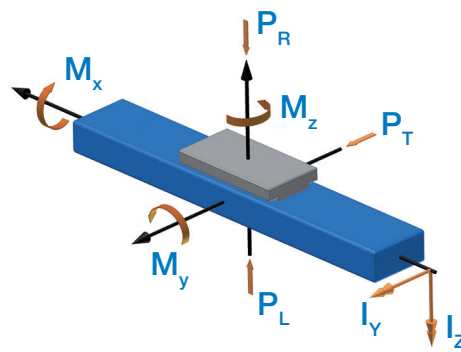


Linear Modules



AXNPS 2015 E

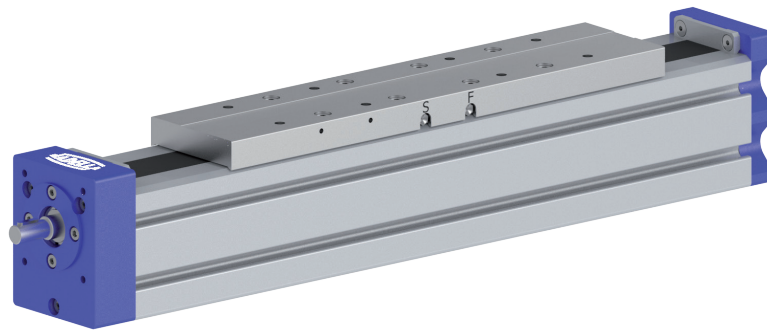
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Type	AXNP 45-S		
Profile cross section w x h [mm]	45 x 60		
Drive	ball screw		
Pitch [mm]	5; 10		
Ball screw [mm]	Ø12		
Max. dynamic working load [N]	3600		
Repeat accuracy [mm]	± 0,03		
Vmax [m/s]	1		
Overall length [m] ¹⁾	2		
Moment of inertia [kgcm ² /m]	0,11		
Guide	Rail guide B		
Loads	dyn.	stat.	
P _R [N] ²⁾	660	910	
P _L [N] ²⁾	660	910	
P _T [N] ²⁾	660	910	
Load torque			
M _x [Nm] ²⁾	5	6	
M _y [Nm] ²⁾	20	25	
M _z [Nm] ²⁾	20	25	

¹⁾ Greater lengths upon request.

²⁾ Max. load and load torque depend on the guide system selected.



AXNP 65-S		AXNP 80-S	
65 x 85		80 x 102	
Ball screw		Ball screw	
5; 10; 16		5; 20	
Ø16		Ø20	
6500 - 12000		8000 - 17500	
± 0,03		± 0,03	
1,6		2	
3		4	
0,33		0,82	
Rail guide B		Rail guide B	
dyn.	stat.	dyn.	stat.
1400	3900	5400	15000
1400	3900	5400	15000
1400	3900	5400	15000
10	30	54	150
65	185	420	1150
65	185	420	1150

Product description

Product description

The type AXNP-S is a further development of our approved AXN/AXNP-Z series with toothed belt drive.

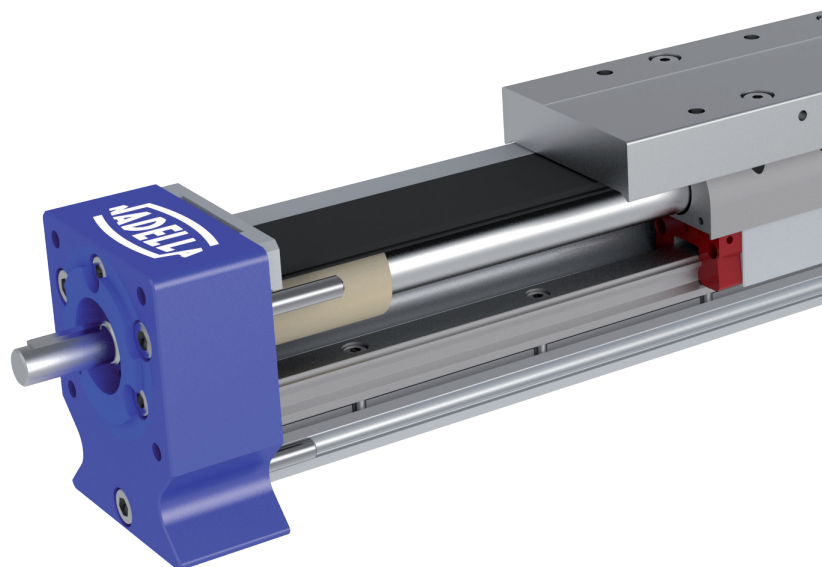
The modules have been developed especially for handling and positioning, primarily for precise positioning and vertical applications. If individual module or multiple axis system - various combinations are possible.

Rail guide system

The AXNP-S series is equipped with high-quality ball rail systems. The advantages of these rail guides are long service life, low noise level, high guidance accuracy and high load values. For statically cycling of the guide systems the dynamic load rating is decisive for the dimensioning of the guide systems.

Screw drive

We use standard highly precise whirled ball screw drives. Due to the hard whirling technology a better surface quality can be reached compared to ground spindles. The spindles we use are in the accuracy range of IT5 ($23\mu\text{m}/300\text{mm}$). To support the ball screw drive in case of larger strokes optionally spindle supports are available which prevent oscillations and thus allow higher speeds.



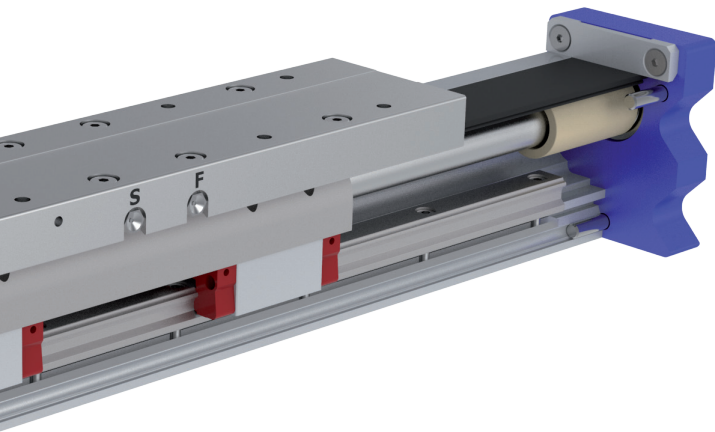
Motor connection

A motor can be mounted through a flange/coupling combination which is available for many motor types. If technically possible also special motors can be connected.

Product description

Dirt protection

On the upper side the actuator is completely covered by a cover band which is clipped in the profile so that it prevents dirt particles from penetrating into the module. Wiper brushes integrated in the table plate as well as an overlapping of the table plate over the main profile minimize the gap additionally.



Fixation of the actuator and attachments

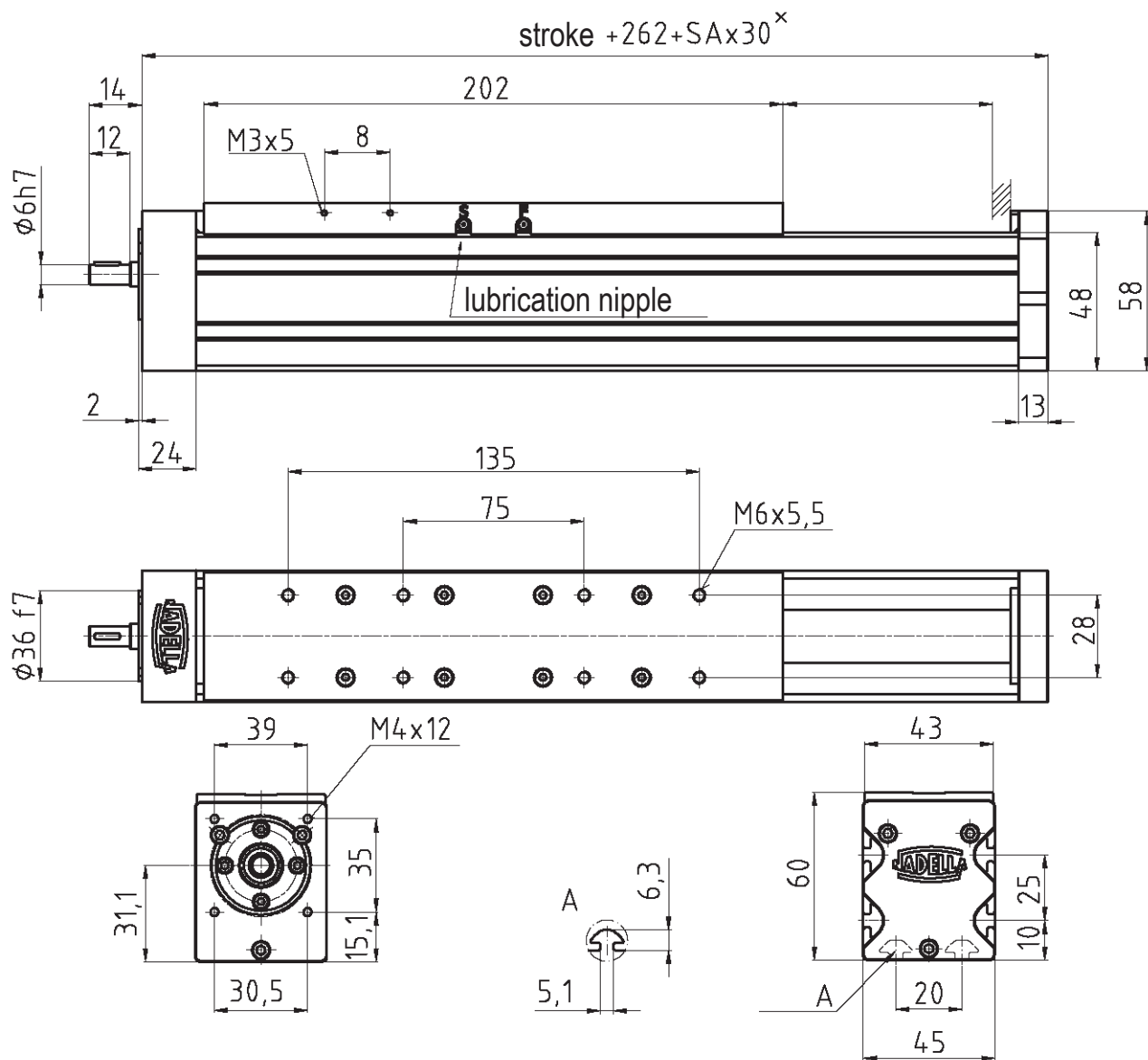
By end-to-end slots at the bottom and on either side the actuator profile a universal installation of the module is possible. Slot nuts that can be swivelled in, fastening strips and connecting plates increase the mounting flexibility. Attachments can simply be screwed through threads in the table plate. Alternatively the Basic-Line can be extended by an additional, non-driven carriage.

Lubrication

The bearings of the linear actuators are lubricated for life. The ball rail system and the ball screw drive can be re-lubricated through separate lubricating nipples at the carriage that are accessible from the outside. Especially in case of a high running performance and/or high acceleration values this is an advantage. We recommend the lubricant Klüber Lamora D220.

AXNP 45-S

Linear actuator with ball screw drive
and rail guide



Stroke calculation: effective stroke + safety overrun
SA = number of spindle support sets
For motor connection see chapter drive adaption.
Lubrication: S = ball screw; F = rail guide

AXNP 45-S

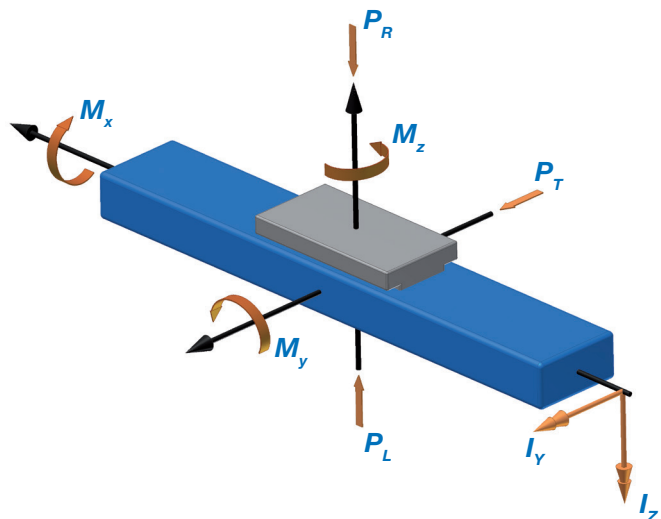
Loads and load moments*

	Rail guide B	
Loads (N)	dyn.	stat.
P_R	660	910
P_L	660	910
P_T	660	910
Load moments (Nm)		
M_x	5	6
M_y	20	25
M_z	20	25

* The dynamic load of the guide system is based on a nominal lifetime of 54.000 km.

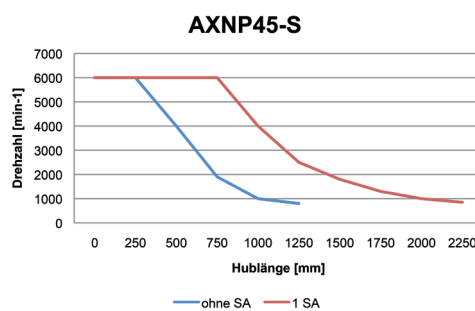
Technical data

Max. speed	1 m/s
Repeating accuracy	$\pm 0,03$ mm
Actuation	Ball screw
Max. dyn. working load	3600 N
Pitch	5 ; 10
Idle-running torque	0,4
Moment of inertia	0,11 kgcm ² /m
Max. length overall	2 m
Geometrical moment of inertia I_y	20,3 cm ⁴
Geometrical moment of inertia I_z	21,7 cm ⁴



Mass

	Rail guide
Basic mass	1,6 kg
Mass per 100 mm stroke	0,4 kg
Slide mass	0,45 kg



SA = 1 set of spindle support

Stroke calculation: effective stroke + safety overrun
 SA = number of spindle support sets
 For motor connection see chapter drive adaption.
 Lubrication: S = ball screw; F = rail guide

AXNP 65-S

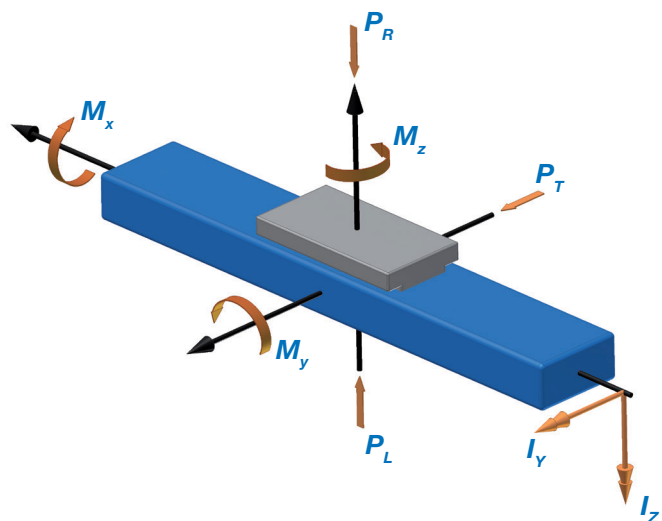
Loads and load moments*

	Rail guide B	
Loads (N)	dyn.	stat.
P_R	1400	3900
P_L	1400	3900
P_T	1400	3900
Load moments (Nm)		
M_x	10	30
M_y	65	185
M_z	65	185

* The dynamic load of the guide system is based on a nominal lifetime of 27.000 km.

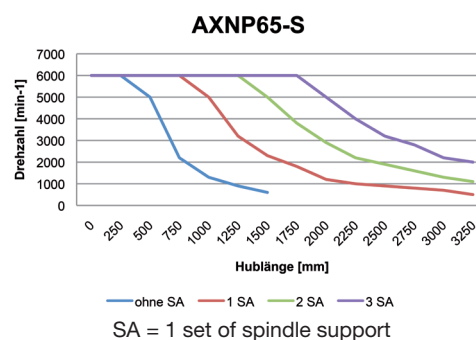
Technical data

Max. speed	1,6 m/s
Repeating accuracy	$\pm 0,03$ mm
Actuation	Ball screw
Max. dyn. working load	6500 - 12000 N
Pitch	5 ; 10 ; 16
Idle-running torque	0,5
Moment of inertia	0,33 kgcm ² /m
Max. length overall	3 m
Geometrical moment of inertia I_y	76,3 cm ⁴
Geometrical moment of inertia I_z	87,3 cm ⁴



Mass

	Schienenführung
Basic mass	4,6 kg
Mass per 100 mm stroke	0,8 kg
Slide mass	1,4 kg



Stroke calculation: effective stroke + safety overrun
 SA = number of spindle support sets
 For motor connection see chapter drive adaption.
 Lubrication: S = ball screw; F = rail guide

AXNP 80-S

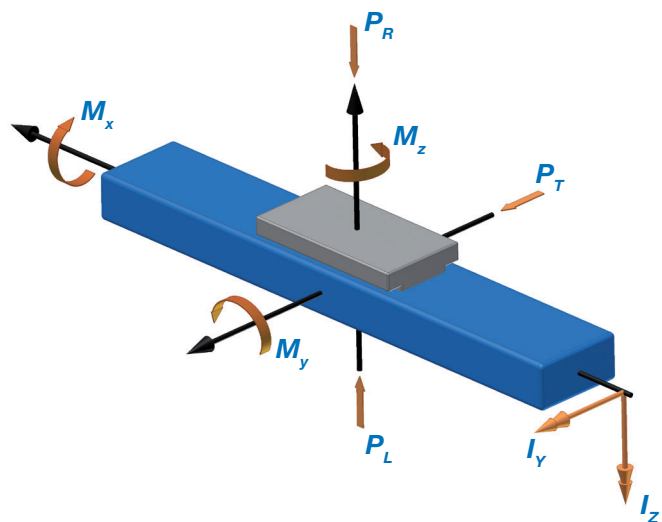
Loads and load moments*

	Rail guide B	
Loads (N)	dyn.	stat.
P_R	5400	15000
P_L	5400	15000
P_T	5400	1500
Load moments (Nm)		
M_x	54	150
M_y	420	1150
M_z	420	1150

* The dynamic load of the guide system is based on a nominal lifetime of 27.000 km.

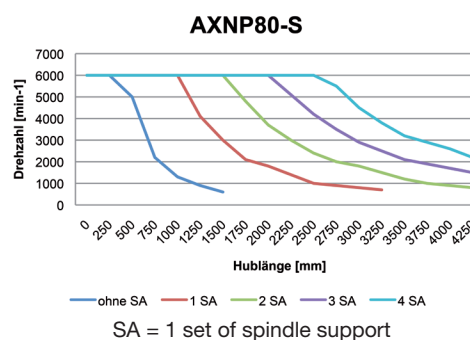
Technical data

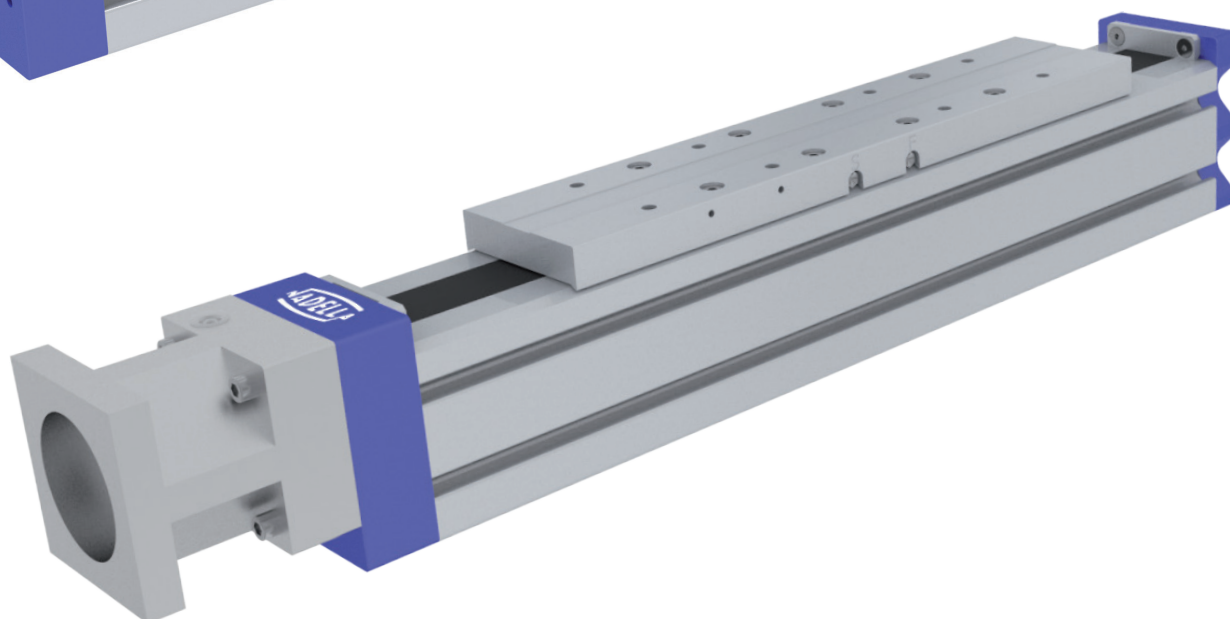
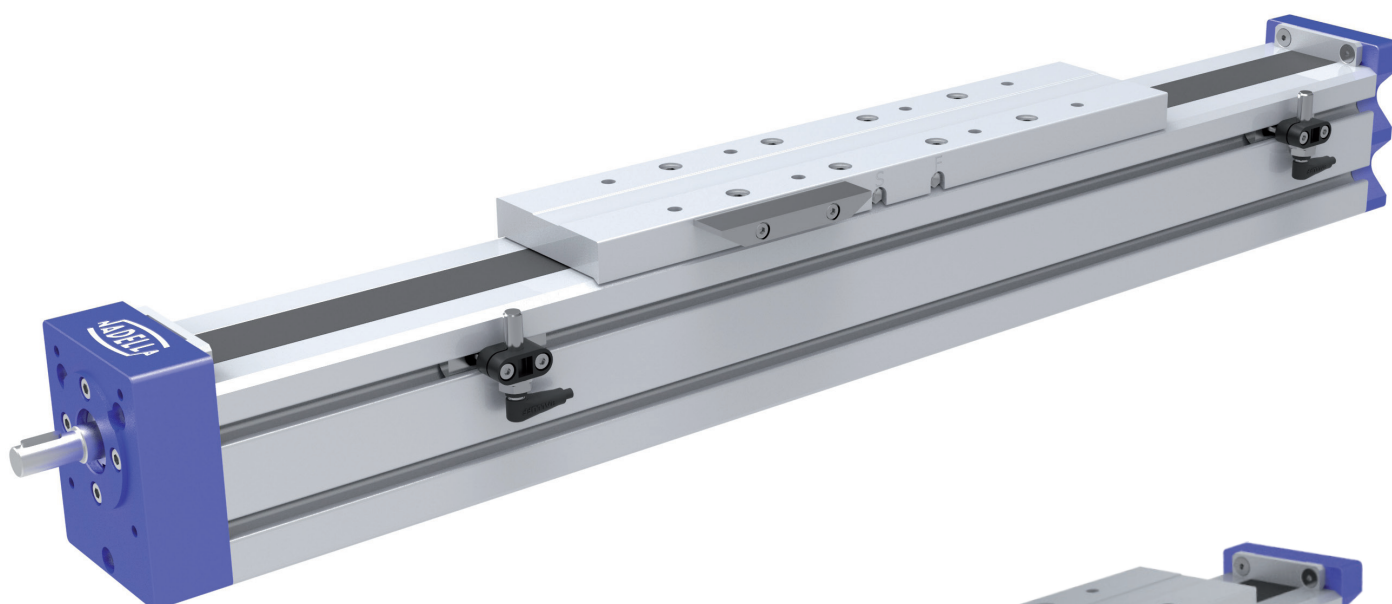
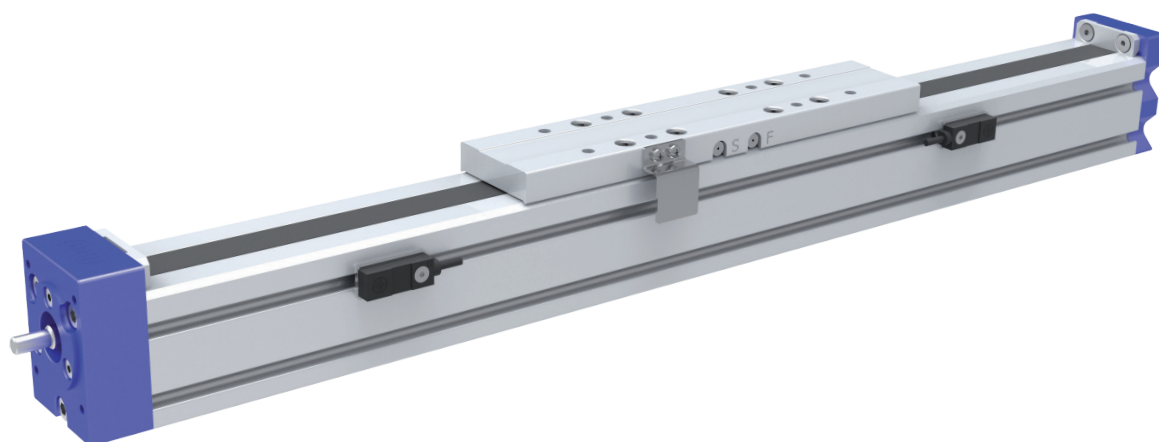
Max. speed	2 m/s
Repeating accuracy	$\pm 0,03$ mm
Actuation	Ball screw
Max. dyn. working load	8000 - 17500 N
Pitch	5 ; 20
Idle-running torque	0,6
Moment of inertia	0,82 kgcm ² /m
Max. length overall	4 m
Geometrical moment of inertia I_y	193,5 cm ⁴
Geometrical moment of inertia I_z	207,1 cm ⁴



Mass

	Rail guide
Mass	8,6 kg
Mass per 100 mm stroke	1,2 kg
Slide mass	2,7 kg





Drive Adaption / Reference Switch

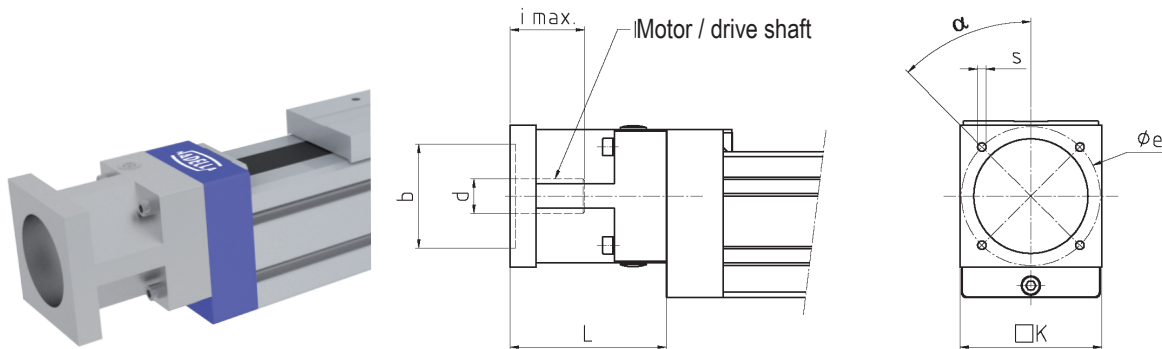
pages

Gear / motor adaption with coupling — 14

Inductive limit / reference switch — 15 - 16

Gear / motor adaption with coupling

Gear / motor adaption through standardized mounting combinations with coupling, coupling bell and adapter flange.

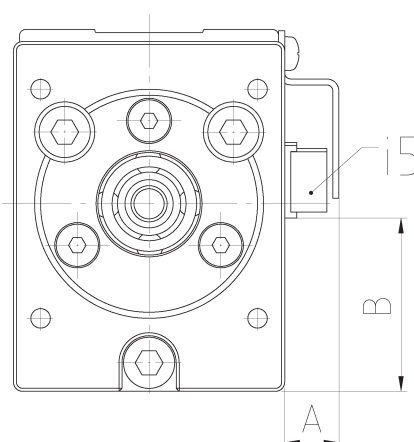
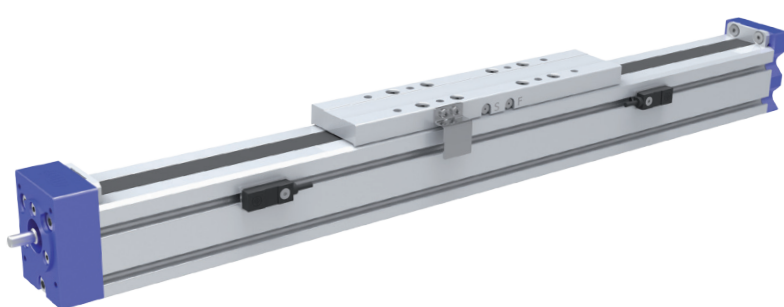


Actuator	Code	Design	e	α	S	b	d	i	K	L
			min.-max.			min.-max.		max.	max.	
AXNP 45-S	I	B5	44-48	0°	4 x M5 x 10	36-41	4 - 16	34	55	50
	II	B5	44-66	45°	4 x M5 x 10	36-53	4 - 16	34	55	50
	III	B14	44-48	0°	4 x Ø 5,5	36-41	4 - 16	34	55	50
	IV	B14	44-66	45°	4 x Ø 5,5	36-53	4 - 16	34	55	50
AXNP 65-S	I	B5	55-74	0°	4 x M5 x 15	48-66	8 - 25	48	82	74
	II	B5	55-102	45°	4 x M5 x 15	48-80	8 - 25	48	82	74
	III	B14	55-74	0°	4 x Ø 5,5	48-66	8 - 25	48	82	74
	IV	B14	55-102	45°	4 x Ø 5,5	48-80	8 - 25	48	82	74
AXNP 80-S	I	B5	69-73	0°	4 x M6 x 15	60-65	12 - 32	56	82	90
	II	B5	69-102	45°	4 x M6 x 15	60-80	12 - 32	56	82	90
	III	B14	69-73	0°	4x Ø 6,6	60-65	12 - 32	56	82	90
	IV	B14	69-102	45°	4x Ø 6,6	60-80	12 - 32	56	82	90

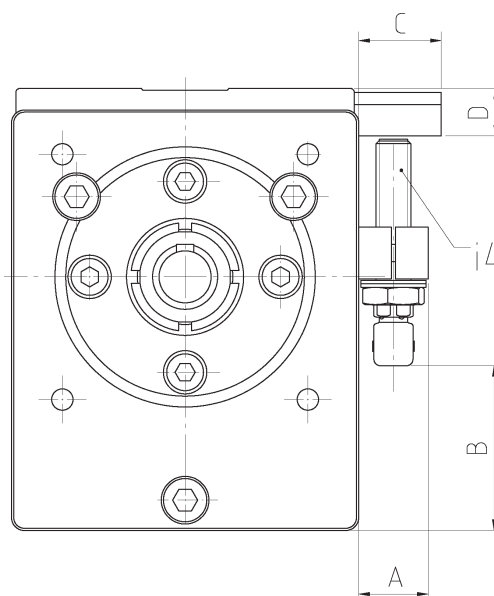
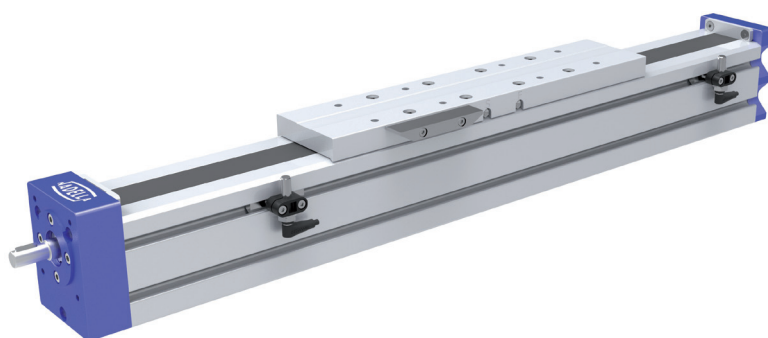
Inductive switches

Inductive switches are a good solution for end position control or position monitoring. Switches are available in a set consisting of two switches, cam and fixing elements or single switches so that also combinations with mechanical switches can be realized. Depending on the application NCC or NOC types can be ordered. The connection lines of the switches are especially easy to maintain.

Inductive proximity switch AXNP 45-S

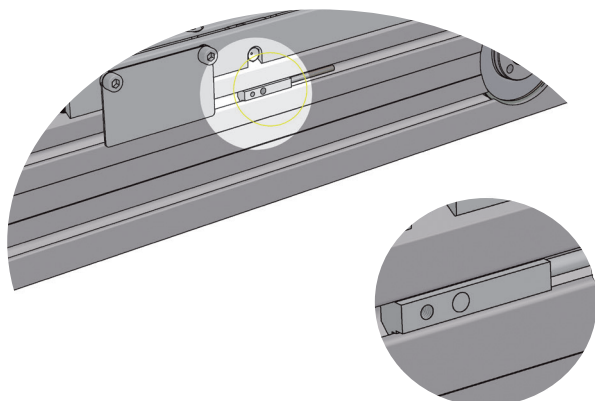


Inductive proximity switch AXNP 65-S AXNP 80-S



	Switch	mounting dimensions			
	Type	A	B	C	D
AXNP 45-S	I5	9	29	9	-
AXNP 65-S	I4	16	27 ¹⁾	19	11
AXNP 80-S	I4	16	44 ¹⁾	19	11

¹⁾ ca. values depending on switch position without cable connection



Inductive switches integrated in slot nut

Our inductive switches i6 and i7 are the most compact version of switches.

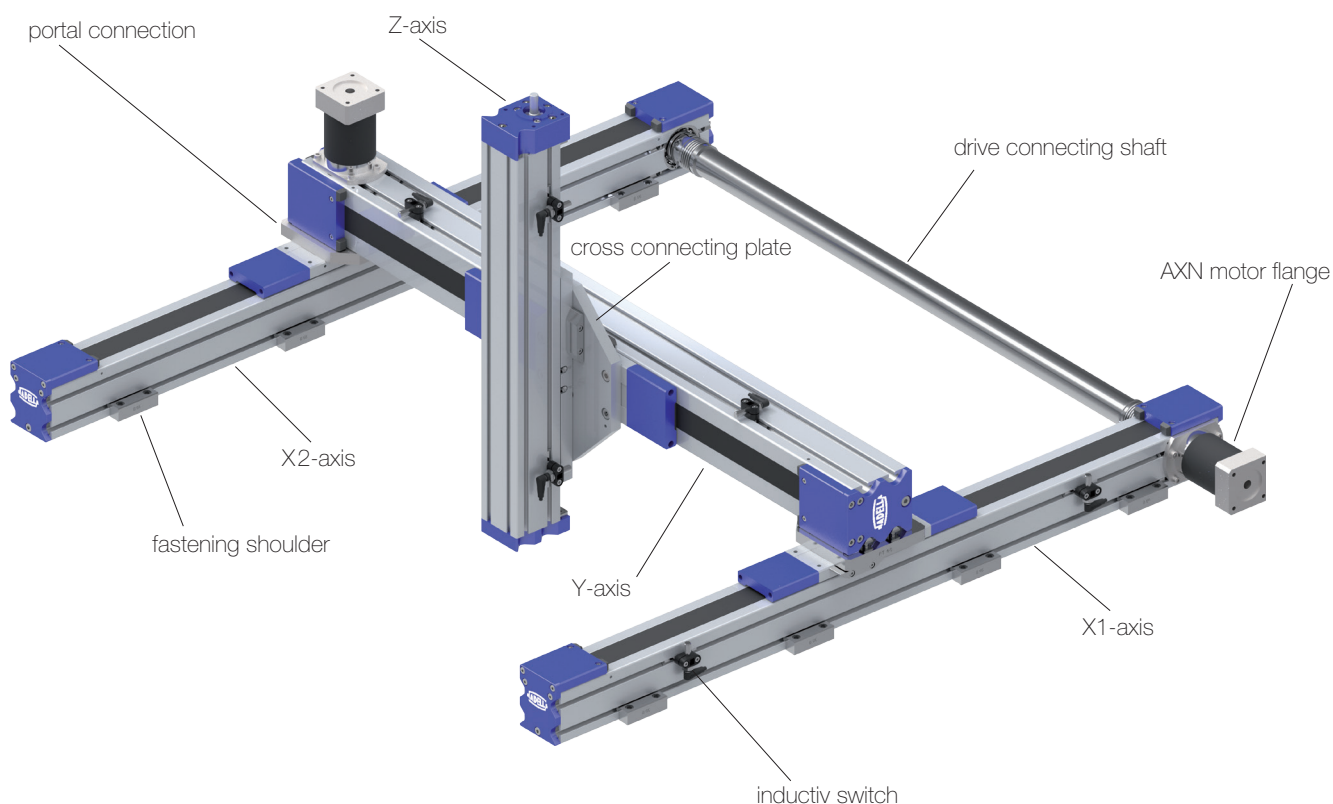
These switches are flush with the surface profile and therefore you will have almost no interfering edge.

Technical Data

	Connected voltage	max. load current	switching precision	cable length ²⁾	protection class
Switch I4 PNP opening/closing contact AXNP 65-S / AXNP 80-S	10...30 V DC	200 mA	≤10% of sensing distance	5 m	IP 67
Switch I5 PNP opening/closing contact AXNP 45-S	10...30 V DC	100 mA	≤10% of sensing distance	3 m	IP 67
Switch I6 (integrated in slot nut) PNP opening contact AXNP 65-S	10...30 V DC	100 mA	≤10% of sensing distance	2 m	IP 67
Switch I6 (integrated in slot nut) PNP opening contact AXNP 80-S	10...30 V DC	200 mA	≤10% of sensing distance	6 m	IP 67

²⁾ Longer cable length on request (please indicate desired cable length in the order).

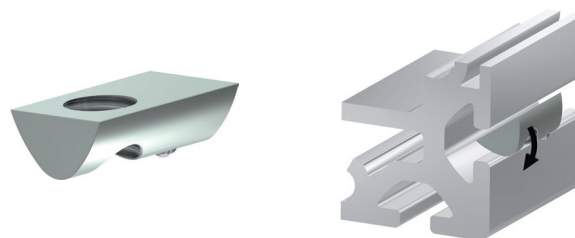
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Cross connection	21 - 22
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Slot nuts

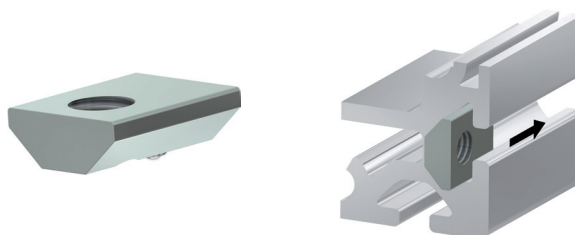
Type E (swivel-mounted)

- standard slot nut
- can be swivelled in any position
- fixed by spring ball
- steel zinc coated



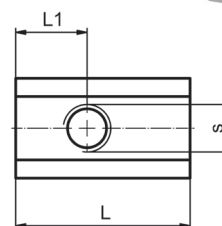
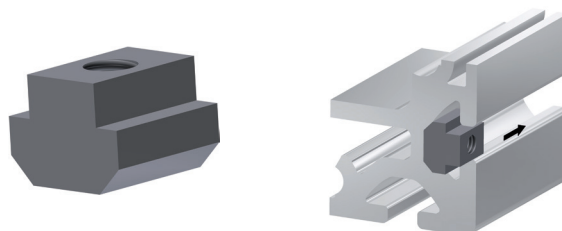
Type S (not swivelled)

- slot nut for heavy loads
- slide- in at end of profile
- fixation with elastic balls (up to nut slot 8,2)
- steel zinc coated



Type T (DIN – slot nut - not swivelled)

- slot nut for heavy loads
- installed on demand
- steel black finishing
- without fixation



Type ¹⁾			Design	L	L ₁ ²⁾	TA (Nm)	max. tensile force
Actuator	nut slot-	s					
AXNP 45-S	5 St-	M3	E / S	12	3	1,5	500
AXNP 65-S	6 St-	M4	E / S	17	5	4,0	1750
AXNP 80-S	8 St-	M5	E	22	9	8,0 ³⁾	2500
AXNP 80-S	DIN 508	M6	T	13	6,5	10,0 ³⁾	3000

¹⁾ all combinations of actuators and nut slots are possible - e.g. AXNP 60-S nut slot 5St-M3 Design E.

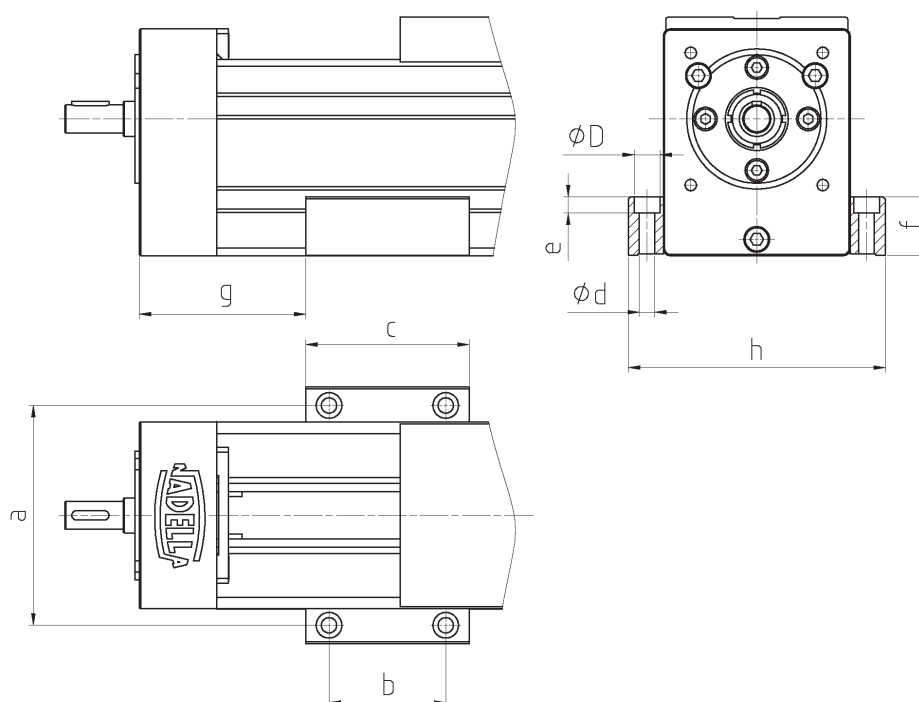
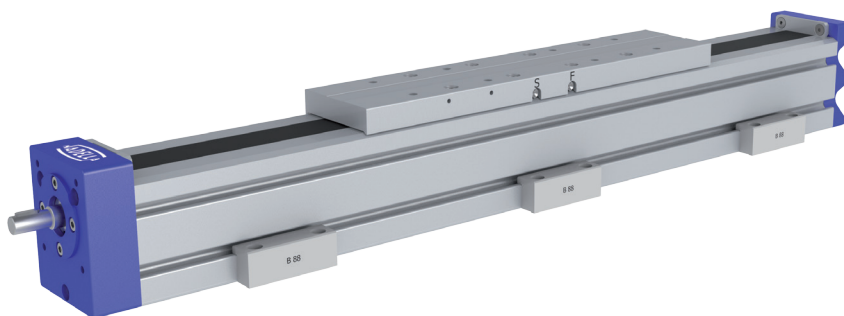
²⁾ Max. values, different dimensions possible

³⁾ strength category 10,9 is necessary by using max. clamping torque

Fastening shoulder

Easy fixation of actuator by top-side screw connection.

For combinations with fastening shoulder please see chapter „direct connection“.



Type ¹⁾		a	b	c	d	D	e	f	g	h
AXNP 45-S	Bfl. Bk4 ²⁾	60	-	20	5,5	10	5,5	11	68	74
	Bfl. B44		28	41						
	Bfl. B64		28	41						
AXNP 65-S	Bfl. Bk6 ²⁾	80	-	20	5,5	10	11,5	17	95	97
	Bfl. B66		40	60						
	Bfl. B86		40	60						
AXNP 80-S	Bfl. Bk8 ²⁾	95	-	25	6,6	11	18,5	25	105	111
	Bfl. B88		50	70						

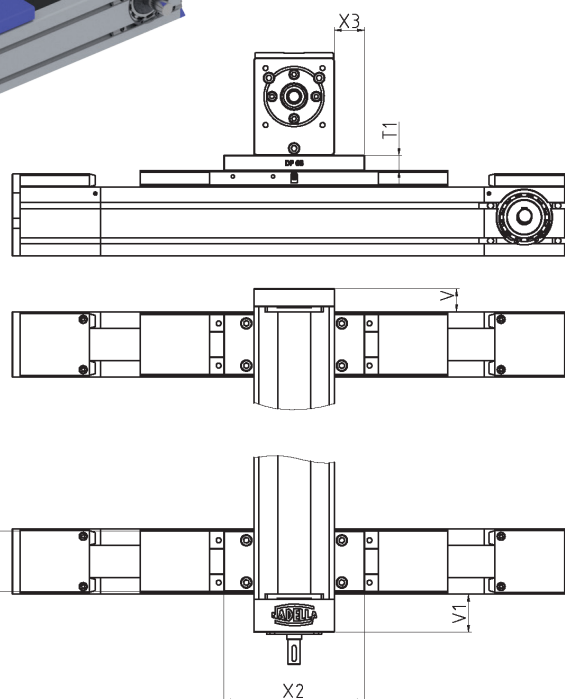
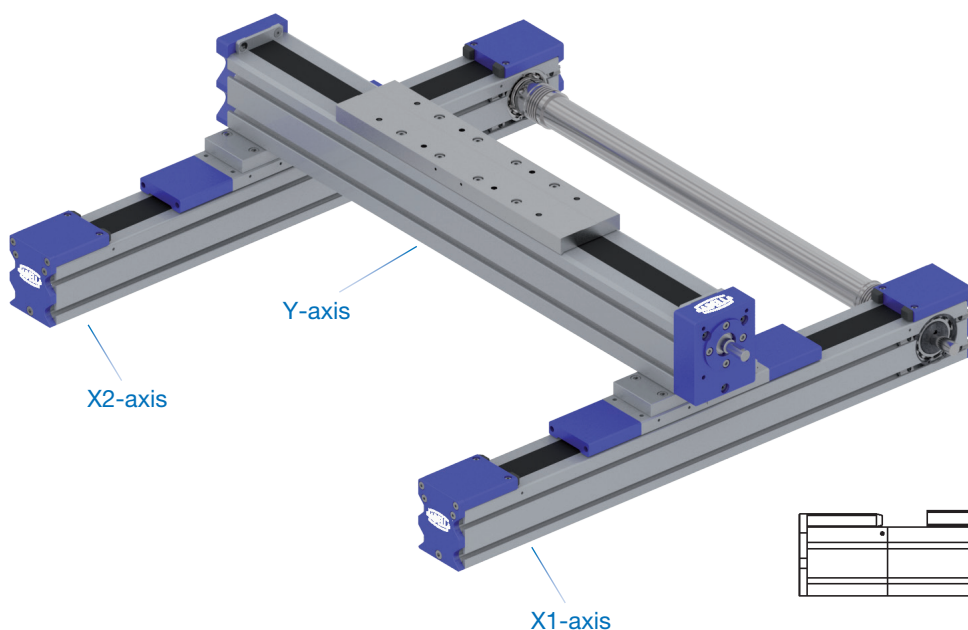
¹⁾ Type = actuator and type of fastening shoulder e.g. AXNP65-S-Bfl B64

²⁾ short version with countersink

Direct connection AXNP-Z / AXNP-S

Cost-efficient solution for simple standard connections.

A direct connecting set including 2 fastening shoulders and corresponding fastening screws is needed for each connection of X- and Y-axis.



Y-axis	AXNP 45-S	AXNP 65-S	AXNP 80-S
X-axis	direct connecting set		
AXNP 45-Z	D4PZ4PS	D4PZ6PS	
AXNP 65-Z		D6PZ6PS	D6PZ8PS
AXNP 80-Z			D8PZ8PS

X1 / X2-axis	Y-axis	T1 (mm)	V (mm)	V1 (mm)	X2 (mm)	X3 (mm)	Y3 (mm)	Direct connecting set
AXNP 45-Z	AXNP 45-S	13	11	20	100	27,5	45	D4PZ4PS
AXNP 45-Z	AXNP 65-S	13	20,5	34	100	17,5	45	D4PZ6PS
AXNP 65-Z	AXNP 65-S	15	18	31,5	140	37,5	60	D6PZ6PS
AXNP 65-Z	AXNP 80-S	15	23	38	140	30	60	D6PZ8PS
AXNP 80-Z	AXNP 80-S	15	24,5	40,5	200	60	80	D8PZ8PS

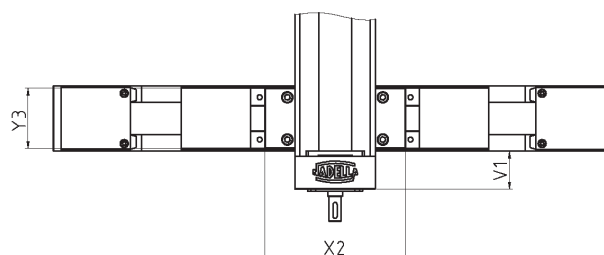
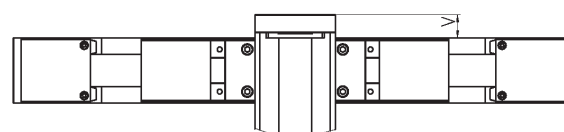
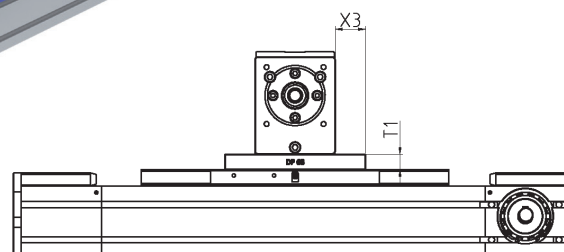
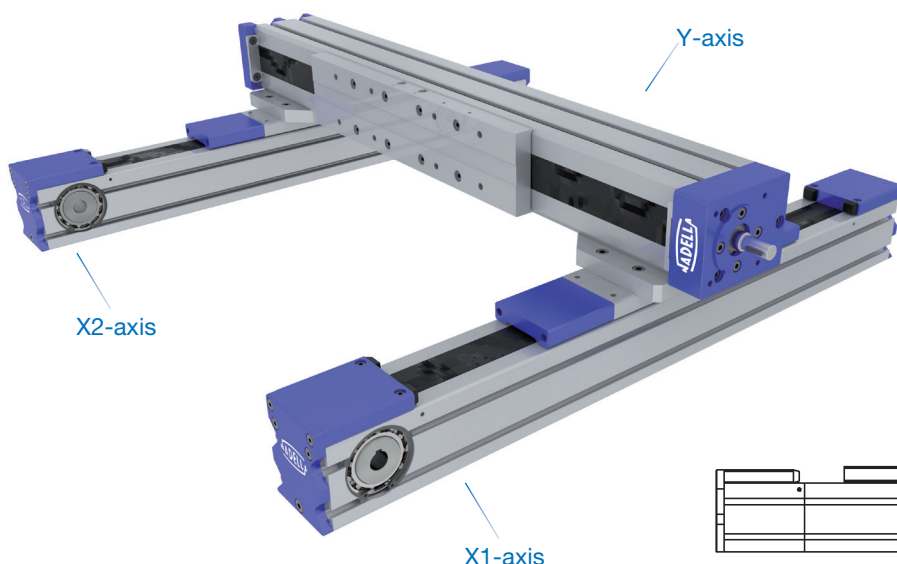
Further direct connections on request.

Portal connection AXNP-Z / AXNP-S

Connection plate for „table-profile-connections“.

With our portal connection plates, workable and cost saving portals can be realized.

Especially for use with big cross hub or bigger mass, very stiff constructions are possible.



Y-axis	AXN 45-S	AXN 65-S	AXN 80-S
X-axis	Portal connecting set		
AXN 45-Z	T4PZ4PS	T4PZ6PS	
AXN 65-Z		T6PZ6PS	T6PZ8PS
AXN 80-Z			T8PZ8PS

X1 / X2-axis	Y-axis	T1 (mm)	U (mm)	V (mm)	V1 (mm)	X2 (mm)	X3 (mm)	Y3 (mm)	portal connecting set
AXNP 45-Z	AXNP 45-S	10	27	27	36	100	27,5	80	T4PZ4PS
AXNP 45-Z	AXNP 65-S	12	20	42,5	56	100	17,5	104	T4PZ6PS
AXNP 65-Z	AXNP 65-S	12	25	37	50,5	130	32,5	104	T6PZ6PS
AXNP 65-Z	AXNP 80-S	15	24	43	58	120	16	117	T6PZ8PS
AXNP 80-Z	AXNP 80-S	15	24	36,5	51,5	200	56	117	T8PZ8PS

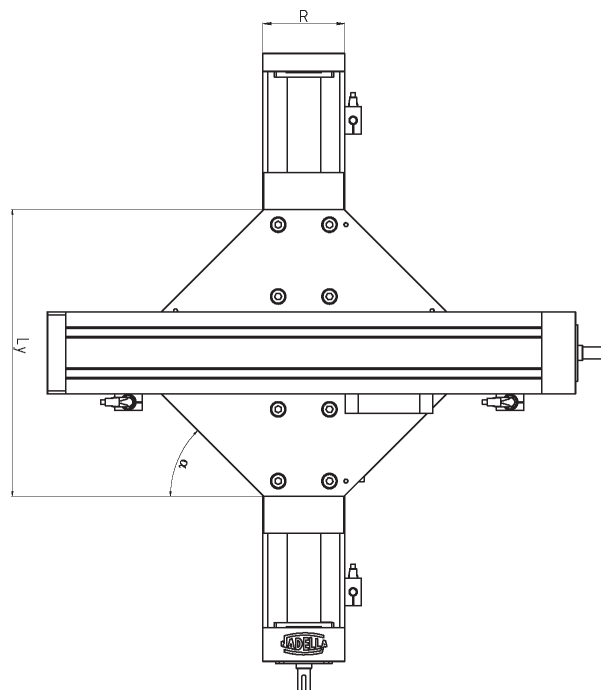
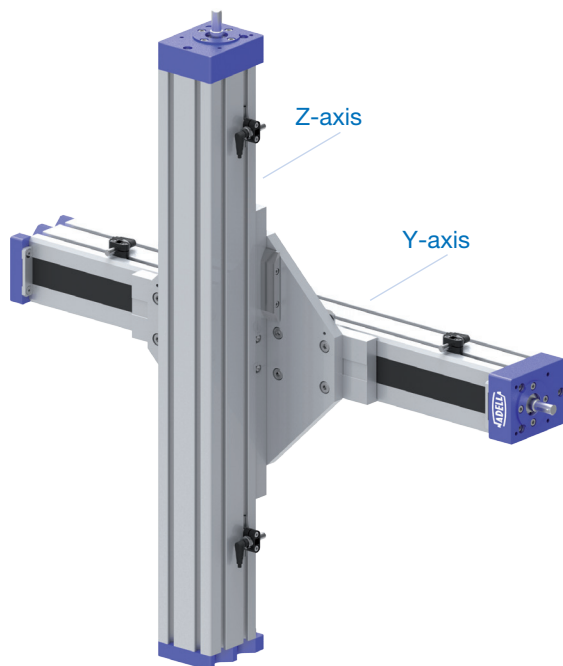
Further portal connections on request.

Cross connection AXNP-S / AXNP-S

Cross connections by standard adapter plates for Y-Z axis connections.

Carriage of Z-axis will be connected to the carriage of Y-axis via adapter plate.

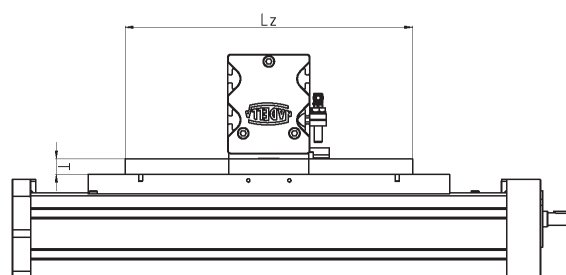
Advantage: the complete Z-axis profile can be moved



Z-axis	AXNP 45-S	AXNP 65-S	AXNP 80-S
Y-axis	cross connecting set		
AXNP 45-S	K4PS4PS	K4PS6PS	
AXNP 65-S		K6PS6PS	K6PS8PS
AXNP 80-S			K8PS8PS

centre of actuator = centre of carriage plate

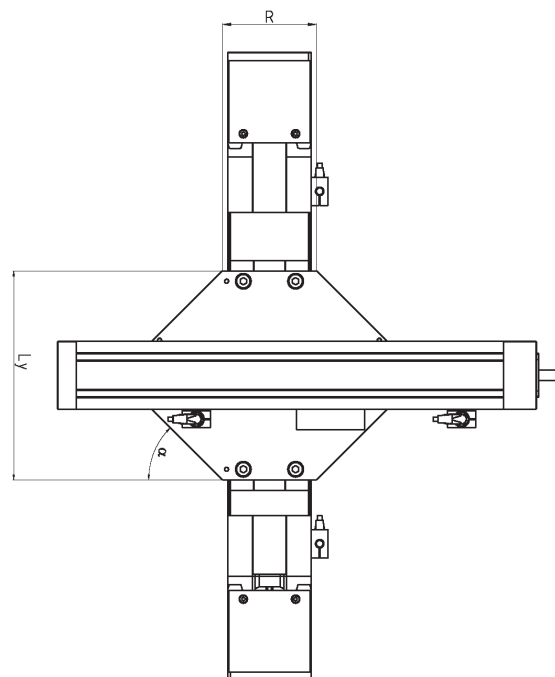
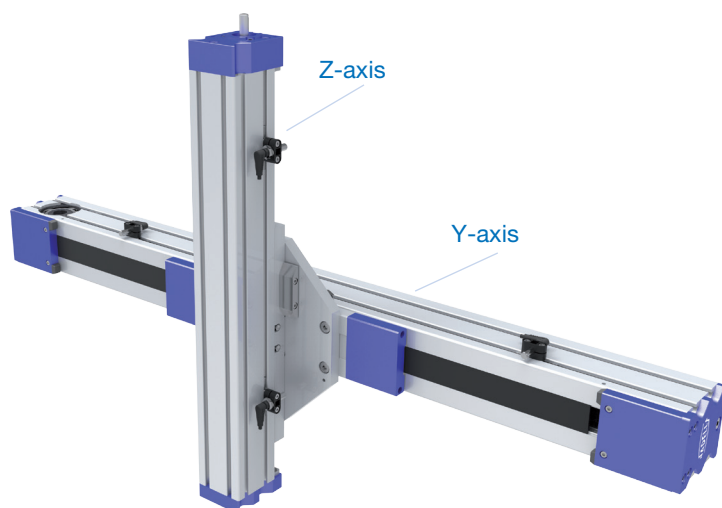
adjustment using cylinder pins or stop angle



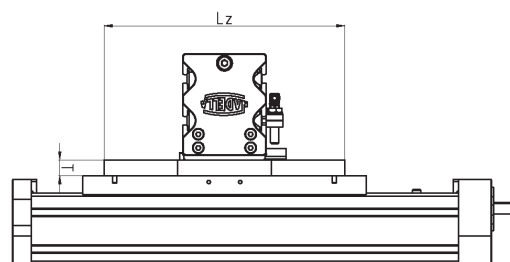
Y-axis	Z-axis	L _y	L _z	R	T	α	cross connection set
AXNP 45-S	AXNP 45-S	155	155	43	12	45°	K4PS4PS
AXNP 45-S	AXNP 65-S	240	155	64	10	60°	K4PS6PS
AXNP 65-S	AXNP 65-S	240	240	64	12	45°	K6PS6PS
AXNP 65-S	AXNP 80-S	280	240	78	15	50°	K6PS8PS
AXNP 80-S	AXNP 80-S	280	280	78	15	45°	K8PS8PS

Further cross connections on request.

Cross connection AXNP-Z / AXNP-S



Z-axis	AXNP 45-S	AXNP 65-S	AXNP 80-S
Y-axis	cross connection set		
AXNP 45-Z	K4PZ4PS	K4PZ6PS	
AXNP 65-Z		K6PS6PS	K6PZ8PS
AXNP 80-Z			K8PZ8PS

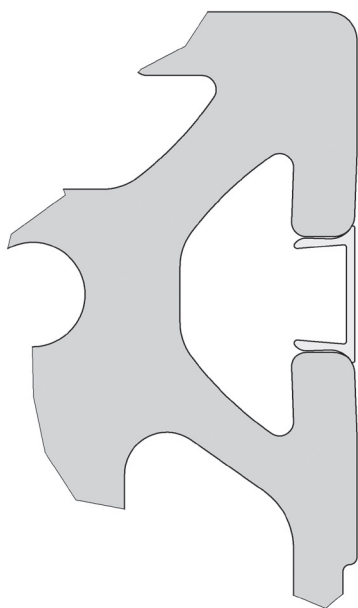


Y-axis	Z-axis	Ly (mm)	Lz (mm)	Ry (mm)	Rz (mm)	T (mm)	α (°)	cross connection set
AXNP 45-Z	AXNP 45-S	80	150	90	40	10	45	K4PZ4PS
AXNP 65-Z	AXNP 45-S	180	160	50	70	12	45	K6PZ4PS
AXN 65-Z	AXNP 45-S	140	160	50	30	12	45	K6Z4PS
AXNP 65-Z	AXNP 65-S	170	230	120	60	12	45	K6PZ6PS
AXN 65-Z	AXNP 65-S	170	230	120	60	12	45	K6Z6PS
AXNP 80-Z	AXNP 45-S	210	160	80	130	15	45	K8PZ4PS
AXN 80-Z	AXNP 65-S	200	230	90	60	15	45	K8Z6PS
AXNP 80-Z	AXNP 80-S	210	280	140	70	15	45	K8PZ8PS

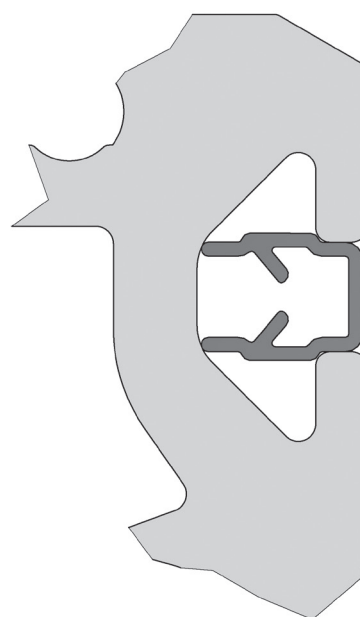
Further cross connections on request.

Cover for profile slots AXNP-S

For any application used in visual range or with increasing dirt, the profile slots can be covered by corresponding covers in aluminium or plastic material. Therefore no dirt particles can enter the t-slots which guarantees good dirt protection for the actuator.



Cover profile Al
Colour: aluminium silver-coloured



Cover profile PP
Colour: black

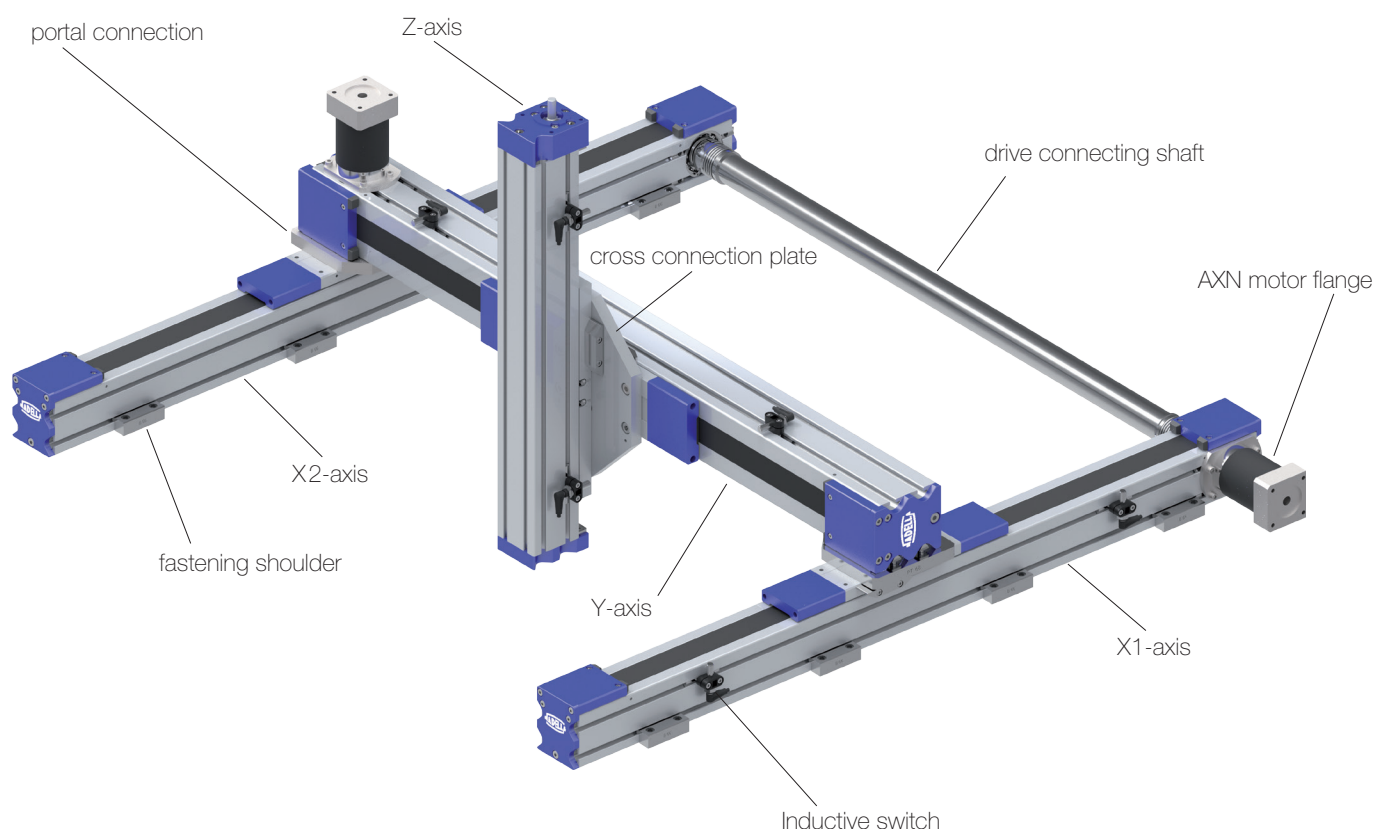
Axis	Size	Designation	Material
AXNP 45-S	Nut 5	cover profile 5 PP	polypropylene black
AXNP 65-S	Nut 6	cover profile 6 Al	aluminium silver-coloured
		cover profile 6 PP	polypropylene black
AXNP 80-S	Nut 8	cover profile 8 Al	aluminium silver-coloured
		cover profile 8 PP	polypropylene black

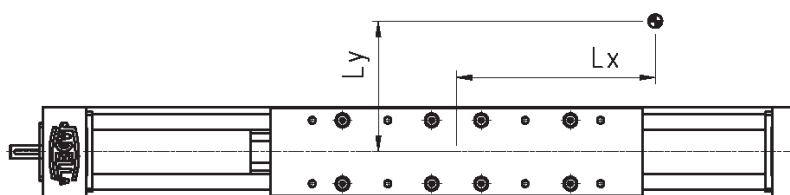
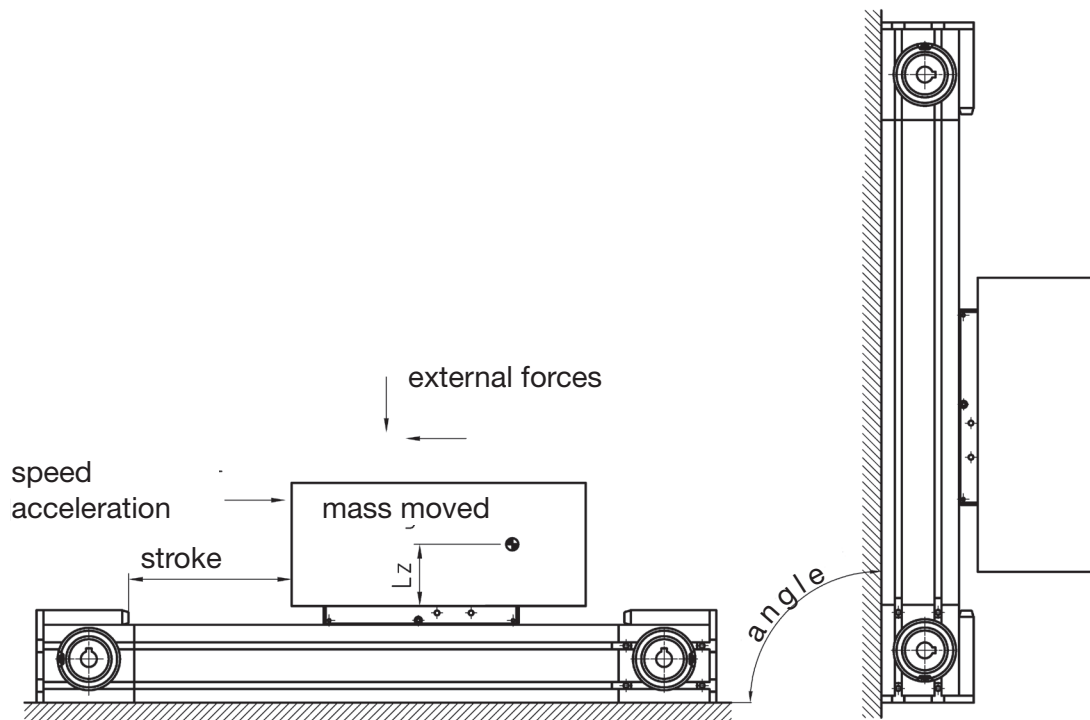
¹⁾ only for T-nuts at the ground area of the actuator

Combinations with AXNP or AXNP-S

More than just a single actuator !

All Basic-Line modules are well thought-out, have high capacity and are a cost saving solution. Single or multi actuator systems are available. Upon customers request, the actuators can be provided with fastening shoulders, limit switches, coupling housing, planetary gear or drive connecting shafts. Delivery of single axis with pre-mounted joining elements or completely ready for use systems can be offered.





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Actuator selection _____	28 - 29
Calculation _____	30 - 31
Type designation Basic-Line AXNPS _____	32
Application form _____	33 - 34

Actuator selection

Drive – toothed belt drive Z or spindle drive S

Application	horizontal	- Z
	vertical	- S
Travel length	short*	- S
	medium*	- S or Z
	long*	- Z
Travel speed	low*	- S
	medium*	- S or Z
	high*	- Z
Precision	low*	- Z
	high*	- S

Guide selection – roller guide LR or rail guide H

Application	horizontal	- LR or H
	vertical	- LR or H
Mass	low to medium*	- LR or H
	medium to high*	- H or parallel guide
Overhanging mass or transverse moment		- H or parallel guide
Dynamic	low to medium*	- LR or H
	medium to high*	- H

Carriage size – single/twin carriage or long carriage

Mass

The mass to be moved should be well fastened on the carriage and not have large overhangs. The centre of gravity of the mass should be approximately in the middle of the carriage mounting surface. Alternatives for longer screw-on surfaces are long standard carriages or double carriages which can also be fitted with larger distances.

Overhanging or wide masses

If the mass to be moved is very wide or has an overhanging centre of gravity it is recommended to use two parallel actuator units (maybe driven by a connecting shaft).

* The specifications short/medium/long or low/medium/high are to be understood in the ratio 1/3, 2/3 and 3/3 of the technical performance data indicated in the catalogue for respective actuator types and sizes.

Selection of linear actuator

Actuator size and type

The actuator size is mainly determined by the mass to be moved (weight and volume). This mass should be easy to mount and therefore should have a certain guide size and carriage mounting surface which also is decisive for the actuator size (see product overview in the catalogue).

The second selection criteria for the actuator is the moving dynamic of the mass. The resulting forces (e.g. driving forces, moments, centrifugal forces etc.) must be absorbed by the toothed belt or the spindle and the guide. Based on the synoptical table in the catalogue possible actuator types and sizes can be specified.

To make the right choice the technical data indicated in the catalogue such as admissible loads and load moments should only be used by one third as the combination of forces and moments can significantly affect the lifetime.

Further selection criteria for the actuator type are space requirements and the travel length of the linear actuator. It may be recommendable to replace larger single actuators by smaller parallel actuators and vice-versa. In case of large effective strokes, it may be necessary to use large actuators also for small loads. Actuators with correspondingly dimensioned toothed belts could be a good alternative to actuators with spindle drive.

The above are only rough guidelines for the selection of an actuator which can also be completely different depending on the application and the existing realities or on the customers personal wishes. In case of combined actuators such as X-Y systems or X-Y-Z systems a gantry structure with two parallel basic actuators should always be given preference to a boom system with only one basic actuator. For the design of combined systems the actuator on which the mass to be moved will be mounted should always be viewed at first.

We shall be pleased to assist you with the design and selection of the right modules for your application.

Please send us information about your application and technical data.
(See also application form at the end of the catalogue)

General

All data refer to the respective standard type of the linear module. A special design or temperatures above 80°C can considerably affect these values.

Technical data, loads and load moments

The values indicated are maximum possible individual sizes. Combined loads (e.g. forces and moments from different directions) reduce these maximum values and can have a negative effect on precision. If linear actuators are not fully supported, in addition a deflection or torsion test may become necessary.

Repeat accuracy

The repeat accuracy defines that under the same conditions within the given tolerances the mechanical linear module will reach again a position already approached before.

Stroke length

The stroke length indicated in the order code corresponds to the maximum possible travel distance. Accelerating and stopping distances or a possible safety overflow must be taken into consideration for design.

Speeds

The theoretical travel speed results from the screw pitch or in case of a toothed belt actuator from the stroke per turn of the pinion, the gear ratio of a possible gear and a motor speed. To determine the actually possible travel speed the specific conditions, the mass to be moved, acceleration, motor output and the admissible drive torque of the selected actuator as well as the efficiency have to be considered.

Operating characteristics and production tolerances

Differences in running performance and noise development with identical units cannot be completely excluded, not even by our high production standard with small production tolerances. Our extruded profiles are manufactured according to DIN EN 12020-2. Especially with reference to straightness and torsion these fixed tolerances mostly are clearly underrun. The exact adjustment of the linear units and/or mounting to precisely machined surfaces increase the guiding accuracy. A possible deflection of partially supported actuators mainly depends on the inherent rigidity, the load, the self-supporting length and the rigidity of the adjacent construction.

Forces due to a moving mass

$$F_x = m \cdot a$$

$$F_y = m \cdot a$$

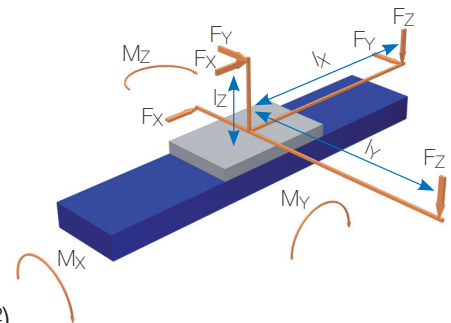
$$F_z = m \cdot (g + a)$$

F = load (N)

m = mass (kg)

a = acceleration (m/sec²)

g = acceleration of gravity (9,81 m/sec²)



Additional moment loading with an eccentric centre of gravity or lever arm

$$M_x = F_y \cdot l_z \text{ or } F_z \cdot l_y$$

$$M_y = F_x \cdot l_z \text{ or } F_z \cdot l_x$$

$$M_z = F_x \cdot l_y \text{ or } F_y \cdot l_x$$

l_x, l_y, l_z = distance of force application point
in direction x, y, z, indicated in m

In most applications there are force combinations. The resulting total forces always must be smaller than the respective admissible values.

Drive sizing (estimate)

$$M_A = M_{Last} + M_{Leer}$$

M_A = necessary drive torque (Nm)

M_{Last} = load torque (Nm)

M_{Leer} = idle torque (Nm) – see data sheets

$$M_{Last} = \frac{F_x \cdot p}{2 \cdot \pi \cdot 1000}$$

F_x = feed force (N)

p = stroke/revolution (mm) for toothed drive belt

screw pitch (mm) for screw drive

η = for ball screw approx. 0.9

For screw drive::

$$M_{Last} = \frac{F_x \cdot p}{2 \cdot \pi \cdot \eta \cdot 1000}$$

Feed force for horizontal operation

$$F_x = m \cdot g \cdot \mu + m \cdot a$$

μ = friction coefficient for rail guide 0.02

for roller guide 0.05

Feed force for vertical operation

$$F_x = m \cdot (g + a)$$

Admissible drive torques

The maximum acceleration also depends on the maximum admissible drive torque of the respective actuator. Example: calculation for toothed belt actuator AXN80-Z:

$$M_{Azul} = \text{belt traction} \times \text{pinion radius} = \frac{1450\text{N} \cdot 180\text{mm}}{2 \cdot \pi \cdot 1000} = 41.5\text{Nm}$$

Ordering example

AXN 65 - S HW 14 - LR 35 - 1000 - 1340 - 00

Type designation

AXN...
AXNP...

Drive configuration

S: ball screw
T: trapezoid thread spindle
Z: belt drive
O: no drive

Drive configuration with belt drive

HW: hollow shaft
WL (WR): driveshaft left (right)
WD: driveshaft both sides
KL (KR): partially integrated coupling on one side left (right)
PL (PR): planetary gear left (right)
PLK (PRK): planetary gear left + coupling right
(planetary gear right + coupling left)
MKL (MKR): motor flange with coupling left (right)

with spindle drive

W: free drive shaft
MK: motor flange with coupling
U: deflection belt drive

Characteristic of the shaft / coupling

with belt drive

- diameter of shaft or hollow shaft (HW, WL, WR, WD)
- diameter of coupling holes (KL, KR, MKL, MKR)
- gear ratio (PL, PR)
- for type PLK or PRK only the gear ratio is indicated

with spindle drive

Spindle diameter and pitch

Options

This number will be given by Nadella. It shows special marks or special design which are noted in clear text.

- 00 no options
 - 01 without slot nut
 - 02 spindle support 1SA
 - 04 spindle support 2SA
 - 06 spindle support 3SA
 - 08 spindle support 4SA
 - 10 cover band
 - 12 slot covers
 - 13 cover band
 - 22 twin carriage
 - 23 long carriage
 - 32 reinforced spindle bearing
 - 33 double spindle nut
 - 34 preloaded spindle nut
 - 35 with caged ball technology
 - 77 stainless version (NX)
 - 88 profile with junction
 - 99 according to drawing
- more than one option possible

Overall length

(Stroke + length surcharge according to data given in this catalogue)

Stroke

Size of guide system

subject to catalog

Reference variable

LR : linear guide system
B : ball circulating guide according to DIN 645

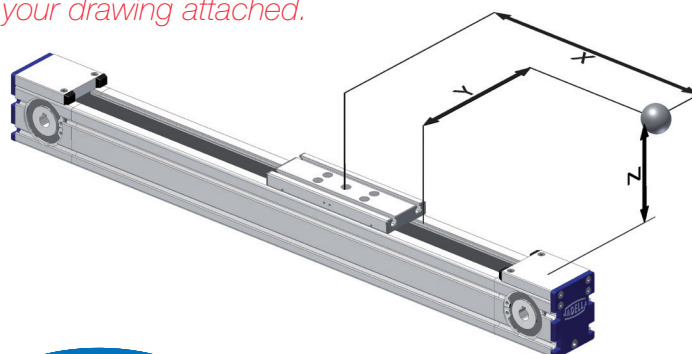
In case any motor adaption is required, please send us the dimension sheets of the corresponding motor/gear for each order.

Date	
Company	
Address	Street
Contact	
Phone	Fax
eMail	
Project designation	

Application parameter

	single axis	multi axis system	
	X	Y	Z
Ccoordinate			
Single axis / parallel axis (distance in mm)			
Installation position: horizontal (hor); vertikal (ver) or wall fastening (wa)			
Stroke [mm]			
Effective stroke $\leq \frac{1}{2}$ carriage length	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Speed v [m/s]			
Acceleration a [m/s ²]			
Traverse time [s]			
Cycle time [s]			
Repeat accuracy [\pm mm]			
Required lifetime [h]			
Actual load [kg]			
External loads [N]			
Center coordinate load X [mm]			
Center coordinate load Y [mm]			
Center coordinate load Z [mm]			
Center coordinate force X [mm]			
Center coordinate force Y [mm]			
Center coordinate force Z [mm]			

For higher loads or charges please send your drawing attached.



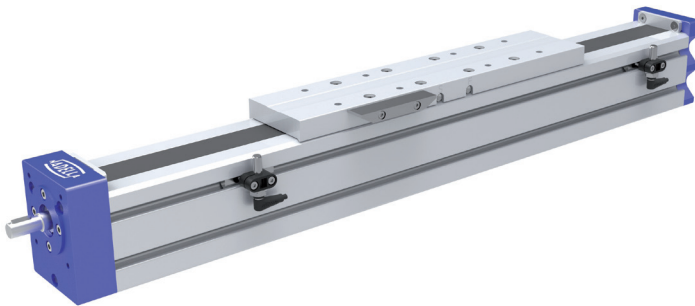
Remarks

Conditions of use (dust, splash water, abrasive media)

Corrosion resistance

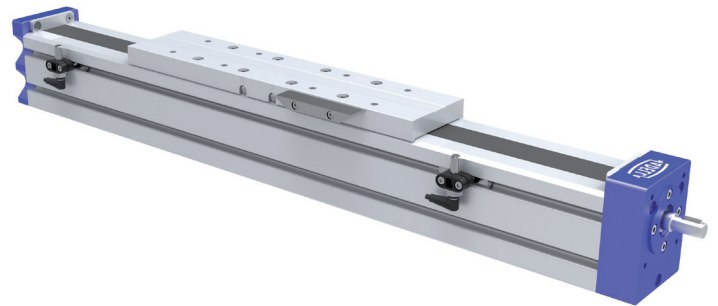
Drive adaption for existing gear

Fittings left side



Switch ☐

Fittings right side



Switch ☐

Attachments

Connecting shaft for distance [mm]

(please indicate distance of actuators)

Planetary gear (Type: ratio)

(e.g. PLE80:8)

Inductive switch (opening/closing contact)

Pieces

Type

Slots

Pieces

Type

Fastening shoulder

Pieces

Type

Cover profile (2m length)

Pieces

Type

Cover plate

☐

Corrosion resistant version

☐

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