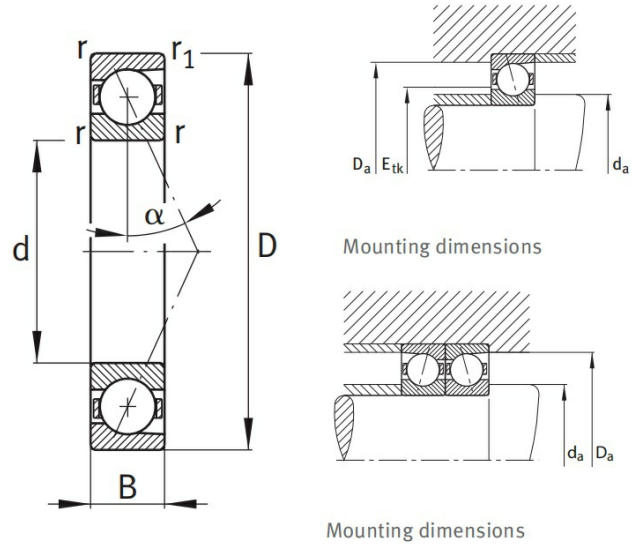


HCB7002-C-2RSD-T-P4S-K5-QBCL

Super Precision Hybrid Angular Contact Ball Bearing



Technical sheet of HCB7002-C-2RSD-T-P4S-K5-QBCL

Type :	Precision spindle bearings	
Model :	HCB7002-C-2RSD-T-P4S-K5-QBCL	
Old Code :	HCB7002C2RSDTP4SK5QBCL	
Main demensions :	15 mm × 32 mm × 9 mm	Bore Dia × Outside Dia × Width Dia
M kg:	0.027	Mass
d mm:	15	inner ring diameter
D mm:	32	Outer ring diameter
B(T) mm:	9	Overall Width
Cr kN:	6.07	Radial dynamic load rating
C0r kN:	2.275	Radial static load rating
Grease r/min:	69966	Reference speed
Oil r/min:	109807	Limiting speed

Detailed parameters and installation dimensions:

Part Number	HCB7002-C-2RSD-T-P4S-K5-QBCL
Design Type	HCB = Hybrid Standard bearing, Lager balls, Ceramic balls
Series	HCB70..-C-2RSD-T-P4S-K5-QBCL

Contact angle - α	(C) 15 °
Dimension series	70 (Medium series)
Reference From	FAG HCB7002-C-2RSD-T-P4S-K5-QBCL
Dimension Inside - $d \phi$ (mm)	15
Dimension Outside - $D \Phi$ (mm)	32
Dimension Width - B (mm)	9
Bearing set	QBCL
Accuracy class	P4S-K5
Dimension - r(min.)	0.3 mm 0.012 inch
Dimension - r_1 (min.)	0.3 mm 0.012 inch
Seal	2RSD = Sealed on both sides
Reference speed (grease) - n_B	69966 min ⁻¹
Limiting speed (oil) - n_G	109807 min ⁻¹
Arrangement	QBC = Set of 4 bearings Tandem - O - arrangement
Preload	L = Preload Light
Mounting dimensions - d_a (h12)	19 mm 0.748 inch
Mounting dimensions - D_a (H12)	29 mm 1.142 inch
Bearing Type	Super Precision Hybrid Angular Contact Ball Bearing
Row No.	Four
Bore Type	Z = Cylindrical bore
Mounting dimensions - E_{tk} (nom.)	22.3 mm 0.878 inch
Dimension Inside - $d \phi$ (inch)	0.591
Dimension Outside - $D \Phi$ (inch)	1.260
Dimension Width - B (inch)	0.354
Manufacturer Part Code	HCB7002C2RSDTP4SK5QBCL , HCB7002C-2RSD-T-P4S-K5-QBCL
Temperature - T(min)	-30°C
Temperature - T(max)	+100°C
Units	Metric
Radial Dynamic Capacity - C_r	6070 N 1364 lbf
Bearing Mass - m	0.027 kg 0.060 lb
Cage	T = Laminated fabric, guidance on outer ring
Radial static Capacity - C_{0r}	2275 N 511 lbf
Preload force - F_v L	12 N 2 lbf
Preload force - F_v M	52 N 11 lbf
Preload force - F_v H	112 N 25 lbf
Ball Material	Ceramic
Axial rigidity - c_a L	13.4 N/ μ m
Axial rigidity - c_a M	24.3 N/ μ m
Axial rigidity - c_a H	35.1 N/ μ m
Ring Material	GCr15SiMn
Lift-off force - K_{aE} L	31 N 6 lbf
Lift-off force - K_{aE} M	162 N 36 lbf
Lift-off force - K_{aE} H	421 N 94 lbf

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HCB7002-C-2RSD-T-P4S-K5-QBCL features:

1. Fundamental advantages of ceramic balls materials:

Extremely low density: Weighs only 40% of steel balls. Reduces friction, heat generation, and wear.

Low coefficient of thermal expansion: Only 25%-30% of steel. Excellent thermal stability and good spindle accuracy retention.

High hardness and wear resistance: Hardness exceeds that of bearing steel, improving fatigue life.

Excellent chemical inertness: Corrosion resistant, can operate in certain special media.

Non-magnetic and insulating: Does not generate magnetic interference and is unaffected by electromagnetic fields.

2. Design advantages of ultra-precision angular contact structures:

High stiffness: Backlash can be eliminated through preload, providing extremely high axial and radial stiffness.

High precision: "Ultra-precision" manufacturing (P4, P2, or higher, or ABEC 7, 9 standards) ensures minimal trajectory error.

High load-bearing capacity: Specific contact angle design can simultaneously withstand combined radial and axial loads.

3. Comprehensive Superior Performance:

Balance between Speed and Temperature Rise: Operates more calmly at higher speeds, avoiding the "thermal failure" bottleneck of steel bearings.

Extra-Long Service Life: Under the same operating conditions, its service life is typically 3-5 times longer than that of high-grade steel bearings.

High Performance Consistency: Under varying operating conditions and wide temperature ranges, performance fluctuations are far less than those of steel bearings.

HCB7002-C-2RSD-T-P4S-K5-QBCL application:

1. Ultra-precision CNC machine tools and machining centers: High-speed electric spindles (high-speed milling and precision engraving of molds and aerospace parts (aluminum alloys/composite materials); precision grinding spindles (for high-precision grinding of bearings, gears, and tool edges).

2. Semiconductor manufacturing equipment: Lithography machines (wafer platforms, objective systems, and other ultra-precision motion platforms); packaging and testing equipment (high-precision placement heads, probe station spindles).

3. High-end robot reducers: Key bearings in RV reducers and harmonic reducers.

4. Aerospace and special fields: Aero-engine accessory systems, UAV electric drive systems, missile guidance gyroscopes; vacuum turbomolecular pump spindles.

5. Other high-tech instruments: High-speed centrifuges (medical blood separators, laboratory centrifuges); precision measuring instruments (roundness testers, high-precision rotary tables).

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