

L1740

LINEAR BEARINGS

Material

Hardened and ground steel ball plate from bearing steel.
Floating plate feature offers self-alignment and clearance adjustment.
Single body resin retainer (POM).
Supplied with nitrile rubber (NBR) end

seals -UU as standard.

Technical Notes

The superball series has 3 x the load rating and 27 x the travel life of conventional linear bushings.
They offer self-alignment - prolonging

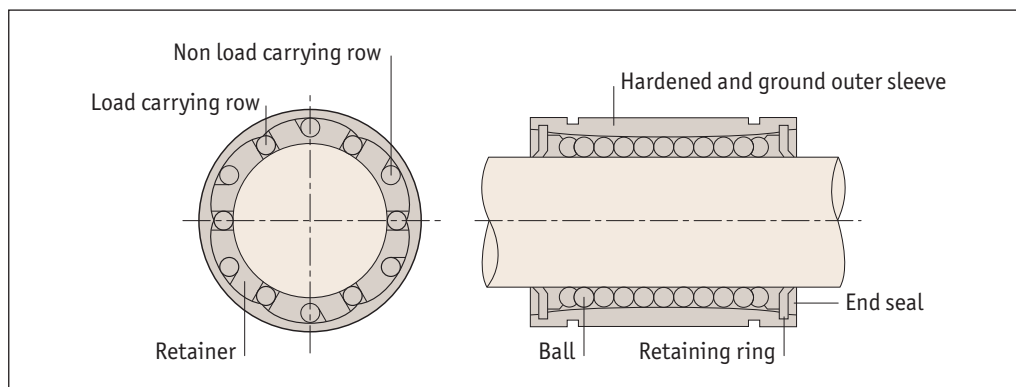
travel life by reducing the friction between shaft and balls.

For use with hardened shafts only (see part nos. L1770 - L1772) - tolerance h6.
Perpendicularity A is better than 15μ.
Temperature range: -20°C to +80°C.

Order No.	d ₁ tol. h6	d ₂ tol. h6	l ₁ ±0.2	l ₂ ±0.2	l ₃ min.	No. of ball circuits	Dyn. load C N max.	Static load C ₀ N max.	Weight g
L1740.010	10	19	29	21.7	1.35	5	550	750	17
L1740.012	12	22	32	22.7	1.35	5	1100	1230	23
L1740.016	16	26	36	24.7	1.35	5	1250	1550	28
L1740.020	20	32	45	31.3	1.65	6	1670	2580	61
L1740.025	25	40	58	43.8	1.90	6	2750	3800	122
L1740.030	30	47	68	51.8	1.90	6	2800	4710	185
L1740.040	40	62	80	60.4	2.20	6	5720	6500	360
L1740.050	50	75	100	77.4	2.70	6	7940	11460	580



Linear ball bushings



Applications

- Computers and peripheral equipment.
- Recording equipment.
- Linear motion systems.
- Multi-axis drilling machine.
- Printing machines.
- Food packaging machines.
- Punching presses.
- Tool grinders.
- Assembly systems.
- Card selectors.

Interchangeability

Our linear bushing systems are designed to have full interchangeability, with other manufacturers' parts. **For shafting see part numbers L1770 to L1785.**

High precision retainer

The single body retainer guides 4-6 ball circuits. It precisely guides the balls with a smooth motion.

Tolerance of housing bore

Normal fit is standard, pressed fit is for without clearance.

Type	Case	
Part no.	Normal fit	Pressed fit
L1706 to L1733	H7	K6, J6
L1706... ⁻¹ to L1733... ⁻¹	H7	J7

Rigid outer sleeve

The hardened and precisely ground outer sleeve is made of bearing steel.

L1750 bushing carriages

Consists of light aluminium case and L1706 type linear bushing, so the installation can be finished simply by bolting. Longer life can be obtained by adjusting the orientation of the ball circuits in the linear carriage element against the direction of load.

Tolerance of shaft

Type	Shaft	
Part no.	Normal fit	Tight fit
L1706 to L1733	h6	k6
L1706... ⁻¹ to L1733... ⁻¹	f6, g6	h6



Technical Information

Load rating important information



Basic dynamic load rating C

The basic dynamic load rating is defined as the constant load both in direction and magnitude under which a group of identical linear bushings are individually operated. 90% of the units can travel 50Km without failing due to rolling contact fatigue.

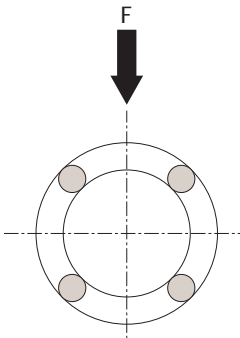
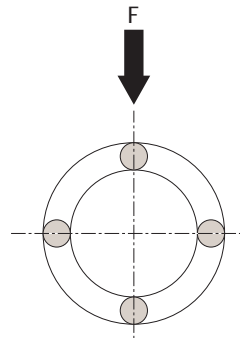
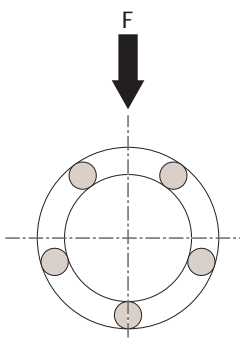
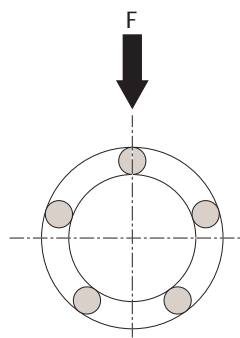
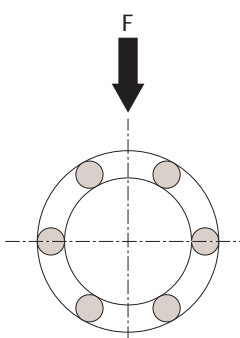
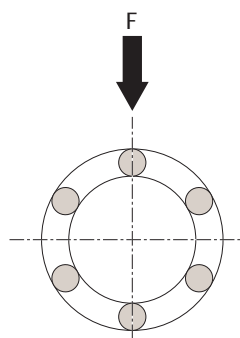
Basic static load rating C₀

If a linear bushing is subject to an excessive load or impact, a permanent deformation occurs between the raceway and the rolling element. The basic static load rating is defined as the static load that gives a prescribed constant contact stress at the centre of the contact area between the rolling element and raceway receiving the maximum load.

Relationships between load ratings and the position of ball circuits

Load ratings of linear bushing are affected by the position of the ball circuits as shown below.

Load ratings and orientation of balls.

No of ball rows	Orientation of balls	
	Maximum load rating	Minimum load rating
4		
	$F = 1.41 \times C$	$F = C$
5		
	$F = 1.46 \times C$	$F = C$
6		
	$F = 1.26 \times C$	$F = C$



When designing a linear motion system it is necessary to consider how the application will affect performance. The following examples demonstrate how the position of the load and the centre of gravity can influence product selection. When evaluating your application, review each of the forces acting on your system and determine the product that best suits your needs.

Horizontal application

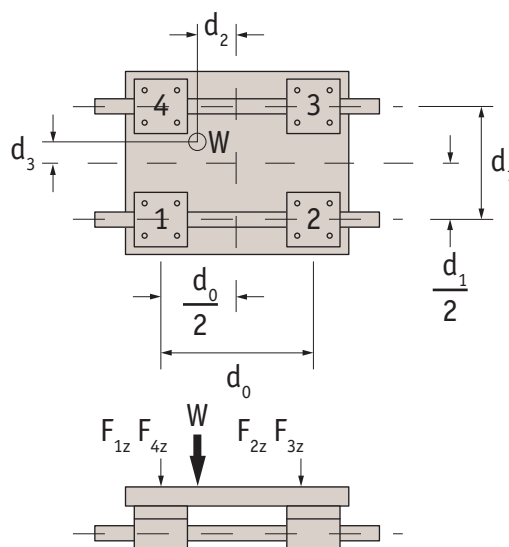
For uniform speed or when stopped.

$$F_{1z} = \frac{W}{4} + \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) - \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$

$$F_{2z} = \frac{W}{4} - \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) - \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$

$$F_{3z} = \frac{W}{4} - \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) + \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$

$$F_{4z} = \frac{W}{4} + \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) + \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$



Horizontal application

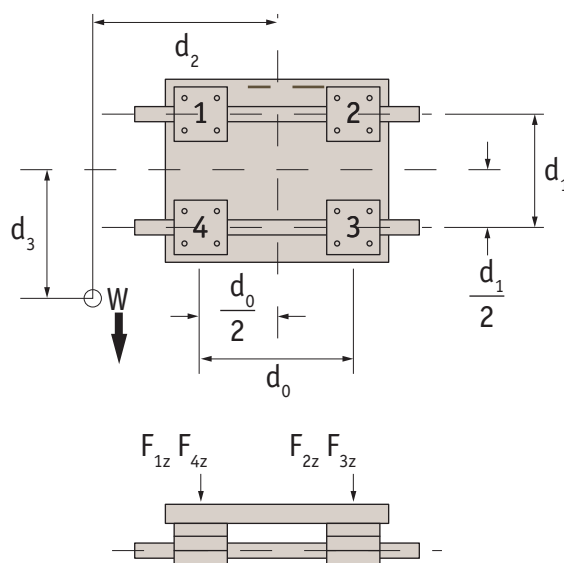
For uniform speed or when stopped.

$$F_{1z} = \frac{W}{4} + \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) - \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$

$$F_{2z} = \frac{W}{4} - \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) - \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$

$$F_{3z} = \frac{W}{4} - \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) + \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$

$$F_{4z} = \frac{W}{4} + \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right) + \left(\frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$





Technical Information

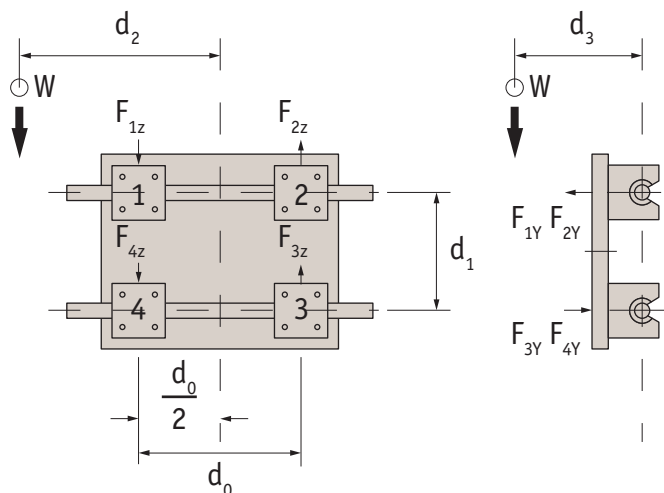
Load rating important information

Linear Ball Bushings

$$F_{1Y} \sim F_{4Y} = \left(\frac{W}{2} \cdot \frac{d_3}{d_0} \right)$$

$$F_{1Z} = F_{4Z} = \frac{W}{4} + \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right)$$

$$F_{2Z} = F_{3Z} = \frac{W}{4} + \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right)$$



Side mounted application

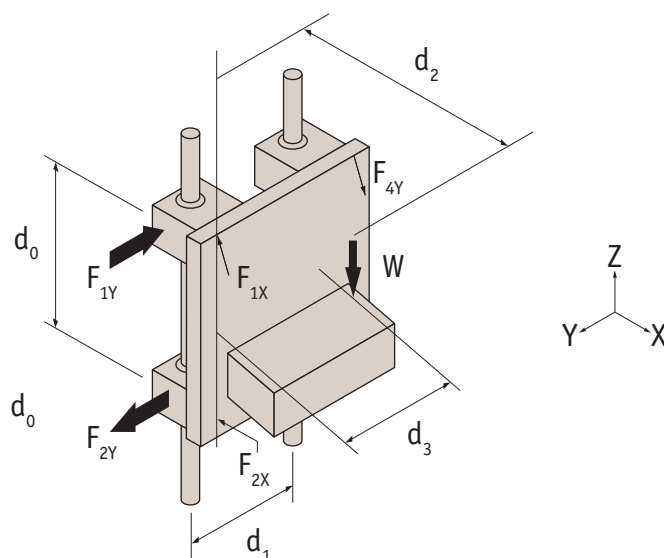
For uniform speed or when stopped.

$$F_{1X} \sim F_{4X} = \left(\frac{W}{2} \cdot \frac{d_2}{d_0} \right)$$

$$F_{1Y} \sim F_{4Y} = \left(\frac{W}{2} \cdot \frac{d_3}{d_0} \right)$$

$$F_{1X} + F_{4X} \sim F_{2X} + F_{3X}$$

$$F_{1Y} + F_{4Y} \sim F_{2Y} + F_{3Y}$$



Vertical application

For uniform speed or when stopped. On start up/stop the load varies due to inertia in the system.