MGV Series

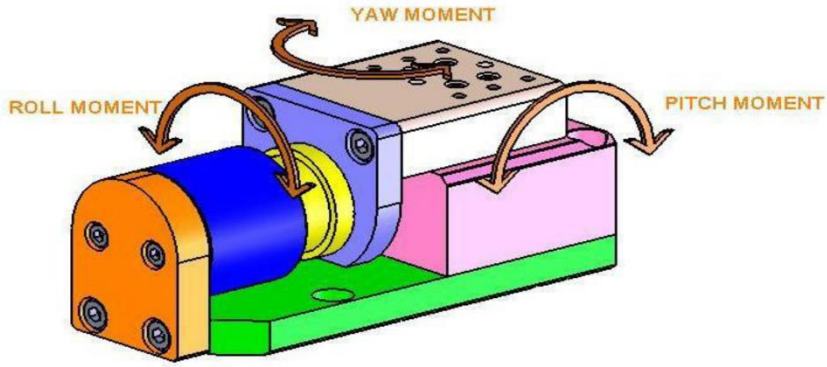
Miniature Guide Voice Motor Stage

- **Direct Drive**
- **Zero cogging and backlash ironless linear motor actuator**
- **Stroke from 15mm to 30mm**
- **Miniature linear guidance rails**
- **Suitable for high speed and acceleration applications**
- **Smooth motion even at low speeds (low velocity ripple)**

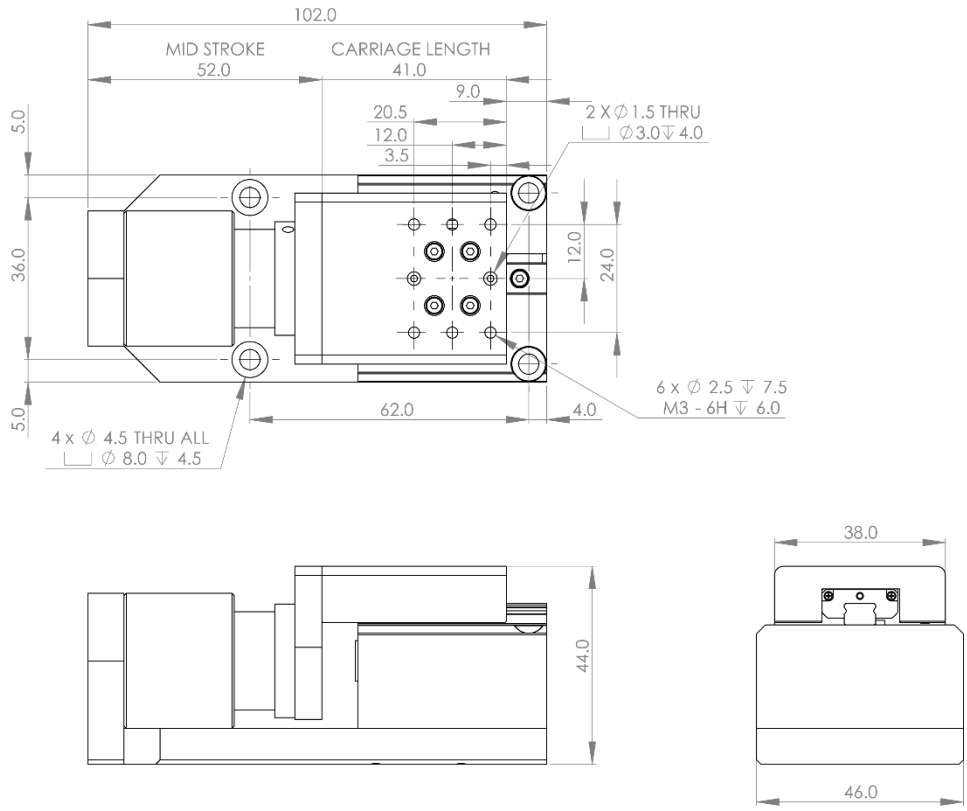
Motor Parameter

	Unit	MGV 38	MGV 41	MGV 52	MGV 84
	Driven by Voice Coil	AVM30-15	AVM40-20	AVM60-25	AVM90-30
Electrical Parameters					
Continuous Force, Coil @100ºC	N	4.6	9.9	26.4	74.3
Peak Force	N	29.4	58.1	119.0	315.0
Motor Constant	N/SqRt (W)	2.26	3.89	7.45	13.21
Continuous Power	W	4.2	6.5	12.5	31.6
Peak Power	W	169.6	222.8	254.8	568.4
Max Bus Voltage	V	48	60	60	60
Max Coil Temperature	ºC	155	155	155	155
Continuous current	A	0.63	0.77	1.55	3.30
Peak Current, I_{peak}	A	4.00	4.50	7.00	14.00
Force Constant	N/A	7.35	12.90	17.00	22.50
Back EMF Constant, V_{emf}	V/m/s	7.35	12.90	17.00	22.50
Inductance	mH	2.94	6.22	6.42	6.61
Terminal Resistance @ 25ºC	Ohms	10.6	11	5.2	2.9
Electrical Time Constant	ms	0.3	0.6	1.2	2.3
Mechanical Parameters					
Moving Mass	kg	0.084	0.162	0.391	1.386
Total Mass	kg	0.366	0.715	1.703	5.457
Recommended maximum load	kg	0.3	0.8	2.0	6.0
Stroke *	mm	15	20	25	30
Note: Please contact us for customized stroke.					
Performance Parameters					
Straightness	µm	±3µm/25mm			
Flatness	µm	±3µm/25mm			
Bidirectional Repeatability	µm	±1.5µm			
Linearity without mapping	µm	±3µm/25mm			
Linearity with mapping	µm	±0.5µm/25mm			
Note: The straightness, bidirectional repeatability and linearity are qualified according to ISO 230-2:1997.					
ISO 230-2:1997 – Bidirectional Repeatability, Bidirectional Accuracy, Bidirectional positional deviation					
Bearing Parameters					
Maximum static load capacity	N	129.0	231.0	706.0	1710.0
Maximum static roll moment	Nm	5.0	10.6	23.1	176.0
Maximum static pitch moment	Nm	3.1	7.8	12.0	51.2
Maximum static yaw moment	Nm	3.7	9.0	12.0	51.2
Recommended maximum load[1]	N	2.9	7.8	19.6	58.9
Recommended roll moment	Nm	1.7	3.5	7.7	58.7
Recommended pitch moment	Nm	1.0	2.6	4.0	17.1
Recommended yaw moment	Nm	1.2	3.0	4.0	17.1
1: The recommended maximum load is based on the load in which the acceleration of the moving mass is at least 1G.					

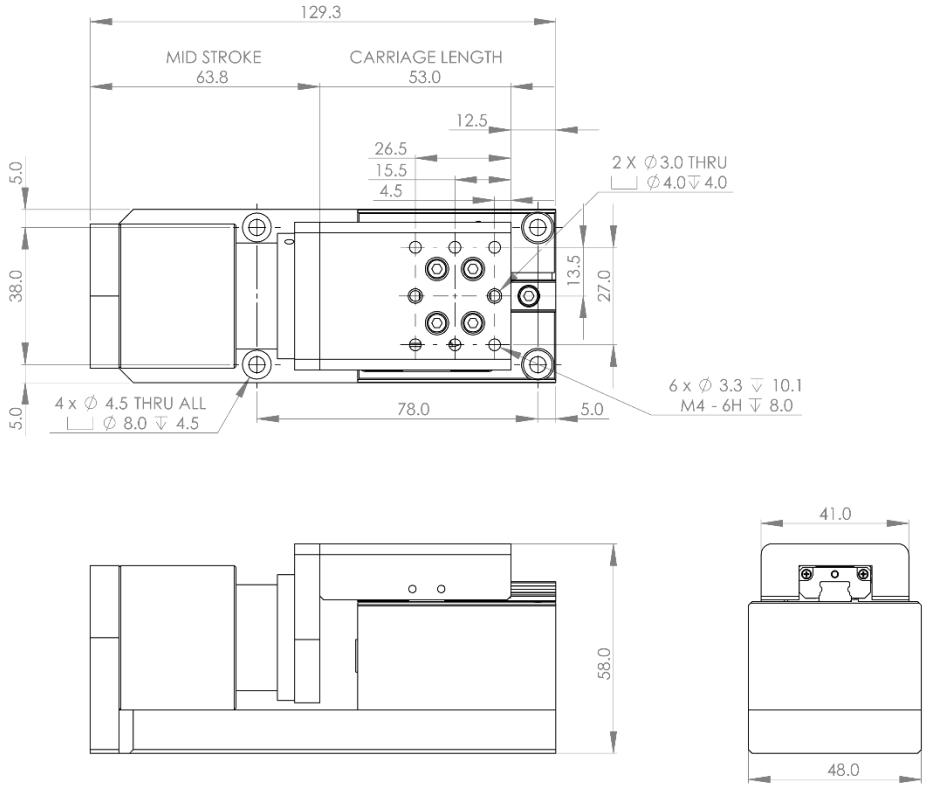
* Stroke refers to hardstop-to-hardstop. The limit sensors are positioned 0.5mm from the hardstops.



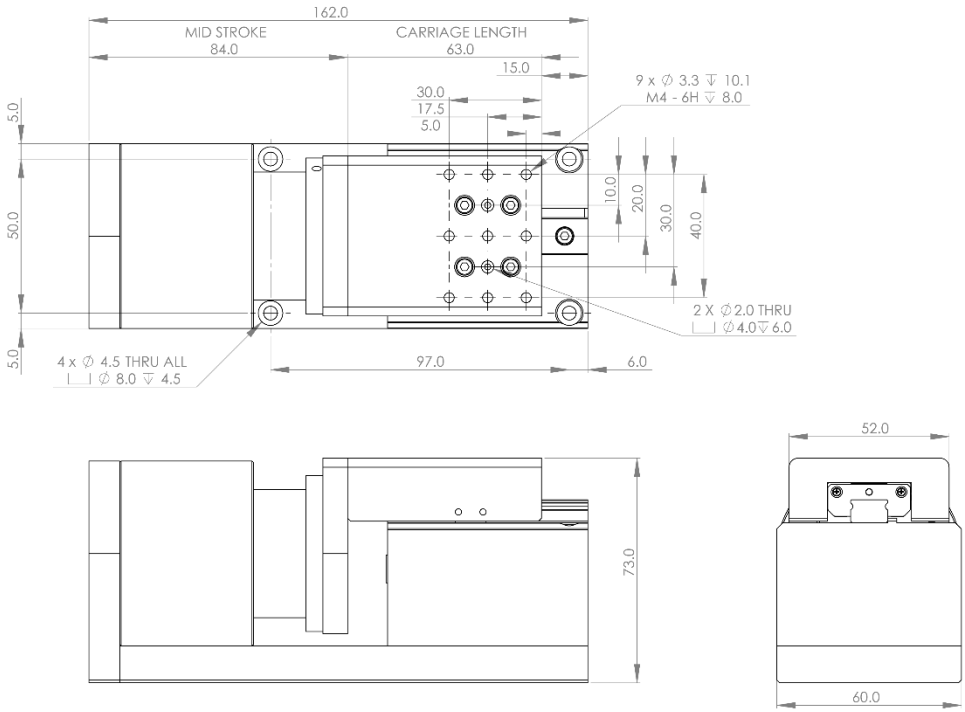
MGV38 Dimensional Drawing



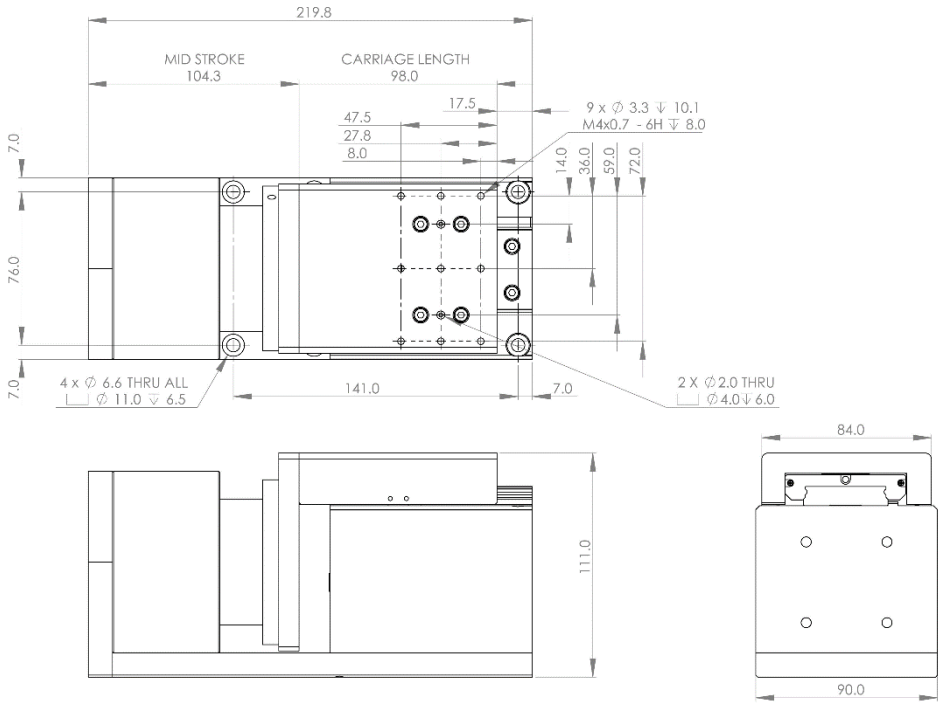
MGV41 Dimensional Drawing



MGV52 Dimensional Drawing



MGV84 Dimensional Drawing



Part Numbering

Common Definition :

* L0100 = 100g Payload
* L0200 = 200g Payload
* L0500 = 500g Payload
* L1000 = 1000g Payload
* E00 = Counter-balance Device activated and Resting Position at 0mm
* E15 = Counter-balance Device activated and Resting Position at 15mm
* E20 = Counter-balance Device activated and Resting Position at 20mm
* E25 = Counter-balance Device activated and Resting Position at 25mm
* E50 = Counter-balance Device activated and Resting Position at 50mm

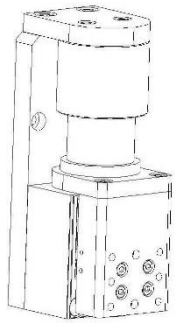
Horizontal Application：

MGV Series			
Model	**Coil Type**	**Encoder**	**Resolution (um)**
MGV 38	AVM30-15-0.5	M1	1500-1.0
MGV 41	AVM40-20-0.5		1500-0.5
MGV 52	AVM60-25-0.5		2000-0.1
MGV 84	AVM90-30-0.5		

Module

Example: MGV84-AVM90-30-0.5-M1-1500-0.5

Vertical Application：



*Orientation of vertical application.
Pls contact factory for the other orientation.

MGV 38					
Model	**Coil Type**	**Encoder**	**Resolution (um)**	**Customer Payload ***	**Position At Rest ***
MGV 38	AVM30–15–0.5	[1]M1	1500-1.0	L0000 to L0100	E00 to E15
			1500-0.5		
			2000-0.1		

Module

Example: MGV38-AVM30-15-0.5-M1-1500-0.5-L0100-E15

MGV 41					
Model	**Coil Type**	**Encoder**	**Resolution (um)**	**Customer Payload ***	**Position At Rest ***
MGV 41	AVM40-20-0.5	[1]M1	1500-1.0	L0000 to L0200	E00 to E20
			1500-0.5		
			2000-0.1		

Module

Example: MGV84-AVM40-20-0.5-M1-1500-0.5-L0200-E15

MGV 52					
Model	**Coil Type**	**Encoder**	**Resolution (um)**	**Customer Payload ***	**Position At Rest ***
MGV 52	AVM60-25-0.5	[1]M1	1500-1.0	L0000 to L0500	E00 to E25
			1500-0.5		
			2000-0.1		

Module

Example: MGV84-AVM60-25-0.5-M1-1500-0.5-L0500-E20

MGV 84					
Model	**Coil Type**	**Encoder**	**Resolution (um)**	**Customer Payload ***	**Position At Rest ***
MGV 84	AVM90-30-0.5	[1]M1	1500-1.0	L0000 to L1000	E00 to E30
			1500-0.5		
			2000-0.1		

Module

Example: MGV84-AVM90-30-0.5-M1-1500-0.5-L1000-E15

1. With external Micro Photo sensor (Panasonic PM series)