

FAG Spindle Bearings

X-life ultra Bearings



5: FAG X-life ultra Spindle Bearings

X-life ultra Bearings

X-life ultra Bearings were designed for maximum demands on speed-ability and load. They are Hybrid Bearings with rings made of Cronidur 30, a high nitrogen stainless steel. Compared to the conventional rolling bearing steel 100Cr6, Cronidur 30 exhibits a substantially finer structure, thus ensuring cooler operation and higher admissible contact pressure.

Tests of the material fatigue life exceeded the calculated values by such a large degree that it can be considered practically fail-safe in the field of application. Under mixed friction conditions, this steel also lasted up to 10 times longer than the standard material 100Cr6. This steel is likewise significantly superior to conventional rolling bearing steels in terms of Hertzian compression strength, corrosion resistance and hot hardness.

Compared to conventional bearings, the extended service life of X-life ultra Bearings makes an enormous contribution to reducing system costs. In principle, all Spindle Bearing designs are available as X-life ultra Bearings. To take full advantage of the performance capability of X-life ultra Bearings, the structure surrounding the bearing arrangement must be designed appropriately.

Bearing Code of FAG Spindle Bearings

B 70 08-C **-T-P4S-UL***
HSS 70 08-C **-T-P4S-UL**
HCB 70 08-C **DLR** **-T-P4S-UL**
B 70 08-C **-2RSD** **-T-P4S-UL**
B 70 08-C **-T-P4S-UL-L075**

Bearing Type

B	Standard Steel balls
HCB	Hybrid Standard Ceramic balls
XCB	Cronidur Standard Ceramic balls
HS	High Speed Bearings Steel balls
HSS	High Speed Bearings Steel balls, sealed
HC	High Speed Bearings Ceramic balls
HCS	High Speed Bearings Ceramic balls, sealed
XC	Cronidur, High Speed Bearings Ceramic balls
XCS	Cronidur, High Speed Bearings Ceramic balls, sealed

Dimension Series

718	Ultra-light series
719	Light series
70	Medium series
72	Heavy series

Bore Reference Number

6	6 mm
7	7 mm
8	8 mm
9	9 mm
00	10 mm
01	12 mm
02	15 mm
03	17 mm
04	4 · 5 = 20 mm
05	5 · 5 = 25 mm

Contact Angle

C	15°
E	25°

External Form

	DIRECT LUBE	
-CDLR	Direct radial lubrication holes with integral O rings	15°
-EDLR	Integral O-ring	25°

Seal

-2RSD	Sealed at both sides and lubricated Sealed designs are indicated with a point (•) in the bearing tables
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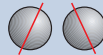
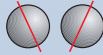
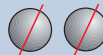
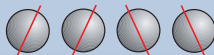
Grease Filling By Manufacturer

L075	FAG Grease Arcanol L075 for non-sealed bearings Bearings sealed at both sides are lubricated for-life with L075.
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Preload

L	Light
M	Medium
H	Heavy

Bearing Arrangement

U	Single bearing arrangeable as desired
DU	Set of 2 universal bearings
TU	Set of 3 universal bearings
QU	Set of 4 universal bearings
PU	Set of 5 universal bearings
DB	Set of 2 bearings O arrangement 
DF	Set of 2 bearings X arrangement 
DT	Set of 2 bearings Tandem arrangement 
TBT	Set of 3 bearings Tandem – O – arrangement 
QBC	Set of 4 bearings Tandem – O – Tandem arrangement. 

Accuracy

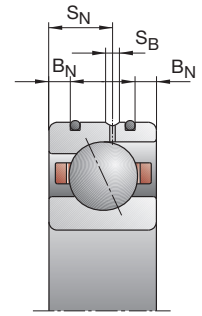
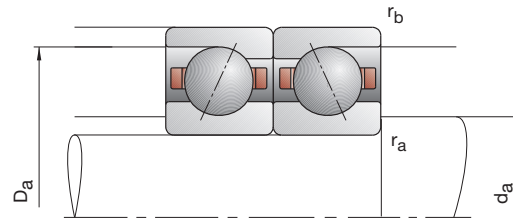
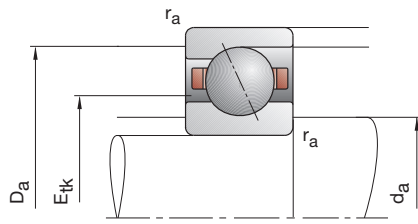
P4S	FAG Standard better than P4 according to DIN 620
P4S-K5	P4S but with mean sorting of bore and outside diameter

Cage

T	Textile laminated phenolic resin, outer ring guided
TX	Textile laminated phenolic resin, outer ring guided
TPA	Textile laminated phenolic resin, series B718 outer ring guided

* Special designs are available by agreement. You can find more information in the “Customized Solutions” chapter.

FAG Spindle Bearings



Bearing code	Dimensions					Abutment dimensions				DLR dimensions			Load rating		
	d	D	B	r _{smin}	r _{1smin}	d _a h12	D _a H12	r _a max	r _b max	B _N	S _N	S _B	E _{tk} nom.	C _{dyn}	C _{0stat}
FAG	mm													kN	
B71816-C-TPA-P4	80	100	10	0,60	0,30	84	95,5	0,6	0,3				87,3	14,60	16,60
B71816-E-TPA-P4	80	100	10	0,60	0,30	84	95,5	0,6	0,3				87,3	13,70	15,60
HCB71816-C-TPA-P4	80	100	10	0,60	0,30	84	95,5	0,6	0,3				87,3	10,00	11,60
HCB71816-E-TPA-P4	80	100	10	0,60	0,30	84	95,5	0,6	0,3				87,3	9,50	10,80
B71916-C-T-P4S	80	110	16	1,00	1,00	86	104	0,6	0,6				92,2	34,50	36,00
B71916-E-T-P4S	80	110	16	1,00	1,00	86	104	0,6	0,6				92,2	32,50	34,00
HCB71916-C-T-P4S	80	110	16	1,00	1,00	86	104	0,6	0,6	3,1	9,3	1,4	92,2	24,00	25,00
HCB71916-E-T-P4S	80	110	16	1,00	1,00	86	104	0,6	0,6	3,1	9,3	1,4	92,2	22,40	23,60
XCB71916-C-T-P4S	80	110	16	1,00	1,00	86	104	0,6	0,6	3,1	9,3	1,4	92,2	54,00	25,00
XCB71916-E-T-P4S	80	110	16	1,00	1,00	86	104	0,6	0,6	3,1	9,3	1,4	92,2	50,00	23,60
HS71916-C-T-P4S	80	110	16	1,00		86	104	0,6	0,6				92,2	21,20	24,00
HS71916-E-T-P4S	80	110	16	1,00		86	104	0,6	0,6				92,2	19,60	22,40
HC71916-C-T-P4S	80	110	16	1,00		86	104	0,6	0,6	3,1	9,3	1,4	92,2	14,60	16,60
HC71916-E-T-P4S	80	110	16	1,00		86	104	0,6	0,6	3,1	9,3	1,4	92,2	13,70	15,60
XC71916-C-T-P4S	80	110	16	1,00		86	104	0,6	0,6	3,1	9,3	1,4	92,2	32,50	16,60
XC71916-E-T-P4S	80	110	16	1,00		86	104	0,6	0,6	3,1	9,3	1,4	92,2	30,50	15,60
B7016-C-T-P4S	80	125	22	1,10	1,10	88	117	1,0	0,6				96,8	63,00	58,50
B7016-E-T-P4S	80	125	22	1,10	1,10	88	117	1,0	0,6				96,8	60,00	55,00
HCB7016-C-T-P4S	80	125	22	1,10	1,10	88	117	1,0	0,6	4,7	12,2	2,2	96,8	44,00	40,50
HCB7016-E-T-P4S	80	125	22	1,10	1,10	88	117	1,0	0,6	4,7	12,2	2,2	96,8	41,50	39,00
XCB7016-C-T-P4S	80	125	22	1,10	1,10	88	117	1,0	0,6	4,7	12,2	2,2	96,8	98,00	40,50
XCB7016-E-T-P4S	80	125	22	1,10	1,10	88	117	1,0	0,6	4,7	12,2	2,2	96,8	93,00	39,00
HS7016-C-T-P4S	80	125	22	1,10		88	117	1,0	0,6				98,9	31,50	34,50
HS7016-E-T-P4S	80	125	22	1,10		88	117	1,0	0,6				98,9	30,00	32,50
HC7016-C-T-P4S	80	125	22	1,10		88	117	1,0	0,6	4,7	12,2	2,2	98,9	21,60	24,50
HC7016-E-T-P4S	80	125	22	1,10		88	117	1,0	0,6	4,7	12,2	2,2	98,9	20,40	22,80
XC7016-C-T-P4S	80	125	22	1,10		88	117	1,0	0,6	4,7	12,2	2,2	98,9	48,00	24,50
XC7016-E-T-P4S	80	125	22	1,10		88	117	1,0	0,6	4,7	12,2	2,2	98,9	45,50	22,80
B7216-C-T-P4S	80	140	26	2,00	2,00	94	126	2,0	2,0				105,2	73,50	68,00
B7216-E-T-P4S	80	140	26	2,00	2,00	94	126	2,0	2,0				105,2	71,00	64,00
HCB7216-C-T-P4S	80	140	26	2,00	2,00	94	126	2,0	2,0				105,2	51,00	47,50
HCB7216-E-T-P4S	80	140	26	2,00	2,00	94	126	2,0	2,0				105,2	49,00	45,00

- * options; • = possible, – = not possible
 ** see section Engineering, Speeds
 *** see section Engineering, Deflection and Rigidity

Designation examples:

Sealed design

B7016-C-2RSD-T-P4S-UL
 HSS7016-E-T-P4S-UL

Hybrid ceramic design

HC7016-E-T-P4S-UL
 HCB71816-C-TPA-P4-UL

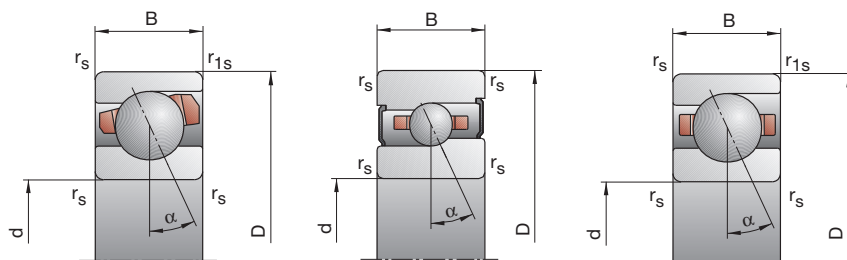
Direct Lube design

HCB7016-EDLR-T-P4S-UL
 HC7016-EDLR-T-P4S-UL

B718..C/E, B719, B70, B72 HS719..C/E, HS70

C: Contact angle $\alpha = 15^\circ$

E: Contact angle $\alpha = 25^\circ$



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Attainable speed**		Preloading force			Unloading force***			Axial rigidity***			Sealed design*	Weight	Bearing code
Grease	Oil	F _V			K _{aE}			c _a					
	minimal	L	M	H	L	M	H	L	M	H			
min ⁻¹		N							N/μm			kg	FAG
12 000	19 000	53	216	474	159	703	1 655	49,5	91,2	134,9	—	0,15	B71816-C-TPA-P4
11 000	18 000	84	302	712	241	892	2 176	121,4	195,3	275,3	—	0,15	B71816-E-TPA-P4
16 000	26 000	23	121	282	68	379	935	40,7	78,4	115,0	—	0,15	HCB71816-C-TPA-P4
13 000	20 000	41	152	402	118	445	1 208	107,1	170,7	246,3	—	0,15	HCB71816-E-TPA-P4
12 000	19 000	175	603	1 262	539	2 009	4 504	70,3	122,0	177,2	•	0,37	B71916-C-T-P4S
11 000	18 000	238	911	1 969	695	2 748	6 127	160,9	266,0	363,7	•	0,37	B71916-E-T-P4S
15 000	24 000	83	319	689	251	1 019	2 320	59,0	101,8	144,5	•	0,31	HCB71916-C-T-P4S
13 000	20 000	96	462	1 052	280	1 379	3 215	132,5	232,3	317,6	•	0,31	HCB71916-E-T-P4S
19 000	32 000	83	319	689	251	1 019	2 320	59,0	101,8	144,5	•	0,31	XCB71916-C-T-P4S
16 000	26 000	96	462	1 052	280	1 379	3 215	132,5	232,3	317,6	•	0,31	XCB71916-E-T-P4S
15 000	24 000	73	218	437	217	679	1 425	52,9	82,6	113,1	•	0,41	HS71916-C-T-P4S
13 000	20 000	117	352	704	335	1 026	2 092	131,8	196,3	255,6	•	0,41	HS71916-E-T-P4S
17 000	28 000	50	150	300	148	461	954	51,7	79,3	106,3	•	0,38	HC71916-C-T-P4S
16 000	24 000	81	244	488	234	714	1 448	132,0	194,7	251,1	•	0,38	HC71916-E-T-P4S
22 000	36 000	50	150	300	148	461	954	51,7	79,3	106,3	•	0,38	XC71916-C-T-P4S
19 000	32 000	81	244	488	234	714	1 448	132,0	194,7	251,1	•	0,38	XC71916-E-T-P4S
11 000	18 000	357	1 163	2 391	1 110	3 920	8 635	86,3	147,5	213,5	•	0,84	B7016-C-T-P4S
9 500	16 000	529	1 830	3 825	1 552	5 557	11 989	201,7	323,3	437,9	•	0,84	B7016-E-T-P4S
14 000	22 000	185	643	1 345	564	2 077	4 585	74,5	124,8	175,8	•	0,71	HCB7016-C-T-P4S
12 000	19 000	250	967	2 089	734	2 902	6 423	175,2	285,5	384,2	•	0,71	HCB7016-E-T-P4S
18 000	30 000	185	643	1 345	564	2 077	4 585	74,5	124,8	175,8	•	0,71	XCB7016-C-T-P4S
15 000	24 000	250	967	2 089	734	2 902	6 423	175,2	285,5	384,2	•	0,71	XCB7016-E-T-P4S
14 000	22 000	109	328	657	323	1 024	2 150	59,1	93,2	127,9	•	0,96	HS7016-C-T-P4S
12 000	19 000	175	524	1 049	502	1 530	3 127	147,9	220,0	287,0	•	0,96	HS7016-E-T-P4S
16 000	26 000	74	222	445	219	682	1 418	57,7	88,7	119,3	•	0,89	HC7016-C-T-P4S
14 000	20 000	123	368	736	355	1 079	2 185	148,4	219,2	282,8	•	0,89	HC7016-E-T-P4S
20 000	34 000	74	222	445	219	682	1 418	57,7	88,7	119,3	•	0,89	XC7016-C-T-P4S
17 000	28 000	123	368	736	355	1 079	2 185	148,4	219,2	282,8	•	0,89	XC7016-E-T-P4S
10 000	17 000	424	1 354	2 701	1 309	4 516	10 274	91,7	155,0	220,5	•	1,52	B7216-C-T-P4S
9 000	15 000	662	2 249	4 899	1 928	6 770	14 523	221,2	351,9	475,3	•	1,52	B7216-E-T-P4S
12 000	19 000	224	761	1 570	669	2 400	5 217	79,4	131,4	183,7	•	1,40	HCB7216-C-T-P4S
11 000	18 000	325	1 219	2 611	935	3 583	7 847	193,9	312,5	418,7	•	1,40	HCB7216-E-T-P4S

X-life ultra design

XCB7016-E-2RSD-T-P4S-UL

XC7016-EDLR-T-P4S-UL

TX design

HCB7016-C-TX-P4S-UL

XC7016-EDLR-TX-P4S-UL