

ASR1100 Series

Mechanical-Bearing Rotary Stage

Integral pneumatic collet chuck

ER16 collet accepts 0.5 mm to 10 mm O.D. tubing

Clear aperture for product feed-through

Threaded collet retainer enables rapid tooling changeover

Normally-closed collet configuration

Low-inertia shaft for maximum acceleration

Direct-drive brushless motor and encoder

Maintenance-free, frictionless rotary union



Aerotech's ASR1100 series is an extension of the hugely successful ASR1000 direct-drive rotary stage. The ASR1100 adds an integral pneumatically-operated collet chuck providing “out-of-the-box” material handling capability.

Integral Collet Design

The collet chuck on the ASR1100 accepts ER16 series collets. These collets are readily available in multiple sizes supporting tube diameters from 0.5 mm to 10 mm. The collet is retained with a threaded retaining cap that enables quick changeover to different tube diameters. The collet chuck is configured in a “fail-safe” mode where full clamping force is applied when no air pressure is present. Applying air pressure up to 40 psi adjusts the collet from fully closed to fully open. Air is delivered to the rotating collet assembly through a custom-designed frictionless, seal-less, rotary union. This 100% noncontact rotary union design ensures a lifetime of maintenance-free operation. The combination collet chuck and rotary union also has significantly less friction and inertia than external assemblies created from discrete parts. This reduced inertia improves system performance by allowing higher peak acceleration and reducing position error during laser machining operations.

Brushless Direct-Drive

The ASR1100 series utilizes direct-drive brushless motor

technology to maximize positioning performance. Direct-drive technology is optimized for 24/7 production environments because there are no brushes to replace and no gear trains or belts to maintain. Direct drive also provides quicker acceleration and higher top speeds than gear- or belt-driven mechanisms, yielding higher total overall throughput. This makes the ASR1100 an excellent choice for processing small-diameter tubular materials.

The low maintenance and high throughput characteristics of the ASR1100 provide a stage that yields the lowest total cost of ownership.

Compact Packaging

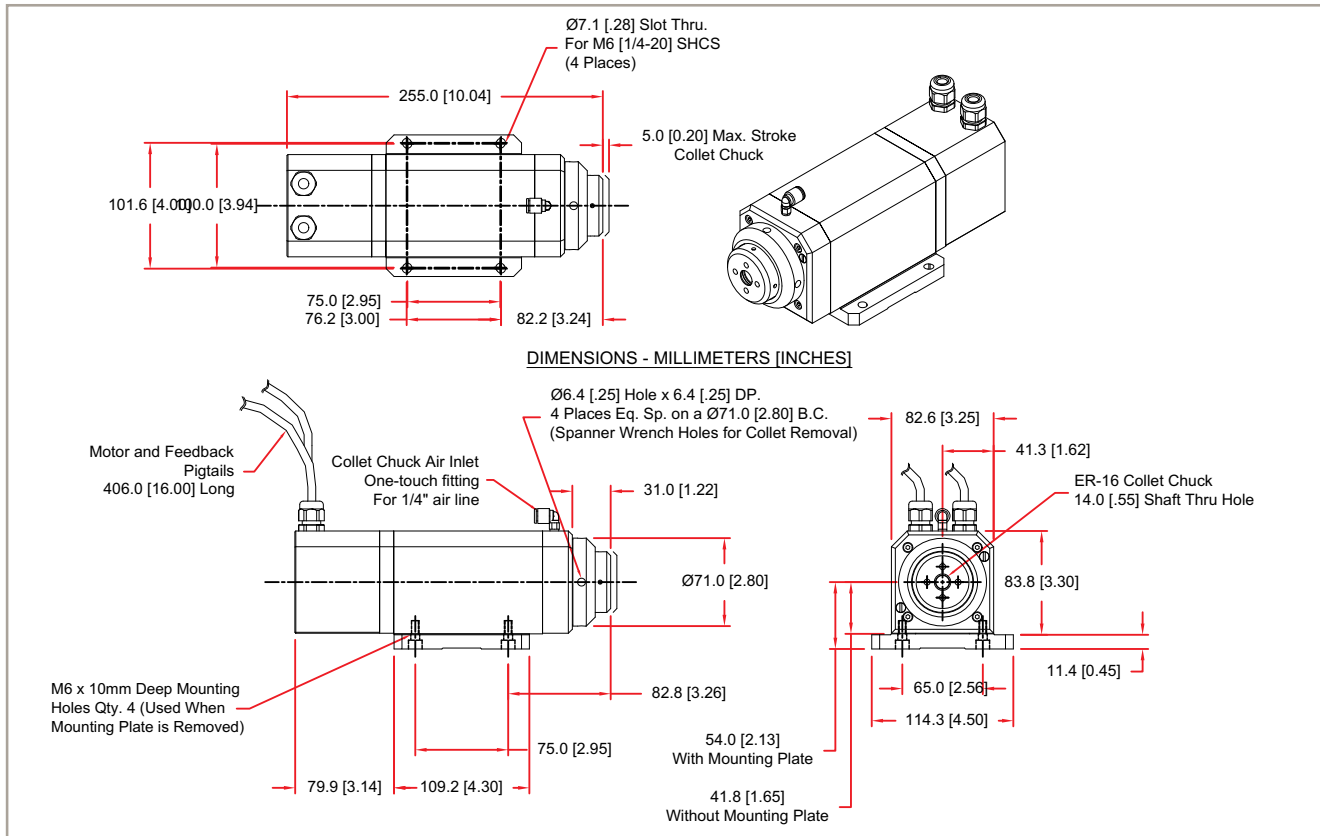
The design of the ASR1100 series direct-drive rotary stage was optimized to minimize stage weight and rotating inertia. The resulting product, with a net overall weight under 5 kg (11 lb), is significantly lighter than competitive product offerings. When used in a multi-axis system, the lower weight results in an increase in performance for all positioning stages carrying the rotary stage.

ASR1100 Series SPECIFICATIONS and DIMENSIONS

ASR1100 Series		
Total Travel		±360° Continuous
Collet Type ⁽¹⁾		ER16
Maximum Aperture		14 mm (Shaft Aperture) With Max 10 mm Collet ID
Drive System		Direct-Drive Brushless Servomotor
Feedback		8192 Cycles/Rev; Analog Output Encoder (standard)
Maximum Rotary Speed ⁽²⁾		600 rpm
Accuracy		±72.8 μrad (±15 arc sec)
Repeatability		±14.6 μrad (±3 arc sec)
Inertia		10 x 10 ⁻⁶ kg-m ² (0.014 oz-in-s ²)
Nominal Stage Weight		<5 kg
Maximum Load ⁽³⁾		3.0 kg (Axial); 2.0 kg (Radial); 3 N-m (Moment)
Motor Type		BM250
Continuous Current	A _{pk}	10
	A _{rms}	7.1
Bus Voltage		Up to 320 VDC
Pin/Collet Runout ⁽⁴⁾		<25 micron
Material	Stage Body	Aluminum
	Collet Chuck	Stainless Steel
Finish	Stage Body	Electroless Nickel
	Collet Chuck	Teflon [®] -Impregnated Nickel Plating

Note:

- Collet chuck accepts Rego-Fix ER collets manufactured to DIN6499 specifications only.
- Maximum speed based on stage capability; maximum application velocity may be limited by system data rate, system resolution, and load.
- Maximum loads are mutually exclusive. Loading limits are due to the collet chuck mechanism. Contact Aerotech directly if part load requirement exceeds specifications.
- Measured TIR of precision gage pin chucked with an ultraprecision ER collet (DIN6499) 10 mm away from collet face with no load.
- Collet chuck mechanism is normally-closed. Collet mechanism requires air to open collet chuck. Air supply must be dry (0° F dew point) oil-less air OR 99.99% pure nitrogen. Air or nitrogen must be filtered to 0.25 micron particle size or better.



ASR1100 Series ORDERING INFORMATION

Ordering Example

ASR1100	-10	-HPD	-RE8192AS	-NC	-NS	-MP	ER16-10AA
Series	Drive Motor	Connector	Position Transducer	Collet Chuck	Rear Seal	Options	Accessories
	-10	-HPD -25D -MS	-RE8192AS	-NC	-S -NS	-MP -WRENCH	ER16-10AA ER16-9AA ER16-8AA ER16-7AA ER16-6AA ER16-5AA ER16-4AA ER16-3AA ER16-2AA ER16-1AA

ASR1100 Series Direct Drive Rotary Stage

ASR1100 Direct-drive rotary stage with integral pneumatic ER16 collet chuck and frictionless rotary union

Drive Motor

-10 5 N-m peak, 1.95 N-m continuous direct-drive brushless motor

Connector

-HPD High power D connector for motor power and 25-pin D for feedback
 -25D Dual 25-pin D connectors with bridged pins for motor power
 -MS MS-style connectors for motor power and feedback

Position Transducer

-RE8192AS Incremental encoder with 8192 cycles per rev sinusoidal output signal

Collet Chuck

-NC Normally closed collect chuck

Rear Seal

-S Rear shaft seal
 -NS No shaft seal

Options

-MP Mounting plate with square bolt-hole pattern
 -WRENCH Spanner wrenches for changing collets

Accessories

ER16-10AA High precision (DIN6499AA) ER 16 collet; 9-10 mm I.D.
 ER16-9AA High precision (DIN6499AA) ER 16 collet; 8-9 mm I.D.
 ER16-8AA High precision (DIN6499AA) ER 16 collet; 7-8 mm I.D.
 ER16-7AA High precision (DIN6499AA) ER 16 collet; 6-7 mm I.D.
 ER16-6AA High precision (DIN6499AA) ER 16 collet; 5-6 mm I.D.
 ER16-5AA High precision (DIN6499AA) ER 16 collet; 4-5 mm I.D.
 ER16-4AA High precision (DIN6499AA) ER 16 collet; 3-4 mm I.D.
 ER16-3AA High precision (DIN6499AA) ER 16 collet; 2-3 mm I.D.
 ER16-2AA High precision (DIN6499AA) ER 16 collet; 1-2 mm I.D.
 ER16-1AA High precision (DIN6499AA) ER 16 collet; 0.5-1 mm I.D.