

Dover Motion

(800) 227-1066

sales@dovermotion.com

www.dovermotion.com

Features

- :: High Speed Direct Drive
- :: No gear wear, torque variations, or backlash
- :: Ultra-stiff 4 point contact ball bearing
- :: 25mm through-bore

Description

Dover Motion's DRT-100 and DRT-200 Rotary Stages are ultra-compact, direct drive rotary tables that establish a new level of price, performance, and compactness. Its direct drive technology eliminates the gear wear, torque variations, and backlash conventional rotary tables encounter. Speed, resolution, and repeatability are also increased by a factor of ten or more over gear driven rotary tables. Despite its high level of performance, the DRT family rotary stages are very compact, with body dimensions of 105mm x 105mm x 65mm. Its 25mm through-bore allows convenient routing of optical beam paths or vacuum/pneumatic lines.

The DRT-100 and DRT-200 Direct Drive Rotary Stages offer standard resolution of 20 and 10 micro-radians respec-

tively ; due to its direct drive technology, the repeatability is +/- 1 count. High speeds and accelerations, permit rapid point-to-point moves. Settling times are minimized due to the direct drive design, which allows high servo bandwidths to be achieved. Unlike other direct drive rotary tables, the electronic interface is completely standard, with digital A Quad B encoder outputs, a standard three phase brushless motor, and three digital Hall commutation sensors. This allows the DRT Stages to be driven by any commercial motion controller/amplifier that can drive standard three phase brushless motors. The ultra-stiff 4 point contact ball bearing provides a high degree of axial and torsional stiffness, and a once per revolution index sensor allows a unique home location to be defined.

Direct Drive Rotary Stage Specifications

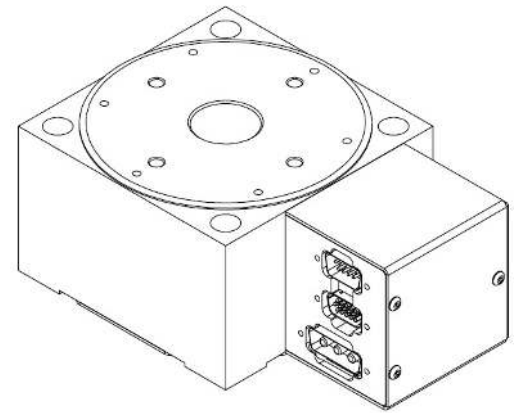
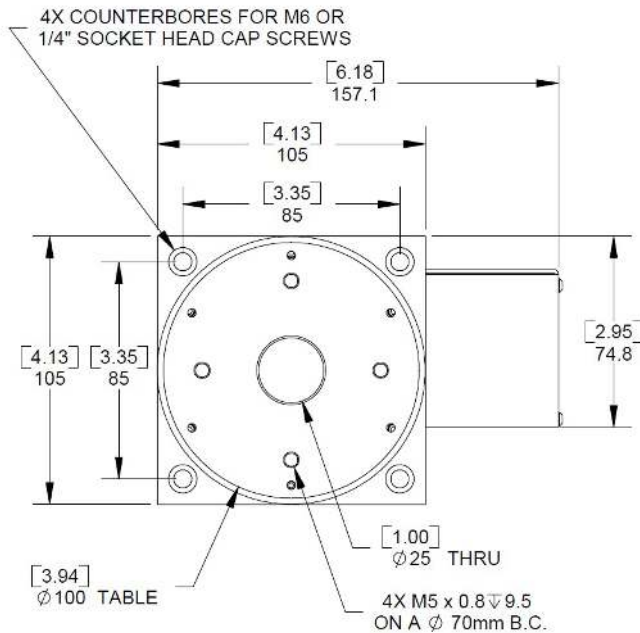
| Specifications | DRT-100 | DRT-200 |
|--|-------------------------------------|------------------------------------|
| Table Diameter (mm) | 100 | 200 millimeters |
| Through-bore Diameter (mm) | 25 millimeters | 65 millimeters |
| Accuracy (uncompensated) | +/- 875 μ rad (+/- 180 arc-sec) | +/- 150 μ rad (+/- 30 arc-sec) |
| Accuracy, sine compensated, 2 point | +/- 88 μ rad (+/- 18 arc-sec) | |
| Resolution, Standard | 20 μ rad (4 arc-seconds) | 10 μ rad (2 arc-sec) |
| Resolution, Optional | 2 μ rad (0.4 arc seconds) | 1 μ rad (0.2 arc-sec) |
| Bi-directional Repeatability | +/- 20 μ rad | +/- 5 μ rad |
| Maximum Speed | 10 rev/sec at 4 arc-sec resolution | 6 rev/sec at 2 arc-sec resolution |
| Maximum Acceleration (rev/sec ²) | 400 | 400 |
| Axial Motion (μ m) | < 5 | < 5 |
| Radial Motion (μ m) | < 5 | < 5 |
| Tilt Motion (micro-radians) | < 100 | < 100 |
| Axial Load Capacity (N) | 400 | 980 |
| Radial Load Capacity (N) | 200 | 490 |
| Moment Load Capacity (N-m) | 5 | 140.5 |
| Axial Stiffness | 0.9 x 10 ⁷ N/m | 2.0 x 10 ⁸ N/m |
| Radial Stiffness | 0.9 x 10 ⁷ N/m | 3.2 x 10 ⁷ N/m |
| Torsional Stiffness (N-m/rad) | 8.0 x 10 ⁴ | 5.0 x 10 ⁴ |
| Total Mass (kg) | 2.3 | 7.9 |
| Rotational Inertia (kg-m ²) | 8.85 x 10 ⁻⁴ | 9.44 x 10 ⁻³ |
| Torque Constant (N-m/Amp) | 0.418 | 1.09 |

Specifications (Continued)

| Motor Specifications | DRT-100 | DRT-200 |
|-----------------------------|-------------------|----------------|
| Motor Constant (N-m/vWatt) | 0.159 | 0.66 N-m/vWatt |
| Back-emf Constant | 0.418 (V/rev/sec) | 144 V/KRPM |
| Coil Resistance (Ohms) | 6.92 | 2.8 |
| Coil Inductance (mH) | 7.5 | 13.0 |
| Continuous Current (Amps) | 2.4 | 6.2 Amps |
| Peak Current | 6.5 Amps | 48.0 Amps |
| Motor Continuous Torque | 1.00 N-m | 6.5 N-m |
| Motor Peak Torque | 2.73 N-m | 27.7 N-m |
| Bearing Torque | 0.23 N-m | 0.79 N-m |
| Available Continuous Torque | 0.77 N-m | 5.7 N-m |
| Available Peak Torque | 2.5 N-m | 26.9 N-m |

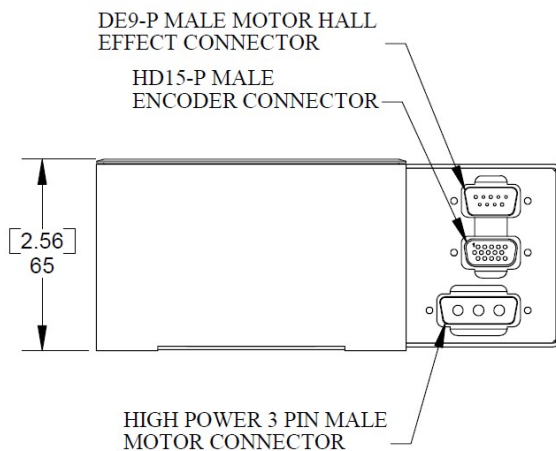
DRT-100 Dimensions

Top View

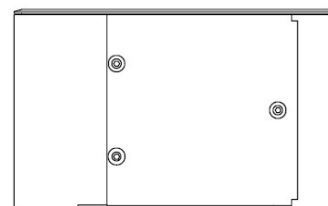


Dimension units: [inches] mm

Side View

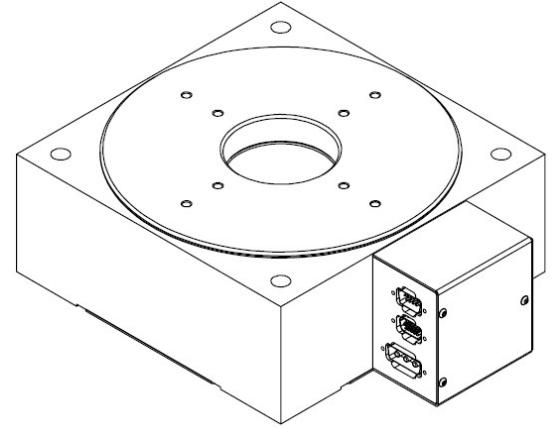
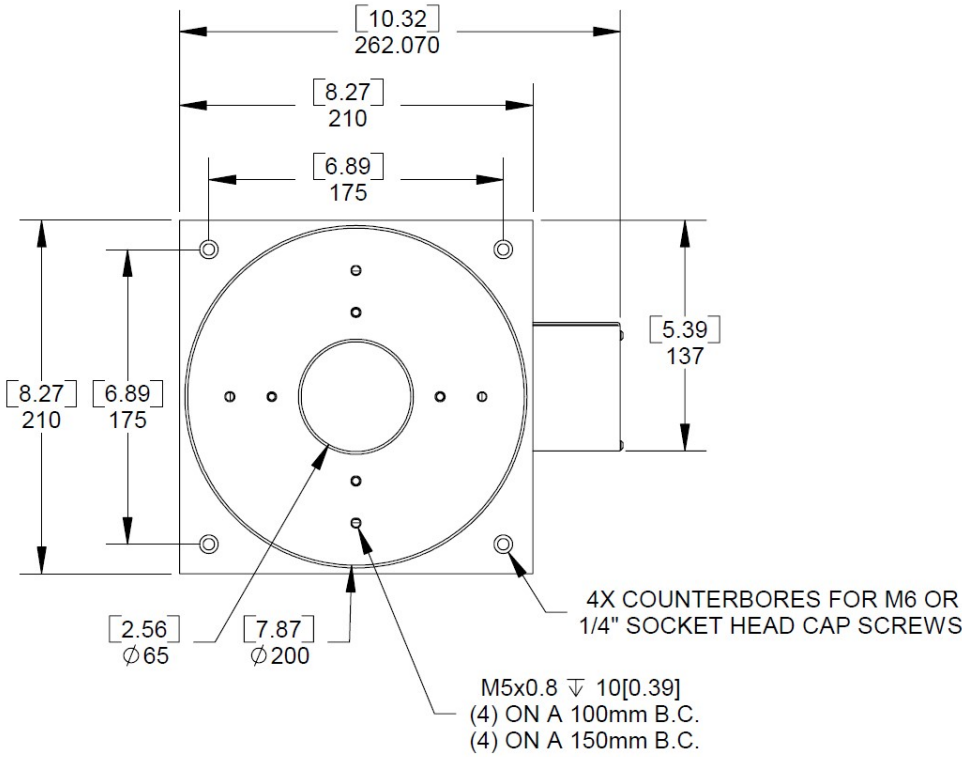


End View



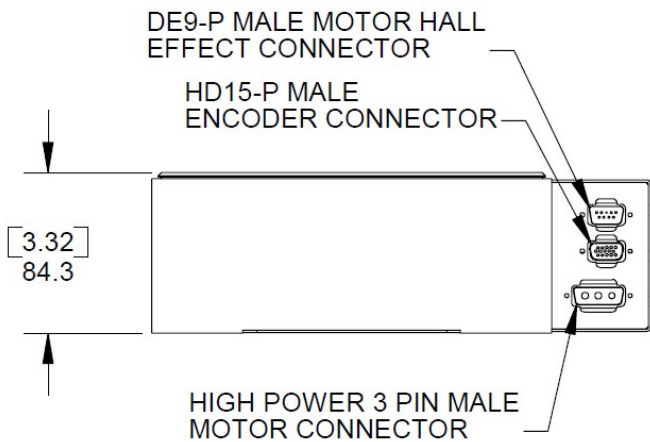
DRT-200 Dimensions

Top View



Dimension units: [inches] mm

Side View



End View

