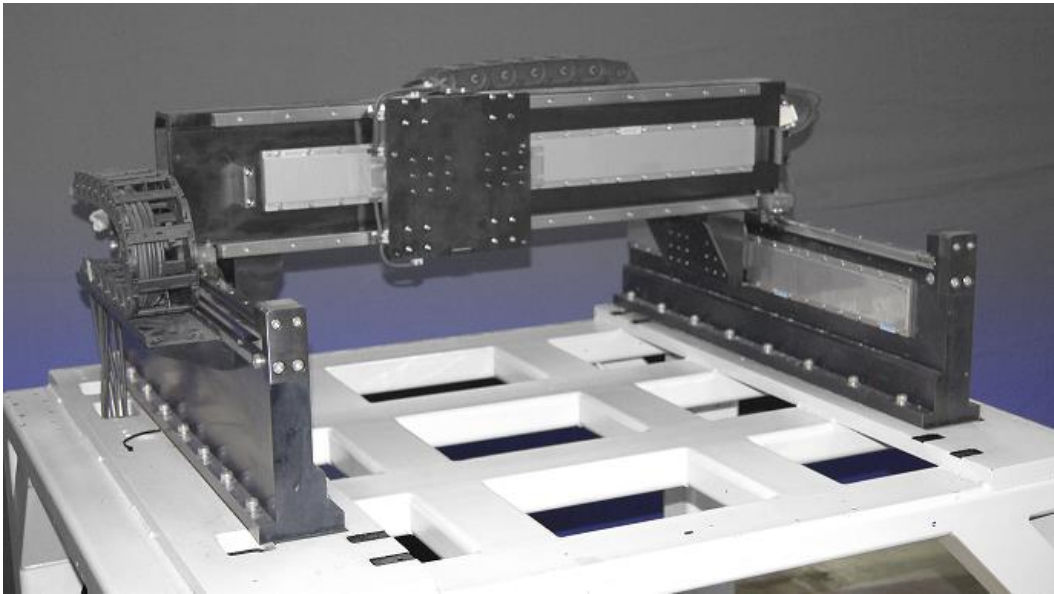


# VRG Series

## Versatile Robust H and T Drive Gantry



- Direct drive, zero backlash linear motor
- Versatile gantry with T drive or H drive configuration, with options of various iron core motors (ACM series) or ironless motors (AUM series)
- T type measurement using direct linear positioning encoder of resolution 0.5 $\mu$ m, 1 $\mu$ m or the versatile sin/cos encoder; or H type measurement using dual encoders on the bottom axes for better positional accuracy and repeatability
- High motor constant offers high peak and continuous force which provides fast motion timing
- Stable and consistent motion performance with short settling time to achieve higher throughput.

## Motor Parameter

	Model	VRG510	
	Drive Type1	T or H	
	Axis	Top	Bottom
<b>Model</b>	<b>Motor</b>	<b>ACM1-L50</b>	<b>ACM3-S1</b>
<b>Performance Parameters</b>	<b>Unit</b>		
Continuous Force, coil @100°C	N	182	293
Peak Force	N	831.4	878
Motor Constant	N/SqRt(W)	25.6	29.4
Continuous Power	W	50.3	99.1
Peak Power	W	1050.6	891.6
Magnetic Period	mm	20	42
Max Coil Temperature	°C	130	130
Continuous Current	Arms	4.2	4.8
Peak Current	Arms	19.2	14.4
Force Constant	N/Arms	43.3	61.0
Back EMF Constant	Vpeak/m/s	35.4	49.8
Inductance	mH	10.4	38.0
Phase Resistance @25°C	Ohms	2.85	4.30
Magnetic Attraction	N	1619	1.45

## Dimension Drawing

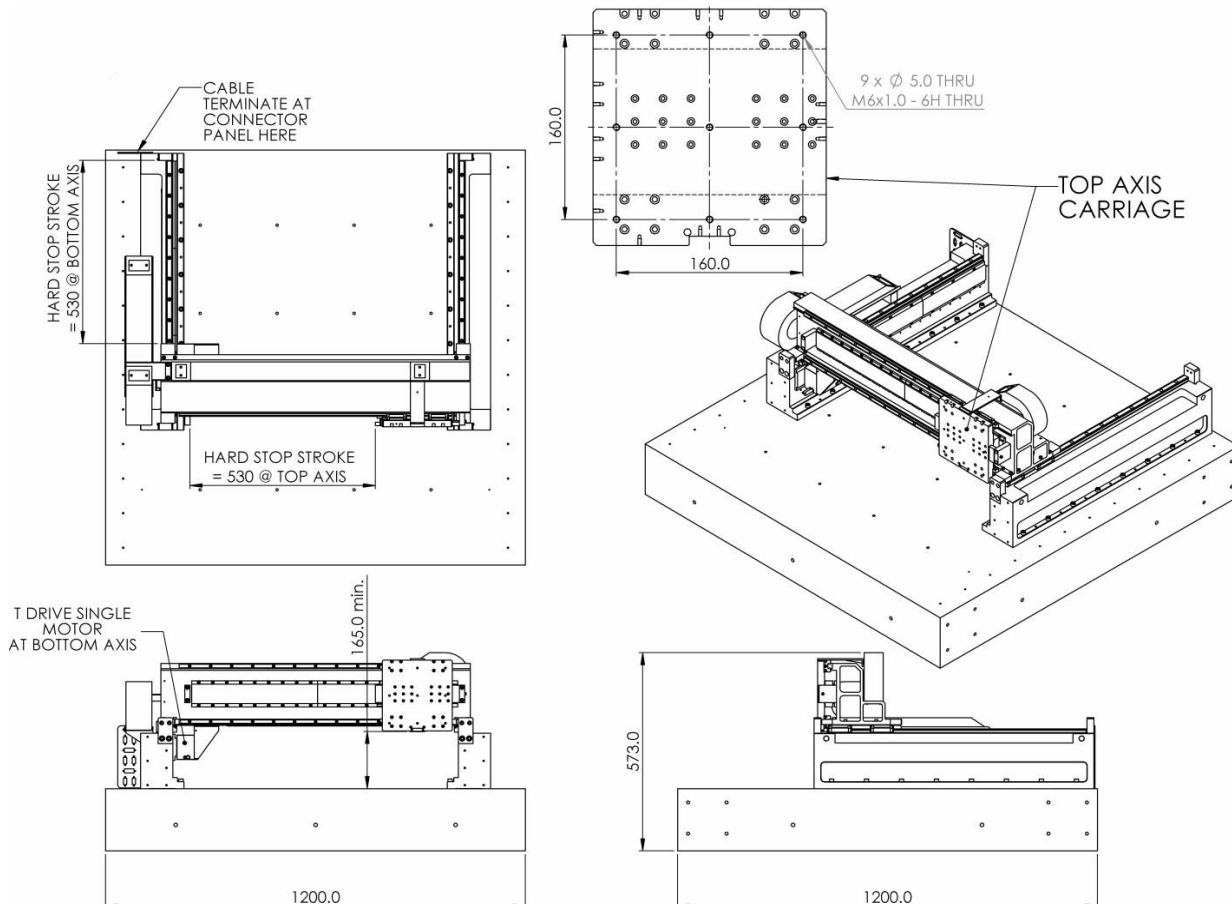
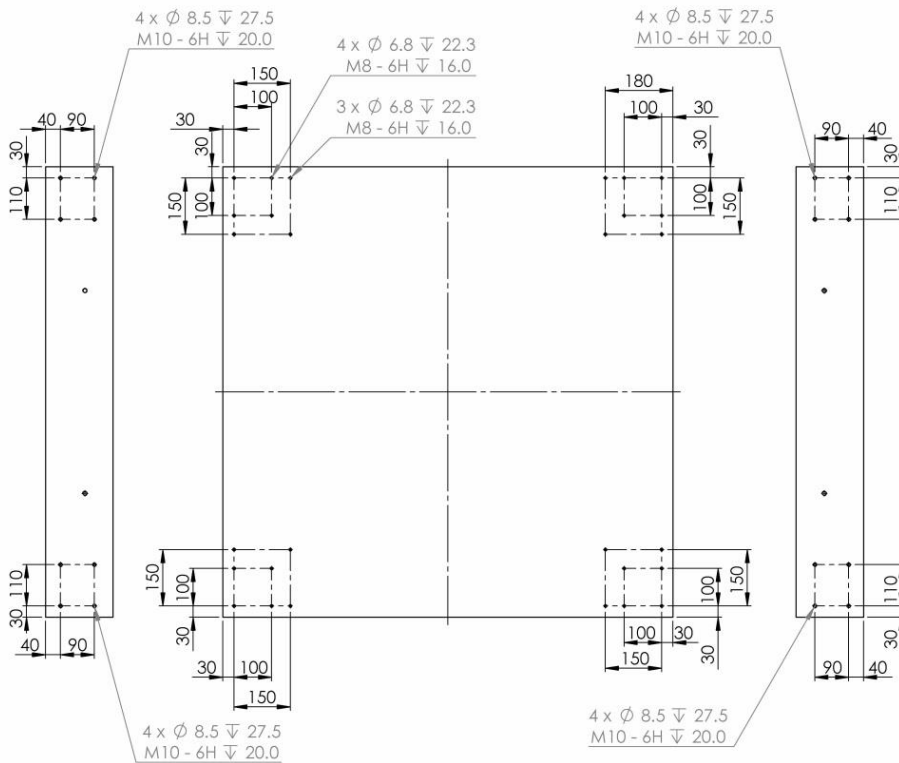


Figure 1: VRG510 GANTRY

## Granite Bottom and Side Mounting Hole



Model	Drive type	Axis	Effective Stroke	Moving Mass	Total Mass	Sensor Position	Hard Stopper Position
			(mm)	(Kg)	(Kg)	(mm)	(mm)
VRG510	T or H	Top	510	4.6	29	514	530
		Bottom	510	34.8	103	514	530

Note that granite mass is approx. 778Kg.

## Performance Parameter

Specification Parameter	Unit	VHG510
<sup>2</sup> Straightness	μm	±3μm/25mm, NTE±10μm for FS
<sup>2</sup> Flatness		±3μm/25mm, NTE±10μm for FS
Repeatability (0.5μm resolution)		±4
Repeatability (1μm resolution)		±5
Repeatability (Analogue)	counts	±5
X-Y Orthogonality	arc-sec	10

**Part Numbering (Rapid Delivery Series)**

VRG	Stroke	Drive <sup>1</sup>	Top Axis Motor Model <sup>4</sup>	Bottom Axis Motor Model <sup>5</sup>	Sensor Type	Measurement Type <sup>3</sup>	Encoder Resolution (µm)	Rail	Clearance Height <sup>6</sup> (mm)
	510	T H	T1- ACM1-L50	B1- ACM1-L50 B2S- ACM3-S-S1 B2P- ACM3-P-S1	J K	T H	0.5 1	T	Default - 165 180- 180 200- 200

1. In T-drive gantry, there is only 1 motor at the bottom axis whereas H-drive gantry has 2 motors at the bottom axis for better performance.
2. All measurement taken when the stage is mounted on a 5 micron flat granite base and with 8kg load.
3. For T-measurement, there is only 1 linear encoder at the bottom axis. For H-measurement, there are 2 encoders at the bottom axis for better performance.
4. The preferred motors for the top axis are in the table above. For other motors e.g. AUM series, pls contact us for more details.
5. The preferred motors for the bottom axis are in the table above. For other motors e.g. AUM series, pls contact us for more details.
6. Clearance height is the distance measured from granite top to the bottom of the top axis carriage. Pls refer to Figure 1 and 2. The minimum clearance is 165mm by default.
7. For applications that have specific straightness and flatness requirements, please contact us for more details.

**Example: VRG510-T-T1-B2S-J-T-1.0-T-180**

## Motor Parameter

	Model	VRG620	
	Drive Type1	T or H	
	Axis	Top	Bottom
<b>Model</b>	<b>Motor</b>	<b>ACM1-L50</b>	<b>ACM1-L50</b>
<b>Performance Parameters</b>	<b>Unit</b>		
Continuous Force, coil @100°C	N	182	182
Peak Force	N	831.4	831.4
Motor Constant	N/SqRt(W)	25.6	25.6
Continuous Power	W	50.3	50.3
Peak Power	W	1050.6	1050.6
Magnetic Period	mm	20	20
Max Coil Temperature	°C	130	130
Continuous Current	Arms	4.2	4.2
Peak Current	Arms	19.2	19.2
Force Constant	N/Arms	43.3	43.3
Back EMF Constant	Vpeak/m/s	35.4	35.4
Inductance	mH	10.4	10.4
Phase Resistance @25°C	Ohms	2.85	2.85
Magnetic Attraction	N	1619	1619

## Dimension Drawing

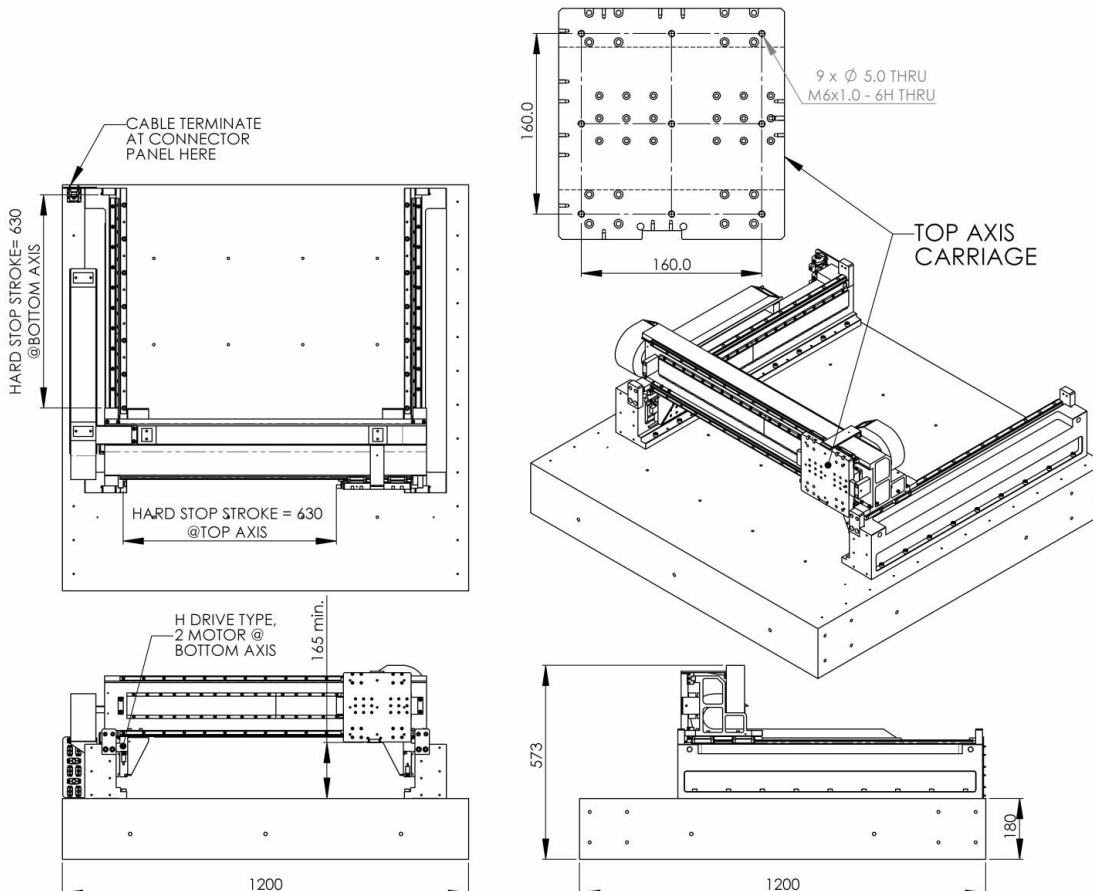
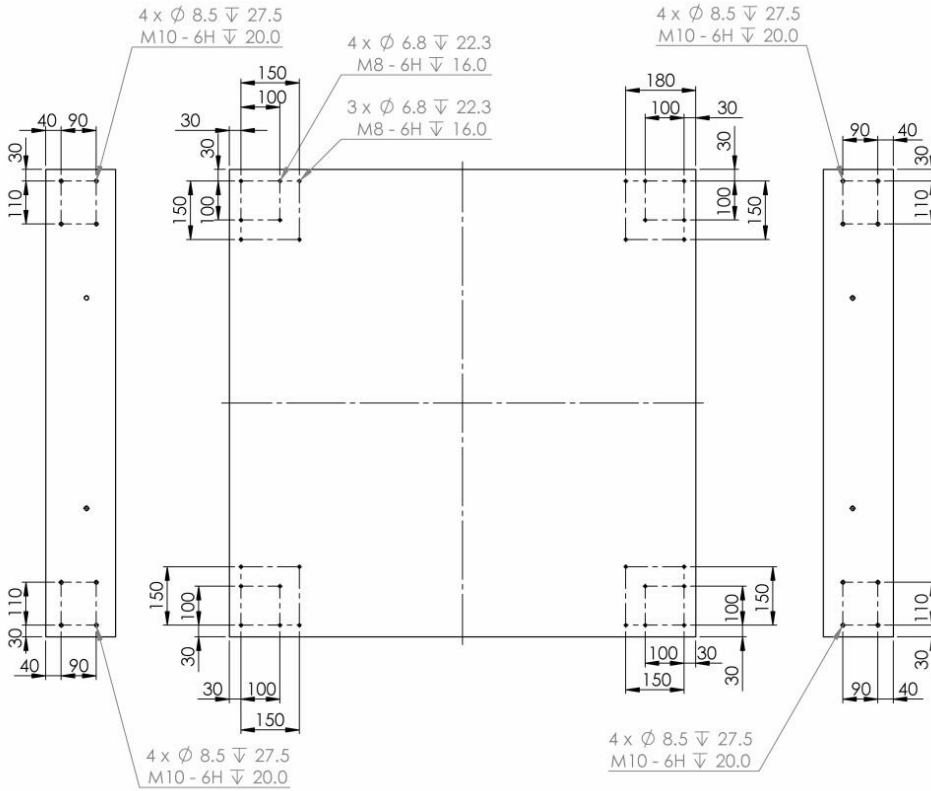


Figure 2: VRG620 GANTRY

## Granite Bottom and Side Mounting Hole



Model	Drive type	Axis	Effective Stroke	Moving Mass	Total Mass	Sensor Position	Hard Stopper Position
			(mm)	(Kg)	(Kg)	(mm)	(mm)
VRG620	T or H	Top	620	4.85	32	624	630
		Bottom	620	38.3	122	624	630

Note that granite mass is approx. 778Kg.

### Performance Parameter

Specification Parameter	Unit	VHG620
<sup>2</sup> Straightness	μm	±3μm/25mm, NTE±12.5μm for FS
<sup>2</sup> Flatness		±3μm/25mm, NTE±12.5μm for FS
Repeatability (0.5μm resolution)		±4
Repeatability (1μm resolution)		±5
Repeatability (Analogue)	counts	±5
X-Y Orthogonality	arc-sec	10

## **Part Numbering (Rapid Delivery Series)**

VRG	Stroke	Drive <sup>1</sup>	Top Axis Motor Model <sup>4</sup>	Bottom Axis Motor Model <sup>5</sup>	Sensor Type	Measurement Type <sup>3</sup>	Encoder Resolution (µm)	Rail	Clearance Height <sup>6</sup> (mm)
	620	T H	T1- ACM1-L50	B1- ACM1-L50 B2S- ACM3-S-S1 B2P- ACM3-P-S1	J K	T                    H	0.5 1	T	Default - 165 180- 180 200- 200

1. In T-drive gantry, there is only 1 motor at the bottom axis whereas H-drive gantry has 2 motors at the bottom axis for better performance.
2. All measurement taken when the stage is mounted on a 5 micron flat granite base and with 8kg load.
3. For T-measurement, there is only 1 linear encoder at the bottom axis. For H-measurement, there are 2 encoders at the bottom axis for better performance.
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5. The preferred motors for the bottom axis are in the table above. For other motors e.g. AUM series, pls contact us for more details.
6. Clearance height is the distance measured from granite top to the bottom of the top axis carriage. Pls refer to Figure 1 and 2. The minimum clearance is 165mm by default.
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**Example: VRG620-T-T1-B2S-J-T-1.0-T-180**