MGV Series

Miniature Guide Voice Motor Modules

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)

Where Precision Matters

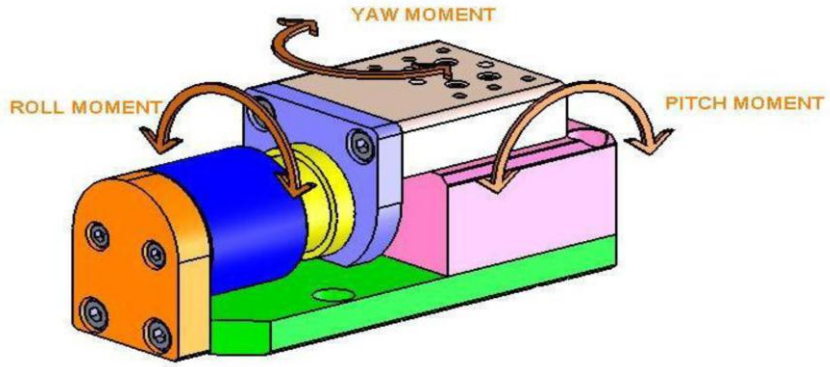
Akribis™

MGV Specifications

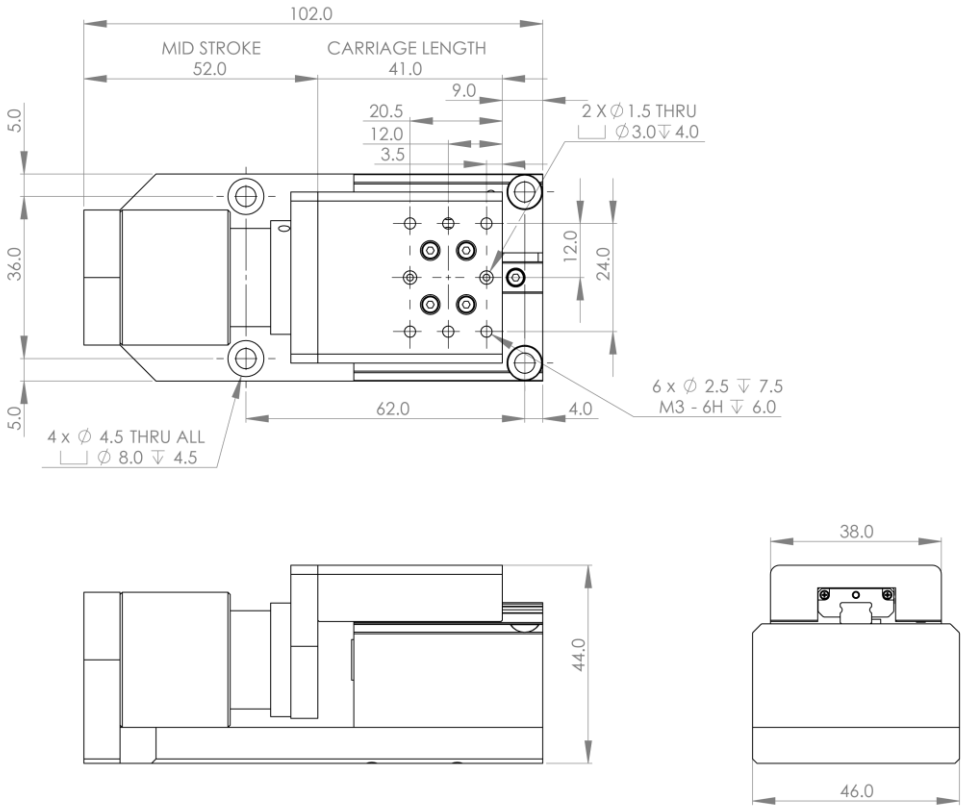
	MGV				
	Unit	**MGV 38**	**MGV 41**	**MGV 52**	**MGV 84**
	Driven by Voice Coil	**AVM30-15**	**AVM40-20**	**AVM60-25**	**AVM90-30**
Electrical Parameters					
Continuous ForceCoil @100 ℃	N	4.6	9.9	26.4	74.3
	lbf	1.0	2.2	5.9	16.7
Peak Force	N	29.4	58.1	119.0	315.0
	lbf	6.6	13.1	26.8	70.8
Motor Constant	N/SqRt (W)	2.26	3.89	7.45	13.21
	lbf/SqRt (W)	0.51	0.87	1.67	2.97
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	℃	155	155	155	155
Continuous current	A (rms)	0.63	0.77	1.55	3.30
Peak Current, I_{peak}	A (rms)	4.00	4.50	7.00	14.00
Force Constant	N/A	7.35	12.90	17.00	22.50
	lbf/A	1.65	2.90	3.82	5.06
Back EMF Constant, V_{emf}	V/m/s	7.35	12.90	17.00	22.50
	V/in/s	289.37	507.87	669.29	885.83
Inductance	mH	2.94	6.22	6.42	6.61
Terminal Resistance @ 25 ℃	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
	lb	0.186	0.357	0.863	3.055
Total Mass	kg	0.366	0.715	1.703	5.457
	lb	0.807	1.575	3.754	12.030
Recommended maximum load	kg	0.3	0.8	2.0	6.0
	lb	0.7	1.8	4.4	13.2
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.		

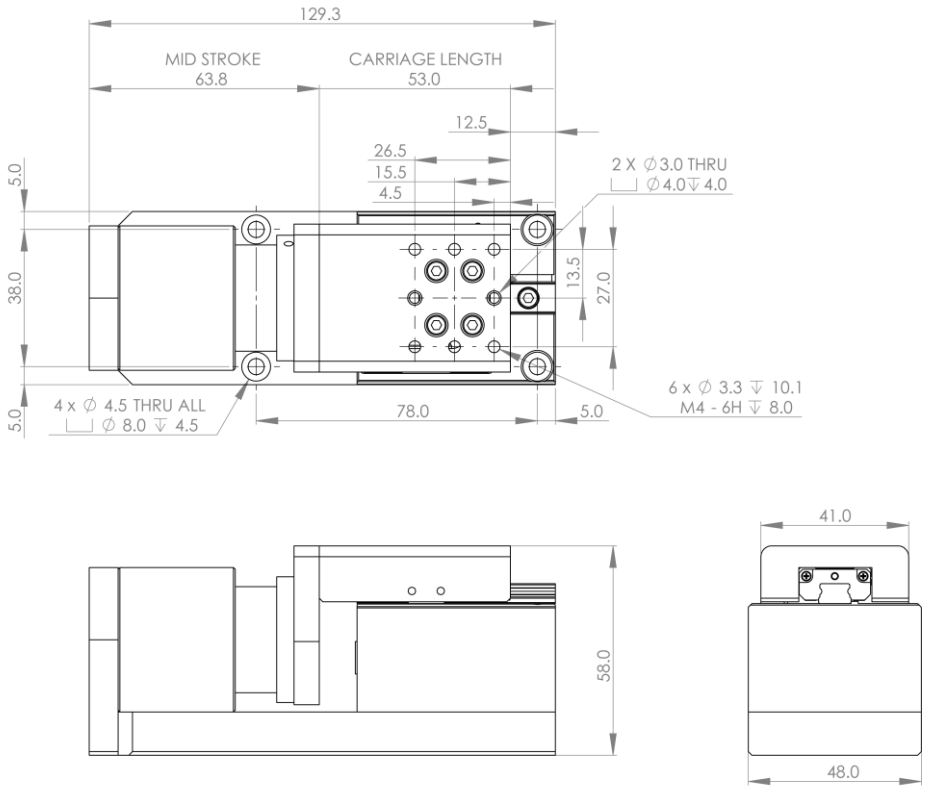
ISO 230-2:1997 – Bidirectional Repeatability, Bidirectional Accuracy, Bidirectional positional deviation					
Bearing Parameters					
Maximum static load capacity	N	129.0	231.0	706.0	1710.0
Maximum static row moment	Nm	5.0	10.6	23.1	176.0
Maximum static pitch moment	Nm	3.1	7.8	12.0	51.2
Maximum static 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 row 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.					



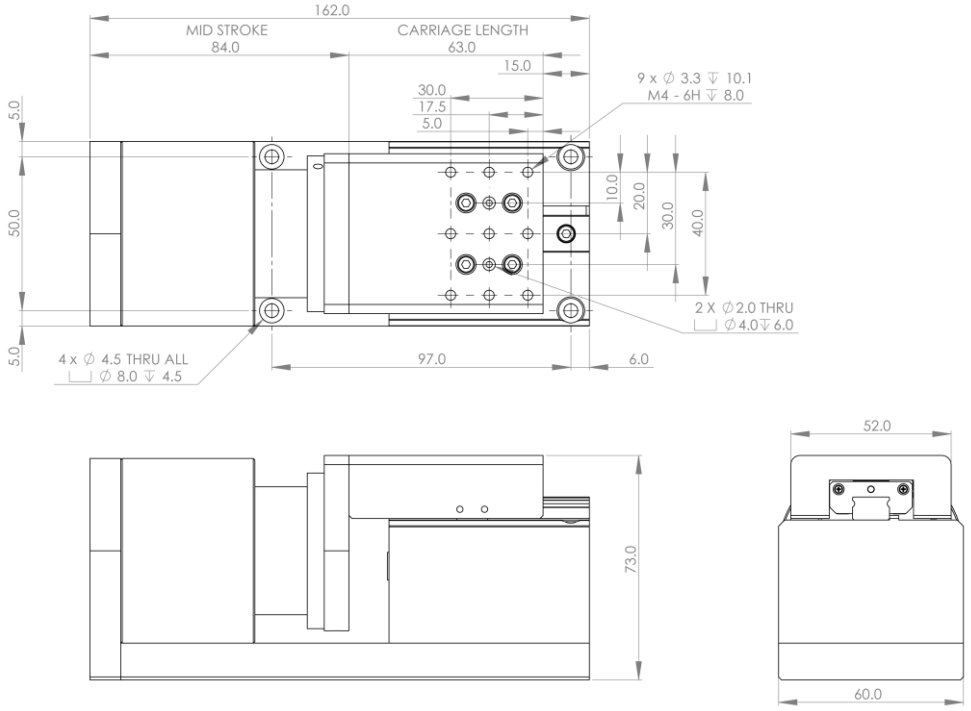
MGV38


102.0
MID STROKE
52.0
CARRIAGE LENGTH
41.0
9.0
20.5
12.0
3.5
2 X ∅ 1.5 THRU
⌴ ∅3.0↧4.0
5.0
36.0
5.0
12.0
24.0
6 x ∅ 2.5 ↧ 7.5
M3 - 6H ↧ 6.0
62.0
4.0
4 x ∅ 4.5 THRU ALL
⌴ ∅ 8.0 ↧ 4.5
44.0
38.0
46.0

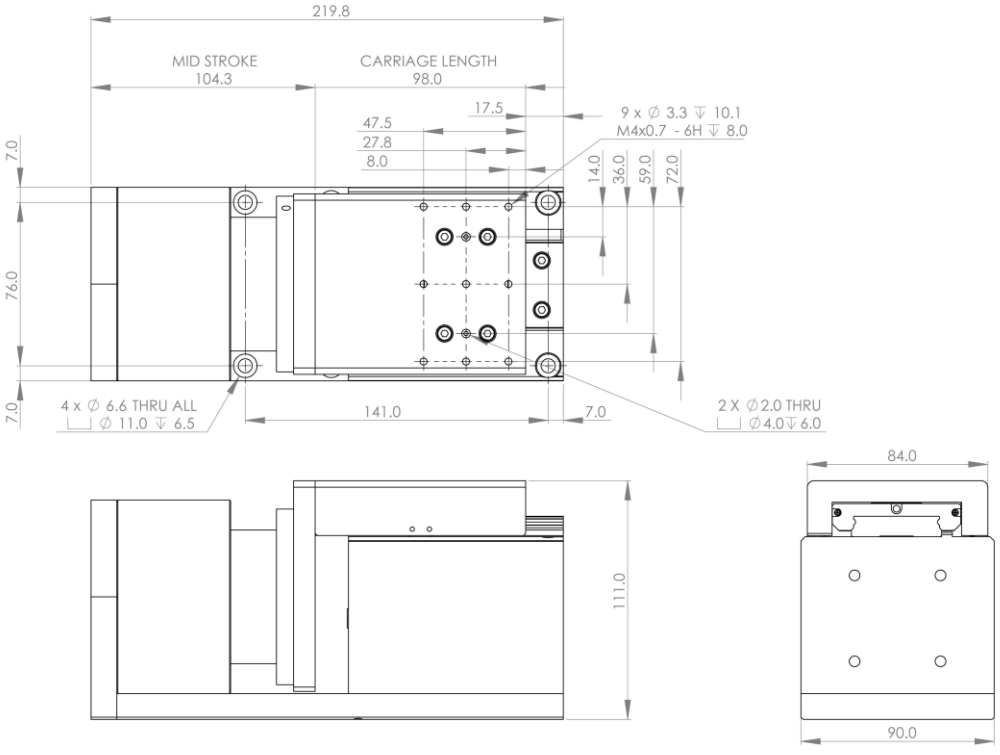
MGV41


129.3
MID STROKE
63.8
CARRIAGE LENGTH
53.0
12.5
26.5
15.5
4.5
2 X ∅3.0 THRU
⌴ ∅4.0↧4.0
5.0
38.0
5.0
13.5
27.0
6 x ∅ 3.3 ↧ 10.1
M4 - 6H ↧ 8.0
4 x ∅ 4.5 THRU ALL
⌴ ∅ 8.0 ↧ 4.5
78.0
5.0
58.0
41.0
48.0

MGV52


162.0
MID STROKE
84.0
CARRIAGE LENGTH
63.0
15.0
30.0
17.5
5.0
9 x ∅ 3.3 ↧ 10.1
M4 - 6H ↧ 8.0
5.0
50.0
5.0
10.0
20.0
30.0
40.0
2 X ∅2.0 THRU
⌴ ∅4.0↧6.0
4 x ∅ 4.5 THRU ALL
⌴ ∅ 8.0 ↧ 4.5
97.0
6.0
73.0
52.0
60.0

MGV84


219.8
MID STROKE
104.3
CARRIAGE LENGTH
98.0
17.5
47.5
27.8
8.0
9 x ∅ 3.3 ↧ 10.1
M4x0.7 - 6H ↧ 8.0
7.0
76.0
7.0
14.0
36.0
59.0
72.0
4 x ∅ 6.6 THRU ALL
⌴ ∅ 11.0 ↧ 6.5
141.0
7.0
2 X ∅2.0 THRU
⌴ ∅4.0↧6.0
111.0
84.0
90.0

Part Numbering

Common Definition :

* L0100 = 100g Payload
* L0200 = 200g Payload
* L0500 = 500g Payload
* L1000 = 1000g Payload
* E00 = Counter-balance Device activitated and Resting Position at 0mm
* E15 = Counter-balance Device activitated and Resting Position at 15mm
* E20 = Counter-balance Device activitated and Resting Position at 20mm
* E25 = Counter-balance Device activitated and Resting Position at 25mm
* E50 = Counter-balance Device activitated 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		3000-0.02
			3500-0.005

Module

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

Vertical Application：

1 **MGV 38**

Model	Coil Type	Encoder	Resolution (um)	Customer Payload *	Position At Rest *
MGV 38	AVM30–15–0.5	M1	1500-1.0	L0000 to L0100	E00 to E15
			1500-0.5		
			2000-0.1		
			3000-0.02		
			3500-0.005		

Module

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

2 **MGV 41**

Model	Coil Type	Encoder	Resolution (um)	Customer Payload *	Position At Rest *
MGV 41	AVM40-20-0.5	M1	1500-1.0	L0000 to L0200	E00 to E20
			1500-0.5		
			2000-0.1		
			3000-0.02		
			3500-0.005		

Module

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

3 **MGV 52**

Model	Coil Type	Encoder	Resolution (um)	Customer Payload *	Position At Rest *
MGV 52	AVM60-25-0.5	M1	1500-1.0	L0000 to L0500	E00 to E25
			1500-0.5		
			2000-0.1		
			3000-0.02		
			3500-0.005		

Module

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

4	MGV 84					
	Model	**Coil Type**	**Encoder**	**Resolution (um)**	**Customer Payload ***	**Position At Rest ***
	MGV 84	AVM90-30-0.5	M1	1500-1.0	L0000 to L1000	E00 to E30
				1500-0.5		
				2000-0.1		
				3000-0.02		
				3500-0.005		

Module

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