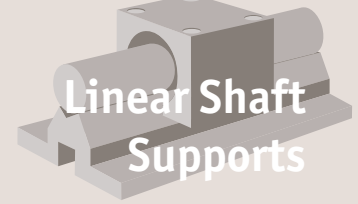


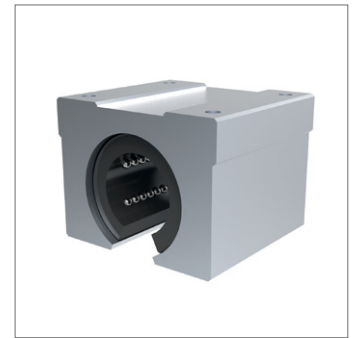
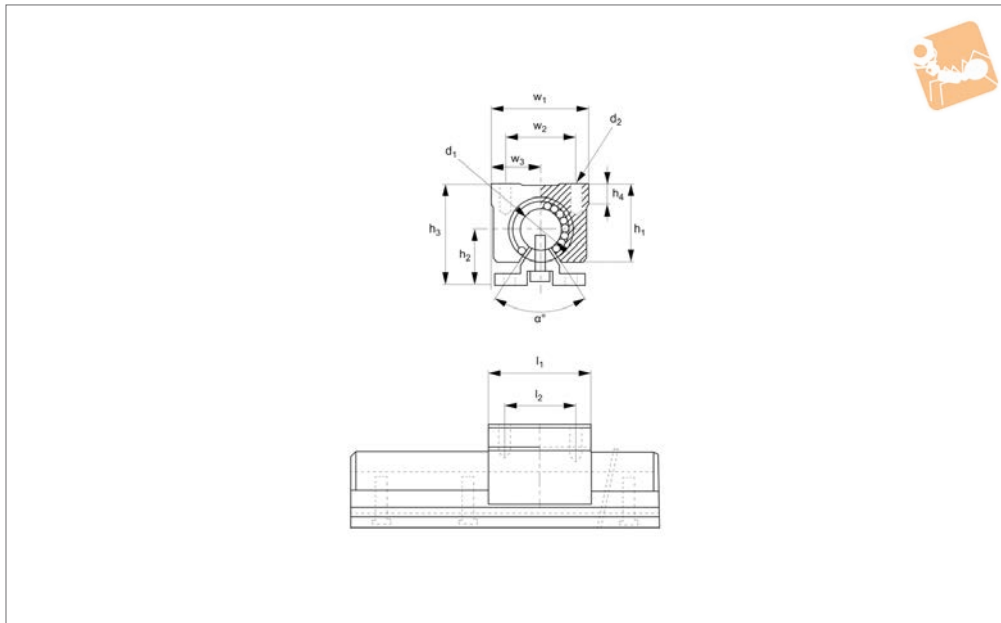


# Open Linear Ball Bushing Carriages

unflanged



## Linear Shaft Supports



### L1752

LINEAR SHAFT SUPPORTS

#### Material

Aluminium body, with L1707 (steel shell) linear bearing installed. Bearing has a resin retainer (POM). Supplied with nitrile rubber (NBR) end seals -UU as standard.

#### Technical Notes

For use with hardened shafts only - see

part no.s L1770 - L1772.

Temperature range: -20°C to +80°C.

#### Tips

Use with shaft support rail L1780. Particularly effective for high loads and long stroke applications.

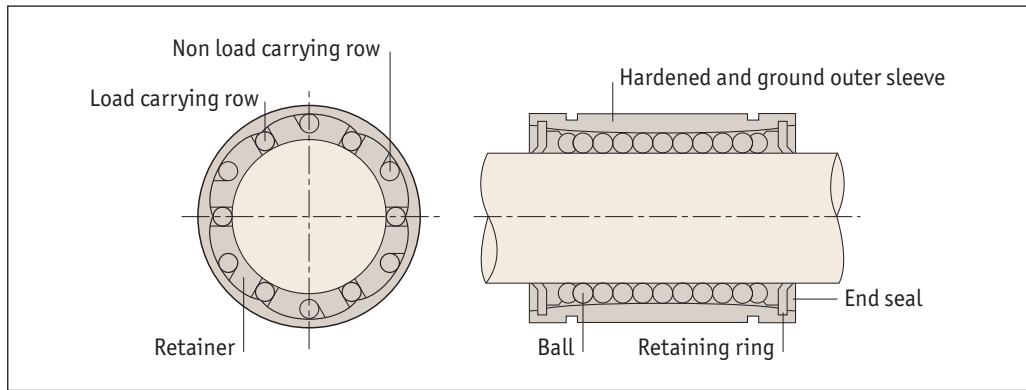
#### Important Notes

**If using the carriage inverted, ie hanging loads, then the load rating is reduced by 50%.**

Order No.	$d_1$ tol. h6	$l_1$	$d_2$	$h_1$	$h_2$	$h_3$ $\pm 0.05$	$h_4$	$l_2$ $\pm 0.2$	$w_1$	$w_2$ $\pm 0.2$	$w_3$	$\alpha$ $^\circ$	Dyn. load C N max.	Static load $C_0$ N max.	Weight g
L1752.016	16	45	M 5x12	33	26	46	9	30	45	32	22.5	80°	770	1170	150
L1752.020	20	50	M 6x12	39	32	55	11	35	48	35	24.0	60°	860	1370	200
L1752.025	25	65	M 6x12	47	36	62	14	40	60	40	30.0	50°	980	1560	450
L1752.030	30	70	M 8x18	56	42	75	15	50	70	50	35.0	50°	1560	2740	630
L1752.040	40	90	M10x20	72	50	92	20	65	90	65	45.0	50°	2150	4010	1330
L1752.050	50	110	M10x20	91	60	113	25	80	120	94	60.0	50°	3820	7930	3000



### 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... <sup>-1</sup> to L1733... <sup>-1</sup>	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.

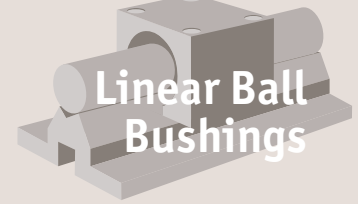
#### Tolerance of shaft

Type	Shaft	
	Normal fit	Tight fit
Part no.		
L1706 to L1733	h6	k6
L1706... <sup>-1</sup> to L1733... <sup>-1</sup>	f6, g6	h6



# Technical Information

## Load rating important information



# Linear Ball Bushings

LINEAR SHAFT SUPPORTS

### 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.

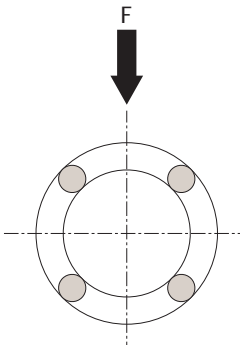
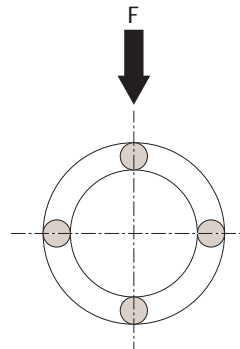
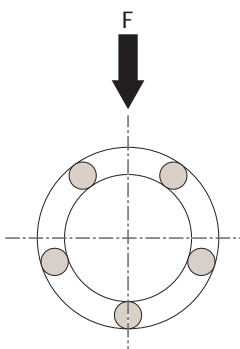
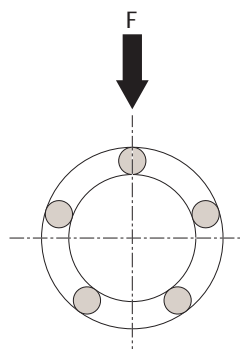
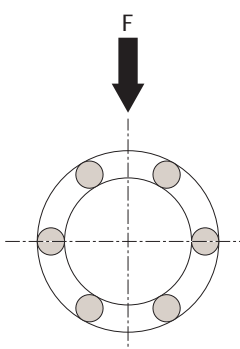
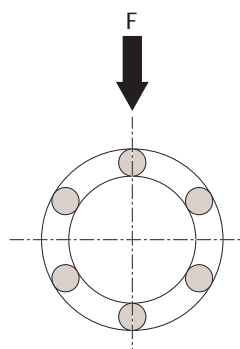
### Basic static load rating C<sub>0</sub>

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		
	$F = 1.26 \times C$	$F = C$

ov-linear-ball-bushings-load-rating-a-rnh - Updated - 22-02-2023



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

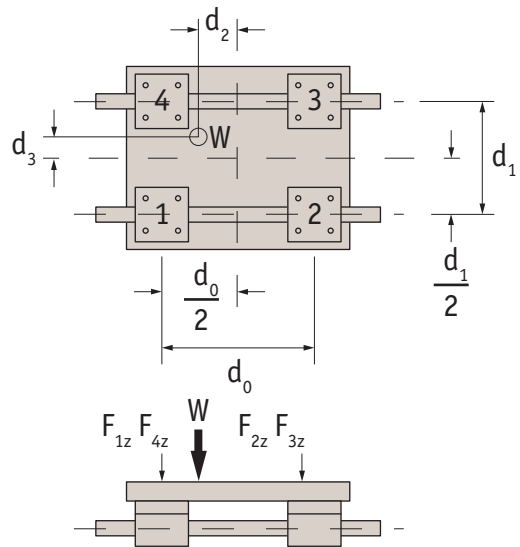
For uniform speed or when stopped.

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

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

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

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



#### Horizontal application

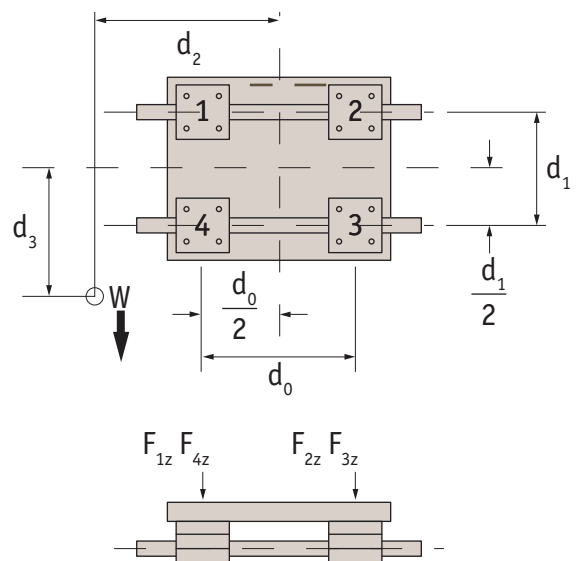
For uniform speed or when stopped.

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

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

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

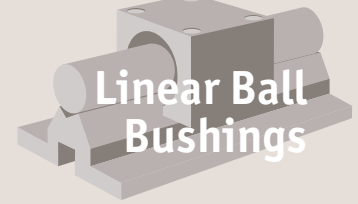
$$F_{4z} = \frac{W}{4} + \left( \frac{W}{2} \cdot \frac{d_2}{d_0} \right) + \left( \frac{W}{2} \cdot \frac{d_3}{d_1} \right)$$





# Technical Information

## Load rating important information



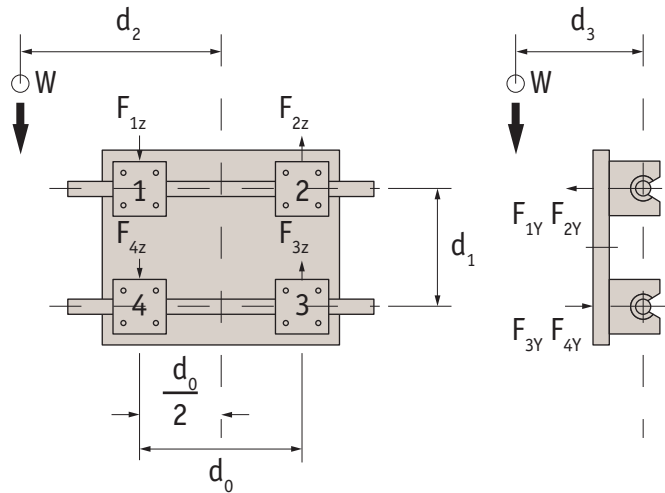
# Linear Ball Bushings

LINEAR SHAFT SUPPORTS

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

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

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



### Side mounted application

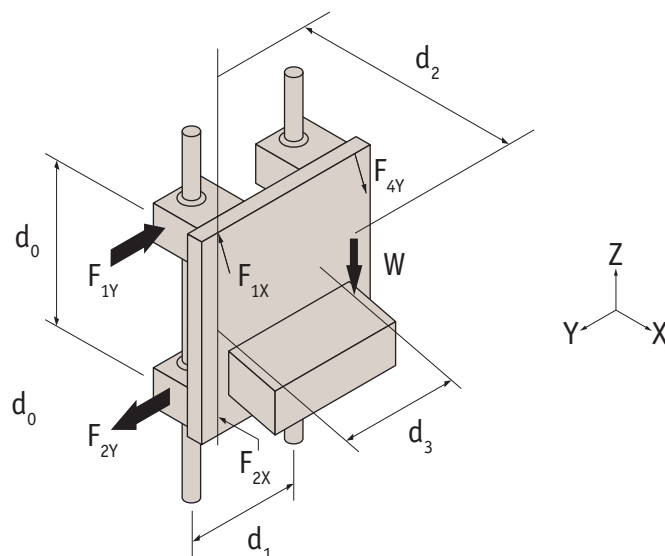
For uniform speed or when stopped.

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

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

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

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



### Vertical application

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

ov-linear-ball-bushings-load-rating-c-rmh - Updated - 22-02-2023