

BXP *linear*



Inclined Linear Technology

2018

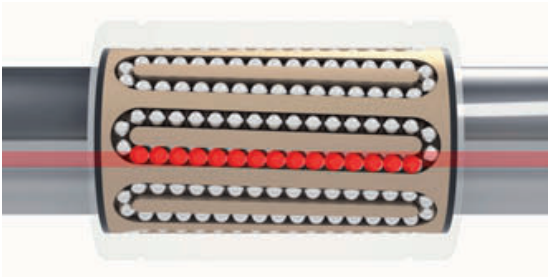
Structure



BXP linear bearings have a completely metallic, compact structure which makes their features different to the existing products in the market. This is their composition:

- Outer ring in steel 100Cr6 quenched at 63 ± 2 HRc, with high-precision grinding
- Inner structure in bronze DIN 1705
- High-precision steel balls
- Seals made in VITON® for supporting high temperatures

Inclined Technology



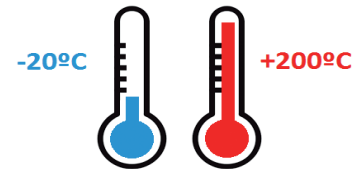
The **slight angle** does enlarge the contact area with the shaft and enable greater load capacity.

All the ball channels on **BXP** linear bearings have a certain inclination, thus increasing the contact surface with the shafts with the same coefficient of friction and extending their useful life as a whole, while supporting greater efforts.

Working Temperature

The structure of our materials and their treatment process allow us to work with a range of temperatures from **-20°C up to +200°C**.

Note that extreme conditions have an impact on the performance of linear bearings. Therefore, please refer to the attached table (Fig. 1) when calculating the working conditions.



Working Conditions

For BXP linear products, the maximum velocity allowed is $v_{max} = 5 \text{ m/s}$ and the maximum acceleration enabled is $a_{max} = 100 \text{ m/s}^2$ for high velocities, a previous deceleration is recommended when changing the sense of motion.

3 Tolerances Available

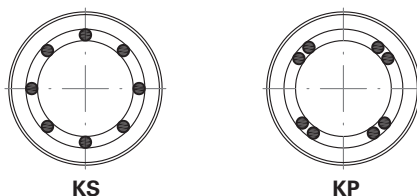
For all our diameters and models, we work with 3 different tolerances to adjust the sliding with the shafts according to every application needs.

- Tolerance A: Standard
- Tolerance B: Precision, with greater adjustment to the shaft
- Tolerance C: Preload, for higher precision applications

Available Standards

The **BXP***linear* range includes two available models, differentiated by a technical feature: **load capacity**.

The rated load of the linear bearing varies according to the position of balls in relation to the load direction. The KS model has equidistant lines of balls which allow for the symmetrical load distribution on the shaft. As for the KP model, the lines of balls are grouped together for supporting greater load capacity.



Nominal Life Rate

The nominal life of the linear bearing can be obtained using the following equation:

$$L_h = \frac{833}{H \times n_{osc}} \times \left(\frac{C}{P}\right)^3 \times f_T$$

L_h : Basic rating life in operating hours

H : Single stroke length

n_{osc} : Number of return strokes per minute

C : Basic dynamic load rating

P : Equivalent dynamic bearing load

f_T : Temperature factor. (See Fig. 1)

[h]
[m]
[min⁻¹]
[N]
[N]

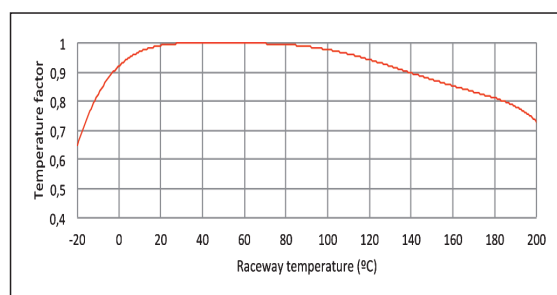


Fig. 1 - Temperature factor (f_T)

The nominal life rate is defined as the life actually achieved by a shaft guidance system. It may differ significantly from the calculated life. The following influences can lead to premature failure through wear or fatigue:

- Contamination.
- Misalignment between the shafts or guidance elements.
- Vibration during stoppage.
- Inadequate lubrication (see *Lubrication* part).
- Rotating movement.

Due to the wide variety of mounting and operating conditions, it is not possible to precisely predetermine the operating life of a shaft guidance system.

The safest way to arrive at an appropriate estimate of operating life is comparison with similar applications.

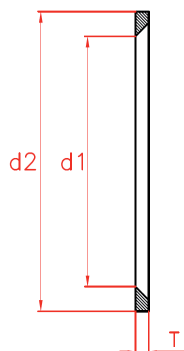
Lubrication

Depending on the velocity and working temperature factors, the appropriate type of lubricant for **BXP***linear* can be recommended. In some cases, no lubricant is required.

	Temperature	Velocity
Oil	Low	High
Grease*	High	Low

* The greases should have a lithium or an oil base.

Seals



d1	d2	T	Reference
12	15	1,25	XRAS12
16	19	1,25	XRAS16
20	24	1,5	XRAS20
25	29	1,5	XRAS25
30	36	2	XRAS30
40	46	2	XRAS40

Our seals can work in the same temperature range as the bearings, from -20°C up to +200°C.

Seals made in VITON®.

KS - Standard Model

Closed, standard-type linear bearing with symmetrical lines of balls.

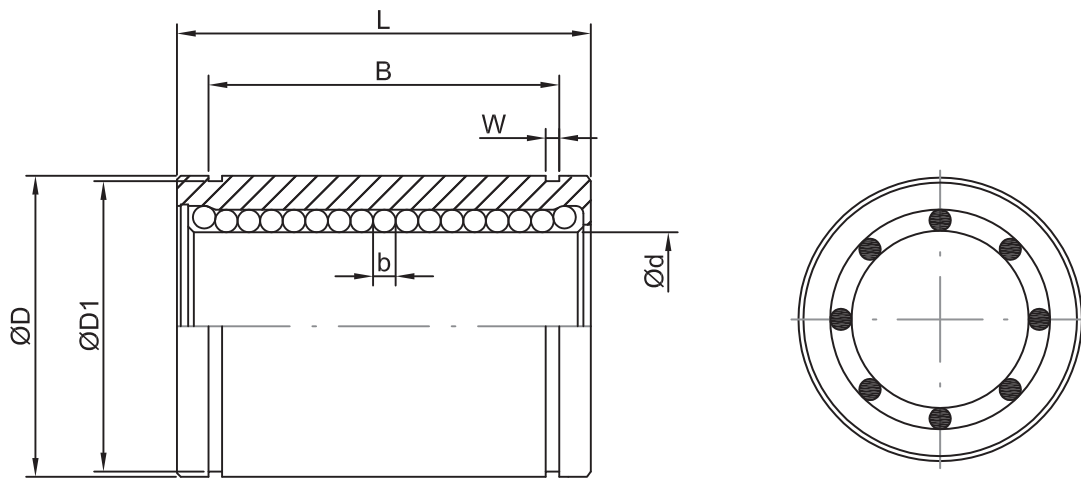
Outer ring in solid steel.

3 tolerances in diameter available for radial clearance adjustment.

Working temperature from -20°C up to +200°C, including seals.

Capability to work with low lubrication.

Version available with/without watertight seals.



measures in millimeters

Article Ref.		Ø d	Tolerance Ød	Ø D	Tolerance ØD	L	B	W	Ø D1	Nr. Strokes	Ø b	Dynamic Load Capacity C (N)	Static Load Capacity C ₀ (N)	Weight gr.
without Seals	with Seals													
KS12A	KS12AR		0 +0,008		-0,009 0									
KS12B	KS12BR	12	0 +0,004	22	-0,005 0	32 ⁰ _{-0,2}	22,9 ⁰ _{-0,2}	1,30	21,0	6	2,5	580	895	52
KS12C	KS12CR		-0,004 0		-0,002 +0,002									
KS16A	KS16AR		0 +0,009		-0,009 0									
KS16B	KS16BR	16	0 +0,005	26	-0,005 0	36 ⁰ _{-0,2}	24,9 ⁰ _{-0,2}	1,30	24,9	6	2,5	770	1180	75
KS16C	KS16CR		-0,004 0		-0,002 +0,002									
KS20A	KS20AR		0 +0,009		-0,011 0									
KS20B	KS20BR	20	0 +0,005	32	-0,006 0	45 ⁰ _{-0,2}	31,5 ⁰ _{-0,2}	1,60	30,3	6	3	1190	1910	140
KS20C	KS20CR		-0,004 0		-0,002 +0,002									
KS25A	KS25AR		0 +0,011		-0,011 0									
KS25B	KS25BR	25	0 +0,006	40	-0,006 0	58 ⁰ _{-0,3}	44,1 ⁰ _{-0,3}	1,85	37,5	8	3	1690	2720	298
KS25C	KS25CR		-0,004 0		-0,003 +0,003									
KS30A	KS30AR		0 +0,011		-0,013 0									
KS30B	KS30BR	30	0 +0,006	47	-0,007 0	68 ⁰ _{-0,3}	52,1 ⁰ _{-0,3}	1,85	44,5	8	4	2210	3880	445
KS30C	KS30CR		-0,005 0		-0,003 +0,003									
KS40A	KS40AR		0 +0,013		-0,013 0									
KS40B	KS40BR	40	0 +0,006	62	-0,007 0	80 ⁰ _{-0,3}	60,6 ⁰ _{-0,3}	2,15	59,0	8	4	2640	4620	1025
KS40C	KS40CR		-0,005 0		-0,003 +0,003									

KP - High Load Model

High load linear bearing with gathered lines of balls.

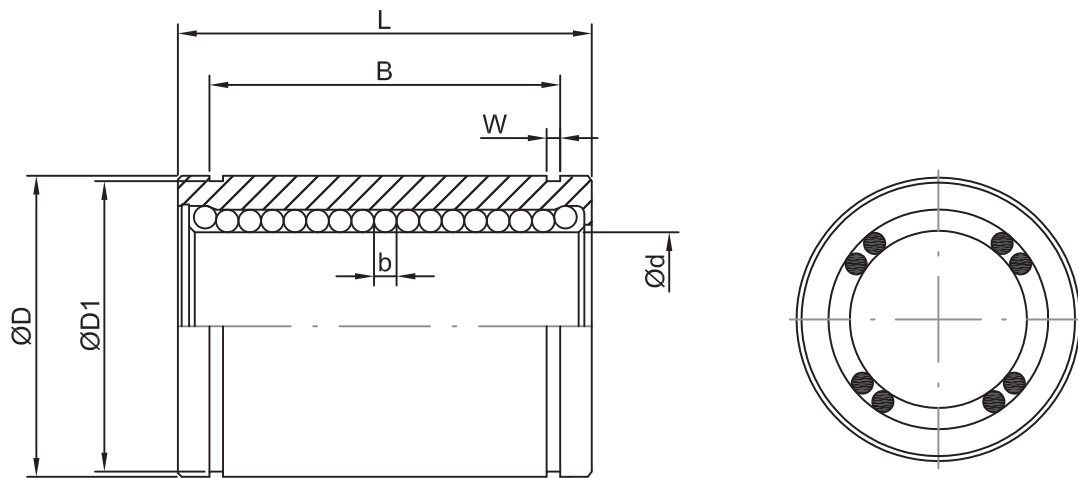
Outer ring in solid steel.

3 tolerances in diameter available for radial clearance adjustment.

Working temperature from -20°C up to +200°C, including seals.

Capability to work with low lubrication.

Version available with/without watertight seals.



measures in millimeters

Article Ref.		Ø d	Tolerance Ød	Ø D	Tolerance ØD	L	B	W	Ø D1	Nr. Strokes	Ø b	Dynamic Load Capacity C (N)	Static Load Capacity C ₀ (N)	Weight gr.
without Seals	with Seals													
KP12A	KP12AR	12	0 +0,008	22	-0,009 0	32 ⁰ _{-0,2}	22,9 ⁰ _{-0,2}	1,30	21,0	6	2,5	670	1210	52
KP12B	KP12BR		0 +0,004		-0,005 0									
KP12C	KP12CR		-0,004 0		-0,002 +0,002									
KP16A	KP16AR	16	0 +0,009	26	-0,009 0	36 ⁰ _{-0,2}	24,9 ⁰ _{-0,2}	1,30	24,9	6	2,5	880	1690	75
KP16B	KP16BR		0 +0,005		-0,005 0									
KP16C	KP16CR		-0,004 0		-0,002 +0,002									
KP20A	KP20AR	20	0 +0,009	32	-0,011 0	45 ⁰ _{-0,2}	31,5 ⁰ _{-0,2}	1,60	30,3	6	3	1500	3050	140
KP20B	KP20BR		0 +0,005		-0,006 0									
KP20C	KP20CR		-0,004 0		-0,002 +0,002									
KP25A	KP25AR	25	0 +0,011	40	-0,011 0	58 ⁰ _{-0,3}	44,1 ⁰ _{-0,3}	1,85	37,5	8	3	1920	4350	298
KP25B	KP25BR		0 +0,006		-0,006 0									
KP25C	KP25CR		-0,004 0		-0,003 +0,003									
KP30A	KP30AR	30	0 +0,011	47	-0,013 0	68 ⁰ _{-0,3}	52,1 ⁰ _{-0,3}	1,85	44,5	8	4	3110	7760	445
KP30B	KP30BR		0 +0,006		-0,007 0									
KP30C	KP30CR		-0,005 0		-0,003 +0,003									
KP40A	KP40AR	40	0 +0,013	62	-0,013 0	80 ⁰ _{-0,3}	60,6 ⁰ _{-0,3}	2,15	59,0	8	4	3400	8940	1025
KP40B	KP40BR		0 +0,006		-0,007 0									
KP40C	KP40CR		-0,005 0		-0,003 +0,003									



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