



Superior Clamping and Gripping



Product data sheet

Universal linear module Gamma 160

Gamma

Universal linear module

Loadable. High Performance. Robust.

Universal linear module Gamma

Toothed belt or rack and pinion driven universal linear module with closed profile and double profiled rail guide

Field of application

Universal linear module with closed profile for high requirements on rigidity, optionally with toothed belt drive for high acceleration and speed or rack and pinion drive for high repeat precision for large strokes.



Advantages – Your benefits

Adaptable drive motor for versatile approach and easy integration into existing control concepts

Choice of toothed belt or rack and pinion drive for the optimum drive for your application

Double-profiled rail guide for very high force and moment loads

Can choose between single and double slides for more flexibility and throughput

Closed basic profile for a high stiffness in all load directions

Compact dimensions for less interfering contours



Sizes
Quantity: 5



Max. stroke
7010 .. 7685 mm



Max. driving force
1150 .. 10000 N



Repeat accuracy
 $\pm 0.05 \dots 0.08$ mm

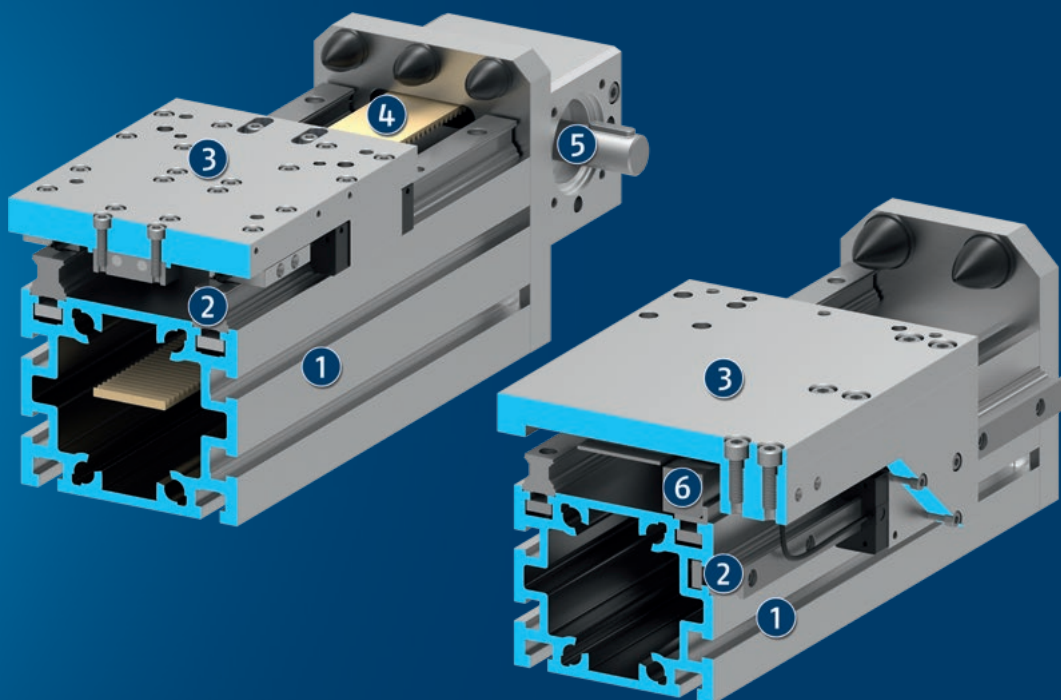


Max. speed
3.2 .. 5 m/s

Functional description

The slide is driven by a toothed belt or a gear rack and is precisely guided by a double profiled rail guide. The servomotor is usually connected with the drive shaft on the profile for a toothed belt drive and with the drive

shaft on the slide for a rack and pinion drive.

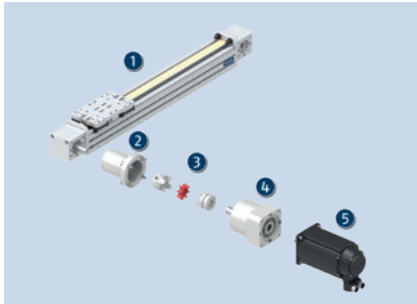


- ① **Aluminum profile**
Self-supporting, closed profile
- ② **Profiled rail guide**
for maximum positioning accuracy and moment loads
- ③ **Aluminum slides**
for attaching the parts to be moved

- ④ **Toothed belt**
Transforms the rotational movement into a linear movement
- ⑤ **Drive connection**
Flanged-on servomotor
- ⑥ **Rack**
Transforms the rotational movement into a linear movement

Detailed functional description

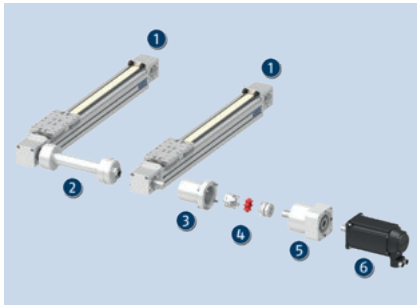
Toothed belt axis with right-angle-mounted motor



This illustration shows how to mount a motor at a right-angle on a toothed belt axis using an engine cone, a clutch and a transmission.

- ① Toothed belt drive
- ② Motor bell
- ③ Coupling
- ④ Gear
- ⑤ Servomotor

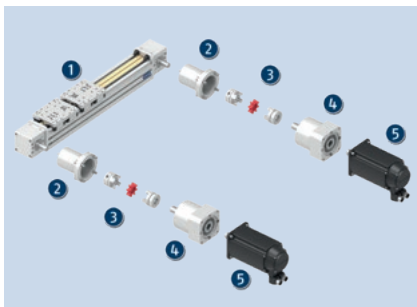
Synchronized toothed belt axes with connection shafts



A second toothed belt axis can be driven using a connection shaft.

- ① Toothed belt drive
- ② Connection shaft
- ③ Motor bell
- ④ Coupling
- ⑤ Gear
- ⑥ Servomotor

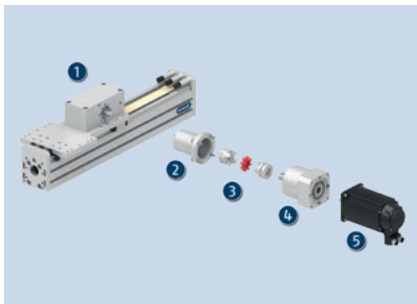
Rack and pinion axis with double slides



This illustration shows a toothed belt axis with two independently moving slides.

- ① Toothed belt drive
- ② Motor bell
- ③ Coupling
- ④ Gear
- ⑤ Servomotor

Toothed belt axes with driven slides



This illustration shows how to mount a motor at a right-angle on a slide of a toothed belt axis using an engine cone and a coupling.

- ① Toothed belt drive
- ② Motor bell
- ③ Coupling
- ④ Gear
- ⑤ Servomotor

Rack and pinion axis with right-angle-mounted motor on slide



This illustration shows how to mount a motor at a right-angle on a toothed belt axis with a transmission using a motor flange and a clutch.

- ① Toothed rack axis
- ② Gear
- ③ Motor bell
- ④ Coupling
- ⑤ Servomotor

Rack and pinion axis with double slides



This illustration shows a rack and pinion axis with two independently moving slides.

- ① Toothed rack axis
- ② Gear
- ③ Motor bell
- ④ Coupling
- ⑤ Servomotor

General notes about the series

Guidance: Rail guide

Drive: servomotors of different providers can be trouble-free adapted

Profile: Extruded aluminum profile

Slide: Aluminum slides

Scope of delivery: Assembly and operating manual with declaration of incorporation

Warranty: 24 months

Ambient conditions: The modules are mainly designed for the use in clean ambient conditions. Please note that the life time of the modules can shorten if they are used in harsh ambient conditions, and that SCHUNK cannot assume liability in such cases. Please contact us for assistance.

Max. stroke: is the maximum permissible stroke. Acceleration and braking distances or possible overrun must be taken into consideration.

Repeat accuracy: defined as the spread of the target position after 100 consecutive positioning cycles under constant conditions.

Acceleration and speed: The values specified are the maximum values of the units without loading. The actual accelerations and speeds for your application must be designed separately and can deviate from the maximum values.

Layout or control calculation: Verifying the sizing of the selected unit is necessary, since otherwise overloading can result. Please contact us for assistance.



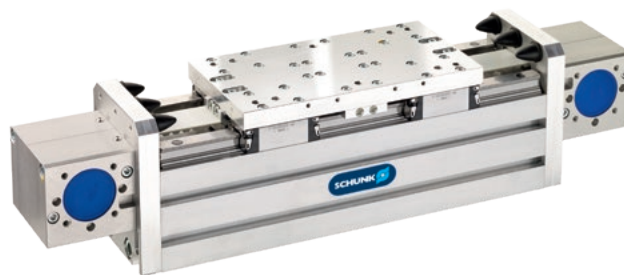
Application example

Line gantry based on a horizontal toothed belt axis with two independently moving slides for work in a joint machining area.

- ① Linear module with toothed-belt drive Gamma
- ② Linear module with rack and pinion drive Gamma
- ③ Electric long-stroke gripper EGA
- ④ Drive motor

SCHUNK offers more ...

The following components make the product even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Rotary module, electric



Universal rotary module



Universal gripper



Universal swivel head



Drive controller



Inductive proximity switches



Drive



Room gantry

① For more information on these products can be found on the following product pages or at schunk.com.

Options and special information

Stroke axis with driven slides: In this version, the servomotor is fastened to the slide and the profile is moved vertically.

Flexible in motor and controller selection: The electrical control is carried out via an adaptable servo drive using common standard controller like Bosch or Siemens.

Easy integration: The easy integration into the control system is ensured by the possibility of attaching a common servomotor.

Complete solutions: On request, SCHUNK can supply complete solutions including motor, gear, controller, and cables.

NEW: Version with food –compliant lubrication (H1G): on request as a solution for an easy entry into medical technology, lab automation,, pharmaceutical and food industry. The requirements of EN 1672-2:2020 are not fully met.

How to order – Toothed belt drive

G - 160 - ZSS - 50ATL10 - 240 - 1000 - 1620 - AZ1 - 1

Product series G = Gamma

Size (version)

Drive

Z = Toothed belt drive

A = driven slide

Guidance system

S = rail guide

Design version

S = standard

SD = standard double (horizontal)

H = Stroke axis (vertical)

Drive version

Toothed belt width and tooth pitch

Stroke per revolution

Traverse path

Overall length

Accessories

EMSEMB = mechanical limit switch (S = Siemens, B = Balluff) attached

E02/E010 = inductive limit switch opener with 2 m/10 m cable attached

ES2/ES10= inductive limit switch closer with 2 m/10 m cable attached

NS = T-nut

AZ = drive shaft

Customized design

0 = Standard

1 = customized (specification in plain text)

Additional accessories (separate item)

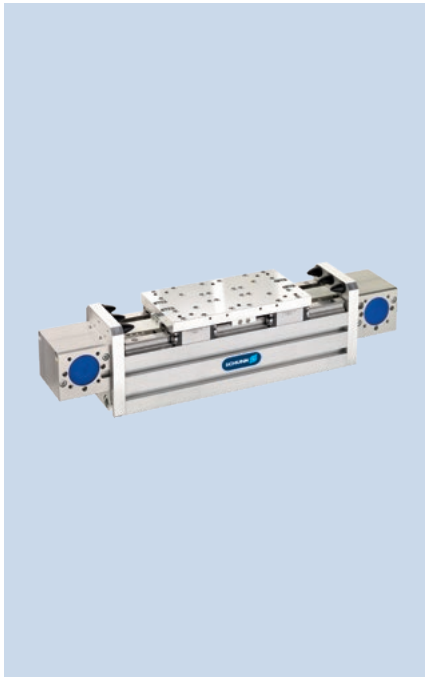
MGK = motor flange and coupling (according to dimension sheet)

How to order – Rack and pinion drive

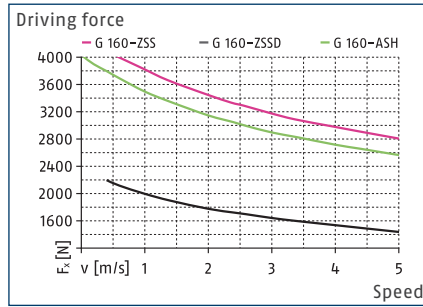
	G	-	160	-	AZSS	-	M2	-	200	-	1000	-	1630	-	NS	-	1
Product series G = Gamma																	
Size (version)																	
Drive AZ = rack and pinion drive																	
Guidance system S = rail guide																	
Design version S = standard (horizontal) H = Stroke axis (vertical)																	
Drive version Pinion module (M2/M3)																	
Stroke per revolution																	
Traverse path																	
Overall length																	
Accessories EMSEMB = mechanical limit switch (S = Siemens, B = Balluff) attached E02/E010 = inductive limit switch opener with 2 m/10 m cable attached ES2/ES10 = inductive limit switch closer with 2 m/10 m cable attached NS = T-nut																	
Customized design 0 = Standard 1 = customized (specification in plain text)																	
Additional information Gear size and ratio (D55 to D115/i = 5 to i = 15) Gear attachment (e.g. BXD)																	

Gamma 160

Universal linear module

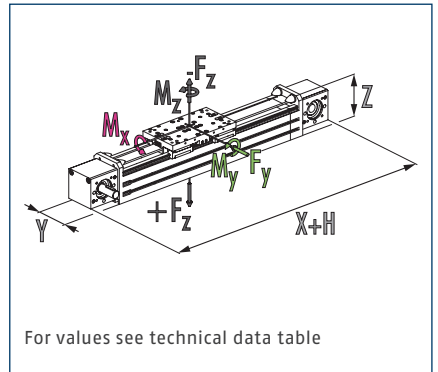


Max. driving force (toothed belt)*



* The specified driving forces are maximum values for modules with toothed-belt drives at a given speed.

Dimensions and maximum loads



① The indicated forces and moments are maximum values for individual loading. If several forces and/or moments are applied at the same time, the maximum permitted individual values will be lower.

Technical data toothed belt drives

Description		G 160-ZSS	G 160-ZSSD	G 160-ASH
Max. stroke H	[mm]	7580	7250	7350
Max. driving force	[N]	4000	2200	4000
Repeat accuracy	[mm]	±0.08	±0.08	±0.08
Max. total length	[mm]	8200	8200	8000
Max. speed	[m/s]	5	5	5
Max. acceleration	[m/s²]	60	60	60
Min./max. ambient temperature	[°C]	0/80	0/80	0/80
Dead weight of base including slide	[kg]	26.5	39.8	36.5
Additional mass per 100 mm stroke	[kg]	2.42	2.5	2.42
Weight of slide	[kg]	7.6	7	
Dead weight of slide, long	[kg]	9.8	9.2	
Weight of slide drive	[kg]			16.6
Guidance system		Rail guide	Rail guide	Rail guide
Number of rails		2	2	2
Size of rails		25	25	25
Drive concept		Belt drive	Belt drive	Belt drive
Idle torque	[Nm]	4	4	4
Moment of inertia	[kgm²]	0.018	0.00875	0.0257
Toothed belt type		50 ATL 10	2x32 AT 10	50 AT 10-E
Traverse path per revolution	[mm]	240	210	240
Dimensions X x Y x Z	[mm]	620 x 160 x 170.5	960 x 160 x 170.5	650 x 160 x 260.5
Moments Mx max./My max./Mz max.	[Nm]	1800/5000/4000	1800/5000/4000	1800/8000/7000
Forces Fy max./Fz max./-Fz max.	[N]	10000/16000/16000	10000/16000/16000	10000/16000/16000

① Please note that the weight of the slight drive for rack and pinion axes (AZSS/AZSH) includes the weight of the gear unit.

Technical data for rack and pinion drives

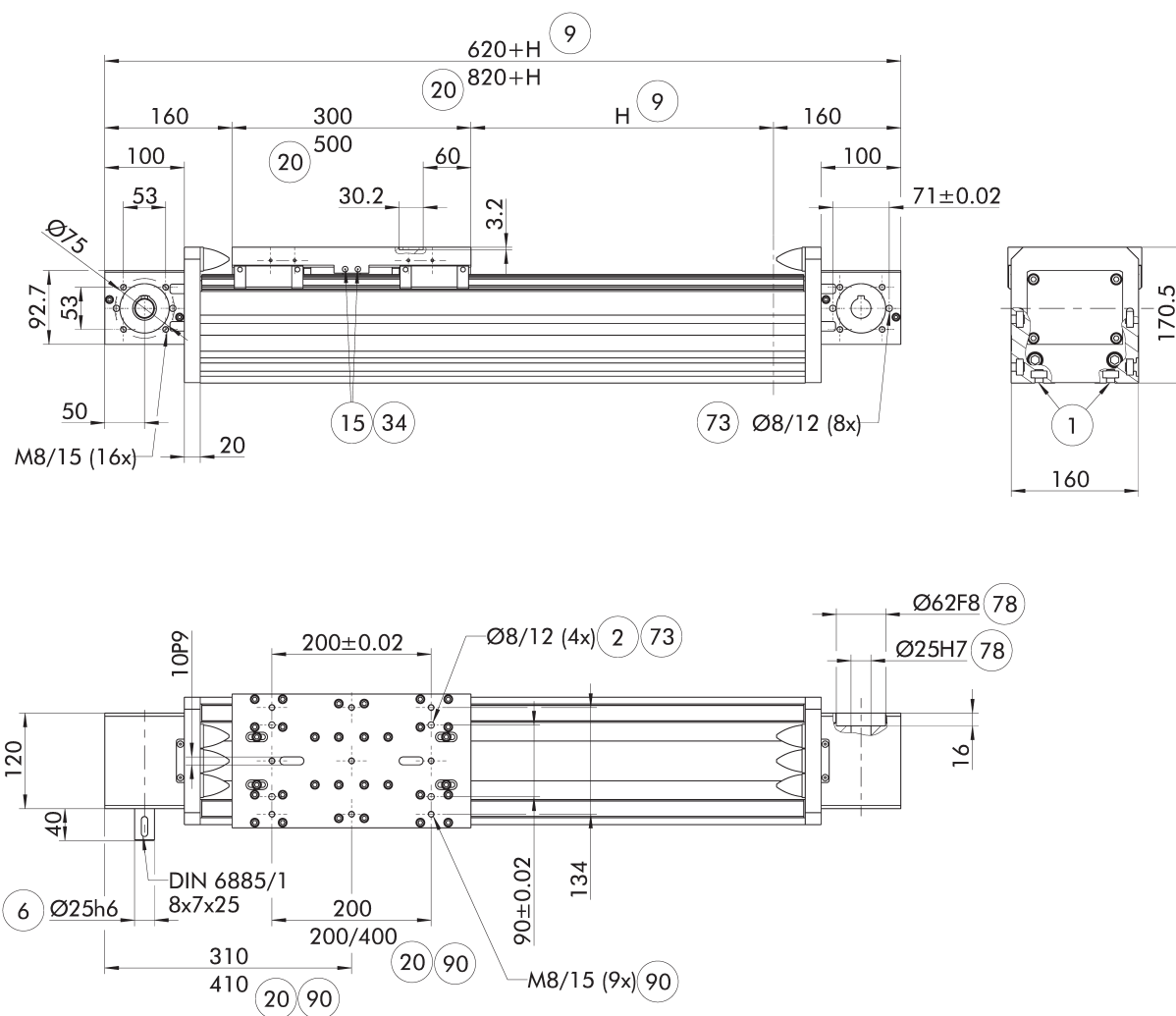
Description		G 160-AZSS-D75	G 160-AZSH-D90
Max. stroke H	[mm]	7370	7370
Max. driving force	[N]	2200	4000
Repeat accuracy	[mm]	±0.05	±0.05
Max. total length	[mm]	8000	8000
Max. speed	[m/s]	5	4.5
Max. acceleration	[m/s ²]	20	20
Min./max. ambient temperature	[°C]	0/80	0/80
Dead weight of base including slide	[kg]	33.25	34.05
Additional mass per 100 mm stroke	[kg]	3	3
Weight of slide drive	[kg]	20.2	25.2
Dead weight of gearbox	[kg]	6.3	10.5
Guidance system		Rail guide	Rail guide
Number of rails		2	2
Size of rails		25	25
Drive concept		Rack and pinion drive	Rack and pinion drive
Idle torque	[Nm]	5.8	5.8
Gear ratio		5/10/15	5/10/15
Serration		Module 2, angled serration	Module 2, angled serration
Number of teeth of pinion		30	30
Traverse path per revolution	[mm]	200	200
Dimensions X x Y x Z	[mm]	630 x 173 x 160	630 x 173 x 160
Moments Mx max./My max./Mz max.	[Nm]	2500/7000/7000	2500/7000/7000
Forces Fy max./Fz max./-Fz max.	[N]	12000/12000/12000	12000/12000/12000

① Please note that the weight of the slide drive for rack and pinion axes (AZSS/AZSH) includes the weight of the gear unit.

Gamma 160

Universal linear module

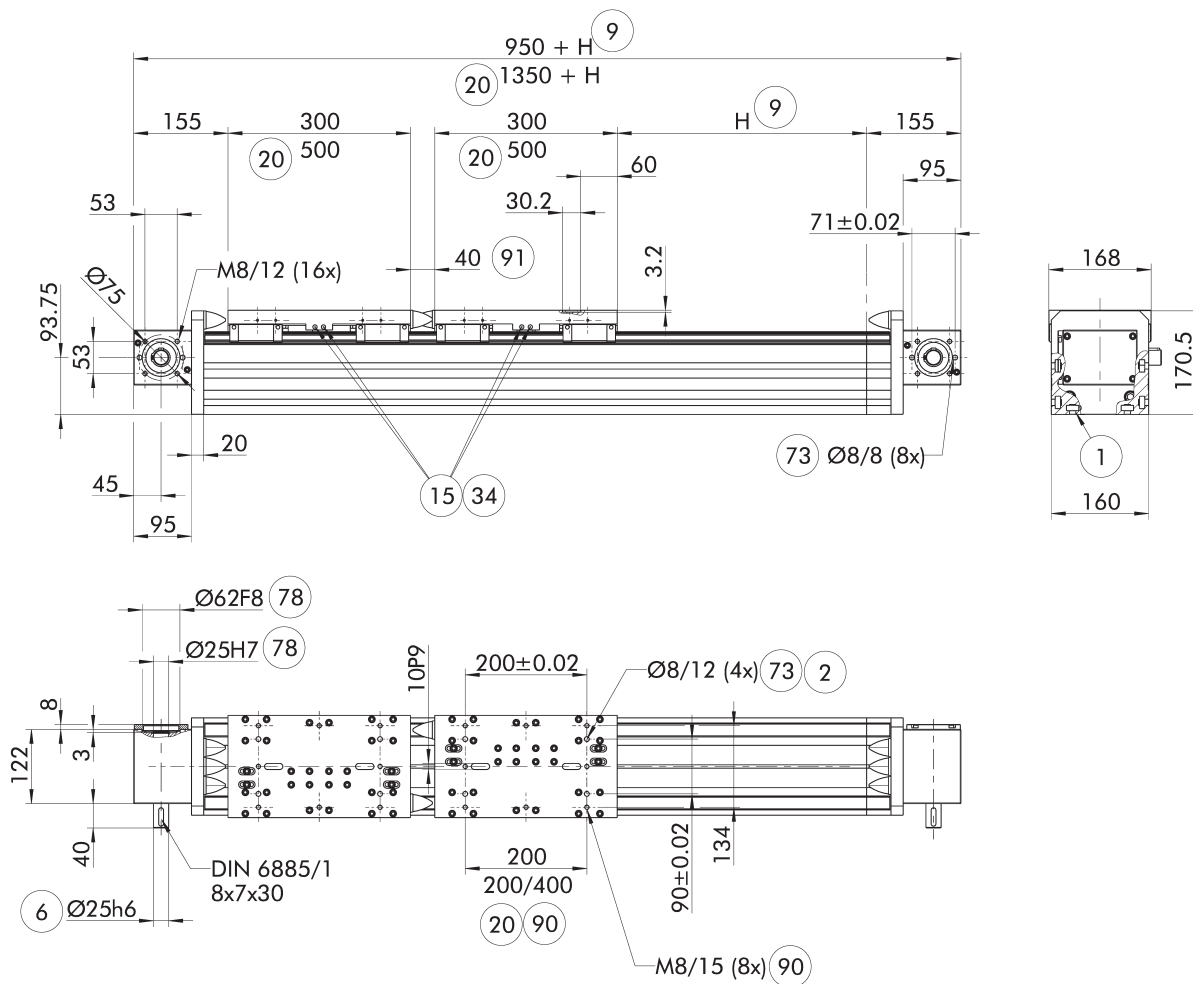
ZSS main view



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- | | |
|--------------------------|---|
| ① Connection linear unit | ②① With long slide plate |
| ② Attachment connection | ③④ On both sides |
| ⑥ Drive connection | ⑦③ Fit for centering pins |
| ⑨ Nominal stroke | ⑦⑧ Fit for centering |
| ⑮ Lubricant connection | ⑨⑩ Additional screw threads in the case of a long slide plate |

ZSSD main view



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- | | |
|--------------------------|---|
| ① Connection linear unit | ③④ On both sides |
| ② Attachment connection | ⑦③ Fit for centering pins |
| ⑥ Drive connection | ⑦⑧ Fit for centering |
| ⑨ Nominal stroke | ⑨⑩ Additional screw threads in the case of a long slide plate |
| ⑮ Lubricant connection | ⑨① Min. distance |
| ⑳ With long slide plate | |

Universal linear module

[illegible]

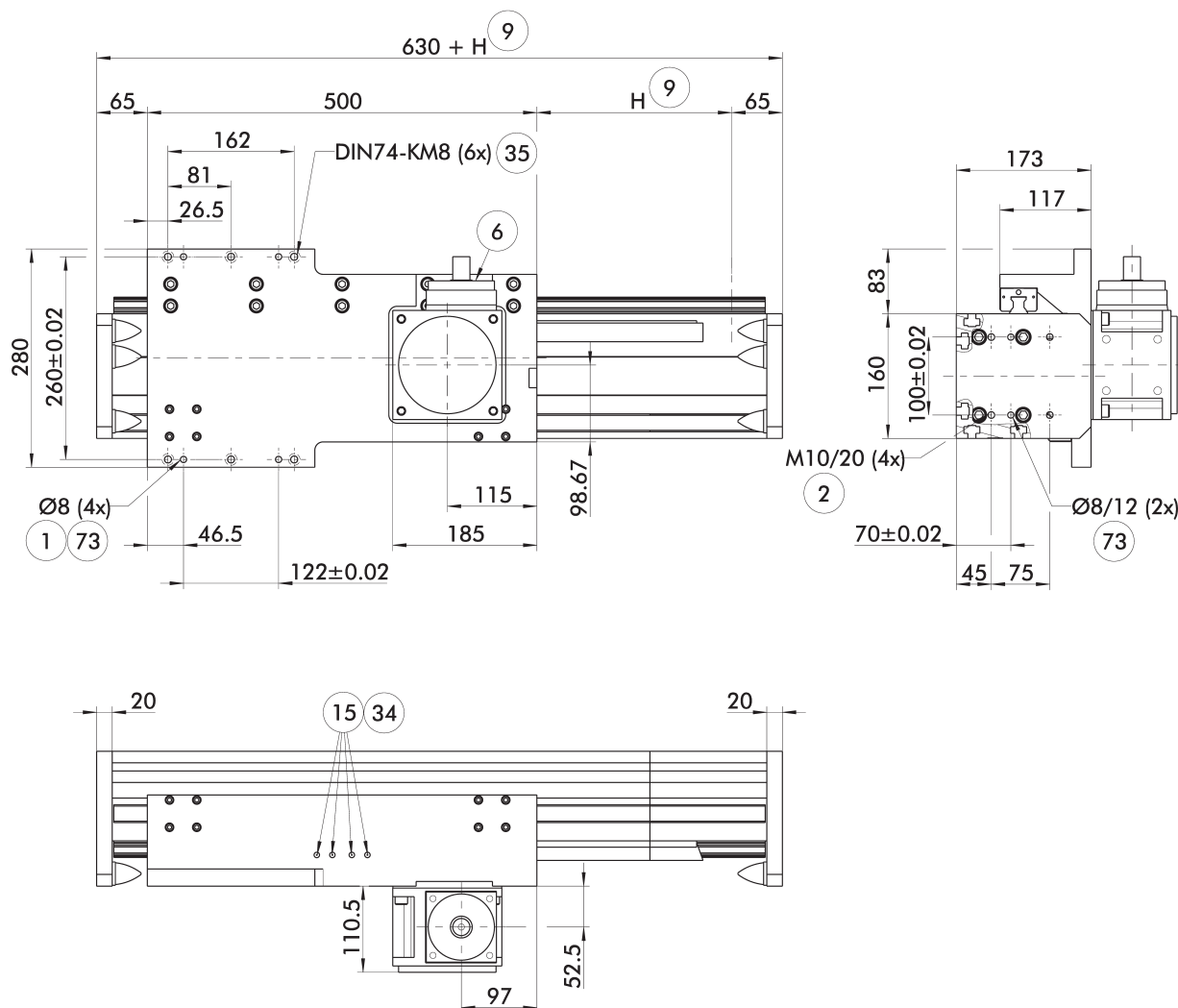
① Connection linear unit	③④ On both sides
② Attachment connection	③⑤ Back side
⑥ Drive connection	⑦③ Fit for centering pins
⑨ Nominal stroke	⑦⑧ Fit for centering
⑮ Lubricant connection	

① Connection linear unit	⑮ Lubricant connection
② Attachment connection	⑳ On both sides
⑥ Drive connection	㉓ Fit for centering pins
⑨ Nominal stroke	

Gamma 160

Universal linear module

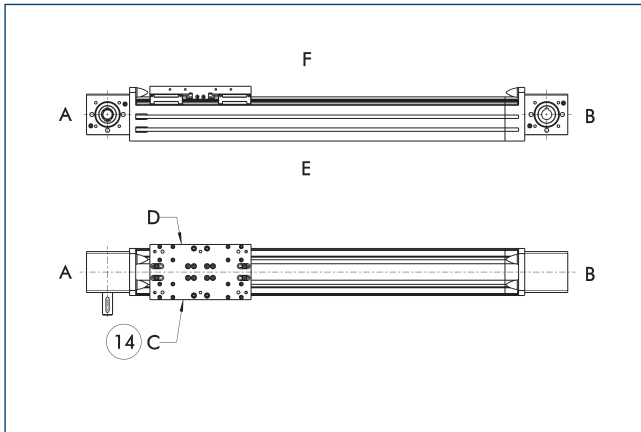
AZSH main view



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- | | |
|--------------------------|--------------------------|
| ① Connection linear unit | ⑮ Lubricant connection |
| ② Attachment connection | ⑳ On both sides |
| ⑥ Drive connection | ㉑ Back side |
| ⑨ Nominal stroke | ㉒ Fit for centering pins |

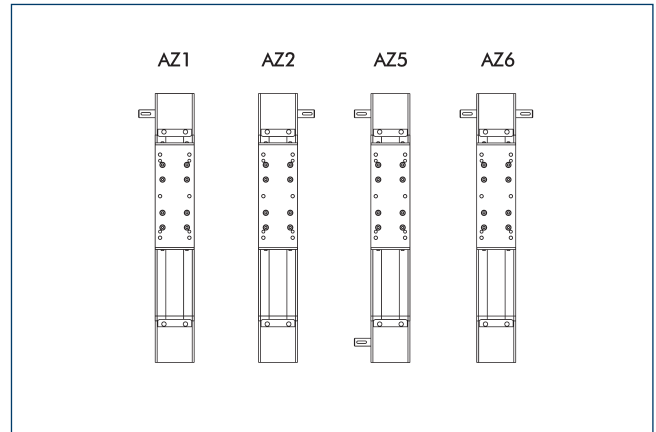
Side definition



⑭ Limit switch standard position

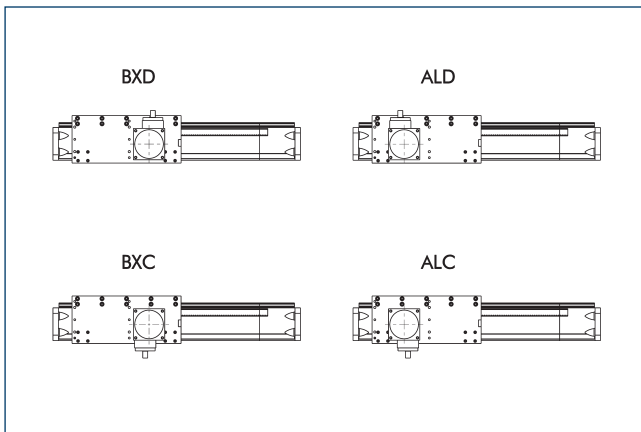
This drawing indicates the definition for the sides. This serves as the basis for all attachments.

Drive shafts in profile (rack and pinion drive)



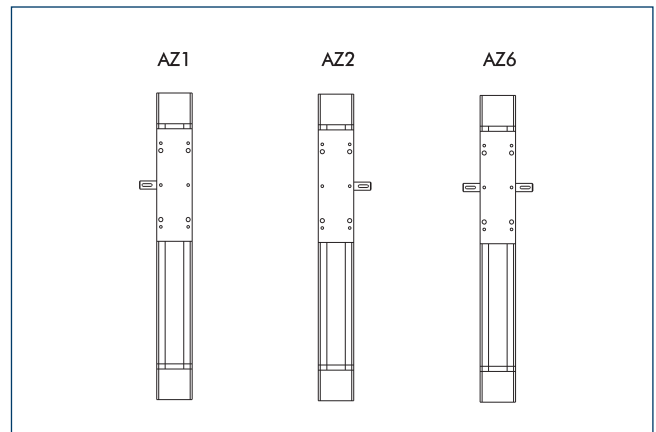
Depending on the axis application, the seat of the drive shaft has to be defined in the order text. Particularly with axis combinations and mechanical synchronization, several drive shafts are required.

Drive shafts at the slide (rack and pinion drive)



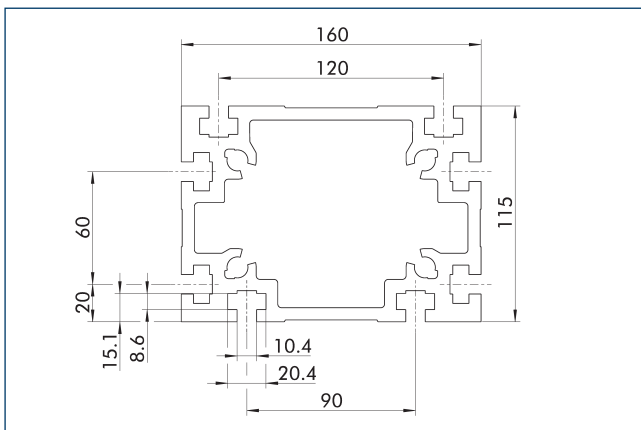
Depending on the axis application, the seat of the drive shaft of the gear has to be defined in the order text.

Drive shafts in slide (rack and pinion drive)



Depending on the axis application, the seat of the drive shaft has to be defined in the order text. Particularly with axis combinations and mechanical synchronization, several drive shafts are required.

Mounting

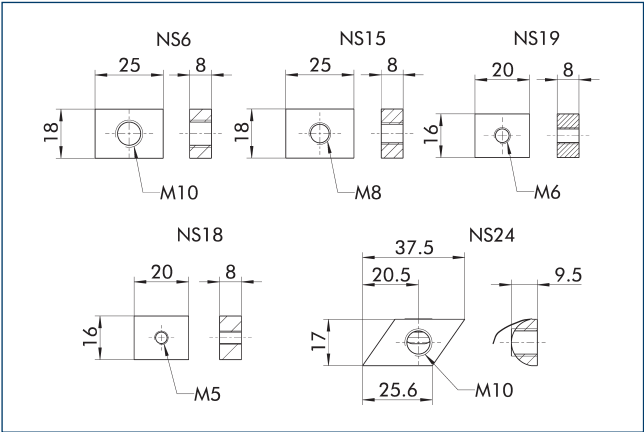


The drawing shows the position of the mounting options.

Gamma 160

Universal linear module

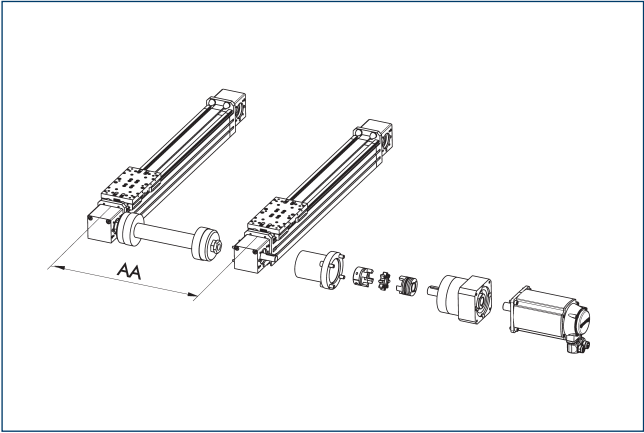
Fastening elements



The unit can be fixed in place using T-nuts. The exact mounting position is indicated on the adjacent attachment illustration.

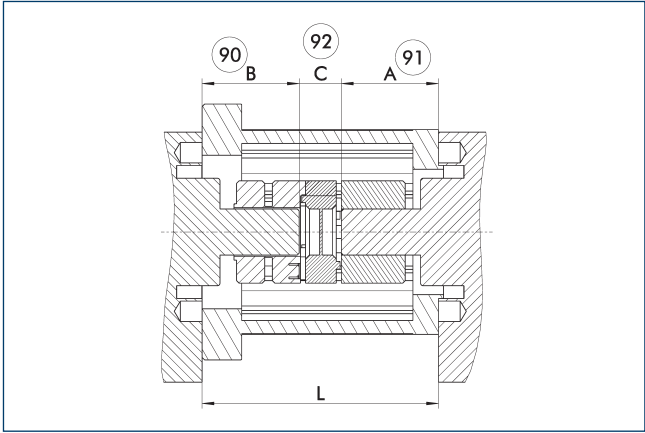
Description	ID	
T-nut		
NS 15-M8	0331433	
NS 18-M5	0331438	
NS 19-M6	0331439	
NS 24-M10	1516296	
NS 6-M10	0331409	

Connection shaft



Description	Connection shaft	Min. AA [mm]
G 160-ZSS	GX4/GX8	300
G 160-ZSSD	GX4	300

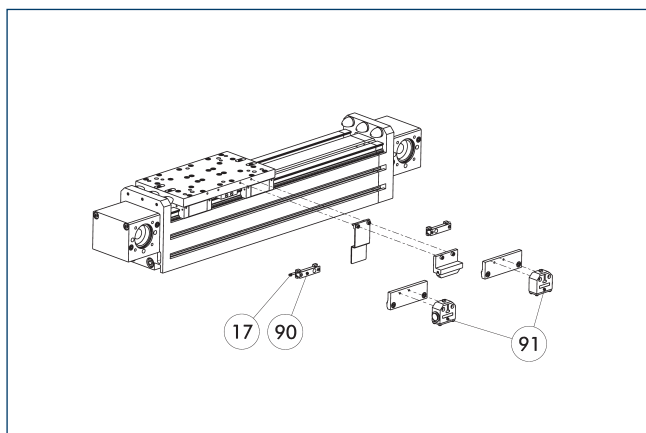
Motor flange schematic diagram



- 90 Length of motor / transmission drive shaft 91 Length of linear unit drive journal
92 Clutch length

Different drive solutions can be attached to our axes. SCHUNK offers you the right motor flange and coupling for your drive.

Limit and reference switch



- 17 Cable outlet
 90 Inductive limit and reference switches
 91 Mechanical limit switches

Generally two E0-02 switches are used as limit switches and one ES-02 is used as reference switch.

Description	ID	Often combined
Inductive limit switch		
E0-02	0331410	●
E0-10	0331412	
ES-02	0331411	●
ES-10	0331413	
Mechanical limit switch		
EMB	0331415	●
EMS	0331414	

- ⓘ The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.



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Spann- und Greiftechnik

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