

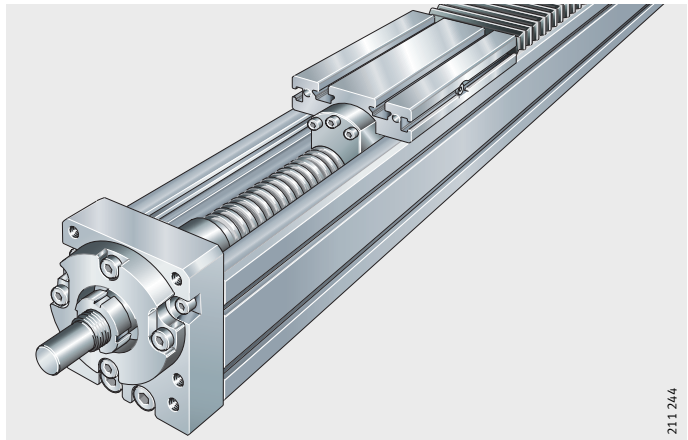
Actuators with ball monorail guidance system and ball screw drive

MKUVE15-KGT, MKUVE20-KGT

Product overview **Actuators with ball monorail guidance system and ball screw drive**

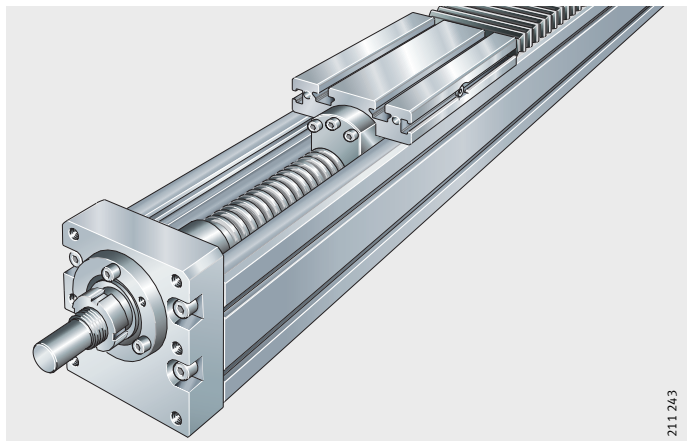
Actuators
with ball monorail guidance system
and ball screw drive

MKUBE15-KGT



211_244

MKUBE20-KGT



211_243

Actuators with ball monorail guidance system and ball screw drive

Features Mechanical components in the handling and automation equipment sectors are subject to particular requirements. Systems for traverse and positioning must be capable of moving small and large masses over various stroke lengths quickly, reliably and to high accuracy. Some years ago, we developed actuators with ball monorail guidance systems and ball screw drives to meet these requirements. This series has now been expanded to include the sizes MKUVE15-KGT and MKUVE20-KGT.

With these new actuators, it is possible to move moderate loads in conjunction with high moment loads about all three axes at a maximum carriage traverse speed of 0,633 m/s in the case of MKUVE15-KGT and 2,5 m/s in the case of MKUVE20-KGT to high positional accuracy (dependent on the spindle pitch, bearing limiting speed and the critical spindle speed).

The actuator is covered by means of bellows.

Guidance system The ball monorail guidance system KUVE15-B-S in MKUVE15-KGT and KUVE20-B-S in MKUVE20-KGT with two carriages allows the movement of moderate loads with high rigidity.

Drive system The actuator is driven by a ball screw drive:

- in MKUVE15-KGT (nominal diameter d_0 of spindle = 16 mm) with pitch values of 5 mm and 10 mm
- in MKUVE20-KGT (nominal diameter d_0 of spindle = 20 mm) with pitch values of 5 mm, 10 mm, 20 mm and 50 mm.

For pitch values of 5 mm and 10 mm, single (F) and preloaded double (FM) nuts are available. For pitch values of 20 mm and 50 mm, only a single nut (F) is possible.

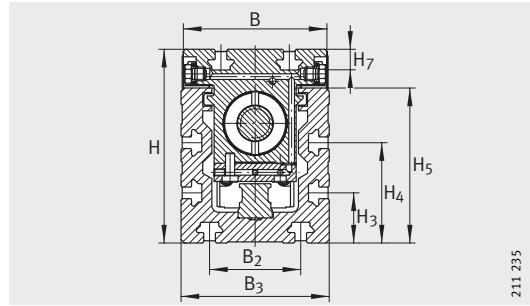
The spindle is supported by an axial angular contact ball bearing of series ZKLN – in MKUVE15-KGT – or ZKLF in MKUVE20-KGT.

The guidance system and drive are integrated in a highly rigid support rail that can be matched to the adjacent construction by means of T-slots.

Applications These actuators are highly suitable for peripheral applications in machine tools (handling tasks), in sheet metalforming and in wood-working machinery, for assembly equipment and in automation engineering as well as the manufacture of electronic components.

Further information on drives and controls is given in publication ALE, Driven Linear Units.

Actuators with ball monorail guidance system and ball screw drive



MKUVE15-KGT

Dimension table - Dimensions in mm

Designation	Spindle $d_0 \times P_z^{3)}$	Mass		Dimensions			Mounting dimensions								
		m_{tot} kg	$m_{Law}^{4)}$ kg	B	H	L	B ₁	B ₂	B ₃	B ₄	d	d ₁	H ₁	H ₂	H ₃
MKUVE15-KGT/5	16×5	$(L_{tot} - 50) \cdot 0,08 + 2,4$	1,4	63	85	160	30	40	65	51	10	60	52,5	84	22
MKUVE15-KGT/10	16×10	$(L_{tot} - 50) \cdot 0,08 + 2,4$	1,4	63	85	160	30	40	65	51	10	60	52,5	84	22

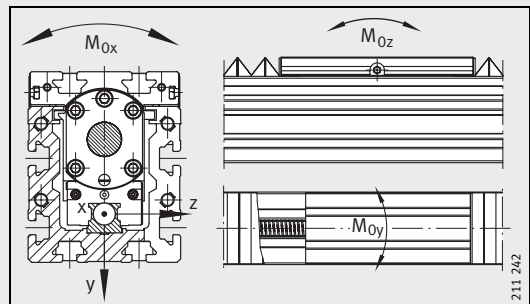
1) $L_2 = \text{total stroke} \cdot 1,19 + L + 25$
 $L_{tot} = \text{total stroke} \cdot 1,19 + L + 75$

Total stroke (GH) = effective stroke + 2 · S (mm)

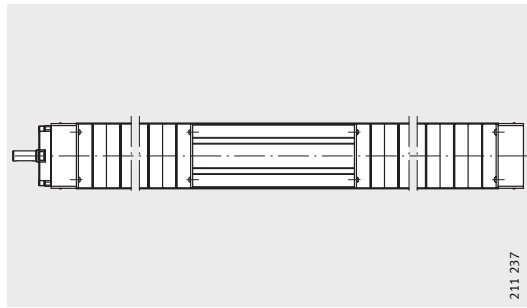
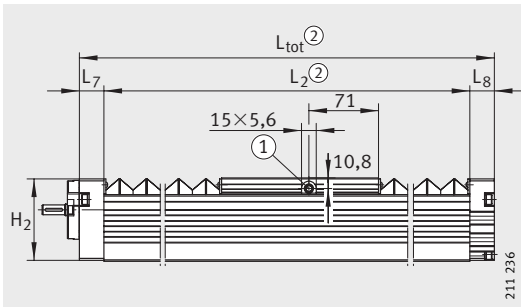
Caution!

The allowance S defines a safety range suitable for the particular application and should be at least equivalent to the spindle pitch P_z . Total stroke in mm. Maximum support rail length $L_2 = 5\,300$ mm. Actuators with a total length over 700 mm can be fitted with movable spindle supports (suffix SPU or 2SPU).

- 2) Values are valid for calculating L_h only.
- 3) $d_0 \times P_z$ = nominal diameter of spindle × spindle pitch.
- 4) m_{Law} = mass of carriage.
- 5) The values are single loads and are valid if the underside of the actuator is fully supported. These must be reduced in the case of combined loads. For design criteria for the linear guidance system, see Catalogue PF 1, Monorail Guidance Systems.
- 6) F = single nut
FM = preloaded double nut.
- 7) Basic load rating C and C_0 to DIN 69 051. Due to the calculation algorithm used, the C and C_0 values may differ in comparison with earlier results based on DIN 69 051.
- 8) Basic load rating in axial direction: For design criteria of the locating bearing, see Catalogue HR 1, Rolling Bearings.



Load directions (schematic)

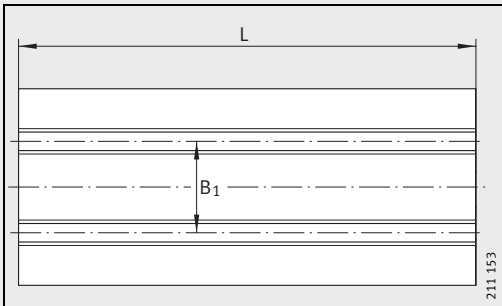


MKUVE15-KGT

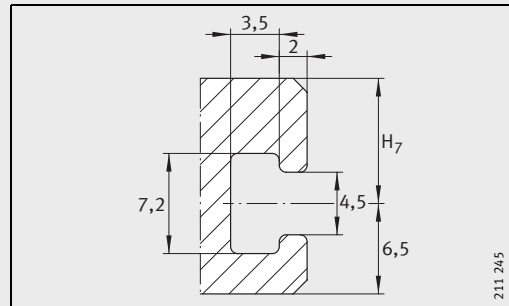
- ① Funnel type lubrication nipple DIN 3 405-AM6
- ② Length calculation¹⁾

											Static moment rating of carriage guidance system ⁵⁾			Geometrical moments of inertia of support rail		Basic load ratings ²⁾				Spindle bearing arrangement ²⁾⁸⁾		
																Carriage guidance system		Spindle nut ⁶⁾				
H ₄	H ₅	H ₆	H ₇	L ₃	L ₄	L ₅	L ₆	L ₇	L ₈	O ₁	M _{0x}	M _{0y}	M _{0z}	l _y	l _z	dyn. C	stat. C ₀			C _a	C _{0a}	
											Nm	Nm	Nm	cm ⁴	cm ⁴	kN	kN		kN	kN	kN	kN
44	68	51	9	15	38	12,2	13	25	25	M6	300	700	700	96	77	11,7	29	F/FM	9,3	13,1	16,9	24,7
44	68	51	9	15	38	12,2	13	25	25	M6	300	700	700	96	77	11,7	29	F/FM	15,4	26,5	16,9	24,7

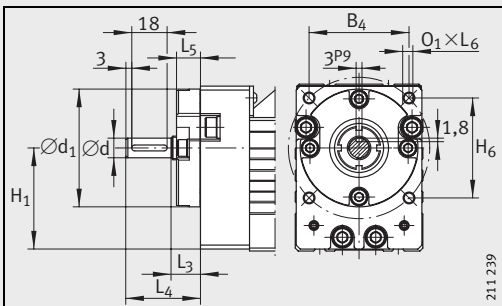
Mounting dimensions



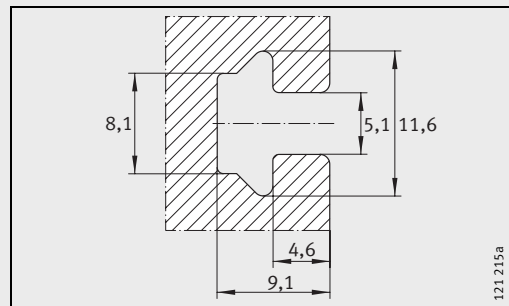
Carriage



T-slot on side of carriage

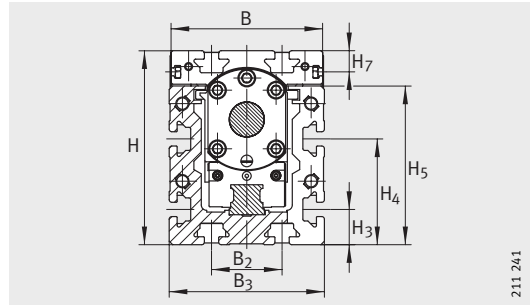


Drive flange/drive shaft



T-slots on support rail and top surface of carriage

Actuators with ball monorail guidance system and ball screw drive



MKUVE20-KGT

Dimension table - Dimensions in mm

Designation	Spindle $d_0 \times P_z$ ³⁾	Mass		Dimensions			Mounting dimensions								
		m_{tot} kg	m_{Law} ⁴⁾ kg	B	H	L	B ₁	B ₂	B ₃	B ₄	d	d ₁	H ₁	H ₂	H ₃
MKUVE20-KGT/5	20×5	$(L_{tot} - 56) \cdot 0,0105 + 6,5$	2,2	86	110	200	40	40	88	68	13	60	71	109	20
MKUVE20-KGT/10	20×10	$(L_{tot} - 56) \cdot 0,0105 + 6,5$	2,2	86	110	200	40	40	88	68	13	60	71	109	20
MKUVE20-KGT/20	20×20	$(L_{tot} - 56) \cdot 0,0105 + 6,5$	2,2	86	110	200	40	40	88	68	13	60	71	109	20
MKUVE20-KGT/50	20×50	$(L_{tot} - 56) \cdot 0,0105 + 6,6$	2,3	86	110	200	40	40	88	68	13	60	71	109	20

1) L_2 = total stroke · 1,17 + L + 25
 L_{tot} = total stroke · 1,17 + L + 81

Total stroke (GH) = effective stroke + 2 · S (mm)

Caution!

The allowance S defines a safety range suitable for the particular application and should be at least equivalent to the spindle pitch P_z . Total stroke in mm. Maximum support rail length $L_2 = 5\,300$ mm. Actuators with a total length over 1000 mm can be fitted with movable spindle supports (suffix SPU or 2SPU).

2) Values are valid for calculating L_h only.

3) $d_0 \times P_z$ = nominal diameter of spindle × spindle pitch.

4) m_{Law} = mass of carriage.

5) The values are single loads and are valid if the underside of the actuator is fully supported.

These must be reduced in the case of combined loads.

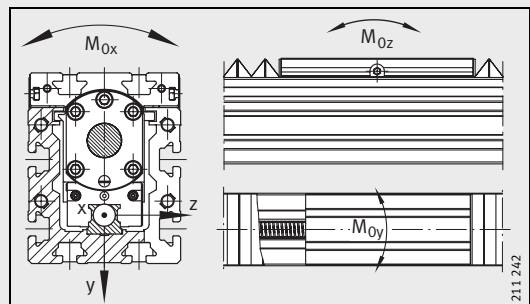
For design criteria for the linear guidance system, see Catalogue PF 1, Monorail Guidance Systems.

6) F = single nut

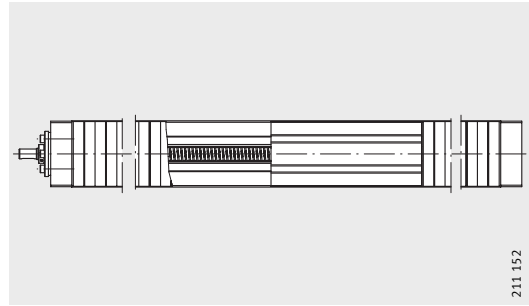
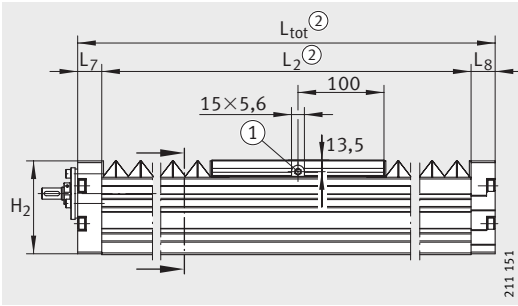
FM = preloaded double nut.

7) Basic load rating C and C_0 to DIN 69 051. Due to the calculation algorithm used, the C and C_0 values may differ in comparison with earlier results based on DIN 69 051.

8) Basic load rating in axial direction: For design criteria of the locating bearing, see Catalogue HR 1, Rolling Bearings.



Load directions (schematic)

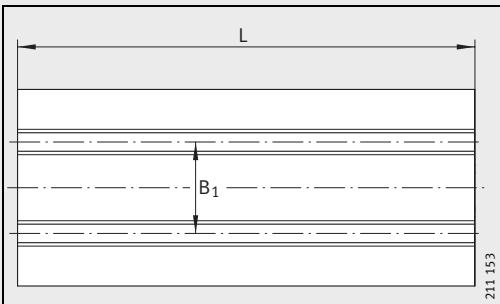


MKUVE20-KGT

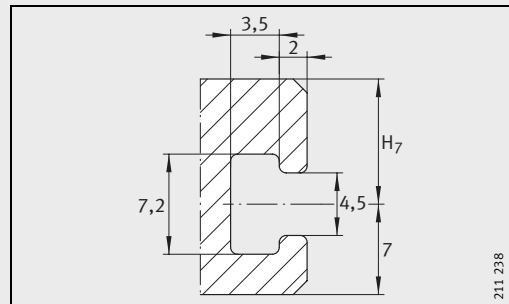
- ① Funnel type lubrication nipple DIN 3 405-AM6
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											Static moment rating of carriage guidance system ⁵⁾			Geometrical moments of inertia of support rail		Basic load ratings ²⁾					Spindle bearing arrangement ²⁾⁸⁾	
																Carriage guidance system		Spindle nut ⁶⁾				
H ₄	H ₅	H ₆	H ₇	L ₃	L ₄	L ₅	L ₆	L ₇	L ₈	O ₁	M _{0x}	M _{0y}	M _{0z}	l _y	l _z	dyn. C	stat. C ₀		C ⁷⁾	C ₀ ⁷⁾	C _a	C _{0a}
											Nm	Nm	Nm	cm ⁴	cm ⁴	kN	kN		kN	kN	kN	kN
60	90	46	12	19	42	8	15	28	28	M6	664	1000	1200	281	219	21,3	54	F/FM	10,5	16,6	17,9	28
60	90	46	12	19	42	8	15	28	28	M6	664	1000	1200	281	219	21,3	54	F/FM	11,9	17,6	17,9	28
60	90	46	12	19	42	8	15	28	28	M6	664	1000	1200	281	219	21,3	54	F	11,6	18,4	17,9	28
60	90	46	12	19	42	8	15	28	28	M6	664	1000	1200	281	219	21,3	54	F	13	24,6	17,9	28

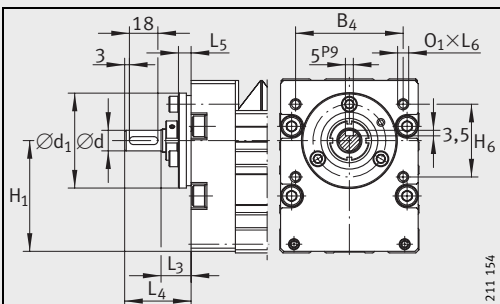
Mounting dimensions



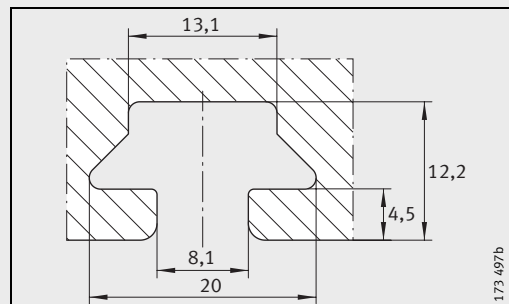
Carriage



T-slot on side of carriage



Drive flange/drive shaft



T-slots on support rail and top surface of carriage

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TPI 139 GB-D