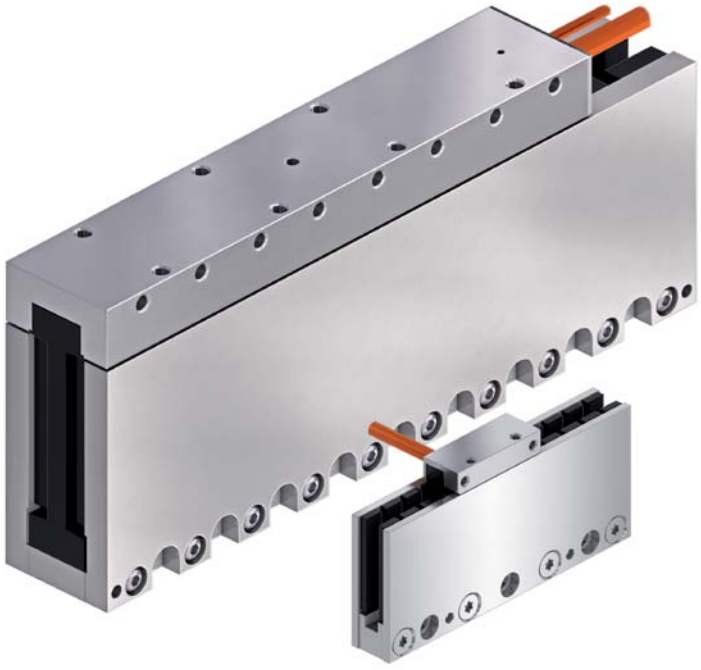
Rexroth
Bosch Group

Motors and gearboxes

Linear motors
MCL dynamic and compact



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Documentation
- Project planning manual

Linear motor without iron core

- Maximum force up to 3.320 N
- Maximum speeds up to 1,400 m/min
- Excellent synchronization, no cogging forces
- Low own weight, high acceleration and dynamics
- Simple integration thanks to various mounting planes

Ironless MCL linear motors position small masses with superior precision and maximum synchronization. Compared to iron core motors, these motors distinguish themselves with the ironless design of the primary part, which contains the fully compound-filled three-phase copper winding. The U-shaped secondary part contains permanent magnets and encloses the primary part. This design means that there is no attraction or cogging force between the primary and secondary part and the force constant is linear.

These aspects, combined with the relatively small mass movement by the primary part, create a high level of dynamics with a very high degree of precision. The compact design provides different mounting planes for mounting primary and secondary parts, providing the highest flexibility in construction design. Optionally, the linear motors also come with a Hall sensor unit to detect the position for the initial commutation.

Typical areas in which ironless linear motors can be used are applications where it is important to move small masses at the maximum possible cycle speed with extremely high precision. That includes pick-and-place machines used in the semiconductor segment as well as those used in general automation processes. The exceptionally high synchronization of the MCL motors also makes them perfect for use in measuring and testing machines.

Technical data

Electrical data

Type	Continuous nominal force	Maximum force	Nominal velocity	Max. velocity with F Max	Ratedcurrent	Maximum current
	F_N	F_{Max}	V_N	$V_{F\,Max}$	I_N	I_{Max}
	[N]	[N]	[m/min]	[m/min]	[A]	[A]
MCP015A-L040	9	36	430	0	1.5	6
MCP015B-L040	18	72	480		3.2	12.8
MCP020B-V180	26	104	560	200	0.8	3.2
MCP020B-V720			1,100	690	1.4	5.6
MCP020C-V180	39	156	550	160	1.2	4.9
MCP020C-V720			1,095	660	2.2	8.8
MCP020D-V180	52	208	620	220	1.7	7
MCP020D-V720			1,410	820	3.2	13
MCP030B-V180	48	192	510	180	1.3	5.2
MCP030B-V390			680	400	1.6	6.4
MCP030C-V180	74	296	460	170	1.8	7.2
MCP030C-V390			630	370	2.4	9.6

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	F_N	F_{Max}	V_N	$V_{F\,Max}$	I_N	I_{Max}
	[N]	[N]	[m/min]	[m/min]	[A]	[A]
MCP030D-V180	105	420	440	180	2.5	10
MCP030D-V390			660	380	3.5	14
MCP040B-V070	73	292	290	80	1.2	4.8
MCP040B-V300			530	290	1.9	7.6
MCP040C-V070	108	432	290	60	1.7	6.8
MCP040C-V300			530	310	2.9	11.6
MCP040E-V070	183	732	280	60		
MCP040E-V300			510	260	4.7	18.8
MCP040G-V070	258	1,032	260	50	3.9	15.6
MCP040G-V300			500	290	6.6	26.4
MCP070C-V050	215	860	180	50	2.2	8.8
MCP070C-V300			470	340	5.1	20.4
MCP070D-V050	286	1,144	180	50	2.8	11.2
MCP070D-V300			460	280	6.4	25.6
MCP070F-V050	428	1,712	210	70	4.6	18.4
MCP070F-V300			460	290	9.2	36.8
MCP070M-V050	830	3,320	200	60	9	36
MCP070M-V230			370	230	15.7	62.8

All specifications are based on operation with 300 V DC bus voltage (with 48 V for MCL015) and an optimum thermal connection.

Dimensions

Type	A	B	C	Weight
	[mm]	[mm]	[mm]	[kg]
MCP015A-L040	51	14.8	34	0.05
MCP015B-L040			67	0.075
MCP020B-V180	52	20.8	127	0.18
MCP020B-V720				0.18
MCP020C-V180			187	0.28
MCP020C-V720				0.28
MCP020D-V180			247	0.38
MCP020D-V720				0.38

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Type	A	B	C	Weight
	[mm]	[mm]	[mm]	[kg]
MCP030B-V180	67	25	127	0.34
MCP030B-V390				0.34
MCP030C-V180			187	0.52
MCP030C-V390				0.52
MCP030D-V180			247	0.7
MCP030D-V390				0.7
MCP040B-V070	86.4	34.3	127	0.56
MCP040B-V300				0.56
MCP040C-V070			187	0.81
MCP040C-V300				0.81
MCP040E-V070			307	1.26
MCP040E-V300				1.26
MCP040G-V070			427	1.71
MCP040G-V300				1.71
MCP070C-V050	124	49.5	187	1.5
MCP070C-V300				1.5
MCP070D-V050			247	1.95
MCP070D-V300				1.95
MCP070F-V050			367	2.85
MCP070F-V300				2.85
MCP070M-V050			727	5.9
MCP070M-V230				5.9

Type	D	Weight
	[mm]	[kg]
MCS015-0066	66	0.2
MCS015-0099	99	0.3
MCS020-0120	120	0.45
MCS020-0180	180	0.67
MCS020-0300	300	1.12
MCS030-0120	120	0.66
MCS030-0180	180	1
MCS030-0300	300	1.64
MCS040-0120	120	1.29
MCS040-0180	180	1.92
MCS040-0300	300	3.22
MCS070-0120	120	2.98
MCS070-0180	180	4.46
MCS070-0300	300	7.44

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It must be remembered that our products are subject to a natural process of wear and aging.