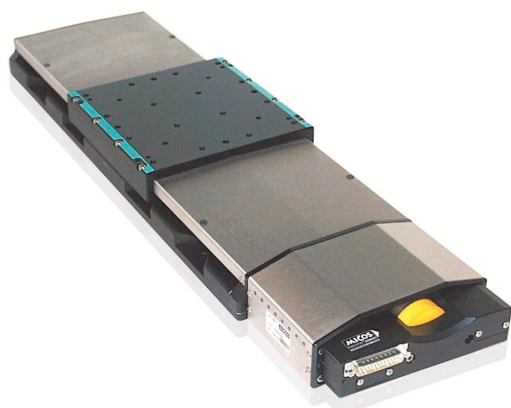


LS-180

Linear stage for heavy loads

Robust design for industrial use



- Travel ranges from 155 to 508 mm (6 to 20")
- Max. velocity to 150 mm/s
- Load capacity to 1000 N
- Optional linear encoder for direct position measurement

Reference-class linear stage

Recirculating ball bearings for high travel accuracy and load capacity. Precision ball screw with 5 mm pitch. Stress-relieved aluminum base for highest stability. Noncontact inductive limit switches.

Drive types

- Closed-loop DC servo motor with rotary encoder on the motor shaft
- 2-phase stepper motor for high torque even at low velocities and high resolution

Versions with direct position measurement

Integrated linear encoder, mounted between the guides. Direct position measurement of the moving platform eliminates the influence of mechanical play and hysteresis in the drivetrain on the positioning accuracy.

Minimum incremental motion

In conjunction with the SMC Hydra controller, versions with stepper motor and integrated linear encoder achieve repeatable minimum incremental motion in the range of the sensor resolution. The same configuration attains constant low velocities of a few sensor increments per second.

Fields of application

Precision positioning in industry and research, high duty cycles.

Specifications

	624091xx	624092xx	62409xx1	Unit	Tolerance
	Linear stage with DC motor and rotary encoder	Linear stage with stepper motor	Also with linear encoder (direct position measurement)		
Motion axis	X	X			
Motion and positioning					
Travel range*	155 (6") / 205 (8") / 305 (12") / 508 (20")	155 (6") / 205 (8") / 305 (12") / 508 (20")		mm (inch)	
Integrated sensor	Rotary encoder	–	Linear encoder		
Design resolution**	0.25	25 (full step)	0.05	µm	
Minimum incremental motion	0.5	0.5	0.05	µm	typ.
Unidirectional repeatability	0.5	0.5	0.05	µm	typ.
Backlash	5	5	–	µm	typ.
Bidirectional repeatability	-	-	±0.1	µm	typ.
Crosstalk, angular error xry (pitch)	±40 / ±50 / ±60 / ±80	±40 / ±50 / ±60 / ±80		µrad	typ.
Crosstalk, angular error xrz (yaw)	±50	±50		µrad	typ.
Max. velocity	150	75		mm/s	
Min. velocity	–	–		mm/s	
Mechanical properties					
Spindle pitch ball screw	5	5		mm	
Load capacity	1000	1000		N	max.
Push/pull force	200	250		N	max.
Permissible lateral force	500	500		N	max.
Holding force	30	50		N	max.
Stiffness k_{ax} in X	20	20		µrad/N m	max.
Stiffness k_{ay} in Y	30	30		µrad/N m	max.
Permissible torque M_x in θ_x	250	250		Nm	max.
Permissible torque M_y in θ_y	132	132		Nm	max.
Permissible torque M_z in θ_z	125	125		Nm	max.

Drive properties					
Motor Type	DC motor	2-phase stepper motor***			
Operating voltage	24			V	
Limit switches	Inductive	Inductive			
Miscellaneous					
Operating temperature range	-20 to 65	-20 to 65	0 to 55	°C	
Material	Aluminum, steel	Aluminum, steel	Aluminum, steel		
Mass	7.8 / 8.4 / 9.4 / 10.6	8.3 / 8.9 / 10.9 / 11.0	also 0.9	kg	±5 %
Connector	Sub-D 25	Sub-D 25	Sub-D 9		
Recommended controllers	SMC Hydra motion controller (two channels) C-863 (one channel)	SMC Hydra motion controller (two channels) C-663 (one channel)	SMC Hydra motion controller (two channels)		

Ask about custom designs!

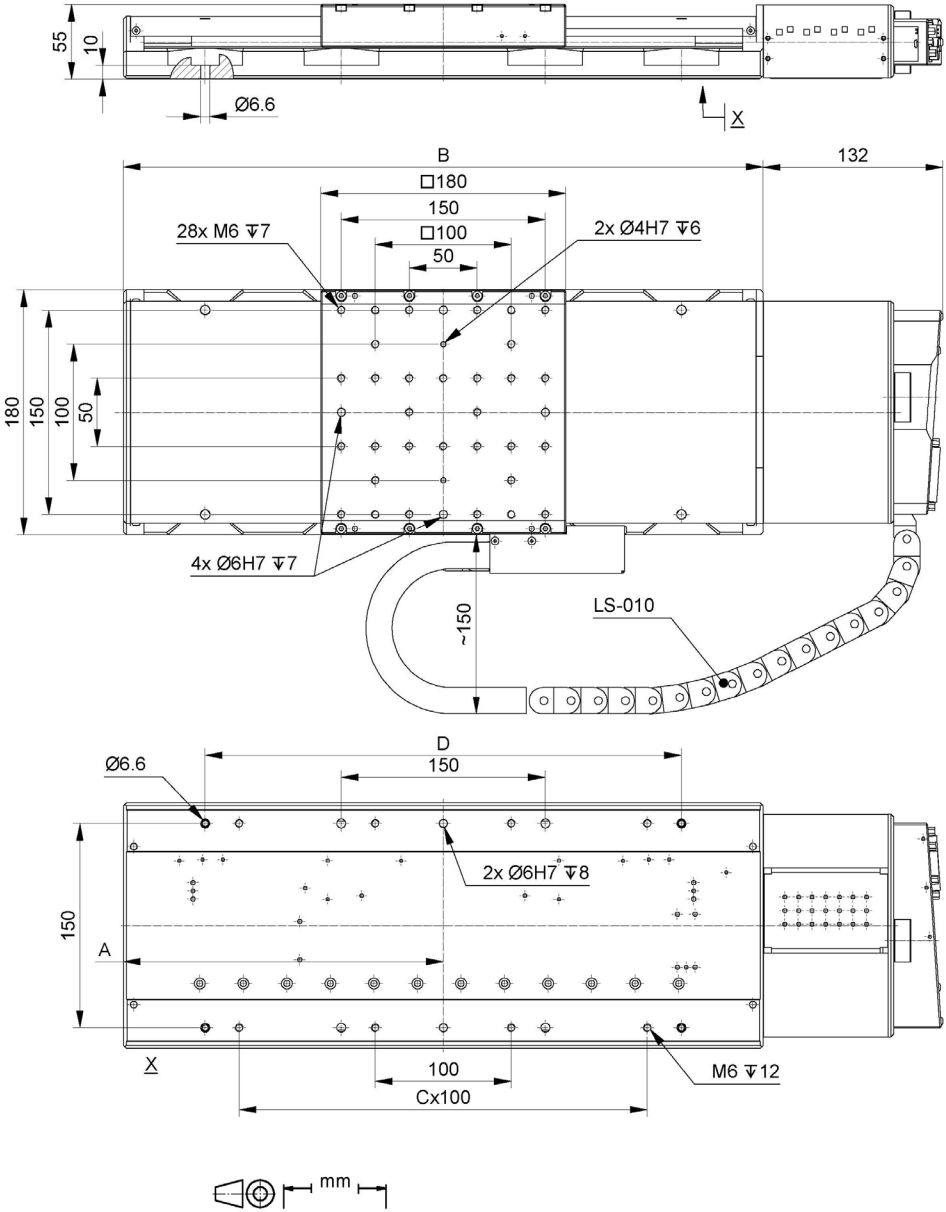
Connection cables for motor and sensor are not in the scope of delivery and must be ordered separately.

* Travel range of the variants: See ordering information

** Operation with SMC Hydra controller with maximum interpolation

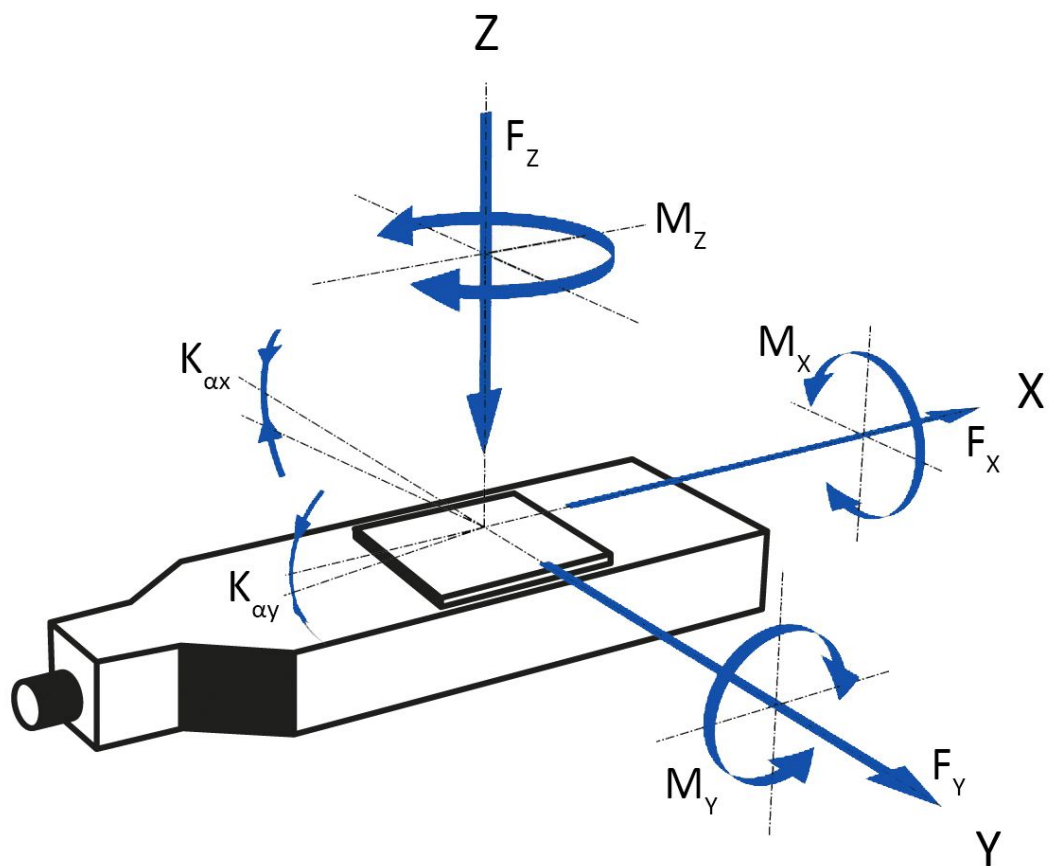
*** 200 full steps/rev., max. 2 A phase current

Drawings and images



Stellweg / mm	A	B	C	D
155	235	470	3	350
205	260	520	3	350
305	310	620	5	450
508	410	820	5	650

LS-180, dimensions in mm, LS-010: Cable for linear encoder



Direction of the axes and moments for linear stages

Ordering information

62409110

LS-180 Linear Stage, 180 mm Width, DC Motor, 155 mm (6") Travel Range, Inductive Limit Switches

62409120

LS-180 Linear Stage, 180 mm Width, DC Motor, 205 mm (8") Travel Range, Inductive Limit Switches

62409130

LS-180 Linear Stage, 180 mm Width, DC Motor, 305 mm (12") Travel Range, Inductive Limit Switches

62409150

LS-180 Linear Stage, 180 mm Width, DC Motor, 508 mm (20") Travel Range, Inductive Limit Switches

62409210

LS-180 Linear Stage, 180 mm Width, Stepper Motor, 155 mm (6") Travel Range, Inductive Limit Switches

62409220

LS-180 Linear Stage, 180 mm Width, Stepper Motor 205 mm (8") Travel Range, Inductive Limit Switches

62409230

LS-180 Linear Stage, 180 mm Width, Stepper Motor 305 mm (12") Travel Range, Inductive Limit Switches

62409250

LS-180 Linear Stage, 180 mm Width, Stepper Motor 508 mm (20") Travel Range, Inductive Limit Switches

Stages with direct position measurement

62409111

LS-180 Linear Stage, 180 mm Width, DC Motor, 155 mm (6") Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Inductive Limit Switches

62409121

LS-180 Linear Stage, 180 mm Width, DC Motor, 205 mm (8") Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Inductive Limit Switches

62409131

LS-180 Linear Stage, 180 mm Width, DC Motor, 305 mm (12") Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Inductive Limit Switches

62409151

LS-180 Linear Stage, 180 mm Width, DC Motor, 508 mm (20") Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Inductive Limit Switches

62409211-0001

LS-180 Linear Stage, 180 mm Width, Stepper Motor, 155 mm (6") Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Inductive Limit Switches

62409221-0001

LS-180 Linear Stage, 180 mm Width, Stepper Motor, 205 mm (8") Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Inductive Limit Switches

62409231-0001

LS-180 Linear Stage, 180 mm Width, Stepper Motor, 305 mm (12") Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Inductive Limit Switches

62409251-0001

LS-180 Linear Stage, 180 mm Width, Stepper Motor, 508 mm (20") Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Inductive Limit Switches

For accessories, please specify when ordering**720090000**

Connection Cable for Stages with Stepper Motor, 3 m

720190000

Connection Cable for Stages with DC Motor, 3 m

721090000

Cable Set for Stages with Measuring System, 3 m

Ask about custom designs!