

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
HSS 70 08-C
HCB 70 08-C
B 70 08-C
B 70 08-C
-T-P4S-UL*
-T-P4S-UL
-T-P4S-UL
-T-P4S-UL
-T-P4S-UL
-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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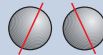
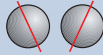
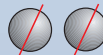
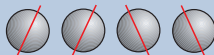
Grease Filling By Manufacturer

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

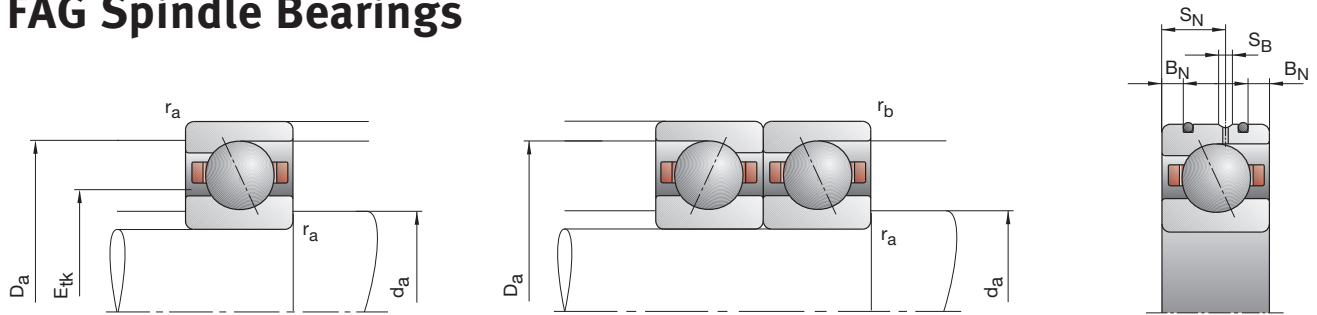
P4S	FAG Standard better than P4 according to DIN 620
P4S-K5	P4S but with mean sorting of bore and outside diameter

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	D _a	r _a	r _b	B _N	S _N	S _B	E _{tk}	C _{dyn}	C _{0stat}
	mm					h12	H12	max	max				nom.		
FAG														kN	
B71818-C-TPA-P4	90	115	13	1,00	0,30	95	109,5	1,0	0,3				99,4	21,20	23,60
B71818-E-TPA-P4	90	115	13	1,00	0,30	95	109,5	1,0	0,3				99,4	20,00	22,00
HCB71818-C-TPA-P4	90	115	13	1,00	0,30	95	109,5	1,0	0,3				99,4	14,60	16,60
HCB71818-E-TPA-P4	90	115	13	1,00	0,30	95	109,5	1,0	0,3				99,4	14,00	15,30
B71918-C-T-P4S	90	125	18	1,10	1,10	97	119	0,6	0,6				104,2	45,50	49,00
B71918-E-T-P4S	90	125	18	1,10	1,10	97	119	0,6	0,6				104,2	43,00	46,50
HCB71918-C-T-P4S	90	125	18	1,10	1,10	97	119	0,6	0,6	4,0	10,4	2,2	104,2	31,50	34,00
HCB71918-E-T-P4S	90	125	18	1,10	1,10	97	119	0,6	0,6	4,0	10,4	2,2	104,2	30,00	32,00
XCB71918-C-T-P4S	90	125	18	1,10	1,10	97	119	0,6	0,6	4,0	10,4	2,2	104,2	71,00	34,00
XCB71918-E-T-P4S	90	125	18	1,10	1,10	97	119	0,6	0,6	4,0	10,4	2,2	104,2	67,00	32,00
HS71918-C-T-P4S	90	125	18	1,10		97	119	0,6	0,6				104,5	23,60	28,50
HS71918-E-T-P4S	90	125	18	1,10		97	119	0,6	0,6				104,5	22,40	26,50
HC71918-C-T-P4S	90	125	18	1,10		97	119	0,6	0,6	4,0	10,4	2,2	104,5	16,30	19,60
HC71918-E-T-P4S	90	125	18	1,10		97	119	0,6	0,6	4,0	10,4	2,2	104,5	15,60	18,60
XC71918-C-T-P4S	90	125	18	1,10		97	119	0,6	0,6	4,0	10,4	2,2	104,5	36,50	19,60
XC71918-E-T-P4S	90	125	18	1,10		97	119	0,6	0,6	4,0	10,4	2,2	104,5	34,50	18,60
B7018-C-T-P4S	90	140	24	1,50	1,50	100	131	1,5	0,6				108,6	76,50	72,00
B7018-E-T-P4S	90	140	24	1,50	1,50	100	131	1,5	0,6				108,6	72,00	68,00
HCB7018-C-T-P4S	90	140	24	1,50	1,50	100	131	1,5	0,6	5,5	14,5	2,2	108,6	53,00	50,00
HCB7018-E-T-P4S	90	140	24	1,50	1,50	100	131	1,5	0,6	5,5	14,5	2,2	108,6	50,00	47,50
XCB7018-C-T-P4S	90	140	24	1,50	1,50	100	131	1,5	0,6	5,5	14,5	2,2	108,6	118,00	50,00
XCB7018-E-T-P4S	90	140	24	1,50	1,50	100	131	1,5	0,6	5,5	14,5	2,2	108,6	112,00	47,50
HS7018-C-T-P4S	90	140	24	1,50		100	131	1,5	0,6				111,0	37,50	43,00
HS7018-E-T-P4S	90	140	24	1,50		100	131	1,5	0,6				111,0	35,50	40,00
HC7018-C-T-P4S	90	140	24	1,50		100	131	1,5	0,6	5,5	14,5	2,2	111,0	26,00	30,00
HC7018-E-T-P4S	90	140	24	1,50		100	131	1,5	0,6	5,5	14,5	2,2	111,0	24,50	28,00
XC7018-C-T-P4S	90	140	24	1,50		100	131	1,5	0,6	5,5	14,5	2,2	111,0	58,50	30,00
XC7018-E-T-P4S	90	140	24	1,50		100	131	1,5	0,6	5,5	14,5	2,2	111,0	55,00	28,00
B7218-C-T-P4S	90	160	30	2,00	2,00	104	147	2,0	2,0				118,8	122,00	104,00
B7218-E-T-P4S	90	160	30	2,00	2,00	104	147	2,0	2,0				118,8	116,00	100,00
HCB7218-C-T-P4S	90	160	30	2,00	2,00	104	147	2,0	2,0				118,8	85,00	73,50
HCB7218-E-T-P4S	90	160	30	2,00	2,00	104	147	2,0	2,0				118,8	80,00	69,50

* options; • = possible, – = not possible

** see section Engineering, Speeds

*** see section Engineering, Deflection and Rigidity

Designation examples:

Sealed design

B7018-C-2RSD-T-P4S-UL

HSS7018-E-T-P4S-UL

Hybrid ceramic design

HC7018-E-T-P4S-UL

HCB71818-C-TPA-P4-UL

Direct Lube design

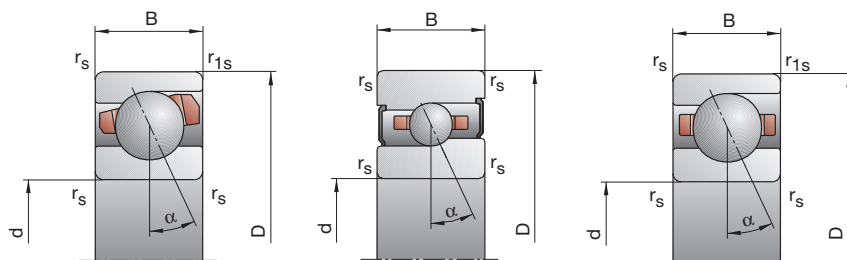
HCB7018-EDLR-T-P4S-UL

HC7018-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	L	M	H	L	M	H	L	M	H			
min ⁻¹	minimal	N						N/μm				kg	FAG
11 000	18 000	91	337	724	275	1 104	2 544	59,0	105,2	154,5	—	0,28	B71818-C-TPA-P4
9 500	16 000	110	495	1 116	316	1 471	3 423	130,4	227,8	316,3	—	0,28	B71818-E-TPA-P4
14 000	22 000	47	200	446	140	633	1 496	51,4	92,4	133,8	—	0,28	HCB71818-C-TPA-P4
12 000	19 000	79	271	659	228	799	1 989	131,5	205,0	287,4	—	0,28	HCB71818-E-TPA-P4
10 000	17 000	240	811	1 688	740	2 703	6 019	82,3	141,6	204,9	•	0,55	B71918-C-T-P4S
9 000	15 000	337	1 243	2 655	985	3 745	8 266	190,3	310,5	422,9	•	0,55	B71918-E-T-P4S
13 000	20 000	122	445	950	369	1 425	3 207	70,9	120,1	169,8	•	0,47	HCB71918-C-T-P4S
11 000	18 000	149	653	1 461	436	1 953	4 461	162,0	274,9	373,3	•	0,47	HCB71918-E-T-P4S
17 000	28 000	122	445	950	369	1 425	3 207	70,9	120,1	169,8	•	0,47	XCB71918-C-T-P4S
14 000	22 000	149	653	1 461	436	1 953	4 461	162,0	274,9	373,3	•	0,47	XCB71918-E-T-P4S
13 000	20 000	83	249	498	246	772	1 620	58,2	91,0	124,5	•	0,63	HS71918-C-T-P4S
11 000	18 000	133	398	796	381	1 158	2 362	145,7	216,0	281,2	•	0,63	HS71918-E-T-P4S
15 000	24 000	57	170	340	168	520	1 078	56,9	87,1	116,7	•	0,58	HC71918-C-T-P4S
14 000	20 000	92	276	552	265	807	1 636	145,3	214,5	276,5	•	0,58	HC71918-E-T-P4S
19 000	32 000	57	170	340	168	520	1 078	56,9	87,1	116,7	•	0,58	XC71918-C-T-P4S
16 000	26 000	92	276	552	265	807	1 636	145,3	214,5	276,5	•	0,58	XC71918-E-T-P4S
9 500	16 000	440	1 427	2 925	1 369	4 810	10 569	95,8	163,5	236,2	•	1,15	B7018-C-T-P4S
8 500	14 000	649	2 217	4 623	1 905	6 732	14 476	223,6	356,6	482,2	•	1,15	B7018-E-T-P4S
12 000	19 000	227	775	1 622	691	2 501	5 523	82,6	137,2	193,2	•	0,96	HCB7018-C-T-P4S
10 000	17 000	319	1 207	2 585	937	3 625	7 934	196,9	318,6	427,0	•	0,96	HCB7018-E-T-P4S
15 000	24 000	227	775	1 622	691	2 501	5 523	82,6	137,2	193,2	•	0,96	XCB7018-C-T-P4S
13 000	20 000	319	1 207	2 585	937	3 625	7 934	196,9	318,6	427,0	•	0,96	XCB7018-E-T-P4S
12 000	19 000	130	389	777	386	1 212	2 536	66,1	103,5	141,6	•	1,31	HS7018-C-T-P4S
10 000	17 000	207	621	1 242	592	1 813	3 689	164,4	244,9	318,6	•	1,31	HS7018-E-T-P4S
14 000	22 000	89	268	536	264	823	1 706	64,7	99,3	133,3	•	1,22	HC7018-C-T-P4S
13 000	19 000	146	437	874	422	1 278	2 593	165,7	244,0	314,9	•	1,22	HC7018-E-T-P4S
18 000	30 000	89	268	536	264	823	1 706	64,7	99,3	133,3	•	1,22	XC7018-C-T-P4S
15 000	24 000	146	437	874	422	1 278	2 593	165,7	244,0	314,9	•	1,22	XC7018-E-T-P4S
8 500	14 000	738	2 332	4 746	2 308	7 904	17 237	109,7	185,7	267,8	—	2,26	B7218-C-T-P4S
7 500	12 000	1 136	3 717	7 651	3 343	11 322	24 113	258,6	406,9	549,2	—	2,26	B7218-E-T-P4S
11 000	18 000	399	1 309	2 691	1 224	4 252	9 221	96,1	157,7	220,9	—	1,86	HCB7218-C-T-P4S
9 000	15 000	580	2 021	4 246	1 707	6 083	13 095	230,4	362,8	483,7	—	1,86	HCB7218-E-T-P4S

X-life ultra design

XCB7018-E-2RSD-T-P4S-UL

XC7018-EDLR-T-P4S-UL

TX design

HCB7018-C-TX-P4S-UL

XC7018-EDLR-TX-P4S-UL