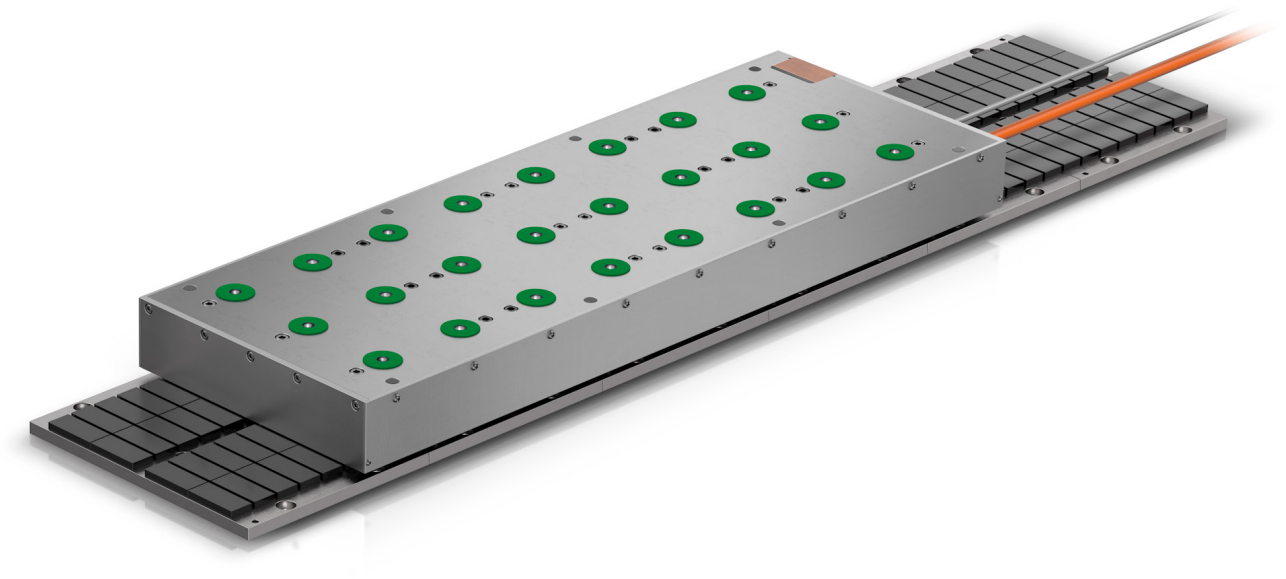
SCHAEFFLER



We pioneer motion

L7-Series
High Efficiency Linear Motors

The L7-series – The benchmark for efficiency and power density

For many years, Schaeffler Industrial Drives has supplied water-cooled, iron core linear motors of L1-series with peak forces of up to 5,171 N. With the new L7-series, we are expanding our range of linear motors with peak forces of up to 24,300 N. This means that Schaeffler linear direct drives can now be used much more widely in handling systems and the main axes of machine tools.

With a very compact cooling system combined with an adapted and optimized coil system, we have been able to achieve a reduction of up to 50 % in the power loss with the same drive force or an increase of up to 40 % in the nominal force compared to the current benchmark.

This allows a significant reduction in the operating costs and a considerable increase in productivity. The L7 motor demonstrates its strengths particularly in the case of oscillating motion where extremely high accelerations are required and the motor is continuously heated: The high acceleration capability reduces the cycle times and the high energy reserves ensure high contour accuracy of the workpiece. Due to the very low power loss, less heat is introduced into the machine bed, which also has a positive effect on the overall accuracy of your machine.

Customer benefits

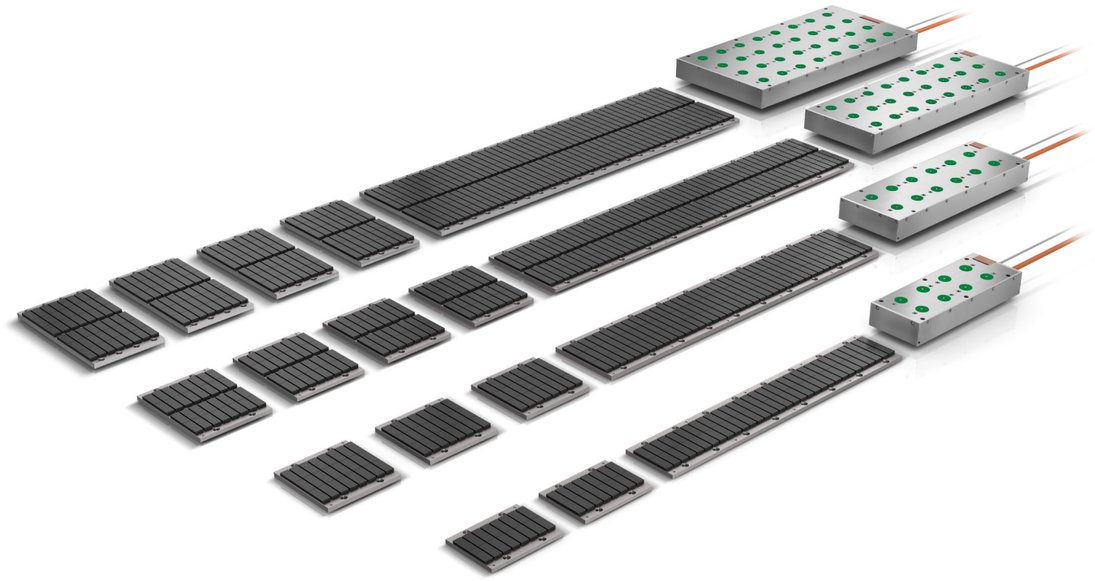
- Higher contour accuracy
- Shorter machining times
- Lower operating costs
- Lower CO_2 emissions
- Higher machine accuracy

Features

- Highly efficient linear motor with water cooling system
- Primary parts available in four widths and three lengths
- Up to 800 V dielectric strength
- Optionally available with encapsulated secondary part

Applications

- Milling machines
- Turning machines
- Laser machining
- Surface grinding machines
- Out-of-round machining
- Oscillation machining



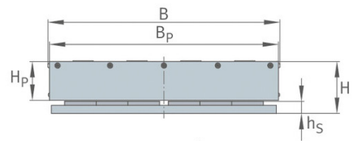
The perfect motor configuration for every task

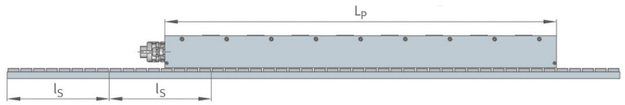
Our L7-series of linear motors comprises twelve motor sizes. These can be divided into the four widths 100, 150, 200, and 300 mm. The widths can be combined with one of the three primary part lengths 350, 500, and 650.

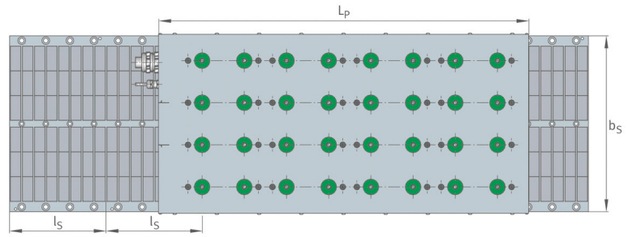
With enormous durability and reliability and energy and resource efficiency, the L7 generation of motors will meet future requirements beyond the existing Ecodesign Directive (2009/125/EG).

Technical data

Size			350-100	500-100	650-100	350-150	500-150	650-150	350-200	500-200	650-200	350-300	500-300	650-300
Winding			**Z1.9H**	**Z2.8H**	**Z2.7H**	**Z1.9H**	**Z2.8H**	**Z2.7H**	**Z2.8H**	**Z2.8H**	**Z3.8H**	**Z2.8H**	**Z2.8H**	**Z3.8H**
Dimensions														
Primary part length	L_P	mm	384	545	706	384	545	706	384	545	706	384	545	706
Primary part width	B_P	mm		140			187			247			340	
Primary part height	H_P	mm		58.5			58.5			58,5			58,5	
Secondary part length	l_S	mm		n x 184			n x 184			n x 184			n x 184	
Secondary part width	b_S	mm		134			180			240			334	
Secondary part height	h_S	mm		16			18			16			18	
System width	B	mm		144.4			191.4			251.4			344.4	
System height	H	mm		76			78			76			78	
Force														
Peak force (saturation range) at I_P	F_P	N	4052	6078	8104	6078	9117	12157	8104	12157	16209	12157	18235	24313
Continuous force (cooled) at I_{CW}	F_{CW}	N	1813	2700	3638	2760	4111	5539	3727	5535	7385	5667	8415	11229
Velocity														
Velocity limit a $I_{p\ eff}$ and U_{DCL} = 600 V	v_{Ip600}	m/s	1.95	1.90	1.40	1.36	1.36	0.98	1.36	0.92	1.20	0.88	0.56	0.76
Velocity limit at $I_{cw\ eff}$ and U_{DCL} = 600 V	v_{Iw600}	m/s	4.53	4.48	3.34	3.08	3.09	2.29	3.11	2.20	2.79	2.04	1.42	1.82
Velocity limit at $I_{p\ eff}$ and U_{DCL} = 300 V	v_{Ip300}	m/s	0.82	0.80	0.54	0.51	0.51	0.30	0.53	0.28	0.44	0.27	0.03	0.20
Velocity limit at $I_{cw\ eff}$ and U_{DCL} = 300 V	v_{Iw300}	m/s	2.08	2.06	1.51	1.38	1.38	0.99	1.40	0.95	1.24	0.88	0.58	0.78
Current														
Peak current (saturation range)	$I_{p\ eff}$	A	52.5	78.7	79.7	52.5	78.7	79.7	72.7	78.7	130.5	72.7	78.7	130.5
Cont. current (cooled)	$I_{cw\ eff}$	A	17.3	25.7	26.3	17.5	26.1	26.7	24.6	26.3	43.7	24.9	26.7	44.3
Power losses														
Power loss at F_{cw}	P_{Iw}	W	1052	1556	2059	1442	2131	2821	1935	2861	3787	2738	4047	5357
Physical constants														
Motor constant (25 °C)	k_m	N/√W	66.1	81.0	94.9	86.0	105.4	123.4	100.3	122.4	142.0	128.2	156.5	181.5
General conditions														
DC link voltage (maximum)	U_{DCL}	V		800			800			800			800	







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