

# ASRT Series

## Mechanical-Bearing, Direct-Drive, Sealed Rotary Stages

**IP66:** Totally protected against dust and water jets from any direction

**Operation over large temperature range:** -20 to +70° C

**Low-friction seal minimizes direction reversal hysteresis** to allow small, precise positioning

**Shaft aperture option with three available sizes:** 30 mm, 80 mm, and 130 mm

**Excellent accuracy (to 2 arc sec) and repeatability (to 1.5 arc sec)**

**Axial load capacity to 130 kg**

**Up to 200 rpm continuous rotation speed**

**Direct-drive motor provides rapid precision motion with no gear backlash**

ASRT sealed rotary stages provide precise angular positioning in hostile environments where dirt or liquids are present. The stage can operate in environments with dust or fluid jets. The ASRT also can be used where cutting fluids are present. Applications range from industrial machining automation to precision sensor positioning in hostile environments. The ASRT is effective for precise rotary motion in product environmental test and range tracking applications.

The ASRT series is available in three different sizes for a variety of load and motor torque ratings. A shaft aperture option on all sizes allows for electrical, pneumatic, or fluid feedthrough. Offered with a high-accuracy optical (incremental or absolute) non-contact encoder or with a robust magnetic non-contact encoder, the ASRT has many feedback options to meet the specific requirements for many tough applications.

Standard operating temperature for the ASRT is 0 to 70°C. Operation below freezing requires the optional air-purge and desiccant. Air-purged stages can operate from -20 to 70°C.



*ASRT series mechanical-bearing direct-drive sealed rotary stages provide extreme positioning performance for harsh environments.*

A polymer-based paint on the housing and hard-coated tabletop is standard for corrosion protection. The stage has optional tan, black, and white paint colors.

Rotary speeds of up to 200 rpm are available. The ASRT includes an electrically grounded shaft and housing to protect against electrical shock and eliminate RF re-radiation, and housing grounding points are included. Circular sealed connectors are standard, while options include desiccant cartridge, air purge option, and mounting flange accessory.

### Superior Mechanical Design

Dual large-diameter bearings are used to maximize performance with respect to tilt error motion, moment stiffness, and repeatability. The large diameter bearings permit large payloads without compromising performance.

### Brushless Direct-Drive

To maximize positioning performance, the ASRT series utilizes Aerotech's brushless, slotless motor. This motor has all of the advantages of a brushless direct-drive motor – no brushes to wear, no gear trains to maintain, and high acceleration and high speeds. The low inertia and zero backlash make the ASRT the ideal solution for applications requiring frequent directional changes.

Aerotech manufactures a wide range of servo amplifiers and advanced controllers to provide a complete integrated package.

## ASRT Series SPECIFICATIONS

Mechanical Specifications			ASRT185DR	ASRT245DR	ASRT300DR
Travel			360° Continuous		
Accuracy <sup>(1)</sup>	-E1 or -E2 Encoder	Standard	194 μrad (40 arc sec)	145 μrad (30 arc sec)	97 μrad (20 arc sec)
		Calibrated	10 μrad (2 arc sec)		
	-E3 Encoder	Standard	243 μrad (50 arc sec)	218 μrad (45 arc sec)	N/A
		Calibrated	97 μrad (20 arc sec)	97 μrad (20 arc sec)	N/A
Resolution (Min. Incremental Motion)	-E1 Encoder	0.5 μrad (0.1 arc sec)	0.4 μrad (0.08 arc sec)	0.3 μrad (0.06 arc sec)	
	-E2 Encoder	0.8 μrad (0.16 arc sec)	0.8 μrad (0.16 arc sec)	0.8 μrad (0.16 arc sec)	
	-E3 Encoder	12.1 μrad (4 arc sec)	11.2 μrad (3 arc sec)	N/A	
Bidirectional Repeatability <sup>(1)</sup>			7.3 μrad (1.5 arc sec)		
Total Tilt Error Motion <sup>(1)</sup>			24 μrad (5 arc sec)		
Maximum Speed <sup>(2)</sup>			200 rpm	150 rpm	100 rpm
Maximum Acceleration <sup>(2)</sup>			930 rad/s <sup>2</sup>	635 rad/s <sup>2</sup>	425 rad/s <sup>2</sup>
Aperture			30 mm	80 mm	130 mm
Maximum Torque (Continuous)			2.85 N·m	5.99 N·m	10.73 N·m
Load Capacity	Axial	30 kg	105 kg	130 kg	
	Radial	25 kg	90 kg	110 kg	
Inertia (Unloaded)	No Aperture	0.009 kg·m <sup>2</sup>	0.034 kg·m <sup>2</sup>	0.091 kg·m <sup>2</sup>	
	Aperture	0.011 kg·m <sup>2</sup>	0.036 kg·m <sup>2</sup>	0.100 kg·m <sup>2</sup>	
Stage Mass	No Aperture	9.5 kg	17 kg	22.5 kg	
	Aperture	12.0 kg	20.5 kg	27.0 kg	
Material			Polymer-Painted Aluminum / Aluminum Hardcoat		
MTBF (Mean Time Between Failure) <sup>(3,4)</sup>			10,000 Hours		

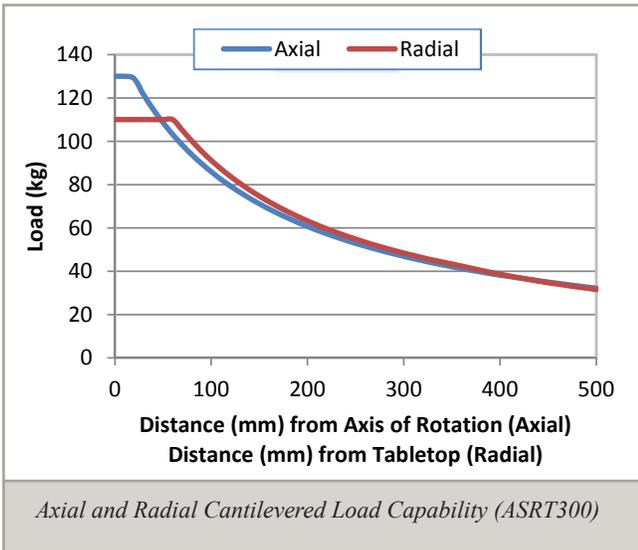
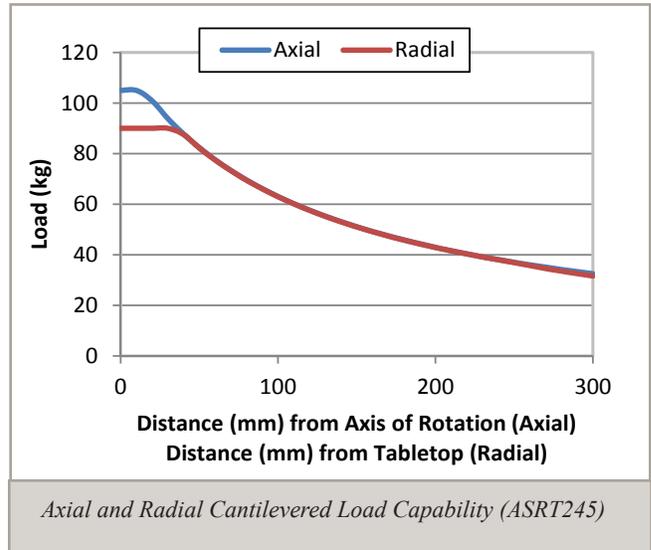
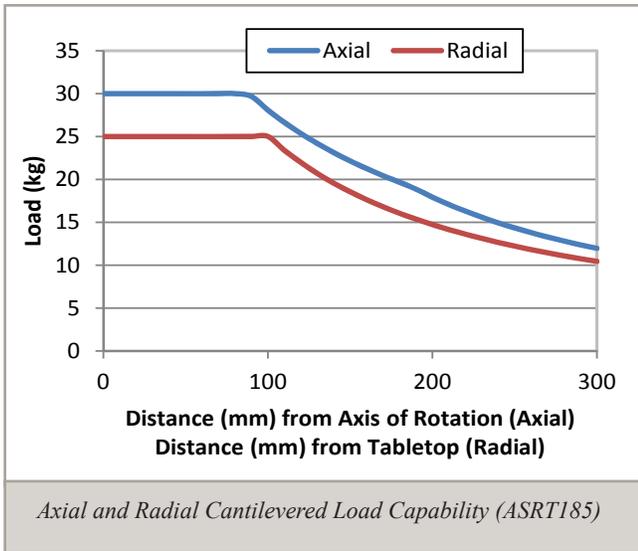
Notes:

1. Certified with each stage.
2. Application dependent. Requires the selection of an appropriate amplifier with sufficient voltage and current.
3. Application dependent. Dry environments between 0° and 70° C up to 10,000 hours.
4. Long-term exposure to temperature cycles and wet environments will require periodic maintenance.

Electrical Specifications			ASRT185DR	ASRT245DR	ASRT300DR
Drive System			Slotless, Brushless, Direct-Drive Rotary Motor		
Feedback System	-E1 Encoder	1 Vpp, Incremental Non-Contact Optical Encoder			
		16384 lines/rev	23600 lines/rev	32768 lines/rev	
	-E2 Encoder	Absolute, BiSS Interface, Non-Contact Optical Encoder			
	-E3 Encoder	1 Vpp, Incremental Non-Contact Magnetic Encoder			N/A
900 lines/rev		1200 lines/rev			
Maximum Bus Voltage			320 VDC		

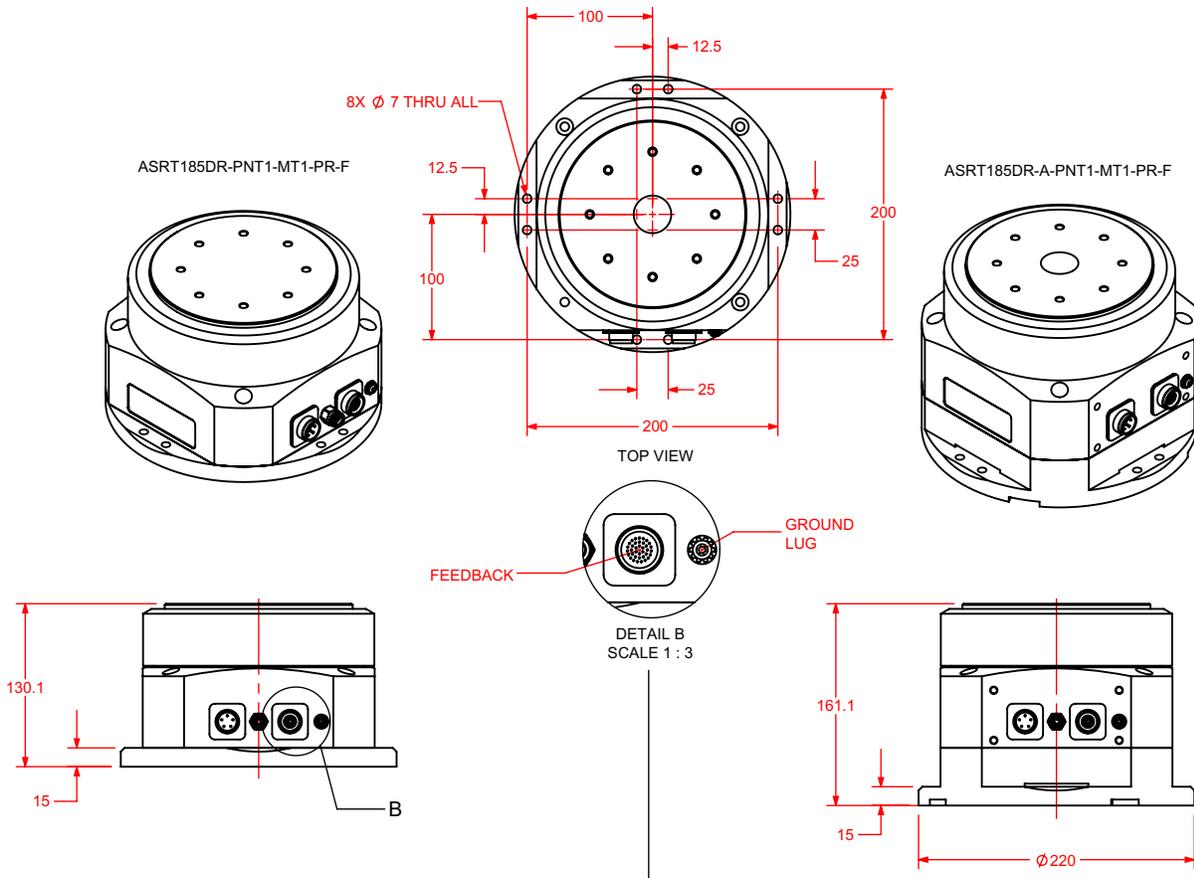
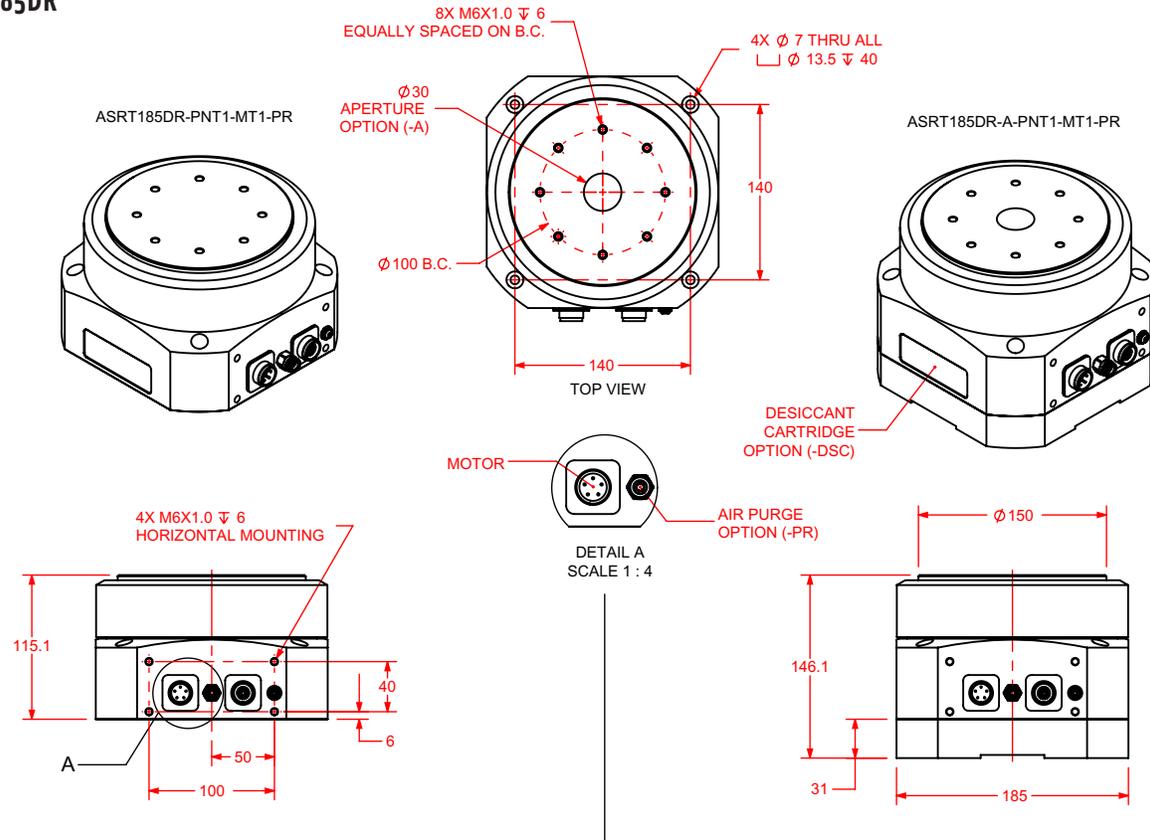
Recommended Controller		ASRT185DR	ASRT245DR	ASRT300DR
Multi-Axis	A3200	HLe-MXH/HPe-MXH/CP-MXU/MP-MXU/Npaq		
	Ensemble	HLe-MXH/HPe-MXH/CP-MXU/MP-MXU		
Single Axis	Soloist	HLe-MXH/HPe-MXH/CP-MXU/MP-MXU		

## ASRT Series PERFORMANCE



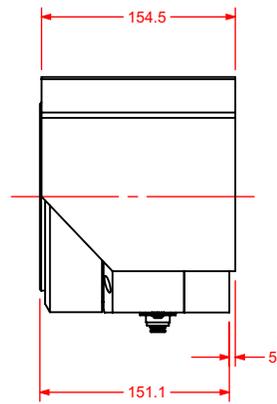
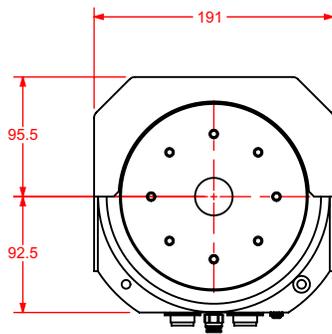
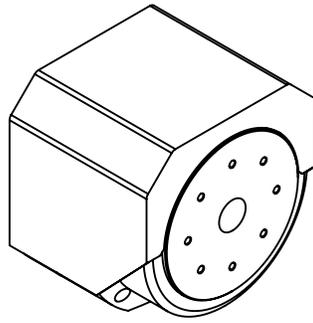
ASRT Series DIMENSIONS

ASRT185DR

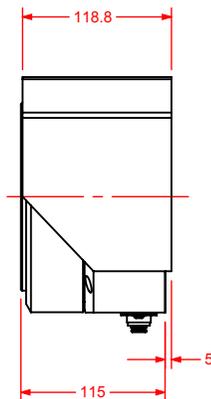
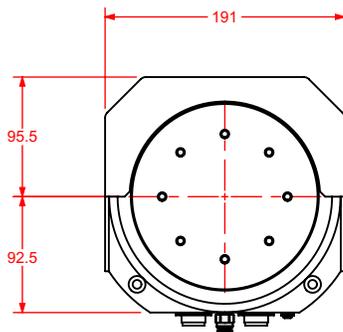
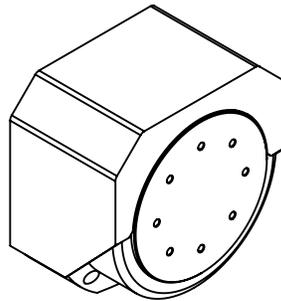


ASRT185DR

ASRT185DR-A-PNT1-MT2-PR-CV



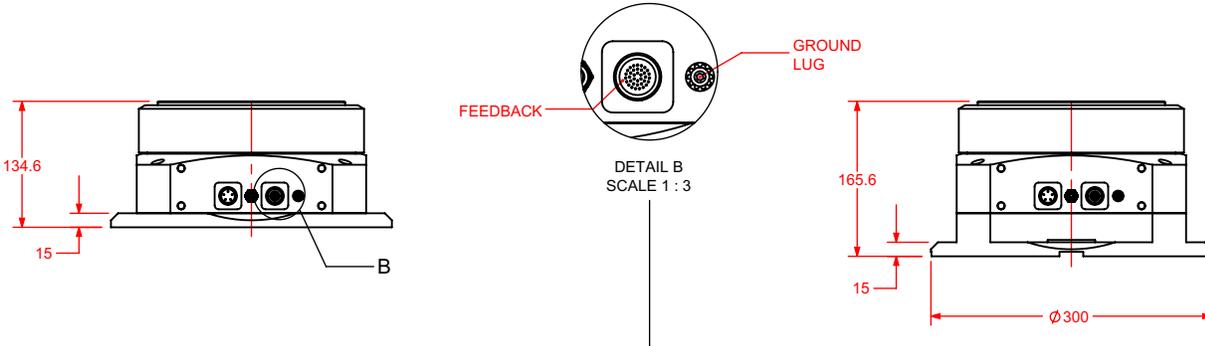
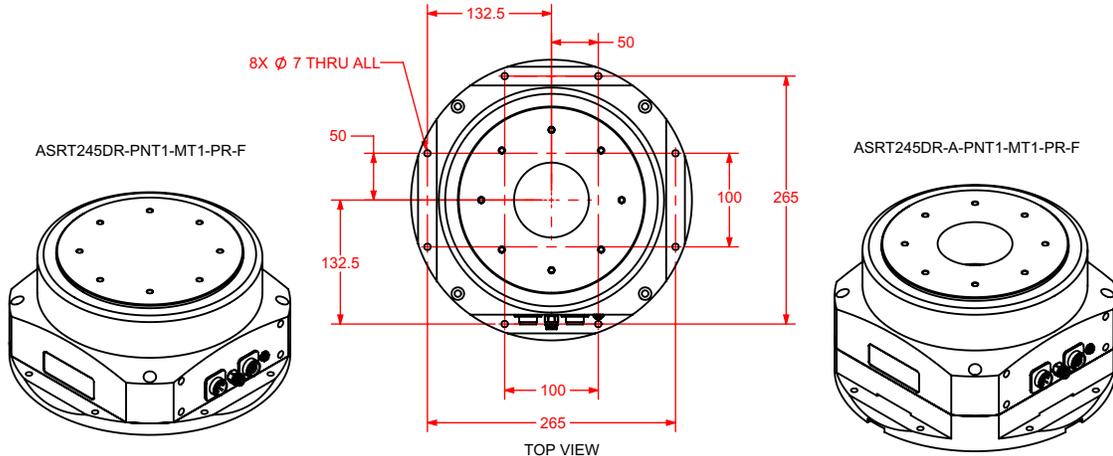
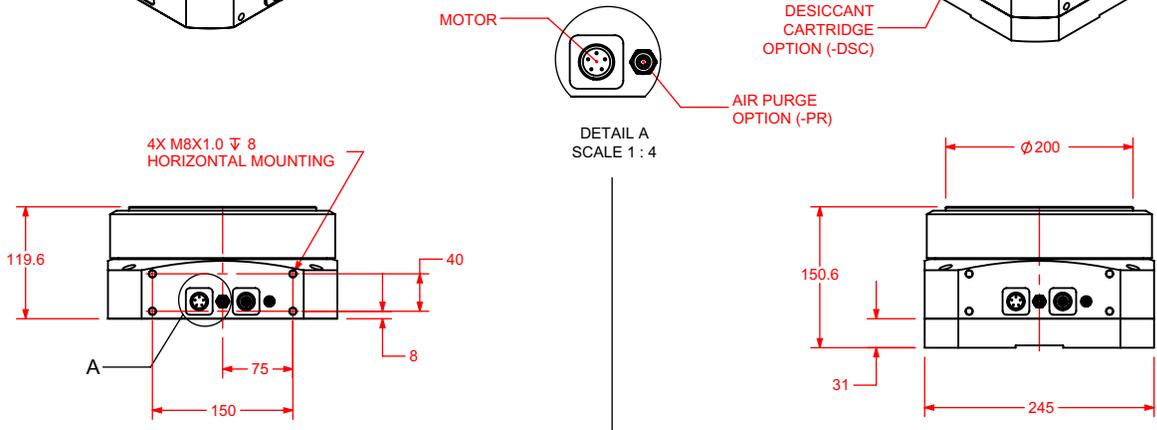
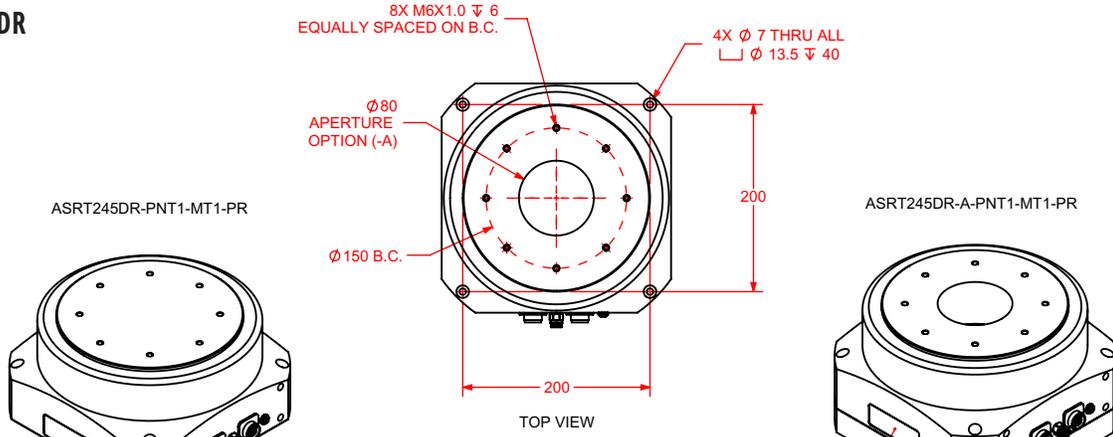
ASRT185DR-PNT1-MT2-PR-CV



DIMENSIONS: MILLIMETERS

**ASRT Series DIMENSIONS**

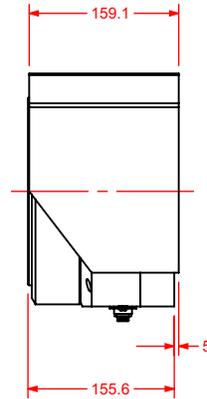
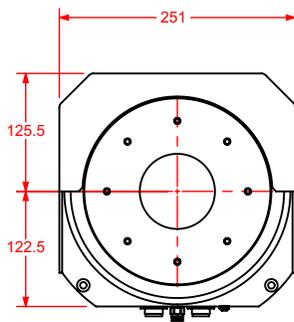
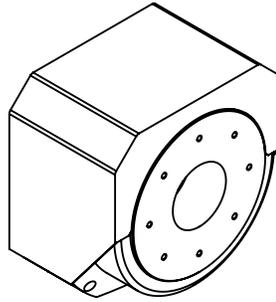
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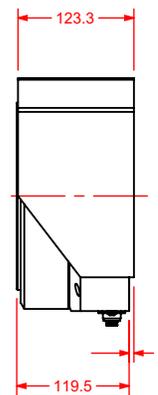
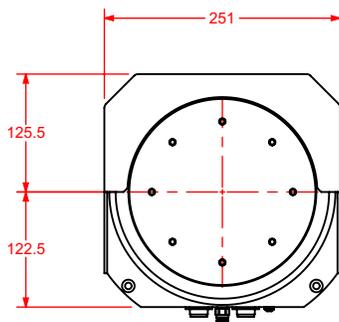
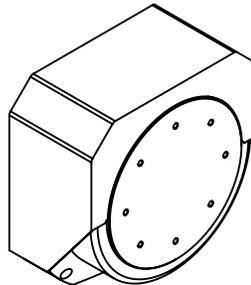
DIMENSIONS: MILLIMETERS

ASRT245DR

ASRT245DR-A-PNT1-MT2-PR-CV



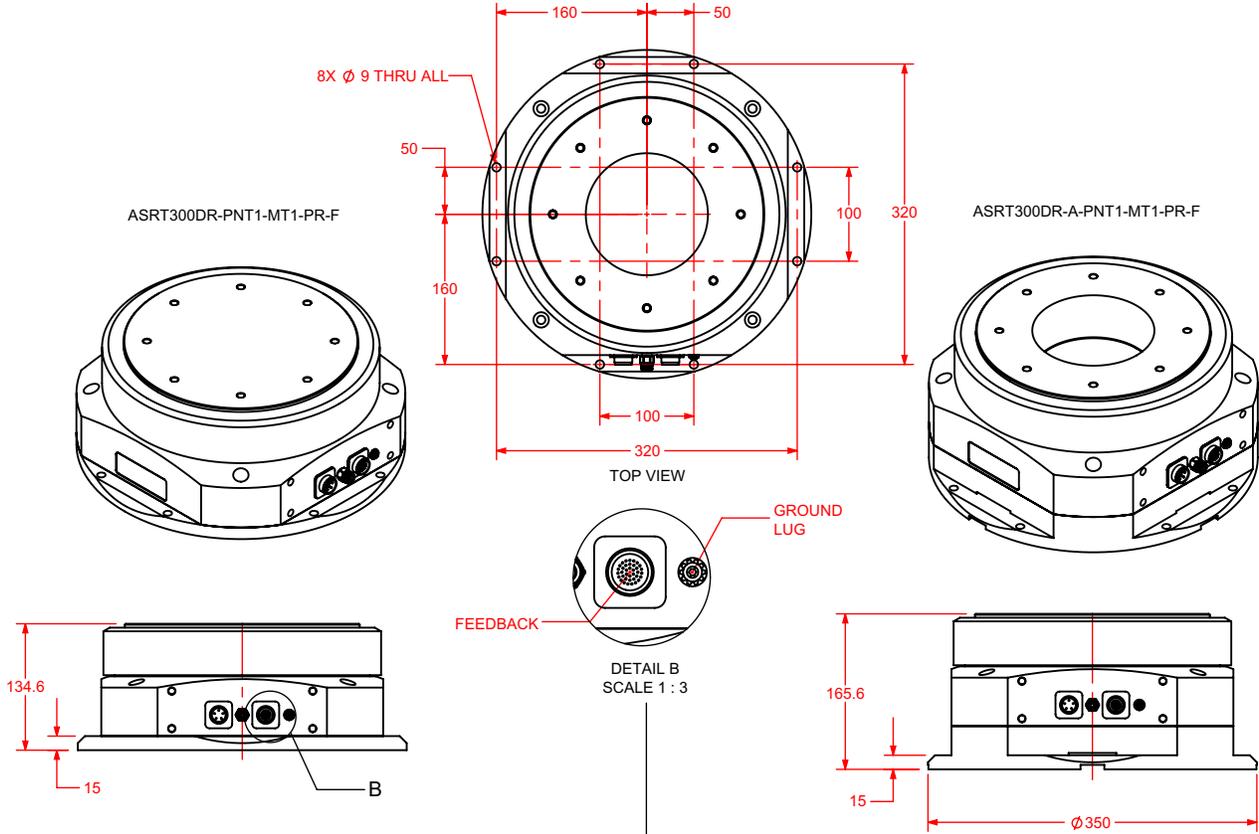
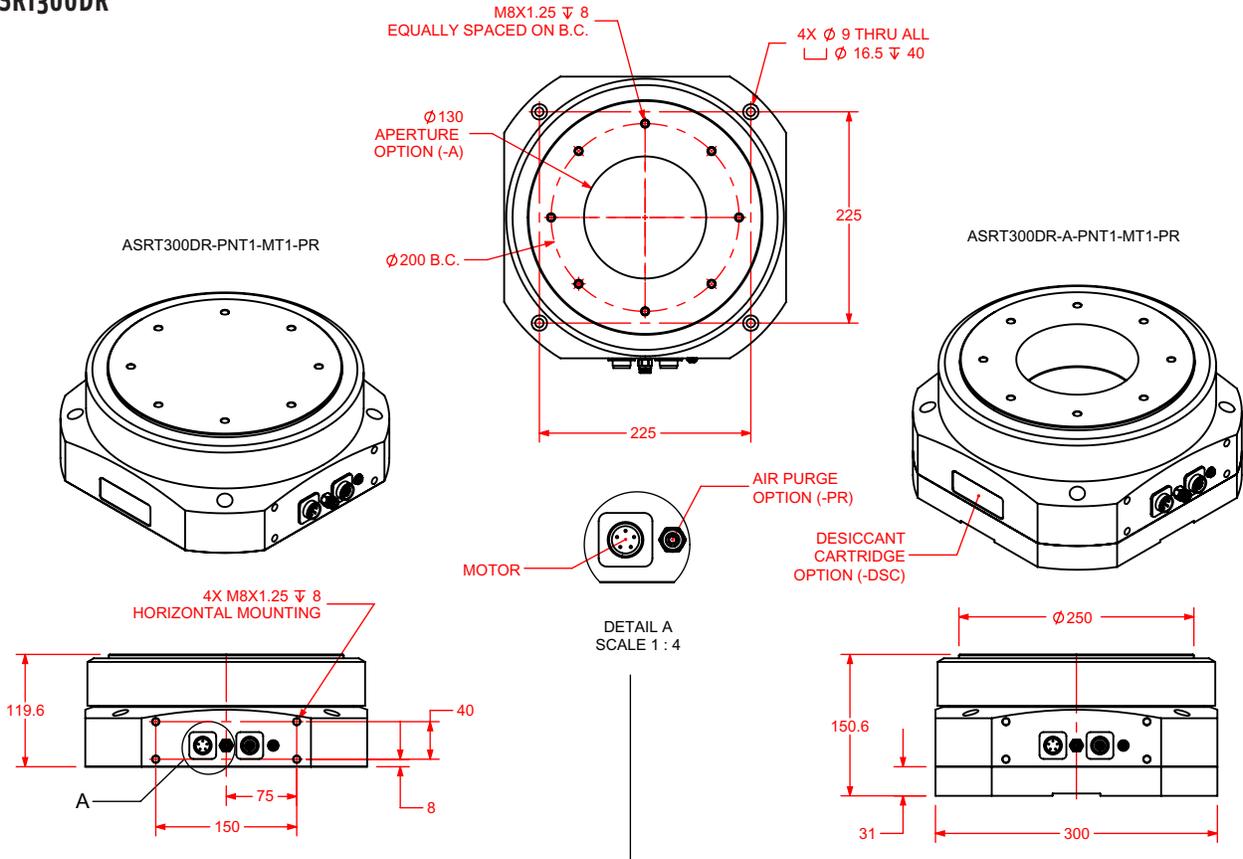
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DIMENSIONS: MILLIMETERS

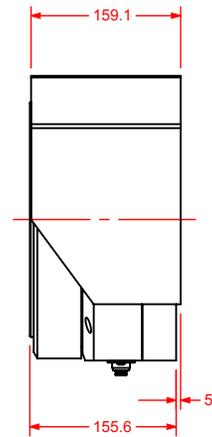
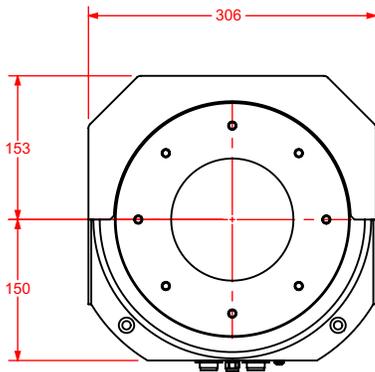
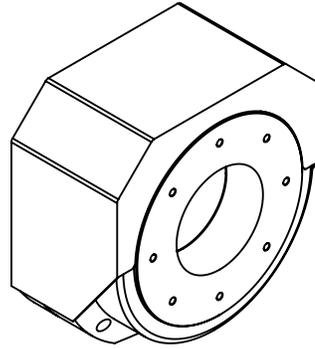
ASRT Series DIMENSIONS

ASRT300DR

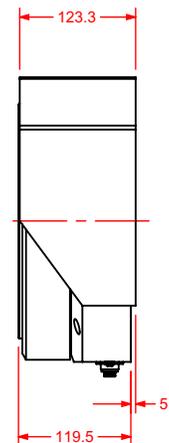
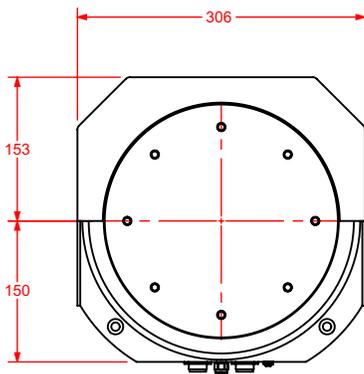
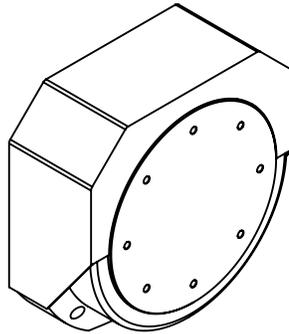


ASRT300DR

ASRT300DR-A-PNT1-MT2-PR-CV



ASRT300DR-PNT1-MT2-PR-CV



## ASRT Series – ORDERING INFORMATION

### ASRT Mechanical-Bearing Direct-Drive Sealed Rotary Stage

ASRT185DR	ASRT185DR mechanical-bearing direct-drive sealed rotary stage, 185 mm frame size
ASRT245DR	ASRT245DR mechanical-bearing direct-drive sealed rotary stage, 245 mm frame size
ASRT300DR	ASRT300DR mechanical-bearing direct-drive sealed rotary stage, 300 mm frame size

### Aperture (Optional)

-A	Clear aperture thru stage; 30 mm (ASRT185DR); 80 mm (ASRT245DR); 130 mm (ASRT300DR)
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### Feedback (Required)

-E1	Incremental optical encoder, 1 Vpp
-E2	Absolute optical encoder
-E3	Incremental magnetic encoder, 1 Vpp

Note: -E3 feedback option not available with ASRT300DR.

### Exterior Paint Color (Required)

-PNT1	Desert tan
-PNT2	Black
-PNT3	White

### Mounting Orientation (Required)

-MT1	Vertical axis of rotation
-MT2	Horizontal axis of rotation

### Air Purge (Optional)

-PR	Air purge
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### Desiccant Cartridge (Optional)

-DSC	Desiccant cartridge
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### Flange Mounting (Optional)

-F	Flange mounting kit
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Note: -F flange mounting kit available only with -MT1 mounting orientation.

### Cover (Optional)

-CV	Cover shroud kit
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Note: -CV cover shroud kit available only with -MT2 mounting orientation.

### Metrology (Required)

-PL1	Metrology, uncalibrated with performance plots
-PL2	Metrology, calibrated (HALAR) with performance plots

### Integration (Required)

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 that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.