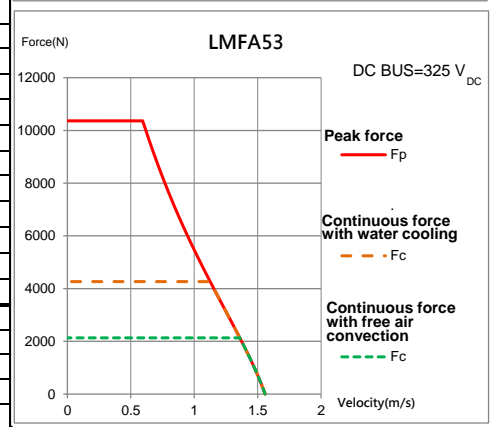
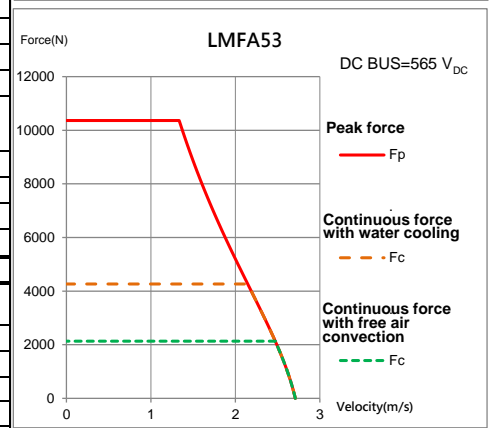
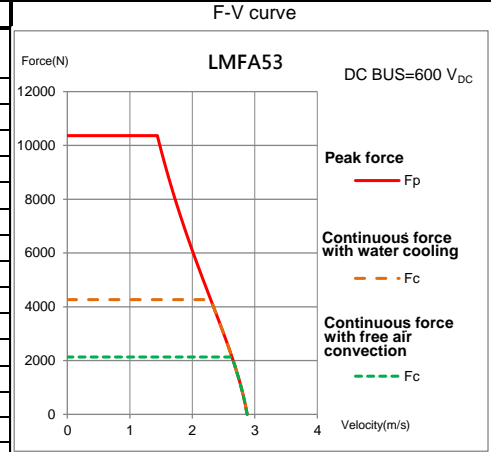


LMFA53 Linear Motor

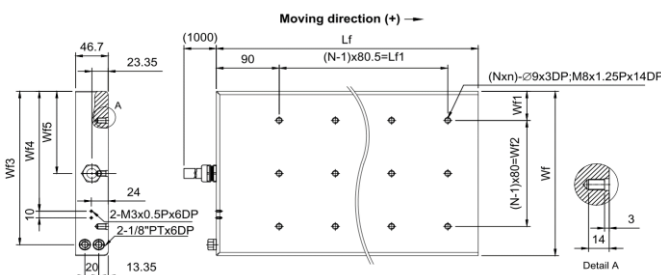
Electrical specifications				
	Symbol	Unit	Free air convection	Water cooling
Continuous force	F_c	N	2133	4266
Continuous current	I_c	A_{rms}	9.3	18.6
Stall force	F_0	N	-	2986
Stall current	I_0	A_{rms}	-	13
Peak force (1s)	F_p	N	-	10388
Peak current (1s)	I_p	A_{rms}	-	57.5
Force constant	K_f	N/A_{rms}	-	229.9
Attraction force	F_a	N	-	20550
Max. winding temperature	T_{max}	$^{\circ}C$	-	120
Electrical time constant	K_e	ms	-	12.2
Resistance (line to line · 25 $^{\circ}C$)	R_{25}	Ω	-	2.6
Resistance (line to line · 120 $^{\circ}C$)	R_{120}	Ω	-	3.4
Inductance (line to line)	L	mH	-	31.8
Pole pair pitch	2τ	mm	-	46
Back emf constant(line to line)	K_v	$V_{rms}/(m/s)$	-	132.7
Motor constant (25 $^{\circ}C$)	K_m	N/\sqrt{W}	-	116.4
Thermal resistance	R_{th}	$^{\circ}C/W$	0.21	0.05
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	-	1.92
Maximum electric power input	$P_{EL,MAX}$	W	-	36967
Maximum dissipated heat output	$Q_{P,H,MAX}$	W	-	1771
Max. DC bus voltage	V_{DC}	V	-	750

Mechanical specifications				
	Symbol	Unit	Free air convection	Water cooling
Mass of forcer	M_f	kg	-	32.3
Unit mass of stator	M_s	kg	-	25
Total installation height	H	mm	-	64.1
Minimum flow rate		L/min	-	6.8
Temperature of cooling water		$^{\circ}C$	-	20
Pressure drop	ΔP	bar	-	1.77
Water temperature difference	$\Delta\theta_{P,H}$	K	-	3.7
Forcer precision cooler				
Maximum dissipated thermal output	$Q_{FC,Max}$	W	-	143
Pressure drop	ΔP_{FC}	bar	-	6.15
Stator precision cooler				
Maximum dissipated thermal output	$Q_{SC,Max}$	W	-	428
Pressure drop per meter of cooling pipe	ΔP_s	bar	-	0.07
Pressure drop per combi distributor	ΔP_{sd}	bar	-	0.2
Pressure drop per coupling point	ΔP_{sp}	bar	-	0.09

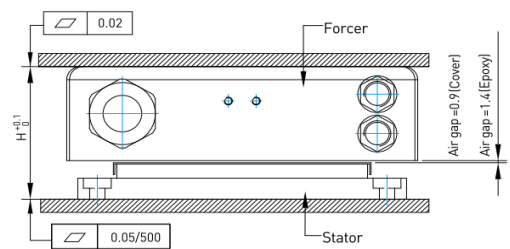
Lf	mm	536	Wf3	mm	231.5
Lf1	mm	402.5	Wf4	mm	181
Wf	mm	248	Wf5	mm	124
Wf1	mm	44	N	mm	3
Wf2	mm	160	n	mm	6



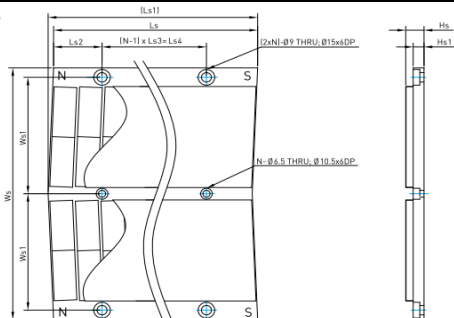
Forcer dimensions



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 $\pm 10\%$ of tolerance

Version: 2.00

Date: 2020/5/8