

# ROTARY STAGE ACS LP SERIES



Aerotech's ACS LP series rotary stages with integrated ER collet chuck provides automated material handling capability for a wide range of materials and applications.

## High Precision ER Collet

The collet chuck on the ACS-100LP accepts an ER8 series collet, while the ACS-150LP uses an ER25 collet and the ACS-200LP uses an ER40 collet. These collets are readily available from machine tool component suppliers in sizes that support tube diameters from 0.5 mm to 30 mm. ER collets provide excellent run-out characteristics for applications requiring high-precision gripping of tubular material. The collet is retained with a threaded retaining nut that enables quick changeover, and is configured in a "fail-safe" normally-closed mode where full clamping force is applied when no air pressure is present.

## Compact Package

The design of the ACS LP series direct-drive rotary stage was optimized to minimize stage height. The low profile of the stage reduces the effective working height of the system minimizing "stack-up" related errors.

## Integral Rotary Union

Air is delivered to the collet or gripper assembly through an integral rotary union using a seal-less, frictionless design. This 100% noncontact rotary-union design ensures a lifetime of maintenance-free operation. The combination collet chuck and rotary union assembly 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 ACS LP 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, which yields higher total overall throughput.

The low maintenance and high throughput characteristics of the ACS LP, coupled with the integral material handling capability, provide the lowest total cost of ownership when compared to component-level solutions.



*ER collets provide excellent run-out characteristics for applications requiring high-precision gripping of tubular material.*

## — PRODUCT HIGHLIGHTS —

- Integral pneumatic ER collet chuck
- Clear aperture for product feed-through
- Low inertia shaft for maximum acceleration
- Integral rotary union
- Ultra-low profile minimizes working height
- Follows the 2011/65/EU RoHS 2 Directive

## ACS LP Series Specifications

Specifications		ACS100LP	ACS150LP	ACS200LP
Total Travel <sup>1</sup>		±360° Continuous		
Collet Option		ER8/MicroBore	ER25	ER40
Aperture	ER8/MicroBore	5 mm ER, 0.9 mm MicroBore	N/A	N/A
	ER25	N/A	16 mm	N/A
	ER40	N/A	N/A	25 mm
Maximum Torque (Continuous)		0.64 N-m	2.36 N-m	5.99 N-m
Bus Voltage		Up to 340 VDC		
Max Speed <sup>2</sup>		1500 rpm	600 rpm	600 rpm
Accuracy <sup>3</sup>	Uncalibrated	388 µrad (80 arc sec)		
	Calibrated	29.1 µrad (6 arc sec)	48.5 µrad (10 arc sec)	48.5 µrad (10 arc sec)
Repeatability <sup>3</sup>		14.6 µrad (3 arc sec)	19.4 µrad (4 arc sec)	19.4 µrad (4 arc sec)
Max Load <sup>4</sup>	ER8/MicroBore	1.5 kg (Axial); 0.5 kg (Radial); 0.75 N-m (Moment)		
	ER25	10 kg (Axial); 5 kg (Radial); 6 N-m (Moment)		
	ER40	15 kg (Axial); 10 kg (Radial); 12 N-m (Moment)		
Pin/Collet Runout <sup>5</sup>		<25 µm		
Inertia	Unloaded	0.00038 kg-m <sup>2</sup>	0.00242 kg-m <sup>2</sup>	0.00843 kg-m <sup>2</sup>
Total Mass		2.0 kg	4.3 kg	7.6 kg
Finish	Table	Hardcoat		
	Stage	Black Anodize		

1 Collet chuck accepts Rego-Fix ER collets manufactured to DIN6499 specifications only.

2 Maximum speed based on stage capability; maximum application velocity may be limited by system data rate, system resolution, and load.

3 Repeatability and accuracy are dependent on encoder resolution. To achieve the listed specifications, encoder resolution must be 0.36 arc sec or less.

4 Maximum loads are mutually exclusive. Loading limits are due to the collet chuck mechanism. Contact Aerotech directly if part load requirement exceeds specifications.

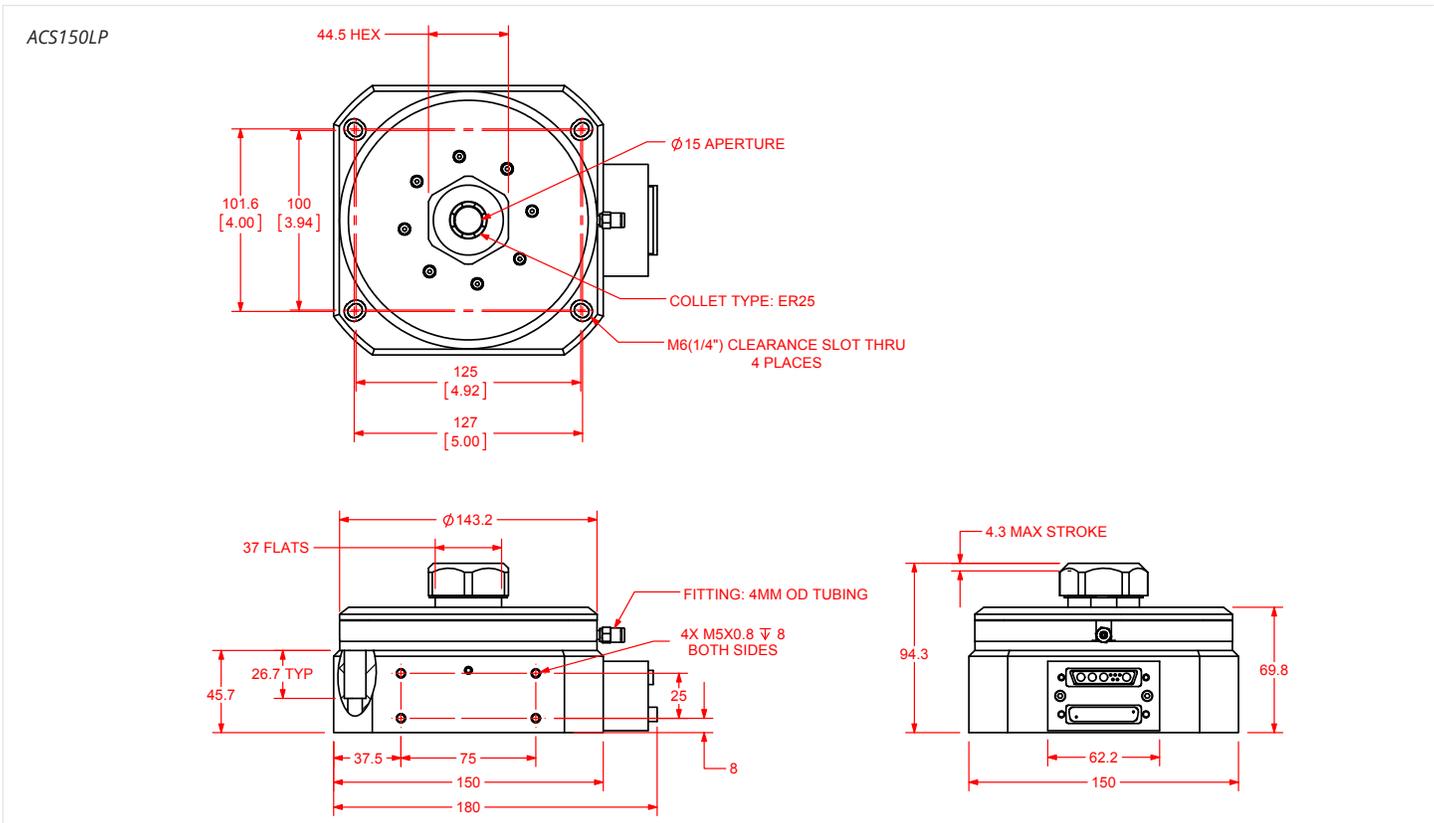
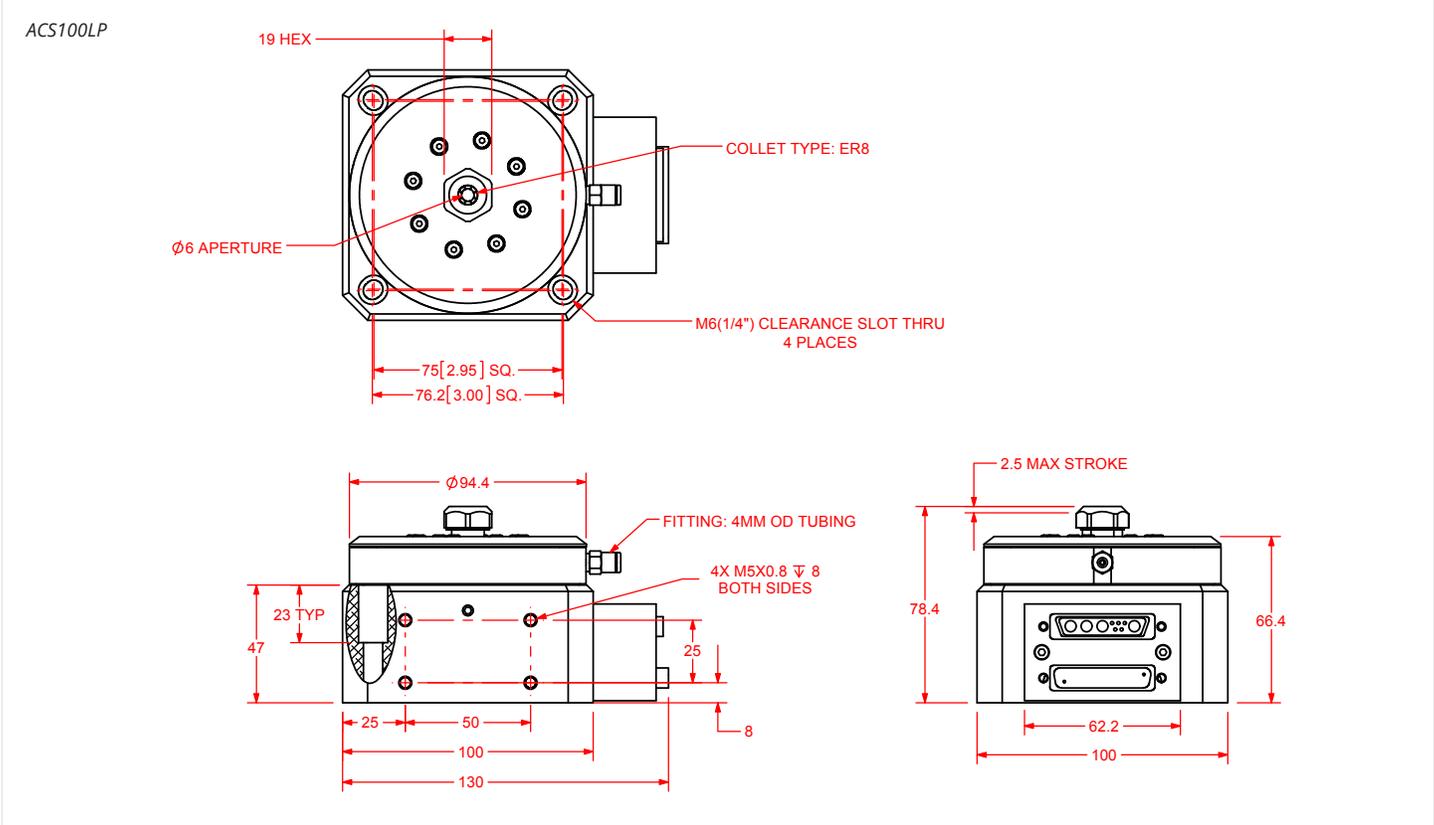
5 Measured TIR of precision gage pin chucked with an ultraprecision ER collet (DIN6499) 6 mm away from collet face with no load.

6 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 1 micron particle size or better.

## ACS Maximum Speeds for Encoder Option

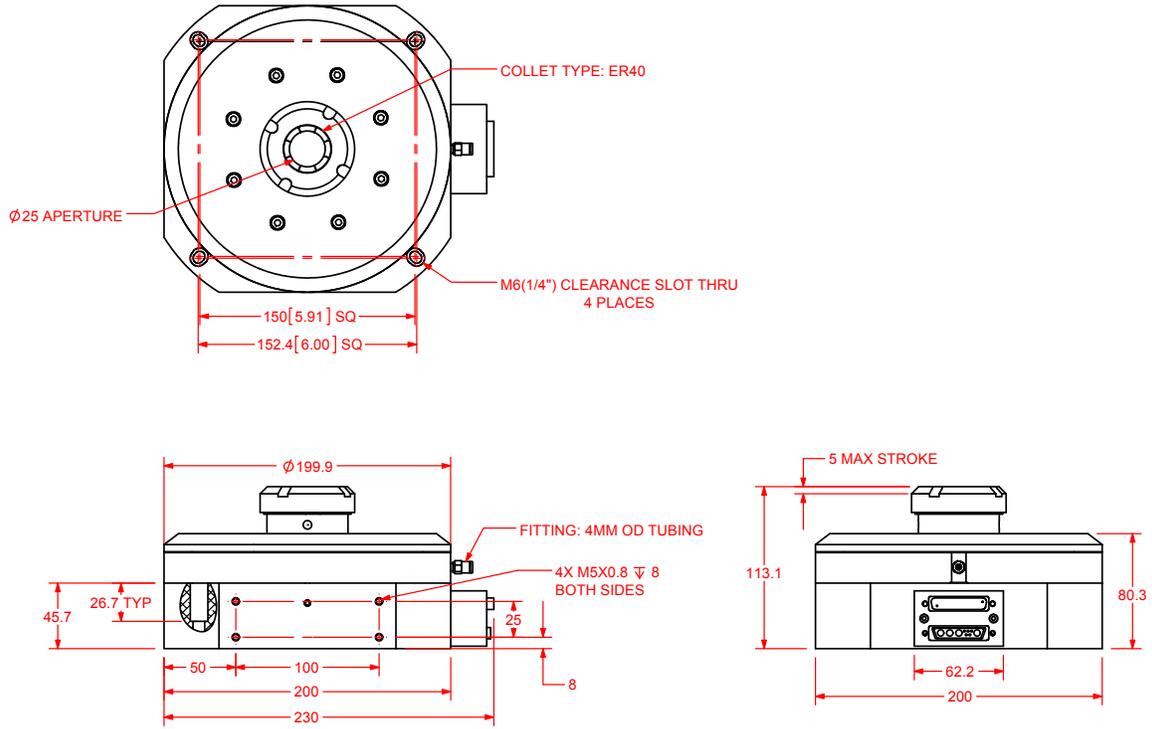
Encoder Option	ACS100	ACS150	ACS200
-AS/-X5/-X10/-X25	800 rpm	600 rpm	600 rpm
-X50	800 rpm	600 rpm	500 rpm

## ACS LP Series Dimensions



## ACS LP Series **Dimensions**

ACS200LP



## ACS LP Series **Ordering Information**

### ACS100 Mechanical-Bearing Direct-Drive Rotary Collet Stage

#### Chuck Style (Required)

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-ER8	ER8 Ultra-Precision Collet
-ER8MB	ER8 Micro-Bore Collet

#### Feedback (Required)

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-E1	Incremental Encoder, 1 Vpp
-E2	Incremental Encoder, TTL, x5 Interpolation
-E3	Incremental Encoder, TTL, x10 Interpolation
-E4	Incremental Encoder, TTL, x25 Interpolation
-E5	Incremental Encoder, TTL, x50 Interpolation

Note: Digital output encoder signals are synthesized with a 16 MHz clock. Care must be taken to ensure that the encoder sample rate on the controller is at least 16 MHz or higher. Slower clock rates are available on request.

#### Wrench (Optional)

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-WR	Wrench for Changing Collet
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#### Metrology (Required)

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-PL1	Metrology, Uncalibrated with Performance Plots
-PL2	Metrology, Calibrated (HALAR) with Performance Plots

#### 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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Collet-ER8-CLTxx	ER8 DIN6499AA Electropolished Collet, 0.5 mm to 5 mm part diameter sizes available
Collet-ER8MB-CLTxx	ER8 DIN6499AA Electropolished Microbore Collet, 0.2 mm to 0.9 mm part diameter available
CGF	Collet and Gripper Filtration Kit

## ACS LP Series **Ordering Information**

### ACS150 Mechanical-Bearing Direct-Drive Rotary Collet Stage

#### Motor (Required)

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-M1	Low Current, -A Winding
-M2	Low Voltage, -B Winding

#### Feedback (Required)

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-E1	Incremental Encoder, 1 Vpp
-E2	Incremental Encoder, TTL, x5 Interpolation
-E3	Incremental Encoder, TTL, x10 Interpolation
-E4	Incremental Encoder, TTL, x25 Interpolation
-E5	Incremental Encoder, TTL, x50 Interpolation

Note: Digital output encoder signals are synthesized with a 16 MHz clock. Care must be taken to ensure that the encoder sample rate on the controller is at least 16 MHz or higher. Slower clock rates are available on request.

#### Rear Seal (Optional)

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-SL	Rear Seal
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#### Wrench (Optional)

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-WR	Wrench for Changing Collet
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#### Metrology (Required)

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-PL1	Metrology, Uncalibrated with Performance Plots
-PL2	Metrology, Calibrated (HALAR) with Performance Plots

#### Integration (Required)

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

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Collet-ER25-CLTxx	ER25 DIN6499AA Electropolished Collet, 0.5 mm to 15 mm part holding sizes available
CGF	Collet and Gripper Filtration Kit

## ACS LP Series **Ordering Information**

### ACS200 Mechanical-Bearing Direct-Drive Rotary Collet Stage

#### Motor (Required)

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-M1	Low Current, -A Winding
-M2	Low Voltage, -B Winding

#### Feedback (Required)

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-E1	Incremental Encoder, 1 Vpp
-E2	Incremental Encoder, TTL, x5 Interpolation
-E3	Incremental Encoder, TTL, x10 Interpolation
-E4	Incremental Encoder, TTL, x25 Interpolation
-E5	Incremental Encoder, TTL, x50 Interpolation

Note: Digital output encoder signals are synthesized with a 16 MHz clock. Care must be taken to ensure that the encoder sample rate on the controller is at least 16 MHz or higher. Slower clock rates are available on request.

#### Rear Seal (Optional)

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-SL	Rear Seal
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#### Wrench (Optional)

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-WR	Wrench for Changing Collet
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#### Metrology (Required)

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-PL1	Metrology, Uncalibrated with Performance Plots
-PL2	Metrology, Calibrated (HALAR) with Performance Plots

#### Integration (Required)

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-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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Collet-ER25-CLTxx	ER40 DIN6499AA Electropolished Collet, 15.5 mm to 25 mm part holding sizes available
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Note: ER40 collet sizes below 15.5 mm diameter are not supported. Use the ACS150LP if these sizes are required.

CGF	Collet and Gripper Filtration Kit
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