

Precision Translation Stage

COST-EFFECTIVE, LARGE CHOICE OF DRIVES & TRAVEL RANGES



M-403

- + Cost-effective design for precise positioning
- + Travel ranges from 25 mm to 200 mm
- + Resolution to 0.018 μm
- + Min. incremental motion to 0.2 μm
- + Preloaded precision leadscrew
- + Stress-relieved aluminum base for highest stability
- + Vacuum-compatible versions available
- + M-413 and M-414 versions for higher load requirements

Specifications

	M-403.1PD / M-403.2PD / M-403.4PD / M-403.6PD / M-403.8PD	M-403.1DG / M-403.2DG / M-403.4DG / M-403.6DG / M-403.8DG	M-403.12S / M-403.22S / M-403.42S / M-403.62S / M-403.82S	Unit	Tolerance
Active axes	with ActiveDrive X	with DC gear motor X	with stepper motor X		
Motion and positioning					
Travel range	25 / 50 / 100 / 150 / 200	25 / 50 / 100 / 150 / 200	25 / 50 / 100 / 150 / 200	mm	
Integrated sensor	Rotary encoder	Rotary encoder	–		
Sensor resolution	4000	2000	–	Cts./ rev.	
Design resolution	0.25	0.018	0.16	μm	typ.
Min. incremental motion	0.25	0.2	0.2	μm	typ.
Backlash	6	10	6	μm	typ.
Unidirectional repeatability	1	1	1	μm	typ.
Pitch	200	200	200	μrad	typ. over 100 mm
Yaw	200	200	200	μrad	typ. over 100 mm
Velocity	10*	2.5	3	mm/ s	max.
Reference point switch repeatability	1	1	1	μm	typ.
Mechanical properties					
Thread pitch	1	1	1	mm/ rev.	
Gear ratio	–	28.44444:1 / 2304:81	–		
Motor resolution	–	–	6400*	steps/ rev.	
Stiffness in motion direction	3.5	3.5	3.5	N/ μm	$\pm 20\%$
Load capacity**	200	200	200	N	max.
Push / pull force	50	50	50	N	max.
Lateral force	100	100	100	N	max.
Drive properties					

Drive type	DC motor, ActiveDrive	DC gear motor	2- phase stepper motor***		
Operating voltage	24 (PWM)	0-12 (differential; polarity determines direction)	24	V	
Motor power	26	2.5	4.8	W	nominal
Miscellaneous					
Operating temperature range	-20 to 65	-20 to 65	-20 to 65	°C	
Material	Al (black anodized)	Al (black anodized)	Al (black anodized)		
Mass	1.7 / 1.8 / 2.1 / 2.2 / 2.5	1.7 / 1.8 / 2.1 / 2.2 / 2.5	1.7 / 1.8 / 2.1 / 2.2 / 2.5	kg	±5 %
Cable length	3	3	3	m	±10 mm
Connector	Sub- D 15 (m)	Sub- D 15 (m)	Sub- D 15 (m)		
Recommended controller / driver	C-843 PCI board, for up to 4 axes C-863 (single-axis)	C-843 PCI board, for up to 4 axes C-863 (single-axis)	C-663 (single-axis)		

* Max. recommended velocity

** Load: Max. normal load capacity: Centered, vertical load (horizontal installation of the stage).

*** Max. 0.85 A/ phase; 400 full steps/ rev., motor resolution with C-663 stepper motor controller.

Order Information

M-403.1PD

Linear Translation Stage, Leadscrew, 80 mm wide, 25 mm, ActiveDrive

M-403.2PD

Linear Translation Stage, Leadscrew, 80 mm wide, 50 mm, ActiveDrive

M-403.4PD

Linear Translation Stage, Leadscrew, 80 mm wide, 100 mm, ActiveDrive

M-403.6PD

Linear Translation Stage, Leadscrew, 80 mm wide, 150 mm, ActiveDrive

M-403.8PD

Linear Translation Stage, Leadscrew, 80 mm wide, 200 mm, ActiveDrive

M-403.1DG

Linear Translation Stage, Leadscrew, 80 mm wide, 25 mm, DC Gear Motor

M-403.2DG

Linear Translation Stage, Leadscrew, 80 mm wide, 50 mm, DC Gear Motor

M-403.4DG

Linear Translation Stage, Leadscrew, 80 mm wide, 100 mm, DC Gear Motor

M-403.6DG

Linear Translation Stage, Leadscrew, 80 mm wide, 150 mm, DC Gear Motor

M-403.8DG

Linear Translation Stage, Leadscrew, 80 mm wide, 200 mm, DC Gear Motor

M-403.12S

Linear Translation Stage, Leadscrew, 80 mm wide, 25 mm, Stepper Motor

M-403.22S

Linear Translation Stage, Leadscrew, 80 mm wide, 50 mm, Stepper Motor

M-403.42S

Linear Translation Stage, Leadscrew, 80 mm Wide, 100 mm, Stepper Motor

M-403.62S

Linear Translation Stage, Leadscrew, 80 mm Wide, 150 mm, Stepper Motor

M-403.82S

Linear Translation Stage, Leadscrew, 80 mm Wide, 200 mm, Stepper Motor

M-403.1VG

Linear Translation Stage, Leadscrew, 80 mm wide, 25 mm, DC Gear Motor, Vacuum Compatible to 10⁻⁶ hPa

M-403.2VG

Linear Translation Stage, Leadscrew, 80 mm wide, 50 mm, DC Gear Motor, Vacuum Compatible to 10⁻⁶ hPa

M-403.4VG

Linear Translation Stage, Leadscrew, 80 mm wide, 100 mm, DC Gear Motor, Vacuum Compatible to 10⁻⁶ hPa

M-403.6VG

Linear Translation Stage, Leadscrew, 80 mm wide, 150 mm, DC Gear Motor, Vacuum Compatible to 10⁻⁶ hPa

M-403.8VG

Linear Translation Stage, Leadscrew, 80 mm wide, 200 mm, DC Gear Motor, Vacuum Compatible to 10⁻⁶ hPa

M-403.1VP

Linear Translation Stage, Leadscrew, 80 mm wide, 25 mm, ActiveDrive, Vacuum Compatible to 10⁻⁶ hPa

M-403.2VP

Linear Translation Stage, Leadscrew, 80 mm wide, 50 mm, ActiveDrive, Vacuum Compatible to 10⁻⁶ hPa

M-403.4VP

Linear Translation Stage, Leadscrew, 80 mm wide, 100 mm, ActiveDrive, Vacuum Compatible to 10⁻⁶ hPa

M-403.6VP

Linear Translation Stage, Leadscrew, 80 mm wide, 150 mm, ActiveDrive, Vacuum Compatible to 10⁻⁶ hPa

M-403.8VP

Linear Translation Stage, Leadscrew, 80 mm wide, 200 mm, ActiveDrive, Vacuum Compatible to 10⁻⁶ hPa

Controllers / Drivers / Amplifiers

[C-663 Mercury Step Controller](#)
[C-843 DC- Servo- Motor Controller](#)
[C-884 Four Axis Motion Controller](#)
[C-863 Mercury Servo Controller](#)

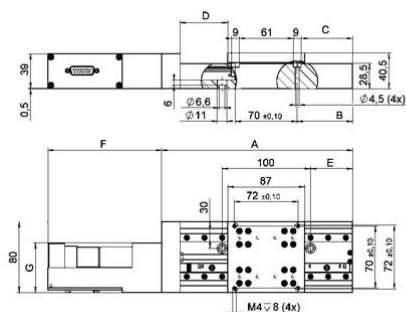
Accessories

[M-060.HP Adapter Plate](#)
[M-061.HP Adapter Plate](#)
[M-062.HP Adapter Plate](#)
[M-110.01 Adapter Plate](#)
[M-403.AP1 Adapter Plate](#)
[M-403.AP2 Adapter Bracket](#)
[M-403.AP3 Adapter Plate](#)
[M-105.AP Adapter Plate](#)
[M-125.90 Z- Axis Mounting Bracket](#)

Related Products

[M-404 Precision Translation Stage](#)
[M-413 High- Load Precision Stage](#)
[M-683 Dynamic Micropositioning Stage](#)
[M-406 Precision Linear Stage](#)
[M-511 • M-521 • M-531 High- Precision Linear Translation Stage](#)

Drawings / Images



	M-403.1xx	M-403.2xx	M-403.4xx	M-403.6xx	M-403.8xx
A	141	166	216	266	316
B	25	37.5	62.5	87.5	112.5
C	20.5	33	58	83	108
D	16.5 (±12.5)	29 (±25)	54 (±50)	79 (±75)	104 (±100)
E	10	22.5	47.5	72.5	97.5
H	x	x	x	50	75

	M-403.xPD	M-403.xDG	M-403.x2S
F	114	128.5	105.5
G	59.5	56	59.5

	M-403.xPD	M-403.xDG	M-403.x2S
F	114	119.5	105.5
G	59.5	56	59.5