

# Aerotech Linear Motors



# Aerotech Linear Motors

Aerotech's "U-channel" brushless linear servomotors are ideal for robots, actuators, positioning stages, fiberoptics/ photonics alignment and positioning, assembly, machine tools, semiconductor equipment, electronic manufacturing, vision systems, and in many other industrial automation applications that require high-speed/high-accuracy motion. Aerotech linear motors are direct drive and are available in two different configurations – "U-channel" and "flat" versions.

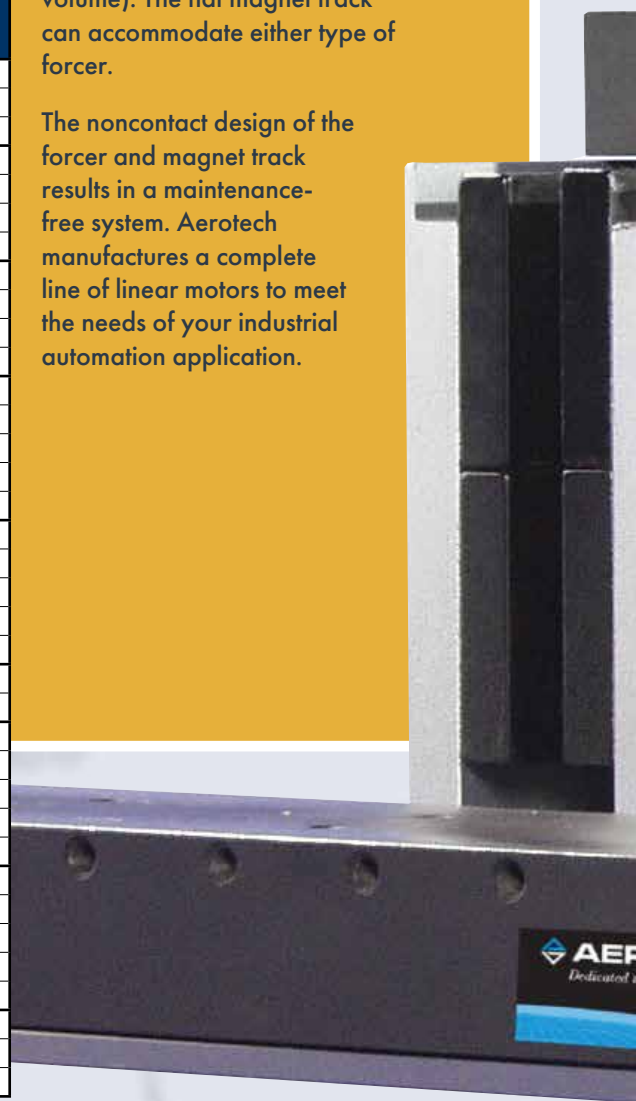
The U-channel design consists of a noncontacting forcer coil and U-channel rare-earth magnet track. This design eliminates backlash, windup, wear, and maintenance issues associated with ball screw, belt, and rack-and-pinion based motion systems.

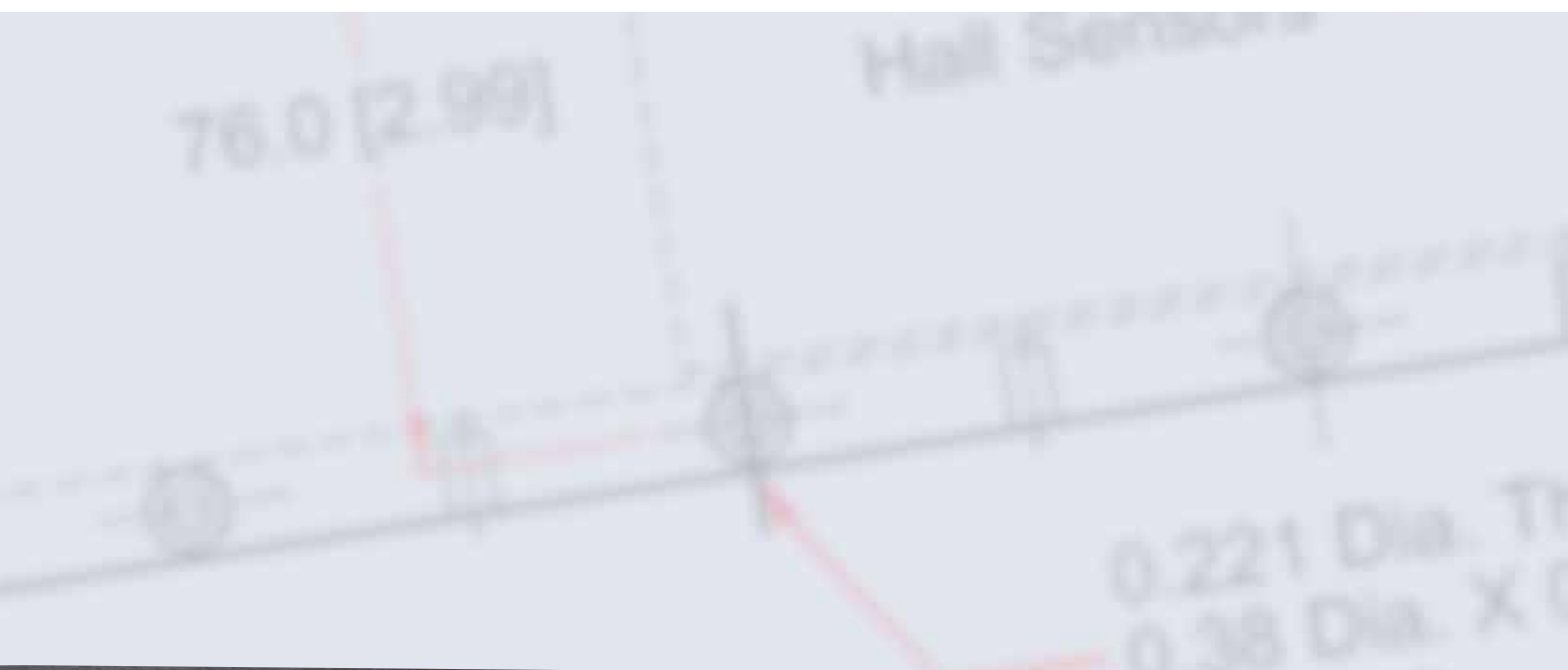
The flat linear motor design consists of a low profile, low-cost forcer and rare-earth magnet track. Aerotech flat linear motors are available with either non-magnetic forcers (to achieve zero cogging for extremely smooth motion and very tight velocity and position

control), or with magnetic forcers (to achieve higher force per unit volume). The flat magnet track can accommodate either type of forcer.

The noncontact design of the forcer and magnet track results in a maintenance-free system. Aerotech manufactures a complete line of linear motors to meet the needs of your industrial automation application.

	Continuous Force (No Air) N (lb)	Continuous Force (20 psi) N (lb)	Peak Force N (lb)
BLMSC-79-A	14 (3.1)	N/A	55.9 (12.6)
BLMSC-111-A	20.8 (4.7)	N/A	83.3 (18.7)
BLMSC-143-A	27.7 (6.2)	N/A	110.9 (24.9)
BLMUC-79	18.3 (4.1)	31.4 (7.0)	125.4 (28.2)
BLMUC-95	23.0 (5.2)	40.5 (9.1)	161.9 (36.4)
BLMUC-111	30.6 (6.9)	46.9 (10.5)	187.6 (42.2)
BLMUC-143	39.8 (9.0)	58.0 (13.0)	231.8 (52.1)
BLMC-92	44.5 (10.0)	75.1 (16.9)	300.6 (67.6)
BLMC-142	77.7 (17.5)	120.3 (27.0)	481.2 (108.2)
BLMC-192	106.7 (24.0)	154.7 (34.8)	618.8 (139.1)
BLMC-267	123.5 (27.8)	184.0 (41.4)	736.0 (165.5)
BLM-142	110.5 (24.8)	173.2 (38.9)	692.7 (155.7)
BLM-203	153.3 (34.5)	251.6 (56.6)	1006.4 (226.3)
BLM-264	197.2 (44.3)	301.7 (67.8)	1206.6 (271.3)
BLM-325	230.7 (51.9)	332.2 (74.7)	1328.6 (298.7)
BLM-386	257.3 (57.8)	397.6 (89.4)	1590.4 (357.5)
BLMH-142	150.0 (33.7)	270.7 (60.9)	1082.7 (243.4)
BLMH-202	194.2 (43.7)	351.2 (79.0)	1404.9 (315.9)
BLMH-262	266.2 (59.9)	437.1 (98.3)	1748.6 (393.1)
BLMH-322	303.2 (68.2)	489.2 (110.0)	1956.7 (439.9)
BLMH-382	357.9 (80.5)	435.8 (98.0)	2195.0 (493.5)
BLMX-382	537 (121)	972 (218)	3887 (874)
BLMX-502	601 (135)	1063 (239)	4252 (956)
BLMFI-81	22.7 (5.1)	N/A	90.6 (20.4)
BLMFI-142	39.3 (8.8)	N/A	157.3 (35.4)
BLMFI-264	78.6 (17.7)	N/A	314.2 (70.6)
BLMFI-325	109.4 (24.6)	N/A	437.5 (98.4)
BLMFI-386	136.0 (30.6)	N/A	543.9 (122.3)
BLMFS-81	34.0 (7.6)	N/A	136.0 (30.6)
BLMFS-142	58.3 (13.1)	N/A	233.1 (52.4)
BLMFS-264	117.8 (26.5)	N/A	471.3 (106.0)
BLMFS-325	163.2 (36.7)	N/A	652.6 (146.7)
BLMFS-386	193.4 (43.5)	N/A	773.5 (173.9)
BLMFS5-142	174.8 (39.3)	323.4 (72.7)*	699.3 (157.2)
BLMFS5-262	282.3 (63.5)	522.3 (117.4)*	1129.2 (253.9)
BLMFS5-382	376.8 (84.7)	697.1 (156.7)*	1507.2 (338.8)





# BLMSC Series

The BLMSC linear motor is Aerotech's smallest "U-channel" linear motor measuring only 37.5 mm x 22 mm in cross section. With a high power density and force output, the BLMSC is ideally suited for space-constrained applications requiring high-acceleration or high force output. The motor consists of a noncontact forcer coil assembly with thermal sensor, optional Hall-effect devices, and "U-channel" magnet track. The design eliminates backlash, windup, wear, and maintenance issues associated with ball-screws, belts, and rack and pinions. The moving forcer coil assembly is a compact, reinforced ceramic-epoxy structure. The ironless design eliminates cogging and eddy-current losses that otherwise would limit speed and produce additional heat. These linear motors are ideal for any application that requires high levels of positioning resolution and accuracy. BLMSC 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. They are also suited for cleanroom use as they produce no particulates. The BLMSC can be driven using standard Aerotech brushless amplifiers and controllers to provide a complete integrated system.

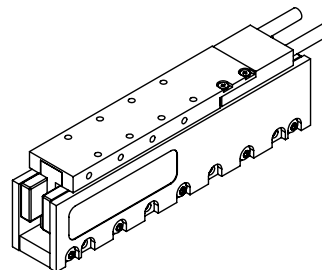
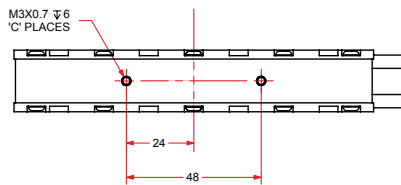
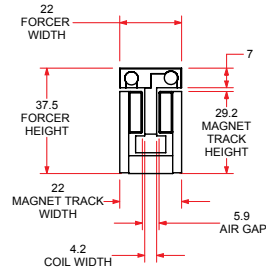
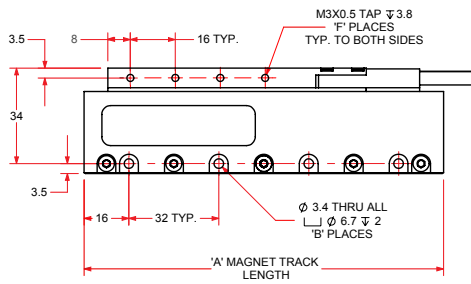
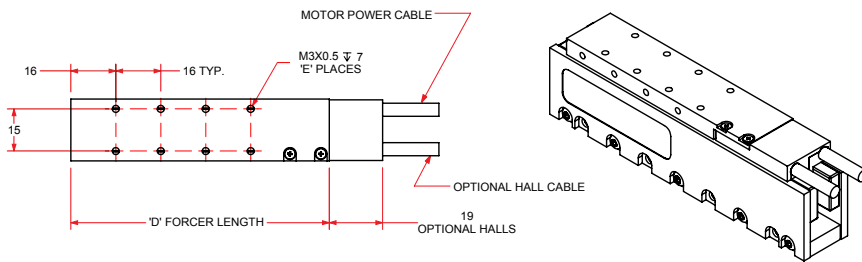
Motor Model	Units	BLMSC-79-A	BLMSC-111-A	BLMSC-143-A
<b>Performance Specifications<sup>(1,2)</sup></b>				
Continuous Force <sup>(3)</sup>	N (lb)	14 (3.1)	20.8 (4.7)	27.7 (6.2)
Peak Force <sup>(4)</sup>	N (lb)	55.9 (12.6)	83.3 (18.7)	110.9 (24.9)
<b>Electrical Specifications<sup>(2)</sup></b>				
Winding Designation		-A	-A	-A
BEMF Constant (Line to Line, Max)	V/m/s (V/(in/s))	5.5 (0.14)	9.2 (0.23)	12.9 (0.31)
Continuous Current <sup>(3)</sup>	A <sub>pk</sub> A <sub>rms</sub>	2.97 2.1	2.67 1.89	2.59 1.83
Peak Current, Stall <sup>(4)</sup>	A <sub>pk</sub> A <sub>rms</sub>	11.88 8.4	10.68 7.55	10.36 7.33
Force Constant, Sine Drive <sup>(5,6)</sup>	N/A <sub>pk</sub> (lb/A <sub>pk</sub> )	4.7 (1.06)	7.8 (1.75)	10.7 (2.41)
	N/A <sub>rms</sub> (lb/A <sub>rms</sub> )	6.65 (1.49)	11.03 (2.48)	15.14 (3.40)
Motor Constant <sup>(5,5)</sup>	N/√W (lb/√W)	2.26 (0.51)	2.91 (0.65)	3.4 (0.76)
Resistance, 25°C (Line to Line)	Ω	4.1	6.8	9.4
Inductance (Line to Line)	mH	0.59	1.02	1.45
Thermal Resistance	°C/W	2.63	1.95	1.51
Maximum Bus Voltage	VDC	340	340	340
<b>Mechanical Specifications</b>				
Coil Weight	kg (lb)	0.09 (0.20)	0.13 (0.29)	0.16 (0.35)
Coil Length	mm (in)	79 (3.11)	111 (4.37)	143 (5.63)
Heat Sink	mm (in)	250x250x25 (10x10x1)		
Magnet Track Weight	kg/m (lb/ft)	2.81 (1.88)		
Magnet Pole Pitch	mm (in)	16.0 (0.63)		
Standards		2011/65/EU RoHS 2 Directive		

**Notes:**

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- All performance and electrical specifications ±10%.
- 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 Aerotech amplifiers are rated A<sub>pk</sub>; use force constant in N/A<sub>pk</sub> when sizing.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.



**Aerotech BLMSC linear motor**



MAGNET TRACK DIMS			
PART NUMBER	A	B	C
MTSC64	64	2	0
MTSC96	96	3	2
MTSC128	128	4	2
MTSC160	160	5	2
MTSC192	192	6	4
MTSC224	224	7	4
MTSC256	256	8	4
MTSC288	288	9	6
MTSC352	352	11	6
MTSC416	416	13	8

FORCER DIMS			
PART NUMBER	D	E	F
BLMSC-79	60	4	2
BLMSC-111	92	8	4
BLMSC-143	124	12	6

DIMENSIONS: MILLIMETERS  
NOTE: BLMSC-111 FORCER SHOWN WITH MTSC128 MAGNET TRACK

# BLMUC Series

The BLMUC linear motor is an ultra-compact "U-channel" motor measuring only 52.0 mm x 20.8 mm in cross section, designed to provide high force in an ultra-compact package. The BLMUC is ideally suited for small load applications with tight space constraints such as a pick head on a pick-and-place machine, and low-mass, high-acceleration material handling machines.

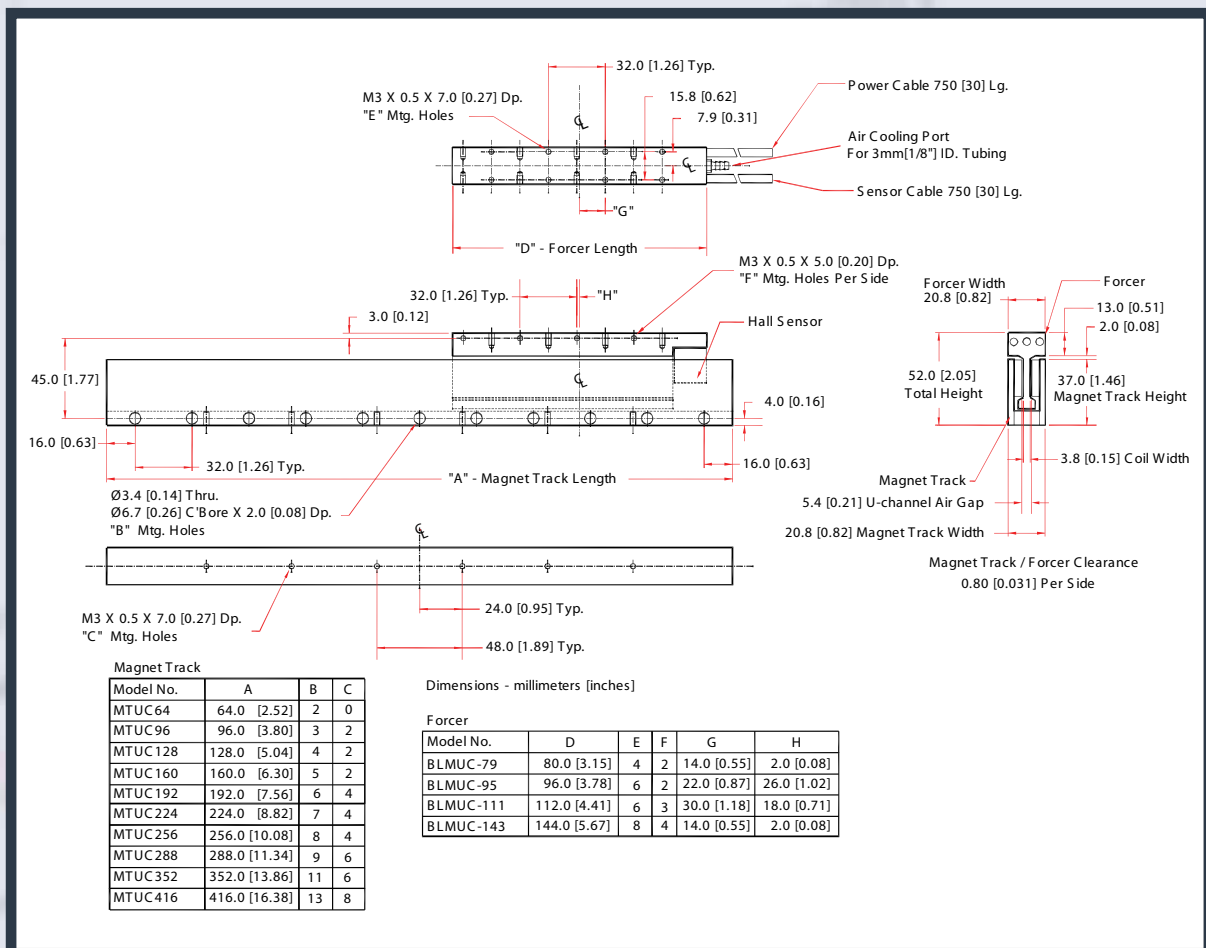
Motor Model	Units	BLMUC-79	BLMUC-95	BLMUC-111	BLMUC-143
<b>Performance Specifications<sup>(1,2)</sup></b>					
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	31.4 (7.0)	40.5 (9.1)	46.9 (10.5)	58.0 (13.0)
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	18.3 (4.1)	23.0 (5.2)	30.6 (6.9)	39.8 (9.0)
Peak Force <sup>(4)</sup>	N (lb)	125.4 (28.2)	161.9 (36.4)	187.6 (42.2)	231.8 (52.1)
<b>Electrical Specifications<sup>(2)</sup></b>					
Winding Designation		-A	-A	-A	-A
BEMF Constant (line-line, max)	V/m/s (V/in/s)	6.80 (0.17)	9.00 (0.23)	11.35 (0.29)	15.90 (0.40)
Continuous Current, 1.4 bar (20 psi) <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	5.30 3.75	5.17 3.66	4.75 3.36	4.19 2.96
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	3.10 2.19	2.94 2.08	3.10 2.19	2.88 2.04
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	21.20 14.99	20.68 14.62	19.00 13.44	16.76 11.85
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	5.92 (1.33)	7.83 (1.76)	9.87 (2.22)	13.83 (3.11)
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	8.37 (1.88)	11.07 (2.49)	13.96 (3.14)	19.56 (4.40)
Motor Constant <sup>(3,5)</sup>	N/√W (lb/√W)	2.89 (0.65)	3.35 (0.75)	3.78 (0.85)	4.53 (1.02)
Resistance, 25° C, Line-Line	Ω	4.0	5.2	6.5	8.9
Inductance, Line-Line	mH	0.51	0.70	0.87	1.10
Thermal Resistance, 1.4 bar (20 psi)	°C/W	0.85	0.69	0.65	0.61
Thermal Resistance, No Forced Cooling	°C/W	2.48	2.12	1.52	1.29
Maximum Bus Voltage	VDC	340			
<b>Mechanical Specifications</b>					
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	1.5x10 <sup>-3</sup> (3.12)	1.5x10 <sup>-3</sup> (3.15)	1.5x10 <sup>-3</sup> (3.22)	1.5x10 <sup>-3</sup> (3.12)
Coil Weight	kg (lb)	0.10 (0.22)	0.12 (0.26)	0.14 (0.31)	0.20 (0.44)
Coil Length	mm (in)	80.0 (3.15)	96.0 (3.78)	112.0 (4.41)	144.0 (5.61)
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)
Magnet Track Weight	kg/m (lb/ft)	3.33 (2.23)			
Magnet Pole Pitch	mm (in)	16.00 (0.63)	16.00 (0.63)	16.00 (0.63)	16.00 (0.63)
Standards		2011/65/EU RoHS 2 Directive			

**Notes:**

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- All performance and electrical specifications ±10%.
- 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 Aerotech amplifiers are rated A<sub>pk</sub>; use force constant in N/A<sub>pk</sub> when sizing.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.



**Aerotech BLMUC  
linear motor**



# BLMC Series

Aerotech's "U-channel" BLMC series compact linear motors are only 57.2 mm x 31.8 mm and designed for high force in a compact package. The compact 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. For highest rms force, optional air cooling is available. Offering high peak forces in its standard configuration, BLMC motors are available with special high-power magnets that can increase output force.

Motor Model (assumes -P magnet track)	Units	BLMC-92	BLMC-142	BLMC-192	BLMC-267
<b>Performance Specifications<sup>(1,2)</sup></b>					
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	75.1 (16.9)	120.3 (27.0)	154.7 (34.8)	184.0 (41.4)
Continuous Force <sup>(3)</sup>	N (lb)	44.5 (10.0)	77.7 (17.5)	106.7 (24.0)	123.5 (27.8)
Peak Force <sup>(4)</sup>	N (lb)	300.6 (67.6)	481.2 (108.2)	618.8 (139.1)	736.0 (165.5)
<b>Electrical Specifications<sup>(2)</sup></b>					
Winding Designation		-A	-A	-A	-A
BEMF Constant (Line to Line, Max)	V/m/s (V/in/s)	11.37 (0.29)	21.28 (0.54)	30.66 (0.78)	41.15 (1.05)
Continuous Current, 1.4 bar, 20 psi <sup>(3)</sup>	A <sub>pk</sub> A <sub>rms</sub>	7.60 5.37	6.50 4.60	5.80 4.10	5.14 3.63
Continuous Current, No Forced Cooling <sup>(3)</sup>	A <sub>pk</sub> A <sub>rms</sub>	4.50 3.18	4.20 2.97	4.00 2.83	3.45 2.44
Peak Current, Stall <sup>(4)</sup>	A <sub>pk</sub> A <sub>rms</sub>	30.40 21.50	26.00 18.38	23.20 16.40	20.56 14.54
Force Constant, Sine Drive <sup>(5,6)</sup>	N/A <sub>pk</sub> (lb/A <sub>pk</sub> )	9.89 (2.22)	18.51 (4.16)	26.67 (6.00)	35.80 (8.05)
	N/A <sub>rms</sub> (lb/A <sub>rms</sub> )	13.98 (3.14)	26.17 (5.88)	37.72 (8.48)	50.63 (11.38)
Motor Constant <sup>(5,5)</sup>	N/√W (lb/√W)	5.67 (1.27)	8.24 (1.85)	10.29 (2.31)	11.52 (2.59)
Resistance, 25°C, (Line to Line)	Ω	2.9	4.8	6.4	9.2
Inductance (Line to Line)	mH	0.83	1.33	1.90	3.40
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.57	0.47	0.44	0.39
Thermal Resistance, No Foced Cooling	°C/W	1.62	1.12	0.93	0.87
Maximum Bus Voltage	VDC	340			
<b>Mechanical Specifications</b>					
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	1.4x10 <sup>-3</sup> (2.9)	1.7x10 <sup>-3</sup> (3.6)	1.4x10 <sup>-3</sup> (2.9)	1.5x10 <sup>-3</sup> (3.2)
Coil Weight	kg (lb)	0.16 (0.35)	0.26 (0.57)	0.34 (0.75)	0.52 (1.14)
Coil Length	mm (in)	91.0 (3.58)	142.0 (5.59)	192.0 (7.56)	267.0 (10.51)
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)
Magnet Track Weight	kg/m (lb/ft)	6.59 (4.42)			
Magnet Pole Pitch	mm (in)	(25) 0.98			
Standards		2011/65/EU RoHS 2 Directive			

**Notes:**

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





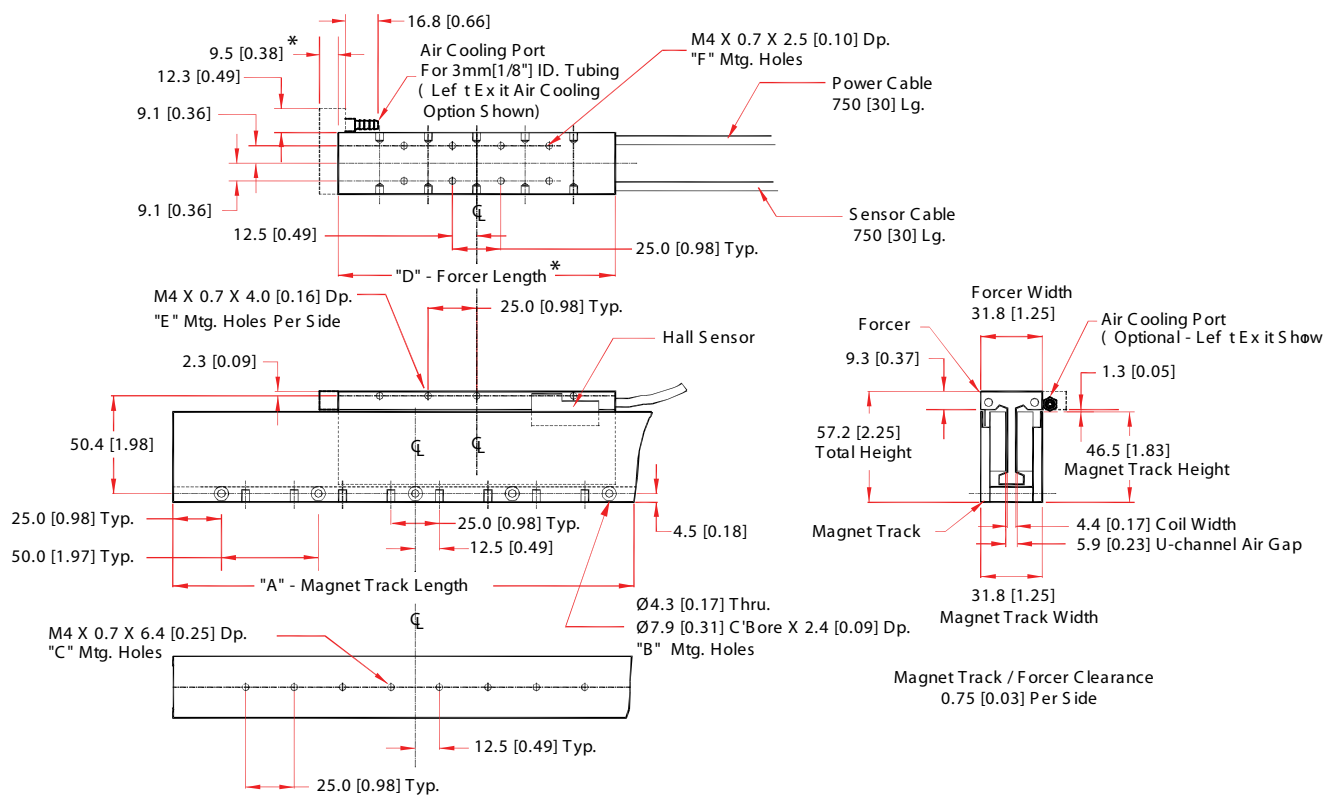
**Aerotech BLMC  
linear motor**

Motor Model (assumes -S magnet track)	Units	BLMC-92	BLMC-142	BLMC-192	BLMC-267
<b>Performance Specifications<sup>(1,2)</sup></b>					
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	54.1 (12.2)	86.6 (19.5)	111.4 (25.0)	132.5 (29.8)
Continuous Force <sup>(3)</sup>	N (lb)	32.0 (7.2)	56.0 (12.6)	76.8 (17.3)	88.9 (20.0)
Peak Force <sup>(4)</sup>	N (lb)	216.4 (48.7)	346.5 (77.9)	445.5 (100.2)	529.9 (119.1)
<b>Electrical Specifications<sup>(2)</sup></b>					
Winding Designation		-A	-A	-A	-A
BEMF Constant (Line to Line, Max)	V/m/s (V/in/s)	8.18 (0.21)	15.32 (0.39)	22.07 (0.56)	29.63 (0.75)
Continuous Current, 1.4 bar, 20 psi <sup>(3)</sup>	A <sub>pk</sub> A <sub>rms</sub>	7.60 5.37	6.50 4.60	5.80 4.10	5.14 3.63
Continuous Current, No Forced Cooling <sup>(3)</sup>	A <sub>pk</sub> A <sub>rms</sub>	4.50 3.18	4.20 2.97	4.00 2.83	3.45 2.44
Peak Current, Stall <sup>(4)</sup>	A <sub>pk</sub> A <sub>rms</sub>	30.40 21.50	26.00 18.38	23.20 16.40	20.56 14.54
Force Constant, Sine Drive <sup>(5,6)</sup>	N/A <sub>pk</sub> (lb/A <sub>pk</sub> )	7.12 (1.60)	13.33 (3.00)	19.20 (4.32)	25.78 (5.79)
	N/A <sub>rms</sub> (lb/A <sub>rms</sub> )	10.07 (2.26)	18.85 (4.24)	27.16 (6.11)	36.45 (8.20)
Motor Constant <sup>(5,5)</sup>	N/√W (lb/√W)	4.08 (0.92)	5.94 (1.33)	7.41 (1.67)	8.29 (1.86)
Resistance, 25°C, (Line to Line)	Ω	2.9	4.8	6.4	9.2
Inductance (Line to Line)	mH	0.83	1.33	1.90	3.40
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.57	0.47	0.44	0.39
Thermal Resistance, No Foced Cooling	°C/W	1.62	1.12	0.93	0.87
Maximum Bus Voltage	VDC	340			
<b>Mechanical Specifications</b>					
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	1.4x10 <sup>-3</sup> (2.9)	1.7x10 <sup>-3</sup> (3.6)	1.4x10 <sup>-3</sup> (2.9)	1.5x10 <sup>-3</sup> (3.2)
Coil Weight	kg (lb)	0.16 (0.35)	0.26 (0.57)	0.34 (0.75)	0.52 (1.14)
Coil Length	mm (in)	91.0 (3.58)	142.0 (5.59)	192.0 (7.56)	267.0 (10.51)
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)
Magnet Track Weight	kg/m (lb/ft)	7.11 (4.76)			
Magnet Pole Pitch	mm (in)	(25) 0.98			
Standards		2011/65/EU RoHS 2 Directive			

Notes:

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

# BLMC Series



Dimensions - millimeters [inches]

Magnet Track

Model No.	A	B	C
MTC 150	150.0 [5.91]	3	4
MTC 250	250.0 [9.84]	5	8
MTC 350	350.0 [13.78]	7	12
MTC 450	450.0 [17.72]	9	16
MTC 500	500.0 [19.68]	10	18

Forcer

Model No.	D	E	F
BLMC-92	93.0 [3.66]	2	4
BLMC-142	143.0 [5.63]	5	8
BLMC-192	193.0 [7.60]	7	12
BLMC-267	268.0 [10.55]	8	20

\* Add 9.5 [0.38] To Forcer Length "D" For Optional Cooling

# BLM Series

Aerotech's "U-channel" BLM series linear motors are 86.4 mm x 34.3 mm in cross section and have proven ideal for both high-accuracy and high-throughput applications. The BLM series nonmagneticforcer eliminates cogging and magnetic attraction to allow extremely smooth motion and very tight velocity and position control. These linear motors are ideal for any application that requires high levels of positioning resolution and accuracy. BLM 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. They are also suited for cleanroom use as they produce no particulates.

Motor Model (assumes -P magnet track)	Units	BLM-142		BLM-203		BLM-264		BLM-325		BLM-386	
<b>Performance Specifications<sup>(1,2)</sup></b>											
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	-A	-B (opt)	251.6 (56.6)	301.7 (67.8)	332.2 (74.7)	397.6 (89.4)				
		173.2 (38.9)	158.7 (35.7)								
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	110.5 (24.8)	153.3 (34.5)	197.2 (44.3)	230.7 (51.9)	257.3 (57.8)					
Peak Force <sup>(4)</sup>	N (lb)	692.7 (155.7)	1006.4 (226.3)	1206.6 (271.3)	1328.6 (298.7)	1590.4 (357.5)					
<b>Electrical Specifications<sup>(2)</sup></b>											
Winding Designation		-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)
BEMF Constant (Line to Line, Max)	V/m/s (V/in/s)	40.96 (1.04)	20.48 (0.52)	33.24 (0.84)	66.49 (1.69)	44.46 (1.13)	88.91 (2.26)	53.03 (1.35)	106.06 (2.69)	67.21 (1.71)	134.42 (3.41)
Continuous Current, 1.4 bar, 20 ps <sup>(3)</sup>	Amp <sub>pk</sub>	4.86	8.91	8.70	4.35	7.80	3.90	7.20	3.60	6.80	3.40
	Amp <sub>rms</sub>	3.44	6.30	6.15	3.08	5.52	2.76	5.09	2.55	4.81	2.40
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub>	3.10	6.20	5.30	2.65	5.10	2.55	5.00	2.50	4.40	2.20
	Amp <sub>rms</sub>	2.19	4.38	3.75	1.87	3.61	1.80	3.54	1.77	3.11	1.56
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub>	19.44	38.88	34.80	17.40	31.20	15.60	28.80	14.40	27.20	13.60
	Amp <sub>rms</sub>	13.75	27.49	24.61	12.30	22.06	11.03	20.36	10.18	19.23	9.62
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	17.82 (4.01)	17.82 (4.01)	28.92 (6.50)	57.84 (13.00)	38.67 (8.69)	77.35 (17.39)	46.13 (10.37)	92.27 (20.74)	58.47 (13.15)	116.94 (26.29)
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	50.39 (11.33)	25.20 (5.66)	40.90 (9.19)	81.80 (18.39)	54.69 (12.30)	109.39 (24.59)	65.24 (14.67)	130.48 (29.34)	82.69 (18.59)	165.38 (37.18)
Motor Constant <sup>(3,5)</sup>	N/√W (lb/√W)	10.53 (2.37)	14.11 (3.17)	16.39 (3.69)	17.66 (3.97)	20.17 (4.54)					
Resistance, 25°C, (Line to Line)	Ω	10.9	2.7	4.0	16.0	5.3	21.2	6.5	26.0	8.0	32.0
Inductance (Line to Line)	mH	8.70	2.18	3.20	12.80	4.20	16.80	5.20	20.80	6.20	24.80
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.37	0.31	0.30	0.28	0.26					
Thermal Resistance, No Forced Cooling	°C/W	0.91	0.85	0.69	0.59	0.61					
Maximum Bus Voltage	VDC	340	340	340	340						
<b>Mechanical Specifications</b>											
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	1.7x10 <sup>-3</sup> (3.5)	1.5x10 <sup>-3</sup> (3.2)	1.6x10 <sup>-3</sup> (3.3)	1.6x10 <sup>-3</sup> (3.3)	1.6x10 <sup>-3</sup> (3.4)					
Coil Weight	kg (lb)	0.60 (1.32)	0.90 (1.98)	1.10 (2.42)	1.40 (3.08)	1.70 (3.74)					
Coil Length	mm (in)	143.8 (5.66)	204.7 (8.06)	265.7 (10.46)	326.6 (12.86)	387.6 (15.26)					
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x400x25 (10x16x1)	250x400x25 (10x16x1)					
Magnet Track Weight	kg/m (lb/ft)	10.12 (6.79)									
Magnet Pole Pitch	mm (in)	30.48 (1.20)	30.48 (1.20)	30.48 (1.20)	30.48 (1.20)	30.48 (1.20)					
Standards	2011/65/EU RoHS 2 Directive										

**Notes:**

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

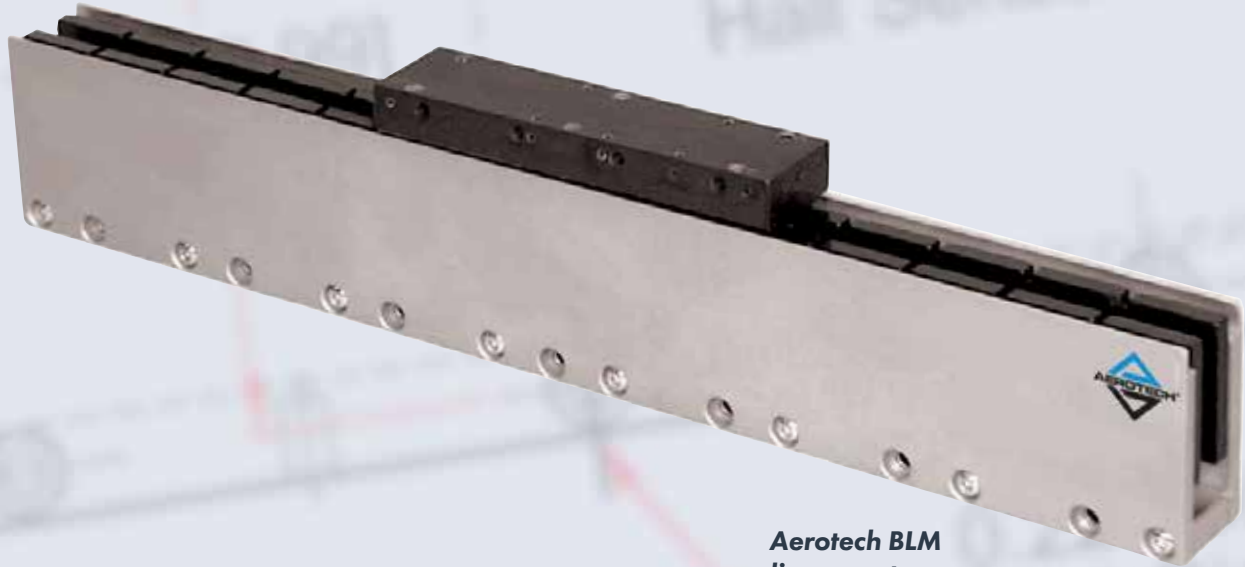
# BLM Series

Motor Model (assumes -S magnet track)	Units	BLM-142	BLM-203	BLM-264	BLM-325	BLM-386						
<b>Performance Specifications<sup>(1,2)</sup></b>												
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	-A	-B (opt)	158.2 (35.6)	189.6 (42.6)	208.8 (46.9)	250.0 (56.2)					
		108.9 (24.5)	99.8 (22.4)									
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	69.4 (15.6)	96.4 (21.7)	124.0 (27.9)	145.0 (32.6)	161.7 (36.4)						
Peak Force <sup>(4)</sup>	N (lb)	435.5 (97.9)	632.7 (142.2)	758.6 (170.5)	835.3 (187.8)	999.8 (224.8)						
<b>Electrical Specifications<sup>(2)</sup></b>												
Winding Designation		-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	
BEMF Constant (Line to Line, Max)	V/m/s (V/in/s)	25.75 (0.65)	12.88 (0.33)	20.90 (0.53)	41.80 (1.06)	27.95 (0.71)	55.90 (1.42)	33.34 (0.85)	66.68 (1.69)	42.25 (1.07)	84.51 (2.15)	
Continuous Current, 1.4 bar, 20 ps <sup>(3)</sup>	Amp <sub>pk</sub>	4.86	8.91	8.70	4.35	7.80	3.90	7.20	3.60	6.80	3.40	
	Amp <sub>rms</sub>	3.44	6.30	6.15	3.08	5.52	2.76	5.09	2.55	4.81	2.40	
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub>	3.10	6.20	5.30	2.65	5.10	2.55	5.00	2.50	4.40	2.20	
	Amp <sub>rms</sub>	2.19	4.38	3.75	1.87	3.61	1.80	3.54	1.77	3.11	1.56	
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub>	19.44	38.88	34.80	17.40	31.20	15.60	28.80	14.40	27.20	13.60	
	Amp <sub>rms</sub>	13.75	27.49	24.61	12.30	22.06	11.03	20.36	10.18	19.23	9.62	
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	22.40 (5.04)	11.20 (2.52)	18.18 (4.09)	36.36 (8.17)	24.31 (5.47)	48.63 (10.93)	29.00 (6.52)	58.01 (13.04)	36.76 (8.26)	73.52 (16.53)	
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	31.68 (7.12)	15.84 (3.56)	25.71 (5.78)	51.42 (11.56)	34.38 (7.73)	68.77 (15.46)	41.02 (9.22)	82.03 (18.44)	51.98 (11.69)	103.97 (23.37)	
Motor Constant <sup>(3,5)</sup>	N/√W (lb/√W)	6.62 (1.49)		8.87 (1.99)		10.31 (2.32)		11.10 (2.50)		12.68 (2.85)		
Resistance, 25°C, (Line to Line)	Ω	10.9	2.7	4.0	16.0	5.3	21.2	6.5	26.0	8.0	32.0	
Inductance (Line to Line)	mH	8.7	2.2	3.2	12.8	4.2	16.8	5.2	20.8	6.2	24.8	
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.37		0.31		0.30		0.28		0.26		
Thermal Resistance, No Forced Cooling	°C/W	0.91		0.85		0.69		0.59		0.61		
Maximum Bus Voltage	VDC	340		340		340		340		340		
<b>Mechanical Specifications</b>												
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	1.7x10 <sup>-3</sup> (3.5)		1.5x10 <sup>-3</sup> (3.2)		1.6x10 <sup>-3</sup> (3.3)		1.6x10 <sup>-3</sup> (3.3)		1.6x10 <sup>-3</sup> (3.4)		
Coil Weight	kg (lb)	0.60 (1.32)		0.90 (1.98)		1.10 (2.42)		1.40 (3.08)		1.70 (3.74)		
Coil Length	mm (in)	143.8 (5.66)		204.7 (8.06)		265.7 (10.46)		326.6 (12.86)		387.6 (15.26)		
Heat Sink	mm (in)	250x250x25 (10x10x1)		250x250x25 (10x10x1)		250x250x25 (10x10x1)		250x400x25 (10x16x1)		250x400x25 (10x16x1)		
Magnet Track Weight	kg/m (lb/ft)	10.92 (7.32)										
Magnet Pole Pitch	mm (in)	30.48 (1.20)		30.48 (1.20)		30.48 (1.20)		30.48 (1.20)		30.48 (1.20)		
Standards		2011/65/EU RoHS 2 Directive										

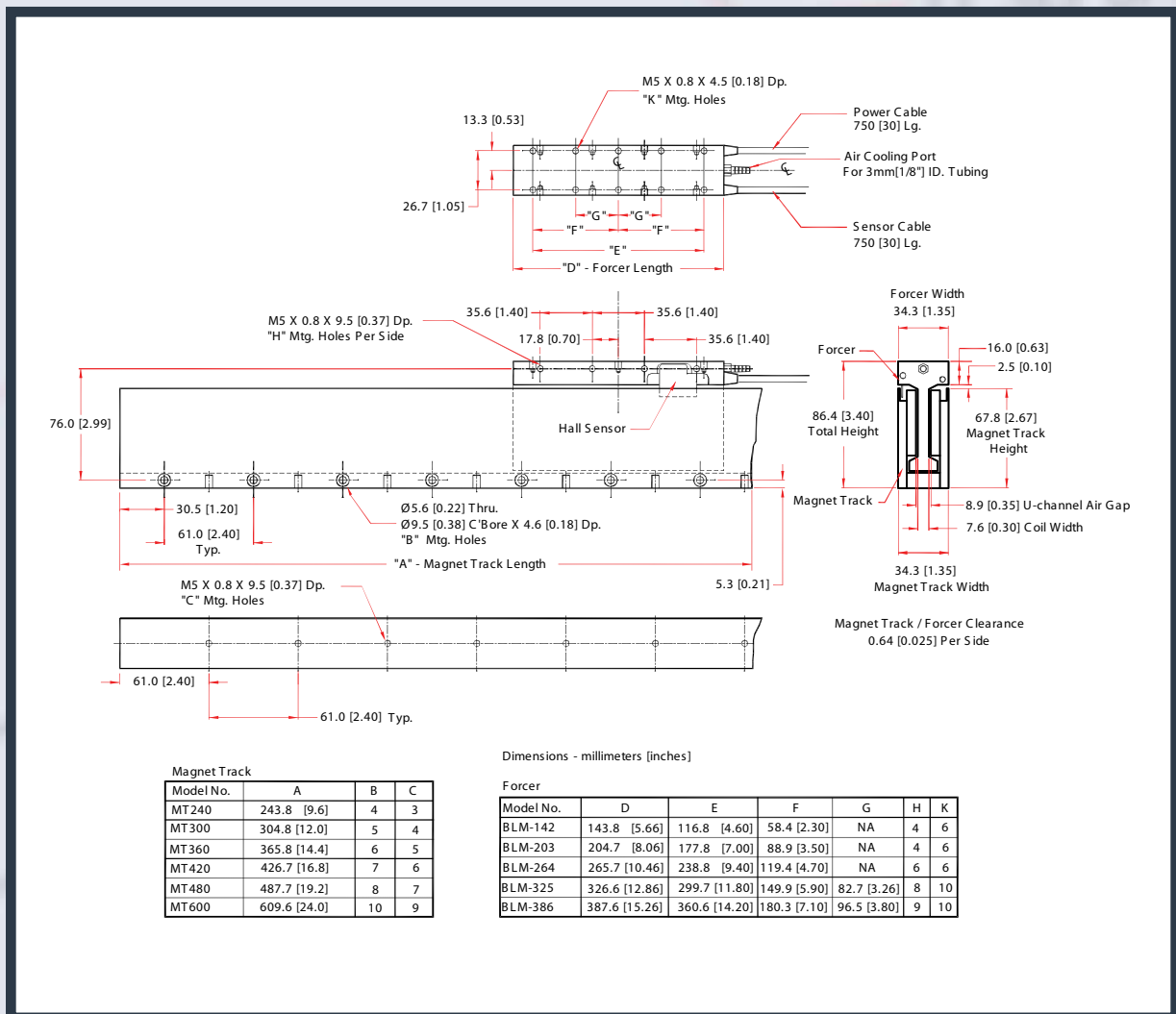
**Notes:**

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- All performance and electrical specifications ±10%.
- 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 Aerotech amplifiers are rated A<sub>pk</sub>; use torque constant in N•m/A<sub>pk</sub> when sizing.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.





**Aerotech BLM  
linear motor**



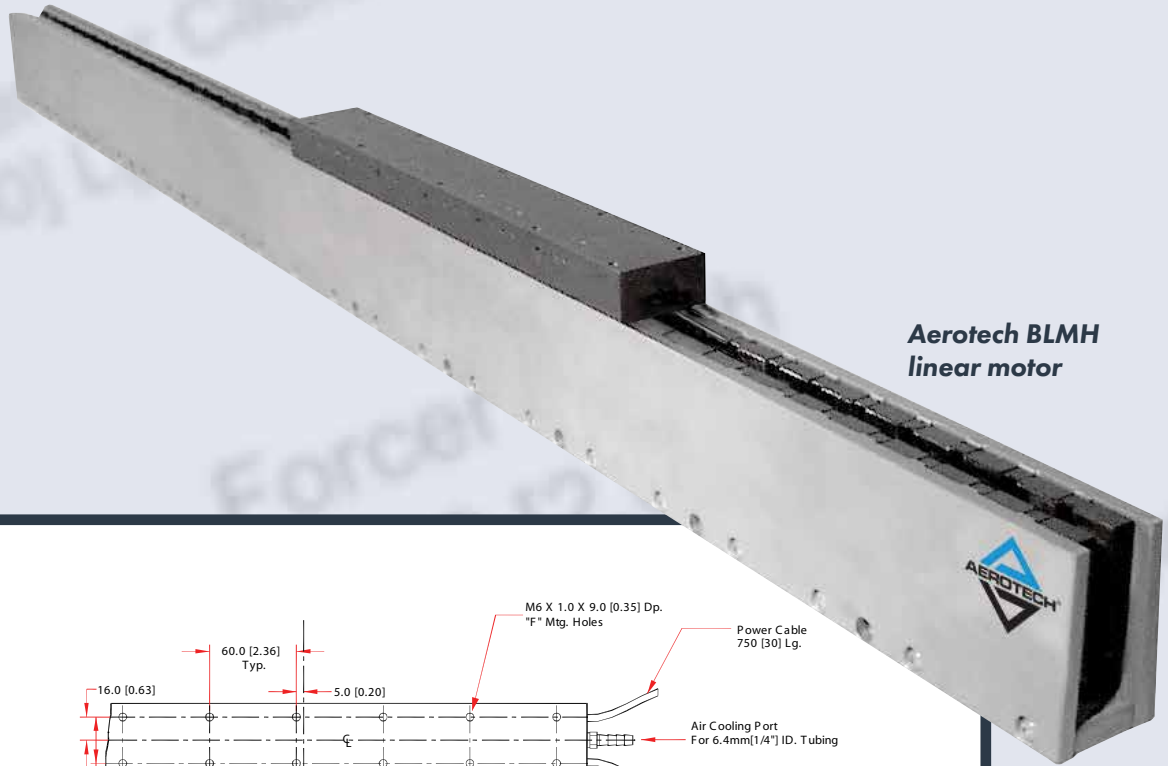
# BLMH Series

The BLMH series "U-channel" brushless linear servomotors offer over 70% greater continuous output force in the same physical envelope than similar models from other manufacturers. BLMH series motors feature a high-efficiency magnetic circuit design that provides continuous force ratings to 548.8 N (123.4 lb) and peak forces to 2195 N (493.5 lb). This extremely high level of performance can be enhanced with special magnet options that increase force further, thereby lowering heat generation.

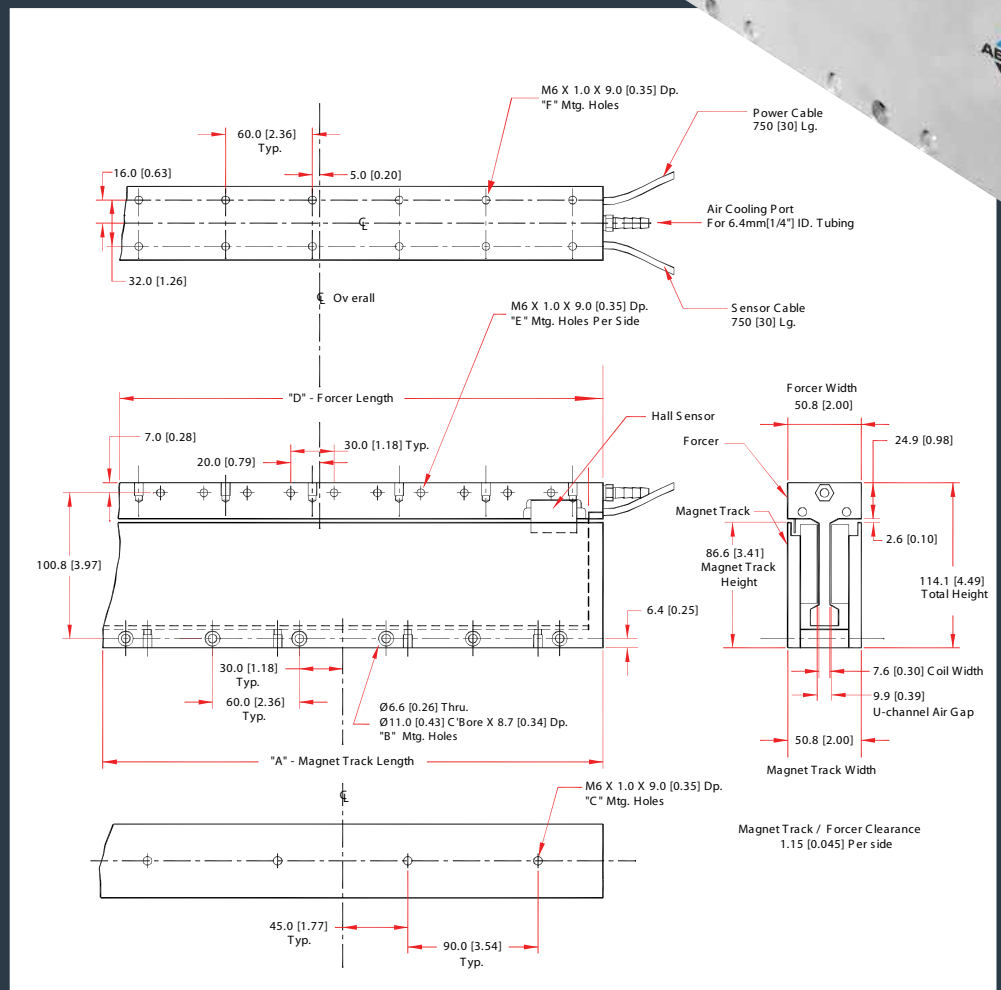
Motor Model	Units	BLMH-142	BLMH-202	BLMH-262	BLMH-322	BLMH-382						
<b>Performance Specifications<sup>(1,2)</sup></b>												
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	270.7 (60.9)	351.2 (79.0)	437.1 (98.3)	489.2 (110.0)	-A 435.8 (98.0)    -B (opt) 548.8 (123.4)						
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	150.0 (33.7)	194.2 (43.7)	266.2 (59.9)	303.2 (68.2)	357.9 (80.5)						
Peak Force <sup>(4)</sup>	N (lb)	1082.7 (243.4)	1404.9 (315.9)	1748.6 (393.1)	1956.7 (439.9)	2195.0 (493.5)						
<b>Electrical Specifications<sup>(2)</sup></b>												
Winding Designation		-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	
BEMF Constant (Line-Line)	V/m/s (V/in/s)	32.11 (0.82)	64.22 (1.63)	47.50 (1.21)	95.00 (2.41)	64.42 (1.64)	128.85 (3.27)	79.20 (2.01)	158.40 (4.02)	45.71 (1.16)	91.42 (2.32)	
Continuous Current, 1.4 bar, 20 ps <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	9.69 6.85	4.85 3.43	8.50 6.01	4.25 3.01	7.80 5.52	3.90 2.76	7.10 5.02	3.55 2.51	10.96 7.75	6.90 4.88	
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	5.37 3.80	2.69 1.90	4.70 3.32	2.35 1.66	4.75 3.36	2.38 1.68	4.40 3.11	2.20 1.56	9.00 6.36	4.50 3.18	
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	38.76 27.41	19.38 13.70	34.00 24.04	17.00 12.02	31.20 22.06	15.60 11.03	28.40 20.08	14.20 10.04	55.20 39.03	27.60 19.52	
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	27.93 (6.28)	55.87 (12.56)	41.32 (9.29)	82.64 (18.58)	56.04 (12.60)	112.09 (25.20)	68.90 (15.49)	137.80 (30.98)	39.77 (8.94)	79.53 (17.88)	
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	39.50 (8.88)	79.01 (17.76)	58.44 (13.14)	116.88 (26.28)	79.26 (17.82)	158.52 (35.64)	97.44 (21.91)	194.88 (43.81)	56.24 (12.64)	112.47 (25.29)	
Motor Constant <sup>(3,5)</sup>	N/√W (lb/√W)	14.17 (3.19)	17.20 (3.87)	20.24 (4.55)	22.29 (5.01)	23.19 (5.21)						
Resistance, 25°C, (Line to Line)	Ω	3.7	14.8	5.5	22.0	7.3	29.2	9.1	36.4	2.8	11.2	
Inductance (Line to Line)	mH	2.40	9.60	3.80	15.20	4.60	18.40	6.00	24.00	1.80	7.20	
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.27	0.24	0.21	0.21	0.18						
Thermal Resistance, No Forced Cooling	°C/W	0.89	0.78	0.58	0.54	0.42						
Maximum Bus Voltage	VDC	340	340	340	340	340						
<b>Mechanical Specifications</b>												
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	2.5x10 <sup>-3</sup> (5.3)	2.8x10 <sup>-3</sup> (5.9)	2.8x10 <sup>-3</sup> (5.9)	2.9x10 <sup>-3</sup> (6.2)	2.7x10 <sup>-3</sup> (5.8)						
Coil Weight	kg (lb)	1.10 (2.42)	1.60 (3.52)	2.10 (4.62)	2.60 (5.72)	3.10 (6.82)						
Coil Length	mm (in)	142.0 (5.59)	202.0 (7.95)	262.0 (10.31)	322.0 (12.68)	382.0 (15.04)						
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x400x25 (10x16x1)	250x400x25 (10x16x1)						
Magnet Track Weight	kg/m (lb/ft)	20.4 (13.68)										
Magnet Pole Pitch	mm (in)	30.00 (1.18)										
Standards		2011/65/EU RoHS 2 Directive										

**Notes:**

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- All performance and electrical specifications ±10%.
- 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 Aerotech amplifiers are rated A<sub>pk</sub>; use torque constant in N·m/A<sub>pk</sub> when sizing.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.



**Aerotech BLMH  
linear motor**



Dimensions - millimeters [inches]

Magnet Track

Model No.	A	B	C
MTH240	240.0 [9.45]	4	2
MTH300	300.0 [11.81]	5	4
MTH360	360.0 [14.17]	6	4
MTH480	480.0 [18.90]	8	4
MTH600	600.0 [23.63]	10	6
MTH720	720.0 [28.35]	12	8

Forcer

Model No.	D	E	F
BLMH-142	152.0 [5.98]	4	6
BLMH-202	212.0 [8.35]	6	6
BLMH-262	272.0 [10.71]	8	10
BLMH-322	332.0 [13.07]	10	10
BLMH-382	392.0 [15.43]	12	14

# BLMX Series

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

Motor Model	Units	BLMX-382		BLMX-502	
<b>Performance Specifications<sup>(1,2)</sup></b>					
Continuous Force, 1.4 bar (20 psi) <sup>(3)</sup>	N (lb)	972 (218)		-A	-B (opt)
				1063 (239)	1011 (227)
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	537 (121)		601 (135)	
Peak Force <sup>(4)</sup>	N (lb)	3887 (874)		4252 (956)	
<b>Electrical Specifications<sup>(2)</sup></b>					
Winding Designation		-A	-B (opt)	-A	-B (opt)
BEMF Constant (Line to Line, Max)	V/m/s (V/in/s)	86.26 (2.19)	172.52 (4.38)	109.59 (2.78)	54.79 (1.39)
Continuous Current, 1.4 bar, 20 ps <sup>(3)</sup>	Amp <sub>pk</sub>	12.95	6.48	11.15	21.21
	Amp <sub>rms</sub>	9.16	4.58	7.88	15.00
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub>	7.15	3.58	6.30	12.60
	Amp <sub>rms</sub>	5.06	2.53	4.45	8.91
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub>	51.80	25.90	44.60	89.20
	Amp <sub>rms</sub>	36.63	18.31	31.54	63.08
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	75.04 (16.87)	150.09 (33.74)	95.33 (21.43)	47.67 (10.72)
	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	106.13 (23.86)	212.25 (47.72)	134.82 (30.31)	67.41 (15.16)
Motor Constant <sup>(5,6)</sup>	N/√W (lb/√W)	39.72 (8.93)		46.23 (10.39)	
Resistance, 25°C, (Line to Line)	Ω	3.4	13.6	4.5	1.1
Inductance (Line to Line)	mH	3.00	12.00	4.00	1.00
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.12		0.12	
Thermal Resistance, No Forced Cooling	°C/W	0.40		0.39	
Maximum Bus Voltage	VDC	340		340	
<b>Mechanical Specifications</b>					
Air Flow, 20 psi	m <sup>3</sup> /s (SCFM)	5.4x10 <sup>-3</sup> (11.5)		5.6x10 <sup>-3</sup> (11.8)	
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)	35.8 (24.01)			
Magnet Pole Pitch	mm (in)	30.00 (1.18)		30.00 (1.18)	
Standards		2011/65/EU RoHS 2 Directive			

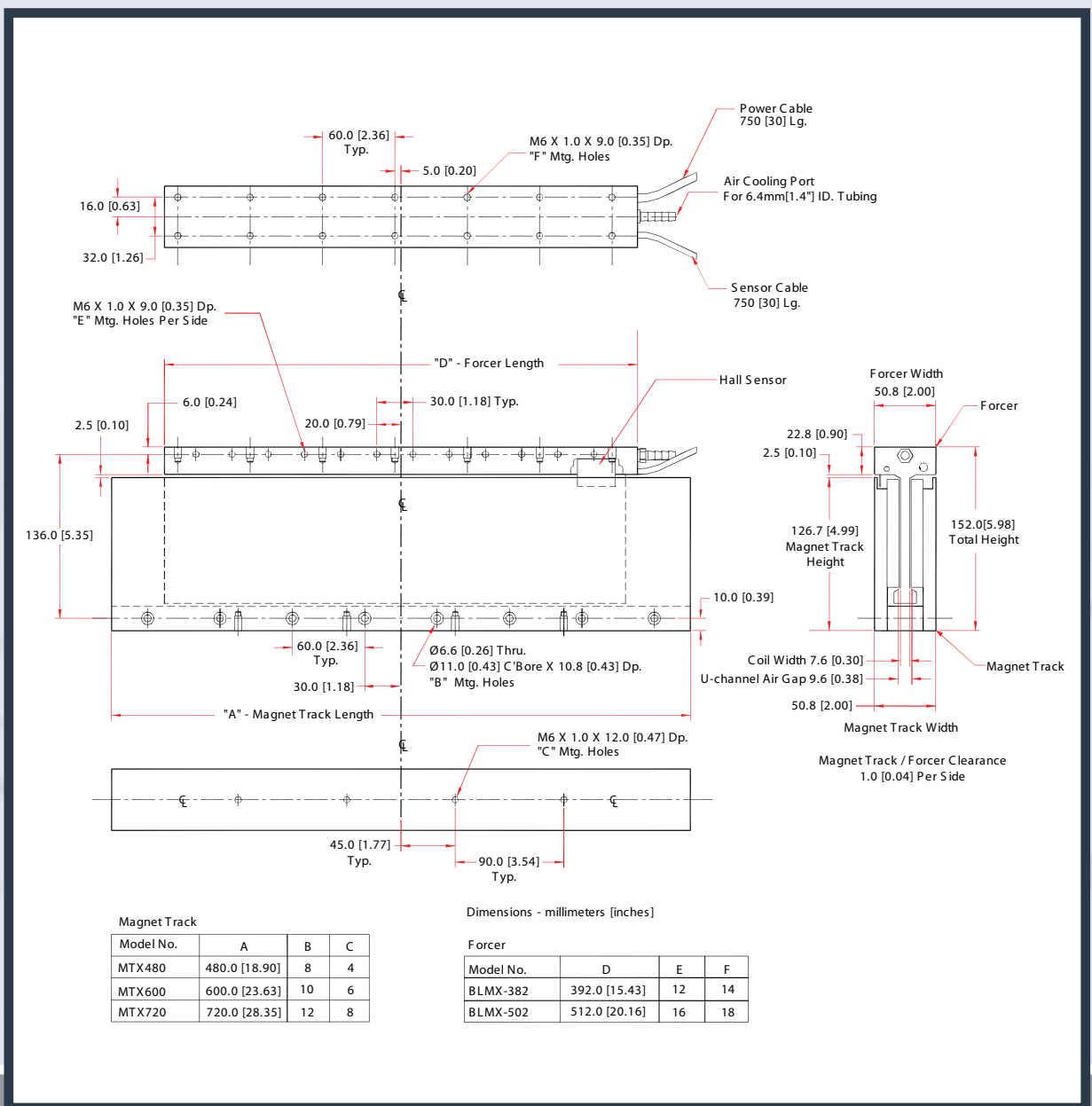
**Notes:**

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- All performance and electrical specifications ±10%.
- 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 Aerotech amplifiers are rated A<sub>pk</sub>; use torque constant in N•m/A<sub>pk</sub> when sizing.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.





**Aerotech BLMX  
linear motor**



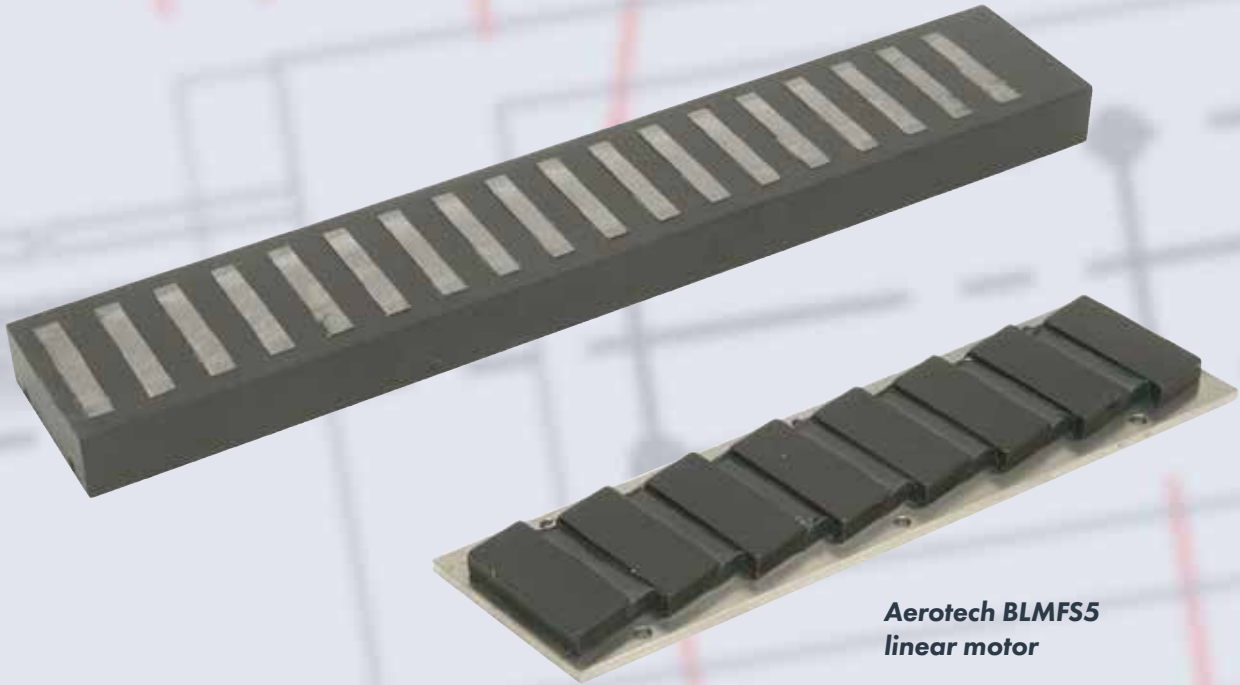
# BLMFS-5 Series

The BLMFS5 series linear motors are designed to provide a higher throughput and lower profile alternative to conventional linear motor applications. This is achieved through a proprietary manufacturing process and laminated iron-core design. The BLMFS5 series utilizes steel laminations to produce more force for a given forcer coil length. This makes it ideal for high speed point-to-point motion. The attraction force can also be used as a bearing pre-load.

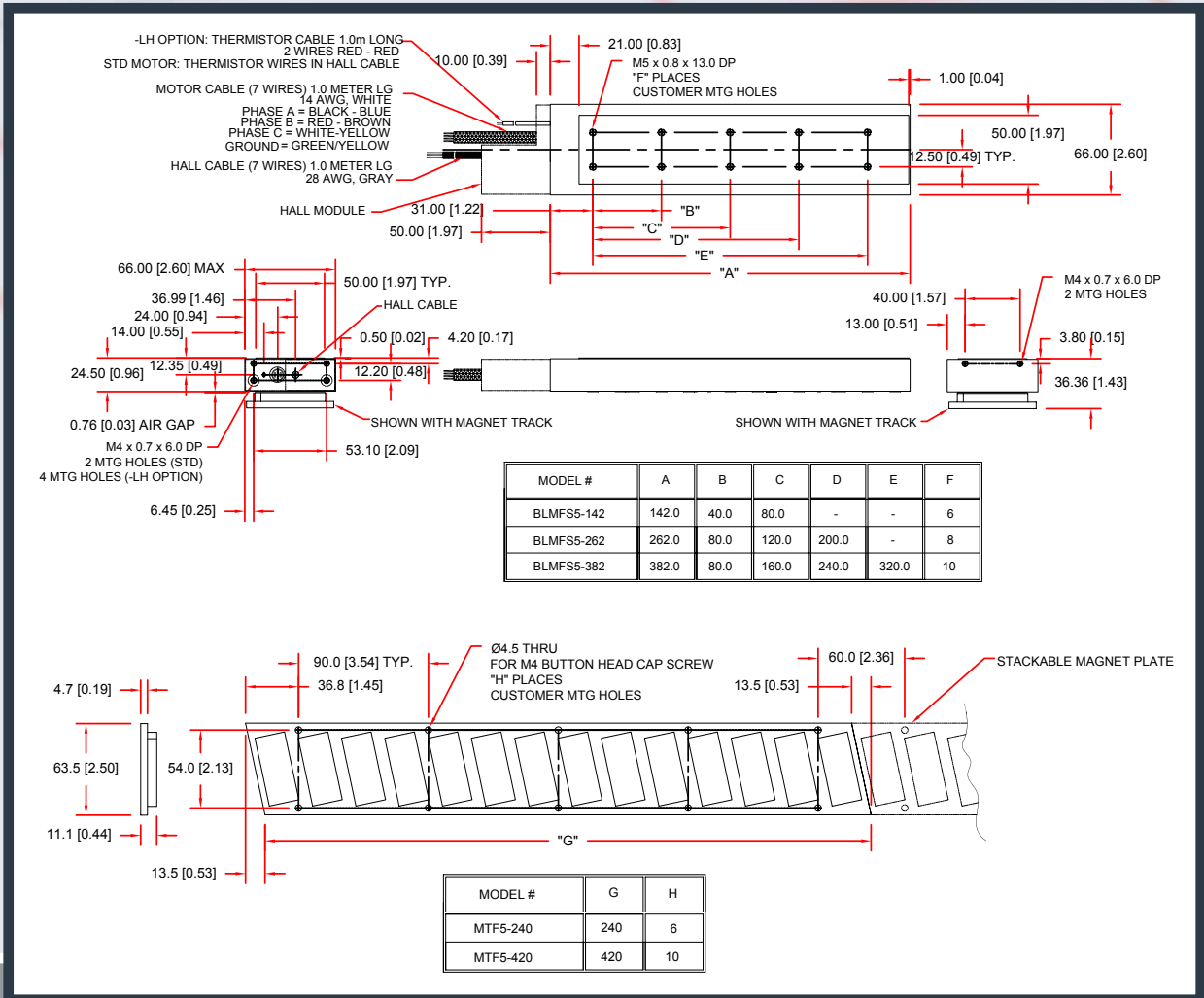
Motor Model	Units	BLMFS5-142	BLMFS5-262	BLMFS5-382			
<b>Performance Specifications<sup>(1,2)</sup></b>							
Continuous Force, Water Cooling <sup>(3,7)</sup>	N (lb)	323.4 (72.7)	522.3 (117.4)	697.1 (156.7)			
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	174.8 (39.3)	282.3 (63.5)	376.8 (84.7)			
Peak Force <sup>(4)</sup>	N (lb)	699.3 (157.2)	1129.2 (253.9)	1507.2 (338.8)			
Cogging Force	N (lb)	57.8 (13.0)	62.3 (14.0)	67.2 (15.1)			
Attraction Force	N (lb)	2410 (542)	4446 (1000)	6482 (1457)			
<b>Electrical Specifications<sup>(2)</sup></b>							
Winding Designation		-A	-B	-A	-B	-A	-B
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	21.99 (0.56)	43.97 (1.12)	21.99 (0.56)	43.97 (1.12)	21.99 (0.56)	43.97 (1.12)
Continuous Current, Water Cooling <sup>(3,7)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	16.91 11.96	8.45 5.98	27.31 19.31	13.65 9.65	36.45 25.77	18.22 12.89
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	9.14 6.46	4.57 3.23	14.76 10.44	7.38 5.22	19.70 13.93	9.85 6.97
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	36.56 25.85	18.28 12.93	59.04 41.75	29.52 20.87	78.80 55.72	39.40 27.86
Average Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	19.13 (4.30)	38.25 (8.60)	19.13 (4.30)	38.25 (8.60)	19.13 (4.30)	38.25 (8.60)
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	27.05 (6.08)	54.10 (12.16)	27.05 (6.08)	54.10 (12.16)	27.05 (6.08)	54.10 (12.16)
Motor Constant <sup>(3,5)</sup>	N/√W (lb/√W)	14.40(3.24)	14.40(3.24)	20.37(4.58)	20.37(4.58)	24.94 (5.61)	24.94 (5.61)
Resistance, 25°C, (Line to Line)	ohms	1.7	6.7	0.8	3.4	0.6	2.2
Inductance (Line to Line)	mH	9.90	39.60	4.95	19.80	3.30	13.20
Thermal Resistance, Water Cooling <sup>(7)</sup>	°C/W	0.20		0.15		0.13	
Thermal Resistance, No Forced Cooling	°C/W	0.68		0.52		0.44	
Maximum Bus Voltage	VDC	340	340	340	340	340	340
<b>Mechanical Specifications</b>							
Coil Weight	kg (lb)	1.42 (3.12)		2.31 (5.08)		3.81 (8.38)	
Coil Length	mm (in)	142.0 (5.59)		262.0 (10.31)		382.0 (15.04)	
Heat Sink	mm (in)	380x380x13(15x15x0.5)					
Magnet Track Weight	kg/m (lb/ft)	4.2 (2.82)					
Magnet Pole Pitch	mm (in)	30.00 (1.18)					
Standards		2011/65/EU RoHS 2 Directive					

**Notes:**

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



**Aerotech BLMF55  
linear motor**



# BLMF Series

BLMF series flat linear motors are designed to provide a lower cost and lower profile alternative to U-channel linear motors. The BLMFI forcer contains no magnetic material to achieve zero cogging and zero magnetic attraction, while the BLMFS forcer contains magnetic material to achieve higher force per unit volume. The BLMF can be driven using standard Aerotech brushless amplifiers and controllers to provide a complete, integrated system.

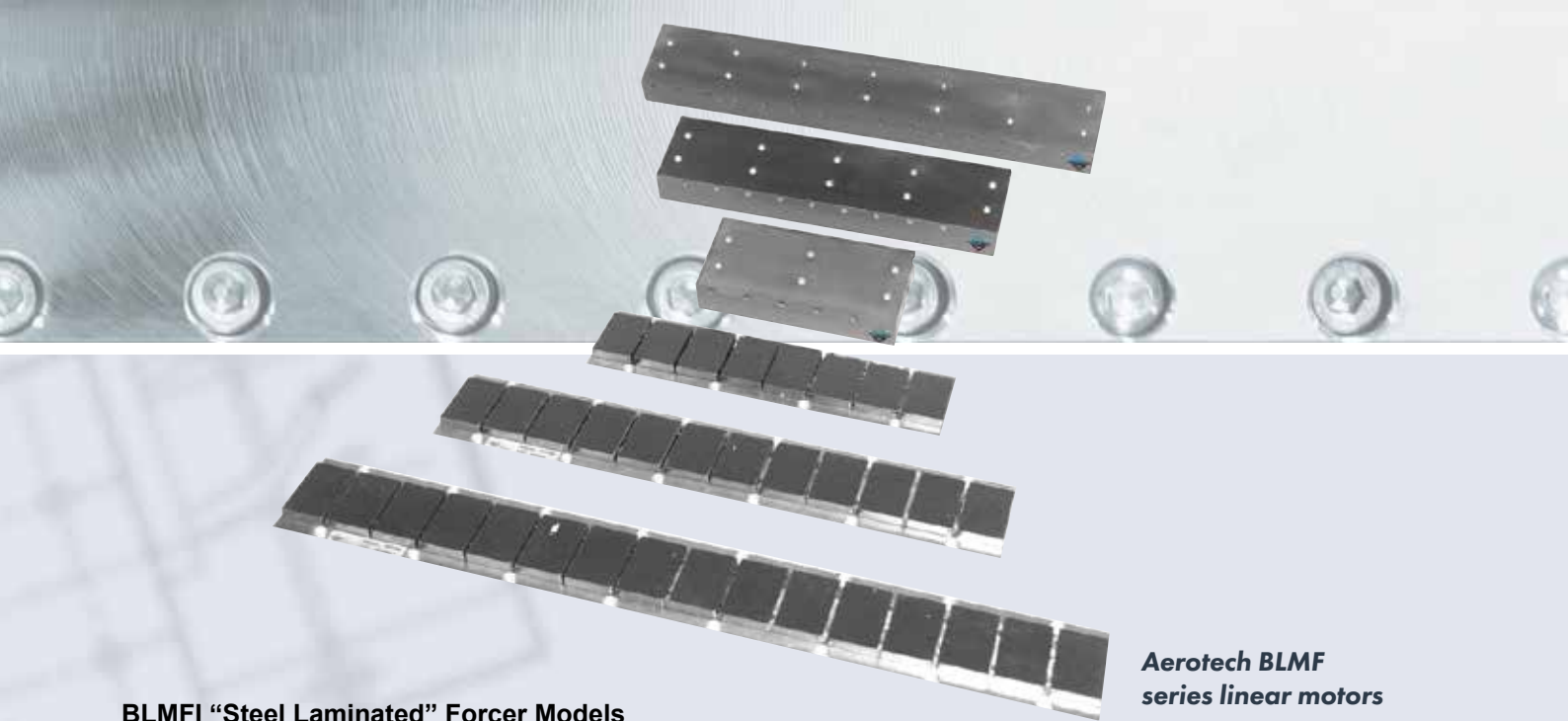
## BLMFI “Ironless” Forcer Models

Motor Model	Units	BLMFI-81	BLMFI-142	BLMFI-264	BLMFI-325	BLMFI-386						
<b>Performance Specifications<sup>(1,2)</sup></b>												
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	22.7 (5.1)	39.3 (8.8)	78.6 (17.7)	109.4 (24.6)	136.0 (30.6)						
Peak Force <sup>(4)</sup>	N (lb)	90.6 (20.4)	157.3 (35.4)	314.2 (70.6)	437.5 (98.4)	543.9 (122.3)						
Attraction Force	N (lb)	0	0	0	0	0						
<b>Electrical Specifications<sup>(2)</sup></b>												
Winding Designation		-A	-B	-A	-B	-A	-B	-A	-B	-A	-B	
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	8.68 (0.22)	4.34 (0.11)	16.75 (0.43)	8.37 (0.21)	17.37 (0.44)	34.73 (0.88)	22.45 (0.57)	44.90 (1.14)	27.91 (0.71)	55.82 (1.42)	
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	3.00 2.12	6.00 4.24	2.70 1.91	5.40 3.82	5.20 3.68	2.60 1.84	5.60 3.96	2.80 1.98	5.60 3.96	2.80 1.98	
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	12.00 8.49	24.00 16.97	10.80 7.64	21.60 15.27	20.80 14.71	10.40 7.35	22.40 15.84	11.20 7.92	22.40 15.84	11.20 7.92	
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	7.55 (1.70)	3.78 (0.85)	14.57 (3.28)	7.28 (1.64)	15.11 (3.40)	30.21 (6.79)	19.53 (4.39)	39.06 (8.78)	24.28 (5.46)	48.56 (10.92)	
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	10.68 (2.40)	5.34 (1.20)	20.60 (4.63)	10.30 (2.32)	21.36 (4.80)	42.73 (9.61)	27.62 (6.21)	55.24 (12.42)	34.34 (7.72)	68.67 (15.44)	
Motor Constant <sup>(3,5)</sup>	N/√W (lb/√W)	3.14 (0.71)	4.31 (0.97)	6.40 (1.44)	7.48 (1.68)	8.38 (1.88)						
Resistance, 25°C, (Line to Line)	Ω	5.5	1.4	10.9	2.7	5.3	21.2	6.5	26.0	8.0	32.0	
Inductance (Line to Line)	mH	2.90	0.73	6.50	1.63	3.50	14.00	4.48	17.92	5.30	21.20	
Thermal Resistance, No Forced Cooling	°C/W	1.92	1.20	0.66	0.47	0.38						
Maximum Bus Voltage	VDC	340	340	340	340	340						
<b>Mechanical Specifications</b>												
Coil Weight	kg (lb)	0.50 (1.10)	0.84 (1.85)	1.10 (2.42)	1.40 (3.08)	1.70 (3.74)						
Coil Length	mm (in)	81.0 (3.19)	142.2 (5.60)	264.2 (10.40)	325.1 (12.80)	386.1 (15.20)						
Heat Sink	mm (in)	100x100x13 (4x4x0.5)	150x150x13 (6x6x0.5)	300x300x13 (12x12x0.5)	350x350x13 (14x14x0.5)	400x400x13 (16x16x0.5)						
Magnet Track Weight	kg/m (lb/ft)	4.70 (3.15)										
Magnet Pole Pitch	mm (in)	30.00 (1.18)	30.00 (1.18)	30.00 (1.18)	30.00 (1.18)	30.00 (1.18)						
Standards		2011/65/EU RoHS 2 Directive										

**Notes:**

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





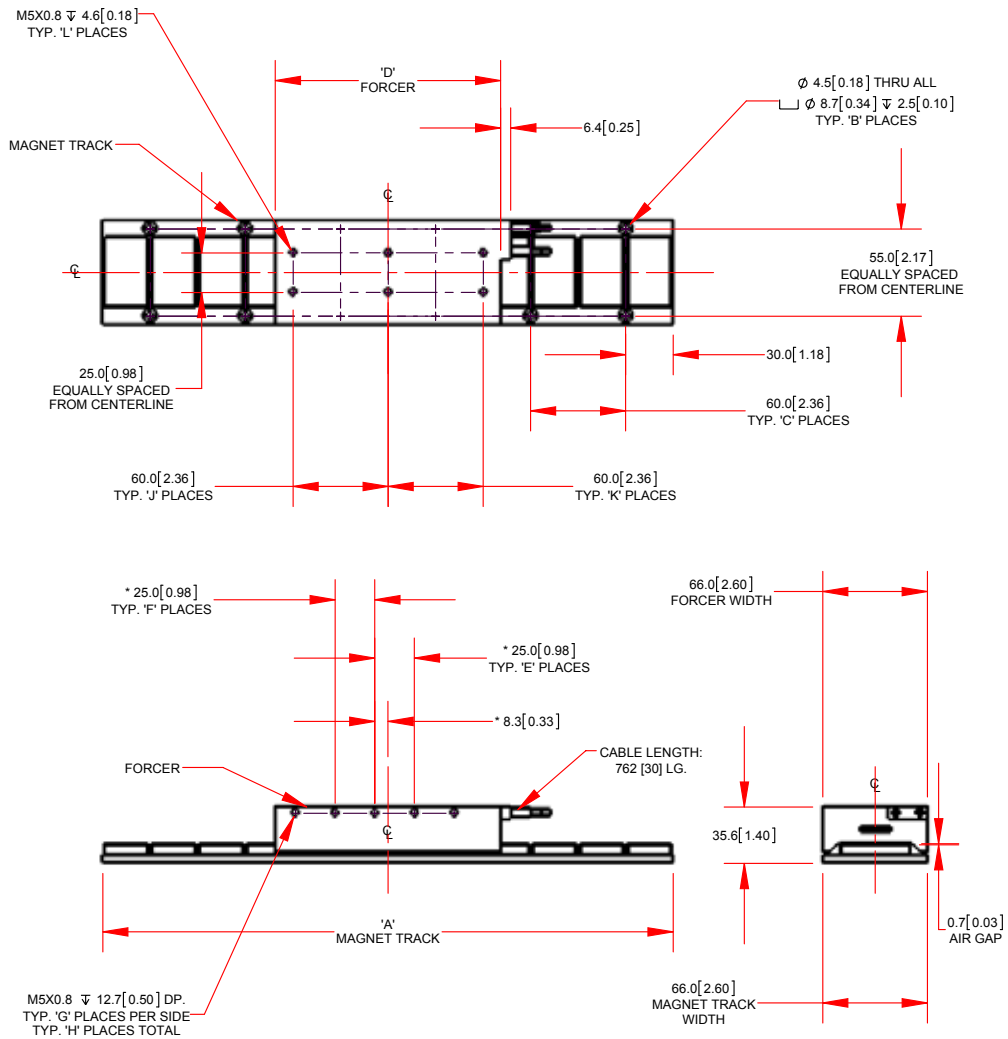
**Aerotech BLMF**  
series linear motors

**BLMFI “Steel Laminated” Forcer Models**

Motor Model	Units	BLMFS-81	BLMFS-142	BLMFS-264	BLMFS-325	BLMFS-386					
<b>Performance Specifications<sup>(1,2)</sup></b>											
Continuous Force, No Forced Cooling <sup>(3)</sup>	N (lb)	34.0 (7.6)	58.3 (13.1)	117.8 (26.5)	163.2 (36.7)	193.4 (43.5)					
Peak Force <sup>(4)</sup>	N (lb)	136.0 (30.6)	233.1 (52.4)	471.3 (106.0)	652.6 (146.7)	773.5 (173.9)					
Attraction Force	N (lb)	197 (44)	341 (77)	628 (141)	787 (177)	925 (208)					
<b>Electrical Specifications<sup>(2)</sup></b>											
Winding Designation		-A	-B	-A	-B	-A	-B	-A	-B	-A	-B
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	13.02 (0.33)	6.51 (0.17)	24.81 (0.63)	12.40 (0.32)	26.05 (0.66)	52.10 (1.32)	33.49 (0.85)	66.98 (1.70)	39.69 (1.01)	79.39 (2.02)
Continuous Current, No Forced Cooling <sup>(3)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	3.0 2.12	6.00 4.24	2.70 1.91	5.40 3.82	5.20 3.68	2.60 1.84	5.60 3.96	2.80 1.98	5.60 3.96	2.80 1.98
Peak Current, Stall <sup>(4)</sup>	Amp <sub>pk</sub> Amp <sub>rms</sub>	12.00 8.49	24.00 16.97	10.80 7.64	21.60 15.27	20.80 14.71	10.40 7.35	22.40 15.84	11.20 7.92	22.40 15.84	11.20 7.92
Force Constant, Sine Drive <sup>(5,6)</sup>	N/Amp <sub>pk</sub> (lb/Amp <sub>pk</sub> )	11.33 (2.55)	5.67 (1.27)	21.58 (4.85)	10.79 (2.43)	22.66 (5.09)	45.32 (10.19)	29.14 (6.55)	58.27 (13.10)	34.53 (7.76)	69.06 (15.53)
	N/Amp <sub>rms</sub> (lb/Amp <sub>rms</sub> )	16.02 (3.60)	8.01 (1.80)	30.52 (6.86)	15.26 (3.43)	32.05 (7.20)	64.09 (14.41)	41.20 (9.26)	82.41 (18.53)	48.83 (10.98)	97.67 (21.96)
Motor Constant <sup>(5,5)</sup>	N/√W (lb/√W)	4.71 (1.06)		6.38 (1.43)		9.61 (2.16)		11.15 (2.51)		11.91 (2.68)	
Resistance, 25°C, (Line to Line)	Ω	5.5	1.4	10.9	2.7	5.3	21.2	6.5	26.0	8.0	32.0
Inductance (Line to Line)	mH	4.50	1.13	10.40	2.60	5.70	22.80	7.40	29.60	8.75	35.00
Thermal Resistance, No Forced Cooling	°C/W	1.92		1.20		0.66		0.47		0.38	
Maximum Bus Voltage	VDC	340		340		340		340		340	
<b>Mechanical Specifications</b>											
Coil Weight	kg (lb)	0.60 (1.32)		1.02 (2.24)		1.90 (4.18)		2.31 (5.08)		2.76 (6.07)	
Coil Length	mm (in)	81.0 (3.19)		142.2 (5.60)		264.2 (10.40)		325.1 (12.80)		386.1 (15.20)	
Heat Sink	mm (in)	100x100x13 (4x4x0.5)		150x150x13 (6x6x0.5)		300x300x13 (12x12x0.5)		350x350x13 (14x14x0.5)		400x400x13 (16x16x0.5)	
Magnet Track Weight	kg/m (lb/ft)	4.70 (3.15)									
Magnet Pole Pitch	mm (in)			30.00 (1.18)		30.00 (1.18)		30.00 (1.18)		30.00 (1.18)	
Standards		2011/65/EU RoHS 2 Directive									

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

# BLMF Series



DIMENSIONS - MILLIMETERS [INCHES]

### MAGNET TRACK

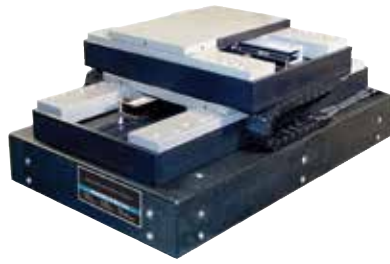
MODEL NO.	A	B	C
MTF240P	240 [9.45]	8	3
MTF300P	300 [11.81]	10	4
MTF360P	360 [14.17]	12	5
MTF480P	480 [18.90]	16	7
MTF540P	540 [21.26]	18	8

### FORCER

MODEL NO.	D	E	F	G	H	J	K	L
BLMF-81	81 [3.19]	1	1	2	4	1	1	4
BLMF-142	142 [5.59]	2	2	5	10	1	1	6
BLMF-264	264 [10.39]	4	4	9	16	2	2	10
BLMF-325	325 [12.80]	5	5	11	22	2	2	10
BLMF-386	386 [15.20]	7	7	15	30	3	3	14

\*DIMENSIONS DO NOT APPLY TO BLMF-81  
CONSULT AEROTECH INC.

# Linear Motors in Action



**ABL8000XY**



**Vacuum-Prepped ALS5000**



**Open Aperture Z Stage**



**Multi-Axis Mask Aligner**



**AGS15000 Gantry System**



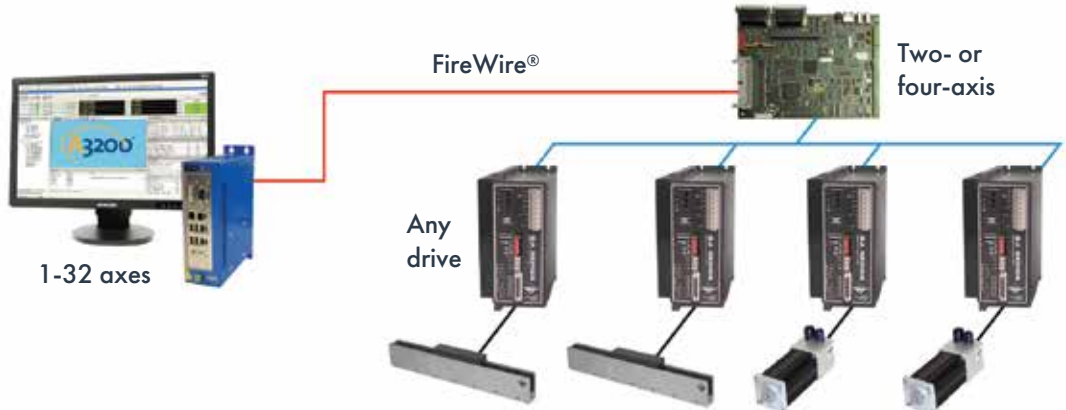
 **AEROTECH**



# Advanced System Controls

- High performance
- Reduced setup time
- Ease of use

## OEM Controller: A3200 and Nservo Software-Based Controller



## Automation 3200

- Up to 32 tasks
- PC-based
- RS-274 G-code, .NET, C, LabVIEW®, or AeroBasic™
- Advanced features for demanding applications
- 1 to 32 axes of coordinated motion
- Scanner control for marking
- Tightly integrated laser functionality
- Retrofit package
- Analog and digital I/O



## Ensemble

- Up to 4 tasks
- Stand-alone 1- to 10-axis controller
- Versatile, cost-effective, coordinated motion
- PWM or linear drives (10-150 A peak)
- Brushless, brush, or stepper motors
- Desktop or panel mount
- .NET, C, LabVIEW®, or AeroBasic™
- GPIB, Ethernet, USB



## Soloist

- Stand-alone, single-axis controller
- Clock and direction input
- PWM or linear drives (10-150 A peak)
- .NET, C, LabVIEW®, or AeroBasic™
- Ethernet, USB
- Commutation for servo motors



### WORLD HEADQUARTERS

Aerotech, Inc.  
101 Zeta Drive  
Pittsburgh, PA 15238  
Ph: 412-963-7470  
Fax: 412-963-7459  
Email: sales@aerotech.com

Aerotech France  
28300 Coltainville  
France  
Ph: +33 2 37 21 87 65  
Fax: +44 (0)1256 855649  
Email: cmonnier@aerotech.com

Aerotech Germany  
Gustav-Weißkopf-Str. 18  
90768 Fürth, Germany  
Ph: +49 (0)911 967 9370  
Fax: +49 (0)911 967 93720  
Email: sales@aerotechgmbh.de

Aerotech United Kingdom  
The Old Brick Kiln  
Ramsdell, Tadley  
Hampshire RG26 5PR  
United Kingdom  
Ph: +44 (0)1256 855055  
Fax: +44 (0)1256 855649  
Email: sales@aerotech.co.uk

Aerotech China  
Room 101, No. 28 Building  
Tianlin Road 140  
Xuhui District  
Shanghai, China 200234  
Ph: +86 (21) 6126 1058  
Email: sales@aerotech.com

Aerotech Japan  
WBG Marive East 22F  
2-6-1 Nakase  
Mihama Ward, Chiba  
Japan 261-7122  
Ph: +81 (0)50 5830 6821  
Fax: +81 (0)43 306 3773  
Email: sales@aerotechkk.co.jp

Aerotech Taiwan  
5F, No 32, Aly 18, Ln 478  
Ruiguang Road  
Neihu District, Taipei City, 114  
Taiwan R.O.C.  
Ph: +886 (0)2 8751 6690  
Email: sales@aerotech.tw