
Bearings That Last

Increase the performance and durability
of your production equipment



CERAMICSPEED

Table of Contents

About Us.....4
 CeramicSpeed Balls.....6
 Surface Technologies8

Product Series

CeramicSpeed Insulate 12
 CeramicSpeed Corrotec 18
 CeramicSpeed Xtreme 25
 CeramicSpeed SLT 34
 CeramicSpeed SlipCoat..... 36

Technical Data

Designation System..... 40
 Bearing Lubrication..... 43
 Miscibility Matrix 44
 Bearing Steels 47
 Seals 48
 Ball Cages and Roller Cages 51
 Handling & Bearing Installation..... 52
 Quality Control..... 54



About Us

Who would have thought, that the small bearings in a roller skate could change the way we look at efficiency on an industrial scale?

Our story began in 1998, when Jacob Csizmadia broke a world record by inline skating 505 kilometres in 24 hours, using skates equipped with ceramic ball bearings. Two years later, he introduced ceramic bearings to professional cycling at the Tour de France. After this success, CeramicSpeed was founded and started producing hybrid bearings in Holstebro, Denmark.

After years of scrupulous development and testing, CeramicSpeed bearings are second to none. Hand-built in Denmark with superior craftsmanship, our bearings provide customers with unmatched performance and bearing life resulting in lower operating costs, improved production uptime and increased competitiveness.

From small electrical equipment to offshore wind turbines, we have revolutionised efficiency on an industrial scale, providing technological advantages for a diverse range of applications. We work with global manufacturing companies across an array of sectors to achieve operational savings that allow them to remain competitive and continue to grow. In 2014, CeramicSpeed received an FDA certification with approval for direct contact with food products and in 2021 we became ISO 9001 certified.

A winning mentality is how it all started, and it's this guiding principle that continues to drive us forward.



CeramicSpeed Balls

Ceramic balls can be found in a variety of materials. The best material available - and the one used for our bearings - is silicon nitride (Si_3N_4)

Silicon nitride balls are less dense and much lighter (58 %) than steel balls. This means that the energy requirements for running the machinery will drop - but the main advantage of the low weight is found in a longer bearing life.

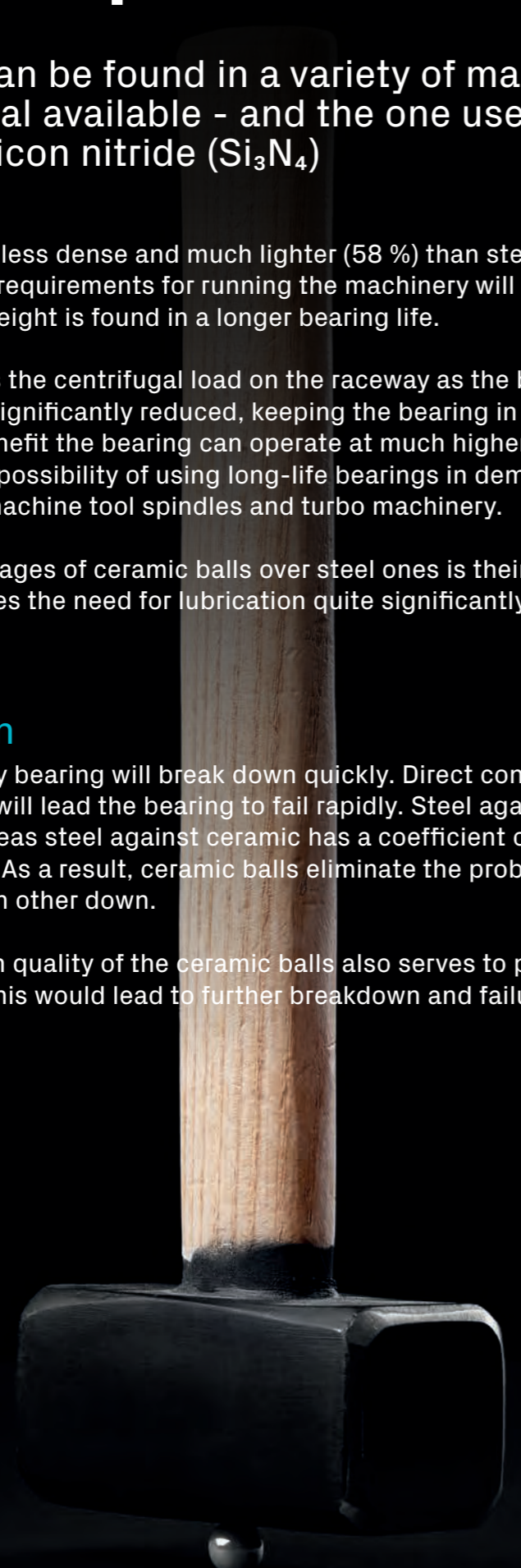
The low weight reduces the centrifugal load on the raceway as the bearing spins, and wear and tear are significantly reduced, keeping the bearing in top condition for longer. As an added benefit the bearing can operate at much higher RPMs - up to 50 % higher - giving you the possibility of using long-life bearings in demanding high-speed applications, such as machine tool spindles and turbo machinery.

One of the main advantages of ceramic balls over steel ones is their low friction coefficient - this reduces the need for lubrication quite significantly.

Less Lubrication

Without lubrication, any bearing will break down quickly. Direct contact between steel ball and steel raceway will lead the bearing to fail rapidly. Steel against steel has a friction coefficient of 0.8, whereas steel against ceramic has a coefficient of 0.2 - or even lower, if the races are coated. As a result, ceramic balls eliminate the problem of two identical materials breaking each other down.

The hardness and finish quality of the ceramic balls also serves to polish out any damage to the races, whereas this would lead to further breakdown and failure in steel bearings.



	Steel Balls	Silicon Nitride CeramicSpeed Balls	Difference
Density [g/cm ³]	7.6	3.2	58% lighter
Hardness (Vickers)	700	1600	128% harder
Elastic modulus [GPa]	190	310	63% stiffer
Thermal expansion coefficient [μm]	12.3	3.7	-70%
Max usage temperature [°C]	320	1000	+680
Surface finish grade [micron]	0.02	0.005	400% smoother
Life wear resistance	-	<10x	<10x
Electrical resistivity [Ohm/cm]	10^{-9}	10^{14}	10^{16} =insulator 0=superconductor

Unique Properties

The smoothness and hardness of the CeramicSpeed Balls are unique. After 600 hours of testing, the CeramicSpeed Ball is still in perfect condition whereas the surface of the other ceramic balls is rough and bumpy after only 10 hours of testing. A rough ball creates increased friction in the bearing and quickly wears down the steel races.

This picture below shows two ¼" (6.35 mm) balls. The one to the left is a CeramicSpeed Ball and the one to the right is a standard steel ball. We applied the same pressure to both balls and the result is clear; the steel ball simply cracked under the load, while the CeramicSpeed Ball is 100% intact and perfectly usable.



Surface Technologies

Bearing rollers, races and other wear parts can be coated to increase resistance against wear and prolong the service life.

The industry's demand for extremely varied technical surface technologies has over the last couple of years been increasing. The overall performance and reliability of machines, units and equipment is becoming more and more important which has led to development of a variety of processes and new materials within surface treatment.

Many advantages can be achieved by coating the material surface of e.g. rolling bearings and linear components, however many coating processes are not suitable for situations in which rolling or compressive stress occurs - but our coating system is created for this.

Our coating system protects the surface from outside environmental conditions and increases the durability of bearing rollers, races or other wear parts' durability. This type of coating also results in extremely good rolling capacity especially if it's used on rolling bearings which results in a supreme protection against wear and corrosion.

CeramicSpeed Coating protect the surface but the technical improvement involved in this process also leads to energy savings and an efficient use of material. Any steel suitable for rolling bearings may be used as the basic material to be coated e.g. 100Cr6 (1.3505) steel. But the coating is also very beneficial if you use AISI 440C (1.4125) corrosion resistant steel or AISI50 (1.3551).

	Bearing Steel (Reference)	CorroCoat	HardCoat	Black Oxide
Process		Dipping	Physical Vapor Deposition (PVD)	Dripping
Process temperature		<80	170	140
Color		Grey	Black	Black
Hardness, HV (vickers)	700	1200-1300 *	1200-1800 *	700
Max. running temperature °C	150/200	800	500	200
Thickness µm	Solid	3-6 µm	< 3µm	< 1µm
Coefficient of friction (against steel)	0,8	0,25	0,05-0,1	0,7

* Depending on specimen material properties

HardCoat

This coating is within the family of DLC coatings, ideal solution for demanding applications where bearing components are under high loads or subject to extreme friction and wear. The high hardness and low coefficient of friction can prevent rolling elements from pitting, seizing and ultimately failing during operation.

Corrocoat

Our CorroCoat system consist of 98% pure chrome. A chromium coating has many advantages and it can be desposited by a high-energy process for any steel that is suitable for coating. The hardness of this coating system is between 75 and 78 HRC (1300-1560 HV).

Black Oxide

Black Oxide treatment is an old technology often associated with initial wear protection or run-in protection. Recent studies have showed that black oxidizing also has a positive effect on bearing steels in regards of hydrogen embrittlement and white etching crack building in bearing steel. As oxidizing is a simple and inexpensive process, this offers a straight forward solution improving safety margins for many bearing applications .



Product Series



CeramicSpeed Insulate

The obvious choice for modern electrical motors

CeramicSpeed Insulate ball bearings are custom made for electrical motors and your guarantee against damage caused by stray currents. The ceramic balls used for CeramicSpeed Insulate series are non-conductive and have an insulating ability of 15 kV per mm - higher than that of atmospheric air.

Lower Energy Consumption

Compared bearing to bearing, we have documented 48% lower friction in our own CeramicSpeed Hybrid Bearing compared to similar sized premium brand steel bearings. In an electrical motor, this reduction in bearing friction yield a measurable increase in overall motor efficiency and resultantly a reduction in energy need and a reduction of CO2 emmisions.

Non-conductive balls

Bearings from competing manufacturers with an insulating coating typically have an insulating ability of up to 1 kV; provided that the coating is not damaged - for example when the bearing is mounted. In practice this protection isn't always sufficient, meaning that these bearings are also vulnerable to damage by stray currents. The ceramic balls used for this product series are non-conductive and have an insulating ability of 15 kV per mm - higher than that of atmospheric air.

In addition to being protected from the passage of electrical currents, the operating temperature is 10-20 °C lower, and the result is a bearing life typically 4-8 times longer than traditional steel bearings.

Advantages of CeramicSpeed Insulate

- Lower energy consumption
- 4-8 times longer lifetime
- Your guarantee against bearing current
- Fast ROI
- Lower operating temperature - 10-20 °C lower than steel bearings
- Higher RPM - up to 50 % higher than steel bearings



Insulate

Sealed

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
5	16	5	1,14	0,38	70000	Insulate 005 625-2RZ/CSB.C3
6	19	6	2,34	0,95	60000	Insulate 006 626-2RZ/CSB.C3
7	19	6	2,34	0,95	60000	Insulate 007 607-2RZ/CSB.C3
7	22	7	3,45	1,37	53000	Insulate 007 627-2RZ/CSB.C3
8	22	7	3,45	1,37	53000	Insulate 008 608-2RZ/CSB.C3
10	26	8	4,75	1,96	45000	Insulate 010 6000-2RZ/CSB.C3
10	30	9	5,40	2,36	43000	Insulate 010 6200-2RZ/CSB.C3
10	35	11	8,52	3,4	39000	Insulate 010 6300-2RZ/CSB.C3
12	28	8	5,40	2,36	43000	Insulate 012 6001-2RZ/CSB.C3
12	32	10	7,28	3,1	38000	Insulate 012 6201-2RZ/CSB.C3
12	37	12	10,10	4,15	33000	Insulate 012 6301-2RZ/CSB.C3
15	32	9	5,85	2,85	36000	Insulate 015 6002-2RZ/CSB.C3
15	35	11	8,06	3,75	32000	Insulate 015 6202-2RZ/CSB.C3
15	42	13	11,90	5,4	28000	Insulate 015 6302-2RZ/CSB.C3
17	35	10	6,37	3,25	32000	Insulate 017 6003-2RZ/CSB.C3
17	40	12	9,95	4,75	28000	Insulate 017 6203-2RZ/CSB.C3
17	47	14	14,30	6,5	26000	Insulate 017 6303-2RZ/CSB.C3
20	42	12	9,95	5	26000	Insulate 020 6004-2RZ/CSB.C3
20	47	14	13,5	6,55	24000	Insulate 020 6204-2RZ/CSB.C3
20	52	15	16,8	7,8	23000	Insulate 020 6304-2RZ/CSB.C3
25	47	12	11,9	6,55	22000	Insulate 025 6005-2RZ/CSB.C3
25	52	15	14,8	7,8	22000	Insulate 025 6205-2RZ/CSB.C3
25	62	17	23,4	11,6	20000	Insulate 025 6305-2RZ/CSB.C3
30	55	13	13,8	8,3	19000	Insulate 030 6006-2RZ/CSB.C3
30	62	16	20,3	11,2	18000	Insulate 030 6206-2RZ/CSB.C3
30	72	19	29,6	16	17000	Insulate 030 6306-2RZ/CSB.C3
35	62	14	16,8	10,25	17000	Insulate 035 6007-2RZ/CSB.C3
35	72	17	27,0	15,3	15000	Insulate 035 6207-2RZ/CSB.C3
35	80	21	35,1	19	16000	Insulate 035 6307-2RZ/CSB.C3
40	68	15	17,8	11	15000	Insulate 040 6008-2RZ/CSB.C3
40	80	18	32,5	19	14000	Insulate 040 6208-2RZ/CSB.C3
40	90	23	42,3	24	13000	Insulate 040 6308-2RZ/CSB.C3
45	75	16	22,1	14,6	16000	Insulate 045 6009-2RZ/CSB.C3
45	85	19	35,1	21,6	13000	Insulate 045 6209-2RZ/CSB.C3
45	100	25	55,3	31,5	12000	Insulate 045 6309-2RZ/CSB.C3
50	80	16	22,9	16	15000	Insulate 050 6010-2RZ/CSB.C3
50	90	20	37,1	23,2	12000	Insulate 050 6210-2RZ/CSB.C3
50	110	27	65,0	38	10000	Insulate 050 6310-2RZ/CSB.C3

Insulate

Sealed

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
55	100	21	46,2	29	10000	Insulate 055 6211-2RZ/CSB.C3
55	120	29	74,1	45	9000	Insulate 055 6311-2RZ/CSB.C3
60	95	18	30,7	23,2	11000	Insulate 060 6012-2RZ/CSB.C3
60	110	22	55,3	36	9500	Insulate 060 6212-2RZ/CSB.C3
60	130	31	85,2	52	8500	Insulate 060 6312-2RZ/CSB.C3
65	100	18	31,9	25	10500	Insulate 065 6013-2RZ/CSB.C3
65	120	23	58,5	40,5	8500	Insulate 065 6213-2RZ/CSB.C3
65	140	33	97,5	60	8000	Insulate 065 6313-2RZ/CSB.C3
70	110	20	39,7	31	9400	Insulate 070 6014-2RZ/CSB.C3
70	125	24	63,7	45	8500	Insulate 070 6214-2RZ/CSB.C3
70	150	35	111	68	7500	Insulate 070 6314-2RZ/CSB.C3
75	115	20	41,6	33,5	9000	Insulate 075 6015-2RZ/CSB.C3
75	130	25	68,9	49	8000	Insulate 075 6215-2RZ/CSB.C3
75	160	37	119	76,5	6700	Insulate 075 6315-2RZ/CSB.C3
80	125	22	49	40	8200	Insulate 080 6016-2RZ/CSB.C3
80	140	26	73	55	7000	Insulate 080 6216-2RZ/CSB.C3
80	170	39	130	86,5	6300	Insulate 080 6316-2RZ/CSB.C3
85	130	22	52	43	6700	Insulate 085 6017-2RZ/CSB.C3
85	150	28	87,1	64	5600	Insulate 085 6217-2RZ/CSB.C3
85	180	41	140	96,5	5000	Insulate 085 6317-2RZ/CSB.C3
90	140	24	60,5	50	6300	Insulate 090 6018-2RZ/CSB.C3
90	160	30	101	73,5	5300	Insulate 090 6218-2RZ/CSB.C3
90	190	43	151	108	4800	Insulate 090 6318-2RZ/CSB.C3
95	145	24	63,7	54	6000	Insulate 095 6019-2RZ/CSB.C3
95	170	32	114	81,5	5000	Insulate 095 6219-2RZ/CSB.C3
100	150	24	63,7	54	5600	Insulate 100 6020-2RZ/CSB.C3
100	180	34	127	93	4800	Insulate 100 6220-2RZ/CSB.C3
100	215	47	174	140	4300	Insulate 100 6320-2RZ/CSB.C3
105	160	26	76,1	65,5	5300	Insulate 105 6021-2RZ/CSB.C3
110	170	28	85,2	73,5	5000	Insulate 110 6022-2RZ/CSB.C3
110	200	38	151	118	4300	Insulate 110 6222-2RZ/CSB.C3
120	180	28	88,4	80	4800	Insulate 120 6024-2RZ/CSB.C3
120	215	40	146	118	4000	Insulate 120 6224-2RZ/CSB.C3
130	200	33	112	100	4300	Insulate 130 6026-2RZ/CSB.C3
140	210	33	111	108	4000	Insulate 140 6028-2RZ/CSB.C3

Insulate

Open

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
5	16	5	1,14	0,38	70000	Insulate 005 625/CSB.C3
6	19	6	2,34	0,95	60000	Insulate 006 626/CSB.C3
7	19	6	2,34	0,95	60000	Insulate 007 607/CSB.C3
7	22	7	3,45	1,37	53000	Insulate 007 627/CSB.C3
8	22	7	3,45	1,37	53000	Insulate 008 608/CSB.C3
10	26	8	4,75	1,96	45000	Insulate 010 6000/CSB.C3
10	30	9	5,40	2,36	43000	Insulate 010 6200/CSB.C3
10	35	11	8,52	3,4	39000	Insulate 010 6300/CSB.C3
12	28	8	5,40	2,36	43000	Insulate 012 6001/CSB.C3
12	32	10	7,28	3,1	38000	Insulate 012 6201/CSB.C3
12	37	12	10,10	4,15	33000	Insulate 012 6301/CSB.C3
15	32	9	5,85	2,85	36000	Insulate 015 6002/CSB.C3
15	35	11	8,06	3,75	32000	Insulate 015 6202/CSB.C3
15	42	13	11,90	5,4	28000	Insulate 015 6302/CSB.C3
17	35	10	6,37	3,25	32000	Insulate 017 6003/CSB.C3
17	40	12	9,95	4,75	28000	Insulate 017 6203/CSB.C3
17	47	14	14,30	6,5	26000	Insulate 017 6303/CSB.C3
20	42	12	9,95	5	26000	Insulate 020 6004/CSB.C3
20	47	14	13,5	6,55	24000	Insulate 020 6204/CSB.C3
20	52	15	16,8	7,8	23000	Insulate 020 6304/CSB.C3
25	47	12	11,9	6,55	22000	Insulate 025 6005/CSB.C3
25	52	15	14,8	7,8	22000	Insulate 025 6205/CSB.C3
25	62	17	23,4	11,6	20000	Insulate 025 6305/CSB.C3
30	55	13	13,8	8,3	19000	Insulate 030 6006/CSB.C3
30	62	16	20,3	11,2	18000	Insulate 030 6206/CSB.C3
30	72	19	29,6	16	17000	Insulate 030 6306/CSB.C3
35	62	14	16,8	10,25	17000	Insulate 035 6007/CSB.C3
35	72	17	27,0	15,3	15000	Insulate 035 6207/CSB.C3
35	80	21	35,1	19	16000	Insulate 035 6307/CSB.C3
40	68	15	17,8	11	15000	Insulate 040 6008/CSB.C3
40	80	18	32,5	19	14000	Insulate 040 6208/CSB.C3
40	90	23	42,3	24	13000	Insulate 040 6308/CSB.C3
45	75	16	22,1	14,6	16000	Insulate 045 6009/CSB.C3
45	85	19	35,1	21,6	13000	Insulate 045 6209/CSB.C3
45	100	25	55,3	31,5	12000	Insulate 045 6309/CSB.C3
50	80	16	22,9	16	15000	Insulate 050 6010/CSB.C3
50	90	20	37,1	23,2	12000	Insulate 050 6210/CSB.C3
50	110	27	65,0	38	10000	Insulate 050 6310/CSB.C3
55	90	18	29,6	21,2	14000	Insulate 055 6011/CSB.C3
55	100	21	46,2	29	10000	Insulate 055 6211/CSB.C3
55	120	29	74,1	45	9000	Insulate 055 6311/CSB.C3

Insulate

Open

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
60	95	18	30,7	23,2	11000	Insulate 060 6012/CSB.C3
60	110	22	55,3	36	9500	Insulate 060 6212/CSB.C3
60	130	31	85,2	52	8500	Insulate 060 6312/CSB.C3
65	100	18	31,9	25	10500	Insulate 065 6013/CSB.C3
65	120	23	58,5	40,5	8500	Insulate 065 6213/CSB.C3
65	140	33	97,5	60	8000	Insulate 065 6313/CSB.C3
70	110	20	39,7	31	9400	Insulate 070 6014/CSB.C3
70	125	24	63,7	45	8500	Insulate 070 6214/CSB.C3
70	150	35	111	68	7500	Insulate 070 6314/CSB.C3
75	115	20	41,6	33,5	9000	Insulate 075 6015/CSB.C3
75	130	25	68,9	49	8000	Insulate 075 6215/CSB.C3
75	160	37	119	76,5	6700	Insulate 075 6315/CSB.C3
80	125	22	49	40	8200	Insulate 080 6016/CSB.C3
80	140	26	73	55	7000	Insulate 080 6216/CSB.C3
80	170	39	130	86,5	6300	Insulate 080 6316/CSB.C3
85	130	22	52	43	6700	Insulate 085 6017/CSB.C3
85	150	28	87,1	64	6700	Insulate 085 6217/CSB.C3
85	180	41	140	96,5	6000	Insulate 085 6317/CSB.C3
90	140	24	60,5	50	6300	Insulate 090 6018/CSB.C3
90	160	30	101	73,5	6300	Insulate 090 6218/CSB.C3
90	190	43	151	108	5600	Insulate 090 6318/CSB.C3
95	145	24	63,7	54	6000	Insulate 095 6019/CSB.C3
95	170	32	114	81,5	6000	Insulate 095 6219/CSB.C3
95	200	45	159	118	5300	Insulate 095 6319/CSB.C3
100	150	24	63,7	54	5600	Insulate 100 6020/CSB.C3
100	180	34	127	93	5600	Insulate 100 6220/CSB.C3
100	215	47	174	140	5000	Insulate 100 6320/CSB.C3
105	160	26	76,1	65,5	5300	Insulate 105 6021/CSB.C3
110	170	28	85,2	73,5	5000	Insulate 110 6022/CSB.C3
110	200	38	151	118	4300	Insulate 110 6222/CSB.C3
120	180	28	88,4	80	4800	Insulate 120 6024/CSB.C3
120	215	40	146	118	4000	Insulate 120 6224/CSB.C3
130	200	33	112	100	4300	Insulate 130 6026/CSB.C3
140	210	33	111	108	4000	Insulate 140 6028/CSB.C3
140	300	62	252	245	3600	Insulate 140 6328/CSB.C3
150	320	65	280	290	3200	Insulate 150 6330/CSB.C3
160	340	68	300	325	2800	Insulate 160 6332/CSB.C3
170	360	72	327	367	2800	Insulate 170 6334/CSB.C3
180	380	75	354	412	2800	Insulate 180 6336/CSB.C3
190	400	78	370	440	2500	Insulate 190 6338/CSB.C3

CeramicSpeed Corrotec

FDA/EN-1935 approved bearings for the food and beverage industry

In the food and beverage industry, uptime and reliability are everything. Production equipment requires food-grade certification, and any breakdown will cause costly production stops. The bearings used must be of the highest possible quality and must be able to withstand high temperature fluctuations, humid and contaminated working conditions with the longest bearing life possible.

CeramicSpeed Corrotec ball bearings are FDA approved and suitable for use in the food industry. The bearings are manufactured using stainless steel rings with ceramic balls and lubricants approved for use in the food industry.

Bearings with lubricant approved for the food industry

When talking about food-approved lubricants, bearings usually require constant lubrication during the production process. As an alternative, sealed bearings can be used. These are delivered with FDA approved lubricants which will last throughout the bearing's lifetime.

We have launched a complete bearing program certified as FDA compliant, these bearings are approved for use in the food industry and certified for direct contact with food.

Advantages of CeramicSpeed Corrotec

- FDA/EN-1935 approved
- 4-8 times longer lifetime than conventional bearings
- Corrosion resistant



Corrotec

Sealed

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
10	26	8	3,97	1,96	19000	Corrotec 010 6000-2RS/CSB
10	30	9	4,36	2,32	16000	Corrotec 010 6200-2RS/CSB
10	35	11	7,02	3,4	15000	Corrotec 010 6300-2RS/CSB
12	28	8	4,42	2,36	16000	Corrotec 012 6001-2RS/CSB
12	32	10	5,72	3	15000	Corrotec 012 6201-2RS/CSB
12	37	12	9,75	4,15	14000	Corrotec 012 6301-2RS/CSB
15	32	9	4,88	2,8	14000	Corrotec 015 6002-2RS/CSB
15	35	11	6,37	3,6	13000	Corrotec 015 6202-2RS/CSB
15	42	13	9,94	5,4	11000	Corrotec 015 6302-2RS/CSB
17	35	10	4,94	3,15	13000	Corrotec 017 6003-2RS/CSB
17	40	12	8,06	4,75	12000	Corrotec 017 6203-2RS/CSB
17	47	14	11,7	6,55	10000	Corrotec 017 6303-2RS/CSB
20	42	12	9,36	5,1	11000	Corrotec 020 6004-2RS/CSB
20	47	14	12,5	6,55	10000	Corrotec 020 6204-2RS/CSB
20	52	15	13,8	7,8	9500	Corrotec 020 6304-2RS/CSB
25	47	12	10,1	5,85	9500	Corrotec 025 6005-2RS/CSB
25	52	15	13,8	7,8	8500	Corrotec 025 6205-2RS/CSB
25	62	17	20,8	11,2	7500	Corrotec 025 6305-2RS/CSB
30	55	13	13,3	8,3	8000	Corrotec 030 6006-2RS/CSB
30	62	16	19	11,4	7000	Corrotec 030 6206-2RS/CSB
30	72	19	22,9	15	6300	Corrotec 030 6306-2RS/CSB
35	62	14	13,8	10,2	6700	Corrotec 035 6007-2RS/CSB
35	72	17	22,1	15,3	6000	Corrotec 035 6207-2RS/CSB
35	80	21	28,6	19	5600	Corrotec 035 6307-2RS/CSB
40	68	15	14,6	11,4	6300	Corrotec 040 6008-2RS/CSB
40	80	18	25,1	17,6	5600	Corrotec 040 6208-2RS/CSB
45	75	23	18,2	15	5600	Corrotec 045 6009-2RS/CSB
45	85	19	28,1	20,4	5000	Corrotec 045 6209-2RS/CSB
50	80	16	19	16,6	5000	Corrotec 050 6010-2RS/CSB
50	90	20	30,2	23,2	4800	Corrotec 050 6210-2RS/CSB

Corrotec

Open

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
10	26	8	3,97	1,96	40000	Corrotec 010 6000/CSB
10	30	9	4,36	2,32	36000	Corrotec 010 6200/CSB
10	35	11	7,02	3,4	34000	Corrotec 010 6300/CSB
12	28	8	4,42	2,36	36000	Corrotec 012 6001/CSB
12	32	10	5,72	3	34000	Corrotec 012 6201/CSB
12	37	12	9,75	4,15	30000	Corrotec 012 6301/CSB
15	32	9	4,88	2,8	32000	Corrotec 015 6002/CSB
15	35	11	6,37	3,6	30000	Corrotec 015 6202/CSB
15	42	13	9,94	5,4	26000	Corrotec 015 6302/CSB
17	35	10	4,94	3,15	28000	Corrotec 017 6003/CSB
17	40	12	8,06	4,75	26000	Corrotec 017 6203/CSB
17	47	14	11,7	6,55	22000	Corrotec 017 6303/CSB
20	42	12	9,36	5,1	24000	Corrotec 020 6004/CSB
20	47	14	12,5	6,55	22000	Corrotec 020 6204/CSB
20	52	15	13,8	7,8	20000	Corrotec 020 6304/CSB
25	47	12	10,1	5,85	20000	Corrotec 025 6005/CSB
25	52	15	13,8	7,8	19000	Corrotec 025 6205/CSB
25	62	17	20,8	11,2	17000	Corrotec 025 6305/CSB
30	55	13	13,3	8,3	17000	Corrotec 030 6006/CSB
30	62	16	19	11,4	16000	Corrotec 030 6206/CSB
30	72	19	22,9	15	14000	Corrotec 030 6306/CSB
35	62	14	13,8	10,2	15000	Corrotec 035 6007/CSB
35	72	17	22,1	15,3	14000	Corrotec 035 6207/CSB
35	80	21	28,6	19	13000	Corrotec 035 6307/CSB
40	68	15	14,6	11,4	14000	Corrotec 040 6008/CSB
40	80	18	25,1	17,6	12000	Corrotec 040 6208/CSB
45	75	23	18,2	15	12000	Corrotec 045 6009/CSB
45	85	19	28,1	20,4	11000	Corrotec 045 6209/CSB
50	80	16	19	16,6	11000	Corrotec 050 6010/CSB
50	90	20	30,2	23,2	10000	Corrotec 050 6210/CSB



CERAMIC SPEED
107987

CERAMIC SPEED

NU224-K-MORR C3 DENMARK Q11

CeramicSpeed Xtreme

A highly resistant bearing that is unlikely to fail even in the most contaminated environments

Imagine a ball bearing in which the balls are harder and tougher than anything that comes into contact with them: dust, grit, metal filings, tiny mineral fragments. Imagine a bearing in which all contaminants are ground to microscopic powder by the balls themselves - a bearing that is unlikely to fail.

Crushing the Particles

Our Xtreme series is designed for applications in contaminated environments, where particles can penetrate the bearing and affect the bearing performance. Characterized by unmatched hardness, the hybrid balls tolerate a high degree of contamination, crushing the particles that penetrate into the bearing races. They are also highly resistant against water and detergents because Silicon Nitride does not corrode.

The CeramicSpeed Xtreme series can also be manufactured and optimized specifically for oscillating applications. These applications match special machines, where a bearing not performing full rotation is needed.

Angular Contact Ball Bearing

In pumps, compressors and generic motor installations running vertical shafts the angular contact ball bearing is often a solid mechanical solution. These however – just like DGBB's – suffer from more and more frequent exposure to electrical stray currents - bearing currents. We can remove this problem with the high quality insulating ceramic balls in our Insulate deep groove ball bearing product series, and we now offer the same guaranteed solution for angular contact ball bearings with a maintained stock of standard executions.

Advantages of CeramicSpeed Xtreme

- 4-8 times longer lifetime than conventional bearings
- Extreme resistance to contamination, heat and dust
- Lower friction and operating temperature
- High temperature versions available on request
- Guarantee against bearing current damages
- High speed rating



Xtreme

Sealed

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
6	19	6	2,34	0,95	24000	Xtreme 006 626-2RS/CSB
7	19	6	2,34	0,95	24000	Xtreme 007 607-2RS/CSB
7	22	7	3,45	1,37	22000	Xtreme 007 627-2RS/CSB
8	22	7	3,45	1,37	22000	Xtreme 008 608-2RS/CSB
10	26	8	4,75	1,96	19000	Xtreme 010 6000-2RS/CSB
10	30	9	5,40	2,36	17000	Xtreme 010 6200-2RS/CSB
10	35	11	8,52	3,4	15000	Xtreme 010 6300-2RS/CSB
12	28	8	5,40	2,36	17000	Xtreme 012 6001-2RS/CSB
12	32	10	7,28	3,1	15000	Xtreme 012 6201-2RS/CSB
12	37	12	10,10	4,15	14000	Xtreme 012 6301-2RS/CSB
15	32	9	5,85	2,85	14000	Xtreme 015 6002-2RS/CSB
15	35	11	8,06	3,75	13000	Xtreme 015 6202-2RS/CSB
15	42	13	11,90	5,4	12000	Xtreme 015 6302-2RS/CSB
17	35	10	6,37	3,25	13000	Xtreme 017 6003-2RS/CSB
17	40	12	9,95	4,75	12000	Xtreme 017 6203-2RS/CSB
17	47	14	14,30	6,55	11000	Xtreme 017 6303-2RS/CSB
20	42	12	9,95	5	11000	Xtreme 020 6004-2RS/CSB
20	47	14	13,5	6,55	10000	Xtreme 020 6204-2RS/CSB
20	52	15	16,8	7,8	9500	Xtreme 020 6304-2RS/CSB
25	47	12	11,9	6,55	9500	Xtreme 025 6005-2RS/CSB
25	52	15	14,8	7,8	8500	Xtreme 025 6205-2RS/CSB
25	62	17	23,4	11,6	7500	Xtreme 025 6305-2RS/CSB
30	55	13	13,8	8,3	8000	Xtreme 030 6006-2RS/CSB
30	62	16	20,3	11,2	7500	Xtreme 030 6206-2RS/CSB
30	72	19	29,6	16	6300	Xtreme 030 6306-2RS/CSB
35	62	14	16,8	10,25	7000	Xtreme 035 6007-2RS/CSB
35	72	17	27,0	15,3	6300	Xtreme 035 6207-2RS/CSB
35	80	21	35,1	19	6000	Xtreme 035 6307-2RS/CSB
40	68	15	17,8	11	6300	Xtreme 040 6008-2RS/CSB
40	80	18	32,5	19	5600	Xtreme 040 6208-2RS/CSB
40	90	23	42,3	24	5000	Xtreme 040 6308-2RS/CSB
45	75	23	20,8	14,6	5600	Xtreme 045 6009-2RS/CSB
45	85	19	35,1	21,6	5000	Xtreme 045 6209-2RS/CSB
45	100	25	55,3	31,5	4500	Xtreme 045 6309-2RS/CSB
50	80	16	22,9	15,6	5000	Xtreme 050 6010-2RS/CSB
50	90	20	37,1	23,2	4800	Xtreme 050 6210-2RS/CSB
50	110	27	65,0	38	4300	Xtreme 050 6310-2RS/CSB
55	90	18	29,6	21,2	4500	Xtreme 055 6011-2RS/CSB
55	100	21	46,2	29	4300	Xtreme 055 6211-2RS/CSB
55	120	29	74,1	45	3800	Xtreme 055 6311-2RS/CSB

Xtreme

Sealed

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
60	95	18	30,7	23,2	4300	Xtreme 060 6012-2RS/CSB
60	110	22	55,3	36	4000	Xtreme 060 6212-2RS/CSB
60	130	31	85,2	52	3400	Xtreme 060 6312-2RS/CSB
65	100	18	31,9	25	4000	Xtreme 065 6013-2RS/CSB
65	120	23	58,5	40,5	3600	Xtreme 065 6213-2RS/CSB
65	140	33	97,5	60	3200	Xtreme 065 6313-2RS/CSB
70	110	20	39,7	31	3600	Xtreme 070 6014-2RS/CSB
70	125	24	63,7	45	3400	Xtreme 070 6214-2RS/CSB
70	150	35	111	68	3000	Xtreme 070 6314-2RS/CSB
75	115	20	41,6	33,5	3400	Xtreme 075 6015-2RS/CSB
75	130	25	68,9	49	3200	Xtreme 075 6215-2RS/CSB
75	160	37	119	76,5	2800	Xtreme 075 6315-2RS/CSB
80	125	22	49	40	3200	Xtreme 080 6016-2RS/CSB
80	140	26	73	55	3000	Xtreme 080 6216-2RS/CSB
80	170	39	130	86,5	2600	Xtreme 080 6316-2RS/CSB
85	130	22	52	43	3000	Xtreme 085 6017-2RS/CSB
85	150	28	87,1	64	2800	Xtreme 085 6217-2RS/CSB
85	180	41	140	96,5	2400	Xtreme 085 6317-2RS/CSB
90	140	24	60,5	50	2800	Xtreme 090 6018-2RS/CSB
90	160	30	101	73,5	2600	Xtreme 090 6218-2RS/CSB
90	190	43	151	108	2400	Xtreme 090 6318-2RS/CSB
95	145	24	63,7	54	2800	Xtreme 095 6019-2RS/CSB
95	170	32	114	81,5	2400	Xtreme 095 6219-2RS/CSB
95	200	45	159	118	2200	Xtreme 095 6319-2RS/CSB
100	150	24	63,7	54	2600	Xtreme 100 6020-2RS/CSB
100	180	34	127	93	2400	Xtreme 100 6220-2RS/CSB
100	215	47	174	140	2000	Xtreme 100 6320-2RS/CSB
105	160	26	76,1	65,5	2400	Xtreme 105 6021-2RS/CSB
105	190	36	140	104	2200	Xtreme 105 6221-2RS/CSB
105	225	49	182	153	1800	Xtreme 105 6321-2RS/CSB
110	170	28	85,2	73,5	2400	Xtreme 110 6022-2RS/CSB
110	200	38	151	118	2000	Xtreme 110 6222-2RS/CSB
110	240	50	203	180	1800	Xtreme 110 6322-2RS/CSB
120	180	28	88,4	80	2200	Xtreme 120 6024-2RS/CSB
120	215	40	146	118	1900	Xtreme 120 6224-2RS/CSB
120	260	55	208	186	1700	Xtreme 120 6324-2RS/CSB
130	200	33	112	100	2000	Xtreme 130 6026-2RS/CSB
130	230	40	156	132	1800	Xtreme 130 6226-2RS/CSB
140	210	33	111	108	1800	Xtreme 140 6028-2RS/CSB
150	225	35	125	125	1700	Xtreme 150 6030-2RS/CSB
160	240	38	143	143	1600	Xtreme 160 6032-2RS/CSB

Xtreme

Open

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
5	16	5	1,14	0,38	70000	Xtreme 005 625/CSB
6	19	6	2,34	0,95	60000	Xtreme 006 626/CSB
7	19	6	2,34	0,95	60000	Xtreme 007 607/CSB
7	22	7	3,45	1,37	53000	Xtreme 007 627/CSB
8	22	7	3,45	1,37	53000	Xtreme 008 608/CSB
10	26	8	4,75	1,96	45000	Xtreme 010 6000/CSB
10	30	9	5,40	2,36	43000	Xtreme 010 6200/CSB
10	35	11	8,52	3,4	39000	Xtreme 010 6300/CSB
12	28	8	5,40	2,36	43000	Xtreme 012 6001/CSB
12	32	10	7,28	3,1	38000	Xtreme 012 6201/CSB
12	37	12	10,10	4,15	33000	Xtreme 012 6301/CSB
15	32	9	5,85	2,85	36000	Xtreme 015 6002/CSB
15	35	11	8,06	3,75	32000	Xtreme 015 6202/CSB
15	42	13	11,90	5,4	28000	Xtreme 015 6302/CSB
17	35	10	6,37	3,25	32000	Xtreme 017 6003/CSB
17	40	12	9,95	4,75	28000	Xtreme 017 6203/CSB
17	47	14	14,30	6,5	26000	Xtreme 017 6303/CSB
20	42	12	9,95	5	26000	Xtreme 020 6004/CSB
20	47	14	13,5	6,55	24000	Xtreme 020 6204/CSB
20	52	15	16,8	7,8	23000	Xtreme 020 6304/CSB
25	47	12	11,9	6,55	22000	Xtreme 025 6005/CSB
25	52	15	14,8	7,8	22000	Xtreme 025 6205/CSB
25	62	17	23,4	11,6	20000	Xtreme 025 6305/CSB
30	55	13	13,8	8,3	19000	Xtreme 030 6006/CSB
30	62	16	20,3	11,2	18000	Xtreme 030 6206/CSB
30	72	19	29,6	16	17000	Xtreme 030 6306/CSB
35	62	14	16,8	10,25	17000	Xtreme 035 6007/CSB
35	72	17	27,0	15,3	15000	Xtreme 035 6207/CSB
35	80	21	35,1	19	16000	Xtreme 035 6307/CSB
40	68	15	17,8	11	15000	Xtreme 040 6008/CSB
40	80	18	32,5	19	14000	Xtreme 040 6208/CSB
40	90	23	42,3	24	13000	Xtreme 040 6308/CSB
45	75	16	22,1	14,6	16000	Xtreme 045 6009/CSB
45	85	19	35,1	21,6	13000	Xtreme 045 6209/CSB
45	100	25	55,3	31,5	12000	Xtreme 045 6309/CSB
50	80	16	22,9	16	15000	Xtreme 050 6010/CSB
50	90	20	37,1	23,2	12000	Xtreme 050 6210/CSB
50	110	27	65,0	38	10000	Xtreme 050 6310/CSB
55	90	18	29,6	21,2	14000	Xtreme 055 6011/CSB
55	100	21	46,2	29	10000	Xtreme 055 6211/CSB
55	120	29	74,1	45	9000	Xtreme 055 6311/CSB

Xtreme

Open

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
60	95	18	30,7	23,2	11000	Xtreme 060 6012/CSB
60	110	22	55,3	36	9500	Xtreme 060 6212/CSB
60	130	31	85,2	52	8500	Xtreme 060 6312/CSB
65	100	18	31,9	25	10500	Xtreme 065 6013/CSB
65	120	23	58,5	40,5	8500	Xtreme 065 6213/CSB
65	140	33	97,5	60	8000	Xtreme 065 6313/CSB
70	110	20	39,7	31	9400	Xtreme 070 6014/CSB
70	125	24	63,7	45	8500	Xtreme 070 6214/CSB
70	150	35	111	68	7500	Xtreme 070 6314/CSB
75	115	20	41,6	33,5	9000	Xtreme 075 6015/CSB
75	130	25	68,9	49	8000	Xtreme 075 6215/CSB
75	160	37	119	76,5	6700	Xtreme 075 6315/CSB
80	125	22	49	40	8200	Xtreme 080 6016/CSB
80	140	26	73	55	7000	Xtreme 080 6216/CSB
80	170	39	130	86,5	6300	Xtreme 080 6316/CSB
85	130	22	52	43	6700	Xtreme 085 6017/CSB
85	150	28	87,1	64	6700	Xtreme 085 6217/CSB
85	180	41	140	96,5	6000	Xtreme 085 6317/CSB
90	140	24	60,5	50	6300	Xtreme 090 6018/CSB
90	160	30	101	73,5	6300	Xtreme 090 6218/CSB
90	190	43	151	108	5600	Xtreme 090 6318/CSB
95	145	24	63,7	54	6000	Xtreme 095 6019/CSB
95	170	32	114	81,5	6000	Xtreme 095 6219/CSB
95	200	45	159	118	5300	Xtreme 095 6319/CSB
100	150	24	63,7	54	5600	Xtreme 100 6020/CSB
100	180	34	127	93	5600	Xtreme 100 6220/CSB
100	215	47	174	140	5000	Xtreme 100 6320/CSB
105	160	26	76,1	65,5	5300	Xtreme 105 6021/CSB
105	190	36	140	104	2200	Xtreme 105 6221/CSB
105	225	49	182	153	1800	Xtreme 105 6321/CSB
110	170	28	85,2	73,5	5000	Xtreme 110 6022/CSB
110	200	38	151	118	4300	Xtreme 110 6222/CSB
110	240	50	203	180	1800	Xtreme 110 6322/CSB
120	180	28	88,4	80	4800	Xtreme 120 6024/CSB
120	215	40	146	118	4000	Xtreme 120 6224/CSB
120	260	55	208	186	1700	Xtreme 120 6324/CSB
130	200	33	112	100	4300	Xtreme 130 6026/CSB
130	230	40	156	132	1800	Xtreme 130 6226/CSB
140	210	33	111	108	4000	Xtreme 140 6028/CSB
140	300	62	252	245	3600	Xtreme 140 6328/CSB

Xtreme

Open

d	D	B	C	C ₀	Limiting Speed	Designation
	[mm]		[kN]	[kN]	[rpm]	
150	225	35	125	125	1700	Xtreme 150 6030/CSB
150	320	65	280	290	3200	Xtreme 150 6330/CSB
160	240	38	143	143	1600	Xtreme 160 6032/CSB
160	340	68	300	325	2800	Xtreme 160 6332/CSB
170	360	72	327	367	2800	Xtreme 170 6334/CSB
180	380	75	354	412	2800	Xtreme 180 6336/CSB
190	400	78	370	440	2500	Xtreme 190 6338/CSB

Xtreme

ACBB

d	D	B	C	C ₀	Limiting Speed	Designation
	[mm]		[kN]	[kN]	[rpm]	
12	37	12	10,6	4	33600	Xtreme 012 7301-40°/CSB
15	42	13	13	5,36	28000	Xtreme 015 7302-40°/CSB
17	47	14	15,9	6,64	26600	Xtreme 017 7303-40°/CSB
20	52	15	17,4	7,6	22400	Xtreme 020 7304-40°/CSB
25	62	17	24,2	11,2	19600	Xtreme 025 7305-40°/CSB
30	72	19	32,5	15,44	16800	Xtreme 030 7306-40°/CSB
35	80	21	39	19,6	14000	Xtreme 035 7307-40°/CSB
40	90	23	46,2	24,4	12600	Xtreme 040 7308-40°/CSB
45	100	25	55,9	30	11200	Xtreme 045 7309-40°/CSB
50	110	27	68,9	38	10500	Xtreme 050 7310-40°/CSB
55	120	29	79,3	44	9380	Xtreme 055 7311-40°/CSB
60	130	31	95,6	55,6	8400	Xtreme 060 7312-40°/CSB
65	140	33	108	64	7840	Xtreme 065 7313-40°/CSB

12	32	10	7,6	3,0	36400	Xtreme 012 7201-40°/CSB
15	35	11	8,3	3,5	33600	Xtreme 015 7202-40°/CSB
17	40	12	10,4	4,4	28000	Xtreme 017 7203-40°/CSB
20	47	14	13,3	6,1	25200	Xtreme 020 7204-40°/CSB
25	52	15	14,8	7,4	21000	Xtreme 025 7205-40°/CSB
30	62	16	22,5	11,4	18200	Xtreme 030 7206-40°/CSB
35	72	17	29,1	15,2	15400	Xtreme 035 7207-40°/CSB
40	80	18	37,7	20,8	15400	Xtreme 040 7208-40°/CSB
45	85	19	35,8	20,8	12600	Xtreme 045 7209-40°/CSB
50	90	20	37,7	22,8	11900	Xtreme 050 7210-40°/CSB
55	100	21	46,2	28,8	10500	Xtreme 055 7211-40°/CSB
60	110	22	57,2	36,4	9800	Xtreme 060 7212-40°/CSB

Xtreme

ACBB

d	D [mm]	B	C [kN]	C ₀ [kN]	Limiting Speed [rpm]	Designation
10	30	14	7,6	3,4	17000	Xtreme 010 3200-2RS/CSB
12	32	15,9	10,1	4,5	15000	Xtreme 012 3201-2RS/CSB
15	35	15,9	11,2	5,4	14000	Xtreme 015 3202-2RS/CSB
17	40	17,5	14,3	7,0	12000	Xtreme 017 3203-2RS/CSB
20	47	20,6	20	9,6	10000	Xtreme 020 3204-2RS/CSB
25	52	20,6	21,6	11,4	8500	Xtreme 025 3205-2RS/CSB
30	62	23,8	28,6	16,3	7500	Xtreme 030 3206-2RS/CSB
35	72	27	40	22,4	9000	Xtreme 035 3207-2RS/CSB
40	80	30,2	47,5	27,2	5600	Xtreme 040 3208-2RS/CSB
45	85	30,2	51	31,2	5300	Xtreme 045 3209-2RS/CSB
50	90	30,2	51	31,2	4800	Xtreme 050 3210-2RS/CSB
55	100	33,3	60	38,0	4500	Xtreme 055 3211-2RS/CSB
60	110	36,5	73,5	46,8	4000	Xtreme 060 3212-2RS/CSB

15	42	19	15,1	7,4	12000	Xtreme 015 3302-2RS/CSB
17	47	22,2	21,6	10,2	11000	Xtreme 017 3303-2RS/CSB
20	52	22,2	23,6	11,7	9000	Xtreme 020 3304-2RS/CSB
25	62	25,4	32	16,3	7500	Xtreme 025 3305-2RS/CSB
30	72	30,2	41,5	22,0	6300	Xtreme 030 3306-2RS/CSB
35	80	34,9	52	28,4	6000	Xtreme 035 3307-2RS/CSB
40	90	36,5	64	35,2	5000	Xtreme 040 3308-2RS/CSB
45	100	39,7	75	42,4	4800	Xtreme 045 3309-2RS/CSB
50	110	44,4	90	51,2	4300	Xtreme 050 3310-2RS/CSB
55	120	49,2	112	65,2	3800	Xtreme 055 3311-2RS/CSB
60	130	54	127	76,0	3500	Xtreme 060 3312-2RS/CSB



CeramicSpeed SLT

At CeramicSpeed we do not accept ultra-short bearing life - not even under the most severe conditions.

One of the solutions to bearing failure we have developed in house is our CeramicSpeed SLT. CeramicSpeed Solid Lubrication Technology is a polymer matrix saturated with lubrication oil. The matrix ensures that the oil is kept on the functional surfaces of the bearing even under very harsh conditions while at the same time preventing moisture and foreign particles from entering the bearing.

CeramicSpeed SLT is food-grade approved and can be combined with most sealed bearing types. In combination with stainless rings and our high-grade ceramic balls, it ends up being an extremely durable and maintenance-free solution for demanding applications in many industries.

Technical Specifications	
Base oil viscosity at 40°C (105F)	220 cSt
NSF H1 Food Grade	Yes
MOH/MOSH/MOAH free	Yes
Operating temperature (°C/F)	
Maximum continuous	85°C / 185F
Minimum start-up temperatures	-25°C / -15F
Maximum intermittent	95°C / 205F
Relubrication Free	Yes
Recommended maximum speed	40.000/dm where dm= 0,5 (d+D) mm

Focus Application

- Environments with severe particle contamination.
- Applications in moist surroundings - even under splash water influence.
- Chemical, pharmaceutical or other applications, where no liquid lubricant can be allowed.



CeramicSpeed SlipCoat

When clean running is required. We have received the question more than once – and in recent times more and more often: Can you make a bearing run without lubrication?

So far, our answer has been the same “All bearings can run without lubricant - but not for very long time”. The underlying demand has however triggered our imagination. How to provide a solution for applications where any tiny drop of oil could ruin products, processes, or sensitive environments?

So, when one of our good customers gave us the exact challenge of making a “lubrication free” bearing where no dripping or splatter of lubricant was acceptable and with a run time of more than 3.000 hours of operation, we gave the challenge to our in-house specialists. It took them 3 iterations to achieve a solution capable of meeting the specified target.

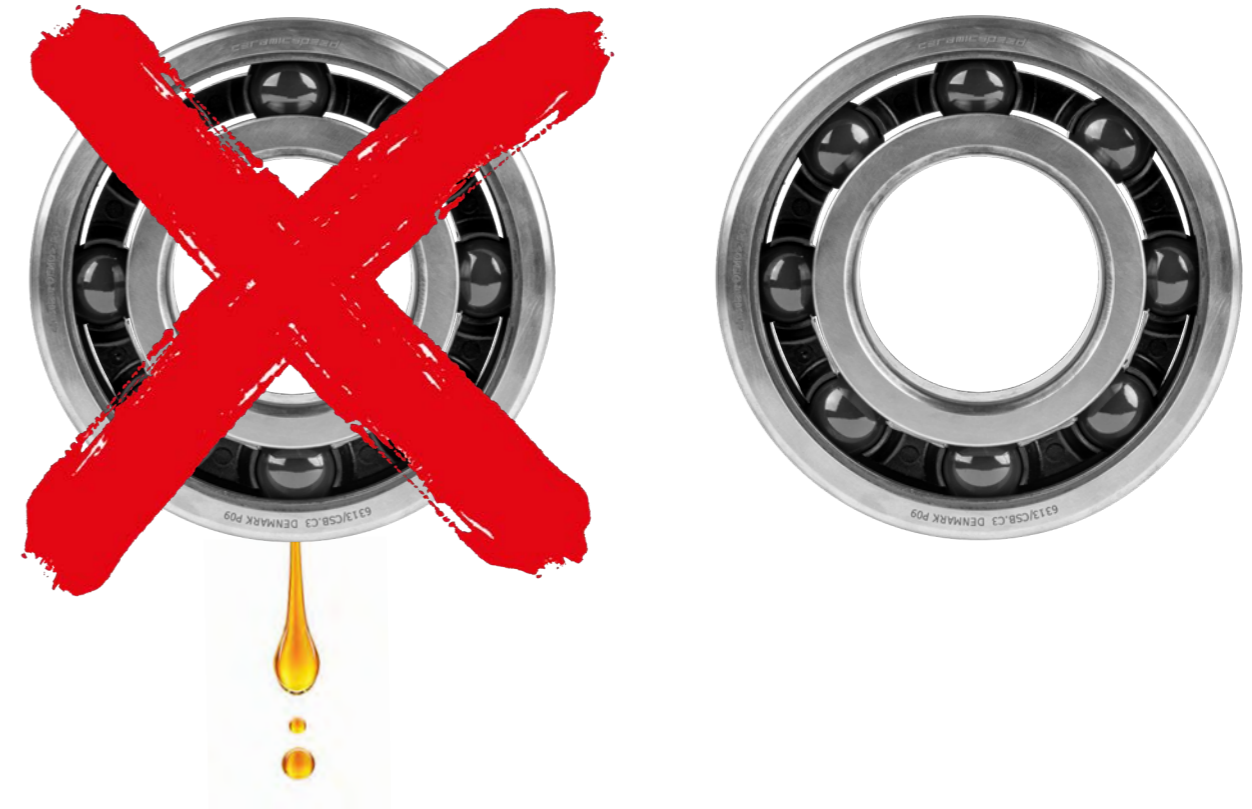
Solution tested:

Ball bearing size 6202

- Stainless steel rings (AISI440C)
- Silicon Nitride rolling elements
- CeramicSpeed SlipCoat treatment

Limitations

As the coating remains soft it creates some friction in the bearing. Hence the solution is not recommendable where low friction / high speed is a key performance focus.



Technical Highlights

- Coating material is FDA and EN1935 compatible
- Functional in temperatures from -20 until 260 C
- Extremely chemically inert
- Transparent / colorless

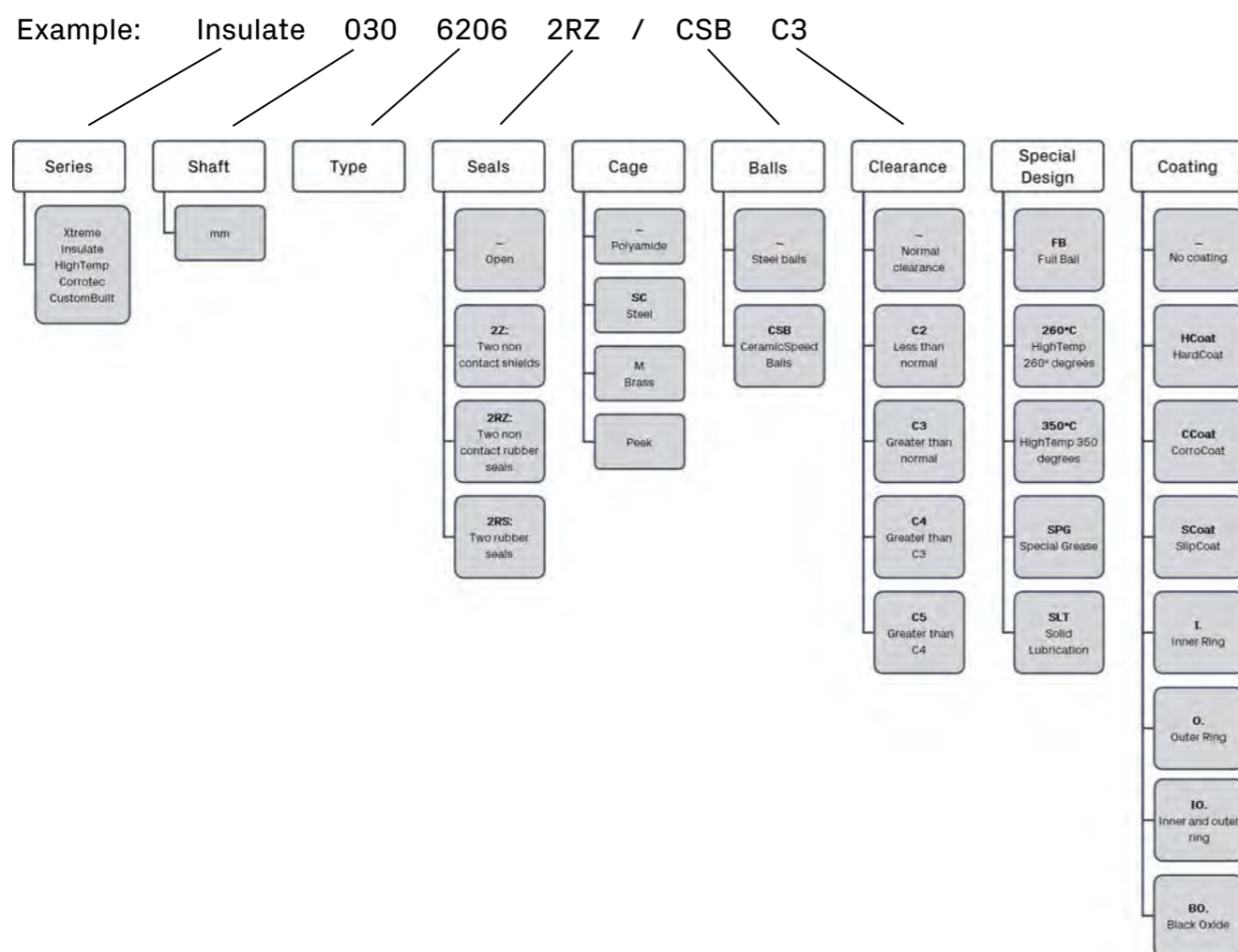
Technical Data



Designation System

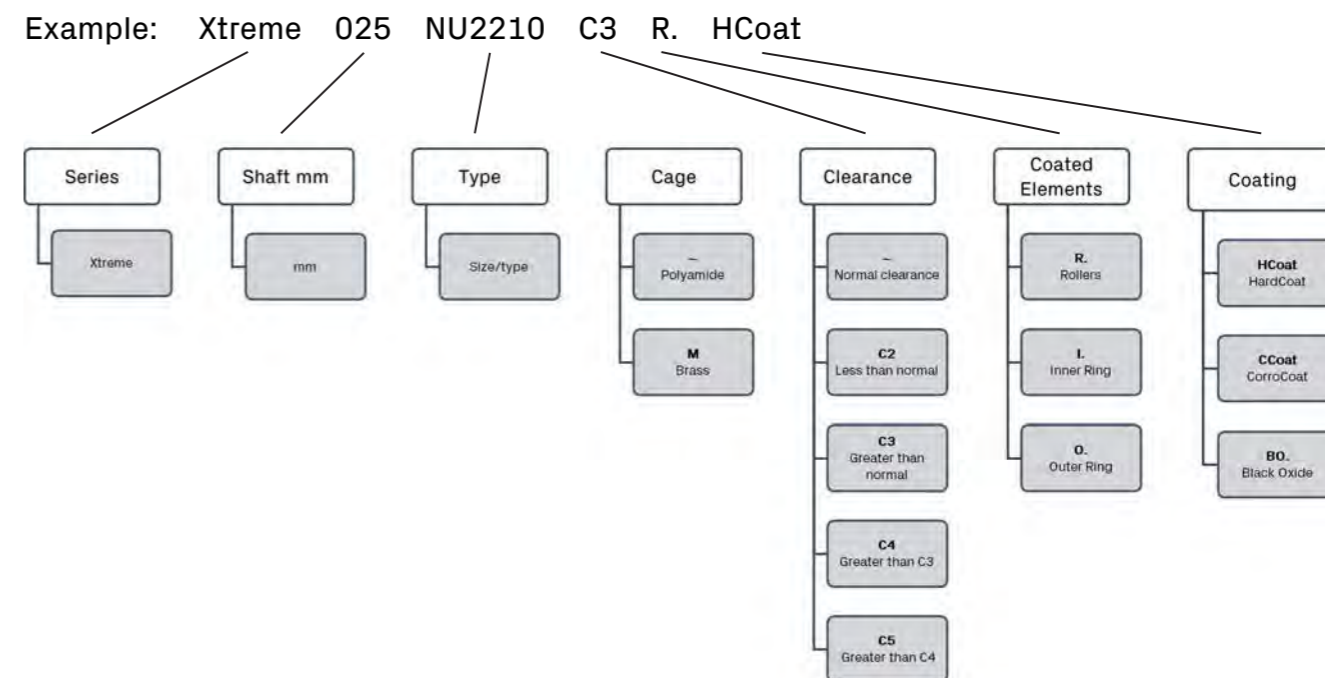
Ball Bearings

The CeramicSpeed Bearings can be used as means of optimisation within a wide range of issues. Amongst other things, these can be applied in areas with contamination from water, dust, dirt and metal, whether it is about bearings with many starts/stops, or where there is a need for fast acceleration. In harsh environments with insufficient lubrication, high temperature, vibrations, bearing stray current and other forces as such, you will find that CeramicSpeed Bearings have a much longer service life and thus a better overall economy.



Coated Roller Bearings

The CeramicSpeed Roller Bearings are ideal for solving issues with bearings that do not run optimally in contaminated environments such as water, dust, dirt, metal, etc. In these environments, the CeramicSpeed Roller Bearings have a much longer service life. The same applies for the environments, where conditions are problematic; this can be everything from frequent starts/stops to high temperatures or lack of lubrication. Our CeramicSpeed Coated Roller Bearings ensure a better overall economy because of their unique properties.



Bearing Lubrication

The lubricant is a vital part of every ball and roller bearing's optimal function. The correct lubricant, in the right volume, is essential for the bearing noise, temperature and service life.

What does the lubrication grease contain?

Base oil: Mineral or synthetic oils, which is the actual lubricant in the grease.

Soap/thickener: A fastening factor, which ensures that the oil remains in the bearing.

Additives: Added to the oil to optimise the properties.

Important parameters when choosing the optimal lubricant

Temperature range

The selected lubricant should be able to operate within the same temperature range, as the bearing is intended to run at. Exceeding the lubricant's temperature limits will shorten its service life dramatically. The service life is reduced to half, at only 15 °C above the limit.

Base oil viscosity

Generally, high load and low rotational speed require a high base oil viscosity.

Contrariwise, low load and high rotation speed require a lubricant with low base oil viscosity.

Typical choice of viscosity:

- Spindle bearings > 10.000 RPM/min.: 20 – 40 [cSt] v/40°C
- Electrical motors < 3.000 RPM/min.: 80 - 120 [cSt] v/40°C
- Main bearing in a windmill rotor < 20 RPM/min.: 200 – 400 [cSt] v/40°C

Other significant input

- Requirements for use in the food industry (FDA/EN-1935)
- Noise requirements
- Protection against corrosion

Lubrication interval

The optimal lubrication interval is 0.5 – 0.7 times the theoretical lubricant service life, which can be difficult to calculate, but it can often be found in the charts and technical documentation of the lubricant supplier. A representative lubricant can for example have a service life of up to 80,000 hours at 70°C but only 15,000 hours at 100°C.

Lubrication volume

The recommended lubrication quantity can be found by simply applying the following formula: $D \times B \times X = M[\text{cm}^3]$

- D = the bearing's outer diameter in mm
- B = the bearing's width in mm
- X = 0.002 (weekly lubrication) / 0.003 (monthly lubrication) / 0.004 (annual lubrication)



Miscibility Matrix

Miscibility is always associated with the risk of mixing different types of lubricant.

Miscibility of base oils

If necessary, the risk can be reduced by examining whether the lubricant's main components (oil and soap/thickener) can be mixed according to the table below.

	Mineral Oil	Synthetic Hydrocarbon	Ester Oil	Polyglycol	Silicone oil (Methyl)	Perfluoroalkyl Ether	Silicone Oil (Phenyl)	Polyphenyl Ether Oil
Mineral Oil	+	+	+	-	-	-	+/-	+
Synthetic Hydrocarbon	+	+	+	-	-	-	-	+
Ester Oil	+	+	+	+	-	-	+	+
Polyglycol	-	-	+	+	-	-	-	-
Silicone Oil (Methyl)	-	-	-	-	+	-	+/-	-
Perfluoroalkylether	-	-	-	-	-	+	-	-
Silicone Oil (Phenyl)	+/-	-	+	-	+/-	-	+	+
Polyphenyl Ether Oil	+	+	+	-	-	-	+	+

+ Miscible +/- Partially miscible - Immiscible

Miscibility of thickeners

	Metal Soap				Complex Soaps					Other Thickeners		
	Al	Ca	Li	Na	Al	Ba	Ca	Li	Na	Bentonit	Polyurea	PTFE
Al	+	+/-	+	+/-	+	+/-	+	+	+/-	+	+	+
Ca	+/-	+	+	+	+	+	+	+/-	+	+	+	+
Li	+	+	+	-	+	+	+	+	-	+/-	+/-	+
Na	+/-	+	-	+	+	+	+/-	+/-	+	-	+	+
Al	+	+	+	+	+	+	+/-	+	+/-	+/-	+/-	+
Ba	+/-	+	+	+	+	+	+/-	+/-	+	+	+/-	+
Ca	+	+	+	+/-	+/-	+/-	+	+	+	+/-	+	+
Li	+	+/-	+	+/-	+	+/-	+	+	+/-	+	+/-	+
Na	+/-	+	-	+	+/-	+	+	+/-	+	-	+	+
Bentonit	+	+	+/-	-	+/-	+	+/-	+	-	+	+	+
Polyurea	+	+	+/-	+	+/-	+/-	+	+/-	+	+	+	+
PTFE	++	+	+	+	+	+	+	+	+	+	+	+

+ Miscible +/- Partially miscible - Immiscible



Bearing Steels

CeramicSpeed standard steel rings

High carbon chrome 100Cr6/ASTM52100 with Ovako steel quality purity Q or better.

	C%	Si%	Mn%	P%	S%	Cr%	Ni%	Mo%	Cu%
Min	0.93	0.15	0.25			1.35			
Max	1.00	0.35	0.45	0.025	0.025	1.60	0.25	0.10	0.30

Specification	Macro Inclusion mm/dm ²	Oxygen Content (ppm)				Titanium Content (ppm)	Micro Inclusions							
							A		B		C		D	
		C* < .5% 05 < C < .8 C* > .8%					Th	He	Th	He	Th	He	Th	He
CQ	According to customer requirements													
Q	5	15	15	15	-	2.5	1.5	1.0	0.5	0	0	0.5	0.5	
BQ	2.5	11	9	7	30	2.0	1.5	0.5	0.1	0	0	0.2	0.1	
PBQ	1	9	8	7	30	1.0	0.5	0.5	0	0	0	0.2	0	

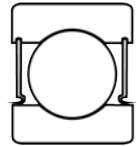
CeramicSpeed stainless rings

CeramicSpeed use race made of martensitic stainless steel like SUS440C (X102CrMo17) or KS440 (X65CR13)

Material	Stainless steel		
Symbol	SUS440C	KS440 (ACD34)	
Chemical Composition %	C	0.95 ~ 1.20	0.60 ~ 0.75
	Si	< 1.00	< 1.00
	Mn	< 1.00	< 1.00
	P	< 0.040	< 0.030
	S	< 0.030	< 0.020
	Cr	16.00 ~ 18.00	11.50 ~ 13.00
	Mo	< 0.75	< 0.30
Equivalent	AISI440C, X102CrMo17	X65Cr13	

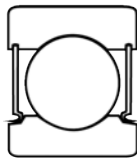
Seals

CeramicSpeed offers three options of seals integrates in deep groove ball bearings.



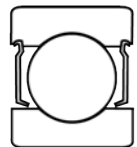
Seals Type RZ (2RZ)

A non-friction rubber seal, which grants optimal protection for the bearing, also at higher speed, without creating undue friction.



Seals Type RS (2RS)

A friction rubber seal, which provides optimal protection for the bearing, but limits the potential rotational speed and creates friction.

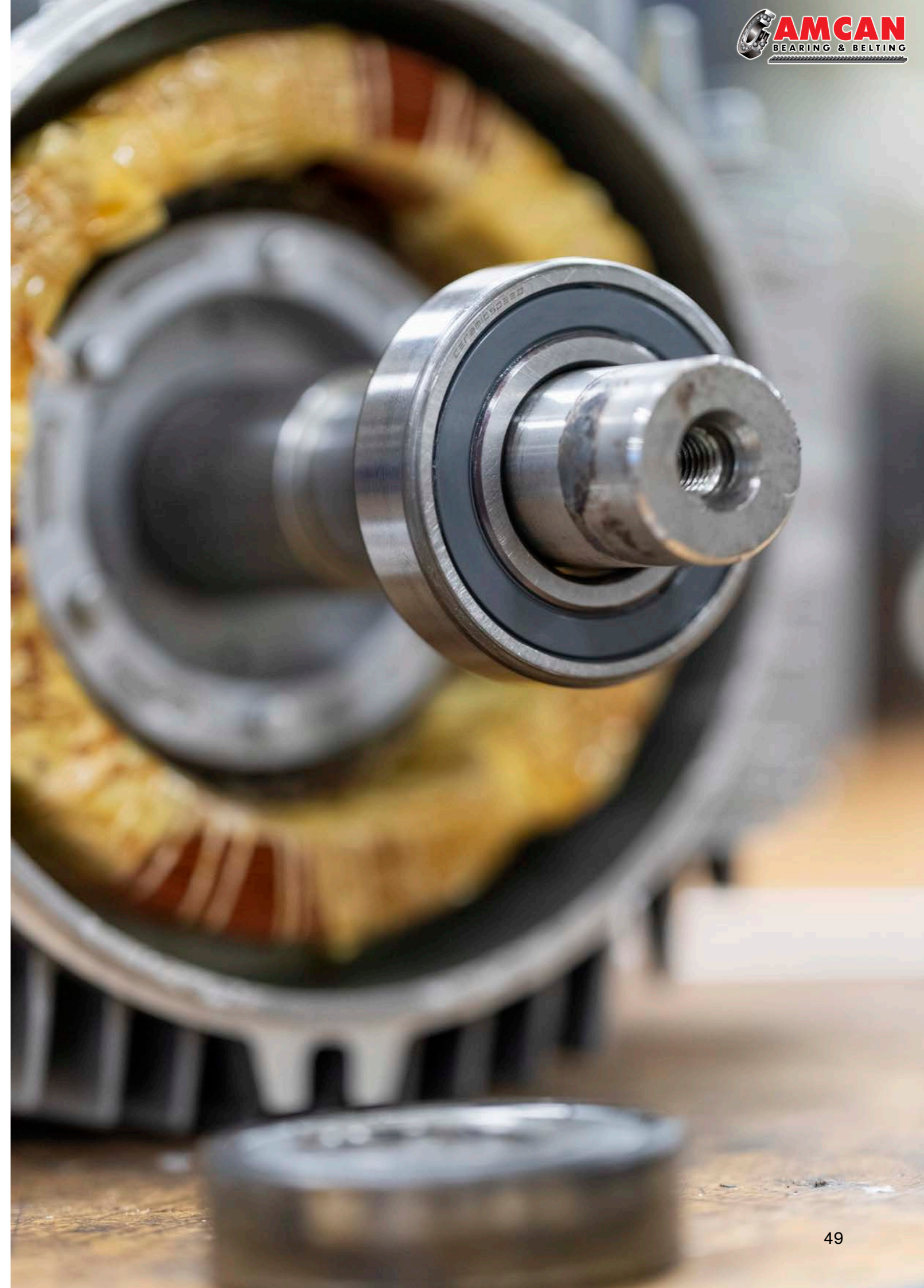


Shield Type Z (2Z)

Shields that provides a fundamental protection of the bearing without creating friction and without limiting the bearings' potential rotational speed.

Seal Type	Protection	Friction	High Speed	Temperature (max)
RZ	++	++	+++	120°C
RS	+++	-	-	120°C
Z	-	+++	+++	360 °C

(+) Suitable (-) Less suitable



Ball Cages and Roller Cages

The purpose of the ball cages or roller cages' is to keep the distance between the rolling elements of the bearing, and thus to reduce friction.

CeramicSpeed produces bearings with ball and roller cages in the following materials:

Cage Material	Fatigue Strength	Friction	Chemical Constancy	Temperature (max)
Steel	++	+	+	360°C
Brass	++	+	++	250°C
PA66	+++	++	+	120°C
PEEK	++	+++	+++	200°C

Steel:
Typically pressed into the plate and assembled with rivets or screws.

Brass:
Machined and assembled with rivets or screws.

PA66:
Glass fiber reinforced Polyamide. Injection molded in one piece.

PEEK:
Polyether-ether-ketone. Injection molded in one piece.

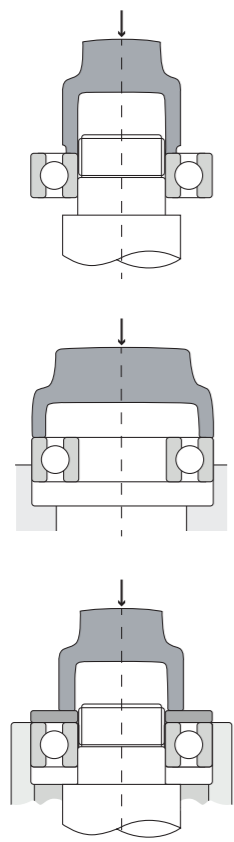


Handling & Bearing Installation

CeramicSpeed Bearings have to be mounted with the same careful consideration as standard steel bearings. Below you can see how you should mount our bearings and what you should be careful with during the mounting.

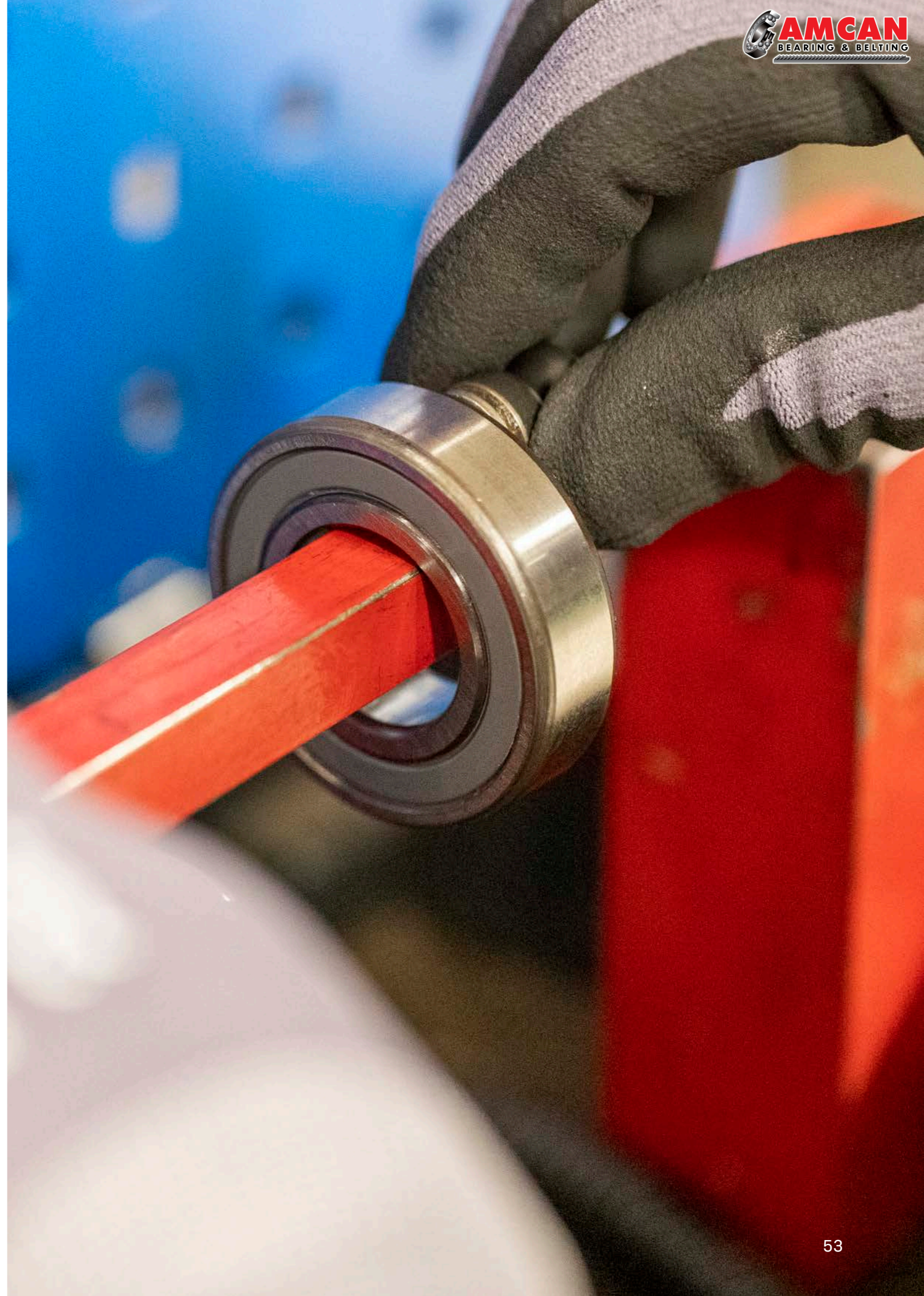
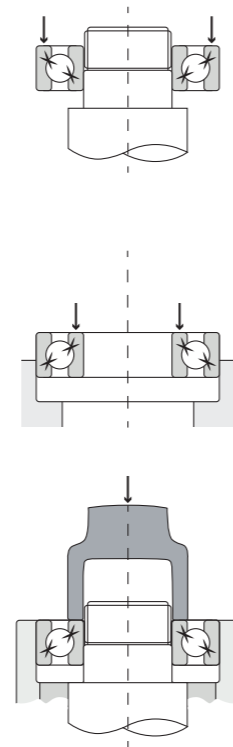
Do's

- Always use the correct tools; impact sleeve or bearing heater
- Remember to keep the bearing and its surroundings clean during assembly



Don'ts

- Never knock the bearing directly with a hammer or hard objects
- Do not apply mounting power through the bearing's balls/rollers
- Never leave a new bearing uncovered for a longer time.



Quality Control

Our products are assembled by hand in our production facility in Denmark and every single bearing is individually checked throughout the assembly process.



Incoming goods inspection

All components are checked geometrically and visually and we perform random checks via vibration analysis on finished components.



Mounting

At CeramicSpeed, the final assembly is always done by hand, and our staff checks the finished products both visually and auditory after each step of the process.

Certified after ISO 9001:2015

Quality has always been on our mind and we strive every day to supply what we promise and when we promise. This doesn't change or improve with a certificate alone, but we strongly believe in ever increasing efficiency and with the ISO system implemented, we have even more tools in the toolbox to support our aims.

The ISO 9001:2015 certification is internationally recognized as the world's leading quality management standard and has been implemented by over one million organizations in over 170 countries globally. The purpose of the standard is to assist companies in meeting statutory and regulatory requirements relating to their product while achieving excellence in their customer service and delivery.





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