

LMA/LMAC Series

Linear Motor Actuators

Travels up to 1 m

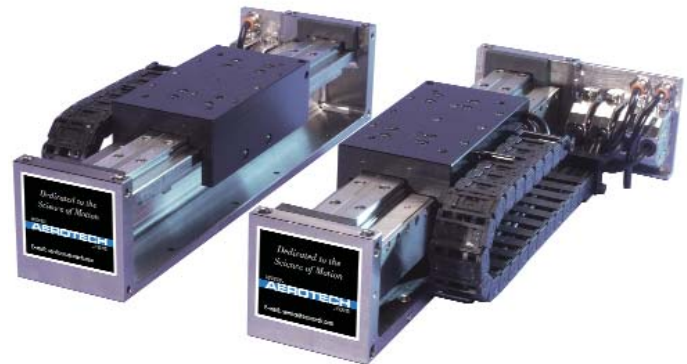
Velocity capability to 5 m/s

Acceleration capability to 3 g

Linear brushless servomotor and noncontact encoder eliminate typical ball screw or belt maintenance

Force outputs from 32 N to 276 N

Counterbalance is available for vertical applications



Faster than a ball screw, more accurate than a belt drive, the LMA and LMAC series actuators harness the speed, acceleration, and accuracy capability of a linear motor for the latest in high-throughput linear actuator technology. This modular stage is ideal for pick-and-place machines, gantry axes, shuttle stages, assembly machines, or as a general-purpose positioner.

Since the LMA and LMAC series actuators integrate the mechanical and electrical components, they eliminate the guesswork involved in choosing bearings, motors, encoders, and the other components required for a linear motor system.

High Speed, High Acceleration

With a no-load acceleration of 3 g and a top speed of 5 m/s, the LMA and LMAC series actuators are the ideal solution to increasing throughput. A high-power brushless linear servomotor drives the LMA and LMAC actuators to speeds and resolutions that are impossible with a ball screw.

Excellent Accuracy and Repeatability

The feedback device is a directly coupled, high-accuracy linear encoder. Since the encoder is mounted in close

proximity to the work surface, accuracy problems associated with pitch, roll, and yaw are greatly reduced. Repeatability is $\pm 0.5 \mu\text{m}$ over the length of travel. The linear encoder is a robust, noncontacting scale with resolution options ranging from 0.1 μm to 1.0 μm .

OEM Version for Application Flexibility

For applications requiring integration into a custom machine, an OEM version is available. The OEM version offers all of the same performance characteristics as the standard actuator, but allows the user to eliminate or modify different characteristics of the actuator. For example, the user can provide their own cable management system, choose a different bearing system, or customize the mounting holes.

High Reliability

The LMA/LMAC linear motor drive system consists of two noncontacting parts, making the actuators virtually maintenance-free. As a result, there is no backlash, windup, wear, or maintenance that is normally associated with contacting-type systems such as ball screws or belts.

LMA/LMAC Series SPECIFICATIONS

LMA										
Total Travel	100 mm	200 mm	300 mm	400 mm	500 mm	600 mm	700 mm	800 mm	900 mm	1000 mm
Drive System	Linear Brushless Servomotor									
Feedback	Noncontact Linear Encoder									
Resolution⁽⁵⁾	5 nm - 1.0 µm									
Max Travel Speed⁽¹⁾⁽⁶⁾	5 m/s									
Max Linear Acceleration⁽⁶⁾	3 g (30 m/s ² no load)									
Max Horizontal Load⁽²⁾	40 kg									
Max Side Load⁽²⁾	20 kg									
Continuous Force⁽³⁾	207 N									
Continuous Force (20 psi)⁽³⁾	276 N									
Peak Force⁽³⁾	1106 N									
Accuracy	±1 µm/25 mm									
Calibrated Accuracy⁽⁴⁾	±5 µm Over Entire Length of Travel									
Repeatability	±0.5 µm									
Nominal Stage Weight	16.3 kg	18.5 kg	20.7 kg	22.8 kg	25.0 kg	27.2 kg	29.4 kg	31.6 kg	33.7 kg	35.9 kg
Moving Weight	3.28 kg (142 Motor Option)					5.18 kg (264 Motor Option)				
Material	Aluminum									
Finish	Electroless Nickel Base/Black Hardcoat Tabletop									

Notes:

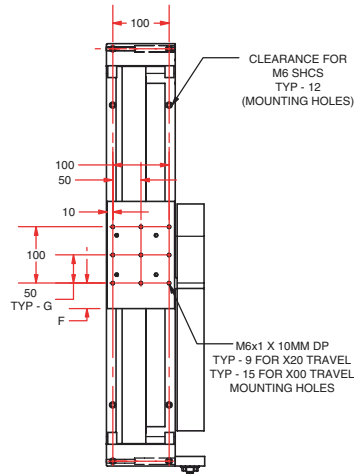
1. Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and resolution.
2. Maximum load based on bearing capability; maximum application load may be limited by acceleration requirements.
3. Specifications based on BLM-264-A motor. Travel increases by 20 mm when using the BLM-142-A motor.
4. Available with Aerotech controller.
5. May require encoder multiplier.
6. Consult factory on high speed and/or high acceleration applications.

LMAC										
Total Travel	100 mm	200 mm	300 mm	400 mm	500 mm	600 mm	700 mm	800 mm	900 mm	1000 mm
Drive System	Linear Brushless Servomotor									
Feedback	Noncontact Linear Encoder									
Resolution⁽⁵⁾	5 nm - 1.0 µm									
Max Travel Speed⁽¹⁾⁽⁶⁾	5 m/s									
Max Linear Acceleration⁽⁶⁾	3 g (30 m/s ² no load)									
Max Horizontal Load⁽²⁾	20 kg									
Max Side Load⁽²⁾	10 kg									
Continuous Force⁽³⁾	47.9 N									
Continuous Force (20 psi)⁽³⁾	73.1 N									
Peak Force⁽³⁾	292 N									
Accuracy	±1 µm/25 mm									
Calibrated Accuracy⁽⁴⁾	±5 µm Over Entire Length of Travel									
Repeatability	±0.5 µm									
Nominal Stage Weight	4.5 kg	5.4 kg	6.3 kg	7.2 kg	8.1 kg	9.0 kg	9.9 kg	10.8 kg	11.7 kg	12.6 kg
Moving Weight	0.79 kg (95 Motor Option)					1.00 kg (143 Motor Option)				
Material	Aluminum									
Finish	Electroless Nickel Base/Black Hardcoat Tabletop									

Notes:

1. Maximum speed based on stage capability; maximum application velocity may be limited by system data rate and resolution.
2. Maximum load based on bearing capability; maximum application load may be limited by acceleration requirements.
3. Specifications based on BLMUC-143-A motor. Travel increases by 35 mm when using the 95 motor.
4. Available with Aerotech controller.
5. May require encoder multiplier.
6. Consult factory on high speed and/or high acceleration applications.

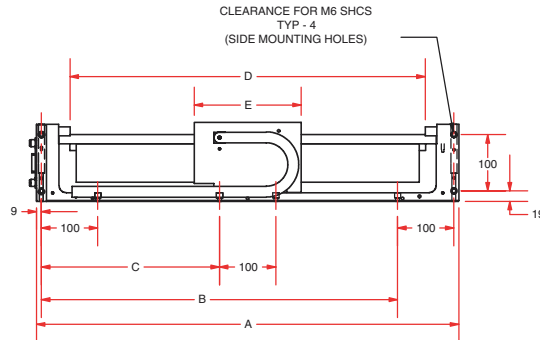
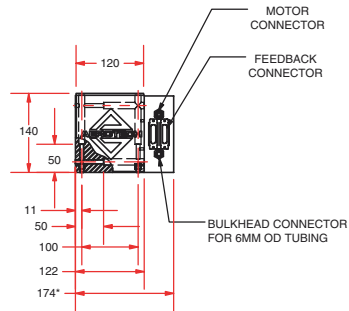
LMA



BASIC MODEL	TOTAL TRAVEL	DIMENSIONS - MILLIMETERS						
		A	B	C	D	E	F	G
LMA100	100	550	432	216	431	312	56	2
LMA200	200	650	532	266	531	312	56	2
LMA300	300	750	632	316	631	312	56	2
LMA400	400	850	732	366	731	312	56	2
LMA500	500	950	832	416	831	312	56	2
LMA600	600	1050	932	466	931	312	56	2
LMA700	700	1150	1032	516	1031	312	56	2
LMA800	800	1250	1132	566	1131	312	56	2
LMA900	900	1350	1232	616	1231	312	56	2
LMA1000	1000	1450	1332	666	1331	312	56	2

BASIC MODEL	TOTAL TRAVEL	DIMENSIONS - MILLIMETERS						
		A	B	C	D	E	F	G
LMA120	120	450	332	166	331	190	45	1
LMA220	220	550	432	216	431	190	45	1
LMA320	320	650	532	266	531	190	45	1
LMA420	420	750	632	316	631	190	45	1
LMA520	520	850	732	366	731	190	45	1
LMA620	620	950	832	416	831	190	45	1
LMA720	720	1050	932	466	931	190	45	1
LMA820	820	1150	1032	516	1031	190	45	1
LMA920	920	1250	1132	566	1131	190	45	1
LMA1020	1020	1350	1232	616	1231	190	45	1

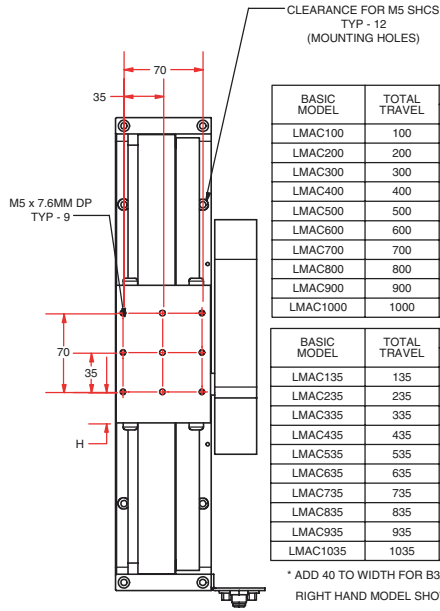
* ADD 40 TO WIDTH FOR B3/B4 CONNECTOR OPTIONS
RIGHT HAND MODEL SHOWN



DIMENSIONS: MILLIMETERS

LMAC Series DIMENSIONS

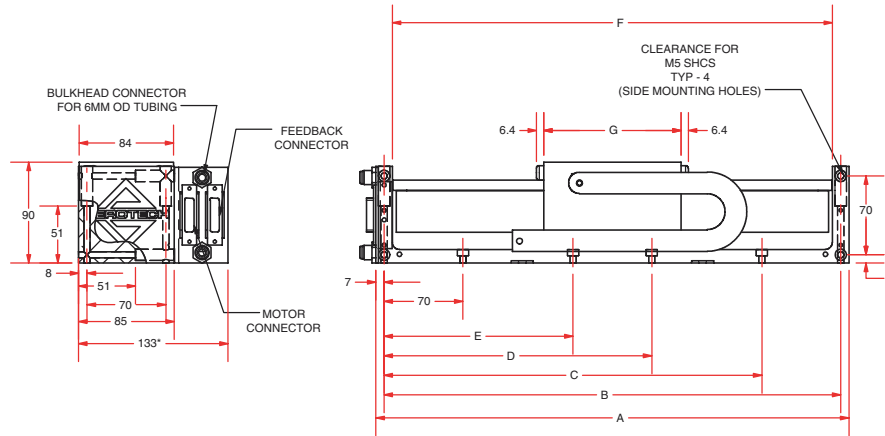
LMAC



BASIC MODEL	TOTAL TRAVEL	DIMENSIONS - MILLIMETERS							
		A	B	C	D	E	F	G	H
LMAC100	100	320	305	235	188	118	291	162	46
LMAC200	200	420	405	335	238	168	391	162	46
LMAC300	300	520	505	435	288	218	491	162	46
LMAC400	400	620	605	535	338	268	591	162	46
LMAC500	500	720	705	635	388	318	691	162	46
LMAC600	600	820	805	735	438	368	791	162	46
LMAC700	700	920	905	835	488	418	891	162	46
LMAC800	800	1020	1005	935	538	468	991	162	46
LMAC900	900	1120	1105	1035	588	518	1091	162	46
LMAC1000	1000	1220	1205	1135	638	568	1191	162	46

BASIC MODEL	TOTAL TRAVEL	DIMENSIONS - MILLIMETERS							
		A	B	C	D	E	F	G	H
LMAC135	135	320	305	235	188	118	291	122	28
LMAC235	235	420	405	335	238	168	391	122	28
LMAC335	335	520	505	435	288	218	491	122	28
LMAC435	435	620	605	535	338	268	591	122	28
LMAC535	535	720	705	635	388	318	691	122	28
LMAC635	635	820	805	735	438	368	791	122	28
LMAC735	735	920	905	835	488	418	891	122	28
LMAC835	835	1020	1005	935	538	468	991	122	28
LMAC935	935	1120	1105	1035	588	518	1091	122	28
LMAC1035	1035	1220	1205	1135	638	568	1191	122	28

* ADD 40 TO WIDTH FOR B3/B4 CONNECTOR OPTIONS
RIGHT HAND MODEL SHOWN



DIMENSIONS: MILLIMETERS

LMA Series ORDERING INFORMATION

Ordering Example

LMA	-142	L	-520	-LT-0.1	-B2
	Motor	Left/Right Side	Travel (mm)	Encoder	Brackets
	-142	L	-120, -220, -320, -420, -520	-LT-1.0	-B2
		R	-620, -720, -820, -920, -1020	-LT-0.5	-B3
				-LT-0.1	-B4
	-264	L	-100, -200, -300, -400, -500,	-LT-AS	-B4
		R	-600, -700, -800, -900, -1000		

LMA Series Linear Motor Actuator

LMA-142L-xxx 168.0 N (20 psi), linear actuator with encoder (1 μ m) and limits, left side

LMA-142R-xxx 168.0 N (20 psi), linear actuator with encoder (1 μ m) and limits, right side

LMA-264L-yyy 276.0 N (20 psi), linear actuator with encoder (1 μ m) and limits, left side

LMA-264R-yyy 276.0 N (20 psi), linear actuator with encoder (1 μ m) and limits, right side

For 'xxx' substitute travel in mm. Available travels are 120, 220, 320, 420, 520, 620, 720, 820, 920, and 1020 mm.

For 'yyy' substitute travel in mm. Available travels are 100, 200, 300, 400, 500, 600, 700, 800, 900, and 1000 mm.

Encoder Options

LT-1.0 Linear encoder; 1.0 μ m line-driver output

LT-0.5 Linear encoder; 0.5 μ m line-driver output

LT-0.1 Linear encoder; 0.1 μ m line-driver output

LT-AS Linear encoder; 20 μ m/Vpp output

Bracket Options

-B2 Standard connector on LMA

-B3 Adds one additional 25-pin connector slot

-B4 Adds two additional 25-pin connector slots

Cover Options

Consult factory for cover options

LMAC Series ORDERING INFORMATION

Ordering Example

LMAC	-095	R	-335	-LT-0.5	-B2
	Motor	Left/Right Side	Travel (mm)	Encoder	Brackets
	-095	L	-135, -235, -335, -435, -535	-LT-1.0	-B2
		R	-635, -735, -835, -935, -1035	-LT-0.5	-B3
				-LT-0.1	-B4
	-143	L	-100, -200, -300, -400, -500,	-LT-AS	
		R	-600, -700, -800, -900, -1000		

LMAC Series Linear Motor Actuator

LMAC-095L-xxx 43.3 N (20 psi), linear actuator with encoder (1 μ m) and limits, left side

LMAC-095R-xxx 43.3 N (20 psi), linear actuator with encoder (1 μ m) and limits, right side

LMAC-143L-yyy 73.1 N (20 psi), linear actuator with encoder (1 μ m) and limits, left side

LMAC-143R-yyy 73.1 N (20 psi), linear actuator with encoder (1 μ m) and limits, right side

For 'xxx' substitute travel in mm. Available travels are 135, 235, 335, 435, 535, 635, 735, 835, 935, and 1035 mm.

For 'yyy' substitute travel in mm. Available travels are 100, 200, 300, 400, 500, 600, 700, 800, 900, and 1000 mm.

Encoder Options

LT-1.0	Linear encoder; 1.0 μ m line-driver output
LT-0.5	Linear encoder; 0.5 μ m line-driver output
LT-0.1	Linear encoder; 0.1 μ m line-driver output
LT-AS	Linear encoder; 20 μ m/Vpp output

Bracket Options

-B2	Standard connector on LMA
-B3	Adds one additional 25-pin connector slot
-B4	Adds two additional 25-pin connector slots

Cover Options

Consult factory for cover options