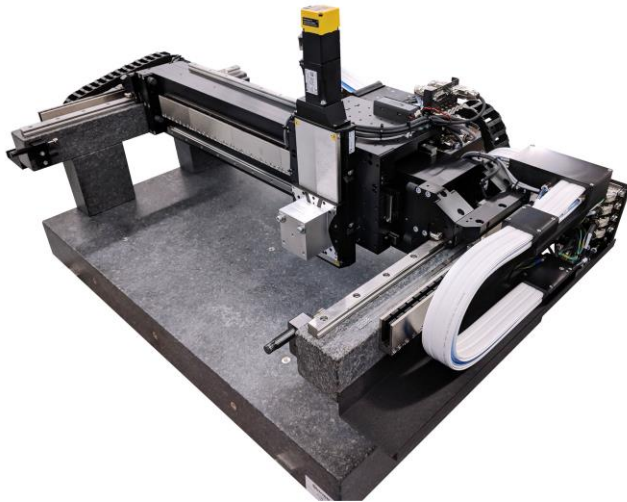


MGS Gantry System with Linear Motors

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



A-351

- Overhead moving XY gantry
- 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-351 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 or aluminum
- Adjustable work height
- Systems for reducing vibration
- Additional drag chains
- Performance of the linear 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	300 500	300 500 750 1000
Guide		Recirculating ball bearing guide	
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
Load capacity		20 kg	
Positioning accuracy, calibrated ⁽¹⁾	µm	±2	
Bidirectional repeatability	µm	±1	
XY orthogonality	µrad	25	
Max. velocity, unloaded ⁽²⁾	m/s	2	1
Moved mass	kg	4.5	Depending on the travel range of the bridge axis: 300 mm: 25 kg 500 mm: 30 kg

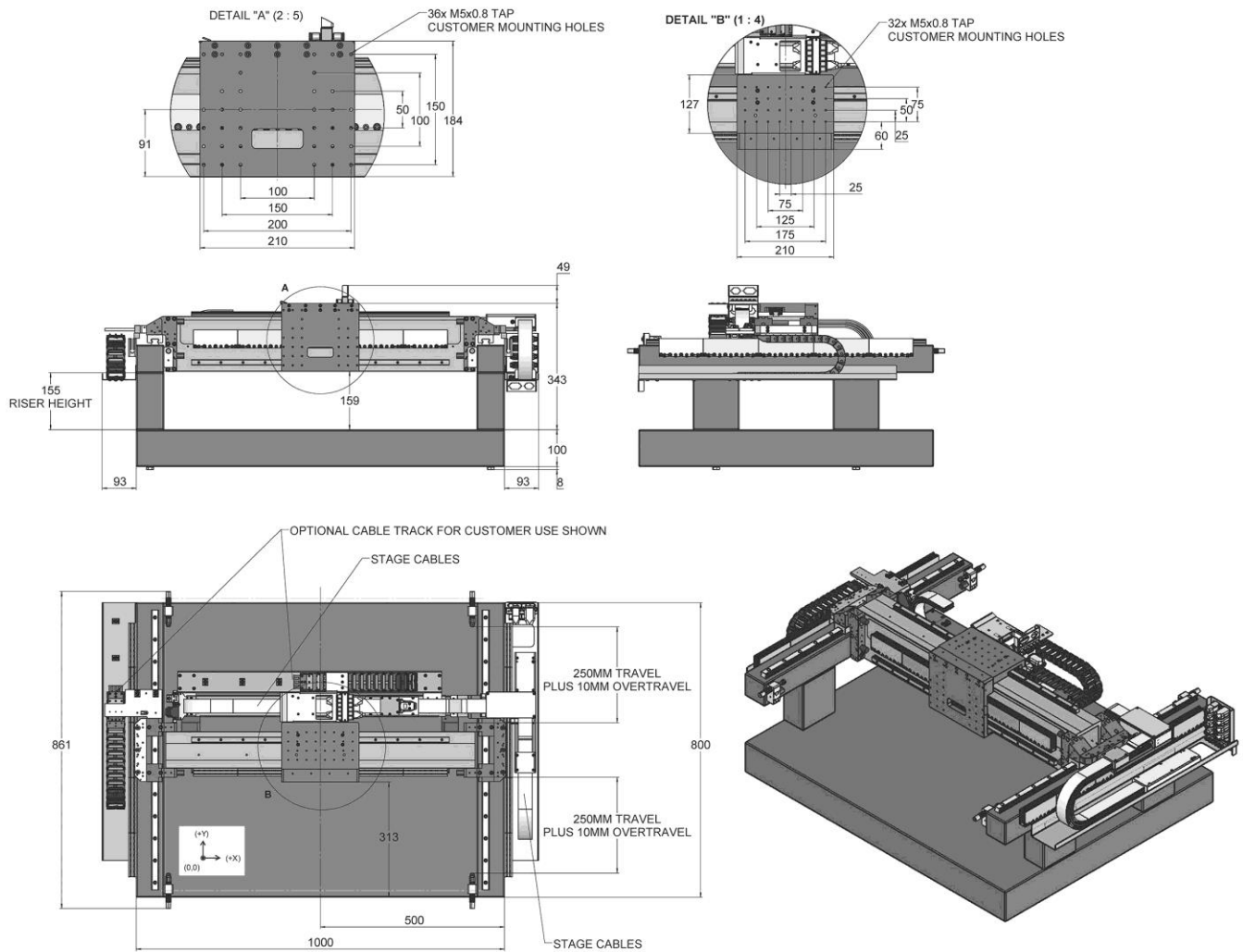
⁽¹⁾ Accuracy values assume short time duration and do not consider the long-term effects of thermal drift on the stage.

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

Drive properties	Unit	Option 1	Option 2
Nominal voltage	V DC	70	
Peak voltage	V DC	300	
Nominal force	N	58	87
Peak force	N	200	300
Nominal current, RMS	A	2.9	4.4
Peak current, RMS	A	10	15
Back EMF phase-phase	V·s/m	16	16
Resistance phase-phase	Ω	5.6	3.6
Inductance phase-phase	mH	1.8	1.2

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-351 gantry system, dimensions in mm

Ordering Information

A-351 MGS basic configuration

Mechanical XY gantry system, recirculating ball bearing guides, 3-phase linear motors, absolute linear encoder, travel range to 500 mm × 1000 mm (please specify in the request)

A-351 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-351 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-351 factory option: Additional drag chains

The A-351 can be equipped with additional drag chains to accommodate additional cables and hoses of the customer's setup.

A-351 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 radiator is necessary.

A-351 factory option: Base materials

The base plate and the base structure of the gantry axis can be either granite or aluminum. Customized hole patterns are possible.