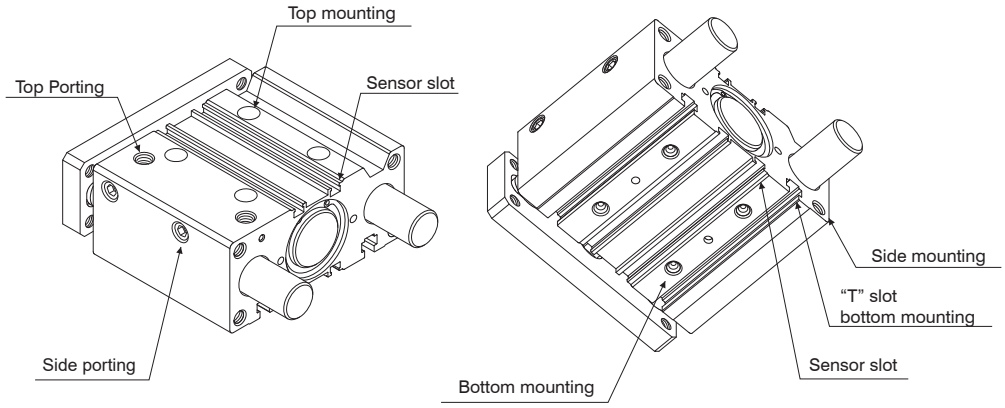
Series 6100 - 6101 - 6110 - Guided compact cylinder



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. _ . _

- Ø: **12**, **16**, **20**, **25**, **32**, **40**, **50**, **63**
- stroke
- Side supply ports closed / **L** = Top supply ports closed
- **B** = Control unit with bronze bush / **C** = Control unit with bearing bush

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

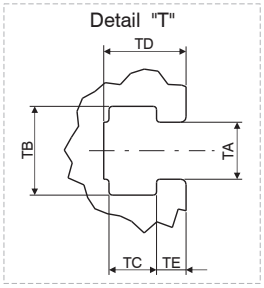
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	max. 10 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper on both ends

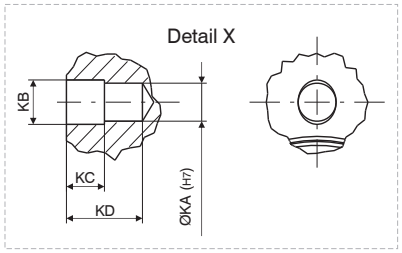
Standard stroke

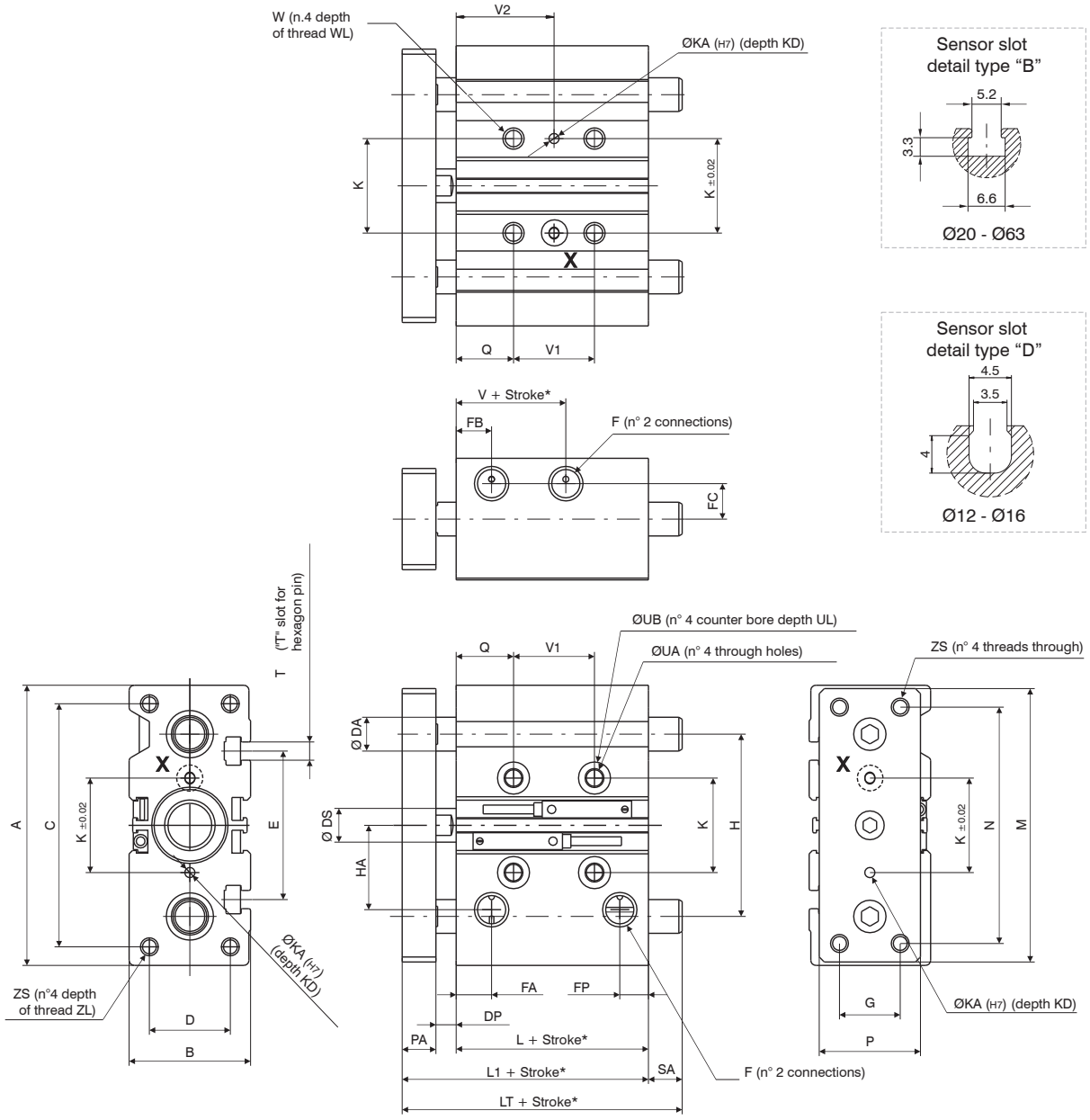
	Stroke											
Bore	**10**	**20**	**25**	**30**	**40**	**50**	**75**	**100**	**125**	**150**	**175**	**200**
Ø12	●	●		●	●	●	●	●				
Ø16	●	●		●	●	●	●	●				
Ø20		●		●	●	●	●	●	●	●	●	●
Ø25		●		●	●	●	●	●	●	●	●	●
Ø32			●			●	●	●	●	●	●	●
Ø40			●			●	●	●	●	●	●	●
Ø50			●			●	●	●	●	●	●	●
Ø63			●			●	●	●	●	●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

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
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 (Control unit with bronze bushes)	8	10	12	16	20	20	25	25
DA (Control unit with bearing bushes)	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
LT (Control unit with bronze bushes, stroke ≤50)	39	43	53,5	54	97	97	106,5	106,5
LT (Control unit with bronze bushes, 50< stroke ≤200)	57	64	84,5	85	102	102	118	118
LT (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 (Control unit with bronze bushes, stroke ≤50)	/	/	/	/	37	31	34,5	29,5
SA (Control unit with bronze bushes, 50< stroke ≤200)	18	21	31	31	42	36	46	41
SA (Control unit with bearing bushes)	See table 1							
T	/	/	M5	M5	M6	M6	M8	M10
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

Control unit with bearing bushes

Table 1	LT			SA		
Bore	stroke≤30	30<stroke≤100	100<stroke≤200	stroke≤30	30<stroke≤100	100<stroke≤200
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	28	52	128	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	out	in	out	in	out	in	out	in	out	in	out	in	out	in	out	in
(mm^2)	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: $\mathbf{Ec} = \frac{1}{2}\ \mathbf{m}\ \mathbf{V}^2$ (J)

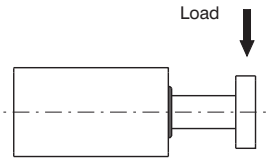
m = Total moving mass: weight of driven object added to weight of cylinder moving parts (kg)
V = max. speed: equal to average speed + 40% (m/sec)

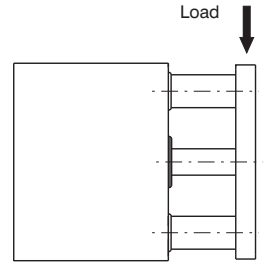
Operating criteria

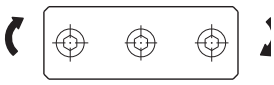
Permissible lateral load (applied on overall plate)

		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)

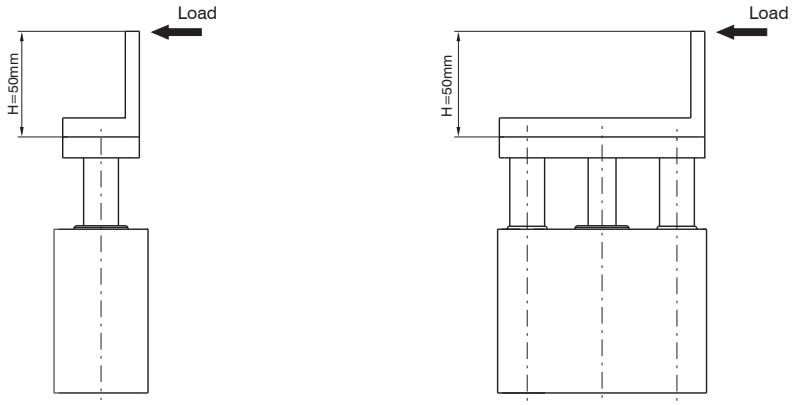






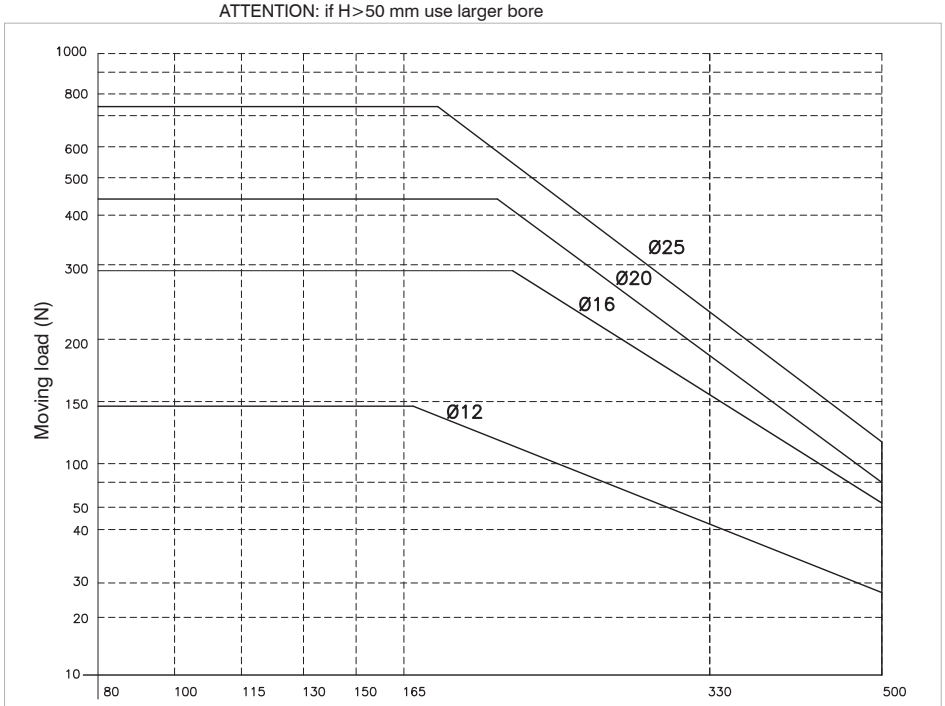
Operating criteria

Stopper device applications



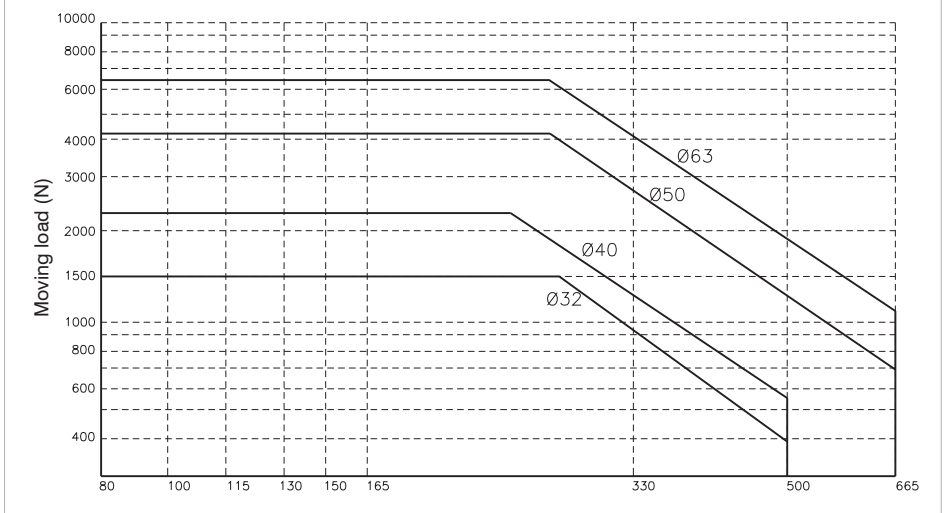
Control unit with bronze bushes

ATTENTION: if H>50 mm use larger bore



Ø12 – Ø25

ATTENTION: use with stroke £ 30 mm

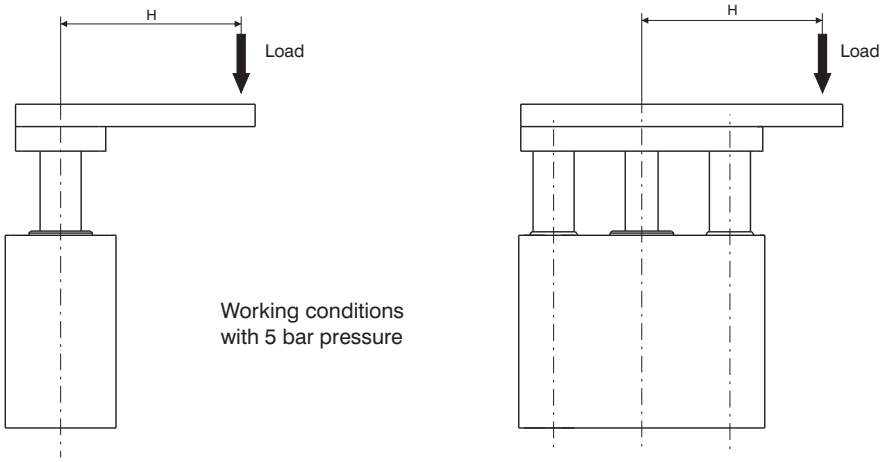


Ø32 – Ø63

ATTENTION: use with stroke £ 50 mm

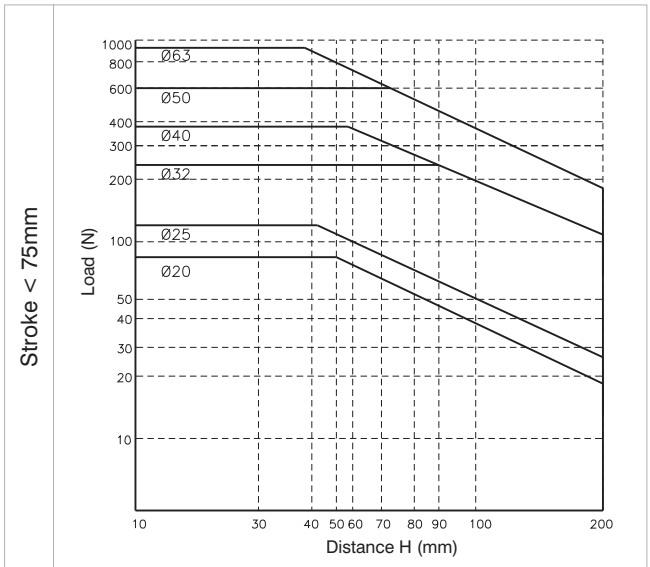
Operating criteria

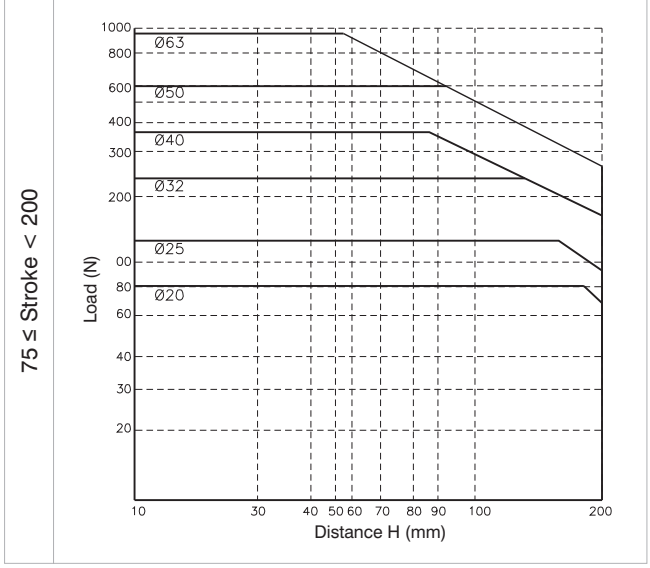
Handling applications



Working conditions
with 5 bar pressure

Control unit with bronze bushes

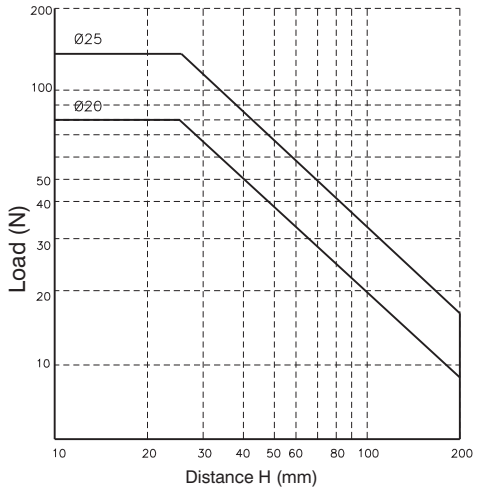
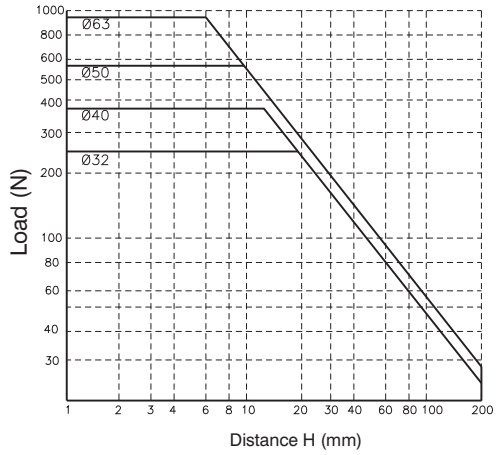
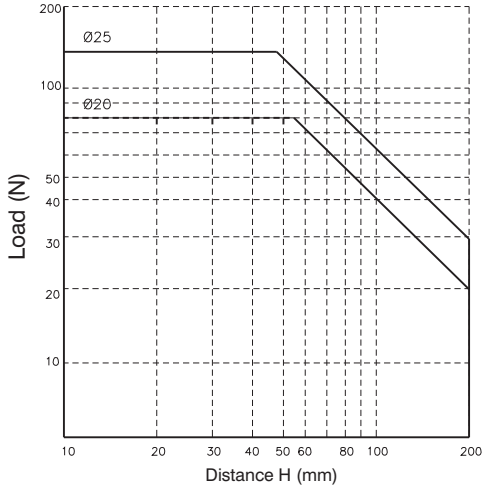
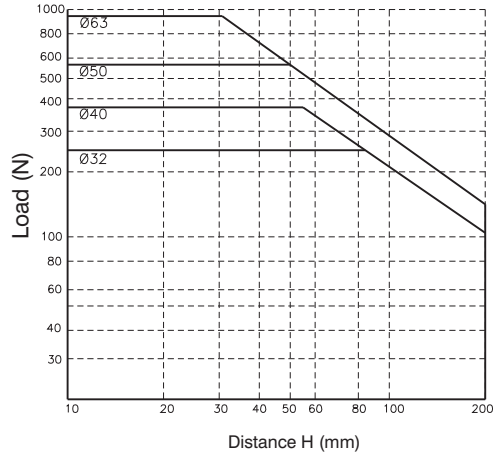
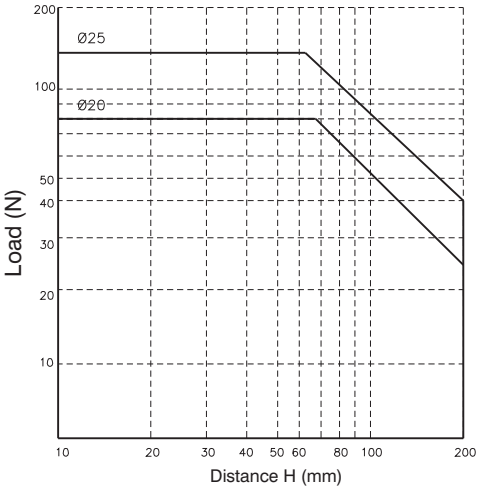
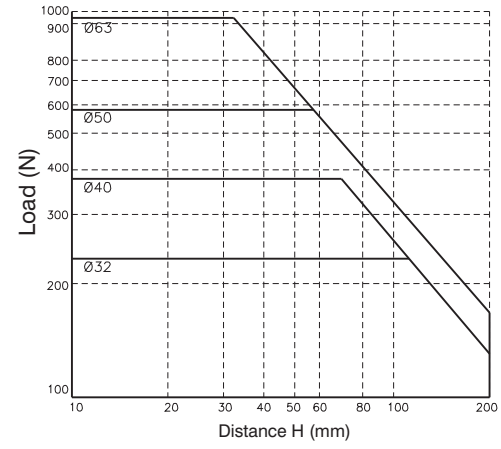




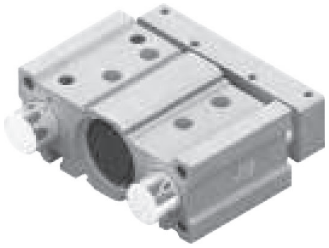
Operating criteria

Handling applications

Control unit with bearing bushes

	Ø20 – Ø25	Ø32 - Ø63
Stroke < 40 mm		
40 < Stroke < 125 mm		
125 ≤ Stroke < 200 mm		

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

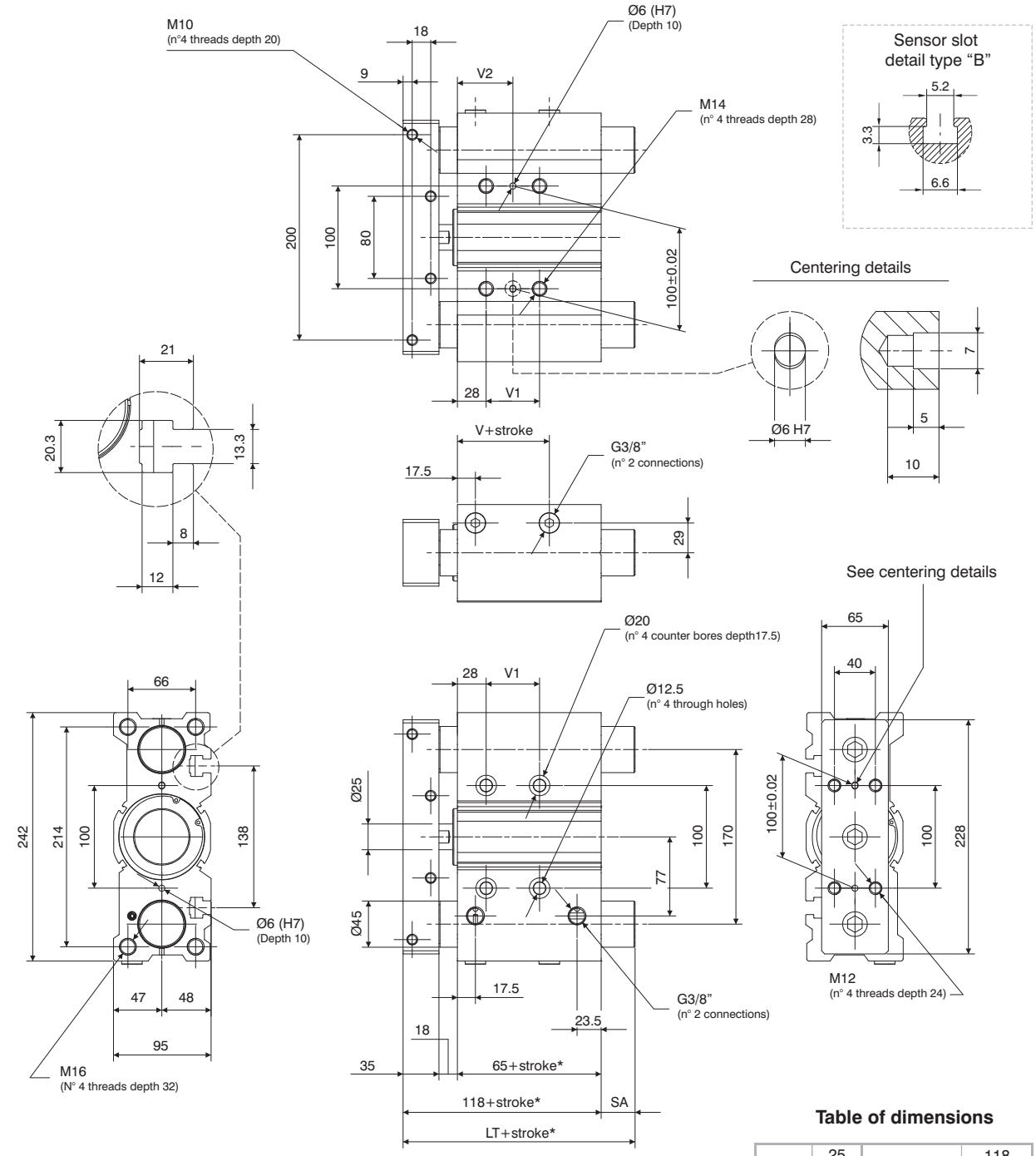
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Max. pressure	max. 10 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper on both ends

Standard strokes

	Stroke							
Bore	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

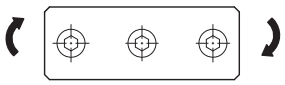
Operating criteria

Cylinder theoretic force (N)

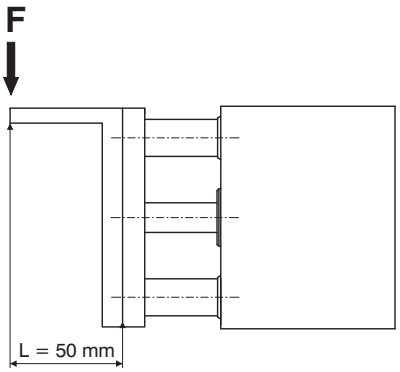
Working pressure		
2 bar	1005	907
3 bar	1508	1361
4 bar	2011	1814
5 bar	2513	2268
6 bar	3016	2721
7 bar	3519	3175
8 bar	4021	3629
9 bar	4524	4082
10 bar	5027	4536
Effective area (mm^2)	out	in
	5027	4536

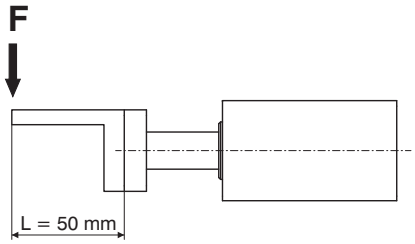
Recommended torque moments

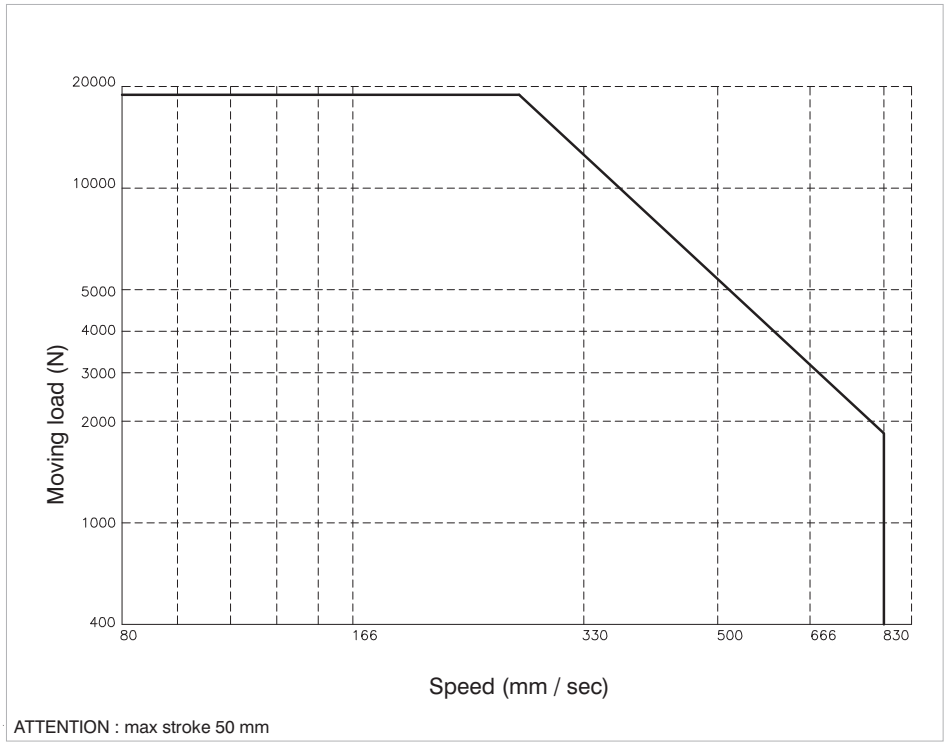
Stroke	N/m
25	49
50	41
75	51
100	45
125	41
150	38
175	35
200	32



"Stopper" device applications





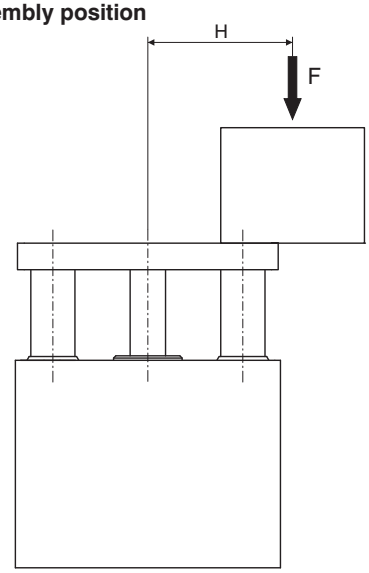


ATTENTION : max stroke 50 mm

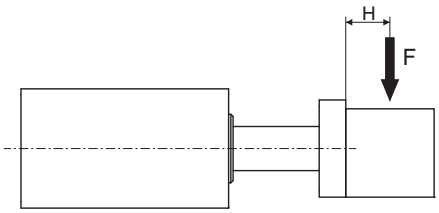
Operating criteria

Handling applications

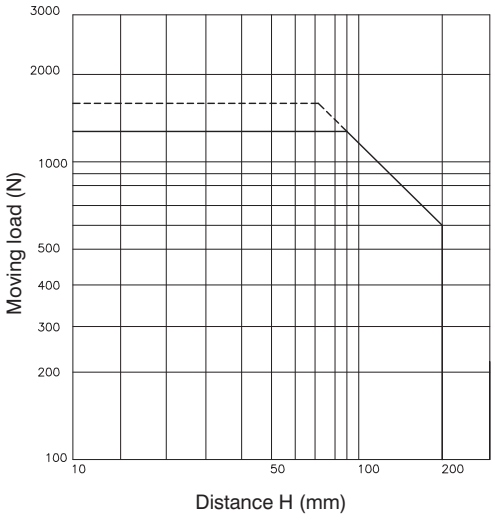
VERTICAL assembly position



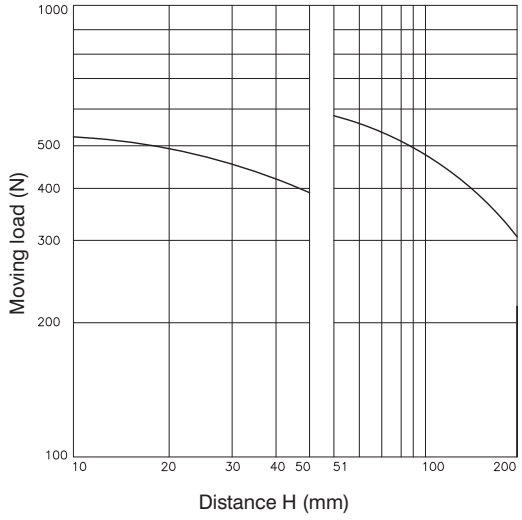
HORIZONTAL assembly position



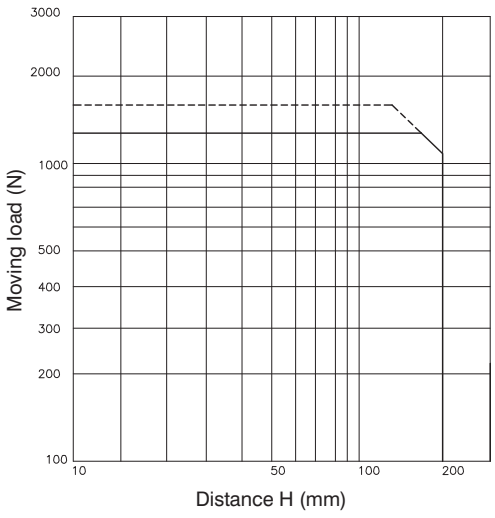
STROKE ≤ 50 mm / V = 200 mm/s



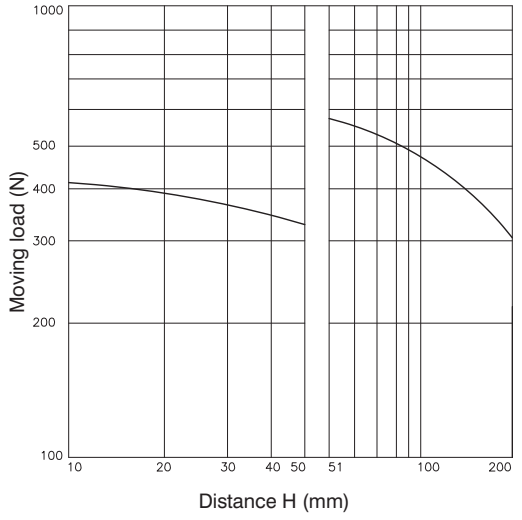
H= 50 mm / V = 200 mm/s



STROKE > 50 mm / V = 200 mm/s



H= 100 mm / V = 200 mm/s



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

Guided compact cylinder with additional metal rod scrapers

Ordering code

6110.Ø.stroke. C . _

- **32**
- **40**
- **50**
- **63**

_ = Side supply ports closed
L = Top supply ports closed

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

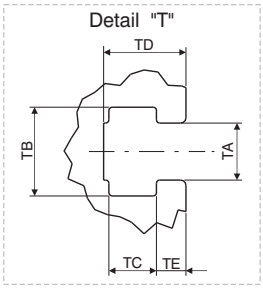
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	max. 10 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper on both ends

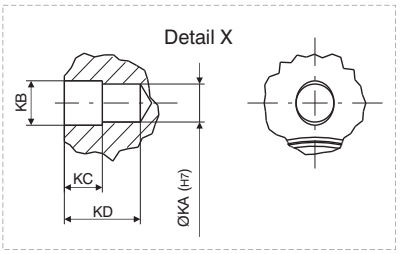
Standard strokes

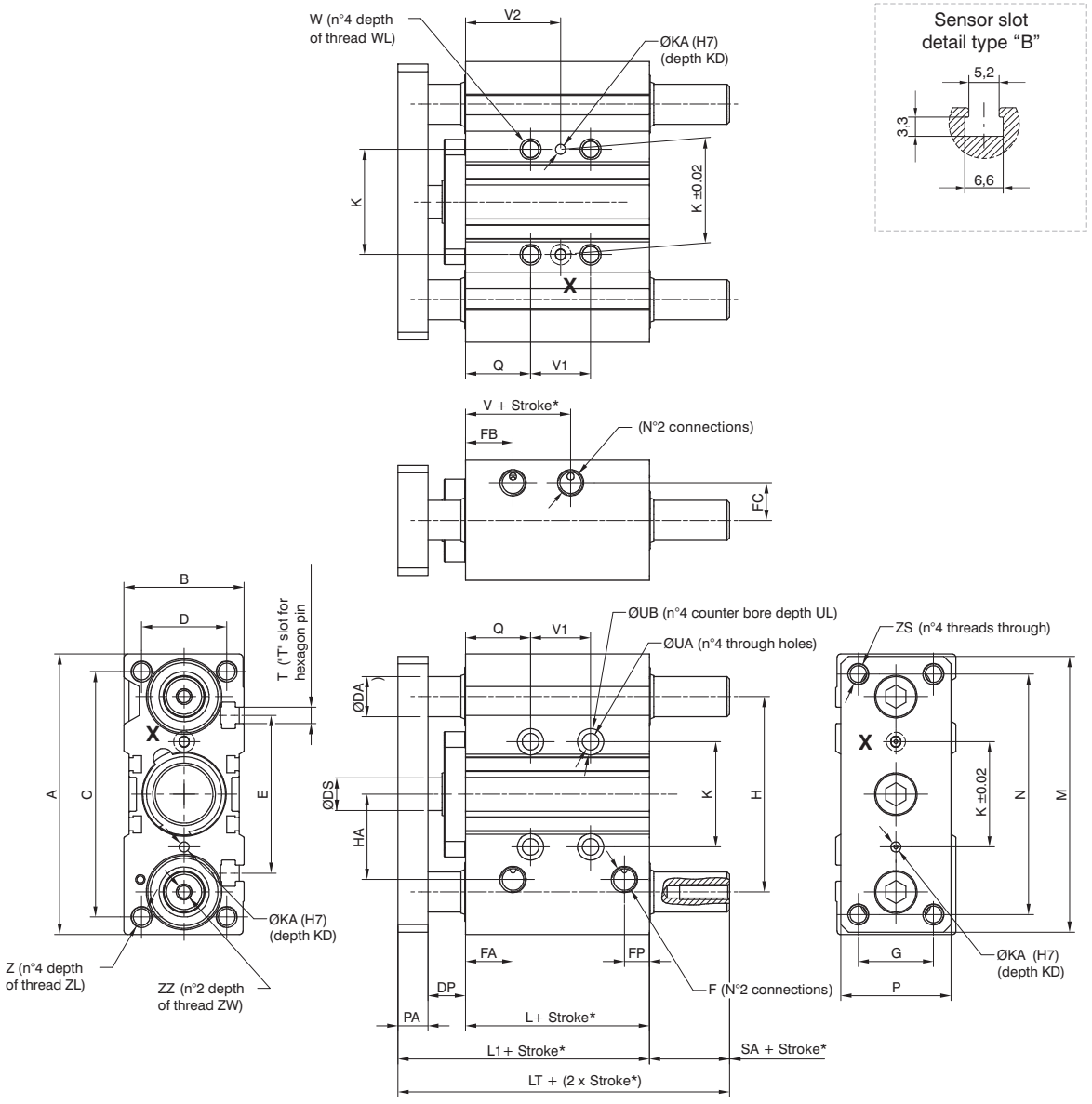
	Stroke									
Bore	**10**	**20**	**25**	**50**	**75**	**100**	**125**	**150**	**175**	**200**
Ø32			●	●	●	●	●	●	●	●
Ø40			●	●	●	●	●	●	●	●
Ø50			●	●	●	●	●	●	●	●
Ø63			●	●	●	●	●	●	●	●

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

Series 6200 - Twin-rod slide units

General

TWIN-ROD SLIDE UNITS SERIES 6200 AND 6210

The 6200 series twin-rod linear guide units are wide cylinders used in manipulation applications and are characterised by their high force output thanks to their double piston design.
Bores range from 10mm to 32mm diameter, with sintered bronze bearings for standard applications and linear ball bearings for more rugged applications.
One major characteristic of these cylinders is the precision of their anti-rotational design, with the possibility of regulating the stroke to within 0.5mm.
When using magnetic sensors, the 1580 series sensor sits entirely within the extrusion, resulting in a smooth profile.

The liner guided units range includes , alongside the conventional two rod version with flange series 6200 , also the through rod version with twin flanges series 6210

Thanks to the twin-rod, double yoke design of the 6210 series it is possible to either fix the body and use the ends of the rods, or alternatively to fix the rod ends and use the body as the moving part. The cylinder can be piped through the body or through the rods depending on the application.
Stroke limiting screws are fitted at either end of the stroke. The substitution of these screws with shock absorbers makes it possible to use the cylinder on higher velocity applications (up to 500mm/sec.) Slots are provided along the edge of these units to accommodate 1580 series miniature sensors.

Twin-rod slide units

Ordering code

6200.Ø.stroke._

- Ø: **10**, **15**, **20**, **25**, **32**
- **B** = Control unit with bronze bush
- **C** = Control unit with bearing bush

Construction characteristics

Body	anodised aluminium
Rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Piston	aluminium
Rod bushing	brass
End cap	anodised aluminium
Piston seal	oil resistant NBR rubber
Piston rod seal	PUR
Plate	anodised aluminium

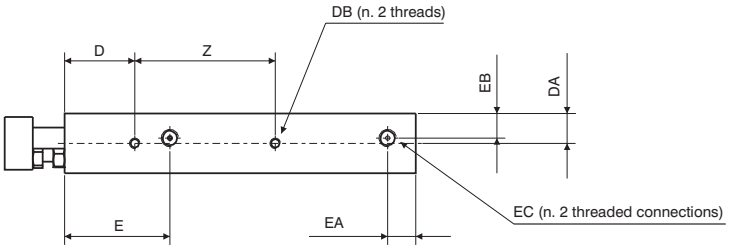
Operational characteristics

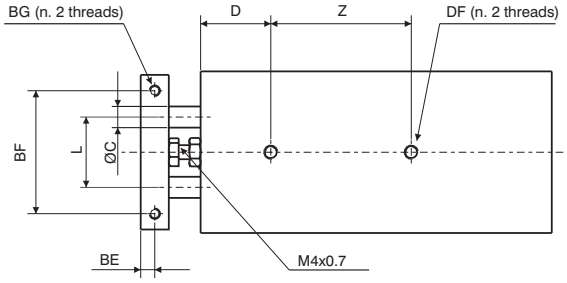
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Max. pressure	7 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper

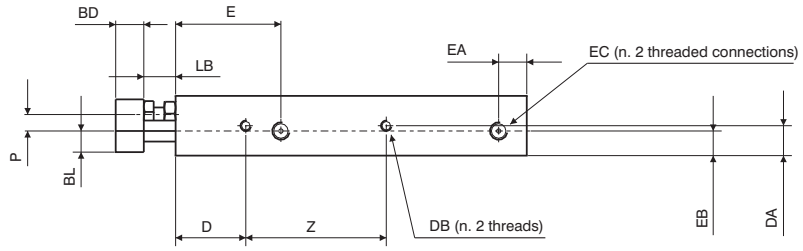
Standard strokes

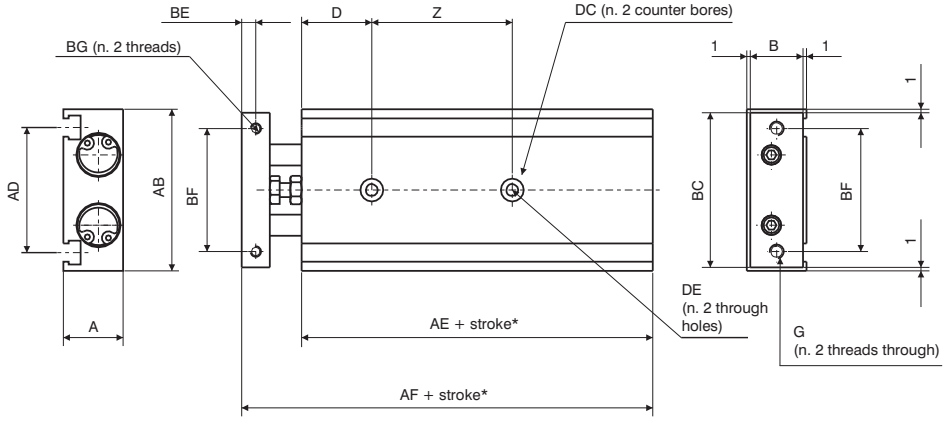
Bore	Stroke														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
Ø10	●	●	●	●	●	●	●	●	●	●	●	●			
Ø15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Overall dimensions Ø10 - Ø15





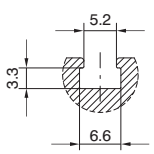




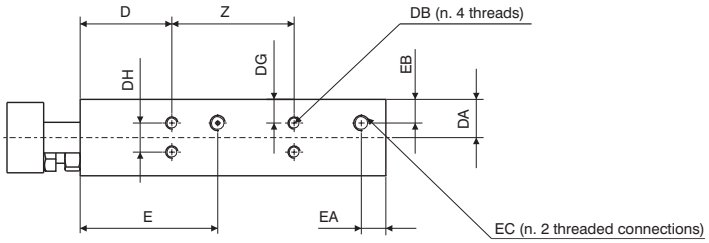
*Dimensions only refer to the "standard stroke"

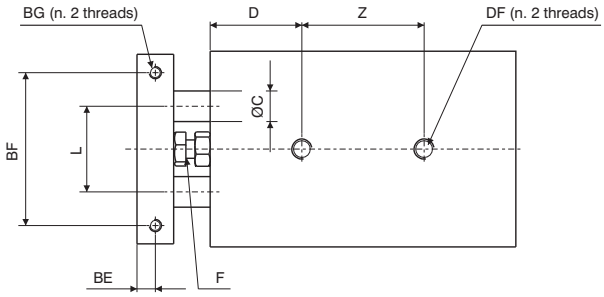
Bore		Ø10	Ø15
A		17	20
AB		46	58
AD		35,6	48
AE		55	60
AF		72	79
B		15	18
BC		44	56
BD		8	10
BE		4	5
BF		35	45
BG		M3x0,5	M4x0,7
	Useful depth	5	6
BL		6	9
C		6	8
D		20	30
DA		8,5	10
DB		M3x0,5	M4x0,7
	Useful depth	4,5	5
DC		6,5	8
	depth	3,3	4,4
DE		3,4	4,3
DF		M4x0,7	M5x0,8
	Useful depth	7	8
E		30	38,5
EA		8	8
EB		7	10
EC		M5x0,8	M5x0,8
	Useful depth	4,5	4,5
F		M4x0,7	M4x0,7
G		M4x0,7	M5x0,8
L		20	25
LB		9	9
P		4,7	4,5
Z stroke	10 - 25	30	25
	30 - 50	40	35
	60 - 75	50	45
	80	-	45
	90-100	-	55

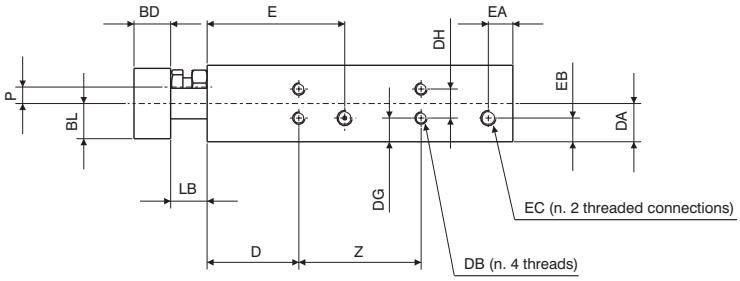
Sensor slot
detail type “B”

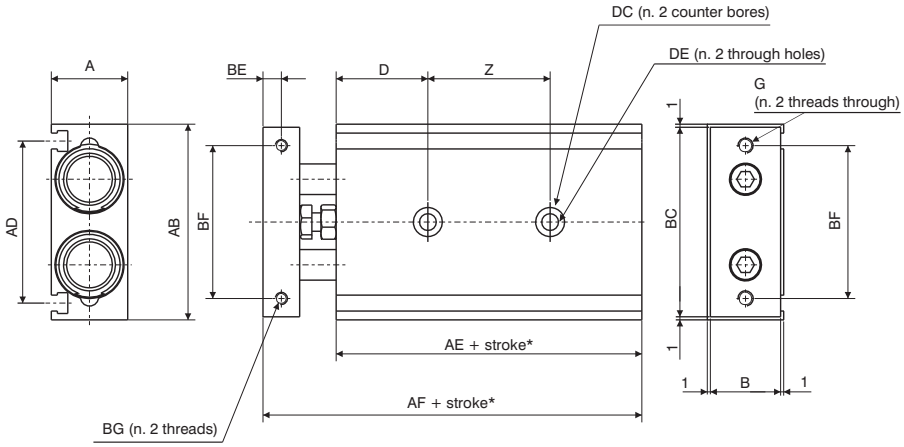


Overall dimensions Ø20 - Ø25 - Ø32

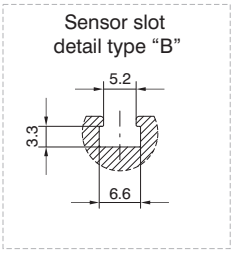








*Dimensions only refer to the "standard stroke"



Bore		Ø20	Ø25	Ø32
A		25	30	38
AB		64	80	98
AD		53	64	76
AE		70	72	82
AF		94	96	112
B		23	28	36
BC		62	78	96
BD		12	12	16
BE		6	6	8
BF		50	60	75
BG		M4x0,7	M5x0,8	M5x0,8
	Useful depth	6	7,5	8
BL		11,5	14	18
C		10	12	16
D		30	30	30
DA		12,5	15	19
DB		M4x0,7	M5x0,8	M5x0,8
	Useful depth	6	7,5	7,5
DC		9,5	11	11
	depth	5,3	6,3	6,3
DE		5,5	6,9	6,9
DF		M6x1	M8x1,25	M8x1,25
	Useful depth	10	12	12
DG		7,75	8,5	9
DH		9,5	13	20
E		45	46	56
EA		8	9	10
EB		7,75	15	19
EC		M5x0,8	G1/8	G1/8
	Useful depth	4,5	6,5	6,5
F		M6x1	M6x1	M8x1,25
G		M5x0,8	M6x1	M6x1
L		28	35	44
LB		12	12	14
P		5,4	7,8	12
Z	stroke 10 - 25	30	30	40
	stroke 30 - 50	40	40	50
	stroke 60 - 100	60	60	70

Operating instructions

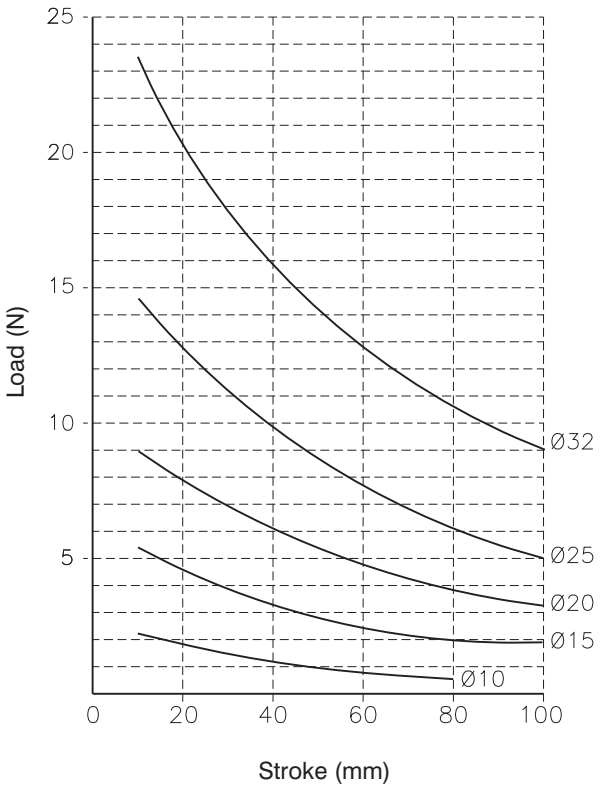
	Bore				
	Ø10	Ø15	Ø20	Ø25	Ø32
Stroke	**Control unit with bronze bush**				**Weight g**
10	150	250	400	610	1150
15	160	265	420	635	1190
20	170	280	440	660	1230
25	180	290	460	690	1275
30	190	300	480	720	1320
35	200	315	495	745	1360
40	210	330	510	770	1400
45	220	345	530	800	1450
50	230	360	550	830	1490
60	250	390	585	890	1580
70	270	420	620	950	1665
75	280	435	640	970	1710
80		450	660	995	1755
90		480	700	1060	1840
100		510	740	1000	1930
Stroke	**Control unit with bearing bush**				
10	160	270	430	620	1160
15	165	285	445	645	1205
20	170	300	460	670	1250
25	180	310	480	700	1295
30	190	320	500	730	1340
35	200	335	515	755	1380
40	210	350	530	780	1420
45	220	365	550	810	1465
50	230	380	570	840	1510
60	250	410	605	895	1595
70	270	440	640	955	1680
75	280	455	660	980	1720
80		470	680	1005	1765
90		500	715	1065	1855
100		530	750	1110	1940

Working pressure	**Theoretical slide force**									
1 bar	16	10	35.5	25	63	47	98	75.5	161	120.5
1.5 bar	23.5	15	53	38	94	62.5	147.5	113.5	241	181
2 bar	31.5	20.0	70.5	50.5	125.5	94	196.5	151	321.5	241
3 bar	47	30	106	75.5	188.5	141	294.5	227	482.5	362
4 bar	63	40	141	101	251	188	393	302.5	643	482.5
5 bar	78.5	50	176.5	126	314	236	491	378	804	603
6 bar	94	60	212	151	377	283	589	453.5	965	723.5
7 bar	110	70	247	176.5	440	330	687.5	529	1125.6	844
	Out	In	Out	In	Out	In	Out	In	Out	In

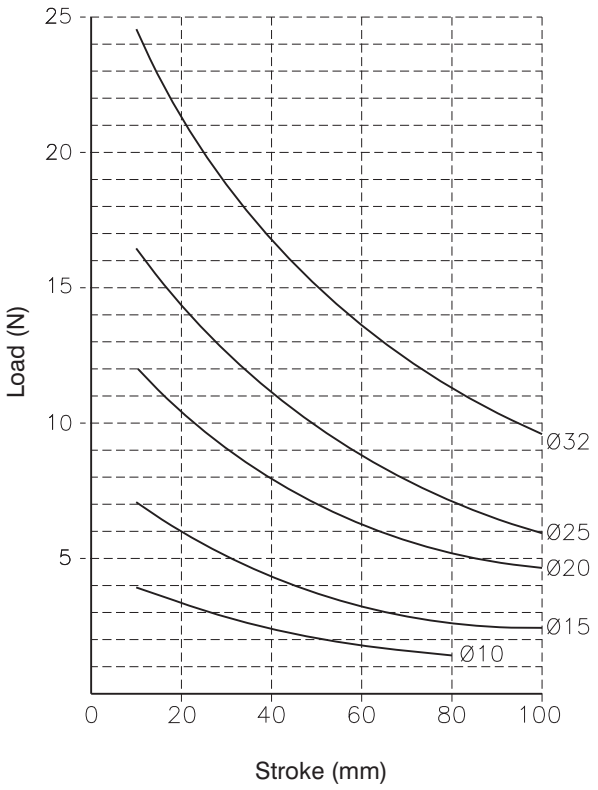
Operating instructions

Possible loads

Control unit with bronze bush



Control unit with bearing bush



3 PNEUMATIC ACTUATION

Twin-rod slide units

Ordering code

6200.Ø.stroke. _

- Ø: **10**, **15**, **20**, **25**, **32**
- **B** = Control unit with bronze bush
- **C** = Control unit with bearing bush

Construction characteristics

Body	anodised aluminium
Rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Piston	aluminium
Rod bushing	brass
End plate	anodised aluminium
Piston seal	oil resistant NBR rubber
Piston rod seal	PUR
Plate	anodised aluminium

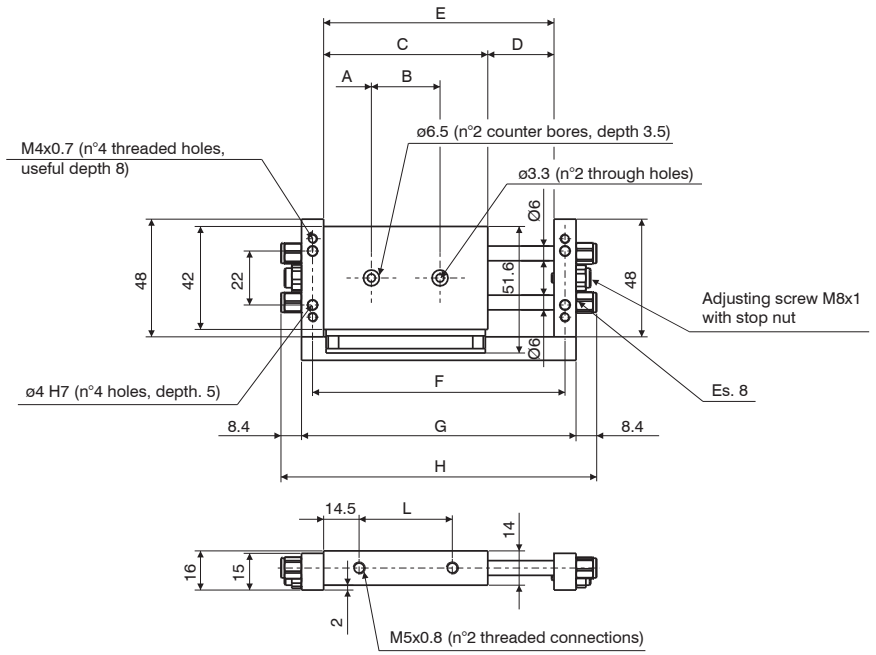
Technical characteristics

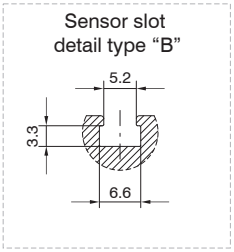
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Max. pressure	7 bar
Working temperature	-5°C - +70°C
Cushioning	elastic bumper

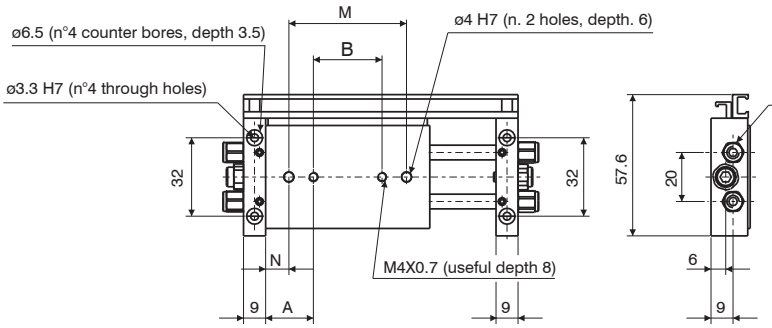
Standard strokes

Bore	Stroke														
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
Ø10	●	●	●	●	●	●	●	●	●	●	●	●			
Ø15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Overall dimensions Ø10

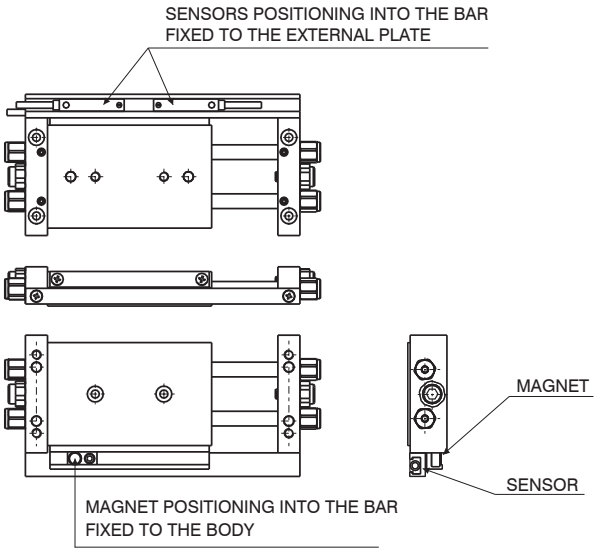




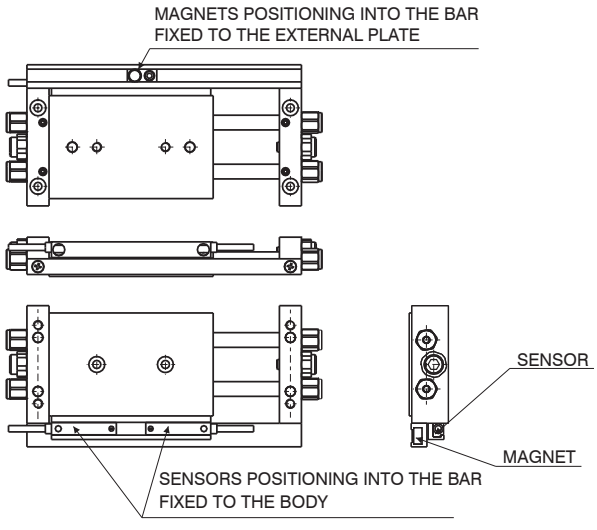


Stroke	25	50	75	100
A	19,5	30	35	35
B	28	32	47	72
C	67	92	117	142
D	27	52	77	102
E	94	144	194	244
F	103	153	203	253
G	112	162	212	262
H	129	179	229	279
L	38	63	88	113
M	48	52	67	92
N	9,5	20	25	25
				Weight
g	160	230	280	310

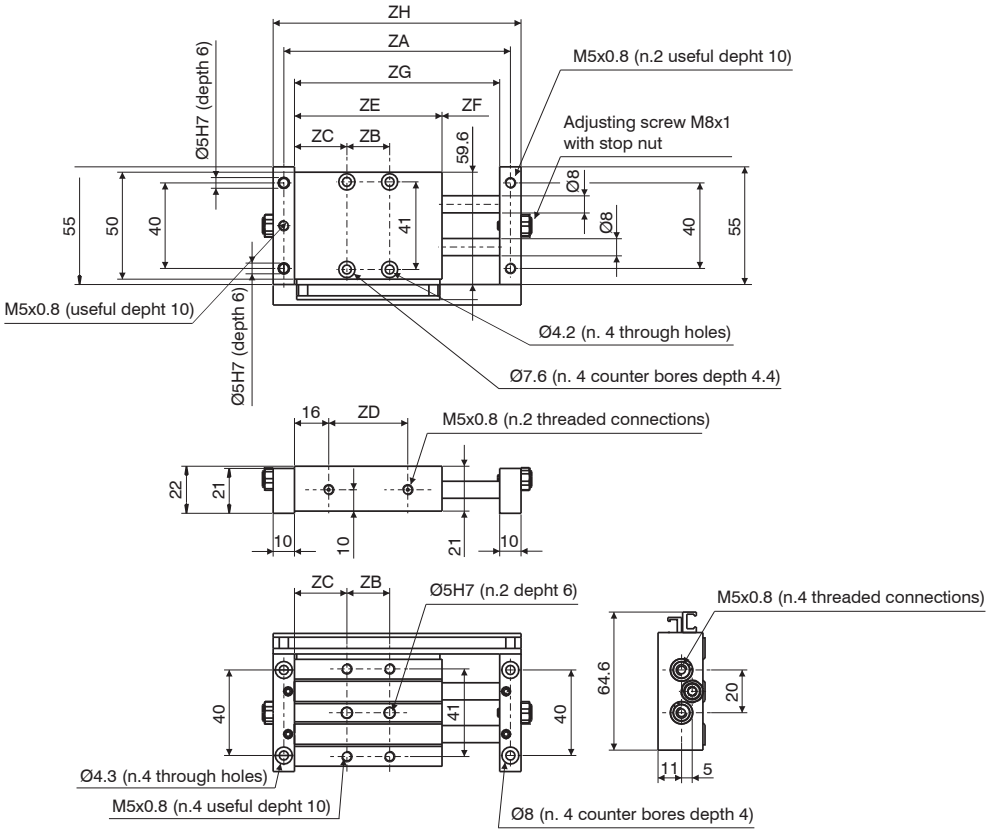
MOUNTING WITH FIXED PLATE

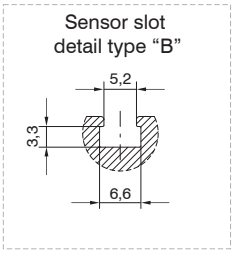


MOUNTING WITH A FIXED BODY



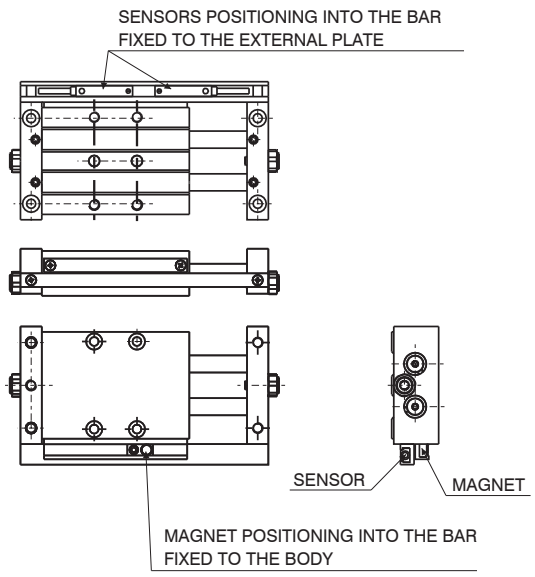
Overall dimensions Ø15



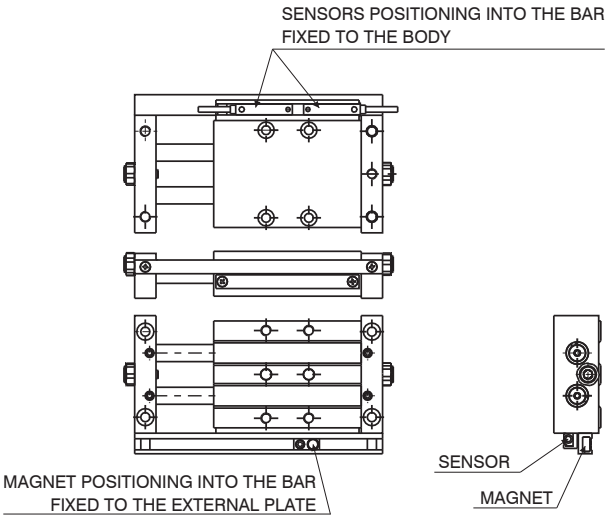


Stroke	25	50	75	100	125	150	175	200
ZA	106	156	206	256	306	356	406	456
ZB	20	45	65	90	90	90	90	90
ZC	24,5	24,5	27	27	39,5	52	64,5	77
ZD	37	62	87	112	137	162	187	212
ZE	69	94	119	144	169	194	219	244
ZF	27	52	77	102	127	152	177	202
ZG	96	146	196	246	296	346	396	446
ZH	116	166	216	266	316	366	416	466
								Weight
g	240	350	450	550	670	750	900	1000

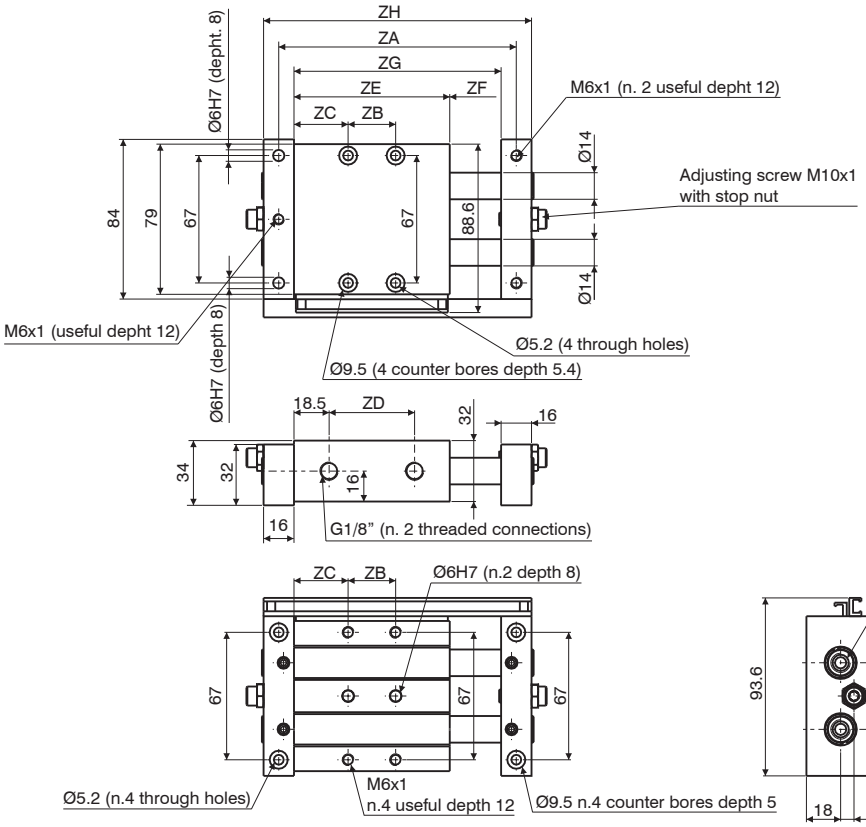
MOUNTING WITH FIXED PLATE

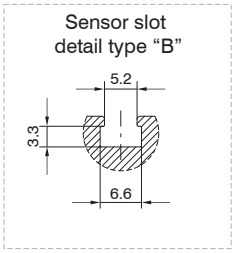


MOUNTING WITH FIXED BODY



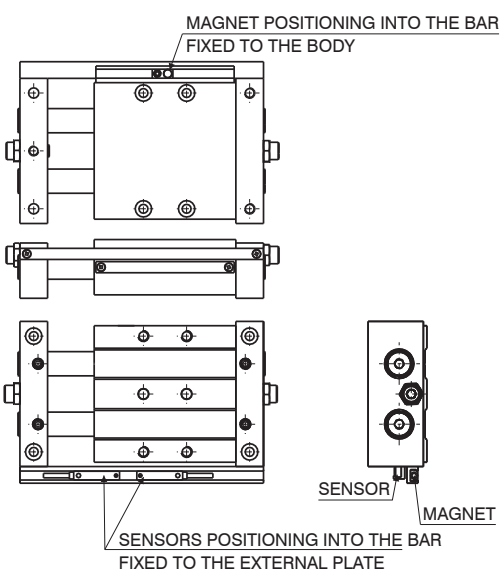
Overall dimensions Ø25



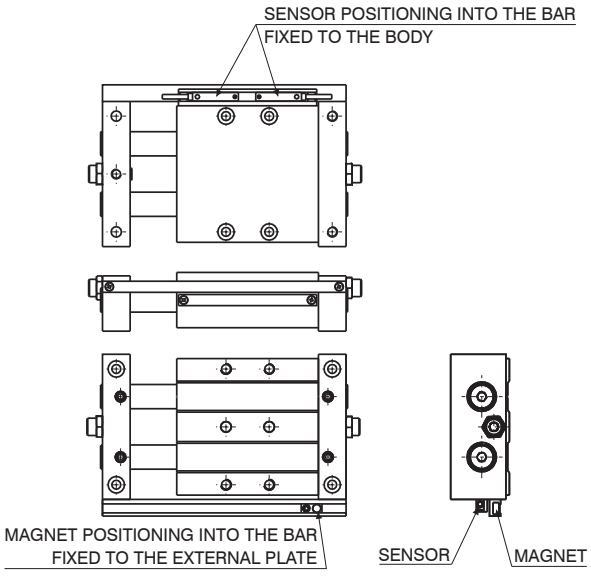


Stroke	25	50	75	100	125	150	175	200
ZA	125	175	225	275	325	375	425	475
ZB	25	45	65	90	90	90	90	90
ZC	28,5	31	33,5	33,5	46	58,5	71	83,5
ZD	45	70	95	120	145	170	195	220
ZE	82	107	132	157	182	207	232	257
ZF	27	52	77	102	127	152	177	202
ZG	109	159	209	259	309	359	409	459
ZH	141	191	241	291	341	391	441	491
								Weight
g	950	1140	1350	1600	1800	2000	2300	2500

MOUNTING WITH FIXED PLATE



MOUNTING WITH FIXED BODY



Operating conditions

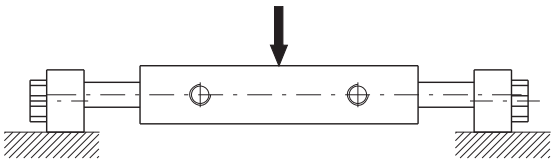
Theoretical force (N)

Working pressure	Bore		
	Ø10	Ø15	Ø25
2 bar	20	41	119
3 bar	30	62	179
4 bar	40	83	239
5 bar	51	104	299
6 bar	61	124	358
7 bar	71	145	418
8 bar	81	166	478
9 bar	91	186	537
	101	207	597
	Effective area (mm^2)		

Deflection of piston rods

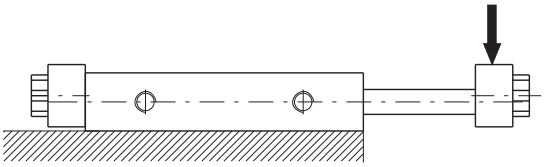
Applied load to body centre

Bore	Load	Deflection (mm)	
Ø10	10 N	0,07	/
Ø15	30 N	0,08	0,28
Ø25	60 N	0,02	0,08
		100	200
		Stroke	

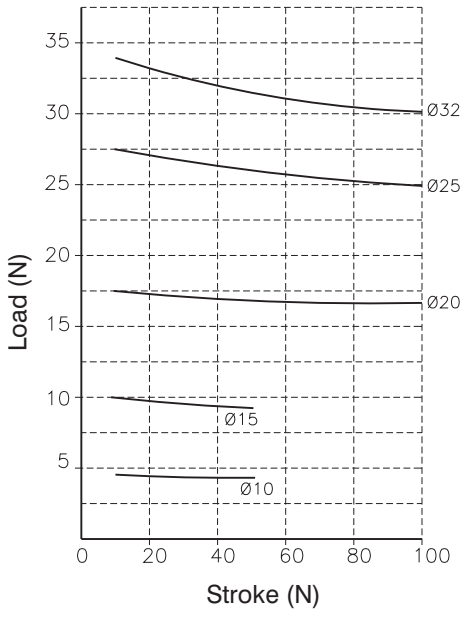


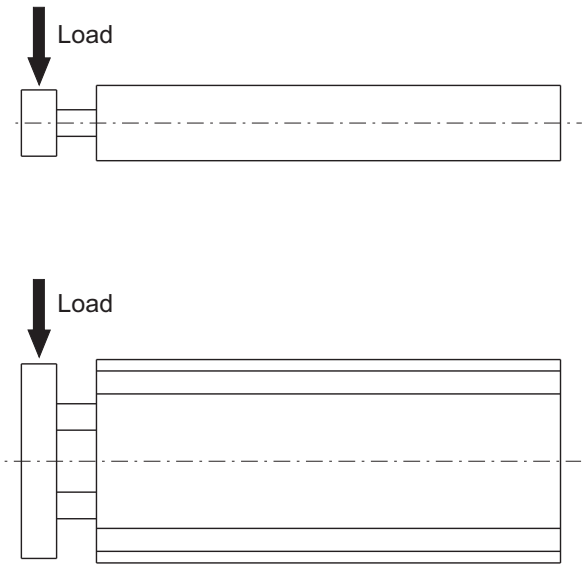
Applied load to body centre

Bore	Load	Deflection (mm)			
Ø10	3 N	0,06	0,3	/	/
Ø15	5 N	0,1	0,2	0,5	1
Ø25	10 N	0,03	0,1	0,15	0,25
		50	100	150	200
		Stroke			



Control unit with bronze bushes





Guide cylinders

Ordering code

6700.Ø.stroke

- 10
- 16
- 20

Construction characteristics

Body	anodised aluminium
Piston rod	stainless steel
Piston	aluminium
Piston rod bushing	aluminium
End cap	anodised aluminium
Seals	oil resistant NBR rubber
Table	anodised aluminium

Standard strokes

	Stroke								
Bore	**5**	**10**	**15**	**20**	**25**	**30**	**40**	**50**	**60**
Ø10	●	●	●	●	●	●	●	●	●
Ø16	●	●	●	●	●	●	●	●	●
Ø20	●	●	●	●	●	●	●	●	●

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	1.2 - 7 bar
Working temperature	-5°C - +70°C
Cushioning	with elastic bumper

Theoretical force

Bore	Effective area (mm²)		Force (N)					
Ø10	Out	28,3	5,7	8,5	11,3	14,2	17	19,8
	In	21,2	4,2	6,4	8,5	10,6	12,7	14,8
Ø16	Out	78,5	15,7	23,6	31,4	39,3	47,1	55
	In	66	13,2	19,8	26,4	33	39,6	46,2
Ø20	Out	314	62,8	94,2	125,6	157	188,4	219,8
	In	264	52,8	79,2	105,6	132	158,4	184,8
			2	3	4	5	6	7
			Working pressure (bar)					

Overall dimensions - Ø10

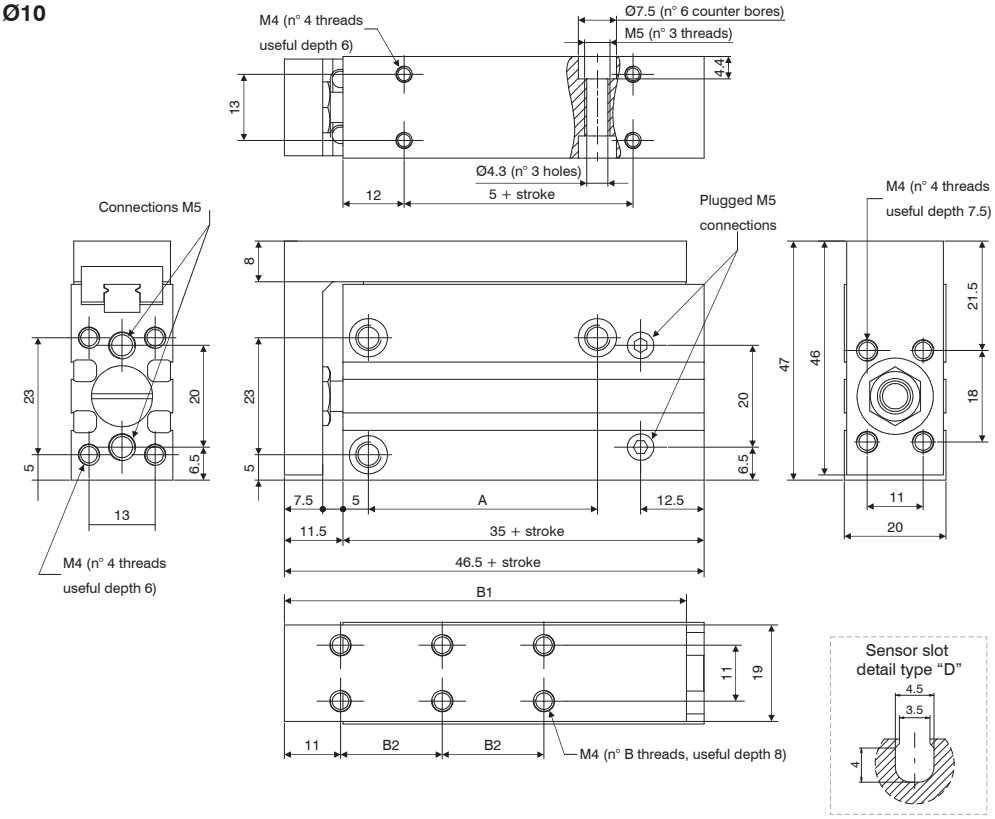


Table of dimensions

	Standard strokes								
	5	**10**	**15**	**20**	**25**	**30**	**40**	**50**	**60**
A	14		24		30		45	45	60
B1	49		59		69		79	79	99
B2	10		20		30		20	20	30
B	4						6		
Weight (g)	117	125	140	148	162	170	192	215	238

Overall dimensions - Ø16

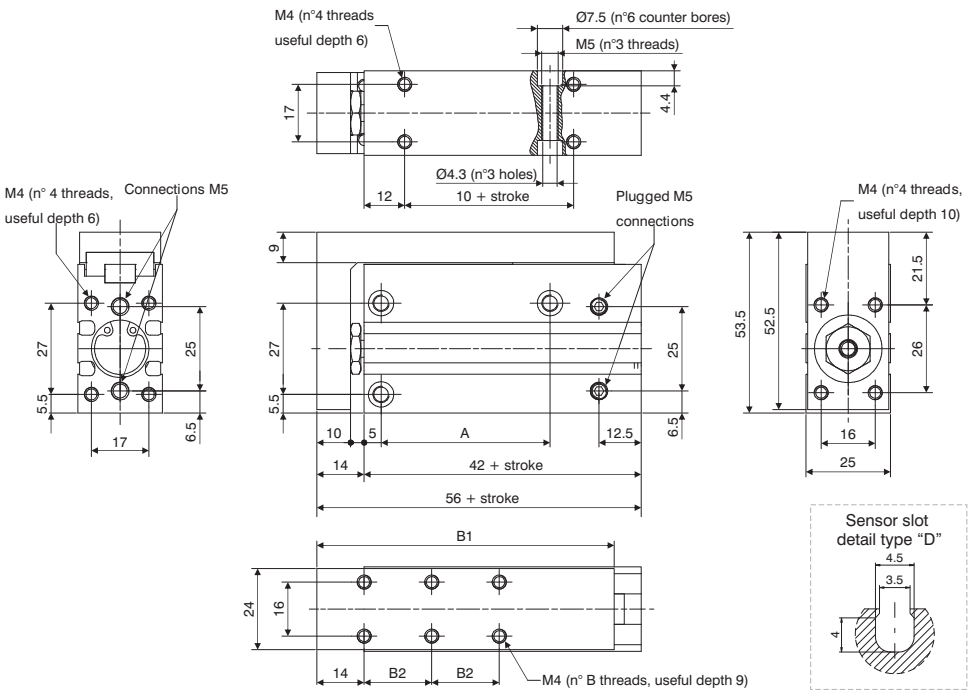


Table of dimensions

	Standard strokes								
	5	10	15	20	25	30	40	50	60
A	20		30		40		50	60	
B1	58		68		78		88	98	108
B2	10		20		30		20	25	30
B	4						6		
Weight (g)	215	230	250	260	280	290	325	350	390

Overall dimensions - Ø20

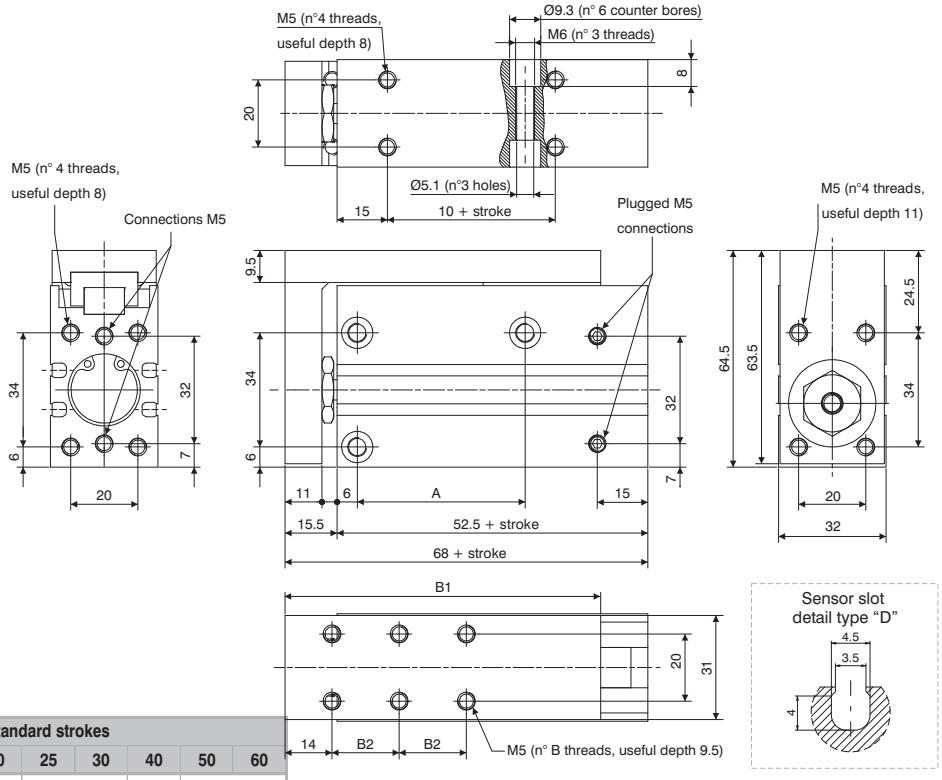
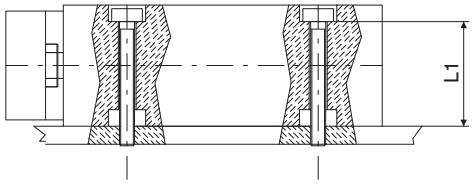


Table of dimensions

	Standard strokes								
	5	10	15	20	25	30	40	50	60
A	20		25		40		50	70	
B1	64		74		84		94	104	114
B2	10		20		30		20	25	30
B	4						6		
Weight (g)	440	455	490	505	540	560	600	660	700

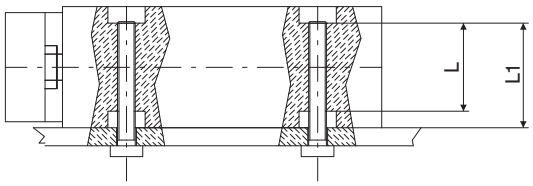
Fixing - Load

LATERAL (THROUGH SCREW)



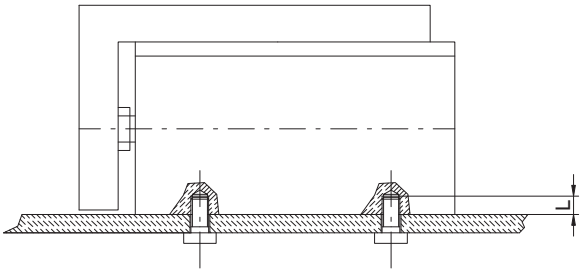
	SCREW	Maximum torque (Nm)	L1
Ø10	M4	2.5	15.6
Ø16	M4	2.5	20.6
Ø20	M5	5.1	24

LATERAL (THREADED HOLE)



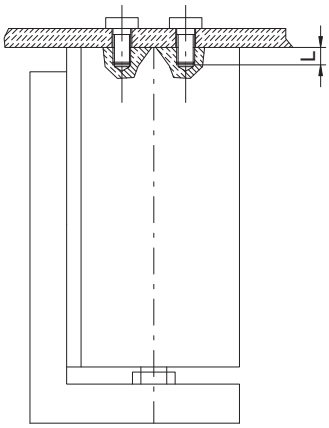
	SCREW	Maximum torque (Nm)	L1	L
Ø10	M5	5.1	15.6	11.2
Ø16	M5	5.1	20.6	16.2
Ø20	M6	8.1	24	16

VERTICAL (THREADED HOLE)



	SCREW	Maximum torque (Nm)	L
Ø10	M4	2.5	6
Ø16	M4	2.5	6
Ø20	M5	5.1	8

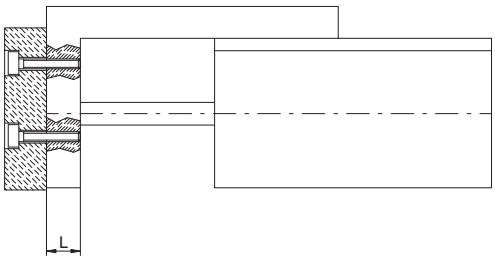
AXIAL (THREADED HOLE)



	SCREW	Maximum torque (Nm)	L
Ø10	M4	2.5	6
Ø16	M4	2.5	6
Ø20	M5	5.1	8

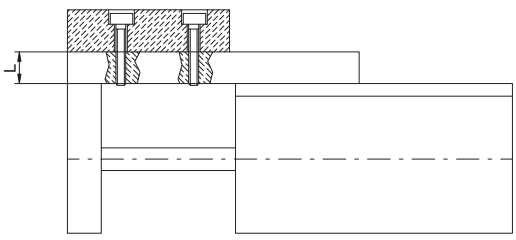
LOAD

FRONTAL MOUNTING



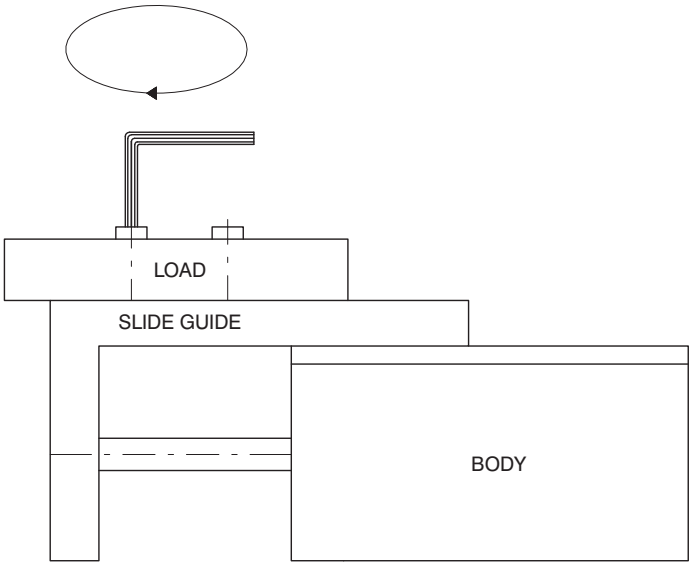
	SCREW	Maximum torque (Nm)	L
Ø10	M4	2.5	7.5
Ø16	M4	2.5	10
Ø20	M5	5.1	11

BACK MOUNTING



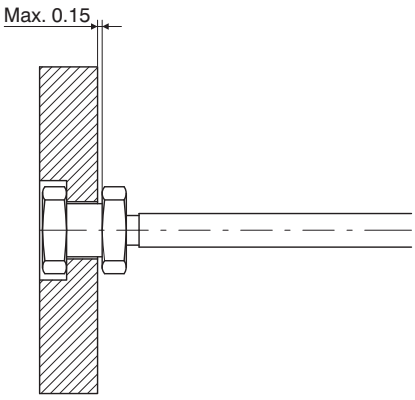
	SCREW	Maximum torque (Nm)	L
Ø10	M4	2.5	8
Ø16	M4	2.5	9
Ø20	M5	5.1	9.5

Fixing - Load



ATTENTION : Slide must be blocked before fixing the load this operation shoul not be done by blocking the body as the guide could get damaged.

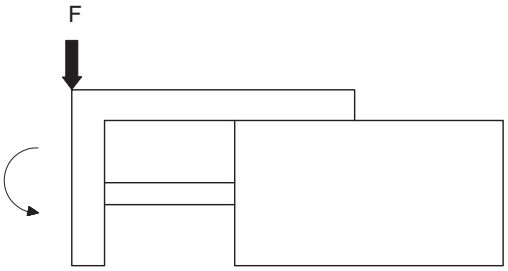
CONNECTION BETWEEN PLATE AND ROD



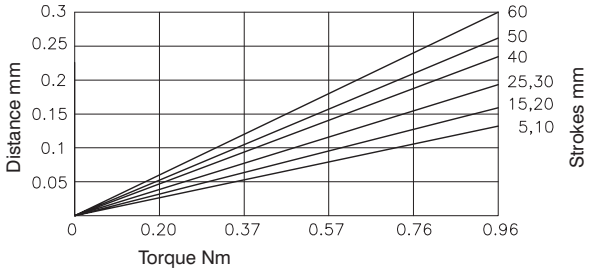
The fluctuating connection, maximum clearence 0.15mm as indicated by the arrow

Plate deflection graphs

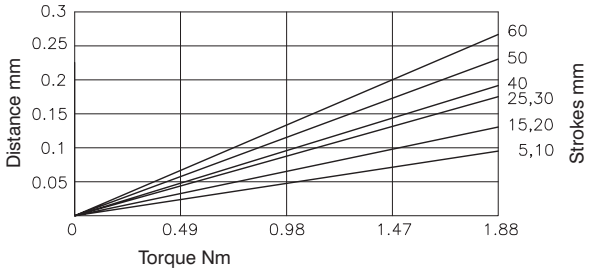
Plate deviation (arrow) when the load is applied on the spot indicated with the arrow and the unit completely extended



Ø10



Ø16



Ø20

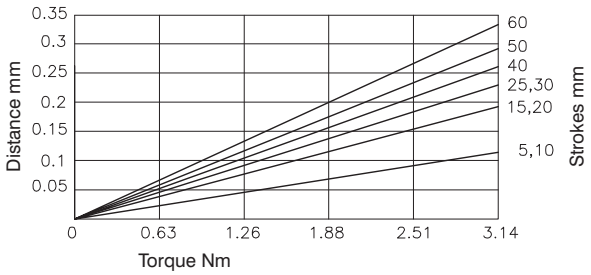
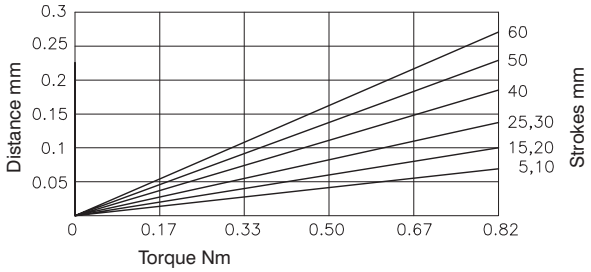
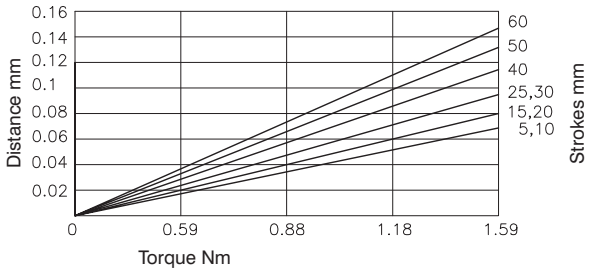


Plate deviation (arrow) when the load is applied on the spot indicated with the arrow and the unit completely extended

Ø10



Ø16



Ø20

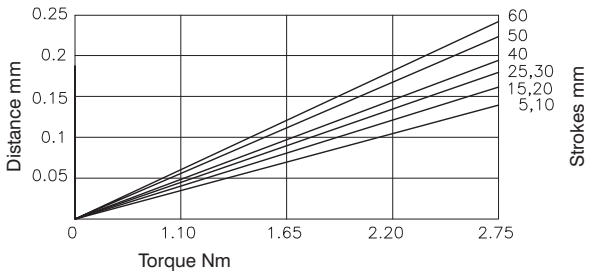
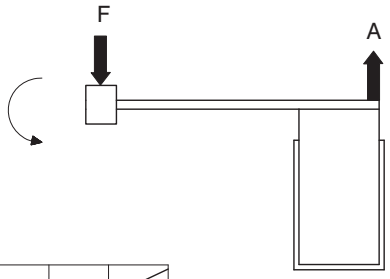
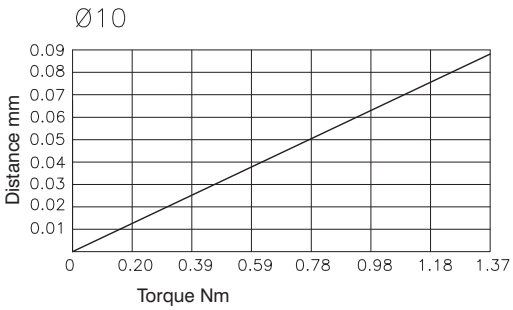
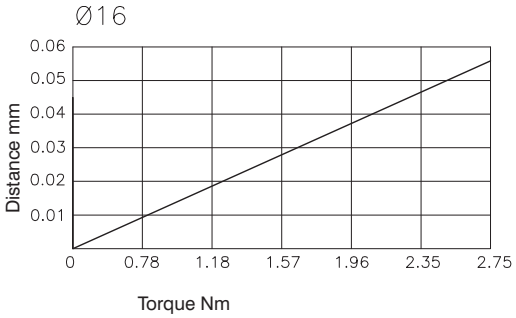


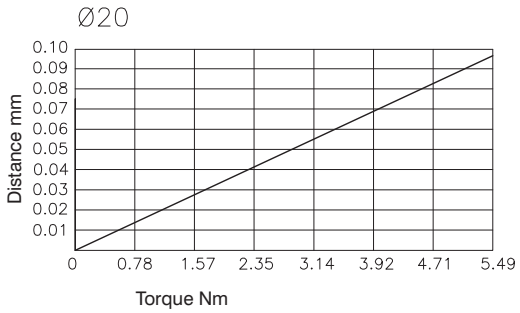
Plate deflection graphs outer stroke - selection graphs

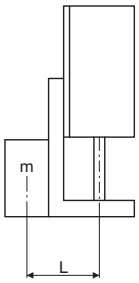
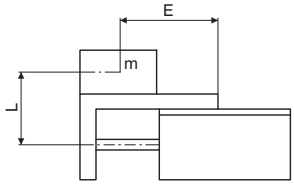
Plate deviation (compared to A) when the load is applied on the spot indicated with the arrow and the unit completely extended







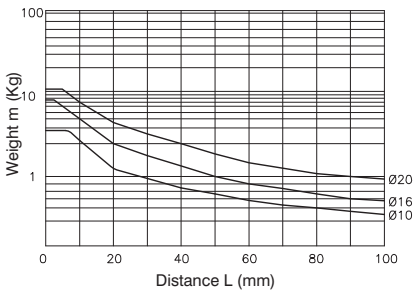


MOUNTING POSITION	VERTICAL			HORIZONTAL								
												
MAX. SPEED (mm/sec.)	100	200	300	100			200			300		
Load eccentricity				50	100	200	50	100	200	50	100	200
Selection graphs	1	2	3	4	5	6	7	8	9	10	11	12

Selection graphs 1 - 3 (vertical mounting)

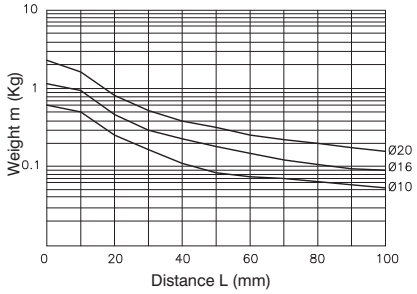
Drawing 1

Maximum speed 100 mm/s or lower



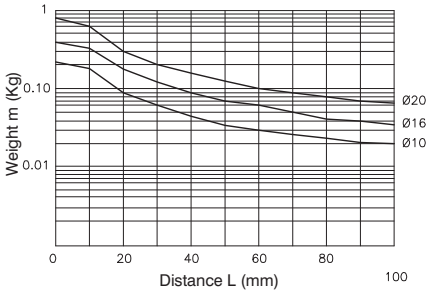
Drawing 2

Maximum speed 300 mm/s or lower



Drawing 3

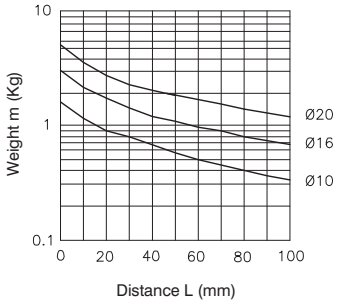
Maximum speed 500 mm/s or lower



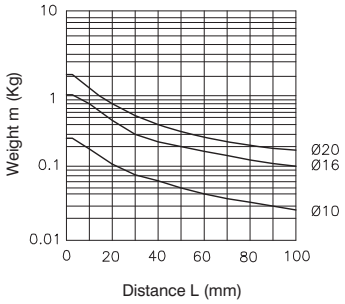
Selection graphs

Selection graphs 4 - 12 (horizontal mounting)

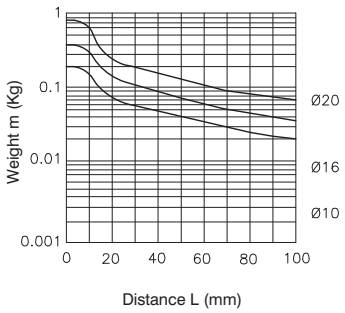
Drawing 4 load eccentricity 50mm
Maximum speed 100 mm/s or lower



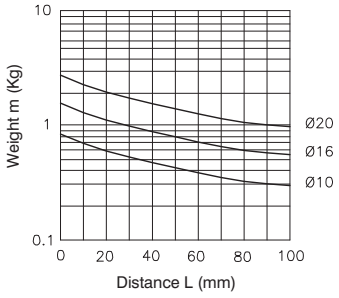
Drawing 7 load eccentricity 50mm
Maximum speed 300 mm/s or lower



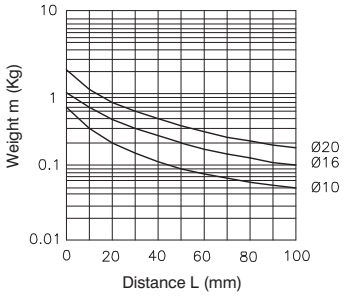
Drawing 10 load eccentricity 50mm
Maximum speed 500 mm/s or lower



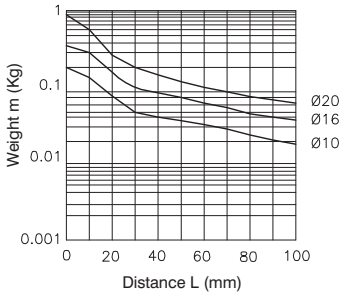
Drawing 5 load eccentricity 100mm
Maximum speed 100 mm/s or lower



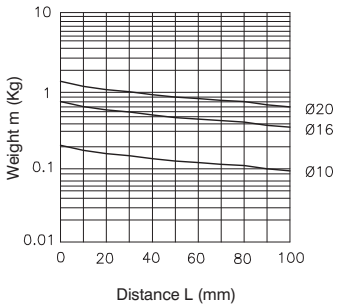
Drawing 8 load eccentricity 100mm
Maximum speed 300 mm/s or lower



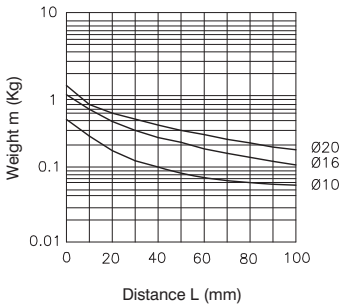
Drawing 11 load eccentricity 100mm
Maximum speed 500 mm/s or lower



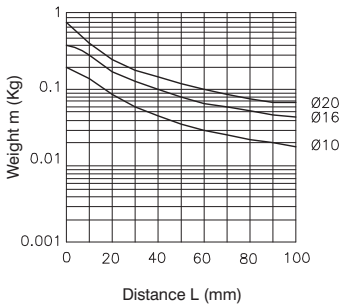
Drawing 6 load eccentricity 200mm
Maximum speed 100 mm/s or lower



Drawing 9 load eccentricity 200mm
Maximum speed 300 mm/s or lower



Drawing 12 load eccentricity 200mm
Maximum speed 500 mm/s or lower



Series 6300 - Pneumatic grippers

General

Pneumatic grippers from the 6300 series are typically used in complex systems such as assembly machines, robots, manipulators etc.
This series covers the wide range requirements of this sector, allowing a variety of applications.
The range includes grippers equipped with holding fingers operating from -10° to +30° degrees, with 180° degree opening, or a parallel guided gripper with great rigidity throughout the stroke.
The parallel grippers cater for larger openings (three different strokes for each diameter) with synchronised operation via a pinion-rack system with high strength thanks to a double piston mechanism.
For the typical application of supplying a piece upon to a machine tool, make provision for an automatic three-pronged movement carried along by a wedge mechanism, containing the elevated force dimensions.
The holding fingers can have a tolerance reference as a precise fixing device for the catching mechanism. Every type of “hand” offers different functional levels of performance at varying diameters and lengths, secondary to the application by the “fingers”.

Pneumatic grippers, angular - Standard version

Ordering code

6301.Ø. _

- **10**
- **16**
- **20**
- **25**

- **D** = Double acting
- **S** = Single acting (normally open)

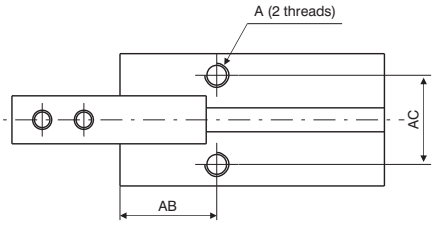
Construction characteristics

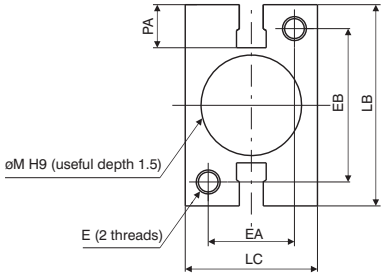
Body	anodised aluminium
Piston	AISI 303 stainless steel
Fingers	nitrate steel
End cap	anodised aluminium
Seals	oil resistant NBR rubber

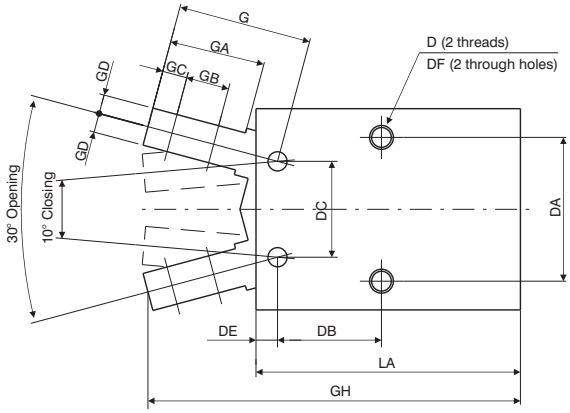
Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.		
Working pressure	1 - 6 bar (double acting) - 2.5 - 6 bar (single acting)		
Operating temperature	-5°C - +70°C		
Opening total stroke	-10° - 30°		
Holding force (Nm) at 5 bar	Bore	Double acting	Single acting
	Ø10	0.1	0.07
	Ø16	0.4	0.30
	Ø20	0.7	0.55
	Ø25	1.35	1.08
Maximum operating frequency	from Ø10 to Ø25, 190 cycles/minute		

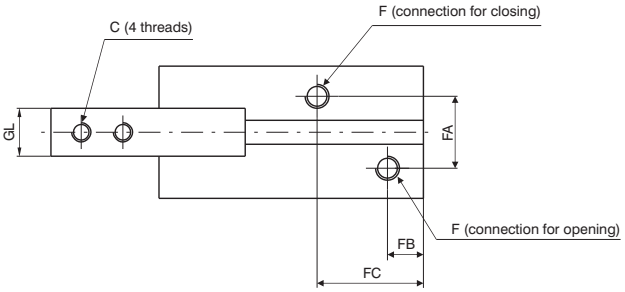
Overall dimensions



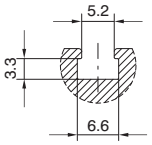




Bore		Ø10	Ø16	Ø20	Ø25
A		M3x0,5	M4x0,7	M5x0,8	M6
	Useful depht	6	6,5	8	10
AB		11,6	14,6	20,2	23,9
AC		11,4	16	18,6	22
C		M2,5x0,45	M3x0,5	M4x0,7	M5x0,8
D		M3x0,5	M4x0,7	M5x0,8	M6
	Useful depht	5	8	10	12
DA		16	24	30	36
DB		12,8	16,2	21,7	25,8
DC		10	16	20	25
DE		2,8	3,9	4,5	4,6
DF		2,6	3,4	4,3	5,1
E		M3x0,5	M4x0,7	M5x0,8	M6
	Useful depht	6	8	10	12
EA		12	15	18	22
EB		18	22	32	40
F		M3x0,5	M5x0,8	M5x0,8	M5x0,8
FA		11	13	15	20
FB		7,2	7	7,5	7,7
FC		18,8	18,3	22,2	23,5
G		17,2	22,6	28	37,5
GA		12	16	20	27
GB		5,7	7	9	12
GC		3	4	5,2	8
GD		2	3,5	4	5
GH		52,4	62,5	78,7	92
GL	0/-0,1	6,4	8	10	12
LA		38,6	44,6	55,2	60,4
LB		23	30,6	42	52
LC		16,4	23,6	27,6	33,6
M	H9	11	17	21	26
PA		5,4	5,8	9	11,5
Weight (g)		40	90	180	315



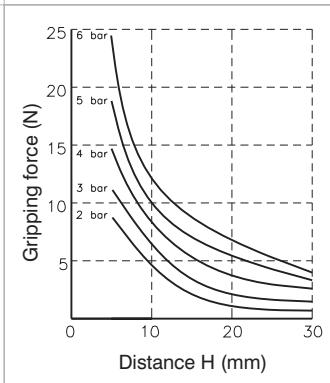
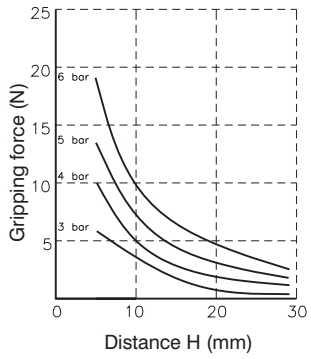
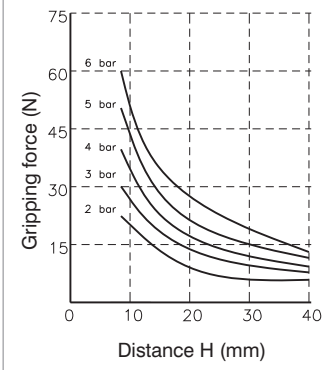
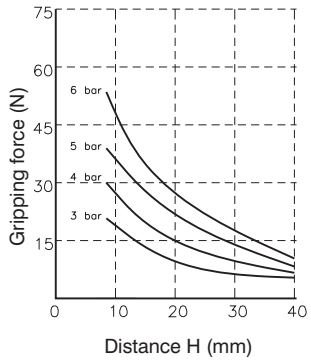
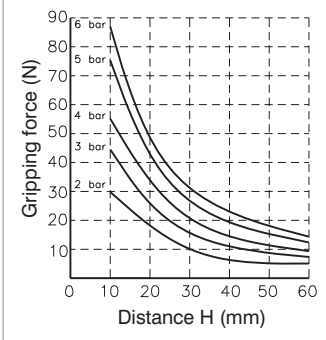
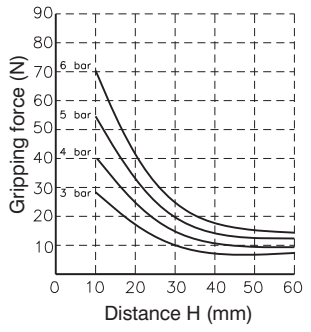
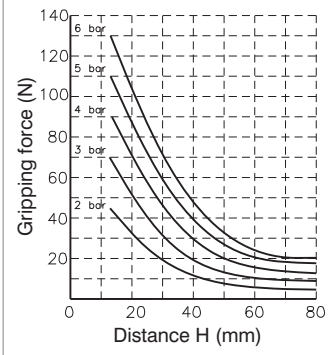
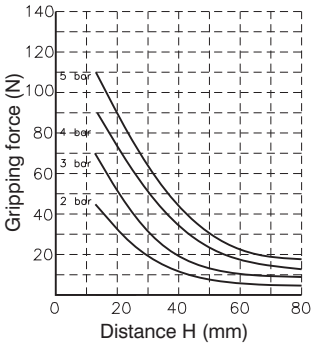
Sensor slot
detail type “B”

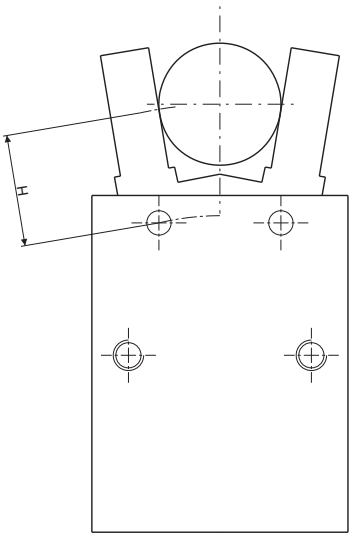


Gripping force 5 bar (Nm)

Bore	Ø10	Ø16	Ø20	Ø25
Double acting (Nm)	0,1	0,4	0,7	1,35
Single acting (Nm)	0,07	0,3	0,55	1,08

NOTE:
Bore selection should be made considering a holding force 10 to 20 times the component weight.
In case of acceleration/deceleration a further margin of safety should be considered.

	Double acting	Single acting
Ø10		
Ø16		
Ø20		
Ø25		



Pneumatic grippers, 180 °angular

Ordering code

6302.Ø.D

- **10**
- **16**
- **20**
- **25**

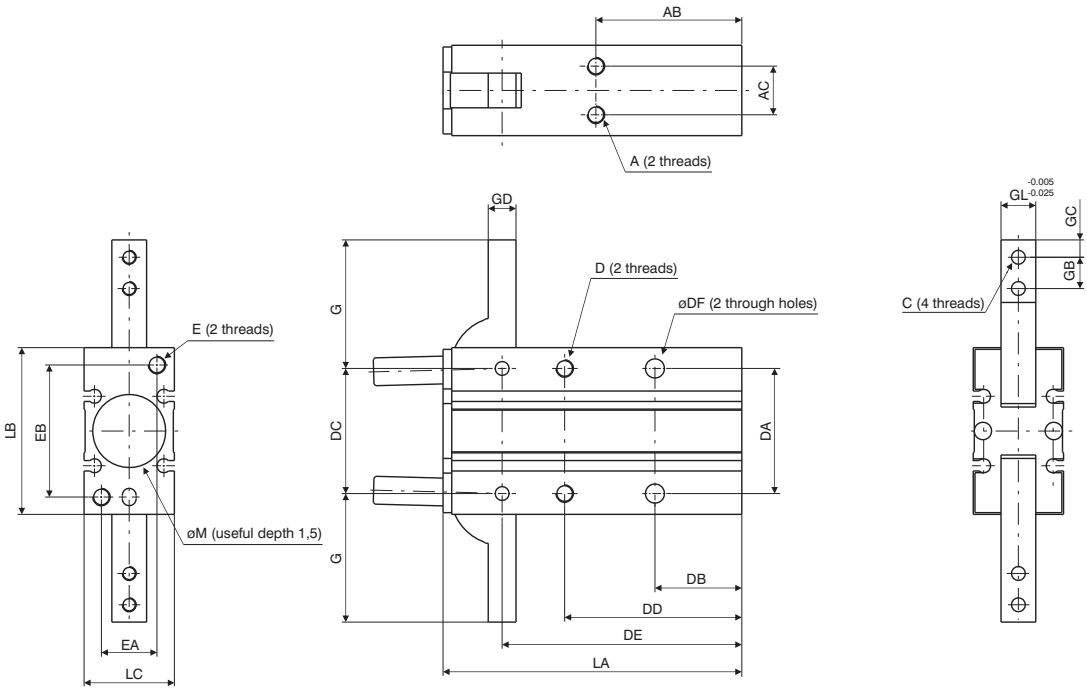
Construction characteristics

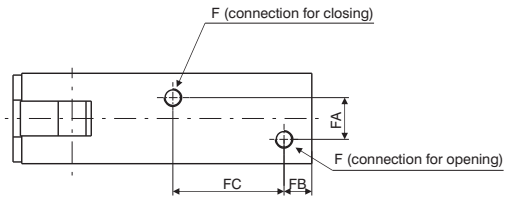
Body	anodised aluminium
Piston	aluminium
Fingers	steel
End cap	anodised aluminium

Operational characteristics

Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	1 - 6 bar
Working temperature	-5C° - +70C°
Opening total stroke	-3° - 180°
Maximum operating frequency	from Ø10 to Ø25, 60 cycles/minute

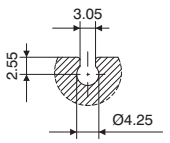
Overall dimensions



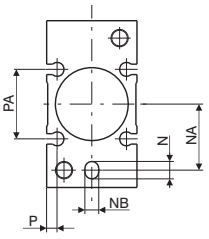


Bore		Ø10	Ø16	Ø20	Ø25
A		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	4	5	8	10
AB		30	33	42	50
AC		9	12	14	16
C		M3x0,5	M3x0,5	M4x0,7	M5x0,8
D		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	8	10	12
DA		24	30	36	42
DB		18	20	25	30
DC		22	28	36	45
DD		35	41	51	60
DE		47,5	55,5	69	86
DF		3,4	4,5	5,5	6,6
E		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	8	10	12
EA		9	12	16	18
EB		24	30	38	46
F		M5x0,8	M5x0,8	M5x0,8	M5x0,8
FA		3	8	2	14
FB		7	7	8	8
FC		23	25	32	42
G		23,5	28,5	37	45
GB		6	7	9	12
GC		3	4	5	6
GD		4	5	8	10
GL		6	8	10	12
LA		58	69	86	107
LB		30	38	48	58
LC		15	20	26	30
N		4	4	5	5
	Useful depth	3	3	4	4
NA		9	15	19	23
ØM^{H9}		11	17	21	26
ØNB^{H9}		3	3	4	4
P		2	2,5	3	3
PA		13	18	20	24
Weight (g)		70	150	320	550

Sensor slot detail type “C”



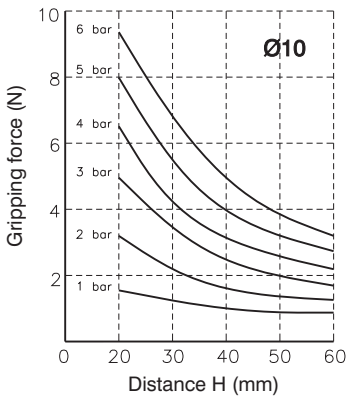
Back view detail

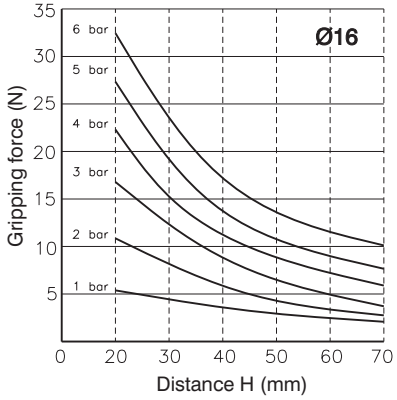


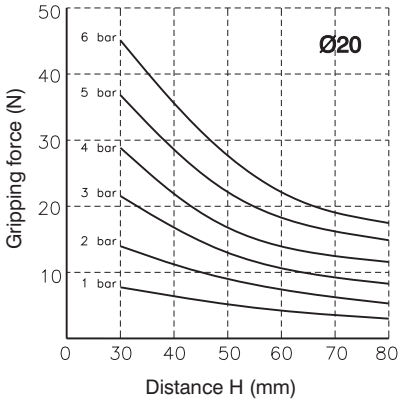
Operating criteria

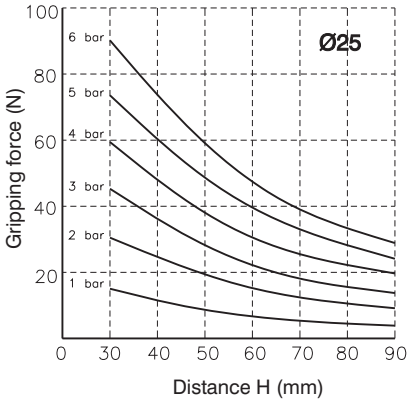
Gripping force 5 bar (Nm)

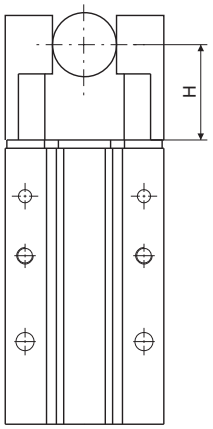
Bore	Ø10	Ø16	Ø20	Ø25
(Nm)	0,16	0,54	1,1	2,28



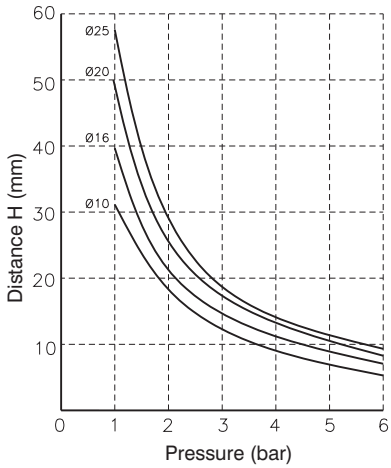


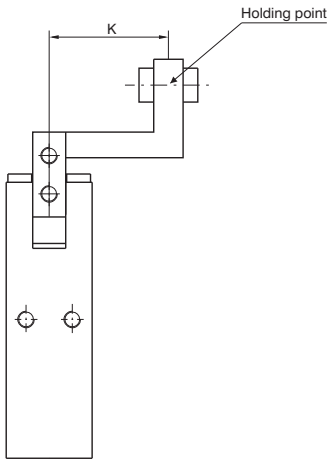






Confirmation of Holding point





Applications where the holding point is outside the recommended parameters shown on the above graph might affect the product life.

180° angular gripper rack & pinion style

Ordering code

6303.Ø.D_

- **F** = Fingers, end fixing
- **L** = Fingers, side fixing

- **20**
- **25**
- **32**
- **40**
- **50**

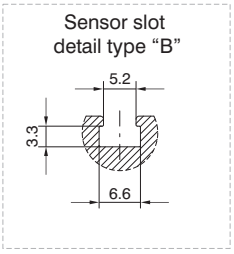
Construction characteristics

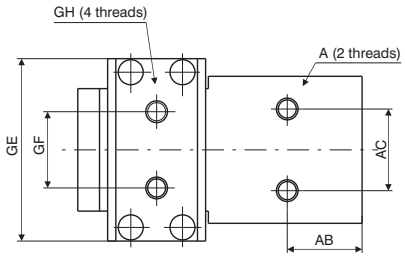
Body	anodised aluminium
Piston	aluminium
Fingers	steel
End cap	anodised aluminium

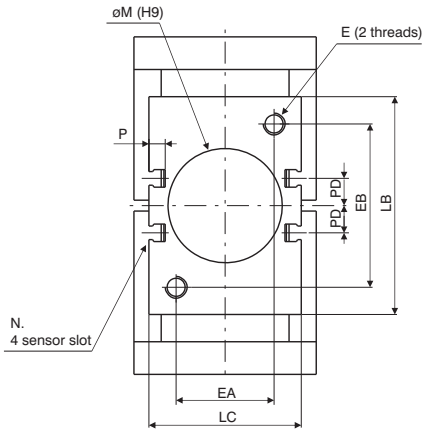
Operational characteristics

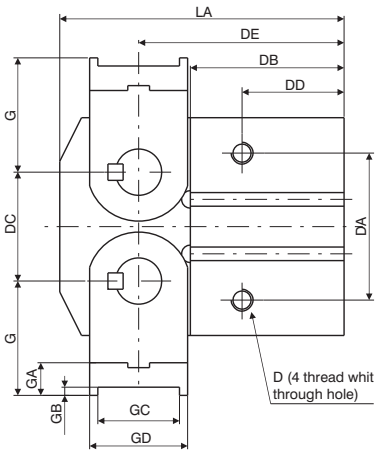
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	1.5 - 7 bar
Working temperature	-5C° - +70C°
Opening total stroke	-5° - 180°
Maximum operating frequency	from Ø20 to Ø25, 60 cycles/minute from Ø32 to Ø50, 30 cycles/minute

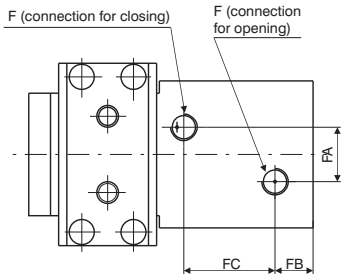
Overall dimensions





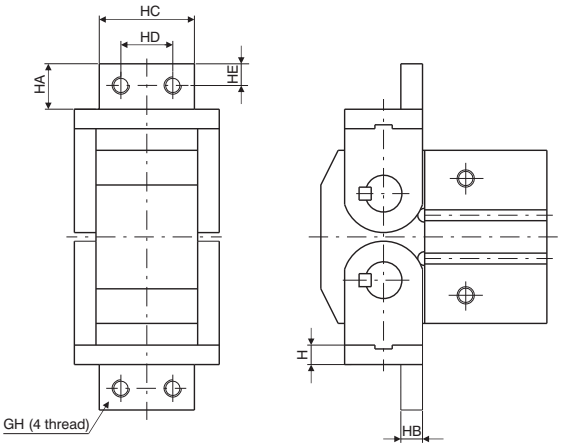






Bore		Ø20	Ø25	Ø32	Ø40	Ø50
A		M5	M6	M6	M8	M10
	Useful depth	7	10	10	15	20
AB		17	20	21	27,5	36
AC		20	24	24	30	40
D		M5	M6	M6	M8	M10
	Useful depth	10	12	12	16	20
DA		27	34	42	54	70
DB		35	40	47	56,5	69
DC		18	24	30	40	56
DD		23	27	29	37,5	48
DE		45	51	61,5	75,5	96
E		M5	M6	M6	M8	M10
	Useful depth	10	12	12	15	20
EA		26	30	30	36	40
EB		26	30	45	60	80
F		M5	M5	G1/8	G1/8	G1/4
FA		12	16	20	20	30
FB		9	10	13	14	16
FC		20	23	25	33,5	44
G		23	27	32	42	58
GA		7	8	9	12	17
GB		2	2	2	3	4
GC		12	17	23	30	44
GD		16	21	27	36	52
GE		41	45	51	67	85
GF		18	20	20	28	38
GH		M4	M5	M6	M8	M10
H		5	6	7	9	13
HA		10	12	14	21	24
HB		5	6	7	10	13
HC		28	30	34	44	58
HD		14	16	18	24	30
LA		60	69	83,5	104,5	136
LB		36	45	58	80	112
LC		36	40	45	56	66
ØM H9		21	26	34	42	52
	Useful depth	3	3	4	4	5
P		6	5,5	5,5	6	6
PD		4	4,5	11	10	13
Weight (g)		300	500	900	2100	5000

Fingers side fixing

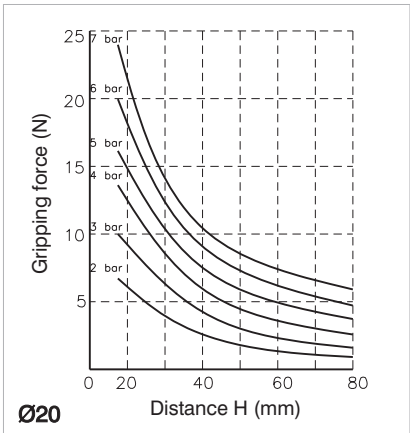


Operating criteria

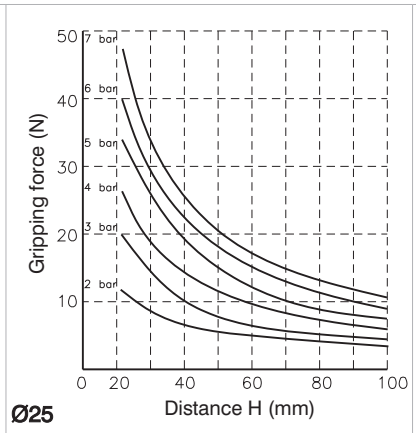
Gripping force

NOTE:
Bore selection should be made considering a holding force 10 to 20 times the component weight.
In case of acceleration/deceleration a further margin of safety should be considered.

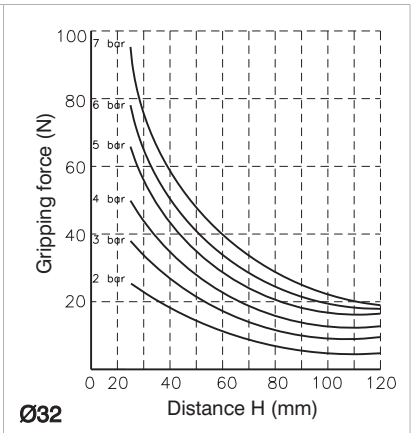
Bore	Ø20	Ø25	Ø32	Ø40	Ø50
(Nm)	0,3	0,7	1,6	3,7	8,3



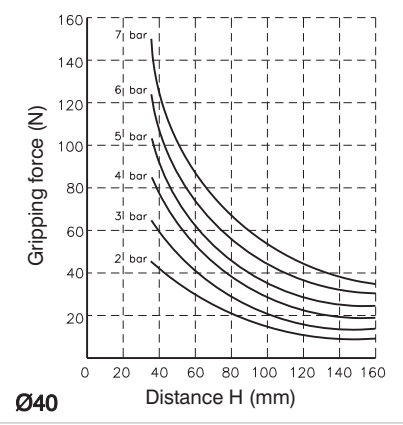
Ø20



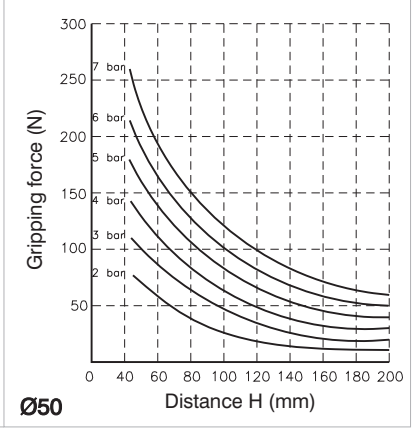
Ø25



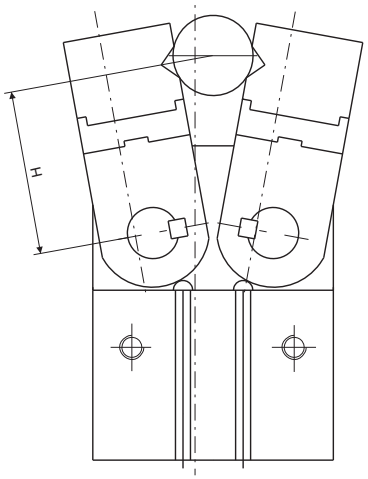
Ø32



Ø40



Ø50



Parallel style pneumatic grippers - Standard version

Ordering code

6310.Ø __

- **10**
- **16**
- **20**
- **25**

- **D** = Double acting
- **NC** = Single acting (normally closed)
- **NO** = Single acting (normally open)

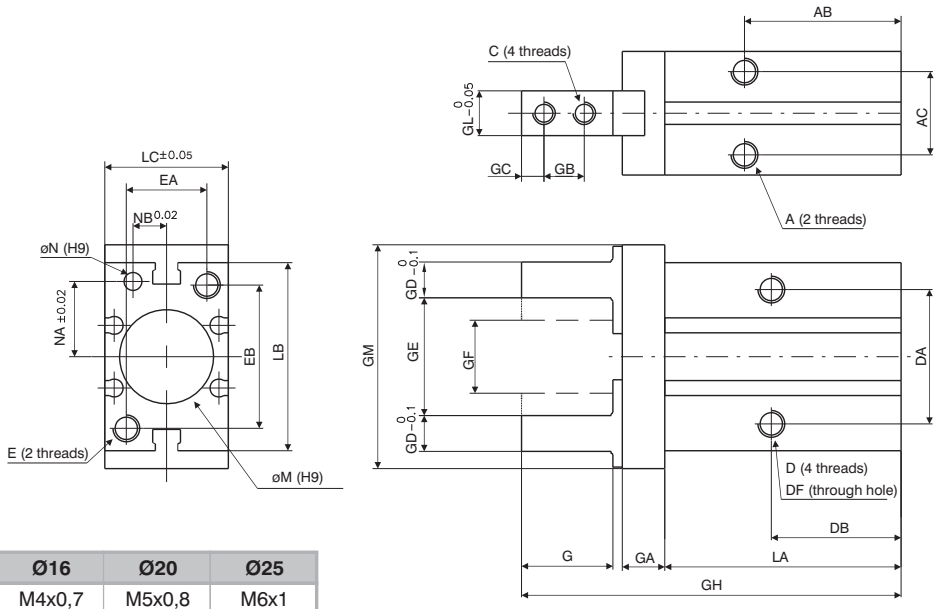
Construction characteristics

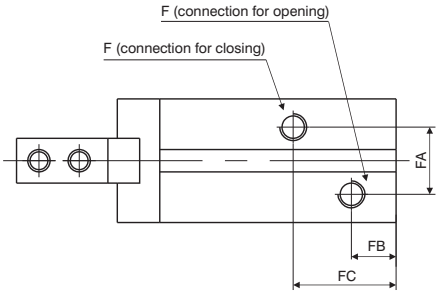
Body	anodised aluminium
Piston	aluminium or stainless steel (depending on the bore)
Fingers	steel
End cap	anodised aluminium
Seals	oil resistant NBR rubber

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	double acting : 2 - 7 bar (for ø10) - 1 - 7 (for other bores) single acting : 3.5 - 7 bar (for ø10) - 2.5 - 7 (for other bores)
Operating temperature	-5°C - +70°C
Maximum operating frequency	from Ø10 to Ø25, 180 cycles/minute

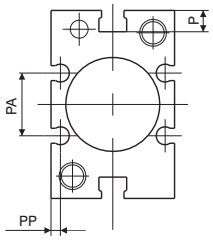
Overall dimensions





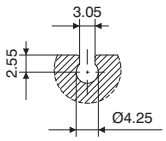
Bore		Ø10	Ø16	Ø20	Ø25
A		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	4,5	8	10
AB		27	30	35	36,5
AC		11,4	16	18,6	22
C		M2,5x0,45	M3x0,5	M4x0,7	M5x0,8
D		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	5,5	8	10	12
DA		16	24	30	36
DB		23	24,5	29	30
ØDF		2,6	3,4	4,3	5,1
E		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	8	10	12
EA		12	15	18	22
EB		18	22	32	40
F		M3x0,5	M5x0,8	M5x0,8	M5x0,8
FA		11	13	15	20
FB		9	7,5	10	10,7
FC		19	19	23	23,5
G		12	15,5	20	25
GA		6	7,5	9,5	11
GB		5,7	7	9	12
GC		3	4	5	6
GD		4	5	8	10
GE		15,2	20,9	26,3	33,3
GF		11,2	14,9	16,3	19,3
GH		57	67,5	84,8	102,7
GL		5	8	10	12
GM		29	38	50	63
LA		37,8	42,5	52,8	63,6
LB		23	30,6	42	52
LC		16,4	23,6	27,6	33,6
ØM^{H9}		11	17	21	26
	Useful depth	2	2	3	3,5
ØN^{H9}		2	3	4	4
	Useful depth	3	3	4	4
NA		7,6	11	16,8	21,8
NB		5,2	6,5	7,5	10
P		5,4	5,8	9	11,5
PA		/	11,6	14	19
PP		/	2,1	2,1	3,5
Weight (g)		55	120	230	425

Sensor slot detail



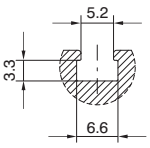
Ø16 - Ø25

Sensor slot detail type “C”



Ø10 - Ø25

Sensor slot detail type “B”

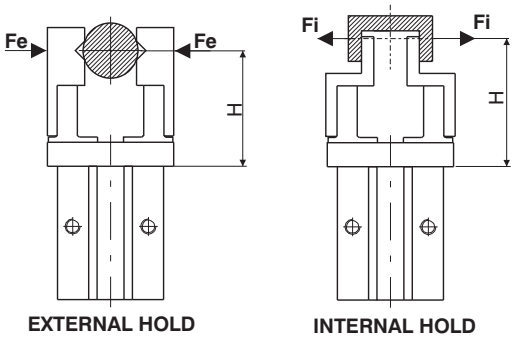


Operating criteria

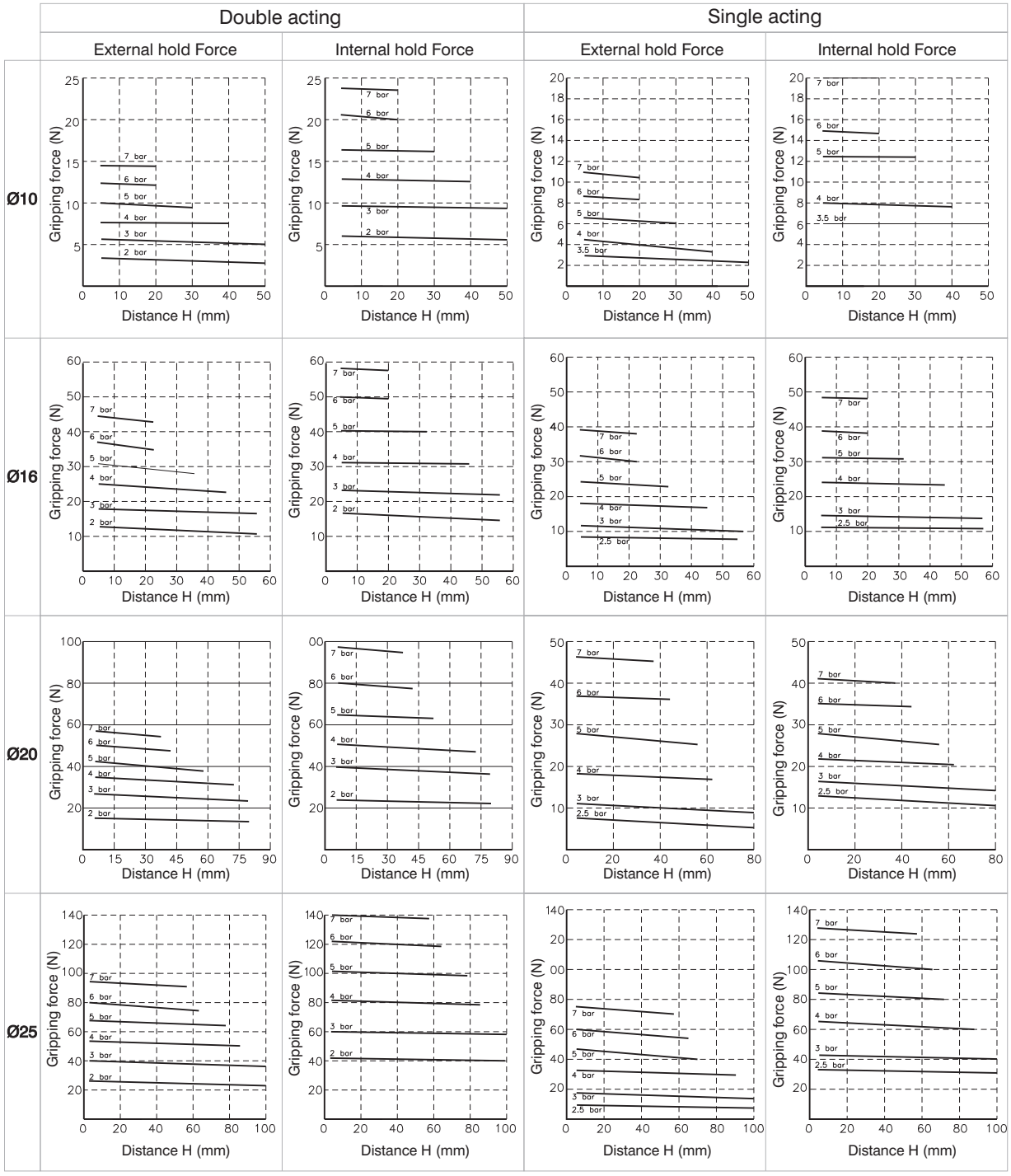
Holding force (N) (pressure 5 bar, holding point H=20 half stroke)

Version		Force	Bore Ø10	Ø16	Ø20	Ø25
Double acting		Fe	9,8	30	42	65
		Fi	17	40	66	104
Single acting	N.O.	Fe	6,3	24	28	45
	N.C.	Fi	12	31	56	83

Fe =external holding force **Fi** = internal holding force



EXTERNAL HOLD **INTERNAL HOLD**



Parallel style pneumatic grippers - Wide opening

Ordering Code

6311.Ø.D. __

- 10
- 16
- 20
- 25
- 32
- 40

Ordering code options	Stroke					
	20	30	40	50	70	100
1	40	60	80	100	120	160
2	60	80	100	120	160	200
	Ø10	**Ø16**	**Ø20**	**Ø25**	**Ø32**	**Ø40**
	Bore					

Construction characteristics

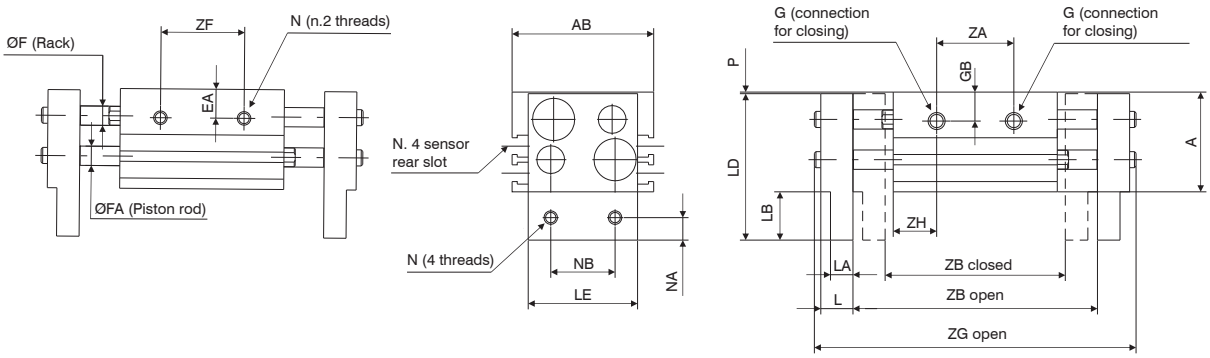
Body	anodised aluminium
Piston	aluminium
Fingers	anodised aluminium
Rod	steel
Rack	steel
Pinion	steel

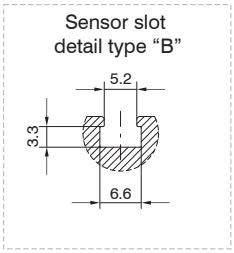
Operational characteristics

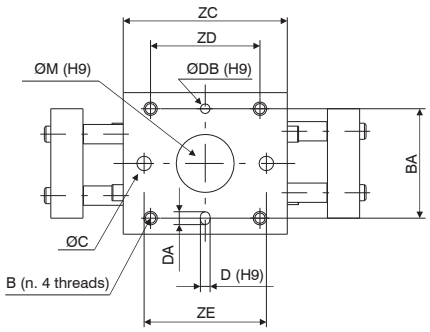
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	Ø10: 1.5 - 6 bar - Ø16 - 40: 1 - 6 bar
Working temperature	-5°C - +70°C

Model	Diameter (mm)	Max.operating frequence cicles/min.	Model	Diameter (mm)	Max.operating frequence cicles/min.
6311.10.D	10	60	6311.25.D	25	60
6311.10.D.1		40	6311.25.D.1		40
6311.10.D.2			6311.25.D.2		
6311.16.D	16	60	6311.32.D	32	30
6311.16.D.1		40	6311.32.D.1		20
6311.16.D.2			6311.32.D.2		
6311.20.D	20	60	6311.40.D	40	30
6311.20.D.1		40	6311.40.D.1		20
6311.20.D.2			6311.40.D.2		

Overall dimensions



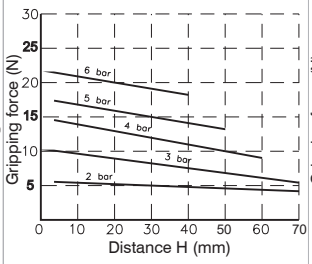
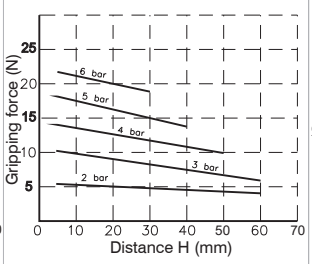
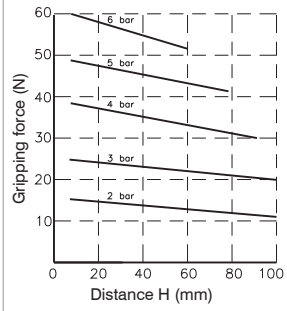
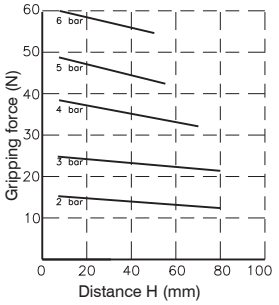
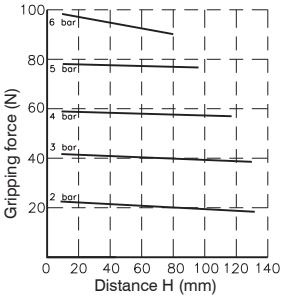
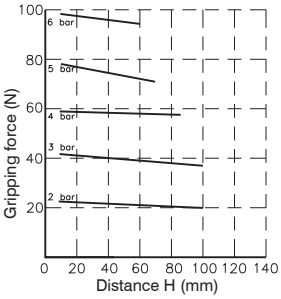
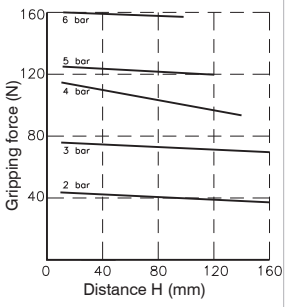
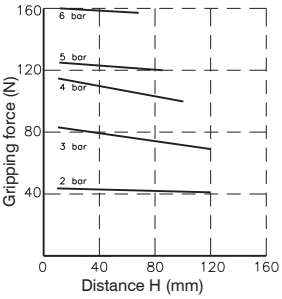
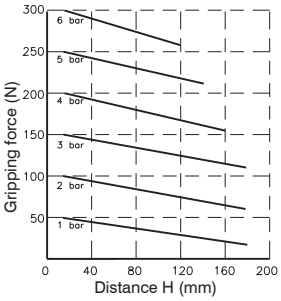
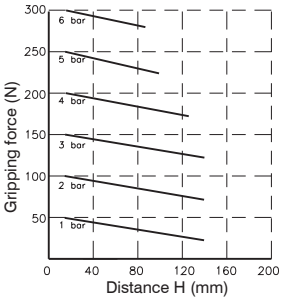
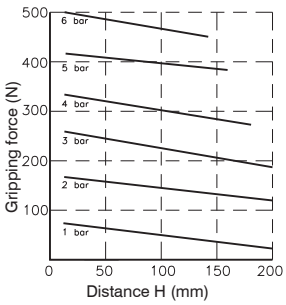
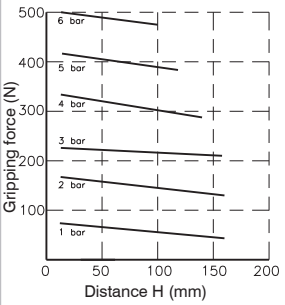


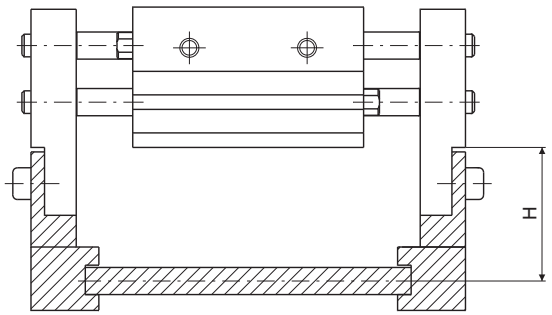


Bore		Ø10			Ø16			Ø20			Ø25			Ø32			Ø40		
A		31			39			46			52			68			79		
AB		44			55			65			76			82			98		
B		M4x0,7			M5x0,8			M6x1			M8x1.25			M8x1.25			M10x1.5		
	Useful depth	8			10			12			16			16			20		
BA		34			42			52			62			64			76		
ØC		4,5			5,5			6,6			9			/			/		
D ^{H9}		3			3			4			4			6			6		
	Useful depth	3			3			4			4,5			8			8		
DA		4			4			5			5			7			7		
ØDB ^{H9}		3			3			4			4			6			6		
	Useful depth	3			3			4			4,5			8			8		
E		M4x0,7			M5x0,8			M6x1			M8x1.25			M8x1.25			M10x1.5		
	Useful depth	5			7			7			7			11			16		
EA		9			10			11			12,5			22			28		
ØF		6			8			10			12			14			16		
FA		6			8			10			12			16			20		
G		M5x0,8			M5x0,8			M5x0,8			M5x0,8			G1/8			G1/8		
GB		9			10			11			16			16			18		
L		10			13			17			21			24			28		
LA		7			9			12,5			14			15			18		
LB		15			19			24			29			32			38		
LD		45,5			57,5			69			80			100			117		
LE		34			43			54			64			70			86		
ØM ^{H9}		18			23			27			32			35			40		
	Useful depth	1,5			1,5			1,5			1,5			1,5			1,5		
N		M4x0,7			M5x0,8			M6x1			M8x1,25			M10x1,5			M10x1,5		
NA		7			8			10			12			15			18		
NB		20			25			30			40			50			60		
P		0,5			0,5			1			1			1			1		
ZA		24	39	57	26	50	70	32	68	88	38	86	104	54	104	148	72	130	170
ZB	closed	56	78	96	68	110	130	82	142	162	100	182	200	150	198	242	188	246	286
	open	76	118	156	98	170	210	122	222	262	150	282	320	220	318	402	288	406	486
ZC		51	67	85	60	90	110	71	113	133	88	142	160	110	158	202	148	206	246
ZD		36	52	70	45	75	95	58	100	120	70	124	142	86	134	178	116	174	214
ZE		38	54	72	40	70	90	54	96	116	66	120	138	/	/	/	/	/	/
ZF		26	42	60	28	58	78	38	80	100	48	102	120	60	108	152	80	138	178
ZG	open	100	142	180	128	200	240	160	260	300	196	328	366	272	370	454	348	466	546
ZH		13,5	14	14	17	20	20	19,5	22,5	22,5	25	28	28	28	27		38		
Weight (g)		280	350	430	600	800	950	1000	1500	1700	1700	2500	2800	2900	3800	4700	5300	6850	7900
		20	40	60	30	60	80	40	80	100	50	100	120	70	120	160	100	160	200
		Stroke																	

Operating criteria

Holding force

	Opening / Closing Stroke			Opening / Closing Stroke	
	Basic Version	Versions 1 & 2		Basic Version	Versions 1 & 2
Ø10			Ø16		
Ø20			Ø25		
Ø32			Ø40		



3 finger parallel style pneumatic grippers

Ordering code

6312.Ø.D

- 16
- 20
- 25
- 32
- 40
- 50
- 63
- 80
- 100
- 125

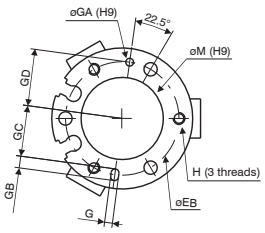
Construction characteristics

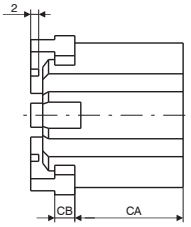
Body	aluminium
Piston	aluminium
Wedge	steel
Fingers	steel

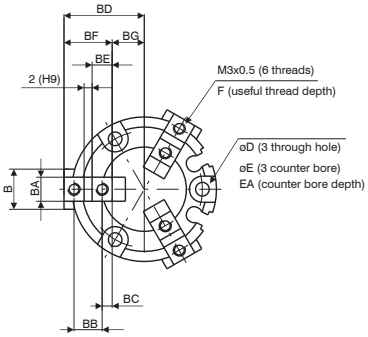
Operational characteristics

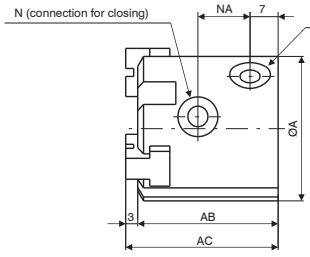
Function	double acting
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	2 - 6 bar (Ø16 - Ø20 - Ø25) - 1 - 6 bar (Ø32 - Ø125)
Working temperature	-5°C - +70°C
Maximum operating frequency	from Ø 16 to Ø 25, 120 cycles/minute from Ø 32 to Ø 63, 60 cycles/minute from Ø 80 to Ø 125, 30 cycles/minute

Overall dimensions Ø16 - Ø25



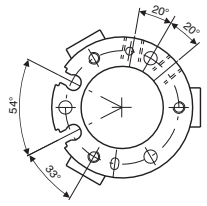




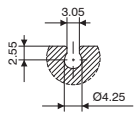


Bore		Ø16	Ø20	Ø25
ØA		30	36	42
AB		32	35	37
AC		35	38	40
B		8	10	12
BA h9		5	6	6
BB		6	7	8
BC		2	2,5	3
BD	open	17	20	24
	close	15	18	21
BE		4	5	6
BF		10	12	14
BG	open	7	8	10
	close	5	6	7
CA		25	27	28
CB		4	5	5
D		3,4	3,4	4,5
E		6,5	6,5	8
EA		8	9,5	10
EB		25	29	34
F		5	6	6
G H9		2	2	3
	Useful depth	2	2	3
ØGA H9		2	2	3
	Useful depth	2	2	3
GB		3	3	5
GC		11	13	14,5
GD		12,5	14,5	17
H		M3x0,5	M3x0,5	M4x0,7
	Useful depth	4,5	6	6
ØM H9		17	21	26
	Useful depth	1,5	1,5	1,5
N		M3x0,5	M5x0,8	M5x0,8
NA		11	13	15
Weight (g)		62	98	139

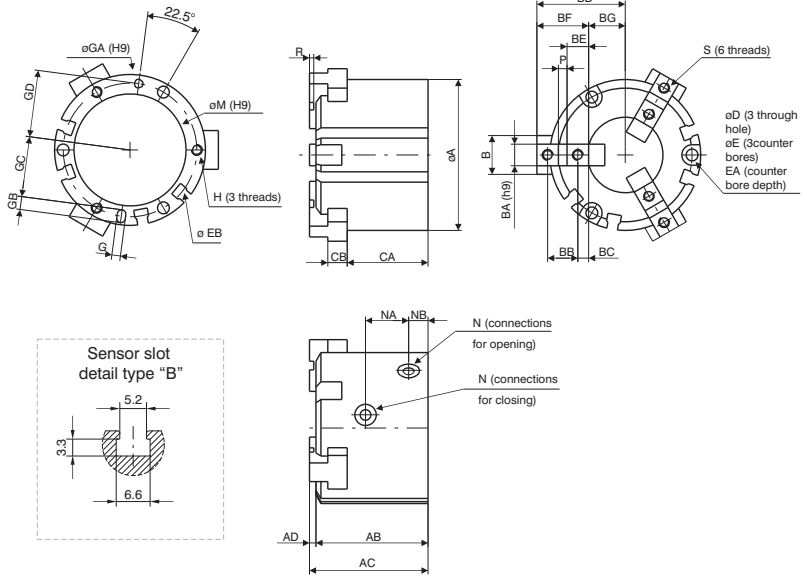
Sensor slots detail and inlet connections

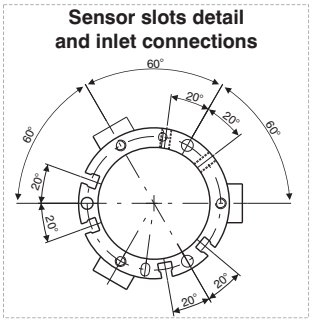


Sensor slot detail type "C"



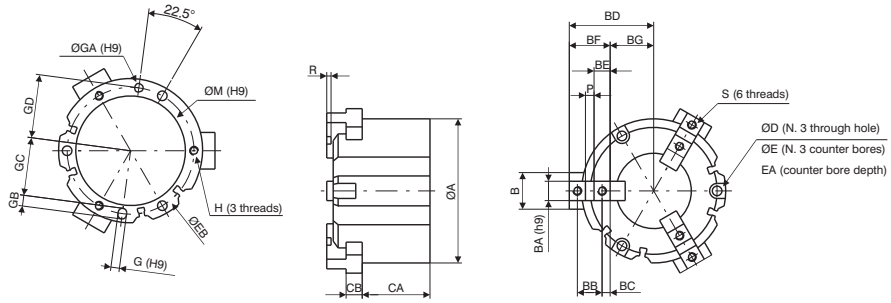
Overall dimensions Ø32 and Ø80

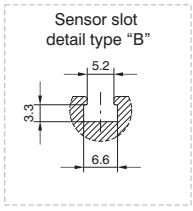


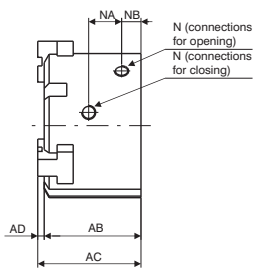


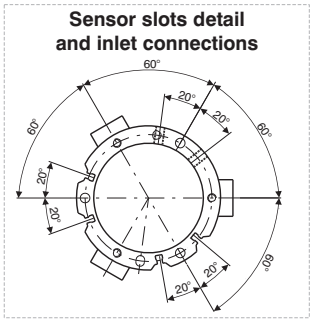
Bore		Ø32	Ø40	Ø50	Ø63	Ø80
ØA		52	62	70	86	106
AB		41	44	52	62	77
AC		44	47	55	66	82
AD		3	3	3	4	5
B		14	16	18	24	28
BA h9		8	8	10	12	14
BB		11	12	14	17	20
BC		4,5	4,5	5	5,5	6
BD	open	32	35	41	51	63,5
	close	28	31	35	43	53,5
BE		9	9	10	11	12
BF		20	21	24	28	32
BG	open	12	14	17	23	31,5
	close	8	10	11	15	21,5
CA		30,5	32	37,5	44	56
CB		6	7	9	11	12
D		4,5	5,5	5,5	6,6	6,6
E		8	9,5	9,5	11	11
EA		9	9	12	14	19
EB		44	53	62	76	95
H		M4x0,7	M5x0,8	M5x0,8	M6x1	M6x1
	Useful depth	6	7,5	10	9	12
G H9		3	4	4	5	6
	Useful depth	3	4	4	5	6
ØGA H9		3	4	4	5	6
	Useful depth	3	4	4	5	6
GB		5	6	6	7	8
GC		19,5	23,5	28	34,5	43,5
GD		22	26,5	31	38	47,5
N		M5x0,8	M5x0,8	M5x0,8	M5x0,8	G1/8
ØM H9		34	42	52	65	82
	Useful depth	2	2	2	2,5	3
NA		16	17	20	22	27
NB		8	9	9	12	13,5
P h9		2	3	4	6	8
R		2	2	2	3	4
S		M4x0,7	M4x0,7	M5x0,8	M5x0,8	M6x1
	Useful depth	8	8	10	10	12
Weight (g)		240	354	542	1000	1850

Overall dimensions Ø100 and Ø125



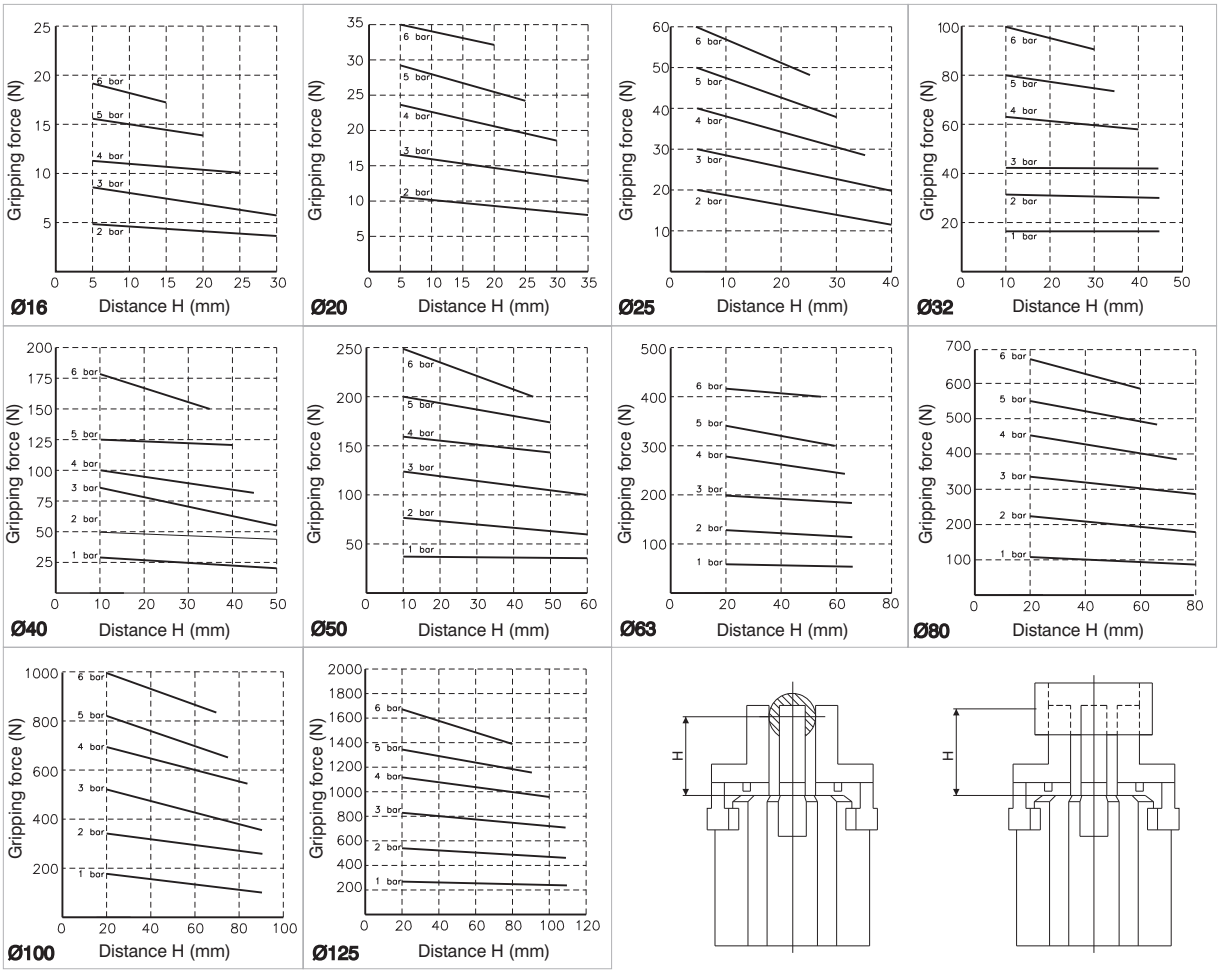






Bore		Ø100	Ø125
ØA		134	166
AB		90	114
AC		96	122
AD		6	8
B		34	40
BA h9		18	22
BB		23	31
BC		7,5	10,5
BD	open	78	98
	close	66	82
BE		15	21
BF		38	52
BG	open	40	46
	close	28	30
CA		63	84
CB		15	18
ØD		9	11
ØE		14	17,5
EA		21	34
EB		118	148
G H9		8	10
	Useful depth	6	8
ØGA H9		8	10
	Useful depth	6	8
GB		10	12
GC		54	68
GD		59	74
H		M8x1,25	M10x1,5
	Useful depth	16	20
ØM H9		102	130
	Useful depth	4	6
N		G1/4	G3/8
NA		30,6	38
NB		18	23,5
P h9		8	10
R		4	6
S		M8x1,25	M10x1,5
	Useful depth	16	20
Weight (g)		3360	6430

Gripping force (N)

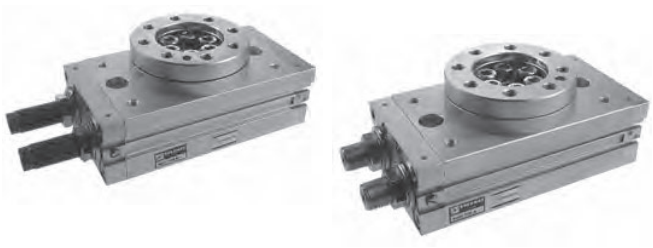


Series 6400 - Rotary actuators

General

These rotary actuators convert linear motion of a piston into a rotary motion via a rack and pinion device, using a single pinion-rack system for the 6411 version and a double system on 6400 versions. The 6410 series actuators have fixed stops at 90 and 180 degrees; while on the 6400 series, rotation can be adjusted between 0 and 190 degrees using variable stops that can also be substituted with hydraulic stoppers (shock absorbers). These devices are equipped with a rotating table upon which the load is fixed.

Double rack rotary actuators with turn table



Ordering code

6400. _ . _

- **A** = Standard
- **R** = Cushioning (shock absorber)

- **10** (piston ø15)
- **30** (piston ø20)
- **50** (piston ø25)
- **100** (piston ø32)
- **200** (piston ø40)

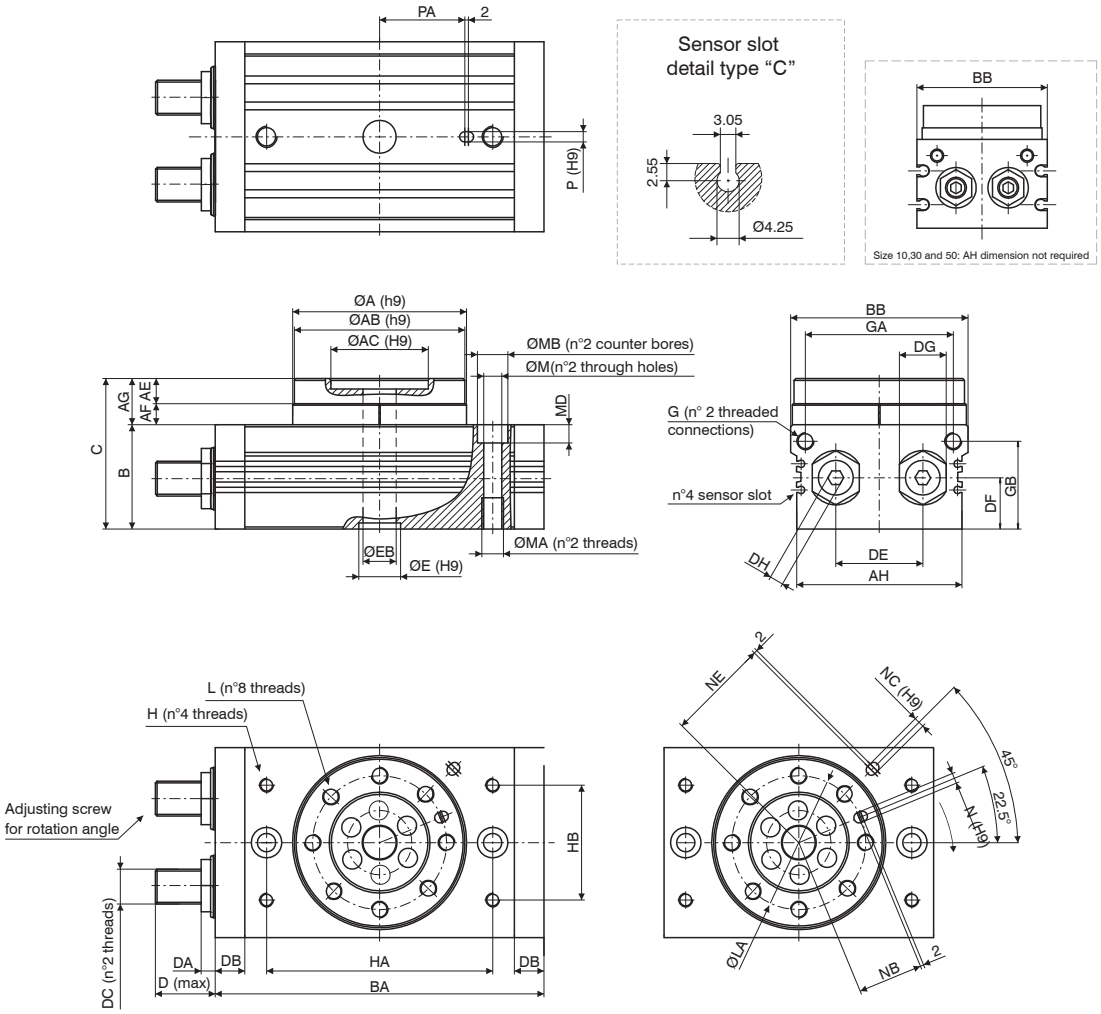
Construction characteristics

Body	anodised aluminium
End cap	anodised aluminium
Piston seal	NBR rubber
Pinion	steel
Rack	steel
Turn table	anodised aluminium
Cushioning	elastic bumper (hydraulic damper available on request)

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.)
Max. pressure	10 bar (for type 100 and 200, 6 bar)
Working temperature	-5°C - +70°C
Rotation angle range	0 - 190°
Max. rotation	190°
Rotation speed	s/90° (see rotation time table)

Overall dimensions

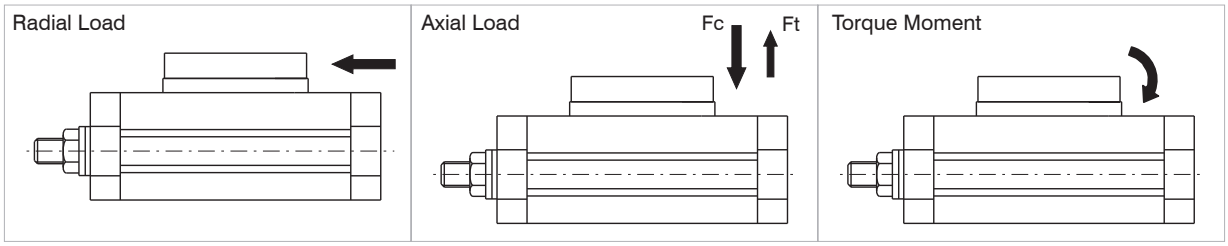


Size	10	30	50	100	200
Ø piston	Ø15	Ø21	Ø25	Ø32	Ø40
ØA h9	46	67	77	100	118
ØAB h9	45	65	75	98	116
ØAC H9	20	32	35	56	64
Useful depth	4	4,5	5	6	9
AE	8	10	12	14,5	16,5
AF	5	7	8	12,5	15,5
AG	13	17	20	27	32
AH	/	/	/	95	114
B +0,5 / 0	34	40	46	59	74
BA	92	127	152	189	240
BB +0,5 / 0	50	70	80	102	120
C +0,5 / 0	47	57	66	86	106
D	17,7	25	31,4	34,3	40,2
DA	8,6	10,6	14	8	20
DB	9,5	12	15,5	17	24
DC	M8x1	M10x1	M14x1,5	M20x1,5	M27x1,5
DE	20	29	38	50	60
DF	15,5	18,5	22	29,5	36,5
DG	12	14	19	27	36
DH	4	5	6	8	10
ØE H9	15	22	26	24	32
Useful depth	3	3	3	3,5	5,5
ØEB	5	9	10	19	24
G	M5x0,8	G1/8	G1/8	G1/8	G1/8

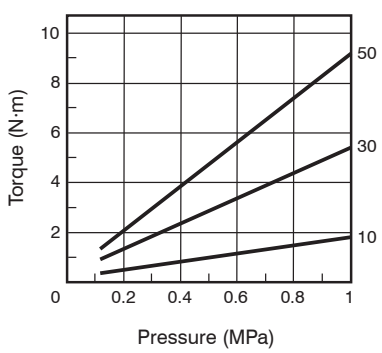
Size	10	30	50	100	200
Ø piston	Ø15	Ø21	Ø25	Ø32	Ø40
GA	34,5	50	63	85	103
GB	27,8	32	37,5	50,5	65,5
H	M5x0,8	M6x1	M8x1,25	M8x1,25	M12x1,75
Useful depth	8	8	8	10	13
HA	60	84	100	130	150
HB	27	37	50	66	80
L	M5x0,8	M6x1	M8x1,25	M10x1,5	M12x1,75
Useful depth	8	10	12	14,5	16,5
LA	32	48	55	77	90
M	6,8	8,6	10,5	10,4	14,2
MA	M8x1,25	M10x1,5	M12x1,75	M12x1,75	M16x2
Useful depth	12	15	18	18	25
MB	11	14	18	17,5	20
MD	6,5	8,5	10,5	10,5	12,5
N H9	3	4	5	6	8
Useful depth	3,5	4,5	5,5	6,5	8,5
NB	15	23	26,5	37,5	44
NC H9	/	/	/	6	8
Useful depth	/	/	/	4,5	4,5
NE	/	/	/	59	69
P H9	/	/	/	6	8
Useful depth	/	/	/	4,5	6,5
PA	/	/	/	49	54
Weight (g)	530	1230	2080	4100	7650

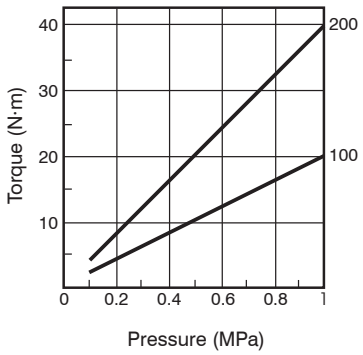
Permissible Loads

		Size				
		10	30	50	100	200
Radial Load (N)		80	200	320	400	550
Axial Load (N)	Fc	80	370	450	710	1000
	Ft	75	200	300	500	750
Torque Moment (Nm)		2,5	5,5	9,5	18	25



Torque Diagrams





Rotation time (sec./90°)

Dimension	With adjusting screw	With hidraulic decelerator
10 - 30 - 50	0.2 - 1	0.2 - 0,7
100	0.2 - 2	0.2 - 1
200	0.2 - 2.5	0.2 - 1

Kinetic energy

Dimension	With adjusting screw	With hidraulic decelerator
10	0.006	Please apply to our tech-dpt for info (as general rule expressed valves can be multiplied by 3)
30	0.045	
50	0.08	
100	0.30	
200	0.52	

Single rack rotary actuators

Ordering code

6411.Ø. _

- **50**
- **63**
- **80**
- **100**

- **90** = rotation 90°
- **180** = rotation 180°

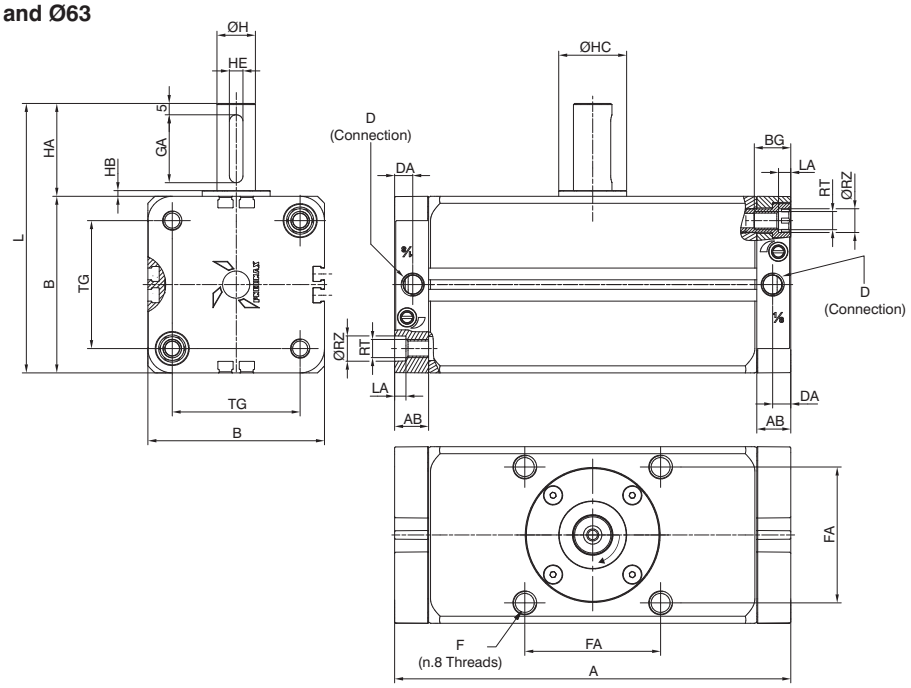
Construction characteristics

Body	anodised aluminium
Piston	aluminium
End cap	anodised aluminium
Piston seal	NBR rubber
Pinion	steel
Rack	steel

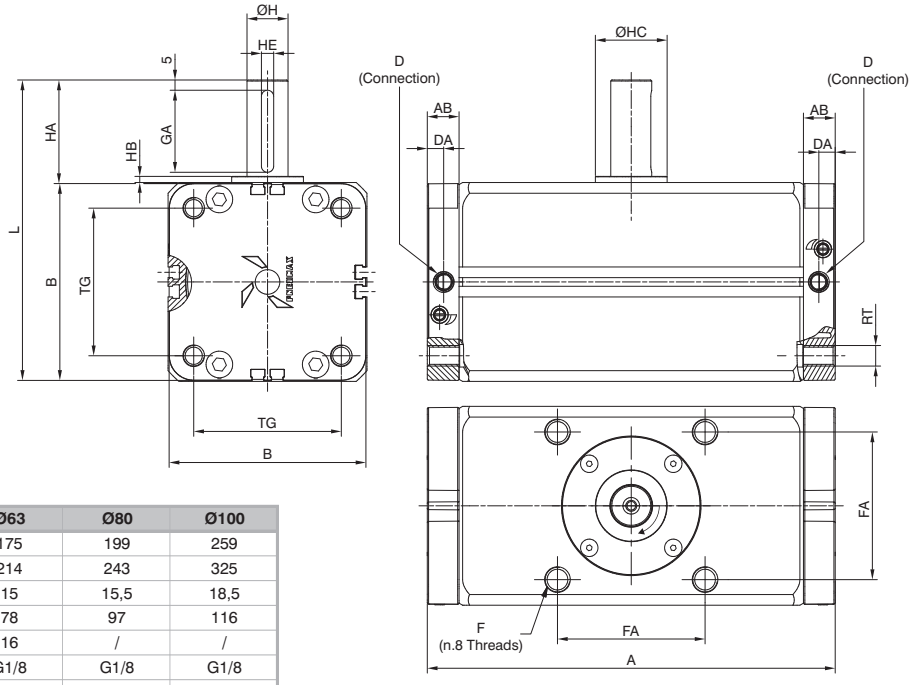
Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Max. pressure	10 bar
Working temperature	-5°C - +70°C
Rotation tolerance	0° - +4°

Overall dimensions Ø50 and Ø63

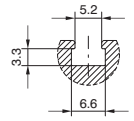


Overall dimensions Ø80 and Ø100



Bore		Ø50	Ø63	Ø80	Ø100
A	90°	156	175	199	259
	180°	189	214	243	325
AB		15	15	15,5	18,5
B		66	78	97	116
BG		16	16	/	/
D		G1/8	G1/8	G1/8	G1/8
DA		8	8	8	8
F		M8x1,25	M10x1,5	M12x1,75	M12x1,75
	Useful depth	12	15	15	18
FA		48	60	72	85
GA		25	30	40	45
H		15	17	20	25
HA		36	41	50	60
HB		2,5	2,5	3	4
HC		25	30	35	39,5
HE^{H9}		5	6	6	8
L		102	119	147	176
LA		5	5	/	/
RT		M8	M8	M10	M10
RZ		10,5	10,5	/	/
TG		46,5	56,5	72	89
Weight (gr.)	90°	1575	2451	4162	6989
	180°	1815	2823	4774	8329

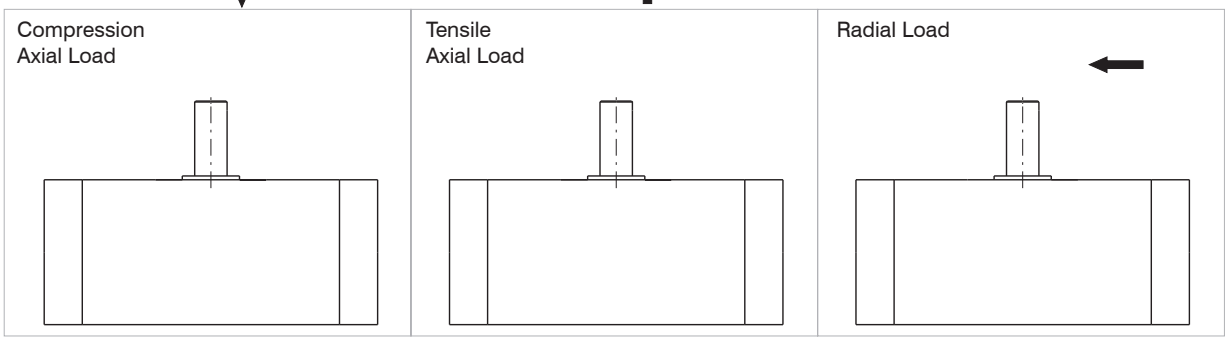
Sensor slot
detail type “B”



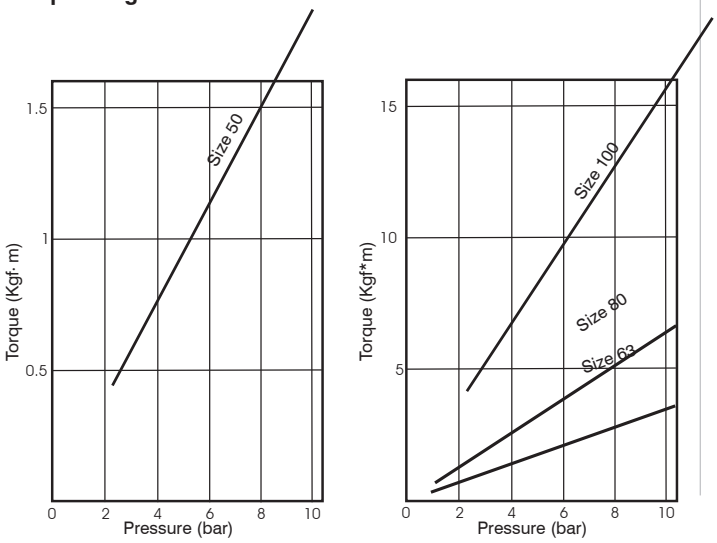
Usable sensors code
1590._
LRS._
LHS._

Allowable Loads

	Bore			
	Ø50	Ø63	Ø80	Ø100
Radial load (N)	200	300	400	600
Axial Load in compression (N)	500	600	900	1000
Tensile Axial Load (N)	200			



Torque Diagrams

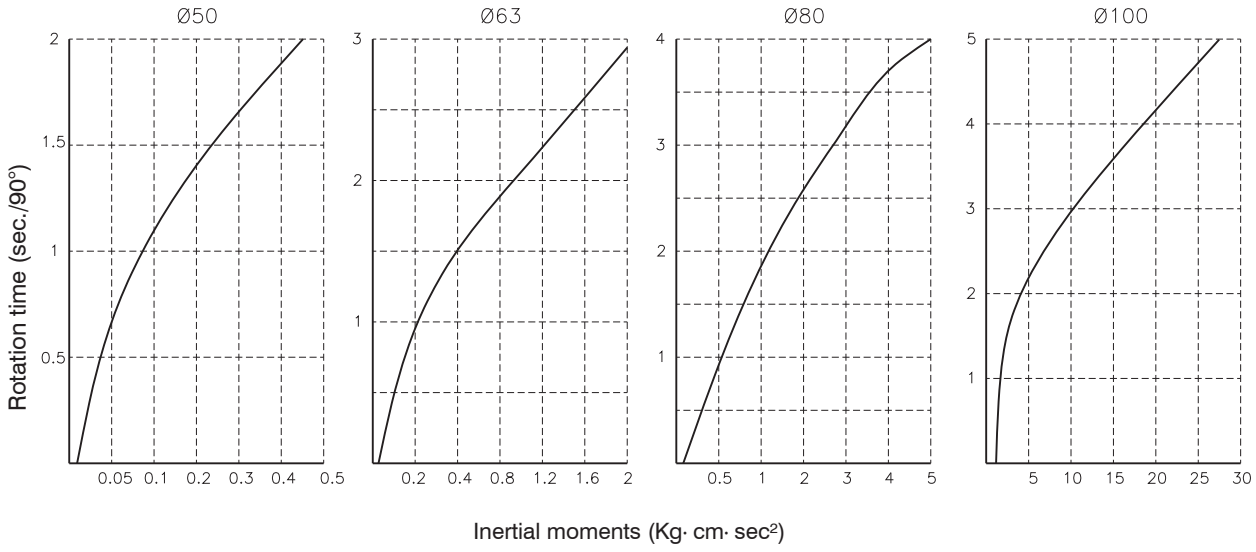


Max Kinetic energy (Kg·cm)

Kinetic energy (cushioning angle 35°)

Bore			
Ø50	Ø63	Ø80	Ø100
10	15	20	30

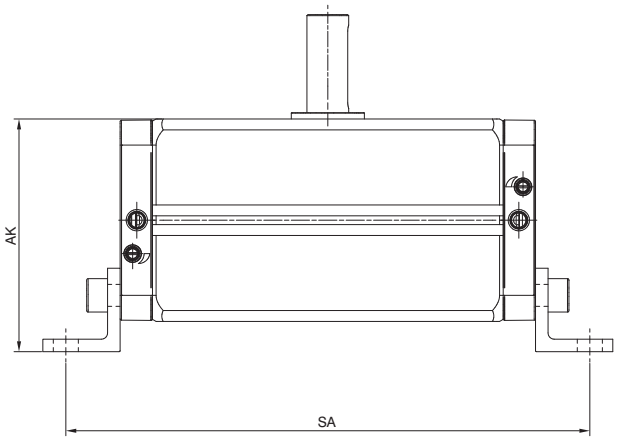
Rotation time according to inertial moments

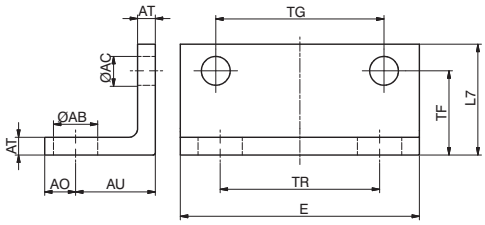


Foot (MS1)

Ordering code
1540.Ø.05/1F

The kit comprises:
n°1 foot (plated zinc steel)
n°2 screws (plated zinc steel)

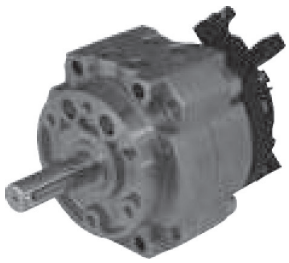




Bore		Ø50	Ø63	Ø80	Ø100
AK		78	89	111,5	132
SA	90°	198	217	251	313
	180°	231	256	295	379

Vane type rotary actuators





General

The vane type rotary actuators, 6420 series is designed to operate at 90-180 or 270 deg. In a contained space. Dimensionally are more compact than other types of rotary actuators.

The range includes bore sizes from 10 to 100 in 4 configurations:
- basic.
- with rotary angle adjustment mechanism.
- with sensing support.
- with rotary angle adjustment mechanism and sensing support.

The bodies are in aluminium , the shafts in chrome plated steel and the seals in NBR.
The sensing support kit enables for the sensors to be positioned in any position.
The rotary angle adjustment mechanism enables the adjustment of the complete rotation on bore sizes 10 to 40 while on the others sizes carries as standard hydraulic dampers which enable the adjustment only of the last part of the rotation.
The units can be fixed using the thread on the body or the through holes on the body.
On bore sizes 50 to 100 the shaft runs into ball bearings which ensure high resistence.o rotante è guidato su cuscinetti a sfere che assorbono i carichi radiali e assiali, garantendo durata e affidabilità. assiali, garantendo durata e affidabilità.

Ordering code

6420.Ø._._

Size
Ø10
Ø15
Ø20
Ø30
Ø40
Ø50
Ø63
Ø80
Ø100

Rotation angle
90 = 90°
180 = 180°
270 = 270°

Version
/ = Without adjustable rotation angle, and without sensor support
R = With adjustable rotation angle
S = With sensor supports
T = With adjustable rotation angle and sensor supports

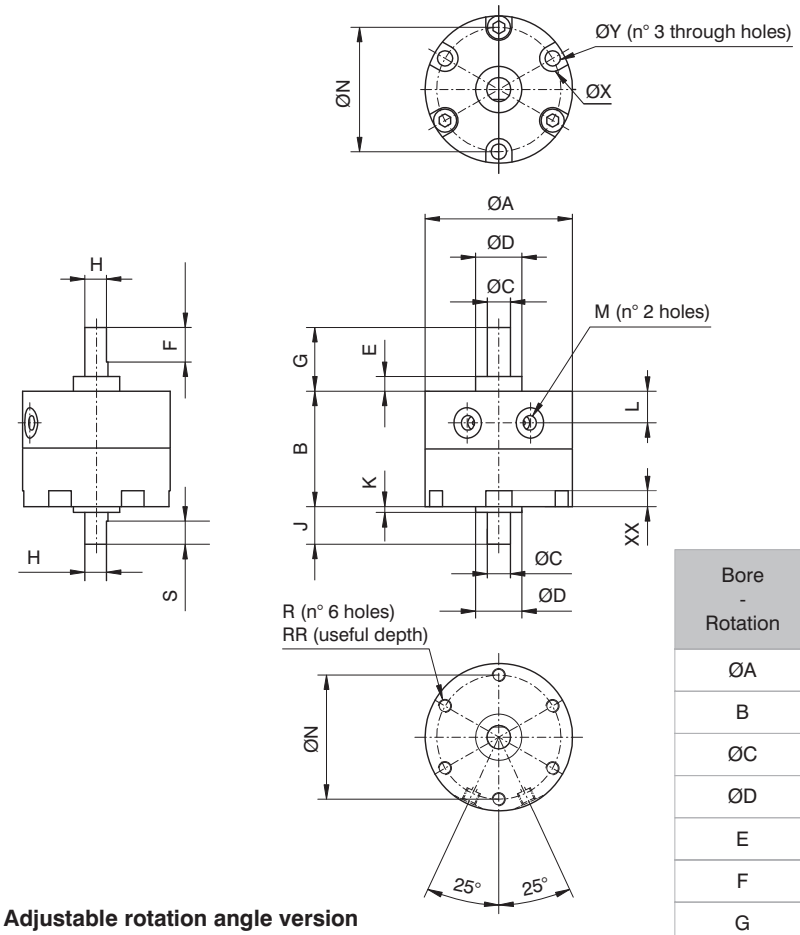
Construction characteristics

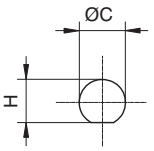
Body	anodised aluminium
Rod	steel
Seals	NBR
Vane	vulcanized NBR rubber on steel core
Cushoning	elastic bumper; hydraulic dampers from size Ø50 - Ø100 versions R or T

Operational characteristics

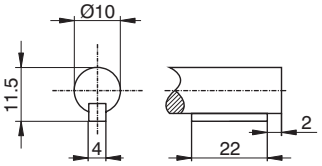
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	1,5 - 7 bar
Temperature	0°C - 50°C
Rotation range	90° - 180° - 270°
Max. allowed leak	Ø10 - Ø40 = 0,3 Nl/min / Ø50 - Ø100 = 0,5 Nl/min

Overall dimensions Ø10 - Ø40



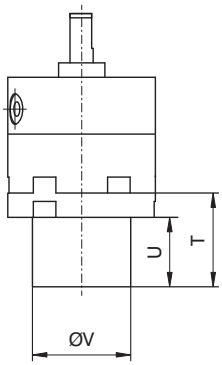


- Ø10 - Ø30 long shaft
- Ø10 - Ø40 short shaft

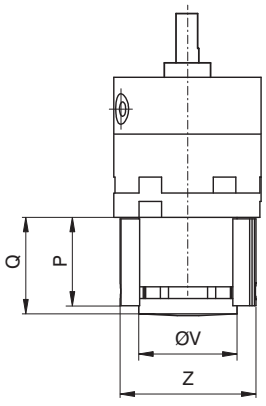


- Ø40 long shaft

Adjustable rotation angle version

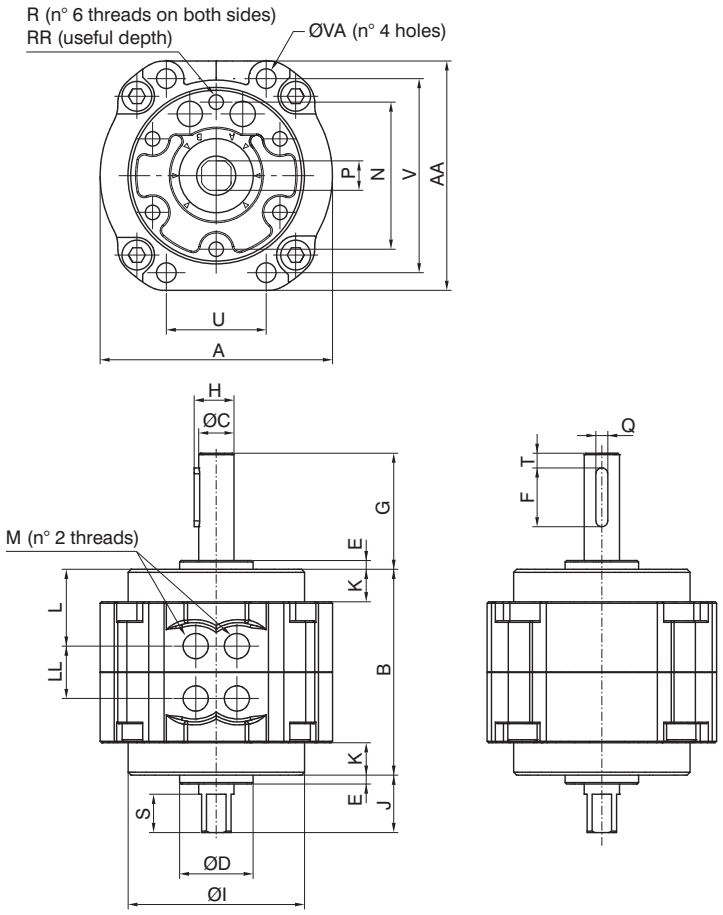


With sensor support version

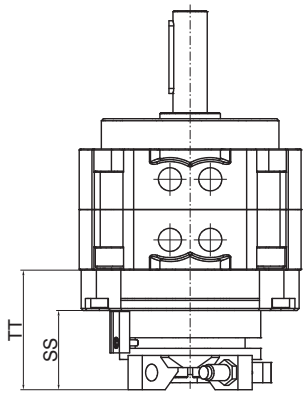


Bore - Rotation	10 - 90° / 10 - 180° / 10 - 270°	15 - 90° / 15 - 180° / 15 - 270°	20 - 90° / 20 - 180° / 20 - 270°	30 - 90° / 30 - 180° / 30 - 270°	40 - 90° / 40 - 180° / 40 - 270°
ØA	30	35	44	51	64
B	17	20,1	29,1	40	45
ØC	4	5	6	8	10
ØD	9	12	14	16	25
E	3	4	4,5	5	6,5
F	9	10	10	12	22
G	14	18	20,3	22	30
H	3,5	4,5	5,5	7,5	9
J	8	9	9,6	13	15
K	1	1,5	1,6	2	4,5
L	4,2	5	8,5	11	9,5
M	M5x0,8	M5x0,8	M5x0,8	M5x0,8	M5x0,8
ØN	24	29	36	43	56
P	23,3	28	28	30,8	33
Q	24	29,5	30,5	34	36
R	M3x0,5	M3x0,5	M4x0,7	M5x0,8	M5x0,8
RR	3	3	4,5	9	9
S	5	6	7	8	9
T	24	28	28,5	32,5	34,5
U	18	22	21	24	26
ØV	18	24	30	34	34
ØX	6	6	7,5	9	9
XX	3,5	3,5	4,5	5,5	5,5
ØY	2,3	2,3	3,2	4,2	4,2
Z	29	34	42	47	47
Weight (g) Base	28	48	112	200	342
Weight (g) With regulation rotation system	78	116	240	390	805

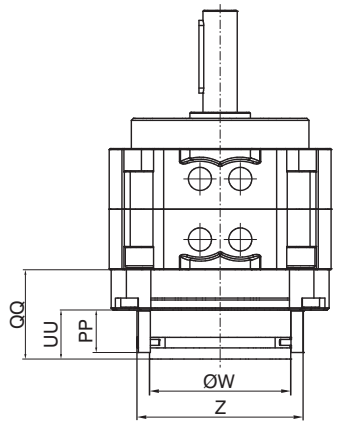
Overall dimensions Ø50 - Ø100



Adjustable rotation angle version



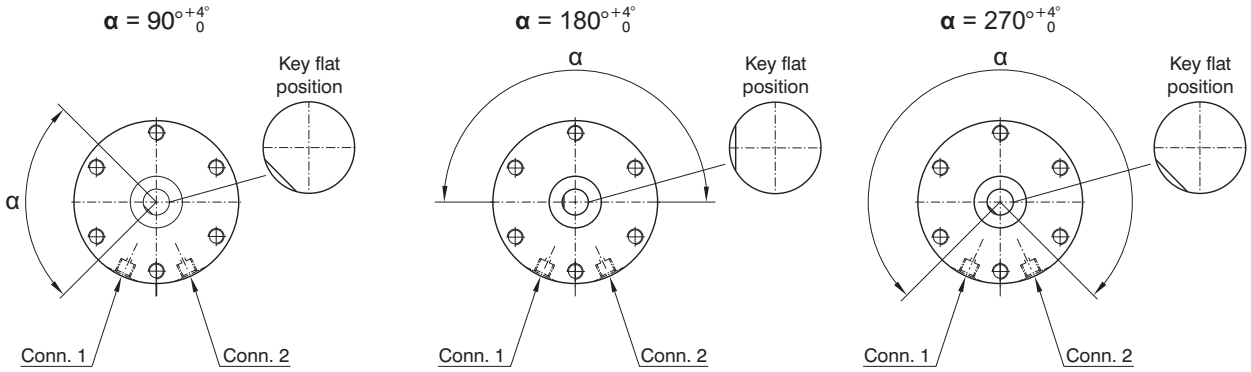
With sensor support version



Bore - Rotation	50 - 90°	63 - 90°	80 - 90°	100 - 90°
	50 - 180°	63 - 180°	80 - 180°	100 - 180°
	50 - 270°	63 - 270°	80 - 270°	100 - 270°
A	79	98	110	140
AA	78	98	110	140
B	70	80	90	103
ØC	12	15	17	25
ØD	25	28	30	45
E	3	3	3	4
F	20	25	36	40
G	39,5	45	53,5	65
H	13,5	17	19	29
ØI	60	75	88	108
J	19,5	21	23,5	30
K	11	14	15	11,5
L	26	28,9	30	35,4
LL	18	22,2	30	32,2
M	G1/8"	G1/8"	G1/4"	G1/4"
N	50	60	70	80
P	10	12	13	19
PP	21	21	21	21
Q	4	5	5	7
QQ	39,4	43	44	48,5
R	M6x1	M8x1,25	M8x1,25	M10x1,5
RR	8	10	14	14
S	13	14	16	16
SS	38	38	39	39,5
T	5	7,5	5	5
TT	53	56,5	59	63
U	34	39	48	60
UU	24,5	24,5	24,5	24,5
V	66	83	94	120
ØVA	6,5	9	9	11
ØW	60	60	70	70
Z	73	73	83	83
Weight (g) Base	760	1290	1920	4100
Weight (g) With regulation rotation system	1100	1690	2370	4840

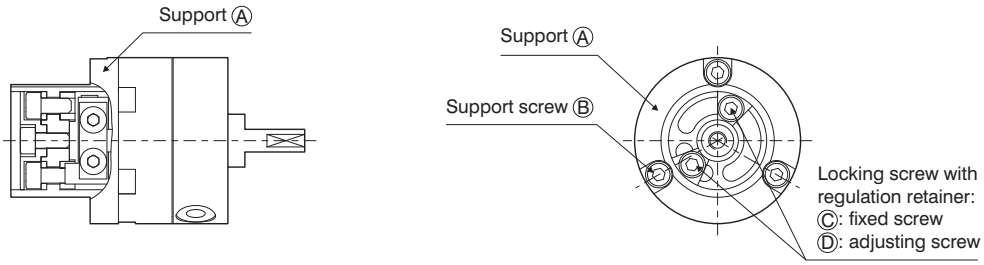
Key flat position and adjustable rotation angle Ø10 - Ø40

ROTATING SHAFT KEY FLAT POSITION



ROTATION ANGLE SETUP

To regulate the rotation angle (codes 6420..R or T), follow the instructions below

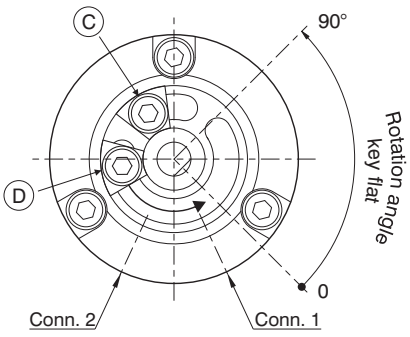


Phase 1 : Choose the regulation configuration based on the following options (consider the actuator base position):
rotation 90°, regulation 0 - 90°, rotation 180°, regulation 0 - 180°, rotation 270°, regulation 0 - 175°

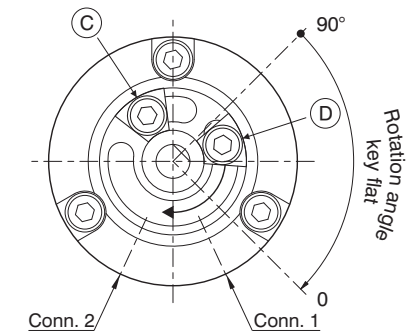
ROTATION CONFIGURATION

90°

Standard version — from 0° to 90°



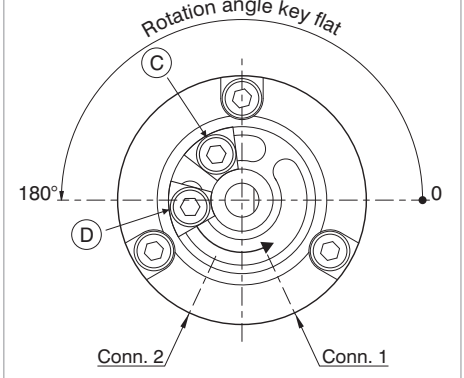
from 90° to 0°



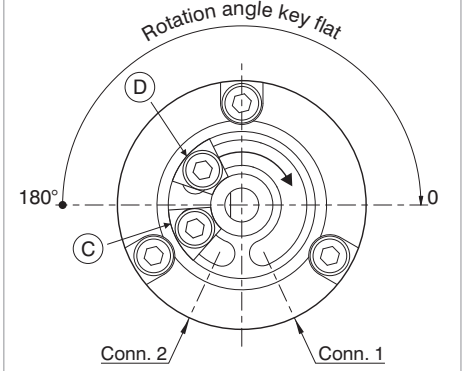
ROTATION CONFIGURATION

180°

Standard version — from 0° to 180°

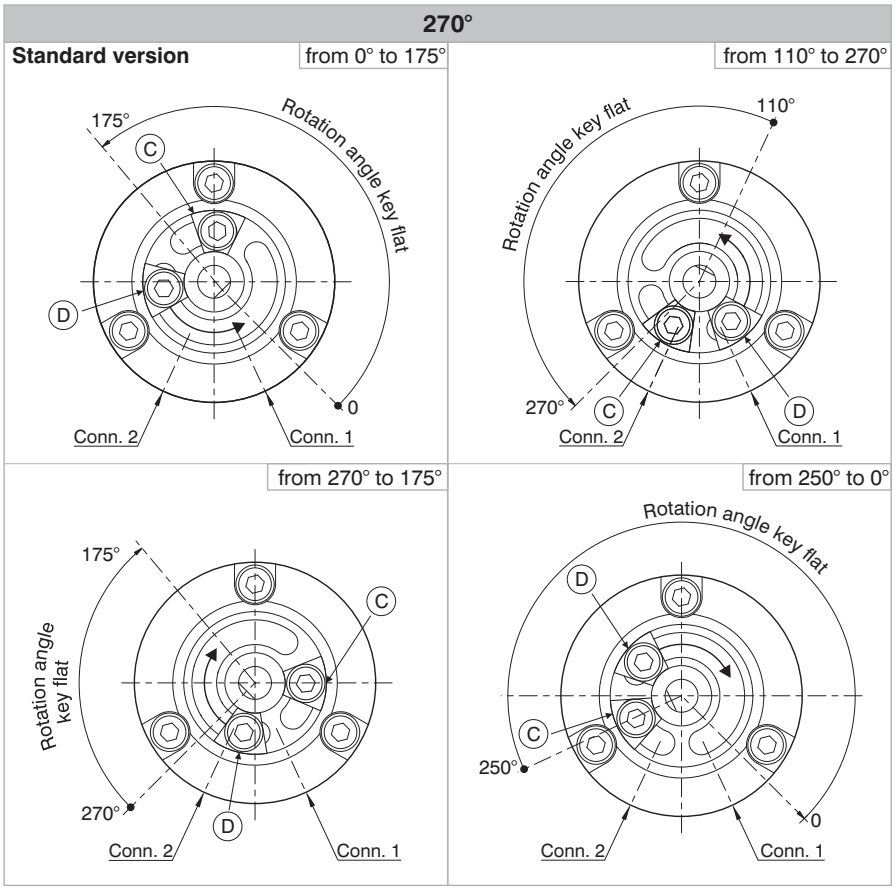


from 180° to 0°



Key flat position and adjustable rotation angle Ø10 - Ø40

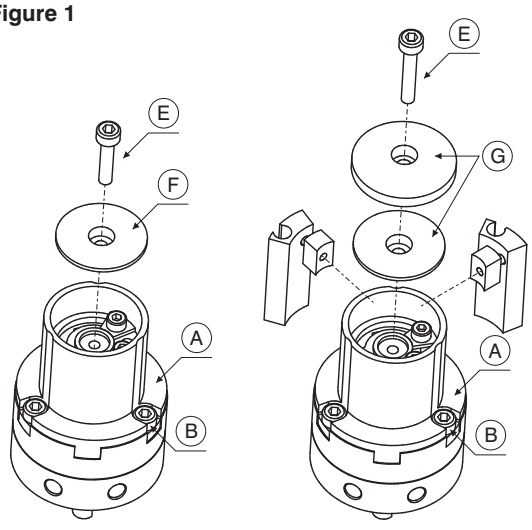
ROTATION CONFIGURATION



Ⓒ = **Fixed screw** Ⓓ = **Adjusting screw**

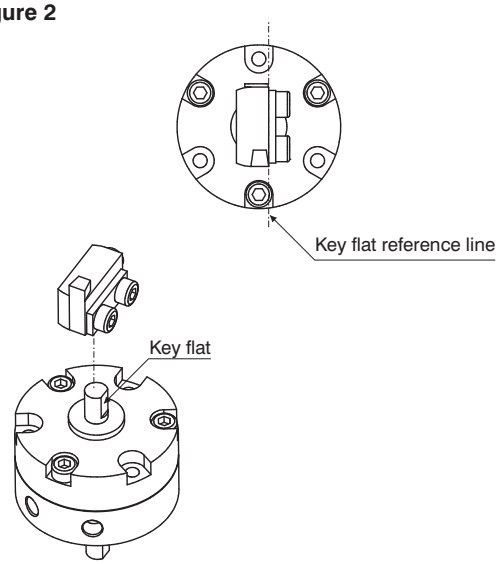
Phase 2 : If the desired settings do not correspond to the basic version settings:
- remove screw Ⓔ and disk Ⓕ or Ⓖ (depending on the version) (see figure 1)
- remove screws Ⓑ, the actuator support Ⓐ (see figure 1) and unlock blocking screws Ⓒ and Ⓓ (see rotation configuration)
- position screws Ⓒ and Ⓓ and the key flat of rotating shaft as indicated in the chosen rotation configuration in order to align the key flat of rotating shaft (see figure 2)
- re-assemble actuator support Ⓐ, tighten screws Ⓑ
- position screws Ⓒ and Ⓓ according to the desired adjustment and tighten the screws
- re-assemble disk Ⓕ or Ⓖ and screw Ⓔ

Figure 1



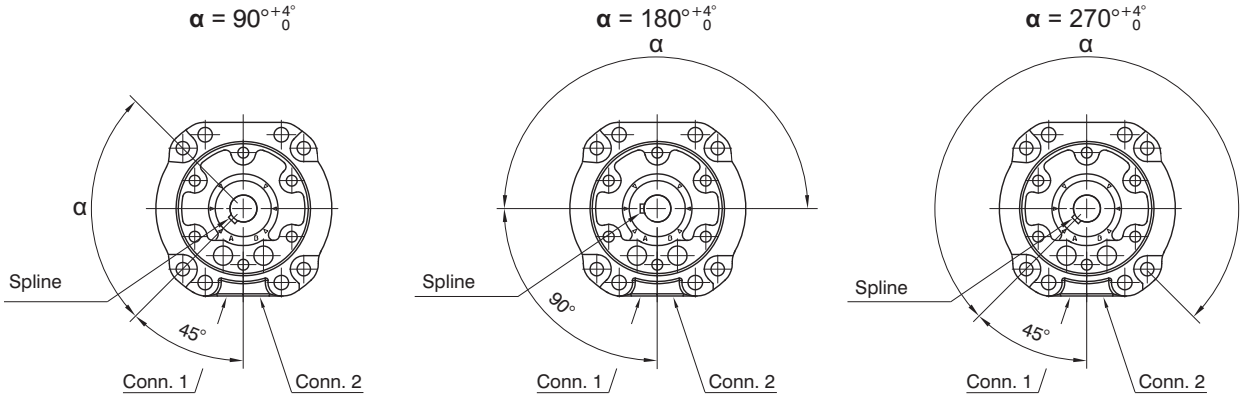
Version "R" **Version "T"**

Figure 2



Spline position and adjustable rotation angle Ø50-Ø100

ROTATING SHAFT SPLINE POSITION



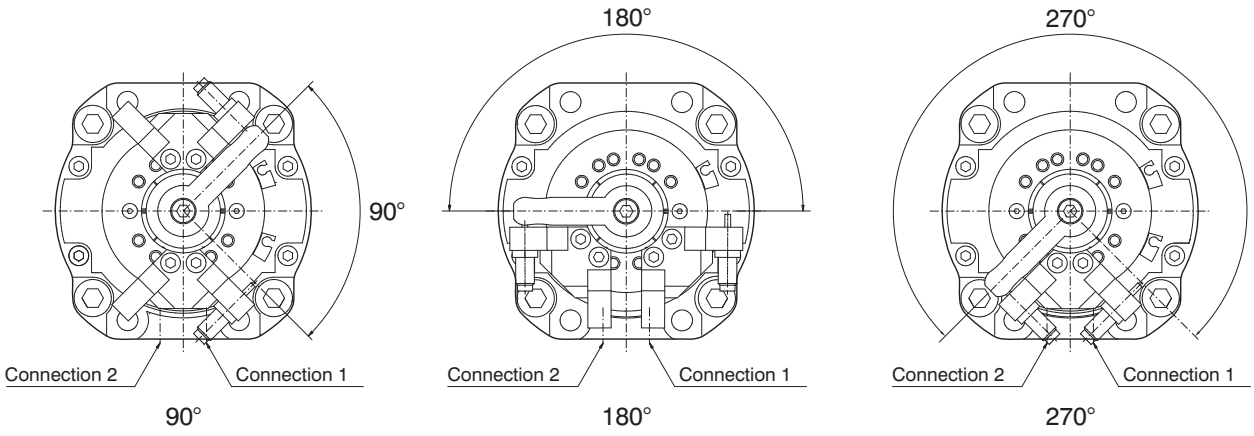
3

PNEUMATIC ACTUATION

ROTATION ANGLE SETUP

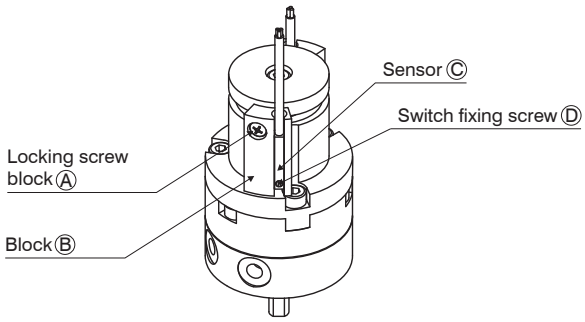
The version with adjustable rotation angle (cod. 6420..R or T) is available with hydraulic dampers which enable to regulate the rotation angle by 15° and to decelerate moving mass.

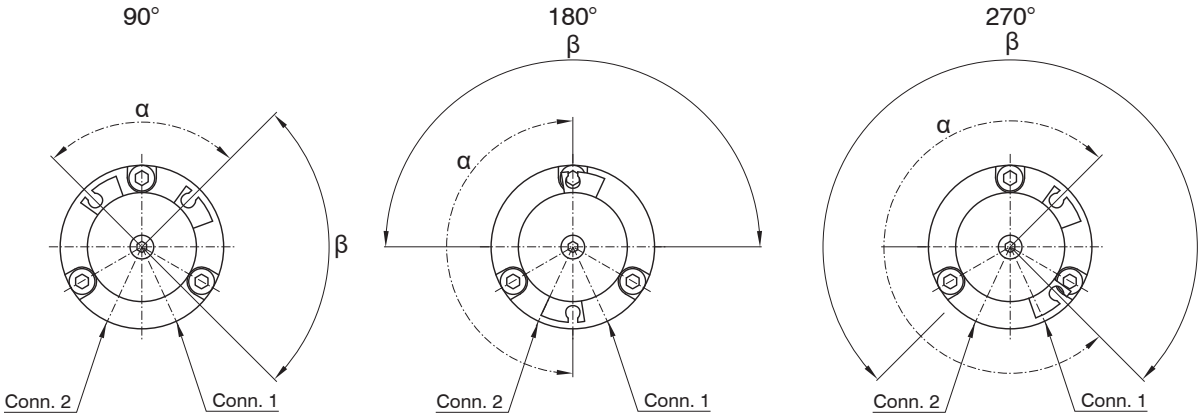
Example: for 90° rotation and 15° regulation per decelerator, the effective rotation angle is 60°
Example: for 180° rotation and 15° regulation per decelerator, the effective rotation angle is 150°
Example: for 270° rotation and 15° regulation per decelerator, the effective rotation angle is 240°



Switch positioning instructions Ø10 - Ø40

Phase 1 - Unfasten screw Ⓐ
Phase 2 - Assemble the switch Ⓒ into the dedicated housing Ⓑ and lock with screw Ⓓ
Phase 3 - Rotate block Ⓑ in the desired position (see following image)





α - magnet rotating angle
β - shaft key flat rotating angle
For correct functionality position the switch within angle **α**

Phase 4 - tighten screw Ⓐ
Phase 5 - repeat the following phases for the second switch

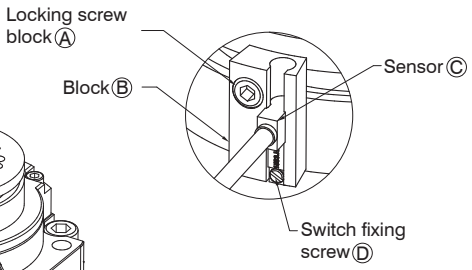
AVAILABLE SENSORS

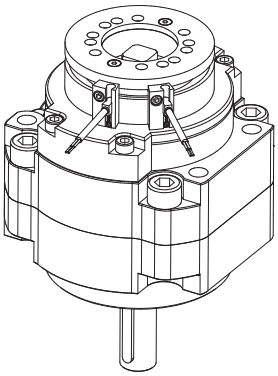
Code
1581.U
TRS.U
1581.HAP
THS.P

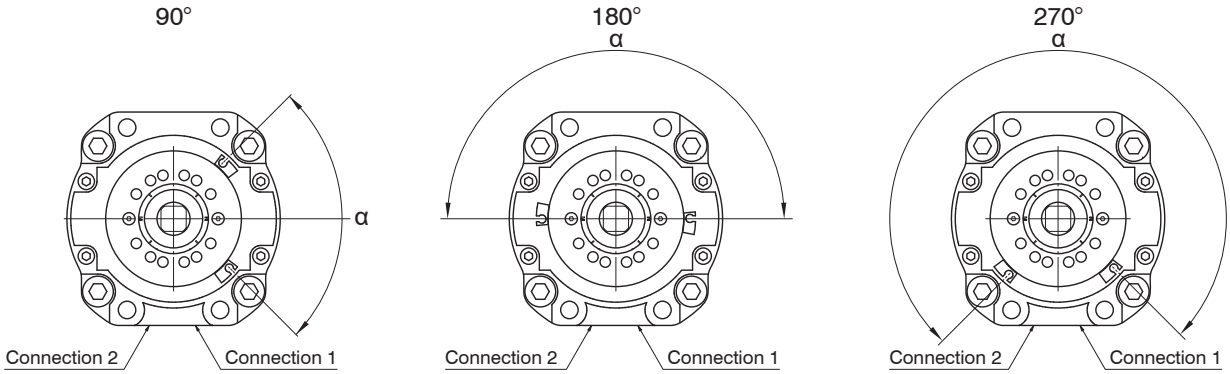
Code
1583.DC
1583.HAP
THR.P

Switch positioning instructions Ø50 - Ø100

Phase 1 - Unfasten screw Ⓐ
Phase 2 - Assemble the switch Ⓒ into the dedicated housing Ⓑ and lock with screw Ⓓ
Phase 3 - Rotate block Ⓑ in the desired position (see following image)







α - magnet rotating angle (that corresponds to the shaft key flat rotating angle)
For correct functionality position the switch within angle **α**

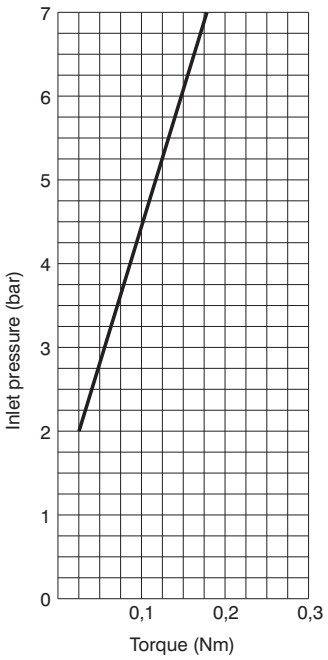
Phase 4 - tighten screw Ⓐ
Phase 5 - repeat the following phases for the second switch

AVAILABLE SENSORS

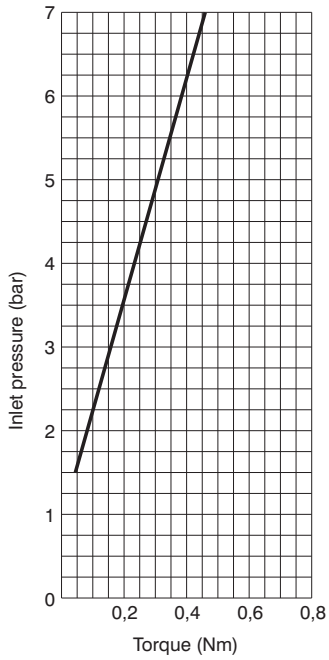
	Code
	**1583.DC**
	1583.HAP
	THR.P

Available torques

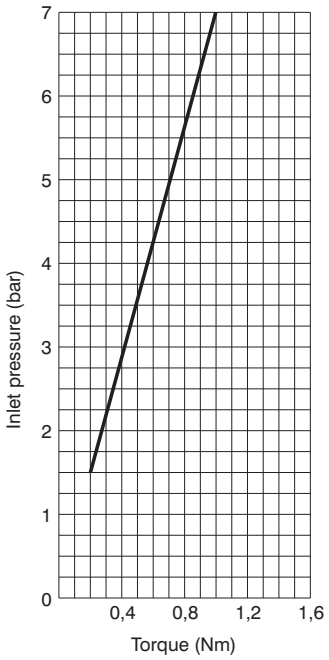
Ø10



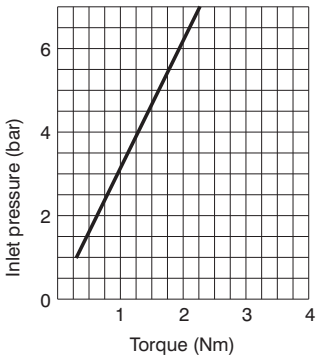
Ø15



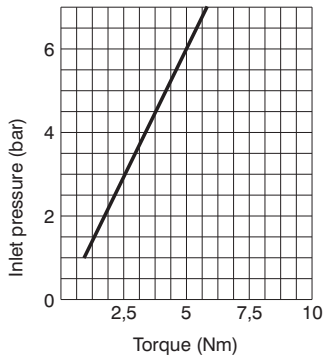
Ø20



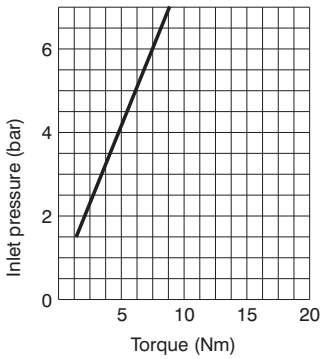
Ø30



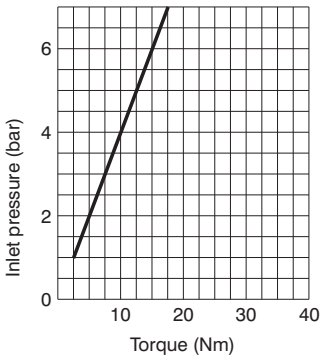
Ø40



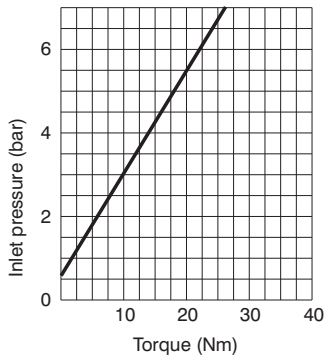
Ø50



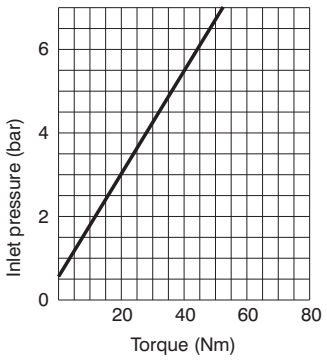
Ø63



Ø80

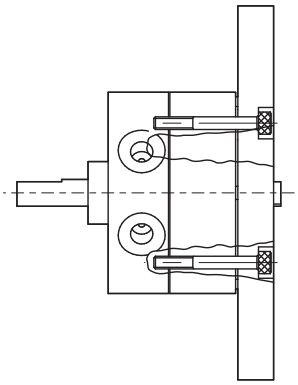


Ø100

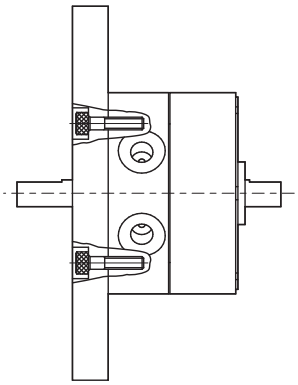


Direct mounting

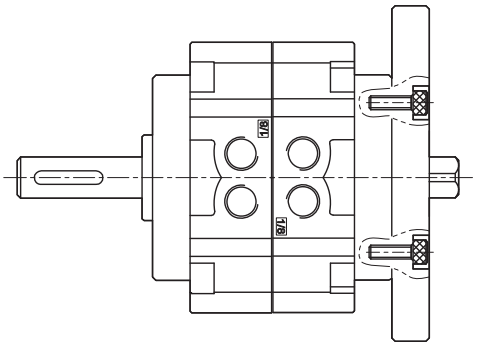
Mounting types



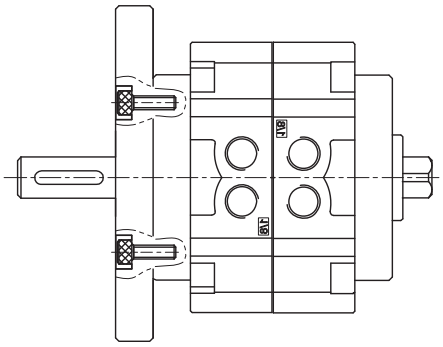
Rear mounting



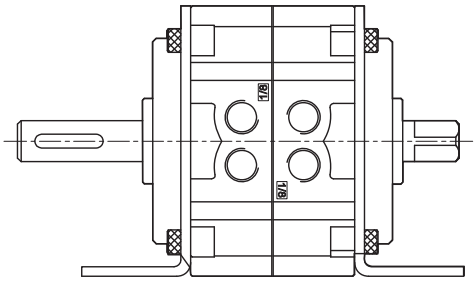
Frontal mounting



Rear mounting



Frontal mounting



Mounting with flange

Multimount cylinders

Ordering code

6500.Ø.stroke. 1 . _

- **10**
- **16**
- **20**
- **25**

_ = non magnetic
M = magnetic

Construction characteristics

Body	anodised aluminium
Piston rod	stainless steel
Piston	brass
Rods bushing	sinterize bronze
End plate	anodised aluminium
Cushioning washer	PUR
Seal	oil resistant NBR rubber

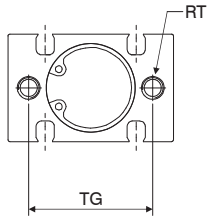
Technical characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Minimum working pressure	0.6 bar (for bore Ø10 - Ø16) 0.5 bar (for bore Ø20 - Ø32)
Max pressure	7 bar
Operating temperature	-5°C - +70°C
Cushioning	with elastic bumper
Stroke tolerance	+1 / 0 mm
Piston speed	50 - 500 mm/sec (without load)

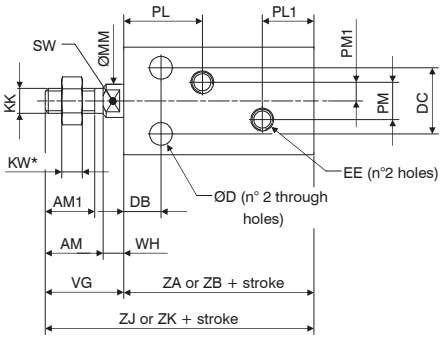
Standard stroke

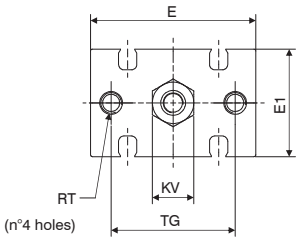
	Stroke							
Bore	**5**	**10**	**15**	**20**	**25**	**30**	**40**	**50**
Ø10	●	●	●	●	●	●		
Ø16	●	●	●	●	●	●		
Ø20	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●

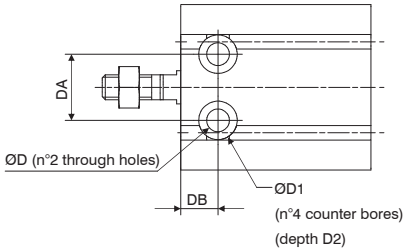
Overall dimensions



*Ø10: n° 2 piston rod nuts
Ø16: n° 1 piston rod nut







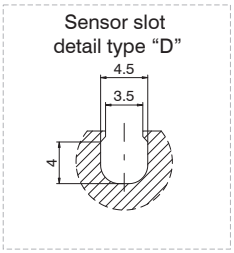
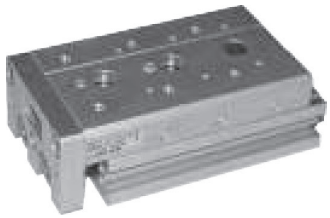


Table of dimensions

		Bore			
		Ø10	Ø16	Ø20	Ø25
AM		/	12,5	14	18
AM1		10	11	12	15,5
ØD		Ø3,2	Ø4,5	Ø5,5	Ø5,5
ØD1		Ø6	Ø7,6	Ø9,3	Ø9,3
D2		5	6,5	8	9
DA		11	14	16	20
DB		7	7	9	10
DC		9	12	16	20
E		24	32	40	50
E1		15	20	26	32
EE		M5	M5	M5	M5
KK		M4	M5	M6	M8
KV		7	8	10	13
KW		3	4	5	5
ØMM		Ø4	Ø6	Ø8	Ø10
PL		16,5	16,5	19	21,5
PL1		10	11,5	12,5	13
PM		/	4	9	9
PM1		/	2	4,5	4,5
RT		M3 (useful depth 5)	M4 (useful depth 6)	M5 (useful depth 8)	M5 (useful depth 8)
SW		/	5	6	8
TG		18	25	30	38
VG		16	16	19	23
WH		/	3,5	5	5
ZA	magnetic	36	40	46	50
ZB	non magnetic	36	30	36	40
ZJ	magnetic	52	56	65	73
ZK	non magnetic	52	46	55	63
Weight (g)					
Stroke 0		32	44	84	159
every 5 mm		4	6	11	17

Slide cylinders



Ordering code

6600.Ø.stroke. _ . _

8	= Without accessories
12	**A** = Double regulation end stroke
16	**AU** = Regulation front end stroke
20	**AR** = Regulation rear end stroke
25	**D** = Double shock absorber
	DU = Front shock absorber
	DR = Rear shock absorber

Construction characteristics

Body	anodised aluminium
Piston rod	stainless steel
Piston	stainless steel
Piston rod bushing	sintered bronze
End cap	anodised aluminium
Cushioning washer	PUR
Seal	oil resistant NBR rubber
Flange	anodised aluminium
Upper plate	anodised aluminium

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous.
Working pressure	1.5 - 7 bar
Working temperature	-5°C - +70°C
Cushioning	with elastic bumper

Theoretical force

Bore	Effective area (mm^2)	Force (N)						
Ø8	Out	101	20	30	40	51	61	71
	In	75	15	23	30	38	45	53
Ø12	Out	226	45	68	90	113	136	158
	In	170	34	51	68	85	102	119
Ø16	Out	402	80	121	161	201	241	281
	In	302	60	91	121	151	181	211
Ø20	Out	628	126	188	251	314	377	440
	In	471	94	141	188	236	283	330
Ø25	Out	982	196	295	393	491	589	687
	In	756	151	227	302	378	454	529
			2	3	4	5	6	7
			Working pressure(bar)					

Standard strokes

Bore	Stroke								
	10	20	30	40	50	75	100	125	150
Ø8	●	●	●	●	●	●			
Ø12	●	●	●	●	●	●	●		
Ø16	●	●	●	●	●	●	●	●	
Ø20	●	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●	●

Overall dimensions Ø8

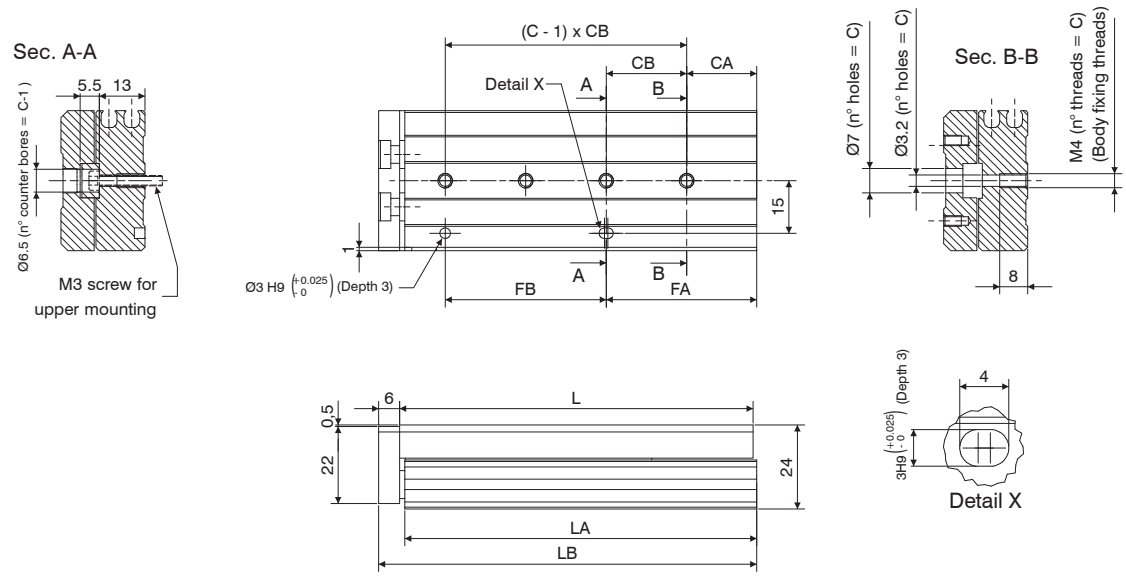


Table of dimensions

	Standard stroke					
	10	**20**	**30**	**40**	**50**	**75**
B	4	4	4	4	6	6
BA	25	25	40	50	38	50
C	2	2	3	3	4	5
CA	9	12	13	15	20	27
CB	28	30	20	28	23	28
DA	23,5	33,5	43,5	53,5	63,5	88,5
DB	/	/	/	/	82,5	132,5
FA	17	12	33	43	43	83
FB	20	30	20	28	46	56
EA	13	8,5	9,5	10,5	24,5	38,5
EB	19,5	29	39	56	60	96
L	49	54	65	83	101	151
LA	48,5	53,5	64,5	82,5	100,5	150,5
LB	56	61	72	90	108	158
Weight g	150	160	190	235	285	410

Overall dimensions Ø12

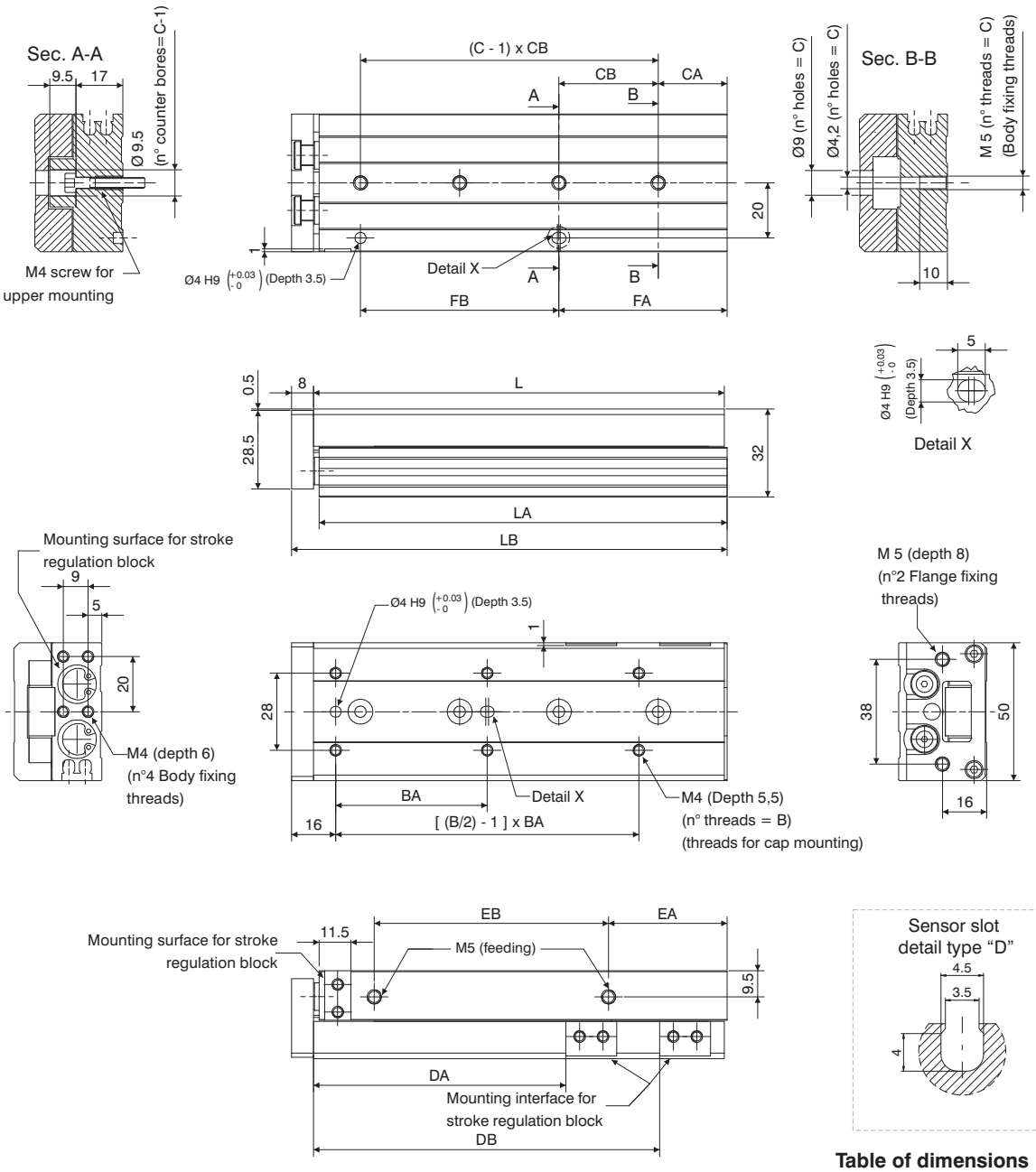


Table of dimensions

	Standard stroke						
	10	**20**	**30**	**40**	**50**	**75**	**100**
B	4				6		
BA		35		50	35	55	65
C		2		3	3	4	5
CA		15		17	15	25	35
CB		40		25	36	36	38
DA	26,5	36,5	46,5	56,5	66,5	91,5	116,5
DB	/	/	/	/	/	125,5	179,5
FA		15		42	51	61	111
FB		40		25	36	72	76
EA	10				22	43	52
EB		40		52	60	85	130
L		71		83	103	149	203
LA		70		82	102	148	202
LB		80		92	112	158	212
Weight (gr.)		325		385	480	660	890

Overall dimensions Ø16

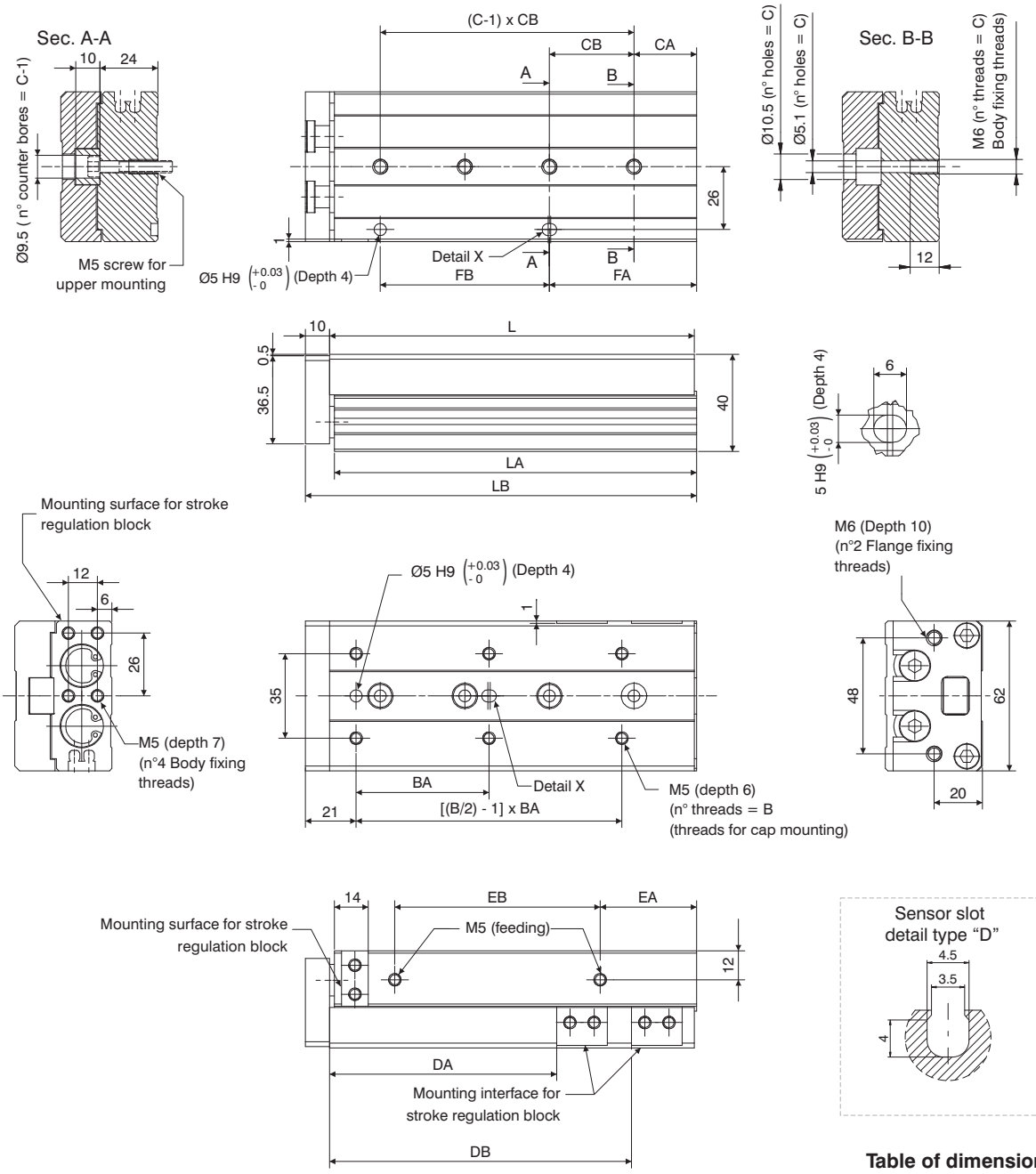


Table of dimensions

	Standard stroke							
	10	**20**	**30**	**40**	**50**	**75**	**100**	**125**
B	4	4	4	4	6	6	6	8
BA	35	35	35	40	30	55	65	70
C	2	2	2	2	3	4	5	7
CA	16	16	16	16	21	26	39	19
CB	40	40	40	50	30	35	35	35
DA	29	39	49	59	69	94	119	144
DB	/	/	/	/	/	125	173	223
FA	16	16	16	16	51	61	109	159
FB	40	40	40	50	30	70	70	70
EA	10	10	10	10	15	40	55	68
EB	40	40	40	50	60	85	118	155
L	76	76	76	86	101	151	199	249
LA	75	75	75	85	100	150	198	248
LB	87	87	87	97	112	162	210	260
Weight (gr.)	570	570	580	640	760	1090	1370	1700

Overall dimensions Ø20

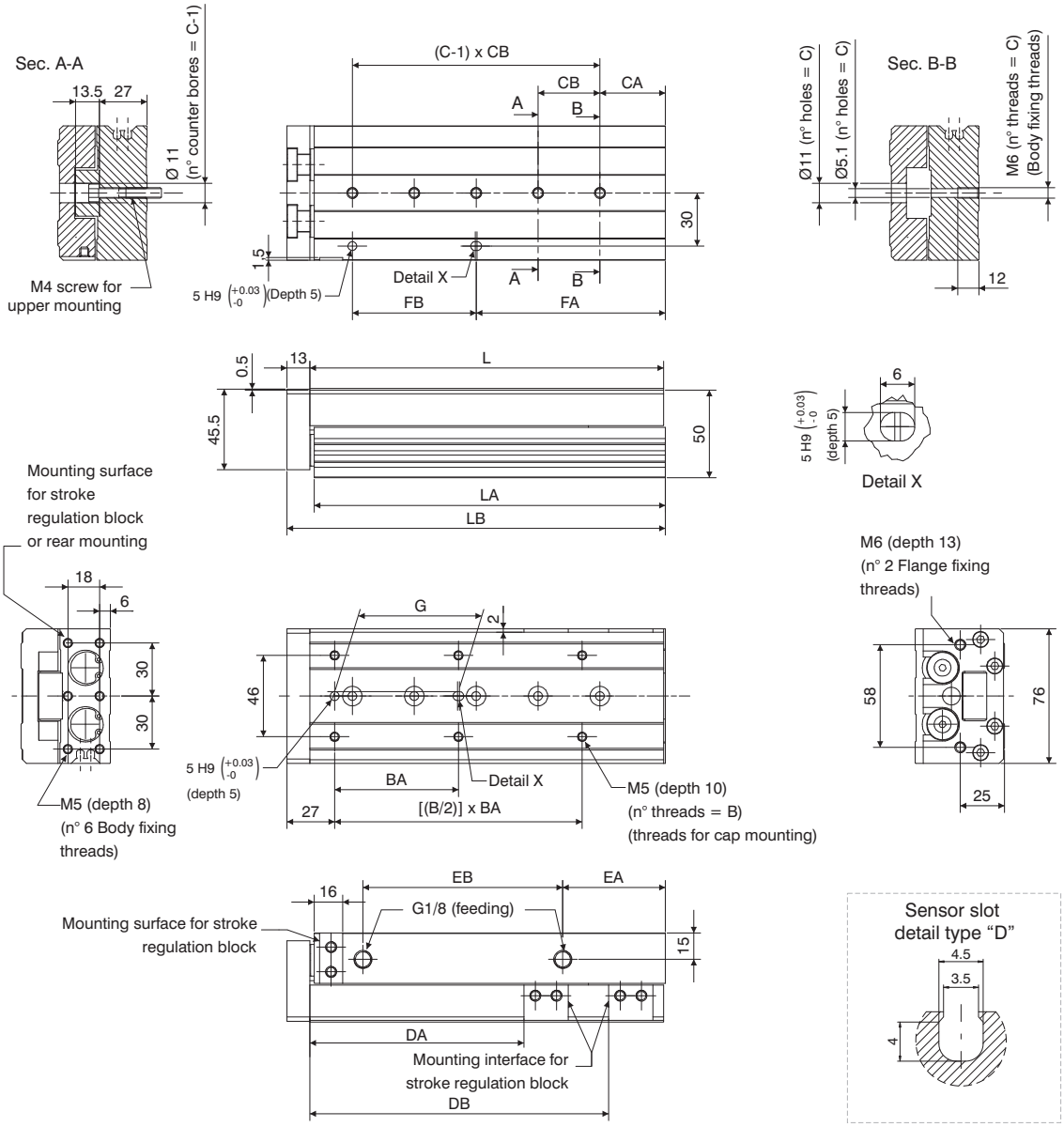


Table of dimensions

	Standard stroke								
	10	**20**	**30**	**40**	**50**	**75**	**100**	**125**	**150**
B	4	4	4	4	6	6	6	8	8
BA	50	50	50	60	35	60	70	70	80
C	2	2	2	2	3	4	5	6	7
CA	15	15	15	15	15	19	37	41	19
CB	45	45	45	55	35	35	35	38	44
DA	31	41	51	61	71	96	121	146	171
DB	/	/	/	/	/	/	169	223	275
EA	10	10	10	10	10	10	58	70	87
EB	44	44	44	54	69	108	113	155	190
FA	25	25	25	35	50	54	107	155	195
FB	35	35	35	35	35	70	70	76	88
G	40	40	40	50	35	60	70	70	80
L	83	83	83	93	108	147	200	254	306
LA	81,5	81,5	81,5	91,5	106,5	145,5	198,5	252,5	304,5
LB	97	97	97	107	122	161	214	268	320
Weight (gr.)	960	980	1010	1100	1250	1630	2150	2670	3190

Overall dimensions Ø25

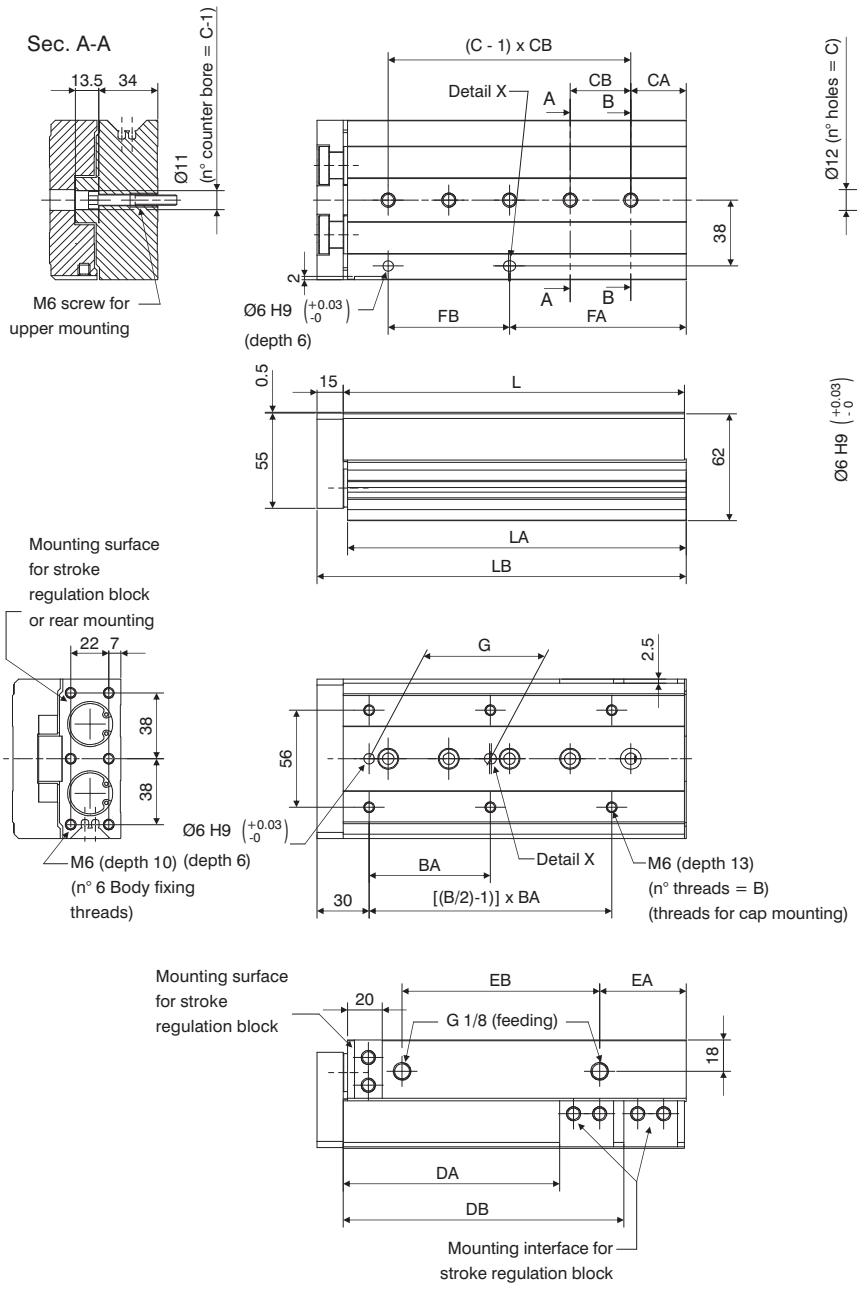
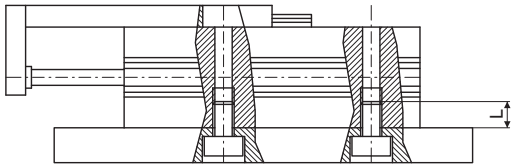


Table of dimensions

	Standard stroke								
	10	**20**	**30**	**40**	**50**	**75**	**100**	**125**	**150**
B	4	4	4	4	6	6	6	8	8
BA	50	50	50	60	35	60	70	75	80
C	2	2	2	2	3	4	5	6	7
CA	22	22	22	22	20	26	32	40	30
CB	45	45	45	55	35	35	35	38	40
DA	35	45	55	65	75	100	125	150	175
DB	/	/	/	/	/	/	162	218	258
EA	12	12	12	12	12	33	50	67	82
EB	47	47	47	57	70	90	114	155	180
FA	22	22	22	22	55	61	102	154	190
FB	45	45	45	55	35	70	70	76	80
G	40	40	40	50	35	60	70	75	80
L	92	92	92	102	115	156	197	255	295
LA	90,5	90,5	90,5	100,5	113,5	154,5	195,5	253,5	293,5
LB	108	108	108	118	131	172	213	271	311
Weight g	1660	1680	1690	1840	2090	2650	3270	4140	4710

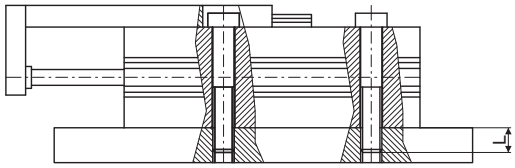
Mounting options

SIDE THREADED HOLES



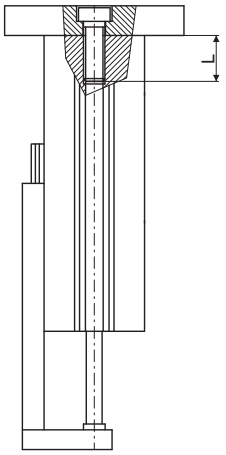
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	2,1	8
Ø12	M4	4,4	10
Ø16	M5	7,4	12
Ø20	M5	7,4	12
Ø25	M6	18	16

SIDE THROUGH HOLES



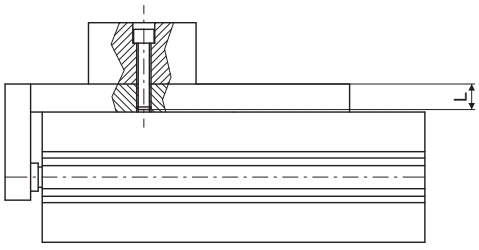
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	1,2	13
Ø12	M4	2,8	18,5
Ø16	M5	5,7	24
Ø20	M5	5,7	29
Ø25	M6	18	34

AXIAL THREADED HOLES

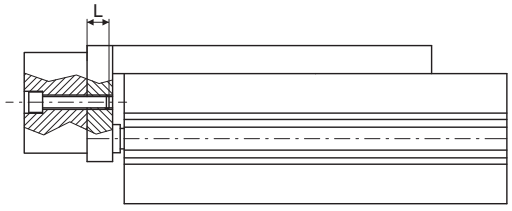


Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	0,9	4
Ø12	M4	2,1	6
Ø16	M5	4,4	7
Ø20	M5	4,4	8
Ø25	M6	7,4	10

Mounting load



Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	2,1	6
Ø12	M4	4,4	8
Ø16	M5	7,4	10
Ø20	M5	7,4	13
Ø25	M6	18	15



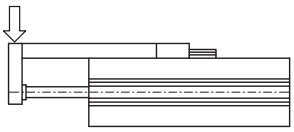
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	0,9	5
Ø12	M4	2,1	5,5
Ø16	M5	4,4	6
Ø20	M5	4,4	10
Ø25	M6	7,4	13

Kinetic energy (J)

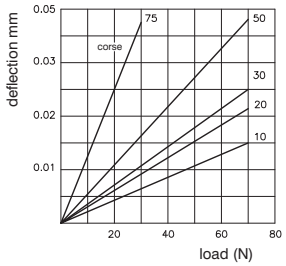
Bore	With elastic bumper	With shock absorber
Ø8	0,027	See Dampers 6900
Ø12	0,055	
Ø16	0,11	
Ø20	0,16	
Ø25	0,24	

Plate deflection

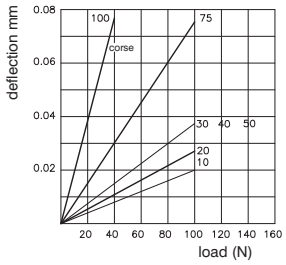
With front moment under static conditions completely extended and with load applied as indicated by the arrows.



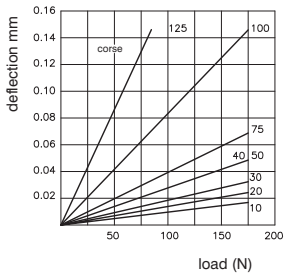
Ø8



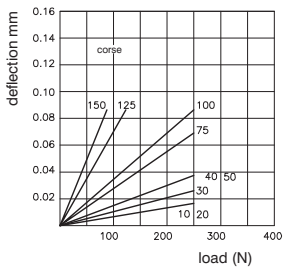
Ø12



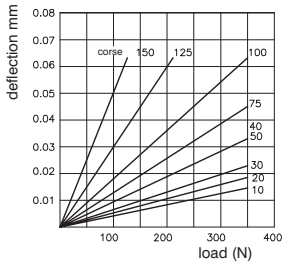
Ø16



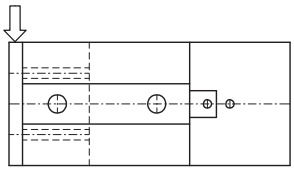
Ø20



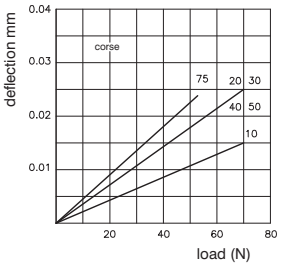
Ø25



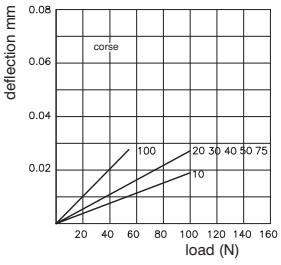
With side moment under static conditions completely extended and with load applied as indicated by the arrow



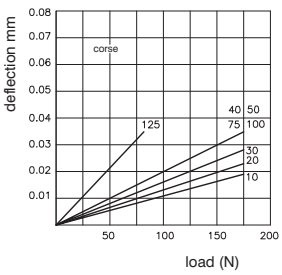
Ø8



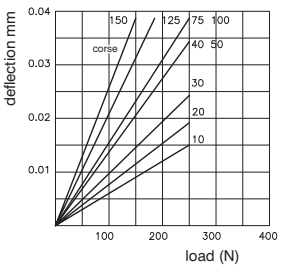
Ø12



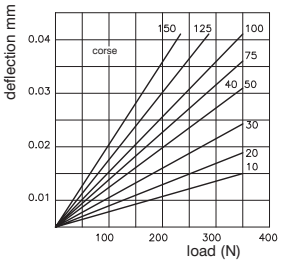
Ø16



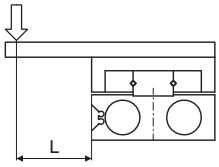
Ø20



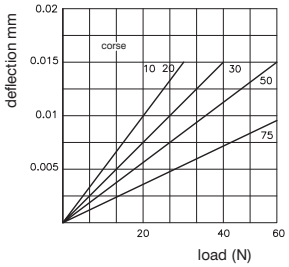
Ø25



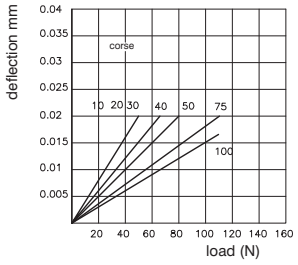
With misaligned side moment with load applied as indicated by the arrow at a distance “L” and with plate completely retracted.



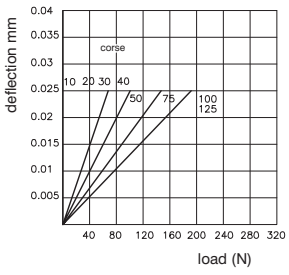
Ø8 L=50mm



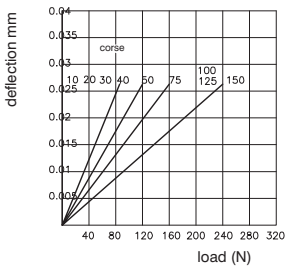
Ø12 L=65mm



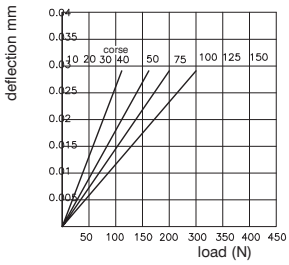
Ø16 L=90mm



Ø20 L=120mm

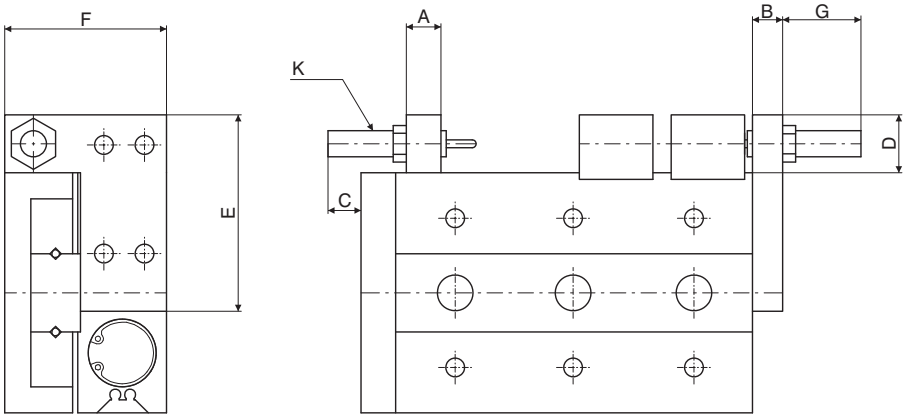


Ø25 L=150mm

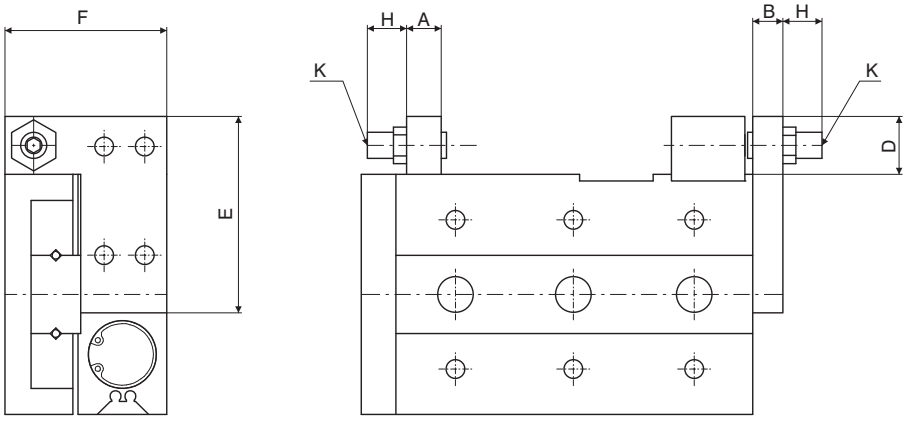


Accessories - Static moment

Dimensions with dampers



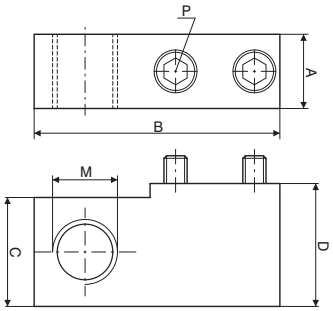
Dimensions with adjusting screw



Bore	A	B	C	D	E	F	G max.	H max.	K
Ø8	7	8	26	14,5	38,5	23	25,5	28,5	M8x1
Ø12	9,5	8	21	15	45	31,5	24,5	32	M8x1
Ø16	11	10	19	18	55	37,5	29	34,5	M10x1
Ø20	13	12	28	24,5	70	47,5	42,5	35,5	M14x1,5
Ø25	16	15	34	24,5	80	54,5	39,5	37,5	M14x1,5

Shock absorber mounting block / front stroke adjusting screw

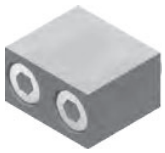
Ordering code
6600.Ø.SU

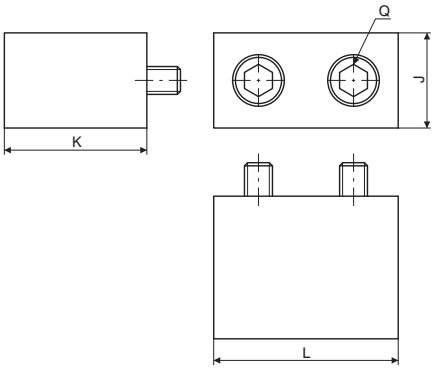


Bore	A	B	C	D	M	P
Ø8	7	23	14	15,5	M8x1	M3x16
Ø12	9,5	31	14,5	16		M4x16
Ø16	11	37	17,5	19	M10x1	M5x18
Ø20	13	45,5	23,5	26	M14x1,5	M6x25
Ø25	16	53,5		26,5		M8x25

Reference block

Ordering code
6600.Ø.SI

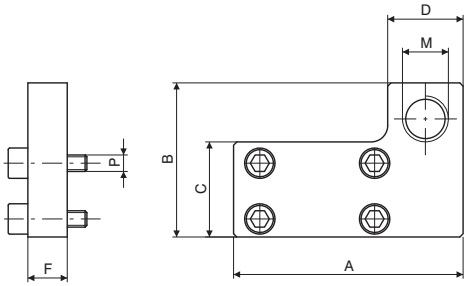




Bore	J	K	L	Q
Ø8	7	15,5	14,6	M3x16
Ø12	10	15	18,5	M4x14
Ø16	12	18,5	21	M5x18
Ø20	13	25,5	25	M6x25
Ø25	17		31	M8x25

Shock absorber mounting block / rear stroke adjusting screw

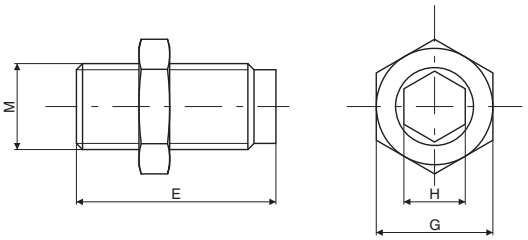
Ordering code
6600.Ø.SR



Bore	A	B	C	D	F	M	P
Ø8	38	23	12,5	14	8	M8x1	M3x12
Ø12	45	31	18				M4x12
Ø16	55	37	23,5	16	10	M10x1	M5x14
Ø20	70	47	29	23	12	M14x1,5	M5x16
Ø25	80	54	35		15		M6x20

Adjusting screw

Ordering code
6600.Ø.VR



Bore	E	G	H	M
Ø8	36,5	12	4	M8x1
Ø12	40			
Ø16	44,5	14	5	M10x1
Ø20	47,5	22	8	M14x1,5
Ø25	52,5			