

# AGS1500 Series

## Linear Motor Gantries

Optimized design for precise contouring in a compact footprint

Velocity to 3 m/s and acceleration to 5 g

High power brushless linear servomotors for smooth motion

Travels up to 500 mm X 500 mm available

Optional electroless nickel for ESD protection

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 AGS1500 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.

AGS1500 systems can be found in production plants around the world, in applications including precision micromachining, stencil cutting, fuel cell manufacturing, solder-ball placement, printed electronics, high-speed pick-and-place, automated assembly, vision inspection, dispensing stations, and high-accuracy inspection. The AGS1500 is based on the industry-leading AGS15000 gantry, and maintains many of the same leading-edge characteristics.

### High Speed/High Acceleration

Aerotech's high-performance BLMC and BLM series brushless linear servomotors drive the AGS1500 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 controllers.

### 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 AGS1500 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 AGS1500 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.

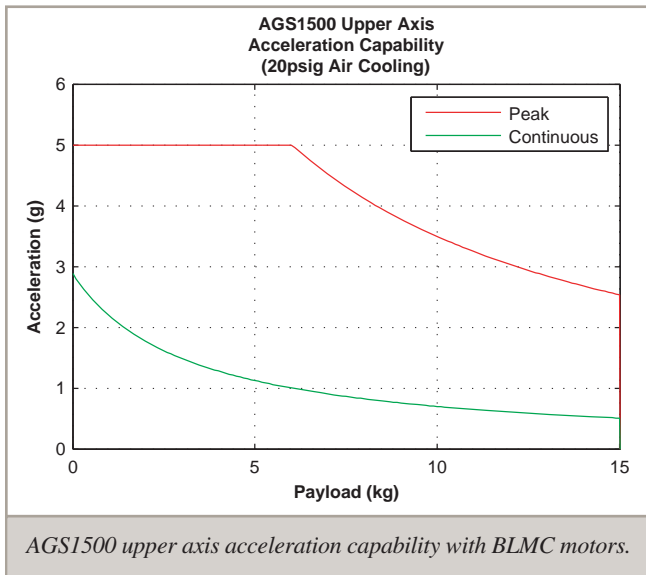
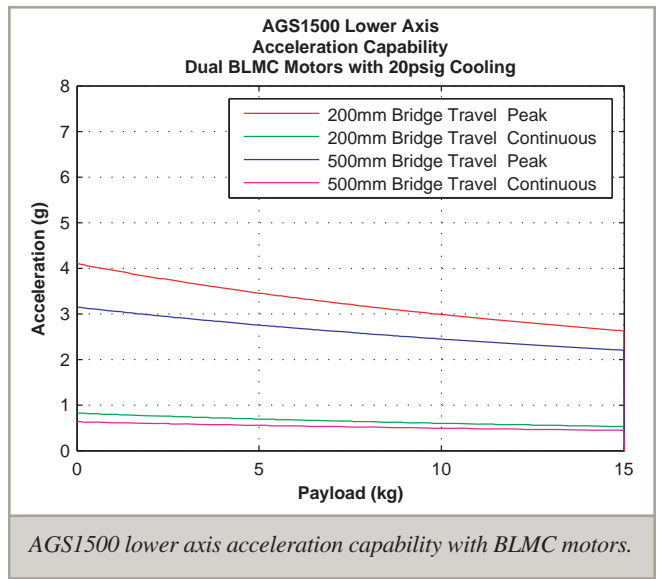
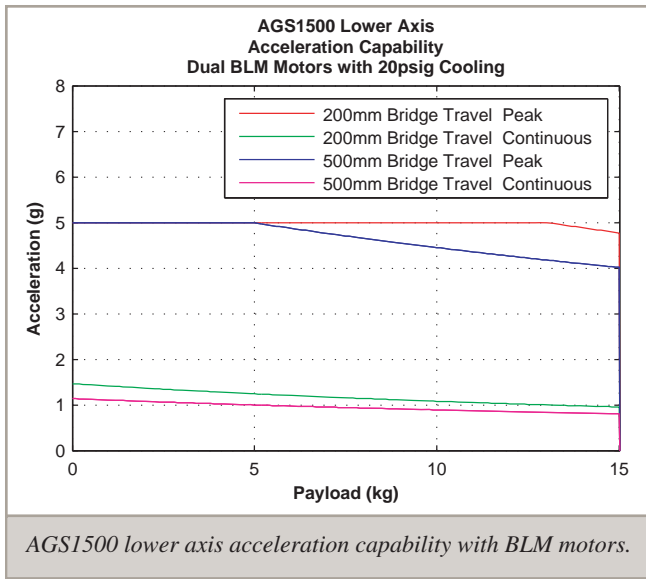
## AGS1500 Series SPECIFICATIONS

| Basic Model                         |            | AGS1500-200-200  | AGS1500-300-300                                  | AGS1500-400-400                                  | AGS1500-500-500                                 |
|-------------------------------------|------------|--|--|--|---|
| Total Travel                        |            | 200 mm x 200 mm<br>(8 in x 8 in)   | 300 mm x 300 mm<br>(12 in x 12 in)               | 400 mm x 400 mm<br>(16 in x 16 in)               | 500 mm x 500 mm<br>(20 in x 20 in)              |
| Drive System <sup>(1)</sup>         | Lower Axis | Linear Brushless Servomotor — Dual BLMC-267-A or Dual BLM-264-A                    |  |  |   |
|                                     | Upper Axis | Linear Brushless Servomotor — BLMC-192-A   |  |  |   |
| Bus Voltage                         |            | Up to 340 VDC  |  |  |   |
| Feedback                            |            | Noncontact Linear Encoder  |  |  |   |
| Resolution <sup>(2)</sup>           |            | 0.001 $\mu\text{m}$ - 1.0 $\mu\text{m}$ (0.04 $\mu\text{in}$ - 40 $\mu\text{in}$ ) |  |  |   |
| 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>         |            | 15.0 kg (33 lb)  |  |  |   |
| Accuracy <sup>(5,6)</sup>           |            | $\pm 1.0 \mu\text{m}$ ( $\pm 40 \mu\text{in}$ )                                    | $\pm 1.25 \mu\text{m}$ ( $\pm 50 \mu\text{in}$ ) | $\pm 1.25 \mu\text{m}$ ( $\pm 50 \mu\text{in}$ ) | $\pm 1.5 \mu\text{m}$ ( $\pm 60 \mu\text{in}$ ) |
| Repeatability                       |            | $\pm 0.3 \mu\text{m}$ ( $\pm 12 \mu\text{in}$ )                                    | $\pm 0.4 \mu\text{m}$ ( $\pm 16 \mu\text{in}$ )  | $\pm 0.4 \mu\text{m}$ ( $\pm 16 \mu\text{in}$ )  | $\pm 0.5 \mu\text{m}$ ( $\pm 20 \mu\text{in}$ ) |
| Orthogonality                       |            | 5 arc sec  |  |  |   |
| Moving Mass                         | Lower Axis | 29.0 kg  | 31.0 kg  | 34.0 kg  | 37.0 kg   |
|                                     | Upper Axis | 3.2 kg   |  |  |   |
| Material                            |            | Aluminum   |  |  |   |
| Finish                              | Stage      | Black Anodize; ESD Optional  |  |  |   |
|                                     | Carriage   | Black Hard Coat; ESD Optional  |  |  |   |

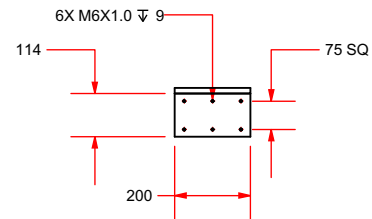
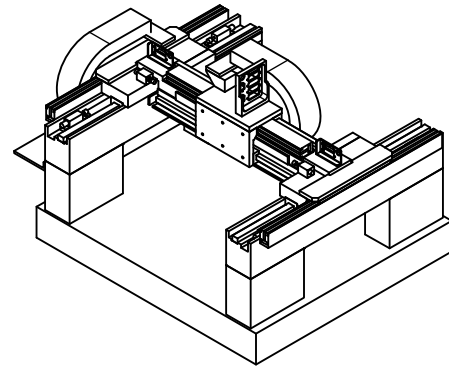
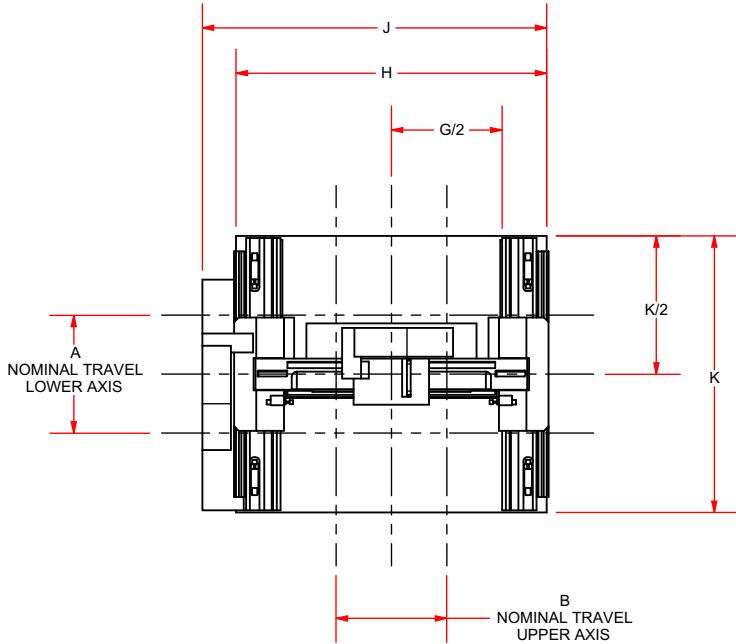
Notes:

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.

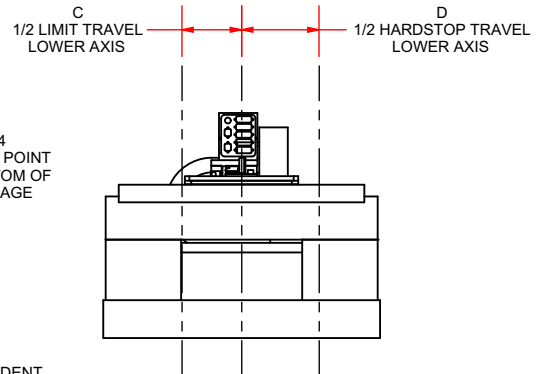
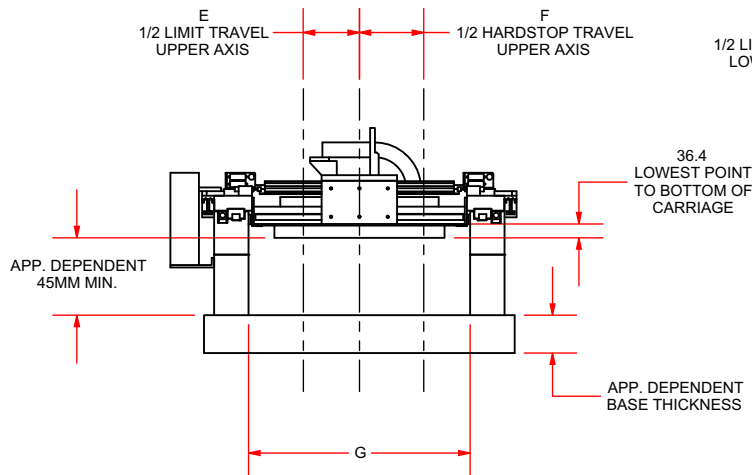
# AGS1500 Series SPECIFICATIONS



# AGS1500 DIMENSIONS



UPPER AXIS CARRIAGE  
CUSTOMER MOUNTING INTERFACE



| DIMENSIONS (MM) |     |     |     |     |     |     |     |      |      |     |
|-----------------|-----|-----|-----|-----|-----|-----|-----|------|------|-----|
| BASIC MODEL     | A   | B   | C   | D   | E   | F   | G   | H    | J    | K   |
| AGS1500-200-200 | 200 | 200 | 102 | 150 | 102 | 125 | 496 | 730  | 795  | 615 |
| AGS1500-300-300 | 300 | 300 | 152 | 200 | 152 | 175 | 596 | 830  | 895  | 715 |
| AGS1500-400-400 | 400 | 400 | 202 | 250 | 202 | 225 | 696 | 930  | 995  | 815 |
| AGS1500-500-500 | 500 | 500 | 252 | 300 | 252 | 275 | 796 | 1030 | 1095 | 915 |

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

## AGS1500 Series ORDERING INFORMATION

### Ordering Information

| AGS1500 | -200                          | -200                          | -10X2                   | -10                     | -LT20X50                  | -LT20X50                  | -GB           |
|---------|-------------------------------|-------------------------------|-------------------------|-------------------------|---------------------------|---------------------------|---------------|
| Series  | X-Travel (mm)<br>(Lower Axis) | Y-Travel (mm)<br>(Upper Axis) | X-Motor<br>(Lower Axis) | Y-Motor<br>(Upper Axis) | X-Encoder<br>(Lower Axis) | Y-Encoder<br>(Upper Axis) | Base<br>Plate |
|         | -200                          | -200                          | -10X2                   | -10                     | -LTxxAS                   | -LTxxAS                   | -GB           |
|         | -300                          | -300                          | -10HX2                  |                         | -LTxxX50                  | -LTxxX50                  | -GR           |
|         | -400                          | -400                          |                         |                         |                           |                           |               |
|         | -500                          | -500                          |                         |                         |                           |                           |               |

### AGS1500 Series Linear Motor Gantry

|                 |  |
|-----------------|--|
| AGS1500-200-200 | 200 mm x 200 mm (8 in x 8 in) cartesian gantry with linear motor, linear encoder, and limits   |
| AGS1500-300-300 | 300 mm x 300 mm (12 in x 12 in) cartesian gantry with linear motor, linear encoder, and limits |
| AGS1500-400-400 | 400 mm x 400 mm (16 in x 16 in) cartesian gantry with linear motor, linear encoder, and limits |
| AGS1500-500-500 | 500 mm x 500 mm (20 in x 20 in) cartesian gantry with linear motor, linear encoder, and limits |
| AGSxxxx-yyyy    | Other travels available; please consult factory  |

### Motor

|        |   |
|--------|---|
| -10X2  | Dual brushless linear motor – dual BLMC-267-A (lower X-axis only) |
| -10HX2 | Dual brushless linear motor – dual BLM-264-A (lower X-axis only)  |
| -10    | Brushless linear motor — BLMC-192-A (upper Y-axis only)           |

### Standard Linear Encoders

|          |   |
|----------|---|
| -LT20AS  | Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS1500-200-200         |
| -LT20X50 | Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS1500-200-200 |
| -LT30AS  | Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS1500-300-300         |
| -LT30X50 | Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS1500-300-300 |
| -LT40AS  | Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS1500-400-400         |
| -LT40X50 | Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS1500-400-400 |
| -LT50AS  | Dual linear encoder for lower axis; linear encoder for upper axis; amplified sine output; for AGS1500-500-500         |
| -LT50X50 | Dual linear encoder for lower axis; linear encoder for upper axis; 0.1 micron line driver output; for AGS1500-500-500 |

### Base Plate

|            |   |
|------------|---|
| -GB200-200 | Granite baseplate for AGS1500-200-200                           |
| -GB300-300 | Granite baseplate for AGS1500-300-300                           |
| -GB400-400 | Granite baseplate for AGS1500-400-400                           |
| -GB500-500 | Granite baseplate for AGS1500-500-500                           |
| -GR200-200 | Granite baseplate for AGS1500-200-200 with 150 mm (6 in) risers |
| -GR300-300 | Granite baseplate for AGS1500-300-300 with 150 mm (6 in) risers |
| -GR400-400 | Granite baseplate for AGS1500-400-400 with 150 mm (6 in) risers |
| -GR500-500 | Granite baseplate for AGS1500-500-500 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  |
| MB200-200 | Steel weldment machine base for AGS1500-200-200                     |
| MB300-300 | Steel weldment machine base for AGS1500-300-300                     |
| MB400-400 | Steel weldment machine base for AGS1500-400-400                     |
| MB500-500 | Steel weldment machine base for AGS1500-500-500                     |