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## SAB series



### > SAB series description



Fig. 1

**SAB** products are self-supporting extruded aluminum actuators driven by a polyurethane belt system. Due to their deep hard anodized surface treatment and their plastic compound coated rollers, SAB series can achieve exceptionally high performances and load capacity with no maintenance or lubrication required. They also provide total reliability even in dirty environments, with uniquely quiet operation.

**SAB** series is defined by the use of **guides with cylindrical and V-shaped rollers** as linear motion components. These linear motion systems are lightweight, self-supporting, easy to assemble, cost effective, modular, clean and quiet. Thanks to this kind of solution they are specifically dedicated for dirty environments and high dynamics in automation. SAB series is available with profiles of different sizes: 60 - 120 - 180 - 250 mm.

Some of the main **advantages** of SAB series are:

- High reliability
- Self-supporting for greatest design freedom
- High technical performance
- High load
- Optimal reliability in dirty environments
- Absence of lubrication
- Uniquely quiet
- Self-aligning system

## > The components

### Extruded bodies

SAB beam is a heat-treated Aluminum alloy profile with hollow cross-sections which makes it very strong under torsion and deflection stresses. Beams are then subject to a special patented treatment which provides a smooth, hard surface, comparable to tempered steel, and an optimal resistance to wear, even in dirty environments.

### Driving belt

The SAB series driving system consists in a polyurethane toothed belt, reinforced with high resistance steel cords. For some applications, the belt driven solution is ideal due to its high load transmission characteristics, compact size and low noise. Some of the advantages of using a belt driven system are: high speed, high acceleration, low noise and no need for lubrication.

### Carriage

The carriage of the SAB series linear units is made of anodised aluminum. Different lengths of the carriages are available according to the different sizes.

## > The linear motion system

The linear motion system has been designed to meet the load capacity, speed, and maximum acceleration conditions of a wide variety of applications.

### **SAB with cylindrical and V-shaped rollers:**

The SAB range includes a large selection of rollers both cylindrical and V-shaped, and sliders assembled with two or more rollers. SAB rollers are covered by a sintered plastic compound, resistant to pollutants and virtually maintenance-free. Ball and/or needle bearings with high performance are mounted into the rollers and can be maintained either with standard greasing procedure or lifetime lubricated. All roller boxes are equipped with concentric and eccentric pins for a quick adjustment of the contact between rollers and rail.

Supports are mounted on the frame when the rail is movable and on the trolleys when it is fixed.

SAB section

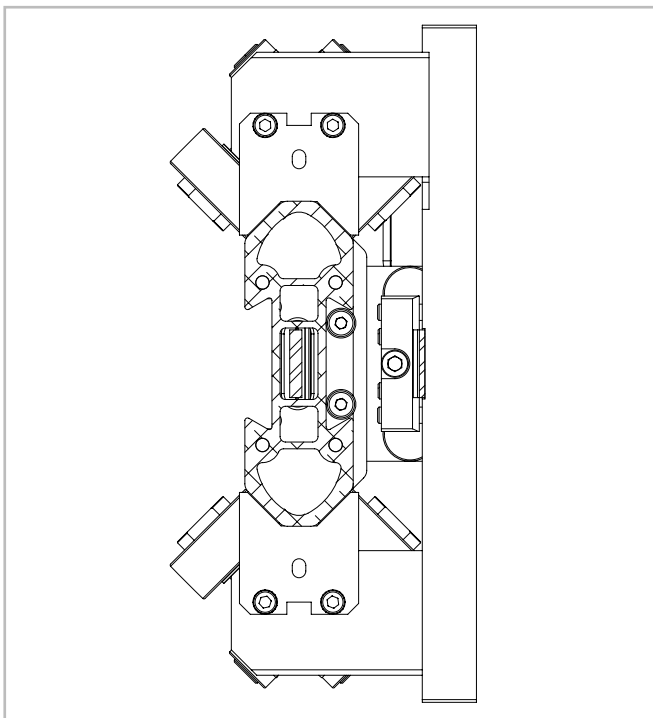
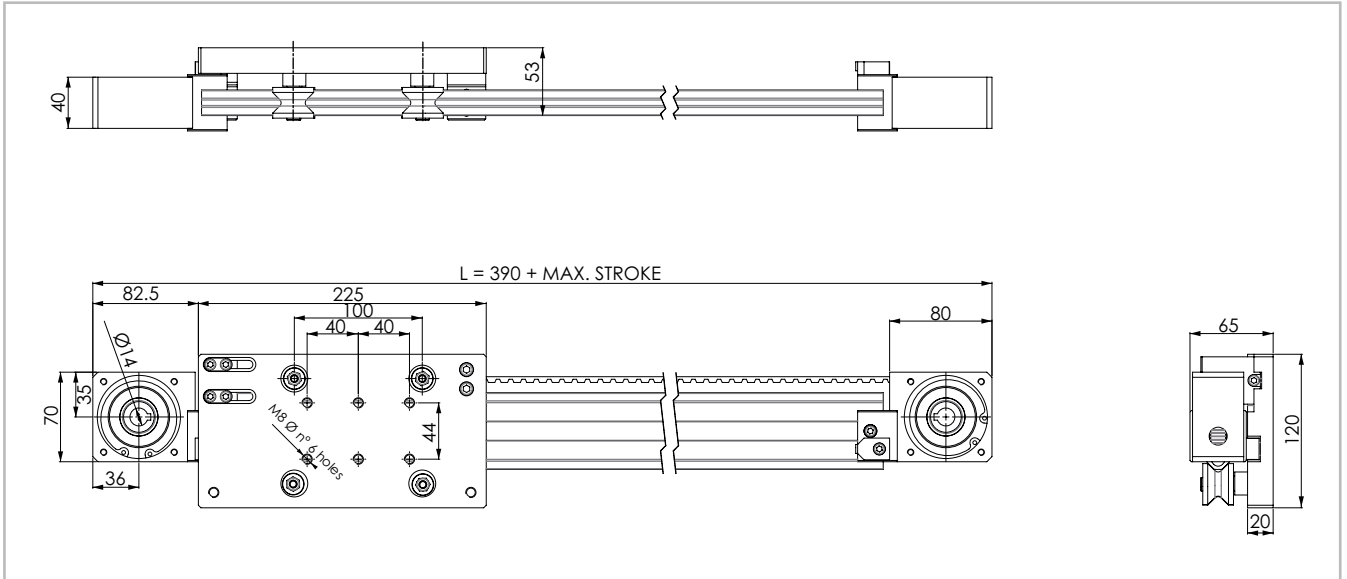


Fig. 2

> SAB 60V

SAB 60V Dimension

Anticorrosion version available



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 3

Technical data

	Type
	SAB 60V
Max. useful stroke length [mm]	7250
Max. positioning repeatability [mm]*1	± 0.2
Max. speed [m/s]	7
Max. acceleration [m/s <sup>2</sup> ]	8
Type of belt	10 AT 10
Type of pulley	Z 19
Pulley pitch diameter [mm]	60.479
Carriage displacement per pulley turn [mm]	190
Carriage weight [kg]	1.7
Zero travel weight [kg]	3.8
Weight for 100 mm useful stroke [kg]	0.13
Rail size [mm]	60x20

\*1) Positioning repeatability is dependent on the type of transmission used

Tab. 1

Moments of inertia of the aluminum body

Type	$I_x$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_y$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_b$ [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 60V	0.014	0.002	0.003

Tab. 2

Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 60V	10 AT 10	10	0.064

Tab. 3

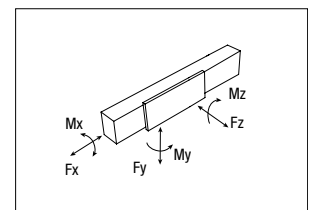
Belt length (mm) = 2 x L - 80

Load capacity

Type	$F_x$ [N]		$F_y$ [N]	$F_z$ [N]	$M_x$ [Nm]	$M_y$ [Nm]	$M_z$ [Nm]
	Stat.	Dyn.					
SAB 60V	706	374	540	400	9	20	27

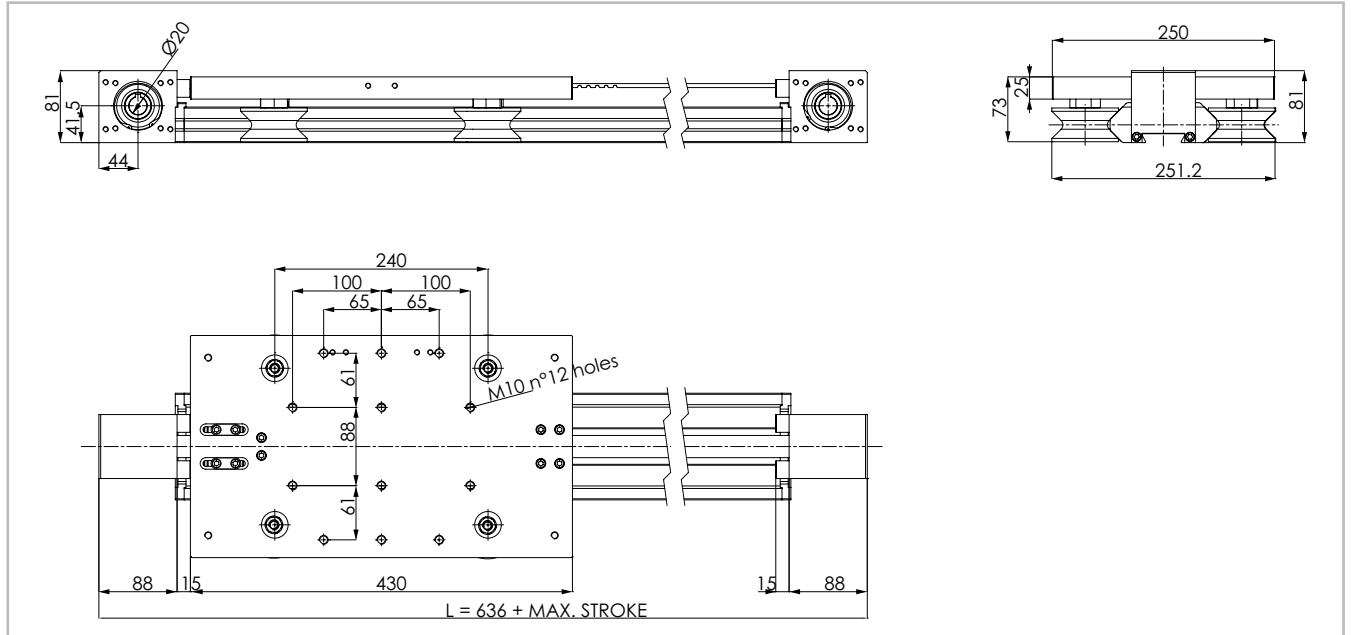
Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

Tab. 4



> SAB 120VX

SAB 120VX Dimension



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 4

Technical data

	Type
	SAB 120VX
Max. useful stroke length [mm]	7056
Max. positioning repeatability [mm]*1	± 0.2
Max. speed [m/s]	6
Max. acceleration [m/s <sup>2</sup> ]	8
Type of belt	25 AT 10HPF
Type of pulley	Z 15
Pulley pitch diameter [mm]	47.746
Carriage weight [kg]	8.22
Zero travel weight [kg]	17.0
Weight for 100 mm useful stroke [kg]	0.472
Rail size [mm]	120x40

\*1) Positioning repeatability is dependent on the type of transmission used

Tab. 5

Moments of inertia of the aluminum body

Type	$I_x$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_y$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_d$ [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 120VX	0.214	0.026	0.043

Tab. 6

Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 120VX	25 AT 10HPF	25	0.16

Tab. 7

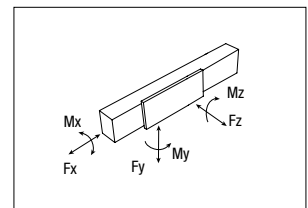
Belt length (mm) = 2 x L - 300

Load capacity

Type	$F_x$ [N]		$F_y$ [N]	$F_z$ [N]	$M_x$ [Nm]	$M_y$ [Nm]	$M_z$ [Nm]
	Stat.	Dyn.					
SAB 120VX	1349	715	1400	800	39.3	96	168

Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

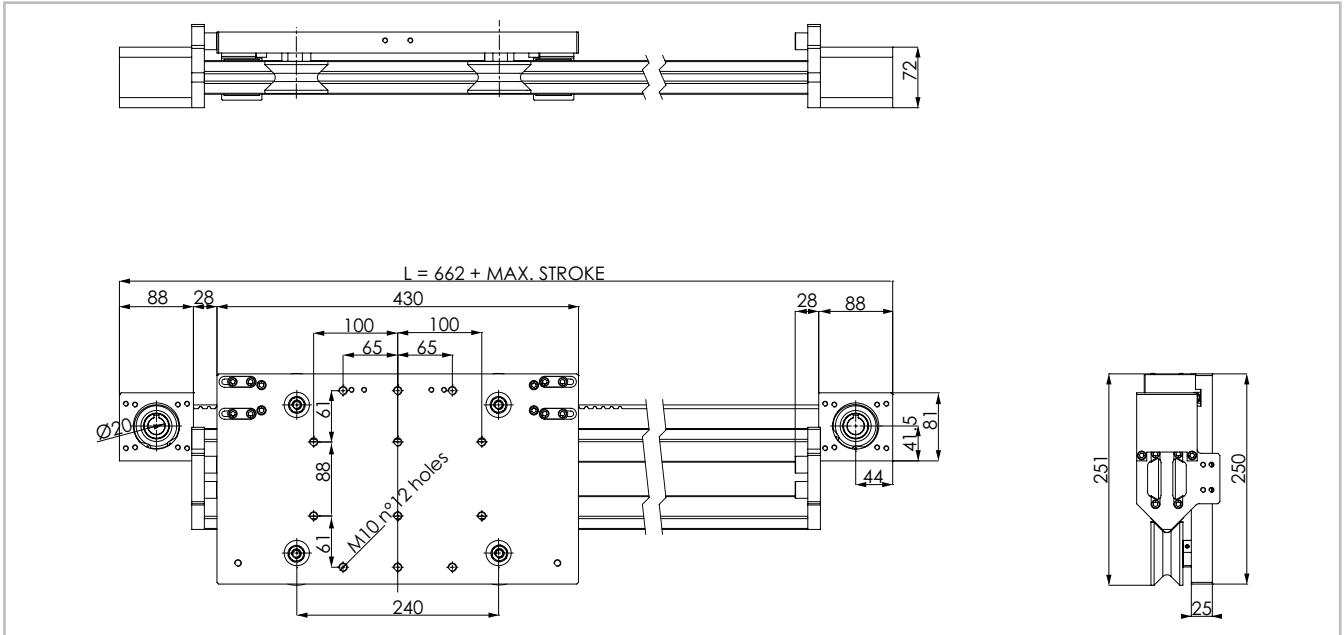
Tab. 8



> SAB 120VZ

SAB 120VZ Dimension

Anticorrosion version available



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 5

Technical data

	Type
	SAB 120VZ
Max. useful stroke length [mm]*1	7040
Max. positioning repeatability [mm]*2	± 0.2
Max. speed [m/s]	6
Max. acceleration [m/s <sup>2</sup> ]	8
Type of belt	25 AT 10HPF
Type of pulley	Z 15
Pulley pitch diameter [mm]	47.746
Carriage displacement per pulley turn [mm]	150
Carriage weight [kg]	9.1
Zero travel weight [kg]	17.9
Weight for 100 mm useful stroke [kg]	0.472
Rail size [mm]	120x40

\*1) It is possible to obtain longer strokes by means of special Rollon joints  
 \*2) Positioning repeatability is dependent on the type of transmission used

Tab. 9

Moments of inertia of the aluminum body

Type	I <sub>x</sub> [10 <sup>7</sup> mm <sup>4</sup> ]	I <sub>y</sub> [10 <sup>7</sup> mm <sup>4</sup> ]	I <sub>p</sub> [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 120VZ	0.214	0.026	0.043

Tab. 10

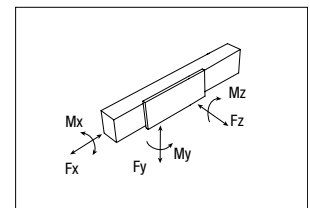
Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 120VZ	25 AT 10HPF	25	0.16

Tab. 11

Belt length (mm) = 2 x L - 310



Load capacity

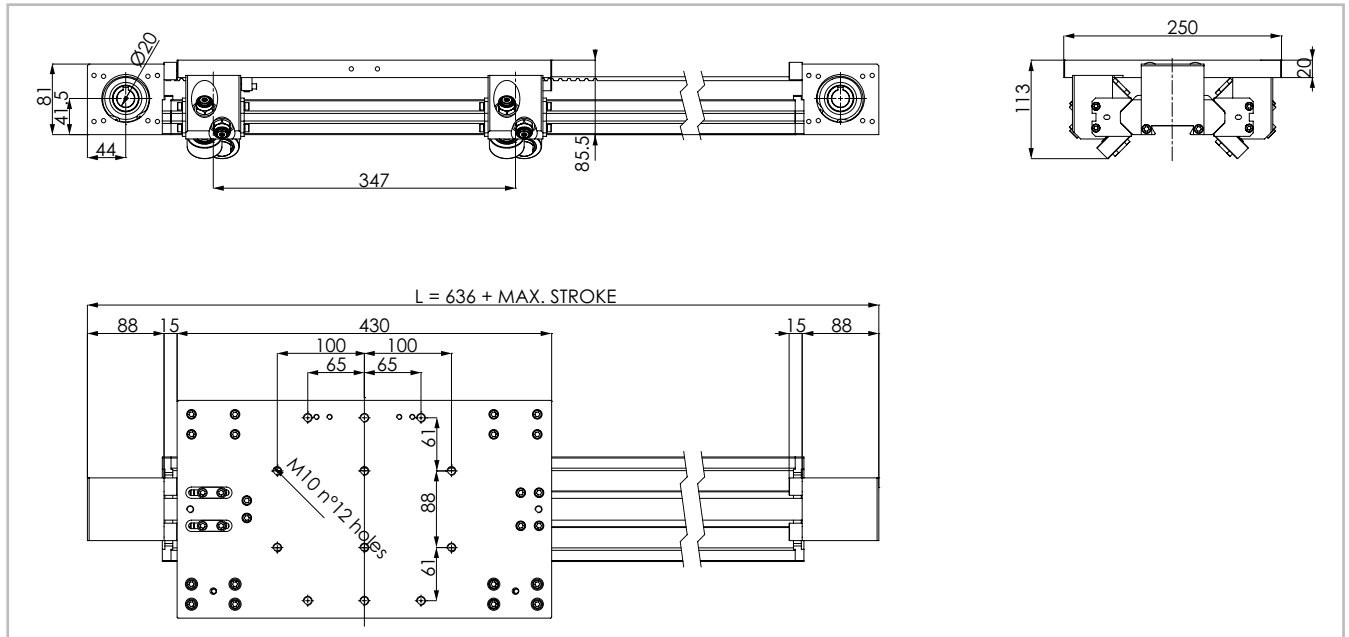
Type	F <sub>x</sub> [N]		F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub> [Nm]	M <sub>y</sub> [Nm]	M <sub>z</sub> [Nm]
	Stat.	Dyn.					
SAB 120VZ	1349	715	1400	800	39.3	96	168

Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

Tab. 12

> SAB 120CX

SAB 120CX Dimension



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 6

Technical data

	Type
	SAB 120CX
Max. useful stroke length [mm]	7056
Max. positioning repeatability [mm]*1	± 0.2
Max. speed [m/s]	6
Max. acceleration [m/s <sup>2</sup> ]	10
Type of belt	25 AT 10HPF
Type of pulley	Z 15
Pulley pitch diameter [mm]	47.746
Carriage displacement per pulley turn [mm]	150
Carriage weight [kg]	8.5
Zero travel weight [kg]	17.3
Weight for 100 mm useful stroke [kg]	0.472
Rail size [mm]	120x40

\*1) Positioning repeatability is dependent on the type of transmission used

Tab. 13

Moments of inertia of the aluminum body

Type	$I_x$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_y$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_d$ [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 120CX	0.214	0.026	0.043

Tab. 14

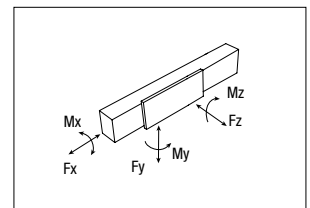
Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 120CX	25 AT 10HPF	25	0.16

Tab. 15

Belt length (mm) = 2 x L - 300



Load capacity

Type	F <sub>x</sub> [N]		F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub> [Nm]	M <sub>y</sub> [Nm]	M <sub>z</sub> [Nm]
	Stat.	Dyn.					
SAB 120CX	1349	715	2489	2489	98	432	432

Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

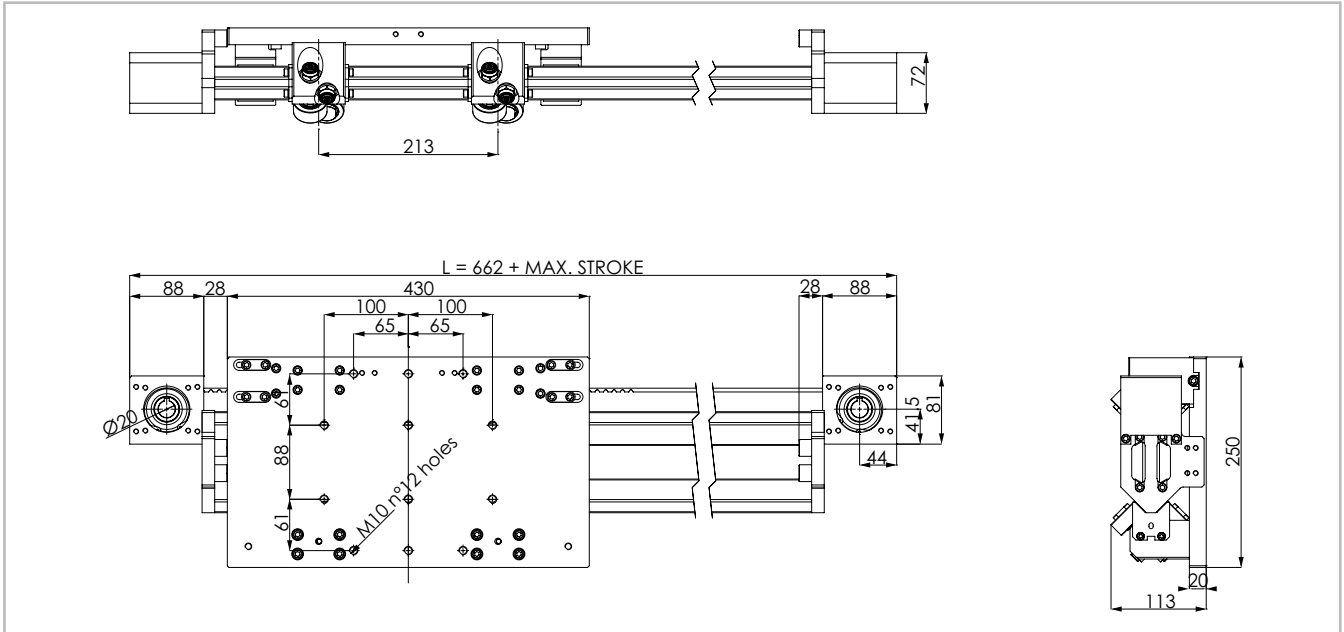
Tab. 16



> SAB 120CZ

SAB 120CZ Dimension

Anticorrosion version available



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 7

Technical data

	Type
	SAB 120CZ
Max. useful stroke length [mm]*1	7040
Max. positioning repeatability [mm]*2	± 0.2
Max. speed [m/s]	6
Max. acceleration [m/s <sup>2</sup> ]	10
Type of belt	25 AT 10HPF
Type of pulley	Z 15
Pulley pitch diameter [mm]	47.746
Carriage displacement per pulley turn [mm]	150
Carriage weight [kg]	9.4
Zero travel weight [kg]	18.2
Weight for 100 mm useful stroke [kg]	0.472
Rail size [mm]	120x40

\*1) It is possible to obtain longer strokes by means of special Rollon joints  
 \*2) Positioning repeatability is dependent on the type of transmission used

Tab. 17

Moments of inertia of the aluminum body

Type	I <sub>x</sub> [10 <sup>7</sup> mm <sup>4</sup> ]	I <sub>y</sub> [10 <sup>7</sup> mm <sup>4</sup> ]	I <sub>p</sub> [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 120CZ	0.214	0.026	0.043

Tab. 18

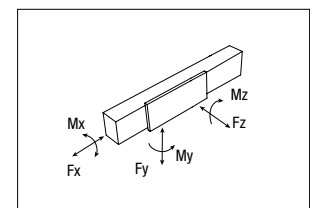
Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 120CZ	25 AT 10HPF	25	0.16

Tab. 19

Belt length (mm) = 2 x L - 300



Load capacity

Type	F <sub>x</sub> [N]		F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub> [Nm]	M <sub>y</sub> [Nm]	M <sub>z</sub> [Nm]
	Stat.	Dyn.					
SAB 120CZ	1349	715	2489	2489	98	265	265

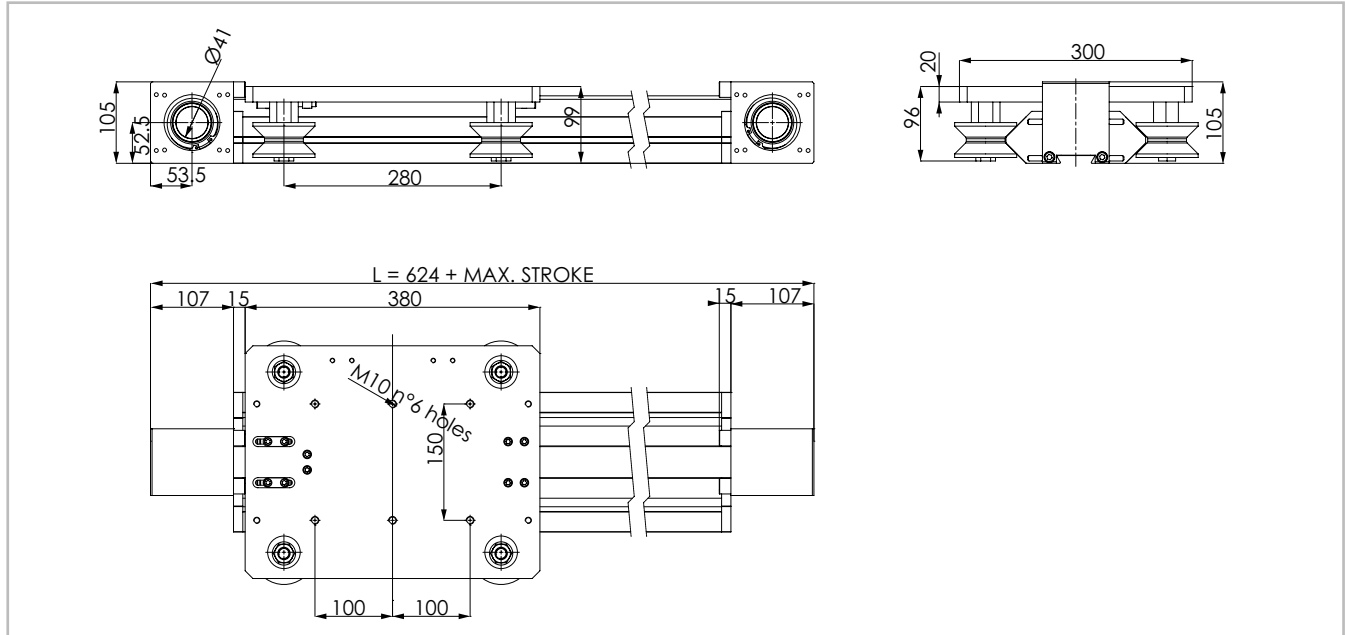
Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

Tab. 20

> SAB 180V

SAB 180V Dimension

 Anticorrosion version available



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 8

Technical data

	Type
	SAB 180V
Max. useful stroke length [mm]	7114
Max. positioning repeatability [mm]*1	$\pm 0.2$
Max. speed [m/s]	8
Max. acceleration [m/s <sup>2</sup> ]	8
Type of belt	40 AT10
Type of pulley	Z 21
Pulley pitch diameter [mm]	66.84
Carriage displacement per pulley turn [mm]	210
Carriage weight [kg]	8.3
Zero travel weight [kg]	27.6
Weight for 100 mm useful stroke [kg]	1.06
Rail size [mm]	180x60

\*1) Positioning repeatability is dependent on the type of transmission used

Tab. 21

Moments of inertia of the aluminum body

Type	$I_x$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_y$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_p$ [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 180V	1.029	0.128	0.260

Tab. 22

Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 180V	40 AT10	40	0.23

Tab. 23

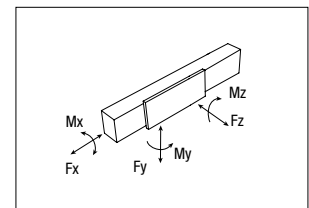
Belt length (mm) = 2 x L - 220

Load capacity

Type	$F_x$ [N]		$F_y$ [N]	$F_z$ [N]	$M_x$ [Nm]	$M_y$ [Nm]	$M_z$ [Nm]
	Stat.	Dyn.					
SAB 180V	3154	1671	1400	800	58	112	196

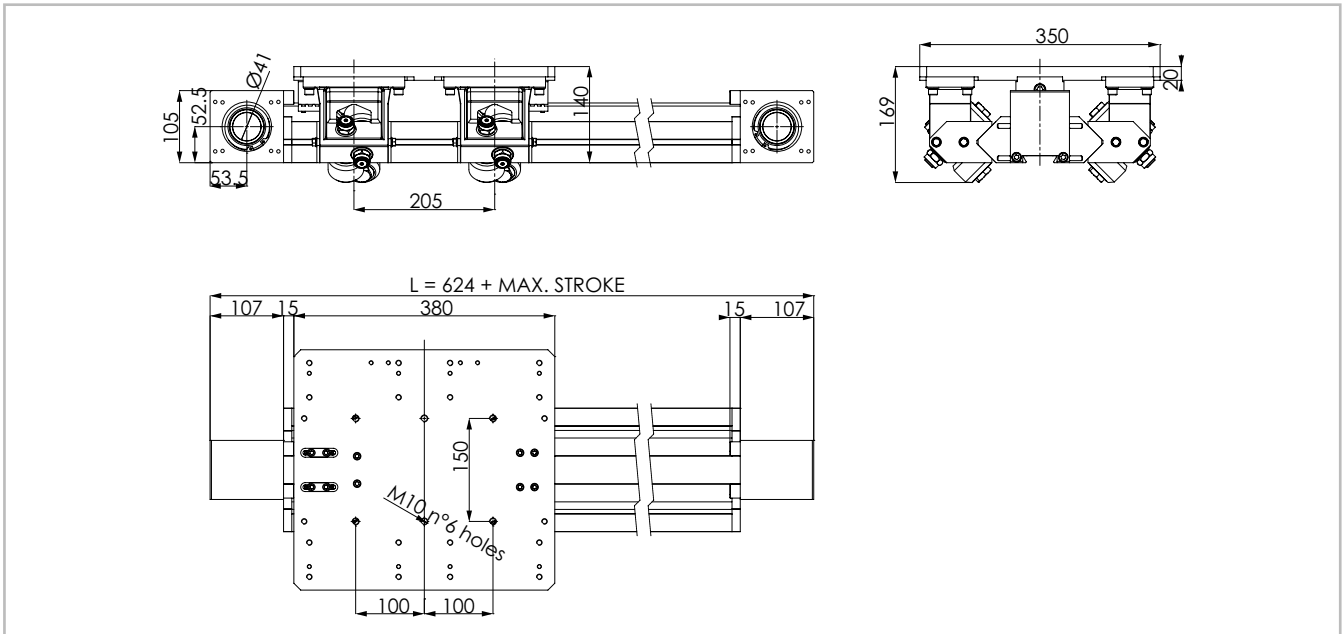
Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

Tab. 24



> SAB 180C

SAB 180C Dimension



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 9

Technical data

	Type
	SAB 180C
Max. useful stroke length [mm]	7114
Max. positioning repeatability [mm]*1	± 0.2
Max. speed [m/s]	8
Max. acceleration [m/s <sup>2</sup> ]	10
Type of belt	40 AT10
Type of pulley	Z 21
Pulley pitch diameter [mm]	66.84
Carriage displacement per pulley turn [mm]	210
Carriage weight [kg]	16.0
Zero travel weight [kg]	30.8
Weight for 100 mm useful stroke [kg]	1.06
Rail size [mm]	180x60

\*1) Positioning repeatability is dependent on the type of transmission used

Tab. 25

Moments of inertia of the aluminum body

Type	$I_x$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_y$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_D$ [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 180C	1.029	0.128	0.260

Tab. 26

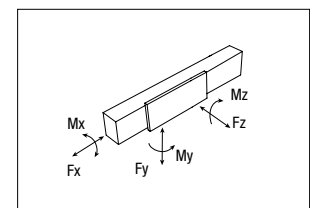
Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 180C	40 AT 10	40	0.23

Tab. 27

Belt length (mm) = 2 x L - 210



Load capacity

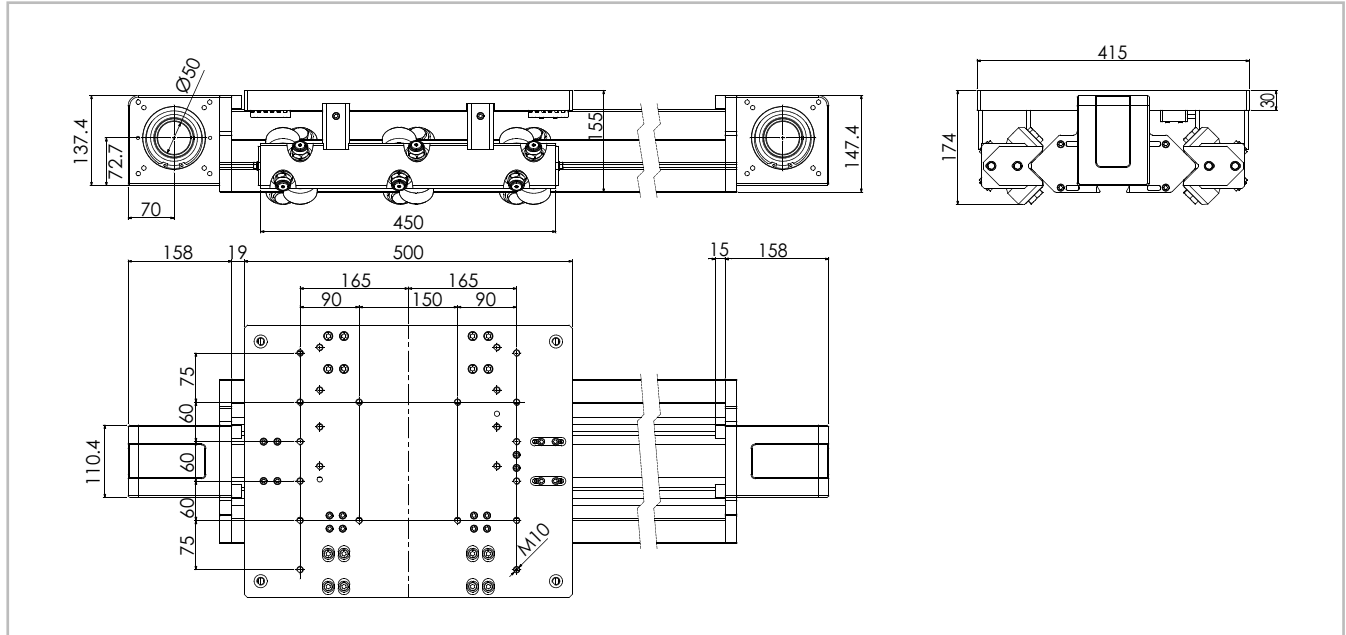
Type	F <sub>x</sub> [N]		F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub> [Nm]	M <sub>y</sub> [Nm]	M <sub>z</sub> [Nm]
	Stat.	Dyn.					
SAB 180C	3154	1671	3620	3620	246	371	371

Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

Tab. 28

> SAB 250C

SAB 250C Dimension



The length of the safety stroke is provided on request according to the customer's specific requirements.

Fig. 10

Technical data

	Type
	SAB 250C
Max. useful stroke length [mm]	6970
Max. positioning repeatability [mm]*1	± 0.2
Max. speed [m/s]	10
Max. acceleration [m/s <sup>2</sup> ]	10
Type of belt	50 AT 10
Type of pulley	Z 27
Pulley pitch diameter [mm]	85.94
Carriage displacement per pulley turn [mm]	270
Carriage weight [kg]	32.3
Zero travel weight [kg]	57.7
Weight for 100 mm useful stroke [kg]	1.55
Rail size [mm]	250x180

\*1) Positioning repeatability is dependent on the type of transmission used

Tab. 29

Moments of inertia of the aluminum body

Type	$I_x$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_y$ [10 <sup>7</sup> mm <sup>4</sup> ]	$I_p$ [10 <sup>7</sup> mm <sup>4</sup> ]
SAB 250C	2.735	0.412	0,840

Tab. 30

Driving belt

The driving belt is manufactured from a friction resistant polyurethane and with steel cords for high tensile stress resistance.

Type	Type of belt	Belt width [mm]	Weight [kg/m]
SAB 250C	50 AT 10	50	0.34

Tab. 31

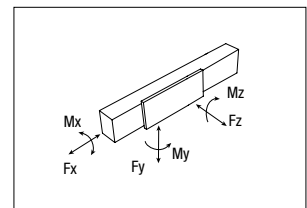
Belt length (mm) = 2 x L - 330

Load capacity

Type	$F_x$ [N]		$F_y$ [N]	$F_z$ [N]	$M_x$ [Nm]	$M_y$ [Nm]	$M_z$ [Nm]
	Stat.	Dyn.					
SAB 250C	4980	2640	5431	5431	558	597	644

Non-cumulative moments referred to the median trolley axis and to a theoretical lifetime of the Speedy Rail guide and of the rollers of up to 80.000 km.

Tab. 32



## > Simple shaft version

Simple shaft type AS

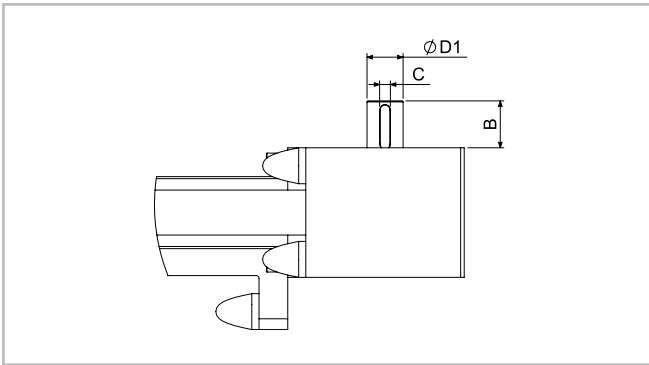


Fig. 11

Unit	Shaft type	Keyway C	B	D1	Kit Code
SAB 60	AS 14	5x5	32	14h7	G002486
SAB 120	AS 20	6x6	26	20h7	G002488

Tab. 33

Position of the simple shaft can be to the right, left, or both sides of the drive head.

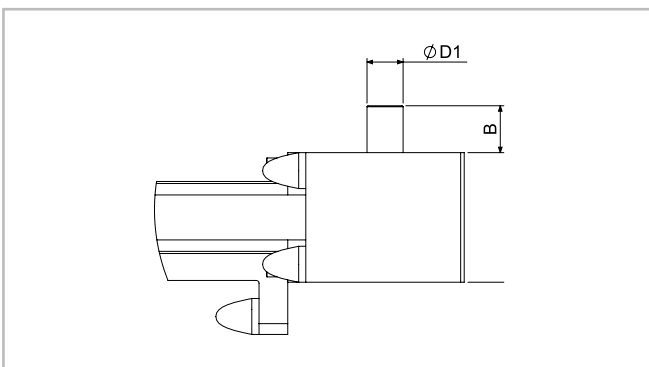


Fig. 12

Unit	Shaft type		B	D1	Kit Code
SAB 180	AS 20	Straight	36	20h7	G000828
SAB 250	AS 25	Straight	50	25h7	G000649

Tab. 34

## > Double shaft version

Double shaft type AS

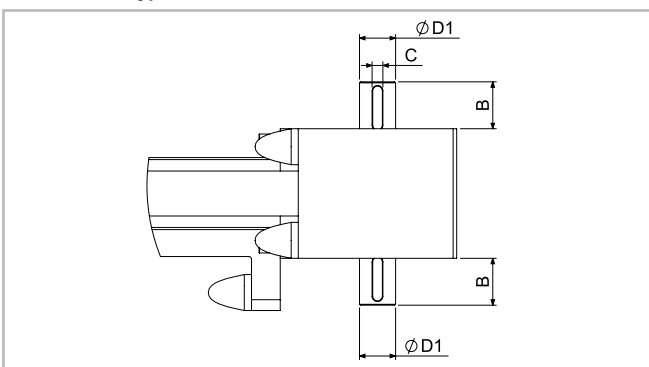


Fig. 13

Unit	Shaft type	Keyway C	B	D1	Kit Code
SAB 60	AS 14	5x5	32	14h7	G002487
SAB 120	AS 20	6x6	26	20h7	G002489

Tab. 35

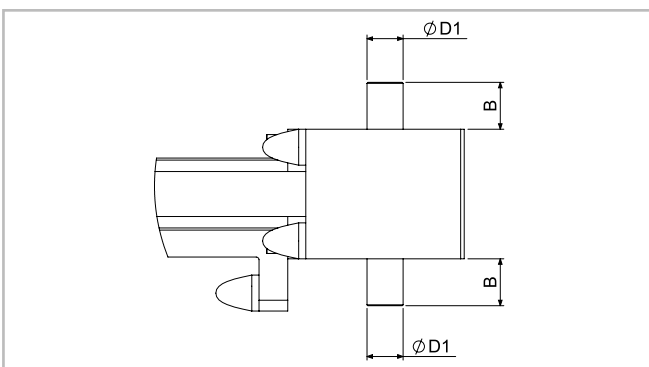


Fig. 14

Unit	Shaft type		B	D1	Kit Code
SAB 180	AS 20	Straight	36	20h7	2 x G000828
SAB 250	AS 25	Straight	50	25h7	2 x G000649

Tab. 36

Position of the simple shafts for encoder assembly to the right or to the left on the drive head.

## > Hollow shafts

### Hollow shaft type AC

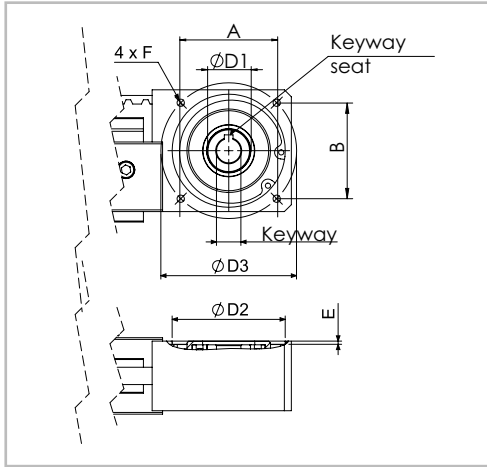


Fig. 15

Unit	Shaft type	Key-way	D1	D2	D3	E	F	A X B
SAB 60	AC 14	5 X 5	14H7	65	78	1.5	M5	-
SAB 120	AC 20	6 X 6	20H7	55	72	3.5	M6	72,8 x 59,2

Tab. 37

An (optional) connection flange is required to fit the standard reduction units selected by Rollon. For further information contact our offices

### Hollow shaft type FP - Standard supply

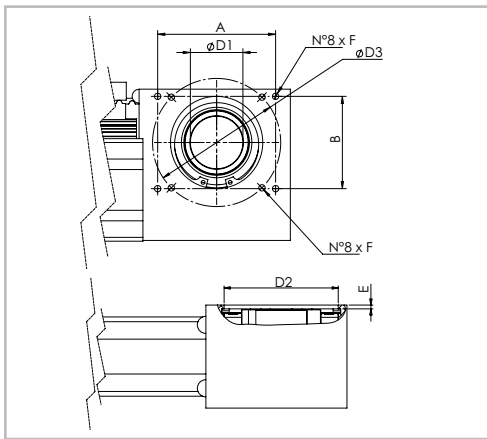


Fig. 16

Unit	Shaft type		D1	D2	D3	E	F	A X B
SAB 180	FP 41	Straight	41H7	72	100	3.5	M6	92 x 72
SAB 250	FP 50	Straight	25H7	95	130	3.5	M8	109 x 109

Tab. 38

## > Linear units in parallel

### Synchronization kit for use of SAB linear units in parallel

When movement consisting of two linear units in parallel is essential, a synchronization kit must be used. This consists of original Rollon lamina

type precision joints complete with tapered splines and hollow aluminum drive shafts.

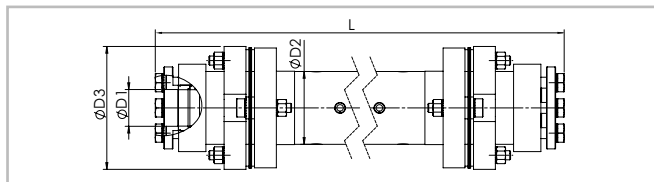


Fig. 17

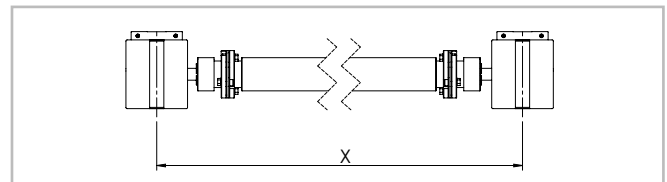


Fig. 18

### Dimensions (mm)

Unit	Shaft type	D1	D2	D3	Kit Code
SAB 60	AP 15	15	40	69.5	GK15P...1A
SAB 120	AP 20	20	40	69.5	GK20P...1A
SAB 180	AP 20	20	40	69.5	GK20P...1A
SAB 250	AP 25	25	70	99	GK25P...1A

Tab. 39

> Accessories

Adapter flange for gearbox assembly

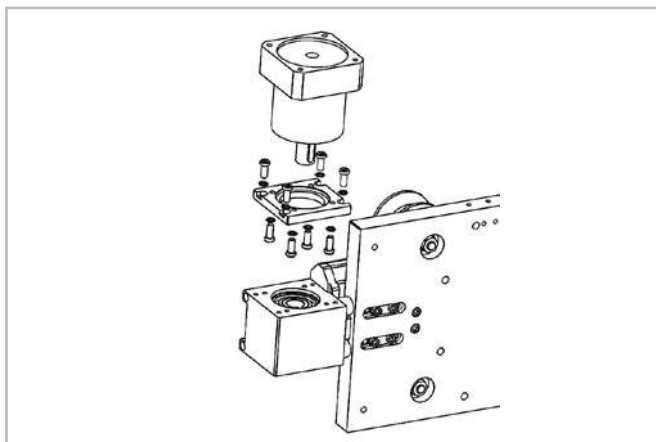


Fig. 19

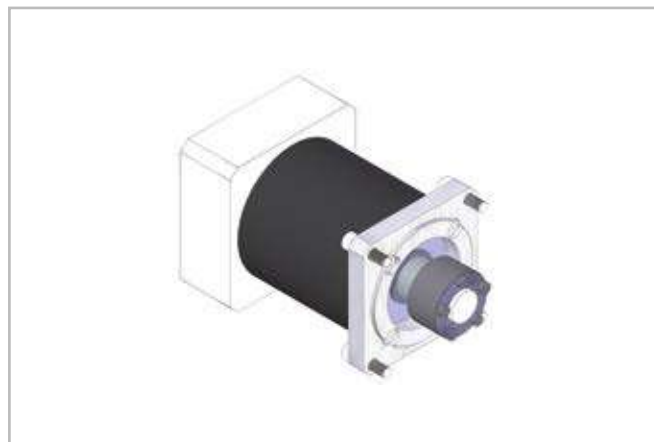


Fig. 20

Assembly kit includes: shrink disk; adapter plate; fixing hardware

Unit	Gearbox type	Kit Code
SAB60	MP060; PLE060; CP060	G002375
	PLE080	G002411
SAB120	PGII080	G002422
	MP080	G002426
	PLE060; CP060; PGII060	G002427
	MP060	G002432
	P3	G000824
SAB180	MP080	G000826
	LC90; MPV01; LP090; PE4	G000827
	MP105	G000830
	PE3; LP070; LC070	G001078
	SP060; PLN070	G000829
	SP070; PLN090	G000859
	SW040	G000866
	MP130	G000482
SAB 250	LC120; MPV02; LP120; PE5	G000483
	LC090; LP090; PE4	G000525
	MP105	G000527
	SP075; PLN090	G000526
	SW050	G000717

Tab. 40

Assembly kits

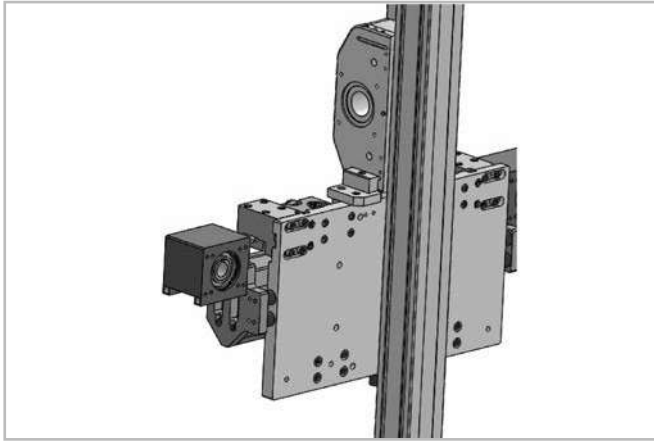


Fig. 21

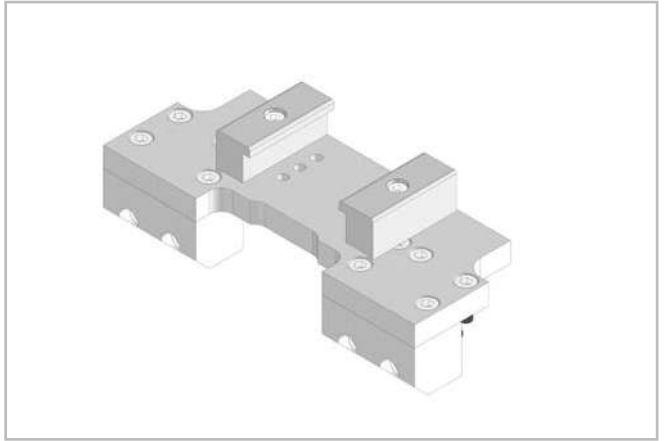


Fig. 22

While ordering two units for Y-Z assembly key has to be specified that they work together in order to drill the trolleys for the assembly of the kit.

Actuator combination Y-Z	Kit Code
 S-SMART 65 on SAB 120	G002440
 S-SMART 80 on SAB 180	G000990

Tab. 41

Connection rods

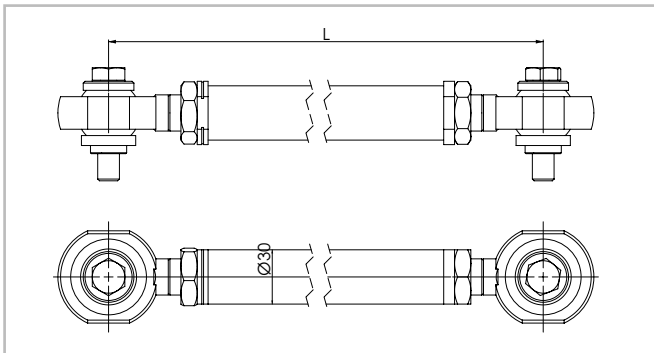


Fig. 23

Unit	Kit Code
SAB 60	GT125xxxxx1A
SAB 120	
SAB 180	
SAB 250	GT205xxxxx1A

Tab. 42

Kit spacer

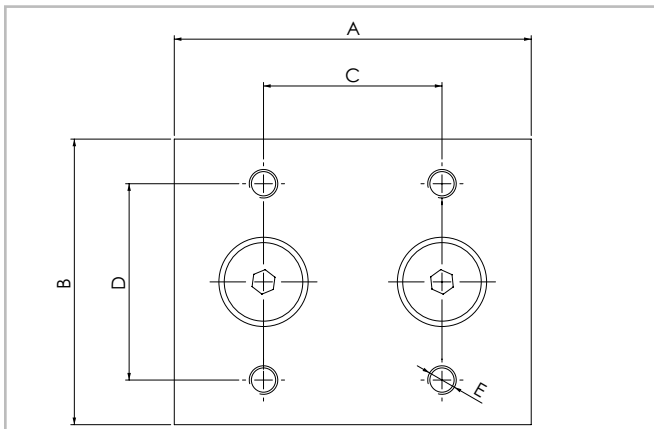


Fig. 24

Unit	A	B	C	D	E	Kit Code
SAB 60	50	40	30	25	M6	G002343
SAB 120	100	80	50	55	M8	G002362
SAB 180	100	125	50	70	M10	G002466
SAB 250	100	145	50	80	M12	G002523

Tab. 43



Insert for SAB 180V - SAB 180C - SAB250C

M5	Steel Std.	
M6	Steel Std.	
M8	Steel Std.	

Fig. 25

Quick insert for: SAB 180V - SAB 180C - SAB 250C

M4	Steel Std.	411.1360					411.2534		496
M5	Steel Std.	411.1361					411.2533		496
M6	Steel Std.	411.1362					411.3633		496
M8	Steel Std.	411.1363							

Fig. 26

Dovetails for: SAB 120C - SAB 120V - SAB 180V - SAB 180C - SAB 250C

M12	Steel Std.							
M12	Steel Std.							
M10	Steel Std.							
M10	Steel Std.							
M8	Steel Std.							
M6	Steel Std.							
M8	Steel Std.							

Fig. 27

Dovetails for: SAB 60V

M8	Steel Std.					
M6	Steel Std.					
M5	Steel Std.					
M4	Steel Std.					

Fig. 28

# Ordering key

## > Identification codes for the SAB linear unit

SB	C	06=60	2D	XXXXX	1X	DXX	
	V	12=120 18=180 25=250			1Z		
Multiple carriages: D01, D02, D03, etc...							
Belt orientation: 1X horizontal, 1Z vertical							
L = total length of the unit							
Hollow shaft head							
Linear unit size							
Roller type C=cylindrical, V=V-shaped							
SAB Series							

In order to create identification codes for Actuator Line, you can visit: <http://configureactuator.rollon.com>



### Left/right orientation

