

Q- Motion Precision Linear Stage

HIGH FORCES AND SMALL SIZE THROUGH PIEZOMOTORS



Q-545

- + Only 45 mm wide
- + Feed force 8 N
- + Direct position measurement with incremental encoder with 1 nm resolution (optional)
- + XY mounting without adapter
- + Travel range 13 or 26 mm
- + Velocity 10 mm/ s
- + Versions vacuum- compatible to 10^{-9} hPa

Precision- class micropositioning stage

Q- Motion stages have a compact design and a high position resolution in the nanometer range. The piezomotor drive principle and the electrical operation are cost- efficient and can be customized

PIShift piezo inertia drives

Self- locking when at rest, therefore no heat generation and no servo jitter. Velocity to 10 mm/ s. 8 N holding force, 8 N feed force

Direct- measuring principle

Versions with noncontact optical linear encoder available. Resolution 1 nm. Versions with encoder feature a reference point switch

Fields of application

Industry and research. For optical metrology, laser technology, micromanipulation, biotechnology, photonics packaging. Vacuum versions down to 10^{-9} hPa available. Nonmagnetic versions are available on request

Specifications

Preliminary Data	Q-545.100 / Q-545.10U	Q-545.140 / Q-545.14U	Q-545.200 / Q-545.20U	Q-545.240 / Q-545.24U	Unit	Tolerance
Motion and positioning	13 mm travel range, open-loop, UHV version Q-545.10U	13 mm travel range, resolution 1 nm, UHV version Q-545.14U	13 mm travel range, open-loop, UHV version Q-545.20U	26 mm travel range, resolution 1 nm, UHV version Q-545.14U		
Active axis	X	X	X	X		
Travel range	13	13	26	26	mm	
Integrated sensor	-	Linear encoder	-	Linear encoder		
Resolution	-	1	-	1	nm	
Min. incremental motion	500 (open- loop)	6	500 (open- loop)	6	nm	typ.
Unidirectional repeatability	-	0.018	-	0.018	µm	
Angular crosstalk	+/-50	+/-50	+/-80	+/-80	µrad	
Linear crosstalk	+/-1	+/-1	+/-2	+/-2	µm	
Maximum velocity	10	10	10	10	mm/s	min.
Reference point switch	-	Optical	-	Optical		
Mechanical properties						
Load capacity	10	10	10	10	N	
Holding force, de-energized	8	8	8	8	N	min.
Push / pull force	8	8	8	8	N	typ.
Drive properties						
Motor type	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive		
Miscellaneous						
Operating temperature range	0 to 40	0 to 40	0 to 40	0 to 40	°C	
Material	Aluminum	Aluminum	Aluminum	Aluminum		
Cable length	2	2	2	2	m	
Connector	Sub- D	Sub- D	Sub- D	Sub- D		
Recommended controller	E-870	E-871	E-870	E-871		

Ask about custom designs!
The Q-545 stage series replaces the LPS-45 series.

Order Information

Q-545.100

Q- Motion Linear Stage, 13 mm Travel Range, without Position Sensor, for Open- Loop Operation, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive

Q-545.10U

Q- Motion Linear Stage, 13 mm Travel Range, without Position Sensor, for Open- Loop Operation, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive, Vacuum- Compatible to 10⁻⁹ hPa

Q-545.140

Q- Motion Linear Stage, 13 mm Travel Range, Linear Encoder, 1 nm Resolution, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive

Q-545.14U

Q- Motion Linear Stage, 13 mm Travel Range, Linear Encoder, 1 nm Resolution, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive, Vacuum- Compatible to 10⁻⁹ hPa

Q-545.200

Q- Motion Linear Stage, 26 mm Travel Range, without Position Sensor, for Open- Loop Operation, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive

Q-545.20U

Q- Motion Linear Stage, 26 mm Travel Range, without Position Sensor, for Open- Loop Operation, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive, Vacuum- Compatible to 10⁻⁹ hPa

Q-545.240

Q- Motion Miniature Linear Stage, 26 mm Travel Range, Linear Encoder, 1 nm Resolution, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive

Q-545.24U

Q- Motion Miniature Linear Stage, 26 mm Travel Range, Linear Encoder, 1 nm Resolution, 8 N Push/ Pull Force, Dimensions 45 × 63 × 15 mm (W × L × H), Piezoelectric Inertia Drive, Vacuum- Compatible to 10⁻⁹ hPa

Ask about custom designs!

Controllers / Drivers / Amplifiers

[E-870 PIShift Drive Electronics](#)

[E-871 Networkable Servo Controller for Stick- Slip Piezo Motors](#)

Related Products

[Q-522 Q- Motion Miniature Linear Stage](#)

[LPS-65 Linear Piezo Stage](#)

[M-663 Compact Linear Positioning Stage](#)

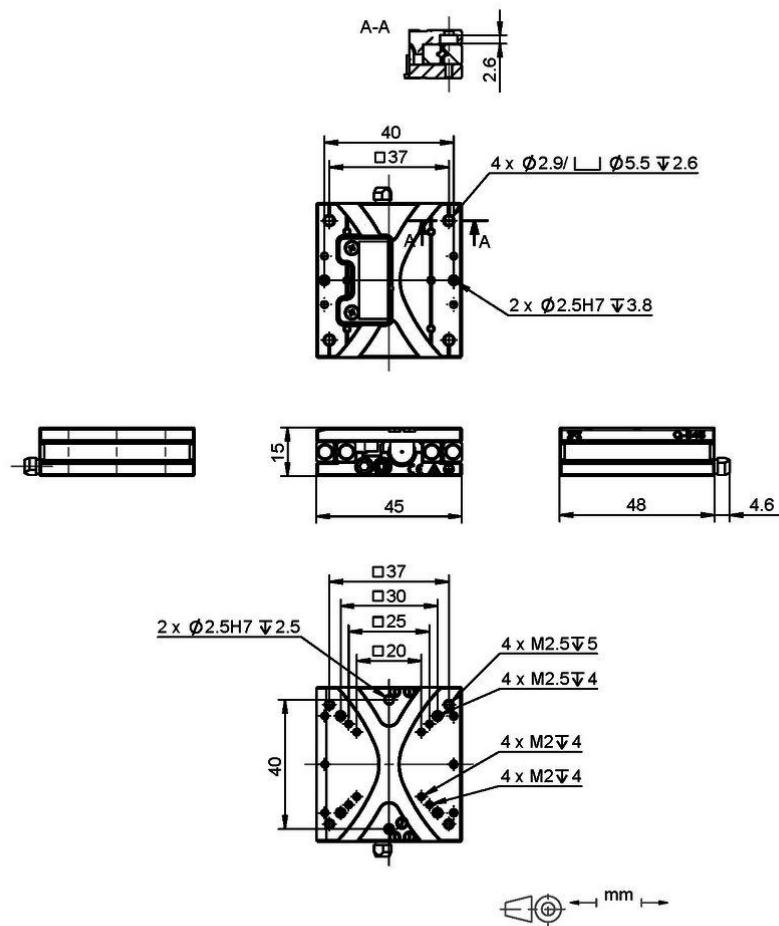
[M-687 PLine® XY Stage System with Controller and Joystick](#)

Technology

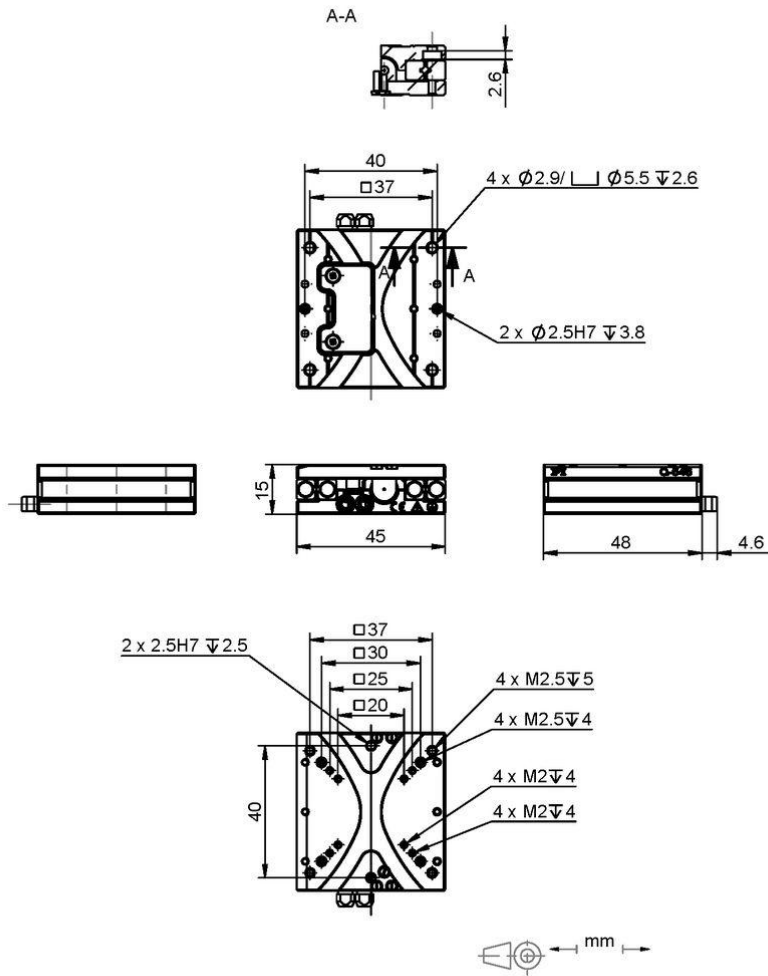
[PIShift Piezoelectric Inertia Drives | Inertia Drives](#) are space- saving and low- cost piezo- based inertia drives with relatively high holding forces of up to 10 N and a travel range that is only limited by the length of the moving rod. [Learn more ...](#)

Drawings / Images

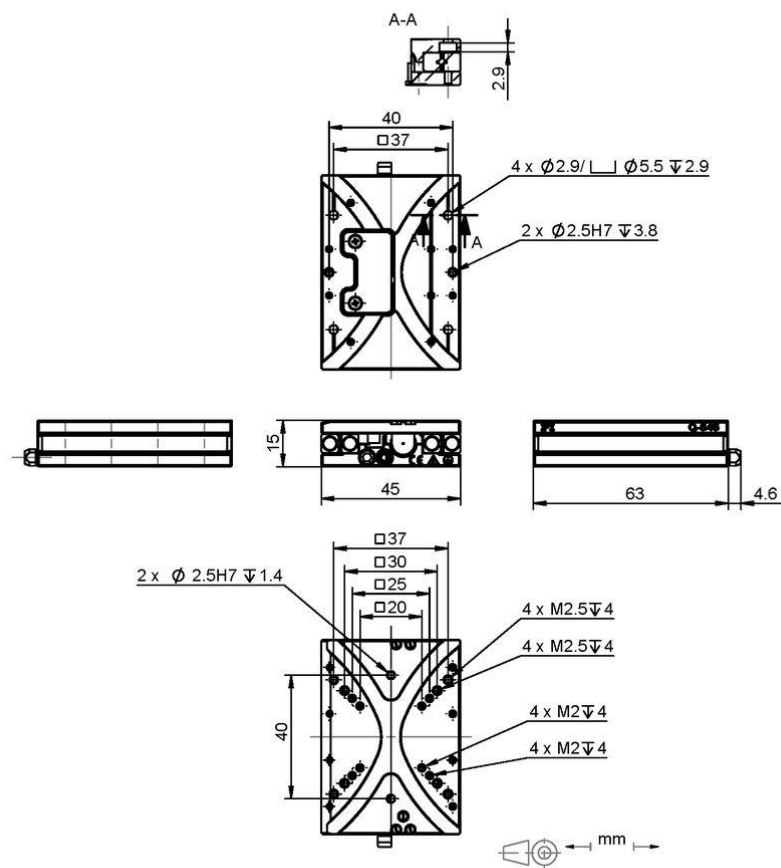
Q-545.100 / .10U,
dimensions in mm



Q-545.140 / .14U,
dimensions in mm



Q-545.200 / .20U,
dimensions in mm



Q-545.240 / . 24U,
dimensions in mm

