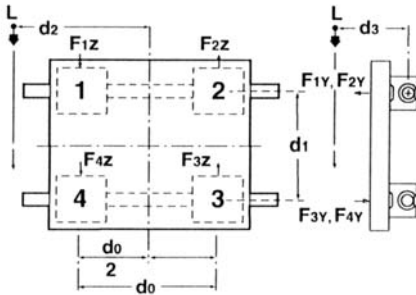


Vertical Load

At the time of movement with uniform velocity or at the time of stop. At the time of acceleration, the load varies because of inertia.



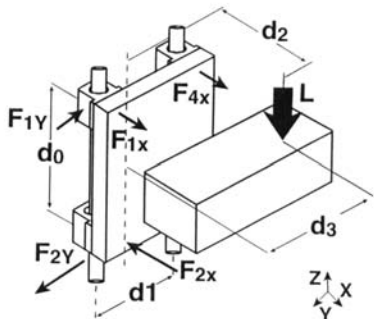
$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \times \frac{d_3}{d_1}$$

$$F_{1Z} \sim F_{4Z} = \frac{L}{4} + \frac{L}{2} \times \frac{d_2}{d_0}$$

$$F_{2Z} \sim F_{3Z} = \frac{L}{4} - \frac{L}{2} \times \frac{d_2}{d_0}$$

Side Mounted Load

At the time of movement with uniform velocity or at the time of stop.



$$F_{1X} \sim F_{4X} = \frac{L}{2} \times \frac{d_2}{d_0}$$

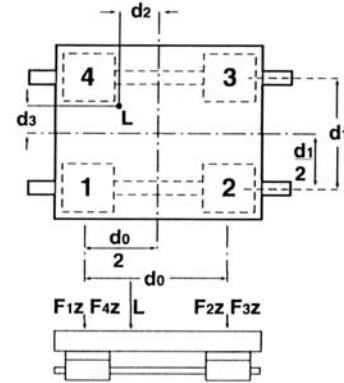
$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \times \frac{d_3}{d_0}$$

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

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

Horizontal Load

At the time of movement with uniform velocity or at the time of stop.



$$F_{1Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{2Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \frac{L}{2} \times \frac{d_3}{d_1}$$

$$F_{3Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \frac{L}{2} \times \frac{d_3}{d_1}$$

$$F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \frac{L}{2} \times \frac{d_3}{d_1}$$

EQUATION TERMS:

d_0 = Distance between centerlines of pillowblocks (in)

d_1 = Distance between centerlines of shafts (in)

d_2 = Distance from centerline of carriage to load action point (in)

d_3 = Distance from centerline of carriage to load action point (in)

F_{NX} = force in the X=axis direction (lbf)

F_{NY} = Force in the Y-axis direction (lbf)

F_{NZ} = Force in the Z-axis direction (lbf)