

VPL Series

Vertical Pick and Place Linear Motor Stage



- High speed high acceleration
- Fast response and quick settling time
- Compact
- No backlash

VPL32 / VPL48 / VPL51 Series

Features

- Direct drive and direct measurement
- Fast response and quick settling time
- Zero cogging ironless linear motor
- No backlash
- Choice of encoder resolutions of up to 0.1µm
- Integrated reference mark and two limit sensors
- High precision corrosion resistant linear guide with 2 high precision runner blocks
- Compact, light and easily integrated

Motor Parameter

VPL	Unit	VPL 32		VPL 48		VPL 51	
		up to 0.5µm	up to 0.1µm	up to 0.5µm	up to 0.1µm	up to 0.5µm	up to 0.1µm
	Motor	AUM2-SS2-K		AUM3-SS2-J		AUM4-SS2-J	
Electrical Parameters							
Continuous Force Coil @100°C	N	17.6		57.0		110.0	
Peak Force	N	88.0		289.0		624.0	
Motor Constant	N/SqRt (W)	4.31		10.2		15.8	
Continuous Power	W	16.6		30.5		48.7	
Peak Power	W	416.0		796.0		1555	
Electrical Cycle	mm	30.0		60.0		60.0	
Max Bus Voltage	V	330.0		330.0		330.0	
Max Coil Temperature	°C	125.0		125.0		125.0	
Continuous current	Arms	1.6		1.8		2.3	
Peak Current, I_{peak}	Arms	8.0		9.2		13.0	
Force Constant	Arms	11.0		31.4		48.0	
Back EMF Constant, V_{emf}	Vpeak/(m/s)	9.0		25.6		39.2	
Inductance	mH	1.5		6.26		7.0	
Terminal Resistance @ 25°C	Ohms	6.5		9.4		9.2	
Electrical Time Constant	ms	0.23		0.67		0.76	
Mechanical Parameters							
Moving Mass	kg	0.33	0.33	1.05	1.05	1.31	1.31
Total Mass	kg	1.24	1.22	3.45	3.43	5.21	5.19
Recommended maximum load ¹	kg	0.50	0.50	2.00	2.00	5.00	5.00
Stroke	mm	50.00		50.00		50.00	

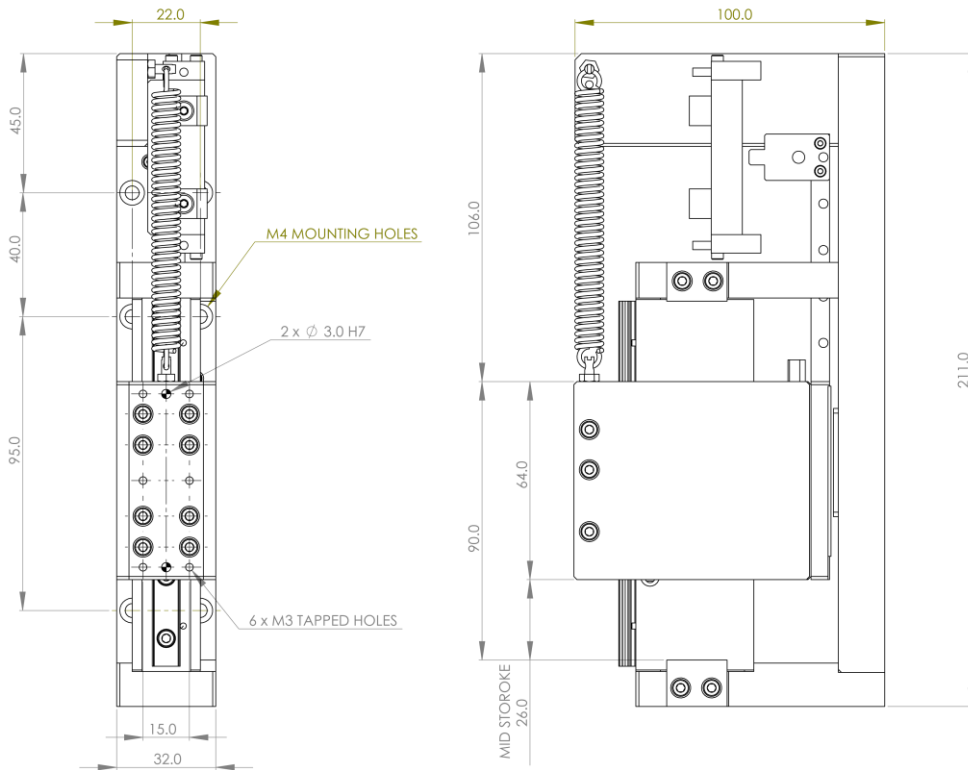
Note: Please contact us for customized stroke, and different loads.

1: At this maximum loading, the load will be retracted up to the top when the power is shut down.

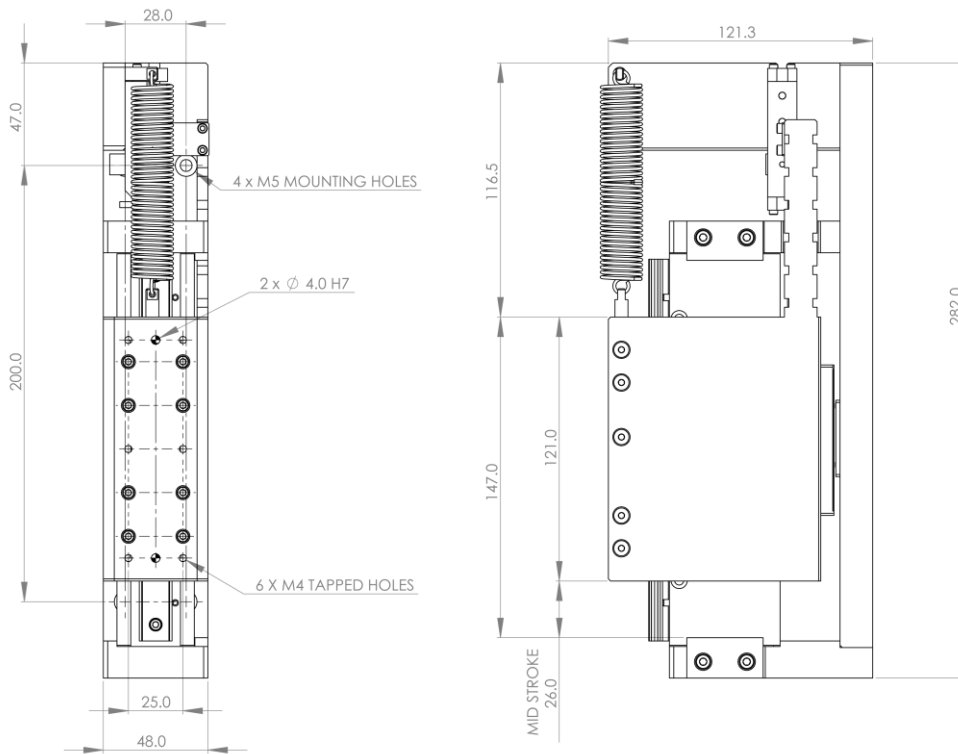
Optional: equilibrium position is at the middle with a different counter-balance spring.

Dimensional Drawing

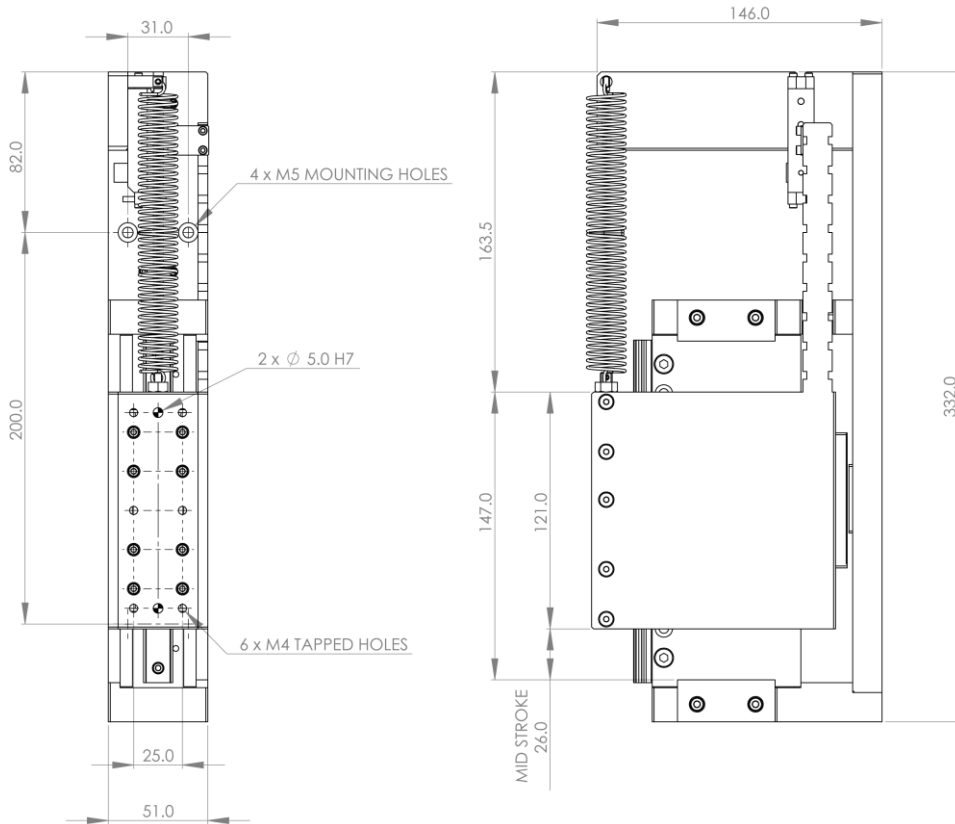
VPL32



VPL48



VPL51



Performance Parameters

Velocity ²	m/s	1.5	0.7	1.5	0.7	1.5	0.7
Straightness	µm	±3µm/25mm					
Flatness	µm	±3µm/25mm					
Bidirectional Repeatability	µm	±1.5µm	±1µm	±1.5µm	±1µm	±1.5µm	±1µm
Linearity without mapping	µm	±3µm/25mm					

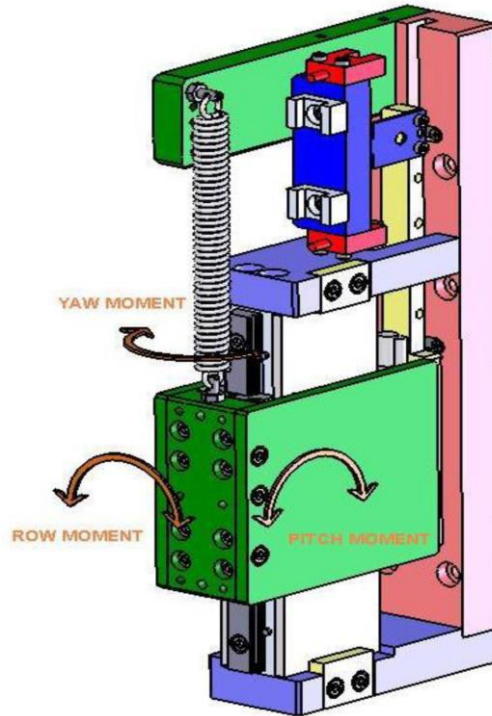
Note: The straightness, bidirectional repeatability and linearity are qualified according to ISO 230-2:1997.

2: Based on 20MHz counter frequency.

Bearing Parameters²

Maximum static load capacity	N	420.0	1140.0	1140.0
Maximum static row moment, M_{ROW}	Nm	69.3	342.0	342.0
Maximum static pitch moment, M_{PITCH}	Nm	69.3	342.0	342.0
Maximum static yaw moment, M_{YAW}	Nm	9.6	40.4	40.4
Recommended maximum load ³	N	0.5	2.0	5.0
Recommended row moment	Nm	6.9	34.2	34.2
Recommended pitch moment	Nm	6.9	34.2	34.2
Recommended yaw moment	Nm	1.0	4.0	4.0

2: The bearings come with a light preload C1, with radial clearance of -12 to -4µm.



Part Numbering

- * Common Definition :
- * L0100 = 100g Payload
- * L0200 = 200g Payload
- * L0500 = 500g Payload
- * L1000 = 1000g Payload

Vertical Application

VPL 32

Model	Coil Type Options	Effective Stroke (mm)	Encoder Options	Encoder Resolution (um) Options	Customer Payload *	Position At Rest *
VPL32	AUM2-S-S2-K-3.0	50	M1	1500-1.0 / 1500-0.5	L0000 to L0500	E00 to E50
	AUM2-P-S2-K-3.0			/ 2000-0.1 / 3000-0.1		

Module

Example: VPL32-AUM2-S-S2-K-3.0-50-M1-1500-1.0-L0200-E15

VPL 48

Model	Coil Type Options	Effective Stroke (mm)	Encoder Options	Encoder Resolution (um) Options	Customer Payload *	Position At Rest *
VPL48	AUM3-S-S2-J-3.0	50	M1	1500-1.0 / 1500-0.5	L0000 to L1000	E00 to E50
	AUM3-P-S2-J-3.0			/ 2000-0.1 / 3000-0.1		

Module

Example: VPL48-AUM3-S-S2-K-3.0-50-M1-1500-1.0-L0500-E20

VPL 51

Model	Coil Type Options	Effective Stroke (mm)	Encoder Options	Encoder Resolution (um) Options	Customer Payload *	Position At Rest *
VPL51	AUM4-S-S2-J-3.0	50	M1	1500-1.0 / 1500-0.5	L0000 to L2000	E00 to E50
	AUM4-P-S2-J-3.0			/ 2000-0.1 / 3000-0.1		

Module

Example: VPL51-AUM4-P-S2-K-3.0-50-M1-1500-1.0-L0800-E50