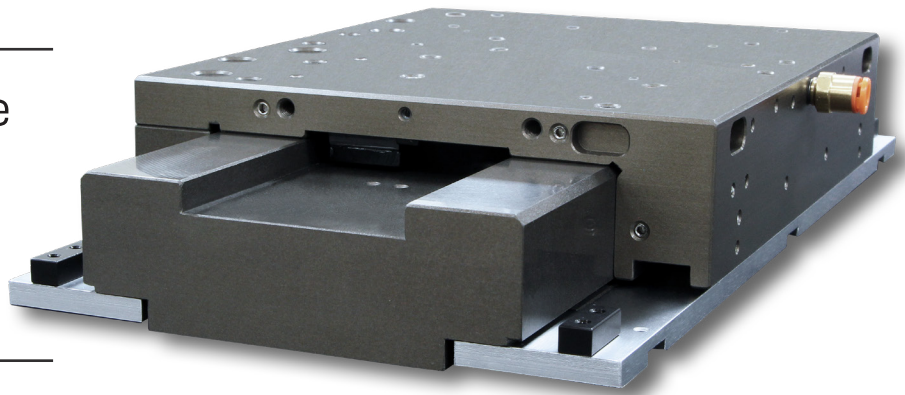




Air-Bearing, Direct-Drive Linear Stage

ABL1000



Precise Motion, Unsurpassed Reliability

Aerotech ABL1000 air-bearing stages leverage a fully preloaded, noncontact design to provide exceptionally smooth, stable, precise motion for the most demanding applications. The direct-drive linear motor delivers the highest force output in its class, enabling robust, high-speed positioning suitable for precision mass production. Because the air bearing, motor and feedback device never make mechanical contact, the stage experiences no wear or performance degradation over time. This results in years of maintenance-free operation and a virtually unlimited service life, lowering the total cost of ownership. Because the stage requires no lubrication, it's an ideal solution for cleanroom applications.

Key Applications

ABL1000 is ideal for applications that require ultra-precise motion, including:

- ◆ Fiber alignment, assembly & advanced packaging
- ◆ Active alignment of photonic devices
- ◆ Metrology & inspection
- ◆ Semiconductor manufacturing & inspection
- ◆ Wafer processing
- ◆ Synchrotron, beamline & other research applications

KEY FEATURES:

- ◆ High-resolution position feedback contributes to **EXCELLENT REPEATABILITY & VELOCITY STABILITY**
- ◆ **FULLY CONTACTLESS, FRICTIONLESS DESIGN** offers the ultimate reliability & longevity
- ◆ Ideal for use in **CLEANROOM ENVIRONMENTS**
- ◆ Configurable as **XY & XYZ ASSEMBLIES** for precise, multi-axis motion
- ◆ Available with optional, user-adjustable **COUNTERBALANCE FOR VERTICAL OPERATION**

ABL1000 Series SPECIFICATIONS

MECHANICAL SPECIFICATIONS		ABL1000-025	ABL1000-050	ABL1000-100
Total Travel		25 mm	50 mm	100 mm
Drive System		Linear Brushless Servomotor		
Resolution	-E2 Encoder	0.5 nm		
	-E1 Encoder	2.5 nm		
Maximum Travel Speed ⁽¹⁾		300 mm/s		
Maximum Linear Acceleration		1 g - 10 m/s ² (no load)		
Maximum Load ⁽²⁾	Horizontal	15.0 kg		
Accuracy	-E2 Encoder	±0.2 µm ⁽³⁾ ±1 µm	±0.2 µm ⁽³⁾ ±1 µm	±0.2 µm ⁽³⁾ ±2 µm
	-E1 Encoder	±0.3 µm ⁽³⁾ ±2 µm	±0.3 µm ⁽³⁾ ±2 µm	±0.3 µm ⁽³⁾ ±5 µm
Repeatability	-E2 Encoder ⁽³⁾	±50 nm		
	-E1 Encoder	±50 nm ⁽³⁾ ; ±100 nm		
Straightness and Flatness ⁽⁴⁾		±0.25 µm	±0.25 µm	±0.4 µm
Pitch and Yaw		±0.25 arc sec	±0.50 arc sec	±1.0 arc sec
Nominal Stage Weight		4.5 kg	5.5 kg	6.4 kg
Moving Mass		1.9 kg		
Operating Pressure ⁽⁵⁾		80 psi ±5 psi		
Air Consumption ⁽⁶⁾⁽⁷⁾		17.5 SLPM	17.5 SLPM	17.5 SLPM
Material		Hardcoat Anodized Aluminum		

Notes:

1. Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and system resolution.
2. Max load for XY configuration is 10.0 kg
3. Values with Aerotech controls and -PL2 metrology option.
4. Dependent on flatness of stage mounting surface.
5. To protect air bearing against under-pressure, an in-line pressure switch tied to the controller E-stop input is required.
6. Air supply must be clean, dry to 0° F dew point, and filtered to 0.25 µm or better; recommend nitrogen at 99.99% purity.
7. Maximum expected air consumption for single axis.
8. Specifications are for single-axis systems, measured 25 mm above the tabletop. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.



ABL1000WB Series SPECIFICATIONS

MECHANICAL SPECIFICATIONS		ABL1000WB-050	ABL1000WB-100	ABL1000WB-150
Nominal Travel		50 mm	100 mm	150 mm
Drive System		Linear Brushless Servomotor		
Resolution	-E2 Encoder	0.5 nm		
	-E1 Encoder	2.5 nm		
Maximum Travel Speed ⁽¹⁾		300 mm/s		
Maximum Linear Acceleration		1 g - 10 m/s ² (no load)		
Maximum Load ⁽²⁾	Horizontal	15.0 kg		
Accuracy	-E2 Encoder	±0.2 µm ⁽³⁾ ±1 µm	±0.2 µm ⁽³⁾ ±1 µm	±0.5 µm ⁽³⁾ ±3 µm
	-E1 Encoder	±0.3 µm ⁽³⁾ ±2 µm	±0.3 µm ⁽³⁾ ±2 µm	±0.5 µm ⁽³⁾ ±5 µm
Repeatability	-E2 Encoder ⁽³⁾	±50 nm		
	-E1 Encoder	±50 nm ⁽³⁾ ; ±100 nm		
Straightness and Flatness ⁽⁴⁾		±0.25 µm	±0.25 µm	±0.4 µm
Pitch and Yaw		±0.25 arc sec	±0.50 arc sec	±1.0 arc sec
Nominal Stage Weight		9.7 kg	10.7 kg	11.6 kg
Moving Mass		4.3 kg		
Operating Pressure ⁽⁵⁾		80 psi ±5 psi		
Air Consumption ⁽⁶⁾⁽⁷⁾		13.2 SLPM	13.2 SLPM	13.2 SLPM
Material		Hardcoat Anodized Aluminum		

Notes:

1. Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and system resolution.
2. Max load for XY configuration is 10.0 kg
3. Values with Aerotech controls and -PL2 metrology option.
4. Dependent on flatness of stage mounting surface.
5. To protect air bearing against under-pressure, an in-line pressure switch tied to the controller E-stop input is required.
6. Air supply must be clean, dry to 0° F dew point, and filtered to 0.25 µm or better; recommend nitrogen at 99.99% purity.
7. Maximum expected air consumption for single axis.
8. Specifications are for single-axis systems, measured 25 mm above the tabletop. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for non-standard applications.

ELECTRICAL SPECIFICATIONS	
Drive System	Brushless Linear Servomotor
Feedback	Noncontact Linear Encoder (see signal period options on Order Information page)
Maximum Bus Voltage	up to 80 VDC
Limit Switches	5 V, Normally Closed
Home Switch	Near Center

ABL1000 Series ORDERING OPTIONS

Orientation (Required)

- Standard orientation; horizontal or side mounting
- Z** Vertical mounting orientation; includes counterbalance

Travel (Required)

- 025** 25 mm travel
- 050** 50 mm travel
- 100** 100 mm travel

Feedback (Required)

- E1** Incremental linear encoder, 1 Vpp amplified sine output
- E2** High-accuracy incremental linear encoder; 1 Vpp amplified sine output

Cable Management (Required)

- CMS1** Cable management system, single axis
- CMS2** Cable management system, lower (X) axis
- CMS3** Cable management system, upper (Y) axis
- CMS5** Cable management system, vertical (Z) axis

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 spareparts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

Accessories (To Be Ordered As Separate Line Item)

- ABF** Air-bearing filtration kit

ABL1000WB Series ORDERING OPTIONS

Travel (Required)

- 050 50 mm travel
- 100 100 mm travel
- 150 150 mm travel

Feedback (Required)

- E1 Incremental linear encoder, 1 Vpp amplified sine output
- E2 High-accuracy incremental linear encoder; 1 Vpp amplified sine output

Cable Management (Required)

- CMS1 Cable management system for single axis
- CMS2 Cable management system for lower (X) axis of XY assembly
- CMS3 Cable management system for upper (Y) axis of XY assembly

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

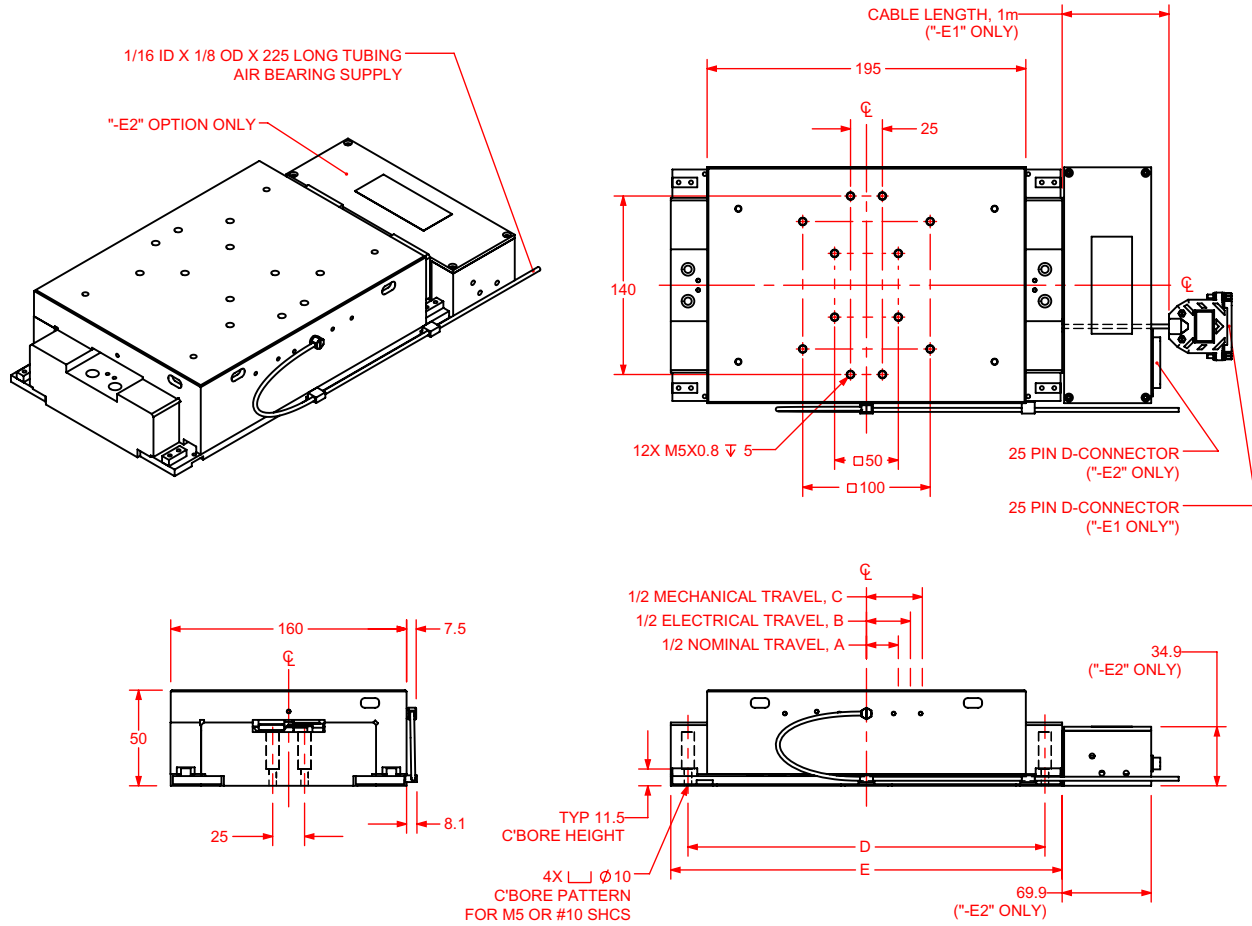
Testing and integration of individual items as discrete components that ship together. This is typically used for spareparts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

Accessories (To Be Ordered As Separate Line Item)

- ABF Air-bearing filtration kit

ABL1000 Series DIMENSIONS

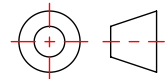
ABL1000



STAGE SHOWN AT MID TRAVEL

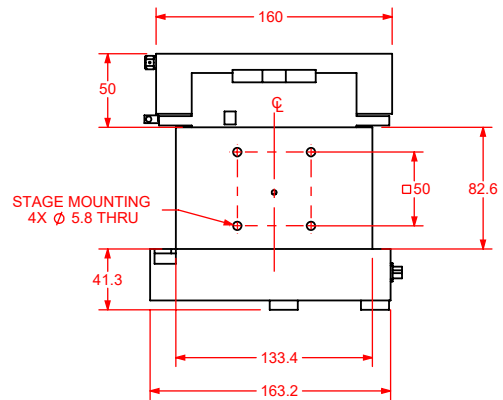
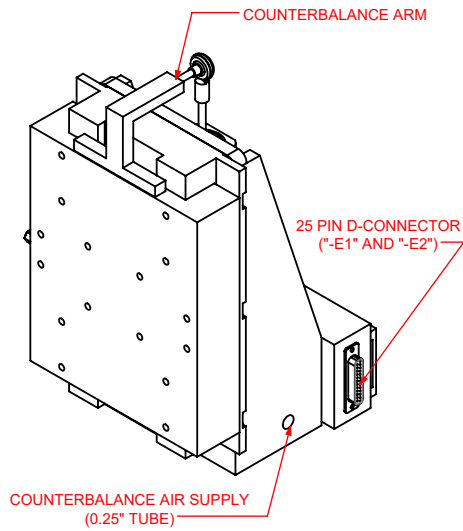
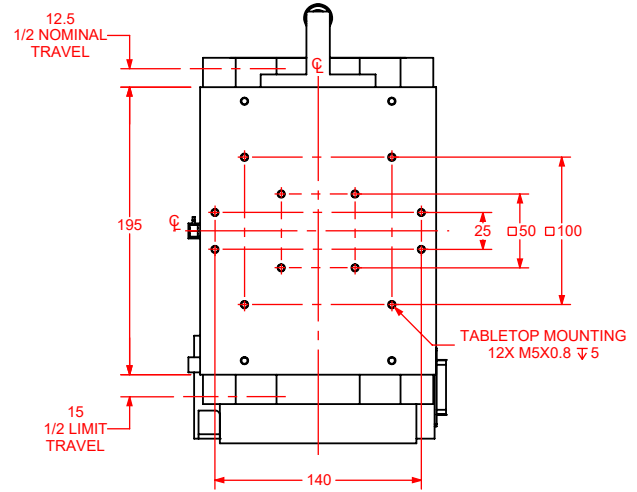
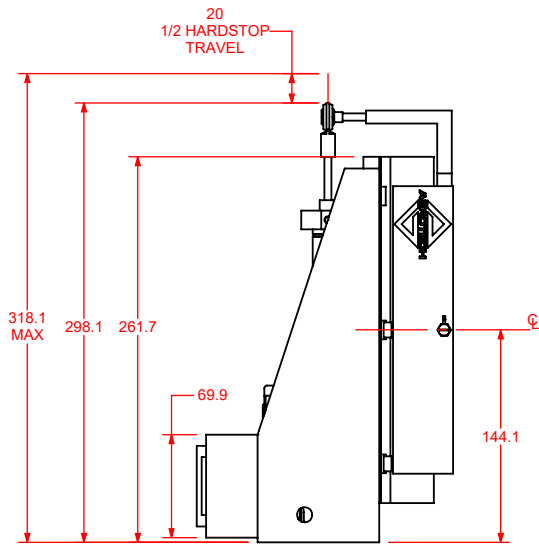
MODEL	TOTAL TRAVEL	A 1/2 NOMINAL TRAVEL	B 1/2 ELECTRICAL TRAVEL	C 1/2 MECHANICAL TRAVEL	D STAGE MOUNTING	E STAGE BASE LENGTH
ABL1000-025	25	12.5	15	20	165	235
ABL1000-050	50	25	27.5	32.5	140	260
ABL1000-100	100	50	51	57.5	140	310

DIMENSIONS: MILLIMETERS

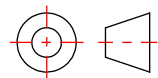


ABL1000 Series DIMENSIONS

ABL1000Z

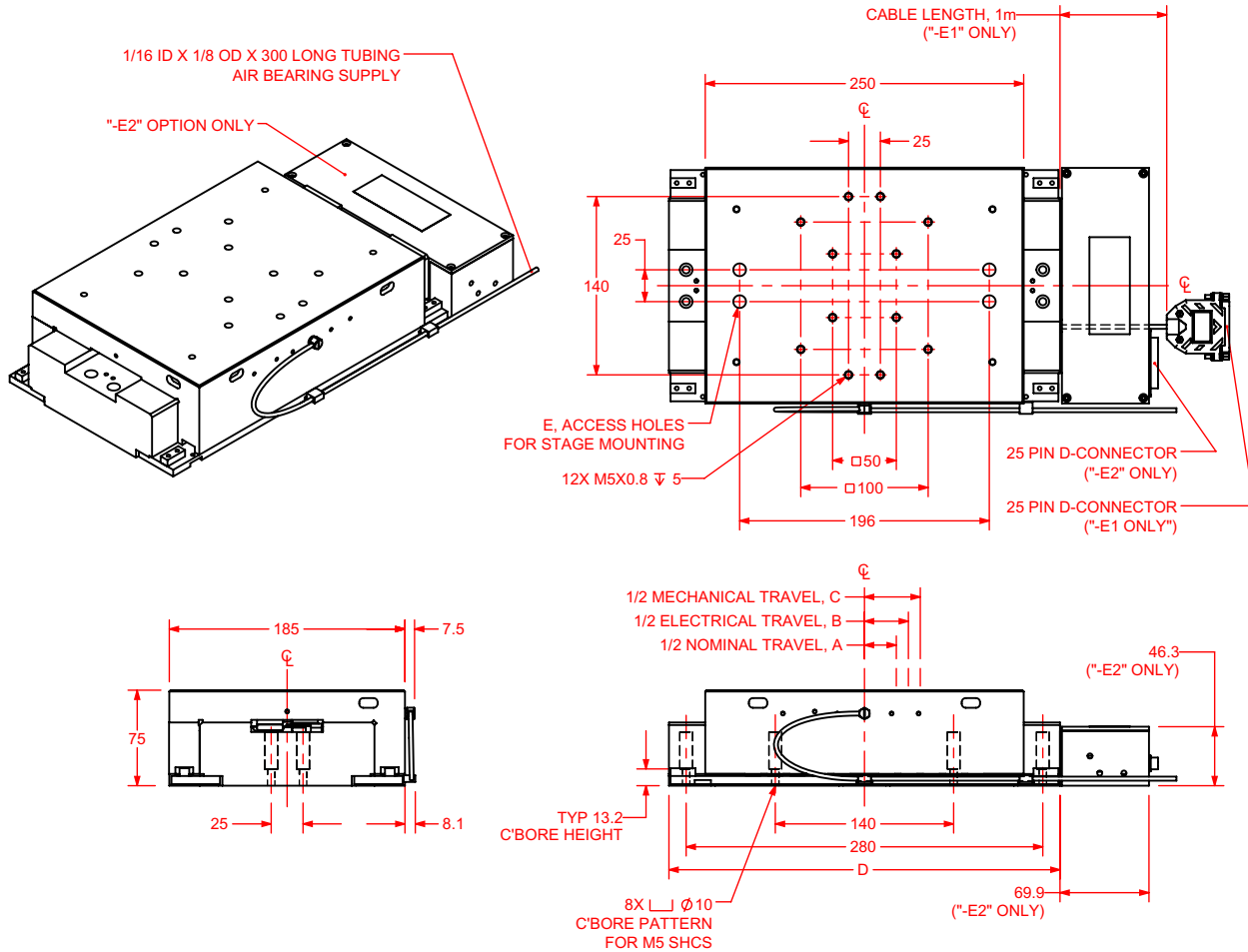


DIMENSIONS: MILLIMETERS



ABL1000 Series DIMENSIONS

ABL1000WB



STAGE SHOWN AT MID TRAVEL

MODEL	TOTAL TRAVEL	A 1/2 NOMINAL TRAVEL	B 1/2 ELECTRICAL TRAVEL	C 1/2 MECHANICAL TRAVEL	D STAGE BASE LENGTH	E STAGE MOUNTING ACCESS HOLES
ABL1000WB-050	50	25.0	25.7	28.4	307	4X ϕ 10 THRU
ABL1000WB-100	100	50.0	50.7	53.4	357	4X ϕ 10 THRU
ABL1000WB-150	150	75.0	75.7	78.4	407	-

DIMENSIONS: MILLIMETERS

