

BLMX Series

Linear Motors

49% greater continuous output force in the same physical envelope than competitive models

Continuous force to 955 N (214.7 lb); peak force to 3820 N (858.8 lb)

152.0 mm high x 50.8 mm wide cross section

Special magnet options available for increased force output



The BLMX series “U-channel” brushless linear servomotors offer over 49% greater continuous output force in the same physical envelope than similar models from other manufacturers.

BLMX series motors feature a high-efficiency magnetic circuit design that provides continuous force ratings to 955 N (214.7 lb) and peak forces to 3820 N (858.8 lb). This extremely high level of performance can be enhanced with special high-power magnet options that increase force output.

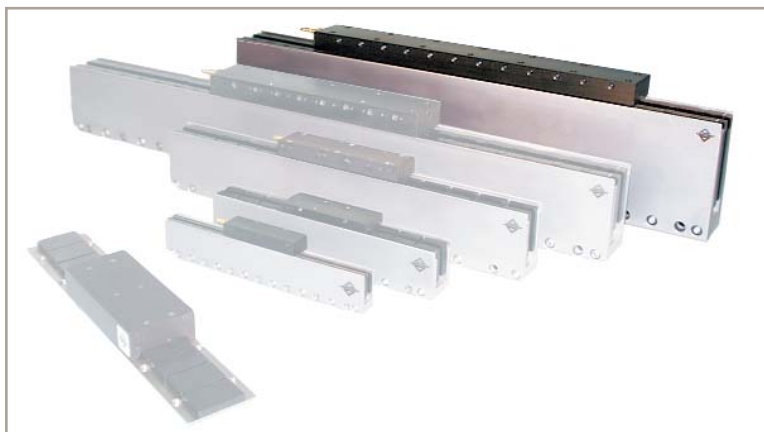
The BLMX moving forcer coil assembly contains Hall-effect devices, and a thermal sensor, and is constructed of reinforced ceramic epoxy. This ironless design eliminates

eddy-current losses that otherwise would limit speed and produce additional heat.

BLMX linear motors are direct drive and consist of a moving forcer coil and “U-channel” rare-earth magnet track. This design eliminates backlash, windup, wear and maintenance issues associated with ball screws, belts, and rack and pinions.

The BLMX series nonmagnetic forcer eliminates cogging and magnetic attraction to allow for extremely smooth motion and very tight velocity and position control. These linear motors are ideal for applications demanding the ultimate in force output. BLMX series linear motors are forgiving to align, easy to assemble, and keep the magnetic field well-contained. Magnet tracks are stackable for any travel length. These motors are well-suited for industrial applications.

The BLMX can be driven using standard Aerotech brushless amplifiers and controllers to provide a complete, integrated system.



The BLMX is shown with Aerotech's linear motor line.

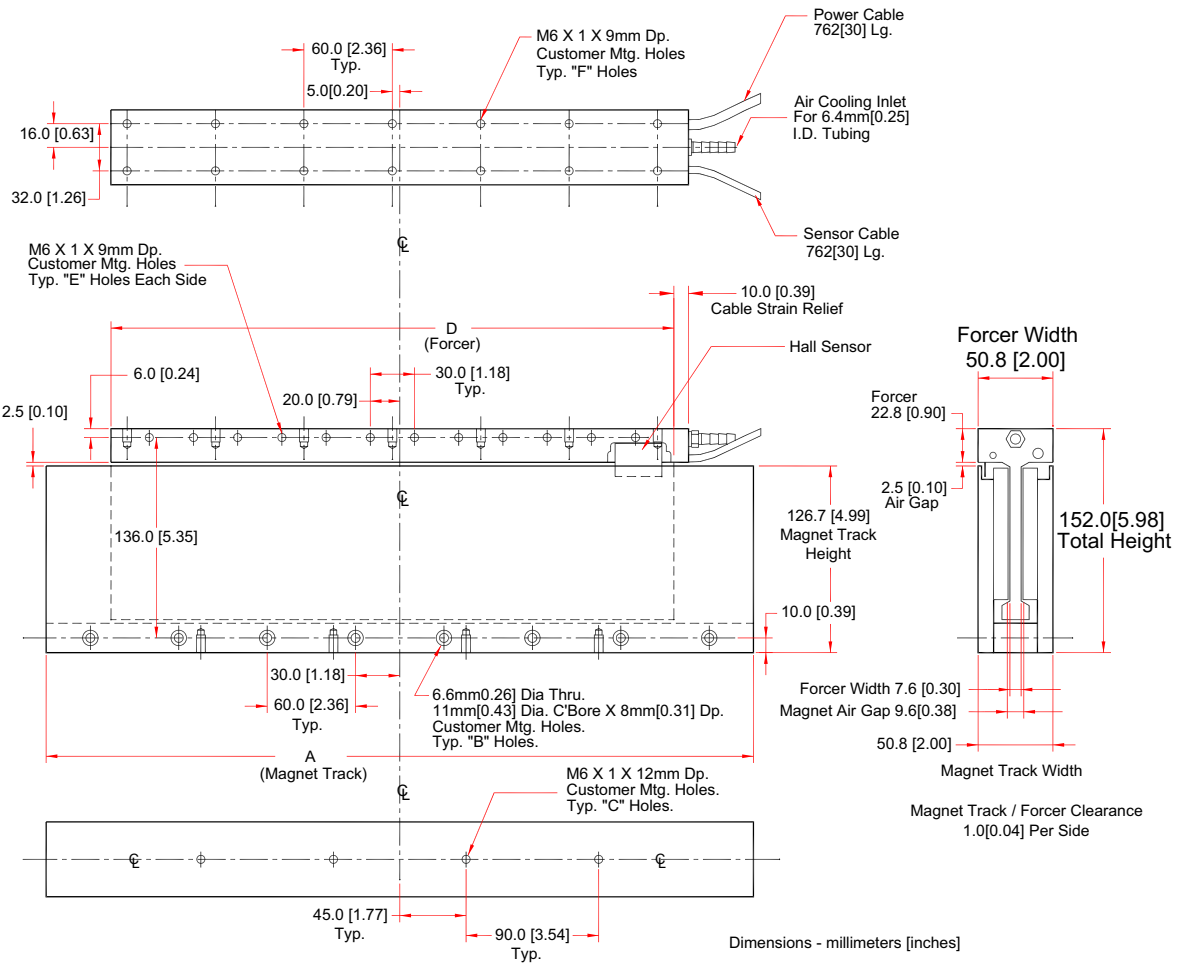
BLMX Series SPECIFICATIONS

Motor Model	Units	BLMX-382		BLMX-502	
Performance Specifications^(1,5)					
Continuous Force, 1.4 bar, 20 psi ⁽²⁾	N (lb)	805.4 (181.1)		955.0 (214.7)	
Continuous Force, No Air ⁽²⁾	N (lb)	577.2 (129.8)		656.6 (147.6)	
Peak Force ⁽²⁾	N (lb)	3221.8 (724.3)		3820.0 (858.8)	
Electrical Specifications⁽⁵⁾					
Winding Designation		-A	-B (opt)	-A	-B (opt)
BEMF Constant (Line-Line)	V/m/s (V/in/s)	77.15 (1.96)	154.31 (3.92)	98.02 (2.49)	49.01 (1.24)
Continuous Current, 1.4 bar, 20 psi ⁽²⁾	Amp _{pk} (Amp _{rms})	12.00 (8.49)	6.00 (4.24)	11.20 (7.92)	22.40 (15.84)
Continuous Current, No Air ⁽²⁾	Amp _{pk} (Amp _{rms})	8.60 (6.08)	4.30 (3.04)	7.70 (5.44)	15.40 (10.89)
Peak Current, Stall ⁽³⁾	Amp _{pk} (Amp _{rms})	48.00 (33.94)	24.00 (16.97)	44.80 (31.68)	89.60 (63.36)
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	67.12 (15.09)	134.24 (30.18)	85.27 (19.17)	42.63 (9.59)
	N/Amp _{rms} (lb/Amp _{rms})	94.92 (21.34)	189.84 (42.68)	120.59 (27.11)	60.29 (13.56)
Motor Constant ^(2,4)	N/√W (lb/√W)	35.52 (7.99)		39.23 (8.82)	
Resistance, 25°C (Line-Line)	ohms	3.4	13.6	4.5	1.1
Inductance (Line-Line)	mH	3.00	12.00	4.00	1.00
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.19		0.17	
Thermal Resistance, No Cooling	°C/W	0.38		0.36	
Maximum Bus Voltage	VDC	340		340	
Mechanical Specifications					
Air Flow, 20 psi	m ³ /s SCFM	3.1x10 ⁻³ 6.5		2.9x10 ⁻³ 6.1	
Coil Weight	kg (lb)	3.40 (7.48)		4.45 (9.79)	
Coil Length	mm (in)	382.0 (15.04)		502.0 (19.76)	
Heat Sink	mm (in)	250x400x25 (10x16x1)		250x500x25 (10x20x1)	
Magnet Track Weight	kg/m (lb/ft)	37.26 (24.99)		37.26 (24.99)	
Magnetic Pole Pitch	mm (in)	30.00 (1.18)		30.00 (1.18)	

Notes:

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
- Peak force assumes correct rms current; consult Aerotech.
- Force constant and motor constant specified at stall.
- All performance and electrical specifications ±10%.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
- All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.

BLMX Series DIMENSIONS



Dimensions - millimeters [inches]

Magnet Track

Model No.	A	B	C
MTX480	480mm 18.90"	8	4
MTX600	600mm 23.63"	10	6
MTX720	720mm 28.35"	12	8

Forcer

Model No.	D	E	F
BLMX-382	382mm 15.04"	12	14
BLMX-502	502mm 19.76"	16	18

MTXy custom track lengths available

BLMX Series ORDERING INFORMATION

Ordering Example

BLMX	-502	-A
Motor Series	Forcer Coil Length	Standard Winding
	382 mm, 502 mm	76 cm (2.5 ft) flying leads std

Brushless Linear Servomotors - BLMX Series Compact "U" Channel Forcer Coils

BLMX-382-A	Linear motor coil, with HED, air cooling, temp SW, Fcont = 805.4 N (181.1 lb) @ 20 psi
BLMX-502-A	Linear motor coil, with HED, air cooling, temp SW, Fcont = 955.0 N (214.7 lb) @ 20 psi

BLMX Options

-LH	Remove HED sensor from BLMX series forcer coil
-B	Optional winding
-V	Vacuum prepared

"U" Channel Magnet Tracks – MTX Series for BLMX motors

MTX480	"U" channel magnet track, for use with BLMX forcer coil, 480 mm (18.9 in) length
MTX600	"U" channel magnet track, for use with BLMX forcer coil, 600 mm (23.6 in) length
MTX720	"U" channel magnet track, for use with BLMX forcer coil, 720 mm (28.4 in) length
MTXy	Custom magnet tracks lengths available. Please consult factory.
-HS	High strength magnets