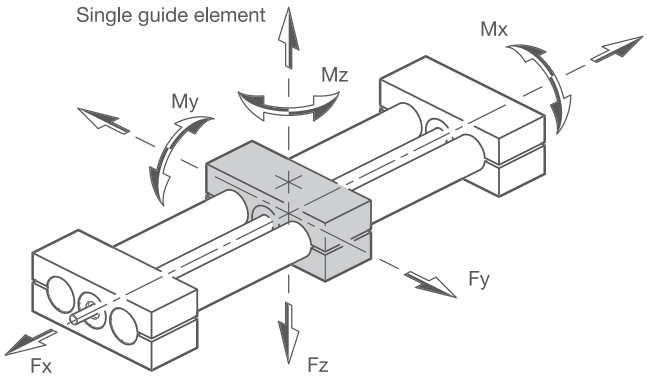
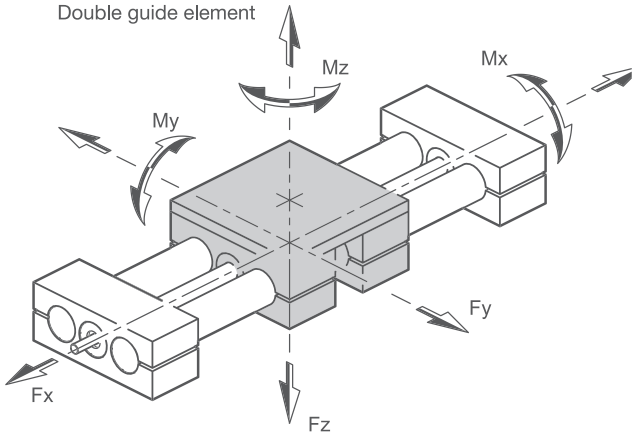




Single guide element

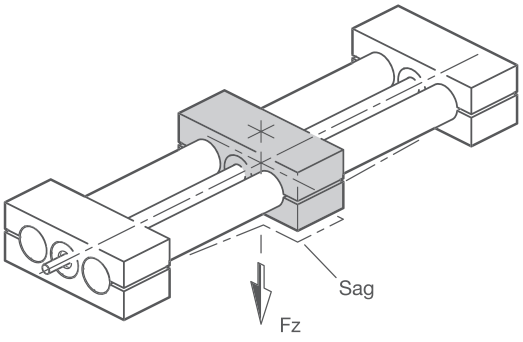
Linear unit nominal diameter	**Fx** in N	**Fy** in N			**Fz** in N			**Mx** in Nm	**My** in Nm	**Mz** in Nm
	l = 500	l = 500	l = 1000	l = 1500	l = 500	l = 1000	l = 1500			
18	425	215	110	-	105	80	-	22	35	40
30	850	1100	900	550	600	350	150	100	100	100
40	1100	3700	2800	1400	2100	600	180	150	140	170
50	1900	3850	2400	2100	3100	700	200	180	220	290
60	2700	6900	5700	5100	6300	2800	360	320	350	500

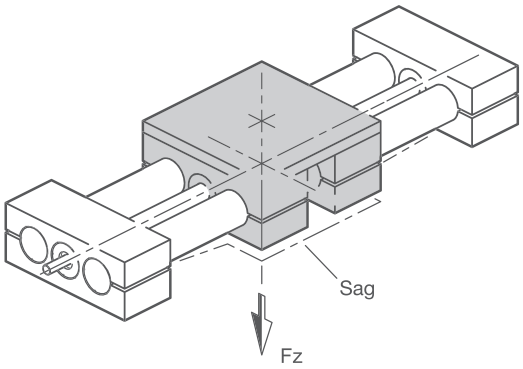
Double guide element

Linear unit nominal diameter	**Fx** in N	**Fy** in N			**Fz** in N			**Mx** in Nm	**My** in Nm	**Mz** in Nm
	l = 500	l = 500	l = 1000	l = 1500	l = 500	l = 1000	l = 1500			
18	425	290	180	-	140	105	-	42	50	75
30	850	1550	1300	800	700	550	250	150	150	200
40	1100	6400	3400	1900	2400	750	280	180	210	260
50	1900	7500	5100	2700	3400	850	340	250	350	530
60	2700	11500	9500	8200	7500	3100	610	550	650	980

Sag / elastic deformation

The maximum permissible forces and tightening torques listed in the table will result in elastic deformation of the linear unit. At the listed values, this amounts to approximately 0.4 mm for guide tubes and 0.3 mm for solid guide shafts. This deformation is shown here using the force Fz as an example.





Positioning precision

The positioning precision indicates the deviation with which a position can be reached. The table shown here lists the maximum arising deviation.

	Trapezoidal thread lead screw	Fine thread lead screw	Ball screw
Max. deviation	±0,1 mm / 300 mm Stroke	±0,1 mm / 300 mm Stroke	±0,05 mm / 300 mm Stroke

Repeatable precision

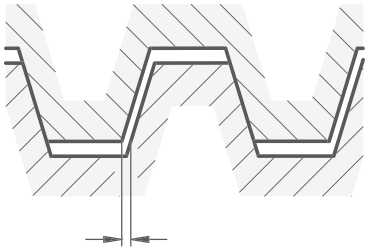
The repeatable precision indicates how precisely a position can be approached multiple times under the same conditions. In most cases, the repeatable precision is higher than the positioning precision because manufacturing tolerances have no influence on the repeatable precision. The trapezoidal and fine thread lead screws have a repeatable precision of ±0.05 mm, and the ball screw has ±0.02 mm.

Guide precision

The precision guide tubes of the linear units of steel are manufactured as per DIN EN 10305-4 and also chrome-plated. In the stainless steel version, steel precision guide tubes as per EN10216-5 are used.

Backlash on reversal

Due to the play between the thread flanks of the spindle and spindle nut, backlash (lost motion) occurs when the direction of the drive movement is changed. This backlash must be overcome before the guide element moves in the opposite direction. The backlash on reversal is required to prevent the spindle nut from seizing on the spindle. For linear units with trapezoidal and fine thread spindle, the value is 0.2 mm and for recirculating ball screws max. 0.04 mm. For recirculating ball screws, the backlash on reversal can be eliminated with pretensioning.



Self-braking

Because trapezoidal and fine thread spindles have pitch angles lower than the angle of friction, they are often self-braking. It is not possible to slide the guide element. In addition, the spindle can be secured against movement with an external spindle clamp. The clamping plates listed as accessories may be used for this.
Due to its lower rolling friction, the ball screw does not have any self-braking properties. An external spindle clamp is recommended to avoid unintentional movement.

Lifespan

The lifespan of linear units depends on the expected ambient conditions of the specific application. The following factors come into play here:

- The installation orientation
- The load to be moved
- The movement speed
- The movement frequency
- Ambient temperature
- External influences
- Compliance with the maintenance intervals

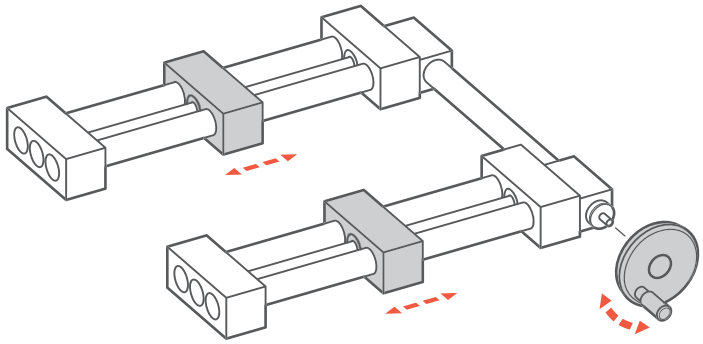
Ambient conditions

The linear units are designed for ambient temperatures from -20°C to +100°C. Large temperature fluctuations and condensing humidity should also be avoided.

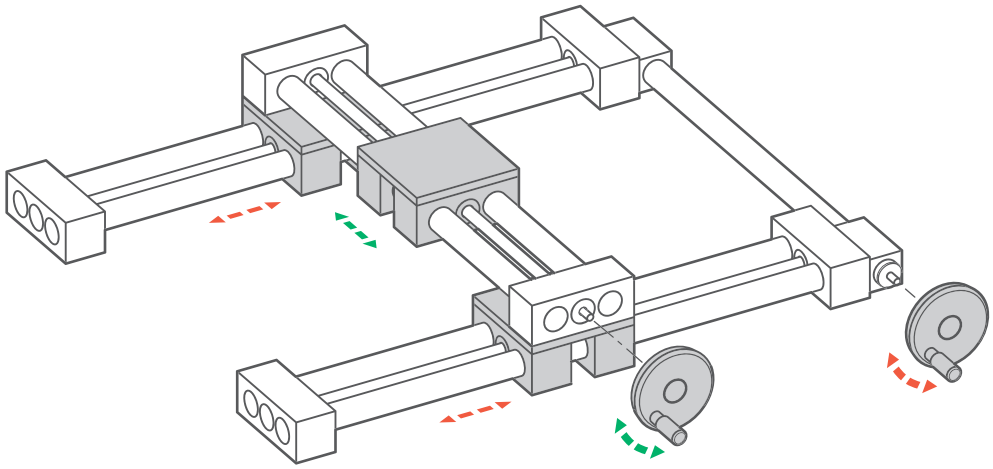
Safety device for vertical linear units

It is possible to install an additional spindle nut that is carried along as a safety nut. This holds the linear unit in position in the event of damage (such as due to overloading or wear) and prevents the guide element from falling when used in a vertical orientation.

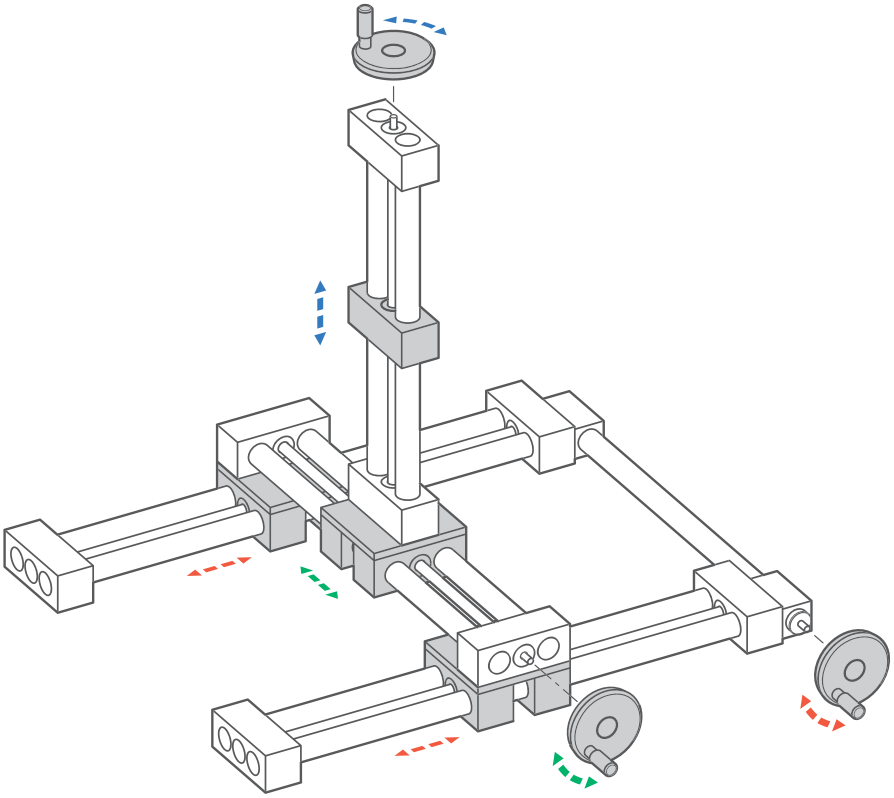
Multi-axis systems are assemblies comprised of multiple linear units. The use of angle gears and transfer units allows multiple linear units to move synchronously. To ensure smooth, even and low-wear movement of the linear units, they must be oriented exactly perpendicular or parallel to each other.



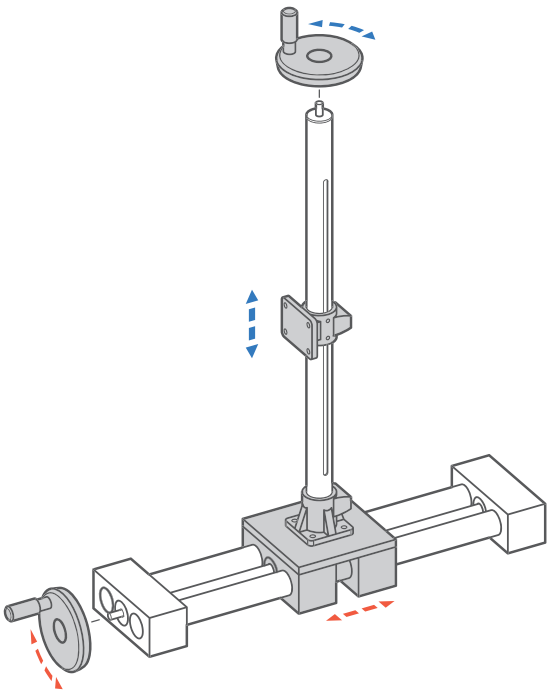
Multi-axis systems with adjustment in X direction



Multi-axis systems with adjustment in X and Y direction



Multi-axis systems with adjustment in X, Y and Z direction



Combined single and double tube linear units with moving in X and Z direction