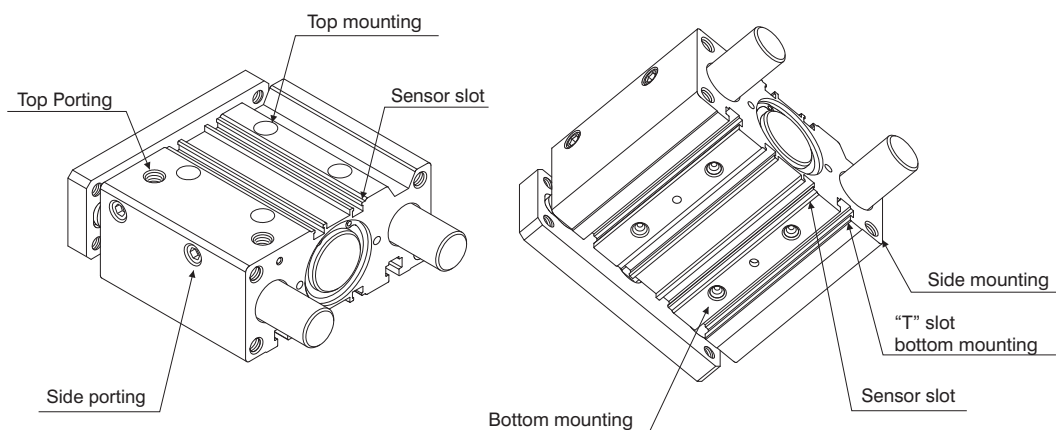


Series 6100 - 6101 - 6110 - Guided compact cylinder



3

PNEUMATIC ACTUATION

These guided compact cylinders, characterised by reduced overall dimensions, can be used for the compression, conveyance and manipulation of objects in many industrial sectors; similarly they can also be used in pushing, lifting and stopping applications.

These cylinders are available in sizes 32mm to 63 mm diameter, and comprise a single compact cylinder with integral guide rods, making it a true guide cylinder designed with installation flexibility and space saving in mind.

The rod guide is available in two styles:

Self-lubricating bronze bushes - useful for absorbing lateral loads and forces, especially as a stopper.

Bearing bushes - guaranteeing high precision and uniform movement with low friction characteristics, useful with mis-aligned loads.

Guided compact cylinders are ideal for use in applications requiring a combination of reduced dimensions and anti-rotation features. Mounting can be achieved on three sides through holes or “T” slots.

Adjustable mounting holes in the front plate ensure safe and accurate assembly. Pneumatic connections can be made to either lateral or top ports (lateral ports plugged on standard units).

When sensors are required, there are special slots in the barrel extrusion where 1580 series miniaturised sensors are easily fitted.

► Guided compact cylinder



Ordering code

6100.Ø.stroke.	
12	Side supply ports closed L = Top supply ports closed
16	
20	
25	
32	
40	B = Control unit with bronze bush C = Control unit with bearing bush
50	
63	

Construction characteristics

Body	anodised aluminium
Guide rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Piston	aluminium
Piston rod	stainless steel (for bores Ø12, Ø16, Ø20, Ø25) C43 chromed steel (for bores Ø32, Ø40, Ø50, Ø63)
Rods bushing	bronze or bearing bushing
End cap	anodised aluminium
Piston seal	oil resistant NBR rubber
Piston rod seal	PUR (NBR 12-16)
Wipers	PUR
Plate	nickel plated steel

Operational characteristics

Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	max. 10 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper on both ends

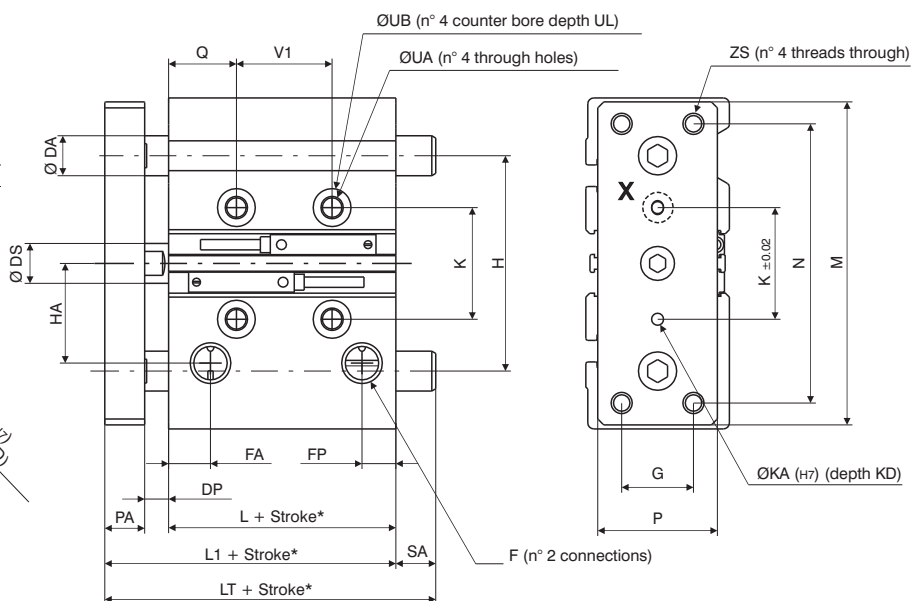
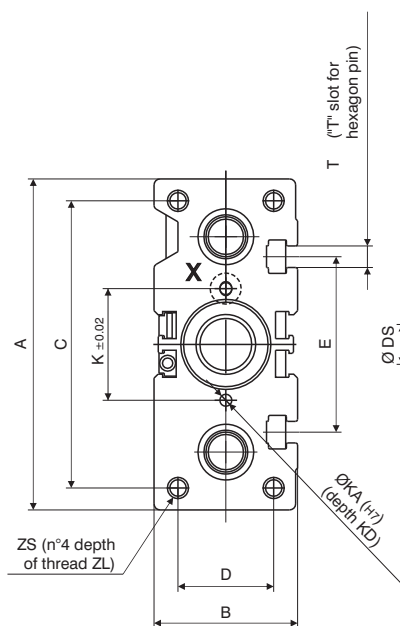
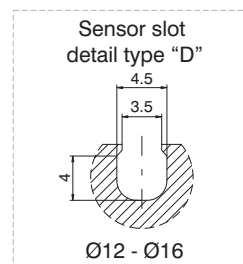
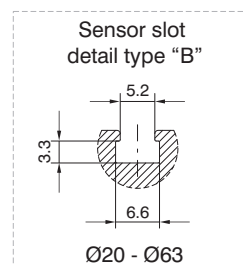
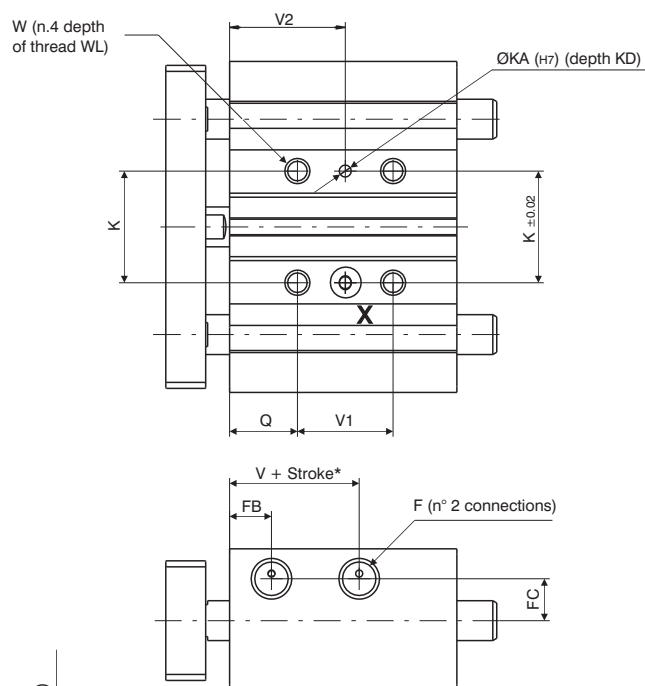
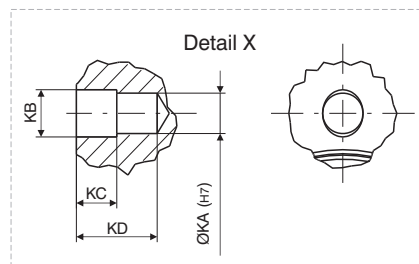
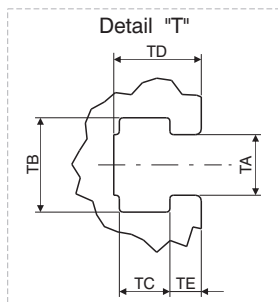
Standard stroke

Bore	Stroke											
	10	20	25	30	40	50	75	100	125	150	175	200
Ø12	●	●		●	●	●	●	●				
Ø16	●	●		●	●	●	●	●				
Ø20		●		●	●	●	●	●	●	●	●	●
Ø25		●		●	●	●	●	●	●	●	●	●
Ø32			●			●	●	●	●	●	●	●
Ø40			●			●	●	●	●	●	●	●
Ø50			●			●	●	●	●	●	●	●
Ø63			●			●	●	●	●	●	●	●

Intermediate strokes can be obtained using spacers with defined length (5, 10, 15, 20 mm).

Example: It is possible to obtain a **6100.32.45.B** cylinder from a **6100.32.50.B** cylinder by inserting a spacer with length of 5 mm. The intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions



*Dimensions only refer to the "standard stroke"

Overall dimensions

				Bore	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	
				Table of dimensions									
				A	58	64	83	93	112	120	148	162	
Control unit with bronze bushes Control unit with bearing bushes				B	26	30	36	42	48	54	64	78	
				C	40	42	72	82	98	106	130	142	
				D	18	22	24	30	34	40	46	58	
				DA	8	10	12	16	20	20	25	25	
					6	8	10	14	16	16	20	20	
				DP	2	2	5,5	5,5	9,5	10	13	13	
				DS	6	8	10	12	16	16	20	20	
				E	/	/	44	50	63	72	92	110	
				F	M5	M5	G1/8"	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"	
				FA	11	11	11	12	13	13	13	14	
				FB	11	11	11	12	13	13	13	14	
				FC	8,5	10	10,5	13,5	15	18	21,5	28	
				FP	15	17	9	10,5	9,5	11	11	12,5	
				G	14	16	18	26	30	30	40	50	
				H	41,5	46	54	64	78	86	110	124	
				HA	19,5	23	25	28,5	34	38	47	55	
				K	23	24	28	34	42	50	66	80	
				KA	/	/	3	4	4	4	5	5	
				KB	/	/	3,5	4,5	4,5	4,5	6	6	
				KC	/	/	3	3	3	3	4	4	
KD	/	/	6	6	6	6	8	8					
L	29	31	38	38,5	38,5	44	44	49					
L1	39	43	53,5	54	60	66	72	77					
Control unit with bronze bushes	50<	stroke	≤50	LT	39	43	53,5	54	97	97	106,5	106,5	
		stroke	≤200		57	64	84,5	85	102	102	118	118	
Control unit with bearing bushes				See table 1									
				M	56	62	81	91	110	118	146	158	
				N	48	52	70	78	96	104	130	130	
				PA	8	10	10	10	12	12	15	15	
				P	22	25	30	38	44	44	60	70	
				Q	5	5	17,5	17,5	21,5	22	24	24	
				SA	/	/	/	/	37	31	34,5	29,5	
18	21	31	31		42	36	46	41					
				See table 1									
				T	/	/	M5	M5	M6	M6	M8	M10	
Control unit with bronze bushes Control unit with bearing bushes				TA	/	/	5,4	5,4	6,5	6,5	8,5	11	
				TB	/	/	8,4	8,4	10,5	10,5	13,5	17,8	
				TC	/	/	4,5	4,5	5,5	5,5	7,5	10	
				TD	/	/	7,8	8,2	9,5	11	13,5	18,5	
				TE	/	/	2,8	3	3,5	4	4,5	7	
				UA	4,3	4,3	5,6	5,6	6,6	6,6	8,6	8,6	
				UB	8	8	9,5	9,5	11	11	14	14	
				UL	4,5	4,5	5,5	5,5	7,5	7,5	9	9	
				V	14	14	13	13	7,5	13	9	14	
				V1	See table 2								
				V2									
				W	M5	M5	M6x1	M6x1	M8x1,25	M8x1,25	M10x1,5	M10x1,5	
				WL	10	10	12	12	16	16	20	20	
				Z	M4	M5	M5x0,8	M6x1	M8x1,25	M8x1,25	M10x1,5	M10x1,5	
ZL	9	11	13	15	20	20	22	22					

Table 1		LT			SA		
Bore		stroke≤30	30<stroke≤100	100<stroke≤200	stroke≤30	30<stroke≤100	100<stroke≤200
Control unit with bearing bushes	Ø12	39	53	53	/	14	/
	Ø16	43	64	64	/	21	/
	Ø20	47	72	72	/	18,5	49
	Ø25	49	77	77	/	23	48
		stroke <50	50≤stroke≤100	100<stroke≤200	stroke <50	50≤stroke≤100	100<stroke≤200
	Ø32	/	87	117	/	27	57
	Ø40	/			/	21	51
	Ø50	/	92	127	/	20	55
	Ø63	/			/	15	50

Table 2		V1			V2		
Bore		stroke≤30	30<stroke≤100	100<stroke≤200	stroke≤30	30<stroke≤100	100<stroke≤200
Ø12		4+stroke			/	/	/
Ø16					/	/	/
Ø20		24	44	120	29,5	39,5	77,5
Ø25							
		stroke≤25	25<stroke≤100	100<stroke≤200	stroke≤25	25<stroke≤100	100<stroke≤200
Ø32		24	48	124	33,5	45,5	83,5
Ø40					34	46	84
Ø50					36	48	86
Ø63					38	50	88



Weight - Cylinder force - kinetic energy

	Bore															
	Ø12		Ø16		Ø20		Ø25		Ø32		Ø40		Ø50		Ø63	
Stroke	Control unit with bronze bushes														Weight g	
10	240		330		/		/		/		/		/		/	
20	280		380		670		950		/		/		/		/	
25	/		/		/		/		1690		1950		3360		4180	
30	310		430		750		1050		/		/		/		/	
40	350		480		830		1160		/		/		/		/	
50	390		530		910		1270		2070		2370		4000		4940	
75	500		680		1170		1650		2470		2830		4730		5780	
100	5903		800		1370		1920		2850		3250		5370		6540	
125	/		/		1570		2190		3240		3680		6010		7290	
150	/		/		1760		2470		3620		4100		6650		8050	
175	/		/		1960		2740		4000		4530		7290		8800	
200	/		/		2160		3010		4380		4950		7930		9560	
Stroke	Moving parts															
10	100		155		/		/		/		/		/		/	
20	108		170		330		520		/		/		/		/	
25	/		/		/		/		1070		1140		2150		2500	
30	116		185		350		560		/		/		/		/	
40	124		200		380		600		/		/		/		/	
50	132		215		400		640		1230		1300		2400		2750	
75	152		250		520		840		1420		1490		2750		3090	
100	172		285		580		950		1580		1650		3000		3350	
125	/		/		640		1050		1740		1810		3260		3600	
150	/		/		700		1150		1910		1980		3510		3860	
175	/		/		760		1250		2070		2140		3760		4110	
200	/		/		820		1350		2230		2300		4020		4360	
Stroke	Control unit with bearing bushes															
10	240		340		/		/		/		/		/		/	
20	270		390		700		980		/		/		/		/	
25	/		/		/		/		1540		1790		3110		3930	
30	300		430		770		1070		/		/		/		/	
40	350		510		890		1250		/		/		/		/	
50	390		560		970		1340		1850		2150		3660		4590	
75	470		670		1140		1570		2300		2640		4410		5460	
100	560		790		1310		1810		2620		3000		4960		6120	
125	/		/		1520		2080		2990		3420		5600		6880	
150	/		/		1690		2310		3310		3780		6150		7540	
175	/		/		1870		2540		3620		4140		6700		8210	
200	/		/		2040		2770		3940		4500		7250		8870	
Stroke	Moving parts															
10	95		145		/		/		/		/		/		/	
20	100		153		310		490		/		/		/		/	
25	/		/		/		/		820		890		1770		2110	
30	105		161		330		520		/		/		/		/	
40	110		169		370		580		/		/		/		/	
50	120		177		390		610		940		1010		1950		2300	
75	145		197		440		690		1110		1180		2240		2590	
100	170		217		480		760		1230		1300		2430		2770	
125	/		/		560		880		1410		1480		2710		3050	
150	/		/		600		950		1530		1600		2890		3240	
175	/		/		650		1020		1650		1720		3080		3420	
200	/		/		700		1100		1770		1830		3270		3610	
Working pressure	Cylinder theoretic force (N)															
2 bar	23	17	40	30	63	47	98	76	161	121	251	211	393	330	623	561
3 bar	34	26	60	45	94	71	147	113	241	181	377	317	589	495	935	841
4 bar	45	34	80	60	126	94	196	151	322	241	503	422	785	660	1247	1121
5 bar	57	43	101	76	157	118	246	189	402	302	629	528	982	825	1559	1402
6 bar	68	51	121	91	188	142	295	227	482	362	754	634	1178	989	1870	1682
7 bar	79	60	141	106	220	165	344	265	563	422	880	739	1374	1154	2182	1962
8 bar	90	68	161	121	251	189	393	302	643	482	1006	845	1570	1319	2494	2242
9 bar	102	77	181	136	283	212	442	340	724	543	1131	950	1767	1484	2805	2523
10 bar	113	85	201	151	314	236	491	378	804	603	1257	1056	1963	1649	3117	2803
Piston area (mm²)	out	in	out	in	out	in	out	in	out	in	out	in	out	in	out	in
	113	85	201	151	314	236	491	378	804	603	1257	1056	1963	1649	3117	2803
	Maximum permissible Momentum															
J	0,08		0,09		0,11		0,18		0,29		0,52		0,91		1,54	

How to calculate the Momentum: $E_c = \frac{1}{2} m V^2$ (J)

m = Total moving mass: weight of driven object added to weight of cylinder moving parts (kg)

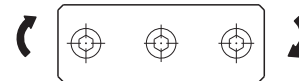
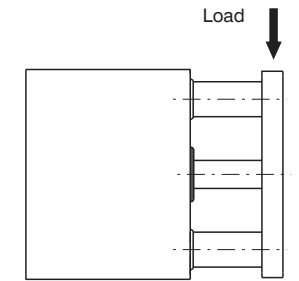
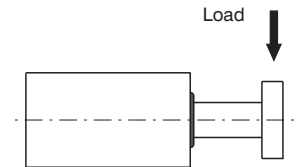
V = max. speed: equal to average speed + 40% (m/sec)

Operating criteria

Permissible lateral load (applied on overall plate)

		Bore							
		Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
Version	Stroke	Permissible lateral load (N)*							
Control unit with bronze bushes	10	30	48						
	20	23	37	49	69				
	25					203	203	296	296
	30	19	30	43	60				
	40	16	25	38	54				
	50	14	20	35	49	164	164	245	245
	75	12	18	87	116	182	182	273	273
	100	10	15	75	100	159	159	241	241
	125			66	88	142	142	216	216
	150			59	79	127	127	195	195
	175			54	71	116	116	179	179
	200			49	65	106	106	164	164
Control unit with bearing bushes	10	20	35						
	20	15	28	58	69				
	25					191	190	208	206
	30	13	22	48	68				
	40	11	18	101	132				
	50	10	16	90	118	157	157	173	171
	75	8	14	70	93	164	163	223	221
	100	6	11	58	77	144	144	199	196
	125			62	80	203	203	264	262
	150			54	70	186	185	242	240
	175			48	62	171	171	224	221
	200			43	55	158	158	207	205
Version	Stroke	Recommended torque moments (Nm)							
Control unit with bronze bushes	10	0,40	0,70						
	20	0,35	0,65	1,1	1,8				
	25					6,4	7,0	13,0	14,7
	30	0,28	0,48	0,9	1,6				
	40	0,25	0,45	0,8	1,4				
	50	0,21	0,39	0,8	1,3	5,1	5,7	10,8	12,1
	75	0,42	0,68	1,9	3,0	5,7	6,3	12,0	13,5
	100	0,40	0,60	1,6	2,6	5,0	5,5	10,6	11,9
	125			1,4	2,3	4,4	4,9	9,5	10,7
	150			1,3	2,0	4,0	4,4	8,6	9,7
	175			1,2	1,8	3,6	4,0	7,9	8,9
	200			1,1	1,7	3,3	3,7	7,2	8,2
Control unit with bearing bushes	10	0,62	0,70						
	20	0,41	0,65	1,3	2,1				
	25					6,0	6,6	9,2	10,2
	30	0,33	0,48	1,0	1,8				
	40	0,30	0,45	2,2	3,4				
	50	0,48	0,39	1,9	3,0	4,9	5,4	7,6	8,5
	75	0,38	0,68	1,5	2,4	5,1	5,6	9,8	11,0
	100	0,32	0,60	1,3	2,0	4,5	5,0	8,7	9,7
	125			1,3	2,1	6,3	7,0	11,6	13,0
	150			1,2	1,8	5,8	6,4	10,7	11,9
	175			1,0	1,6	5,3	5,9	9,8	11,0
	200			0,9	1,4	4,9	5,4	9,1	10,2

*(Applied on overall plate)

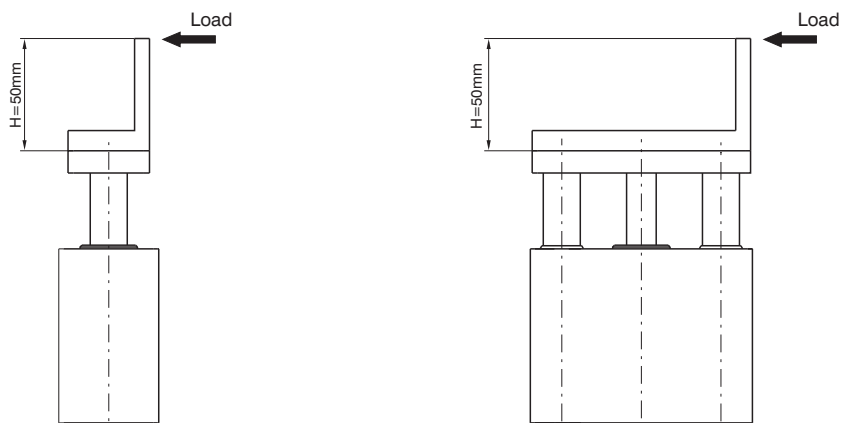


3

PNEUMATIC ACTUATION

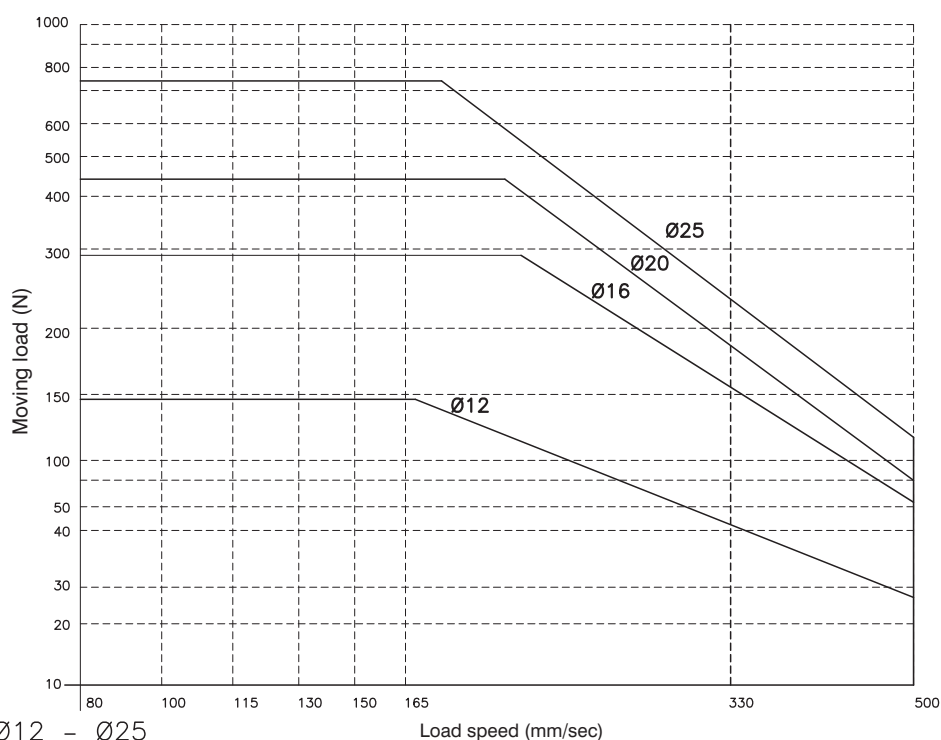
Operating criteria

Stopper device applications



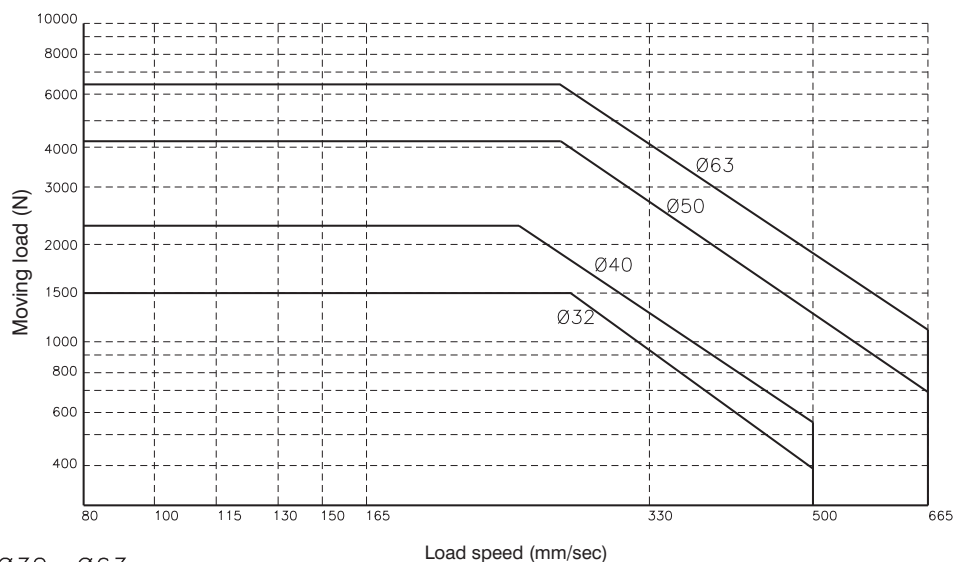
Control unit with
bronze bushes

ATTENTION: if $H > 50$ mm use larger bore



Ø12 - Ø25

ATTENTION: use with stroke ≤ 30 mm

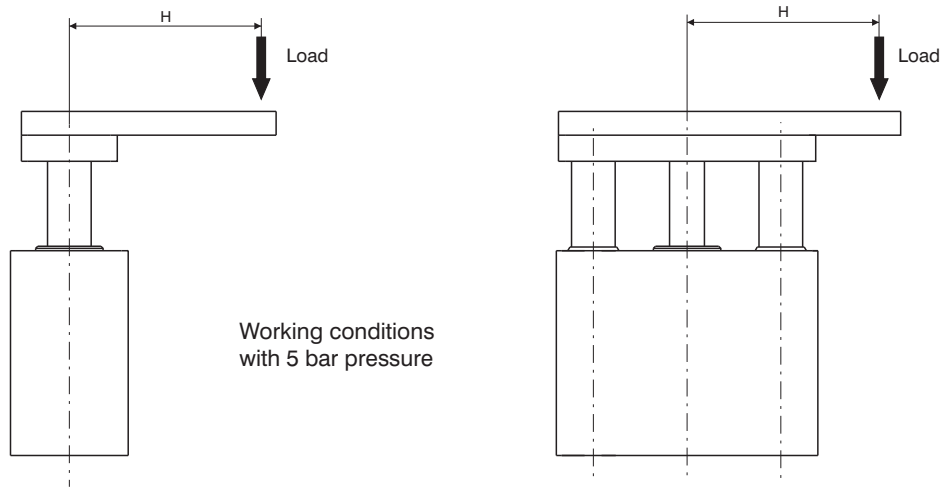


Ø32 - Ø63

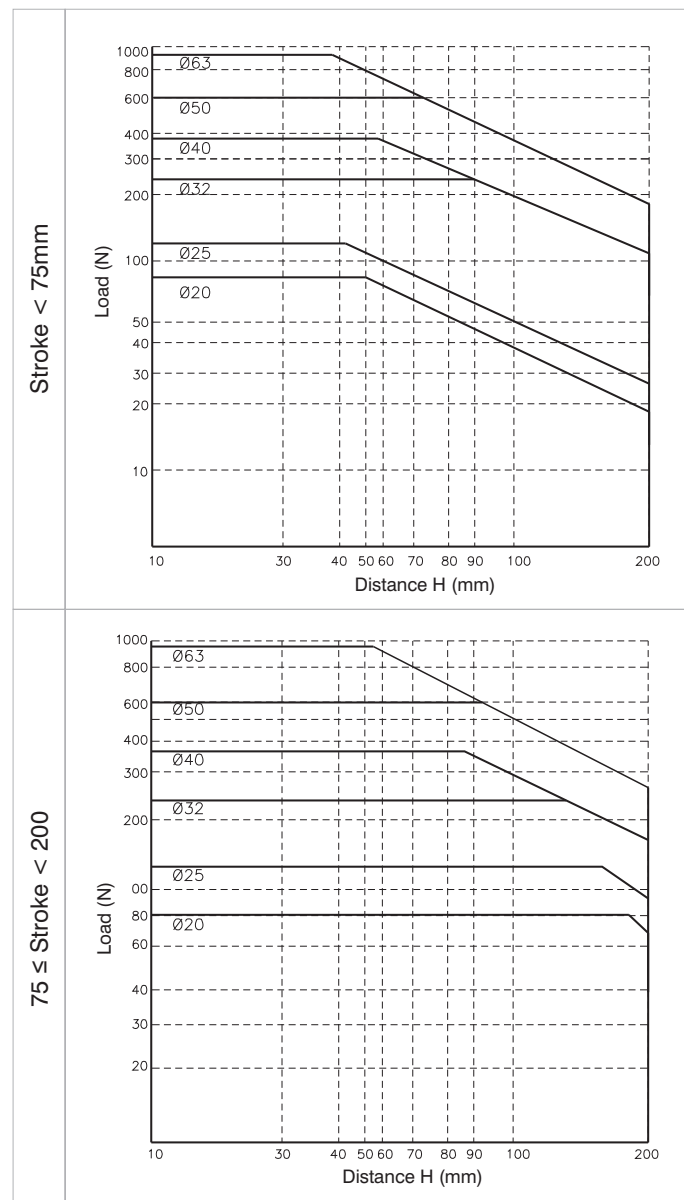
ATTENTION: use with stroke ≤ 50 mm

Operating criteria

Handling applications



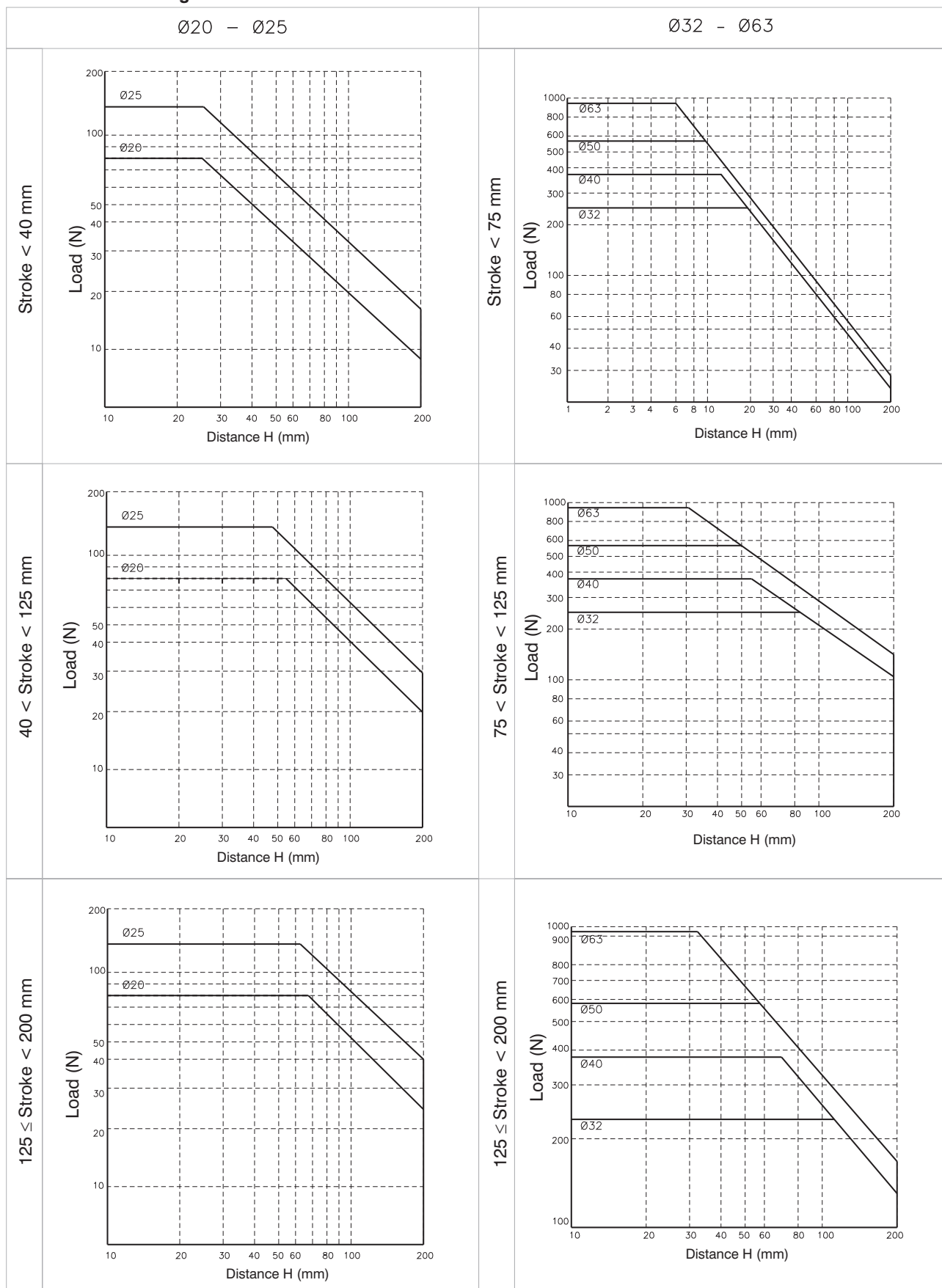
Control unit with bronze bushes



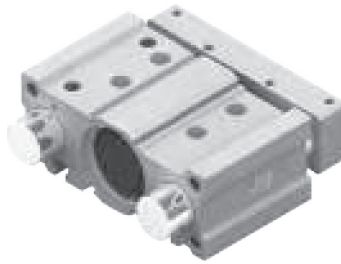
Operating criteria

Handling applications

Control unit with bearing bushes



► Heavy duty guided short stroke cylinder



Ordering code

6101.80.stroke. B .

Side supply ports closed
L = Top supply ports closed

Construction characteristics

Body	anodised aluminium
Rods	C43 chromed steel
Piston	aluminium
Piston rod	C43 chromed steel
Piston rod bushing	sintered bronze
Rod bushing	teflon coated bush
End cap	aluminium
Piston seal	NBR oil-resistant rubber
Piston rod seal	PUR
Plate	anodised aluminium

Operational characteristics

Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Max. pressure	max. 10 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper on both ends

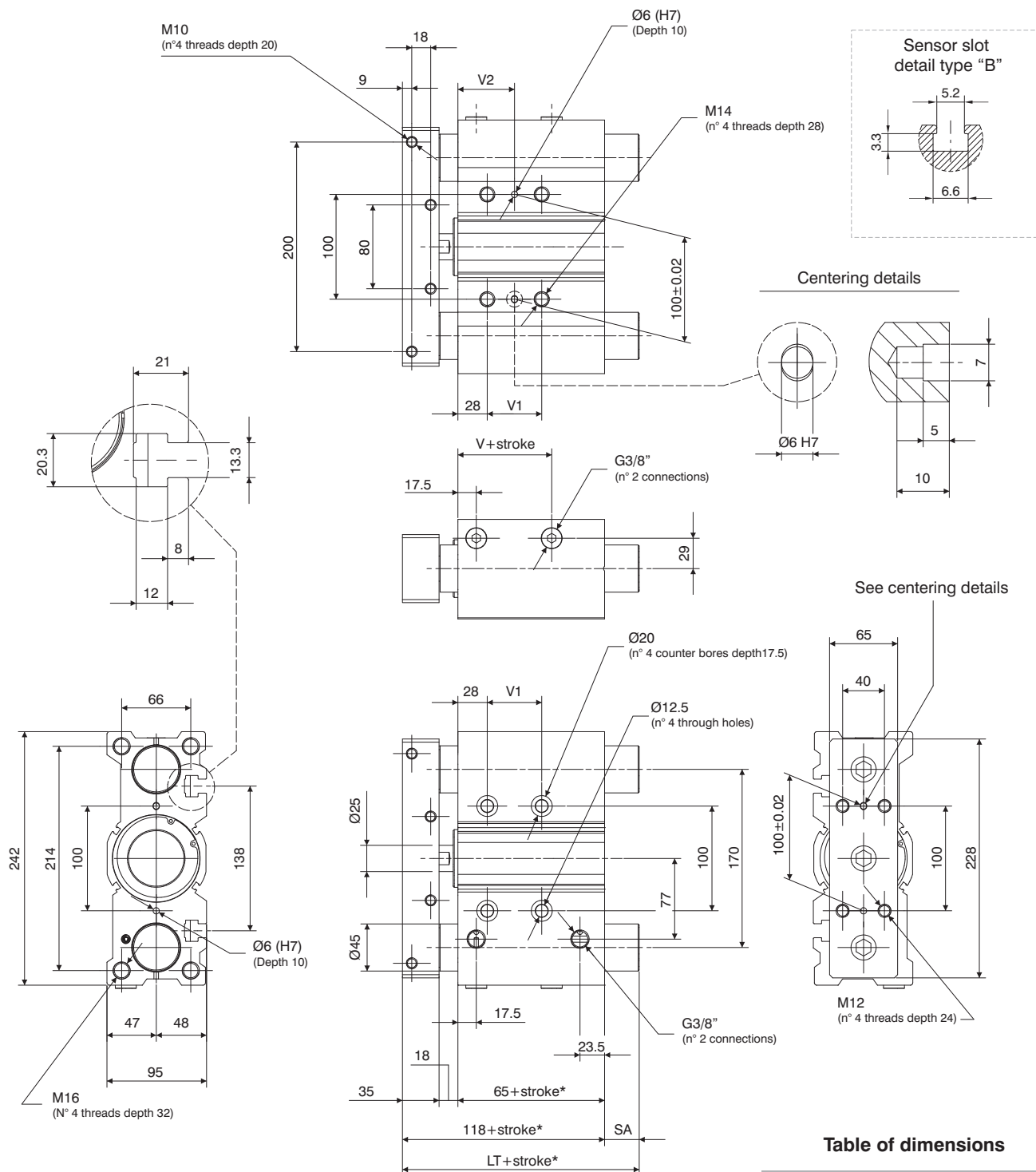
Standard strokes

Bore	Stroke							
	25	50	75	100	125	150	175	200
Ø80	●	●	●	●	●	●	●	●

Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20mm).

Example: It is possible to obtain a **6101.80.45.B** cylinder from a **6101.80.50.B** cylinder by adding a 5mm spacer.
The Intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions



*Dimensions only refer to the "standard stroke"

Table of dimensions

	25	LT	118
stroke	50		118
	> 50		151
		V	14.5
	25	V1	28
	50		52
stroke	75		52
	100		52
	>100		128
	25	V2	42
	50		54
stroke	75		54
	100		54
	>100		92
	25	SA	0
stroke	50		
	> 50		33

Operating criteria

Cylinder theoretic force (N)

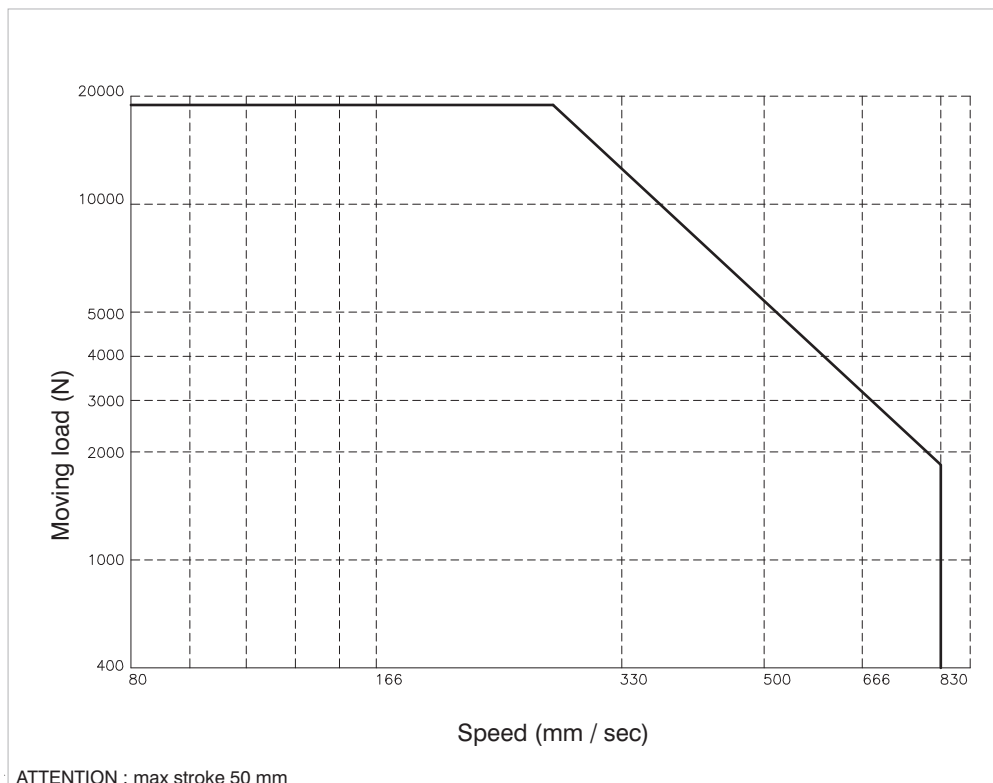
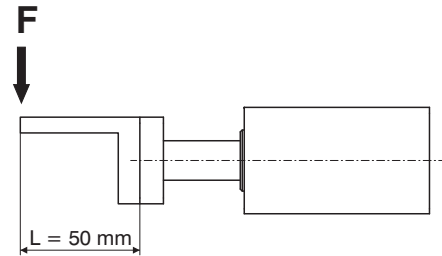
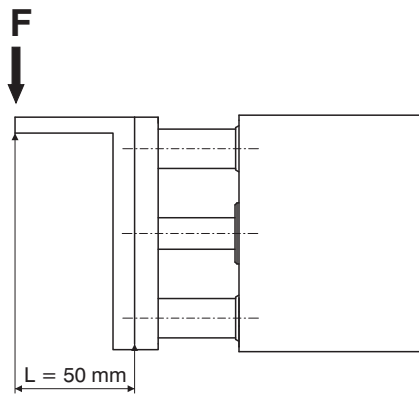
Working pressure		
2 bar	1005	907
3 bar	1508	1361
4 bar	2011	1814
5 bar	2513	2268
6 bar	3016	2721
7 bar	3519	3175
8 bar	4021	3629
9 bar	4524	4082
10 bar	5027	4536
Effective area (mm ²)	out	in
	5027	4536

Recommended torque moments

Stroke	N/m
25	49
50	41
75	51
100	45
125	41
150	38
175	35
200	32



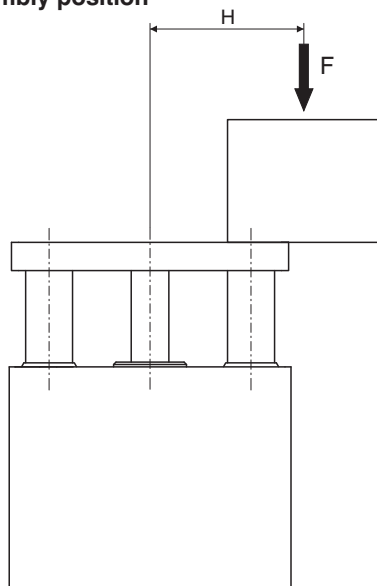
"Stopper" device applications



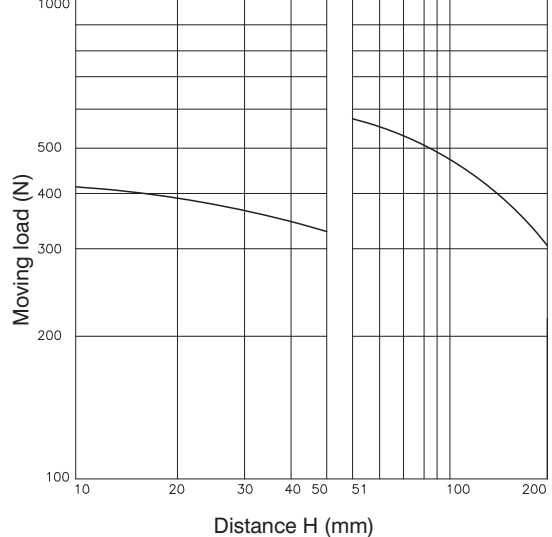
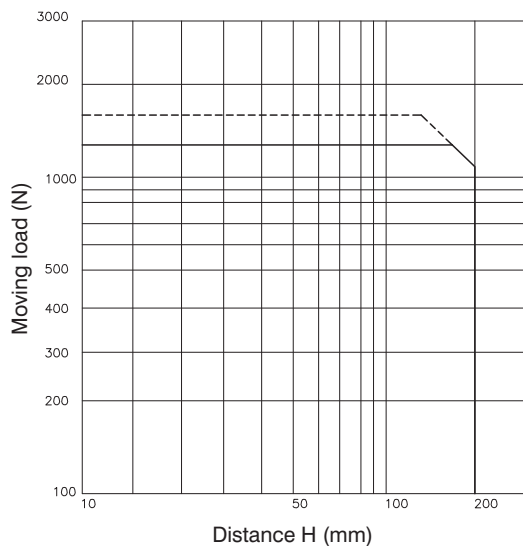
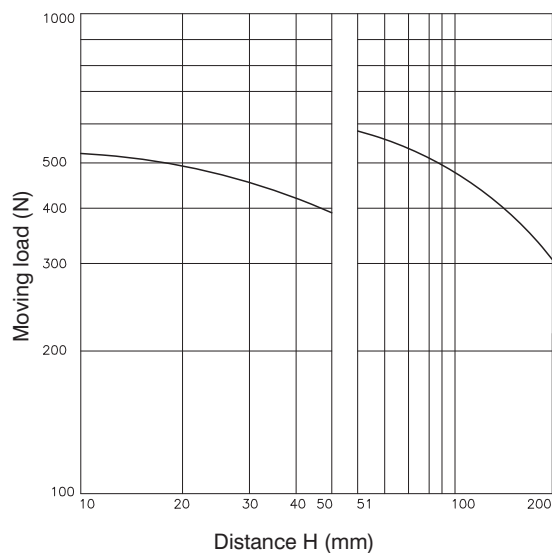
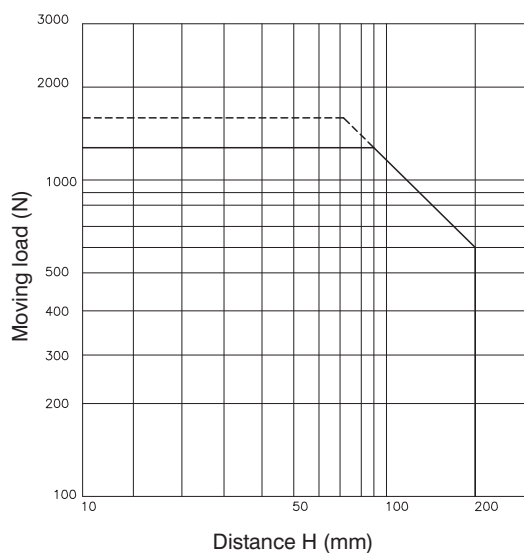
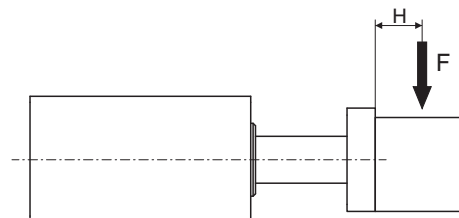
Operating criteria

Handling applications

VERTICAL assembly position



HORIZONTAL assembly position



— Working pressure : 4 bar
- - - Working pressure : 5 bar

► Guided compact cylinder with additional metal rod scrapers



Ordering code

6110.Ø.stroke. C .

32	Side supply ports closed L = Top supply ports closed
40	
50	
63	

Construction characteristics

Body	anodised aluminium
Guide rods	tempered and chromed steel
Piston	aluminium
Piston rod	C43 chromed steel
Rods bushing	bearing bushing
End cap	anodised aluminium
Piston seal	oil resistant NBR rubber
Piston rod seal	PUR
External rod scraper	brass
Internal rod scraper	NBR
Plate	nickel plated steel

The cylinders are equipped with 4 rod scrapers on the guide rods and 1 rod scraper on the central piston rod

Operational characteristics

Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	max. 10 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper on both ends

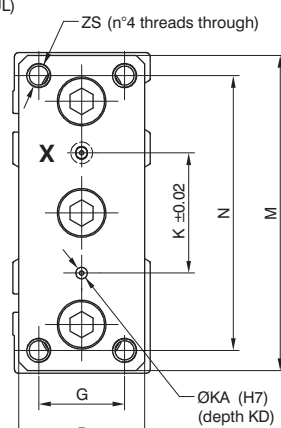
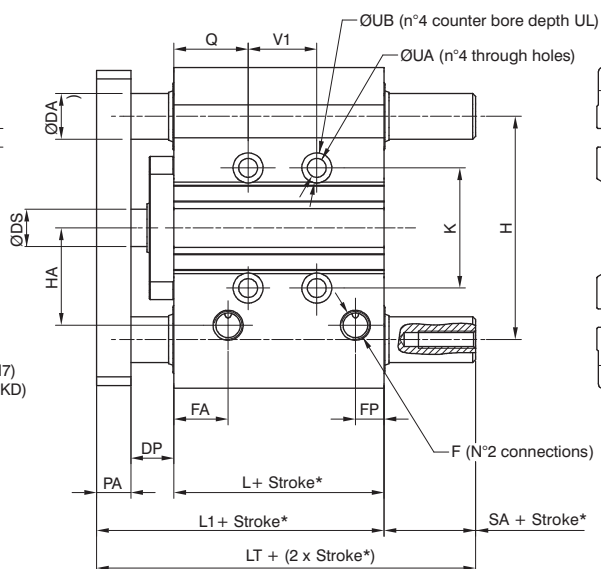
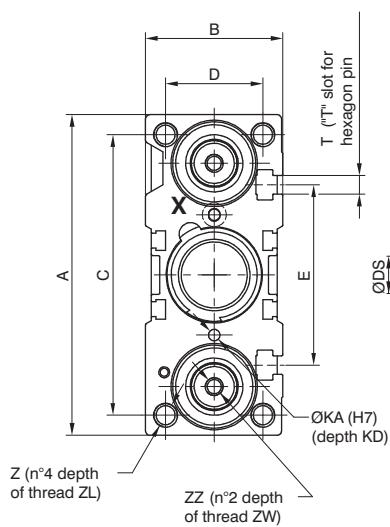
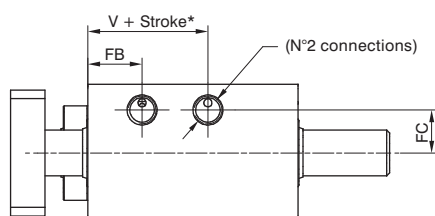
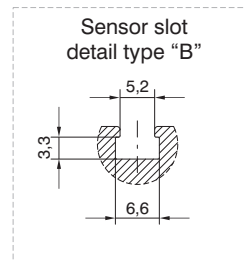
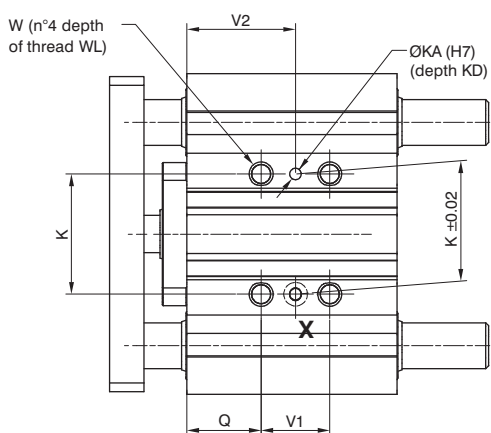
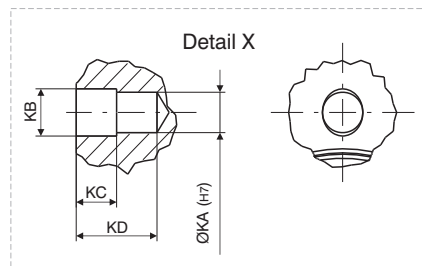
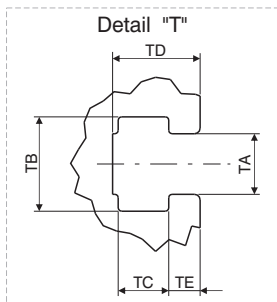
Standard strokes

Bore	Stroke									
	10	20	25	50	75	100	125	150	175	200
Ø32			●	●	●	●	●	●	●	●
Ø40			●	●	●	●	●	●	●	●
Ø50			●	●	●	●	●	●	●	●
Ø63			●	●	●	●	●	●	●	●

Intermediate strokes can be obtained using spacers with defined length (5, 10, 15, 20 mm).

Example: It is possible to obtain a **6110.32.45.B** cylinder from a **6110.32.50.B** cylinder by inserting a spacer with length of 5 mm. The intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions



Overall dimensions

Bore	Ø32	Ø40	Ø50	Ø63
Table of dimensions				
A	112	120	148	162
B	48	54	64	78
C	98	106	130	142
D	34	40	46	58
DA	16	16	20	20
DP	15	20	23	23
DS	16	16	20	20
E	63	72	92	110
F	G1/8"	G1/8"	G1/4"	G1/4"
FA	19	13	13	14
FB	19	13	13	14
FC	15	18	21,5	28
FP	10	11	11	12,5
G	30	30	40	50
H	78	86	110	124
HA	34	38	47	55
K	42	50	66	80
KA	4	4	5	5
KB	4,5	4,5	6	6
KC	3	3	4	4
KD	6	6	8	8
L	48,5	50	50	55
L1	75,5	82	88	93
LT	82,5	89	93	100
M	110	118	146	158
N	96	104	130	130
PA	12	12	15	15
P	44	44	60	70
Q	26	22	24	24
SA	7	7	5	7
T	M6	M6	M8	M10
TA	6,5	6,5	8,5	11
TB	10,5	10,5	13,5	17,8
TC	5,5	5,5	7,5	10
TD	9,5	11	13,5	18,5
TE	3,5	4	4,5	7
UA	6,6	6,6	8,6	8,6
UB	11	11	14	14
UL	7,5	7,5	9	9
V	17	19	15	20
V1	See table 1			
V2				
W	M8x1,25	M8x1,25	M10x1,5	M10x1,5
WL	16	16	20	20
Z	M8x1,25	M8x1,25	M10x1,5	M10x1,5
ZL	20	20	22	22
ZS	M8x1,25	M8x1,25	M10x1,5	M10x1,5
ZZ	M6	M8	M10	M10
ZW	20	20	25	25

Table 1	V1			V2		
Bore	stroke ≤ 25	25 < stroke ≤ 100	100 < stroke ≤ 200	stroke ≤ 25	25 < stroke ≤ 100	100 < stroke ≤ 200
Ø32	24	48	124	38	50	88
Ø40				34	46	84
Ø50				36	48	86
Ø63	28	52	128	38	50	88