



## Air-Bearing Direct-Drive Rotary Stage

# ABRS



### Low Profile, High Performance

ABRS direct-drive rotary air-bearing stages deliver superior angular positioning, velocity stability and error-motion performance in an exceptionally compact package. An ironless, slotless torque motor; high-resolution position encoder; and precision-ground air-bearing surfaces ensure precise, stable and reliable rotary motion. Independent air inlets for journal and thrust bearings maximize this stage's versatility. Available in 200 mm, 250 mm and 300 mm frame sizes—all featuring ultra-low profiles—ABRS stages provide an optimal balance between performance, size and cost

### Key Applications

ABRS is ideal for high-precision test, inspection and manufacturing applications, including:

- ◆ Wafer inspection
- ◆ Surface metrology (including roundness, flatness & form error)
- ◆ X-ray diffraction systems
- ◆ CT inspection systems
- ◆ Optical alignment, inspection & calibration
- ◆ Nanotechnology fabrication
- ◆ Beamline research

### KEY FEATURES:

- ◆ Direct-drive, slotless motor provides **SMOOTH, NON-COGGING MOTION**
- ◆ Low-profile design is **COST EFFECTIVE & EASY TO INTEGRATE**
- ◆ Superb axial, radial & tilt error-motion performance
- ◆ **CLEAR CENTRAL APERTURE** provides versatility for product feed-through, beam delivery, cable clearance & more
- ◆ Large bearing surfaces for **EXCELLENT LOAD CAPACITY & STIFFNESS**

## ABRS SERIES SPECIFICATIONS

Specifications		ABRS200MP	ABRS250MP	ABRS300MP
Width		200 mm	250 mm	300 mm
Tabletop Diameter		178.1 mm	228.1 mm	278.1 mm
Height		90 mm	100 mm	110 mm
Aperature		20 mm	35 mm	75 mm
Total Travel		360° Continuous		
Bus Voltage		340 VDC		
Fundamental Encoder Resolution		8192 lines/rev	11,840 lines/rev	18,000 lines/rev
Max Speed <sup>1</sup>		300 rpm	500 rpm	
Accuracy <sup>2</sup>		±2 arc sec		
Repeatability (Bi-Directional)		<1 arc sec		
Max Load <sup>3</sup>	Axial	31 kg	66 kg	97 kg
	Radial	15 kg	36 kg	51 kg
	Tilt	10 N-m	28 N-m	45 N-m
Axial Error Motion (Synchronous)		<100 nm		
Radial Error Motion (Synchronous)		<250 nm		
Tilt Error Motion (Synchronous)		<3.4 μrad (<0.7 arc-sec)	<2.4 μrad (<0.5 arc sec)	<2.4 μrad (<0.5 arc sec)
Axial Error Motion (Asynchronous)		<20 nm		
Radial Error Motion (Asynchronous)		<20 nm		
Tilt Error Motion (Asynchronous)		<0.3 μrad (<0.06 arc-sec)	<0.2 μrad (<0.04 arc sec)	<0.2 μrad (<0.04 arc sec)
Operating Pressure <sup>4</sup>		80 psig (5.5 bar) + 0 psig (0.0 bar) / - 10 psig (0.7 bar)		
Air Consumption <sup>5</sup>		<56.6 SLPM (<2 SCFM)		
Inertia	Unloaded	13,800 kg-mm <sup>2</sup>	39,100 kg-mm <sup>2</sup>	102,000 kg-mm <sup>2</sup>
Total Mass		9.1 kg	15.6 kg	24.5 kg
Material		Aluminum		
Finish		Hardcoat (62 Rockwell Hardness)		

**Notes:**

1. Maximum speed based on stage capability. Maximum application velocity may be limited by system data rate and system resolution.
2. Certified with each stage. Requires the use of an Aerotech controller.
3. Maximum loads are mutually exclusive.
4. Maximum loads are mutually exclusive.
5. To protect air bearing against under-pressure, an in-line pressure switch tied to the motion controller is recommended.
6. Air supply must be clean, dry to 0° F dew point, and filtered to 0.25 µm or better. Recommend nitrogen at 99.9% purity.

## ABRS SERIES ORDERING OPTIONS

### ABRS Air-Bearing Direct-Drive Rotary Stage

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**ABRS200MP** 200 mm wide air-bearing direct-drive rotary stage

**ABRS250MP** 250 mm wide air-bearing direct-drive rotary stage

**ABRS300MP** 300 mm wide air-bearing direct-drive rotary stage

### Feedback (Required)

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**-E1** Incremental encoder, 1 Vpp

### Integration (Required)

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Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

**-TAS Integration - Test as system**

Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.

**-TAC Integration - Test as components**

Testing and integration of individual items as discrete components. This is typically used for spare parts, replacement parts or items that will not be used or shipped together (ex: stage only). These components may or may not be part of a larger system.

### Accessories (To Be Ordered As Separate Line Item)

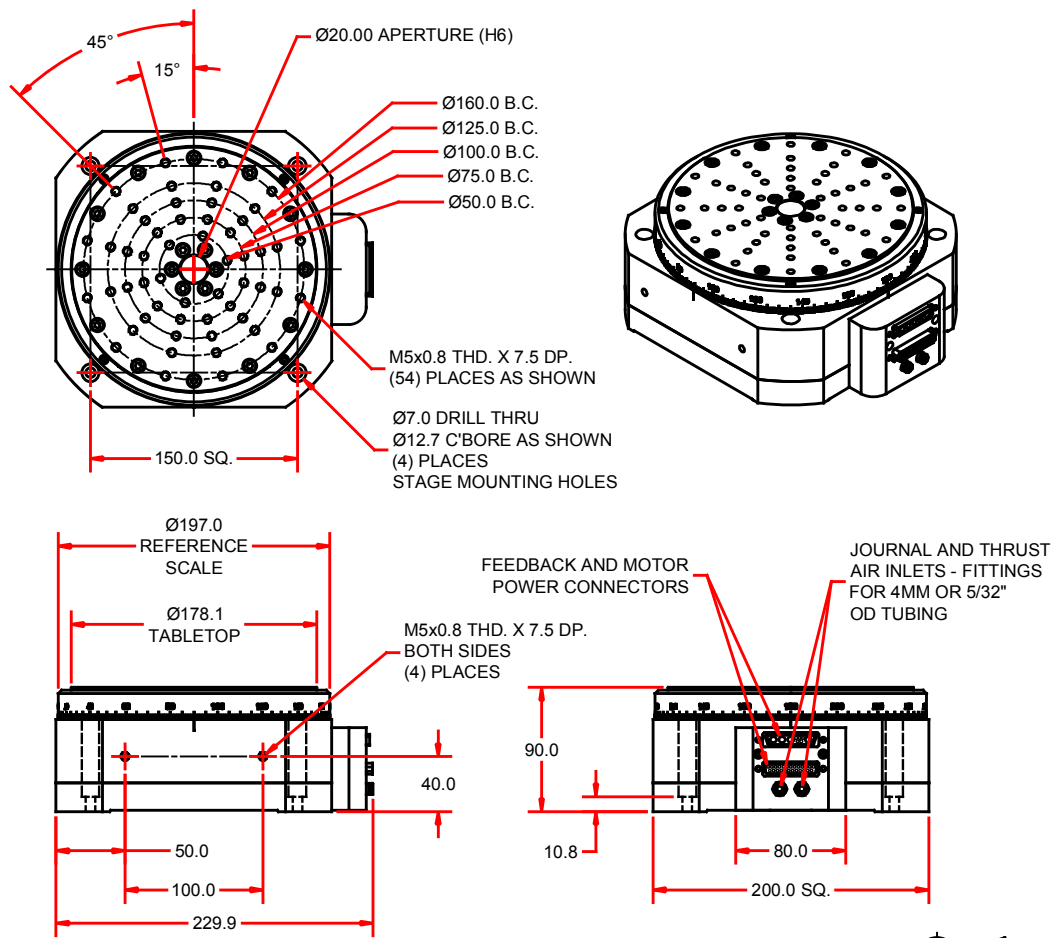
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**-ABF** Air-bearing filtration kit



## ABRS SERIES DIMENSIONS

### ABRS-200MP

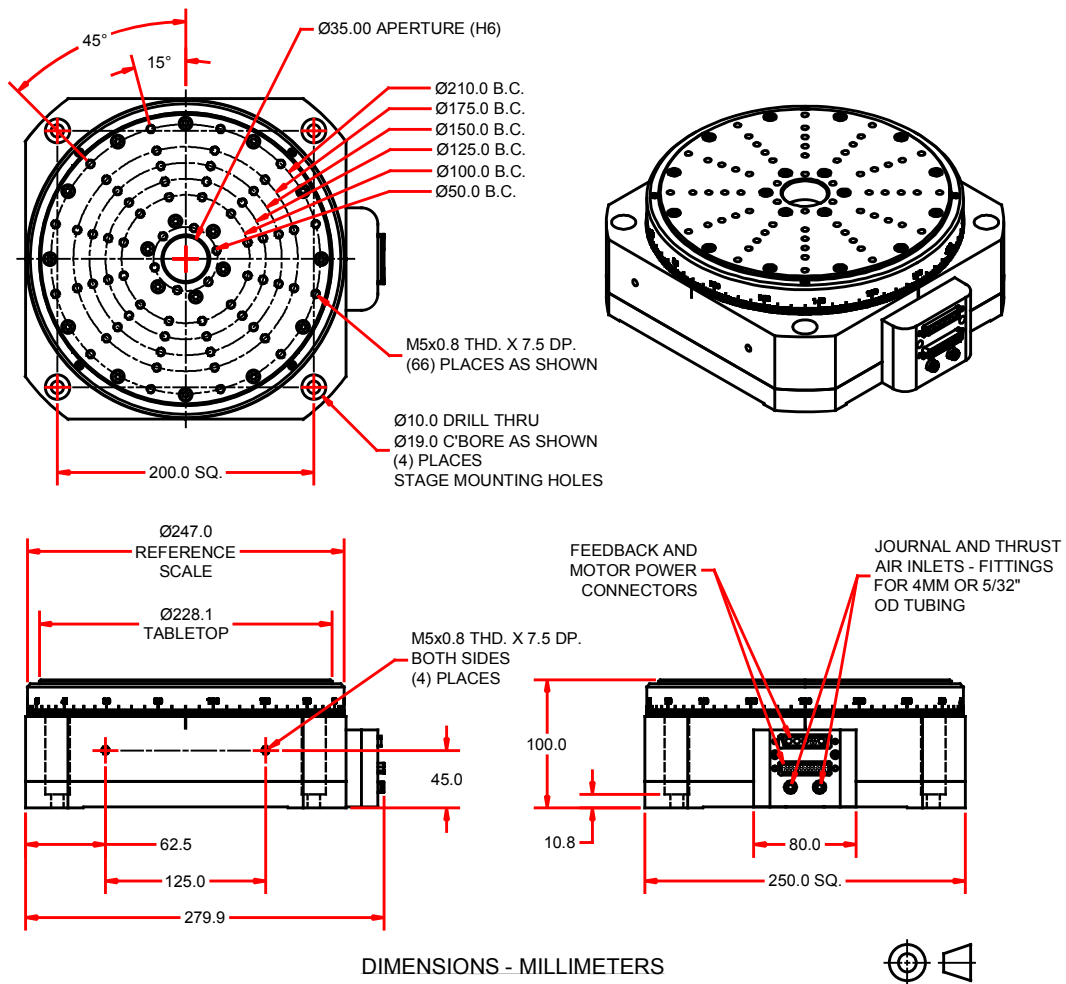


DIMENSIONS - MILLIMETERS



## ABRS SERIES DIMENSIONS

### ABRS-250MP



## ABRS SERIES DIMENSIONS

### ABRS-300MP

