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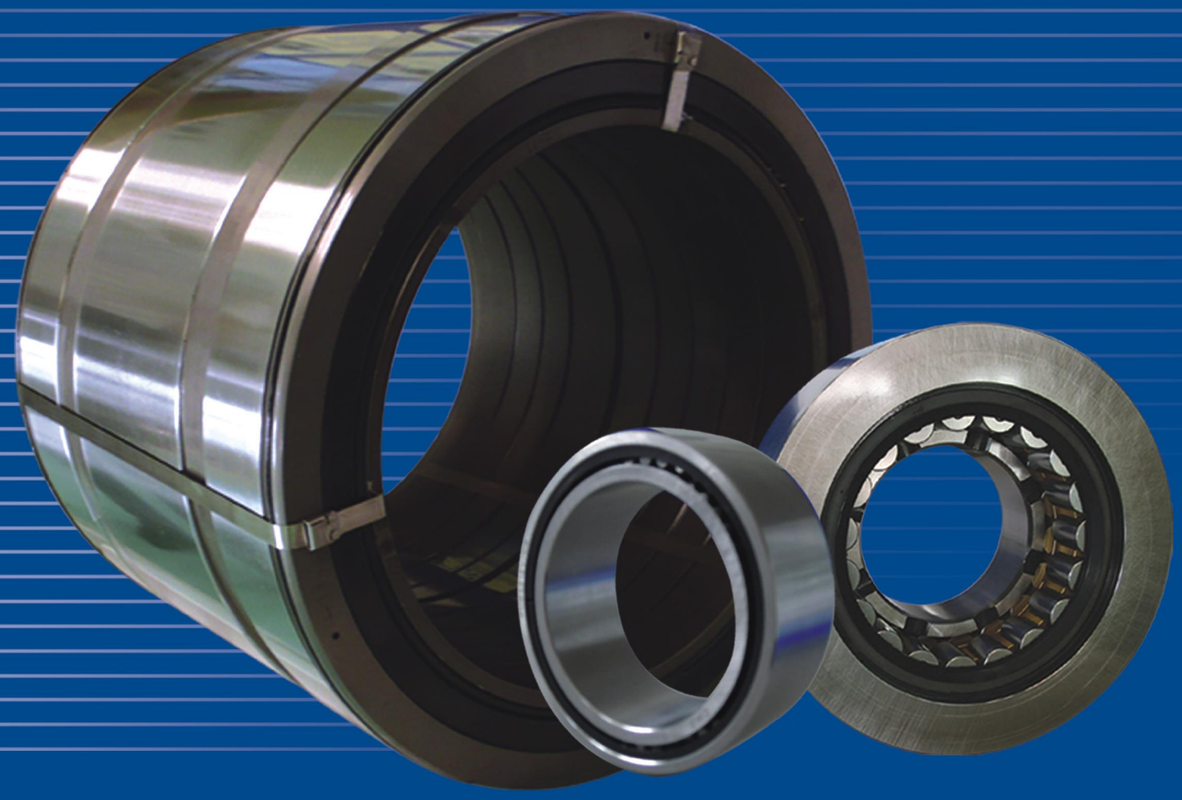
ZWZ

Metallurgy Bearing Catalogue



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- Range of size: Can manufacture steel bearings outer diameter from Φ 30mm-Φ 6300mm.
- Bearing Types: Deep groove ball bearings, single / double/ four row cylindrical roller bearings, self-aligning roller bearings,single / double/ four row tapered roller bearings , thrust self-aligning roller bearings and many kinds of bearings with different structures.
- Application Fields: wire & bar mill, hot strip mills, cold strip mills, section mill, sendzimir mill, continuous casting machine supporting bearing and mill machine and fields of bearing block for rolling mill.
- Manufacture Capacity: Can provide 400 kinds of bearing specifications and 30,000 sets of bearings to customer.
- Manufacture Period: Bearing steel products 35 days, carburizing steel products 50 days.

Metallurgy Bearing Catalogue

ZWZ

Selection and Collocation of Rolling Mill Bearing

1 Four-rowCylindrical Roller Bearing for Rollers

1.1 Characteristics

This type bearing can carry heavy radial load, whereas can not bear axial force. It has small radial dimension and higher limit rotation speed. This bearing can be installed separately with IR and OR components due to its no-rib structure of OR.

The bearing is applicable for all rolling mills which rollers are changed frequently. Its advantages of heavier radial loading, higher rotation precision and easy to disassembly, which makes it the first choice as rolling mill roller bearing.

1.2 Structure Type

FC Type: One inner ring and two outer ring assembly composed by two outer rings with ribs, rollers and cages; See chart 1

FCD Type: Double inner ring and two outer ring assembly composed by two outer rings with ribs, rollers and cages;See chart 2

FCDP Type: Component composed by double outer rings with ribs, rollers and cages, double inner rings and 3 flat ribs; See chart 3

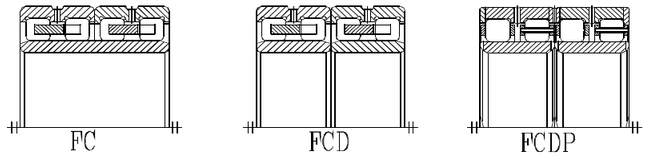

chart1 chart2 chart3

1.3 Collocation of bearing with roller neck and inner house of bearing house

According to the operating requirements of hot-rolling mill and cold-rolling mill, the collocation is recommended as below:

Chart 1 The collocation of bearing ID and roller neck

Bearing ID	Roller Dimension	Roller Geometric Accuracy		Fitting surface	Notes
d（mm）	Tolerance	Roundness	Cylindricity	Roughness（μm）	Increase the tolerance value from n6 p6 r6 accroding to the incre-asing carrying load form small to large
d<200	n6	Half of the dimensional tolerance range value		Ra1.6	
d=200-500	p6				
d>500	r6			Ra3.2	

Chart 2 The collocation of bearing OD and inner hole of bearing house

Bearing OD	Bearing block bore size	Geometric tolerance of bearing block bore		Fitting surface
d（mm）		Roundness	Cylindricity	Roughness（μm）
D<500	H7	half of the dimensional tolerance range value		3.2a
D>500	F7(G7)			

1.4 Selection of Bearing Radial Clearance

As the radial support bearing for rollers, its operating environment is badly tough. The actual clearance is related with loads, rotation speed, lubrication, temperature raise, structure, roughness of working surface and the interference of the bearing's ID. So the comprehensive actual operating environment need to be considered when select bearing type.

C3 clearance is recommended for cold-rolling mill bearings or bearings whose interference on inner ring is small. C4 clearance is recommended for hot-rolling mill bearings or bearings whose interference of ID and rollers is large. See detail information in below chart.

3 Chart 3 Radial Clearances of 4-row Cylindrical Roller Bearing

Nominal ID d (mm)		Group 0		Group 3		Group 4		Group 5	
from	to	min	max	min	max	min	max	min	max
80	100	50	85	75	110	105	140	155	190
100	120	50	90	85	125	125	165	180	220
120	140	60	105	100	145	145	190	200	245
140	160	70	120	115	165	165	215	225	275
160	180	75	125	120	170	170	220	250	300
180	200	90	145	140	195	195	250	275	330
200	225	105	165	160	220	220	280	305	365
225	250	110	175	170	235	235	300	330	395
250	280	125	195	190	260	260	330	370	440
280	315	130	205	200	275	275	350	410	485
315	355	145	255	255	305	305	385	455	535
355	400	190	280	280	370	370	460	510	600
400	450	210	310	310	410	410	510	565	665
450	500	220	330	330	440	440	550	625	735
500	560	240	360	360	480	480	600	-	-
560	630	260	380	380	500	500	620	-	-
630	710	285	425	425	565	565	705	-	-
710	800	310	470	470	630	630	790	-	-
800	900	350	520	520	690	690	860	-	-
900	1000	390	580	580	770	770	960	-	-
1000	1120	430	640	640	850	850	1060	-	-
1120	1250	470	710	710	950	950	1190	-	-
1250	1400	530	790	790	1050	1050	1310	-	-

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2 Tapered Roller Bearing

2.1 Characteristics

Taper roller bearing's inner raceway and outer raceway are tapered with taper rollers in between. If extend the tapered surfaces of outer raceway, inner raceway and taper rollers, they will finally gather onto one point, which enables peripheral speeds of any point on raceways are the same. During operating, the rolling elements moves only as rolling.

Taper roller bearing mainly carry the combined loads from radial and axial directions. Bearing's axial loading capacity is determined by contact angle. The bigger the contact angle, the bigger loading capacity. Bearing with bigger taper angle can bear axial load by itself.

Taper roller bearing is separable. Cones composed by rollers, cage and inner ring can be separate from outer ring.

2.2 Structure Type

2.2.1 Double-row Tapered Roller Bearing

350000 type : This bearing adopts a double-raceway outer ring and 2 inner rings. There is a spacer between 2 inner rings.Bearing clearance can be adjusted by changing spacer's thickness. Bearing can carry axial loads from double directions when carry radial load. It can bear axial load by itself. See chart 4 and chart 5. Detail information for selecting bearings refers to data and structures in catalogue.

370000 type : This bearing adopts a double raceway inner ring and two separate outer rings with single raceway. One spacer in between the 2 outer rings. Bearing's axial clearance can be adjusted by changing spacer's thickness. It can bear axial loads from double directions when carry radial load. It can carry axial load by itself. The structures are shown in chart 6 and chart 7. Type selecting refers to detail data and structure in catalogue.

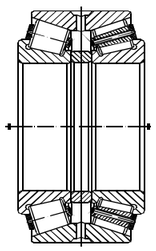


Chart 4

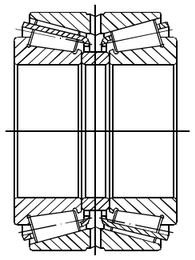


Chart 5

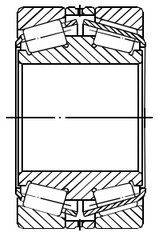


Chart 6

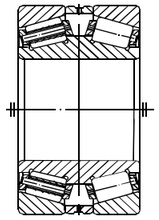


Chart 7

2.2.2 Four-row Tapered Roller Bearing

380000 type : This bearing adopts 2 inner rings with double raceway, one outer ring with double raceway and 2 outer rings with single raceway. Between inner rings and outer rings, there are spacers which can adjust bearing clearance. The bearing can carry heavy radial load and certain axial load, whereas its limit rotation speed is low. It mainly is used onto back-up roller, middle roller and work roller. The structures are shown as chart 8, chart 9 and chart 10.

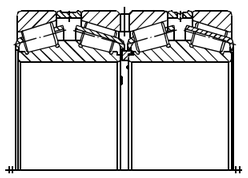


Chart 8

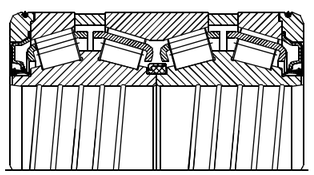


Chart 9

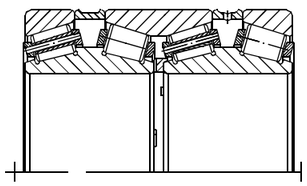


Chart 10

2.3 Collocation of bearing with roller neck and inner hole of bearing house

According to the operating requirements of hot rolling mill and cold rolling mill, the collocation of bearing and roller neck and bearing house is recommended to be:

The collocation of bearing ID and roller neck is through clearance. This collocation enables bearing inner ring can slightly moving along roller neck's circle, and make the disassembly of roller easy.

The collocation of bearing OD and bore of bearing house is related to bearing OD size. When D≤500mm, H7 tolerance is recommended for bearing house inner hole; When D>500mm, G7 tolerance is recommended.

2.4 Selection of bearing radial clearance

As taper roller bearing carries mainly radial load and combined load from axial and radial directions, its working environment is extremely bad. The actual clearance during operation is related to loads, rotate speed, lubrication, temperature raise, structure and the contact surface roughness. The proper clearance should be determined after careful analysis based on the rolling condition of the rolling mill. See Chart 4 .

chart4

nominal ID d mm		Group 1		Group 2		Group 0		Group 3		Group 4		Group 5	
from	to	min	max	min	max	min	max	min	max	min	max	min	max
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	320	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	390	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	110	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				

2.5 Clearance of Double-row & Four-row Tapered roller bearings and the adjustment method.

Formula 1 is for calculation of bearing axial clearance:

Ga=1.5Gr/e……（1）

Note: Gr refers to bearing radial clearance; See chart 4; please refers to product catalogue for e value

The adjustment of bearing axial clearance is by adjusting its inner ring and outer ring spacer (except 350000D1)

2.5.1 Preparation for Adjustment

Wash and clean bearing components after examination.

Adjust the clearance on work table, flat-plate or 3-4 blocks. The height difference of the 3-4 blocks should be 50% smaller than the parallel difference of inner ring's two end-faces.

2.5.2 Adjustment Requirements

Before measurement, the orientation end-face of IR's lower side should be parallel.

During the measurement, put a loading block on outer ring, which ensures uniform contact of rolling elements and raceways.

Rotate each roller and ring before measurement to ensure all components are in proper positions.

Equidistance measure 4 points along circle. Choose the mean value as the actual measure dimension. When bearing OD ⩽ 440mmm, the difference of the 4 values should be ⩽0.08mm; When OD>440mm, the four point measured value difference should be ⩽0.15mm. If the four point measured value difference surpass above limit, re-rotate each roller and ring to make them in proper position.

2.5.3 Adjustment of bearing clearance

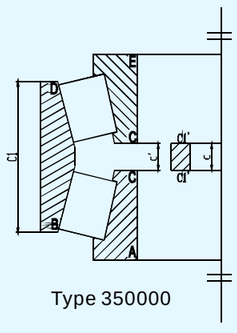
Bearing type 350000 (see chart 11)

Measure h1 on position I and h2 on position II shown in chart 12. Calculate distance c' of the 2 end-faces CC as formula (2):

c'=h1+h2-C1…… （2)

If Ga is the required axial clearance, inner ring spacer width "c" is calculate as formula (3):

c=c'+Ga…… （3)



Type 350000

Chart 11

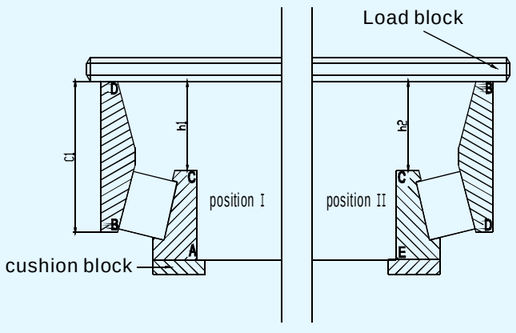


Chart 12

Bearing type 350000D1 (see chart 13)

Measurements of h1 and h2 same as 5.3.1. Bearing actual axial clearance is calculated as formula (4):

Ga=C1-（h1+h2）……(4)

If bearing actual axial clearance value is different with the one from formula (1), modify rings or change components is needed.

Bearing Type 370000 (see chart 14)

Measure 11 on position I and 12 on position II as shown in chart 15. Calculate distance b' between the 2 end-faces BB

b'=l1+l2-B1 ……(5)

If Ga is the required axial clearance, calculate width b of outer spacer as formula (6)

b=b'+Ga ……(6)

Bearing Type 380000 （see chart 16）

Inner ring spacer width "c"

Measure h1 on position I as shown in chart 17, and h2 on position II. Calculate distance c' between the 2 end-faces CC

c'=h1+h2-C1……（7）

If Ga is the required axial clearance, calculate width c of inner ring spacer as formula (8)

c=c'+Ga……（8）

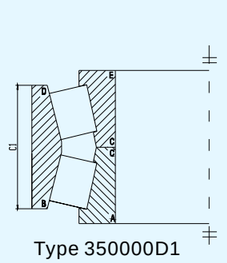
Outer ring spacer width b1 and b2

Equally space 3 supporting blocks between 2 inner rings along the peripheral direction. The height M⩾c'+（5~10）（mm）. Difference of the block heights M should be smaller than 50% parallel difference of the measured bearing inner spacer.

Measure b1'on position I and b2'on position II as shown in chart 18. Calculate the width of upper and down side spacers as formula (9) and (10):

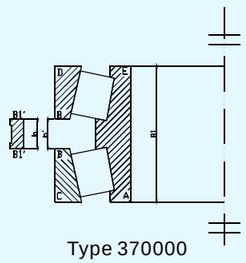
b1=b1'-(M-c')+Ga ……(9)

b2=b2'-(M-c')+Ga ……(10)



Type 350000D1

Chart 13



Type 370000

Chart 14

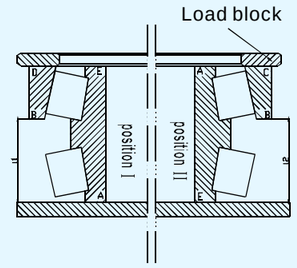
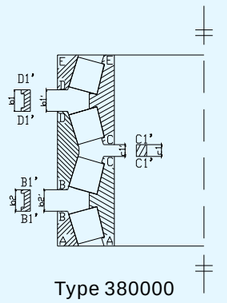


Chart 15



Type 380000

Chart 16

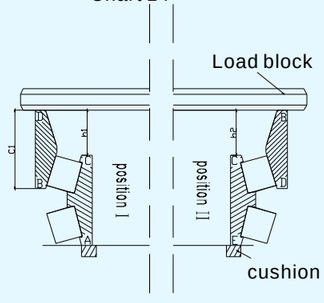


Chart 17

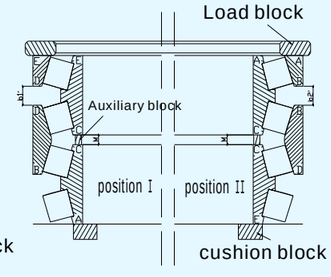


Chart 18

3 Self-aligning Roller Bearing for segment

3.1 Characteristics

Sometimes shaft and bearing box are misalignment or the shaft will be bending. But this kind of bearing with self-aligning will not be influenced by misalignment. And it can adjust roundness error made by them. Except radial road, these bearings also can carry combined axial and radial load in double direction. They have heavier load carrying capacity , shock resistant ,impact resistant .

3.2 Types of bearings

3.2.1 Single row Spherical Roller Bearing

SDB0000 type: This kind of bearing have single row rollers, self-aligning capacity. And can move in axial direction. These bearings usually used on machines for steel manufacture. The major structure as shown in figure 19 and 20.The type should be chosen based on detail dates and structures in capacity.

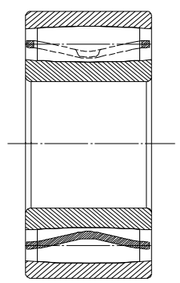


Chart 19

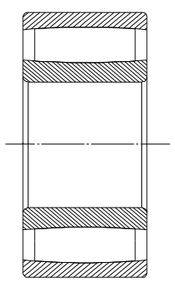


Chart 20

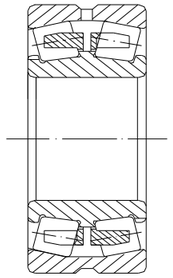


Chart 21

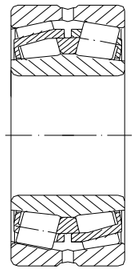


Chart 22

3.2.2 Double row self-aligning Roller Bearing

This kind of bearing with bipartite pressed steel cage or bipartite brass entity cage, will be used in segment of metallurgy. Because of self-aligning capacity and bipartite cage, these bearings can steady rotating under high temperature. Add heavier load carrying capacity, these bearings can well done in segment produce. Type of structures as figure 21,22.

3.3 The choice of radial clearance

As main product used in segment, the bearing must do better in every performance because of high-temperature working environment. We set dedicated clearance standard for SDB bearings. So that these bearings can steady turning under this environment. As shown in table 5.

Notice: Double row self-aligning roller bearing mentioned in 3.2.2 are not suitable for this standard. The radial clearance should be chosen from table 6.

Table 5

Nominal internal diameter d mm		Group 3		Group 4	
Over	Up to	min	max	min	max
18	24	39	51	51	65
24	30	46	60	60	76
30	40	55	73	73	93
40	50	65	85	85	109
50	65	79	104	104	139
65	80	96	124	124	164
80	100	120	158	158	206
100	120	144	186	186	244
120	140	166	215	215	280
140	160	195	252	252	321
160	180	217	280	280	361
180	200	238	307	307	394
200	225	262	337	337	434
225	250	282	368	368	478
250	280	307	407	407	519
280	315	330	434	434	570
315	355	360	483	483	620
355	400	395	528	528	675
400	450	435	577	577	745
450	500	475	633	633	811
500	560	518	688	688	890
560	630	567	751	751	975

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4 Self-aligning Roller Bearing for converter

4.1 Characteristics

This kind of bearing have self-aligning capacity. Self-aligning Roller Bearing can adjust misalignment cased by bending of shaft. And these bearings can carry double direction axial load, the load combined with radial and axial road. They have heavier load carrying capacity,shock resistant , impact resistant . Besides, because of long assemble period of converter bearings, split Self-aligning Roller Bearing was designed out.

4.2 Types of Bearings

4.2.1 Common Type of Self-aligning Roller Bearing

This kind of bearing have small ribs on two ends of the inner ring, There is no rib in the middle. Cage is whole with double row claws. Or the cage with rib on middle is bipartite made of brass or carbon steel. This version is mostly used on large size and extra large size bearings.As shown in chart 23,24.

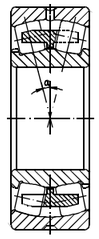

Chart 23

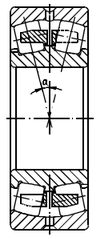

Chart 24

4.2.2 Split Type of Self-aligning Roller Bearing

This kind of bearing mostly used in position which is hard for integral bearing assembled on and demount from. For example, the middle of macroaxis. Otherwise it will take more time, manpower to maintain and incur extremely expensive fees for machine halt. These bearings have split type of inner ring and outer ring. Wide inner ring with double collars. As shown in Chart 25,26 and 27.

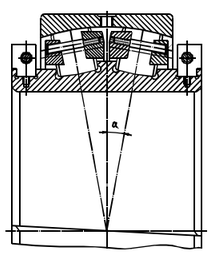

Chart 25

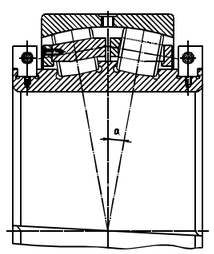

Chart 26

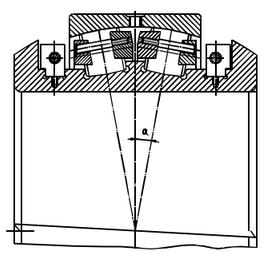

Chart 27

4.3 The choice of radial clearance

The radial clearance of cylindrical bores and split types of Self-aligning roller bearing should be chosen base on table 6.But the radial clearance chosen must consider working condition.

Table 6

Nominal internal diameter d mm		Group 3		Group 4		Group 5	
Over	Up to	min	max	min	max	min	max
14	18	35	45	45	60	60	75
18	24	35	45	45	60	60	75
24	30	40	55	55	75	75	95
30	40	45	60	60	80	80	100
40	50	55	75	75	100	100	125
50	65	65	90	90	120	120	150
65	80	80	110	110	145	145	180
80	100	100	135	135	180	180	225
100	120	120	160	160	210	210	260
120	140	145	190	190	240	240	300
140	160	170	220	220	280	280	350
160	180	180	240	240	310	310	390
180	200	200	260	260	340	340	430
200	225	220	290	290	380	380	470
225	250	240	320	320	420	420	520
250	280	260	350	350	460	460	570
280	315	280	370	370	500	500	630
315	355	310	410	410	550	550	690
355	400	340	450	450	600	600	750
400	450	370	500	500	660	660	820
450	500	410	550	550	720	720	900
500	560	440	600	600	780	780	1000
560	630	480	650	650	850	850	1100
630	710	530	700	700	920	920	1190
710	800	580	770	770	1010	1010	1300
800	900	650	860	860	1120	1120	1440
900	1000	710	930	930	1220	1220	1570

Selection and Collocation of Rolling Mill Bearing

5 Sendzimir mill rolling bearing

5.1 Characteristics

As the rolling equipments keep developing, the precision of steel rolling products are asked to increase. So sendzimir mill rolling bearings were designed. The outside of these bearings straightly touch to intermediate roll. And they can carry rolling component. The outer ring have good wear resistance, inner have enough long rolling fatigue life. Outer ring can be regrinded. And the bearing will still rotate as usual after regrinding. The bearing have high impact resistant because of soft inner part. Deep enough surface hardened. Except high rigid, can increase frequent of outer diameter repair. The bearing have high fatigue resistant because of good material. The difference in size of all bearings section height of the same shaft⩽ 0.005mm,The difference between the installed wall thickness of the adjacent bearing⩽0.002mm.

5.2 Types of bearings

According to working condition, installing space and the type of bearing assemble, the structure types as shown in figure 28,29,30

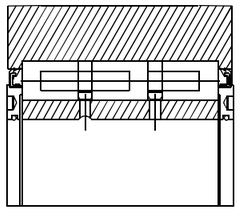

Chart 28

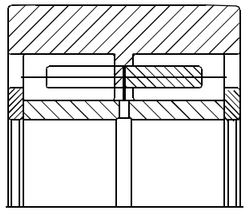

Chart 29

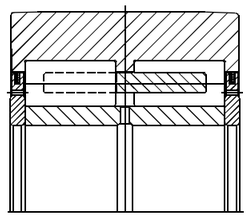

Chart 30

The material chosen of rolling mill bearing

Generally, bearing parts are made of high-carbon chromium steel. The parts are martensite quenched when they carry less or no impact load. Bainite quenching should be used when parts carry high impact load. The parts are not only made of carburizing steel but also according carburzation and carbonitridion if they will carry high impact load.

Table 7 Examples of application for typical steel

Class	Steel NO.	Examples of application
High Carbon Chromium Bearing Steel	GCr15	The small and medium-size bearings carry less or no impact load
	GCr15SiMn	large size bearing on mill rolling, no impact load.
	GCr18Mo	According bainite quenching,the bearing used in mill rolling can carry certain impact load and sustain high temperature.
	ZWZ11	Used in large size rolling bearing. According salt bath isothermally-quenching, the bearing can carry certain impact load and sustain high temperature.
	ZWZ12	These bearings are used in heavy machine like mill rolling.Effective thickness less than 45 mm.After salt bath isothermally-quenching,the bearing can carry certain impact load and sustain high temperature.
Carburizing Bearing Steel	G20CrMo G20CrNiMo	The small and medium-size bearings carry impact load
	G20CrNi2Mo G10CrNi3Mo	Medium and large size bearing carry high impact load
	G20Cr2Ni4	Extra large size bearing carry high impact load.

Bearing precision and level

Roller bearings are classified by its dimension tolerance and geometric tolerance. Tolerance grade of radial bearing (taped roller bearing excepted) are divided into 5 grades: grade 0, grade 6, grade 5, grade 4, and grade 2, the accuracy is increases in sequence. Tapered roller bearing are divided into 4 grades: grade 0, grade 6X, grade 5 and grade 4, the accuracy is increases in sequence. Thrust bearing are divided into 4 grades: grade 0, grade 6, grade 5, and grade 4, the accuracy is increases in sequence. For the specific size tolerance and geometric tolerance, see related standards.

The accuracy grade of industrial standard refer to table 8

Table 8

Standard	Application standard	Precision					Bearing type
International standard	ISO492	Standard level Grade 6X	Grade 6	Grade 5	Grade 4	Grade 2	Radial bearing
	ISO199	Standard level	Grade 6	Grade 5		---	Thrust ball bearing
	ISO578	Grade 4	---	Grade 3	Grade 0	Grade 00	Tapered roller bearing(inch)
Germany Standard(DIN)	DIN620	P0	P6	P5	P4	P2	All types
American standard	ANSI/ARMA std.20	ABEC-1	ABEC-3	ABEC-5			Radial bearing(except tapered roller bearing)
		RBEC-1	RBEC-3	RBEC-5	ABEC-7	ABEC-9	
SKF		P0	P6	P5	P4	P2	
Japanese standard	JIS B 1514	Grade 0.6	Grade 6	Grade 5	Grade 4	Grade 2	All types

Bearing Clearance

Bearing clarence indicates that the bearing under the circumstance with not mounted (no loading applied) , fix the inner ring or the outer ring, move the other unfixed ring, the amount of movement from one extreme position to another extreme position is called bearing clearance. According to the direction, it can be either radial clearance, or the axial clearance.

From the theoretical clearance minus the bearings are mounted on shafts or enclosures for interference rings of expansion or contraction after the clearance of known as "installation clearance".

The clarence while bearing are mounted on the machine, applied a mount of load while rotating are called “working clarence”

In general, the bearing original radial clearance is greater than the clearance while bearing working, the radial clearance have great influence to the bearing life, temperature rise, noise, vibration and other functions. In order to determine the clearance of bearing, the following elements must be considered:

Interference fit when bearing installation, Inner ring expansion and the outer contraction led to the decrease of the clearance.

Under the operation temperature, the difference temperature between bearing inner ring and the related thermal expansion of the clearance changes, that will lead to the change of clearance.

In working condition, for the ball bearings which running at working temperature, clarence of ball bearings are usually approaching 0; for the roller bearings, working at normal conditions, reserve certain amount of clarence normally.

Bearing lubrication and sealing

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1 The purpose and method of lubrication

While bearing rotating, in order to avoid direct contact of parts, reduce the internal friction and wear, improve the performance of bearing, extend bearing's life span. Lubrication is essential for bearings.

In the bearing application, choose proper lubricant and lubrication method is especially important. Bearing lubrication is divided into grease lubrication, oil lubrication and solid lubrication, etc.

The advantage of grease lubrication is , the simple structure of bearing house, bearing seal and lubrication facility, easy maintenance, and the lubricating grease is not easy to leek, and also have the capacity to prevent the bearing effected from water, gas, dust and other harmful impurity. So, in general circumstance, grease lubrication is widely used.

Oil lubrication is applied to heavy-duty, high-speed and high temperature,lubricating oil have good liquidity. In some special environment such as high temperature and vacuum circumstance, also could choose solid lubrication.

2 The importance of the seal and pattern

In order to maintain the bearing in good lubricate conditions and normal working environment, perform full bearing performance , the rolling bearing must have proper sealing device, in order to prevent the lubricant leakage and dust air, water or other dirt invaded to bearing. The selection of bearing sealing form should consider the following elements.

Choose bearing seal form, should consider the following factors:

Category of bearing lubricant; bearing working environment, the size of the space occupied; the shaft supporting structure characteristics, allowed angular deviation, circumferential velocity of seal surface; friction of seals and the resulting temperature rise; manufacturing cost, etc

Bearing seal generally divided into non-contacted, contacted and comprehensive type,in addition, also have the bearing with dust cap or seal ring.

Rolling mill bearing mounting and dismounting

Mill bearing mounting and dismounting involves relatively large bearing and equipment, sometime it should with the help of proper tools and lifting appliances, In order to avoid the occurrence of unexpected circumstances, Please read the content and follow our suggested methods carefully and prudently.

In addition to comply with the contents, ZWZ technical service engineer can assist you to mounting and dismounting the mill bearing, provide value-added services, sufficient express the performance of bearing, reduce unnecessary losses in downtime, guarantee the mill equipment operating safety and smoothly.

1. The storage of Mill bearing

The bearing should be stored in clean and dry environment; it should control temperature and humidity during transporting and storage, the temperature and humidity should in an acceptable fixed range, and off the ground more than 30 cm.

Bearing components generally packed based on its size and in corrugated box or in wooden cases, but the bearing cone for the initial mounting, the cover and component are wrapped in plastic generally. All of the design for packing aims at provide proper protection to the bearings, against the pollution from dirt and dust.

In order to prevent the cone and plate become elliptic, the bearing should be placed in horizontal direction (vertical along with axis).Bearing should be kept in the original box and dry environment. If the package and storage condition in a ideal environment, the bearing parts may be still have its initial working performance after more than ten years.

Bearing can not take out from the case, bearing can not storage on the open shelf and cabinet, because it may pollute by the dust.

When use the brand new bearings, it's unnecessary to remove the original dust-proof grease. Although the original grease has little lubrication ability,the original grease will not damage the new lubricating oil.

All the tools should be clean and in good condition, table and assembly working area should be clean. Assembly work cannot be done in welding area or nearby the machine, that' because the pieces and dust which from the welding produce may enter into the bearing.

2 Preparing and checking before mill bearing installation

2.1 Selection of installation place

Choose a clean and dry environment, working in in dust free and moisture free workplace, If can not reach the requirements, assembly operator should try their best to keep clean with screen cover and cleaning cloth, etc

In order to prevent the dust pollution, do not open the packaging of the new bearing until installation operation. In general, the rust-preventive oil on the bearing is unnecessary to be removed, but if use grease lubrication, and in extreme high or low temperature, or when the grease and rust-proof oil are not compatible, bearing must be clean up and dry up carefully, in order to prevent the harmful influence. The bearings which have shield and sealed additional cleaning is not needed.

2.2 Work plan

According to different bearing size and application, can use different methods of install, however the installation must follow the basic program.

It need to know what to do first and prepare for all the tools needed, study the installation order according the drawings or specifications seriously . It can save working time, and reduce the probability of the dust stain the bearing.

2.3 Tools preparation

(1) Lifting appliance: Use it when bearing components install to the bearing housing, or take out from bearing housing. According to the type of bearing, take full consideration of operation property and strength, then choose the proper lifting appliance.

(2) suitable tools: Necessary operation tools such as wrench and other tools, please use suitable tools in appropriate place.

(3) Wood tie: Used for building space in order to use sling's claw to enter into underneath of bearing.

(4) Brass rod: When the bearing mount into bearing housing or take out of bearing housing, in case of the bearing inclined and can not move, knock on the bearing with brass rod gently, for the purpose of fixing bearing position.

2.4 Inspection

Before mounting bearing, prepare all the required machine parts, thoroughly cleaning all parts before mounting.

Clean up the shell hole, blow the oil hole and keep clean. Do not use the air hose to the bearing, If use the blind hole, it should use the magnetic roll to clean up the residual metal fragments.

The shaft shoulder and bushing should along with the vertical axis, the fillet between Conterminous axes and shaft must small enough and can't not contact with the fillet radius of bearing hole.

In the initial installation, should inspect all the parts dimension accuracy according to the drawings.

In the initial installation phase, checking dimensional precision to all parts with drawing. Checking and measuring the dimension and roundness of roll neck and bearing housing.

2.4.1 Roll neck inspection and measurement

Measurement sketch map 31:

Before mounting the complete bearing and the bearing components to the roll neck, should make a general inspection and dimensional inspection to the roll neck.

The roll neck which install the bearing, must be clean and without any scratches and burrs.

When the circumstance of bearing housing is fixed, but the roll neck is rotated, the suggested maximum roughness value of roll neck outer diameter is no more than Ra=1.6μm.

Metallurgy Bearing Catalogue

ZWZ

The Lubrication and Seal of Metallurgy Bearing

If can not grinding, in many cases, it can use the fine lathe to grind reach the surface roughness to Ra=3.2μm. Specific situation can consult to ZWZ technical service engineer.

Usually when in inspecting the dimension and roundness of the roll neck, measured by micrometer generally, choose two sections on the roll neck, take four points from every section and measured, the measure value should subject to the average value.

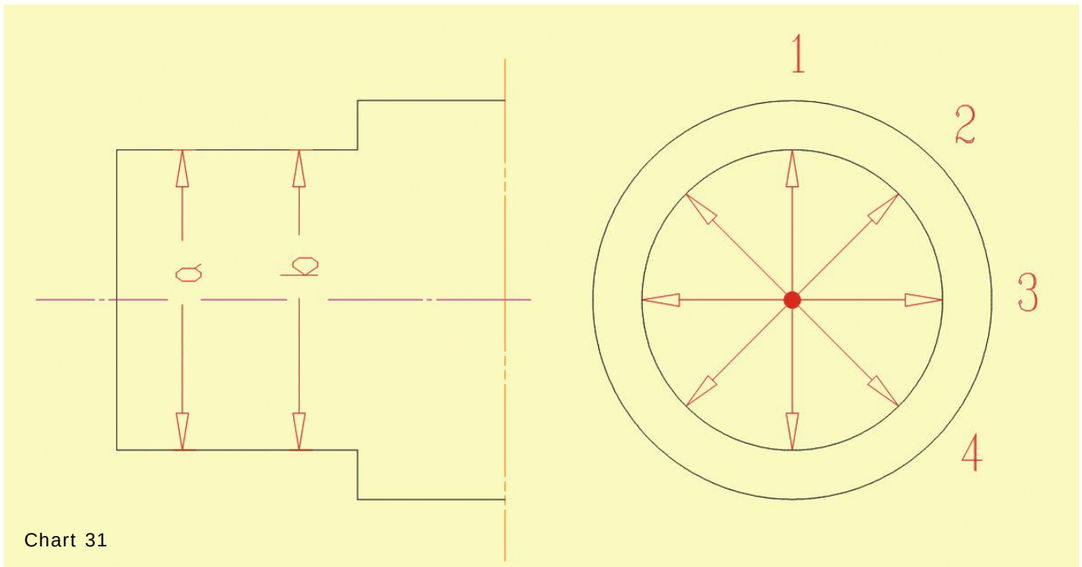

Chart 31

The checking and measuring records should be kept by the maintainer, checking record as per sheet 9:

Table 9

Roll neck dimension checking record sheet				
Roll neck No:				
Data	Drive Side		Work Side	
	a	b	a	b
1				
2				
3				
4				
Average Value				

2.4.2 Inspection and measurement of bearing housing

Confirm vertical guide and shaking guide are in good condition during inspection, have well gradient to allow vibrate of bearing housing, and when the roll neck in skew status, they can be formed in one row. In the rack, the gaps of the frame which between the bearing housing and window must be kept in good condition.

Using compressed air to clean the bearing block, clean up all the lubricating oil and drainage hole by compressed air. Part of the serious corrosion must be polished clean. Inspect and record the bore diameter roundness periodically.

The supporting arm of bearing block can not be rusted, because it should have a good seal with the cover. Rust can cause loose in normal working hours, and rust may enter into the bearing. Rust are also not allowed in supporting arm,at the cover plate side.

Check all the sealing, If find any serious worn or damaged been detected, it must be replaced. Seals play an important role in bearing working, so the seals of the bearing block should be well-maintained constantly.

Usually when in inspecting the dimension and roundness of the bearing block, it adopt the micrometer to measure, taking two sections on the bearing block, take four points from every section and measure them, the measure value should subject to the average value.

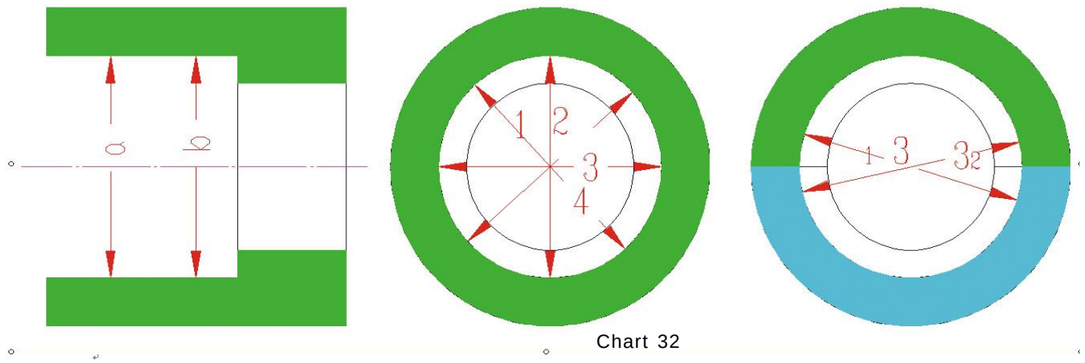

Chart 32

Checking record sheet see table 10

bearing block size checking record sheet		
Bearing Block No:		
Frame No:		
The poison of the Frame		
Bearing No:		
Data	a	b
1		
2		
3		
4		
Average Value		

3 Rolling Mill Four-row Cylindrical Roller Bearing mounting and dismounting

3.1 Inner ring mounting

- **The first step**

Generally, bearing inner ring nominal dimension is as same as mill roll neck metric dimension, but the tolerance is different. Commonly, select r6 or s6 interference fit.Heat inner ring, expanded inner ring is easy to be mounted on roller neck. Heating inner ring by induction heater or furnace, but not exceed 120℃. In order to avoid inner diameter overreached, the temperature must be controlled during heating. Test inner ring inner diameter expanding situation with inner ring measuring instrument.

Note: Once heating temperature exceed 150 ℃, inner ring maybe annealed, hardness descend, bearing life will be affected.

- **The second step**

Mill roll neck and inner ring surface should be washed and drying treated; Before mounting inner ring, grinding mill roll neck dimension should make ensure the magnitude of interference. After inner ring meets mounting requirement, can be mounted。

Use rope and ribbon to hang and mount the inner ring。

- **The third step**

The inner ring must be fixed in axial direction before cooling after mounting.

- **The fourth step**

When mounted inner ring temperature reached environment temperature, take off axial direction clamping equipment. Repeat the second step, mount the other inner ring.

- **The fifth step**

During mounting inner ring, two inner rings semicircle gaps should be aligned, that helps easy mounting and dismounting for inner ring.

- **The sixth step**

During the second inner ring is cooling, it must be fixed in axial direction, close with the first inner ring. After inner ring temperature cool down to environment degree, take off axial direction clamping equipment, inner ring is mounted.

Grinding of inner ring outer diameter

At present, many rolling mill equipments have high precision level, especially cold rolling mills,planisher equipments and so on. In order to increase bearing usage precision, inner ring should be grinded after mounting to mill roll neck, the advantage are follows:

• Eliminate mill roll eccentricity ratio.

• Eliminate the eccentricity from inner ring wall thickness difference

• Ensure bearing radial clearance easy to control

• Ensure inner ring outer diameter dimension on each mill roll neck is uniform.

- **The seventh step**

Inner ring outer diameter dimension measures after grinding (on mill roll neck) as chart 33, measures the dimension 2 times at 4 positions on raceway with 90°angle after grinding.

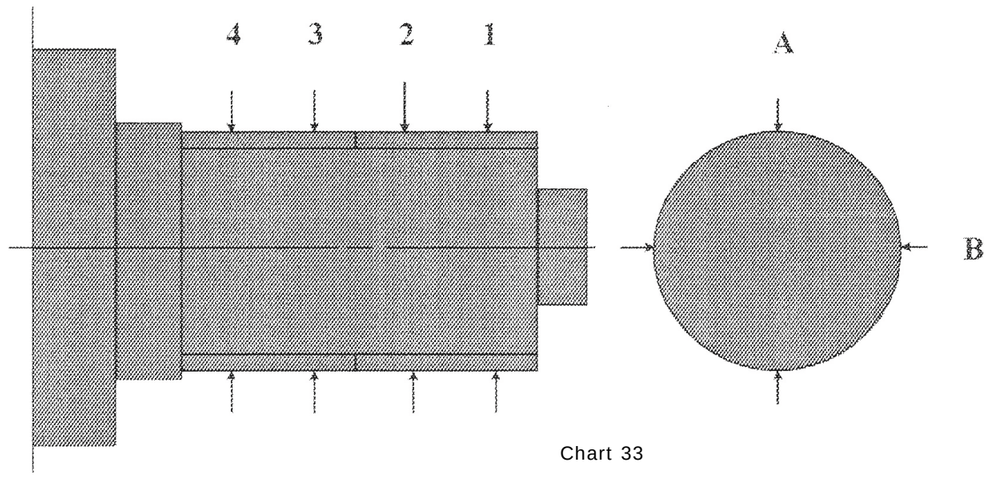

Chart 33

Following table 11 is Measure Data

Table 11

Back-up Roller No.				
Times of Read	Transmission Side		Working Side	
	A	B	A	B
1				
2				
3				
4				
Average value				

- **The eighth step**

Inner ring needs oiled after grinding, packed with paper or plastic after oiled, in order to avoid rust or damage.

3.2 Outer ring mounting

Each part end side (including outer ring, outer rib ring, middle rib ring, roller subassembly) there are marked sequence number A-B-C-D available, mounted according to this sequence number. Outer ring end side marked load zone.

- **The first step**

Put outer ring into bearing house. Must ensure outer ring rib completely contact shaft shoulder on bearing housing. Our suggestion is mounting D side firstly, and is opposite load zone 1.

- **The second step**

Bearing cage have hanging nut hole, screw hanging nut into cage, mount one cage assembly into CD outer ring raceway, then take cage group and outer ring into bearing house, until outer ring end side contact outer rib ring.

In order to help outer ring mount into bearing house, cover thin lubricate grease on outside surface of outer ring.

Mount outer ring into bearing house.

After mounted outer ring, demount hanging nut. Check bearing house hole damage by visual, like burr or crack and other problems.

- **The third step**

After put middle rib ring on one row cage subassembly, mount cage subassembly with middle rib into bearing house together by hanging nut.

- **The forth step**

Mounting AB outer ring and cage subassembly refer to the second step.

- **The fifth step**

Put outer rib ring on cage subassembly, hang cage subassembly with outer rib ring into bearing house with hanging nut.

- **The sixth step**

If use grease lubrication , fill 40-50% lubrication grease of whole space between cage subassembly.

- **The seventh step**

Mounting bearing house cover board, measure and mount sealing gasket.

- **The eighth step**

Mount thrust bearing (see next part) and bearing house.

The ninth step

If don't need mount bearing onto the mill roll neck immediately, please stand bearing and cover with protective cover.

3.3 Mount bearing house on mill roll neck

- **The first step**

Clean and dry mill roll neck, spread the same bearing lubricating oil on roll neck.

If need crane, slinging the mill roll neck horizontally.

The second step

Hang bearing house horizontally with crane and transfer the bearing house in front of the mill roll neck.

- **The third step**

Put bearing house and mill roll neck in one line carefully, confirm bearing house face mill rock neck, put bearing house on mill roll neck slowly.

- **The fourth step**

Support the bearing house by hand, in order to avoid scratch or collide.

Note: If the bearing house get stuck or cylindrical roller stuck on the inner ring race way, must stop mounting, and quit the bearing house. after repaired the damaged position, realign and install again. Even the smallest damage which not been repaired on time, it may cause the bearing performance reduction.

- **The fifth step**

Continuously and smoothly mount bearing house, until the bearing house have been mounted to mill roll neck completely and the position is correct. Must confirm the roller group on inner ring raceway without damage.

Note: Be careful while mounting, not to damage seal ring.

- **The sixth step**

Mount bearing end shield and other parts according to technical requirement.

4 Rolling mill double-row tapered roller bearing mounting(thrust bearing)

- **The first step**

Put single raceway outer ring into bearing house.

- **The second step**

Put cone into bearing house, hoisting tools can be used if needed.

- **The third step**

Put another single raceway outer ring into bearing house.

- **The fourth step**

Mount cover board bottom on top of the bearing bearing, and fasten with 4 nuts. Mount related accessories: such as cover board, outer ring and bearing house. Turn nuts with proper torque force, ensure all springs and bracket compressed and contact completely. Rotate inner ring with hand, makes the roller with properly sealed.

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5 Rolling mill four-row tapered roller bearing mounting

- **The first step**

Set single raceway outer ring“A-BA” into bearing house, ensure outer ring end face contact with bearing house completely.

- **The second step**

Set outer spacer B carefully, to avoid scratches.

The third step

Put in “A-CA”,the cone assembly and accessories of double row tapered roller bearing.

- **The fourth step**

Put in double raceway outer ring “BC-CD” and inner spacer “C”.

Confirm inner spacer and inner ring rib contact completely, during putting inner spacer “C”.

- **The fifth step**

Put in“CE-E”, cone assembly and accessories of double row tapered roller bearing.

- **The sixth step**

Set single raceway outer ring “DE-E”.

Note: All load zone should be in one line, during putting all outer rings.

- **The seventh step**

Mount bearing end shield (not fill with adjusting shim),fasted uniformly with 4 same separation covers nuts, until cover board are pressed closely on bearing outer ring end side, measure 3 area gaps, the value should be equal to average “G”. The pad thickness must be adjusted under 0.050mm, in order that it can be nipped and filled.

- **The eighth step**

Remove bearing end shield, fill adjusting pad and fasten all cover board nuts. Nuts must be screw down the confirmed torque.

Metallurgy Bearing Catalogue

Four-row Tapered Roller Bearings Metric Series

ZWZ

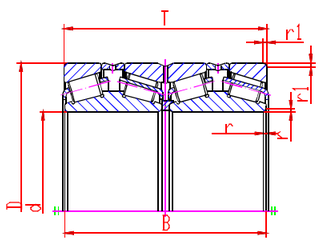


Figure 1

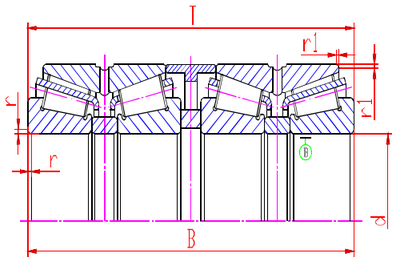


Figure 2

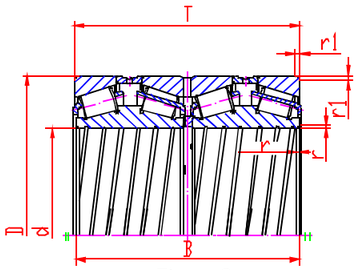


Figure 3

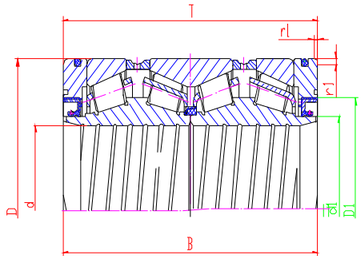


Figure 4

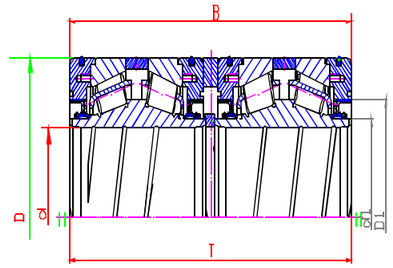


Figure 5

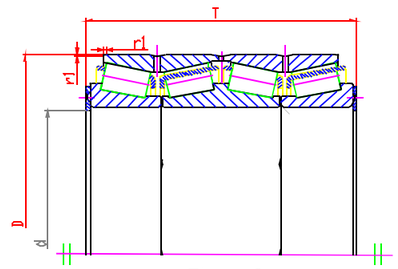
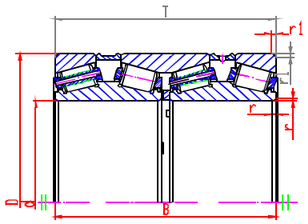


Figure 6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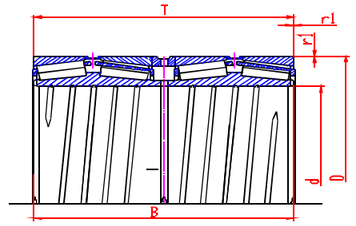
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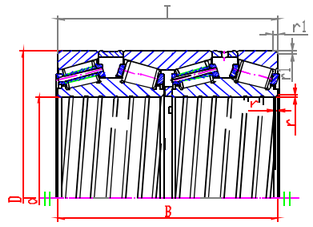
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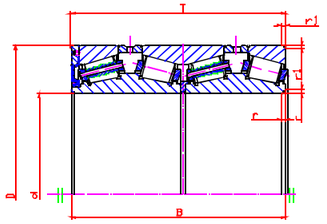
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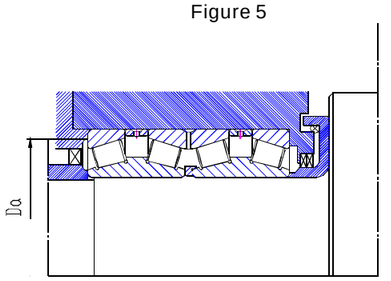
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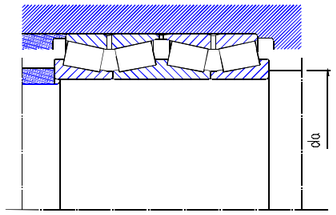
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Designations	working position	Basic Dimensions(mm)						Mounting Dimensions(mm)		Basic Load Ratings(kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	B	T	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
380632/HC	Working Roll	160	226	165	165	3	2.5	214	167.5	1070	2290	0.29	2.33	3.46	2.27	20.7	Figure 1
352936X2/DF-1	Working Roll	180	250	207	207	2.5	0.7	246	198	790	2100	0.367	1.84	2.74	1.8	29	Figure 2
382936X3-1		180	260	200	200	2.5	2	245	189.5	1110	2700	0.35	1.93	2.87	1.89	33.2	Figure 3
380636	Working Roll	180	280	180	180	3	2.5	260.5	189.5	835	2540	0.499	1.5	2.24	1.47	39.6	Figure 1
382938X2-1/HCC9	Working Roll	190	260	200	200	2.5	2	246	196.5	1040	2780	0.36	1.87	2.79	1.83	29.6	Figure 1
380640/HCC9/W283	Working Roll	200	280	206	206	1.5	3	263.5	208.5	1600	3410	0.36	1.87	2.79	1.83	38.9	Figure 3
382040X2-1	Working Roll	200	310	200	200	3	2.5	292	210.5	1970	5520	0.337	2	2.98	1.96	55.6	Figure 1
382040	Working Roll	200	310	275	275	3	2.5	287	210	1350	4200	0.393	1.72	2.56	1.68	75.1	Figure 1
380641	Working Roll	205	320	205	205	4	3	300.5	215	1060	2850	0.463371	1.46	2.17	1.42	55.4	Figure 1
380642-XRS/HCC9	Working Roll	210	288.925	262	262		3	274.5	282.5	1510	4050	0.264	2.55	3.8	2.5	49.3	Figure 4
380644/W283	Working Roll	220	295	315	315	1.5	3	278	225	1470	4350	0.333	2.03	3.02	1.98	57.2	Figure 3
380644-XRS/HCYAB	Working Roll	220	295	315	315			283.5	227.5	1270	3780	0.402	1.68	2.5	1.64	56.6	Figure 5
380644-2RS/HCEC9	Working Roll	220	295	315	315			279	227.5	1580	3950	0.365	1.85	2.76	1.81	56.4	Figure 4
382944X2/HCEP5	Working Roll	220	300	230	230	3	2.5	279	228	1570	4000	0.401	1.69	2.51	1.65	47.9	Figure 1
380644X2/HCC2H/W283	Working Roll	220	310	226	226	3	2.5	281.5	229.5	1900	4400	0.353	1.91	2.85	1.87	53.1	Figure 3
380644/HC/W283	Intermediate Roll	220	330	260	260	3	3	305	229.5	2200	5300	0.546	1.24	1.84	1.21	77.9	Figure 1
382044	Working Roll	220	340	305	305	4	3	317	229	2800	5950	0.346	1.95	2.9	1.91	99.5	Figure 1
382044/HC	Working Roll	220	340	305	305	4	3	317	229	2550	5950	0.346	1.95	2.9	1.91	99.5	Figure 1
382948X2-1/HCC9/W283	Intermediate Roll	240	320	250	250	1.5	2.5	300.5	246.5	2100	5350	0.374	1.8	2.69	1.77	56.5	Figure 3
382948X2-XRS/HC	Working Roll	240	320	294	294		4	300.5	246	1550	5000	0.335	2.01	3	1.97	61.6	Figure 4
380648/HCC9	Working Roll	240	338	248	248	4	4	169	120	1850	5400					69	Figure 3
380648/C9-3	Working Roll	240	338	248	248	3	2.5	319	249	2050	5650	0.39	1.73	2.58	1.69	69.2	Figure 1
380648X2-XRS/HCP59YAB	Intermediate Roll	240	338	340	340		3	368.5	250	1900	5160	0.421	1.6	2.39	1.57	78.8	Figure 5
380648/HCEC9-1	Intermediate Roll	240	338	248	248	4	4	319	249	2210	5950	0.39	1.73	2.58	1.69	69	Figure 3
380648/HCC3-2	Working Roll	240	350	230	230	1.5	2	329	252	2050	4700	0.42	1.61	2.39	1.57	72.2	Figure 1
382048X2	Working Roll	240	360	310	310	4	3	335.5	250	3630	2210	0.314	2.15	3.2	2.1	90.5	Figure 1
380650X1-XRS/HCP59	Working Roll	250	365	270	270		3	337.5	262	1950	4600	0.4	1.69	2.51	1.65	90.4	Figure 4
380650/HC	Working Roll	250	460	270	270	5	4	427.5	276	2250	6400	0.317	2.13	3.17	2.08	192	Figure 1

Four-row Tapered Roller Bearings Metric Series

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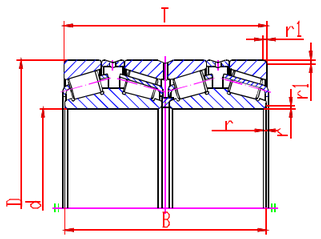
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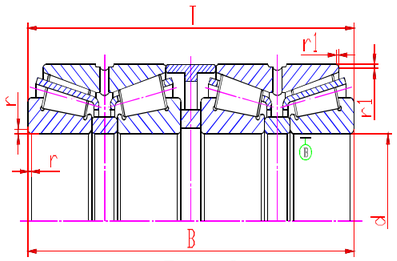
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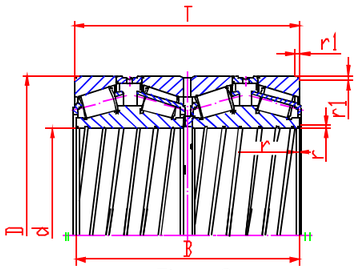
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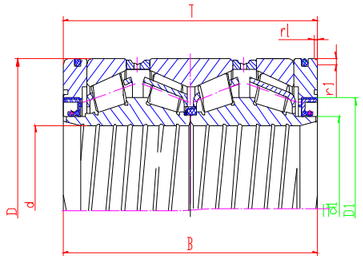
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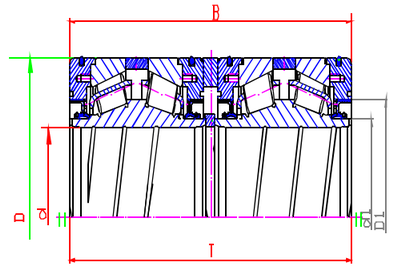
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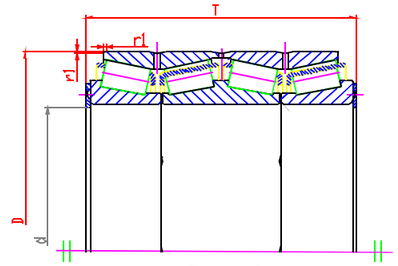
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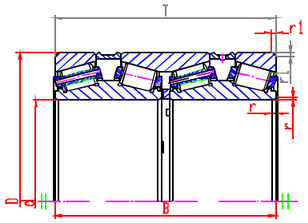
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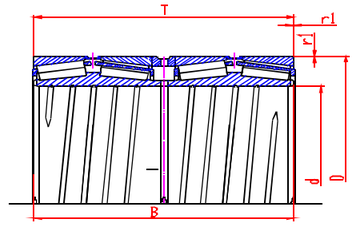
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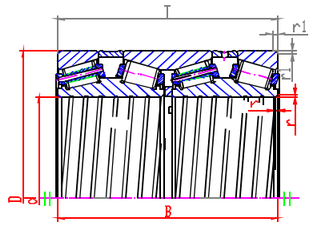
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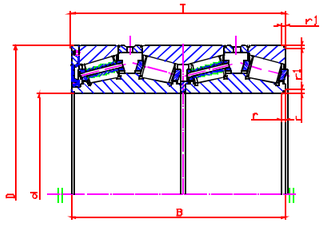
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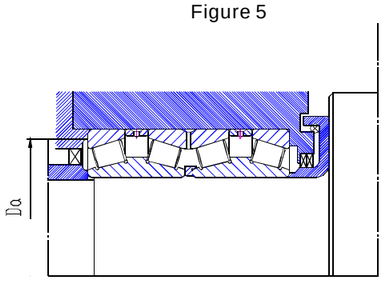
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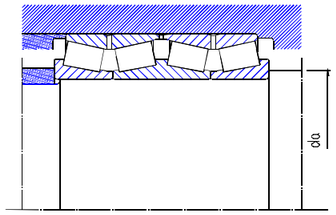
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Designations	working position	Basic Dimensions(mm)						Mounting Dimensions(mm)		Basic Load Ratings(kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	B	T	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
3806/254-XRS/HC	Working Roll	254	358.775	269.875	269.875	1.5	3.3	341	267.5	1890	4950	0.333	2.03	3.02	1.98	80.5	Figure 4
382952/HC	Working Roll	260	360	265	265	3	2.5	340	270	1730	5050	0.407	1.66	2.47	1.62	77.8	Figure 1
382952X2/HCR	Intermediate Roll	260	360	272	272	3	2.5	338.5	269	2200	6500	0.411	1.64	2.44	1.6	83.1	Figure 1
382952X2/HCC2HYA23/W283	Intermediate Roll	260	360	272	272	3	2.5	338.5	269	2200	6500	0.411	1.64	2.44	1.6	83.1	Figure 3
380652-XRS/HCC9YB2/W281	Working Roll	260	365	340	340		3.5	343	269	2500	6650	0.402	1.68	2.5	1.64	107	Figure 4
380652X3/HC-FM	Intermediate Roll	260	380	280	280	4	7.5	355.5	272	2400	6400	0.43	1.57	2.34	1.53	108	Figure 1
380652/HC	Intermediate Roll	260	400	255	255	4	7.5	374	272.5	2050	4800	0.393	1.72	2.56	1.68	117	Figure 1
380652/HC-1	Intermediate Roll	260	400	255	255	4	7.5	374	272.5	2050	4800	0.393	1.72	2.56	1.68	117	Figure 1
380652/HG2	Intermediate Roll	260	400	255	255	5	4	374	272.5	1910	4900	0.393	1.72	2.56	1.68	117	Figure 3
382052	Intermediate Roll	260	400	345	345	5	4	372	273	2850	7700	0.435	1.55	2.31	1.52	161	Figure 1
382152X2/HCYA6	Intermediate Roll	260	440	300	300	2	5	402.5	282	2670	5850	0.699	0.965	1.44	0.947	182	Figure 1
382956X3/C9YAD	Intermediate Roll	280	395	288	288	4	7	371.5	293	2510	7060	0.402	1.68	2.5	1.64	110	Figure 1
380656-XRS/HC-1	Working Roll	280	395	290	290	1	4	372	291.5	2830	6550	0.459	1.47	2.19	1.44	109	Figure 4
380656	Working Roll	280	420	250	250	5	5	394	294	1540	5300	0.416	1.62	2.42	1.59	119	Figure 1
381156	Working Roll	280	460	324	324	5	4	429.5	303.5	3350	8350	0.333	2.03	3.02	1.98	219	Figure 3
382960/C9	Working Roll	300	420	300	300	4	3	397	314	2500	7500	0.395	1.71	2.54	1.67	125	Figure 1
382960X2/HCC9YA3	Working Roll	300	420	310	310	4	3	397.5	311	2020	8100	0.278	1.43	3.61	2.37	134	Figure 1
382160/HC	Working Roll	300	460	390	390	5	4	429	313	3850	10200	0.365	1.85	2.76	1.81	222	Figure 1
380660/HCC9	Working Roll	300	500	350	350	5	4	465	319.5	2730	8900	0.319	2.12	3.15	2.07	280	Figure 1
380662/HCC9	Intermediate Roll	310	430	310	310	4	4	408	324.5	3050	7900	0.32	2.11	3.14	2.06	135	Figure 1
380662-XRS/HCEC9-1/W281	Intermediate Roll	310	430	350	350	1	4	404	320.5	3700	9450	0.459	1.47	2.19	1.44	154	Figure 4
382064X2/HC	Intermediate Roll	320	480	380	380	5	4	447.5	336.5	3000	11500	0.459	1.47	2.19	1.44	252	Figure 1
382968X2/HC	Working Roll&Intermediate Roll	340	460	310	310	4	4	438	352	3000	8950	0.302	2.21	3.29	2.16	147	Figure 1
382968X2/HCC9	Working Roll&Intermediate Roll	340	460	310	310	4	4	438	352	3000	8950	0.305	2.21	3.29	2.16	146	Figure 1
381068	Working Roll&Intermediate Roll	340	520	325	325	5	4	489	364	3540	8200	0.287	2.35	3.5	2.3	247	Figure 1
381168	Working Roll&Intermediate Roll	340	580	425	425	5	4	535.5	370.5	5050	12300	0.423	1.6	2.38	1.56	468	Figure 1
382972X2/HCYA3	Working Roll	360	480	375	375	4	4	454.5	369	2550	11800	0.333	2.03	3.02	1.98	197	Figure 1
381172/HCYA6	Working Roll	360	600	420	420	4.7	4.7	555.5	382	3950	13500	0.442	1.53	2.27	1.49	423	Figure 1
380676/HC-1	Working Roll	380	550	330	350	5	5	514	394	2490	9450	0.444	1.52	2.26	1.49	273	Figure 1

Four-row Tapered Roller Bearings Metric Series

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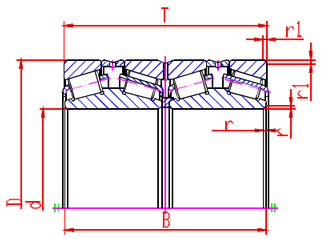
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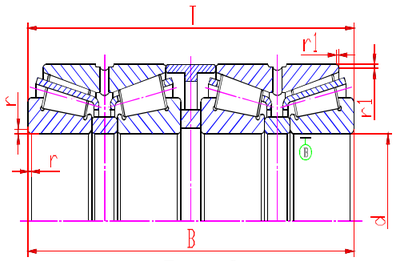
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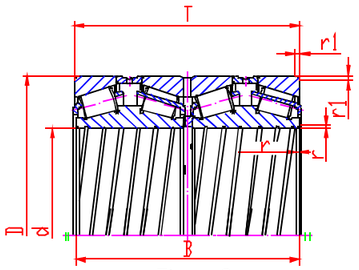
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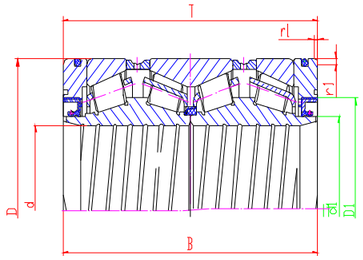
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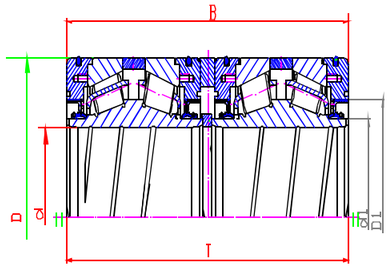
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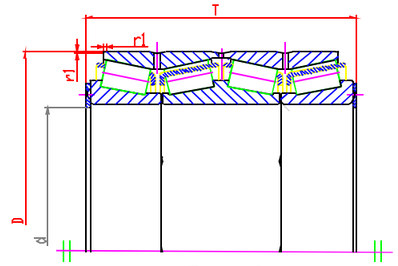
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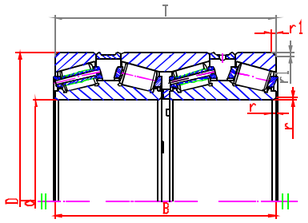
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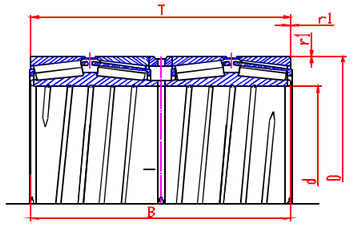
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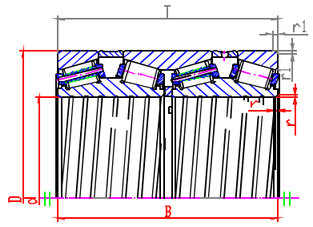
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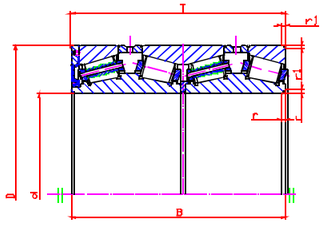
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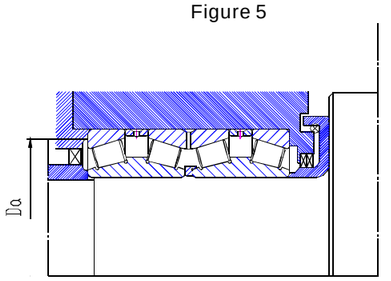
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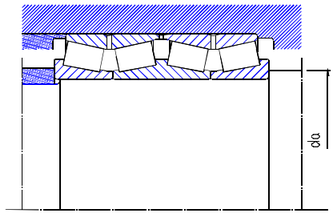
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Designations	working position	Basic Dimensions(mm)						Mounting Dimensions(mm)		Basic Load Ratings(kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	B	T	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
380676/HC	Working Roll	380	620	388	388	6	6	577.5	403.5	3800	11600	0.43	1.57	2.34	1.53	443	Figure 1
381176/HC	Working Roll	380	620	420	420	5	4	575	400	5550	12600	0.459	1.47	2.19	1.44	485	Figure 1
381176/HCC9	Working Roll	380	620	420	420	5	4	575	400	5550	12600	0.459	1.47	2.19	1.44	485	Figure 1
381176/HCYA2-1	Working Roll	380	620	420	420	5	4	575	400	5550	12600	0.459	1.47	2.19	1.44	484	Figure 1
381176/HCYA2	Working Roll	380	620	420	420	5	4	575	400	5550	12600	0.459	1.47	2.19	1.44	484	Figure 1
380680/HCEP59YAD	Vertical Roll	390	540		339.96		1.5	270	195	4650	11700	0.311	2.17	3.24	2.12	214	Figure 6
380679X2/HC	Roller	395	545	268.7	288.7	4	7.5	516	410	2340	6500	0.445	1.52	2.26	1.48	194	Figure 1
380679X2/HCYA7	Roller	395	545	268.7	288.7	4	7.5	516	410	2340	6500	0.445	1.52	2.26	1.48	194	Figure 1
380679X2/HCC9	Roller	395	545	268.7	288.7	4	7.5	516	410	2340	6500	0.445	1.52	2.26	1.48	194	Figure 1
380679/HCYA3	Roller	395	545	268	288.9	5	10	512.5	410	2130	6500	0.445	1.52	2.26	1.48	194	Figure 3
380680/HC-1	Back-up Roll	400	540	280	280	3.7	7.5	511.5	412.5	2690	6500	0.445	1.52	2.26	1.48	187	Figure 1
380680/HC	Back-up Roll	400	540	400	400	5	5	514.5	418.5	6980	13300	0.297	2.28	3.39	2.23	262	Figure 1
380680/HCEC9YA6-1	Back-up Roll	400	540	280	280	4	7.5	511.5	412.5	2450	6500	0.445	1.52	2.26	1.48	187	Figure 1
380680/HCC9	Working Roll	400	540	400	400	5	5	514.5	418.5	6350	13300	0.297	2.28	3.39	2.23	262	Figure 1
351080X2-2/C9	Gear Box	400	600	185	185	6	2.5	581	445	2700	5850	0.37	1.83	2.72	1.78	168	Figure 1
381080/HC	Back-up Roll	400	600	356	356	5	4	565	418	3740	12400	0.38	1.78	2.65	1.74	345	Figure 1
380684/HC	Working Roll&Back-up Roll	420	560	437	437	5	5	532.5	435.5	7900	16300	0.309	2.18	3.25	2.13	298	Figure 1
380684-XRS/HCP69	Working Roll&Back-up Roll	420	560	437	437	特殊	6	532.5	430	4800	15200	0.31	2.18	3.25	2.13	292	Figure 4
381084	Working Roll&Back-up Roll	420	620	356	356	5	4	583.5	446	4560	11700	0.411	1.64	2.44	1.6	369	Figure 1
381184X2J/HC	Working Roll&Back-up Roll	420	700	480	480	6	5	652.5	451.5	5610	18200	0.319	2.12	3.15	2.07	749	Figure 1
381184	Working Roll&Back-up Roll	420	700	480	480	6	5	651.5	452.5	10500	11900	0.319	2.12	3.15	2.07	755	Figure 1
381188X1-XRS-HC-1	Vertical Roll	440	590	480	480			561	451.5	8000	19000	0.278	2.43	3.61	2.37	359	Figure 4
380688/HCC9	Roller	440	620	454	454	6	6	571	455	6650	18800	0.418	1.61	2.4	1.58	432	Figure 1
380688/HC-1	Working Roll	440	620	454	454	6	6	586	455	6050	18800	0.418	1.61	2.4	1.58	432	Figure 1
380688/HCC9YA8	Working Roll	440	620	454	454	6	6	582	452	6500	20200	0.402	1.68	2.5	1.64	422	Figure 1
380688-XRS/HCC9	Working Roll	440	620	454	454		7.5	588.5	455	6750	16700	0.333	2.03	3.02	1.98	408	Figure 4
380688	Working Roll	440	650	355	355	6	5	611	457.5	4900	12000	0.463	1.46	2.17	1.42	385	Figure 1
380688/HC	Working Roll	440	650	355	355	6	5	611	457.5	3680	12100	0.463	1.46	2.17	1.42	385	Figure 1
380688/HCYA7	Working Roll	440	650	355	355	6	6	611	458	3680	12100	0.463	1.46	2.17	1.42	385	Figure 1
381088X2/HG	Working Roll	440	650	355	355	6	5	611	457.5	5000	12300	0.463	1.46	2.17	1.42	402	Figure 7
380690-XRS/HC	Working Roll	450	595	368	368		5	569.5	464	5250	13400	0.33	2.05	3.05	2	268	Figure 4

Four-row Tapered Roller Bearings Metric Series

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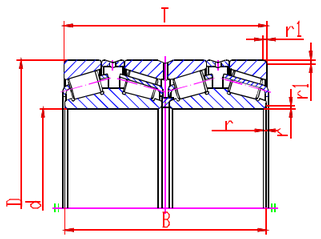
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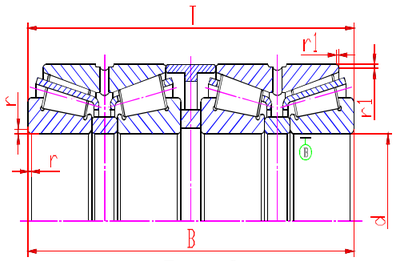
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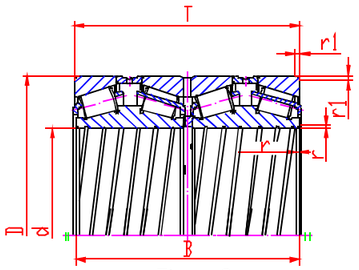
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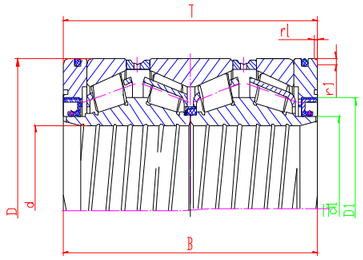
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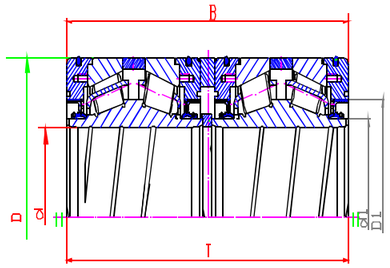
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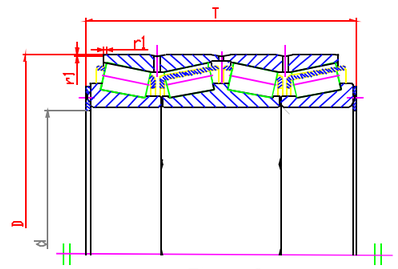
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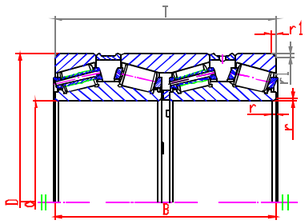
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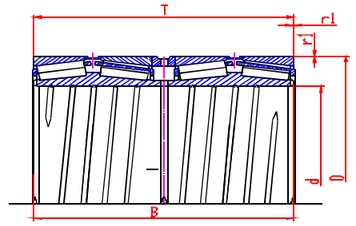
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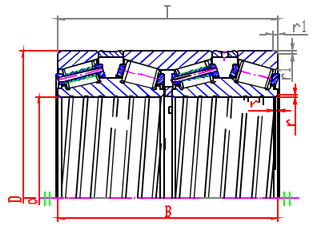
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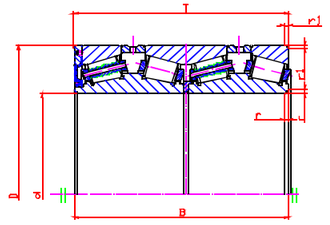
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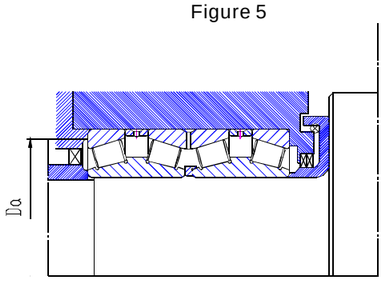
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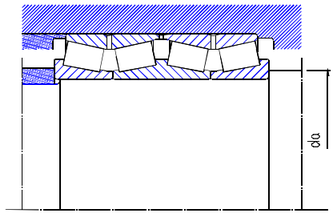
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Designations	working position	Basic Dimensions(mm)						Mounting Dimensions(mm)		Basic Load Ratings(kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	B	T	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
380690/HC	Vertical Roll	450	595	390	390	6	1.5	583.5	486.5	5350	14700	0.333	2.03	3.02	1.98	285	Figure 6
370690X2/HCC9DB/W281	Working Roll	450	595	415	415		6	566.5	467.5	4900	16700	0.31	2.18	3.24	2.13	305	Figure 8
380692/HCEP59YAD	Working Roll&Back-up Roll	460	590	360	360			567.5	476.5	5100	14400	0.275	2.45	3.65	2.4	241	Figure 1
381992X3/YA	Working Roll&Back-up Roll	460	610	360	360	3	6	582.5	476	6100	16400	0.339	1.99	2.96	1.94	291	Figure 3
381992/HC	Working Roll&Back-up Roll	460	620	310	310	5	4	592	474.5	6160	3450	0.402	1.68	2.5	1.64	260	Figure 1
381992/HCC9	Working Roll&Back-up Roll	460	620	310	310	5	4	592	474.5	6160	3450	0.402	0.68	2.5	1.64	260	Figure 1
380692/HCC9-1	Working Roll&Back-up Roll	460	650	474	474	6	6	613	478	4950	20000	0.338	2	2.97	1.95	506	Figure 1
381192X3/HC	Working Roll&Back-up Roll	460	730	440	440	4	7.5	674.5	491.5	6160	14800	0.748	0.903	1.34	0.882	663	Figure 1
381192X3/HCC9	Working Roll&Back-up Roll	460	730	440	440	4	7.5	674.5	491.5	6160	14800	0.748	0.903	1.34	0.882	663	Figure 1
381096	Working Roll&Back-up Roll	480	700	420	420	5	5	658	500.5	4730	16900	0.408	1.66	2.47	1.62	582	Figure 1
381096/HCYA2	Working Roll&Back-up Roll	480	700	420	420	6	5	658	498.5	5880	15500	0.408	1.66	2.47	1.62	535	Figure 3
380698/HC	Working Roll	490	625	385	385	7	4	559.5	505	5390	16500	0.319	2.12	3.15	2.07	278	Figure 1
380698/HCYA2	Working Roll	490	625	385	385		4	559.5	505	4900	16500	0.319	2.12	3.15	2.07	278	Figure 3
3806/510/HCC9	Working Roll	510	655	377	379	1.5	6.4	626.5	525.5	5500	16200	0.333	2.03	3.02	1.98	316	Figure 3
3810/530	Working Roll	530	780	450	450	6	5	735.5	555	7200	18200	0.38	1.78	2.65	1.74	745	Figure 9
3806/540J/HC	Working Roll	540	690	400	400	2	5	661	555.5	6270	11400	0.333	2.03	3.02	1.98	375	Figure 3
3819/560/HC	Working Roll	560	750	368	368	5	4	715.5	583	7850	15800	0.43	1.57	2.34	1.53	447	Figure 9
3811/560	Working Roll	560	920	620	620	7.5	6	855	607	18200	32000	0.394	1.73	2.57	1.69	1690	Figure 9
3806/600/HC	Working Roll&Back-up Roll	600	800	365	365	5	5	766.5	623	4000	18100	0.33	2.05	3.05	2	489	Figure 1
3806/600/HCYA8	Working Roll&Back-up Roll	600	800	365	365	5	5	766.5	623	5110	17200	0.33	2.05	3.05	2	522	Figure 9
3819/600/HC	Working Roll&Back-up Roll	600	800	380	380	5	4	765.5	622.5	4000	18100	0.33	2.05	3.05	2	497	Figure 1
3810/600/HC	Working Roll&Back-up Roll	600	870	480	480	6	6	812	622.5	8900	27500	0.414	1.63	2.43	1.6	990	Figure 9
3811/600/HC	Working Roll&Back-up Roll	600	980	650	650	7.5	7.5	917.5	639	9650	37500	0.319	2.12	3.15	2.07	1950	Figure 9
3806/625/HC	Working Roll	625	815	480	480	3.5	6.5	779	498.5	9720	28900	0.333	2.03	3.02	1.98	658	Figure 1
3819/630/HC	Backup Roll	630	850	418	418	6	6	810.5	650.5	6700	22200	0.4	1.69	2.52	1.65	683	Figure 9
3806/630-XRS/HCC9	Backup Roll	630	860	615	615	5	5	816.5	653	13300	37000	0.346	1.95	2.9	1.91	1034	Figure 4
3810/630/HC	Backup Roll	630	920	515	515	7.5	7.5	866.5	657	6550	27500	0.425	1.59	2.36	1.55	1190	Figure 1

Four-row Tapered Roller Bearings Metric Series

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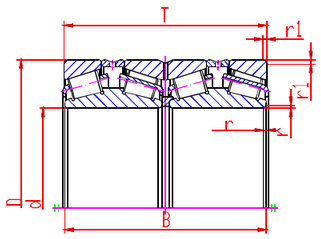
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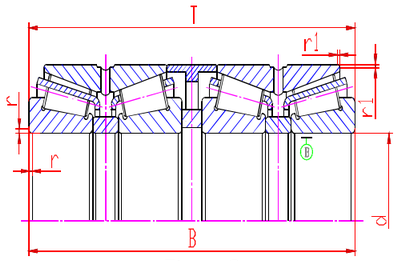
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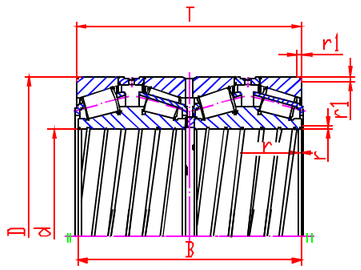
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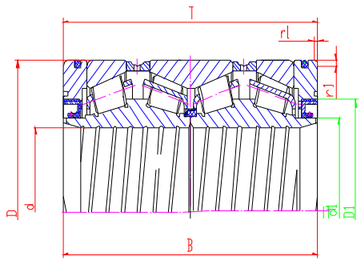
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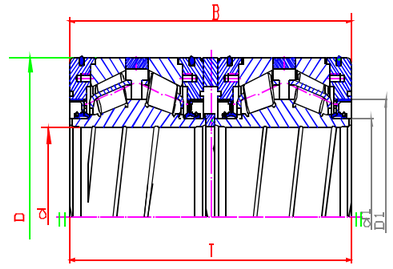
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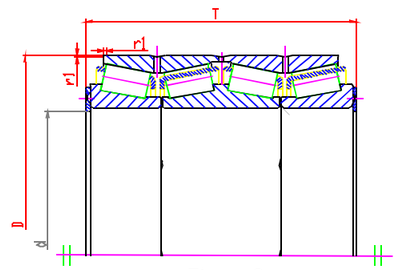
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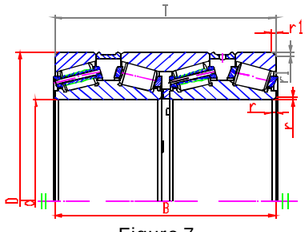
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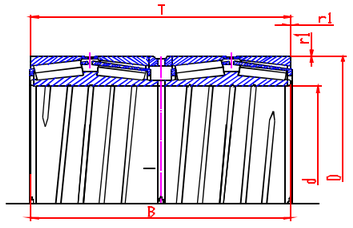
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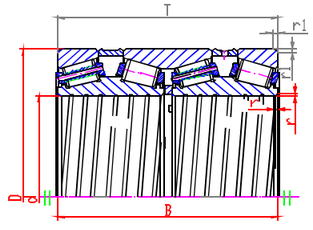
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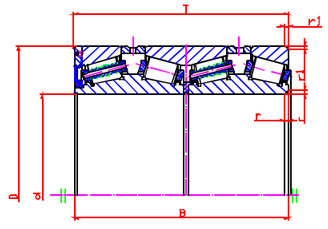
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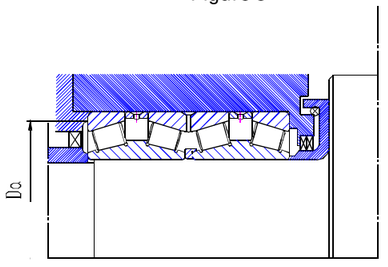
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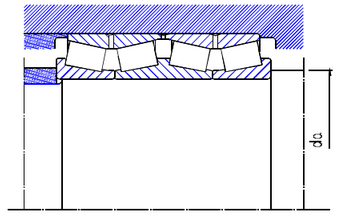
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Designations	working position	Basic Dimensions(mm)						Mounting Dimensions(mm)		Basic Load Ratings(kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	B	T	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
3811/630/HC	Backup Roll	630	1030	670	670	7.5	6	960.5	681.5	15000	42000	0.387	1.75	2.6	1.71	2200	Figure 9
3806/650/HCYA7	Backup Roll	650	1030	560	560	7.5	12	970	687	16000	39300	0.317	2.15	3.2	2.1	1770	Figure 9
3806/650/HCYAD	Backup Roll	650	1030	560	560	7.5	12	970	691.5	17600	39300	0.314	2.15	3.2	2.1	1735	Figure 9
3806/650/HC	Backup Roll	650	1030	560	560	7.5	12	970	697.5	17600	39300	0.314	2.15	3.2	2.1	1720	Figure 9
3806/650/HCC9	Backup Roll	650	1030	560	560	7.5	12	970	697.5	17600	39300	0.314	2.15	3.2	2.1	1723	Figure 9
3806/650/HCC9-1	Backup Roll	650	1030	560	560	7.5	12	970	697.5	17600	39300	0.314	2.15	3.2	2.1	1712	Figure 9
3806/650/HCEC91YA3	Backup Roll	650	1030	560	560	7.5	12	970	697.5	16000	39000	0.314	2.15	3.2	2.1	1720	Figure 7
3819/670/HC	Backup Roll	670	900	412	412	6	6	857	691	5770	24600	0.437	1.55	2.3	1.51	773	Figure 1
3806/685.8-XRS/HCC9	Backup Roll	685.8	876.3	352.425	355.6	6.4	6.4	844	704.5	5800	14500	0.417	1.62	2.41	1.58	490	Figure 4
3806/710/HCYA2	Backup Roll	710	900	410	410	3	6	865.5	728	5880	27500	0.353	1.91	2.85	1.87	650	Figure 9
3811/750	Backup Roll	750	1220	840	840	9.5	9.5	1141	792.5	17700	68500	0.323	2.09	3.11	2.04	3985	Figure 7
3811/750-RS/HCC9	Backup Roll	750	1220	840	840	9.5	9.5	1143	805	24600	64500	0.323	2.09	3.11	2.04	3880	Figure 10
3806/750/HCC9	Backup Roll	750	1220	840	840	6	13	1050.5	768	21100	70500	0.37	1.83	2.72	1.78	3810	Figure 7

Inch Series Four-row Tapered Roller Bearings

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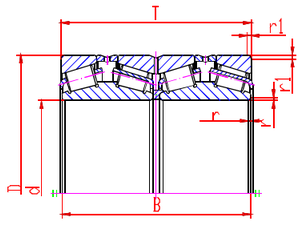


Figure 1

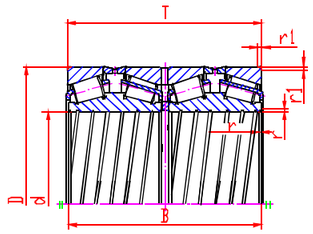


Figure 2

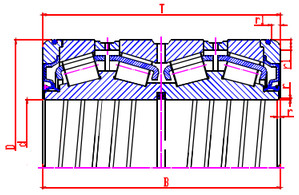
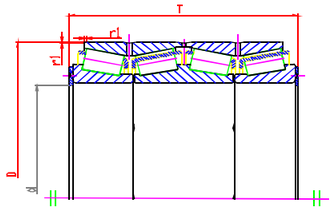


Figure 3



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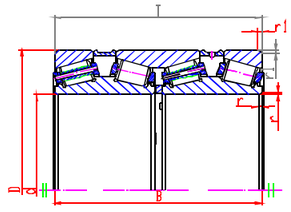


Figure 5

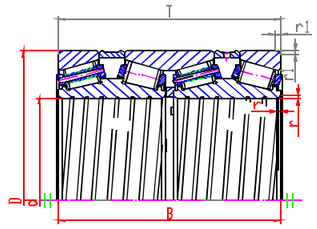


Figure 6

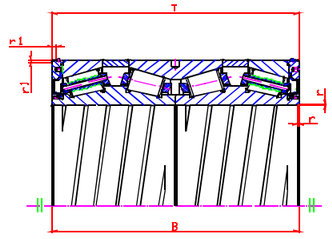
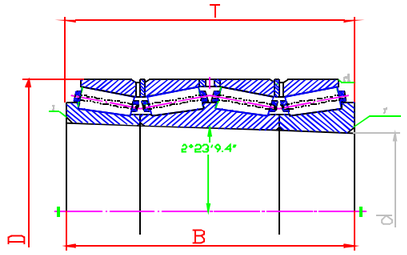


Figure 7



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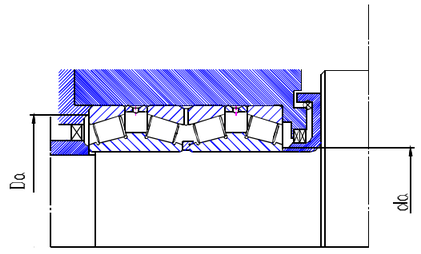
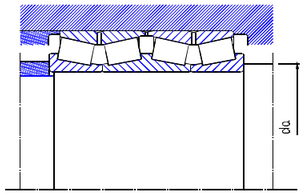


Mounted



Mounted

Designations	Working Position	Basic Dimensions (mm)				Mounting Dimensions (mm)		Chamfer Dimensions				Calculation Coefficient				Basic Load Ratings (kN)		Weigh (kg)	Patterns
		d	D	B	T	Da	da	rmin (Axial Direction)	rmin (Radial Direction)	r1min (Axial Direction)	r1min (Radial Direction)	e	Y1	Y2	Yo	Cr	Cor		
K67390D/K67322-K67322D	Working Roll	133.35	196.85	193.675	193.675	184	140	1.5	1.5	3.3	3.3	0.344	1.96	2.92	0.192	970	2370	20.2	Figure 1
3806/139.7/HCP59	Backup Roll	139.7	200.025	157.162	160.338	187.5	145	1.1	1.1	1.8	1.8	0.289	2.33	3.47	2.28	695	1870	16.2	Figure 1
67791DGW/67720-67721D	Working Roll	177.8	247.65	192.088	192.088	231	186	1.5	1.5	3.3	3.3	0.44	1.54	2.29	1.5	1070	3000	28.6	Figure 2
KM238849D/KM238810-KM238810D	Working Roll	187.325	269.875	211.138	211.138	254.5	193.5	1.5	1.5	3.3	3.3	0.331	2.04	3.03	1.99	1570	3430	41.5	Figure 1
M240648DW/M240611-M240611D	Working Roll	198.438	284.162	225.425	225.425	267	208	1.5	1.5	3.3	3.3	0.333	2.03	3.02	1.98	1880	4200	46.6	Figure 1
67986D/67920-67921D-3	Working Roll	206.375	282.575	190.5	190.5	264.5	211	0.8	0.8	3.3	3.3	0.509	1.33	1.97	1.3	1030	2830	34.4	Figure 1
KM244249D/KM244210-KM244210D	Working Roll	220.662	314.325	239.712	239.712	296	232.5	1.5	1.5	3.3	3.3	0.333	2.03	3.02	1.98	2090	4900	60.2	Figure 1
M244249DGW/M244210-M244210D-XRS	Working Roll	220.662	314.325	239.712	239.712	297.5	229.5	3.8	1.5	3.3	3.3	0.333	2.03	3.02	1.98	1750	4150	57.4	Figure 3
M244249D/M244210-M244210D-2/C9	Working Roll	220.662	314.325	239.712	239.712	296	232.5	1.5	1.5	3.3	3.3	0.333	2.03	3.02	1.98	1790	4900	58.8	Figure 1
M244249DGW/M244210-M244210CD/C9	Working Roll	220.662	314.325	239.712	239.712	296	232.5	1.5	1.5	3.3	3.3	0.333	2.03	3.02	1.98	2000	4500	58.8	Figure 2
LM245149DGW/LM245110-LM245110D	Intermediate Roll	228.6	311.15	200.025	200.025	294.5	238	1.5	1.5	3.3	3.3	0.33	2.05	3.05	2	1560	3650	43.9	Figure 2
8576DW/8520-8520D-3	Working Roll	234.95	327.025	196.85	196.85	308.5	246.5	1.5	1.5	3.3	3.3	0.407	1.66	2.47	1.62	1660	3830	50	Figure 1
KEE127097D/K127135-K127136D	Working Roll	241.478	349.148	228.6	228.6	328	255.5	1.5	1.5	3.3	3.3	0.353	1.91	2.85	1.87	2050	4350	71.9	Figure 1
KLM247748DW/KLM247710-KLM247710D	Working Roll	244.475	327.025	193.675	193.675	312	254.5	3.3	1.5	3.3	3.3	0.326	2.07	3.08	2.02	1740	3930	42.7	Figure 1
LM247748DW/LM247710-LM247710D	Working Roll	244.475	327.025	193.675	193.675	312	254.5	3.3	1.5	3.3	3.3	0.326	2.07	3.08	2.02	1740	4050	42.7	Figure 1
KLM247748DGW/KLM247710-KLM247710D/HG2-3	Working Roll	244.475	327.025	193.675	193.675	312	254.5	1.5	1.5	3.3	3.3	0.326	2.07	3.08	2.02	1450	4050	44	Figure 2
M249748D/M249710-M249710D	Working Roll	254	358.775	269.875	269.875	339	267	3.3	3.3	3.3	3.3	0.333	2.03	3.02	1.98	2720	6050	88.9	Figure 1
M249748DW/M249710-M249710D	Working Roll	254	358.775	269.875	269.875	339	267	3.3	3.3	3.3	3.3	0.333	2.03	3.02	1.98	2720	6050	88.9	Figure 2
K3M249748DW/K3M249710-K3M249710D-3	Working Roll	254	358.775	269.875	269.875	339	267	3.3	3.3	3.3	3.3	0.333	2.03	3.02	1.98	2720	6050	88.9	Figure 2
EE134102D/134143-134144CD-3	Working Roll	260.35	365.125	228.6	228.6	344.5	273	3.3	3.3	6.4	6.4	0.374	1.8	1.69	1.76	1900	4580	71.8	Figure 1
KLM451349DW/KLM451310-KLM451310D	Working Roll	266.7	355.6	230.188	228.6	338	273	3.3	1.5	3.3	3.3	0.36	1.87	2.79	1.83	1950	5560	65.3	Figure 1
LM451349DW/LM451310-LM451310D	Working Roll	266.7	355.6	230.188	228.6	338	273	3.3	1.5	3.3	3.3	0.36	1.87	2.79	1.83	1950	5800	63.9	Figure 1
M252349DW/M252310-M252310D	Intermediate Roll	269.875	381	282.575	282.575	359.5	283	3.3	3.3	3.3	3.3	0.333	2.03	3.02	1.98	2930	7550	105	Figure 1

Inch Series Four-row Tapered Roller Bearings

ZWZ

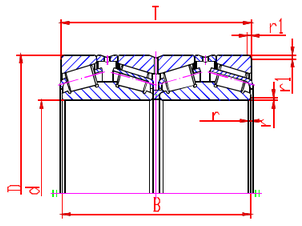


Figure 1

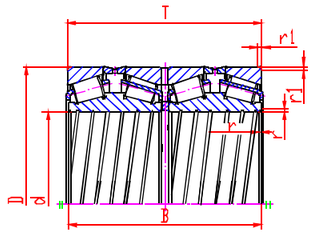


Figure 2

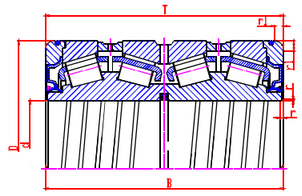
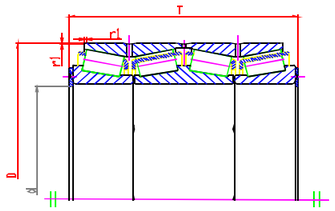


Figure 3



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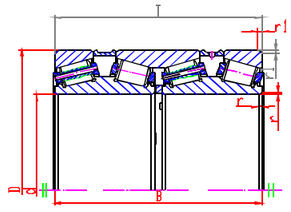


Figure 5

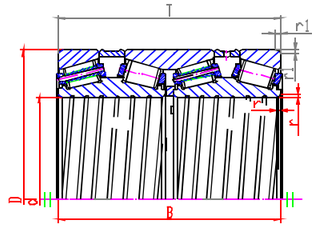


Figure 6

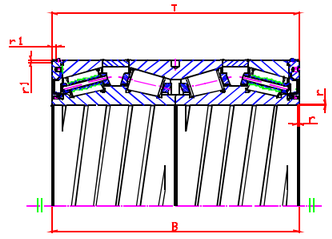


Figure 7

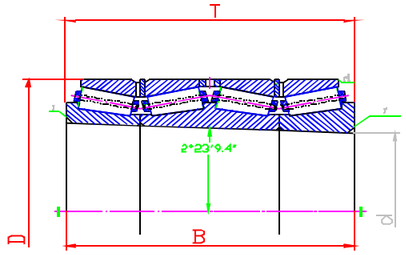
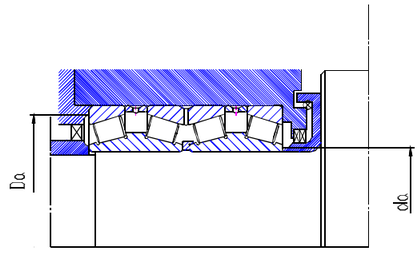
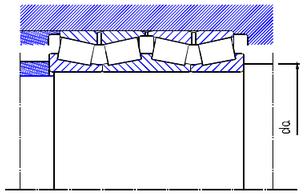


Figure 8



Mounted



Mounted

Designations	Working Position	Basic Dimensions (mm)				Mounting Dimensions (mm)		Chamfer Dimensions				Calculation Coefficient				Basic Load Ratings (kN)		Weigh (kg)	Patterns
		d	D	B	T	Da	da	rmin (Axial Direction)	rmin (Radial Direction)	r1min (Axial Direction)	r1min (Radial Direction)	e	Y1	Y2	Yo	Cr	Cor		
M252349DW/M252310-M252310D-3	Intermediate Roll	269.875	381	282.575	282.575	359.5	283	3.3	3.3	3.3	3.3	0.333	2.03	3.02	1.98	2340	7550	105	Figure 1
KEE135111DW/K135155-K135156D	Intermediate Roll	279.4	393.7	269.875	269.875	370.5	293	2	1.5	6.4	6.4	0.38	1.77	2.64	1.73	2880	6200	103	Figure 1
EE135111D/135155-135156D	Intermediate Roll	279.4	393.7	269.875	269.875	370.5	293	1.5	1.5	6.4	6.4	0.38	1.77	2.64	1.73	2880	6200	103	Figure 1
EE135111DW/135155-135156DW/HEC9	Intermediate Roll	279.4	393.7	269.875	269.875	370.5	293	1.5	1.5	6.4	6.4	0.38	1.77	2.64	1.73	2040	6200	103	Figure 1
3806/279.4-XRS/HC	Working Roll	297.4	393.7	320	320	370	295.5			3.2	3.2	0.4	1.69	2.51	1.65	2500	7200	120	Figure 3
M255449DW/M255410-M255410D	Working Roll	288.925	406.4	298.45	298.45	383	302	3.3	3.3	3.3	3.3	0.338	2	2.97	1.95	3400	8150	125	Figure 1
M255449D/M255410-M255410D	Working Roll	288.925	406.4	298.45	298.45	383	302	3.3	3.3	3.3	3.3	0.338	2	2.97	1.95	3400	8150	125	Figure 1
M257248DW/M257210-M257210D	Working Roll	304.902	412.648	266.7	266.7	393	318	3.3	3.3	3.3	3.3	0.319	2.12	3.15	2.07	2930	7000	102	Figure 1
LM761648D/LM761610-LM761610D-3	Working Roll	341.312	457.098	254	254	434.5	355	2	1.5	3.3	3.3	0.47	1.43	2.14	1.4	2490	7050	112	Figure 1
LM761648D/LM761610-LM761610D	Working Roll	341.312	457.098	254	254	434.5	355	2	1.5	3.3	3.3	0.47	1.43	2.14	1.4	2490	7050	112	Figure 1
KEE971355DW/K972100-K972103D/HG2	Working Roll&Intermediate Roll	342.9	533.4	301.625	307.975	502	368.5	3.3	3.3	3.3	3.3	0.333	2.03	3.02	1.98	3660	8460	246	Figure 1
LM761649DW/LM761610-LM761610D	Working Roll&Intermediate Roll	343.052	457.098	254	254	434.5	351.5	2	1.5	3.3	3.3	0.471	1.43	2.14	1.4	2670	7350	110	Figure 1
LM761649D/LM761610-LM761610D-3	Working Roll&Intermediate Roll	343.052	457.098	254	254	434.5	351.5	2	1.5	3.3	3.3	0.471	1.43	2.14	1.4	2260	7000	110	Figure 1
LM761649DWSH/LM761610SH-LM761610DSH-3	Intermediate Roll	343.052	457.098	254	254	433.5	355.5	1.5	1.5	3.3	3.3	0.471	1.43	2.14	1.4	2800	6900	111	Figure 1
3806/368.3/HCEP59YAD	Vertical Roll	368.3	523.875	419.96	419.96	511	385.5			1.5	1.5	0.333	2.03	3.02	1.98	5800	14900	284	Figure 4
EE231475D/231975-231976D	Working Roll&Intermediate Roll	374.65	501.65	250.825	260.35	476.5	388	1.5	1.5	3.3	3.3	0.446	1.51	2.25	1.48	3120	7550	141	Figure 1
HM266449DW/HM266410-HM266410CD	Working Roll&Intermediate Roll	384.175	546.1	400.05	400.05	514.5	397	3.3	3.3	6.4	6.4	0.333	2.03	3.02	1.98	6120	16400	310	Figure 2
M667947DGW/M667911-M667911D/ZP-1	Working Roll	409.575	546.1	334.962	334.962	519	425	1.5	1.5	6.4	6.4	0.416	1.62	2.42	1.59	4400	11500	213	Figure 2
1-7016	Working Roll	409.575	546.1	334.962	334.962	519.5	425	1.5	1.5	6.4	6.4	0.416	1.62	2.42	1.59	3900	11700	201	Figure 1
M272647D/M272610-M272610D-3/C9	Back-up Roll	482.6	647.7	417.512	417.512	615.5	495	3.3	3.3	6.4	6.4	0.333	2.03	3.02	1.98	7000	18700	383	Figure 5
M270749DGW/M270710-M270710D	Backup Roll	447.675	635	463.55	463.55	598.5	470	3.3	3.3	6.4	6.4	0.333	2.03	3.02	1.98	8150	21000	485	Figure 2
M270448DGW/M270410/DB-3	Backup Roll	449.949	594.949	368	368	567	465	4	4	8	8	0.333	2.03	3.02	1.98	4900	15700	300	Figure 2
EE425176D/425299-425299D-3	Working Roll&Backup Roll	456.794	761.873	527.05	527.05	708	495	3.3	3.3	6.4	6.4	0.444	1.52	2.26	1.49	10600	22900	973	Figure 5

Inch Series Four-row Tapered Roller Bearings

ZWZ

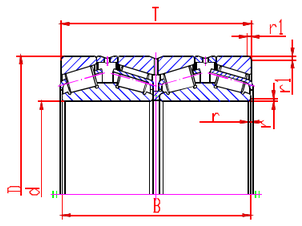


Figure 1

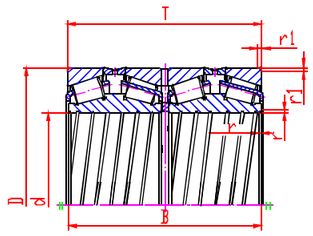
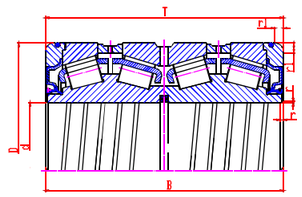


Figure 2



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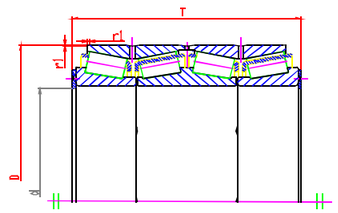


Figure 4

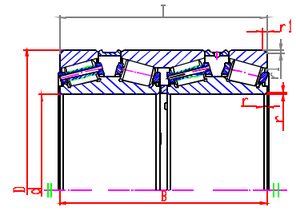


Figure 5

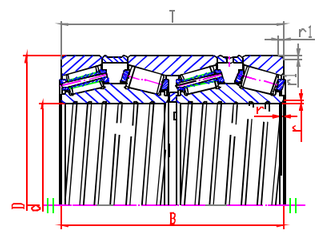


Figure 6

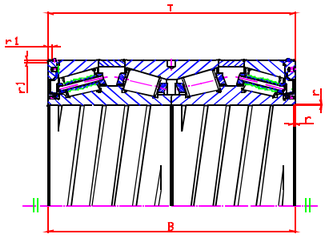
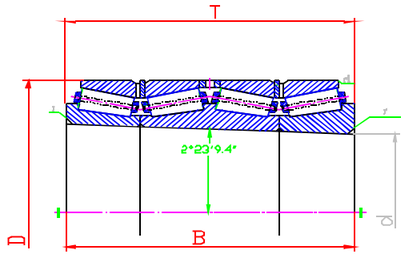


Figure 7



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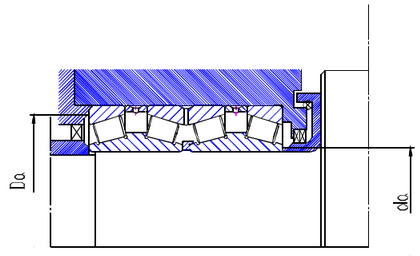

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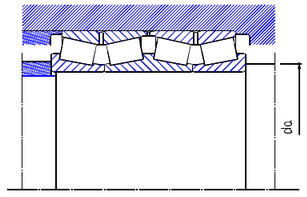

Mounted

Designations	Working Position	Basic Dimensions (mm)				Mounting Dimensions (mm)		Chamfer Dimensions				Calculation Coefficient				Basic Load Ratings (kN)		Weigh (kg)	Patterns
		d	D	B	T	Da	da	rmin (Axial Direction)	rmin (Radial Direction)	r1min (Axial Direction)	r1min (Radial Direction)	e	Y1	Y2	Yo	Cr	Cor		
LM272249DW/LM272210-LM272210D M272647D/M272610-M272610D-3/C9	Working Roll&Backup Roll Backup Roll	482.6 482.6	615.95 647.7	330.2 417.512	330.2 417.512	593 615.5	494.5 495	6.4 3.3	6.4 3.3	6.4 6.4	6.4 6.4	0.333 0.333	2.03 2.03	3.02 3.02	1.98 1.98	4860 7000	15200 18700	252 383	Figure 5 Figure 5
M274149DW/M274110-M274110D	Working Roll&Backup Roll	501.65	711.2	520.7	520.7	669.5	525	3.3	3.3	6.4	6.4	0.352	1.92	2.86	1.88	9690	26900	687	Figure 6
LM274049DW/LM274010-LM274010D	Working Roll&Backup Roll	508	695.325	415.925	415.925	662	531	3.3	3.3	6.4	6.4	0.333	2.03	3.02	1.98	5800	19600	464	Figure 5
3806/558X4-2RS/HCC9-1	Working Roll&Backup Roll	558.8	736.6	409.575	409.575	705	572.5	3.3	3.3	6.4	6.4	0.346	1.95	2.9	1.91	6500	20000	456	Figure 7
LM278849DGWX2/LM278810-LM278810D-XRS	Working Roll	585.788	771.525	567	567	737	602			6.4	6.4	0.333	2.03	3.02	1.98	8100	26700	676	Figure 3
3806/595X4/HCP59YAB	Backup Roll	595.312	844.55	615.95	615.95	799	626	3.3	3.3	6.4	6.4	0.333	2.03	3.02	1.98	13600	36900	1125	Figure 2
M280249DWA6-M280210A6-M280210D	Working Roll	603.25	857.25	622.3	622.3	808	624.5					0.333	2.01	3	1.97	14000	38900	1172	Figure 6
EE649241D/649310-649311D	Working Roll	609.6	787.4	361.95	361.95	754	632.5	3.3	3.3	6.4	6.4	0.372	1.82	2.7	1.78	7100	22000	460	Figure 1
3806/660X4/HC	Working Roll	660.011	855.015	319.99	319.99	816.5	677	12	12	5.2	5.2	0.516	1.31	1.95	1.28	4750	17000	495	Figure 5
M282249D/M282210-M282210D	Working Roll	682.625	965.2	701.675	701.675	911.5	711	3.3	3.3	6.4	6.4	0.344	1.96	2.93	1.92	17400	50000	1714	Figure 5
3806/707X4K/HC	Backup Roll	707.496	1079.5	844.55	844.55	1018	811.5	9.7	9.7	3.3	3.3	0.333	2.03	3.02	1.98	22500	65500	2581	Figure 8
1-7029	Backup Roll	711	914.4	390	420	880.5	730.5	6.4	6.4	6.4	6.4	0.38	1.78	2.65	1.74	6200	19400	671	Figure 8
3806/711X4-XRS	Backup Roll	711.2	914.4	390	390	880.5	735			7.5	7.5	0.38	1.78	2.65	1.74	7900	20100	620	Figure 3
LM282847D/LM282810-LM282810D	Working Roll	717.55	946.15	565.15	565.15	903	742.5	3.3	3.3	6.4	6.4	0.333	2.03	3.02	1.98	13300	41000	1085	Figure 5
3806/749.3/HC-JG	Working Roll	749.3	990.6	605	605	946.5	778.5	4	4	8	8	0.319	2.12	3.15	2.07	13000	45300	1284	Figure 6
M284249DW/M284210-M284210D	Backup Roll	762	1079.5	787.4	787.4	1018.5	799	4.8	4.8	12.7	12.7	0.328	2.06	3.06	2.01	20500	61900	2340	Figure 5
LM286230T-46TD-49T/10/C9YA6	Backup Roll	803.803	1130.3	717.551	717.551	1080.5	900	9.7	9.7	3.3	3.3	0.333	2.03	3.02	1.98	19500	62000	2160	Figure 8

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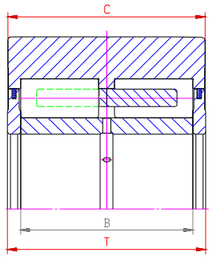
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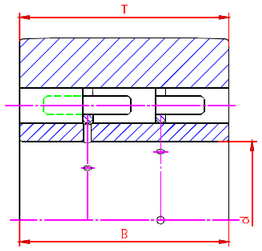
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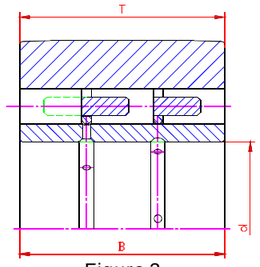
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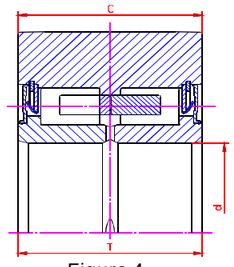
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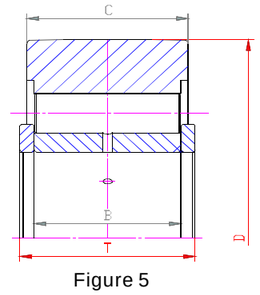
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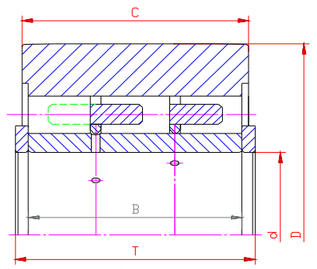
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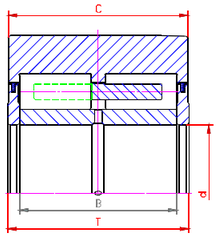
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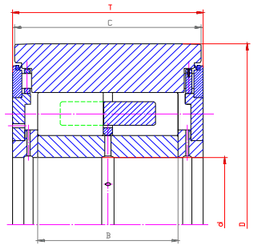
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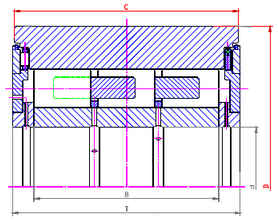
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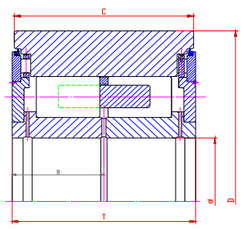
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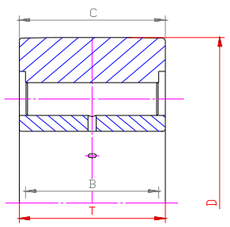
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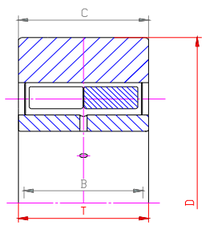
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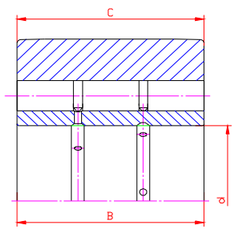
Figure 13

Designations	Basic Dimensions (mm)			Basic Load Ratings(KN)		Limit Speed Ratings(r/min)		Weight kg	Patterns
	d	D	B	Cr	Cor	Grease Lubrication	Oil Lubrication		
BNPF102256/2RZ	50	110	56	194	309	4800	6000	2.9	Figure 7
BNPF112564X1-2RZ	55	126	64	172	260	4800	6000	4.53	Figure 7
BNUP112452	55	120	52	155	219	4800	6000	3.4	Figure 5
BNUPA112452	55	120	52	171	237	4800	6000	33.5	Figure 6
BKBF112452	55	120	52.2	168	372	4800	6000	3.5	Figure 5
BNNB112460/BH1	55	120	60	208	356	4800	6000	3.8	Figure 11
BNUP112464	55	120	64	206	317	4800	6000	4.2	Figure 5
BNPF123075-2RZ	60	150	75	270	390	3800	4800	7.85	Figure 7
BNNB123374	60	165	74	357	530	3800	4500	10	Figure 11
BNBA133370	65	165	70	361	472	3800	4500	9.5	Figure 12
BNUP143275	70	160	75	190	360	3600	4500	9	Figure 5
BNUP143290/2RZ	70	160	90	347	550	3600	4500	10	Figure 7
BNPF143290/2RZ	70	160	90	425	720	3600	4500	10.5	Figure 7
BNTB143290/IS	70	160.02	90	393	695	3600	4500	10	Figure 3
BNTF143290/IS	70	160.02	90	435	846	3600	4500	10.5	Figure 3
BNTF143290	70	160.02	90	435	846	3600	4500	10.5	Figure 13
BNBA184494	90	220	94	690	1000	2600	3400	21.5	Figure 12
BNAF184494	90	220	94	762	1140	2600	3400	21	Figure 12
BNTBP1844120	90	220	120	625	1110	2600	3400	26.5	Figure 6
BNTPF1844120	90	220	120	732	1360	2600	3400	27	Figure 6
BNTF1844120	90	220.02	120	810	1600	2600	3400	27.5	Figure 3
BNUP204596	100	225	96	543	830	2400	3000	22.5	Figure 5
BNUP2045120/2RZ	100	225	120	672	1090	2400	3000	28	Figure 7
BNPF2045120/2RZ	100	225	120	795	1370	2400	3000	28	Figure 7
BNUP2045120/BH1	100	225	120	272	1090	2400	3000	28	Figure 7
BNPF2045120/BH1	100	225	120	795	1370	2400	3000	28	Figure 5
BNTB2045120/IS	100	225	120	740	1410	2400	3000	24.5	Figure 3
BNTF2045120	100	225	120	850	1700	2400	3000	28	Figure 3
BNBA225298	110	260	98	782	1180	2000	2400	31	Figure 12
BNPBF2252110	110	260	110	849	1370	2000	2400	35	Figure 5

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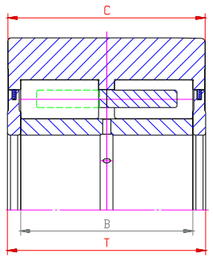
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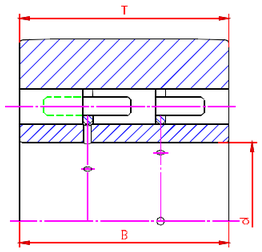
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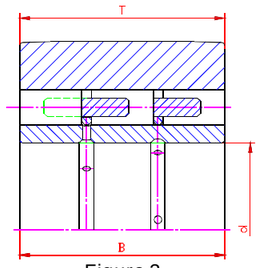
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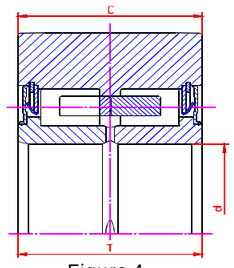
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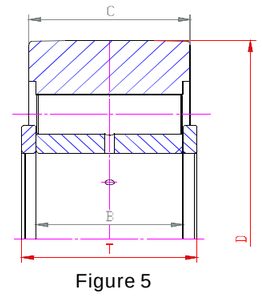
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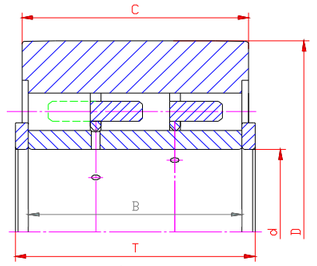
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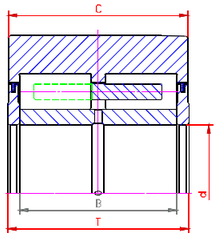
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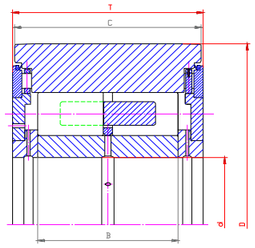
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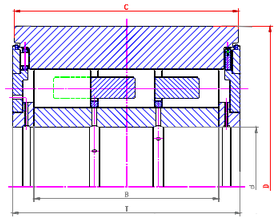
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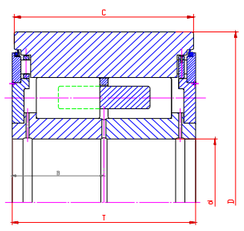
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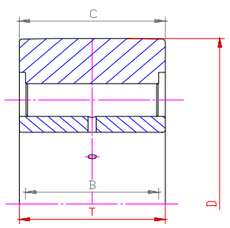
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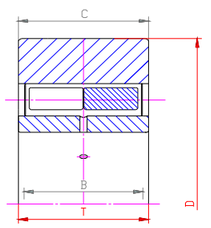
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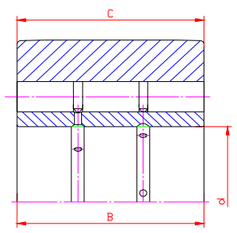
Figure 13

Designations	Basic Dimensions (mm)			Basic Load Ratings(KN)		Limit Speed Ratings(r/min)		Weight kg	Patterns
	d	D	B	Cr	Cor	Grease Lubrication	Oil Lubrication		
BNBA2252125	110	260	125	1010	1630	2000	2400	40	Figure 12
SJ-NNUP130-2ZL	130	300.02	150	1450	2430	1800	2200	70.1	Figure 1
SJ-TCNB130-1	130	300	172.664	1510	2790	1800	2200	72.9	Figure 2
SJ-TCNB130	130	300	172.64	1720	2670	1800	2200	72.3	Figure 2
SJ-TCNB130-2	130	300	172.64	1830	2900	1800	2200	73.6	Figure 2
SJ-TCNB130/WN26	130	300	172.64	1720	2670	1800	2200	72.2	Figure 3
BNUP2660150	130	300.02	150	1150	2150	1800	2200	61.5	Figure 5
BNUPA2260160	130	300.02	160	1250	2170	1800	2200	64.5	Figure 5
BNTF2260160	130	300.02	160	1510	2770	1800	2200	65.5	Figure 3
BNUP2660172	130	300.02	172.6	1480	2690	1800	2200	68	Figure 5
BNTB2660172	130	300.02	172.6	1570	2910	1800	2200	72.5	Figure 3
BNTF2660172	130	300.02	172.6	1670	3230	1800	2200	71.5	Figure 3
BNUP2660172/2RZ	130	300.02	172.6	1320	2100	1800	2200	70	Figure 7
BNUP2660172	130	300.02	172.6	1320	2100	1800	2200	70	Figure 5
SJ-NNJ180-2RS	180	406.42	85.52	1450	2770	1200	1500	125	Figure 4
SJ-NP180	180	410	67.5	1250	2050	1200	1500	58.5	Figure 5
SJ-TCNB180	180	406.42	171.04	2360	4050	1200	1500	130	Figure 3
SJ-TCNP180	180	410	210	2500	4950	1200	1500	170	Figure 6
BNPF3697212	180	485	145.7	2740	3680	1000	1300	230	Figure 8
BNPF3697344	180	485	278	4550	7050	1000	1300	380	Figure 9
BNUP3681171	180	406.4	171	1860	3120	1200	1500	130	Figure 5
BNUP3681224/2RZ	180	406.4	224	2360	4250	1200	1500	170	Figure 7
BNUP3681224/BH1	180	406.4	224	2360	4520	1200	1500	170	Figure 5
BNTPA3681171	180	406.42	171	1760	3270	1200	1500	130	Figure 6
BNTB3681171/IS	180	406.42	171	1910	3640	1200	1500	130	Figure 3
BNTF3681171/BH1	180	406.42	171	2020	3700	1200	1500	130	Figure 3
BNTB3681217	180	406.42	217	2440	4370	1200	1500	165	Figure 3
BNTB3681224	180	406.42	224	2440	4730	1200	1500	170	Figure 3
BNTB3681224/BH2	180	406.42	224	2440	4730	1200	1500	170	Figure 3
BNPF3897212X2	190	485	157.7	2950	3850	1000	1300	233	Figure 8
BNPF3897350X2	190	485	154	4700	7000	1000	1300	381	Figure 10
BNUP4092171	200	460	171	1880	3340	1000	1300	166	Figure 7
BNUP4092241	200	460	241	2660	5250	1000	1300	239	Figure 7

Double-row Tapered rolling Bearings for Rolling Mill(Carrying Axial Load)

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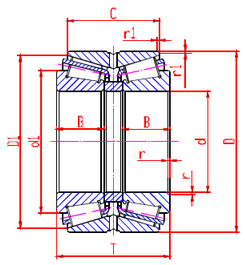
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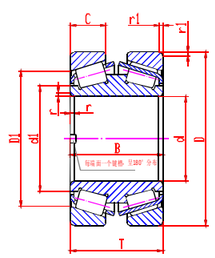
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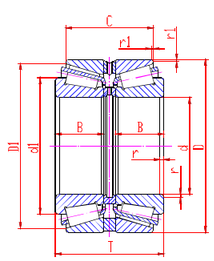
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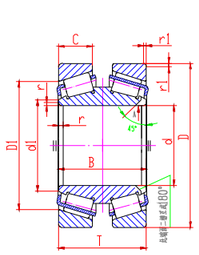
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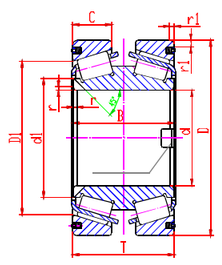
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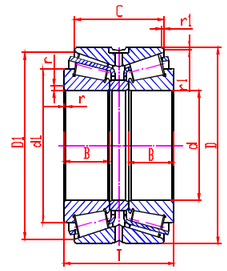
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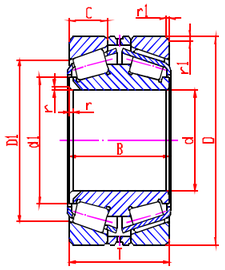
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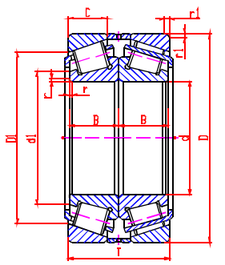
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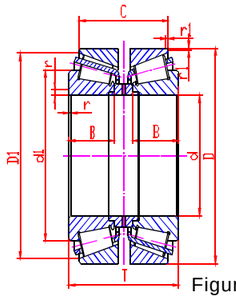
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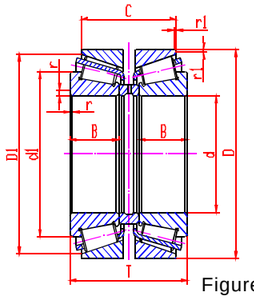
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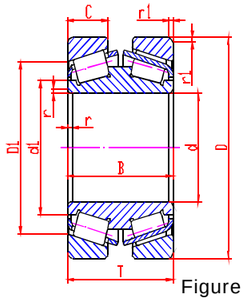
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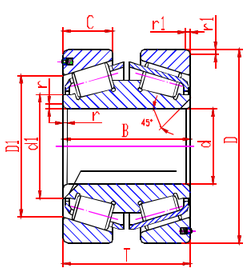
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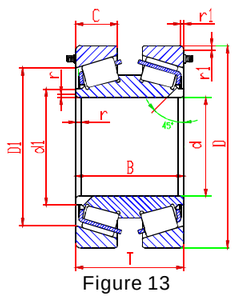
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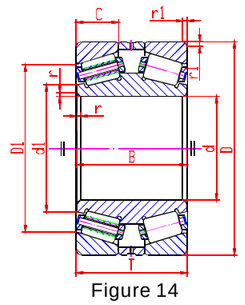
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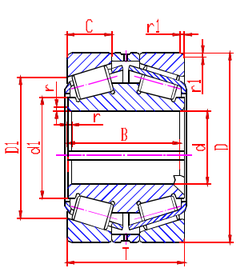
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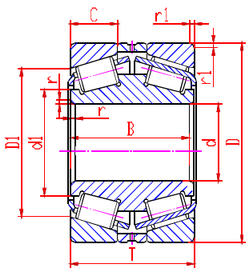
Figure 16

Designations	Working Position	Basic Dimensions (mm)							Other Dimensions (mm)		Basic Load Ratings (kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	T	B	C	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
352217X2-2	Working Roll	85	150	85	36.5	66	2.5	0.5	145	100	390	620	0.42	1.61	2.39	1.57	5.96	Figure 1
3706/101X4/HC/W281	Working Roll	101.6	250.825	145	145	50.5	1.5	3.3	215	120	1050	1490	0.7	0.96	1.44	0.94	35.1	Figure 2
KJHM522649/KJHM522610T103/DB	Gear Box	110	180	103	46	85	3	0.6	175	127.5	545	1020	0.4	1.69	2.51	1.65	9.81	Figure 3
352124	Working Roll	120	200	110	48	90	2	0.6	193	139	600	1060	0.3	2.25	3.35	2.2	12.6	Figure 1
KHM926747/KHM926710D	Gear Box	127	228.6	115.888	49.428	84.138	3.5	2.3	221.5	155	720	1350	0.74	0.91	1.36	0.89	19.1	Figure 1
74525/74851CD	Gear Box	133.35	215.9	106.362	47.625	80.962	3.5	1.5	208.5	153.5	550	1090	0.32	2.11	3.14	2.06	13.7	Figure 6
352028/HC	Working Roll	140	210	104	45	82	2.5	0.6	205	158	658	1170	0.46	1.47	2.18	1.43	12.1	Figure 1
32028T100/DBYB2	Gear Box	140	210	100	45	78	2.5	0.5	205	158	580	1170	0.46	1.47	2.18	1.43	12.4	Figure 3
370628D/HCYA3/W283	Working Roll	140	270	120	120	41	3	3	241.5	152.5	1100	1600	0.7	0.96	1.44	0.94	29.5	Figure 4
HM231149/HM231111CD	Gear Box	149.225	236.538	131.762	56.642	106.362	3.5	1.5	228	169	815	1540	0.32	2.11	3.14	2.06	20.1	Figure 6
370632D/HC/W281	Intermediate Roll	160	343	160	160	53.975	3.3	3.3	298	181.5	1520	2290	0.81	0.83	1.24	0.81	65.3	Figure 5
370634-1/P59	Intermediate Roll	170	295	100	100	35	2.5	4	267.5	188	860	1360	0.87	0.78	1.16	0.76	27.8	Figure 7
KEE222070/K222127CD	Gear Box	177.8	320.675	185.738	85.725	138.112	3.5	1.5	307.5	214	1400	2760	0.4	1.69	2.51	1.65	61.5	Figure 6
32936/DF	Straightening Roll	180	250	90	45	34	0.6	2	234	199	590	1430	0.48	1.41	2.09	1.38	13.5	Figure 8
352036	Gear Box	180	280	142	64	110	3	1	272.5	205.5	1070	2220	0.42	1.61	2.39	1.57	29.8	Figure 1
352136	Vertical Roll	180	300	164	72	134	3	1	287	206.5	1090	2350	0.26	2.6	3.87	2.54	39.9	Figure 1
370636D/HCYA3	Intermediate Roll	180	330	190	190	76	1.5	5	291	194	1800	3700	0.58	1.16	1.73	1.14	71.6	Figure 4
H239649NA/239612D(KH239649/KH239612CD)	Working Roll	187.325	320.675	185.738	85.725	138.112	5.5	1.5	309	216	1590	2830	0.32	2.11	3.14	2.06	55.4	Figure 6
93787/93127D	Working Roll	200.025	317.5	146.05	63.5	111.125	4.3	1.5	304.5	230	940	2270	0.52	1.3	1.93	1.27	40.8	Figure 1
KEE420801/K421451CD	Gear Box	203.2	368.3	193.675	88.897	136.525	3.3	1.5	347.5	238	1530	2900	0.4	1.69	2.51	1.65	78.8	Figure 6
352940	Gear Box	200	280	116	51	92	3	1	274	221.5	750	1770	0.4	1.69	2.51	1.65	21	Figure 1

Double-row Tapered rolling Bearings for Rolling Mill(Carrying Axial Load)

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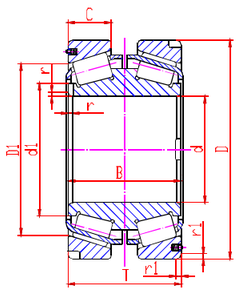

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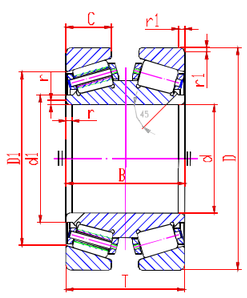

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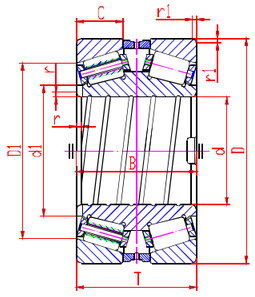

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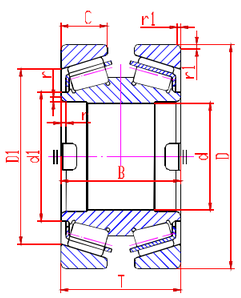

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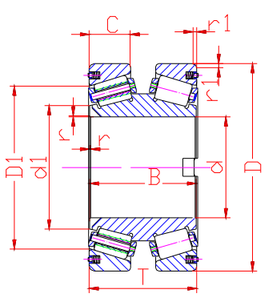

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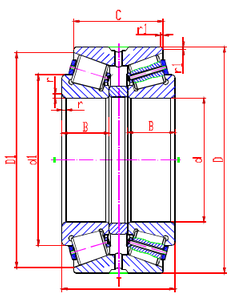

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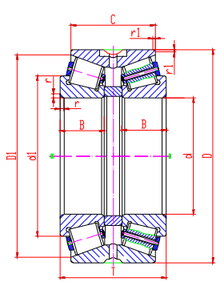

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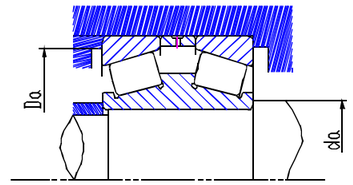

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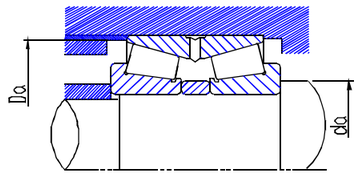

Mounted

Designations	Working Position	Basic Dimensions (mm)							Other Dimensions (mm)		Basic Load Ratings (kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	T	B	C	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
370642-FM	Back-up Roll	210	300	100	100	38	2	3	279	218	760	1780	0.57	1.18	1.76	1.16	23.2	Figure 7
352044X2	Vertical Roll	220	340	164	72	130	4	1.1	329.5	247.5	1530	2980	0.35	1.93	2.87	1.89	47.7	Figure 1
370644/P59	Intermediate Roll	220	360	120	120	39	3	4	327	235.5	1000	2000	0.87	0.78	1.16	0.76	47.5	Figure 7
370646/HG2	Working Roll	230	350	92	92	33	3	4	325.5	245.5	795	1640	0.54	1.25	1.86	1.22	31.9	Figure 7
KRM249736/M249710CD	Gear Box	237.33	358.775	152.4	71.438	117.475	6.4	1.5	349.5	351	1530	3090	0.33	2.05	3.05	2	53	Figure 6
32248/HCC9DBYAB	Working Roll	240	440	270	120	216	5	1.5	425.5	426.5	3200	6300	0.43	1.57	2.34	1.53	168	Figure 9
30648/HCC9DBY	Vertical Roll	240	420	205	87.5	155	5		404.5	404.5	2550	4100	0.44	1.53	2.28	1.5	105	Figure 9
352048X2/HC-XRBL	Gear Box	240	360	165	72	130	4	1.1	347	348	1400	3050	0.31	2.18	3.24	2.13	53.2	Figure 1
KEE923095/923176	Working Roll	241.3	444.5	209.55	100.012	158.75	6.4	1.5	423.5	425	2480	4650	0.34	1.99	2.96	1.94	135	Figure 1
306/242/HCC9/DB	Vertical Roll	242	406	206	92	162	4	1	393.5	394.5	2680	5000	0.43	1.57	2.34	1.53	101	Figure 10
352052X2/HCYAD-XRBL	Gear Box	260	400	186	82	146	5	1.5	387.5	389	1850	4100	0.43	1.57	2.34	1.53	80.7	Figure 1
370652D/HC	Backup Roll	260	420	170	170	70	5	5	386.5	386.5	1970	4050	0.48	1.41	2.09	1.38	88.4	Figure 11
352952X2-3	Back-up Roll	260	360	92	40	62	3	1	350.5	351.5	630	1370	0.7	0.96	1.44	0.94	25.5	Figure 1
HM252348/HM252310CD	Vertical Roll	260.35	422.275	178.592	79.771	139.7	6.8	1.5	409	298	1800	3750	0.33	2.05	3.05	2	89.1	Figure 6
KEE275108/K275156CD	Gear Box	273.05	393.7	157.162	69.85	109.538	6.4	1.5	384	305	1170	2830	0.4	1.69	2.51	1.65	56.3	Figure 6
EE722110/722186D	Working Roll	279.4	469.9	200.025	93.662	149.225	9.7	1.5	449.5	325.5	2490	5000	0.38	1.78	2.64	1.74	132	Figure 1
352056X2	Backup Roll	280	420	186	82	146	5	1.3	408	312.5	1720	4000	0.37	1.82	2.72	1.78	81.5	Figure 1
370656	Backup Roll	280	389.5	92	92	30	4	4	365.5	292.5	870	1880	0.82	0.82	1.23	0.8	33.3	Figure 7
M255449/M255410CD	Gear Box	288.925	406.4	165.1	77.788	130.175	6.4	1	395.5	311.5	1620	4100	0.34	1.99	2.96	1.94	64.1	Figure 1
370658D/HCEYAT	Intermediate Roll	290	450	180	180	65	3	4	404	302.5	2150	4300	0.87	0.78	1.16	0.76	103	Figure 12
370660D/HCYAD-1	Backup Roll	300	440	104.749	105	35	4	4	408.5	317	980	2050	0.88	0.77	1.14	0.75	55.4	Figure 2
350660/C9	Backup Roll	300	460	140	62	100	5	1.5	436.5	322	1450	3000	0.41	1.65	2.45	1.61	63.2	Figure 1
352060X2/HC	Backup Roll	300	460	210	95	165	5	1.3	446	337.5	2280	4890	0.36	1.88	2.79	1.83	118	Figure 1
370660D/HCYAT	Backup Roll	300	440	105	105	35	4	4	408.5	317	1000	2050	0.88	0.77	1.14	0.75	48.5	Figure 13
351160X2-1/HC-XRBL	Gear Box	300	500	203	91	152	5	1.5	480	346	3000	4950	0.4	1.69	2.51	1.65	148	Figure 1

Double-row Tapered rolling Bearings for Rolling Mill(Carrying Axial Load)

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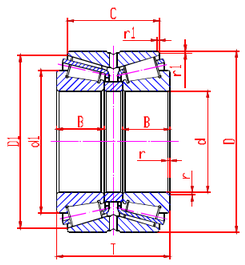
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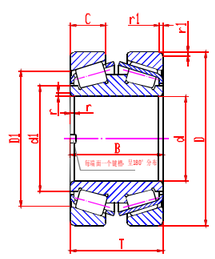
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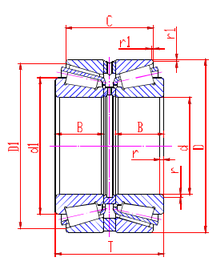
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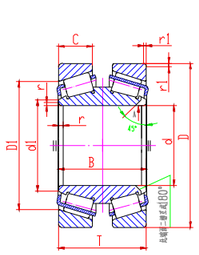
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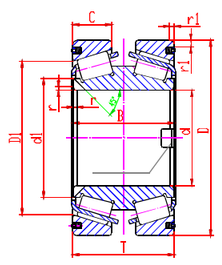
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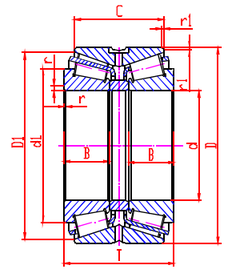
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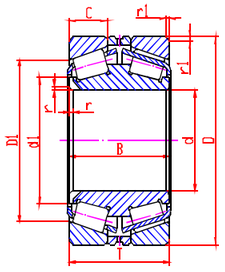
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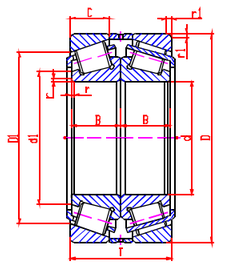
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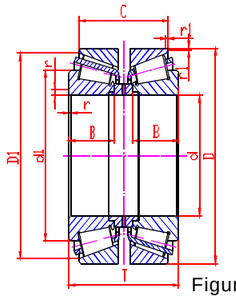
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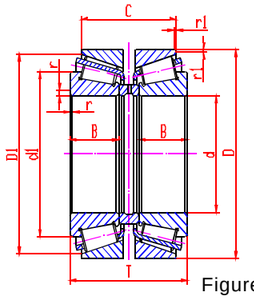
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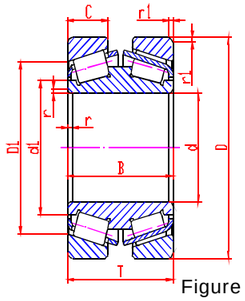
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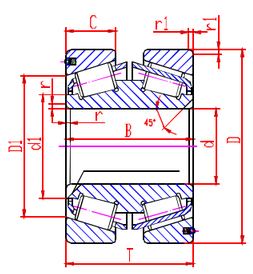
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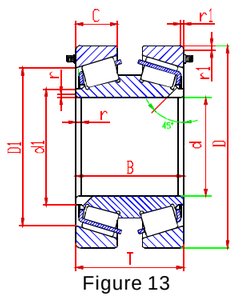
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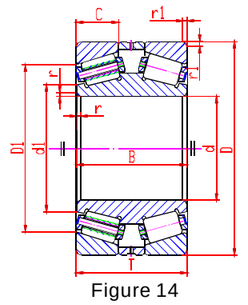
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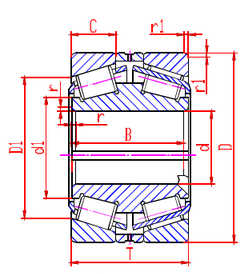
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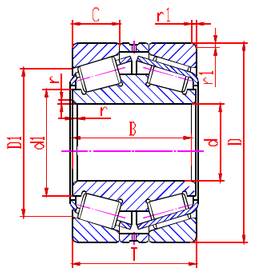
Figure 16

Designations	Working Position	Basic Dimensions (mm)							Other Dimensions (mm)		Basic Load Ratings (kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	T	B	C	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
370660/HCC9	Backup Roll	300	560	170	170	50	5	5	506.5	327.5	3520	3800	0.81	0.83	1.24	0.81	197	Figure 14
HM256849/HM256810CD/YA1	Gear Box	300.038	422.275	174.625	82.55	136.525	6.4	1.5	410.5	329	1560	4050	0.34	1.99	2.96	1.94	69.7	Figure 6
3706/305X4D/HCEYAD	Backup Roll	305.034	499.948	200.025	200.025	63.5	3.3	6.4	452.5	329	2630	4850	0.88	0.77	1.14	0.75	143	Figure 15
3706/305X4	Working Roll&Backup Roll	305.07	500	200	200	70	6.4	4.8	451.5	322.5	1870	3550	0.79	0.85	1.27	0.84	122	Figure 15
3706/305X4D/HCYA3-2	Working Roll&Backup Roll	305.07	500	200	200	67	6.4	4.8	451.5	321	2350	5020	0.88	0.77	1.14	0.75	155	Figure 2
3706/305.2D	Working Roll&Backup Roll	305.2	500	200	200	70	6.4	4.8	451.5	322.5	1870	3550	0.79	0.85	1.27	0.84	115	Figure 15
HM259049/HM259010CD	Gear Box	317.5	447.675	180.975	85.725	146.05	3.5	1.5	435	350.5	1800	4650	0.33	2.05	3.05	2	85.4	Figure 6
KEE291250/K291751CD	Gear Box	317.5	444.5	146.05	61.912	98.425	8	1.5	427.5	344	1240	2770	0.38	1.78	2.64	1.74	59	Figure 6
350664/HCE	Back-up Roll	320	480	151	66.5	121	5	1.5	464.5	355	2090	3500	0.32	2.11	3.14	2.06	88.9	Figure 1
352064X2-1	Gear Box	320	480	215	100	163	5	1.1	469	360	2500	5700	0.46	1.47	2.18	1.43	129	Figure 1
HM261049/HM261010CD/YA1	Intermediate Roll	333.375	469.9	190.5	90.488	152.4	6.4	1.5	457.5	366.5	2070	5080	0.33	2.05	3.05	2	97.7	Figure 6
KHM261049D/KHM261010	Working Roll	333.375	469.9	166.688	166.688	71.438	3.3	3.3	443	348	2470	5900	0.33	2.05	3.05	2	91.5	Figure 7
352968X2A/HG2	Back-up Roll	340	460	160	72	128	4	1.5	450.5	370	1600	4000	0.4	1.69	2.51	1.65	70.5	Figure 1
KLM961548/KLM961511D	Gear Box	342.9	457.098	142.875	63.5	101.6	3.3	1.5	449	376.5	1180	3550	0.7	0.96	1.44	0.94	4.8	Figure 1
351072	Working Roll	360	540	185	82	140	5	1.5	522.5	400	2620	6300	0.37	1.82	2.72	1.78	120	Figure 1
371976	Back-up Roll	380	520	145	145	56	4	4	494.5	394	2050	4950	0.38	1.78	2.64	1.74	89.2	Figure 16
JM966741DW/JM966711W/ZP	Working Roll	380	576.5	180	180	70	2	4	530	405	2450	6220	0.73	0.92	1.38	0.9	155	Figure 17
M268730/M268710DC	Gear Box	381	590.55	244.475	114.3	193.675	6.4	1.5	574.5	442	3550	8800	0.33	2.05	3.05	2	245	Figure 6
HM266448/HM266410CD	Gear Box	384.175	546.1	222.25	104.775	177.8	6.4	1.5	531	422.5	2910	8200	0.33	2.05	3.05	2	160	Figure 6
3706/385	Working Roll	385	530	180	180	65	2	4	501	400	2220	5700	0.38	1.78	2.64	1.74	116	Figure 16
LM665949/LM665910CD	Working Roll	385.762	514.35	177.8	82.55	139.7	6.4	1.5	503	418.5	2050	5600	0.42	1.61	2.39	1.57	100	Figure 6

Double-row Tapered rolling Bearings for Rolling Mill(Carrying Axial Load)

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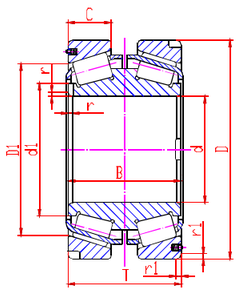

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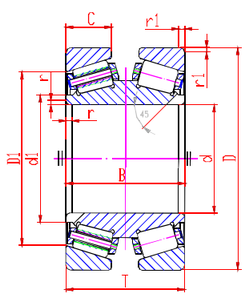

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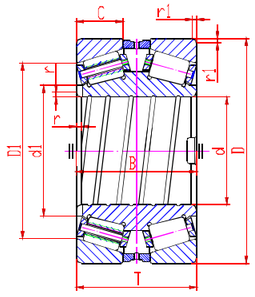

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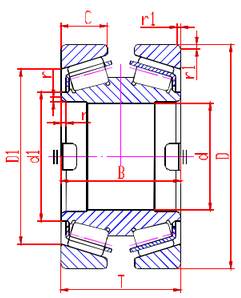

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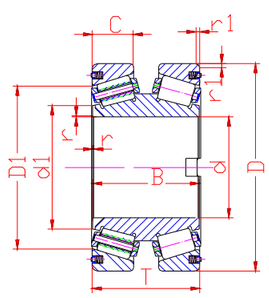

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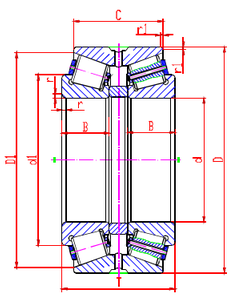

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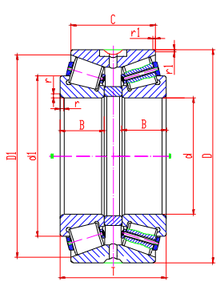

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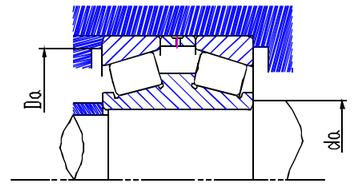
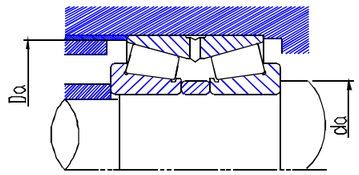


Mounted



Mounted

Designations	Working Position	Basic Dimensions (mm)							Other Dimensions (mm)		Basic Load Ratings (kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	T	B	C	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
JM966748DWA/JM966711W	Back-up Roll	390	567.5	180	180	70	2	4	525.5	410	2450	6220	0.73	0.92	1.38	0.9	147	Figure 17
351980/HC	Back-up Roll	400	540	150	65	105	4	1.1	526.5	433	1650	3850	0.45	1.5	2.23	1.47	84.5	Figure 1
1-7017	Back-up Roll	400	650	240	240	80	6	6	591	427.5	3740	8400	0.87	0.78	1.16	0.76	299	Figure 18
351080X2-2/C9	Gear Box	400	600	185	80	148	6	2.5	578.5	445	2700	5850	0.37	1.82	2.72	1.78	168	Figure 6
370680D/HCEYAB	Back-up Roll	400	650	240	240	80	6.4	6.4	591	414	3450	8200	0.87	0.78	1.16	0.76	289	Figure 2
370680D/HCEYAD	Back-up Roll	400	650	240	240	77	6	6	593.5	425	3550	7300	0.87	0.78	1.16	0.76	279	Figure 4
370680D/HCEP6YAD-1	Back-up Roll	400	650	240	240	80	6	6	591	425	3400	8400	0.87	0.78	1.16	0.76	299	Figure 18
370680X2-2/HCC9YAB	Backup Roll	400	650	200	200	60	6	6	592.5	427.5	2900	6250	1.05	0.64	0.96	0.63	264	Figure 19
370680X2D/HCYAB-1	Back-up Roll	400	650	200	200	70	6	6	596	432.5	2940	6450	0.87	0.78	1.16	0.76	244	Figure 20
370680D/HCYA36	Backup Roll	400	650	240	240	80	2	6	591	425	3400	8400	0.87	0.78	1.16	0.76	299	Figure 18
370680D/HCYA3	Backup Roll	400	650	240	240	80	6	6	591	427.5	3400	8400	0.87	0.78	1.16	0.76	299	Figure 18
3706/406.4/HCYAD	Working Roll	406.4	762	330	330	116.5	3.3	6.4	679	450.5	6000	13100	0.75	0.9	1.34	0.88	660	Figure 21
EE911600/912401D	Gear Box	406.4	609.6	187.325	84.138	123.825	6.8	1.5	587.5	452.5	2500	5500	0.38	1.78	2.64	1.74	169	Figure 22
KM667947D/KM667910	Working Roll	409.575	546.1	161.925	161.925	66.675	1.5	6.4	519	422	2800	6550	0.41	1.65	2.45	1.61	104	Figure 16
M268749/M268710DC	Gear Box	415.925	590.55	244.475	114.3	193.675	6.4	1.5	574.5	460	2820	8050	0.33	2.05	3.05	2	205	Figure 6
351988	Backup Roll	440	600	170	74	125	4	1.1	584.5	476.5	2300	5300	0.39	1.73	2.58	1.69	123	Figure 1
371092	Backup Roll	460	680	230	230	85	4	4	629.5	475.5	3910	9400	0.61	1.11	1.65	1.08	293	Figure 14
351092	Working Roll	460	680	230	100	175	6	2.5	656.5	508.5	3400	7450	0.31	2.18	3.24	2.13	253	Figure 1
KM272749/KM272710D	Working Roll	479.425	679.45	276.225	128.588	222.25	6.4	1.5	662.5	528	3800	10900	0.33	2.05	3.05	2	307	Figure 1
351096	Backup Roll	480	700	240	100	180	6	2.5	677.5	529	3100	8200	0.41	1.65	2.45	1.61	272	Figure 1
EE640192/640261CD	Working Roll	488.95	660.4	206.375	94.458	158.75	6.4	1.5	644.5	528.5	3000	7600	0.31	2.18	3.24	2.13	181	Figure 6
3519/500/HC	Working Roll	500	670	180	78	130	5	1.5	653	541.5	1340	6200	0.43	1.57	2.34	1.53	158	Figure 1
3706/500-1/P59	Backup Roll	500	720	218	185	80	6	6	665.5	526	3000	7400	0.7	0.96	1.44	0.94	288	Figure 16
3510/500X2	Working Roll&Backup Roll	500	720	209	94	167	6	3	695.5	550	3250	7700	0.37	1.82	2.72	1.78	256	Figure 1
M274149/M274110DC	Gear Box	501.65	711.2	292.1	136.525	231.775	6.4	1.5	693	550.5	4500	13400	0.35	1.93	2.87	1.89	355	Figure 23

Double-row Tapered rolling Bearings for Rolling Mill(Carrying Axial Load)

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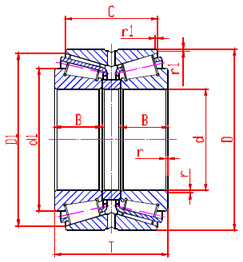
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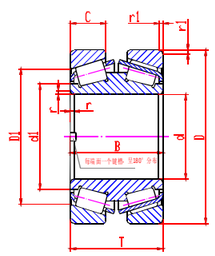
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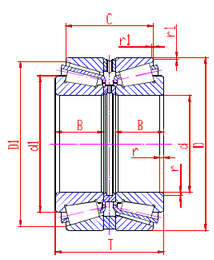
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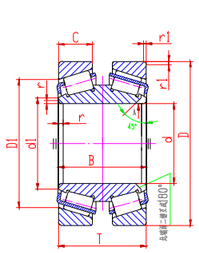
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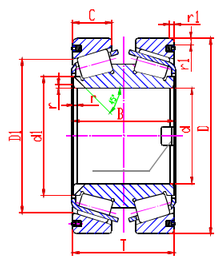
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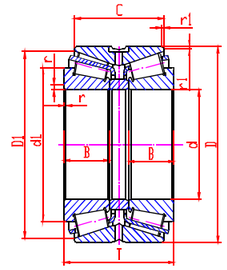
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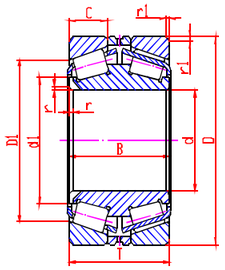
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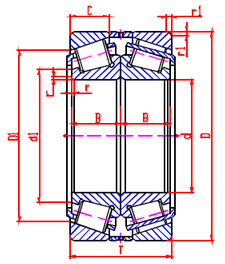
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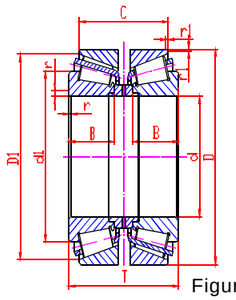
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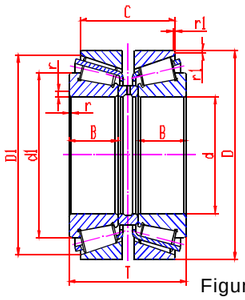
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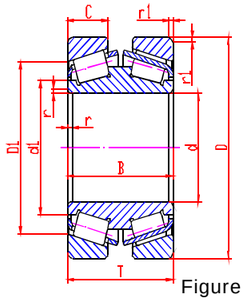
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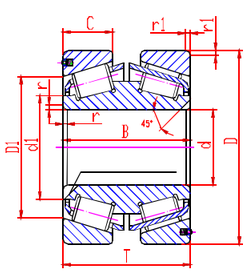
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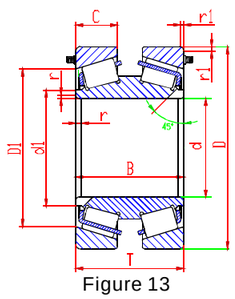
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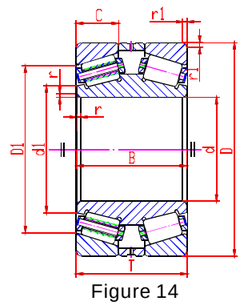
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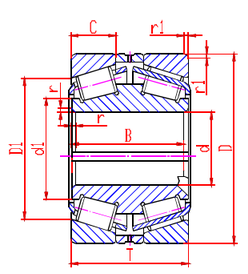
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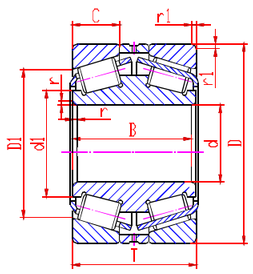
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Designations	Working Position	Basic Dimensions (mm)							Other Dimensions (mm)		Basic Load Ratings (kN)		Calculation Coefficient				Weight (kg)	Patterns
		d	D	T	B	C	rmin	r1min	Da	da	Cr	Cor	e	Y1	Y2	Yo		
3706/509X4D/HCP5YAT	Backup Roll	509.948	733.425	200.025	200.025	68	3.3	4.8	683.5	537.5	3850	8400	0.87	0.78	1.16	0.76	265	Figure 21
M275349D/M275310	Vertical Roll	519.112	736.6	258.762	258.762	111.125	3.3	6.4	694.5	538	5200	13300	0.33	2.05	3.05	2	352	Figure 16
EE626210/626321D	Gear Box	533.4	812.8	269.875	123.825	187.325	9.7	3.3	784	604	4650	11100	0.44	1.53	2.28	1.5	470	Figure 22
LM377449/LM377410CD	Gear Box	558.8	736.6	225.425	104.775	177.8	6.4	1.5	720	600	4400	12800	0.35	1.93	2.87	1.89	256	Figure 23
3510/560	Working Roll	560	820	260	115	185	6	2.5	794.5	619	2920	5700	0.42	1.61	2.39	1.57	449	Figure 22
3706/570/HC	Working Roll	570	750	240	240	100	6	6	706.5	584	3500	11800	0.5	1.35	2.01	1.32	287	Figure 16
M278749/M278710D	Gear Box	571.5	812.8	333.375	155.575	263.525	6.4	1.5	793.5	630	7700	18000	0.33	2.05	3.05	2	529	Figure 22
3719/600X2	Working Roll&Backup Roll	600	800	190	190	68	5	4	757	614.5	3470	9200	0.61	1.11	1.65	1.08	270	Figure 14
3710/600	Working Roll&Backup Roll	600	870	270	270	98	6	6	809.5	619.5	5670	14300	0.61	1.11	1.65	1.08	726	Figure 14
1-7031	Backup Roll	635	939.8	304.8	304.8	110	3.3	6.4	862.5	670	5400	9400	0.82	0.82	1.23	0.8	721	Figure 14
3706/635/HC	Backup Roll	635	939.8	304.8	304.8	110	3.3	6.4	862.5	655	5400	9400	0.82	0.82	1.23	0.8	721	Figure 14
3706/635D/HC	Backup Roll	635	939.8	304.8	305.105	110	3.3	6.4	862.5	670	5800	17000	0.82	0.82	1.23	0.8	697	Figure 18
3706/635/HC-1	Backup Roll	635	940	305	305	107.95	3.3	6.4	858	663.5	5800	17000	0.88	0.77	1.14	0.75	762	Figure 14
KL281148/KL281110CD	Gear Box	660.4	812.8	203.2	95.25	158.75	6.4	1.5	798.5	698.5	3080	9900	0.33	2.05	3.05	2	212	Figure 6
3706/724/HC	Working Roll&Backup Roll	724	915	187	187	70	5	5	878	747	3450	11600	0.38	1.78	2.64	1.74	293	Figure 16
3519/750	Working Roll&Backup Roll	750	1000	264	112	194	6	2.5	974	810	4900	15100	0.45	1.5	2.23	1.47	542	Figure 22
3519/750X2	Working Roll&Backup Roll	750	1000	255	112	190	6	2.5	975	810	4900	15100	0.45	1.5	2.23	1.47	530	Figure 22
3706/800/HCC9	Working Roll&Backup Roll	800	1100	300	300	112	1.5	6	1025.5	825.5	7000	20700	0.8	0.84	1.26	0.83	862	Figure 14
3706/900/HCYA6	Working Roll&Backup Roll	900	1220	300	300	108	3.3	12.7	1140	932.5	9100	23000	0.81	0.83	1.24	0.81	997	Figure 18

Tapered Roller Thrust Bearing for Thrust down

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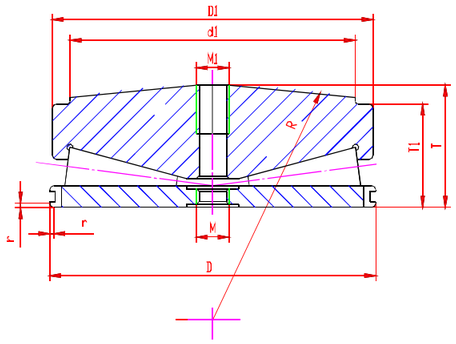

Figure 1

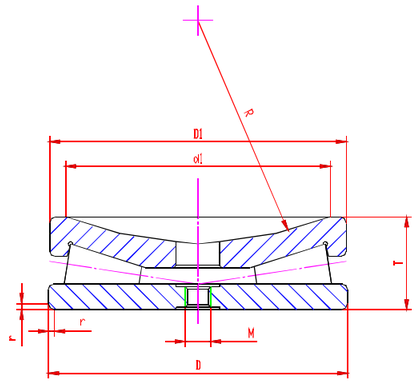

Figure 2

Designations		Dimensions (mm)					Outer Diameter (mm)	Dimensions (mm)				Axial Static Load	Weight (kg)
Old Designations	Current Designations	D	D1	T	T1	d1		R	M	M1	rmin		
4397/265/HC 4297/265	TTSX265 TTSV265	265 265	263 263	95 81	81	229 229	265	609 304.8	M20 M20		2.1 2.4	7750	33.9
4297/330K	TTSV330K	330	328	95		280	330	381	M20		2.4	11500	51.4
4297/440	TTSV440	440	438	130		380	440	508	M24	M36	3	23300	137
4397/525 4297/525	TTSX525 TTSV525	525 525	522 522	180 155	155	460 460	525 525	1270 635	M24 M24	M36 M36	3 3	36200	266
4297/580	TTSV580	580	577	165		510	580	710	M24	M42	3	41600	301
	THR581XY	581.025	578.663	193.777	168.275	508	581	1422.4	M24	M42	3.2	39000	338
4397/610 4297/610	TTSX610 TTSV610	610 610	607 607	205 178	178	533 533	610 610	1524 762	M30 M30	M42 M42	3 3		
4397/640/HC 4297/640	TTSX640 TTSV640	640 640	637 637	214.5 185	185	550 550	640	1520 762	M30 M30	M42 M42	3 3	48600 49200	454 418
4397/750/HC/A1	TTSX750	750	745	260	225	650	750	1600	M30	M42	4	63900	747
4397/800	TTSX800	800	795	270	245	700	800	1700	M30	M48	5		
4397/900/HC	TTSX900	900	896	280	236	750	900	1800	M36	M48	6	94000	1150

Four-row Cylinderical Roller Bearing for Rolling Mill

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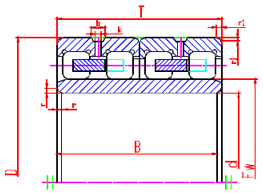


Figure 1

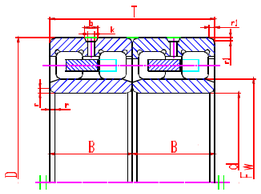


Figure 2

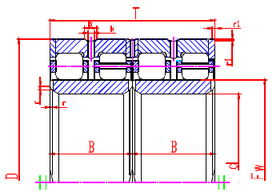


Figure 3

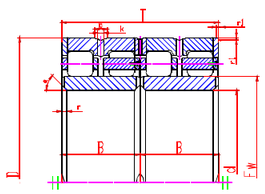


Figure 4

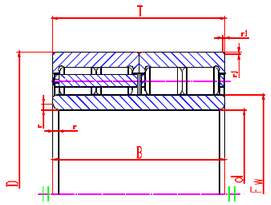
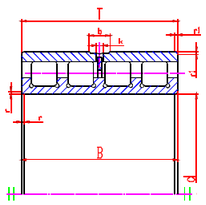


Figure 5



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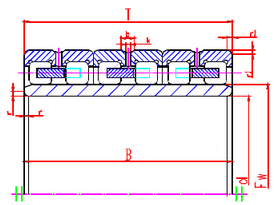

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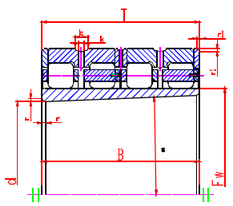

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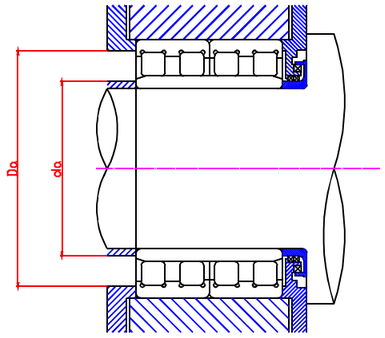

Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FC182870	Working Roll	90	140	70	70	1.5	1.1	105	130	99	6.5	4	253	425	3.78	Figure 1
FC182870A	Working Roll	90	140	70	70	1.1	1.5	105	130	99	6.5	4	275	425	3.78	Figure 1
FC202870/YA3	Working Roll	100	140	70	70	1.5	1.1	111	131	107			209	435	3.10	Figure 1
FC202870A/YA3	Working Roll	100	140	70	70	1.1	1.5	111	131	107			209	435	3.62	Figure 1
FC2028104	Working Roll	100	140	104	104	1.5	1.1	111	131	107	8	4	330	775	4.99	Figure 1
FC2028104A	Working Roll	100	140	104	104	1.1	1.5	111	131	107	8	4	396	870	4.99	Figure 1
FC2234120A	Working Roll	110	170	120	120	2	2	127	157	120	6.5	4	583	1110	10.1	Figure 1
FC2234120	Working Roll	110	170	120	120	2	2	127	157	120	6.5	4	534	1110	10.1	Figure 1
FC2436105	Working Roll	120	180	105	105	2	2	135	168	129	6.5	4	413	770	9.13	Figure 1
FC2436105A	Working Roll	120	180	105	105	2	2	135	167	129	6.5	4	561	1100	9.13	Figure 1
FC2640125	Working Roll	130	200	125	125	2	2	149	184	141.5	6.5	4	583	1200	14.6	Figure 1
FC2640125A	Working Roll	130	200	125	125	2	2	149	184	141.5	6.5	4	638	1200	14.6	Figure 1
FC2842125	Working Roll	140	210	125	125	2	2	158	196.5	151	9.5	5	594	1160	14.7	Figure 1
FC2842125A	Working Roll	140	210	125	125	2	2	158	196	151	9.5	5	594	1050	14.7	Figure 1
FC2842155K/C9YA3	Working Roll	140	210	155	155	2	2	166	198.5	151			693	1610	18.1	Figure 1
FC2942155/YA3	Working Roll	145	210	155	155	2	2	166	198.5	158			752	1610	18.3	Figure 1
FC2942155A/YA3	Working Roll	145	210	155	155	2	2	166	198	158			754	1800	18	Figure 1
FC2945156/C3	Working Roll	145	225	156	78	2	2	169	208.5	159	9.5	5	913	1800	23.6	Figure 1
FC3045120	Working Roll	150	225	120	120	2	2	169	210	161.5	9	4	710	1450	16.7	Figure 1
FC3045120ZW/C9	Working Roll	150	225	120	120	2	2	169	211	161.5	9	4	809	1620	17.9	Figure 1
FC3045120A	Working Roll	150	225	120	120	2	2	169	209.5	161.5	9	4	781	1450	16.7	Figure 1
FC3045120A/YA3	Working Roll	150	225	120	120	2	2	169	209.5	161.5	9	4	710	1450	16.7	Figure 1
FC3045150/HCYA34	Working Roll	150	225	150	150	2	2	169	209.5	161.5	9.5	4	900	1950	20.9	Figure 1
SC3045180/C4	Working Roll	150	225	180	180	2	2	169	209.5	161.5	9	4	1010	2250	25	Figure 7
FC3046156	Working Roll	150	230	156	156	2	2	174	214	164.5	9.5	5	852	1790	23.6	Figure 1
FC3046156A	Working Roll	150	230	156	156	2	2	174	213.5	164.5	9.5	5	1010	2090	23.6	Figure 1
FC3246130	Working Roll	160	230	130	130	1.5	1.5	180	218	172			742	1705	16.9	Figure 1
FC3246130A/YA3	Working Roll	160	230	130	130	1.5	1.5	180	218	172			770	1620	17.3	Figure 1
FC3246168/YA3	Working Roll	160	230	168	168	2.1	2.1	180	215.5	172			852	2170	22.1	Figure 1

Four-row Cylinderical Roller Bearing for Rolling Mill

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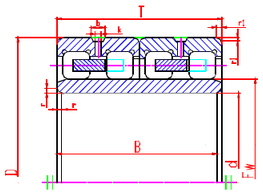


Figure 1

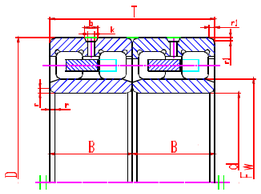
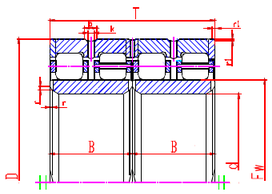


Figure 2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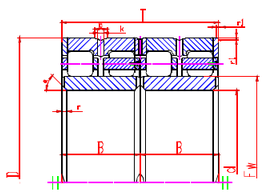
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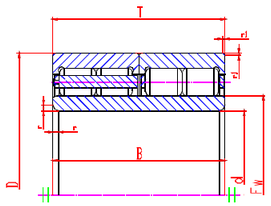


Figure 5

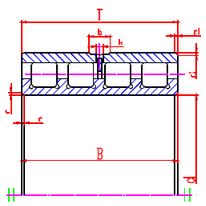
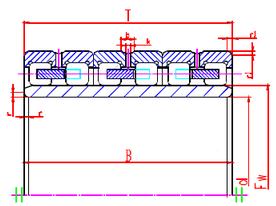


Figure 6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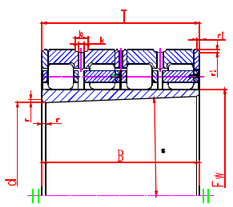
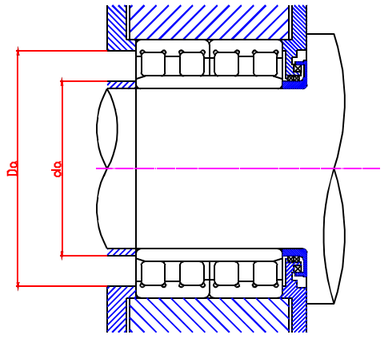


Figure 8


Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FC3246168A/YA3	Working Roll	160	230	168	168	2.1	2.1	180	215	172	–	–	897	2200	2200	Figure 1
FC3246168/HCC9YA34	Working Roll	160	230	168	168	2	2	179	214	171.5	8.5	4	1070	2250	2250	Figure 1
FC3248124A/YA3	Working Roll	160	240	124	124	2.1	2.1	183	225	174	9	4	685	1530	1530	Figure 1
FC3248124/C9	Working Roll	160	240	124	124	2.1	2.1	183	225.5	174	9	4	810	1530	1530	Figure 1
FC3248124	Working Roll	160	240	124	124	2.1	2.1	183	225.5	174	9	4	810	1530	1530	Figure 1
FC3248124A	Working Roll	160	240	124	124	2.1	2.1	183	225	174	9	4	810	1530	1530	Figure 1
FC3248124A/YA31	Working Roll	160	240	124	124	2.1	2.1	183	225	174	9	4	810	1530	1530	Figure 1
FC3248124/YA31	Working Roll	160	240	124	124	2.1	2.1	183	225	174	9	4	810	1530	1530	Figure 1
FC3248168	Working Roll	160	240	168	168	2.1	2.1	183	225.5	174	10	5	1060	2350	2350	Figure 1
NNQD6032X2/C4	Working Roll	160	240	168	84	2.1	2.1	183	225	174			1240	2560	2560	Figure 5
FC3248168A	Working Roll	160	240	168	168	2.1	2.1	183	225	174	10	5	1060	2350	2350	Figure 1
FCD3345168X4/YA3	Working Roll	165.1	225.425	168.275	168.275	1.5	1.5	181	213	175			785	1950	1950	Figure 2
FCD3446160	Working Roll	170	230	160	160	2	2	185.5	218.5	179	7.5	3	1210	2360	2360	Figure 2
FC3450170	Working Roll	170	250	170	170	2.1	2.1	192	235	183	12	6	1280	2500	2500	Figure 1
FC3450170Q1/HG2YA4	Working Roll	170	250	170	170	2.1	2.1	192	235	183	9.5	5	1280	2590	2590	Figure 1
FC3450170A	Working Roll	170	250	170	170	2.1	2.1	192	234	183	12	6	1380	2550	2550	Figure 1
FC3452120	Working Roll	170	260	120	120	2.1	2.1	195	240.5	185	9.5	5	867	1790	1790	Figure 1
FC3452120A	Working Roll	170	260	120	120	2.1	2.1	195	240	185	9.5	5	867	1790	1790	Figure 1
NNQ6936X2V/YA7	Working Roll	180	250	133	133	2	2	234	240	212.5	12	6	1050	1870	1870	Figure 6
FC3650156/C4YA4	Working Roll	180	250	156	156	2.1	2.1	200	253.5	192	9.5	6.5	1210	1770	1770	Figure 1
FC3650156/YA34	Working Roll	180	250	156	78	2	2	200	236	192			1210	2315	2315	Figure 1
FC3650156/YA3	Working Roll	180	256	156	156	2	2	198	238	191			1220	1950	1950	Figure 1
FC3652124	Working Roll	180	260	124	124	2.1	2.1	202	244.5	193	9.5	5	809	1730	1730	Figure 1
FC3652168	Working Roll	180	260	168	168	2.1	2.1	202	244.5	193	12	6	1180	2790	2790	Figure 1
FC3652168/YA3	Working Roll	180	260	168	168	2.1	2.1	202	244.5	193	12	6	1180	2790	2790	Figure 1
FC3652168Q1/HG2YA4	Working Roll	180	260	168	168	2.1	2.1	202	244.5	193	9.5	5	1530	2790	2790	Figure 1
FC3652168/C4YAD	Working Roll	180	260	168	84	2.1	2.1	202	243	193			1180	2790	2790	Figure 1
FC3652168A	Working Roll	180	260	168	168	2.1	2.1	202	244	193	12	6	1180	2790	2790	Figure 1
FC3652168A/YA3	Working Roll	180	260	168	168	2.1	2.1	202	244	193	12	6	1180	2790	2790	Figure 1
FC3652168/YA31	Working Roll	180	260	168	168	2.1	2.1	202	246.5	193	9.5	5	1180	2790	2790	Figure 1
FC3652180	Working Roll	180	260	180	180	2.1	2.1	202	244.5	193	12	6	1250	3000	3000	Figure 1
FC3852168A	Working Roll	190	260	168	168	2.1	2.1	212	246.5	203	9.5	5	1450	2600	2600	Figure 1
FC3852168/HCYA34	Working Roll	190	260	168	168	2.1	2.1	212	246.5	203	8	4	1000	2600	2600	Figure 1

Four-row Cylinderical Roller Bearing for Rolling Mill

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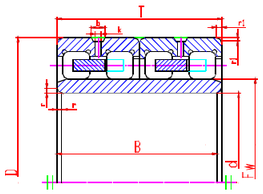


Figure 1

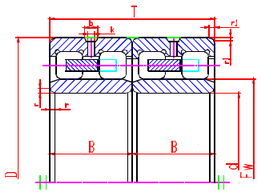


Figure 2

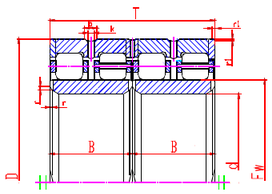
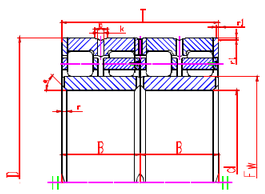


Figure 3



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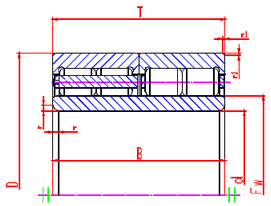


Figure 5

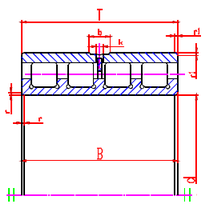


Figure 6

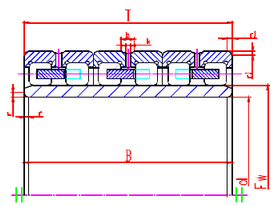
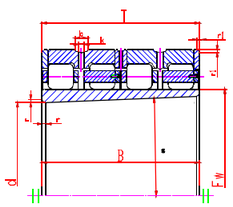


Figure 7



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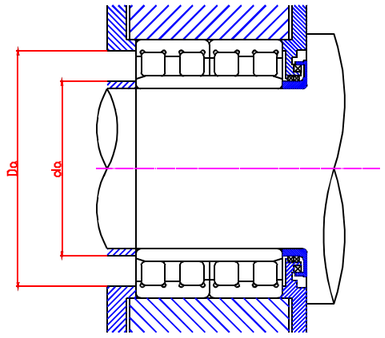

Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FC3854200/YA5	Working Roll	190	270	200	200	2.1	2.1	212	254	203	15	5	1280	3150	33.4	Figure 1
FC3854168	Working Roll	190	270	168	168	2.1	2.1	212	255	203	9.5	5	1420	2430	30.2	Figure 1
FC3854168/YA3	Working Roll	190	270	168	168	2.1	2.1	212	255	203	9.5	5	1420	2430	29.9	Figure 1
FC3854168Q1/HG2C9YA4	Working Roll	190	270	168	168	2.1	2.1	212	255	203	9.5	5	1420	2430	30.8	Figure 1
FC3854168A	Working Roll	190	270	168	168	2.1	2.1	212	254	203	9.5	5	1420	2430	31.9	Figure 1
FC3854168A/YA3	Working Roll	190	270	168	168	2.1	2.1	212	254	203	9.5	5	1420	2430	31	Figure 1
FC3854168AQ1/HG2C9YA4	Working Roll	190	270	168	168	2.1	2.1	212	254	203	9.5	5	1420	2430	30.8	Figure 1
FC3854170/YA3	Working Roll	190	270	170	170	2.1	2.1	212	255	203	9.5	5	1430	2430	30.2	Figure 1
FC3854170A/YA3	Working Roll	190	270	170	170	2.1	2.1	212	254	203	9.5	5	1430	2650	31.8	Figure 1
FC3854200	Working Roll	190	270	200	200	2.1	2.1	212	255	203	15	7	1520	3180	35.0	Figure 1
FC3854200A	Working Roll	190	270	200	200	2.1	2.1	212	254	203	15	7	1580	3275	35	Figure 1
FC4054170Q1/YA3	Working Roll	200	270	170	170	2.1	2.1	222	255.5	213	9.5	5	1120	2270	28.7	Figure 1
FC4054170Q1/HG2C4Y	Working Roll	200	270	170	170	2.1	2.1	222	255.5	213			1120	2270	28.7	Figure 1
FC4054170A/C4YA3	Working Roll	200	270	170	170	2.1	2.1	222	256.5	213	9.5	5	1120	2740	28.7	Figure 1
FC4054170/YAD	Working Roll	200	270	170	170	2.1	2.1	222	254.5	213	9	4	950	2780	29.2	Figure 1
FC4056170/C4	Working Roll	200	280	170	170	2.1	2.1	222	264	213	9.5	5	1110	3000	33.3	Figure 1
FC4056200/YA3	Working Roll	200	280	200	200	2.1	2.1	222	264	213	9.5	5	1340	3400	38.8	Figure 1
FC4056188	Working Roll	200	280	188	188	2.1	2.1	222	265	213	9.5	5	1430	2580	35.7	Figure 1
FC4056188A	Working Roll	200	280	188	188	2.1	2.1	222	264	213	9.5	5	1560	3000	35.9	Figure 1
FC4056200/P6YA34	Working Roll	200	280	200	200	2.1	2.1	222	264	213	9.5	5	1340	3400	38.8	Figure 1
FC4058192	Working Roll	200	290	192	192	2.1	2.1	226	273	216	15	6	1460	3250	40.9	Figure 1
FC4058192/YA4	Working Roll	200	290	192	192	2.1	2.1	226	272.5	216	15	6	1490	3300	40.9	Figure 1
FC4058192A	Working Roll	200	290	192	192	2.1	2.1	226	272.5	216	15	6	1460	3695	40.9	Figure 1
FC4058192A/YA4	Working Roll	200	290	192	192	2.1	2.1	226	272.5	216	15	6	1460	3350	41.3	Figure 1
FC4062175/YA3	Back-up Roll	200	310	175	175	2.1	2.1	229	286	217.5	9.5	5	1420	3050	49.8	Figure 1
FC4260210	Working Roll	210	300	210	210	2.1	2.1	234	282.5	224.5	9.5	5	1560	3950	48.3	Figure 1
FC4260210/C9YA4	Working Roll	210	300	210	210	2.1	2.1	234	282.5	224.5	9.5	5	1560	3950	48.3	Figure 1
FC4260210A	Working Roll	210	300	210	210	2.1	2.1	234	281	224.5	9.5	5	1780	4140	48.3	Figure 1
FC4260210A/C9YA4	Working Roll	210	300	210	210	2.1	2.1	234	281	224.5	9.5	5	1780	4140	48.3	Figure 1
FC4460192/C4YA4-1	Working Roll	220	300	192	192	2.5	2.5	242	283	233	9.5	5	1280	3390	39.8	Figure 1
FC4462192/YA3	Working Roll	220	310	192	192	2.1	2.1	246	293.5	236	15	6	1600	1910	45.8	Figure 1
FC4462192	Working Roll	220	310	192	192	2.1	2.1	246	293.5	236	15	6	1600	1910	45.8	Figure 1
FC4462192A	Working Roll	220	310	192	192	2.1	2.1	246	292.5	236	15	6	1600	3600	46.2	Figure 1
FC4462192A/YA3	Working Roll	220	310	192	192	2.1	2.1	246	292.5	236	15	6	1600	3600	46.1	Figure 1

Four-row Cylinderical Roller Bearing for Rolling Mill

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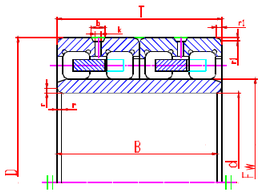
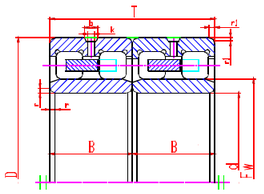


Figure 1



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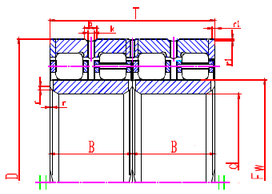


Figure 3

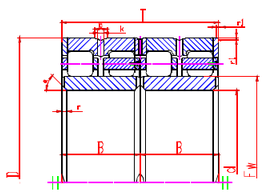


Figure 4

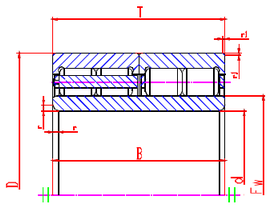


Figure 5

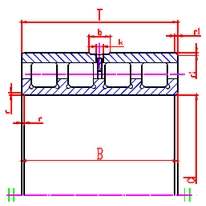


Figure 6

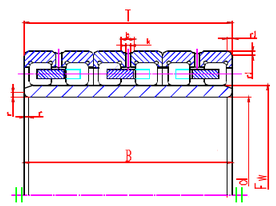


Figure 7

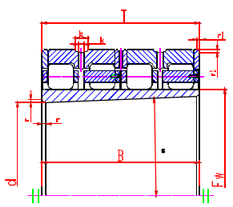
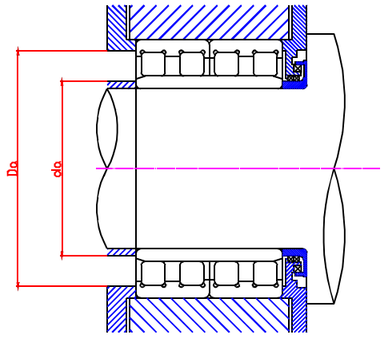


Figure 8



Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FC4462225	Working Roll	220	310	225	225	0.6	2.1	244	292	234.5	–	–	1850	4050	53.9	Figure 1
FC4462225F3/YA3	Working Roll	220	310	225	225	2.1	2.1	246	290.5	236	5.5	3.5	1500	4000	54	Figure 1
FC4464210/YA3W33	Working Roll	220	320	210	210	2.1	2.1	248	299.5	237	12.5	5	1500	4000	57.6	Figure 1
FC4464210/YA3	Working Roll	220	320	210	210	2.1	2.1	248	300	237			1900	3800	56.5	Figure 1
FC4464210A/YA3	Working Roll	220	320	210	210	2.1	2.1	248	299.5	237			1900	4000	58.2	Figure 1
FC4468200/YB2	Working Roll	220	340	200	200	4	4	250	320.5	238	15	6	1950	3550	63.4	Figure 1
FC4468192/YA3	Back-up Roll	220	340	192	192	2.1	2.1	250	314.5	238	9.5	5	1620	3390	64.6	Figure 1
FC4666206/YA3	Working Roll	230	330	206	206	2.1	2.1	260	309.5	248	9.5	5	1780	3800	56.5	Figure 1
FC4666206/C4YAD	Working Roll	230	330	206	103	2.1	2.1	258	307.8	247			1880	4350	59.1	Figure 1
FC4666206A/YA3	Working Roll	230	330	206	206	2.1	2.1	260	309	248	9.5	5	1880	4350	57.8	Figure 1
FC4668260/HCYA3-SY	Working Roll	230	340	260	260	2.1	2.1	261	317.5	249	9.5	5	2120	5350	82.1	Figure 1
FC4668260/HCYA3	Working Roll	230	340	260	260	2.1	2.1	261	317.5	249	9.5	5	2120	5350	82.1	Figure 1
FC4866220/YA3	Working Roll	240	330	220	220	2.1	2.1	264	312.5	254.5	9.5	5	1780	4850	56.5	Figure 1
FC4866220	Working Roll	240	330	220	220	2.1	2.1	264	312.5	254.5			1780	4850	56.7	Figure 1
FC4866220A	Working Roll	240	330	220	220	2.1	2.1	264	311	254.5			1960	5335	57.1	Figure 1
FC4866220A/HG2	Working Roll	240	330	220	220	2.1	2.1	264	311	254.5			1960	5335	57.1	Figure 1
FC4866220A/YA3	Working Roll	240	330	220	220	2.1	2.1	264	311	254.5			1960	5335	56.8	Figure 1
FCD4866220	Working Roll	240	330	220	220	2.1	2.1	264	311	254.5	9.5	5	1780	4850	57.1	Figure 2
FC4868192A1	Working Roll	240	340	192	192	2.1	2.1	265	320.5	255	9.5	5	1440	3380	52.8	Figure 1
FC4868192A	Working Roll	240	340	192	192	2.1	2.1	265	319	255	9.5	5	1540	3650	54.7	Figure 1
FC4870224/HG2YAD	Working Roll	240	350	224	224	3	3	270	326	258	9.5	6	1850	4600	75.1	Figure 1
FC4872220	Working Roll	240	360	200	200	2.1	2.1	272	334.5	259	12	6	1870	4410	78.0	Figure 1
FC4872220A/C4YA3	Working Roll	240	360	220	220	2.5	2.5	272	336	259			1870	4410	78.0	Figure 1
FC4872220Q1/HG2YA4	Working Roll	240	360	220	220	2.1	2.1	272	336	259	9.5	5	2430	4410	78.4	Figure 1
FC4872220A	Working Roll	240	360	220	220	2.1	2.1	272	334	259	12	6	1930	4600	79.1	Figure 1
FC4872220AQ1/HG2YA4	Working Roll	240	360	220	220	2.1	2.1	272	334	259	12	6	2530	4850	79.1	Figure 1
FCD5068230/HCOC4YA34	Working Roll	250	340	230	230	3.5	3.5	276	323	266	9.5	5	1750	4700	60.8	Figure 2
FC5070220/YA3	Working Roll	250	350	220	220	3	3	278	329.5	267	9.5	5	1740	4980	65.5	Figure 1
FC5070220A/YA3	Working Roll	250	350	220	220	3	3	278	329.5	267	9.5	5	1840	4980	67.5	Figure 1
FC5072220/YA3	Working Roll	250	360	220	220	3	3	282	336	269	9.5	5	1650	4250	76.9	Figure 1
FC5072220A/YA3	Working Roll	250	360	220	220	3	3	282	336	269	9.5	5	1710	4670	76.8	Figure 1
FC5272200/YA3B2	Working Roll	260	360	200	200	3	3	288	340.5	277	9.5	5	2000	4650	63.0	Figure 1
FC5272200A/YA3B2	Working Roll	260	360	200	200	3	3	288	339.5	277	9.5	5	2000	4650	63	Figure 1

Four-row Cylinderical Roller Bearing for Rolling Mill

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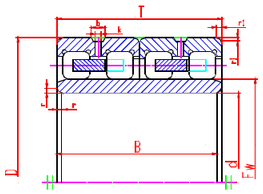


Figure 1

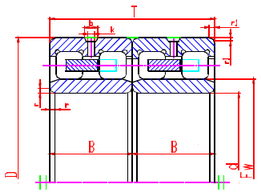


Figure 2

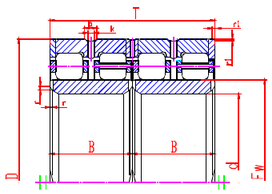
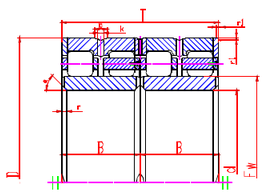


Figure 3



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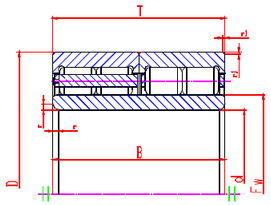


Figure 5

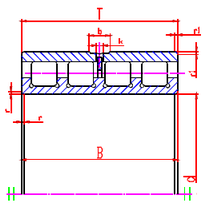


Figure 6

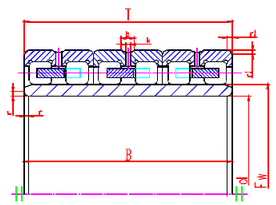


Figure 7

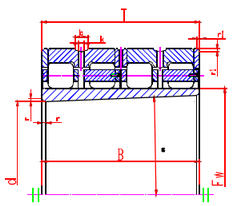
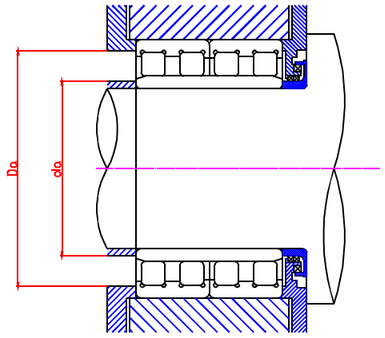


Figure 8



Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FCD5274200/C4YAB	Working Roll	260	370	100	100	3	3	290	347	278	–	–	1710	4100	73	Figure 2
FC5274200	Working Roll	260	370	200	200	3	3	292	349	279	15	6	2050	4250	73.0	Figure 1
FC5274200A	Working Roll	260	370	200	200	3	3	292	348	279	15	6	2150	4250	73.8	Figure 1
FC5274220/YA3	Working Roll	260	370	220	220	3	3	292	349	279	9.5	5	2100	4900	79.2	Figure 1
FC5274220	Working Roll	260	370	220	220	3	3	292	349	279	9.5	5	2100	4900	80.0	Figure 1
FC5274220A	Working Roll	260	370	220	220	3	3	292	348	279	9.5	5	2150	4900	80.4	Figure 1
FC5274220A/YA4	Working Roll	260	370	220	220	3	3	292	346	279	9.5	5	2100	4800	78.7	Figure 1
FC5274220/YA4-1	Working Roll	260	370	220	220	3	3	292	346	279	9.5	5	1810	4800	78.7	Figure 1
FC5276280/HCYA3-SY	Intermediate Roll	260	380	280	280	3	3	294	353	280	9.5	5	2640	6050	111	Figure 1
FC5276280/HCYA3	Intermediate Roll	260	380	280	280	3	3	294	353	280	9.5	5	2640	6050	111	Figure 1
FC5276220/C4YA4	Working Roll&Intermediate Roll	260	380	220	220	3	3	290	351	278			2150	4750	87.9	Figure 1
FCD5280290/P63YA3	Working Roll&Intermediate Roll	260	400	145	145	4	4	296	371	282	9.5	5	1800	1720	136	Figure 2
FC5476230/YA3	Working Roll&Intermediate Roll	270	380	230	230	3	3	298	359.5	287	9.5	5	1890	4800	80.2	Figure 1
FC5476230A	Working Roll&Intermediate Roll	270	380	230	230	3	3	298	357.5	287	9.5	5	1970	4800	82.1	Figure 1
FC5476230A/YA3	Working Roll&Intermediate Roll	270	380	230	230	3	3	298	357.5	287	9.5	5	1970	4800	81.9	Figure 1
FC5478236	Working Roll&Intermediate Roll	270	390	236	236	3	3	312	0.67	295	9.5	5	2310	5950	97.8	Figure 1
FC5478236A	Working Roll&Intermediate Roll	270	390	236	236	3	3	312	366	295	9.5	5	2310	5950	98.3	Figure 1
FC5675200/YA3	Working Roll&Intermediate Roll	280	375	200	200	3	3	306	354.5	296	9.5	5	1700	4800	62.9	Figure 1
FCD5678275	Working Roll&Intermediate Roll	280	390	275	275	3	3	308	364.5	297	9.5	5	2360	6650	105	Figure 2
FC5678220	Working Roll&Intermediate Roll	280	390	220	220	3	3	312	369	299	12	6	2130	5150	86.5	Figure 1
FC5678220A	Working Roll&Intermediate Roll	280	390	220	220	3	3	312	366	299	12	6	2130	5200	89	Figure 1
FC5678220/YA3	Working Roll&Intermediate Roll	280	390	220	220	3	3	312	369	299	12	6	2680	5000	86.6	Figure 1
FC5678220A/YA3	Working Roll&Intermediate Roll	280	390	220	220	3	3	312	366	299	12	6	2130	5200	88.6	Figure 1
FC5678240/C4YA34	Working Roll&Intermediate Roll	280	390	240	240	3	3	312	368.5	299	12	6	2570	5850	89.6	Figure 1
FCDP5678275	Working Roll&Intermediate Roll	280	390	275	275	1.5	1.1	308	368.5	397	9.5	5	2930	6250	102	Figure 4
FCD5678275/C3YA34	Working Roll&Intermediate Roll	280	390	275	275	3	3	308	367.5	397	9.5	5	2930	6250	102	Figure 2
FCD5680244F3/YAD	Working Roll&Intermediate Roll	280	400	244	244	4	7.5	312	374	299	15	8	2300	6000	102	Figure 2
FC5684280	Working Roll&Intermediate Roll	280	420	280	280	4	4	318	391.5	303	12	6	3500	7000	139	Figure 1
FC5882240/C4YA3	Back-up Roll	290	410	240	120	4	4	320	384.5	308	15	8	2340	5900	102	Figure 1
FCD5884300	Back-up Roll	290	420	300	300	4	4	327	391	312	12	6	2800	7850	144	Figure 2
FC6084240	Working Roll	300	420	240	240	4	4	332	397	319	15	8	3450	6300	111	Figure 1
FC6084240YA3	Working Roll	300	420	240	240	4	4	332	397	319	15	8	3450	6300	111	Figure 1
FC6084240A	Working Roll	300	420	240	240	4	4	332	396	319	15	8	3450	6300	111	Figure 1

Four-row Cylinderical Roller Bearing for Rolling Mill

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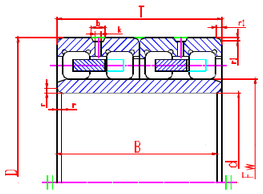
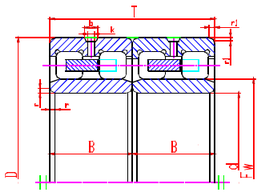


Figure 1



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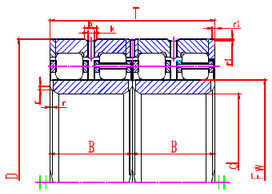

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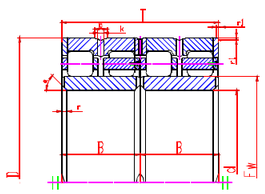

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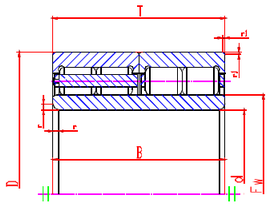
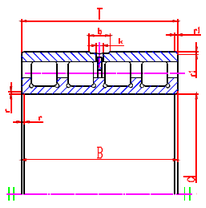


Figure 5



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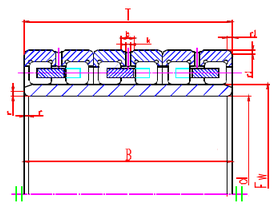
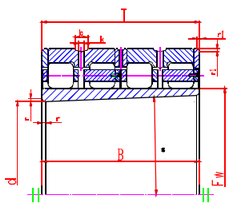


Figure 7



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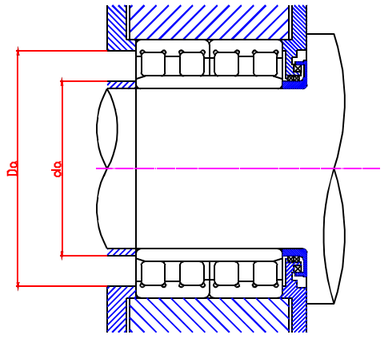

Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FC6084240A/YA3	Working Roll	300	420	240	240	4	4	332	396	319	15	8	3450	6300	111	Figure 1
FCD6084300/YA34	Working Roll	300	420	300	300	3	3	332	397	319	12	6	3550	6800	129	Figure 2
FC6084218/C4YA4	Working Roll	300	420	218	218	4	4	332	396	319	9.5	5	2270	5700	94.3	Figure 1
FCD6084300/HCYA4	Working Roll	300	420	300	300	3	3	332	397	319	12	6	2650	6950	129	Figure 2
FCDP6084300F3/YAD	Back-up Roll	300	420	300	300	7×20°	3	332	403	319	12	6	3750	8800	133	Figure 2
FCD6092350ZWF3/HCYAD	Back-up Roll	300	460	350	350	5	4	340	423	324	20	10	4100	10500	226	Figure 5
FCD6488240	Back-up Roll	320	440	240	240	4	4	351	415	339	12	6	2550	6700	110	Figure 2
FC6490240/YA3	Working Roll&Back-up Roll	320	450	240	240	4	4	355	427	341	12	6	2760	6720	119	Figure 1
FC6490240/C4YA3	Working Roll&Back-up Roll	320	450	240	240	4	4	355	425.5	341	12	6	2970	6720	120	Figure 1
FCD6492240ZW/YA34	Working Roll	320	460	240	240	3	3	364	434	346.5			2700	7050	141	Figure 5
FCD6496350F3/HCYA34	Working Roll	320	460	350	350	4	4	364	440	346.5	16	8	5150	10500	230	Figure 2
FCD6692340	Working Roll&Back-up Roll	330	460	340	340	4	4	365	433.5	351	12	6	2780	9950	210	Figure 2
FCD6890250/C3YA4	Back-up Roll	340	450	250	125	4	4	371	429.5	359	12	6	2420	7240	115	Figure 2
FC6890250/YA4-2	Back-up Roll	340	450	250	250	4	4	366	424.5	356	12	6	2460	7250	112	Figure 1
FCD6890250/C9YA4-1	Working Roll	340	450	250	125	4	4	371	426	359	12	6	2420	7500	109	Figure 2
FC6890250/C3YAD	Working Roll	340	460	250	250	4	4	369	433	357	12	6	2430	6820	105	Figure 1
FCDSP70100380/HC	Working Roll	350	500	380	380	6	3	388	470	373	12	6	4030	10200	225	Figure 2
FCD7296340/HCC4YB2	Working Roll&Back-up Roll	360	480	340	340	4	4	392	456.5	379	12	6	3700	11300	172	Figure 2
FCD72102370	Working Roll&Back-up Roll	360	510	370	370	4	4	397	480	382	12	6	4950	11400	220	Figure 2
FCD72102370/YA4	Working Roll&Back-up Roll	360	510	370	370	4	4	399.5	481	384	12	6	4950	11300	241	Figure 2
FCDP74104380	Working Roll	370	520	380	380	1.5	1.5	409	492	393	12	6	5230	12000	296	Figure 4
FCDP74106400/HCG2IC4	Working Roll	370	570	400	400	4	4	413	523.5	396	12	6	4650	12600	299	Figure 4
FCDP75120440/P63	Backup Roll	375	600	440	440	2	2	470	570	432	15	6	5350	15600	527	Figure 4
FCD76104340/HCYA3	Working Roll	380	520	340	340	4	4	416	488.5	402	12	6	4300	10700	211	Figure 2
FCDP78108320/YA3	Working Roll	390	540	320	320	10×20°	2	431	520	415	15	8	3800	10100	230	Figure 4
FC80110300	Back-up Roll	400	550	300	300	5	5	442	526	421	12	6	4460	5050	223	Figure 1
FC80110300A	Back-up Roll	400	550	300	300	5	5	442	524.5	421	12	6	4640	5450	225	Figure 1

Four-row Cylinderical Roller Bearing for Rolling Mill

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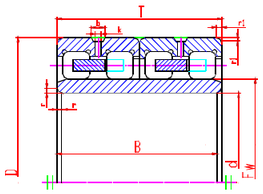
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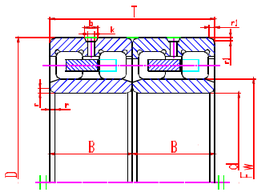
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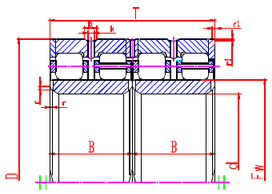
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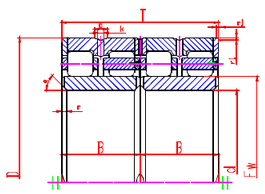
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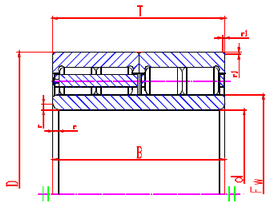
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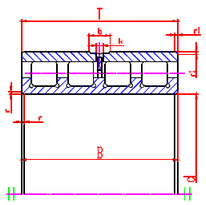
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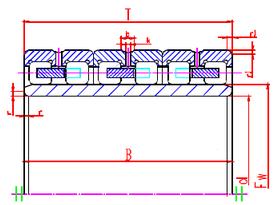
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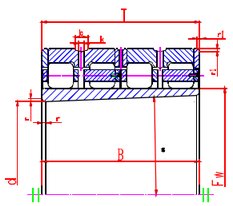
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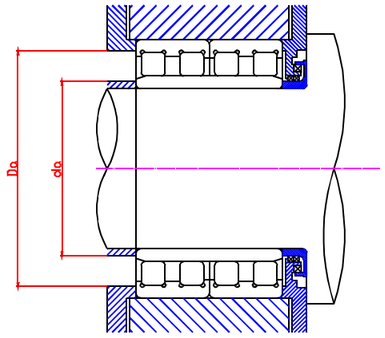
Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FCD80112410/HCYA34	Back-up Roll	400	560	410	410	12×20°	5	445	534.5	422.5	13	7	5200	15000	320	Figure 2
FCDP82112400/HCYAD	Backup Roll	410	560	400	400	11×20°	2	450	541	430	16.7	9	5600	14400	286	Figure 4
FCDP82120440-ZH	Back-up Roll	410	600	440	440	5	5	460	575	435	20	10	6450	18300	432	Figure 3
FCDP84120440/HCP6YA34	Working Roll&Back-up Roll	420	600	440	440	5	5	470	577	445	22	10	7100	19500	416	Figure 3
FCD84124400/HCC4	Working Roll&Back-up Roll	420	620	400	400	5	5	473	585	446.5	15	8	5800	15400	423	Figure 2
FCDP88124450	Working Roll&Back-up Roll	440	620	450	450	5	5	487	591.5	463.5	15	8	7420	15800	452	Figure 4
FCDP88124450/YA6	Working Roll&Back-up Roll	440	620	450	450	5	5	487	591.5	463.5	15	8	7420	15800	452	Figure 3
FC88132340ZW/HCC4YA3	Working Roll&Back-up Roll	440	660	340	340	6	6	492	621	466			6380	13500	425	Figure 5
FCDP92130470/HCYAD/W283	Back-up Roll	460	650	470	470	12×20°	3	509	627.5	484.5	22	12	8750	21500	492	Figure 5
FCD96130450	Working Roll&Back-up Roll	480	650	450	450	6	6	525	621.5	502.5	15	8	7840	15400	419	Figure 4
FCDP96136500/P54	Working Roll&Back-up Roll	480	680	500	500	6	6	532	656	506	15	9	7980	23400	599	Figure 3
FCDP97148540K/HCE	Backup Roll	485	740	540	540	5	5	572.3	710	529	22.3	12	9520	28600	814	Figure 8
FC100134450/P69	Working Roll&Back-up Roll	500	670	450	450	6	6	540	642.5	520	15	7	7840	20100	446	Figure 1
FCD100134450/P69HCYA3	Working Roll&Back-up Roll	500	670	450	450	6	6	540	643.5	520	15	8	8640	23700	460	Figure 3
FCDP100134450/HCEC9YAD	Working Roll	500	670	485	450		5	540	650	520	18	10	8400	22700	463	Figure 3
FCDP100134450/HCC9YAD	Back-up Roll	500	670	450	450	12.5×20°	5	540	650	520	18	10	8400	22700	454	Figure 3
FCDP100144530/HCYAD-1/W283	Back-up Roll	500	720	530	530	15×20°	6	568	694	534	15	8	8550	28100	751	Figure 3
FCDP102136500/HCYAD	Backup Roll	510	680	500	500	5	5	560	622	535	22	12	8300	25200	522	Figure 3
FCDP102146520/HCC4YB2	Working Roll	510	730	520	520	6	6	565	705.5	538	18	8	11000	27000	724	Figure 3
FCDP104147535/HCYAD	Back-up Roll	520	735	535	535	20×20°	5	574.5	708.5	547	22	12	11000	27800	757	Figure 3
FCDP106142520/HCC3	Working Roll&Back-up Roll	530	710	520	520	6	6	578	688	554	22	10	9450	26500	597	Figure 3
FCDP106152520/HCRG2YAD	Backup Roll	530	760	520	520	3	5	587	733.5	558.5	22.3	12	11100	27000	788	Figure 3
FCDP106156570/HCEYAD	Back-up Roll	530	780	570	570	6	6	595	747.5	562.5	19	10	13000	32000	971	Figure 3
FCDP110160560/HCYAD-1/W283	Back-up Roll	550	800	560	560	6	6	610	775	580	24	12	13600	32500	952	Figure 3
FCDP110160520	Back-up Roll	550	800	520	520	6	6	612	771	581	18	10	10300	28500	887	Figure 3

Four-row Cylinderical Roller Bearing for Rolling Mill

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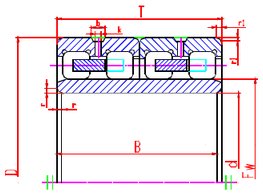
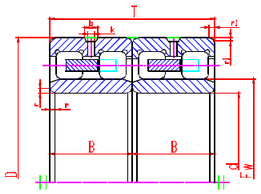


Figure 1



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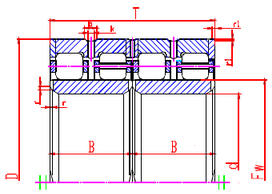

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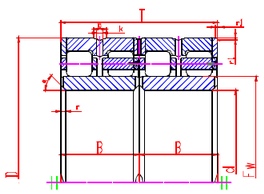

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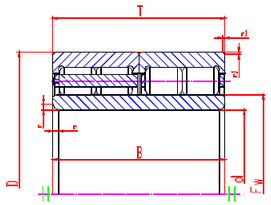
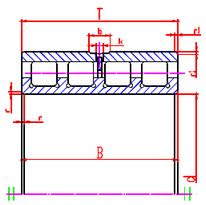


Figure 5



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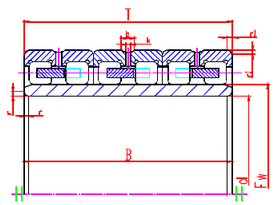

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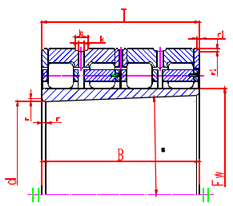
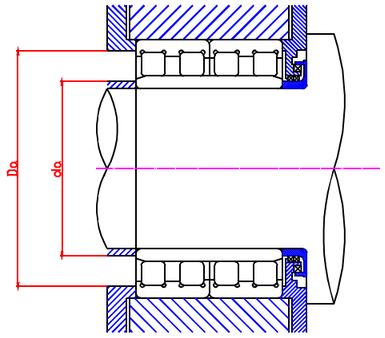


Figure 8



Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FCDP112160600/HCP5YAD	Back-up Roll	560	800	600	600	6	6	620	766	590	18	8	12500	32000	1010	Figure 4
FCDP112164630/HCC4YA3	Back-up Roll	560	820	630	630	6	6	625	787.5	592.5	18	10	11100	36000	1164	Figure 3
FC114150530/HCYA3	Working Roll&Back-up Roll	570	750	530	530	6	6	622	720	596		8	9000	26600	625	Figure 1
FCDP114163594/HCYA3	Working Roll&Back-up Roll	570	815	594	594	6	6	628	781.5	599	18	10	11100	33300	1030	Figure 3
FCDP120164575/HCYA6-1	Back-up Roll	600	820	575	575	3	6	660	794	630	18	9	12300	35000	945	Figure 3
FCDP120164575/HCYA6	Back-up Roll	600	820	575	575	6	3	660	794	630	18	9	9750	35000	948	Figure 3
FCDP120164575/HCRYA6	Back-up Roll	600	820	575	575	6	3	660	794	630	18	9	9750	35000	948	Figure 3
FCDP120174540/HCYAD-FSDT	Back-up Roll	600	870	540	540	6	6	672	841	636	18	10	12500	35700	1107	Figure 3
FCDP120174640/HCYAD/W283	Back-up Roll	600	870	640	640	6	6	672	841	636	18	10	15700	41000	1337	Figure 3
FCDP120174640/HCYA34	Back-up Roll	600	870	640	640	6	6	669	839.5	634.5	18	10	13200	38500	1347	Figure 3
FCDP122174660/HCYA34	Back-up Roll	610	870	660	660		6	680	842	645	20	12	16900	44000	1310	Figure 3
FCDP126184600X4/HCEYAD	Backup Roll	628	922	600	600	17.5×20°	6	702	892	665	24	12	16800	39000	1403	Figure 3
FCD126184515/HC	Back-up Roll	630	920	515	515	7.5	7.5	700	872.5	665	25	12	13700	17160	1182	Figure 2
FCDP130180650/HC	Back-up Roll	650	900	650	650	20×20°	7.5	704	870	677	30	12	16200	42000	1252	Figure 3
FCDP130184670/HCYAD-1	Back-up Roll	650	920	670	670	7.5	7.5	723	889.5	686.5	18	10	14300	44500	1456	Figure 3
FCDP130184670//HCYA3	Back-up Roll	650	920	670	370	17×20°	4	723	889.5	686.5	18	10	14300	44500	1454	Figure 3
FCDP130184690/HCYAD	Back-up Roll	650	920	690	690	18×20°	6	723	883.5	686.5	24	12	15700	47500	1536	Figure 3
FCDP136184600/HCG2IYAD	Back-up Roll	680	920	600	600	18×20°	6	743	889.5	711.5	22	12	12400	41600	1178	Figure 3
FCDP136196640/HCC4YAD	Back-up Roll	680	980	640	640	20×20°	4	760	942	720	22	12	17700	46000	1680	Figure 3
FCDP138196715/HCP69YAD	Back-up Roll	690	980	715	715	20×20°	4	767.5	943.5	729	22	12	18800	51500	1805	Figure 3
FCDP138196750/HCC9YA6	Back-up Roll	690	980	750	750		7.5	766	943	728	45	13	16100	51500	1881	Figure 3
FCDP138196750/HCEP59YAD	Back-up Roll	690	980	750	750	7.5	7.5	766	943	728	27	15	16100	51500	1873	Figure 3
FCDP138196715/HCP69YAD/W283	Backup Roll	690	980	715	715	20×20°	4	767.5	943.5	729	22	12	16200	51500	1814	Figure 3
FCDP140186620/HCEC9YAD	Back-up Roll	700	930	620	620	18×20°	3	763	903.5	731.5	22.3	12	15100	44000	1208	Figure 3
FCDP142200715/HCYAD/W283	Back-up Roll	710	1000	715	715	17×20°	7.5	787.5	963.5	749	22.3	12	20100	55500	1851	Figure 3
FCDP146192620/HCC4YA6	Back-up Roll	730	960	620	620	6	6	790	933	760	23.5	12	15000	44000	1254	Figure 3

Four-row Cylinderical Roller Bearing for Rolling Mill

ZWZ

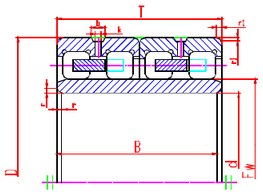


Figure 1

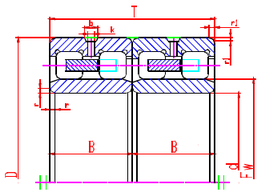


Figure 2

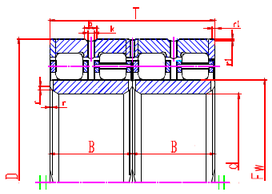


Figure 3

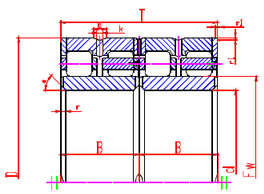


Figure 4

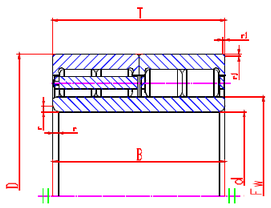


Figure 5

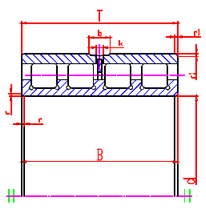


Figure 6

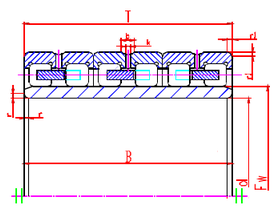


Figure 7

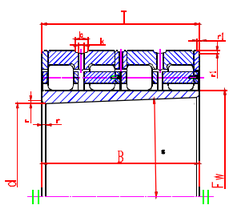
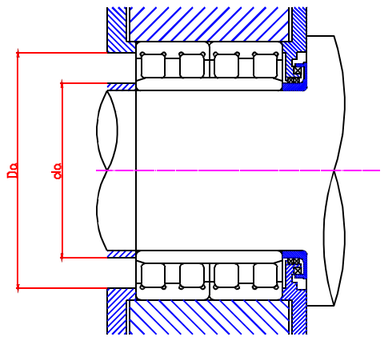


Figure 8



Mounted

Designations	Working Position	Basic Dimensions (mm)							Other related dimensions (mm)				Basic Load Ratings (kN)		Weight (kg)	Patterns
		d	D	B	C	rmin	r1min	Fw	Da	da	b max	k max	Cr	Cor		
FCDP146206750/HC-FY/W283	Back-up Roll	730	1030	750	750	21×20°	6	809	911.5	770	22	12	21000	58000	2082	Figure 3
FCDP146206750/HCEYAD/W281	Back-up Roll	730	1030	750	750	21×20°	6	809	911.5	770	22	12	21000	58000	2082	Figure 3
FCDP146200700/HCEYAD	Back-up Roll	730	1000	700	700	20×20°	4	802	971	766	45	13	16600	54500	1681	Figure 3
FCDP150200670/HCYAD/W283	Back-up Roll	750	1000	670	670		3	813	972.5	781.5	23.5	12	18000	52000	1496	Figure 3
FCDP152215787X4/HCP5	Back-up Roll	761.425	1079.6	787.4	787.4		5	846	1069.5	804	23.5	12	26600	64000	2376	Figure 3
FCDP156214780/HCYAD	Back-up Roll	780	1070	780	780	7.5	7.5	849	1032.5	814.5	23.5	12	21400	65700	2170	Figure 3
FCDP160216700/HC	Back-up Roll	800	1080	700	700	3	3	878	1042.5	830	23.5	12	12600	48500	1850	Figure 3
FCDP160216700/HCP64YAD	Back-up Roll	800	1080	700	700	5	5	878	1056	830	30	12	19030	59500	1918	Figure 3
FCDP164226800/HCP6YA3-SY	Back-up Roll	820	1130	800	800		4	903	1100.5	851.5	23.5	12	19700	67000	2534	Figure 3
FCDP164226800/HCYA3/W283	Back-up Roll	820	1130	800	800		4	903	1100.5	851.5	23.5	12	19700	67000	2512	Figure 3
FCDP164226800/HCYA3	Back-up Roll	820	1130	800	800		4	903	1100.5	851.5	23.5	12	19700	67000	2512	Figure 3
FCDP170230840/HCYAD/W283	Back-up Roll	850	1150	840	840		6	928	1126	880	23.5	12	24000	75000	2550	Figure 3
FCDP170230840/HCE	Back-up Roll	850	1150	840	840		4	928	1122.5	880	23.5	12	25000	75500	2595	Figure 3
FCDP180244840/HCYAD	Working Roll&Back-up Roll	900	1220	840	840		4	989	1189	934	22.3	12	2000	8000	2975	Figure 3
FCDP190260850/C9HCYA3	Back-up Roll	950	1300	850	850	7.5	7.5	1044	1255	986	30	14	32200	85000	3390	Figure 3
FCDP190260850/HCC9	Back-up Roll	950	1300	850	850	10	10	1044	1255	986	30	16	28600	80500	3390	Figure 3
FCDP190260850/HCP69YAD	Back-up Roll	950	1300	850	850	10	10	1044	1256.5	986	32	12	21500	64000	3360	Figure 3
FCDP190260850E/C9HCYA3	Back-up Roll	950	1300	850	850	7.5	7.5	1044	1274.5	986	30	14	33300	90500	3550	Figure 3
FCDP1902721000/HCEYAD/W281	Backup Roll	950	1360	1000	1000		5	1075	1323.5	997.5	30	18	41500	113000	5027	Figure 3

Self-aligning Roller Bearing

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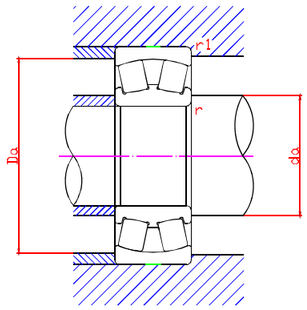

Mounted

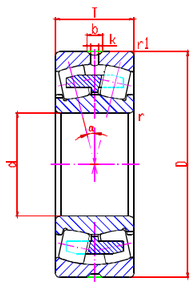

Figure 1

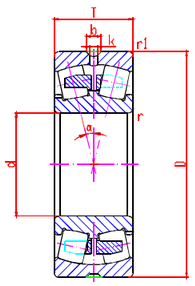

Figure 2

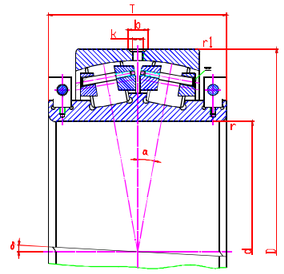

Figure 3

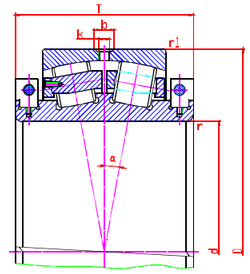

Figure 4

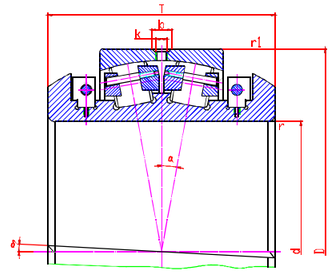

Figure 5

Designations	Basic Dimensions (mm)					Mounting Dimensions (mm)				e Value	Basic Load Ratings (kN)		Weight (kg)	Patterns
	d	D	T	rmin	r1min	Da	da	b	k		Cr	Cor		
230/628CAF3/W33	628	920	212	7.5	7.5	875.5	674.5	22.3	9	0.208	5900	12800	481	Figure 1
240/884/HCC9YA1	884	1320	365	7.5	7.5	1251.5	961	24	12	0.28	12900	28900	1811	Figure 2
240/884F3/HCC9YA1	884	1320	365	7.5	7.5	1251.5	961	24	12	0.28	12900	28900	1811	Figure 2
240/900X3/HCC9-1	900	1320	365	7.5	7.5	1249	960.5	24	12	0.264	10500	27600	1730	Figure 2
240/900X3/W33	900	1270	365	7.5	7.5	1204	953.5	24	12	0.28	10800	26600	1440	Figure 2
240/1000/C3W33	1000	1420	412	7.5	7.5	1346	1064	22.3	12	0.27	15600	40000	2150	Figure 2
240/1060F3/C4W33X	1060	1500	438	9.5	9.5	1419.5	1122.5	22.3	12	0.273	17000	44100	2500	Figure 2
240/1060CAF1/W33	1060	1500	438	9.5	9.5	1419.5	1125	22.3	12	0.256	17200	45000	2540	Figure 1
230/1120CAF3/W33X	1120	1580	345	9.5	9.5	1511	1202.5	40	25	0.192	15000	38100	2210	Figure 1
249/1180CAF1/W33X	1180	1540	355	7.5	7.5	1481	1235	22.3	12	0.197	12100	40000	1772	Figure 1
240/1320CAF3/W33T	1320	1850	530	12	12	1755.5	1402.5	40	25	0.254	23200	63300	4540	Figure 1

Split Bearing

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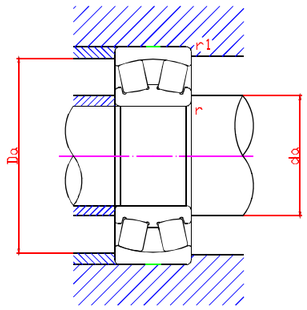

Mounted

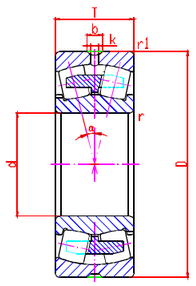

Figure 1

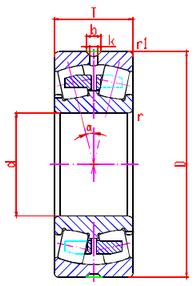

Figure 2

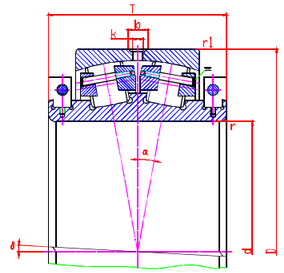

Figure 3

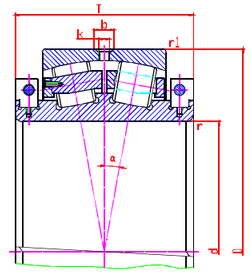

Figure 4

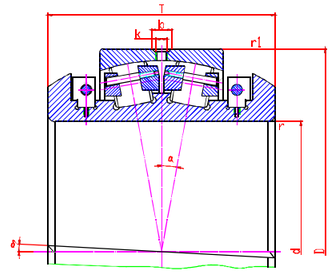

Figure 5

Designations	Basic Dimensions (mm)					Other Dimensions (mm)				e Value	Basic Load Ratings (kN)		Weight (kg)	Patterns
	d	D	T	rmin	r1min	Da	da	b	k		Cr	Cor		
230/530D	530	780	265	6	6	742	561	22.3	12	0.211	3400	8100	389	Figure 4
230/750D	750	1090	340	7.5	7.5	1040.5	794.5	20	12	0.205	6810	15230	961	Figure 3
230/800D	800	1150	358	7.5	7.5	1097	843	20	12	0.197	6850	15600	1087	Figure 3
249/800D	800	1060	370	6	6	1019	836	23.5	12	0.211	6000	15300	819	Figure 3
230/800WD	800	1150	540	7.5	7.5	1097	850	20	12	0.197	6850	15600	1367	Figure 5
240/850WD	850	1220	660	18×45°	7.5	1156	889.5	27	18	0.27	10900	25800	1931	Figure 5
240/850WBD	850	1220	540	7.5	7.5	1156	882.5	27	18	0.27	10900	25800	1781	Figure 3
240/884D/HC	884	1320	478	9.5	9.5	1239.5	951	22	18	0.246	11000	24900	2457	Figure 3
240/900X3D/HCC9-2	900	1320	478	9.5	9.5	1249	965	22	18	0.238	9850	24100	2050	Figure 3
240/900X3D-1	900	1270	470	9.5	9.5	1200	955	22	18	0.247	9800	24600	1970	Figure 3
240/900X3D-2	900	1270	470	8.5	8.5	1200	955	22	18	0.247	9800	24600	1970	Figure 3
240/900X2D/HC	900	1280	498	9.5	9.5	1205	955	22	18	0.247	9800	24600	2064	Figure 3
240/900X3D-3	900	1270	470	9.5	9.5	1200	955	22	18	0.247	9800	24600	1879	Figure 3
230/950D	950	1360	420	20	7.5	1297	1003	27	18	0.197	9100	21000	1956	Figure 3
230/950D-1	950	1360	640	55×45°	7.5	1297	1000	27	18	0.197	9100	21000	2338	Figure 5
240/1000D	1000	1420	556	32×45°	7.5	1347	1054.5	22	18	0.251	13300	34500	2633	Figure 3
240/1060D	1060	1500	585	9.5	9.5	1422.5	1120	22	18	0.251	15000	40000	3083	Figure 3
240/1060D-2	1060	1500	575	9.5	9.5	1422.5	1112	22	18	0.251	15000	40000	3354	Figure 3
240/1060D-1	1060	1500	611.5	70×45°	9.5	1422.5	1120	22	18	0.251	15000	40000	3089	Figure 3
249/1180D	1180	1540	500	7.5	7.5	1484	1227	22.3	18	0.197	10000	31000	2254	Figure 3

Torodial Roller Bearing

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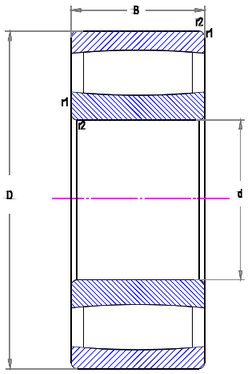


Figure 1

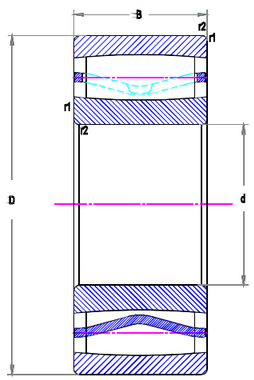
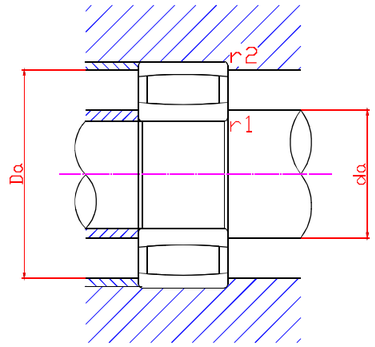


Figure 2



Mounted

Designations	Basic Dimensions (mm)					Other Dimensions (mm)		Basic Load Ratings (kN)		Limit Speed Ratings r/min	Weight (kg)	Patterns
	d	D	B	r1min	r2min	Da	da	Cr	Cor			
SDB5915V	75	105	40	1	1	100	79.5	204	325	1900	1.1	Figure 1
SDB6915V	75	105	54	1	1	99	80	178	325	1600	1.35	Figure 1
SDB5917V	85	120	46	1.1	1.1	145	90	275	465	1700	1.52	Figure 1
SDB5918V	90	125	46	1.1	1.1	119	96	200	400	1600	1.71	Figure 1
SDB5020V	100	150	67	1.5	1.5	142	107.5	510	865	1100	4.3	Figure 1
SDB4024V	120	180	60	2	2	172	130	530	880	1100	5.5	Figure 1
SDB4026V	130	200	69	2	2	190	140	720	1120	850	8.05	Figure 1
SDB4030V	150	225	75	2.1	2.1	214	162	780	1320	750	10.5	Figure 1
SDB3044	220	340	90	3	3	325	239	1320	2040	2200	29	Figure 2

Self-aligning roller bearing

ZWZ

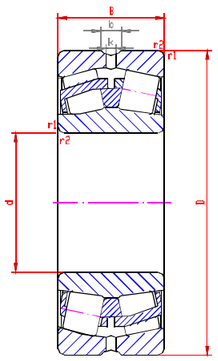


Figure 1

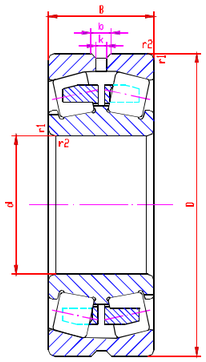
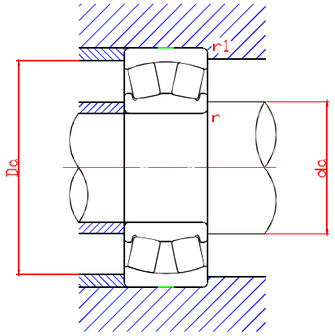
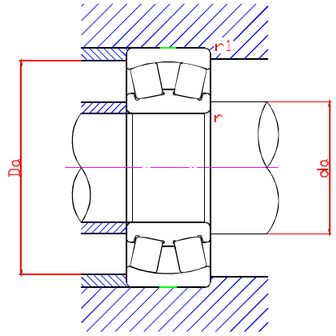


Figure 2



Mounted



Mounted

Designations	Basic Dimensions (mm)					Mounting Dimension				Basic Load Ratings (kN)		Limit Speed Ratings r/min	Weight (kg)	Patterns
	d	D	B	r1min	r2min	Da	da	b	k	Cr	Cor			
22211C/W33	55	100	25	1.5	1.5	93.5	60	5.5	2	119	126	4500	0.856	Figure 1
22212CB/W33	60	110	28	1.5	1.5	102.5	67.5	5.5	3	156	166	4300	1.15	Figure 2
24013CB/W33	65	100	35	1.1	1.1	93	69	5.5	3	110	165	2600	0.966	Figure 2
22313CB/W33	65	140	48	2.1	2.1	128	76.5	8.3	4.5	340	360	2600	3.75	Figure 2
22314CB/W33	70	150	51	2.1	2.1	137.5	83	8.3	4.5	400	430	2200	4.55	Figure 2
24015CB/W33	75	115	40	1.1	1.1	107.5	81.5	5.5	3	158	240	2600	1.48	Figure 2
22315CB/W33	75	160	55	2.1	2.1	146.5	88	8.3	4	440	475	2100	5.55	Figure 2
22216C/W33	80	140	33	2	2	131	89.5	5.5	2.5	165	225	3200	2.06	Figure 1
22317CB/W33	85	180	60	3	3	165	100	8.5	4	550	620	1900	7.65	Figure 2
23218CB/W33	90	160	52.4	2	2	148	100.5	5.7	3	300	440	1900	4.5	Figure 2
22219CB/W33	95	170	43	2.1	2.1	159	107.5	8.4	4.5	275	370	1750	4.29	Figure 2
22319CB/W33	95	200	67	3	3	183.5	111	8.3	5	670	765	1750	10.5	Figure 2
23220CB/W33	100	180	60.3	2.1	2.1	166	112.5	8.4	4.5	400	570	1700	6.44	Figure 2
22320CB/W33	100	215	73	3	3	196.5	119	11.1	5	815	950	1700	13.5	Figure 2
23121C/W33	105	175	56	2	2	163	112.5	5.5	3	365	560	1500	5.36	Figure 1
22322CB/W33	110	240	80	3	3	218.5	130.5	13.9	6	950	1120	1500	18.4	Figure 2
24124C/W33	120	200	80	2	2	183	133	5.5	3	655	950	1400	10.3	Figure 1
22224CB/W33	120	215	58	2.1	2.1	201	135	11.1	4	630	765	1900	8.7	Figure 2
24126C/W33	130	210	80	2	2	194	138	8.3	4	680	1000	1300	11	Figure 1

Self-aligning roller bearing

ZWZ

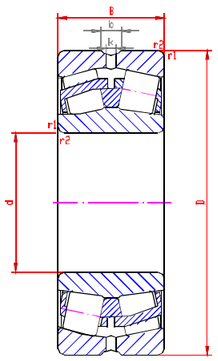


Figure 1

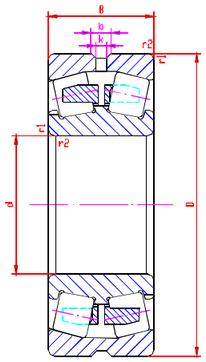
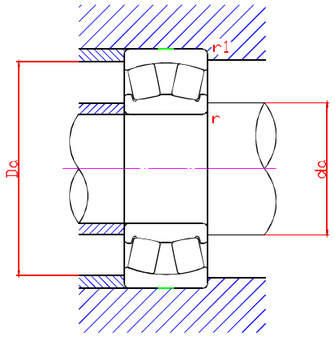
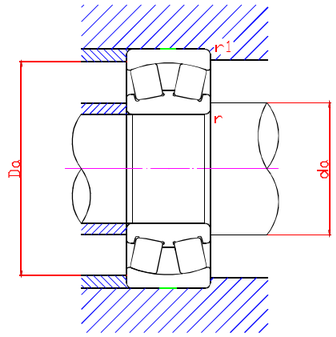


Figure 2



Mounted



Mounted

Designations	Basic Dimensions (mm)					Mounting Dimension				Basic Load Ratings (kN)		Limit Speed Ratings r/min	Weight (kg)	Patterns
	d	D	B	r1min	r2min	Da	da	b	k	Cr	Cor			
22226CB/W33	130	230	64	3	3	215	146	11.1	6	735	930	1800	11	Figure 2
24128CB/W33	140	225	85	2.1	2.1	208.5	152.5	8.3	4.5	765	1160	1100	13.5	Figure 1
24130C/W33	150	250	100	2.1	2.1	229	165	8.3	4.5	1020	1530	1000	20	Figure 1
24132C/W33	160	270	109	2.1	2.1	247	170.5	8.3	4	1180	1760	950	25	Figure 1
24134CB/W33	170	280	109	2.1	2.1	258.5	186.5	8.3	5	1220	1860	900	27.5	Figure 1
24136CB/W33	180	300	118	3	3	275.5	198	11.1	6	1400	2160	900	34.5	Figure 1
24138CB/W33	190	320	128	3	3	293	208	11.1	6	1600	2500	850	43	Figure 1
24140CB/W33	200	340	140	3	3	311.5	221	11.1	6	1800	2800	800	53.5	Figure 1
24144CB/W33	220	370	150	4	4	341.5	241	11.1	6	2120	3350	750	67	Figure 1
24148CB/W33	240	400	160	4	4	368	262.5	11.1	6	2400	3900	700	83	Figure 1
24152CB/W33	260	440	180	4	4	405.5	285.5	13.9	8	3000	4800	650	110	Figure 1
24156CB/W33	280	460	180	5	5	426.5	306.5	13.9	8	3100	5100	600	120	Figure 1
24060C/W33	300	460	160	4	4	429.5	323.5	13.9	7	2700	4750	550	97	Figure 1

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