

# LMFA44L Linear Motor

## Electrical specifications

	Symbol	Unit	Free air convection	Water cooling
Continuous force	$F_c$	N	1979	3958
Continuous current	$I_c$	$A_{rms}$	17	34.1
Stall force	$F_0$	N	-	2771
Stall current	$I_0$	$A_{rms}$	-	23.9
Peak force (1s)	$F_p$	N	-	10413
Peak current (1s)	$I_p$	$A_{rms}$	-	105.7
Force constant	$K_f$	$N/A_{rms}$	-	116.1
Attraction force	$F_a$	N	-	20580
Max. winding temperature	$T_{max}$	$^{\circ}C$	-	120
Electrical time constant	$K_e$	ms	-	12.1
Resistance (line to line · 25 $^{\circ}C$ )	$R_{25}$	$\Omega$	-	0.7
Resistance (line to line · 120 $^{\circ}C$ )	$R_{120}$	$\Omega$	-	0.9
Inductance (line to line)	$L$	mH	-	8.3
Pole pair pitch	$2\tau$	mm	-	46
Back emf constant(line to line)	$K_v$	$V_{rms}/(m/s)$	-	67
Motor constant (25 $^{\circ}C$ )	$K_m$	$N/\sqrt{W}$	-	114.9
Thermal resistance	$R_{th}$	$^{\circ}C/W$	0.24	0.06
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	-	4.01
Maximum electric power input	$P_{EL,MAX}$	W	-	56792
Maximum dissipated heat output	$Q_{P,H,MAX}$	W	-	1565
Max. DC bus voltage	$V_{DC}$	V	-	750

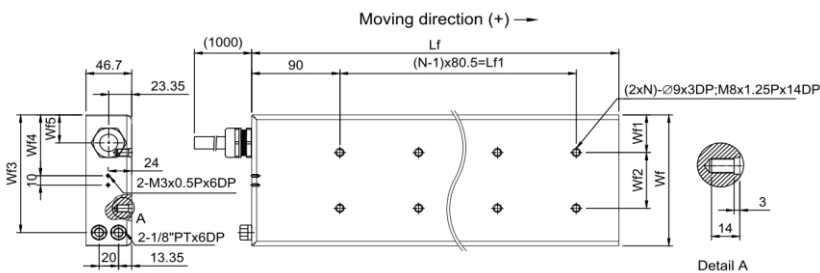
## Mechanical specifications

	Symbol	Unit	Free air convection	Water cooling
Mass offorcer	$M_f$	kg	-	29
Unit mass of stator	$M_s$	kg	-	22.3
Total installation height	$H$	mm	-	66.1
Minimum flow rate		L/min	-	6.2
Temperature of cooling water		$^{\circ}C$	-	20
Pressure drop	$\Delta P$	bar	-	1.8
Water temperture difference	$\Delta\theta_{P,H}$	K	-	3.6
<b>Forcer precision cooler</b>				
Maximum dissipated thermal output	$Q_{FC,Max}$	W	-	130
Pressure drop	$\Delta P_{FC}$	bar	-	1.58
<b>Stator precision cooler</b>				
Maximum dissipated thermal output	$Q_{SC,Max}$	W	-	390
Pressure drop per meter of cooling pipe	$\Delta P_s$	bar	-	0.16
Pressure drop per combi distributor	$\Delta P_{sd}$	bar	-	0.85
Pressure drop per coupling point	$\Delta P_{sp}$	bar	-	0.17

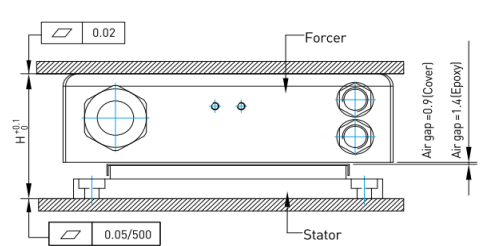
  

Lf	mm	697	Wf3	mm	173.5
Lf1	mm	563.5	Wf4	mm	89
Wf	mm	188	Wf5	mm	30
Wf1	mm	54	N	mm	8
Wf2	mm	80	n	mm	-

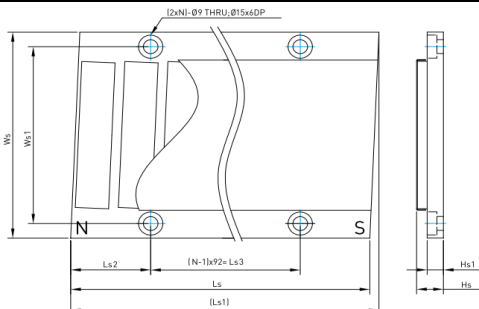
## Forcer dimensions



## Mounting tolerance



## Stator dimensions



Type	Ls	Ls1	Ls2	Ls3	Ls4	Hs	Hs1	Ws	Ws1	N
LMF4S1	184	189.03	48.9	92	18.5	12	180	161	2	
LMF4S1E	184	189.03	48.9	92	18	11.8	180	161	2	
LMF4S2	276	281.03	48.9	184	18.5	12	180	161	3	
LMF4S2E	276	281.03	48.9	184	18	11.8	180	161	3	
LMF4S3	460	465.03	48.9	368	18.5	12	180	161	5	
LMF4S3E	460	465.03	48.9	368	18	11.8	180	161	5	

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

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