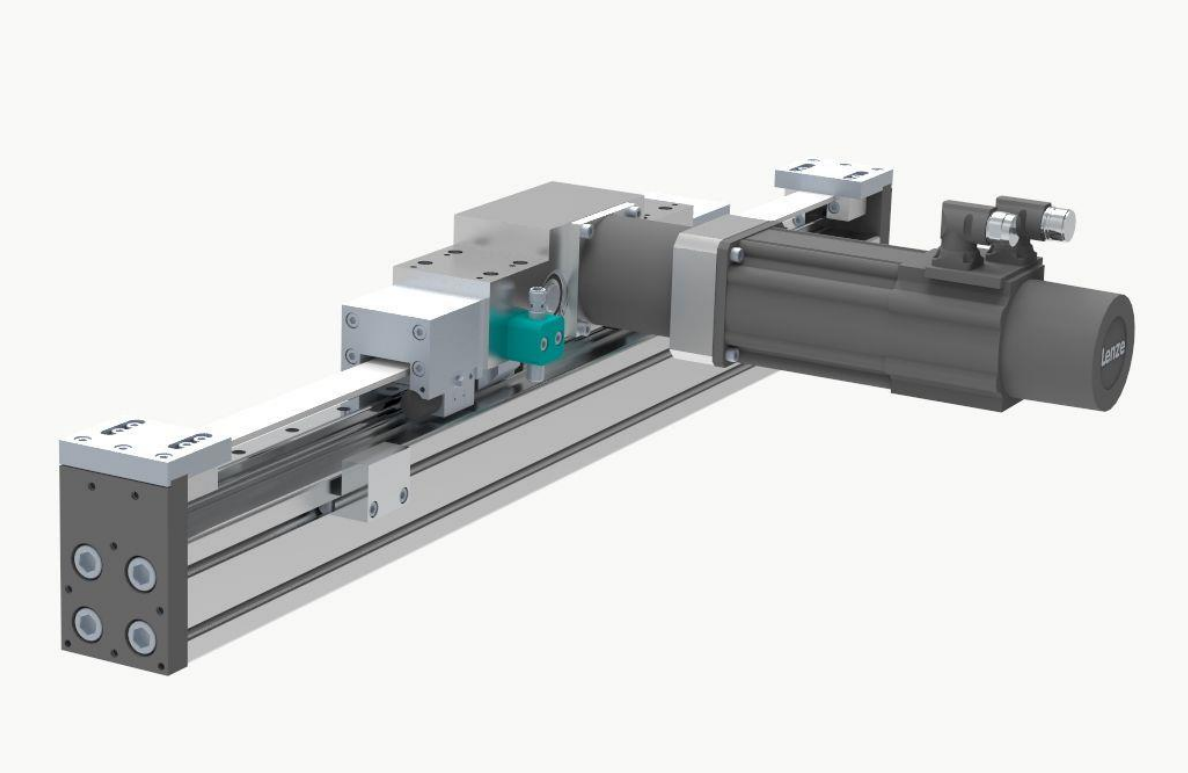
Gesellschaft für innovative Automationstechnik mbH

Linear actuators LVE - ECO



Preface

To realise automation solutions in a technically and economically efficient way, it is essential to trust in the competence and experience of specialists.
We consequently follow the idea of systems to offer a comprehensive range of standardised automation solutions with which line and gantry robots, palletisers and manipulators can be realised in an economically efficient way.

Use our experience and our specialist's know-how! Benefit from our innovative technologies for economical, user-oriented solutions. Wherever custom-tailored and individual automation solutions are required – we are your competent partner!

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Linear actuators LVE-ECO

The linear actuators type ECO were developed to achieve the best possible effectiveness for simple constructions while maintaining the highest standards.
They consist of monocoque aliminium extrusion profiles featuring linear guides with high static load ratings.
The systems are driven by a toothed belt made of polyurethane with steel reinforcement and AT profile.

The linear actuators type ECO are available in different sizes (30, 50 and 80) and hence provide an ideal range for designers and users of individual applications with different masses, velocities and accelerations.

Linear actuators LVE-ECO

Safety instructions

All sizes are not or only partly self-locking and therefore require motors with holding brake especially for vertical application. Screw drives are preferable for vertical application. Make sure, the application poses no danger to people or material or clearly indicate remaining risks.

Girder profile

The aluminium profile is an extrusion profile with tolerances in straightness and torsion. The tolerances are regulated according to DIN 17615. Our profiles usually fall well below the required tolerances.

Mounting

The linear units are mounted either at the bottom of the profile using T- nuts or T-bolts or at the sides using clamping strips. In order to achieve the desired accuracy of the guide the linear stage has to be aligned by means of levelling plates or by mounting them them to a specially machined mounting face (flatness tolerance <0,2 mm per 1 m).

The lead can be securely mounted to the slide by means of screws. The linear unit should regularly be cleaned from dust and dirt.

Commissioning

During commissioning make sure the permissible loads are not exceeded and the permissible distances are kept (don't drive against mechanical stop). The end positions should be equipped with limit switches and external dampers as emergency stoppers.

Lubrication and maintenance

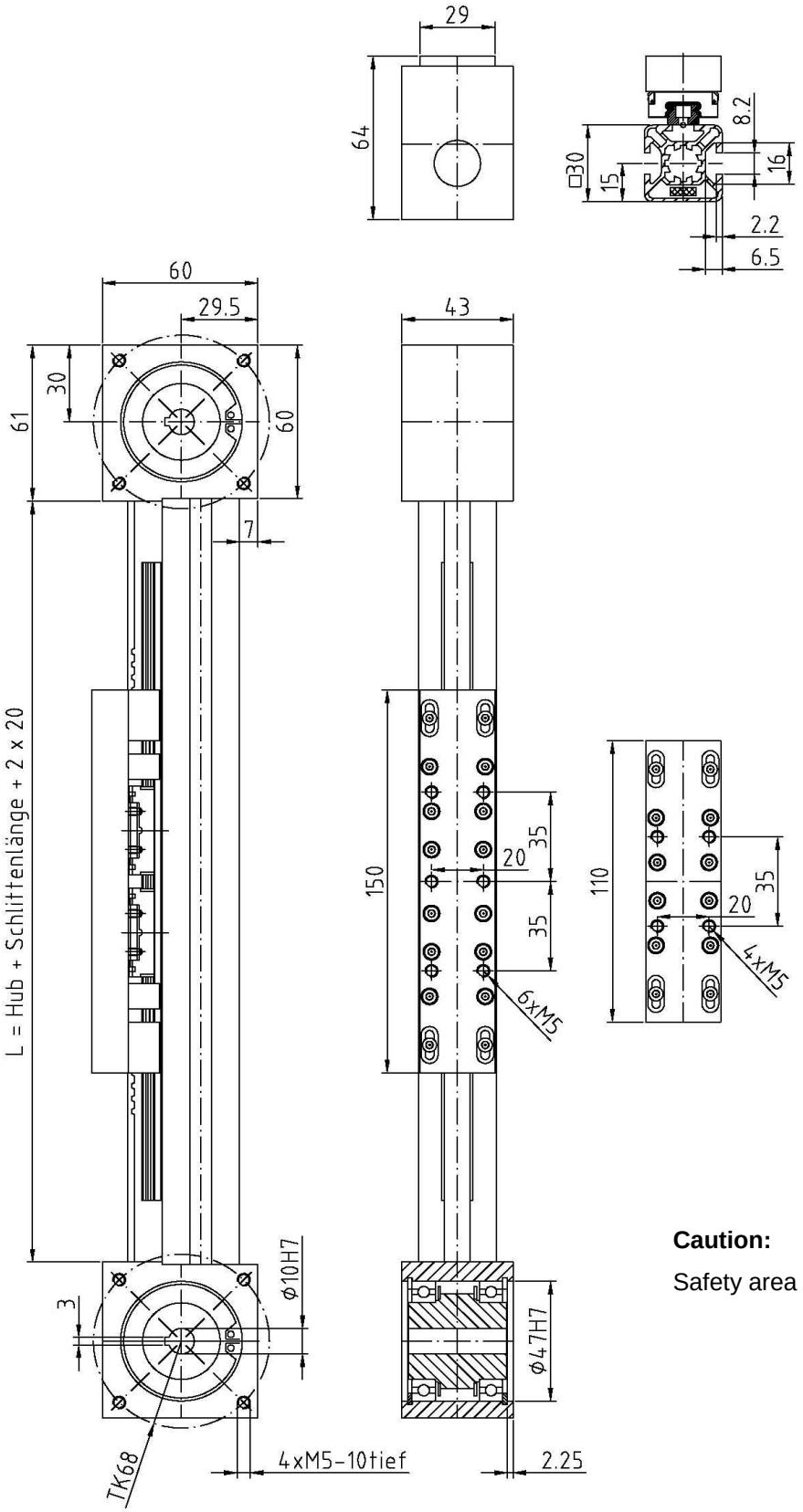
The linear axis are delivered ready-to-mount and lubricated with lithium complex soap thickened grease. Lubrication nipples mounted on the sides allow central relubrication for maintenance. All bearings are sealed and maintenance-free. Every 400 operating hours at the latest or every six months the linear recirculating ball bearings and the screw shoudld be relubricated by means of a suitable grease. If other greases are used check the miscibility. It is recommended to rather grease several times with small amounts than to grease once when the maintenance interval expires.

The maintenance intervals depend on the ambient conditions and the application.

Amounts for relubrication per carriage

	Linear recirculating ball bearing **KU 12**	Linear recirculating ball bearing **KU 15**	Linear recirculating ball bearing **KU 20**
LVE with toothed belt drive ZR	0.2 cm^3	0.8 cm^3	1.4 cm^3

LVE 30 ZR ECO – Linear actuator with toothed belt



Caution:

Safety area 2 x 20 mm

LVE 30 ZR ECO – Linear actuator with toothed belt

Fields of application:
- high speed
- long strokes

Guide system:
- KU2-12 two-row linear recirculating ball bearing, size 12

Guide system	Static load rating per carriage	
	$C_{dynamic}$ [kN]	C_{static} [kN]
KU2-12	2.31	3.47

The given static load ratings refer radially to one carriage and only serve for the calculation of the theoretic useful life.
If there are any questions please do not hesitate to contact us.

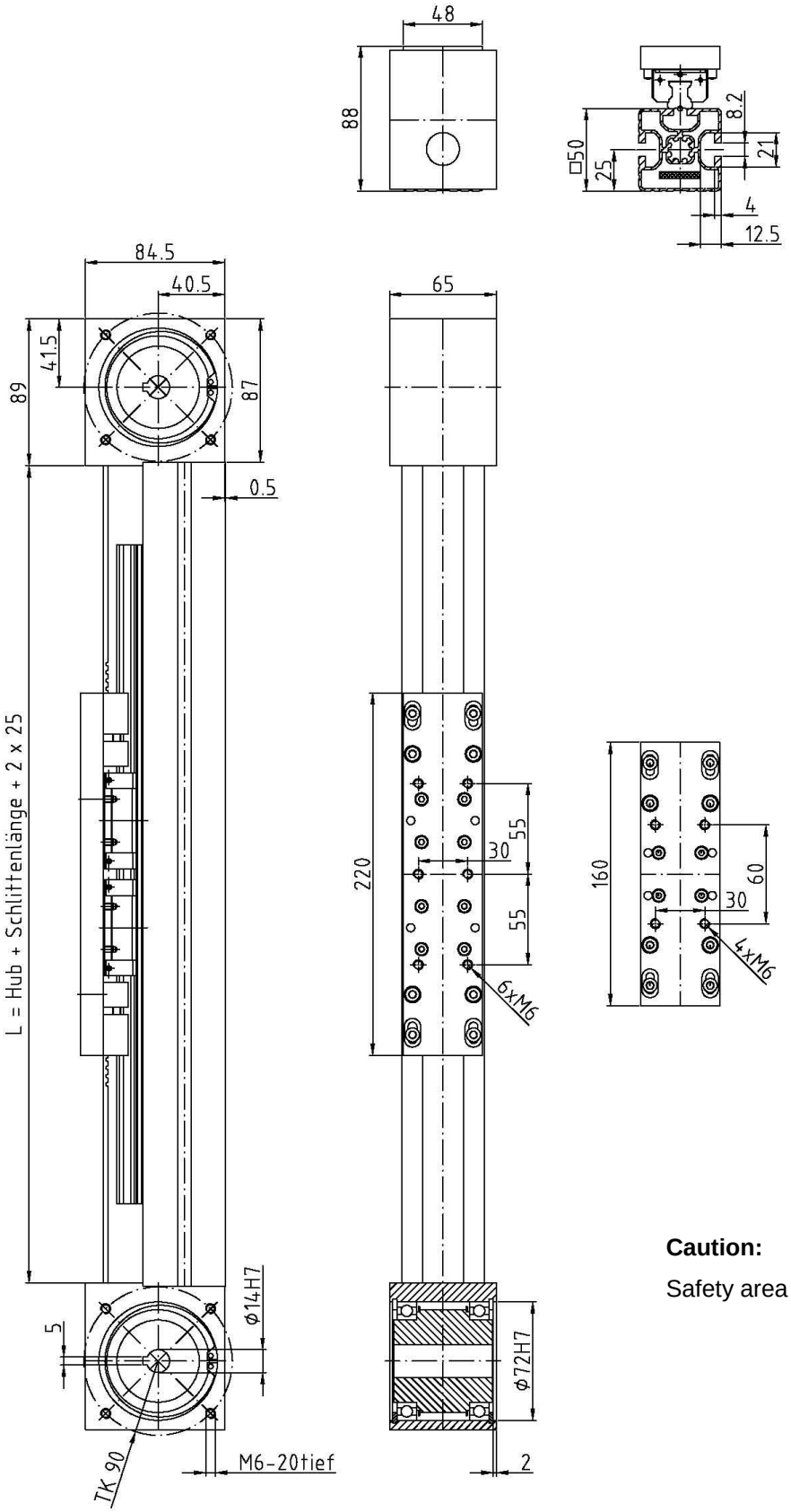
Max. length of the profile	4000 mm
Speed	up to 4 m/s
Repeatability[2)]	± 0.1 mm
Feed per revolution	120 mm
Max. operational force of the belt[1)]	225 N
Max. drive torque	4.3 Nm
Type of belt	10 AT 5

Moment of inertia	Jx = 3.5 cm^4
of the profile	Jy = 3.7 cm^4
Weight carriage	ca. 0.16 kg
Weight of unit without stroke	ca. 0.27 kg
Weight per 100 mm stroke	ca. 2.5 kg
Moment of inertia	ca. 0.13 kg

- Length of the carrige S1 = 110 mm with one runner block
- Length of the carriage S2 = 150 mm with two runner blocks
- To reach higher moment loads two or more carriages can be used. They are connected via the toothed belt.

1) Dependent on load, velocity, deceleration, direction and temperature

LVE 50 ZR ECO – Linear actuators with toothed belt



Caution:

Safety area 2 x 25 mm

LVE 50 ZR ECO – Linear actuators with toothed belt

Field of application:
- high speed
- long strokes

Guide system:
- KU4-15 four-row linear recirculating ball bearing, size 15

Guide system	**Static load rating per carriage**	
	$C_{dynamic}$ [kN]	**C_{static} [kN]**
KU4-15	7,8	13,5

The given static load ratings refer radially to one runner block and only serve for the calculation of the theoretic useful life.
If there are any questions please do not hesitate to contact us.

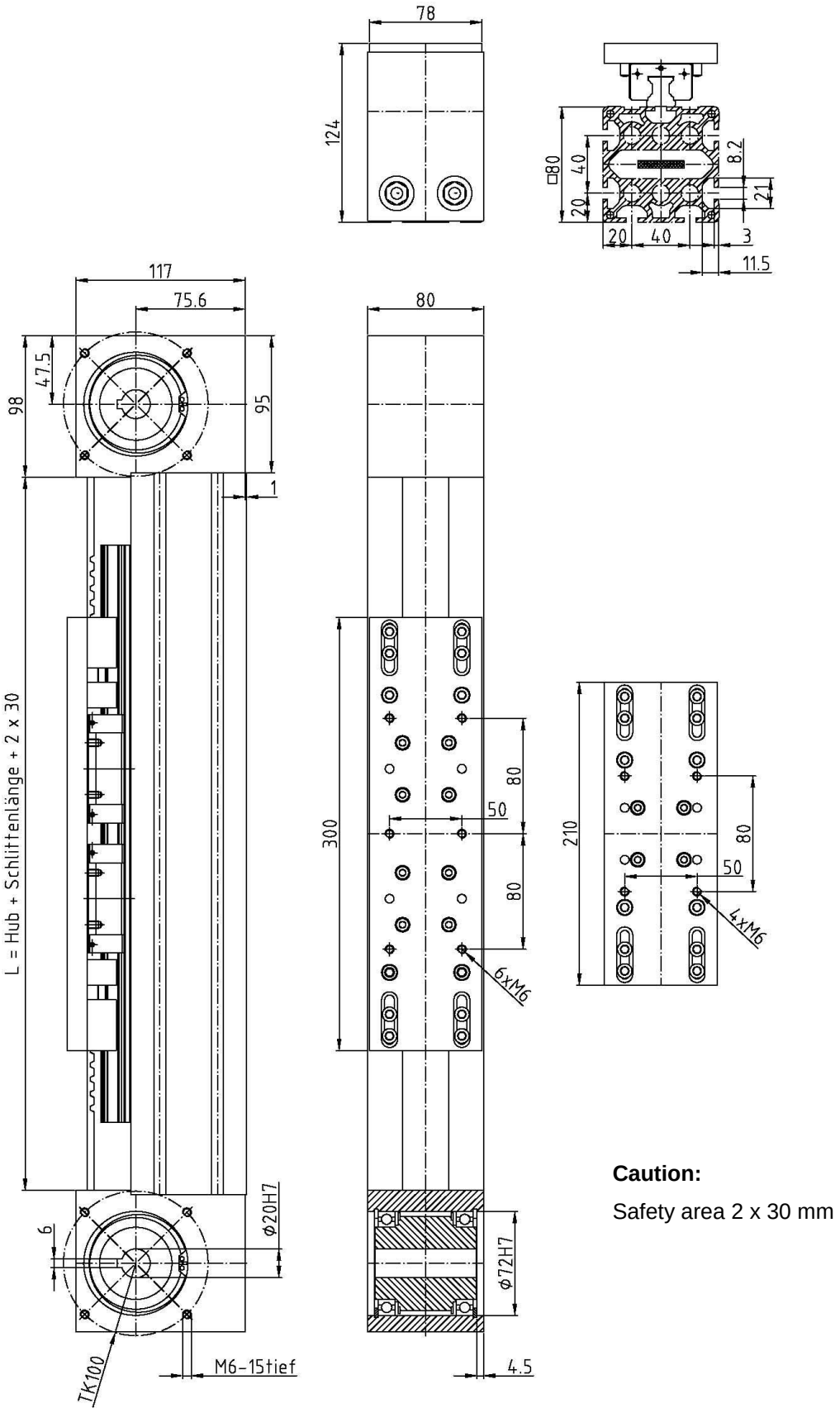
Max. length of the profile	6000 mm
Speed	up to 5 m/s
Repeatability[1)]	± 0.1 mm
Feed per revolution	200 mm
Max. operational force of the belt	670 N
Max. drive torque	21 Nm
Type of belt	25 AT 5

Moment of inertia	Jx = 18.4 cm^4
of the profile	Jy = 16.0 cm^4
Weight carriage	ca. 0.56 kg
Weight of unit without stroke	ca. 0.85 kg
Weight per 100 mm stroke	ca. 5.5 kg
Moment of inertia	ca. 0.34 kg

- Length of the carriage S1 = 160 mm with one runner block
- Length of the carriage S2 = 220 mm with two runner blocks
- To achieve higher moment loads two or more carriages can be used. They are connected via the toothed belt.

1) Dependent on load, velocity, deceleration, direction and temperature

LVE 80 ZR ECO – Linear stage with toothed belt



Caution:

Safety area 2 x 30 mm

LVE 80 ZR ECO – Linear actuator with toothed belt

Field of application:
- high speed
- long strokes

Guide system:
- KU4-20 four-row linear recirculating ball bearing, size 20

Guide system	Static load rating per carriage	
	$C_{dynamic}$ [kN]	C_{static} [kN]
KU4-20	18.8	24.4

The given static load ratings refer radially to one runner block and only serve for the calculation of the theoretic useful life.
If there are any questions please do not hesitate to contact us.

Max. length of the profile	6000 mm
Speed	up to 5 m/s
Repeatability[1)]	± 0.1 mm
Feed per revolution	210 mm
Max. operational force of the belt	2000 N
Max. drive torque	66 Nm
Type of belt	32 AT 10

Moment of inertia	Jx = 173 cm^4
of the profile	Jy = 160 cm^4
Weight carriage	ca. 1.35 kg
Weight of unit without stroke	ca. 2.1 kg
Weight per 100 mm stroke	ca. 12 kg
Moment of inertia	ca. 1.1 kg

- Length of the carriage S1 = 210 mm with one runner block
- Length of the carriage S2 = 300 mm with two runner blocks
- To achieve higher moment loads two or more carriages can be used. They are connected via the toothed belt.

1) dependent on load, velocity, acceleration, direction and temperature

Accessory

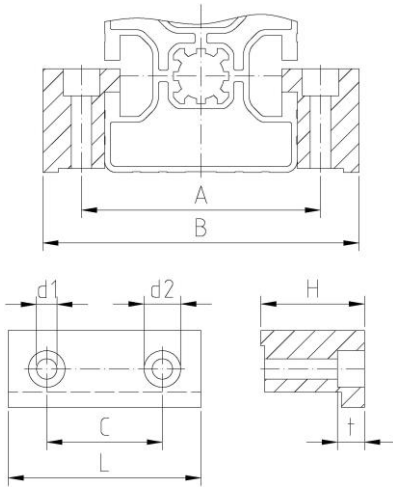
Clamping strip – KL

Use clamping strips to mount the linear axis to a mounting face. The number of clamping strips required depends on the load and the total length of the actuator.

Type of stage	A	B	C	L	H	Ød1	Ød2	t
LVE 30	42	62	30	50	17.5	5.5	9.5	7
LVE 50	62	82	30	50	26.9	5.5	9.5	7
LVE 80	92	112	30	50	20.7	5.5	9.5	7

[mm]

Other dimensions on demand.



Slot nut N

T- nuts are used to mount any component to the profile slots.

	LVE 30	LVE 50	LVE 80
Thread	M5	M5	M6

Order code

LVE 50 ZR	–	ECO	–	S2	–	500	–	770	–	MG	–	KUP	–	Sonder

LVE 50 ZR	-	Product name	Linear stage size 50 With toothed belt drive
ECO	-	Series	ECO-series
S2	-	Type of slide unit	Slide unit S2 = 220 mm
500	-	Length of stroke [mm]	500 mm stroke
770	-	Length of profile [mm]	Length of profile L = 770 mm
MG	-	Accessory	Motor flange
KUP	-	Accessory	Coupling
Sonder	-	Special design	E. g. additional mounting holes in the slide unit

Product range

Drives and stages

- Linear stages
- Linear positioning tables with/without drive
- Precision positioning tables
- Ball screws and roller screws
- Trapezoidal screws
- Screw jacks
- Electromechanical cylinders
- Bevel gears
- Planeatry gears

Drives and accessory

- Three-phase asynchronous motors
- Worm geared motors
- Spur gear motors
- Servo drives
- Stepper drives
- DC motors
- Frequency changers
- Controllers
- Switches, proximity sensors

Linear guides

- Linear ball or roller guides
- Precision shafts
- Linear ball bearings
- Glide bushings

Links

- Couplings
- Universal shafts
- Cardan shafts
- Clamps

Roller bearings

Custom-tailored solutions

GIA – Gesellschaft für innovative Automationstechnik mbH
Scarletallee 11, D-50735 Köln
Tel.: +49 221 7174-380 Fax: +49 221 7174-375
E-mail: gia-mbh@web.de
Internet: www.giambh.com