

L Series - Linear bearings

From standard products to customized solutions
Linear bearings - Linear movement

Standard product line – microlinea

Miniature high precision linear bearings
L Series with stainless steel housing and brass retainer

On request

Completely out of stainless steel
with reduced bore tolerance



Reference	d (mm)	D (mm)	B (mm)	r min (mm)	Ø balls (mm)	Load ratings to ISO 14728 (N)	
						stat. (C ₀)	dyn. (C _{100B})
L 204X	2	4	5	0.02	0.500	12	11
L 306X	3	6	7	0.13	0.600	31	26
L 307X	3	7	10	0.20	0.794	73	56
L 408X	4	8	10	0.24	0.794	77	53
L 510X	5	10	14	0.24	1.250	131	118
L 612X	6	12	18	0.39	1.588	250	220

Materials

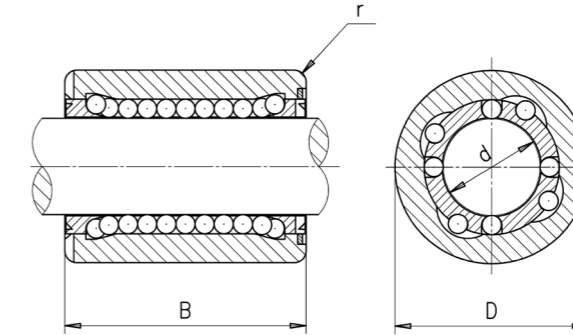
- Housing:** stainless steel AISI 440C
- Cage:** brass (on request: stainless steel AISI 303)
- Balls:** stainless steel AISI 440C
- Lubrication:** standard: Winsor Lube L245X (other oils on request)
- Temperature:** -40°C bis +80°C (or more with the appropriate lubricant)
- Bearing tolerances:** bore diameter d +8/0 µm
outer diameter D 0/-8 µm

Example of part number definition

- L 204X** miniature precision linear bearing L-type
- L 204X** bore diameter = 2 mm
- L 204X** outer diameter = 4 mm
- L 204X** stainless steel balls and housing

Recommended tolerances for shaft: 0/-6 µm
Recommended hardness for shaft: 58 HRC
Max. press fit between the outer ring and housing: 1 to 3 µm

Data subject to change without notice.



Linear bearings life calculation

C_{100B} is calculated according to ISO 14728. 100 stands for a nominal life expectancy of 100km and B for linear ball bearing. Without any precision, a C value may also correspond to C_{50B} (C_{50B} = 1.26 x C_{100B}).

General formulas

The theoretical life has no practical value unless the following conditions are scrupulously observed:

- Magnitude and direction of constant load carefully determined
- Constant velocity
- Constant temperature not exceeding 100°C
- Rigorous cleanliness in mounting and during running
- Careful choice and dosage of lubricant

Life in achievable distance

- L_m: Life expectancy in meters [m]
- C_{100B}: Dynamic load rating [N]
- P: Equivalent dynamic load [N]

$$L_m = \left(\frac{C_{100B}}{P}\right)^3 \cdot 10^5$$

Life in hours

- L_h: Life expectancy in hours [h]
- f: Number of double strokes per minute [min⁻¹]
- s: Length of a double stroke [m]

$$L_h = \left(\frac{C_{100B}}{P}\right)^3 \cdot \frac{10^5}{f \cdot s \cdot 60}$$

According to ISO 14728, one shall consider a static safety factor so that the actual load does not exceed half of the C₀ value.