



Large Aperture Rotary Stage

ALAR-LP

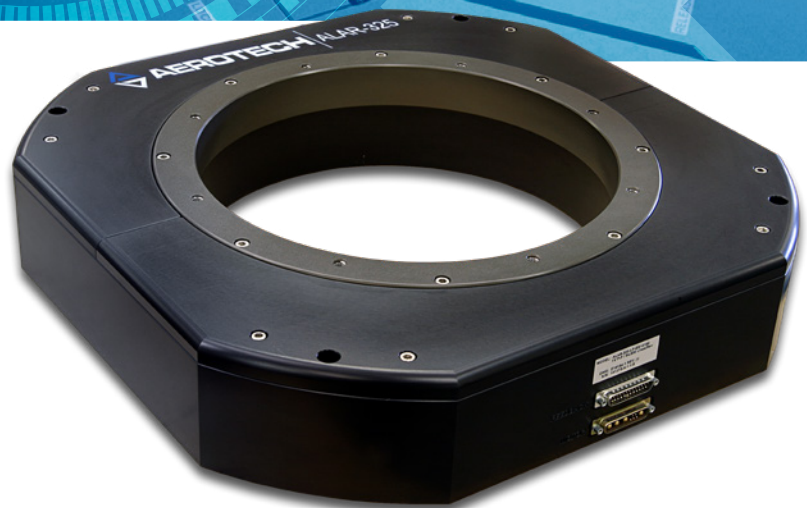
Low-Profile, Direct-Drive Motion for Heavy-Duty Applications

The ALAR family of direct-drive, large-aperture rotary stages provides superior angular positioning and velocity control. ALAR-LP (low profile) offers a generous payload capacity with a short overall height, making it ideal for space-constrained applications. Featuring a large-diameter clear aperture and a non-cogging direct-drive motor, ALAR-LP stages offer a better-performing alternative to worm-gear stages.

Key Applications

ALAR-LP stages are best suited for applications including:

- ◆ Single- and multi-axis sensor testing
- ◆ Inertial navigation device qualification
- ◆ Missile seeker testing
- ◆ Antenna testing
- ◆ Photonic component alignment
- ◆ High-accuracy laser processing
- ◆ Precision wafer inspection
- ◆ Custom gimbal assemblies



KEY FEATURES:

- ◆ Offers a **LOW-PROFILE FORM FACTOR** with overall stage height as short as 65 mm for space-constrained applications
- ◆ **INTEGRATES EASILY INTO SYSTEMS & MACHINES** thanks to large-diameter clear aperture up to 325 mm
- ◆ Delivers **EXTREMELY PRECISE**, smooth, cog-free rotation with direct-drive torque motor
- ◆ **SUPPORTS LARGE AXIAL & RADIAL LOADS**, ideal for linear/rotary stage combinations & gimbal configurations
- ◆ Provides long service life & **CONSISTENT PERFORMANCE** over time
- ◆ Available with absolute encoder option & limited travel for **MAXIMUM PAYLOAD SECURITY**

ALAR-LP SPECIFICATIONS

Mechanical Specifications	ALAR100LP	ALAR150LP	ALAR200LP	ALAR250LP	ALAR325LP
Travel	Continuous (optional 340° max. limited travel)				
Aperture	100 mm	150 mm	200 mm	250 mm	325 mm
Resolution (Min. Incremental Motion) ⁽¹⁾	0.1 μ rad (0.02 arc sec)	0.09 μ rad (0.018 arc sec)	0.02 μ rad (0.014 arc sec)	0.05 μ rad (0.01 arc sec)	0.04 μ rad (0.009 arc sec)
Accuracy ⁽²⁾⁽³⁾	$\pm 9.7 \mu$ rad (± 2 arcsec)				
Bidirectional Repeatability ⁽³⁾	$\pm 2.4 \mu$ rad (± 0.5 arc sec)				
Tilt-Error Motion	19.4 μ rad (4.0 arc sec)				
Maximum Speed ⁽⁴⁾	50 rpm	45 rpm	90 rpm		120 rpm
Maximum Torque	13 N•m	22.9 N•m	126.8 N•m	147.9 N•m	213.8 N•m
Continuous Torque	2.2 N•m	4.0 N•m	19.3 N•m	22.5 N•m	35.0 N•m
Axial Load	1175 N	1325 N	4350 N	4590 N	5825 N
Radial Load	950 N	1275 N	4125 N	5050 N	6450 N
Moment Load ⁽⁵⁾	150 N•m	225 N•m	1075 N•m	1475 N•m	2200 N•m
Shaft Inertia	0.022 kg•m ²	0.031 kg•m ²	0.190 kg•m ²	0.310 kg•m ²	0.550 kg•m ²
Shaft Inertia with Limits	0.026 kg•m ²	0.042 kg•m ²	0.229 kg•m ²	0.383 kg•m ²	0.675 kg•m ²
Stage Mass	8.3 kg	9.8 kg	28.2 kg	35.0 kg	44.5 kg
Stage Mass with Limits	8.9 kg	10.8 kg	30.1 kg	37.4 kg	49.9 kg

1. Resolution assumes 1 Vpp encoder with 2000x controller multiplication.
2. Certified with each stage. Requires the use of an Aerotech controller.
3. Repeatability and accuracy are dependent on encoder selection. To achieve the listed specifications, the electrical resolution should be 0.2 arc sec or smaller.
4. Square-wave digital encoder options will limit maximum speed below the listed value. Contact factory for specific stage and encoder speed combination.
5. The ALAR-LP base must be fully supported by a rigid mounting surface to achieve the specified moment load.

Electrical Specifications	ALAR100LP	ALAR150LP	ALAR200LP	ALAR250LP	ALAR325LP
Motor	Brushless Slotless				
Continuous Current	A_{pk}	5.8	5.4	5.3	5.1
	A_{rms}	4.1		3.8	3.6
Peak Current, Stall	A_{pk}	33.5	31.4	34.8	31.2
	A_{rms}	23.7	22.2	24.6	22.1
Bus Voltage	Up to 340 VDC				
Incremental Encoder Line Count	31,488 lines/rev	36,000 lines/rev	47,200 lines/rev	55,040 lines/rev	64,800 lines/rev
Limit Switches ⁽¹⁾	5 V, normally closed				

1. Limited travel options only.

ALAR-LP ORDERING INFORMATION

ALAR-LP Mechanical-Bearing, Direct-Drive Rotary Stage

ALAR100LP	Mechanical-bearing, direct-drive rotary stage, low profile, 100 mm aperture
ALAR150LP	Mechanical-bearing, direct-drive rotary stage, low profile, 150 mm aperture
ALAR200LP	Mechanical-bearing, direct-drive rotary stage, low profile, 200 mm aperture
ALAR250LP	Mechanical-bearing, direct-drive rotary stage, low profile, 250 mm aperture
ALAR325LP	Mechanical-bearing, direct-drive rotary stage, low profile, 325 mm aperture

Travel (Required)

-	Continuous travel
-TR010	Limited travel, ± 5 degrees
-TR020	Limited travel, ± 10 degrees
-TR030	Limited travel, ± 15 degrees
-TR060	Limited travel, ± 30 degrees
-TR090	Limited travel, ± 45 degrees
-TR120	Limited travel, ± 60 degrees
-TR180	Limited travel, ± 90 degrees
-TR240	Limited travel, ± 120 degrees
-TR300	Limited travel, ± 150 degrees
-TR340	Limited travel, ± 170 degrees
-TR340	Limited travel, ± 170 degrees

Feedback (Required)

-E1	Incremental encoder, 1 Vpp
-E2	Incremental encoder, digital RS422, x4 interpolation
-E3	Incremental encoder, digital RS422, x20 interpolation
-E4	Incremental encoder, digital RS422, x40 interpolation
-E5	Incremental encoder, digital RS422, x100 interpolation
-E6	Incremental encoder, digital RS422, x200 interpolation
-E7	Absolute encoder

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

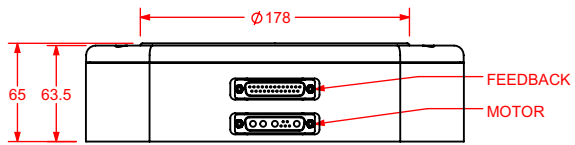
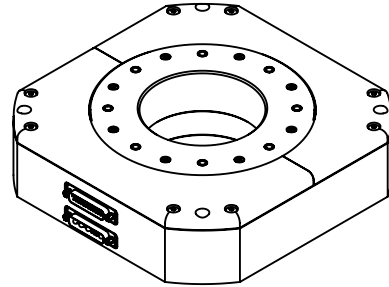
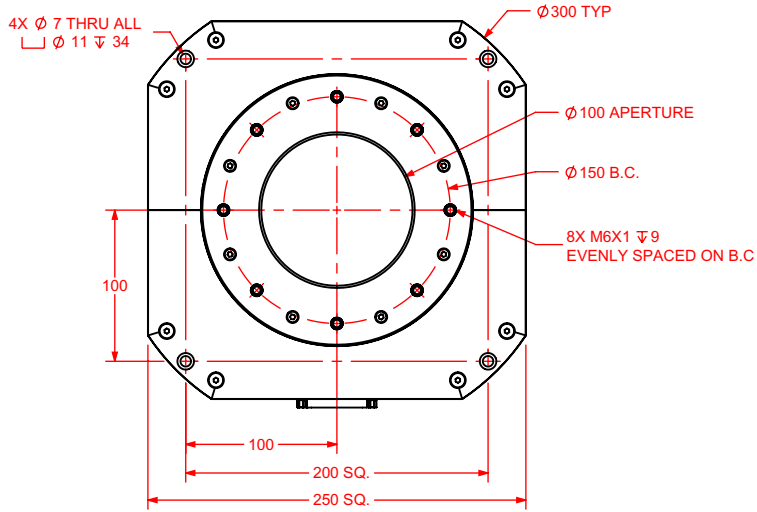
Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller, and stage). This includes parameter file generation, system tuning, and documentation of the system configuration.

-TAC Integration - Test as components

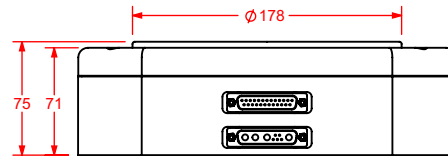
Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

ALAR-LP DIMENSIONS

ALAR100LP

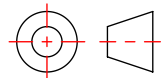


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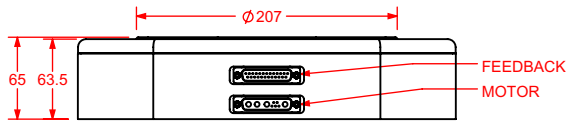
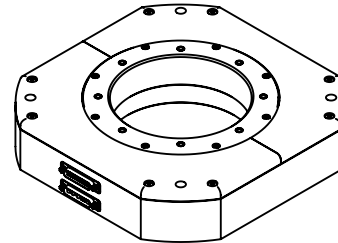
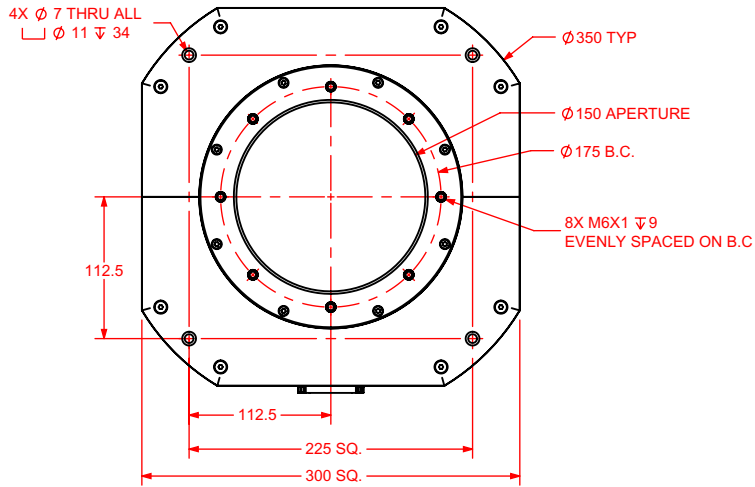
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DIMENSIONS: MILLIMETERS

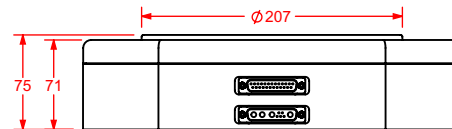


ALAR-LP DIMENSIONS

ALAR150LP

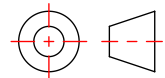


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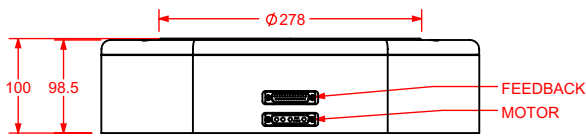
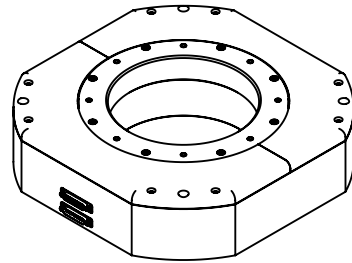
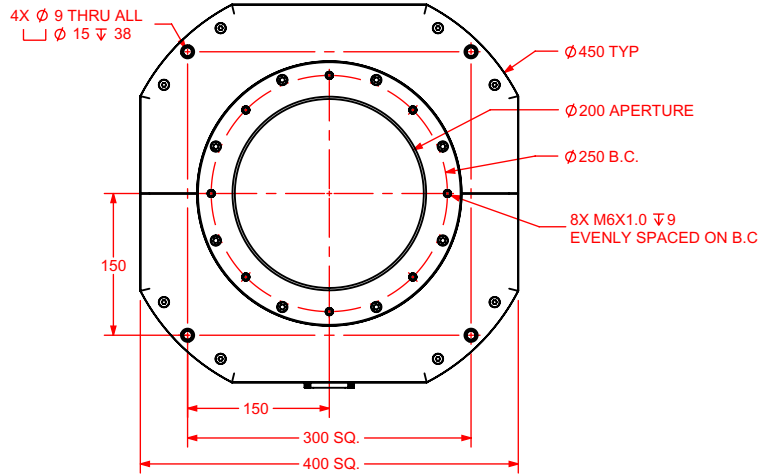
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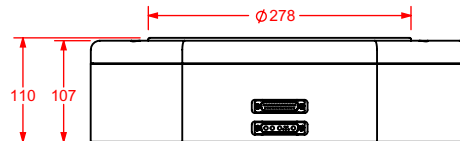


ALAR-LP DIMENSIONS

ALAR200LP

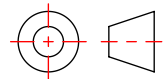


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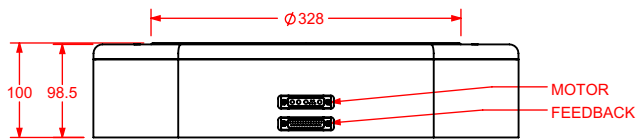
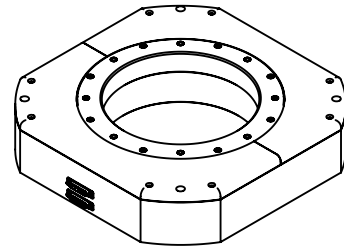
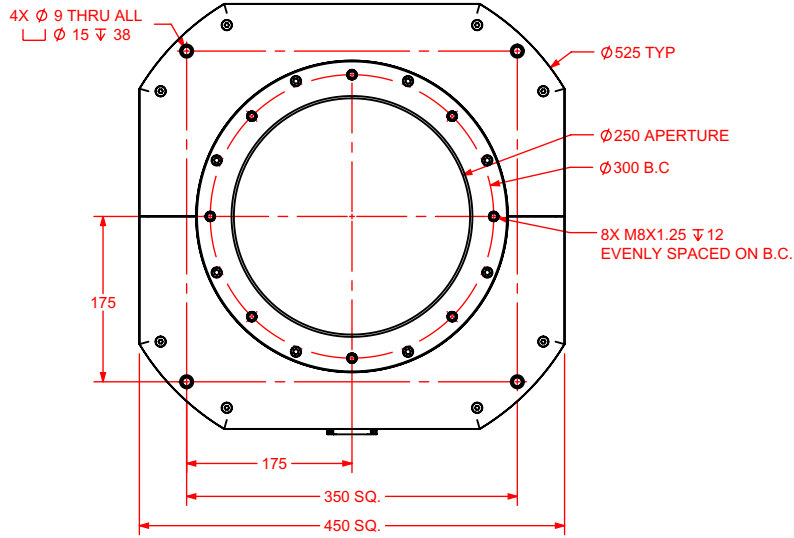
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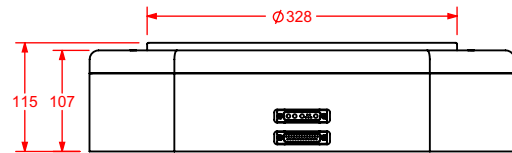


ALAR-LP DIMENSIONS

ALAR250LP

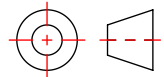


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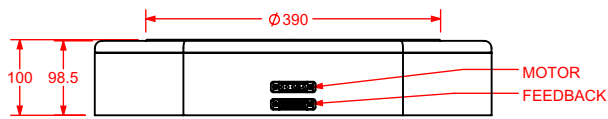
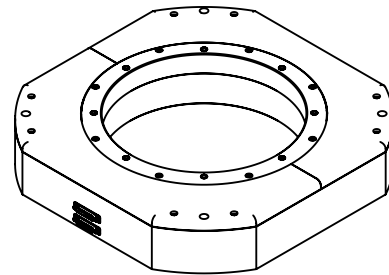
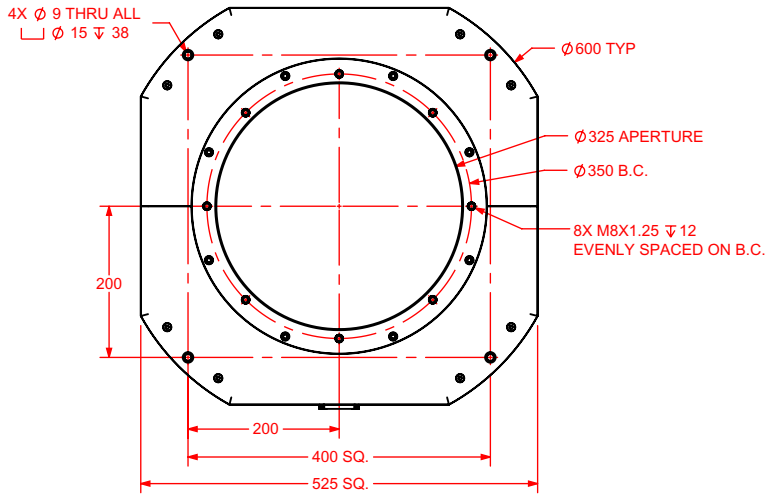
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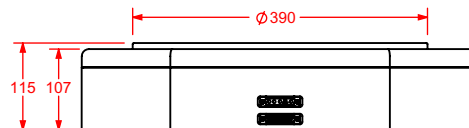


ALAR-LP DIMENSIONS

ALAR325LP



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DIMENSIONS: MILLIMETERS

