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WRC-012 Datasheet

High-Precision Lift and Rotate Stage for Semiconductor Processing

FEATURES

- 12.5mm of Vertical Travel
- Continuous Rotational Travel
- Optional Pneumatic Rotary Union for Wafer-Chucking
- Variety of Encoder Options
- Crossed Roller Linear Bearings
- Direct-Drive Rotary Motor
- Optional Cleanroom Compatibility

The WRC-012 is a high-precision vertical-lift and rotation stage engineered specifically for wafer-chuck manipulation in semiconductor processing. Combining a wedge-based lift mechanism with a smooth, direct-drive rotary axis, the WRC-012 provides accurate, repeatable positioning for demanding semiconductor applications. Its compact, stable design maintains precision under load, while the integrated lift-and-rotate architecture simplifies system design and reduces stack-up errors. Ideal for inspection, metrology, and general wafer handling, the WRC-012 delivers reliable, high-performance motion in cleanroom environments.

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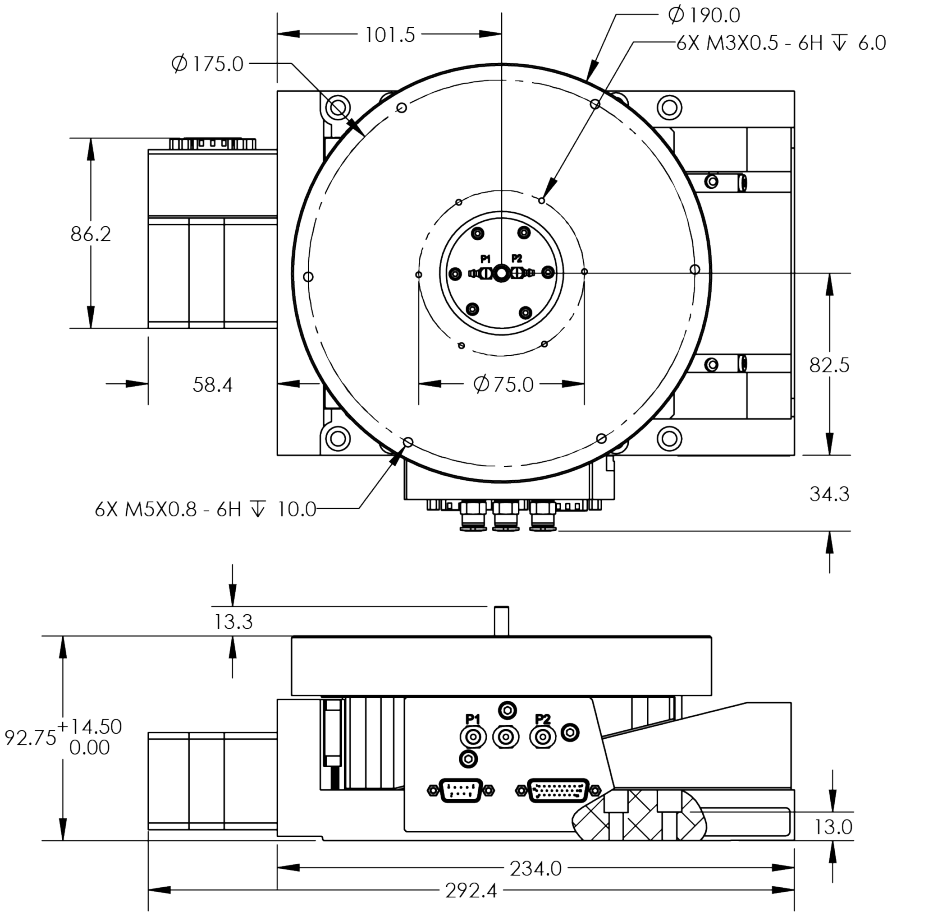
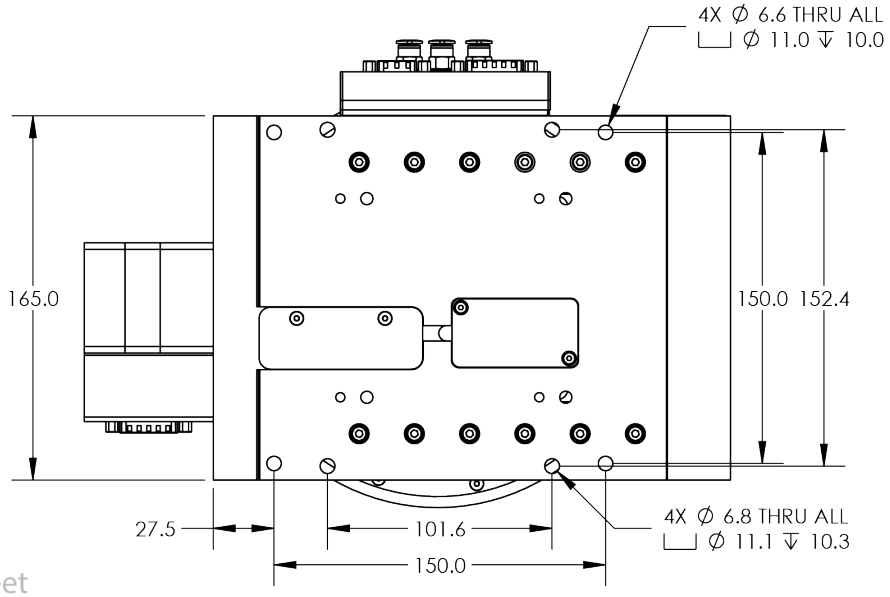
WRC-012 Dimensions





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WRC-012 Ordering Options

WRC-012 Ordering Options	
Product Series	WRC: Z/Θ Stage for Semiconductor Wafers
Z Stage Travel	012: 12.5mm Between Limit Switches[1]
Rotary Axis Travel	360: Full 360° Rotation[2]
Z Axis Feedback	H: RS422, Rotary Encoder, 32,000 counts/mm HH: 1Vpp Sin-Cos, Linear Encoder (50 sine periods/mm) M: RS422, Linear Encoder, 10,000 counts/mm
Rotary Axis Feedback	C: RS422, 1,800,000 counts/rev D: RS422, 7,200,000 counts/rev E: 1Vpp Sin-Cos (18,000 sine periods/rev)
Additional Options	0: No Additional Options M: 3-Channel Pneumatic Rotary Union (2 Positive, 1 Vacuum as Standard)
Customizations	00: Standard Product 01-99: Custom Stage, Customer Specific[3]
Example Part Number	WRC-012-360-HH-E-M-02
Notes	1: Custom travels may be available below 12.5mm 2: Limit switches and hard stops may be added to limit the rotary axis to less than 360° 3: Common customizations include: custom hole patterns and cleanroom preparation

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WRC-012 Performance Specifications

Performance Specifications		
Axis	Z	Θ
Accuracy[1]	±5 µm[3]	±30 arc-sec
Repeatability[1]	1 µm[3]	3 arc-sec
Max Velocity	10 mm/s	See Table
Flatness (Y Movement)[2]	10 µm	
Straightness (X Movement)[2]		
Pitch[1]	10 arc-sec	
Yaw[1]		
Axial Runout[2]		10 µm
Radial Runout[2]		
Wobble[2]		±15 arc-sec
Max Payload	20 kg	
Continuous Torque		1.56 Nm
Lifting Force	400 N	

Notes:
1:Specification is verified via laser interferometer on every stage
2: Specification may be verified upon request, additional charges may apply
3: Assumes linear encoder is equipped for Z Axis feedback

WRC-012 Maximum Rotational Velocity	
Encoder Feedback Code	Max Velocity (°/s)[1,2]
C	1750
D	400
E	2650

Notes:
1: The true maximum velocity of a rotary stage is dependent on the controls system as well as the stage
2: Pneumatic air union option may limit max velocity below these values