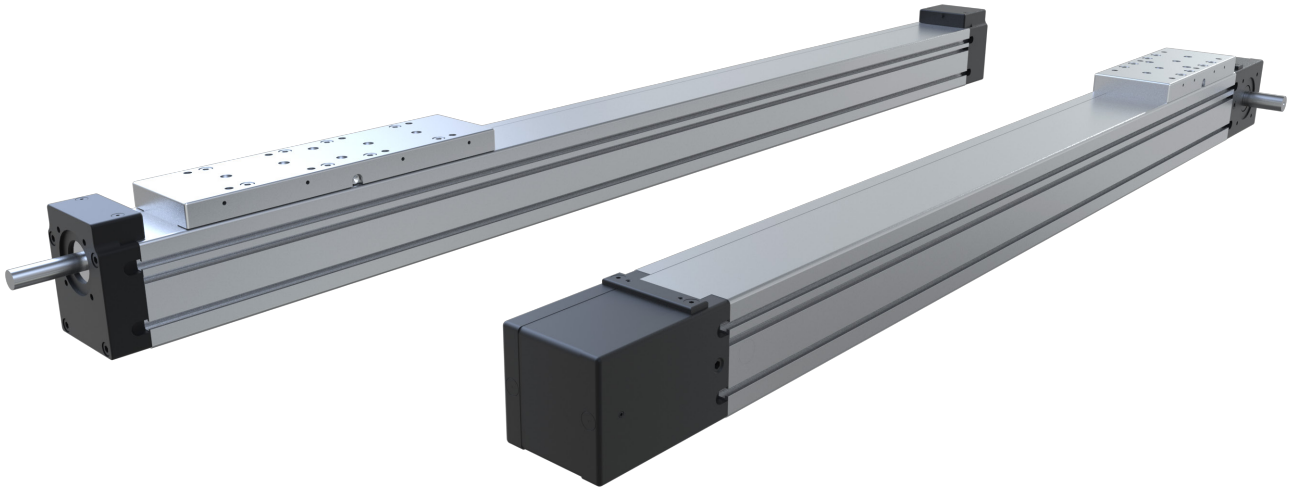
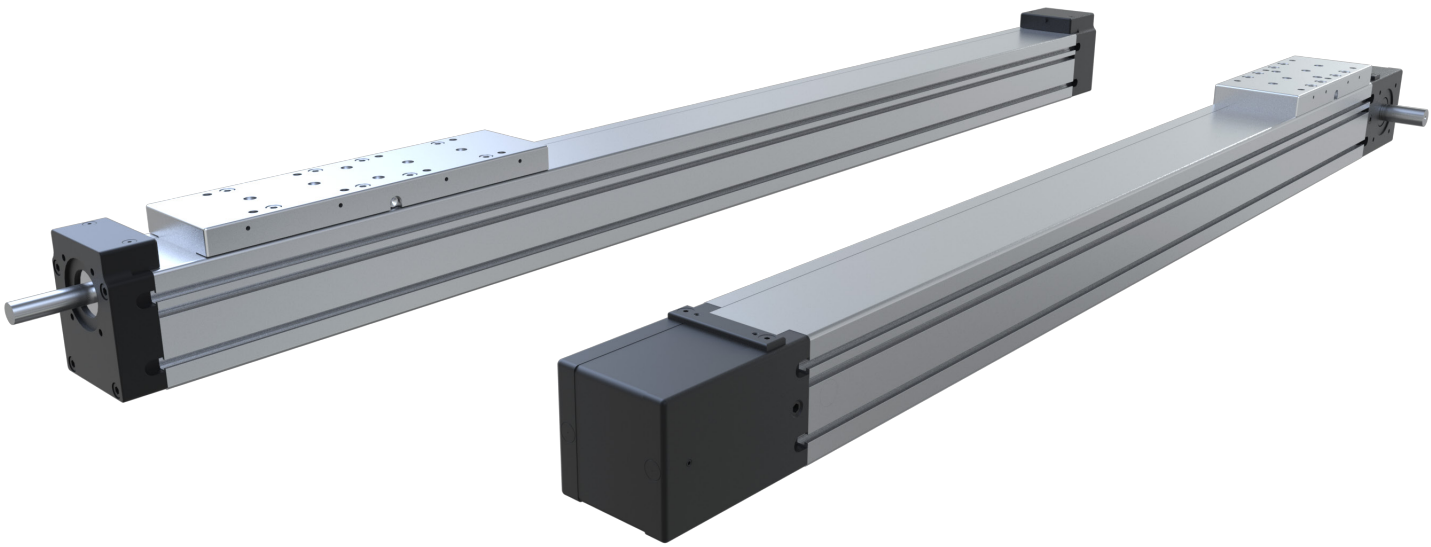
LINEAR UNITS

MODULAR LINEAR ACTUATORS

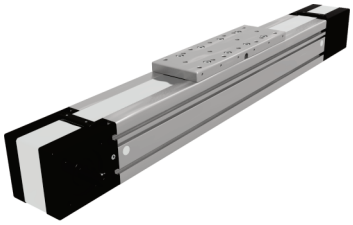


LINEAR UNITS

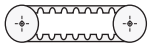


BELT DRIVEN LINEAR UNITS

BR-S / BT-S

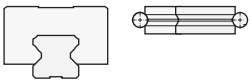


DRIVE



GUIDE

BR-S BT-S



FEATURES

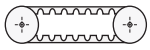
- High speed
- High acceleration
- Large stroke lenghts
- Good repeatability

Linear Unit	Dynamic load capacity		Max. travel speed	[1] Max. profile length	Max. repeatability	Dimensions	
	Cy [N]	Cz [N]	[m/s]	[mm]	[mm]	[2] Width [mm]	[3] Height [mm]
BR-S 40	4610		6	3000	± 0.08	40	52
BR-S 65 S	9900		6	6000	± 0.08	65	85
BR-S 65 L	19800		6	6000	± 0.08	65	85
BR-S 80 S	17100		6	6000	± 0.08	80	100
BR-S 80 L	34200		6	6000	± 0.08	80	100
BR-S 110 S	24800		6	6000	± 0.08	110	129
BR-S 110 L	49600		6	6000	± 0.08	110	129
BT-S 40	3400	1700	10	6000	± 0.08	40	52
BT-S 65 L	8600	4400	10	6000	± 0.08	65	85
BT-S 80 L	17100	9000	10	6000	± 0.08	80	100
BT-S 110 L	31000	14000	10	6000	± 0.08	110	129

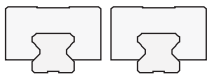
[1] For lengths over the stated value in the table above please contact us. [2] Profile [3] Profile + carriage

BR-D

DRIVE



GUIDE



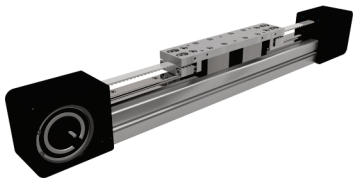
FEATURES

- High speed
- High acceleration
- Large stroke lenghts
- Good repeatability
- High load capabilities
- High flexural rigidity

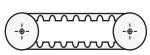
Linear Unit	Dynamic load capacity		Max. travel speed	[1] Max. profile length	Max. repeatability	Dimensions	
	Cy [N]	Cz [N]	[m/s]	[mm]	[mm]	[2] Width [mm]	[3] Height [mm]
BR-D 90 S	4620		5	6000	± 0.08	90	40
BR-D 90 L	9240		5	6000	± 0.08	90	40
BR-D 110 S	19800		6	6000	± 0.08	110	50
BR-D 110 L	39600		6	6000	± 0.08	110	50
BR-D 145 S	34200		6	6000	± 0.08	145	65
BR-D 145 L	68400		6	6000	± 0.08	145	65
BR-D 200 S	49600		6	6000	± 0.08	200	100
BR-D 200 L	99200		6	6000	± 0.08	200	100

[1] For lengths over the stated value in the table above please contact us. [2] Profile [3] Profile + carriage

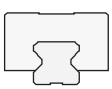
BR-E



DRIVE



GUIDE



FEATURES

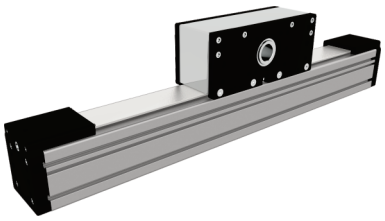
- Excellent price/performance ratio
- High acceleration
- Large stroke lenghts

Linear Unit	Dynamic load capacity		Max. travel speed	[1] Max. profile length	Max. repeatability	Dimensions	
	Cy [N]	Cz [N]	[m/s]	[mm]	[mm]	[2] Width [mm]	[3] Height [mm]
BR-E 40 S	9900		3	5960	± 0.1	40	78
BR-E 40 L	19800		3	5960	± 0.1	40	78

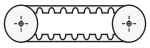
[1] For lengths over the stated value in the table above please contact us. [2] Profile [3] Profile + carriage

BELT DRIVEN LINEAR UNITS

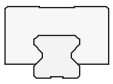
BR-Z



DRIVE



GUIDE



FEATURES

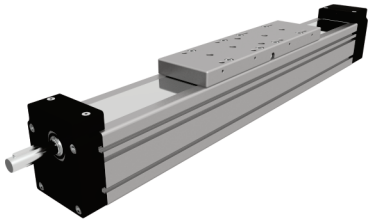
- High speed
- High acceleration
- Large stroke lenghts
- Good repeatability

Linear Unit	Dynamic load capacity		Max. travel speed	[1] Max. profile length	Max. repeatability	Dimensions	
	Cy [N]	Cz [N]	[m/s]	[mm]	[mm]	[2] Width [mm]	[3] Height [mm]
BR-Z 40	4610		5	3000	± 0.08	40	88
BR-Z 65	19800		5	6000	± 0.08	65	143.5
BR-Z 80	34200		5	6000	± 0.08	80	178.5
BR-Z 110	49600		5	6000	± 0.08	110	241

[1] For lengths over the stated value in the table above please contact us. [2] Profile [3] Profile + carriage

BALL SCREW DRIVEN LINEAR UNITS

SR-S



DRIVE

GUIDE

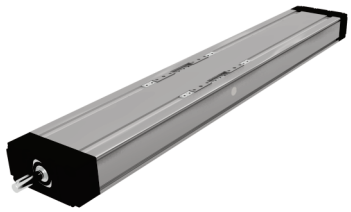
FEATURES

- High repeatability
- Ball screw support system for higher speeds at the same stroke
- High axial load capabilities
- Large stroke lenghts

Linear Unit	Dynamic load capacity		Max. travel speed	[1] Max. profile length	Max. repeatability	Dimensions	
	Cy [N]	Cz [N]	[m/s]	[mm]	[mm]	[2] Width [mm]	[3] Height [mm]
SR-S 40	4620		0.97	2920	± 0.01	40	52
SR-S 65	19800		1.12	2920	± 0.01	65	85
SR-S 80	34200		2.5	5480	± 0.01	80	100
SR-S 110	49600		1.6	5850	± 0.01	110	129

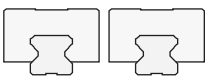
[1] For lengths over the stated value in the table above please contact us. [2] Profile [3] Profile + carriage

SR-D



DRIVE

GUIDE



FEATURES

- High repeatability
- High load capabilities
- High flexural rigidity

Linear Unit	Dynamic load capacity		Max. travel speed	[1] Max. profile length	Max. repeatability	Dimensions	
	Cy [N]	Cz [N]	[m/s]	[mm]	[mm]	[2] Width [mm]	[3] Height [mm]
SR-D 90 S	4620		0.97	750	± 0.01	90	40
SR-D 90 L	9240		0.97	750	± 0.01	90	40
SR-D 110 S	19800		1.12	1500	± 0.01	110	50
SR-D 110 L	39600		1.12	1500	± 0.01	110	50
SR-D 145 S	34200		2.5	1800	± 0.01	145	65
SR-D 145 L	68400		2.5	1800	± 0.01	145	65
SR-D 200 S	49600		1.6	2200	± 0.01	200	100
SR-D 200 L	99200		1.6	2200	± 0.01	200	100

[1] For lengths over the stated value in the table above please contact us. [2] Profile [3] Profile + carriage

CHARACTERISTICS

BR-S and BT-S Linear Units with toothed belt drive and compact dimensions provide high performance features such as, high speed, good accuracy and repeatability. 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.

For very high speeds, up to 10m/s, the Track Rollers (journal Bearings) of the type BT-S are particularly suitable.

In the Linear Units BR-S and BT-S 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.

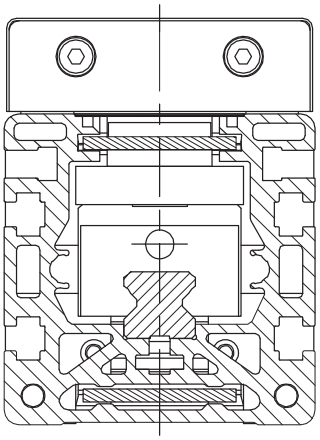
The in the Profile slot driving Polyurethane timing belt protects all the parts in the Profile from dust and other contaminations. As optional, a corrosion-resistant protection strip is available.

The aluminum profile includes T-slots for fixing the Linear Unit and for attaching sensors and switches. Also, a Reed switch can be used here.

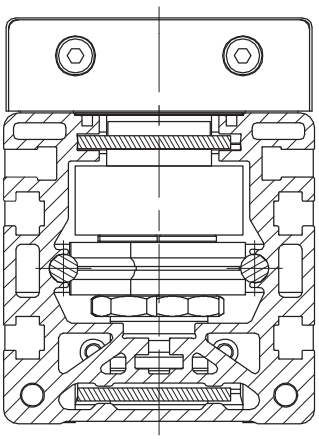
Different carriage lengths with central lubrication port, allow easy re-lubrication of the Linear Unit and allow the possibility to attach additional accessories on the side.

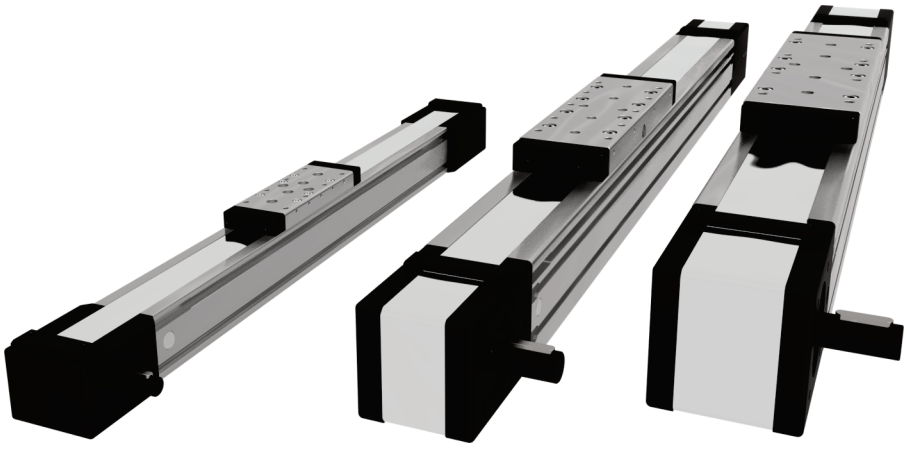
For the Linear Units BR-S and BT-S various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.

BR-S



BT-S

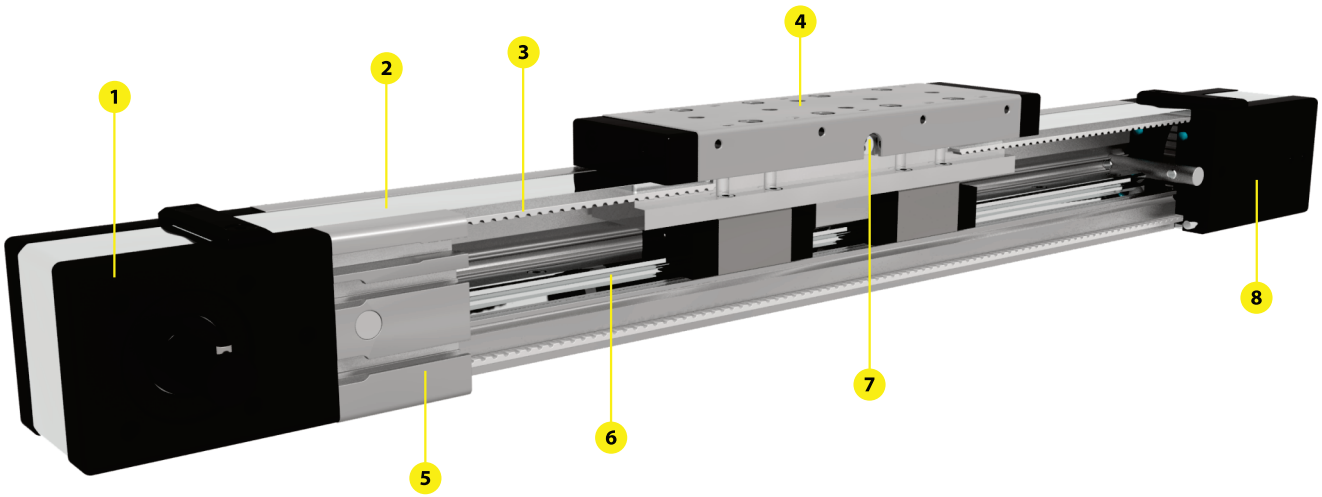




The aluminium profiles are manufactured according to the medium EN 12020-2 standard
Straightness = 0.35 mm/m; Max. torsion = 0.35 mm/m; Angular torsion = 0.2 mm/40 mm; Parallelism = 0.2 mm

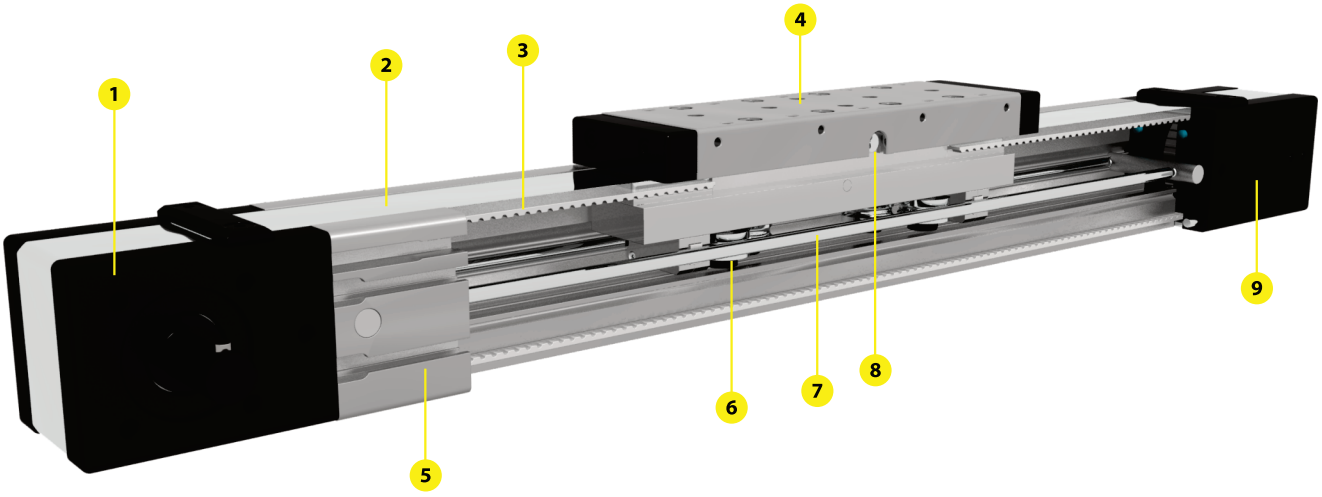
STRUCTURAL DESIGN

BR-S Series



1 - Drive block with pulley
2 - Corrosion-resistant protection strip (available also without protection strip)
3 - AT polyurethane toothed belt with steel tension cords
4 - Carriage; with built in Magnets
5 - Aluminium profile-Hard anodized
6 - Linear Ball Guideway
7 - Central lubrication port; both sides
8 - Tension End with integrated belt tensioning system

BT-S Series



1 - Drive block with pulley
2 - Corrosion-resistant protection strip (available also without protection strip)
3 - AT polyurethane toothed belt with steel tension cords
4 - Carriage; with build in Magnets
5 - Aluminium profile-Hard anodized
6 - Track Roller (journal Bearing)
7 - Two hardened steel Round guide (58/60 HRC)
8 - Central lubrication port; both sides
9 - Tension End with integrated belt tensioning system

HOW TO ORDER

BR 0110 S - 6000 - L 20 X - 1 - 1

Series Prefix:
BR
BT

Size:
40: 0040
65: 0065
80: 0080
110: 0110

Series Suffix:
S

Absolute stroke [mm]:
(Absolute stroke = Effective stroke + 2 x Safety stroke)

Carriage Version:
S: Short (only for BT-S series)
L: Long ..
Leave blank: For BR0040, BT0040

Type of drive pulley:
00: Pulley with through hole
01: Pulley with journal (with Keyway)
02: Pulley with journal on both sides (without Keyway)
03: Without drive unit
10: Pulley with journal (without Keyway)
20: Pulley with journal on both sides (with Keyway)

Drive journal position:
L: Journal on left side
R: Journal on right side
X: Both sided or none

Protection cover:
0: In profile groove guided Polyurethane toothed belt
1: Corrosion-resistant protection strip

Version:
S: Special Version
1: Standard Single Carriage
2: Dual Carriage

TECHNICAL DATA

General Technical Data

Linear Unit	Carriage length	Dynamic load capacity			Dynamic moment			Max. permissible loads						Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
								Forces		Moments								
	Lv [mm]	C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]		[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-S 40	92	4610	/	/	28	90	90	3850	3850	14	75	75		0.28	± 0.08	3000	2876	25
BT-S 40	92	/	3400	1700	20	21	25	1015	1090	13	14	7.6		0.26	± 0.08	6000	5876	0

*For lengths / stroke over the stated value in the table above please contact us.

Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).

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

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

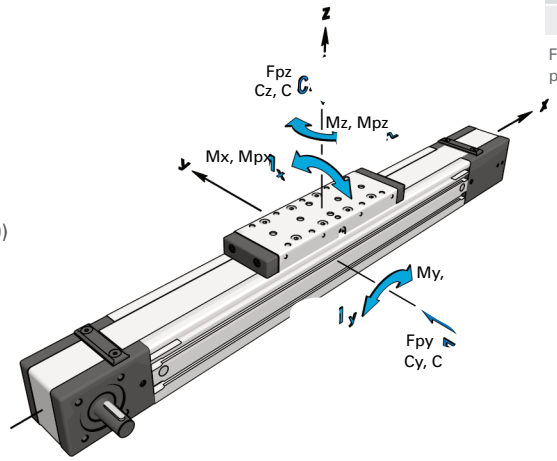
For operating temperature out of the presented range, please contact us.

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:

$E = 70000\ N / mm^2$

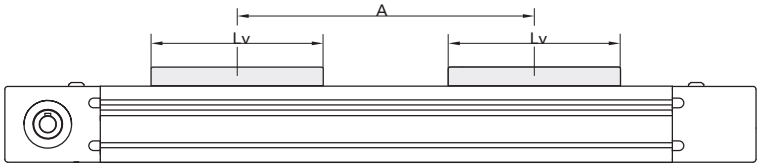


General Technical Data for Double Carriage

Linear Unit	Carriage version	Dynamic load capacity			* Dynamic moment			* Max. permissible loads				
								Forces		Moments		
		C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-S 40	2	9220	/	/	57	4.6 × A	4.6 × A	7690	7690	28	3.8 × A	3.8 × A
BT-S 40	2	/	6800	3400	40	1.7 × A	3.4 × A	2030	2180	26	1.1 × A	1.0 × A

*A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.



Drive and belt data

Linear Unit	* Max. travel speed	Max. drive torque	** No load torque		Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring	* Max. acceleration
		Ma	With strip	Without strip						Cspec	
	[m / s]	[Nm]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s²]
BR-S 40	6	3.7	0.4 × nc	0.2 × nc	99	31.51	AT 3	20	235	225000	70
BT-S 40	10		0.4 × nc	0.2 × nc							

*Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1.5 m/s and 50 m/s, respectively. For travel speed and acceleration over the stated value in the table above please contact us.

*The stated values are for strokes (and for distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation. nc - Number of carriages

TECHNICAL DATA

Mass and mass moment of inertia

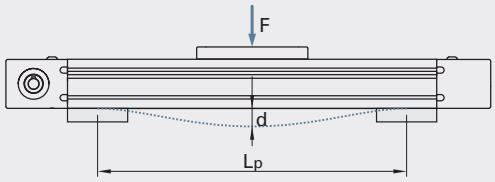
Linear Unit	* Mass of linear unit [kg]	* Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia	
			Iy [cm^4]	Iz [cm^4]
BR-S 40	1.3 + 0,0024 × (Abs. stroke + (nc - 1) × A) + 0.28 × (nc - 1)	9.7 + 0,0035 × (Abs. stroke + (nc - 1) × A) + 7.0 × (nc - 1)	9.8	11.6
BT-S 40	1.25 + 0,0022 × (Abs. stroke + (nc - 1) × A) + 0.26 × (nc - 1)	9.3 + 0,0035 × (Abs. stroke + (nc - 1) × A) + 6.5 × (nc - 1)		

*Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

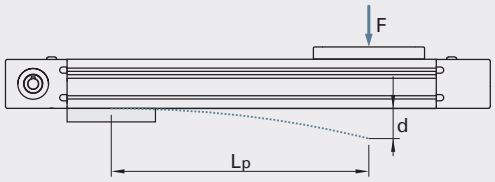
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



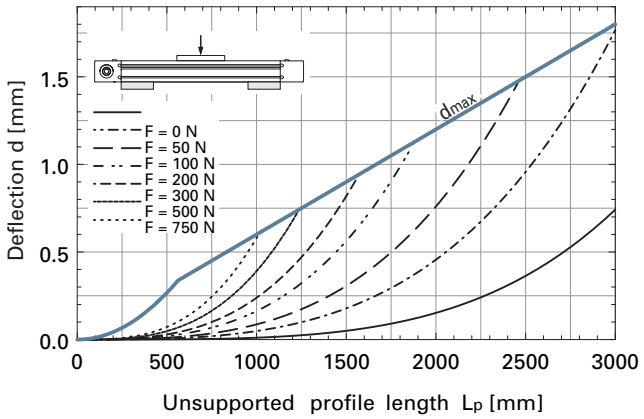
Fixed - free mounting

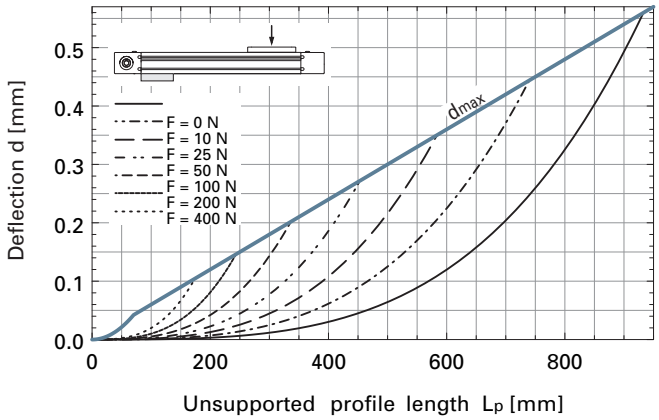


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

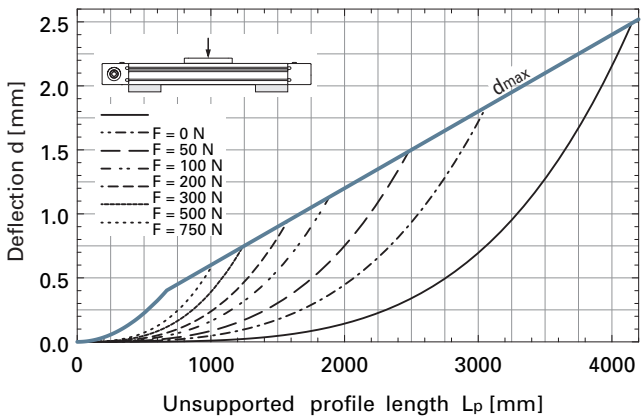
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

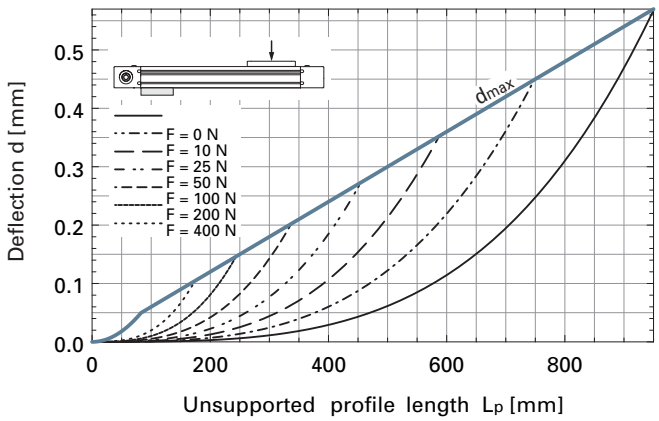
BR-S 40





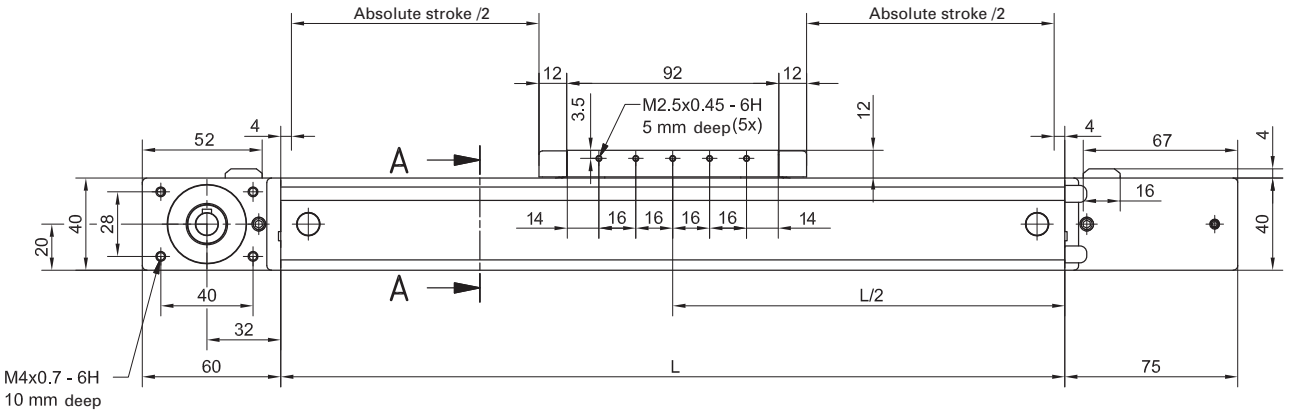
BT-S 40



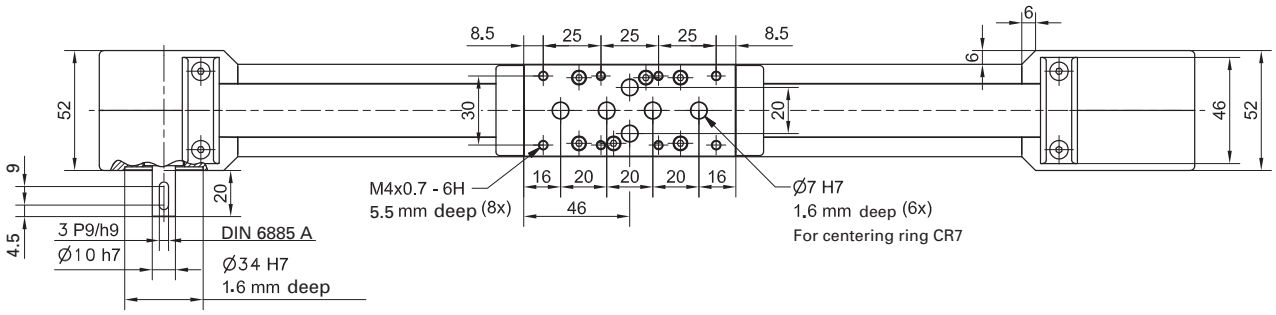


DIMENSIONS

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



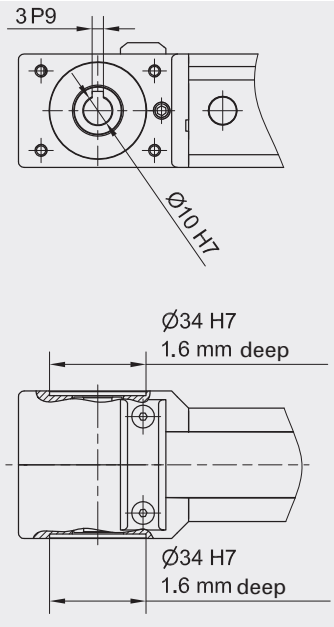
Lifetime lubrication



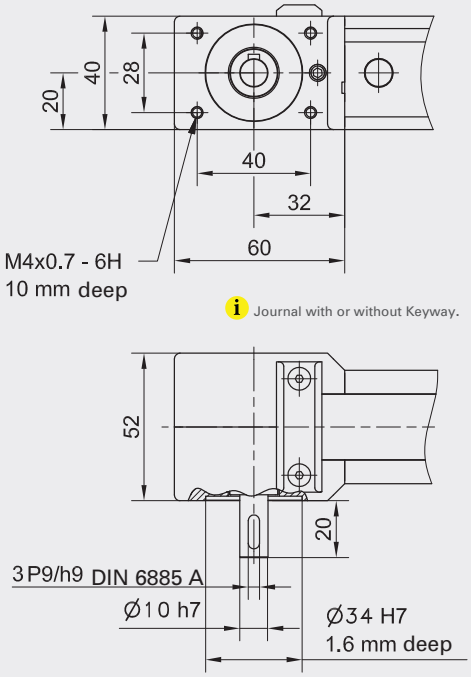
Journal with or without Keyway.

All dimensions in mm; Drawings scales are not equal.

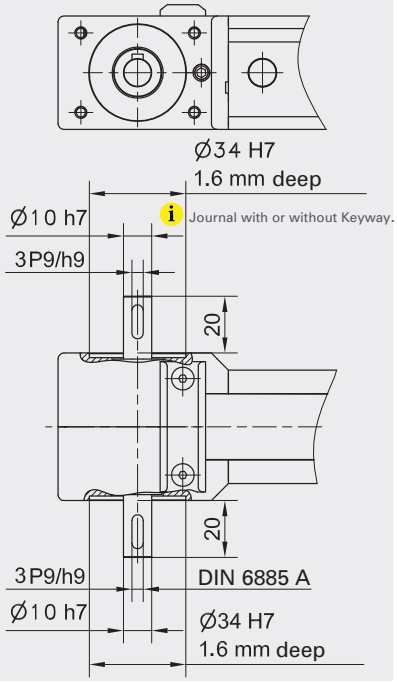
TYPE 0



TYPE 1 L and 1 R

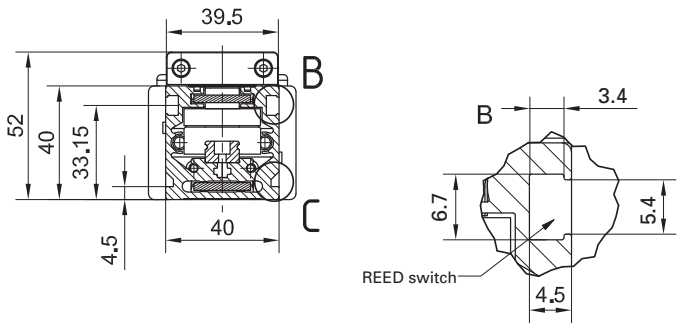


TYPE 2

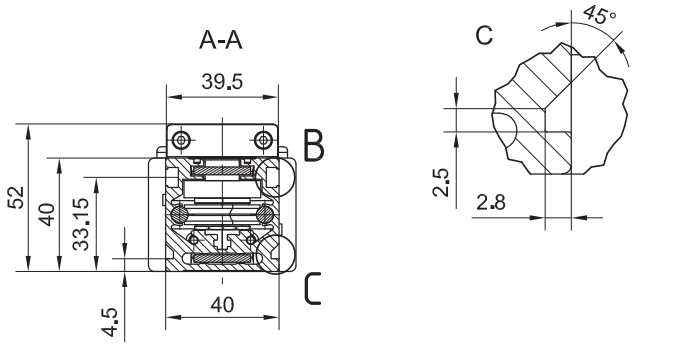


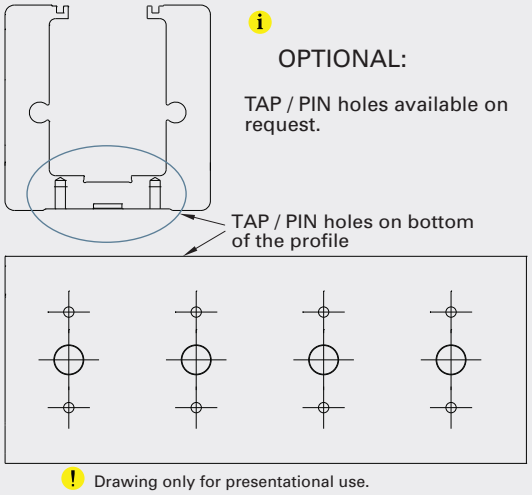
DIMENSIONS

BR-S 40

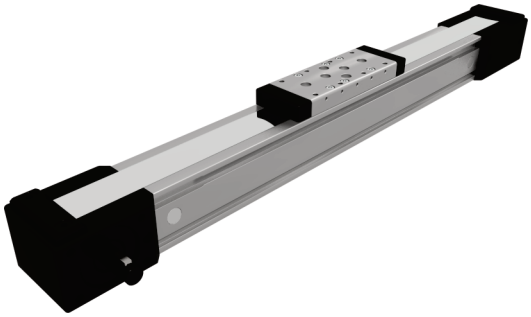


BT-S 40





Drawing only for presentational use.



All dimensions in mm; Drawings scales are not equal.

Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING

Available on request.

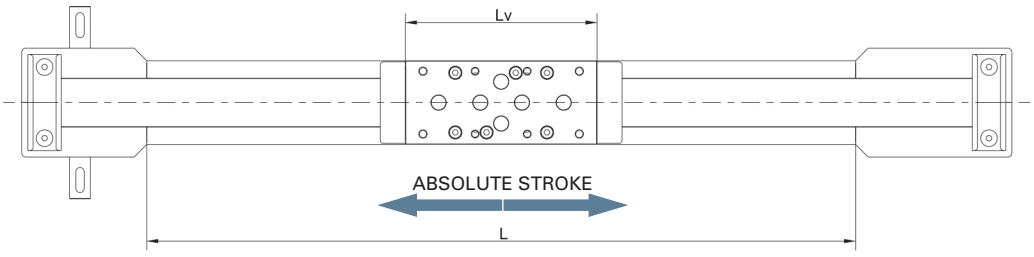
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 32 mm

Lv = 92 mm

Ltotal = L + 135 mm

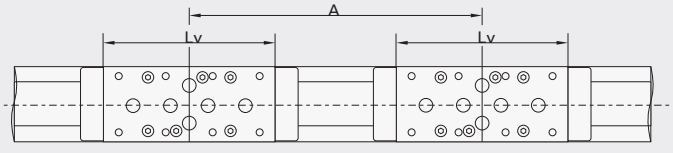
Left side (L)



Right side (R)

Multiple carriages

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 32 mm

Ltotal = L + 135 mm

} A ≥ Lv + 24 mm

nc - Number of carriages

For the case of A [mm] > Alim :

- a toothed belt for the connection of the carriages will be used,

- the following condition must be met:
A [mm] = Alim + 3 × i,
where i Î {1,2,3,...}.

	BR-S / BT-S 40
Alim	401.5

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity			Dynamic moment			Max. permissible loads						Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
								Forces		Moments								
	Lv [mm]	C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]		[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-S 65 S	140	9900	/	/	79	59	59	3270	5100	34	34	34		1.00	± 0.08		5820	40
BR-S 65 L	190	19800	/	/	158	1025	1025	6540	10190	60	530	340		1.45	± 0.08	6000	5770	40
BT-S 65 L	190	/	8600	4400	74	186	425	1920	1470	25	62	95		1.31	± 0.08		5770	0

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
** For minimum stroke below the stated value in the table above please contact us.

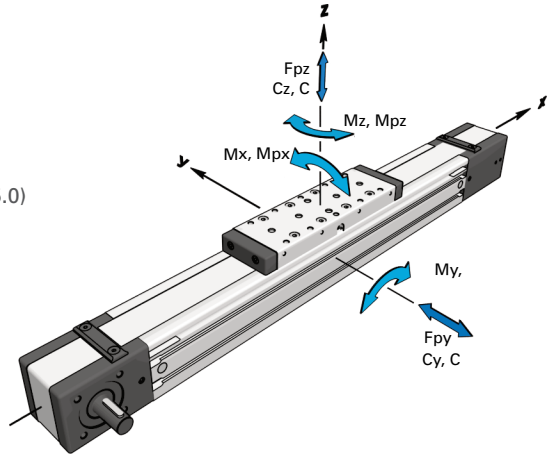
Operating conditions	
Operating temp.	0°C ~ +60°C
Duty cycle	100%

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

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 N / mm^2

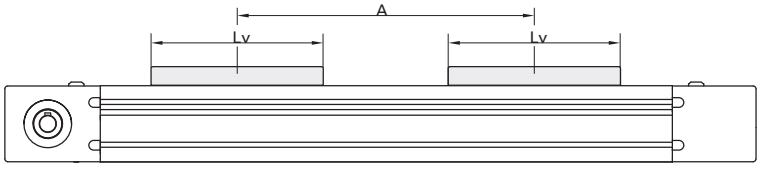


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity			* Dynamic moment			* Max. permissible loads				
								Forces		Moments		
		C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-S 65	S2	19800	/	/	158	9.9 × A	9.9 × A	6540	10190	68	5.1 × A	3.3 × A
BR-S 65	L2	39600	/	/	316	19.8 × A	19.8 × A	13080	20380	120	10.2 × A	6.5 × A
BT-S 65	L2	/	17200	8800	148	4.4 × A	8.6 × A	3850	2940	50	1.5 × A	1.9 × A

*A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting our sales engineers.



Drive and belt data

Linear Unit	* Max. travel speed	Max. drive torque	** No load		Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring	* Max. acceleration
		Ma	With strip	Without strip						Cspec	
	[m / s]	[Nm]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s^2]
BR-S 65 S	6	13.1	1.1 × nc	0.8 × nc	165	52.52	AT 5	32	500	600000	70
BR-S 65 L			1.2 × nc	0.9 × nc							
BT-S 65 L	10		1.0 × nc	0.7 × nc							

* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s, respectively.
For travel speed and acceleration over the stated value in the table above please contact us.

* The stated values are for strokes (and for distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.

nc - Number of carriages

TECHNICAL DATA

Mass and mass moment of inertia

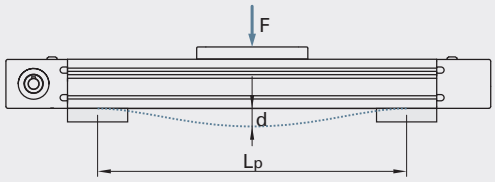
Linear Unit	* Mass of linear unit [kg]	* Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-S 65 S	4,0 + 0.0055 × (Abs. stroke + (nc - 1) × A) + 1.00 × (nc - 1)	98.4 + 0.0154 × (Abs. stroke + (nc - 1) × A) + 69.0 × (nc - 1)	59.7	74.4
BR-S 65 L	4,6 + 0.,0055 × (Abs. stroke + (nc - 1) × A) + 1.45 × (nc - 1)	130.1 + 0.0154 × (Abs. stroke + (nc - 1) × A) + 100.0 × (nc - 1)		
BT-S 65 L	4,3 + 0.0047 × (Abs. stroke + (nc - 1) × A) + 1.31 × (nc - 1)	120.4 + 0.0154 × (Abs. stroke + (nc - 1) × A) + 90.3 × (nc - 1)		

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

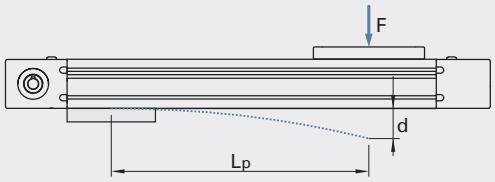
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



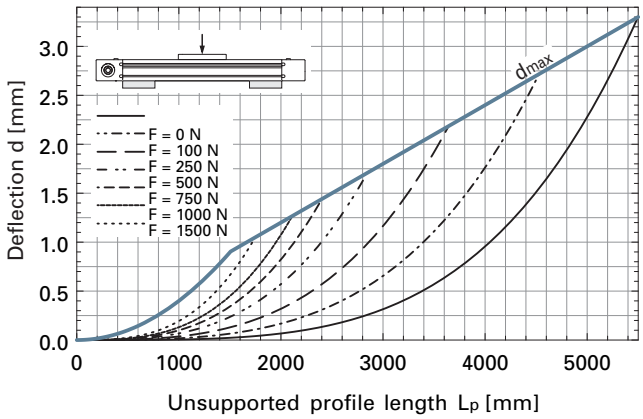
Fixed - free mounting

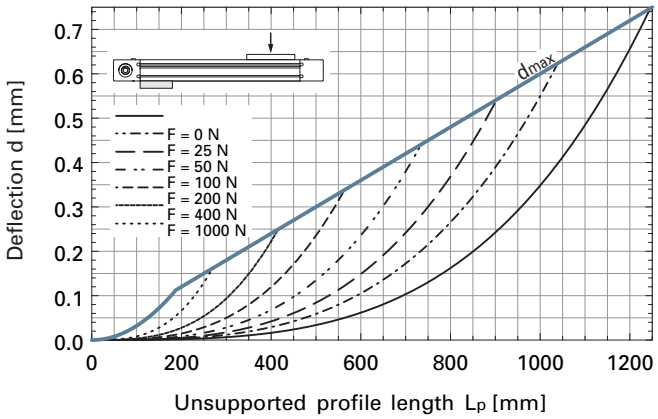


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

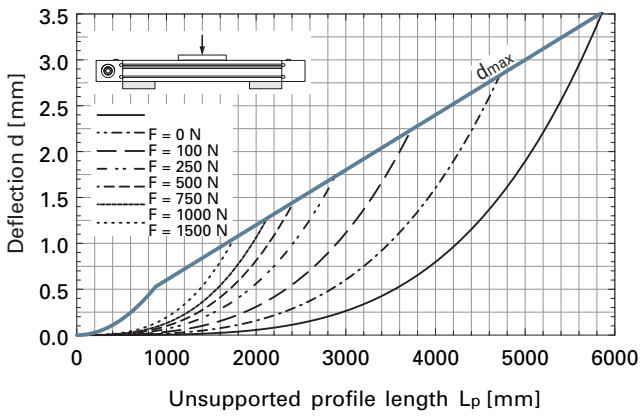
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

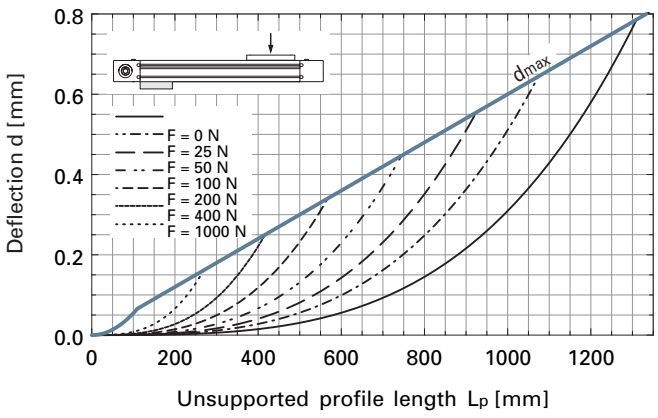
BR-S 65



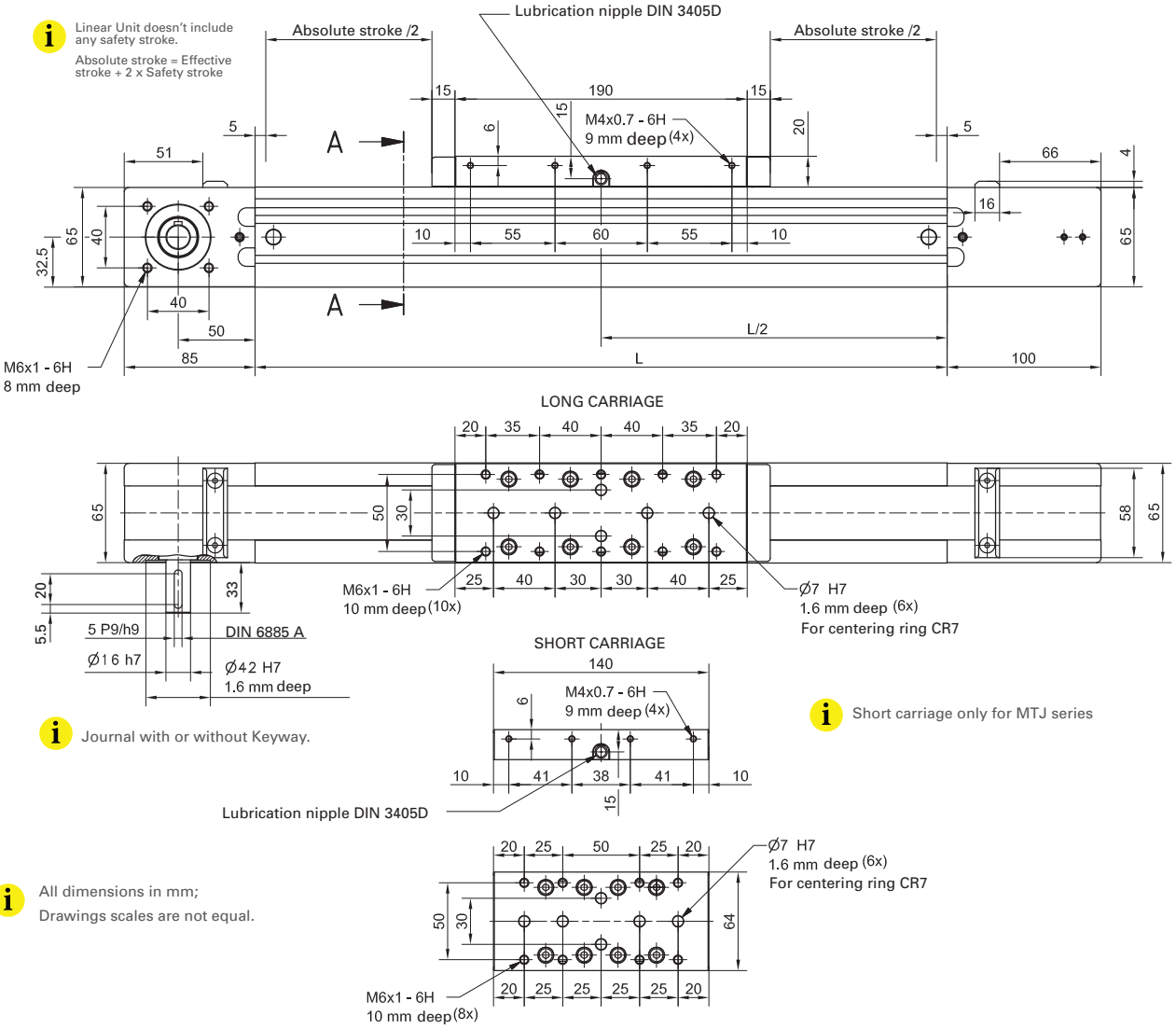


BT-S 65

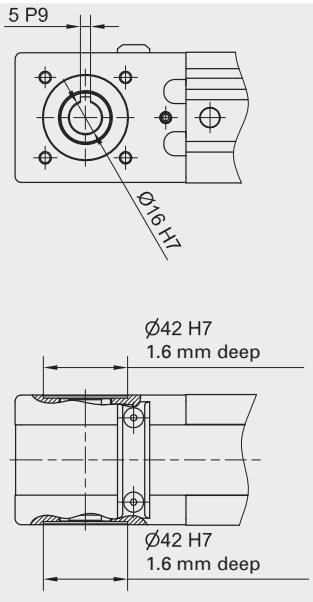




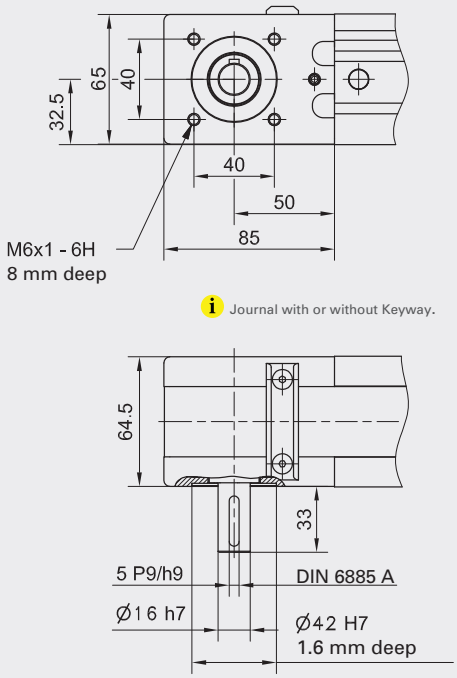
DIMENSIONS



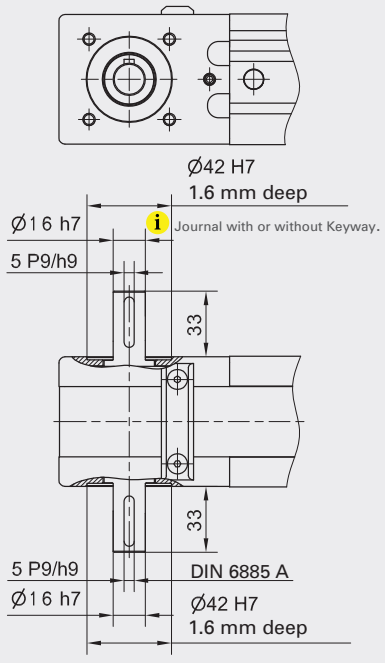
TYPE 0



TYPE 1 L and 1 R



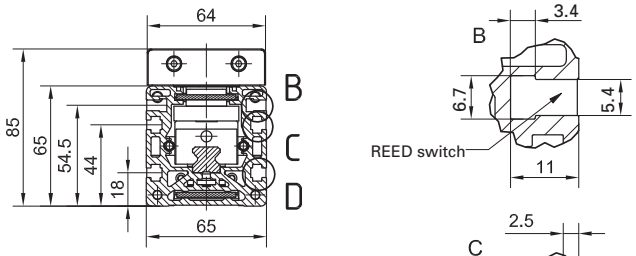
TYPE 2



DIMENSIONS

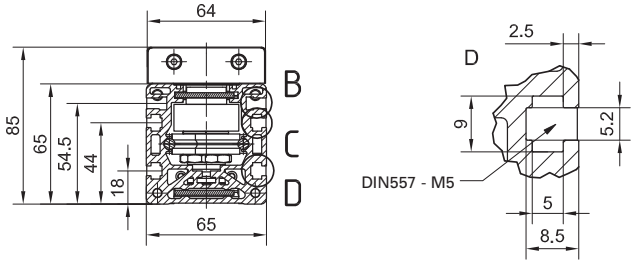
BR-S 65

A-A

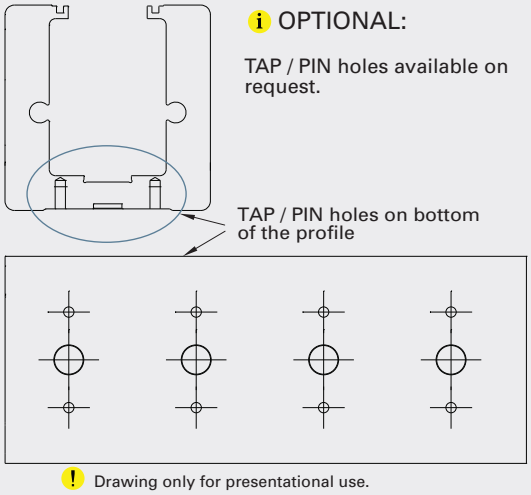


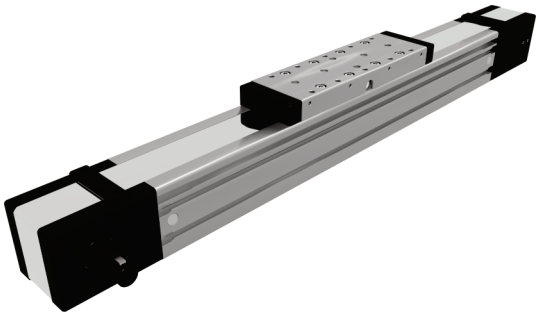
BT-S 65

A-A



All dimensions in mm; Drawings scales are not equal.





Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING

Available on request.

Defining of the linear unit length

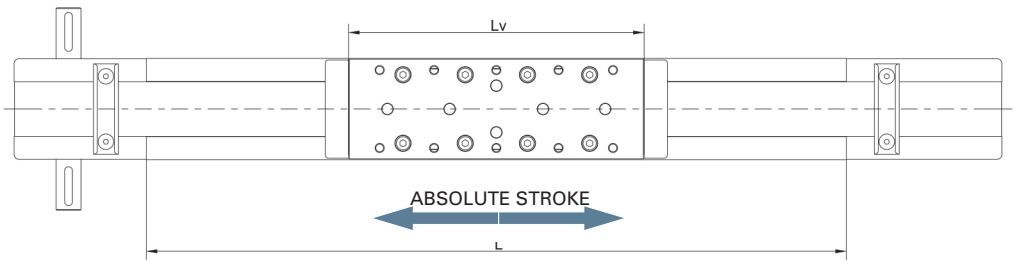
L = Effective stroke + 2 × Safety stroke + Lv + 40 mm

Ltotal = L + 185 mm

Lv - Long carriage = 190 mm

Lv - Short carriage = 140 mm

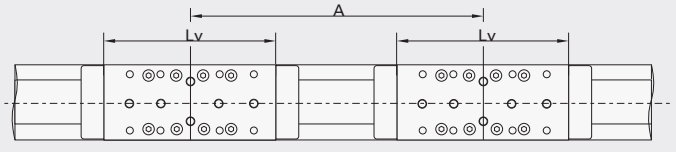
Left side (L)



Right side (R)

Multiple carriages

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 40 mm

Ltotal = L + 185 mm

} A ≥ Lv + 30 mm

nc - Number of carriages

For the case of A [mm] > Alim :

- a toothed belt for the connection of the carriages will be used,

- the following condition must be met:
A [mm] = Alim + 5 × i,
where i Î {1,2,3,...}.

	BR-S 65 S	BR-S / BT-S 65 L
Alim [mm]	550	600

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity			Dynamic moment			Max. permissible loads						Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
								Forces		Moments								
	Lv [mm]	C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]		[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-S 80 S	170	17100	/	/	185	130	130	4470	7530	110	122	100		1.72	± 0.08	6000	5788	55
BR-S 80 L	260	34200	/	/	370	2565	2565	8930	15060	150	1130	670		2.72	± 0.08		5698	55
BT-S 80 L	260	/	17100	9000	198	511	1145	3400	1760	39	101	228		2.73	± 0.08		5698	0

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages
(equation of defining the linear unit length for particular size of the linear unit needs to be used).
** For minimum stroke below the stated value in the table above please contact us.

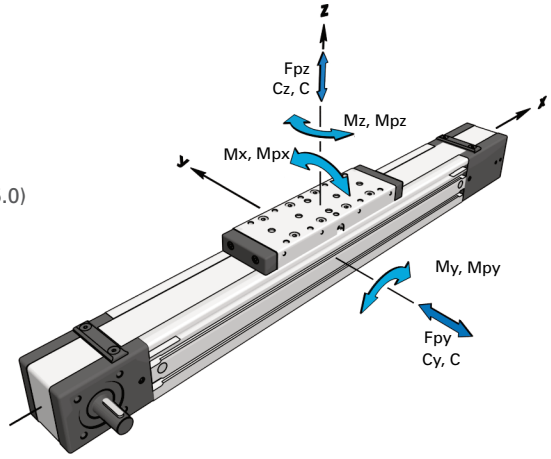
Operating conditions	
Operating temp.	0°C ~ +60°C
Duty cycle	100%

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

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 :
$E = 70000\ N / mm^2$

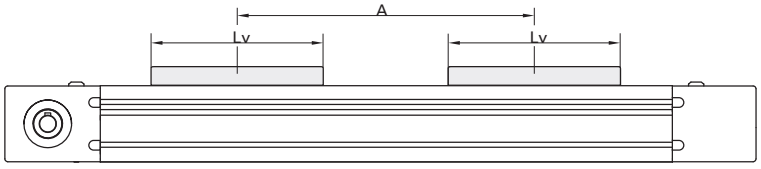


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity			* Dynamic moment			* Max. permissible loads				
								Forces		Moments		
		C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-S 80	S2	34200	/	/	370	17.1 × A	17.1 × A	8930	15060	220	7.5 × A	4.5 × A
BR-S 80	L2	68400	/	/	740	34.2 × A	34.2 × A	17860	30130	300	15.1 × A	8.9 × A
BT-S 80	L2	/	34200	18000	396	9.0 × A	17.1 × A	6800	3530	78	1.8 × A	3.4 × A

*A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting our engineers.



Drive and belt data

Linear Unit	* Max. travel speed	Max. drive torque	** No load torque		Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring constant	* Max. acceleration
		Ma	With strip	Without strip						Cspec	
	[m / s]	[Nm]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s²]
BR-S 80 S	6	29.4	1.5 × nc	1.2 × nc	210	66.84	AT 5	50	880	960000	70
BR-S 80 L			1.7 × nc	1.4 × nc							
BT-S 80 L	10		1.4 × nc	1.1 × nc							

* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s, respectively.
For travel speed and acceleration over the stated value in the table above please contact us.

* The stated values are for strokes (and for distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.

nc - Number of carriages

TECHNICAL DATA

Mass and mass moment of inertia

Linear Unit	* Mass of linear unit [kg]	* Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-S 80 S	6.8 + 0.0085 × (Abs. stroke + (nc - 1) × A) + 1.72 × (nc - 1)	310.,6 + 0.0391 × (Abs. stroke + (nc - 1) × A) + 192.1 × (nc - 1)	129.1	173.4
BR-S 80 L	8.4 + 0.0085 × (Abs. stroke + (nc - 1) × A) + 2.72 × (nc - 1)	423.3 + 0.0391 × (Abs. stroke + (nc - 1) × A) + 303.,8 × (nc - 1)		
BT-S 80 L	8.2 + 0.0075 × (Abs. stroke + (nc - 1) × A) + 2.73 × (nc - 1)	424.4 + 0.0391 × (Abs. stroke + (nc - 1) × A) + 304.9 × (nc - 1)		

* Absolute stroke [mm]

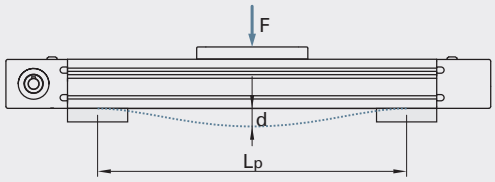
A - Distance between carriages [mm]. More info on following pages.

nc - Number of carriages

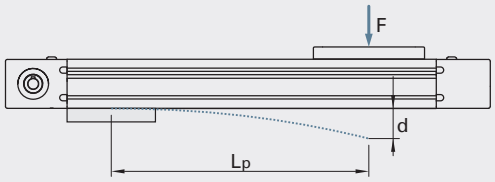
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



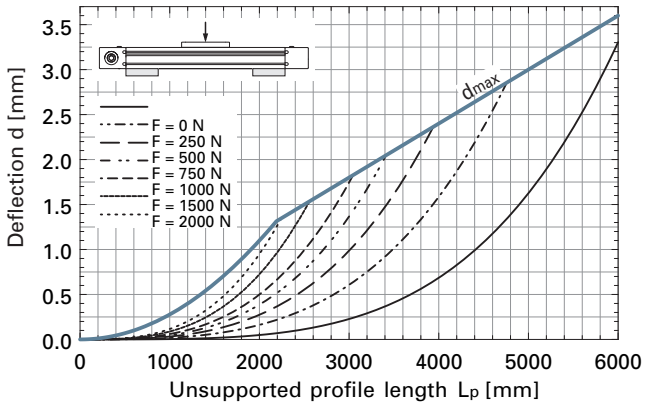
Fixed - free mounting

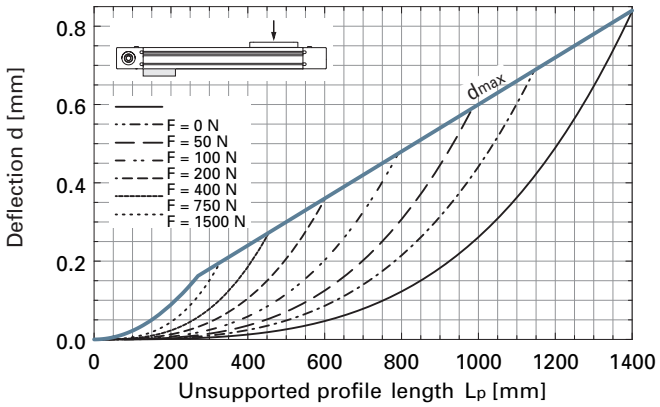


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

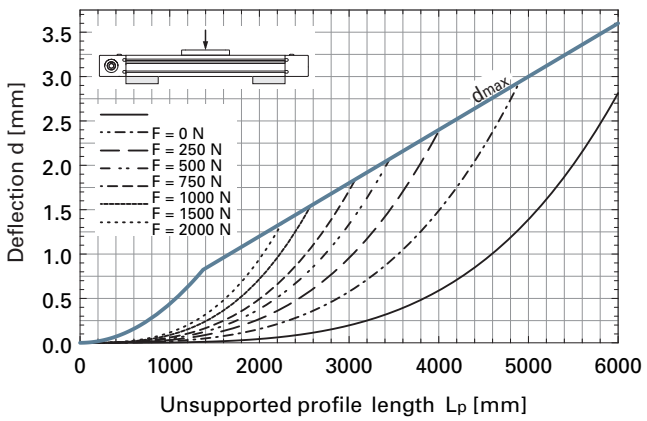
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

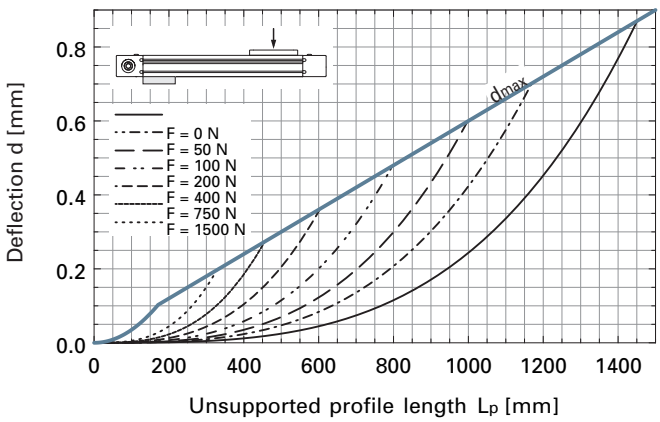
BR-S 80



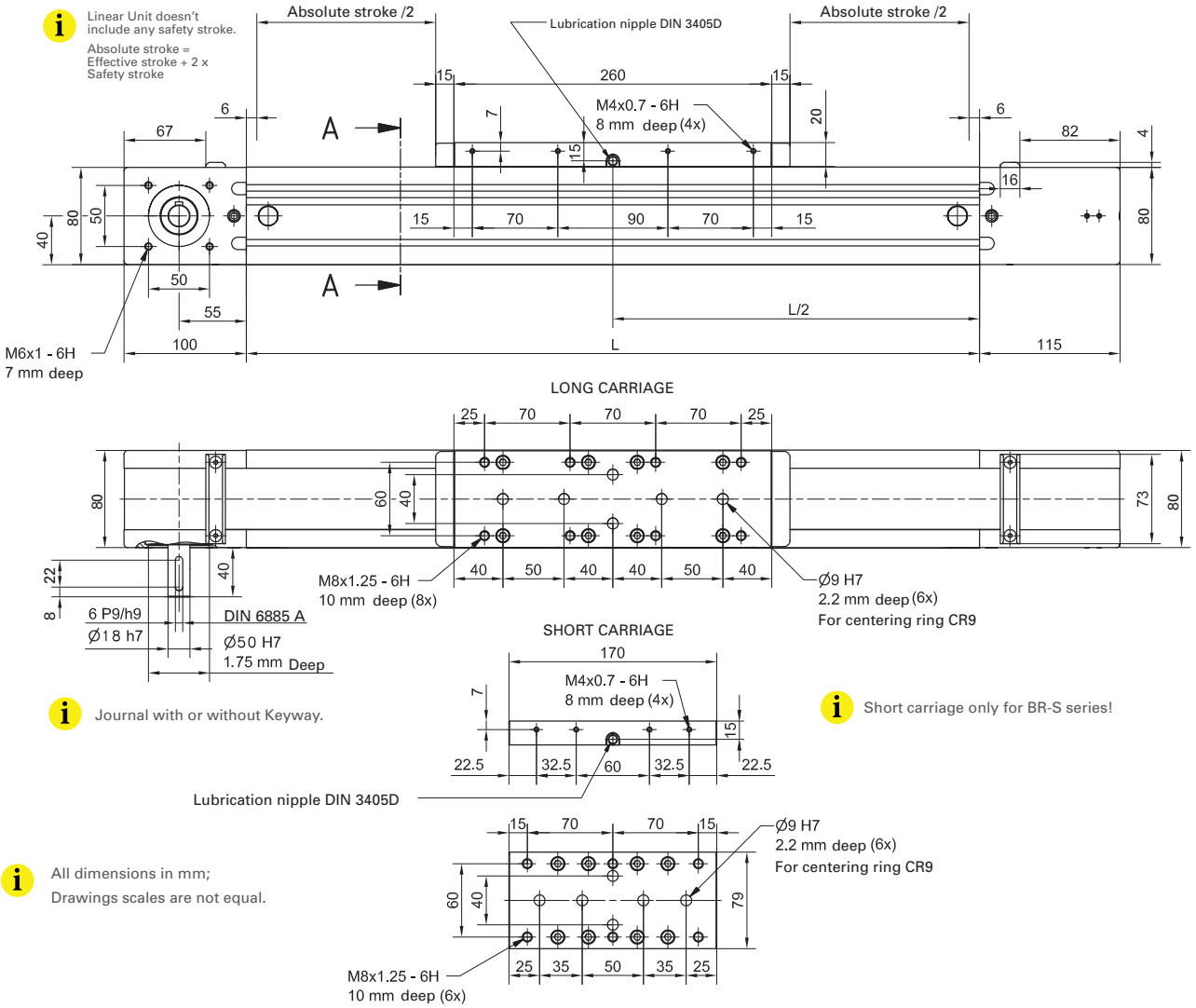


BT-S 80

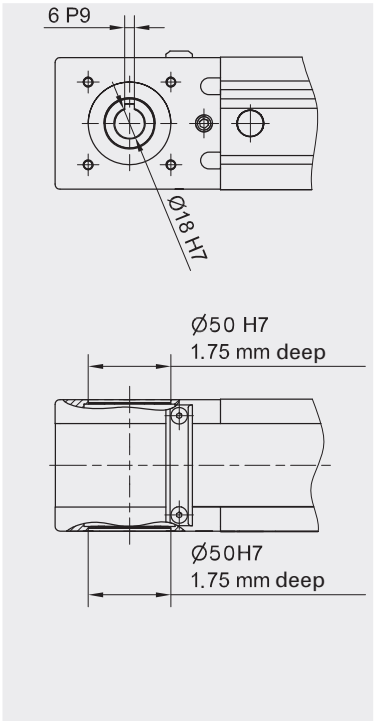




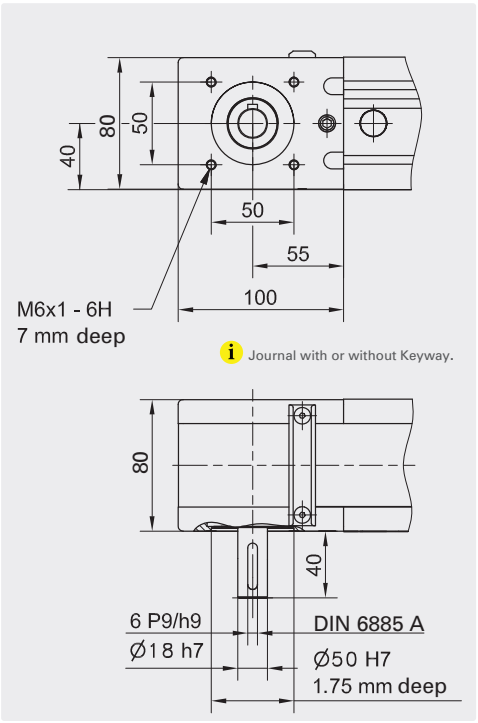
DIMENSIONS



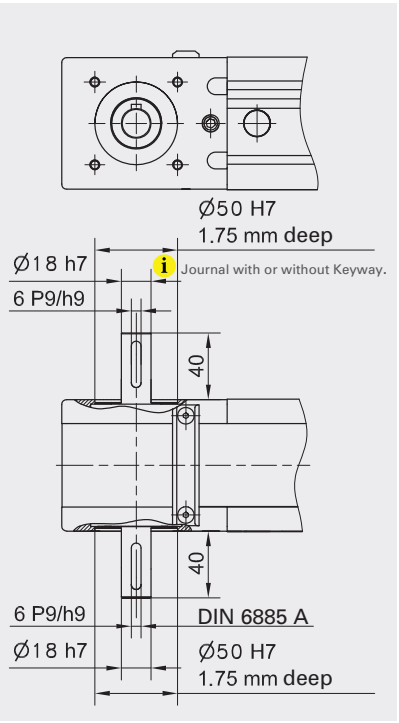
TYPE 0



TYPE 1 L and 1 R

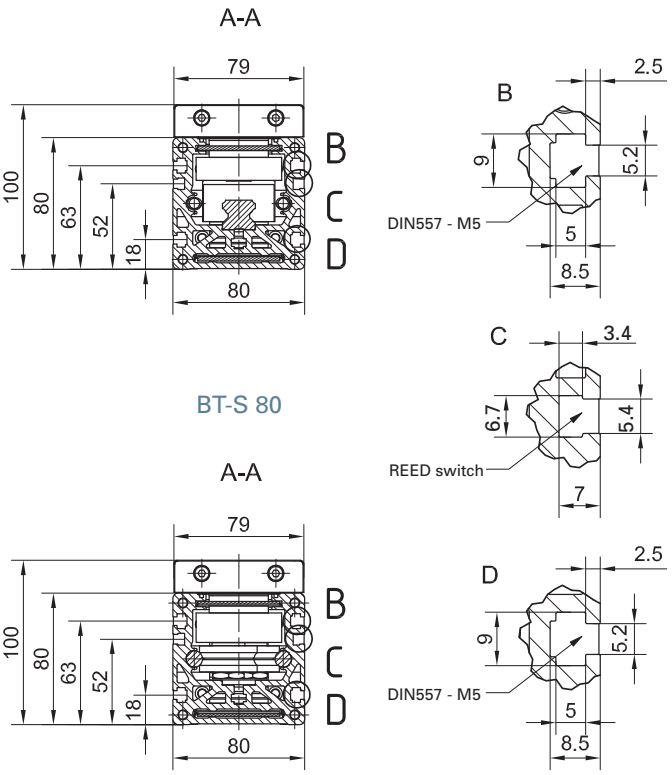


TYPE 2



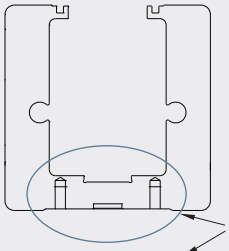
DIMENSIONS

BR-S 80



BT-S 80

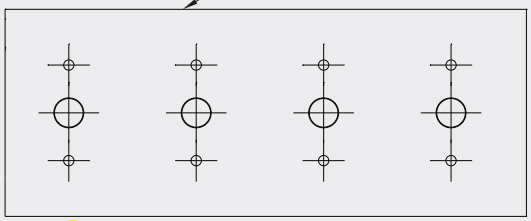
All dimensions in mm; Drawings scales are not equal.



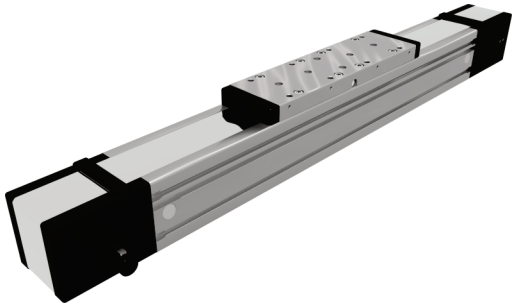
OPTIONAL:

TAP / PIN holes available on request.

TAP / PIN holes on bottom of the profile



Drawing only for presentational use.



Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 42 mm

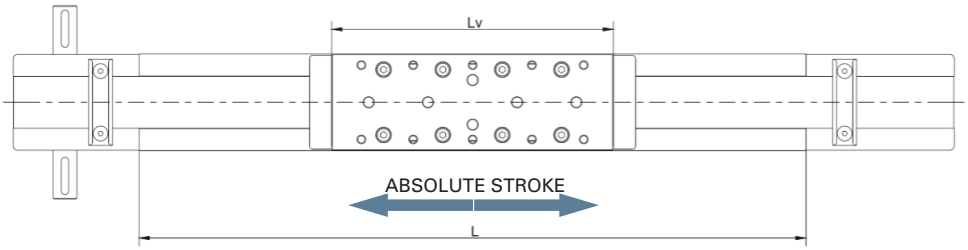
Ltotal = L + 215 mm

Left side (L)

Right side (R)

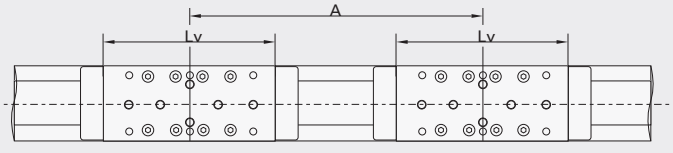
Lv - Long carriage = 260 mm

Lv - Short carriage = 170 mm



Multiple carriages

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 42 mm

Ltotal = L + 215 mm

} A ≥ Lv + 30 mm

nc - Number of carriages

For the case of A [mm] > A_{lim} :

- a toothed belt for the connection of the carriages will be used,

- the following condition must be met:
A [mm] = A_{lim} + 5 × i,
where i Î {1,2,3,...}.

	BR-S 80 S	BR-S / BT-S 80 L
A_{lim} [mm]	711.5	801.5

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity			Dynamic moment			Max. permissible loads					Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
								Forces		Moments							
	Lv [mm]	C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-S 110 S	240	24800	/	/	315	220	220	5000	10130	135	180	100	3.25	± 0.08	6000	5748	65
BR-S 110 L	330	49600	/	/	630	3840	3840	10000	20260	295	1570	775	4.61	± 0.08		5658	65
BT-S 110 L	330	/	31000	14000	406	877	2325	6200	3410	99	214	465	4.78	± 0.08		5658	0

* For lengths / stroke over the stated value in the table above please contact us.

Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).

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

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

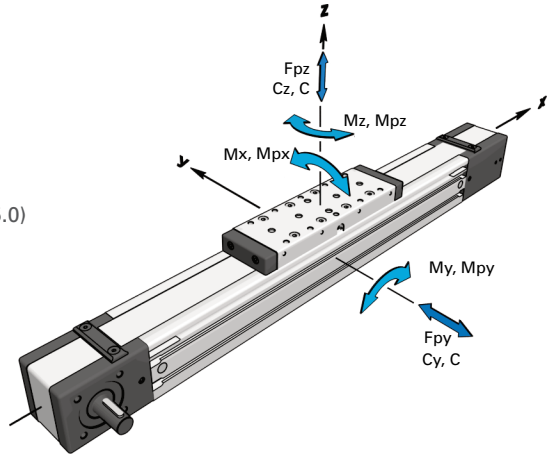
For operating temperature out of the presented range, please contact us.

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 :

$E = 70000 \text{ N / mm}^2$

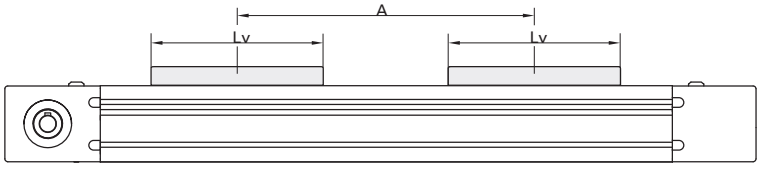


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity			* Dynamic moment			* Max. permissible loads				
								Forces		Moments		
		C [N]	Cy [N]	Cz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-S 110	S2	49600	/	/	630	24.8 × A	24.8 × A	10000	20260	270	10.1 × A	5.0 × A
BR-S 110	L2	99200	/	/	1260	49.6 × A	49.6 × A	20000	40520	590	20.3 × A	10.0 × A
BT-S 110	L2	/	62000	28000	812	14.0 × A	31.0 × A	12400	6830	198	3.4 × A	6.2 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be provided by contacting our sales engineers.



Drive and belt data

Linear Unit	* Max. travel speed	Max. drive torque	** No load torque		Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring constant	* Max. acceleration
		Ma	With strip	Without strip						Cspec	
	[m / s]	[Nm]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s²]
BT-S 110 L	10	68.5 with Keyway 82.6 without Keyway	2.2 × nc	2.0 × nc	300	95.49	AT 10	50	1730	2145000	70
BR-S 110 S	6		2.2 × nc	2.0 × nc							
BR-S 110 L			2.7 × nc	2.3 × nc							

* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s, respectively.
For travel speed and acceleration over the stated value in the table above please contact us.

* The stated values are for strokes (and for distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.

nc - Number of carriages

TECHNICAL DATA

Mass and mass moment of inertia

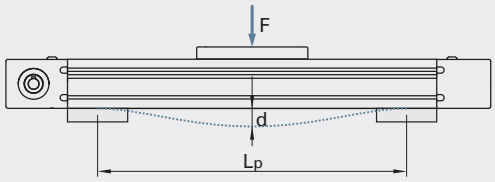
Linear Unit	* Mass of linear unit [kg]	* Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-S 110 S	15.0 + 0.015 × (Abs. stroke + (nc - 1) × A) + 3.25 × (nc - 1)	1065.0 + 0.137 × (Abs. stroke + (nc - 1) × A) + 741.9 × (nc - 1)	513.0	620.0
BR-S 110 L	17.7 + 0.015 × (Abs. stroke + (nc - 1) × A) + 4.61 × (nc - 1)	1381.0 + 0.137 × (Abs. stroke + (nc - 1) × A) + 1050.9 × (nc - 1)		
BT-S 110 L	16.3 + 0.0133 × (Abs. stroke + (nc - 1) × A) + 4.78 × (nc - 1)	1420.0 + 0.137 × (Abs. stroke + (nc - 1) × A) + 1089.6 × (nc - 1)		

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

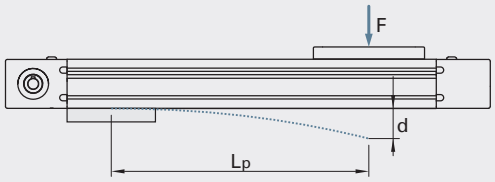
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



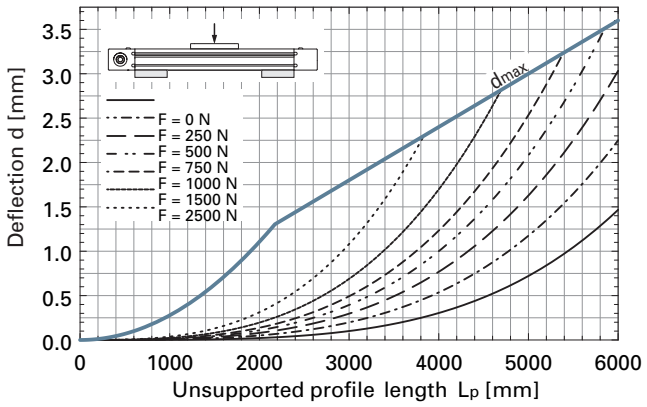
Fixed - free mounting

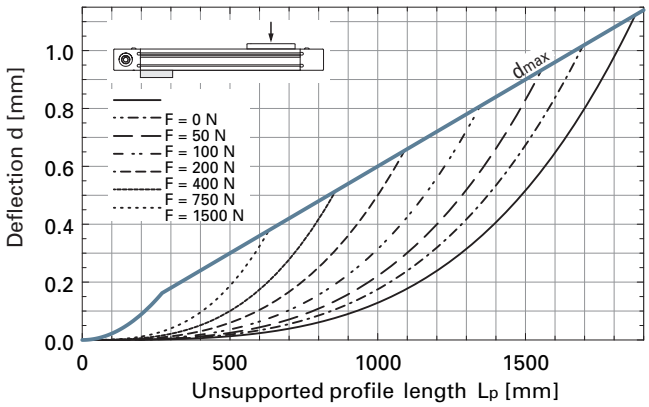


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

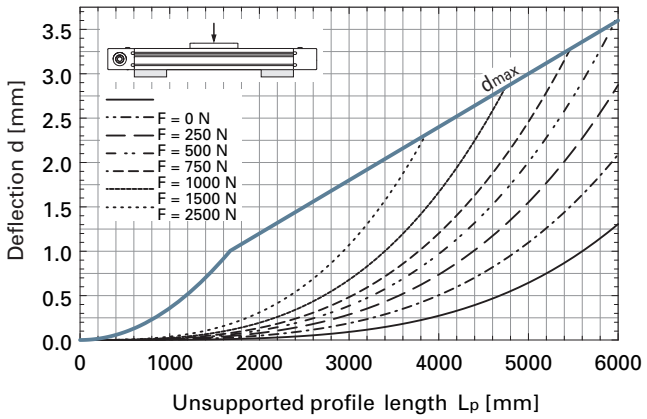
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

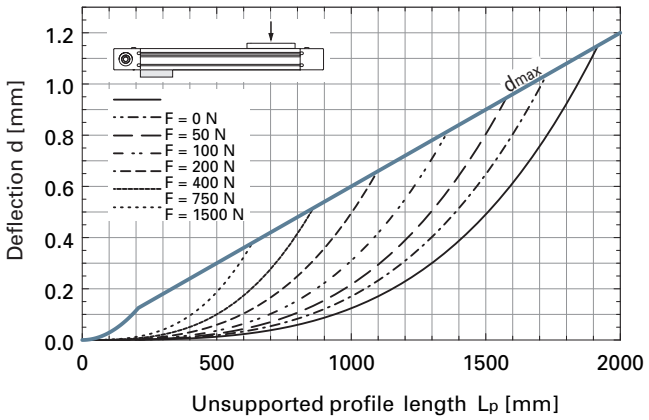
BR-S 110



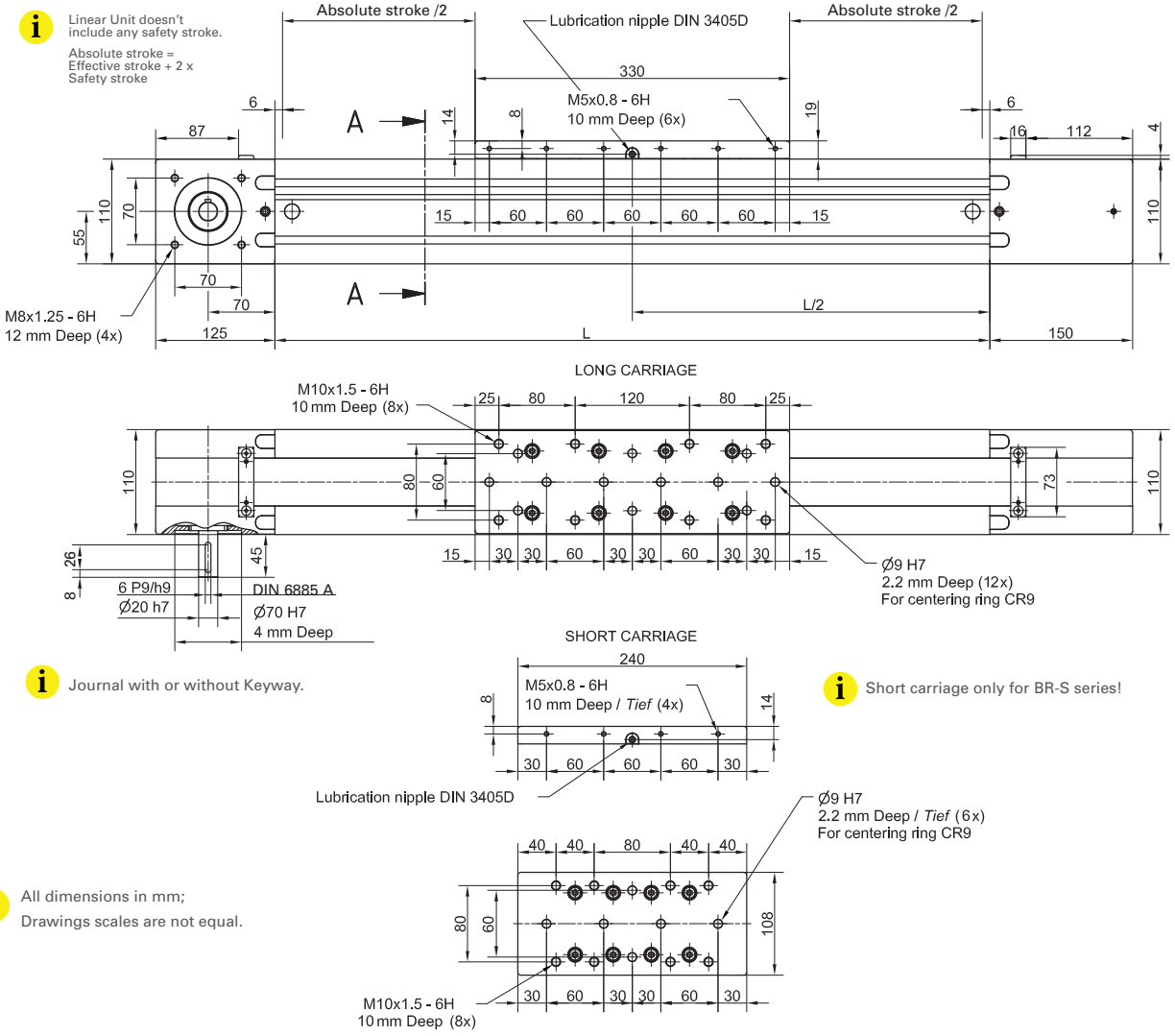


BT-S 110

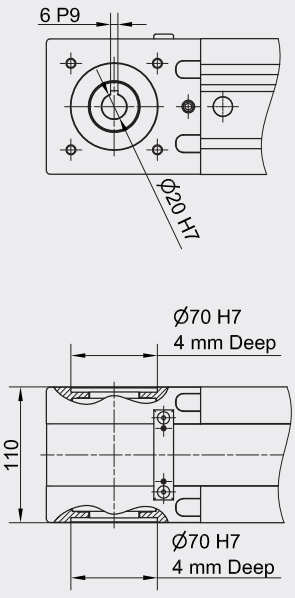




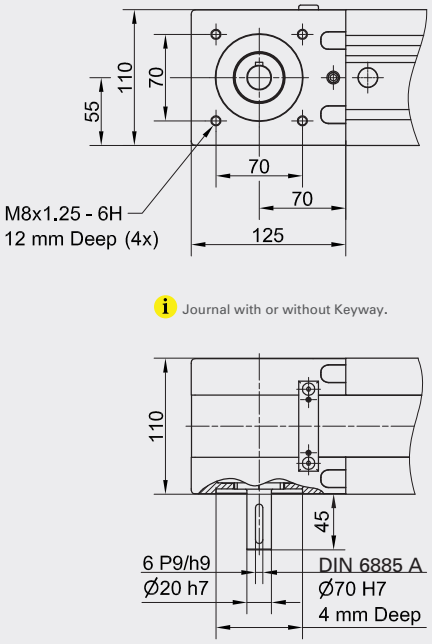
DIMENSIONS



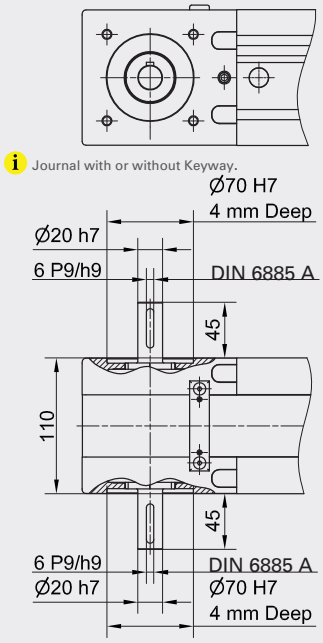
TYPE 0



TYPE 1 L and 1 R

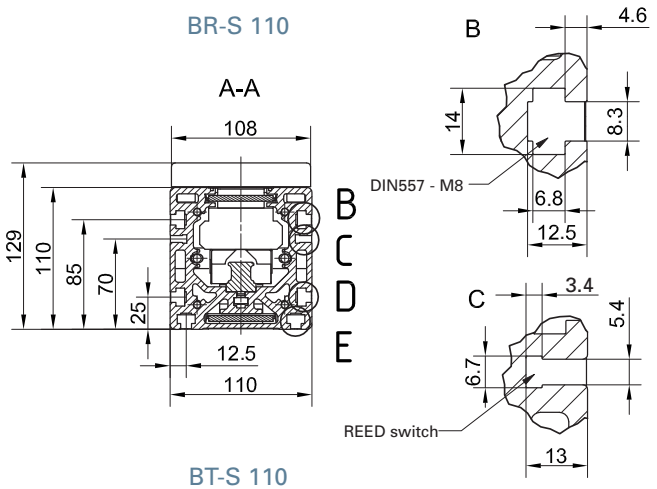


TYPE 2

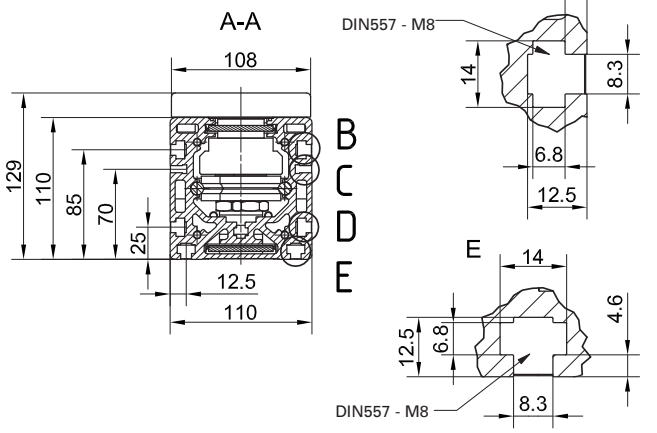


DIMENSIONS

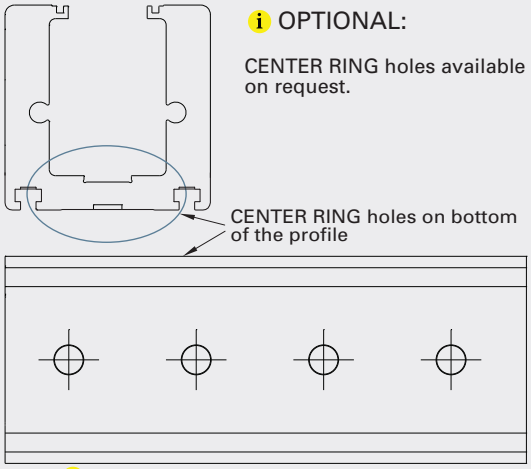
BR-S 110



BT-S 110



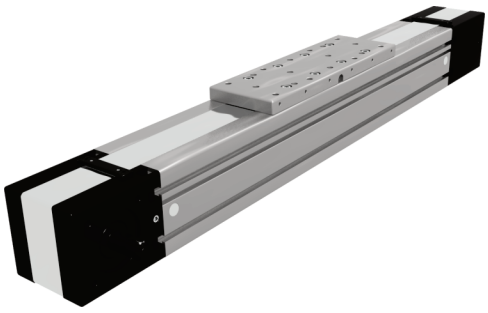
All dimensions in mm; Drawings scales are not equal.



OPTIONAL:

CENTER RING holes available on request.

Drawing only for presentational use.



Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING

Available on request.

Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 12 mm

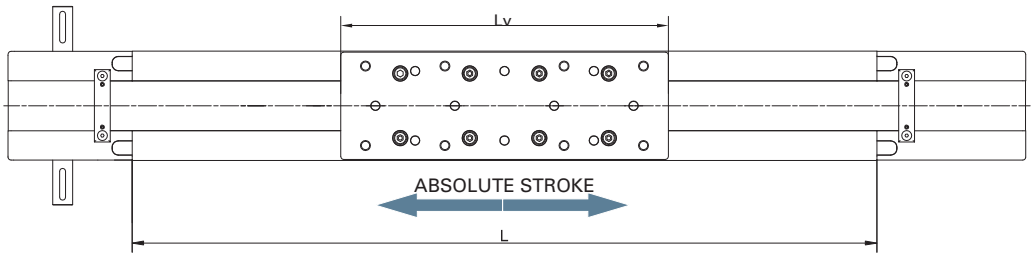
Ltotal = L + 275 mm

Lv - Long carriage = 330 mm

Lv - Short carriage = 240 mm

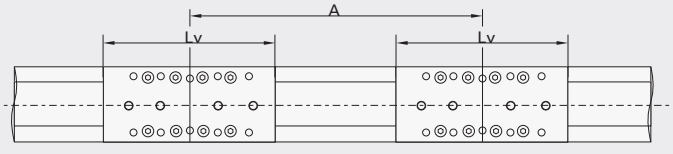
Left side (L)

Right side (R)



Multiple carriages

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 12 mm

Ltotal = L + 275 mm

} A ≥ Lv

nc - Number of carriages

For the case of A [mm] > A_{lim} :

- a toothed belt for the connection of the carriages will be used,

- the following condition must be met:
A [mm] = A_{lim} + 10 × i,
where i Î {1,2,3,...}.

	BR-S 110 S	BR-S / BT-S 110 L
A_{lim} [mm]	716	806

CHARACTERISTICS

The SR-S series describes Linear Units with precision ball screw drive, integrated guide rail and compact dimensions. They provide high performances features, such as high speeds, good accuracy and repeatability. 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.

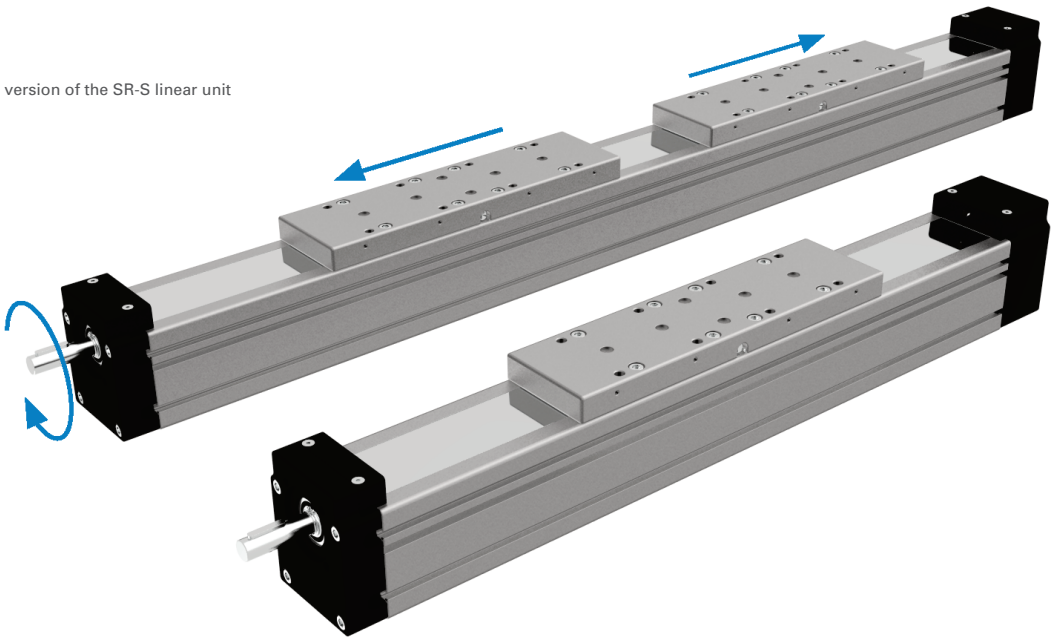
In the Linear Units SR-S a precision ball screw, with tolerance class ISO7 (ISO5 on request), with reduced backlash of the ball nut is used.

A corrosion-resistant protection strip, protects all the parts in the profile from dust and other contaminants.
The aluminum profile includes T-slots for fixing the Linear Unit and for attaching sensors and switches. Also, a Reed switch can be used here. The carriage, with central lubrication port, allows easy central re-lubrication of ball screw and Ball rail guide and provides the possibility to attach additional accessories on the side. For the Linear Units SR-S various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.

To achieve higher speeds at the same stroke of the linear unit, the ball screw support system can be integrated. With this feature vibrations and deflections of the ball screw are reduced, therefore longer strokes are possible. The linear unit with integrated support system can have a higher axial load capacity.
Ball screw supports are made out of high quality plastic materials with high wear resistance properties. Our system enables ball screw support in horizontal or vertical positioning of the linear unit.

A 2LR version of SR-S linear unit is available, where two carriages are moving simultaneously in opposite directions. Both right and left handed precision ball screws are used, which are rigidly connected. The ball screw support system can also be integrated.

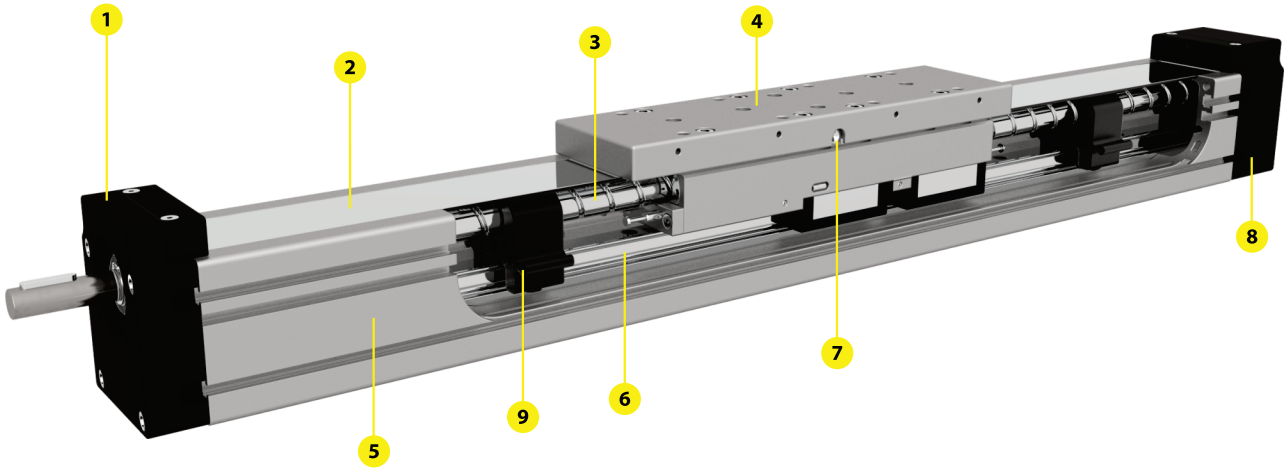
2LR version of the SR-S linear unit



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

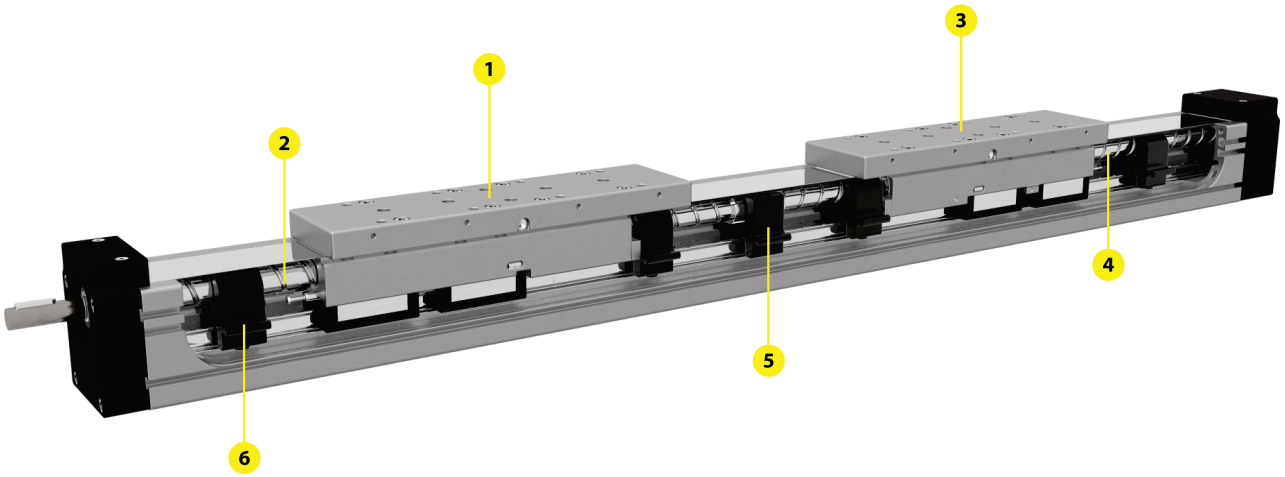
STRUCTURAL DESIGN

Standard version



1 - Drive block with floating bearing (SR-S 110 - fixed bearing)
2 - Corrosion-resistant protection strip
3 - Ball screw tolerance ISO7 (ISO5 available on request)
4 - Carriage; with built in Magnets
5 - Aluminium profile-Hard anodized
6 - Integrated Linear Ball Guideway
7 - Central lubrication port; both sides
8 - End block with fixed bearing (SR-S 110 - floating bearing)
9 - Screw support - SA

2LR version



1 - Carriage; with build in right hand ball nut
2 - Right hand ball screw
3 - Carriage; with build in left hand ball nut
4 - Left hand ball screw
5 - Central screw support - fixed
6 - Screw support - SA

HOW TO ORDER

SR 0110 S - 5850 - 32 7 1 - W A

Series Prefix:
SR

Size:
40: 0040
65: 0065
80: 0080
110: 0110

Series Suffix:
S

Absolute stroke [mm]:
(Absolute stroke = Effective stroke + 2 x Safety stroke)

Ball Screw Dia./Pitch:
SR0040 (⌀12): 05, 10
SR0065 (⌀16): 05, 10, 16
SR0080 (⌀20): 05, 10, 20, 50
SR0110 (⌀32): 05, 10, 20, 32

Ball Screw Tolerance:
7: ISO7
5: ISO5

Ball Screw Journal:
0: Without Keyway
1: With Keyway

Number of Screw Supports n_{SA}:
X: Without
W: With
(only even #'s - 2, 4, 6, 8, 10 n_{SA}) - for SR0065, a max. of 4SA is available.

Version:
A: Both right and left screws are used, single carriage
B: Standard version, single carriage
Available for SR0065: 16x5, 16x10
SR0080: 20x5
C: Both right and left screws are used, multi-carriage
D: Standard version, multi-carriage
Available for SR0065: 16x5, 16x10
SR0080: 20x5
S: Special Version

TECHNICAL DATA

General technical data

Linear Unit	Carriage length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Max. permissible loads: Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Moved mass [kg]	Max. Repeatability [mm]	* Max. length Lmax [mm]	* Max. stroke [mm]	** Min. stroke [mm]
SR-S 40 S	132	9900	79	59	59	3270	5100	34	34	34	0.45	± 0.1	5960	5813	40
SR-S 40 L	200	19800	158	660	660	6540	10190	60	341	219	0.72	± 0.1		5745	40

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
* For minimum stroke below the stated value in the table above please contact us.

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

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

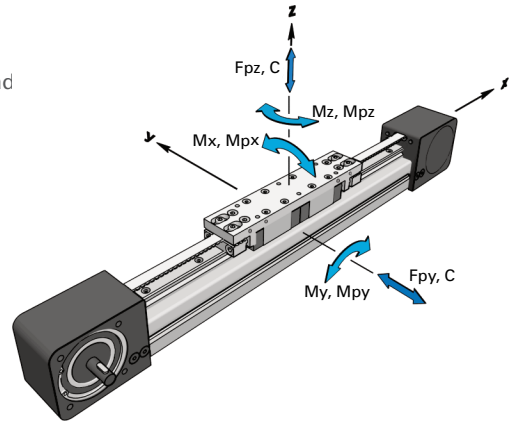
Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safet factor. The safety factor depends on the application and its requested safety.

We recommend a minimum safety factor

Modulus of elasticity

$E = 70000 \text{ N / mm}^2$

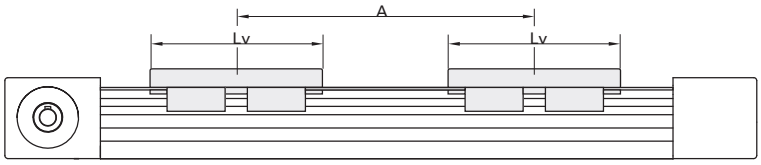


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	* Max. permissible loads: Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-S 40	S2	19800	158	9.9 × A	9.9 × A	6540	10190	68	5.1 × A	3.3 × A
	L2	39600	317	19.8 × A	19.8 × A	13080	20380	120	10.2 × A	6.5 × A

* A - Distance between carriages [mm]. More on page 4.030.0

Presented values are for informational purposes only.
Exact values can be calculated by contacting a sales engineer.



Drive and belt data

Linear Unit	** Max. travel speed [m / s]	Max. drive torque [Nm]	* No load torque [Nm]	Puley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmited by belt [N]	Specific spring constant Cspec [N]	** Max. acceleration [m/s²]
SR-S 40 S	3	7.5	1.0 × nc	180	57.31	AT5	12	262	235000	70
SR-S 40 L			1.1 × nc							

* The stated values are for strokes (and for distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.
nc - Number of carriages
**For travel speed and acceleration over the stated value in the table above please contact us.

TECHNICAL DATA

Mass, moved mass, mass moment of inertia and no load torque

Linear Unit	Ball screw [d x l]	Number of SA n_{SA}	* Mass of linear unit [kg]	* Moved mass [kg]
SR-S 40	12 x 5	0	1.2 + 0.0028 x (Abs. stroke + (nc - 1) x A) + 0.47 x (nc - 1)	0.47 + 0.47 x (nc - 1)
		2	1.3 + 0.0028 x (Abs. stroke + (nc - 1) x A) + 0.47 x (nc - 1)	0.50 + 0.47 x (nc - 1)
		4	1.4 + 0.0028 x (Abs. stroke + (nc - 1) x A) + 0.47 x (nc - 1)	0.53 + 0.47 x (nc - 1)
	12 x 10	0	1.2 + 0.0028 x (Abs. stroke + (nc - 1) x A) + 0.47 x (nc - 1)	0.47 + 0.47 x (nc - 1)
		2	1.3 + 0.0028 x (Abs. stroke + (nc - 1) x A) + 0.47 x (nc - 1)	0.50 + 0.47 x (nc - 1)
		4	1.4 + 0.0028 x (Abs. stroke + (nc - 1) x A) + 0.47 x (nc - 1)	0.53 + 0.47 x (nc - 1)

Linear Unit	Ball screw [d x l]	Number of SA n_{SA}	* Mass moment of inertia [10^{-5} kg m^2]	** No load torque [Nm]
SR-S 40	12 x 5	0	0.48 + 0.0012 x (Abs. stroke + (nc - 1) x A) + 0.03 x (nc - 1)	0.08 + 0.08 x (nc - 1)
		2	0.53 + 0.0012 x (Abs. stroke + (nc - 1) x A) + 0.03 x (nc - 1)	0.09 + 0.08 x (nc - 1)
		4	0.57 + 0.0012 x (Abs. stroke + (nc - 1) x A) + 0.03 x (nc - 1)	0.10 + 0.08 x (nc - 1)
	12 x 10	0	0.57 + 0.0012 x (Abs. stroke + (nc - 1) x A) + 0.12 x (nc - 1)	0.09 + 0.09 x (nc - 1)
		2	0.62 + 0.0012 x (Abs. stroke + (nc - 1) x A) + 0.12 x (nc - 1)	0.11 + 0.09 x (nc - 1)
		4	0.67 + 0.0012 x (Abs. stroke + (nc - 1) x A) + 0.12 x (nc - 1)	0.14 + 0.09 x (nc - 1)

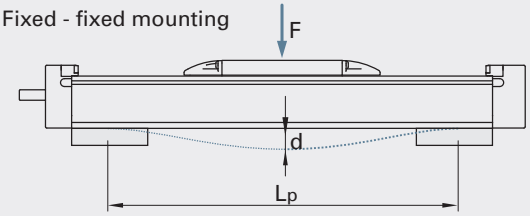
* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

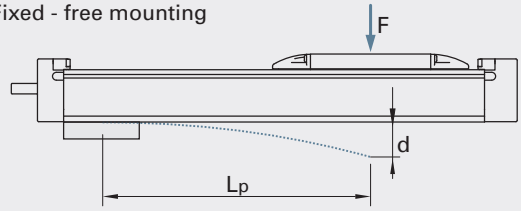
** The stated values are for strokes (and for distances between the carriages A) up to 500mm.
No Load Torque value increases with stroke (and with A) elongation.

Deflection of the linear unit

Fixed - fixed mounting



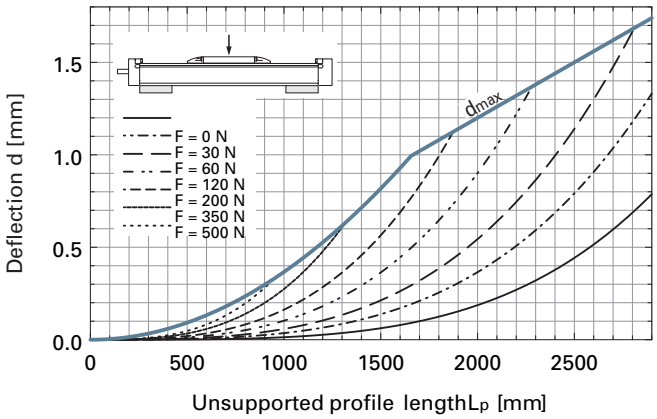
Fixed - free mounting

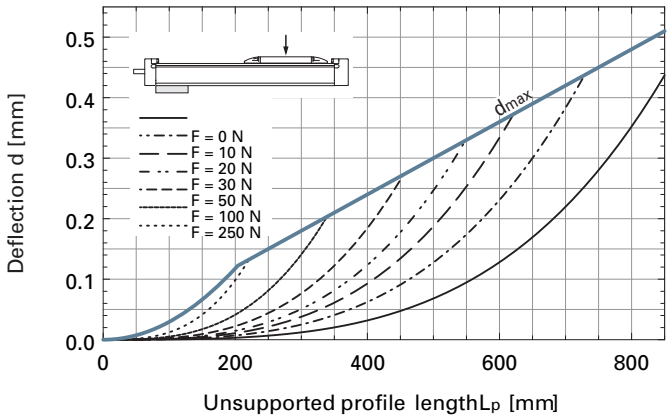


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

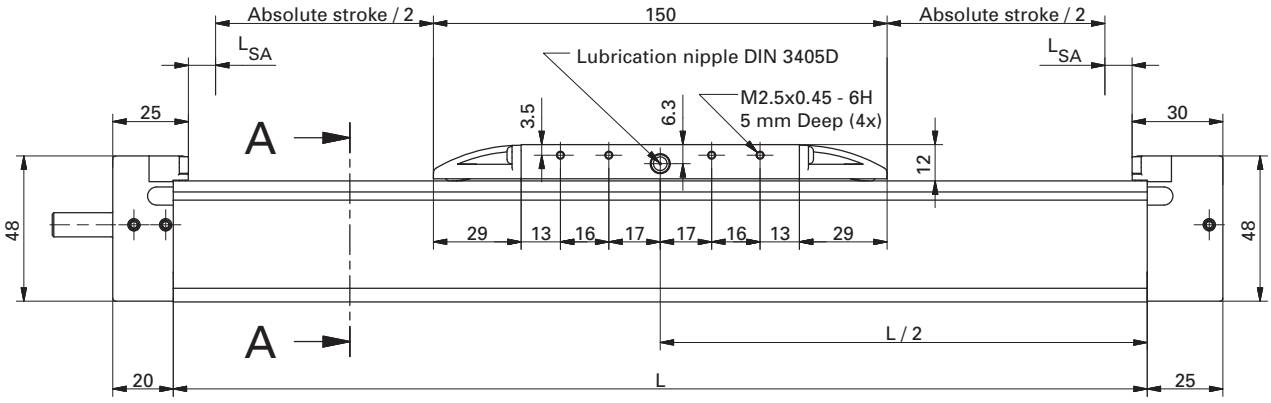
SR-S 40



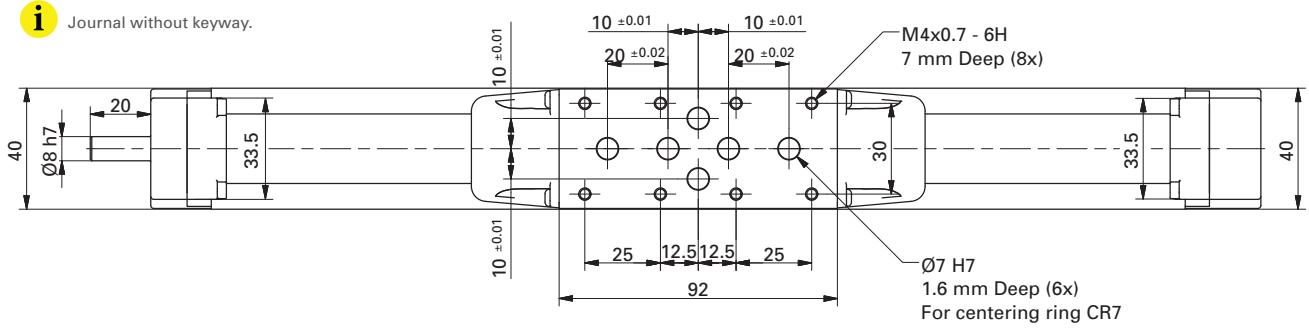


DIMENSIONS

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



Journal without keyway.



n_{SA}	L_{SA}
0	6.0
2SA	23.0
4SA	40.0

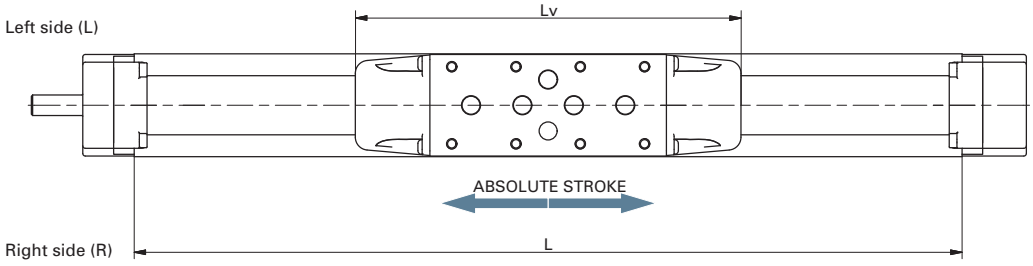
All dimensions in mm;
Drawings scales are not equal.

L_{SA} Additional length [mm]

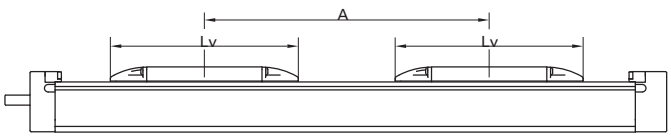
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 2 × LS_A + A × (nc - 1) + 10 mm

Ltotal = L + 45 mm, Lv = 150 mm



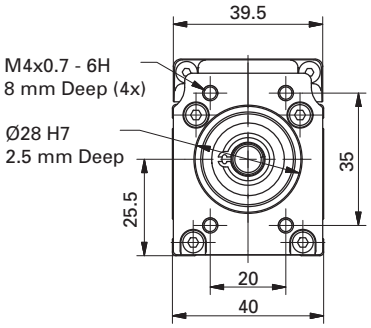
Multiple carriages

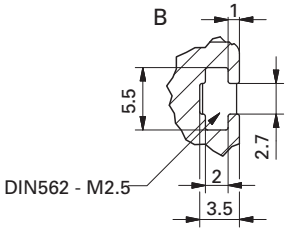


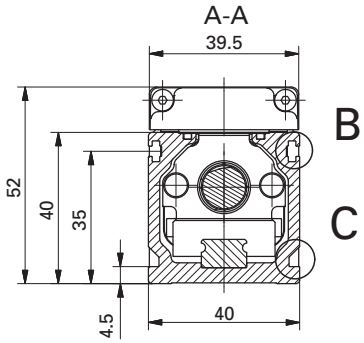
A ≥ Lv Connection between the carriages must be provided by the customer

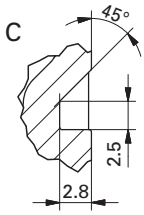
nc - Number of carriages

DIMENSIONS

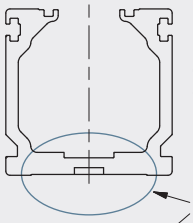








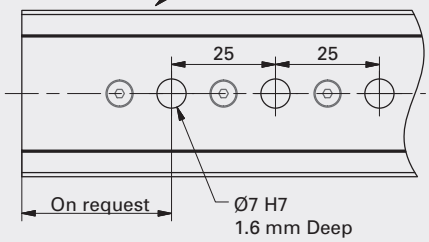
All dimensions in mm.
Drawings scales are not equal.



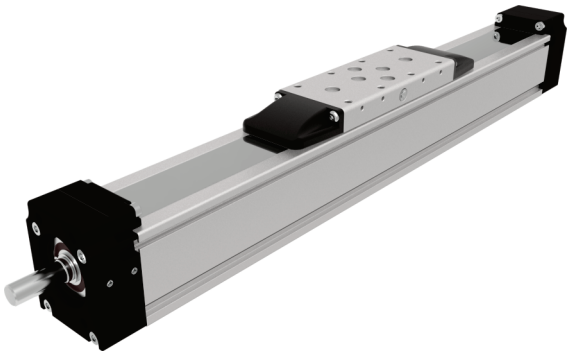
OPTIONAL:

CENTER RING holes available on request.

CENTER RING holes on bottom of the profile



Drawing only for presentational use.

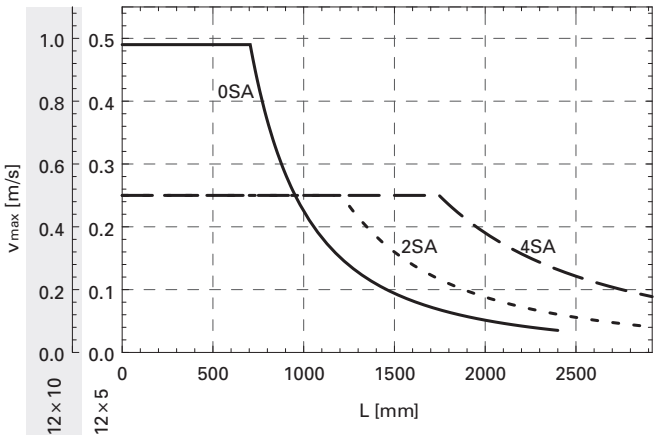


Mounting the drive

- by the MOTOR SIDE DRIVE - MSD
- by the MOTOR ADAPTER WITH COUPLING

Available on request.

Maximum travel speed as a function of the profile length (Vmax - L curves)



TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic Load capacity	Dynamic moment			Max. permissible loads					* Max. length	* Max. stroke
						Forces		Moments				
	Lv [mm]	C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Lmax [mm]	[mm]
SR-S 65	220	19800	158	700	700	6540	10190	94	350	233	2920	2690
SR-S 65 2LR	220	19800	158	700	700	6540	10190	94	350	233	5789	2667

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages and screw support SA (equation of defining the linear unit length for particular size of the linear unit needs to be used).

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

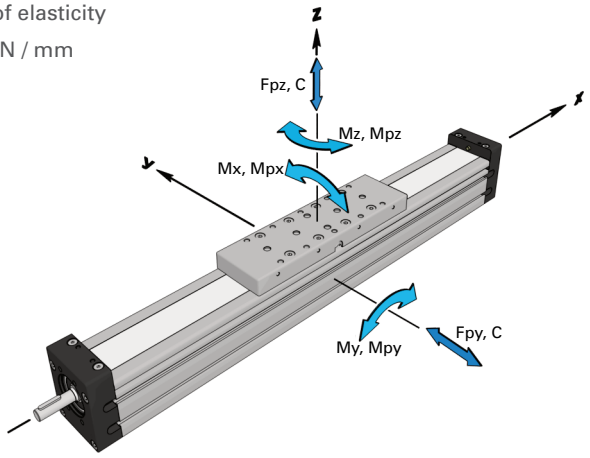
For operating temperature out of the presented range, please contact us.

Recommended values of loads:

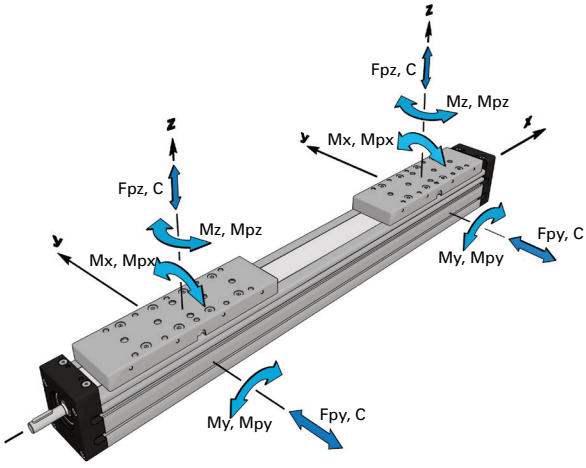
All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs =5.0)

Modulus of elasticity

E = 70000 N / mm



Standard version



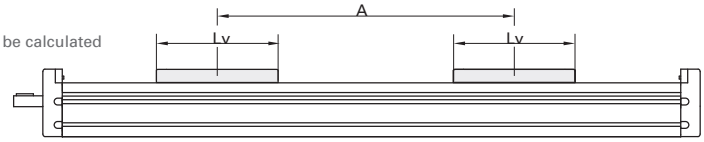
2LR version

General technical data for double carriage

Linear Unit	Number of carriages	Dynamic Load capacity	* Dynamic moment			* Max. permissible loads				
						Forces		Moments		
		C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-S 65 / SR-S 65 2LR	2	39600	316	19.8 × A	19.8 × A	13070	20380	188	10.2 × A	6.5 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.



Ball Screw Drive data

Linear Unit	Ball screw	[3] Max. rotational	[1] Max.	Lead constant	[2] Max. Repeatability precision [mm]		Dynamic load capacity BS	[5] Max. axial load	Max. drive torque	[4] Min. stroke	[1] Max. acceleration
		(Without SA)	(Without SA)		STANDARD ISO7	ISO5					
	[d x l]	[rev / min]	[m / s]	[mm / rev]			Ca [N]	Fx [N]	Ma [Nm]	[mm]	[m/s^2]
SR-S 65 SR-S 65 2LR	16 × 5	4200	0.35	5	± 0.02	± 0.01	13150	8700	5.5 with Keyway 7.7 without Keyway	40	20
	16 × 10		0.70	10	± 0.02	± 0.01	11550	6730	5.5 with Keyway 11.9 without Keyway		
	16 × 16		1.12	16	± 0.02	± 0.01	8170	4200			

[1] Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

[2] For the ball nut with the preload of 2%, please contact us.

[3] With SA or 2LR version the max. rotation speed is limited to 3000 rev / min.

[4] For minimum stroke below the stated value in the table above please contact us.

[5] In the case of 2RL version the axial load is total axial load of both carriages.

TECHNICAL DATA

Mass, moved mass, mass moment of inertia and no load torque

Linear Unit	Ball screw [d × l]	Number of SA n_{SA}	* Mass of linear unit [kg]	* Moved mass [kg]
SR-S 65	16 × 5	0	4.0 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.50 + 1.50 × (nc - 1)
		2	4.5 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.58 + 1.50 × (nc- 1)
		4	5.0 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.66 + 1.50 × (nc - 1)
	16 × 5 2LR version	0	7.2 + 0.0146 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.2 + 0.0146 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.16 + 3.00 × (nc - 1)
		4	9.2 + 0.0146 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.32 + 3.00 × (nc - 1)
	16 × 10	0	4.0 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.50 + 1.50 × (nc - 1)
		2	4.5 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.58 + 1.50 × (nc - 1)
		4	5.0 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.66 + 1.50 × (nc - 1)
	16 × 10 2LR version	0	7.2 + 0.0146 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.2 + 0.0146 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.16 + 3.00 × (nc - 1)
		4	9.2 + 0.0146 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.32 + 3.00 × (nc - 1)
	16 × 16	0	4.0 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.50 + 1.50 × (nc - 1)
		2	4.5 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.58 + 1.50 × (nc - 1)
		4	5.0 + 0.0073 × (Abs. stroke + (nc - 1) × A) + 1.5 × (nc - 1)	1.66 + 1.50 × (nc - 1)

Linear Unit	Ball screw [d × l]	Number of SA n_{SA}	* Mass moment of inertia [10^{-5} kg m^2]	** No load torque [Nm]
SR-S 65	16 × 5	0	1.6 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.09 × (nc - 1)	0.14 + 0.14 × (nc - 1)
		2	1.9 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.09 × (nc - 1)	0.16 + 0.14 × (nc - 1)
		4	2.2 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.09 × (nc - 1)	0.18 + 0.14 × (nc - 1)
	16 × 5 2LR version	0	2.9 + 0.0104 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.28 + 0.28 × (nc - 1)
		2	3.5 + 0.0104 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.32 + 0.28 × (nc - 1)
		4	4.1 + 0.0104 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.35 + 0.28 × (nc - 1)
	16 × 10	0	1.9 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.15 + 0.15 × (nc - 1)
		2	2.2 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.19 + 0.15 × (nc - 1)
		4	2.5 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.22 + 0.15 × (nc - 1)
	16 × 10 2LR version	0	3.5 + 0.0104 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.30 + 0.30 × (nc - 1)
		2	4.1 + 0.0104 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.34 + 0.30 × (nc - 1)
		4	4.8 + 0.0104 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.37 + 0.30 × (nc - 1)
	16 × 16	0	2.5 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.97 × (nc - 1)	0.20 + 0.20 × (nc - 1)
		2	2.8 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.97 × (nc - 1)	0.26 + 0.20 × (nc - 1)
		4	3.2 + 0.0052 × (Abs. stroke + (nc - 1) × A) + 0.97 × (nc - 1)	0.31 + 0.20 × (nc - 1)

* Absolute stroke [mm]

A - Distance between carriages [mm]. More info on following pages.

nc - Number of carriages

* The stated values are for strokes (and for distances between the carriages A) up to 500mm
No Load Torque value increases with stroke (and with A) elongation.

Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

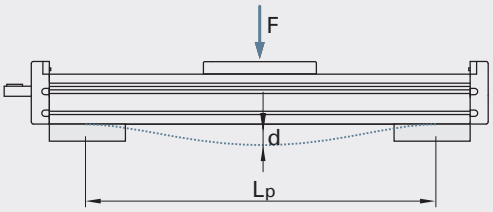
Planar moment of inertia

Linear Unit	Planar moment of inertia	
	I_y [cm^4]	I_z [cm^4]
SR-S 65 SR-S 65 2LR	71.3	89.4

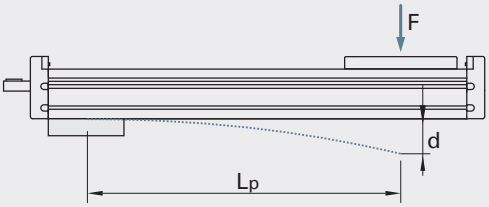
TECHNICAL DATA

Deflection of the linear unit

Fixed - fixed mounting



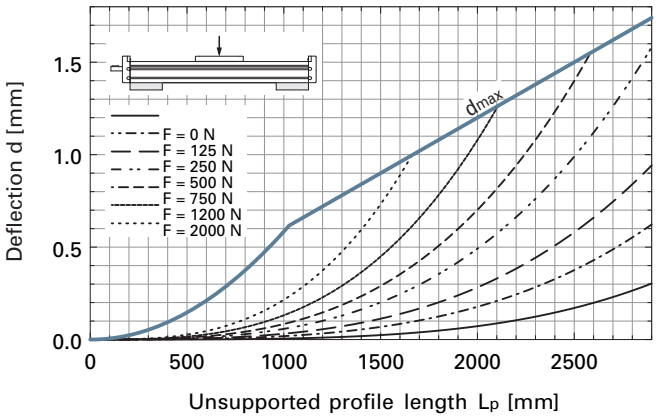
Fixed - free mounting

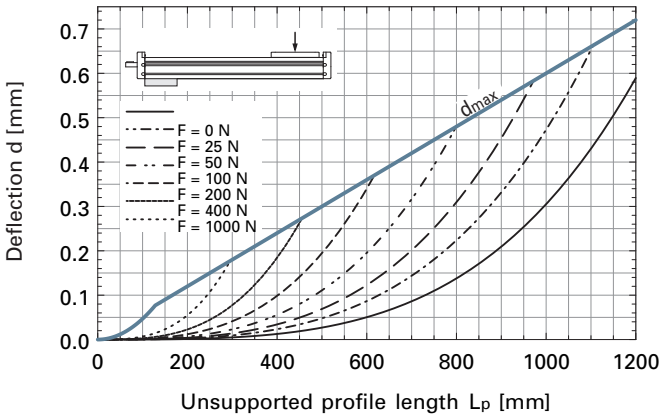


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

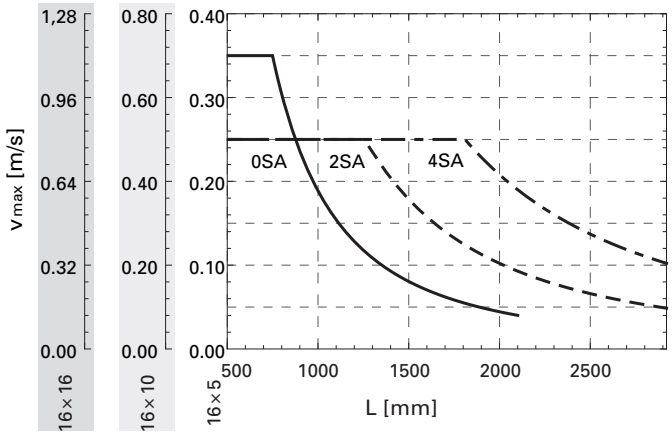
SR-S 65





Maximum travel speed as a function of the profile length (Vmax - L curves)

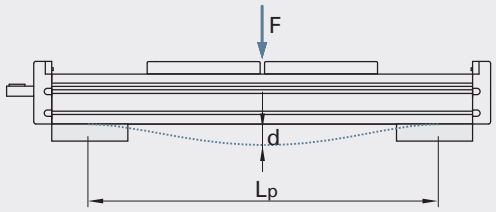
SR-S 65



TECHNICAL DATA

Deflection of the 2LR version

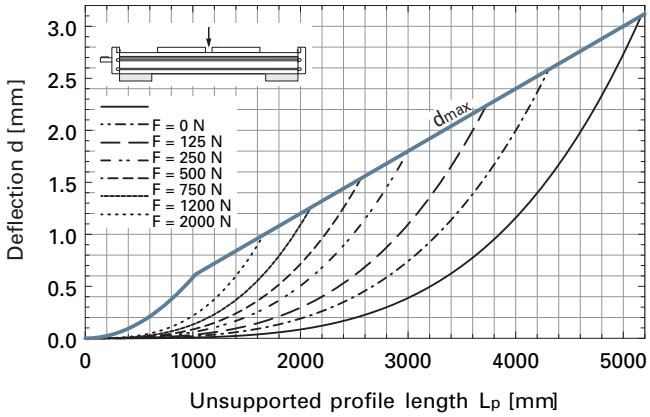
Fixed - fixed mounting



d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

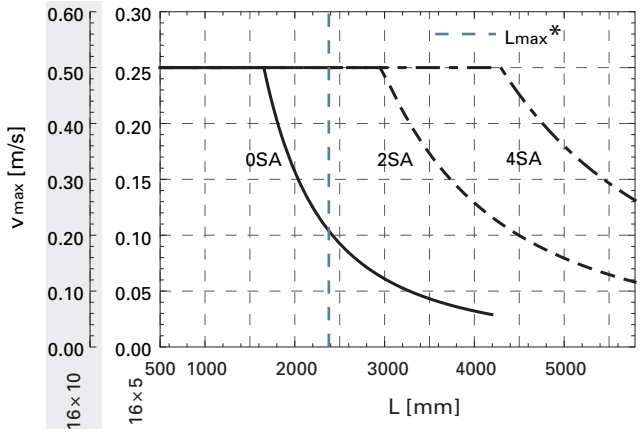
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

SR-S 65 2LR



Maximum travel speed as a function of the profile length (Vmax - L curves)

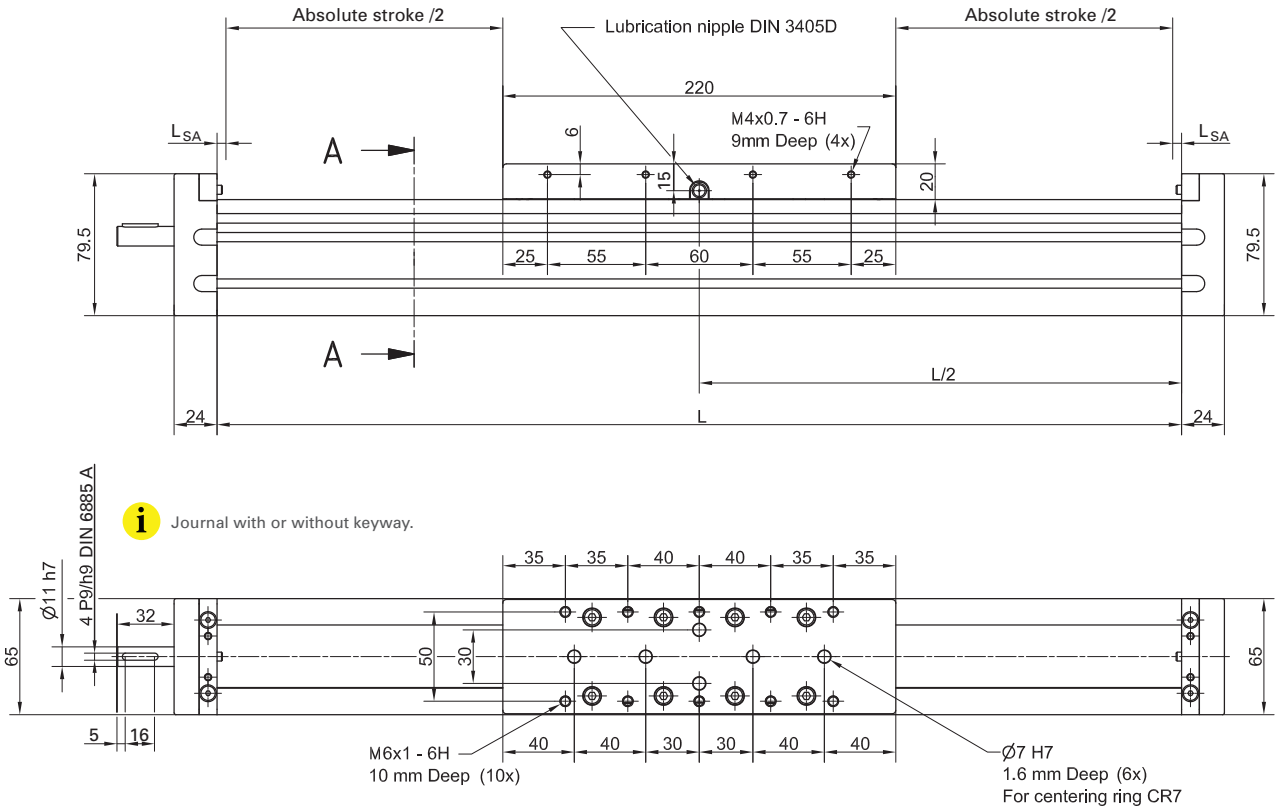
SR-S 65 2LR



* Max. length Lmax of SR-S 65 2LR linear unit with 16x10 ball screw.

DIMENSIONS

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

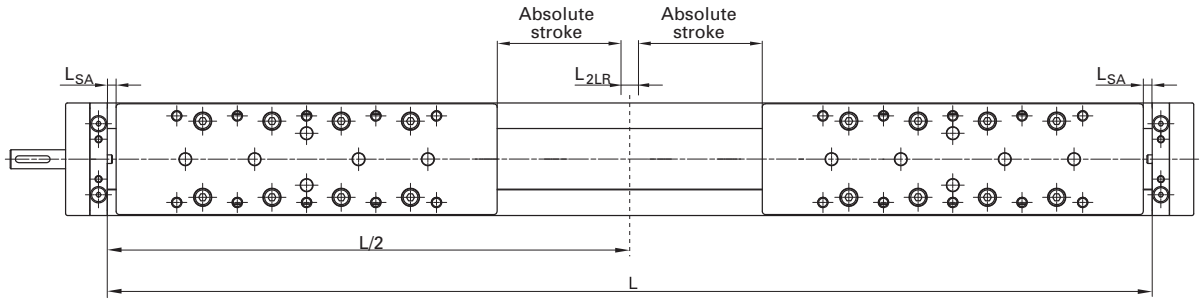


n	L_{SA}
0	5.0
2SA	31.0
4SA	62.0

L_{SA} Additional length [mm]

All dimensions in mm;
Drawings scales are not equal.

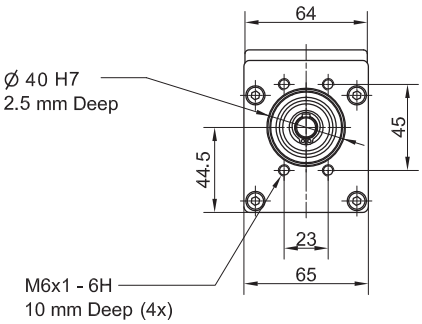
2LR version

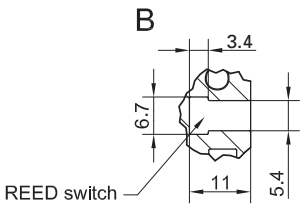


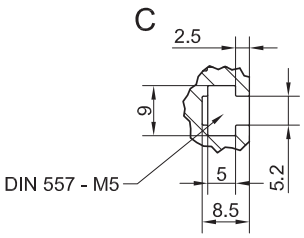
n	L_{SA}	L_{2LR}
0	5.0	5.0
2SA	31.0	67.0
4SA	62.0	129.0

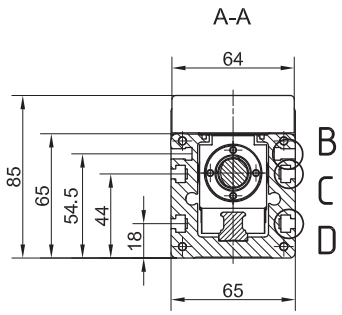
L_{SA} Additional length [mm]
L_{2LR} Min. distance between carriages [mm]

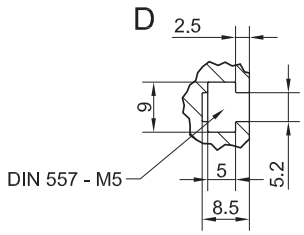
DIMENSIONS



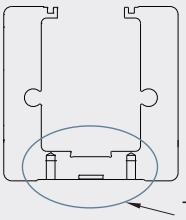






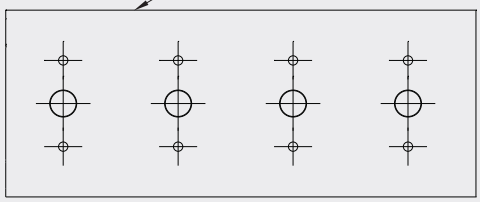


All dimensions in mm.
Drawings scales are not equal.



OPTIONAL:

TAP / PIN holes available on request.



Drawing only for presentational use

Mounting the drive

- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page 120)

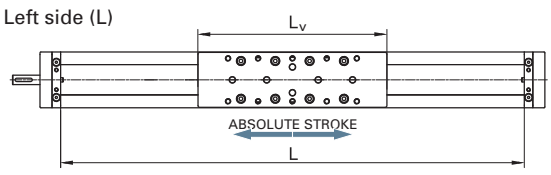
Available on request.

Defining of the linear unit length

Standard version

L = Effective stroke + 2 × Safety stroke + Lv + 2 × LS_A + A × (nc - 1)

Ltotal = L + 48 mm, Lv = 220 mm



Multiple carriages

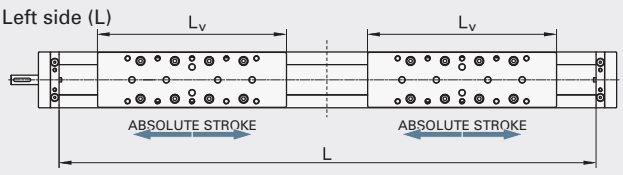
A ≥ Lv — Connection between the carriages must be provided by the customer

nc - Number of carriages

Version 2LR

L = 2 × (Effective stroke + 2 × Safety stroke) + 2 × Lv + 2 × LS_A + $L2_{LR}$ + A × (nc - 1)

Ltotal = L + 48 mm, Lv = 220 mm



Multiple carriages

A ≥ Lv — Connection between the carriages must be provided by the customer

nc - Number of carriages

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic Load capacity	Dynamic moment			Max. permissible loads					* Max. length	* Max. stroke
						Forces		Moments				
	Lv [mm]	C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Lmax [mm]	[mm]
SR-S 80	290	34200	370	1470	1470	8930	15070	150	500	384	5480	5163
SR-S 80 2LR	290	34200	370	1470	1470	8930	15070	150	500	384	11055	5224

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages and screw support SA (equation of defining the linear unit length for particular size of the linear unit needs to be used).

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

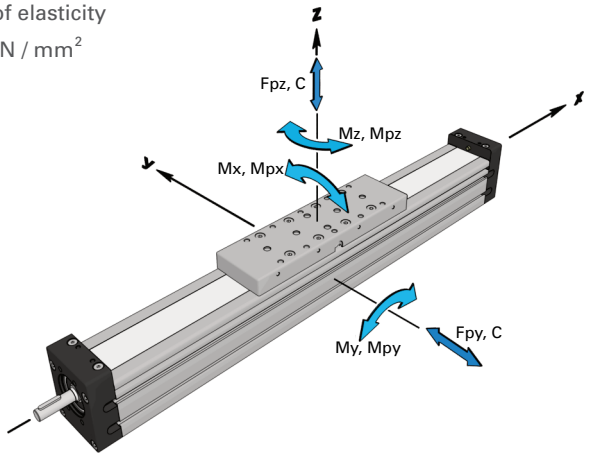
For operating temperature out of the presented range, please contact us.

Recommended values of loads:

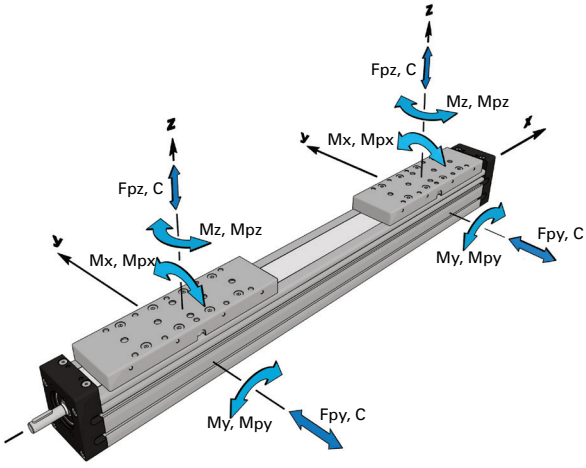
All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs =5.0)

Modulus of elasticity

$E = 70000\ N / mm^2$



Standard version



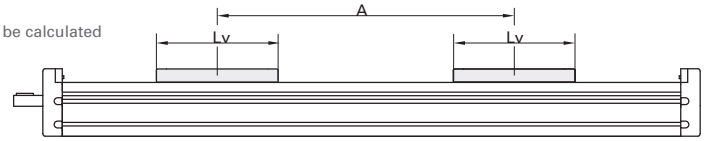
2LR version

General technical data for double carriage

Linear Unit	Number of carriages	Dynamic Load capacity	* Dynamic moment			* Max. permissible loads				
						Forces		Moments		
		C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-S 80 / SR-S 80 2LR	2	68400	740	34.2 × A	34.2 × A	17860	30130	300	15.0 × A	8.9 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.



Ball Screw Drive data

Linear Unit	Ball screw	[3] Max. rotational	[1] Max.	Lead constant	[2] Max. Repeatability precision [mm]		Dynamic load capacity BS	[5] Max. axial load	Max. drive torque	[4] Min. stroke	[1] Max. acceleration
		(Without SA)	(Without SA)		STANDARD ISO7	ISO5					
	[d x l]	[rev / min]	[m / s]	[mm / rev]			Ca [N]	Fx [N]	Ma [Nm]	[mm]	[m/s²]
SR-S 80 SR-S 80 2LR	20 × 5	3300	0.28	5	± 0.02	± 0.01	14800	14800	11.9 with Keyway 13.0 without Keyway	55	20
	20 × 10		0.55	10	± 0.02	± 0.01	15900	13850	11.9 with Keyway 24.5 without Keyway		
	20 × 20		1.10	20	± 0.02	± 0.01	16250	6930			
	20 × 50	3000	2.50	50	± 0.02	± 0.01	13000	2770			

[1] Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

[2] For the ball nut with the preload of 2%, please contact us.

[3] With SA or 2LR version the max. rotation speed is limited to 3000 rev / min.

[4] For minimum stroke below the stated value in the table above please contact us.

[5] In the case of 2RL version the axial load is total axial load of both carriages.

TECHNICAL DATA

Mass, moved mass, mass moment of inertia and no load torque

Linear Unit	Ball screw [d × l]	Number of SA n_{SA}	* Mass of linear unit [kg]	* Moved mass [kg]
SR-S 80	20 × 5	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc- 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)
	20 × 5 2LR version	0	14.6 + 0.0228 × (Abs. stroke + (nc - 1) × A) + 6.0 × (nc - 1)	6.00 + 6.00 × (nc - 1)
		2	15.9 + 0.0228 × (Abs. stroke + (nc - 1) × A) + 6.0 × (nc - 1)	6.14 + 6.00 × (nc - 1)
		4 / 6 / 8 / 10	17.5 + 0.8* (n_{SA} -4) + 0.0228 × (Abs. stroke + (nc - 1) × A) + 6.0 × (nc - 1)	6.42 + 0.07* (n_{SA} -4) + 6.00 × (nc - 1)
	20 × 10	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc - 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)
	20 × 20	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc - 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)
	20 × 50	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc - 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)

Linear Unit	Ball screw [d × l]	Number of SA n_{SA}	* Mass moment of inertia [10^{-5} kg m^2]	** No load torque [Nm]
SR-S 80	20 × 5	0	5.6 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.23 + 0.23 × (nc - 1)
		2	6.2 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.26 + 0.23 × (nc - 1)
		4 / 6 / 8 / 10	7.0 + 0.4* (n_{SA} -4) + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.31 + 0.015* (n_{SA} -4) + .23 × (nc - 1)
	20 × 5 2LR version	0	9.5 + 0.0254 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.468 + 0.46 × (nc - 1)
		2	10.7 + 0.0254 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.51 + 0.46 × (nc - 1)
		4 / 6 / 8 / 10	12.3 + 0.8* (n_{SA} -4) + 0.0254 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.62 + 0.03* (n_{SA} -4) + 0.46 × (nc - 1)
	20 × 10	0	6.2 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.25 + 0.25 × (nc - 1)
		2	6.8 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.30 + 0.25 × (nc - 1)
		4 / 6 / 8 / 10	7.6 + 0.4* (n_{SA} -4) + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.41 + 0.025* (n_{SA} -4) + 0.25 × (nc - 1)
	20 × 20	0	8.5 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 3.04 × (nc - 1)	0.30 + 0.30 × (nc - 1)
		2	9.1 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 3.04 × (nc - 1)	0.41 + 0.30 × (nc - 1)
		4 / 6 / 8 / 10	10.1 + 0.5* (n_{SA} -4) + 0.0127 × (Abs. stroke + (nc - 1) × A) + 3.04 × (nc - 1)	0.62 + 0.055* (n_{SA} -4) + 0.30 × (nc - 1)
	20 × 50	0	24.4 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 19.00 × (nc - 1)	0.70 + 0.20 × (nc - 1)
		2	25.5 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 19.00 × (nc - 1)	0.97 + 0.20 × (nc - 1)
		4 / 6 / 8 / 10	27.1 + 0.6* × (Abs. stroke + (nc - 1) × A) + 19.00 × (nc - 1)	1.50 + 0.135* (n_{SA} -4) + 0.70 × (nc - 1)

* Absolute stroke [mm]

A - Distance between carriages [mm]. More info on following pages.

nc - Number of carriages

** The stated values are for strokes (and for distances between the carriages A) up to 500mm
No Load Torque value increases with stroke (and with A) elongation.

Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

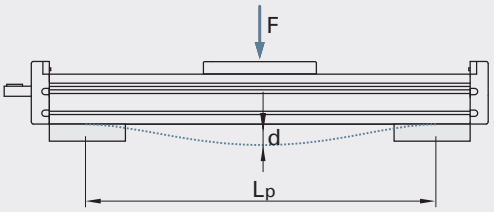
Planar moment of inertia

Linear Unit	Planar moment of inertia	
	I_y [cm^4]	I_z [cm^4]
SR-S 80 SR-S 80 2LR	144.1	192.3

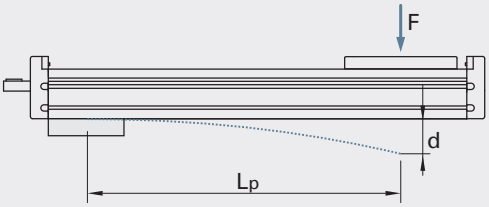
TECHNICAL DATA

Deflection of the linear unit

Fixed - fixed mounting



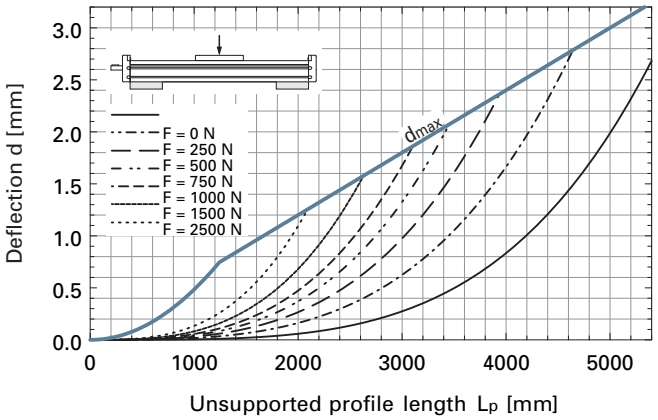
Fixed - free mounting

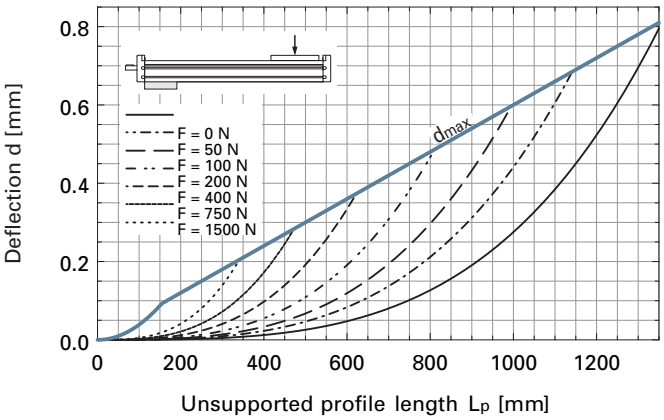


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

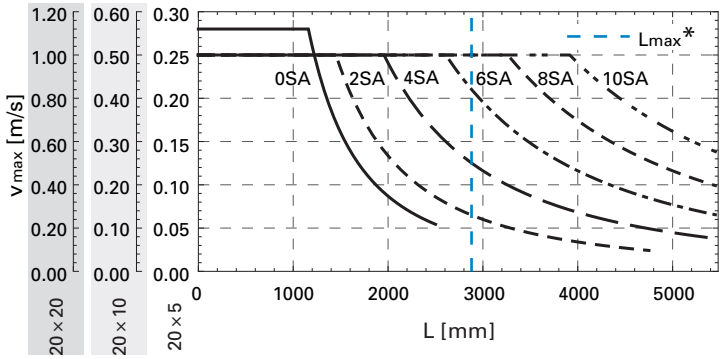
SR-S 80

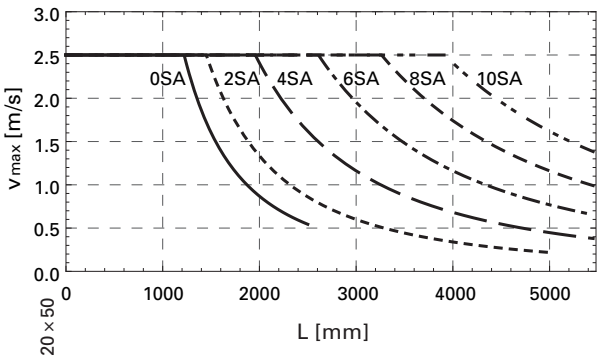




Maximum travel speed as a function of the profile length (Vmax - L curves)

SR-S 80



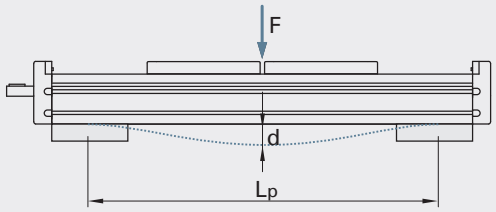


* Max. length Lmax of SR-S 80 linear unit with 20x10 ball screw.

TECHNICAL DATA

Deflection of the 2LR version

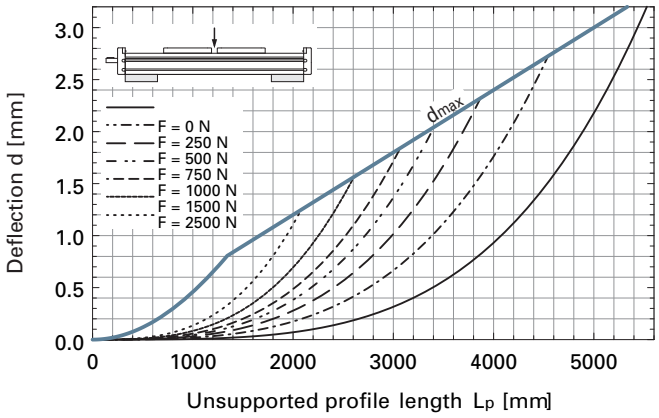
Fixed - fixed mounting



d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

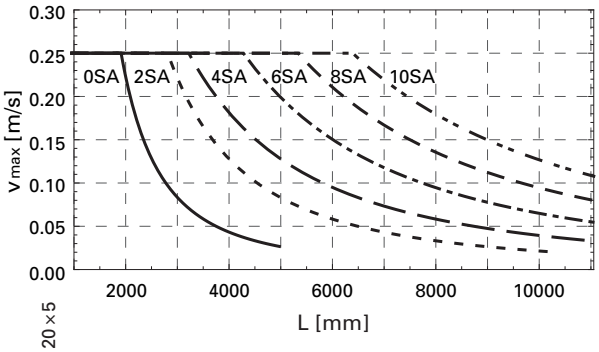
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

SR-S 80 2LR



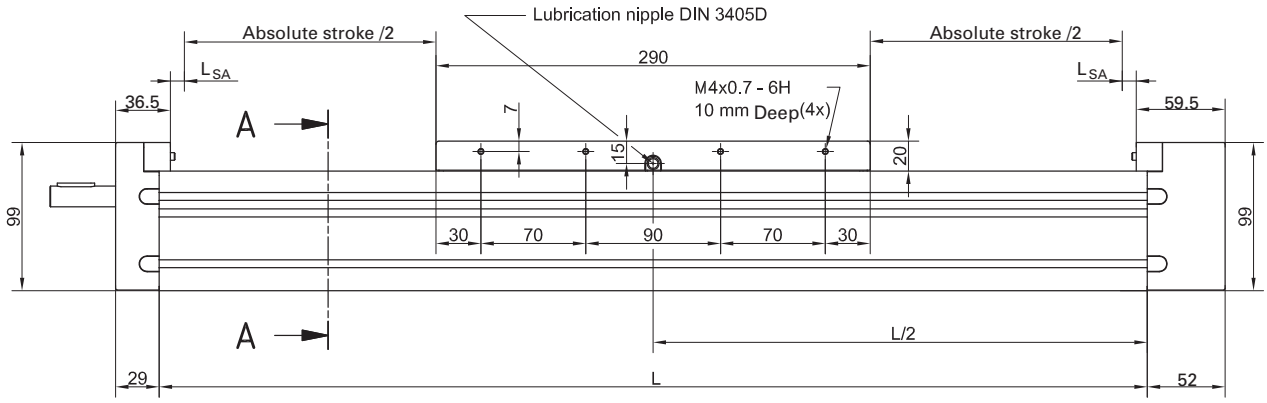
Maximum travel speed as a function of the profile length (Vmax - L curves)

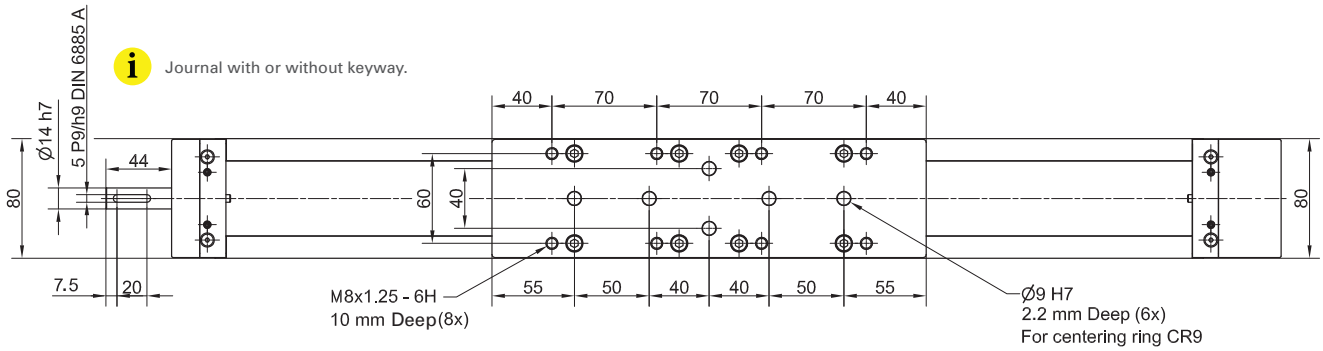
SR-S 80 2LR



DIMENSIONS

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



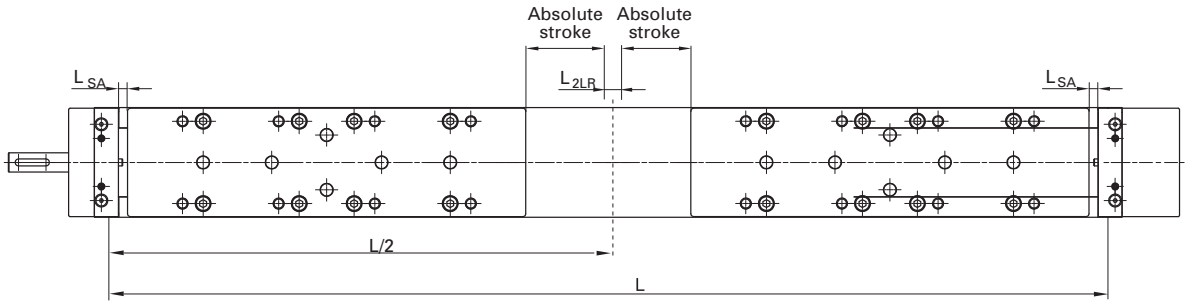


n_{SA}	L_{SA}
0	6.0
2SA	28.5
4SA	59.5
6SA	90.5
8SA	121.5
10SA	152.5

L_{SA} Additional length [mm]

All dimensions in mm;
Drawings scales are not equal.

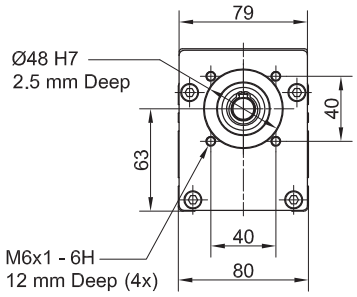
2LR Version

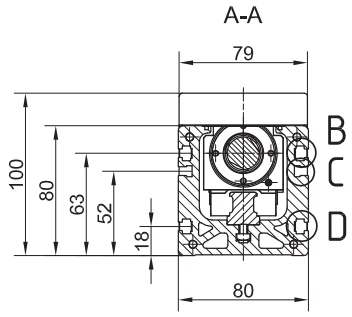


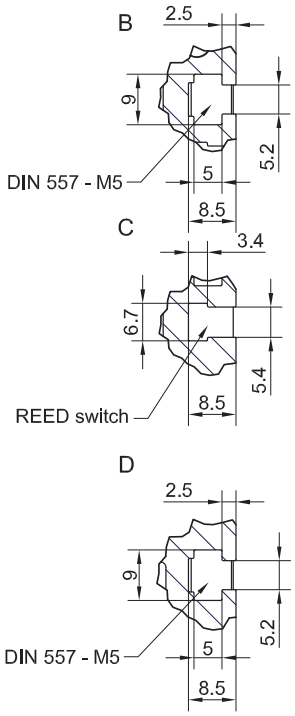
n_{SA}	L_{SA}	L_{2LR}
0	6.0	0.0
2SA	28.5	48.0
4SA	59.5	110.0
6SA	90.5	172.0
8SA	121.5	234.0
10SA	152.5	296.0

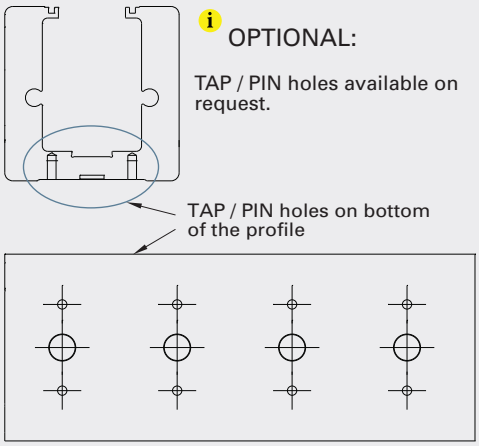
L_{SA} Additional length [mm]
L_{2LR} Min. distance between carriages [mm]

DIMENSIONS



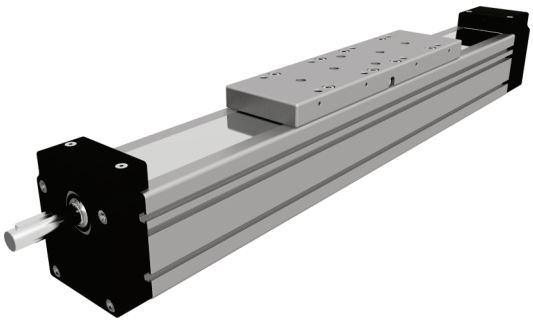






! Drawing only for presentational use.

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



Mounting the drive

- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page 120)

i Available on request.

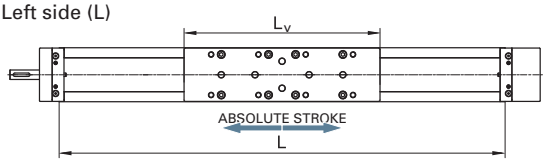
Defining of the linear unit length

i Standard version

L = Effective stroke + 2 × Safety stroke + Lv + 2 × LSA + A × (nc - 1) + 15 mm

Ltotal = L + 81 mm, Lv = 290 mm

Left side (L)



Right side (R)

Multiple carriages

A ≥ Lv ! Connection between the carriages must be provided by the customer

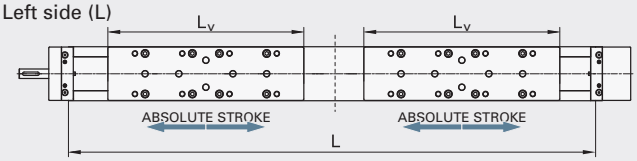
nc - Number of carriages

i 2LR version

L = 2 × (Effective stroke + 2 × Safety stroke) + 2 × Lv + 2 × LSA + L2LR + A × (nc - 1) + 15 mm

Ltotal = L + 81 mm, Lv = 290 mm

Left side (L)



Right side (R)

Multiple carriages

A ≥ Lv ! Connection between the carriages must be provided by the customer

nc - Number of carriages

TECHNICAL DATA

General technical data

Linear Unit	Carriage length Lv [mm]	Dynamic Load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	* Max. length Lmax [mm]	* Max. stroke [mm]
SR-S 110	330	49600	630	2650	2650	10000	20260	295	670	535	5850	5456

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages and screw support SA (equation of defining the linear unit length for particular size of the linear unit needs to be used).

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

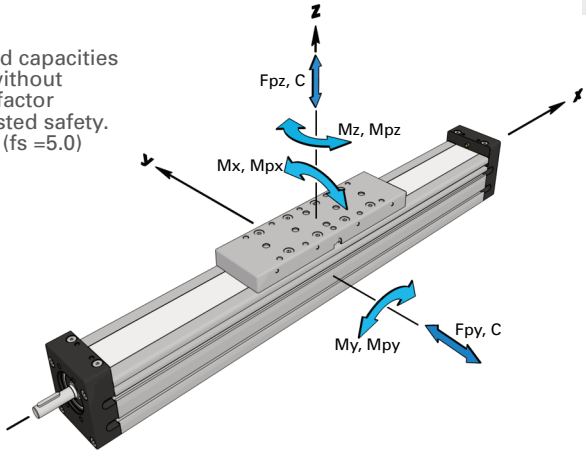
For operating temperature out of the presented range, please contact us.

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

$E = 70000 \text{ N / mm}^2$

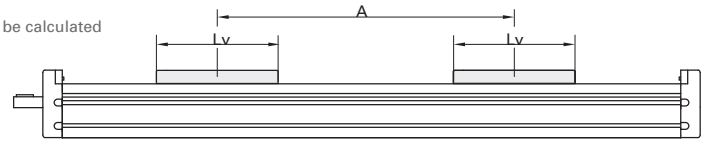


General technical data for double carriage

Linear Unit	Number of carriages	Dynamic Load capacity C [N]	* Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	* Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-S 110	2	99200	1260	49.6 × A	49.6 × A	20000	40500	590	20.3 × A	10.0 × A

*A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting one of our sales engineers.



Ball Screw Drive data

Linear Unit	Ball screw [d x l]	3 Max. rotational (Without SA) [rev / min]	1 Max. (Without SA) [m / s]	Lead constant [mm / rev]	2 Max. Repeatability precision [mm] STANDARD ISO7	ISO5	Dynamic load capacity BS Ca [N]	Max. axial load Fx [N]	Max. drive torque Ma [Nm]	4 Min. stroke [mm]	1 Max. acceleration [m/s^2]
SR-S 110	32 × 5	2150	0.18	5	± 0.02	± 0.01	18850	18850	16.7 with Keyway 16.7 without Keyway	65	20
	32 × 10	3000	0.50	10	± 0.02	± 0.01	37000	29600	27.3 with Keyway 52.3 without Keyway		
	32 × 20		1.00	20	± 0.02	± 0.01	22950	14800			
	32 × 32		1.60	32	± 0.02	± 0.01	15500	9240		70	

1 Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

2 For the ball nut with the preload of 2%, please contact us.

3 With SA the max. rotation speed is limited to 3000 rev / min.

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

Planar moment of inertia

Linear Unit	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
SR-S 110	562.0	669.0

TECHNICAL DATA

Mass, moved mass, mass moment of inertia and no load torque

Linear Unit	Ball screw [d × l]	Number of SA n_{SA}	* Mass of linear unit [kg]	* Moved mass [kg]
SR-S 110	20 × 5	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc- 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)
	20 × 5 2LR version	0	14.6 + 0.0228 × (Abs. stroke + (nc - 1) × A) + 6.0 × (nc - 1)	6.00 + 6.00 × (nc - 1)
		2	15.9 + 0.0228 × (Abs. stroke + (nc - 1) × A) + 6.0 × (nc - 1)	6.14 + 6.00 × (nc - 1)
		4 / 6 / 8 / 10	17.5 + 0.8* (n_{SA} -4) + 0.0228 × (Abs. stroke + (nc - 1) × A) + 6.0 × (nc - 1)	6.42 + 0.07* (n_{SA} -4) + 6.00 × (nc - 1)
	20 × 10	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc - 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)
	20 × 20	0	8.2 + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.00 + 3.00 × (nc - 1)
		2	8.9 + 0.0144 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.07 + 3.00 × (nc - 1)
		4 / 6 / 8 / 10	9.7 + 0.4* (n_{SA} -4) + 0.0114 × (Abs. stroke + (nc - 1) × A) + 3.0 × (nc - 1)	3.21 + 0.035* (n_{SA} -4) + 3.00 × (nc - 1)

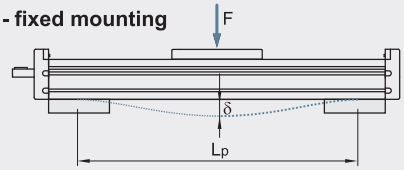
Linear Unit	Ball screw [d × l]	Number of SA n_{SA}	* Mass moment of inertia [10^{-5} kg m^2]	* ** No load torque [Nm]
SR-S 110	20 × 5	0	5.6 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.23 + 0.23 × (nc - 1)
		2	6.2 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.26 + 0.23 × (nc - 1)
		4 / 6 / 8 / 10	7.0 + 0.4* (n_{SA} -4) + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.19 × (nc - 1)	0.31 + 0.015* (n_{SA} -4) + .23 × (nc - 1)
	20 × 5 2LR version	0	9.5 + 0.0254 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.468 + 0.46 × (nc - 1)
		2	10.7 + 0.0254 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.51 + 0.46 × (nc - 1)
		4 / 6 / 8 / 10	12.3 + 0.8* (n_{SA} -4) + 0.0254 × (Abs. stroke + (nc - 1) × A) + 0.38 × (nc - 1)	0.62 + 0.03* (n_{SA} -4) + 0.46 × (nc - 1)
	20 × 10	0	6.2 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.25 + 0.25 × (nc - 1)
		2	6.8 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.30 + 0.25 × (nc - 1)
		4 / 6 / 8 / 10	7.6 + 0.4* (n_{SA} -4) + 0.0127 × (Abs. stroke + (nc - 1) × A) + 0.76 × (nc - 1)	0.41 + 0.025* (n_{SA} -4) + 0.25 × (nc - 1)
	20 × 20	0	8.5 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 3.04 × (nc - 1)	0.30 + 0.30 × (nc - 1)
		2	9.1 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 3.04 × (nc - 1)	0.41 + 0.30 × (nc - 1)
		4 / 6 / 8 / 10	10.1 + 0.5* (n_{SA} -4) + 0.0127 × (Abs. stroke + (nc - 1) × A) + 3.04 × (nc - 1)	0.62 + 0.055* (n_{SA} -4) + 0.30 × (nc - 1)

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages
** The stated values are for strokes (and for distances between the carriages A) up to 500mm
No Load Torque value increases with stroke (and with A) elongation.

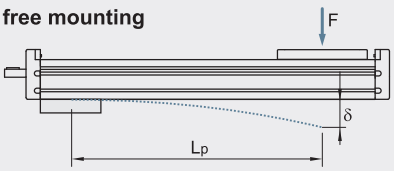
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflectionof the linear unit

Fixed - fixed mounting



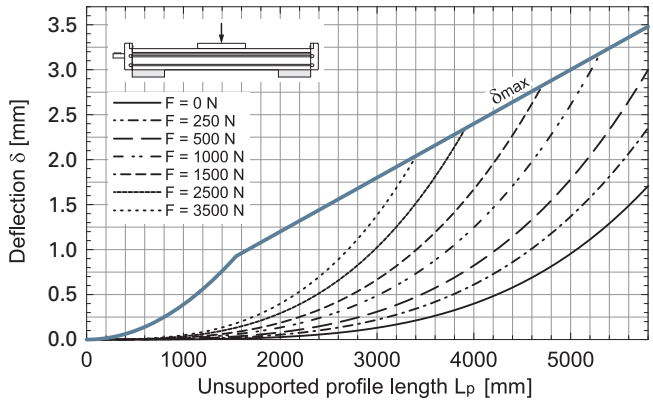
Fixed - free mounting

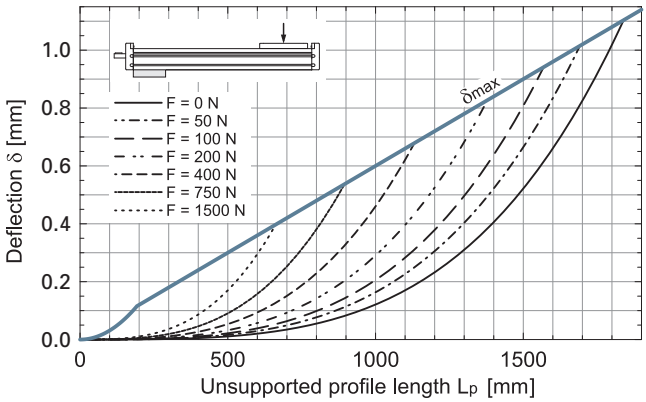


δ Maximum deflection of the linear unit [mm]
δmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

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

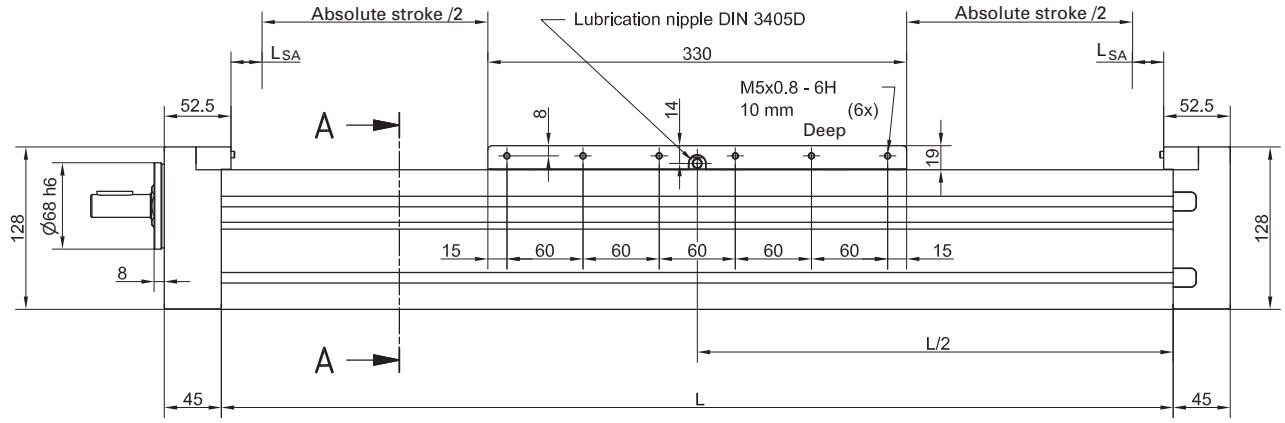
SR-S 110

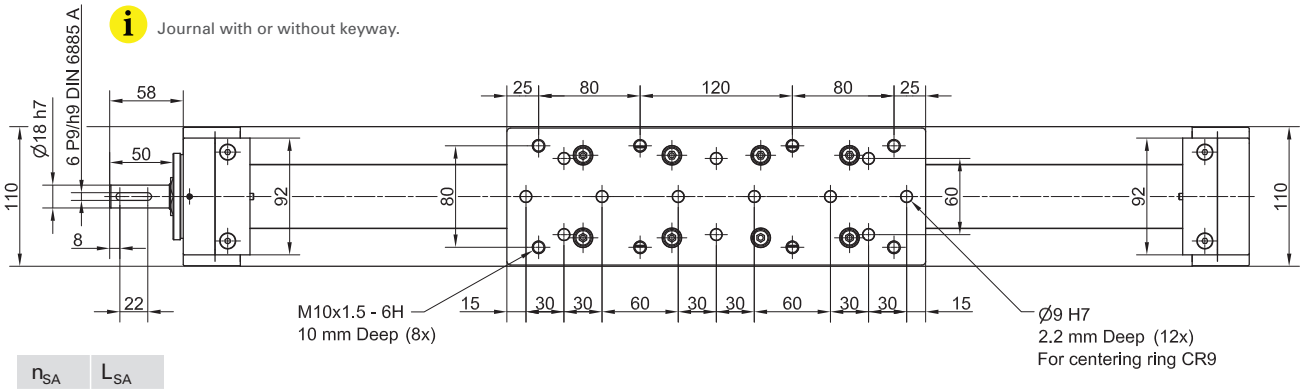




DIMENSIONS

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





n_{SA}	L_{SA}
0	24.5
2SA	28.0
4SA	59.0
6SA	90.0
8SA	121.0
10SA	152.0

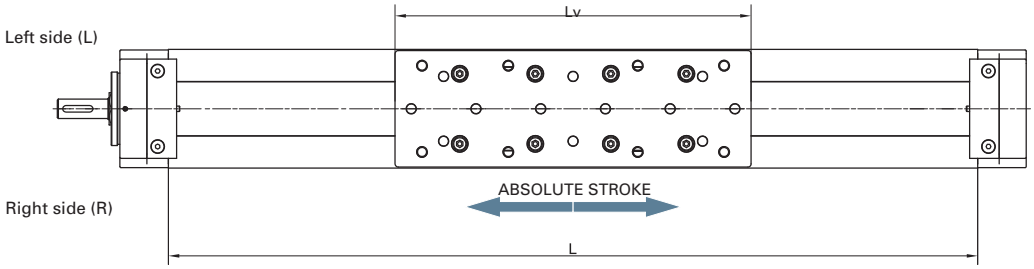
All dimensions in mm;
Drawings scales are not equal.

L_{SA} Additional length [mm]

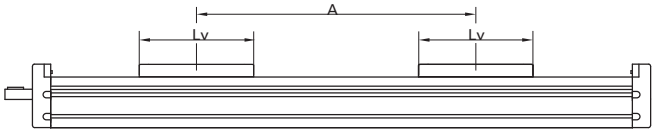
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 2 × LSA + A × (nc - 1) + 15 mm

Ltotal = L + 90 mm, Lv = 330 mm



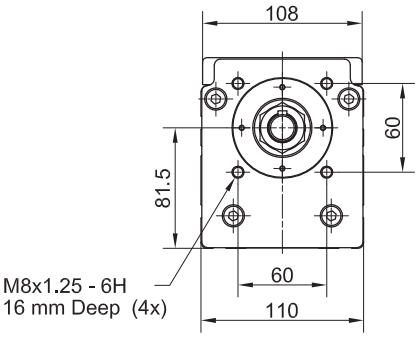
Multiple carriages

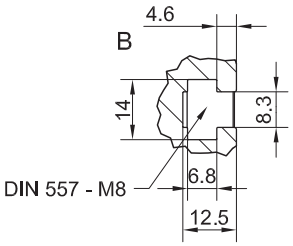


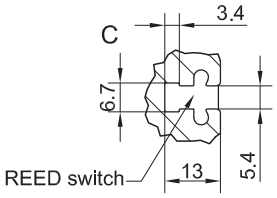
A ≥ Lv Connection between the carriages must be provided by the customer

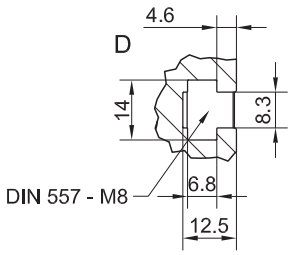
nc - Number of carriages

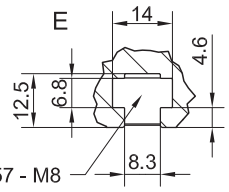
DIMENSIONS

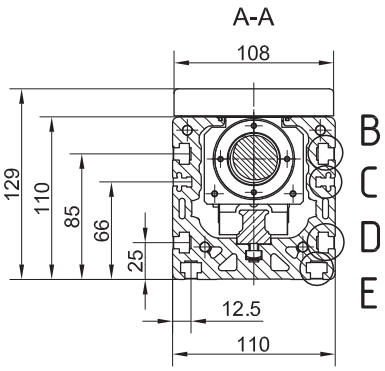




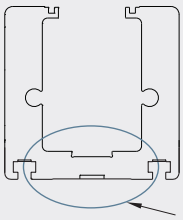






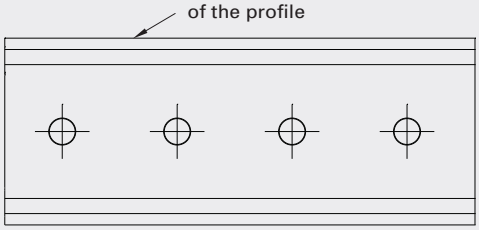


All dimensions in mm.
Drawings scales are not equal.

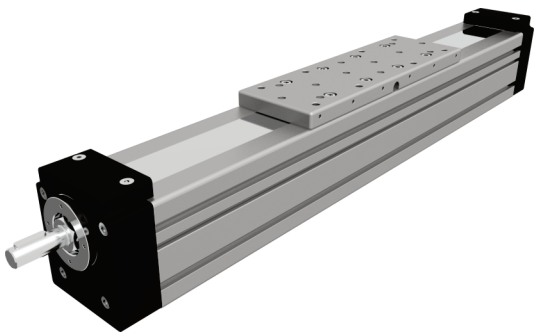


OPTIONAL:

CENTER RING holes available on request.



Drawing only for presentational use.

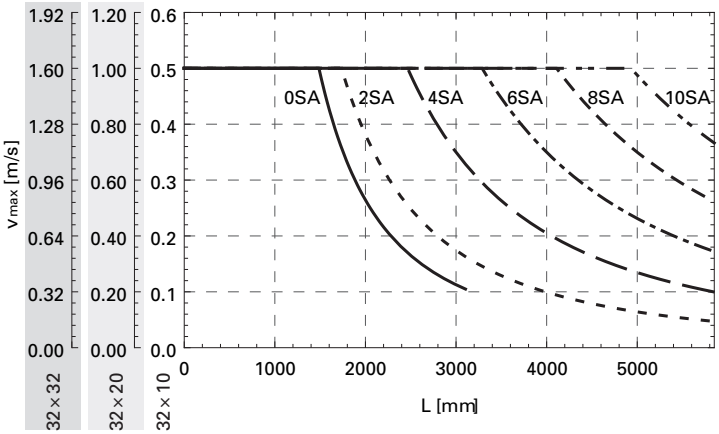


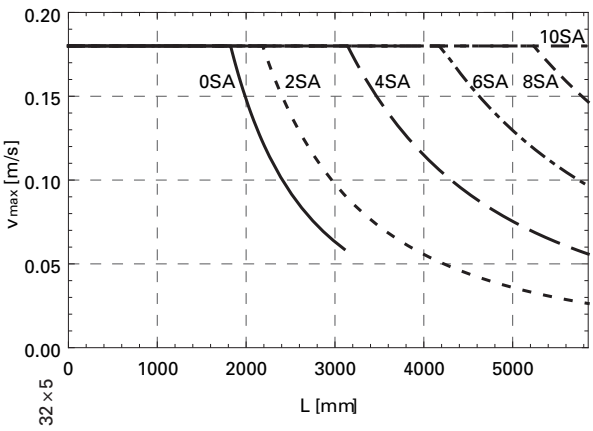
Mounting the drive

- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

Maximum travel speed as a function of the profile length (Vmax - L curves)





CHARACTERISTICS

The BR-E series Linear Unit is a powerful and cost-effective Linear Unit with toothed belt drive and a Zero-backlash Ball rail guide system for easy and accurate linear movements.

It can easily be combined to multi-axis systems.

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

An extruded aluminum Profile from 6063 AL with on it mounted Zero-backlash Ball rail guide system, allows high load capacities and optimal cycles for the movement of larger masses at high speed.

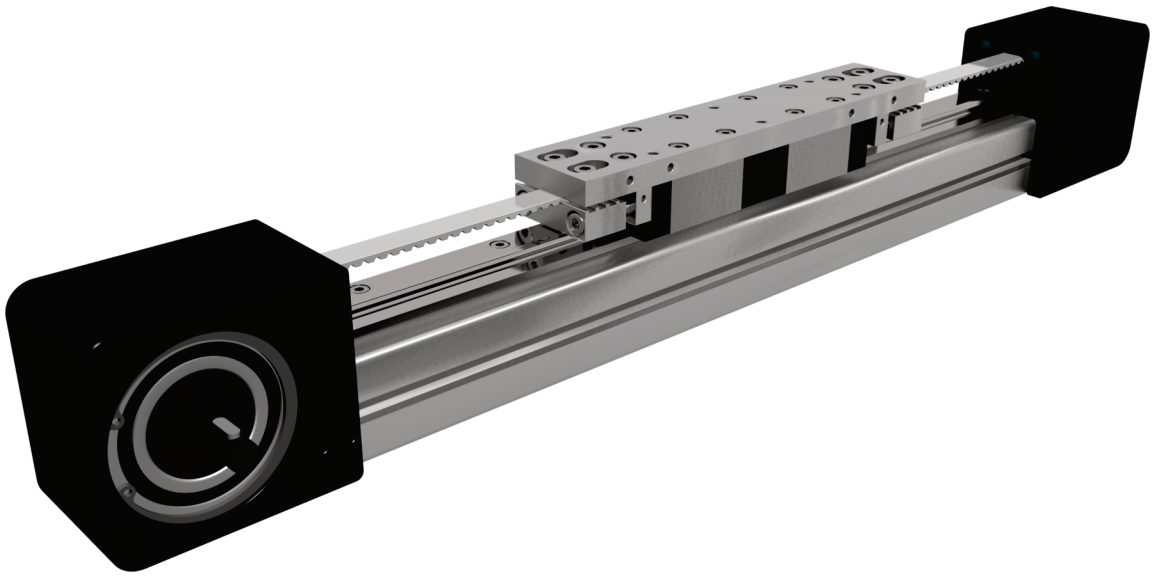
The linear unit BR-E uses a pre-tensioned steel reinforced AT polyurethane timing toothed belt. In conjunction with a Zero-backlash drive pulley high moments with alternating loads with good positioning accuracy, low wear and low noise can be realized.

The aluminum Profile includes T-slots for fixing the Linear Unit and for attaching sensors and switches .

Different carriage lengths of the Linear Unit allow the possibility to attach additional accessories on the side.

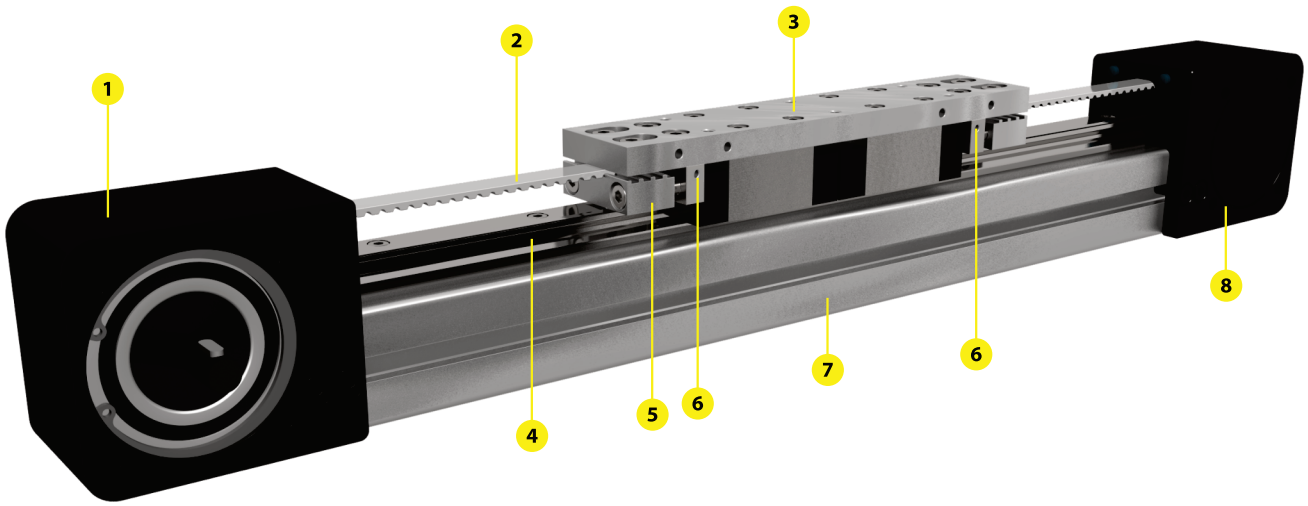
Lubrication holes on the carriage allow easy re-lubrication of the Ball rail guide .

For the linear unit BR-E various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.



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 - Drive block with pulley
2 - AT polyurethane toothed belt with steel tension cords
3 - Carriage
4 - Linear Ball Guideway
5 - Belt Tensioning system
6 - Lubrication port
7 - Aluminium profile-Hard anodized
8 - End block

HOW TO ORDER

BR 0040 E - 6000 - L 20 X - 00

Series Prefix:
BR

Size:
0040: 40

Type:
E

Absolute stroke [mm]:
(Absolute stroke = Effective stroke + 2 x Safety stroke)

Carriage Version:
S: Short
L: Long

Type of Drive Pulley:
00: Pulley with through hole
01: Pulley with journal
02: Pulley with journal on both sides
03: Without drive unit
10: Pulley with journal (without keyway)
20: Pulley with journal on both sides (without keyway)

Drive Journal Position:
L: Journal on left side
R: Journal on right side
X: Both sides or none

Version:
0S: Special version
01: Standard single carriage
02: Dual carriage

TECHNICAL DATA

General technical data

Linear Unit	Carriage length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Moved mass [kg]	Max. Repeatability [mm]	* Max. length Lmax [mm]	* Max. stroke [mm]	** Min. stroke [mm]
SR-S 40 S	132	9900	79	59	59	3270	5100	34	34	34	0.45	± 0.1	5960	5813	40
SR-S 40 L	200	19800	158	660	660	6540	10190	60	341	219	0.72	± 0.1		5745	40

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
* For minimum stroke below the stated value in the table above please contact us.

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

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

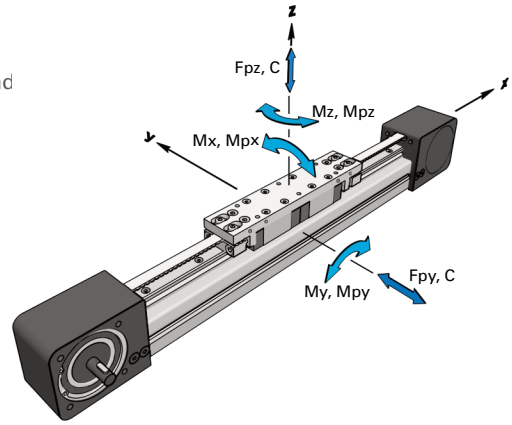
Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safet factor. The safety factor depends on the application and its requested safety.

We recommend a minimum safety factor

Modulus of elasticity

$E = 70000 \text{ N / mm}^2$

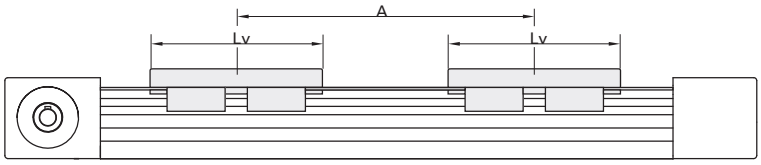


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	* Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-S 40	S2	19800	158	9.9 × A	9.9 × A	6540	10190	68	5.1 × A	3.3 × A
	L2	39600	317	19.8 × A	19.8 × A	13080	20380	120	10.2 × A	6.5 × A

* A - Distance between carriages [mm]. More on page 4.030.0

Presented values are for informational purposes only.
Exact values can be calculated by contacting a sales engineer.



Drive and belt data

Linear Unit	** Max. travel speed [m / s]	Max. drive torque [Nm]	* No load torque [Nm]	Puley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmited by belt [N]	Specific spring constant Cspec [N]	** Max. acceleration [m/s²]
SR-S 40 S	3	7.5	1.0 × nc	180	57.31	AT5	12	262	235000	70
SR-S 40 L			1.1 × nc							

* The stated values are for strokes (and for distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.
nc - Number of carriages
**For travel speed and acceleration over the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

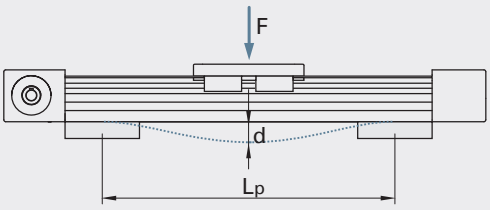
Linear Unit	Mass of linear unit [kg]	Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia	
			Iy [cm^4]	Iz [cm^4]
BR-E 40 S	3.1 + 0.003 × (Abs. stroke + (nc - 1) × A) + 0.45 × (nc - 1)	70.1 + 0.007 × (Abs. stroke + (nc - 1) × A) + 36.9 × (nc - 1)	9.53	9.21
BR-E 40 L	3.55 + 0.003 × (Abs. stroke + (nc - 1) × A) + 0.72 × (nc - 1)	92.3 + 0.007 × (Abs. stroke + (nc - 1) × A) + 59.1 × (nc - 1)		

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

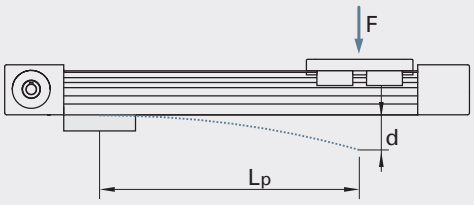
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



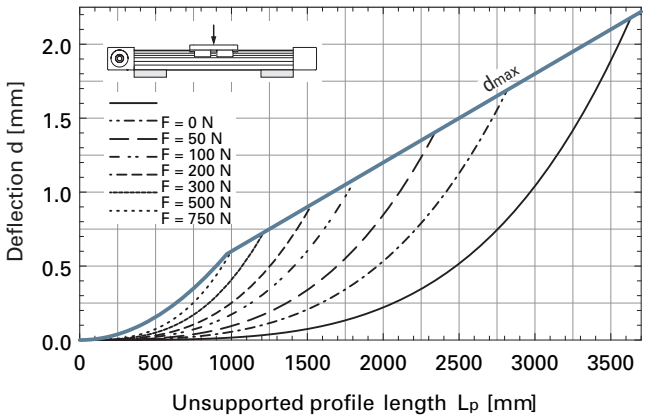
Fixed - free mounting

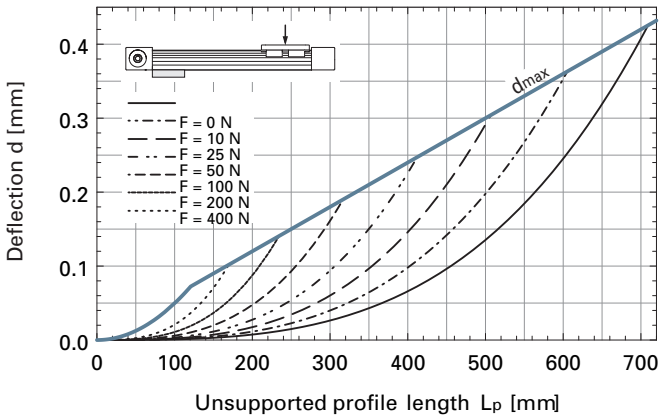


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

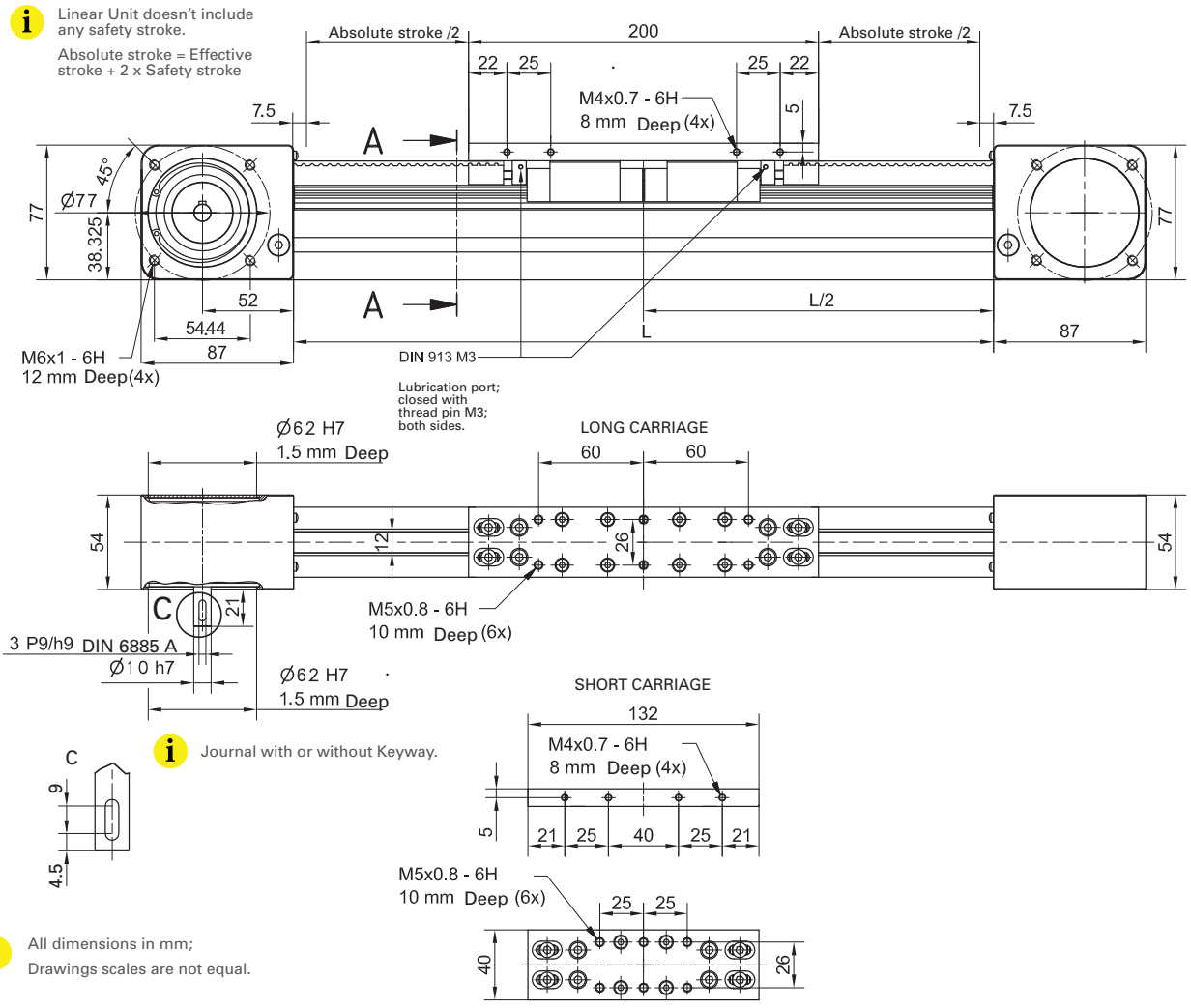
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

BR-E 40

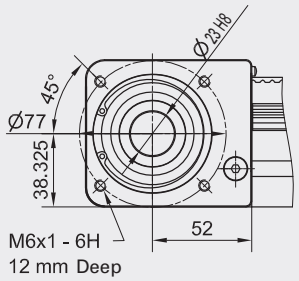


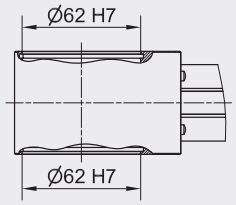


DIMENSIONS

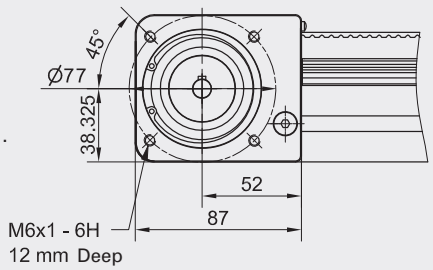


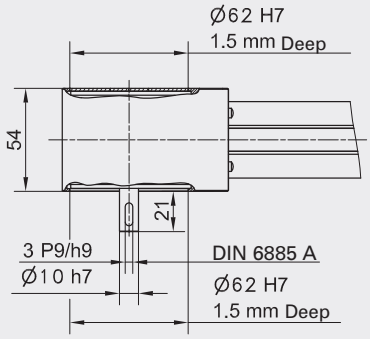
TYPE 0



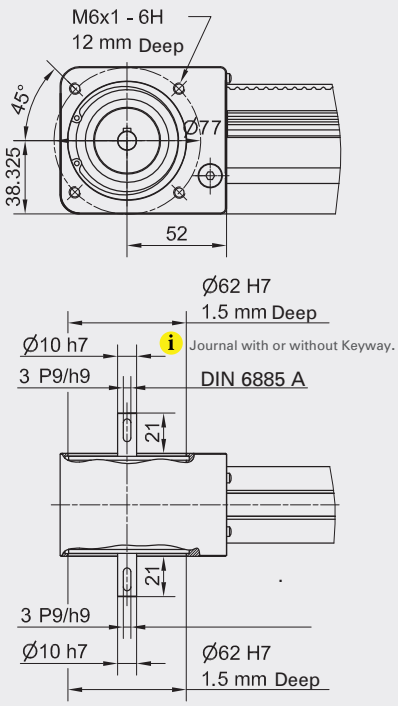


TYPE 1 L and 1 R

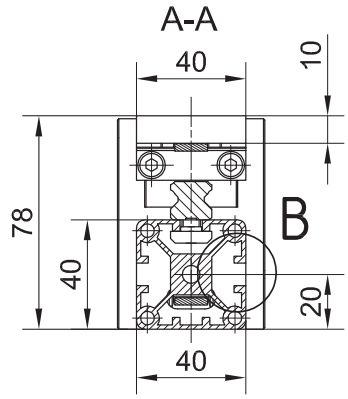


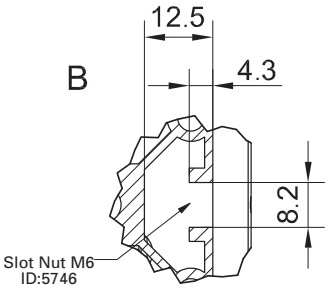


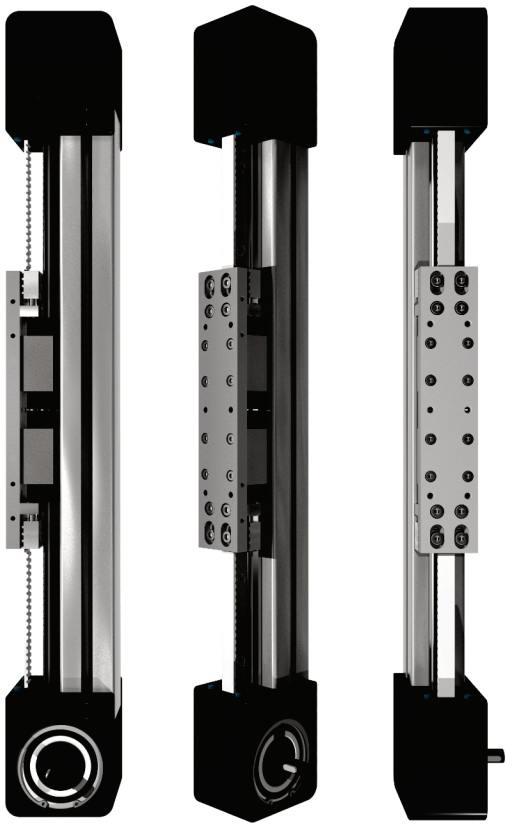
TYPE 2



DIMENSIONS







All dimensions in mm;
Drawings scales are not equal.

Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 15 mm

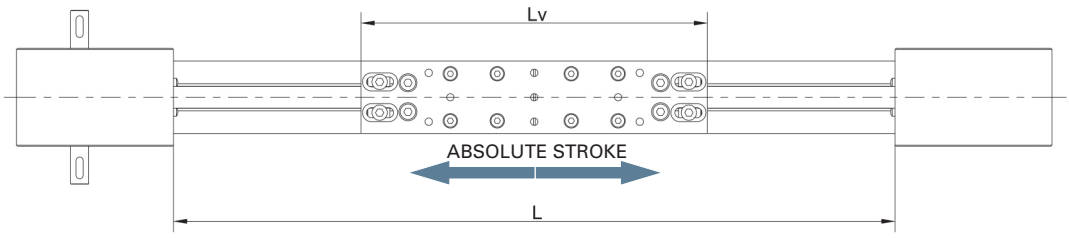
Ltotal = L + 174 mm

Lv - Long carriage = 200 mm

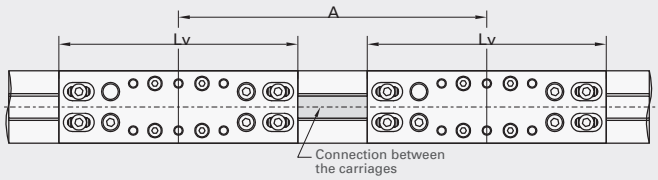
Lv - Short carriage = 132 mm

Left side (L)

Right side (R)



Multiple Carriages



L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 15 mm

Ltotal = L + 174 mm

} A ≥ Lv !

nc - Number of carriages

For the case of A [mm] ≥ Alim : !

- a toothed belt for the connection of the carriages will be used,

- the following condition must be met:
A [mm] = Alim + 5 × i,
where i Î {1,2,3,...}.

	BR-E 40 S	BR-E 40 L
Alim [mm]	132	200

CHARACTERISTICS

The BR-Z 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 BR-Z 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.

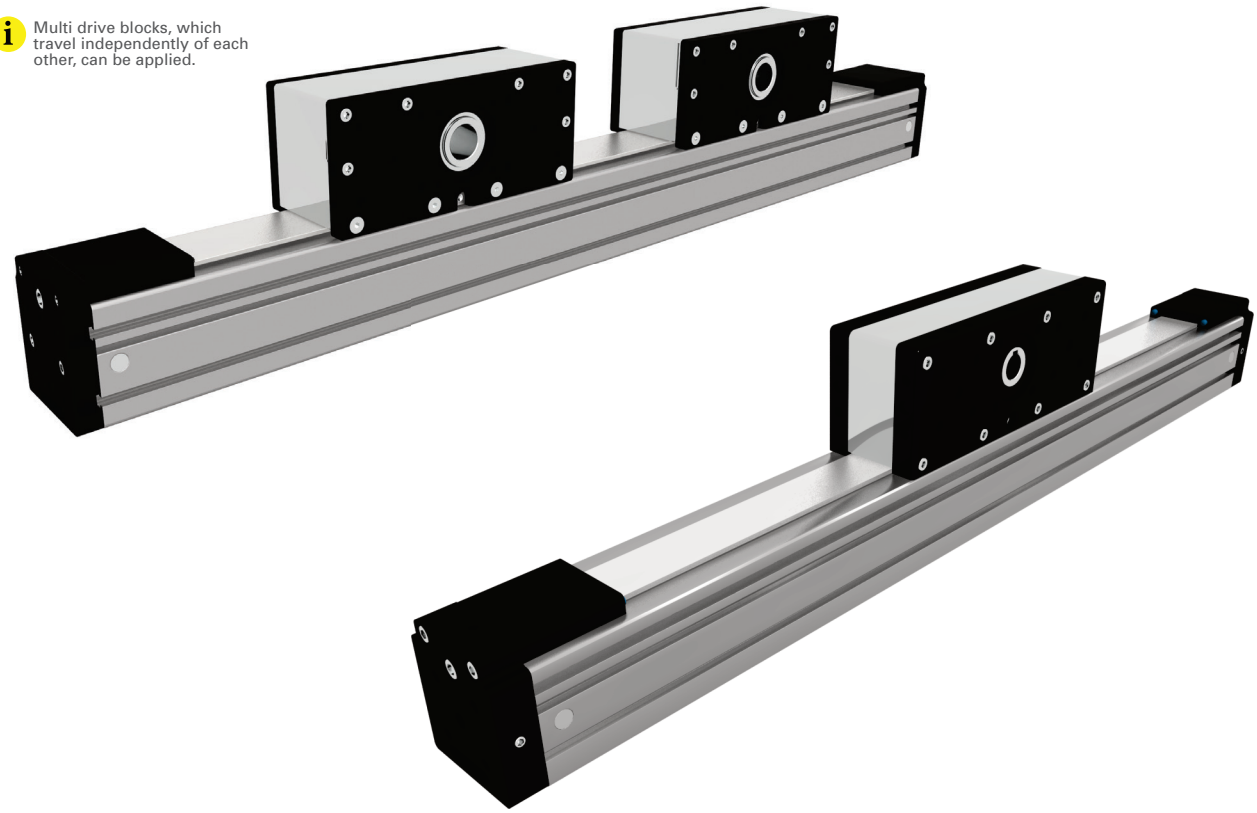
The aluminum Profile includes T-slots for attaching sensors and switches. Also, a Reed switch can be used here.

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.

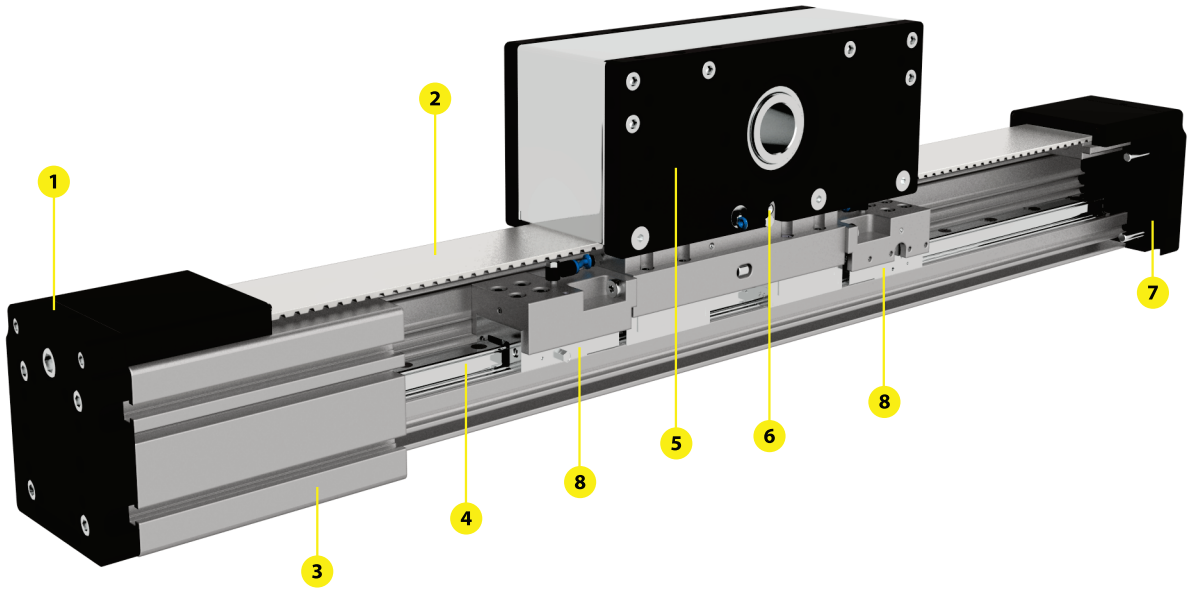
For the linear units BR-Z various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.

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



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

HOW TO ORDER

BR | 0110 | Z - 3000 - 20 | 1 - 1 | 0

Series Prefix:
BR

Size:
0040: 40
0065: 65
0080: 80
0110: 110

Series Suffix:
Z

Absolute stroke [mm]:
(Absolute stroke = Effective stroke + 2 x Safety stroke)

Type of Drive Pulley:
00: Pulley with through hole
01: Pulley with journal
02: Pulley with journal on both sides
10: Pulley with journal (without keyway)
20: Pulley with journal on both sides (without keyway)
Note: BR0110Z only available with option 00

Number of Drive Blocks:
The stated number specifies the number of drive blocks on one Linear Unit

Clamping Element:
0: Without
1: With (available only for BR0110Z)

Version:
S: Special version
1: Standard single carriage
2: Dual carriage

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Mass of drive block [kg]	Maximum Repeatability [mm]	[2] Max. length [3] (Version 1) Lmax [mm]	[2] Max. length [3] (Version 2) Lmax [mm]	[2] Max. Stroke [3] (Ver. 1) [mm]	[3](Ver. 2) [mm]	[1] Min. Stroke [mm]
BR-Z 40	120	4610	28	120	120	0.95	±0.08	1000	3000	792	2792	25

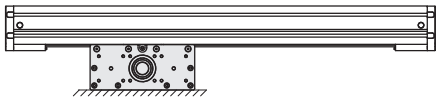
[1] For minimum stroke below the stated value in the table above please contact us.

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

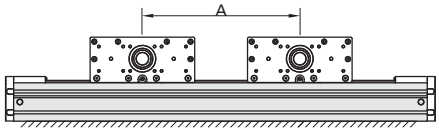
Linear Unit	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-Z 40	2320	1510	14	40	62

[3] Mounting versions

Version 1: Mounting by the drive block, profile travels



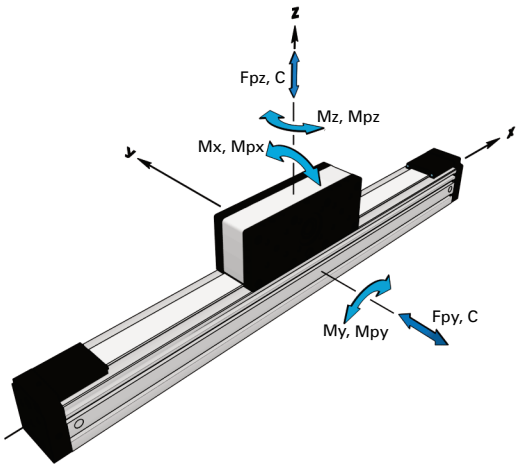
Version 2: Mounting by the profile, drive blocks travel



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

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

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



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 N / mm^2

Drive and belt data

Linear Unit	* Max. travel speed [m / s]	Max. drive torque [Nm]	No load torque of drive block [Nm]	Puley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmited by belt [N]	Specific spring constant Cspec [N]	* Max. acceleration [m/s^2]
BR-Z 40	5	3.6	0,2	99	31.51	AT3	20	230	225000	70

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

Mass and planar moment of inertia

Linear Unit	* Mass of linear unit [kg]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-Z 40	1.7 + 0,0023 × (Abs. stroke + (nb - 1) × A) + 0.95 × (nb - 1)	9.8	11.6

*Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

TECHNICAL DATA

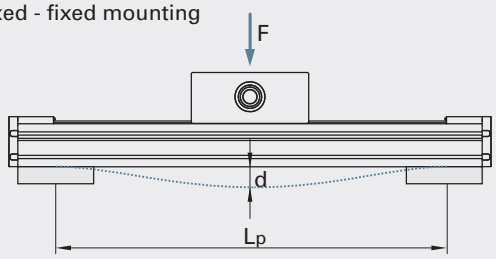
Mass moment of inertia

Linear Unit	* Mass moment of inertia (Version 1) [10^{-4} kg m^2]	Mass moment of inertia of drive block (Version 2) [10^{-4} kg m^2]
BR-Z 40	2.1 + 0.0058 × (Abs. stroke + (nb - 1) × A) + 0.22 × (nb - 1)	2.6

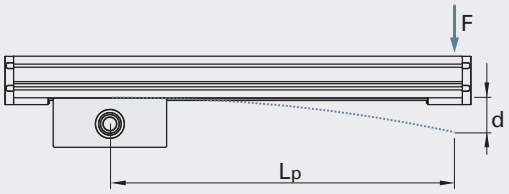
* Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

Deflection of the linear unit

Fixed - fixed mounting



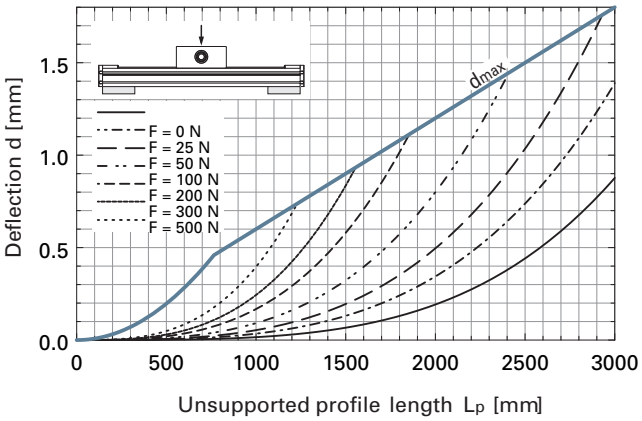
Fixed - free mounting

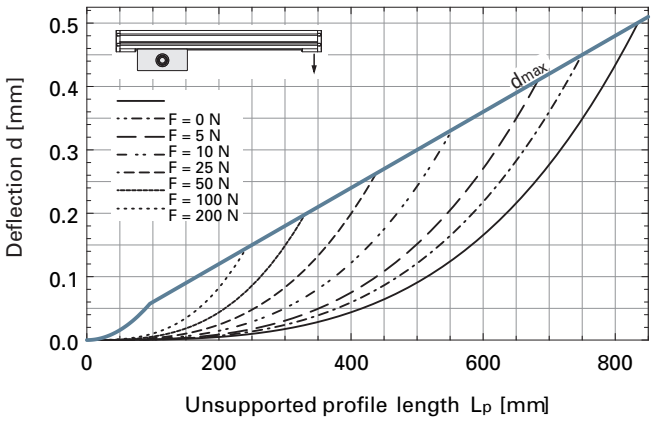


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

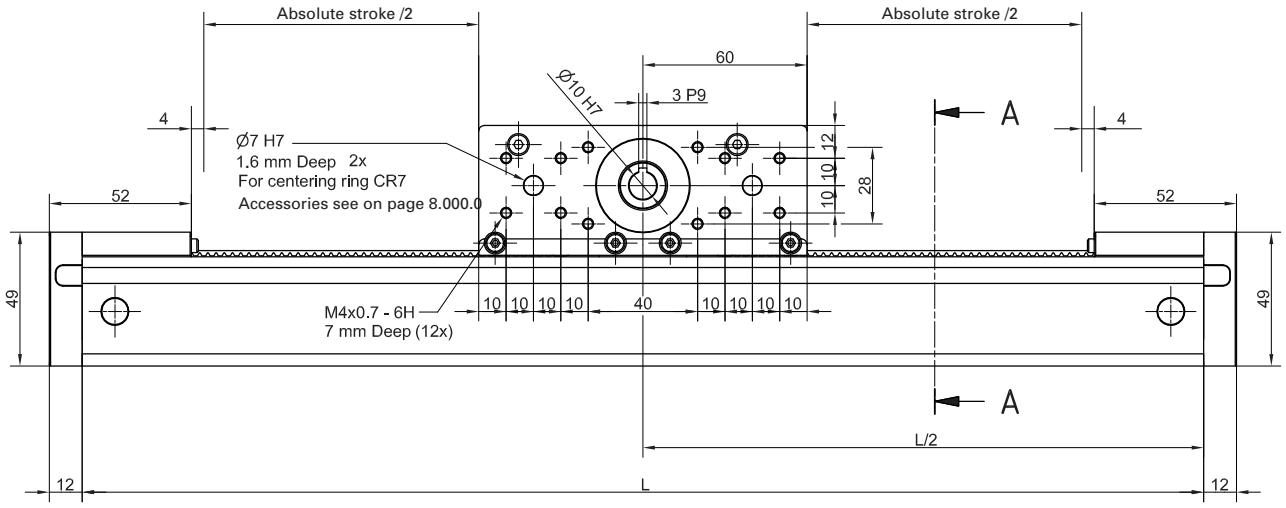
BR-Z 40

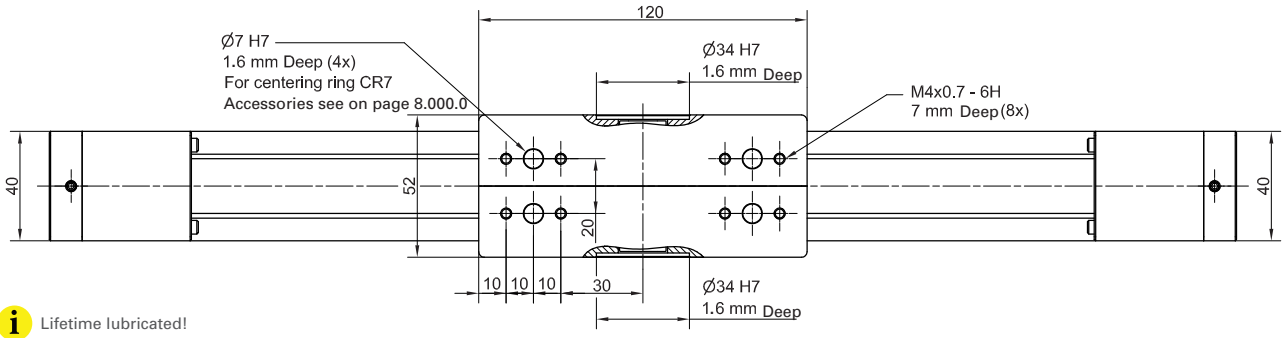




DIMENSIONS

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

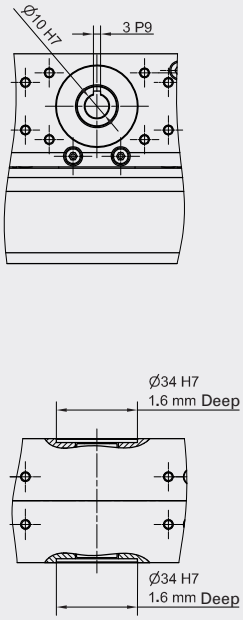




Lifetime lubricated!

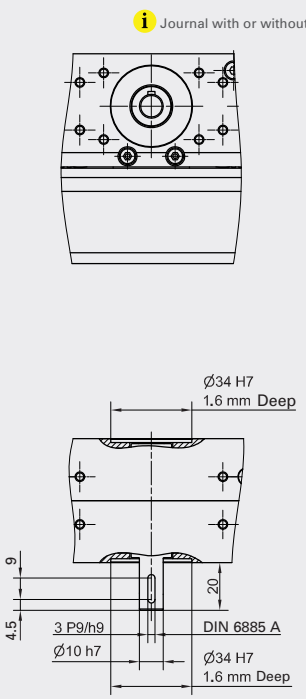
All dimensions in mm; Drawings scales are not equal.

TYPE 0



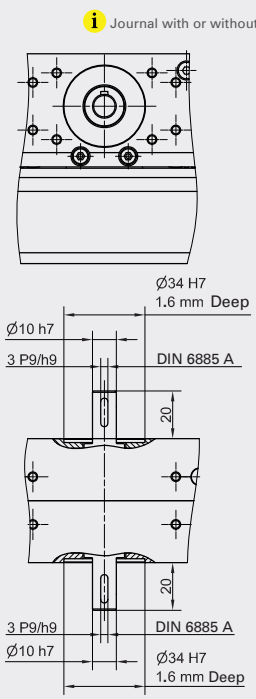
TYPE 1

Journal with or without Keyway.

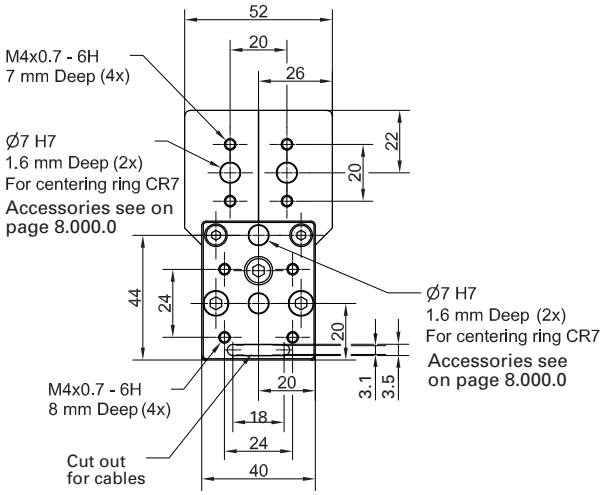


TYPE 2

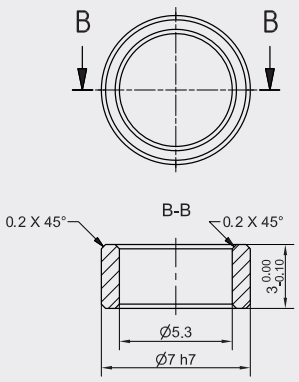
Journal with or without Keyway.

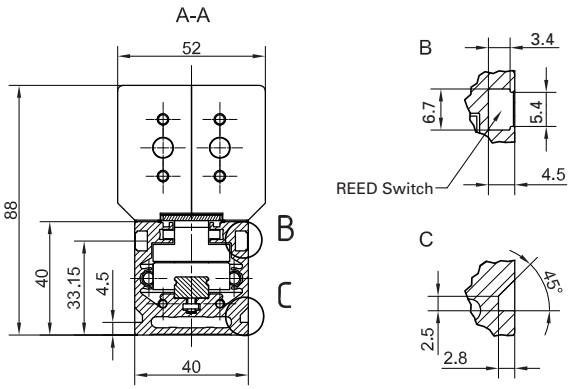


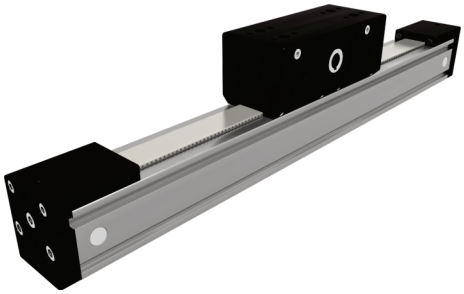
DIMENSIONS



CENTERING RING CR7
Material: 1.4305 (AISI303)





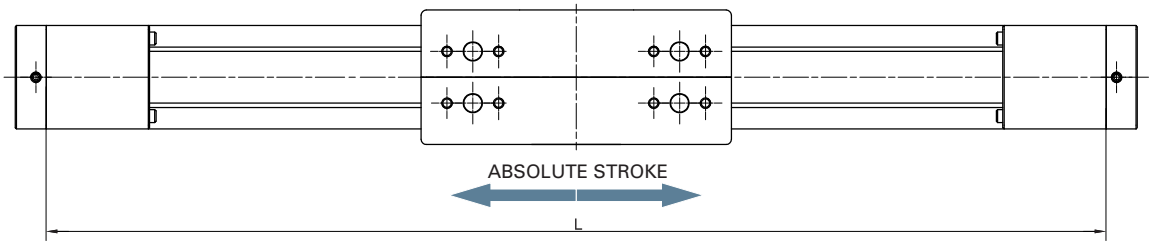


All dimensions in mm; Drawings scales are not equal.

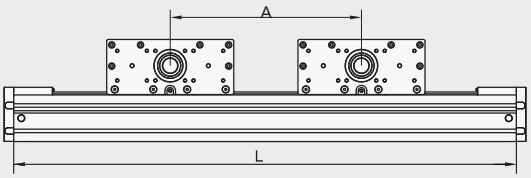
Defining of the linear unit length

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

Ltotal = L + 24 mm



Multiple drive blocks



L = Effective stroke + 2 × Safety stroke + A × (nb - 1) + 208 mm

Ltotal = L + 24 mm

} A ≥ 120 mm

nb - Number of drive blocks

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Mass of drive block [kg]	Maximum Repeatability [mm]	[2] Max. length [3] (Version 1) Lmax [mm]	[2] Max. length [3] (Version 2) Lmax [mm]	[2] Max. Stroke [3] (Ver. 1) [mm]	[3](Ver. 2) [mm]	[1] Min. Stroke [mm]
BR-Z 65	200	19800	158	1025	1025	3.2	±0.08	1200	6000	880	5680	40

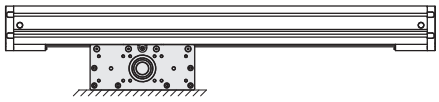
[1] For minimum stroke below the stated value in the table above please contact us.

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

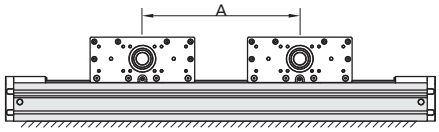
Linear Unit	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-Z 65	6540	5870	60	305	340

[3] Mounting versions

Version 1: Mounting by the drive block, profile travels



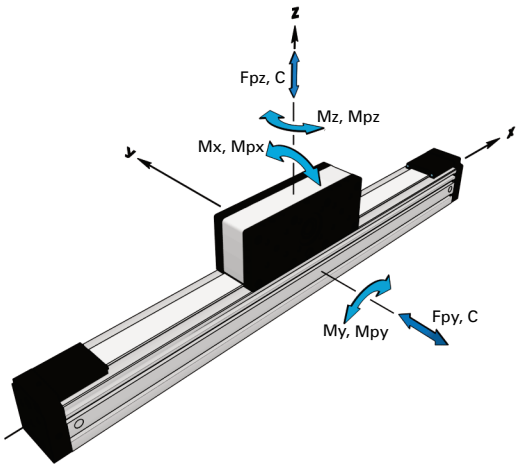
Version 2: Mounting by the profile, drive blocks travel



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

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

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



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 N / mm^2

Drive and belt data

Linear Unit	* Max. travel speed [m / s]	Max. drive torque [Nm]	No load torque of drive block [Nm]	Puley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmited by belt [N]	Specific spring constant Cspec [N]	* Max. acceleration [m/s^2]
BR-Z 65	5	13.1	0.9	165	52.52	AT5	32	500	600000	70

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

Mass and planar moment of inertia

Linear Unit	* Mass of linear unit [kg]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-Z 65	5.7 + 0.0054 × (Abs. stroke + (nb - 1) × A) + 3.2 × (nb - 1)	59.7	74.4

* Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

TECHNICAL DATA

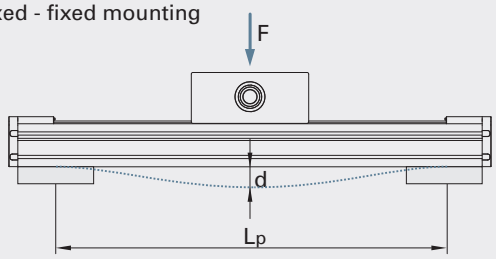
Mass moment of inertia

Linear Unit	* Mass moment of inertia (Version 1) [10^{-4} kg m^2]	Mass moment of inertia of drive block (Version 2) [10^{-4} kg m^2]
BR-Z 65	18.9 + 0.0374 × (Abs. stroke + (nb - 1) × A) + 1.7 × (nb - 1)	23.8

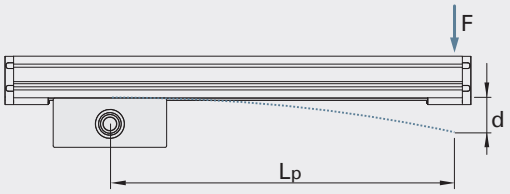
*Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

Deflection of the linear unit

Fixed - fixed mounting



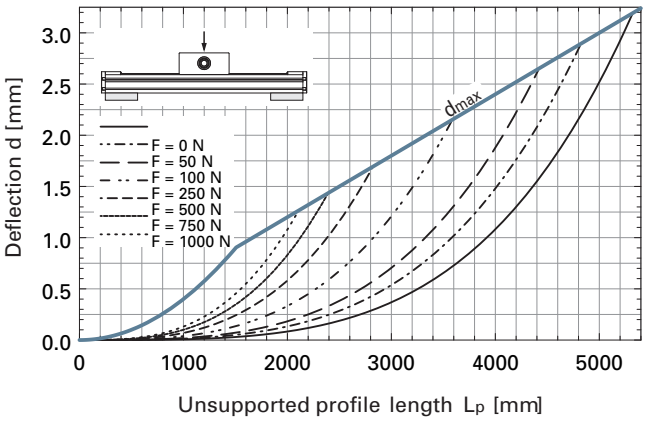
Fixed - free mounting

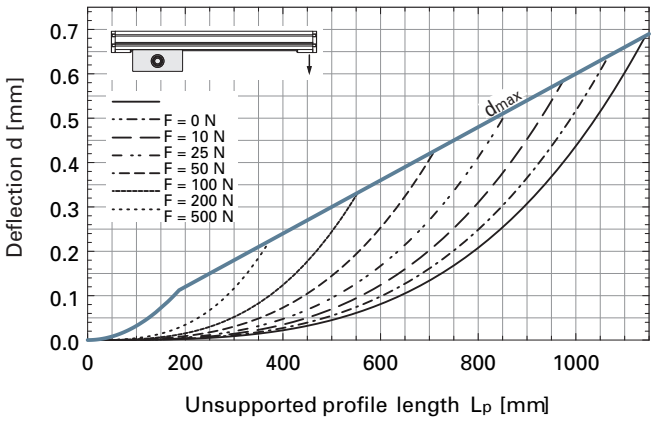


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

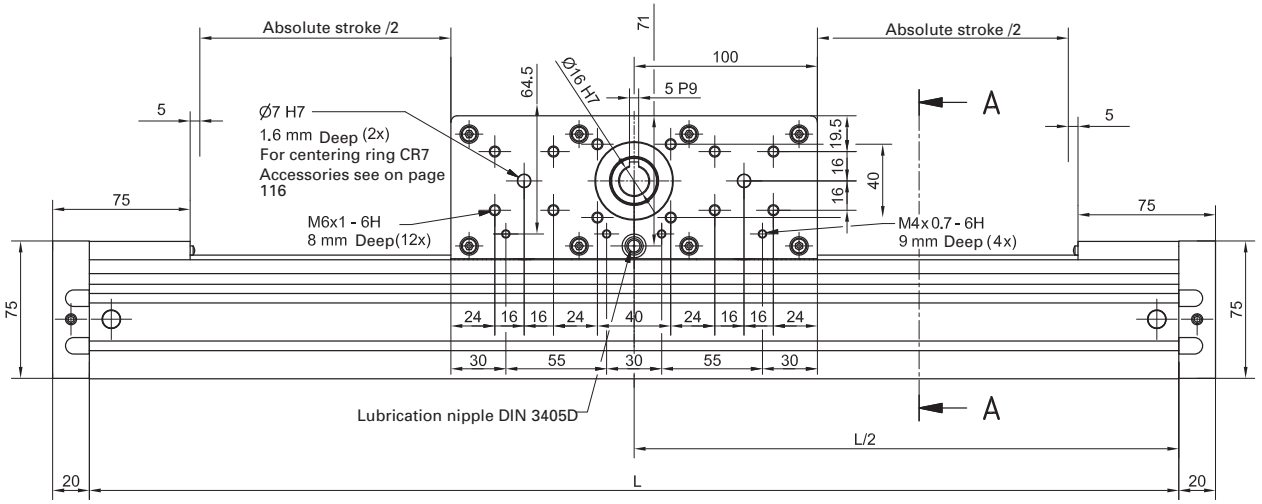
BR-Z 65

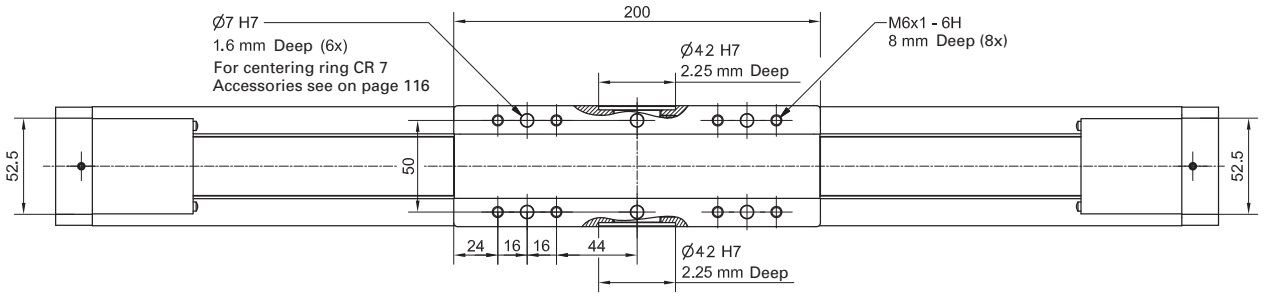




DIMENSIONS

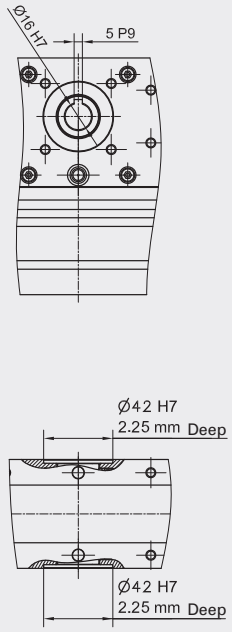
Linear Unit doesn't include any safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke





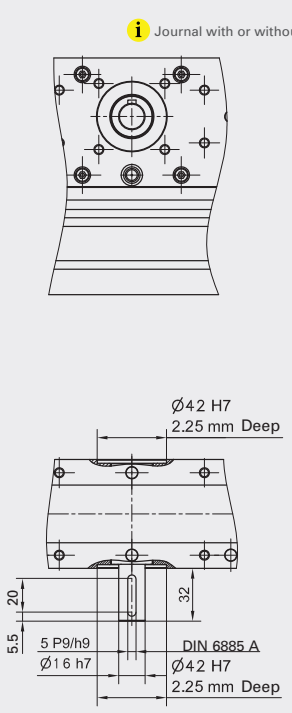
All dimensions in mm; Drawings scales are not equal.

TYPE 0



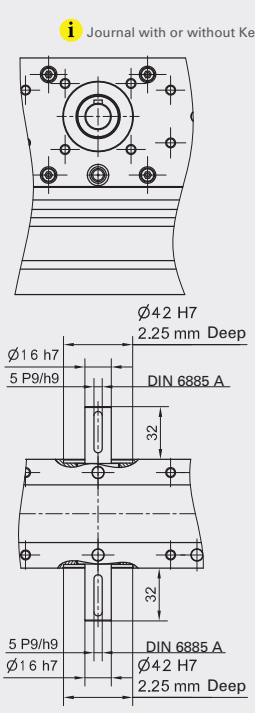
TYPE 1

Journal with or without Keyway.

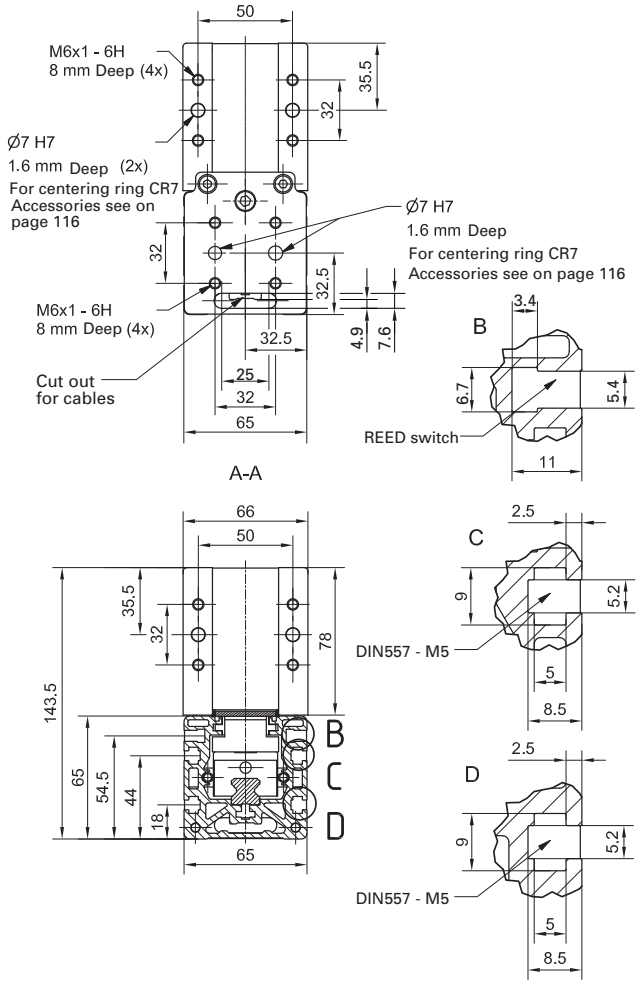


TYPE 2

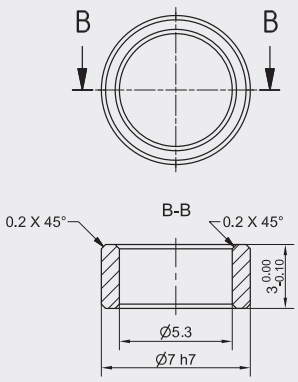
Journal with or without Keyway.

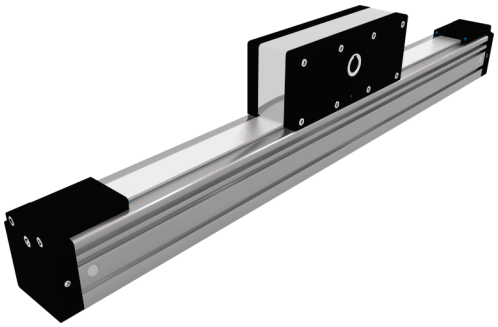


DIMENSIONS



CENTERING RING CR7
Material: 1.4305 (AISI303)



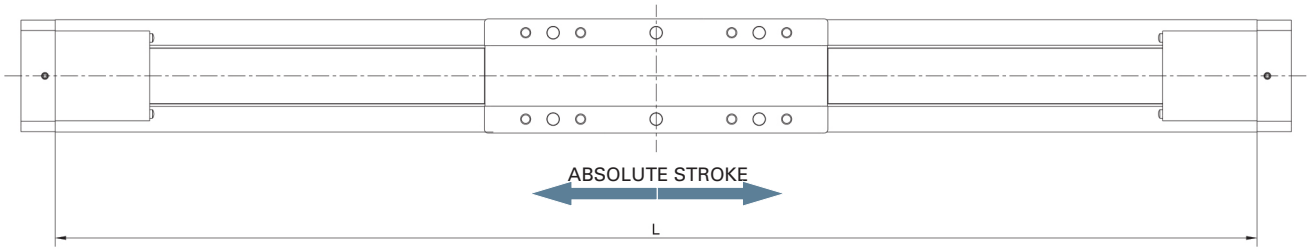


All dimensions in mm; Drawings scales are not equal.

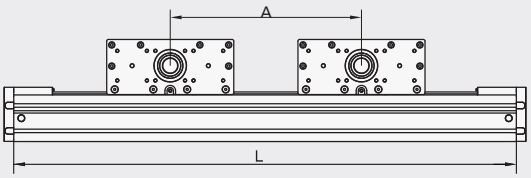
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + 320 mm

Ltotal = L + 40 mm



Multiple drive blocks



L = Effective stroke + 2 × Safety stroke + A × (nb - 1) + 320 mm

Ltotal = L + 40 mm

} A ≥ 200 mm !

nb - Number of drive blocks

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Mass of drive block [kg]	Maximum Repeatability [mm]	[2] Max. length [3] (Version 1) Lmax [mm]	[2] Max. length [3] (Version 2) Lmax [mm]	[2] Max. Stroke [3] (Ver. 1) [mm]	[3](Ver. 2) [mm]	[1] Min. Stroke [mm]
BR-Z 80	250	34200	370	2565	2565	4.9	±0.08	1500	6000	1118	5618	55

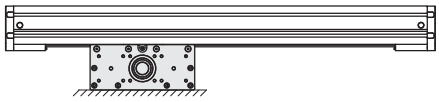
[1] For minimum stroke below the stated value in the table above please contact us.

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

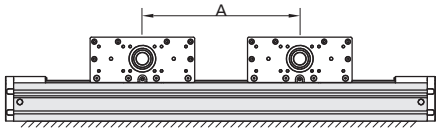
Linear Unit	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-Z 80	8930	7130	150	535	670

[3] Mounting versions

Version 1: Mounting by the drive block, profile travels



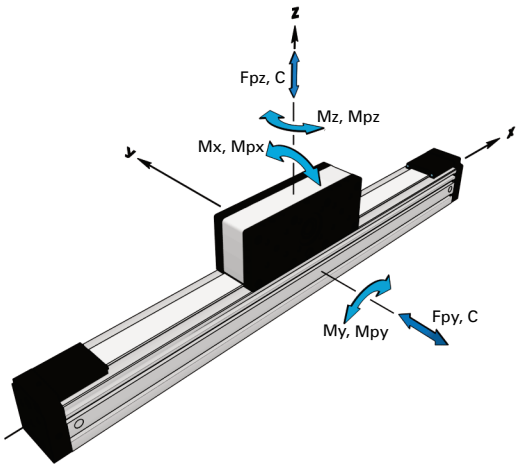
Version 2: Mounting by the profile, drive blocks travel



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

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

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



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 N / mm^2

Drive and belt data

Linear Unit	* Max. travel speed [m / s]	Max. drive torque [Nm]	No load torque of drive block [Nm]	Puley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmited by belt [N]	Specific spring constant Cspec [N]	* Max. acceleration [m/s^2]
BR-Z 80	5	29.4	1.4	210	66.84	AT5	50	880	960000	70

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

Mass and planar moment of inertia

Linear Unit	* Mass of linear unit [kg]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-Z 80	9.7 + 0.0083 × (Abs. stroke + (nb - 1) × A) + 4.9 × (nb - 1)	129.1	173.4

* Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

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

TECHNICAL DATA

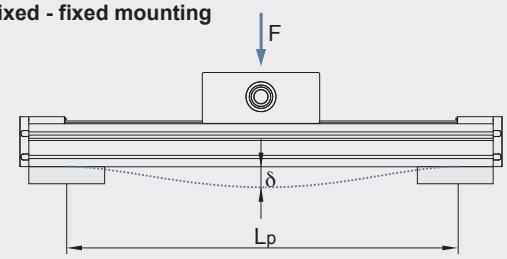
Mass moment of inertia

Linear Unit	* Mass moment of inertia *(Version 1)* [10^{-4} kg m²]	Mass moment of inertia of drive block *(Version 2)* [10^{-4} kg m²]
BR-Z 80	**60.0 + 0.0922 × (Abs. stroke + (nb - 1) × A) + 6.4 × (nb - 1)**	**61.1**

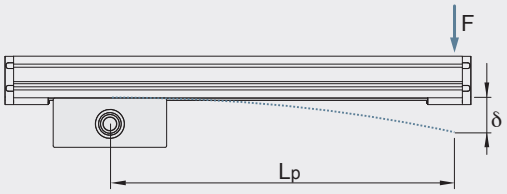
** Absolute stroke [mm]*
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

Deflection of the linear unit

Fixed - fixed mounting



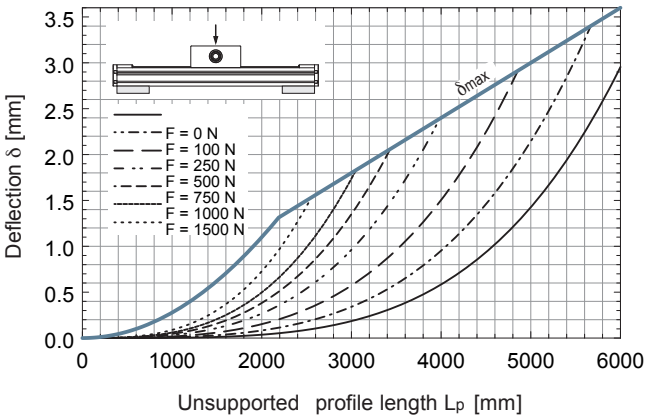
Fixed - free mounting

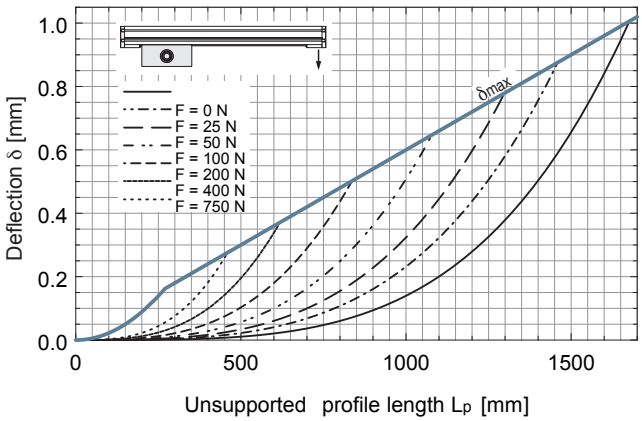


δ Maximum deflection of the linear unit [mm]
δmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection δmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

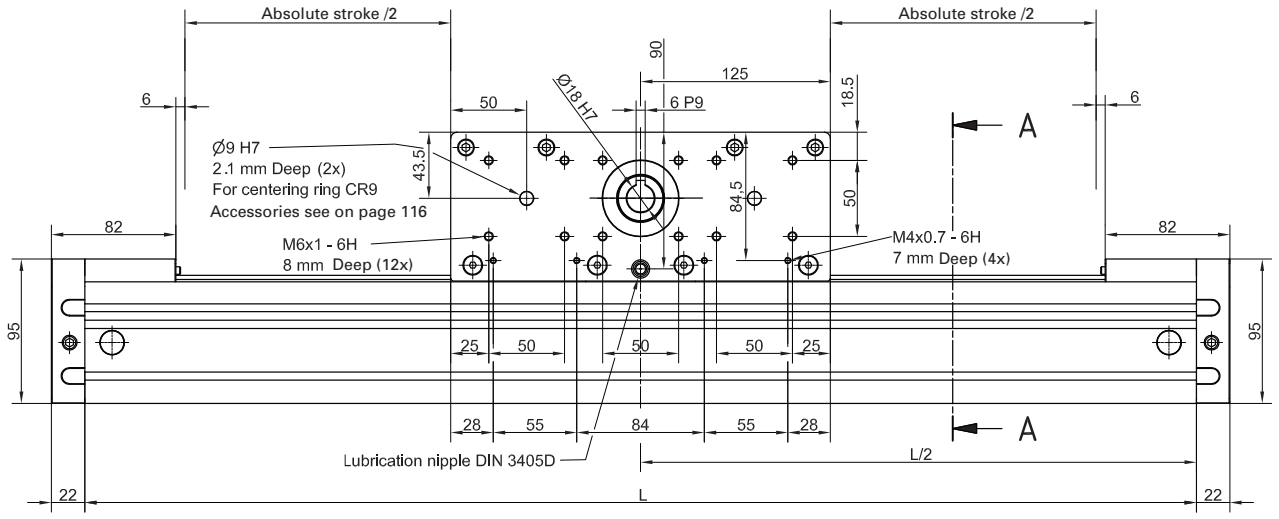
BR-Z 80

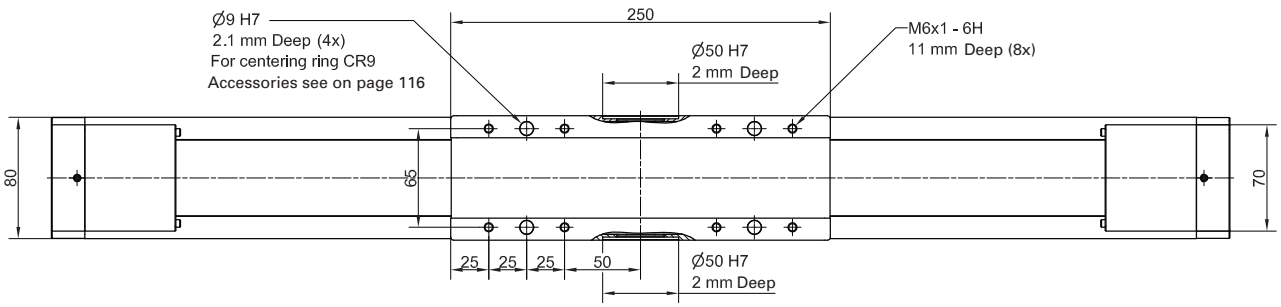




DIMENSIONS

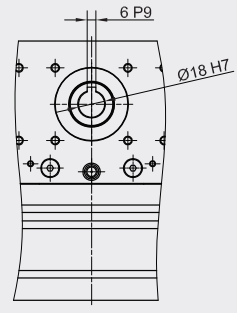
Linear Unit doesn't include any safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke

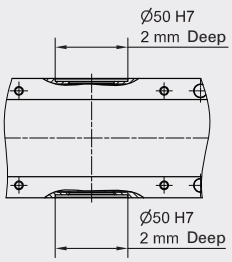




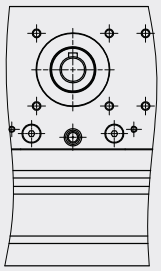
All dimensions in mm; Drawings scales are not equal.

TYPE 0

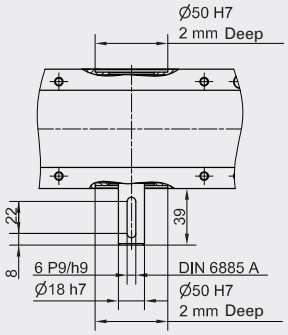




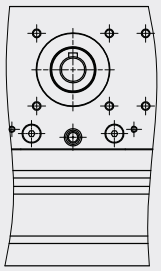
TYPE 1



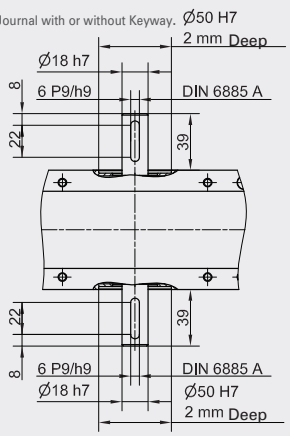
Journal with or without Keyway.



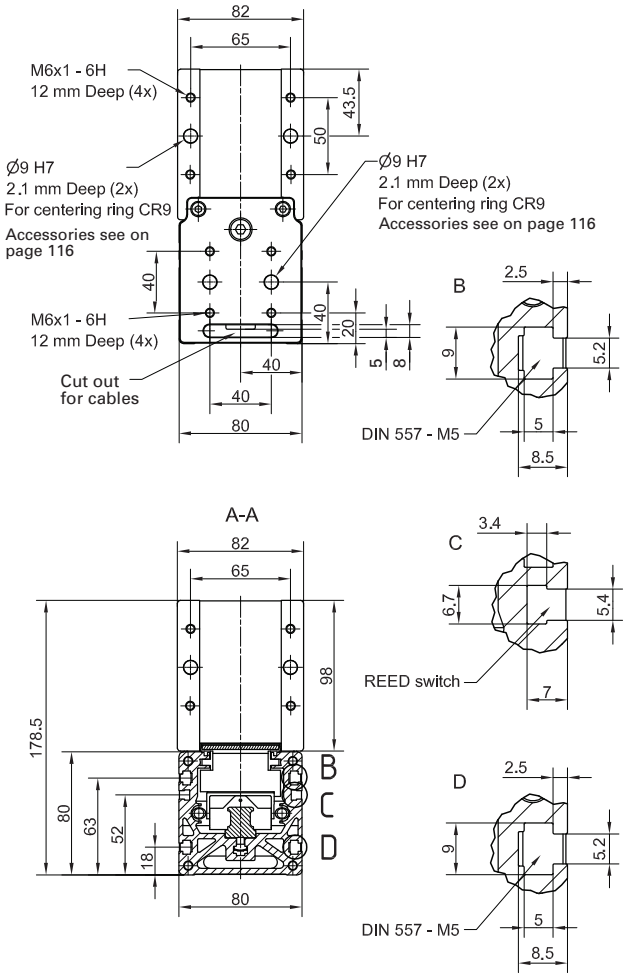
TYPE 2

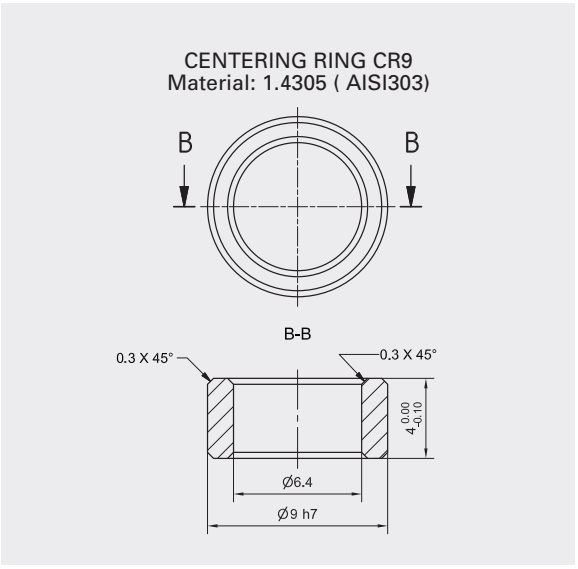


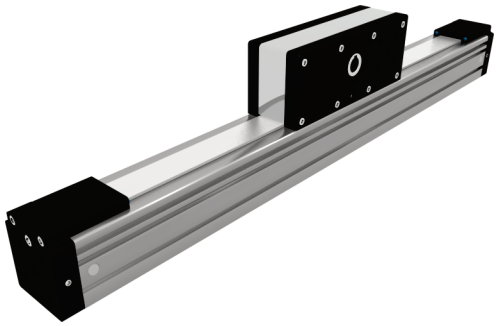
Journal with or without Keyway.



DIMENSIONS





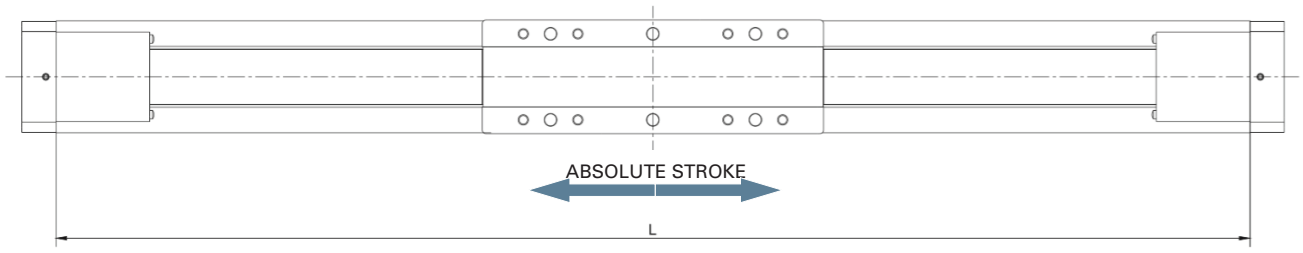


All dimensions in mm; Drawings scales are not equal.

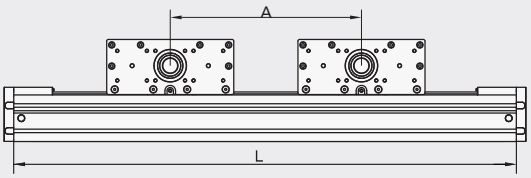
Defining of the linear unit length

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

Ltotal = L + 44 mm



Multiple drive blocks



L = Effective stroke + 2 × Safety stroke + A × (nb - 1) + 382 mm

Ltotal = L + 44 mm

} A ≥ 250 mm !

nb - Number of drive blocks

TECHNICAL DATA

General technical data

Linear Unit	Drive block length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Mass of drive block [kg]	Maximum Repeatability [mm]	[2] Max. length [3] (Version 1) Lmax [mm]	[2] Max. length [3] (Version 2) Lmax [mm]	[2] Max. Stroke [3] (Ver. 1) [mm]	[3](Ver. 2) [mm]	[1] Min. Stroke [mm]
BR-Z 110	300	49600	630	3470	3470	11.3	±0.08	1800	6000	1304	5504	65

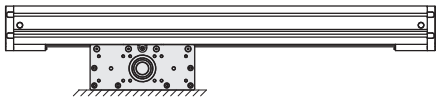
[1] For minimum stroke below the stated value in the table above please contact us.

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

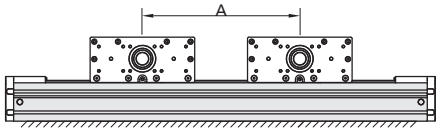
Linear Unit	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-Z 110	10000	14290	260	1000	700

[3] Mounting versions

Version 1: Mounting by the drive block, profile travels



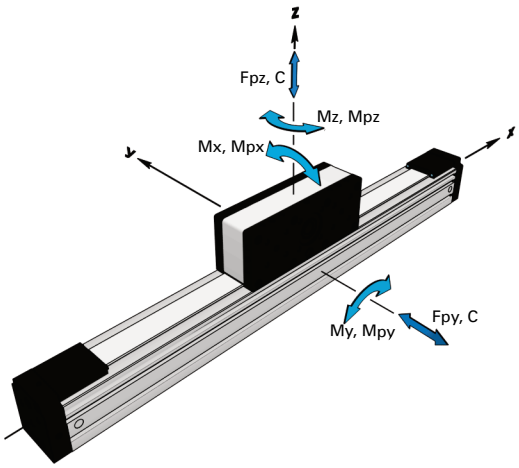
Version 2: Mounting by the profile, drive blocks travel



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

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

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



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 N / mm^2

Drive and belt data

Linear Unit	* Max. travel speed [m / s]	Max. drive torque [Nm]	No load torque of drive block [Nm]	Puley drive ratio [mm / rev]	Pulley diameter [mm]	Belt type	Belt width [mm]	Max. force transmited by belt [N]	Specific spring constant Cspec [N]	* Max. acceleration [m/s^2]
BR-Z 110	5	110.0	2.6	300	95.49	AT10	70	2300	2450000	70

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

Mass and planar moment of inertia

Linear Unit	* Mass of linear unit [kg]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
BR-Z 110	21.7 + 0.0147 × (Abs. stroke + (nb - 1) × A) + 11.3 × (nb - 1)	513.0	620.0

* Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

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

TECHNICAL DATA

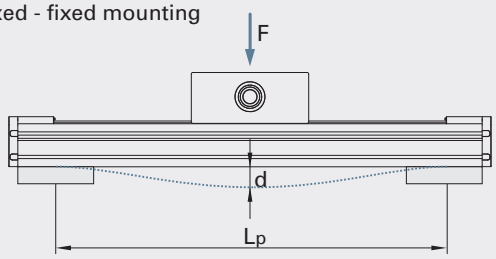
Mass moment of inertia

Linear Unit	* Mass moment of inertia (Version 1) [10^{-4} kg m^2]	Mass moment of inertia of drive block (Version 2) [10^{-4} kg m^2]
BR-Z 110	282.4 + 0.3358 × (Abs. stroke + (nb - 1) × A) + 45,3 × (nb - 1)	302.9

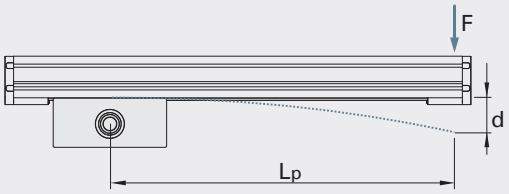
* Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

Deflection of the linear unit

Fixed - fixed mounting



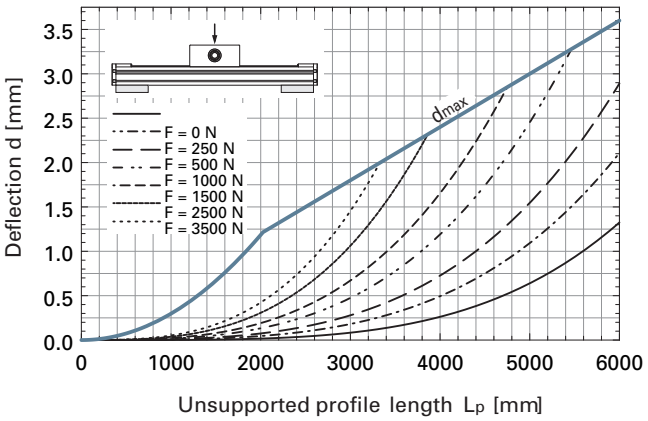
Fixed - free mounting

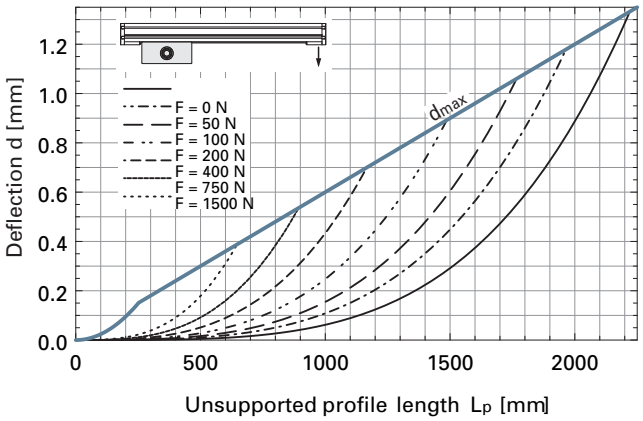


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

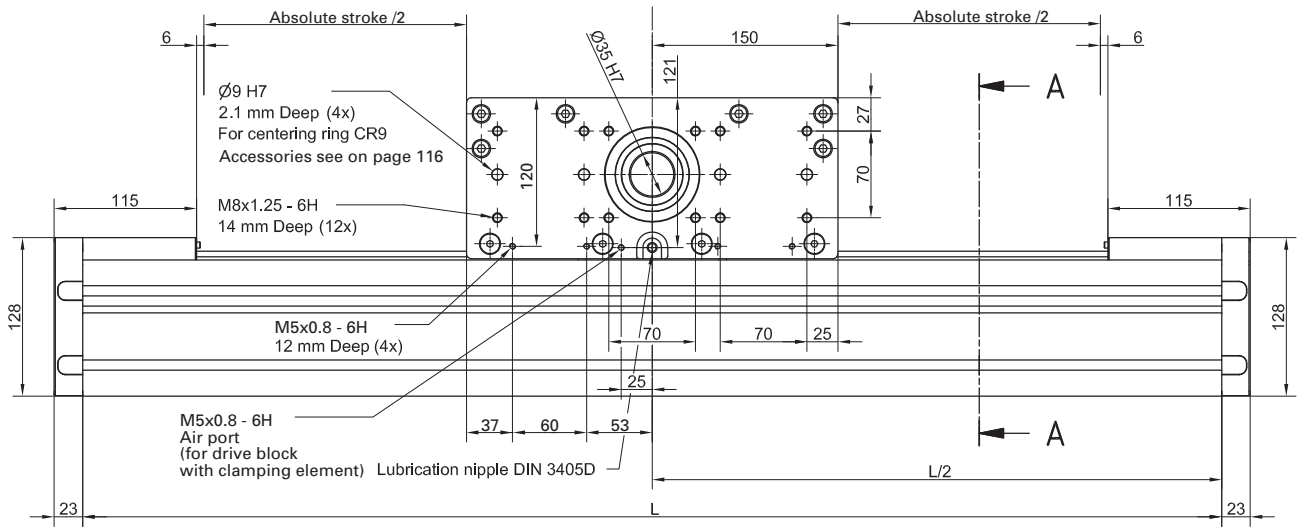
BR-Z 110

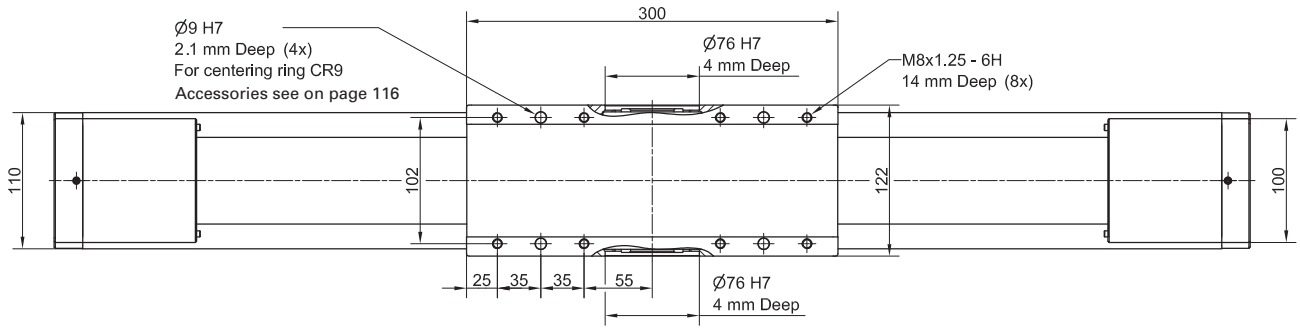




DIMENSIONS

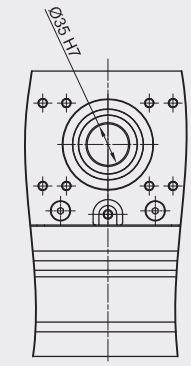
Linear Unit doesn't include any safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke

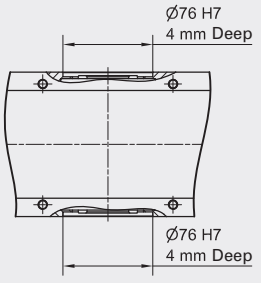




All dimensions in mm; Drawings scales are not equal.

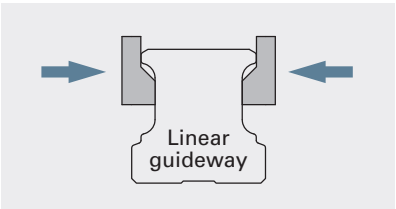
TYPE 0





Drive block with clamping element

Clamping by spring-loaded energy

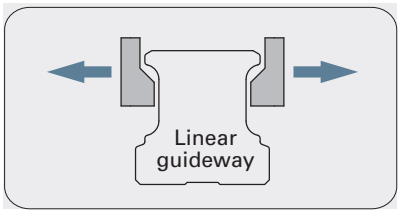


Air pressure = 0 bar

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

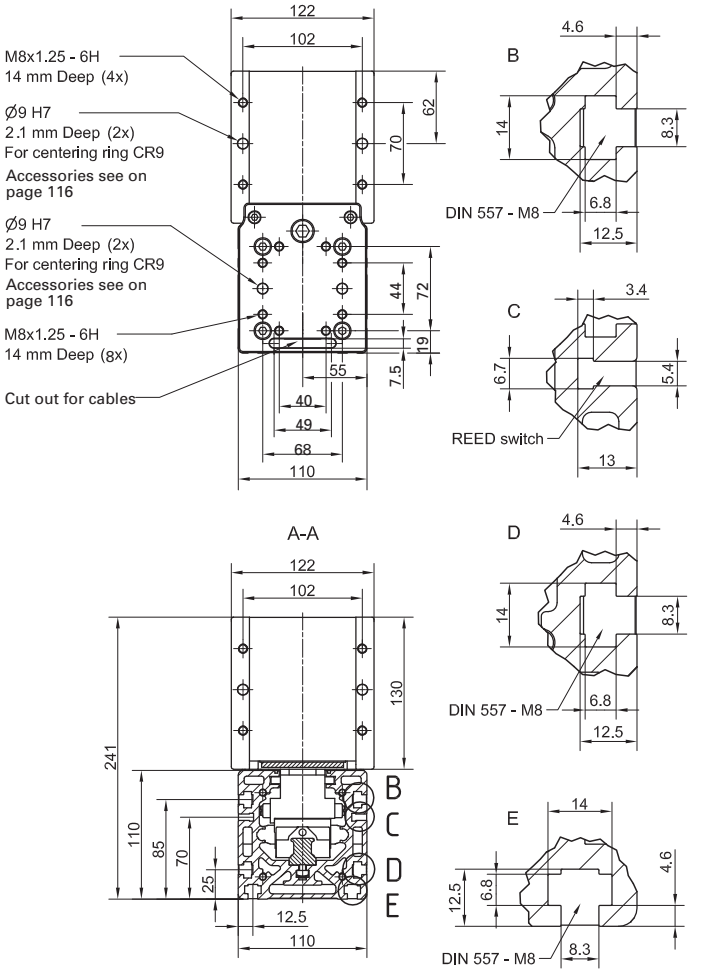
The air pressure opens clamping pistons. Free movement is allowed.

Purified and oiled air shall be used (according to ISO 8573-1 Class 4). Recommended filter size is 25 µm.

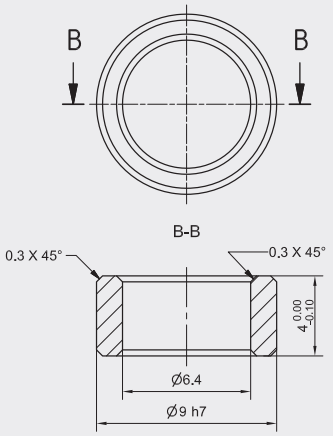
Linear Unit	Mass of drive block [kg]	* Mass of linear unit [kg]
BR-Z 110	12.9	23.3 + 0.0147 × (Abs. stroke + (nb - 1) × A) + 12.9 × (nb - 1)

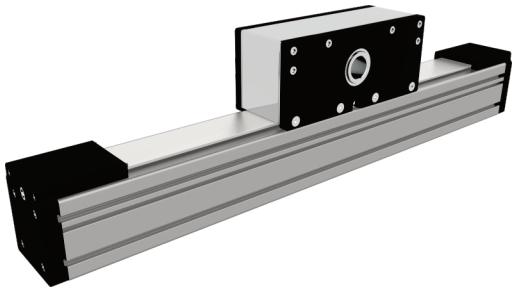
* Absolute stroke [mm]
A - Distance between two drive blocks [mm]
nb - Number of drive blocks

DIMENSIONS



CENTERING RING CR9
Material: 1.4305 (AISI303)



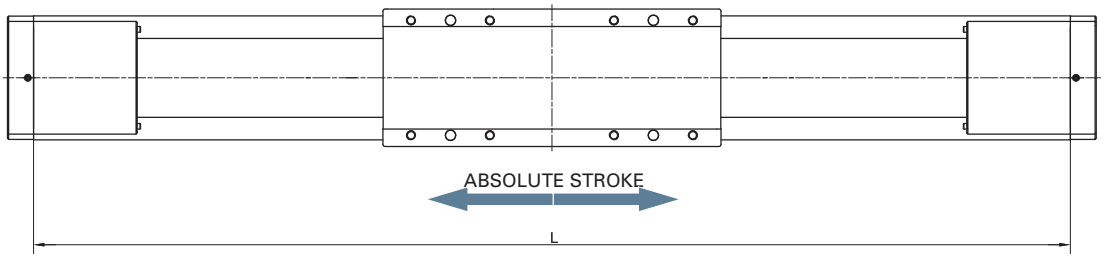


All dimensions in mm; Drawings scales are not equal.

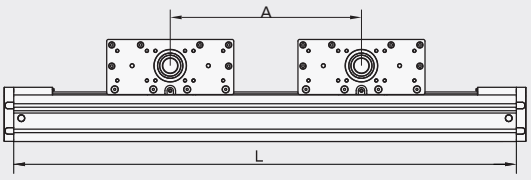
Defining of the linear unit length

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

Ltotal = L + 46 mm



Multiple drive blocks



L = Effective stroke + 2 × Safety stroke + A × (nb - 1) + 496 mm

Ltotal = L + 46 mm

*A ≥ 300 mm
*A ≥ 410 mm

In case of using the drive blocks with clamping element

nb - Number of drive blocks

CHARACTERISTICS

The BR-D series includes Linear Units with a toothed belt drive and two parallel, integrated, Zero-backlash rail guides. Compact dimensions allow high performance features such as, high speed and repeatability.

They can easily be combined to multi-axis systems.

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

A compact , precision-extruded aluminum Profile from AL 6063, with two parallel, integrated Zero-backlash rail guide systems, allows high load capacities and an optimal sequence for the movement of larger masses at high speed.

In the linear units BR-D is used a pre-tensioned steel reinforced AT polyurethane timing toothed belt.

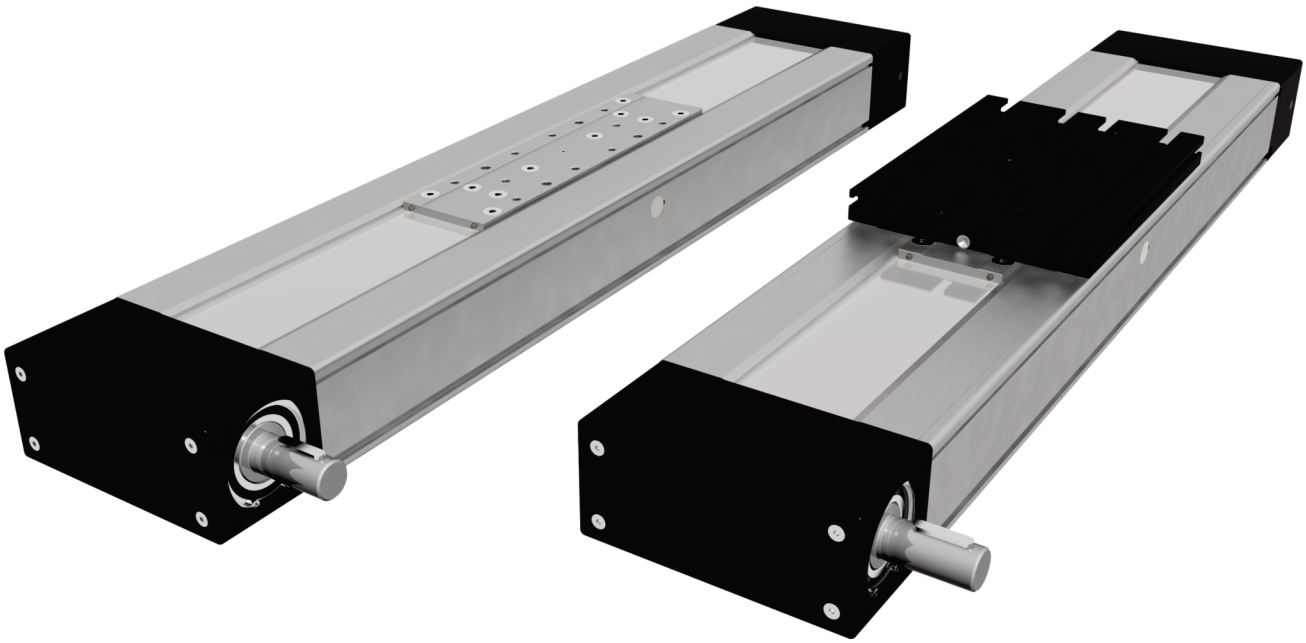
In conjunction with a Zero-backlash drive pulley high moments with alternating loads with good positioning accuracy, low wear and low noise can be realized.

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

Different carriage lengths with lubrication port allows for easy re-lubrication of the Ball rail guide system and allows the possibility to attach additional accessories. The re-lubrication can also be done through maintenance holes on the side of the Profile.

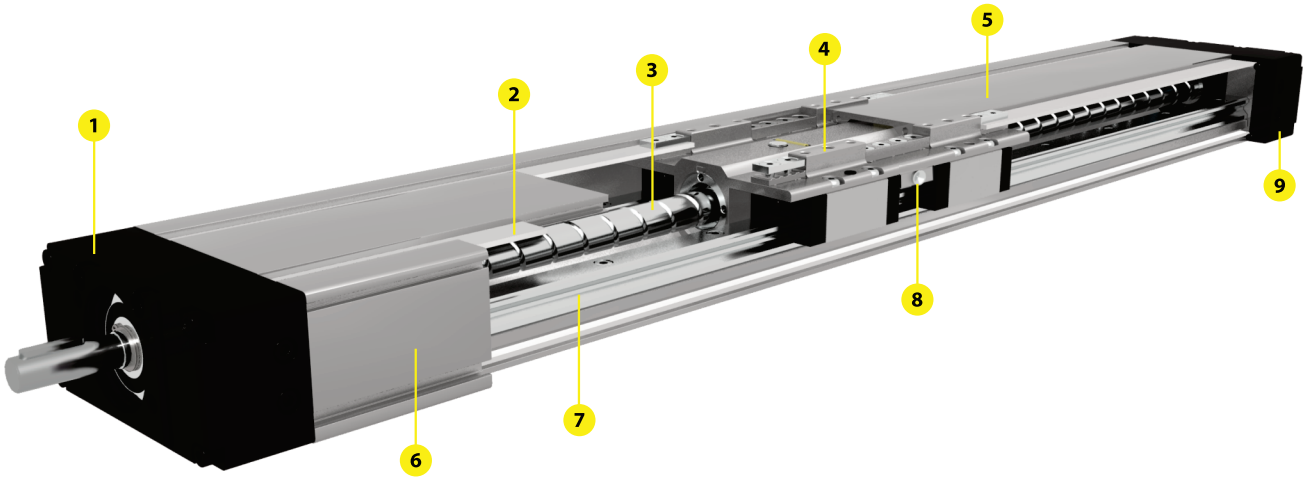
The aluminum profile includes T-slots for fixing the Linear Unit and for attaching sensors and switches. Also, a Reed switch can be used here.

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



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 - Drive block with floating bearing
2 - Gap-type seal of antistatic PU strip (recirculating)
3 - Ball screw tolerance ISO7 (ISO5 available on request)
4 - Carriage; with built in Magnets
5 - Aluminum cover
6 - Aluminium profile-Hard anodized
7 - Two integrated Linear Ball Guideways
8 - Central lubrication port; both sides
9 - End block with fixed bearing

HOW TO ORDER

BR 0200 D - 6000 - L 20 R - 1 0

Series Prefix:
BR

Size:
0090: 90
0110: 110
0145: 145
0200: 200

Series Suffix:
D

Absolute stroke [mm]:
(Absolute stroke = Effective stroke + 2 x Safety stroke)

Carriage Version:
S: Short
L: Long

Type of Drive Pulley:
01: Pulley with journal
02: Pulley with journal on both sides
03: Without drive unit
10: Pulley with journal (without keyway)
20: Pulley with journal on both sides (without keyway)
Note: For BR0200D with option 01 or 02, the drive position left (L) or right (R) must also be specified - motor/gearbox attachment side.

Drive Journal Position:
L: Journal on left side
R: Journal on right side
X: Both sides or none

Connection Plate:
0: Without
1: With

Version:
S: Special version
1: Standard single carriage
2: Dual carriage

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity	Dynamic moment			Max. permissible loads Forces		Moments			Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
	Lv [mm]	C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-D 90 S	102	4620	125	17	34	2000	4000	110	17	34	0.20	± 0.08	6000	5873	25
BR-D 90 L	156	9240	250	290	290	3990	8270	200	290	125	0.35	± 0.08		5819	25

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
** For minimum stroke below the stated value in the table above please contact us.

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

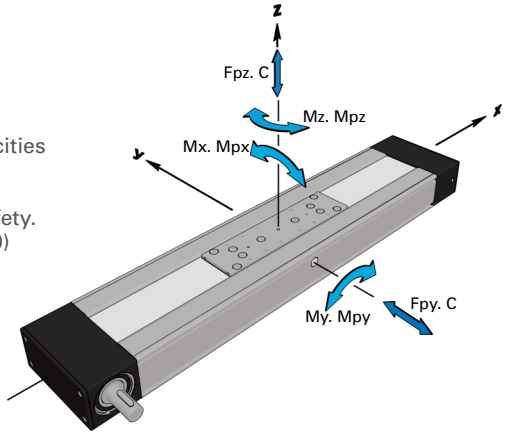
For operating temperature out of the presented range. please contact us.

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

$E = 70000\ N / mm^2$

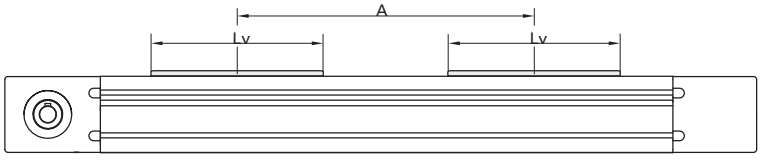


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity	* Dynamic moment			* Max. permissible loads Forces		Moments		
		C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-D 90	S2	9230	250	4.6 × A	4.6 × A	4000	8000	220	4.0 × A	2.0 × A
	L2	18400	500	9.2 × A	9.2 × A	8000	16500	400	8.3 × A	4.0 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.

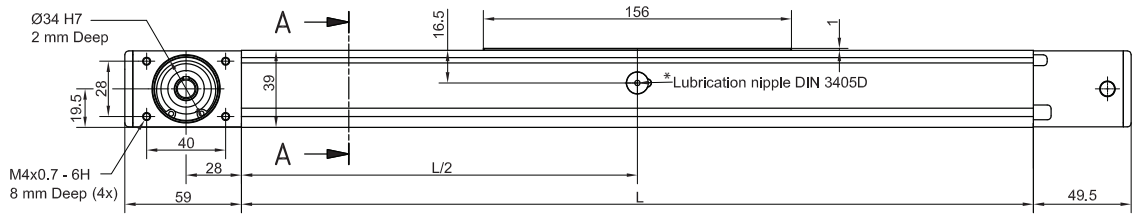


Drive and belt data

Linear Unit	** Max. travel speed	Max. drive torque	* No load torque	Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring constant C_{spec}	** Max. acceleration
	[m / s]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s²]
BR-D 90 S	5	7.5	0.40 × nc	90	28.65	AT 3	35	520	402500	70
BR-D 90 L			0.42 × nc							

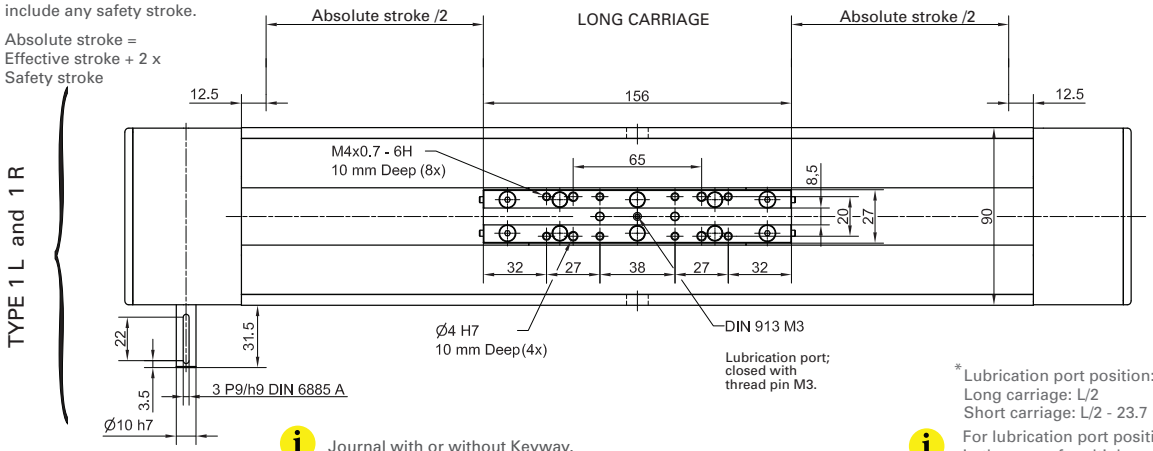
* The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.
nc - Number of carriages
** For travel speed and acceleration over the stated value in the table above please contact us.

DIMENSIONS



Linear Unit doesn't include any safety stroke.

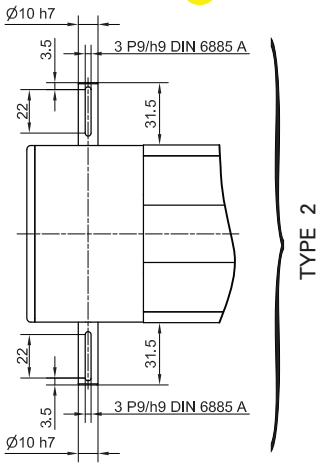
Absolute stroke = Effective stroke + 2 x Safety stroke

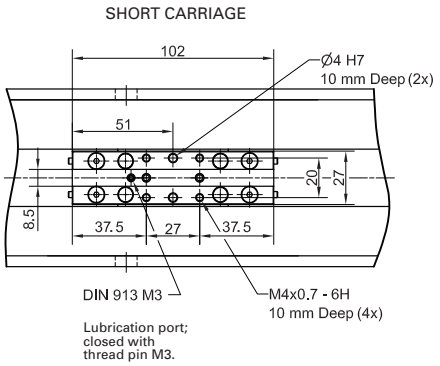


*Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 23.7 mm

For lubrication port positions in the case of multiple carriages please contact us.

Journal with or without Keyway.





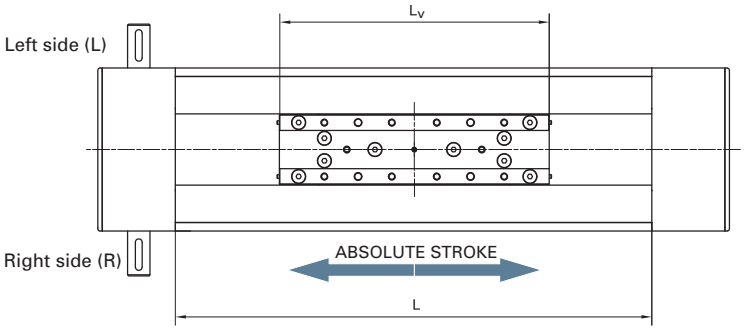
All dimensions in mm; Drawings scales are not equal.

Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 25 mm

Ltotal= L + 108.5 mm

nc - Number of carriages

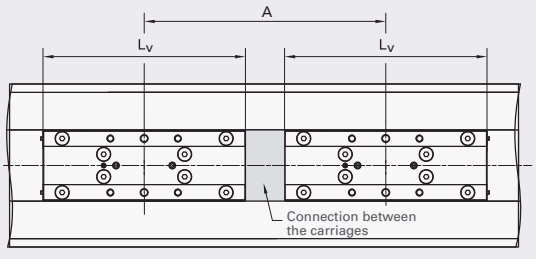


Lv - Long carriage = 156 mm
Lv - Short carriage = 102 mm

Multiple carriages

A ≥ Lv

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



For the case of A [mm] > Alim :

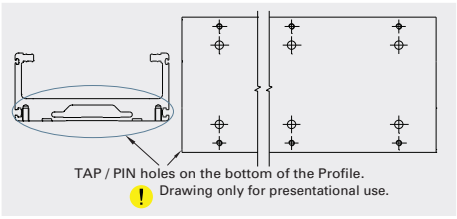
- a toothed belt for the connection of the carriages will be used.

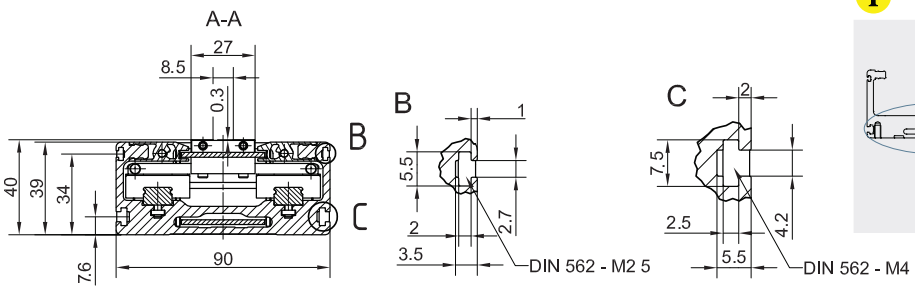
- the following condition must be met:
A [mm] = Alim + 3 × i.
where i Î {1.2.3....}.

	BR-D 90 S	BR-D 90 L
Alim [mm]	401.5	455.5

DIMENSIONS

OPTIONAL: TAP / PIN holes available on request.

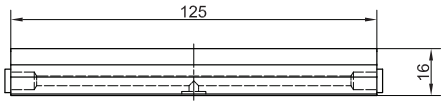


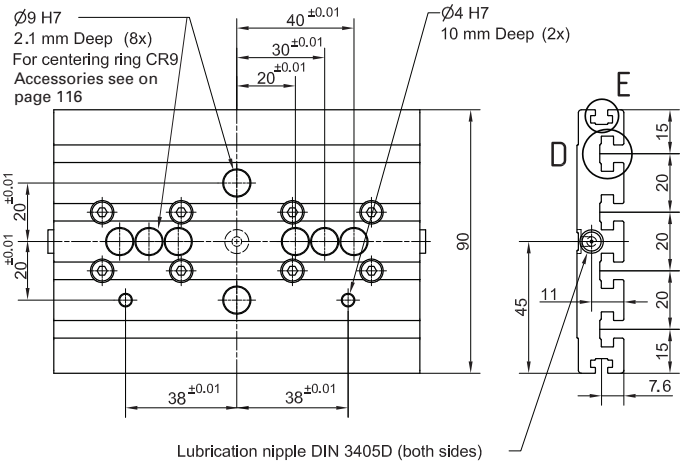


All dimensions in mm; Drawings scales are not equal.

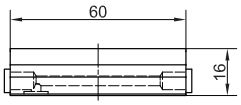
CONNECTION PLATE

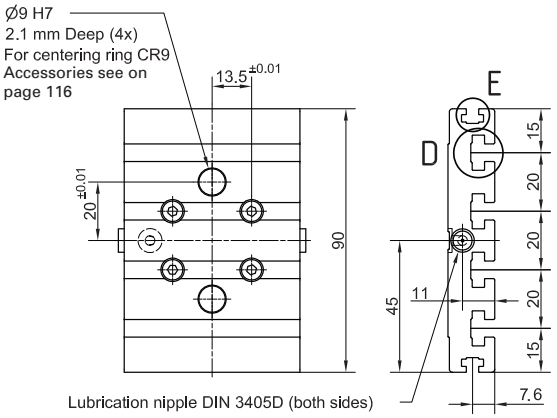
BR-D 90 L

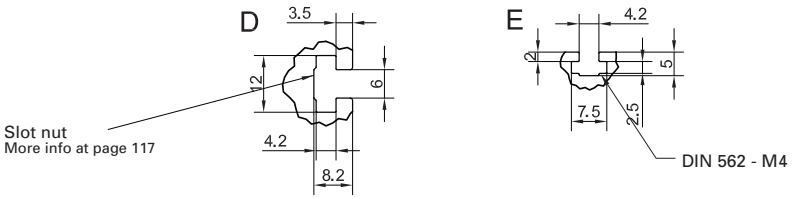




BR-D 90 S

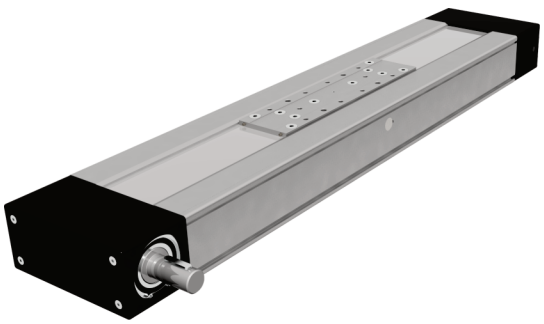






Linear Unit	Plate length [mm]	Weight [kg]	Code
BR-D 90 S	60	0.2	103661
BR-D 90 L	125	0.4	103660

Mounting elements for mounting the connection plate on the Linear unit are inlcuded.



Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity	Dynamic moment			Max. permissible loads Forces		Moments			Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
	Lv [mm]	C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-D 110 S	170	19800	610	118	235	6470	8390	260	90	90	0.64	± 0.08	6000	5805	40
BR-D 110 L	215	39600	1225	1680	1680	13080	18820	525	880	550	0.98	± 0.08		5760	40

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
** For minimum stroke below the stated value in the table above please contact us.

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

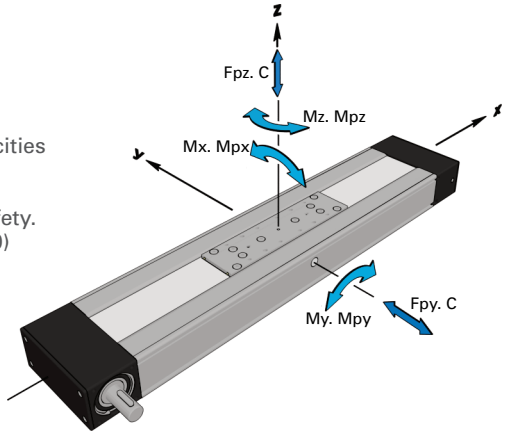
For operating temperature out of the presented range. please contact us.

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

$E = 70000\ N / mm^2$

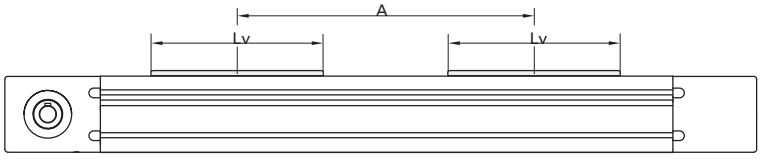


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment			* Max. permissible loads Forces		Moments		
			Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-D 110	S2	39600	1220	19.8 × A	19.8 × A	12940	16770	520	8.4 × A	6.5 × A
	L2	79200	2450	39.6 × A	39.6 × A	26150	37600	1050	18.8 × A	13.1 × A

*A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.



Drive and belt data

Linear Unit	** Max. travel speed	Max. drive torque	* No load torque	Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring constant Cspec	** Max. acceleration
	[m / s]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s²]
BR-D 110 S	6	15.7	0.98 × nc	120	38.20	AT 5	50	820	960000	70
BR-D 110 L			1.00 × nc							

* The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.
nc - Number of carriages
** For travel speed and acceleration over the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

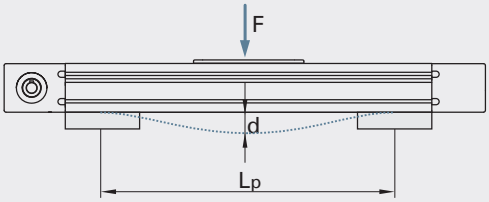
Linear Unit	Mass of linear unit [kg]	Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia	
			Iy [cm^4]	Iz [cm^4]
BR-D 110 S	3.6 + 0.0072 × (Abs. stroke + (nc - 1) × A) + 0.64 × (nc - 1)	36 + 0.0125 × (Abs. stroke + (nc - 1) × A) + 23.3 × (nc - 1)	31.1	217.2
BR-D 110 L	4.2 + 0.0072 × (Abs. stroke + (nc - 1) × A) + 0.98 × (nc - 1)	49 + 0.0125 × (Abs. stroke + (nc - 1) × A) + 35.8 × (nc - 1)		

A* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

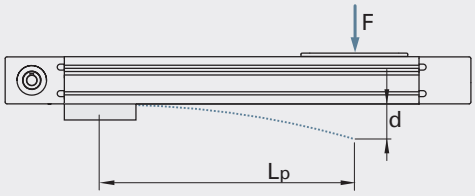
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



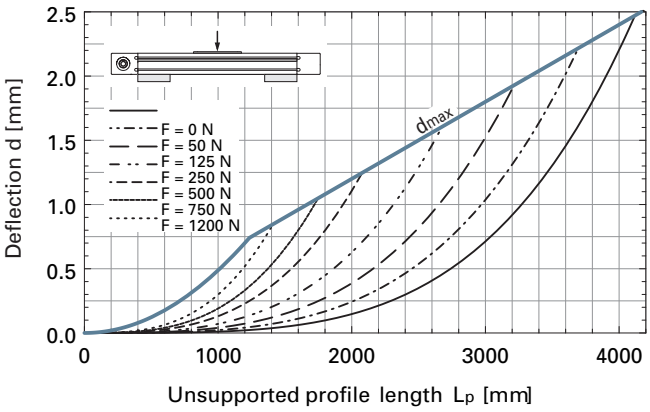
Fixed - free mounting

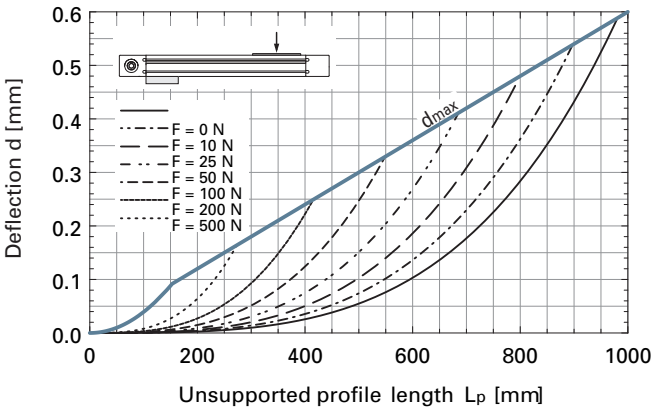


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

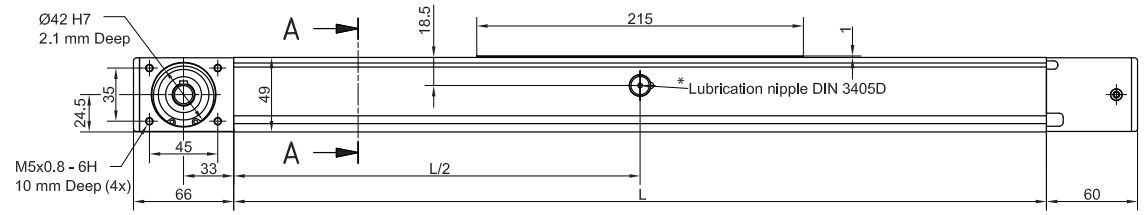
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

BR-D 110



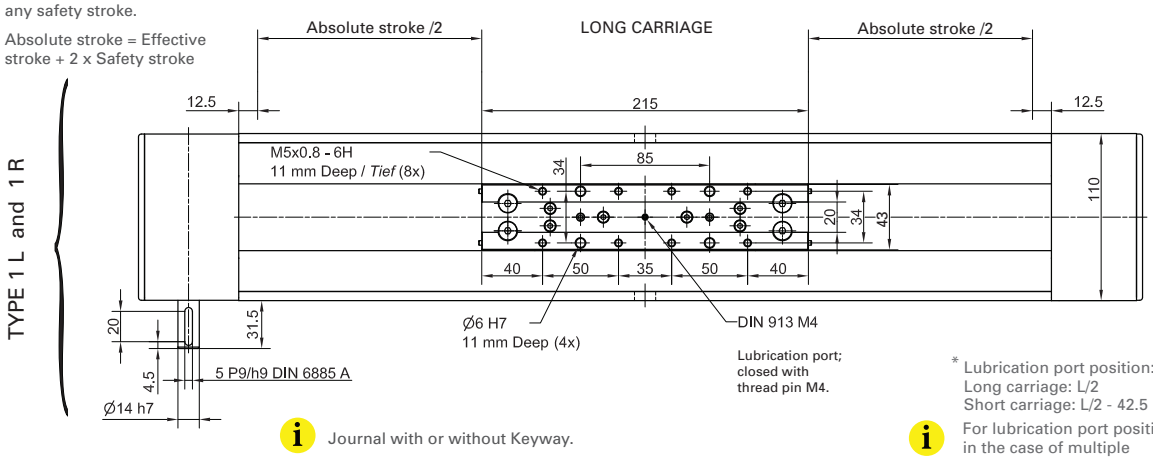


DIMENSIONS



Linear Unit doesn't include any safety stroke.

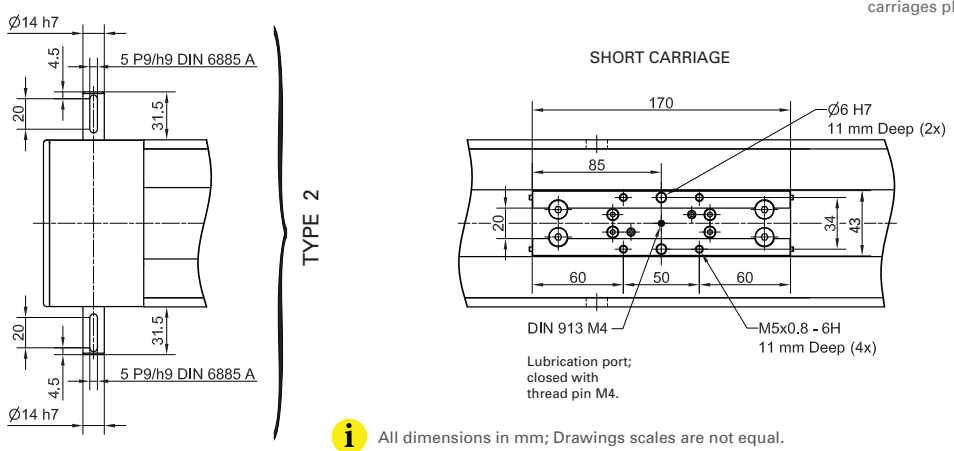
Absolute stroke = Effective stroke + 2 x Safety stroke



* Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 42.5 mm

Journal with or without Keyway.

For lubrication port positions in the case of multiple carriages please contact us.



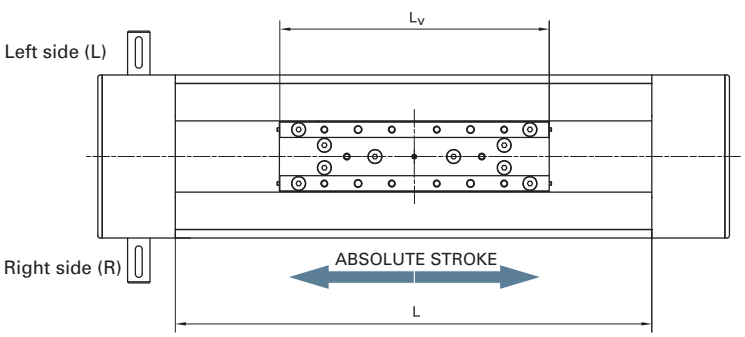
All dimensions in mm; Drawings scales are not equal.

Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 25 mm

Ltotal = L + 126 mm

nc - Number of carriages

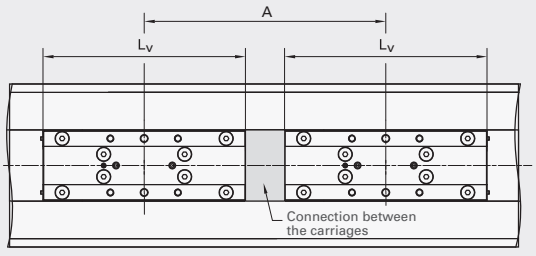


Lv - Long carriage = 215 mm
Lv - Short carriage = 170 mm

Multiple carriages

A ≥ Lv

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



For the case of A [mm] > Alim :

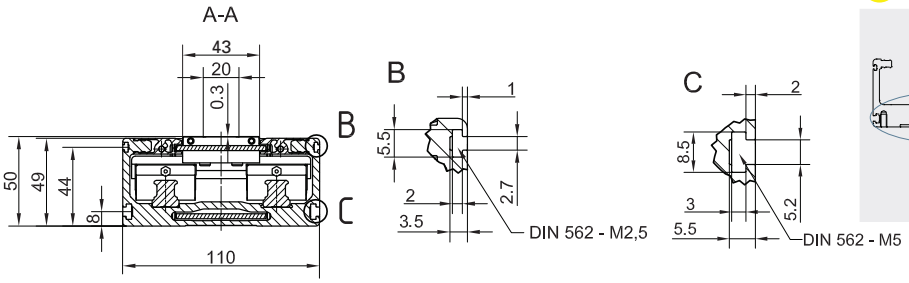
- a toothed belt for the connection of the carriages will be used.

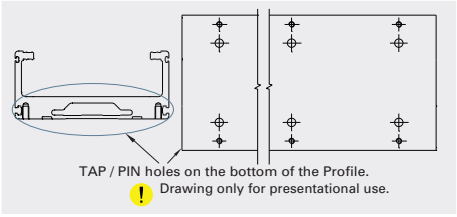
- the following condition must be met:
A [mm] = Alim + 5 × i.
where i Î {1.2.3....}.

	BR-D 110 S	BR-D 110 L
Alim [mm]	601	646

DIMENSIONS

OPTIONAL: TAP / PIN holes available on request.

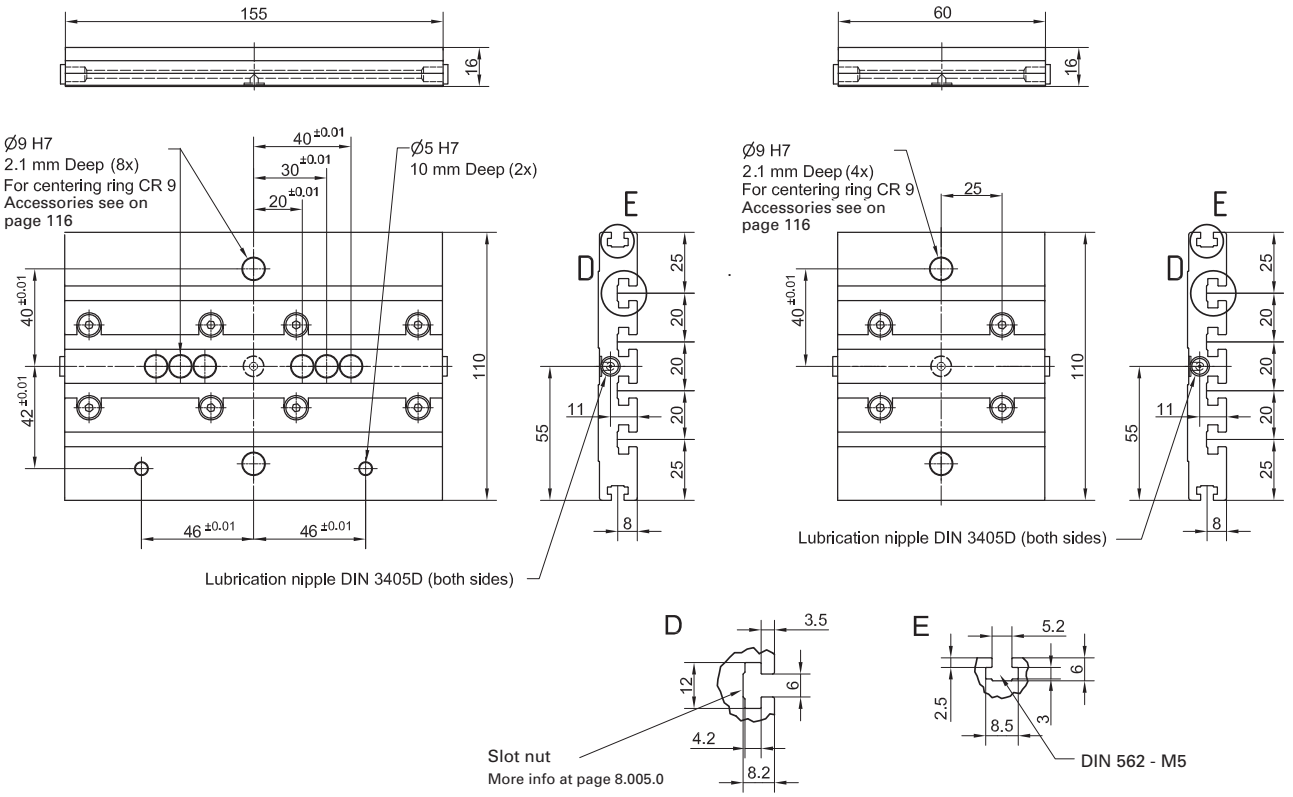




All dimensions in mm; Drawings scales are not equal.

CONNECTION PLATE

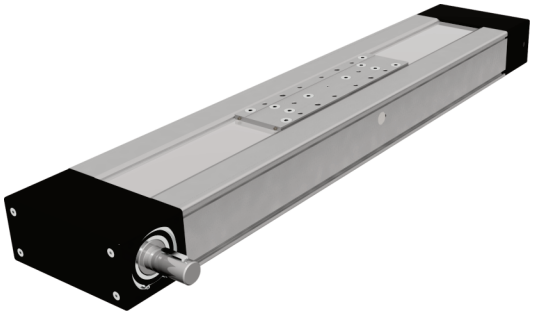
BR-D 110 L



BR-D 110 S

Linear Unit	Plate length [mm]	Weight [kg]	Code
BR-D 110 S	60	0.35	103663
BR-D 110 L	155	0.60	103662

Mounting elements for mounting the connection plate on the Linear unit are inlcuded.



Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING (Page120)

Available on request.

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity	Dynamic moment			Max. permissible loads Forces		Moments			Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
	Lv [mm]	C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-D 145 S	180	34200	1500	260	520	8930	15320	674	260	180	1.35	± 0.08	6000	5795	55
BR-D 145 L	240	68400	3005	3420	3420	17870	30640	1200	1700	893	2.25	± 0.08		5735	55

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
** For minimum stroke below the stated value in the table above please contact us.

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

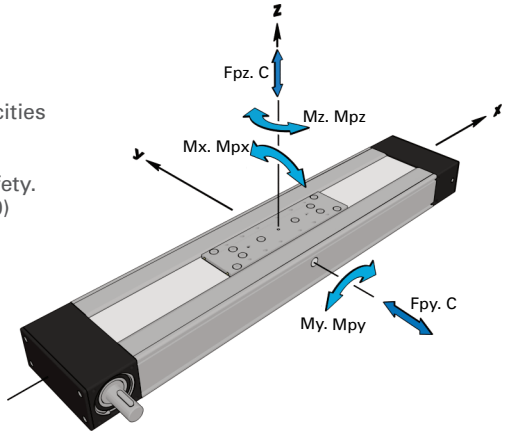
For operating temperature out of the presented range. please contact us.

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

$E = 70000\ N / mm^2$

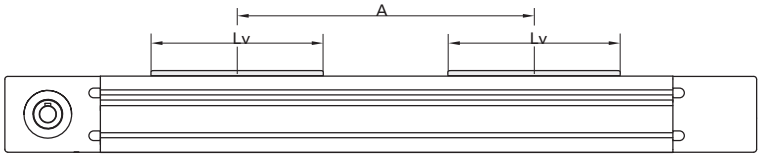


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment			* Max. permissible loads Forces		Moments		
			Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-D 145	S2	68400	3000	34.2 × A	34.2 × A	17870	30640	1350	15.3 × A	8.9 × A
	L2	136800	6000	68.4 × A	68.4 × A	35700	61200	2400	30.6 × A	17.8 × A

*A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.



Drive and belt data

Linear Unit	** Max. travel speed	Max. drive torque	* No load torque	Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring constant Cspec	** Max. acceleration
	[m / s]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	[N]	[m/s²]
BR-D 145 S	6	33.6	1.48 × nc	165	52.52	AT 5	70	1280	1360000	70
BR-D 145 L			1.50 × nc							

* The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.
nc - Number of carriages
* For travel speed and acceleration over the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

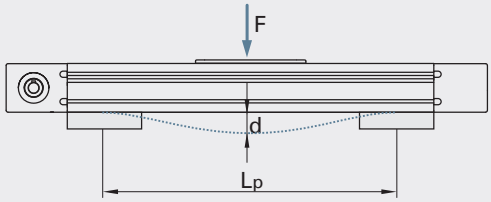
Linear Unit	Mass of linear unit [kg]	Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia	
			Iy [cm^4]	Iz [cm^4]
BR-D 145 S	7.2 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 1.35 × (nc - 1)	145 + 0.0330 × (Abs. stroke + (nc - 1) × A) + 93.1 × (nc - 1)	78.9	707.6
BR-D 145 L	8.8 + 0.0127 × (Abs. stroke + (nc - 1) × A) + 2.25 × (nc - 1)	208 + 0.0330 × (Abs. stroke + (nc - 1) × A) + 155.2 × (nc - 1)		

*Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

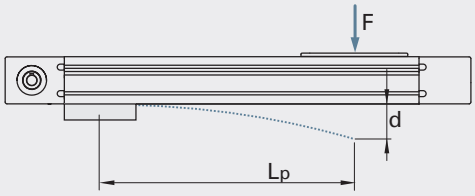
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



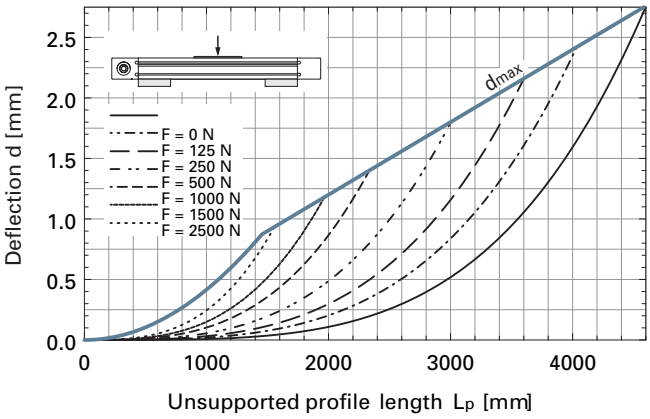
Fixed - free mounting

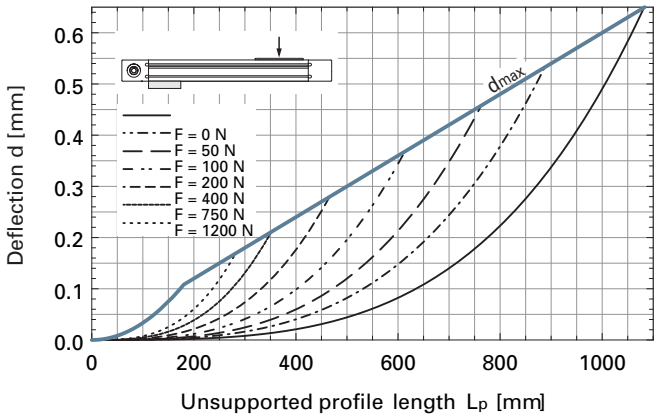


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

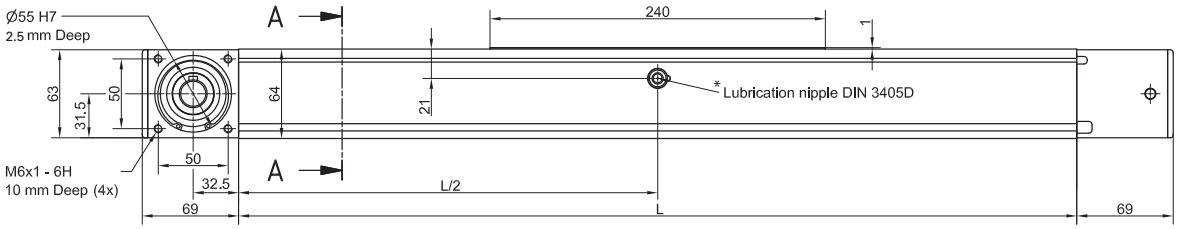
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

BR-D 145



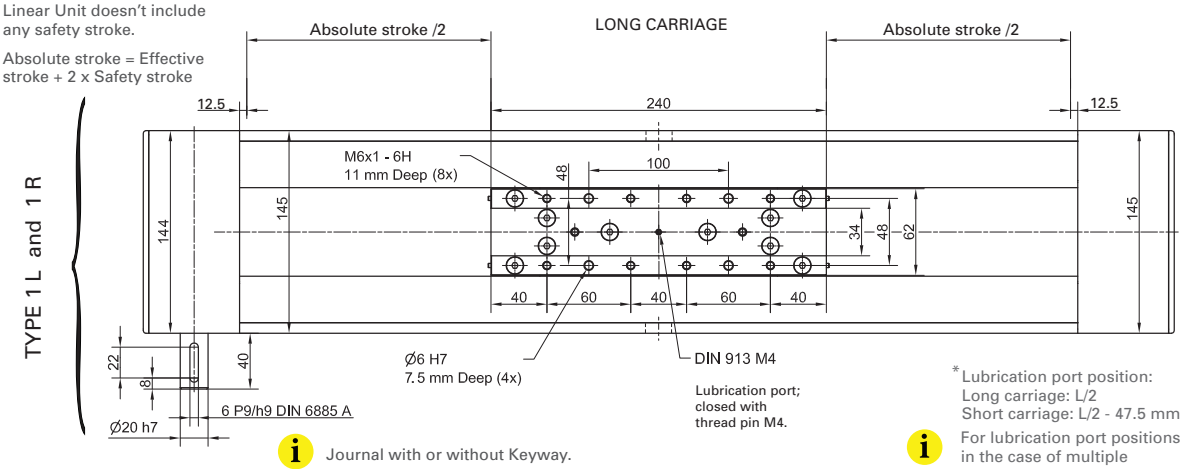


DIMENSIONS



Linear Unit doesn't include any safety stroke.

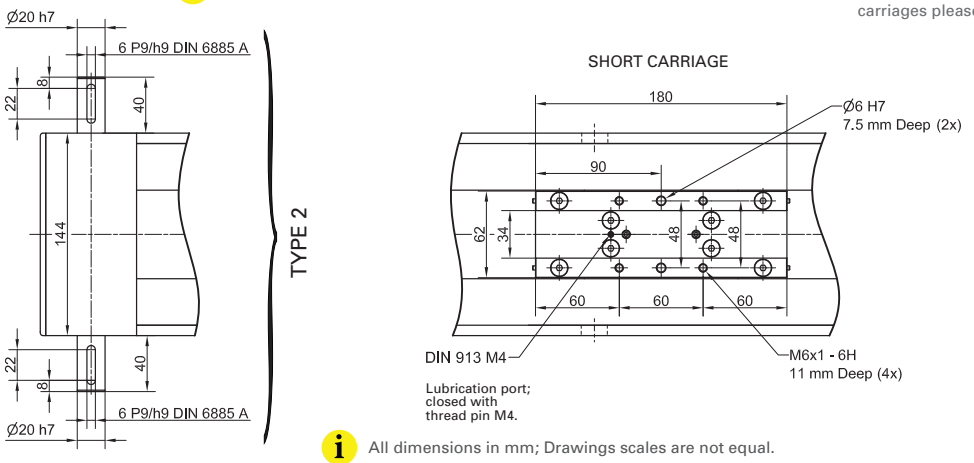
Absolute stroke = Effective stroke + 2 x Safety stroke



Journal with or without Keyway.

* Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 47.5 mm

For lubrication port positions in the case of multiple carriages please contact us.



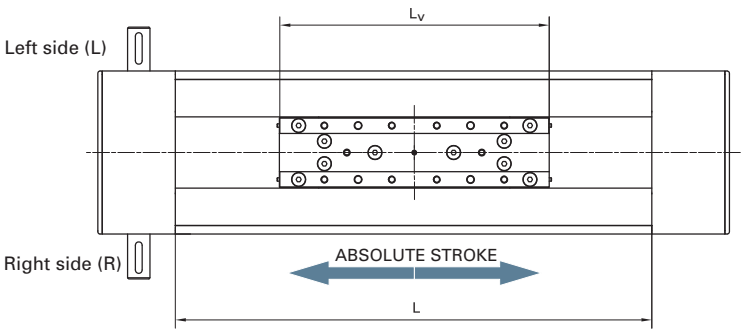
All dimensions in mm; Drawings scales are not equal.

Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 25 mm

Ltotal = L + 138 mm

nc - Number of carriages

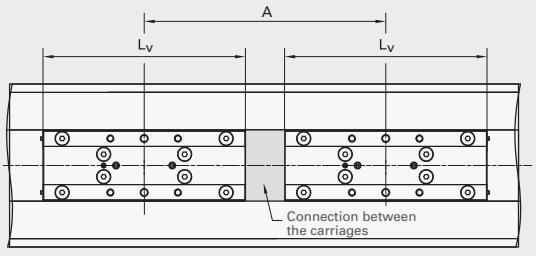


Lv - Long carriage = 240 mm
Lv - Short carriage = 180 mm

Multiple carriages

A ≥ Lv

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



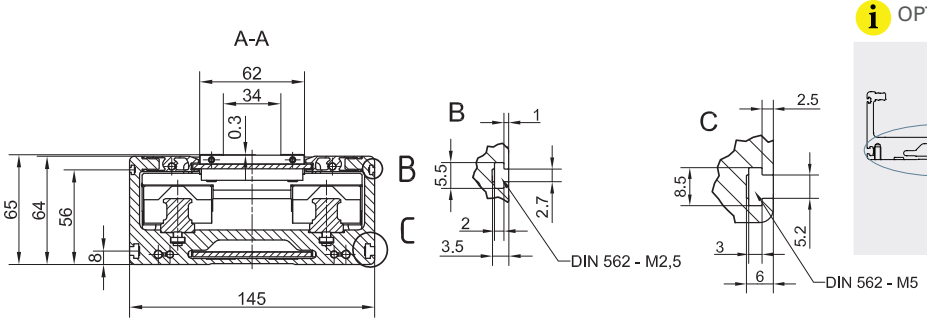
For the case of A [mm] > Alim :

- a toothed belt for the connection of the carriages will be used.

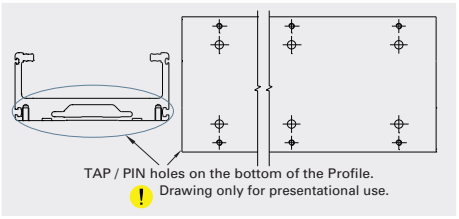
- the following condition must be met:
A [mm] = Alim + 5 × i.
where i Î {1.2.3....}.

	BR-D 145 S	BR-D 145 L
Alim [mm]	801	861

DIMENSIONS



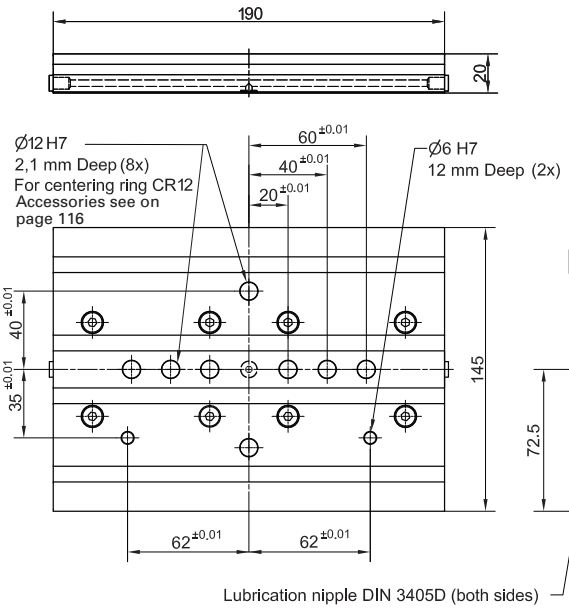
OPTIONAL: TAP / PIN holes available on request.



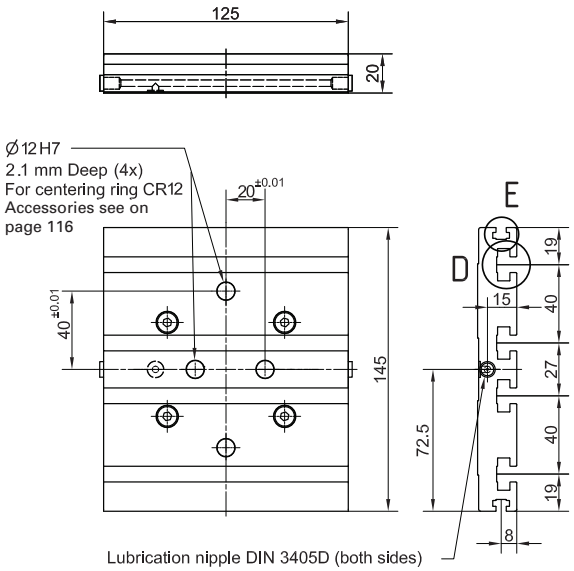
All dimensions in mm; Drawings scales are not equal.

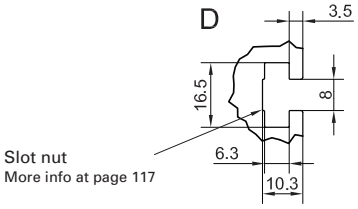
CONNECTION PLATE

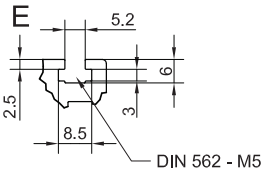
BR-D 145 L



BR-D 145 S

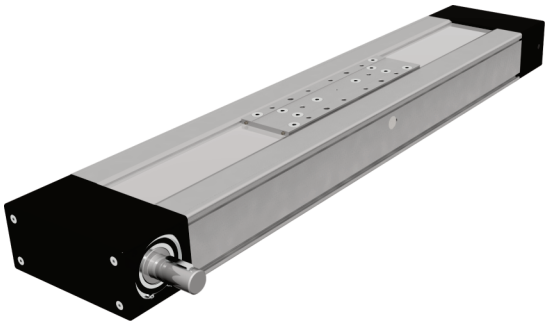






Linear Unit	Plate length [mm]	Weight [kg]	Code
BR-D 145 S	125	0.8	395-103665
BR-D 145 L	190	1.3	395-103664

Mounting elements for mounting the connection plate on the Linear unit are inlcuded.



Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity	Dynamic moment			Max. permissible loads Forces		Moments			Moved mass	Max. Repeatability	* Max. length	* Max. stroke	** Min. stroke
	Lv [mm]	C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	[kg]	[mm]	Lmax [mm]	[mm]	[mm]
BR-D 200 S	265	49600	3235	450	900	10000	24520	1600	450	308	3.05	± 0.08	6000	5710	65
BR-D 200 L	405	99200	6470	8680	8680	20000	50900	3250	4550	1750	5.70	± 0.08		5570	65

* For lengths / stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for multiple carriages (equation of defining the linear unit length for particular size of the linear unit needs to be used).
* For minimum stroke below the stated value in the table above please contact us.

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

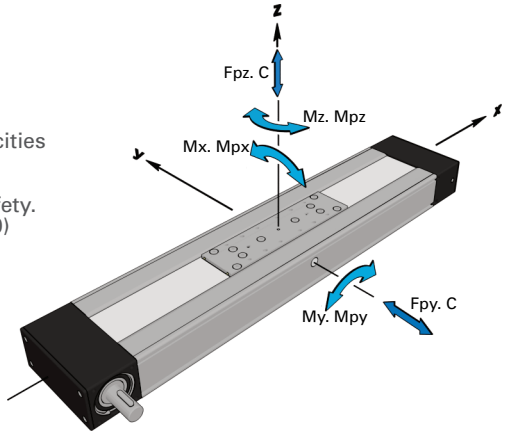
For operating temperature out of the presented range. please contact us.

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

$E = 70000 \text{ N / mm}^2$

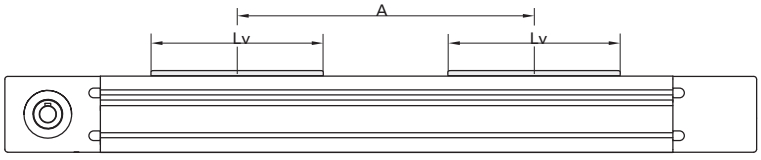


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity	* Dynamic moment			* Max. permissible loads Forces		Moments		
		C [N]	Mx [Nm]	My [Nm]	Mz [Nm]	Fpy [N]	Fpz [N]	Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
BR-D 200	S2	99200	6470	49.6 × A	49.6 × A	20000	49040	3200	24.5 × A	10.0 × A
	L2	198400	12940	99.2 × A	99.2 × A	40000	101800	6500	50.9 × A	20.0 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.



Drive and belt data

Linear Unit	** Max. travel speed	Max. drive torque	* No load torque	Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmited by belt	Specific spring constant	** Max. acceleration
	[m / s]	[Nm]	[Nm]	[mm / rev]	[mm]		[mm]	[N]	C_{spec} [N]	[m/s^2]
BR-D 200 S	6	102 with keyway	3.5 × nc	250	79.58	AT 10	100	2850	4350000	70
BR-D 200 L		113 without keyway	4.5 × nc							

* The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation.
nc - Number of carriages
** For travel speed and acceleration over the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

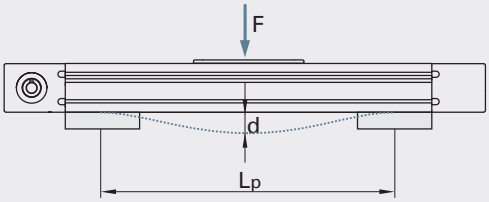
Linear Unit	Mass of linear unit [kg]	Mass moment of inertia [10^{-5} kg m^2]	Planar moment of inertia	
			Iy [cm^4]	Iz [cm^4]
BR-D 200 S	20.2 + 0.0245 × (Abs. stroke + (nc - 1) × A) + 3.1 × (nc - 1)	778 + 0.1868 × (Abs. stroke + (nc - 1) × A) + 482.9 × (nc - 1)	376.4	2744.6
BR-D 200 L	26.2 + 0.0245 × (Abs. stroke + (nc - 1) × A) + 5.7 × (nc - 1)	1210 + 0.1868 × (Abs. stroke + (nc - 1) × A) + 902.4 × (nc - 1)		

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

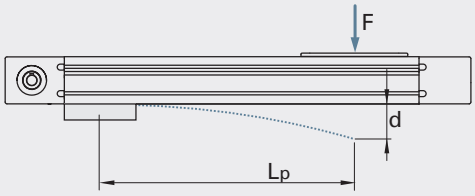
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



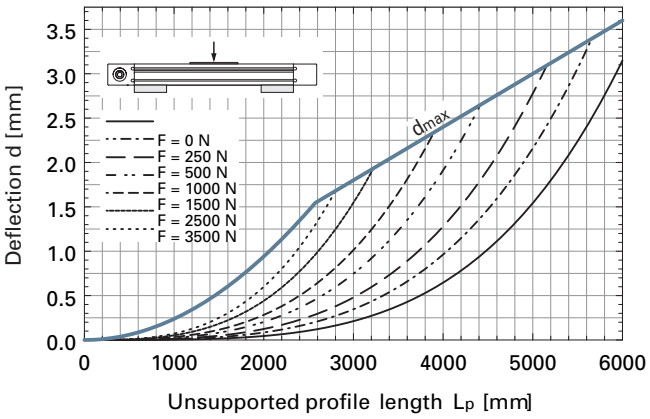
Fixed - free mounting

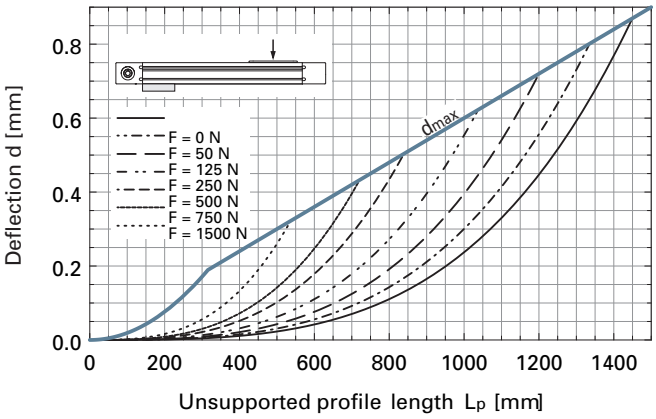


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

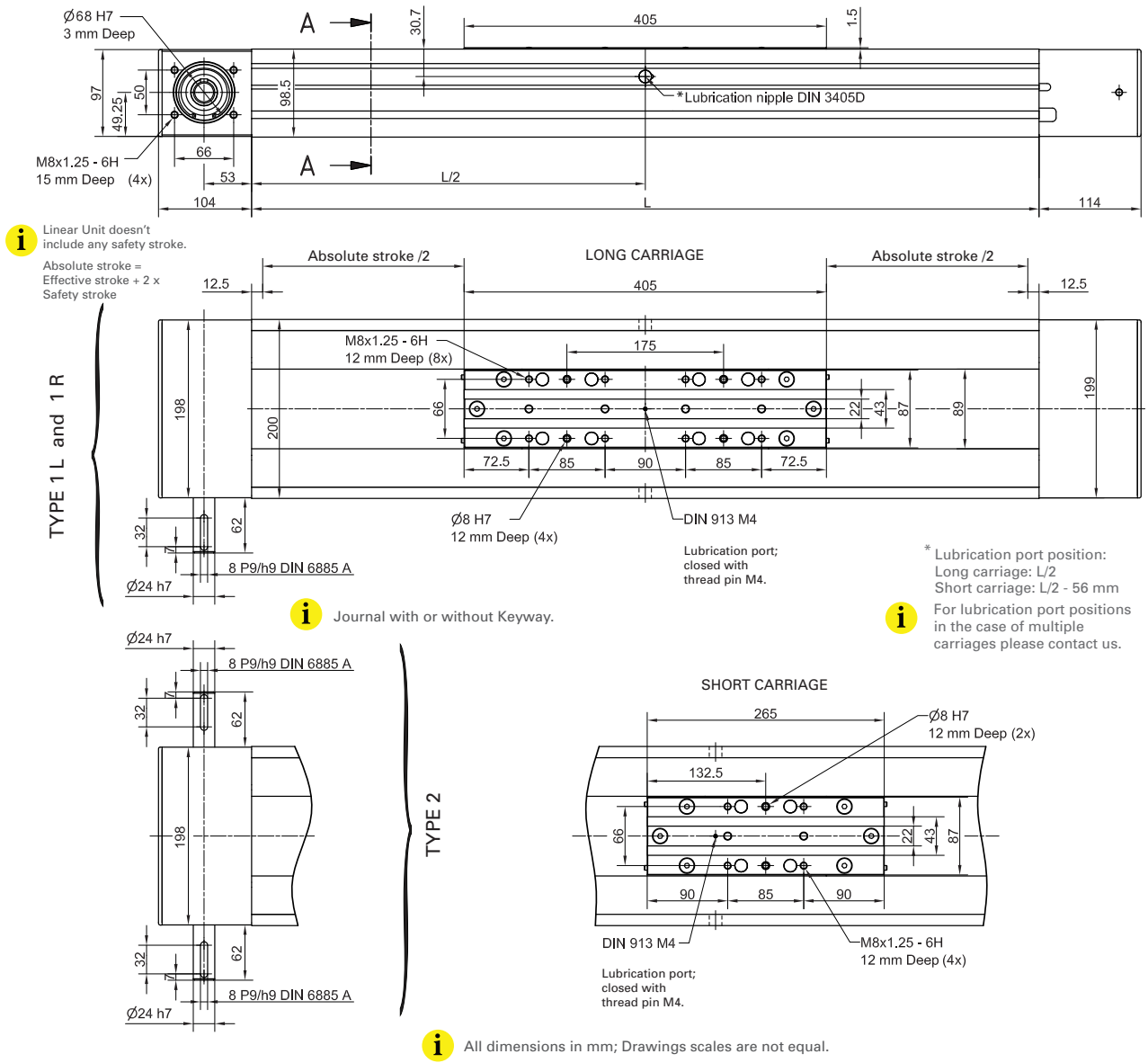
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

BR-D 200





DIMENSIONS

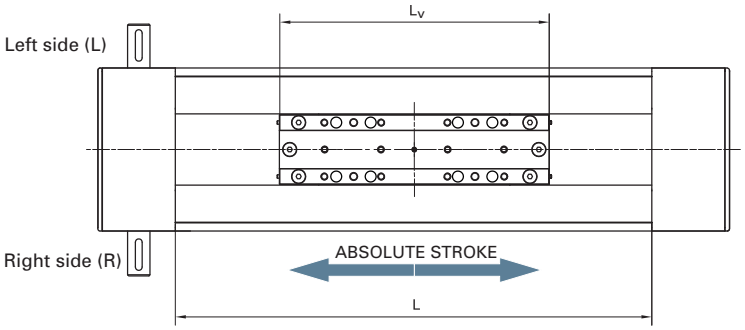


Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 25 mm

Ltotal= L + 218 mm

nc - Number of carriages

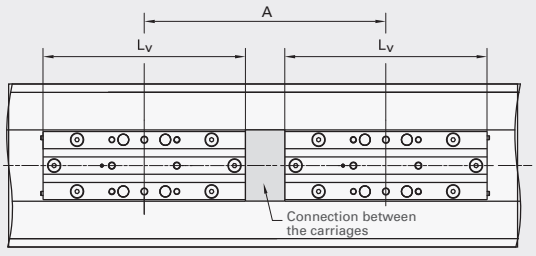


Lv - Long carriage = 405 mm
Lv - Short carriage = 265 mm

Multiple carriages

A ≥ Lv

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



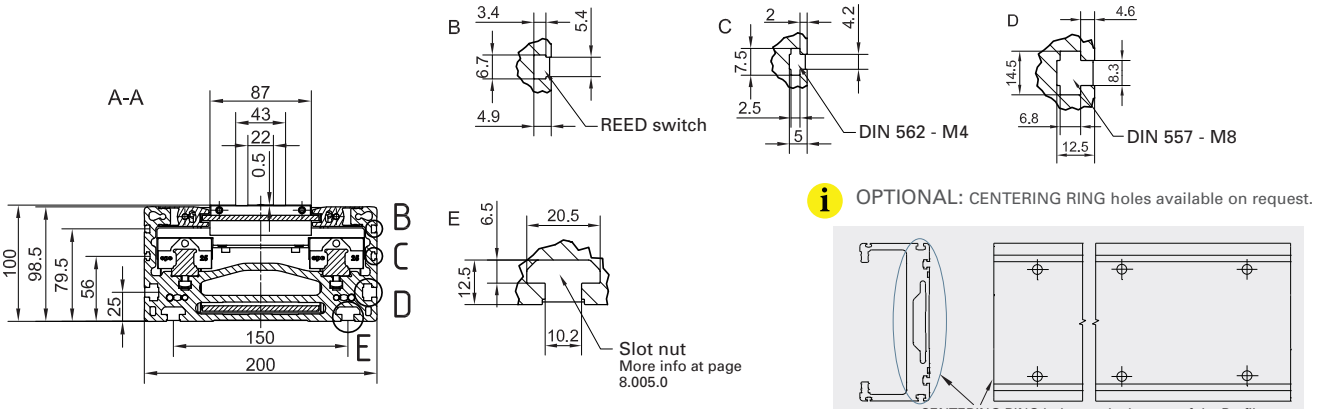
For the case of A [mm] > Alim :

- a toothed belt for the connection of the carriages will be used.

- the following condition must be met:
A [mm] = Alim + 10 × i.
where i Î {1.2.3....}.

	BR-D 200 S	BR-D 200 L
Alim [mm]	1006	1146

DIMENSIONS



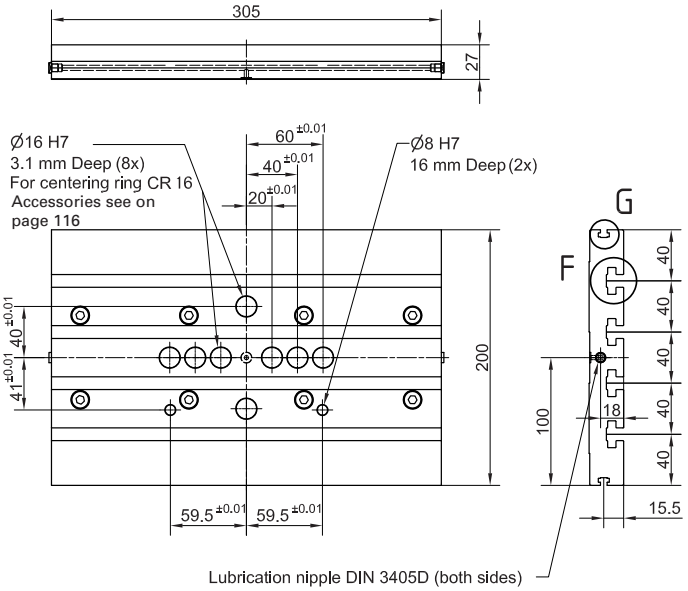
All dimensions in mm; Drawings scales are not equal.

OPTIONAL: CENTERING RING holes available on request.

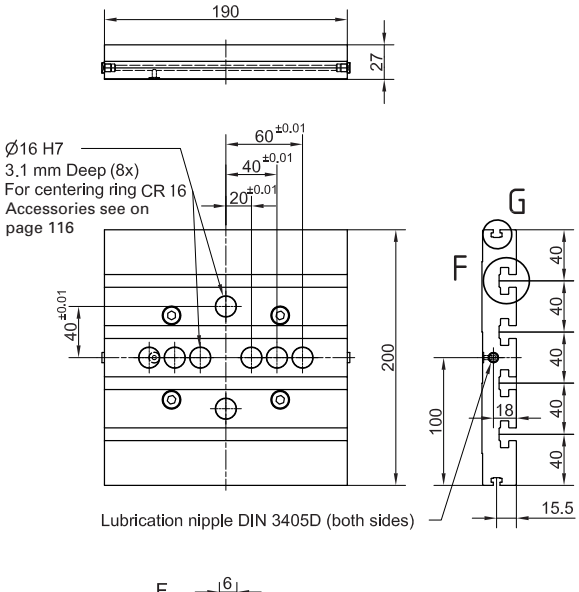
CENTERING RING holes on the bottom of the Profile.
Drawing only for presentational use.

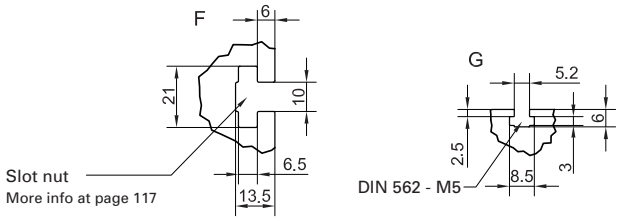
CONNECTION PLATE

BR-D 200 L



BR-D 200 S





Linear Unit	Plate length [mm]	Weight [kg]	Code
BR-D 200 S	190	2.3	395-103667
BR-D 200 L	305	3.7	395-103666

Mounting elements for mounting the connection plate on the Linear unit are inlcuded.

Mounting the drive

- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

CHARACTERISTICS

The SR-D series describes Linear Units with a precision ball screw drive and two parallel, integrated, Zero-backlash rail guides. Compact dimensions allow high performance features such as, high speeds, good accuracy and repeatability.

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 AL 6063, with two parallel, integrated, Zero-backlash rail guide systems, allows high load capacities and optimal cycles for the movement of larger masses at high speed.

In the Linear Units SR-D a precision ball screw, with tolerance class ISO7 (ISO5 on request), with reduced backlash of the ball nut is used.

Two parallel circulating antistatic polyurethane sealing strips and an aluminum cover are ensuring to protect all the parts in the profile from dust and other contaminantions.

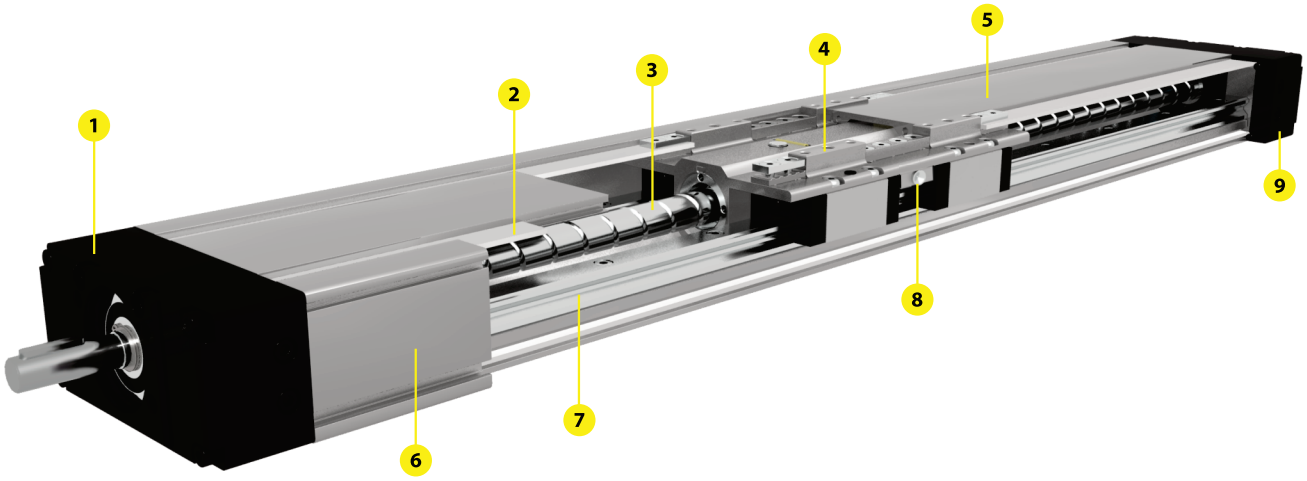
Different carriage lengths with lubrication port allows for easy re-lubrication of the ball screw and Ball rail guide system and allows the possibility to attach additional accessories. The re-lubrication can also be done through maintenance holes on the side of the Profile.

The aluminum profile includes T-slots for fixing the Linear Unit and for attaching sensors and switches. Also, a Reed switch can be used here.

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

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 - Drive block with floating bearing
2 - Gap-type seal of antistatic PU strip (recirculating)
3 - Ball screw tolerance ISO7 (ISO5 available on request)
4 - Carriage; with built in Magnets
5 - Aluminum cover
6 - Aluminium profile-Hard anodized
7 - Two integrated Linear Ball Guideways
8 - Central lubrication port; both sides
9 - End block with fixed bearing

HOW TO ORDER

SR 0200 D - 0950 - 32 5 0 - S 0

Series Prefix:
SR

Size:
0090: 90
0110: 110
0145: 145
0200: 200

Series Suffix:
D

Absolute stroke [mm]:
(Absolute stroke = Effective stroke + 2 x Safety stroke)

Ball Screw Dia./Pitch:
SR0090 (⌀12): 05, 10
SR0110 (⌀16): 05, 10, 16
SR0145 (⌀20): 05, 10, 20, 50
SR0200 (⌀32): 05, 10, 20, 32

Ball Screw Tolerance:
7: ISO7
5: ISO5

Ball Screw Journal:
0: Without
1: With (available only for BR0110Z)
Note: SR0090 only available with option 0

Carriage Version:
S: Short
L: Long

Version:
A: Without connection plate, without antistatic PU Gap-type seal strip, single carriage
B: Without connection plate, with antistatic PU Gap-type seal strip, single carriage
C: Without connection plate, with corrosion-resistant protection strip, single carriage
D: With connection plate, without antistatic PU Gap-type seal strip, single carriage
E: With connection plate, with antistatic PU Gap-type seal strip, single carriage
F: With connection plate, with corrosion-resistant protection strip, single carriage
G: Without connection plate, without antistatic PU Gap-type seal strip, multi-carriage
H: Without connection plate, with antistatic PU Gap-type seal strip, multi-carriage
I: Without connection plate, with corrosion-resistant protection strip, multi-carriage
J: With connection plate, without antistatic PU Gap-type seal strip, multi-carriage
K: With connection plate, with antistatic PU Gap-type seal strip, multi-carriage
L: With connection plate, with corrosion-resistant protection strip, multi-carriage
S: Special Version
* Specify the number of carriages and distance between in special notes

TECHNICAL DATA

General technical data

Linear Unit	Carriage length	Dynamic load capacity	Dynamic moment			Max. permissible loads					Moved mass	* Max. length	* Max. stroke
						Forces		Moments					
	L_V [mm]	C [N]	M_x [Nm]	M_y [Nm]	M_z [Nm]	F_{py} [N]	F_{pz} [N]	M_{px} [Nm]	M_{py} [Nm]	M_{pz} [Nm]	[kg]	L_{max} [mm]	[mm]
SR-D 90 S	35	4620	125	17	34	2000	4540	125	17	34	0.3	750	665
SR-D 90 L	100	9240	250	300	300	3990	9090	250	297	130	0.5		600

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

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

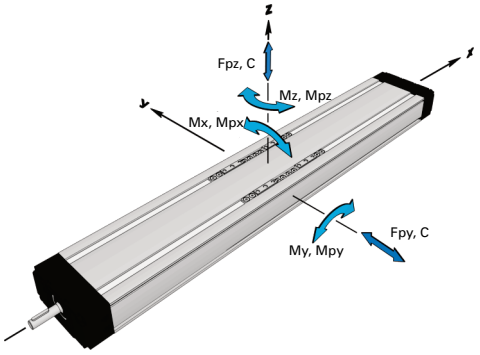
For operating temperature out of the presented range, please contact us.

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

$E = 70000 \text{ N / mm}^2$

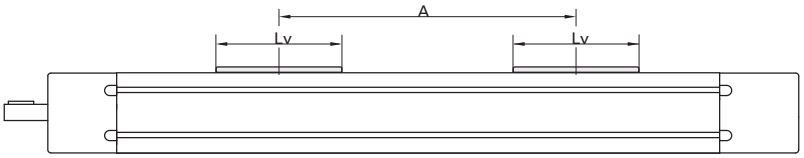


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity	* Dynamic moment			* Max. permissible loads				
						Forces		Moments		
		C [N]	M_x [Nm]	M_y [Nm]	M_z [Nm]	F_{py} [N]	F_{pz} [N]	M_{px} [Nm]	M_{py} [Nm]	M_{pz} [Nm]
SR-D 90	S2	9240	250	4.6 × A	4.6 × A	3990	9090	250	4.5 × A	2.0 × A
	L2	18480	500	9.2 × A	9.2 × A	7980	18170	500	9.0 × A	4.0 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting our engineers.



Ball Screw Drive data

Linear Unit	Ball screw	Max. rotational speed	1 Max. travel speed	2 No load torque		Lead constant	3 Max. repeteability precision [mm]		Dynamic load capacity BS	Max. Axial load	Max. drive torque	4 Min. stroke	1 Max. accele-ration
				Carriage: S	Carriage: L		STANDARD ISO7	ISO5					
	[d x l]	[rev / min]	[m / s]	[Nm]	[Nm]	[mm / rev]			C_a [N]	F_x [N]	M_a [Nm]	[mm]	[m/s^2]
SR-D 90	12 × 5	5800	0.49	0.08 × nc	0.10 × nc	5	± 0.02	± 0.01	5000	5000	4.4 without Keyway	30	20
	12 × 10		0.97	0.09 × nc	0.11 × nc	10	± 0.02	± 0.01	3800	2540	4.5 without Keyway		

1 Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.
2 The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation. nc - Number of carriages
3 For the ball nut with the preload of 2% please contact us
4 For minimum stroke below the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

Linear unit	Mass of linear unit [kg]	Planar moment of inertia Iy [cm⁴]	Iz [cm⁴]
SR-D 90 S	1.6 + 0.006 × (Abs. stroke + (nc - 1) × A) + 0.30 × (nc - 1)	13.6	102.6
SR-D 90 L	2.2 + 0.006 × (Abs. stroke + (nc - 1) × A) + 0.50 × (nc - 1)		

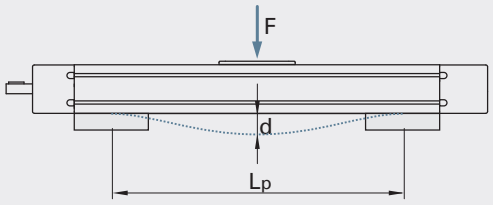
Linear unit	Ball screw [d × l]	Mass moment of inertia [10⁻⁵ kg m²]
SR-D 90 S	12 × 5	0.32 + 0.002 × (Abs. stroke + (nc - 1) × A) + 0.02 × (nc - 1)
	12 × 10	0.38 + 0.002 × (Abs. stroke + (nc - 1) × A) + 0.08 × (nc - 1)
SR-D 90 L	12 × 5	0.43 + 0.002 × (Abs. stroke + (nc - 1) × A) + 0.03 × (nc - 1)
	12 × 10	0.53 + 0.002 × (Abs. stroke + (nc - 1) × A) + 0.13 × (nc - 1)

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

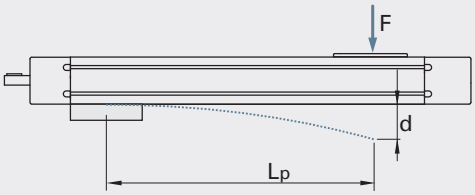
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



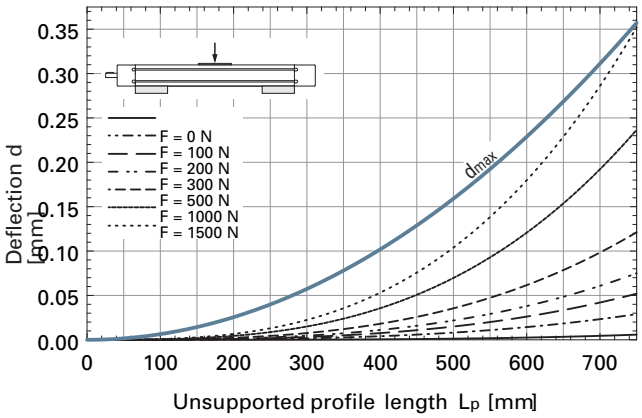
Fixed - free mounting

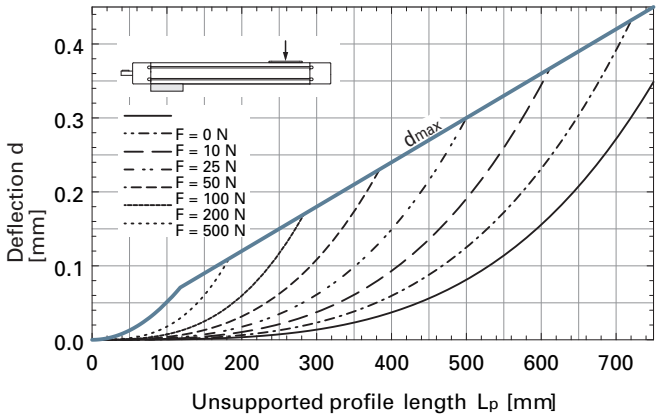


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

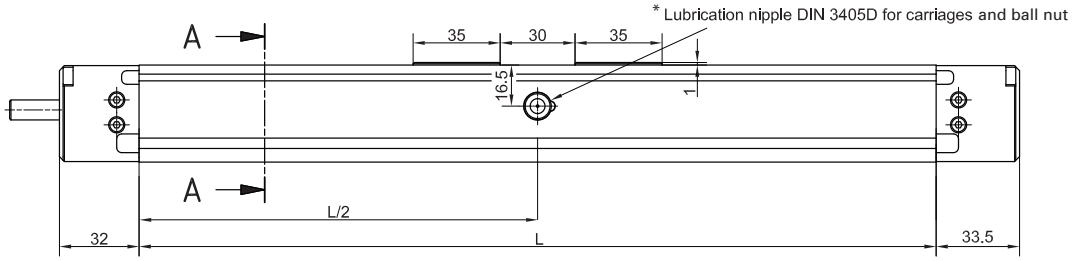
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

SR-D 90



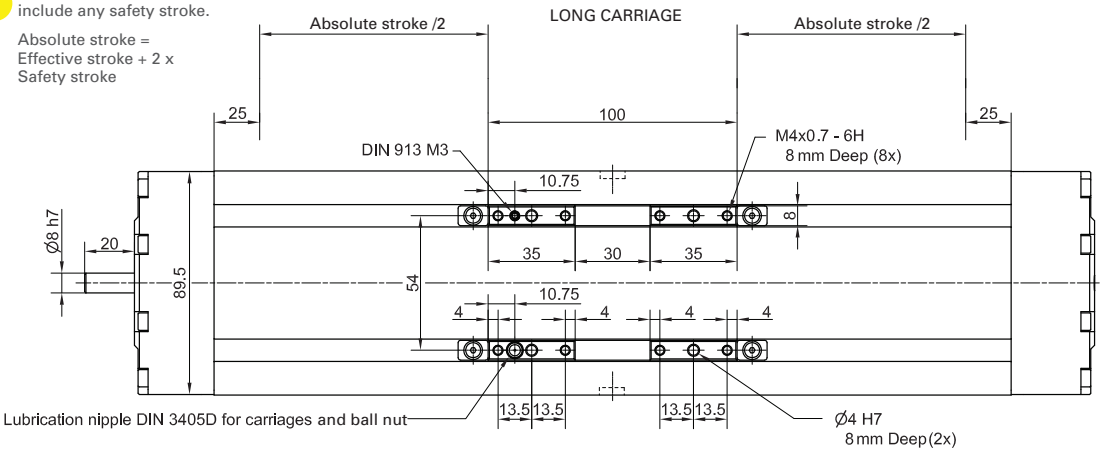


DIMENSIONS



Linear Unit doesn't include any safety stroke.

Absolute stroke = Effective stroke + 2 x Safety stroke

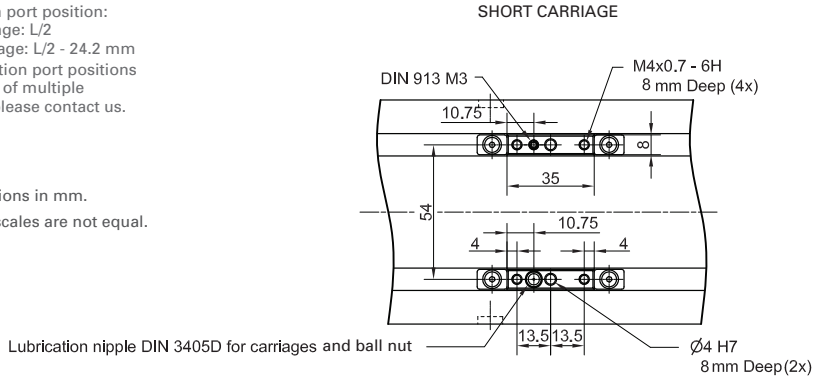


* Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 24.2 mm

For lubrication port positions in the case of multiple carriages please contact us.

All dimensions in mm.

Drawings scales are not equal.



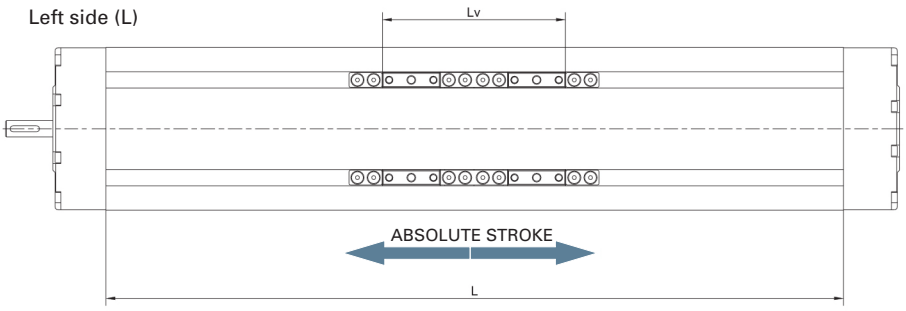
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 50 mm

Ltotal = L + 65.5 mm

nc - Number of carriages

Left side (L)

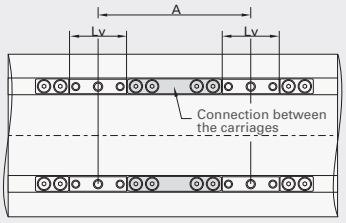


Right side (R)

Lv - Long carriage = 100 mm
Lv - Short carriage = 35 mm

Multiple carriages

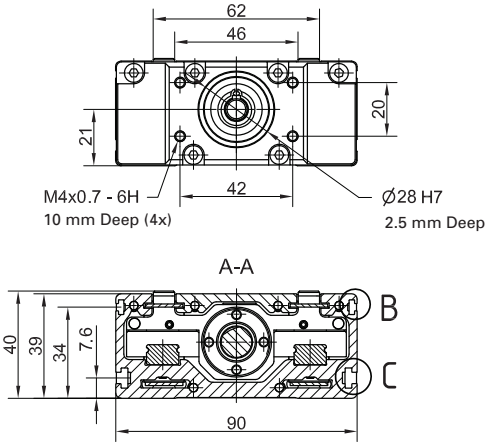
$A_{min} \leq A \leq A_{lim}$



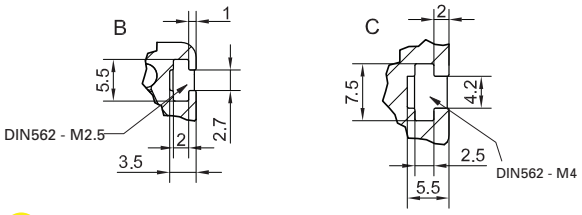
Carriages are connected with non-rigid galvanized steel plates.

	SR-D 90 S	SR-D 90 L
A_{min} [mm]	65	130
A_{lim} [mm]	600	665

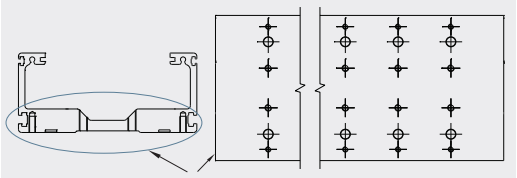
DIMENSIONS



All dimensions in mm; Drawings scales are not equal.



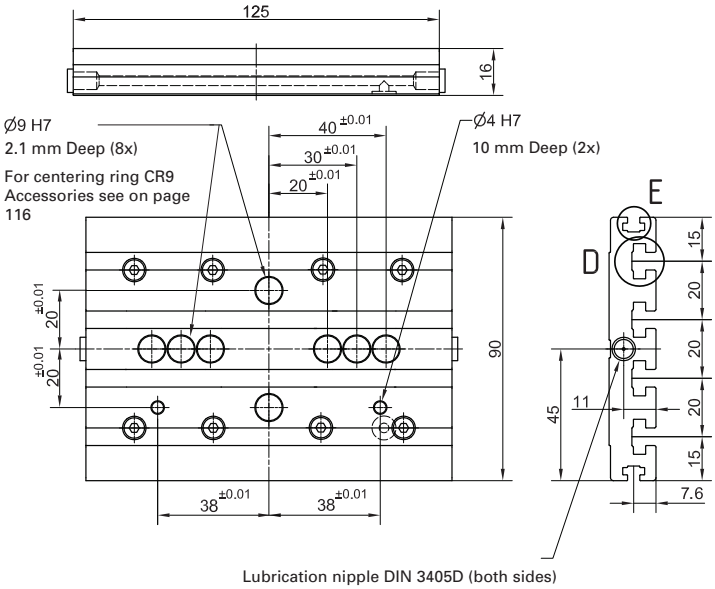
OPTIONAL: TAP / PIN holes available on request.



TAP / PIN holes on the bottom of the Profile.
Drawing only for presentational use.

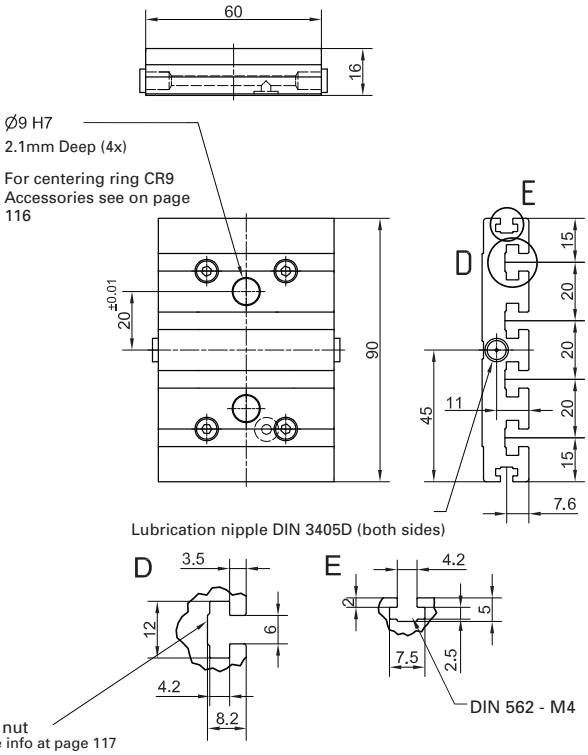
CONNECTION PLATE

SR-D 90 L



Lubrication nipple DIN 3405D (both sides)

SR-D 90 S



Lubrication nipple DIN 3405D (both sides)

Slot nut
More info at page 117

Linear Unit	Plate length [mm]	Weight [kg]	Code
SR-D 90 S	60	0.21	395-103669
SR-D 90 L	125	0.44	395-103668

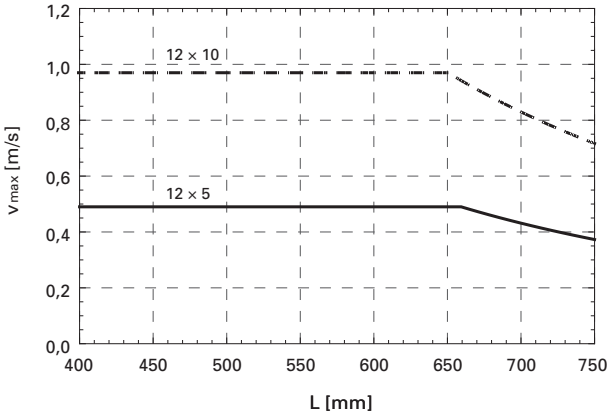
Mounting elements for mounting the connection plate on the Linear unit are inlcuded.

Mounting the drive

- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

Maximum travel speed as a function of the profile length (Vmax - L curves)



TECHNICAL DATA

General technical data

Linear Unit	Carriage length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Moved mass [kg]	* Max. length Lmax [mm]	* Max. stroke [mm]
SR-D 110 S	39	19800	650	118	235	4670	9390	310	90	90	0.63	1500	1410
SR-D 110 L	124	39600	1305	1680	1680	13080	18800	620	800	550	1.36		1325

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

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

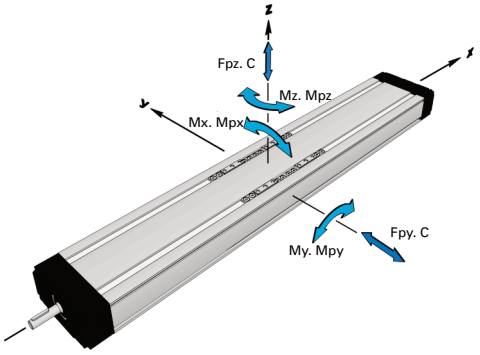
For operating temperature out of the presented range please contact us.

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

$E = 70000 \text{ N / mm}^2$

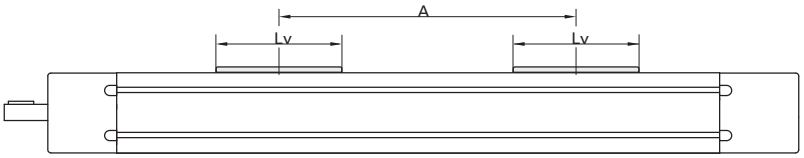


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	* Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-D 110	S2	39600	1300	19.8 × A	19.8 × A	12940	18790	620	9.4 × A	6.5 × A
	L2	79200	2600	39.6 × A	39.6 × A	26100	37600	1240	18.8 × A	13.0 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.



Ball Screw Drive data

Linear Unit	Ball screw [d x l]	Max. rotational speed [rev / min]	1 Max. travel speed [m / s]	2 No load torque Carriage: S [Nm]	Carriage: L [Nm]	Lead constant [mm / rev]	3 Max. repeteability precision [mm] STANDARD ISO7	ISO5	Dynamic load capacity BS Ca [N]	Max. Axial load Fx [N]	Max. drive torque Ma [Nm]	4 Min. stroke [mm]	1 Max. accele-ration [m/s^2]
SR-D 110	16 × 5	4200	0.35	0.17 × nc	0.20 × nc	5	± 0.02	± 0.01	13150	8700	5.5 with Keyway 7.7 without Keyway	40	20
	16 × 10		0.70	0.18 × nc	0.21 × nc	10	± 0.02	± 0.01	11550	6730	5.5 with Keyway		
	16 × 16		1.12	0.23 × nc	0.26 × nc	16	± 0.02	± 0.01	8170	4200	11.9 without Keyway		

1 Max. travel speed depends of the length of the linear unit. see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.
2 The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation. nc - Number of carriages
3 For the ball nut with the preload of 2% please contact us
4 For minimum stroke below the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

Linear unit	Mass of linear unit [kg]	Planar moment of inertia Iy [cm⁴]	Iz [cm⁴]
SR-D 110 S	3.3 + 0.008 × (Abs. stroke + (nc - 1) × A) + 0.63 × (nc - 1)	29.1	196.0
SR-D 110 L	4.6 + 0.008 × (Abs. stroke + (nc - 1) × A) + 1.36 × (nc - 1)		

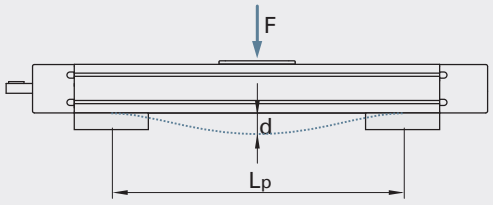
Linear unit	Ball screw [d × l]	Mass moment of inertia [10⁻⁵ kg m²]
SR-D 110 S	16 × 5	0.70 + 0.005 × (Abs. stroke + (nc - 1) × A) + 0.04 × (nc - 1)
	16 × 10	0.82 + 0.005 × (Abs. stroke + (nc - 1) × A) + 0.16 × (nc - 1)
	16 × 16	1.07 + 0.005 × (Abs. stroke + (nc - 1) × A) + 0.41 × (nc - 1)
SR-D 110 L	16 × 5	1.19 + 0.005 × (Abs. stroke + (nc - 1) × A) + 0.09 × (nc - 1)
	16 × 10	1.45 + 0.005 × (Abs. stroke + (nc - 1) × A) + 0.34 × (nc - 1)
	16 × 16	1.99 + 0.005 × (Abs. stroke + (nc - 1) × A) + 0.88 × (nc - 1)

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

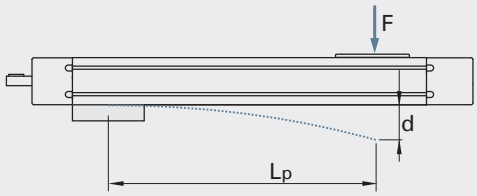
Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



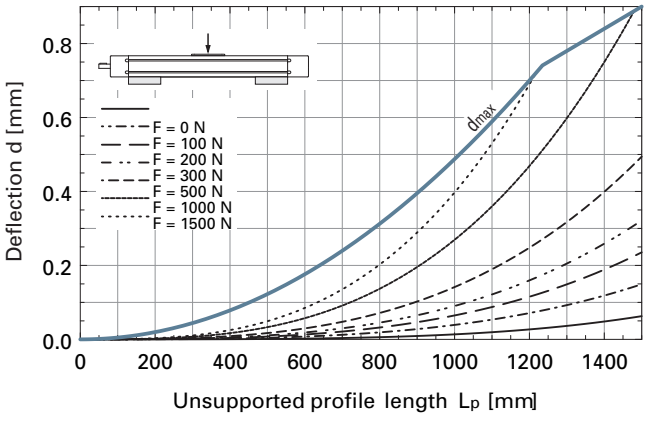
Fixed - free mounting

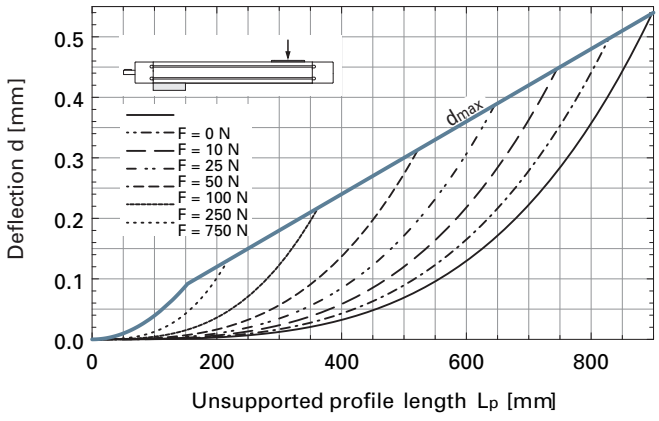


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

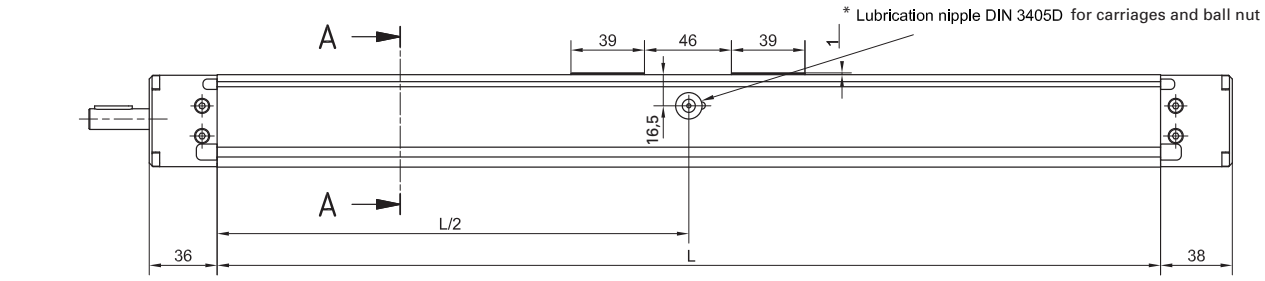
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

SR-D 110





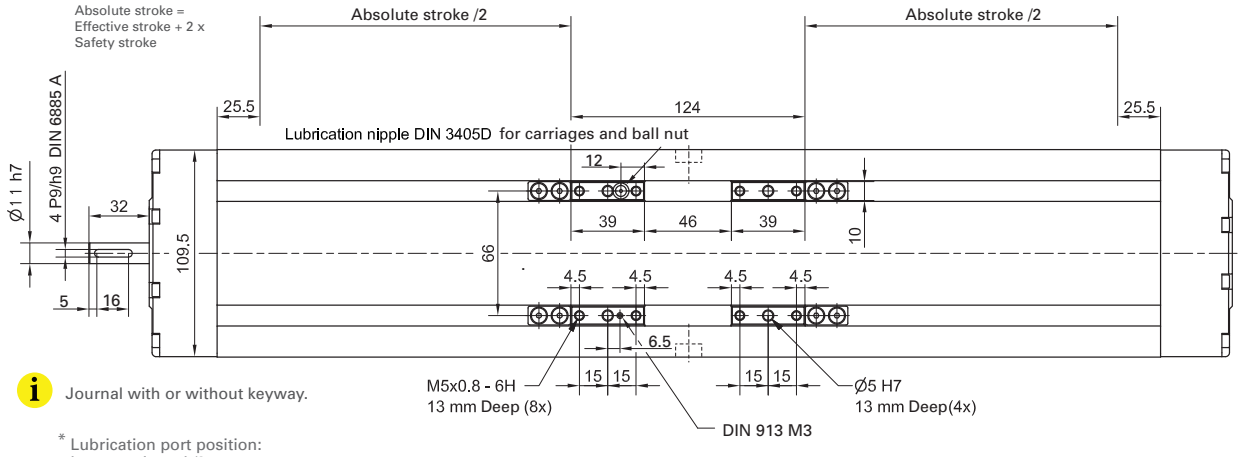
DIMENSIONS



Linear Unit doesn't include any safety stroke.

Absolute stroke = Effective stroke + 2 x Safety stroke

LONG CARRIAGE



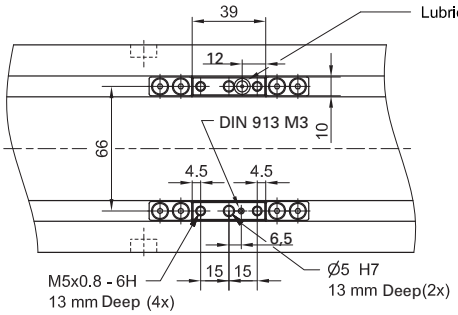
Journal with or without keyway.

* Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 39 mm

For lubrication port positions in the case of multiple carriages please contact us.

All dimensions in mm.
Drawings scales are not equal.

SHORT CARRIAGE



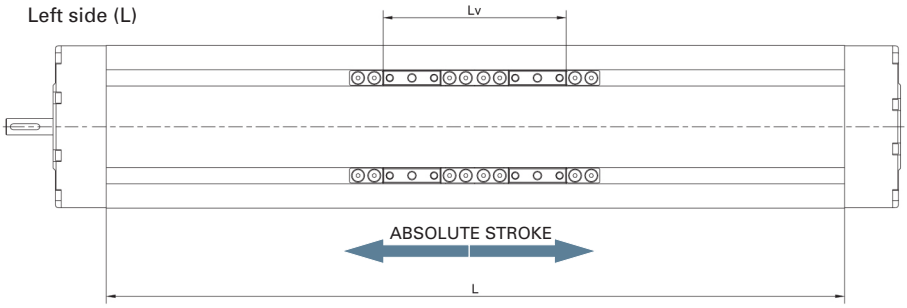
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 51 mm

Ltotal = L + 74 mm

nc - Number of carriages

Left side (L)

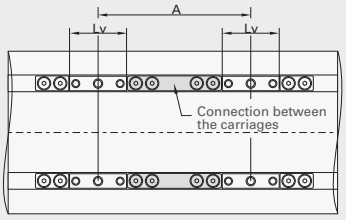


Right side (R)

Lv - Long carriage = 124 mm
Lv - Short carriage = 39 mm

Multiple carriages

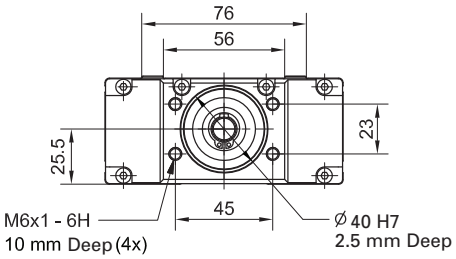
$A_{min} \leq A \leq A_{lim}$

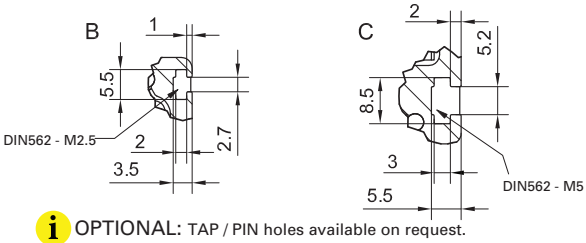


Carriages are connected with non-rigid galvanized steel plates.

	SR-D 110 S	SR-D 110 L
A_{min} [mm]	85	175
A_{lim} [mm]	800	885

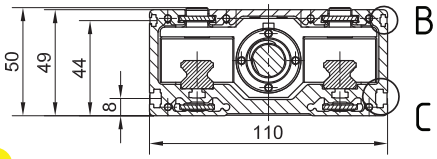
DIMENSIONS



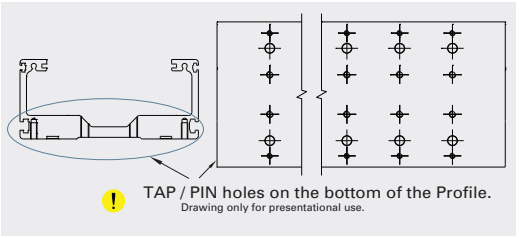


OPTIONAL: TAP / PIN holes available on request.

A-A

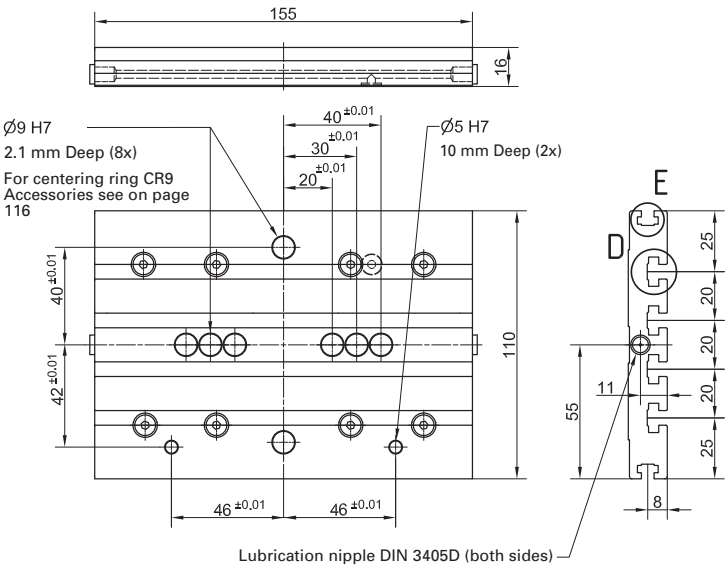


All dimensions in mm; Drawings scales are not equal.

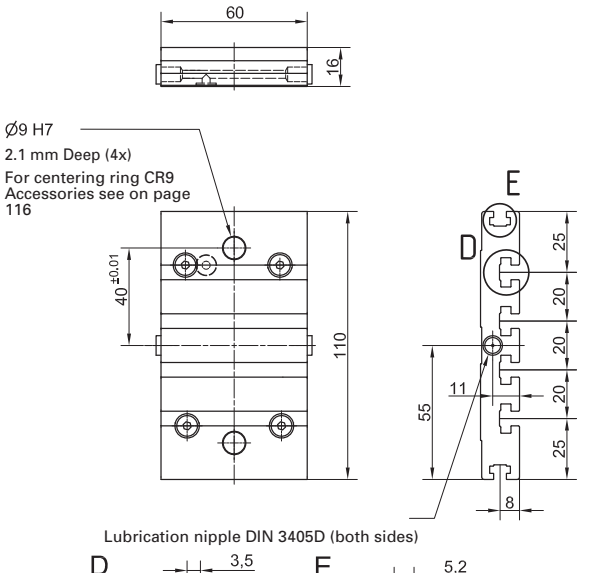


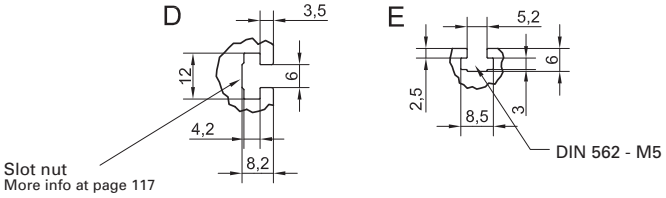
CONNECTION PLATE

SR-D 110 L



SR-D 110

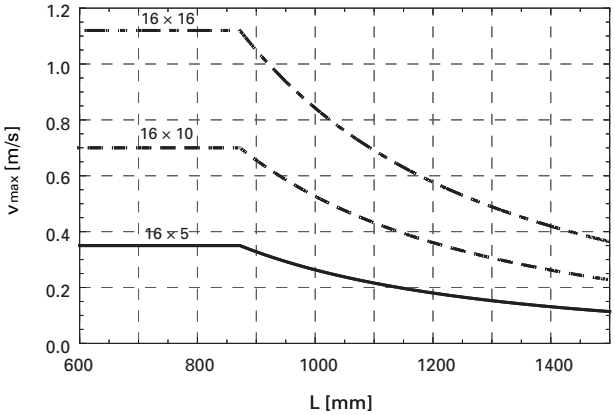




Linear Unit	Plate length [mm]	Weight [kg]	Code
SR-D 110 S	60	0.37	395-000103671
SR-D 110 L	155	0.74	395-000103670

Mounting elements for mounting the connection plate on the Linear unit are inlcuded.

Maximum travel speed as a function of the profile length (Vmax - L curves)



Mounting the drive

- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

TECHNICAL DATA

General technical data

Linear Unit	Carriage length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Moved mass [kg]	* Max. length Lmax [mm]	* Max. stroke [mm]
SR-D 145 S	49	34200	1500	260	520	8930	15320	674	260	180	1.19	1800	1690
SR-D 145 L	149	68400	3005	3420	3420	17870	30680	1350	1700	893	2.61		1590

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

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

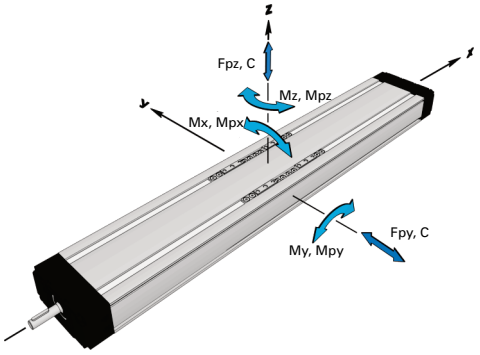
For operating temperature out of the presented range, please contact us.

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

$E = 70000 \text{ N} / \text{mm}^2$

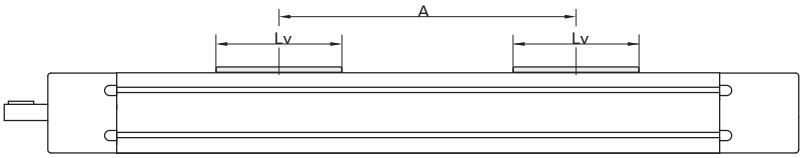


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	* Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-D 145	S2	68400	3000	34.2 × A	34.2 × A	17870	30640	1350	15.3 × A	8.9 × A
	L2	136800	6000	68.4 × A	68.4 × A	35700	61300	2700	30.6 × A	17.8 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.



Ball Screw Drive data

Linear Unit	Ball screw [d x l]	Max. rotational speed [rev / min]	1 Max. travel speed [m / s]	2 No load torque Carriage: S [Nm]	Carriage: L [Nm]	Lead constant [mm / rev]	3 Max. repeteability precision [mm] STANDARD ISO7	ISO5	Dynamic load capacity BS Ca [N]	Max. Axial load Fx [N]	Max. drive torque Ma [Nm]	4 Min. stroke [mm]	1 Max. accele-ration [m/s²]
SR-D 145	20 × 5	3300	0.28	0.30 × nc	0.35 × nc	5	± 0.02	± 0.01	14800	14800	11.9 with Keyway 13.0 without Keyway	55	20
	20 × 10		0.55	0.32 × nc	0.37 × nc	10	± 0.02	± 0.01	15900	13850	11.9 with Keyway 24.5 without Keyway		
	20 × 20		1.10	0.45 × nc	0.50 × nc	20	± 0.02	± 0.01	16250	6930			
	20 × 50	3000	2.50	0.80 × nc	0.85 × nc	50	± 0.02	± 0.01	13000	2770			

1 Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

2 The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation. nc - Number of carriages

3 For the ball nut with the preload of 2% please contact us

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

TECHNICAL DATA

Mass and mass moment of inertia

Linear unit	Mass of linear unit [kg]	Planar moment of inertia Iy [cm^4]	Iz [cm^4]
SR-D 145 S	5.7 + 0.015 × (Abs. stroke + (nc - 1) × A) + 1.19 × (nc - 1)	85.3	682.3
SR-D 145 L	8.4 + 0.015 × (Abs. stroke + (nc - 1) × A) + 2.61 × (nc - 1)		

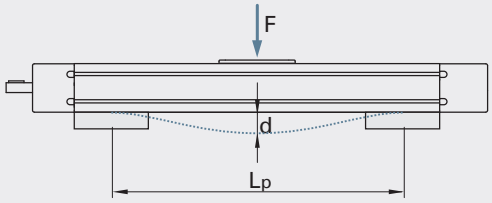
Linear unit	Ball screw [d × l]	Mass moment of inertia [10^{-5} kg m^2]
SR-D 145 S	20 × 5	3.04 + 0.013 × (Abs. stroke + (nc - 1) × A) + 0.08 × (nc - 1)
	20 × 10	3.27 + 0.013 × (Abs. stroke + (nc - 1) × A) + 0.30 × (nc - 1)
	20 × 20	4.17 + 0.013 × (Abs. stroke + (nc - 1) × A) + 1.21 × (nc - 1)
	20 × 50	10.50 + 0.013 × (Abs. stroke + (nc - 1) × A) + 7.54 × (nc - 1)
SR-D 145 L	20 × 5	4.43 + 0.013 × (Abs. stroke + (nc - 1) × A) + 0.17 × (nc - 1)
	20 × 10	4.92 + 0.013 × (Abs. stroke + (nc - 1) × A) + 0.66 × (nc - 1)
	20 × 20	6.91 + 0.013 × (Abs. stroke + (nc - 1) × A) + 2.64 × (nc - 1)
	20 × 50	20.79 + 0.013 × (Abs. stroke + (nc - 1) × A) + 16.53 × (nc - 1)

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

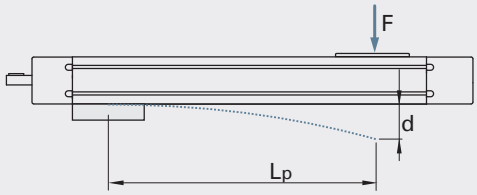
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



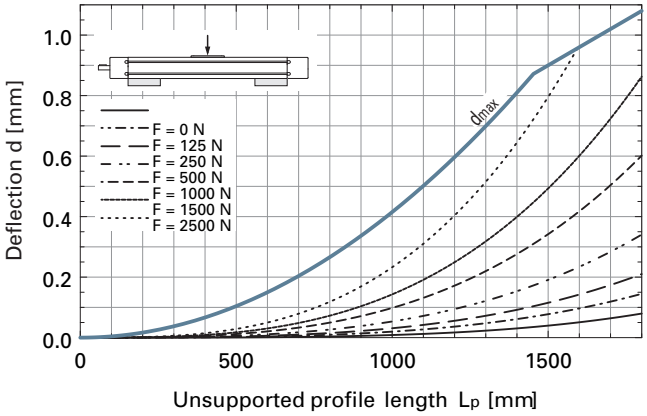
Fixed - free mounting

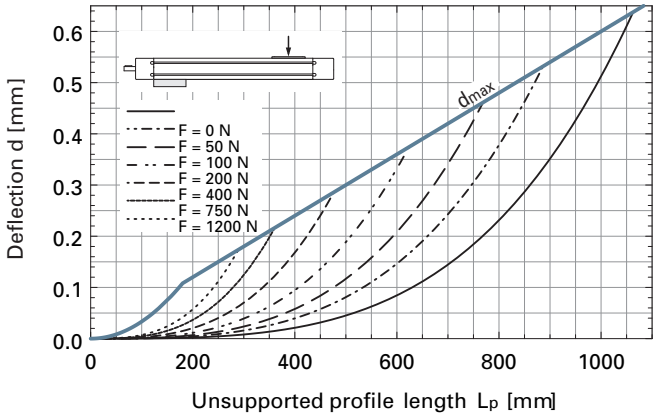


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

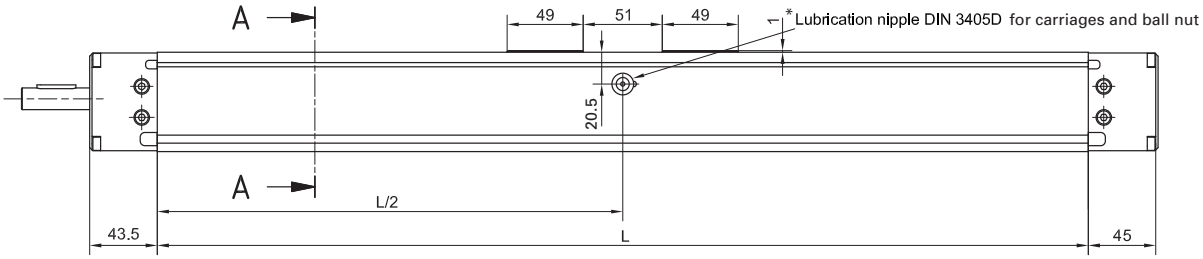
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

SR-D 145





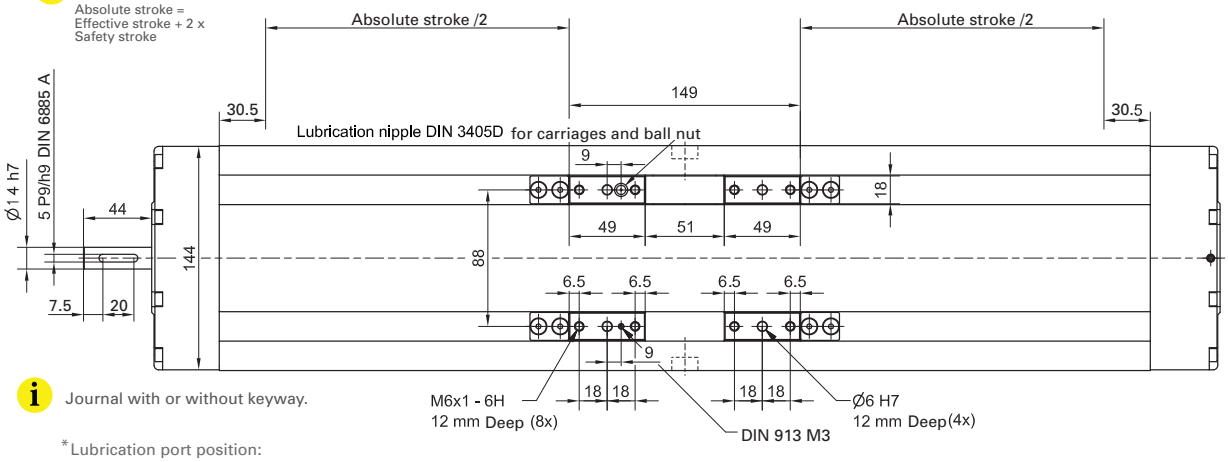
DIMENSIONS



Linear Unit doesn't include any safety stroke.

Absolute stroke = Effective stroke + 2 x Safety stroke

LONG CARRIAGE

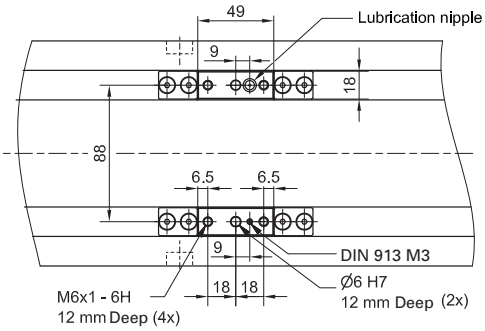


Journal with or without keyway.

*Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 46 mm

For lubrication port positions in the case of multiple carriages please contact us.

SHORT CARRIAGE



All dimensions in mm.
Drawings scales are not equal.

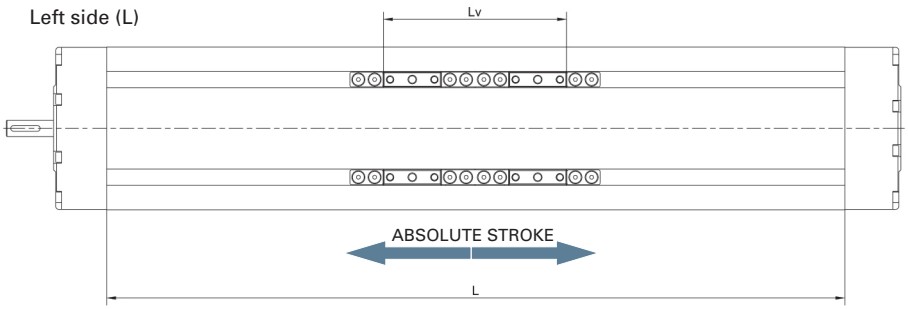
Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 61 mm

Ltotal = L + 88.5 mm

nc - Number of carriages

Left side (L)

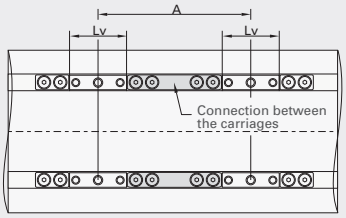


Right side (R)

Lv - Long carriage = 149 mm
Lv - Short carriage = 49 mm

Multiple carriages

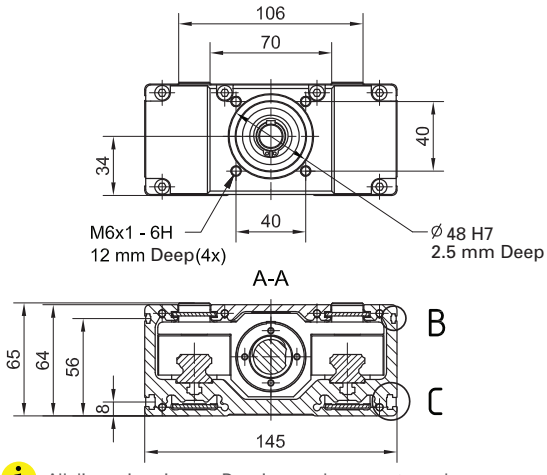
Amin ≤ A ≤ Alim



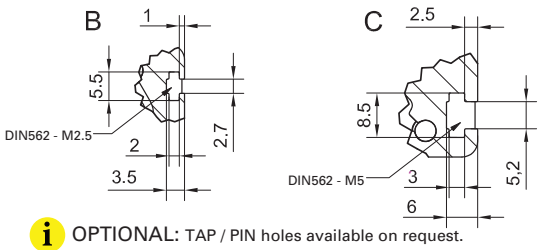
Carriages are connected with non-rigid galvanized steel plates.

	SR-D 145 S	SR-D 145 L
Amin [mm]	100	200
Alim [mm]	800	900

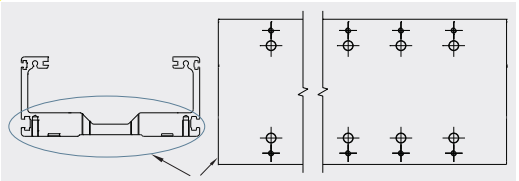
DIMENSIONS



All dimensions in mm; Drawings scales are not equal.



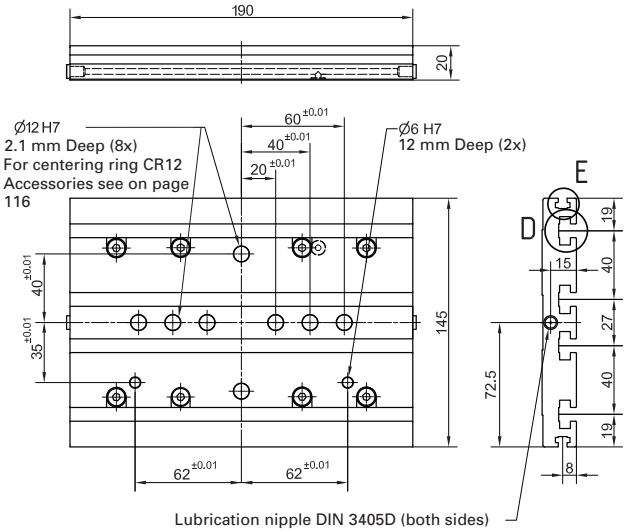
OPTIONAL: TAP / PIN holes available on request.



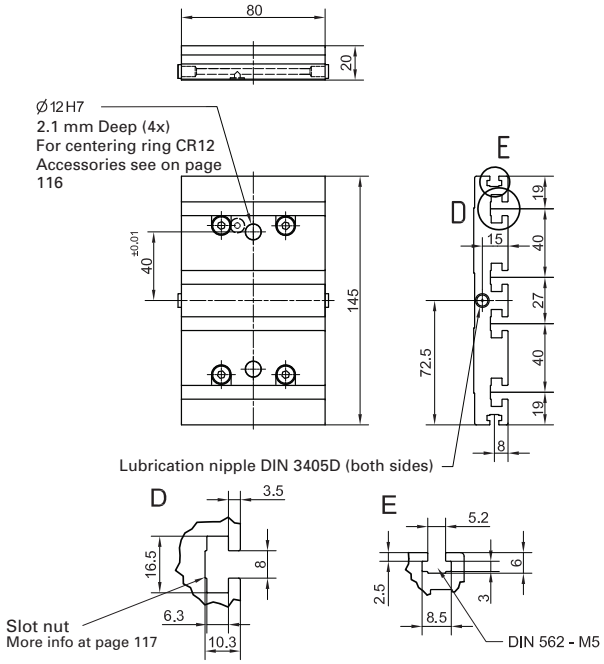
TAP / PIN holes on the bottom of the Profile.
Drawing only for presentational use.

CONNECTION PLATE

SR-D 145 L



SR-D 145



Linear Unit	Plate length [mm]	Weight [kg]	Code
SR-D 145 S	80	0.78	395-000103673
SR-D 145 L	190	1.54	395-000103672

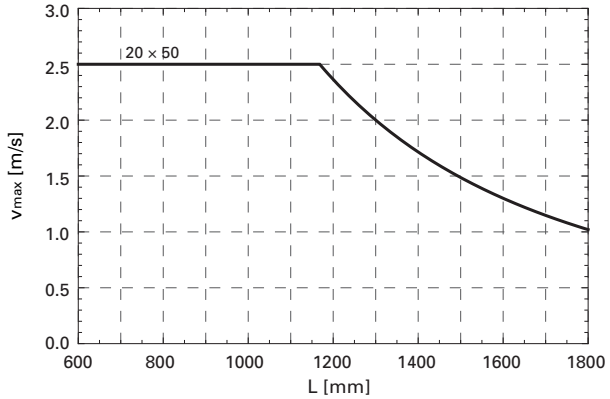
Mounting elements for mounting the connection plate on the Linear unit are inlcuded.

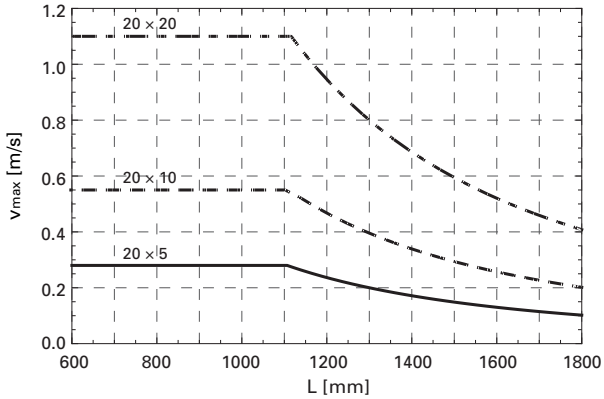
Mounting the drive

- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page 120)

Available on request.

Maximum travel speed as a function of the profile length (Vmax - L curves)





TECHNICAL DATA

General technical data

Linear Unit	Carriage length Lv [mm]	Dynamic load capacity C [N]	Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]	Moved mass [kg]	* Max. length Lmax [mm]	* Max. stroke [mm]
SR-D 200 S	80	49600	3220	450	900	10000	24610	1600	450	308	3.11	2200	2000
SR-D 200 L	255	99200	6445	8680	8680	20000	51540	3350	4550	1750	6.21		1825

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

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

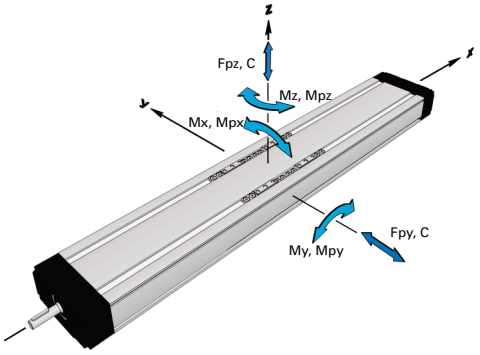
For operating temperature out of the presented range, please contact us.

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

$E = 70000 \text{ N / mm}^2$

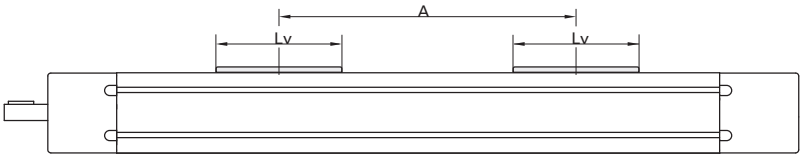


General technical data for double carriage

Linear Unit	Carriage version	Dynamic load capacity C [N]	* Dynamic moment Mx [Nm]	My [Nm]	Mz [Nm]	* Max. permissible loads Forces Fpy [N]	Fpz [N]	Moments Mpx [Nm]	Mpy [Nm]	Mpz [Nm]
SR-D 200	S2	99200	6440	49.6 × A	49.6 × A	20000	49230	3200	24.6 × A	10.0 × A
	L2	198400	12890	99.2 × A	99.2 × A	40000	103000	6700	51.5 × A	20.0 × A

* A - Distance between carriages [mm]. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated by contacting a sales engineer.



Ball Screw Drive data

Linear Unit	Ball screw [d × l]	Max. rotational speed [rev / min]	1 Max. travel speed [m / s]	2 No load torque Carriage: S [Nm]	Carriage: L [Nm]	Lead constant [mm / rev]	3 Max. repeteability precision [mm] STANDARD ISO7	ISO5	Dynamic load capacity BS Ca [N]	Max. Axial load Fx [N]	Max. drive torque Ma [Nm]	4 Min. stroke [mm]	1 Max. accele-ration [m/s²]
SR-D 200	32 × 5	2150	0.18	0.60 × nc	0.70 × nc	5	± 0.02	± 0.01	18850	18850	16.7 with Keyway 16.7 without Keyway	65	20
	32 × 10	3000	0.50	0.70 × nc	0.80 × nc	10	± 0.02	± 0.01	37000	29600	27.3 with Keyway 52.3 without Keyway		
	32 × 20		1.00	0.75 × nc	0.85 × nc	20	± 0.02	± 0.01	22950	14800			
	32 × 32		1.60	0.80 × nc	0.90 × nc	32	± 0.02	± 0.01	15550	9240		70	

1 Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit. For travel speed and acceleration over the stated value in the table above or diagrams please contact us.
2 The stated values are for strokes (and distances between the carriages A) up to 500mm. No Load Torque value increases with stroke (and with A) elongation. nc - Number of carriages
3 For the ball nut with the preload of 2% please contact us
4 For minimum stroke below the stated value in the table above please contact us.

TECHNICAL DATA

Mass and mass moment of inertia

Linear unit	Mass of linear unit [kg]	Planar moment of inertia Iy [cm⁴]	Iz [cm⁴]
SR-D 200 S	15.4 + 0.031 × (Abs. stroke + (nc - 1) × A) + 3.11 × (nc - 1)	417.4	3007.3
SR-D 200 L	23.8 + 0.031 × (Abs. stroke + (nc - 1) × A) + 6.21 × (nc - 1)		

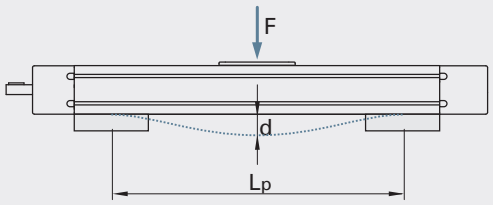
Linear unit	Ball screw [d × l]	Mass moment of inertia [10^{-5} kg m²]
SR-D 200 S	32 × 5	21.17 + 0.069 × (Abs. stroke + (nc - 1) × A) + 0.20 × (nc - 1)
	32 × 10	21.76 + 0.069 × (Abs. stroke + (nc - 1) × A) + 0.79 × (nc - 1)
	32 × 20	24.12 + 0.069 × (Abs. stroke + (nc - 1) × A) + 3.15 × (nc - 1)
	32 × 32	29.04 + 0.069 × (Abs. stroke + (nc - 1) × A) + 8.07 × (nc - 1)
SR-D 200 L	32 × 5	33.41 + 0.069 × (Abs. stroke + (nc - 1) × A) + 0.39 × (nc - 1)
	32 × 10	34.59 + 0.069 × (Abs. stroke + (nc - 1) × A) + 1.57 × (nc - 1)
	32 × 20	39.31 + 0.069 × (Abs. stroke + (nc - 1) × A) + 6.29 × (nc - 1)
	32 × 32	49.12 + 0.069 × (Abs. stroke + (nc - 1) × A) + 16.11 × (nc - 1)

* Absolute stroke [mm]
A - Distance between carriages [mm]. More info on following pages.
nc - Number of carriages

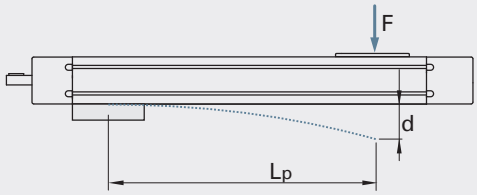
Mass calculation doesn´t include mass of motor, reduction gear, switches and clamps.

Deflection of the linear unit

Fixed - fixed mounting



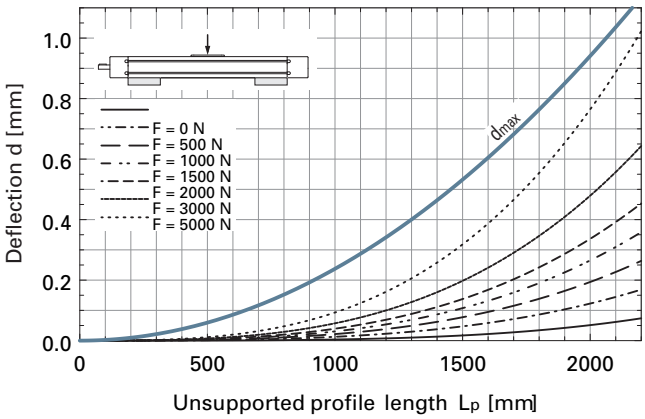
Fixed - free mounting

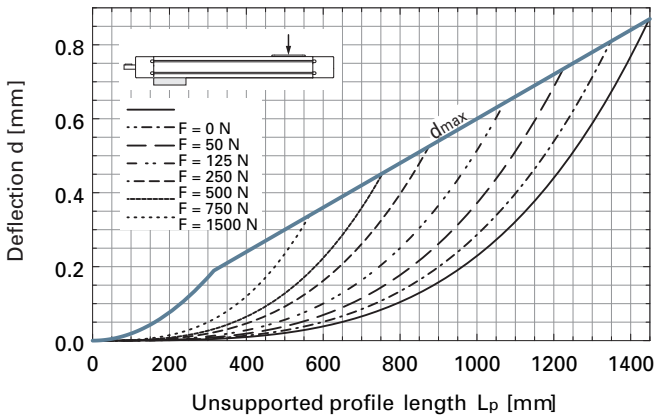


d Maximum deflection of the linear unit [mm]
dmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

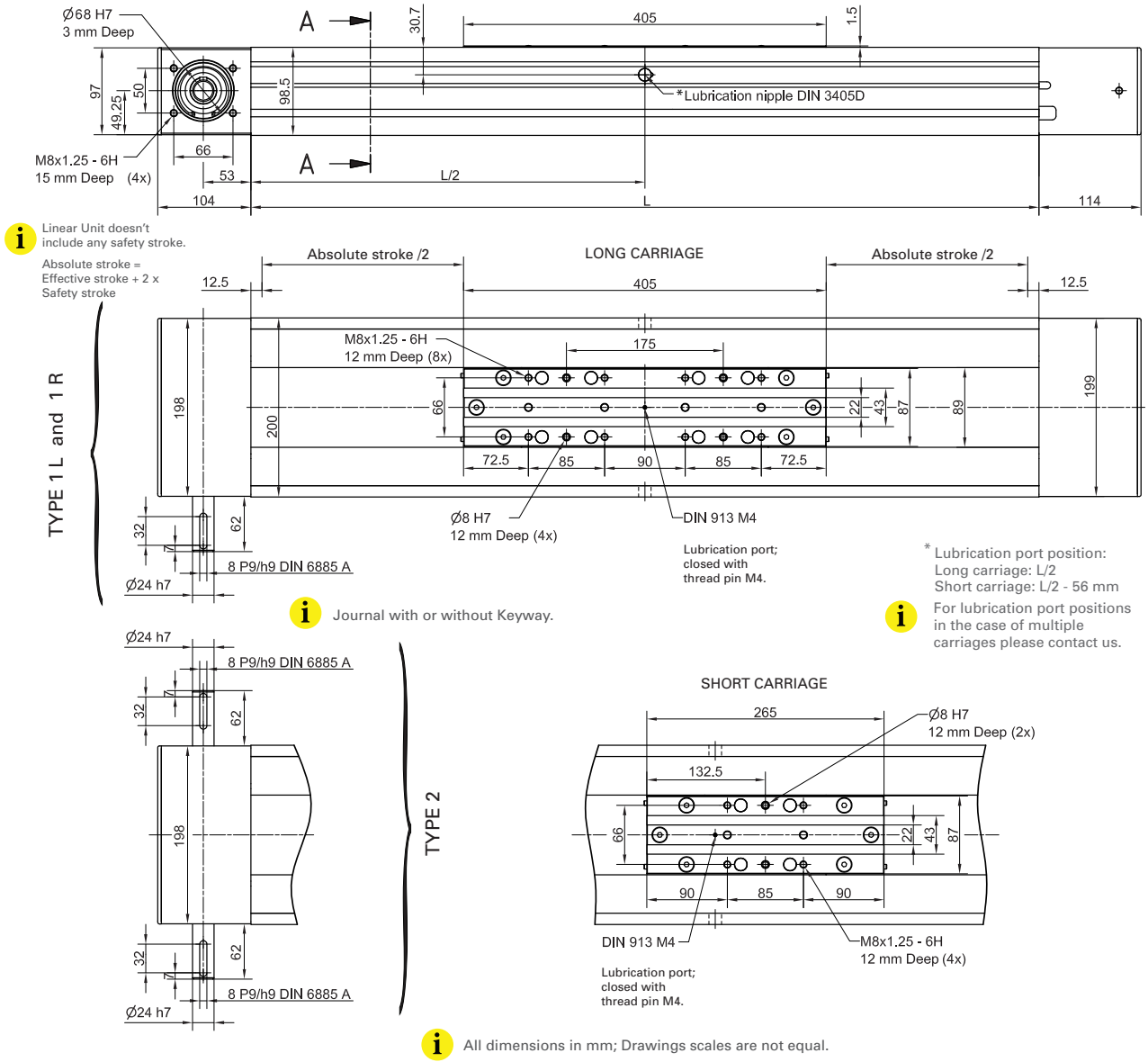
The maximum permissible deflection dmax must not be exceeded. In the case that maximum deflection d exceeds the maximum permissible deflection dmax additional profile supports are needed.

SR-D 200





DIMENSIONS

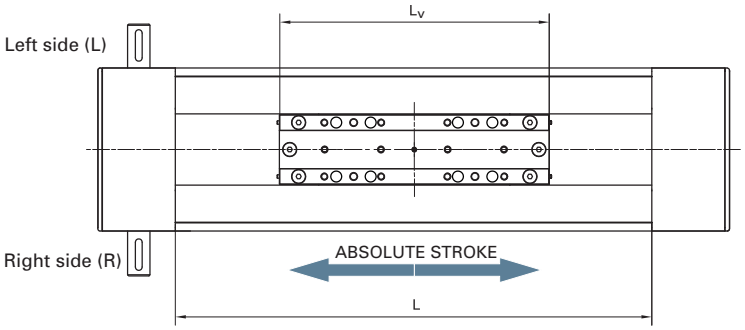


Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + A × (nc - 1) + 25 mm

Ltotal= L + 218 mm

nc - Number of carriages

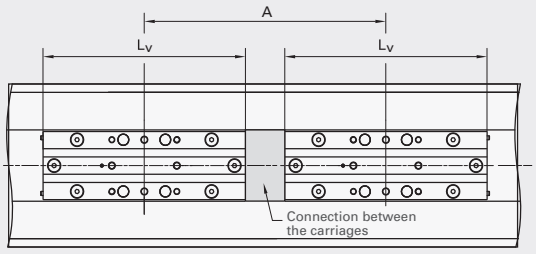


Lv - Long carriage = 405 mm
Lv - Short carriage = 265 mm

Multiple carriages

A ≥ Lv

Carriages are connected inside the profile with an aluminium plate (or a toothed belt for the case of longer distances A)



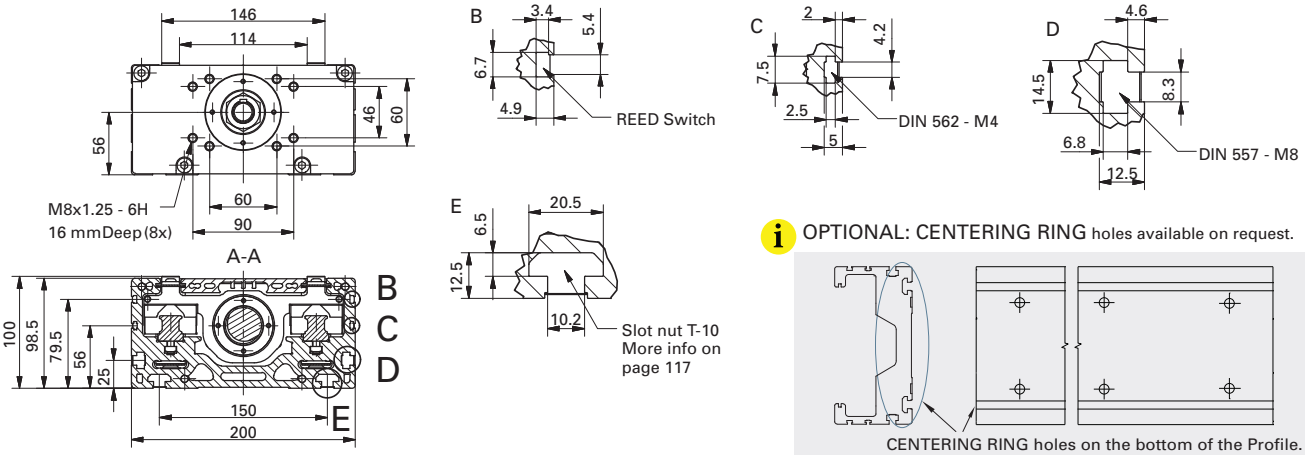
For the case of A [mm] > Alim :

- a toothed belt for the connection of the carriages will be used.

- the following condition must be met:
A [mm] = Alim + 10 × i.
where i Î {1.2.3....}.

	BR-D 200 S	BR-D 200 L
Alim [mm]	1006	1146

DIMENSIONS



All dimensions in mm; Drawings scales are not equal.

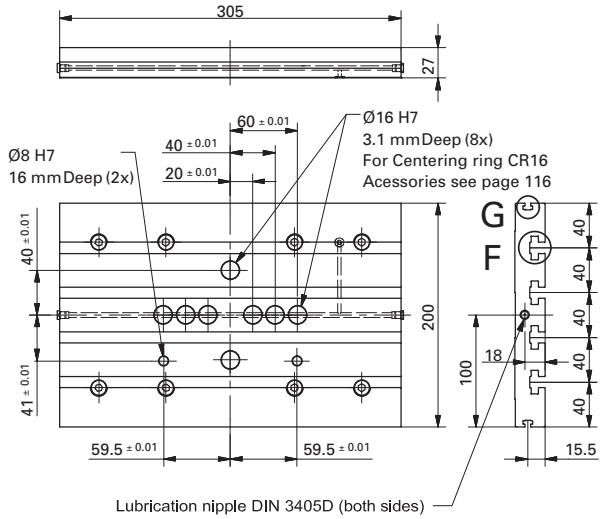
OPTIONAL: CENTERING RING holes available on request.

CENTERING RING holes on the bottom of the Profile.

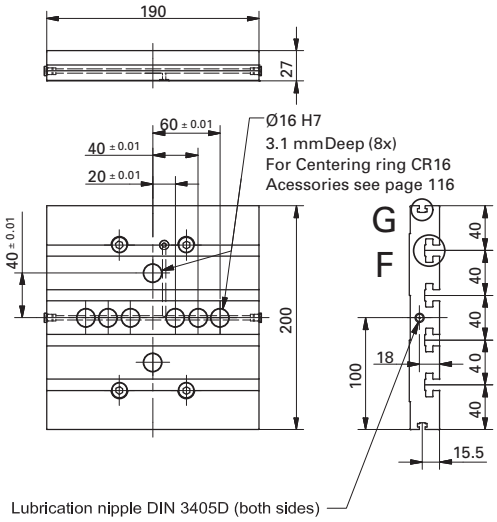
Drawing only for presentational use.

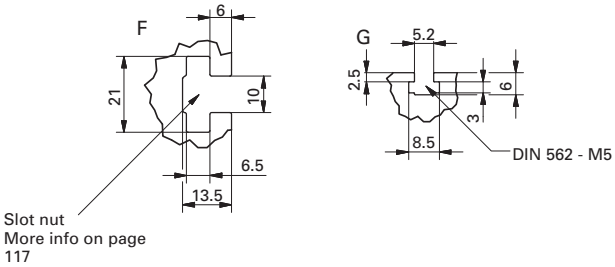
CONNECTION PLATE

SR-D 200 L



SR-D 200 S





Linear Unit	Plate length [mm]	Weight [kg]	Code
SR-D 200 S	190	2.32	395-000103675
SR-D 200 L	305	3.75	395-000103674

Mounting elements for mounting the connection plate on the Linear unit are inlcuded.

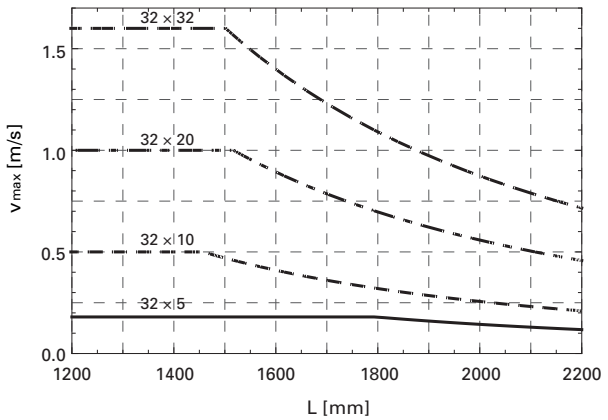
Please consider our advice in our Maintenance- and assembly instructions

Mounting the drive

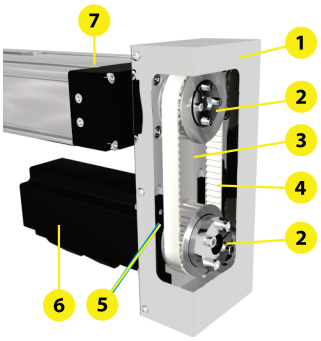
- by the MOTOR SIDE DRIVE - MSD (Page 112)
- by the MOTOR ADAPTER WITH COUPLING (Page120)

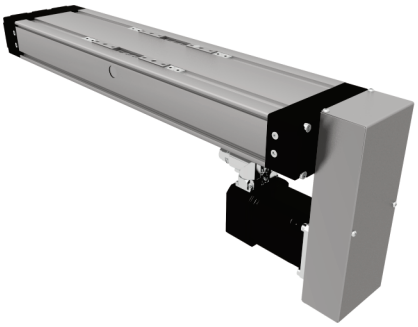
Available on request.

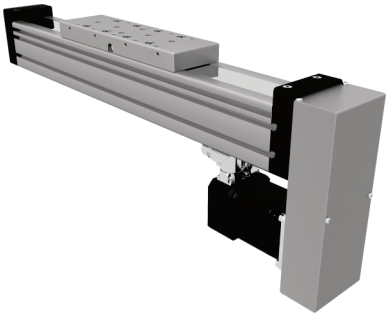
Maximum travel speed as a function of the profile length (Vmax - L curves)



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 - SR-D / SR-S

Possible installation positions of MSD

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

HOW TO ORDER

395SD - SR0110D - 2B - 1.5 - M40

Motor Side Drive: 395SD

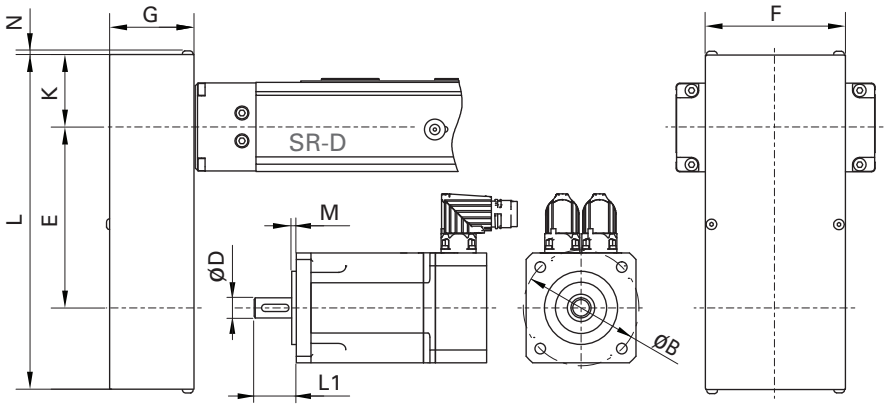
Linear Unit: SR0110D
e.g. - SR0110D

Type: 2B
See next page

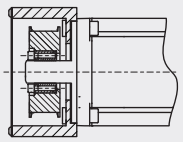
Gear ratio: 1.5
See next page

Motor type: M40
According to customer's drawing

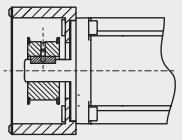
TECHNICAL DATA AND DIMENSIONS



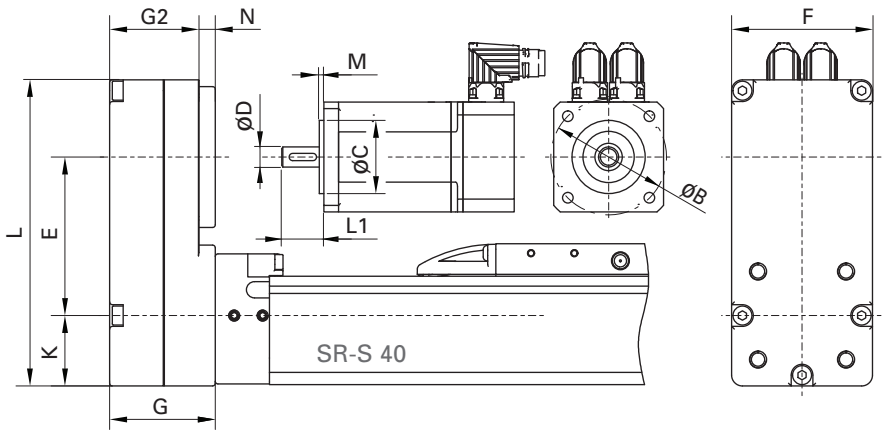
Clamping set



Keyway



SR-S 40



TECHNICAL DATA AND DIMENSIONS

Technical data

Linear Unit	Type	Gear ratio	Max. drive torque (linear unit)	** Max. radial load on shaft	Mass moment of inertia	Mass ***	Motor size limits [mm]								
							ØB	ØC	*M	L1			ØD		
							max	max	max	min		max	Clamping set	Keyway	
		i	[Nm]	[N]	[10^{-6}kg m^2]	[kg]				Clamping set	Keyway		max	min	max
SR0040S	1A	1	1.3	60	4.6	0.5	60	36	4	****	20	32	8	>8	12
	1B	1.5	1.3	60	5.4	0.5							8	-	-
SR0040S	2A	1	3	80	45	0.8	80	52	4		25	39	19	-	-
	2B	1.5	3	80	31	0.7							10	>10	14
SR0090D	1A	1	2.7	90	75	0.8	70	-	4		25	39	19	-	-
	1B	1.5	2.7	90	45	0.7							10	>10	14
SR0110D SR0065S	1A	1	5	175	70	0.8	70	-	4		25	39	19	-	-
	1B	1.5	5	175	45	0.8							10	>10	14
SR0110D SR0065S	2A	1	9	245	210	1.5	100	-	4		30	49	22	-	-
	2B	1.5	11	235	330	1.5							19	>19	28
SR0145D SR0080S	1A	1	13	350	210	1.5	100	-	4		30	49	22	-	-
	1B	1.5	19	410	330	1.6							19	>19	28
SR0145D SR0080S	2A	1	19	410	550	3.0	130	-	4		35	59	35	-	-
	2B	2	24	375	860	2.9							19	>19	28
SR0200D SR0110S	1A	1	25	500	640	3.8	130	-	4		35	59	35	-	-
	1B	2	25	400	960	3.6							19	>19	28

(max. drive speed: 3000 1/min; No load torque: approx. 0.5 Nm)

* For a bigger value an additonal adapter plate is used. For the case of SR0040S a thicker plate may be used.

** 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.

*** This is an average value. It could differ depending to the motor dimensions.

**** Minimum dimension L1 depends on the size of particular clamping set. Values can be found in the table on page 114.

Dimensions

Linear Unit	Type	Gear ratio	Dimensions [mm]						
		i	E (± 0.5)	L	F	G	G2	K	N
SR0040S	1A	1	58.5	113	52	39	33	26	6 *
	1B	1.5	59						
SR0040S	2A	1	65	135	68	42	36	31	8 *
	2B	1.5	64.5						
SR0090D	1A	1	100	179	70	41	-	31	2
	1B	1.5	102						
SR0110D SR0065S	1A	1	100	179	70	41	-	31	2
	1B	1.5	112	190					
SR0110D SR0065S	2A	1	145	250	90	51	-	43	2
	2B	1.5	139						
SR0145D SR0080S	1A	1	145	250	90	51	-	43	2
	1B	1.5	180	282					
SR0145D SR0080S	2A	1	160	297	120	61	-	56	2.5
	2B	2	158						
SR0200D SR0110S	1A	1	268	403	120	61	-	56	2.5
	1B	2	267						

* This is a standard value. It could differ depending to the motor dimensions M and L1.

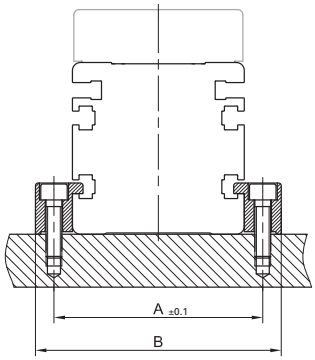
TECHNICAL DATA AND DIMENSIONS

Minimum dimension L1 [mm] depends on the motor shafts diameter øD

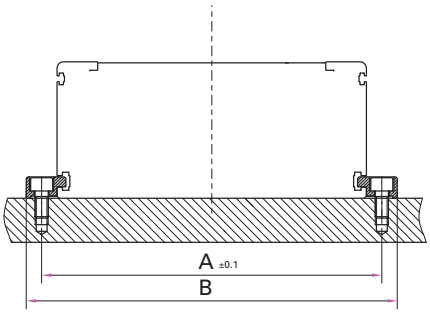
Linear Unit	Type	Gear ratio i	ØD [mm]																								
			4	5	6	6.35	7	8	9	9.53	10	11	12	14	15	16	17	18	19	20	22	24	25	25.4	28	30	32	35
SR0040S	1A	1	17	17	17	17	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1B	1.5	17	17	17	17	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SR0040S	2A	1	-	-	17	17	17	17	18	18	18	18	18	22	22	22	25	25	25	-	-	-	-	-	-	-	-	-
	2B	1.5	-	-	17	17	17	17	18	18	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SR0090D	1A	1	-	-	23	23	23	23	24	24	24	24	24	28	28	28	31	31	31	-	-	-	-	-	-	-	-	-
	1B	1.5	-	-	23	23	23	23	24	24	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SR0110D SR0065S	1A	1	-	-	23	23	23	23	24	24	24	24	24	28	28	28	31	31	31	-	-	-	-	-	-	-	-	-
	1B	1.5	-	-	23	23	23	23	24	24	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SR0110D SR0065S	2A	1	-	-	-	-	-	23	24	24	24	24	24	28	28	28	31	31	31	31	31	-	-	-	-	-	-	-
	2B	1.5	-	-	-	-	23	23	24	24	24	24	24	28	28	28	31	31	31	-	-	-	-	-	-	-	-	-
SR0145D SR0080S	1A	1	-	-	-	-	-	-	24	24	24	24	24	28	28	28	31	31	31	31	31	-	-	-	-	-	-	-
	1B	1.5	-	-	-	-	-	-	24	24	24	24	24	28	28	28	31	31	31	-	-	-	-	-	-	-	-	-
SR0145D SR0080S	2A	1	-	-	-	-	-	-	-	-	-	-	29	33	33	33	36	36	36	36	36	40	40	40	40	40	40	43
	2B	2	-	-	-	-	-	-	29	29	29	29	29	33	33	33	36	36	36	-	-	-	-	-	-	-	-	-
SR0200D SR0110S	1A	1	-	-	-	-	-	-	-	-	-	-	29	33	33	33	36	36	36	36	36	40	40	40	40	40	40	43
	1B	2	-	-	-	-	-	-	29	29	29	29	29	33	33	33	36	36	36	-	-	-	-	-	-	-	-	-

FIXING SYSTEM

BRS, BT-S, SR-S
BR-E



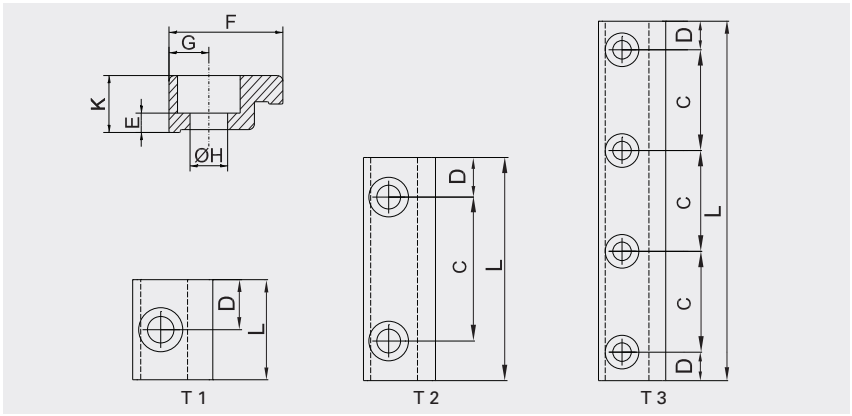
SR-D, BR-D



General

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

Linear Unit must be mounted by the aluminium profile!

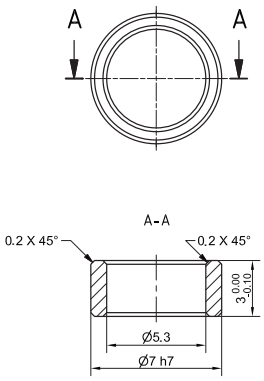


Linear Unit	Type	Dimensions [mm]										Screw	Countersink for	Weight [kg]	Code
		A	B	C	D	L	E	F	G	ØH	K				
BRS, BT-S, SR-S 40	T 2	50	64.4	40	7.5	55	2.5	15	7.2	5.5	8	M5	DIN 912	0.014	395-000037139
BRS, BT-S, SR-S 65	T 2	78	93	40	10	60	11.5	20	7.5	6.5	20	M6	DIN 912	0.054	395-000037129
BRS, BT-S, SR-S 80	T 2	93	108	40	10	60	11.5	20	7.5	6.5	20	M6	DIN 912	0.054	395-000037129
BRS, BT-S, SR-S 110	T 2	130	150	40	10	60	18	30	10	8.5	27	M8	DIN 912	0.082	395-000044375
BR-E 40	T 2	52	66	40	7.5	55	14.5	20	7	5.5	20	M5	DIN 912	0.035	395-000040728
SR-D, BR-D 90	T 1	102	112	/	12.5	25	4.5	15	5	4.5	9	M4	DIN 912	0.01	395-000046994
SR-D, BR-D 90	T 2	102	112	40	11	62	4.5	15	5	4.5	9	M4	DIN 912	0.02	395-000048636
SR-D, BR-D 90	T 3	102	112	20	8.5	77	4.5	15	5	4.5	9	M4	DIN 912	0.025	395-000047613
SR-D, BR-D 90	T3	102	112	25	6	87	4.5	15	5	4.5	9	M4	DIN 912	0.028	395-000055261
SR-D, BR-D 90	T 3	102	112	30	8.5	107	4.5	15	5	4.5	9	M4	DIN 912	0.031	395-000055638
SR-D, BR-D 110	T 1	126	140	/	12.5	25	3.4	20	7	6.6	10	M6	DIN 912	0.01	395-000048642
SR-D, BR-D 110	T 2	126	140	40	11	62	3.4	20	7	6.6	10	M6	DIN 912	0.03	395-000048643
SR-D, BR-D 110	T 3	126	140	20	8.5	77	4.5	20	7	5.5	10	M5	DIN 912	0.03	395-000048640
SR-D, BR-D 110	T 3	126	140	30	8.5	107	4.5	20	7	5.5	10	M5	DIN 912	0.045	395-000046995
SR-D, BR-D 110	T3	126	140	40	11	142	3.4	20	7	6.6	10	M6	DIN 912	0.056	395-000055260
SR-D, BR-D 145	T 1	161	175	/	12.5	25	3.4	20	7	6.6	10	M6	DIN 912	0.01	395-000048642
SR-D, BR-D 145	T 2	161	175	40	11	62	3.4	20	7	6.6	10	M6	DIN 912	0.03	395-000048643
SR-D, BR-D 145	T 3	161	175	20	8.5	77	4.5	20	7	5.5	10	M5	DIN 912	0.03	395-000048640
SR-D, BR-D 145	T 3	161	175	30	8.5	107	4.5	20	7	5.5	10	M5	DIN 912	0.045	395-000046995
SR-D, BR-D 145	T 3	161	175	40	11	142	3.4	20	7	6.6	10	M6	DIN 912	0.056	395-000055260
SR-D, BR-D 200	T 2	222	240	40	19	78	14.8	29	9	8.5	27.5	M8	DIN 912	0.110	395-000053049
SR-D, BR-D 200	T 2	222	240	50	19	88	14.8	29	9	8.5	27.5	M8	DIN 912	0.120	395-000053050
SR-D, BR-D 200	T 2	222	240	70	19	108	16.3	29	9	8.5	27.5	M8	DIN 912	0.160	395-000053051

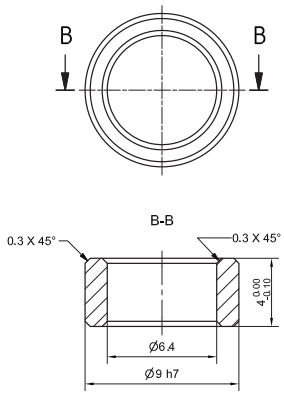
Recommended number of clamping fixtures: For T1 is recommended 6 pcs. per meter on each side. for T2 is recommended 3 pcs. per meter on each side and for T3 is recommended 3 pcs. per meter on each side.

CENTERING RINGS

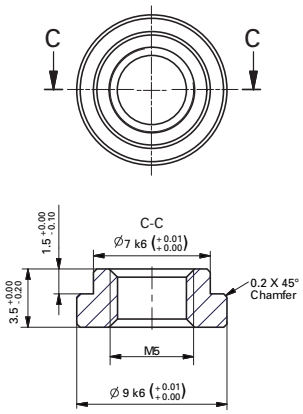
CR 7



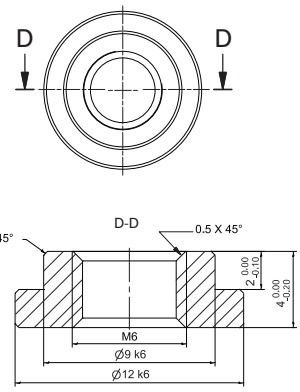
CR 9



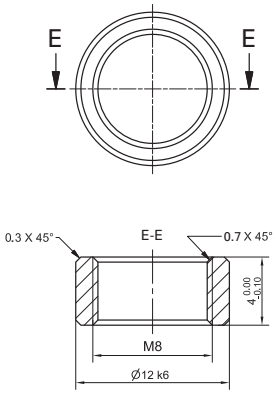
CR 7 / 9



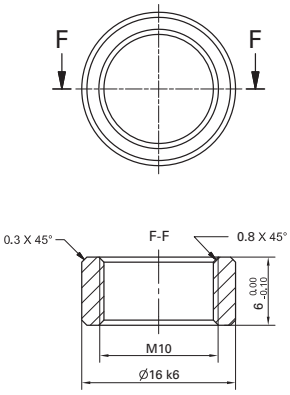
CR 9 / 12



CR 12



CR 16



Type	Compatible with	Code
CR 7	BR-S/BT-S/BR-Z/SR-S: 40, 65	395-000023332
CR 9	BR-S/BT-S /SR-S/BR-Z: 80,110 SR-D/BR-D: 90, 110	395-000023331
CR 7/9	BR-S/BT-S/SR-S/BR-Z/ SR-D/BR-D: 90, 110	395-000075114
CR 9/12	BR-S/BT-S /SR-S/BR-Z: 80,110 SR-D/BR-D: 90, 110, 145	395-000048885
CR 12	SR-D/BR-D: 145	395-000049049
CR 16	SR-D/BR-D: 200	395-000053023

SLOT NUTS


DIN562


DIN557


Slot Nut

* - deviating CODE

LINEAR UNITS - PROFILE

CODE	NUT TYPE	BR-S/ BT-S 40	SR-S 40	BR-S/BT-S/ SR-S/BR-Z 65	BR-S/BT-S/ SR-S/BR-Z 80	BR-S/BT-S/ SR-S /BR-Z 110	BR-E 40	SR-D/ BR-D 90	SR-D/ BR-D 110	SR-D/ BR-D 145	SR-D/ BR-D 200
395-000041609	DIN562 - M2.5		X					X	X	X	
395-000040682	DIN562 - M4	X - *395-000057017		X	X			X			X
395-000040768	DIN562 - M5								X	X	
395-000040769	DIN557 - M5			X	X						
395-000044451	DIN557 - M8					X					X
395-000005746	Slot Nut M6						X				
395-000005551	Slot Nut T-10-M8										X
395-000005552	Slot Nut T-10-M6										X
395-000005553	Slot Nut T-10-M5										X
395-000005570	Slot Nut T-10-M8 L=90										X

LINEAR UNITS - CONNECTION PLATES

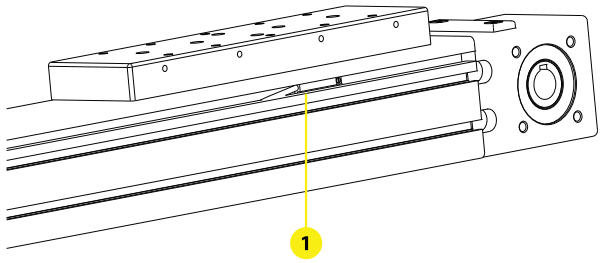
CODE	NUT TYPE	SR-D/ BR-D 200
395-000005551	Slot Nut T-10-M8	X
395-000005552	Slot Nut T-10-M6	X
395-000005553	Slot Nut T-10-M5	X
395-000005570	Slot Nut T-10-M8 L =90	X

CODE	NUT TYPE	SR-D/ BR-D 145
395-000005704	Slot Nut 8LM4	X
395-000005703	Slot Nut 8LM5	X
395-000005702	Slot Nut 8LM6	X
395-000005701	Slot Nut 8LM8	X

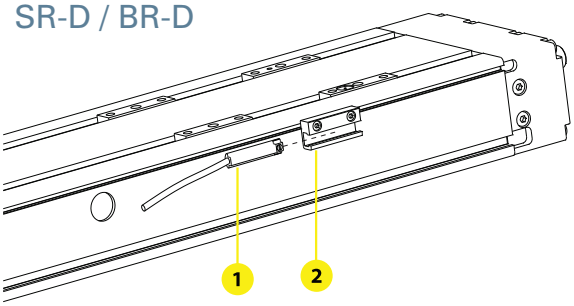
CODE	NUT TYPE	SR-D/ BR-D 110	SR-D/ BR-D 90
395-000048887	Slot Nut 6LM4	X	X
395-000048888	Slot Nut 6LM5	X	X

MAGNETIC FIELD SENSORS

BR-S / BT-S / SR-S



SR-D / BR-D

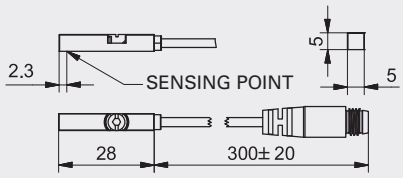


1 - Magnetic field sensor
2 - Sensor holder

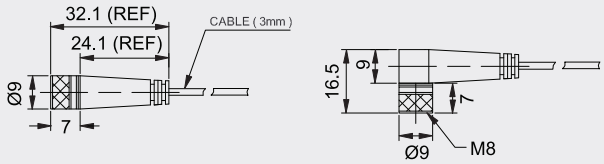
Mounting of Magnetic field sensor on SR-D and BR-D series requires a HOM sensor holder.

For SR-S 40 a HOM sensor holder is also needed. For SR-D/BR-D 200 a HOM sensor holder is not needed.

SMT-65TP-K N0 / NC



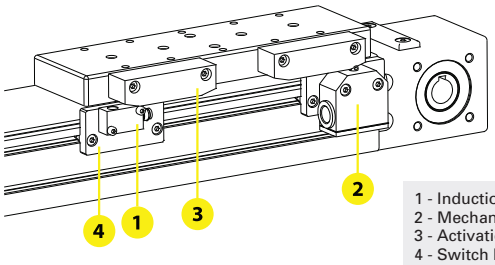
Extension cable with connector



Code	Type	Compatibility	
395-000043851	HOM Sensor holder	SR-S 40, SR-D90, SR-D110, SR-D145, BR-D90, BR-D110, BR-D145	
395-000074073	SMT-65TP-K NC	BR-S/BT-S/SR-S/BR-SZ:40,65,80, 110 SR-D/BR-D: 200	
395-000077075	SMT-65TP-K NC + HOM	SR-S 40, SR-D90, SR-D110, SR-D145, BR-D90, BR-D110, BR-D145	
395-000074074	SMT-65TP-K NO	BR-S/BT-S/SR-S/BR-SZ:40,65,80, 110 SR-D/BR-D: 200	
395-000077076	SMT-65TP-K NO + HOM	SR-S 40, SR-D90, SR-D110, SR-D145, BR-D90, BR-D110, BR-D145	
395-00008146	Extension Cable length 2m - Straight connector		
395-00008147	Extension Cable length 5m - Straight connector		
395-00009017	Extension Cable length 2m - Angeled connector		
395-00009019	Extension Cable length 5m - Angeled connector		

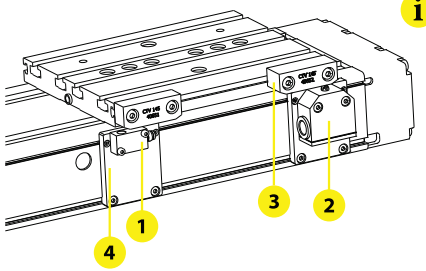
TECHNICAL DATA	SMT-65TP-K NC	SMT-65TP-K NO
Sensor Type	GMR sensor	GMR sensor
Switching function	NC	NO
Output	PNP	PNP
Operating voltage	10 ~ 28 V DC	10 ~ 28 V DC
Switching Current	200 mA max.	200 mA max.
Power rating	5.5 W max.	5.5 W max.
Voltage Drop	1.5 V / 200mA max.	1.5 V / 200 mA max.
Current Consumption	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

BR-S / BT-S / SR-S



1 - Induction switch
2 - Mechanical switch
3 - Activation block
4 - Switch holder

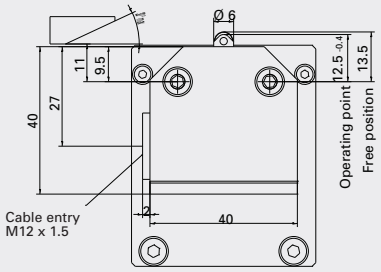
SR-D / BR-D



Mounting and using the Induction and Mechanical switch. can be done only if the SR-D and BR-D series Linear Units are delivered with Connection plates.

MS- Mechanical switch

TECHNICAL DATA

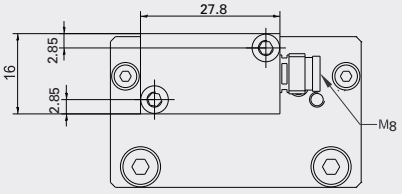


Protection class IEC 60529	IP 67
Ambient temperature	-5°C ...+80°C
Operating point accuracy	± 0.05 mm
Approach speed max.	45 m/min
Approach speed min.	0.01 m/min
Switching contact	1 changeover
Switching principle	Snap-action
Rated voltage	250 V AC
Switching current. min. at	10 mA
Switching voltage	24 V DC
Cable entry	M12 x 1.5

ORDERING CODES		BR-S/ BT-S 40	BR-Z 40	SR-S 40	BR-S/BT-S/SR-S 65; BR-Z 65/80	BR-S/BT-S/ SR-S 80	BR-S/BT-S/ SR-S 110	BR-Z 110	BR-E 40	SR-D/ BR-D 90	SR-D/ BR-D 110	SR-D/ BR-D 145	SR-D/ BR-D 200
+ 2×	Activation block with fixing screws	395-0000 43243	395-0000 52022	395-0000 43243	395-000043247	395-000043256	395-0000 47827	395-0000 63702	395-0000 49030	395-0000 49032	395-0000 49031	395-0000 40652	395-0000 40652
	Mechanical switch only	395-000047921											
2× +	+ 2× + Mechanical switch with	395-000040683	395-0000 104970		395-000040687	395-000040689	395-0000 47826	395-0000 63703	395-0000 49035	395-0000 49034	395-0000 49033	395-0000 47939	395-0000 53055

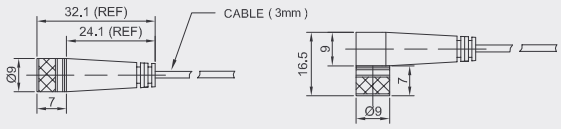
IS- Inductive switch

TECHNICAL DATA



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

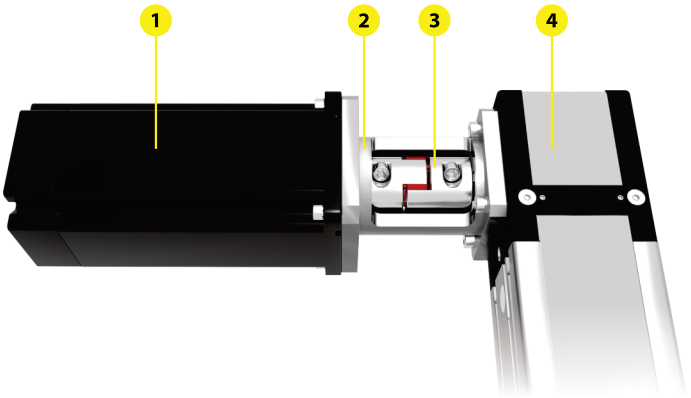
Extension cable with connector



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		BR-S/ BT-S 40	BR-Z 40	SR-S 40	BR-S/BT-S/ SR-S 65/BR-Z 65/80	BR-S/BT-S/ SR-S80	BR-S/BT-S /SR-S 110	BR-Z 110	BR-E 40	SR-D/ BR-D 90	SR-D/ BR-D 110	SR-D/ BR-D 145	SR-D/ BR-D 200
+ 2×	Activation block with fixing screws	395-0000 43243	395-0000 52022	395-0000 43243	395-000043247	395-000043256	395-0000 47827	395-0000 63702	395-0000 49030	395-0000 49032	395-0000 49031	395-0000 40652	395-0000 40652
	PNP NO Inductive switch only	395-000040671											
2× +	+2× + PNP NO Ind. switch with mounting elements	395-000040680		395-0000 104968	395-000048026	395-000043233	395-0000 48047	395-0000 63705	395-0000 45105	395-0000 49039	395-0000 49038	395-0000 48058	395-0000 53054
	PNP NC Inductive switch only	395-000043570											
2× +	+2× + PNP NC Ind. switch with mounting elements	395-000048851		395-0000 104969	395-000040685	395-000047848	395-0000 47989	395-0000 63704	395-0000 45103	395-0000 49037	395-0000 49036	395-0000 47850	395-0000 53052
	Extension Cable length 2m - Straight connector	395-000008146											
	Extension Cable length 5m - Straight connector	395-000008147											
	Extension Cable length 2m - Angeled connector	395-000009017											
	Extension Cable length 5m - Angeled connector	395-000009019											

MOTOR ADAPTER WITH COUPLING



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

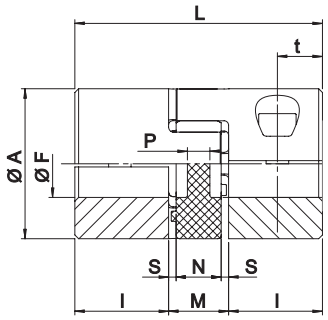
395MA - 110 - SMB60 - 0007

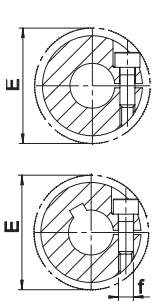
Motor adapter :
Linear Unit :
Motor type :
According to customer's specification
Coupling type :
See below

COUPLINGS

395C - 0007 - 008 - 014 - C

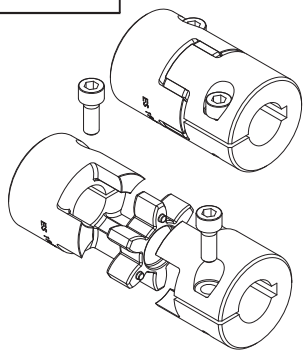
Coupling:
Coupling type / size:
7, 9, 14, 19/24, 24/28, 28/38, 38/45
Hole Diameter 1 [mm]:
Hole Diameter 2 [mm]:
Option:
C: with keyway
Leave blank: without keyway





without Keyway

with Keyway



The maximum transmittable torque of the clamping hub depends on the bore diameter (see the upper table on page 121).

Size	* T_{KN} Nominal [Nm]	*T_{Kmax} [Nm]	Ms [Nm]	Hub W [Kg]	Hub J [Kgm²]	n_{max} [min⁻¹]	A [mm]	F min [mm]	F max [mm]	f [mm]	L [mm]	l [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}** transmissible torque in the upper table are valid for coupling with Keyway!

**for legend see page 121

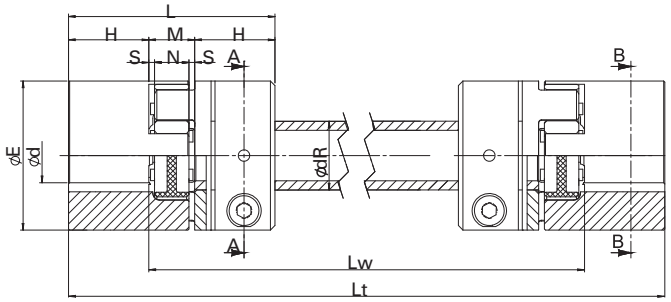
Size	Recommended coupling bore diam. and Transmissible Torque [Nm] - valid for shaft tolerances k6 without Keyway																							
	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
7	0.7	0.8	1.0	1.1																					
9	1.1	1.4	1.7	1.9	2.2	2.5	2.8																		
14			2.5	2.9	3.3	3.7	4.1	4.6	5.0	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

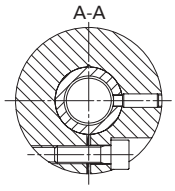
Ms - Screw tightening torque	Nm
W - Weight	Kg
J - Coupling moment of inertia	kgm^2
nmax - Maximum rpm	min^{-1}
TKN - Coupling nominal torque	Nm
Tkmax - Coupling maximum torque	Nm

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

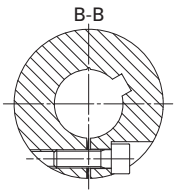
SYNCHRONIZATION SHAFT OSL

The maximum transmittable torque of the clamping hub depends on the bore diameter (see the upper table on page 121).



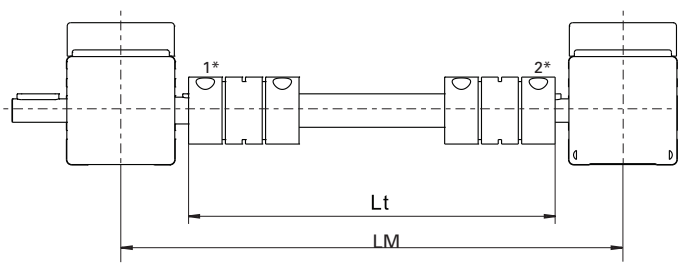


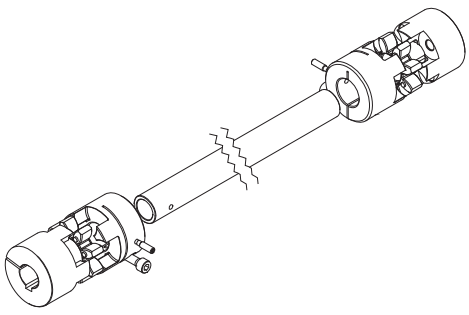
Internal Hub



Size	Internal hub		CT [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]	MT [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
MT - Maximum transmissible torque	Nm
CT - Torsional rigidity per meter	Nm/rad

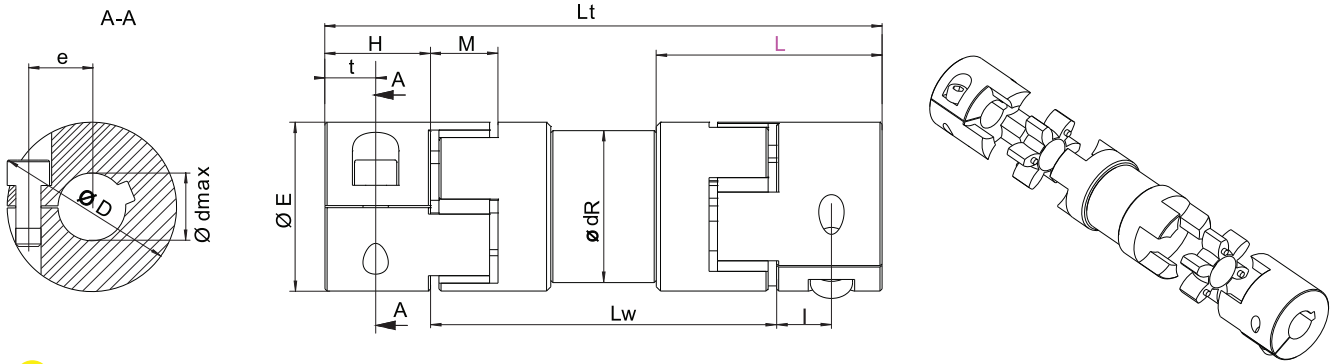




* - see page 122 for more info

For longer distances Bearing Supports needed, please contact us.

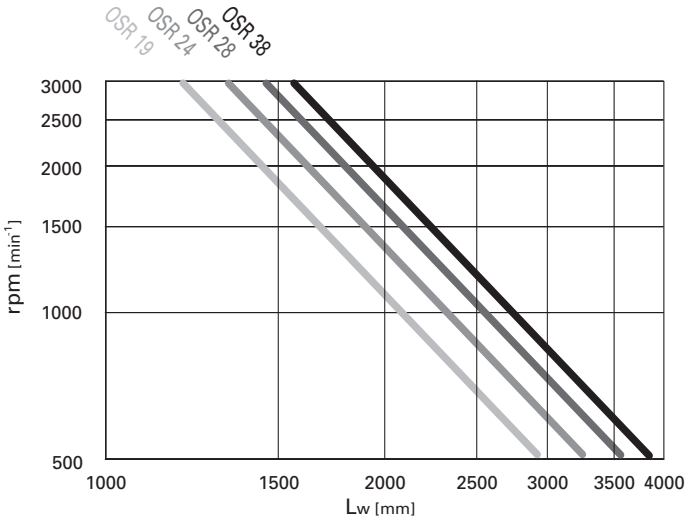
SYNCHRONISATION SHAFT OSR



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

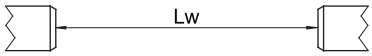
Size	d min [mm]	d max [mm]	Ms [Nm]	MT [Nm]	CT [Nm/rad]	E [mm]	H [mm]	I [mm]	L [mm]	M [mm]	Lw min [mm]	Lt [mm]	D [mm]	t [mm]	e [mm]	dR [mm]	Weight [kg]	Moment of inertia [10⁻⁸kg * m²]
19	10	20	10	39	1630	40	25	13	53.5	16	82	on request	47	12	15	36	0.30 + 0.00058 * Lw	66.0 + 0.1679 * Lw
24	10	28	10	53	3980	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 shat connections.
Torque transmission is zero backlash. Designed for lengths up to 4m without bearing support (depending on rotation speed).

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

HOW TO ORDER

395SSR - 19 - BRE65 - LM - 890 - F16C - F16C

Type:
395SSL
395SSR

Size:
SSL: 14, 19/24, 24/28, 28/38, 38/45
SSR: 19, 24, 28, 38

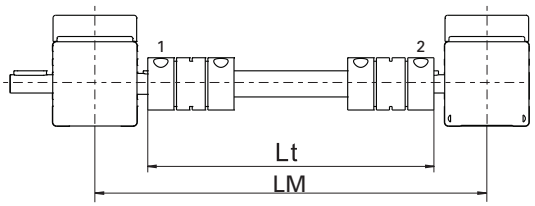
Linear unit series:
BR-S/BT-S/BR-E: 40, 65, 80, 110
BR-D: 90, 110, 145, 200
Leave blank: not for linear unit

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

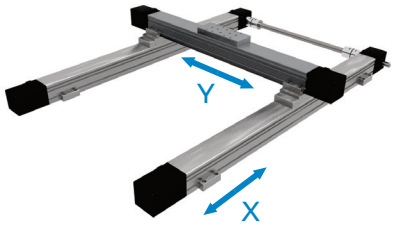
Hole diameter:
— one side end hub[1]
--- other side end hub[2]

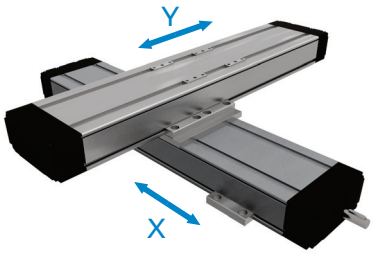
Length [mm]

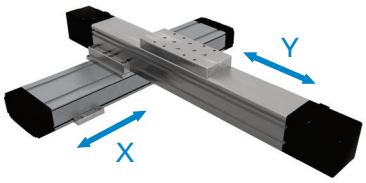


X-Y CONNECTION ELEMENTS

X- Axis BR-S, BT-S, SR-S, BR-E, SR-D = 0° → Y Axis = 0°

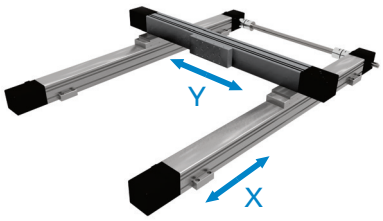


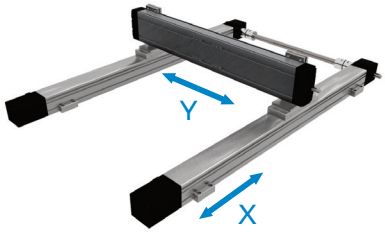


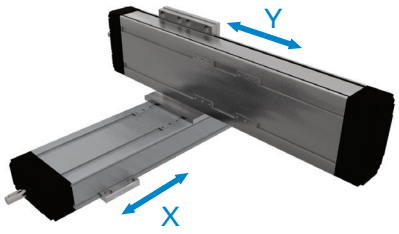


X-Axis	Y-Axis								
	BR-S, BT-S, SR-S 40	BR-S, BT-S, SR-S 65	BR-S, BT-S, SR-S 80	BR-S, BT-S, SR-S 110	BR-E 40	SR-D, BR-D 90	SR-D, BR-D 110	SR-D, BR-D 145	SR-D, BR-D 200
BR-S, BT-S, SR-S 40	CP M40 0 M40 0	CP M40 0 M65 0			CP M40 0 E40 0	CP M40 0 C90 0			
BR-S, BT-S, SR-S 65	CP M65 0 M40 0	CP M65 0 M65 0	CP M65 0 M80 0		CP M65 0 E40 0	CP M65 0 C90 0	CP M65 0 C110 0		
BR-S, BT-S, SR-S 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	
BR-S, BT-S 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
BR-E 40	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		
SR-D, BR-D 90	CP C90 0 M40 0	CP C90 0 M65 0				CP C90 0 C90 0	CP C90 0 C110 0		
SR-D, BR-D 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	
SR-D, BR-D 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	
SR-D, BR-D 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 BR-S, BT-S, SR-S, BR-E, SR-D = 0° → Y Axis = 90°



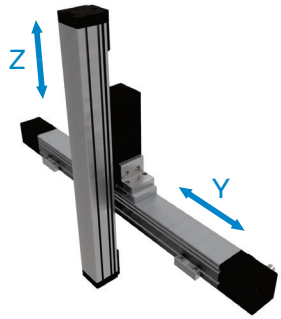


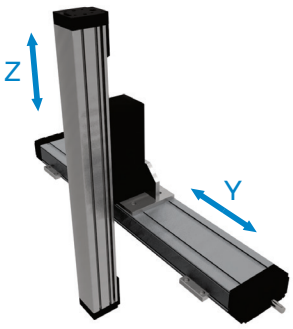


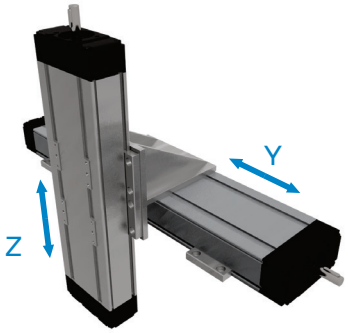
X-Axis	Y-Axis								
	BR-S, BT-S, SR-S 40	BR-S, BT-S, SR-S 65	BR-S, BT-S, SR-S 80	BR-S, BT-S, SR-S 110	BR-E 40	SR-D, BR-D 90	SR-D, BR-D 110	SR-D, BR-D 145	SR-D, BR-D 200
BR-S, BT-S, SR-S 40	CP M40 0 M40 90	CP M40 0 M65 90			CP M40 0 E40 90	CP M40 0 C90 90			
BR-S, BT-S, SR-S 65	CP M65 0 M40 90	CP M65 0 M65 90	CP M65 0 M80 90			CP M65 0 C90 90	CP M65 0 C110 90		
BR-S, BT-S, SR-S 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	
BR-S, BT-S 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
BR-E 40	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		
SR-D, BR-D 90	CP C90 0 M40 90	CP C90 0 M65 90				CP C90 0 C90 90			
SR-D, BR-D 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		
SR-D, BR-D 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	
SR-D, BR-D 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 BR-S, BT-S, SR-S, BR-E, SR-D, BR-D = 0° → Z-Axis = 90°

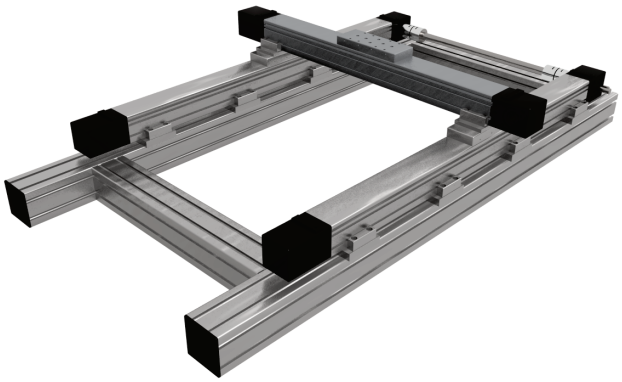


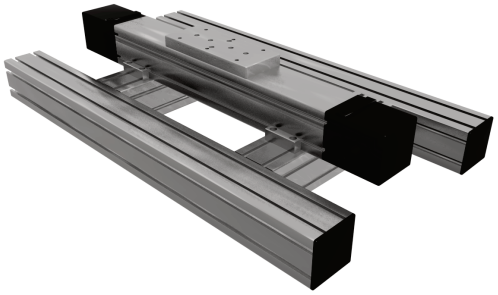




Y-Axis	Z-Axis										
	BR-Z 40	BR-Z 65	BR-Z 80	BR-Z 110	SR-S 40	SR-S 65	SR-S 80	SR-S 110	SR-D 90	SR-D 110	SR-D 145
BR-S, BT-S, SR-S 40	CP M40 0 Z40				CP M40 0 ZM40						
BR-S, BT-S, SR-S 65	CP M65 0 Z40	CP M65 0 Z65			CP M65 0 ZM40	CP M65 0 ZM65					
BR-S, BT-S, SR-S 80	CP M80 0 Z40	CP M80 0 Z65	CP M80 0 Z80		CP M80 0 ZM40	CP M80 0 ZM65	CP M80 0 ZM80				
BR-S, BT-S, SR-S 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			
BR-E 40	CP E40 0 Z40										
SR-D, BR-D 90	CP C90 0 Z40	CP C90 0 Z65			CP C90 0 ZM40				CP C90 0 ZC90		
SR-D, BR-D 110	CP C110 0 Z40	CP C110 0 Z65	CP C110 0 Z80		CP C110 0 ZM40	CP C110 0 ZM65	CP C110 0 ZM80		CP C110 0 ZC90	CP C110 0 ZC110	
SR-D, BR-D 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
SR-D, BR-D 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 CONSTRICTIONS WITH ALU PROFILES



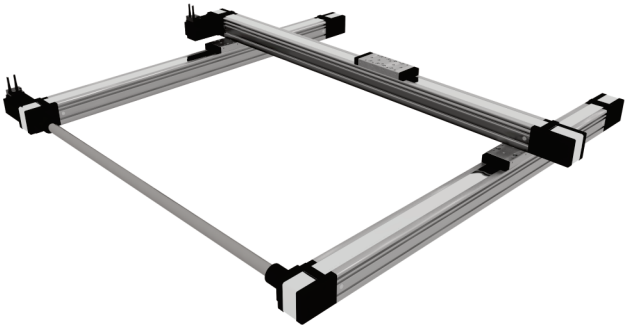


Linear Unit must be mounted by the aluminium profile and not at the end blocks!

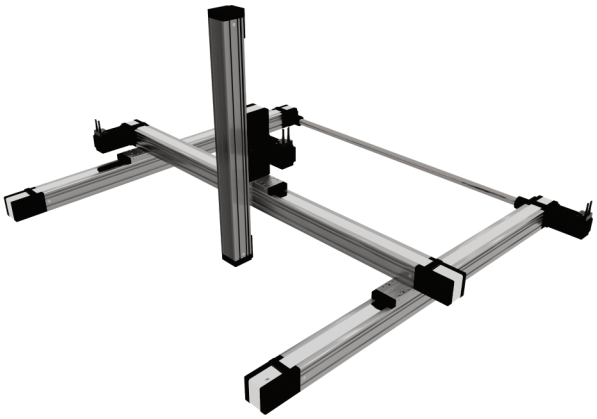
MULTI AXIS SYSTEMS

We offer all neccessary 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.

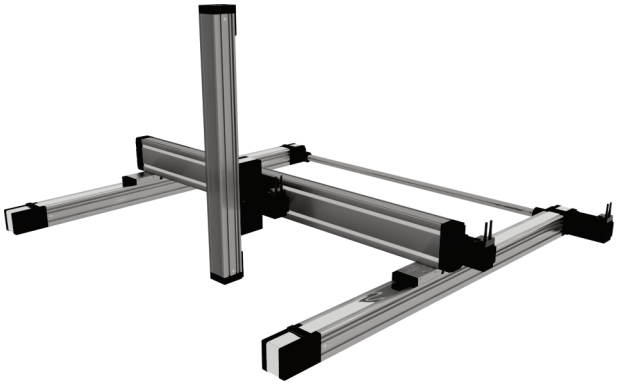
1



2



3



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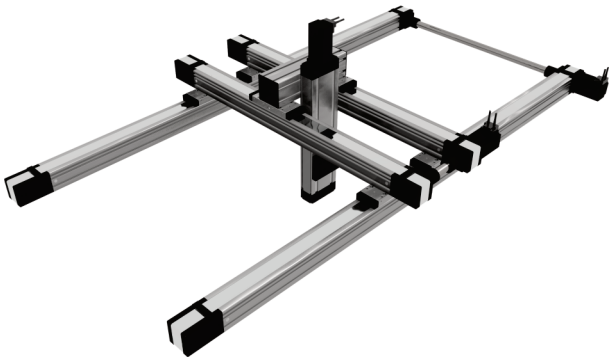

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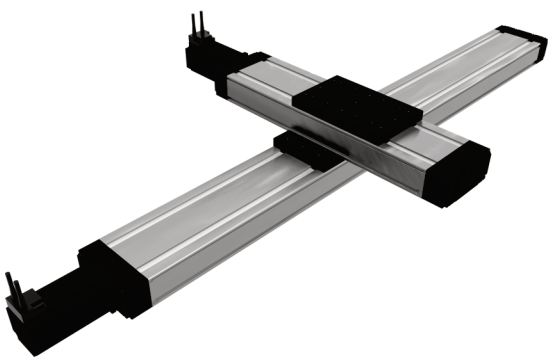
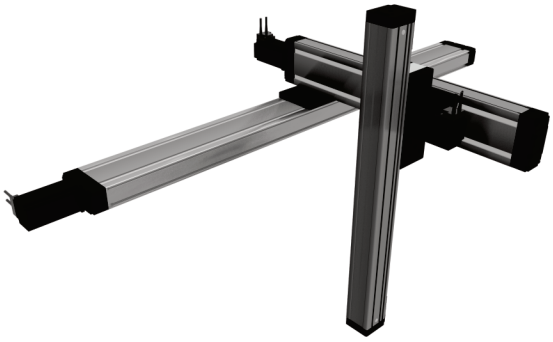
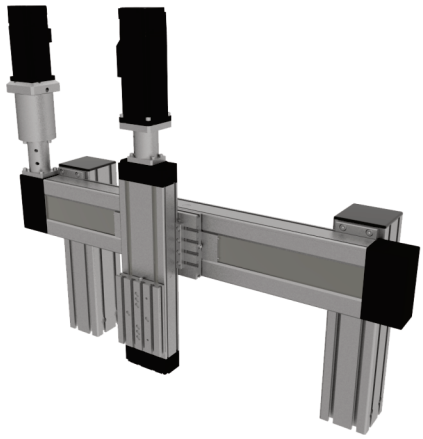


6

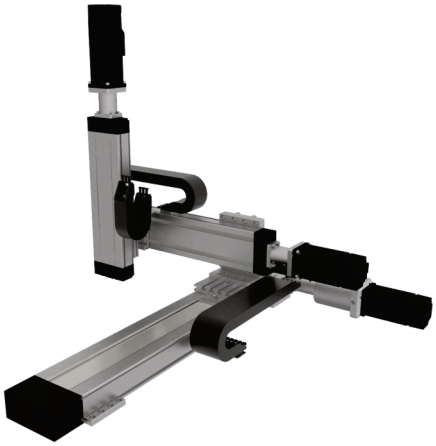


MULTI AXIS SYSTEMS

7

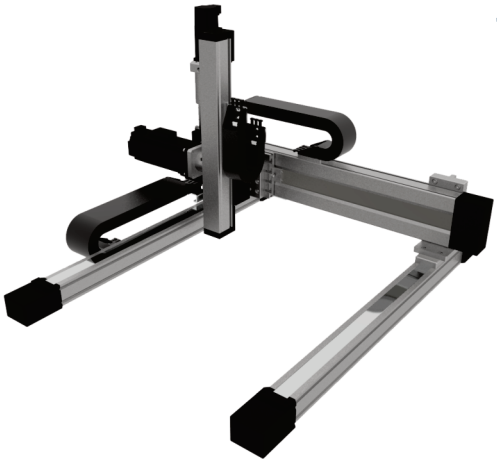


8



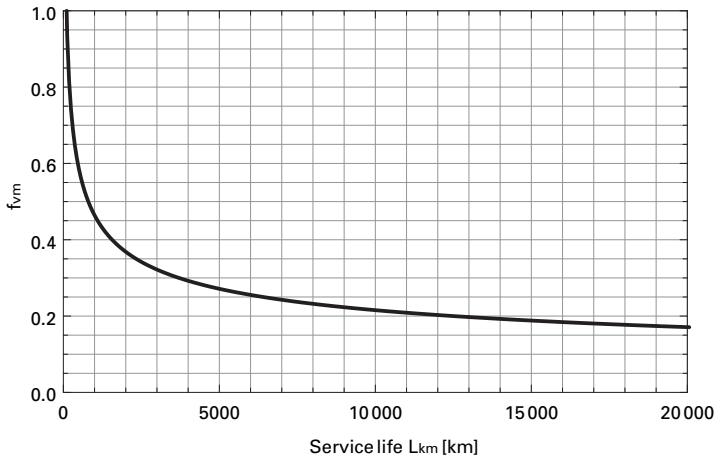
9

10

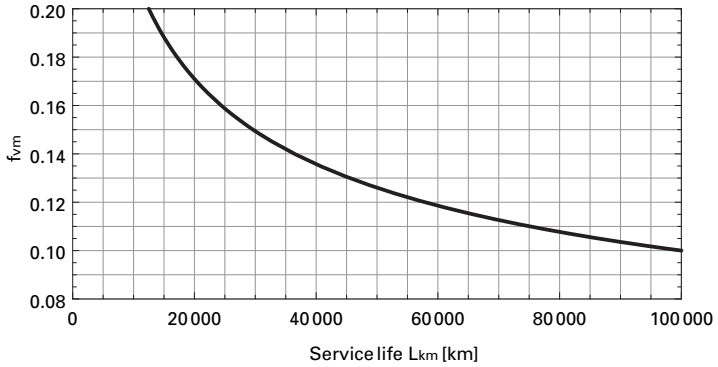


SERVICE LIFE - LINEAR GUIDING

Mean load comparison factor f_{vm} as a function of service life L_{km}



Detailed view:



Diagrams and equations are valid for:

- BR-S series
- SR-S series
- BR-E series
- BR-Z series
- BR-D series
- SR-D series

Presented diagrams are showing theoretically determined service life of the linear guiding when mean load comparison factor fvm is taken into consideration.

Load comparison factor f_v:

$$f_v = \frac{|F_y|}{C_{dyn}} + \frac{|F_z|}{C_{dyn}} + \frac{|M_x|}{M_{x\,dyn}} + \frac{|M_y|}{M_{y\,dyn}} + \frac{|M_z|}{M_{z\,dyn}}$$

fv	Load comparison factor	
Cdyn	Dynamic load capacity	N
Mx dyn	Dynamic moment capacity about the x axis	Nm
My dyn	Dynamic moment capacity about the y axis	Nm
Mz dyn	Dynamic moment capacity about the z axis	Nm
Fy	Applied force in the y direction	N
Fz	Applied force in the z direction	N
Mx	Applied moment about the x axis	Nm
My	Applied moment about the y axis	Nm
Mz	Applied moment about the z axis	Nm

Service life calculation:

$$L_{km} = \left(\frac{1}{f_{vm}}\right)^3 \cdot 10^2$$

L_{km} Service life [km]

Safety factor f_s:

$$f_s = \frac{1}{f_{vm}}$$

f_s Safety factor

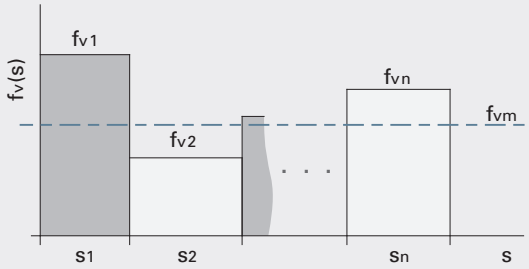
The safety factor depends on the application and its requested safety. We recommend a minimum safety factor fs = 5.0

Mean load comparison factor f_{vm} calculation:

$$f_{vm} = \sqrt[3]{\frac{f_{v1}^3 \times s_1 + f_{v2}^3 \times s_2 + \ldots + f_{vn}^3 \times s_n}{s_1 + s_2 + \ldots + s_n}}$$

fvm	Mean load comparison factor
fv i	i-th load comparison factor of a given loading regime fv (s), i Î {1,2,...,n}
si	i-th travel path of a given loading regime fv (s), i Î {1,2,...,n}

Loading regime fv (s):



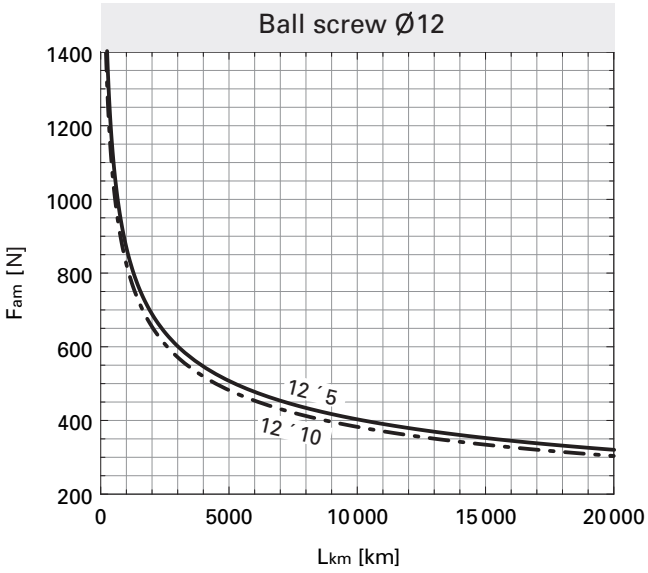
PERMISSIBLE LOAD FACTOR f_p - LINEAR GUIDING

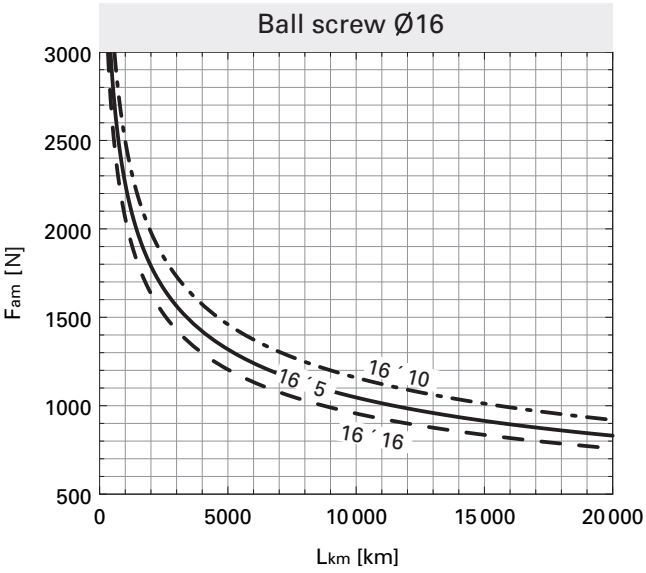
$$f_p = \frac{|F_y|}{F_{py}} + \frac{|F_z|}{F_{pz}} + \frac{|M_x|}{M_{px}} + \frac{|M_y|}{M_{py}} + \frac{|M_z|}{M_{pz}} \leq 1$$

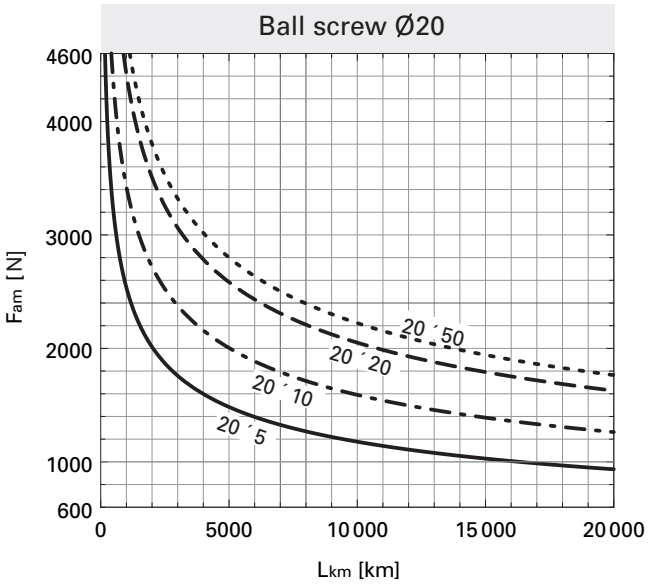
fp	Permissible load factor	
Fpy	Max. permissible force in the y axis	N
Fpz	Max. permissible force in the z axis	N
Mpx	Max. permissible moment about the x axis	Nm
Mpy	Max. permissible moment about the y axis	Nm
Mpz	Max. permissible moment about the z axis	Nm

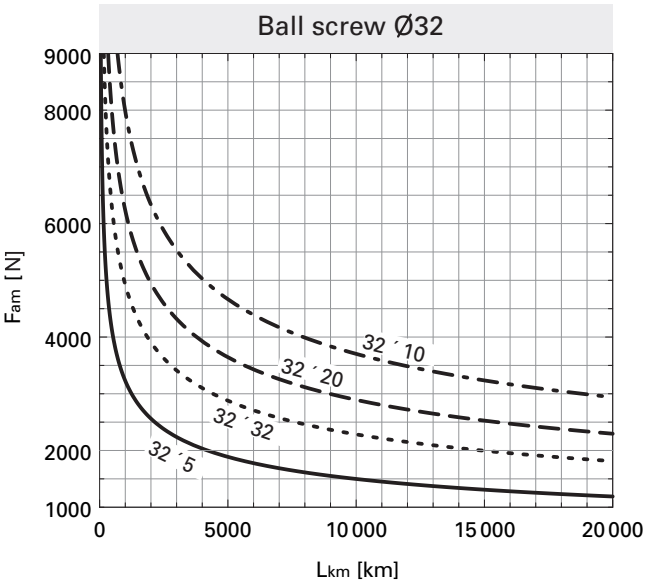
SERVICE LIFE - BALL SCREW

Applied mean axial force Fam as a function of service life Lkm







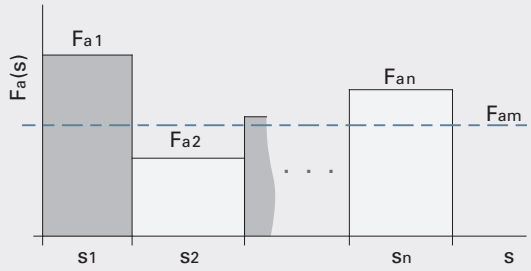


Mean axial force Fam calculation:

$$Fam = \sqrt[3]{\frac{|Fa1|^3 \times s1 + |Fa2|^3 \times s2 + \ldots + |Fan|^3 \; sn}{s1 + s2 + \ldots + sn}}$$

Fam	Mean axial force
Fa i	i-th axial force of a given loading regime Fa (s), i Î {1,2,...,n}
si	i-th travel path of a given loading regime Fa (s), i Î {1,2,...,n}

Loading regime Fa (s):



Diagrams presented above are showing theoretically determined service life of the ball screw when mean axial force Fam is taken into consideration.

Diagrams and equations are valid for:

- SR-S series
- SR-D series

08/2020 • Subject to technical changes

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