



A Full Line Up of Powerful Servos to Meet the Demands of Your Application!

Compumotor began manufacturing brushless servo motors with the release of the SM series in the spring of 1995. Since that time, we have continued to expand our product offering and have manufacturing plants in California and Italy.

Innovation in Design

Compumotor utilizes two distinct technologies in the manufacturing of brushless servo motors. The Slotless Design and the Bridged Stator Design both reduce motor manufacturing costs while providing performance advantages to the user.

The slotless design eliminates all detent torque in the motor, providing superior performance in applications requiring smooth, low speed operation. This design also results in higher rotor inertia, providing an advantage in applications involving high inertia loads.

The bridged stator design results in extremely high torque-to-

inertia ratios, providing a performance advantage in applications requiring high accelerations. The bridged stator design also greatly reduces detent torque and mechanical noise when compared to a conventional slotted motor.

Compumotor can also provide an integrated planetary gearhead for use with our brushless servo motors. Our unique design integrates the pinion of the gearhead into the motor shaft, reducing total package length by almost two inches.

Standards or Specials in 10 Days

Compumotor's brushless servo motors are manufactured in our modern JIT manufacturing facility. Highly evolved manufacturing philosophies provide levels of service and product availability previously unattainable in the servo motor industry.

Compumotor's lead times average less than ten days for all standard and custom servo motors.

SM Series



- Size 16 and 23
- 0.8 to 11.3 in-lb. continuous torque
- Slotless design
- Rugged housing (IP65 option)
- Connection options

SE Series



- Size 16 and 23
- 0.8 to 10.1 in-lb. continuous torque
- Slotless design
- Plastic encoder cover
- Short package length

BE Series



- Size 16, 23 and 34
- 1.4 to 46 in-lb. continuous torque
- Bridged stator design
- 2000-line encoder standard
- Connection options

M Series



- Size 105, 145 and 205mm
- Up to 90 Nm of power
- Brushless construction
- Encoder feedback and resolver

Planetary Gearheads



- Size 16, 23, 34 and 92
- Integrated pinion design
- Shortest package length available

NeoMetric & J Series



- 70 mm and 92 mm
- 6 to 61 in-lb. continuous torque
- Bridged stator design
- Rugged housing (IP65 option)
- Connection options

SL Series



- Size 42, 63, 102 and 140mm
- 20 to 350 lbs continuous force
- Slotless design
- High speeds
- High precision

Custom Designed Servo Motors for Your Specific Application!

Compumotor offers a broad range of standard options with all of our brushless servo motor families. Our numerous shaft, feedback and connection options will fulfill the needs of most of our customers. However, we realize that from time to time the need arises to have a custom motor designed specially for your application.

Whether you need custom connectors, mounting, or a custom winding, Compumotor can build a motor designed to your exact specifications. Compumotor provides these special designs for our customers with:

- Minimal impact on product lead time
- Modest impact on pricing
- No minimum quantities

Compumotor's modern manufacturing system allows us to offer custom motor solutions without sacrificing product quality and availability. All of our custom motors are built in our standard servo motor work cell, and our computerized custom product tracking system allows us to provide consistent, high-quality custom products. And, because custom motor manufacturing is integrated into our standard manufacturing process, we can often build and ship custom designed motors and cables in the same time frame as standard products.

Compumotor provides this service for one simple reason: to make it easier for you, our customer, to integrate a Compumotor servo motor into your application. We provide more than just a component, we provide a custom designed servo motor solution.

Common Special Requests

Connectorization

- Right angle connector housing
- MS connectors on back cover
- Special cable lengths
- Hi-flex cables
- Customer specified cables and connectors
- Cable exiting through back cover

Flanges

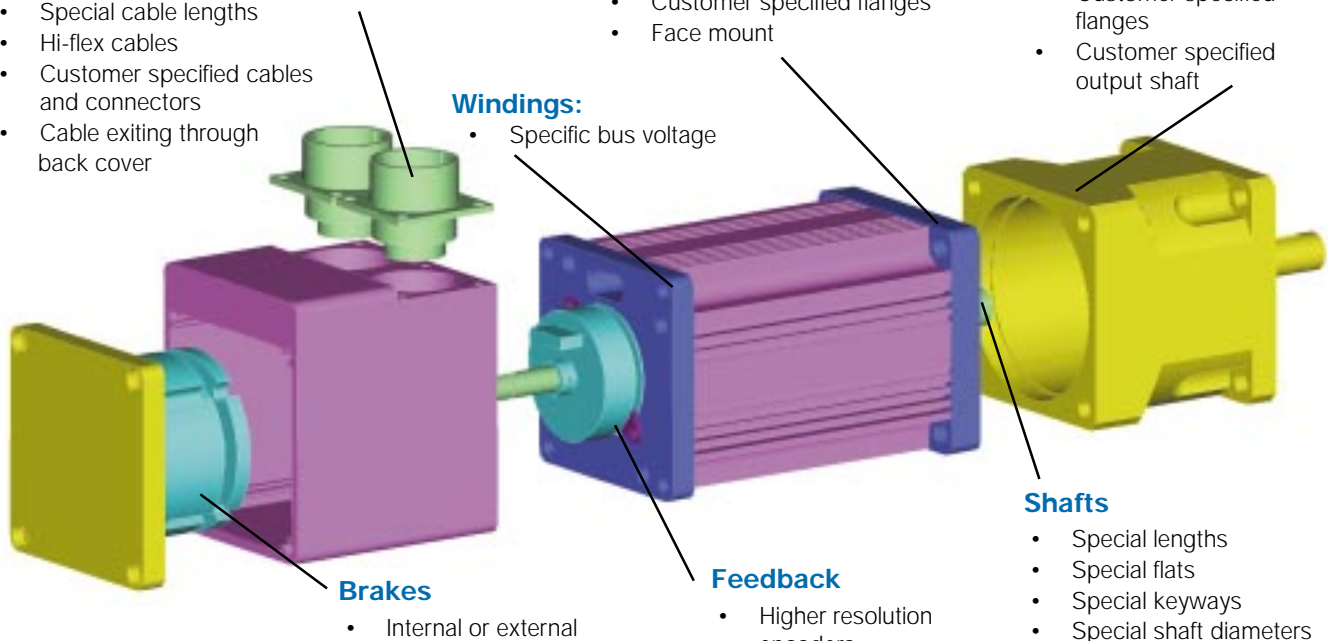
- Tapped mounting holes
- Customer specified flanges
- Face mount

Gearheads

- Non-standard ratios
- Customer specified flanges
- Customer specified output shaft

Windings:

- Specific bus voltage



Miscellaneous Options

- Private label back cover
- Special windings
- Shorter lengths
- High speed balancing
- Special finish

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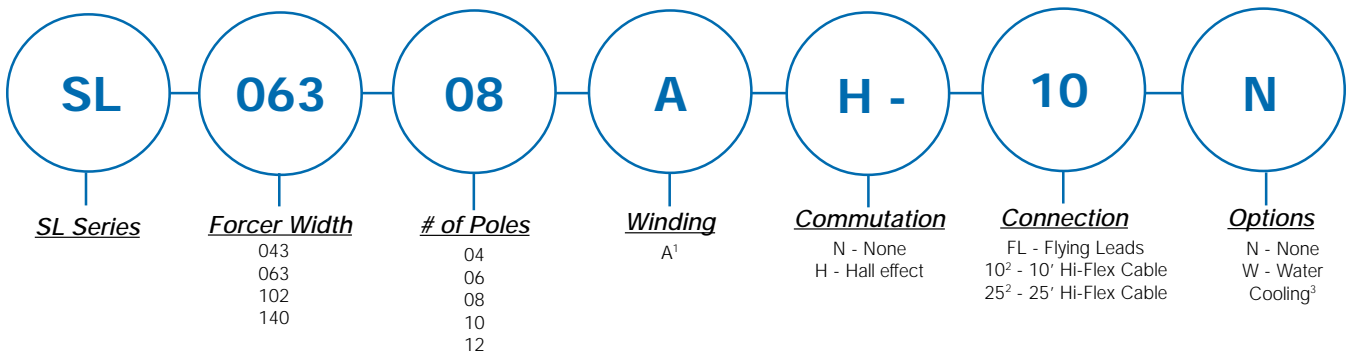


Slotless Linear Servo Motor

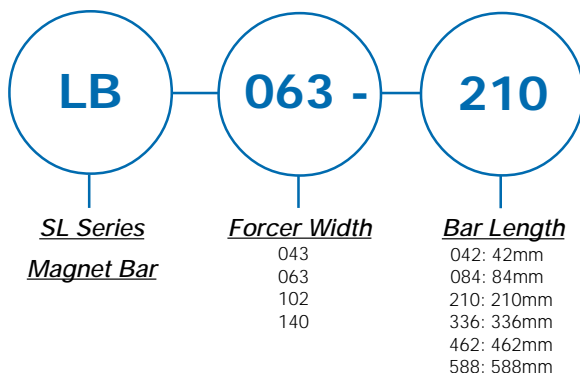
Compumotor's SL Series brushless linear servo motors feature the same slotless winding design made popular by our SM and SE Series rotary servo motors. Along with reduced manufacturing costs, the slotless design creates several performance advantages when compared to traditional ironcore and ironless linear servo motors:

- Single-row magnet bar
- Lower cost and weight (compared to ironless design)
- Better heat dissipation (compared to ironless design)
- More force per package size (compared to ironless design)
- Lighter weight forcer (compared to ironcore design)
- Lower attractive forces (compared to ironcore design)
- Less cogging force (compared to ironcore design)

Forcer Part Numbering System



Magnet Bar Part Numbering System



1 Special windings can be designed to meet customer specifications. Please consult factory.
 2 For motors without hall effect commutation, motor phase and temperature switch wires are located in a single cable. For motors with hall effect commutation, motor phase wires are in one cable, hall effect and temperature switch wires are in a second cable.
 3 Not available on SL043.

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The Linear Motor Concept

The idea is simple enough. Take a conventional rotary servo motor and unwrap it. What was the stator is now a forcer and the rotor becomes a magnet bar. With this design, the motor is connected directly to the load. Direct linear motion is achieved without any rotary to linear transmission devices. The direct coupling of the forcer to the load provides these performance benefits:

- High Speeds
- Zero Backlash
- Fast Response
- High Precision
- High Stiffness
- Low Maintenance

Summary Chart: Below is a summary of linear motor attributes and how each technology compares to the others.

ATTRIBUTE	IronCore	AirCore	Slotless
Cost	Low	High	Lowest
Attractive Force	Highest	None	Moderate
Cogging	Highest	None	Moderate
Force / Size	Best	Moderate	Good
Thermal Characteristics	Best	Lowest	Good
Forcer Weight	Heaviest	Lightest	Moderate
Forcer Strength	Best	Worst	Good

SL043, Uncooled, Specifications (Preliminary)

Parameter	Symbol	Units	SL04304A	SL04306A	SL04308A	SL04310A	SL04312A
Peak Force ^{1, 3}	T_{pk}	N	60	81	102	129	168
		lbf	13.5	18	23	29	37.5
Continuous Stall Force ^{1, 2}	F_{cs}	N	20	27	34	43	56
		lbf	4.5	6	7.5	9.7	12.5

¹ SL043 specifications are preliminary.

² Measured Line to Line, +/- 10%.

³ +/-30%, Line-to-Line, inductance bridge measurement @1Khz.

SL063, General Specifications

Parameter	Symbol	Units	SL06304A	SL06306A	SL06308A	SL06310A	SL06312A
Voltage Constant ^{1,2}	K_b	Volts/m/s	12.8	19.2	25.6	32.0	38.4
		Volts/in/s	0.33	0.49	0.65	0.81	0.98
Force Constant ⁸	$K_f(\text{sine})$	N/Amp Peak	11.09	16.63	22.17	27.71	33.26
		lbf/Amp Peak	2.49	3.74	4.99	6.23	7.48
Resistance ¹	R	Ohms	5.2	7.7	10.3	12.9	15.4
Inductance ³	L	mH	1.96	2.94	3.92	4.90	5.88
Maximum Bus Voltage	V_m	Volts DC	340	340	340	340	340
Motor Constant	K_m	N/ $\sqrt{\text{watt}}$	5.63	6.90	7.97	8.91	9.79
Motor Thermal Time Constant	τ_{th}	minutes	37	37	37	37	37
Electrical Time Constant	τ_{elec}	millisecs	0.38	0.38	0.38	0.38	0.38
Mechanical Time Constant	τ_{mch}	millisecs	0.013	0.012	0.011	0.010	0.010
Intermittent Force Duration ⁴	F_{2x}	seconds	13	13	16	15	17
Peak Force Duration ⁵	F_{3x}	seconds	5	5	6	6	6
Magnetic Attraction ⁶	F_a	N	223	334	445	556	668
		lbf	50	75	100	125	150
Electrical Pitch ⁷	P_e	mm	42	42	42	42	42
Forcer Mass	M_f	kg	0.41	0.55	0.69	0.80	0.95
		lb	0.09	1.2	1.5	1.8	2.1
Rated Winding Temperature	T_{max}	°C	125	125	125	125	125
Winding Class			H	H	H	H	H

SL063, Uncooled, Specifications

Parameter	Symbol	Units	SL06304A	SL06306A	SL06308A	SL06310A	SL06312A
Peak Force ³	T_{pk}	N	122	183	240	283	342
		lbf	27	41	54	64	77
Continuous Stall Force ¹	F_{cs}	N	41	61	80	94	114
		lbf	9	14	18	21	26
Peak Current ^{2,3,4}	$I_{pk}(\text{sine})$	Amps Peak	11.0	11.0	10.8	10.2	10.3
Stall Current Continuous ^{1,2,4}	$I_{cs}(\text{sine})$	Amps Peak	3.7	3.7	3.6	3.4	3.4
Thermal Resistance ¹	R_{th}	°C/watt	1.38	0.92	0.71	0.64	0.53

¹ Measured Line to Line, +/- 10%.

² Value is measured peak of sine wave.

³ +/-30%, Line-to-Line, inductance bridge measurement @1Khz.

⁴ Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.

⁵ Maximum time duration with 3 times rated current applied with initial winding temp at 60°C.

⁶ Measured with a 0.76mm gap

⁷ Distance from the leading edge of a north pole to the leading edge of the next north pole

⁸ Total motor torque per peak of the sinusoidal amps measured in any phase, +/-10%.

Note: These specifications are based on theoretical motor performance and are not specific to any amplifier.

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SL063, Air Cooled, Specifications

Parameter	Symbol	Units	SL06304A	SL06306A	SL06308A	SL06310A	SL06312A
Peak Force ³	T_{pk}	N	122	183	240	283	342
		lbf	27	41	54	64	77
Continuous Stall Force ¹	F_{cs}	N	46	64	86	105	125
		lbf	10.3	14.4	19.3	23.6	28.1
Peak Current ^{2,3,4}	$I_{pk}(sine)$	Amps Peak	11.0	11.0	10.8	10.2	10.3
Stall Current Continuous ^{1,2,4}	$I_{cs}(sine)$	Amps Peak	4.1	3.8	3.9	3.8	3.8
Thermal Resistance ¹	R_{th}	°C/watt	1.08	0.84	0.61	0.52	0.44

SL063, Water Cooled, Specifications

Parameter	Symbol	Units	SL06304A	SL06306A	SL06308A	SL06310A	SL06312A
Peak Force ³	T_{pk}	N	122	183	240	283	342
		lbf	27	41	54	64	77
Continuous Stall Force ¹	F_{cs}	N	53	79	119	148	182
		lbf	10	11.9	17.8	26.7	40.9
Peak Current ^{2,3,4}	$I_{pk}(sine)$	Amps Peak	11.0	11.0	10.8	10.2	10.3
Stall Current Continuous ^{1,2,4}	$I_{cs}(sine)$	Amps Peak	4.8	5.2	5.4	5.3	5.5
Thermal Resistance ¹	R_{th}	°C/watt	0.81	0.47	0.32	0.26	0.21

SL102, General Specifications

Parameter	Symbol	Units	SL10204A	SL10206A	SL10208A	SL10210A	SL10212A
Voltage Constant ^{1,2}	K_b	Volts/m/s	13.2	19.8	26.4	33	39.6
		Volts/in/s	0.34	0.50	0.67	0.84	1.01
Force Constant ⁸	$K_f(\text{sine})$	N/Amp Peak	11.42	17.13	22.84	28.54	34.26
		lbf/Amp Peak	2.57	3.85	5.13	6.41	7.70
Resistance ¹	R	Ohms	2.5	3.75	5	6.25	7.5
Inductance ³	L	mH	0.77	1.16	1.54	1.93	2.31
Maximum Bus Voltage	V_m	Volts DC	340	340	340	340	340
Motor Constant	K_m	N/ $\sqrt{\text{watt}}$	8.34	10.21	11.79	13.18	14.45
Motor Thermal Time Constant	τ_{th}	minutes	28.3	31.7	35	36.7	36.7
Electrical Time Constant	τ_{elec}	milliseconds	0.31	0.31	0.31	0.31	0.31
Mechanical Time Constant	τ_{mch}	milliseconds	0.012	0.011	0.01	0.01	0.009
Intermittent Force Duration ⁴	F_{2x}	seconds	26	36	40	45	50
Peak Force Duration ⁵	F_{3x}	seconds	10	12	13	14	15
Magnetic Attraction ⁶	F_a	N	444.9	667.2	889.6	1112	1334.4
		lbf	99.98	149.93	199.91	249.89	299.87
Electrical Pitch ⁷	P_e	mm	42	42	42	42	42
Forcer Mass	M_f	kg	0.86	1.16	1.43	1.66	1.95
		lb	1.89	2.56	3.15	3.66	4.30
Rated Winding Temperature	T_{max}	°C	125	125	125	125	125
Winding Class			H	H	H	H	H

SL102, Uncooled, Specifications

Parameter	Symbol	Units	SL10204A	SL10206A	SL10208A	SL10210A	SL10212A
Peak Force ³	T_{pk}	N	234.9	318.4	412.5	520.8	625.1
		lbf	52.79	71.55	92.70	117.03	140.47
Continuous Dynamic Force ^{1,9}	F_{cs}	N	90.8	121.3	155.3	197.7	239.4
		lbf	20.41	27.27	34.91	44.45	53.82
Continuous Stall Force ¹	F_{cs}	N	78.3	106.1	137.5	173.6	208.4
		lbf	17.60	23.84	30.90	39.01	46.83
Peak Current ^{2,3,4}	$I_{pk}(\text{sine})$	Amps Peak	20.6	18.6	18.1	18.2	18.2
Dynamic Current Continuous ^{1,2,4,9}	$I_{cs}(\text{sine})$	Amps Peak	7.94	7.07	6.79	6.92	6.98
Stall Current Continuous ^{1,2,4}	$I_{cs}(\text{sine})$	Amps Peak	6.85	6.2	6.02	6.08	6.08
Thermal Resistance ¹	R_{th}	°C/watt	0.815	0.665	0.53	0.414	0.345

¹ Measured Line to Line, +/- 10%.

² Value is measured peak of sine wave.

³ +/-30%, Line-to-Line, inductance bridge measurement @1Khz.

⁴ Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.

⁵ Maximum time duration with 3 times rated current applied with initial winding temp at 60°C.

⁶ Measured with a 0.76mm gap

⁷ Distance from the leading edge of a north pole to the leading edge of the next north pole

⁸ Total motor torque per peak of the sinusoidal amps measured in any phase, +/-10%

⁹ Dynamic force and current measured at a carriage velocity of .5m/s.

Note: These specifications are based on theoretical motor performance and are not specific to any amplifier.

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SL102, Air Cooled, Specifications

Parameter	Symbol	Units	SL10204A	SL10206A	SL10208A	SL10210A	SL10212A
Peak Force	T_{pk}	N	233.4	325.5	399.7	476.3	534.2
		lbf	52.45	73.12	89.82	107.03	120.04
Continuous Stall Force	F_{cs}	N	116.7	162.7	199.8	238.2	267.1
		lbf	26.22	36.56	44.90	53.53	60.02
Peak Current	$I_{pk}(\text{sine})$	Amps Peak	20.4	19	17.5	16.7	15.6
Stall Current Continuous	$I_{cs}(\text{sine})$	Amps Peak	10.21	9.5	8.75	8.34	7.8
Thermal Resistance	R_{th}	°C/watt	0.367	0.283	0.25	0.22	0.21

SL102, Water Cooled, Specifications

Parameter	Symbol	Units	SL10204A	SL10206A	SL10208A	SL10210A	SL10212A
Peak Force ³	T_{pk}	N	288.6	412.6	523	644.9	748.3
		lbf	64.85	92.72	117.53	144.92	168.16
Continuous Stall Force ¹	F_{cs}	N	144.3	206.3	261.5	322.5	374.2
		lbf	32.43	46.36	58.76	72.47	84.09
Peak Current ^{2,3,4}	$I_{pk}(\text{sine})$	Amps Peak	25.3	24.1	22.9	22.6	21.8
Stall Current Continuous ^{1,2,4}	$I_{cs}(\text{sine})$	Amps Peak	12.63	12.04	11.45	11.3	10.92
Thermal Resistance ¹	R_{th}	°C/watt	0.24	0.176	0.15	0.12	0.107

SL140, General Specifications

Parameter	Symbol	Units	SL14004A	SL14006A	SL14008A	SL14010A	SL14012A
Voltage Constant ^{1,2}	K_b	Volts/m/s	22	33	44	55	66
		Volts/in/s	0.56	0.84	1.12	1.40	1.68
Force Constant ⁸	$K_f(\text{sine})$	N/Amp Peak	19.05	28.58	38.1	47.6	57.16
		lbf/Amp Peak	4.28	6.42	8.56	10.70	12.84
Resistance ¹	R	Ohms	4.42	5.13	6.84	8.54	10.25
Inductance ³	L	mH	1.25	1.87	2.5	3.12	3.74
Maximum Bus Voltage	V_m	Volts DC	340	340	340	340	340
Motor Constant	K_m	N/ $\sqrt{\text{watt}}$	10.46	14.57	16.8	18.82	20.61
Motor Thermal Time Constant	τ_{th}	minutes	18.3	21.7	25	25	25
Electrical Time Constant	τ_{elec}	milliseconds	0.28	0.36	0.37	0.37	0.36
Mechanical Time Constant	τ_{mch}	milliseconds	0.011	0.008	0.007	0.006	0.006
Intermittent Force Duration ⁴	F_{2x}	seconds	181	181	196	187	160
Peak Force Duration ⁵	F_{3x}	seconds	73	64	77	73	63
Magnetic Attraction ⁶	F_a	N	667.2	1001	1334	1668	2002
		lbf	149.93	224.94	299.78	374.83	449.89
Electrical Pitch ⁷	P_e	mm	42	42	42	42	42
Forcer Mass	M_f	kg	1.2	1.6	2	2.3	2.7
		lb	2.64	3.52	4.41	5.07	5.95
Rated Winding Temperature	T_{max}	°C	125	125	125	125	125
Winding Class			H	H	H	H	H

SL140, Uncooled, Specifications

Parameter	Symbol	Units	SL14004A	SL14006A	SL14008A	SL14010A	SL14012A
Peak Force ³	T_{pk}	N	276	402	491	606	739
		lbf	62.02	90.34	110.34	136.18	166.07
Continuous Dynamic Force ^{1,9}	F_{cs}	N	127.3	193.3	238.9	291.1	361.1
		lbf	28.62	43.46	53.71	65.45	81.18
Continuous Stall Force ¹	F_{cs}	N	92	134	164	202	246
		lbf	20.67	30.11	36.85	45.39	55.28
Peak Current ^{2,3,4}	$I_{pk}(\text{sine})$	Amps Peak	14.5	14.1	12.9	12.7	12.9
Dynamic Current Continuous ^{1,2,4,9}	$I_{cs}(\text{sine})$	Amps Peak	6.68	6.76	6.27	6.11	6.32
Stall Current Continuous ^{1,2,4}	$I_{cs}(\text{sine})$	Amps Peak	4.83	4.69	4.29	4.24	4.31
Thermal Resistance ¹	R_{th}	°C/watt	0.923	0.847	0.76	0.623	0.503

¹ Measured Line to Line, +/- 10%.

² Value is measured peak of sine wave.

³ +/-30%, Line-to-Line, inductance bridge measurement @1Khz.

⁴ Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.

⁵ Maximum time duration with 3 times rated current applied with initial winding temp at 60°C.

⁶ Measured with a 0.76mm gap

⁷ Distance from the leading edge of a north pole to the leading edge of the next north pole

⁸ Total motor torque per peak of the sinusoidal amps measured in any phase, +/-10%

⁹ Dynamic force and current measured at a carriage velocity of .5m/s.

Note: These specifications are based on theoretical motor performance and are not specific to any amplifier.

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SL140, Air Cooled, Specifications

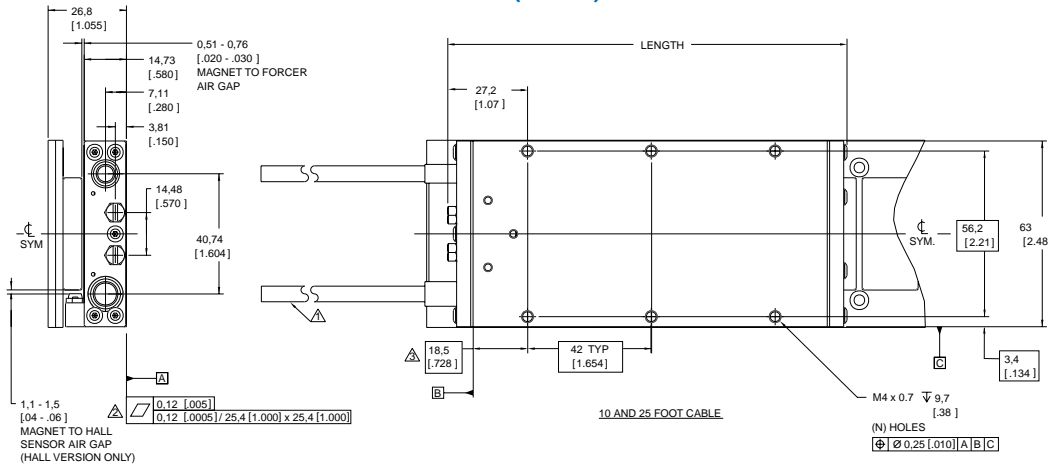
Parameter	Symbol	Units	SL14004A	SL14006A	SL14008A	SL14010A	SL14012A
Peak Force ³	T_{pk}	N	307	471	601	722	806
		lbf	68.99	105.84	135.06	162.25	181.12
Continuous Stall Force ¹	F_{cs}	N	153	236	301	361	403
		lbf	34.38	53.03	67.64	81.12	90.56
Peak Current ^{2,3,4}	$I_{pk}(sine)$	Amps Peak	16.1	16.5	15.8	15.2	14.1
Stall Current Continuous ^{1,2,4}	$I_{cs}(sine)$	Amps Peak	8	8.25	7.89	7.58	7.05
Thermal Resistance ¹	R_{th}	°C/watt	0.333	0.274	0.23	0.2	0.188

SL140, Water Cooled, Specifications

Parameter	Symbol	Units	SL14004A	SL14006A	SL14008A	SL14010A	SL14012A
Peak Force ³	T_{pk}	N	397	582	713	852	951
		lbf	89.21	130.79	160.22	191.46	213.71
Continuous Stall Force ¹	F_{cs}	N	198	291	356	426	475
		lbf	44.49	65.39	80.00	95.73	106.74
Peak Current ^{2,3,4}	$I_{pk}(sine)$	Amps Peak	20.8	20.4	18.7	17.9	16.6
Stall Current Continuous ^{1,2,4}	$I_{cs}(sine)$	Amps Peak	10.4	10.2	9.35	8.95	8.32
Thermal Resistance ¹	R_{th}	°C/watt	0.2	0.18	0.16	0.14	0.135

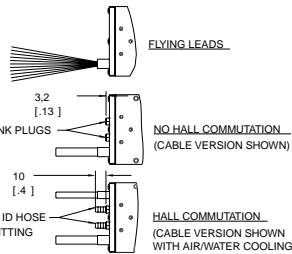
SL063 Dimensional Drawings

Dimensions in mm (inches)



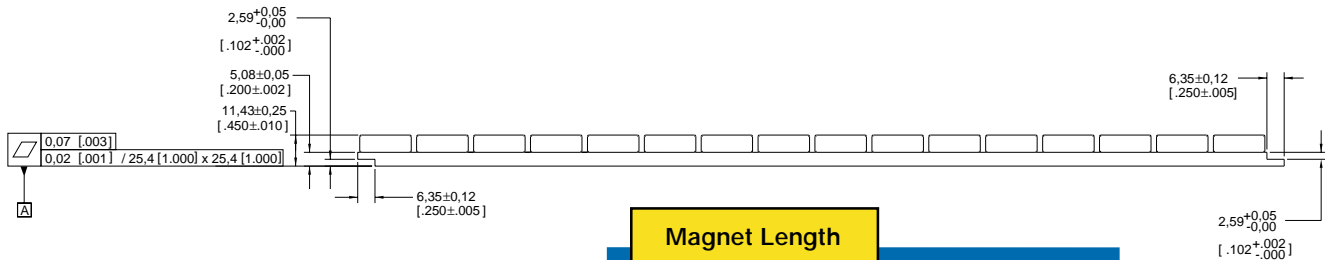
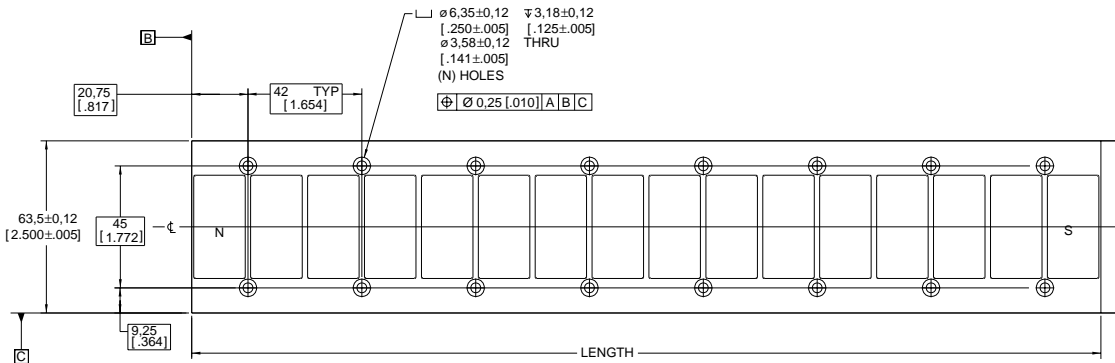
NOTES:

- △ FLEX CABLE IS DESIGNED FOR 10 MILLION CYCLES AT A BEND RADIUS > 80 MM. DO NOT FLEX CABLES WITHIN 30 MM OF CABLE EXIT.
- △ FORCER MOUNTING SURFACE MUST MEET THIS FLATNESS SPEC.
- △ DIMENSION USED TO ESTABLISH POSITIONAL TOLERANCE ON M4 MOUNTING HOLES.



Motor Length

Model	Length	Holes
SL06304	13.5 (5.33)	6
SL06306	177.5 (6.99)	8
SL06308	219.5 (8.64)	10
SL06310	261.5 (10.30)	12
SL06312	303.5 (11.95)	14



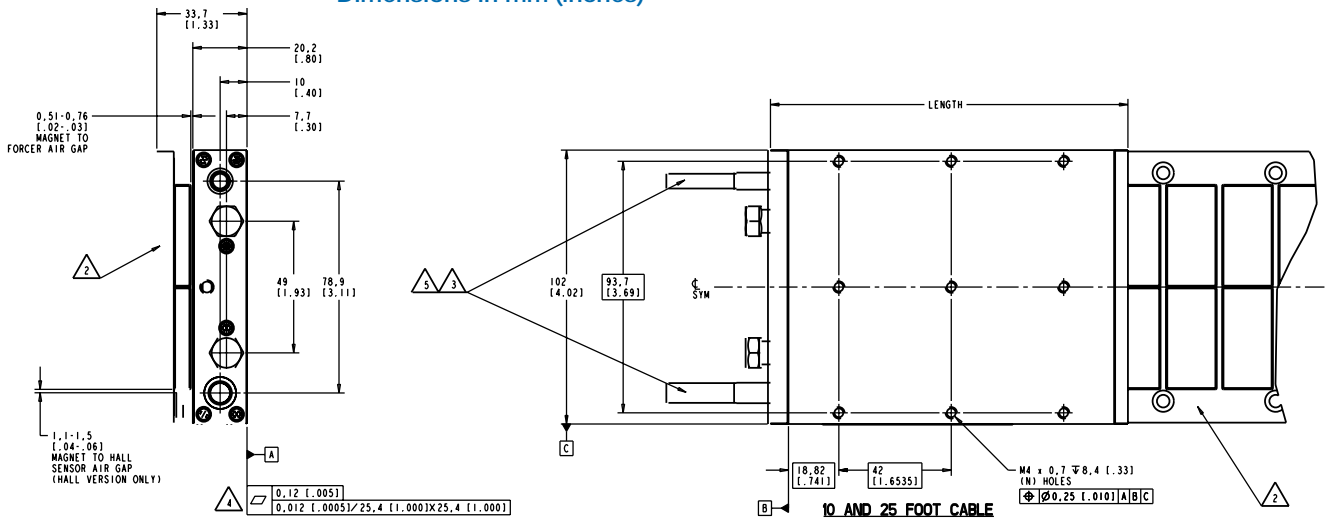
Magnet Length

Model	Length	Holes
LB063042	42 (1.654)	2
LB063084	84 (3.307)	4
LB063210	210 (8.268)	10
LB063336	336 (13.228)	16
LB063462	462 (18.189)	22
LB063588	588 (23.150)	28

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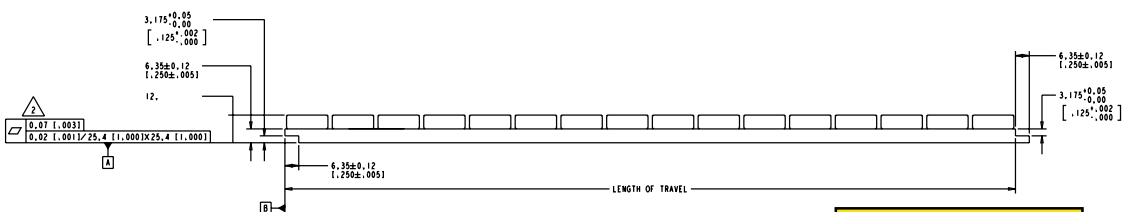
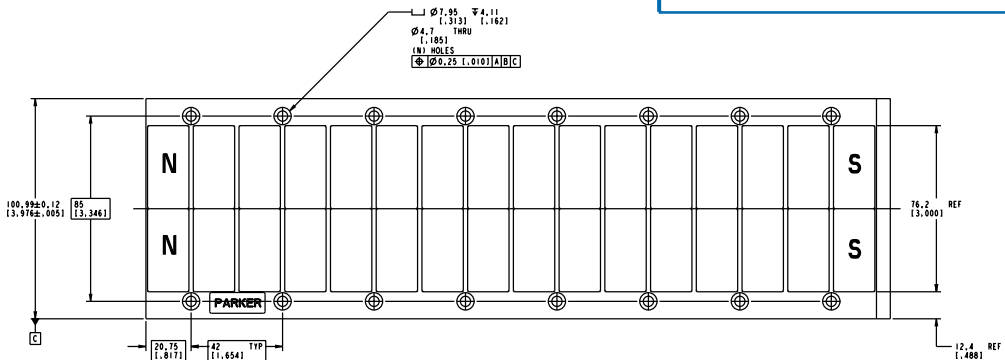
SL102 Dimensional Drawings

Dimensions in mm (inches)



Motor Length

Model	Length	Holes
SL10204	133.7 (5.26)	9
SL10206	175.5 (6.92)	12
SL10208	217.7 (8.57)	15
SL10210	259.7 (10.22)	18
SL10212	301.7 (11.88)	21

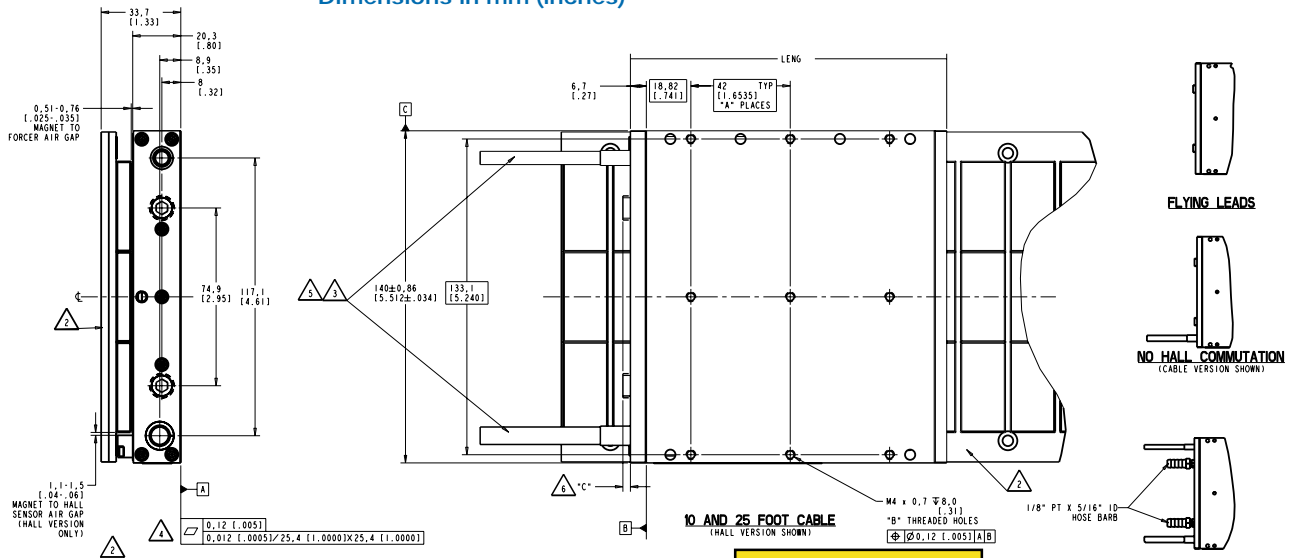


Magnet Length

Model	Length	Holes
LB102042	42 (1.654)	2
LB102084	84 (3.307)	4
LB102210	210 (8.268)	10
LB102336	336 (13.228)	16
LB102462	462 (18.189)	22
LB102588	588 (23.150)	28

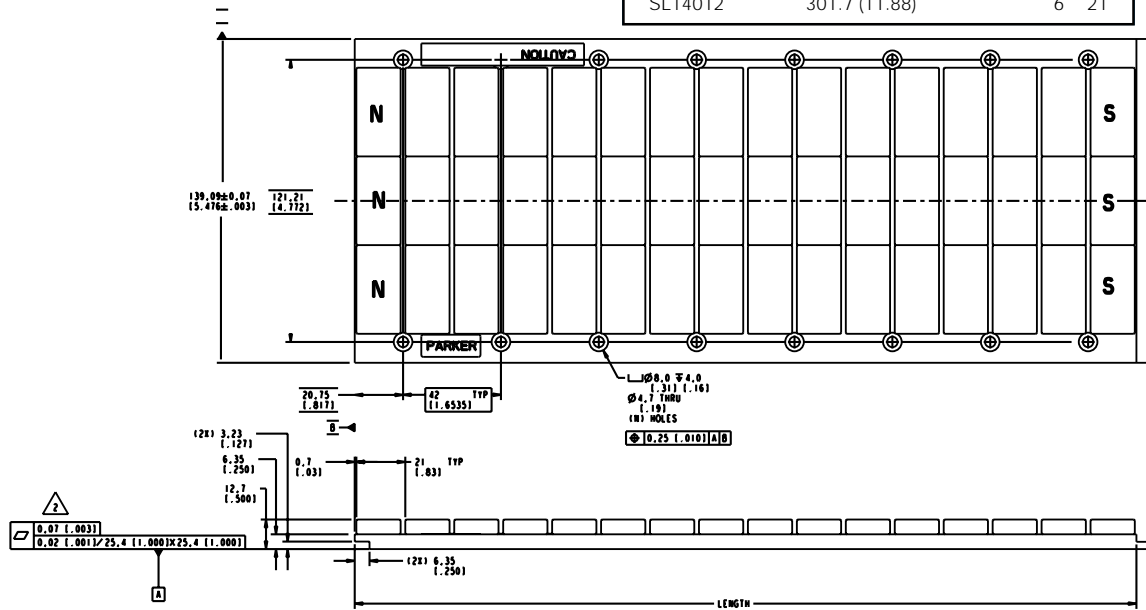
SL140 Dimensional Drawings

Dimensions in mm (inches)



Motor Length

Model	Length	Holes: A	B
SL14004	133.7 (5.26)	2	9
SL14006	175.7 (6.92)	3	12
SL14008	217.7 (8.57)	4	15
SL14010	259.7 (10.22)	5	18
SL14012	301.7 (11.88)	6	21



Magnet Length

Model	Length	Holes
LB140042	42 (1.654)	2
LB140084	84 (3.307)	4
LB140210	210 (8.268)	10
LB140336	336 (13.228)	16
LB140462	462 (18.189)	22
LB140588	588 (23.150)	28

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