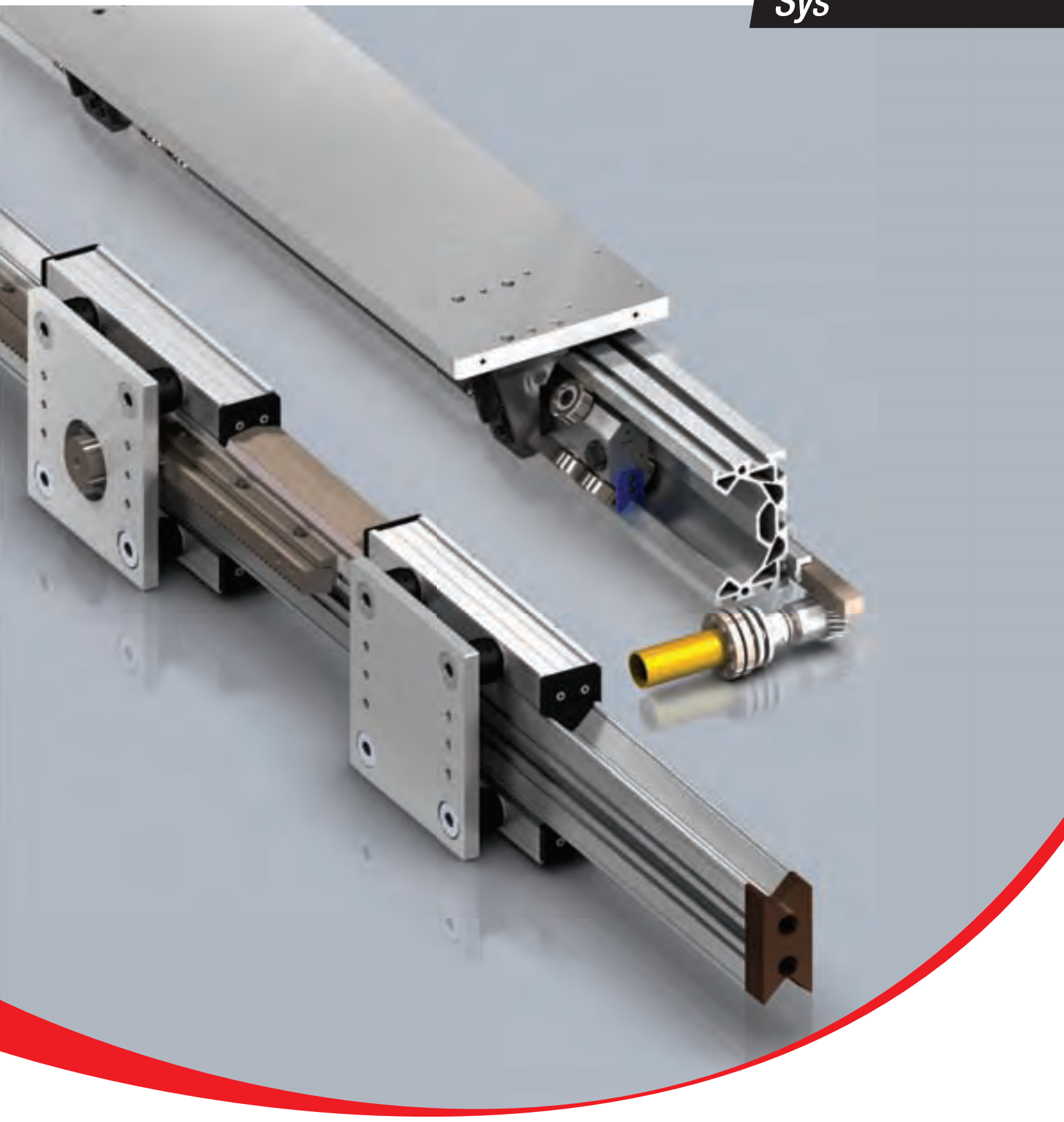
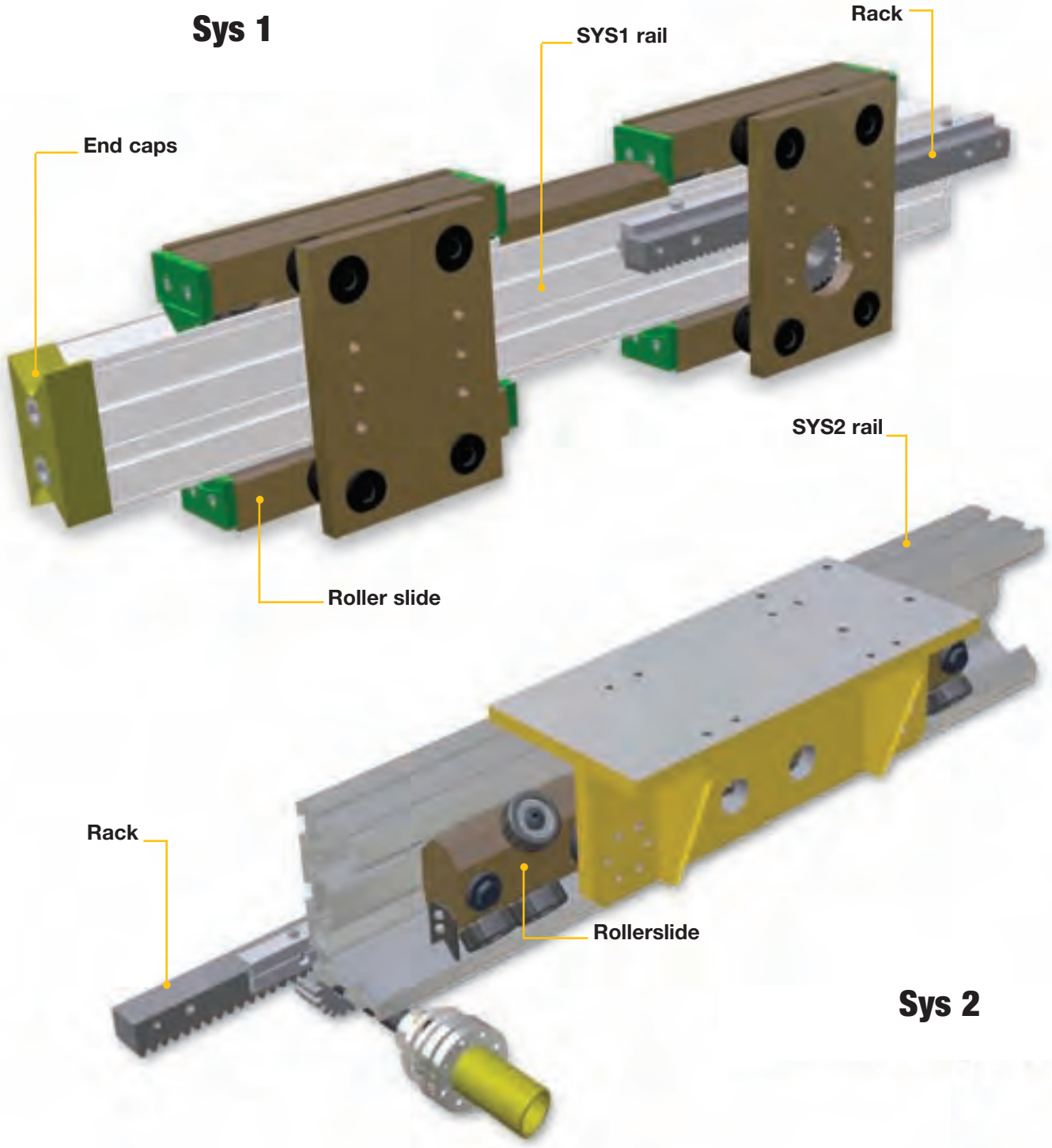
ROLLON®

Linear Evolution

Sys



www.motiontech.com.au



The **Sys** linear transfer system consists of higher mechanical performances aluminium alloy rail with dee-panodising surface and light alloy extruded roller slides.

Innovative features are:

- extremely small section sizes
- modularity of the system achieved by structural
- profiles and wide range of accessories
- special profile section to protect sliding tracks and roller
- slow friction lame contact roller
- shigh resistance polyamide roller surface
- customizable solutions for the applied loads

Applications such as handling units, Cartesian robots and **lift and shift** systems are implemented in the following sectors: wood working industry, **body in white welding** lines, white goods industry, **piping and sheet metal** working industry.

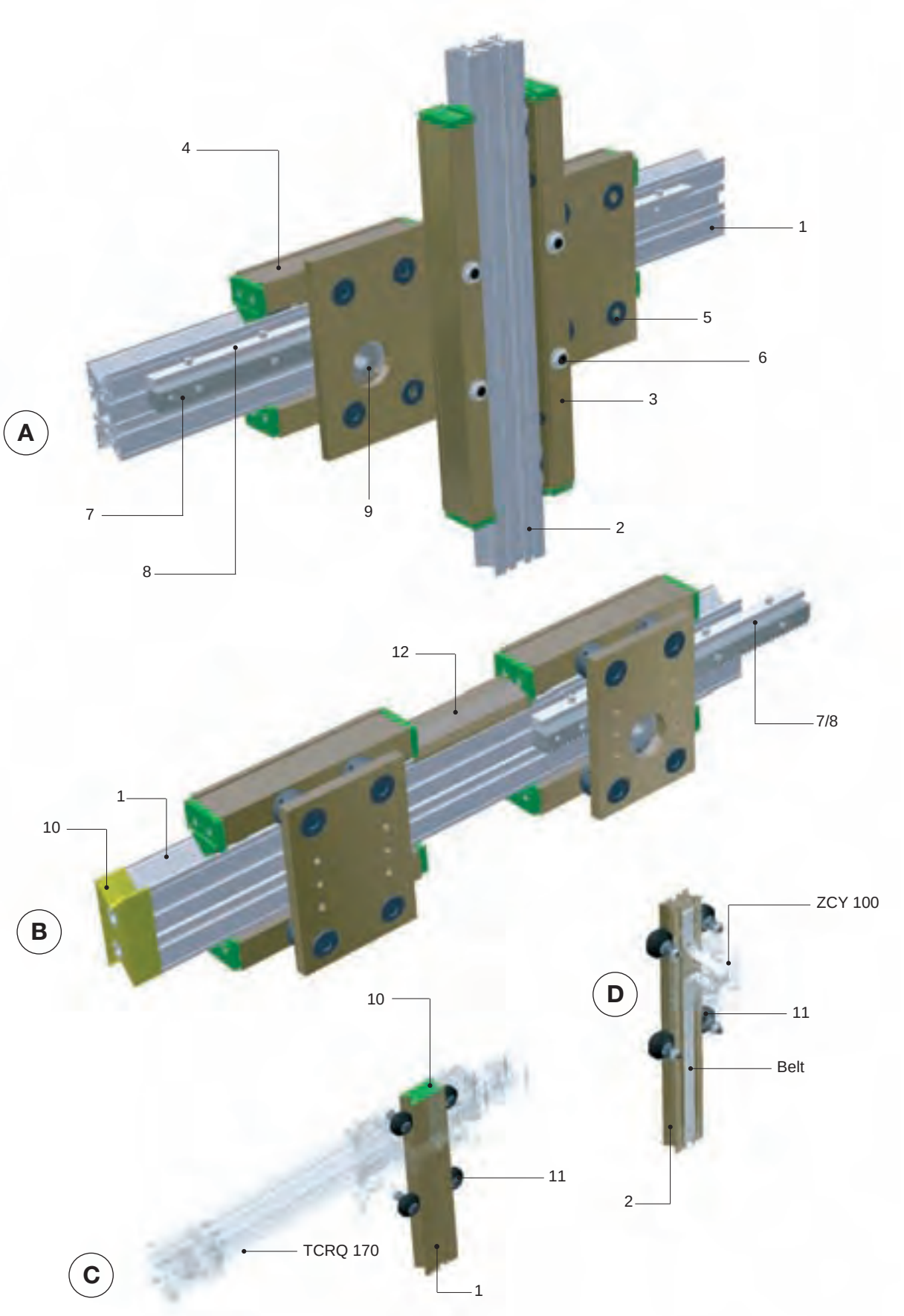
Index

SYS1

SYS2

03-2015 edition
This publication cancels any previous one.

Assembly solutions



“A” Assembly (fixed rail / moving carriage):

This example represents a typical 2-axis system completely manufactured with SYS1 products.
The horizontal traverse is made of a pinion/rack drive, handling a carriage composed of a plate and 4 roller slides. On the plate there is the pinion through hole.
For this kind of system we can supply motor adapter plate and shafts.
The vertical axis is pneumatically operated (not shown).
On demand we can supply cylinder supports as well.

“B” Assembly (moving rail / fixed carriage):

This example represents a system operated by a pinion/rack drive.
The rail runs on roller slides, which can be mounted on plates or fixed structural works.

Legend:
1 – SYS1-M rail (see page 8)
2 – SYS1-P rail (see page 8)
3 – Roller slides L=600mm (see page 11)
4 – Roller slides L=290mm (see page 10)
5 – Type D assembly pins (see page 13)
6 – Type A assembly pins (see page 13)
7 – Rack (see page 20-21)
8 – Rack fixing plate (see page 20)
9 – Toothed pinion
10 – End cap (see page 28)
11 – Ø76 shaped rollers (see page 17)
12 – Guard profile (see page 30)

“C” Assembly:

This example again shows a 2-axis system realised by coupling two Rollon products.
The horizontal axis is composed of a TCRQ 170 linear module (see Modline catalogue).
The vertical axis is pneumatically operated.

“D” Assembly:

This example represents a ZCY100 linear unit (see Modline catalogue).
This module is composed of a SYS rail sliding on rollers, it is toothed belt operated.

Sizing request form

For a proper definition of the application, fill in the scaling request form and send it to the Technical Support Department.

Date: .....Request n°.....

Filled in by.....

Company.....

Address.....

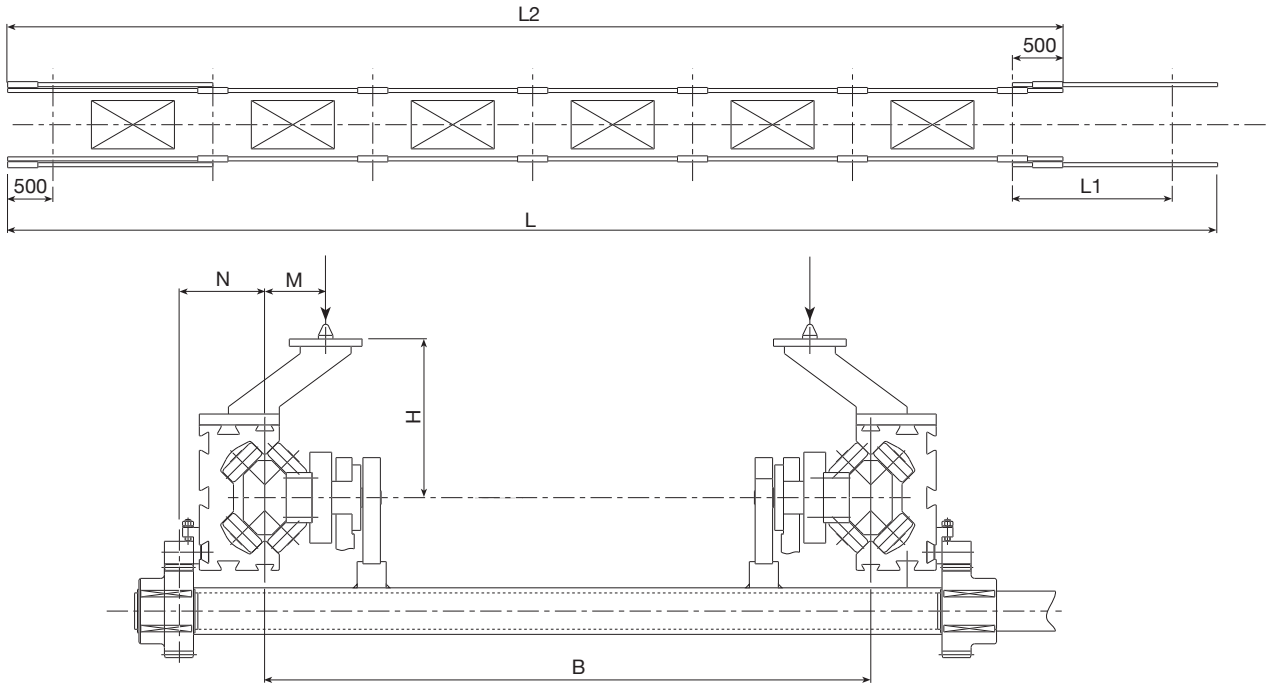
Phone .....Fax.....

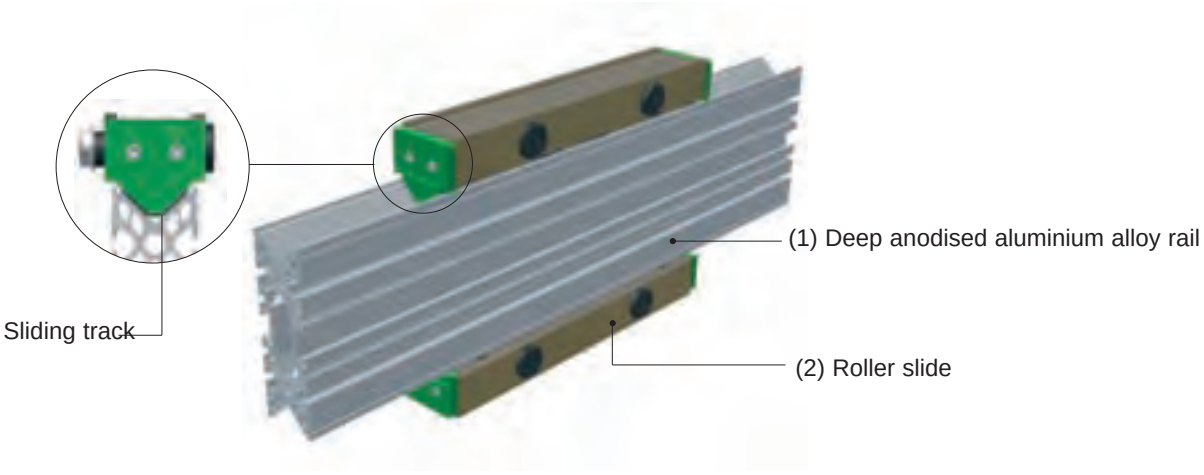
E-mail .....

Lift and shift system with moving rail

SIZING TEMPLATE

Applied load			[Kg]
No. of stations, loading/unloading included			
Total system length	L		[m]
Distance between stations	L1		[m]
Rail length	L2		[m]
Number of the part-holder arms on each rail side	R		
Part-holder arm weight	S		[Kg]
Total load on one rail	P		[Kg]
Distance between rail Y-axis and applied load	M		[mm]
Weight distributed on the rail (e.g.: 50x50 rack)	C		[kg/m]
Distance between rail Y-axis and applied distributed weight	N		[mm]
No. of the rail supports incl. extremity roller slides			
Distance between rail X-axis and applied load	H		[mm]
Number of rail sides			
Distance between rails	B		[mm]
Translation speed	V		[m/s]
Acceleration	a		[m/s^2]
Transport time (one way)	t		[s]





SYStema was conceived to offer the market competitive and easy to use products.
It is used in handling and transfer systems and consists of light aluminium alloy rails (1) and low-friction roller slides (2).
The peculiar feature of this rail is its geometry, that has been developed to optimize torsion performances and reduce reaction stresses on roller slides, with “competitive benefits” accordingly.
In detail, the sliding track configuration allows the system, with an equal torque applied to the rail, to minimize the roller reactions, compared to similar applications with the same overall dimensions, therefore:

• With an equal outside and overhanging load, the number of roller slides decreases as does the cost.

• With an equal roller slides number, the outside applied load and/or the projection can be increased.

The sliding tracks are built to protect the rolling elements and to minimize the width.
This allows the transfer system to be installed close to manufacturing sites.
Besides, the light alloy gives the rails a good mechanical resistance and protects them against aggressive external agents.

SYStema’s assembly possibilities are:

• Moving rail and fixed roller slides

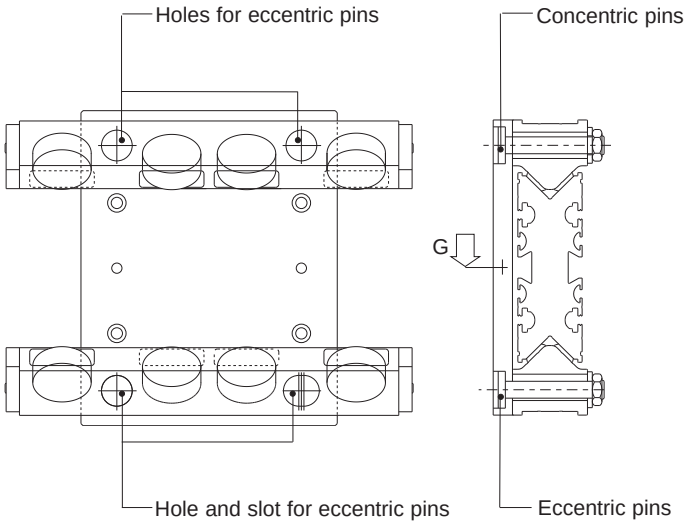
• Fixed roller slides and moving rail

These two solutions, single or combined, can solve many problems; particularly, there is a possibility to produce Cartesian robots, palletizers and portal systems.
Some interesting applications have been realised in automation and robotics fields, plastic moulding, light industry, wood and rubber industry, painting, textile and handling fields.

Assembly specifications

A - Features

This translation system consists of a plate, where roller slides with concentric and eccentric pins are fixed.
The eccentric pins are fitted for adjusting backlash between roller slides and track and have a circular identification mark (1).
The plate is supplied with machining for pin assembly: through holes for concentric pins and hole and slot for eccentric ones.



B - Alignment

Sliding tracks have to be perfectly aligned.

C - Rack assembly

With rack drive it is very important to guarantee the exact parallelism between the sliding system and the rack axis.

D - Roller slide: assembly and adjustment

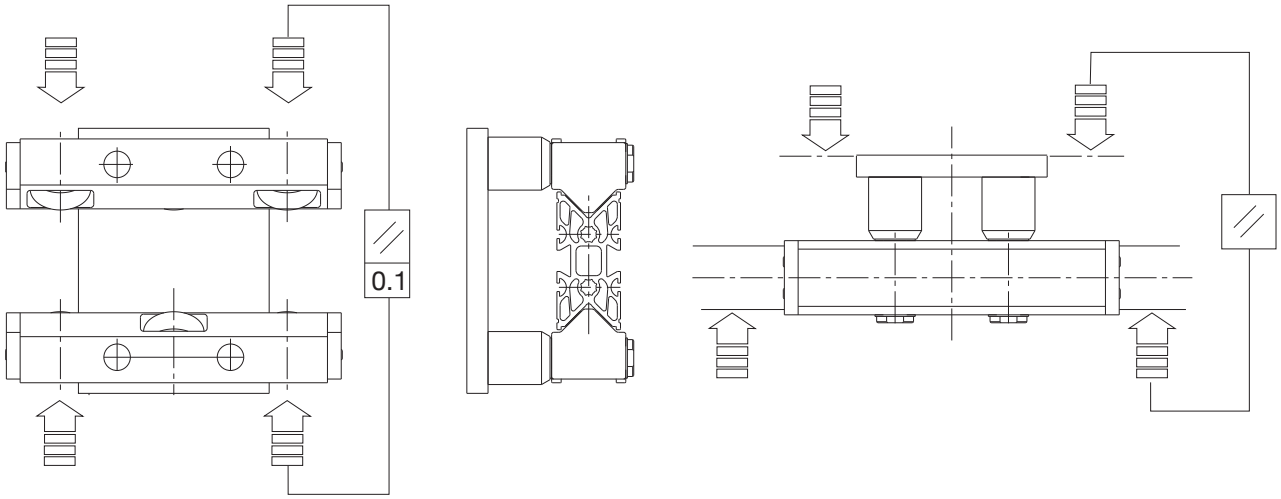
1) Check the alignment and set in contact the concentric pin roller slides and the rail.
2) Take up backlashes: operate on the eccentric pins fixed on the through hole first, then on the one fixed on the slot.
3) Repeat the adjustment.
4) Rotate the reachable rollers with a finger: they must slide without roller slide advancing.
The mean load condition is easily achieved and can damage the plastic coating.
For the simultaneous assembly of several roller slides in one system, it is possible that not all rollers can remain in contact with the rails, because of the rail natural deformation.
In this case it is not advisable to act on the eccentric pins. It is important to check the smoothless capacity of the whole system, which should be high; if not, loosen the pins and repeat the adjustment. While assembling, ensure that the rollers and the rail surfaces are not dirtied by foreign bodies (oil, grease, chips, etc). Always use scrapers or protections (see page 30).

E - Rail protection

The roller slides are provided with spring scrapers, in order to keep the sliding surface clean and to avoid the roller meeting any obstacle while moving.
If this does not meet the customer's requirements, we can supply on demand other track protections, such as bellows, toothed belts or protecting straps.
It is possible to use the guard profile to protect the area between two roller slides (code 302.0147 – see page 30), always available in stock.

F - Tightening specificatons

Make sure all parts are blocked with proper screws, in compliance with the prescribed tightening torque standards.



WARNINGS

The mean load condition is easily achieved and can damage the plastic coating.
To realise a moving carriage with 1 plate and 2 x 3-roller slides, rollers should be symmetrically positioned, respect to the connecting plate.
Check the correct parallelism between the two roller slide opposite plane surfaces and between the roller slide connecting plates and the rail (primary control for the correct 3+3-roller slide assembly), and then block the eccentric pins without moving them.

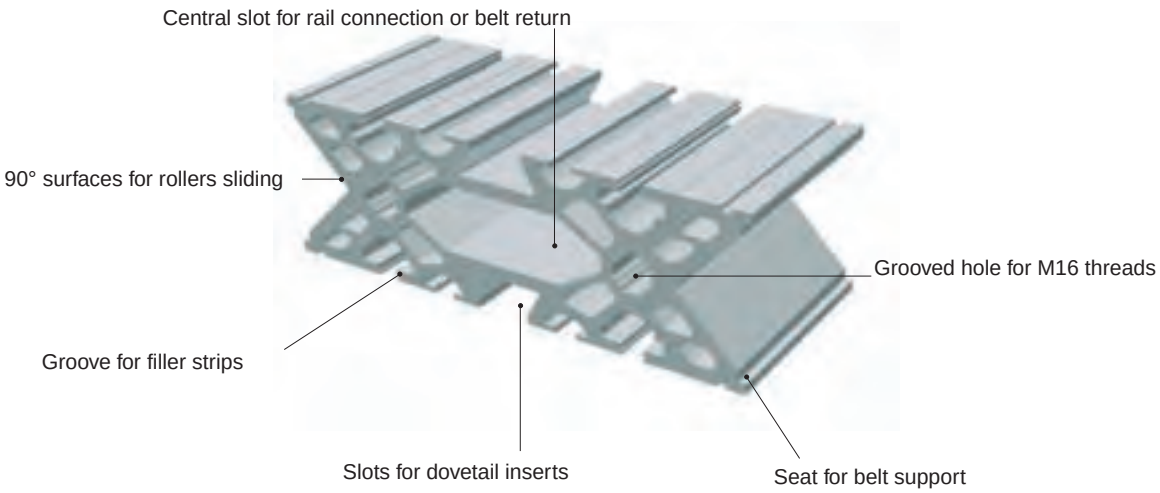
The adjustment of D and E executions (foreseen for one hole roller slides) should be made by acting on the eccentric pin gradually, until the roller contact is reached, without reaching the mean load capacity.
Ensure that rollers keep their low-friction features, and then assemble the scrapers, allowing a minimal back-lash with the rail.

Rail description

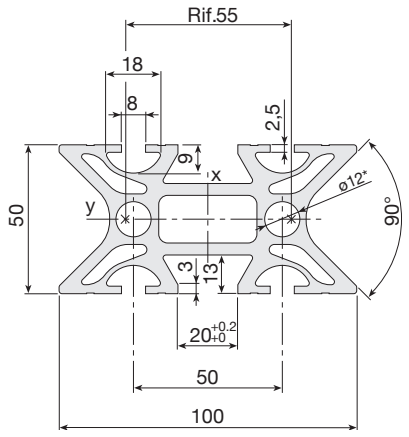
The symmetrical rail section was developed to achieve maximum rigidity. It is provided with slots that can be used with a wide range of accessories always available in stock.
The rail surface is chemically treated, in order to obtain considerable hardness above all on roller sliding tracks, guaranteeing its long-life (a silver anodised rail for light applications is available on demand).

Specifications	
Material:	hard. and temp. racks light alum. alloy (AlMgSi)
Quality:	F = 25
Tolerances:	1/2 UNI 3879
Tear resistance:	R = 245 - 270 N/mm^2
Yelding point:	Rp = 215 - 240 N/mm^2
Hardness:	HB = 70 - 90

Surface treatments:
Deep anodizing (bronze coloured) – thickness > 0,055 mm, or silver coloured anodizing - thickness > 0,015 mm (on demand)

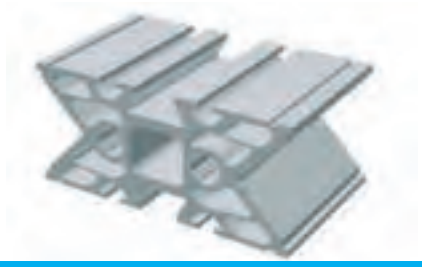


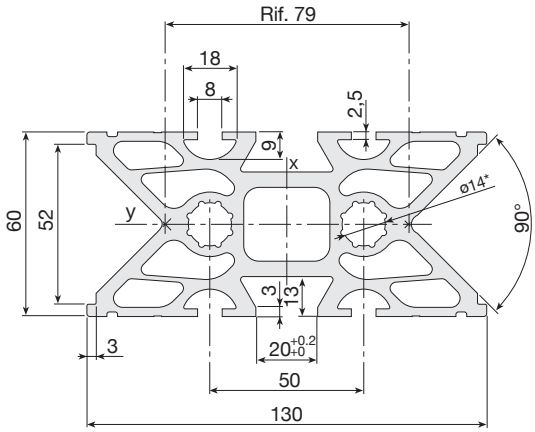
Rail specifications



SYS1-P	Code 302.0714	
Size	50x100	mm
Weight	4,7	Kg/m
Max. length	7,5	m
Moment of inertia (Ix)	1.430.000	mm⁴
Moment of inertia (Iy)	450.000	mm⁴
Bending section mod. (Wx)	28.600	mm³
Bending section mod. (Wy)	18.000	mm³

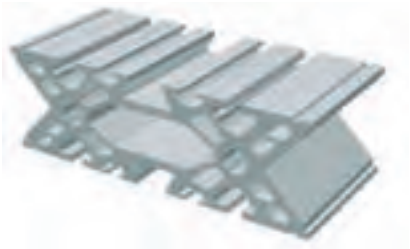
*Holes for M14 thread and PVS® connectors

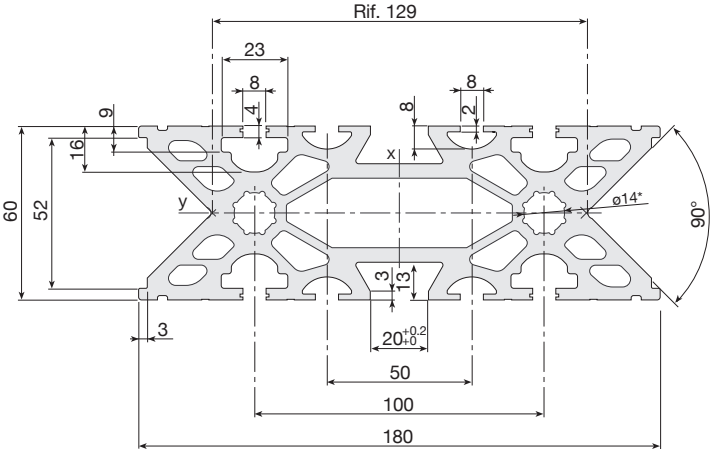




SYS1-M	Code 302.0113	
Size	60x130	mm
Weight	7,8	Kg/m
Max. length	7,5	m
Moment of inertia (Ix)	3.560.000	mm⁴
Moment of inertia (Iy)	1.005.000	mm⁴
Bending section module (Wx)	54.708	mm³
Bending section module (Wy)	33.500	mm³

*Holes for M16 thread and PVS® connectors

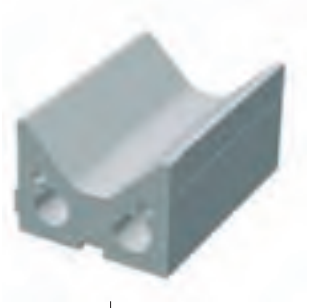


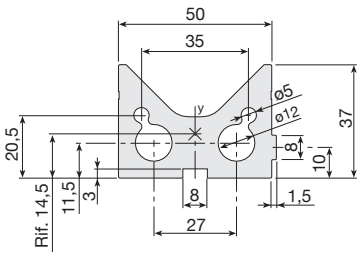


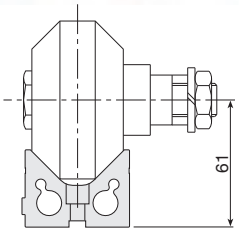
SYS1-G	Code 302.0001	
Size	60x180	mm
Weight	12	Kg/m
Max. length	7,5	m
Moment of inertia (Ix)	12.350.000	mm⁴
Moment of inertia (Iy)	1.600.000	mm⁴
Bending section module (Wx)	137.220	mm³
Bending section module (Wy)	53.330	mm³

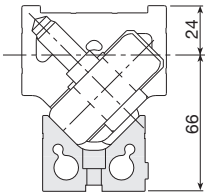
*Holes for M16 thread and PVS® connectors

Single track guide



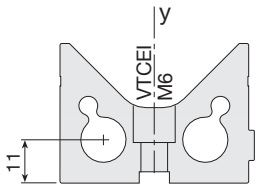




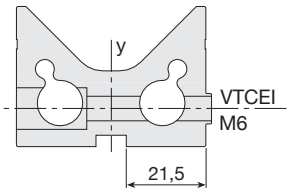


SYS1-H	Code 302.0552	
Weight	3,2	Kg/m
Max. length	6	m
Moment of inertia (lx)	103.500	mm⁴
Moment of inertia (ly)	292.000	mm⁴

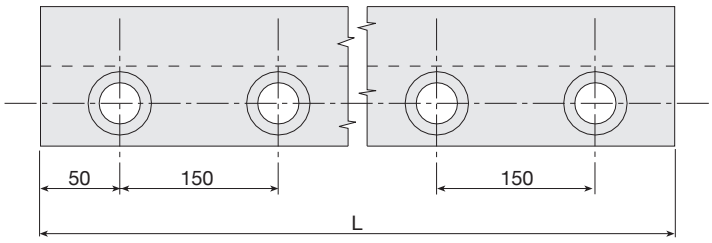
Special machining on demand



302.0895/L

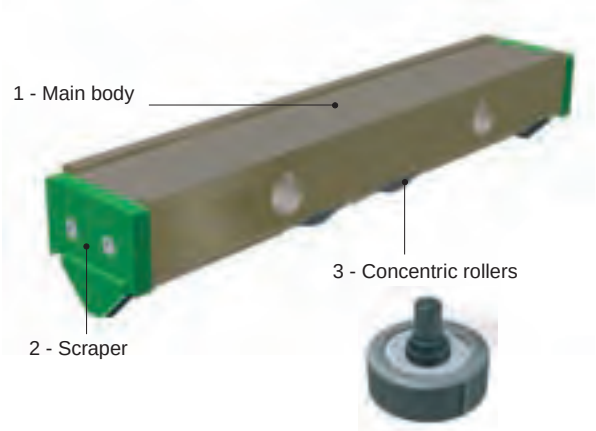


302.0896/L



Roller slide description

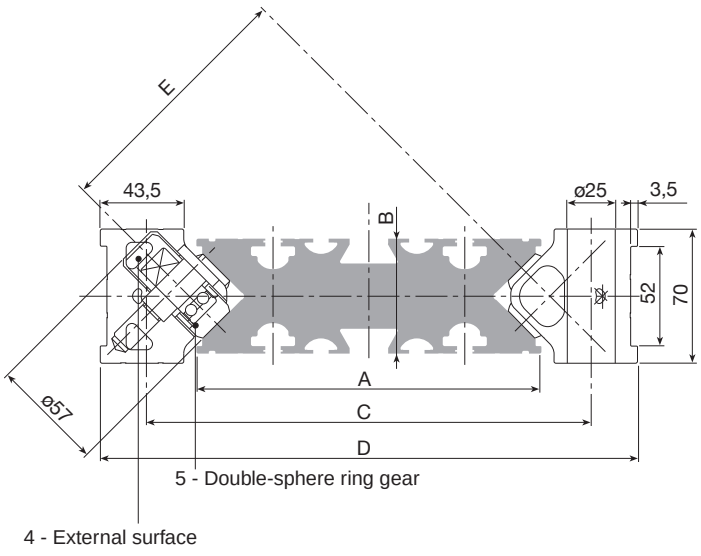
The main body (1) is made of a high strength aluminium alloy; it can be delivered with 2, 3, 4 and 6 concentric rollers (3) and equipped with scraper (2).
The roller slide is provided with double-sphere ring gear bearings (5), lubrication-free, and neoprene O-rings, to ensure the lowest friction coefficient. The roller external surface is covered with a low-friction plastic material, which guarantees the maximum noise reduction and lowest possible rail wear. Roller slides are mounted on a base plate by concentric and eccentric pins. It is very important to fix eccentric pins on the lowest load side.
A 4-roller slide version with central assembly pin is also available. This pin allows a well balanced load distribution on each bearing through a slight oscillation (type 7).
Type D and E pins (see page 13) are generally used in mounting double-rail assemblies, in order to compensate any parallel error.



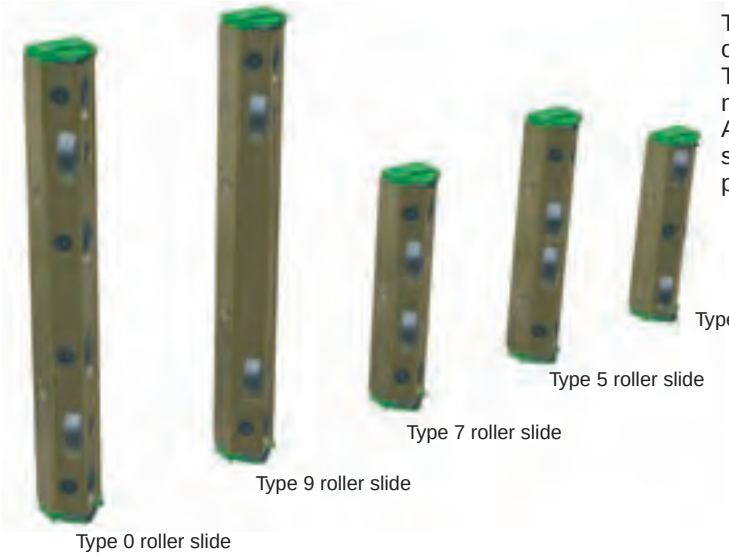
Type	A	B	C	D	E
SYS 1-P	100	50	158	206	81
SYS 1-M	130	60	182	230	98
SYS 1-G	180	60	232	280	134

Roller specifications

Specifications		
Cw	10.400	N
C0w	6.600	N
Admissible Fr	1.400	N
Max. speed	5	m/s



Roller slide size



Type 0 roller slide

Type 9 roller slide

Type 7 roller slide

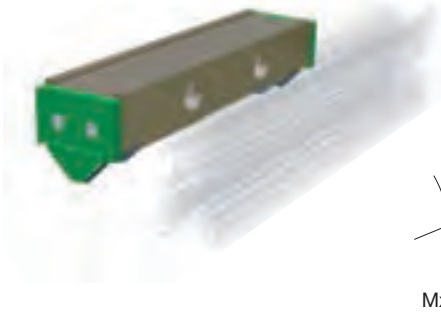
Type 5 roller slide

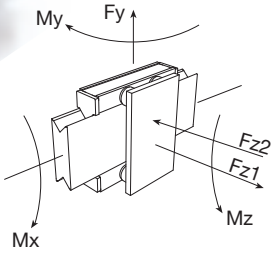
Type 3 roller slide

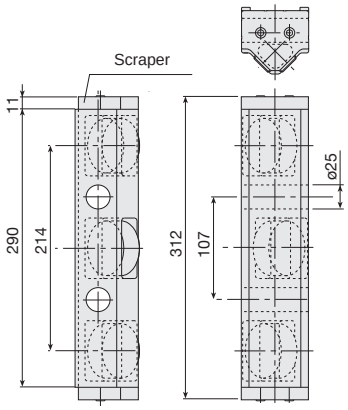
The stated dynamic values do not correspond to the theoretical max. load capacities.
They already consider safety factors proper for automation machinery.
All mentioned data refer to the peak efficiency of each stress. Should more peak stresses occur at the same time, please contact our technical dept.

Type 3

3-roller slide, fixed assembly with 2 pins
centre-distance: 107mm
ATTENTION: please refer to “Warnings” on page 7 for a correct assembly.





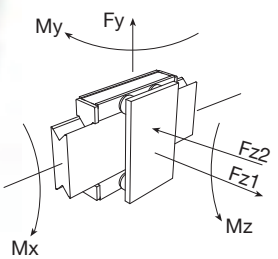


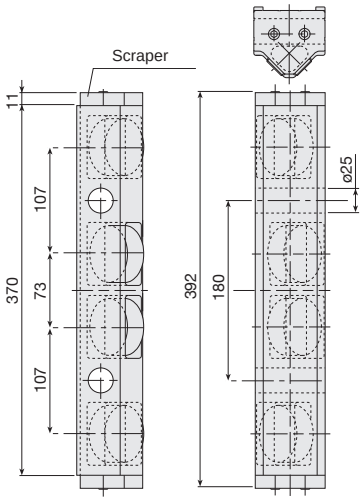
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_y[N]	F_{z1}[N]	F_{z2}[N]
SYS1-M	257	128	128	2000	2000	3950
SYS1-G	343	128	128	2000	2000	3950

Specifications	
Number of rollers	3
Weight	about 3 Kg
Spare part	Code 304.0716

Type 5

4-roller slide, fixed assembly with 2 pins
centre-distance: 180mm





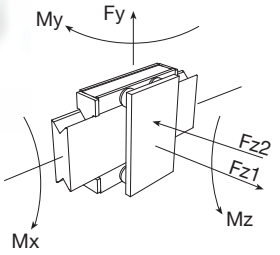
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_y[N]	F_{z1}[N]	F_{z2}[N]
SYS1-M	257	355	315	3950	3950	3950
SYS1-G	343	355	315	3950	3950	3950

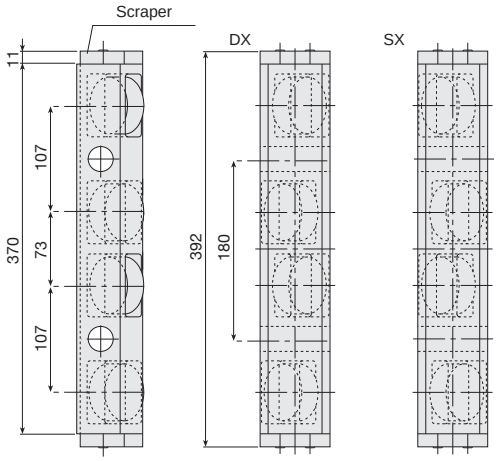
Specifications	
Number of rollers	4
Weight	about 4 Kg
Spare part	Code 304.0717

Alternative version

Roller slide with alternate rollers for vertical and/or overhanging horizontal rail applications

(Please state plate, pins and roller slide apart).
Position the roller slide properly while assembling.



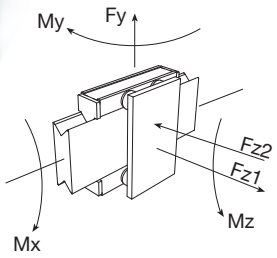


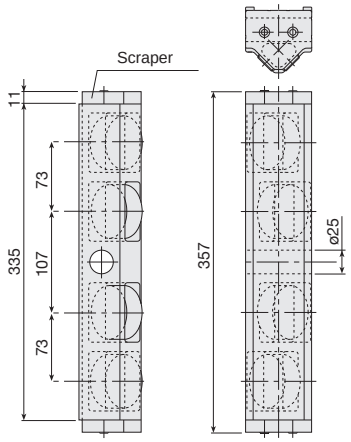
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_y[N]	F_{z1}[N]	F_{z2}[N]
SYS1-M	257	567	315	3950	3950	3950
SYS1-G	343	567	315	3950	3950	3950

Components	
Right roller slide	Code 304.0837
Left roller slide	Code 304.0866

Type 7

4-roller slide, assembly with 1 self-aligning pin.



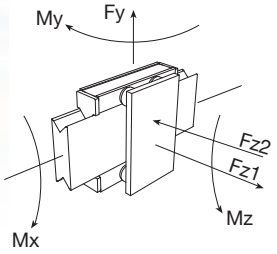


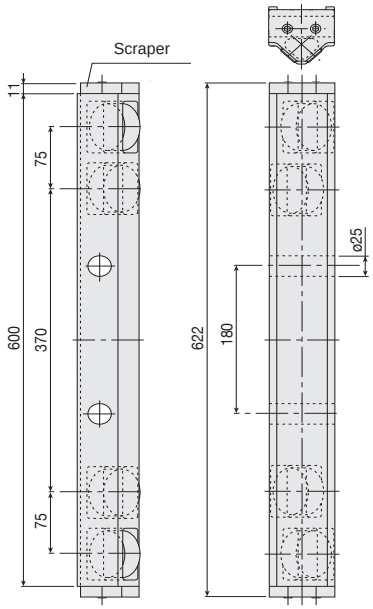
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_y[N]	F_{z1}[N]	F_{z2}[N]
SYS1-M	257	355	-	3950	3950	3950
SYS1-G	343	355	-	3950	3950	3950

Specifications	
Number of rollers	4
Weight	about 4 Kg
Spare part	Code 304.0718

Type 9

4-roller slide, fixed assembly with 2 pin
centre-distance: 180mm



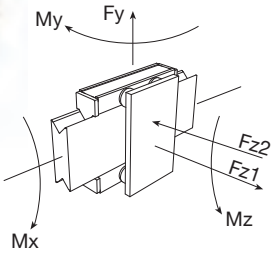


	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_y[N]	F_{z1}[N]	F_{z2}[N]
SYS1-M	257	878	668	3950	3950	3950
SYS1-G	343	878	668	3950	3950	3950

Specifications	
Number of rollers	4
Weight	about 6,5 Kg
Spare part	Code 304.0719

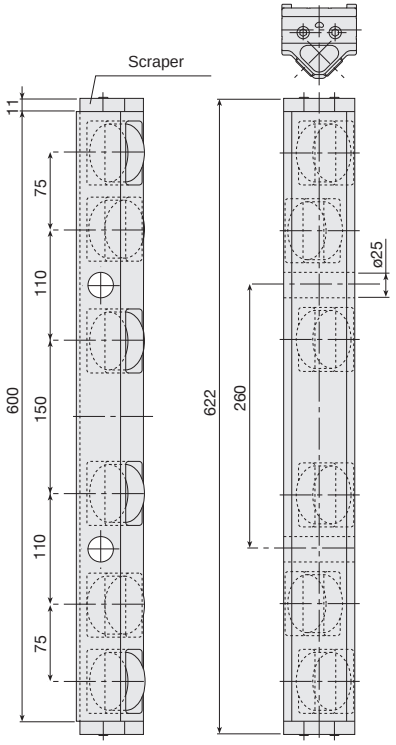
Type 0

6-roller slide, fixed assembly with 2 pins
centre-distance: 260mm
On request it is possible to ask for this roller slide equipped with 4 external rollers only (code 304.0934).



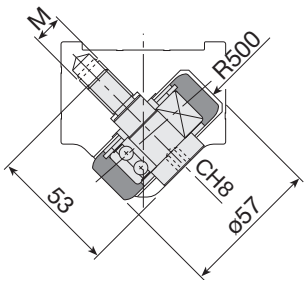
	M_{x1}[Nm]	M_{x2}[Nm]	M_y[Nm]	M_z[Nm]	F_y[N]	F_{z1}[N]	F_{z2}[N]
SYS1-M	257	411	950	668	3950	6317	3950
SYS1-G	343	548	950	668	3950	6317	3950

Specifications	
Number of rollers	6
Weight	about 7 Kg
Spare part	Code 304.0720



Spare part pin with roller

In case of maintenance, by reassembling the pin, do not lubricate the thread and apply **a tightening torque of max 55 Nm.**

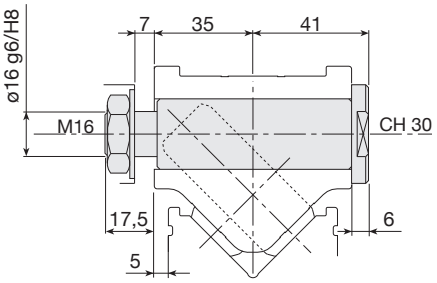


Components	
Spare part pin with Ø 57 roller	Code 305.0958
Spare part with stainless steel pin	Code 305.0951

Assembly pins

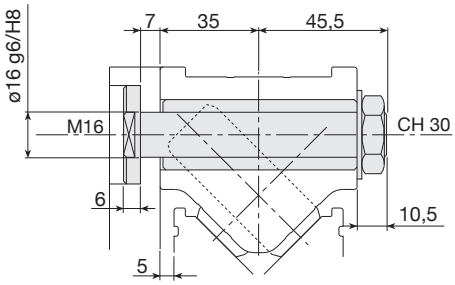
Type N assembly pins

Material: blued steel. Special executions on demand.
Some versions are also available in AISI 303 stainless steel
ATTENTION: please refer to “Warnings” on page 7 for a correct assembly.



Specifications	
Weight	0,4 Kg circa
Concentric	Code 336.1001
Eccentric	Code 336.1002

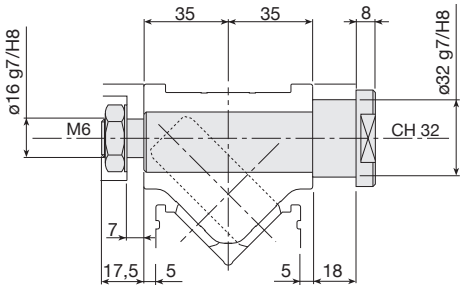
Type A assembly pins



Specifications	
Weight	about 0,4 Kg
Concentric	Code 336.0701
Eccentric	Code 336.0702

Type F assembly pins

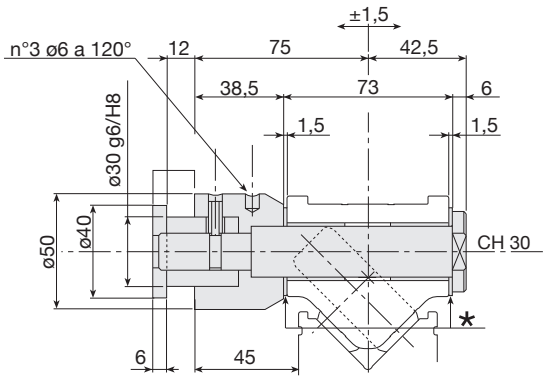
For double plate carriage.



Specifications	
Weight	about 0,5 Kg
Concentric	Code 336.0738
Eccentric	Code 336.0739

Type D self-aligning pins

For parellelism error compensation (±1,5 mm).

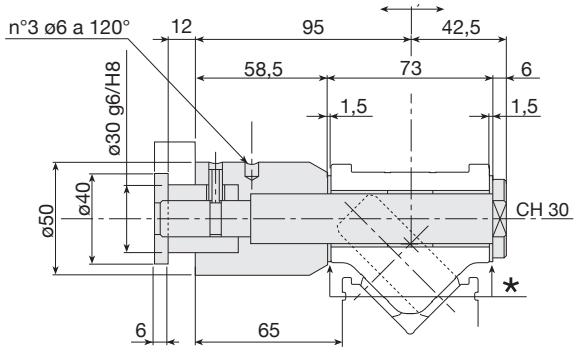


* **NB:** remove the two washers to obtain a roller slide self-alignment of ±1,5mm.

Specifications	
Weight	about 1,3 Kg
Concentric	Code 336.0707
Eccentric	Code 336.0708

Type E self-aligning pins

For parellelism error compensation (±1,5 mm).



* **NB:** remove the two washers to obtain a roller slide self-alignment of ±1,5mm.

Specifications	
Weight	about 1,6 Kg
Concentric	Code 336.0709
Eccentric	Code 336.0710

Connecting plates

Material: 6082 aluminium alloy.
ATTENTION: eccentric pins must be mounted on the side with the lower load.

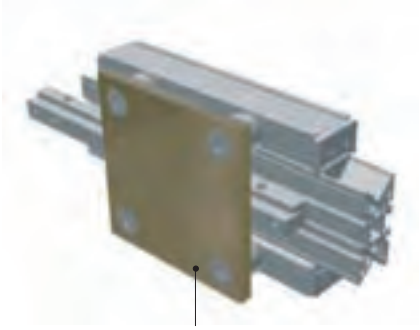


Plate for type D-E pins

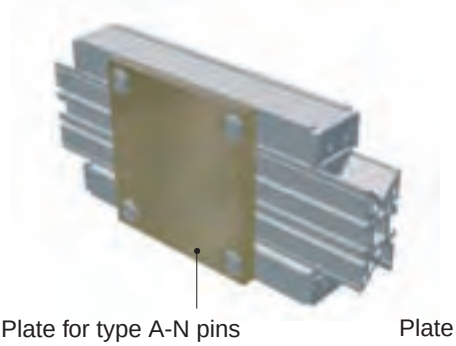


Plate for type A-N pins

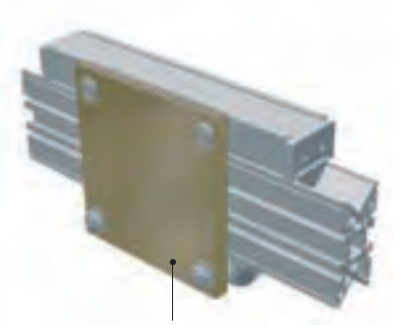


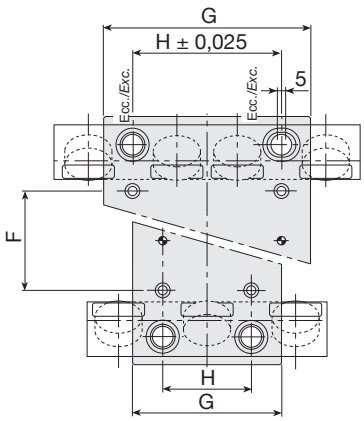
Plate for type A-N pins and V-shaped rollers

Plate for type D-E pins

When a “fixed carriage/moving rail” application is required, where the load (P) is applied onto the bar, please arrange pins as shown in figure no.1.

When a “moving carriage/fixed rail” application is required, where the load (P) is applied onto the carriage, please arrange pins as shown in figure no. 2

Fig. 1



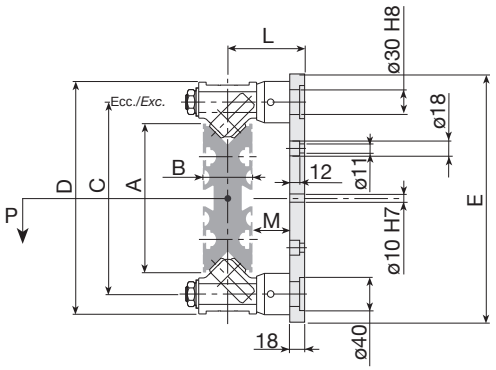
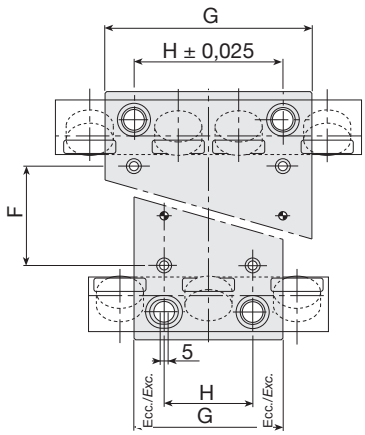
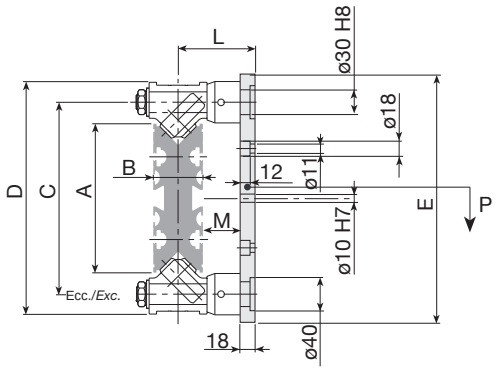


Fig. 2





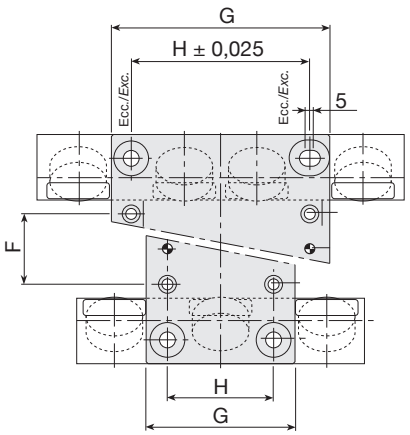
Roller slide	Pins	Rail	A	B	C	D	E	F	G	H	L	M	Plate
Type 5-9	D	SYS1-M	130	60	182	230	250	70	250	180	93	45	315.0660
Type 5-9	D	SYS1-G	180	60	232	280	300	100	250	180	93	45	315.0659
Type 5-9	E	SYS1-M	130	60	182	230	250	70	250	180	113	65	315.0660
Type 5-9	E	SYS1-G	180	60	232	280	300	100	250	180	113	65	315.0659
Type 3	D	SYS1-M	130	60	182	230	250	70	180	107	93	45	315.0662
Type 3	D	SYS1-G	180	60	232	280	300	100	180	107	93	45	315.0661
Type 3	E	SYS1-M	130	60	182	230	250	70	180	107	113	65	315.0662
Type 3	E	SYS1-G	180	60	232	280	300	100	180	107	113	65	315.0661

Plate for type A-N pins

When a “fixed carriage/moving rail” application is required, where the load (P) is applied onto the bar, please arrange pins as shown in figure no. 3.

When a “moving carriage/fixed rail” application is required, where the load (P) is applied on the carriage, please arrange pins as shown in figure no. 4

Fig. 3



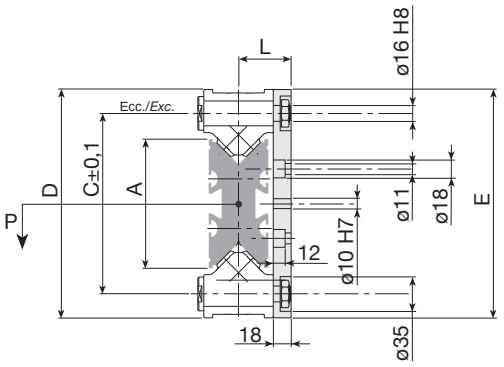
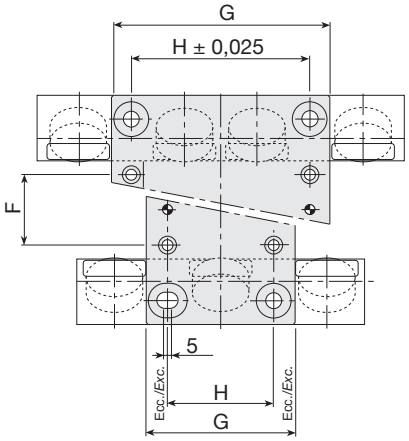
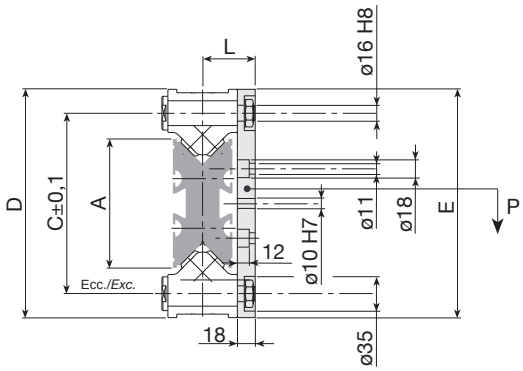


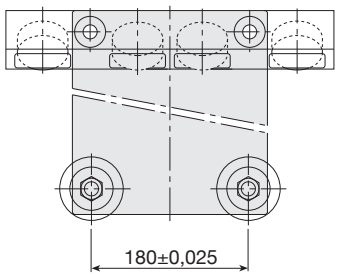
Fig. 4

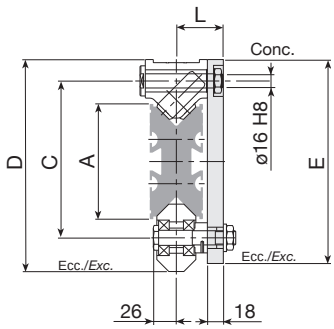




Roller slide	Pins	Rail	A	B	C	D	E	F	G	H	L	M	Plate
Type 5-9	A-N	SYS1-M	130	60	182	230	230	70	220	180	53	5	315.0656
Type 5-9	A-N	SYS1-G	180	60	232	280	280	100	220	180	53	5	315.0655
Type 3	A-N	SYS1-M	130	60	182	230	230	70	150	107	53	5	315.0658
Type 3	A-N	SYS1-G	180	60	232	280	280	100	150	107	53	5	315.0657

Plate for type A-N pins and V-shaped rollers

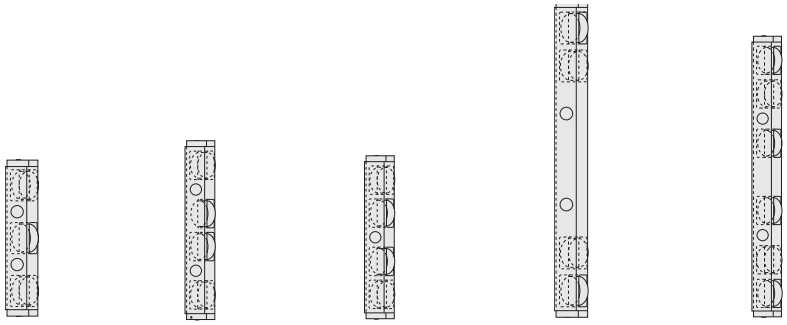


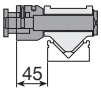
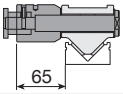
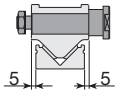


Roller slide	Pins	Rail	A	B	C	D	E	F	G	H	L	Plate
Type 5-9 + *shaped roll.*	**A-N**	SYS1-M	130	60	177	239	230	-	220	180	53	315.1032
Type 5-9 + *shaped roll.*	**A-N**	SYS1-G	180	60	227	289	280	-	220	180	53	315.1031

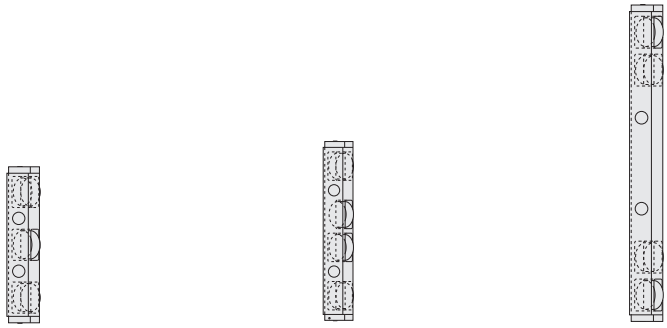
Order code table

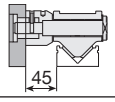
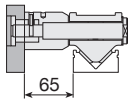
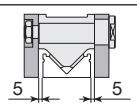
Roller slides and pins



			3	5	7	9	0
	**N**	con.	304.0243	304.0245	-	304.0726	304.0727
		exc.	304.0303	304.0305	-	304.0728	304.0729
	**A**	con.	304.0203	304.0205	-	304.0601	304.0602
		exc.	304.0263	304.0265	-	304.0617	304.0618
	**D**	con.	304.0221	304.0223	304.0225	304.0607	304.0608
		exc.	304.0281	304.0283	304.0285	304.0623	304.0624
	**E**	con.	304.0229	304.0231	304.0233	304.0609	304.0610
		exc.	304.0289	304.0291	304.0293	304.0625	304.0626
	**F**	con.	304.0237	304.0239	-	304.0611	304.0612
		exc.	304.0297	304.0299	-	304.0627	304.0628

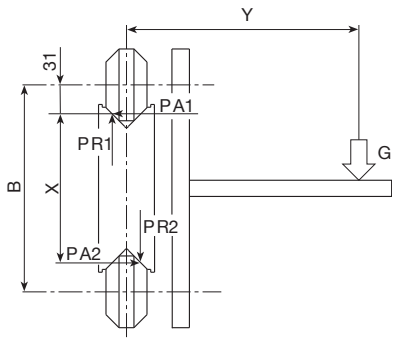
Roller slides equipped with pins and plate



		Rail	3	5	9
	**N**	SYS1-M	304.0423	304.0425	304.0735
		SYS1-G	304.0363	304.0365	304.0734
	**A**	SYS1-M	304.0383	304.0385	304.0641
		SYS1-G	304.0323	304.0325	304.0633
	**D**	SYS1-M	304.0401	304.0403	304.0644
		SYS1-G	304.0341	304.0343	304.0636
	**E**	SYS1-M	304.0409	304.0411	304.0645
		SYS1-G	304.0349	304.0351	304.0637
	**F**	SYS1-M	304.0417	304.0419	304.0646
		SYS1-G	304.0357	304.0359	304.0638

Material: black high-resistance polyamide coating.
Eccentric or concentric blued steel pin.

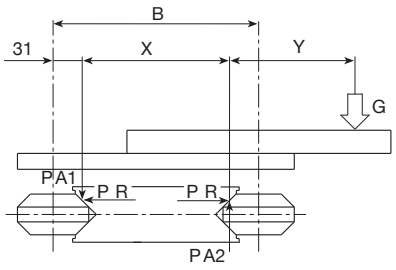
On demand: white polyacetic coating (high hardness); longer pins.



$$P_{A1} = \frac{G \bullet Y}{X} = P_{A2}$$

$$P_{R1} = G + P_{A1}$$

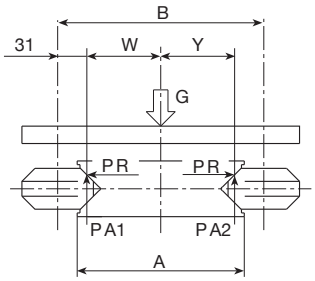
$$P_{R2} = P_{A2}$$



$$P_{A1} = \frac{G \bullet Y}{X}$$

$$P_{A2} = P_{A1} + G$$

$$X = A - 20 \text{ mm}$$



$$P_{A1} = \frac{G \bullet Y}{W + Y}$$

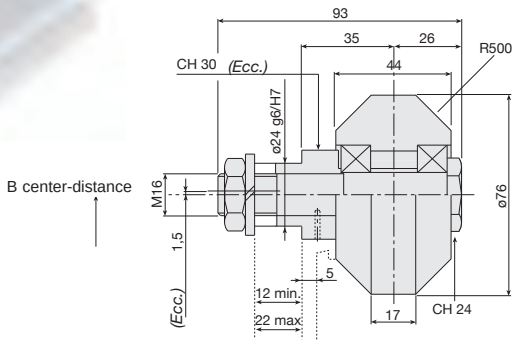
$$P_{A2} = G - P_{A1}$$

B center-distances

SYS1-H	SYS1-P	SYS1-M	SYS1-G	Code
61	148	172	222	305.0730/1
61	148	172	222	305.0732/3
61	148	172	222	305.0747/8
57	140	164	214	305.1570/1

Ø76 shaped rollers

Material: high-resistance black polyamide coating.
Eccentric or concentric blued steel pin.



Middle version roller (radial bearings)

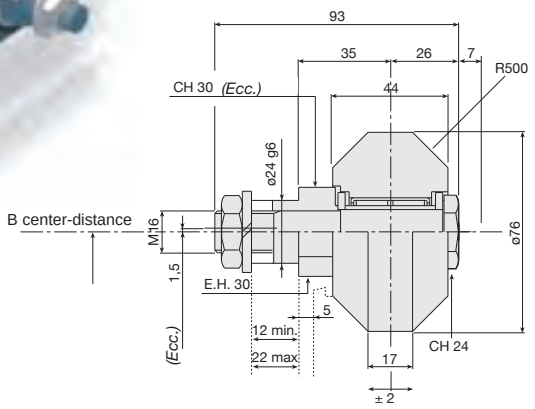
Type	Weight [kg]	PR [N]	PA [N]	Speed [m/s]	Code
Ecc.	0,6	800	200	2	305.0730
Conc.	0,6	800	200	2	305.0731

Heavy version roller (skew contact bearings)

Type	Weight [kg]	PR [N]	PA [N]	Speed [m/s]	Code
Ecc.	0,6	1200	500	2	305.0732
Conc.	0,6	1200	500	2	305.0733

Ø76 V-shaped self-aligning rollers

External coating with ±3 mm end float.
For parallel rail application.
To be coupled with shaped roller (see page 17).

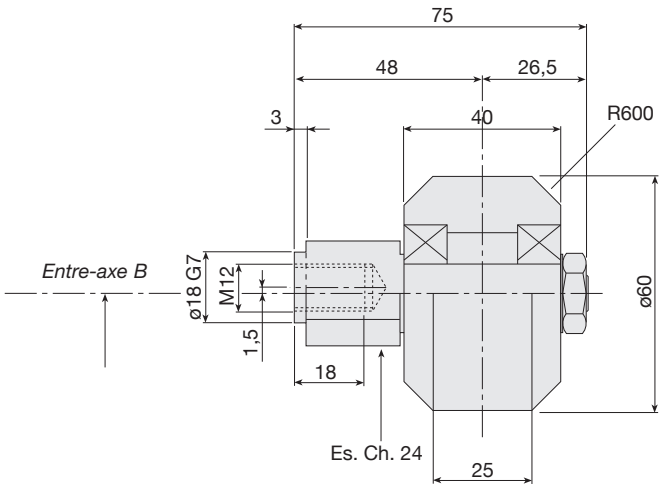


Floating roller

Type	Weight [kg]	PR [N]	PA [N]	Speed [m/s]	Code
Ecc.	0,6	1400	0	2	305.0748
Conc.	0,6	1400	0	2	305.0747

Ø60 V-shaped rollers

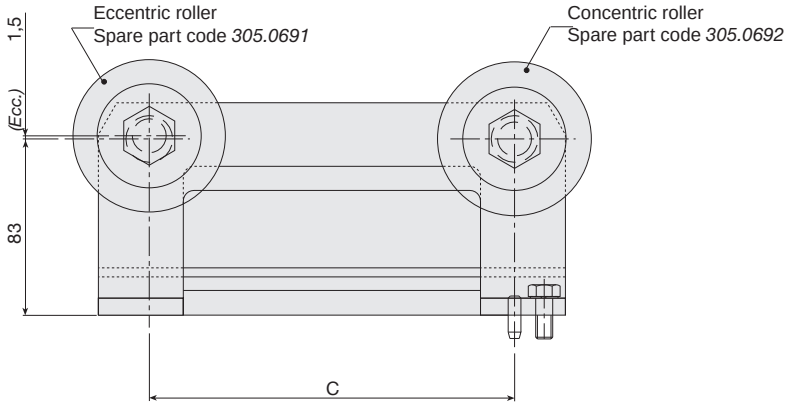
Material: high-resistance black polyamide coating.
Drilled, threaded, chromium plated steel enbloc pin.
Clamping screw not included.

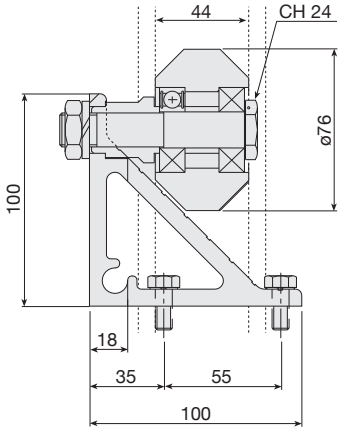


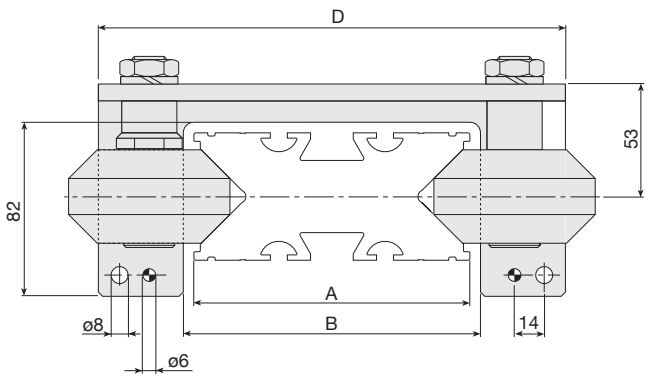
Type	Weight [kg]	PR [N]	PA [N]	Speed [m/s]	Code
Ecc.	0,5	500	120	2	305.1570
Conc.	0,5	500	120	2	305.1571

Angular support

Angular support complete with 2 V-shaped rollers for SYS1 rails. Suitable for applications with rail mounted orthogonally respect to the plate plane.





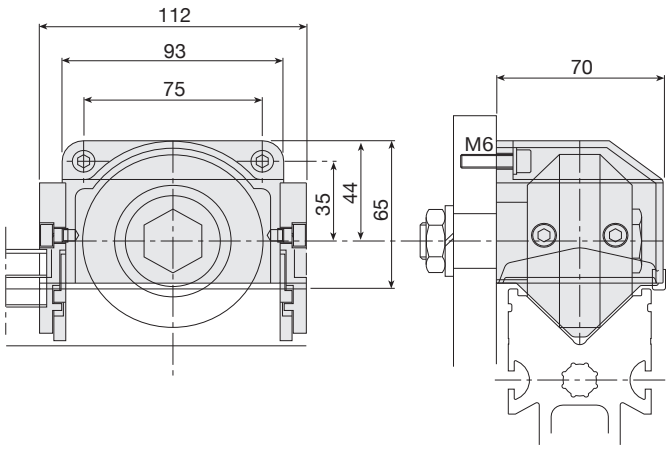


Rail	A	B	C	D	Weight [Kg]	Code
SYS1-P	100	110	148	195	1,6	304.1017
SYS1-M	130	140	172	220	1,8	304.0476
SYS1-G	180	190	222	270	2	304.0667

Roller guard

Code 312.1572

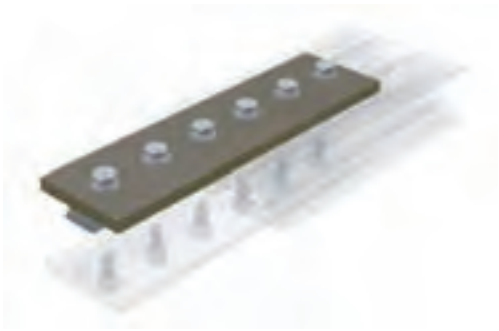
Ø76 shaped roller guard in black stiffened plastic material, complete with grooved scraper for guard profile.
(see page 30).

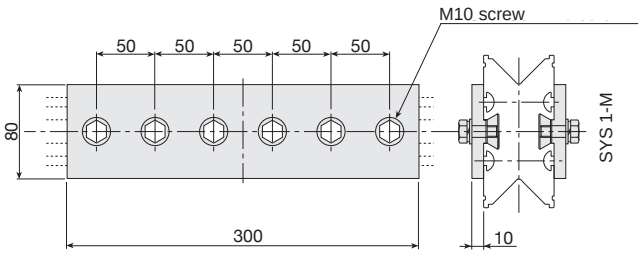


Rail connecting plates

SYS1-M connecting plate

Material: bronze coloured anodized 6082 aluminium alloy.

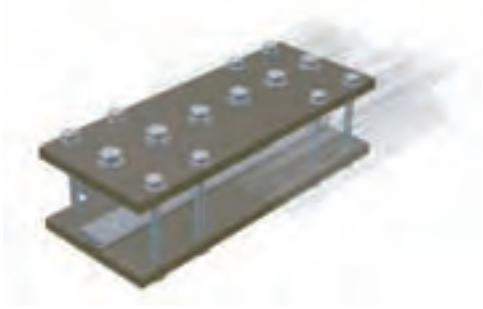


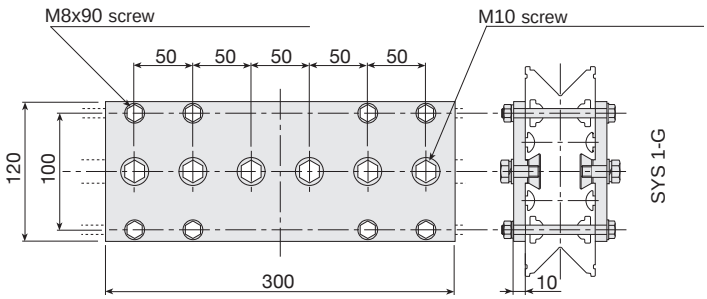


Double connecting plate	Code
Complete set	336.0198
Single plate	315.0724

SYS1-G connecting plate

Material: bronze coloured anodized 6082 aluminium alloy.



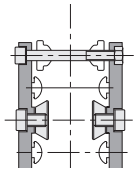


Double connecting plate	Code
Complete set	336.0188
Single plate	315.0713

N.B.: Please ask for code ..-62/… or …-63/…
to get the rail drilled (see page 31)

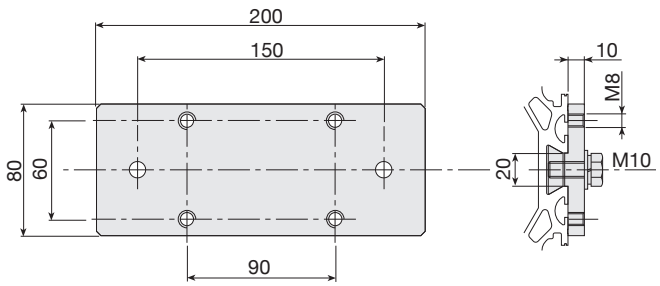
On demand

Plate for built in screws and nuts	Code
Double plate	336.0879
Single plate	315.0882



Accessory fixing plate

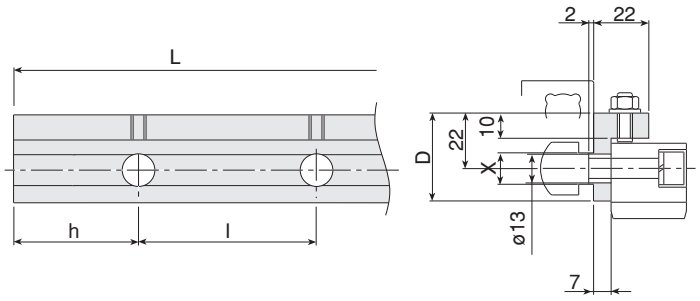
Material: bronze coloured anodiz ed 6082 aluminium alloy.



For SYS1 rail	Code
Complete set	336.0666
Single plate	315.0185

Rack fixing plate

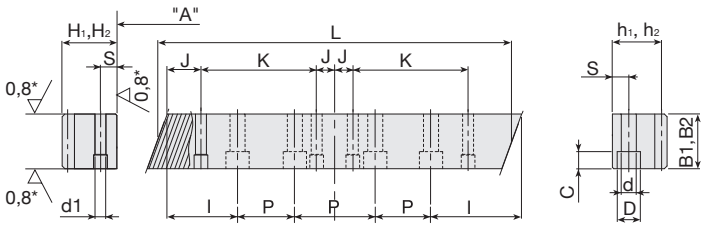
Obtained by extrusion.
Material: natural anodized 6082 aluminium alloy.



Module	D	L	l	h	Hole no.	X	Code
2	35	50	-	25	1	8	315.0005
2	35	243	126,1	56,35	2	8	215.0025
2	35	491	126,1	56,35	4	8	215.0026
3	35	50	-	25	1	8	315.0583
3	35	243	126,1	56,35	2	8	215.2368
3	35	491	126,1	56,35	4	8	215.2137
3	35	50	-	25	1	20	315.0578
3	35	243	126,1	56,35	2	20	315.0001
3	35	491	126,1	56,35	4	20	315.0002
4	39	243	125,3	57,55	2	20	315.0003
4	39	491	125,3	57,55	4	20	315.0004

Helical Teeth (right-hand 19° 31' 42", press. angle 20°)

- KBD CK 45: normalized, milled
- KTD CK 45: normalized, induction hardened teeth
- KFD CK 45: normalized, hardened teeth, 3 ground sides
- KSD CK 45: normalized, hardened, induction, ground teeth and sides
- KRD AISI 984: induction hardened alloyed steel, ground sides and teeth



*machining of surfaces **NOT** available on version KBD - KTD

Treatment	Rs	Hardness	Quality	Precision
KBD CK 45	650 N/mm^2	-	Q8	0,085mm/300mm
KTD CK 45	650 N/mm^2	≥ HRC 56	Q9	0,085mm/300mm
KSD CK45	> 650 N/mm^2	≥ HRC 56	Q6	0,025mm/300mm
KRD AISI 9840	> 900 N/mm^2	HRC 60 c.a.	Q6	0,025mm/300mm

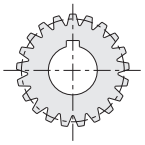
Mod.	H1	H2	B1	B2	L	I	J	d	D	C	d1(H7)	S	h1	h2	P	K	p.[kg]	Code
2	25	24	25	24	500	62,5	35	7	11	7	6	8	23	22	125	430	2,2	**211.2429**
2	25	24	25	24	1000	62,5	35	7	11	7	6	8	23	22	125	430	4,3	**211.2363**
3	30	29	30	29	500	62,5	35	10	15	9	8	9	27	26	125	430	3,0	**211.2367**
3	30	29	30	29	1000	62,5	35	10	15	9	8	9	27	26	125	430	6,1	**211.2351**
4	40	39	40	39	500	62,5	35	10	15	9	8	12	36	35	125	430	5,5	**211.2366**
4	40	39	40	39	1000	62,5	35	10	15	9	8	12	36	35	125	430	10,9	**211.2349**

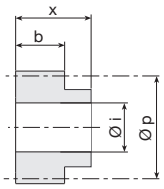
Code 211.2426 / BD

└ Teeth and treatment features

Pinion Gears

- ND Pinion with helical teeth
- RD Pinion with ground helical teeth





Type	Material	Surf. treat.	RS	Quality	Hardness
ND	Special steel	tempered and hardened	>900 N/mm^2	Q8	HRC 50
RD	16MnCr5	temp. induction-hardened	>900 N/mm^2	Q7	HRC 60

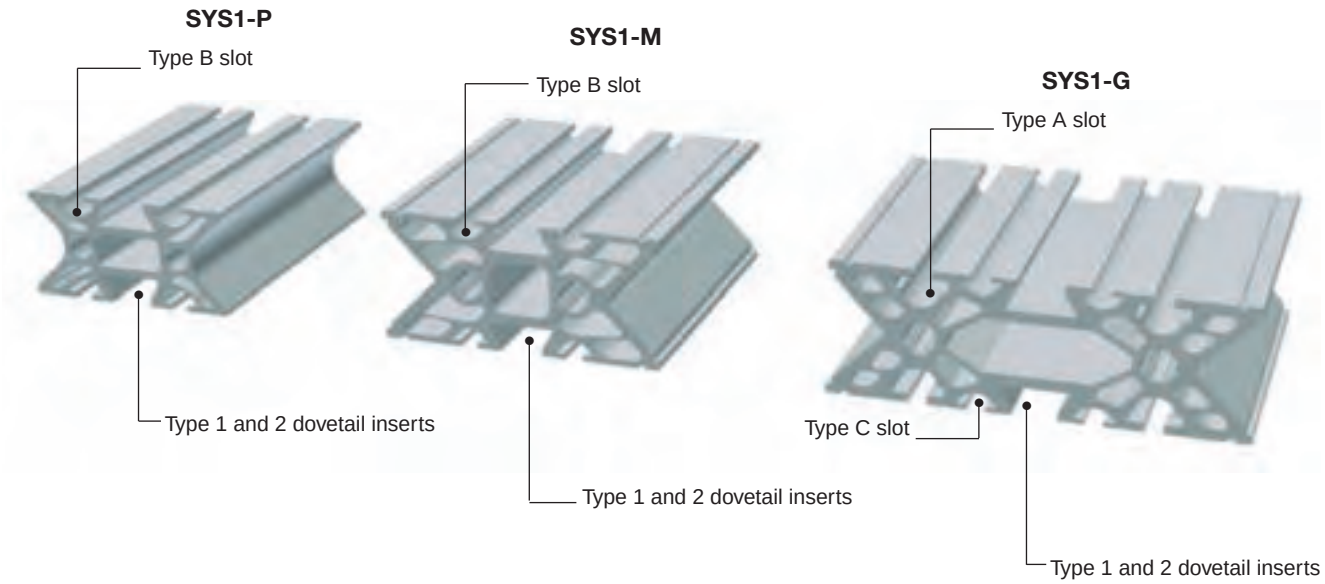
Helical tooth pinion

mod.	p.[kg]	Z	Øp	Øi	b	x	Code
2	0.2	21	44.56	22	28	56	**201.0005**
2	0.6	30	63.66	22,30,32	28	56	**201.0012**
3	0.8	20	63.66	22,25,30,32	28	65	**201.0007**
3	1.4	28	89.13	25,30,32	28	65	**201.0013**
4	1.5	18	76.39	32	40	75	**201.0009**
4	2.8	25	106.10	55	40	80	**201.0014**

Code 201.0007 / ND / 25 ─ Øi

└ Teeth and treatment features

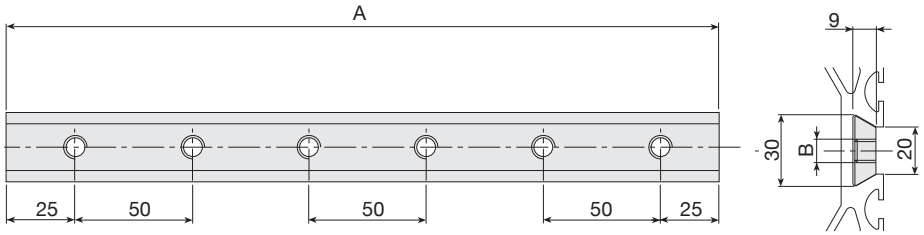
Slot details



Dovetail inserts

Dovetail insert

Material: C40 blued - M8 and M10 holes.
Special lengths on demand.

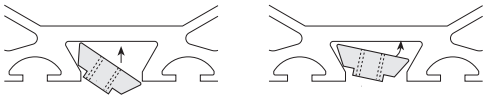


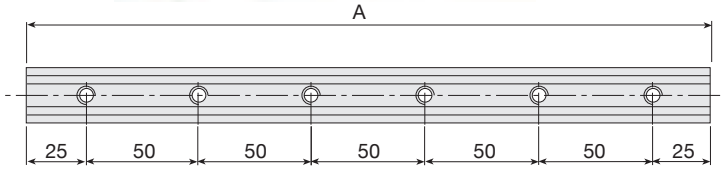
A	B	Hole no.	Code
50	M8	1	314.0170
150	M8	3	314.0172
300	M8	6	314.0175
50	M10	1	314.0164
150	M10	3	314.0166
300	M10	6	314.0169

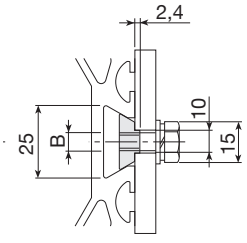
Dovetail centering insert (type 2)

NB: All dovetail centering inserts can be frontally inserted into the bigger slot.

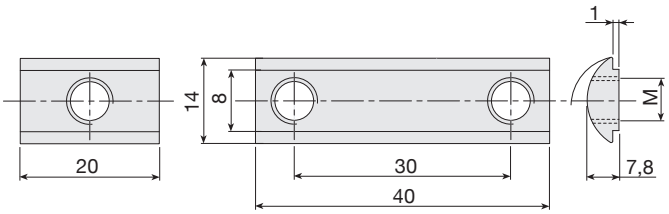
A	B	Hole no.	Code
50	M8	1	314.0178
300	M8	6	314.0183







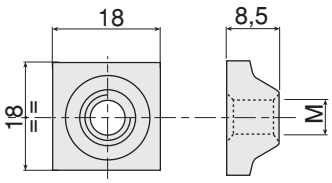
Type A slots



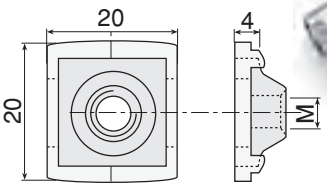
Thread	Hole no.	L	Code
M5	1	20	A32-55
M6	1	20	A32-65
M8	1	20	A32-85
M6	2	40	A32-67

Square nuts and spring

Also suitable for profiles **STATYCA, VALYDA, LOGYCA, PRATYCA and SOLYDA.**
Material: galvanised steel.
Important: inserts must be inserted into the longitudinal slots before assembling.



Square nut

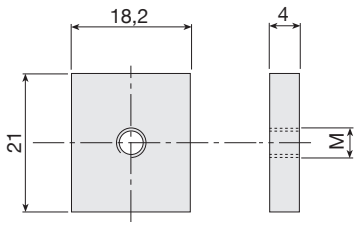


Plastic compound spring

Thread	Code 18x18	Code
Spring	**101.0732**	
M4	209.0031	209.0023
M5	209.0032	209.0019
M6	209.0033	209.1202
M8	209.0034	209.0467

Flat inserts

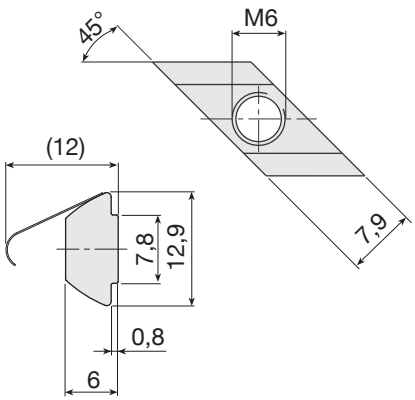
Material: zinc plated steel.



Thread	Code
M4	A32-40
M5	A32-50
M6	A32-60
M8	A32-80
Spring	211.1061

Spring nuts

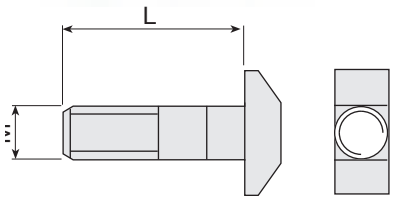
For universal assembly. Can be frontally inserted into the slot, even after assembly. Material: zinc plated steel.



Thread	Code
M3	AC31-30
M4	AC31-40
M5	AC31-50
M6	AC31-60
Spring	AC31-90

T-bolts

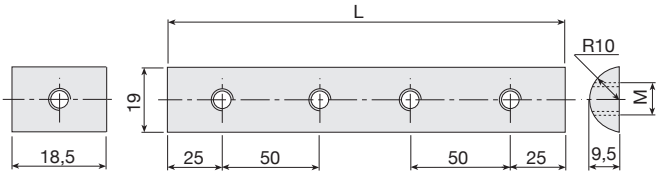
Suitable for 8mm slots. Can be frontally inserted, even after assembly. Material: zinc plated steel.



M x L	Code
M8x20	A35-20
M8x25	A35-25
M8x30	A35-30
M8x40	A35-40
M8x60	A35-60

Half-round threaded inserts

Material: zinc plated steel.

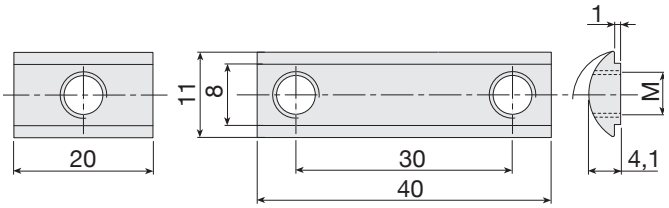


Thread	Hole no.	L	Code
M6	1	18.5	A32-61
M8	1	18.5	A32-81
M8	2	80	A32-82
M8	3	150	A32-83
M8	4	200	A32-84
M8	5	250	A32-89
M8	6	300	A32-86
M8	7	350	A32-87

Type B-C slots

Steel threaded inserts

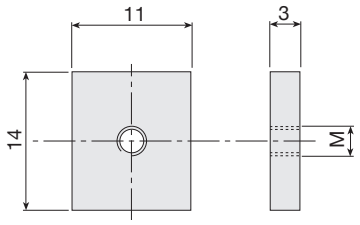
Material: zinc plated steel; harmonic steel spring.



Thread	Hole no.	L	Code
M5	1	20	B32-55
M6	1	20	B32-65
M8	1	20	B32-85
M6	2	40	B32-67

Flat inserts

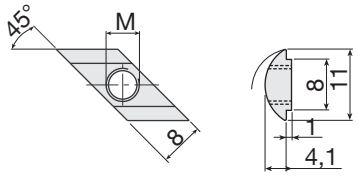
Material: zinc plated steel.



Thread	Code
M3	B32-30
M4	B32-40
M5	B32-50
M6	B32-60
Spring	211.1077

Spring nuts

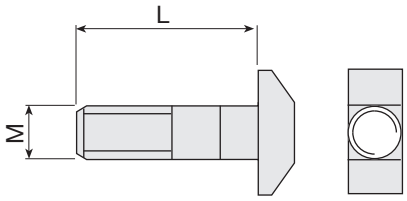
For universal assembly. Can be frontally inserted into the slot, even after assembly. Material: zinc plated steel.



Thread	Code
M3	BD31-30
M4	BD31-40
M5	BD31-50
M6	BD31-60
Spring	BD31-90

T-bolts

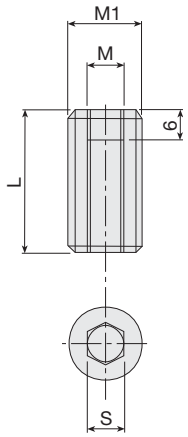
Suitable for 8mm slots. Can be frontally inserted, even after assembly. Material: zinc plated steel.



M x L	Code
M6x15	B35-15
M6x20	B35-20
M6x30	B35-30
M6x40	B35-40

Threaded Inserts

Material: chromium plated steel.
Ask for M14 or M16 thread.
SYS1-P : M14 thread (B33-.. series)
SYS1-M,G: M16 thread (A33-.. series)

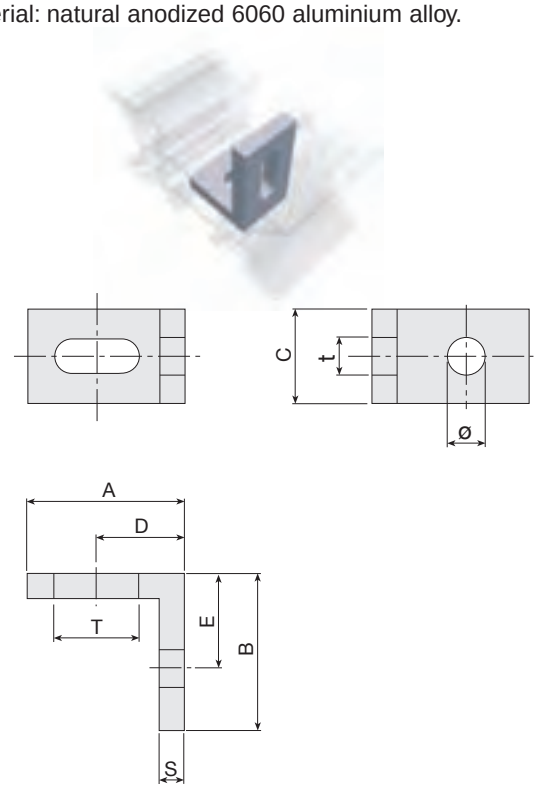


Rail	M1	M	S	L	Code
SYS1-P	14	10	10	25	B33-21
SYS1-P	14	8	8	25	B33-28
SYS1-P	14	6	6	25	B33-26
SYS1-M / G	16	10	10	25	A33-20
SYS1-M / G	16	8	8	25	A33-28
SYS1-M / G	16	6	6	25	A33-26

Assembly brackets

Through hole bracket

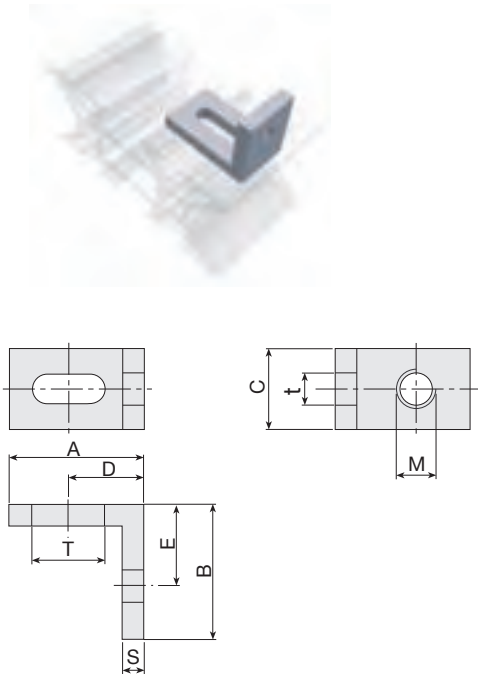
Through hole bracket for mounting additional equipment.
Material: natural anodized 6060 aluminium alloy.



A	B	C	D	E	S	T x t	Ø	Code
45	45	20	25	25	5	15 x 6.5	6	A30-76
35	25	20	19	15	5	20 x 6.5	4	A30-54
35	25	20	19	15	5	20 x 6.5	5	A30-55
35	25	20	19	15	5	20 x 6.5	6	A30-56
25	25	15	14	15	4	13.5 x 5.5	3	B30-53
25	25	15	14	15	4	13.5 x 5.5	4	B30-54
25	25	15	14	15	4	13.5 x 5.5	5	B30-55
25	25	15	14	15	4	13.5 x 5.5	6	B30-56

Threaded hole bracket

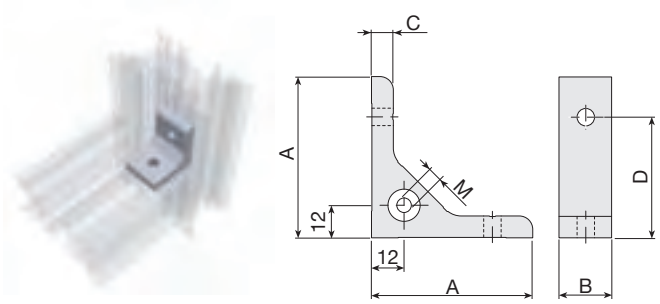
Threaded hole bracket for mounting additional equipment.
Material: natural anodised 6060 aluminium alloy.



A	B	C	D	E	S	T x t	M	Code
45	45	20	25	25	5	15 x 6.5	M6	A30-86
35	25	20	19	15	5	20 x 6.5	M4	A30-64
35	25	20	19	15	5	20 x 6.5	M5	A30-65
35	25	20	19	15	5	20 x 6.5	M6	A30-66
25	25	15	14	15	4	13.5 x 5.5	M3	B30-63
25	25	15	14	15	4	13.5 x 5.5	M4	B30-64
25	25	15	14	15	4	13.5 x 5.5	M5	B30-65
25	25	15	14	15	4	13.5 x 5.5	M6	B30-66

Accessory fixing bracket

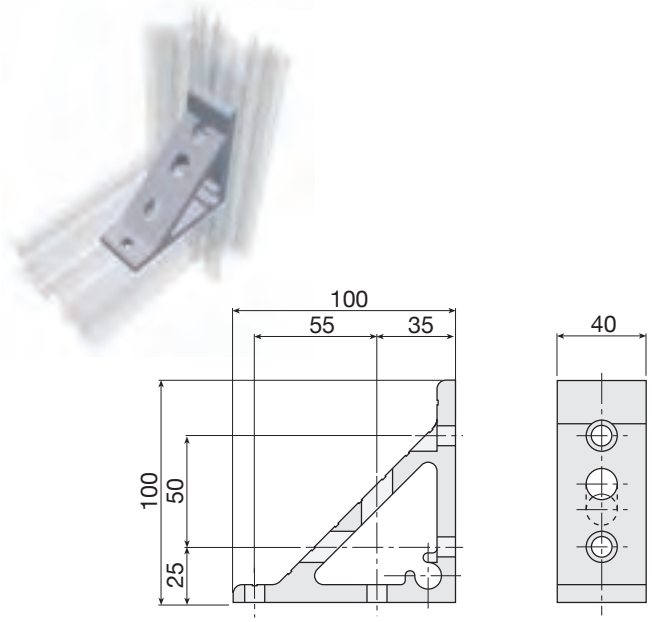
Bracket mainly used to fix accessories and to reinforce frames realised with profiles.
Material: natural anodized 6060 aluminium alloy.



A	B	C	D	E	Ø	M	Code
60	20	8	45	-	6,5	-	B30-10
60	20	8	45	-	6,5	M6	B30-20
60	30	8	45	-	9	-	A30-10
60	30	8	45	-	9	M6	A30-20
38	30	8	25	-	9	-	A30-00
31	20	6	20	-	6,5	-	C30-00

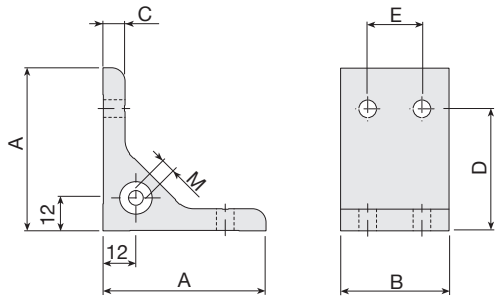
Code 213.0756

Bracket for rail connection.
Material: natural anodized 6060 aluminium alloy.



Threaded hole bracket

Bracket for rail connection.
Material: natural anodized 6060 aluminium alloy.

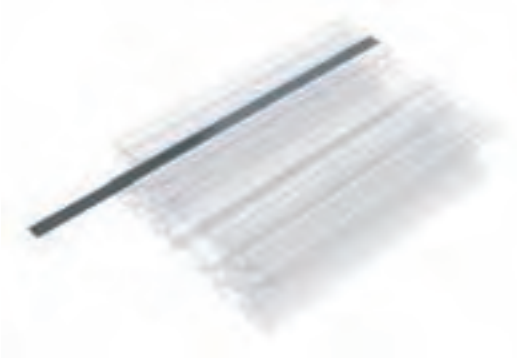


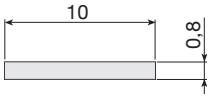
A	B	C	D	E	Ø	M	Code
38	80	8	25	50	9	-	A30-02
31	60	6	20	40	6,5	-	C30-02

Filler strips

Aluminium filler strips

Aluminium filler strips L=1000 mm are used to blank out the longitudinal SYS1-G “A” slots.

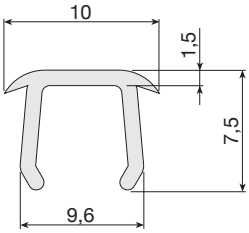




Description	Code
Black	A39-10
Natural anodized	A39-10 ALU

PVC filler strips

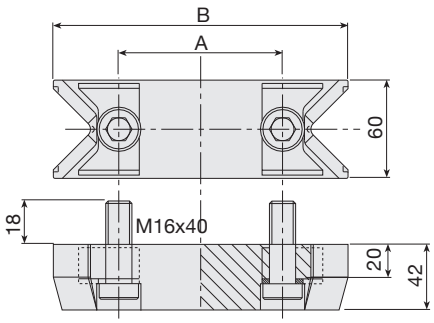
Grey or black PVC filler strips L= 5000mm suitable for any 8 mm longitudinal slots.



Description	Code
Grey	A39-25/5000
Black	A39-26/5000

Guide end parts

Guide end parts for the rail fitting in the roller slides (degree 15°). Yellow plastic material (hardness: 95° Shore), complete with assembling accessories.

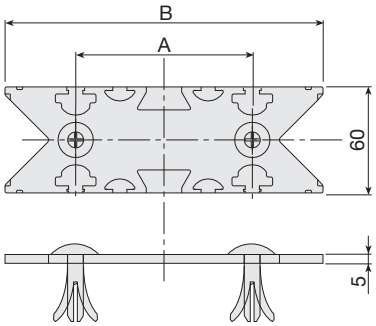


Rail	A	B	Code
SYS1-P	50	100	336.1069
SYS1-M	50	130	312.0159
SYS1-G	100	180	312.0158

NB: holes on rail ends should be threaded M16.

End caps

Green polymer material, complete with assembling accessoires.

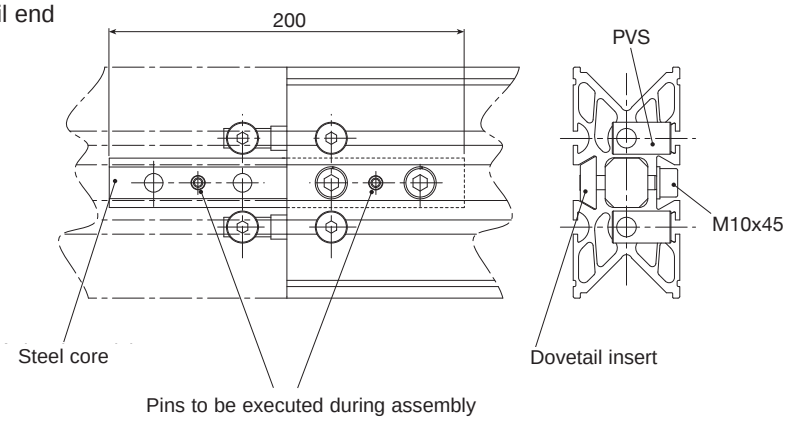


Rail	A	B	Code
SYS1-P	50	100	312.0846
SYS1-M	50	130	312.0679
SYS1-G	100	180	312.0680

Rail Extension Kits

Code 336.0597

Complete group for SYS1-G and SYS1-M rail extension (without side projections on the rail).
Please ask for code ..-60/… or …-61/… to get the rail end drilled (see page 31).

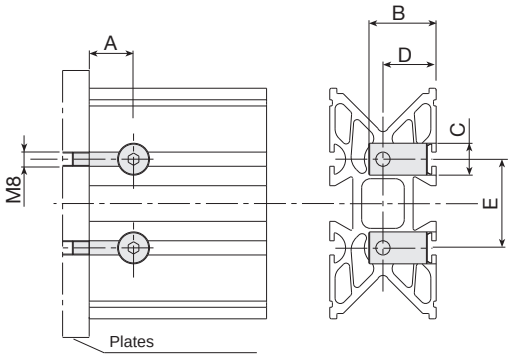


PVS® connectors

PVS® connectors are used to mount plates or accessories to the rail end.
They are manufactured in zinc plated steel.
To use PVS® connectors, rails should be drilled.
Please ask for machining code 33 or 34 (see page 31).

Threaded connectors

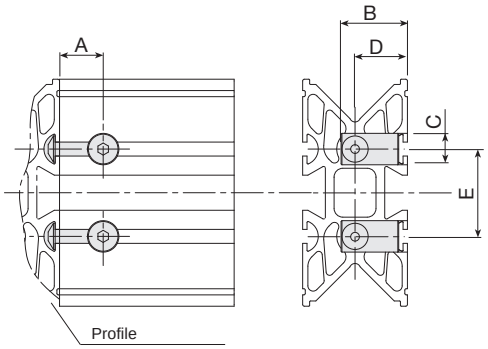
PVS® for rail / plate at 90° assembly.



Rail	A	B	C	D	E	Code
SYS1-P	25	33	15	25	50	B20-60
SYS1-M	25	38	18	30	50	A20-60
SYS1-G	25	38	18	30	100	A20-60

Standard connectors

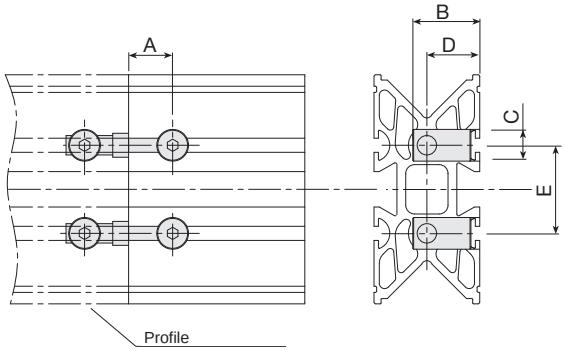
PVS® for rail / rail at 90° assembly.



Rail	A	B	C	D	E	Code
SYS1-P	25	33	15	25	50	B20-90
SYS1-M	25	38	18	30	50	211.1617
SYS1-G	25	38	18	30	100	A20-90

Rail extension connectors

PVS® for rail / rail assembly.

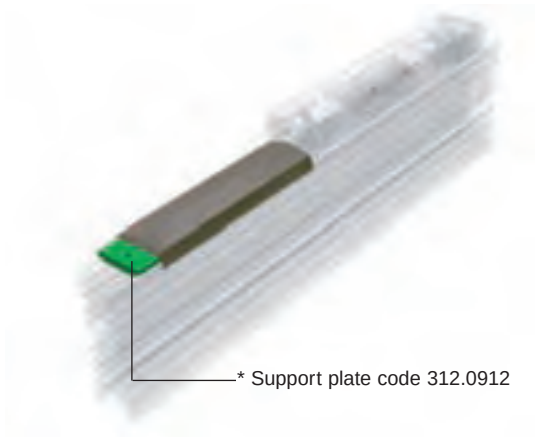


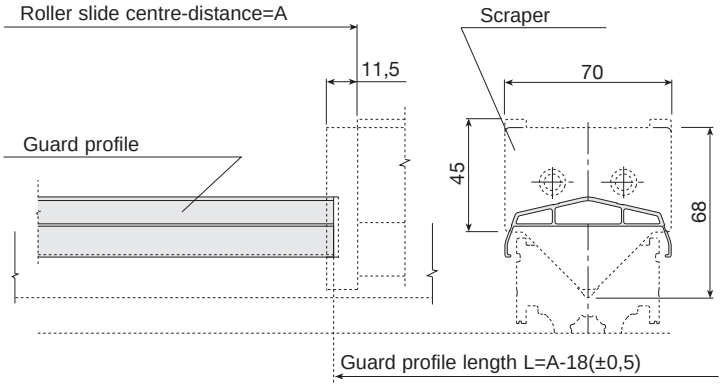
Rail	A	B	C	D	E	Code
SYS1-P	25	33	15	25	50	B24-00
SYS1-M	25	38	18	30	50	A24-00
SYS1-G	25	38	18	30	100	A24-00

Guard profiles

Guard profile code 302.0147 / length

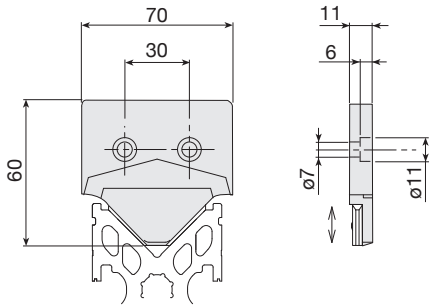
Material: bronze anodized aluminium alloy (max. L=7 m)
*Guard profile longer than 3 m should be mounted with a support plate in intermediate position.





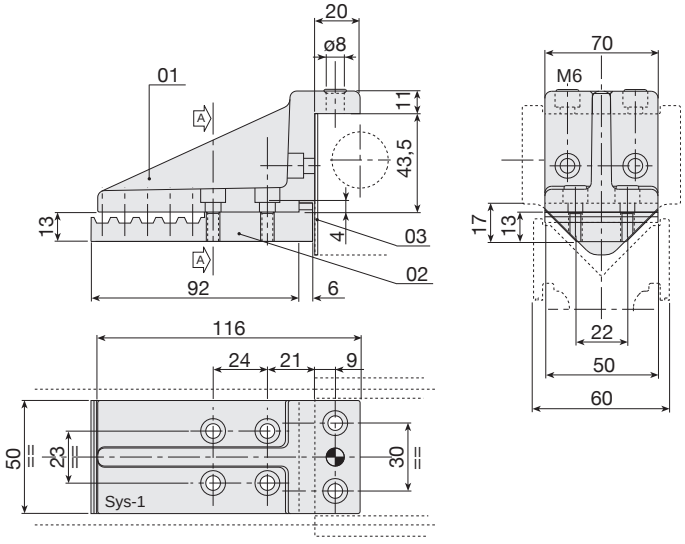
Spring scraper code 312.1026

With grooved seat for guard profile.
Material: green coloured plastic.



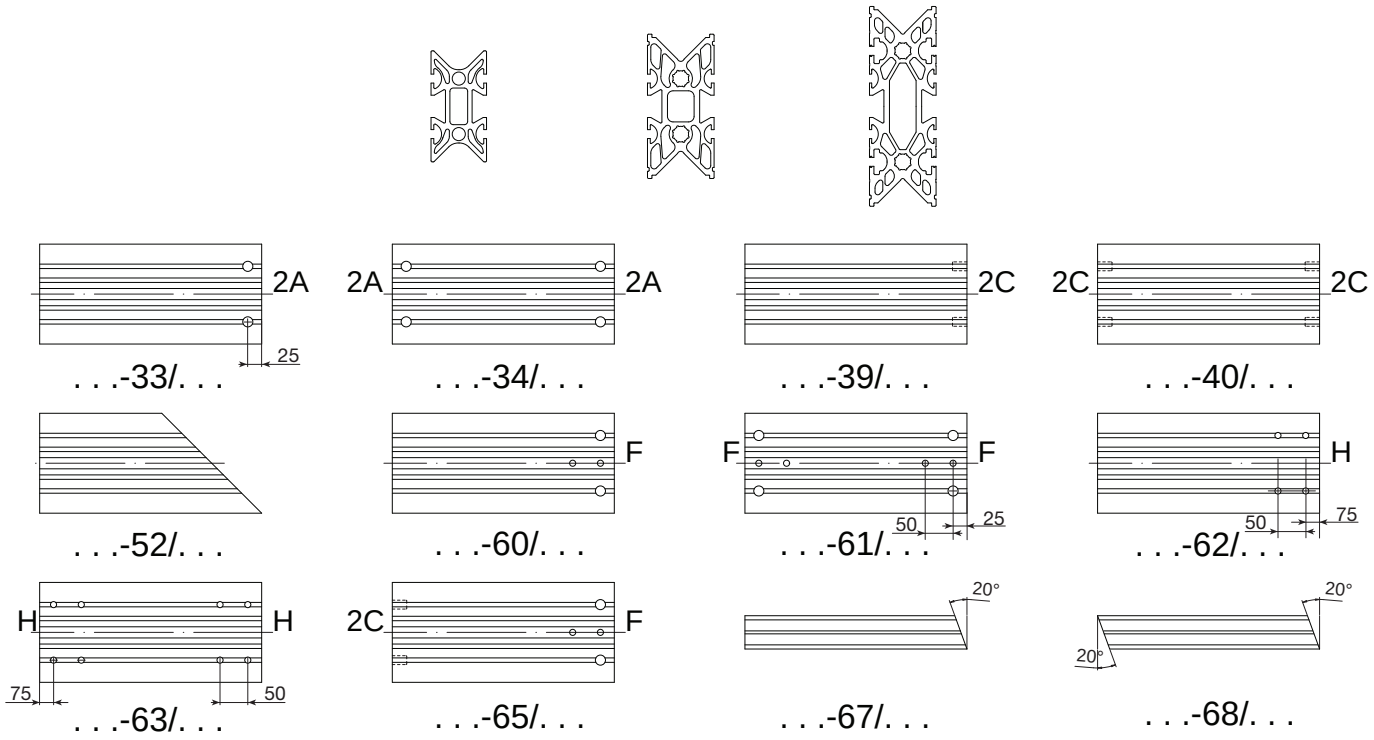
Belt assembly

This device is used to fix the toothed belt to the roller slide and is provided with toothed plate and special scraper.
N.B. Please ask for roller slide presetting.



Complete belt fixing group		Code 336.0007
01	Belt fixing bracket	313.0884
02	Toothed plate for 50AT10 belt	315.0885
03	Special scraper (1,5 mm thickness)	312.0935

Standard machining on rails



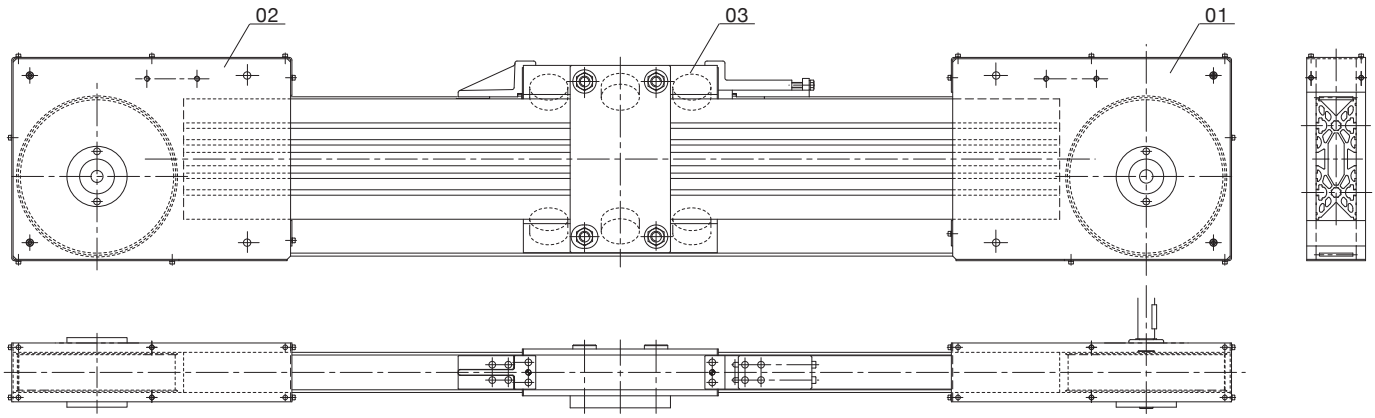
A Milling for Ø15 or Ø18 PVS® (see rails)
C M14 or M16 threads (see rails)
F Drilling to rails connection, code 336.0597
H Drilling to rails connection, code 336.0597

ORDER CODE EXAMPLE:

2 - 3020001 - 60 / 2500

- Required length
- Machining code
- Rail code (see page 8)
- No. of ordered rails

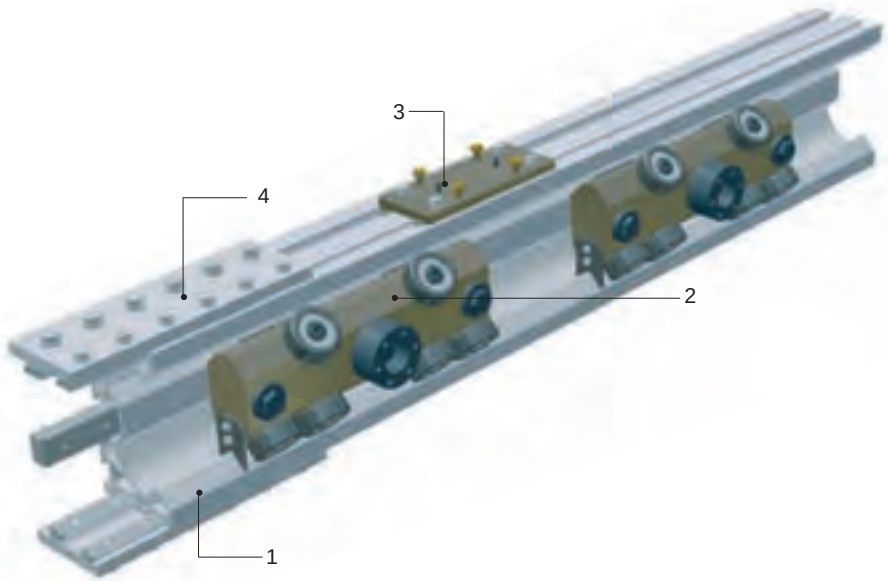
Special application



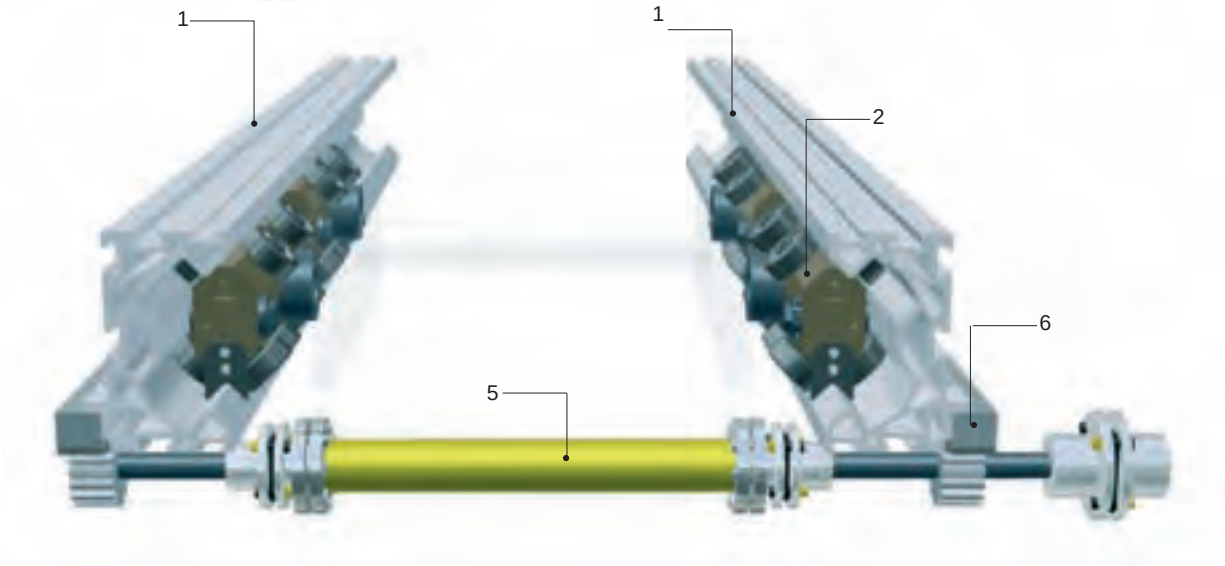
Components		Code
01	Drive head	336.0003
02	Driven head	336.0004
03	Complete carriage	336.0005

Assembly solutions

A



B



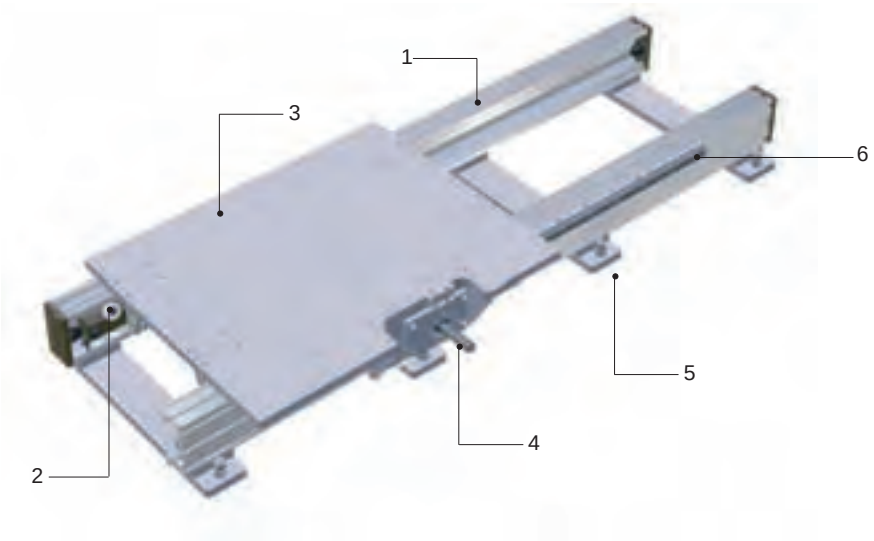
A assembly:

This assembly example represents an axis composed of a single rail. With this configuration you can keep the roller slides steady and move the rail by using pneumatic cylinders, pinion/rack or belt drive systems (not shown here).

B assembly:

This assembly example represents a system composed of 2 pinion/rack-operated moving rails.
It is mainly used to build lift and shift linear units for metal sheet handling.

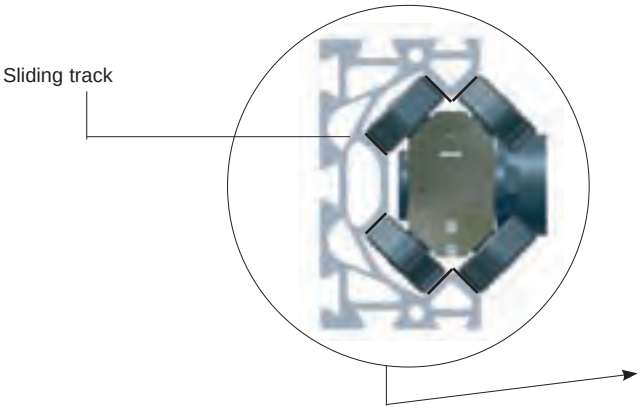
Legend:
1 – SYS 2 rail (see page 35)
2 – Self-aligning roller slide (see page 36)
3 – Accessory fixing set (see page 38)
4 – Rail extension plate set (see page 38)
5 – Connecting shaft (see Modline and Tecline catalogue)
6 – Racks and fixing plates (see page 20-21)

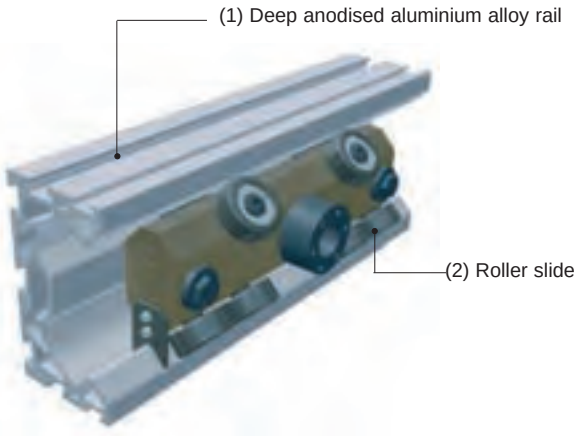


This assembly example represents a slide composed of a carriage (plate and 4 roller slides complete with welded supports) running on 2 profiles that act like a rail.
In this configuration the self-aligning roller slides are mounted on the rack opposite site (see page 36), to compensate any stress caused by rail parallelism errors.
This system is mainly used as robot-holder, elevators and palletisers.

Legend:
1 – SYS2 rail (see page 35)
2 – Self-aligning roller slide (see page 36)
3 – Base plate
4 – Gearbox assembly set
5 – Risers
6 – Racks and fixing plate (see page 20-21)

Overview



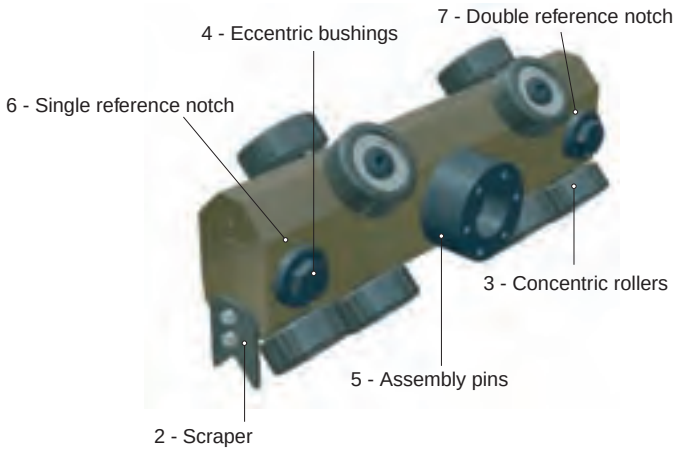


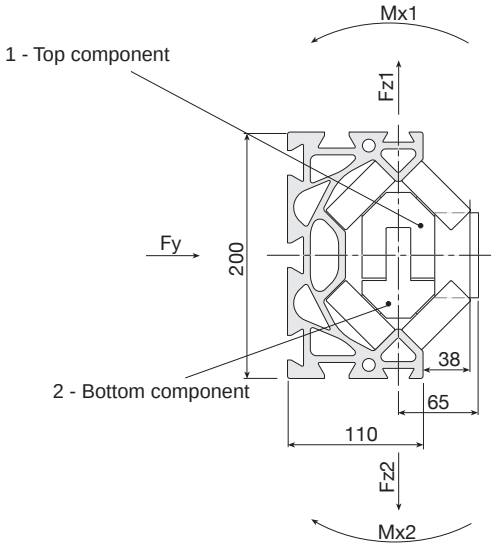
A rugged aluminium C-shaped rail (1) is at the basis of the SYS2 translation system.
The linear motion is made through 8-12- or more roller slides running on the hardened inside surfaces.
The rail section allows the full rollers and sliding surfaces protection; moreover, an additional lateral guard gives the rail a completely closed rectangular section.
Thanks to its particular features, this system can also be used as slide handlings, elevators, palletizers and Cartesian robots.

Roller slide description

The main body consists of two joined high-resistance light alloy components (1-2). It is provided with double-sphere ring gear angular contact bearings, neoprene O-rings, to ensure the lowest friction coefficient.
Lubrication is not required for the standard version, giving a great advantage to the plant operating efficiency.
The roller external surface is covered by a low-friction plastic material, which guarantees the maximum noise reduction and lowest possible rail wear.

Roller slides can be supplied in two solutions: 16- and 20-rollers with 2 assembly pins (length: 480 and 600 mm) and scraper (4) or 8- 12-rollers with just 1 central assembly pin, which allows a well balanced load distribution on each bearing through a slight oscillation.
A self-aligning roller slide version with 1 locking pin is also available.





Assembly specifications

A - Features

The sliding system generally foresees 2 assembly possibilities: moving rail and fixed roller slides (example 1) or fixed roller slides and moving rail (example 2).
If the application requires fixed rails and moving carriage, it is very important to pay particularly attention to the rail alignment while assembling, in order to avoid any additional loads on the rollers, that could limit their life.
The max. possible tolerance between 2 rails is ±1mm.
In this case is highly recommended to use self-aligning roller slides. If the sliding system is pinion/rack operated, check that slipping washers (see page 36) are removed on the roller slides fixed on the rack opposite side.
Rail connecting systems are available on demand.

B - Alignment

Sliding tracks have to be perfectly aligned.

C - Rack assembly

With rack drive it is very important to guarantee exact parallelism between the sliding system and the rack axis. (rack and fixing plates on page 20-21).

D - Roller slide assembly and adjusting

The roller slide can be assembled and disassembled through the rail groove.
The correct backlash adjustment between rollers and rail sliding tracks must be made along the rail vertical axis, acting on the roller slide eccentric bushings (4).

It is recommended to adjust any backlash near each support, to avoid possible rail deformations caused by roller preloading.
An optimum condition for preloading is reached when rollers without any load, touching the sliding track, are not blocked and you can easily let them roll on the track just by hand.
For the simultaneous assembly of several roller slides in one system, it is possible that not all rollers can remain in contact with rails, because of the natural deformation of the rails.
In this case it is not advisable to act on the eccentric pins.
It is important to check the smoothness capacity of the whole system, which should be high; if not, loosen the pins and repeat the adjustment.
Please follow these instructions to disassemble roller slides: loosen the screws and the eccentric bushings (4) placed on the roller slide end, and the assembly pin CH24 bolts (5); free the roller slide from the equipment (welded parts or plates) and take it off; remove pins and bushings; split the two roller slide parts (1 and 2) and remove them from the rail.
To assemble the roller slide please follow the instructions in reverse order. Before blocking the CH24 bolts, adjust the roller slide by rotating counter-clockwise the eccentric bushing marked with the single notch (6) until all rollers touch the rail.
Do the same with double notched bushing. Repeat the previous fine-adjustment, by paying attention that rollers without any load can easily slide on the track just by hand.

Rail specifications

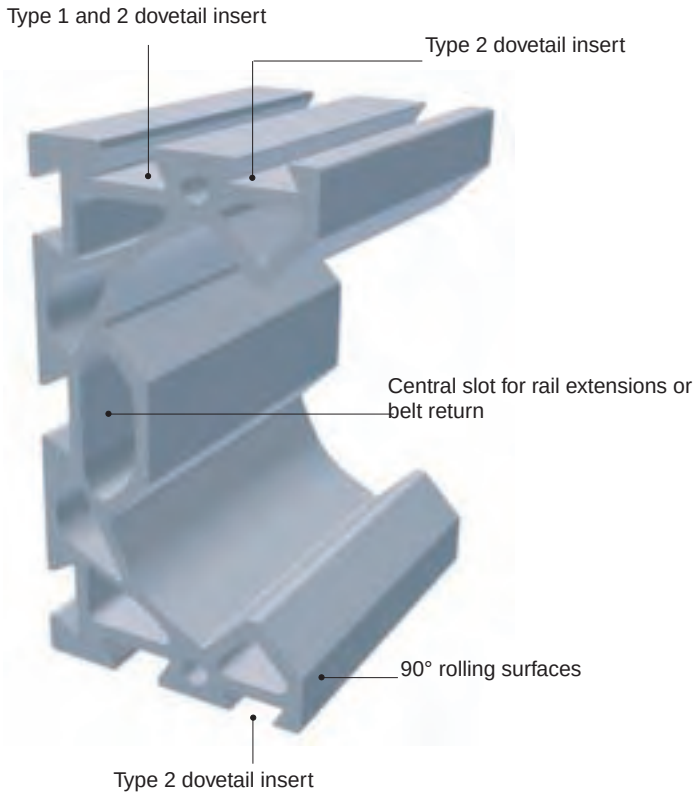
SYS2 rail has been developed to obtain a very strong asymmetrical section and limited on load structural deformation. It is provided with slots that can be used with a wide range of accessories.
The rail surface is chemically treated, in order to obtain a great hardness above all on roller sliding tracks, guaranteeing its long-life.

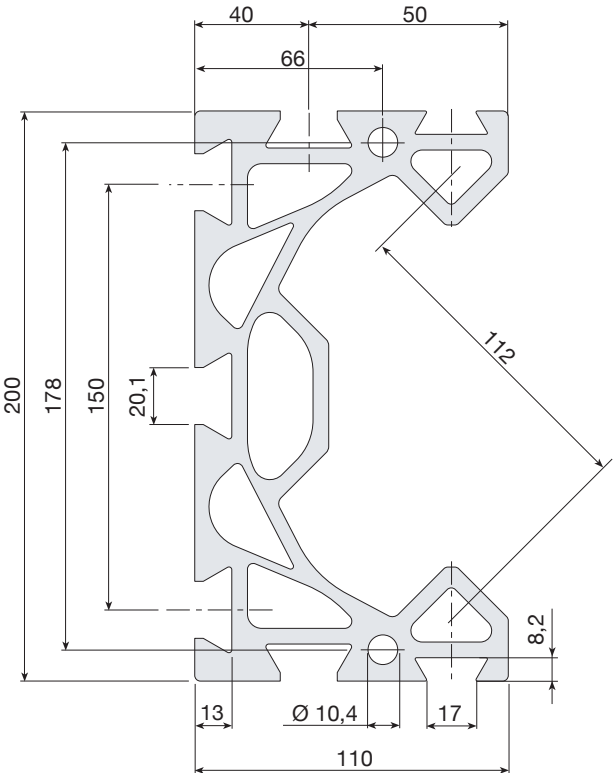
Specifications	
Material:	hard. and temp. light alum. alloy (AlMgSi)
Quality:	F = 25
Tolerances:	1/2 UNI 3879
Tear resistance:	R = 245 - 270 N/mm^2
Yelding point:	Rp = 215 - 240 N/mm^2
Hardness:	HB = 70 - 90

Surface treatment: deep anodising (bronze coloured) , thickness > 0,055 mm

SYS2 rail	Code 302.0539	
Size	200x110	mm
Weight	16,8	Kg/m
Max. length	7,5	m
Moment of inertia X (Ix)	31.900.000	mm^4
Moment of inertia Y (Iy)	6.600.000	mm^4
Bending section mod. (Wx)	319.000	mm^3
Bending section mod. (Wy)	120.000	mm^3

*Holes for M14 thread and PVS® connectors

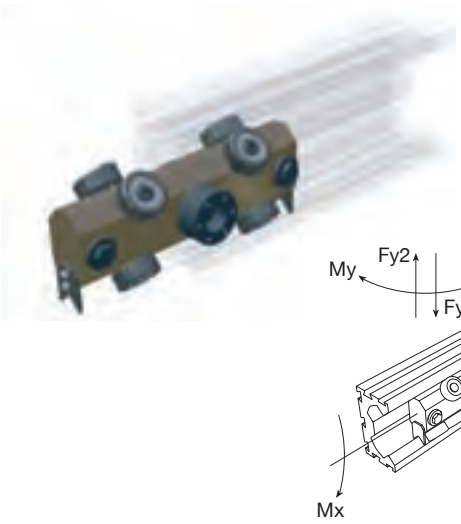


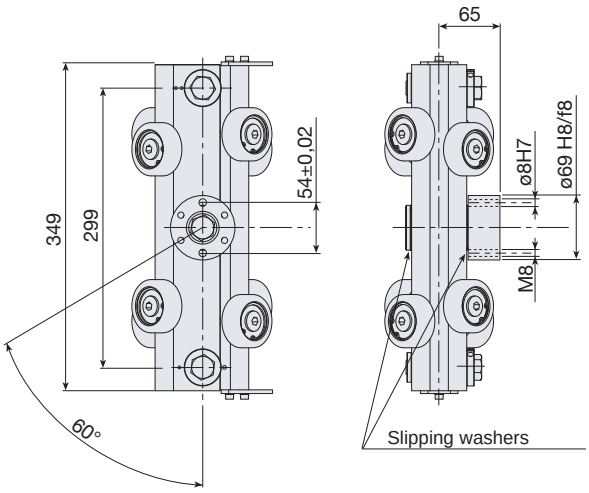


Roller slide size

Code 304.0833

8-roller slide, assembly with 1 self-aligning pin.



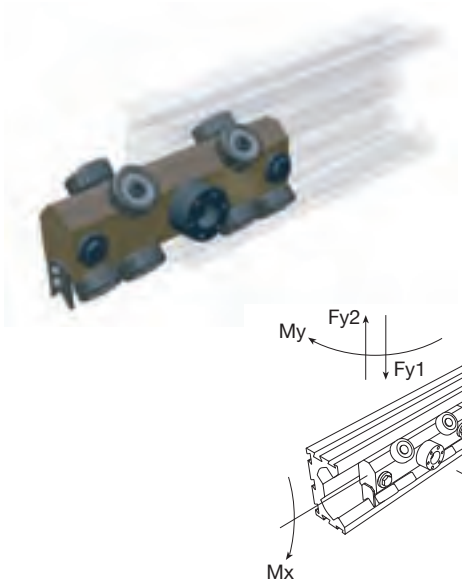


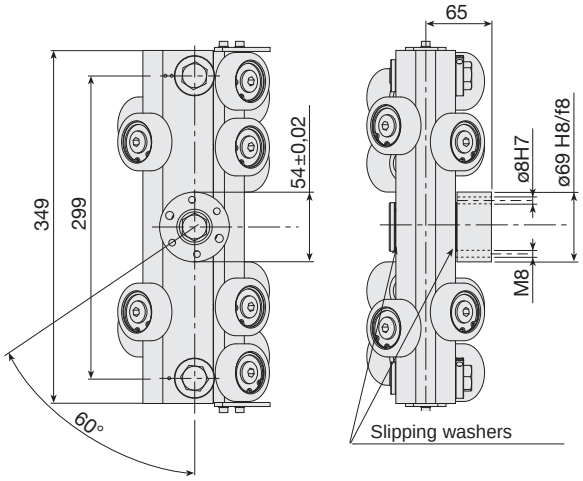
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_{y1}[N]	F_{y2}[N]	F_z[N]
SYS2	293	363	-	3950	3950	3950

Specifications	
Support pins no.	1
Adjusting bushings no.	2
Rollers no.	8

Code 304.0001

12-roller slide, assembly with 1 self-aligning pin.



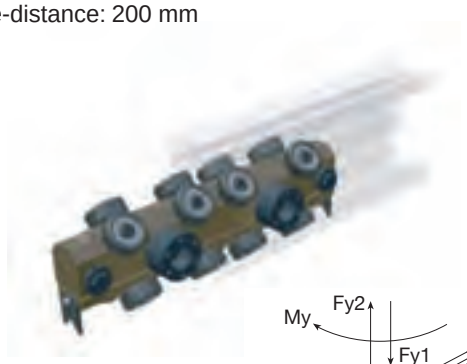


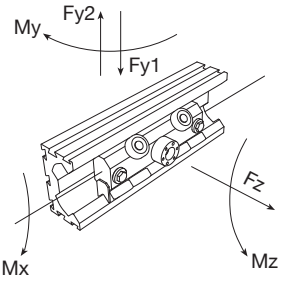
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_{y1}[N]	F_{y2}[N]	F_z[N]
SYS2	320	363	-	6320	3950	3950

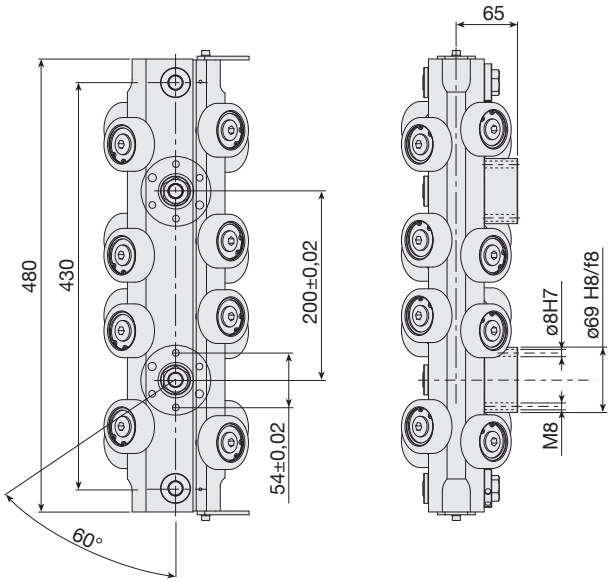
Specifications	
Support pins no.	1
Adjusting bushings no.	2
Rollers no.	12

Code 304.0911

16-roller slide, fixed assembly with 2 pins
centre-distance: 200 mm





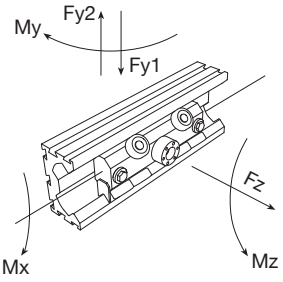


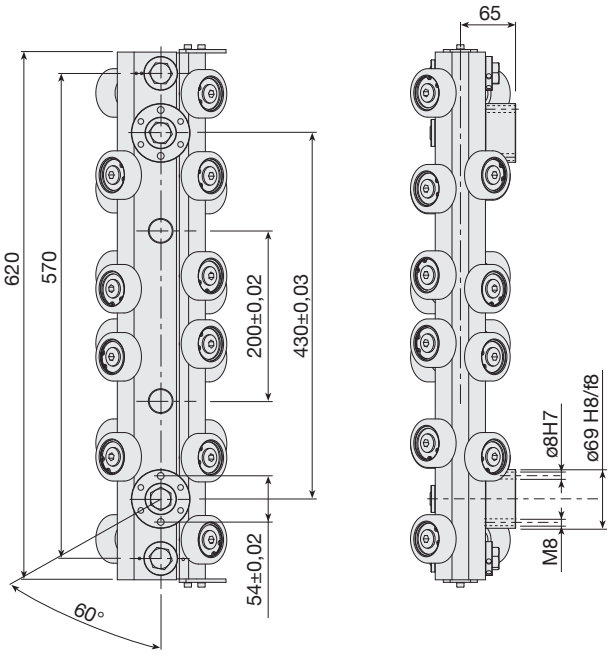
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_{y1}[N]	F_{y2}[N]	F_z[N]
SYS2	470	620	705	6320	6320	6300

Specifications	
Support pins no.	2
Adjusting bushings no.	2
Rollers no.	16

Code 304.0902

20-roller slide, fixed assembly with 2 pins
centre-distance: 430 mm





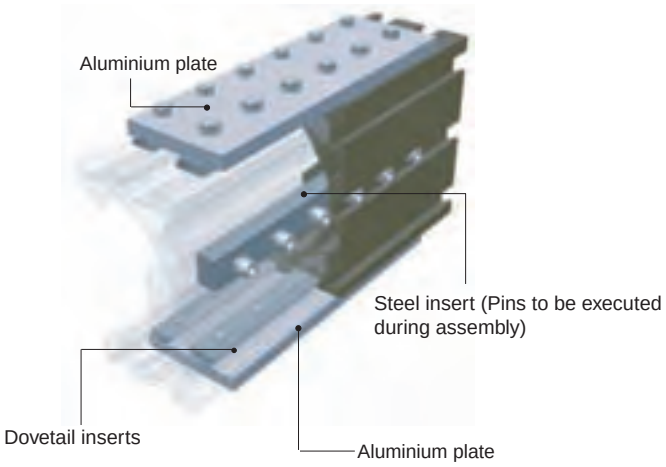
	M_x[Nm]	M_y[Nm]	M_z[Nm]	F_{y1}[N]	F_{y2}[N]	F_z[N]
SYS2	700	820	705	6320	6320	6320

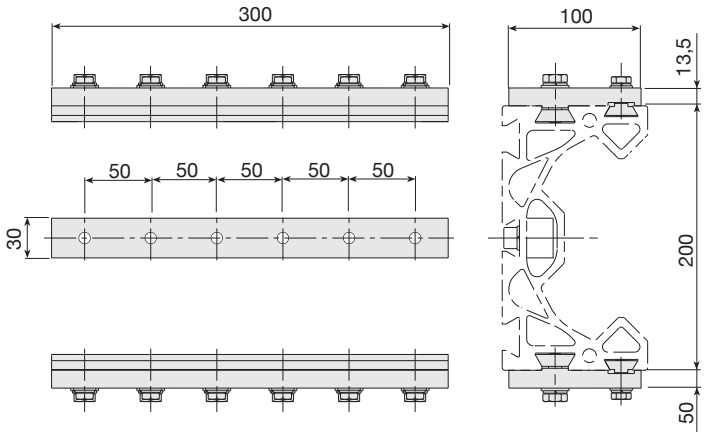
Specifications	
Support pins no.	2
Adjusting bushings no.	2
Rollers no.	20

Rail connecting plate

Code 336.0803

N.B.: please ask for the specific rail machining.

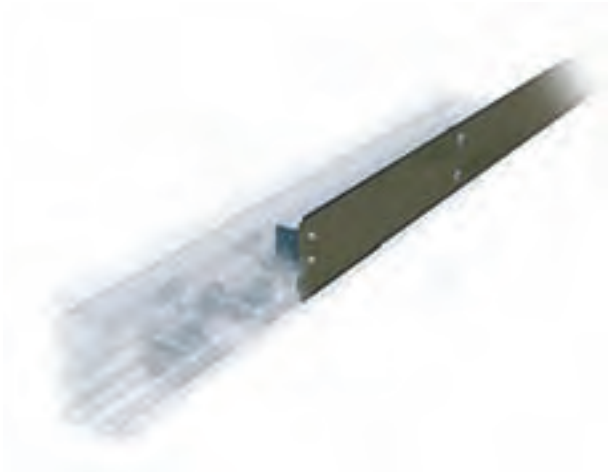


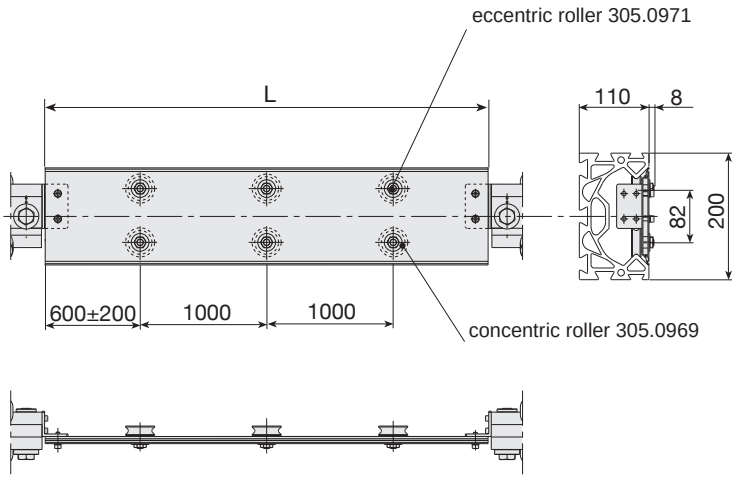


Roller slide guard profile

Code 335.0805/L

Material: aluminium alloy profile.

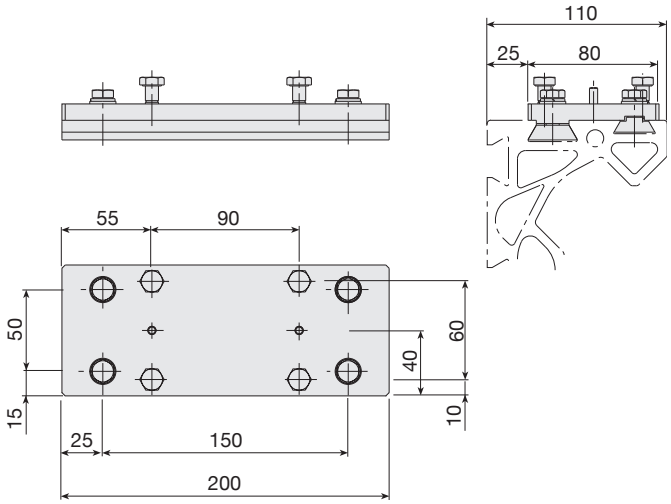




Accessory fixing plate

Code 336.0810

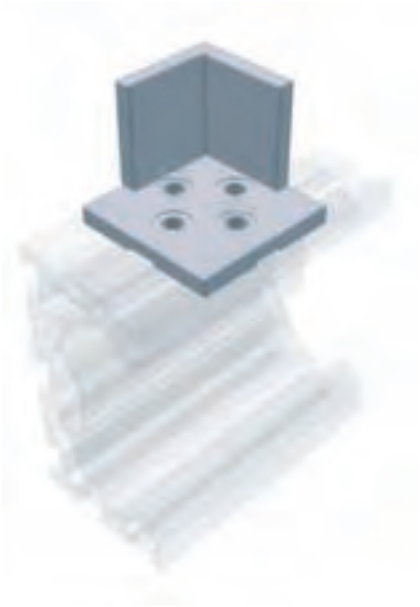
Material: bronze anodised 6082 aluminium alloy.

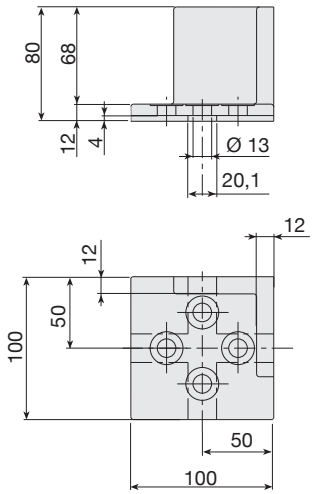


Tool fixing bracket

Code 213.1100

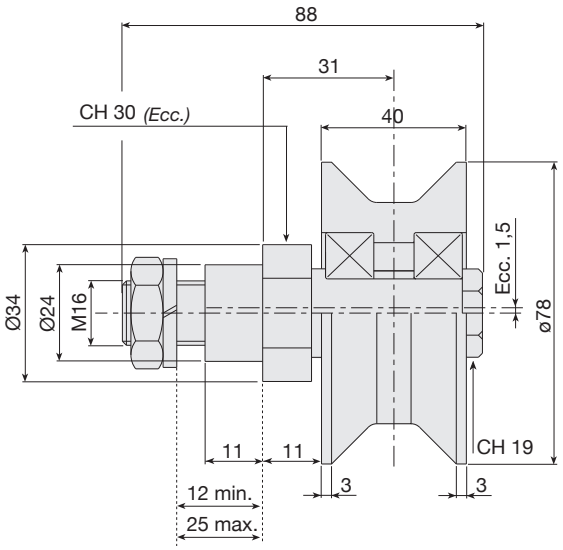
Material: aluminium alloy extrusion.





Ø78 V-shaped rollers

Material: high-resistance black polyamide coating.
Eccentric or concentric blued steel pin.



Type	Weight [kg]	PR [N]	PA [N]	Speed [m/s]	Code
Ecc.	0,6	500	130	2	305.1037
Conc.	0,6	500	130	2	305.1036

Code Parts Index

Notes

ROLLON®
LinearEvolution

- Rollon Branches & Rep. Offices
- Distributors

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