# M-036

# DC-Motor-Driven Precision Tangent-Arm Rotation Stages

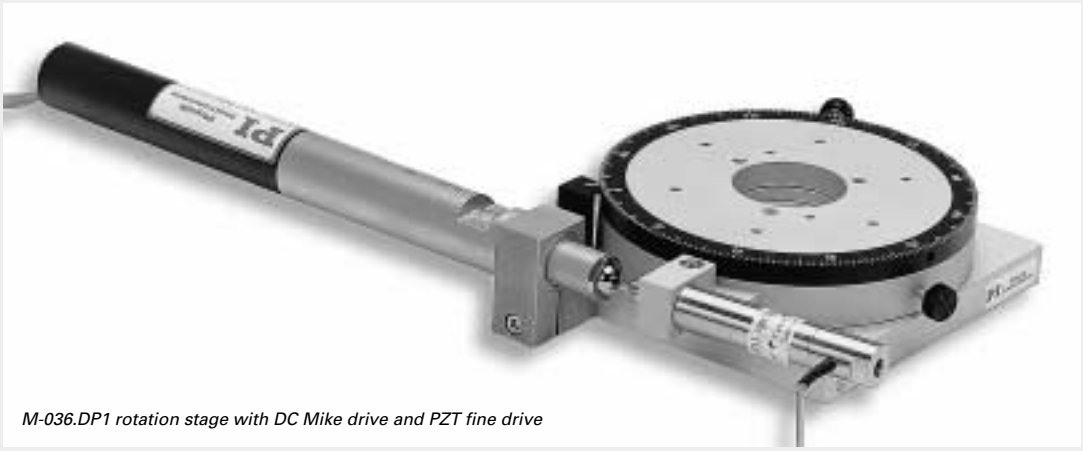
## Ordering Information

**M-036.D01**
Rotation Stage, ∅ 100 mm,
DC-Motor Drive

**M-036.DP1**
Rotation Stage, ∅ 100 mm,
DC-Motor + PZT Drive

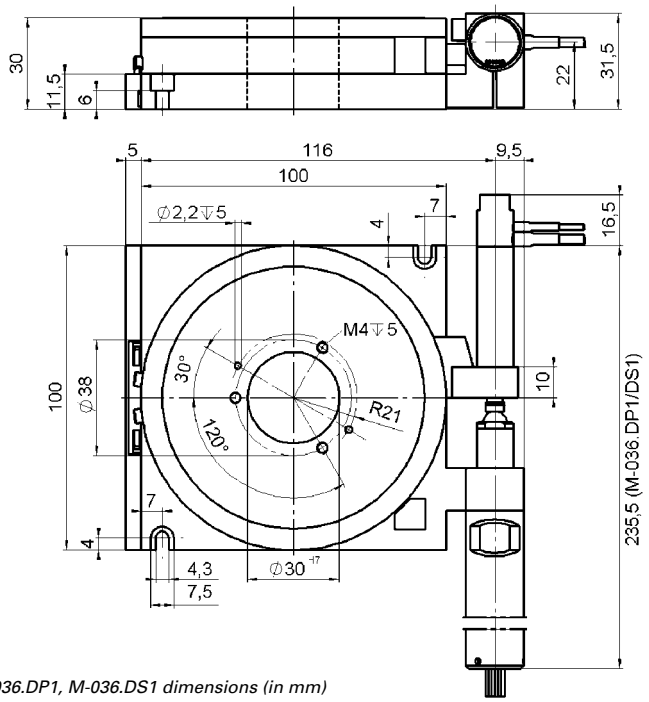
**M-036.DS1**
Rotation Stage, ∅ 100 mm,
DC-Motor + Closed-Loop PZT Drive

**Custom Designs for Volume Buyers**



*M-036.DP1 rotation stage with DC Mike drive and PZT fine drive*

- **Closed-Loop DC-Motor Drive with 1 µrad Resolution**
- **Piezo Option for High-Resolution Dynamic Scanning and Tracking**
- **360° Coarse Range, > 20° Fine Range**
- **30 mm ∅ Clear Aperture**
- **Limit Switches**




*M-036.DP1, M-036.DS1 dimensions (in mm)*

M-036 series precision rotation stages feature high resolution, excellent repeatability and minimum wobble. The stages are equipped with double-row ball bearings for minimum 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.

The basic version, M-036.D01, is equipped with a DC-servomotor drive (model M-227.25, see page 7-66 for further details and recommended motor controller) providing a positioning range of ±10.5 degrees. A set of limit switches eliminates the possibility of overtravel. See page 7-49 for information on how to convert linear input into rotation.

**High-Resolution Piezo Option**
The M-036.DS1 and M-036.DP1 versions provide an additional piezoelectric fine adjustment over a range of ±350 µrad. The piezoelectric fine adjustment also allows dynamic operation such as scanning or tracking. The .DS version is equipped with a closed-loop PZT drive (model P-841.30), while the .DP version comes with an open-loop PZT actuator (model P-840.30). Both drives provide a linear range of 45 µm and sub-nanometer linear resolution (see the "PZT Actuators" section for further details and recommended controllers).

## Notes

*See "Accessories," page 7-82* ff. for adapters, brackets, etc.

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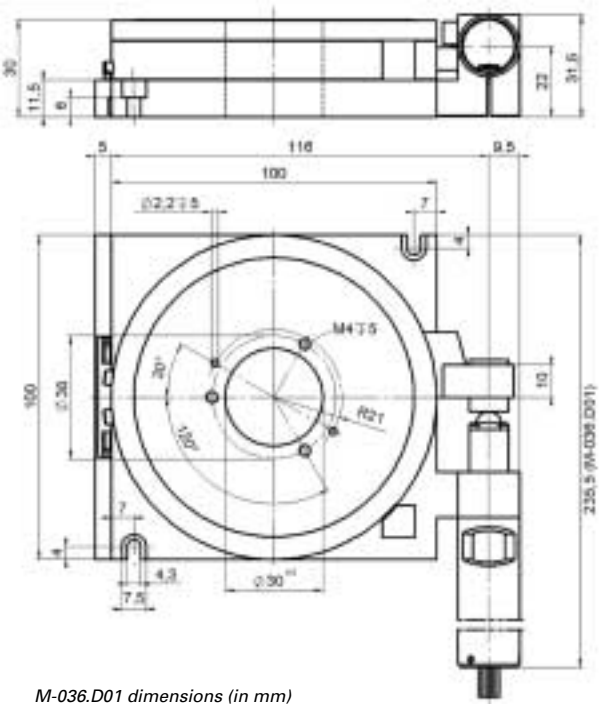


*M-036.D01 dimensions (in mm)*

## Technical Data

| Models | M-036.D01 | M-036.DP1 | M-036.DS1 | Units | Notes see p. 7-96 |
|---|---|---|---|---|---|
| Rotation range, coarse | 360 | 360 | 360 | deg | |
| Rotation range, motorized | ±10.5 | ±10.5 | ±10.5 | deg | |
| Rotation range (PZT drive) | - | ±350 | ±350 | µrad | |
| Min. incremental motion (PZT drive) | - | 1 | 1 | µrad | A4 |
| Repeatability (PZT drive) | - | - | 2 | µrad | |
| Design resolution (DC motor) | 0.05 | 0.05 | 0.05 | µrad | A3 |
| Min. incremental motion (DC motor) | 2 | 2 | 2 | µrad | A4 |
| Rotation / linear input | 15 | 15 | 15 | µrad / µm | A5 |
| Tangent arm length | 66 | 66 | 66 | mm | A5 |
| Unidirectional repeatability | 10 | 10 | 10 | µrad | |
| Backlash | 40 | 40 | 40 | µrad | |
| Wobble | < 75 | < 75 | < 75 | µrad | |
| Max. velocity | 0.8 | 0.8 | 0.8 | deg/sec | |
| Maximum axial force | ±400 | ±400 | ±400 | N | |
| Maximum torque ($\theta_x$, $\theta_y$) | ±6 | ±6 | ±6 | Nm | |
| Maximum torque CW* | 4.5 | 4.5 | 4.5 | Nm | |
| Maximum torque CCW* | 0.075 | 0.075 | 0.075 | Nm | |
| Drive | M-227.25 DC-Mike | M-227.25 DC-Mike | M-227.25 DC-Mike | | |
| PZT drive | - | P-840.30 | P-841.30 | | D1 |
| Weight | 1.05 | 1.15 | 1.17 | kg | |
| Body material | Al, St | Al, St | Al, St | Al, St | L |
| Recommended motor controller | C-842, C-844, C-860 | C-842, C-844, C-860 | C-842, C-844, C-860 | | D2 |
| Recommended PZT controller (codes explained p. 6-46) | - | A, C, G | D, H | | |

** CW: clockwise; CCW: counter-clockwise*