LMFA52L Linear Motor

Electrical specifications

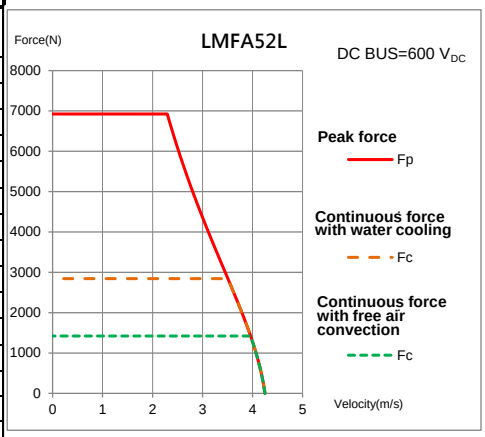
	Symbol	Unit	Free air convection	Water cooling
Continuous force	F_c	N	1422	2844
Continuous current	I_c	A_{rms}	9.1	18.3
Stall force	F_0	N	-	1991
Stall current	I_0	A_{rms}	-	12.8
Peak force (1s)	F_p	N	6925	
Peak current (1s)	I_p	A_{rms}	56.6	
Force constant	K_f	N/A_{rms}	155.7	
Attraction force	F_a	N	13700	
Max. winding tempurature	T_{max}	℃	120	
Electrical time constant	K_e	ms	12.4	
Resistance (line to line · 25℃)	R_{25}	Ω	1.8	
Resistance (line to line · 120℃)	R_{120}	Ω	2.3	
Inductance (line to line)	L	mH	21.9	
Pole pair pitch	2τ	mm	46	
Back emf constant(line to line)	K_v	$V_{rms}/(m/s)$	89.9	
Motor constant (25℃)	K_m	$N/\sqrt{W}$	95.6	
Thermal resistance	R_{th}	℃/W	0.33	0.08
Thermal time constant	t_{th}	s	-	150
Thermal switch			1 x Pt1000 + 1 x (3 PTC SNM 120 In Series)	
Maximum velocity at maximum force	$V_{MAX,FP}$	m/s	3.04	
Maximum electric power input	$P_{EL,MAX}$	W	-	32267
Maximum dissipated heat output	$Q_{P,H,MAX}$	W	-	1167
Max. DC bus voltage		V_{DC}	750	

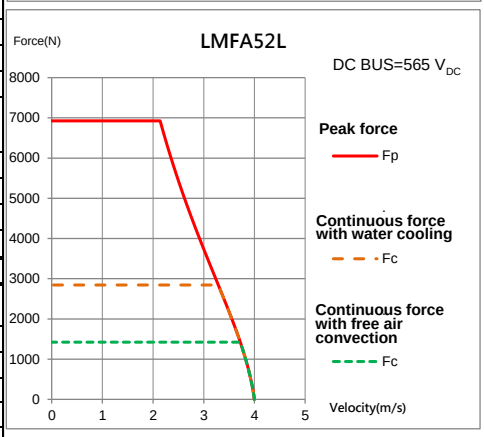
Mechanical specifications

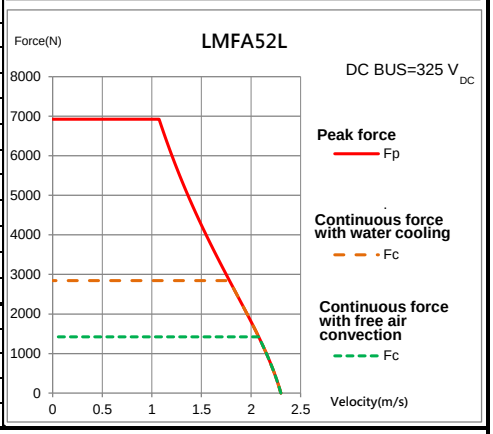
	Symbol	Unit	Free air convection	Water cooling
Mass of forcer	M_f	kg	23.8	
Unit mass of stator	M_S	kg	25	
Total installation height	H	mm	64.1	
Minimum flow rate		L/min	-	6.3
Temperature of cooling water		℃	-	20
Pressure drop	△P	bar	-	1.25
Water temperture difference	$\triangle\theta_{P,H}$	K	-	2.6
Forcer precision cooler				
Maximum dissipated thermal output	$Q_{FC,Max}$	W	-	132
Pressure drop	$\triangle P_{FC}$	bar	-	5.44
Stator precision cooler				
Maximum dissipated thermal output	$Q_{SC,Max}$	W	-	397
Pressure drop per meter of cooling pipe	$\triangle P_S$	bar	-	0.07
Pressure drop per combi distributor	$\triangle P_{Sd}$	bar	-	0.2
Pressure drop per coupling point	$\triangle P_{SP}$	bar	-	0.09

Lf	mm	375	Wf3	mm	231.5
Lf1	mm	241.5	Wf4	mm	181
Wf	mm	248	Wf5	mm	124
Wf1	mm	44	N	mm	3
Wf2	mm	160	n	mm	4

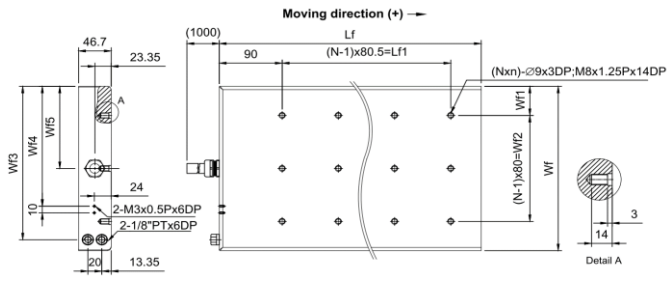
F-V curve



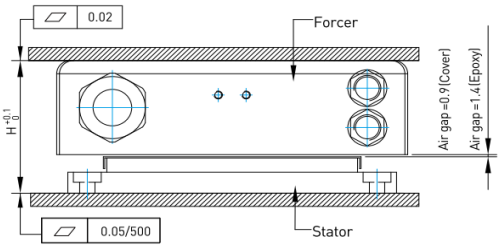




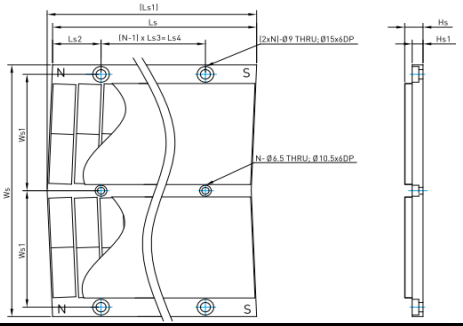
Focer dimensions



Mounting tolerance



Stator dimensions



Type	Ls	Ls1	Ls2	Ls3	Ls4	Hs	Hs1	Ws	Ws1	N
LMF5S1E	184	188.89	43.7	92	92	16	9.8	240	111	2
LMF5S2E	276	280.89	43.7	92	184	16	9.8	240	111	3
LMF5S3E	460	464.89	43.7	92	368	16	9.8	240	111	5

Except dimensions, all the specifications in the table are in ±10% of tolerance

Version: 2.00

Date: 2020/5/8