

M-036

Precision Tangent-Arm Rotation Stages with Optional DC-Motor and Piezo Drives

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M-036.P0 rotation stage with piezo drive.

- Sub-Microradian Resolution
- 360° Coarse Range, up to 21° Fine Range
- Precision Micrometer or DC Motor Drives
- Piezo Option for High-Resolution Scanning and Tracking
- ø 30 mm Clear Aperture

M-036 series precision rotation stages with tangent-arm drive feature high resolution, excellent repeatability and minimum wobble. The stages are equipped with double-row ball bearings for zero backlash and high load capacity. Both the rotation platform and the scale ring (graduated in 2-degree increments) can be independently coarse positioned over 360° degrees and then locked with screws.

Drive Options

A total of six different drive types are offered. They include various combinations of piezoelectric fine-positioners (closed-loop or open-loop), manual and motorized micrometer drives.

Manual Drive

The basic version, the M-036.00, is equipped with a micrometer drive and a zero-

backlash magnetic coupling. The micrometer motion, when converted into rotation, provides a positioning range of 21° degrees (see p. 7-60 for information on how to convert linear input into rotation). The resolution is approximately 15 µrad.

DC Motor Drives

The motorized version, the M-036.D01 features a high-resolution DC motor drive unit (M-227.25, p. 7-76) and has a resolution of 2 µrad. (see p. 7-60 for information on how to convert linear input into rotation). A set of limit switches on the rotation stage protects against overtravel damage.

High-Resolution Piezo Option

For applications requiring extremely high angular resolution, models M-036.PS and M-036.P0 (with manual micrometer drive) and M-036.DS1

and M-036.DP1 (motorized) are available. They have an additional piezoelectric fine adjustment, which can also be used for dynamic operation. The piezo drive has a linear travel range of 45 µm with sub-nanometer resolution, which converts to a rotation range of approx. 0.7 mrad and sub-µrad resolution.

The piezo drives in the M-036.PS and M-036.DS1 versions are also equipped with a position sensor, making closed-loop operation possible, with higher stability, reproducibility and accuracy. For more details on the piezo drives, see the "Piezo Actuators" section.

Upgrades

M-036 stages without piezo or DC-motor drives can be upgraded at a later date.

Notes

See "Accessories", page 7-92 ff. for adapters, brackets, etc.

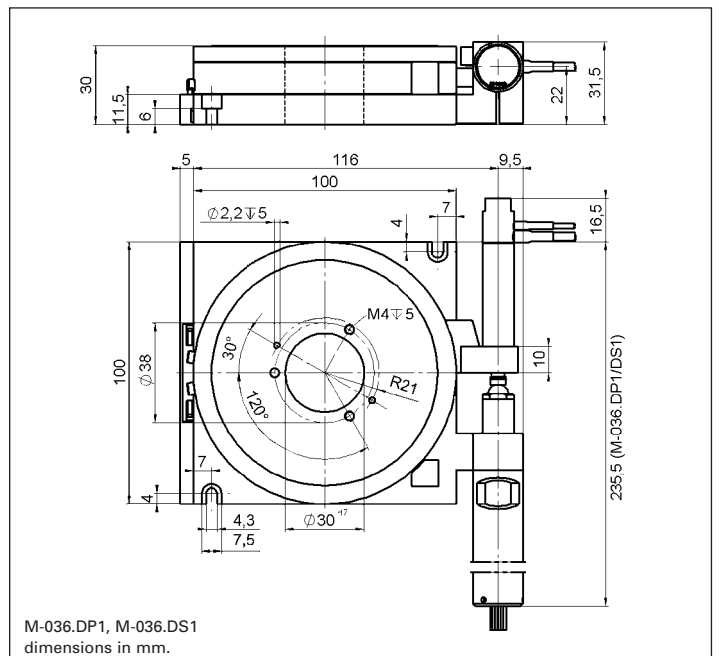
Ordering Information

- M-036.00**
Precision Rotation Stage, ø 100 mm, Micrometer Drive
- M-036.P0**
Precision Rotation Stage, ø 100 mm, Micrometer + Piezo Drive
- M-036.PS**
Precision Rotation Stage, ø 100 mm, Micrometer + Closed-Loop Piezo Drive
- M-036.D01**
Precision Rotation Stage, ø 100 mm, DC Motor Drive
- M-036.DP1**
Precision Rotation Stage, ø 100 mm, DC Motor + Piezo Drive
- M-036.DS1**
Precision Rotation Stage, ø 100 mm, DC Motor + Closed-Loop Piezo Drive

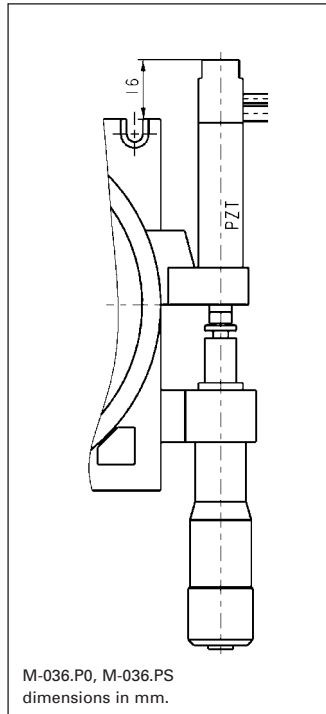
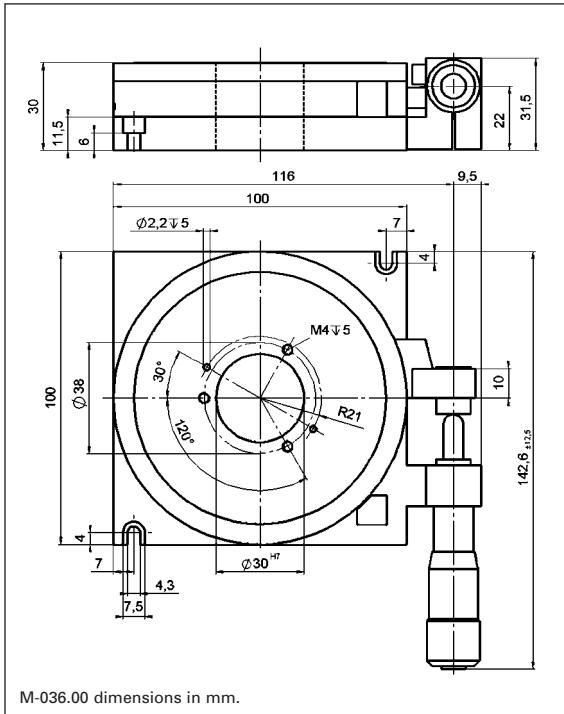
Upgrade Kits

- M-036.U0**
Upgrade Kit with Open-loop Piezo Drive
- M-036.US**
Upgrade Kit with Closed-Loop Piezo Drive
- M-036.UD**
Upgrade Kit with DC Motor Drive (for factory installation)

Ask about custom designs!



M-036.DP1, M-036.DS1 dimensions in mm.



Piezo Actuators

Nanopositioning & Scanning Systems

Active Optics / Steering Mirrors

Tutorial: Piezo-electrics in Positioning

Capacitive Position Sensors

Piezo Drivers & Nanopositioning Controllers

Hexapods / Micropositioning

Photonics Alignment Solutions

Motion Controllers

Ceramic Linear Motors & Stages

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Technical Data

Models	M-036.00	M-036.P0	M-036.PS	M-036.D01	M-036.DP1	M-036.DS1	Units	Notes, see p. 7-106
Coarse rotation range	360	360	360	360	360	360	°	
Rotation range (micrometer drive)	21	21	21	10 **	10 **	10 **	°	
Rotation range (piezo drive)	-	700	700	-	700	700	μrad	
Minimum incremental motion (piezo drive)	-	<1	<1	-	<1	<1	μrad	
Repeatability (piezo drive)	-	-	2	-	-	2	μrad	
Unidirectional repeatability (motor drive)	-	-	-	10	10	10	μrad	
Backlash (motor drive)	-	-	-	40	40	40	μrad	
Design resolution (motor drive)	-	-	-	0.08	0.08	0.08	μrad	A3
Minimum incremental motion (motor drive)	-	-	-	2	2	2	μrad	A4
Minimum incremental motion (micrometer drive)	23	23	23	-	-	-	μrad	
Rotation / linear input	15	15	15	15	15	15	μrad/μm	A5
Tangent-arm length	66	66	66	66	66	66	mm	A5
Wobble	<75	<75	<75	<75	<75	<75	μrad	
Max. velocity	-	-	-	0.8	0.8	0.8	°/s	
Max. axial force	±400	±400	±400	±400	±400	±400	N	
Max. torque (θ _x , θ _y)	±6	±6	±6	±6	±6	±6	Nm	
Max. torque CW*	4.5	4.5	4.5	4.5	4.5	4.5	Nm	
Max. torque CCW*	0.075	0.075	0.075	0.075	0.075	0.075	Nm	
Drive (manual or motor)	M-624	M-624	M-624	M-227.25	M-227.25	M-227.25		
Piezo drive	-	P-840.30	P-841.30	-	P-840.30	P-841.30		D1
Weight	0.85	0.95	0.97	1.05	1.15	1.17	kg	
Body material	Al, St	Al, St	Al, St	Al, St	Al, St	Al, St		L
Recommended controllers	-	-	-	C-843, C-848, C-862	C-843, C-848, C-862	C-843, C-848, C-862		D2
Recommended piezo controllers (codes explained p. 6-11)	-	A, C, G	D, H	-	A, C, G	D, H		

* CW: clockwise CCW: counter-clockwise

** Limited by limit switch position.