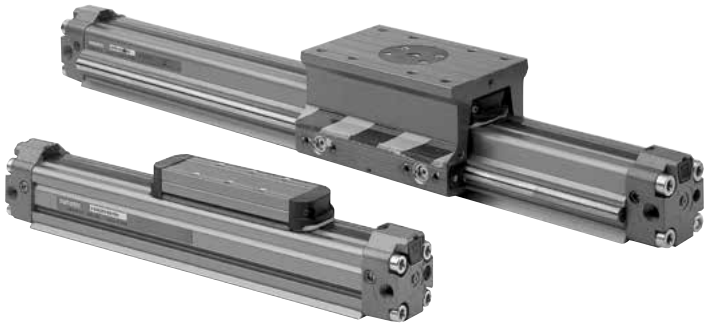
RODLESS PNEUMATIC CYLINDERS SERIES S1, S5, VL1



These mechanically coupled rodless cylinders offer long strokes with reduced installation place. Thanks to max. stroke up to 6 meters, these cylinders can be used in such an applications, where use of standard cylinder is impossible. This series uses well-proved two bands principle. Series S5 is equipped with slide guide with plastic bearings, series VL1 is equipped with rolling guide with ball bearings. There is also locking unit available for series S5 and VL1 (for details please contact our technical dept.)

Working pressure	0.6 MPa
Min. pressure	0,35 MPa
Max. pressure	1.0 MPa
Temp. range	-20°C to +80°C
Working medium	modified compressed air
Carriage speed	min. 7 to 20 mms^{-1} max. 3 ms^{-1} (series S1) max. 1.5 ms^{-1} (series S5) max. 2 ms^{-1} (series VL1)

Piston diameter [mm]	25	32	40	50
Weight 0 mm stroke (series S1) [kg]	0.75	1.31	2.6	4.79
Weight 0 mm stroke (series S5) [kg]	1.63	2.78	6.1*	10.1*
Weight 0 mm stroke (series VL1) [kg]	2.10*	3.13*	6.34*	10.85*
Weight of 100 mm stroke (series S1) [kg]	0.21	0.325	0.555	0.955
Weight of 100 mm stroke (series S5) [kg]	0.365	0.495	0.92*	1.28*
Weight of 100 mm stroke (series VL1) [kg]	0.30*	0.42*	0.67*	1.02*

*) Values with asterisk are valid for medium carriage, other values are for standard carriage.

Piston diameter [mm]	25	32	40	50
Force at 0.6 MPa [N]	265	432	675	1053
Connection	G1/8“	G1/4“	G3/8“	G3/8“
Length of adjustable cushioning [mm]	25	32.5	41.5	52
Max. stroke [mm]	6000	6000	6000	6000

Order codes

P S1 0 1 1 25 0500 M

Type	
S1	standard rodless cylinder, double acting
S5	rodless cylinder with integrated turcite bearing guides
VL1	rodless cylinder with integrated ball bearing guides

Carriage - series S1 and S5	
0	standard*
2	medium
3	long

*) only for piston diameter 25 and 32 when series S5 is used

Carriage - series VL1	
22	medium carriage diameters 25-40
23	medium carriage diameter 50
33	long carriage diameters 25-40
34	long carriage diameter 50

Left end cap supply port	
1	side supply
2	bottom supply
3	rear supply
0	no supply port (when both chambers are supplied from right end cap)

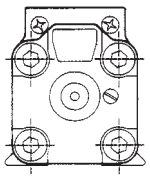
Right end cap supply port	
1	side supply
2	bottom supply
3	rear supply
4	both chambers supplied from right end cap

Piston diameter	
25	25 mm
32	32 mm
40	40 mm
50	50 mm

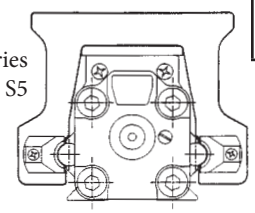
Stroke	
xxxx	mm of stroke e.g.: 0100 = stroke 100 mm

Equipment	
	w/o magnet
M	with magnet (series S1 only)

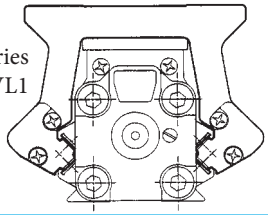
Series S1



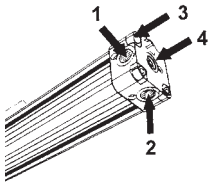
Series S5



Series VL1



Supply ports options:



In case of proximity sensing request, please contact our technical dept. for details

Examination and selection of cushioning

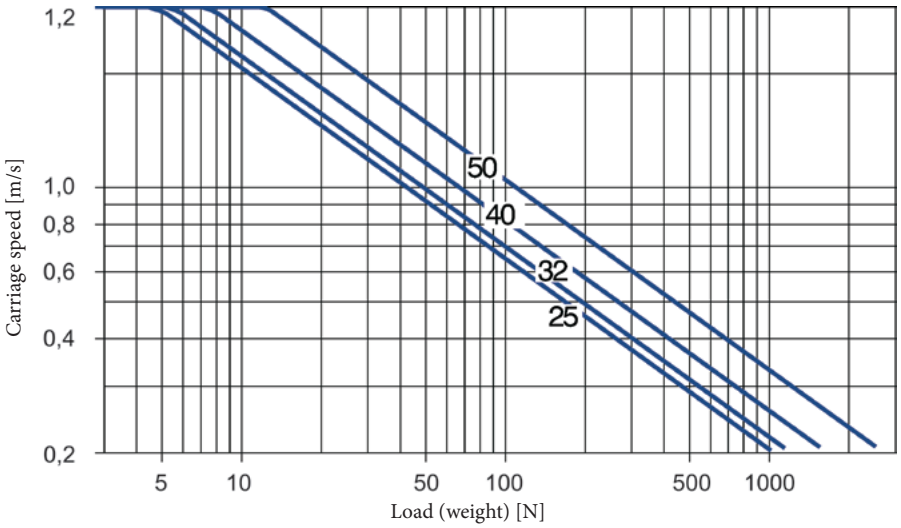
In a system with dynamic masses as for example with the rodless cylinder, it is essential to control the dissipation of the kinetic energy during braking until standstill. The first thing to be done is to select cushioning. Two kinds are available: 1. internal cushioning and 2. external cushioning.

It is of special significance that the carriage with load does not hit the end cap at high speed. If the point corresponding to a given load and speed lies beneath the appropriate curve, the cushioning is able to absorb the kinetic energy of the system. Vice versa if the point lies above the curve, the cushioning is not able to absorb the kinetic energy, in which case you must:

a) reduce load and keep the speed the same
b) decrease the speed and maintain the load
c) select a larger cylinder
d) use external damping (see page 9-1)

Cushioning capacity is shown in the diagrams on the right (in respect to final speed, when carriages get close to end caps).

Cushioning of S1, S5 and VL1 series



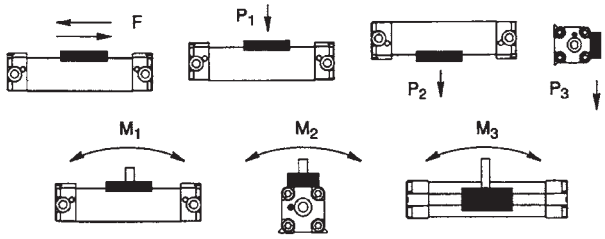
Calculation of admissible load of cylinders series S1, S5 and VL1

Allowable values of static load for S1 series

∅	F [N]	P1 [N]	P2 [N]	P3 [N]	Standard carriage			Medium carriage			Long carriage		
					M1 [Nm]	M2 [Nm]	M3 [Nm]	M1 [Nm]	M2 [Nm]	M3 [Nm]	M1 [Nm]	M2 [Nm]	M3 [Nm]
25	250	200	200	50	8	2	3	14	3	5	25	6	9
32	420	250	250	65	9	3	4	15	4	7	28	8	12
40	640	350	350	90	11	9	14	16	14	20	31	27	39
50	1050	500	500	125	19	13	19	29	20	30	52	36	53

Allowable values of static load for S5 series

∅	F [N]	P1, P2, P3 [N]	Standard carriage			Medium carriage			Long carriage		
			M1 [Nm]	M2 [Nm]	M3 [Nm]	M1 [Nm]	M2 [Nm]	M3 [Nm]	M1 [Nm]	M2 [Nm]	M3 [Nm]
25	250	400	13	8	16	20	10	25	40	15	50
32	420	400	20	9	27	30	12	40	55	18	75
40	640	600	–	–	–	60	30	80	110	45	150
50	1050	800	–	–	–	85	50	110	150	75	210



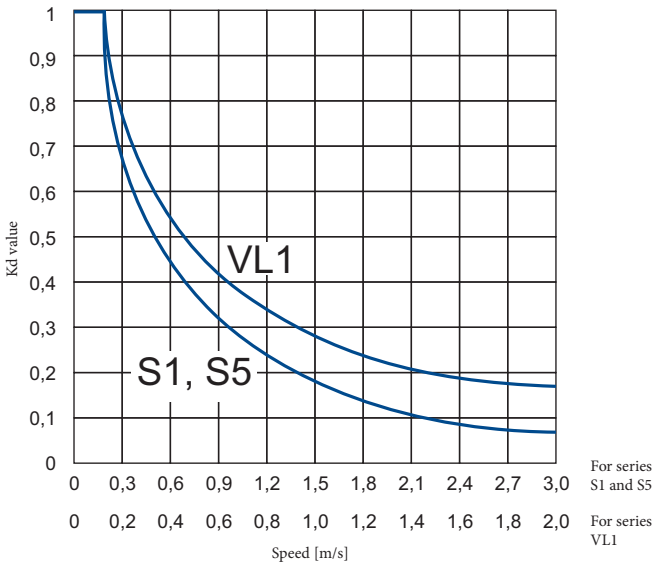
Allowable values of static load for VL1 series

∅	F [N]	Medium carriage				Long carriage			
		P1, P2, P3 [N]	M1 [Nm]	M2 [Nm]	M3 [Nm]	P1, P2, P3 [N]	M1 [Nm]	M2 [Nm]	M3 [Nm]
25	250	700	34	17	34	1000	63	25	63
32	420	700	51	20	51	1000	93	30	93
40	640	1100	120	46	120	1600	230	69	230
50	1050	1500	170	85	170	2000	310	110	310

Allowable values of dynamic load for S1, S5 and VL1 series

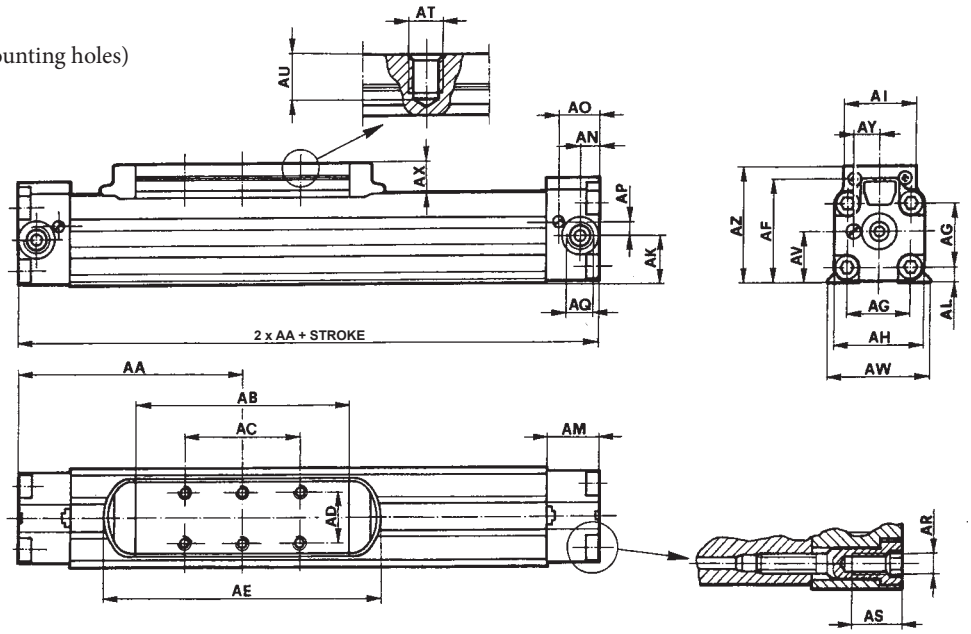
How to find allowable value at dynamic load:

- take Kd value from graph according to the speed
- allowable values of static load multiple by Kd value and we will get max. allowable value for dynamic load



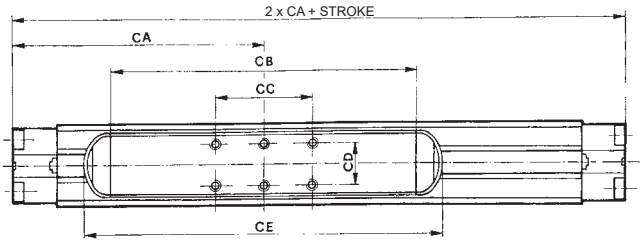
Dimensions
Series S1

Standard carriage (6 mounting holes)



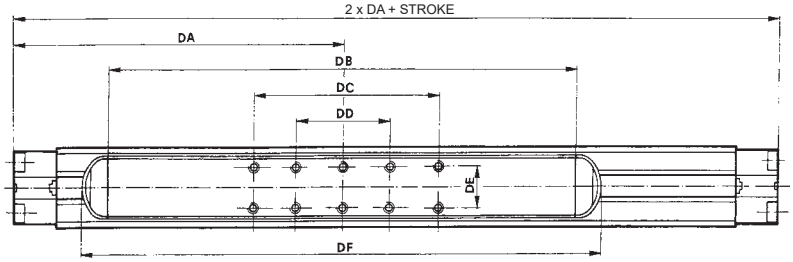
∅	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
25	100	95	50	24	130	48.3	28	40.5	33	20.2	7	24	7.4	18.2	5.7	G1/8“	M5	12	M5	9	22,8	42.8	16	12.2	57.6
32	125	118	65	31	156	57	35	50	40	25.3	8	29	10.3	22.5	7.3	G1/4“	M6	15.5	M6	9	28	54.5	16	14.2	66.2
40	150	134	65	31	177	74	44	64	44	33.8	11.8	33	12.5	26.5	8.7	G3/8“	M8	20	M6	11	37	67	19.5	16.5	85.8
50	175	164	105	39	211	90.7	55	80	54	41.4	14.7	33	14.2	25.7	11.8	G3/8“	M10	20	M6	12	47.7	86	20.5	19.1	103

Medium carriage (6 mounting holes)



∅	CA	CB	CC	CD	CE
25	114.5	125	50	24	160
32	142.5	153	65	31	191
40	169	172	65	31	215
50	205	224	105	39	271

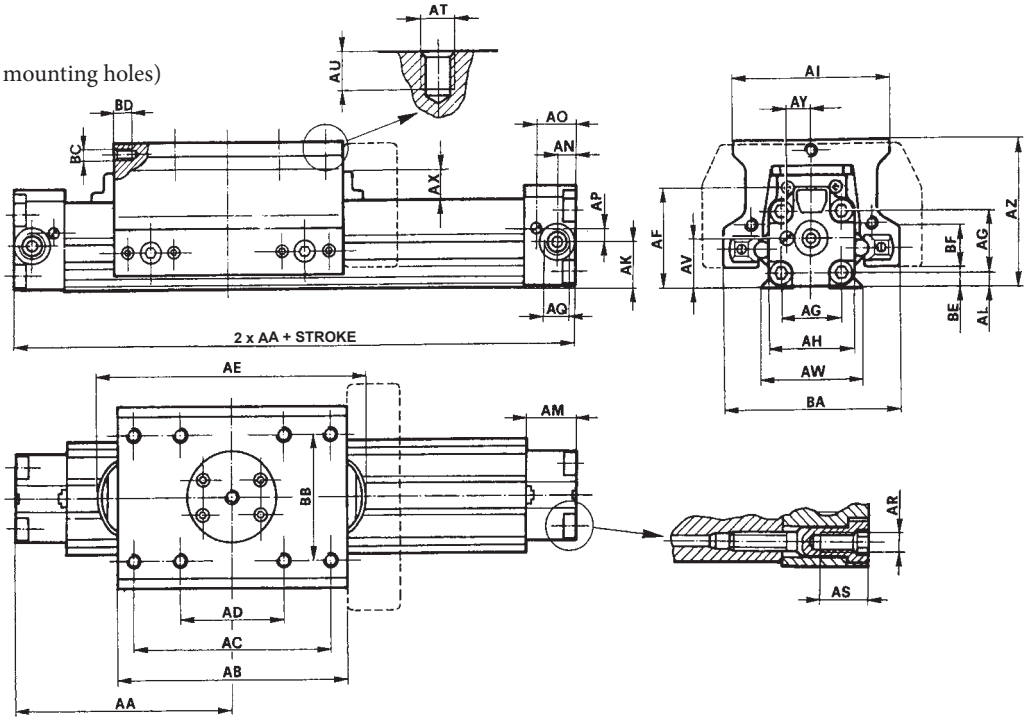
Long carriage (10 mounting holes)



∅	DA	DB	DC	DD	DE	DF
25	147.5	190	100	50	24	225
32	190	248	130	65	31	286
40	225	284	130	65	31	327
50	277	364	315	105	39	411

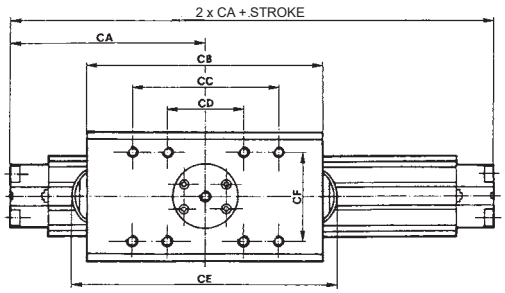
Series S5

Standard carriage (8 mounting holes)



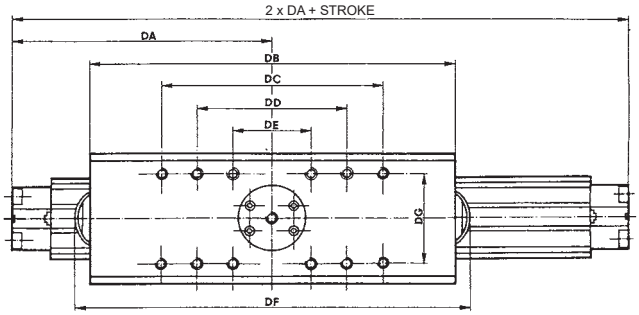
∅	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF
25	100	106	90	50	130	48.3	28	40.5	70	20.2	7	24	7.4	18.2	5.7	G1/8“	M5	12	M6	10	22.8	42.8	16	12.2	71.8	85	50	M6	15	5.7	24
32	125	140	115	55	156	57	35	50	88	25.3	8	29	10.3	22.5	7.3	G1/4“	M6	15.5	M8	12	28	57	16	14.2	82.5	100	67.5	M6	15	7	24.5
40	—	—	—	—	—	—	44	64	90	33.8	11.8	33	12.5	26.5	8.7	G3/8“	M8	20	M8	14	37	67	19.5	16.5	106.6	135	65	M6	15	7	39
50	—	—	—	—	—	—	55	80	100	41.4	14.7	33	14.2	25.7	11.8	G3/8“	M10	20	M8	16	47.7	86	20.5	19.1	123.7	149	76.5	M8	16	7.2	41

Medium carriage (8 mounting holes)



∅	CA	CB	CC	CD	CE	CF
25	114.5	136	90	50	160	50
32	142.5	175	115	55	191	67.5
40	169	205	180	75	215	65
50	205	258	190	80	271	76.5

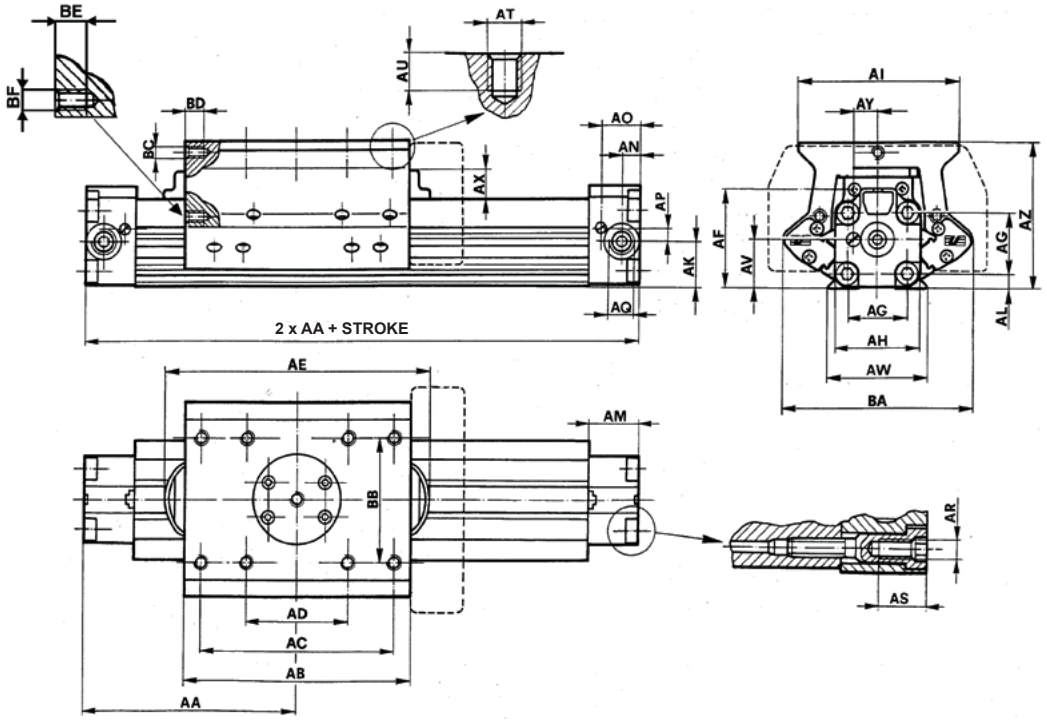
Long carriage (12 mounting holes)



∅	DA	DB	DC	DD	DE	DF	DG
25	147.5	201	130	90	50	225	50
32	190	270	175	115	55	286	67.5
40	225	317	280	185	75	327	65
50	277	398	320	200	80	411	76.5

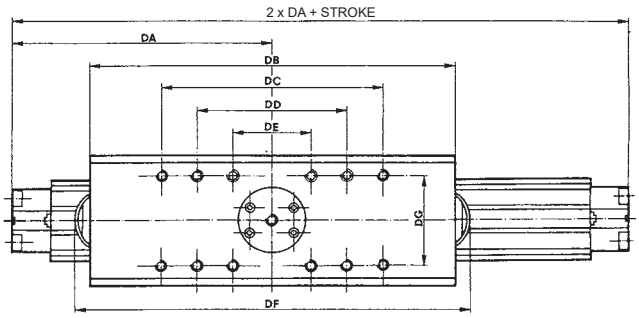
Series VL1

Medium carriage (8 mounting holes)



∅	AA	AB	AC	AD	AE	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF
25	114.5	136	90	50	160	48.3	28	40.5	83.5	20.2	7	24	7.4	18.2	5.7	G1/8“	M5	12	M6	12	22.8	42.8	16	12.2	74.3	111	50	M6	10	M6	10
32	142.5	175	115	55	191	57	35	50	92	25.3	8	29	10.3	22.5	7.3	G1/4“	M6	15.5	M8	12	28	57	16	14.2	82.5	118	67.5	M6	10	M6	10
40	169	205	180	75	215	74	44	64	125	33.8	11.8	33	12.5	26.5	8.7	G3/8“	M8	20	M8	14	37	67	19.5	16.5	106	158	65	M6	15	M6	15
50	205	258	190	80	271	90.7	55	80	140	41.4	14.7	33	14.2	25.7	11.8	G3/8“	M10	20	M8	15	47.7	86	20.5	19.1	126.2	173	100	–	–	M6	12

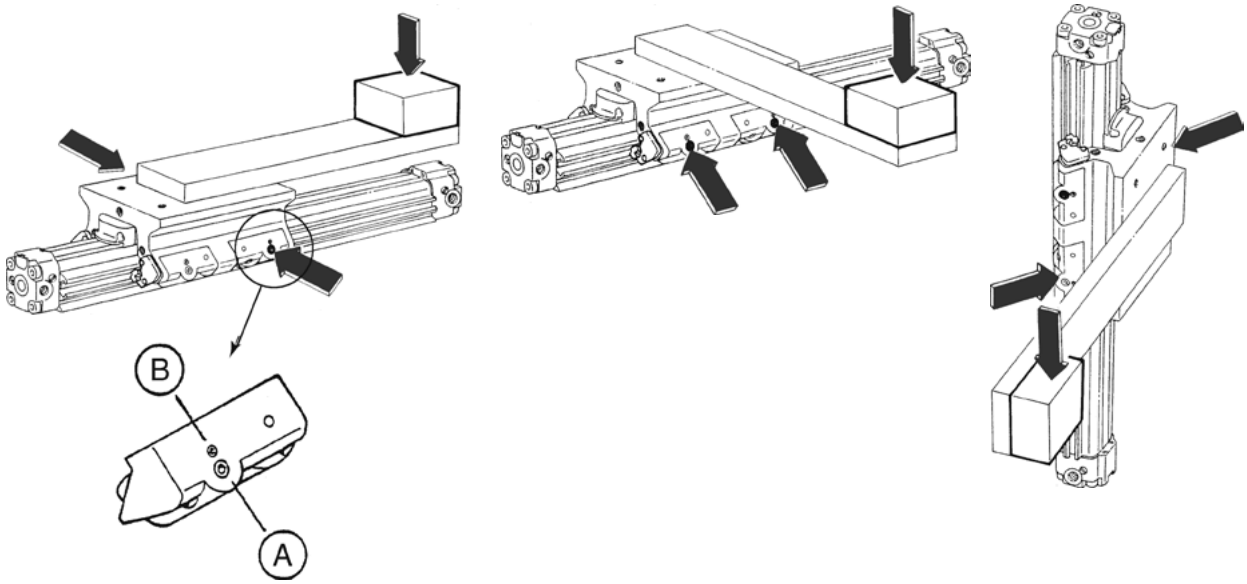
Long carriage (12 mounting holes)



∅	DA	DB	DC	DD	DE	DF	DG
25	147.5	201	130	90	50	225	50
32	190	270	175	115	55	286	67.5
40	225	317	280	185	75	327	65
50	277	398	320	200	80	411	100

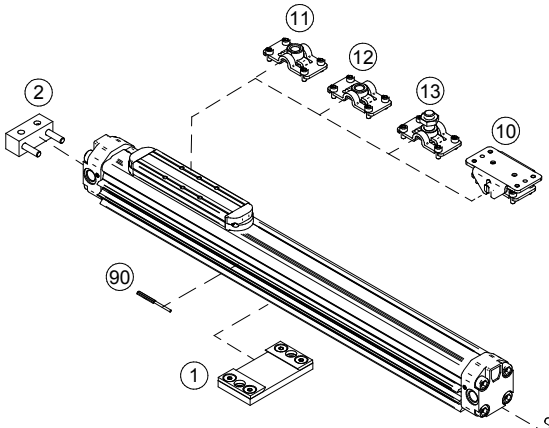
Adjusting of the carriage of series VL1

In case of off-centred loads it is necessary to adjust the screws A as shown below. The arrows indicate the screws to be adjusted, in accordance with the position of the load. Adjust the screw A by one turn or more depending on the load. Put a drop of Loctite 242 on the screw B and tighten it thoroughly. Finally loosen both screws by 90°.

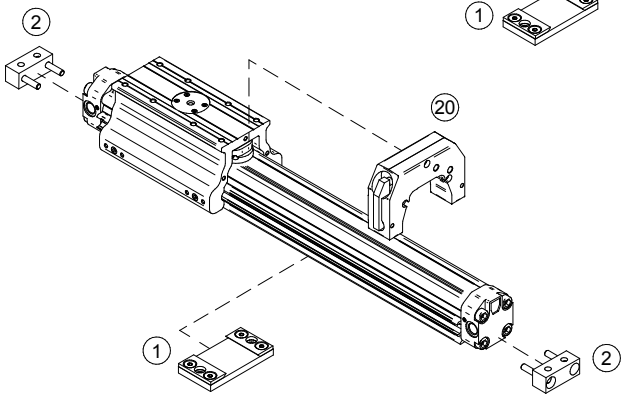


Mounting accessories

for series S1



for series S5 and VL1



Mounting accessories	... see page
1 Mounting plate	... 4-15
2 Foot mounting	... 4-16
10 Floating flange	... 4-16
11 Female threaded connection	... 4-17
12 Female connection w/o thread	... 4-17
13 Male threaded pin	... 4-17
20 Locking unit	... *)
90 Proximity switch	... *)

*) For more information about locking unit and proximity switches for rodless cylinders, please contact our technical dept.