

ROLLON[®]
BY TIMKEN

R-SMART SERIES

Data sheet - rev. 1.0



ACTUATORS AND SYSTEMS

myRollon

MyRollon is **your digital working platform** for linear guides, telescopic slides, actuators and actuator systems.

With myRollon, it is possible to determine the best linear motion solution according to our application specifications.

SCAN ME!



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► ORDERING KEY

■ R-SMART

D	12	2R	02000	4R				
	12=120							
	16=160							
	22=220							
	23=230							
28=280								
				Number of blocks - 4R = 4 blocks [SP4], 6R = 6 blocks [SP6]				
				Total length of the unit [mm]				
				Drive head - see pg. 14				
				Size - see from pg. 6 to pg. 10				
Series								

Ordering example: **D122R006004R**

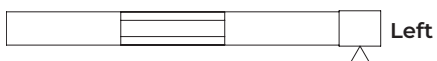
■ R-SMART-R

DCR	14	2R	02000	4R				
	14=140							
	17=170							
	22=220							
	23=230							
28=280								
				Number of blocks - 4R = 4 blocks [SP4], 6R = 6 blocks [SP6]				
				Total length of the unit [mm]				
				Drive head - see pg. 31				
				Size - see from pg. 22 to pg. 26				
Series								

Ordering example: **DCR222R006004R**

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

Left / right orientation



► FEATURES AND ADVANTAGES

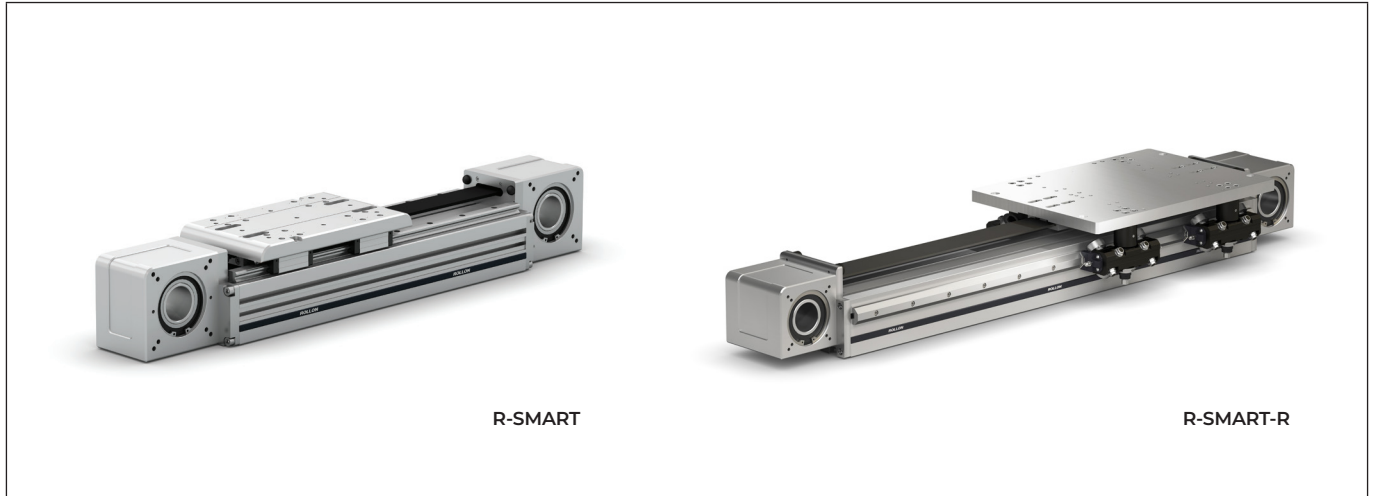


Fig. 1

The R-SMART and R-SMART-R linear units are designed to provide a high load capacity in a compact design.

R-SMART and R-SMART-R feature a self-supporting structure with a profile of extruded aluminium. Several sizes are available ranging from a width of 120 to 280 mm.

The carriage is made of machined aluminium and is guided and supported by dual rail recirculating ball bearing guides (R-SMART) or hardened prismatic rails (R-SMART-R).

R-SMART linear units can be equipped with sliders featuring self-lubricating tanks while the R-SMART-R linear units feature roller blocks with felts for self-lubrication. Both systems help ensuring a long maintenance interval.

The thrust force is transmitted by a steel reinforced, polyurethane belt with AT pitch, which helps ensuring high load transmission characteristics, compact size, low noise and smooth alternating motion.

R-SMART and R-SMART-R feature two symmetrical heads designed to allow the highest freedom while sizing the application and mounting the gearbox. Therefore, it is possible to assemble the gearbox on both heads, on the right or left side, by means of a standard assembly kit. This feature is also useful when the unit is assembled to be part of a multi-axis system.

Preferred areas of application

The R-SMART and R-SMART-R units are best used in applications requiring heavy loads in confined spaces, and where machines cannot be stopped to carry out ordinary system maintenance, like in automated industrial lines. They are also suitable for use in dirty environments.

Performance characteristics

- Available sizes: 120, 160, 220, 230, 280 (R-SMART); 140, 170, 220, 230, 280 (R-SMART-R)
- Max. operating speed.: 4 m/s
- Max. acceleration: 50 m/s²
- Repeatability: up to ±0.05 mm
- Profile material: Aluminium
- Drive: Toothed belt AT pitch
- Guide: Recirculating ball bearings (R-SMART); prismatic rails (R-SMART-R)

Standard accessories

- Shaft
- Synchronization kit
- Fixing system
- Sensors
- Gearbox assembly kit

MAIN ADVANTAGES

Load capacity

Highly engineered combination of recirculating ball guides and aluminum profile, extruded with elaborate geometries, allows for high stiffness and load capacity.

High dynamics

High dynamics, thanks to excellent acceleration and speed.

Compactness

The compact design and available strokes help to ensure a coordinated and precise movement.

Versatility

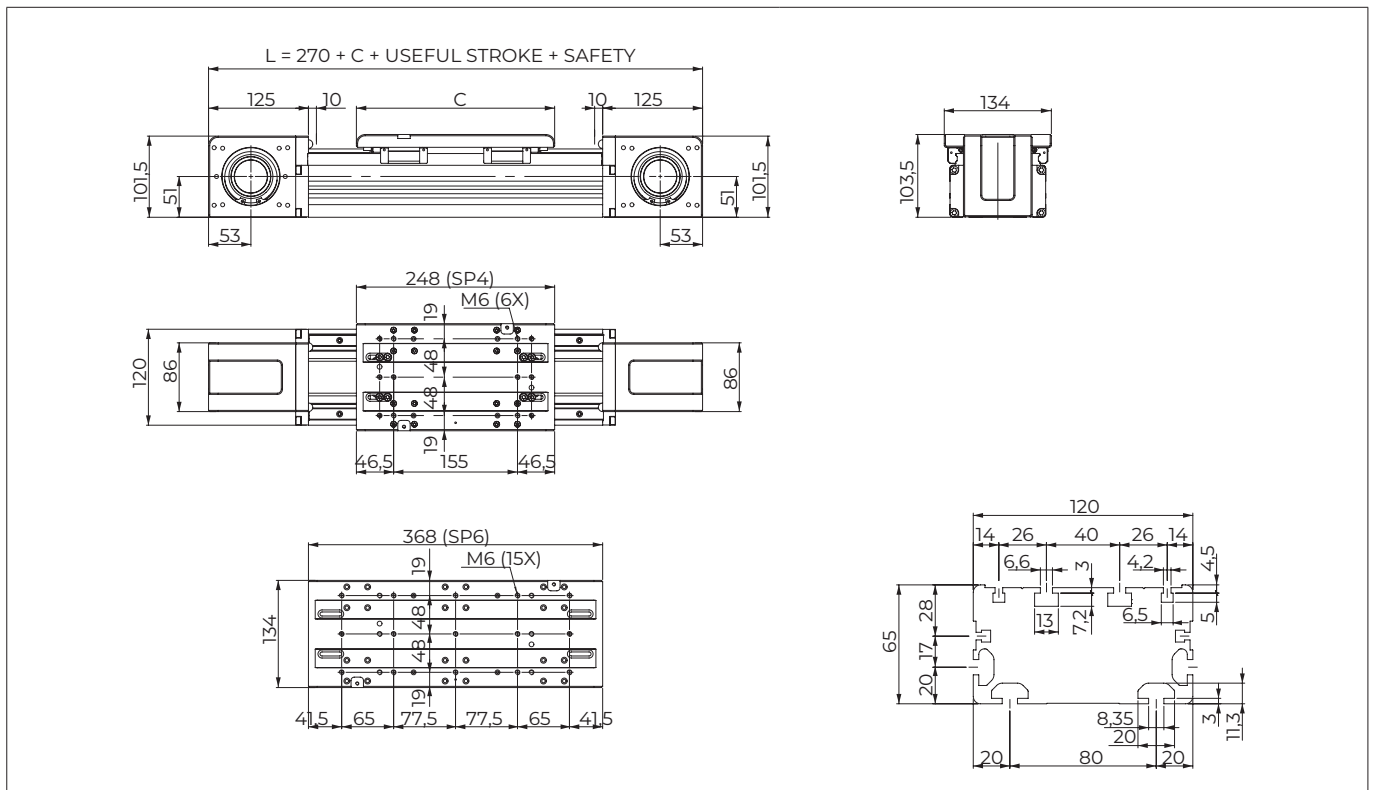
The driving head allows for assembly of the gearbox on either side of it.

Low maintenance

The system helps ensure long maintenance intervals and consequently long life.

► COMPONENTS AND DIMENSIONS R-SMART

■ R-SMART 120 SP4 - SP6



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

Fig.2

Technical data	SP4	SP6
Max. useful stroke length [mm] ¹⁾	6050	5930
Max. positioning repeatability [mm] ²⁾	± 0.05	± 0.05
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	2.79	3.94
Zero travel weight [kg]	11.90	13.80
Weight for 100 mm useful stroke [kg]	1.07	1.07
Rail size [mm]	15	15

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

Tab.1

Driving belt and pulley data	SP4	SP6
Belt type	40 AT 10	40 AT 10
Belt width [mm]	40	40
Belt length [mm]	2 x L - 115	2 x L - 235
Belt weight [kg/m]	0.23	0.23
Pulley type	Z 21	Z 21
Pulley pitch diameter [mm]	66.84	66.84
Carriage displacement per pulley turn [mm]	210	210
Starting torque [Nm]	2.0	2.3
Moment of inertia of pulleys [kg·mm ²]	1054	1054

Tab.2

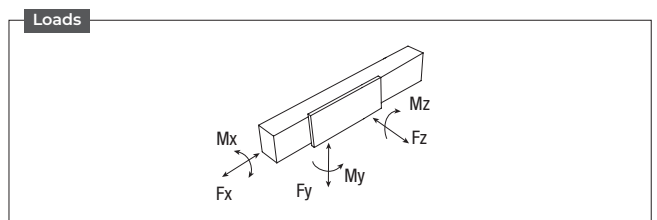
Load capacity	SP4	SP6
Fx static [N]	3154	3154
Fx dynamic [N]	2090	2090
Fy static [N]	50800	76200
Fy dynamic [N]	39440	59160
Fz static [N]	50800	76200
Mx static [Nm]	2337	3505
My static [Nm]	3277	6248
Mz static [Nm]	3277	6248

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 20).

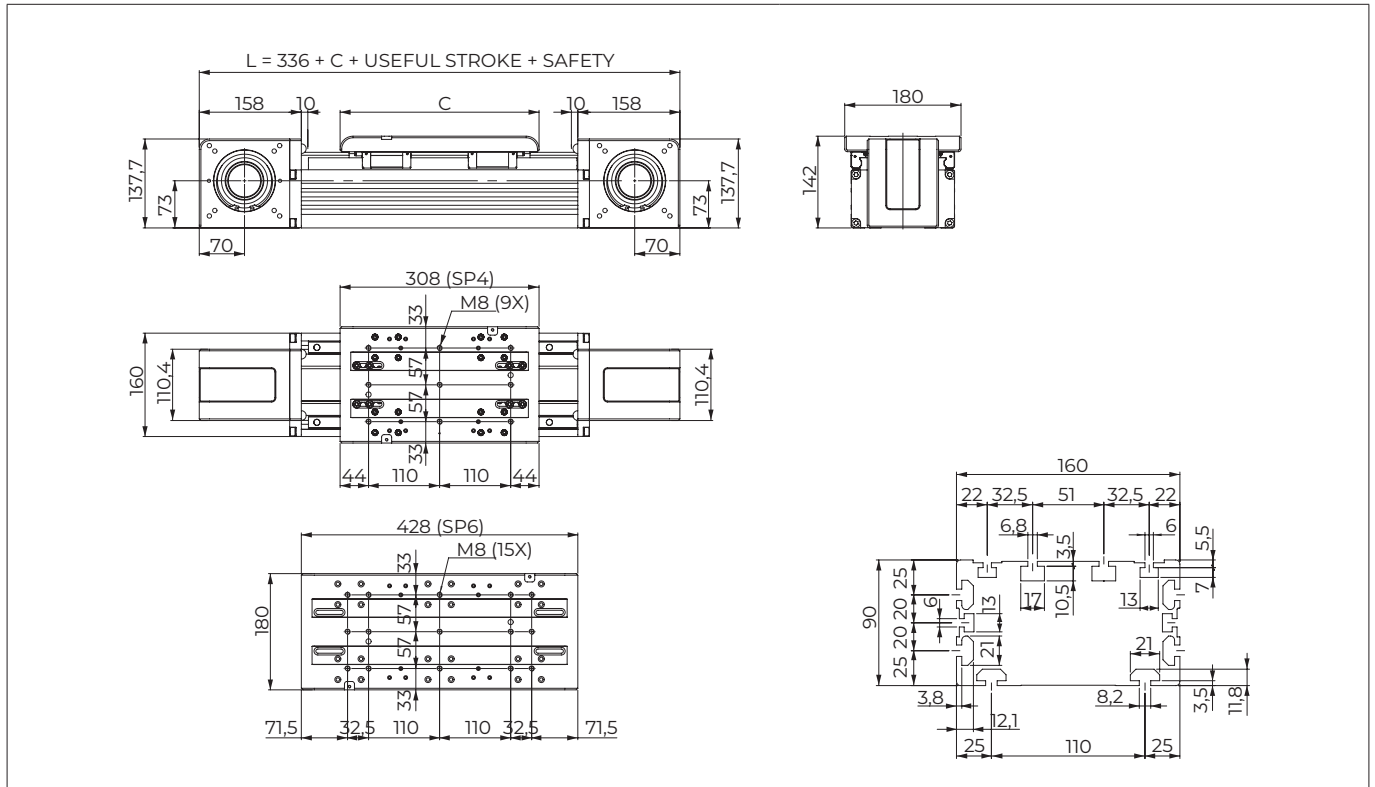
Tab.3

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	0.108
Iy [10 ⁷ mm ⁴]	0.367
Ip [10 ⁷ mm ⁴]	0.475

Tab.4



■ R-SMART 160 SP4 - SP6



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

Fig.3

Technical data	SP4	SP6
Max. useful stroke length [mm] ¹⁾	6000	5880
Max. positioning repeatability [mm] ²⁾	± 0.05	± 0.05
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	5.60	7.80
Zero travel weight [kg]	25.40	29.70
Weight for 100 mm useful stroke [kg]	2.34	2.34
Rail size [mm]	20	20

Tab.5

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

Driving belt and pulley data	SP4	SP6
Belt type	50 AT10	50 AT10
Belt width [mm]	50	50
Belt length [mm]	2 x L - 150	2 x L - 270
Belt weight [kg/m]	0.29	0.29
Pulley type	Z 27	Z 27
Pulley pitch diameter [mm]	85.94	85.94
Carriage displacement per pulley turn [mm]	270	270
Starting torque [Nm]	3.4	4.0
Moment of inertia of pulleys [kg·mm ²]	4035	4035

Tab.6

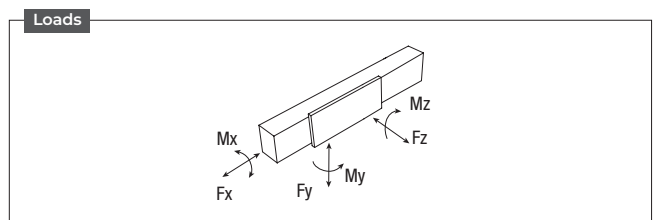
Load capacity	SP4	SP6
Fx static [N]	4980	4980
Fx dynamic [N]	3390	3390
Fy static [N]	119200	178800
Fy dynamic [N]	93600	140400
Fz static [N]	119200	178800
Mx static [Nm]	6914	10370
My static [Nm]	9774	16628
Mz static [Nm]	9774	16628

Tab.7

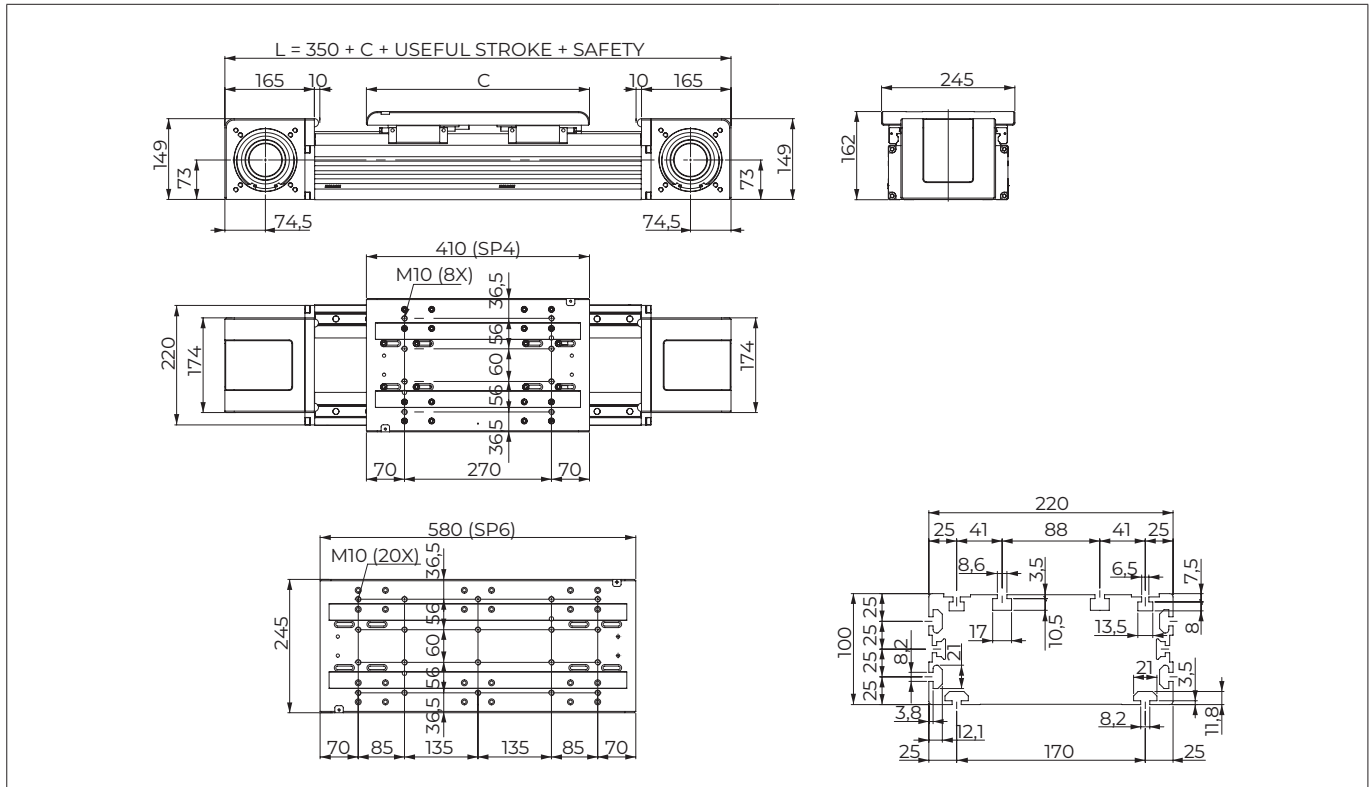
Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 20).

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	0.38
Iy [10 ⁷ mm ⁴]	1.31
Ip [10 ⁷ mm ⁴]	1.70

Tab.8



■ R-SMART 220 SP4 - SP6



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

Fig.4

Technical data	SP4	SP6
Max. useful stroke length [mm] ¹⁾	5900	5730
Max. positioning repeatability [mm] ²⁾	± 0.05	± 0.05
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	11.50	16.00
Zero travel weight [kg]	44.30	52.90
Weight for 100 mm useful stroke [kg]	2.97	2.97
Rail size [mm]	25	25

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

Tab.9

Driving belt and pulley data	SP4	SP6
Belt type	100 AT 10	100 AT 10
Belt width [mm]	100	100
Belt length [mm]	2 x L - 130	2 x L - 300
Belt weight [kg/m]	0.58	0.58
Pulley type	Z 32	Z 32
Pulley pitch diameter [mm]	101.86	101.86
Carriage displacement per pulley turn [mm]	320	320
Starting torque [Nm]	4.3	7.0
Moment of inertia of pulleys [kg·mm ²]	12529	12529

Tab.10

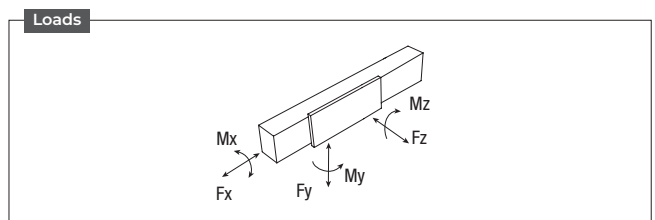
Load capacity	SP4	SP6
Fx static [N]	9960	9960
Fx dynamic [N]	7380	7380
Fy static [N]	210000	315000
Fy dynamic [N]	149200	223800
Fz static [N]	210000	315000
Mx static [Nm]	17850	26775
My static [Nm]	23100	40950
Mz static [Nm]	23100	40950

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 20).

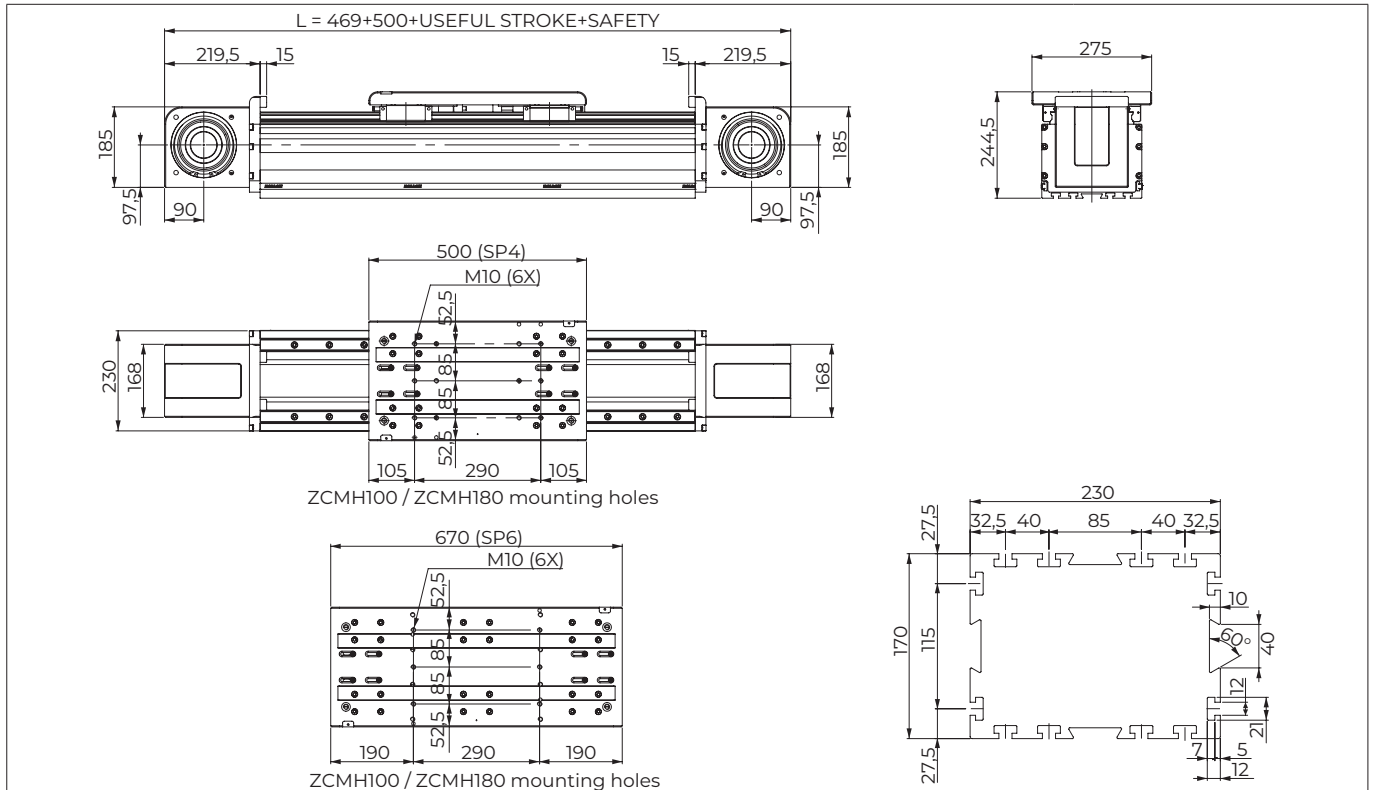
Tab.11

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	0.66
Iy [10 ⁷ mm ⁴]	3.66
Ip [10 ⁷ mm ⁴]	4.32

Tab.12



■ R-SMART 230 SP4 - SP6



The length of the safety stroke is provided on request according to the customer's specific requirements. See pg 11

Fig.5

Technical data	SP4	SP6
Max. useful stroke length [mm]	11470	11300
Max. positioning repeatability [mm] ¹⁾	± 0.1	± 0.1
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	18.90	25.20
Zero travel weight [kg]	84.80	97.40
Weight for 100 mm useful stroke [kg]	3.81	3.81
Rail size [mm]	30	30

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

Tab.13

Driving belt and pulley data	SP4	SP6
Belt type	75 AT 20	75 AT 20
Belt width [mm]	75	75
Belt length [mm]	2 x L - 30	2 x L - 200
Belt weight [kg/m]	0.72	0.72
Pulley type	Z 22	Z 22
Pulley pitch diameter [mm]	140.06	140.06
Carriage displacement per pulley turn [mm]	440	440
Starting torque [Nm]	11.5	12.7
Moment of inertia of pulleys [kg·mm ²]	43005	43005

Tab.14

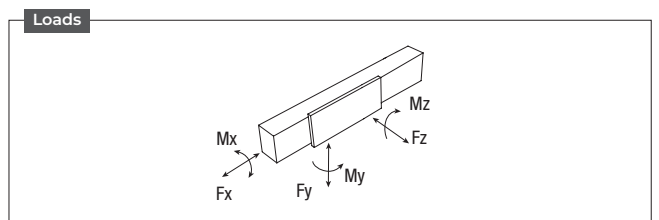
Load capacity	SP4	SP6
Fx static [N]	11025	11025
Fx dynamic [N]	8025	8025
Fy static [N]	267600	401400
Fy dynamic [N]	184000	276000
Fz static [N]	267600	401400
Mx static [Nm]	22077	33116
My static [Nm]	44154	66900
Mz static [Nm]	44154	66900

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 20).

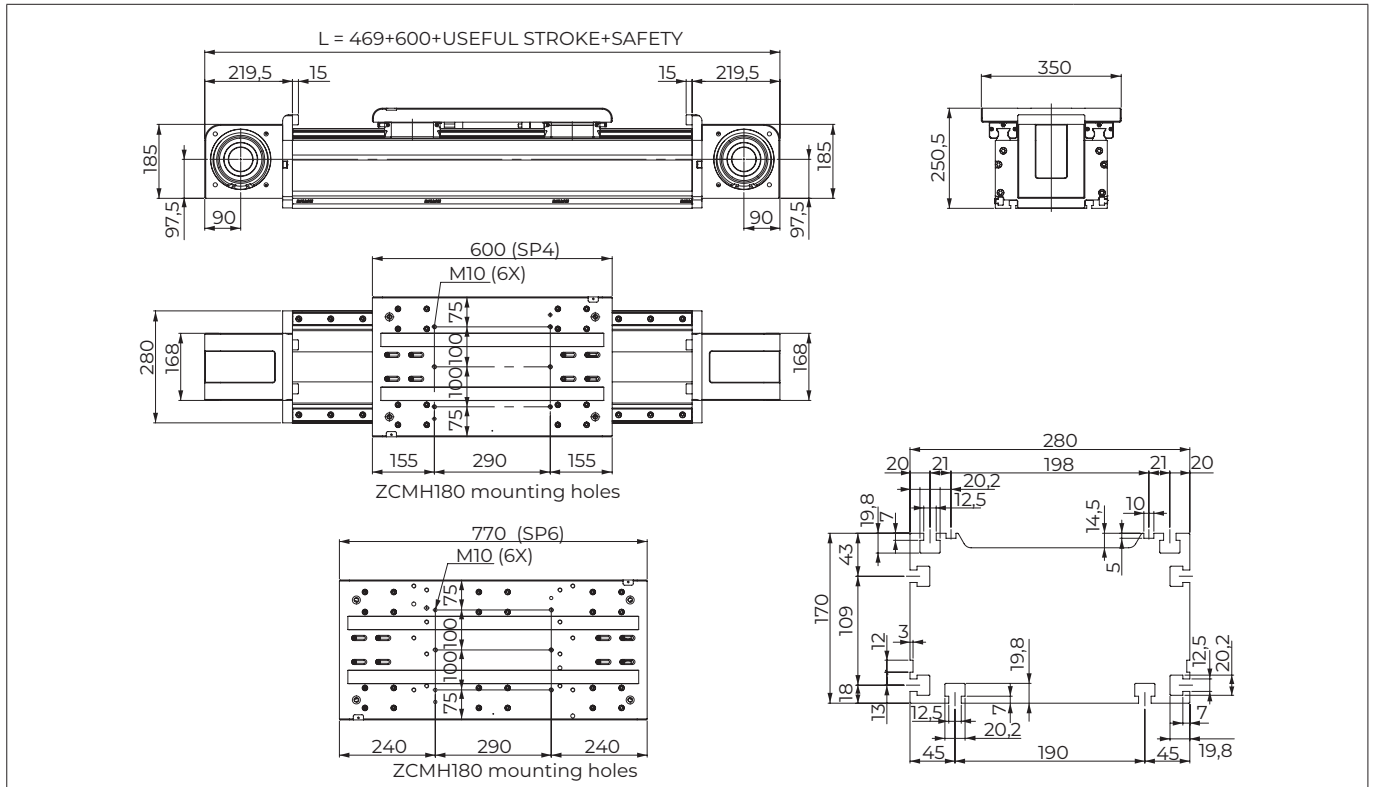
Tab.15

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	3.78
Iy [10 ⁷ mm ⁴]	6.50
Ip [10 ⁷ mm ⁴]	10.28

Tab.16



■ R-SMART 280 SP4 - SP6



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

Fig.6

Technical data	SP4	SP6
Max. useful stroke length [mm]	11370	11200
Max. positioning repeatability [mm] ¹⁾	± 0.1	± 0.1
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	26.80	34.70
Zero travel weight [kg]	105.20	121.60
Weight for 100 mm useful stroke [kg]	5.45	5.45
Rail size [mm]	35	35

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

Tab.17

Driving belt and pulley data	SP4	SP6
Belt type	75 AT 20	75 AT 20
Belt width [mm]	75	75
Belt length [mm]	2 x L - 110	2 x L - 280
Belt weight [kg/m]	0.72	0.72
Pulley type	Z 22	Z 22
Pulley pitch diameter [mm]	140.06	140.06
Carriage displacement per pulley turn [mm]	440	440
Starting torque [Nm]	13.4	14.6
Moment of inertia of pulleys [kg·mm ²]	43005	43005

Tab.18

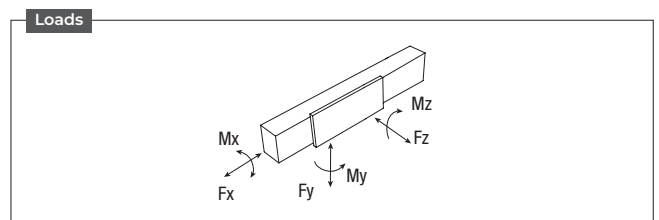
Load capacity	SP4	SP6
Fx static [N]	11025	11025
Fx dynamic [N]	8025	8025
Fy static [N]	464000	696000
Fy dynamic [N]	266800	400200
Fz static [N]	464000	696000
Mx static [Nm]	55680	83520
My static [Nm]	92800	132240
Mz static [Nm]	92800	132240

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 20).

Tab.19

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	4.83
Iy [10 ⁷ mm ⁴]	12.65
Ip [10 ⁷ mm ⁴]	17.48

Tab.20



▶ STANDARD VERTICAL AXIS ASSEMBLY HOLES

■ R-Smart 230 SP6

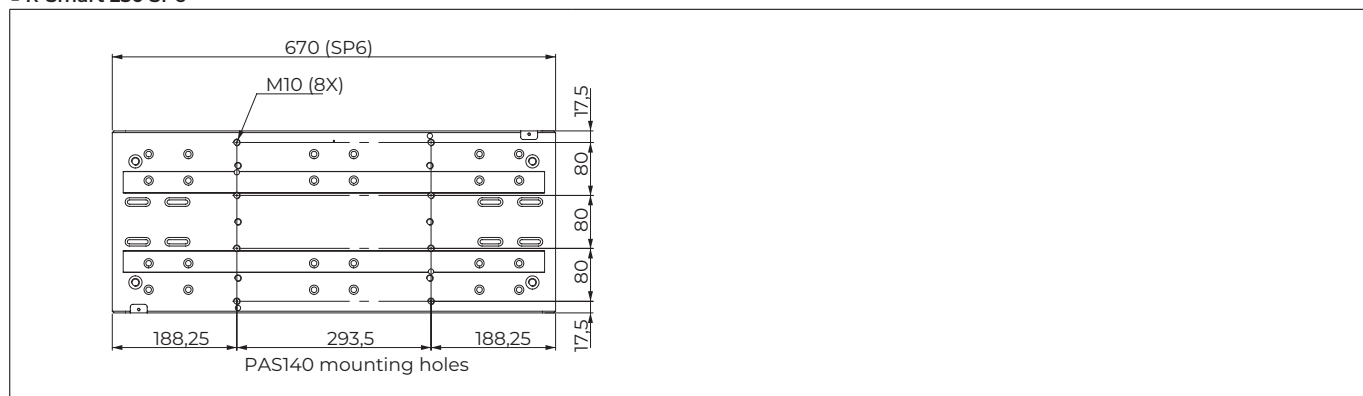


Fig.7

■ R-Smart 280 SP6

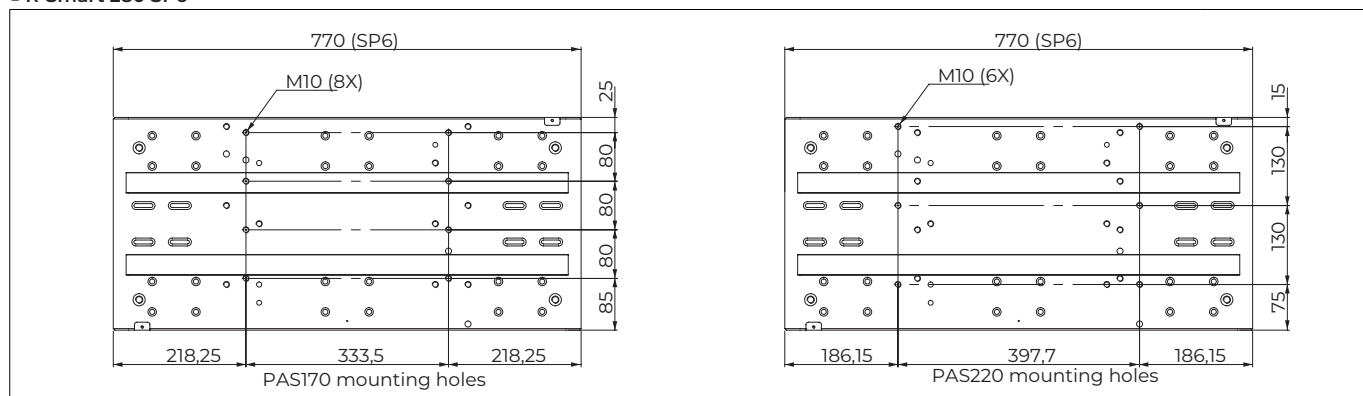


Fig.8

► INTERMEDIATE PULLEY

A version with intermediate pulley is available for the sizes shown below. This solution is particularly suitable for multi-carriage systems. For the development of this type of application, please contact Rollon Technical Department.

- Available for 230 and 280

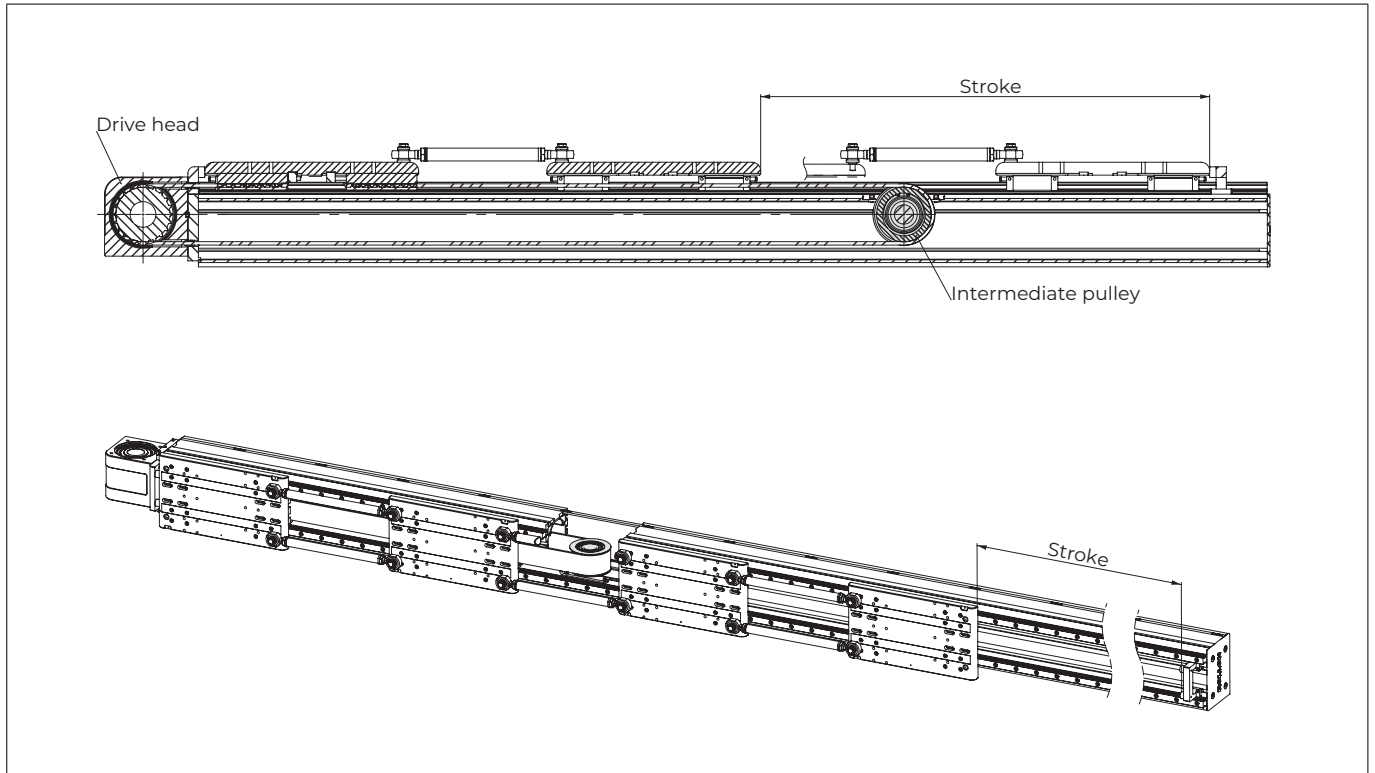


Fig.9

▶ ACCESSORIES

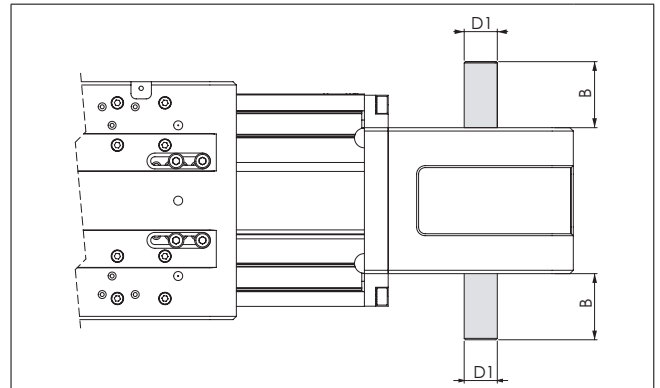
■ AS type simple shafts

Type	Shaft type	B [mm]	D1 [mm]	AS assembly kit code
R-SMART 120	AS 20	36	20h7	G000828
R-SMART 160	AS 25	50	25h7	G000649
R-SMART 220	AS 25	50	25h7	G002789
R-SMART 230*	AS 32	50	32h7	G004773
R-SMART 280*	AS 32	50	32h7	G004773

*The shaft for R-SMART 230 and 280 features a key 10x8 L=45 mm.

Tab.21

This head configuration is obtained by utilizing an assembly kit delivered as a separate accessory item. Shaft can be installed on the left or right side of the drive head as decided by the customer.



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

Fig.10

■ Hollow shaft type AC - Standard supply

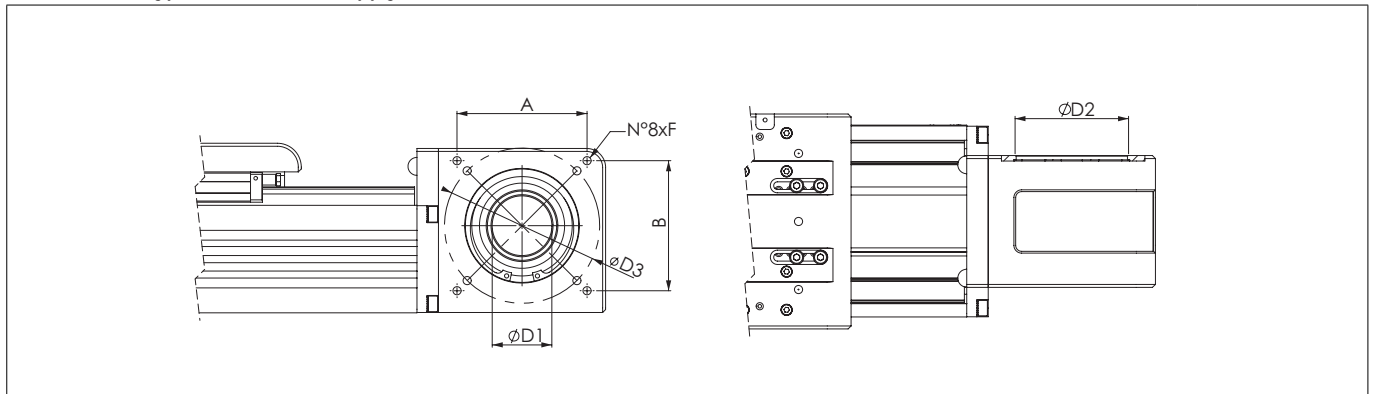


Fig.11

Type	Shaft type	D1 [mm]	D2 [mm]	D3 [mm]	F	A x B	Drive head code
R-SMART 120	AC 41	41H7	72	100	M6	92x72	2R
R-SMART 160	AC 50	50H7	95	130	M8	109x109	2R
R-SMART 220	AC 60	60H7	115	130	M8	109x109	2R
R-SMART 230	AC 60	60H7	150	180	M12	-	2R
R-SMART 280	AC 60	60H7	150	180	M12	-	2R

Tab.22

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

■ Fixing systems

To install the R-Smart units, we recommend use of one of the systems indicated below:

Type	A [mm]	B [mm]
R-SMART 120	132	80
R-SMART 160	180	110
R-SMART 220	240	170
R-SMART 230	250	165
R-SMART 280	300	190

Tab.23

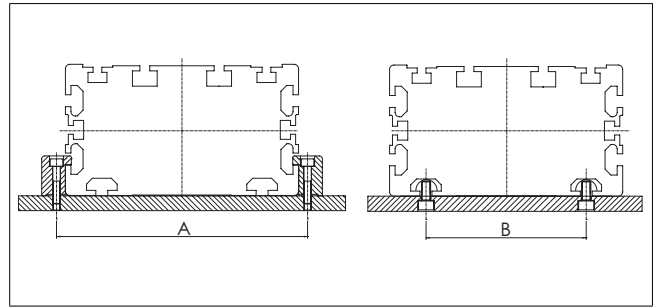


Fig.12

Fixing brackets

Type	C [mm]	H [mm]	L [mm]	T [mm]	D [mm]	Code
R-SMART 120	16	20.7	50	-	M5	1000111
R-SMART 160	31	28.5	100	-	M10	1002377
R-SMART 220	31	28.5	100	-	M10	1002377
R-SMART 230	31	28.5	100	60	M10	1020522
R-SMART 280	31	21.75	100	60	M10	1020523

Tab.24

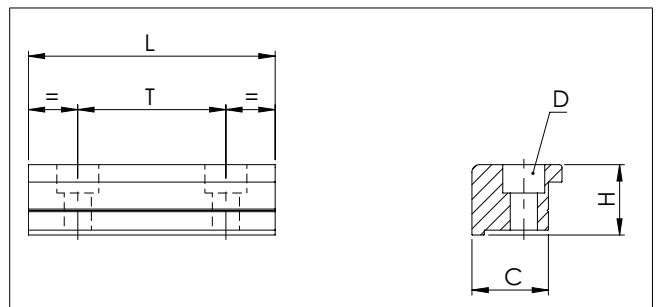


Fig.13

Threaded inserts

Type	C [mm]	H [mm]	Code
R-SMART 120	M6	20	6000437
R-SMART 160	M6	20	6000437
R-SMART 160	M8	20	6001544
R-SMART 220	M6	20	6000437
R-SMART 220	M8	20	6001544

Tab.25

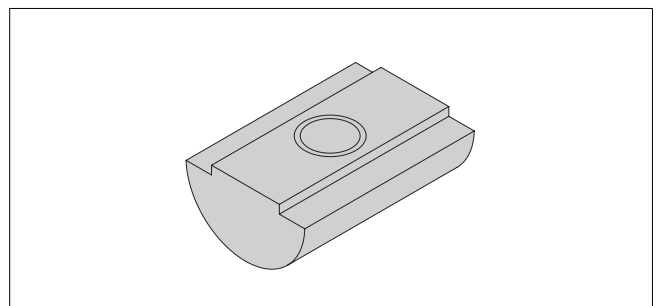


Fig.14

Steel nuts to be used in the slots of the body.

Threaded inserts for 230 profile

Material: burnished steel

Thread	Holes	Code
M4	1	4111360
M5	1	4111351
M6	1	4111352
M8	1	4111353

Tab.26

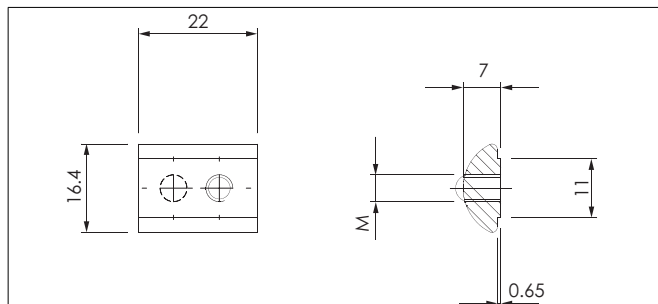


Fig.15

Threaded inserts for 230 profile

Material: burnished steel

Thread	Holes	Code
M5	1	4112540
M6	1	4112541
M8	1	4112542
M10	1	4112543

Tab.27

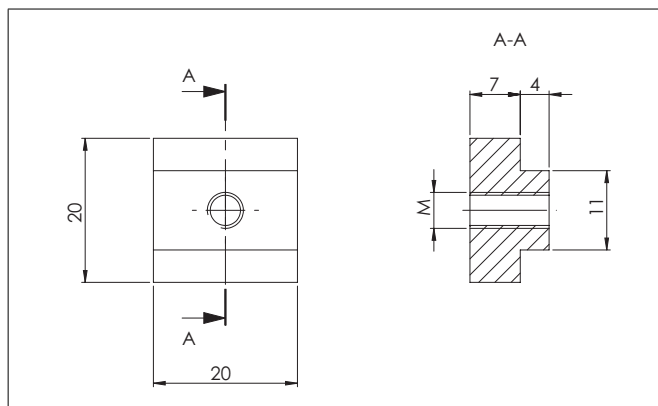


Fig.16

Threaded inserts for 280 profile

Material: burnished steel

Thread	Code
M5	6006051
M6	6006052
M8	6006053

Tab.28

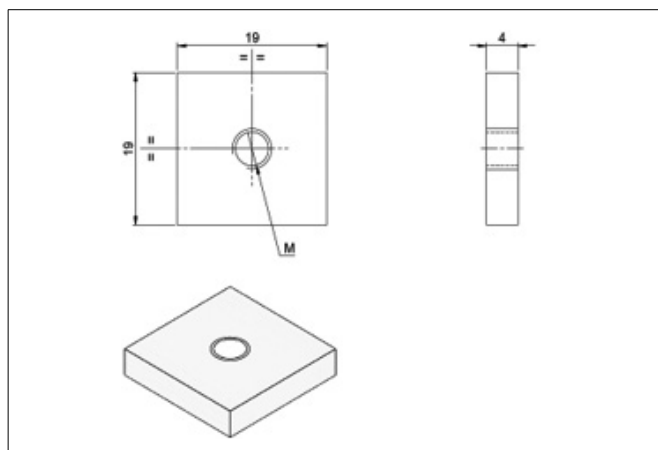


Fig.17

Threaded inserts for 280 profile

Material: galvanised steel

Thread	Code
M5	2151768
M6	2151769
M8	2151770
M10	2152124

Tab.29

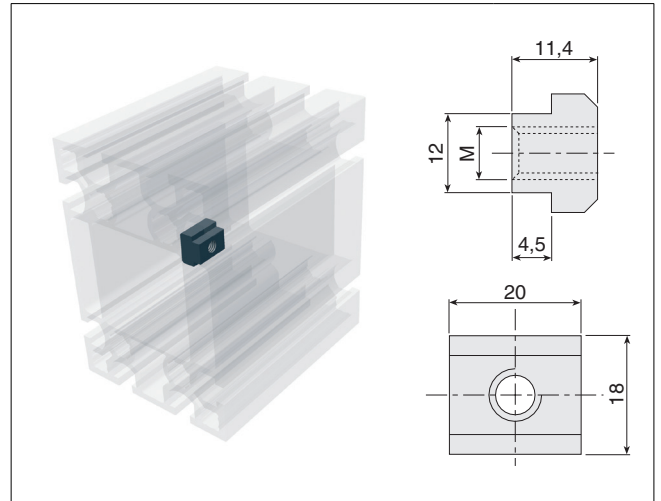


Fig.18

Frontally insertable threaded inserts for 280 profile

Material: galvanised steel

Thread	Code
M5	2151771
M6	2151772
M8	2151773
M10	2152125

Tab.30

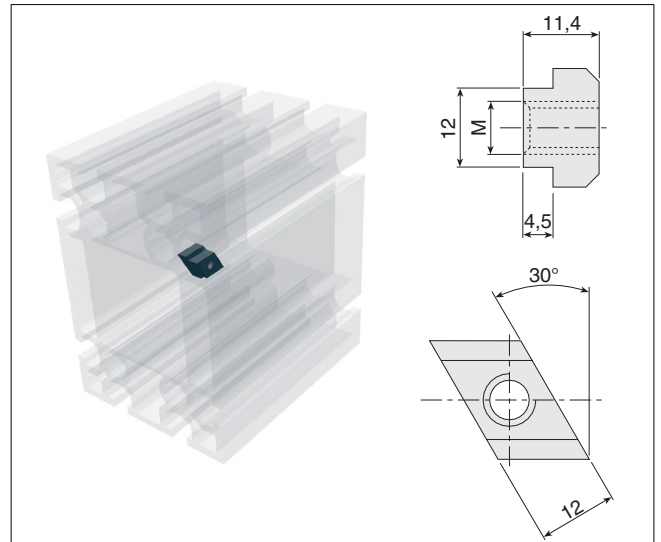


Fig.19

Threaded inserts for 280 profile

Material: galvanised steel

Thread	N. holes	L	Code
M10	1	40	2150477
M12	1	40	2091281
M10	1	20	2091277
M10	2	80	2091776
M10	3	150	2091777
M10	4	200	2091778
M10	5	250	2091779
M10	6	300	2091780
M10	7	350	2091781

Tab.31

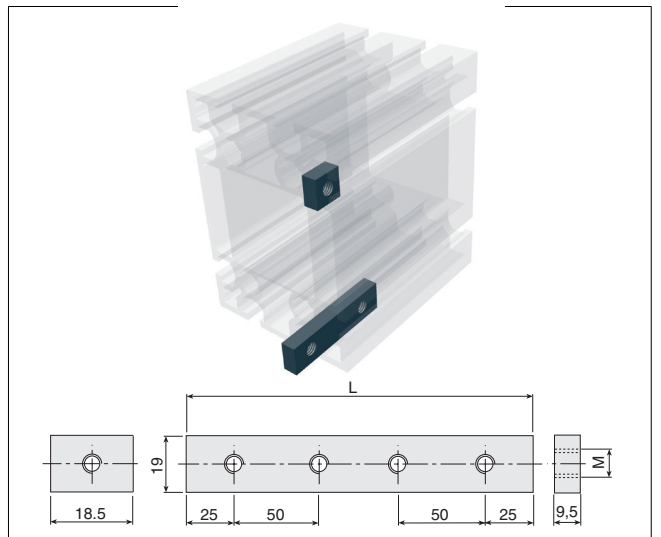


Fig.20

■ Sensors

Inductive proximity sensor holder is made of aluminum and features "T" nuts for fixing on the axis profile. The sensor dog is an iron plate mounted on the carriage and used for proximity operation. The inductive proximity sensor is not supplied by Rollon.

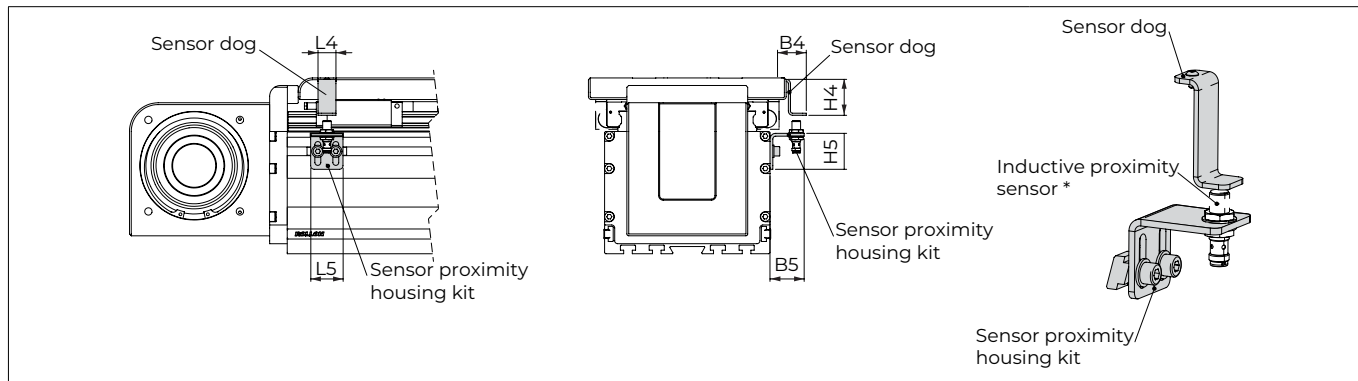


Fig.21

Type	B4 [mm]	B5 [mm]	L4 [mm]	L5 [mm]	H4 [mm]	H5 [mm]	Proximity diameter	Sensor dog code	Sensor proximity kit code
R-SMART 120	26	30	15	30	32	30	Ø 8	G000833	G000844
R-SMART 160	26	30	15	30	32	30	Ø 8	G000833	G000838
R-SMART 220	26	30	15	30	32	30	Ø 8	G000833	G000838
R-SMART 230	28	47.5	25	45	50	50	Ø 12	G004686	G004687
R-SMART 280	25	60	25	45	65	50	Ø 12	G004688	G004689

Tab.32

■ Assembly kits

For the direct assembly of R-SMART linear units on other types of actuators Rollon offers dedicated assembly kits. The table below shows the allowed combinations as well as the assembly kit codes.

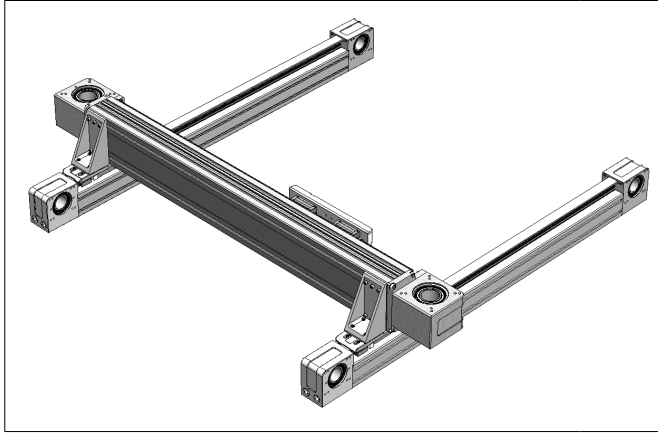


Fig.22



Fig.23

	Kit	Code	X No rail at each end [mm]
	R-SMART 120 on E-SMART 50	G000899*	60
	R-SMART 120 on E-SMART 80	G000863*	90
	R-SMART 160 on E-SMART 80	G000902*	90
	R-SMART 160 on E-SMART 100	G000903*	110
	R-SMART 220 on E-SMART 100	G001207	110
	R-SMART 230 on E-SMART144	G004682	175
	R-SMART 280 on E-SMART144	G004683	175
	R-SMART 280 on E-SMART144	G004684	175

Tab.33

* Additional fixing holes are requested on the E-SMART plate.

■ Adapter flange for gearbox assembly

Unit type	Gearbox type (not included)	Kit Code
R-SMART 120	P3	G000824
	MP080	G000826
	LC90; MPV01; NP025; PE4	G000827
	MP105	G000830
	PE3; NP015; LC070	G001078
	SP060; PLN070	G000829
	SP075; PLN090	G000859
	SW040	G000866
	CP025	G001643
	CP035	G004732
R-SMART 160	MP130	G000482
	LC120; MPV02; NP035; PE5	G000483
	LC090; NP025; PE4	G000525
	MP105	G000527
	SP075; PLN090	G000526
	SW050	G000717
	CP025	G004733
	CP035	G001058
	SP100	G000657
R-SMART 220	MP130	G002785
	MP105	G002786
	LP120; LC120; PE5; NP035	G002787
	CP035	G004753
	CP045	G004754
	NP045	G004755
	SP075	G003083
	SP100	G002788
R-SMART 230	MP105	G004678
	MP130	G004677
	LC120, LP120, PE5; NP035	G004679
	SP100	G004680
	NP045	G004681
	CP035	G004751
	CP045	G004745
	SP140	G004738
R-SMART 280	MP105	G004678
	MP130	G004677
	LC120, LP120, PE5; NP035	G004679
	SP100	G004680
	NP045	G004681
	CP035	G004751
	CP045	G004745
	SP140	G004738

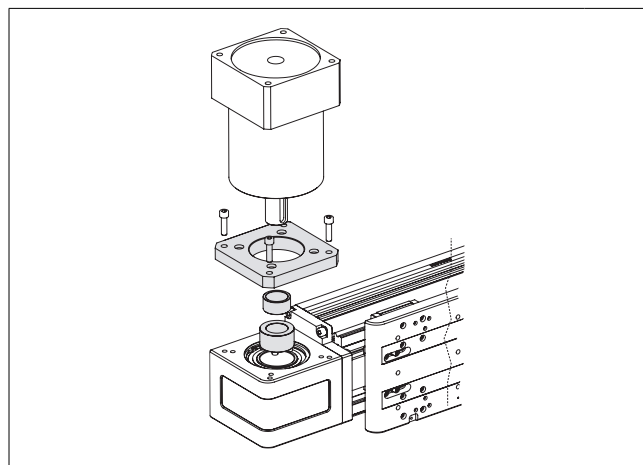


Fig.24

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

For other gearbox type ask Rollon

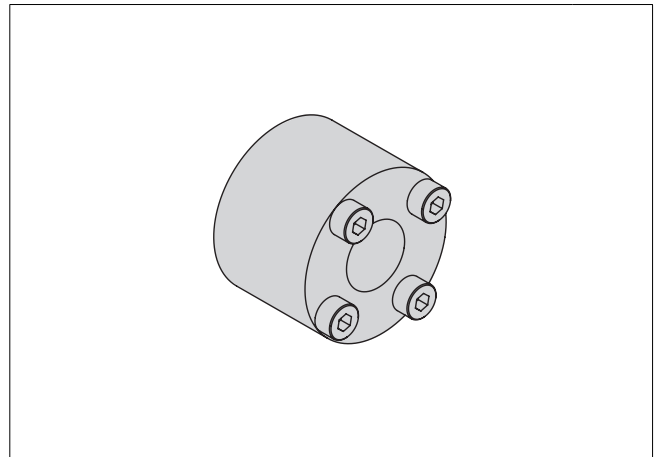
Tab.34

■ Single shrink disc

Unit type	Hollow shaft [mm]	Shrink disc dxD [mm]	Transmittable torque* [Nm]	Shrink disc code
R-SMART 120	41	19x41	150	6005734
		22x41	174	6005735
		25x41	198	6005736
R-SMART 160	50	22x50	286	6005730
		25x50	324	6005731
		32x50	415	6005732
R-SMART 220	60	22x60	343	6005298
		25x60	389	6005299
		32x60	498	6005300
R-SMART 230	60	22x60	343	6005298
		25x60	389	6005299
		32x60	498	6005300
		40x60	623	6005301
R-SMART 280	60	22x60	343	6005298
		25x60	389	6005299
		32x60	498	6005300
		40x60	623	6005301

* Transmittable torque in the table represents the maximum capacity of the shrink disk. For the application, the limit of F_x must be considered too.

Tab.35



Codes on the table refer to a shrink disc ordered as single element.

Fig.25

► USE AND MAINTENANCE

■ Lubrication

The recirculating ball guide system guarantees a long interval between maintenances: every 2000km or 1 year of use, based on the value reached first. If a longer service life is required or in case of high dynamic or high loaded applications please contact our offices for further verification.

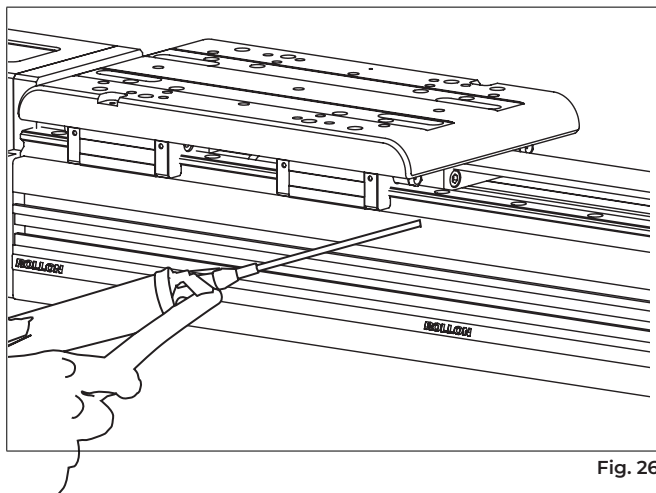


Fig. 26

- Insert the tip of the grease gun into the specific grease blocks.
- Type of lubricant: Lithium soap grease of class NLGI 2.
- For specially stressed applications or hostile environmental conditions, lubrication should be applied out more frequently.

Contact Rollon for further advice

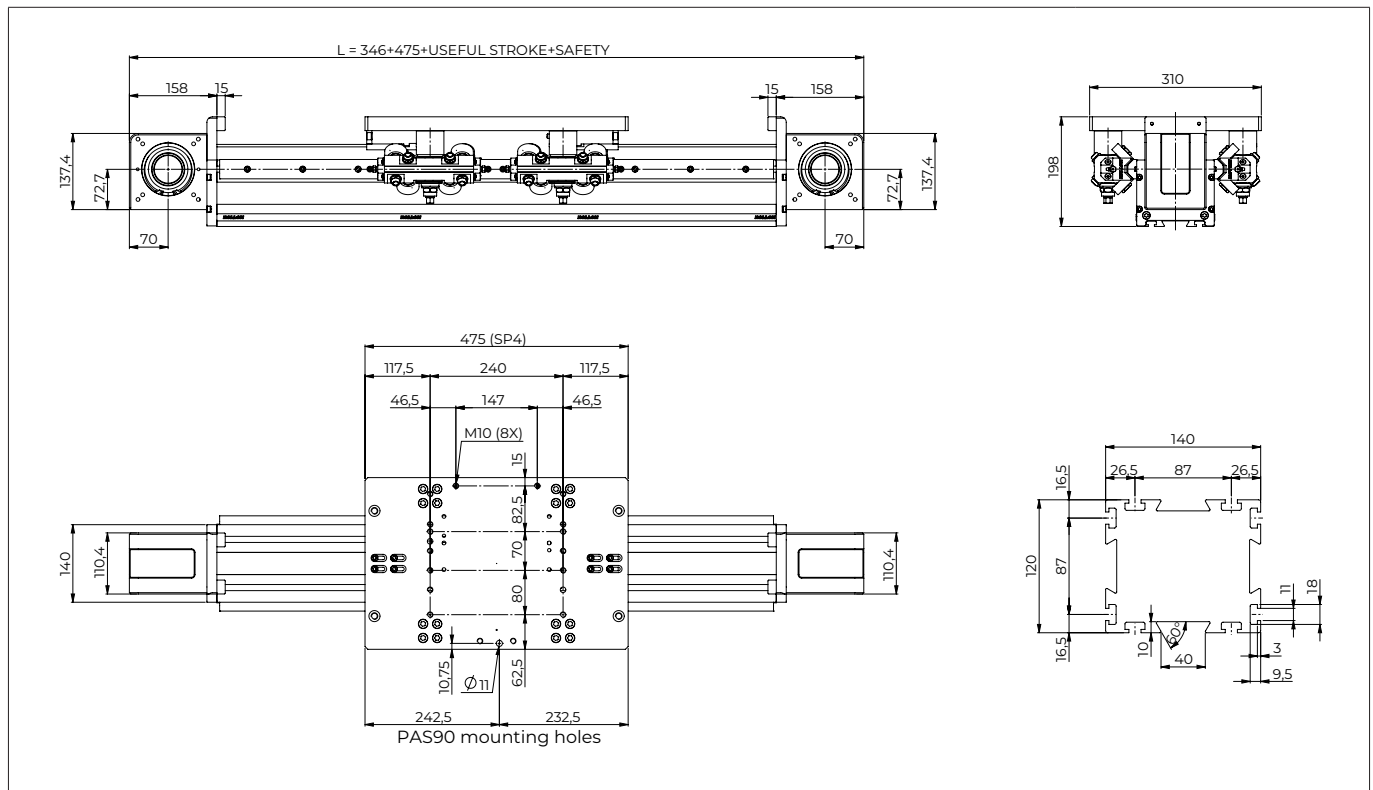
Quantity of lubricant necessary for re-lubrication of each block:

Type	Quantity [cm ³]
R-SMART 120	0.7
R-SMART 160	1.4
R-SMART 220	2.4
R-SMART 230	3.6
R-SMART 280	4.8

Tab.36

COMPONENTS AND DIMENSIONS

R-SMART-R 140 SP4



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

Fig.27

Technical data	SP4
Max. useful stroke length [mm] ¹⁾	9495
Max. positioning repeatability [mm] ²⁾	± 0.05
Max. speed [m/s]	4.0
Max. acceleration [m/s ²]	50
Carriage weight [kg]	23.60
Zero travel weight [kg]	49.00
Weight for 100 mm useful stroke [kg]	2.16
Rail size [mm]	35x16

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

Tab.37

Driving belt and pulley data	SP4
Belt type	40 AT 10
Belt width [mm]	40
Belt length [mm]	2 x L - 265
Belt weight [kg/m]	0.23
Pulley type	Z 27
Pulley pitch diameter [mm]	85.94
Carriage displacement per pulley turn [mm]	270
Starting torque [Nm]	3.0
Moment of inertia of pulleys [kg·mm ²]	4982

Tab.38

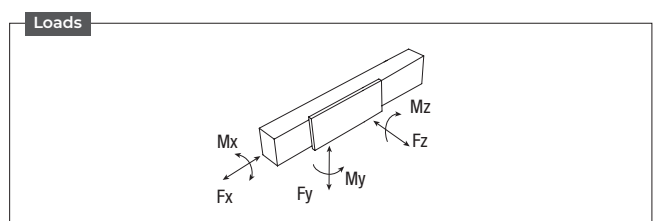
Load capacity	SP4
Fx static [N]	3984
Fx dynamic [N]	2712
Fy static [N]	14142
Fy dynamic [N]	65928
Fz static [N]	14142
Mx static [Nm]	990
My static [Nm]	1697
Mz static [Nm]	1697

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 36).

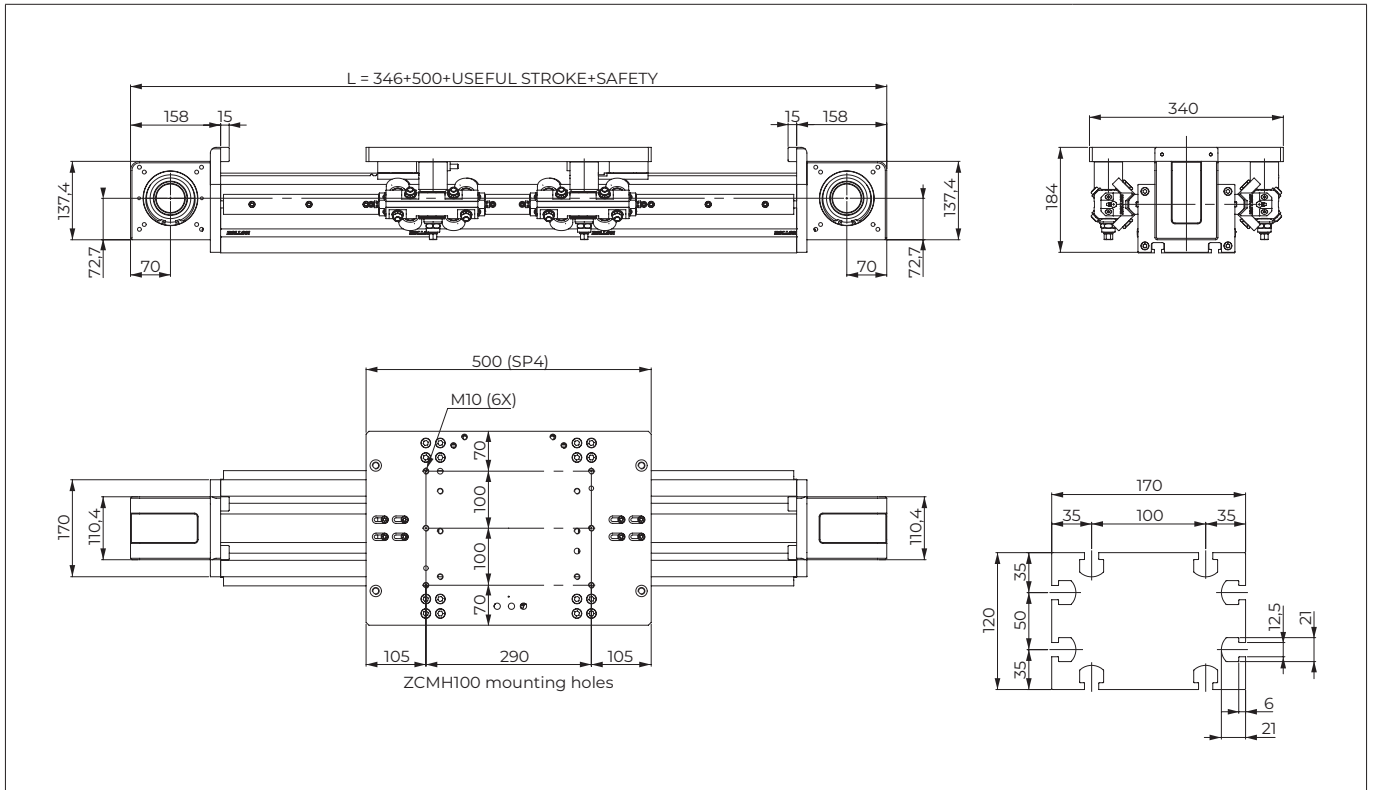
Tab.39

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	0.89
Iy [10 ⁷ mm ⁴]	1.15
Ip [10 ⁷ mm ⁴]	2.04

Tab.40



■ R-SMART-R 170 SP4



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

Fig.28

Technical data	SP4
Max. useful stroke length [mm] ¹⁾	9470
Max. positioning repeatability [mm] ²⁾	± 0.05
Max. speed [m/s]	4.0
Max. acceleration [m/s ²]	50
Carriage weight [kg]	25.70
Zero travel weight [kg]	54.10
Weight for 100 mm useful stroke [kg]	2.52
Rail size [mm]	35x16

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

Tab.41

Driving belt and pulley data	SP4
Belt type	50 AT 10
Belt width [mm]	50
Belt length [mm]	2 x L - 265
Belt weight [kg/m]	0.29
Pulley type	Z 27
Pulley pitch diameter [mm]	85.94
Carriage displacement per pulley turn [mm]	270
Starting torque [Nm]	4.2
Moment of inertia of pulleys [kg·mm ²]	5363

Tab.42

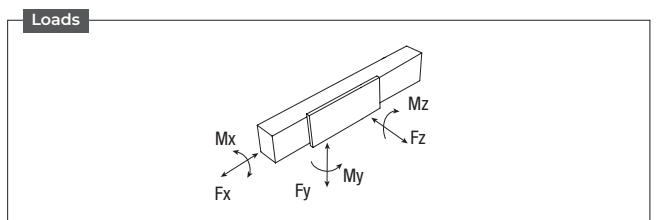
Load capacity	SP4
Fx static [N]	4980
Fx dynamic [N]	3390
Fy static [N]	14142
Fy dynamic [N]	65928
Fz static [N]	14142
Mx static [Nm]	1202
My static [Nm]	1874
Mz static [Nm]	1874

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 36).

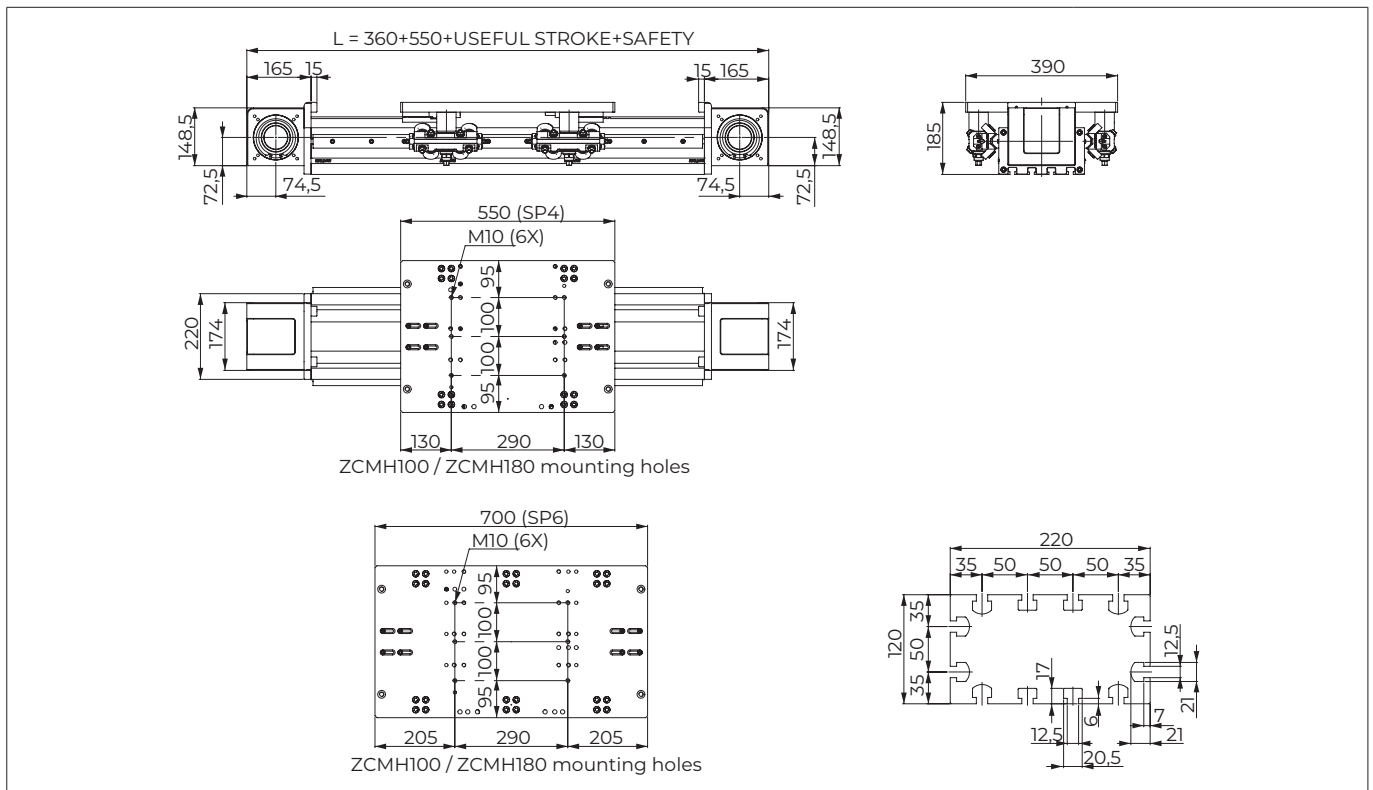
Tab.43

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	0.98
Iy [10 ⁷ mm ⁴]	1.97
Ip [10 ⁷ mm ⁴]	2.96

Tab.44



■ R-SMART-R 220 SP4 - SP6



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

Fig.29

Technical data	SP4	SP6
Max. useful stroke length [mm]	11420	11270
Max. positioning repeatability [mm] ¹⁾	± 0.05	± 0.05
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	28.50	38.50
Zero travel weight [kg]	70.60	85.90
Weight for 100 mm useful stroke [kg]	3.95	3.95
Rail size [mm]	35x16	35x16

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

Tab.45

Driving belt and pulley data	SP4	SP6
Belt type	75 AT10	75 AT10
Belt width [mm]	75	75
Belt length [mm]	2 x L - 265	2 x L - 415
Belt weight [kg/m]	0.44	0.44
Pulley type	Z 32	Z 32
Pulley pitch diameter [mm]	101.86	101.86
Carriage displacement per pulley turn [mm]	320	320
Starting torque [Nm]	5.8	6.8
Moment of inertia of pulleys [kg·mm ²]	15077	15077

Tab.46

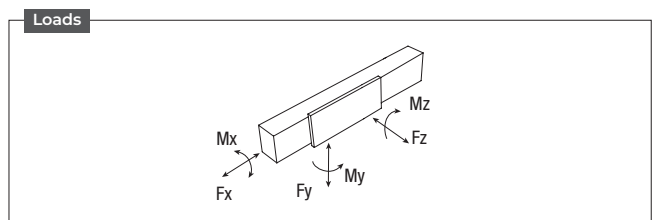
Load capacity	SP4	SP6
Fx static [N]	7470	7470
Fx dynamic [N]	5535	5535
Fy static [N]	14142	21213
Fy dynamic [N]	65928	98892
Fz static [N]	14142	21213
Mx static [Nm]	1556	2333
My static [Nm]	2227	3288
Mz static [Nm]	2227	3288

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 36).

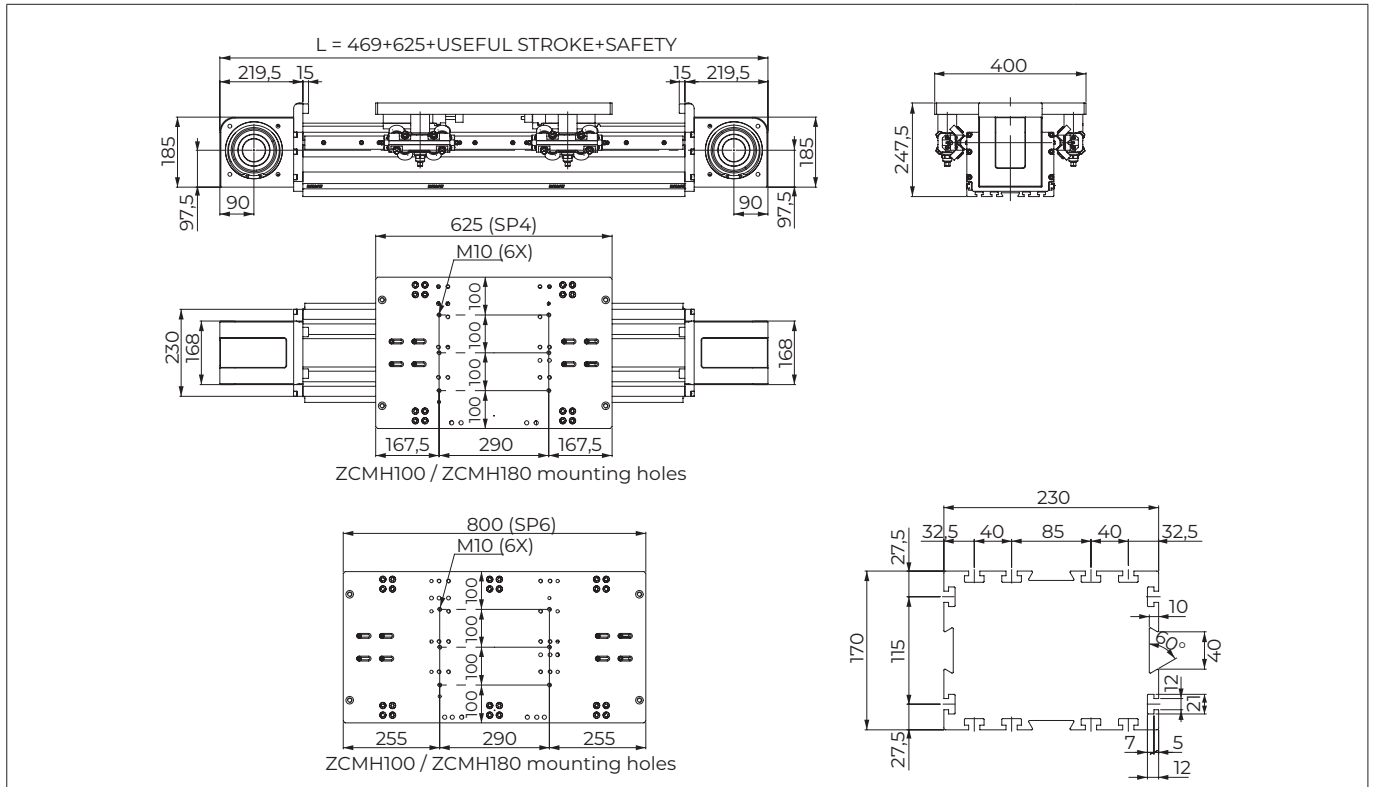
Tab.47

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	1.56
Iy [10 ⁷ mm ⁴]	4.63
Ip [10 ⁷ mm ⁴]	6.18

Tab.48



■ R-SMART-R 230 SP4 - SP6



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

Fig.30

Technical data	SP4	SP6
Max. useful stroke length [mm]	11345	11170
Max. positioning repeatability [mm] ¹	± 0.1	± 0.1
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	35.80	47.60
Zero travel weight [kg]	104.70	122.30
Weight for 100 mm useful stroke [kg]	3.51	3.51
Rail size [mm]	35x16	35x16

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

Tab.49

Driving belt and pulley data	SP4	SP6
Belt type	75 AT 20	75 AT 20
Belt width [mm]	75	75
Belt length [mm]	2 x L - 125	2 x L - 300
Belt weight [kg/m]	0.72	0.72
Pulley type	Z 22	Z 22
Pulley pitch diameter [mm]	140.06	140.06
Carriage displacement per pulley turn [mm]	440	440
Starting torque [Nm]	10.5	11.7
Moment of inertia of pulleys [kg·mm ²]	43005	43005

Tab.50

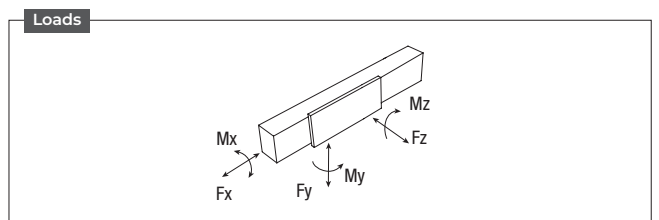
Load capacity	SP4	SP6
Fx static [N]	11025	11025
Fx dynamic [N]	8025	8025
Fy static [N]	14142	21213
Fy dynamic [N]	65928	98892
Fz static [N]	14142	21213
Mx static [Nm]	1626	2440
My static [Nm]	2758	3995
Mz static [Nm]	2758	3995

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 36).

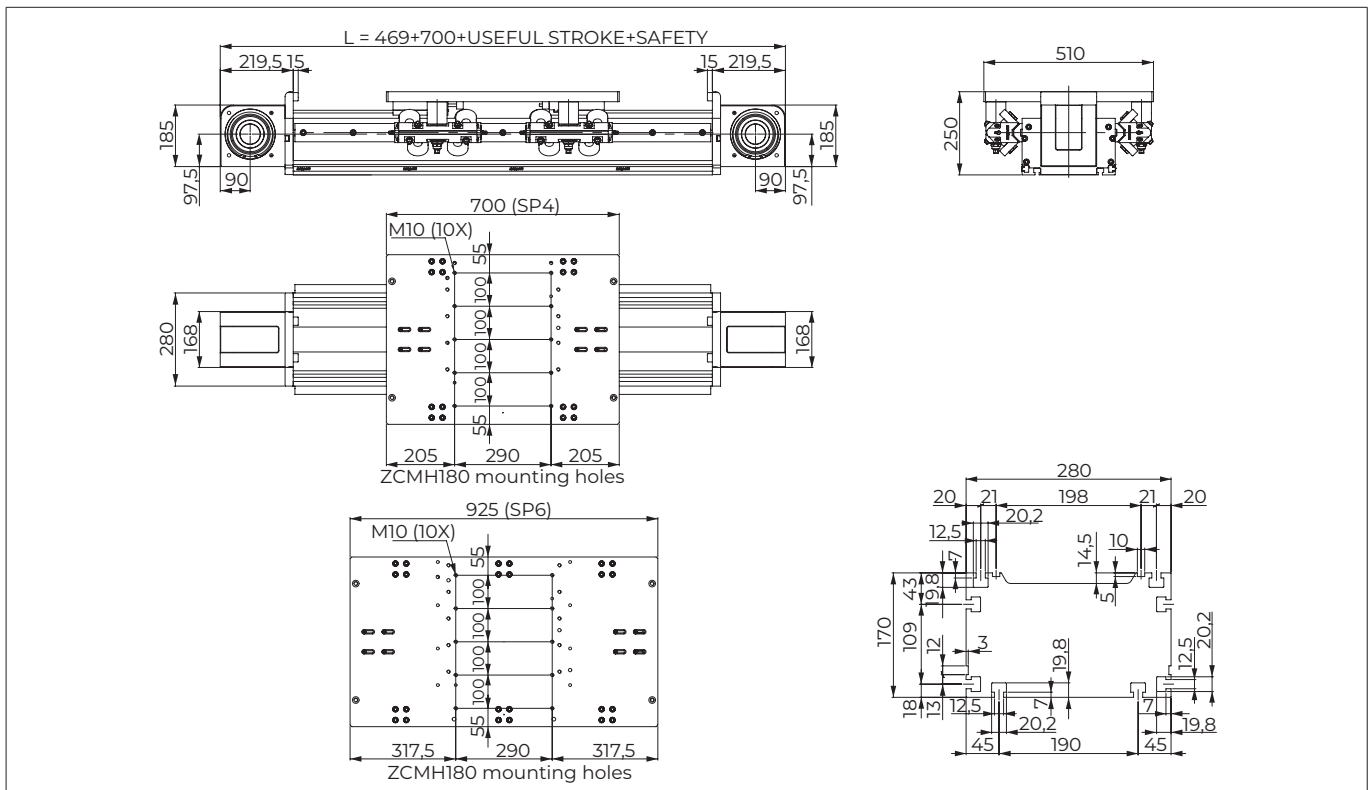
Tab.51

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	3.78
Iy [10 ⁷ mm ⁴]	6.50
Ip [10 ⁷ mm ⁴]	10.28

Tab.52



■ R-SMART-R 280 SP4 - SP6



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

Fig.31

Technical data	SP4	SP6
Max. useful stroke length [mm]	11270	11045
Max. positioning repeatability [mm] ¹	± 0.1	± 0.1
Max. speed [m/s]	4.0	4.0
Max. acceleration [m/s ²]	50	50
Carriage weight [kg]	59.50	82.20
Zero travel weight [kg]	146.30	181.20
Weight for 100 mm useful stroke [kg]	5.45	5.45
Rail size [mm]	55x25	55x25

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

Tab.53

Driving belt and pulley data	SP4	SP6
Belt type	75 AT 20	75 AT 20
Belt width [mm]	75	75
Belt length [mm]	2 x L - 200	2 x L - 425
Belt weight [kg/m]	0.72	0.72
Pulley type	Z 22	Z 22
Pulley pitch diameter [mm]	140.06	140.06
Carriage displacement per pulley turn [mm]	440	440
Starting torque [Nm]	12.7	13.9
Moment of inertia of pulleys [kg·mm ²]	43005	43005

Tab.54

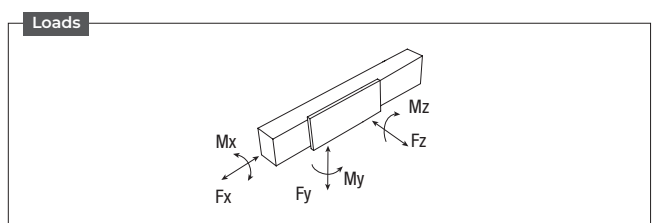
Load capacity	SP4	SP6
Fx static [N]	11025	11025
Fx dynamic [N]	8025	8025
Fy static [N]	24042	36062
Fy dynamic [N]	112593	168890
Fz static [N]	24042	36062
Mx static [Nm]	4197	6296
My static [Nm]	4748	7453
Mz static [Nm]	4748	7453

Fx in the table represents the maximum capacity of the toothed belt. For the application, the limit of transmittable torque of the shrink disk must be considered too (see pg 36).

Tab.55

Moments of inertia of the aluminum body	
Ix [10 ⁷ mm ⁴]	4.83
Iy [10 ⁷ mm ⁴]	12.65
Ip [10 ⁷ mm ⁴]	17.48

Tab.56



STANDARD VERTICAL AXIS ASSEMBLY HOLES

■ R-Smart-R 140 SP4

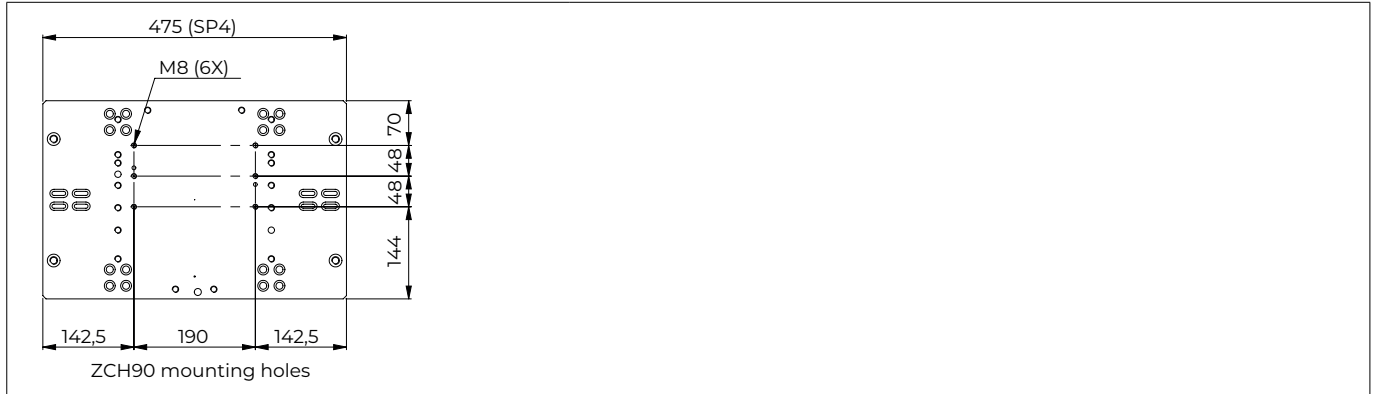


Fig.32

■ R-Smart-R 170 SP4

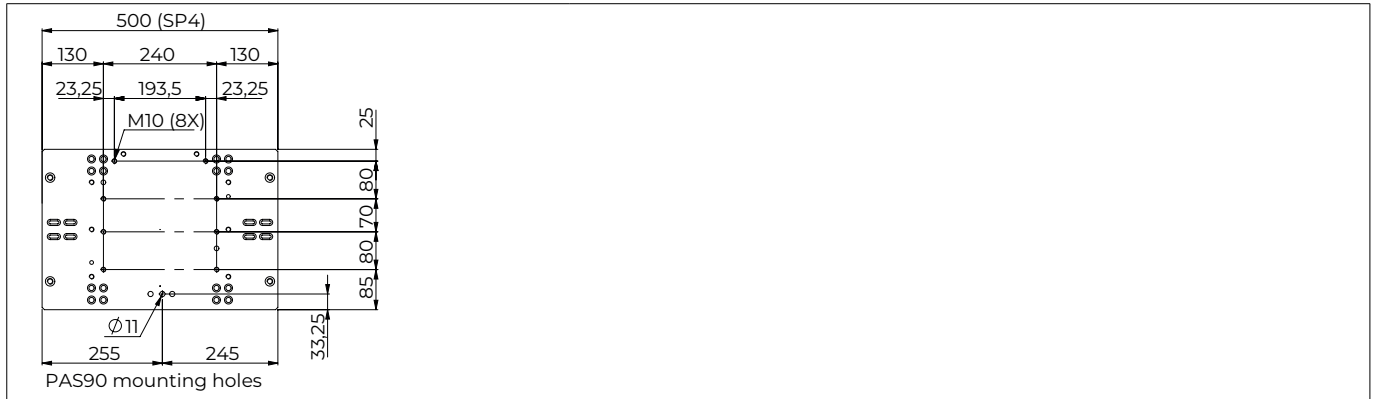


Fig.33

■ R-Smart-R 220 SP4

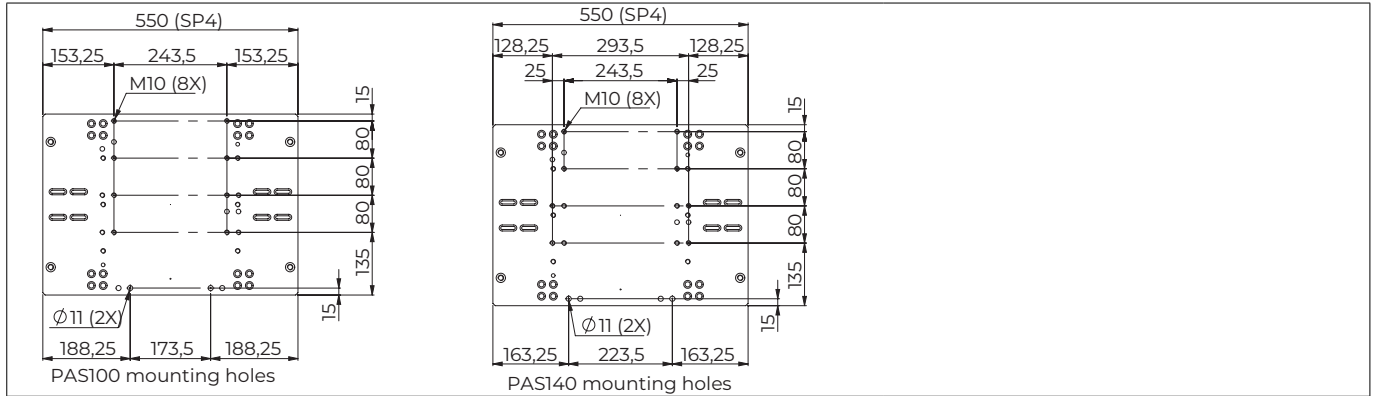


Fig.34

■ R-Smart-R 220 SP6

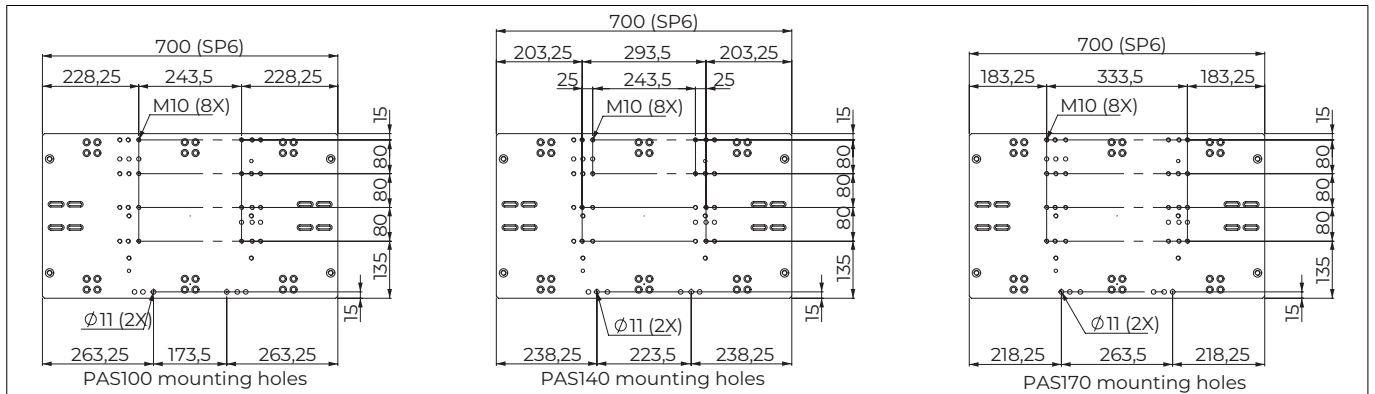


Fig.35

■ R-Smart-R 230 SP4

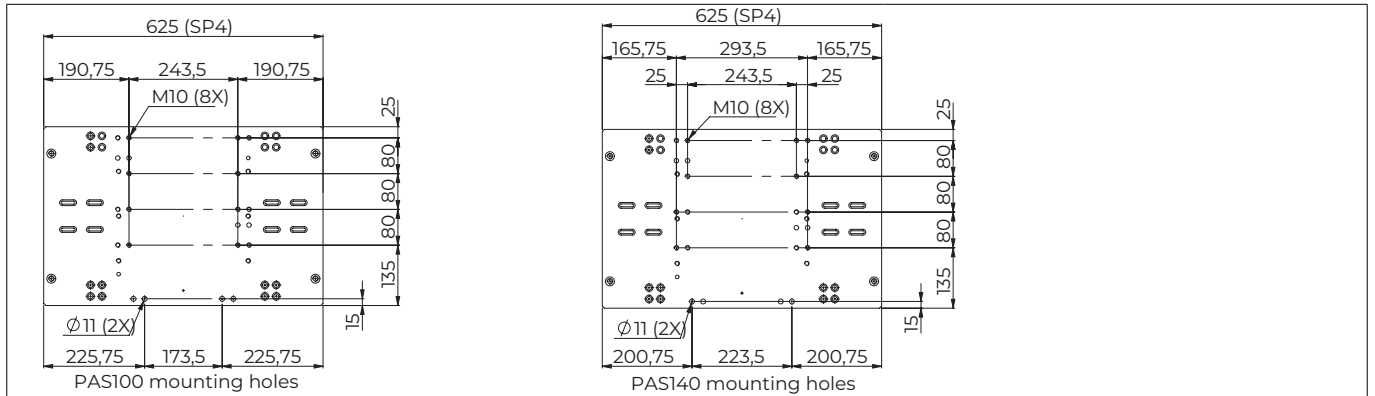


Fig.36

■ R-Smart-R 230 SP6

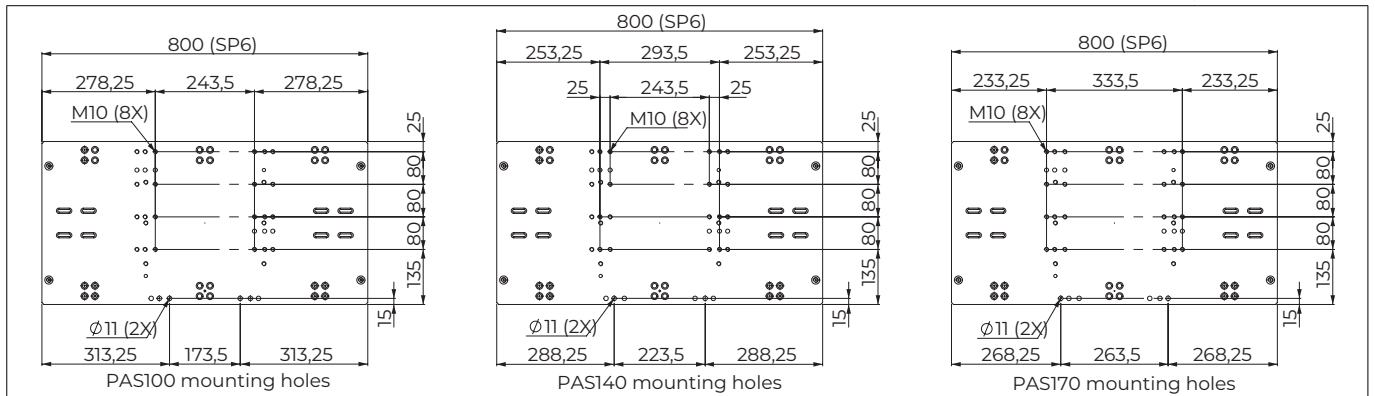


Fig.37

■ R-Smart-R 280 SP4

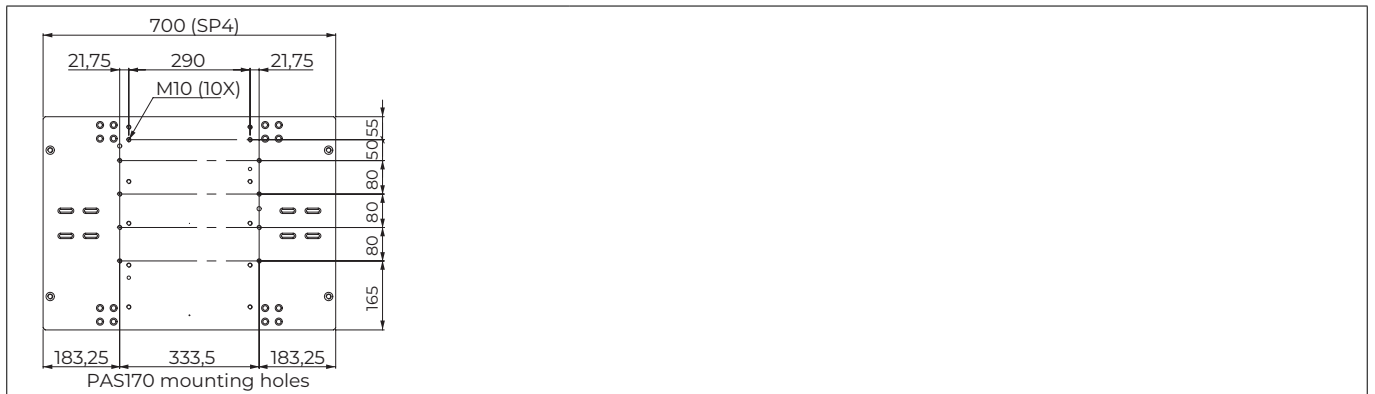


Fig.38

■ R-Smart-R 280 SP6

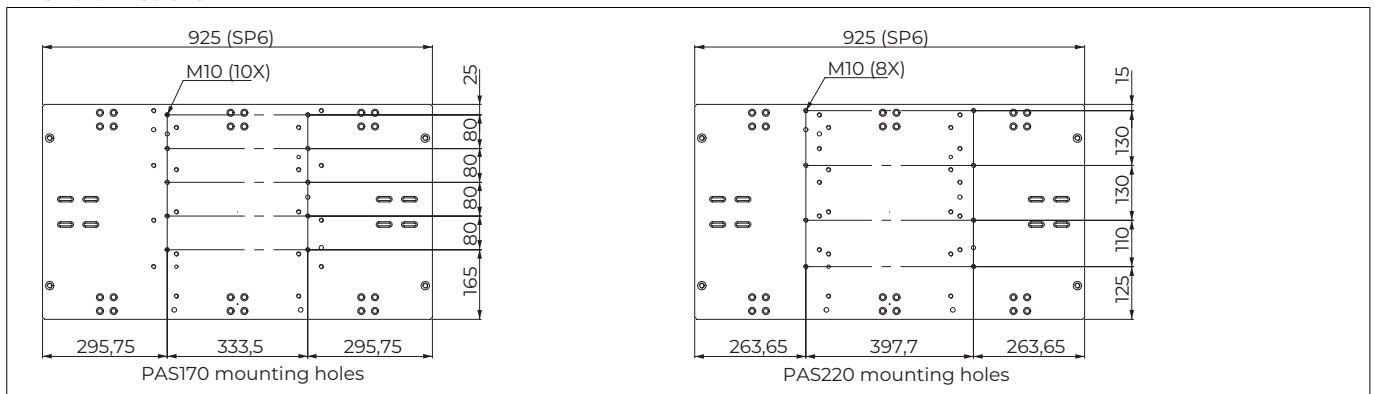


Fig.39

► INTERMEDIATE PULLEY

A version with intermediate pulley is available for the sizes shown below. This solution is particularly suitable for multi-carriage systems. For the development of this type of application, please contact Rollon Technical Department.

■ Available for 170, 220, 230, 280

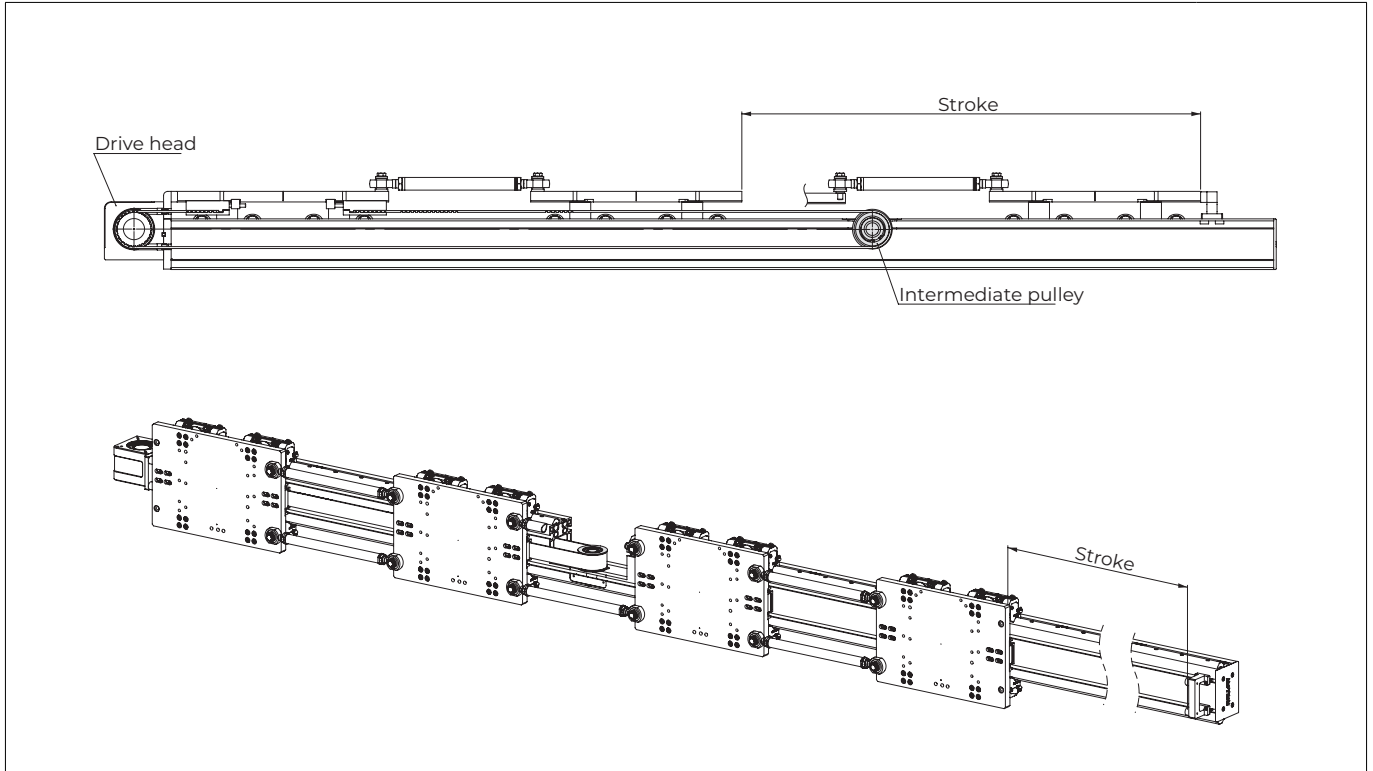
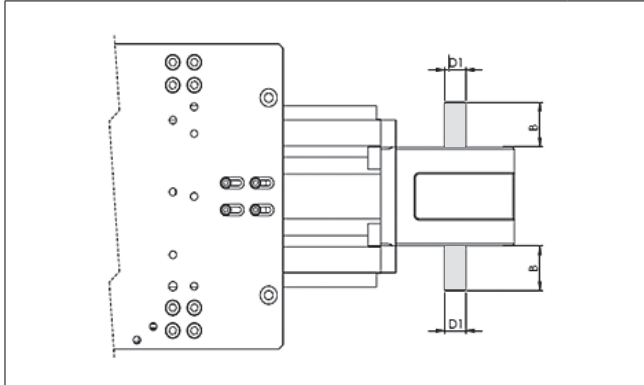


Fig.40

▶ ACCESSORIES

■ AS type simple shafts



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

Fig.41

Type	Shaft type	B [mm]	D1 [mm]	AS assembly kit code
R-SMART-R 140	AS 25	50	25h7	G000649
R-SMART-R 170	AS 25	50	25h7	G000649
R-SMART-R 220	AS 25	50	25h7	G002789
R-SMART-R 230*	AS 32	50	32h7	G004773
R-SMART-R 280*	AS 32	50	32h7	G004773

The shaft for R-SMART-R 230 and 280 features a key 10x8 L=45 mm.

Tab.57

This head configuration is obtained by utilizing an assembly kit delivered as a separate accessory item. Shaft can be installed on the left or right side of the drive head as decided by the customer.

■ Hollow shaft type AC - Standard supply

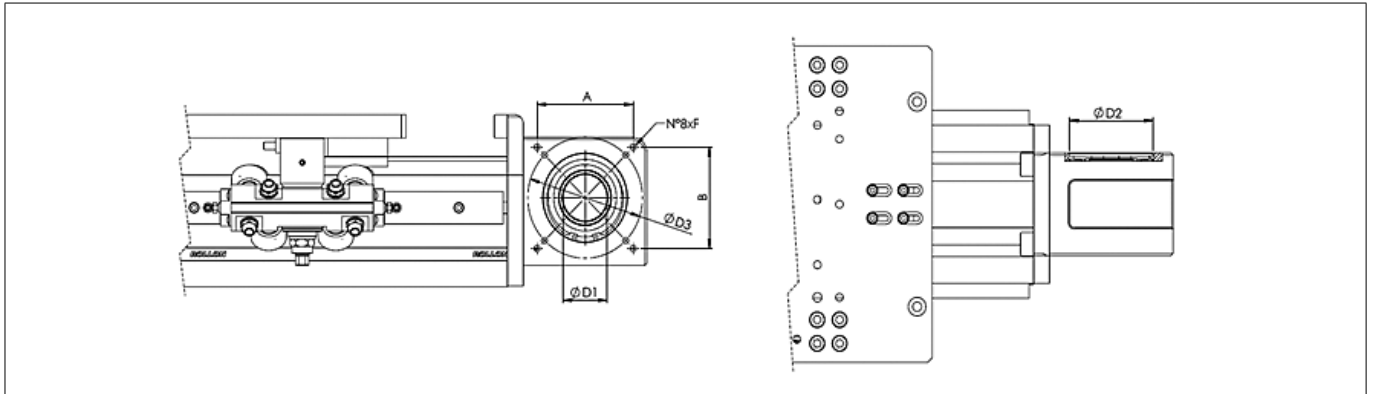


Fig.42

Type	Shaft type	D1 [mm]	D2 [mm]	D3 [mm]	F	A x B	Drive head code
R-SMART-R 140	AC 50	50H7	95	130	M8	109x109	2R
R-SMART-R 170	AC 50	50H7	95	130	M8	109x109	2R
R-SMART-R 220	AC 60	60H7	115	130	M8	109x109	2R
R-SMART-R 230	AC 60	60H7	150	180	M12	-	2R
R-SMART-R 280	AC 60	60H7	150	180	M12	-	2R

Tab.58

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

■ Fixing systems

To install the R-Smart R units, we recommend use of one of the systems indicated below:

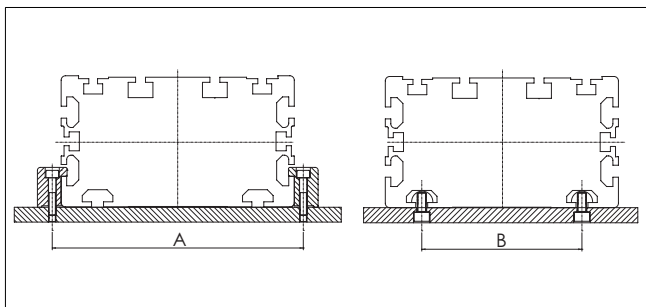


Fig.43

Type	A [mm]	B [mm]
R-SMART-R 140	152	87
R-SMART-R 170	198	100
R-SMART-R 220	248	150
R-SMART-R 230	250	165
R-SMART-R 280	300	190

Tab.59

Fixing brackets

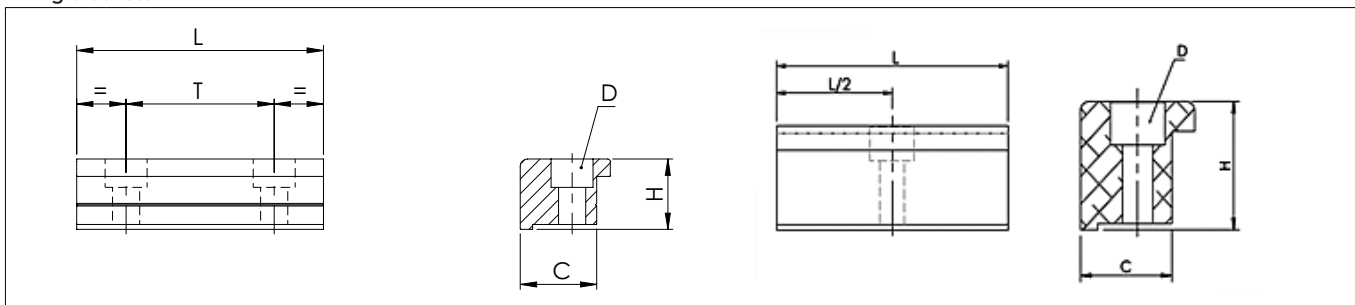


Fig.44

Type	C [mm]	H [mm]	L [mm]	T [mm]	D [mm]	Code
R-SMART-R 140	16	15.8	50	-	M5	1002167
R-SMART-R 170	25	40	90	50	M10	4150762
R-SMART-R 220	25	40	90	50	M10	4150762
R-SMART-R 230	31	28.5	100	60	M10	1020522
R-SMART-R 280	31	21.75	100	60	M10	1020523

Tab.60

Threaded inserts for 140/230 profiles

Material: burnished steel

Thread	Holes	Code
M4	1	4111360
M5	1	4111351
M6	1	4111352
M8	1	4111353

Tab.61

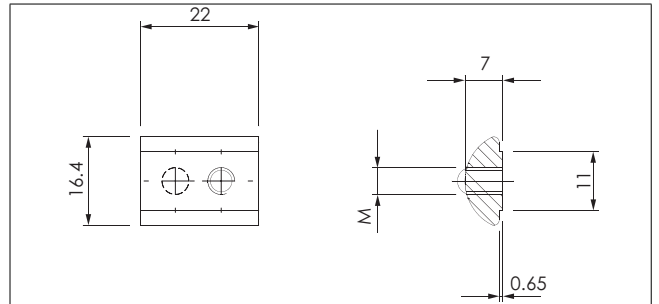


Fig.45

Threaded inserts for 140/230 profiles

Material: burnished steel

Thread	Holes	Code
M5	1	4112540
M6	1	4112541
M8	1	4112542
M10	1	4112543

Tab.62

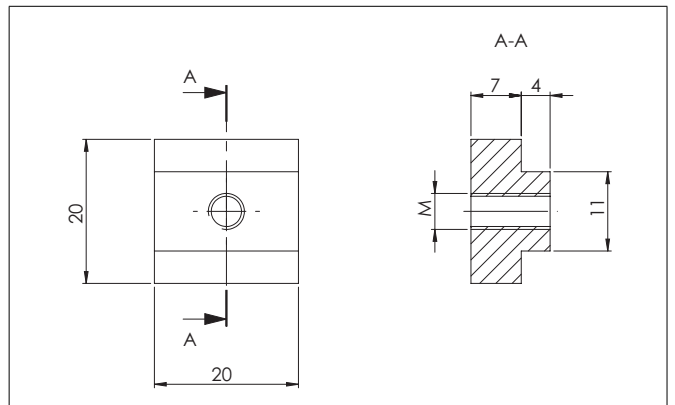


Fig.46

Threaded inserts for 170/220/280 profiles

Material: burnished steel

Thread	Code
M5	6006051
M6	6006052
M8	6006053

Tab.63

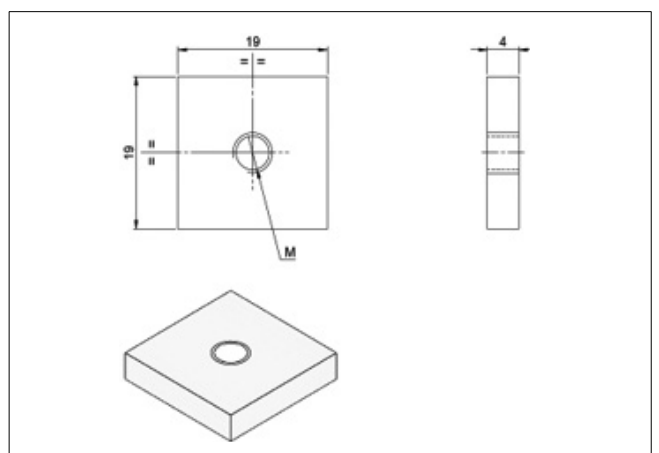


Fig.47

Threaded inserts for 170/220/280 profiles

Material: galvanised steel

Thread	Code
M5	2151768
M6	2151769
M8	2151770
M10	2152124

Tab.64

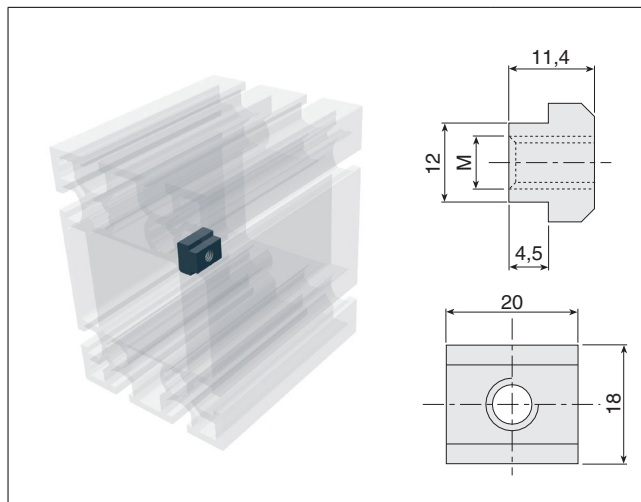


Fig.48

Frontally insertable threaded inserts for 170/220/280 profiles

Material: galvanised steel

Thread	Code
M5	2151771
M6	2151772
M8	2151773
M10	2152125

Tab.65

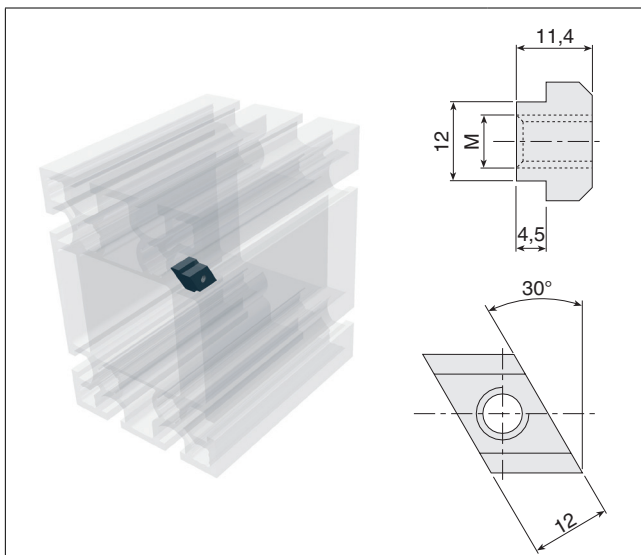


Fig.49

Threaded inserts for 170/220/280 profiles

Material: galvanised steel

Thread	N. holes	L	Code
M10	1	40	2150477
M12	1	40	2091281
M10	1	20	2091277
M10	2	80	2091776
M10	3	150	2091777
M10	4	200	2091778
M10	5	250	2091779
M10	6	300	2091780
M10	7	350	2091781

Tab.66

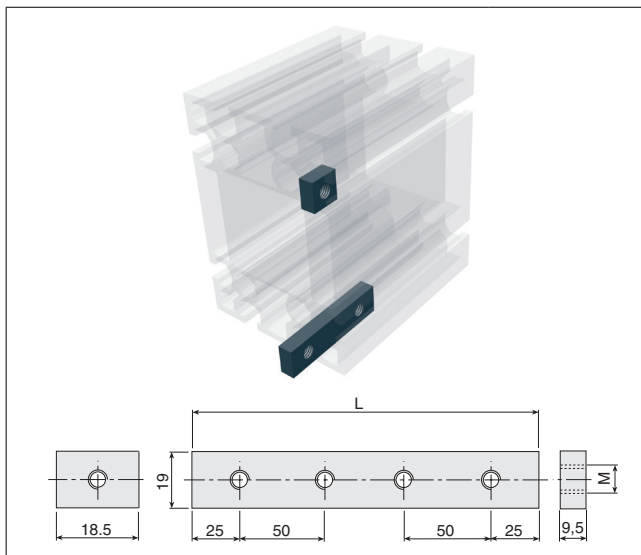


Fig.50

■ Sensors

Inductive proximity sensor holder is made of aluminum and features “T” nuts for fixing on the axis profile. The sensor dog is an iron plate mounted on the carriage and used for proximity operation. The inductive proximity sensor is not supplied by Rollon.

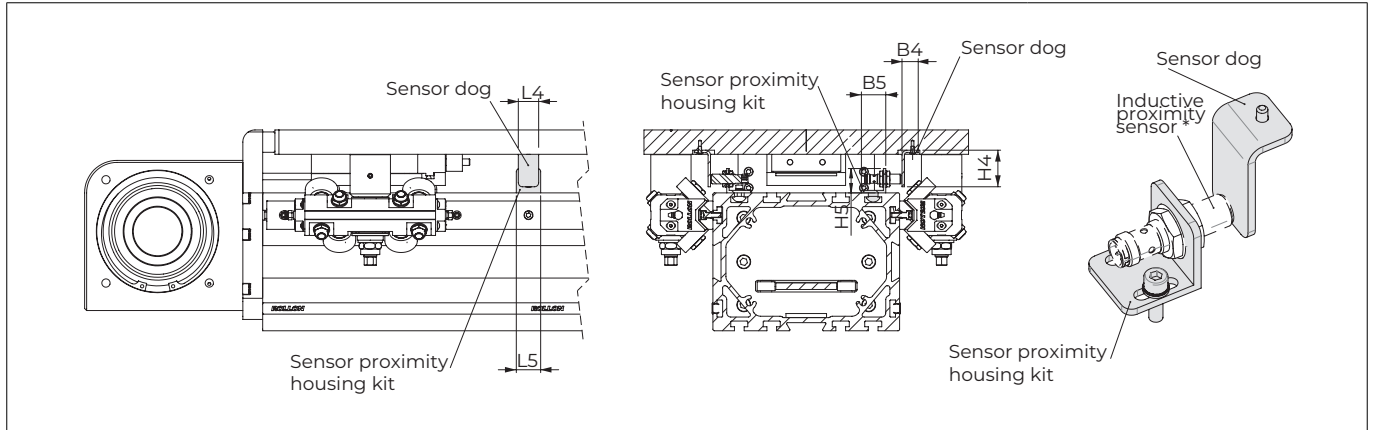


Fig.51

Type	B4 [mm]	B5 [mm]	L4 [mm]	L5 [mm]	H4 [mm]	H5 [mm]	Proximity diameter	Sensor dog code	Sensor proximity kit code
R-SMART-R 140	20	30	25	30	45	30	Ø8	G004692	G004694
R-SMART-R 170	20	30	25	30	35	30	Ø8	G004693	G004866
R-SMART-R 220	20	30	25	30	35	30	Ø8	G004693	G004866
R-SMART-R 230	20	30	25	30	45	30	Ø12	G004692	G004865
R-SMART-R 280	20	30	25	30	45	30	Ø12	G004692	G004694

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■ Adapter flange for gearbox assembly

Unit type	Gearbox type (not included)	Kit Code
R-SMART-R 140	MP130	G000482
	LC120; MPV02; NP035; PE5	G000483
	LC090; NP025; PE4	G000525
	MP105	G000527
	SP075; PLN090	G000526
	SW050	G000717
	CP025	G004733
	CP035	G001058
	SP100	G000657
R-SMART-R 170	MP130	G000482
	LC120; MPV02; NP035; PE5	G000483
	LC090; NP025; PE4	G000525
	MP105	G000527
	SP075; PLN090	G000526
	SW050	G000717
	CP025	G004733
	CP035	G001058
	SP100	G000657
R-SMART-R 220	MP130	G002785
	MP105	G002786
	LP120; LC120; PE5; NP035	G002787
	CP035	G004753
	CP045	G004754
	NP045	G004755
	SP075	G003083
	SP100	G002788
	R-SMART-R 230	MP105
MP130		G004677
LC120, LP120, PE5; NP035		G004679
SP100		G004680
NP045		G004681
CP035		G004751
CP045		G004745
SP140		G004738
R-SMART-R 280	MP105	G004678
	MP130	G004677
	LC120, LP120, PE5; NP035	G004679
	SP100	G004680
	NP045	G004681
	CP035	G004751
	CP045	G004745
	SP140	G004738

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For other gearbox type ask Rollon

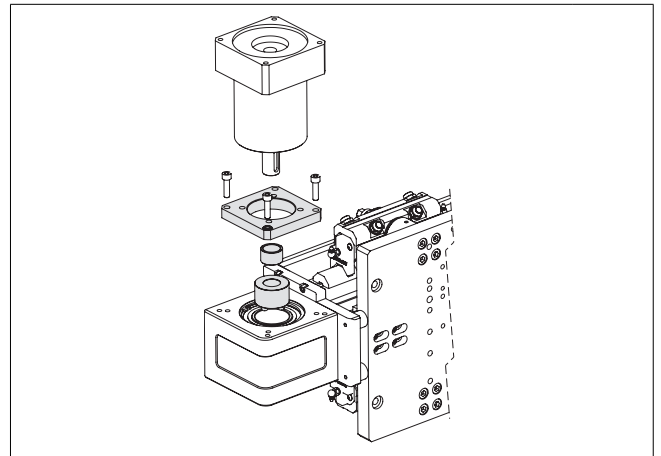


Fig.52

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

■ Single shrink disc

Unit type	Hollow shaft [mm]	Shrink disc dxD [mm]	Transmittable torque* [Nm]	Shrink disc code
R-SMART-R 140	50	22x50	286	6005730
		25x50	324	6005731
		32x50	415	6005732
R-SMART-R 170	50	22x50	286	6005730
		25x50	324	6005731
		32x50	415	6005732
R-SMART-R 220	60	22x60	343	6005298
		25x60	389	6005299
		32x60	498	6005300
R-SMART-R 230	60	22x60	343	6005298
		25x60	389	6005299
		32x60	498	6005300
		40x60	623	6005301
R-SMART-R 280	60	22x60	343	6005298
		25x60	389	6005299
		32x60	498	6005300
		40x60	623	6005301

* Transmittable torque in the table represents the maximum capacity of the shrink disk. For the application, the limit of F_x must be considered too.

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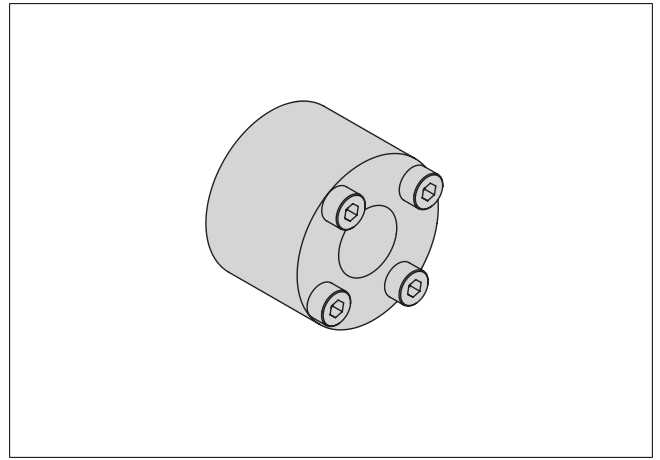


Fig.53

Codes on the table below refer to a shrink disc ordered as single element.

► USE AND MAINTENANCE

■ Prismatic Rails

Maintain lubrication of the prismatic rails using KLUBER CENTOPLEX GLP 500 type oil for surfaces every 2000km or 1 year of use, based on the value reached first. Use the image as a reference for lubrication: insert the oil where indicated; when the oil enters the tank, it will moisten the felt part that lubricates the rails. ATTENTION: Felts are supplied prelubricated. Before starting the system, make sure that the felt is completely impregnated with oil. Relubrication operation: fill the reservoir through the reservoir nipple.

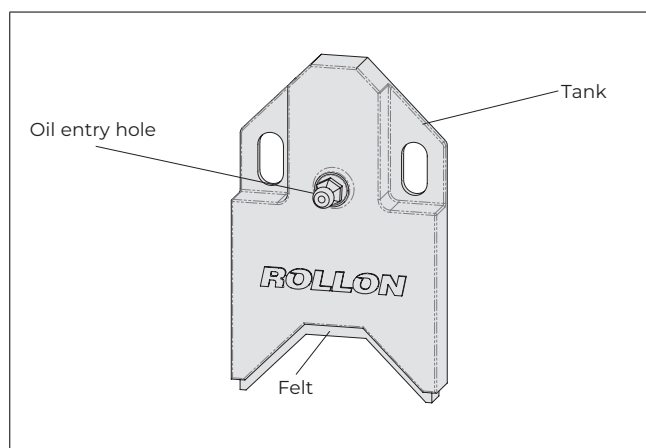


Fig. 54

- ▣ Insert the tip of the oil gun into the specific tanks.
- ▣ Type of lubricant: KLUBER CENTOPLEX GLP 500.
- ▣ For specially stressed applications or hostile environmental conditions, lubrication should be applied out more frequently.

Contact Rollon for further advice

Quantity of lubricant necessary for re-lubrication of each block:

Type	Quantity [cm ³]
R-SMART-R 140	9
R-SMART-R 170	9
R-SMART-R 220	9
R-SMART-R 230	9
R-SMART-R 280	26

Tab.70



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