

# MGS Large Format Gantry System with Linear Motors

Robust Compact Design with Recirculating Ball Bearing Guides for High Load Capacity.



## A-352

- XY gantry for overhead motion. Travel ranges to 1 m × 2 m
- Precision recirculating ball bearing guides
- Absolute encoder
- High-performance ironless linear motors
- Various travel ranges. Options and customized adaptations
- Flexible modular platform

### Overview

The MGS gantry system has been designed to maximize throughput for applications requiring overhead motion. This stage is ideal for 3D printing, assembly, pick-and-place, alignment, inspection, and industrial automation applications.

The MGS uses preloaded linear mechanical bearings which are designed to provide optimized stiffness and precision. Optional stainless steel guide rails can be delivered.

The gantry axis incorporates dual linear motors and dual linear encoders. Ironless linear motors provide smooth motion and no cogging or attractive forces. The linear motor and linear encoders are noncontact devices, so there is no backlash, wear, or maintenance concerns.

The A-352 is coupled with industry-leading controllers and drive modules from ACS that offer superior servo performance, advanced control algorithms to improve dynamic performance and error compensation, and a wide suite of software development tools.

### Options and customized adaptations

- Base made of granite
- Customizable work height
- Support stands with and without vibration isolation
- Additional drag chains
- Increased performance motors
- Liquid cooling of the linear motors

### Application fields

Scanning, Digital printing, Electronics assembly and inspection, AOI (Automatic Optical Inspection), Automation.

## Specifications

Motion	Unit	Bridge axis	Gantry axis
Travel range	mm	750, 1000	750, 1000, 1500, 2000
Guide		Recirculating ball bearing guide (lubrication and surface finish can be customized)	
Drive		1 × Ironless 3-phase linear motor	2 × Ironless 3-phase linear motor
Measuring system		Absolute linear encoder, 1 nm sensor resolution, BiSS-C, steel measuring scale	2 × Absolute linear encoder, 1 nm sensor resolution, BiSS-C, steel measuring scale
Max. load capacity		30 kg	
Positioning accuracy, calibrated <sup>(1)</sup>	µm	±2	
Bidirectional repeatability	µm	±1	
XY orthogonality	µrad	25	
Max. velocity, unloaded <sup>(2)</sup>	m/s	2	1
Moved mass	kg	4.5	Depending on the travel range of the bridge axis: 750 mm: 65 kg 1000 mm: 80 kg

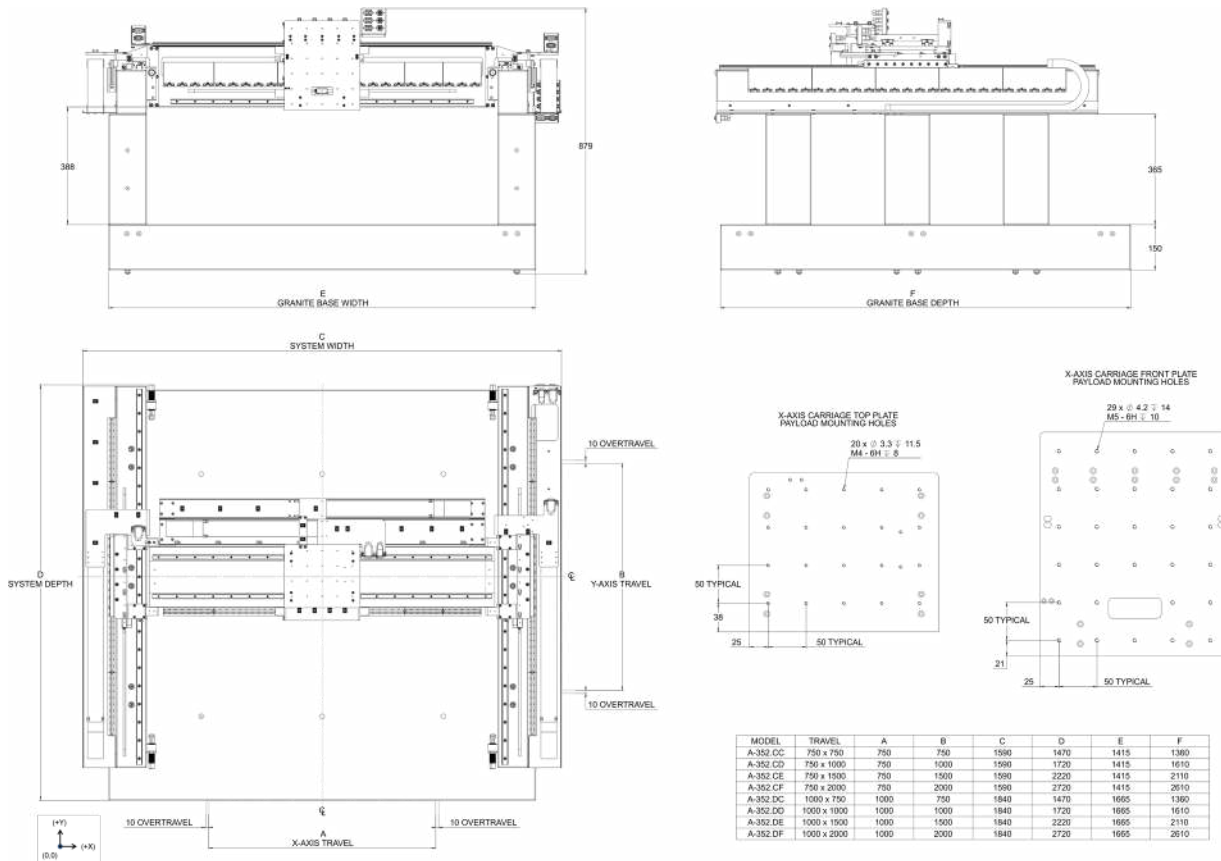
<sup>(1)</sup> Accuracy values assume short time duration and do not consider the long-term effects of thermal drift on the stage.

<sup>(2)</sup> Depends on the motor selected, controller performance, duty cycle, load, and other application-specific parameters.

Drive properties	Unit	Per motor winding
Nominal voltage	V DC	70
Peak voltage	V DC	300
Force constant, RMS	N/A	27.5
Nominal force	N	210
Peak force	N	720
Nominal current, RMS	A	7.6
Peak current, RMS	A	26.2
Back EMF, phase-phase	V·s/m	22.5
Resistance, phase-phase	Ω	51.7
Inductance, phase-phase	mH	1.4

Miscellaneous	
Materials	Hardcoat aluminum Guide rails made of steel, cleanroom grease (guide rails made of stainless steel on request) Mounting hardware made of stainless steel

## Drawings / Images



A-352 gantry system, dimensions in mm

## Ordering Information

### A-352 MGS basic configuration

Mechanical XY gantry system, recirculating ball bearing guides, 3-phase linear motors, absolute linear encoders, travel range to 1000 mm x 2000 mm (please specify in the request)

### A-352 factory option: L-511 as Z axis

Modified L-511 linear stage with synchronous servo motor and holding brake, 50 to 150 mm travel range

### A-352 factory option: V-408 as Z axis

Modified V-408 linear stage with 3-phase linear motor, holding brake, and pneumatic weight force compensation, 50 mm travel range

### A-352 factory option: Additional drag chains

The A-352 can be equipped with additional drag chains to accommodate additional cables and hoses of the customer's setup.

### A-352 factory option: Increased linear motor size

The A-352 can be equipped with larger motors for increased dynamic performance.

### A-352 factory option: Motor cooling

For applications with a high duty cycle and high accelerations can be equipped with liquid-cooled linear motors. Individual liquid cooling is also possible for the linear motor of the bridge axis. An external cooler is necessary.