

# AGS15000 Series

## Linear Motor Gantries

- Optimized design for precise contouring
- Velocity to 3 m/s and acceleration to 5 g
- High power brushless linear servomotors for smooth motion
- Travels up to 1.3 m X 1.3 m available
- Customizable Z and  $\theta$  axes for flexible configurations
- Noncontact linear encoders
- Configurable cable management system allows for integration of fiber lasers, cameras, air lines, etc. for multiple applications

### 24/7 Operation Around the World

The AGS15000 series of Cartesian gantry systems is designed for ultra-precision, high-dynamic contouring, providing outstanding performance and versatility in a wide range of automation platforms. The planar design minimizes dynamic pitch errors at the workpoint.

AGS15000 systems can be found in production plants around the world, in applications including precision micromachining, stencil cutting, fuel cell manufacturing, printed electronics, flat sheet processing, high-speed pick-and-place, automated assembly, vision inspection, dispensing stations, and high-accuracy inspection.

### High Speed/High Acceleration

Aerotech's high-performance BLM and BLMH series brushless linear servomotors drive the AGS15000 to speeds of 3 m/s and accelerations of 5 g. Dual linear motors and encoders are included on the lower axis for the highest level of performance and precision. The rugged noncontact optical linear encoders offer resolutions to 1 nm when coupled with Aerotech's encoder multiplier. Optimized to account for thermal expansion, the design ensures high accuracy under varying operating conditions.



### Rugged Design

The linear motor is a noncontact device, resulting in no backlash, wear, or maintenance. The bearings are preloaded linear motion guides with wiper seals and grease fittings, and are mounted to provide optimized dynamic stiffness and load distribution.

The AGS15000 design keeps the linear motors and linear encoders to the outside of the work area. This design makes the gantry less susceptible to debris-induced damage.

### Long-Lasting Cable Management System

The cable management system (CMS) is optimized and field-proven as the industry's most reliable design. Large bend radii and high-flex cables ensure that the AGS15000 provides millions of cycles of maintenance-free operation. In the unlikely event of a component failure, a modular design ensures that part replacement is fast and easy.

All customer cabling and pneumatics can be routed through the system e-chain. Connectors are provided at the workpiece and at the opposite end of the e-chain, greatly simplifying final machine integration.

### Turnkey Operation

Aerotech's years of experience manufacturing precision positioning and control systems can be leveraged by acquiring a turnkey system. Typical options include Z-theta mechanisms, risers to accommodate automated parts handling equipment, brackets for flying optics components, isolation systems, and machine bases that are designed to accommodate the entire controls and electronics subsystems.

### System Controllers

Aerotech manufactures a wide range of amplifiers and advanced motion controllers that are optimized for high-performance automation applications.

## AGS15000 Series EXAMPLES

### Aerotech Gantries: Flexible, High-Throughput Solutions for Your Application

Aerotech designs and manufactures gantries for many of the largest manufacturers in the world. These systems are carefully engineered to provide superior performance in applications as varied as pick-and-place, automated assembly, vision inspection, dispensing stations, and packaging applications. With our extensive experience and broad line of products, Aerotech can deliver the ideal gantry for your application.

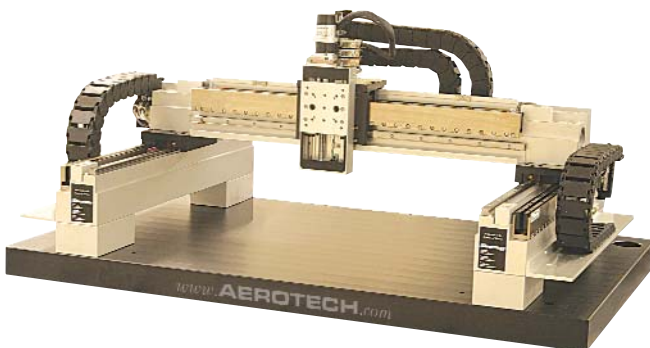


#### APPLICATION: STENCIL CUTTING

- Planar design greatly increases the servo bandwidth of the system, improving geometric tolerances of the stencil apertures at high speeds
- Custom cable management system supports Z axes, autofocus height sensing heads, and fiber laser beam delivery
- Extremely smooth velocity regulation for high cut quality

#### APPLICATION: LASER MICROMACHINING

- Sealed design protects linear motors and encoders, allowing use in harsh environments
- Planar design coupled with dual linear motors/encoders and stiff mounting interfaces permit micron-level dynamic accuracies on high-speed cutting applications
- Large bend radius cable management system is sized for integration of laser's fiber delivery system for simple and seamless integration of lasers
- Mounting surfaces on bridge structure enable attachment of optics for free space laser delivery systems or galvo scanners



#### APPLICATION: DISPENSING

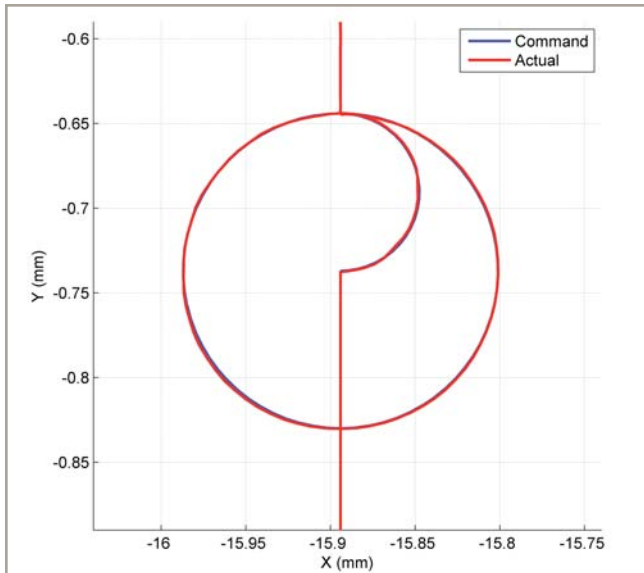
- High speed (up to 1 m/s) to achieve economical production throughput
- High resolution, direct-drive axes allow micron-level dynamic tolerances for dispensing over complex contours
- Powerful, noncontact linear motors enable high accelerations for rapid direction reversals of complex contours, increasing throughput

# AGS15000 Series SPECIFICATIONS

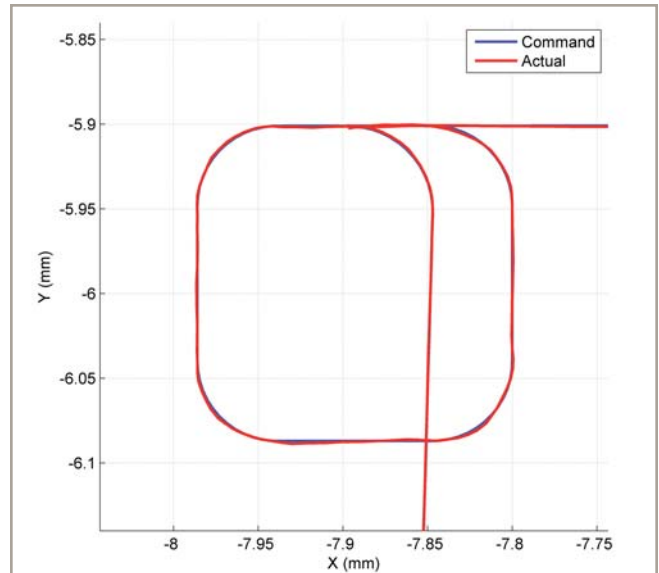
Basic Model		AGS15000-500-500	AGS15000-750-750	AGS15000-1000-1000	AGS15000-1250-1250
Total Travel		500 mm x 500 mm (20 in x 20 in)	750 mm x 750 mm (30 in x 30 in)	1000 mm x 1000 mm (40 in x 40 in)	1250 mm x 1250 mm (50 in x 50 in)
Drive System <sup>(1)</sup>	Lower Axis	Linear Brushless Servomotor — Dual BLM-386-A or Dual BLMH-382-A			
	Upper Axis	Linear Brushless Servomotor — BLM-264-A			
Bus Voltage		Up to 340 VDC			
Feedback		Noncontact Linear Encoder			
Resolution <sup>(2)</sup>		0.001 μm - 1.0 μm (0.04 μin - 40 μin)			
Maximum Travel Speed <sup>(3)</sup>		3 m/s (120 in/s)			
Maximum Linear Acceleration		5 g (50 m/s <sup>2</sup> ) (no-load)			
Maximum Load <sup>(4)</sup>		40.0 kg (88.2 lb)			
Accuracy <sup>(5,6)</sup>		±1.5 μm (±60 μin)	±2.0 μm (±80 μin)	±2.5 μm (±100 μin)	±3.0 μm (±120 μin)
Repeatability		±0.5 μm (±20 μin)	±0.75 μm (±30 μin)	±1.0 μm (±40 μin)	±1.25 μm (±50 μin)
Orthogonality		5 arc sec			
Moving Mass	Lower Axis	62.0 kg	72.3 kg	82.5 kg	92.7 kg
	Upper Axis	7.2 kg			
Material		Aluminum			
Finish	Stage	Black Anodize; ESD Optional			
	Carriage	Hard Coating; ESD Optional			

Notes:

1. Air cooling options available.
2. With encoder multiplier.
3. Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and system resolution.
4. Maximum load based on bearing capability; maximum application load may be limited by acceleration and dynamic requirements.
5. Measured at center of travel, single axis under static conditions.
6. Available with Aerotech controllers with HALAR.

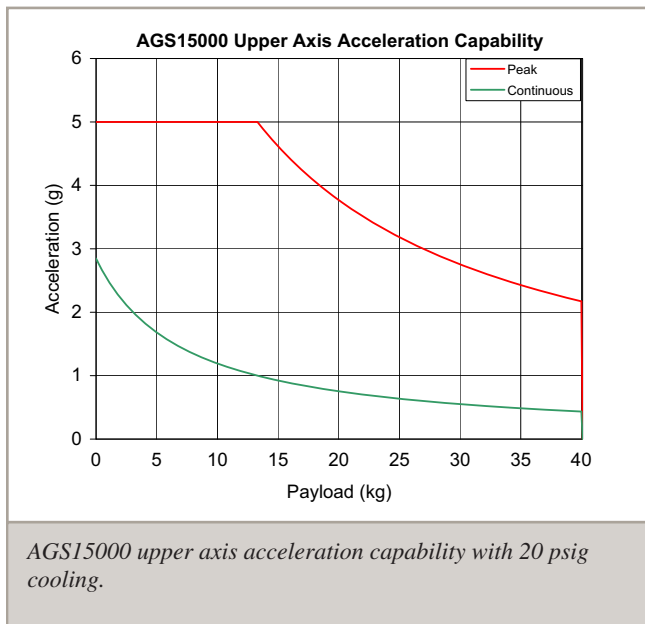
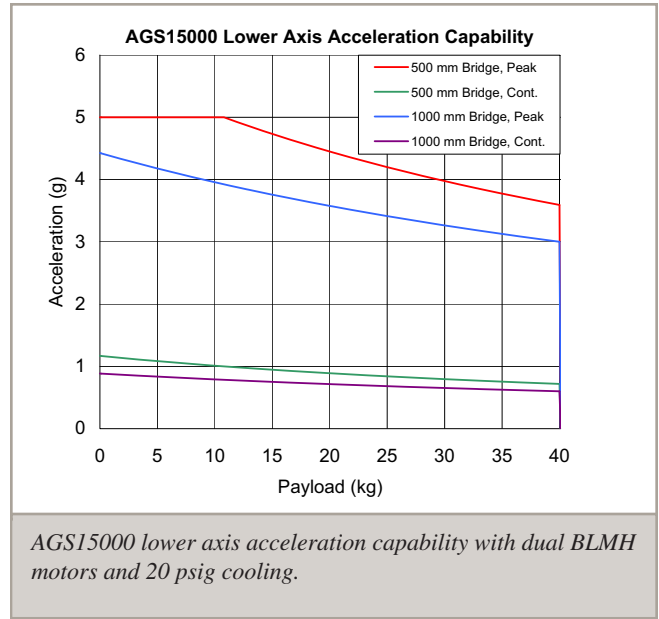
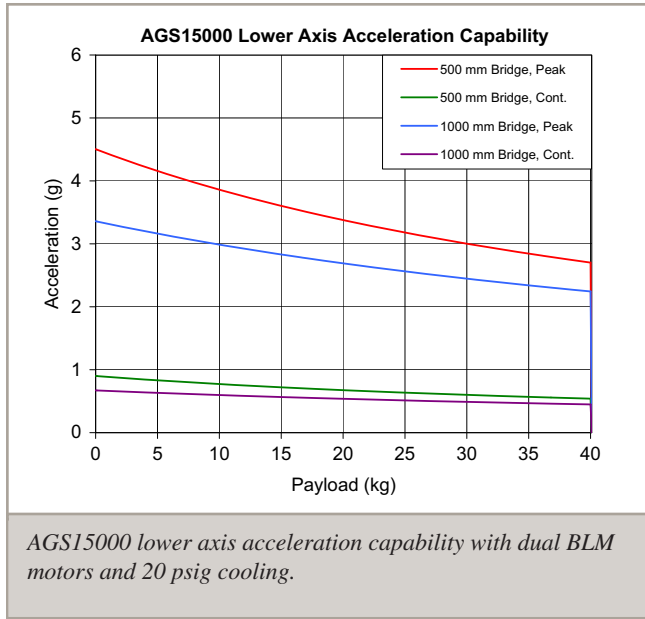


2D plot showing following error of <math><1 \mu\text{m}</math> at 25 mm/s profile velocity. Feature: 180 micron diameter circle.

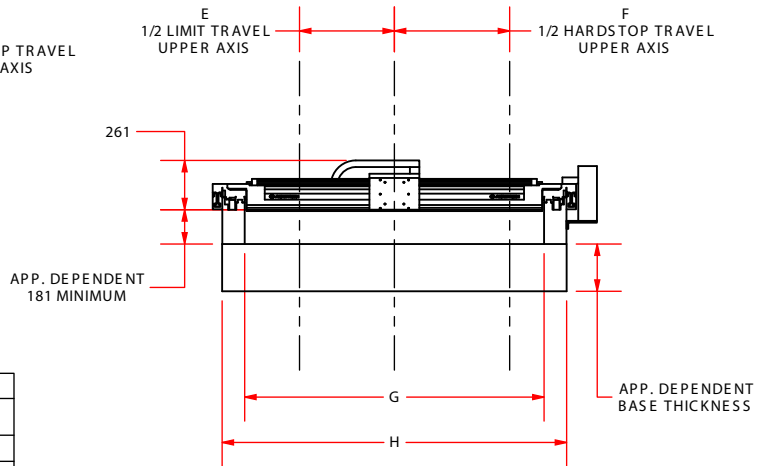
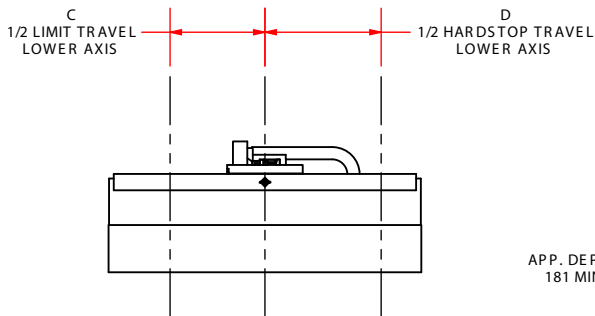
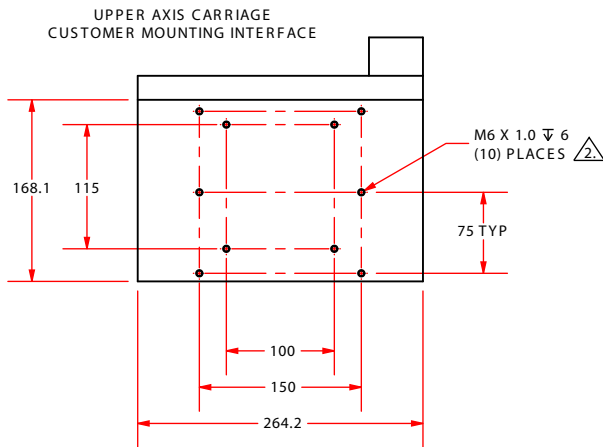
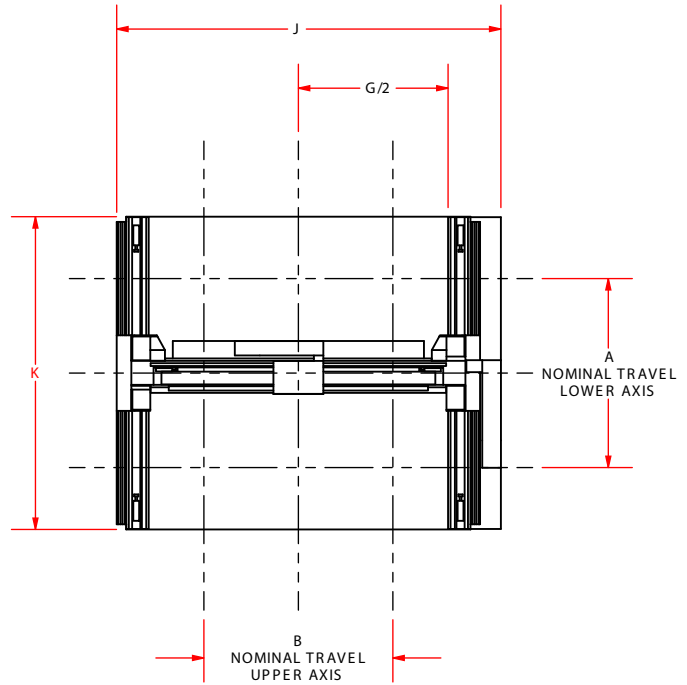
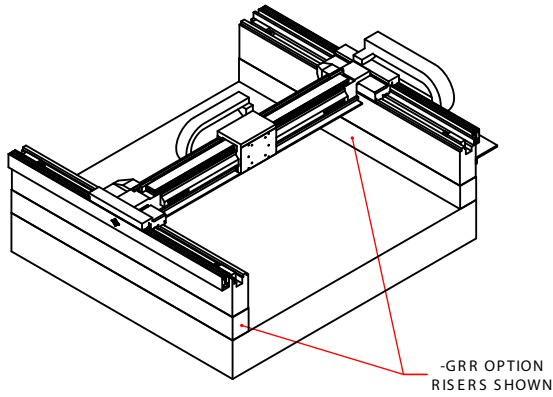


2D plot showing following error of <math><1 \mu\text{m}</math> at 25 mm/s average profile velocity. Feature: 180 micron square with 50 micron corner radii.

# AGS15000 Series SPECIFICATIONS



# AGS15000-HL (High Load) Series DIMENSIONS



DIMENSIONS (MM)				
LOWER AXIS TRAVEL	A	C	D	K
-0500	500	252	365	1155
-0750	750	377	490	1405
-1000	1000	502	615	1655
-1250	1250	627	740	1905

DIMENSIONS (MM)						
UPPER AXIS TRAVEL	B	E	F	G	H	J
-0500	500	252	360	1084	1323	1533
-0750	750	377	485	1334	1573	1783
-1000	1000	502	610	1584	1823	2033
-1250	1250	627	735	1834	2073	2283

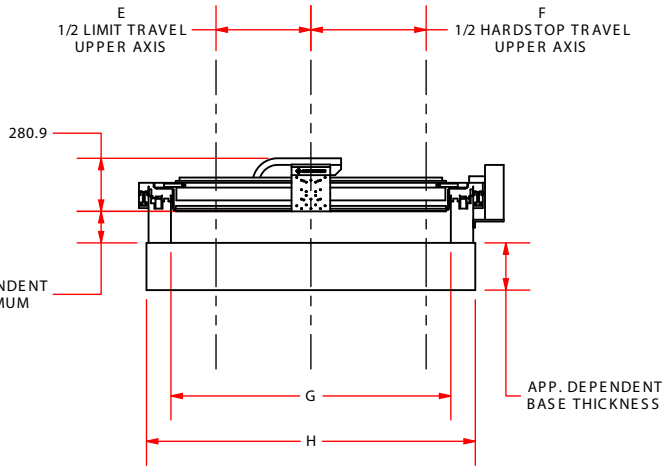
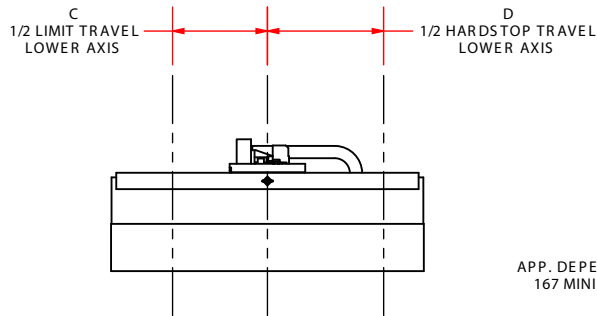
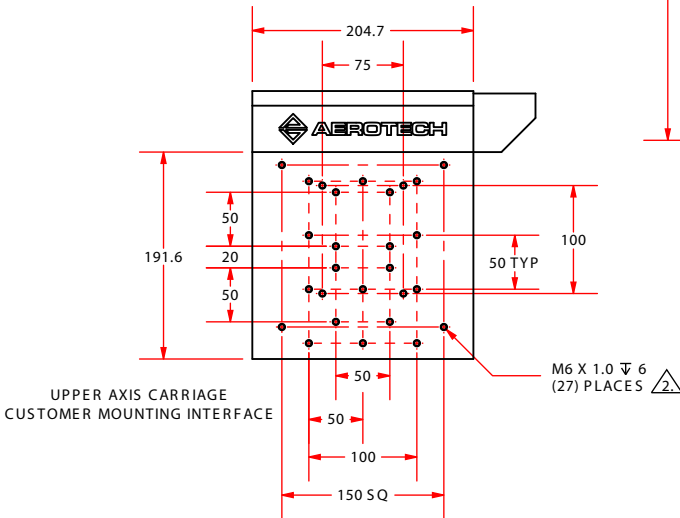
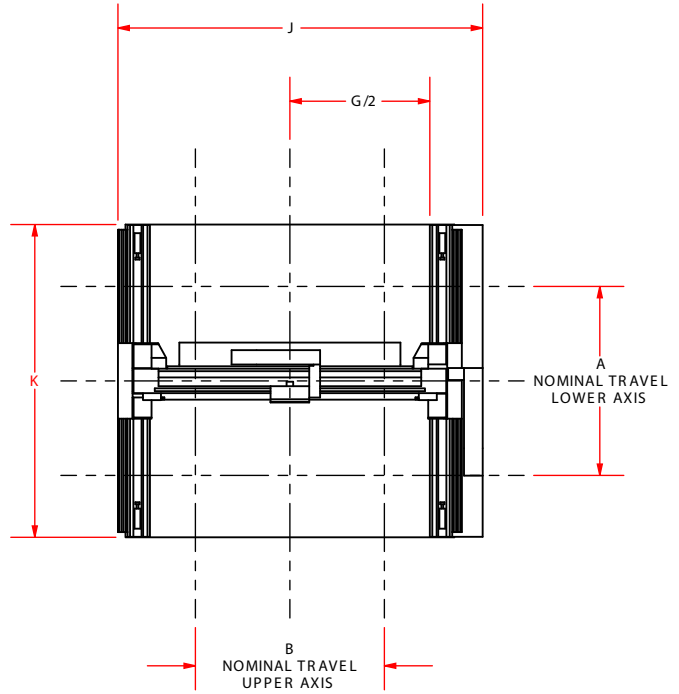
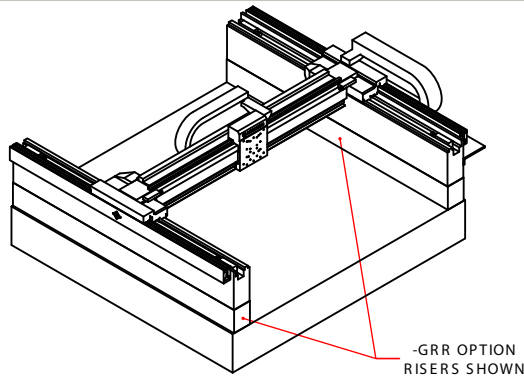
**NOTES:**

- ALL DIMENSIONS ARE FOR TYPICAL MODELS. DIMENSIONS MAY VARY BASED ON CUSTOMER REQUIREMENTS INCLUDING, BUT NOT LIMITED TO, MAXIMUM PROCESS SPEED, REQUIRED CLEARANCE FROM WORK SURFACE, NUMBER OF CUSTOMER CABLES, AND PAYLOAD. CONTACT AEROTECH FOR APPLICATION-DEPENDENT DIMENSIONS.

DIMENSIONS: MILLIMETERS

$\nabla$  2 HOLE PATTERN MAY VARY BASED ON CUSTOMER REQUIREMENTS.

# AGS15000-HP (High Performance) Series DIMENSIONS



LOWER AXIS TRAVEL	DIMENSIONS (MM)			
	A	C	D	K
-0500	500	252	365	1155
-0750	750	377	490	1405
-1000	1000	502	615	1655
-1250	1250	627	740	1905

UPPER AXIS TRAVEL	DIMENSIONS (MM)					
	B	E	F	G	H	J
-0500	500	252	360	981	1240	1430
-0750	750	377	485	1231	1490	1680
-1000	1000	502	610	1481	1740	1930
-1250	1250	627	735	1731	1990	2180

**NOTES:**

- ALL DIMENSIONS ARE FOR TYPICAL MODELS. DIMENSIONS MAY VARY BASED ON CUSTOMER REQUIREMENTS INCLUDING, BUT NOT LIMITED TO, MAXIMUM PROCESS SPEED, REQUIRED CLEARANCE FROM WORK SURFACE, NUMBER OF CUSTOMER CABLES, AND PAYLOAD. CONTACT AEROTECH FOR APPLICATION-DEPENDENT DIMENSIONS.

DIMENSIONS: MILLIMETERS

HOLE PATTERN MAY VARY BASED ON CUSTOMER REQUIREMENTS.

## AGS15000 Series ORDERING INFORMATION

### Ordering Information

AGS15000	-500	-500	-HL	-10X2	-10	-LT50X50	-LT50X50	-GR
Series	X-Travel (mm) (Lower Axis)	Y-Travel (mm) (Upper Axis)	Gantry Type	X-Motor (Lower Axis)	Y-Motor (Upper Axis)	X-Encoder (Lower Axis)	Y-Encoder (Upper Axis)	Base Plate
	-500	-500	-HL	-10X2	-10	-LTxxAS	-LTxxAS	-GR
	-750	-750		-10HX2		-LTxxX50	-LTxxX50	-GRR
	-1000	-1000						
	-1250	-1250						

### AGS15000 Series Linear Motor Gantry

AGS15000-500-500	500 mm x 500 mm (20 in x 20 in) Cartesian gantry with linear motor, linear encoder, and limits
AGS15000-750-750	750 mm x 750 mm (30 in x 30 in) Cartesian gantry with linear motor, linear encoder, and limits
AGS15000-1000-1000	1000 mm x 1000 mm (40 in x 40 in) Cartesian gantry with linear motor, linear encoder, and limits
AGS15000-1250-1250	1250 mm x 1250 mm (50 in x 50 in) Cartesian gantry with linear motor, linear encoder, and limits
AGSxxxx-yyyy	Other travels available; please consult factory

### Gantry Type

-HL	High load design
-----	------------------

### Motor

-10X2	Dual brushless linear motor – dual BLM-386-A (lower X-axis only)
-10HX2	Dual brushless linear motor – dual BLMH-382-A (lower X-axis only)
-10	Brushless linear motor — BLM-264-A (upper Y-axis only)

### Standard Linear Encoders

-LT50AS	Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS15000-500-500
-LT50X50	Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS15000-500-500
-LT75AS	Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS15000-750-750
-LT75X50	Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS15000-750-750
-LT100AS	Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS15000-1000-1000
-LT100X50	Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS15000-1000-1000
-LT125AS	Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS15000-1250-1250
-LT125X50	Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS15000-1250-1250

### Base Plate

-GR500-500	Granite baseplate for AGS15000-500-500
-GR750-750	Granite baseplate for AGS15000-750-750
-GR1000-1000	Granite baseplate for AGS15000-1000-1000
-GR1250-1250	Granite baseplate for AGS15000-1250-1250
-GRR500-500	Granite baseplate for AGS15000-500-500 with 150 mm (6 in) risers
-GRR750-750	Granite baseplate for AGS15000-750-750 with 150 mm (6 in) risers
-GRR1000-1000	Granite baseplate for AGS15000-1000-1000 with 150 mm (6 in) risers
-GRR1250-1250	Granite baseplate for AGS15000-1250-1250 with 150 mm (6 in) risers

### Accessories (to be ordered as separate line item)

Z100	100 mm (4 in) travel z-stage
Z100LM	Pneumatic-counterbalanced 100 mm (4 in) travel linear motor z-stage
Z150	150 mm (6 in) travel z-stage
Z150LM	Pneumatic-counterbalanced 150 mm (6 in) travel linear motor z-stage
THETA	360° travel theta axis
MB500-500	Steel weldment machine base for AGS15000-500-500
MB750-750	Steel weldment machine base for AGS15000-750-750
MB1000-1000	Steel weldment machine base for AGS15000-1000-1000
MB1250-1250	Steel weldment machine base for AGS15000-1250-1250