

ABM
PRECISION BEARINGS



GENERAL CATALOG

SUPER PRECISION ANGULAR
CONTACT BALL BEARINGS



ABM specializes in developing leading-edge super precision angular contact ball bearing series for modern machine tool spindles, precision instruments, and other devices carrying high load at utmost rotation speed.



We aim for

1. Supreme running accuracy
2. High load rating
3. Minimal temperature increase on high rotation speed operation
4. Stable bearing metallurgical structure
5. Precision built-in preload in each bearing, to achieve the degree of excellence that we hold our values to.

ABM Super Precision Angular Contact Ball Bearings

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Technology and Engineering of Bearings



Material

We use "Bearing Quality Chromium Alloy High Carbon Steel" (DIN 100Cr6, SAE 52100) as standard.

Heat resistant steel can be applied upon request.

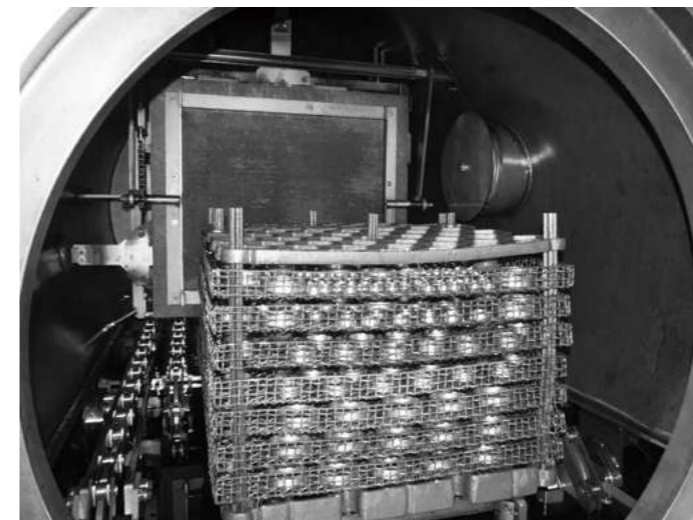
Standard bearing cage material is phenolic resin cotton fiber reinforced composite.

Peek or Nylon cages can be applied upon request.

<< Phenolic resin cotton fiber reinforced cage

Heat Treatment

All bearing rings undergo vacuum heat treatment to achieve metallurgical structure and bearing dimension stabilization.



"Core section" of each bearing ring has identical structure as the surface part. Fine grain size of metallurgical structure can sustain a longer service life for all ABM bearings.

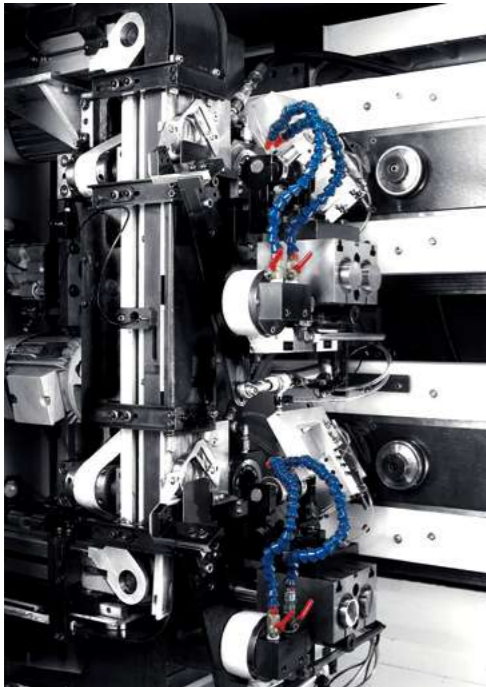
<< Vacuum heat treatment

Technology and Engineering of Bearings

Machining Process

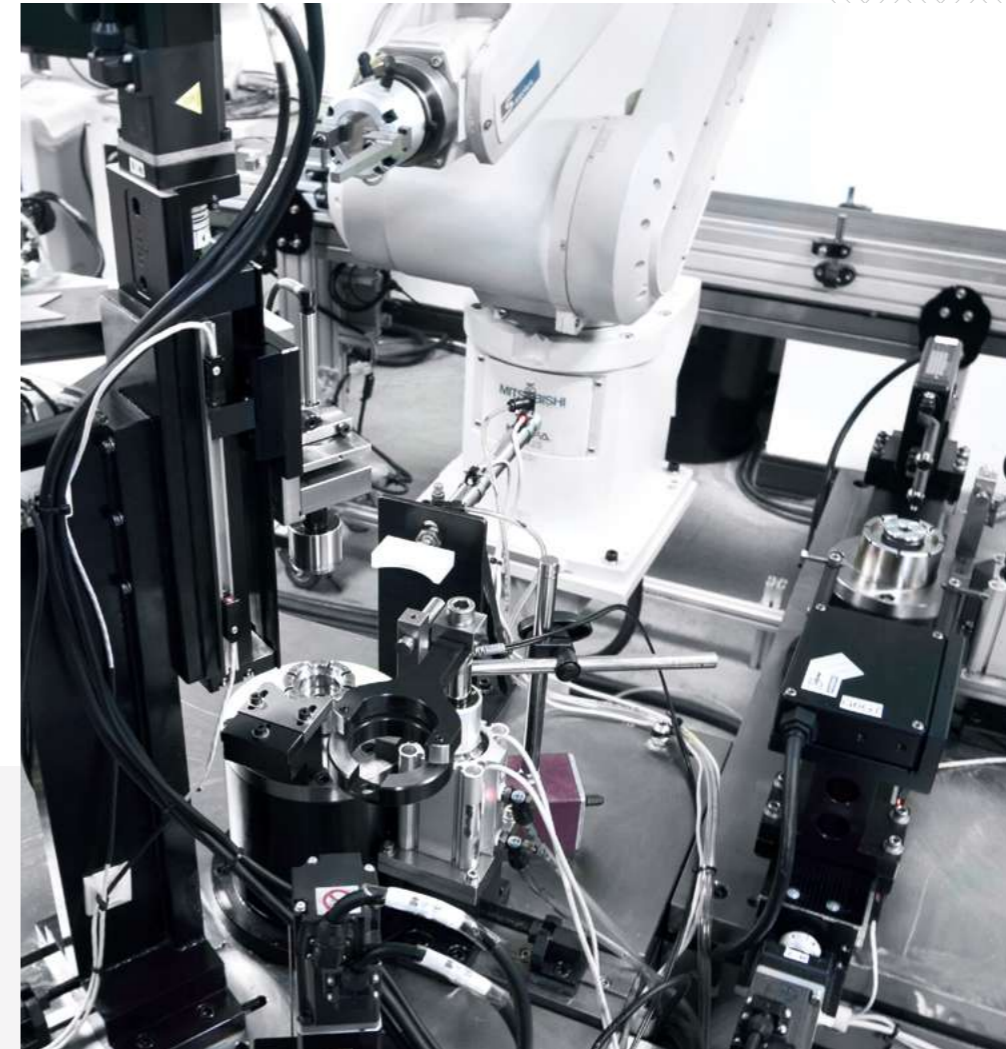
ABM's modern grinding machines equip with both in-process and post-process gauges.

All grinding process is under temperature control with well-balanced high speed grinding wheels. All the ring tolerances meet ISO P4 standard or above.



Inspection

Metallurgical structure, ring geometry, bearing runout, bearing preload, and bearing noise are all under inspection by precision instruments. Robot-integrated automation conducts various inspections to reassure 100% accuracy.



100% ACCURACY

Assembly

Tailor-made automation system can assemble bearing rings with cage and rolling elements.



Package and Storage

All standard bearings are packed with preservative. Our preservative oil is compatible to most of the lubricants. However, we still recommend a fully wash off the preservative oil before greasing.

Hybrid Bearings with Ceramic Balls



<< Si₃N₄ ceramic balls

For high speed operation, mass of rolling steel ball would generate considerable hoop stress on bearing rings. This effect could lead to high temperature raise and premature bearing fatigue failure.

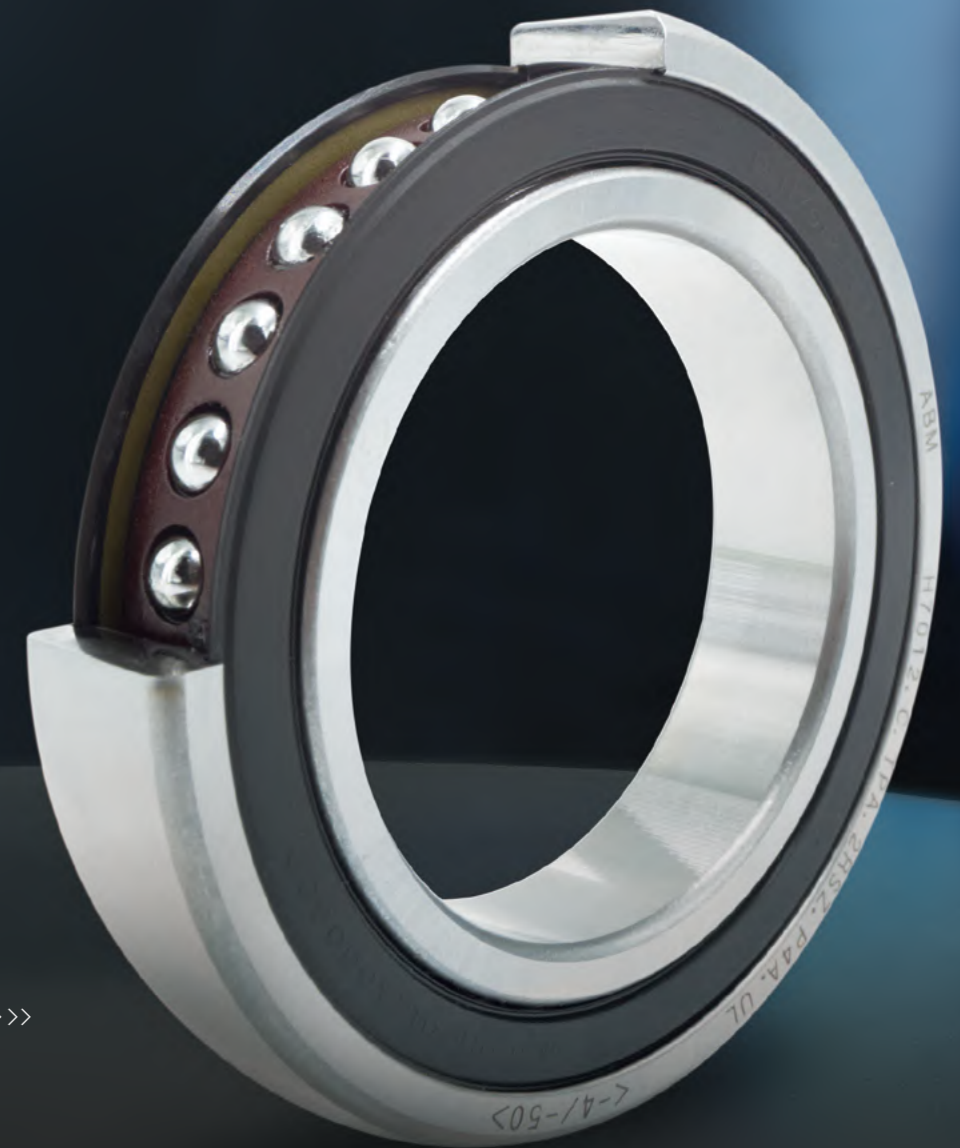
Applying lighter ceramic rolling element Silicon Nitride (Si₃N₄), which has 42% density of bearing steel, can reduce adverse ball inertial effect on steel rings. Silicon Nitride also has superior compressive strength and less heat expansion rate. Systems constructed with ceramic hybrid bearings have higher stiffness, higher speed, and longer service life.

Properties (at ambient temperature)	Unit	Ceramic Si ₃ N ₄	Ball Bearing Steel 100Cr6
Density	g/cm ³	3.2	7.8
Coefficient of expansion	10 ⁻⁶ /k	3.2	11.5
Young's modulus	GPa	315	210
Poisson's ratio	-	0.26	0.3
Hardness (Vickers) HV10	-	1600	700
Tensile strength	MPa	700	2500
Fracture toughness	MPa m ^{0.5}	7	20
Thermal conductivity	W/mk	30-35	40-45
Spec. electric resistance	Ωmm ² /m	10 ¹⁷ -10 ¹⁸	0.1-1

Sealing Solution

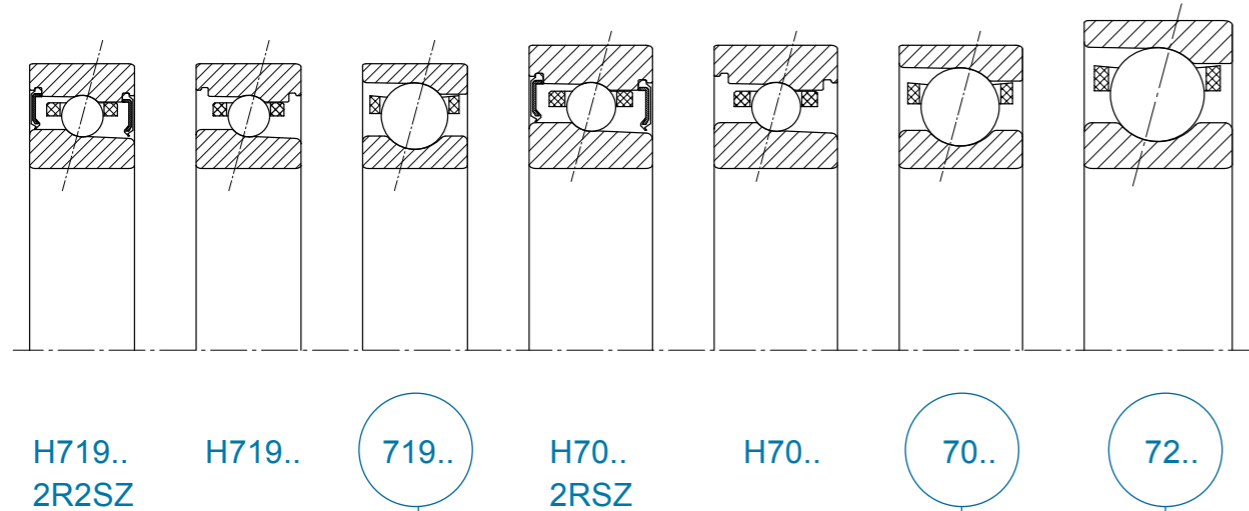
Sealed version bearings provide better contaminant resistance and longer lubricant service life. Non-contact rubber seals can be mounted on (CB)H719 and (CB)H70 series.

Since these seals generate no friction force, sealed bearings have same attainable speed as open bearings. All the sealed bearings have been pre-greased 20%-25% of bearing free inner space volume and can be mounted directly without additional cleaning process.



Sealed version bearing >>>>>

Super Precision Angular Contact Ball Bearings



H719..
2RSZ

H719..

719..

H70..
2RSZ

H70..

70..

72..

Bearing Series

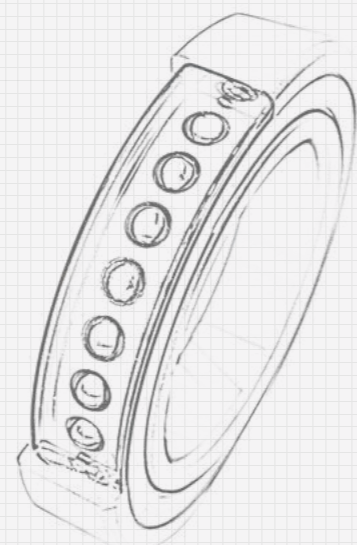
(H)719, (H)70,72

ABM
PRECISION BEARINGS

719, 70, and 72 are three major series of ABM super precision angular contact ball bearings.

For same bearing bore diameter, 72 series has largest outside diameter and width, and can carry largest load at moderate speed.

719 and 70 series are more suitable for higher speed and limited space applications. Each of 719 and 70 series has even higher speed "H" version, which has smaller balls with more ball complement.



Designation of ABM Super Precision Angular Contact Ball Bearings

---	: Steel balls
CB	: Ceramic balls
---	: Standard version
H	: High speed version
Series	: 719,70,72...
Bore code	00 : 10mm 01 : 12mm 02 : 15mm 03 : 17mm 04 upwards : Multiply by 5 to obtain bore in mm
Contact angle	C : 15° (For H version C : 18°) E : 25°
---	: Standard lubrication
S	: Lubrication via outer ring OD
TPA	: Fabric reinforced phenolic resin outer ring pilot cage
P	: Polyamide glass fiber reinforced cage
K	: PEEK cage
---	: Open version
2RSZ	: Non-contact seals on both sides
P4, P4A, P2A ..	Accuracy
U	: Universal
Preload	L : Light M : Medium H : Heavy

Bearing Dynamic Load Rating & Basic Rating Life

ISO Standard 281 specifies that basic rating life of identical ball bearings with same contact angle can be elaborated as below :

>> $L_{10} = \left(\frac{K \times C}{P_e} \right)^3$ (million revolutions)

>> $L_{10h} = \frac{L_{10} \times 10^6}{60 \times n}$ (hours)

>> L_{10} :Bearing life in million revolutions, which has 90% survival rate

>> L_{10h} :Bearing life in hours, which has 90% survival rate

- C: Bearing dynamic load rating, N
- C_0 : Bearing static load rating, N
- K: Correction factor. $K=i^{0.7}$, " i " :number of bearings
- F_a : Axial load on bearings, N
- F_r : Radial load on bearings, N
- n: Rotation speed (RPM)

Equivalent dynamic load "Pe" can be expressed as following

>> $P_e = X \times F_r + Y \times F_a$

X&Y values table for single or tandem bearings(i=1)

α	$\frac{F_a}{iC_0}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
			X	Y	X	Y
15°	0.015	0.38				1.47
	0.029	0.40				1.40
	0.058	0.43				1.30
	0.087	0.46				1.23
	0.12	0.47	1	0	0.44	1.19
	0.17	0.50				1.12
	0.29	0.55				1.02
	0.44	0.56				1.00
	0.58	0.56				1.00
18°	-	0.57	1	0	0.43	1.00
25°	-	0.68	1	0	0.41	0.87



X&Y values table for DB or DF arrangement (i=2)

α	$\frac{F_a}{iC_0}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
			X	Y	X	Y
15°	0.015	0.38		1.65		2.39
	0.029	0.40		1.57		2.28
	0.058	0.43		1.46		2.11
	0.087	0.46		1.38		2.00
	0.12	0.47	1	1.34	0.72	1.93
	0.17	0.50		1.26		1.82
	0.29	0.55		1.14		1.66
	0.44	0.56		1.12		1.63
	0.58	0.56		1.12		1.63
18°	-	0.57	1	1.09	0.70	1.63
25°	-	0.68	1	0.92	0.67	1.41

Note

1. If bearings sustain only external radial load, preload can be axial load
2. If external axial load < 3×preload, use $F_a = 2/3$ external axial load + preload
3. If external axial load > 3×preload, use $F_a =$ external axial load
4. For spring preloaded bearings, $F_a =$ spring force + external axial load

Dynamic bearing load rating for bearing set can be obtained by multiplying factors by individual bearing C

>> $C_{set} = i^{0.7} \times C_{single\ bearing}$ (i=number of bearings)

- 1.62 for 2 bearings
- 2.16 for 3 bearings
- 2.64 for 4 bearings

Bearing Static Load Check

Static load rating C_0 is used to check whether a non-rotating bearing set can withstand the external impact. Machining center spindle bearings during tool holder exchange is an example. In order to prevent any permanent damage on bearing raceway caused by sudden external impact, we can check the $C_0/P_0=FS$ safety factor.

>> P_0 : Equivalent static load

$$P_0 = X_0 \times F_r + Y_0 \times F_a \text{ or } P_0 = F_r, \text{ whichever is greater.}$$

F_r : Radial load

F_a : Axial load

X_0 : Radial load factor

Y_0 : Axial load factor

FS: Factor of safety for static loading

Static load of bearing set can be calculated as following:

>> $C_{Oset} = i \times C_{Osingle bearing}$ (i = number of bearings)

Single bearing or Tandem pair		
α	X_0	Y_0
15°	0.50	0.46
18°	0.50	0.42
25°	0.50	0.38

DB pair or DF pair		
α	X_0	Y_0
15°	1	0.92
18°	1	0.84
25°	1	0.76

FS≥1: Ordinary service

FS≥2: Sudden shock and high requirements for smooth running

FS≥3: Very frequent static stress conditions

Bearing Preload

Bearing preload is an axial load built-in bearings to generate elastic deformation in contact area of raceways and rolling elements.

Preloaded bearings have following characteristics:



1. Increase bearings stiffness.



2. Reduce bearing rolling element sliding.



3. Increase bearing running accuracy under various external load.

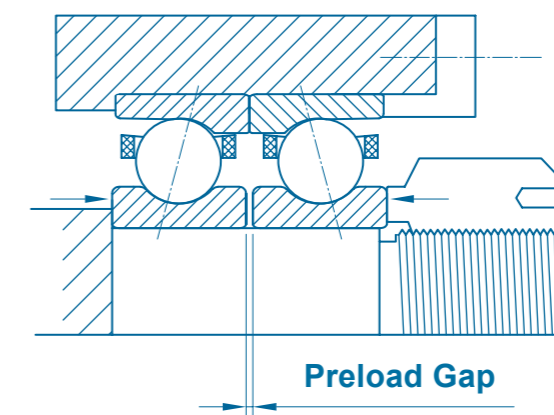


4. Reduce vibration and noise.

How to Preload Bearings

The elastic deformation in contact area of raceways and balls is generated by clamping clearance between bearings.

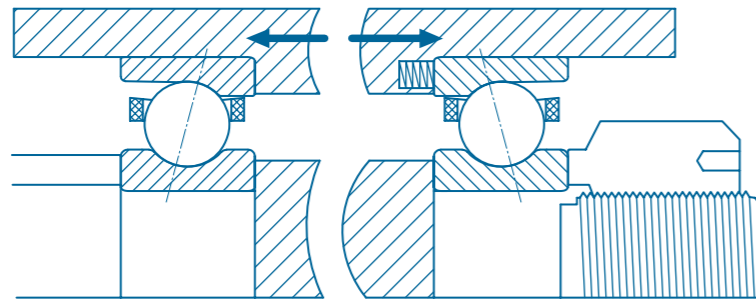
Clearance between bearings can be eliminated by lock nuts or springs.



For machining centers, lathe, and milling machines, magnitude and direction of cutting forces vary during machining operations. Bearings of these machine tool spindles are recommended to be fixed on shaft by lock nuts or end plates to ensure the highest accuracy and stiffness of the assembly.

Bearing Preload

Spring Preload



In high-speed operation, spring preload can maintain a constant clamping force to bearings. A constant bearing preload is critical in high-speed operation to keep balls rolling than skidding. The lower stiffness can be expected in spring preload assembly. Motor built-in grinding spindles usually apply spring to clamp bearings.

Universal Face Control

ABM super precision angular contact ball bearings are universally ground. Inner ring and outer ring of a single bearing have identical widths, and the relative positions of the faces of each bearing are made adjustable to build the bearing preload. Bearings can be mounted back-to-back or face-to-face without affecting the preload.

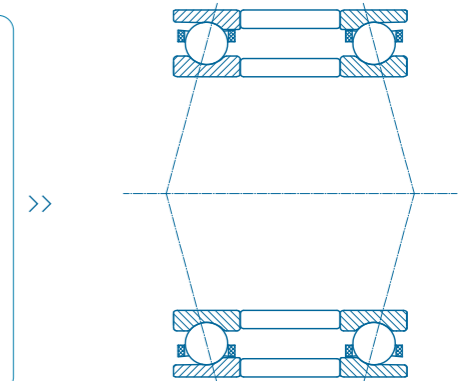
Bearing Arrangements

Multi bearings can also be combined into various bearing sets to have different characteristics to the shaft assemblies.

Two Bearings Pair

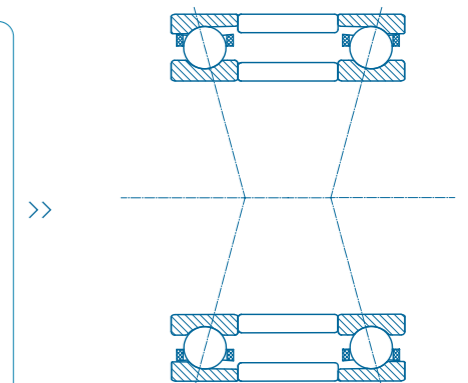
DB (Back-to-Back Arrangement)

The pressure lines diverge in the bearing axis direction with larger span than DF arrangement. DB set bearing performs well against tilting moment and can carry axial forces from both directions.



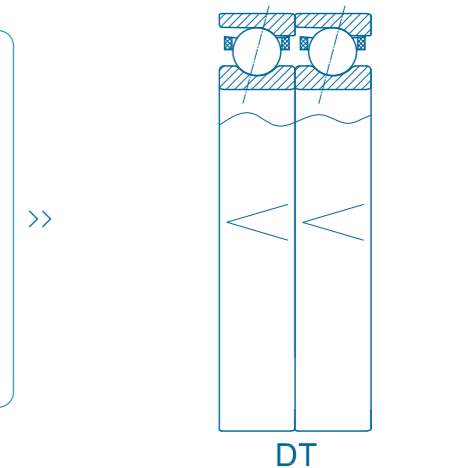
DF (Face-to-Face Arrangement)

The pressure lines converge in the bearing axis direction. DF pair tends to be insensitive to assembly misalignment and can result in carrying axial load in both directions.



DT (Tandem Arrangement)

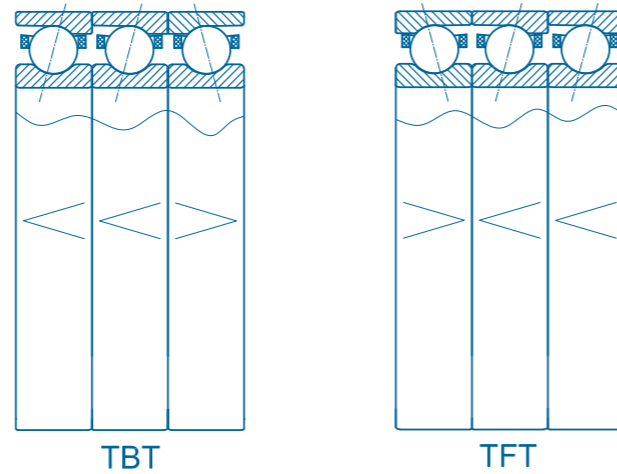
Two parallel bearings share the axial load equally when one direction of load is large and one extra bearing is needed. In most cases, DT pair bearings are applied with another third bearing against them to ensure bearings are preloaded.



DT

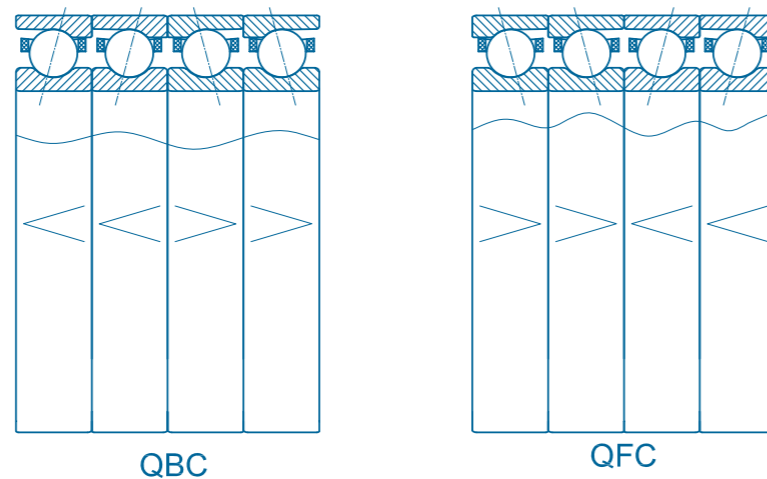
Multiple Arrangements

For demands of greater load and higher stiffness, bearings can be assembled into 3-bearing and 4-bearing arrangements. Arrangement of 5 bearings is achievable if needed in some rare cases.



TBT arrangement and TFT arrangement

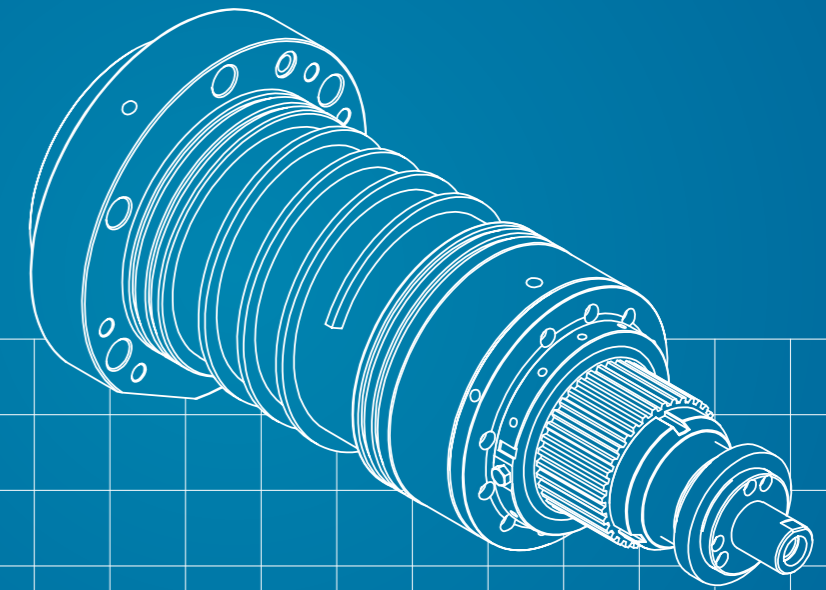
Two bearings in the same row carry large axial load. The opposite bearing as counter guide generates bearing set preload. This counter also shares larger preload with higher operation temperature than one of the bearing in DT pair. TBT or TFT set is a great fit for occasions with limited bearing mounting space available for heavy load in single direction.



QBC Arrangement and QFC Arrangement

These two sets are composed of two DT pairs. Each bearing has identical preload and can take carry loads from both axial directions. For higher speed application, spaces can be designed and mounted between each bearing to enhance heat dissipation and ease lubrication.

Spacers



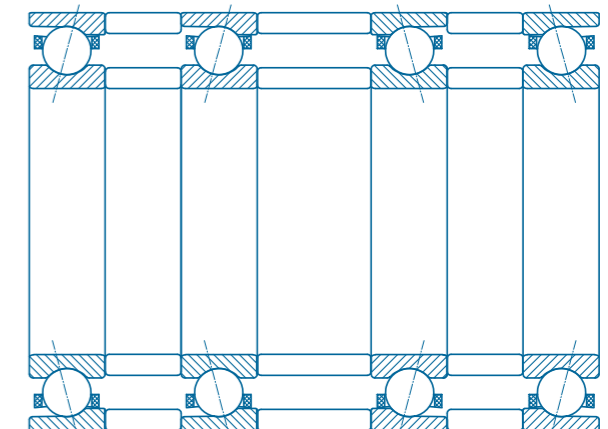
Several advantages of installing paired spacer rings between bearings include:

1. To increase bearings' span to acquire better system stiffness
2. To better dissipate friction heat inside bearings
3. Grease lubrication is better reserved. Oil lubrication through spacers is achievable
4. Bearing preloads can be adjusted by different lengths between inner and outer spacers

*Please contact ABM for dimensions and availabilities

Spacers Manufacturing Notice

1. Control parallelism and length of spacers.
2. Every rotating spacer is well balanced.
3. Through hardened heat treatment is highly recommended.



Unloading Force and Axial Stiffness of Bearing Set

External force exerted on bearing set will decrease bearing preload. When the force exceeds unloading force, ball sliding effect will increase and reduce bearing service life.



Comparison chart of bearing preload, axial stiffness, and unloading force

load in main direction		Axial Stiffness Factor K_a	Unloading Force $X \cdot Pr$
Side	A B		
		1.0	2.83
		1.63	5.66
		2.22	8.49
		2.0	5.66
		2.64	8.49

Pr = Preload force of DB and DF arrangement
The bearings in combinations above have identical contact angle

Comparison chart of bearing preload, axial stiffness, and unloading force

load in reverse order		Axial Stiffness Factor K_a	Unloading Force $X \cdot Pr$	Bearing Set Preload $K \cdot Pr$
Side	A B			
		1.0	2.83	1.0
		1.30	2.83	1.36
		1.54	2.83	1.57
		2.0	5.66	2.0
		2.31	5.66	2.42

Radial stiffness can be calculated by multiplier of axial stiffness

- >> $S_{radial} \approx 6 \times S_{axial}$ for $\alpha = 15^\circ$
- >> $S_{radial} \approx 2 \times S_{axial}$ for $\alpha = 25^\circ$

Rotation Speed Limit Calculation

Number of bearings, arrangement, preload, and lubrication are all factors of spindle limit rotation speed. The correction factors "fr" which can be used to multiply attainable speeds of bearing data are as following.



Bearing Arrangement	Factor fr Bearing Preload			
	L	M	H	
Large bearing distance				
		0.85	0.75	0.5
		0.8	0.7	0.5
		0.75	0.65	0.45
Small bearing distance				
		0.75	0.6	0.35
		0.65	0.5	0.3
		0.65	0.5	0.3
		0.72	0.57	0.37
		0.54	0.4	0.37

Super Precision Angular Contact Ball Bearing Tolerances

■ Bore Diameter

d : nominal bore diameter

d_s : individual bore diameter

$\Delta d_s = d_s - d$: deviation of an individual bore diameter from nominal diameter

$Vd_s = d_{smax} - d_{smin}$: difference between the largest and smallest bore diameters of a single inner ring

$d_m = (d_{smax} + d_{smin})/2$: mean bore diameter, arithmetic mean derived from the largest and smallest bore diameters of the single inner ring

$\Delta d_m = d_m - d$: deviation of the mean bore diameter, difference between the mean bore diameter and nominal diameter

d_{mp} : mean bore diameter in an individual plane of a single inner ring

Δd_{mp} : deviation of the mean bore diameter in an individual plane

$Vd_p = d_{pmax} - d_{pmin}$: variation of an individual bore diameter in a single plane

$Vd_{mp} = d_{mpmax} - d_{mpmin}$: variation of mean bore diameters of different radial planes

■ Outside Diameter

D : nominal outside diameter

D_s : individual outside diameter

$\Delta D_s = D_s - D$: deviation of an individual outside diameter from nominal diameter

$VD_s = D_{smax} - D_{smin}$: difference between the largest and smallest outside diameters of a single outer ring

$D_m = (D_{smax} + D_{smin})/2$: mean outside diameter, arithmetic mean derived from the largest and smallest outside diameters of the single outer ring

$\Delta D_m = D_m - D$: deviation of the mean outside diameter, difference between the mean outside diameter and nominal diameter

D_{mp} : mean outside diameter in an individual plane of a single outer ring

ΔD_{mp} : deviation of the mean outside diameter in an individual plane

$VD_p = D_{pmax} - D_{pmin}$: variation of an individual outside diameter in a single plane

$VD_{mp} = D_{mpmax} - D_{mpmin}$: variation of mean outside diameters of different radial planes

Super Precision Angular Contact Ball Bearing Tolerances

■ Width

B: nominal width of the inner ring

C: nominal width of the outer ring

B_s : individual inner ring width

C_s : individual outer ring width

$\Delta B_s = B_s - B$: deviation of an individual inner ring width from nominal dimension

$\Delta C_s = C_s - C$: deviation of an individual outer ring width from nominal dimension

$VB_s = B_{smax} - B_{smin}$: variation of inner ring width

$VC_s = C_{smax} - C_{smin}$: variation of outer ring width

■ Running Accuracy

K_{ia} : inner ring radial runout of an assembled bearing

K_{ea} : outer ring radial runout of an assembled bearing

S_{ia} : inner ring axial runout of an assembled bearing

S_{ea} : outer ring axial runout of an assembled bearing

S_d : side face runout of inner ring with reference to bore

S_D : variation in inclination of outside cylindrical surface to outer ring side face

ABM supplies super precision angular contact bearings with standard precision class P4A which exceeds ISO P4 standard and have similar running accuracy to P2 standard bearings. For more rigorous standard, we can supply bearings that meet P2A standard upon request.



Bearing tolerance P4A inner ring

Nominal Bore Diameter	Dimensions in mm									
	Over Including	10	18	30	50	80	120	150	180	250
Tolerance in μm										
Bore Deviation	$\Delta ds, \Delta dmp$	0 -4	0 -4	0 -5	0 -6	0 -7	0 -8	0 -10	0 -10	0 -12
Variation Vdp	Series 9	2.5	2.5	3	3	4	4.5	6	6	7
	Series 0,2	2	2	2.5	2.5	3	3.5	5	5	6
Width Deviation	ΔBs	0 -100	0 -100	0 -120	0 -120	0 -150	0 -200	0 -250	0 -250	0 -300
Width Variation	VBs	1.5	1.5	1.5	1.5	1.5	2.5	2.5	4	5
Radial Runout	Kia	1.5	1.5	2.5	2.5	2.5	2.5	2.5	5	5
Axial Runout	Sd	1.5	1.5	1.5	1.5	1.5	2.5	2.5	4	5
Axial Runout	Sia	1.5	1.5	2.5	2.5	2.5	2.5	2.5	5	5

Bearing tolerance P4A outer ring

Nominal Outer Diameter	Dimensions in mm									
	Over Including	10	18	30	50	80	120	150	180	250
Tolerance in μm										
Outer Diameter Deviation	$\Delta Ds, \Delta Dmp$	0 -4	0 -5	0 -6	0 -7	0 -8	0 -9	0 -10	0 -11	0 -13
Variation VDp	Series 9	2.5	3	3	4	4.5	5	6	7	8
	Series 0,2	2	2.5	2.5	3	3.5	4	5	5	6
Width Variation	VCs	1.5	1.5	1.5	1.5	2.5	2.5	2.5	4	5
Radial Runout	Kea	1.5	2.5	2.5	4	5	5	5	7	7
Axial Runout	SD	1.5	1.5	1.5	1.5	2.5	2.5	2.5	4	5
Axial Runout	Sea	1.5	2.5	2.5	4	5	5	5	7	7

>> The width deviations of inner ring and outer ring are identical in a bearing

Bearing tolerance P2A inner ring

Nominal Bore Diameter	Dimensions in mm							
	Over Including	10	18	30	50	80	120	150
Tolerance in μm								
Bore Deviation	$\Delta ds, \Delta dmp$	0 -2	0 -2	0 -2	0 -2.5	0 -4	0 -5	0 -6
Variation Vdp	Series 9	2	2	2	2.5	4	4	5
	Series 0,2	2	2	2.5	2.5	3	3.5	5
Width Deviation	ΔBs	0 -25	0 -25	0 -25	0 -25	0 -25	0 -50	0 -50
Width Variation	VBs	1	1	1	1.3	1.3	2	2
Radial Runout	Kia	1.3	1.3	1.5	1.5	2	2	2.5
Axial Runout	Sd	1.3	1.3	1.3	1.3	1.3	2	2
Axial Runout	Sia	1.3	1.3	2	2	2	2	2.5

Bearing tolerance P2A outer ring

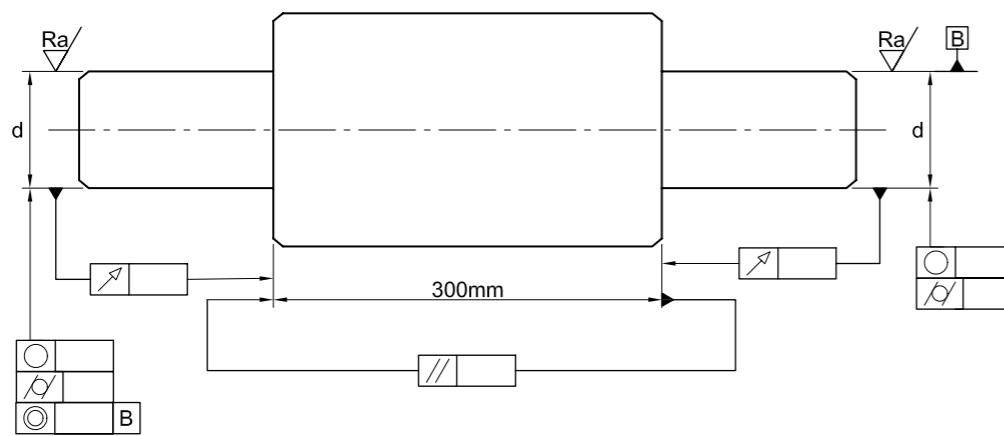
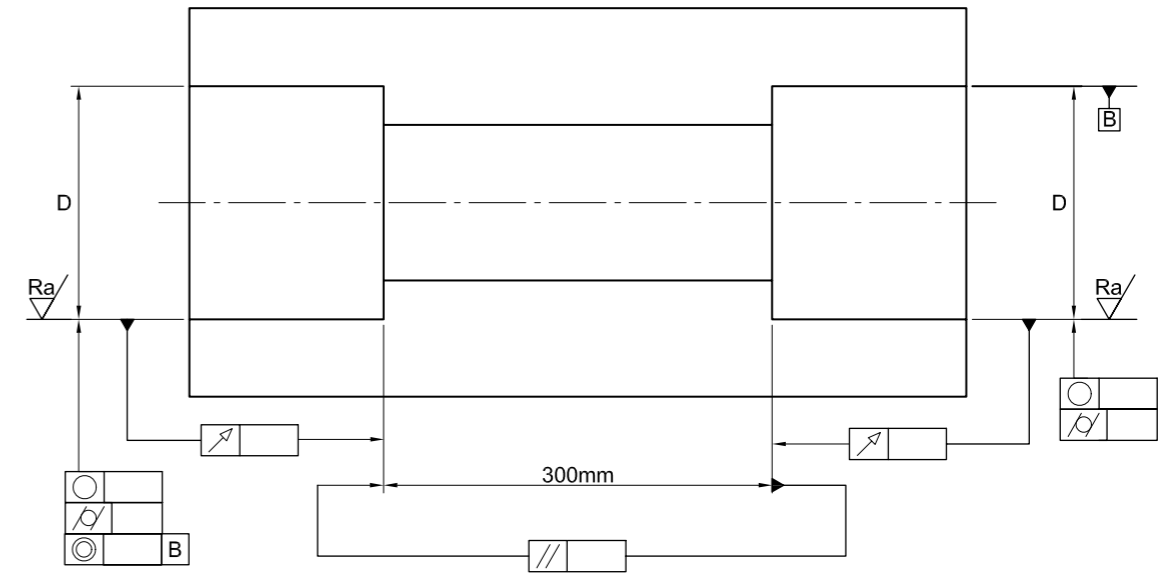
Nominal Outer Diameter	Dimensions in mm							
	Over Including	10	18	30	50	80	120	150
Tolerance in μm								
Outer Diameter Deviation	$\Delta Ds, \Delta Dmp$	0 -2.5	0 -3.5	0 -3.5	0 -3.5	0 -4	0 -4	0 -6
Variation VDp	Series 9	2	3.5	3.5	3.5	4	4	6
	Series 0,2	2	2.5	2.5	3	3.5	4	5
Width Variation	VCs	1	1	1	1.3	2	2	2
Radial Runout	Kea	1.5	2	2	2.5	3	3	3.5
Axial Runout	SD	1.3	1.3	1.3	1.3	2.5	2.5	2.5
Axial Runout	Sea	1.5	2	2	3	4	4	4

>> The width deviations of inner ring and outer ring are identical in a bearing

Bearing Mating Parts Tolerance Recommendations

Machine tool spindle shaft out of round would deteriorate bearing inner raceway roundness.

Any misalignment of bearings or mating parts would result in an increase of running temperature and vibration. Machining the mating parts as precise as possible can ensure the bearings perform as expected after assembled. The following are the recommendation for mating parts tolerance.



		P5	P4A	P2A
○	Circularity	$\frac{IT\ 3}{2}$	$\frac{IT\ 2}{2}$	$\frac{IT\ 1}{2}$
⊘	Cylindricity	$\frac{IT\ 3}{2}$	$\frac{IT\ 2}{2}$	$\frac{IT\ 1}{2}$
↗	Runout	IT 3	IT 2	IT 1
//	Parallelism	IT 3	IT 2	IT 1
◎	Concentricity	IT 4	IT 3	IT 2
Ra	Roughness	0.4μm	0.4μm	0.2μm

		P5	P4A	P2A
○	Circularity	$\frac{IT\ 3}{2}$	$\frac{IT\ 2}{2}$	$\frac{IT\ 1}{2}$
⊘	Cylindricity	$\frac{IT\ 3}{2}$	$\frac{IT\ 2}{2}$	$\frac{IT\ 1}{2}$
↗	Runout	IT 3	IT 2	IT 1
//	Parallelism	IT 3	IT 2	IT 1
◎	Concentricity	IT 4	IT 3	IT 2
Ra	Roughness	0.8μm	0.4μm	0.4μm

Nominal diameter in mm	≥	6	10	18	30	50	80	120	180	250
	<	10	18	30	50	80	120	180	250	315
Tolerance of form and squareness in micron	IT 0	0.6	0.8	1	1	1.2	1.5	2	3	4
	IT 1	1	1.2	1.5	1.5	2	2.5	3.5	4.5	6
	IT 2	1.5	2	2.5	2.5	3	4	5	7	8
	IT 3	2.5	3	4	4	5	6	8	10	12
	IT 4	4	5	6	7	8	10	12	14	16

Shaft and Housing Fit Tolerance Recommendations

Bearing seat tolerances are very critical for both assembly and bearing performance. Excessive shaft fit would generate heat and deteriorate bearing accuracy. Overly loose fit would cause ring creeping and early failure.

Super precision bearings are widely used in machine tool spindles. Rotating inner ring with stationary outer ring is the most common application. For rotating outer ring, or dm*N value over 1 million, please consult ABM for special fit tolerance.

dm*N value: Bearing pitch diameter ($\frac{OD+ID}{2}$) times revolution speed

7014 C at 10,000RPM: ($\frac{110mm+70mm}{2}$) \times 10,000=900,000

Recommended shaft OD tolerance for P4A bearing

Nominal Shaft Diameter in mm	\geq	10	18	30	50	80	120	180	
	<	10	18	30	50	80	120	180	
Shaft tolerance in μ m		+2	+2	+2	+3	+3	+3	+3.5	+4
		-2	-2	-2	-2	-2	-3	-4	-6

Recommended housing ID tolerance for P4A bearing

Nominal Shaft Diameter in mm	\geq	18	30	50	80	120	150	180	250
	<	30	50	80	120	150	180	250	315
Bearing Axially Fixed	Tolerance μ m	+5	+5	+5	+5	+7	+7	+7	+10
		0	0	0	-2.5	-3	-3	-3	-3
Bearing Axially Floating	Tolerance μ m	+7	+7	+7	+11	+17	+17	+19	+24
		+2	+2	+2	+4	+7	+7	+9	+11



>>>>> Oil quenching vacuum furnace in heat treatment facility of ABM

Lubrication

Grease lubrication:

Grease lubrication is the most common and cost efficient method for lubricating your bearings. Only small amount is needed for almost zero maintenance. Expensive oil air or oil mist equipment is not needed. Grease pack machine tool spindles usually can fulfill demand of long service life, low temperature increase and simple structure. Nowadays synthetic base oil grease is well developed and has outperformed the mineral base oil grease with higher attainable speed and longer service life.

>> We recommend some suitable greases such as:

Klüber Isoflex NBU15 (speed factor $dm \cdot N$ 1,000,000)

Klüber Isoflex NCA15 (speed factor $dm \cdot N$ 1,300,000)

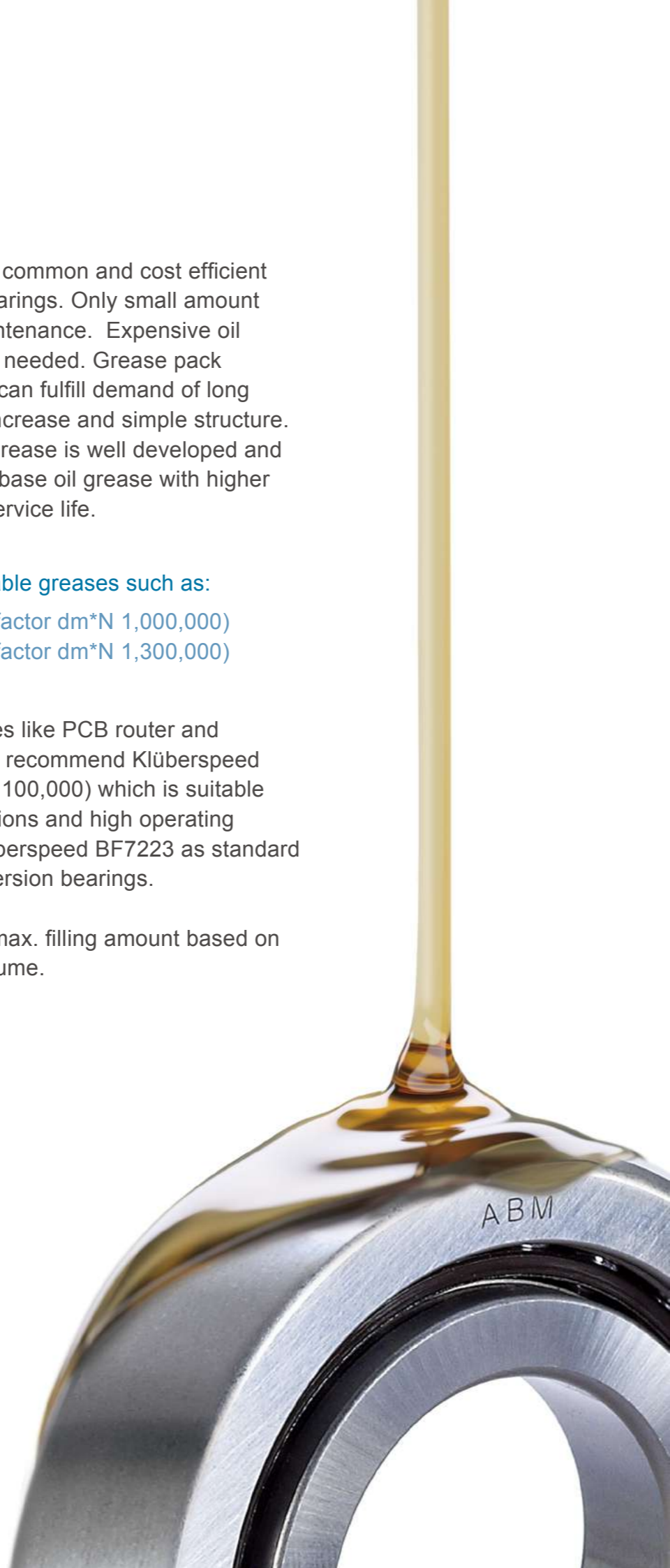
For high speed vertical spindles like PCB router and machining center spindles, we recommend Klüberspeed BF7223 (speed factor $dm \cdot N$ 2,100,000) which is suitable for any spindle mounting positions and high operating temperature. We also use Klüberspeed BF7223 as standard grease of (CB) H series seal version bearings.

The following table is grease max. filling amount based on 50% of bearing free inside volume.



Please reduce filling amount according to higher operation speed or elongate running in cycle.

Bore code	Grease quantity/Bearing series				
	(CB)H719	(CB)719	(CB)H70	(CB)70	(CB)72
CM ³					
00	0.18	0.10	0.25	0.17	0.25
01	0.18	0.10	0.30	0.20	0.35
02	0.28	0.17	0.45	0.30	0.50
03	0.30	0.18	0.60	0.40	0.70
04	0.60	0.35	1.00	0.75	1.15
05	0.70	0.40	1.15	0.85	1.45
06	0.90	0.45	1.70	1.15	2.10
07	1.20	0.65	2.20	1.75	3.00
08	1.60	1.40	2.60	2.35	3.80
09	2.10	1.60	3.65	3.00	4.55
10	2.30	1.70	4.00	3.30	5.45
11	3.40	2.20	5.95	4.60	6.50
12	3.60	2.50	6.40	4.95	8.00
13	3.90	2.65	6.80	5.30	9.35
14	5.80	4.35	9.20	7.10	10.80
15	6.10	4.60	9.70	7.50	12.90
16	7.00	4.90	12.80	9.65	12.30
17	8.50	6.80	13.40	10.30	18.30
18	9.40	7.10	17.70	13.30	19.10
19	9.80	7.40	18.40	13.90	26.10
20	12.80	9.70	19.20	14.60	27.20
21		10.10	24.60	15.00	
22		10.40	28.20	21.90	
24		14.20	30.30	23.60	
26				36.10	
28				38.30	
30				44.70	
32				58.20	
34				65.30	
36				94.90	



Grease Life Time and Replenish System

Grease will gradually deteriorate after a bearing starts its service. Refilling definite amount of grease every working period to bearings assembly like machine tool spindle brings several advantages:

1. Contaminated or degraded grease can be easily accessed and removed from raceway contact area
2. Achieve higher operation speed and sustain longer service life
3. Non-interrupted operation on 24/7 capacity

For applying "Grease replenish system", grease can be refilled through outer OD. This direct lubrication version bearing has suffix "s" in the designation, and can also be applied with oil air or oil mist system.

>>>> Please contact ABM for more details on "Direct Lubrication" version bearings.

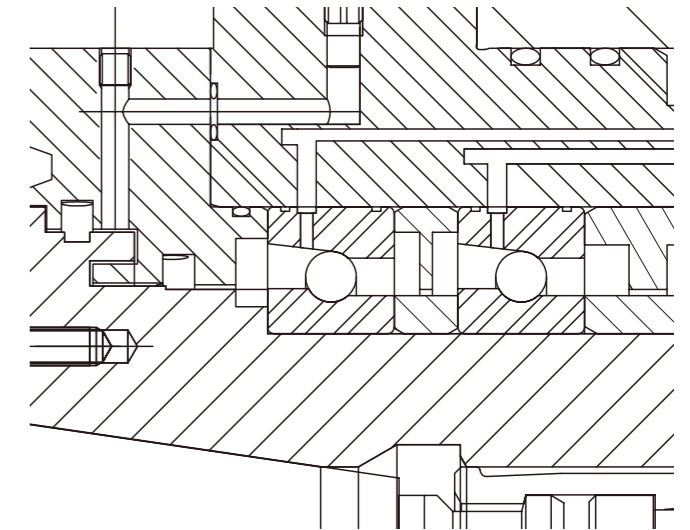


Oil Lubrication

For higher speed application, oil lubrication is a better solution.

Both oil mist and oil air systems can achieve minimum oil lubrication and heat dissipation ability.

Mating parts of bearings using oil mist are less complicated than oil air system.



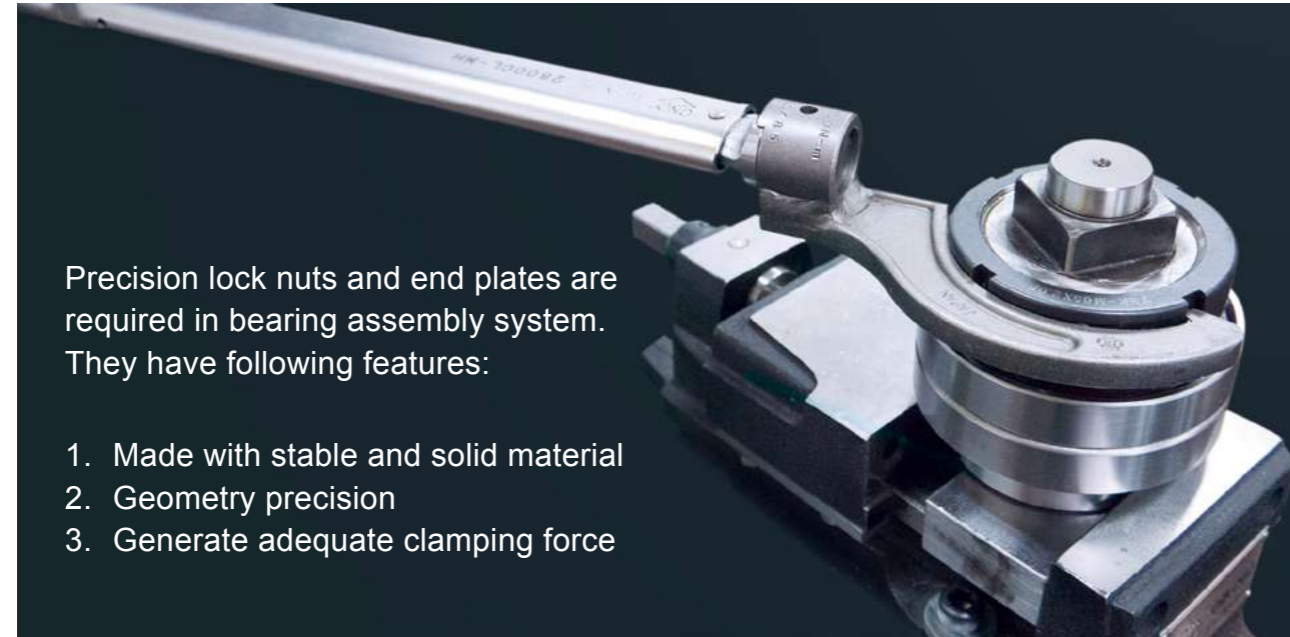
Oil air system >>

Oil air system supplies accurately metered oil through air stream to bearings and ensure there is enough oil to form effective elastohydrodynamic film. Oil is only carried not mixed by air stream. There is less oil mist effect and more environment friendly. Synthetic high viscosity lubricant (ISO VG68) is recommended. This lubricant can ensure the oil film of ball contact area existing under external load with minimum oil supply quantity. Oil supply position of oil air system is crucial. Each bearing of assembly should have its own oil supply nozzle. Nozzles have better deliver oil to ball contact area without interference and turbulence. ABM "Direct Lubrication" version bearings which have outer ring lubrication groove combined with O rings supply designer simple solution to deliver oil through outer ring to the load area.

Oil mist system >>

An oil mist system conveys a mixture of air and very finely divided oil droplets to bearing raceway surface. The system usually needs a larger flow rate than oil-air to ensure there is no lubricant starvation. Designers need to take care of oil drainage to prevent excessive friction heat inside bearings. ISO VG32 lubricant is suitable for most oil mist lubrication application.

Bearing Clamping Force and Tightening Torque



Bearings can be fixed on the shaft and located in the housing by lock nuts and end plates. Adequate clamping force can ensure the bearing assembly with right preload and squareness. Excessive clamping force can bring material fatigue and overheating of bearings. Inadequate clamping force cannot fully build preload of bearing set. Less running accuracy and service life would occur. The recommendation of clamping force and tightening torque is shown in following paragraph. Please refer and adjust when apply bearing mounting process.

■ Calculation of the Clamping Force Pa

The value of Pa can be obtained from:

$$Pa = Fs + (Ncp \cdot Fc) + Pr$$

where:

Pa	Axial clamping force (daN)
Fs	Minimum axial clamping force (daN)
Fc	Axial fitting force (daN)
Pr	Bearing preload (daN)
Ncp	Bearings in same orientation of bearing set need to be moved to close preload gap and achieve pre-set preload (Ex: QBC arrangement: Ncp:2)

■ Clamping Force Calculation

H719 SERIES			719 SERIES			H70 SERIES		
d	Fs	Fc	d	Fs	Fc	d	Fs	Fc
10	50	28	10	50	28	10	65	44
12	60	28	12	60	28	12	70	50
15	65	28	15	65	28	15	100	45
17	75	28	17	75	28	17	100	46
20	130	40	20	130	40	20	160	50
25	160	34	25	160	34	25	180	60
30	190	30	30	190	30	30	250	55
35	260	44	35	260	44	35	330	65
40	310	38	40	310	38	40	410	75
45	310	48	45	310	48	45	450	75
50	380	50	50	380	50	50	500	75
55	410	43	55	410	43	55	600	80
60	450	40	60	450	40	60	650	75
65	480	37	65	480	37	65	700	70
70	650	48	70	650	48	70	850	80
75	650	50	75	650	50	75	900	75
80	700	65	80	700	65	80	1100	120
85	900	90	85	900	90	85	1100	140
90	950	85	90	950	85	90	1600	170
95	1000	85	95	1000	85	95	1400	150
100	1200	100	100	1200	100	100	1500	140
			105	1200	100	105	1700	160
			110	1300	90	110	2000	180
			120	1600	120	120	2200	190

Bearing Clamping Force and Tightening Torque

■ Clamping Force Calculation

70 SERIES			70 SERIES			72 SERIES		
d	Fs	Fc	d	Fs	Fc	d	Fs	Fc
10	65	44	105	1700	160	10	85	60
12	70	50	110	2000	180	12	95	70
15	100	45	120	2200	190	15	100	70
17	100	46	130	2700	270	17	130	70
20	160	50	140	2900	250	20	230	85
25	180	60	150	3400	270	25	240	85
30	250	55				30	340	80
35	330	65				35	550	100
40	410	75				40	600	100
45	450	75				45	600	100
50	500	75				50	700	100
55	600	80				55	750	110
60	650	75				60	1100	130
65	700	70				65	1300	130
70	850	80				70	1400	130
75	900	75				75	1500	130
80	1100	120				80	1700	190
85	1100	140				85	1900	250
90	1600	170				90	1900	250
95	1400	150				95	2700	300
100	1500	140				100	2700	310

■ Calculation of the Tightening Torque

With values for Pa, the tightening torque C (daN-mm) can be calculated:

$$C = K \cdot Pa \quad \text{for a locking nut}$$

$$C = K \cdot Pa / Nb \quad \text{for bolts in an end cap}$$

where:

K = factor based on the thread

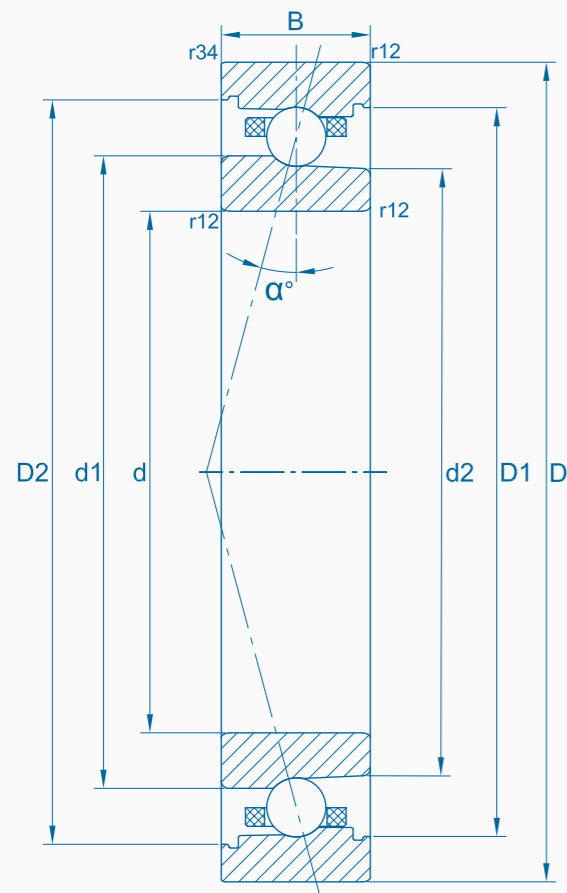
Nb = number of bolts in the end cap

Coefficient "K" for calculation of the tightening torque

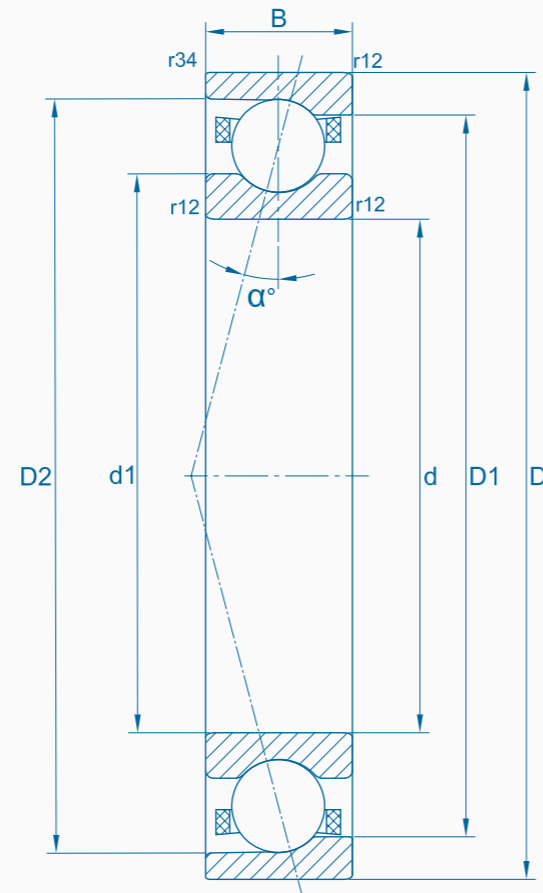
THREAD	"K" FACTOR		THREAD	"K" FACTOR
	NUTS	BOLTS		
M4		0.8	M70	9.0
M5		1.0	M75	9.6
M6		1.2	M80	10.0
M8		1.6	M85	11.0
M10	1.4	2.0	M90	11.0
M12	1.6	2.4	M95	12.0
M14	1.9	2.7	M100	12.0
M15	2.0	2.9	M105	13.0
M16	2.1	3.1	M110	14.0
M17	2.2		M120	15.0
M20	2.6		M130	16.0
M25	3.2		M140	17.0
M30	3.9		M150	18.0
M35	4.5		M160	19.0
M40	5.1		M170	21.0
M45	5.8		M180	22.0
M50	6.4		M190	23.0
M55	7.0		M200	24.0
M60	7.6		M220	26.0
M65	8.1		M240	27.0
			M260	29.0
			M280	32.0

■ Bearing Data

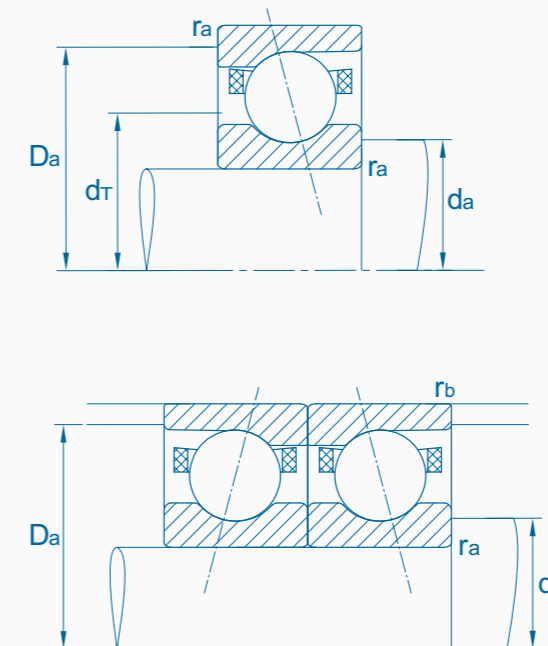
Symbol explanation >>



- d(mm): Bore diameter
- D(mm): Outer diameter
- B(mm): Width of single bearing
- d1(mm): Outer diameter of inner ring
- d2(mm): Outer diameter of inner ring (open side)
- D1(mm): Inner diameter of outer ring
- D2(mm): Inner diameter of outer ring (open side)



- r1,2(mm): Chamfer (min)
- r3,4(mm): Chamfer, open side (min)
- α° =contact angle
- ra max(mm): Undercut of mating part
- rb max(mm): Undercut of mating part(open side)
- da min(mm): Abutment diameter inner ring
- Da max(mm): Abutment diameter outer ring



- dT(mm): Oiling nozzle position
- m(kg): Bearing weight
- C(N): Dynamic load rating
- Co(N): Static load rating
- noil(RPM): Attainable speed with oil lubrication
- ngrease(RPM): Attainable speed with grease lubrication
- Fv(N): Preload for paired bearings
- Cax(N/um): Axial Stiffness for paired bearings

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H71900 C	10	22	6	13.6	13.3	17.8	18.5	0.3	0.3	0.3	0.1	12.5	19.5	14.5	0.01	18	1420	590	135000	100000	7	12	21	18	45	25	H71900 C
H71900 E	10	22	6	13.6	13.3	17.8	18.5	0.3	0.3	0.3	0.1	12.5	19.5	14.5	0.01	25	1360	565	125000	94000	11	25	35	37	70	49	H71900 E
CBH71900 C	10	22	6	13.6	13.3	17.8	18.5	0.3	0.3	0.3	0.1	12.5	19.5	14.5	0.01	18	1420	415	168750	125000	7	12	21	18	45	25	CBH71900 C
CBH71900 E	10	22	6	13.6	13.3	17.8	18.5	0.3	0.3	0.3	0.1	12.5	19.5	14.5	0.01	25	1360	400	156250	117500	11	25	35	37	70	49	CBH71900 E
H71901 C	12	24	6	15.4	15.1	19.6	20.3	0.3	0.3	0.3	0.1	14.5	21.5	16.3	0.01	18	1480	650	120000	90000	7	12	22	19	45	26	H71901 C
H71901 E	12	24	6	15.4	15.1	19.6	20.3	0.3	0.3	0.3	0.1	14.5	21.5	16.3	0.01	25	1410	620	110000	82000	12	26	35	39	70	51	H71901 E
CBH71901 C	12	24	6	15.4	15.1	19.6	20.3	0.3	0.3	0.3	0.1	14.5	21.5	16.3	0.01	18	1480	455	150000	112500	7	12	22	19	45	26	CBH71901 C
CBH71901 E	12	24	6	15.4	15.1	19.6	20.3	0.3	0.3	0.3	0.1	14.5	21.5	16.3	0.01	25	1410	440	137500	102500	12	26	35	39	70	51	CBH71901 E
H71902 C	15	28	7	18.7	18.3	23.9	24.5	0.3	0.3	0.3	0.1	17.5	25.5	19.9	0.02	18	2010	940	100000	75000	10	15	30	23	60	31	H71902 C
H71902 E	15	28	7	18.7	18.3	23.9	24.5	0.3	0.3	0.3	0.1	17.5	25.5	19.9	0.02	25	1930	900	90000	67000	16	32	50	48	100	64	H71902 E
CBH71902 C	15	28	7	18.7	18.3	23.9	24.5	0.3	0.3	0.3	0.1	17.5	25.5	19.9	0.02	18	2010	660	125000	93750	10	15	30	23	60	31	CBH71902 C
CBH71902 E	15	28	7	18.7	18.3	23.9	24.5	0.3	0.3	0.3	0.1	17.5	25.5	19.9	0.02	25	1930	630	112500	83750	16	32	50	48	100	64	CBH71902 E
H71903 C	17	30	7	21.0	20.6	26.2	26.8	0.3	0.3	0.3	0.1	19.5	27.5	22.2	0.02	18	2150	1070	90000	67000	11	17	35	27	65	34	H71903 C
H71903 E	17	30	7	21.0	20.6	26.2	26.8	0.3	0.3	0.3	0.1	19.5	27.5	22.2	0.02	25	2060	1020	82000	61000	17	35	50	62	100	67	H71903 E
CBH71903 C	17	30	7	21.0	20.6	26.2	26.8	0.3	0.3	0.3	0.1	19.5	27.5	22.2	0.02	18	2150	760	112500	83750	11	17	35	27	65	34	CBH71903 C
CBH71903 E	17	30	7	21.0	20.6	26.2	26.8	0.3	0.3	0.3	0.1	19.5	27.5	22.2	0.02	25	2060	720	102500	76250	17	35	50	62	100	67	CBH71903 E
H71904 C	20	37	9	25.1	24.5	31.7	33.0	0.3	0.3	0.3	0.15	23.0	33.5	26.6	0.04	18	3900	1900	75000	56000	20	21	60	33	120	44	H71904 C
H71904 E	20	37	9	25.1	24.5	31.7	33.0	0.3	0.3	0.3	0.15	23.0	33.5	26.6	0.04	25	3700	1820	68000	51000	30	44	90	66	180	85	H71904 E
CBH71904 C	20	37	9	25.1	24.5	31.7	33.0	0.3	0.3	0.3	0.15	23.0	33.5	26.6	0.04	18	3900	1340	93750	70000	20	21	60	33	120	44	CBH71904 C
CBH71904 E	20	37	9	25.1	24.5	31.7	33.0	0.3	0.3	0.3	0.15	23.0	33.5	26.6	0.04	25	3700	1280	85000	63750	30	44	90	66	180	85	CBH71904 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H71905 C	25	42	9	30.6	30.0	37.2	38.5	0.3	0.3	0.3	0.15	28.0	38.5	32.1	0.04	18	4250	2330	63000	47000	22	25	65	38	130	51	H71905 C
H71905 E	25	42	9	30.6	30.0	37.2	38.5	0.3	0.3	0.3	0.15	28.0	38.5	32.1	0.04	25	4100	2220	57000	43000	35	52	100	76	200	99	H71905 E
CBH71905 C	25	42	9	30.6	30.0	37.2	38.5	0.3	0.3	0.3	0.15	28.0	38.5	32.1	0.04	18	4250	1640	78750	58750	22	25	65	38	130	51	CBH71905 C
CBH71905 E	25	42	9	30.6	30.0	37.2	38.5	0.3	0.3	0.3	0.15	28.0	38.5	32.1	0.04	25	4100	1560	71250	53750	35	52	100	76	200	99	CBH71905 E
H71906 C	30	47	9	35.1	35.0	41.7	43.0	0.3	0.3	0.3	0.15	33.0	43.5	36.5	0.05	18	4650	2750	55000	41000	23	28	70	43	140	57	H71906 C
H71906 E	30	47	9	35.1	35.0	41.7	43.0	0.3	0.3	0.3	0.15	33.0	43.5	36.5	0.05	25	4400	2650	50000	37000	35	58	110	87	220	112	H71906 E
CBH71906 C	30	47	9	35.1	35.0	41.7	43.0	0.3	0.3	0.3	0.15	33.0	43.5	36.5	0.05	18	4650	1930	68750	51250	23	28	70	43	140	57	CBH71906 C
CBH71906 E	30	47	9	35.1	35.0	41.7	43.0	0.3	0.3	0.3	0.15	33.0	43.5	36.5	0.05	25	4400	1840	62500	46250	35	58	110	87	220	112	CBH71906 E
H71907 C	35	55	10	41.4	40.8	48.1	49.4	0.6	0.3	0.6	0.15	40.0	50.5	43.0	0.08	18	5050	3300	47000	35000	25	32	80	50	150	64	H71907 C
H71907 E	35	55	10	41.4	40.8	48.1	49.4	0.6	0.3	0.6	0.15	40.0	50.5	43.0	0.08	25	4800	3150	43000	32000	40	67	120	99	240	129	H71907 E
CBH71907 C	35	55	10	41.4	40.8	48.1	49.4	0.6	0.3	0.6	0.15	40.0	50.5	43.0	0.07	18	5050	2320	58750	43750	25	32	80	50	150	64	CBH71907 C
CBH71907 E	35	55	10	41.4	40.8	48.1	49.4	0.6	0.3	0.6	0.15	40.0	50.5	43.0	0.07	25	4800	2210	53750	40000	40	67	120	99	240	129	CBH71907 E
H71908 C	40	62	12	46.8	45.3	55.2	56.7	0.6	0.3	0.6	0.15	45.0	57.5	48.3	0.11	18	6850	4550	42000	31000	35	37	100	55	210	75	H71908 C
H71908 E	40	62	12	46.8	45.3	55.2	56.7	0.6	0.3	0.6	0.15	45.0	57.5	48.3	0.11	25	6550	4300	38000	28500	55	77	160	113	330	148	H71908 E
CBH71908 C	40	62	12	46.8	45.3	55.2	56.7	0.6	0.3	0.6	0.15	45.0	57.5	48.3	0.10	18	6850	3200	52500	38750	35	37	100	55	210	75	CBH71908 C
CBH71908 E	40	62	12	46.8	45.3	55.2	56.7	0.6	0.3	0.6	0.15	45.0	57.5	48.3	0.10	25	6550	3050	47500	35625	55	77	160	113	330	148	CBH71908 E
H71909 C	45	68	12	52.3	50.8	60.7	62.2	0.6	0.3	0.6	0.15	50.0	63.5	53.8	0.13	18	7300	5150	38000	28500	35	40	110	61	220	81	H71909 C
H71909 E	45	68	12	52.3	50.8	60.7	62.2	0.6	0.3	0.6	0.15	50.0	63.5	53.8	0.13	25	6950	4900	34000	25500	60	86	170	124	350	162	H71909 E
CBH71909 C	45	68	12	52.3	50.8	60.7	62.2	0.6	0.3	0.6	0.15	50.0	63.5	53.8	0.12	18	7300	3600	47500	35625	35	40	110	61	220	81	CBH71909 C
CBH71909 E	45	68	12	52.3	50.8	60.7	62.2	0.6	0.3	0.6	0.15	50.0	63.5	53.8	0.12	25	6950	3450	42500	31875	60	86	170	124	350	162	CBH71909 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H71910 C	50	72	12	56.8	55.3	65.2	66.7	0.6	0.3	0.6	0.15	55.0	67.5	58.3	0.13	18	7500	5550	35000	26000	40	44	110	64	230	86	H71910 C
H71910 E	50	72	12	56.8	55.3	65.2	66.7	0.6	0.3	0.6	0.15	55.0	67.5	58.3	0.13	25	7150	5300	32000	24000	60	90	180	132	360	171	H71910 E
CBH71910 C	50	72	12	56.8	55.3	65.2	66.7	0.6	0.3	0.6	0.15	55.0	67.5	58.3	0.12	18	7500	3900	43750	32500	40	44	110	64	230	86	CBH71910 C
CBH71910 E	50	72	12	56.8	55.3	65.2	66.7	0.6	0.3	0.6	0.15	55.0	67.5	58.3	0.12	25	7150	3700	40000	30000	60	90	180	132	360	171	CBH71910 E
H71911 C	55	80	13	63.1	61.8	72.9	74.5	1.0	0.3	0.6	0.3	60.0	75.0	65.0	0.18	18	10000	7500	31000	23000	50	50	150	75	300	99	H71911 C
H71911 E	55	80	13	63.1	61.8	72.9	74.5	1.0	0.3	0.6	0.3	60.0	75.0	65.0	0.18	25	9600	7150	28500	21500	80	104	240	154	480	199	H71911 E
CBH71911 C	55	80	13	63.1	61.8	72.9	74.5	1.0	0.3	0.6	0.3	60.0	75.0	65.0	0.17	18	10000	5250	38750	28750	50	50	150	75	300	99	CBH71911 C
CBH71911 E	55	80	13	63.1	61.8	72.9	74.5	1.0	0.3	0.6	0.3	60.0	75.0	65.0	0.17	25	9600	5050	35625	26875	80	104	240	154	480	199	CBH71911 E
H71912 C	60	85	13	68.1	66.8	77.9	79.5	1.0	0.3	0.6	0.3	65.0	80.0	70.0	0.20	18	10300	8100	29500	22000	50	52	160	80	310	104	H71912 C
H71912 E	60	85	13	68.1	66.8	77.9	79.5	1.0	0.3	0.6	0.3	65.0	80.0	70.0	0.20	25	9800	7700	26500	20000	80	109	240	161	490	209	H71912 E
CBH71912 C	60	85	13	68.1	66.8	77.9	79.5	1.0	0.3	0.6	0.3	65.0	80.0	70.0	0.19	18	10300	5650	36875	27500	50	52	160	80	310	104	CBH71912 C
CBH71912 E	60	85	13	68.1	66.8	77.9	79.5	1.0	0.3	0.6	0.3	65.0	80.0	70.0	0.19	25	9800	5400	33125	25000	80	109	240	161	490	209	CBH71912 E
H71913 C	65	90	13	73.1	71.8	82.9	84.5	1.0	0.3	0.6	0.3	70.0	85.0	75.0	0.21	18	10600	8600	27500	20500	55	56	160	83	320	110	H71913 C
H71913 E	65	90	13	73.1	71.8	82.9	84.5	1.0	0.3	0.6	0.3	70.0	85.0	75.0	0.21	25	10100	8200	25000	18500	80	113	250	169	500	219	H71913 E
CBH71913 C	65	90	13	73.1	71.8	82.9	84.5	1.0	0.3	0.6	0.3	70.0	85.0	75.0	0.19	18	10600	6050	34375	25625	55	56	160	83	320	110	CBH71913 C
CBH71913 E	65	90	13	73.1	71.8	82.9	84.5	1.0	0.3	0.6	0.3	70.0	85.0	75.0	0.19	25	10100	5800	31250	23125	80	113	250	169	500	219	CBH71913 E
H71914 C	70	100	16	80.1	78.5	91.3	93.4	1.0	0.3	0.6	0.3	76.0	94.5	82.3	0.35	18	13000	10600	25000	18500	65	59	200	89	390	118	H71914 C
H71914 E	70	100	16	80.1	78.5	91.3	93.4	1.0	0.3	0.6	0.3	76.0	94.5	82.3	0.35	25	12400	10100	22500	17000	100	122	310	182	620	235	H71914 E
CBH71914 C	70	100	16	80.1	78.5	91.3	93.4	1.0	0.3	0.6	0.3	76.0	94.5	82.3	0.33	18	13000	7400	31250	23125	65	59	200	89	390	118	CBH71914 C
CBH71914 E	70	100	16	80.1	78.5	91.3	93.4	1.0	0.3	0.6	0.3	76.0	94.5	82.3	0.33	25	12400	7050	28125	21250	100	122	310	182	620	235	CBH71914 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H71915 C	75	105	16					1.0	0.6	0.6	0.6	81.0	99.5	87.3	0.40	18	19000	21200	26000	16000	65	50	196	78	391	107	H71915 C
H71915 E	75	105	16					1.0	0.6	0.6	0.6	81.0	99.5	87.3	0.40	25	17600	20000	20000	13000	105	125	315	185	630	241	H71915 E
CBH71915 C	75	105	16					1.0	0.6	0.6	0.6	81.0	99.5	87.3	0.37	18	19000	15000	30000	18000	45	49	134	75	268	100	CBH71915 C
CBH71915 E	75	105	16					1.0	0.6	0.6	0.6	81.0	99.5	87.3	0.37	25	17600	13700	24000	16000	73	125	219	184	437	237	CBH71915 E
H71916 C	80	110	16					1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.41	18	21200	24000	24000	15000	73	53	218	83	437	113	H71916 C
H71916 E	80	110	16					1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.41	25	19600	22400	20000	13000	117	132	352	196	704	256	H71916 E
CBH71916 C	80	110	16					1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.38	18	21200	16600	28000	17000	50	52	150	79	300	106	CBH71916 C
CBH71916 E	80	110	16					1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.38	25	19600	15600	24000	16000	81	132	244	195	488	251	CBH71916 E
H71917 C	85	120	18					1.0	0.6	0.6	0.6	92.0	114.0	99.7	0.61	18	22000	26000	22000	14000	76	56	228	88	456	121	H71917 C
H71917 E	85	120	18					1.0	0.6	0.6	0.6	92.0	114.0	99.7	0.61	25	20400	24500	19000	12000	123	142	368	210	736	274	H71917 E
CBH71917 C	85	120	18					1.0	0.6	0.6	0.6	92.0	114.0	99.7	0.57	18	22000	18000	26000	16000	53	56	158	85	316	114	CBH71917 C
CBH71917 E	85	120	18					1.0	0.6	0.6	0.6	92.0	114.0	99.7	0.57	25	20400	17000	20000	14000	84	141	253	208	506	268	CBH71917 E
H71918 C	90	125	18					1.0	0.6	0.6	0.6	97.0	119.0	104.5	0.63	18	23600	28500	20000	13000	83	58	249	91	498	125	H71918 C
H71918 E	90	125	18					1.0	0.6	0.6	0.6	97.0	119.0	104.5	0.63	25	22400	26500	18000	11000	133	146	398	216	796	281	H71918 E
CBH71918 C	90	125	18					1.0	0.6	0.6	0.6	97.0	119.0	104.5	0.58	18	23600	19600	24000	15000	57	57	170	87	340	117	CBH71918 C
CBH71918 E	90	125	18					1.0	0.6	0.6	0.6	97.0	119.0	104.5	0.58	25	22400	18600	20000	14000	92	145	276	215	552	277	CBH71918 E
H71919 C	95	130	18					1.0	0.6	0.6	0.6	102.0	124.0	109.5	0.66	18	24500	30000	19000	13000	85	61	255	95	509	129	H71919 C
H71919 E	95	130	18					1.0	0.6	0.6	0.6	102.0	124.0	109.5	0.66	25	22800	28000	17000	10000	138	153	414	227	828	295	H71919 E
CBH71919 C	95	130	18					1.0	0.6	0.6	0.6	102.0	124.0	109.5	0.61	18	24500	20800	22000	14000	59	60	177	91	354	123	CBH71919 C
CBH71919 E	95	130	18					1.0	0.6	0.6	0.6	102.0	124.0	109.5	0.61	25	22800	19300	19000	13000	96	153	288	226	575	290	CBH71919 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																							L	M	H		
H71920 C	100	140	20					1.0	0.6	0.6	0.6	107.0	133.0	116.7	0.90	18	29000	36000	18000	11000	102	66	306	102	611	140	H71920 C
H71920 E	100	140	20					1.0	0.6	0.6	0.6	107.0	133.0	116.7	0.90	25	27500	33500	16000	9500	166	166	497	245	994	319	H71920 E
CBH71920 C	100	140	20					1.0	0.6	0.6	0.6	107.0	133.0	116.7	0.84	18	29000	25000	20000	13000	70	64	209	98	418	132	CBH71920 C
CBH71920 E	100	140	20					1.0	0.6	0.6	0.6	107.0	133.0	116.7	0.84	25	27500	23600	18000	12000	115	165	345	244	690	314	CBH71920 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	
																			L		M		H			
71900 C	10	22	6	14.0	18.1	0.3	0.15	0.3	0.15	13.0	19.5	15.2		0.01	15	3000	1530	110000	70000	14	13	51	24	114	37	71900 C
71900 E	10	22	6	14.0	18.1	0.3	0.15	0.3	0.15	13.0	19.5	15.2		0.01	25	2900	1460	95000	63000	17	27	63	45	149	65	71900 E
CB71900 C	10	22	6	14.0	18.1	0.3	0.15	0.3	0.15	13.0	19.5	15.2		0.01	15	3000	1060	150000	90000	5	9	20	17	49	26	CB71900 C
CB71900 E	10	22	6	14.0	18.1	0.3	0.15	0.3	0.15	13.0	19.5	15.2		0.01	25	2900	1000	120000	75000	9	25	25	35	70	53	CB71900 E
71901 C	12	24	6	15.8	20.2	0.3	0.15	0.3	0.15	15.0	21.5	17.2		0.01	15	3350	1860	90000	60000	15	14	56	27	126	42	71901 C
71901 E	12	24	6	15.8	20.2	0.3	0.15	0.3	0.15	15.0	21.5	17.2		0.01	25	3200	1760	85000	56000	19	31	67	51	162	74	71901 E
CB71901 C	12	24	6	15.8	20.2	0.3	0.15	0.3	0.15	15.0	21.5	17.2		0.01	15	3350	1290	130000	80000	6	11	22	19	54	29	CB71901 C
CB71901 E	12	24	6	15.8	20.2	0.3	0.15	0.3	0.15	15.0	21.5	17.2		0.01	25	3200	1220	100000	67000	10	28	26	40	75	60	CB71901 E
71902 C	15	28	7	19.2	23.8	0.3	0.15	0.3	0.15	18.0	25.5	20.9		0.02	15	5000	2900	75000	50000	20	17	77	31	167	47	71902 C
71902 E	15	28	7	19.2	23.8	0.3	0.15	0.3	0.15	18.0	25.5	20.9		0.02	25	4800	2750	70000	48000	22	35	112	65	259	93	71902 E
CB71902 C	15	28	7	19.2	23.8	0.3	0.15	0.3	0.15	18.0	25.5	20.9		0.01	15	5000	2000	100000	67000	11	15	38	25	87	37	CB71902 C
CB71902 E	15	28	7	19.2	23.8	0.3	0.15	0.3	0.15	18.0	25.5	20.9		0.01	25	4800	1930	85000	56000	17	36	48	53	125	77	CB71902 E
71903 C	17	30	7	20.8	26.3	0.3	0.15	0.3	0.15	20.0	27.5	22.2		0.02	15	5300	3150	70000	48000	21	18	81	34	176	50	71903 C
71903 E	17	30	7	20.8	26.3	0.3	0.15	0.3	0.15	20.0	27.5	22.2		0.02	25	5000	3000	63000	43000	23	37	116	69	268	98	71903 E
CB71903 C	17	30	7	20.8	26.3	0.3	0.15	0.3	0.15	20.0	27.5	22.2		0.01	15	5300	2200	90000	60000	11	16	39	26	91	39	CB71903 C
CB71903 E	17	30	7	20.8	26.3	0.3	0.15	0.3	0.15	20.0	27.5	22.2		0.01	25	5000	2080	75000	50000	18	39	50	57	132	82	CB71903 E
71904 C	20	37	9	25.3	31.8	0.3	0.15	0.3	0.15	24.0	33.5	26.8		0.03	15	7350	4550	56000	38000	41	25	137	44	297	66	71904 C
71904 E	20	37	9	25.3	31.8	0.3	0.15	0.3	0.15	24.0	33.5	26.8		0.03	25	6950	4400	53000	36000	38	47	172	84	390	118	71904 E
CB71904 C	20	37	9	25.3	31.8	0.3	0.15	0.3	0.15	24.0	33.5	26.8		0.03	15	7350	3200	75000	50000	13	17	58	32	132	47	CB71904 C
CB71904 E	20	37	9	25.3	31.8	0.3	0.15	0.3	0.15	24.0	33.5	26.8		0.03	25	6950	3050	63000	43000	27	48	77	69	193	99	CB71904 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L		M		H				
71905 C	25	42	9	30.3		37.0		0.3	0.15	0.3	0.15	29.0	38.5	31.8	0.04	15	8150	5700	48000	32000	40	27	141	49	326	76	71905 C
71905 E	25	42	9	30.3		37.0		0.3	0.15	0.3	0.15	29.0	38.5	31.8	0.04	25	7800	5500	45000	30000	40	55	189	98	430	138	71905 E
CB71905 C	25	42	9	30.3		37.0		0.3	0.15	0.3	0.15	29.0	38.5	31.8	0.04	15	8150	4000	63000	43000	13	19	64	37	147	55	CB71905 C
CB71905 E	25	42	9	30.3		37.0		0.3	0.15	0.3	0.15	29.0	38.5	31.8	0.04	25	7800	3800	53000	36000	30	56	84	81	214	116	CB71905 E
71906 C	30	47	9	35.3		41.8		0.3	0.15	0.3	0.15	34.0	43.5	36.8	0.05	15	8650	6550	43000	28000	42	30	158	54	345	82	71906 C
71906 E	30	47	9	35.3		41.8		0.3	0.15	0.3	0.15	34.0	43.5	36.8	0.05	25	8150	6300	40000	26000	40	59	194	106	445	149	71906 E
CB71906 C	30	47	9	35.3		41.8		0.3	0.15	0.3	0.15	34.0	43.5	36.8	0.04	15	8650	4650	53000	36000	14	21	66	40	153	59	CB71906 C
CB71906 E	30	47	9	35.3		41.8		0.3	0.15	0.3	0.15	34.0	43.5	36.8	0.04	25	8150	4400	48000	32000	30	60	86	88	223	126	CB71906 E
71907 C	35	55	10	41.5		48.6		0.6	0.3	0.6	0.3	40.0	51.5	44.0	0.07	15	11800	9500	38000	24000	61	36	209	64	481	99	71907 C
71907 E	35	55	10	41.5		48.6		0.6	0.3	0.6	0.3	40.0	51.5	44.0	0.07	25	11000	9000	36000	22000	61	74	276	129	619	181	71907 E
CB71907 C	35	55	10	41.5		48.6		0.6	0.3	0.6	0.3	40.0	51.5	44.0	0.06	15	11800	6550	48000	32000	21	27	96	50	217	72	CB71907 C
CB71907 E	35	55	10	41.5		48.6		0.6	0.3	0.6	0.3	40.0	51.5	44.0	0.06	25	11000	6300	40000	26000	44	74	127	109	316	154	CB71907 E
71908 C	40	62	12	46.7		55.6		0.6	0.3	0.6	0.3	45.0	58.5	49.1	0.11	15	17600	13700	36000	22000	85	41	300	73	633	107	71908 C
71908 E	40	62	12	46.7		55.6		0.6	0.3	0.6	0.3	45.0	58.5	49.1	0.11	25	16600	13200	34000	20000	112	92	450	155	984	215	71908 E
CB71908 C	40	62	12	46.7		55.6		0.6	0.3	0.6	0.3	45.0	58.5	49.1	0.09	15	17600	9650	43000	28000	39	34	156	60	341	86	CB71908 C
CB71908 E	40	62	12	46.7		55.6		0.6	0.3	0.6	0.3	45.0	58.5	49.1	0.09	25	16600	9150	38000	24000	76	91	222	134	519	185	CB71908 E
71909 C	45	68	12	52.2		61.1		0.6	0.3	0.6	0.3	50.0	63.5	54.4	0.13	15	18600	15600	32000	19000	89	44	315	79	667	116	71909 C
71909 E	45	68	12	52.2		61.1		0.6	0.3	0.6	0.3	50.0	63.5	54.4	0.13	25	17600	15000	30000	18000	116	99	473	169	1038	234	71909 E
CB71909 C	45	68	12	52.2		61.1		0.6	0.3	0.6	0.3	50.0	63.5	54.4	0.11	15	18600	10800	38000	24000	41	37	164	65	360	93	CB71909 C
CB71909 E	45	68	12	52.2		61.1		0.6	0.3	0.6	0.3	50.0	63.5	54.4	0.11	25	17600	10400	36000	22000	79	98	230	145	541	201	CB71909 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																		L		M		H					
71910 C	50	72	12	56.7		65.6		0.6	0.3	0.6	0.3	55.0	67.5	58.9	0.13	15	19000	16600	30000	18000	90	46	321	81	679	120	71910 C
71910 E	50	72	12	56.7		65.6		0.6	0.3	0.6	0.3	55.0	67.5	58.9	0.13	25	18000	15600	26000	16000	118	103	482	175	1059	242	71910 E
CB71910 C	50	72	12	56.7		65.6		0.6	0.3	0.6	0.3	55.0	67.5	58.9	0.11	15	19000	11600	36000	22000	41	38	166	67	366	96	CB71910 C
CB71910 E	50	72	12	56.7		65.6		0.6	0.3	0.6	0.3	55.0	67.5	58.9	0.11	25	18000	11000	34000	20000	79	101	232	150	549	208	CB71910 E
71911 C	55	80	13	63.7		71.6		1.0	0.6	0.6	0.6	60.0	75.5	65.1	0.18	15	22800	20400	26000	16000	112	51	391	90	825	132	71911 C
71911 E	55	80	13	63.7		71.6		1.0	0.6	0.6	0.6	60.0	75.5	65.1	0.18	25	21600	19300	24000	15000	149	116	592	194	1287	267	71911 E
CB71911 C	55	80	13	63.7		71.6		1.0	0.6	0.6	0.6	60.0	75.5	65.1	0.15	15	22800	14300	34000	20000	51	42	204	74	444	106	CB71911 C
CB71911 E	55	80	13	63.7		71.6		1.0	0.6	0.6	0.6	60.0	75.5	65.1	0.15	25	21600	13400	30000	18000	58	94	298	169	693	233	CB71911 E
71912 C	60	85	13	68.7		76.6		1.0	0.6	0.6	0.6	65.0	80.5	70.1	0.19	15	24000	22800	24000	15000	117	55	410	97	866	141	71912 C
71912 E	60	85	13	68.7		76.6		1.0	0.6	0.6	0.6	65.0	80.5	70.1	0.19	25	22800	21600	22000	14000	156	124	622	209	1353	288	71912 E
CB71912 C	60	85	13	68.7		76.6		1.0	0.6	0.6	0.6	65.0	80.5	70.1	0.16	15	24000	16000	32000	19000	54	46	215	80	470	114	CB71912 C
CB71912 E	60	85	13	68.7		76.6		1.0	0.6	0.6	0.6	65.0	80.5	70.1	0.16	25	22800	15000	28000	17000	57	99	302	180	707	248	CB71912 E
71913 C	65	90	13	73.7		81.5		1.0	0.6	0.6	0.6	70.0	85.5	75.1	0.20	15	24500	24000	22000	14000	118	57	417	99	883	146	71913 C
71913 E	65	90	13	73.7		81.5		1.0	0.6	0.6	0.6	70.0	85.5	75.1	0.20	25	22800	22400	20000	13000	153	127	617	214	1348	295	71913 E
CB71913 C	65	90	13	73.7		81.5		1.0	0.6	0.6	0.6	70.0	85.5	75.1	0.17	15	24500	16600	30000	18000	55	47	219	83	479	118	CB71913 C
CB71913 E	65	90	13	73.7		81.5		1.0	0.6	0.6	0.6	70.0	85.5	75.1	0.17	25	22800	16000	24000	15000	57	102	307	186	721	257	CB71913 E
71914 C	70	100	16	80.4		89.8		1.0	0.6	0.6	0.6	76.0	94.5	82.2	0.33	15	33500	32500	20000	13000	172	67	588	116	1230	168	71914 C
71914 E	70	100	16	80.4		89.8		1.0	0.6	0.6	0.6	76.0	94.5	82.2	0.33	25	31500	31000	19000	12000	234	152	890	251	1917	343	71914 E
CB71914 C	70	100	16	80.4		89.8		1.0	0.6	0.6	0.6	76.0	94.5	82.2	0.28	15	33500	22800	26000	16000	82	56	311	96	671	137	CB71914 C
CB71914 E	70	100	16	80.4		89.8		1.0	0.6	0.6	0.6	76.0	94.5	82.2	0.28	25	31500	21600	22000	14000	96	126	452	219	1026	299	CB71914 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L		M		H				
71915 C	75	105	16	85.4		94.8		1.0	0.6	0.6	0.6	81.0	99.5	87.2	0.35	15	34000	34500	19000	12000	174	69	596	119	1246	173	71915 C
71915 E	75	105	16	85.4		94.8		1.0	0.6	0.6	0.6	81.0	99.5	87.2	0.35	25	32000	32500	18000	11000	236	156	901	258	1943	353	71915 E
CB71915 C	75	105	16	85.4		94.8		1.0	0.6	0.6	0.6	81.0	99.5	87.2	0.30	15	34000	24000	26000	16000	84	58	320	100	691	142	CB71915 C
CB71915 E	75	105	16	85.4		94.8		1.0	0.6	0.6	0.6	81.0	99.5	87.2	0.30	25	32000	22800	20000	13000	96	129	457	225	1039	308	CB71915 E
71916 C	80	110	16	90.4		99.7		1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.37	15	34500	36000	19000	12000	175	70	603	122	1262	177	71916 C
71916 E	80	110	16	90.4		99.7		1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.37	25	32500	34000	18000	11000	238	161	911	266	1969	364	71916 E
CB71916 C	80	110	16	90.4		99.7		1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.31	15	34500	25000	24000	15000	83	59	319	102	689	145	CB71916 C
CB71916 E	80	110	16	90.4		99.7		1.0	0.6	0.6	0.6	86.0	104.0	92.2	0.31	25	32500	23600	20000	13000	96	133	462	232	1052	318	CB71916 E
71917 C	85	120	18	97.1		108.2		1.0	0.6	0.6	0.6	92.0	114.0	99.2	0.53	15	45000	46500	18000	11000	239	80	804	138	1672	200	71917 C
71917 E	85	120	18	97.1		108.2		1.0	0.6	0.6	0.6	92.0	114.0	99.2	0.53	25	42500	44000	16000	9500	336	185	1232	302	2631	411	71917 E
CB71917 C	85	120	18	97.1		108.2		1.0	0.6	0.6	0.6	92.0	114.0	99.2	0.45	15	45000	32500	20000	13000	120	69	438	117	934	165	CB71917 C
CB71917 E	85	120	18	97.1		108.2		1.0	0.6	0.6	0.6	92.0	114.0	99.2	0.45	25	42500	30500	19000	12000	148	157	642	266	1436	362	CB71917 E
71918 C	90	125	18	102.1		113.1		1.0	0.6	0.6	0.6	97.0	119.0	104.2	0.55	15	45500	49000	17000	10000	240	82	811	142	1688	205	71918 C
71918 E	90	125	18	102.1		113.1		1.0	0.6	0.6	0.6	97.0	119.0	104.2	0.55	25	43000	46500	15000	9000	337	190	1243	311	2655	423	71918 E
CB71918 C	90	125	18	102.1		113.1		1.0	0.6	0.6	0.6	97.0	119.0	104.2	0.47	15	45500	34000	20000	13000	122	71	445	120	950	170	CB71918 C
CB71918 E	90	125	18	102.1		113.1		1.0	0.6	0.6	0.6	97.0	119.0	104.2	0.47	25	43000	32000	18000	11000	149	162	653	275	1461	373	CB71918 E
71919 C	95	130	18	107.1		118.1		1.0	0.6	0.6	0.6	102.0	124.0	109.2	0.58	15	46500	51000	16000	9500	245	85	827	146	1724	211	71919 C
71919 E	95	130	18	107.1		118.1		1.0	0.6	0.6	0.6	102.0	124.0	109.2	0.58	25	44000	48000	14000	8500	343	196	1269	321	2713	437	71919 E
CB71919 C	95	130	18	107.1		118.1		1.0	0.6	0.6	0.6	102.0	124.0	109.2	0.49	15	46500	35500	19000	12000	121	72	443	123	947	173	CB71919 C
CB71919 E	95	130	18	107.1		118.1		1.0	0.6	0.6	0.6	102.0	124.0	109.2	0.49	25	44000	33500	17000	10000	150	167	663	283	1487	385	CB71919 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L	M		H					
71920 C	100	140	20	113.8		126.4		1.0	0.6	0.6	0.6	107.0	133.0	117.2	0.79	15	58500	64000	15000	9000	318	95	1059	162	2194	234	71920 C
71920 E	100	140	20	113.8		126.4		1.0	0.6	0.6	0.6	107.0	133.0	117.2	0.79	25	55000	60000	13000	8000	453	220	1626	355	3437	482	71920 E
CB71920 C	100	140	20	113.8		126.4		1.0	0.6	0.6	0.6	107.0	133.0	117.2	0.66	15	58500	44000	18000	11000	161	81	576	137	1220	192	CB71920 C
CB71920 E	100	140	20	113.8		126.4		1.0	0.6	0.6	0.6	107.0	133.0	117.2	0.66	25	55000	42500	16000	9500	204	188	852	314	1881	424	CB71920 E
71921 C	105	145	20	118.8		131.4		1.0	0.6	0.6	0.6	112.0	138.0	121.2	0.80	15	58500	64000	14000	8500	318	95	1059	162	2194	234	71921 C
71921 E	105	145	20	118.8		131.4		1.0	0.6	0.6	0.6	112.0	138.0	121.2	0.80	25	55000	60000	12000	7500	453	220	1626	355	3437	482	71921 E
CB71921 C	105	145	20	118.8		131.4		1.0	0.6	0.6	0.6	112.0	138.0	121.2	0.70	15	58500	45000	18000	11000	161	81	576	137	1220	192	CB71921 C
CB71921 E	105	145	20	118.8		131.4		1.0	0.6	0.6	0.6	112.0	138.0	121.2	0.70	25	55000	42500	15000	9000	204	188	852	314	1881	424	CB71921 E
71922 C	110	150	20	123.8		136.4		1.0	0.6	0.6	0.6	117.0	143.0	126.2	0.80	15	58500	67000	13000	8000	316	97	1056	165	2191	238	71922 C
71922 E	110	150	20	123.8		136.4		1.0	0.6	0.6	0.6	117.0	143.0	126.2	0.80	25	56000	63000	12000	7500	458	226	1651	366	3495	496	71922 E
CB71922 C	110	150	20	123.8		136.4		1.0	0.6	0.6	0.6	117.0	143.0	126.2	0.70	15	58500	46500	17000	10000	163	84	583	140	1236	198	CB71922 C
CB71922 E	110	150	20	123.8		136.4		1.0	0.6	0.6	0.6	117.0	143.0	126.2	0.70	25	56000	44000	15000	9000	205	193	861	323	1905	437	CB71922 E
71924 C	120	165	22	135.5		149.7		1.0	0.6	0.6	0.6	128.0	157.0	138.2	1.20	15	73500	85000	11000	7000	408	110	1344	186	2773	268	71924 C
71924 E	120	165	22	135.5		149.7		1.0	0.6	0.6	0.6	128.0	157.0	138.2	1.20	25	69500	80000	10000	6700	591	256	2087	412	4388	556	71924 E
CB71924 C	120	165	22	135.5		149.7		1.0	0.6	0.6	0.6	128.0	157.0	138.2	1.00	15	73500	58500	15000	9000	212	95	742	158	1566	222	CB71924 C
CB71924 E	120	165	22	135.5		149.7		1.0	0.6	0.6	0.6	128.0	157.0	138.2	1.00	25	69500	55000	13000	8000	277	223	1110	366	2421	492	CB71924 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H7000 C	10	26	8	14.7	14.2	20.5	21.3	0.3	0.3	0.3	0.1	12.5	23.0	15.9	0.02	18	2020	780	125000	94000	10	12	30	19	60	26	H7000 C
H7000 E	10	26	8	14.7	14.2	20.5	21.3	0.3	0.3	0.3	0.1	12.5	23.0	15.9	0.02	25	1950	750	110000	82000	16	26	50	39	100	51	H7000 E
CBH7000 C	10	26	8	14.7	14.2	20.5	21.3	0.3	0.3	0.3	0.1	12.5	23.0	15.9	0.02	18	2020	550	156250	117500	10	12	30	19	60	26	CBH7000 C
CBH7000 E	10	26	8	14.7	14.2	20.5	21.3	0.3	0.3	0.3	0.1	12.5	23.0	15.9	0.02	25	1950	530	137500	102500	16	26	50	39	100	51	CBH7000 E
H7001 C	12	28	8	16.7	16.2	22.5	23.3	0.3	0.3	0.3	0.1	14.5	25.0	18.0	0.02	18	2260	950	110000	82000	11	15	35	22	70	30	H7001 C
H7001 E	12	28	8	16.7	16.2	22.5	23.3	0.3	0.3	0.3	0.1	14.5	25.0	18.0	0.02	25	2180	920	100000	75000	18	30	55	45	110	59	H7001 E
CBH7001 C	12	28	8	16.7	16.2	22.5	23.3	0.3	0.3	0.3	0.1	14.5	25.0	18.0	0.02	18	2260	670	137500	102500	11	15	35	22	70	30	CBH7001 C
CBH7001 E	12	28	8	16.7	16.2	22.5	23.3	0.3	0.3	0.3	0.1	14.5	25.0	18.0	0.02	25	2180	645	125000	93750	18	30	55	45	110	59	CBH7001 E
H7002 C	15	32	9	20.2	19.4	26.7	28.0	0.3	0.3	0.3	0.1	17.5	29.0	21.6	0.03	18	3400	1470	92000	69000	17	18	50	27	100	36	H7002 C
H7002 E	15	32	9	20.2	19.4	26.7	28.0	0.3	0.3	0.3	0.1	17.5	29.0	21.6	0.03	25	3300	1420	83000	62000	30	39	80	55	160	72	H7002 E
CBH7002 C	15	32	9	20.2	19.4	26.7	28.0	0.3	0.3	0.3	0.1	17.5	29.0	21.6	0.03	18	3400	1040	115000	86250	17	18	50	27	100	36	CBH7002 C
CBH7002 E	15	32	9	20.2	19.4	26.7	28.0	0.3	0.3	0.3	0.1	17.5	29.0	21.6	0.03	25	3300	1000	103750	77500	30	39	80	55	160	72	CBH7002 E
H7003 C	17	35	10	22.7	22	29.8	30.4	0.3	0.3	0.3	0.1	20.0	31.5	24.2	0.04	18	3750	1750	82000	61000	19	20	55	31	110	41	H7003 C
H7003 E	17	35	10	22.7	22	29.8	30.4	0.3	0.3	0.3	0.1	20.0	31.5	24.2	0.04	25	3600	1680	74000	55000	30	42	90	63	180	82	H7003 E
CBH7003 C	17	35	10	22.7	22	29.8	30.4	0.3	0.3	0.3	0.1	20.0	31.5	24.2	0.04	18	3750	1230	102500	76250	19	20	55	31	110	41	CBH7003 C
CBH7003 E	17	35	10	22.7	22	29.8	30.4	0.3	0.3	0.3	0.1	20.0	31.5	24.2	0.04	25	3600	1180	92500	68750	30	42	90	63	180	82	CBH7003 E
H7004 C	20	42	12	26.6	25.3	36.4	38.0	0.6	0.3	0.6	0.3	25.0	37.0	28.6	0.06	18	6500	3050	70000	52000	35	27	100	40	200	54	H7004 C
H7004 E	20	42	12	26.6	25.3	36.4	38.0	0.6	0.3	0.6	0.3	25.0	37.0	28.6	0.06	25	6300	2950	63000	47000	50	54	160	82	320	106	H7004 E
CBH7004 C	20	42	12	26.6	25.3	36.4	38.0	0.6	0.3	0.6	0.3	25.0	37.0	28.6	0.05	18	6500	2140	87500	65000	35	27	100	40	200	54	CBH7004 C
CBH7004 E	20	42	12	26.6	25.3	36.4	38.0	0.6	0.3	0.6	0.3	25.0	37.0	28.6	0.05	25	6300	2060	78750	58750	50	54	160	82	320	106	CBH7004 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H7005 C	25	47	12	32.2	30.9	42.0	43.6	0.6	0.3	0.6	0.3	30.0	42.0	34.2	0.08	18	7400	3900	59000	44000	35	30	110	47	220	63	H7005 C
H7005 E	25	47	12	32.2	30.9	42.0	43.6	0.6	0.3	0.6	0.3	30.0	42.0	34.2	0.08	25	7100	3750	53000	40000	60	65	180	96	360	125	H7005 E
CBH7005 C	25	47	12	32.2	30.9	42.0	43.6	0.6	0.3	0.6	0.3	30.0	42.0	34.2	0.07	18	7400	2750	73750	55000	35	30	110	47	220	63	CBH7005 C
CBH7005 E	25	47	12	32.2	30.9	42.0	43.6	0.6	0.3	0.6	0.3	30.0	42.0	34.2	0.07	25	7100	2650	66250	50000	60	65	180	96	360	125	CBH7005 E
H7006 C	30	55	13	38.1	37	47.9	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.1	0.11	18	8200	4700	50000	37000	40	35	120	54	250	73	H7006 C
H7006 E	30	55	13	38.1	37	47.9	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.1	0.11	25	7800	4500	46000	34000	65	74	200	111	390	143	H7006 E
CBH7006 C	30	55	13	38.1	37	47.9	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.1	0.10	18	8200	3350	62500	46250	40	35	120	54	250	73	CBH7006 C
CBH7006 E	30	55	13	38.1	37	47.9	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.1	0.10	25	7800	3200	57500	42500	65	74	200	111	390	143	CBH7006 E
H7007 C	35	62	14	43.2	41.5	53.6	56.0	1.0	0.6	1.0	0.3	41.0	56.0	45.5	0.15	18	10400	6150	44000	33000	50	40	160	62	320	82	H7007 C
H7007 E	35	62	14	43.2	41.5	53.6	56.0	1.0	0.6	1.0	0.3	41.0	56.0	45.5	0.15	25	10000	5900	40000	30000	80	83	250	125	500	162	H7007 E
CBH7007 C	35	62	14	43.2	41.5	53.6	56.0	1.0	0.6	1.0	0.3	41.0	56.0	45.5	0.14	18	10400	4350	55000	41250	50	40	160	62	320	82	CBH7007 C
CBH7007 E	35	62	14	43.2	41.5	53.6	56.0	1.0	0.6	1.0	0.3	41.0	56.0	45.5	0.14	25	10000	4150	50000	37500	80	83	250	125	500	162	CBH7007 E
H7008 C	40	68	15	50.0	48.3	58.2	60.5	1.0	0.6	1.0	0.3	46.0	62.0	51.4	0.19	18	10900	6900	39000	29000	55	44	160	65	330	88	H7008 C
H7008 E	40	68	15	50.0	48.3	58.2	60.5	1.0	0.6	1.0	0.3	46.0	62.0	51.4	0.19	25	10500	6550	36000	27000	90	92	260	135	520	175	H7008 E
CBH7008 C	40	68	15	50.0	48.3	58.2	60.5	1.0	0.6	1.0	0.3	46.0	62.0	51.4	0.17	18	10900	4850	48750	36250	55	44	160	65	330	88	CBH7008 C
CBH7008 E	40	68	15	50.0	48.3	58.2	60.5	1.0	0.6	1.0	0.3	46.0	62.0	51.4	0.17	25	10500	4650	45000	33750	90	92	260	135	520	175	CBH7008 E
H7009 C	45	75	16	55.7	53.9	64.3	67.0	1.0	0.6	1.0	0.3	51.0	69.0	56.9	0.24	18	10800	6950	36000	27000	55	44	160	65	330	88	H7009 C
H7009 E	45	75	16	55.7	53.9	64.3	67.0	1.0	0.6	1.0	0.3	51.0	69.0	56.9	0.24	25	10300	6650	32000	24000	90	92	260	135	520	175	H7009 E
CBH7009 C	45	75	16	55.7	53.9	64.3	67.0	1.0	0.6	1.0	0.3	51.0	69.0	56.9	0.22	18	10800	4900	45000	33750	55	44	160	65	330	88	CBH7009 C
CBH7009 E	45	75	16	55.7	53.9	64.3	67.0	1.0	0.6	1.0	0.3	51.0	69.0	56.9	0.22	25	10300	4700	40000	30000	90	92	260	135	520	175	CBH7009 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L		M		H				
H7010 C	50	80	16	61.4	59.0	70.0	72.1	1.0	0.6	1.0	0.3	56.0	74.0	62.7	0.29	18	13400	13200	36000	22000	46	37	137	58	273	79	H7010 C
H7010 E	50	80	16	61.4	59.0	70.0	72.1	1.0	0.6	1.0	0.3	56.0	74.0	62.7	0.29	25	12500	12200	30000	18000	74	91	222	136	444	178	H7010 E
CBH7010 C	50	80	16	61.4	59.0	70.0	72.1	1.0	0.6	1.0	0.3	56.0	74.0	62.7	0.27	18	13400	9150	38000	24000	32	36	95	55	190	75	CBH7010 C
CBH7010 E	50	80	16	61.4	59.0	70.0	72.1	1.0	0.6	1.0	0.3	56.0	74.0	62.7	0.27	25	12500	8500	36000	24000	51	91	154	135	308	174	CBH7010 E
H7011 C	55	90	18	68.2	65.2	79.5	81.4	1.0	0.6	1.0	0.6	62.0	83.0	69.7	0.43	18	18600	19000	32000	20000	64	43	192	67	383	92	H7011 C
H7011 E	55	90	18	68.2	65.2	79.5	81.4	1.0	0.6	1.0	0.6	62.0	83.0	69.7	0.43	25	17600	17600	28000	17000	105	107	315	159	630	208	H7011 E
CBH7011 C	55	90	18	68.2	65.2	79.5	81.4	1.0	0.6	1.0	0.6	62.0	83.0	69.7	0.40	18	18600	13200	36000	22000	45	42	134	65	268	87	CBH7011 C
CBH7011 E	55	90	18	68.2	65.2	79.5	81.4	1.0	0.6	1.0	0.6	62.0	83.0	69.7	0.40	25	17600	12200	32000	20000	73	107	219	158	437	204	CBH7011 E
H7012 C	60	95	18	73.3	70.3	84.5	86.4	1.0	0.6	1.0	0.6	67.0	88.0	74.7	0.46	18	19300	20000	30000	19000	67	45	201	71	402	98	H7012 C
H7012 E	60	95	18	73.3	70.3	84.5	86.4	1.0	0.6	1.0	0.6	67.0	88.0	74.7	0.46	25	18300	19000	24000	15000	107	113	322	168	644	219	H7012 E
CBH7012 C	60	95	18	73.3	70.3	84.5	86.4	1.0	0.6	1.0	0.6	67.0	88.0	74.7	0.43	18	19300	14000	34000	20000	46	44	139	69	279	92	CBH7012 C
CBH7012 E	60	95	18	73.3	70.3	84.5	86.4	1.0	0.6	1.0	0.6	67.0	88.0	74.7	0.43	25	18300	13200	30000	19000	75	113	225	167	451	216	CBH7012 E
H7013 C	65	100	18	78.2	75.2	89.5	91.5	1.0	0.6	1.0	0.6	72.0	93.0	79.7	0.48	18	20000	21600	28000	17000	70	48	209	76	418	104	H7013 C
H7013 E	65	100	18	78.2	75.2	89.5	91.5	1.0	0.6	1.0	0.6	72.0	93.0	79.7	0.48	25	19000	20000	24000	15000	112	120	336	178	672	233	H7013 E
CBH7013 C	65	100	18	78.2	75.2	89.5	91.5	1.0	0.6	1.0	0.6	72.0	93.0	79.7	0.45	18	20000	15000	34000	20000	47	47	142	72	284	97	CBH7013 C
CBH7013 E	65	100	18	78.2	75.2	89.5	91.5	1.0	0.6	1.0	0.6	72.0	93.0	79.7	0.45	25	19000	14000	28000	18000	77	119	230	176	460	227	CBH7013 E
H7014 C	70	110	20	84.9	81.5	97.8	99.9	1.0	0.6	1.0	0.6	77.0	102.0	86.7	0.67	18	26000	28000	26000	16000	89	53	268	83	536	114	H7014 C
H7014 E	70	110	20	84.9	81.5	97.8	99.9	1.0	0.6	1.0	0.6	77.0	102.0	86.7	0.67	25	24500	26000	20000	13000	146	132	437	196	874	256	H7014 E
CBH7014 C	70	110	20	84.9	81.5	97.8	99.9	1.0	0.6	1.0	0.6	77.0	102.0	86.7	0.63	18	26000	19600	30000	18000	63	52	188	80	375	107	CBH7014 C
CBH7014 E	70	110	20	84.9	81.5	97.8	99.9	1.0	0.6	1.0	0.6	77.0	102.0	86.7	0.63	25	24500	18300	24000	16000	101	132	304	195	607	252	CBH7014 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	
																		L		M		H				
H7015 C	75	115	20	90.2	100.1	1.0	0.6	1.0	0.6	82.0	107.0	91.7		0.71	18	26500	29000	24000	15000	91	54	273	85	547	117	H7015 C
H7015 E	75	115	20	90.2	100.1	1.0	0.6	1.0	0.6	82.0	107.0	91.7		0.71	25	25000	27000	20000	13000	148	136	444	202	888	263	H7015 E
CBH7015 C	75	115	20	90.2	100.1	1.0	0.6	1.0	0.6	82.0	107.0	91.7		0.66	18	26500	20000	28000	17000	63	53	188	81	375	110	CBH7015 C
CBH7015 E	75	115	20	90.2	100.1	1.0	0.6	1.0	0.6	82.0	107.0	91.7		0.66	25	25000	18600	24000	16000	101	135	304	199	607	257	CBH7015 E
H7016 C	80	125	22	97.2	108.1	1.0	0.6	1.0	0.6	88.0	117.0	98.9		0.96	18	31500	34500	22000	14000	109	59	328	93	657	128	H7016 C
H7016 E	80	125	22	97.2	108.1	1.0	0.6	1.0	0.6	88.0	117.0	98.9		0.96	25	30000	32500	19000	12000	175	148	524	220	1049	287	H7016 E
CBH7016 C	80	125	22	97.2	108.1	1.0	0.6	1.0	0.6	88.0	117.0	98.9		0.89	18	31500	24500	26000	16000	74	58	222	89	445	119	CBH7016 C
CBH7016 E	80	125	22	97.2	108.1	1.0	0.6	1.0	0.6	88.0	117.0	98.9		0.89	25	30000	22800	20000	14000	123	148	368	219	736	283	CBH7016 E
H7017 C	85	130	22	102.2	113.1	1.0	0.6	1.0	0.6	93.0	122.0	103.9		0.99	18	32000	36000	20000	13000	109	61	328	95	657	130	H7017 C
H7017 E	85	130	22	102.2	113.1	1.0	0.6	1.0	0.6	93.0	122.0	103.9		0.99	25	30000	33500	18000	11000	178	152	534	226	1067	295	H7017 E
CBH7017 C	85	130	22	102.2	113.1	1.0	0.6	1.0	0.6	93.0	122.0	103.9		0.92	18	32000	25000	24000	15000	76	60	228	92	456	123	CBH7017 C
CBH7017 E	85	130	22	102.2	113.1	1.0	0.6	1.0	0.6	93.0	122.0	103.9		0.92	25	30000	23200	20000	14000	123	152	368	224	736	289	CBH7017 E
H7018 C	90	140	24	109.0	124.0	1.5	0.8	1.5	0.6	100.0	131.0	111.0		1.31	18	37500	43000	19000	12000	130	66	389	104	777	142	H7018 C
H7018 E	90	140	24	109.0	124.0	1.5	0.8	1.5	0.6	100.0	131.0	111.0		1.31	25	35500	40000	17000	10000	207	164	621	245	1242	319	H7018 E
CBH7018 C	90	140	24	109.0	124.0	1.5	0.8	1.5	0.6	100.0	131.0	111.0		1.22	18	37500	30000	22000	14000	89	65	268	99	536	133	CBH7018 C
CBH7018 E	90	140	24	109.0	124.0	1.5	0.8	1.5	0.6	100.0	131.0	111.0		1.22	25	35500	28000	19000	13000	146	166	437	244	874	315	CBH7018 E
H7019 C	95	145	24	113.7	126.6	1.5	0.8	1.5	0.6	105.0	136.0	116.0		1.34	18	38000	44000	18000	12000	130	67	389	106	777	144	H7019 C
H7019 E	95	145	24	113.7	126.6	1.5	0.8	1.5	0.6	105.0	136.0	116.0		1.34	25	35500	41500	16000	9500	211	169	633	252	1265	328	H7019 E
CBH7019 C	95	145	24	113.7	126.6	1.5	0.8	1.5	0.6	105.0	136.0	116.0		1.24	18	38000	31000	20000	13000	89	66	268	101	536	136	CBH7019 C
CBH7019 E	95	145	24	113.7	126.6	1.5	0.8	1.5	0.6	105.0	136.0	116.0		1.24	25	35500	28500	18000	12000	146	169	437	249	874	321	CBH7019 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L	M	H						
H7020 C	100	150	24	119.0		134.0		1.5	0.8	1.5	0.6	110.0	141.0	121.0	1.40	18	38000	45500	18000	12000	134	70	402	109	804	149	H7020 C
H7020 E	100	150	24	119.0		134.0		1.5	0.8	1.5	0.6	110.0	141.0	121.0	1.40	25	36000	42500	15000	9000	215	174	644	259	1288	336	H7020 E
CBH7020 C	100	150	24	119.0		134.0		1.5	0.8	1.5	0.6	110.0	141.0	121.0	1.29	18	38000	31500	19000	12000	91	68	273	104	547	139	CBH7020 C
CBH7020 E	100	150	24	119.0		134.0		1.5	0.8	1.5	0.6	110.0	141.0	121.0	1.29	25	36000	30000	18000	12000	148	174	444	256	888	330	CBH7020 E
H7021 C	105	160	26					2.0	1.0	2.0	1.0	116.0	150.0	127.9	1.80	18	49000	58500	17000	10000	170	76	509	119	1018	162	H7021 C
H7021 E	105	160	26					2.0	1.0	2.0	1.0	116.0	150.0	127.9	1.80	25	46500	54000	14000	8500	276	191	828	283	1656	369	H7021 E
CBH7021 C	105	160	26					2.0	1.0	2.0	1.0	116.0	150.0	127.9	1.60	18	49000	40500	19000	12000	118	75	355	115	710	154	CBH7021 C
CBH7021 E	105	160	26					2.0	1.0	2.0	1.0	116.0	150.0	127.9	1.60	25	46500	38000	17000	11000	192	191	575	281	1150	363	CBH7021 E
H7022 C	110	170	28					2.0	1.0	2.0	1.0	121.0	159.0	135.4	2.20	18	50000	60000	16000	9500	174	78	523	122	1045	167	H7022 C
H7022 E	110	170	28					2.0	1.0	2.0	1.0	121.0	159.0	135.4	2.20	25	46500	56000	13000	8000	280	196	840	291	1679	378	H7022 E
CBH7022 C	110	170	28					2.0	1.0	2.0	1.0	121.0	159.0	135.4	2.10	18	50000	41500	18000	11000	118	76	355	117	710	157	CBH7022 C
CBH7022 E	110	170	28					2.0	1.0	2.0	1.0	121.0	159.0	135.4	2.10	25	46500	39000	15000	9500	192	195	575	287	1150	370	CBH7022 E
H7024 C	120	180	28					2.0	1.0	2.0	1.0	131.0	169.0	145.4	2.30	18	51000	63000	14000	8500	179	82	536	128	1072	175	H7024 C
H7024 E	120	180	28					2.0	1.0	2.0	1.0	131.0	169.0	145.4	2.30	25	48000	58500	12000	7500	288	206	863	306	1725	397	H7024 E
CBH7024 C	120	180	28					2.0	1.0	2.0	1.0	131.0	169.0	145.4	2.10	18	51000	44000	17000	10000	123	81	369	123	737	165	CBH7024 C
CBH7024 E	120	180	28					2.0	1.0	2.0	1.0	131.0	169.0	145.4	2.10	25	48000	41500	14000	9000	199	206	598	303	1196	391	CBH7024 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation			
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}	F _V	C _{ax}
																			L		M		H						
7000 C	10	26	8	14.7		21.4	22.7	0.3	0.3	0.3	0.1	12.5	23.0	16.5	0.02	15	5450	2600	95000	71000	25	17	80	30	160	43			7000 C
7000 E	10	26	8	14.7		21.4	22.7	0.3	0.3	0.3	0.1	12.5	23.0	16.5	0.02	25	5250	2550	80000	60000	45	42	130	65	260	87			7000 E
CB7000 C	10	26	8	14.7		21.4	22.7	0.3	0.3	0.3	0.1	12.5	23.0	16.5	0.02	15	5450	1830	118750	88750	25	17	80	30	160	43			CB7000 C
CB7000 E	10	26	8	14.7		21.4	22.7	0.3	0.3	0.3	0.1	12.5	23.0	16.5	0.02	25	5250	1760	100000	75000	45	42	130	65	260	87			CB7000 E
7001 C	12	28	8	16.7		23.4	24.7	0.3	0.3	0.3	0.1	14.5	25.0	18.5	0.02	15	5900	3000	85000	64000	30	20	90	33	180	48			7001 C
7001 E	12	28	8	16.7		23.4	24.7	0.3	0.3	0.3	0.1	14.5	25.0	18.5	0.02	25	5650	2900	72500	54000	50	47	140	70	280	95			7001 E
CB7001 C	12	28	8	16.7		23.4	24.7	0.3	0.3	0.3	0.1	14.5	25.0	18.5	0.02	15	5900	2100	106250	80000	30	20	90	33	180	48			CB7001 C
CB7001 E	12	28	8	16.7		23.4	24.7	0.3	0.3	0.3	0.1	14.5	25.0	18.5	0.02	25	5650	2020	90625	67500	50	47	140	70	280	95			CB7001 E
7002 C	15	32	9	20.2		26.9	28.2	0.3	0.3	0.3	0.1	17.5	29.0	21.9	0.03	15	6650	3750	72000	54000	32	22	100	38	200	55			7002 C
7002 E	15	32	9	20.2		26.9	28.2	0.3	0.3	0.3	0.1	17.5	29.0	21.9	0.03	25	6350	3600	62000	46000	55	54	160	82	320	110			7002 E
CB7002 C	15	32	9	20.2		26.9	28.2	0.3	0.3	0.3	0.1	17.5	29.0	21.9	0.03	15	6650	2650	90000	67500	32	22	100	38	200	55			CB7002 C
CB7002 E	15	32	9	20.2		26.9	28.2	0.3	0.3	0.3	0.1	17.5	29.0	21.9	0.03	25	6350	2550	77500	57500	55	54	160	82	320	110			CB7002 E
7003 C	17	35	10	22.7		29.4	30.7	0.3	0.3	0.3	0.1	20.0	31.5	24.4	0.04	15	6950	4150	65000	49000	35	24	105	41	210	59			7003 C
7003 E	17	35	10	22.7		29.4	30.7	0.3	0.3	0.3	0.1	20.0	31.5	24.4	0.04	25	6650	4000	56000	42000	60	58	170	88	340	115			7003 E
CB7003 C	17	35	10	22.7		29.4	30.7	0.3	0.3	0.3	0.1	20.0	31.5	24.4	0.03	15	6950	2950	81250	61250	35	24	105	41	210	59			CB7003 C
CB7003 E	17	35	10	22.7		29.4	30.7	0.3	0.3	0.3	0.1	20.0	31.5	24.4	0.03	25	6650	2800	70000	52500	60	58	170	88	340	115			CB7003 E
7004 C	20	42	12	26.6		35.5	37.3	0.6	0.3	0.6	0.3	25.0	37.0	29.0	0.06	15	12200	7600	55000	41000	60	33	180	57	360	84			7004 C
7004 E	20	42	12	26.6		35.5	37.3	0.6	0.3	0.6	0.3	25.0	37.0	29.0	0.06	25	11700	7300	47000	35000	100	78	300	120	600	165			7004 E
CB7004 C	20	42	12	26.6		35.5	37.3	0.6	0.3	0.6	0.3	25.0	37.0	29.0	0.06	15	12200	5350	68750	51250	60	33	180	57	360	84			CB7004 C
CB7004 E	20	42	12	26.6		35.5	37.3	0.6	0.3	0.6	0.3	25.0	37.0	29.0	0.06	25	11700	5150	58750	43750	100	78	300	120	600	165			CB7004 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L		M		H				
7005 C	25	47	12	32.2		40.1	42.3	0.6	0.3	0.6	0.3	30.0	42.0	34.3	0.08	15	13400	9200	47000	35000	70	38	200	65	400	95	7005 C
7005 E	25	47	12	32.2		40.1	42.3	0.6	0.3	0.6	0.3	30.0	42.0	34.3	0.08	25	12700	8800	40000	30000	110	88	320	135	640	180	7005 E
CB7005 C	25	47	12	32.2		40.1	42.3	0.6	0.3	0.6	0.3	30.0	42.0	34.3	0.06	15	13400	6500	58750	43750	70	38	200	65	400	95	CB7005 C
CB7005 E	25	47	12	32.2		40.1	42.3	0.6	0.3	0.6	0.3	30.0	42.0	34.3	0.06	25	12700	6200	50000	37500	110	88	320	135	640	180	CB7005 E
7006 C	30	55	13	38.1		47.0	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.5	0.11	15	16500	11900	40000	30000	85	43	250	72	500	105	7006 C
7006 E	30	55	13	38.1		47.0	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.5	0.11	25	15700	11400	34000	25500	130	98	400	150	800	205	7006 E
CB7006 C	30	55	13	38.1		47.0	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.5	0.10	15	16500	8400	50000	37500	85	43	250	72	500	105	CB7006 C
CB7006 E	30	55	13	38.1		47.0	49.5	1.0	0.6	1.0	0.3	36.0	49.0	40.5	0.10	25	15700	8000	42500	31875	130	98	400	150	800	205	CB7006 E
7007 C	35	62	14	43.2		53.1	56.3	1.0	0.6	1.0	0.3	41.0	56.0	46.1	0.15	15	20600	15500	35000	26000	100	50	300	84	600	120	7007 C
7007 E	35	62	14	43.2		53.1	56.3	1.0	0.6	1.0	0.3	41.0	56.0	46.1	0.15	25	19600	14800	30000	22500	170	118	500	180	1000	245	7007 E
CB7007 C	35	62	14	43.2		53.1	56.3	1.0	0.6	1.0	0.3	41.0	56.0	46.1	0.13	15	20600	10900	43750	32500	100	50	300	84	600	120	CB7007 C
CB7007 E	35	62	14	43.2		53.1	56.3	1.0	0.6	1.0	0.3	41.0	56.0	46.1	0.13	25	19600	10400	37500	28125	170	118	500	180	1000	245	CB7007 E
7008 C	40	68	15	49.2		59.3	62.1	1.0	0.6	1.0	0.3	46.0	62.0	50.8	0.19	15	20400	16000	34000	20000	102	44	353	77	743	113	7008 C
7008 E	40	68	15	49.2		59.3	62.1	1.0	0.6	1.0	0.3	46.0	62.0	50.8	0.19	25	19600	15000	32000	19000	142	99	547	166	1180	229	7008 E
CB7008 C	40	68	15	49.2		59.3	62.1	1.0	0.6	1.0	0.3	46.0	62.0	50.8	0.17	15	20400	11000	40000	26000	48	36	187	64	406	91	CB7008 C
CB7008 E	40	68	15	49.2		59.3	62.1	1.0	0.6	1.0	0.3	46.0	62.0	50.8	0.17	25	19600	10600	36000	22000	55	80	269	143	617	196	CB7008 E
7009 C	45	75	16	54.3		66.3	69.7	1.0	0.6	1.0	0.3	51.0	69.0	56.2	0.23	15	27500	21200	30000	18000	145	50	490	88	1019	129	7009 C
7009 E	45	75	16	54.3		66.3	69.7	1.0	0.6	1.0	0.3	51.0	69.0	56.2	0.23	25	26500	20000	28000	17000	209	116	768	190	1638	261	7009 E
CB7009 C	45	75	16	54.3		66.3	69.7	1.0	0.6	1.0	0.3	51.0	69.0	56.2	0.20	15	27500	14600	38000	24000	72	43	264	73	562	104	CB7009 C
CB7009 E	45	75	16	54.3		66.3	69.7	1.0	0.6	1.0	0.3	51.0	69.0	56.2	0.20	25	26500	14000	34000	20000	90	97	393	165	876	226	CB7009 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L		M		H				
7010 C	50	80	16	59.3		71.3	74.7	1.0	0.6	1.0	0.3	56.0	74.0	61.2	0.25	15	28500	22800	28000	17000	150	53	507	92	1054	135	7010 C
7010 E	50	80	16	59.3		71.3	74.7	1.0	0.6	1.0	0.3	56.0	74.0	61.2	0.25	25	27000	21600	24000	15000	211	120	779	198	1663	272	7010 E
CB7010 C	50	80	16	59.3		71.3	74.7	1.0	0.6	1.0	0.3	56.0	74.0	61.2	0.21	15	28500	16000	36000	22000	74	45	275	77	586	110	CB7010 C
CB7010 E	50	80	16	59.3		71.3	74.7	1.0	0.6	1.0	0.3	56.0	74.0	61.2	0.21	25	27000	15300	30000	18000	89	101	397	172	889	236	CB7010 E
7011 C	55	90	18	65.8		79.8	83.8	1.0	0.6	1.0	0.6	62.0	83.0	68.1	0.37	15	38000	31000	24000	15000	207	62	687	107	1424	157	7011 C
7011 E	55	90	18	65.8		79.8	83.8	1.0	0.6	1.0	0.6	62.0	83.0	68.1	0.37	25	36000	29000	22000	14000	298	142	1066	232	2257	316	7011 E
CB7011 C	55	90	18	65.8		79.8	83.8	1.0	0.6	1.0	0.6	62.0	83.0	68.1	0.32	15	38000	21600	32000	19000	104	53	373	90	789	127	CB7011 C
CB7011 E	55	90	18	65.8		79.8	83.8	1.0	0.6	1.0	0.6	62.0	83.0	68.1	0.32	25	36000	20400	28000	17000	134	122	553	203	1219	275	CB7011 E
7012 C	60	95	18	70.8		84.8	88.7	1.0	0.6	1.0	0.6	67.0	88.0	73.1	0.40	15	39000	33500	22000	14000	211	65	704	112	1459	163	7012 C
7012 E	60	95	18	70.8		84.8	88.7	1.0	0.6	1.0	0.6	67.0	88.0	73.1	0.40	25	36500	31500	20000	13000	299	148	1075	240	2281	328	7012 E
CB7012 C	60	95	18	70.8		84.8	88.7	1.0	0.6	1.0	0.6	67.0	88.0	73.1	0.34	15	39000	23200	30000	18000	105	55	378	93	801	132	CB7012 C
CB7012 E	60	95	18	70.8		84.8	88.7	1.0	0.6	1.0	0.6	67.0	88.0	73.1	0.34	25	36500	22000	24000	15000	137	127	572	213	1263	289	CB7012 E
7013 C	65	100	18	75.9		89.9	93.8	1.0	0.6	1.0	0.6	72.0	93.0	78.1	0.42	15	40000	35500	20000	13000	216	67	720	116	1495	169	7013 C
7013 E	65	100	18	75.9		89.9	93.8	1.0	0.6	1.0	0.6	72.0	93.0	78.1	0.42	25	38000	33500	19000	12000	310	155	1118	252	2372	344	7013 E
CB7013 C	65	100	18	75.9		89.9	93.8	1.0	0.6	1.0	0.6	72.0	93.0	78.1	0.36	15	40000	24500	28000	17000	109	57	391	97	830	138	CB7013 C
CB7013 E	65	100	18	75.9		89.9	93.8	1.0	0.6	1.0	0.6	72.0	93.0	78.1	0.36	25	38000	23600	24000	15000	137	132	579	221	1281	300	CB7013 E
7014 C	70	110	20	82.4		98.4	102.8	1.0	0.6	1.0	0.6	77.0	102.0	85.0	0.59	15	50000	43000	19000	12000	278	74	915	127	1888	185	7014 C
7014 E	70	110	20	82.4		98.4	102.8	1.0	0.6	1.0	0.6	77.0	102.0	85.0	0.59	25	46500	41500	18000	11000	398	170	1397	274	2945	374	7014 E
CB7014 C	70	110	20	82.4		98.4	102.8	1.0	0.6	1.0	0.6	77.0	102.0	85.0	0.50	15	50000	30000	26000	16000	140	63	492	106	1036	150	CB7014 C
CB7014 E	70	110	20	82.4		98.4	102.8	1.0	0.6	1.0	0.6	77.0	102.0	85.0	0.50	25	46500	29000	20000	13000	184	147	736	242	1609	327	CB7014 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L		M		H				
7015 C	75	115	20	87.4		103.4	107.8	1.0	0.6	1.0	0.6	82.0	107.0	90.0	0.62	15	51000	46500	19000	12000	283	77	931	132	1923	192	7015 C
7015 E	75	115	20	87.4		103.4	107.8	1.0	0.6	1.0	0.6	82.0	107.0	90.0	0.62	25	48000	44000	18000	11000	408	178	1439	287	3027	390	7015 E
CB7015 C	75	115	20	87.4		103.4	107.8	1.0	0.6	1.0	0.6	82.0	107.0	90.0	0.53	15	51000	32500	24000	15000	144	66	509	111	1071	157	CB7015 C
CB7015 E	75	115	20	87.4		103.4	107.8	1.0	0.6	1.0	0.6	82.0	107.0	90.0	0.53	25	48000	30500	20000	13000	190	154	762	254	1667	343	CB7015 E
7016 C	80	125	22	93.9		111.9	116.9	1.0	0.6	1.0	0.6	88.0	117.0	96.8	0.84	15	63000	58500	18000	11000	357	86	1163	148	2391	214	7016 C
7016 E	80	125	22	93.9		111.9	116.9	1.0	0.6	1.0	0.6	88.0	117.0	96.8	0.84	25	60000	55000	16000	9500	529	202	1830	323	3825	438	7016 E
CB7016 C	80	125	22	93.9		111.9	116.9	1.0	0.6	1.0	0.6	88.0	117.0	96.8	0.71	15	63000	40500	22000	14000	185	75	643	125	1345	176	CB7016 C
CB7016 E	80	125	22	93.9		111.9	116.9	1.0	0.6	1.0	0.6	88.0	117.0	96.8	0.71	25	60000	39000	19000	12000	250	175	967	286	2089	384	CB7016 E
7017 C	85	130	22	98.9		116.9	121.9	1.0	0.6	1.0	0.6	93.0	122.0	101.8	0.89	15	65500	62000	17000	10000	370	90	1209	154	2484	223	7017 C
7017 E	85	130	22	98.9		116.9	121.9	1.0	0.6	1.0	0.6	93.0	122.0	101.8	0.89	25	62000	58500	15000	9000	545	211	1888	338	3949	457	7017 E
CB7017 C	85	130	22	98.9		116.9	121.9	1.0	0.6	1.0	0.6	93.0	122.0	101.8	0.74	15	65500	43000	20000	13000	192	78	667	131	1401	184	CB7017 C
CB7017 E	85	130	22	98.9		116.9	121.9	1.0	0.6	1.0	0.6	93.0	122.0	101.8	0.74	25	62000	40500	18000	11000	260	184	1008	300	2179	403	CB7017 E
7018 C	90	140	24	105.4		125.5	131.1	1.5	0.8	1.5	0.6	100.0	131.0	108.6	1.15	15	76500	72000	16000	9500	440	96	1427	164	2925	236	7018 C
7018 E	90	140	24	105.4		125.5	131.1	1.5	0.8	1.5	0.6	100.0	131.0	108.6	1.15	25	72000	68000	14000	8500	649	224	2217	357	4623	482	7018 E
CB7018 C	90	140	24	105.4		125.5	131.1	1.5	0.8	1.5	0.6	100.0	131.0	108.6	0.96	15	76500	50000	19000	12000	227	83	775	137	1622	193	CB7018 C
CB7018 E	90	140	24	105.4		125.5	131.1	1.5	0.8	1.5	0.6	100.0	131.0	108.6	0.96	25	72000	47500	17000	10000	319	197	1207	319	2585	427	CB7018 E
7019 C	95	145	24	110.4		130.5	136.1	1.5	0.8	1.5	0.6	105.0	136.0	113.6	1.20	15	78000	76500	15000	9000	447	99	1452	169	2980	244	7019 C
7019 E	95	145	24	110.4		130.5	136.1	1.5	0.8	1.5	0.6	105.0	136.0	113.6	1.20	25	75000	72000	13000	8000	675	234	2308	374	4813	505	7019 E
CB7019 C	95	145	24	110.4		130.5	136.1	1.5	0.8	1.5	0.6	105.0	136.0	113.6	1.01	15	78000	53000	18000	11000	238	87	811	144	1692	202	CB7019 C
CB7019 E	95	145	24	110.4		130.5	136.1	1.5	0.8	1.5	0.6	105.0	136.0	113.6	1.01	25	75000	51000	16000	9500	325	205	1231	331	2641	444	CB7019 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation		
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}	F _V
7020 C	100	150	24	115.4		135.5	141.1	1.5	0.8	1.5	0.6	110.0	141.0	118.6	1.26	15	81500	81500	14000	8500	467	104	1516	177	3112	256	7020 C	
7020 E	100	150	24	115.4		135.5	141.1	1.5	0.8	1.5	0.6	110.0	141.0	118.6	1.26	25	76500	76500	12000	7500	685	243	2347	387	4902	524	7020 E	
CB7020 C	100	150	24	115.4		135.5	141.1	1.5	0.8	1.5	0.6	110.0	141.0	118.6	1.05	15	81500	56000	18000	11000	238	89	818	149	1707	209	CB7020 C	
CB7020 E	100	150	24	115.4		135.5	141.1	1.5	0.8	1.5	0.6	110.0	141.0	118.6	1.05	25	76500	53000	15000	9000	334	214	1272	346	2731	464	CB7020 E	
7021 C	105	160	26	123.9		141.3		2.0	1.0	2.0	1.0	116.0	150.0	125.8	1.60	15	106000	102000	13000	8000	625	114	1999	193	4083	279	7021 C	
7021 E	105	160	26	123.9		141.3		2.0	1.0	2.0	1.0	116.0	150.0	125.8	1.60	25	102000	98000	11000	7000	960	271	3206	428	6639	578	7021 E	
7022 C	110	170	28	129.0		151.1		2.0	1.0	2.0	1.0	121.0	159.0	133.3	2.00	15	110000	110000	12000	7500	648	120	2072	202	4235	291	7022 C	
7022 E	110	170	28	129.0		151.1		2.0	1.0	2.0	1.0	121.0	159.0	133.3	2.00	25	104000	104000	10000	6700	975	281	3262	445	6760	600	7022 E	
7024 C	120	180	28	140.6		159.6		2.0	1.0	2.0	1.0	131.0	169.0	143.3	2.10	15	112000	116000	10000	6700	657	124	2107	209	4308	300	7024 C	
7024 E	120	180	28	140.6		159.6		2.0	1.0	2.0	1.0	131.0	169.0	143.3	2.10	25	106000	110000	9500	6300	989	292	3317	461	6881	622	7024 E	
7026 C	130	200	33	154.4		175.8		2.0	1.0	2.0	1.0	142.0	189.0	157.2	3.20	15	143000	150000	9000	6000	857	138	2720	232	5545	333	7026 C	
7026 E	130	200	33	154.4		175.8		2.0	1.0	2.0	1.0	142.0	189.0	157.2	3.20	25	137000	143000	8500	5600	1322	328	4358	515	8972	692	7026 E	
7028 C	140	210	33	164.4		185.8		2.0	1.0	2.0	1.0	152.0	199.0	167.2	3.40	15	146000	160000	8500	5600	873	143	2775	240	5657	344	7028 C	
7028 E	140	210	33	164.4		185.8		2.0	1.0	2.0	1.0	152.0	199.0	167.2	3.40	25	140000	150000	7500	5000	1345	340	4446	535	9159	718	7028 E	
7030 C	150	225	35	176.2		199.1		2.0	1.0	2.0	1.0	163.0	213.0	178.5	4.10	15	183000	193000	8000	5300	1111	157	3503	263	7142	378	7030 C	
7030 E	150	225	35	176.2		199.1		2.0	1.0	2.0	1.0	163.0	213.0	178.5	4.10	25	173000	186000	7000	4800	1705	373	5555	583	11417	783	7030 E	
7032 C	160	240	38	187.8		212.4		2.0	1.0	2.0	1.0	174.0	228.0	191.0	5.10	15	190000	208000	7000	4800	1152	164	3635	275	7412	393	7032 C	
7032 E	160	240	38	187.8		212.4		2.0	1.0	2.0	1.0	174.0	228.0	191.0	5.10	25	176000	196000	6300	4300	1728	387	5642	605	11602	811	7032 E	
7034 C	170	260	42	201.2		229.1		2.0	1.0	2.0	1.0	185.0	246.0	203.8	6.70	15	236000	270000	6700	4500	1458	172	4562	285	9252	406	7034 C	
7034 E	170	260	42	201.2		229.1		2.0	1.0	2.0	1.0	185.0	246.0	203.8	6.70	25	224000	255000	6000	4000	2263	411	7276	638	14926	855	7034 E	

Designation	Boundary dimensions			Dimensions						Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}	d _T			m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V	C _{ax}	
																			L	M		H					
7036 C	180	280	46	215.4		244.8		2.0	1.0	2.0	1.0	196.0	264.0	218.8	8.90	15	245000	285000	6000	4000	1513	180	4733	299	9600	425	7036 C
7036 E	180	280	46	215.4		244.8		2.0	1.0	2.0	1.0	196.0	264.0	218.8	8.90	25	232000	275000	5600	3800	2339	430	7529	668	15449	895	7036 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																		L		M		H					
7200 C	10	30	9	16.0		24.5		0.6	0.3	0.6	0.3	14.5	25.5	18.8	0.03	15	5850	2900	85000	56000	25	16	92	30	198	45	7200 C
7200 E	10	30	9	16.0		24.5		0.6	0.3	0.6	0.3	14.5	25.5	18.8	0.03	25	5600	2800	75000	50000	31	35	139	63	312	88	7200 E
7201 C	12	32	10	18.3		26.1		0.6	0.3	0.6	0.3	16.5	27.5	21.1	0.04	15	7650	3900	75000	50000	35	19	124	35	264	52	7201 C
7201 E	12	32	10	18.3		26.1		0.6	0.3	0.6	0.3	16.5	27.5	21.1	0.04	25	7350	3750	67000	45000	47	43	191	73	420	102	7201 E
7202 C	15	35	11	21.1		29.1		0.6	0.3	0.6	0.3	19.5	30.5	23.3	0.04	15	9650	5000	67000	45000	47	22	165	40	347	60	7202 C
7202 E	15	35	11	21.1		29.1		0.6	0.3	0.6	0.3	19.5	30.5	23.3	0.04	25	9300	4800	60000	40000	65	50	256	85	555	119	7202 E
7203 C	17	40	12	24.1		33.0		0.6	0.3	0.6	0.3	22.5	34.5	26.7	0.06	15	10800	5850	56000	38000	53	24	186	43	391	64	7203 C
7203 E	17	40	12	24.1		33.0		0.6	0.3	0.6	0.3	22.5	34.5	26.7	0.06	25	10400	5600	53000	36000	75	54	289	91	626	126	7203 E
7204 C	20	47	14	29.6		39.0		1.0	0.6	1.0	0.6	26.5	40.5	31.7	0.10	15	14600	8150	48000	32000	74	28	252	49	527	73	7204 C
7204 E	20	47	14	29.6		39.0		1.0	0.6	1.0	0.6	26.5	40.5	31.7	0.10	25	14000	7800	45000	30000	105	63	393	105	843	145	7204 E
7205 C	25	52	15	34.4		43.8		1.0	0.6	1.0	0.6	31.5	45.5	36.5	0.12	15	15600	9300	43000	28000	79	30	269	54	562	79	7205 C
7205 E	25	52	15	34.4		43.8		1.0	0.6	1.0	0.6	31.5	45.5	36.5	0.12	25	15000	9000	40000	26000	113	69	420	114	901	158	7205 E
7206 C	30	62	16	41.2		52.4		1.0	0.6	1.0	0.6	37.5	54.5	43.7	0.19	15	23200	14600	38000	24000	122	42	412	76	856	112	7206 C
7206 E	30	62	16	41.2		52.4		1.0	0.6	1.0	0.6	37.5	54.5	43.7	0.19	25	22000	14000	36000	22000	175	95	637	157	1357	218	7206 E
7207 C	35	72	17	46.8		60.8		1.0	0.6	1.0	0.6	44.0	63.0	50.7	0.28	15	25500	18000	34000	20000	136	45	454	79	942	116	7207 C
7207 E	35	72	17	46.8		60.8		1.0	0.6	1.0	0.6	44.0	63.0	50.7	0.28	25	24500	17000	32000	19000	197	104	714	170	1521	234	7207 E
7208 C	40	80	18	53.3		67.3		1.0	0.6	1.0	0.6	48.0	72.0	56.7	0.37	15	32000	22400	30000	18000	176	50	584	87	1204	127	7208 C
7208 E	40	80	18	53.3		67.3		1.0	0.6	1.0	0.6	48.0	72.0	56.7	0.37	25	30500	21600	28000	17000	259	114	912	186	1925	254	7208 E
7209 C	45	85	19	57.5		72.4		1.0	0.6	1.0	0.6	52.5	78.0	61.8	0.41	15	33500	24500	28000	17000	184	53	607	92	1252	134	7209 C
7209 E	45	85	19	57.5		72.4		1.0	0.6	1.0	0.6	52.5	78.0	61.8	0.41	25	32000	23600	24000	15000	270	122	955	197	2016	270	7209 E

Designation	Boundary dimensions			Dimensions					Abutment dimensions					Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation	
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}
																			L		M		H				
7210 C	50	90	20	62.4		78.4		1.0	0.6	1.0	0.6	57.0	83.0	66.2	0.46	15	43000	31500	26000	16000	242	60	792	104	1631	153	7210 C
7210 E	50	90	20	62.4		78.4		1.0	0.6	1.0	0.6	57.0	83.0	66.2	0.46	25	40500	30500	22000	14000	355	139	1230	224	2583	306	7210 E
7211 C	55	100	21	70.1		85.0		1.0	0.6	1.0	0.6	63.0	92.0	73.7	0.61	15	46500	37500	22000	14000	261	67	849	116	1750	168	7211 C
7211 E	55	100	21	70.1		85.0		1.0	0.6	1.0	0.6	63.0	92.0	73.7	0.61	25	44000	35500	20000	13000	381	156	1331	251	2797	342	7211 E
7212 C	60	110	22	76.8		93.4		1.0	0.8	1.0	0.8	69.5	101.5	81.2	0.80	15	55000	44000	20000	13000	315	71	1022	123	2100	179	7212 C
7212 E	60	110	22	76.8		93.4		1.0	0.8	1.0	0.8	69.5	101.5	81.2	0.80	25	52000	42500	19000	12000	467	166	1599	266	3333	361	7212 E
7213 C	65	120	23	84.4		101.8		1.5	0.8	1.5	0.8	75.5	109.5	88.2	1.02	15	57000	48000	19000	12000	325	75	1051	129	2163	187	7213 C
7213 E	65	120	23	84.4		101.8		1.5	0.8	1.5	0.8	75.5	109.5	88.2	1.02	25	54000	45500	18000	11000	482	175	1656	280	3455	380	7213 E
7214 C	70	125	24	88.4		106.6		1.5	0.8	1.5	0.8	80.0	115.0	92.7	1.12	15	69500	58500	18000	11000	404	84	1301	143	2664	208	7214 C
7214 E	70	125	24	88.4		106.6		1.5	0.8	1.5	0.8	80.0	115.0	92.7	1.12	25	65500	56000	17000	10000	600	195	2030	311	4233	421	7214 E
7215 C	75	130	25	93.4		111.6		1.5	0.8	1.5	0.8	85.0	120.0	97.7	1.21	15	72000	63000	18000	11000	416	88	1346	150	2757	217	7215 C
7215 E	75	130	25	93.4		111.6		1.5	0.8	1.5	0.8	85.0	120.0	97.7	1.21	25	68000	60000	16000	9500	619	205	2103	327	4389	443	7215 E
7216 C	80	140	26	101.7		121.5		2.0	1.0	2.0	1.0	94.0	126.0	105.2	1.52	15	73500	68000	17000	10000	424	92	1354	155	2800	221	7216 C
7216 E	80	140	26	101.7		121.5		2.0	1.0	2.0	1.0	94.0	126.0	105.2	1.52	25	71000	64000	15000	9000	662	221	2249	352	4899	475	7216 E
7217 C	85	150	28	107.3		127.9		2.0	1.0	2.0	1.0	98.0	138.0	112.3	1.85	15	96500	85000	15000	9000	573	100	1825	170	3734	246	7217 C
7217 E	85	150	28	107.3		127.9		2.0	1.0	2.0	1.0	98.0	138.0	112.3	1.85	25	91500	80000	13000	8000	869	234	2889	371	5972	501	7217 E
7218 C	90	160	30	115.3		136.7		2.0	1.0	2.0	1.0	104.0	147.0	118.8	2.26	15	122000	104000	14000	8500	738	110	2332	186	4746	268	7218 C
7218 E	90	160	30	115.3		136.7		2.0	1.0	2.0	1.0	104.0	147.0	118.8	2.26	25	116000	100000	12000	7500	1136	259	3717	407	7651	549	7218 E
7219 C	95	170	32	121.3		145.2		2.0	1.0	2.0	1.0	110.5	154.0	125.8	2.78	15	127000	114000	13000	8000	768	116	2426	196	4937	282	7219 C
7219 E	95	170	32	121.3		145.2		2.0	1.0	2.0	1.0	110.5	154.0	125.8	2.78	25	122000	108000	11000	7000	1193	274	3906	432	8042	582	7219 E

Designation	Boundary dimensions			Dimensions						Abutment dimensions				Weight	Contact angle	Load rating		Speed value		Preload/axial stiffness						Designation		
	d	D	B	d ₁	d ₂	D ₁	D ₂	r _{1,2}	r _{3,4}	r _{a max}	r _{b max}	d _{a min}	D _{a max}			d _T	m	α ₀	C	C ₀	n _{oil}	n _{grease}	F _V	C _{ax}	F _V		C _{ax}	F _V
																						L	M	H				
7220 C	100	180	34	127.0		153.2		2.0	1.0	2.0	1.0	114.5	165.5	132.4	3.32	15	132000	122000	12000	7500	796	122	2519	206	5128	296	7220 C	
7220 E	100	180	34	127.0		153.2		2.0	1.0	2.0	1.0	114.5	165.5	132.4	3.32	25	125000	116000	10000	6700	1217	287	3994	451	8229	609	7220 E	

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F +886-4-26390989
www.abm-bearings.com

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PRECISION BEARINGS

No. 36, Ln. 465, Sec. 9,
Xiangshang Rd., Wuqi Dist.,
Taichung City 435055,
Taiwan

TEL : 886-4-26390616

FAX : 886-4-26390989

Email: abm.twn@msa.hinet.net

www.abm-bearings.com

ADVANCED BEARING MANUFACTURING CO.,LTD.



