

L Series - Linear bearings

Standard product line – microlinea

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

Great technology:

- The smallest linear ball bearings in the world
- Exceptional smoothness and extremely low friction
- Extended life
- Ideal for precise positioning without stick-slip effect

On request

Completely out of stainless steel with reduced bore tolerance.



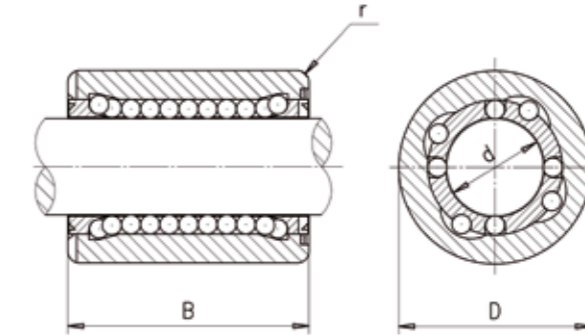
| Reference | d (mm) | D (mm) | B (mm) | r min (mm) | Ø balls (mm) | Load ratings to ISO 14728 (N) | |
|-----------|--------|--------|--------|------------|--------------|-------------------------------|---------------------------|
| | | | | | | stat. (C ₀) | dyn. (C _{100B}) |
| L 153X | 1.5 | 3 | 4 | 0.015 | 0.300 | 8 | 6 |
| L 204X | 2 | 4 | 5 | 0.020 | 0.500 | 12 | 11 |
| L 306X | 3 | 6 | 7 | 0.130 | 0.600 | 31 | 26 |
| L 307X | 3 | 7 | 10 | 0.200 | 0.794 | 73 | 56 |
| L 408X | 4 | 8 | 10 | 0.240 | 0.794 | 77 | 53 |
| L 510X | 5 | 10 | 14 | 0.240 | 1.250 | 131 | 118 |
| L 612X | 6 | 12 | 18 | 0.390 | 1.588 | 250 | 220 |

Data subject to change without notice.

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 lubricants on request)
Temperature: -40°C to +80°C (or more with the appropriate lubricant)
Bearing tolerances: bore diameter d +8/0 µm
 outer diameter D 0/-8 µm

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



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.