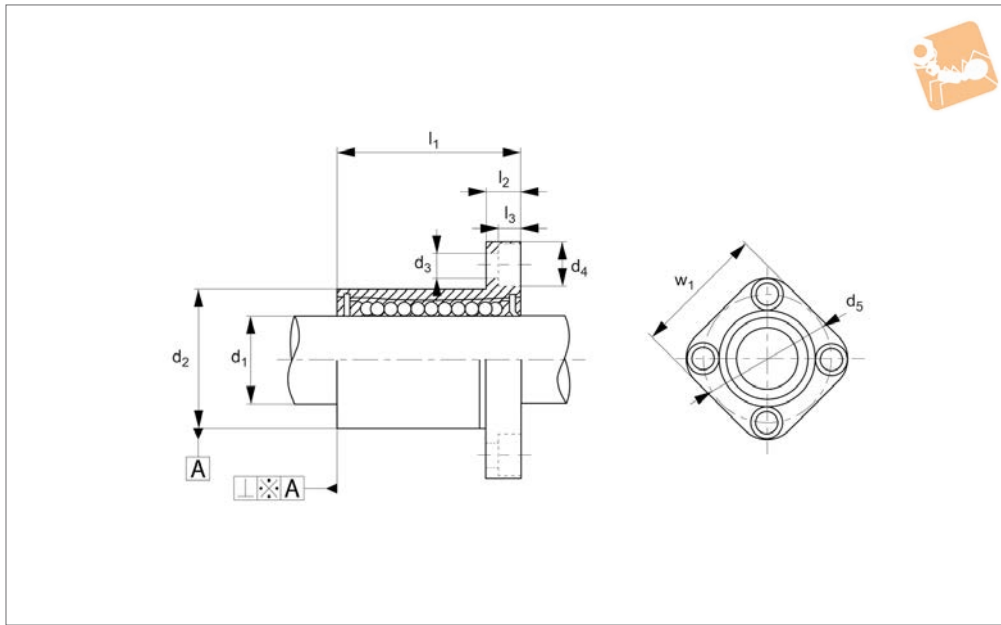




Flanged Linear Ball Bushings

square flange

Linear Bearings



L1719

LINEAR BEARINGS

Material

Hardened and ground body from bearing steel.

Single body resin retainer (POM).

Supplied with nitrile rubber (NBR) end-seals -UU as standard.

nos. L1770 - L1772) - tolerance h6.

For part numbers with ⁻¹ shaft tolerance required is g6. Temperature range : -20°C to +80°C.

Steel ball retainers can be supplied for higher temperature applications (up to +120°C) - with no end seals. Please advise at time of ordering if this is required.

Tips

Nickel plated version with stainless steel balls (for corrosion resistance) on request - or stainless steel version no. L1721.

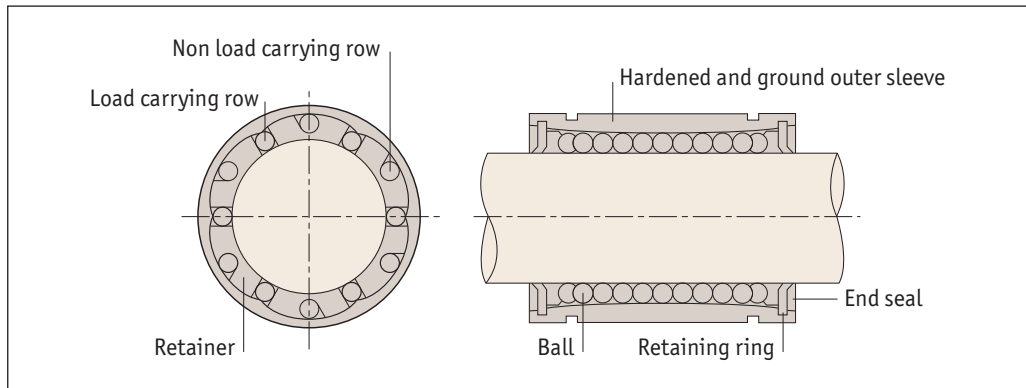
Technical Notes

For use with hardened shafts only (see part

Order No.	d ₁ tol. h6	d ₂ tol. h6	l ₁	d ₃	d ₄	d ₅	l ₂	l ₃	No. of ball circuits	w ₁	Squareness A µm	Dyn. load C N max.	Static load C ₀ N max.	Weight g
L1719.006-1	6	12	19	3,4	6,5	20	5	3,3	4	22	12	200	260	26,5
L1719.008	8	16	25	3,4	6,5	24	5	3,3	4	25	12	260	400	44,0
L1719.010-1	10	19	29	4,5	8,0	29	6	4,4	4	30	12	370	540	78,0
L1719.012	12	22	32	4,5	8,0	32	6	4,4	4	32	12	410	590	86,0
L1719.016	16	26	36	4,5	8,0	36	6	4,4	5	35	12	770	1170	120,0
L1719.020	20	32	45	5,5	9,5	43	8	5,4	5	42	15	860	1370	184,0
L1719.025	25	40	58	5,5	9,5	51	8	5,4	6	50	15	980	1560	335,0
L1719.030	30	47	68	6,6	11,0	62	10	6,5	6	60	15	1560	2740	545,0
L1719.040	40	62	80	9,0	14,0	80	13	8,6	6	75	20	2150	4010	1185,0
L1719.050	50	75	100	9,0	14,0	94	13	8,6	6	88	20	3820	7930	1730,0
L1719.060	60	90	125	11	17,5	112	18	10,8	6	106	25	4700	9990	3180,0



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	
	Normal fit	Pressed fit
Part no.		
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	
	Normal fit	Tight fit
Part no.		
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

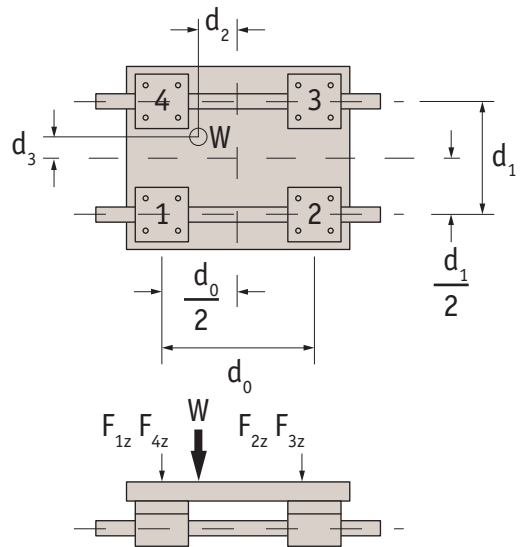
For uniform speed or when stopped.

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

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

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

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



Horizontal application

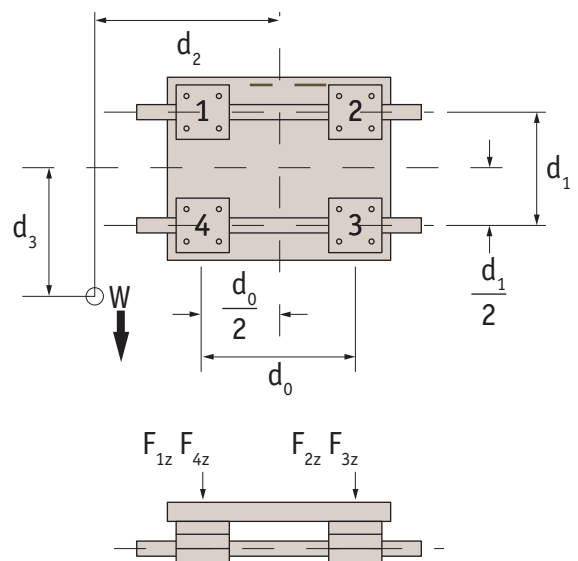
For uniform speed or when stopped.

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

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

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

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





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

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

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

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.