

M-038

**Rotation Stages with
Worm Gear Drive**

**Ordering
Information**

M-038.00
Rotation Stage, Ø 100 mm, > 360°,
Manual Drive

M-038.DG
Rotation Stage, Ø 100 mm, > 360°,
Closed-Loop DC-Motor/ Gearhead
Drive

M-038.PD
Rotation Stage, Ø 100 mm, > 360°,
ActiveDrive™ DC Motor (Includes
Power Supply)

M-038.2S
Rotation Stage, Ø 100 mm, > 360°,
2-Phase Stepper-Motor Drive

**Custom Designs
for Volume Buyers**



Custom M-038 stages at the coordinate measuring machine.



M-038.DG rotation stage

- **Ultra-High Resolution**
- **Continuous Rotation**
- **Preloaded Worm Drive for Zero Backlash**
- **ActiveDrive™ DC-Motor, Stepper-Motor and Manual Versions**
- **Compatible with Leading Industrial Motion Controllers**
- **30 mm Ø Clear Aperture**

M-038 rotation stages are equipped with ultra-precise worm gear drives allowing unlimited rotation in either direction. An integrated spring preload eliminates backlash. The worm gear ratio is 180:1, corresponding to a turntable rotation of 2 degrees per revolution of the drive shaft. Coarse position can be read from an adjustable scale ring on the outer edge of the turntable, graduated in 2-degree increments and a drive-shaft-mounted indicator with 0.1-degree graduations.

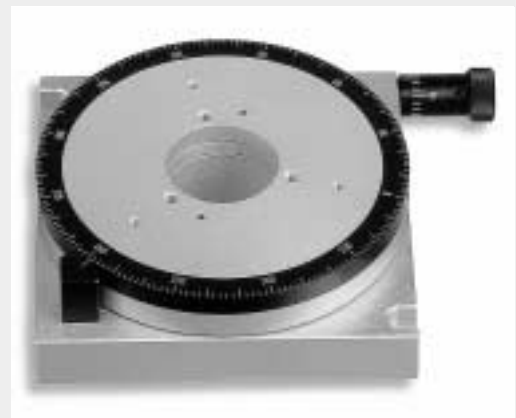
DC-motor and stepper-motor drives are available.

The M-038.DG features a 3-watt DC motor with 29.6:1 backlash-free gearhead and a 2000 counts/revolution encoder, mounted on the motor shaft. The M-038.2S is equipped with a 2-phase stepper motor providing 20,000 micro-steps/revolution. 5-phase stepper motors are available on request.

ActiveDrive™

The top model, the M-038.PD, is equipped with a 30-watt ActiveDrive™ DC motor providing 9 µrad minimum incremental motion and velocity to 45 deg/sec. The novel ActiveDrive™ concept features an integrated, high-efficiency servo-amplifier increasing dynamic performance and reliability while reducing cost of ownership, because no external driver is required.

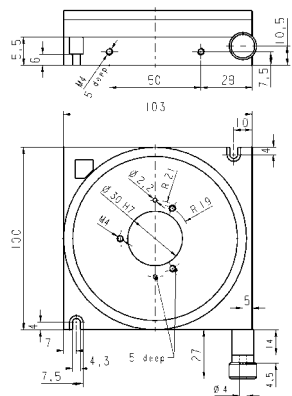
Each M-038 stage is individually broken in before delivery to achieve the exceptional mechanical precision.



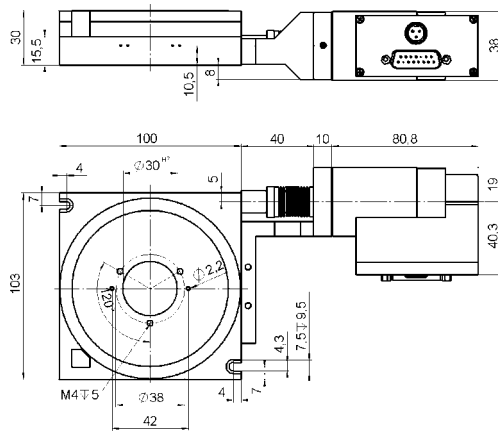
M-038.00 rotation stage

Notes

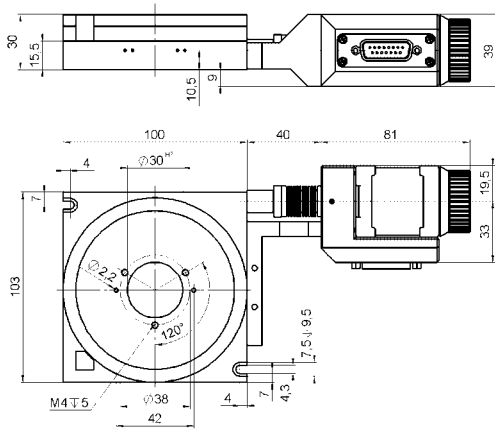
See "Accessories," page 7-82 ff. for adapters, brackets, etc.



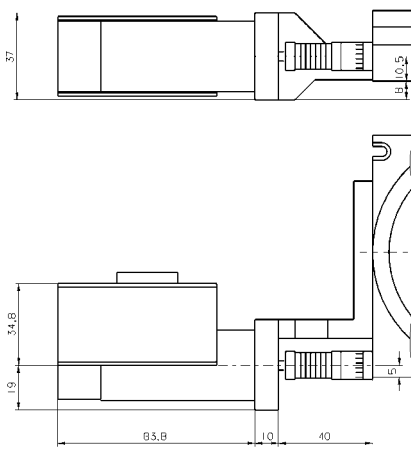
M-038.00 dimensions (in mm)



M-038.PD dimensions (in mm)



M-038.2S dimensions (in mm)



M-038.DG dimensions (in mm)

Technical Data

Models	M-038.00	M-038.DG	M-038.PD	M-038.2S	Units	Notes see p. 7-96
Rotation range	Continuous	Continuous	Continuous	Continuous		
Design resolution	-	0.59 (34 x 10 ⁶)	8.75 (0.0005)	1.75 (0.0001)	μrad (deg)	A3
Min. incremental motion	-	5	8.75	17.5	μrad	A4
Unidirectional repeatability	-	20	20	20	μrad	
Backlash	-	200	200	200	μrad	
Max. velocity	-	6	90	10	deg/sec	
Wobble	< 75	< 75	< 75	< 75	μrad	
Maximum axial force	±400	±400	±400	±400	N	
Maximum torque (θ _x , θ _y)	±6	±6	±6	±6	Nm	
Maximum torque CW**	2	2	2	2	Nm	
Maximum torque CCW**	0.8	0.8	0.8	0.8	Nm	
Encoder resolution	-	2000	4000	-	counts/rev.	
Motor resolution	-	-	-	20000*	steps/rev	
Gear ratio	-	(28/12) ² :1 ≈ 29.6:1	-	-		
Worm Gear ratio	180:1	180:1	180:1	180:1		
Nominal motor power	-	3	30 ***	- *	W	
Motor voltage range	-	0 to ±12	0 to ±24	24 *	V	
Weight	0.9	1.25	1.35	1.25	kg	
Body material	Al	Al	Al	Al		L
Recommended motor controller	-	C-842, C-844 C-860	C-842, C-844 C-860	C-600, C-630		D2

* 2-phase stepper, 24 V chopper voltage, max. 1.5 A / phase, 20,000 microsteps with C-600, C-630 controllers;

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

*** ActiveDrive™ (integrated PWM servo-amplifier)