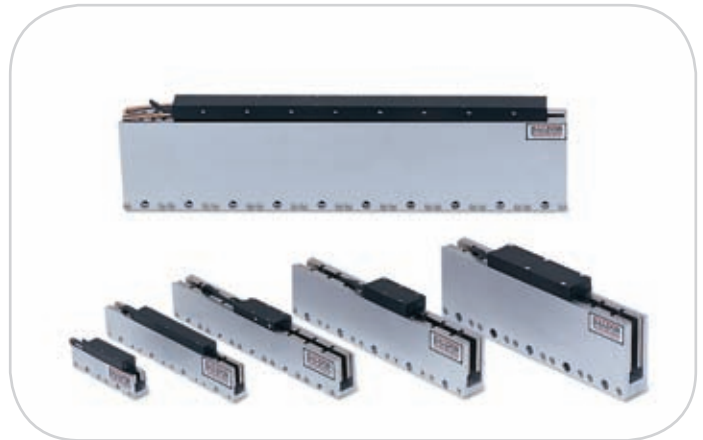


Cog-free Brushless Servo Motors

- › Standard and custom magnetic track lengths
- › Peak forces from 16N [3.6 Lbs] to 2300 N [517 Lbs]
- › High acceleration to 98m/s² [10g's]
- › High speeds to 10m/s [400 in/sec] with encoder resolutions ≥1 micron
- › Speeds to 2.5m/s [100 in/sec] with encoder resolutions ≤ 1 micron
- › High accuracy 2.5µm/300m [±0.0001 in/ft] (encoder dependent)
- › High repeatability 1µm [0.00004 in] (encoder dependent)
- › Unlimited stroke length
- › Independent multiple coil operation with overlapping trajectories
- › No metal-to-metal contact, virtually maintenance free
- › Modular magnet tracks



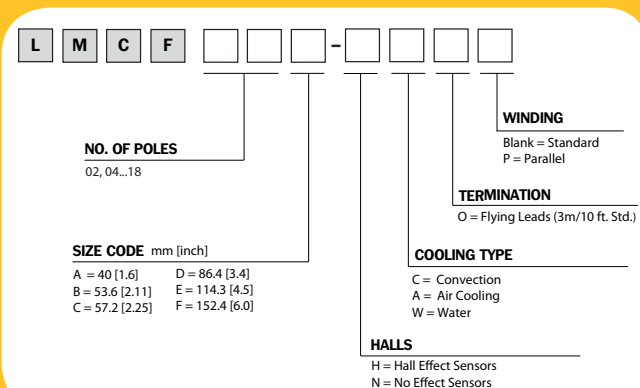
The cog free motor is designed for unlimited stroke servo applications that require smooth operation without magnetic force variation or “cogging”. A large range of motors are available to suit different applications. These motors are supplied in kit form to be integrated into your machine. They are used in closed loop servo systems and provide optimum performance. For higher continuous forces, air and water cooling options are available. Baldor's cog free motors are ideally suited for applications requiring high accuracy (with resolutions down to 0.1µm) and smooth movement.

The motors can be controlled from any of Baldor's 3 phase brushless drive family, including MicroFlex, FlexDrive-II, Flex+Drive-II and MintDrive-II. The motors are also compatible with the NextMove range of motion controllers for multi-axis position control. Baldor's cog free linear motors are nickel plated meeting ROHS compliance.

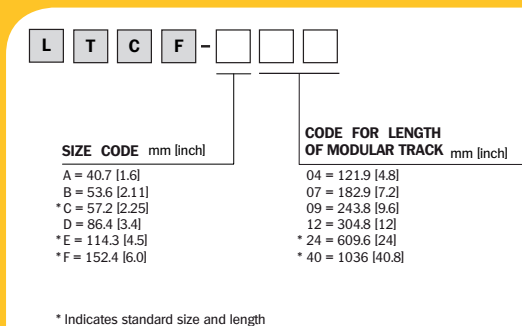
Baldor provides standard magnetic track lengths to optimize pricing for customers. These standards include: LTCF-C24, LTCF-E24, LTCF-F24; and LTCF-C40, LTCF-E40, LTCF-F40. Other track lengths are available as custom.

› Ordering Information

Primary (Forcer)



Secondary (Magnet Track)



Cog-free Brushless Technical Data

› Technical Data

Catalog Numbers	Continuous Force (1) - (2) - (3)		Continuous Current	Peak Force @ 10% Duty		Peak Current @ 10% Duty	Back-EMF Constant K_{emf} (ph-ph)	
	N	Lbs	Amps	N	Lbs	Amps	V/m/sec	V/in/sec
LMCF02A-HCO	5.3	1.2	1.7	16	3.6	5.1	3.1	0.08
LMCF02B-HCO	13.8	3.1	2.1	41.8	9.4	6.3	6.7	0.17
LMCF04B-HCO	27.8	6.2	2.1	83.3	18.7	6.3	13.2	0.34
(4) LMCF02C-HCO	29	6.5	1.9	86.8	19.5	5.7	15.2	0.39
(4) LMCF04C-HCO	58	13	1.9	173	39	5.7	30.4	0.77
(4) LMCF06C-HCO	87	19.5	1.9	260	58	5.7	45.6	1.16
(4) LMCF08C-HCO	116	26	1.9	347	78	5.7	60.9	1.55
LMCF02D-HCO	36.8	8.3	1.5	110	24	4.4	24.8	0.63
LMCF04D-HCO	73.6	16.5	1.5	220	49	4.4	49.6	1.26
LMCF06D-HCO	110	24.8	1.5	330	74	4.4	74.4	1.89
LMCF08D-HCO	147	33	1.5	440	99	4.4	99.3	2.52
LMCF10D-HCO	184	41.3	3.0	550	123	8.9	61.8	1.57
LMCF12D-HCO	220	49.6	3.0	660	148	8.9	74.2	1.88
(4) LMCF04E-HCO	124	28	1.6	372	84	4.7	79.9	2.03
(4) LMCF06E-HCO	185	42	3.1	556	125	9.2	59.7	1.52
(4) LMCF08E-HCO	251	56	3.1	753	169	9.2	82.0	2.08
(4) LMCF10E-HCO	314	70	3.1	942	212	9.2	102.5	2.60
(4) LMCF12E-HCO	377	85	3.1	1132	254	9.2	123.0	3.12
(4) LMCF14E-HCO	440	99	3.1	1318	294	9.2	143.5	3.64
(4) LMCF04F-HCO	191	43	2.6	578	130	7.8	74.4	1.89
(4) LMCF08F-HCO	387	87	2.6	1152	256	7.8	148.4	3.78
(4) LMCF12F-HCO	578	130	3.9	1726	338	11.6	148.4	3.77
(4) LMCF16F-HCO	771	173	5.2	2300	517	15.6	148.0	3.76

Notes: All specifications are for reference only.

Technical data at 75°C rise over 25°C ambient.

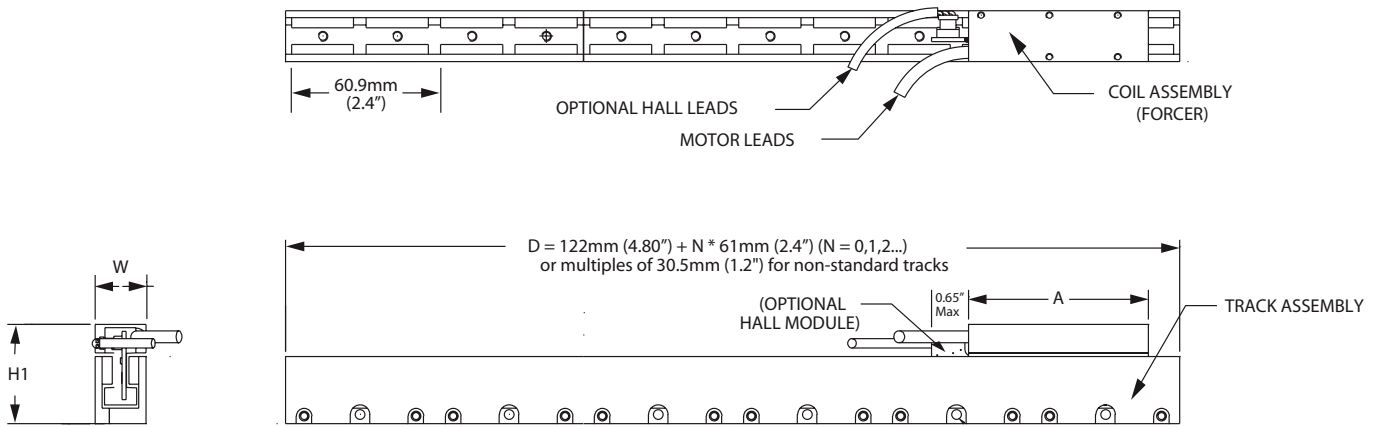
(1) Addition of 254 x 254 x 25.4 mm [10 x 10 x 1 in] aluminum heat sink increases continuous force capability by 20% (along with 20% more current).

(2) Addition of forced air cooling increases continuous force 12% (and 12% more current).

(3) Liquid cooling option increases continuous forces by 25% and power dissipation by 50%. Available only on motors with D, E and F "size codes."

(4) Standard Motor

Cog-free Brushless Motors Dimensions



Track assemblies can be stacked for additional stroke lengths.

Forcer/Primary (Coil Assembly) - LMCF

Catalog Number	A		W		H1		Weight	
	mm	in	mm	in	mm	in	Kg	Lbs
Size A								
LMCF02A-HCO	73.7	2.90	20.8	0.82	40.64	1.60	0.08	0.17
Size B								
LMCF02B-HCO	73.7	2.90	20.83	0.82	53.59	2.11	0.11	0.25
LMCF04B-HCO	134.6	5.30	20.83	0.82	53.59	2.11	0.22	0.49
Size C								
LMCF02C-HCO	73.7	2.90	30.48	1.20	57.15	2.25	0.18	0.39
LMCF04C-HCO	134.6	5.30	30.48	1.20	57.15	2.25	0.32	0.70
LMCF06C-HCO	195.6	7.70	30.48	1.20	57.15	2.25	0.57	1.25
LMCF08C-HCO	256.5	10.10	30.48	1.20	57.15	2.25	0.75	1.64
Size D								
LMCF02D-HCO	73.7	2.90	34.29	1.35	86.31	3.40	0.35	0.76
LMCF04D-HCO	134.6	5.30	34.29	1.35	86.31	3.40	0.6	1.4
LMCF06D-HCO	195.6	7.70	34.29	1.35	86.31	3.40	0.9	2.0
LMCF08D-HCO	256.5	10.10	34.29	1.35	86.31	3.40	1.2	2.6
LMCF10D-HCO	317.5	12.50	34.29	1.35	86.31	3.40	1.5	3.2
LMCF12D-HCO	378.5	14.90	34.29	1.35	86.31	3.40	1.8	3.9
Size E								
LMCF04E-HCO	134.6	5.30	39.37	1.55	114.3	4.50	0.77	1.7
LMCF06E-HCO	195.6	7.70	39.37	1.55	114.3	4.50	1.1	2.5
LMCF08E-HCO	256.5	10.10	39.37	1.55	114.3	4.50	1.5	3.2
LMCF10E-HCO	317.5	12.50	39.37	1.55	114.3	4.50	1.8	4.0
LMCF12E-HCO	378.5	14.90	39.37	1.55	114.3	4.50	2.2	4.8
LMCF14E-HCO	439.4	17.30	39.37	1.55	114.3	4.50	2.5	5.6
Size F								
LMCF04F-HCO	156.2	5.30	44.0	1.73	152.4	6.00	1.65	3.6
LMCF08F-HCO	256.5	10.10	44.0	1.73	152.4	6.00	3.1	6.8
LMCF12F-HCO	378.5	14.90	44.0	1.73	152.4	6.00	4.5	9.9

Secondary (Track) - LTCF

Standard cog-free tracks include:	
610 mm (24inch)	1036 mm (40.8 inch)
LTCF-C24	LTCF-C40
LTCF-E24	LTCF-E40
LTCF-F24	LTCF-F40

Other track lengths are available as custom

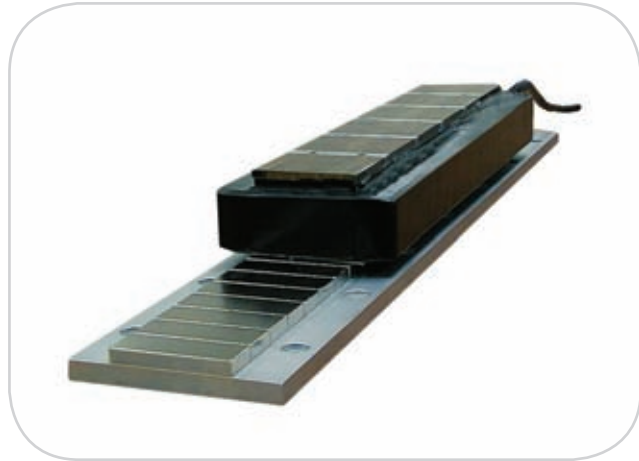
Catalog Number	D	
	mm	in
LTCF-X04	122	4.8
LTCF-X07	183	7.2
LTCF-X09	244	9.6
LTCF-X12	305	12.0
LTCF-X24	610	24.0
LTCF-X40	1036	40.8

Catalog Number	Weight	
	Kg/m	Lb/in
LTCF-AXX	3.6	0.20
LTCF-BXX	5.5	0.31
LTCF-CXX	8.1	0.45
LTCF-DXX	11.6	0.65
LTCF-EXX	17.2	0.96
LTCF-FXX	34	1.90

NOTE: Min track length recommended = "A" dimension + 0.65 inch [1.65mm] + stroke [min 3 inch (76.2mm)]

Iron Core Brushless Servo Motor

- › Standard and custom magnetic track lengths
- › High peak force to 13813 N [3105 Lbs]
- › High continuous force to 5179 N [1164 Lbs]
- › High acceleration to over 10 g's
- › High speed to 8 m/s [320 in/sec] with encoder resolution ≥ 1 micron
- › High speed to 4 m/s [160 in/sec] with encoder resolution ≥ 1 micron
- › High accuracy ± 0.0001 2.5 μ m/300mm [in/ft] encoder dependent
- › High repeatability $\pm 1\mu$ m [0.00004 in] encoder dependent
- › Unlimited travel stroke length
- › Payloads to 100 Kg (220 Lbs)
- › Multiple coil independent operation with overlapping trajectories
- › Non-contact, virtually maintenance free



Linear Iron Core Brushless Servo Motors are designed for unlimited travel stroke positioning applications with high thrust force, high speed and acceleration, with optimal static and dynamic performance. The motors are designed to integrate easily with equipment, providing closed-loop servo with a high degree of positioning accuracy and repeatability.

Linear iron core brushless servomotors consist of a magnet track and a coil assembly supported by customer-supplied bearing system. For higher continuous forces, air and water cooling options are available.

The magnet track is comprised of multi-pole alternating polarity permanent magnets bonded on a nickel cold-rolled steel plate. The coil assembly consists of a high magnetic property

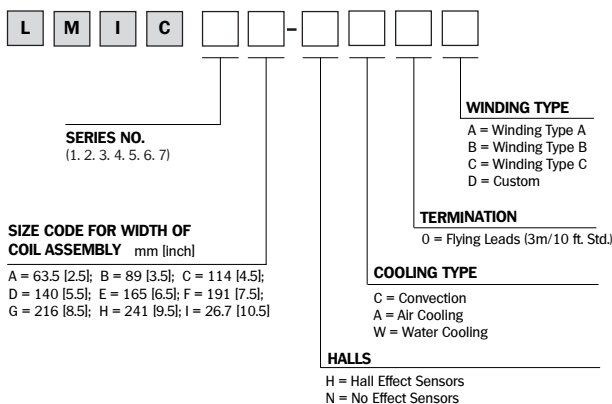
laminated steel assembly encapsulated in thermally conductive epoxy. Hall effect sensors are used to provide feedback. Custom designs with other sensors are also available.

The motors can be controlled from any of Baldor's 3 phase brushless drive family, including MicroFlex, FlexDrive-II, Flex+Drive-II and MintDrive-II. The motors are also compatible with the NextMove range of motion controllers for multi-axis position control.

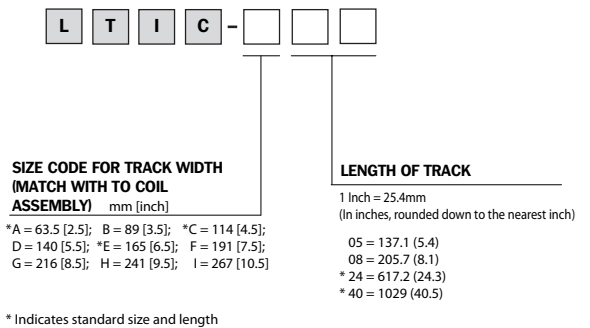
Baldor provides standard magnetic track lengths to optimize pricing for customers. These standard tracks include: LTIC-A24, LTIC-C24, LTIC-E24; and LTIC-A40, LTIC-C40, LTIC-E40. Other track lengths are available as custom.

› Ordering Information

Primary (Forcer)



Secondary (Magnet Track)



Iron Core Brushless Technical Data

› Technical Data

Catalog Number	Continuous Force (1) - (2) - (3)		Continuous Current	Peak Force @ 10% Duty		Peak Current @ 10% Duty	Attractive Force		Back-EMF Constant K_{emf} (ph-ph)	
	N	Lbs	Amps	N	Lbs	Amps	N	Lbs	V/m/sec	V/in/sec
(4) LMIC1A-S-HCOA	80	18	4	213	48	12	894	201	20	0.5
(4) LMIC1A-S-HCOB	80	18	8	213	48	24	894	201	10	0.25
(4) LMIC1C-S-HCOA	244	55	4	654	147	12	2682	603	61	1.6
(4) LMIC1C-S-HCOB	244	55	8	654	147	24	2682	603	30.5	0.8
LMIC2B-S-HCOA	329	74	4	877	194	12	3579	804	82	2.1
LMIC2B-S-HCOB	329	74	8	877	197	24	3579	804	41	1.0
(4) LMIC2C-S-HCOA	489	110	4	1305	293	12	5364	1206	122	3.1
(4) LMIC2C-S-HCOB	489	110	8	1305	293	24	5364	1206	61	1.6
(4) LMIC2E-S-HCOA	818	184	4	2183	490	12	8941	2010	205	5.2
(4) LMIC2E-S-HCOB	818	184	8	2183	490	24	8941	2010	102	2.6
LMIC3D-S-HCOA	983	221	4	2622	589	12	10729	2412	246	6.2
LMIC3D-S-HCOB	983	221	8	2622	589	24	10729	2412	123	3.1
LMIC3D-S-HCOC	983	221	16	2622	589	48	10729	2412	61	1.6
(4) LMIC3E-S-HCOA	1232	277	4	3286	739	12	13411	3015	308	7.8
(4) LMIC3E-S-HCOB	1232	277	8	3286	739	24	13411	3015	154	3.9
(4) LMIC3E-S-HCOC	1232	277	16	3286	739	48	13411	3015	77	2.0
(4) LMIC4E-S-HCOA	1641	369	4	4377	984	12	17882	4020	410	10.4
(4) LMIC4E-S-HCOB	1641	369	8	4377	984	24	17882	4020	205	5.2
(4) LMIC4E-S-HCOC	1641	369	16	4377	984	48	17882	4020	102	2.6
LMIC5F-S-HCOA	2465	554	4	6574	1478	12	26823	6030	616	15.6
LMIC5F-S-HCOB	2465	554	8	6574	1478	24	26823	6030	308	7.8
LMIC5F-S-HCOC	2465	554	16	6574	1478	48	26823	6030	154	3.9
LMIC6G-S-HCOA	3451	776	4	9203	2069	12	37552	8442	864	21.9
LMIC6G-S-HCOB	3451	776	8	9203	2069	24	37552	8442	432	12.0
LMIC6G-S-HCOC	3451	776	16	9203	2069	48	37552	8442	216	6.0
LMIC6I-S-HCOA	4439	998	4	11838	2661	12	48281	10854	1100	28.2
LMIC6I-S-HCOB	4439	998	8	11838	2661	24	48281	10854	555	14.1
LMIC6I-S-HCOC	4439	998	16	11838	2661	48	48281	10854	277	7.0
LMIC7I-S-HCOA	5179	1164	4	13813	3105	12	56326	12663	1294	32.9
LMIC7I-S-HCOB	5179	1164	8	13813	3105	24	56326	12663	647	16.4
LMIC7I-S-HCOC	5179	1164	16	13813	3105	48	56326	12663	324	8.2

Notes: All specifications are for reference only.

Technical data at 75°C rise over 25°C ambient.

(1) Addition of 254 x 254 x 25.4 mm [10 x 10 x 1 in] aluminum heat sink increases continuous force capability by 20% (along with 20% more current).

(2) Addition of forced air cooling increases continuous force 12% (and 12% more current).

(3) Liquid cooling option increases continuous forces by 25% and power dissipation by 50%. Available only on motors with D, E and F "size codes."

(4) Standard Motor

Iron Core Brushless Motor Performance Curves

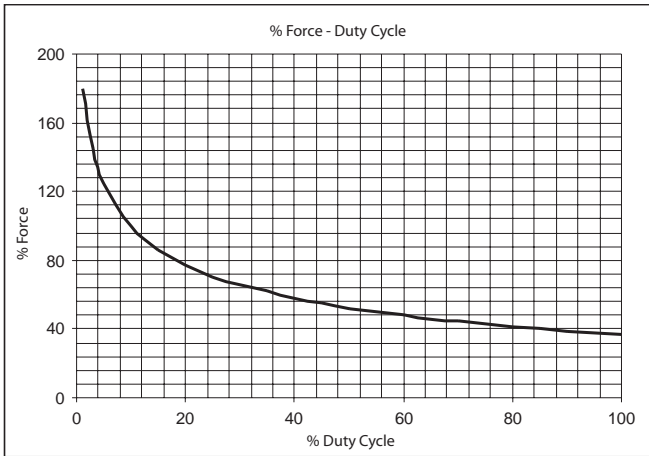


Figure 1: % Force versus % Duty Cycle

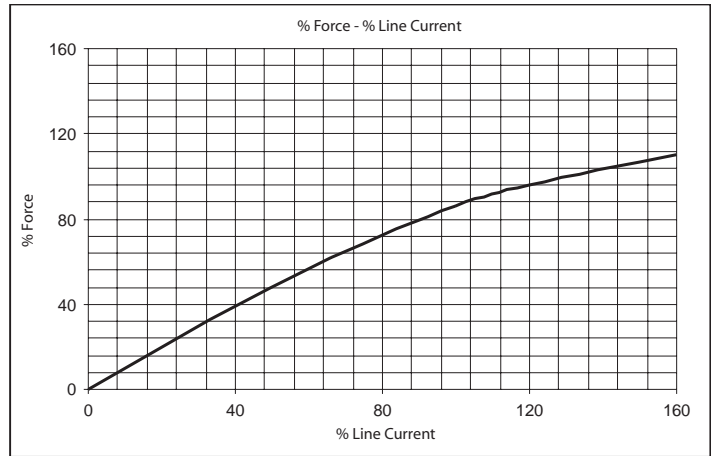


Figure 2: % Force versus % Line Current

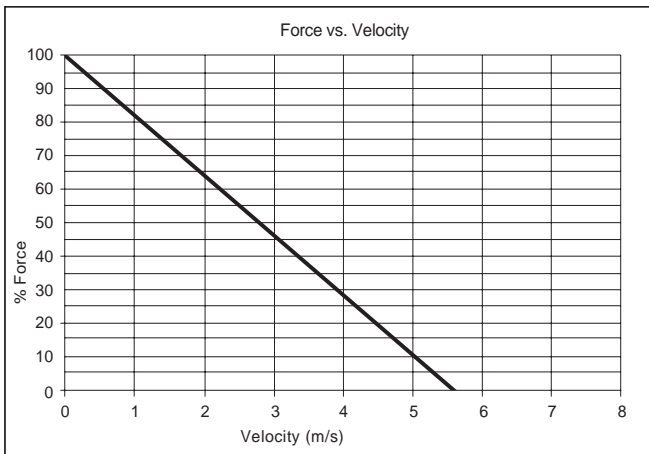


Figure 3: % Output Force versus Velocity

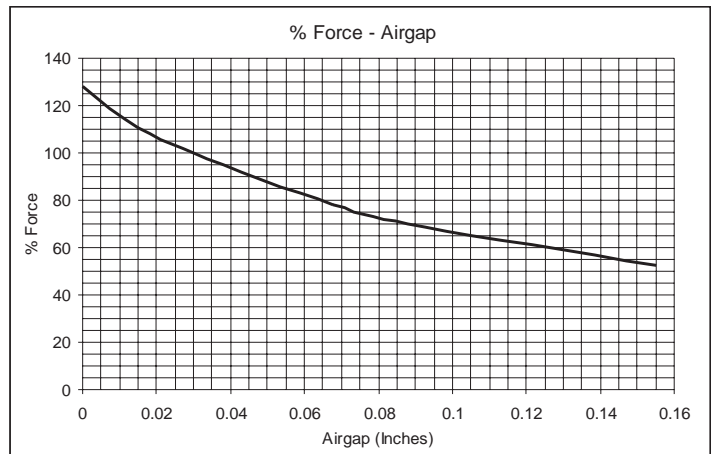
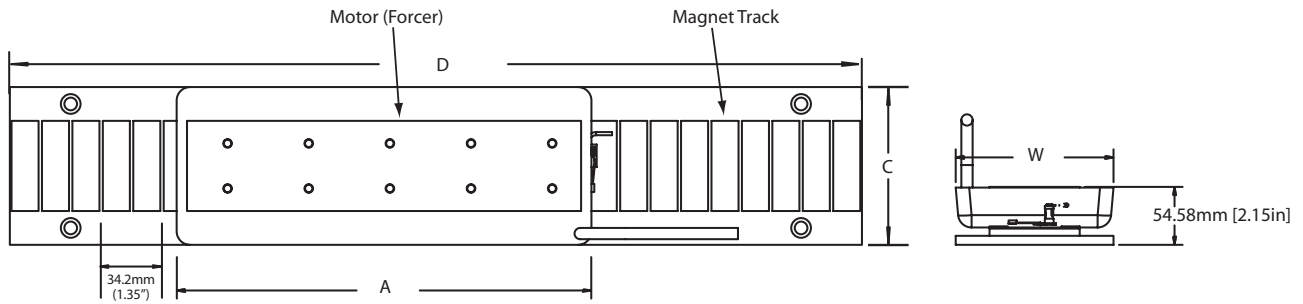


Figure 4: % Output Force versus Airgap

Iron Core Brushless Motor Dimensions



Track assemblies can be stacked for longer stroke lengths

Secondary (Magnetic Track) - LTIC

Standard tracks include:	
617 mm (24.3 inch)	1029 mm (40.5 inch)
LTIC-A24	LTIC-A40
LTIC-C24	LTIC-A40
LTIC-E24	LTIC-E40
Other tracks available as custom	

Forcer/Primary (Coil Assembly)

Catalog Number	A		W		Weight	
	mm	in	mm	in	Kg	lbs
LMIC1A-S-HCOx	162.6	6.4	63.5	2.5	1.2	2.7
LMIC1C-S-HCOx	162.6	6.4	114	4.5	3.4	7.4
LMIC2B-S-HCOx	299.7	11.8	89	3.5	4.5	10.0
LMIC2C-S-HCOx	299.7	11.8	114	4.5	6.7	14.7
LMIC2E-S-HCOx	299.7	11.8	165	6.5	11.2	24.7
LMIC3D-S-HCOx	436.9	17.2	140	5.5	13.6	30
LMIC3E-S-HCOx	436.9	17.2	165	6.5	16.8	37
LMIC4E-S-HCOxx	574.0	22.6	165	6.5	22.4	49
LMIC5F-S-HCOx	711.2	28.0	191	7.5	33.3	73
LMIC6G-S-HCOx	848.4	33.4	267	10.5	46.8	103
LMIC7I-S-HCOx	985.2	38.8	267	10.5	72	158

Catalog Number	C		D	
	mm	in	mm	in
LTIC-A05	63.5	2.5	137.2	5.4
LTIC-A08	63.5	2.5	205.7	8.1
LTIC-A13	63.5	2.5	343.0	13.5
LTIC-A24	63.5	2.4	617.2	24.3
LTIC-A40	63.5	2.4	1010.9	39.8
LTIC-B05	89	3.5	137.2	5.4
LTIC-B08	89	3.5	205.7	8.1
LTIC-B13	89	3.5	343.0	13.5
LTIC-C05	114	4.5	137.2	5.4
LTIC-C08	114	4.5	205.7	8.1
LTIC-C13	114	4.5	343.0	13.5
LTIC-C24	114	4.5	617.2	24.3
LTIC-C40	114	4.5	1010.9	39.8
LTIC-D05	140	5.5	137.2	5.4
LTIC-D08	140	5.5	205.7	8.1
LTIC-D13	140	5.5	343.0	13.5
LTIC-E05	165	6.5	137.2	5.4
LTIC-E08	165	6.5	205.7	8.1
LTIC-E13	165	6.5	343.0	13.5
LTIC-E24	165	6.5	617.2	24.3
LTIC-E40	165	6.5	1010.9	39.8
LTIC-F05	191	7.5	137.2	5.4
LTIC-F08	191	7.5	205.7	8.1
LTIC-F13	191	7.5	343.0	13.5
LTIC-G08	216	8.5	205.7	8.1
LTIC-G13	216	8.5	343.0	13.5
LTIC-H08	241	9.5	205.7	8.1
LTIC-H13	241	9.5	343.0	13.5
LTIC-I08	267	10.5	205.7	8.1
LTIC-I13	267	10.5	343.0	13.5

Secondary (Magnetic Track)

Catalog Number	Weight	
	Kg/m	lb/in
LTIC-AXX	6.3	0.4
LTIC-BXX	10.7	0.6
LTIC-CXX	15.2	0.9
LTIC-DXX	18.8	1.1
LTIC-EXX	22.4	1.3
LTIC-FXX	26	1.5
LTIC-GXX	30.4	1.7
LTIC-HXX	36.7	2.1
LTIC-IXX	43	2.4

NOTE: A lower profile motor is also available. Please contact Baldor for details.

NOTE: Min track length recommended = "A" Dimension + Stroke [min 2 inches (50.8 mm)]