

LMFA01 Linear Motor

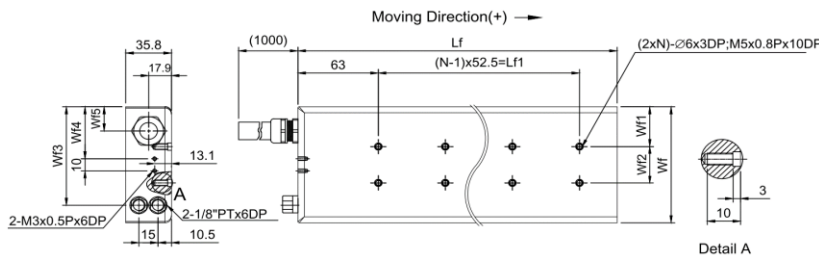
Electrical specifications

	Symbol	Unit	Free air convection	Water cooling
Continuous force	F_c	N	74	149
Continuous current	I_c	A_{rms}	1.4	2.7
Stall force	F_0	N	-	104
Stall current	I_0	A_{rms}	-	1.9
Peak force (1s)	F_p	N	-	282
Peak current (1s)	I_p	A_{rms}	-	8.4
Force constant	K_f	N/A_{rms}	-	55.1
Attraction force	F_a	N	-	457
Max. winding temperature	T_{max}	$^{\circ}C$	-	120
Electrical time constant	K_e	ms	-	7.2
Resistance (line to line · 25 $^{\circ}C$)	R_{25}	Ω	-	11.7
Resistance (line to line · 120 $^{\circ}C$)	R_{120}	Ω	-	15.4
Inductance (line to line)	L	mH	-	84.2
Pole pair pitch	2τ	mm	-	30
Back emf constant(line to line)	K_v	$V_{rms}/(m/s)$	-	31.8
Motor constant (25 $^{\circ}C$)	K_m	N/\sqrt{W}	-	13.1
Thermal resistance	R_{th}	$^{\circ}C/W$	2.25	0.56
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	-	5.39
Maximum electric power input	$P_{EL,MAX}$	W	-	3140
Maximum dissipated heat output	$Q_{P,H,MAX}$	W	-	169
Max. DC bus voltage		V_{DC}	-	750

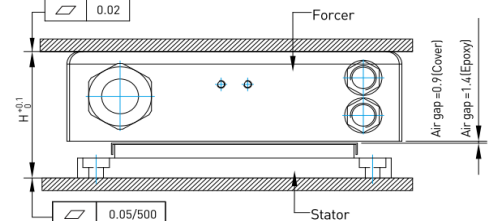
Mechanical specifications

	Symbol	Unit	Free air convection	Water cooling	
Mass offorcer	M_f	kg	-	1.5	
Unit mass of stator	M_s	kg	-	3.7	
Total installation height	H	mm	-	48.5	
Minimum flow rate		L/min	-	3.3	
Temperature of cooling water		$^{\circ}C$	-	20	
Pressure drop	ΔP	bar	-	0.54	
Water temperature difference	$\Delta\theta_{P,H}$	K	-	0.7	
L_f	mm	145	$Wf3$	mm	55
L_{f1}	mm	52.5	$Wf4$	mm	33.75
W_f	mm	67	$Wf5$	mm	14.4
$Wf1$	mm	18.5	N	mm	2
$Wf2$	mm	30	n	mm	-

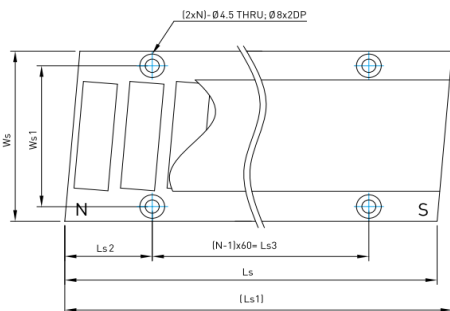
Forcer dimensions



Mounting tolerance



Stator dimensions



Type	L_s	L_{s1}	L_{s2}	L_{s3}	H_s	H_{s1}	W_s	W_{s1}	N
LMF0S1	120	124.87	31.25	60	11.8	5.9	58	48	2
LMF0S1E	120	124.87	31.25	60	11.3	5.7	58	48	2
LMF0S2	180	184.87	31.25	120	11.8	5.9	58	48	3
LMF0S2E	180	184.87	31.25	120	11.3	5.7	58	48	3
LMF0S3	300	304.87	31.25	240	11.8	5.9	58	48	5
LMF0S3E	300	304.87	31.25	240	11.3	5.7	58	48	5

Except dimensions, all the specifications in the table are in $\pm 10\%$ of tolerance

Version: 2.00

Date: 2020/5/8