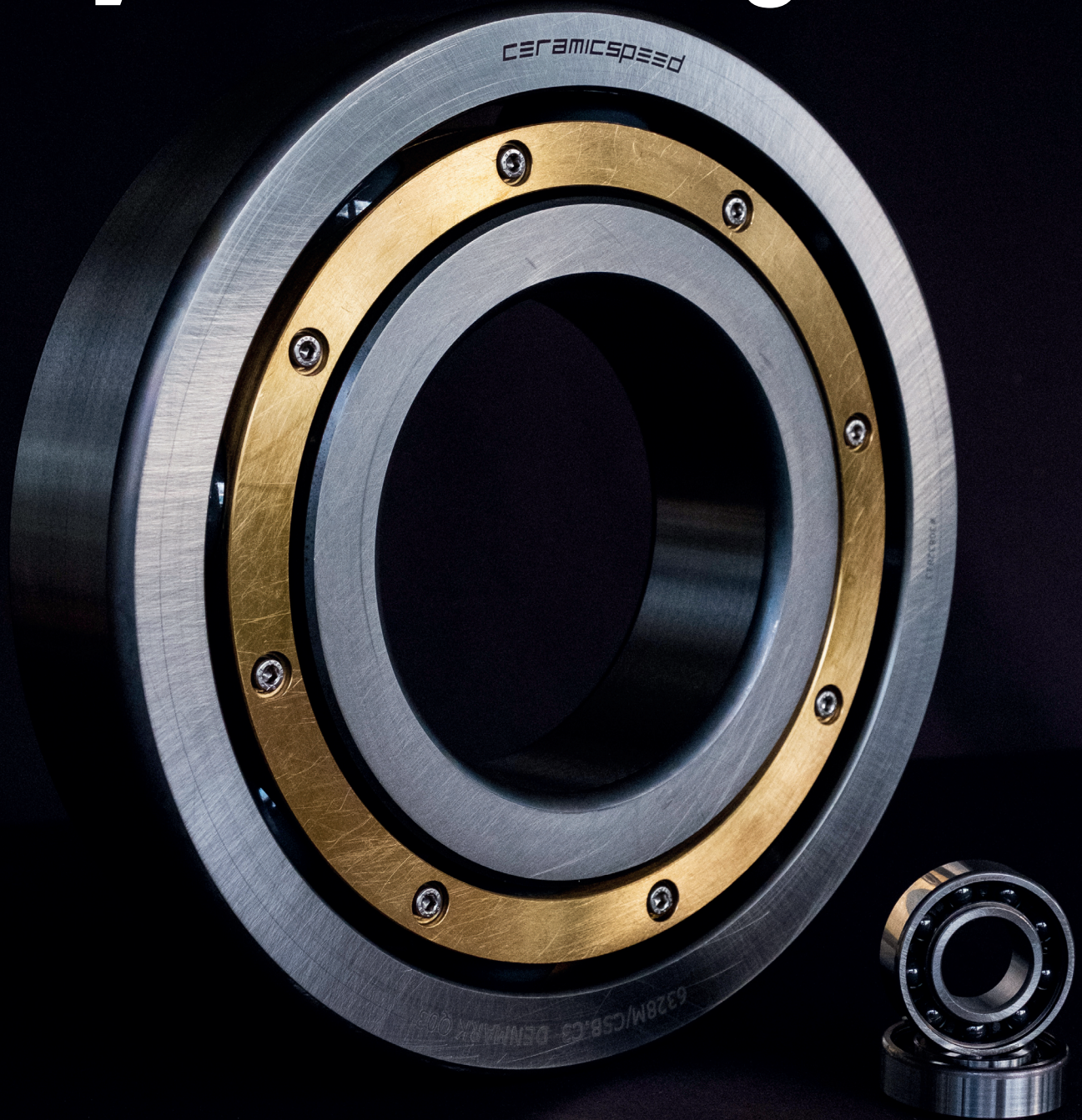

Data Sheet

Large Size Hybrid Bearings



ceramicspeed

Large Size Ceramic Hybrid Bearings

Large size bearings with the highest quality ceramic balls in all sizes. Same durability and high performance, no matter the size.

Why ceramic balls?

Innovations in material science are changing a lot of industries these years. Ceramic materials are proving stronger and much more durable than e.g. steel. Ceramic balls can be found in a variety of materials. The best material available - and the one used for our bearings no matter the size - is silicon nitride (Si₃N₄)

Ceramic balls are superior to steel balls in all physical measurable properties. This ensures many benefits in the bearing: The increased hardness of the ball means that the contact area between the ball and the track is reduced, which leads to lower friction, higher potential speeds and less energy wasted. The hardness and extremely smooth surface also means that the balls are far more durable than steel balls.

	Steel Balls	Silicon Nitride CeramicSpeed Balls	Difference
Density (g/cc)	7.6	3.2	58% lighter
Hardness (Vickers)	700	1600	128% harder
Elastic modulus (GPa)	190	310	63% stiffer
Thermal expansion coefficient	12.3	3.7	-70%
Max usage temperature (°C)	300	1000	+680
Surface finish grade (micron)	0.02	0.005	400% smoother
Life wear resistance	-	<10×	<10×
Electrical resistivity (Ohm/cm)	10 ⁻⁹	10 ¹⁴	10 ¹⁶ =insulator 0=superconductor

Longer Lubricant Life

One of the advantages of ceramic hybrid bearings is the low internal friction in the bearing. The coefficient of friction for ceramic balls against steel is 0,2 compared to that of 0,8 for a steel/steel contact. As friction generates heat, the hybrid bearings with low internal friction runs cooler than ordinary bearings and cooler running equals longer lubricant life. In a greased for life bearing, this effect could easily double the overall bearing life alone.



Zero Current Erosion

In contrast to steel balls, silicon nitride balls insulate effectively against stray currents. Especially in frequency controlled electrical motors, stray current can be a severe threat to the motor bearings. Over time, they hamper the smooth running of the bearings by creating micro welds and craters within the raceway - a condition that will grow progressively worse until the motor stops working. The safe weapon against this failure mode is hybrid bearings - bearings where the balls are made from non-conductive materials such as silicon nitride.

By choosing CeramicSpeed ceramic hybrid bearings you will achieve a number of advantages:

- Elimination of bearing current related damages
- Increased robustness towards lubricant starvation / asperity contacts
- Significant increase in bearing life compared to ordinary bearings
- Quality ceramic rolling elements in Silicon Nitride, Class 1 according to ASTM 2094
- Machined brass cage for maximum robustness
- Manual quality inspection on 100% of items

We have a variety of large size bearings in stock - ready for swift supply when required:

d [mm]	D [mm]	B [mm]	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
110	240	50	201	132	6930	Insulate 110 6322M/CSB.C3
120	260	55	225	156	4900	Insulate 120 6324M/CSB.C3
130	280	58	244	171	5810	Insulate 130 6326M/CSB.C3
140	300	62	270	197	5390	Insulate 140 6328M/CSB.C3
150	320	65	300	232	5040	Insulate 150 6330M/CSB.C3
160	340	68	300	256	4760	Insulate 160 6332M/CSB.C3
170	360	72	325	292	4480	Insulate 170 6334M/CSB.C3
180	380	75	355	324	4200	Insulate 180 6336M/CSB.C3
190	400	78	370	348	3990	Insulate 190 6338M/CSB.C3

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