

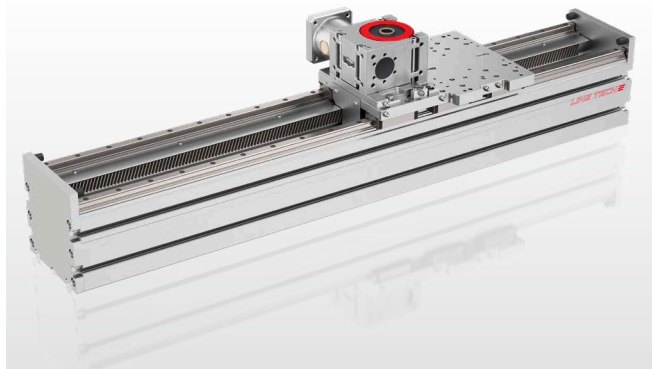
DYNAMIC MODULES

PRODUCT CATALOGUE

Product Overview / Content

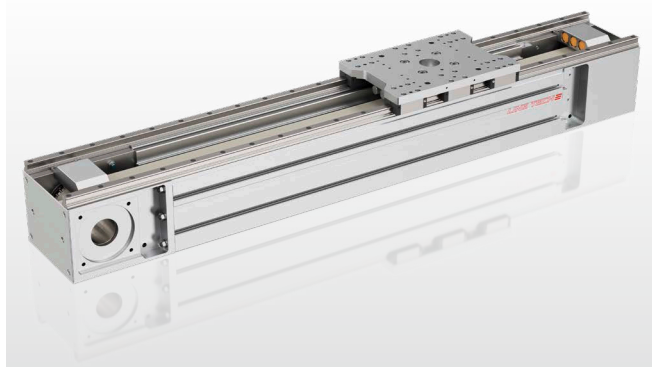
DM...ZS...

Dynamic module with rack and pinion drive



DM...ZR...

Dynamic module with toothed belt drive



Content

Dynamic modules DM...ZS/ZR...

- Product Overview	3
- Design / Lubrication / Maintenance	4
- Mounting type	5
- Cross sections	
- DM...ZS...	6
- DM...ZR...	7
- DM...ZS...; Rack and pinion drive data	8
- DM...ZR...; Toothed belt drive data	9
- Data for DM...ZS...	
- DM2.ZS... with angular gearbox	10-11
- DM3.ZS... with angular gearbox	12-13
- Data for DM2.ZR... / DM3.ZR...	14
- DM application example	15

Dynamic module DM...ZS... with rack and pinion drive

- Designation system for DM...ZS...	16-17
- Gearbox range DM...ZS...	18
- DM application example	19
- DM2.ZS...	
- Dimensions with toothed rack – 1 carriage	20
- Dimensions with toothed rack – 2 carriages	21
- DM3.ZS...	
- Dimensions with toothed rack – 1 carriage	22
- Dimensions with toothed rack – 2 carriages	23

Dynamic module DM...ZR... with toothed belt drive

- Designation system for DM...ZR...	24-25
- Gearbox range DM...ZR...	26
- Gearbox mounting DM...ZR...A/B...	27
- DM2.ZR...	
- Dimensions with toothed belt drive	28
- DM3.ZR...	
- Dimensions with toothed belt drive	29

Dynamic modules DM...ZS/ZR...

- Lubrication points for	
- DM...ZS...	30
- DM...ZR...	31
- Options and accessories for	
- DM...ZR...	32-33
- Mounting accessories	
- Clamps	34
- T-slot nuts	35

Product Overview

LINE TECH dynamic modules are ready-to-install linear axes driven by rack and pinion (DM...ZS...) or toothed belts (DM...ZR...). These dynamic modules meet the highest standards of dynamics and service life and can achieve very fast cycle times under high loads. Thanks to the special design of the extruded aluminium profile, the compact base profile has high torsional rigidity and is also suitable for self-supporting applications. Two sizes (DM2... and DM3...) are currently available.

Advantages

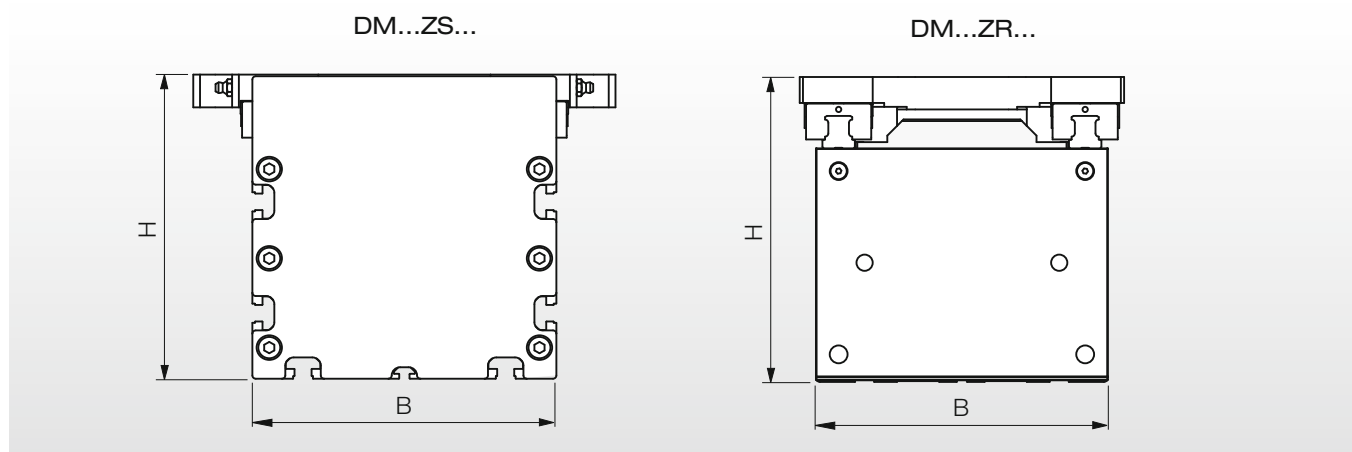
- Compact size
- Optimal movement characteristics in conjunction with high load ratings and high rigidity provided by two integrated zero-play linear rail guides
- Drive via either rack and pinion (DM...ZS...) or toothed belt (DM...ZR...)
- Simple gearbox mounting via centring and mounting thread on the drive housing or on the carriage plate

Design

- Compact aluminium profile as base profile
- Ready-to-install dynamic modules in any length
- Aluminium carriage

Options available on request

- Motor attachments
- Special carriages
- Multi-axis systems



Dynamic module	Dimensions	Load ratings	
Type	B x H [mm]	C ₀ [kN]	C ₅₀ [kN]
DM2.ZS...	180 x 188	192.6	131.3
DM2.ZR...	180 x 188	162.0	116.3
DM3.ZS...	220 x 241	311.5	208.8
DM3.ZR...	220 x 231	311.5	208.8

See pages [8 to 14](#) for further technical data.

LINE TECH Dynamic Modules

LINE TECH dynamic modules with rack and pinion drive or toothed belt drive are modular, ready-to-install linear systems including the drive. Sealed guide elements are used in all sizes. The extruded base profile is aluminium alloy.

Optional integrated limit switches protect against overshooting; prepared mounting points are provided as standard.

Additional external sensors can be used in conjunction with the motor and control unit to ensure the correct positioning of the carriage by means of a switch flag and sensor holder.

The design delivers very high performance with extremely compact dimensions.

Lubrication

The guide elements of LINE TECH dynamic modules are pre-lubricated at the factory with Microlube GBU Y 131.

Attention: See the instructions on page [30](#) for lubricating the rack and pinion drive!

Correct and sufficient lubrication can significantly extend the service life of the dynamic modules. Periodic lubrication should be conducted in accordance loads handled and field of application. In general, lubrication should be carried out every 500 hours.

All roller bearings used are lubricated for life and therefore require no maintenance.

Note: See pages [30/31](#) for information on the lubrication points.

Maintenance

Except for periodic lubrication, LINE TECH dynamic modules are maintenance free.

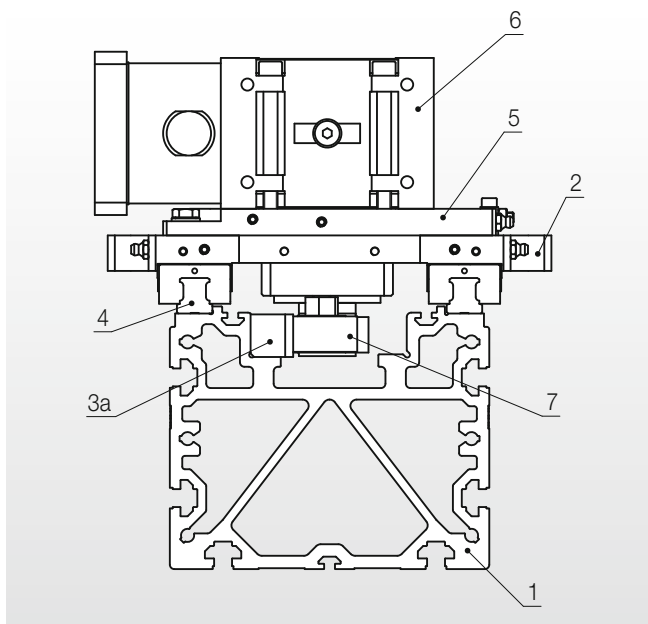
Operating temperature

The permissible operating temperature of between 5 and 80 °C is determined by the plastic components.

The specifications of the respective manufacturers of motors and controls apply.

DM...ZS...

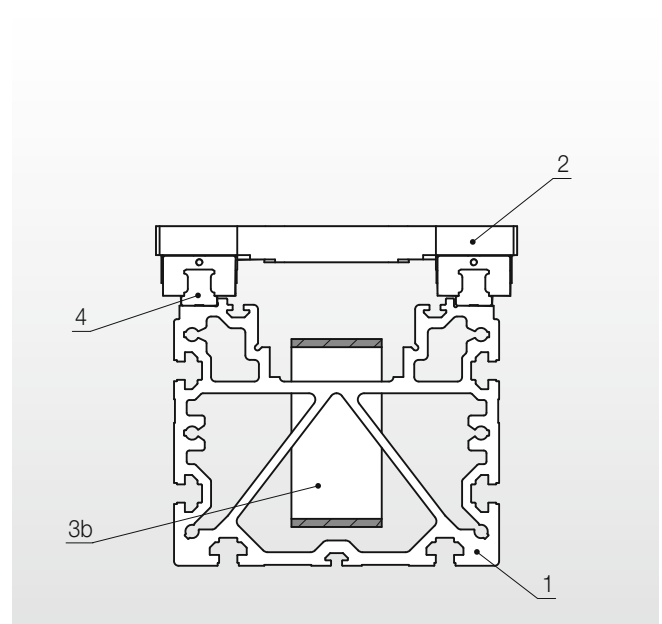
with rack and pinion drive



- 1) Base profile
- 2) Carriage
- 3a) Toothed rack
- 3b) Toothed belt

DM...ZR...

with toothed belt drive



- 4) Linear rail guide
- 5) Gearbox mounting plate
- 6) Gearbox
- 7) Drive and lubrication pinion

Mounting type

When determining the layout of linear units, the method of mounting is usually disregarded (undefined support points » Order code **A** (Designation systems » see pages [16](#) / [24](#))). In this case, any unevenness of the mounting surface can be carried over to the linear module (assuming that the mounting surface is stiffer than the base profile).

Because the base profile of our dynamic modules is very rigid, other mounting options are also available: The final mounting situation of each module can be taken into account already during the processing of the base profile – support points predefined by the customer can be incorporated into the JIT production process (defined support points » Order code **B**).

If an extremely high level of precision is required for the linear movement, the defined support points can also be machined. These then serve as the clamping surface for machining the guide rail supports, allowing even greater precision of movement to be achieved (machined support points » Order code **C**).

Please provide us with your defined support points (» Order code **B/C**) (number, position, width) and we will manufacture your dynamic module according to your application-specific requirements and give it a unique ID number.

Installation orientation

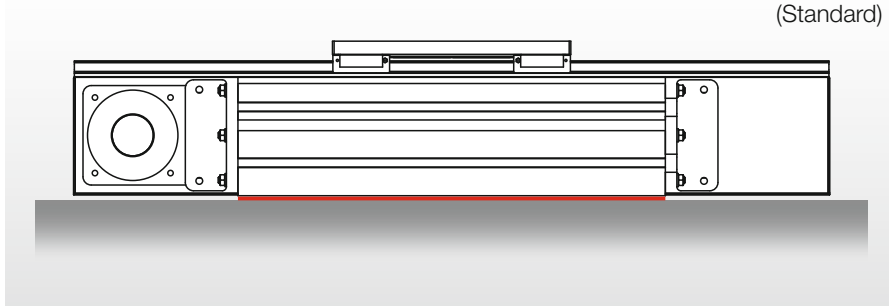
The standard installation position of linear units is horizontal (as shown) or overhead. If your application requires a vertical or lateral installation position, please contact our technical sales department in advance.

Undefined support points

Order code **A**
(Standard)

Undefined support points for the base profile (unmachined).

» Straightness 0.8 mm/1000 m

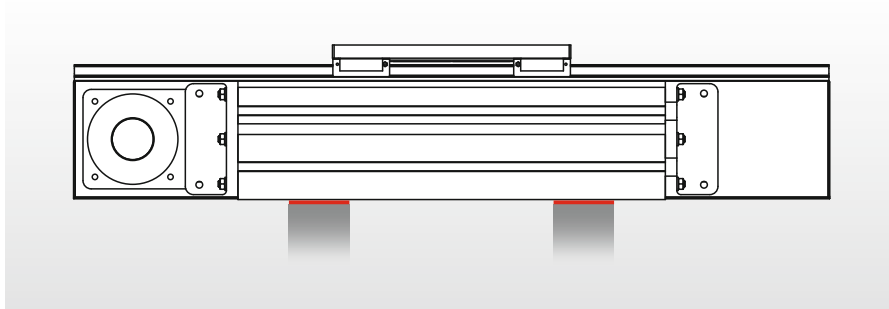


Defined support points

Order code **B**

Defined support points for the base profile (unmachined).

» Straightness 0.4 mm/1000 mm

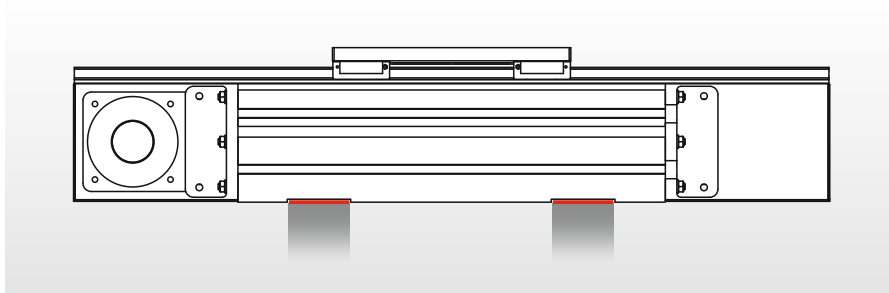


Machined support points

Order code **C**

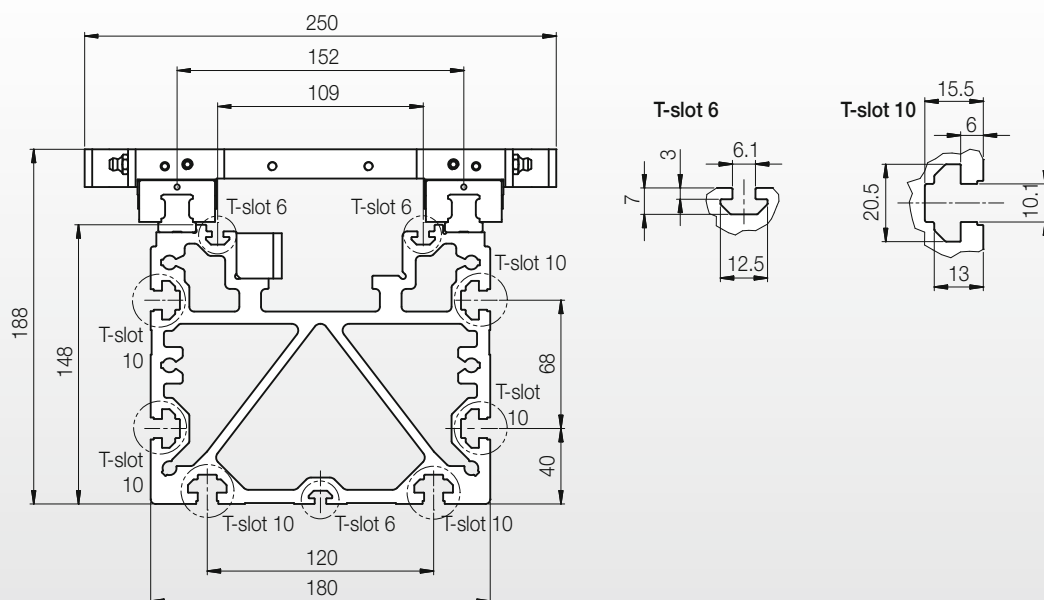
Overmilled defined support points for the base profile.

» Straightness 0.2 mm/1000 mm

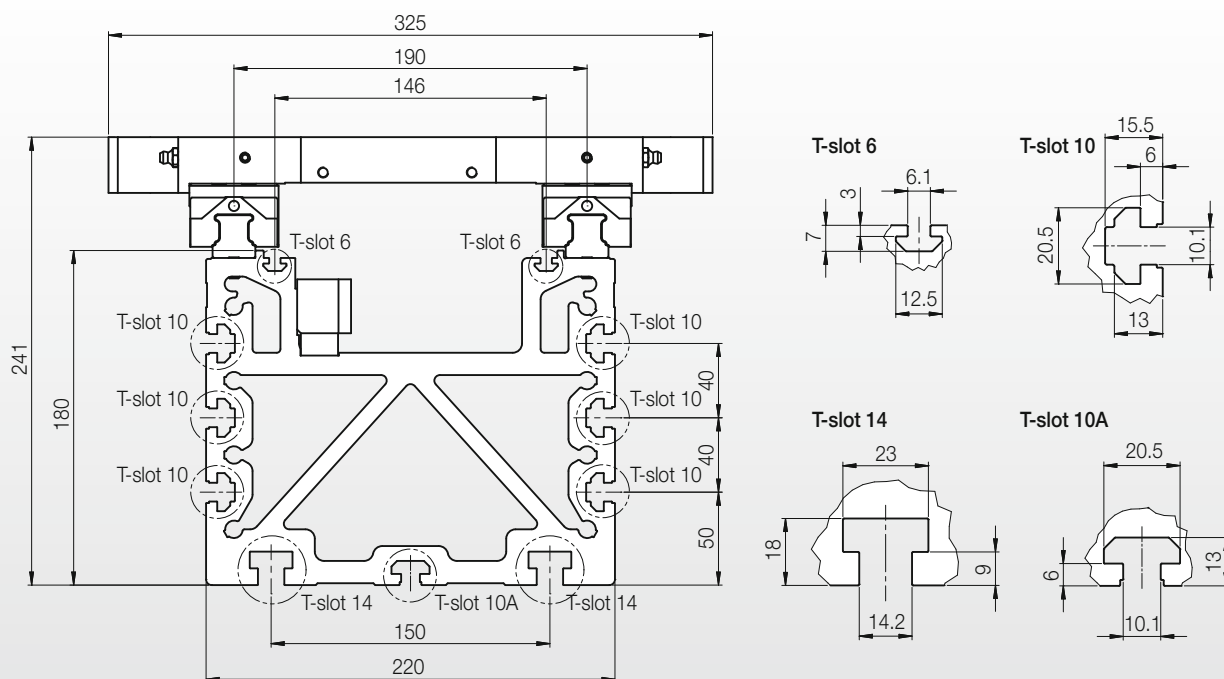


Cross sections

Cross section DM2.ZS...



Cross section DM3.ZS...

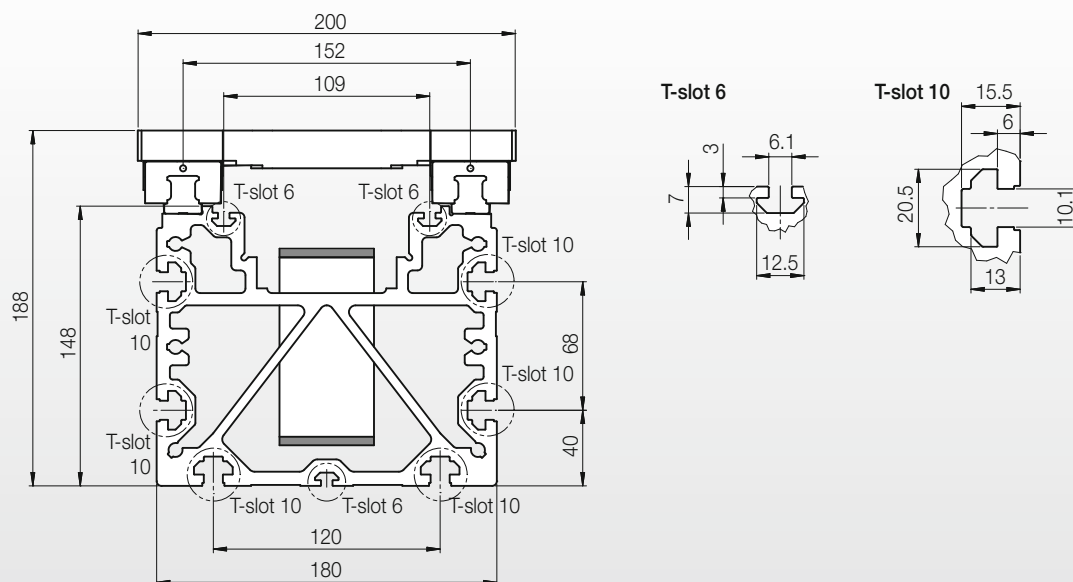


DYNAMIC MODULES WITH TOOTHED BELT DRIVE

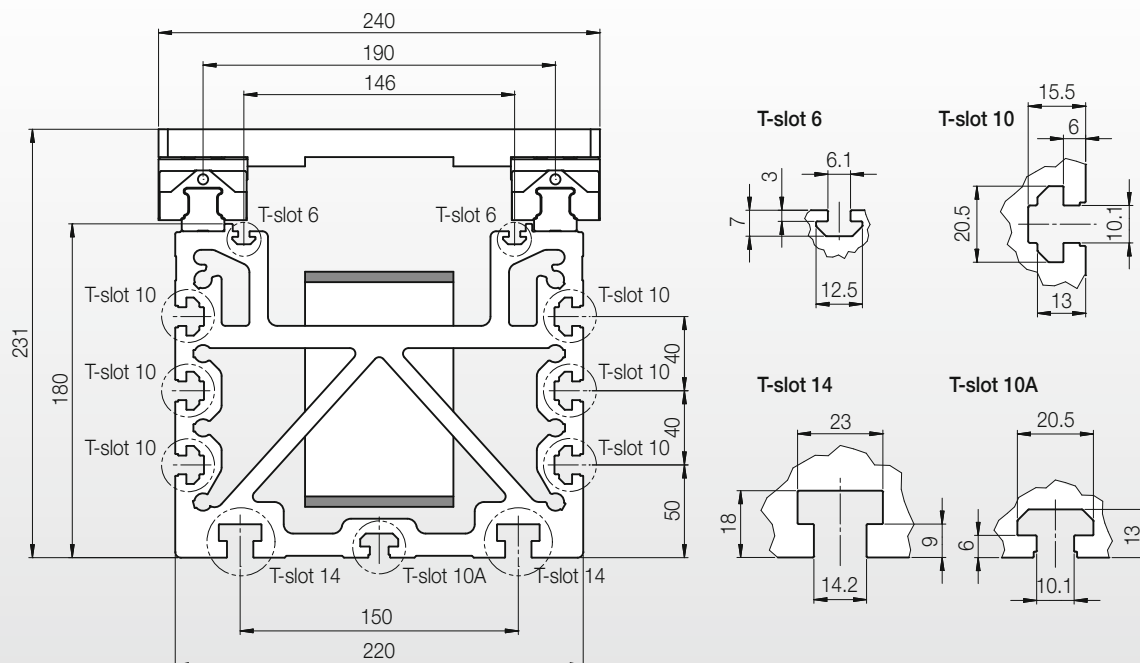


Cross sections

Cross section DM2.ZR...



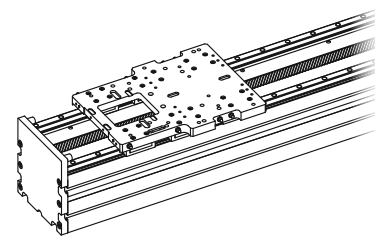
Cross section DM3.ZR...



DYNAMIC MODULES WITH RACK AND PINION DRIVE



Rack and pinion drive data



Technical data

DM	Rack and pinion drive	Axial load rating	Positioning accuracy	Repeating accuracy	Acceleration
Size	Stroke/R [mm]	F [N]	[μ/mm]	.../1000 mm [mm]	a _{max} [m/s ²]
DM2.ZS...	133.332 (42.441 x π)	..... ¹⁾	36/1000 ²⁾	± 0.02 ²⁾	50 ³⁾
DM3.ZS...	160.001 (50.93 x π)	..... ¹⁾	37/1000 ²⁾	± 0.02 ²⁾	50 ³⁾

¹⁾ Depends on speed and load

→ see "Permissible speeds" charts on pages [10/11](#) (DM2.ZS...) and [12/13](#) (DM3.ZS...)

²⁾ Without considering backlash and load

³⁾ Maximum possible value; precise value for your specific application to be determined with our technical sales department

General technical data for dynamic modules with rack and pinion drive

DM	Travel speed		Area moment of inertia		Stroke max.	Feed and friction force	Mass/carriage transported (without gearbox)
Type	Guide v _{max} [m/min]	Drive v _{max} [m/min]	I _y [cm ⁴]	I _z [cm ⁴]	[mm]	F _v [N]	m _b [kg]
DM2.ZS...	360 ⁶⁾	⁴⁾	1780	3184	5550 (1 carriage) ⁵⁾ 5200 (2 carriages) ⁵⁾	50 ⁷⁾	7.8
DM3.ZS...	360 ⁶⁾	⁴⁾	4352	8260	5450 (1 carriage) ⁵⁾ 5000 (2 carriages) ⁵⁾	60 ⁷⁾	16.0

⁴⁾ Depends on load and gear ratio

→ see "Permissible speeds" charts on pages [10/11](#) (DM2.ZS...) and [12/13](#) (DM3.ZS...)

⁵⁾ Longer strokes on request

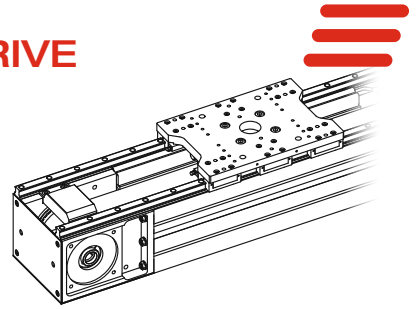
⁶⁾ Higher speeds on request

⁷⁾ Without idling-torque gearbox; this is dependent on the gear ratio



DYNAMIC MODULES WITH TOOTHED BELT DRIVE

Toothed belt drive data



Technical data

DM	Toothed belt drive		Axial load rating	Positioning accuracy	Repeating accuracy	Acceleration
Size	Stroke/R [mm]	Elongation ³⁾ [mm/m]	F [N]	[μm/mm]	.../1000 mm [mm]	a _{max} [m/s ²]
DM2.ZR...	320	0.037	..... ¹⁾	200/1000 ²⁾	± 0.05 ²⁾	50.0 ⁴⁾
DM3.ZR...	392	0.023	..... ¹⁾	200/1000 ²⁾	± 0.05 ²⁾	50.0 ⁴⁾

¹⁾ Depends on speed and load

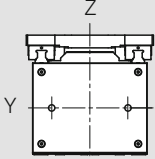
→ see "Permissible speeds" chart on page [14](#)

²⁾ Without considering backlash and load

³⁾ Belt elongation/metre [mm/m] per 100 N tensile force

⁴⁾ Maximum possible value; precise value for your specific application to be determined with our technical sales department

General technical data for dynamic modules with toothed belt drive

DM	Travel speed		Area moment of inertia		Stroke max.	Feed and friction force	Mass transported
Type	Guide v _{max} [m/min]	Drive v _{max} [m/min]	I _y [cm ⁴]	I _z [cm ⁴]	[mm]	F _v [N]	m _b [kg]
							
DM2.ZR...A/B/C... ⁸⁾	360 ⁷⁾	⁵⁾	1780	3184	5880 ⁶⁾	65	6.4
DM2.ZR...D/E/F... ⁸⁾	360 ⁷⁾	⁵⁾	1780	3184	5880 ⁶⁾	80	7.2
DM3.ZR...A/B/C... ⁸⁾	360 ⁷⁾	⁵⁾	5183	8917	5770 ⁶⁾	80	12.3
DM3.ZR...D/E/F... ⁸⁾	360 ⁷⁾	⁵⁾	5183	8917	5770 ⁶⁾	100	13.7

⁵⁾ Depends on load, rotation speed, and permissible travel speed of the guides

→ see "Permissible speeds" chart on page [14](#)

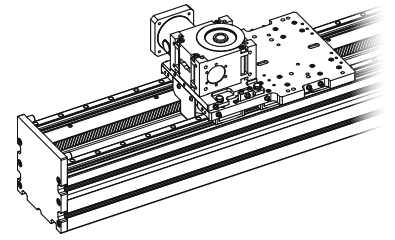
⁶⁾ Longer strokes on request

⁷⁾ Higher speeds on request

⁸⁾ ...A/B/C... = 4 runner blocks / ...D/E/F... = 6 runner blocks

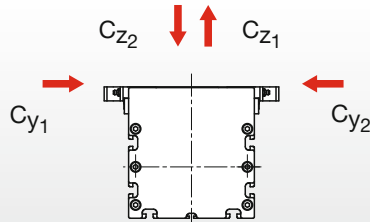
DYNAMIC MODULES WITH RACK AND PINION DRIVE

Data for DM2.ZS... with angular gearbox

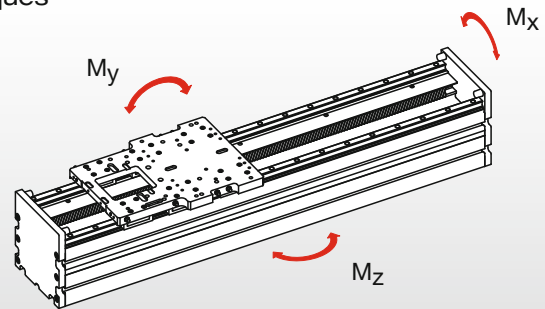


Load ratings and torques of the linear rail guides

Load ratings



Torques



Dynamic module	Maximum permissible forces [kN]				Maximum permissible torques [Nm]					
	static		dynamic		static			dynamic		
	$C_{y0\ 1,2}$	$C_{z0\ 1,2}$	$C_{y1,2\ 50}$	$C_{z1,2\ 50}$	M_{x0}	M_{y0}	M_{z0}	$M_{x\ 50}$	$M_{y\ 50}$	$M_{z\ 50}$
DM2.ZS...	192.6	192.6	131.3	131.3	14630	15110	15110	9980	10620	10620

Permissible speeds of DM2.ZS... with angular gearbox versus selected gear ratio.

Gearbox type: HPG045-DM2.ZS

» see page [18](#)

Available gear ratios i [-]:

1:2 / 3 / 4 / 5 / 6 / 8 / 10 / 13.33 / 16 / 24 / 30 / 47 / 60

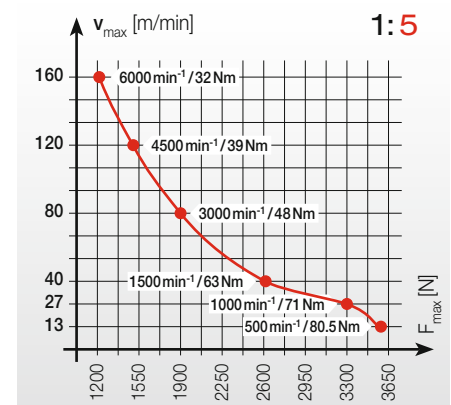
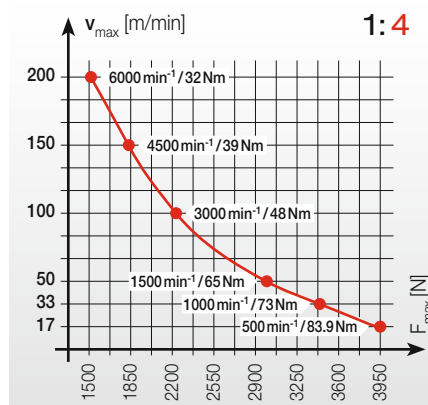
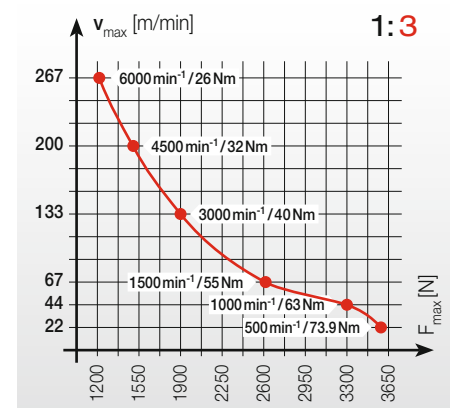
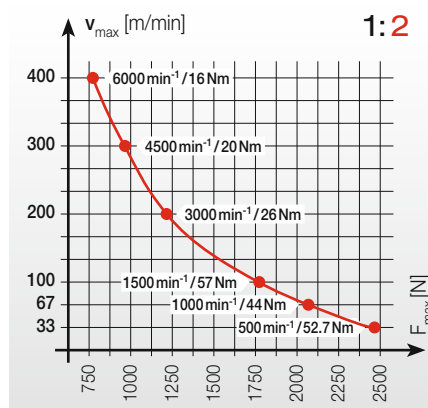
Corresponding gearbox input values for the intersection points [•] of v_{\max} and F_{\max} in the graphs:

n_E [min⁻¹] / M_E [Nm]

whereby

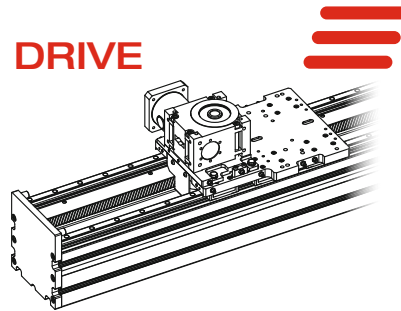
i [-] = Gear ratio
 n_E [min⁻¹] = Input speed
 M_E [Nm] = Input torque
 F_{\max} [N] = Max. axial load
 v_{\max} [m/min] = Max. speed

Please contact us for a detailed configuration for your application.

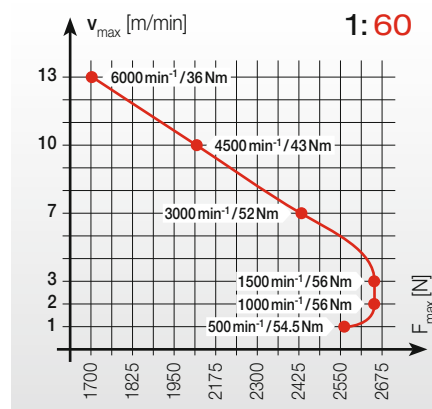
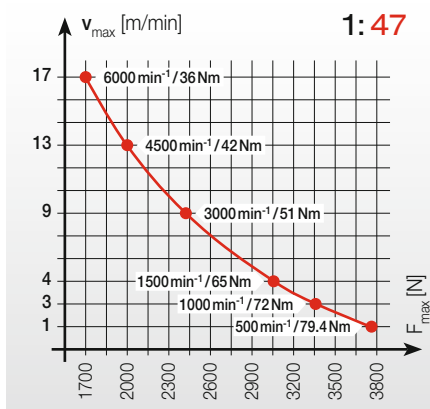
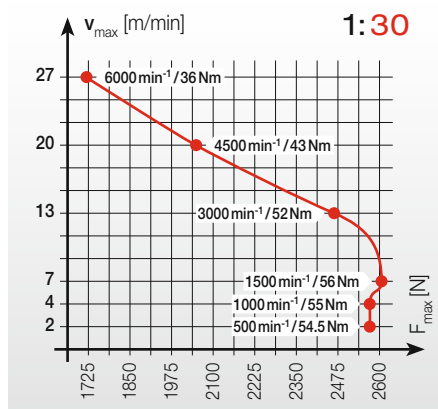
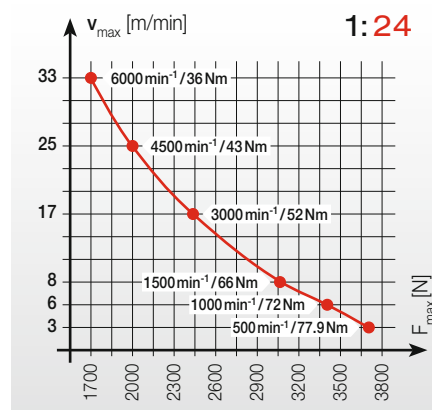
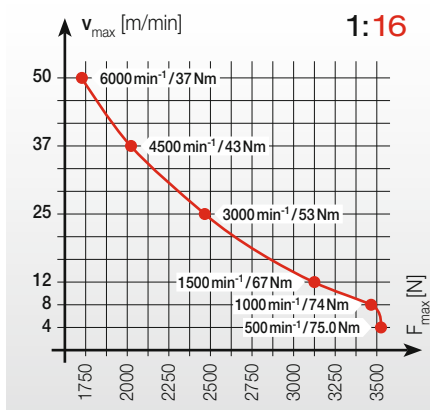
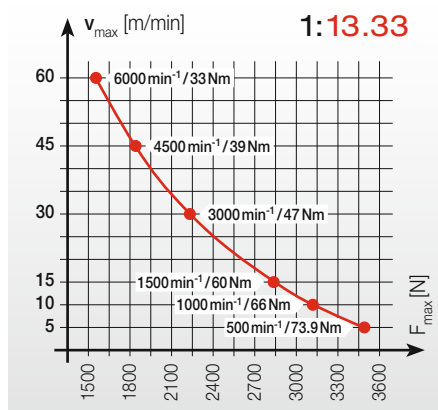
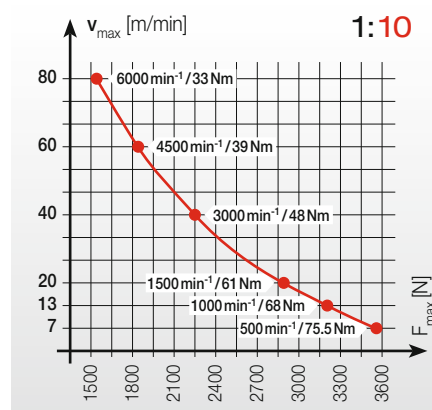
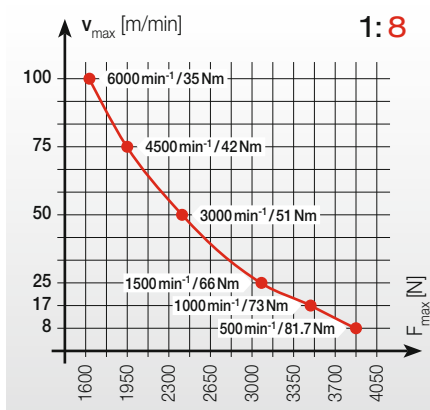
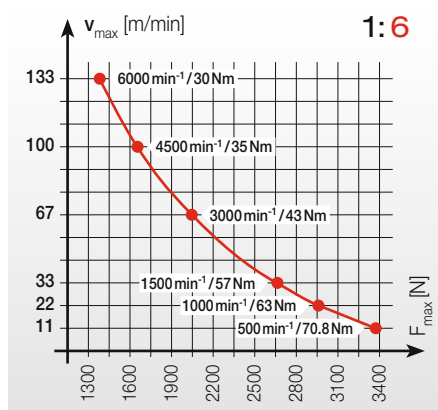


DYNAMIC MODULES WITH RACK AND PINION DRIVE

Data for DM2.ZS... with angular gearbox

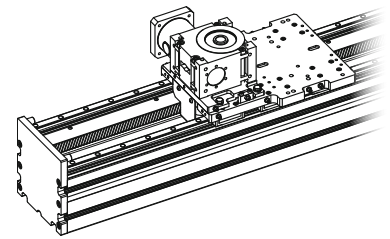


Permissible speeds of DM2.ZS... with angular gearbox (continued)



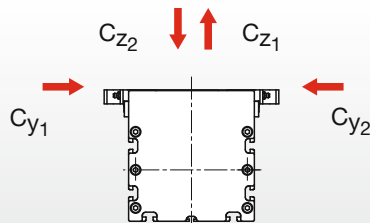
DYNAMIC MODULES WITH RACK AND PINION DRIVE

Data for DM3.ZS... with angular gearbox

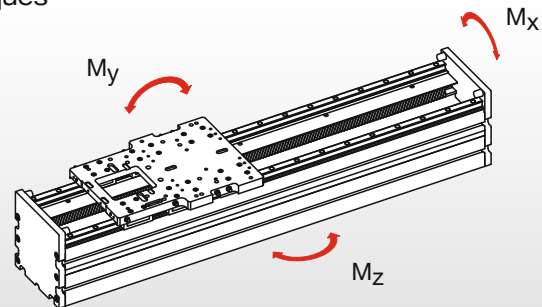


Load ratings and torques of the linear rail guides

Load ratings



Torques



Dynamic module	Maximum permissible forces [kN]				Maximum permissible torques [Nm]					
	static		dynamic		static			dynamic		
	$C_{y0,1,2}$	$C_{z0,1,2}$	$C_{y1,2,50}$	$C_{z1,2,50}$	M_{x0}	M_{y0}	M_{z0}	M_{x50}	M_{y50}	M_{z50}
DM3.ZS...	311.5	311.5	208.8	208.8	29600	35950	35950	19840	24470	24470

Permissible speeds of DM3.ZS... with angular gearbox versus selected gear ratio.

Gearbox type: HPG060-DM3.ZS

» see page 18

Available gear ratios i [-]:

1:2 / 3 / 4 / 5 / 6 / 8 / 10 / 13.33 / 16 / 24 / 30 / 47 / 60

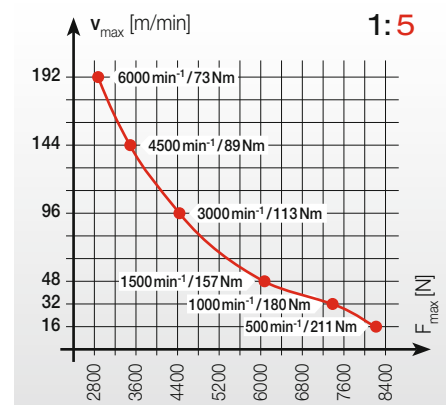
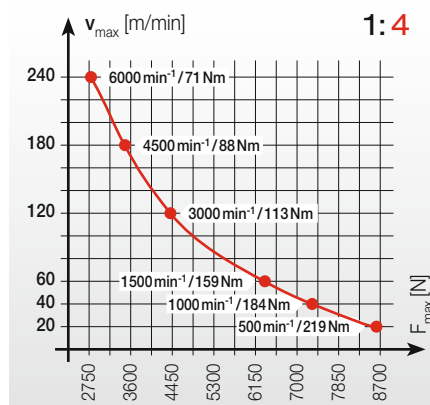
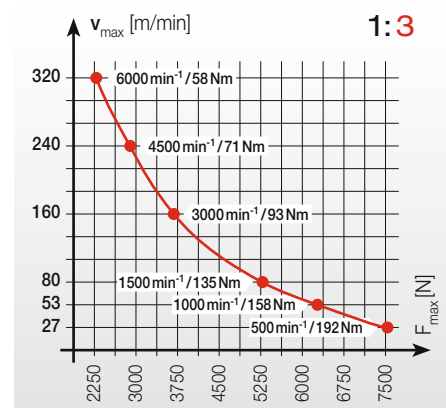
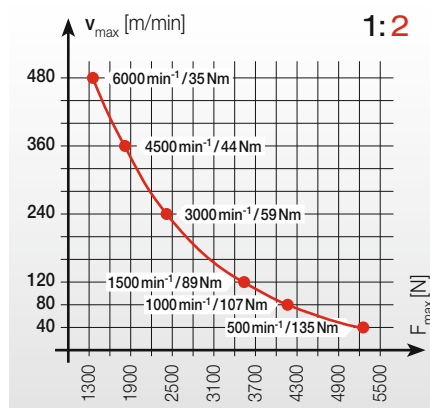
Corresponding gearbox input values for the intersection points [•] of v_{max} and F_{max} in the graphs:

n_E [min⁻¹] / M_E [Nm]

whereby

i [-] = Gear ratio
 n_E [min⁻¹] = Input speed
 M_E [Nm] = Input torque
 F_{max} [N] = Max. axial load
 v_{max} [m/min] = Max. speed

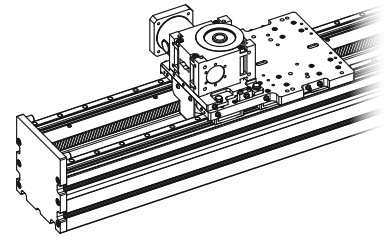
Please contact us for a detailed configuration for your application.



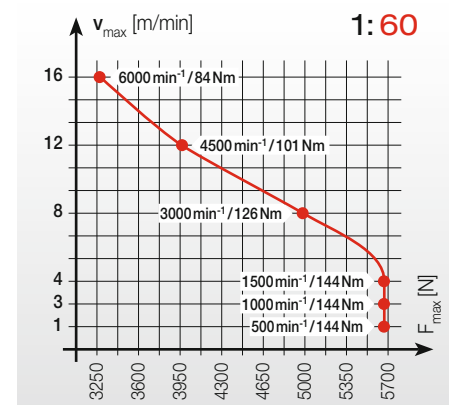
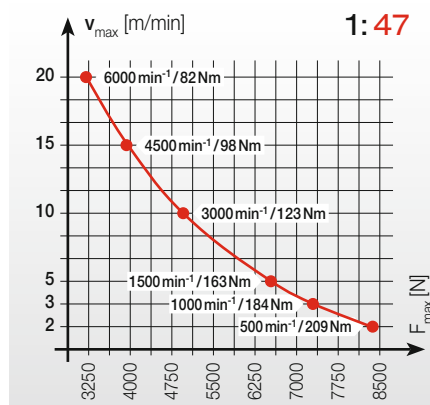
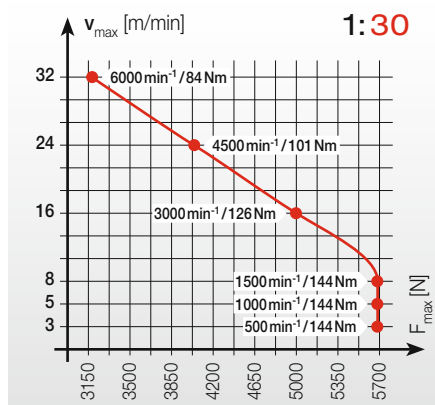
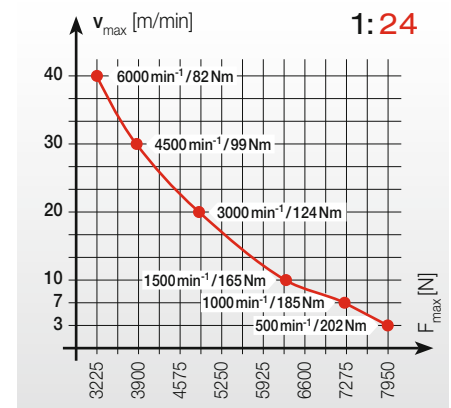
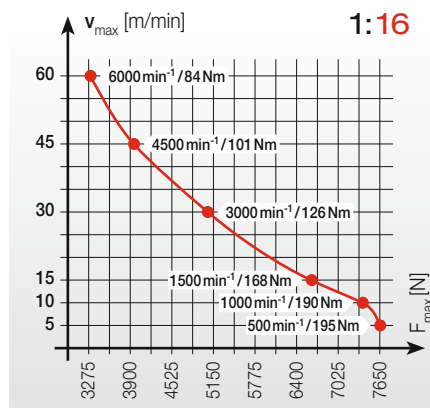
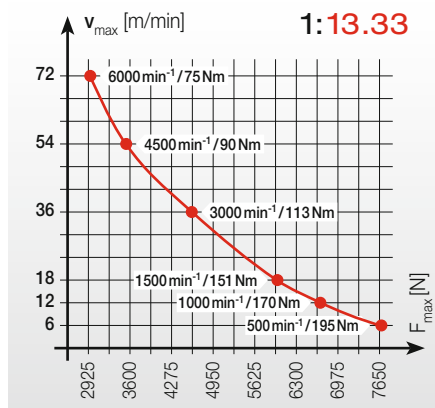
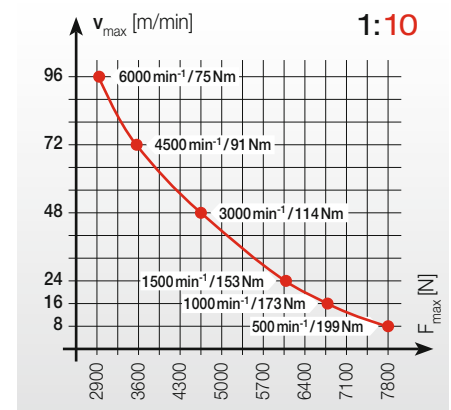
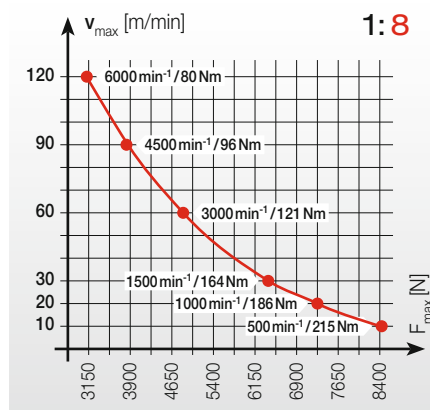
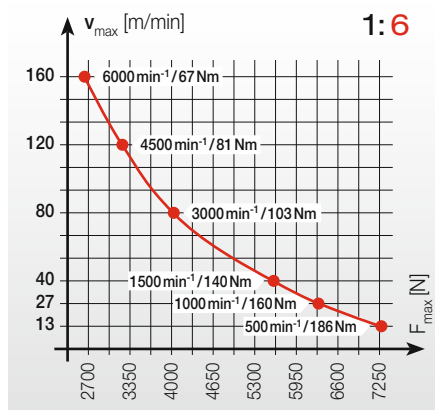
DYNAMIC MODULES WITH RACK AND PINION DRIVE



Data for DM3.ZS... with angular gearbox

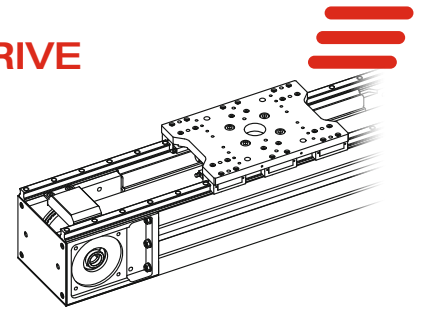


Permissible speeds of DM3.ZS... with angular gearbox (continued)



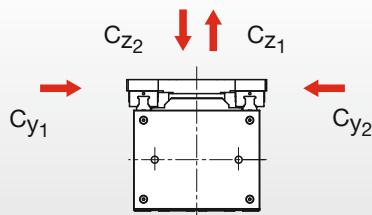
DYNAMIC MODULES WITH TOOTHED BELT DRIVE

Data for DM2.ZR... / DM3.ZR...

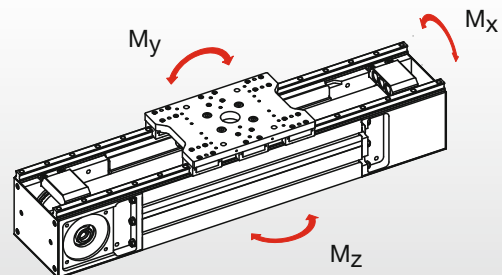


Load ratings and torques of the linear rail guides

Load ratings



Torques



Dynamic module	Maximum permissible forces [kN]				Maximum permissible torques [Nm]					
	static		dynamic		static			dynamic		
	$C_{y0\ 1,2}$	$C_{z0\ 1,2}$	$C_{y1,2\ 50}$	$C_{z1,2\ 50}$	M_{x0}	M_{y0}	M_{z0}	$M_{x\ 50}$	$M_{y\ 50}$	$M_{z\ 50}$
DM2.ZR...A/B/C... ¹⁾	108	108	77.5	77.5	8200	11880	11880	5900	8530	8530
DM2.ZR...D/E/F... ¹⁾	162.0	162.0	116.3	116.3	12310	12080	12080	8840	8790	8790
DM3.ZR...A/B/C... ¹⁾	207.7	207.7	139.2	139.2	19730	35310	35310	13220	23670	23670
DM3.ZR...D/E/F... ¹⁾	311.5	311.5	208.8	208.8	29600	35950	35950	19840	24470	24470

¹⁾ ...A/B/C... = 4 runner blocks / ...D/E/F... = 6 runner blocks » see designation system on page 24

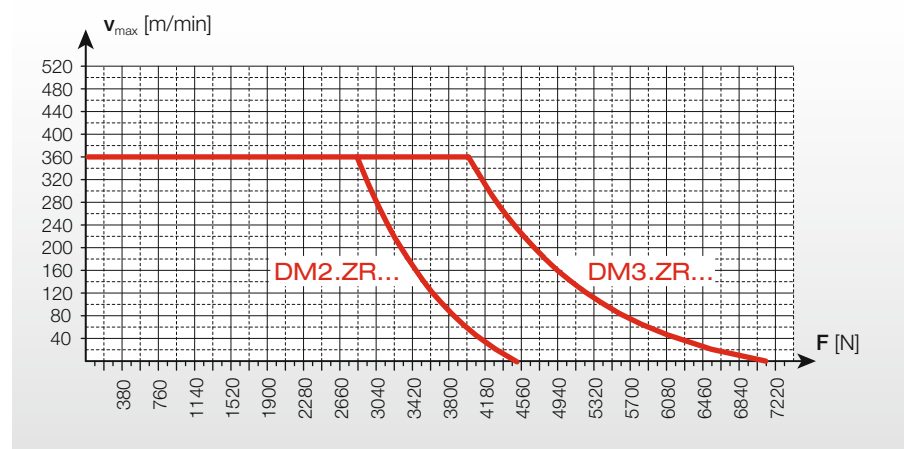
Note on dynamic load ratings and torques

The values given for the dynamic load ratings and torques are based on a stroke travel of 50 km. If comparative values are to be calculated for a stroke travel of 100 km, the values M_{x50} , M_{y50} , M_{z50} and C_{50} must be divided by a factor of 1.26.

Reasonable loads

With regard to service life, loads of less than 20% of the dynamic load ratings have generally proved to be reasonable.

Permissible speeds of DM...ZR...



F = axial load

LINE TECH system solutions

In addition to the development and production of a wide range of linear axes, LINE TECH specialises in the design, layout, and production of multi-axis system solutions. We have been supporting our customers with engineering services and supplying application-specific optimised linear systems since 1993.

Of course, we also serve our customers with installation and commissioning on request. As part of our after-sales service, we remain available to answer any questions and address any problems throughout the entire service life of our products.

Example: 3-axis, high-dynamics handling system for large parts in an electroplating line



This application consists of two X-axes with rack and pinion drive and a 2270 mm stroke as the basis, as well as a gantry with a 2610 mm stroke, also with rack and pinion drive. For the central drive of the motorised X-axes, connecting shafts with metal bellows couplings are used, which ensures absolutely backlash-free torque transmission and precise positioning of the gantry, even with highly dynamic movements.

The Y-axis with its large unsupported span and 2610 mm stroke makes use of the rigid base profile of the dynamic modules. To utilise the stroke of the Z-axis optimally and compactly, the connection to the Y-axis is made with a customised support adapted to the specific application.

LINE TECH linear units used

- X-axes: 2x dynamic modules (size 2) with rack and pinion drive, stroke 2270 mm (DM2.ZS.2270.AABB.10 / DM2.ZS.2270.AABA.10)
- Y-axis: 1x dynamic module (size 2) with rack and pinion drive, stroke 2610 mm (DM2.ZS.2610.CBAB.10)
- Z-axis: 1x positioning unit (size 3) with ball screw drive and bellows cover, stroke 450 mm, from the LINE TECH product range

DYNAMIC MODULES WITH RACK AND PINION DRIVE



Designation system for DM...ZS...

Dynamic module with rack and pinion drive

Basic key

Designation example:

DM 2 . ZS . 2400 . A A

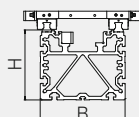
Design

DM = Dynamic module with linear rail guide

Size (cross section of base profile)

2 = B 180 x H 148 mm

3 = B 220 x H 180 mm



Drive type

ZS = Rack and pinion

Stroke absolute [mm]

Stroke_{max} DM2.ZS... = 5550 mm / Stroke_{max} DM3.ZS... = 5450 mm / longer strokes available on request

Mounting type » see page 5

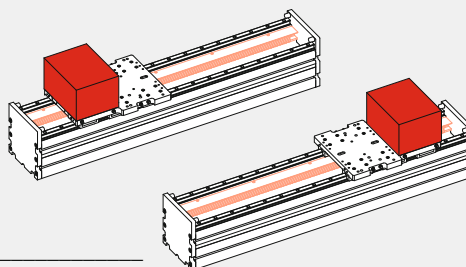
A = undefined support points **

B = defined support points

C = machined support points

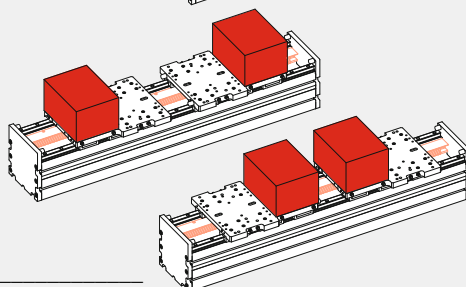
Carriages

A = 1 carriage with gearbox on left * _____



B = 1 carriage with gearbox on right * _____

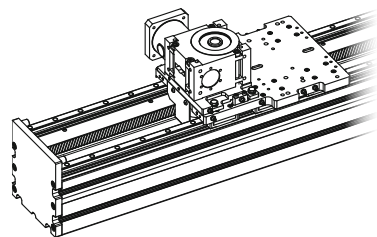
C = 2 carriages with gearboxes outward * _____



D = 2 carriages with gearboxes inward * _____

Other configurations are possible to meet specific requirements





Basic key				Customer-specific modifications
A	A	.	08	- XXXX

ID number

XXXX = Unique identification number reflecting mounting type B/C, gearbox configuration, or customer-specific modifications (number assigned by LINE TECH)

Gear ratio » see page [18](#) for available gear ratios

02 = 1:2

03 = 1:3

XX = 1:XX

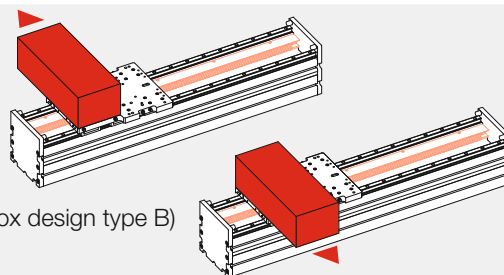
Available gear ratios:

1:2 (02) / 3 (03) / 4 (04) / 5 (05) / 6 (06) / 8 (08) / 10 (10) / 13.33 (13) / 16 (16) / 24 (24) / 30 (30) / 47 (47) / 60 (60)

Gearbox mounting orientation

A = rear * (toothed rack side) **

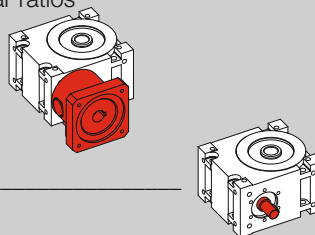
B = front * (only applicable in conjunction with gearbox design type B)



Gearbox design type » see page [18](#) for available gear ratios

A = Angular gearbox with motor flange **

B = Angular gearbox with drive shaft



* View from side without toothed rack toward side with toothed rack

** Standard version

DYNAMIC MODULES WITH RACK AND PINION DRIVE



Gearbox range DM...ZS...

DM2.ZS... Standard gearboxes

Gearbox design type	Drive	Gearbox type	Mounting geometry
Angular gearbox with motor flange » Designation system page 17 : Order code A	Electric motor	HPG045-DM2.ZS	
Angular gearbox with drive shaft » Designation system page 17 : Order code B	Connecting shaft for belt drive	HPG045-DM2.ZS	

Information required by LINE TECH to configure a gearbox:

- Desired gear ratio
Available gear ratios: 1:2 / 3 / 4 / 5 / 6 / 8 / 10 / 13.33 / 16 / 24 / 30 / 47 / 60
- Desired motor (provided by customer)

DM3.ZS... Standard gearboxes

Gearbox design type	Drive	Gearbox type	Mounting geometry
Angular gearbox with motor flange » Designation system page 17 : Order code A	Electric motor	HPG060-DM3.ZS	
Angular gearbox with drive shaft » Designation system page 17 : Order code B	Connecting shaft for belt drive	HPG060-DM3.ZS	

Information required by LINE TECH to configure a gearbox:

- Desired gear ratio
Available gear ratios: 1:2 / 3 / 4 / 5 / 6 / 8 / 10 / 13.33 / 16 / 24 / 30 / 47 / 60
- Desired motor (provided by customer)

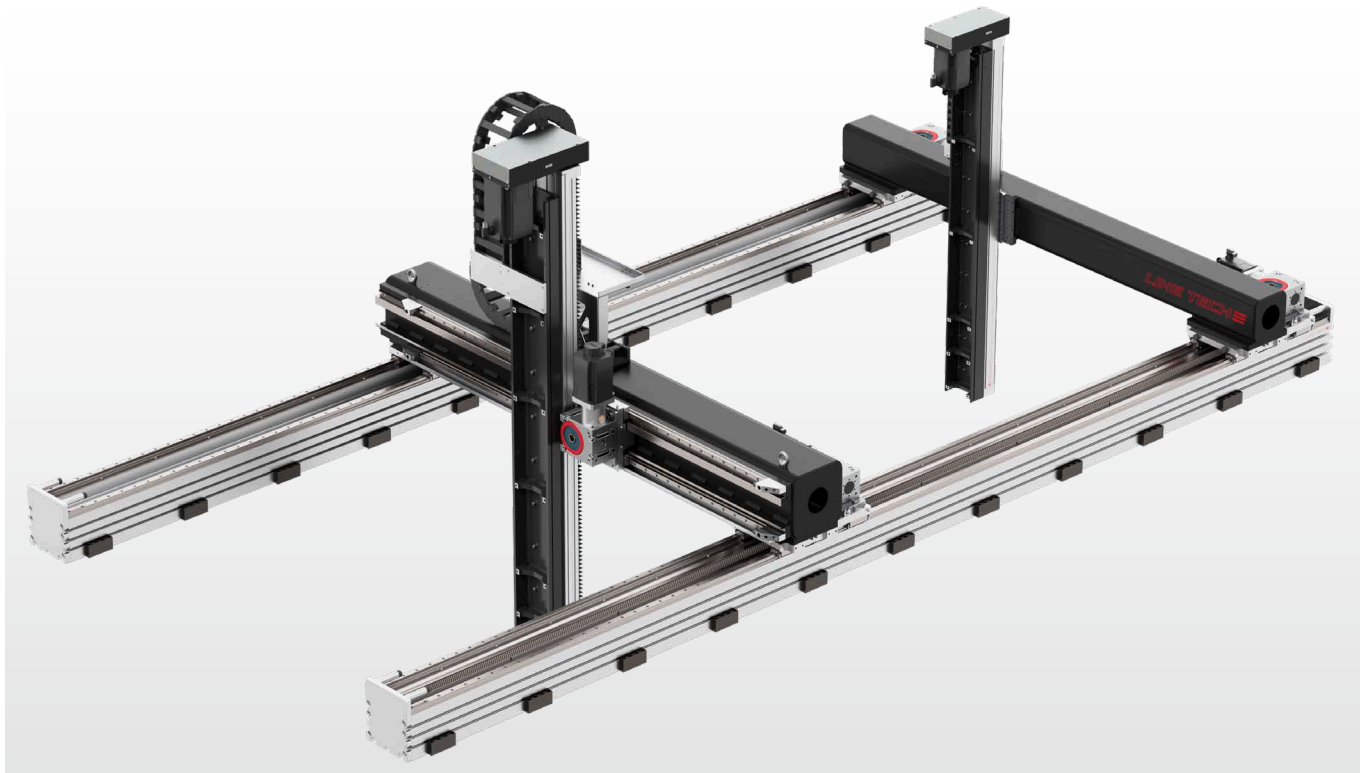


LINE TECH system solutions

In addition to the development and production of a wide range of linear axes, LINE TECH specialises in the design, layout, and production of multi-axis system solutions. We have been supporting our customers with engineering services and supplying application-specific optimised linear systems since 1993.

Of course, we also serve our customers with installation and commissioning on request. As part of our after-sales service, we remain available to answer any questions and address any problems throughout the entire service life of our products.

Example: 3-axis system consisting of 6 modules for handling battery systems in the e-mobility sector



This project benefited greatly from LINE TECH's core competencies: detailed technical consulting in the preliminary phase, engineering (design with service life calculation, calculation of the necessary motor torques), and development of the design solution including in-house JIT production and assembly.

The system enables the highly dynamic movement of large loads with extremely short cycle times. It is designed to be highly integrated into the process and saves the customer the need for complex and space-consuming additional constructions.

The main gantry performs the main handling and achieves positioning at the X-Y-Z coordinates. The Y-stroke of 1440 mm is precisely adapted to the application and assembly line conditions.

The secondary gantry extends the system's handling options in the X/Z directions in a cost-effective and space-saving manner.

LINE TECH linear units used

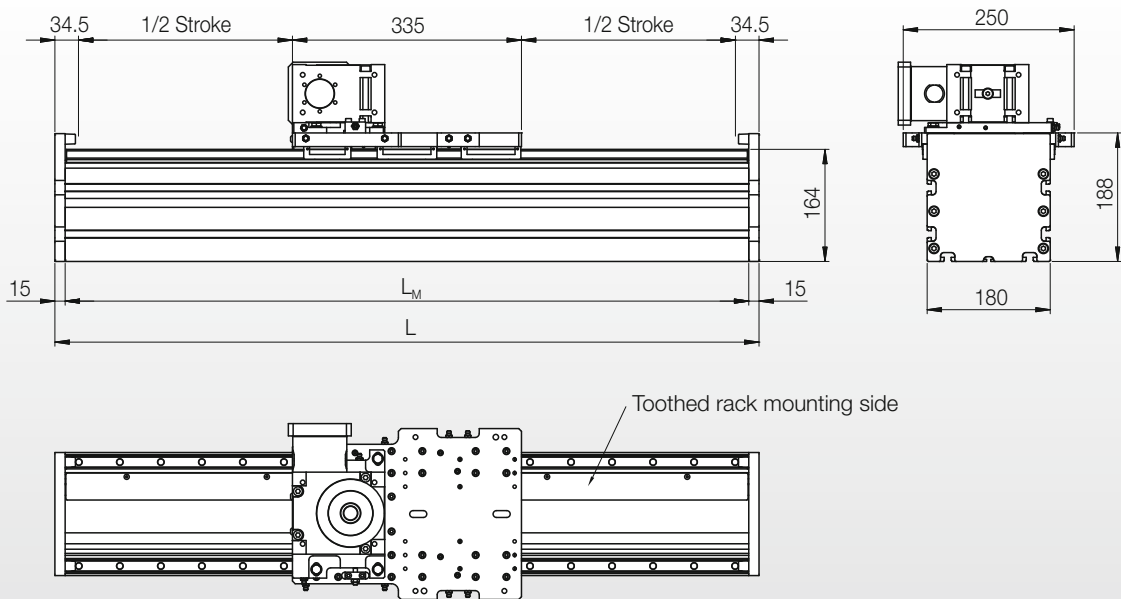
- X-axes: 2x dynamic modules (size 3) with rack and pinion drive, stroke 3500 mm
(DM3.ZS.3500.AFAA.10 / DM3.ZS.3500.AEAB.10)
- Y-axes: 1x special axis with elevated rigidity based on dynamic module (size 3) with rack and pinion drive, stroke 1440 mm
1x plain carrier without Y drive but with independent X and Z drives
- Z-axes: 1x positioning unit (size 3, PE3) with ball screw drive, bellows cover, and rear stiffening profile, stroke 1200 mm, from the LINE TECH product range
1x compact unit (size 3, KE3) with ball screw drive and rear stiffening profile, stroke 1200 mm, from the LINE TECH product range



DYNAMIC MODULE DM2.ZS...

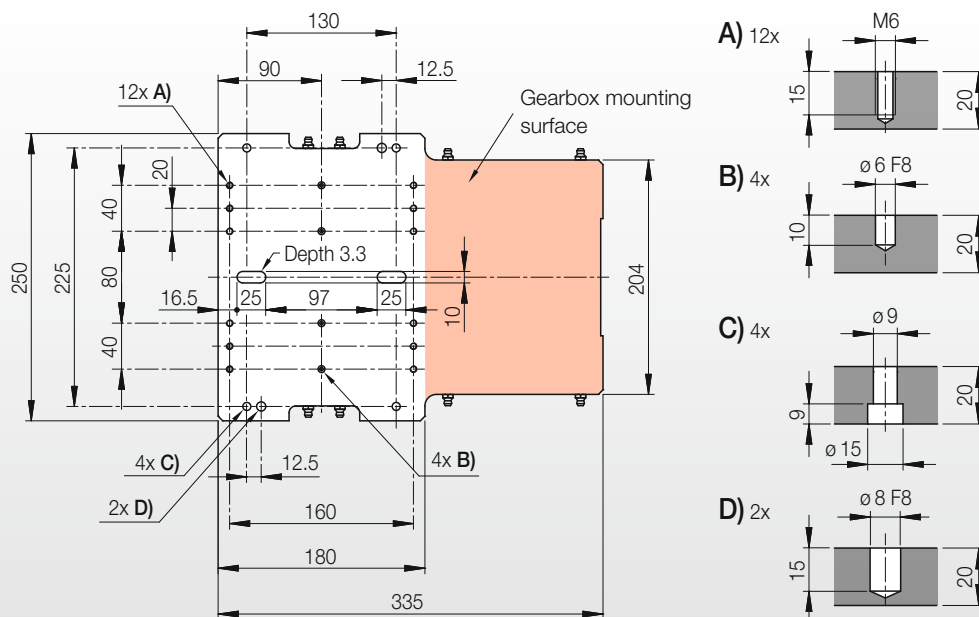
Dimensions with toothed rack – 1 carriage

– 1 carriage with gearbox on the left (Order code Carriage = A) or with gearbox on the right (Order code Carriage = B)



Nominal size	Dimensions		
Designation	L [mm]	L _M [mm]	Weight (excluding gearbox) [kg]
DM2.ZS...A/B...	Stroke + 404	L – 30	21.39 kg + 3.06 kg/100 mm Stroke

Dimensions of DM2.ZS carriage plate

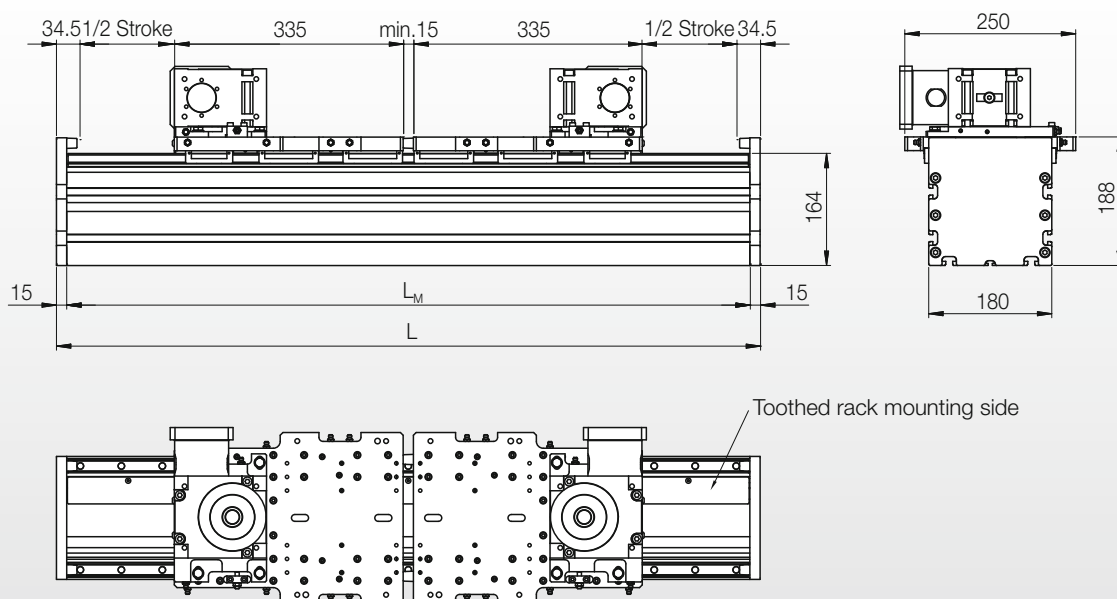




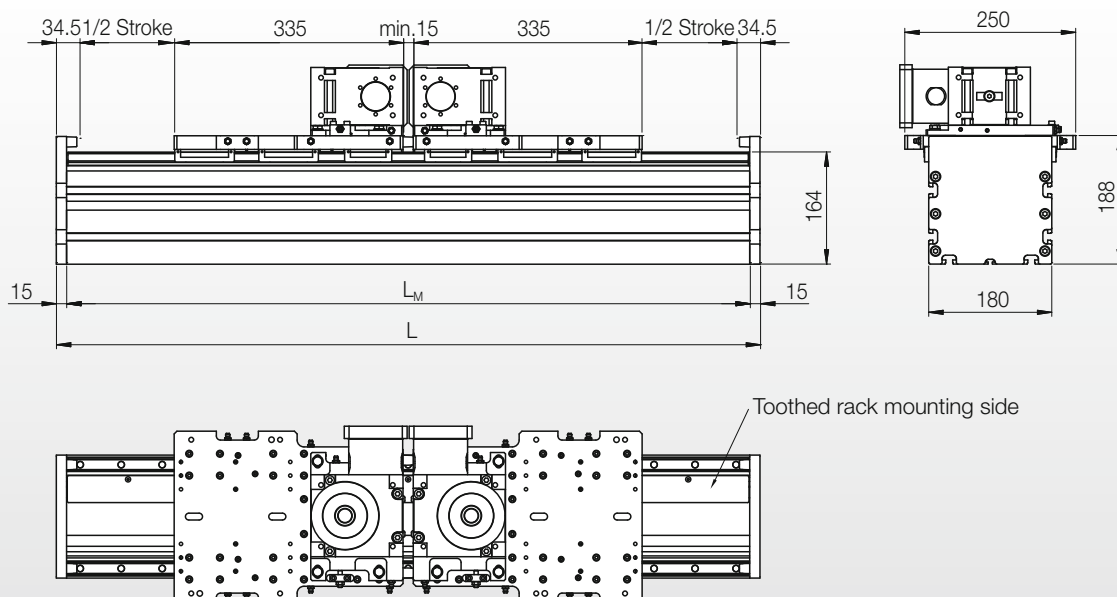
DYNAMIC MODULE DM2.ZS...

Dimensions with toothed rack – 2 carriages

– 2 carriages with gearboxes outward (Order code Carriage = C)



– 2 carriages with gearboxes inward (Order code Carriage = D)



Nominal size	Dimensions		
Designation	L [mm]	L _M [mm]	Weight (excluding gearbox) [kg]
DM2.ZS...C/D...	Stroke + 754	L – 30	44.55 kg + 3.06 kg/100 mm Stroke

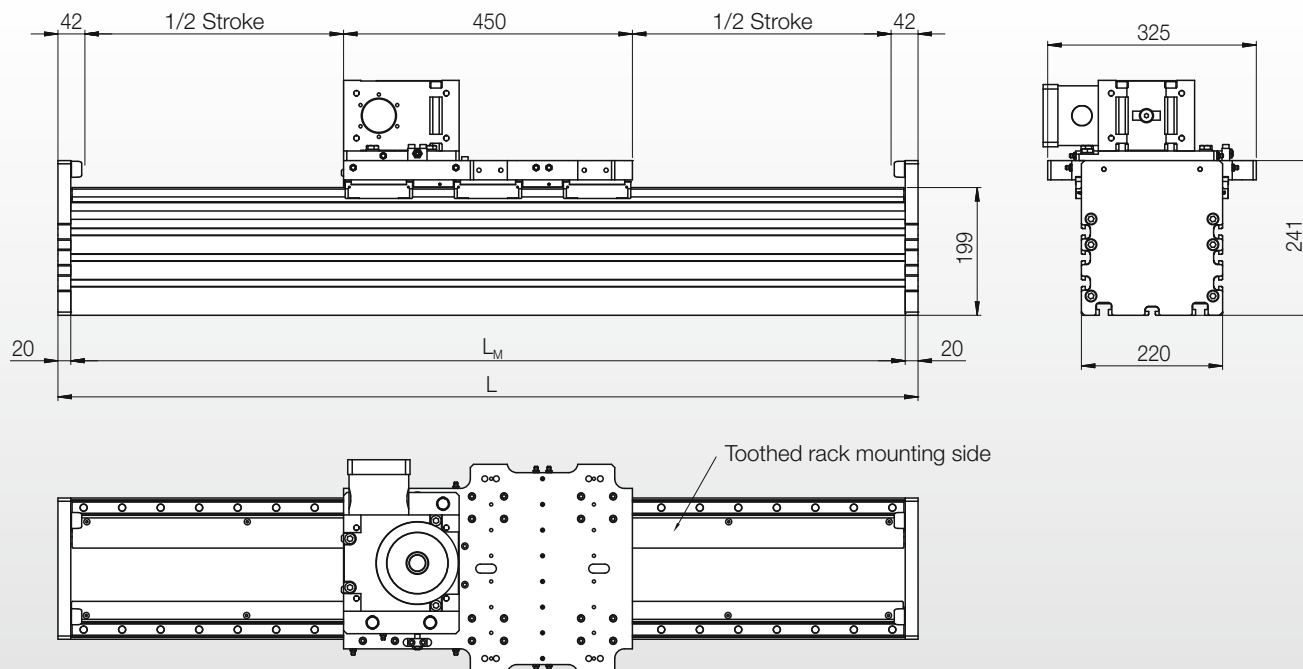


DYNAMIC MODULE DM3.ZS...



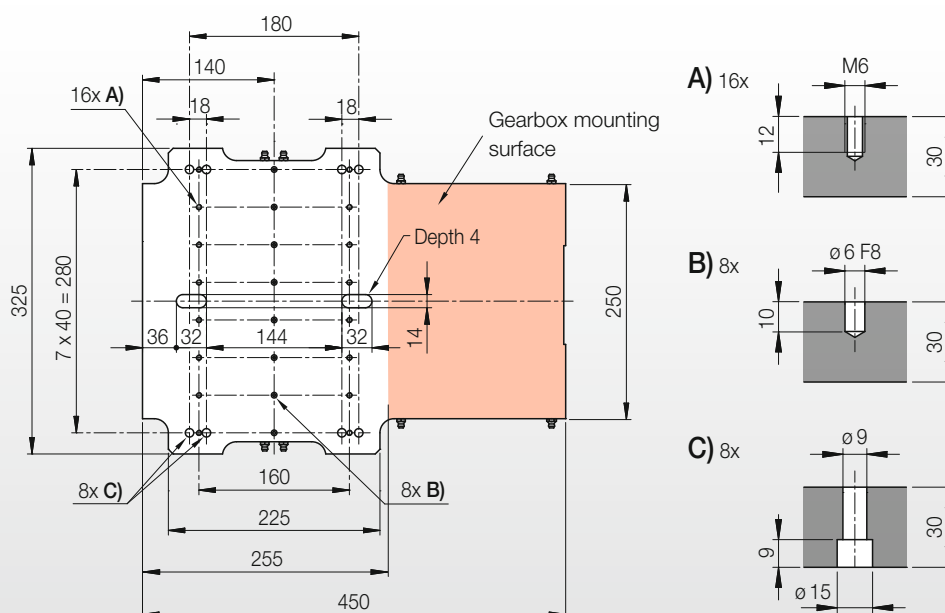
Dimensions with toothed rack – 1 carriage

– 1 carriage with gearbox on the left (Order code Carriage = A) or with gearbox on the right (Order code Carriage = B)



Nominal size	Dimensions		
Designation	L [mm]	L _M [mm]	Weight (excluding gearbox) [kg]
DM3.ZS...A/B...	Stroke + 534	L – 40	55.6 kg + 5.0 kg/100 mm Stroke

Dimensions of DM3.ZS carriage plate

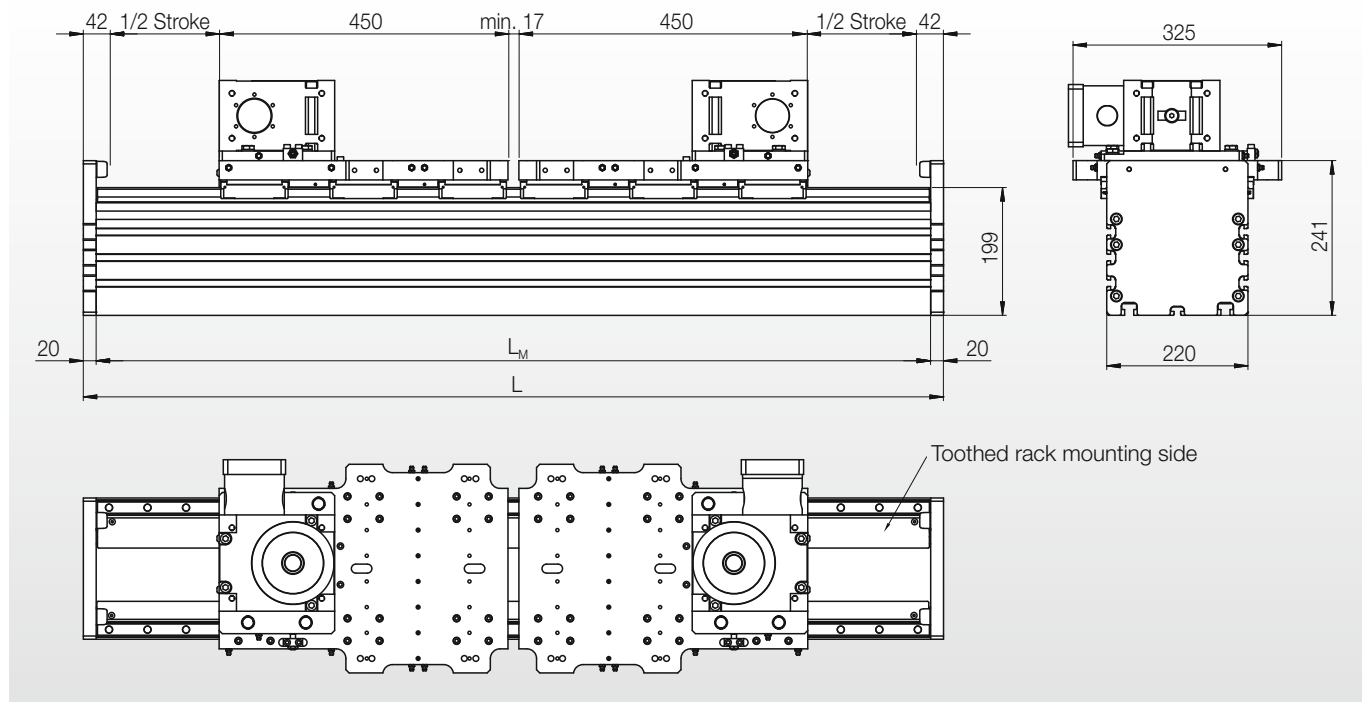


DYNAMIC MODULE DM3.ZS...

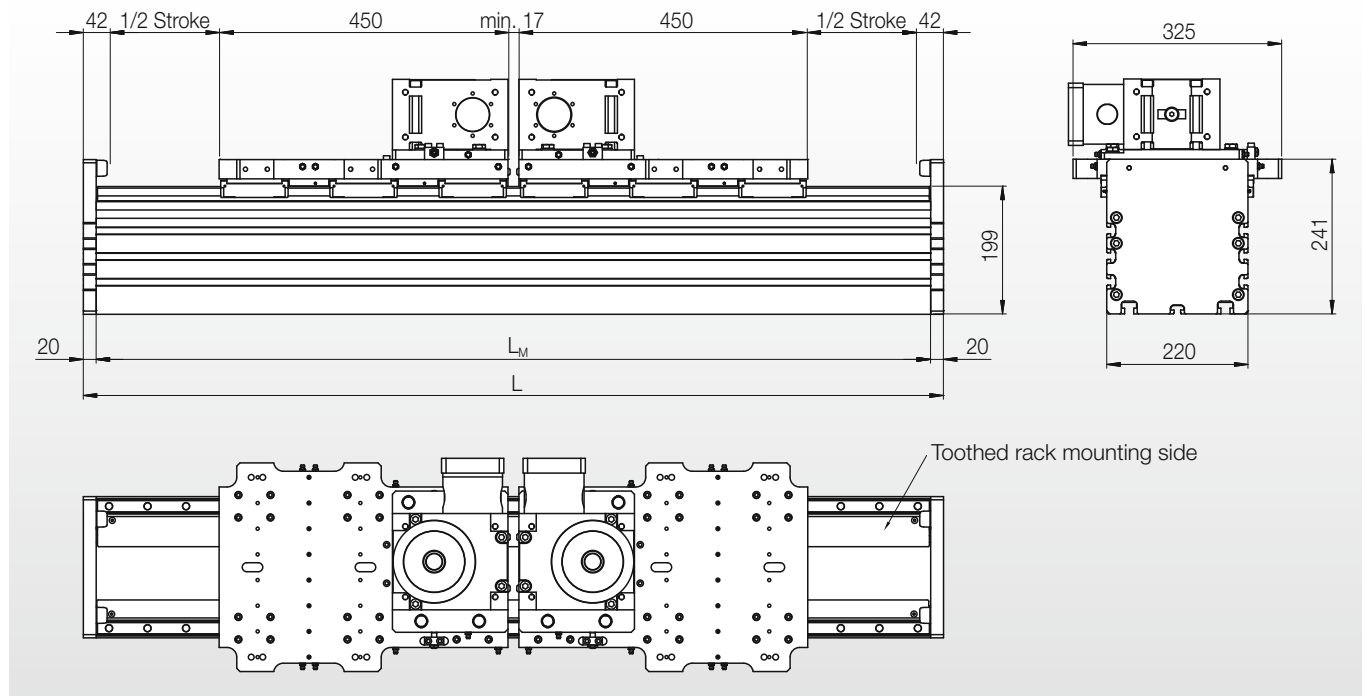


Dimensions with toothed rack – 2 carriages

– 2 carriages with gearboxes outward (Order code Carriage = C)



– 2 carriages with gearboxes inward (Order code Carriage = D)

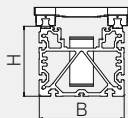
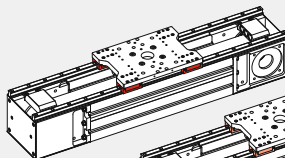
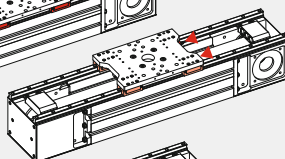
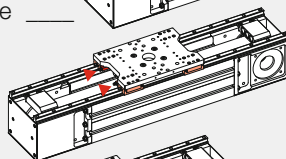
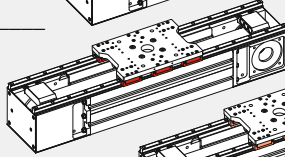
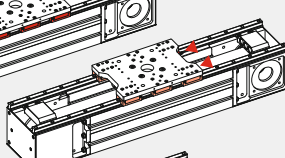
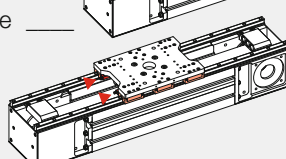


Nominal size	Dimensions		
Designation	L [mm]	L _M [mm]	Weight (excluding gearbox) [kg]
DM3.ZS...C/D...	Stroke + 1001	L – 40	95.1 kg + 5.0 kg/100 mm Stroke

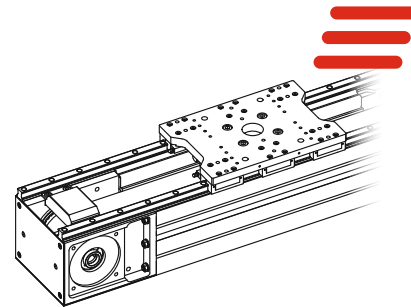
DYNAMIC MODULES WITH TOOTHED BELT DRIVE



Designation system for DM...ZR...

Dynamic module with toothed belt drive										Basic key		Customer-specific modifications								
Designation example:										DM	2	.	ZR	.	2400	.	A	A	-	0000
Design DM = Dynamic module with linear rail guide																				
Size (cross section of base profile) 2 = B 180 x H 148 mm 3 = B 220 x H 180 mm																				
Drive type ZR = Toothed belt																				
Stroke absolute [mm] (longer strokes available on request) DM2 = 360 mm / 420 mm / 480 mm / ... every 60 mm ... / 5760 mm / 5820 mm / 5880 mm DM3 = 430 mm / 490 mm / 550 mm / ... every 60 mm ... / 5650 mm / 5710 mm / 5770 mm																				
Mounting type » see page 5 A = undefined support points ** B = defined support points C = machined support points																				
Carriages » for details see pages 28–29, for lubrication see page 31																				
A = 4 runner blocks ** _____																				
B = 4 runner blocks with centralised lubrication points on the motor side _____																				
C = 4 runner blocks with centralised lubrication points on side opposite the motor _____																				
D = 6 runner blocks _____																				
E = 6 runner blocks with centralised lubrication points on the motor side _____																				
F = 6 runner blocks with centralised lubrication points on side opposite the motor _____																				
ID number 0000 = Standard (no customisation) XXXX = Unique identification number reflecting mounting type B/C or customised modifications (number assigned by LINE TECH)																				



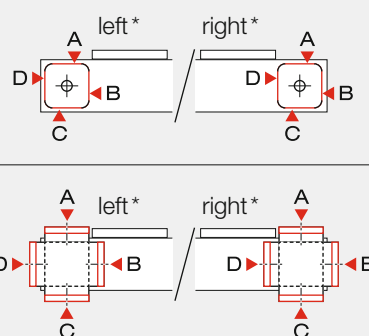


Options

Gearbox mounting

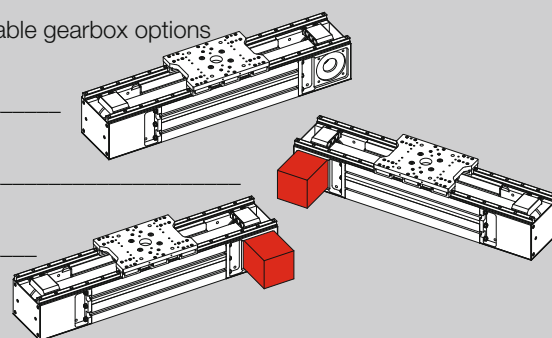
Gearbox mounting orientation

- N = without mounted gearbox
 A = 0° ** – with straight gearbox:
 B = 90° Access to grub screw of clamping set
 C = 180° of the gearbox/motor connection
 D = 270°
- with angular gearbox:
 Orientation of motor mounting flange



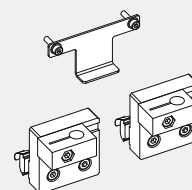
Delivery condition » see page 26 for available gearbox options

- N = without gearbox **
 A = Gearbox on left * fully assembled
 B = Gearbox on right * fully assembled



Sensor mounting set, consisting of 1 x switch flag and 2 x sensor holder

- N = none **
 A = mounted on left *
 B = mounted on right *

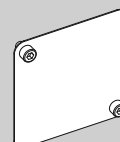


» see page 32

Matching sensor: PNP opener (PNP-NC) ▶ Item no. I08H004 (see page 33), or customer-side

Cover plate

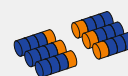
- N = none **
 A = mounted on left *
 B = mounted on right *



» see page 32

Buffers

- N = none **
 A = with pre-installed high-performance PU buffers



» see page 32

* View towards motor from side opposite motor

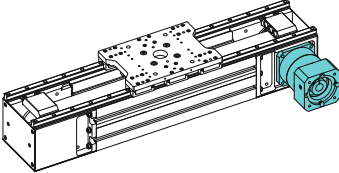
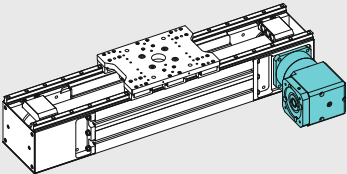
** Standard version

DYNAMIC MODULES WITH TOOTHED BELT DRIVE



Gearbox options DM...ZR...

DM2.ZR... standard gearboxes

Gearbox design type	Gearbox type	Configuration link
Planetary gearbox 	PLQE120	www.neugart.com/en/gearboxes/economy-gearboxes/plqe#s120
Angular gearbox 	WPLQE120	www.neugart.com/en/gearboxes/economy-gearboxes/wplqe#s120

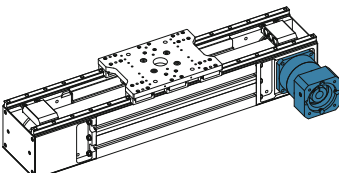
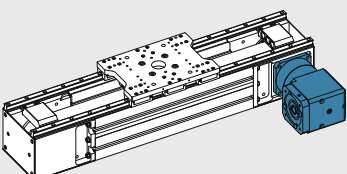
The following parameters can be specified to suit application-specific requirements:

1. «Gear ratio»
2. «Lubrication»
3. «Drive version» – available options may depend on the chosen motor
4. «Motor interface»

This standard value must remain unchanged: Output shaft ▶ «smooth output shaft»

» You can configure your gearbox yourself using the corresponding url. This gives us your complete gearbox item number.
If you would like LINE TECH to configure your gearbox, please give us your specifications for parameters 1 to 4 above.

DM3.ZR... standard gearboxes

Gearbox design type	Gearbox type	Flange *	Configuration link
Planetary gearbox 	AE120	P1110400001 (previous no.: PF140001)	www.apexdyna.com/websites/Default.aspx
Angular gearbox 	AER120	P1110400001 (previous no.: PF140001)	

* The gearbox mounting flange (dynamic module mounting side) is a required part and is included with gearboxes provided by LINE TECH. If the gearbox is to be provided by the customer, this flange must be procured separately!

The following parameters can be specified to suit application-specific requirements:

1. «Gear ratio»
2. «Motor interface»

» You can configure your gearbox yourself using the corresponding url. This gives us your complete gearbox item number.
If you would like LINE TECH to configure your gearbox, please give us your specifications for parameters 1 and 2 above.

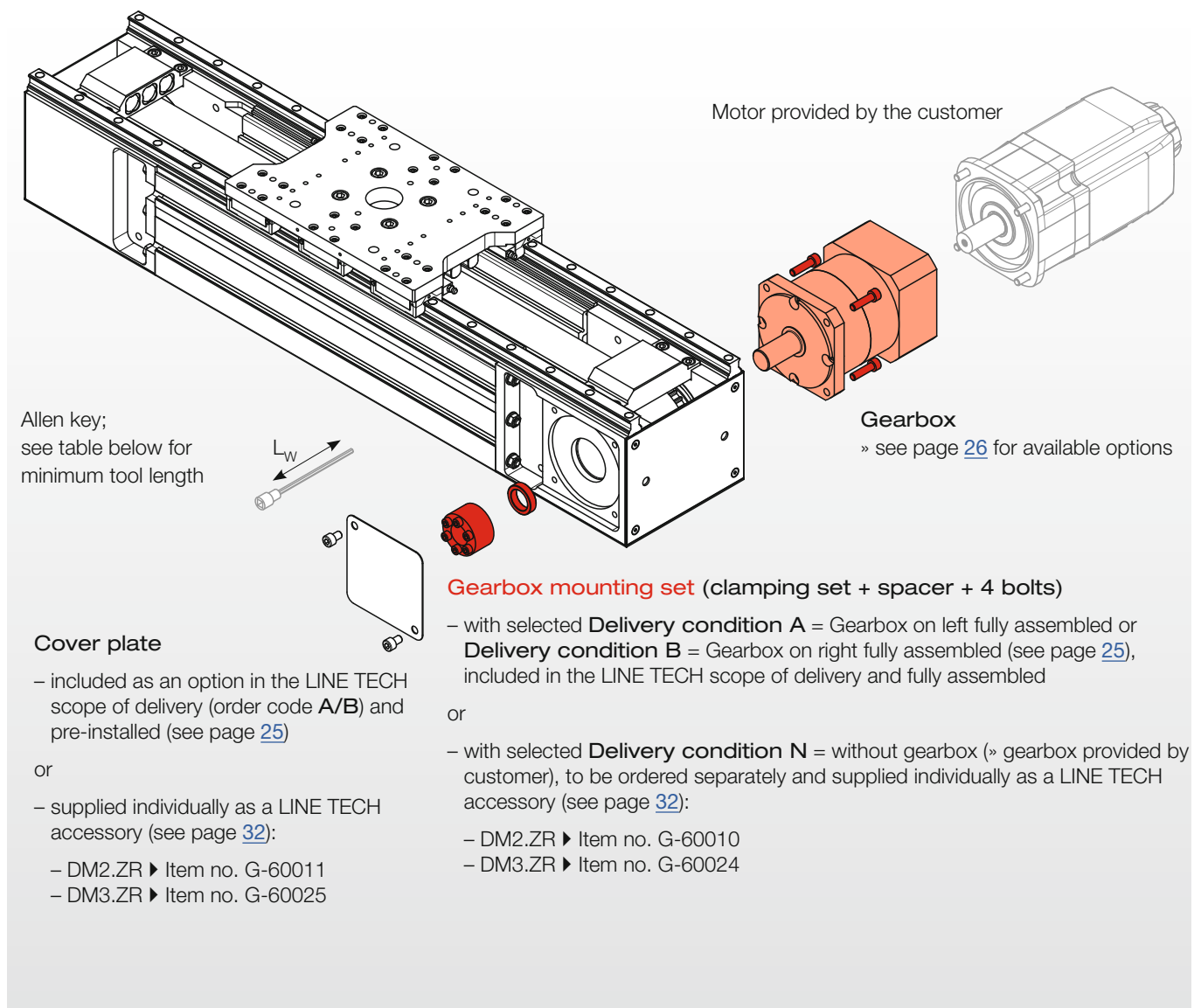


DYNAMIC MODULE WITH TOOTHED BELT DRIVE



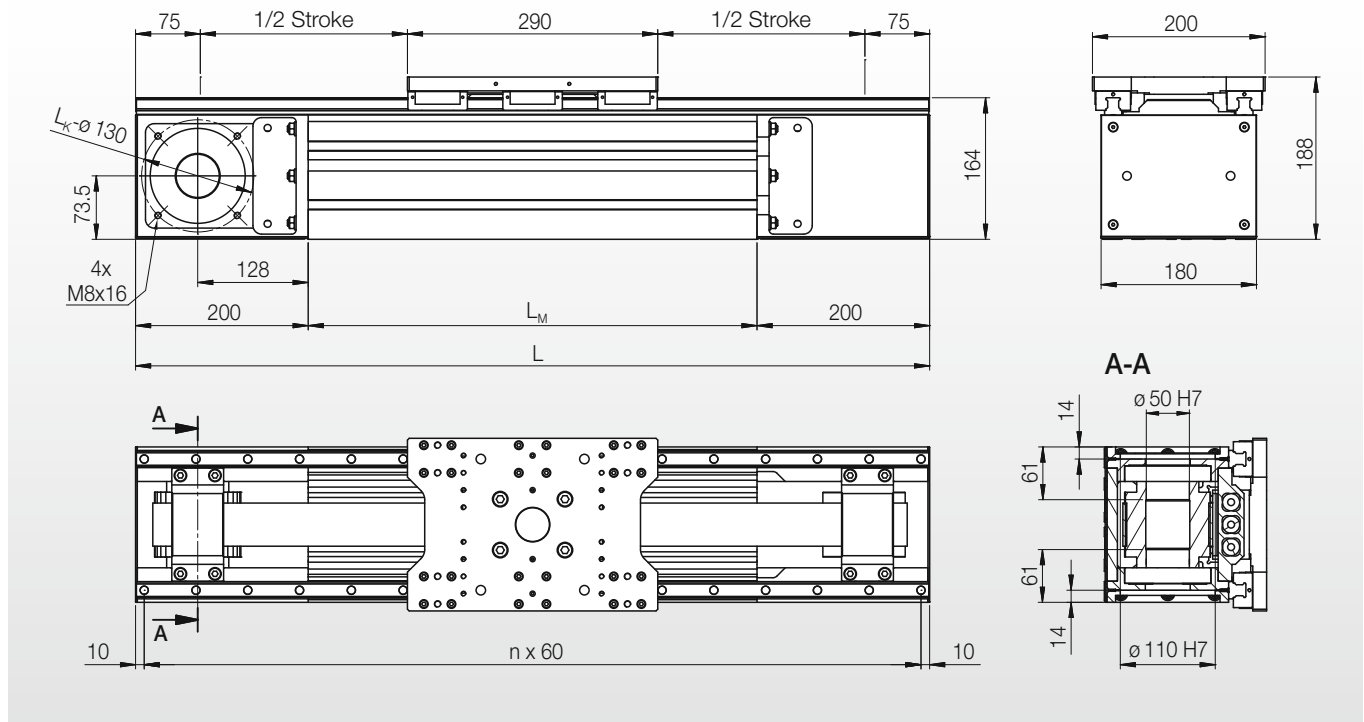
Gearbox mounting DM...ZR...A/B...

Gearbox mounting principle (straight planetary gearbox or angular gearbox)



Nominal size	Clamping set			Allen key (provided by customer)	
	Bolts	Torque [Nm]	Condition	Size [mm]	Tool length L_w [mm]
DM2...ZR...	6 x M6	14	Oiled, without additives	5	≥ 120
DM3...ZR...	6 x M6	16.5	Oiled, without additives	5	≥ 140

Dimensions with toothed belt drive



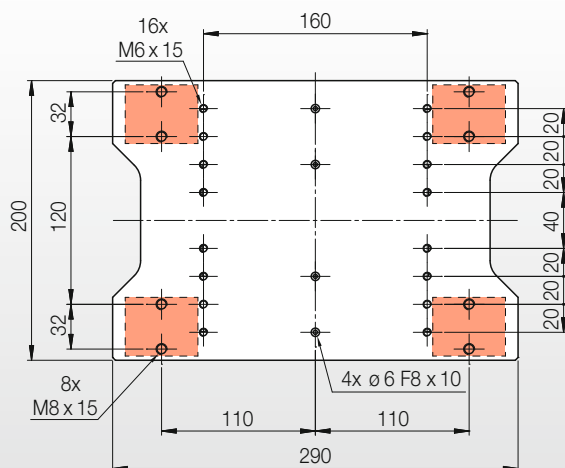
Nominal size	Dimensions			
Designation	L [mm]	L _M [mm]	Belt length [mm]	Weight (excluding gearbox) [kg]
DM2.ZR...A/B/C...	Stroke * + 440	L – 400	2 x Stroke + 880	24.34 kg + 2.688 kg/100 mm Stroke
DM2.ZR...D/E/F...	Stroke * + 440	L – 400	2 x Stroke + 880	25.11 kg + 2.688 kg/100 mm Stroke

* **Please note** – the stroke can be specified in the following increments only: **Stroke = n x 60**

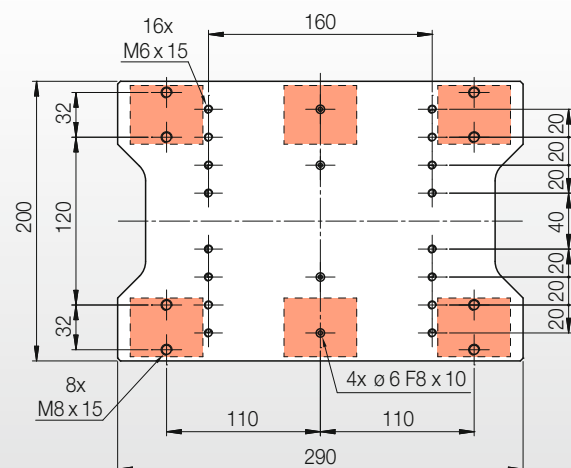
Example: Stroke = 360 mm / 420 mm / 480 mm / ... every 60 mm ... / 5760 mm / 5820 mm / 5880 mm

Dimensions of DM2.ZR... carriage plates

DM2.ZR...A/B/C... with 4 runner blocks

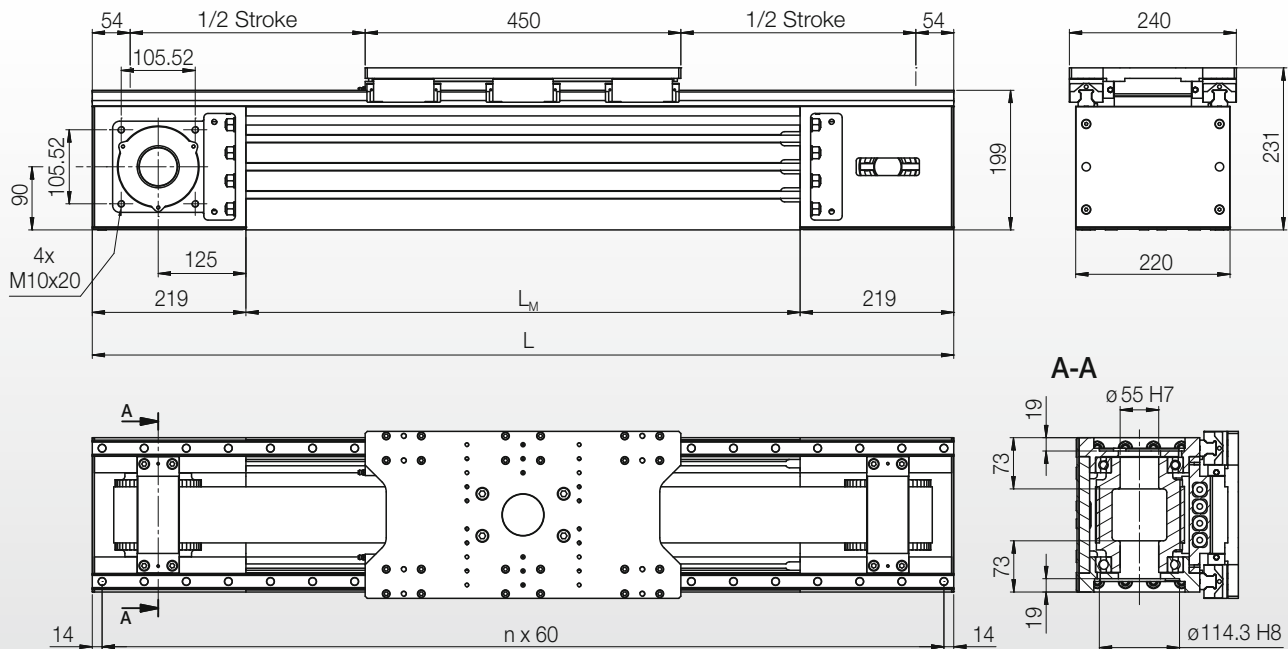


DM2.ZR...D/E/F... with 6 runner blocks





Dimensions with toothed belt drive



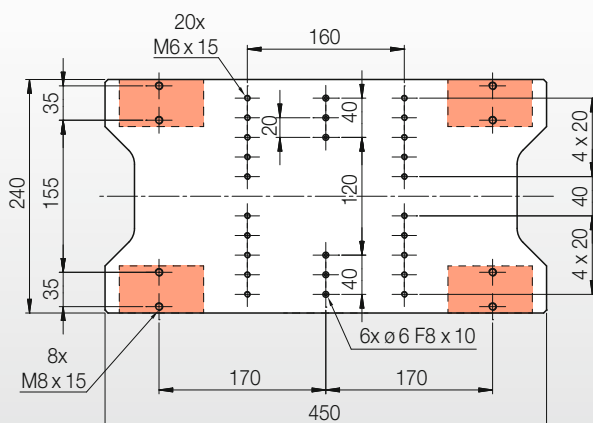
Nominal size	Dimensions			
Designation	L [mm]	L _M [mm]	Belt length [mm]	Weight (excluding gearbox) [kg]
DM3.ZR...A/B/C...	Stroke * + 558	L – 438	2 x Stroke + 1124	55.1 kg + 4.63 kg/100 mm Stroke
DM3.ZR...D/E/F...	Stroke * + 558	L – 438	2 x Stroke + 1124	56.5 kg + 4.63 kg/100 mm Stroke

* **Please note** – the stroke can be specified in the following increments only: **Stroke = 10 + n x 60**

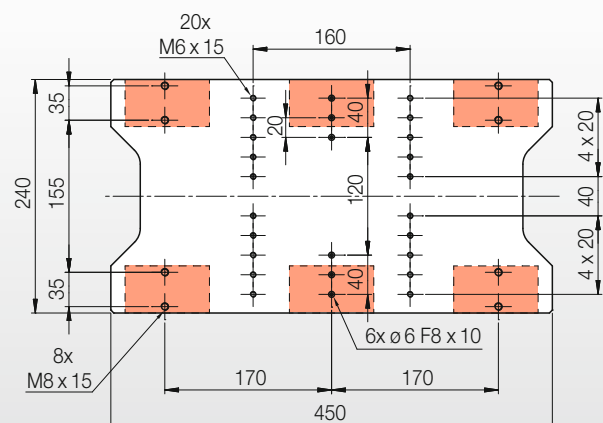
Example: Stroke = 430 mm / 490 mm / 550 mm / ... every 60 mm ... / 5650 mm / 5710 mm / 5770 mm

Dimensions of DM3.ZR... carriage plates

DM3.ZR...A/B/C... with 4 runner blocks



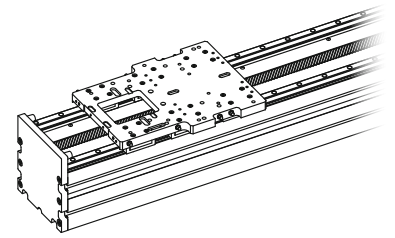
DM3.ZR...D/E/F... with 6 runner blocks



DYNAMIC MODULES WITH RACK AND PINION DRIVE



Lubrication points for DM...ZS...



Lubrication of the runner blocks and the toothed rack (DM2/DM3.ZS...)

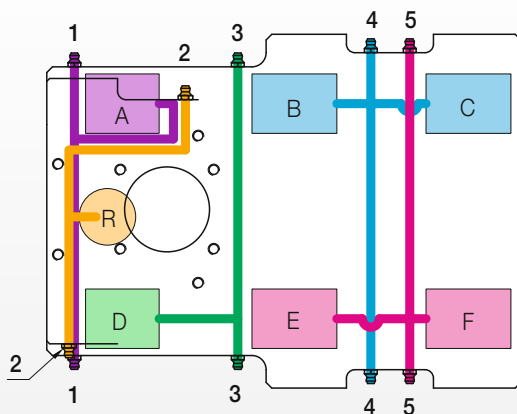
- The lubrication points are located on the carriage and are fitted with M6 grease nipples (DIN 71412 A).
- Recommended grease gun: ZPE.FETTPRESSE.03 (with attachment 01.528)
- Recommended standard greases:
 - Lubrication points **1 / 3 / 4 / 5**: **Microlobe GBU Y 131** (pre-lubricated ex works)
 - Lubrication point **2**: **Klübersynth G 34-130** (not pre-lubricated; **must be lubricated during commissioning!**)

DM2.ZS... (versions left/right or outside/inside)

(Order Code for Carriage = A/B/C/D » see page 16)

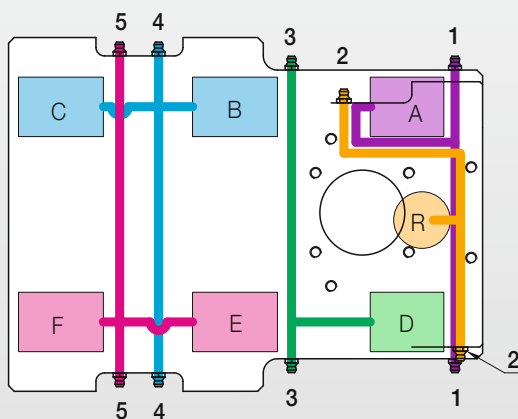
Version left (A) / outside (C) / inside (D)

Use only 1 connection per lubrication point.



Version right (B) / inside (D) / outside (C)

Use only 1 connection per lubrication point



Lubrication point	Object	Lubrication point	Object
1	A *	4	B + C *
2	R **	5	E + F *
3	D *		

* Runner block

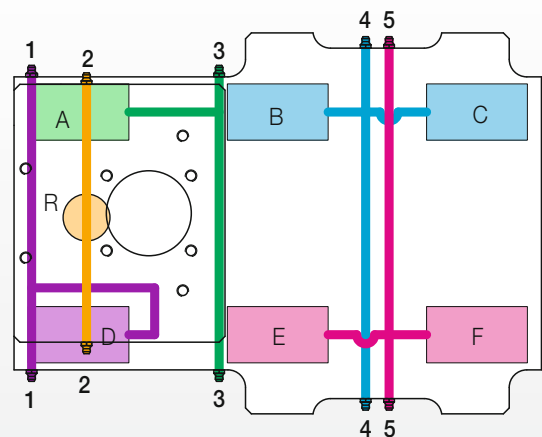
** Toothed rack

DM3.ZS... (versions left/right or outside/inside)

(Order Code for Carriage = A/B/C/D » see page 16)

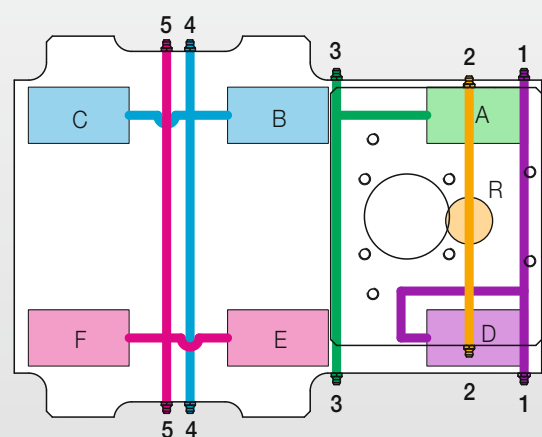
Version left (A) / outside (C) / inside (D)

Use only 1 connection per lubrication point.



Version right (B) / inside (D) / outside (C)

Use only 1 connection per lubrication point

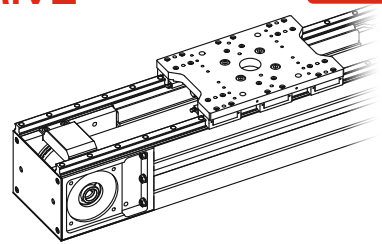


Lubrication point	Object	Lubrication point	Object
1	D *	4	B + C *
2	R **	5	E + F *
3	A *		



DYNAMIC MODULES WITH TOOTHED BELT DRIVE

Lubrication points for DM...ZR...

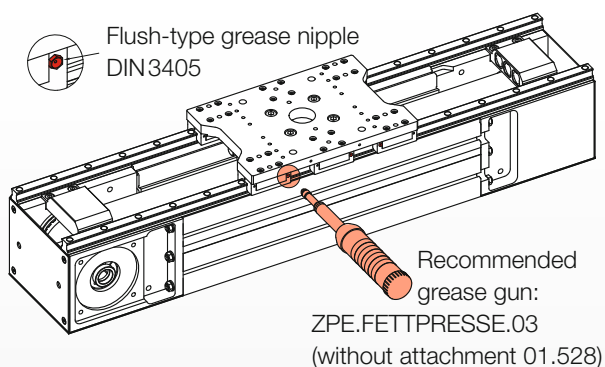


Lubrication of the runner blocks (DM2/DM3.ZR...)

- The lubrication points are located on the carriage.
- Recommended standard grease: **Microlube GBU Y 131** (pre-lubricated ex works)

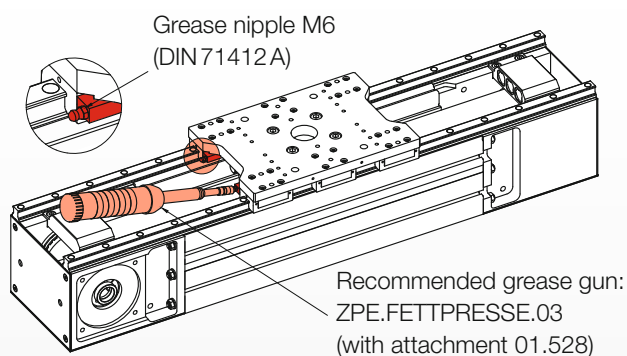
Standard: Individual lubrication points

(Order code **A** or **D** » see page 24)



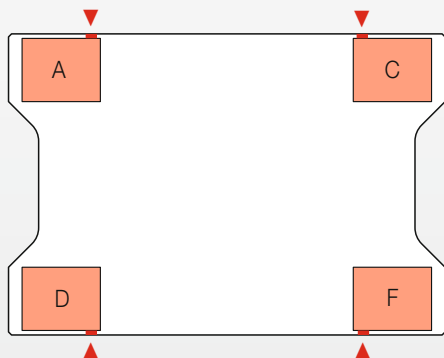
Centralised lubrication: with lubrication strips

(Order code **B** or **C** or else **E** or **F** » see page 24)



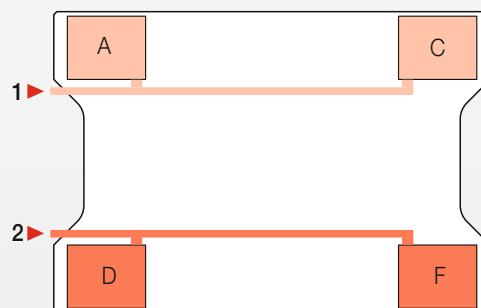
DM2/DM3.ZR...A... with 4 runner blocks

Lubrication of each of the 4 individual lubrication points (A, C, D, F) is required.



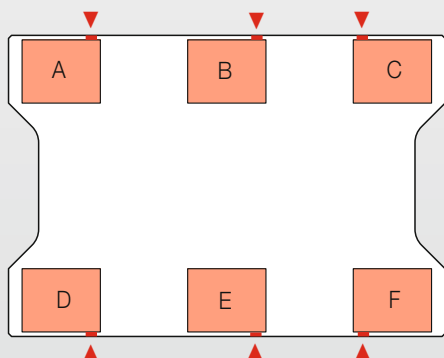
DM2/DM3.ZR...B/C... with centralised lubrication on motor side / opposite motor side

Lubrication of the two centralised lubrication points **1** (A + C) and **2** (D + F) is required.



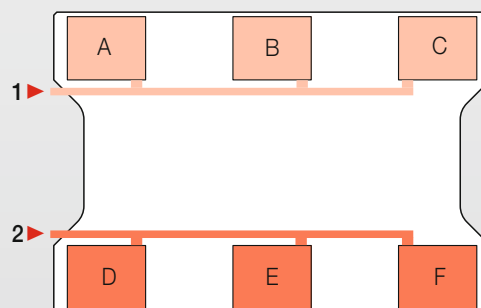
DM2/DM3.ZR...D... with 6 runner blocks

Lubrication of each of the 6 individual lubrication points (A...F) is required



DM2/DM3.ZR...E/F... with centralised lubrication on motor side / opposite motor side

Lubrication of the two centralised lubrication points **1** (A + B + C) and **2** (D + E + F) is required.



DYNAMIC MODULES WITH TOOTHED BELT DRIVE



Options and accessories for DM...ZR...

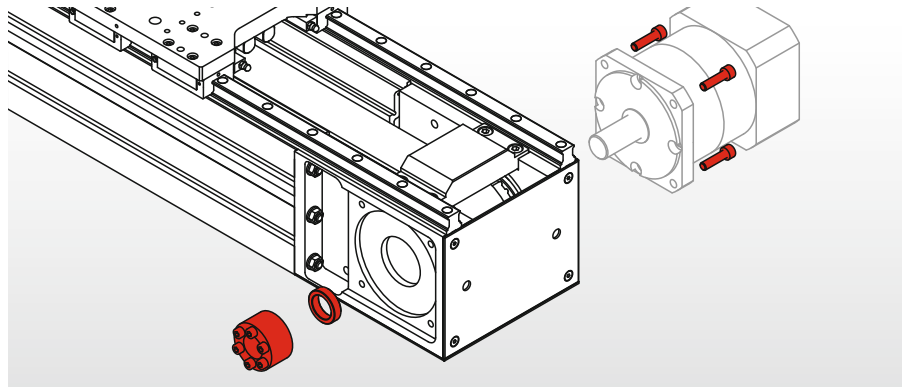
Gearbox mounting set

For mounting standard gearboxes (see page 26).

When ordering as an option* » designation system p. 25: Order code **A/B**

When ordered as a separate accessory:

- DM2.ZR ► Item no. G-60010
- DM3.ZR ► Item no. G-60024



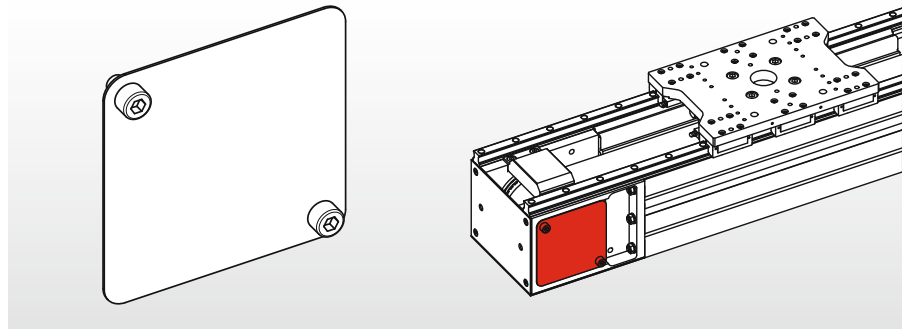
Cover plate

To cover the open hollow shaft opposite the gearbox.

When ordering as an option* » designation system p. 25: Order code **A/B**

When ordered as a separate accessory:

- DM2.ZR ► Item no. G-60011
- DM3.ZR ► Item no. G-60025



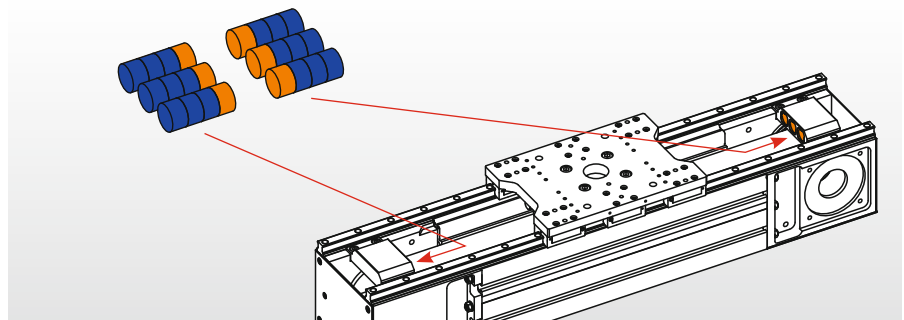
High-performance PU buffers

For optimal protection of all components in the event of a malfunction.

When ordering as an option* » designation system p. 25: Order code **A**

When ordered as a separate accessory:

- DM2.ZR ► Item no. G-60012
- DM3.ZR ► Item no. G-60026



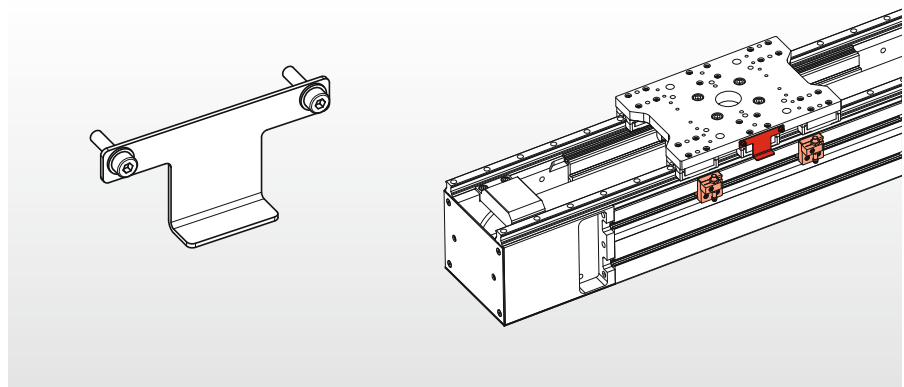
Switch flag

For triggering additional external sensors (with sensor holder, see p. 33, or a solution provided by the customer)

When ordering as an option (part of sensor mounting set)* » designation system p. 25: Order code **A/B**

When ordered as a separate accessory:

- DM2.ZR ► Item no. G-60013
- DM3.ZR ► Art.-Nr. G-60027



* As an option included in the LINE TECH scope of delivery and fully assembled



Options and accessories for DM...ZR...

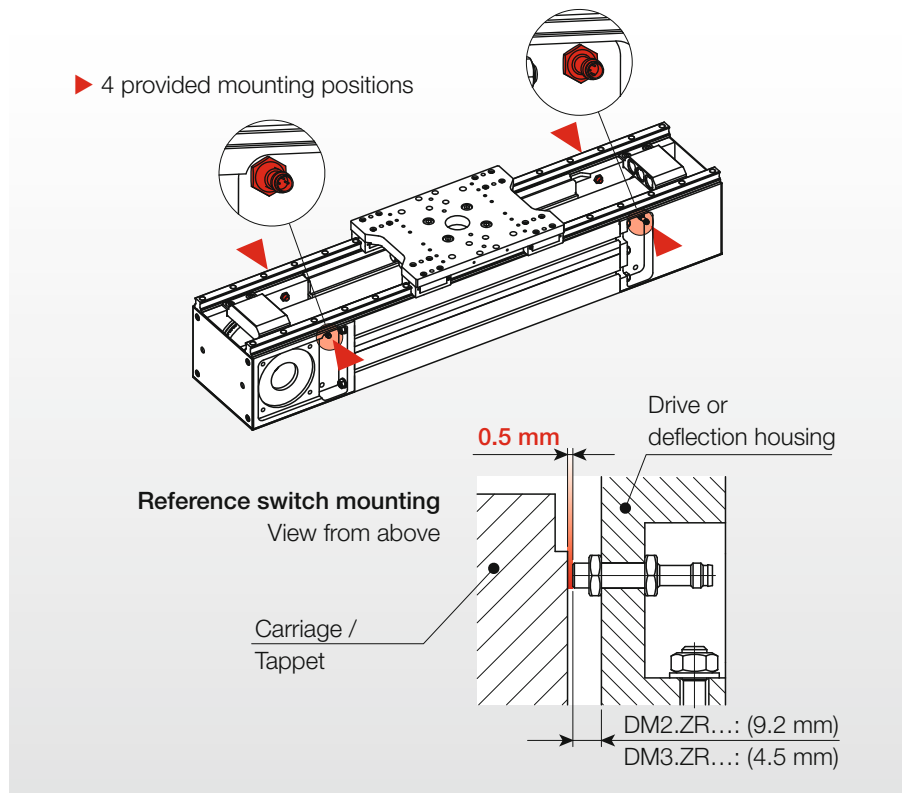
Reference switch

In conjunction with a control system, reference switches are needed to determine a reference point.

For mounting, the end plates have mounting holes on each side, either threaded M8x1 (DM3.ZR...) or 8.2 mm \varnothing through-holes (DM2.ZR...). The reference switches are triggered by a tappet on the carriage.

LINE TECH offers inductive sensors with an M8 connector plug as standard:

- PNP opener (PNP-NC)
 - ▶ Item no. I08H004



Sensor holder

For mounting additional external sensors with 8 mm \varnothing , LINE TECH recommends the use of sensor holders.

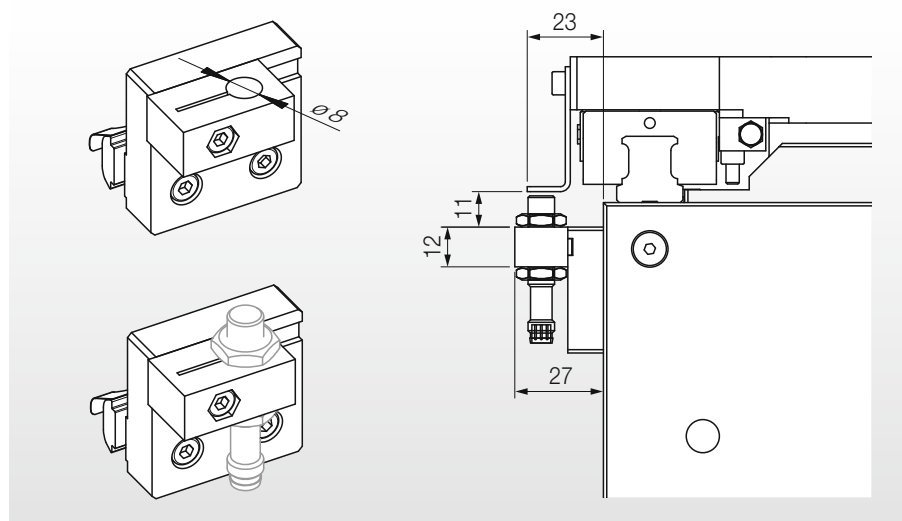
When ordering as an option (part of sensor mounting set) * » designation system p. 25: Order code **A/B**

When ordered as a separate accessory:

- ▶ Item no. G-10796 (without sensor)

Matching sensor:

- PNP opener (PNP-NC)
 - ▶ Item no. I08H004



* As an option included in the LINE TECH scope of delivery and fully assembled



DYNAMIC MODULES

Mounting accessories; Clamps

Mounting options

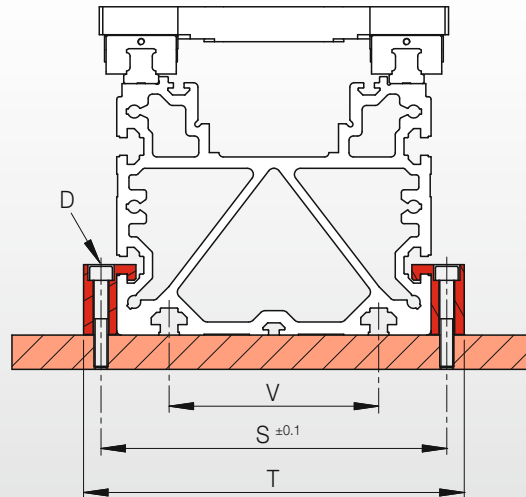
The dynamic modules are attached using clamps or T-slot nuts.

Attention: The dynamic modules are to be attached to or supported by the base profile only, not the end plates.

Nominal size	Dimensions [mm]			
	S	T	V	D (DIN912)
DM2...	198	218	120	M8x50 ¹⁾
DM3...	238	258	150	M8x60 ¹⁾

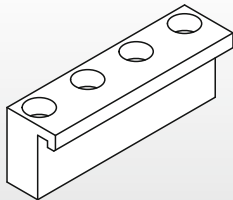
¹⁾ Recommended bolt length

DM2... / DM3...

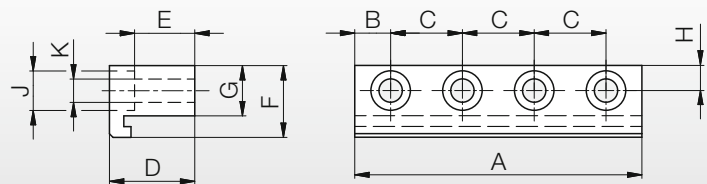


Clamps

Recommended number of clamps:
4 per metre per side



Type II



Nominal size	Dimensions [mm]											Weight [kg]	Item no.
	Type	A	B	C	D	E	F	G	H	J	K		
DM2...	II	110	10	30	40	31	30	19	10	ø15	ø9	0.610	P-55247
DM3...	II	110	10	30	50	41	30	19	10	ø15	ø9	0.754	P-54856



Mounting accessories; T-slot nuts

T-slot nuts

T-nuts properly sized for the corresponding T-slot can be used for fastening attachments and add-ons to the base profile.

Depending on the T-slot width (see profile cross sections, pages [6/7](#)), T-nuts type NS6, NS10, or NS14 can be used. The T-nuts are available from LINE TECH. The size, material, and threading must be defined as the ordering number as per the ordering system below. The available types are listed on the right.



Dimensions [mm]		Material
T-slot width	a (thread)	
T-slot 6	M4 / M5 / M6	Galvanised steel
T-slot 10 / 10A	M4 / M5 / M6 / M8	Galvanised steel
T-slot 14	M12	Galvanised steel

Ordering system for T-slot nuts

Designation example:

NS = T-slot nut

T-slot width » see profile cross sections, pages [6/7](#)

6 = T-slot 6

10 = T-slot 10 / 10A

14 = T-slot 14

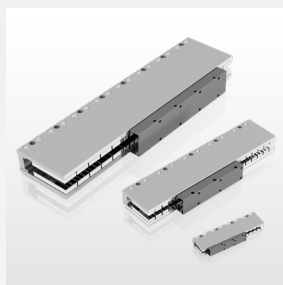
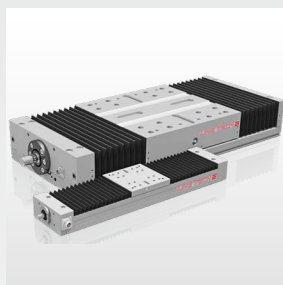
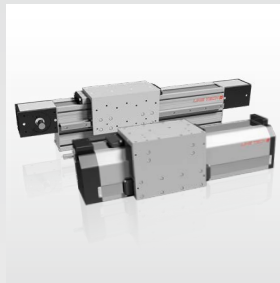
Basic key

NS 6 St M5 - DM

DM = for Dynamic module
(only for sizes 10 and 14)

Thread » size a as per table above
M4 / M5 / M6 / M8 / M12

Material
St = Galvanised steel



© LINE TECH AG

The contents of this publication are protected by copyright held by the publisher and may not be reproduced in whole or in part unless permission is granted. Every care has been taken to ensure the accuracy of the information contained herein but no liability can be accepted for any loss or damage, whether direct, indirect or consequential, resulting from or in connection with the use of the information contained herein. This catalogue supersedes previous catalogues in which information differs from that contained herein. Information is subject to change as required by technological advancements.

Version: 08-2025 E

LINE TECH AG
Europastrasse 19
8152 Glattbrugg
Switzerland

Phone +41 43 211 68 68

sales@linetech.ch

