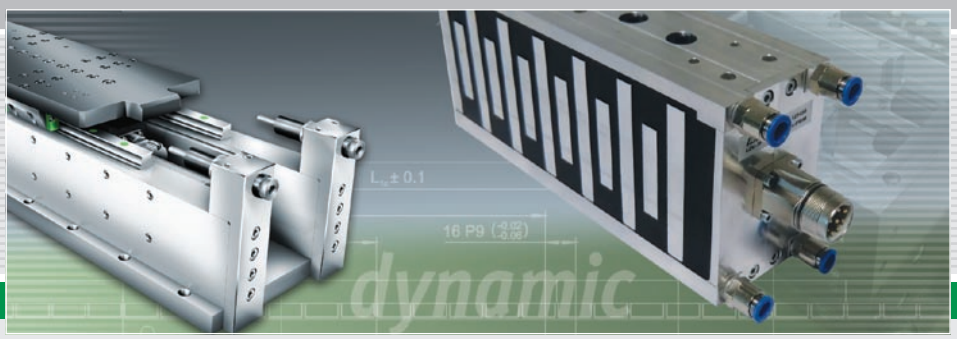
IDAM

INA Drives & Mechatronics



LDDM

Linear Direct Drive Motors

L2U Series

SCHAEFFLER

LuK INA FAG

The Perfect Drive for Every Application.

INA – Drives & Mechatronics GmbH & Co. KG, a member of the Schaeffler Group, is a specialist in linear and rotary direct drives. To complement these products, we also offer directly driven positioning systems and all the necessary controllers and mechatronic assemblies.
In addition to standard products, IDAM also develops and produces customised drive solutions.
In modern machines and equipment, direct drives are increasingly replacing standard drive solutions because of ever-stricter requirements for dynamics, precision and cost-effectiveness.
Directly linking the motor and the moving mass increases the dynamic and static rigidity, enabling high-performance positioning movements.

Direct drives are low wearing. This allows maintenance and operating costs to be reduced whilst also increasing availability.
For more than 20 years, teams at IDAM have been developing and producing direct drives and complex drive systems for the following sectors: machine tools and production machinery, automation, productronics/semicon, measuring technology and medical engineering.
Models and simulations are integrated into the development process for direct drives and positioning systems, making the process more efficient.
IDAM has a cutting-edge quality management system. At IDAM, quality management is a dynamic process that is checked daily and continuously improved. IDAM is certified to DIN EN ISO 9001:2008.

IDAM uses specially developed tools to develop and design the motors, including tools for mechanical and thermal simulation. This produces results that our customers can use to optimise their subsequent designs.

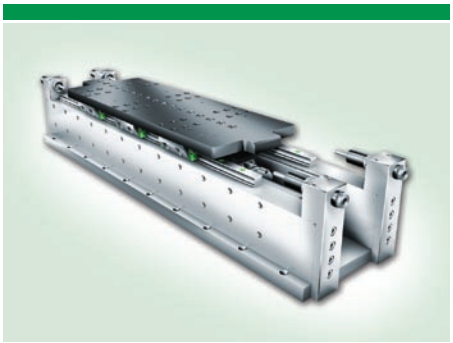
Contents

L2U Linear Motors

Features, benefits, applications

L2U linear motors are slotted, permanent magnet excited AC synchronous motors in double-sided design. They are characterised by their excellent force to volume ratio.
The attraction between the primary part and the two secondary parts is reduced to value approaching zero. The iron-core linear motor has two secondary parts symmetrically opposite each other.
A very compact design of the moving primary part reduces mass and volume.

The L2U series offers an impressive low moving mass, optimum power loss, high degree of force, and compact installation space. This creates the advantage of having high acceleration and final speeds.
The attraction forces are absorbed in the mechanical structure, without having to load the guides. This results both in lower costs for dimensioning and service as well increasing the service life of the guides.



L2U motors are offered in different categories:

- with 3 standard lengths from 200 mm to 600 mm (primary part)
- with 3 standard widths from 50 mm to 100 mm (primary part)
- with 2 standard windings for medium and higher dynamics
- with 2 fastening variants for the secondary parts
- with cooling option for the primary part
- with 2 connection options (cable, plug) for the primary part

Benefits

- Speed adjusting range 0 – 100% of nominal speed
- Highly dynamic and high rigidity
- High speed
- More force compared with DC motors with the same installation space
- Reduced heat dissipation into the machine bed
- Active cooling options
- High accelerating and stopping capability owing to a favourable force-mass ratio
- Very compact design
- Wear-free drive principle
- Good synchronisation characteristics
- Operating in parallel in different arrangements

Applications

- Machine tools (high-speed milling and grinding machines, presses, handling systems)
- Automation technology
- Printing machines
- Packaging machinery

Designation

L2U - L - B - X - X - X - PRIM

Short designation of motor type
L2U Linear motor with iron core (primary part), double-sided, slotted, great force

Length of coil system
200 mm, 400 mm, 600 mm

Width of magnetic track
50 mm, 75 mm, 100 mm

Winding types
WL Low dynamic, reduced power requirement
WH High dynamic, higher power requirement

Cooling options
O Not cooled on both sides
C2 Water cooling double-sided

Connection options
Gl.l Fixed cable (motor and sensor separate), length in [m]
Standard: G1.0 (length: 1.0 m)
C Plug

Motor part
PRIM Primary part

L2 - B - L - X - X - SEK

Short designation of motor type
L2 L2U linear motor (secondary part)

Width of magnetic track
50 mm, 75 mm, 100 mm

Length of secondary part
Standard 76 mm, 152 mm

Magnet cover
O Standard (without)
S Special version (stainless steel)

Mounting options
1 Threaded hole M6
2 Standard: through-hole for screw M6 ISO4762

Motor part
SEK Secondary part

Electrical Connection Technology

The standard connections of the IDAM motors are routed through the face end. The cable length from the motor outlet is 1.0 m or according to the customer's request. The cross-section of the power connection cable depends on the nominal motor current, dimensioning is carried out to nominal current I_{cw} at P_{lw} (cooled). The sensor cable allows you to monitor the temperature using PTC and KTY.

Motor versions with panel mounting connectors M23 or M40 on the face end are available as an option. Depending on nominal current value at I_{cw} ‹30 A a M23-connector size is assembled. At I_{cw} ›30 A it will be replaced by a M40 connector size.

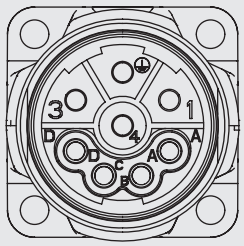
Characteristics of the lines

- Shielded
- Oil-resistant and coolant-resistant (PUR outer sheath)
- Flame-retardant
- UL/CSA certified
- Suitable for cable carriers

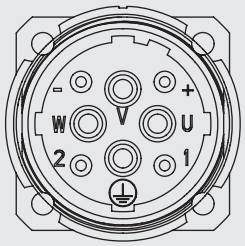
Nominal current (cooled) I_{cw} in A	Line cross-section A in mm²	Diameter (± 10%) d_K in mm	Bending radius moved dynamically r_d in mm	Bending radius laid statically r_s in mm	Weight m in g/m
Sensor	4x0.14	5.1	min. 10x d	min. 5x d	40
≤ 22	4G2.5	11.0			230
≤ 30	4G4	12.5			310
≤ 37	4G6	14.5			440
≤ 52	4G10	18.0			700
≤ 70	4G16	21.5			1050

Pin assignments

Motor Core	Connector M23	Connector M40	
1/U	1	U	Phase U
2/V	4	V	Phase V
3/W	3	W	Phase W
GNYE	2/PE	PE	PE
Sensor			
WH	A	1	PTC
BN	B	2	PTC
GN	C	+	+ KTY
YE	D	–	– KTY



Panel mounting connector M23 (I_{cw} ‹30 A)



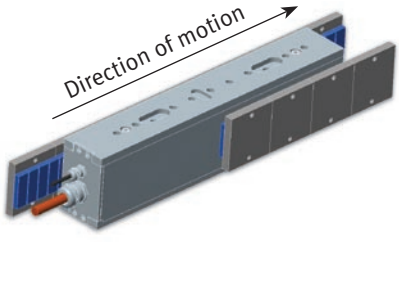
Panel mounting connector M40 (I_{cw} ›30 A)

Positive direction of motor motion

The electrically positive direction of motion matches a clockwise rotating field for all three-phase motors, i.e. the phase voltages are induced in the order U, V, W.

IDAM motors have this positive direction of motion in the motor movement

- in the direction of the side without cables
- in the direction of the side without panel mounting connectors.



Direction of motion with positive current feed, example: cable outlet

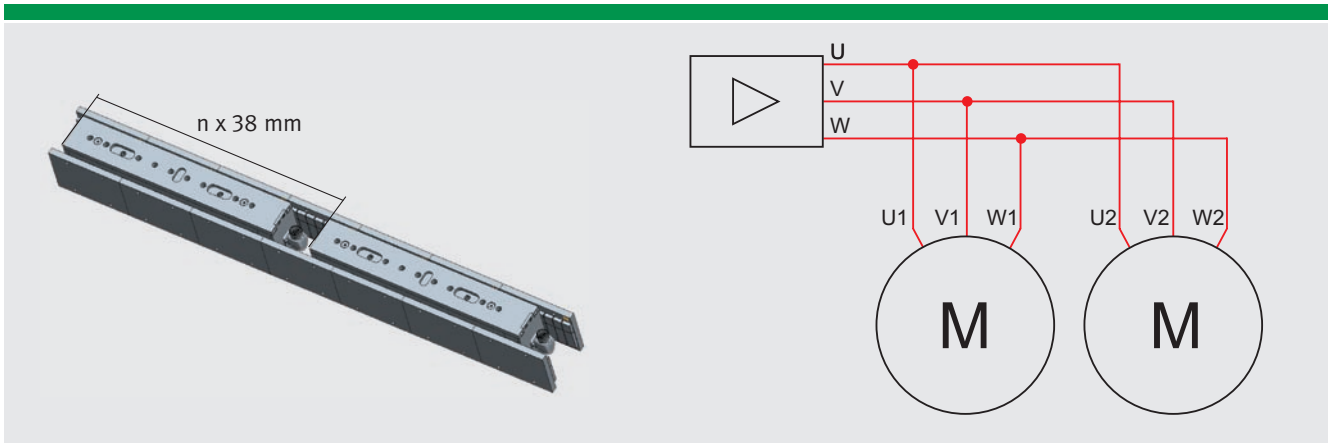
Operating Several Motors in Parallel

For higher power requirements or special motor arrangements (e.g. gantry system) engines of the series L2U-400 or L2U-600 can be connected in parallel to a common converter.

Arrangement on one axis

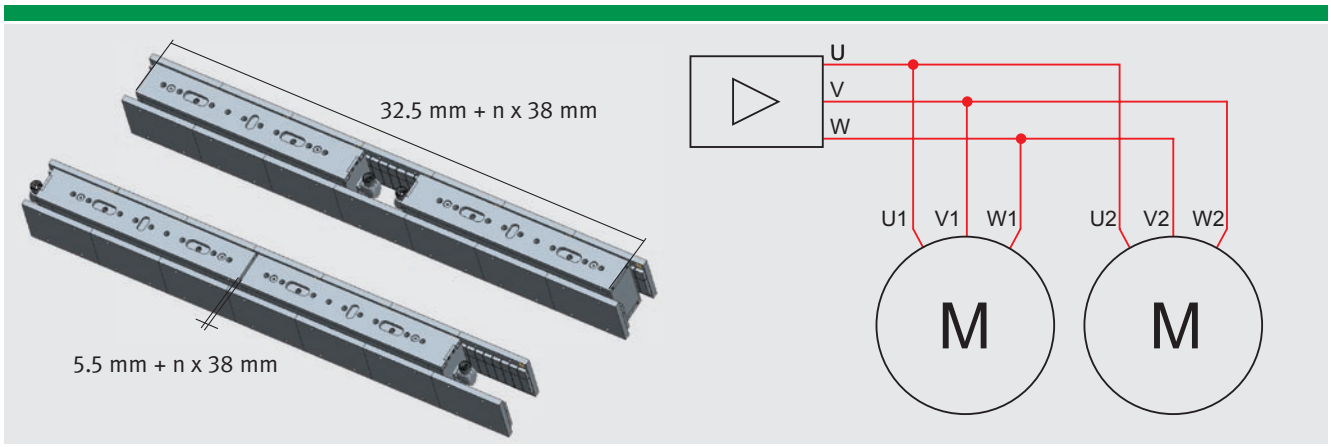
When operating multiple primary parts in a secondary part track, a distinction is made between the tandem arrangement (parallel) and the Janus arrangement (antiparallel).

Tandem arrangement



The primary parts can be moved against each other in the pole pair grid. Be sure to provide sufficient space for the electrical connection. The phase connections must be connected equally.

Janus arrangement



On Janus arrangements, an offset between the primary parts is necessary before they again can be aligned in the pole pair grid. Motors arranged in this way must operate in the opposite direction of movement. To do so, you interchange the phases V and W, only phase U is now mutually shared.

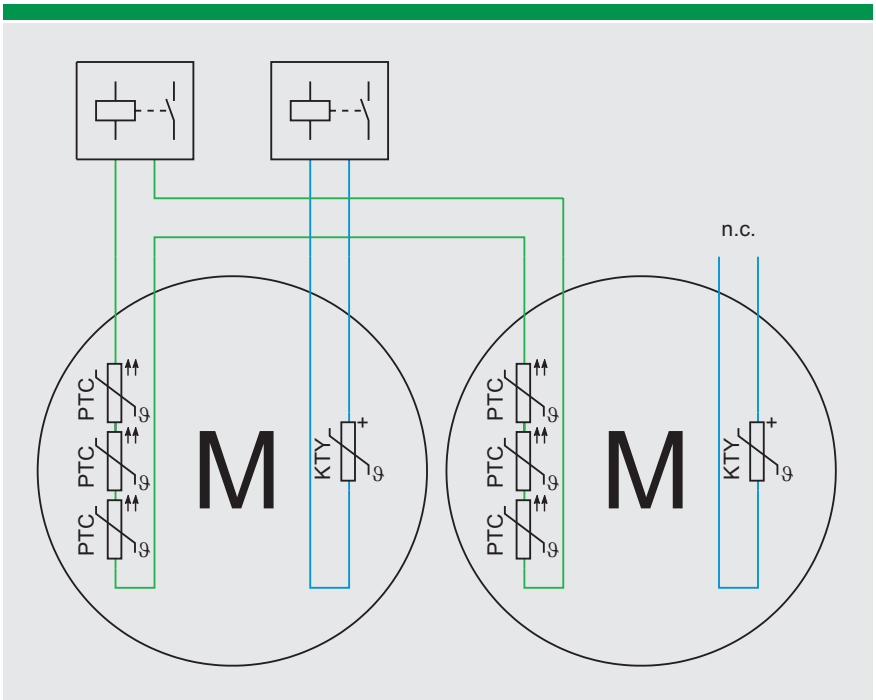
Setting for the phase coincidence

A check must always be made as to whether the parallel motors are aligned in phase to one another. If the phases do not match up, the force constant and efficiency are reduced depending on the speed owing to induced short-circuit currents.
To adjust the phases, the respective reverse voltage in the motors is measured with a dual-channel oscilloscope during simultaneous movement. The phase displacement of the two curves should not be greater than ±5°, so that good static functioning of the interconnected motors can be ensured.

Evaluation of temperature sensor systems

The integrated PTC sensors must be used for protecting the motors. To do this, the PTC sensors for each motor in the arrangement are connected in series and evaluated via a motor protection tripping unit. To prevent premature tripping of the motor protection, we recommend several or multi-channel motor protection tripping units in the event of three or more PTC monitoring circuits.

The temperature can be observed individually using the KTY or via a KTY evaluation unit for several motors as well. Unused connections must be securely isolated.



Connection of temperature sensors for several motors

Resulting motor data

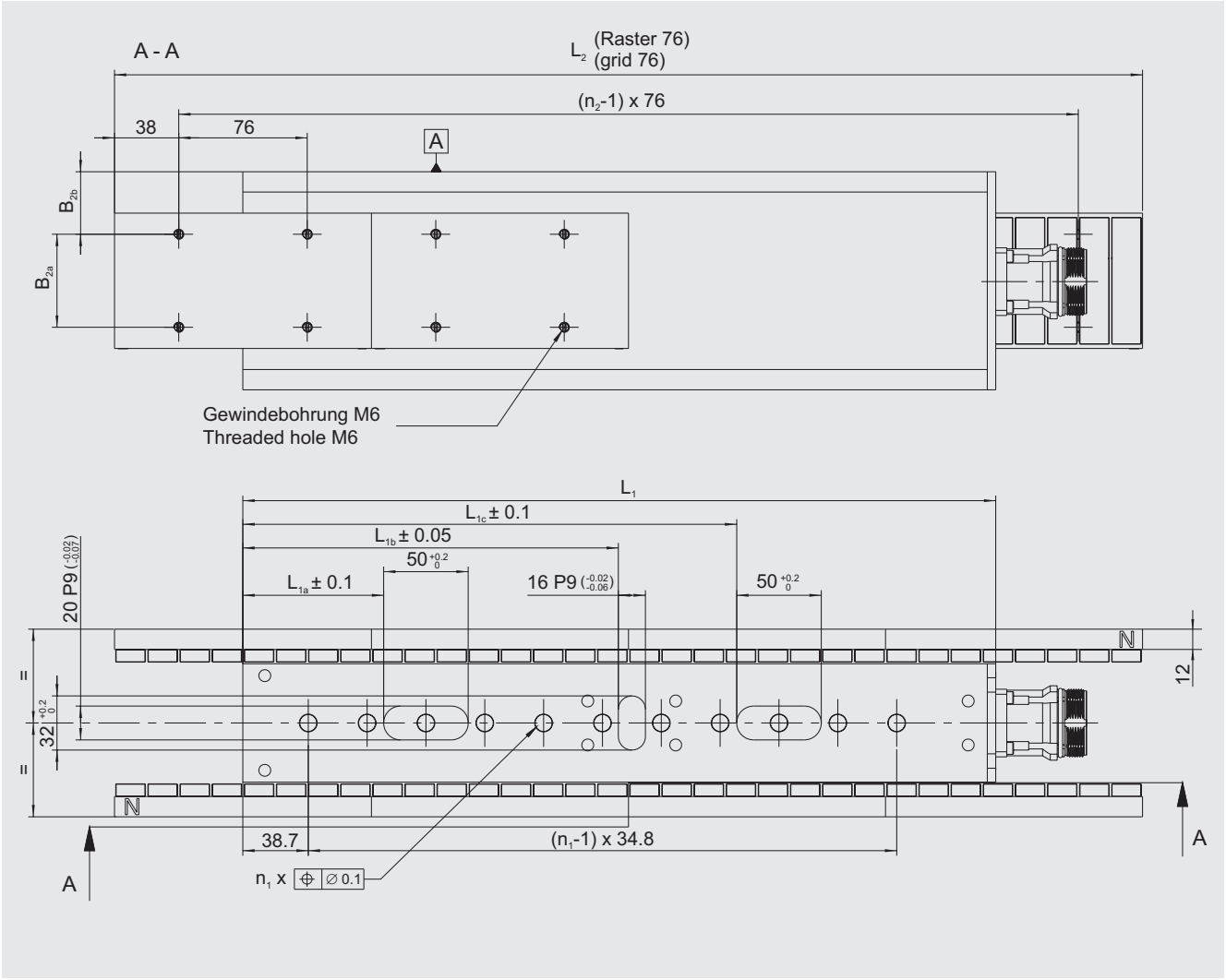
When the structurally identical single motors are connected in parallel this produces for the converter new electrical data for the replacement motor now available. They can be determined from the data for the single motors:

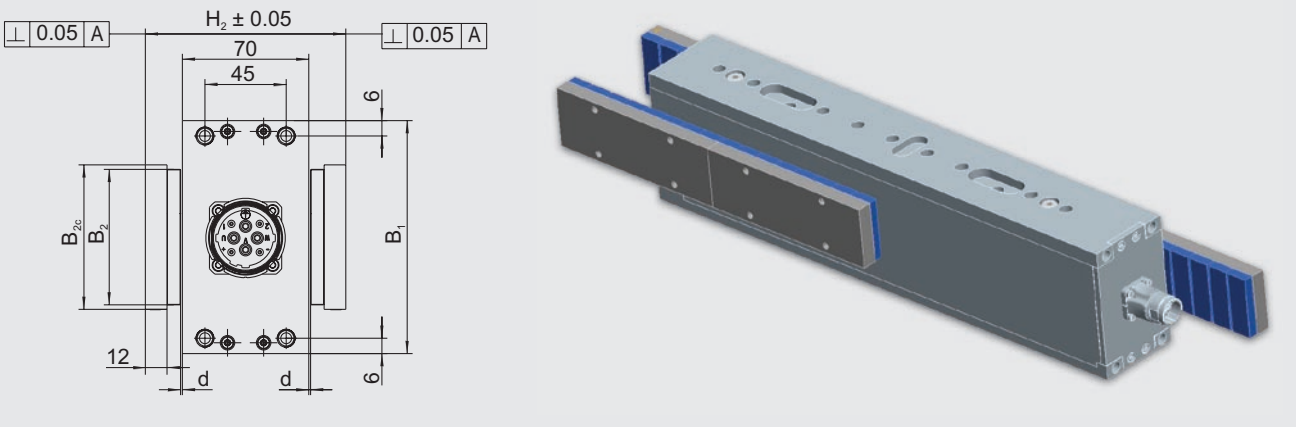
- Pole pair distance, force constants, voltage constants, time constants as well as speeds remain unchanged.
- Currents, forces and the damping constant multiply according to the number of single motors.
- Resistance and inductance are divided through the number of single motors.

L2U-200-B

Drawing: mounting option 1 (secondary part) – from below

The illustrations show a L2U motor with plug and cooling.



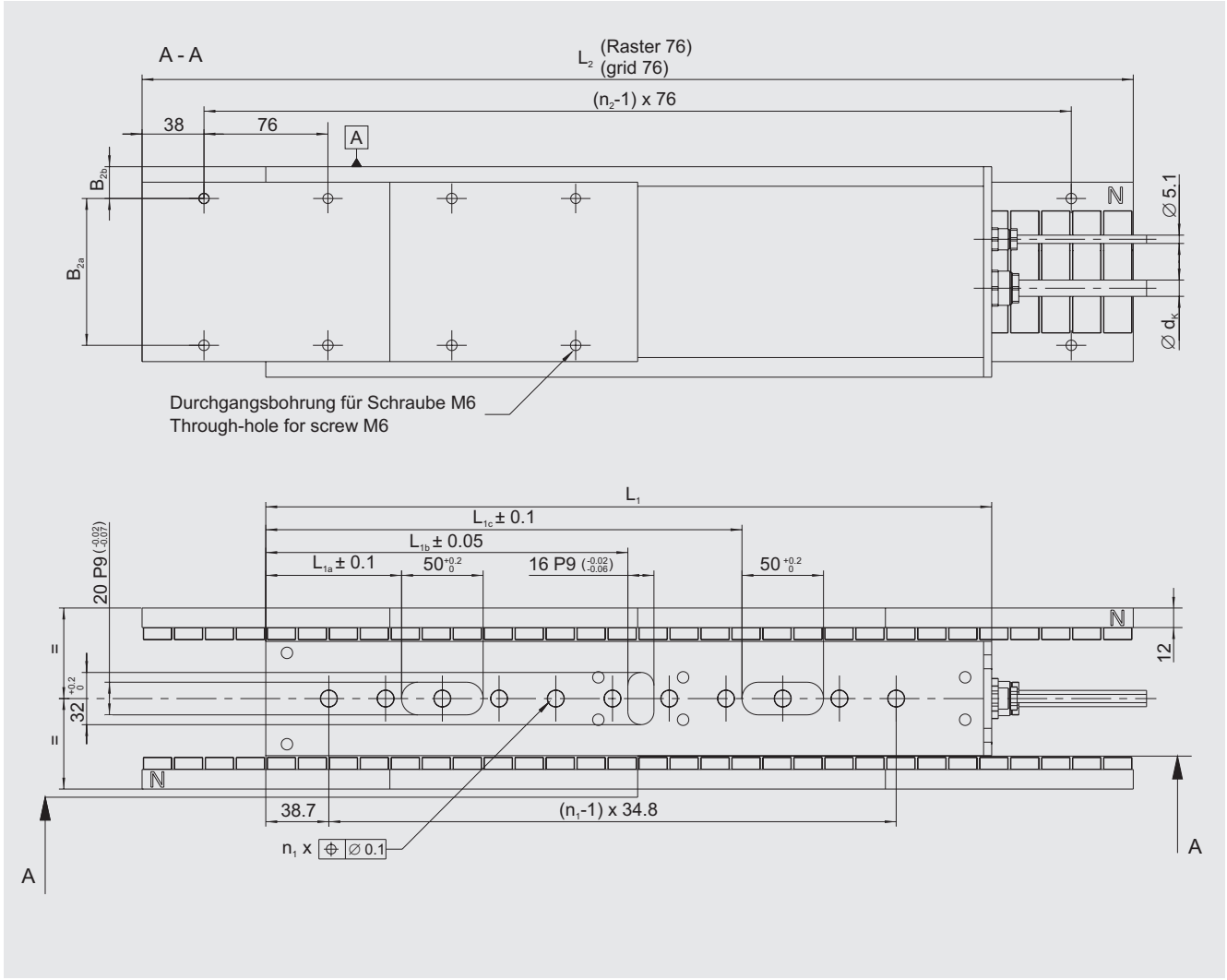


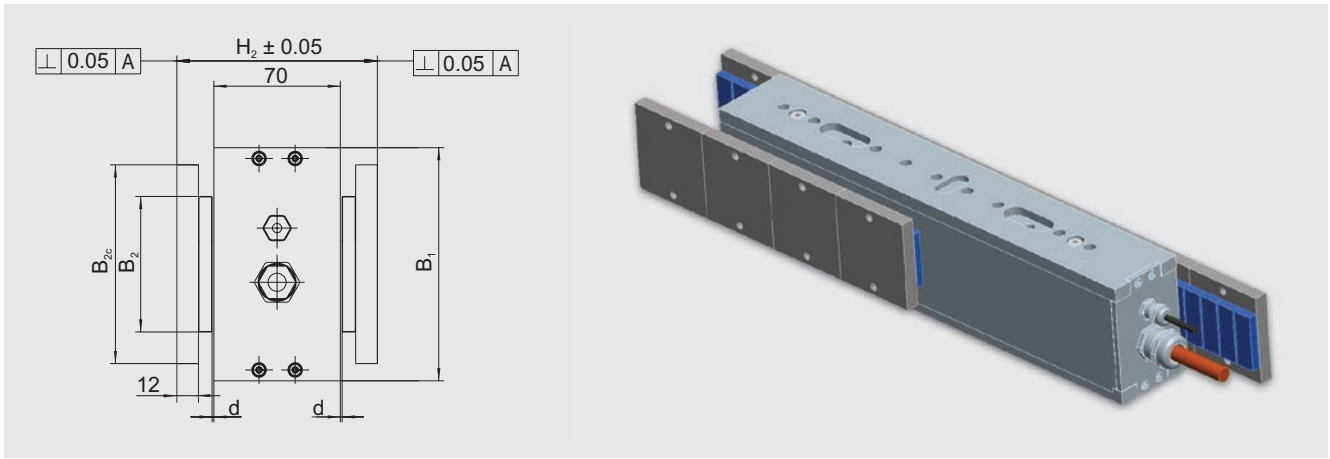
Side view: secondary part screw connection from below | plug connector and cooling (4 x cooling connection G 1/8, depth 14)

L2U-200-B

Drawing: mounting option 2 (secondary part) – from the top

The illustrations show a L2U motor with fixed cable and without cooling.





Side view: secondary part screw connection from the top | fixed cable, no cooling

L2U-200-B
Technical data I

Primary part L2U-L-B	Symbol	Unit	L2U-200-50	L2U-200-75	L2U-200-100
Block length	L_1	mm	240	240	240
Air gap width	B	mm	50	75	100
Total width with cooling double-sided	B_1	mm	108	133	158
Thread M10 (number of)	n_1	pc.	5	5	5
Key position 1	L_{1a}	mm	48.5	48.5	48.5
Key position 2	L_{1b}	mm	117.7	117.7	117.7
Key position 3	L_{1c}	mm	152.9	152.9	152.9
Primary part mass	m_1	kg	11	14	17
Secondary part L2-B-L, variant 1	**Symbol**	**Unit**	**L2U-200-50**	**L2U-200-75**	**L2U-200-100**
Magnet width = air gap width	B_2	mm	50	75	100
Height (secondary parts: fastening surfaces distance)	H_2	mm	111	111	111
Width of secondary part	B_{2c}	mm	50	80	100
Distance of 1st to 2nd drill row	B_{2a}	mm	38	55	80
Installation reference for primary part	B_{2b}	mm	35	39	39
Specific mass (per side)	m_n	kg/m	7.3	11.4	14.5
Secondary part L2-B-L, variant 2 (standard)	**Symbol**	**Unit**	**L2U-200-50**	**L2U-200-75**	**L2U-200-100**
Magnet width = air gap width	B_2	mm	50	75	100
Height (secondary parts: fastening surfaces distance)	H_2	mm	111	111	111
Width of secondary part	B_{2c}	mm	80	110	130
Distance of 1st to 2nd drill row	B_{2a}	mm	65	90	115
Installation reference for primary part	B_{2b}	mm	21.5	21.5	21.5
Specific mass (per side)	m_n	kg/m	10.5	14.2	17.4
Installation dimensions	**Symbol**	**Unit**	**L2U-200-50**	**L2U-200-75**	**L2U-200-100**
Mechanical air gap (per side)	d	mm	1	1	1

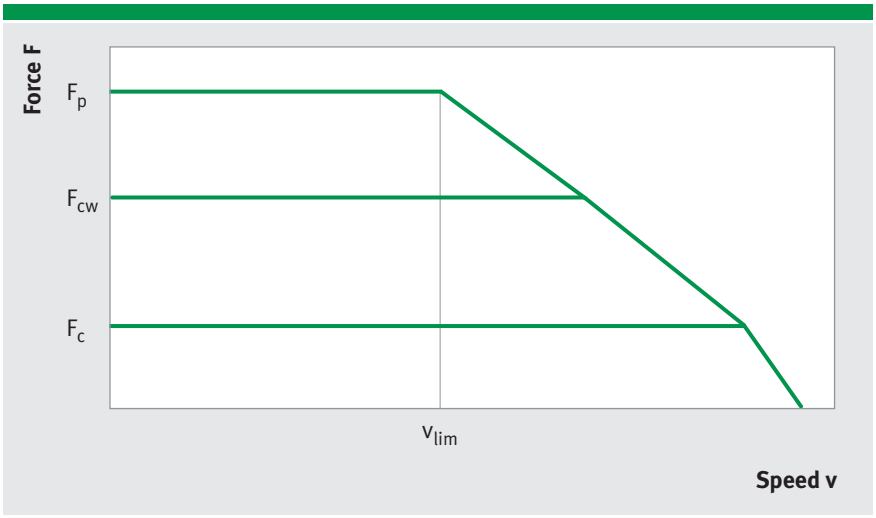
Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

Note: A slight fluctuation is allowed for the air gap dimension. The specified total installation heights (H_2) are technically relevant. Make sure that the primary part is positioned in the middle, between the secondary parts. The position tolerance of the mounting holes for the primary part to the fastening surfaces for the secondary parts is ±0.05 mm.

L2U-200-B
Technical data II

Performance data	Symbol	Unit	L2U-200-50	L2U-200-75	L2U-200-100
Ultimate force (1 s) at I_u	F_u	N	2198	3297	4395
Peak force (saturation range) at I_p	F_p	N	2017	3025	4033
Peak force (linear range) at I_{pl}	F_{pl}	N	1496	2244	2993
Nominal force at I_c	F_c	N	449	718	991
Nominal force (cooled) at I_{cw}	F_{cw}	N	881	1408	1943
Power loss at F_p (25 °C)	P_{lp}	W	3539	4680	5822
Power loss at F_{pl} (25 °C)	P_{lpl}	W	1185	1567	1950
Power loss at F_c (25 °C)	P_{lc}	W	107	160	214
Power loss at F_{cw}	P_{lcw}	W	534	802	1069
Motor constant (25 °C)	k_m	N/√W	43.5	56.7	67.8
Damping constant (short-circuit)	k_d	N/(m/s)	1889	3214	4593
Electrical time constant	τ_{el}	ms	7.13	8.08	8.67
Attraction force	F_a	N	compensated	compensated	compensated
Ripple force (cogging)	F_r	N	20	30	40
Pole pair distance	$2\tau_p$	mm	38	38	38

Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

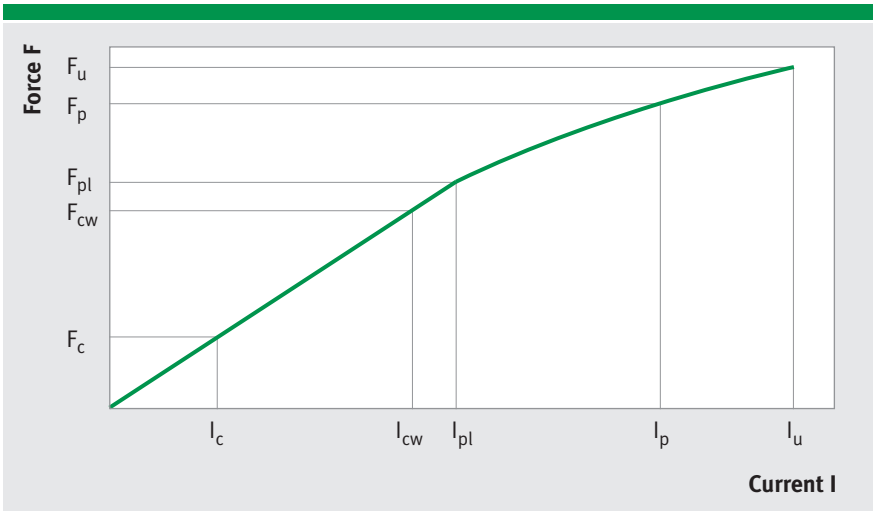


Force vs. speed

L2U-200-B
Technical data III

Winding data	Symbol	Unit	L2U-200-50-WH	L2U-200-75-WH	L2U-200-100-WH
Force constant	k_f	N/A_{rms}	50.6	75.9	101.3
Back EMF constant, phase-to-phase	k_u	V/(m/s)	41.4	62.1	82.8
Limit speed at I_p and U_{DCL} = 300 V_{DC}	v_{lim}	m/s	3.4	2.0	1.3
Limit speed at I_p and U_{DCL} = 600 V_{DC}	v_{lim}	m/s	7.0	4.6	3.4
Electrical resistance, ph-to-ph (25 °C)	R_{25}	Ω	0.90	1.20	1.49
Inductance, phase-to-phase	L	mH	6.45	9.67	12.90
Ultimate current (1 s)	I_u	A_{rms}	63.8	63.8	63.8
Peak current (saturation range) (3 s)	I_p	A_{rms}	51.1	51.1	51.1
Peak current (linear range)	I_{pl}	A_{rms}	29.6	29.6	29.6
Nominal current (not cooled)	I_c	A_{rms}	8.9	9.5	9.8
Nominal current (cooled)	I_{cw}	A_{rms}	17.4	18.5	19.2
Maximum DC link voltage	U_{DCL}	V	600	600	600

Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

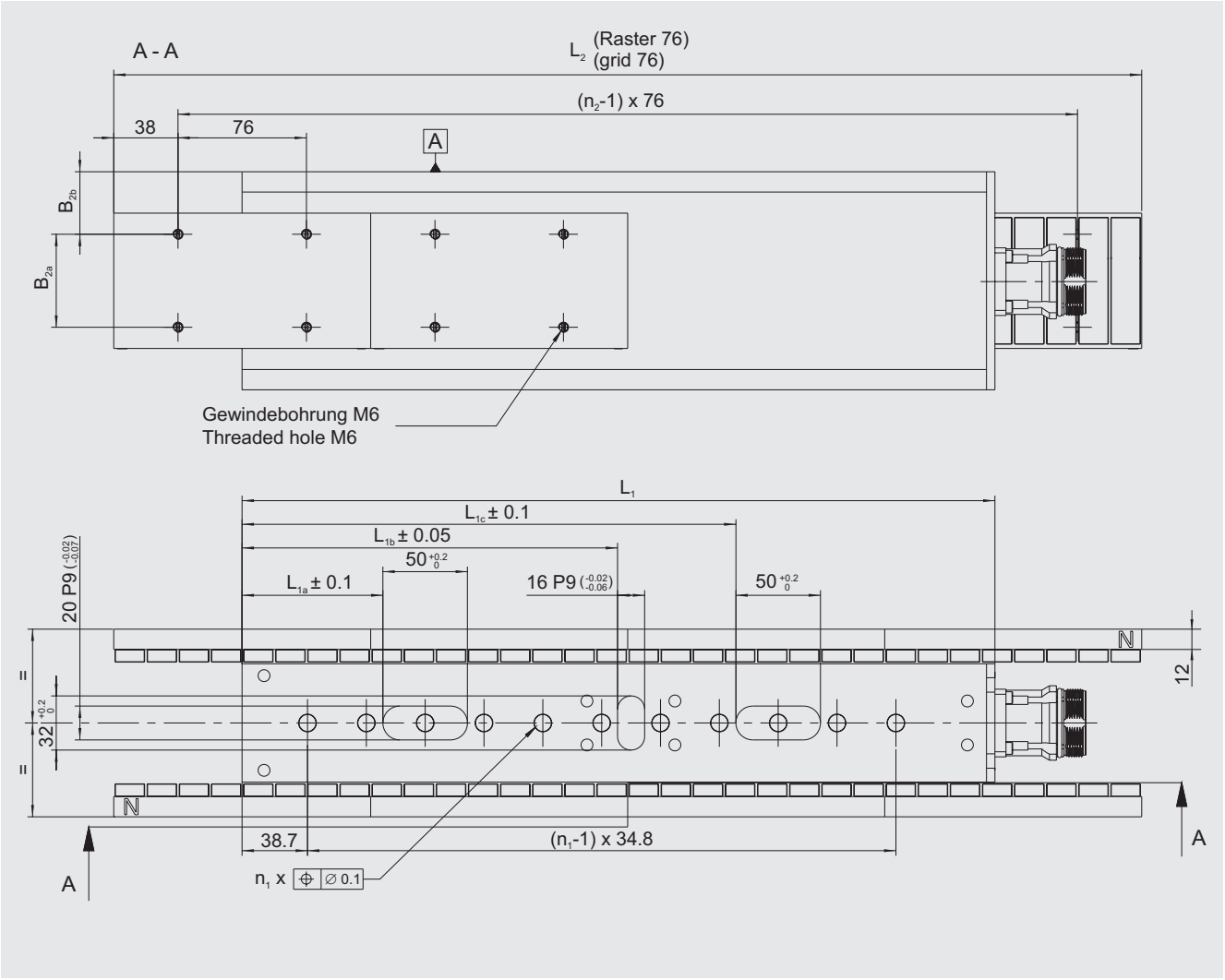


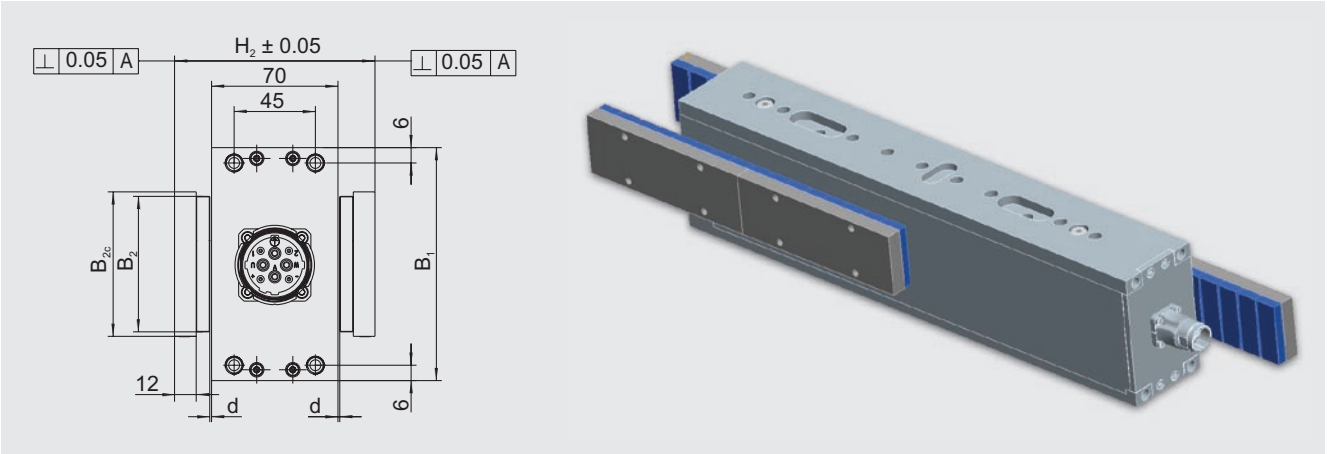
Force vs. current

L2U-400-B

Drawing: mounting option 1 (secondary part) – from below

The illustrations show a L2U motor with plug and cooling.



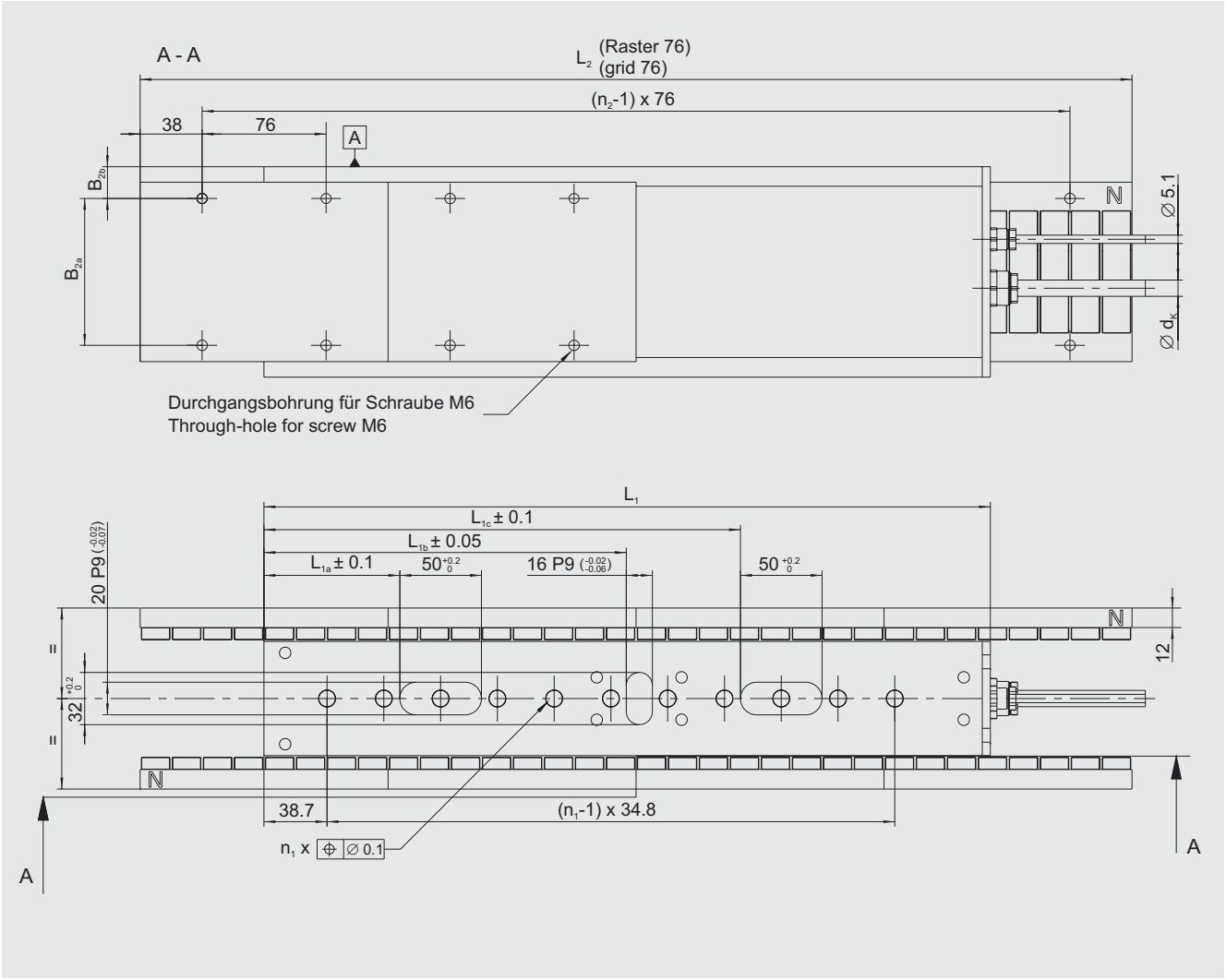


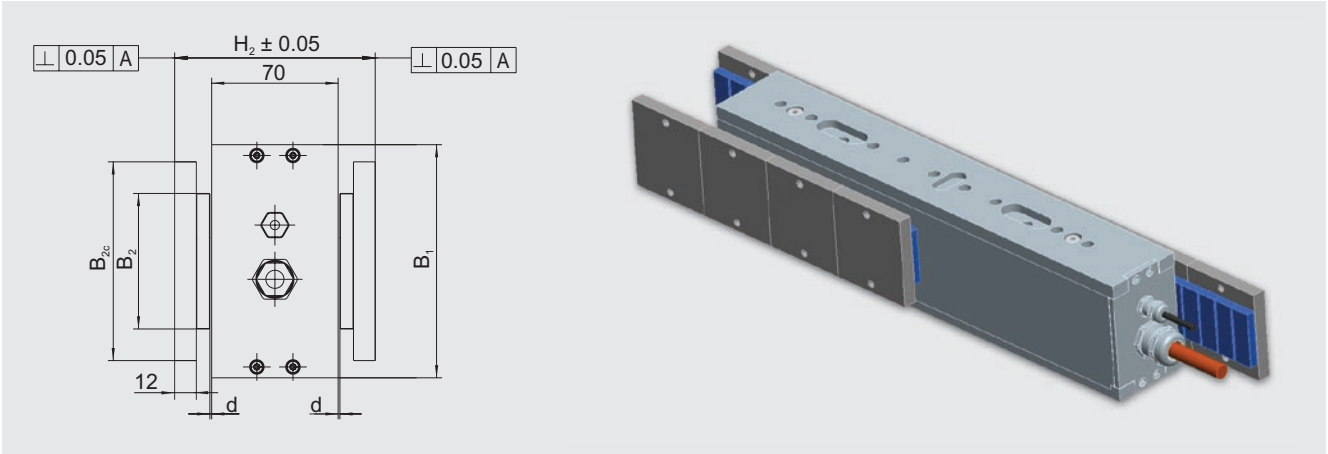
Side view: secondary part screw connection from below | plug connector and cooling (4 x cooling connection G 1/8, depth 14)

L2U-400-B

Drawing: mounting option 2 (secondary part) – from the top

The illustrations show a L2U motor with fixed cable and without cooling.





Side view: secondary part screw connection from the top | fixed cable, no cooling

L2U-400-B
Technical data I

Primary part L2U-L-B	Symbol	Unit	L2U-400-50	L2U-400-75	L2U-400-100
Block length	L_1	mm	450	450	450
Air gap width	B	mm	50	75	100
Total width with cooling double-sided	B_1	mm	108	133	158
Thread M10 (number of)	n_1	pc.	11	11	11
Key position 1	L_{1a}	mm	83.3	83.3	83.3
Key position 2	L_{1b}	mm	222.1	222.1	222.1
Key position 3	L_{1c}	mm	292.1	292.1	292.1
Primary part mass	m_1	kg	21	27	34
Secondary part L2-B-L, variant 1	**Symbol**	**Unit**	**L2U-400-50**	**L2U-400-75**	**L2U-400-100**
Magnet width = air gap width	B_2	mm	50	75	100
Height (secondary parts: fastening surfaces distance)	H_2	mm	111	111	111
Width of secondary part	B_{2c}	mm	50	80	100
Distance of 1st to 2nd drill row	B_{2a}	mm	38	55	80
Installation reference for primary part	B_{2b}	mm	35	39	39
Specific mass (per side)	m_n	kg/m	7.3	11.4	14.5
Secondary part L2-B-L, variant 2 (standard)	**Symbol**	**Unit**	**L2U-400-50**	**L2U-400-75**	**L2U-400-100**
Magnet width = air gap width	B_2	mm	50	75	100
Height (secondary parts: fastening surfaces distance)	H_2	mm	111	111	111
Width of secondary part	B_{2c}	mm	80	110	130
Distance of 1st to 2nd drill row	B_{2a}	mm	65	90	115
Installation reference for primary part	B_{2b}	mm	21.5	21.5	21.5
Specific mass (per side)	m_n	kg/m	10.5	14.2	17.4
Installation dimensions	**Symbol**	**Unit**	**L2U-400-50**	**L2U-400-75**	**L2U-400-100**
Mechanical air gap (per side)	d	mm	1	1	1

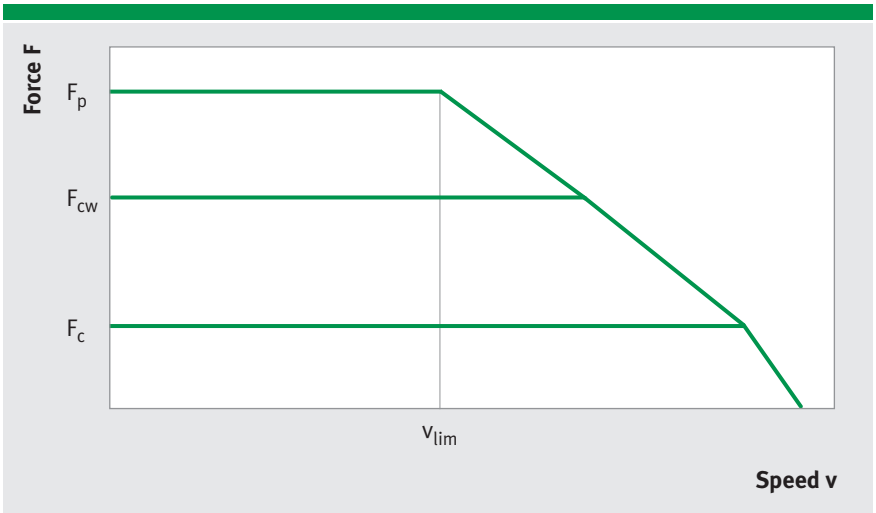
Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

Note: A slight fluctuation is allowed for the air gap dimension. The specified total installation heights (H_2) are technically relevant. Make sure that the primary part is positioned in the middle, between the secondary parts. The position tolerance of the mounting holes for the primary part to the fastening surfaces for the secondary parts is ±0.05 mm.

L2U-400-B
Technical data II

Performance data	Symbol	Unit	L2U-400-50	L2U-400-75	L2U-400-100
Ultimate force (1 s) at I_u	F_u	N	4395	6593	8791
Peak force (saturation range) at I_p	F_p	N	4033	6050	8067
Peak force (linear range) at I_{pl}	F_{pl}	N	2993	4489	5985
Nominal force at I_c	F_c	N	894	1428	1971
Nominal force (cooled) at I_{cw}	F_{cw}	N	1753	2800	3865
Power loss at F_p (25 °C)	P_{lp}	W	7077	9360	11643
Power loss at F_{pl} (25 °C)	P_{lpl}	W	2370	3135	3899
Power loss at F_c (25 °C)	P_{lc}	W	211	317	423
Power loss at F_{cw}	P_{lcw}	W	1057	1585	2114
Motor constant (25 °C)	k_m	N/√W	61.5	80.2	95.8
Damping constant (short-circuit)	k_d	N/(m/s)	3778	6428	9186
Electrical time constant	τ_{el}	ms	7.13	8.08	8.67
Attraction force	F_a	N	compensated	compensated	compensated
Ripple force (cogging)	F_r	N	24	36	48
Pole pair distance	$2\tau_p$	mm	38	38	38

Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

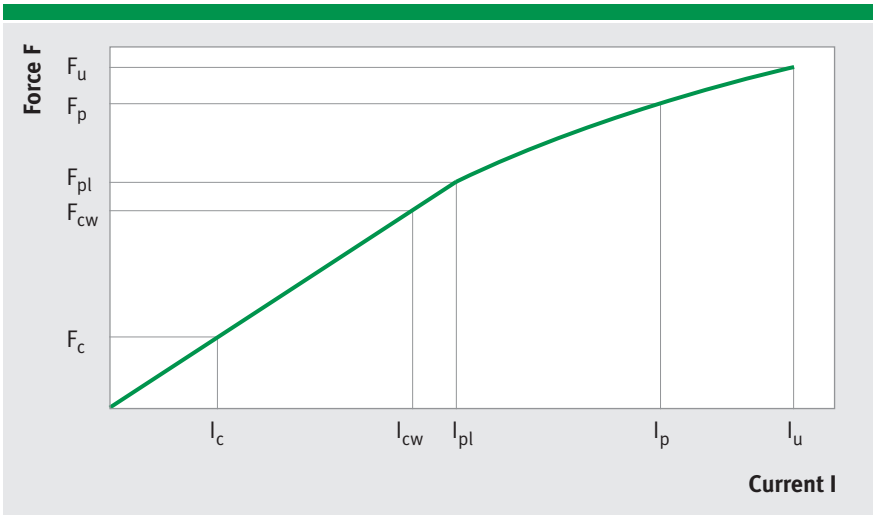


Force vs. speed

L2U-400-B
Technical data III

Winding data	Symbol	Unit	L2U-400-50-WL	L2U-400-50-WH	L2U-400-75-WL	L2U-400-75-WH	L2U-400-100-WL	L2U-400-100-WH
Force constant	k_f	N/A_{rms}	101.3	50.6	151.9	75.9	202.5	101.3
Back EMF constant, phase-to-phase	k_u	V/(m/s)	82.8	41.4	124.2	62.1	165.7	82.8
Limit speed at I_p and U_{DCL} = 300 V_{DC}	v_{lim}	m/s	1.4	3.9	0.7	2.3	0.3	1.6
Limit speed at I_p and U_{DCL} = 600 V_{DC}	v_{lim}	m/s	3.3	7.0	2.1	4.6	1.5	3.4
Electrical resistance, ph-to-ph (25 °C)	R_{25}	Ω	1.81	0.45	2.39	0.60	2.98	0.74
Inductance, phase-to-phase	L	mH	12.90	3.22	19.35	4.84	25.79	6.45
Ultimate current (1 s)	I_u	A_{rms}	63.8	127.7	63.8	127.7	63.8	127.7
Peak current (saturation range) (3 s)	I_p	A_{rms}	51.1	102.1	51.1	102.1	51.1	102.1
Peak current (linear range)	I_{pl}	A_{rms}	29.6	59.1	29.6	59.1	29.6	59.1
Nominal current (not cooled)	I_c	A_{rms}	8.8	17.6	9.4	18.8	9.7	19.5
Nominal current (cooled)	I_{cw}	A_{rms}	17.3	34.6	18.4	36.9	19.1	38.2
Maximum DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

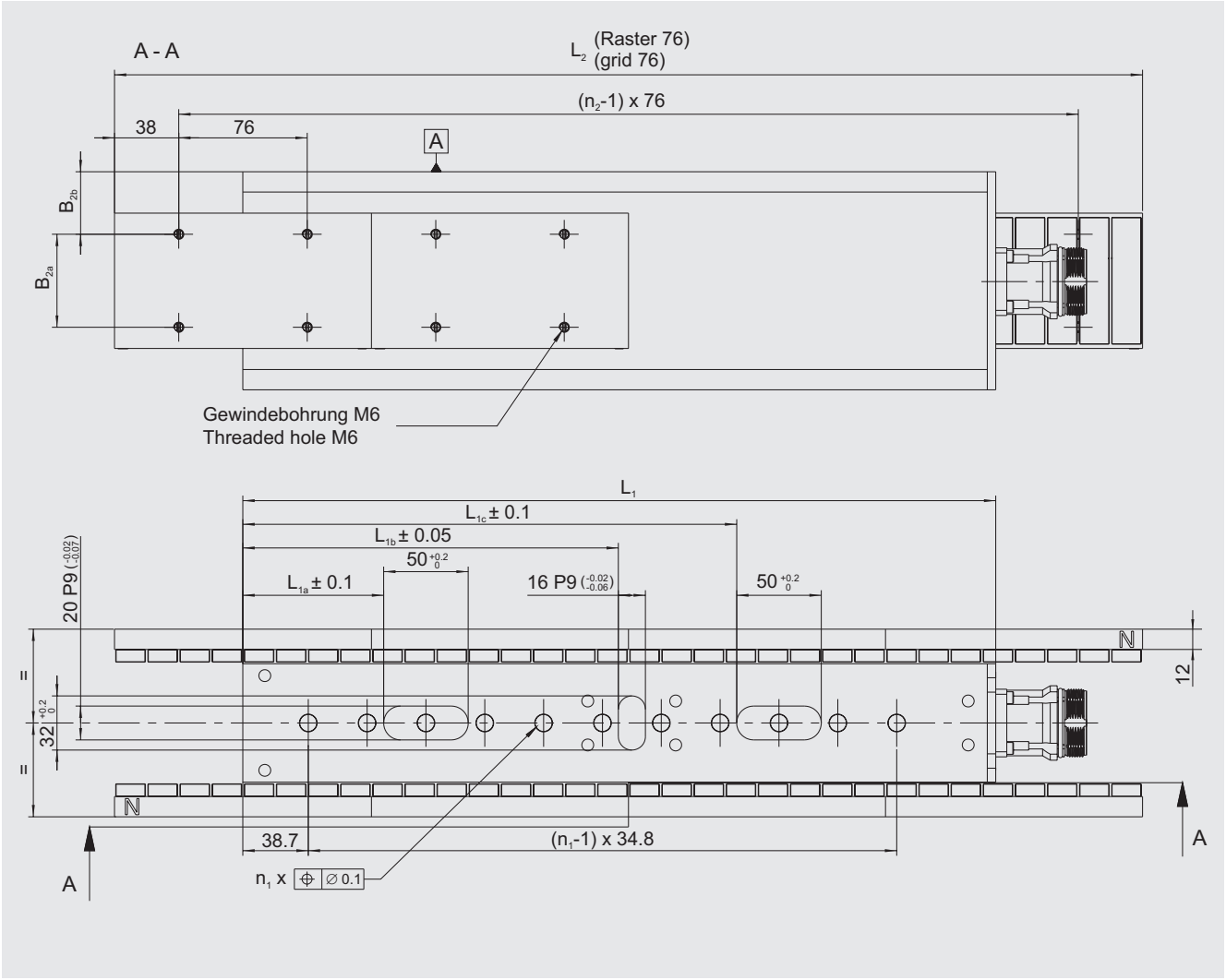


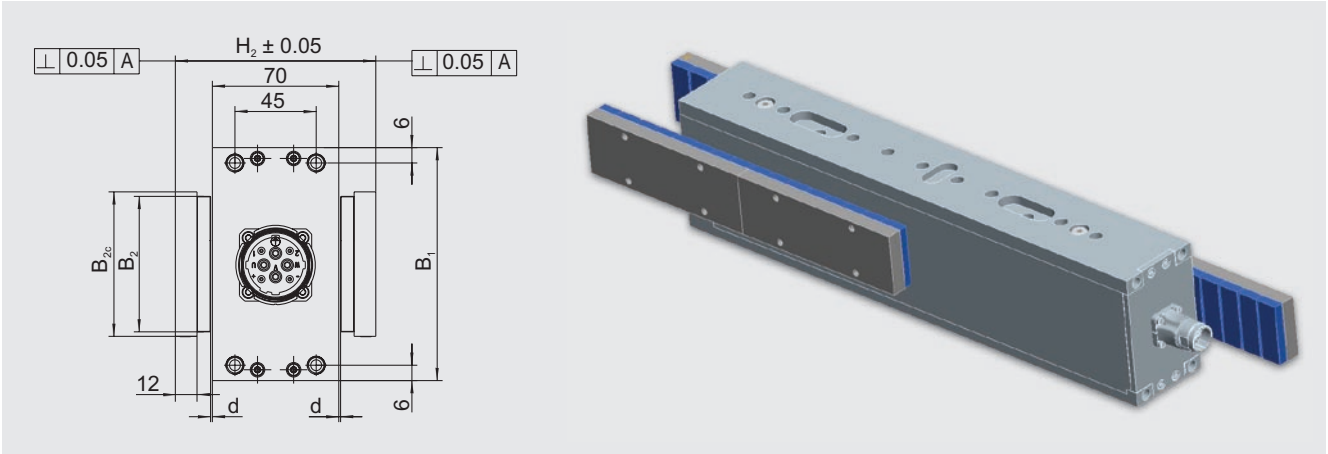
Force vs. current

L2U-600-B

Drawing: mounting option 1 (secondary part) – from below

The illustrations show a L2U motor with plug and cooling.



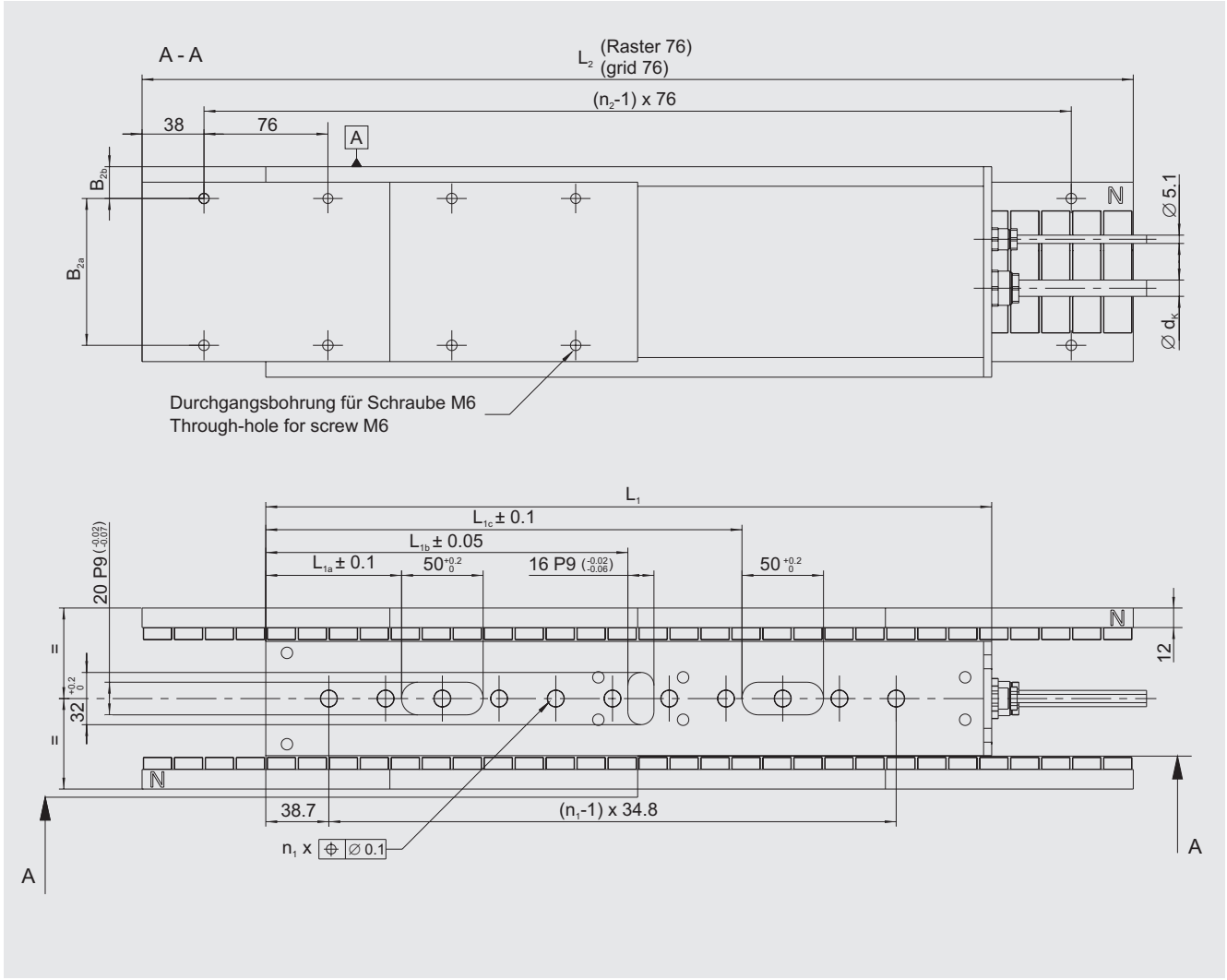


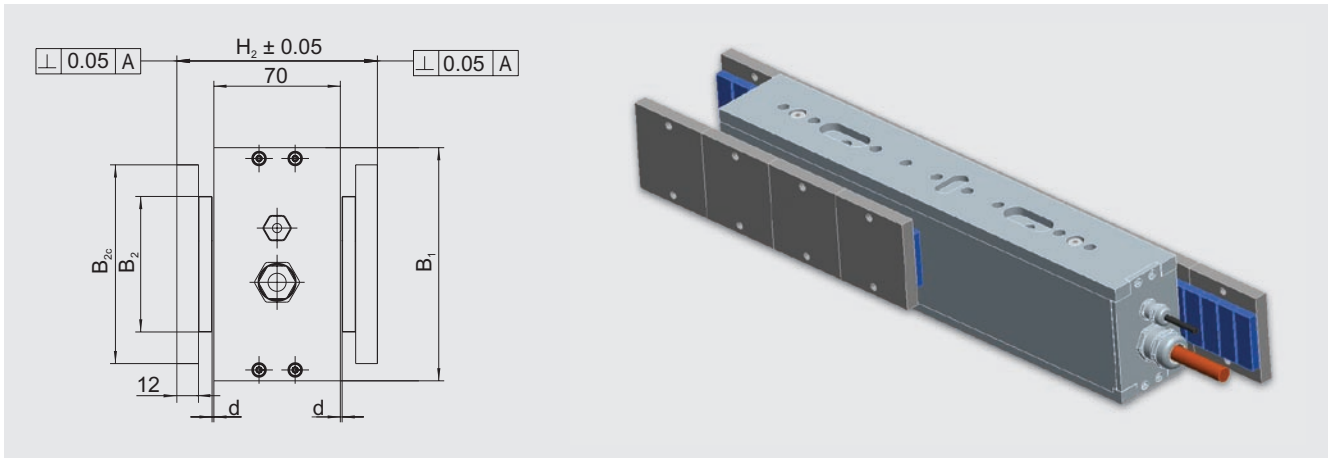
Side view: secondary part screw connection from below | plug connector and cooling (4 x cooling connection G 1/8, depth 14)

L2U-600-B

Drawing: mounting option 2 (secondary part) – from the top

The illustrations show a L2U motor with fixed cable and without cooling.





Side view: secondary part screw connection from the top | fixed cable, no cooling

L2U-600-B
Technical data I

Primary part L2U-L-B	Symbol	Unit	L2U-600-50	L2U-600-75	L2U-600-100
Block length	L_1	mm	659	659	659
Air gap width	B	mm	50	75	100
Total width with cooling double-sided	B_1	mm	108	133	158
Thread M10 (number of)	n_1	pc.	17	17	17
Key position 1	L_{1a}	mm	118.1	118.1	118.1
Key position 2	L_{1b}	mm	326.5	326.5	326.5
Key position 3	L_{1c}	mm	466.1	466.1	466.1
Primary part mass	m_1	kg	31	40	50
Secondary part L2-B-L, variant 1	**Symbol**	**Unit**	**L2U-600-50**	**L2U-600-75**	**L2U-600-100**
Magnet width = air gap width	B_2	mm	50	75	100
Height (secondary parts: fastening surfaces distance)	H_2	mm	111	111	111
Width of secondary part	B_{2c}	mm	50	80	100
Distance of 1st to 2nd drill row	B_{2a}	mm	38	55	80
Installation reference for primary part	B_{2b}	mm	35	39	39
Specific mass (per side)	m_n	kg/m	7.3	11.4	14.5
Secondary part L2-B-L, variant 2 (standard)	**Symbol**	**Unit**	**L2U-600-50**	**L2U-600-75**	**L2U-600-100**
Magnet width = air gap width	B_2	mm	50	75	100
Height (secondary parts: fastening surfaces distance)	H_2	mm	111	111	111
Width of secondary part	B_{2c}	mm	80	110	130
Distance of 1st to 2nd drill row	B_{2a}	mm	65	90	115
Installation reference for primary part	B_{2b}	mm	21.5	21.5	21.5
Specific mass (per side)	m_n	kg/m	10.5	14.2	17.4
Installation dimensions	**Symbol**	**Unit**	**L2U-600-50**	**L2U-600-75**	**L2U-600-100**
Mechanical air gap (per side)	d	mm	1	1	1

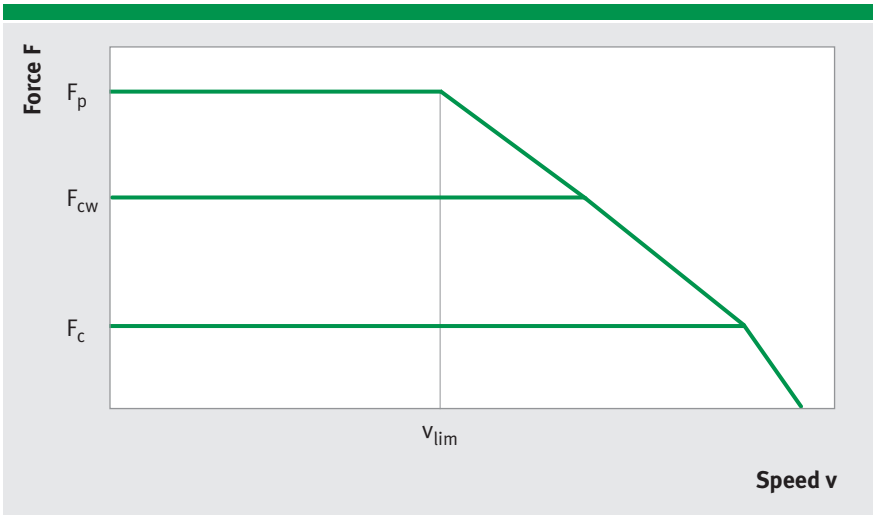
Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

Note: A slight fluctuation is allowed for the air gap dimension. The specified total installation heights (H_2) are technically relevant. Make sure that the primary part is positioned in the middle, between the secondary parts. The position tolerance of the mounting holes for the primary part to the fastening surfaces for the secondary parts is ±0.05 mm.

L2U-600-B
Technical data II

Performance data	Symbol	Unit	L2U-600-50	L2U-600-75	L2U-600-100
Ultimate force (1 s) at I_u	F_u	N	6593	9890	13186
Peak force (saturation range) at I_p	F_p	N	6050	9075	12100
Peak force (linear range) at I_{pl}	F_{pl}	N	4489	6733	8978
Nominal force at I_c	F_c	N	1338	2137	2950
Nominal force (cooled) at I_{cw}	F_{cw}	N	2624	4192	5786
Power loss at F_p (25 °C)	P_{lp}	W	10616	14040	17465
Power loss at F_{pl} (25 °C)	P_{lpl}	W	3555	4702	5849
Power loss at F_c (25 °C)	P_{lc}	W	316	474	632
Power loss at F_{cw}	P_{lcw}	W	1579	2369	3159
Motor constant (25 °C)	k_m	N/√W	75.3	98.2	117.4
Damping constant (short-circuit)	k_d	N/(m/s)	5667	9642	13780
Electrical time constant	τ_{el}	ms	7.13	8.08	8.67
Attraction force	F_a	N	compensated	compensated	compensated
Ripple force (cogging)	F_r	N	30	45	61
Pole pair distance	$2\tau_p$	mm	38	38	38

Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.

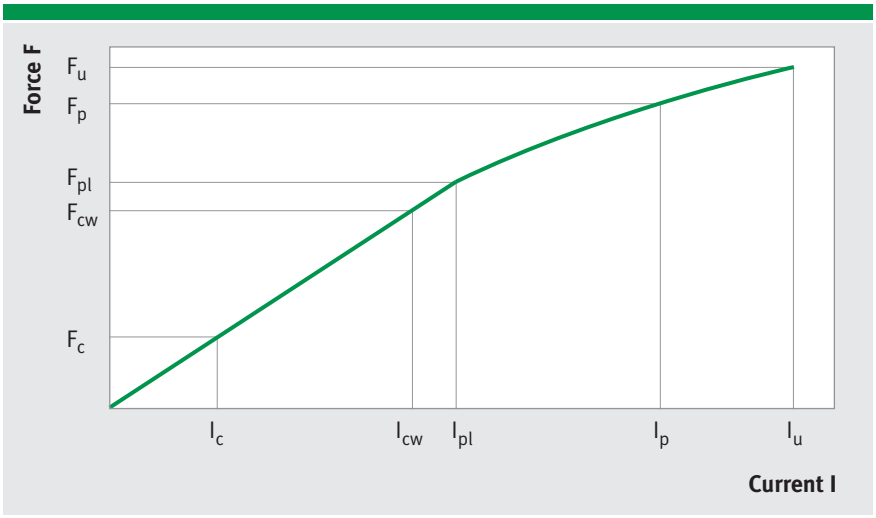


Force vs. speed

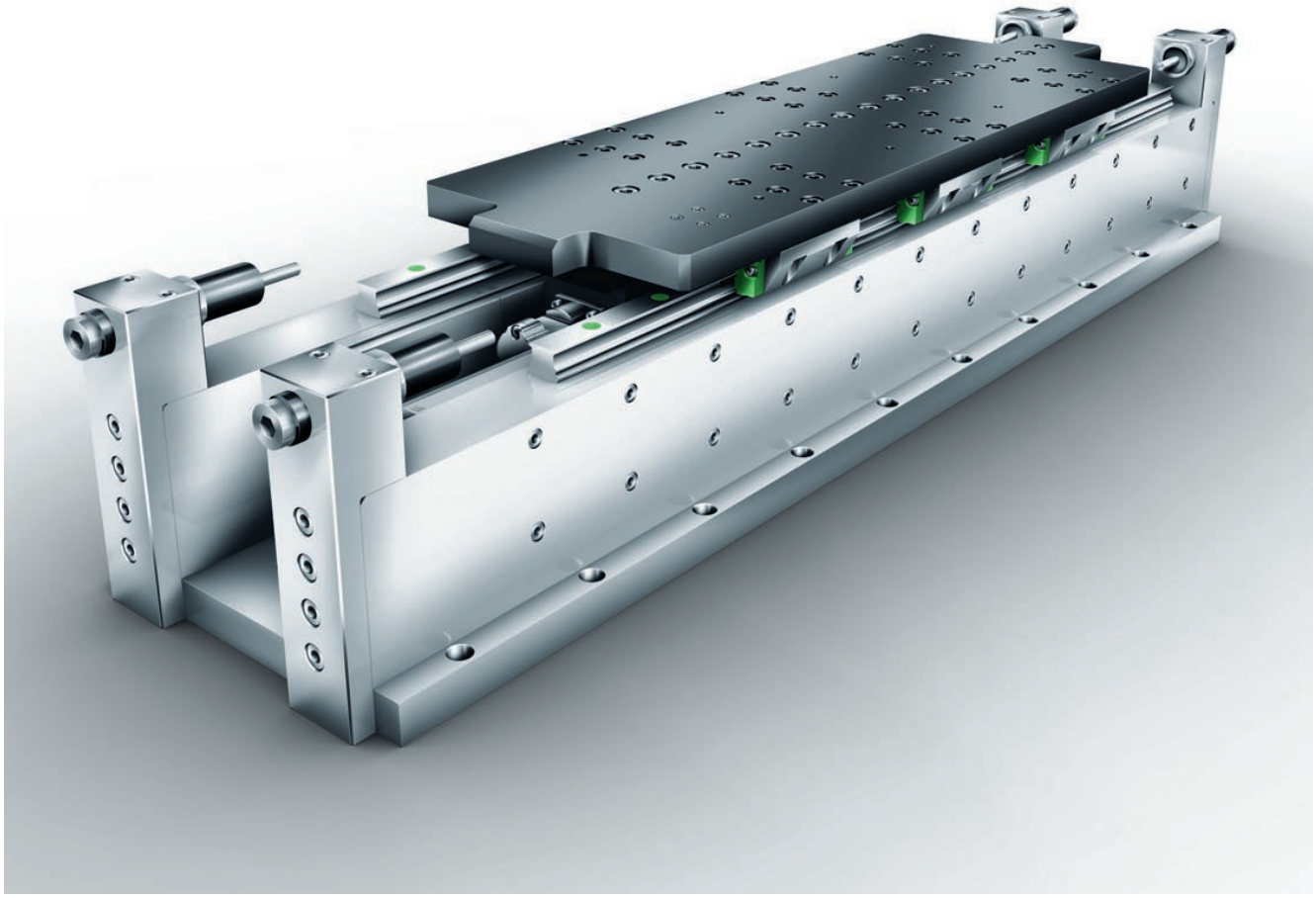
L2U-600-B
Technical data III

Winding data	Symbol	Unit	L2U-600-50-WL	L2U-600-50-WH	L2U-600-75-WL	L2U-600-75-WH	L2U-600-100-WL	L2U-600-100-WH
Force constant	k_f	N/A_{rms}	101.3	50.6	151.9	75.9	202.5	101.3
Back EMF constant, phase-to-phase	k_u	V/(m/s)	82.8	41.4	124.2	62.1	165.7	82.8
Limit speed at I_p and U_{DCL} = 300 V_{DC}	v_{lim}	m/s	1.6	4.2	0.8	2.6	0.4	1.8
Limit speed at I_p and U_{DCL} = 600 V_{DC}	v_{lim}	m/s	3.3	7.1	2.1	4.6	1.5	3.3
Electrical resistance, ph-to-ph (25 °C)	R_{25}	Ω	1.21	0.30	1.60	0.40	1.98	0.50
Inductance, phase-to-phase	L	mH	8.60	2.15	12.90	3.22	17.20	4.30
Ultimate current (1 s)	I_u	A_{rms}	95.7	191.5	95.7	191.5	95.7	191.5
Peak current (saturation range) (3 s)	I_p	A_{rms}	76.6	153.2	76.6	153.2	76.6	153.2
Peak current (linear range)	I_{pl}	A_{rms}	44.3	88.7	44.3	88.7	44.3	88.7
Nominal current (not cooled)	I_c	A_{rms}	13.2	26.4	14.1	28.1	14.6	29.1
Nominal current (cooled)	I_{cw}	A_{rms}	25.9	51.8	27.6	55.2	28.6	57.1
Maximum DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Tolerance range of values: ±10% • Subject to changes without advance notification, according to technical progress.



Force vs. current



Check List for Your Enquiry

Send by fax to: +49 3681 7574-30

Company	Contact person	Industry / project name
Telephone	**Fax**	**E-mail**

Brief description

Motor ☐ **System** ☐ **Axis within a multi-axis system** ☐

Spatial position of drive axis

Type of weight compensation: _____

Installation conditions for drive

(sketch or drawing, if appropriate)

Max. installation dimensions [mm]: _____

(length/width/height)

Mechanical interface: _____

Required cable length from motor [m]: _____

Ambient conditions

Temperature [K]: _____

Contamination: _____

Protection class (IP): _____

Motion variables

Stroke s [mm]: _____

Payload [kg]: _____

External forces [N]: _____

Maximum speed [m/s]: _____

Constant velocity fluctuations [%] at: _____

Shortest acceleration

and/or deceleration time [ms]: _____

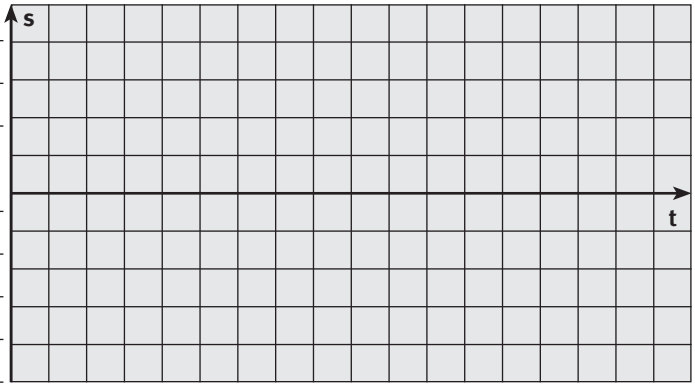
Overshoot in position [µm]: _____

Settling time [ms]: _____

Typical cycle per time (diagram): _____

Service life/operating hours [h]: _____

sketch



Required accuracies

(sketch or drawing, if appropriate)

Positioning accuracy [µm]: _____

Repeatability [µm]: _____

Cooling

Cooling permissible?

Yes ☐ No ☐

Oil ☐ Water ☐ Air ☐

Maximum permissible temperature of

primary part [K]: _____

secondary part [K]: _____

Controller

Present? yes ☐ no ☐

DC link voltage [V_{DC}]: _____

Controller type:

Components: Servo controller only ☐

Complete controller ☐

Positioning: Point-to-point control ☐

Continuous path control ☐

Total cable length from motor to controller [m]: _____

sketch

Interfaces: _____

Options: _____

General information

Accessories: _____

Single unit ☐ Series ☐ Prototype for series ☐

Expected annual need: _____

Planned series-production start: _____

Price suggestion or costs of

previous solution: _____

Desired date of quotation: _____

Technical documentation

Medium: Paper ☐ CD ☐

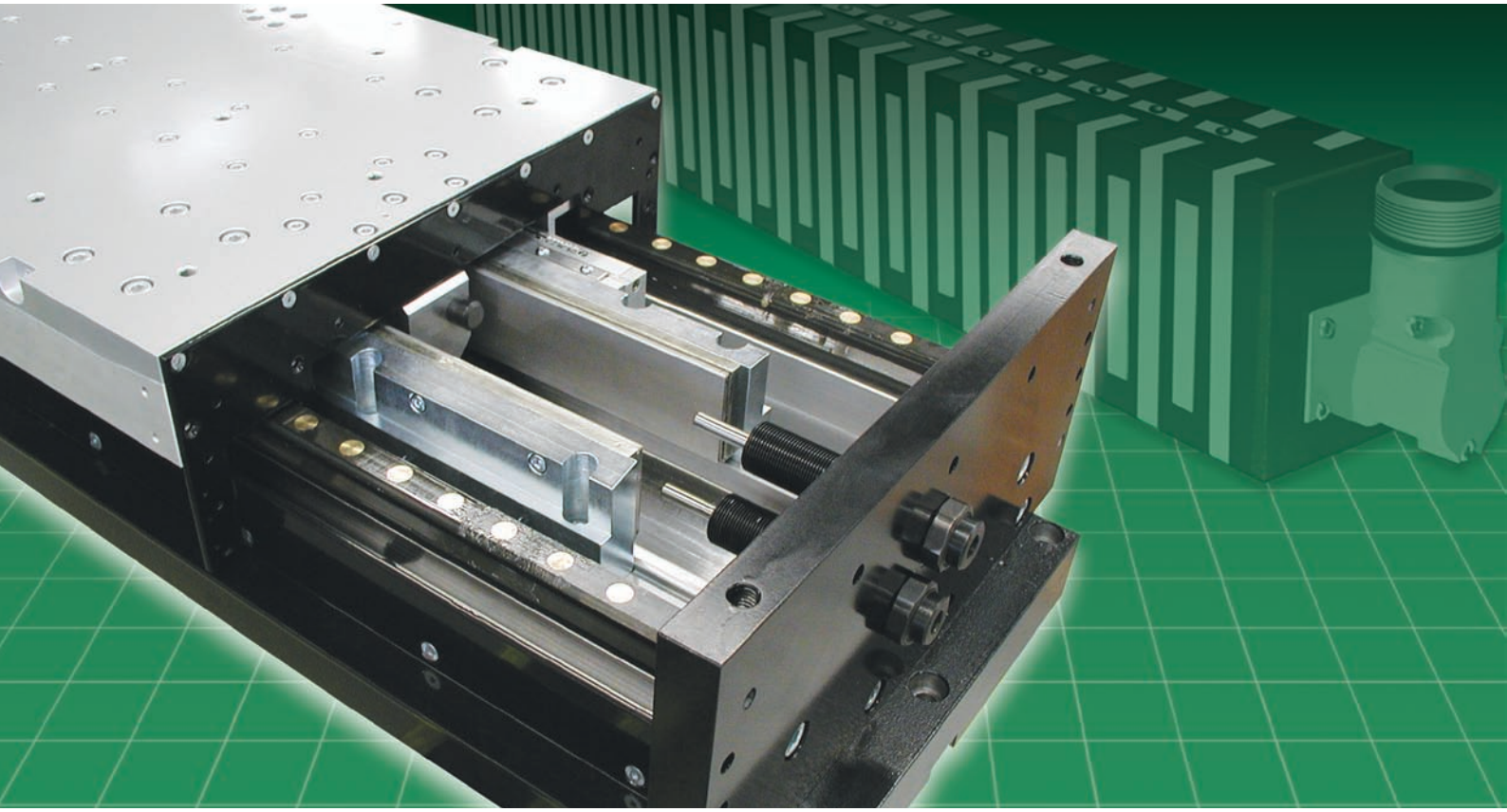
Language: _____

Further processing by: _____ Date: _____

Created by: _____ Date: _____

Feasibility checked by: _____ Date: _____

Technical Information and Consulting Services



IDAM offers you cutting-edge technology and expert advice.
The IDAM application technicians will be happy to help you select the perfect drive for your application.

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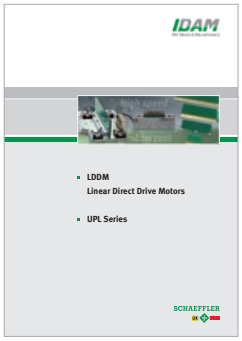
Notes

Overview of Publications

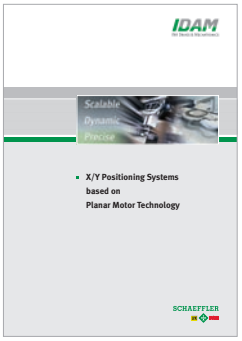
Are you interested in detailed technical information?
We would be happy to send you our product brochures. Contact us: idam@schaeffler.com

LDDM – Linear Direct Drive Motors: L1 Series

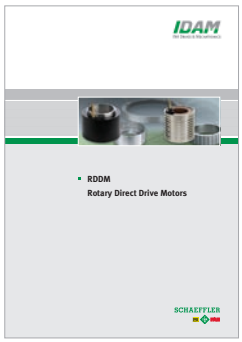
LDDM – Linear Direct Drive Motors: L2U Series



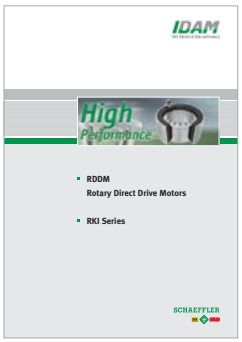
LDDM – Linear Direct Drive Motors: UPL Series



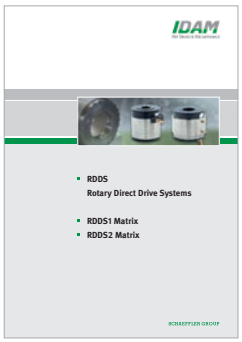
X/Y Positioning Systems based on Planar Motor Technology



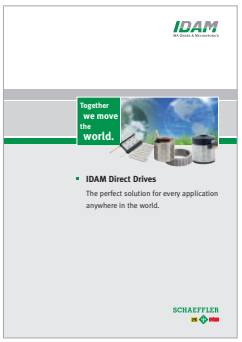
RDDM – Rotary Direct Drive Motors



RDDM – Rotary Direct Drive Motors: RKI Series



RDDS – Rotary Direct Drive Systems: RDDS1, RDDS2 Matrix



Product Overview: IDAM Direct Drives

We would be happy to provide you with product brochures for our electronic assemblies and system solutions.

All information about our motors and systems can also be found on our website at www.idam.de.

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