.3

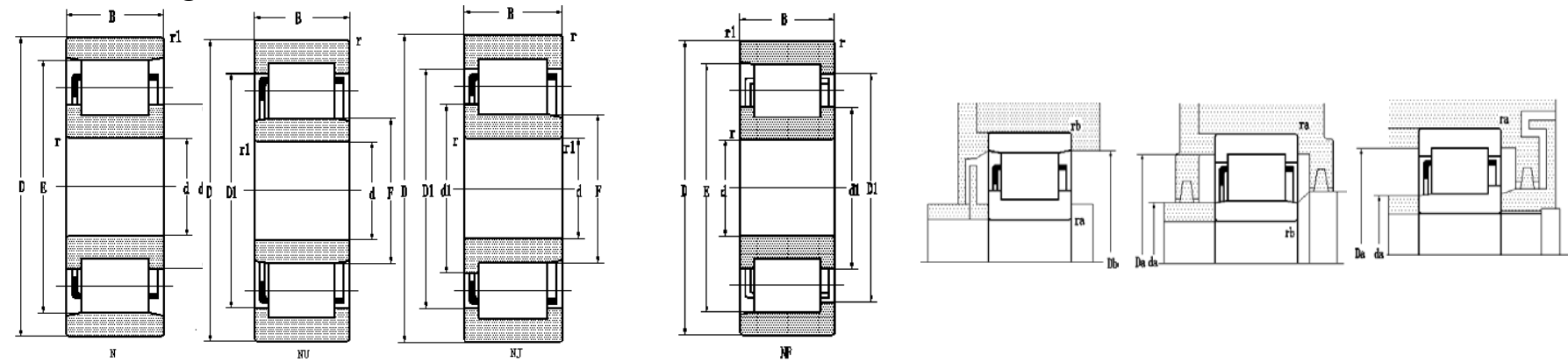
Single row cylindrical bearing

d170~220mm



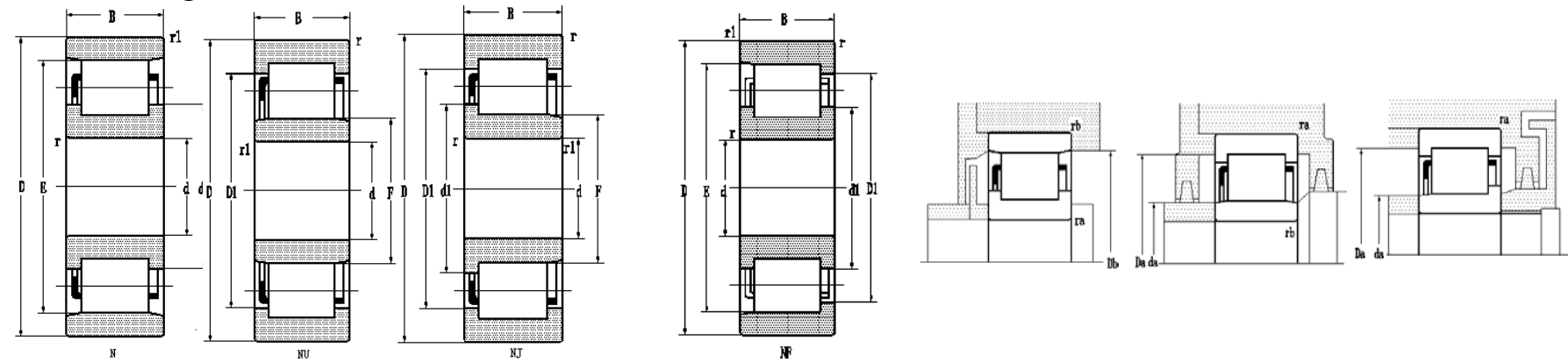
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
170	360	120	4	4	1220	1750	1400	1700	NJ 2334M	42634H	170	237	289	220	188	344	344	3	3	63.6	
	360	72	4	4	892	1090	1600	2000	NU334EM		170		301	218	188	344	344	3	3	36.3	
180	280	82.6	2.1	2.1	743	1290	1870	2360	NU 3036X2M	32836H	180		246	204	192	268	268	3	3	19.6	
	320	52	4	4	625	850	1690	2130	NJ 236 M		180	230	279	217	198	302	302	3	3	18.9	
	320	86	4	4	887	1140	1700	2000	NU 2236 EM	32536EH	180		280	215	198	302	302	3	3	30.8	
	380	126	4	4	1200	1990	1300	1600	NJ 2336 EM	42636EH	180	246	320	231	198	302	302	3	3	77.9	
190	260	42	2	2	239	216	2000	2800	NU 2938	2032938	190		235	207	200	250		2	2	6.45	
	290	46	2.1	2.1	384	575	1780	2240	NU1038 M		190		254	215	202	278	278	2	2	10.8	
200	310	34	2	2	280	300	1400	1800	N 0040M	7002140	200	243		277		212	280	280	2	2	10.2
	310	34	2	2	280	300	1400	1800	NFP 0041F1	7022140W	200	243	269	277		212	280	280	2	2	10.5
	310	51	2.1	2.1	388	580	1900	2400	NU 1040	32140	200		269		229	212	298	298	2	2	14.3
	310	51	2.1	2.1	388	580	1900	2400	NU 1040 NQ1	232140Q	200		269		229	212	298	298	2	2	14.3
	320	88.9	2.5	2.5	860	1346	1600	2020	NU 640M	32840H	200		286		228	212	308	308	2	2	26.5
	360	58	4	4	745	1020	1460	1840	NJ 240 EM		200	258	310		243	218	342	342	3	3	27.8
220	340	56	3	3	470	750	1800	2200	NU 1044	32144	220		297		250	233	327	327	2.5	2.5	19.3
	340	56	3	3	470	750	1800	2200	NU 1044 NQ	232144Q	220		297		250	233	327	327	2.5	2.5	18.9

Single row cylindrical bearing
d220~250mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions								Mass
mm					kN		r/min				mm		mm								kg
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
220	350	98.42	3	3	1070	1050	1600	2000	NU 644M	32844H	220	313	245	234	336	336	2.5	2.5	37.5		
	460	88	5	5	1130	1570	1200	1500	NU 344	32344H	220	370	284	242	438	438	4	4	75.6		
230	350	70	2.1	2.1	856	610	1500	1900	NF 646 WC	402746H	230	276	306	316	242	238	238	2	2	26	
	370	80	3	3	826	795	1400	1800	N 646	2746H	230	282	334	334	250	350	350	3	3	37	
240	360	37	2.1	2.1	388	392	1000	1400	N 0048F1	7002148W	240	287	325	251	348	348	2	2	14.7		
	360	56	4	4	497	820	1700	2000	NU 1048Q	32148H	240	318	270	253	347	347	2.5	2.5	20.4		
	360	56	3	3	530	820	1700	2000	NU 1048M	32148Q	240	318	270	253	347	347	2.5	2.5	20.4		
	360	56	3	3	497	820	1700	2000	NJ 1048M	42148H	240	279	318	270	253	347	347	2.5	2.5	20.8	
	360	92	3	3	855	938	1000	1300	NU 3248M	3032148EH	240	316	270	253	347	347	2.5	2.5	35.5		
	339	108	4	4	1370	2310	1600	2000	NU2148X3M/C9		240	340	275	258	372	372	3	3	53.7		
	440	72	4	4	935	1340	1130	1420	NJ 248		240	313	368	295	258	422	422	3	3	50.7	
	500	95	5	5	1350	1820	1000	1300	NU 348M	32348H	240	403	310	262	478	478	4	4	97.7		
250	380	50	5	2.1	660	643	1300	1700	N 650L	2750L	250	298	347	272	368	368	4	2	19.8		
260	400	44	3	3	552	603	1500	1800	N 0052F1	7002152W	260	314	360	274	386	386	2.5	2.5	22.7		
	400	65	4	4	645	1000	1500	1800	N 1052F1	2152W	260	312	364	276	367	367	3	3	30.8		
	400	65	4	4	645	1000	1500	1800	NUP 1052F1	32152W	260	348	296	276	384	384	3	3	29.4		

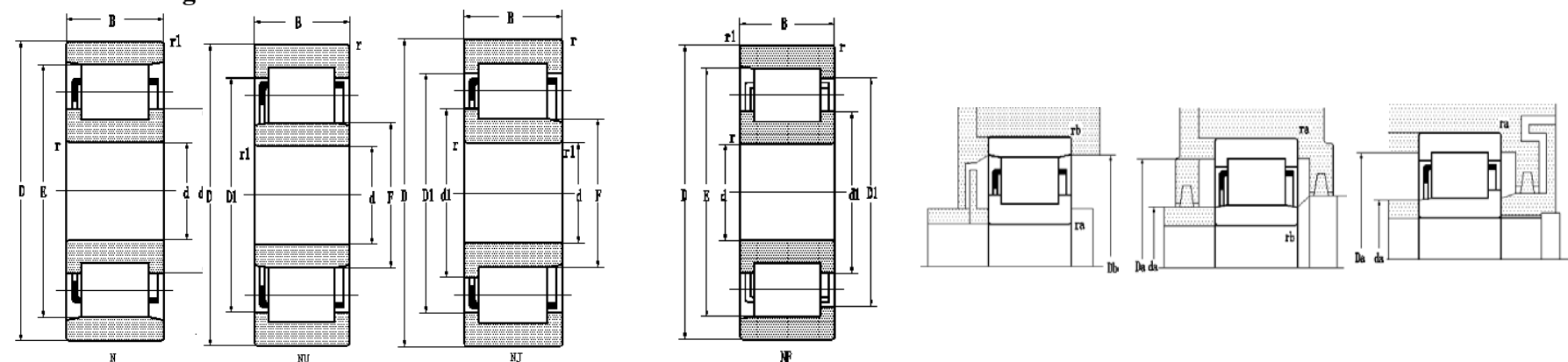
Single row cylindrical bearing
d260~360mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass
mm					kN		r/min				mm		mm							kg
					dynamic	static	grease	oil	present	original										
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
260	400	65	4	4	645	1000	1500	1800	NU 1052F2	92152W	260	348	296	276	384	384	3	3	29.5	
280	420	65	4	4	660	1050	1400	1700	NU 1056M	32156H	280	368	316	298	404	404	3	3	33.4	
	580	108	6	6	1642	2523	810	1030	NU356M		280	469	362	308	552	552	5	5	139	
300	460	74	4	4	855	1400	1200	1500	NU 1060	32160	300	407	340	318	442	442	3	3	44.4	
	460	118	4	4	1690	1800	1060	1340	NU 3060	3032160	300	407	340	318	442	442	3	3	72	
	540	85	5	5	1350	2070	1000	1340	NU 260	32260	300	450	365	322	518	518	4	4	87.2	
305	460	65	4	4	800	878	1100	1300	N 661L	2761L	305	362	421	325	442	442	2.5	2.5	35.2	
320	480	74	4	4	905	1470	900	1140	NU 1064	32164	320	427	360	338	462	462	3	3	47	
	480	74	4	4	905	1470	900	1140	NU1064M		320	427	360	338	462	462	3	3	46.6	
	480	74	4	4	905	1470	900	1140	NU 1064 K	332164	320	427	360	338	462	462	3	3	46.6	
340	520	57	4	4	995	935	950	1200	N 0068	7002168	340	408	470	358	512	512	4	3	45.5	
	530	133.3	5	5	1660	1810	880	1100	N 668	2768	340	414	476	358	512	512	4	4	117	
360	650	170	6	6	3150	5400	850	1000	NU 2272 E	32572E	360	542	437	390	620	62	5	5	263	
	650	170	6	6	3150	5400	640	810		32572EH	360			370	640		5	5	263	
	750	224	7.5	7.5	5200	8300	850	1000	NU 2372	32672	360	610	455	395	715	715	6	6	485	

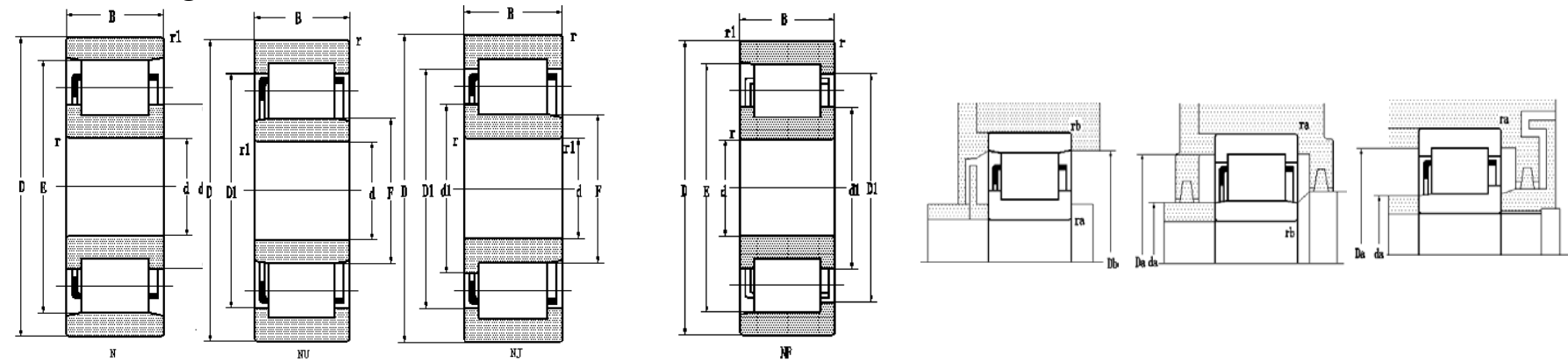
Single row cylindrical bearing

d380~480mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions						Mass	
mm					kN		r/min				mm		mm						kg	
					dynamic	static	grease	oil	present	original										
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax	
380	480	60	2.1	2.1	647	756	900	1100	N 2876	2002876K	380	417	455		390	463	463	2	2	24.6
400	540	65	4	4	785	1460	950	1150	NU 1980	1032980	400	490	434	420	520			3	3	42.7
	600	90	5	5	1350	2320	900	1100	NU 1080	32180	400	528	448	420	580	580		4	4	88.8
	600	148	5	5	2650	5400	700	900	NU 3080	3032180	400	528	448	420	580	580		4	4	144.5
	650	145	6	6	2830	5600	700	900	N 2180	2002780	400	492	585	426	597	597		5	5	190
420	560	65	4	4	825	1650	670	850	NF1984/C9YA1		420	471	509	522	438	542	542	3	3	41.6
434	540	46	2.5	1.5	413	476	745	938	NU 16/434	32987	434	502	468	445	525	525		2	1.5	26.2
440	546	46	2.5	1.5	413	476	730	920	NU 688	32788	440	502	468	454	555	555		2	1.5	26.5
	720	122	6	6	2320	2220	510	620	N 1188	1002788	440	543	648	460		700		5	5	191
460	620	95	4	4	1600	3400	500	630	N 2992	2002992	460	516	580	480		588		3	3	82.4
	620	95	4	4	1600	3400	500	630	NU 2992	2032992	460	562	500	480	596	596		3	3	84
	680	100	6	6	1600	3700	530	670	NU1092M		460	600	516	490	650	650		5	5	130
480	790	248	7.5	7.5	6230	12100	450	570	NU3196		480	701	556	516	754	754		6	6	489

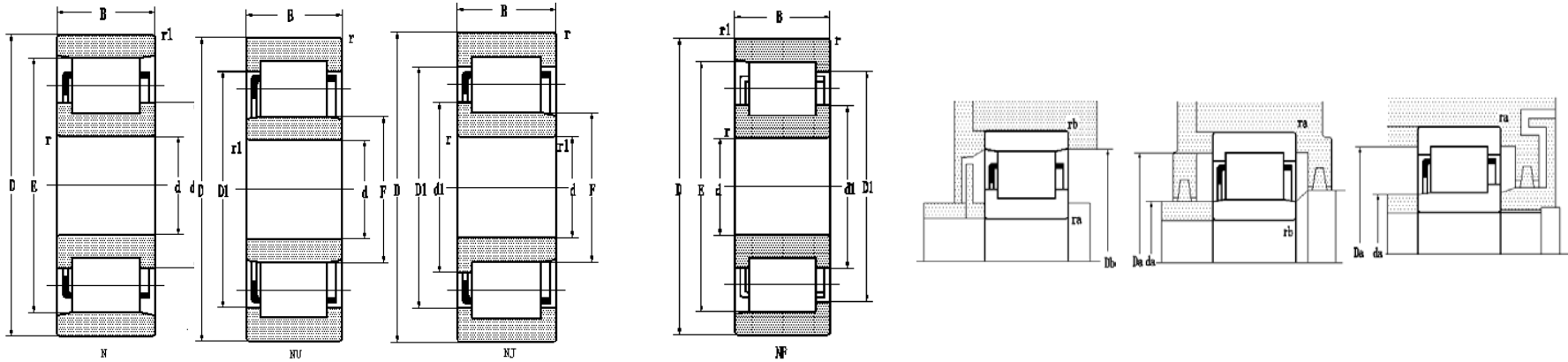
Single row cylindrical bearing
d500~800mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass	
mm					kN		r/min				mm		mm							kg	
					dynamic	static	grease	oil	present	original											
d	D	B	rmin	r1min	C	C0					d1	D1	E	F	damin	Damax	Dbmin	ramax	rbmax		
500	670	100	5	5	2000	4050	560	710	NU 29/500	20329/500	500	610	543	525	650	650	4	4	99.5		
	830	264	7.5	7.5	7100	13500	420	530	NU31/500		500	728	576	540	790	790	6	6	563		
530	710	106	5	5	2170	5200	400	500	NU 29/530	20329/530	530	644	575	555	685	685	4	4	123		
630	850	100	6	6	1830	3750	280	360	N 19/630	10029/630	630	710	795		665	820	820	5	5	160	
	850	128	6	6	3050	6550	280	360	NU 29/630	20329/630	630	770		685	665	820	820	5	5	206	
666.8	838.2	114.3	3	3	2900	4040	400	480	NP 6/666.75	3-235	666.75	724	785	803		815	690		2.5	2.5	154
670	820	69	4	4	1098	2870	340	430	NJ18/670 M		670	726	770		712	688	802	802	3	3	78.9
	820	112	4	4	2500	6760	340	430	NJ38/670Q1		670	718	774		706	688	802		3	3	123
700	930	160	6	6	3200	4580	310	390	NU 6/700	327/700	700		845		760	730	890	890	5	5	295
710	950	106	6	6	2300	4400	220	300	NU 19/710	10329/710	710		863		770	745	900	900	5	5	207
	950	106	6	6	2300	4400	220	300	N 19/710	10329/710	710	797	863	890		745	900	900	5	5	205
800	980	82	5	5	1640	4320	250	310	NJ18/800 M		800	868	921		849	814	950	950	4	4	120

Single row cylindrical bearing

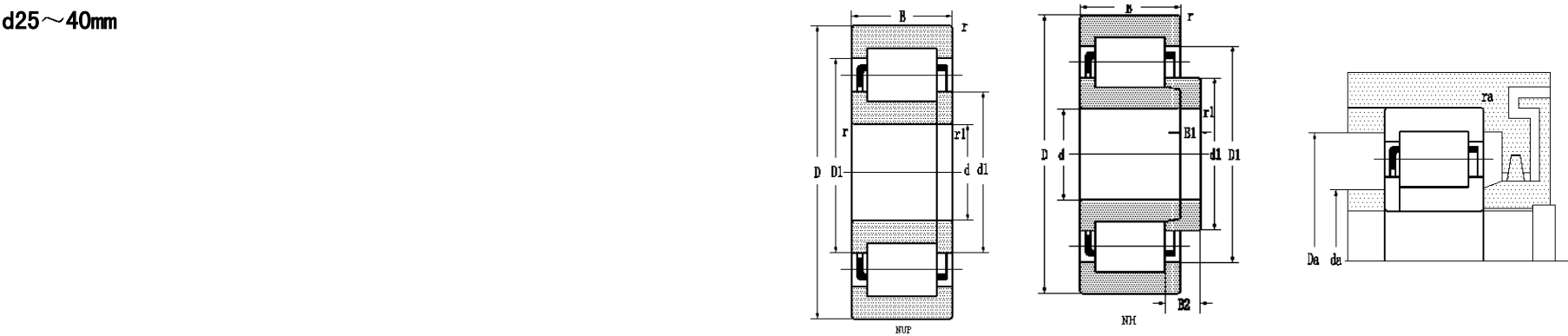
d840~1600mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions							Mass
mm					kN		r/min		present	original	mm	mm							kg	
d	D	B	rmin	r1min	dynamic	static	grease	oil				d1	D1	E	F	damin	Damax	Dbmin		ramax
840	1040	125	4	4	2530	5290	180	260	N 6/840	27/840	840	912	985	875	992	992	3	3	240	
950	1250	175	7.5	7.5	5850	14600	140	170	NU 29/950	20329/950	950	1137		1032	990	1190	1190	6	6	563
	1250	224	7.5	7.5	6780	10500	140	170	N 39/950	30029/950	950	1062	1170		990	1190	1190	6	6	745
1060	1400	150	7.5	7.5	4500	10000	120	150	NU 19/1060M	10329/1060H	1060	1270		1162	1100	1360	1360	6	6	683
1200	1520	185	7.5	7.5	4797	10223	90	110	NU6/1200D	329/1200	1200	1410		1280	1240	1480	1480	6	6	698
	1520	185	7.5	7.5	4800	10200	110	140	NU 6/1200	329/1200	1200	1410		1280	1240	1480		6	6	
1320	1720	175	7.5	7.5	6650	14600	99	120	NU 19/1320	10329/1320	1320	1565		1440	1365	1670		6	6	1148
1500	1800	150	7.5	7.5	4900	8400	80	100	NU 6/1500/YA	3-248	1500	1688		1540	1586	1750		6	6	805
1600	1950	155	7.5	7.5	7250	12200	80	100	NU 18/1600	10328/1600	1600	1818		1695	1660	1890		6	6	1059

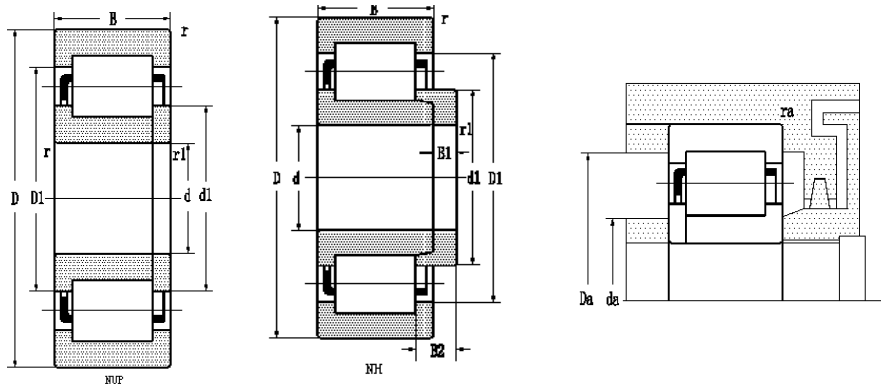
Single row cylindrical roller bearings with
bearings with loose rib or angle ring
d25~40mm

d25~40mm



Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions								Mass
mm					kN		r/min		present	original	mm	mm								kg
d	D	B	rmin	r1min	dynamic C	static C0	grease	oil				d1	D1	B1	B2	damin	Damax	ramax	rbmax	
25	52	15	1	1	29.3	27.7	12790	16120	NUP 205 ETN1	92205EA	25		43.5			31	46	1	1	0.14
	80	24	1.1	1.1	46.4	40.0	9500	12000	NH 405 X2M	32705H	25	39	48.7	4	8.83	32	72	1	1	0.853
30	72	27	1.1	1.1	61.5	64.1	7500	9500	NUP 2306M		30	46	58.4			37	65	1	1	0.603
32.5	62	16	1	1	21.9	13.5	10000	13000	NUP 6/32.6	3-250	32.5	41	49		38.5	37	57	1	1	0.024
35	80	21	1.5	1.1	49.5	47.0	8000	9500	NUP 307	92307	35	50.8	63.5			43	73	1.5	1	0.575
	80	21	1.5	1.1	49.5	47.0	8000	9500	NUP 307 N	192307	35	50.8	63.5			43	73	1.5	1	0.569
	80	21	1.5	1.1	80.2	83.3	8700	10960	NUP 307EV/C9		35	52.2	64.4			44	71	1.5	1	0.552
	80	21	1.5	1.1	80.2	83.3	8700	10960	NUP 307ENV/C9		35	52.2	64.4			44	71	1.5	1	0.546
	80	21	1.5	1.1	49.5	47	8000	9500	NUP 307EF1		35	51.1	66.3			44	72	1.5	1	0.687
	80	31	1.5	1.5	60.5	60.0	7000	8500	NUP 2307	92607	35	50.8	63.5			44	71	1.5	1	0.902
	90	23	1.5	1.1	91.4	95.9	8000	10080	NUP2207X1V/C9YB2		35	55.2	70			53	81	1.5	1	0.812
40	80	18	1.1	1.1	43.5	43	7500	9000	NUP 208	92208	40	54.2	65.6			46.5	73	1	1	0.468
	80	18	1.1	1.1	49.1	31.9	7500	9000	NUP 208 E	92208E	40	54.2	67.6			47	73	1	1	0.396
	80	18	1.1	1.1	55.5	55.5	8330	10500		92208EA	40		67.6			47	73	1	1	0.396

Single row cylindrical roller bearings with
bearings with loose rib or angle ring
d40~65mm

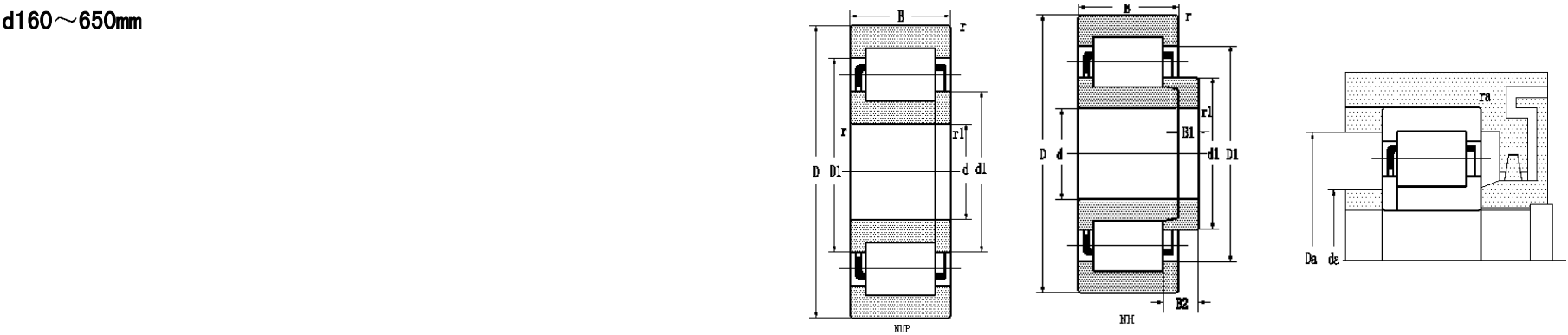


Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions						Mass	
mm					kN		r/min		present	original	mm		mm						kg	
d	D	B	rmin	r1min	dynamic C	static C0	grease	oil			d1	D1	B1	B2	damin	Damax	ramax	rbmax		
40	90	23	1.5	1.5	58.5	57.0	8700	8000	NUP 308 EN	192308E	40	57.5	75		47	82	1.5	1.5	0.693	
	90	23	1.5	1.5	51.5	34	7690	9690	NUP 308 M		40		72.1		49	81	1.5	1.5	0.786	
45	100	25	1.5	1.5	101	103	6880	8670	NUP 309 EF1		45	64.7	83.6		54	91	1.5	1.5	1.27	
	100	25	1.5	1.5	115	145	6880	8670	NUP 309 ENV		45	63.5	80.2		54	91	1.5	1.5	0.978	
	100	25	1.5	1.5	115	145	6880	8670	NUP 309 EV		45	63.5	80.2		54	91	1.5	1.5	0.988	
50	110	27	2	2	87	86	5300	6300	NH 310M	62310H	50	70.2	89.6	8	13.81	59	101	2	2	1.46
	110	27	2	2	108	125	6210	7830	NH 310 EF1		50	71.2	91.7	8	12.81	59	101	2	2	1.72
55	100	21	1.5	1.1	79	100	6420	8090	NUP 211 EF1		55		86.3		64	91	1.5	1	0.757	
	120	29	2	2	140	146	5650	7120	NUP 311 EF1		55		100.6		64	111	2	2	1.69	
	120	43	2	2	148	162	4800	5600	NUP 2311M	92611H	55	76	98.5		64	111	2	2	2.89	
60	110	22	1.5	1.5	68.5	75	5300	6300	NUP 212	92212	60	77.6	92.2		68	102	1.5	1.5	1.09	
	150	35	2.1	2.1	167	168	4300	5000	NUP 412	92412	60	91	118.8		72	138	2	2	3.42	
	130	31	2.1	2.1	135	141	5100	5500	NUP 312M		60	84	106.5		71	120	2	2	2.16	
65	140	33	2.1	2.1			4300	5300	NUP 313M	92313H	65	91	114.9		77	129	2	2	2.65	

Single row cylindrical roller bearings with
bearings with loose rib or angle ring
d70~140mm

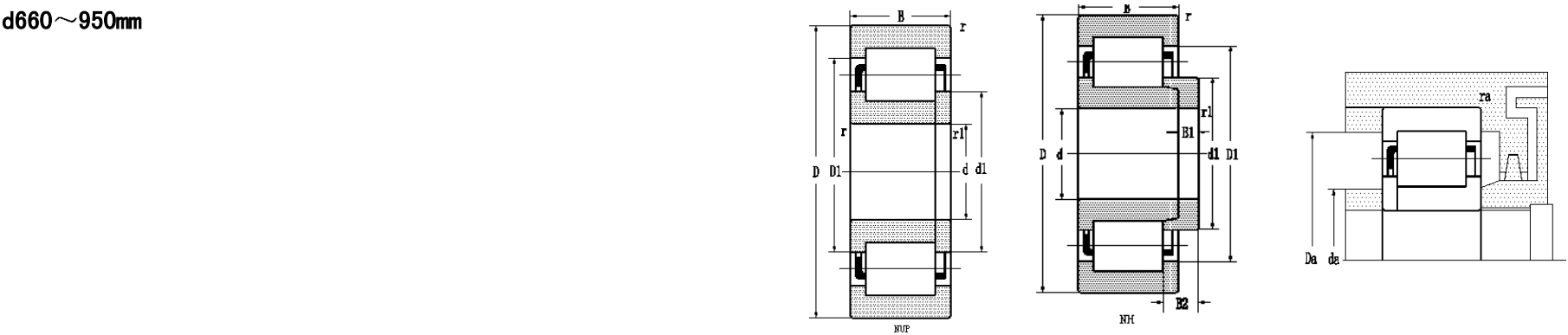
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions								Mass
mm					kN		r/min		present	original	mm	mm								kg
d	D	B	rmin	r1min	dynamic C	static C0	grease	oil				d1	D1	B1	B2	damin	Damax	ramax	rbmax	
70	125	31	1.5	1.5	119	151	4500	5300	NUP 2214 M	92514EH	70	89.4	114.9			78	117	1.5	1.5	1.9
70.2	125	24	1.5	1.5	83.5	95	5030	6340	NUP 214 E		70.2		109			80	116	1.5	1.5	1.32
85	150	27.5	2	2	171	204	4110	5180	NUP217ERM/YB2		85		130			95	140	2	2	2.2
	210	52	4	4	357	386	3180	4010	NUP417Q1/C9S0	8G92417QT	85	127	170.5			103	192	3	3	9.7
100	180	50	2.1	2.1	335	445	3200	3800	NJP 2220/ZM	152720H	100	127.9	151.3			111	169	2	2	5.9
	215	47	3	3	380	425	2950	3720	NH 320		100	139.1	182.3	13	20.23	114	201	2.5	2.5	9.74
	215	47	3	3	380	432	2940	3710			100	139	182.3			114	201	2.5	2.5	8.78
120	215	40	2.1	2.1	250	299	2400	3000	NUP 224	92224	120	151.1	182.3			131	204	2	2	6.51
	240	80	5	5	477	408	2520	3180	NJP 624Q	152724QT	120					142	218	3	3	17.2
130	250	80	5	5	547	473	2360	2980		152726QT	130					152	228	4	4	
	250	80	5	5	604	807	2360	2980	NJP3226X1		130					152	228	4	4	
140	310	108	4	4	1280	1800			NH2328X3V		140	203.5	261.5			158	292	3	3	42.8

Single row cylindrical roller bearings with
bearings with loose rib or angle ring
d160~650mm



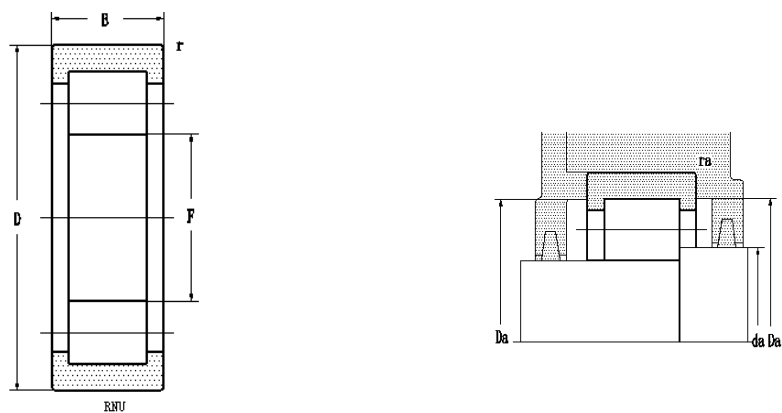
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions						Mass	
mm					kN		r/min		present	original	mm		mm						kg	
d	D	B	rmin	r1min	dynamic C	static C0	grease	oil			d1	D1	B1	B2	damin	Damax	ramax	rbmax		
160	290	80	3	3	786	1150	1910	2410		752732QT	163	249.4			177	276	2.5	2.5	27.1	
190	340	92	4	4	1020	1290	1600	1900	NH 2238 EM	62538EN	190	240.8	296.8	13	26.12	208	322	3	3	44.1
240	500	95	5	5	1390	1610	1010	1270	NUP348M	92348H	240	329.2	402.7			262	478	4	4	111
260	400	65	4	4	645	1000	1500	1800	NUP 1052	92152	260	309.2	348.4			276	384	3	3	29.5
360	520	82	5	5	1160	2100	790	990	NUP1072X1M		360	416	463			382	498	4	4	61.3
460	620	95	4	4	1600	3400	500	630	NUP 2992	2092992	460	516	562			480	596		3	87
	680	100	6	6	2000	3700	530	670	LY-N024		460		600	25	40.49	470	670	5	5	144
500	670	100	5	5	2000	4510	510	650	NUP29/500		500	560	610			522	648	4	4	105
530	710	106	5	5	2170	5200	400	500	NUP 29/530	20929/530	530	592	644			555	685	4	4	127
650	900	170	6	6	3320	6470	340	430	NUP 6/650	927/650	650	739	808			690	860	5	5	349

Single row cylindrical roller bearings with
bearings with loose rib or angle ring
d660~950mm



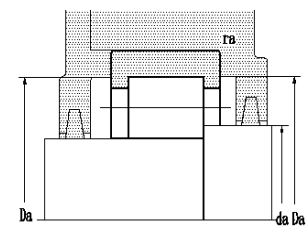
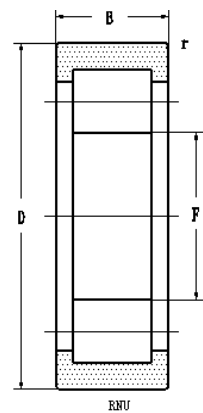
Boundary dimensions					Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions					Mass	
mm					kN		r/min		present	original	mm		mm					kg	
d	D	B	rmin	r1min	dynamic C	static C0	grease	oil			d1	D1	B1	B2	damin	Damax	ramax	rbmax	
660.4	812.8	107.95	6	6	2510	6152	320	410	NUP 6/660.4	929/660.4	660.4	709.4	763.8		690	785	5	5	131
700	930	160	6	6	3200	4580	310	390	NUP 6/700	927/700	700	781	845		730	890	5	5	308
710	950	106	6	6	2190	3250	220	300	NUP 19/710	10929/710	710	797	863		745	910	5	5	220
950	1250	175	7.5	7.5	5850	14600	140	180	NUP 29/950	20929/950	950	1058	1137		995	1190	6	6	612

Single row cylindrical roller bearings without inner ring
d27~108mm



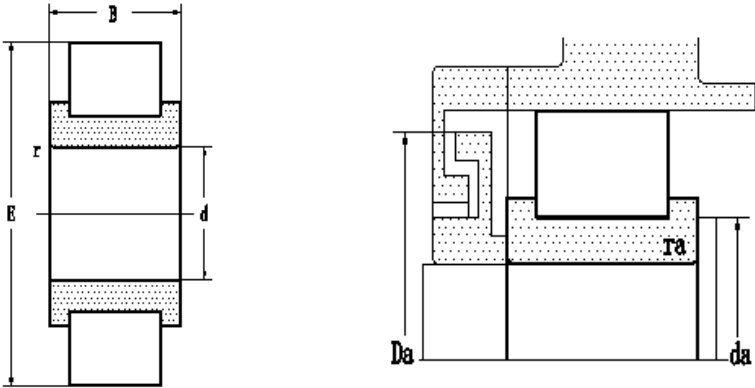
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions			Mass
mm				kN		r/min		present	original	mm	mm			kg
F	D	B	rmin	dynamic C	static C0	grease	oil				damin	Damax	ramax	
27	47	14	1.5	15.8	12.7	12000	16000	RNU 204M	292204H	27	29.8	41	1	0.103
32	52	15	1.5	16.8	15.7	10000	14000	RNU 205M	292205H	32	35	43	1.5	0.134
25	52	15	1	17.7	15.7	10000	14000	RNB 205F1	922205W	25	25	43	1	0.150
38.5	82	16	1	21.9	21.5	8500	11000	RNU 206	292206	38.5	41.5	56	1	0.189
47.55	70.64	27	1	62.6	91.3	8460	10660	RNAL 607		47.55	50.5	65	1	0.330
60.4	90	20	1.1	44.6	51	6000	7500	RNU 210M	292210H	60.4	63	83	1	0.432
66	100	21	1.5	80.9	57.2	6400	8100	RNU 211 E	292211 E	66	70	91	1.5	0.515
72	110	22	1.5	85.5	60	5800	7300	RNU 212 E	292212 E	72	76.5	100	1.5	0.644
83.5	125	24	1.5	108	95	5100	6400	RNU 214 E	292214 E	83.5	88	118	1.5	0.884
84.5	125	24	1.5	75.6	58.3	5100	6500	RNU 214M	292214H	84.5	88.6	118	1.5	1.02
108	180	60	3	315	380	3200	4000	RNU 2317M	292617	108	113.5	166	2.5	6.47

Single row cylindrical roller bearings without inner ring
d282.7mm



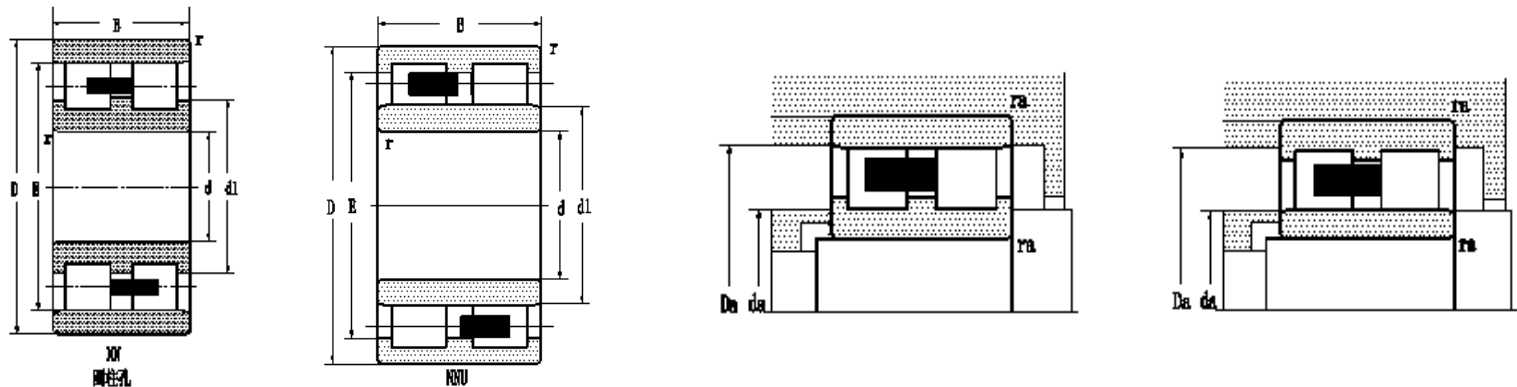
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions			Mass
mm				kN		r/min		present	original	mm	mm			kg
F	D	B	rmin	dynamic C	static C0	grease	oil				damin	Damax	ramax	
282.7	380	50	3	579	1010	1170	1470		942750K3L	282.7	289	366	2.5	13.84

Single row cylindrical roller bearings without outer ring
d20~65mm



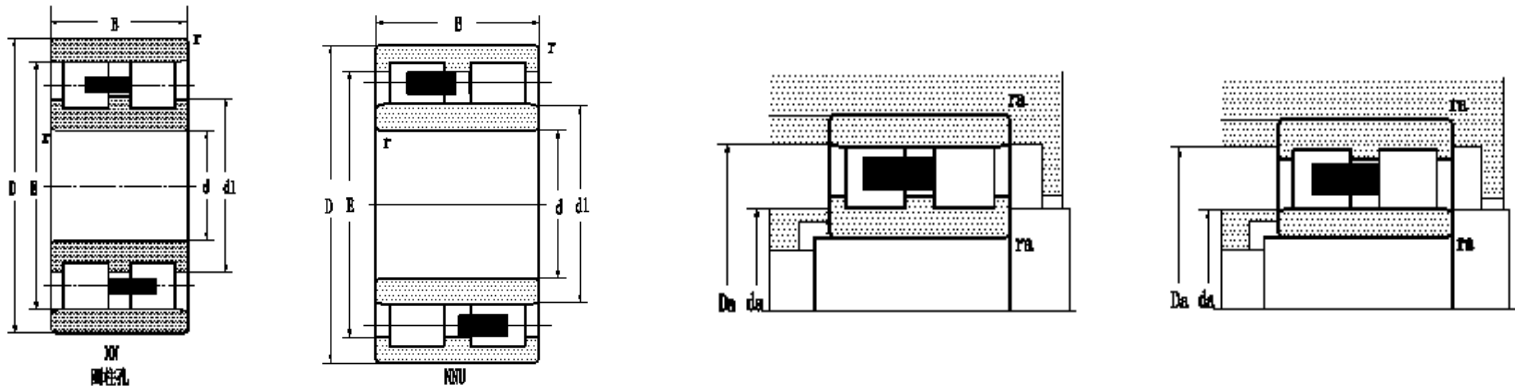
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions			Mass
mm				kN		r/min		present	original	mm	mm			kg
F	D	B	r1min	dynamic C	static C0	grease	oil				damin	Damax	ramax	
20	40	14	1	15.8	9.62	12000	18000	RN 204	502204	20	25	38	1	0.078
30	53.5	16	1	21.9	13.5	8500	11000	RN 206	502206	30	35	51	1	0.144
	53.5	16	1	22.6	13.7	11860	14940		502206W1	30	36	51.5	1	0.135
	55.5	16	1	34.3	21.7	8500	11000	RN 206 E	502206 E		35	53	1	0.132
	55.5	16	1	34.3	21.7	11590	14610		502206EA	30	36	53.5	1	0.312
	60	26	1	77.6	86	11040	13910	RN 606M		30	36	57	1	0.343
	68	26	1	89.2	85.8	10170	12820	RN 606M-1		30	36	65	1	0.426
40	70	18	1.1	38.5	24.7	7000	9000	RN 208	502208	40	47	67	1	0.272
	71.5	18	1.1	49.1	31.9	7000	9000	RN 208 E	502208 E		47	69.5	1	0.243
45	86.5	25	1.5	71.7	47.7	5600	7000	RN 309	502309	45	53	82	1.5	0.613
50	95	27	2	80	52.7	5300	6700	RN 310	502310	50	59	90	2	0.798
60	113	31	2.1	112	77.1	4500	5600	RN 312	502312	60	70	108	2	1.28
65	121.5	33	2.1	122	85.2	4000	5000	RN 313	502313	65	76	118	2	1.57

Double row cylindrical roller bearings
d50~130mm



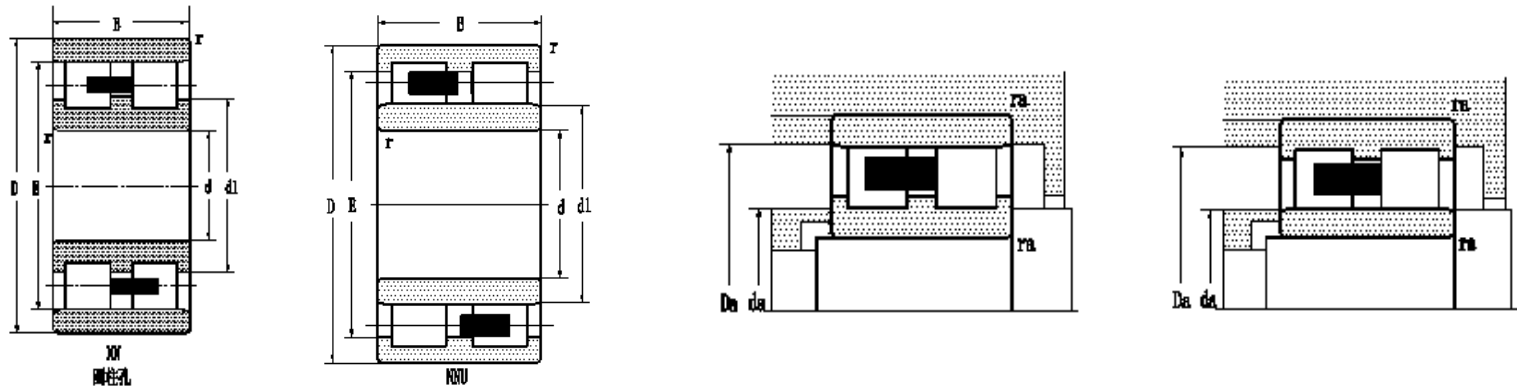
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions						Mass
mm				kN		r/min		present	original	mm	mm						kg
d	D	B	rmin	dynamic C	static C0	grease	oil				d1	E	damin	Damax	Dbmax	ramax	
50	80	23	1.5	45.7	57.4	6300	8000	NN 3910 K	3182110	50	61.3	72.5	57	75	75	1	0.421
75	115	30	1.1	96.5	149	5180	6530	NN3015K	3182115	75	90.6	105.8	482	108	108	1	1.12
80	125	34	1.1	119	186	4770	6010	NN3016K	3182116	80	97	113	987	118	118	1	1.53
85	130	34	1.1	125	201	4530	5710	NN3017K		85	102	118	92	123	123	1	1.59
90	140	37	1.5	143	228	4210	5300	NN3018K	3182118	90	109.4	127	99	131	131	1.5	2.06
100	150	37	2.5	157	265	3400	4300	NN 3020 K	3182120	100	119.4	137	113	142	142	1.5	2.2
105	160	41	2	198	300	3800	4500	NN 3021K	3182121	105	125.2	146	115	150		2	2.95
110	200	69.8	2.1	372	592	3100	3900	NN 3222	3282222	110	142.5	178.5	126	182	182	2	9.52
120	180	46	2	239	405	3120	3930	NN3024K	3182124	120	142	166	130	170	170	2	3.89
	180	46	2	239	405	3120	3930	NN3024K/SPC9		120	142.5	165	130	170	170	2	3.99
130	200	52	2	294	498	2790	3520	NN3026K/W33		130	156.5	182	140	190	190	2	5.76

Double row cylindrical roller bearings
d130~260mm



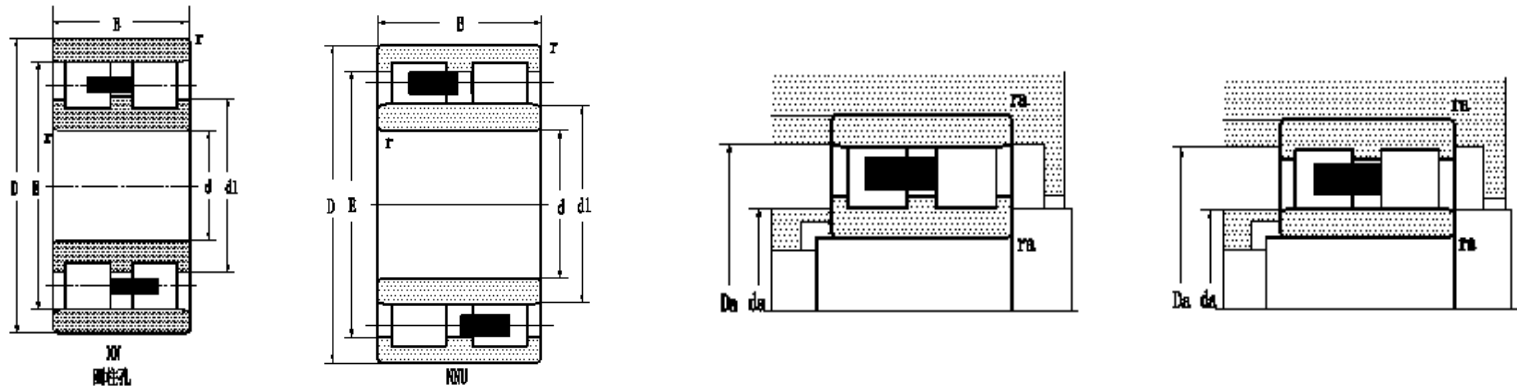
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal		Other dimensions					Mass
mm				kN		r/min		present	original	mm		mm					kg
d	D	B	rmin	dynamic	static	grease	oil			d1		E	damin	Damax	Dbmax	ramax	
130	200	52	2	290	498	2790	3520	NN3026K/SPC9		130	156.5	182	140	190	190	2	5.87
	200	52	2	294	498	2790	3520	NN3026K		130	156.5	183.2	140	190	190	2	5.76
140	210	53	2	298	515	2000	2800	NN 3028 K	3182128	140	166.5	192	158	198	198	2	6.43
	210	53	2	298	515	2000	2800	NN 3028	3182128	140	166.5	192	158	198	198	2	6.54
160	240	60	2.1	446	776	2220	2800	NN3032K		160	190	223	170	228	228	2.1	9.14
	240	60	2.1	446	776	2220	2800	NN3032K/W33		160	190	223	170	228	228	2.1	9.07
190	260	69	2	485	1060	1900	2400	NNU 4938 K	4382938	190			200	250	250	2	10.96
200	280	80	2.1	570	1220	1900	2400	NN 4940K	4182940	200	232	259	216	265	265	2	14.1
	280	80	2.1	570	1220	1900	2400	NN 4940 K/W20	4182940Y	200	232	259	216	265	265	2	14.1
240	400	160	4	1880	3530	1300	1600	NNU 4148M	4482748H	240	346		282	240	380	3	81.8
	360	92	3	892	1610	1500	1800	NN 3048		240	281.5	330	254	346	346	2.5	32.3
260	400	104	4	1030	1920	950	1300	NN 3052 K/C9	3182152U	260	212.8	364	280	380	380	3	44.3
	400	104	4	1030	1920	950	1300	NN 3052 K	3182152	260	312.8	364	280	380	380	3	44.3
	400	104	4	1030	1920	950	1300	NN 3052	3282152	260	312.8	364	280	380	380	3	47.1

Double row cylindrical roller bearings
d260~340mm



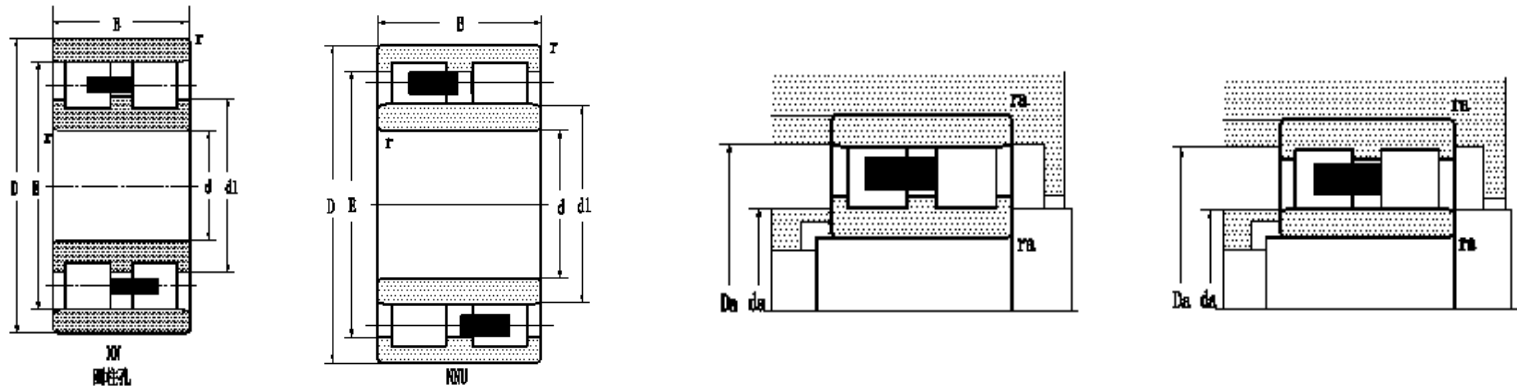
Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions						Mass
mm				kN		r/min		present	original	mm	mm						kg
d	D	B	rmin	dynamic C	static C0	grease	oil				d1	E	damin	Damax	Dbmax	ramax	
260	360	100	2.1	935	2100	1400	1700	NN 4952 K	4182952	260	300	334	272	348	348	2	29.2
	360	100	2.1	935	2100	1400	1700	NN 4952 K/YA1	4182952Y	260	300	334	272	348	348	2	29.2
	360	100	2.1	935	2100	1280	1610	NNU4952/C3W33-1		260			272	348	348	2	31.7
280	420	106	4	1020	1950	850	1100	NN 3056 K	3182156	280	333	384	300	399	399	3	49.1
	420	106	4	1020	1950	850	1100	NN 3056	3282156	280	333	384	300	399	399	3	49.87
	380	100	2.1	960	2230	1180	1480	NNU4956/C3		280			292	368	368	2	33.6
	460	180	5	2400	4250	1010	1270	NNU4156/C9		280			302	438	438	4	120
300	460	118	4	1290	2460	800	1000	NN 3060	3282160	300	360.4	418	320	440	440	3	71.7
	460	118	4	1290	2460	800	1000	NN 3060/YA1	3282160Y	300	360.4	418	320	440	440	3	71.2
	460	118	4	1290	2460	800	1000	NN 3060 K	3182160	300	360.4	418	320	440	440	3	69.6
320	480	121	4	1350	2670	750	950	NN 3064 K	3182164	320	380	438	340	460	460	3	75
	440	118	3	1260	3050	1100	1300	NN 4964 K	4182964	320	369	409	340	420	420	2.5	52
	440	118	3	1260	3050	1100	1300	NN 4964 K/YA1	4182964Y	320	369	409	340	420	420	2.5	52
340	520	133	5	1670	3300	700	900	NN 3068 K	3182168	340	409	473	362	498	498	4	101
	520	133	5	1670	3300	700	900	NN 3068	3282168	340	409	473	362	498	498	4	104
	460	118	3	1040	2450	1000	1200	NN 4968 K	4182968	340	385	433	354	440	440	2.5	53.8

Double row cylindrical roller bearings
d340~460mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions					Mass	
mm				kN		r/min				mm	mm					kg	
				dynamic	static	grease	oil	present	original								
d	D	B	rmin	C	C0					d1	E	damin	Damax	Dbmax	ramax		
340	460	118	3	1040	2450	1000	1200	NN 4968 K/YA1	4182968Y	340	385	433	354	440	440	2.5	53.8
360	540	134	5	1630	3240	670	850	NN 3072	3282172	360	429	493	382	518	518	4	106
	540	134	5	1630	3240	670	850	NN 3072 K	3182172	360	429	493	382	518	518	4	106
	480	118	3	1130	2810	840	1060	NNU4972K		360				374	466	2.5	57.8
380	560	135	5	1590	3240	630	800	NN 3076	3282176	380	447	515	424	534	534	3.5	114
	320	194	5	2700	5800	500	700	NN 3176 V	3202776	380	463	560	424	570	570	4	221
	560	135	5	1650	3240	720	900	NN3076K	3182176	380	447	515	424	534	534	4	110
	560	135	5	1650	1990	720	900	NN3076K/W33		380	447	515	424	534	534	4	110
	540	180	4	2500	5690	740	930	NNU4076X1/C3W33XYA3		380			400	520	520	3	132
400	540	106	4	1240	2400	780	980	NN 3980 K	3182980	400	454	505	430	510	510	3	71.3
	540	106	4	1240	2400	780	980	NN 3980 K/YA1	3182980Y	400	454	505	430	510	510	3	71.3
	600	148	5	1980	3660	700	880	NN 3080 K	3182180	400	477	549	450	555	555	4	143
	600	148	5	1980	3660	700	880	NN 3080	3282180	400	477	549	450	555	555	4	147
460	680	163	6	2470	5070	450	560	NN 3092 K	3182192	460	543	623	486	654	654	5	204
	680	163	6	2470	5070	450	560	NN 3092	3182192	460	543	623	486	654	654	5	204
	620	160	4	2120	5500	700	800	NNU 4992/YA	4482992	460	568		486	600	600	3	136

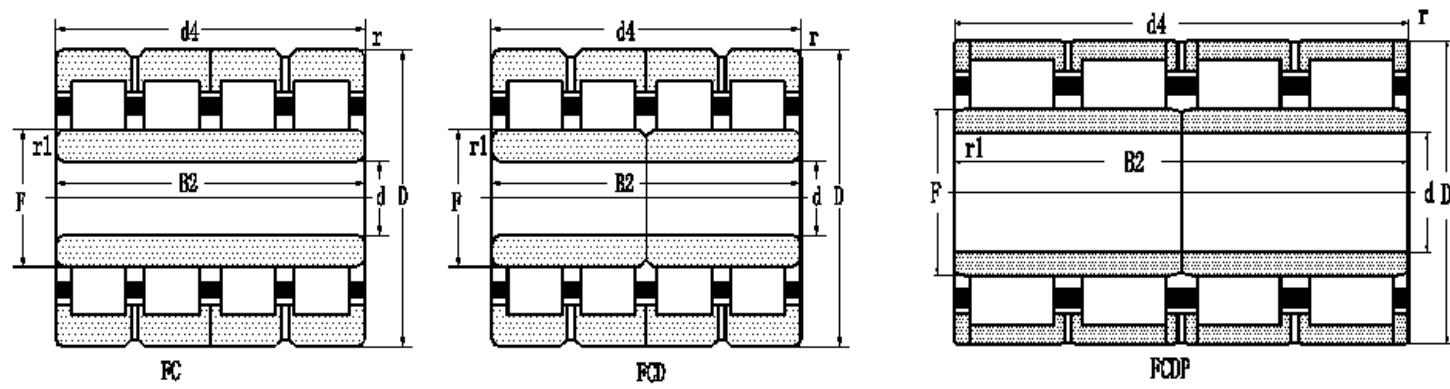
Double row cylindrical roller bearings
d480~800mm



Boundary dimensions				Basic load ratings		Limiting speeds		Bearing designations		Journal	Other dimensions					Mass	
mm				kN		r/min		present	original	mm	mm					kg	
d	D	B	rmin	dynamic C	static C0	grease	oil				d1	E	damin	Damax	Dbmax		ramax
460	680	163	6	2470	5070	530	670	NN 3092	3182192	460	543	623	486	654	654	5	202
500	670	170	5	2210	6100	700	800	NNU 49/500/YA1	44829/500	500	616		525	650	650	4	166
530	710	136	5	2270	5130	470	590	NN39/530K		530	589.5	663	555	685	685	4	149
	760	260	6	5353	12834	440	550	NNU6/530/C3W33XYA3		530			560	730	730	5	387
560	750	140	5	2370	4860	470	590	NN 39/560	32829/560	560	633	705	600	710	710	4	188
	780	180	6	2400	6400	450	560	NN 6/560	2827/560	560	640	725	600	740	740	5	266
	820	195	6	2460	6560	340	430	NN 30/560 KF1	31821/560W	560	659	755	600	780	780	5	341
	820	195	6	3620	7890	390	490	NN30/560KF1/W33		560			600	780	780	5	336
	820	195	6	3620	7890	390	490	NN30/560F1/W33		560	659	755	600	780	780	5	347
600	800	200	5	3450	10400	400	500	NN 49/600 K	41829/600	600	675	755	640	764	764	4	257
670	980	230	7.5	4620	9360	200	300	NN 30/670 KF1	31821/670W	670	788	900	735	930	930	6	597
800	980	180	6	4300	14400	250	310	SLx800x980x180PX1		800	869	917	830	950	950	5	295

Four-row cylindrical roller bearings

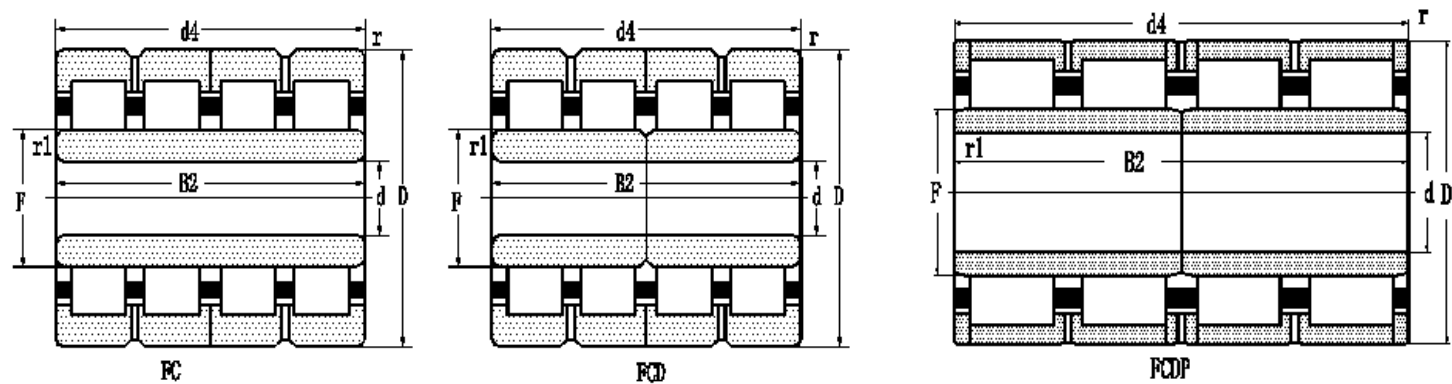
d90~220mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Other dimensions					Mass
mm						kN		present	original	mm	mm					kg
d	D	B2	d4	rmin	r1min	dynamic	static				d1	E	damin	Damax	Dbmax	
90	140	70	70	1.5	1.1	345	820	FC182870		90		97	133	133	1	4.08
100	140	104	104	1.1	1.5	333	793	FC2028104		100		107	133	133	1.5	5.18
140	210	125	125	2	2	622	1270	FC2842125		140		150	200	200	2	15.6
	210	155	155	2	2	786	1710	FC2842155		140		150	200	200	2	18.9
150	225	120	120	2	2	658	1289	FC3045120		150		160	215	215	2	15.9
160	230	130	130	2	2	1000	1560	FC3246130		160		170	220	220	2	19.8
170	260	192	192	2.1	2.1			FC3452192/C9	672734KU	170		182	248	248	2	36.5
180	260	168	168	2.1	2.1	1270	2250	FC3652168/c9	652736U	180		192	248	248	2	29.4
190	270	200	200	2.1	2.1	1660	3100	FC3854200		190		202	258	258	2	38.3
210	300	210	210	2.1	2.1	1320	3170	FC4260210		210		222	288	288	2	47.5
220	310	192	192	2.1	2.1	1830	2521	FC4462192		220		232	298	298	2	47.1

Four-row cylindrical roller bearings

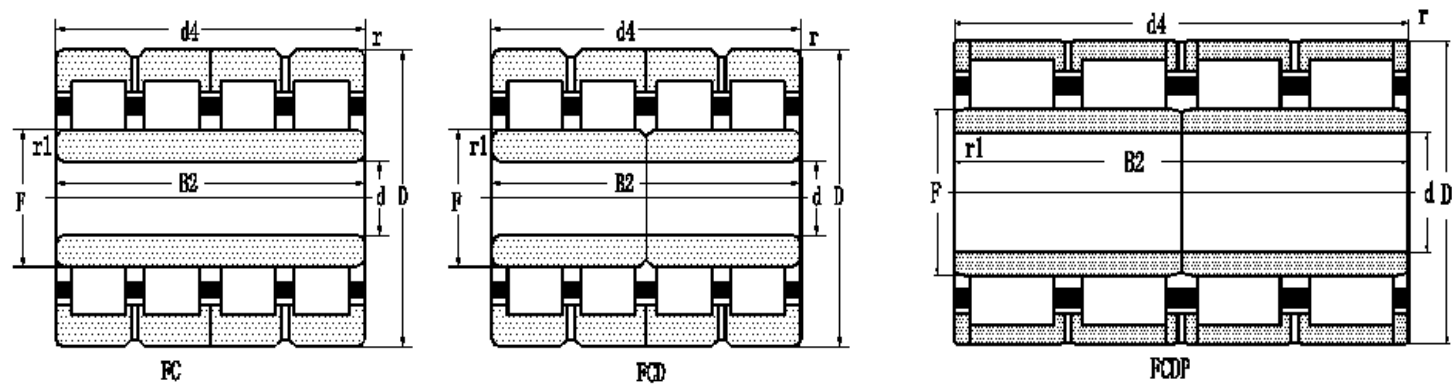
d260~380mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Other dimensions					Mass
mm						kN		present	original	mm	mm					kg
d	D	B2	d4	rmin	r1min	dynamic	static			C	C0	d1	E	damin	Damax	Dbmax
260	370	220	220	3	3	2200	4460	FC5274220		260		274	356	356	2.5	77.3
	370	220	220	3	3	2200	4460	FC5274220 A		260		274	356	356	2.5	77.3
290	410	240	240	3	4	2150	5260	FC5882240 A		290		304	396	396	2.5	102
	410	240	240	4	4	2150	5260	FC5882240		290		308	396	396	3	97.5
300	420	240	240	4	4	2060	5020	FC6084240		300		318	402	402	3	98.3
	420	150	300	3	3	2620	6860	FCD6084300		300		314	406	406	2.5	128
320	480	290	290	4	4	3420	7200	FCD6496290	6672164Y	320		342	460	460	3	186
	480	350	350	4	4	6200	10200	FCD6496350A	672764Y	320		342	460	460	3	225
	480	175	350	4	4	6200	10200	FCD6496350		320		342	458	458	3	225
340	480	350	350	4	4	5850	10327	FCD6896350A	972768Y	340	435	360	460	460	3	230
	480	175	350	4	4	5850	10327	FCD6896350		340	435	360	460	460	3	230
370	520	380	380	4	4	6550	10600	FCD74104380	672974	370	486	400	500	500	3	253
	520	380	380	3	1.5	4233	12569	FCDP74104380		370		384	506	506	1	224
380	540	400	400	4	4	4630	12600	FCD76108400		380		402	518	518	3	291

Four-row cylindrical roller bearings

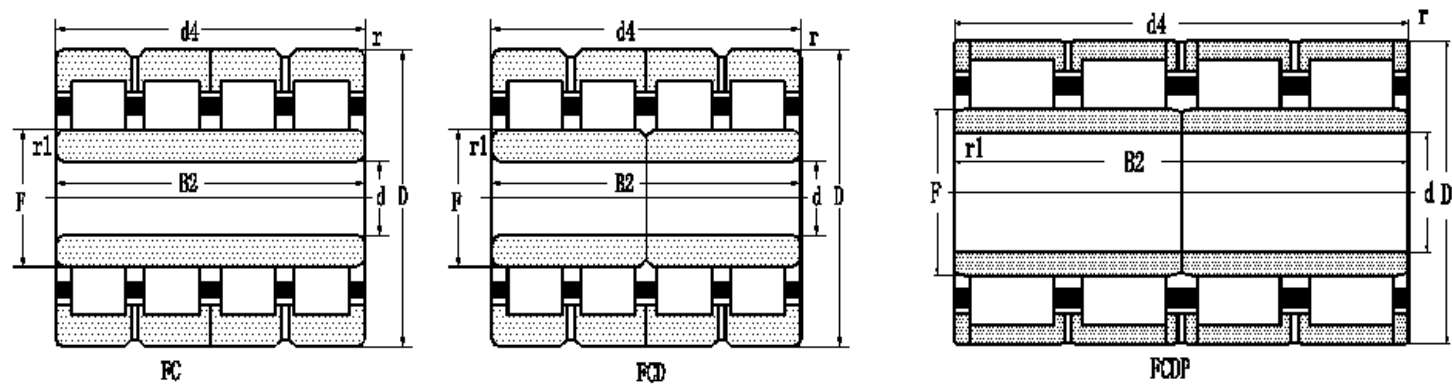
d460~748mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Other dimensions					Mass	
mm						kN				mm	mm					kg	
d	D	B2	d4	rmin	r1min	dynamic	static	present	original		d1	E	damin	Damax	Dbmax	ramax	
460	650	470	470	5	5	6860	19000	FCDP92130470M/HC		460			482	628	628	4	500
480	680	500	500	6	6	11000	15600	FCD96136500	FCD96136501	480			510	650	650	5	607
	700	400	400	5	5	6600	15100	FCD96140400	672796Y	480			500	680	680	4	508
500	670	450	450	6	6	9800	20200	FCDP100134450	6728/500Y	500			530	640	640	5	441
560	820	300	600	4	6	11400	35600	FCDP112164600		560			590	790	790	5	1071
	820	630	630	6	6	12600	35800	FCD112164630		560			590	810	790	5	1134
570	815	594	594	6	6	11400	29700	FCD114163594	9727/470Y	570	628		600	785	785	7	1066
600	870	640	640	6	6	19300	37700	FCD120174640K		600			630	840	840	5	1286
	870	640	640	6	6	19300	37700	FCDP120174640K1		600			630	840	840	5	1286
658	1075	650	650	6		17300	37700	FCDP132538350	6729/658	658			690	1000	1000	5	2400
690	980	357.5	715	4	10	15380	55330	FCD138196715		690			730	940	940	3	1860
748	1135	690	690	4		18300	43600	FCDP150227690 X3	6729/748	748			810	1100	1100	3	2570

Four-row cylindrical roller bearings

d760~950mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Other dimensions					Mass
mm						kN		present	original	mm	mm					kg
d	D	B2	d4	rmin	r1min	dynamic	static				d1	E	damin	Damax	Dbmax	
760	1080	788	788	7.5	7.5	20100	55500	FCDP152216788	9727/760	760		800	1025	1025	6	2403
800	1080	350	700	3	7.5	14600	53600	FCDP160216700/P64YA4		800		850	1030	1030	2.5	1912
830	1080	710	710	6	6	18000	50000	FCD166216710	9727/830	830		860	1030	1030	5	1764
850	1150	840	840	7.5	7.5	30500	69900	FCD170230840/C9	FCD170230840U	850		900	1100	1100	6	2529
950	1300	850	850	7	7	29000	92000	FCD190260850/YB2	6726/950	957		1000	1250	1250	6	3523



滚针及万向节轴承

Needle Roller Bearing

Gimbal Bearing

Needle Roller Bearings and Universal Joint Bearings

Needle roller bearings have a high load carrying in addition to their low cross-section and stiffness. They are especially suitable for bearing arrangements where radial space is limited. Because needle roller bearings only carry pure radial load and can not limit the axial displacement of shaft relative to the housing. It is important to ensure that inner ring axis and outer ring must be aligned during mounting the bearings.

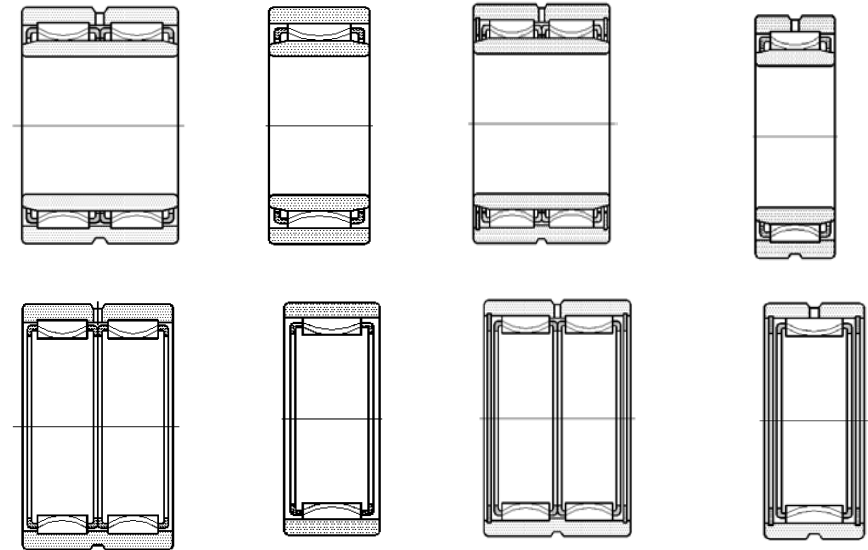
LYC standard needle roller bearings are type NA. They have single row and double row designs. Depending on applications, either single row or double row needle roller bearings can be made with inner ring as type NA or without inner ring as type RNA. Constructive feature is the bearing with ribs or retaining snap rings at both sides of outer ring, and inner ring without ribs. The larger needle roller bearings have an annular groove and a lubricating hole in outer ring. Outer ring, needle roller and cage assembly of standard needle roller bearing are non-separable unit. Besides types of NA and RNA, LYC can provide full complement needle roller bearing of type RNAV and needle roller bearing with cageless of type NAV.

LYC also can provide long cylindrical roller bearings of type NAOL or NAL for customers. Operation feature of long cylindrical roller bearings is the same as that of needle roller bearings. For its cross section is larger than that of needle roller bearings, long cylindrical roller bearings are more suitable for heavy load applications.

Needle roller bearings have a pressed steel cage or machined solid cage. Structure of cage will be determined by bearings in different applications.

In order to prevent detrimental sliding movement caused by centrifugal force between roller and raceway during bearing in high speed, the bearing should be subjected to a given minimum radial load,

the requisite minimum radial load to be applied can be estimated from:



$$Fr' = 0.02C$$

Where

Fr' — minimum radial load, N

C — basic dynamic load rating, N

Because the bearings only carry pure radial load, equivalent dynamic load is same as equivalent static load. Then

$$P = P_0 = Fr$$

Where

P — equivalent dynamic load, N

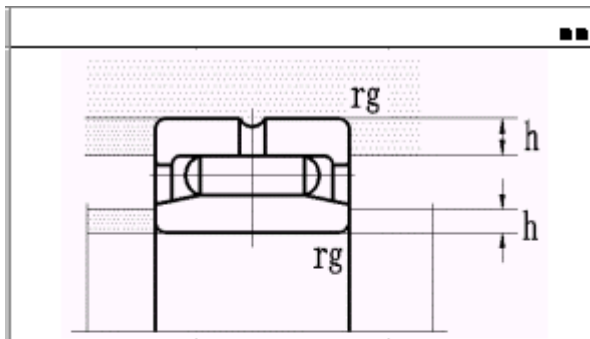
P_0 — equivalent static load, N

Fr — radial load, N

For correct mounting and using bearings, the bearings must be ensured to effectively fit tightly against shaft shoulder and housing shoulder. Mounting dimensions are recommended to refer to the following

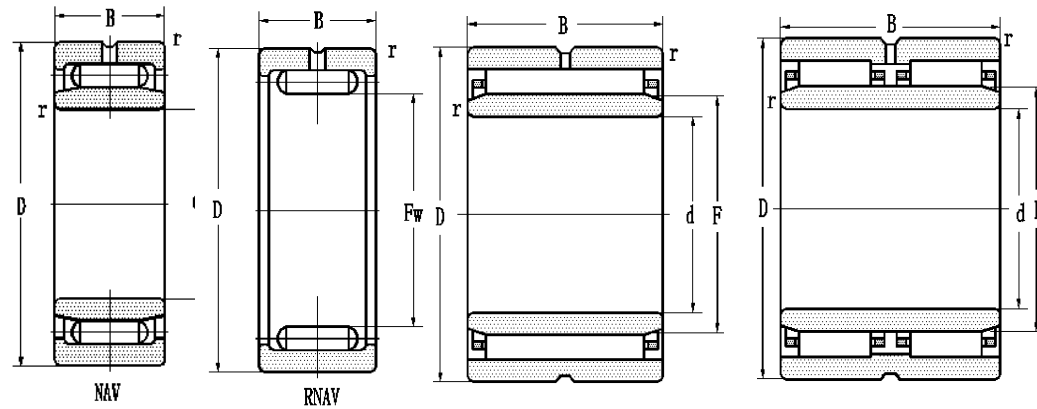
table:

Universal joint bearings which are which are widely used in automobile and other machinery industry, are usually without inner ring. They can be divided into two designs, one with rubber seal and another without seal ring. Universal joint bearings without inner ring for automobile have three different structures, such as types of 7040/00, 8040/00, 9040/00. And types of 604000 or 604000RS are used for universal joint crosses of heavy machinery, machinery etc. With rings specially heat treated, they can carry heavier impact loads. Because universal joint bearings have thin section and take small space, the structures of universal joint crosses can be simplified and rsduced.



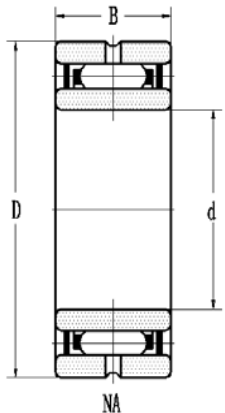
r	rg	h
min	max	min
0.15	0.15	0.8
0.3	0.3	1
0.8	0.8	2
1	1	2.5
1.1	1	2.25
1.5	1.5	4
2	2	5
2.1	2	5.5
3	2.5	6

**Single row needle roller bearings with ribs
on the outer ring and long roller bearings**



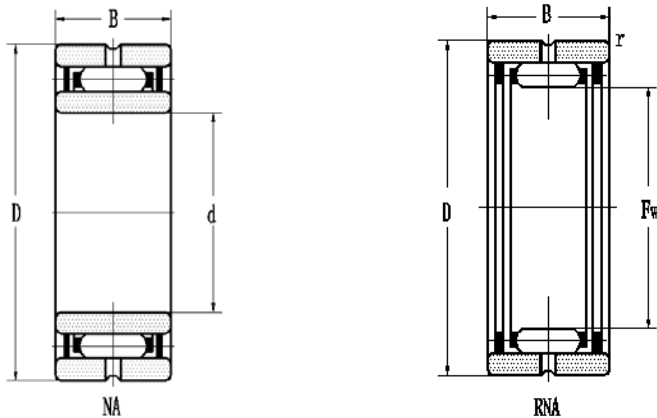
Boundray Dimensions					Basic load ratings		Limiting speeds		Bearing designation		mass
mm					kN		r/min		present	original	kg
d	Fw	D	C	rmin	C	Co	grease	oil			
15		33	12	0.3	9.2	11.5	10000	12000	NA602X3		0.053
45		72	18	0.6	45.4	56.7	8547	10769	NAV609	74809K	0.331
50		72	40	0.6	62.9	133			NA6910A.R200.250.S3		0.551
50		90	35	1.1	48.4	53.6	1540	2090	NAV610	74710	1.19
55		85	20	1.1	63	78.8	7143	9000	NAV611	74811K	0.483
75		105	54	1	143	307			NA6915A.R200.250.S3		1.44
100		135	40	1.1	81.6	242	825	1100	NAV620	74720	1.9
130		180	50	1.5	228	515	660	880	NAV4926	4074926	4.48
140		175	35	1.1	133	340	500	600	NA 4828		2
150		210	60	2	150.7	506	528	693	NAV4930	4074930	7.29
200		280	60	2.5	165	616	418	605	NAV3940	3074940	13.1
280		350	69	2	510	1390	250	450	NA4856		16.3
280		380	75	2.5	220	770	264	462	NAV3956	3074956	27.1
300		380	80	2.1	660	1810	300	500	NA4860		23.2
320		400	80	2.1	675	1900	430	650	NA4864		24.6
320		410	75	2.5	330	1210	440	660	NAV664	74764U	29
340		420	80	2.1	690	1990	460	680	NA4868		26.5
500		620	118	3	1430	4124	110	154	NAV48/500	40748/500	93.5
1400		1700	175	7.5	3960	15329			NAV28/1400	20748/1400	930
	32	45	32	0.5	25.2	37.3	2860	3960	RNAV606	84906	0.166
	151.5	180	50	1.5	228	515	660	880	RNAV4926	4084926	2.66

Single row needle roller bearings with spring locked ring on the outer ring
d12~140mm



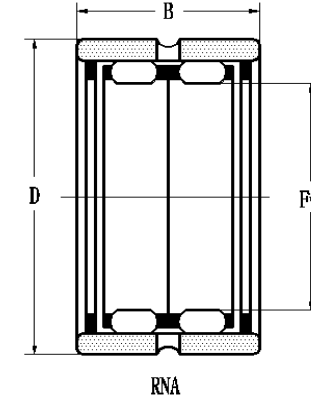
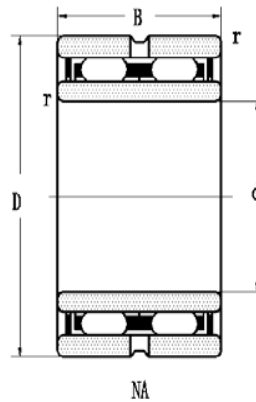
Boundray Dimensions					Basic load ratings		Limiting speeds		bearing designations		mas
		mm			kN		r/min				kg
	Fw	D	B	r	dynamic	static	grease	oil	present	original	
d					C	Co					
12		24	13	0.3	10.1	11.7	15000	23000	NA4901A	4524901	0.0303
20		37	17	0.3	21.3	25.5	11000	16000	NA4904A	4524904K	0.0851
25		42	17	0.3	24	31.5	8500	13000	NA4905A	4524905	0.0963
30		47	17	0.3	25.5	35.5	7500	11000	NA4906A	4524906	0.109
35		55	20	0.6	32	50	6600	9500	NA4907A	4524907	0.179
40		65	22	0.6	43.5	66.5	5500	8500	NA608A	524708	0.315
40		62	22	0.6	43.5	66.5	5500	8500	NA4908A	4524908	0.266
45		68	22	0.6	45	72	5500	8000	NA4909A	4524909	0.208
50		72	22	0.6	48	80	5000	7000	NA4910A	4524910	0.319
55		85	25	1	58.5	99.5	4300	6500	NA611A	524711	0.562
55		80	25	1	58.5	99.5	4300	6500	NA4911A	4524911	0.448
65		90	25	1	62.5	112	3700	5500	NA4913A	4524913	0.521
70		100	30	1	85.5	156	3300	5500	NA4914A	4524914	0.825
80		110	30	1	90.5	174	2900	4400	NA4916A	4524916	0.91
85		120	35	1.1	112	237	2500	3800	NA4917A	4524917	1.39
90		125	35	1.1	116	252	2500	3800	NA4918A	4524918	1.43
110		150	40	1.1	149	315	2100	3200	NA4922A	4524922	2.28
120		165	45	1.1	192	395	2000	3000	NA4924A	4524924	2.96
140		175	35	1.1	133	340	1700	2600	NA4828A	4524828	2.17

Single row needle roller bearings with spring locked ring on the outer ring
d170~2800mm



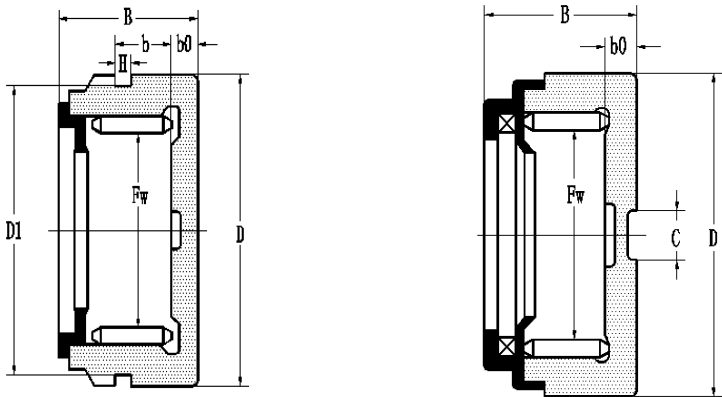
Boundray Dimensions mm					Basic load ratings kN		Limiting speeds r/min		bearing designations		Mas kg
d	Fw	D	B	r	dynamic C	static Co	grease	oil	present	original	
170		215	45	1.1	185	495	1500	2200	NA4834A	4524834	4.31
180		250	45	1.1	195	540	1400	2100	NA4836A	4524836	4.6
220		270	50	1.5	242	770	1100	1700	NA4844A	4524844	7.12
260		320	60	2	375	1160	950	1400	NA4852A	4524852	11.3
280		350	69	2	455	1300	850	1300	NA4856A	4524856	15.7
	25	37	17	0.3	31.3	25.5	11000	14000	RAN4904A	4624904	0.061
	30	42	17	0.3	24	31.5	8500	13000	RNA4905A	4624905	0.0677
	32	42	20	0.3	23.5	37.5	8500	13000	RNA6/28A	624706	0.0807
	35	47	17	0.3	25.5	35.5	7500	11000	RNA4906A	4624906	0.0744
	37	52	22	1	30	42	8000	14000	RNA6/32	624707	0.14
	42	55	20	0.6	32	50	6500	9500	RNA4907A	4624907	0.115
	48	62	22	0.6	43.5	66.5	5500	8500	RNA4908A	4624908	0.171
	52	68	22	0.6	45	72	5500	8000	RNA4909A	4624909	0.209
	55	68	25	1	41	82	5500	7500	RNA6/48A	624711	0.199
	58	72	22	0.6	48	80	5500	7000	RNA4910A	4624910	0.207
	80	100	30	1	85.5	156	3300	5500	RNA4914A	4624914	0.55
	100	120	35	1.1	112	237	2500	3800	RNA4917	4624917	0.798

Double row needle roller bearings with spring locked ring on the outer ring
d25~80mm



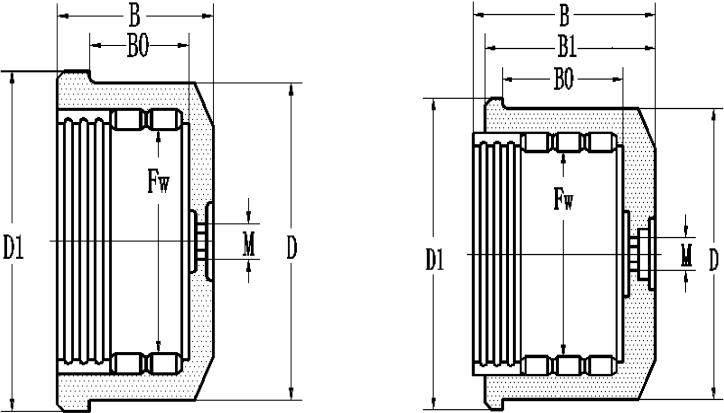
Boundray Dimensions mm					basic load ratings kN		Limiting speeds r/min		Bearing designations		mass kg
d	Fw	D	B	r	dynamic C	static Co	grease	oil	present	original	
25		42	30	0.3	41.5	63	8500	13000	NA6905A	6534905	0.167
30		47	30	0.3	44	71.5	7500	11000	NA6906A	6534906	0.202
35		55	36	0.6	57.5	106	6500	9500	NA6907A	6534907	0.329
40		62	40	0.6	72	137	5500	8500	NA6908A	6534908	0.488
45		68	40	0.6	76	149	5000	7500	NA6909A	6534909	0.544
80		110	54	1	149	325	2900	4400	NA6916A	6534916	1.67
	20	32	30	0.3	17.6	12.8	13000	20000	RNA602A	6634102	0.0938
	22	30	30	0.3	18.6	28.8	12000	18000	RNA6903X2A	634704	0.059
	25	37	30	0.3	36.5	50.5	11000	16000	RNA6904A	6634904	0.108
	30	42	30	0.3	41.5	63	8500	13000	RNA6905A	6634905	0.112
	32	45	30	0.5	43	67	8500	13000	RNA69/28A	634906	0.138
	35	47	30	0.3	44	71.5	7500	11000	RAN6906A	6634906	0.143
	42	55	36	0.6	57.5	106	6500	9500	RNA6907A	6634907	0.211
	52	68	40	0.6	76	149	5000	7500	RNA6909A	6634909	0.38

**Needle roller bearings without inner ring
for universal joint of automobile**



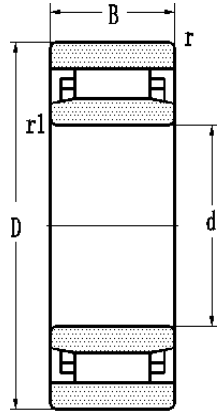
Boundray Dimensions mm								bearing designations		mass kg
Fw	D	D1	B	b	b0	H	C	present	original	
16.3	30	27.5	21	12.5	3.95	3		57049/16	704702	0.0701
15.2	28	25.7	19	11	4.25	2.5		57049/15	704902	0.06
14	24		16.6		3			58049/14	804902	0.0301
14	24		16.6		3			58049/14/YA	804902K	0.035
22	35		3		4		10	58049/22	804704	0.0949
25	39		28		5		9.9	58049/25-FS	804705	0.127
25	39		32.6		5		9.9	58049/25-RSFS	804705K	0.137
25	39		32.6		5		9.9	58049/25-RS	804705K1	0.14
25	39		32.6		5			58049/25-RS/YA	804705K2	0.145
45	62		34.4		4		9	58049/45	804709	0.435
45	62		36.5		4		9	58049/45-RS	804709	0.45
33.65	50		34.4		4		9	58049/34	804906	0.306
33.65	50		28.4		4		9	58049/34 X2	804907	0.203

**Cylindrical rollers bearings without
inner ring for universal joint**



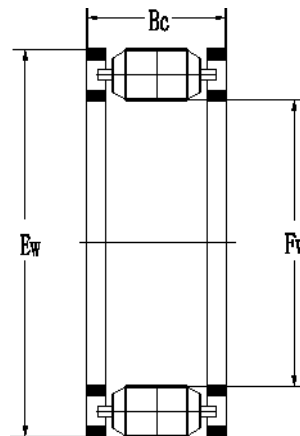
Boundray Dimensions mm							Bearing designations		Mass kg
Fw	D	D1	B	Bo	B1	M	present	original	
32.44	52	60	47	26		6	604906	604906	0.673
36.3	60	68	53	31		6	604907	604907	0.799
40.1	66	74	59	34		6	604908	604908	1.06
45.8	74	82	65	36		6	604909	604909	1.42
45.8	74	82	65	36			604909/YA3	604909K	1.43
51.5	83	91	73.5	44.5			604910/YA3	604909K	1.9
51.5	83	91	73.5	44.5		10x1	604910	604710Y	1.9
60.5	95	105	81	49.5			604912/YA3	604712	2.67
60.5	95	105	81	49.5		10x1	604912	604712Y	2.66
70	110	122	89	56			604914/YA3	604714	3.75
70	110	122	89	56		10x1	604914	604714Y	3.74
76.25	120	134	88	64			604915/YA3	604715	4.42
76.25	120	134	88	64	73		604915	607415K	4.69
80.2	124	135	96	60		10x1	604916	604716	5.18
86.8	130	142	103	69		10x1	604917	604717	5.48
100	154	166	111	76		10x1	604920	604920	9.17
109.7	164	175	105	85		10x1	604922/YB2	604722	9.2
109.7	164	175	113	78		10x1	604922	604922	9.77
158	230	250	160	110	170	10x1	604932	3-476	27.2
188.8	260	280	195	134	185	10x1	604938	3-475	37.1

Long cylindrical rollers bearing
d220~282mm



Boundray Dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		mass kg
d	D	B	b	r1	r	dynamic C	static Co	grease	oil	present	original	
220	380	175		2	2	1814.4	2268	1333	1680	NAOL644	4744	87.1
240	380	100		5	5	1054	1317.5	1290	1626	NAOL648	4748	46.6
	400	160		4	4	1736	2170	1234	1555	NAOL4148	4004748	83.8
355	470	110		3.5	3.5	1418.1	1772.6	874	1101	NAOL671	4771	53
380	485	75		3.5	3.5	846	1057.5	797	1004	NAOL3876X1	4776	38.5
450	590	100		5	5	1434.4	1793	615	763	NAOL690	4990	70.5
850	1030	136		6	6	4121	5151.6	234	295	NAOL38/850	32048/850	263
60	120	58	60	3.5	0.8	161.4	201.7	5556	7000	NAOL612WB	404712	3.29
60	120	58	60	3.5	0.8	148.9	186.2	5556	7000	NAOL612WBJ	404712K	3.17
60	120	58	60	3.5	0.8	161.4	201.7	5556	7000	NAOL612WBJW	404712F	3.32
282	334	87	118		1	829.6	1073	1299	1636	NAOL6/282WBJR	414956	16.48

Long cylindrical rollers and cage assemblies



Boundray Dimensions mm			Bearing designations		mass kg
Fw	Ew	B	present	original	
19.05	31.775	34	K19.05X31.775X34JR	64804	0.0903
19.051	28.588	36.75	K19.051X28.588X36.75JR	64903	0.068
19.051	28.588	43.25	K19.051X28.588X43.25JR	64904	0.08
20	30.02	18	K20X30.02X18JR	64704	0.0386
20.612	33.325	35	K20.612X33.325X35JR	64904K	0.1
25	38	24.7	K25X38X24.7JR	64805	0.0783
25.4	41.288	60.4	K25.4X41.288X60.4JR	64905	0.265
27.71	42.825	44.1	K27.71X42.825X44.1JR	64906	0.183
29.975	42	44.1	K29.975X42X44.1JR	64706	0.147
31.675	46.81	44.1	K31.675X46.81X44.1JR	64906K	0.217
32	52.012	49	K32X52.012X49JR	64907	0.329
52.412	71.425	43.3	K52.412X71.425X43.3JR	64911	0.441
130	138	25	K130X138X25JR	9247/130	0.212
38	43	35.7	K38X43X35.7ZWDTN1		0.0333
32	37	35.8	K32X37X35.8ZWDTN1		0.028
37	42	29.79	K37X42X29.79ZWDTN1		0.0277
82.5	92	38	K82.5X92X38		0.224
88.8	101.5	38	K88.8X101.5X38		0.348



调心滚子轴承

Spherical Roller Bearing

Spherical Roller Bearings

Spherical roller bearings are principally provided with two rows of symmetrical spherical roller and a common sphered raceway in outer ring, the two inner ring raceways are inclined at an angle to the bearing axis. The bearings have good self-aligning ability and can operate when the shaft deflection under load or the shaft misalignment in mounting and their permissible aligning angle is $1\sim 2.5^\circ$. This type of bearings has heavy load carrying capacity and anti-impact ability, in addition to radial loads, they also can carry axial loads in two directions. In general, this type of bearings permit a lower limiting speed.

LYC spherical roller bearings have two designs depending on the shape of roller cross section, they symmetrical rollers and asymmetrical rollers. Asymmetrical roller bearings are the earlier products and now are seldom to use, but for the machine maintenance. Compared with the earlier products, internal desings of symmetrical roller bearing have been improved and the parameters have been optimized. Therefore they are particularly suitable for carrying heavier axial loads and their

Operating temperature is lower, so they can rotate at higher speeds.

LYC spherical roller bearings are divided into type C and CA depending on the design of the bearing structures, type C bearings with a flangeless inner ring and a pressed steel cage, type CA with double ribbed inner ring and a machined solid cage.

In order to lubricate bearings efficiently, the spherical roller bearings with an annular groove and three oil holes in the outer ring can be provided by LYC, the bearings with this feature are suffixed with W33. According to the requirements of customers, the spherical roller bearings with lubricating oil hole in the inner ring can also be supplied by LYC.

For user to dismount and replace bearings easily, the bearing with tapered bore can be provided, the taper is 1:12, and they are identified by suffix K. To satisfy the special requirements, the bearings with bore taper 1:30 will be supplied to order and they are suffixed with K30. Bearings with tapered bore can be directly mounted on tapered journal by using locking nut, or can be mounted on cylindrical shaft with tapered adapter or withdrawal sleeve.

In bearings rotating at high speeds, to prevent detrimental sliding movement caused by centrifugal force between rollers and raceway, minimum radial load should be applied and calculated from:

$$Fr' = 0.02C$$

where

Fr' —minimum radial load, N

C —basic dynamic load rating, N

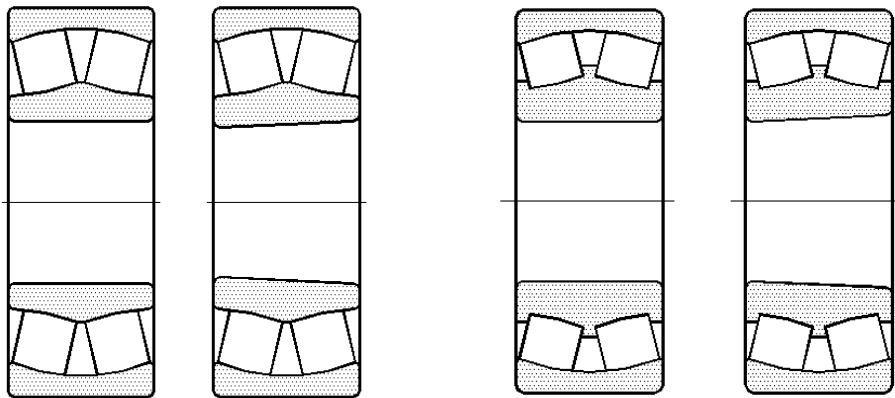
Equivalent dynamic load

$$P = Fr + Y_1 Fa \quad \text{when } Fa/Fr < e$$

$$P = 0.67Fr + Y_2 Fa \quad \text{when } Fa/Fr > e$$

where

P — equivalent dynamic load, N



F_a — axial load, N
 F_r — radial load, N
 Y_1 、 Y_2 —axial dynamic load factor
 Equivalent static load
 $P_0 = F_r + Y_0 F_a$

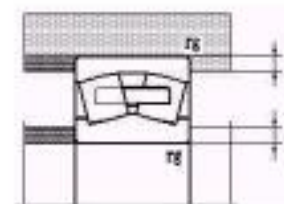
where

P_0 —equivalent static load, N
 Y_0 —axial static load factor

To mount conveniently and reliably, shoulder height of shaft fitted with the bearing with cylindrical bore and shoulder height h of housing bore and relative chamfer r_g are shown in Table 1. Mounting dimensions of tapered bore bearings with adapter or withdrawal sleeve are shown in Table 2.

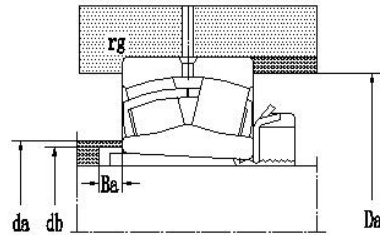
Table 1

mm



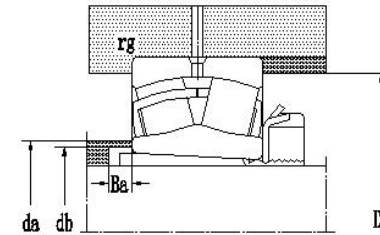
r min	r_g max	h min	
			Bearing series
		230	231, 213
		239	241, 223
		240	222, 233
			232
1	1	2.3	2.8
1.1	1	3	3.5
1.5	1.5	3.5	4.5
2	2	4.4	5.5
2.1	2.1	5.1	6
3	2.5	6.2	7
4	3	7.3	8.5
5	4	9	10
6	5	11.5	13
7.5	6	14	16
9.5	8	17	20

Table2



Bore code	Journal	Bearing series											
		222K			232K			213K			223K		
		db	da	Ba	db	da	Ba	db	da	Ba	db	da	Ba
		min	max	min	min	max	min	min	max	min	min	max	min
5	20	28	31	5									
6	25	33	37	5									
7	30	39	43	5				39	47	7			
8	35	44	48	5				40	53	5	45	52	5
9	40	50	54	7				50	59	5	50	58	5
10	45	55	59	9				55	66	5	56	63	5
11	50	60	67	10				60	72	6	61	68	6
12	55	65	71	9				65	79	6	66	74	6
13	60	70	79	8				70	85	6	72	83	6
14	60	75	84	11				75	92	6	77	86	6
15	65	80	89	12				80	98	6	82	92	6
16	70	85	94	12				85	105	6	88	98	6
17	75	91	99	12				91	111	7	94	104	7
18	80	96	106	10	100	104	18	96	117	7	100	110	7
19	85	102	112	9				102	124	7	105	115	7
20	90	108	118	8	110	116	19	108	131	7	110	124	7
22	100	118	129	6	121	129	17	118	146	9	121	143	7
24	110	128	141	11	131	139	17				131	150	7
26	115	138	151	8	142	150	21				142	162	8
28	125	149	164	8	152	162	22				152	173	8

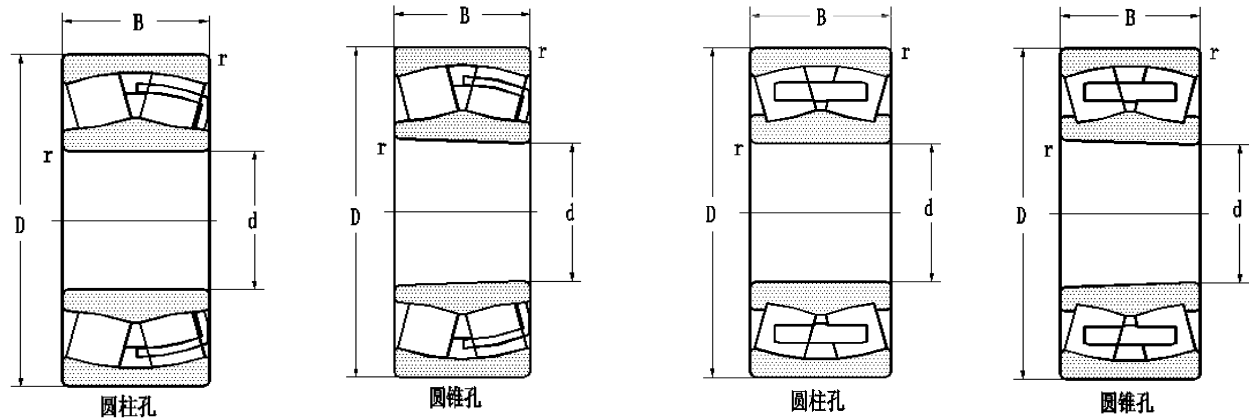
Table2



Bore code	Journal	Bearing series											
		222K			232K			213K			223K		
		db	da	Ba	db	da	Ba	db	da	Ba	db	da	Ba
		min	max	min	min	max	min	min	max	min	min	max	min
30	135	160	177	15	163	174	20				163	185	8
32	140	170	190	14	174	186	18				174	191	8
34	150	180	199	10	185	199	18				185	204	8
36	160	191	211	18	195	210	22				195	217	8
38	170	202	223	21	206	222	21				206	228	9
40	180	212	234	23	216	237	19				216	240	9
44	200	233	258	21	236	259	10				236	272	9
48	220	254	283	19	257	284	6				257	296	11
52	240	276	308	25	278	309	2				278	322	11
56	260	296	324	28	299	329	11				299	349	12
60	280	318	352	32	321	353	12						
64	300	338	378	38	343	378	12						
68	320				364	402	14						
72	340				385	424	14						
76	360				405	447	15						
80	380				427	473	15						
84	400				449	495	15						
88	410				469	516	17						
92	430				490	541	17						
96	450				512	568	18						
/500	470				534	593	18						

Spherical Roller Bearings

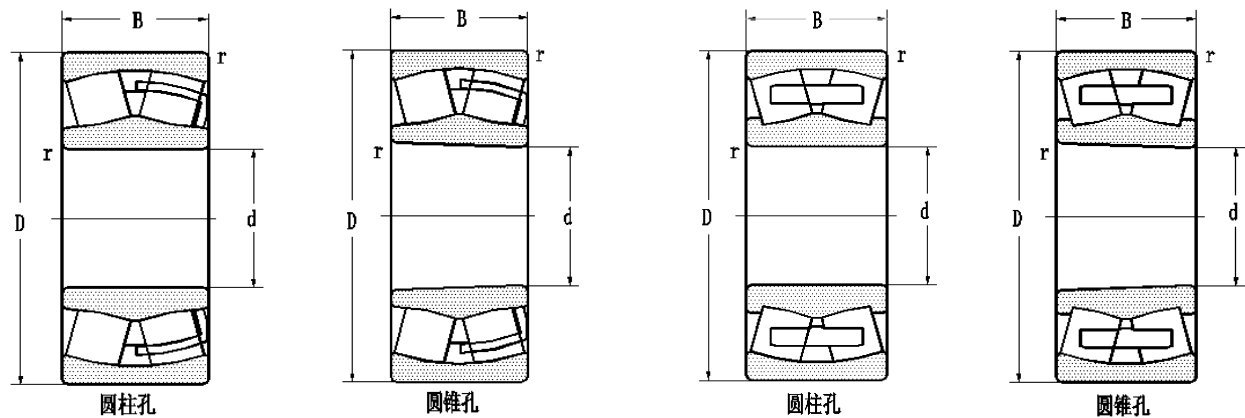
d25~55mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic		grease	oil	present		original		e	Y1	Y2	Y0	
				C	Co			cylindrical bore	tapered bore	cylindrical bore	tapered bore					
25	52	18	1	36.1	36.6	1100	9000	22205CA/W33	22205CK/W33	53505hy	153505hy	0.36	1.9	2.8	1.8	0.178
30	62	20	1	51.7	55	6000	7500	22206C/w33	22206CK/W33	53506Y	163506Y	0.332	2	3	2	0.281
40	80	23	1.1	71.4	79	6000	7500	22208C/W33	22308CK/W33	53508Y	153508Y	0.29	2.4	3.5	2.3	0.564
	90	33	1.5	112	133	4500	5600	22308C/W33	22208CK/W34	53608Y	153608Y	0.38	1.8	2.7	1.7	1.02
45	85	23	1.1	74.8	85.4	5300	6700	22209C/W33	22209CK/W33	53509Y	153509Y	0.3	2.2	3.2	2.1	0.618
	100	36	1.5	141	154	3800	4800	22309C	22309CK/W33	53609Y	153609Y	0.37	1.8	2.7	1.8	1.37
50	90	23	1.1	82	97	5000	6300	22210C/W33	22210CK/W33	53510Y	153510Y	0.25	2.7	4	2.7	0.65
	90	23	1.1	81.5	95.4	5000	6300	22210CA/W33	22210CA/W33	53510HY	153510HY	0.25	2.6	3.9	2.6	0.614
	110	40	2	150	193	3000	3800	22310C/W33	22310CK/W33	53610Y	153610Y	0.38	1.8	2.7	1.7	1.83
55	100	25	1.5	96.5	114	4500	5600	22211C/W33	22211CK/W33	53511Y	153511Y	0.25	2.7	4.1	2.7	0.88
	100	25	1.5	109	130	4500	5600	22211CA/W33	22211CAK/W33	53511HY	153511HY	0.25	2.7	4.1	2.7	0.82
	120	43	2	210	243	3200	4000	22311C/W33	22311CK/W33	53611Y	153511Y	0.37	1.8	2.7	1.8	2.38

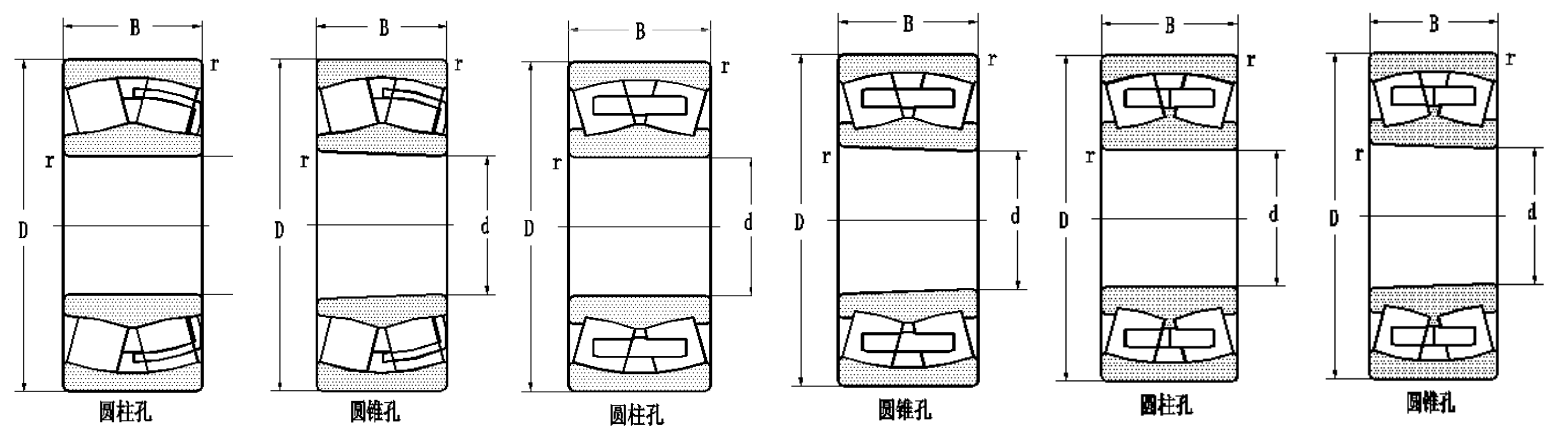
Spherical Roller Bearings

d60~90mm



Boundray dimension				Basic load ratings		Limiting speeds		Bearing designations				Calculation				mass
mm				kN		r/min						factors				kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present cylindrical bore	tapered bore	original cylindrical bore	tapered bore	e	Y1	Y2	Y0	
60	110	28	1.5	118	142	4000	5000	22212C/W33	22212CK/W33	53512Y	153512Y	0.25	2.7	4	2.7	1.22
	130	46	2.1	207	279	2700	3400	22312C/W33	22312CK/W33	53612Y	113612Y	0.36	1.7	2.5	1.6	2.95
65	120	31	1.5	144	178	3800	4800	22213C/W33	22213CK/W33	53513Y	153513Y	0.26	2.6	3.9	2.6	1.58
	120	31	1.5	140	116	3800	4800	222213CA/W33	22213CAK/W33	53513HY	153513HY	0.27	2.5	3.7	2.1	1.52
	140	48	2.1	260	305	2600	3400	22313CA/W33	22313CAK/W33	53613Y	153613Y	0.36	1.9	2.8	1.8	3.54
70	125	31	1.5	154	208	3600	4500	22214C/W33	22214CK/W33	53514Y	153514Y	0.24	2.8	4.2	2.8	1.69
	150	51	2.1	300	369	2400	3200	22314C/W33	22314CK/W33	53614Y	153614Y	0.35	2	2.9	1.9	4.35
75	130	31	1.5	153	200	3400	4300	22215C/W33	22215 CK/W	53515Y	153515Y	0.22	3	4.5	2.9	1.73
	160	55	2.1	350	427	2200	3000	22315C/W33	22315CKW33	53615Y	153615Y	0.35	1.9	2.9	1.8	5.4
80	140	33	2.3	171	221	3200	4000	2216C/W33	22216CK/W33	53516Y	15316Y	0.22	3	4.5	2.9	2.23
	170	58	2.1	363	441	2000	2800	22316C/W33	22316 CK/W33	53616Y	153616Y	0.34	2	2.9	1.9	6.59
85	150	36	2	204	262	3000	3800	22217 C/W33	22217CK/W33	53517Y	153517Y	0.23	3	4.4	2.9	2.8
90	160	40	2	245	330	2600	3400	22218C/W33	22218CK/W33	53518Y	153518Y	0.23	2.9	4.3	2.8	3.24

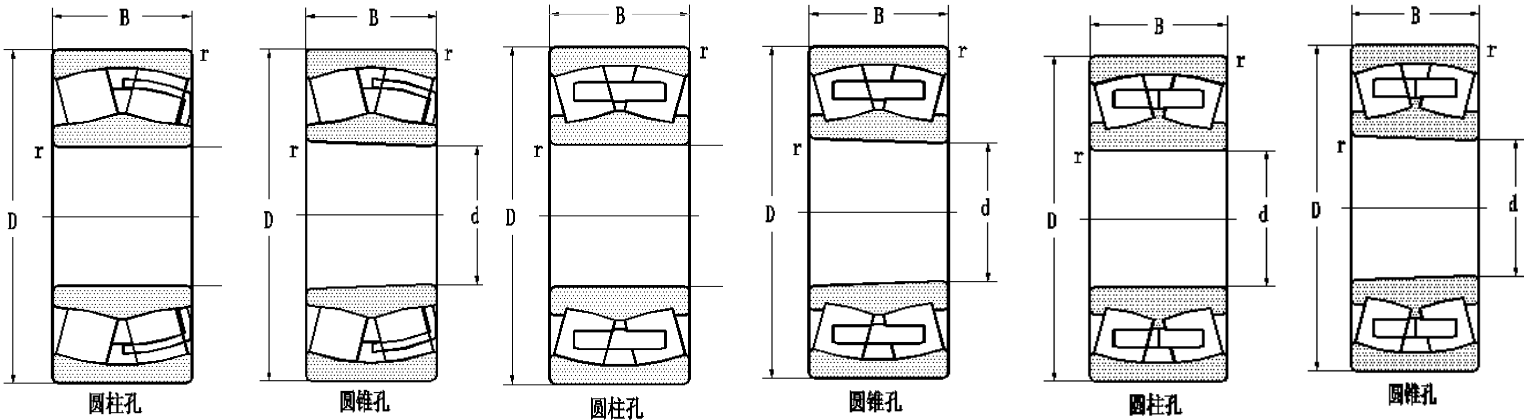
Spherical Roller Bearing
d90~110mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic		grease	oil	present		original		e	Y1	Y2	Y0	
				C	Co			cylindrical bore	tapered bore	cylindrical bore	tapered bore					
90	160	52.4	2	340	490	1900	2600	23218C/W33	23218CK/W33	3053218Y	3153218Y	0.31	2.1	3.2	2.1	4.61
	190	64	3	463	592	1800	2400	22318C/W33	22318CK/W33	53618Y	153618Y	0.34	2	3	2	9.12
	190	64	3	483	594	1800	2400	22318 CA/W33	22318CAK/W33	53618HY	153618HY	0.35	2	2.9	1.9	8.72
95	170	43	2.1	284	380	2400	3200	22219 C/W33	22219CK/W33	53519Y	1535195	0.24	2.8	4.2	2.8	4.2
100	180	46	2.1	300	403	2200	3000	22220 C/W33	22220 CK/W33	53520 Y	153520 Y	0.27	2.5	3.7	2.1	4.95
	180	60.3	2.1	402	582	1700	2200	23220 C	23220 CK	3053220	3153220	0.33	2.1	3.1	2	6.74
	180	60.3	2.1	420	605	1700	2200	23220 C/W33	23220CK/W33	3053220Y	3153220Y	0.33	2.1	3.1	2	6.71
	215	73	3	590	776	1700	2200	22320 C/W33	22320CK/W33	53620 Y	153620Y	0.36	1.9	2.8	1.8	13.6
	215	73	3	601	785	1700	2200	22320 CA/W33	22320 CAK/W33	53620 HY	153620 HY	0.35	2	2.9	1.8	12.4
105	175	56	2	310	540	1900	2600	23121W33	2312K/W33	3003721Y	3113721Y	0.32	2.1	3.1	2	6.64
	175	56	2	310	540	1900	2600	23121 N		3203721		0.32	2.1	3.1	2	6.59
110	170	45	2	293	465	1900	2700	23022/W33	23022 K/W33	3003122 Y	3113122 Y	0.26	2.6	3.9	2.5	4.2
	170	45	2	293	465	1900	2700	23022N		3203122		0.26	2.6	3.9	2.5	4.18
110	180	56	2	385	630	1700	2300	23122/W33	23122 K/W33	3003722Y	3113722Y	0.32	2.1	3.1	2.1	6.25

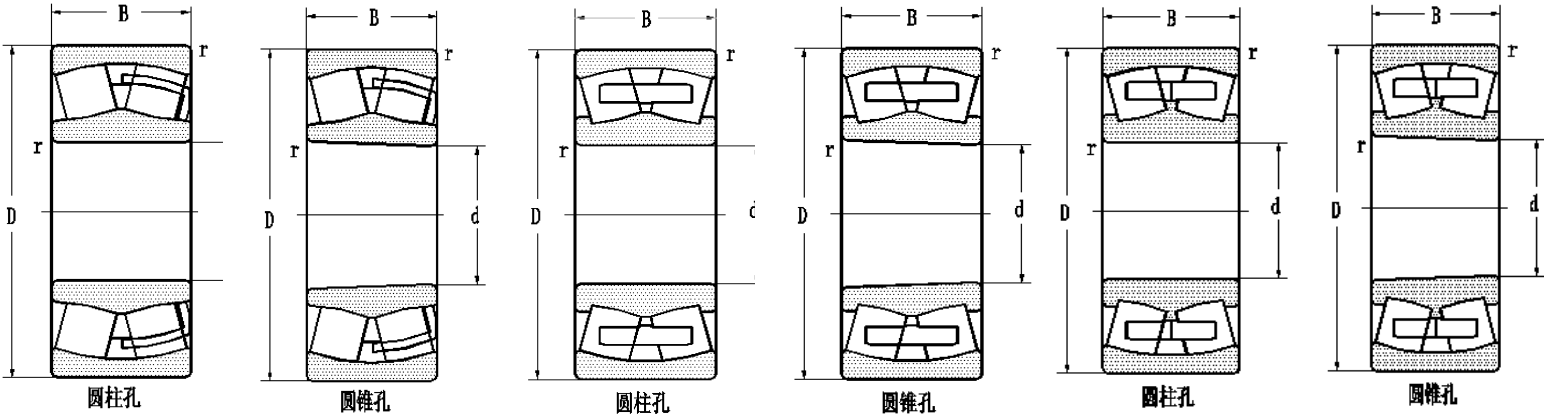
Spherical Roller Bearings

d110~120



Boundray dimension				Basic load ratings		Limiting speeds		Bearing designations				Calculation				mass
mm				kN		r/min						factors				kg
d	D	B	rmin	dynamic	static	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore	e	Y1	Y2	Y0	
110	180	56	2	341	562	1700	2300	23122 N		3203722		0.32	2.1	3.1	2.1	6.2
	180	69	2	460	750	1000	1400	24122 C/W33	24122K30/W33	4053722 Y	9453722Y	0.35	1.9	2.9	1.9	6.88
	180	69	2	435	721	1000	1400	24122CA/W33	24122CAK30/W33	4053722H	4453722HY	0.36	1.9	2.8	1.8	6.86
	180	69	3	460	750	1000	1400	24122 C/SOYA		4053722KT		0.35	1.9	2.9	1.9	6.9
	200	53	2.1	363	531	2000	2800	22222 C/W33	22222 CK/W33	53522 Y	153522 Y	0.25	2.7	4	2.6	7.25
	200	69.8	2.1	515	760	1600	2000	23222 C/W33	23222 CK/W33	3053222Y	3153222 Y	0.35	1.9	2.9	1.9	9.66
	240	80	3	739	982	1600	2000	22322 CA/W33	22322CAK/W33	53622HY	153622HY	0.35	1.9	2.9	1.9	17.5
	240	92.1	3	799	998	1400	1700	23322/W33	23322K/W33	3003322Y	3113322Y	0.44	1.5	2.3	1.5	23.6
120	180	46	2	315	527	1800	2500	23024/W33	23024 K/W33	3003124Y	4453123HY	0.25	2.7	4.1	2.6	4.63
	180	46	2	315	527	1800	2500	23024N		3203124		0.25	2.7	4	2.6	4.61
	180	60	2	392	370	1500	2000	24024CA/W33	24024CAK30/W33	4053124HY	4453124Y	0.3	2.2	3.3	2.1	5.41
	180	60	2	362	650	1600	2000	24024C/W33		4053124Y		0.3	2.2	3.3	2.1	5.41
120	200	62	2	360	580	1600	2100	23124/w33	23124K/W33	3003724Y	3113724Y	0.32	2.1	3.1	2	7.61
	200	62	2	360	580	1600	2100	23124N		3203724		0.32	2.1	3.1	2	7.57
	200	80	2	561	919	1500	1800	24124CA/W33	24124CAK30/W33	4053724HY	4453724HY	0.38	1.8	2.7	1.7	10
	200	80	2	575	950	800	1000	24124C/W33	24124CK30/W33	4053724Y	4453724Y	0.38	1.8	2.6	1.7	10
	215	58	2.1	452	650	1900	2600	22224C/W33	22224CK/W33	53524Y	153524Y	0.25	2.7	4.1	2.7	9.08

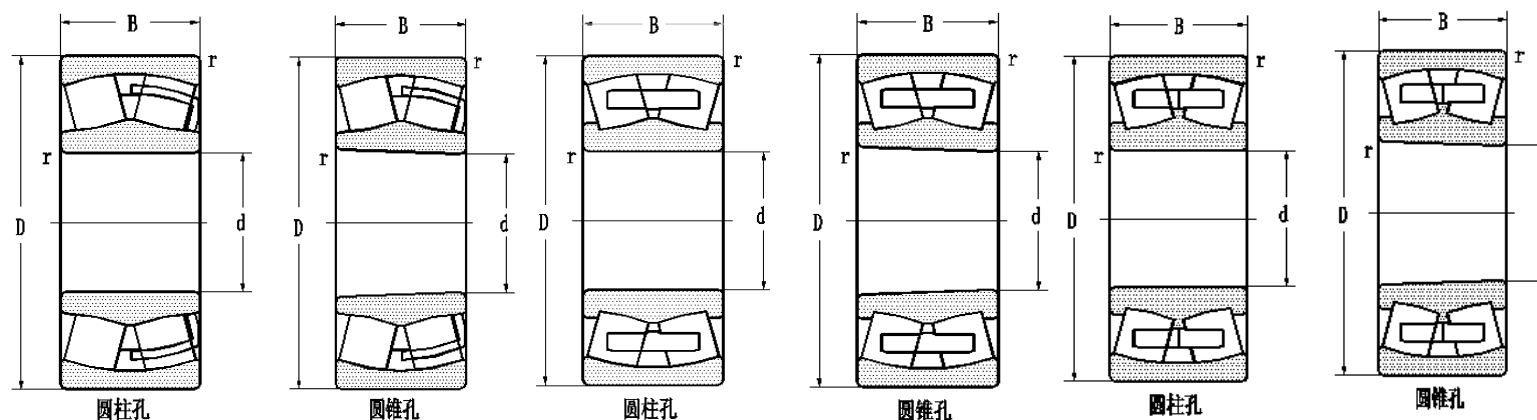
Spherical Roller Bearing
d120~140mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore	e	Y1	Y2	Y0	
120	215	76	2.1	630	970	1500	1900	23224C/W33	23224CK/W33	3053224Y	3155324Y	0.35	1.9	2.9	1.9	12
	260	86	3	842	1110	1500	1900	22324C/W33	22324CK/W33	53624Y	53624HY	0.4	2	3	2	22.7
130	200	52	2	400	655	1700	2300	23026/W33	23026K/W33	3003126Y	3113126Y	0.26	2.6	3.9	2.6	6.8
	200	52	2	400	655	1700	2300	23026N		3203126		0.26	2.6	3.8	2.5	6.72
	210	64	2	473	777	900	1200	23126CA/W33	23126CAK30/W33	4053726HY	4453726HY	0.36	1.9	2.8	1.8	9.55
	210	80	2	569	970	900	1200	24126C/W33	24126CAK30/W34	4053726Y	4453727Y	0.36	1.9	2.8	1.8	10.9
	230	64	3	530	776	1800	2400	22226C/W33	22226CK/W33	53526Y	153626Y	0.35	1.9	2.9	1.9	11.7
	230	80	3	700	1080	1300	1700	23226C/W33	3153226CK/W33	3053226Y	3153226Y	0.33	2	3	2	14.4
130	280	93	4	930	1250	1300	1700	22326CA/W33	22326CAK/W33	53626HY	153626HY	0.35	1.9	2.9	1.9	27.1
140	210	53	2	420	715	1600	2100	23028/W33	23028K/W33	3003128Y	3113128Y	0.24	2.8	4.2	2.7	7.65
	210	53	2	395	705	1600	2100	23028N		3203128		0.24	2.8	4.2	2.7	7.64
	210	69	2	525	945	1400	1800	24028C/W33	24028CK/W33	4053128Y	4153128Y	0.28	2.4	3.6	2.3	8.09
	225	68	2.1	560	925	1250	1600	23128CA/W33	23128CAK/W33	3053728HY	3153728HY	0.28	2.4	3.6	2.3	10.4
	225	85	2.1	620	1060	1200	1600	24128CA/W33	24128CAK30/W33	4053128HY	4453728HY	0.36	1.9	2.8	1.9	12.9
	250	68	3	636	897	1500	1900	22228CA/W33	22228CAK/W33	53528HY	153528HY	0.26	2.6	3.8	2.5	14.1
	250	88	3	835	1300	1200	1600	23228C/W33	23228CK/W33	3053228Y	3153228Y	0.35	2	2.9	1.9	18.8

Spherical Roller Bearing

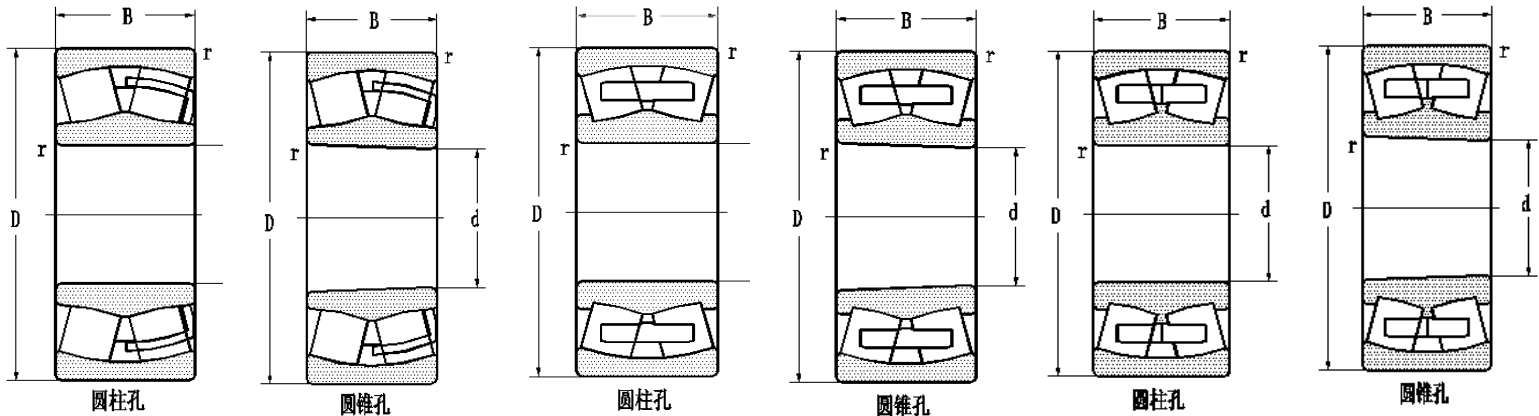
d140~170mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present cylindrical bore	tapered bore	original cylindrical bore	tapered bore	e	Y1	Y2	Y0	
140	300	102	4	1160	705	1100	1500	22328CA/W33	22328CAK/W33	53628HY	153628HY	0.35	1.9	2.9	1.9	35.9
150	225	56	2.1	470	815	1500	1900	23030/W33	23030K/W33	3003130Y	3113130Y	0.25	2.7	4.1	2.7	8.85
	250	80	2.1	671	1170	1100	1400	23130CA/W33	23130CAK/W33	3053730HY	3153730HY	0.3	2.2	3.3	2.2	18.2
150	250	100	2.1	890	1530	800	1000	24130C/W33	24130CK30/W33	4053730Y	4453730Y	0.37	1.8	2.7	1.8	20.3
	250	100	2.1	861	1420	1100	1400	24130CA/W33	24130CAK30/W33	4053730HY	4453730HY	0.38	1.8	2.7	1.7	19.5
	270	73	3	635	1035	1600	2000	22230C/W33	22230CK/W33	53530Y	153530Y	0.27	2.5	3.7	2.4	17.9
	270	96	3	975	1560	1100	1500	23230C/W33	23230CK/W33	3053230Y	3153230Y	0.35	1.9	2.9	1.9	24.3
	320	108	4	1220	1680	1000	1400	22330CA/W33	22330CAK/W33	53630HY	153630HY	0.35	1.9	2.9	1.9	41.7
160	240	60	2.1	488	854	1500	1900	23032N		3203132		0.25	2.7	4.1	2.7	13.4
	240	60	2.1	540	955	1500	1900	23032/W33	23032K/W33	3003132Y	3113132Y	0.25	2.7	4.1	2.7	13.4
	240	80	2.1	680	1260	1100	1500	24032C/W33	24032CK30/W33	4053132Y	4453132Y	0.3	2.3	3.4	2.2	12.8
	270	86	2.1	660	1280	1000	1300	23132CA/W33	23132CAK/W33	3053732HY	3153732HY	0.31	2.2	3.3	2.2	20.3
	270	109	2.1	1010	1700	700	900	24132C/W33	24132CK30/W33	4053732Y	4453732HY	0.38	1.8	2.7	1.7	25
	290	80	3	733	1230	1350	1700	22232CA/W33	22232CAK/W33	53532HY	153532HY	0.27	2.5	3.7	2.4	22.6
170	260	67	2.1	640	1040	1400	1800	23035N		3203135		0.26	2.6	3.9	2.6	14.6
	260	67	2.1	640	1090	1400	1800	23034/W33	23034 K/W33	3003134 Y	3113134	0.26	2.6	3.9	2.6	14.6

Spherical Roller Bearing

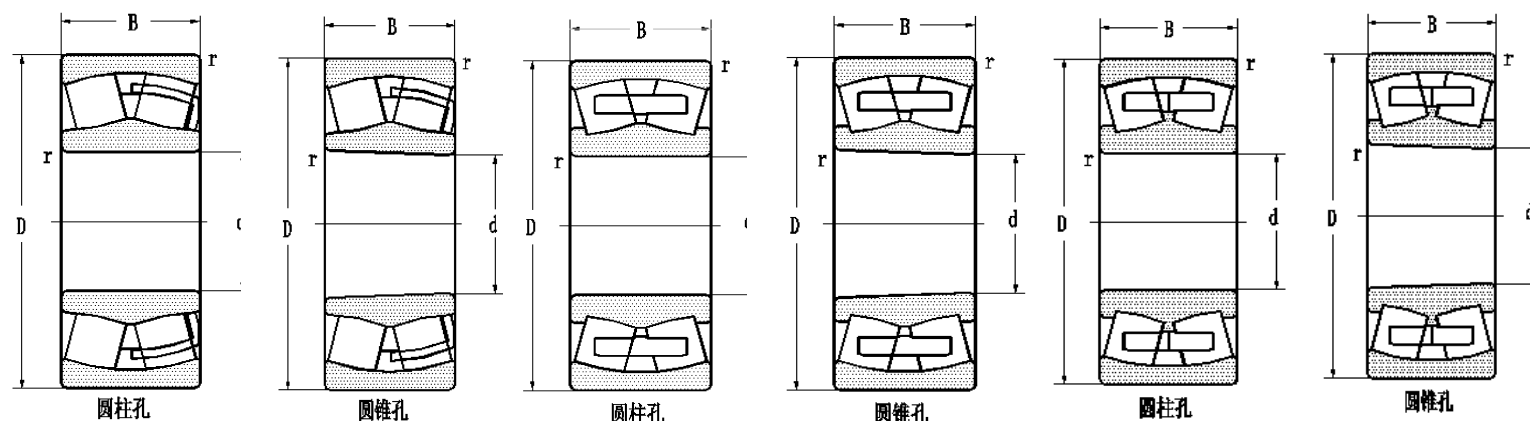
d170~190mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin			grease	oil	present		original		e	Y1	Y2	Y0	
				dynamic C	static Co			cylindrical bore	tapered bore	cylindrical bore	tapered bore					
170	310	110	4	1160	1835	950	1300	23234 CA/W33	23234CAK/W33	3053234 HY	3153234HY	0.35	1.9	2.9	1.9	37.1
180	280	74	2.1	750	1270	1300	1600	23036/W33	23036K/W33	3003136Y	3113136Y	0.26	2.6	3.8	2.5	19.3
	280	100	2.1	930	1510	850	1200	24036/W33	24036K30/W33	4003136Y	4403136Y	0.35	1.9	2.8	1.9	22.3
	300	96	3	1060	1800	990	1400	23136C/W33	23136CK/W33	3053760Y	3153760Y	0.3	2	3	2	27.2
	300	96	3	927	1555	990	1400	23136/W33	23136K/W33	3003736 Y	3113736Y	0.32	2.1	3.2	2.1	26.8
	300	96	3	927	1555	990	1400	23136/W33YA2		3003736KY		0.32	2.1	3.2	2.1	26.8
180	300	96	3	927	1555	990	1400	23136 N		3203736		0.32	2.1	3.2	2.1	26.4
	300	118	3	1170	1930	900	1100	24136/W33	24136K/W33	4003736Y	4403736Y	0.38	1.7	2.5	1.6	33.7
	320	112	4	1250	2060	900	1200	23236 CA/W33	23236CAK/W33	3053236 HY	3153236HY	0.35	1.9	2.9	1.9	39.5
	320	112	4	1250	2060	900	1200	23236 CA/W33YA2		3053236 HKY		0.35	1.9	2.9	1.9	39.4
190	290	75	2.1	800	1500	1200	1500	23038/W33	23038 K/W33	3003138 Y	3113138Y	0.26	2.6	3.9	2.6	20.3
	320	104	3	1050	1760	800	1050	23138/W33	23138K/W33	3003738Y	3113738Y	0.33	2.1	3	2	35.1
	320	104	3	1140	1910	800	1050	23138CA/W33	23138CAK/W33	3053738HY	3153738HY	0.31	2.2	3.2	2.1	45
	320	128	3	1290	2250	800	1050	24138CA	24138CAK30/W33	4053738HY	4453738HY	0.39	1.7	2.6	1.7	43.8
	340	92	4	1140	1730	1200	1600	22238CA/W33	22238 CAK/W33	53538HY	153538HY	0.26	2.6	3.8	2.5	35.5
	340	120	4	1410	2300	850	1100	23238 CA	23238CAK	3053238H	3153238H	0.35	1.9	2.9	1.9	51

Spherical Roller Bearing

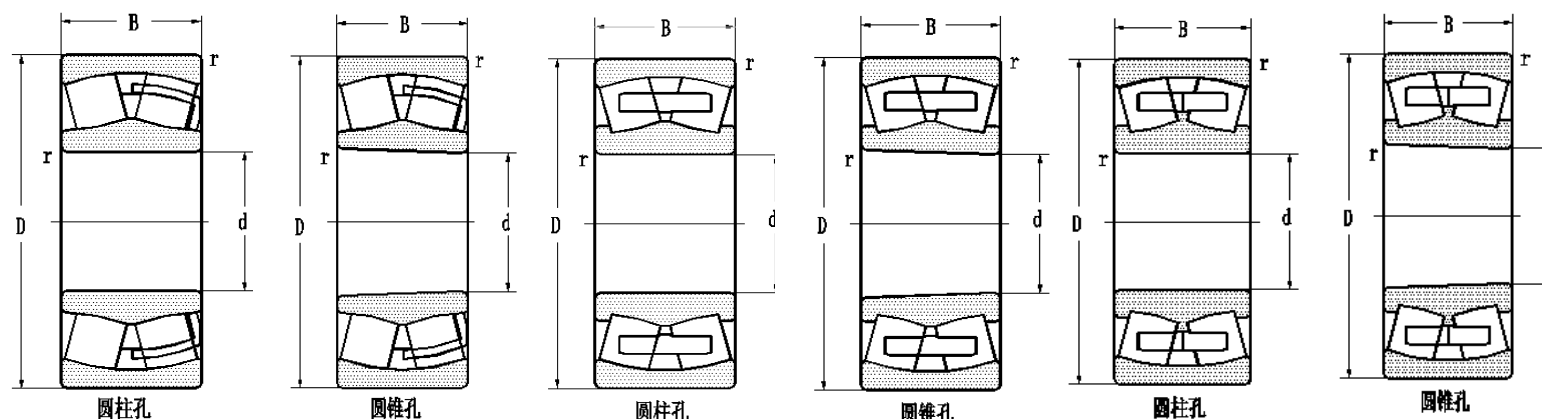
d200~260mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	C	Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore	e	Y1	Y2	Y0	
200	310	82	2.1	870	1600	1100	1400	23040/W33	23040 K/W33	3003140Y	3113140Y	0.26	2.6	3.8	2.5	26
	340	112	3	930	1830	850	1200	23140/W33	23140 K/W33	3003740Y	3113740Y	0.34	2	3	2	50.5
	340	140	3	1570	2670	560	700	24140 C/W33	24140 CK30/W33	4053740Y	4453740Y	0.4	1.7	2.5	1.6	51.9
220	340	90	3	989	1750	750	950	23044/W33	23044K/W33	30031445Y	3113144Y	0.26	2.6	3.9	2.6	31
	370	120	4	1530	2640	800	1100	23144/W33	23144K/W33	3003744Y	3113744Y	0.32	2.1	3.1	2	53.5
	370	120	4	1540	2650	700	900	23144CA	23144CAK	3053744HY	315374411Y	0.32	2.1	3.1	2	54.2
	370	150	4	1620	1870	700	900	24144C/W33	24144CK30/W33	4053744Y	4453744Y	0.4	1.7	2.5	1.6	66.1
220	400	108	4	1570	2430	850	1200	22244CA/W33	22244CAK/W33	53544HY	153544HY	0.27	2.5	3.7	2.4	62.4
	400	144	4	1800	2820	670	850	23244/W33	23244 K/W33	3003244Y	3113244Y	0.38	1.8	2.6	1.7	94.2
240	360	92	3	820	1800	900	1200	23048/W33	23048 K/W33	3003148Y	3113148Y	0.25	2.7	4	2.6	37.4
	400	128	4	1610	3000	760	990	23148/W33	23148K/W33	3003748Y	3113748Y	0.33	2.1	3.1	2	75.2
	400	160	4	1610	3400	430	540	24148/W33	24148K30/W33	4003748Y	4403748Y	0.41	1.7	2.5	1.6	81.6
260	400	104	4	1320	2570	810	1080	23052/W33	23052 K/W33	3003152Y	3113152Y	0.26	2.6	3.8	2.5	51.2
	400	140	4	1810	3500	150	950	24052CA/W33	24052CAK30/W33	4053152HY	4453152HY	0.33	2	3	2	63.4

Spherical Roller Bearing

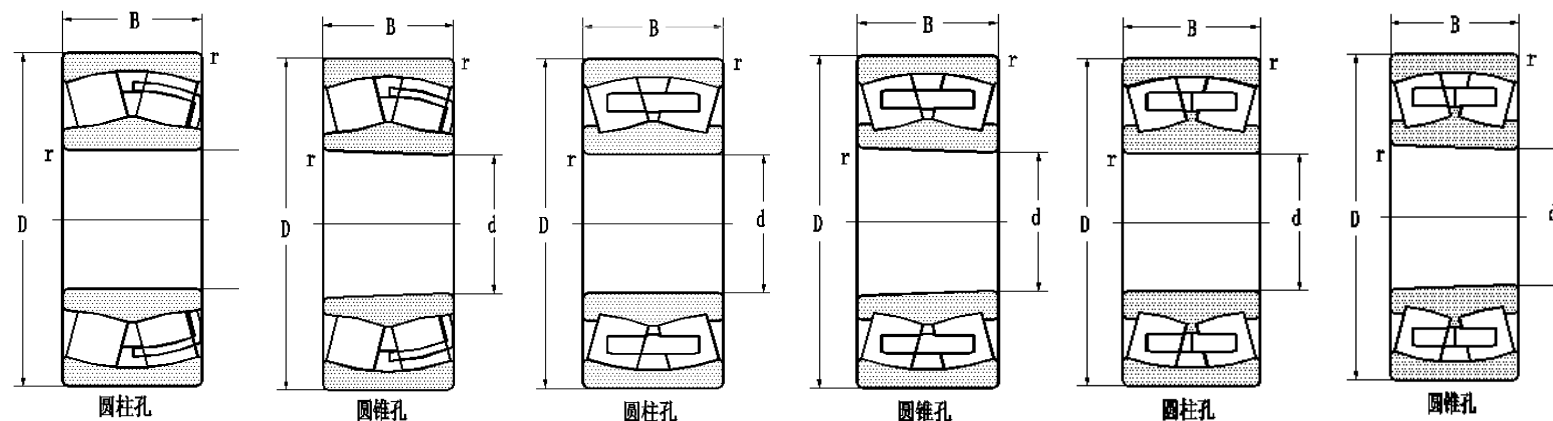
d260~300mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present cylindrical bore	tapered bore	original cylindrical bore	tapered bore	e	Y1	Y2	Y0	
260	440	144	4	1880	3510	720	900	23152 /W33	23152/W33	3003752Y	3113752Y	0.33	2	3	2	96
	440	180	4	2500	4550	720	900	SX-24152				0.42	1.6	2.4	1.6	112
	440	180	4	2560	4700	720	900	24152 CA/W33	24152CAK/W33	4053752HY	4453752HY	0.4	1.7	2.5	1.6	108
	440	180	4	2560	4700	720	900	24152C/W33	24152CK30/W33	4053752Y	4453752Y	0.4	1.7	2.5	1.6	113
	480	130	5	2180	3400	760	1800	22252 CA/W33	22252 CAK/W33	53552 HY	153552HY	0.27	2.5	3.7	2.5	96
	480	174	5	2800	4100	560	720	23252 C/W33	23252CK/W33	3053252Y	3153252Y	0.37	1.8	2.7	1.8	140
	480	174	5	2800	4100	560	720	23252 CA/W33	23252 CA/CAK/W33	3053252HY	3153252HY	0.37	1.8	2.7	1.8	151
280	420	106	4	1370	2750	760	950	23056/W33	23056 K/W33	3003156Y	3113156Y	0.25	2.7	4	2.6	61.5
	420	106	4	1540	2950	760	950	23056CA/W33	23056CAK/W33	3053156HY	3153156HY	0.23	2.7	4	2.6	51.7
	420	140	4	1781	3414	760	950	24056CA/W33	24056CAK30/W33	4053156HY	4453156HY	0.3	2.2	3.3	2.2	71.3
280	460	146	5	1800	3700	670	850	23156/W33	23156K/W33	3003756Y	3113756Y	0.32	2.1	3.2	2.1	95.5
	500	176	5	2560	4350	540	670	23256/W33	23256 K/W33	3003256Y	3113256Y	0.37	1.8	2.7	1.8	152
300	420	90	3	1080	2440	550	700	23960C/W33	23960CK/W33	3053960Y	3153960Y	0.18	3.7	5.5	3.6	37.2
	460	118	4	1920	3700	720	900	23060CA/W33	23060CAK/W33	3053160HY	3153160HY	0.26	2.6	3.9	2.6	76.6
	460	118	4	1630	3250	720	900	23060/W33	23060K/W33	3003160Y	3113160Y	0.26	2.6	3.9	2.6	74.6
	460	160	4	2280	4600	540	670	24060C/W33	24060CK30/W33	4053160Y	4453160Y	0.32	2.1	3.2	2.1	101

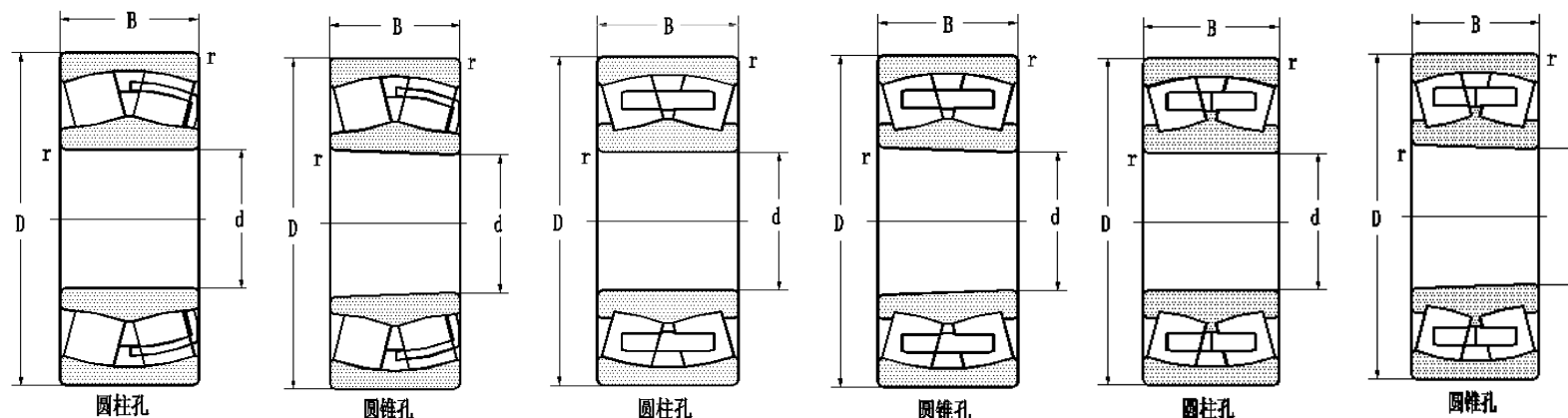
Spherical Roller Bearing

d300~360mm



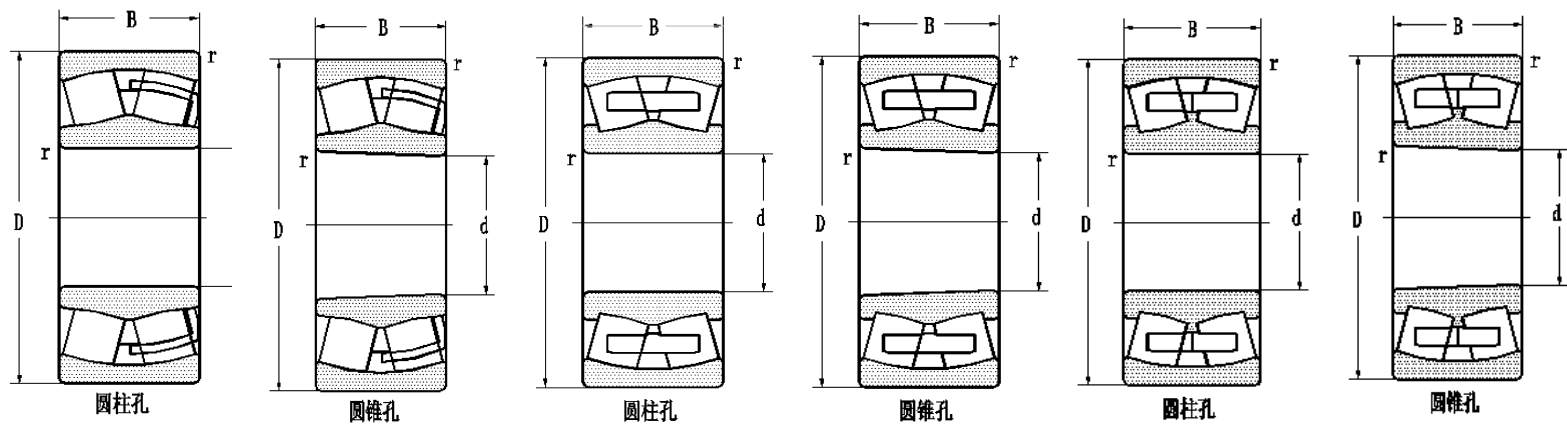
Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore	e	Y1	Y2	Y0	
300	500	160	5	2360	4550	600	760	23160/W33	23160K/W33	3003760Y	311760Y	0.32	2.1	3.1	2.1	133
	500	200	5	2735	5950	324	400	24160C/W33	24160CK30/W33	4053760Y	4453760Y	0.37	1.8	2.7	1.8	159
	500	200	5	3120	5650	324	400	24160CA/W33	24160CAK30/W33	4053760HY	4453760HY	0.36	1.9	2.8	1.9	160
320	440	90	3	1190	2430	600	750	23964/W33	23964K/W33	3003964Y	3113964Y	0.19	3.6	5.3	3.5	45
	480	121	4	1690	3450	720	900	23064/W33	23064K/W33	3003164Y	3113164Y	0.26	2.6	3.8	2.5	80.9
	480	121	4	1960	3850	630	800	23064CA/W33	23064CAK/W33	3053164HY	3153164HY	0.24	1.6	2.4	1.6	77.4
	480	160	4	2160	4350	500	630	24064/W33	24064K30/W33	4003164Y	4403164Y	0.32	2.1	3.2	2.1	103
	540	176	5	3050	5538	300	380	23164CA/W33	23164CAK/W33	3003764Y	3113764Y	0.31	2.1	3.2	2.1	169
	540	218	5	3680	5940	300	380	24164/W33	24164K30/W33	4003764Y	4403764	0.42	1.6	2.4	1.6	251
	580	208	5	3620	6400	450	560	23264/W33	23264K/W33	3003264Y	3113264Y	0.37	1.8	2.7	1.8	259
340	460	90	3	1100	2520	810	1050	23968/W33	23968K/W33	3003968Y	3113968Y	0.18	3.7	5.6	3.7	50.5
	520	133	5	2140	4350	630	810	23068/W33	23068K/W33	3003168Y	3113168Y	0.25	2.7	4	2.6	109
	520	180	5	2436	5060	470	600	24068/W33	24068K30/W33	4003168Y	4403168Y	0.33	2	3	2	160
	520	180	5	2920	6050	480	600	24068CA/W33	24068K30/W33	4053168Y	4453168Y	0.33	2	3	2	140
360	480	90	3	1330	2710	760	990	23972/W33	23972K/W33	3003972	3113972Y	0.17	4	5.9	3.9	49.1

Spherical Roller Bearing
d360~400mm



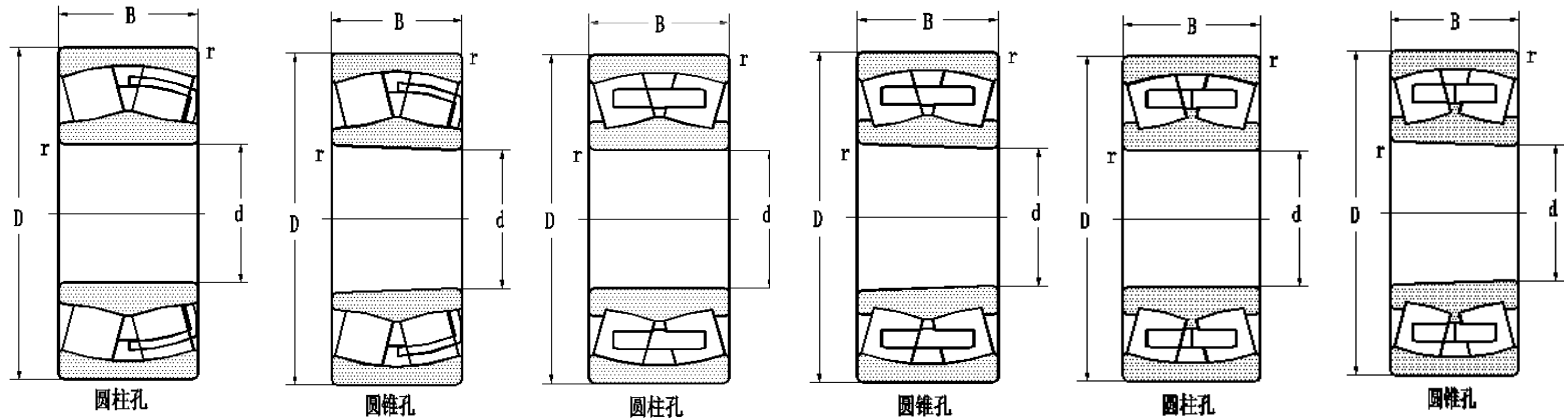
Bearing dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore	e	Y1	Y2	Y0	
360	540	134	5	2180	4500	600	760	23072/W33	23072K/W33	3003172 Y	3113732Y	0.25	2.7	4	2.6	114
	540	134	5	2390	4700	600	760	23072CA/W33	23072CAK/W33	3053172HY	3153172HY	0.25	2.7	4	2.6	113
	540	180	5	3010	6350	500	630	24072C/W33	24072CK30/W33	4053172Y	4453172Y	0.3	2.2	3.2	2.1	148
	540	180	5	3010	6350	500	630	24072C/W34 YA5				0.31	2.1	3.2	2.1	149
	540	180	5	2960	6160	500	630	24072CA/W33	24072CAK/W33	4053172HY	4453172HY	0.3	2.2	3.2	2.1	146
	600	192	5	3400	6700	500	630	23172/W33	23172K/W33	3003772Y	3113772Y	0.32	2.1	3.1	2	221
	600	243	5	4200	7940	270	340	24172/W33	24172K30/W33	4003772Y	4403772Y	0.42	1.6	2.4	1.6	338
380	520	106	4	1480	3400	720	900	23976/W33	23976K/W33	3003976Y	3113976Y	0.19	3.6	5.3	3.5	73.5
	560	135	5	2220	4650	560	720	23076/W33	23076 K/W33	3003176Y	3113176 Y	0.24	2.8	4.1	2.7	118
	620	194	5	3450	6800	360	450	23176/W33	23176 K/W33	3003776 Y	3113776 Y	0.34	2	3	2	243
	620	194	5	4000	7600	380	550	23176CA/W33	23176CAK/W33	3053776HY	3153776HY	0.3	2.2	3.2	2.1	230
400	600	148	5	2520	5450	540	670	23080/W33	23080K/W33	3003180 Y	3113180Y	0.25	2.7	4	2.6	165
400	650	200	6	3850	7540	340	430	23180/W33	23180K/W33	3003780 Y	3113780Y	0.31	2.2	3.2	2.1	238
	720	256	6	5300	10100	310	390	23280/W33	23280 K/W33	3003280Y	3113280 Y	0.37	1.8	2.7	1.8	515
	720	315	6	6620	10400	310	390	24280/W33	24280K30/W33	4003280Y	4403280Y	0.44	1.53	2.3	1.5	549

Spherical Roller Bearing
d420~500mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present cylindrical bore	tapered bore	original cylindrical bore	tapered bore	e	Y1	Y2	Y0	
420	620	150	5	2610	5750	400	500	23084/W33	24084K/W33	3003184Y	3113184Y	0.24	2.8	4.2	2.8	158
	700	224	6	4600	9300	320	400	23184/W33	23184K/W33	3003784Y	3113784Y	0.32	2.1	3.2	2.1	402
	760	272	7.5	6450	11700	320	400	23284CA/W33	23284CAK/W33	3053284HY	3153284HY	0.35	1.9	2.9	1.9	443
440	650	157	6	2790	6050	390	480	23088/W33	23088K/W33	3003188Y	3113188Y	0.24	2.8	4.2	2.8	192
	720	226	6	4910	9600	310	390	23188/W33	23188K/W33	3003788 Y	3113788Y	0.31	2.2	3.2	2.1	419
	720	280	6	5740	11460	310	390	24188/W33	24188K/W33	4003788Y	4403788Y	0.38	1.8	2.6	1.7	443
460	680	163	6	2850	6150	360	450	23092/W33	23092K/W33	3003192 Y	3113192Y	0.23	2.9	4.4	2.9	220
460	760	240	7.5	4800	4900	250	300	23192/W33	23192K/W33	3003792Y	3113792Y	0.31	2.1	3.2	2.1	468
480	650	128	5	2240	5000	360	450	23996/W33	23996K/W33	3003996Y	3113996Y	0.18	3.8	5.7	3.7	161
	700	165	6	2990	6600	340	430	23096/W33	23996K/W33	3003196	3113996Y	0.24	2.8	4.2	2.8	231
	870	310	7.5	7400	14100	230	310	23296/W33	23296K/W33	3003296	3113296	0.39	1.7	2.6	1.7	827
500	670	128	5	2120	5250	360	450	239/500/W33	239/500K/W33	30039/500Y	31139/500Y	0.18	3.8	5.7	3.8	135
	720	167	6	3150	7100	340	430	230/500/W33	230/500K/W33	30031/500Y	31131/500Y	0.23	3	4.4	2.9	238

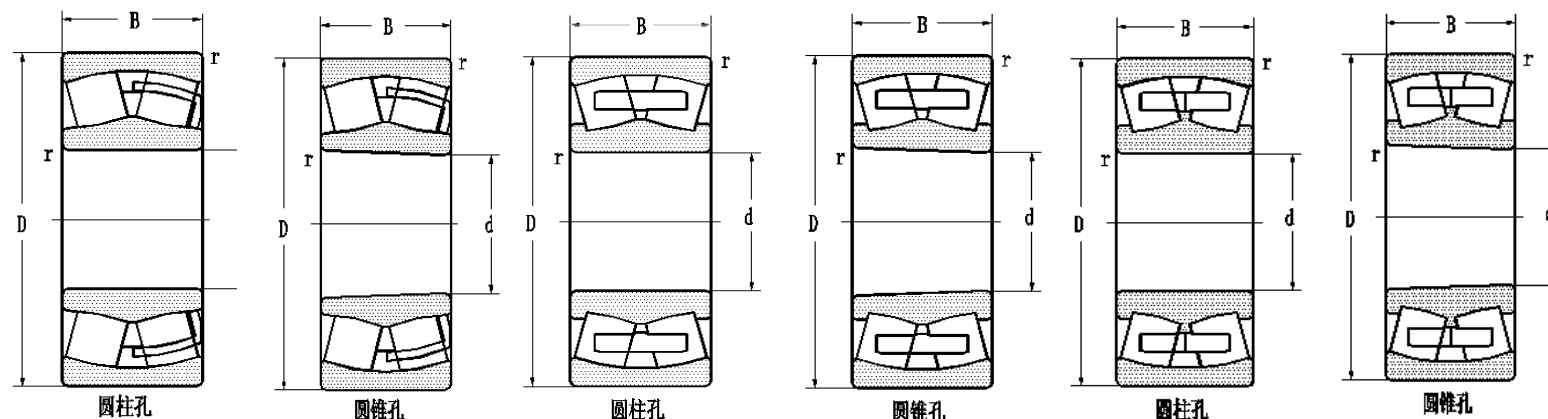
Spherical Roller Bearing
d530~750mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	present cylindrical bore	tapered bore	original cylindrical bore	tapered bore	e	Y1	Y2	Y0	
530	780	185	6	3900	8800	310	390	230/530/W33	230/530K/W33	30031/530Y	31131/530Y	0.23	2.9	4.3	2.8	314
560	820	195	6	4300	9750	230	310	230/560/W33	230/560K/W33	30031/560Y	31131/560T	0.23	2.9	4.3	2.8	365
	820	195	6	4700	10300	230	310	230/560CA/W33	230/560CAK/W33	30531/560HY	31531/560HY	0.22	3	4.5	2.9	354
	920	280	7.5	7990	16000	240	320	231/560/W33	231/560K/W33	30037/560Y	31137/560Y	0.3	2.3	3.4	2.2	757
600	870	200	6	4600	10700	270	340	230/600/W33	230/600K/W33	30031/600Y	31131/600Y	0.22	3	4.5	2.9	393
	980	375	7.5	8960	19600	110	150	241/600/W33	241/600K30/W33	40037/600Y	44037/600Y	0.37	1.8	2.6	1.7	1079
630	920	212	7.5	5300	12400	230	300	230/630/W33	230/630K/W33	30031/630Y	31131/630Y	0.23	2.3	4.4	2.9	509
670	900	170	6	4020	9600	230	300	239/670/W33	239/670K/W33	30039/670Y	31139/670Y	0.18	3.8	5.6	3.7	317
	980	230	7.5	6350	13600	220	290	230/670/W33	230/670K/W33	30031/670Y	31131/670Y	0.23	3	4.4	2.9	655
710	950	180	6	4050	10500	220	290	239/710/W33	239/710K/W33	30039/710Y	31139/710Y	0.18	3.8	5.6	3.7	387
	1030	236	7.5	6250	14900	200	270	230/710/W33	230/710K/W33	30031/710Y	31131/710Y	0.23	2.9	4.4	2.9	742
	1150	438	9.5	11730	29940	90	120	241/710/W33	241/710K30/W33	40037/710Y	44037/710Y	0.38	1.8	2.7	1.7	1802
750	1090	250	7.5	7890	17600	120	150	230/750/W33	230/750K/W33	30030/750Y	31131/750Y	0.22	3.1	4.6	3	855

Spherical Roller Bearing

d800~1180mm



Boundray dimension mm				Basic load ratings kN		Limiting speeds r/min		Bearing designations				Calculation factors				mass kg
d	D	B	rmin	dynamic C	static Co	grease	oil	cylindrical bore	tapered bore	cylindrical bore	tapered bore	e	Y1	Y2	Y0	
800	1060	258	6	9500	21000	170	230	249/800/W33	249/800K30/W33	40039/800Y	44039/800Y	0.22	3	4.5	2.9	638
	1150	258	7.5	8630	20000	190	200	230/800/W33	230/800K/W33	30031/800Y	31131/800Y	0.21	3.2	4.7	3.1	986
800	1150	345	7.5	10000	22000	190	200	240/800/W33	240/800K30/W33	40031/800Y	44031/800Y	0.29	2.3	3.3	2.2	1240
850	1120	200	6	5700	15600	170	230	239/850/W33	239/850K/W33	30039/850Y	31139/850Y	0.16	4.2	6.2	4.1	531
	1220	365	7.5	10000	21400	140	180	240/850/W33	240/850K30/W33	40031/850Y	44031/850Y	0.28	2.4	3.5	2.3	1398
	1220	365	7.5	10000	21400	140	180	240/850YA1		40031/850Y1		0.28	2.4	3.5	2.3	1396
	1220	272	7.5	9050	21100	90	120	230/850/W33	230/850K/W33	30031/850Y	31131/850Y	0.21	3.2	4.8	3.1	1069
900	1270	365	7.5	10906	31106	130	170	261/900/C3W33XYA3				0.27	2.5	3.7	2.5	1703
	1280	375	7.5	11000	28000	130	170	240/900/W33	240/900K30/W33	40031/900Y	44031/900Y	0.27	2.5	3.7	2.5	1783
1000	1420	412	7.5	13300	40000	120	160	240/10000/W33	240/1000K30/W33	40031/1000Y	44031/1000Y	0.27	2.5	3.7	2.5	2117
1180	1660	355	9.5	15500	38400	40	55	230/1180/W33	230/1180K/W33	30031/1180Y	31131/1180Y	0.2	3.4	5.1	3.3	2480



圆锥滚子轴承

Tapered Roller Bearing

Tapered Roller Bearings

Tapered roller bearings are generally of separable design and have tapered cone and cup raceways between which tapered roller are arranged, their design makes tapered roller bearings particularly suitable for carrying combined (radial and axial) loads.

LYC tapered roller bearings have single, double and four-row tapered roller bearings. The single row tapered roller bearings are able to accommodate radial loads and axial loads in one direction only. Under radial loads, and axial component force is produced in the bearing which must be counteracted, so the bearing are normally adjusted against a second bearings. The axial load carrying capacity of single row tapered roller bearings is largely determined by the contact angle α , which corresponds to the angle of the cup raceway, the larger this angle, the higher the axial load carrying capacity.

LYC manufactured single row tapered roller bearings with metric as well as inch dimensions. The bearings with suffix E in metric series are reinforced bearings and the main parameters have been optimized, their rollers are more and longer than the conventional bearings, the bearings therefore have higher load carrying capacity and longer basic rating life. These dimensions of bearings conform to ISO. All the designations and dimensions of inch size bearings of LYC conform to AFBMA standards.

LYC produces double row and four-row tapered roller bearings which can carry combined (radial and axial) loads and axial loads in which radial load is predominant and axial loads in two directions. They limit axial displacements of shaft relative to housing in both directions.

In order to satisfy the special demands of customers, bearing axial clearance can be modified by using the special adjusted procedures, the load can be uniformly distributed within the bearing axial clearance limit. The bearings with this feature are usually suitable for the operation of medium of low speeds.

Tapered roller bearings can supply with a pressed steel cage, but those with outside diameter $D > 650\text{mm}$ will be supplied with a machined steel cage, this kind of cage is welded with supporting rollers (each roller has a

supporting hole in its radial center).

In bearings rotating at high speeds, to prevent detrimental sliding movement caused by centrifugal force between rollers and raceway, minimum load should be applied and calculated from:

$$Fr' = 0.02C$$

where

Fr' - minimum radial load, N

C - basic dynamic load rating, N

When tapered roller bearings are under the constant radial and axial loads, the equivalent load be calculated by the following equation:

Single row tapered roller bearings

Equivalent dynamic load

$$P = Fr \quad \text{when } Fa/Fr \leq e$$

$$P = 0.4Fr + YFa \quad \text{when } Fa/Fr > e$$

Equivalent static load

$$Po = 0.5Fr + YoFa$$

When $Po < Fr$, $Po = Fr$ should be used

Double and four-row tapered roller bearings

Equivalent dynamic load

$$P = Fr + Y1Fa \quad \text{when } Fa/Fr \leq e$$

$$P = 0.67Fr + Y2Fa \quad \text{when } Fa/Fr > e$$

Equivalent static load

$$Po = Fr + YoFa$$

where

$Y1$, $Y2$, Y — axial static load factor

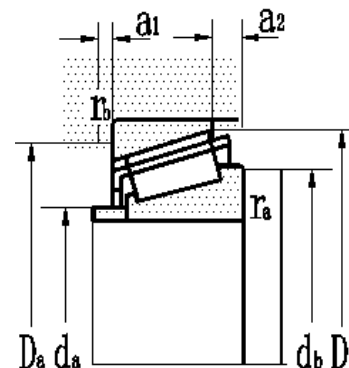
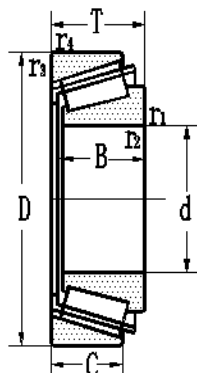
Yo — axial dynamic load factor

Fr — radial load, N

Fa — axial load, N

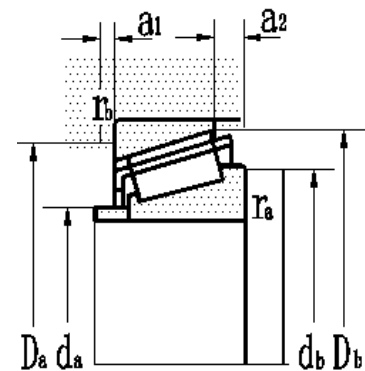
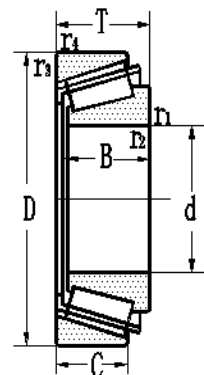
Single row tapered roller bearings

d15~30mm



Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions						Calculation factors			Mass		
mm					kN				r/min					mm	mm									kg		
d	D	B	C	T	r1,2 min	r3,4 min	dynamic C	static Co	grease r/min	oil r/min	present	original	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
15	42	13	11	14.3	1	1	22.9	21.7	9000	13000	30302	7302E	2FB	15	23	23	35	36	3	5	1	1	0.28	2.1	1.1	0.0948
17	40	12	11	13.3	1	1	20.7	22.2	9000	13000	30203	7203E	2DB	17	22	22	34	35	2	4	1	1	0.35	1.7	0.9	0.13
	47	14	12	15.3	1	1	28.3	27.4	8500	12000	30303	7303E	2FB	17	25	25	41	42	3	5	1	1	0.28	2.1	1.1	0.13
	47	19	16	20.3	1	1	35.4	36.6	8000	11000	32303	7603E	2FD	17	25	25	41	42	3	6	1	1	0.28	2.1	1.1	0.174
20	47	14	12	15.3	1	1	28.2	30.9	8000	11000	30204	7204E	2DB	20	26	26	42	43	3	5	1	1	0.35	1.7	0.9	0.127
	52	15	13	16.3	1.5	1.5	33.2	33.3	8000	11000	30304	7304E	2FB	20	28	28	45	47	3	5	1.5	1.5	0.3	2	1.1	0.168
	52	21	18	22.3	1.5	1.5	42.7	46.4	7500	10000	32304	7604E	2FD	20	28	28	45	47	3	6	1.5	1.5	0.3	2	1.1	0.231
25	52	15	13	16.3	1	1	33.7	39.4	7500	10000	30205	7205E	3CC	25	31	31	46	47	3	5	1	1	0.37	1.6	0.9	0.157
	62	17	13	18.3	1.5	1.5	40.7	46	5600	7500	31305	27305E	7FB	25	33	33	52	57	3	7	1.5	1.5	0.83	0.7	0.4	0.264
	62	17	15	18.3	1.5	1.5	47	48.3	6700	9000	30305	7305E	2FB	25	33	33	55	57	3	5	1.5	1.5	0.3	2	1.1	0.265
	62	24	20	25.3	1.5	1.5	61.7	68.9	6000	8000	32305	7605E	2FD	25	33	33	55	57	3	7	1.5	1.5	0.3	2	1.1	0.37
	62	17	14	18.3	1.5	1.5	40.6	48.4	9980	12470	31305X2/YB2			25	31	32	47	59	3	5.5	2.5	2.5	0.54	1.1	0.6	0.267
	52	18	16	19.3	1	1	39	48.8	11650	14560	32205			25	31	31	44	46	3	4	1	1	0.36	1.7	0.9	0.184
30	62	16	14	17.3	1	1	43.3	50.6	6300	8500	30206	7206E	3DB	30	36	36	56	57	3	5	1	1	0.37	1.6	0.9	0.232
	62	20	17	21.3	1	1	51.8	63.9	6300	8500	32206	7506E	3DC	30	36	36	56	57	3	6	1	1	0.37	1.6	0.9	0.285
	72	19	16	20.8	1.5	1.5	59	63.9	5600	7500	30306	7306E	2FB	30	38	38	64	66	3	7	1.5	1.5	0.31	1.9	1	0.389

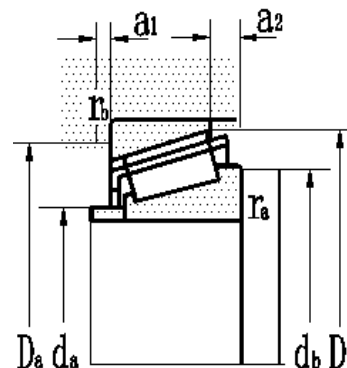
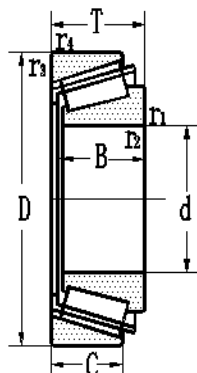
Single row tapered roller bearings
d30~40mm



Boundary dimensions					Basic load ratings					Limiting speeds	Bearing designations			Journal	Mounting dimensions					Calculation factors			Mass			
mm					kN					r/min	present	original	ISO355 series code	mm	mm					e	Y	Yo	kg			
d	D	B	C	T	r1,2 min min	r3,4 min min	dynamic C	static Co	grease r/min	oil r/min				da max max	db max max	Da min min	Db min min	a1	a2					ra max max	rb max max	
30	72	24	18	24.5	3	1	53.8	65.9	5600	7500	30306BX2	27706		30	36	36	60	68	5	9	2.5	1	0.6	1	0.56	0.472
	72	27	23	28.8	1.5	1.5	81.7	97.6	5300	7000	32306	7606E	2FD	30	38	38	64	66	4	8	1.5	1.5	0.31	1.9	1	0.566
	72	19	14	20.8	2	1.5	51	36	8710	10890	31306/YB2			30	37	37	65	68	3	7	2.5	2.5	0.82	0.7	0.4	0.394
	72	19	14	20.8	1.5	1.5	51	36	8710	10890	31306			30	37	37	55	68	3	7	2.5	2.5	0.82	0.7	0.4	0.394
	72	27	23	28.8	1.5	1.5	66.8	83.3	8710	10890	32306 AN			30	38	37	59	66	4	6	1.5	1.5	0.31	1.9	1	0.587
32	75	28	23	29.8	1.5	1.5	76.9	60.6	5200	6900	323/32	76/32		32	39	39	68	71	3	6.5	1.5	1.5	0.55	1.1	0.6	0.647
35	72	17	15	18.3	1.5	1.5	54.2	63.7	5300	7000	30207	7207E	3DB	35	43	43	64	67	3	5	1.5	1.5	0.37	1.6	0.9	0.333
	72	17	15	18.5	1	1	49	53	5300	7000	30207/YB2	7207		35	43	43	64	67	3	5	1	1	0.37	1.6	0.9	0.327
	72	23	19	24.3	1.5	1.5	70.6	89.7	5300	7000	32207	7507E	3DC	35	43	43	64	67	3	7	1.5	1.5	0.37	1.6	0.9	0.447
	80	21	18	22.8	2	1.5	75.4	83.6	5000	6700	30307	7307E	2FB	35	44	44	71	75	3	7	2	1.5	0.31	1.9	1	0.518
	80	31	25	32.8	2	1.5	99.1	119.7	4800	6300	32307	7607E	2FE	35	44	44	71	75	5	10	2	1.5	0.31	1.9	1	0.766
	72	17	15	18.3	4	1.5	48	36	8710	10890	30207/YB2			35	44	42	62	67	3	3.5	2.5	2.5	0.37	1.6	0.9	0.331
	80	21	15	22.8	2	1.5	63.8	45.8	7900	9870	31307	27307E		35	42	44	62	76	4	8	3	3	0.82	0.7	0.4	0.517
	80	31	24	32.8	2	1.5	94.7	116	7900	9870	32307 CN			35	43	44	66	74	4	8	2	2	0.31	1.9	1	0.777
	65	18	14	18	3.5	3.5	41.3	59	9560	11950	30607		3DB	35	50	50	56	50	3	5	3	3	0.38	1.5	0.8	0.246
35	62	18	14	18	1	1	42.3	53.7	6570	8220	32007		3DC	35	40	41	54	59	4	4	1	1	0.2	2.9	1.6	0.22
40	62	14	12	15.2	0.6	0.6	30	50	5600	7000	32908	2007908		40	46	46	57	58	3	5	0.6	6	0.28	2.1	1.2	0.139

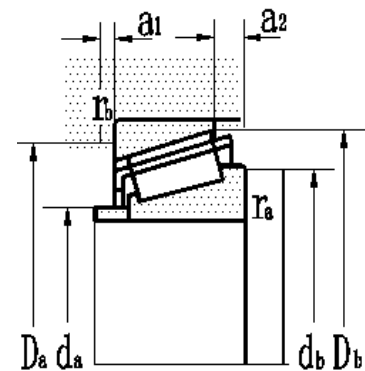
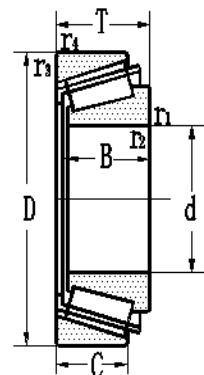
Single row tapered roller bearings

d40~50mm



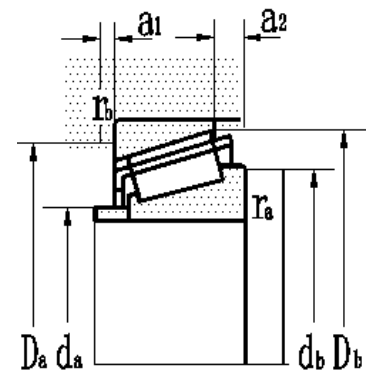
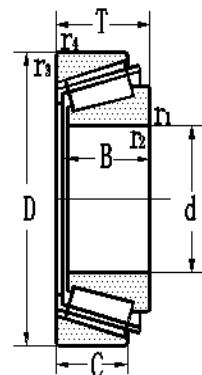
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN				r/min					mm	mm											kg
d	D	B	C	T	r _{1,2} min	r _{3,4} min	dynamic C	static Co	grease r/min	oil r/min	present	original	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
40	80	18	16	19.8	1.5	1.5	63	74.1	4800	6300	30208	7208E	3DB	40	48	48	72	75	3	6	1.5	1.5	0.37	1.6	0.9	0.423
	80	18	18	21.5	1.5	1.5	66	66	5300	6600	30608	7808E		40	48	48	72	75	4	7	1.5	1.5	0.37	1.6	0.9	0.446
	80	23	19	24.8	1.5	1.5	77.9	97.5	4800	6300	32208	7.51E+06	3DC	40	48	48	72	75	3	8	1.5	1.5	0.37	1.6	0.9	0.529
	90	23	20	25.3	2	1.5	90.8	108.7	4500	6000	30308	7308E	2FB	40	49	49	80	85	3	7	2	1.5	0.35	1.7	0.9	0.748
	90	23	17	25.3	2	1.5	81.5	96.5	4000	5300	31308	27308E	2EB	40	49	49	80	85	6	10	2	1.5	0.83	0.7	0.4	0.729
	90	33	27	35.3	2	1.5	115.3	149	4000	5300	32308	7608E	2FD	40	49	49	80	85	5	10	2	1.5	0.35	1.7	1	1
	80	23	19	24.8	1.5	1.5	67	54	7900	9870	32208 R			40	48	47	68	75	3	6	2	1.5	0.37	1.6	0.9	0.549
	90	33	27	35.3	2.5	2.5	115.3	149	7070	8830	32308/YB2			40	49	49	73	83	4	8.5	2	2	0.35	1.7	0.9	1
	90	33	26	35.3	2	1.5	100	118	7070	8830	32308 CN			40	49	49	73	83	4	8.5	2	2	0.35	1.7	0.9	1.02
	68	19	15	19	1	1	52.6	72.3	9180	11470	32008		3DB	40	46	46	60	65	4	4.5	1	1	0.38	1.5	0.8	0.275
45	85	19	16	20.8	1.5	1.5	67.6	84.4	4500	6000	30209	7209E	3DB	45	53	53	76	79	3	7	1.5	1.5	0.4	1.5	0.8	0.474
	85	23	19	24.8	1.5	1.5	80.3	105.1	4500	6000	32209	7509E	3DC	45	53	53	76	79	3	8	1.5	1.5	0.4	1.5	0.8	0.585
	85	23.5	20	25	1.5	1.5	77	93	4500	6000	32209/YB2	127509		45	53	53	76	79	3	8	1.5	1.5	0.4	1.5	0.8	0.584
	100	25	22	27.3	2	1.5	108.7	131.2	4000	5300	30309	7309E	2FB	45	54	54	90	94	4	7	2	1.5	0.35	1.7	0.9	0.988
	100	29	20	32	1.5	1.5	63	83	4500	5600	30309BX2	27709		45	51	51	82	96	6	13	1.5	1.5	0.7	0.8	0.46	1.04
47	100	43	37	43	1.5	1.5	108	169	5300	6700	306/47	7909		47	57	57	86	95	6	8	1.5	1.5	0.3	1.9	1.1	1.66
50	90	20	17	21.8	1.5	1.5	76.1	97.4	4300	5600	30210	7210E	3DB	50	58	58	82	85	4	7	1.5	1.5	0.43	1.4	0.8	0.539

Single row tapered roller bearings
d50~55mm



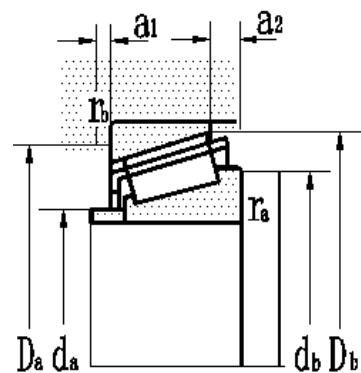
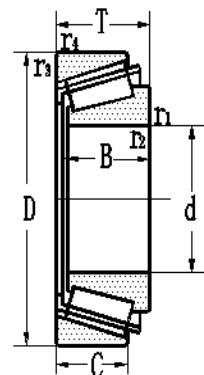
Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal		Mounting dimensions						Calculation factors			Mass
mm					kN					r/min					mm		mm									kg
d	D	B	C	T	r1,min	2,3,min	4,dynamic C	static Co	grease r/min	oil r/min	present	orginal	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
50	90	23	19	24.8	1.5	1.5	89.4	120	4300	5600	32210	7510E	3DC	50	58	58	82	85	3	8	1.5	1.5	0.43	1.4	0.8	0.645
	110	27	23	29.3	2.5	2	129.9	158.9	3600	4800	30310	7310E	2FB	50	60	60	98	103	4	8	2.1	2	0.35	1.7	0.9	1.3
	110	40	33	42.3	2.5	2	177.3	238.7	3200	4300	32310	7610E	2FD	50	60	60	98	103	6	12	2.1	2	0.35	1.7	0.9	1.9
	110	27	19	29.3	2.5	2	102	128	5810	7270	31310	27310E		50	58	60	87	105	4	10.5	3	3	0.82	0.7	0.4	1.22
	90	23	19	24.8	1.5	1.5	77	65	7070	8830	32210 R			50	57	57	78	86	3	6	1.5	1.5	0.43	1.4	0.8	0.668
	80	20	16	20	1.5	1.5	54.5	85	7900	9870	32010/YB2		3DC	50	56	56	72	77	4	4.5	1.5	1.5	0.42	1.4	0.8	0.373
	80	20	16	20	1	1	59.1	85	7900	9870	32010		3DC	50	56	56	72	77	4	4.5	1	1	0.42	1.4	0.8	0.373
50.8	100	35	27	35	2.5	2.5	140	192	4230	5280	33910/YB2			50.8	63	63	90	88	3	5	2	2	0.4	1.5	0.8	1.17
55	95	30	23	30	1.5	1.5	105	148	3800	5000	33111	3007711	3CE	55	63	63	81	92	5	7	1.5	1.5	0.37	1.6	0.9	0.862
	100	21	18	22.8	2	1.5	90.9	115.7	3800	5000	30211	7211E	3DB	55	64	64	90	94	4	7	2	1.5	0.4	1.5	0.8	0.719
	100	25	21	26.8	2	1.5	107.5	143.8	3800	5000	32211	75111E	3DC	55	64	64	90	94	4	8	2	1.5	0.4	1.5	0.8	0.86
55	120	29	21	31.5	2.5	2	129.9	158	2800	3800	31311	27311E	7FB	55	65	65	103	114	8	14	2.1	2	0.83	0.7	0.4	1.56
	120	29	25	31.5	2.5	2	153.1	189.7	3200	4300	30311	7311	2FB	55	65	65	106	114	4	9	2.1	2	0.35	1.7	0.9	1.63
	120	43	35	45.5	2.5	2	202.8	274.3	3000	4000	32311	7611E	2FD	55	65	65	106	114	8	14	2.1	2	0.35	1.7	0.9	2.33
	100	23	18	24.8	2	1.5	90.1	111	6380	7980	30211 x2			55	64	64	88	95	4	5	3	3	0.55	1	0.6	0.76
	120	29	21	31.5	4	3	113	90	5330	6670	31311/YB2			55	70	65	104	112	4	6.5	3	3	0.82	0.7	0.4	1.56
	120	43	35	45.5	7	2	203	256	5330	6670	32311/YB2			55	66	65	99	111	5	10.5	18	18	0.35	1.7	0.9	2.34
	130	33	22	36	3	2.5	170	184	4920	6150	30611		2FB	55	69	69	111	116	4	11	2.5	2.5	0.82	0.7	0.4	2.11

Single row tapered roller bearings
d55~65mm



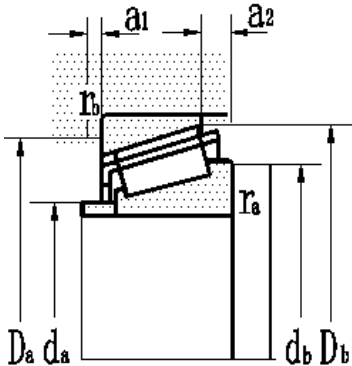
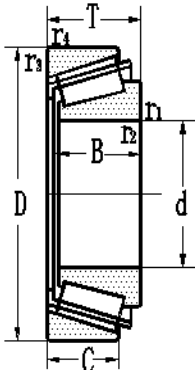
Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal		Mounting dimensions					Calculation factors			Mass	
mm					kN					r/min					mm		mm								kg	
d	D	B	C	T	r1,2	r3,4	dynamic	static	grease	oil	present	original	ISO355	da	db	Da	Db	a1	a2	ra	rb	e	Y	Yo		
					min	min	C	Co	r/min	r/min			series code	max	max	min	min			max	max					
55	90	23	18	23	1.5	1.5	75.4	122	4400	5500	32011	2007111E	3CE	55	63	62	81	86	4	5.5	1.5	1.5	0.4	1.5	0.8	0.561
	125	36	25	37	3	2	158	209	5120	6400	31611		3DB	55	69	69	107	111	4	11	2.5	2.5	0.73	0.8	0.4	2.11
60	85	16	14	17.3	1	1	56	83	4000	5000	32912	2007912		60	67	67	78	81	3	5	1	1	0.38	1.6	0.9	0.24
	110	22	19	23.8	2	1.5	102.9	131.5	3400	4500	30212	7212E		60	69	69	100	104	5	7	2	1.5	0.4	1.5	0.8	0.906
	110	28	24	29.8	2	1.5	132.2	181.5	3400	4500	32212	7512E	3EB	60	69	69	100	104	4	8	2	1.5	0.4	1.5	0.8	1.18
	130	31	26	33.5	3	2.5	175	203	3000	4000	30312	7312E	2FB	60	71	71	116	123	4	10	2.5	2.1	0.35	1.7	0.9	2
	130	31	22	33.5	3	2.5	145.4	176.8	2600	3600	31312	27312E	7FB	60	71	71	112	123	8	14	2.5	2.1	0.83	0.72	0.4	2.02
	130	46	37	48.5	3	2.5	226.3	306.1	2600	3600	32312	7612E	7FD	60	71	71	116	123	8	14	2.5	2.1	0.35	1.7	1	2.91
	110	30	20	34.1	2	2	82	61	5810	7270		3-706		60	70	70	100	104	5	14	2	2	0.43	1.4	0.7	1.25
	95	23	18	23	1.5	1.5	79.8	125	6710	8390	32012	2007112E	3CE	60	67	67	85	91	4	5.5	1.5	1.5	0.43	1.4	0.7	0.592
62	100	21	17	21.5	1	1	70	85	3900	4900	306/62	7912		62	68	71	91	96.9	4	6	1	1	0.37	1.6	0.9	0.597
65	130	43	35	45	7	2	207	306	4000	5000	30613			65	70	75	100	104	4	8	3	1.5	0.33	1.5	0.8	2.64
	120	23	20	24.8	2	1.5	120	154.2	3000	4000	30213	7213E	3EB	65	74	74	108	114	5	7	2	1.5	0.4	1.5	0.8	1.13
	120	31	27	32.8	2	1.5	163	212	3000	4000	32213	7513E	3EC	65	74	74	108	114	4	8	2	1.5	0.4	1.5	0.8	1.54
	120	41	32	41	2	1.5	184	257	2800	3800	33213	3007213	3EE	65	76	74	104	111	6	12	2	1.5	0.39	1.5	0.8	2.01
	140	33	28	36	3	2.5	195.7	244.4	2600	3600	30313	7313E	7GB	65	76	76	125	132	5	10	2.5	2.1	0.35	1.7	0.9	2.45
	140	33	23	36	3	2.5	165.7	202.6	2200	3200	31313	27313E	7GB	65	76	76	120	132	10	16	2.5	2.1	0.83	0.7	0.4	2.39

Single row tapered roller bearings
d65~75mm



Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN					r/min					mm	mm											kg
d	D	B	C	T	r1,2 min	r3,4 min	dynamic C	static Co	grease r/min	oil r/min	present	orginal	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo			
65	140	48	39	51	3	2.5	259.3	353.6	2400	3400	32313	7613E	2GD	65	76	76	125	132	8	14	2.5	2.1	0.35	1.7	1	3.35	
	120	41	32	41	2	1.5	183	280	5330	6670	33213 TN1			65	77	74	106	114	4	5	3	3	0.4	1.5	0.8	1.91	
	110	34	27	34	1.5	1.5	125	202	5810	7270	33113			65	75	75	100	104	4	5	1.5	1.5	0.39	1.5	0.8	1.27	
	100	23	18	23	1.5	1.5	84.5	131	6380	7980	32013		3DC	65	72	72	90	97	4	5.5	1.5	1.5	0.46	1.3	0.7	0.631	
	140	38	27	40	3	2.5	187	247	4560	5700	31613		3DB	65	79	79	122	126	6	13	2.5	2.5	0.73	0.8	0.4	2.74	
70	120	33	27	33	2	2	151	217	3000	4000	33114 X2	7814E	3DE	70	77	77	110	115	5	10	2	2	0.28	2.2	1.2	1.46	
	125	24	21	26.3	2	1.5	132	174.3	3000	4000	30214	7214E	3EB	70	79	79	114	119	5	7	2	1.5	0.42	1.4	0.8	1.26	
	125	31	27	33.3	2	1.5	168.1	238	2800	3800	32214	7514E	3EC	70	79	79	114	119	4	8	2	1.5	0.42	1.4	0.8	1.65	
	150	35	30	38	3	2.5	218.8	274.7	2400	3400	30314	7314E	2GB	70	81	81	135	142	5	10	2.5	2.1	0.35	1.7	0.9	2.99	
	150	51	42	54	3	2.5	298.8	413.4	2200	3200	32314	7614E	2GD	70	81	81	135	142	8	14	2.5	2.1	0.35	1.7	1	4.43	
70	150	35	25	38	5	2.5	197	232	2830	3530	31314/YB2			70	89	82	130	141	5	8	4	4	0.82	0.7	0.4	2.91	
75	130	25	22	27.3	2	1.5	137.7	186.9	2800	3800	30215	7215E	4DB	75	84	84	119	124	5	7	2	1.5	0.44	1.4	0.8	1.38	
	130	31	27	33.3	2	1.5	169.5	244.1	2600	3600	32215	7515	4DC	75	84	84	119	124	4	8	2	1.5	0.44	1.4	0.8	1.74	
	135	45	35	44	2	2	175	274	3000	3800	30615/YB2			75	82	85	119	131	5	11	2	2	0.28	2.2	1.2	2.57	
	135	45	37	44.5	2	2	228	339	3000	3800	30615			75	82	85	119	131	5	11	2	2	0.28	2.2	1.2	2.69	
	160	37	31	40	3	2.5	250.3	318.6	2200	3200	30315	7315E	2GB	75	86	86	143	152	5	11	2.5	2.1	0.35	1.7	0.9	3.58	
	160	55	45	58	3	2.5	358	472	2000	3000	32315	7615E	2GD	75	86	86	143	152	10	16	2.5	2.1	0.35	1.7	1	5.32	

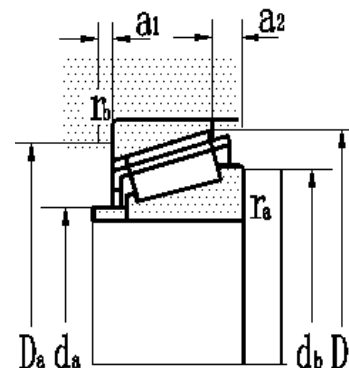
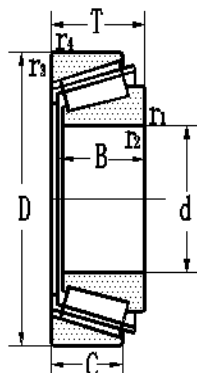
Single row tapered roller bearings
d80~90mm



Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN					r/min					mm	mm											kg
d	D	B	C	T	r1,2	r3,4	dynamic	static	grease	oil			ISO355		da	db	Da	Db	a1	a2	ra	rb	e	Y	Yo		
					min	min	C	Co	r/min	r/min		present	original	series code	max	max	min	min			max	max					
80	140	26	22	28.3	2.5	2	160.1	213.6	2400	3400		30216	7216E	3EB	80	90	90	127	134	5	8	2.1	2	0.42	1.4	0.8	1.84
	140	33	28	35.3	2.5	2	198	280.1	2400	3400		32216	7516E	3EC	80	90	90	127	134	5	8	2.1	2	0.42	1.4	0.8	2.03
	140	33	28	35.5	2	2	160	241	2400	3400		32216/YB2	7516		80	90	90	127	134	5	8	2	2	0.4	1.5	0.8	2.15
	140	45	37	45	2.5	2	233	214	2900	3600		30616			80	87	90	127	135.7	5	11	2.1	2	0.28	2.2	1.2	2.81
	170	39	33	42.5	3	2.5	286	343	2000	3000		30316	7316E	2GB	80	92	92	152	162	7	12	2.5	2.1	0.35	1.7	0.9	4.5
	170	58	48	61.5	3	2.5	400	532	1900	2800		32316	7616E	2GD	80	92	92	152	162	10	16	2.5	2.1	0.35	1.7	0.9	6.39
	130	31	25	32	1	3.5	140	233	4920	6150		30616/YB2			80	86	86	119	124	5	7	1	1	0.38	1.6	0.8	1.56
	125	29	22	29	1.5	1.5	136	209	5120	6400		32016		3EB	80	89	87	112	120	6	7	1.5	1.5	0.42	1.6	0.8	1.27
85	150	28	24	30.5	2.5	2	180	242.5	2200	3200		30217	7217E	3EB	85	95	95	136	144	5	9	2.1	2	0.42	1.4	0.8	2.06
	150	36	30	38.5	2.5	2	220	323	2200	3200		32217	7517E	3EC	85	95	95	136	144	5	11	2.1	2	0.42	1.4	0.8	2.67
	150	49	37	49	2.5	2	272	409	2000	3000		33217	3007217	3EE	85	95	95	136	144	7	12	2.1	2	0.42	1.4	0.8	3.57
	180	41	34	44.5	4	3	304.5	392.4	1900	2800		30317	7317E	3GB	85	97	97	161	171	8	14	3	2.5	0.35	1.7	0.9	5.305
	180	60	49	63.5	4	3	434	580	1800	2600		32317	7617E	2GD	85	98	98	161	171	12	18	3	2.5	0.35	1.7	0.9	6.81
	140	38.5	29	47.1	2	0.6			4560	5700			B3-748L		85	95	95		130			2	2	0.33	1.8	1	3.32
90	140	30	26	32.4	2	1.5	160	257	2200	3200		32018 X2/YA	2007118		90	99	99	128	134	5	8	2	1.5	0.34	1.8	1	1.66
	160	30	26	32.5	2.5	2	199.7	270.5	2000	3000		30218	7218E	3FB	90	100	100	145	153	5	9	2.1	2	0.42	1.4	0.8	2.558
	160	40	34	42.5	2.5	2	269.1	396.9	2000	3000		32218	7518E	3FC	90	100	100	145	153	5	11	2.1	2	0.42	1.4	0.8	3.33
	190	43	36	46.5	4	3	341.7	445.7	1800	2600		30318	7318E	2GB	90	103	103	170	181	8	14	3	2.5	0.35	1.7	0.9	6.144

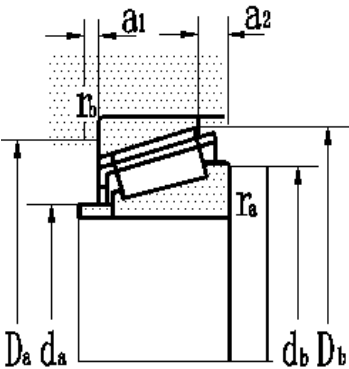
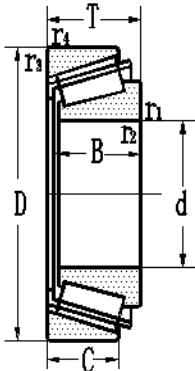
Single row tapered roller bearings

d90~100mm



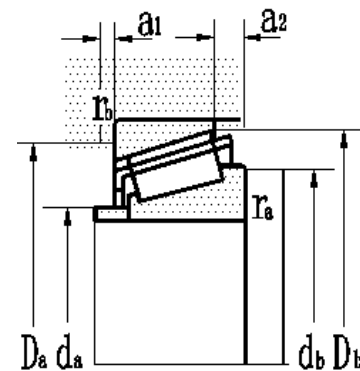
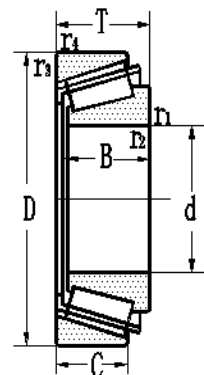
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN				r/min					mm	mm											kg
d	D	B	C	T	r1,2,3,4 min	r3,4 min	dynamic C	static Co	grease r/min	oil r/min	present	orginal	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
90	190	64	53	67.5	4	3	477.7	690.8	1700	2400	32318	7618E	2GD	90	103	103	170	181	12	18	3	2.5	0.35	1.7	0.9	8.76
	150	45	35	45	2.5	2	231	396	4250	5310	33118TN1			90	102	102	134	138	5	10	2	2	0.4	1.5	0.8	2.97
	140	30	26	32.4	2	1.5	130	210	4560	5700	32018 RX2			90	100	99	125	134	6	8	2	2	0.34	1.7	0.9	1.7
	140	32	24	32	2	1.5	159	245	4560	5700	32018		3EB	90	100	99	125	134	6	8	2	2	0.42	1.4	0.8	1.7
95	145	30	26	32.4	2	1.5	135	220	2200	3200	32019 X2/YA	2007119		95	104	104	133	139	5	8	2	1.5	0.36	1.7	0.9	1.7
	170	32	27	34.5	3	2.5	224	287	1900	2800	30219		3FB	95	106	106	157	163	5	10	2.5	2.1	0.42	1.4	0.8	0
	170	43	37	45.5	3	2.5	313	443	1900	2800	32219	7519E	3FC	95	106	106	157	163	5	11	2.5	2.1	0.42	1.4	0.8	4.24
95	200	45	38	49.5	4	3	368.6	483	1800	2600	30319	7319E	2GB	95	109	109	180	191	8	14	3	2.5	0.35	1.7	0.9	7.13
	200	67	55	71.5	4	3	515.5	745.8	1700	2400	32319	7619E	2GD	95	109	109	180	191	14	20	3	2.5	0.35	1.7	0.9	10.73
	160	47	38	47	3	2.5	251	420	3970	4970	30619		3FB	95	109	109	145	146	5	9	2.5	2.5	0.29	2	1.1	3.7
	145	32	24	32	2	1.5	162	255	4400	5500	32019		3EB	95	105	104	130	140	6	8	2	2	0.45	1.3	0.7	1.77
100	150	30	26	32.4	2	1.5	163	266	2000	3000	32020 YB2	2007120		100	109	109	138	144	5	8	2	1.5	0.37	1.6	0.9	1.79
	180	34	29	37	3	2.5	253.3	351.6	1900	2800	30220	7220E	3FB	100	111	111	162	172	5	10	2.5	2.1	0.42	1.4	0.8	3.73
	180	46	39	49	3	2.5	340.2	513.7	1800	2600	32220	7520E	3FC	100	111	111	162	172	5	14	2.5	2.1	0.42	1.4	0.8	5.12
	215	47	39	51.5	4	3	406	532.3	1700	2400	30320	7320E	2GB	100	116	116	194	205	10	16	3	2.5	0.35	1.7	0.9	8.69
	215	73	60	77.5	4	3	599.5	881.9	1600	2200	32320	7620E	2GD	100	116	116	194	205	14	20	3	2.5	0.35	1.7	0.9	12.9
	150	30	26	32.4	2	1.5	150	261	4250	5310	32020 RX2			100	109	109	134	144	6	8	2	2	0.37	1.6	0.9	1.8
	150	32	24	32	2	1.5	165	265	4250	5310	32020		3EB	100	109	109	134	144	6	8	2	2	0.46	1.3	0.7	1.84

Single row tapered roller bearings
d105~120mm



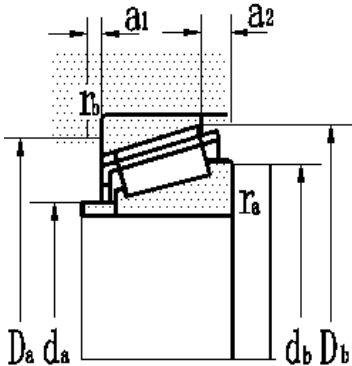
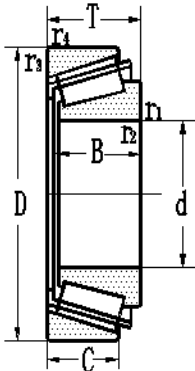
Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN					r/min					mm	mm											kg
d	D	B	C	T	r1,2 min	r3,4 min	dynamic C	static Co	grease r/min	oil r/min	present	orginal	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo			
105	190	36	30	39	3	2.5	284.6	400	1800	2600	30221	7221E	2FB	105	116	116	172	182	6	11	2.5	2.1	0.42	1.4	0.8	4.936	
	190	50	43	53	3	2.5	380.1	581.2	1800	2600	32221	7521E	3FC	105	116	116	172	182	6	12	2.5	2.1	0.42	1.4	0.8	6.25	
	225	49	41	53.5	4	3	432.6	568.1	1600	2200	30321	7321E	2GB	105	120	120	202	215	10	16	3	2.5	0.35	1.7	0.9	9.912	
	225	77	63	81.5	4	3	646.4	955.6	1500	2000	32321	7621E	2GD	105	123	123	202	215	14	20	3	2.5	0.35	1.7	0.9	14.458	
	160	35	26	35	2.5	2	194	311	3970	4970	32021		3EB	105	116	115	143	154	6	9	2	2	0.44	1.3	0.7	2.38	
	160	43	34	43	2.5	2	240	398	3970	4970	33021		3EB	105	116	115	143	154	6	9	2	2	0.46	1.3	0.7	2.94	
110	200	38	32	41	3	2.5	314.1	445.1	1700	2400	30222	7222E	3FB	110	121	121	181	192	6	11	2.5	2.1	0.42	1.4	0.8	5.422	
	200	53	46	56	3	2.5	430.7	668.6	1700	2400	32222	7522E	3FC	110	121	121	181	192	6	12	2.5	2.1	0.42	1.4	0.8	7.86	
	240	50	42	54.5	4	3	471.6	619.1	1600	2200	30322	7322E	2GB	110	124	124	215	230	10	16	3	2.5	0.35	1.7	0.9	11.45	
	240	80	65	84.5	4	3	722.8	1075.9	1400	1900	32322	7622E	2GD	110	127	127	215	230	18	25	3	2.5	0.35	1.7	0.9	18.78	
	170	38	29	38	2.5	2	202	354	3730	4660	32022		3DC	110	122	120	152	163	7	9	2	2	0.43	1.4	0.7	3.01	
	170	47	37	47	2.5	2	266	464	3730	4660	33022		3EB	110	122	120	152	163	7	9	2	2	0.29	2.1	1.1	3.76	
120	180	36	31	38.4	2.5	2	191	331	1700	2400	32024 X2/YA	2007124		120	130	130	166	174	6	9	2.1	2	0.37	1.6	0.9	3	
	215	40	34	43.5	3	2.5	335.8	487.2	1600	2200	30224	7224E	4FB	120	131	131	196	207	7	12	2.5	2.1	0.44	1.4	0.8	6.125	
	215	58	50	61.5	3	2.5	492	741	1600	2200	32224	7524E	4FD	120	131	131	196	207	8	12	2.5	2.1	0.44	1.4	0.8	9.25	
	260	55	46	59.5	4	3	562	754.3	1500	2000	30324	7324E	2GB	120	137	137	235	250	10	16	3	2.5	0.35	1.7	0.9	13.7	
	260	86	69	90.5	4	3	824.8	1239.3	1300	1800	32324	7624E	2GD	120	138	138	235	250	18	25	3	2.5	0.35	1.7	0.9	21.7	
	180	38	29	38	2.5	2	230	394	3510	4390	32024/YA	2007124 K		120	131	130	161	173	7	9	2	2	0.37	1.6	0.9	3.07	
	180	36	31	38.4	2.5	2	230	394	3510	4390	32024 X2R			120	131	130	161	173	7	9	2	2	0.37	1.6	0.9	3.14	

Single row tapered roller bearings
d130~160mm



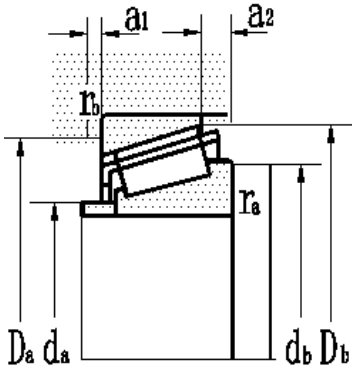
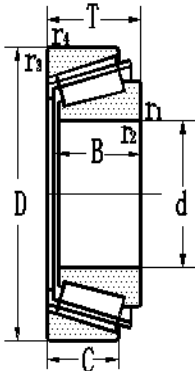
Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN					r/min					mm	mm											kg
d	D	B	C	T	r1,2	r3,4	dynamic	static	grease	oil					da	db	Da	Db	a1	a2	ra	rb	e	Y	Yo		
					min	min	C	Co	r/min	r/min		present	original	ISO355	max	max	min	min			max	max					
130	230	40	34	43.8	4	3	364.3	525.6	1500	2000		30226	7226E	4FB	130	142	142	208	222	7	12	3	2.5	0.44	1.4	0.8	7.24
	230	40	34	44.5	4	3	351	466	1500	2000		30226 X2	7226	4FB	130	142	142	208	222	7	12	3	2.5	0.44	1.4	0.8	7.25
	230	64	54	67.8	4	3	561	855	1500	2000		32226	7526E	4FD	130	142	142	208	222	10	16	3	2.5	0.44	1.4	0.8	11.3
	280	58	49	63.8	5	4	639.3	864.5	1300	1800		30326	7326E	2GB	130	148	148	250	267	14	18	4	3	0.35	1.7	0.9	17.1
	200	45	34	45	2.5	2	309	513	1300	1800		32026		3EB	130	144	140	178	192	8	11	2	2	0.43	1.3	0.7	4.9
140	250	42	36	45.8	4	3	407.3	589.4	1400	1900		30228	7228E	4FB	140	153	153	226	241	7	12	3	2.5	0.44	1.4	0.8	8.892
	250	68	58	71.8	4	3	657	1020	1400	1900		32228	7528E	4FD	140	153	153	226	241	10	16	3	2.5	0.44	1.4	0.8	14.4
	300	62	53	67.8	5	4	721.8	985.5	1200	1700		30328	7328E	2GB	140	159	159	270	288	14	18	4	3	0.35	1.7	0.9	21.7
	210	42	36	45.5	2.5	2	259	460	2970	3720		32028 X2/YA	2007128		140	153	150	187	202	8	11	2	2	0.37	1.6	0.9	5.72
	210	45	34	45	2.5	2	314	533	2970	3720		32028		3EB	140	153	150	187	202	8	11	2	2	0.46	1.3	0.7	5.14
150	270	45	38	49	4	3	495	687	1300	1800		30230	7230E	4GB	150	164	164	248	260	8	14	3	2.5	0.44	1.4	0.8	11.1
	270	73	60	77	4	3	718	1191.4	1200	1700		32230	7530E	4GD	150	164	164	248	260	14	20	3	2.5	0.44	1.4	0.8	18.2
	320	108	90	115	5	4	1010	1580	950	1400		32330	7630		150	172	172	287	305	20	30	4	3	0.31	1.9	1.1	37.1
	225	48	36	48	3	2.5	361	621	2760	3450		32030		3EB	150	164	162	200	216	8	12	2.5	2.5	0.46	1.3	0.7	6.38
160	290	48	40	52	4	3	556	774	1100	1600		30232	7232E	4GB	160	175	175	265	279	8	14	3	2.5	0.44	1.4	0.8	13.7
	290	80	67	84	4	3	852.6	1446.1	1000	1400		32232	7532E	4GD	160	175	175	265	279	14	20	3	2.5	0.44	1.4	0.8	21.1
	240	51	38	51	3	2.5	346	346	2570	3210		32032/YA4		4GD	160	175	172	213	231	8	13	2.5	2.5	0.37	1.6	0.9	7.16

Single row tapered roller bearings
d170~240mm



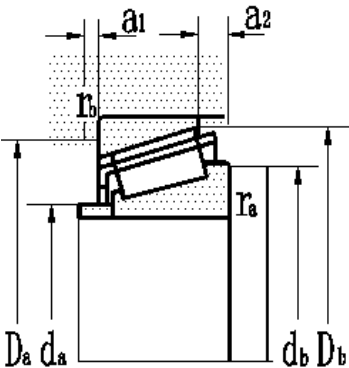
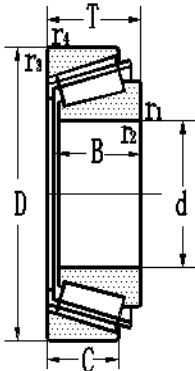
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN				r/min					mm	mm											kg
d	D	B	C	T	r1,2	r3,4	dynamic	static	grease	oil	present	orginal	ISO355	da	db	Da	Db	a1	a2	ra	rb	e	Y	Yo		
					min	min	C	Co	r/min	r/min			series code	max	max	min	min			max	max					
170	360	120	100	127	5	4	1280	2080	850	1100	32334	7634		170	192	192	326	344	20	4	3	0.36	1.7	0.9	58.3	58.3
180	320	86	71	91	5	4	998.1	1727.3	950	1400	32236	7536E	4GD	180	196	196	292	308	18	25	4	3	0.45	1.3	0.7	29.8
	280	60	52	64.5	3	2.5	550	928	2160	2700	32036 X2		4GD	180	199	192	247	267	10	16	2.5	2.5	0.28	2.1	1.2	13.5
190	290	60	52	64.5	3	2.5	511	970	1000	1500	32038 X2/YA	2007138		190	202	202	268	282	8	14	2.5	2.1	0.29	2.1	1.1	14.1
	340	92	75	97	5	4	1117	1919.5	900	1300	32238	7538E	4GD	190	208	208	309	328	18	25	4	3	0.44	1.4	0.8	36.1
	260	45	34	45	2.5	2	335	699	2350	2930	32938			190	202	202	231	248	8	11	2	2	0.48			6.76
	290	60	52	64.5	3	2.5	511	970	2070	2590	32038 X2/HN YA	2007138N		190	209	202	257	279	10	16	2.5	2.5	0.29			14.1
200	360	98	82	104	5	4	1309.4	2203.8	900	1300	32240	7504E	3GD	200	220	220	330	345	18	25	4	3	0.41	1.5	0.8	43.2
205	485	95.2	73	118	4	4	1418	1750	770	960	30641	7841		205	247	279	410	454	20	30	3	3	0.87	0.7	0.4	90.8
220	340	72	62	76.5	4	3	726	1380	900	1300	32044 X2	2007144		220	234	234	314	331	10	16	3	2.5	0.35	1.7	0.9	22.2
	400	65	54	73	4	3	941	1330	850	1200	30244 X2	7244		220	244	244	367	385	14	20	3	2.5	0.37	1.6	0.9	35.4
	400	108	90	115	4	3	1530	2565	800	1100	32244	7544		220	244	244	367	385	20	30	3	2.5	0.39	1.5	0.8	48.1
	400	108	90	115	4	3	1230	2280	1420	1780	32244 X2			220	238	238	381	382	12	24	3	3	0.39	1.5	0.8	48.1
240	440	120	100	127	4	4	1843	3183	750	1000	32248	7548E		240	262	262	393	425	20	30	3	3	0.44	1.4	0.8	81.3

Single row tapered roller bearings
d240~305mm



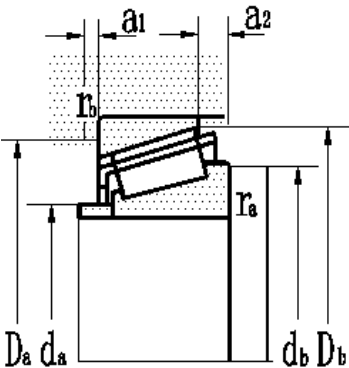
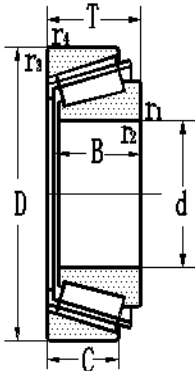
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN				r/min					mm	mm											kg
d	D	B	C	T	r1,2 min	r3,4 min	dynamic C	static Co	grease r/min	oil r/min	present	orginal	IS0355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
240	360	76	57	76	4	3	709	1560	850	1070	32048			240	261	254	318	346	12	19	3	3	0.36		25.8	
241	360	76	57	76	4	3	709	1560	850	1060	32048/YA2			241	261	254	318	346	12	19	3	3	0.36		25.6	
255	560	105	70	124	6	6	1816	2380	620	770	30651	7851		255	300	338	480	523	30	40	5	5	0.87	0.7	0.4	129
260	400	82	71	87.7	5	4	917	1849	800	1100	32052 X2	2007152		260	277	277	370	386	12	18	4	3	0.3	2	1.1	36.9
	540	102	85	114	6	6	2014	2898	670	900	30352 X2	7352		260	301	301	490	506	20	30	5	5	0.23	2.6	1.4	111
280	350	33	26	36	2	2	259	614	870	1100	30656	1007856		280	295	295	336	342	6	9	2	2	0.43	1.4	0.8	6.33
	380	63.5	48	63.5	3	2.5	601	1430	800	1000	32956	2007956	4EC	280	298	298	348	368	11	16	2.5	2.1	0.43	1.4	0.8	19.8
	380	60	52	64.5	3	2.5	601	1430	800	1000	32956/YB2	2007956K		280	300	325	348	368	11	16	2.5	2.1	0.29	2.1	1.1	19.8
300	420	72	61	76.5	4	3	998	2128	700	950	32960/YB2	2007960		300	317	317	394	408	10	16	3	2.5	0.28	2.1	1.2	28.7
	460	95	82	101	5	4	803	1722	560	700	32060/YB2	2007160		300	320	320	425	445	14	20	4	3	0.31	1.9	1.1	55.9
	440	70	55	73	4	3	959	2062	570	600	30660	7860		300	318	318	406	426	14	20	3	2.5	0.44	1.4	0.8	30.7
	500	90	70	95	4	4	1225	2207	530	670	31160 X2	1007760		300	327	327	460	480	20	30	3	3	0.32	1.9	1	67.7
304.8	546.1	171	140	171	8	8	2660	3020	530	660	306/304.8/HC			304.8	316	316		534			18	18	0.34			175

Single row tapered roller bearings
d320~420mm



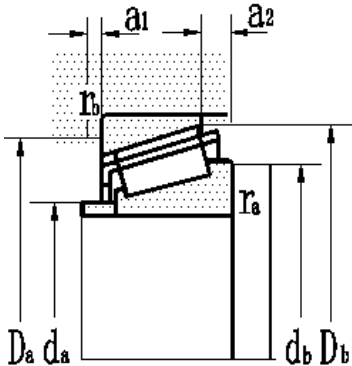
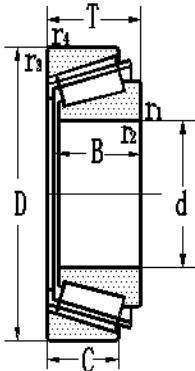
Boundary dimensions					Basic load ratings					Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN					r/min					mm	mm											kg
d	D	B	C	T	r1,2 min min	r3,4 min min	dynamic C	static Co	grease r/min	oil r/min	present	original	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo			
320	440	72	62	76.5	4	3	607	1375	560	700	32964	2007964		320	335	335	412	427	10	16	3	2.5	0.3	2	1.1	44.7	
	480	95	82	101	5	4	1463	2945	530	670	32064/YB2	2007164		320	340	340	440	468	14	20	4	3	0.42	1.4	0.8	59	
330.2	482	64	87	3	3	863	1526	530	670	306/330.2	7766			330.2	351	351	449	462	20	30	2.5	2.5	0.31	1.9	1.1	37.2	
340	460	72	62	76.5	4	3	611	1428	530	670	32968/YB2	2007968		340	356	356	432	448	10	16	3	2.5	0.31	1.9	1.1	34.3	
	520	82	64	86	4	3	634	1526	500	630	32068 X2	7168		340	360	360	186	501	18	25	3	3	0.29	2.1	1.1	57	
360	480	72	62	76.5	4	3	634	1526	500	630	32972/YB2	2007972		360	376	376	452	468	10	16	3	2.5	0.33	1.8	1	35.9	
	540	82	64	86	4	4	919	1848	480	600	31072 X2	7172		360	380	380	504	522	18	25	3	3	0.3	2	1.1	60.5	
380	520	65	47	66.5	3	3	529	1138	480	600	31976 X2	1007976		380	402	402	486	505	15	20	2.5	2.5	0.42	1.4	0.8	37.5	
	620	106	76	112	4	4	909	1708	400	500	31176 X2	1007776		380	420	420	534	560	10	40	3	3	0.46	1.3	0.7	114	
400	600	90	67	95	4	4	1040	2128	400	500	31080 X2	7180		400	420	420	560	580	20	30	3	3	0.39	1.5	0.8	84	
	540	65	48	70	5	4	811	1658	980	1220	31980			400	422	422	499	518	16	16	4	4	0.44	1.3	0.7	40.6	
420	560	65	51	70	3	3	630	1383	400	500	31984 X2	1007984		420	440	440	532	546	15	20	2.5	2.5	0.31	1.9	1.1	42.4	
	620	90	70	95	4	4	1132	2422	380	480	31084 X2	7184		420	448	448	579	601	20	30	3	3	0.41	1.5	0.8	88	
	700	122	92	130	6	6	1620	2800	310	420	31184 X2	107784		420	490	490	606	646	15	40	5	5	0.32	1.9	1	183	

Single row tapered roller bearings
d440~710mm



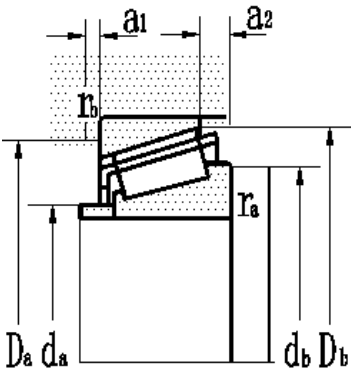
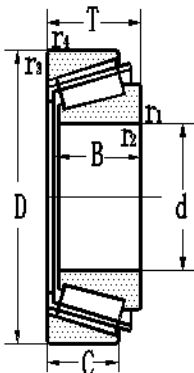
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions					Calculation factors			Mass			
mm					kN				r/min					mm	mm								kg			
d	D	B	C	T	r1,2 min min	r3,4 min min	dynamic C	static Co	grease r/min	oil r/min	present	original	ISO355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
440	650	94	67	96.4	6	4	1193	2422	360	450	31088 X2	7188		440	469	469	606	629	20	30	5	3	0.43	1.4	0.8	99
460	620	74	58	80	3	3	836	1843	380	480	31992 X2	1007992		460	480	480	590	605	18	25	2.5	2.5	0.4	1.5	0.8	59.8
	680	100	78	105	6	6	1680	3550	330	450	31092 X2	7192		460	516	516	610	640	8	34	5	5	0.3	1.9	1.1	118
480	650	78	60	84.2	4	4	854	1918	340	430	31996 X2	1007996		480	502	502	613	633	18	25	3	3	0.42	1.4	0.8	71
500	720	100	82	110	6	6	1459	3192	280	360	310/500 X2	71/500		500	530	530	674	700	20	30	5	5	0.33	1.8	1	135
530	710	82	62	88	4	4	1001	2380	280	360	319/530 X2	10079/530		530	554	554	672	693	20	30	3	3	0.41	1.5	0.8	94.8
	670	95	82	100	5	3	1850	4800	740	920	329/530 X2			530	552	552	637	658	20	30	4	4	0.38			81.3
560	750	85	64	92.5	4	4	1001	2576	240	320	319/560 X2	10079/560		560	586	586	708	731	20	30	3	3	0.44	1.4	0.8	104
	820	115	84	121	6	6	1887	4046	220	300	310/560 X2	71/560		560	594	594	768	795	30	40	5	5	0.39	1.5	0.8	191
600	870	118	89	124	6	6	2020	4438	180	240	310/560 X2	71/600		600	630	630	821	845	30	40	5	5	0.41	1.5	1.6	235
630	920	128	94	135	7.5	7.5	2315	5222	170	220	310/630 X2	71/630		630	669	669	858	891	30	40	6	6	0.42	1.4	0.8	278
710	950	106	80	114	6	6	1765	4494	150	190	319/710 X2	10079/710		710	743	743	895	925	25	35	5	5	0.46	1.3	0.7	210.24

Single row tapered roller bearings
d800~1800mm



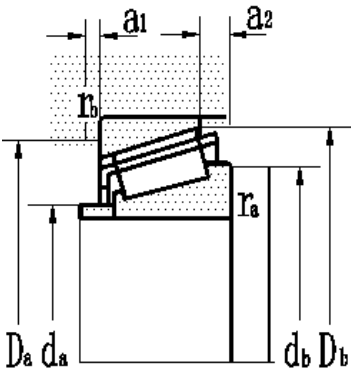
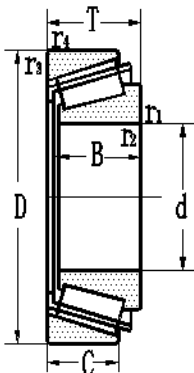
Boundary dimensions					Basic load ratings				Limiting speeds		Bearing designations			Journal	Mounting dimensions								Calculation factors			Mass
mm					kN				r/min					mm	mm											kg
d	D	B	C	T	r1,2 min	r3,4 min	dynamic C	static Co	grease r/min	oil r/min	present	orginal	IS0355 series code	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo		
800	1060	115	89	122	6	6	2132	5530	130	170	319/800 X2	10079/800		800	838	838	1005	1031	25	35	5	5	0.35	1.7	0.9	275
800	990	55	45	57	5	5	907	2644	150	190	308/800 R/YB2P6			800	822	822	930	968	25	35	4	4	0.39	1.5	0.8	96.3
900	1180	122	87	124	6	6	2173	5782	95	130	319/900 X2	10079/900		900	940	940	1117	1146	30	40	5	5	0.39	1.5	0.8	330
	1280	170	135	190	7.5	7.5	5615	13913	95	130	320/900 X2	71/900		900	944	944	1194	1246	45	60	6	6	0.54	1.1	0.6	703
950	1250	132	100	140	7.5	7.5	3930	10427	80	100	319/950 X2	10079/950		950	994	994	1191	1220	30	40	6	6	0.33	1.8	1	428
1800	2300	218	180	260	15	15	10810	34000	80	100	306/1800			1800	1824	1824	2191	2276	30	40	32	32	0.67	0.9	0.5	2339

Single row tapered roller bearings,inch sizes
d17. 462~30. 162mm



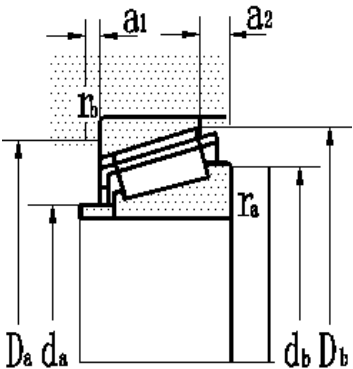
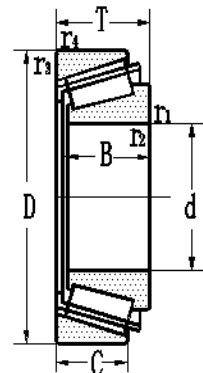
Boundary dimensions					Basic load ratings						miting speed r/min	Bearing designations		Journal mm	Mounting dimensions								Calculation factors			Mass kg		
mm					r/min		Kn		dynamic	static		grease	oil		present	original	da max	db max	Da min	Db min	mm				e		Y	Yo
d	D	B	C	T	r1,2 min	r3,4 min	C	Co													ra max	rb max	a1	a2				
17.462	39.878	14.605	10.668	13.843	1.3	1.3	21.2	20.8	9000	13000	LM11749/LM11710	LM11749/LM11710	17.462	21.5	23	34	37	2	3	1.3	1.3	0.29	2.1	1.15	0.0833			
19.05	45.237	16.637	12.065	15.494	1.3	1.3	27.5	27.5	8500	12000	LM11949/LM11910	LM11949/LM11911	19.05	23.5	25	39.5	41.5	2	4	1.3	1.3	0.3	2	1.1	0.124			
21.43	50.005	18.288	13.97	17.526	1.3	1.3	36.9	38	8000	11000	M12649/M12610	M12649/M12611	21.43	25.4	27.5	44	46	2	4	1.3	1.3	0.28	2.16	1.19	0.169			
21.987	45.237	16.637	12.065	15.494	1.3	1.3	26.9	33.6	9270	11590	LM12749/LM12710		21.987	27.5	26	39.5	42.5	3	4	1.3	1.3	0.31	2	1.1	0.115			
22	45.237	16.637	12.065	15.494	1.3	1.3	27.5	31	8000	11000	LM12749/LM12710	LM12749/LM12711	22	26	28	39.5	41.5	2	4	1.3	1.3	0.3	2.02	1.11	0.115			
	46	16.637	12.065	15.494	1.3	1.3	27.5	31	8000	11000	LM12749/LM12711	LM12749/LM12712	22	26	28	39.5	41.5	2	4	1.3	1.3	0.3	2.02	1.11	0.12			
25.4	50.005	14.26	9.525	13.495	1	1	27	29	7500	10000	07100/07196	07100/07197	25.4	29.5	30.5	44.5	47	3	5	1	1	0.4	1.49	0.82	0.119			
	50.292	14.732	10.668	14.224	1.3	1.3	26	30	7500	10000	L44643/L44610	L44643/L44611	25.4	29.5	31.5	44.5	47	3	5	1.3	1.3	0.37	1.6	0.88	0.127			
26.988	50.292	14.732	10.668	14.224	3.5	1.3	26	30	7500	10000	L44649/L44610	L44649/L44611	26.988	31	37.5	44.5	47	3	5	2.5	1.3	0.37	1.6	0.88	0.12			
29	50.292	14.732	10.668	14.224	3.5	1.3	26	33	7000	9500	L45449/L45410	L45449/L45411	29	33	39.5	44.5	48	3	5	2.5	1.3	0.37	1.62	0.89	0.113			
30.162	64.292	21.433	16.67	21.433	1.5	1.5	48	66.5	6750	8430	M86649/M86610		30.162	38.2	41	54	61	3	5	3	1.3	0.55	1.1	0.6	0.331			

Single row tapered roller bearings,inch sizes
d31. 75~41. 275mm



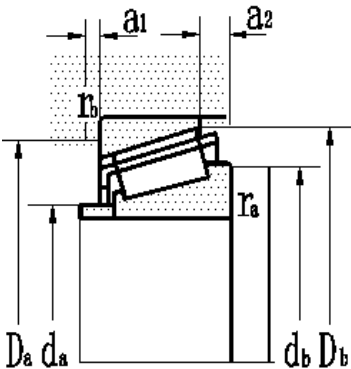
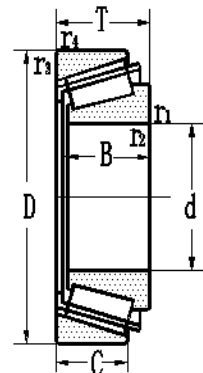
Boundary dimensions					Basic load ratings						miting speed		Bearing designations		Journal		Mounting dimensions						alculation factors			Mass
mm					Kn				r/min						mm		mm									kg
d	D	B	C	T	r1,2 min	r3,4 min	dynamic C	static Co	grease	oil	present	original	da max	db max	Da min	Db min	a1	a2	ra max	rb max	e	Y	Yo			
31.75	59.131	16.764	11.811	15.875	3.6	1.3	34.7	41.5	6300	7500	LM67048/LM67010	LM67048/LM67010	31.75	36	42.5	52	56	3	5	3	1.3	0.41	1.46	0.8	0.18	
	69.012	19.583	15.875	19.845	3.5	1.3	51.2	65.4	9060	11320	14125A/14276		31.75	37.5	38.5	60	63	3	4.5	3	3	0.38	1.57	0.86	0.353	
	62	19.05	14.288	18.161	5.5	1.3	45.8	60.1	9980	12470	15123/15245		31.75	36	42.5	52	56	3.5	4.5	4	4	0.35	1.7	0.94	0.244	
	59.131	16.764	11.811	15.875	3.6	1.3	32.8	43	10410	13010	LM67048/LM67010		31.75	36	42.5	52	56	3.5	4.5	3	3	0.41	1.46	0.8	0.18	
34.925	65.088	18.288	13.97	18.034	3.6	1.3	47.3	57	5600	7500	LM48548/LM48510	LM48548/LM48511	34.925	40	46	58	61	3	5	3	1.3	0.38	1.59	0.88	0.252	
	80.167	30.391	23.812	29.37	3.5	3.2	91.9	106	5000	6700	3379/3320	3379/3321	34.925	41.5	48	70	74.8	3	5	3	2.5	0.27	2.19	1.21	0.742	
34.987	59.975	16.764	11.938	15.875	3.6	1.3	32.2	47.3	6710	8390	L68149/L68111		34.987	39	45.5	53	56	3	4	3	3	0.42	1.44	0.79	0.177	
	59.131	16.764	11.938	15.875	3.6	1.3	32.2	47.3	10410	13010	L68149/L68110		34.987	39	45.5	52	56	3	4	3	3	0.42	1.44	0.79	0.169	
37.987	62.975	17	13.5	17	3.6	1.3	40	55	5600	7500	JL69349/JL69310	JL69349/JL69311	37.987	41	47	56	60	4	6	3	1.3	0.42	1.44	0.79	0.186	
38.1	76.2	25.65	19.05	23.81	3.5	3.2	74.8	93	5000	6700	2788R/2720	2788R/2721	38.1	43	50	65	72	4	6	3	2.5	0.3	2.03	1.12	0.501	
39.688	73.025	22.098	21.336	25.654	0.8	2.3	66	86.5	5000	6700	M201047/M201011	M201047/M201012	39.688	44	51	66	70	4	6	0.6	2.1	0.32	1.85	1.02	0.432	
41.275	73.431	19.812	14.732	19.558	3.5	0.8	55	69.5	4800	6300	LM501349/LM501310	LM501349/LM501310	41.275	48	53.5	64	69	4	8	3	0.8	0.4	1.5	0.8	0.336	
	88.9	29.37	23.02	30.162	3.5	3.3	95.2	127	4300	5600	FHM803146/FHM803110	FHM803146/FH803110	41.275	53	53.5	70	84	4	7	2.5	2.5	0.54	1.1	0.6	0.882	

Single row tapered roller bearings,inch sizes
d44. 45~55. 562mm



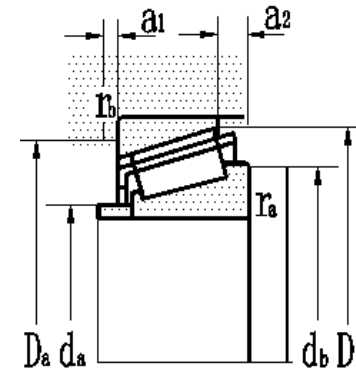
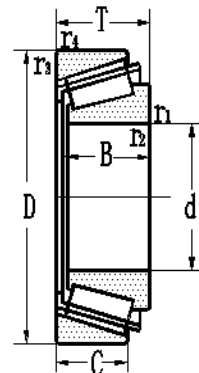
Boundary dimensions					Basic load ratings						Bearing designations		Journal mm	Mounting dimensions						Calculation factors			Mass kg		
mm					Kn		r/min		C	Co	present	original		da max	db max	Da min	Db min	mm		ra max	rb max	e		Y	Yo
d	D	B	C	T	r1,2 min	r3,4 min	dynamic	static										a1	a2						
44.45	82.931	25.4	19.05	23.81	3.5	0.8	80.9	106	4500	6000	25580/25520	25580/25520	44.45	50	56	72	78	4	6	2.5	0.8	0.32	1.85	1.02	0.57
45.23	79.985	20.638	15.08	19.842	2	1.3	55.1	70.8	4800	6300	17887/17831	17887/17832	45.23	50	56	72	78	4	6	2	1.3	0.37	1.64	0.9	0.402
45.242	73.431	19.812	15.748	19.558	3.5	0.8	53.9	69.5	4800	6300	LM102949/LM102910	LM102949/LM102911	45.242	50	57	68	70	3	4.5	2.5	0.8	0.31	1.97	1.08	0.3
	77.788	19.842	16.667	21.43	3.5	0.8	52.2	73.7	8110	10140	LM603049/LM603012		45.242	50	57	71	74	3.5	5	3	3	0.43	1.4	0.77	0.385
45.618	82.931	25.4	19.05	23.81	3.5	2.3	80.9	106	4500	6000	25590/25520	25590/25521	45.618	50	56	72	78	4	6	2.5	0.8	0.33	1.8	1	0.554
	82.931	25.4	22.225	26.988	3.5	2.3	80.9	106	4500	6000	25590/25523		45.618	50	56	72	78	4	6	2.5	2.1	0.33	1.8	1	0.603
50	82	21.5	17	21.5	3	0.6	66.9	94.1	4840	6060	JLM104948/JLM104910		50	55	60	76	8	4	6	2.5	2.5	0.3	1.96	1.08	0.429
50.8	82.55	22.225	16.51	21.59	3.5	1.3	60.8	94.1	4790	5990	LM104949/LM104911		50.8	55	62	75	78	4	6	4.5	5.5	0.31	1.96	1.08	0.426
52.388	92.075	25.4	19.845	24.608	3.5	0.8	82	108	4000	5300	28584/28521	28584/28522	52.388	59	69	83	87	4	7	2.5	0.8	0.38	1.59	0.87	0.695
55	90	26	18.5	23	3.5	0.5	84	110	3800	5000	JLM506848E/JLM506810	JLM506848E/JLM506811	55	61	69	78	87	7	8	2.5	0.5	0.4	1.49	0.82	0.586
55.562	97.63	24.608	19.446	24.608	3.5	0.8	80.9	71	4160	5200	28680/28622		55.562	62	68	88	92	4	5	3	3	0.4	1.49	0.82	0.754

Single row tapered roller bearings,inch sizes
d60. 325~85. 975mm



Boundary dimensions					Basic load ratings						Bearing designations		Journal mm	Mounting dimensions						Calculation factors			Mass kg		
mm					Kn		r/min		C	Co	present	original		da max	db max	Da min	Db min	mm		ra max	rb max	e		Y	Yo
d	D	B	C	T	r1,2 min	r3,4 min												a1	a2						
60.325	101.6	25.4	19.85	25.4	5	3.3	85.8	125	3600	4800	28985/28920	28985/28921	60.325	68	80	88	97	5	9	2.5	2.5	0.43	1.41	0.78	0.798
63.5	122.238	38.354	29.718	38.1	7	1.5	159	146	3400	4300	HM212047/HM212010	HM212047/HM212011	63.5	73	80	110	116	4	6	6	1.5	0.34	1.78	0.98	1.94
	122.238	38.354	29.718	38.1	7	3.3	159	146	3400	4300	HM212047/HM212011	HM212047/HM212012	63.5	73	80	110	116	4	6	6	2.5	0.34	1.78	0.98	1.93
66.675	107.95	25.4	19.05	25.4	3.5	0.8	85.8	125	3600	4800	29590/29522	H29590/29522	66.675	75	87	94	102.5	4	10	2.5	0.8	0.46	1.31	0.72	0.854
	122.238	38.354	29.718	38.1	3.5	1.5	159	146	3400	4200	HM212049/HM212010	HM212049/HM212011	66.675	75.5	82	110	116	4	6	2.5	1.5	0.34	1.78	0.98	1.85
	122.238	38.354	29.718	38.1	3.5	3.3	159	146	3400	4200	HM2112049/HM212011	HM2112049/HM212012	66.675	75.5	82	110	116	4	6	2.5	2.5	0.34	1.78	0.98	1.85
68.262	161.925	46.038	31.75	49.212	3.5	3.3	256	304	2690	3360	9278/9220		68.262	90.4	97	138	153	4.5	12	3	3	0.71	0.85	0.46	4.46
69.85	146.05	39.688	25.4	41.275	3.6	3.4	192	239	2880	3610	H913849/H913810		69.85	82	95	124	138	5.5	11	3	3	0.78	0.77	0.42	2.92
84.976	125.412	25.4	19.845	25.4	5	1.5	110	183	2970	3710	27695/27620		84.976	91	100	115	120	5	6	4	4	0.42	1.44	0.79	1
88.9	152.4	39.688	30.162	39.688	0.5	0.5	229	362	2550	3190	HM518445/HM518410		88.9	102	108.5	135	139	6	9.5	0.5	0.5	0.4	1.49	0.82	2.9
89.975	146.975	40	32.5	40	7	3.5	229	355	2200	3200	HM218248/HM218210	HM218248/HM218211	89.975	95	110.7	132	140	5	7	6	2.5	0.33	1.8	1	2.52

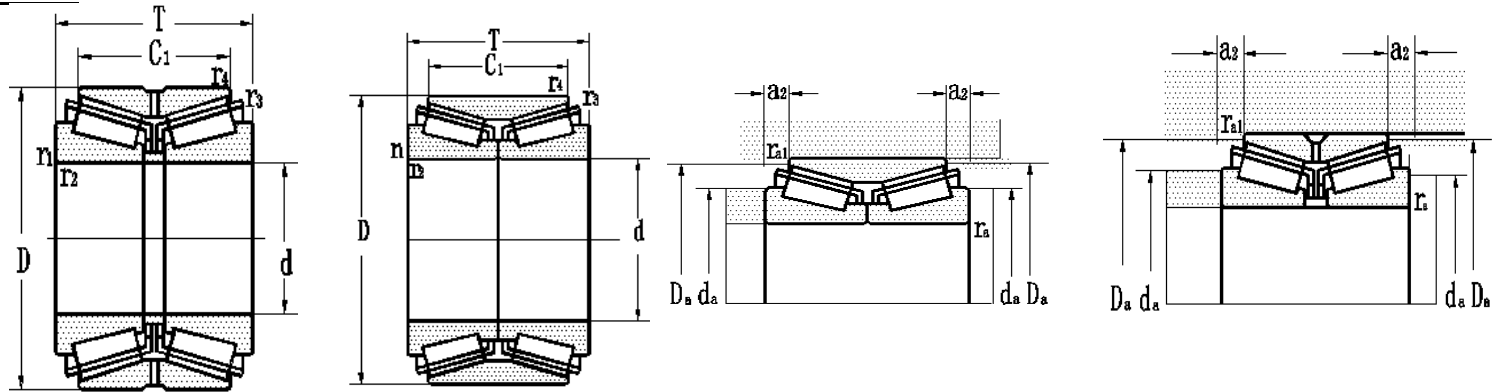
Single row tapered roller bearings,inch sizes
d95. 25～685. 8mm



Boundary dimensions					Basic load ratings						Bearing designations		Journal	Mounting dimensions						Calculation factors			Mass		
mm					K _n		r/min				present	original	mm	mm								kg			
d	D	B	C	T	r _{1,2} min	r _{3,4} min	dynamic C	static C ₀	grease	oil				d _a max	d _b max	D _a min	D _b min	a ₁	a ₂				r _a max	r _b max	e
95.25	152.4	36.322	30.162	39.688	5	3.3	185.3	289.7	2480	3100	594A/592A		95.25	104	110	135	144	4	9.5	4	4	0.44	1.36	0.75	2.55
99.974	156.975	42	34	42	8	3.5	243	391	2380	2970	HM220149/HM220110		99.974	109	122.9	142	151	5.5	9	18	18	0.33	1.9	0.99	2.92
99.975	212.725	66.675	53.975	66.675	3.5	3.3	556	783	1900	2380	HH224334/HH224310		99.975	120	124	192	203	7	12	3	3	0.33	1.8	0.99	11.3
142.88	200.025	39.688	34.13	41.275	3.5	3.3	242	500	1710	2130	48685/48620		142.875	151	158	185	193	5	9	3	3	0.34	1.77	0.97	3.84
180	250	45	37	47	3	2.5	338	682	1300	1630	JM736149/JM736110		180	190	196	232	243	5.5	10	2.5	2.5	0.48	1.25	0.69	6.72
254	358.775	71.438	53.975	71.438	3.5	3.3	694	1550	830	1040	M249749/M249710		254	270	274	335	343	7.5	14	3	3	0.33	1.8	1	21.7
304.8	444.5	61.912	39.688	63.5	6	1.1	685	1140	510	640	EE29120/291749	3-736	304.8	340	370	403	422	8	28	1.5	1	0.38	1.6	0.87	25.1
304.8	546.1	171.053	140.097	171.053	6	6	2800	5800	490	600	306/304.8	7961	304.8	355	400	500	515	8	28	5	5	0.34	1.8	1	175
393.7	546.1	61.12	55.562	76.2	6	6	860	1343	500	630	EE234154/234215	7979	393.7	416	437	508	532	18	25	6	5	0.48	1.2	0.7	44.8
609.6	787.4	93.662	69.85	93.662	6	6	2010	5060	340	450	EE649240/649310	3-734	609.6	655	690	725	760	10	25	6	5	0.37	1.6	0.9	110
685.8	876.3	92.075	69.85	93.663	6.4	6.4	1980	5150	300	400	EE655270/655345	EE655270/655345	685.8	730	775	814	843	13	25	5	5	0.43	1.4	0.8	133

Double row tapered roller bearing

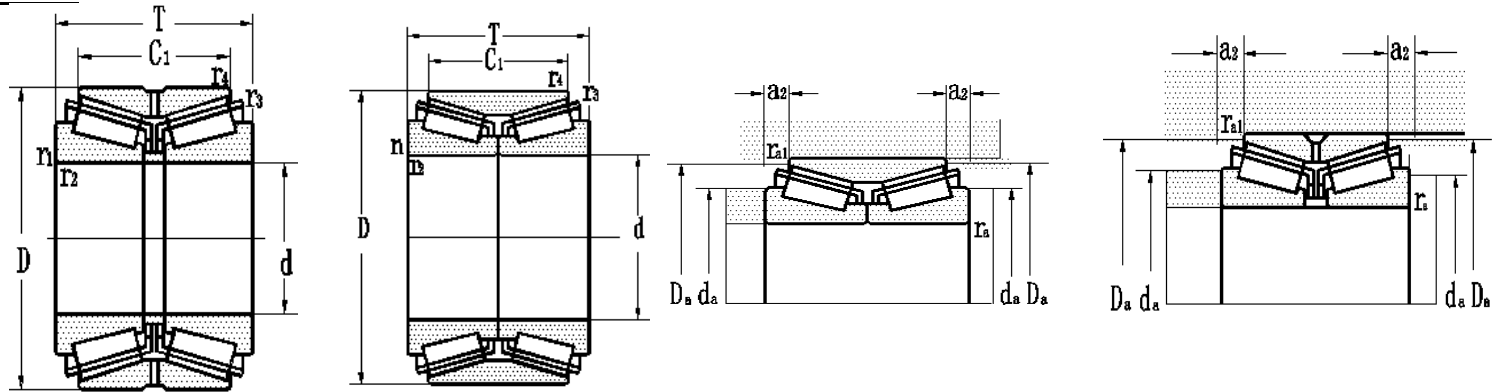
d30~65mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	C	Co				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
30	60.03	37	37	2.5	0.4	61.5	87.7	350606-2LS		30	42	56	0	2	2	0.46	1.5	2.19	1.4	0.491
34	64	37	37	2.5	1	60	82	3506/34X3TN1-2RS		34	46	61.5	0	2	2	0.46	1.5	2.19	1.4	0.483
35	64	37	37	2.5	1	60	82	350607X3TN1-2RS		35	47	61.5	0	2	2	0.46	1.5	2.19	1.4	0.467
35	80	45	57	2	0.5				57707	35	60	76.5	7	2	2	0.55	1.21	1.84	1.21	1.22
42	76	39	39	2	1.5	67.6	105.5	3506/42X3TN1-2RS		42	58	71	0	2	2	0.55	1.21	1.84	1.21	0.644
49	84	48	48	2.8	0.5	97.3	171	3506/49-2LS		49	63	79	0	2.5	2.5	0.46	1.5	2.19	1.4	1.13
	84	48	48	2.8	0.5	94.6	165	3506/49TN1-2LS		0	63	79	0	2.5	2.5	0.46	1.5	2.19	1.4	1.1
50	84	54	54	5.5	1.5	106	236	350610X3TN1-2RS		50	65	79	0	4	4	0.46	1.5	2.19	1.4	1.19
	100	54	79	2	0.8				797710	50	62	88	13	2	2	0.42	1.6	2.4	1.6	2.45
	100	54	79	2	0.8				797710 K	50	62	88	13	2	2	0.42	1.6	2.4	1.6	2.44
55	90	43	52	3.5	0.2	142	220		3-762	55	69	87	6	2.5	0.2	0.4	1.7	2.5	1.6	1.23
	100	48.5	60	2	0.6	192	281	352211		55	69	96	6	2	2	0.4	1.7	2.5	1.6	1.83
65	120	61.5	73	2	0.6	279	424	352213		65	75	116	6	2	2	0.4	1.63	2.48	1.63	3.35

Double row tapered roller bearing

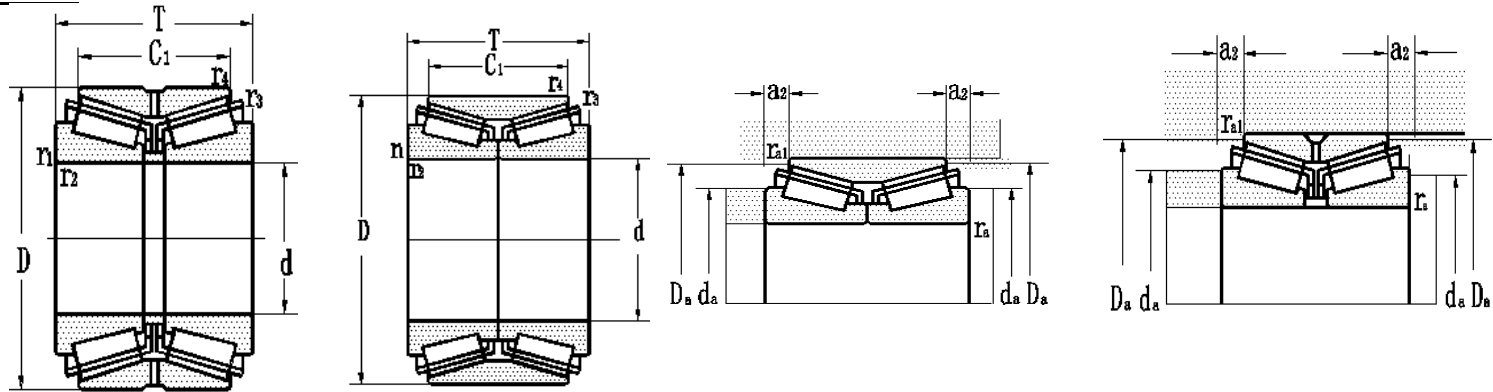
d70~120mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
						dynamic	static	present	original											
d	D	B	T	r1, 2min	r3, 4min	C	Co				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
70	110	28	38	1	0.5	104	156	350014 X2	97814	70	78	104	7	1	0.5	0.46	1.5	2.2	1.4	1.06
75	130	62	75	2	0.3	294	466	352215	97515	75	79	125	10	2	0.3	0.43	1.6	2.3	1.5	3.62
	130	62	75	2.5	0.5				B97515L	75	87			2	2	0.43				3.62
80	140	63.5	78	2.5	0.6	339	526	352216		80	92	135	8	2	2	0.42	1.57	2.39	1.57	4.48
90	160	77	94	2.5	0.6	405	535	352218	97518E	90	118	153	8	2	0.6	0.42	1.6	2.4	1.6	7.21
100	180	87	107	3	1	603	1010	352220		100	114			2.5	2.5	0.42				10.9
	190	100	125	4	2	651	1200	350620D1		100	118	175	14	3	3	0.36	1.86	2.83	1.86	15.4
110	200	101	121	3	1	763	1310	352222		110	124	193	11	2.5	2.5	0.42	1.57	2.39	1.57	15.7
	180	76	95	2	0.6	473	839	352122		110	120		10	2	2	0.28	2.32	3.53	2.32	8.63
120	200	90	110	2.5	0.6	663	900	352124	2097724	120	130	194	12	2	0.6	0.3	2.2	3.3	2.2	12
	215	109	132	3	1	843	1480	352224		120	134	205	13	2.5	2.5	0.44	1.52	2.32	1.52	19.5
	200	90	110	2	0.6	663	900		2697724	120	130	187	12	2	2	0.24	2.7	4.11	2.7	12

Double row tapered roller bearing

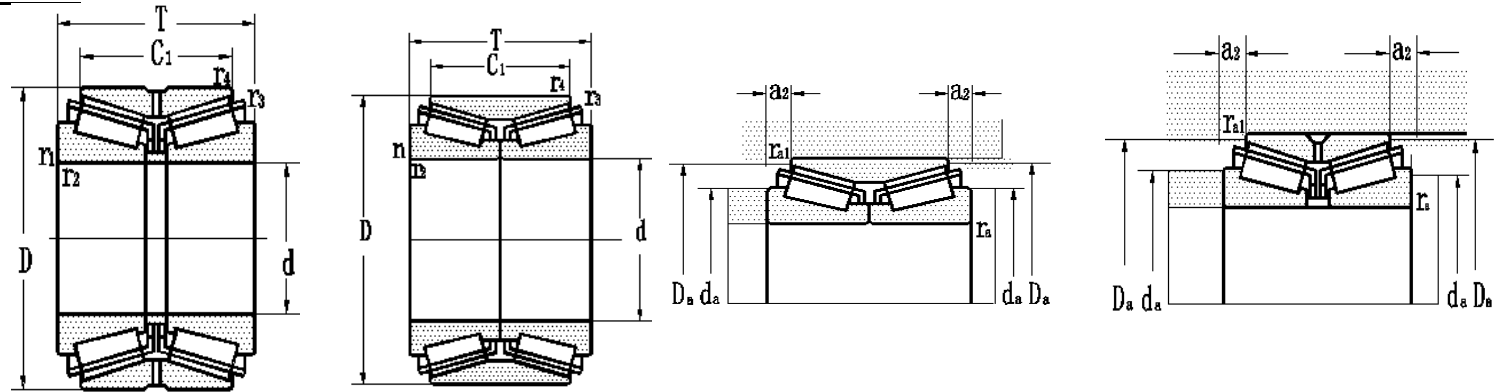
d130~190mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	C	Co				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
130	230	150	222	3	1	842	957	350626	197726	130	141	203	12	2.5	1	0.26	2.6	3.8	2.5	30.2
	230	120	149	4	1	916	1680	352226X2		130	148	215	15	3	3	0.26	2.6	3.8	2.5	24.6
	200	80	102	3	1	842	957		C2697126	130	144	194	12	2.5	2.5	0.43	1.52	2.3	1.52	11.1
	200	75	95	2.5	0.6	425	958	352026 X2	197726	130	142	188		2	2	0.35	1.88	2.87	1.88	10.1
140	210	75	95	2.5	0.6	498	924	352028 RX2	2697128	140	147	200	12	2	0.6	0.37	1.8	2.7	1.8	12.1
160	240	90	115	3	1	670	1062	352032 X2	2697132L	160	168	228	14	2.5	1	0.37	1.8	2.7	1.8	14.9
	270	120	140	2.5	1	947	2020	352132 X2		160	172	252	12	2	2	0.32	2.1	3.2	2.1	31
	270	120	150	2.5	1	947	2020	352132		160	172	252	16	2	2	0.32	2.1	3.2	2.1	31.6
170	260	100	128	3	1	833	1458	352034/YA	2097134K	170	183	248	14	2.5	1	0.31	2.2	3.2	2.1	21
	260	95	120	3	1	811	1630	352034 X2		170	184	250	13	3	3	0.44	1.48	2.26	1.48	21.2
180	250	74	95	2.5	0.6	504	1263	352936 X2		180	192	239	11	2	2	0.37	1.76	2.68	1.76	13.1
	250	80	102	2.5	0.6	519	1370	352936		180	192	242	11	2	2	0.48	1.37	2.09	1.37	14.2
	250	74	95	2.5	0.6	563	1210	352936 X2/YA4		180	192	242	11	2	2	0.37	1.76	2.68	1.76	12.7
	280	108	134	3	1.2	972	1930	352036 X2		180	194	263	13	2.5	2.5	0.28	2.32	3.53	2.32	28
190	320	130	170	3	1	1410	2720	352138		190	204	298	20	2.5	2.5	0.28	2.3	3.5	2.3	50.4

Double row tapered roller bearing

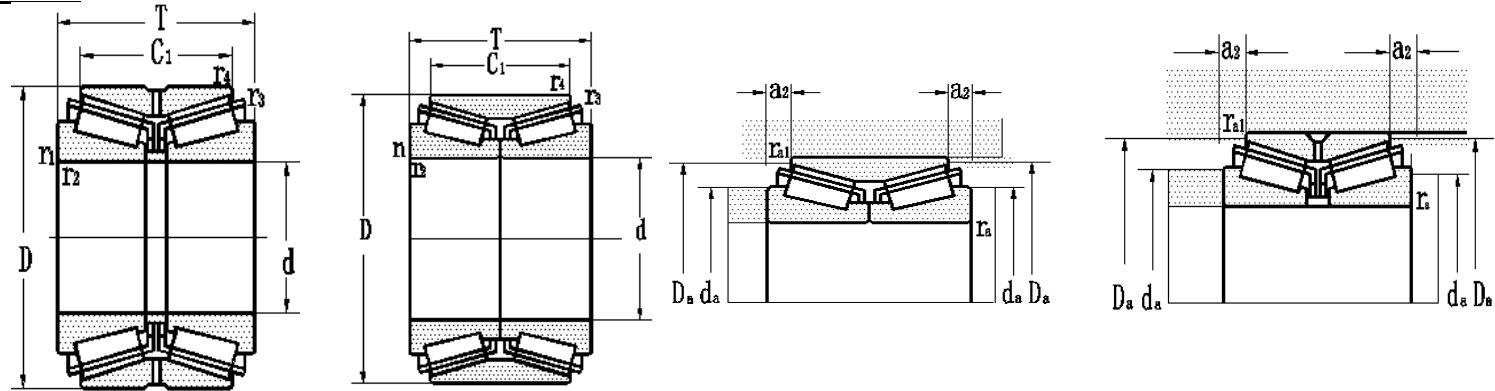
d200~260mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
200	280	92	116	3	1			352940X2/YA	2097940EK	200	214	273	14	2.5	2.5	0.39	1.8	2.6	1.7	22
200	280	85	110	3	1	615	1670	352940 X2		200	214	266	13	2.5	2.5	0.39	1.66	2.53	1.66	19.7
203.2	276.225	73.025	95.25	3.5	0.8	629	1044	3506/203.2/YA3	37941K	203.2	214	268	14	2.5	1	0.32	2.1	3.1	2	14.8
220	340	130	165	4	1	1370	2760	352044 X2		220	238	324	19	3	3	0.34	2	2.9	2	49.4
240	440	240	294	4	1	3349	5508	32248 X2/DB	3-745	240	252	427	2.6	3	1	0.43	1.6	2.3	7.5	174
	320	90	110	3	1	811	1950	352948 X2		240	254	314	12	2.5	2.5	0.46	1.4	2.19	1.4	22.6
	360	128	165	4	1	1340	3120	352048 X2		240	258	340	20	3	3	0.35	1.9	2.89	1.9	55.2
	400	128	160	5	1.5	1570	3370	240 KBE 031+L		240	264	380	18	4	4	0.39	1.69	2.57	1.69	75.2
247.65	406.4	203.2	247.65	6.4	1.6	2450	5330	46T504125GWH		247.65	257	343	23	14	14	0.33	2	3.1	2	121
260	360	108	134	3	1	1263	2430	352952 X2	2097952	260	274	350	16	2.5	1	0.37	1.8	2.7	1.8	36.8
	360	108	134	3	0.9	1263	2430	352952 X2/YA	2097952K	260	274	350	16	2.5	0.9	0.37	1.8	2.7	1.8	36.8
	400	146	185	5	1.1	1955	2600	352052 X2	2097152	260	277	380	22	4	1	0.3	2.3	3.3	2.2	76.8
	430	130	180	7.5	1.5	2737	3016	350652	97752	260	285	398	25	6	1.5	0.34	2	2.9	2	93.4
	440	180	225	4	1.1	2630	5190	352152		260	278	418	25	3	3	0.37	1.76	2.68	1.76	131

Double row tapered roller bearing

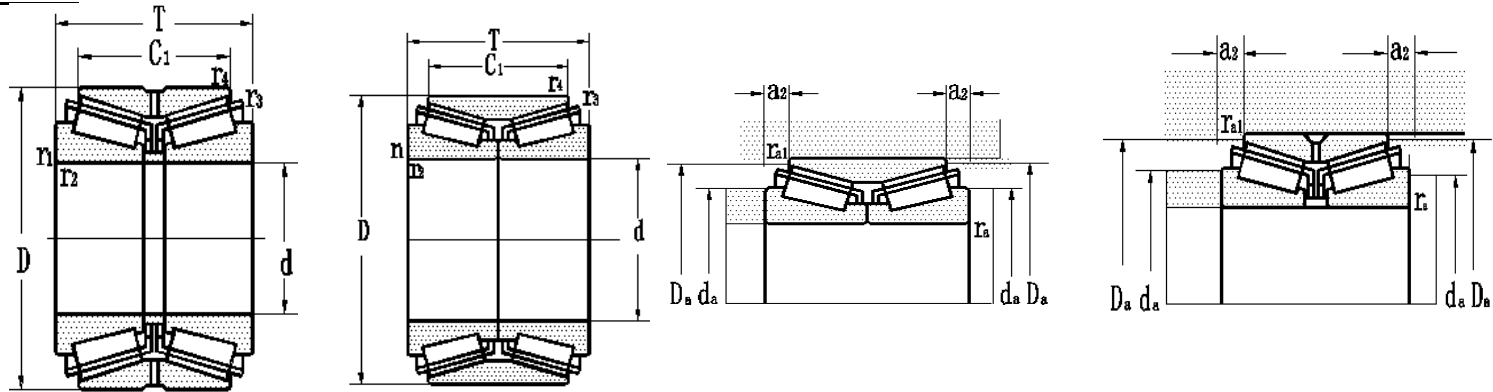
d280~350mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
280	380	108	134	3	1	1328	1885	352956 X2	2097956	280	294	371	16	2.5	1	0.29	2.3	3.4	2.3	41.3
	420	106	133	4	2	1270	1936	350056	97156	280	294	400	24	3	2	0.3	2.2	3.3	2.2	58.1
	420	146	186	5	1.1	1570	4000	352056 X2		280	302	400	20	4	4	0.37	1.8	2.7	1.8	84.6
300	420	128	160	4	1	1700	4270	352960 X2	2097960	300	317	408	18	3	1	0.28	2.4	3.6	2.3	63
	420	136	175	5	1	1800	2629	352960/YB2	97760	300	315	405	14	4	1	0.36	1.9	2.8	1.9	65.6
	440	100	140	5	1	2560	4440	350660 D	37860	300	327	420	22	4	1	0.44	1.5	2.3	1.5	58.42
	460	165	210	5	1.1	2278	4148	352060 X2	2097160	300	320	445	24	4	1	0.31	2.2	3.2	2.1	117
	500	152	205	5	1.5	2618	4165	351160	1097760	300	327	470	28	4	1.5	0.32	2.1	3.2	2.1	143
320	440	128	160	4	1	1326	2000	352964 X2	2097964	320	335	427	18	3	1	0.3	2.3	3.3	2.2	67
	480	160	210	5	1.1	1600	2200	352064 X2	2097164	320	345	456	25	4	1	0.42	1.6	2.4	1.6	122
	480	160	210	5	1.1	1600	2200	352064 X2/C9	2097164U	320	345	456	25	4	1	0.42	1.6	2.4	1.6	122
340	460	128	160	4	1	1575	2496	352968 X2	2097969	340	355	448	18	3	1	0.31	2.2	3.2	2.1	71
	520	135	180	5	1.5	1904	2640	350068	97168	340	360	501	27	4	1.5	0.29	2.3	3.4	2.3	119
	580	170	242	5	1.5	2299	4277	351168	1097768	340	368	555	38	4	1.5	0.42	1.6	2.4	1.6	214
350	590	140	200	9.5	1.5	1992	3367	350670	97770	350	368	566	32	8	1.5	0.42	1.6	2.4	1.6	212

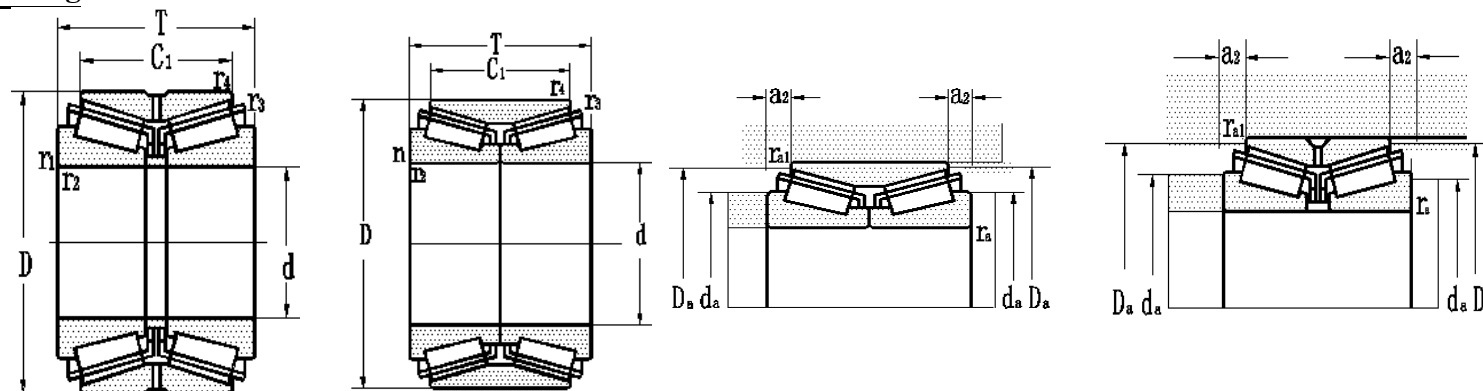
Double row tapered roller bearing

d360~420mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	C	Co				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
360	480	128	160	4	1	1296	2847	352972 X2	2097972	360	376	468	18	3	1	0.33	2.1	3.1	2	74.3
	530	110	155	5	1.5	1344	2800	350672 D1	37772	360	378	510	25	4	1.5	0.4	1.7	2.5	1.6	109
	530	110	155	5	1.5	1344	2800	350672	97772	360	378	510	25	4	1.5	0.4	1.7	2.5	1.6	107
	540	140	185	5	1.5	1716	3068	350072	97172	360	380	522	27	4	1.5	0.3	2.3	3.3	2.2	127
	540	140	185	5	1.5	1716	3068	350072/YA	97172Y	360	380	522	27	4	1.5	0.3	2.3	3.3	2.2	128
	600	170	242	5	1.5	2544	4407	351172	1097772	360	390	575	38	4	1.5	0.44	1.5	2.3	1.5	235
380	520	105	145	4	1.1	1062	2132	351976	1097976	380	402	505	22	3	1	0.43	1.6	2.3	1.6	80.3
	560	140	190	5	1.5	1560	2670	350076	97176	380	406	542	27	4	1.5	0.31	2.2	3.2	2.1	146
	620	170	242	5	1.5	2400	4050	351176	1097776	380	405	598	38	4	1.5	0.46	1.5	3.2	1.4	243
400	540	105	150	4	1.1	1062	2132	351980	1097980	400	420	525	24	3	1	0.45	1.6	2.2	1.5	86.9
	590	123	185	5	2	1500	3080	350180 D	37780	400	420	558	35	4	2	31	2.2	3.2	2.1	166
	600	150	206	5	1.5	2148	4134	350080	97180	400	420	580	30	4	1.5	0.4	1.7	2.5	1.7	180
420	560	105	145	4	1.1	1060	2167	351984	1097984	420	440	546	24	3	1	0.31	2.2	2.3	2.1	88.7
	620	125	190	5	1	1470	2490	350184 D	37784	420	440	598	34	4	1	0.35	2.1	3.2	2.1	171
	620	150	206	5	1.5	1790	3180	350084	97184	420	448	601	30	4	1.5	0.41	1.6	2.5	1.6	187
420	700	200	275	6	2.5	3010	5130	351184	1097784	420	460	670	40	5	2	0.32	2.1	3.1	2.1	392

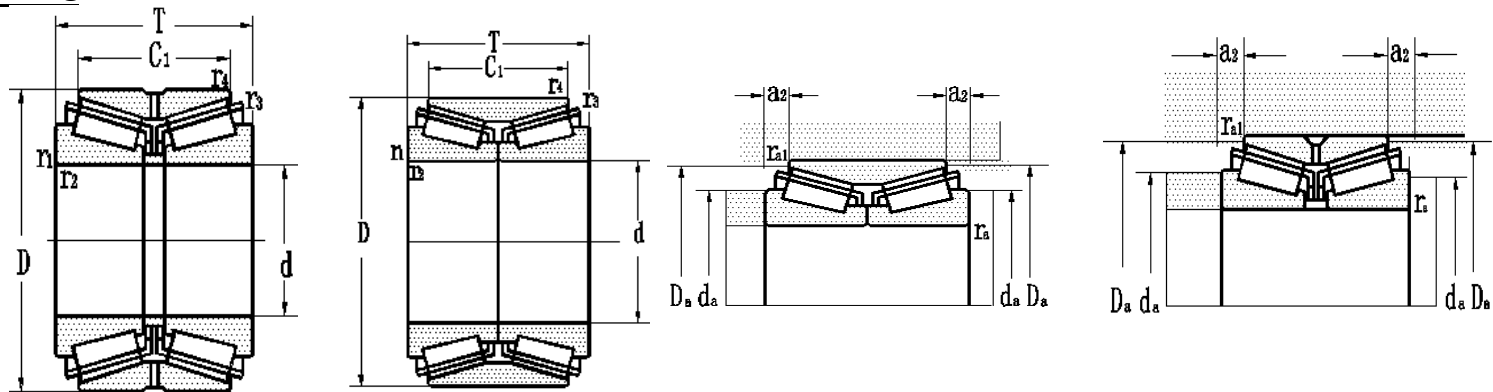
d431.8~530mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm					e	Y1	Y2	Y0	kg
d	D	B	T	r1, 2min	r3, 4min	C	Co				damax	Damin	a2	ramax	ralmax					
431.8	565.15	73.5	100.22	3.3	1.5	1040	2880	LY-3019		431.8	445	532	28	2.5	2.5	0.32	2.11	3.1	2.1	60.2
440	600	125	170	4	1.1	1390	2560	351988	1097988	440	460	585	24	3	1	0.39	1.8	2.6	1.7	114
	650	152	212	6	2.5	2000	3710	350088	97188	440	469	629	32	5	2	0.43	1.6	2.3	1.5	213
460	620	130	174	4	1.1	1410	2630	351992	1097992	460	480	605	24	3	1	0.4	1.7	2.5	1.7	130
	680	230	175	6	2.5	3024	6732	350092	97192	460	489	657	32	5	2	0.31	2.2	3.2	2.1	253
480	650	130	180	5	1.5	1859	3822	351996	1097996	480	520	633	27	4	1.5	0.42	1.6	2.4	1.6	151
	700	180	240	6	2.5	2928	5316	350096	97196	480	511	671	32	5	2	0.32	2.1	3.1	2.1	281
490	640	144	180	7.5	3	1716	3549	350698	97798	490	514	615	20	6	2.5	0.37	1.8	2.7	1.8	140
500	670	130	180	5	1.5	1884	3740	3519/500	10979/500	500	524	650	27	4	1.5	0.44	1.5	2.3	1.5	159
	720	180	236	6	2.5	2480	6384	3500/500	971/500	500	530	682	28	5	2	0.33	2	3	2	289
520	740	120	190	2.5	2.5	2158	3913	3506/520	977/520	520	546	712	37	2	2	0.42	1.6	2.4	1.6	231
530	710	136	190	5	1.5	2100	3729	3519/530	10979/530	530	554	683	29	4	1.5	0.41	1.6	2.5	1.6	190

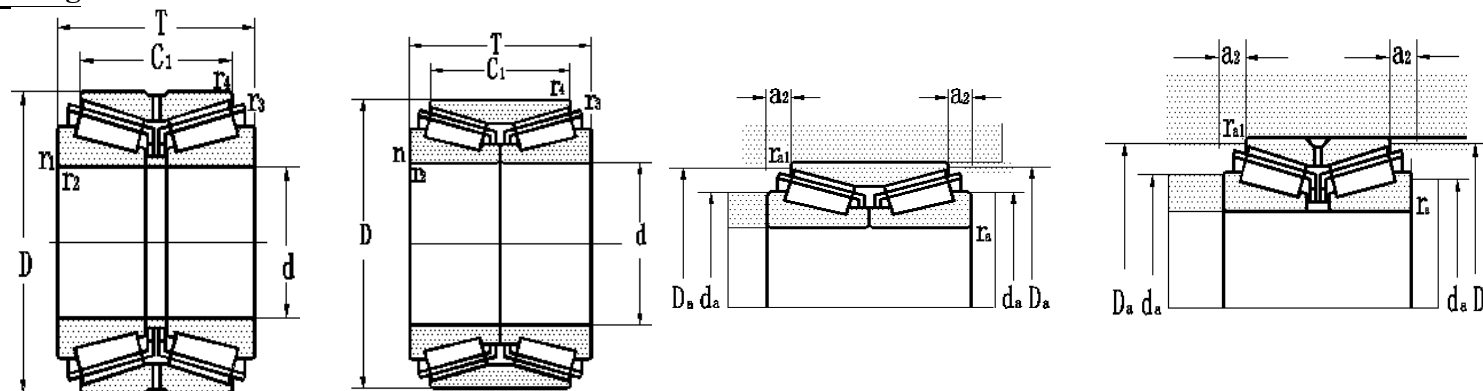
Double row tapered roller bearing

d560~800mm



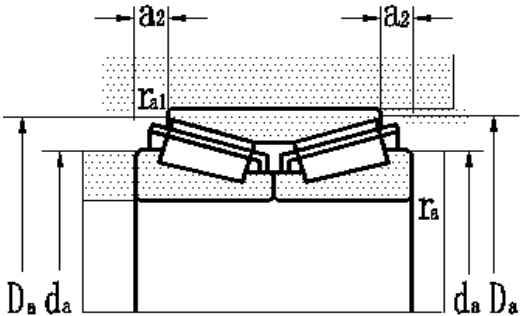
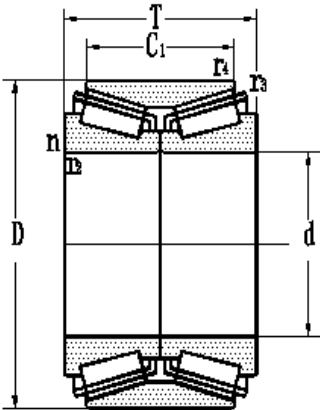
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN		present	original	mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static				damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
560	750	156	213	5	1.5	4081	8880	3519/560	10979/560	560	580	725	16	4	1.5	0.44	1	1.5	1	235
	820	185	260	6	2.5	4785	9216	3500/560	971/560	560	594	795	39	5	2	0.4	1.7	2.5	1.7	409
600	800	156	205	5	1.5	2772	5832	3519/600	10979/600	600	625	779	30	4	1.5	0.33	2.1	3.1	2	266
	870	198	270	6	2.5	3828	6912	3500/600	971/600	600	630	845	39	5	2	0.41	1.6	2.5	1.6	500
630	850	182	242	6	2.5	4095	8205	3519/630	10979/630	630	657	829	32	5	2	0.4	1.7	2.5	1.7	368
670	900	180	240	6	2.5	4260	8970	3519/670	10979/670	670	703	875	32	5	2	0.43	1.6	2.3	1.5	416
710	950	175	240	6	2.5	4425	9600	3519/710	10979/710	710	743	925	34	5	2	0.46	1.5	2.2	1.4	444
	1030	208	236	7.5	4	5310	11520	3500/710 X2	977/710	710	810	995	14	6	3	0.39	1.8	2.6	1.7	651
720	915	140	190	2	5	3451	6681	3506/720	977/720	720	756	890	27	2	4	0.35	1.9	2.9	1.9	277
750	1000	194	264	6	2.5	5370	11175	3519/750	10979/750	750	783	978	37	5	2	0.4	1.7	2.5	1.6	499
800	1060	204	270	6	2.5	6086	13464	3519/800	10979/800	800	838	1031	37	5	2	0.35	1.9	2.9	1.9	604

d850~1600mm



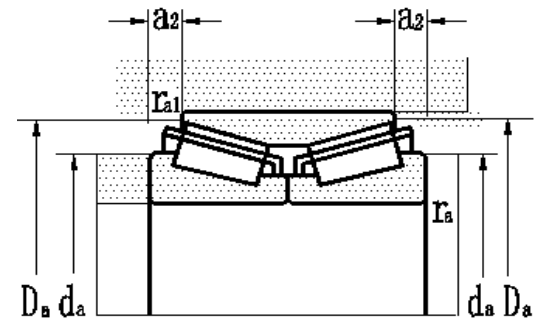
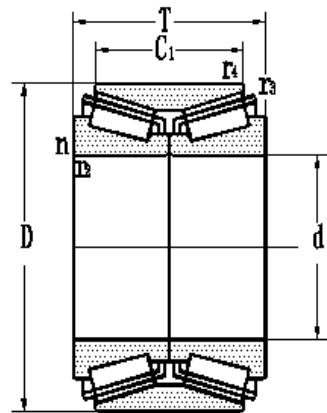
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1,2min	r3,4min	C	Co	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
850	1120	188	268	6	2.5	6188	14042	3519/850	10979/850	850	886	1093	42	5	2	0.46	1.5	2.2	1.5	636
950	1250	220	300	7.5	3	8347	18360	3519/950	10979/950	950	994	1220	42	6	2.5	0.33	2	3	2	909
1120	1460	250	335	7.5	3	10319	23290	3506/1120	10979/1120	1120	1170	1427	45	6	2.5	0.35	1.9	2.9	1.9	1344
1600	2060	360	560	9.5	4	21420	57970	3506/1600	978/1600	1600	1780	2035	52	8	3	1.26	0.5	0.8	0.5	4210

Double row tapered roller bearings,inch size
d50~304. 8mm



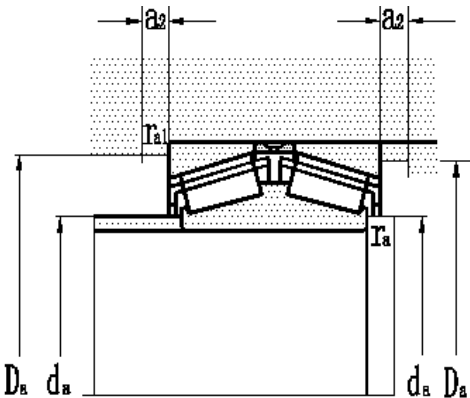
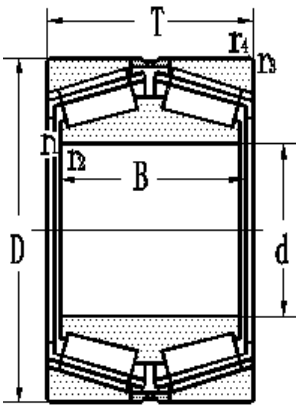
Boundary dimensions						Basic load ratings		Bearing designations	Journal	Mounting dimensions					Calculation factors				Mass	
mm						kN				mm										
d	D	C1	T	r1,2min	r3,4min	C	Co	Bearing designations		damax	Damin	a2	ramax	ra1max	e	Y1	Y2	Y0		
50	100	50	50	1.5	5.5	137	195	LY-3021		50	59	90	0	0	1.5	0.42	1.6	2.4	1.6	1.62
99.995	225	119.926	117	3.3	0.8	605	1060	H221647NA/K426864		99.995	114	200	0	0	3	0.33	2	3	2	25.1
111.125	190.5	80.962	106.362	3.5	1.5	412	845	71437/71751D		111.125	125	180	14	3	2.5	0.42	1.6	2.4	1.6	11.9
177.8	288.925	111.125	142.875	7	1.5	1070	1220	HM237545/HM237510CD		177.8	189	266	18	4	18	0.32	2.1	3.2	2.1	33
203.2	406.4	127	196.85	4	2	2006	2952	EE114080/114161DC	3-730	203.2	228	375	37	4	2	0.78	0.9	1.3	0.8	107
228.6	358.775	117.475	152.4	3.5	3.5	1190	3110	M249732/M249710CD		228.6	242				3	0.33				56.7
254	347.662	69.85	101.6	3.5	1.5	850	1386	LM249747NW/LM249710D	37951K	254	270	335	16	2.5	1	0.33	2	3	2	23.9
260	360	134	134	3	2.5	1020	2581	372952 K		260	274				2.5	0.37				42.3
300	560	170	170	5	5	2280	3940	370660/HC		300	322				4	0.81				196
	560	170	170	5	5	2870	3340	370660-LS/HCC9		300	322				4	0.85				189
300.038	422.275	136.525	174.625	4	1	1785	2805	HM256849/HM256810D	97960300.04	300.038	320	410	22	4	1	0.35	1.9	2.8	1.9	65.6
304.8	393.7	82.55	107.95	6	1.5	901	1854	L357049/L357010D	37961K	304.8	324	386	20	5	1.5	0.36	1.9	2.7	1.8	30.1
	438.048	123.825	161.925	6.4	1	2521	2157	NA329120/329173D	3-769	304.8	340	420	20	5	1	0.34	2	3	2	65.4

Double row tapered roller bearings,inch size
d268. 249~558. 8mm



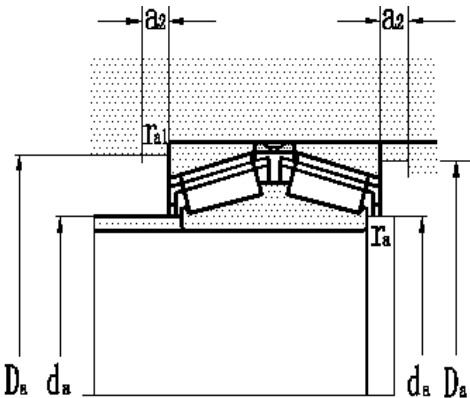
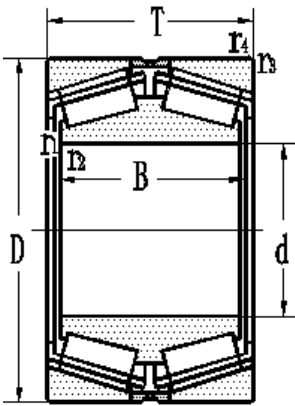
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN					mm									
d	D	C1	T	r1,2min	r3,4min	Basic load ratings		Bearing designations		damax	Damin	a2	ramax	ra1max	e	Y1	Y2	Y0		
						C	Co													
368.249	523.875	169.862	214.312	6.4	1.5	2570	4650	HM265049/HM265010D	3-743	368.249	386	510	14	5	1	0.33	2	3	2	143
368.3	596.9	133.35	203.2	9.5	2.5	2490	3650	EE181453/182351D	97974	368.3	394	580	37	8	2	0.48	1.4	2.1	1.4	184
371.475	501.65	107.95	155.575	6	1	1720	4050	EE231462/231976DC	3-726	371.475	394	485	26	5	1	0.44	1.5	2.3	1.5	79
479.425	679.45	222.25	276.225	4.5	1.5	4730	12300	M272749/M272710DC	3-723	479.425	503	660	29	4	1.5	0.35	1.9	2.9	1.9	322
498.475	634.873	142.875	177.8	4.5	1	2550	6990	EE243196/243251DC	3-725	498.475	525	625	16	4	1	0.34	2	3	2	127
558.8	736.6	177.8	225.425	6	1	4020	11000	LM377449/LM377410DC	3-724	558.8	587	715	26	5	1	0.35	1.9	2.9	1.9	247
	742.95	138.112	187.328	4.5	1.5	2610	5220	EE843220/843292D	3-737	558.8	587	721	24	4	1.5	0.34	2	2.6	1.9	205

Double row tapered roller bearings, inch size
d50~300mm



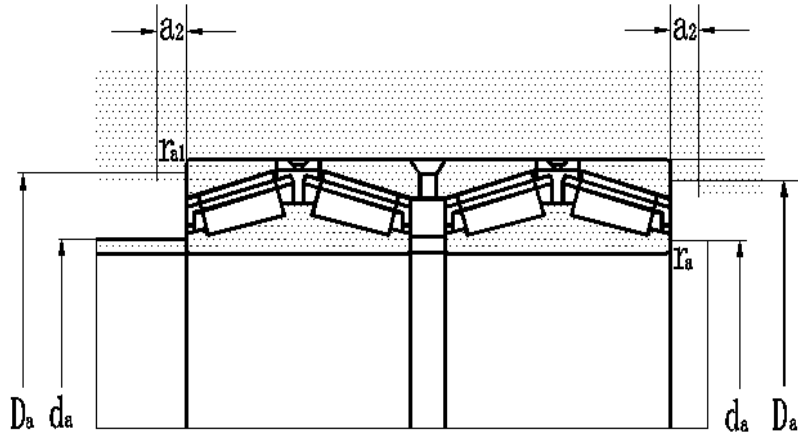
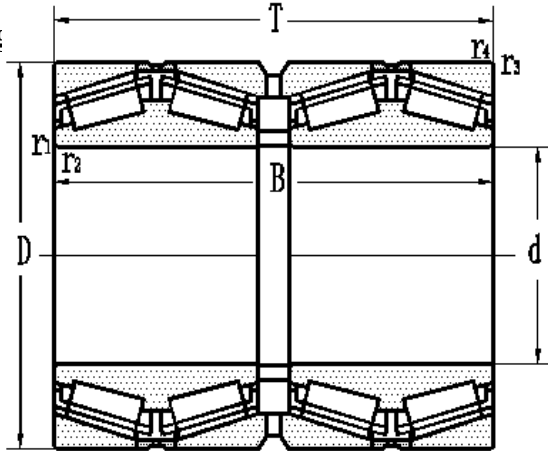
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1,2min	r3,4min	dynamic	static	present	original		d _{max}	D _{min}	a2	r _a	r _{a1}	e	Y1	Y2	Y0	
100	215	110	110	2	3	713	1100	45T202211-1F2		100	110	180	5	2	2	0.81	0.8	1.2	0.8	18.6
105	160	86	86	2.5	1	411	796	LY-3016		105	117	145	5	2	2	0.28	2.3	3.6	2.3	6.04
110	240	118	118	1.5	4	662	1040	370622	87722	110	138	185	5	1.5	3	0.8	0.8	1.2	0.8	25.1
	170	94	94	2.5	2	456	928	LY-3017		110	122	155	4	1.5	2	0.29	2.3	3.5	2.3	7.68
130	280	132	144	1.5	4	1050	1560	31326/DF	3-772	130	158	218	8	1.5	3	0.83	0.8	1.2	0.8	42.4
177.8	288.93	123.8	123.8	1.6	3.2	1091	1870	HM237546D/HM237510	3-759	177.8	191	266	5	1	2.5	0.32	2.1	3.2	2.1	31.5
200	380	180	180	4	4	1750	3080	45T403818-1Y2		200	218				3	0.8				91.3
203.2	368.3	152.4	158.8	3.2	3.2	1500	2690	EE420800D/421450	3-758	203.2	240	310	5	2.5	2.5	0.4	1.7	2.5	1.6	76.2
254	438.15	165.1	165.1	3.2	6.4	1917	3555	EE73810D/738172	3-757	254	283	400	5	2.5	5	0.36	1.9	2.8	1.8	105
254	347.66	101.6	101.6	3.5	3.5	850	1386	LM249747TD/LM249710		254	268	325	5	2.5	2.5	0.33	2	3	2	24.5
260	360	134	134	3	2.5	1020	2581	372952 K		260	274				2.5	0.37				42.3
300	560	170	170	5	5	2280	3940	370660/HC		300	322				4	0.81				196
	560	170	170	5	5	2870	3340	370660-LS/HCC9		300	322				4	0.85				189

Double row tapered roller bearings, inch size
d305~595.31mm



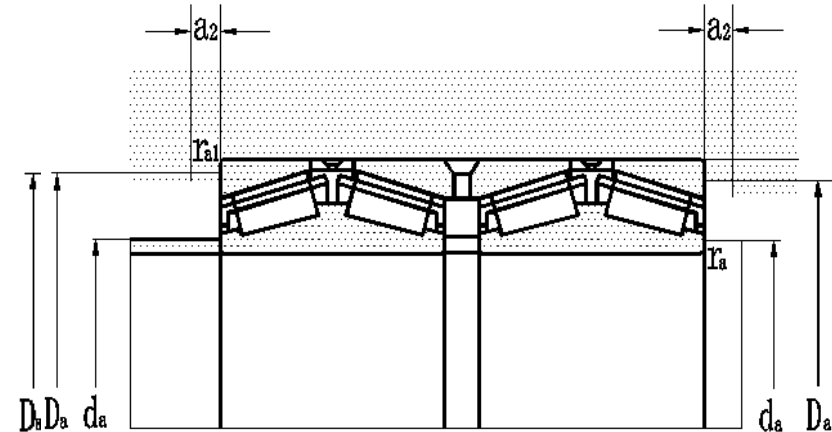
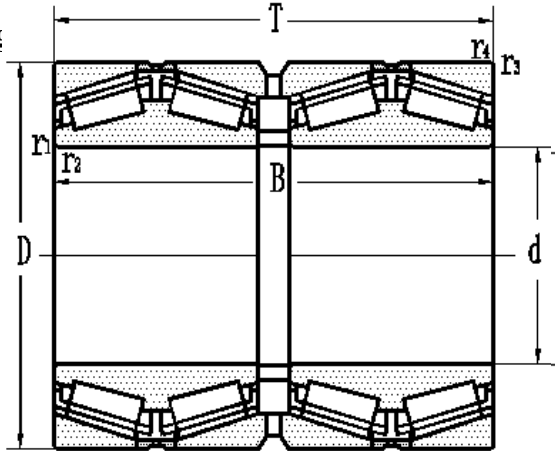
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1,2min	r3,4min	dynamic	static	present	original		damax	Damin	a2	ramax	ra1max	e	Y1	Y2	Y0	
305	559.87	170	170.4	3.3	4.8	2304	4840	HM959649D/HM959618	3-770S	305	350	436	5	2.5	3	0.87	0.9	1.2	0.9	187
419.227	736.45	406.4	406.4	6	6	5294	10100	EE323166D/323290	87964	419.227	440	702	25	5	5	0.26	2.6	3.9	2.6	799
420	560	207.5	207.5	3	5	2890	7900	370684K		420	434				2.5	0.3				143
509.998	733.5	200	200.2	6	6	2532	5220	3706/509.998	3-753	509.998	535	698	20	5	5	0.7	1	1.4	0.9	277
571.5	812.8	285.8	285.8	3.2	6.4	4548	9192	M278749D/278740	3-754	571.5	596	774	20	2.5	5	0.33	2	3	2	491
595.312	844.55	296.9	296.9	6	6	4896	10668	M280049D/M280010	879/595	595.312	625	804	20	5	5	0.33	2	3	2	523

Four-row tapered roller bearing
d140~260mm



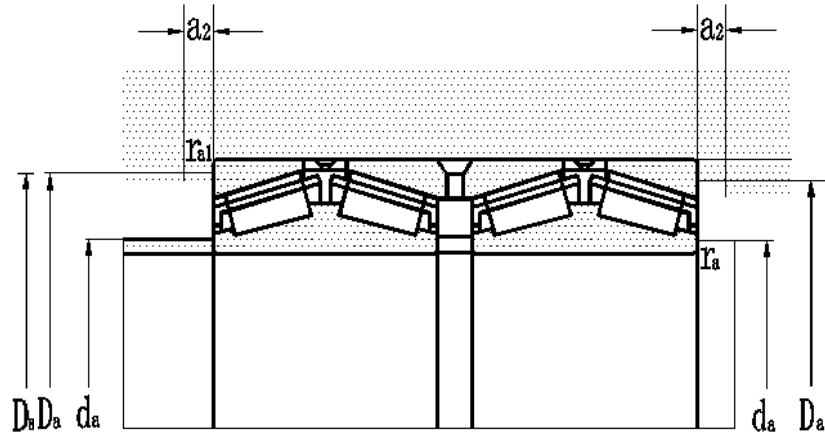
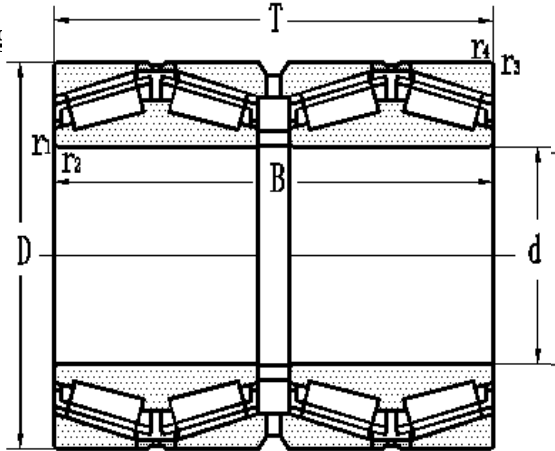
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1,2min	r3,4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
140	210	185	185	2.5	2	604	1095	382028	2077128	140	150	196	16	2	2	0.37	1.8	2.7	1.8	24.1
170	260	230	230	3	2.5	907	1720	382034	2077134	170	183	240	15	2.5	2	0.44	1.5	2.3	1.5	39.5
200	282	206	206	3	2.5	1117	2087	380640	3-744	200	212	266	20	2.5	2	0.39	1.7	2.5	1.7	42.7
205	320	205	205	3	3	1254	1931	380641	77741	205	220	304	16	2.5	2.5	0.46	1.5	2.2	1.4	54.5
220	340	305	305	4	3	1500	3020	382044	2077144	220	234	314	15	3	2.5	0.35	1.9	2.8	1.9	97.9
	340	305	305	4	3	2340	5520	382044/HCYB2		220	238	314	15	3	3	0.35	1.9	2.8	1.9	97
240	338	248	248	4	4	2020	5320	37248WF/DPICS130		240	258	308	15	4	3	0.39	1.7	2.6	1.7	69
250	385	255	255	4	4	1913	4300	380650	3-703	250	270	364	20	3	3	0.38	1.8	2.7	1.7	108
	365	270	270	3	3	1930	4750	250KVE3601AEg		250	264	330	15	3	2.5	0.33	1.7	2.5	1.6	90.5
254	358.775	269.875	269.875	3.5	3.3	2040	6220	47T513627AWF/DPGCS130		254	268	325	15	3	3	0.33	1.7	2.5	1.6	85.6
260	360	265	265	3	2.5	1920	4590	382952	2077952	260	274	337	20	2.5	2	0.37	1.8	2.7	1.8	78.4
	400	345	345	5	4	3750	7950	382052	2077152	260	277	370	20	4	3	0.3	2.3	3.4	2.2	153
	440	300	300	2	5	2597	5047	380152	777752	260	278	418	20	2	4	0.7	1	1.4	0.9	164

Four-row tapered roller bearing
d260~340mm



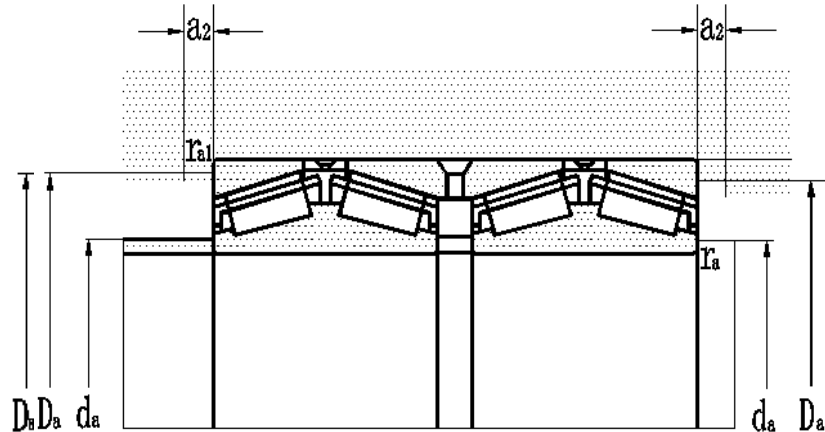
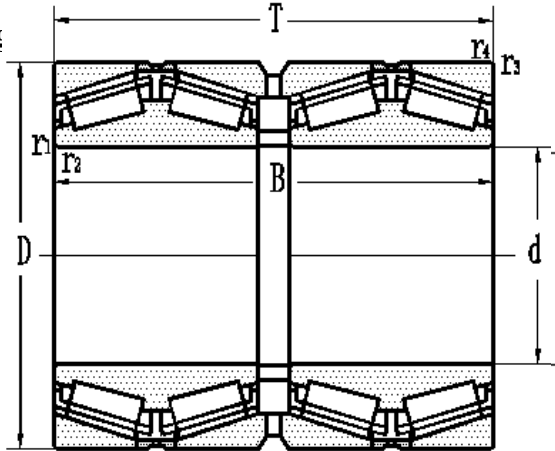
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
260	380	200	200	3	2.5	1730	4000	382952 X3		260	274	345	15	3	2.5	0.4	1.8	2.7	1.8	73
	400	255	255	4	7.5	2120	5010	382052X2	77752	260	278	370	16	3	3	0.39	2.3	3.4	2.2	115
	440	330	284	5	2	3260	7600	477752		260	282	418	20	4	4	0.32	2.1	3.2	2.1	168
279.4	393.7	269.875	269.875	2	5	2210	6200	47T563927AWH/DPGCS155		279.4	289	365	15	3	2	0.4	1.7	2.5	1.7	97.5
280	460	324	324	5	4	4100	7850	381156	1077756	280	304	423	20	4	3	0.33	2.1	3.1	2	200
300	420	300	300	4	3	2253	4702	382960	2077960	300	317	394	20	3	2.5	0.29	2.3	3.4	2.3	130
	460	390	390	5	4	3234	6832	382060	2077160	300	320	425	20	4	3	0.31	2.2	3.2	2.1	238
	500	370	370	5	4	3654	6776	381160	1077760	300	327	460	20	4	3	0.32	2.1	3.2	2.1	285
320	460	338	338	4	4	3056	7164	380664	77764	320	336	438	20	3	3	0.4	1.7	2.5	1.7	180
	460	380	380	4	4	3100	8000	380664/YB2	77864	320	340	425	20	3	3	0.37	1.8	2.7	1.8	218
	480	380	380	4	4	3470	9230	382064/YB2	2077164	320	338	440	20	4	3	0.42	1.6	2.4	1.6	235
340	460	310	310	4	3	2478	5782	382968	2077968	340	355	434	20	3	2.5	0.31	2.2	3.2	2.1	145
	520	325	325	5	4	2898	5872	380068	77168	340	360	486	20	4	3	0.29	2.3	3.4	2.3	234
	580	425	425	5	4	4236	8450	381168	1077768	340	365	531	20	4	3	0.42	1.6	2.4	1.6	441
	460	310	310	4	3	2680	7930	382968/HC C9		340	358	434	20	4	3	0.31	2.2	3.2	2.1	145

Four-row tapered roller bearing
d350~440mm



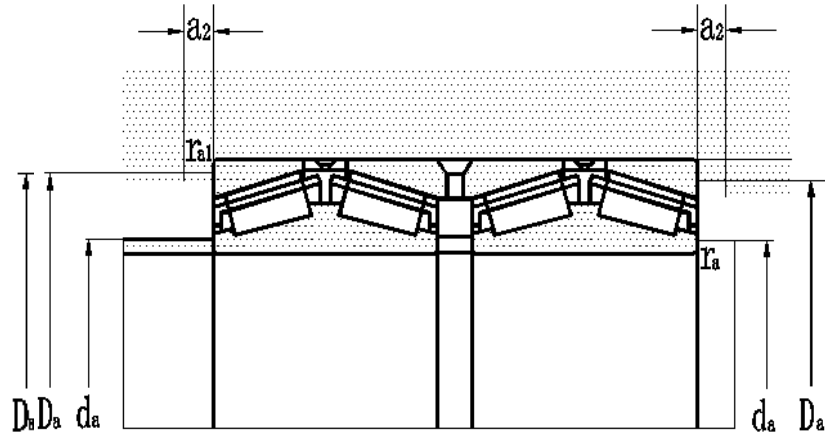
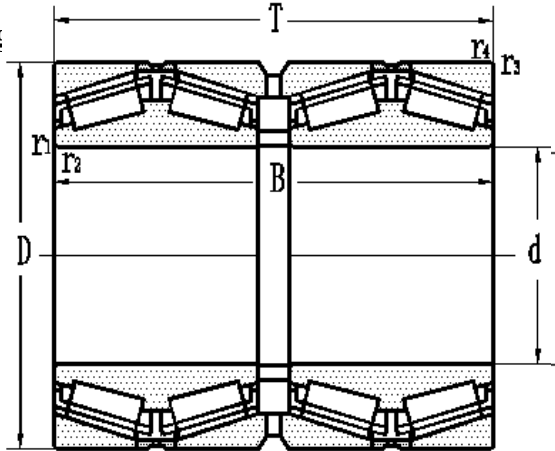
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic C	static Co	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
350	590	420	420	2	5	4732	8582	380670	777770	350	368	560	20	2	4	0.7	1	1.4	0.9	475
360	480	375	375	3	3	3038	3038	380672	77872	360	378	456	16	2.5	2.5	0.33	2	3	2	189
	540	325	325	5	4	3388	6524	380072	77172	360	380	504	20	4	3	0.3	2.3	3.3	2.2	248
380	560	325	325	5	4	3066	5754	380076	77176	380	405	530	20	4	3	0.31	2.1	3.2	2.1	281
	620	420	420	5	4	5082	9604	381176	1077776	380	405	570	20	4	3	0.46	1.5	2.2	1.4	519
390	510	350	350	4	3	3760	12100	380678/HC		390	408	475	20	4	3	0.33	2	3	2	184
395	545	268.7	288.7	4	7.5	1946	4032	380679	77779	395	415	504	16	3	6	0.44	1.5	2.3	1.5	194
400	540	280	280	4	4	1946	4032	380680	77880	400	420	510	16	3	3	0.44	1.5	2.3	1.5	175
	600	356	356	5	4	2618	6762	380680	77180	400	420	560	20	4	3	0.4	1.7	2.5	1.7	317
	540	400	400	4	4	5260	11500	382980-2LS/YA3		400	418	510	16	3	3	0.33	2	3	2	250
420	620	356	356	5	4	3948	7616	380084	77184	420	450	570	20	4	3	0.41	1.6	2.4	6	358
	700	480	480	6	5	7308	12360	381184	1077784	420	460	645	25	5	4	0.32	2.1	3.2	2.1	760
	760	500	500	7.5	7.5	7987	13328	380684	77884	420	460	724	16	6	6	0.35	1.9	2.9	2.1	1039
440	620	454	454	6	6	3962	7882	380688	77888	440	469	570	20	5	5	0.4	1.7	2.5	1.6	440

Four-row tapered roller bearing
d440~530mm



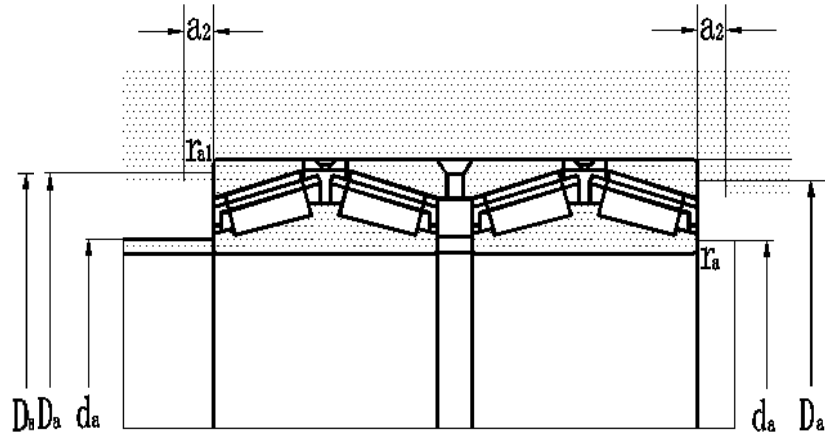
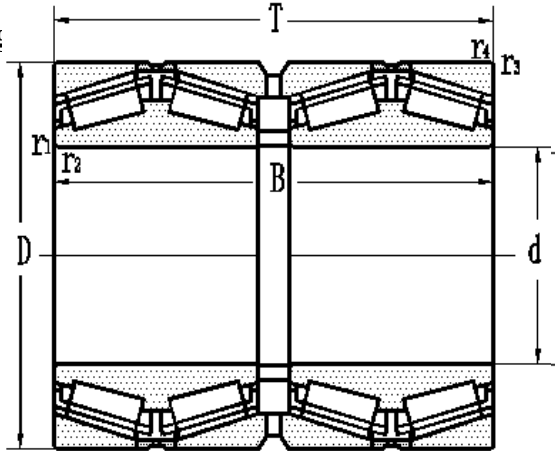
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
440	650	355	355	6	6	3962	7882	380088/YB2	77788	440	468	618	20	5	5	0.43	1.6	2.3	1.5	385
	650	376	376	6	5	4326	9072	380088	77188	440	469	606	20	5	4	0.43	1.6	2.3	1.5	401
	650	355	355	6	6	6130	7400	380088E/YB2	77888E	440	450	620	20	5	14	0.33	2	3	2	401
460	620	310	310	4	3	3402	7350	381992	1077992	460	480	590	25	3	2.5	0.4	1.7	2.5	1.7	173
	650	474	474	6	6	5292	11270	380692	77892	460	484	580	25	5	4	0.41	1.7	2.5	1.6	495
	680	410	410	6	5	5665	11235	380092	77192	460	489	636	25	5	4	0.31	2.2	3.2	2.1	476
	730	440	440	4	7.5	6062	11438	380692/YB2	77792	460	489	694	25	3	6	0.75	0.9	1.3	0.9	694
480	700	420	420	6	5	5922	12600	380096	77196	480	510	655	25	5	4	0.32	2.1	3.1	2.1	547
482.6	615.95	425	425	6.4	6.4	4110	13700	3806/482.6-2LS/YA3		482.6	482	570	20	5	14	0.33	2	3	2	300
488.95	622.3	365.125	365.125	4	3	4900	1440	3806/488.95	3-720	488.95	505	592	25	3	2.5	0.33	2	3	2	266
	622.3	365.125	365.125	6.4	6.4	3350	11100	3806/488.95-2LS/YA3		488.95	498	585	20	3	14	0.39	1.7	2.5	1.7	262
500	720	420	420	6	5	5950	12768	3800/500	771/500	500	530	674	25	5	4	0.33	2.1	3.1	2	565
530	780	450	450	6	5	7602	15960	3800/530	771/530	530	560	742	25	5	4	0.38	1.8	2.6	1.7	744
	870	590	590	7.5	6	10038	20300	3811/530	10777/530	530	570	794	25	6	5	0.46	1.5	2.2	1.4	1422
	880	544	544	7.5	7.5	9394	18340	3806/530	30777/530	530	570	794	25	6	6	0.46	1.5	2.2	1.4	1350

Four-row tapered roller bearing
d560~750mm



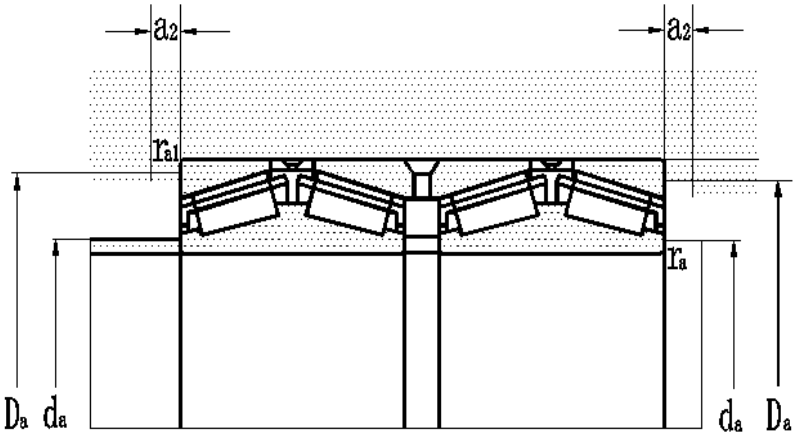
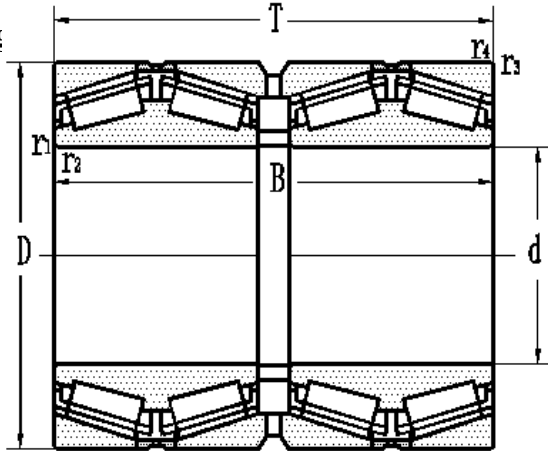
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
560	750	368	368	5	4	4424	10374	3819/560	10779/560	560	586	710	30	4	3	0.43	1.6	2.3	1.5	456
	920	620	620	7.5	6	12138	20300	3811/560	10777/560	560	604	848	25	6	5	0.39	1.7	2.6	1.7	1635
600	800	380	380	5	4	4728	11652	3819/600	10779/600	600	625	760	30	4	3	0.33	2.1	3.1	2	536
	870	480	480	6	5	7212	15960	3800/600	771/600	600	630	821	30	5	4	0.41	1.6	2.4	1.6	995
	980	650	650	7.5	6	11808	24480	3811/600	10777/600	600	644	908	25	6	5	0.32	2.1	3.2	2.1	1970
630	850	418	418	6	5	7472	17600	3819/630	10779/630	630	657	800	30	5	4	0.4	1.7	2.5	1.7	720
	920	515	515	7.5	6	9975	20860	3800/630	771/630	630	669	858	30	6	5	0.42	1.6	2.4	1.6	1158
	1030	670	670	7.5	6	10755	31080	3811/630	10777/630	630	673	959	30	6	5	0.3	2.3	3.4	2.3	2170
650	1030	560	560	7.5	12	11466	22050	3806/650	777/650	650	684	962	30	6	9.5	0.3	2.1	3.2	2.1	1769
660	1070	640	650	7.5	7.5	12600	26500	3806/660	777/660	660	738	950	12	6	6	0.31	2.2	3.2	2.1	2282
670	900	412	412	6	5	7545	17360	3819/670	10779/670	670	700	855	30	5	4	0.44	1.5	2.3	1.5	959
710	1030	555	555	7.5	6	9828	22560	3800/710	771/710	710	752	962	30	6	5	0.43	1.6	2.3	1.5	1568
	1150	750	750	9.5	8	15840	33960	3811/710	10777/710	710	762	1078	30	8	6	0.32	2.1	3.2	2.1	3227
750	1090	605	605	7.5	6	11580	26760	3800/750	771/750	750	793	1020	30	6	5	0.42	1.7	2.4	1.6	1880

Four-row tapered roller bearing
d750~1060mm



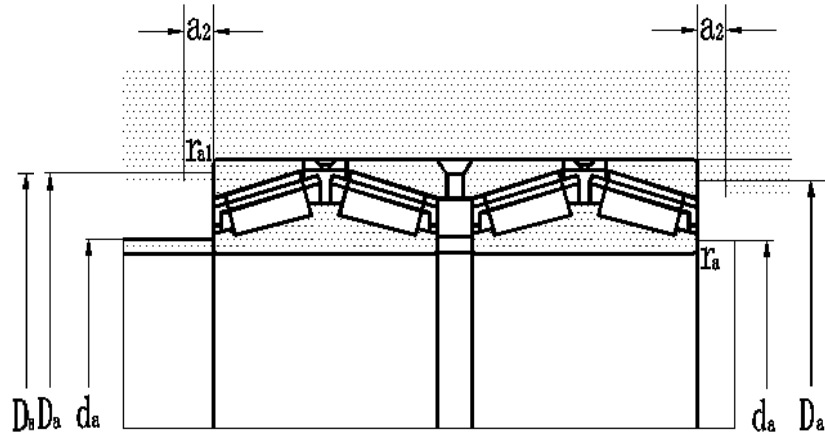
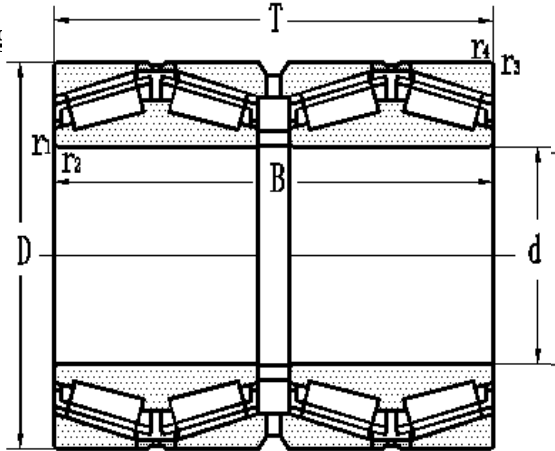
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic C	static Co	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
750	1130	690	690	7.5	7.5	12720	27960	3806/750	777/750	750	790	1076	30	6	6	0.47	1.4	2.1	1.4	2549
	1220	840	840	9.5	8	18590	41470	3811/750	10777/750	750	807	1130	30	8	6	0.32	2.1	3.2	2.1	3994
	1220	840	840	9.5	8	18590	41470	3811/750/YA	10777/750Y	750	807	1130	30	8	6	0.32	2.1	3.2	2.1	3994
	1220	840	840	9.5	8	18590	41470	3811/750/YA1	10777/750Y1	750	807	1130	30	8	6	0.32	2.1	3.2	2.1	3994
800	1240	850	850	9.5	8	20600	67200	3811/800 X1		800	816	1130	30	8	22	0.3	2.2	3.3	2.2	3950
850	1360	900	900	12	9.5	25900	76000	3811/850	10777/850	850	900	1200	30	9.5	8	0.34	2	2.98	2	5168
950	1360	880	880	7.5	6	1700	44200	3820/950	20771/950	950	1000	1290	30	6	5	0.26	2.6	3.8	2.6	4087
1060	1500	1000	1000	9.5	8	21300	56300	3820/1060	20771/1060	1060	1117	1420	30	8	6	0.26	2.6	3.8	2.6	5698

Four-row tapered roller bearing
d140~260mm



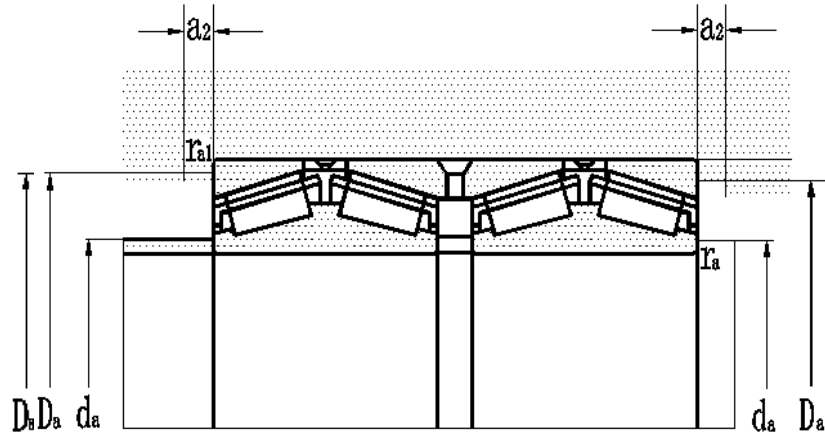
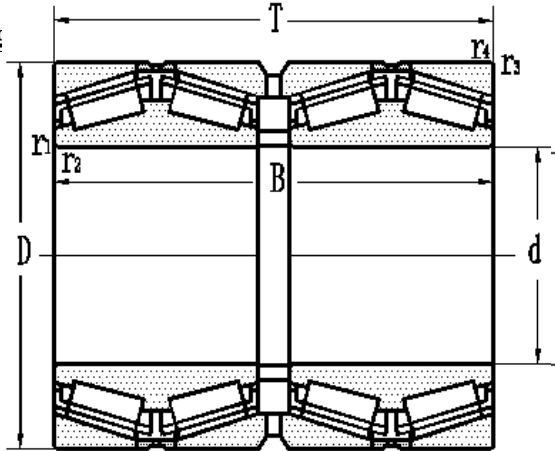
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1,2min	r3,4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
140	210	185	185	2.5	2	604	1095	382028	2077128	140	150	196	16	2	2	0.37	1.8	2.7	1.8	24.1
170	260	230	230	3	2.5	907	1720	382034	2077134	170	183	240	15	2.5	2	0.44	1.5	2.3	1.5	39.5
200	282	206	206	3	2.5	1117	2087	380640	3-744	200	212	266	20	2.5	2	0.39	1.7	2.5	1.7	42.7
205	320	205	205	3	3	1254	1931	380641	77741	205	220	304	16	2.5	2.5	0.46	1.5	2.2	1.4	54.5
220	340	305	305	4	3	1500	3020	382044	2077144	220	234	314	15	3	2.5	0.35	1.9	2.8	1.9	97.9
	340	305	305	4	3	2340	5520	382044/HCYB2		220	238	314	15	3	3	0.35	1.9	2.8	1.9	97
240	338	248	248	4	4	2020	5320	37248WF/DPICS130		240	258	308	15	4	3	0.39	1.7	2.6	1.7	69
250	385	255	255	4	4	1913	4300	380650	3-703	250	270	364	20	3	3	0.38	1.8	2.7	1.7	108
	365	270	270	3	3	1930	4750	250KVE3601AEg		250	264	330	15	3	2.5	0.33	1.7	2.5	1.6	90.5
254	358.775	269.875	269.875	3.5	3.3	2040	6220	47T513627AWF/DPGCS130		254	268	325	15	3	3	0.33	1.7	2.5	1.6	85.6
260	360	265	265	3	2.5	1920	4590	382952	2077952	260	274	337	20	2.5	2	0.37	1.8	2.7	1.8	78.4
	400	345	345	5	4	3750	7950	382052	2077152	260	277	370	20	4	3	0.3	2.3	3.4	2.2	153
	440	300	300	2	5	2597	5047	380152	777752	260	278	418	20	2	4	0.7	1	1.4	0.9	164

Four-row tapered roller bearing
d260~340mm



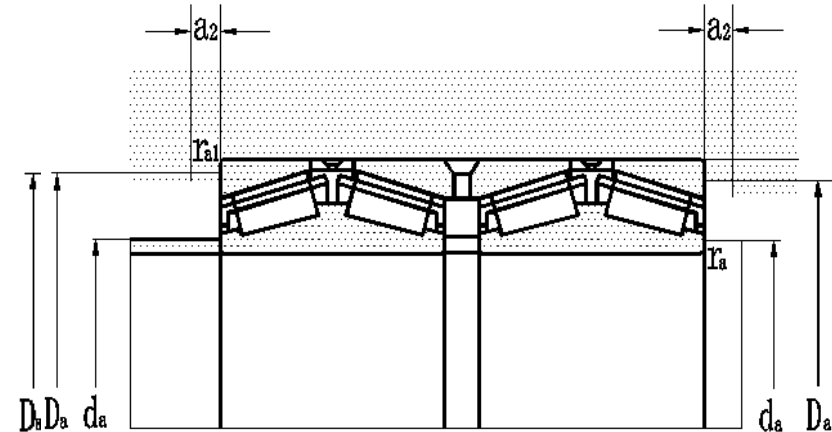
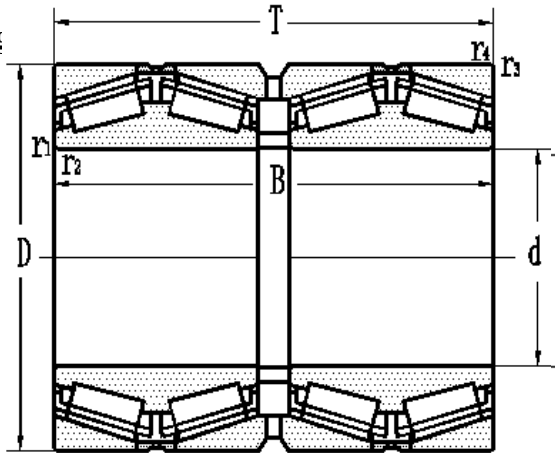
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	C	Co	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
260	380	200	200	3	2.5	1730	4000	382952 X3		260	274	345	15	3	2.5	0.4	1.8	2.7	1.8	73
	400	255	255	4	7.5	2120	5010	382052X2	77752	260	278	370	16	3	3	0.39	2.3	3.4	2.2	115
	440	330	284	5	2	3260	7600	477752		260	282	418	20	4	4	0.32	2.1	3.2	2.1	168
279.4	393.7	269.875	269.875	2	5	2210	6200	47T563927AWH/DPGCS155		279.4	289	365	15	3	2	0.4	1.7	2.5	1.7	97.5
280	460	324	324	5	4	4100	7850	381156	1077756	280	304	423	20	4	3	0.33	2.1	3.1	2	200
300	420	300	300	4	3	2253	4702	382960	2077960	300	317	394	20	3	2.5	0.29	2.3	3.4	2.3	130
	460	390	390	5	4	3234	6832	382060	2077160	300	320	425	20	4	3	0.31	2.2	3.2	2.1	238
	500	370	370	5	4	3654	6776	381160	1077760	300	327	460	20	4	3	0.32	2.1	3.2	2.1	285
320	460	338	338	4	4	3056	7164	380664	77764	320	336	438	20	3	3	0.4	1.7	2.5	1.7	180
	460	380	380	4	4	3100	8000	380664/YB2	77864	320	340	425	20	3	3	0.37	1.8	2.7	1.8	218
	480	380	380	4	4	3470	9230	382064/YB2	2077164	320	338	440	20	4	3	0.42	1.6	2.4	1.6	235
340	460	310	310	4	3	2478	5782	382968	2077968	340	355	434	20	3	2.5	0.31	2.2	3.2	2.1	145
	520	325	325	5	4	2898	5872	380068	77168	340	360	486	20	4	3	0.29	2.3	3.4	2.3	234
	580	425	425	5	4	4236	8450	381168	1077768	340	365	531	20	4	3	0.42	1.6	2.4	1.6	441
	460	310	310	4	3	2680	7930	382968/HC C9		340	358	434	20	4	3	0.31	2.2	3.2	2.1	145

Four-row tapered roller bearing
d350~440mm



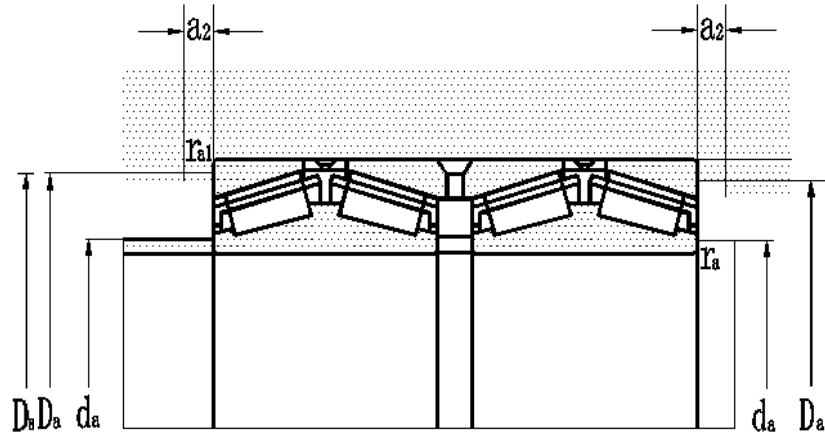
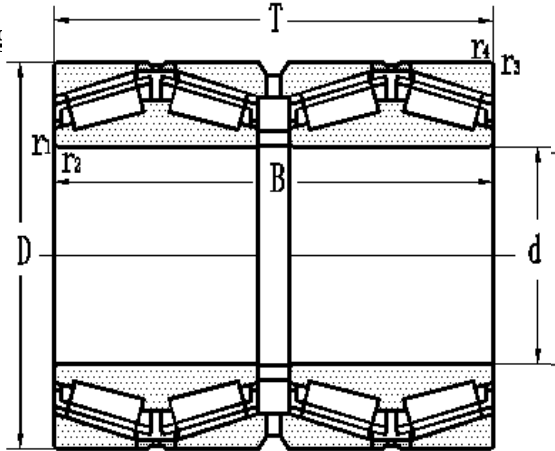
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic C	static Co	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
350	590	420	420	2	5	4732	8582	380670	777770	350	368	560	20	2	4	0.7	1	1.4	0.9	475
360	480	375	375	3	3	3038	3038	380672	77872	360	378	456	16	2.5	2.5	0.33	2	3	2	189
	540	325	325	5	4	3388	6524	380072	77172	360	380	504	20	4	3	0.3	2.3	3.3	2.2	248
380	560	325	325	5	4	3066	5754	380076	77176	380	405	530	20	4	3	0.31	2.1	3.2	2.1	281
	620	420	420	5	4	5082	9604	381176	1077776	380	405	570	20	4	3	0.46	1.5	2.2	1.4	519
390	510	350	350	4	3	3760	12100	380678/HC		390	408	475	20	4	3	0.33	2	3	2	184
395	545	268.7	288.7	4	7.5	1946	4032	380679	77779	395	415	504	16	3	6	0.44	1.5	2.3	1.5	194
400	540	280	280	4	4	1946	4032	380680	77880	400	420	510	16	3	3	0.44	1.5	2.3	1.5	175
	600	356	356	5	4	2618	6762	380680	77180	400	420	560	20	4	3	0.4	1.7	2.5	1.7	317
	540	400	400	4	4	5260	11500	382980-2LS/YA3		400	418	510	16	3	3	0.33	2	3	2	250
420	620	356	356	5	4	3948	7616	380084	77184	420	450	570	20	4	3	0.41	1.6	2.4	6	358
	700	480	480	6	5	7308	12360	381184	1077784	420	460	645	25	5	4	0.32	2.1	3.2	2.1	760
	760	500	500	7.5	7.5	7987	13328	380684	77884	420	460	724	16	6	6	0.35	1.9	2.9	2.1	1039
440	620	454	454	6	6	3962	7882	380688	77888	440	469	570	20	5	5	0.4	1.7	2.5	1.6	440

Four-row tapered roller bearing
d440~530mm



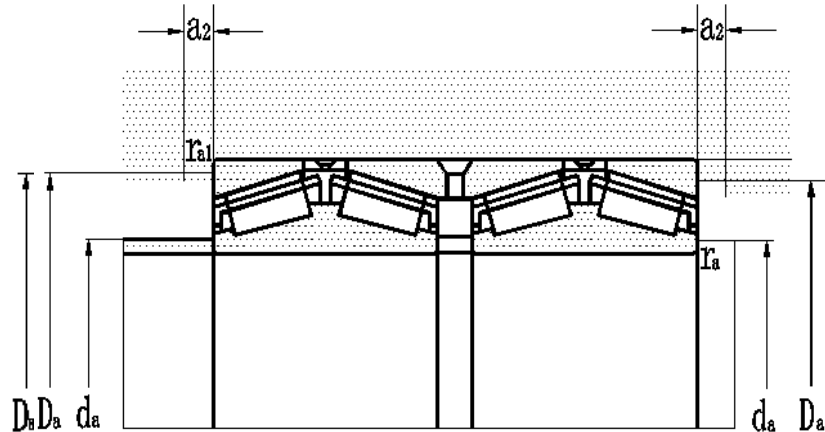
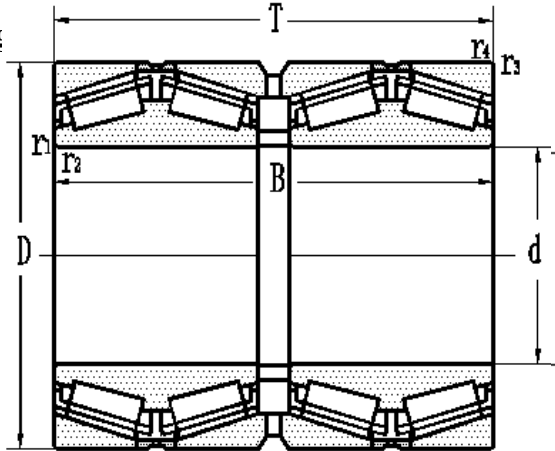
Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
440	650	355	355	6	6	3962	7882	380088/YB2	77788	440	468	618	20	5	5	0.43	1.6	2.3	1.5	385
	650	376	376	6	5	4326	9072	380088	77188	440	469	606	20	5	4	0.43	1.6	2.3	1.5	401
	650	355	355	6	6	6130	7400	380088E/YB2	77888E	440	450	620	20	5	14	0.33	2	3	2	401
460	620	310	310	4	3	3402	7350	381992	1077992	460	480	590	25	3	2.5	0.4	1.7	2.5	1.7	173
	650	474	474	6	6	5292	11270	380692	77892	460	484	580	25	5	4	0.41	1.7	2.5	1.6	495
	680	410	410	6	5	5665	11235	380092	77192	460	489	636	25	5	4	0.31	2.2	3.2	2.1	476
	730	440	440	4	7.5	6062	11438	380692/YB2	77792	460	489	694	25	3	6	0.75	0.9	1.3	0.9	694
480	700	420	420	6	5	5922	12600	380096	77196	480	510	655	25	5	4	0.32	2.1	3.1	2.1	547
482.6	615.95	425	425	6.4	6.4	4110	13700	3806/482.6-2LS/YA3		482.6	482	570	20	5	14	0.33	2	3	2	300
488.95	622.3	365.125	365.125	4	3	4900	1440	3806/488.95	3-720	488.95	505	592	25	3	2.5	0.33	2	3	2	266
	622.3	365.125	365.125	6.4	6.4	3350	11100	3806/488.95-2LS/YA3		488.95	498	585	20	3	14	0.39	1.7	2.5	1.7	262
500	720	420	420	6	5	5950	12768	3800/500	771/500	500	530	674	25	5	4	0.33	2.1	3.1	2	565
530	780	450	450	6	5	7602	15960	3800/530	771/530	530	560	742	25	5	4	0.38	1.8	2.6	1.7	744
	870	590	590	7.5	6	10038	20300	3811/530	10777/530	530	570	794	25	6	5	0.46	1.5	2.2	1.4	1422
	880	544	544	7.5	7.5	9394	18340	3806/530	30777/530	530	570	794	25	6	6	0.46	1.5	2.2	1.4	1350

Four-row tapered roller bearing
d560~750mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic	static	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
560	750	368	368	5	4	4424	10374	3819/560	10779/560	560	586	710	30	4	3	0.43	1.6	2.3	1.5	456
	920	620	620	7.5	6	12138	20300	3811/560	10777/560	560	604	848	25	6	5	0.39	1.7	2.6	1.7	1635
600	800	380	380	5	4	4728	11652	3819/600	10779/600	600	625	760	30	4	3	0.33	2.1	3.1	2	536
	870	480	480	6	5	7212	15960	3800/600	771/600	600	630	821	30	5	4	0.41	1.6	2.4	1.6	995
	980	650	650	7.5	6	11808	24480	3811/600	10777/600	600	644	908	25	6	5	0.32	2.1	3.2	2.1	1970
630	850	418	418	6	5	7472	17600	3819/630	10779/630	630	657	800	30	5	4	0.4	1.7	2.5	1.7	720
	920	515	515	7.5	6	9975	20860	3800/630	771/630	630	669	858	30	6	5	0.42	1.6	2.4	1.6	1158
	1030	670	670	7.5	6	10755	31080	3811/630	10777/630	630	673	959	30	6	5	0.3	2.3	3.4	2.3	2170
650	1030	560	560	7.5	12	11466	22050	3806/650	777/650	650	684	962	30	6	9.5	0.3	2.1	3.2	2.1	1769
660	1070	640	650	7.5	7.5	12600	26500	3806/660	777/660	660	738	950	12	6	6	0.31	2.2	3.2	2.1	2282
670	900	412	412	6	5	7545	17360	3819/670	10779/670	670	700	855	30	5	4	0.44	1.5	2.3	1.5	959
710	1030	555	555	7.5	6	9828	22560	3800/710	771/710	710	752	962	30	6	5	0.43	1.6	2.3	1.5	1568
	1150	750	750	9.5	8	15840	33960	3811/710	10777/710	710	762	1078	30	8	6	0.32	2.1	3.2	2.1	3227
750	1090	605	605	7.5	6	11580	26760	3800/750	771/750	750	793	1020	30	6	5	0.42	1.7	2.4	1.6	1880

Four-row tapered roller bearing
d750~1060mm



Boundary dimensions						Basic load ratings		Bearing designations		Journal	Mounting dimensions					Calculation factors				Mass
mm						kN				mm	mm									kg
d	D	B	T	r1, 2min	r3, 4min	dynamic C	static Co	present	original		damax	Damin	a2	ramax	ralmax	e	Y1	Y2	Y0	
750	1130	690	690	7.5	7.5	12720	27960	3806/750	777/750	750	790	1076	30	6	6	0.47	1.4	2.1	1.4	2549
	1220	840	840	9.5	8	18590	41470	3811/750	10777/750	750	807	1130	30	8	6	0.32	2.1	3.2	2.1	3994
	1220	840	840	9.5	8	18590	41470	3811/750/YA	10777/750Y	750	807	1130	30	8	6	0.32	2.1	3.2	2.1	3994
	1220	840	840	9.5	8	18590	41470	3811/750/YA1	10777/750Y1	750	807	1130	30	8	6	0.32	2.1	3.2	2.1	3994
800	1240	850	850	9.5	8	20600	67200	3811/800 X1		800	816	1130	30	8	22	0.3	2.2	3.3	2.2	3950
850	1360	900	900	12	9.5	25900	76000	3811/850	10777/850	850	900	1200	30	9.5	8	0.34	2	2.98	2	5168
950	1360	880	880	7.5	6	1700	44200	3820/950	20771/950	950	1000	1290	30	6	5	0.26	2.6	3.8	2.6	4087
1060	1500	1000	1000	9.5	8	21300	56300	3820/1060	20771/1060	1060	1117	1420	30	8	6	0.26	2.6	3.8	2.6	5698



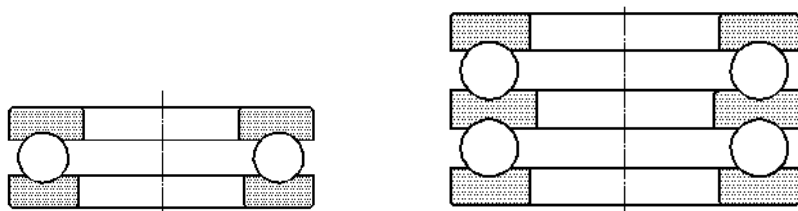
推力球轴承

Thrust Ball Bearing

Thrust Ball Bearings

Thrust ball bearings with flat back face are separable and divided into single direction and double direction designs. The single direction thrust ball bearings with flat back face can only be used to carry axial load in one direction and limit the axial displacement in single direction. The double direction thrust ball bearings with flat back face can be used to carry axial in both directions and limit the axial displacements in both directions. Neither of them can carry radial loads.

LYC standard single direction thrust ball bearings consist of a shaft washer with groove raceway, a set of ball and cage assembly and a housing washer with groove raceway. Shaft washer is fitted onto the shaft. The standard double direction thrust ball bearings consist of two housing washers with groove raceways and shaft washer with groove raceways in each face, two sets of balls and cage assembly. This type of bearings has a pressed steel cage. But the thrust ball bearings with solid cage made of brass or steel, also can be provided.



This type of bearings is suitable for applications where the rotational speed is lower. In order to prevent detrimental movement between roller and raceway caused by centrifugal force during bearing in high speed, the requisite minimum axial load to be applied can be estimated from:

$$F'_a = A \left(\frac{n}{1000} \right)^2 kN$$

where

A — minimum load constant, see bearing dimension tables

n — speed, r/min

In general, the weight of the components supported by bearing, together with the external loads can exceed the requisite minimum load. If the requisite minimum axial load can not be met, preload must be applied to meet the above mentioned requirement.

Calculation of equivalent bearing loads is as follows:

Equivalent dynamic load

$$P = F_a$$

Equivalent static load

$$P_0 = F_a$$

Angular contact thrust ball bearings are mainly used to carry axial load. At the same time it can also carry a certain radial load. So they can make up for a weakness of thrust ball bearings with flat back face which can not carry radial load. The contact angles are 45° and 60° . The smaller the degree of contact angle, the heavier the capacity of radial load.

Calculation of equivalent loads :

Equivalent dynamic load

$$P = X F_r + F_a$$

Equivalent static load

$$P_a = F_a + 2.3 \tan \alpha F_r$$

where

F_r —radial load, N

F_a —axial load, N

α —contact angle

when $\alpha = 45^\circ$ $X = 0.66$

when $\alpha = 60^\circ$ $X = 0.92$

Mounting dimensions of single direction thrust ball bearing can be taken from Table 1 according to difference of the inside diameter and dimension series. Mounting dimensions of double direction thrust ball bearing can be taken from Table 2 according to the inside diameter and dimension series. The shoulder of shaft fitted with angular contact thrust ball bearing or shoulder height of housing fitted with it and chamfer rg can be taken from Table 12.1 in this catalog.

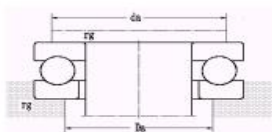


Table1

Bore Journal code	Bearing series												
	511			512			513			514			
	da	Da	rg	da	Da	rg	da	Da	rg	da	Da	rg	
	min	max	max	min	max	max	min	max	max	min	max	max	
0	10	18	16	0.3	20	16	0.6						
1	12	20	18	0.3	22	18	0.6						
2	15	23	20	0.3	25	22	0.6						
3	17	25	22	0.3	28	24	0.6						
4	20	29	26	0.3	32	28	0.6						
5	25	35	32	0.6	38	34	0.6	41	36	1	46	39	1
6	30	40	37	0.6	43	39	0.6	48	42	1	54	46	1
7	35	45	42	0.6	51	46	1	55	48	1	62	53	1
8	40	52	48	0.6	57	51	1	63	55	1	70	60	1
9	45	57	53	0.6	62	56	1	69	61	1	78	67	1
10	50	62	58	0.6	67	61	1	77	68	1	86	74	1.5
11	55	69	64	0.6	76	69	1	85	75	1	94	81	1.5
12	60	75	70	1	81	74	1	90	80	1	102	88	1.5
13	65	80	75	1	86	79	1	95	85	1	110	95	2
14	70	85	80	1	91	84	1	103	92	1	118	102	2
15	75	90	85	1	96	89	1	111	99	1.5	126	109	2
16	80	95	90	1	101	94	1	116	104	1.5	134	116	2.1
17	85	100	95	1	109	101	1	124	111	1.5	142	123	2.1
18	90	108	102	1	117	108	1	129	116	1.5	150	130	2.1
19	100	121	114	1	130	120	1	142	128	1.5	166	144	2.5
20	110	131	124	1	140	130	1	158	142	2	182	158	2.5
24	120	141	134	1	150	140	1	174	156	2.1	198	172	3
26	130	154	146	1	166	154	1.5	187	168	2.1	214	186	3
28	140	164	156	1	176	164	1.5	200	180	2.1	224	196	3
30	150	174	166	1	189	176	1.5	210	190	2.1	240	210	3
32	160	184	176	1	199	186	1.5	226	204	2.5			
34	170	197	188	1	212	198	1.5	236	214	2.5			
36	180	207	198	1	222	208	1.5	252	228	2.5			
38	190	220	210	1	238	222	2	268	242	3			
40	200	230	220	1	248	232	2	284	256	3			
44	220	250	240	1	268	252	2						
48	240	276	264	1.5	300	280	2.1						
52	260	296	284	1.5	320	300	2.1						
56	280	322	308	1.5	340	320	2.1						
60	300	348	332	2	372	348	2.5						
64	320	368	352	2	392	368	2.5						
68	340	388	372	2	412	388	2.5						
72	360	408	392	2	444	416	3						
76	380	428	412	2									
80	400	448	432	2									
84	420	468	452	2									
88	440	500	480	2.1									
92	460	520	500	2.1									
96	480	540	520	2.1									
/500	500	560	540	2.1									
/530	530	596	574	2.5									

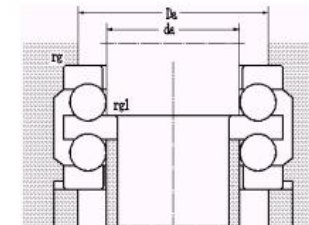
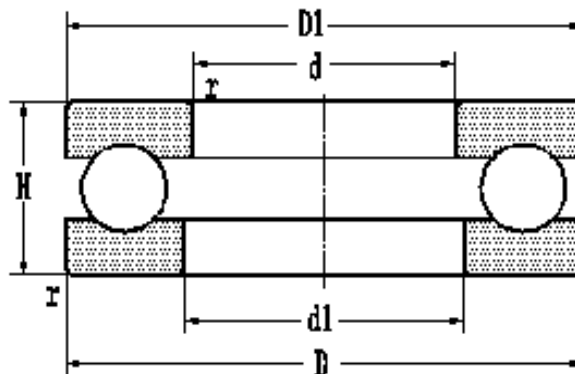


Table2

Bore code	Journal	Bearing series								Journal	Bearing series				mm
		522				523					524				
		da	Da	rg	rg1	da	Da	rg	rg1		da	Da	rg	rg1	
		max	max	max	max	max	max	max	max		max	max	max	max	
2	10	15	22	0.6	0.3										
4	15	20	28	0.6	0.3										
5	20	25	34	0.6	0.3	25	36	1	0.3	15	25	39	1	0.6	
6	25	30	39	0.6	0.3	30	42	1	0.3	20	30	46	1	0.6	
7	30	35	46	1	0.3	35	48	1	0.3	25	35	53	1	0.6	
8	30	40	51	1	0.6	40	55	1	0.6	30	40	60	1	0.6	
9	35	45	56	1	0.6	45	61	1	0.6	35	45	67	1	0.6	
10	40	50	61	1	0.6	50	68	1	0.6	40	50	74	1.5	0.6	
11	45	55	69	1	0.6	55	75	1	0.6	45	55	81	1.5	0.6	
12	50	60	74	1	0.6	60	80	1	0.6	50	60	88	1.5	0.6	
13	55	65	79	1	0.6	65	85	1	0.6	50	65	95	2	1	
14	55	70	84	1	1	70	92	1	1	55	70	102	2	1	
15	60	75	89	1	1	75	99	1.5	1	60	75	109	2	1	
16	65	80	94	1	1	80	104	1.5	1	65	80	116	2.1	1	
17	70	85	101	1	1	85	111	1.5	1	65	85	123	2.1	1	
18	75	90	108	1	1	90	116	1.5	1	70	90	130	2.1	1	
20	85	100	120	1	1	100	128	1.5	1	80	100	144	2.5	1	
22	95	110	130	1	1	110	142	2	1						
24	100	120	140	1	1	120	155	2.1	1						
26	110	130	154	1.5	1	130	168	2.1	1						
28	120	140	164	1.5	1	140	180	2.1	1						
30	130	150	176	1.5	1										
32	140	160	186	1.5	1										
34	150	170	198	1.5	1										

Single direction thrust ball bearings with flat back face

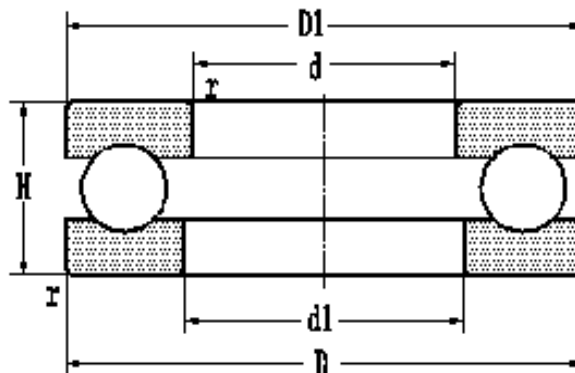
d10–25mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D3	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
10	11	24	24	9	0.3	10	13.3	7000	9500	51100	8100	0.002	0.02
	12	26	26	11	0.6	12.7	16.2	6000	8000	51200	8200	0.003	0.03
12	13	26	26	9	0.3	10.3	14.5	6700	9000	51101	8101	0.002	0.022
	14	28	28	11	0.6	13.2	18.1	6000	8000	51201	8201	0.003	0.035
15	16	28	28	9	0.3	10.5	13.3	6300	8500	51102	8102	0.003	0.024
	17	32	32	12	0.6	14.2	15.8	5300	7000	51202	8202	0.005	0.044
15	15.2	32	32	12	0.6	14.2	15.8	5300	7000	51202/YB2	8202K	0.005	0.0451
17	18	30	30	9	0.3	10.8	13.4	6300	8500	51103	8103	0.003	0.0242
	19	35	35	12	0.6	17.2	26.1	5000	6700	51203	8203	0.006	0.053
20	21	35	35	10	0.3	13.4	18.6	5600	7500	51104	8104	0.005	0.0372
	22	40	40	14	0.6	22.3	35.6	4500	6000	51204	8204	0.009	0.08
25	26	42	42	11	0.6	17.4	27.6	4800	6300	51105	8105	0.007	0.06

Single direction thrust ball bearings with flat back face

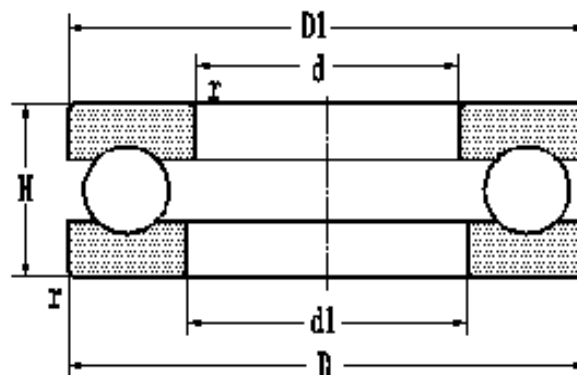
d25–40mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
25	25.2	47	47	15	0.6	27.8	47.5	4000	5300	51205	8205	0.018	0.112
	27	52	52	18	1	35.7	52.3	3400	4500	51305	8305	0.026	0.18
	27	60	60	24	1	55.5	85.5	2600	3600	51405	8405	0.053	0.34
30	32	47	47	11	0.6	18.1	31.8	4500	6000	51106	8106	0.009	0.07
	32	52	52	16	0.6	28.1	45.1	3600	4800	51206	8206	0.02	0.137
	32	60	60	21	1	42.8	62.2	2800	3800	51306	8306	0.046	0.252
	32	70	70	28	1	72.7	119	2000	3000	51406	8406	0.084	0.53
35	37	52	52	12	0.6	21.2	38.2	4300	5600	51107	8107	0.014	0.0836
	35.2	62	62	18	1	39.2	63.7	3000	4000	51207	8207	0.04	0.22
	37	68	68	24	1	55.4	83.6	2400	3400	51307	8307	0.072	0.39
	37	80	80	32	1.1	87	148	1800	2600	51407	8407	0.17	0.82
40	42	60	60	13	0.6	26.9	47.5	3800	5000	51108	8108	0.027	0.12
	42	68	68	19	1	47	93.1	2800	3800	51208	8208	0.055	0.27
	42	78	78	26	1	69.2	106	2000	3000	51308	8308	0.103	0.426

Single direction thrust ball bearings with flat back face

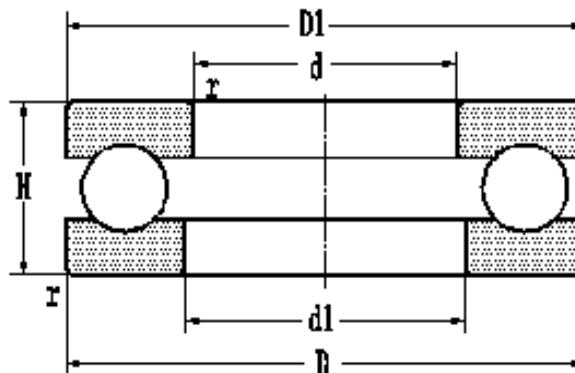
d40–55mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
40	42	90	9	36	1.1	112	194	1700	2400	51408	8408	0.275	1.18
45	47	65	65	14	0.6	27	54.2	3400	4500	51109	8109	0.027	0.15
	47	65	65	14	0.6	31.6	108	3400	4500	51109M	8109	0.027	0.16
	47	73	73	20	1	47.8	76	2600	3600	51209	8209	72	0.32
	47	85	85	28	1	75.8	133	1900	2800	51309	8309	0.148	0.665
	47	100	100	39	1.1	141	228	1600	2200	51409	8409	0.442	1.64
50	52	70	70	14	0.6	27.1	59.9	3200	4300	51110	8110	0.032	0.16
	52	78	78	22	1	48.5	101	2400	3400	51210	8210	0.097	0.375
	52	95	95	31	1.1	96.6	164	1800	2600	51310	8310	0.266	1
	52	110	110	43	1.5	160	295	1500	2000	51410	8410	0.589	1.99
55	57	78	78	16	0.6	34.4	74.1	2800	3800	51111	8111	0.068	0.232
	57	90	90	25	1	67.6	127	1900	2800	51211	8211	0.168	0.61
	57	105	105	35	1.1	114.5	198	1600	2200	51311	8311	0.393	1.34
	57	120	120	48	1.5	183	342	1300	1800	51411	8411	0.834	2.6

Single direction thrust ball bearings with flat back face

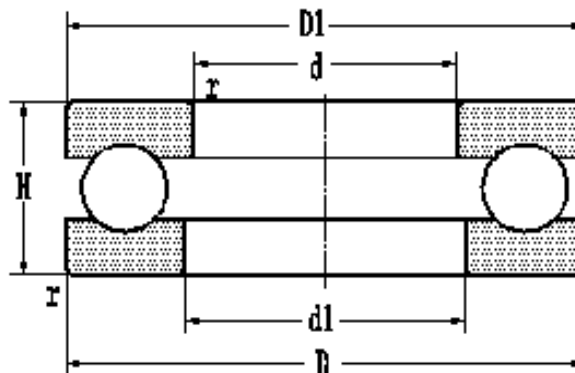
d60–75mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
60	62	85	85	17	1	40.3	85.5	2600	3600	51112	8112	0.07	0.29
	62	95	95	26	1	73.6	133	1900	2800	51212	8212	0.207	0.69
	62	110	110	35	1.1	118	198	1600	2200	51312	8312	0.462	1.43
	62	130	130	51	1.5	201	380	1100	1600	51412	8412	1.326	3.3
65	67	90	90	18	1	41.7	93.1	2400	3400	51113	8113	0.099	0.34
	67	100	100	27	1	74.9	143	1800	2600	51213	8213	0.226	0.77
	67	115	115	36	1.1	116	209	1500	2000	51313	8313	0.638	1.57
	68	140	140	56	2	217	428	1000	1500	51413	8413	1.48	4.2
70	72	95	95	18	1	42	98.8	2400	3400	51114	8114	0.119	0.36
	72	105	105	27	1	73.6	152	1800	2600	51214	8214	0.226	0.81
	72	125	125	40	1.1	148	285	1400	1900	51314	8314	0.756	1.932
	73	150	150	60	2	257	475	950	1400	51414	8414	2.07	5.18
75	77	100	100	19	1	44	130	2200	3200	51115	8115	0.128	0.42
	77	110	110	27	1	74.9	162	1700	2400	51215	8215	0.295	0.86

Single direction thrust ball bearings with flat back face

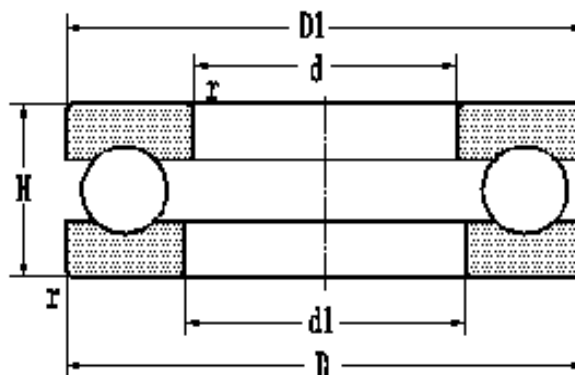
d75-100mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
75	77	135	135	44	1.5	163	342	1200	1700	51315	8315	1.04	2.7
	78	160	160	65	2	269	532	900	1300	51415	8415	3.05	6.97
80	82	105	105	19	1	48.8	133	2000	3000	51116	8116	0.138	0.43
	82	115	115	28	1	83.8	181	1700	2400	51216	8216	0.324	0.95
	82	140	140	44	1.5	178	342	1200	1700	51316	8316	1.19	2.58
	83	170	170	68	2.1	292	589	850	1200	51416	8416	3.726	7.11
85	87	110	110	19	1	49.2	143	2000	3000	51117	8117	0.148	0.46
	88	125	125	31	1	103	238	1600	2200	51217	8217	0.56	1.3
	88	150	150	49	1.5	209	404	1100	1600	51317	8317	1.766	3.7
	88	180	177	72	2.1	318	646	850	1200	51417	8417	4.42	9.5
90	92	120	120	22	1	65.1	181	1800	2600	51118	8118	0.256	0.636
	93	135	135	35	1.1	125	285	1500	2000	51218	8218	0.746	1.77
	93	155	155	50	1.5	221	379	1000	1500	51318M	8318	0.202	4.21
	93	190	187	77	2.1	327	713	800	1100	51418	8418	6.09	11.2
100	102	135	135	25	1	85.1	257	1700	2400	51120	8120	0.403	1

Single direction thrust ball bearings with flat back face

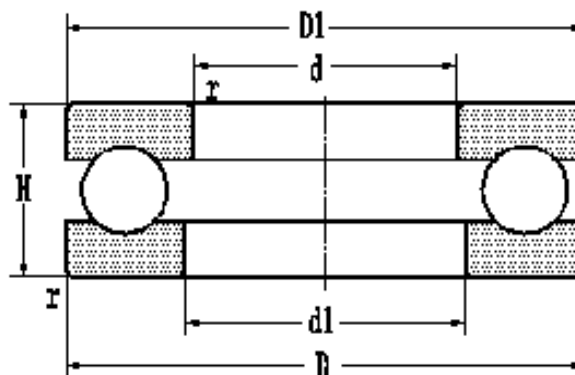
d100–130mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
100	103	150	150	38	1.1	149	323	1300	1800	51220M	8220	1.226	2.51
	103	170	170	55	1.5	263	476	950	1400	51320M	8320	3.236	5.46
	103	210	205	85	3	399	917	700	950	51420	8420	9.606	14.9
110	112	145	145	25	1	87.2	276	1600	2200	51122	8122	0.48	1.08
	113	160	160	38	1.1	139	342	1200	1700	51222	8222	1.58	2.6
	113	190	187	63	2	280	684	850	1200	51322	8322	4.216	7.9
	113	230	225	95	3	415	1083	630	850	51422	8422	12.7	20
120	122	155	155	25	1	87.1	295	1600	2200	51124	8124	0.48	1.16
	123	170	170	39	1.1	136	380	1100	1600	51224	8224	1.58	2.9
	123	210	205	70	2.1	330	869	800	1100	51324	8324	6.176	9.75
130	132	170	170	30	1	109	371	1400	1900	51126	8126	0.922	1.87
	133	190	187	45	1.5	186	513	950	1400	51226	8226	2.85	4.2
	134	225	220	75	2.1	358	1007	750	1000	51326	8326	7.36	13.3
	134	270	265	110	4	490	1520	560	750	51426	8426	26.3	32

Single direction thrust ball bearings with flat back face

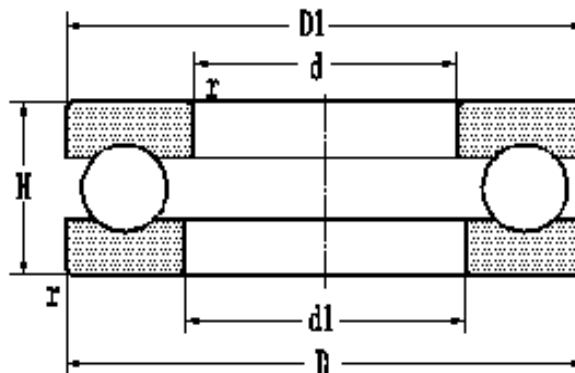
d140–180mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
140	142	180	178	31	1	111	380	1300	1800	51128	8128	0.99	2.1
	143	200	197	46	1.5	191	542	950	1400	51228	8228	3.15	4.5
	144	240	235	80	2.1	396	1159	700	950	51328	8328	10.4	15.9
	144	280	275	112	4	494	1520	500	700	51428	8428	26.3	32.2
150	152	190	188	31	1	112	380	1200	1700	51130	8130	1.09	2.2
150	153	215	212	5	1.5	244	698	900	1300	51230	8230	4.13	5.8
	154	250	245	80	2.1	407	1226	670	900	51330	8330	12	16.7
160	162	200	198	31	1	112	404	1200	1700	51132	8132	1.276	2.3
	163	225	222	51	1.5	240	741	850	1200	51232	8232	4.52	6.7
	164	270	265	87	3	463	1425	630	850	51332	8332	16.3	21.5
170	172	215	213	34	1.1	137	475	1100	1600	51134	8134	1.58	3.3
	173	240	237	55	1.5	280	884	800	1100	51234	8234	5.196	8.3
	174	280	275	87	3	445	1520	600	800	51334	8334	16.3	22.5
180	183	225	222	34	1.1	135	504	1000	1500	51136	8136	2.356	3.5

Single direction thrust ball bearings with flat back face

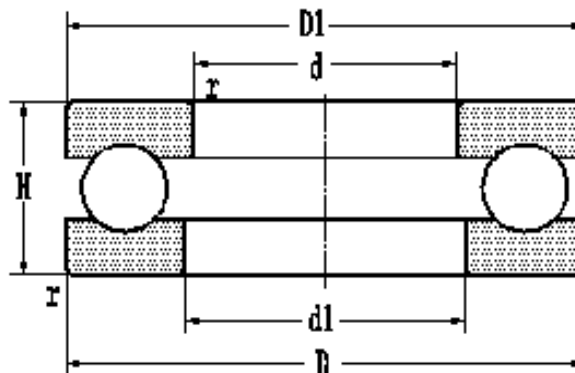
d180–360mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
180	183	250	247	56	1.5	294	950	800	1100	51236	8236	6.276	8.08
	184	300	295	95	3	494	1738	560	750	51336	8336	21.7	28.7
260	263	320	317	45	1.5	218	856	750	1000	51152	8152	0.856	7.96
	264	360	355	79	2.1	450	1900	560	750	51252	8252	1.9	24.8
300	304	380	376	62	2	322	1250	630	850	51160	8160	22.46	17.3
	304	420	415	95	3	575	2613	480	630	51260	8260	46.2	42.5
320	324	400	396	63	2	352	1615	600	800	51164	8164	23.91	18.76
	325	440	435	95	3	543	2565	450	600	51264	8264	55.2	43
340	344	420	416	64	2	358	1710	600	800	51168	8168	27.16	19.8
	345	460	455	96	3	575	2755	450	600	51268	8268	59.9	45
	345	540	535	160	5	948	4332	200	250	51368	8368	211.8	142
360	364	440	436	65	2	371	1805	560	750	51172	8172	28.86	21.1
	364	440	436	36	2	371	1805	560	750	51172X2	7708172	1.805	11.3
	365	500	495	110	4	704	3610	400	530	51272	8272	101	69.2

Single direction thrust ball bearings with flat back face

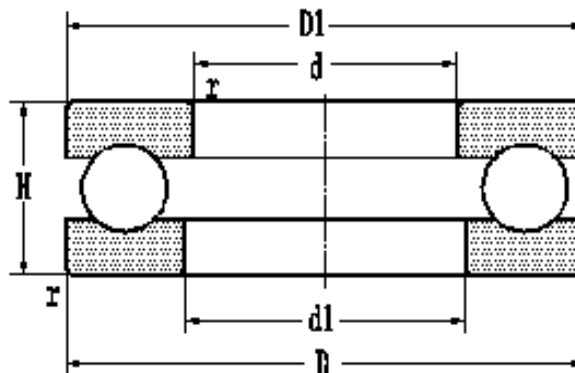
d400–480mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
400	404	480	476	65	2	383	2014	530	700	51180	8180	36	23
	405	540	535	112	4	680	3773	250	380	51280	8280	119.5	74.5
	405	540	535	85	4	668	3250	330	470	59280	9008280	3.25	53.4
	400.4	440	440	24	1	140	700	1300	1600	50980/YB2	9008980	119.5	4.47
420	424	500	495	65	2	390	2090	530	700	51184	8184	39.1	24.2
	422	550	550	80	4	463	2574	500	650	51784	8784	2.574	53.6
440	444	540	535	80	2.1	552	2730	450	600	51188	8188	2.7	39
	444	540	535	60	2.1	360	2112	360	500	59188/YB2	9008188	38	28.2
	445	600	595	130	5	622	3530	320	470	51288	8288	126.3	109
455	457	650	650	120	5	776	4851	350	500	51791	8791	4.851	131
460	464	560	555	80	2.1	501	2850	450	600	51192	8192	70.7	41.7
	465	620	615	130	5	654	3962	200	300	51292	8292	176.6	114
480	481	600	600	80	2.1	585	3165	448	640	51196X1	8196K	3.165	53.1

Single direction thrust ball bearings with flat back face

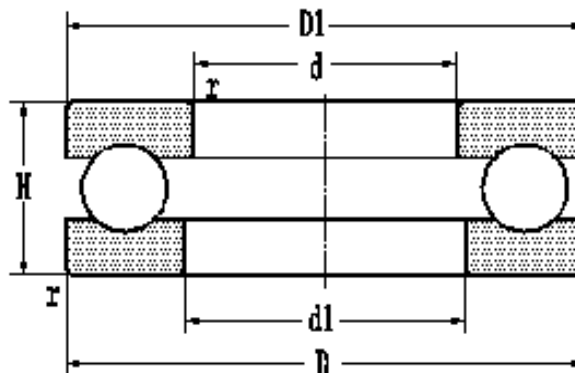
d480–635mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D3	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
480	484	580	575	80	2.1	513	2898	430	560	51196	8196	78.5	42.5
	485	730	725	195	6	1065	6886	230	330	51396	8396	6.886	308
500	504	600	595	80	2.1	525	3183	430	560	511/500	81/500	82.66	45.7
	505	670	665	135	5	864	5443	250	300	512/500	82/500	248.4	137
	502	540	540	30	1	101	835	1100	1500	510/500	10089/500	0.835	6.66
	505	750	745	150	6	950	6320	180	220	593/500	90083/500	6.32	228
530	534	640	635	85	3	618	3311	400	530	511/530	81/530	123.6	55.8
560	560.6	610	610	30	1.1	128	960	560	800	590/560	90089/560	6.6	9.55
600	604	710	705	67	3	630	4275	380	500	591/600	90081/600	4.275	50.1
630	635	850	845	175	6	1124	7041	100	160	512/630	82/630	558.7	243
	635	810	805	100	6	894	5058	302	432	517/630	87/630	5.058	126
635	635	787.4	787.4	88.9	3	730	4690	341	488	517/635/YB2	87/635K	4.69	95.2

Single direction thrust ball bearings with flat back face

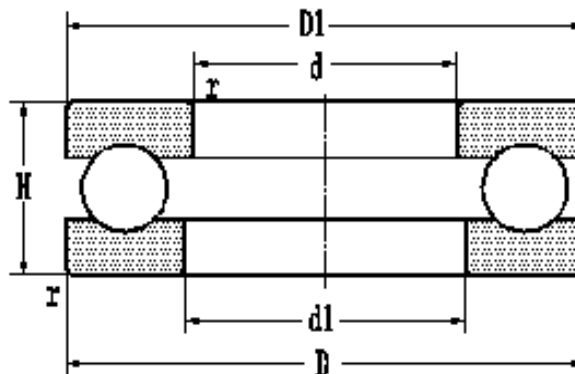
d670–980mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D3	H	rmin	C	Co					A	
670	670	800	800	95	4	725	4850	318	454	511/670X2	81/670K	4.85	93.5
	674	800	795	105	4	728	4420	160	240	511/670	81/670	164.7	92.21
	672	730	730	45	1.5	284	2160	380	530	510/670	10089/670	33	20.5
710	715	950	945	109	6	787	980	150	220	572/710	70082/710	4.4	199.4
710	715	950	945	145	6	1025	1296	150	220	592/710	90082/710	4.4	284
750	755	900	895	90	4	810	6210	160	240	591/750V	97081/750	6.21	100
	755	900	895	90	4	700	4900	303	433	591/750	90081/750	4.9	111
780	782	930	930	100	3.5	800	6069	140	200	517/780	87/780	6.069	129
850	855	1000	995	120	4	885	6770	220	314	511/850	81/850	6.77	173
880	880	1020	1020	86	5	840	6620	284	406	LY-5004		6.62	114
980	985	1120	1115	120	5	940	7880	200	284	517/980	87/980	7.88	185

Single direction thrust ball bearings with flat back face

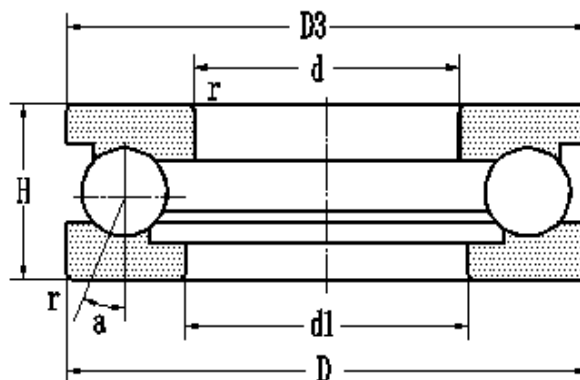
d1060–3000mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D3	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
1060	1065	1250	1245	115	5	940	1240	140	200	591/1060V	97081/1060	1.24	215
1180	1181	1280	1280	80	2.1	738	7680	150	220	510/1080	10089/1180	420	108
1720	1721.2	1880	1880	80	2.5	988	12243	180	258	517/1720V	7089/1720	12.24	200
1095	1095	1205	1205	55	3	377	2708	353	504	517/1095/HG2	7089/1095G2	2.709	68.5
2860	2860	3140	3140	210	9.5	2434	42494	28	40	517/2860V	8089/2860	42.494	1821
3000	3000	3250	3250	140	3	1612	29858	53	76	517/3000V	87/3000	29.959	1116

Angular contact thrust ball bearings

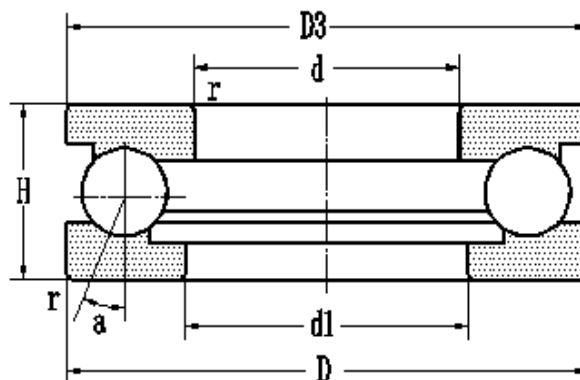
d320-560mm



Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant A	Mass kg
d	d1	D	D3	H	r _{min}	α	dynamic C	static C ₀	grease	oil	present	original		
320	335	400	385	48	2	60°	260	1115	830	1100	569164	9168164	1.115	12.1
330	345	410	380	45	2	60°	111	607	600	900	569164/YB2	9168764K	0.607	10.5
380	410	470	440	50	2	60°	177	602	500	730	569176/YB2	9168776K	0.602	15.8
420	430	500	490	48	2	60°	260	1440	830	1100	569184	9168184	3.9	15.9
	462	580	538	73	5	45°	330	2010	700	980	567284	7168284	2.01	51
440	458	540	522	60	2.1	45°	380	1980	660	950	569188	9168188	1.98	25.5
500	530	600	570	60	2.1	60°	322	1956	660	950	5691/500	91681/500	1.956	25.3
520	545	620	596	60	5	60°	440	2430	660	950	5617/520	1687/520	2.4	29.7
530	590	710	650	109	5	60°	695	4320	350	500	5692/530	91682/530	4.02	93.9
	550	710	190	109	5	60°	780	4250	350	500	5692/530/YB2	91682/530K		108
560	620	740	680	89	6	45°	805	3432	400	570	5617/560	1687/560	3.342	77

Angular contact thrust ball bearings

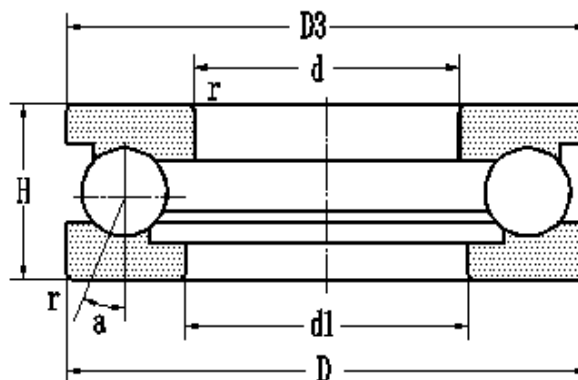
d562–800mm



Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	$d1$	D	$D3$	H	r_{min}	α	dynamic C	static C_0	grease	oil	present	original	A	
562	580	632	612	40	1.5	60°	143	500	300	440	5617/562	1688/562	0.5	12.2
600	635	710	675	67	3	60°	380	2484	510	720	5691/600	91681/600	12	37.6
610	700	790	735	89	4.5	45°	839	3648	380	540	5617/610	1687/610	3.648	86
620	665	780	735	102	3.5	45°	776	3588	340	490	5617/620	1687/620	3.588	95.2
620	640	700	680	50	1.5	30°	311	1314	260	380	1688/620	5617/620	1.314	95.2
650	720	880	800	140	6	60°	1105	7692	260	370	5617/650	1687/650	7.092	194
670	740	900	830	140	6	45°	1260	6084	250	360	5692/670	91682/670	53	206
750	780	900	870	90	4	60°	587	4620	340	480	5691/750	91681/750	40	94.4
800	840	950	910	120	4	60°	850	6710	200	240	5611/800	1681/800	6.71	140
	870	1060	990	155	7.5	60°	1145	8868	180	250	5692/800	91682/800	150	293

Angular contact thrust ball bearings

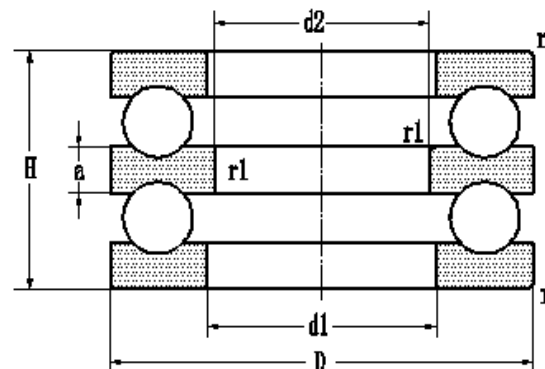
d810–3000mm



Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D3	H	r _{min}	α	dynamic C	static Co	grease	oil	present	original	A	
810	880	1030	960	110	7.5	45°	780	4080	280	400	5617/810	1687/810	150	176
950	1040	1250	1160	180	7.5	45°	1500	9168	120	170	5691/950	91682/950	60	432
1000	1040	1180	1140	109	5	45°	1076	6516	250	360	5691/1000	91681/1000	200	177
1120	1170	1320	1270	122	5	60°	1018	10272	180	260	5691/1120	91681/1120	10.272	241
1600	1600	1760	1760	90	6	60°	682	8052	210	300	5617/1600	1687/1600	8.052	248
1860	1900	2100	2060	140	4.5	60°	1272	19370	93	130	5617/1860	1687/1860	19.07	577
2100	2120	2260	2260	150	4.5	60°	1200	19300	78	111	5617/2100	1687/2100	19	563
2500	2520	2700	2680	160	5	60°	1584	26640	57	81	5610/2500	11689/2500	26.64	732
3000	3000	3270	3270	140	7.5	60°	1464	24240	52	75	5617/3000/YA	1687/3000	24.24	1262

Double direction thrust ball bearings with flat back face

d₁940–1520mm



Boundary dimensions mm							Basic load ratings kN		Limiting speeds r/min		Bearing designations		Mass kg
d1	d2	D	H	a	r _{min}	r _{1min}	dynamic C	static C ₀	grease	oil	present	original	
940	865	1030	110	28	2.1	1.1	796	4272	280	400	527/940	389/940	135
950.8	845	1030	120	28	2.1	1.1	796	4272	260	370	527/950.8	387/950	144
	845	1030	110	28	2.1	1.1	796	4272	280	400	527/950.8YB2	388/950	136
1050	1049.5	1250	220	77	5	3	1223	9989	99	142	2327/1049/YA	2687/1049	408
1181	1070	1280	145	35	2.5	1.1	1192	7680	150	220	527/1181	389/1181	243
1520	1420	1720	270	61	7.5	7.5	2616	20520	51	73	527/1520	387/1520	693



推力滚子轴承

Thrust Roller Bearing

Thrust Roller Bearings

Cylindrical roller thrust bearings and tapered roller thrust bearings are separable and can carry heavy axial loads. Furthermore, they are stiff and insensitive to shock loads, and they require little space. They are single direction bearings and only accommodate axial load in one direction. Their main use is in applications where the load carrying capacity of thrust ball bearing is inadequate.

LYC cylindrical roller thrust bearings are divided into single row and double row. Single row cylindrical roller thrust bearings can carry axial load in one direction and limit axial displacement in one direction. Double row cylindrical roller thrust bearings can carry axial load in both directions and limit axial displacements in both directions. Cylindrical roller thrust bearings with shield which are identified by suffix also can be provided in accordance with the customer's requirements. Housing washer with shield is identified by ZH while shaft washer with shield is identified by ZS. Thrust roller bearings without shaft or housing washers also can be provided as requested.

Cylindrical roller thrust bearings or tapered roller thrust bearings have a machined solid cage as standard. Other materials of cage can be used according to the requirement of customers.

In order to prevent detrimental sliding movement caused by the centrifugal force between roller and raceway during bearings in high speed, the bearing should be subjected to a given minimum axial load, the requisite minimum axial load to be applied can be estimated from:

$$Fa' = A \left(\frac{n}{1000} \right)^2$$

where

Fa'—minimum axial load, N

A—minimum load constant, see bearing dimension tables

n—speed, r/min

If axial load acting on the bearing is less than the minimum axial load required, the bearing must be preloaded.

Equivalent dynamic load

$$P = Fa$$

Equivalent static load

$$Po = Fa$$

Spherical roller thrust bearings are separable design. For its load acting lines and bearings axis form a certain angle, the bearings can

simultaneously carry axial and radial loads. And they can be used in considerable heavy load applications and their permissible speed is higher. Spherical roller thrust bearings have self-aligning ability, permissible misalignment is reduced $2 \sim 3^\circ$. But permissible misalignment is reduced as the load increases. For example, when $Fa + 2.7Fr = 0.15Co$, permissible misalignment is reduced to 1.5° for bearing series of 293, 293, 294.

Spherical roller thrust bearing have a pressed steel cage or machined solid cage as requested.

In order to prevent the detrimental sliding movement between roller and raceway caused by centrifugal force during bearings in high speed, the bearings should be subjected to a given minimum axial load, the requisite minimum axial load to be applied can be estimated from:

$$Fa' = 1.8Fr + A \left(\frac{vn}{1000} \right)^2$$

(If $1.8Fr < 0.0005Co$, then $0.0005Co$ should be used in the above equation instead of $1.8Fr$)

where:

Fa'—minimum axial load, N

Fr—radial component force of combined load for bearings, N

Co—basic static load rating, N

A—minimum load constant see bearing dimension tables,

n—speed, r/min

Equivalent dynamic load

$$P = Fa + 1.2Fr$$

Equivalent static load

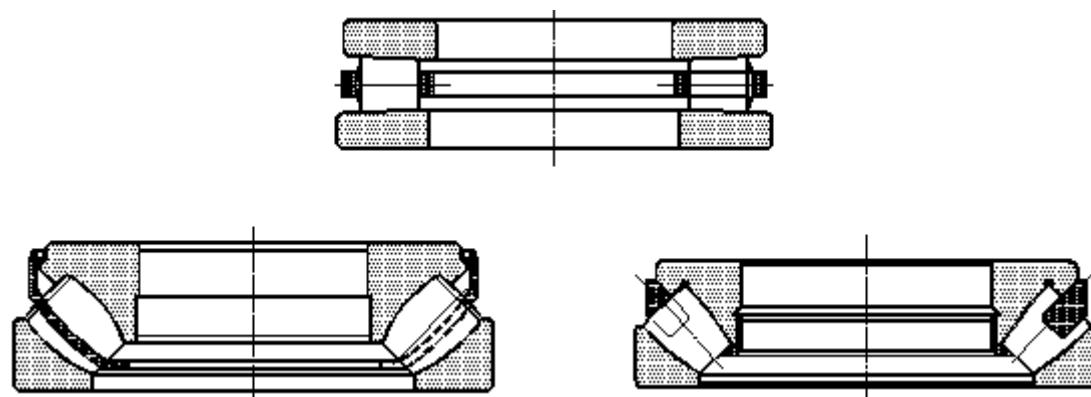
$$Po = Fa + 2.7Fr$$

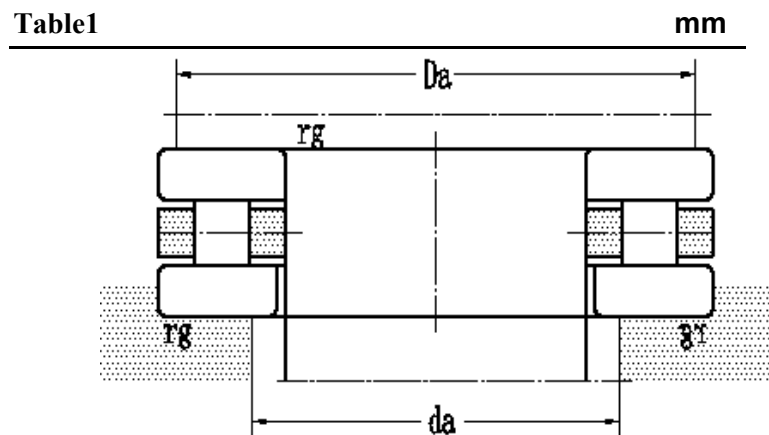
where,

Fr—radial load, N

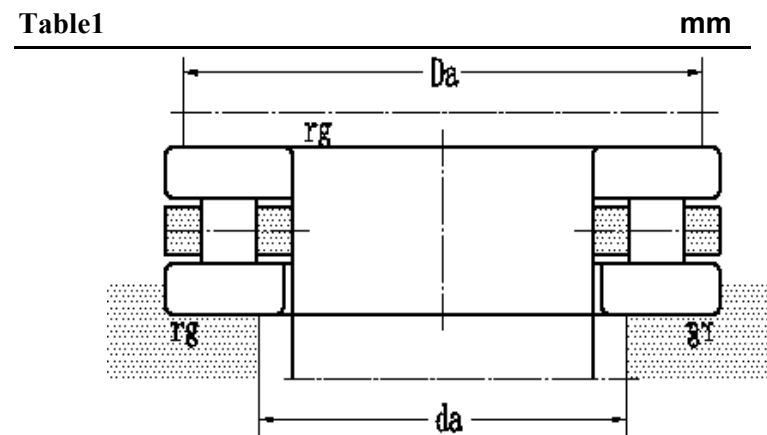
Fa—axial load, N

Mounting dimensions of cylindrical roller thrust bearings are defined in Table 1 Mounting dimensions of spherical roller thrust bearings are defined in Table 2.





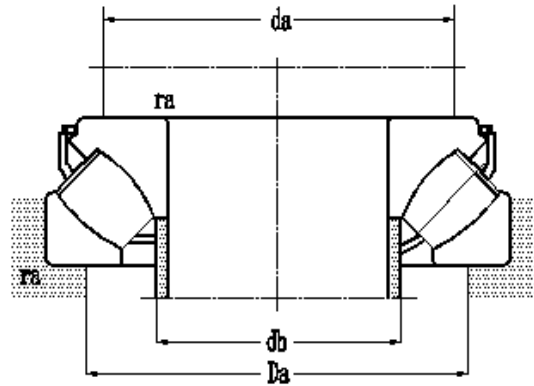
Bore code	Journal	Bearing series					
		811 da min	Da max	rg max	812 da min	Da max	rg max
02	15	25	18	0.3			
03	17	27	20	0.3			
04	20	32	23	0.3			
05	25	39	28	0.6			
06	30	44	33	0.6	49	33	0.6
07	35	49	38	0.6	56	41	1
08	40	56	44	0.6	63	45	1
09	45	61	49	0.6	68	50	1
10	50	66	54	0.6	73	55	1
11	55	73	60	0.6	84	61	1
12	60	80	65	1	89	66	1
13	65	85	70	1	94	71	1
14	70	90	75	1	99	76	1
15	75	95	80	1	104	81	1
16	80	100	85	1	109	86	1



Bore code	Journal	Bearing series					
		811 da min	Da max	rg max	812 da min	Da max	rg max
17	85	105	90	1	117	93	1
18	90	114	96	1	127	98	1
20	100	129	106	1	140	110	1
22	110	139	116	1	150	120	1
24	120	149	126	1	160	130	1
26	130	162	138	1	179	141	1.5
28	140	172	148	1	189	151	1.5
30	150	182	158	1	204	162	1.5
32	160	192	168	1	214	171	1.5
34	170	207	178	1	227	183	1.5
36	180	217	188	1	237	193	1.5
38	190	230	200	1	256	204	2
40	200	240	210	1	266	214	2

Table2

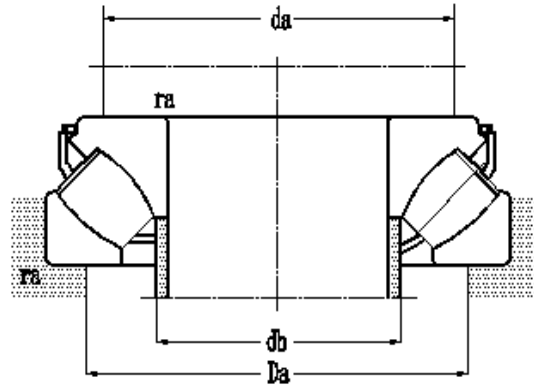
mm



Bore code	Shaft	Bearing series								293E			
		292E d_a min	D_a max	d_b max	r_g max	293E d_a min	D_a max	d_b max	r_g max	d_a min	D_a max	d_b max	r_g max
12	60									90	107	70	1.5
13	65									100	115	73	2
14	70									105	124	80	2
15	75									115	132	86	2
16	80									120	141	91	2.1
17	85					115	129	93	1.5	130	150	97	2.1
18	90					118	135	93	1.5	135	158	103	2.1
20	100					132	148	109	1.5	150	175	112	2.5
22	110					145	165	119	2	165	192	125	2.5
24	120					160	182	132	2.1	180	210	135	3
26	130					170	195	141	2.1	195	227	151	3
28	140					185	208	152	2.1	205	237	158	3
30	150					195	220	163	2.1	220	253	171	3
32	160					210	236	174	2.5	230	271	181	4
34	170					220	247	184	2.5	245	288	191	4
36	180					235	263	193	2.5	260	305	202	4

Table2

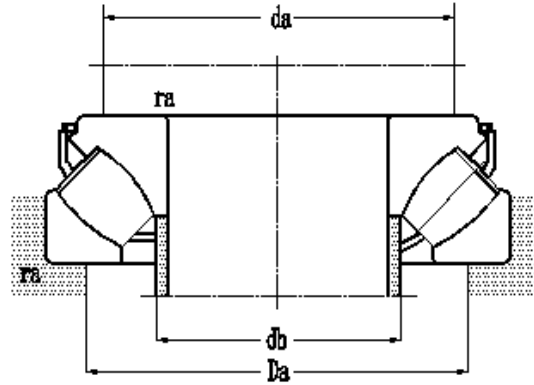
mm



Bore code	Shaft	Bearing series											
		292E				293E				293E			
		da min	Da max	db max	rg max	da min	Da max	db max	rg max	da min	Da max	db max	rg max
38	190					250	281	206	3	275	322	214	4
40	200	235	258	211	2	265	298	215	3	290	338	225	4
44	220	260	277	229	2	285	316	235	3	310	360	243	5
48	240	285	311	251	2.1	300	337	256	3	330	381	265	5
52	260	305	331	272	2.1	330	372	277	4	360	419	291	5
56	280	325	351	291	2.1	350	394	298	4	390	446	310	5
60	300	355	386	317	2.5	380	429	320	4	410	471	326	5
64	320	375	406	336	2.5	400	449	340	4	435	507	354	6
68	340	395	427	353	2.5	430	484	364	4	465	541	373	6
72	360	420	461	380	3	450	504	384	4	485	560	391	6
76	380	440	480	395	3	480	538	404	5	510	587	415	6
80	400	460	500	415	3	500	557	424	5	540	622	441	6
84	420	490	534	437	4	525	585	447	5	560	643	455	6
88	440	510	554	458	4	548	614	470	5	595	684	486	8
92	460	530	575	477	4	575	638	487	5	615	704	502	8
96	480	555	603	508	4	593	660	507	5	645	744	521	8

Table2

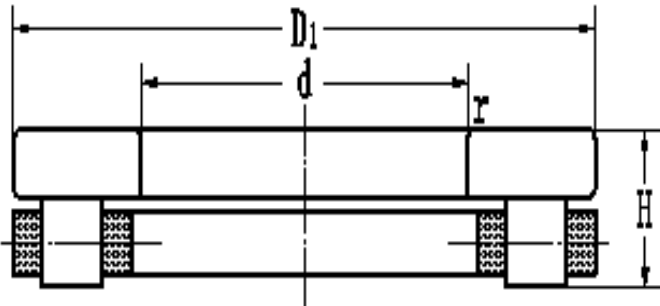
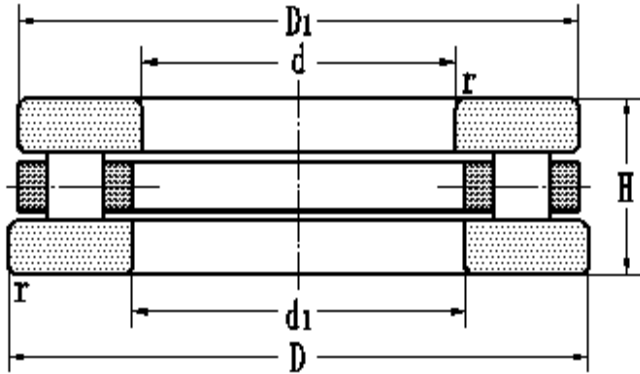
mm



Bore code	Shaft	Bearing series											
		292E				293E				293E			
		da min	Da max	db max	rg max	da min	Da max	db max	rg max	da min	Da max	db max	rg max
/500	500	575	622	527	4	615	683	532	5	670	765	542	8
/530	530	611	661	560	4	650	724	561	6	700	810	573	8
/560	560	645	697	586	4	691	770	595	6	750	860	606	10
/600	600	690	744	633	4	735	815	633	6	800	900	653	10
/630	630	730	789	657	5	839	856	665	8	840	960	681	10
/670	670	775	836	710	5	819	906	706	8	880	1015	729	12
/710	710	820	882	743	5	869	962	752	8	925	1073	768	12
/750	750	863	930	798	5	915	1015	795	8				
/800	800	918	987	837	6	970	1070	842	8				
/850	850	973	1043	881	6	1028	1137	896	10				
/900	900	1025	1101	933	6	1090	1203	947	10				

Cylindrical roller thrust bearings

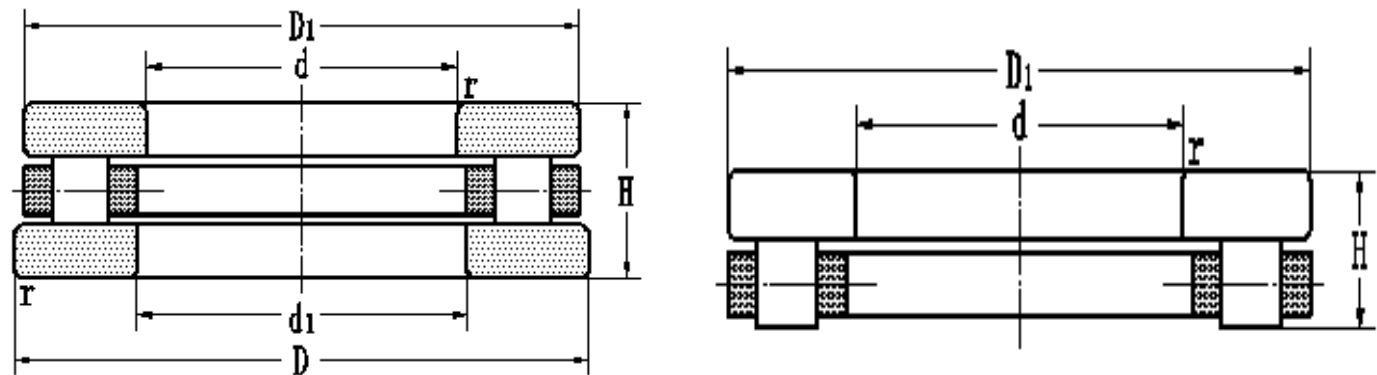
d25~60mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
25	25.2	40.5	40.5	7	0.3	13.8	66	4000	5500	81705	589705	0.00031	0.038
34.925	37	79	78	15.875	1	76.8	316.8	2500	3400	817/34.925	549707	0.0083	0.441
35	35.2	52	52	8	0.6	18.1	95.74	3400	4500	87107	7009107	0.00057	0.0625
40	40.2	60	60	13	0.6	38	118	1700	2400	81108	9108	0.0011	0.146
	40.2	68	68	19	1	83	255	1400	1900	81208	9208	0.0051	0.32
	40.2	90	90	16	1.1	92.9	400	2400	3100	87407X2	559708	0.0073	0.497
45	45.2	110	110	19	1.1	150	619.5	1900	2600	81709	559709	0.0077	0.94
50	50.2	78	78	22	1	91.5	300	1200	1700	81210	9210	0.0073	0.43
55	55.2	78	78	16	0.6	69.5	285	1400	1900	81111	9111	0.0066	0.27
	57	90	90	25	1	116	365	950	1400	81211	9211	0.011	0.708
	57	105	105	30	1.1	145	564	1200	1600	89311	954311	0.019	1.38
60	62	85	85	17	1	80	300	1300	1800	81112	9112	0.0073	0.338

Cylindrical roller thrust bearings

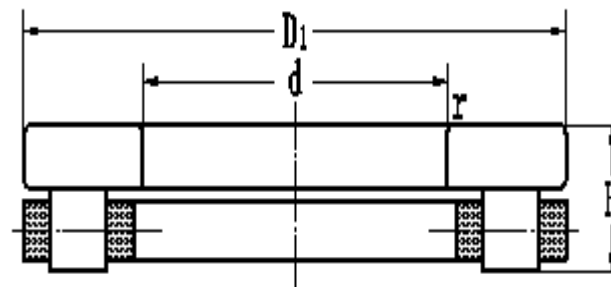
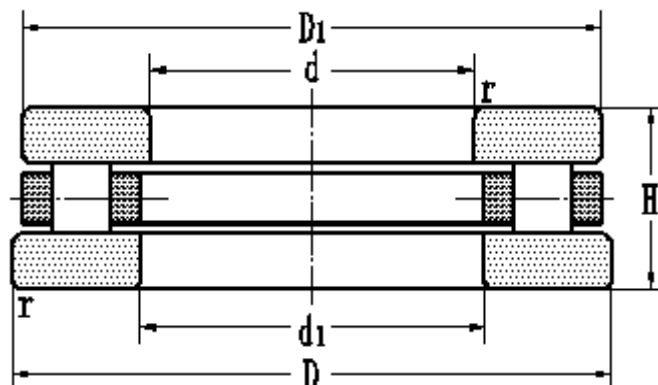
d60~85mm



Boundary dimensions						Basic load ratings		Limiting speeds		Bearing designations		Minimum load	Mass
mm						kN		r/min				constant	kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D1	H	rmin	C	Co					A	
60	62	95	95	26	1	117	332	1810	2400	81212	9212		0.792
	62	130	130	32	1.5	206	998	1000	1400	87412	7559412	0.06	2.45
	60	100	130	12	1	91.4	372			KOW-87212X3			0.404
65	65.2	90	90	18	1	83	320	1200	1700	81113	9113	0.0083	0.381
	67	100	100	27	1	140	490	1200	1700	81213	9213	0.019	0.874
70	72	95	95	18	1	81.9	254			81114	9214		0.403
75	77	110	110	27	1	125	440	850	1200	81215	9215	0.015	0.979
	77	100	100	19	1	75.5	266			81115	9115		0.455
80	80.2	150	150	26	1.5	238	1056	1400	1900	81716	9716	0.032	2.06
	90.2	135	134	62	0.6	311	1256	1000	1500	82716	59716	0.044	3.28
85	85.2	110	110	19	1	76.5	310	1000	1500	81117	9117	0.0077	0.52
	88	125	125	31	1	153	550	800	1100	81217	9217	0.024	1.44
	88	150	150	39	1.5	286	1200	900	1200	89317	9549317	0.054	3.35

Cylindrical roller thrust bearings

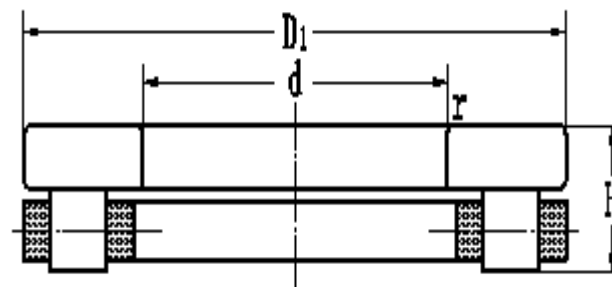
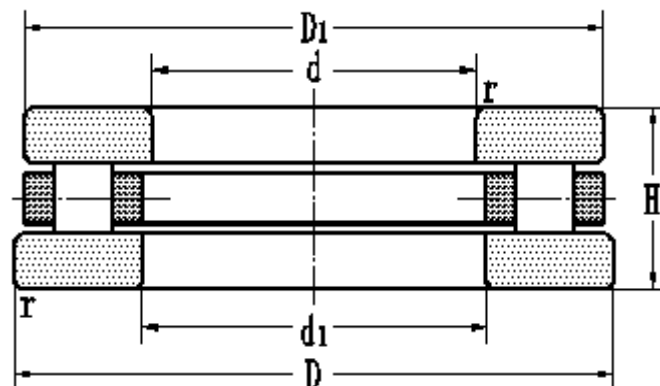
d90~130mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
90	90.2	120	120	22	1	104	415	900	1300	81118	9118	0.014	0.797
	90.2	160	160	26	1.5	250	1210	1300	1800	81718	9718	0.039	2.25
100			135	11	1	77.6	530	1800	2500	KIW-87120	7789120	0.028	0.517
	100.2	190	190	39	1.5	451	2090	1000	1400	81720	9720	0.06	5.11
	100.2	135	135	25	1	152	544			81120	9220		1.19
	103	150	150	38	1.1	214	830	800	1100	81220	9220	0.054	2.58
	103	170	170	42	1.5	327	1520	760	1100	89320	9549320	0.074	4.49
110	110.2	200	200	39	2.1	459	2194	990	1300	81722	9722	0.075	5.43
	110.2	200	200	26	2	460	2180			40W-87322X3			3.7
	111	230	230	60	3	634	2642	720	960	89422 X2	549822	0.3	13.7
	113	160	160	38	1.1	244	827			81222	9222		2.78
120	100	215	215	30	1.1	451	2471	850	1200	81724	559724	0.1	5.03
	120.2	155	155	25	1	146	680	950	1400	81124	9124	0.037	1.36
	123	170	170	39	1.1	258	918			81224	9224		3.08
130			170	14	1	113	825	1400	1800	KIW-89126 X2	799726	0.049	0.949

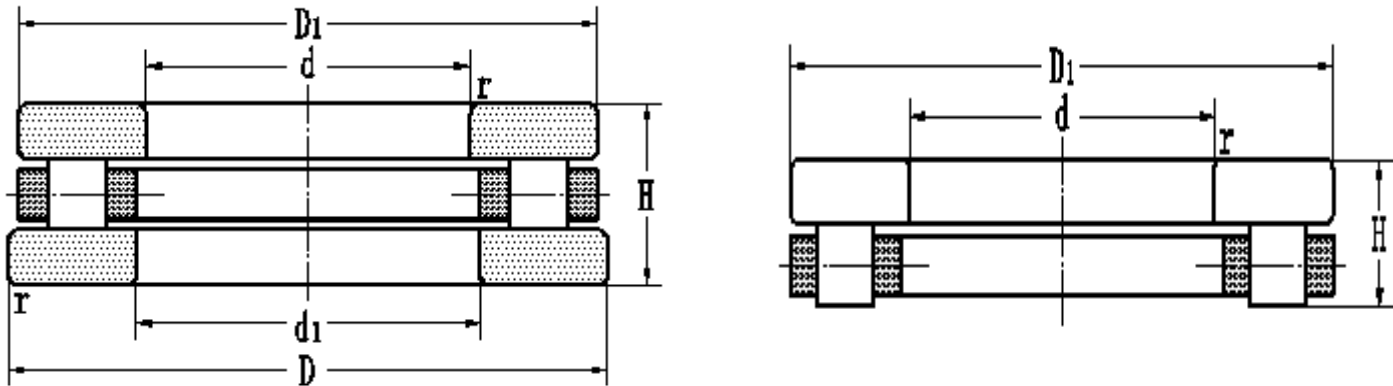
Cylindrical roller thrust bearings

d130~240mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
130	130.2	225	187	30	2.1	446	2180			KOW-8726X2			5.52
	133	190	187	45	1.5	344	1250	670	900	81226	9226	0.13	4.59
150			188	21.5	1	246	1174	1000	1300	KIW-81130	209130	0.065	1.54
	150.3	300	300	35	2.1	698	4330	840	1100	87430 X2	569730	0.45	11.3
	152	190	188	31	1	253	1230			81130	9130		2.3
	153	230	227	50	3	553	2370	800	1100	81730	9830	0.35	8.22
	153	215	212	50	1.5	459	1615			81230	9230		6.45
180			222	24	1.1	325	1665	900	1200	KIW-81136	209136	0.13	2.23
	184	280	275	54	3	803	3717	680	900	81836	9836	0.46	13.4
200	203	250	247	37	1.1	278	1326	700	900	81140/YA	9140K	0.18	4.82
240	245	440	435	122	6	2360	10770	300	400	89448	9549448	4.6	89.5
	260	420		95	5	1210	5940	350	600	89352 DH	9809352	4.2	57.1
	285	445		95	4	1210	5943	360	480	81757 DH	809757	4	60.4
	300	540		145	6	2770	12917	230	300	89460 DH	9809460	10	161

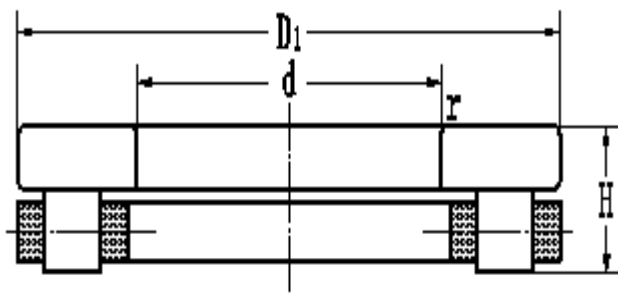
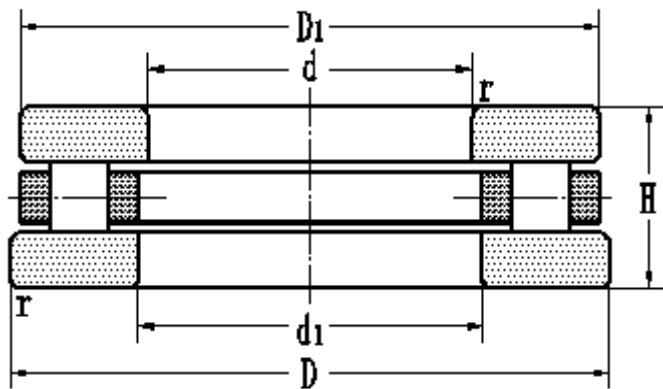
Cylindrical roller thrust bearings
d460~900mm



Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
460	464	560	555	80	2.1	1030	6150			81192			42.6
500	505	670	665	135	5	3400	17600	140	190	812/500	92/500	25	153
530	532	710	708	82	5	2280	17840	220	290	872/530	75492/530	23	96.6
560	565	750	745	150	5	3900	20800	120	170	812/560	92/560	35	198
600	602	860	860	125	6	3870	12980	130	180	817/600	5497/600	23	264
670	672	900	900	103	6	3530	26503	160	200	872/670	75492/670	30	198
710	714	850	848	63	4	1440	13657	240	300	871/710	75491/710	27	79
800	800	950	950	90	4	1360	9440	160	200	891/800	90091/800	32	105
850	855	1000	995	67	4	1864	17480	200	260	871/850	75491/850	32	97.1
900	902	1180	1180	125	7.5	5300	50459	100	130	972/900	75492/900	46	386

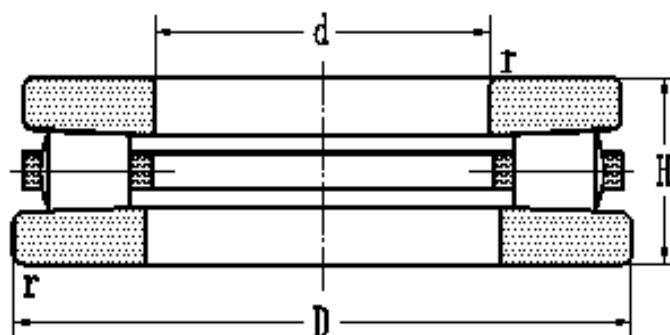
Cylindrical roller thrust bearings

d1060~1320mm



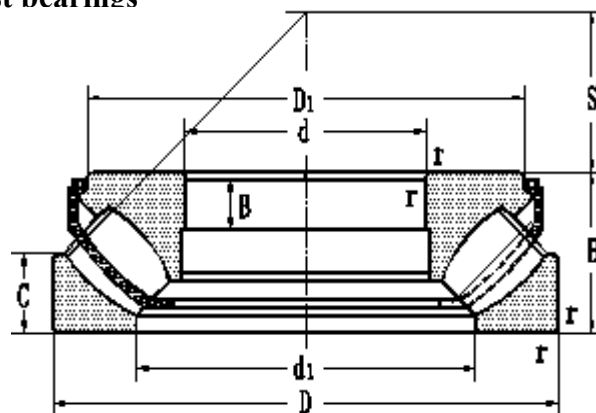
Boundary dimensions mm						Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
						dynamic	static	grease	oil	present	original		
d	d1	D	D1	H	rmin	C	Co					A	
1060	1065	1400	1400	155	9.5	8950	79388	87	110	872/1060	75492/1060	50	689
1180	1180	1325		88.5	3	4430	21700	100	150	817/1180 DH	97/1180	25	173
	1185	1400	1395	100	6	4430	48664	110	140	871/1180	75491/1180	35	311
1320	1325	1700	1700	175	9.5	10300	105400	67	90	872/1320	75492/1320	56	105

Tapered roller thrust bearings 200~1290



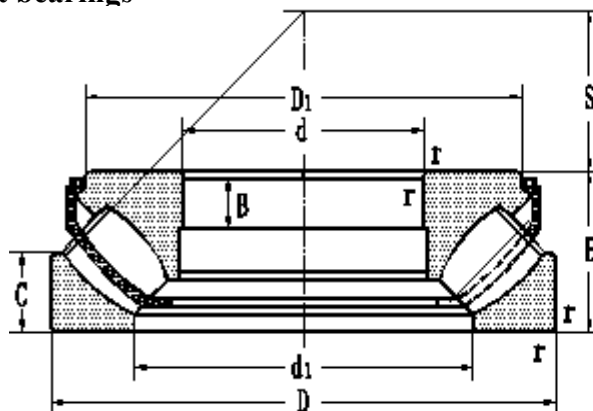
Boundary dimensions mm					Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load 常数	Mass kg
d	d1	D	H	rmin	dynamic C	static Co	grease	oil	present	original	A	
200	200.3	400	122	5	1720	7226	200	300	99440	9019440	0.25	75
210	210.3	460	122	7.5	2870	14450	290	390	91742	19742	0.25	107
	210.3	460	150	7.5	2870	14450	290	390	91742 DS	219742	0.25	134
240		540	127	7.5	5100	28760	250	340	91748/YA	219748	0.3	157
260	260.3	480	132	6	2558	11360	160	220	99452	9019452	0.35	111
270	270.3	550	130	6	4080	20940	240	330	91754	19954	0.35	164
280	280.3	520	145	6	2950	13350	140	190	99456	9019456	0.35	143
320	320.4	580	155	7.5	3740	17537	110	160	99464	9019464	0.38	185
380	380.4	670	175	7.5	4710	22870	85	120	99476	9019476	0.56	274
1290	1291	1550	134	6	6970	55950	95	120	917/1290	197/1290	1.6	495

Spherical roller thrust bearings
d100~180mm



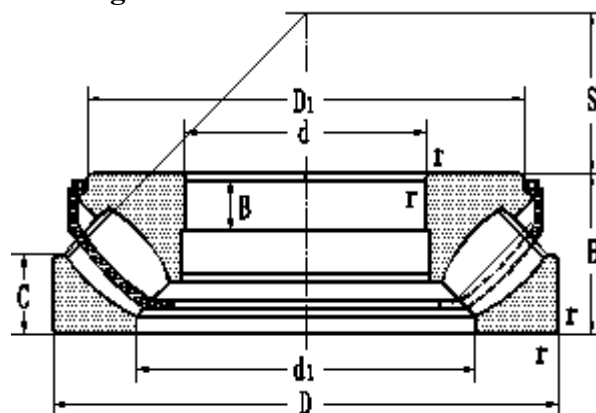
Boundary dimensions mm									Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	B	C	H	S	rmin	dynamic C	static Co	grease	oil	present	original	A	
100	129	170	153	15	20.8	42	58	1.5	410	1280	760	1000	29320	9039320	0.166	3.66
110	135	190	175	30	24	48	64	2	347	970	1200	1800	9069322	9069322	0.138	5.46
	150	230	195	43	35	73	69	3	545	1479	800	1200	9069422	9069422	0.393	12.8
120	156.5	210	192.7	18	26.5	54	70	2.1	607	1940			29324			7.48
140	181	240	221.8	20	29	60	82	2.1	760	2530			29328			10.6
150	185	250	220	36	31	60	87	2.1	525	1670	850	1300	9069330	9069330	0.54	10.2
160	200	270	240	45	32	67	92	3	610	2240	800	1200	9069332	9069332	0.736	13.5
170	236	340	300	62	52	103	104	5	1400	4120			9069434			38.8
180	225	300	270	46	36	73	103	3	790	2713	700	1000	9069336	9069336	0.883	18.3
	230	300	276.8	25	34.5	73	103	3	967	3864			29336			19.4
	250	360	325.5	39	53	109	110	5	1770	6460			29436			49.2

Spherical roller thrust bearings
d190~260mm



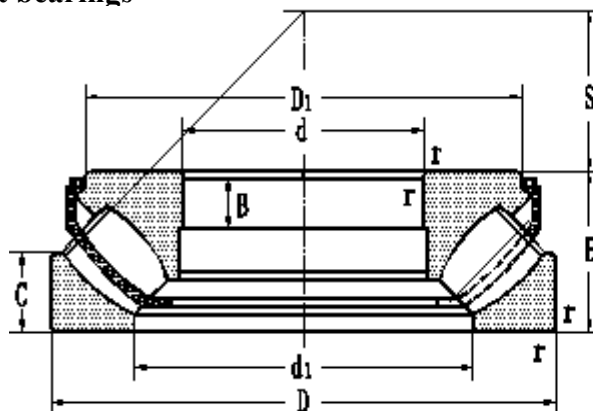
Boundary dimensions mm									Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	B	C	H	S	rmin	dynamic C	static Co	grease	oil	present	original	A	
190	224	270	250	30	24	48	110	2	420	1746	950	1500	9069238	9069238	0.442	8
	226	270	253.3	14	25.5	48	103	2	2100	2260			29238			7.87
	268	380	340	41	53.5	115	117	5	2070	7594	430	600	29438	9039438	6.228	56.4
200	270	400	340	62	62	122	122	5	1740	6054	430	600	9069440	9069440	5.685	60.6
	278	400	360	43	59	122	122	5	2760	9000	600	800	29440E	9039440E	5.978	71.1
220	254	300	278	29	26	48	117	2	504	1932	438	1300	9069244	9069244	0.491	11.2
	270	360	320	52	44	85	125	4	970	3769	560	800	9069344	9069344	2.059	32.5
	290	420	360	76	58	122	132	6	1830	6624	400	560	9069444	9069444	6.665	68.7
240	280	340	323.9	19	31.2	60	130	2.1	800	3450		1100	29248E	9039248E	1.483	19.3
	290	380	340	52	44	85	135	4	1320	4251	560	800	9069348	9069348	2.556	33.8
	310	440	380	62	62	122	142	6	1920	7158	380	530	9069448	9069448	7.645	70
260	295	360	330	38	30	60	139	2.1	645	2877	700	1000	9069252	9069252	1.128	16.9
	315	420	370	60	46	95	148	5	1390	5793	480	670	9069352	9069352	4.705	45.6
	327	420	390	32	45	95	148	5	2220	8300	600	800	29352 E	9039352E	6.5	53.6
	335	480	415	80	66	132	154	6	2120	8118	340	480	9069452	9069452	9.81	91.8

Spherical roller thrust bearings
d260~340mm



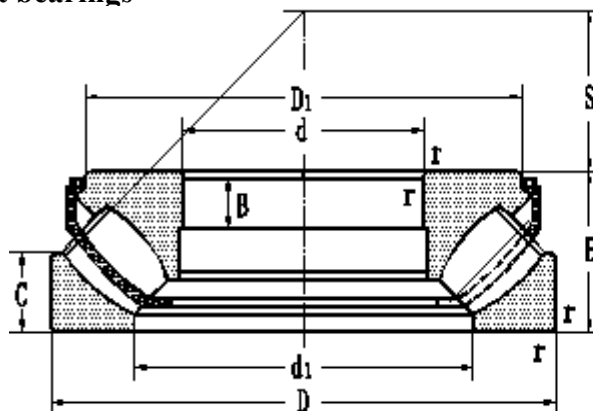
Boundary dimensions mm									Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	B	C	H	S	rmin	dynamic C	static Co	grease	oil	present	original	A	
260	346	480	434.9	48	63	132	154	6	2730	10800	450	600	29452			99.2
280	323	380	360.4	19	30	60	150	2.1	852	4330			29256			18.1
	335	440	390	62	46	95	158	5	1410	5980	450	630	9069356	9069356	5.097	48.4
	348	440	409.8	32	46	95	158	5	1980	7710	650	870	29356			50.2
	365	520	450	75	72	145	166	6	2550	9828	300	480	9069456	9069456	14.5	115
	372	520	475.6	52	70	145	166	6	3800	13450	400	550	29456			130
300	365	480	425	58	52	109	168	5	1870	7640	400	560	9069360	9069360	8.527	61.4
320	385	500	445	68	55	109	180	5	2030	7915	380	530	9069364	9069364	8.919	73.4
	369	440	413	21	38	73	172	3	1300	5610	800	1100	29264			29.4
	410	580	500	95	75	155	191	7.5	2930	11660	240	360	9069464	9069464	20.1	171
	424	580	528.5	55	74	155	191	7.5	3910	16180	350	500	29464			168
340	390.5	460	436.5	21	37	73	183	3	1410	6440	800	1100	29268			32.3
	410	540	480	74	62	122	192	5	2710	11000		600	9069368	9069368	11	94.9
	462	620	590	61	82	170	201	7.5	4550	17480		320	29468	9039468	30.19	226

Spherical roller thrust bearings
d360~500mm



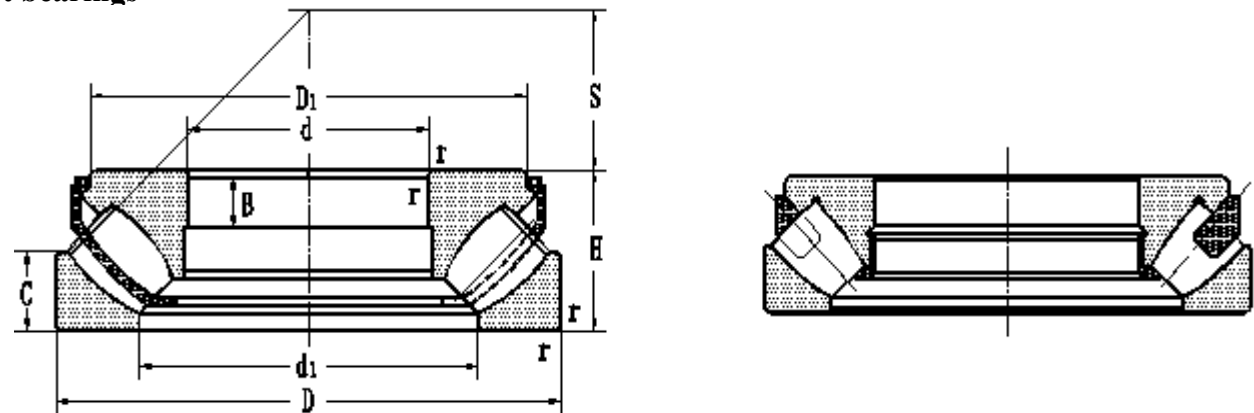
Boundary dimensions mm									Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	B	C	H	S	rmin	dynamic C	static Co	grease	oil	present	original	A	
360	442	560	523.1	41	59.5	122	202	5	2744	12707	550	700	29372			104
	460	640	555	87	85	170	210	7.5	3790	15440	190	300	9069472	9069472	35.38	199
380	439	520	497	27	41.8	85	202	4	1460	6800		750	29276 E	9039276E	5.6	50
400	450	540	500	55	42	85	212	4	1260	7060	430	600	9069280	9069280	6.763	49
	475	620	555	81	65	132	225	6	2860	12050	260	380	9069380	9069380	20.59	134
	510	710	620	113	93	185	236	7.5	4820	19060	260	380	9069480	9069480	53.8	3.88
420	514.5	650	608.3	48	68.5	140	235	6	3660	17600	400	500	29384			161
440	508	600	570.2	30	48	95	235	5	2350	11100	550	750	29288			72.7
460	567	710	685	51	72	150	257	6	4310	19000		450	29392	9039392	34	217
480	540	650	600	65	50	103	259	5	1950	10500	340	480	9069296	9069296	14.99	89.4
500	560	670	620	60	50	103	268	5	1950	10540	320	450	90692/500	90692/500	15	89.6
	590	750	675	94	74	150	280	6	3520	16900	180	280	90693/500	90693/500	39.99	203

Spherical roller thrust bearings
d500~750mm



Boundary dimensions mm									Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	B	C	H	S	rmin	dynamic C	static Co	grease	oil	present	original	A	
500	630	870	760	140	110	224	290	9.5	6290	27340	120	180	90694/500	90694/500	110.8	520
	652.5	870	794.5	81	107.5	224	290	9.5	7850	34600	200	300	294/500			521
530	601.5	710	681.2	39	57	109	288	5	3220	16400	400	550	292/530			114
	690	920	841.5	85	110.4	236	309	9.5	9000	41950		160	294/530 E	90394/530E	179.2	624
	700	920	840	145	116	236	309	9.5	8386	32630	120	160	90694/530	90694/530	137.8	573
560	625	750	695	72	58	115	300	5	2430	13320	260	380	90692/560	90692/560	23.92	127
600	688	800	780	39	65	122	321	5	3420	20500		340	292/600	90392/600	37.04	172
	750	1030	900	156	130	258	360	12	9626	37580	100	130	90694/600	90694/600	223	700
630	705	850	785	84	64	132	338	6	3270	17760	190	300	90692/630	90692/630	42.73	188
	728	850	830	42	67	132	338	6	4634	24450		300	292/630	90392/630	52.95	218
670	750	900	830	86	70	140	365	6	3670	20280	180	280	90692/670	90692/670	55.67	218
710	915	1220	1131.8	113	150	308	415	15	15500	67400	120	160	294/710			1400
750	935	1280	1120	195	155	315	450	15	14340	58590	80	100	90694/750	90694/750	412.8	1309

Spherical roller thrust bearings
d1320~1620mm



Boundary dimensions mm									Basic load ratings kN		Limiting speeds r/min		Bearing designations		Minimum load constant	Mass kg
d	d1	D	D1	B	C	H	S	rmin	dynamic C	static Co	grease	oil	present	original	A	
1320	1380	1540	1510	87	72	175	1446	6	4050	50400	70	90	691/1320	691/1320	140	480
1620	1700	1860	1799	45	80	150	850	6	6150	48400			292/1620			552