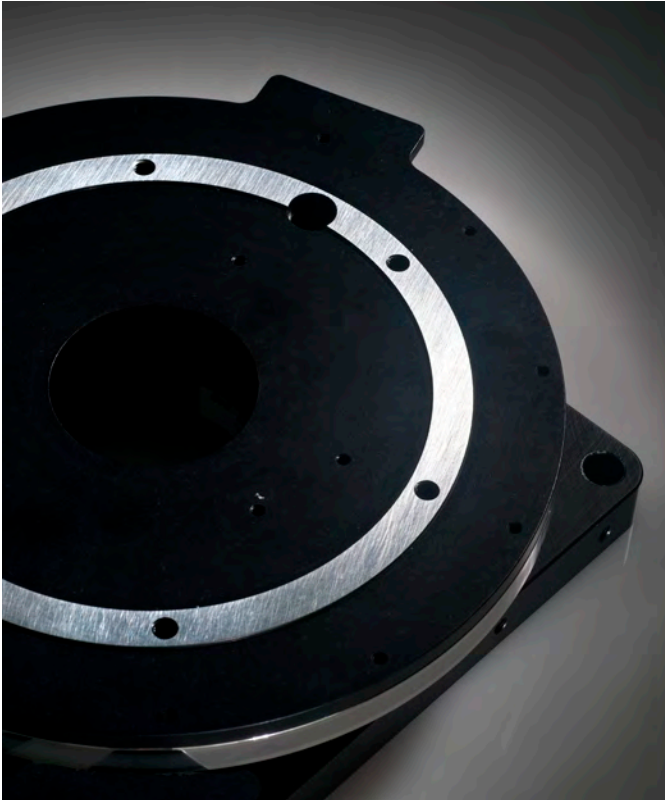




Direct Drive Theta

Low-profile stages for precision positioning and metrology



- **Low Profile, Large Through Holes.** DDT units are available in two sizes, both with ample space in the middle to bring power and utilities to the top of the stage. The DDT 100 offers a 15-mm through hole, and the DDT 200 has a 50-mm through hole. Both units are less than 50 mm tall.
- **Precise Angular Alignment.** DDT rotary stages provide superb angular alignment capabilities. The DDT 100 model has an accuracy of ± 12 arc-sec, while the DDT 200 models have an accuracy of ± 6 arc-sec. Both units have a bi-directional repeatability of ± 1 encoder count.
- **Consistent Motor Tuning.** DDT units have been engineered with extremely fine preload adjustments, which allow users to maintain consistent motor tuning.
- **Ease of integration.** DDT models install with just a four-bolt connection. Top plates can be configured to user specifications. The DDT 200 additionally offers three-point adjustable leveling mounts with mechanism for tip, tilt and elevation adjustments.
- **Rugged.** DDT features anodized aluminum construction with stainless steel hardware.

PART NUMBERING

DDT – XX – XX – XX – XX

Series

Direct Drive Theta (DDT)

Model

100, 200, 200MT

Feedback (Encoder)

- RE1 (1 μ 200-mm RESR ring encoder with RGH 20 readhead)
- RE.5 (0.5 μ 200-mm RESR ring encoder with RGH 20 readhead)
- RE.2 (0.2 μ 200-mm RESR ring encoder with RGH 20 readhead)
- RE.1 (0.1 μ 200-mm RESR ring encoder with RGH 20 readhead)

Accessories

LF (Leveling Feet—DDT 200 only)

Operating Environment

- N (Normal use, supplied with standard lubricants)
- C (Clean room use, supplied with clean room lubricants)

EXAMPLE

DDT – 200 – RE.5 – LF – N

TECHNICAL SPECIFICATIONS	Direct Drive Theta		
	DDT-100	DDT-200	DDT-200MT
Type	Direct Drive Rotary		
Bearing type	Preloaded duplex angular contact	Kingpost style angular contact	Kingpost style angular contact
Motor type	3-phase brushless		
Through hole	15 mm (0.59 in.)	50 mm (1.97 in.)	50 mm (1.97 in.)
Accuracy (\pmarc-sec) <small>Deviation from commanded angle.</small>	12	6	6
Kinematic wobble (\pmarc-sec) <small>Tilt of rotary axis irrespective of table flatness of physical runout of table top.</small>	15	12	10
Kinematic radial runout (μm TIR) <small>In-plane wander of rotational centerline irrespective of table roundness or physical runout of table top OD.</small>	8	8	8
Table top parallelism to base (μm TIR) <small>Total indicated worse-case parallelism top to bottom.</small>	25	25	25
Table top physical runout (μm TIR) <small>Total indicated runout of the top of the rotating table under stationary indicator at the table's outer edge.</small>	20	20	5
Repeatability	Control Dependent, ± 1 count possible		
Resolution choices (includes index pulse)	1 μ m, 0.5 μ m, 0.2 μ m, 0.1 μ m (75-mm ring)	1 μ m, 0.5 μ m, 0.2 μ m, 0.1 μ m (200-mm ring)	1 μ m, 0.5 μ m, 0.2 μ m, 0.1 μ m (200-mm ring)
Table resolution (KCPR) <small>Measured in thousands of pulses per revolution of the table (KCPR).</small>	236.8, 473.6, 1184, 2368	472, 944, 236, 4720	472, 944, 236, 4720
Speed limit (RPM) <small>Note that maximum speed for ring encoder units decreases as resolution increases.</small>	178-1273	66-477	66-477
Continuous torque, N-m(motor) <small>RMS torque allowed at table. Assume peak torque to be 3 times RMS torque for no longer than 3 seconds.</small>	0.74	1.07	1.07
Load capacity axial/radial (kN) <small>Load capacity are for L10 rating life of 1 million table revolutions. Load capacity is not equivalent to payload. The ability to servo control a given payload is dependent on inertia, motion profile, duty cycle and control architecture.</small>	6.5/2.6	20.8/7.2	20.8/7.2
Max. moment (N-m) <small>Moment loads are for L10 rating life of 1 million table revolutions.</small>	100	460	460
Rotational inertia (kg-m²) <small>Rotational inertia of table.</small>	0.0005	0.0052	0.0051
Stage weight (kg, less motor)	1.5	3.6	4.5