

ALS5000WB Series

Mechanical Bearing, Linear Motor Stage

Wide base for large offset loads

Powerful dual linear motor drive

Hard-coated tabletop and waycovers

Fully integrated cable management system

Sealed design with optional air purge



The ALS5000WB is a large base version of the popular ALS5000 series stage. The wider bearing spacing makes the ALS5000WB ideally suited for applications with large offset loads, and is commonly used as the lower axis in XY stage systems with large travel. The ALS5000WB also incorporates dual linear motors, effectively doubling the force output of a standard ALS5000 stage.

Rugged Construction

The ALS5000WB shares all of the same rugged design features of the ALS5000. The tabletop utilizes stainless steel Helicoil™ inserts to protect mounting holes against thread wear.

The integral metal waycover provides protection from hot sparks or debris. Both the metal waycover and tabletop are treated with a hardcoat (Rockwell 62 hardness) that is scratch-resistant and provides outstanding protection.

To further provide the stage with protection from a caustic environment, the ALS5000WB utilizes Aerotech's unique tensioned side-strap system. The straps are in a vertical orientation that prevents debris from accumulating on top of them, and are tensioned to create a tight seal. An optional air-purge is available that allows air to be forced into the body of the stage. This creates a positive pressure that prevents any particulate, no matter how fine, from entering the stage.

To aid in system assembly, the base mounting holes are located outboard of the stage. Therefore, the stage can be mounted without removing the hardcover.

Performance

By increasing the overall width of the stage, the spacing between the linear bearings was dramatically increased. This wider spacing allows the ALS5000WB to handle high cantilever loads and still maintain the high accuracy expected of an Aerotech product. In XY systems, this wider base translates into greater support for the upper axis, effectively increasing its performance, particularly when handling a heavy load.

Dual Linear Motor Drive

Dual high-power, cog-free, BLM series linear motors drive the ALS5000WB to a peak force of over 2500 N (570 lb). High accelerations are achievable even with heavy loading.

Since the BLM is a cog-free design, the ALS5000WB is ideal for applications requiring outstanding contour accuracy and smooth velocity profiling. As with all of Aerotech's ALS series linear motor stages, the linear motor has zero backlash, no windup, zero friction, and outstanding system responsiveness.

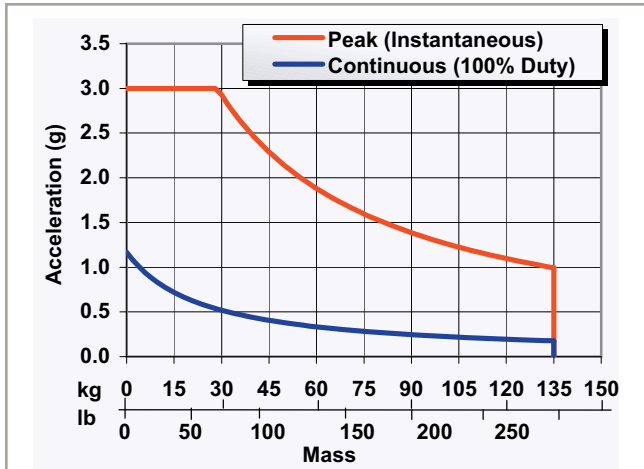
ALS5000WB Series SPECIFICATIONS

Basic Model			ALS50045WB	ALS50060WB	ALS50075WB	ALS50090WB	ALS50100WB
Total Travel			450 mm (18 in)	600 mm (24 in)	750 mm (30 in)	900 mm (36 in)	1000 mm (40 in)
Drive System			Dual Linear Brushless Servomotors (BLM-325-A)				
Bus Voltage			Up to 320 VDC				
Continuous Current ⁽¹⁾	A _{pk}	Up to 10.00 A					
	A _{rms}	Up to 7.1 A					
Feedback			Noncontact Linear Encoder				
Resolution	LN	0.001 μm - 0.2 μm (0.04 μin - 8 μin)					
	LT	0.005 μm - 1.0 μm (0.2 μin - 40 μin)					
Maximum Travel Speed ⁽²⁾			2 m/s (80 in/s)				
Maximum Linear Acceleration			3 g (30 m/s ²) (1152 in/s ²) (No Load)				
Maximum Load ⁽³⁾	Horizontal	135.0 kg (297.6 lb)					
	Side	45.0 kg (99.2 lb)					
Accuracy	LN	HALAR ⁽⁴⁾	±1.0 μm (±40 μin)				
		Standard	±5.0 μm (±200 μin)				
	LT	HALAR ⁽⁴⁾	±1.0 μm (±40 μin)				
		Standard	±18.0 μm (±720 μin)	±24.0 μm (±960 μin)	±30.0 μm (±1200 μin)	±36.0 μm (±1440 μin)	±40.0 μm (±1600 μin)
Repeatability	LN	±0.5 μm (±20 μin)					
	LT	±0.5 μm (±20 μin)					
Straightness and Flatness	Differential	HALSF	1 μm/25 mm (40 μin/in)				
		Standard	2 μm/25 mm (80 μin/in)				
	Maximum Deviation	HALSF	±2.5 μm (±100 μin)	±3.0 μm (±120 μin)	±3.5 μm (±140 μin)	±4.5 μm (±180 μin)	±5.0 μm (±200 μin)
		Standard	±4.0 μm (±160 μin)	±6.0 μm (±240 μin)	±7.0 μm (±280 μin)	±8.0 μm (±320 μin)	±9.0 μm (±360 μin)
Pitch and Yaw			14 arc sec	17 arc sec	20 arc sec	25 arc sec	25 arc sec
Nominal Stage Weight			73.5 kg (162.0 lb)	120.0 kg (264.6 lb)	131.5 kg (289.9 lb)	145.0 kg (319.7 lb)	153.0 kg (337.3 lb)
Moving Mass			28.7 kg (63.3 lb)				
Construction	Stage	Aluminum Body; Textured Epoxy (Polane-T) Pebble Grey Paint					
	Table and Waycover	Hard Coating (62 Rockwell Hardness Teflon® Impregnated)					

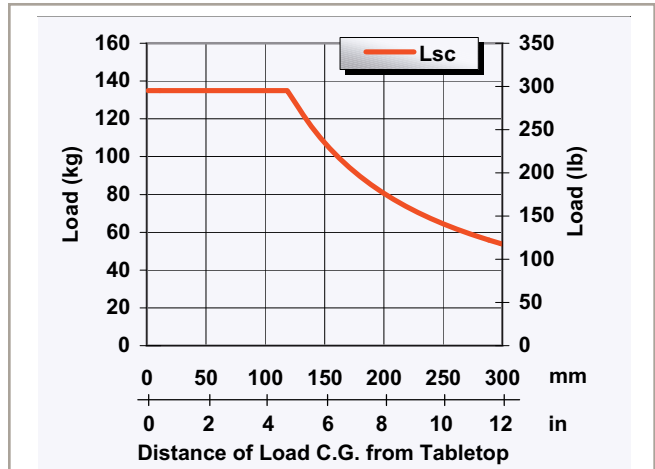
Notes:

1. Current values based on high performance (-P) magnet track.
2. Maximum speed based on stage capability. Maximum application velocity may be limited by system data rate and system resolution.
3. Maximum load based on bearing capability. Maximum application load may be limited by acceleration requirements.
4. Available with Aerotech controllers.
5. Specifications are for single-axis systems, measured 50 mm above the tabletop. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.

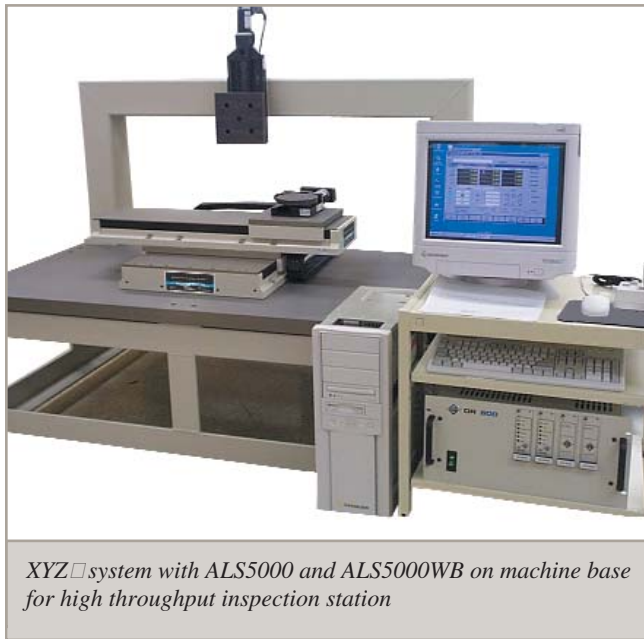
ALS5000WB Series SPECIFICATIONS



Acceleration vs. Mass (ALS5000WB with BLM-325-A motor)

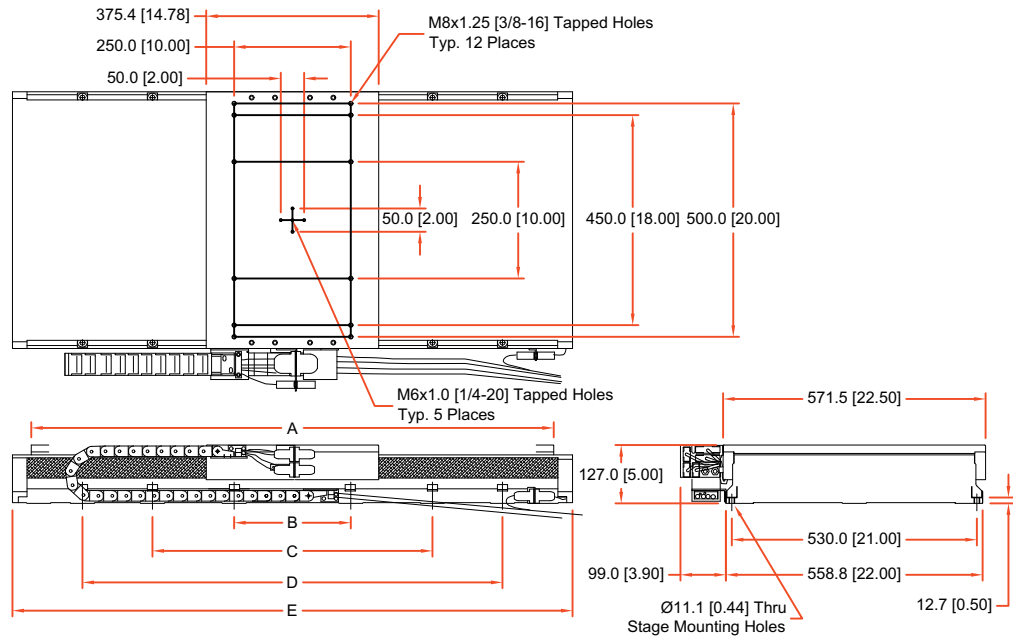


L_{VC} and L_{SC} Cantilevered Load Capability (ALS5000WB)



XYZ system with ALS5000 and ALS5000WB on machine base for high throughput inspection station

ALS5000WB Series DIMENSIONS



Model Name	Dimensions -Millimeters [Inches]					
	Travel	A	B	C	D	E
ALS50045WB	450.0 [18.00]	832.6 [32.78]	250.0 [10.00]	600.0 [24.00]	-	914.4 [36.00]
ALS50060WB	600.0 [24.00]	985.0 [38.78]	250.0 [10.00]	760.0 [30.00]	-	1066.8 [42.00]
ALS50075WB	750.0 [30.00]	1137.4 [44.78]	250.0 [10.00]	610.0 [24.00]	910.0 [36.00]	1219.2 [48.00]
ALS50090WB	900.0 [36.00]	1289.8 [50.78]	250.0 [10.00]	650.0 [26.00]	1075.0 [42.00]	1371.6 [54.00]
ALS50100WB	1000.0 [40.00]	1442.2[56.78]	250.0 [10.00]	700.0 [28.00]	1175.0 [46.00]	1473.2 [58.00]

ALS5000WB Series ORDERING INFORMATION

Ordering Example

ALS50	045WB	-M	-10X2-S	-LT45X5	-NC		
Series	Travel (mm)	Mounting and Grid Pattern	Motor and Magnet Track	Linear Encoder	Limits	Options	Stage Construction
	045WB	-M	-10X2-S	-LTnnAS	-NC	-XY-CMS	/VAC3
	060WB	-U	-10X2-P	-LTnnX5	-NO		/VAC6
	075WB			-LNnnAS			/STEEL
	090WB						
	100WB						

ALS5000 Series Linear Motor Stage

ALS50045WB	450 mm (18 in) travel stage with linear motor and limits
ALS50060WB	600 mm (24 in) travel stage with linear motor and limits
ALS50075WB	750 mm (30 in) travel stage with linear motor and limits
ALS50090WB	900 mm (36 in) travel stage with linear motor and limits
ALS50100WB	1000 mm (40 in) travel stage with linear motor and limits

Mounting and Grid Pattern

-M	Metric dimension mounting pattern and holes
-U	English dimension mounting pattern and holes

Motor and Magnet Track

-10X2-S	Dual brushless linear motors with standard magnet track (BLM-325-A)
-10X2-P	Dual brushless linear motors with high performance magnet track (BLM-325-A)

Standard Linear Encoders

-LT45AS	Linear encoder for ALS50045WB; amplified sine output 1 Vpp (20 µm signal period); requires signal multiplier
-LT60AS	Linear encoder for ALS50060WB; amplified sine output 1 Vpp (20 µm signal period); requires signal multiplier
-LT75AS	Linear encoder for ALS50075WB; amplified sine output 1 Vpp (20 µm signal period); requires signal multiplier
-LT90AS	Linear encoder for ALS50090WB; amplified sine output 1 Vpp (20 µm signal period); requires signal multiplier
-LT100AS	Linear encoder for ALS50100WB; amplified sine output 1 Vpp (20 µm signal period); requires signal multiplier
-LT45X5	Linear encoder for ALS50045WB; 1.0 micron line driver output
-LT60X5	Linear encoder for ALS50060WB; 1.0 micron line driver output
-LT75X5	Linear encoder for ALS50075WB; 1.0 micron line driver output
-LT90X5	Linear encoder for ALS50090WB; 1.0 micron line driver output
-LT100X5	Linear encoder for ALS50100WB; 1.0 micron line driver output

ALS5000WB Series ORDERING INFORMATION

High-Accuracy Linear Encoders

-LN45AS	High-accuracy linear encoder for ALS50045WB; amplified sine output 1 V _{pp} (4 μm signal period); requires signal multiplier
-LN60AS	High-accuracy linear encoder for ALS50060WB; amplified sine output 1 V _{pp} (4 μm signal period); requires signal multiplier
-LN75AS	High-accuracy linear encoder for ALS50075WB; amplified sine output 1 V _{pp} (4 μm signal period); requires signal multiplier
-LN90AS	High-accuracy linear encoder for ALS50090WB; amplified sine output 1 V _{pp} (4 μm signal period); requires signal multiplier
-LN100AS	High-accuracy linear encoder for ALS50100WB; amplified sine output 1 V _{pp} (4 μm signal period); requires signal multiplier

Note: Integral signal multipliers available with A3200 amplifier products.

Limits

-NC	Normally-closed end of travel limit switches (standard)
-NO	Normally-open end of travel limit switches

Options

-XY-CMS	Cable management system for X-Y assembly; order with X-axis only
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Stage Construction Options (Consult Factory)

/VAC3	Vacuum preparation of stage to 10 ⁻³ torr
/VAC6	Vacuum preparation of stage to 10 ⁻⁶ torr
/STEEL	All steel construction

Accessories (to be ordered as separate line item)

ALIGNMENT-NPA	Non-precision XY assembly
ALIGNMENT-PA10	XY assembly; 10 arc sec orthogonal
ALIGNMENT-PA5	XY assembly; 5 arc sec orthogonal
HALAR	High-accuracy system – linear error correction for accuracy and repeatability
HALSF	High-accuracy system – improved straightness and flatness