

UNIMOTION



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LINEAR UNITS

CHARACTERISTICS

The **MTJZ** series contains Z-axis Linear Units with toothed belt drive, integrated Ball rail system and compact dimensions. This Linear Units provide high performance features such as, high speed, good accuracy and repeatability by vertical applications.

They can easily be combined to multi-axis systems.

Excellent price-/performance ratio and quick delivery time are ensured.

The compact, precision-extruded aluminum Profile from 6063 AL with integrated Zero-backlash Ball rail guide system, allows high load capacities and optimal cycles for the movement of larger masses at high speed.

In the linear units MTJZ is used a pre-tensioned steel reinforced AT polyurethane timing toothed belt. In conjunction with a Zero-backlash drive pulley high moments with alternating loads with good positioning accuracy, low wear and low noise can be realized.

The in the Profile slot driving Polyurethane timing belt protects all the parts in the Profile from dust and other contaminations

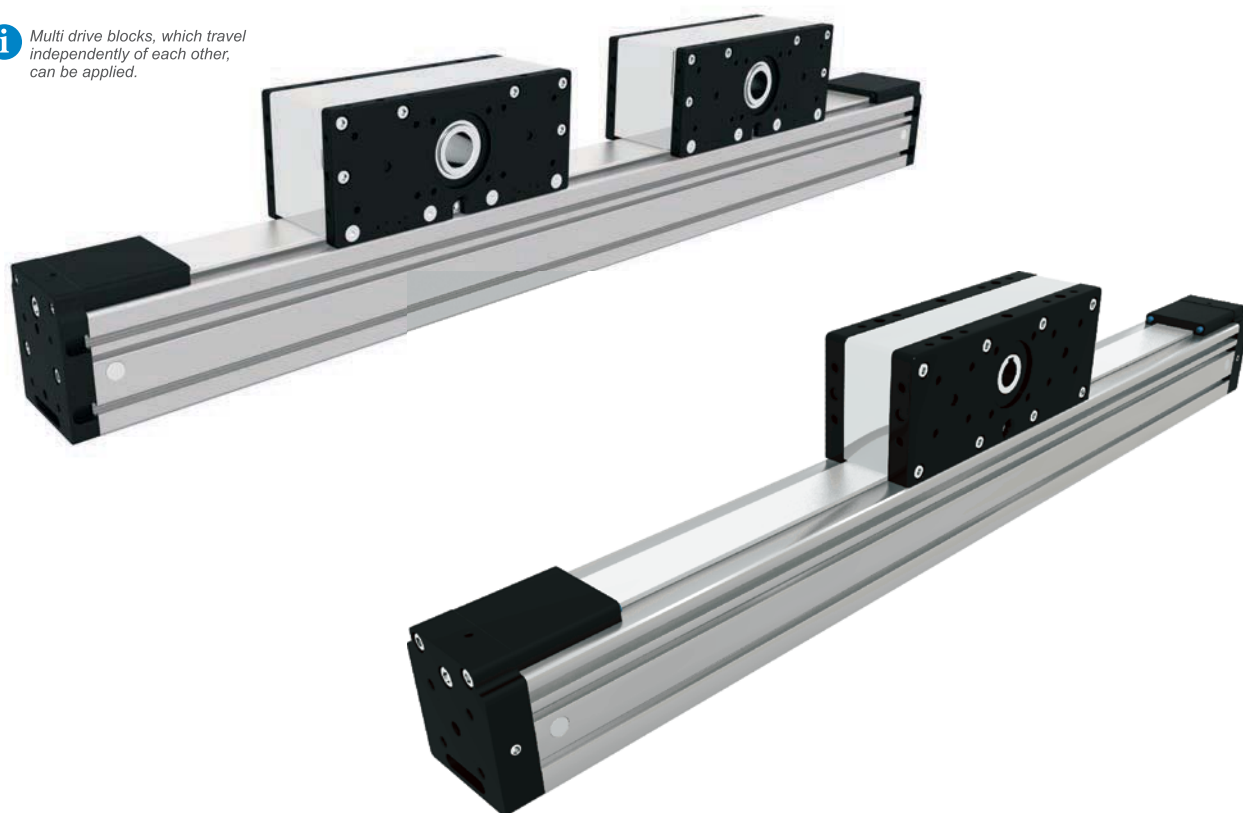
The aluminum Profile includes T-slots for attaching sensors and switches. Also, a Reed switch can be used here.

The drive block provides the possibility to attach a Motor or Gearbox housing and additional accessories on it.

Central lubrication port on the drive block allows easy re-lubrication of the Ball rail guide.

For the linear units MTJZ various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.

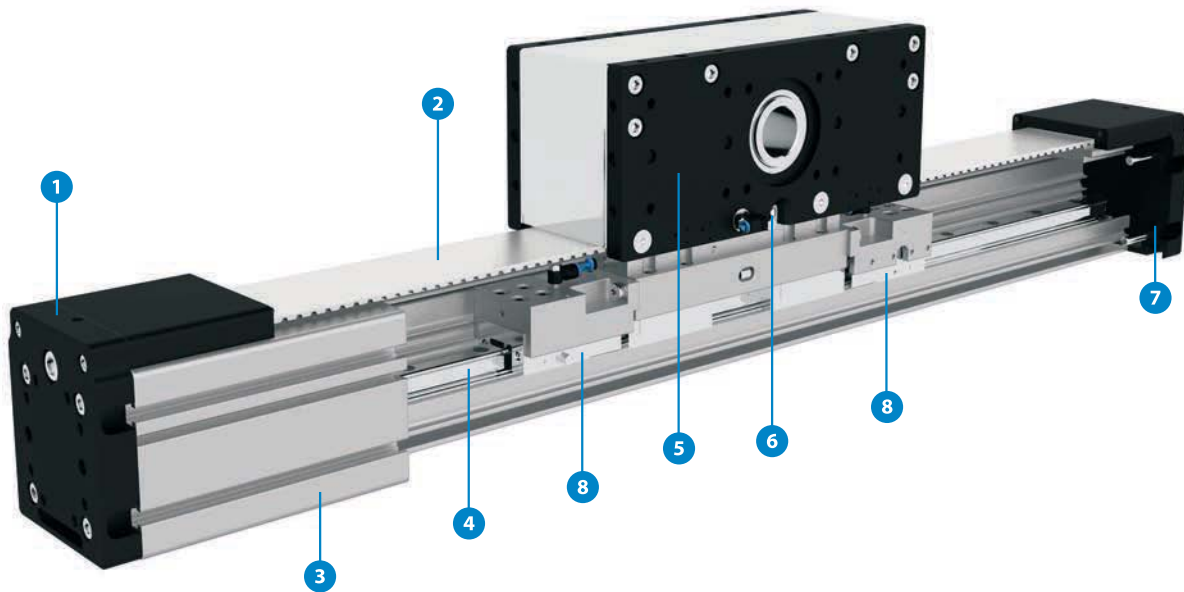
i Multi drive blocks, which travel independently of each other, can be applied.



i The aluminium profiles are manufactured according to the medium EN 12020-2 standard

Straightness = 0,35 mm/m; Max. torsion = 0,35 mm/m; Angular torsion = 0,2 mm/40 mm; Parallelism = 0,2 mm

STRUCTURAL DESIGN



- 1 - Tension End with integrated belt tensioning system
- 2 - AT polyurethane toothed belt with steel tension cords
- 3 - Aluminium profile-Hard anodized
- 4 - Linear Ball Guideway
- 5 - Drive block with pulley, Motor flange; with built in Magnets
- 6 - Central lubrication port; both sides
- 7 - Tension End with integrated belt tensioning system
- 8 - Clamping and braking element for linear guideway

MTJZ - **65** - **1000** - **1** - **0** - **1**

Series : _____

MTJZ

Size : _____

40

65

80

110

Absolute Stroke (mm) : _____

(Absolute stroke = Effective stroke + 2 x Safety stroke)

Type of drive pulley : _____

0 : Pulley with through hole

1 : Pulley with journal

10 : Pulley with journal (without Keyway)

2 : Pulley with journal on both sides

20 : Pulley with journal on both sides (without Keyway)

! *MTJZ 110 only available with drive pulley with through hole*

Clamping element : _____

0 : Without

1 : With (available only for MTJZ 110)

! *Only as emergency break!*

Number of drive blocks : _____

The stated number specifies the number of drive blocks on one Linear unit

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment			Mass of drive block [kg]	Maximum Repeatability [mm]	Max. length ² (Version 1) Lmax [mm]	Max. length ² (Version 2) Lmax [mm]	Max. Stroke		Min. Stroke [mm]
			Mx [Nm]	My [Nm]	Mz [Nm]					² (Ver. 1) [mm]	² (Ver. 2) [mm]	
MTJZ 40	120	4610	28	120	120	0,95	±0,08	1000	3000	792	2792	25

¹ For minimum stroke below the stated value in the table above please contact us.

³ For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multi drive block
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

Linear Unit	Max. permissible loads				
	Forces		Moments		
	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
MTJZ 40	2320	1510	14	40	62

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs =5.0)

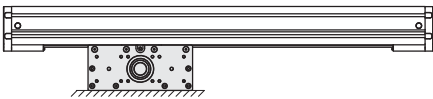
Modulus of elasticity: $E = 70000 \text{ N / mm}^2$

Operating conditions	
Operating temp.	0°C ~ +60°C
Duty cycle	100%

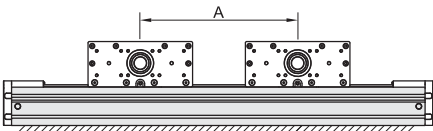
For operating temperature out of the presented range, please contact us.

² Mounting versions

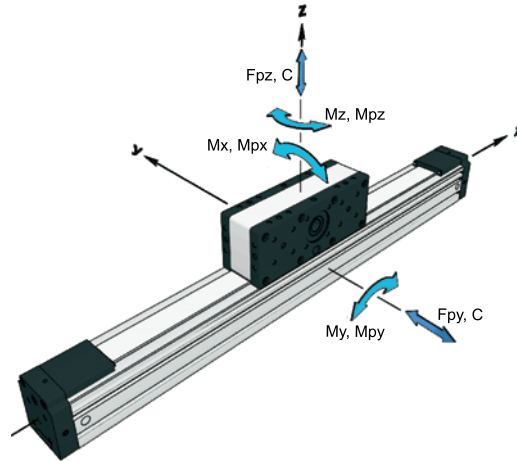
Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive block travels



Multi drive blocks, which travel independently of each other, can be applied.
For ordering code please contact us.



Drive and belt data

Linear Unit	** Max. travel speed [m / s]	Max. drive torque [Nm]	* No load torque [Nm]	Pulley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmitted by belt [N]	Specific spring constant Cspec [N]	** Max. acceleration [m/s ²]
MTJZ 40	5	3,6	0,2	99	31,51	AT3	20	230	225000	70

*The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

**For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

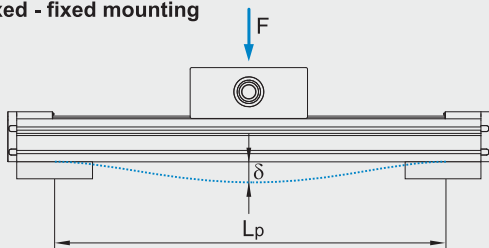
Mass and mass moment of inertia

Linear Unit	Mass of linear unit [kg]	Mass moment of inertia of drive block [10 ⁻⁴ kg * m ²]	Planar moment of inertia	
			Iy [cm ⁴]	Iz [cm ⁴]
MTJZ 40	1,7 + 0,0023 * Stroke [mm]	2,3 + 0,0058 * Stroke [mm]	9,8	11,6

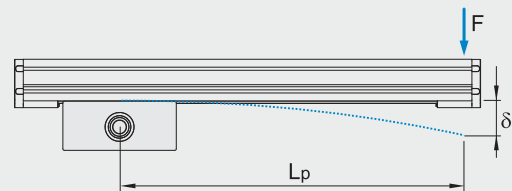
i Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



Fixed - free mounting

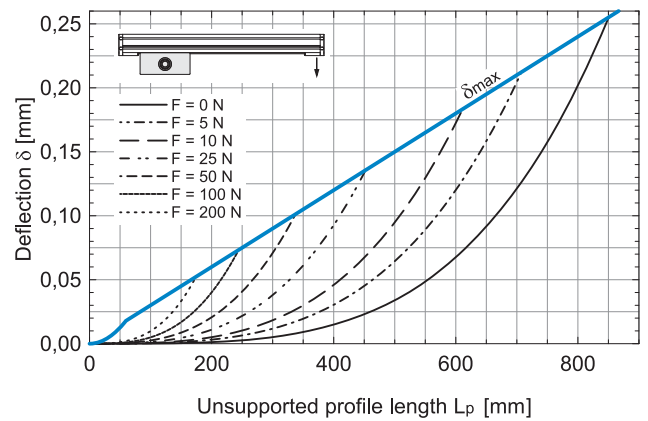
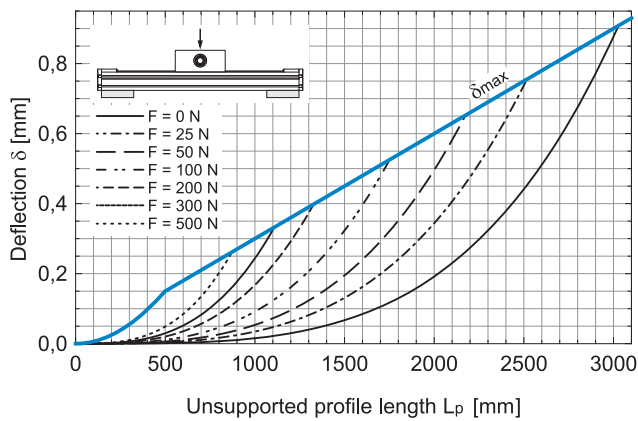


- δ Maximum deflection of the linear unit [mm]
- δ_{max} Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- L_p Unsupported profile length [mm]



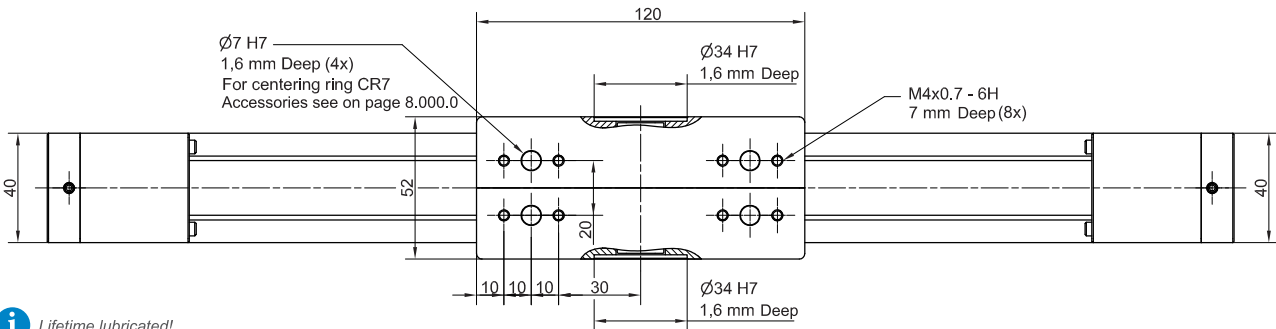
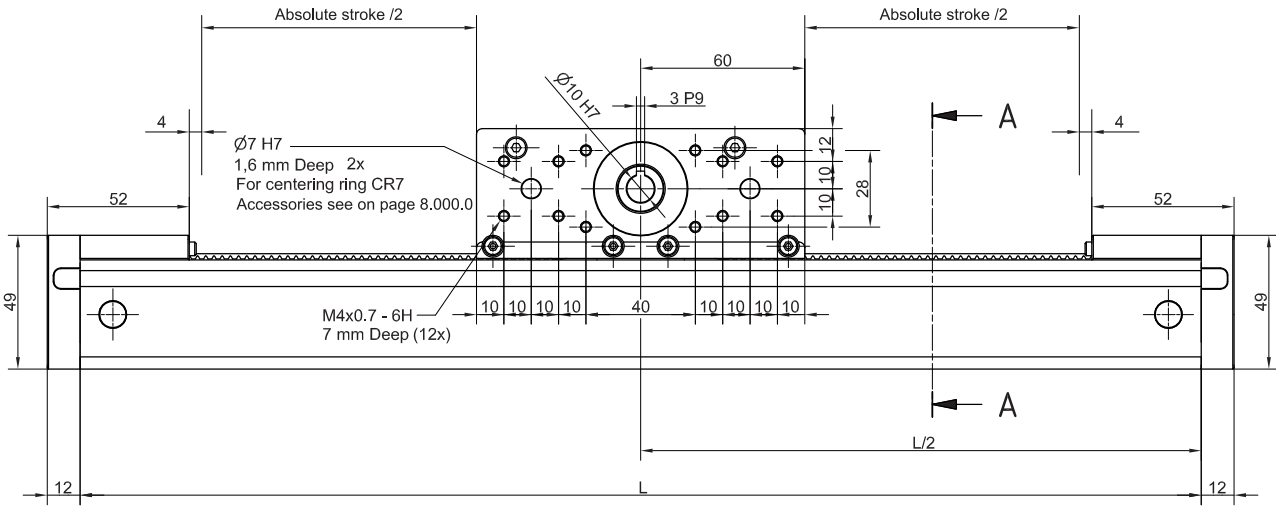
The maximum permissible deflection δ_{max} must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} additional profile supports are needed.

MTJZ 40



DIMENSIONS

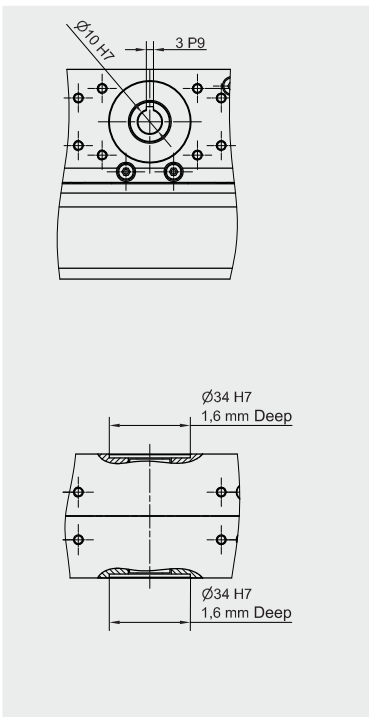
i Linear Unit doesn't include any safety
Absolute stroke = Effective stroke + 2 x Safety stroke.



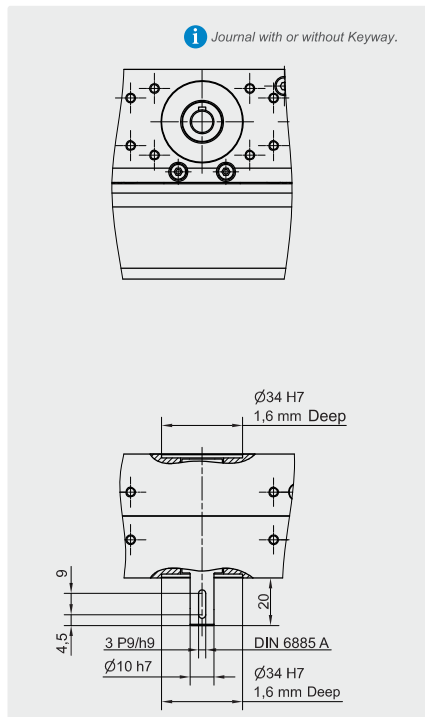
i Lifetime lubricated!

i All dimensions in mm; Drawings scales are not equal.

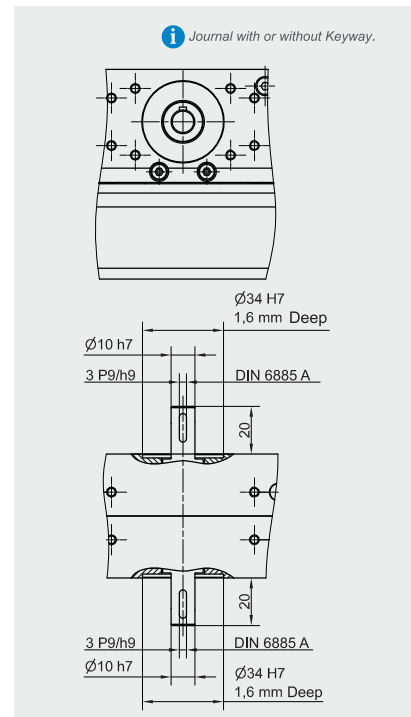
TYPE 0

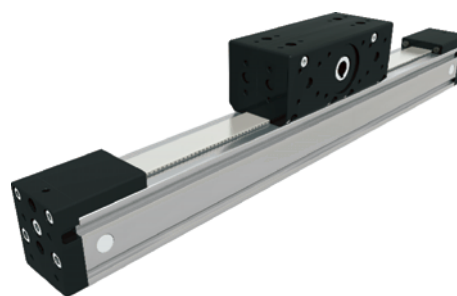
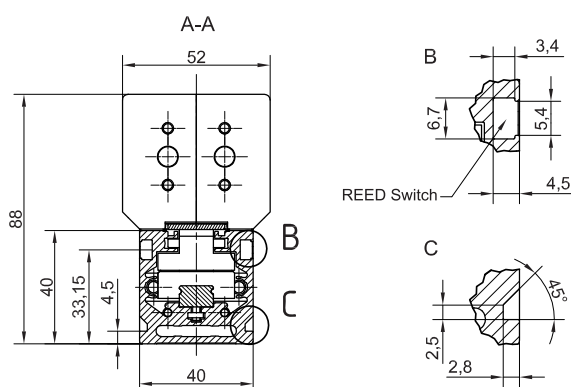
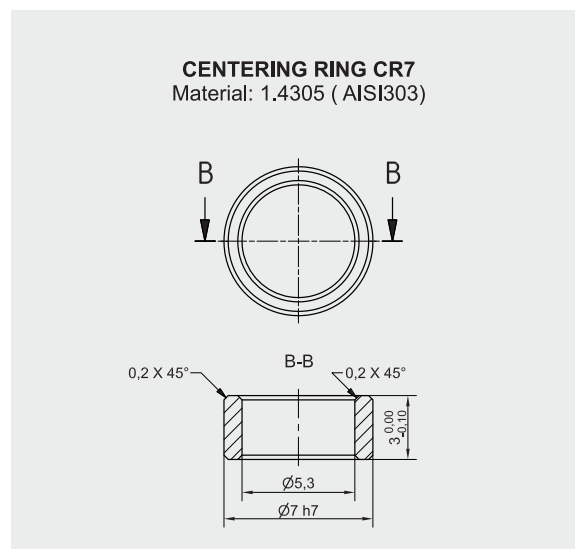
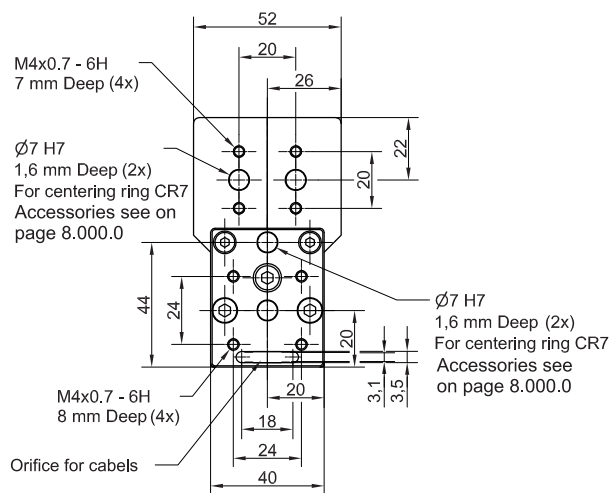


TYPE 1



TYPE 2



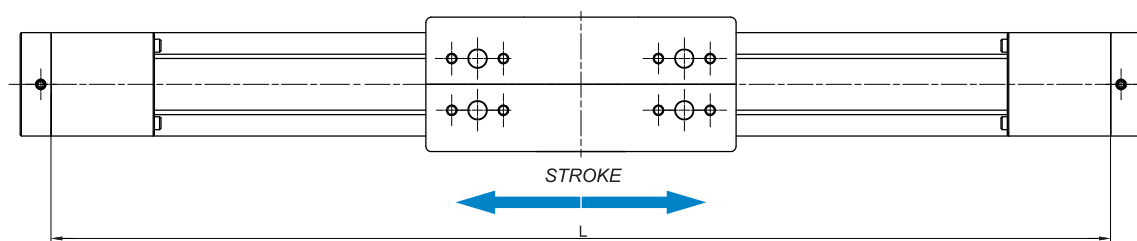


i All dimensions in mm; Drawings scales are not equal.

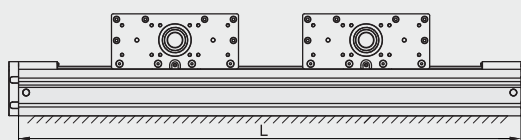
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + 208 mm

Ltotal = L + 24 mm



Multi drive block



L = Effective stroke + 2 × Safety stroke + 120 × n_b + 88 mm

n_b - number of drive blocks

Ltotal = L + 24 mm

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment			Mass of drive block [kg]	Maximum Repeatability [mm]	Max. length ² (Version 1) Lmax [mm]	Max. length ² (Version 2) Lmax [mm]	Max. Stroke		Min. Stroke [mm]
			Mx [Nm]	My [Nm]	Mz [Nm]					² (Ver. 1) [mm]	² (Ver. 2) [mm]	
MTJZ 65	200	19800	158	1025	1025	3,2	±0,08	1200	6000	880	5680	40

¹ For minimum stroke below the stated value in the table above please contact us.

³ For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multi drive block
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

Linear Unit	Max. permissible loads				
	Forces		Moments		
	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
MTJZ 65	6540	5870	60	305	340

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

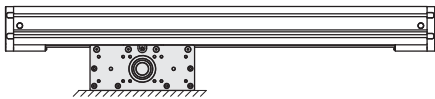
Modulus of elasticity: $E = 70000 \text{ N / mm}^2$

Operating conditions	
Operating temp.	0°C ~ +60°C
Duty cycle	100%

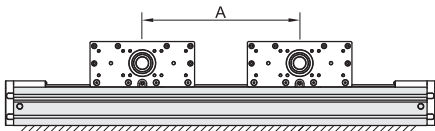
For operating temperature out of the presented range, please contact us.

2 Mounting versions

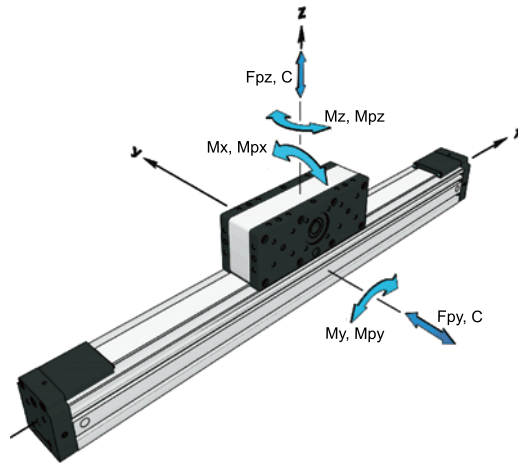
Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive block travels



Multi drive blocks, which travel independently of each other, can be applied.
For ordering code please contact us.



Drive and belt data

Linear Unit	** Max. travel speed [m / s]	Max. drive torque [Nm]	* No load torque [Nm]	Pulley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmitted by belt [N]	Specific spring constant Cspec [N]	** Max. acceleration [m/s ²]
MTJZ 65	5	13,1	0,9	165	52,52	AT5	32	500	600000	70

*The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

**For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

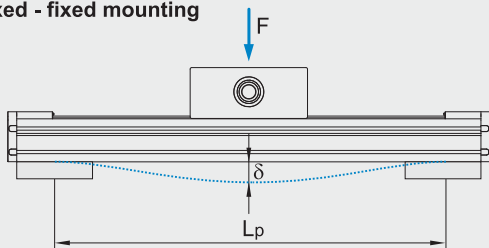
Mass and mass moment of inertia

Linear Unit	Mass of linear unit [kg]	Mass moment of inertia of drive block [10 ⁻⁴ kg * m ²]	Planar moment of inertia	
			Iy [cm ⁴]	Iz [cm ⁴]
MTJZ 65	5,7 + 0,0054 * Hub [mm]	18,9 + 0,0374 * Hub [mm]	59,7	74,4

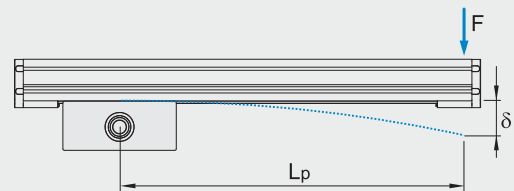
i Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



Fixed - free mounting

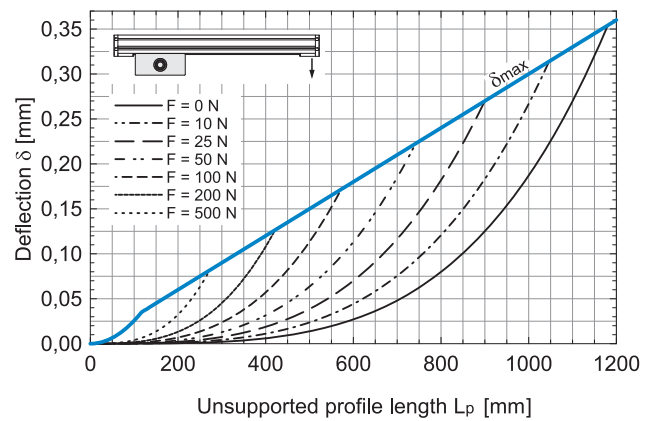
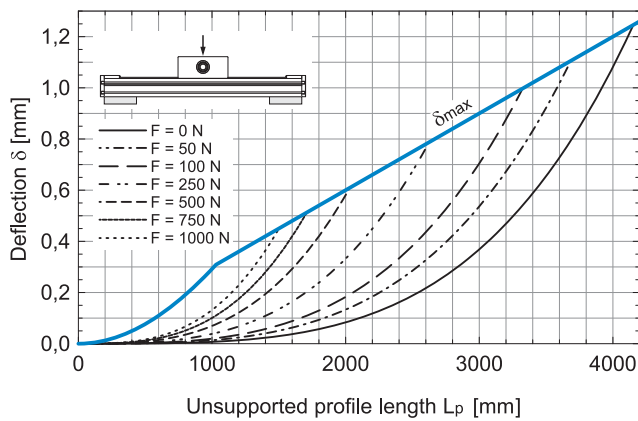


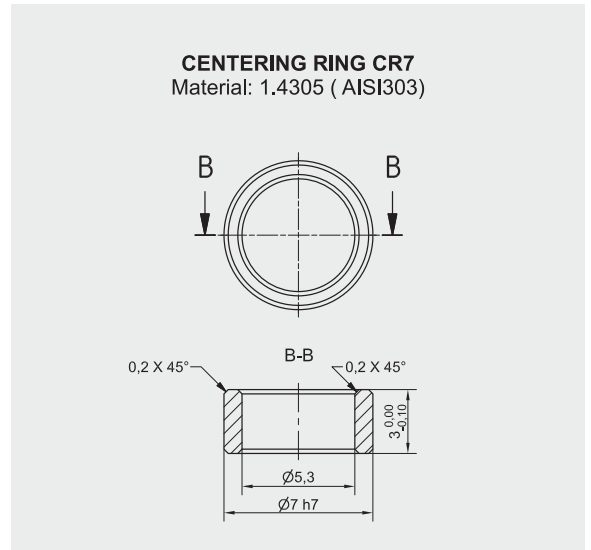
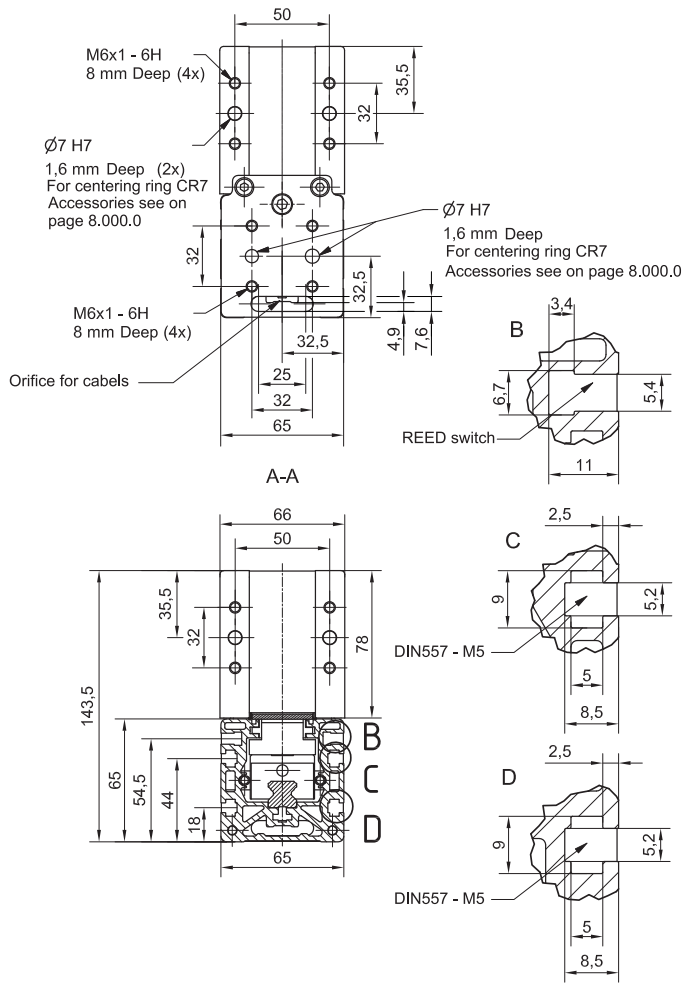
- δ Maximum deflection of the linear unit [mm]
- δ_{max} Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- L_p Unsupported profile length [mm]



The maximum permissible deflection δ_{max} must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} additional profile supports are needed.

MTJZ 65



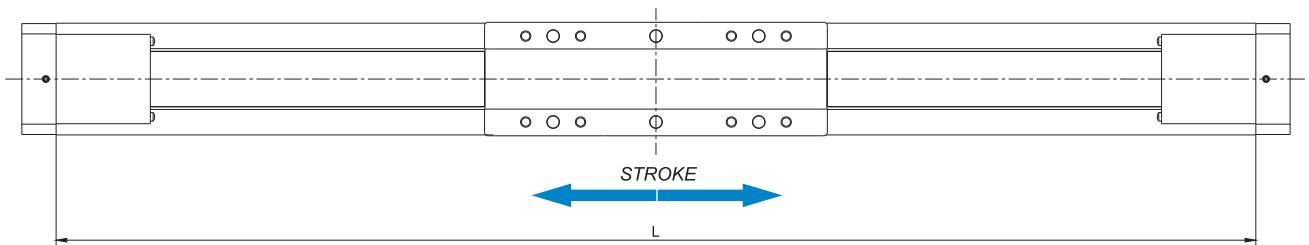


i All dimensions in mm; Drawings scales are not equal.

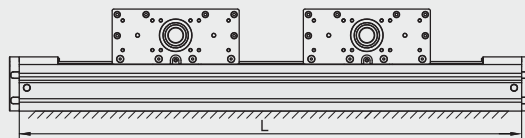
Defining of the linear unit length

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + 320 \text{ mm}$$

$$L_{\text{total}} = L + 40 \text{ mm}$$



Multi drive block



$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + 200 \times n_b + 120 \text{ mm}$$

n_b - number of drive blocks

$$L_{\text{total}} = L + 40 \text{ mm}$$

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment			Mass of drive block [kg]	Maximum Repeatability [mm]	Max. length ² (Version 1) Lmax [mm]	Max. length ² (Version 2) Lmax [mm]	Max. Stroke		Min. Stroke [mm]
			Mx [Nm]	My [Nm]	Mz [Nm]					² (Ver. 1) [mm]	² (Ver. 2) [mm]	
MTJZ 80	250	34200	370	2565	2565	4,9	±0,08	1500	6000	1118	5618	55

¹ For minimum stroke below the stated value in the table above please contact us.

³ For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multi drive block
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

Linear Unit	Max. permissible loads				
	Forces		Moments		
	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
MTJZ 80	8930	7130	150	535	670

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

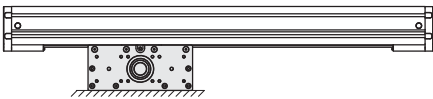
Modulus of elasticity: $E = 70000 \text{ N / mm}^2$

Operating conditions	
Operating temp.	0°C ~ +60°C
Duty cycle	100%

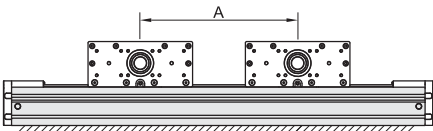
For operating temperature out of the presented range, please contact us.

² Mounting versions

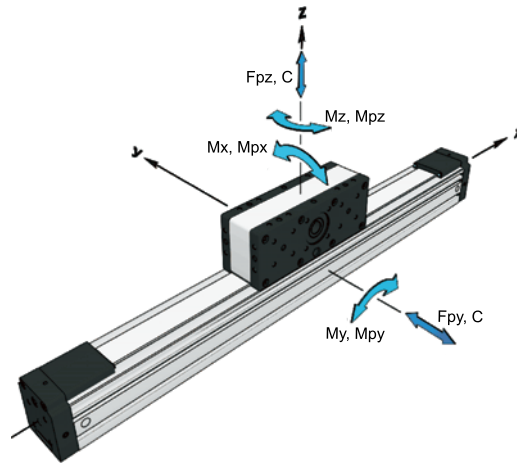
Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive block travels



Multi drive blocks, which travel independently of each other, can be applied.
For ordering code please contact us.



Drive and belt data

Linear Unit	** Max. travel speed [m / s]	Max. drive torque [Nm]	* No load torque [Nm]	Pulley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmitted by belt [N]	Specific spring constant Cspec [N]	** Max. acceleration [m/s ²]
MTJZ 80	5	29,4	1,4	210	66,84	AT5	50	880	960000	70

* The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

** For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

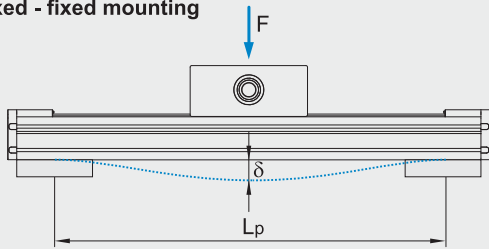
Mass and mass moment of inertia

Linear Unit	Mass of linear unit [kg]	Mass moment of inertia of drive block [10 ⁻⁴ kg * m ²]	Planar moment of inertia	
			Iy [cm ⁴]	Iz [cm ⁴]
MTJZ 80	9,7 + 0,0083 * Stroke [mm]	60,5 + 0,0922 * Stroke [mm]	129,1	173,4

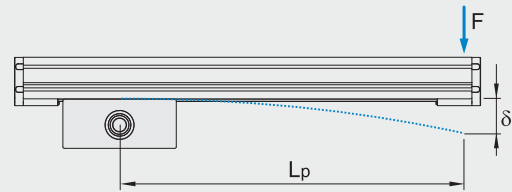
i Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



Fixed - free mounting

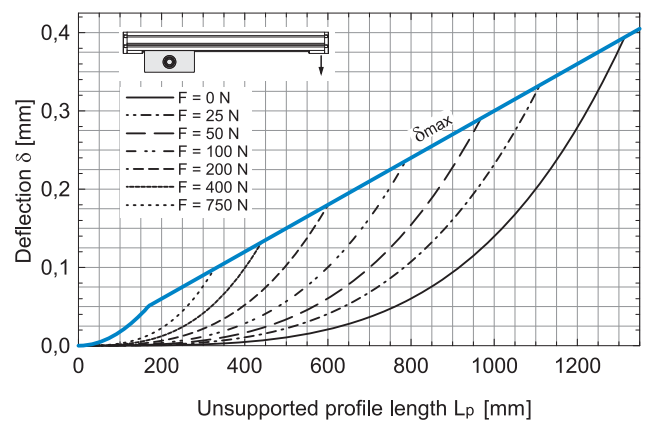
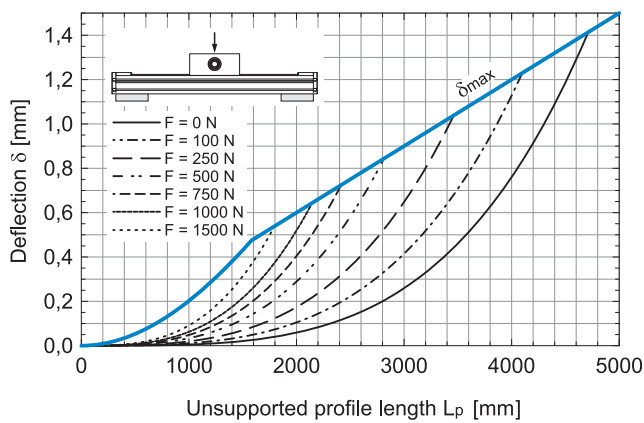


- δ Maximum deflection of the linear unit [mm]
- δ_{max} Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- L_p Unsupported profile length [mm]



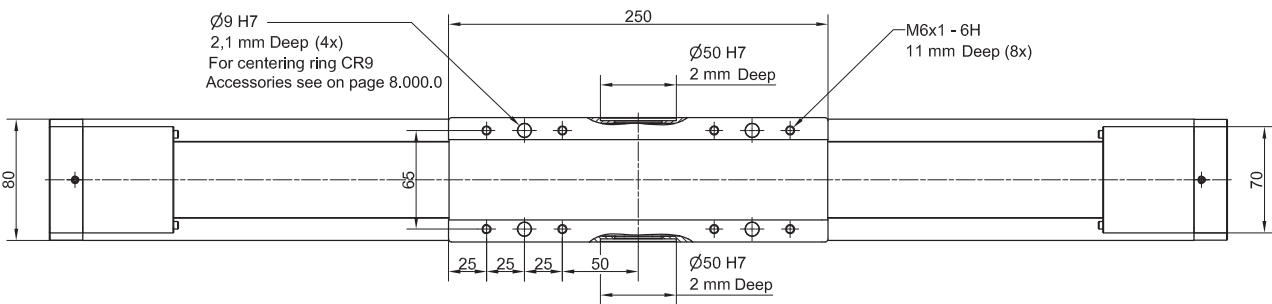
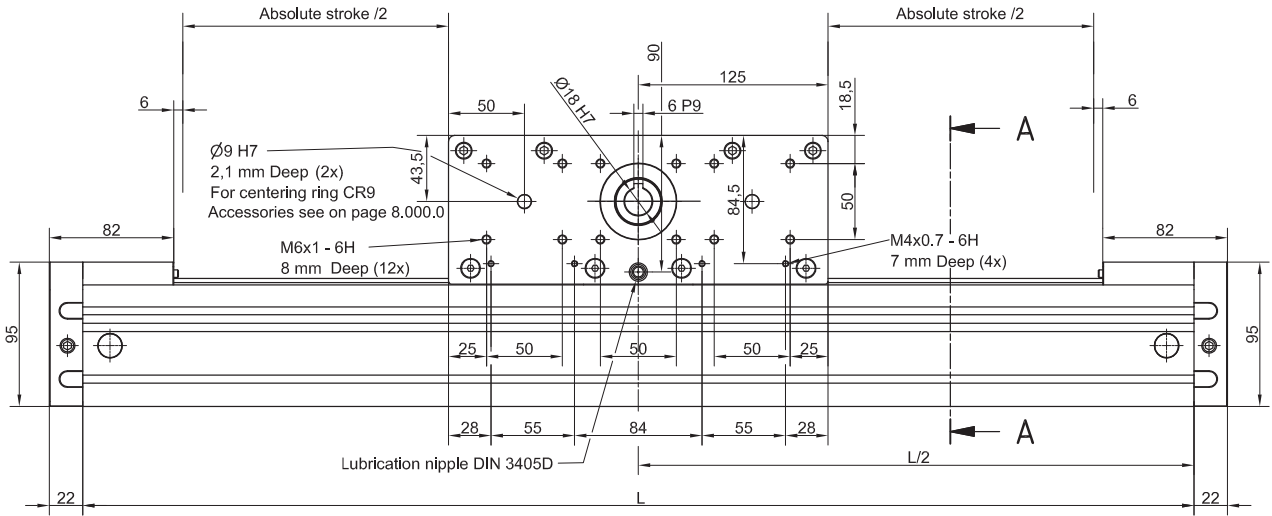
The maximum permissible deflection δ_{max} must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} additional profile supports are needed.

MTJZ 80



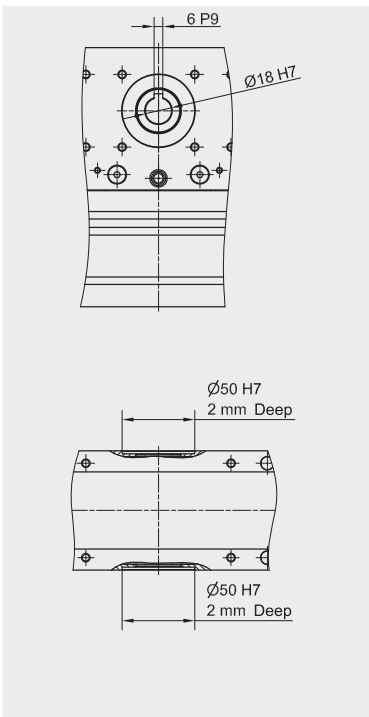
DIMENSIONS

i Linear Unit doesn't include any safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke

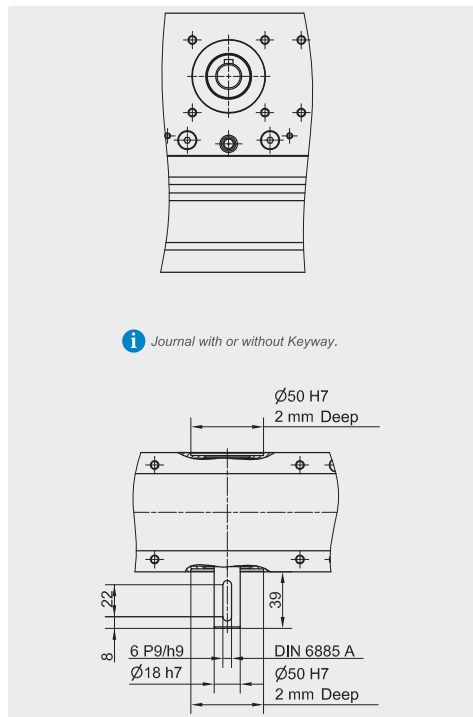


i All dimensions in mm; Drawings scales are not equal.

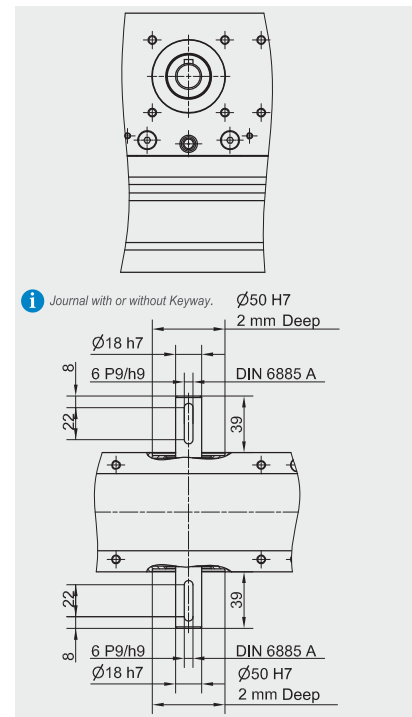
TYPE 0



TYPE 1

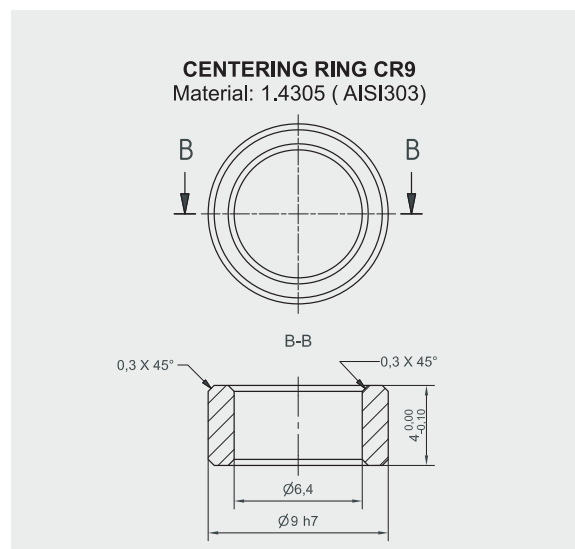
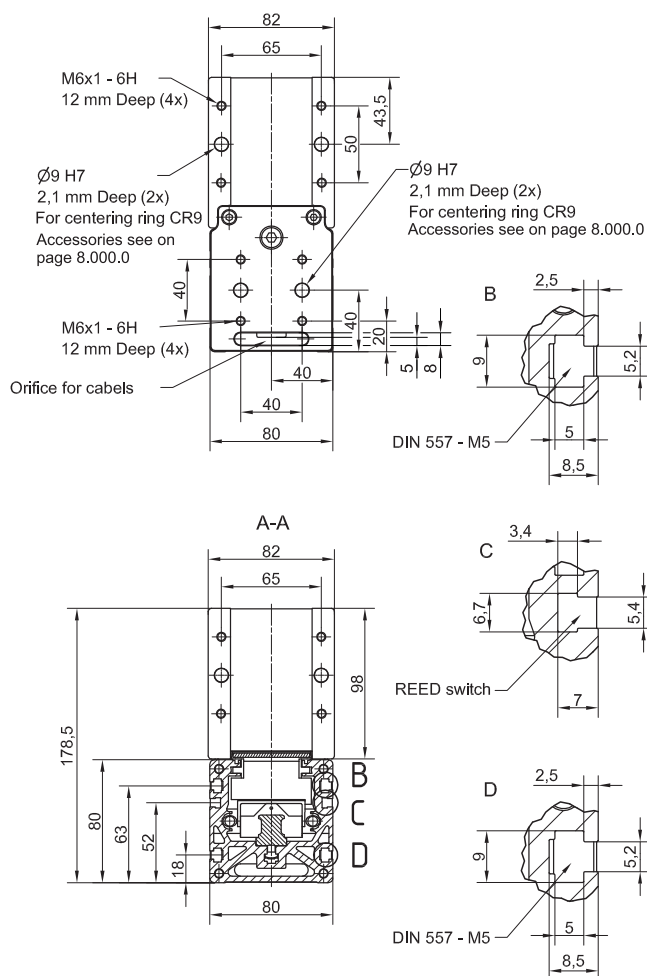


TYPE 2



i Journal with or without Keyway. $\varnothing 50$ H7, 2 mm Deep

i Journal with or without Keyway.

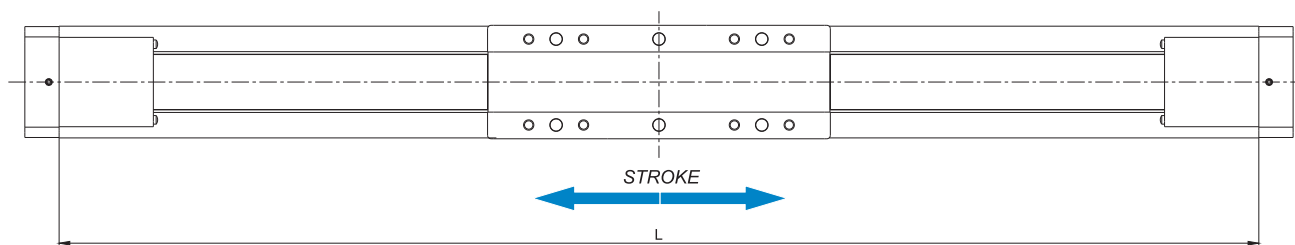


i All dimensions in mm; Drawings scales are not equal.

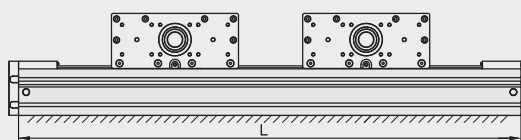
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + 382 mm

Ltotal = L + 44 mm



Multi drive block



L = Effective stroke + 2 × Safety stroke + 250 × n_b + 132 mm

n_b - number of drive blocks

Ltotal = L + 44 mm

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment			Mass of drive block [kg]	Maximum Repeatability [mm]	Max. length ² (Version 1) Lmax [mm]	Max. length ² (Version 2) Lmax [mm]	Max. Stroke		Min. Stroke [mm]
			Mx [Nm]	My [Nm]	Mz [Nm]					² (Ver. 1) [mm]	² (Ver. 2) [mm]	
MTJZ 110	300	49600	630	3470	3470	11,3	±0,08	1800	6000	1304	5504	65

¹ For minimum stroke below the stated value in the table above please contact us.

³ For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multi drive block
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

Linear Unit	Max. permissible loads				
	Forces		Moments		
	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
MTJZ 110	10000	14290	260	1000	700

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

Modulus of elasticity: $E = 70000 \text{ N / mm}^2$

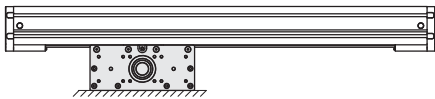
Operating conditions

Operating temp.	0°C ~ +60°C
Duty cycle	100%

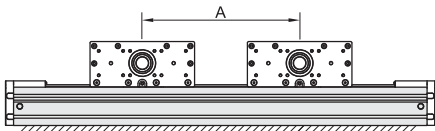
For operating temperature out of the presented range, please contact us.

² Mounting versions

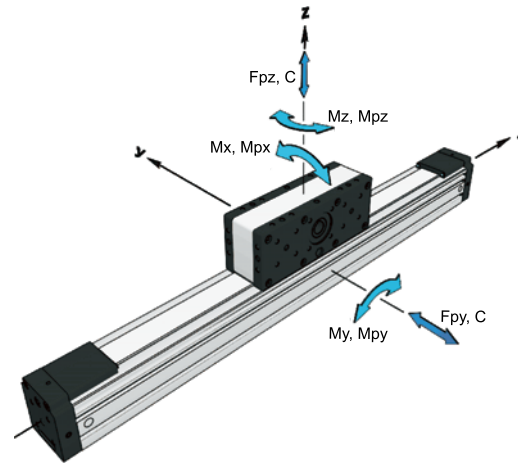
Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive block travels



Multi drive blocks, which travel independently of each other, can be applied.
For ordering code please contact us.



Drive and belt data

Linear Unit	** Max. travel speed [m / s]	Max. drive torque [Nm]	* No load torque [Nm]	Pulley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmitted by belt [N]	Specific spring constant Cspec [N]	** Max. acceleration [m/s ²]
MTJZ 110	5	110,0	2,6	300	95,49	AT10	70	2300	2450000	70

* The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

** For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

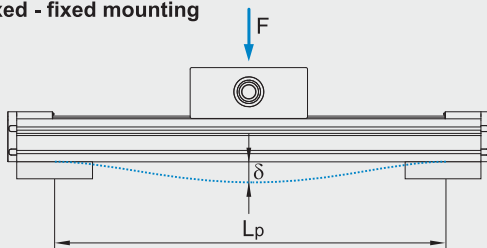
Mass and mass moment of inertia

Linear Unit	Mass of linear unit [kg]	Mass moment of inertia of drive block [10 ⁻⁴ kg * m ²]	Planar moment of inertia	
			Iy [cm ⁴]	Iz [cm ⁴]
MTJZ 110	21,7 + 0,0147 * Stroke [mm]	273,0 + 0,3358 * Stroke [mm]	513,0	620,0

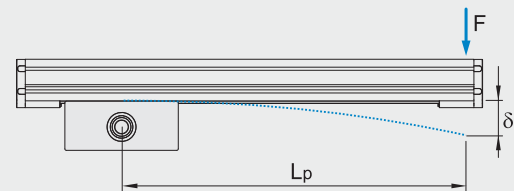
i Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



Fixed - free mounting

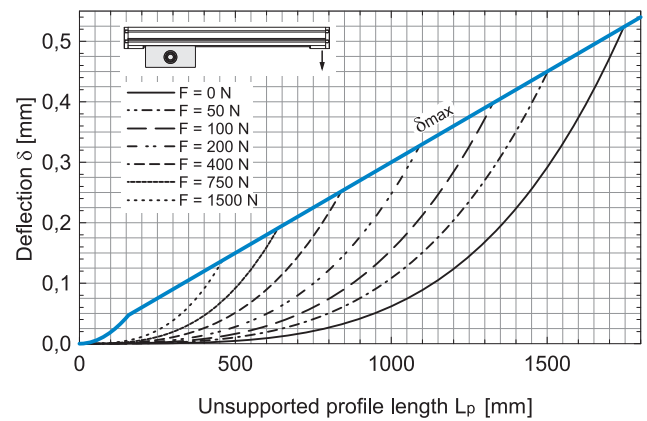
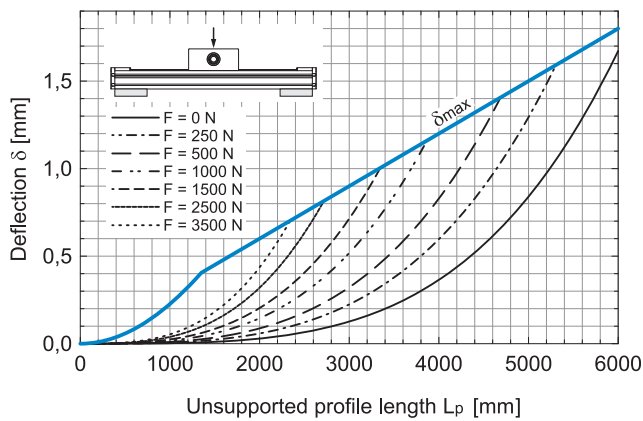


- δ Maximum deflection of the linear unit [mm]
- δ_{max} Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- L_p Unsupported profile length [mm]



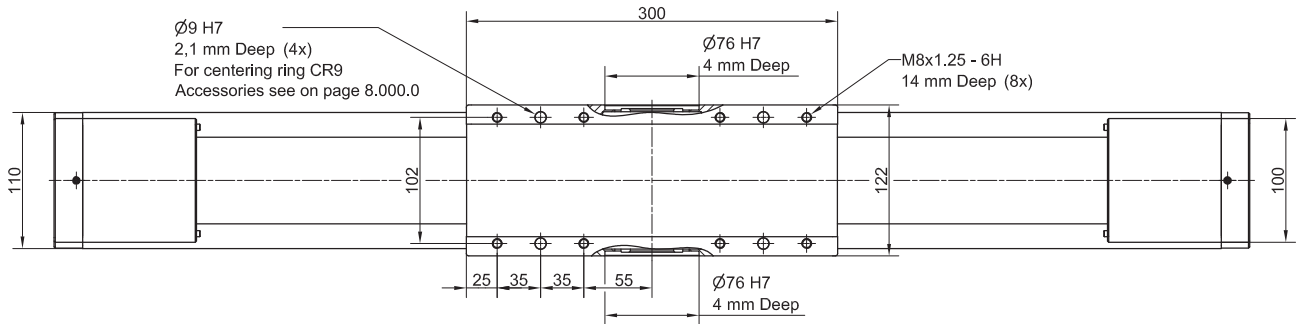
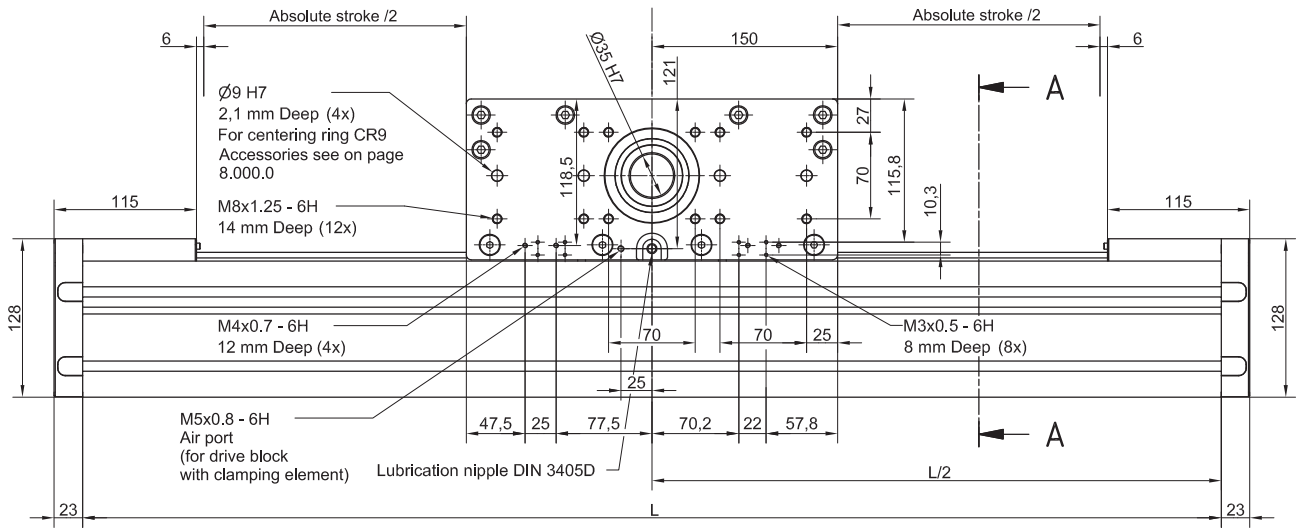
The maximum permissible deflection δ_{max} must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} additional profile supports are needed.

MTJZ 110



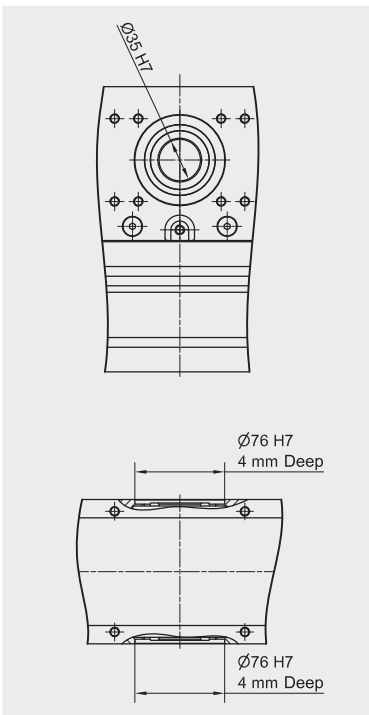
DIMENSIONS

i Linear Unit doesn't include any safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke



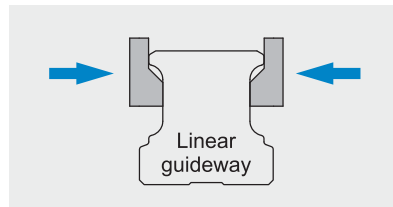
i All dimensions in mm; Drawings scales are not equal.

TYPE 0



Drive block with clamping element

Clamping by spring-loaded energy

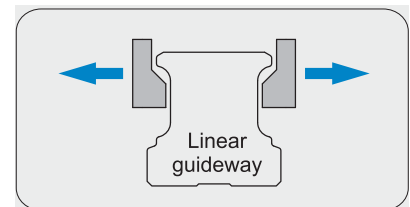


Air pressure = 0 bar

Holding force = 1400 N

Holding force is tested on clamping element using a slightly lubricated rail (ISO VG 68).

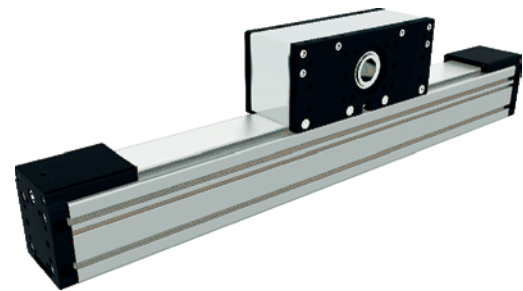
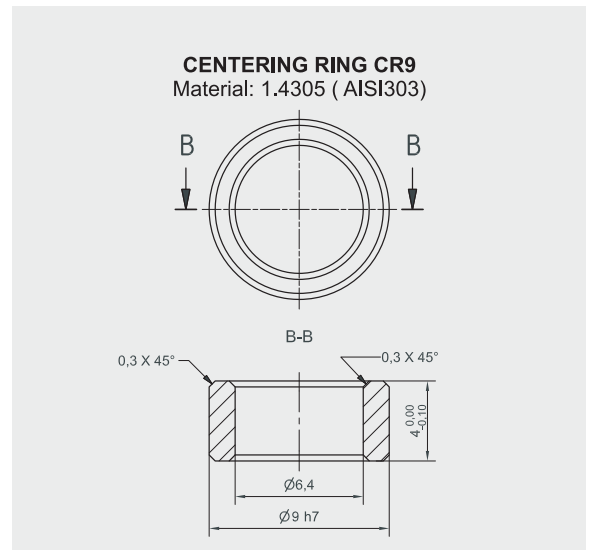
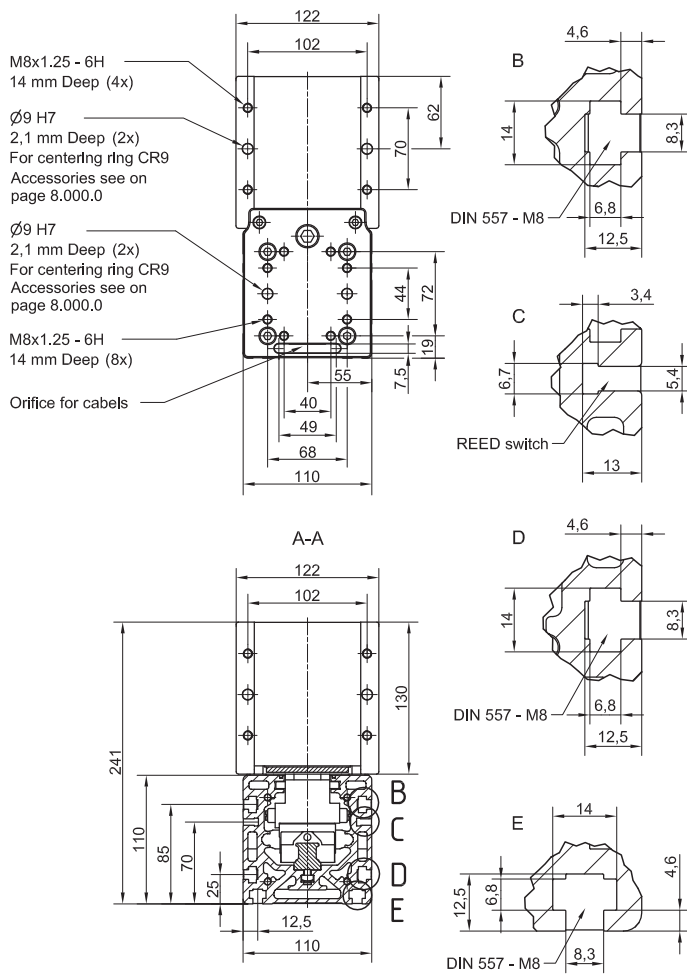
Opened by air pressure



Opening air pressure = 5,5 - 8 bar

i The air pressure opens clamping pistons. Free movement is allowed.
Purified and oiled air shall be used (according to ISO 8573-1 Class 4). Recommended filter size is 25 µm.

Linear Unit	Mass of drive block [kg]	Mass of linear unit [kg]
MTJZ 110	12,9	23,3 + 0,0147 * Stroke [mm]

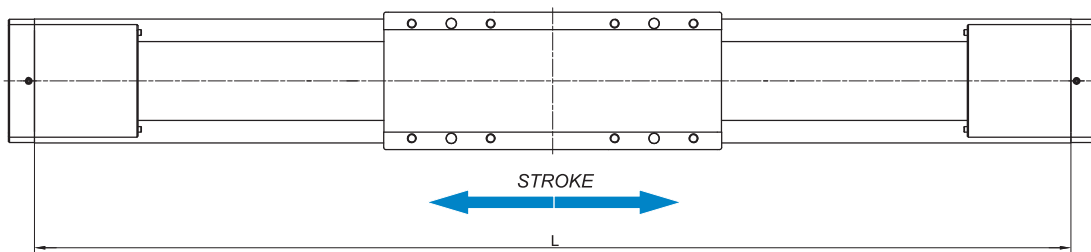


i All dimensions in mm; Drawings scales are not equal.

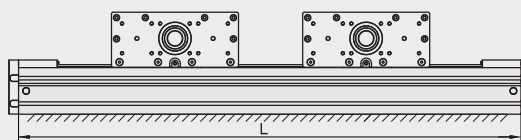
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + 496 mm

Ltotal = L + 46 mm



Multi drive block



L = Effective stroke + 2 × Safety stroke + 300 × n_b + 196 mm

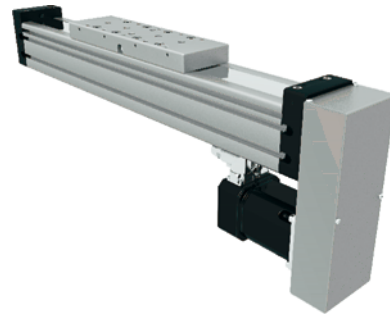
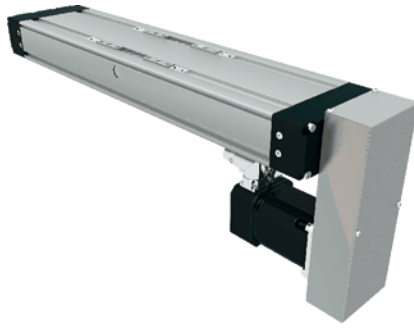
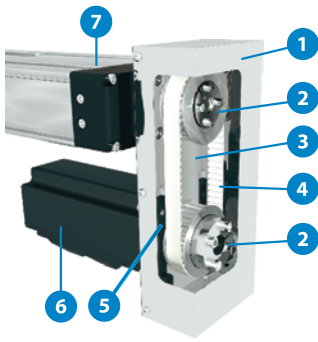
n_b - number of drive blocks

Ltotal = L + 46 mm

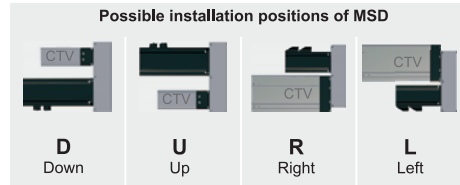
CTV - MTV MOTOR SIDE DRIVE

LINEAR UNITS

STRUCTURAL DESIGN

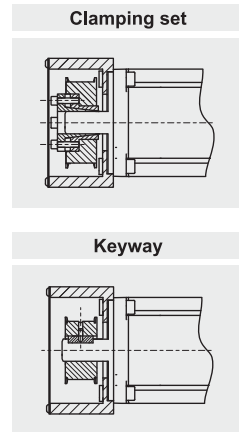
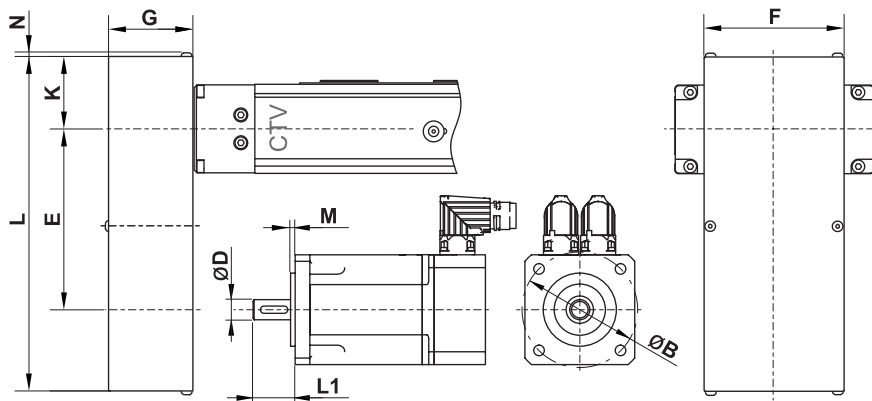


- 1 - Cover
- 2 - Attachment of pulley with clamping set
- 3 - Anodized aluminium housing
- 4 - Toothed belt
- 5 - Belt tensioning system (elongation and frequency of belt span provided with delivery of unit)
- 6 - Motor
- 7 - Linear unit - CTV / MTV



i The linear unit must be executed with drive journal without keyway, so that the MSD belt drive can be mounted on it.

DIMENSIONS AND TECHNICAL DATA



Linear Unit	Type	Gear ratio	Max. drive torque (linear unit) [Nm]	** Max. radial load on shaft [N]	Mass moment of inertia [10 ⁻⁶ kg * m ²]	Mass [kg]	Motor size limits [mm]						Dimensions [mm]						
							ØB max	* M max	L1		ØD max		E	F	G	K	L	N	
									Clamping set min	Keyway	max	Clamping set max	Keyway						
CTV 90	T1	i=1	2,7	90	79	0,88	70	4	22	25	39	14	22	100	70	41	31	179	2
		i=1,5	2,7	90	48	0,74			/			14	102						
CTV 110 MTV 65	T1	i=1	5	175	72	0,90	70	4	22	25	39	14	22	100	70	41	31	179	2
		i=1,5	5	175	41	0,80			/			14	112						
CTV 110 MTV 65	T2	i=1	9	245	206	1,51	100	4	24	30	49	18	30	145	90	51	43	250	2
		i=1,5	11	235	335	1,53			25			14	139						
CTV 145 MTV 80	T1	i=1	13	350	207	1,52	100	4	24	30	49	18	30	145	90	51	43	250	2
		i=1,5	19	410	335	1,64			25			14	180						
CTV 145 MTV 80	T2	i=1	19	410	551	3,30	120	4	30	35	59	22	40	160	120	61	56	297	2,5
		i=2	24	375	860	2,93						14	32						
CTV 200 MTV 110	ON REQUEST																		

*For a bigger value an additional adapter plate is used.

(max. drive speed: 3000 1/min; No load torque: approx. 0,5 Nm)

**This is the load which is linearly dependent on the max. drive torque and is generated by the correct pretension of the belt. This load needs to be reduced in accordance with the capabilities of the motor.

HOW TO ORDER

MSD - CTV 110 - T2 - 1,5 - MSM040B

Motor Side Drive:

Linear Unit series :

CTV / MTV

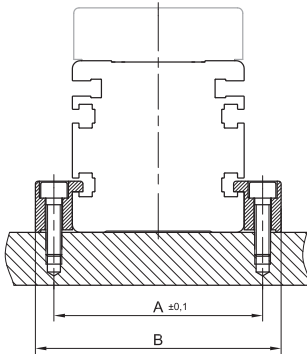
Type :

Motor type :

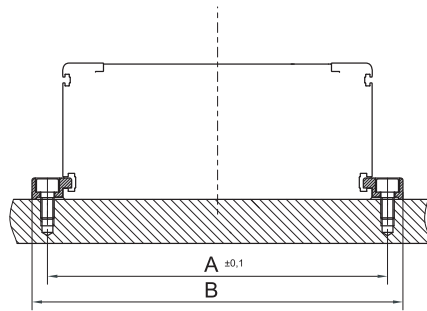
According to customer's drawing

Gear ratio :

**MTJ, MRJ, MTV
MTJ ECO**



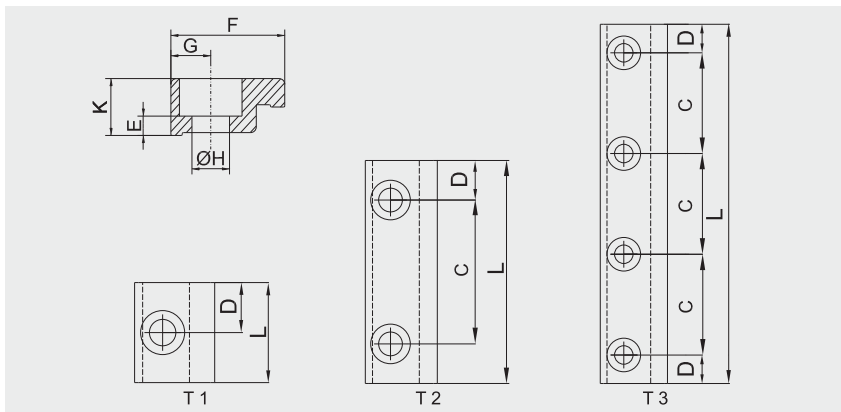
CTV, CTJ



General

The linear units are mounted by using fixtures which are placed in the slot on the side of the profile.

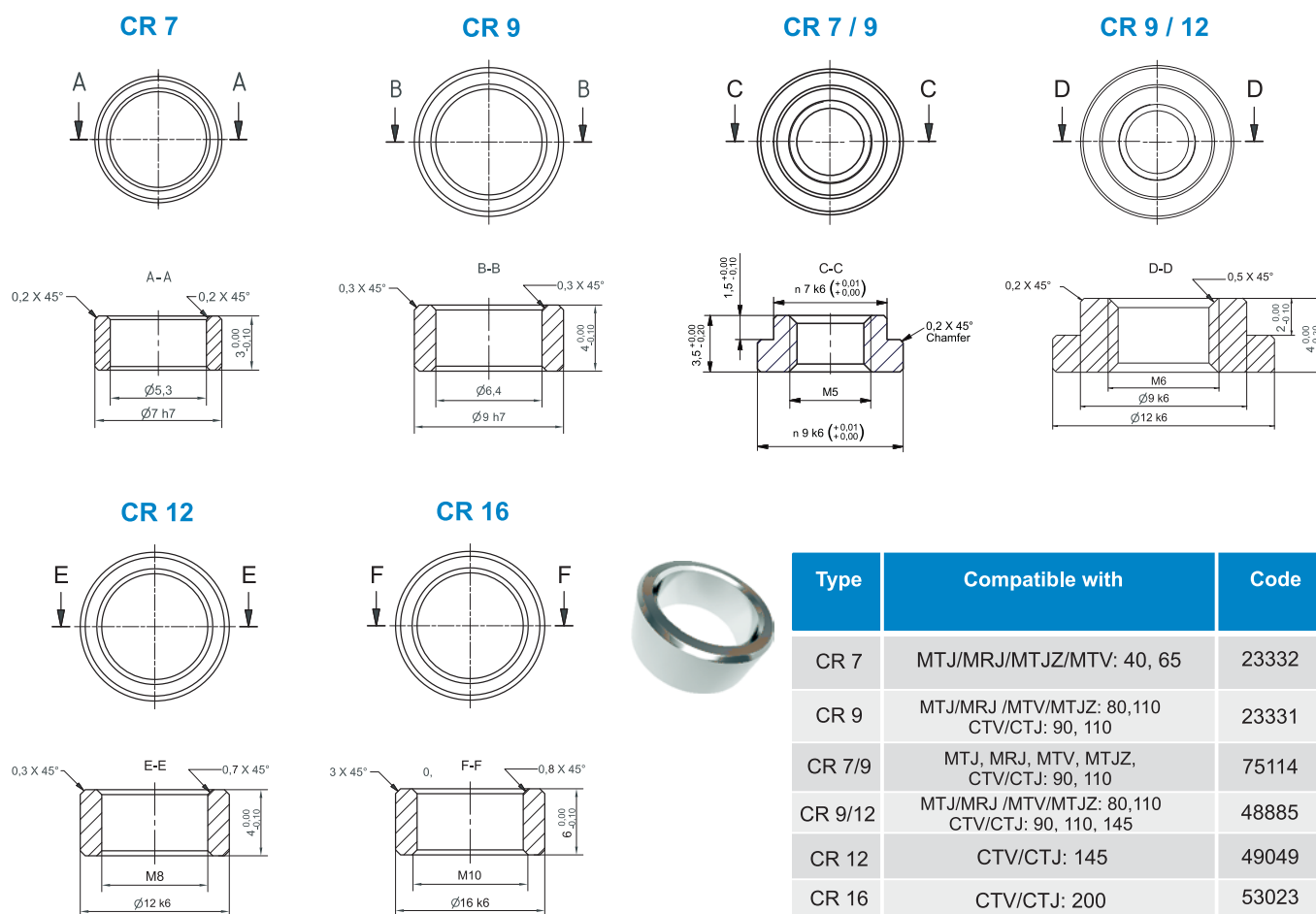
i Linear Unit must be mounted by the aluminium profile!



Linear Unit	Type	Dimensions [mm]										Screw	Countersink for	Weight [kg]	Code
		A	B	C	D	L	E	F	G	ØH	K				
MTJ, MRJ 40	T 2	50	64,4	40	7,5	55	2,5	15	7,2	5,5	8	M5	DIN 912	0,014	37139
MTJ, MRJ, MTV 65	T 2	78	93	40	10	60	11,5	20	7,5	6,5	20	M6	DIN 912	0,054	37129
MTJ, MRJ, MTV 80	T 2	93	108	40	10	60	11,5	20	7,5	6,5	20	M6	DIN 912	0,054	37129
MTJ, MRJ, MTV 110	T 2	130	150	40	10	60	18	30	10	8,5	27	M8	DIN 912	0,082	44375
MTJ ECO 40	T 2	52	66	40	7,5	55	14,5	20	7	5,5	20	M5	DIN 912	0,035	40728
CTV, CTJ 90	T 1	102	112	/	12,5	25	4,5	15	5	4,5	9	M4	DIN 912	0,01	46994
CTV, CTJ 90	T 2	102	112	40	11	62	4,5	15	5	4,5	9	M4	DIN 912	0,02	48636
CTV, CTJ 90	T 3	102	112	20	8,5	77	4,5	15	5	4,5	9	M4	DIN 912	0,025	47163
CTV, CTJ 90	T3	102	112	25	6	87	4,5	15	5	4,5	9	M4	DIN 912	0,028	55261
CTV, CTJ 90	T 3	102	112	30	8,5	107	4,5	15	5	4,5	9	M4	DIN 912	0,031	55638
CTV, CTJ 110	T 1	126	140	/	12,5	25	3,4	20	7	6,6	10	M6	DIN 912	0,01	48642
CTV, CTJ 110	T 2	126	140	40	11	62	3,4	20	7	6,6	10	M6	DIN 912	0,03	48643
CTV, CTJ 110	T 3	126	140	20	8,5	77	4,5	20	7	5,5	10	M5	DIN 912	0,03	48640
CTV, CTJ 110	T 3	126	140	30	8,5	107	4,5	20	7	5,5	10	M5	DIN 912	0,045	46995
CTV, CTJ 110	T3	126	140	40	11	142	3,4	20	7	6,6	10	M6	DIN 912	0,056	55260
CTV, CTJ 145	T 1	161	175	/	12,5	25	3,4	20	7	6,6	10	M6	DIN 912	0,01	48642
CTV, CTJ 145	T 2	161	175	40	11	62	3,4	20	7	6,6	10	M6	DIN 912	0,03	48643
CTV, CTJ 145	T 3	161	175	20	8,5	77	4,5	20	7	5,5	10	M5	DIN 912	0,03	48640
CTV, CTJ 145	T 3	161	175	30	8,5	107	4,5	20	7	5,5	10	M5	DIN 912	0,045	46995
CTV, CTJ 145	T 3	161	175	40	11	142	3,4	20	7	6,6	10	M6	DIN 912	0,056	55260
CTV, CTJ 200	T 2	222	240	40	19	78	14,8	29	9	8,5	27,5	M8	DIN 912	0,110	53049
CTV, CTJ 200	T 2	222	240	50	19	88	14,8	29	9	8,5	27,5	M8	DIN 912	0,120	53050
CTV, CTJ 200	T 2	222	240	70	19	108	16,3	29	9	8,5	27,5	M8	DIN 912	0,160	53051

i Recommended number of clamping fixtures: For T1 is recommended 6 pcs. per meter on each side, for T2 is recommended 3 pcs. per meter on each side and for T3 is recommended 3 pcs. per meter on each side.

CENTERING RINGS



SLOT NUTS



LINEAR UNITS - PROFILE

DIN562

DIN557

Slot Nut

* - deviating CODE

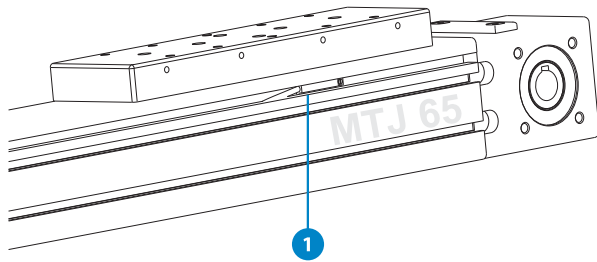
CODE	NUT TYPE	MTJ/MRJ 40	MTJ/MRJ/ MTV/MTJZ 65	MTJ/MRJ/ MTV/MTJZ 80	MTJ/MRJ/MTV MTJZ 110	MTJ 40 ECO	CTV 90 CTJ 90	CTV 110 CTJ 110	CTV 145 CTJ 145	CTV 200 CTJ 200
41609	DIN562 - M2,5						X	X	X	
40682	DIN562 - M4	X - *57017	X	X			X			X
40768	DIN562 - M5							X	X	
40769	DIN557 - M5		X	X						
44451	DIN557 - M8				X					X
5746	Slot Nut M6					X				
5551	Slot Nut T-10-M8									X
5552	Slot Nut T-10-M6									X
5553	Slot Nut T-10-M5									X
5570	Slot N. T-10-M8 L=90									X

LINEAR UNITS - CONNECTION PLATES

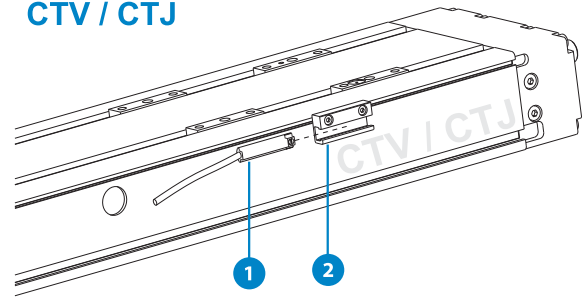
CODE	NUT TYPE	CTV 200 CTJ 200	CODE	NUT TYPE	CTV 145 CTJ 145	CODE	NUT TYPE	CTV 110 CTJ 110	CTV 90 CTJ 90
5551	Slot Nut T-10-M8	X	5704	Slot Nut 8LM4	X	48887	Slot Nut 6LM4	X	X
5552	Slot Nut T-10-M6	X	5703	Slot Nut 8LM5	X	48888	Slot Nut 6LM5	X	X
5553	Slot Nut T-10-M5	X	5702	Slot Nut 8LM6	X				
5570	Slot Nut T-10-M8 L=90	X	5701	Slot Nut 8LM8	X				

MAGNETIC FIELD SENSORS

MTJ / MRJ / MTV



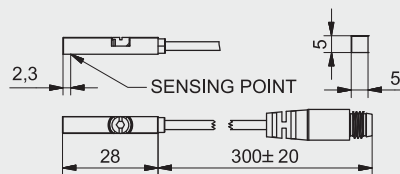
CTV / CTJ



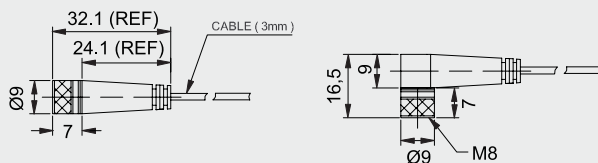
- 1 - Magnetic field sensor
- 2 - Sensor holder

i Mounting of Magnetic field sensor on **CTV** and **CTJ** series requires a HOM sensor holder. For CTV/CTJ 200 a HOM sensor holder is not needed.

SMT-65TP-K NO / NC



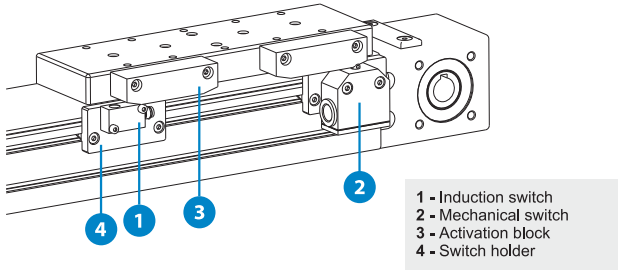
Extension cable with connector



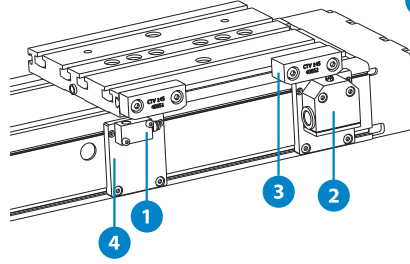
Code	Type	Compatibility	
43851	HOM Sensor holder	CTV90, CTV110, CTV145, CTJ90, CTJ110, CTJ145	
74073	SMT-65TP-K NC	MTJ/MRJ/MTV/MTJZ:40,65,80,110 CTV/CTJ: 200	
77075	SMT-65TP-K NC + HOM	CTV90, CTV110, CTV145 CTJ90, CTJ110, CTJ145	
74074	SMT-65TP-K NO	MTJ/MRJ/MTV/MTJZ:40,65,80,110 CTV/CTJ: 200	
77076	SMT-65TP-K NO + HOM	CTV90, CTV110, CTV145 CTJ90, CTJ110, CTJ145	
8146	Extension Cable length 2m - Straight connector		
8147	Extension Cable length 5m - Straight connector		
9017	Extension Cable length 2m - Angeled connector		
9019	Extension Cable length 5m - Angeled connector		

TECHNICAL DATA	SMT-65TP-K NC	SMT-65TP-K NO
Sensor Type	GMR sensor	GMR sensor
Switching function	NC	NO
Output	PNP	PNP
Operating voltage	10 ~ 28 V DC	10 ~ 28 V DC
Switching Current	200 mA max.	200 mA max.
Power rating	5,5 W max.	5,5 W max.
Voltage Drop	1,5 V / 200mA max.	1,5 V / 200 mA max.
Current Consumption	10 mA / 24 V max.	10 mA / 24 V max.
Switching Frequency	1000 Hz	1000 Hz
Ambient temperature	-10 ~ +70°C	-10 ~ +70°C
Shock/Vibration	50 G / 9 G	50 G / 9 G
Protection class	IP 67	IP 67
LED indicator	yellow	Yellow
Electrical connection	M8, 3-pin	M8, 3-pin
Cable material length	PU - 0,3 m	PU - 0,3 m
Extension cable	Energy chain compliant	Energy chain compliant

MTJ / MRJ / MTV



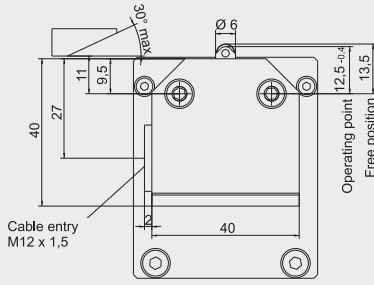
CTV / CTJ



i Mounting and using the Induction and Mechanical switch, can be done only if the CTV and CTJ series Linear Units are delivered with Connection plates.

MS- Mechanical switch

TECHNICAL DATA

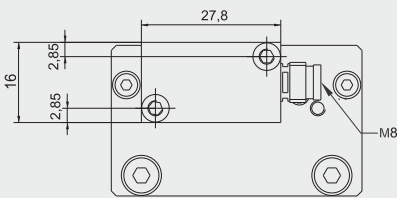


Protection class IEC 60529	IP 67
Ambient temperature	-5°C ...+80°C
Operating point accuracy	± 0.05 mm
Approach speed max.	45 m/min
Approach speed min.	0,01 m/min
Switching contact	1 changeover
Switching principle	Snap-action
Rated voltage	250 V AC
Switching current, min. at	10 mA
Switching voltage	24 V DC
Cable entry	M12 x 1,5

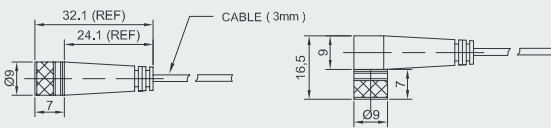
ORDERING CODES	MTJ/MRJ 40	MTJZ 40	MTJ/MRJ/MTV 65 MTJZ 65/80	MTJ/MRJ/MTV 80	MTJ/MRJ/MTV 110	MTJZ 110	MTJ ECO 40	CTV/CTJ 90	CTV/CTJ 110	CTV/CTJ 145	CTV/CTJ 200
+ 2x Activation block with fixing screws	43243	52022	43247	43256	47827	63702	49030	49032	49031	40652	40652
Mechanical switch only	47921										
2x + 2x Mechanical switch with mounting elements	40683		40687	40689	47826	63703	49035	49034	49033	47939	53055

IS- Inductive switch

TECHNICAL DATA



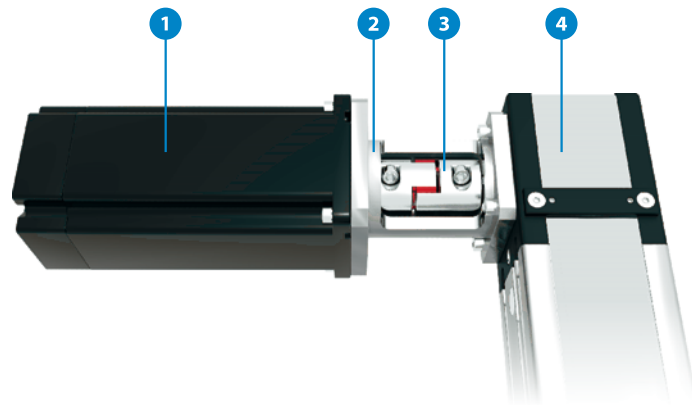
Extension cable with connector



Sensor Type	PNP
Switching function	NC / NO
Rated voltage	10 ~ 30 V DC
Switching Current	150 mA max.
Ambient temperature	-25°C ...+70°C
Switching Frequency	800 Hz max.
Voltage Drop	3,5 V
Protection class	IP 67
Electrical connection	M8, 3-pin
Extension cable	Energy chain compliant - bending radius 75 mm
Cable material-length	PU
Cable length	2m / 5m
Cable length	M8, 3-pin Straight or Angeled connector

ORDERING CODES	MTJ/MRJ 40	MTJZ 40	MTJ/MRJ/MTV 65 MTJZ 65/80	MTJ/MRJ/MTV 80	MTJ/MRJ/MTV 110	MTJZ 110	MTJ ECO 40	CTV/CTJ 90	CTV/CTJ 110	CTV/CTJ 145	CTV/CTJ 200
+ 2x Activation block with fixing screws	43243	52022	43247	43256	47827	63702	49030	49032	49031	40652	40652
PNP NO Inductive switch only	40671										
2x + PNP NO Ind. switch with mounting elements	40680		48026	43233	48047	63705	45105	49039	49038	48058	53054
PNP NC Inductive switch only	43570										
2x + PNP NC Ind. switch with mounting elements	48851		40685	47848	47989	63704	45103	49037	49036	47850	53052
Extension Cable length 2m - Straight connector										8146	
Extension Cable length 5m - Straight connector										8147	
Extension Cable length 2m - Angeled connector										9017	
Extension Cable length 5m - Angeled connector										9019	

MOTOR ADAPTER WITH COUPLING



- 1 - Motor
- 2 - Motor adapter
- 3 - Coupling
- 4 - Linear Unit

VK - CTV110 - SMB60 - GESM14

Motor adapter : _____

Linear Unit : _____

Motor type : _____

According to customer's specification

Coupling type : _____

See page 8.020.0 or According to customer's specification

COUPLINGS

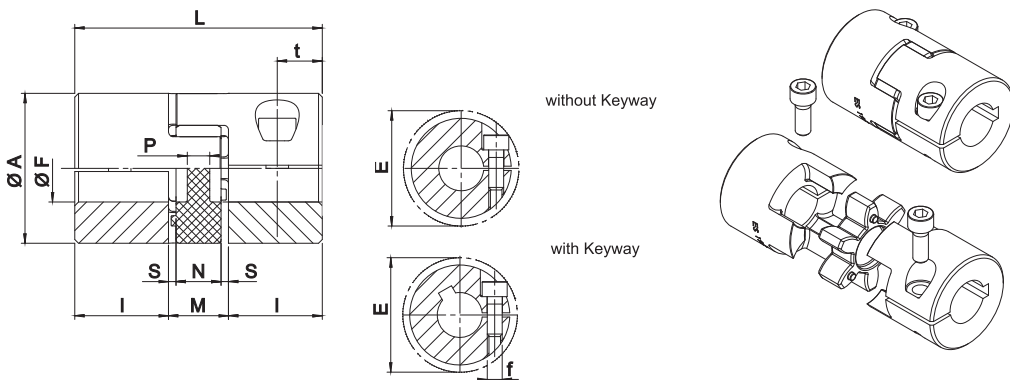
COUPLING - GESM14 - F8C - F14C

Coupling: _____

Coupling type / size: _____

7, 9, 14, 19/24, 24/28, 28/38, 38/45

Option:
C: with keyway
Leave blank: without keyway
Hole diameter



i The maximum transmittable torque of the clamping hub depends on the bore diameter (see the upper table on page 8.025.0).

Size	* T _{KN} Nominal (Nm)	* T _{Kmax} (Nm)	Ms (Nm)	W (Kg)	Hub J (Kg ^{m2})	n _{max} (min ⁻¹)	A (mm)	F (mm) [min]	F (mm) [max]	f (mm)	L (mm)	I (mm)	M (mm)	N (mm)	S (mm)	P (mm)	t (mm)	E (mm)
7	2	4	0,35	0,003	0,085 x 10	40.000	14	3	7	M2	22	7	8	6	1,0	6	4	15,0
9	5	10	0,75	0,007	0,42 x 10	28.000	20	4	10	M2,5	30	10	10	8	1,0	2	5	23,4
14	12,5	25	1,4	0,018	2,6 x 10	19.000	30	6	16	M3	35	11	13	10	1,5	2	5,5	32,2
19/24	17	34	11	0,071	18,1 x 10	14.000	40	10	20	M6	66	25	16	12	2,0	3,5	12	45,7
24/28	60	120	11	0,156	74,9 x 10	10.600	55	10	32	M6	78	30	18	14	2,0	4	12	56,4
28/38	160	320	25	0,240	163,9 x 10	8.500	65	14	35	M8	90	35	20	15	2,5	5,2	13,5	72,6
38/45	325	650	25	0,440	465,5 x 10	7.100	80	19	45	M8	114	45	24	18	3,0	5,6	16	83,3

*The values of nominal T_{KN}** and max. T_{Kmax}** transmittable torque in the upper table are valid for coupling with Keyway!

**for legend see page 8.025.0

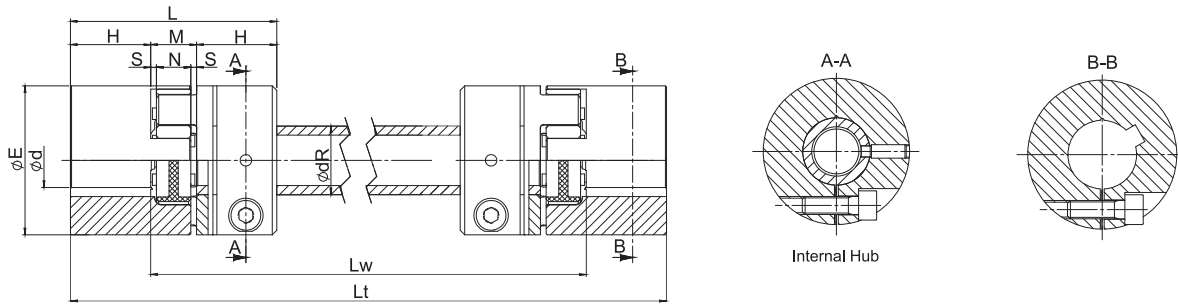
Size	Recommended coupling bore diam. and Transmissible Torque (Nm) - valid for shaft tolerances k6 without Keyway																								
	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
7	0,7	0,8	1	1,1																					
9	1,1	1,4	1,7	1,9	2,2	2,5	2,8																		
14			2,5	2,9	3,3	3,7	4,1	4,6	5	5,8	6,2	6,6													
19/24							23	25	27	32	34	36	43	45											
24/28							23	25	27	32	34	36	43	45	50	54	57	63							
28/38										58	62	66	79	83	91	100	104	116	124	133	145				
38/45													79	83	91	100	104	116	124	133	145	158	166	174	187

Ms	Screw tightening torque	Nm
W	Weight	Kg
J	Coupling moment of inertia	kgm ²
n_{max}	Maximum rpm	min ⁻¹
T_{KN}	Coupling nominal torque	Nm
T_{kmax}	Coupling maximum torque	Nm

The operating temperature range for the coupling is between -30 and +90°C

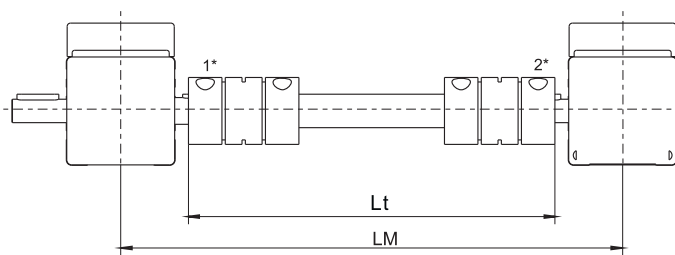
SYNCHRONISATION SHAFT OSL

i The maximum transmissible torque of the clamping hub depends on the bore diameter (see the upper table on page 8.025.0).

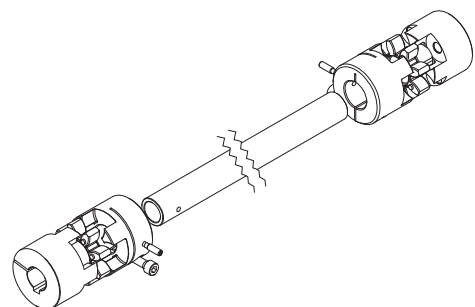


Size	Internal hub		C _T (Nm/rad)	E (mm)	H (mm)	Ød min (mm)	Ød max (mm)	M (mm)	N (mm)	S (mm)	L (mm)	Lw min (mm)	Lt (mm)	dR x thickness (mm)	Weight (kg)	Moment of inertia (10 ⁻⁶ kg * m ²)
	Ms (Nm)	M _T (Nm)														
14	1,34	6	59	30	11	4	16	13	10	1,5	35	48	on request	14 x 2,0	0,072 + 0,00021 * Lw	10,4 + 0,0076 * Lw
19/24	10	34	314	40	25	6	20	16	12	2	66	82		20 x 3,0	0,284 + 0,00044 * Lw	72,4 + 0,0324 * Lw
24/28	10	45	596	55	30	8	28	18	14	2	78	96		25 x 2,5	0,624 + 0,00048 * Lw	300 + 0,0614 * Lw
28/38	25	105	2868	65	35	10	38	20	15	2,5	90	110		35 x 5,0	0,960 + 0,00128 * Lw	656 + 0,2954 * Lw
38/45	25	123	4521	80	45	12	45	24	18	3	114	138		40 x 5,0	1,760 + 0,00149 * Lw	1862 + 0,4656 * Lw

Ms	Screw tightening torque	Nm
M_T	Maximum transmissible torque	Nm
C_T	Torsional rigidity per meter	Nm/rad

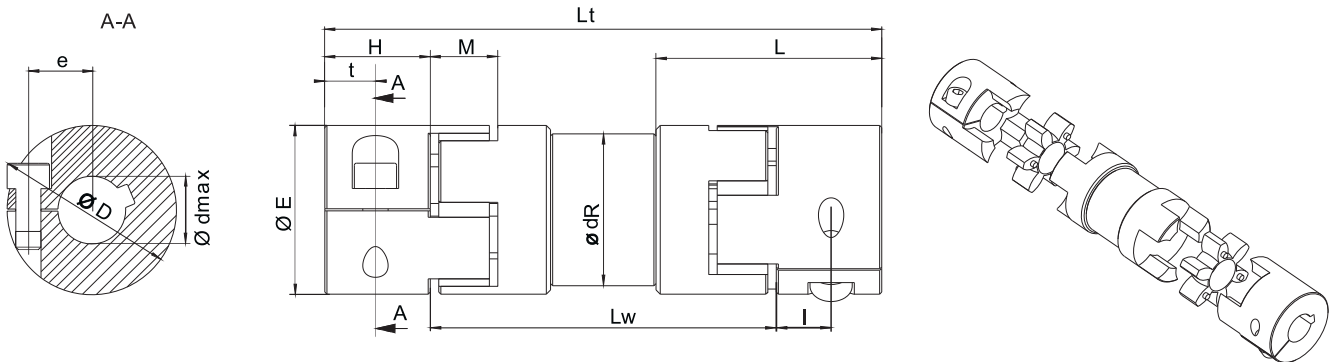


* - see page 8.030.0 for more info



i For longer distances Bearing Supports needed. Please contact us.

SYNCHRONISATION SHAFT OSR



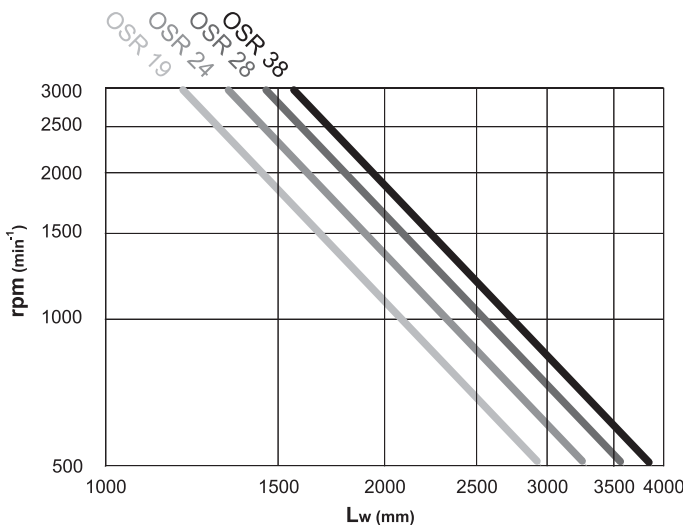
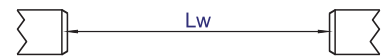
i The maximum transmittable torque of the clamping hub depends on the bore diameter (see the upper table on page 8.025.0).

Size	d min (mm)	d max (mm)	Ms (Nm)	Mt (Nm)	Ct (Nm/rad)	E (mm)	H (mm)	I (mm)	L (mm)	M (mm)	Lw min (mm)	Lt (mm)	D (mm)	t (mm)	e (mm)	dR (mm)	Weight (kg)	Moment of inertia (10 ⁻⁶ kg * m ²)
19	10	20	10	39	1630	40	25	13	53,5	16	82	on request	47	12	15	36	0,30 + 0,00058 * Lw	66,0 + 0,1679 * Lw
24	10	28	10	53	3980	55	30	16	63	18	96		57	14	20,8	45	0,62 + 0,00091 * Lw	242 + 0,4099 * Lw
28	14	35	25	137	7494	65	35	20	67	20	110		73	15	25	55	0,98 + 0,00112 * Lw	572 + 0,7717 * Lw
38	15	45	25	180	14540	80	45	25	83,5	24	138		84	20	30	68	1,75 + 0,00140 * Lw	1522 + 1,4975 * Lw

Ms Screw tightening torque Nm
Mt Maximum transmissible torque Nm
Ct Torsional rigidity per meter Nm/rad

INSTALLATION

The overall length Lt is best determined as the distance between shaft ends - length Lw plus 2x dimension H.



SELECTION DIAGRAM

Ideal execution for long distance shaft connections. Torque transmission is zero backlash. Designed for lengths up to 4m without bearing support (depending on rotation speed).

Standard lengths available till 3m, for longer lengths please contact us.

HOW TO ORDER

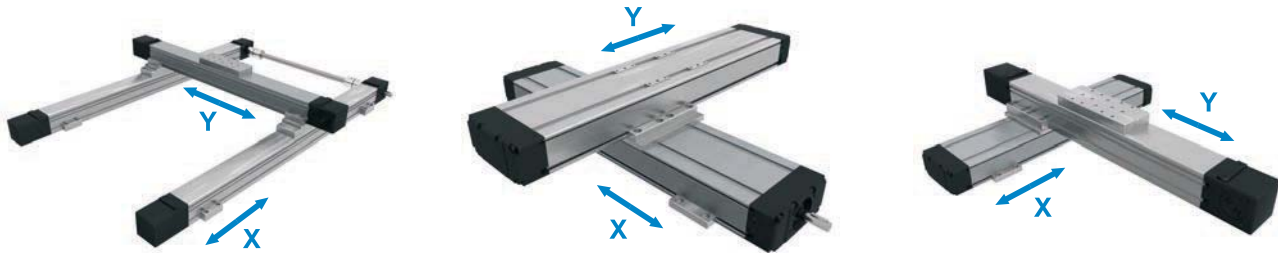
OSR - 19 - MTJ65 - LM - 890 - F16C - F16C

Type: OSR
 Size: OSR: 14, 19/24, 24/28, 28/38, 38/45
 OSR: 19, 24, 28, 38
 Linear unit series: MTJ/MRJ/MTJ ECO: 40, 65, 80, 110
 CTJ: 90, 110, 145, 200
 Leave blank : not for linear unit
 Length type: LM (Middle distance of the linear units)
 Lt (Production length of the sync. shaft)

Option:
C: with keyway
Leave blank: w/o keyway
Hole diameter:
 — one side end hub¹₂
 --- other side end hub
Length [mm]

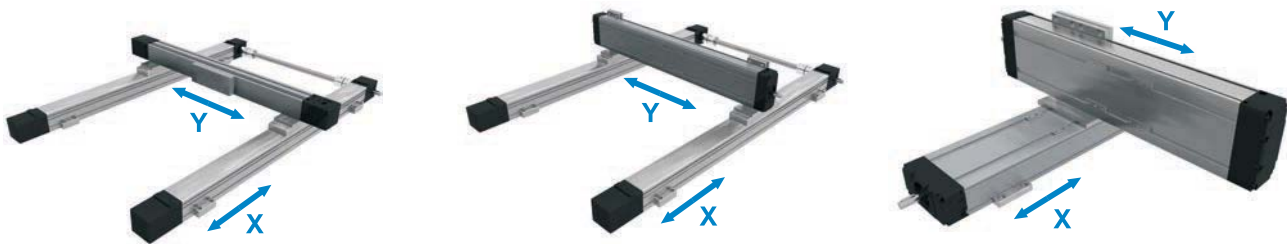
X-Y CONNECTION ELEMENTS

X- Axis MTJ, MRJ, MTV, MTJ ECO, CTV = 0° → Y Axis = 0°



X-Axis	Y-Axis								
	MTJ, MRJ 40	MTJ, MRJ, MTV 65	MTJ, MRJ, MTV 80	MTJ, MRJ, MTV 110	MTJ 40 ECO	CTV, CTJ 90	CTV, CTJ 110	CTV, CTJ 145	CTV, CTJ 200
MTJ, MRJ 40	CP M40 0 M40 0	CP M40 0 M65 0			CP M40 0 E40 0	CP M40 0 C90 0			
MTJ, MRJ, MTV 65	CP M65 0 M40 0	CP M65 0 M65 0	CP M65 0 M80 0		CP M65 0 E40 0	CP M65 0 C90 0	CP M65 0 C110 0		
MTJ, MRJ, MTV 80		CP M80 0 M65 0	CP M80 0 M80 0	CP M80 0 M110 0		CP M80 0 C90 0	CP M80 0 C110 0	CP M80 0 C145 0	
MTJ, MRJ 110		CP M110 0 M65 0	CP M110 0 M80 0	CP M110 0 M110 0			CP M110 0 C110 0	CP M110 0 C145 0	CP M110 0 C200 0
MTJ 40 ECO	CP E40 0 M40 0	CP E40 0 M65 0	CP E40 0 M80 0		CP E40 0 E40 0	CP E40 0 C90 0	CP E40 0 C110 0		
CTV, CTJ 90	CP C90 0 M40 0	CP C90 0 M65 0				CP C90 0 C90 0	CP C90 0 C110 0		
CTV, CTJ 110	CP C110 0 M40 0	CP C110 0 M65 0	CP C110 0 M80 0			CP C110 0 C90 0	CP C110 0 C110 0	CP C110 0 C145 0	
CTV, CTJ 145		CP C145 0 M65 0	CP C145 0 M80 0	CP C145 0 M110 0		CP C145 0 C90 0	CP C145 0 C110 0	CP C145 0 C145 0	
CTV, CTJ 200			CP C200 0 M80 0	CP C200 0 M110 0			CP C200 0 C110 0	CP C200 0 C145 0	CP C200 0 C200 0

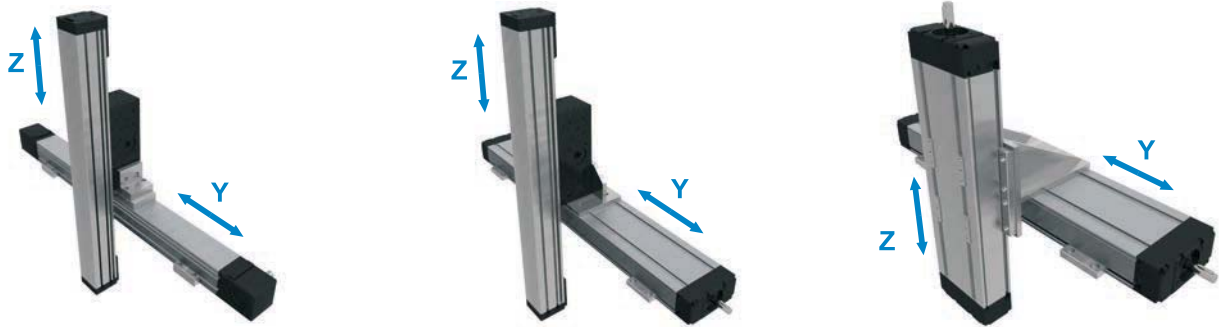
X- Axis MTJ, MRJ, MTV, MTJ ECO, CTV = 0° → Y Axis = 90°



X-Axis	Y-Axis								
	MTJ, MRJ 40	MTJ, MRJ, MTV 65	MTJ, MRJ, MTV 80	MTJ, MRJ, MTV 110	MTJ 40 ECO	CTV, CTJ 90	CTV, CTJ 110	CTV, CTJ 145	CTV, CTJ 200
MTJ, MRJ 40	CP M40 0 M40 90	CP M40 0 M65 90			CP M40 0 E40 90	CP M40 0 C90 90			
MTJ, MRJ, MTV 65	CP M65 0 M40 90	CP M65 0 M65 90	CP M65 0 M80 90			CP M65 0 C90 90	CP M65 0 C110 90		
MTJ, MRJ, MTV 80		CP M80 0 M65 90	CP M80 0 M80 90	CP M80 0 M110 90		CP M80 0 C90 90	CP M80 0 C110 90	CP M80 0 C145 90	
MTJ, MRJ 110		CP M110 0 M65 90	CP M110 0 M80 90	CP M110 0 M110 90			CP M110 0 C110 90	CP M110 0 C145 90	CP M110 0 C200 90
MTJ 40 ECO	CP E40 0 M40 90	CP E40 0 M65 90	CP E40 0 M80 90		CP E40 0 E40 90	CP E40 0 C90 90	CP E40 0 C110 90		
CTV, CTJ 90	CP C90 0 M40 90	CP C90 0 M65 90				CP C90 0 C90 90			
CTV, CTJ 110	CP C110 0 M40 90	CP C110 0 M65 90	CP C110 0 M80 90			CP C110 0 C90 90	CP C110 0 C110 90		
CTV, CTJ 145		CP C145 0 M65 90	CP C145 0 M80 90	CP C145 0 M110 90		CP C145 0 C90 90	CP C145 0 C110 90	CP C145 0 C145 90	
CTV, CTJ 200			CP C200 0 M80 90	CP C200 0 M110 90			CP C200 0 C110 90	CP C200 0 C145 90	CP C200 0 C200 90

Y-Z CONNECTION ELEMENTS

Y- Axis MTJ, MRJ, MTV, MTJ ECO, CTV, CTJ = 0° → Z-Axis = 90°



Y-Axis	Z-Axis									
	MTJZ 40	MTJZ 65	MTJZ 80	MTJZ 110	MTV 65	MTV 80	MTV 110	CTV 90	CTV 110	CTV 145
MTJ, MRJ 40	CP M40 0 Z40									
MTJ, MRJ, MTV 65	CP M65 0 Z40	CP M65 0 Z65			CP M65 0 ZM65					
MTJ, MRJ, MTV 80	CP M80 0 Z40	CP M80 0 Z65	CP M80 0 Z80		CP M80 0 ZM65	CP M80 0 ZM80				
MTJ, MRJ, MTV 110		CP M110 0 Z65	CP M110 0 Z80	CP M110 0 Z110	CP M110 0 ZM65	CP M110 0 ZM80	CP M110 0 ZM110			
MTJ 40 ECO	CP E40 0 Z40									
CTV, CTJ 90	CP C90 0 Z40	CP C90 0 Z65						CP C90 0 ZC90		
CTV, CTJ 110	CP C110 0 Z40	CP C110 0 Z65	CP C110 0 Z80		CP C110 0 ZM65	CP C110 0 ZM80		CP C110 0 ZC90	CP C110 0 ZC110	
CTV, CTJ 145	CP C145 0 Z40	CP C145 0 Z65	CP C145 0 Z80	CP C145 0 Z110	CP C145 0 ZM65	CP C145 0 ZM80	CP C145 0 ZM110	CP C145 0 ZC90	CP C145 0 ZC110	CP C145 0 ZC145
CTV, CTJ 200			CP C200 0 Z80	CP C200 0 Z110		CP C200 0 ZM80	CP C200 0 ZM110		CP C200 0 ZC110	CP C200 0 ZC145

CONNECTION ELEMENTS FOR CUNSTRICIONS WITH ALU PROFILES



i Linear Unit must be mounted by the aluminium profile and not at the end blocks!

For more details about Alu profiles see **PROFILE TECHNIC** catalogue.



MULTI AXIS SYSTEMS

We offer all necessary fittings including brackets, clamping fixtures and adapter plates in order to build multi-axis systems. Beside standard elements we supply also custom fixing and connection elements manufactured in our workshop.

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2



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