

# DRT-200™ Rotary Table



## Direct Drive Rotary Table

### Features

- :: Speeds to 6 revolutions per second
- :: 1 micro-radian (0.2 arc-second) resolution
- :: No gear wear, torque variations, or backlash
- :: Ultra-stiff 4 point contact ball bearing
- :: 65mm through-bore

Danaher Motion-Dover's DRT-200 rotary stage is an ultracompact, direct drive rotary table that establishes 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-200 stage is very compact, with body dimensions of 210mm x 210mm x 843mm. Its 65mm through-bore allows convenient routing of optical beam paths or vacuum/pneumatic lines.

The DRT-200 table offers a standard resolution of 10 microradians (~2 arc-seconds, or 0.00051 degrees); due to its direct drive technology, the repeatability

is +/- 1 count, or +/- 10 micro-radians. Speeds to 6 revolutions per second, and accelerations to 400 revolutions per second<sup>2</sup>, 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-200 Stage 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.

### DRT-200 ROTARY TABLE SPECIFICATIONS

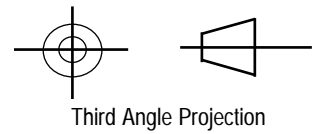
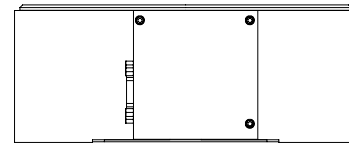
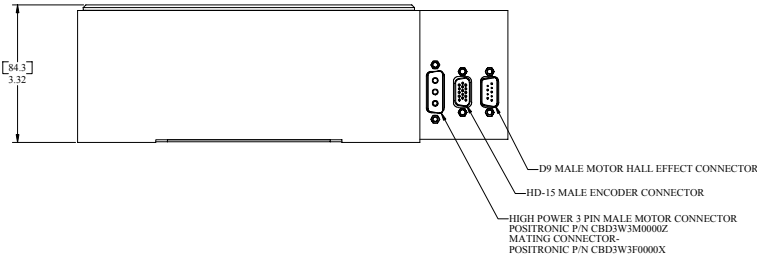
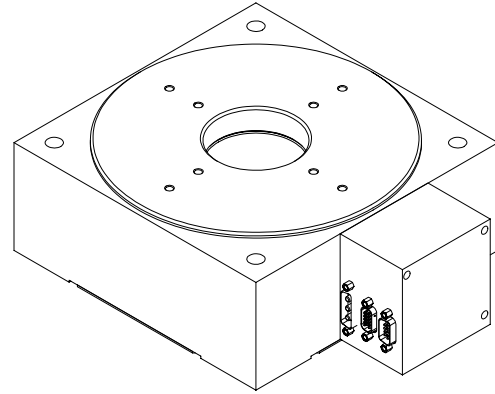
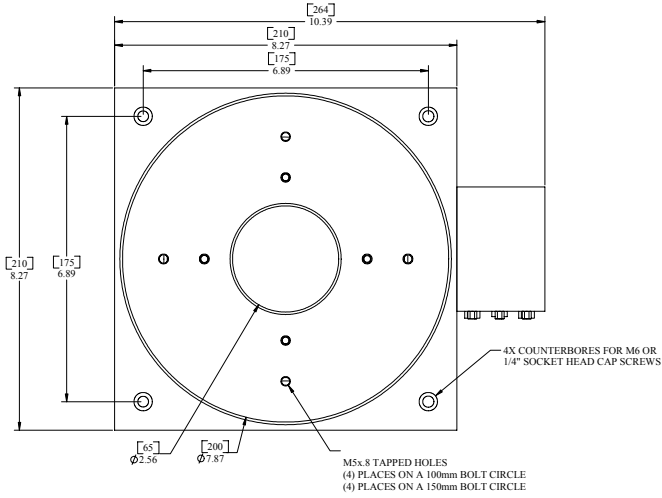
| Specification                |  |
|------------------------------|--|
| Table Diameter               | 200 millimeters  |
| Through-bore Diameter        | 65 millimeters   |
| Accuracy (uncompensated)     | +/- 150 micro-radians (+/- 30 arc seconds)   |
| Resolution                   | Standard: 10 micro-radians (2 arc-seconds)<br>Optional: 1 micro-radian (0.2 arc-seconds) |
| Bi-directional Repeatability | +/- 5 micro-radians  |
| Maximum Speed                | 6 rev/sec at 2 arc-second resolution   |
| Maximum Acceleration         | 400 rev/sec <sup>2</sup>   |
| Axial Motion                 | < 5 microns  |
| Radial Motion                | < 5 microns  |
| Tilt Motion                  | < 100 micro-radians  |
| Axial Load Capacity          | 980 N  |
| Radial Load Capacity         | 490 N  |
| Moment Load Capacity         | 145.0 N-m  |
| Axial Stiffness              | 2.0 x 10 <sup>8</sup> N/m  |
| Radial Stiffness             | 3.2 x 10 <sup>7</sup> N/m  |
| Torsional Stiffness          | 5.0 x 10 <sup>4</sup> N-m/radian   |
| Total Mass                   | 7.9 kg   |
| Rotational Inertia           | 9.44 x 10 <sup>-3</sup> kg-m <sup>2</sup>  |
| Torque Constant              | 1.09 N-m/Amp   |
| Motor Constant               | 0.66 N-m / √Watt   |
| Back-emf Constant            | 144 V/KRPM   |
| Coil Resistance              | 2.8 Ohms   |
| Coil Inductance              | 13.0 mH  |
| Continuous Current           | 6.2 Amps   |
| Peak Current                 | 48.0 Amps  |
| Motor Continuous Torque      | 6.5 N-m  |
| Motor Peak Torque            | 27.7 N-m   |
| Bearing Torque               | 0.79 N-m   |
| Available Continuous Torque  | 5.7 N-m  |
| Available Peak Torque        | 26.9 N-m   |

# DRT-200™ Rotary Table

## DRT-200 ROTARY TABLE SPECIFICATIONS



Helping you build a better machine, faster.



- Cleanroom compatible option available.
- 9,9; 9,15; 3,15,9 pin configurations available.