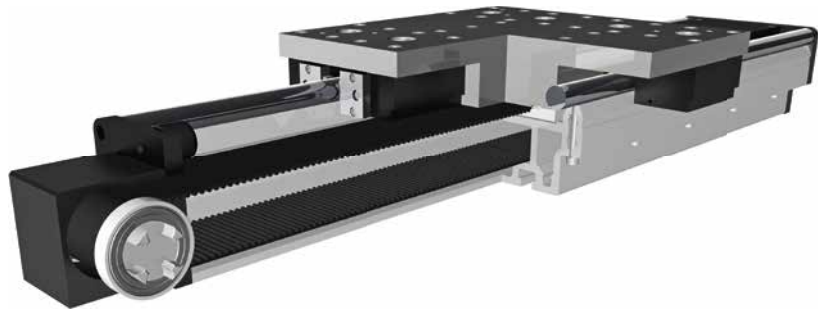# Linear system **ALLZ 203, 204**

BELT DRIVE

- ROLLER GUIDE
- KG HEAVY LOAD
- KG HIGH LOAD CAPACITY

Function:
This unit consists of an aluminium profile with hardened steel guide rods mounted on top of the profile. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. The pulleys have maintenance-free ball bearings. Opposite the driven side there is an integrated timing-belt tensioner which can be readjusted by 2 screws.

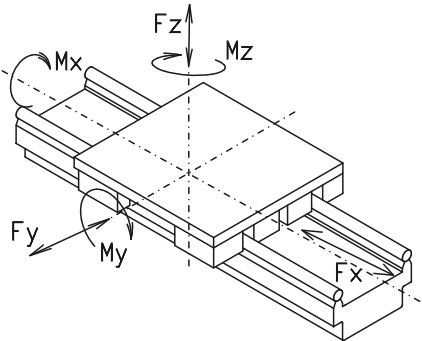|	
Fitting position:	As required. Max. length 5.000 mm without joints.
Carriage mounting:	By tapped holes.
Unit mounting:	By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support:	In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased. Repeatability ± 0,1.
Belt type:	HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Forces and torques

Size	ALLZ 203		ALLZ 204	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	-	5610	-	5610
F_y (N)	23000	18400	30000	24000
F_z (N)	11000	8800	16200	13000
M_x (Nm)	1180	950	1870	1500
M_y (Nm)	1870	1500	3000	2400
M_z (Nm)	3800	3100	5600	4500

All forces and torques related to the following:

$$\text{existing values} \quad \frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$$

No-load torque

Nm	4	4

Speed

(m/s) max	8	8

Geometrical moments of inertia of aluminium profile

I_x mm⁴	$2{,}26 \times 10^7$	$2{,}98 \times 10^7$
I_y mm⁴	$8{,}75 \times 10^7$	$10{,}22 \times 10^7$
Elastic modulus N/mm²	70000	70000

For life-time calculation of rollers use our homepage.

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Driving torque:

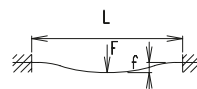$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

$$P_a = \frac{M_a * n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
Si	= safety factor 1,2 … 2	
M_n	= no-load torque	(Nm)
n	= rpm pulley	(min⁻¹)
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

Deflection:

$$f = \frac{F * L^3}{E * I * 192}$$

f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm²)
I	= second moment of area	(mm⁴)

Linear system **ALLZ 203, 204**
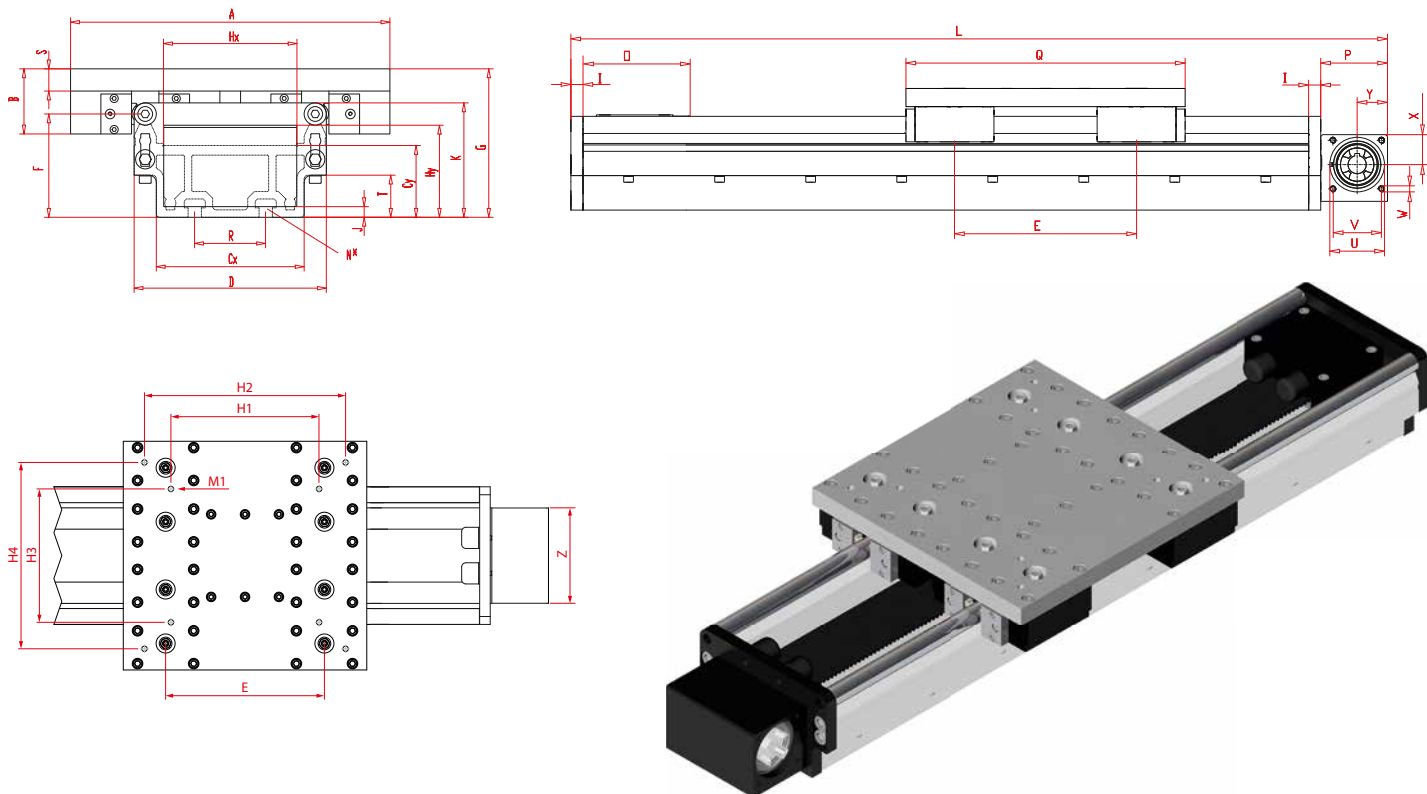
Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	Cx	Cy	D	F	G	Hx	Hy	I	J	K	N for	O	P	R	S	T	U -0,05	V	W	X	Y	Z	Basic weight	Weight per 100 mm
ALLZ 203	798	432	88	200	97	260	139,6	200,5	180,5	124,5	20	14,5	154,5	M16	182	110	96	30	57	90	80	10	49,5	50	180	90 kg	4,0 kg
ALLZ 204	822	460	80	200	97	270	139,6	199	180,5	124,5	20	14,5	165	M16	182	110	96	30	57	90	80	10	49,5	50	180	92 kg	4,9 kg

| Carriage	E	Q	H1	H2	H3	H4	M1
ALLZ 203	300	460	280	380	252	352	M12
ALLZ 204	355	490	---	---	---	---	M12

3 Guide rod size:
(3) ∅=30 **(4)** ∅=40

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Drive version:**

0   1   2   6   7   9
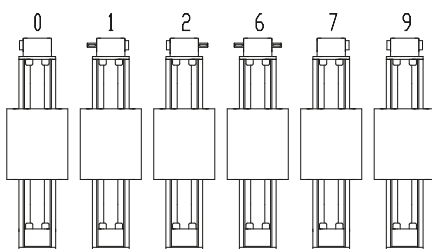
9 is as 0, but with coupling claws on both sides.

Coupling claw on one side
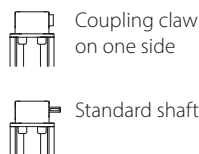
Standard shaft

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings.

Belt table:

Code No.		Belt	mm/rev.	Number of teeth
0	7	8M100	224	28

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
203	30 x 55	8x7x50	24
204	30 x 55	8x7x50	24

ALLZ 20	3	0	0	0	0	0	7	0	2000
Pos.	1	2	3	4	5	6	7		

Basic length + stroke = total length

Sample ordering code:
ALLZ203, guide rods 30 mm, standard body profile, coupling claw on both side, toothed belt 8M100, 1208 mm stroke.

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