

# Linear actuator with linear ball bearing and guideway assembly and direct drive

Series MKUVS 42-LM



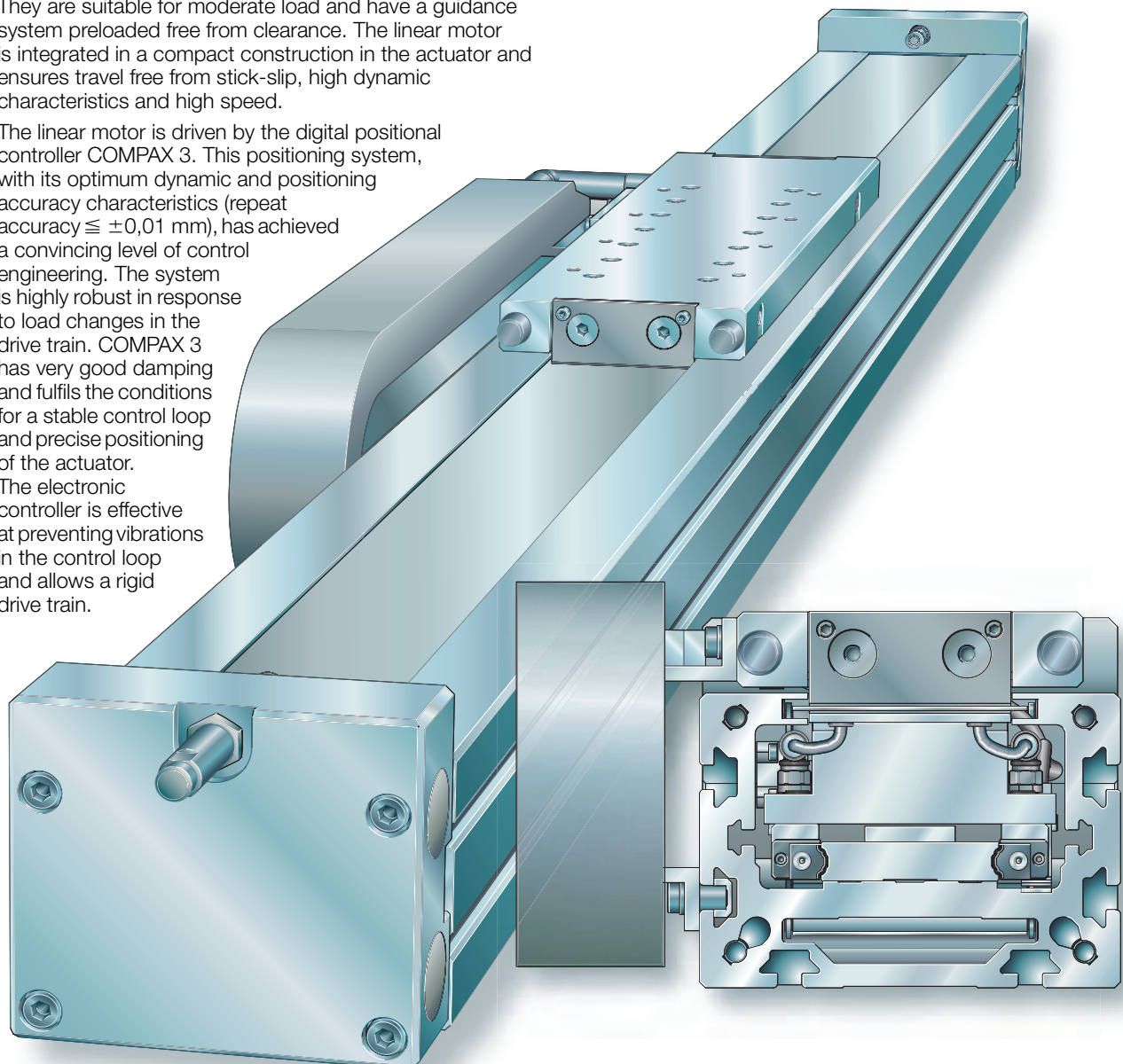
Linear actuators with linear ball bearing and guideway assembly and direct drive MKUVS 42-LM with an integral electro-magnetic measuring system are ready-to-fit units. They consist of a carriage with four KUVS linear recirculating ball bearing units, the integral primary component of the linear motor and the sensing head of the measuring system and the combined support rail/guideway with the secondary component of the linear motor and the longitudinal scale of the measuring system.

They are suitable for moderate load and have a guidance system preloaded free from clearance. The linear motor is integrated in a compact construction in the actuator and ensures travel free from stick-slip, high dynamic characteristics and high speed.

The linear motor is driven by the digital positional controller COMPAX 3. This positioning system, with its optimum dynamic and positioning accuracy characteristics (repeat accuracy  $\leq \pm 0,01$  mm), has achieved a convincing level of control engineering. The system is highly robust in response to load changes in the drive train. COMPAX 3 has very good damping and fulfils the conditions for a stable control loop and precise positioning of the actuator. The electronic controller is effective at preventing vibrations in the control loop and allows a rigid drive train.

The rapid control system allows very high cycle rates. This reliably prevents process-critical overshoot behaviour. COMPAX 3 ensures adherence to the standards UL, cUL and CE. Furthermore, the function "Safe operational stop" to EN 954-1 is supported.

The control options available for positioning are: digital I/O, RS 232/RS 485, Profibus DP and CANopen. Other controllers can be incorporated by means of Profibus, CAN or RS 485.



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# Linear actuator with linear ball bearing and guideway assembly and direct drive

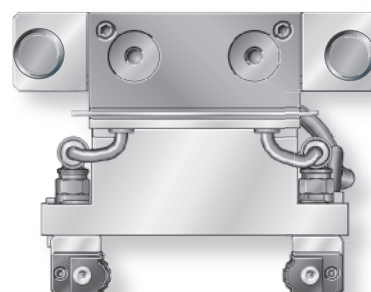


## Features

### Linear actuators with linear ball bearing and guideway assembly and direct drive

- are complete units comprising:
  - a compact, rigid aluminium support rail with a guideway and secondary component
  - a carriage with an integral primary component, guided in the support rail by means of four KUVS linear recirculating ball bearing units
  - an electro-magnetic length measuring system
  - two end plates or, if the option “Covering strip” is selected, two return units
  - a flexible cable trunking system
- can support forces from all directions and moments about all axes
- are easy to fit
  - the support rail has T-slots for standard T-nuts or fixing lugs. The carriage has threaded holes. The components can therefore be easily screwed to the adjacent construction
- are suitable, due to the mounting options on the support rail, for modular constructions
- have the following options
  - circulating covering strip
  - flexible cable trunking system
  - shock absorbers
  - pneumatic brake (in preparation)
- are suitable for moderate loads
- can also be fitted with more than one carriage, where the carriages are independent of each other (in this case, a covering strip is not possible)
- have a clearance-free, preloaded guidance system
- run with high positional accuracy and free from stick-slip
  - if the servo controller COMPAX 3 is used, a positional accuracy of  $\leq \pm 0,1$  mm can be achieved
- are suitable for:
  - accelerations up to  $40 \text{ m/s}^2$
  - speeds up to  $5 \text{ m/s}$
  - operating temperatures from  $0 \text{ }^\circ\text{C}$  to  $+60 \text{ }^\circ\text{C}$
- have carriages with relubrication facility
  - the linear ball bearing units are relubricated via lubrication nipples in the longitudinal faces of the carriage
  - the direct drive, covering strip and return units are maintenance-free.

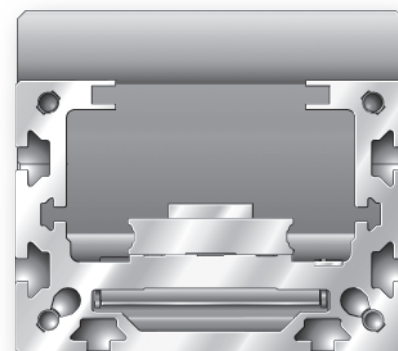
## Carriage



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- carriage saddle plate made from anodised profiled aluminium with threaded holes
- four linear recirculating ball bearing units
- primary component of the direct drive
- sensing head of the linear measuring system
- mounting units for the covering strip
- funnel type lubrication nipples on the longitudinal faces of the carriage saddle plate

## Support rail

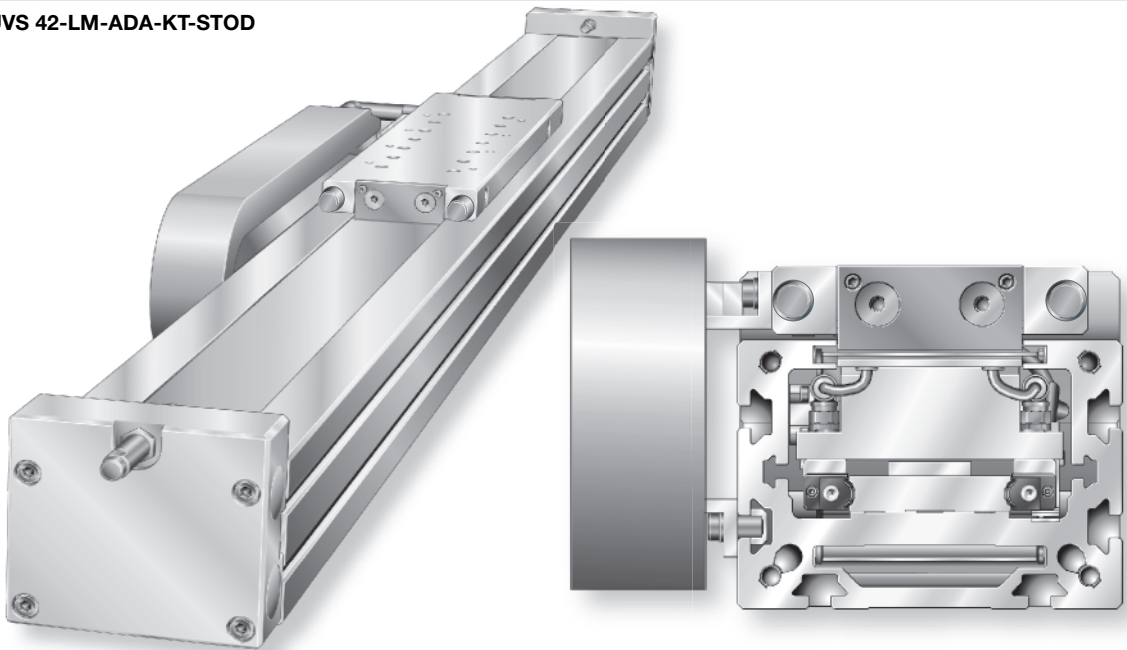


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- support rail
  - composite rail made from anodised aluminium profiled supporting section, combined with guideway for KUVS, as well as secondary component of linear motor
  - with magnetic measuring strip fixed by adhesive
  - maximum length:  $8\,000 \text{ mm}$
  - T-slots for mounting in the adjacent construction

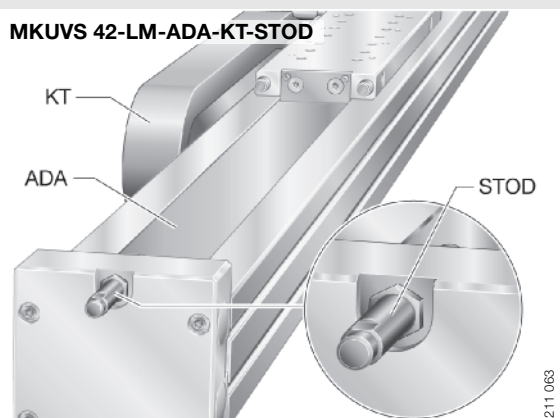
Linear actuator with options

MKUVS 42-LM-ADA-KT-STOD



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MKUVS 42-LM-ADA-KT-STOD



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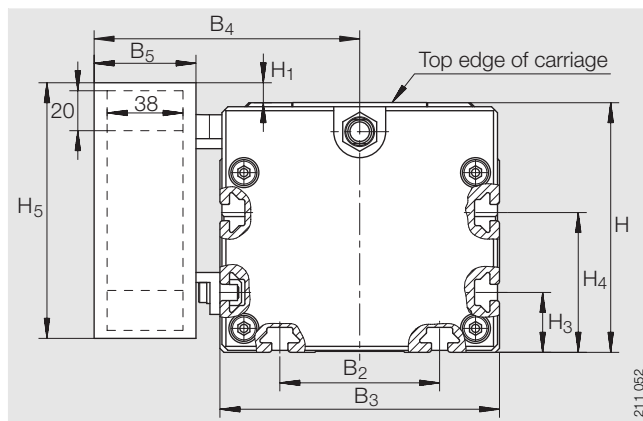
- ADA: circulating covering strip
- KT: flexible cable trunking system
- STOD: shock absorbers (both sides)

# Linear actuator with linear ball bearing and guideway assembly and direct drive

Series MKUVS 42-LM

With options:

- covering strip ADA
- flexible cable trunking system KT
- shock absorbers STOD.



MKUVS 42-LM-ADA-KT-STOD, section

Dimension table · Dimensions in mm											
Designation	Mass		Dimensions			Mounting dimensions					
	$G_{tot}^{5)}$ ≈ kg	$G_{Law}^{3)}$ ≈ kg	B	H	L	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	B <sub>5</sub>	H <sub>1</sub>	H <sub>3</sub>
<b>MKUVS 42-LM-ADA-KT-STOD</b>	$(L_{tot} - 86) \times 0,02 + 12$	8,8	115	125	460	80	140	133	51	10	30

1)  $L_2$  = total stroke +  $L_1$  + 54.

$L_{tot}$  = total stroke +  $L_1$  + 54 + 86.

Total stroke = effective stroke +  $2 \times S$ .

The allowance S designates a safety range suitable for the particular application and should be at least 50 mm; total stroke in mm.

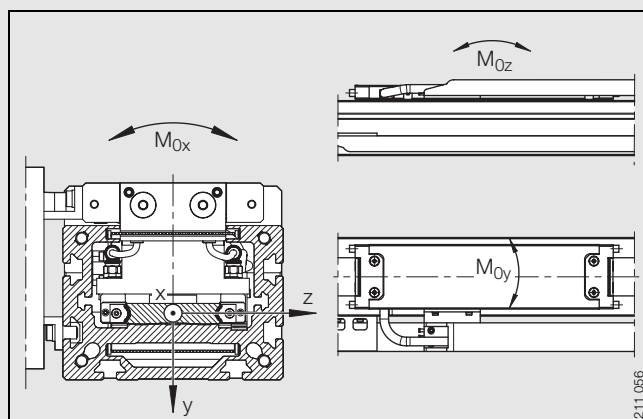
Maximum single-piece support rail length  $L_2$  = 8 000 mm.

2) Values are valid for calculating  $L_1$  only.

3)  $G_{Law}$  = mass of carriage.

4) The values are single loads and apply when the underside of the actuator is fully supported. These must be reduced for combined loads. For design criteria of the linear guidance system, see *INA Market Information "MAI 102"*.

5) Mass excluding flexible cable trunking system.



Load directions

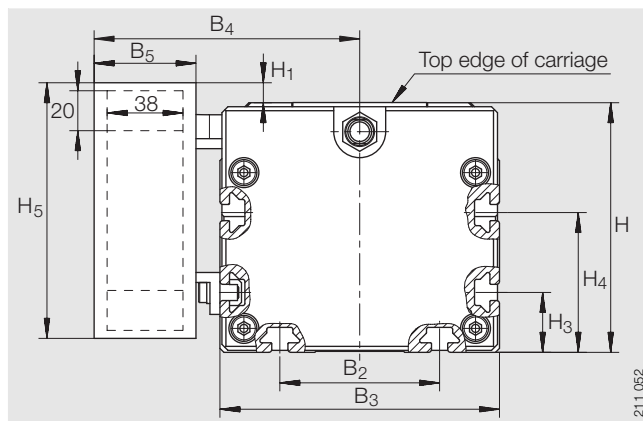


# Linear actuator with linear ball bearing and guideway assembly and direct drive

Series MKUVS 42-LM

With options:

- flexible cable trunking system KT
- shock absorbers STOD.



MKUVS 42-LM-KT-STOD, section

## Dimension table · Dimensions in mm

Designation	Mass		Dimensions			Mounting dimensions					
	$G_{\text{tot}}^{5)}$ ≈ kg	$G_{\text{Law}}^{3)}$ ≈ kg	B	H	L	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	B <sub>5</sub>	H <sub>1</sub>	H <sub>3</sub>
<b>MKUVS 42-LM-KT-STOD</b>	$(L_{\text{tot}} - 50) \times 0,02 + 11$	8	115	125	410	80	140	133	51	10	30

1)  $L_2$  = total stroke +  $L_1$  + 54.

$L_{\text{tot}}$  = total stroke +  $L_1$  + 54 + 50.

Total stroke = effective stroke +  $2 \times S$ .

The allowance S designates a safety range suitable for the particular application and should be at least 50 mm; total stroke in mm.

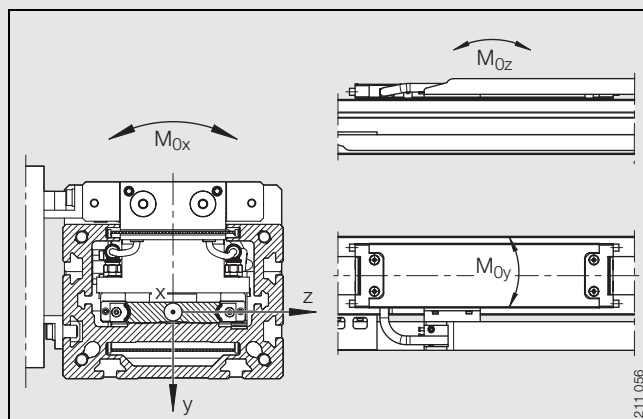
Maximum single-piece support rail length  $L_2$  = 8 000 mm.

2) Values are valid for calculating  $L_1$  only.

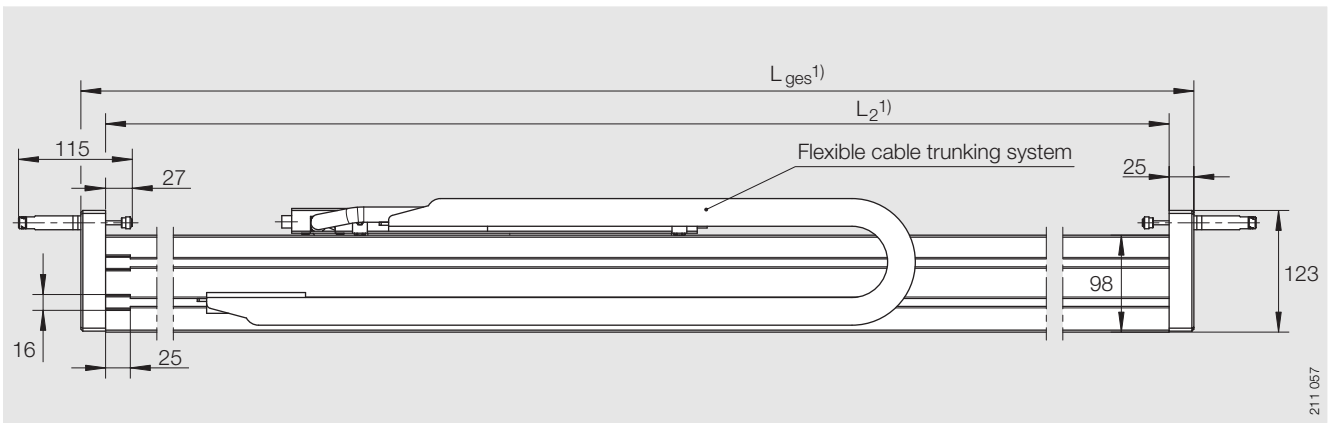
3)  $G_{\text{Law}}$  = mass of carriage.

4) The values are single loads and apply when the underside of the actuator is fully supported. These must be reduced for combined loads. For design criteria of the linear guidance system, see *INA Market Information "MAI 102"*.

5) Mass excluding flexible cable trunking system.



Load directions

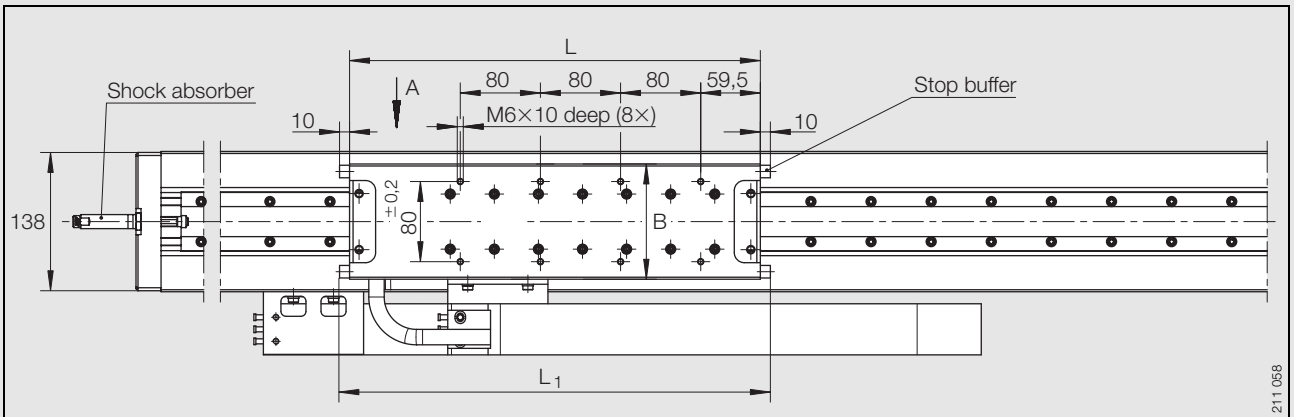


MKUVS 42-LM-KT-STOD

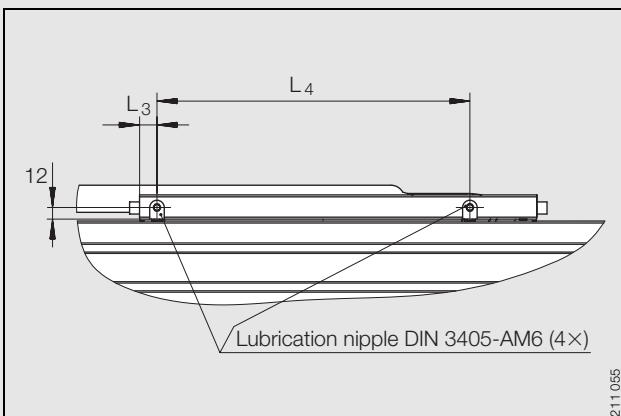
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					Basic load ratings of carriage guidance system <sup>2)</sup>		Static moment rating of linear guidance system <sup>4)</sup>			Geometrical moments of inertia of support rail	
H <sub>4</sub>	H <sub>5</sub>	L <sub>1</sub>	L <sub>3</sub>	L <sub>4</sub>	C	C <sub>0</sub>	M <sub>0x</sub>	M <sub>0y</sub>	M <sub>0z</sub>	I <sub>y</sub>	I <sub>z</sub>
					kN	kN	Nm	Nm	Nm	cm <sup>4</sup>	cm <sup>4</sup>
70	128	430	18	323	27,4	51	1500	4200	4200	1192	432

Mounting dimensions:

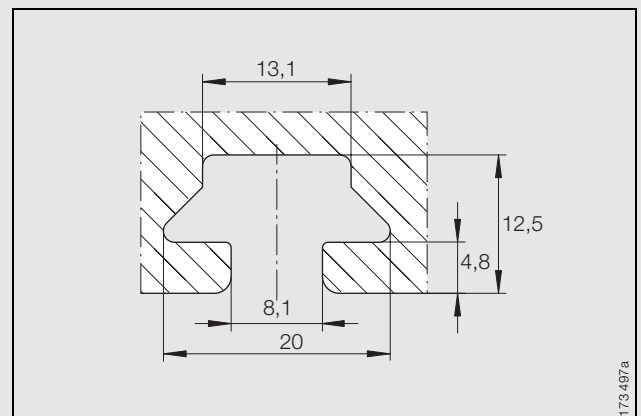


Carriage



Lubrication connector on both sides

211 055



T-slots

173 497a



## **INA-Schaeffler KG**

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