NORGREN

OBSOLETE DOCUMENT Technical Reference Only

DM/99000, DC/99000

Compact cylinders
Non-magnetic and magnetic piston
Double acting
Ø 12 to 160 mm

Light weight

Compact design, which is considerably shorter than ISO/VDMA or NFPA equivalent.

Low friction characteristics for high speed operation

Duralon® rod bearing for reduced wear

Chrome plated stainless steel piston rods

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
DM/99000 BSP parallel ports, double acting, non-cushioned, metric threads
DC/99000 NPT ports, double acting, non-cushioned, inch threads

Operating pressure:
1 to 10 bar

Operating temperature:
-32°C to +121°C
Consult our Technical Service for use below +2°C

Cylinder diameters:
12, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 140, 160 mm

Strokes:
See table on page N 1.5.099.02
Non-standard strokes available on request

Materials

Barrel: hard anodized aluminium
End caps: hard anodized aluminium alloy
Piston rod: stainless steel, hard chrome plated
Elastomers: Buna N

Alternative cylinders

See pages N 1.5.099.02 and N 1.4.099

Ordering information

To order a basic 25 mm bore cylinder with a magnetic piston and 10 mm stroke, female rod thread, BSP parallel ports, quote: **DM/99025/MX/10**.

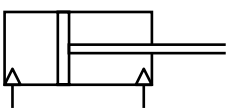
To order a basic 40 mm bore cylinder with a magnetic piston and 5 mm stroke, female rod thread, NPT ports, quote: **DC/99040/MX/5**.

Mountings are included for cylinders up to Ø 100 mm. See Options selector table on page N 1.5.099.02

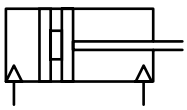
Magnetically operated switches need to be ordered separately.

Accessories

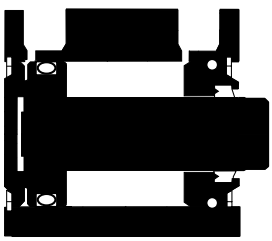
Switches See pages N 4.3.085 and N 4.3.087



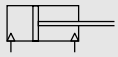
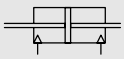
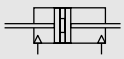
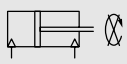
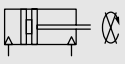
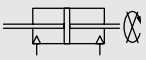
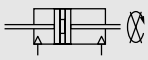
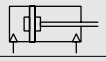
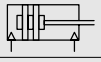
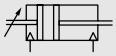
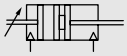
Non-magnetic



Magnetic



Cylinder variants

Symbol	Model Non-magnetic piston	Symbol	Model Magnetic piston	Description	Catalogue page
	D*/99000/X		D*/99000/MX	Standard female thread	4 & 5
	D*/99000/		D*/99000/M	Male rod thread, single rod	4 & 5
	D*/99000/EX		D*/99000/MEX	Boss, rod end female thread	15
	D*/99000/FX		D*/99000/MFX	Boss, cap end female thread	15
	TD*/99000/X		TD*/99000/MX	High temperature (Viton seals)	4
	D*/99000/JX D*/99000/J		D*/99000/JMX D*/99000/JM	Double ended piston rod, female thread Double ended piston rod, male thread	6 & 7 6 & 7
	D*/99000/N1X		D*/99000/N2X	Non-rotating piston rod, female thread (Ø 12 to 100 mm)	8 & 9
	D*/99000/N3		D*/99000/N4	Cylinder with guided toolplate	12
	D*/99000/N5X		D*/99000/N6X	Non-rotating double ended piston rod, female thread	10 & 11
	D*/99000/BX		D*/99000/BMX	Cylinder with bumpers both ends, female thread (standard on Ø 125, 140 & 160)	4 & 5
	D*/99000/SX		D*/99000/MSX	Adjustable stroke, single rod, female thread	On request

For combinations of alternative cylinders consult our Technical Service.

Options selector

★D★/99★★★/★/★/★

Temperature	Substitute
High temperature (Viton® seals)	T

Ports	Substitute
NPT Ports (inch threads, stroke in mm)	C
BSP parallel ports (metric ports & threads, stroke in mm)	M

Cylinder diameters (mm)	Substitute
12	012
16	016
20	020
25	025
32	032
40	040
50	050
63	063
80	080
100	100
125	125
140	140
160	160

Mounting	Substitute
Without	None
Foot	C
Flange rod end	G
Flange cap end	B
ISO Flange rod end	IG
ISO Flange cap end	IB
Rear clevis	D
Tapped holes - both ends	A

Stroke (mm)
300 max. (see table below)

Variants (non-magnetic piston)	Substitute
Standard, female rod thread	X
Male rod thread, single rod	None
Double ended piston rod, female rod thread	JX
Double ended piston rod, male thread, both ends	J
Non-rotating piston rod, female rod thread	N1X
Cylinder with guided toolplate	N3
Double ended piston rod, non-rotating, female rod thread	N5X
Boss, rod end, female rod thread	EX
Boss, cap end, female rod thread	FX
Bumpers on both ends, female rod thread (Ø 12 ... 100 mm)	BX
Adjustable stroke, retract, single rod, female rod thread	SX

Variants (magnetic piston)	Substitute
Standard, female rod thread	MX
Male rod thread, single rod	M
Double ended piston rod, male thread, both ends	JM
Double ended piston rod, female rod thread	JMX
Non-rotating piston rod, female rod thread	N2X
Cylinder with guided toolplate	N4
Double ended piston rod, non-rotating, female rod thread	N6X
Boss, rod end, female rod thread	MEX
Boss, cap end, female rod thread	MFX
Bumpers on both ends, female rod thread (Ø 12 ... 100 mm)	MBX
Adjustable stroke, retract, single rod, female rod thread	MSX

For combinations of alternative cylinders consult our Technical Service.

Strokes:

Ø	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	250	300
12	●	●	●	●	●	●	–	–	–	–	–	–	–	–	–	–	–	–
16	●	●	●	●	●	●	–	–	–	–	–	–	–	–	–	–	–	–
20	●	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
25	●	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
32	●	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
40	●	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
50	–	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
63	–	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
80	–	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
100	–	●	●	●	●	●	●	●	●	●	–	–	–	–	–	–	–	–
125	–	●	–	●	–	●	–	●	–	●	●	●	●	●	●	●	●	●
140	–	●	–	●	–	●	–	●	–	●	●	●	●	●	●	●	●	●
160	–	●	–	●	–	●	–	●	–	●	●	●	●	●	●	●	●	●

Theoretical forces • Air consumption

	Theoretical forces (N) at 6 bar		Air consumption l/cm stroke at 6 bar	
Ø	Outstroke	Instroke	Outstroke	Instroke
12	65,8	50,3	0,008	0,007
16	120,1	89,0	0,014	0,011
20	189,5	143,2	0,022	0,017
25	294,0	228,2	0,035	0,027
32	484,0	363,9	0,056	0,042
40	754,9	634,8	0,088	0,074
50	1176,6	990,6	0,138	0,116
63	1869,1	1683,7	0,218	0,196
80	3014,6	2720,5	0,35	0,32
100	4709,8	4288,1	0,55	0,52
125	7360,5	6749,3	0,86	0,79
140	9233,6	8622,4	1,08	1,01
160	12062,7	11307,8	1,41	1,32

Cylinder weights

	Stroke (mm)								Additional weight	Additional weight
Ø	5	10	30	50	75	100	125	150	for male thread	for magnetic piston
12	0,04	0,05	0,08	0,11	0,14	0,17	–	–	0,004	0,03
16	0,06	0,07	0,12	0,16	0,20	0,25	–	–	0,007	0,04
20	0,09	0,11	0,19	0,25	0,31	0,38	–	–	0,015	0,05
25	0,12	0,14	0,22	0,29	0,41	0,48	–	–	0,040	0,06
32	0,16	0,18	0,27	0,34	0,52	0,64	0,82	0,94	0,090	0,09
40	0,27	0,29	0,38	0,45	0,62	0,73	1,08	1,21	0,090	0,12
50	–	0,40	0,55	0,66	0,96	1,10	1,85	2,07	0,180	0,18
63	–	0,65	0,81	0,93	1,26	1,46	2,24	2,50	0,180	0,24
80	–	1,44	1,80	2,08	2,83	3,30	3,49	3,87	0,350	0,31
100	–	2,21	2,63	2,95	3,80	4,32	5,04	5,53	0,600	0,62
125	–	5,48	6,00	6,52	7,17	7,81	8,46	9,11	0,680	–
140	–	6,49	7,08	7,68	8,42	9,17	9,91	10,66	0,680	–
160	–	8,96	9,67	10,39	11,29	12,19	13,09	13,99	1060	–

Weights in kg
Please note: estimated weights for single rod models

Switches

Model		
Reed	QM/348/RSU/2,75	QM/348/RSU/CP
	QM/348/LSU/2,75	QM/348/LSU/CP
Solid state	QM/348/EAP/2,75	QM/348/EAP/CP
	QM/348/EAN/2,75	QM/348/EAN/CP

Female cordsets

Model	Length
M/P73326/1	1 m
M/P73326/2	2 m
M/P73326/5	5 m

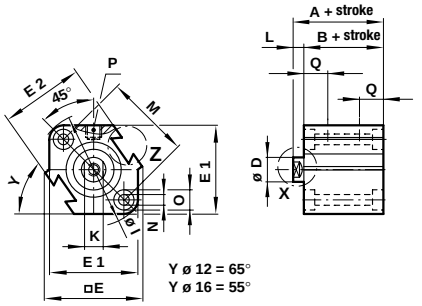
Note: Quick disconnect styles are supplied with 6 inch pigtail with male connector. Order female cordsets separately.

Model Reed	Solid state	Voltage V a.c.	V d.c.	Current max.	Temperature °C	LED	Features	Cable/plug length	Cable type	Catalogue page
	QM/348/RSU/2,75	0 ... 120	0 ... 120	500 mA	-20° ... +80°	–	–	2,75 m	26-3 PVC	N 4.3.085
	QM/348/LSU/2,75	5 ... 120	5 ... 120	30 mA	-20° ... +80°	●	–	2,75 m	26-3 PVC	N 4.3.085
	QM/348/EAP/2,75	–	6 ... 24	200 mA	-20° ... +80°	●	PNP	2,75 m	26-3 PVC	N 4.3.087
	QM/348/EAN/2,75	–	6 ... 24	200 mA	-20° ... +80°	●	NPN	2,75 m	26-3 PVC	N 4.3.087

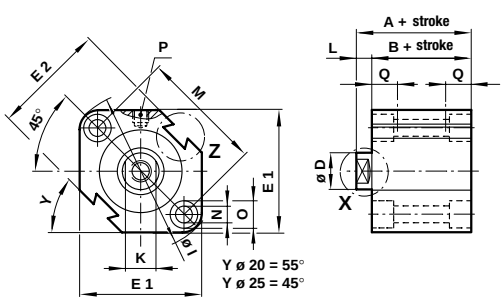
Full information on switches (technical data, cable materials, dimensions etc.) please refer to relevant catalogue pages

Basic dimensions – DM/99000/X (Non-magnetic)

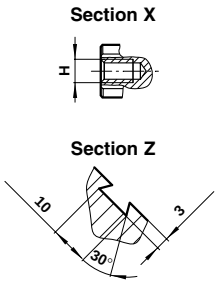
Ø 12 ... 16 mm



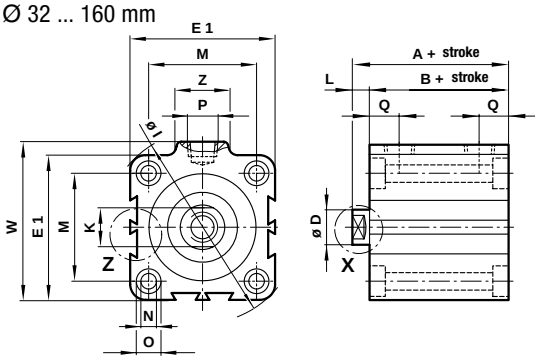
Ø 20 ... 25 mm

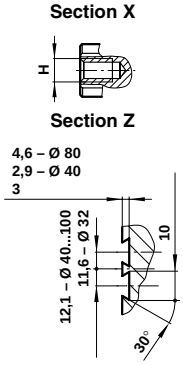


Ø 12 ... 25 mm



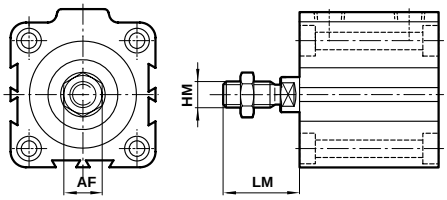
Ø 32 ... 160 mm





Cylinder with rod end male thread D*/99000 . . .

Ø 12 ... 160 mm



Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2
12	5 ... 10	20,5	8	17	6	27,7	25	23
16	5 ... 10	22	10	18,5	8	31,7	29	27,2
20	5 ... 10	24	13	19,5	10	–	36	31,2
25	5 ... 10	27,5	17	22,5	12	–	40	36,9
32	5, 10 ... 50	30	22	23	16	–	44,5	–
40	5 ... 10	36,5	22	29,5	16	–	52	–
50	10 ... 20	38,5	27	30,5	20	–	63,7	–
63	10 ... 50	44	27	36	20	–	76,7	–
80	10 ... 50	53,5	32	43,5	25	–	97,8	–
100	10 ... 50	65	46	53	30	–	115,3	–
125	10 ... 300	99	46	83	36	–	142	–
140	10 ... 300	99	46	83	36	–	158	–
160	10 ... 300	108	55	91	40	–	178	–

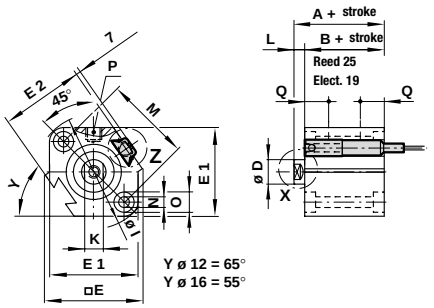
Ø	Stroke range	H	HM	Ø I	K	L	LM	M
12	5 ... 10	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5	3,5	14	22
16	5 ... 10	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28
20	5 ... 10	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36
25	5 ... 10	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40
32	5, 10 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34
40	5 ... 10	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40
50	10 ... 20	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	17	8	33,5	50
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	17	8	33,5	60
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94
125	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	190	32	16	58	114
140	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	210	32	16	58	128
160	10 ... 300	M24 x 3,0-27 deep	M36 x 1,5-47 deep	238	36	17	64	144

Ø	Stroke range	Ø N	Ø O	P*	Q	W	Z
12	5 ... 10	3,5	6,5 x 3,5 deep	M5 x 0,8	7	–	–
16	5 ... 10	3,5	6,5 x 3,5 deep	M5 x 0,8	7,8	–	–
20	5 ... 10	5,5	9,0 x 7,0 deep	M5 x 0,8	8,1	–	–
25	5 ... 10	5,5	9,0 x 7,0 deep	M5 x 0,8	8,4	–	–
32	5, 10 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,7	49,3	21,4
40	5 ... 10	5,5	9,0 x 7,0 deep	1/8*	9,2	57	21,4
50	10 ... 20	6,5	11,0 x 8,0 deep	1/4*	10,5	70,6	26,5
63	10 ... 50	9	14,0 x 10,5 deep	1/4*	11,5	83,6	26,5
80	10 ... 50	11	17,5 x 13,5 deep	3/8*	14	104	30
100	10 ... 50	11	17,5 x 13,5 deep	3/8*	18	121,9	30
125	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	153	39
140	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	168	39
160	10 ... 300	14,5	24,2 x 21,2 deep	3/8*	27,5	188	39

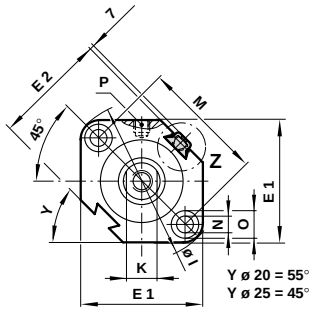
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

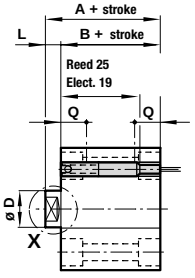
Basic dimensions – DM/99000/MX (Magnetic)

Ø 12 ... 16 mm

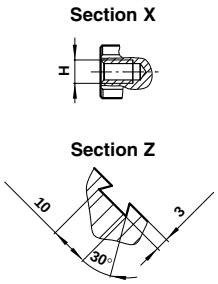


Ø 20 ... 25 mm

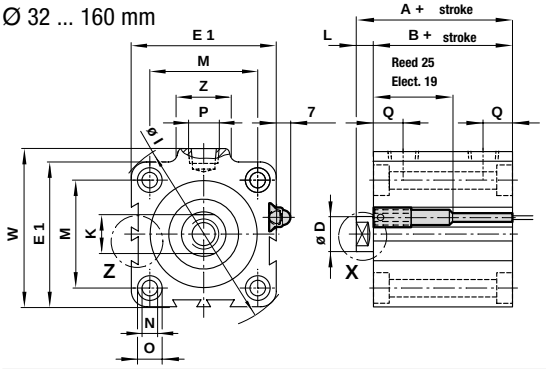


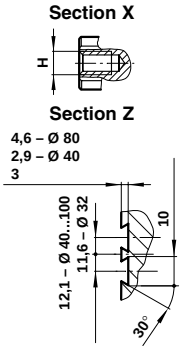


Ø 12 ... 25 mm



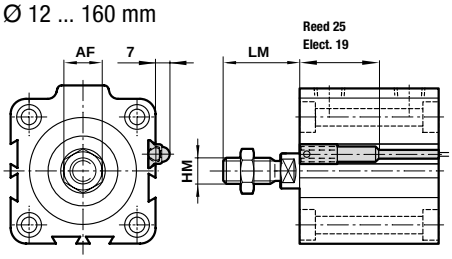
Ø 32 ... 160 mm





Cylinder with rod end male thread D*/99000/M

Ø 12 ... 160 mm



Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2
12	5 ... 30	31,5	8	28	6	27,7	25	23
16	5 ... 30	34	10	30,5	8	31,7	29	27,2
20	5 ... 50	36	13	31,5	10	–	36	31,2
25	5 ... 50	37,5	17	32,5	12	–	40	36,9
32	5 ... 50	40	22	33	16	–	44,5	–
40	5 ... 50	46,5	22	39,5	16	–	52	–
50	10 ... 50	48,5	27	40,5	20	–	63,7	–
63	10 ... 50	54	27	46	20	–	76,7	–
80	10 ... 50	63,5	32	53,5	25	–	97,8	–
100	10 ... 50	75	46	63	30	–	115,3	–
125	10 ... 300	99	46	83	36	–	142	–
140	10 ... 300	99	46	83	36	–	158	–
160	10 ... 300	108	55	91	40	–	178	–

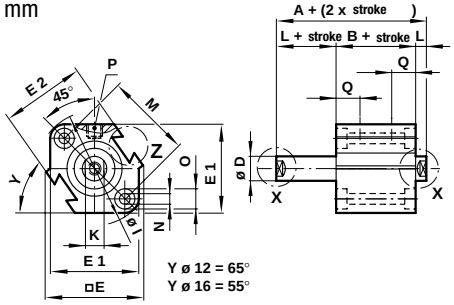
Ø	Stroke range	H	HM	Ø I	K	L	LM	M
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5	3,5	14	22
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37	6	3,5	15,5	28
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,5	10	5	22,5	40
32	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	59	14	7	28,5	34
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	85	17	8	33,5	50
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	102	17	8	33,5	60
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	130	22	10	43,5	77
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	154	27	12	43,5	94
125	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	190	32	16	58	114
140	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	210	32	16	58	128
160	10 ... 300	M24 x 3,0-27 deep	M36 x 1,5-47 deep	238	36	17	64	144

Ø	Stroke range	Ø N	Ø O	P*	Q	W	Z
12	5 ... 30	3,5	6,5 x 3,5 deep	M5 x 0,8	7	–	–
16	5 ... 30	3,5	6,5 x 3,5 deep	M5 x 0,8	7,8	–	–
20	5 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,1	–	–
25	5 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,4	–	–
32	5 ... 50	5,5	9,0 x 7,0 deep	1/8*	8,7	49,3	21,4
40	5 ... 50	5,5	9,0 x 7,0 deep	1/8*	9,2	57	21,4
50	10 ... 50	6,6	11,0 x 8,0 deep	1/4*	10,5	70,6	26,5
63	10 ... 50	9	14,0 x 10,5 deep	1/4*	11,5	83,6	26,5
80	10 ... 50	11	17,5 x 13,5 deep	3/8*	14,0	104	30
100	10 ... 50	11	17,5 x 13,5 deep	3/8*	18	121,9	30
125	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	153	39
140	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	168	39
160	10 ... 300	14,5	24,2 x 21,2 deep	3/8*	27,5	188	39

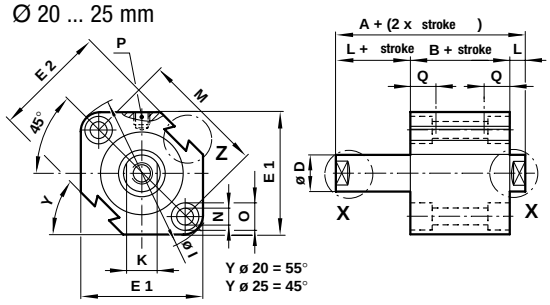
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

Double ended piston rod – DM/99000/JX (Non-magnetic)

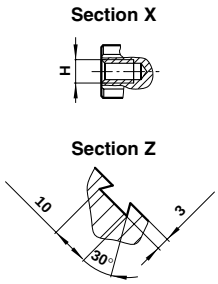
Ø 12 ... 16 mm



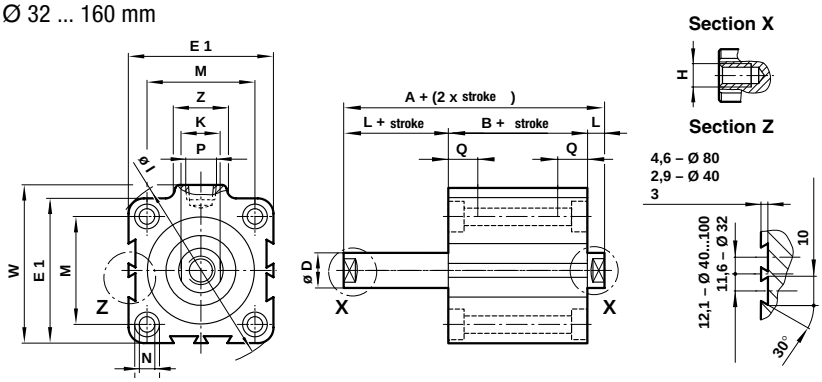
Ø 20 ... 25 mm



Ø 12 ... 25 mm

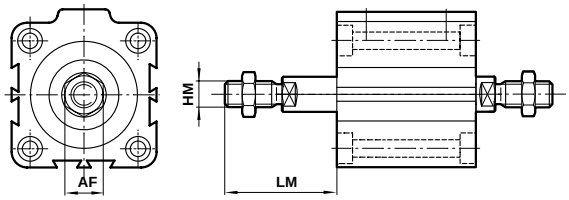


Ø 32 ... 160 mm



Cylinder with rod end male thread D*/99000/J

Ø 12 ... 160 mm



Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2
12	5 ... 30	32,2	8	25,2	6	27,7	25	23
16	5 ... 30	33,0	10	26,0	8	31,7	29	27,2
20	5 ... 50	35,0	13	26,0	10	–	36	31,2
25	5 ... 50	39,0	17	29,0	12	–	40	36,9
32	5, 10 ... 50	44,5	22	30,5	16	–	44,5	–
40	5 ... 50	54,0	22	40,0	16	–	52	–
50	10 ... 50	56,5	27	40,5	20	–	63,7	–
63	10 ... 50	58,0	27	42,0	20	–	76,7	–
80	10 ... 50	71,0	32	51,0	25	–	97,8	–
100	10 ... 50	84,5	46	60,5	30	–	115,3	–
125	10 ... 300	115	46	83,0	36	–	142	–
140	10 ... 300	115	46	83,0	36	–	158	–
160	10 ... 300	125	55	91,0	40	–	178	–

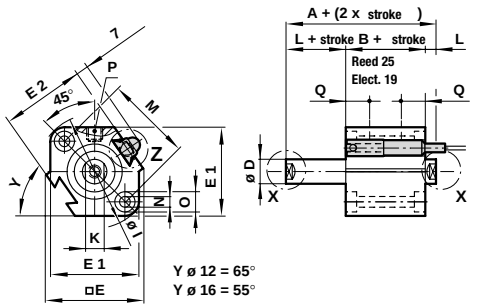
Ø	Stroke range	H	HM	Ø I	K	L	LM	M
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5	3,5	14	22
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40
32	5, 10 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	17	8	33,5	50
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	17	8	33,5	60
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94
125	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	190	32	16	58	114
140	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	210	32	16	58	128
160	10 ... 300	M24 x 3,0-27 deep	M36 x 1,5-47 deep	238	36	17	64	144

Ø	Stroke range	Ø N	Ø O	P*	Q	W	Z
12	5 ... 30	3,5	6,5 x 3,5 deep	M5 x 0,8	7,0	–	–
16	5 ... 30	3,5	6,5 x 3,5 deep	M5 x 0,8	7,8	–	–
20	5 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,1	–	–
25	5 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,4	–	–
32	5, 10 ... 50	5,5	9,0 x 7,0 deep	1/8*	8,7	49,3	21,4
40	5 ... 50	5,5	9,0 x 7,0 deep	1/8*	9,2	57,0	21,4
50	10 ... 50	6,6	11,0 x 8,0 deep	1/4*	10,5	70,6	26,5
63	10 ... 50	9	14,0 x 10,5 deep	1/4*	11,5	83,6	26,5
80	10 ... 50	11	17,5 x 13,5 deep	3/8*	14,0	104	30,0
100	10 ... 50	11	17,5 x 13,5 deep	3/8*	18,0	121,9	30,0
125	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	153	39,0
140	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	168	39,0
160	10 ... 300	14,5	24,2 x 21,2 deep	3/8*	27,5	188	39,0

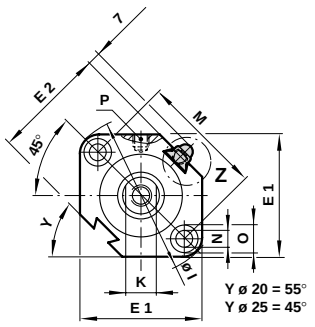
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

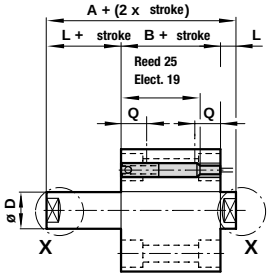
Double ended piston rod – DM/99000/JMX (Magnetic)

Ø 12 ... 16 mm

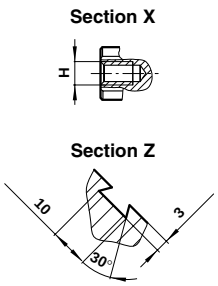


Ø 20 ... 25 mm

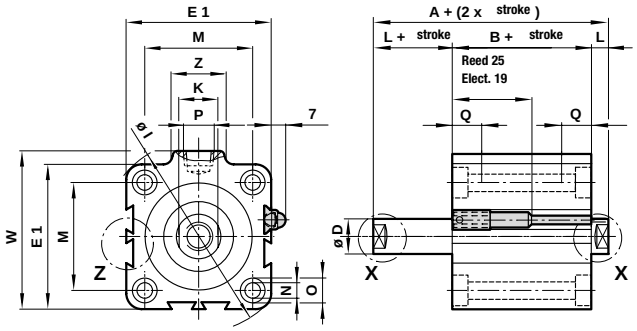


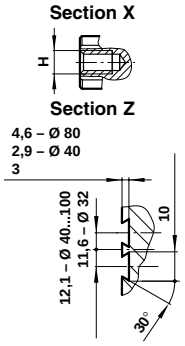


Ø 12 ... 25 mm



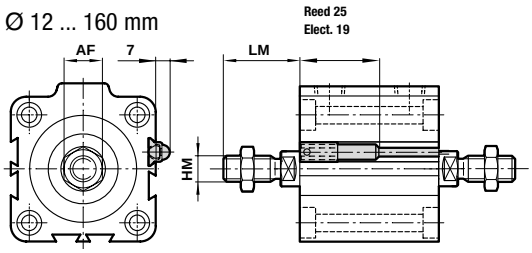
Ø 32 ... 160 mm





Cylinder with rod end male thread D*/99000/JM

Ø 12 ... 160 mm



Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2
12	5 ... 30	39,4	8	32,4	6	27,7	25	23
16	5 ... 30	43,0	10	36,0	8	31,7	29	27,2
20	5 ... 50	47,0	13	38,0	10	–	36	31,2
25	5 ... 50	49,0	17	39	12	–	40	36,9
32	5 ... 50	54,5	22	40,5	16	–	44,5	–
40	5 ... 50	64,0	22	50,0	16	–	52	–
50	10 ... 50	66,5	27	50,5	20	–	63,7	–
63	10 ... 50	68,0	27	52,0	20	–	76,7	–
80	10 ... 50	81,0	32	61,0	25	–	97,8	–
100	10 ... 50	94,5	46	70,5	30	–	115,3	–
125	10 ... 300	115	46	83,0	36	–	142	–
140	10 ... 300	115	46	83,0	36	–	158	–
160	10 ... 300	125	55	91,0	40	–	178	–

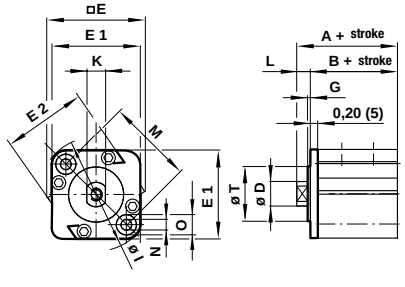
Ø	Stroke range	H	HM	Ø I	K	L	LM	M
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5	3,5	14	22
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40
32	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	17	8	33,5	50
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	17	8	33,5	60
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94
125	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	190	32	16	58	114
140	10 ... 300	M22 x 2,5-27 deep	M30 x 1,5-42 deep	210	32	16	58	128
160	10 ... 300	M24 x 3,0-27 deep	M36 x 1,5-47 deep	238	36	17	64	144

Ø	Stroke range	Ø N	Ø O	P*	Q	W	Z
12	5 ... 30	3,5	6,5 x 3,5 deep	M5 x 0,8	7,0	–	–
16	5 ... 30	3,5	6,5 x 3,5 deep	M5 x 0,8	7,8	–	–
20	5 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,1	–	–
25	5 ... 50	5,5	9,0 x 7,0 deep	M5 x 0,8	8,4	–	–
32	5 ... 50	5,5	9,0 x 7,0 deep	1/8*	8,7	49,3	21,4
40	5 ... 50	5,5	9,0 x 7,0 deep	1/8*	9,2	57,0	21,4
50	10 ... 50	6,6	11,0 x 8,0 deep	1/4*	10,5	70,6	26,5
63	10 ... 50	9	14,0 x 10,5 deep	1/4*	11,5	83,6	26,5
80	10 ... 50	11	17,5 x 13,5 deep	3/8*	14,0	104	30,0
100	10 ... 50	11	17,5 x 13,5 deep	3/8*	18,0	121,9	30,0
125	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	153	39,0
140	10 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	168	39,0
160	10 ... 300	14,5	24,2 x 21,2 deep	3/8*	27,5	188	39,0

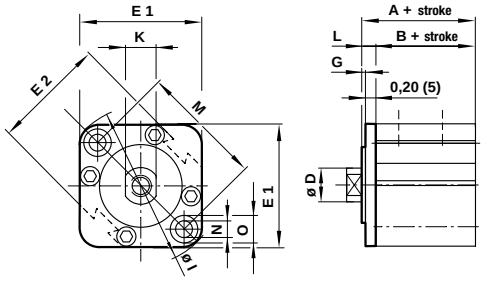
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

Cylinders with non-rotating piston rod – DM/99000/N1X (Non-magnetic)

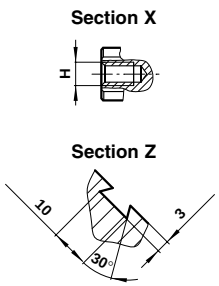
Ø 12 ... 16 mm



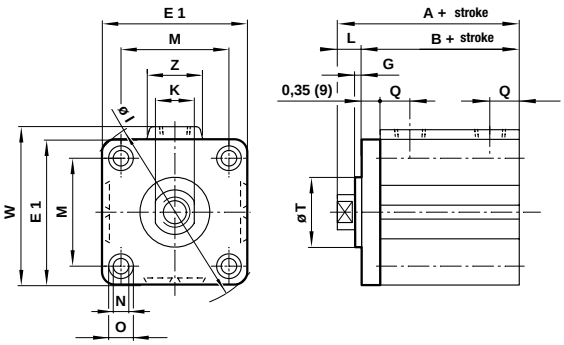
Ø 20 ... 25 mm



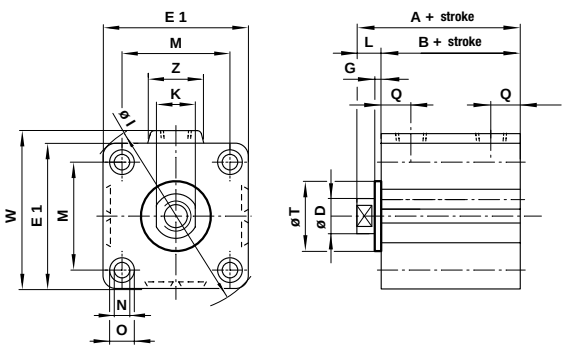
Ø 12 ... 25 mm

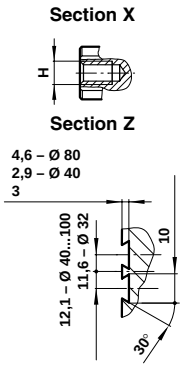


Ø 32 mm



Ø 40 ... 100 mm





WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT SCRATCH OR DENT SHAFT.

Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2	G
12	5 ... 30	25,5	8	22,0	6	27,7	25	23	1,5
16	5 ... 30	27,0	10	23,5	8	31,7	29	27,2	1,5
20	5 ... 50	32,0	13	27,5	10	–	36	31,2	2,0
25	5 ... 50	35,5	17	30,5	12	–	40	36,9	2,0
32	5, 10 ... 50	39,0	22	32,0	16	–	44,5	–	2,0
40	5 ... 50	36,5	22	29,5	16	–	52	–	2,0
50	10 ... 50	38,5	27	30,5	20	–	63,7	–	2,0
63	10 ... 50	44,0	27	36,0	20	–	76,7	–	2,0
80	10 ... 50	53,5	32	43,5	25	–	97,8	–	2,0
100	10 ... 50	65,0	46	53,0	30	–	115,3	–	2,0

Ø	Stroke range	H	HM	Ø I	K	L	LM	M	Ø N
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5,2	3,5	14	22	3,5
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28	3,5
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36	5,5
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40	5,5
32	5, 10 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34	5,5
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40	5,5
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	18	8	33,5	50	6,6
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	18	8	33,5	60	9
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77	11
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94	11

Ø	Stroke range	Ø O	P*	Q	Ø T	W	Z
12	5 ... 30	6,5 x 3,5	M5 x 0,8	7,0	15 ±0,043	–	–
16	5 ... 30	6,5 x 3,5	M5 x 0,8	7,8	20 ±0,052	–	–
20	5 ... 50	9,0 x 7,0	M5 x 0,8	8,1	13 ±0,043	–	–
25	5 ... 50	9,0 x 7,0	M5 x 0,8	8,4	15 ±0,043	–	–
32	5, 10 ... 50	9,0 x 7,0	M5 x 0,8	8,7	21 ±0,062	49,3	21,4
40	5 ... 50	9,0 x 7,0	1/8*	9,2	28 ±0,062	57,0	21,4
50	10 ... 50	11,0 x 8,0	1/4*	10,5	35 ±0,062	70,6	26,5
63	10 ... 50	14,0 x 10,5	1/4*	11,5	35 ±0,062	83,6	26,5
80	10 ... 50	17,5 x 13,5	3/8*	14,0	43 ±0,062	104	30,0
100	10 ... 50	17,5 x 13,5	3/8*	18,0	59 ±0,074	121,9	30,0

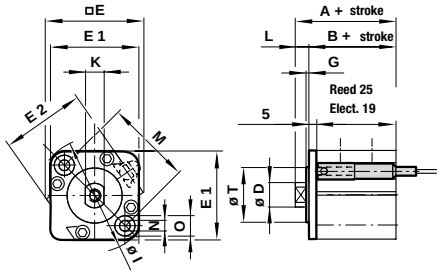
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

Non-rotation accuracy

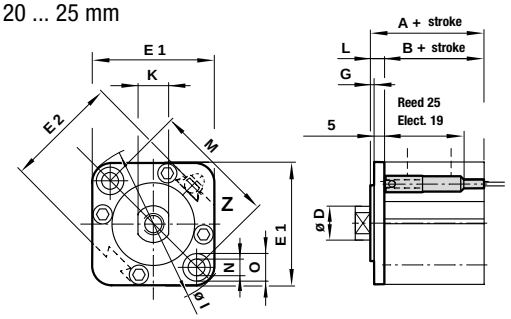
Ø	12	16	20	25	32	40	50	63	80	100
	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Cylinders with non-rotating piston rod – DM/99000/N2X (Magnetic)

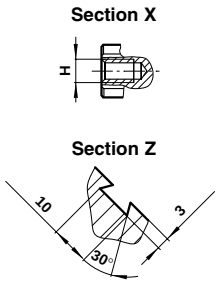
Ø 12 ... 16 mm



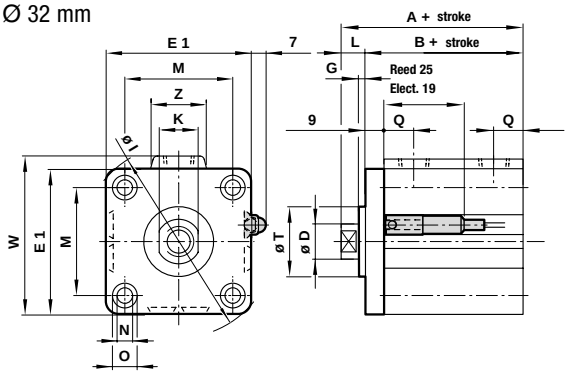
Ø 20 ... 25 mm



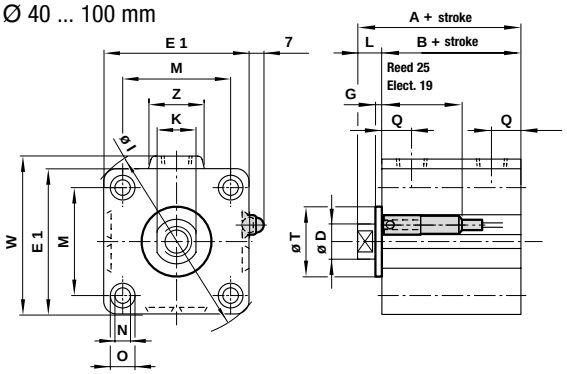
Ø 12 ... 25 mm

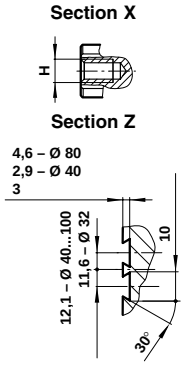


Ø 32 mm



Ø 40 ... 100 mm





WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT SCRATCH OR DENT SHAFT.

Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2	G
12	5 ... 30	36,5	8	33,0	6	27,7	25	23	1,5
16	5 ... 30	39,0	10	35,5	8	31,7	29	27,2	1,5
20	5 ... 50	44,0	13	39,5	10	–	36	31,2	2,0
25	5 ... 50	45,5	17	40,5	12	–	40	36,9	2,0
32	5, 10 ... 50	49,0	22	42,0	16	–	44,5	–	2,0
40	5 ... 50	46,5	22	39,5	16	–	52	–	2,0
50	10 ... 50	48,5	27	40,5	20	–	63,7	–	2,0
63	10 ... 50	54,0	27	46,0	20	–	76,7	–	2,0
80	10 ... 50	63,5	32	53,5	25	–	97,8	–	2,0
100	10 ... 50	75,0	46	63,0	30	–	115,3	–	2,0

Ø	Stroke range	H	HM	Ø I	K	L	LM	M	Ø N
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5,2	3,5	14	22	3,5
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28	3,5
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36	5,5
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40	5,5
32	5, 10 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34	5,5
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40	5,5
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	18	8	33,5	50	6,6
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	18	8	33,5	60	9
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77	11
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94	11

Ø	Stroke range	Ø O	P*	Q	Ø T	W	Z
12	5 ... 30	6,5 x 3,5	M5 x 0,8	7,0	15 ±0,043	–	–
16	5 ... 30	6,5 x 3,5	M5 x 0,8	7,8	20 ±0,052	–	–
20	5 ... 50	9,0 x 7,0	M5 x 0,8	8,1	13 ±0,043	–	–
25	5 ... 50	9,0 x 7,0	M5 x 0,8	8,4	15 ±0,043	–	–
32	5, 10 ... 50	9,0 x 7,0	M5 x 0,8	8,7	21 ±0,062	49,3	21,4
40	5 ... 50	9,0 x 7,0	1/8*	9,2	28 ±0,062	57,0	21,4
50	10 ... 50	11,0 x 8,0	1/4*	10,5	35 ±0,062	70,6	26,5
63	10 ... 50	14,0 x 10,5	1/4*	11,5	35 ±0,062	83,6	26,5
80	10 ... 50	17,5 x 13,5	3/8*	14,0	43 ±0,062	104	30,0
100	10 ... 50	17,5 x 13,5	3/8*	18,0	59 ±0,074	121,9	30,0

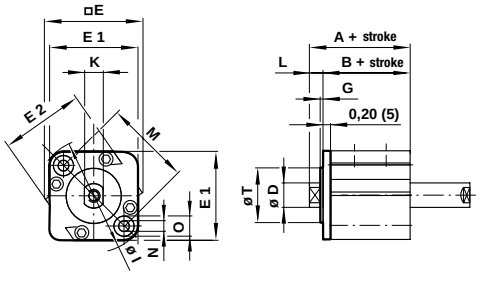
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

Non-rotation accuracy

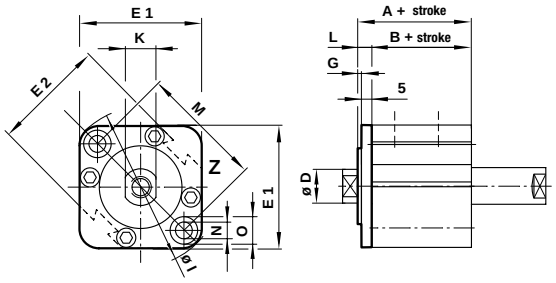
Ø	12	16	20	25	32	40	50	63	80	100
	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Cylinders with non-rotating piston rod – DM/99000/N5X (Non-magnetic)

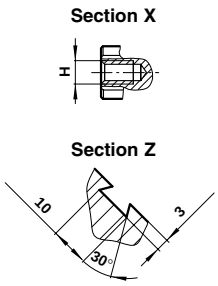
Ø 12 ... 16 mm



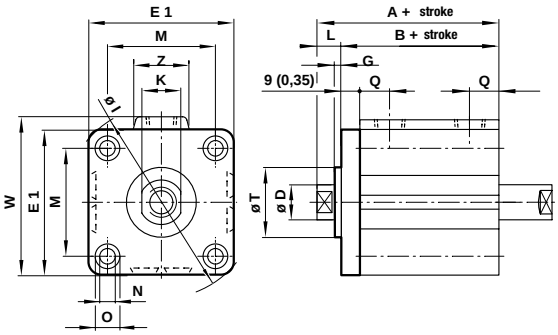
Ø 20 ... 25 mm



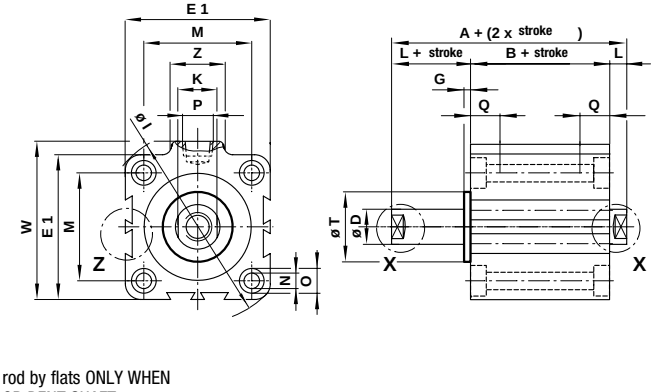
Ø 12 ... 25 mm



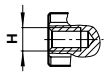
Ø 32 mm



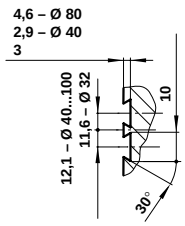
Ø 40 ... 100 mm



Section X



Section Z



WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT SCRATCH OR DENT SHAFT.

Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2	G
12	5 ... 30	37,2	8	30,2	6	27,7	25	23	1,5
16	5 ... 30	38,0	10	31,0	8	31,7	29	27,2	1,5
20	5 ... 50	43,0	13	34,0	10	–	36	31,2	2,0
25	5 ... 50	47,0	17	37,0	12	–	40	36,9	2,0
32	5, 10 ... 50	53,5	22	39,5	16	–	44,5	–	2,0
40	5 ... 50	54,0	22	40,0	16	–	52	–	2,0
50	10 ... 50	56,5	27	40,5	20	–	63,7	–	2,0
63	10 ... 50	58,0	27	42,0	20	–	76,7	–	2,0
80	10 ... 50	71,0	32	51,0	25	–	97,8	–	2,0
100	10 ... 50	84,5	46	60,5	30	–	115,3	–	2,0

Ø	Stroke range	H	HM	Ø I	K	L	LM	M	Ø N
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5,2	3,5	14	22	3,5
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28	3,5
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36	5,5
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40	5,5
32	5, 10 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34	5,5
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40	5,5
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	18	8	33,5	50	6,6
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	18	8	33,5	60	9
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77	11
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94	11

Ø	Stroke range	Ø O	P*	Q	Ø T	W	Z
12	5 ... 30	6,5 x 3,5	M5 x 0,8	7,0	15 ±0,043	–	–
16	5 ... 30	6,5 x 3,5	M5 x 0,8	7,8	20 ±0,052	–	–
20	5 ... 50	9,0 x 7,0	M5 x 0,8	8,1	13 ±0,043	–	–
25	5 ... 50	9,0 x 7,0	M5 x 0,8	8,4	15 ±0,043	–	–
32	5, 10 ... 50	9,0 x 7,0	M5 x 0,8	8,7	21 ±0,062	49,3	21,4
40	5 ... 50	9,0 x 7,0	1/8*	9,2	28 ±0,062	57,0	21,4
50	10 ... 50	11,0 x 8,0	1/4*	10,5	35 ±0,062	70,6	26,5
63	10 ... 50	14,0 x 10,5	1/4*	11,5	35 ±0,062	83,6	26,5
80	10 ... 50	17,5 x 13,5	3/8*	14,0	43 ±0,062	104	30,0
100	10 ... 50	17,5 x 13,5	3/8*	18,0	59 ±0,074	121,9	30,0

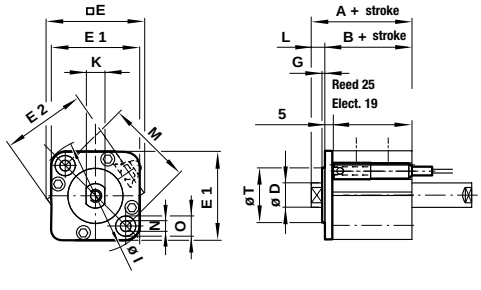
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

Non-rotation accuracy

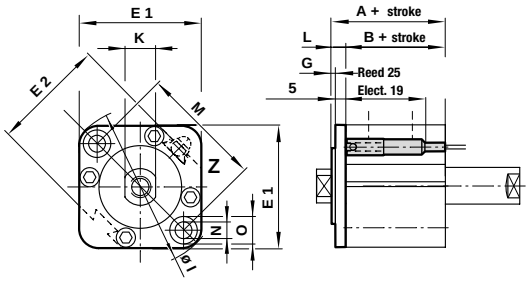
Ø	12	16	20	25	32	40	50	63	80	100
	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Cylinders with non-rotating piston rod – DM/99000/N6X (Magnetic)

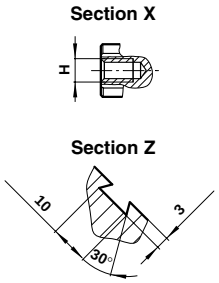
Ø 12 ... 16 mm



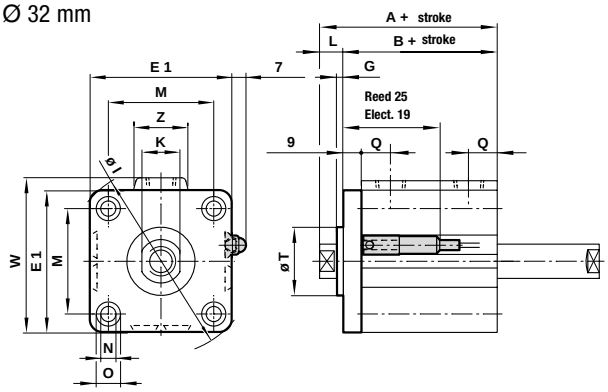
Ø 20 ... 25 mm



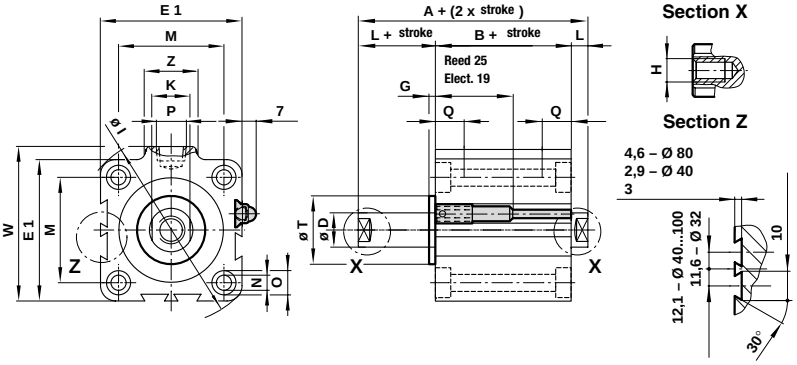
Ø 12 ... 25 mm



Ø 32 mm



Ø 40 ... 100 mm



WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT SCRATCH OR DENT SHAFT.

Ø	Stroke range	A	AF	B	Ø D	❑ E	E1	E2	G
12	5 ... 30	44,4	8	37,4	6	27,7	25	23	1,5
16	5 ... 30	48,0	10	41,0	8	31,7	29	27,2	1,5
20	5 ... 50	55,0	13	46,0	10	–	36	31,2	2,0
25	5 ... 50	57,0	17	47,0	12	–	40	36,9	2,0
32	5, 10 ... 50	63,5	22	49,5	16	–	44,5	–	2,0
40	5 ... 50	64,0	22	50,0	16	–	52	–	2,0
50	10 ... 50	66,5	27	50,5	20	–	63,7	–	2,0
63	10 ... 50	68,0	27	52,0	20	–	76,7	–	2,0
80	10 ... 50	81,0	32	61,0	25	–	97,8	–	2,0
100	10 ... 50	94,5	46	70,5	30	–	115,3	–	2,0

Ø	Stroke range	H	HM	Ø I	K	L	LM	M	Ø N
12	5 ... 30	M3 x 0,5-5 deep	M5 x 0,8-9 deep	31,5	5,2	3,5	14	22	3,5
16	5 ... 30	M4 x 0,7-5 deep	M6 x 1,0-10 deep	37,1	6	3,5	15,5	28	3,5
20	5 ... 50	M5 x 0,8-7 deep	M8 x 1,25-12 deep	47	8	4,5	18,5	36	5,5
25	5 ... 50	M6 x 1,0-10 deep	M10 x 1,25-15 deep	51,3	10	5	22,5	40	5,5
32	5, 10 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	58,9	14	7	28,5	34	5,5
40	5 ... 50	M8 x 1,25-12 deep	M14 x 1,5-20,5 deep	69	14	7	28,5	40	5,5
50	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	84,9	18	8	33,5	50	6,6
63	10 ... 50	M10 x 1,5-12 deep	M18 x 1,5-26 deep	101,8	18	8	33,5	60	9
80	10 ... 50	M16 x 2,0-22 deep	M22 x 1,5-32,5 deep	129,8	22	10	43,5	77	11
100	10 ... 50	M20 x 2,5-22 deep	M26 x 1,5-32,5 deep	153,9	27	12	43,5	94	11

Ø	Stroke range	Ø O	P*	Q	Ø T	W	Z
12	5 ... 30	6,5 x 3,5	M5 x 0,8	7,0	15 ±0,043	–	–
16	5 ... 30	6,5 x 3,5	M5 x 0,8	7,8	20 ±0,052	–	–
20	5 ... 50	9,0 x 7,0	M5 x 0,8	8,1	13 ±0,043	–	–
25	5 ... 50	9,0 x 7,0	M5 x 0,8	8,4	15 ±0,043	–	–
32	5, 10 ... 50	9,0 x 7,0	M5 x 0,8	8,7	21 ±0,062	49,3	21,4
40	5 ... 50	9,0 x 7,0	1/8*	9,2	28 ±0,062	57,0	21,4
50	10 ... 50	11,0 x 8,0	1/4*	10,5	35 ±0,062	70,6	26,5
63	10 ... 50	14,0 x 10,5	1/4*	11,5	35 ±0,062	83,6	26,5
80	10 ... 50	17,5 x 13,5	3/8*	14,0	43 ±0,062	104	30,0
100	10 ... 50	17,5 x 13,5	3/8*	18,0	59 ±0,074	121,9	30,0

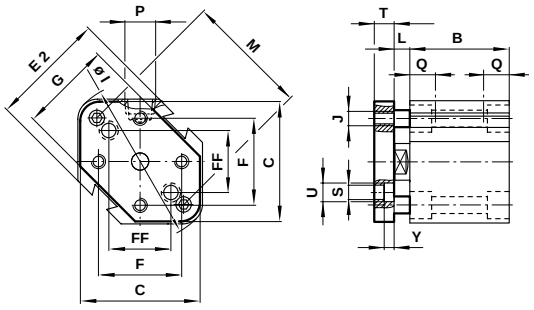
* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

Non-rotation accuracy

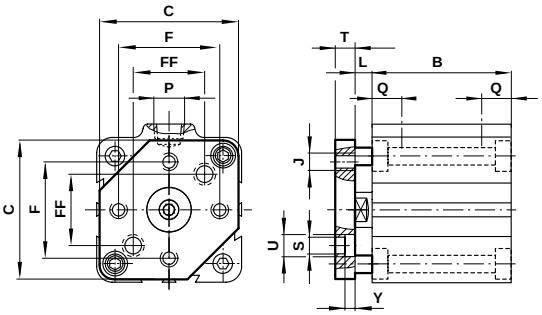
Ø	12	16	20	25	32	40	50	63	80	100
	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Guided toolplate – DM/99000/N3 (Non-magnetic)

Ø 12 ... 25 mm

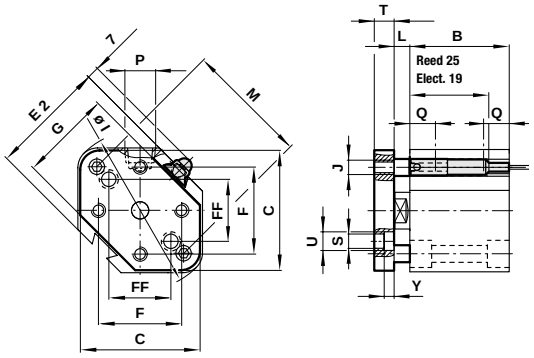


Ø 32 ... 160 mm

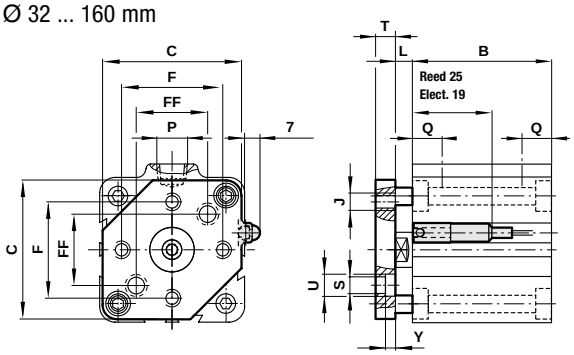


Guided toolplate – DM/99000/N4 (Magnetic)

Ø 12 ... 25 mm



Ø 32 ... 160 mm



Ø	Stroke range	C	E1	E2	F	FF	G	Ø I	J	L	M
12	5 ... 100	24	25	23	16	–	20,8	31,5	M3 x 0,5	3,5	22
16	5 ... 100	28	29	27,2	20	11	25	37,1	M4 x 0,7	3,5	28
20	5 ... 100	35	36	31,2	27	14,5	25,4	47	M6 x 1,0	4,5	36
25	5 ... 100	40	40	36,9	28,5	16,6	30	51,3	M6 x 1,0	5	40
32	5 ... 150	43,4	44,5	–	30	21,2	36,7	58,9	M5 x 0,8	7	34
40	5 ... 150	50,5	52	–	35	24,7	45,1	69	M6 x 1,0	7	40
50	5 ... 150	62,7	63,7	–	45,5	32,2	57,1	84,9	M8 x 1,25	8	50
63	5 ... 150	75,7	76,7	–	50,5	35,7	68,3	101,8	M10 x 1,5	8	60
80	5 ... 150	96,9	97,8	–	70	49,5	88,9	129,8	M12 x 1,75	10	77
100	5 ... 150	114,4	115,3	–	82,5	58,3	112,9	153,9	M12 x 1,75	12	94
125	5 ... 300	141	142	–	95	67,2	134,7	190	M14 x 2,0	16	114
140	5 ... 300	157	158	–	101,5	71,8	154,5	210	M14 x 2,0	16	128
160	5 ... 300	175,5	178	–	120,5	85,2	174,1	238	M16 x 2,0	17	144

Ø	Stroke range	N	O	P	Q	S	T	U	W	Y	Z
12	5 ... 100	–	–	M5 x 0,8	7	–	6,1	–	–	–	–
16	5 ... 100	–	6,5 x 3,5 deep	M5 x 0,8	7,8	3,3	6,1	–	–	–	–
20	5 ... 100	–	9,0 x 7,0 deep	M5 x 0,8	8,1	4,2	6,9	7	–	1,5	–
25	5 ... 100	–	9,0 x 7,0 deep	M5 x 0,8	8,4	4,2	8,3	–	–	–	–
32	5 ... 150	5,5	9,0 x 7,0 deep	1/8*‡	8,7	5,2	8,3	–	49,3	–	21,4
40	5 ... 150	5,5	9,0 x 7,0 deep	1/8*	9,2	6,1	8,3	–	57	–	21,4
50	5 ... 150	6,6	11,0 x 8,0 deep	1/4*	10,5	8,2	12,1	13,5	70,6	2,5	26,5
63	5 ... 150	9	14,0 x 10,5 deep	1/4*	11,5	11,5	12,5	16,5	83,6	3,3	26,5
80	5 ... 150	11	17,5 x 13,5 deep	3/8*	14	12,3	14	18,5	104	3,8	30
100	5 ... 150	11	17,5 x 13,5 deep	3/8*	18	12,3	14	18,5	121,9	3,2	30
125	5 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	14,3	21	–	153	–	39
140	5 ... 300	12,7	21,2 x 18,4 deep	3/8*	24,5	14,3	21	–	168	–	39
160	5 ... 300	14,5	24,2 x 21,2 deep	3/8*	27,5	16,7	21	–	188	–	39

* Port sizes: DM/99000/... = G (BSP parallel ports), DC/99000/... = NPT (NPT ports). Note: M5 x 0,8 port will accept #10-32 male thread fittings.

‡ Note: On 32 bore, 5 mm stroke, non-magnetic model only, port thread is M5 x 0,8 which will accept #10-32 male thread fittings.

Please see next page for 'B' and 'Q' dimensions.

Ø	Q Stroke (mm)						
	5 ... 45	5 ... 100	50	75	100	125, 150	175 ... 300
12	7	–	9	9	9	–	–
16	8	–	10	10	10	–	–
20	8	–	8	12	12	–	–
25	8,5	–	8,5	12,5	12,5	–	–
32	–	9	–	–	–	12,5	–
40	–	9	–	–	–	12,5	–
50	–	10,5	–	–	–	13	–
63	–	11,5	–	–	–	18,5	–
80	–	14	–	–	–	14	–
100	–	18	–	–	–	18	–
125	–	24,5	–	–	–	24,5	24,5
140	–	24,5	–	–	–	24,5	24,5
160	–	27,5	–	–	–	27,5	27,5

Non-magnetic piston

Ø	B Stroke (mm)													
	5	10	15	20	25	30	35	40	45	50	75	100	125	150
12	33	38	43	48	53	58	–	–	–	84	109	134	–	–
16	35,5	40,5	45,5	50,5	55,5	60,5	–	–	–	86	111	136	–	–
20	36,5	41,5	46,5	51,5	56,5	61,5	–	–	–	81,5	116,5	141,5	–	–
25	37,5	42,5	47,5	52,5	57,5	62,5	–	–	–	82,5	122,5	147,5	–	–
32	28	33	38	43	48	53	58	63	68	73	108	133	173	198
40	34,5	39,5	44,5	49,5	54,5	59,5	64,5	69,5	74,5	79,5	114,5	139,5	180,5	205,5
50	–	40,5	45,5	50,5	55,5	60,5	65,5	70,5	75,5	80,5	115,5	140,5	184,5	209,5
63	–	46	51	56	61	66	71	76	81	86	121	146	189,5	214,5
80	–	53,5	58,5	63,5	68,5	73,5	78,5	83,5	88,5	93,5	128,5	153,5	194,5	219,5
100	–	63	68	73	78	83	88	93	98	103	138	163	202	227
125	–	93	–	103	–	113	–	123	–	133	158	183	208	233
140	–	93	–	103	–	113	–	123	–	133	158	183	208	233
160	–	101	–	111	–	121	–	131	–	141	166	191	216	241

Magnetic piston

Ø	B Stroke (mm)													
	5	10	15	20	25	30	35	40	45	50	75	100	125	150
12	33	38	43	48	53	58	–	–	–	84	109	134	–	–
16	35,5	40,5	45,5	50,5	55,5	60,5	–	–	–	86	111	136	–	–
20	36,5	41,5	46,5	51,5	56,5	61,5	–	–	–	81,5	116,5	141,5	–	–
25	37,5	42,5	47,5	52,5	57,5	62,5	–	–	–	82,5	122,5	147,5	–	–
32	38	43	48	53	58	63	68	73	78	83	108	133	173	198
40	44,5	49,5	54,5	59,5	64,5	69,5	74,5	79,5	84,5	89,5	114,5	139,5	180,5	205,5
50	–	50,5	55,5	60,5	65,5	70,5	75,5	80,5	85,5	90,5	115,5	140,5	184,5	209,5
63	–	56	61	66	71	76	81	86	91	96	121	146	189,5	214,5
80	–	63,5	68,5	73,5	78,5	83,5	88,5	93,5	98,5	103,5	128,5	153,5	194,5	219,5
100	–	73	78	83	88	93	98	103	108	113	138	163	201,5	226,5
125	–	93	–	103	–	113	–	123	–	133	158	183	208	233
140	–	93	–	103	–	113	–	123	–	133	158	183	208	233
160	–	101	–	111	–	121	–	131	–	141	166	191	216	241

Maximum allowable load at toolplate

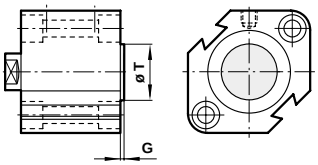
Ø	Stroke (mm) 5	10	15	20	25	30	35	40	45
12	3,54	2,72	1,36	1,14	0,95	0,86	–	–	–
16	4,99	4,09	2,13	1,86	1,54	1,32	–	–	–
20	7,72	7,26	4,99	4,09	3,18	2,81	2,59	2,36	2,27
25	8,17	7,49	5,45	4,77	4,09	3,41	2,72	2,50	2,36
32	10,90	9,08	7,04	6,13	4,99	4,54	3,63	3,41	3,27
40	11,80	9,99	7,72	6,45	5,31	4,81	3,90	3,68	3,54
50	–	15,66	14,07	12,71	11,35	10,44	9,99	8,63	7,26
63	–	25,42	22,70	21,11	17,25	14,98	13,17	10,44	8,85
80	–	38,59	35,82	33,14	30,87	28,60	26,79	20,43	16,80
100	–	42,00	38,59	35,87	33,60	31,33	29,51	22,25	17,71
125	–	44,95	–	38,59	–	34,05	–	24,06	–
140	–	48,58	–	42,22	–	36,77	–	25,88	–
160	–	76,27	–	66,28	–	57,66	–	42,22	–

Ø	Stroke (mm) 50	75	100	125	150	175	200	250	300
12	0,50	0,41	0,32	–	–	–	–	–	–
16	0,77	0,64	0,41	–	–	–	–	–	–
20	2,09	1,23	0,77	–	–	–	–	–	–
25	2,18	1,32	0,86	–	–	–	–	–	–
32	3,04	2,45	1,91	0,73	0,41	–	–	–	–
40	3,22	2,63	2,90	0,86	0,54	–	–	–	–
50	5,90	4,81	4,13	1,36	1,04	–	–	–	–
63	8,40	6,63	5,49	2,04	1,41	–	–	–	–
80	14,98	12,08	10,26	3,81	2,63	–	–	–	–
100	15,89	13,17	11,17	4,13	2,86	–	–	–	–
125	16,80	14,07	11,80	5,45	4,31	3,31	2,50	1,68	1,23
140	19,98	19,07	15,89	7,26	5,90	4,31	3,45	2,63	2,04
160	32,69	31,33	25,89	11,80	9,53	6,95	5,54	5,13	4,59

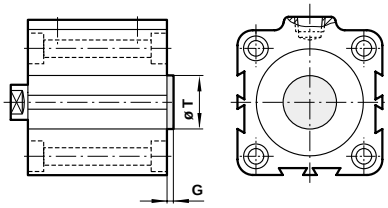
Figures in kg

Boss, cap end – DM/99000/FX

Ø 12 ... 25 mm



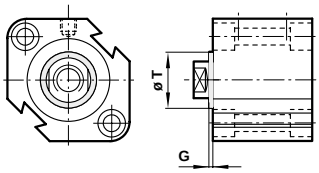
Ø 32 ... 160 mm



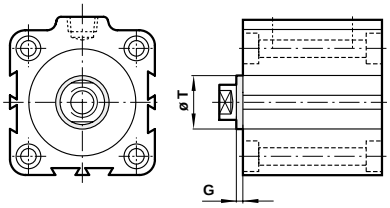
Ø	Ø T	G
12	15 ±0,043	1,5
16	20 ±0,052	1,5
20	13 ±0,043	2,0
25	15 ±0,043	2,0
32	21 ±0,062	2,0
40	28 ±0,062	2,0
50	35 ±0,062	2,0
63	35 ±0,062	2,0
80	43 ±0,062	2,0
100	59 ±0,074	2,0

Boss, rod end – DM/99000/EX

Ø 12 ... 25 mm

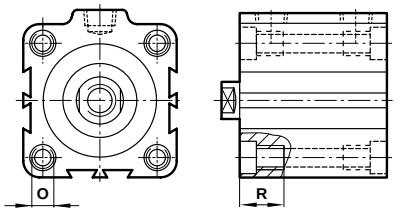


Ø 32 ... 160 mm



Mountings
Tapped hole mounting both ends – A

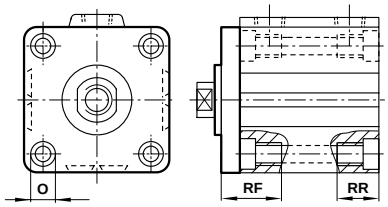
For single and double ended piston rod



Ø	O	R
12	M4 x 0,7	11
16	M4 x 0,7	11
16	M6 x 1,0	17
25	M6 x 1,0	17
32	M6 x 1,0	17
40	M6 x 1,0	19
50	M8 x 1,25	19
63	M10 x 1,5	22
80	M12 x 1,75	29
100	M12 x 1,75	29
125	M14 x 2,0	45
140	M14 x 2,0	45
160	M16 x 2,0	50

Note: Inch threads for 'C' port code.
Metric threads for 'M' port codes.
Metric for foot, flange, or clevis mount.

For cylinders with non-rotating piston rod

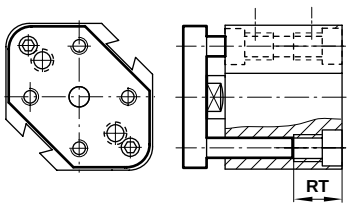


Ø	O	Places front	RF	Places rear	RR
12	M4 x 0,7	2	16	2	11
16	M4 x 0,7	2	16	2	11
16	M6 x 1,0	2	25	2	17
25	M6 x 1,0	2	25	2	17
32	M6 x 1,0	2	26	4	17
40	M6 x 1,0	4	19	4	19
50	M8 x 1,25	4	19	4	19
63	M10 x 1,5	4	22	4	22
80	M12 x 1,75	4	29	4	29
100	M12 x 1,75	4	29	4	29

Note: Inch threads for 'C' port code.
Metric threads for 'M' port codes.
Metric for foot, flange, or clevis mount.

For cylinders with toolplate

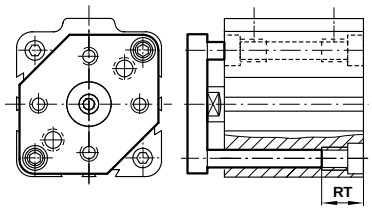
Ø 12 .... 25 mm



Ø	OT	RT
12	M4 x 0,7	9,7
16	M4 x 0,7	13
20	M6 x 1,0	13,5
25	M6 x 1,0	15
32	M6 x 1,0	17
40	M6 x 1,0	19
50	M8 x 1,25	19
63	M10 x 1,5	22
80	M12 x 1,75	29
100	M12 x 1,75	29
125	M14 x 2,0	40
140	M14 x 2,0	40
160	M16 x 2,0	45,2

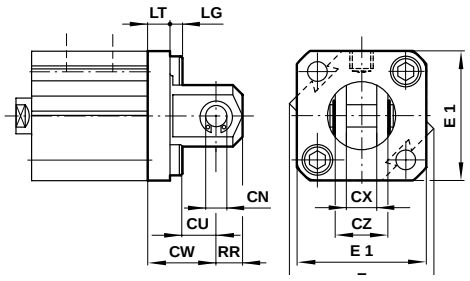
Note: Inch threads for 'C' port code.
Metric threads for 'M' port codes.
Metric for foot, flange, or clevis mount.

Ø 32 .... 100 mm

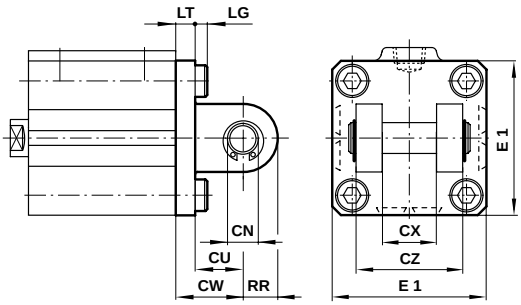


Rear clevis mounting – D

Ø 12 ... 25 mm



Ø 32 ... 100 mm

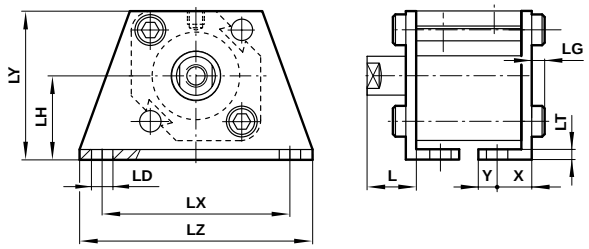


Ø	CN	CW	CU	CX	CZ	LT	LG	RR	E1	❑ E	kg
12	5	14	7	5,3	10	5	2,8	6,0	25	27,7	0,02
16	5	15	10	6,8	12	5	2,8	6,0	29	31,7	0,02
20	8	18	12	8,3	16	5	4,0	9,0	36	–	0,05
25	10	20	14	10,3	20	5	4,0	10	40	–	0,07
32	10	20	14	18,3	36	6	4,0	10	44,5	–	0,09
40	10	22	14	18,3	36	8	4,0	10	52	–	0,13
50	14	28	20	22,3	44	8	5,0	14	63,7	–	0,22
63	14	30	20	22,3	44	10	6,0	14	76,7	–	0,34
80	18	38	27	28,3	56	11	7,0	18	97,8	–	0,54
100	22	45	31	32,3	64	14	7,0	22	115,3	–	0,90

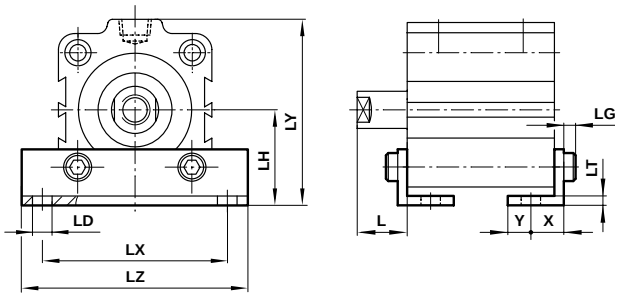
For basic cylinder dimensions, see pages N 1.5.099.04 ... N 1.5.099.12

Foot mounting – C

Ø 12 ... 25 mm



Ø 32 ... 100 mm

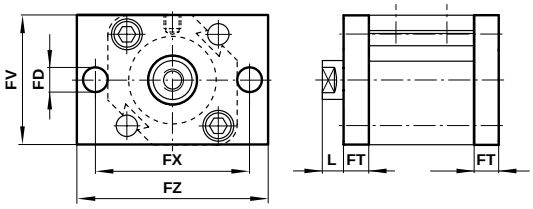


Ø	LD	LH	LX	LY	LZ	L	LT	X	Y	LG	kg
12	4,5	17	34	29,5	44	13,5	2	8	4,5	2,8	0,02
16	4,5	19	38	33,5	48	13,5	2	8	5	2,8	0,02
20	6,5	24	48	42	62	14,5	3,2	9,2	5,8	4	0,02
25	6,5	26	52	46	66	15	3,2	10,7	5,8	4	0,04
32	6,5	30	57	57	71	17	3,2	11,2	5,8	4	0,04
40	6,5	33	64	64	78	17	3,2	11,2	7	4	0,10
50	9	39	79	78	95	18	3,2	14,7	8	5	0,11
63	11	46	95	91,5	113	18	3,2	16,2	9	6	0,13
80	13	59	118	114	140	20	4,5	19,5	11	7	0,18
100	13	71	137	136	162	22	6	23	12,5	7	0,47

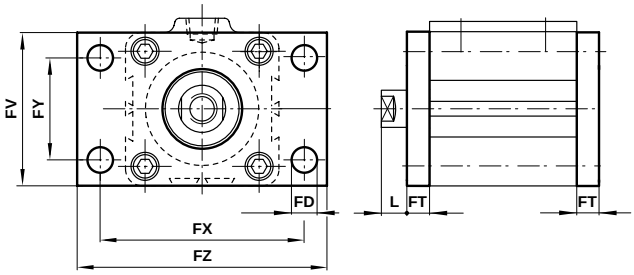
For basic cylinder dimensions, see pages N 1.5.099.04 ... N 1.5.099.12

Flange rod end mounting – G
Flange cap end mounting – B
ISO Flange mounting – IF
ISO Flange rod end mounting – IG
ISO Flange cap end mounting – IB

Ø 12 ... 25 mm



Ø 32 ... 100 mm



ISO | **Non-ISO**

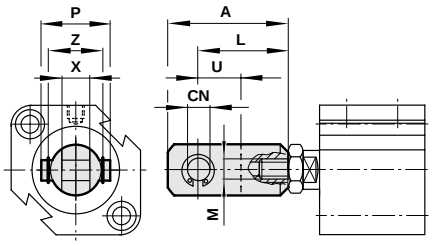
Ø	FT	L	FD	FY	FX	FV	FZ	FD	FY	FX	FV	FZ	kg
12	5,5	8	5,5	–	40	25	50	4,5	–	45	25	55	0,02
16	5,5	8	5,5	–	40	30	50	4,5	–	45	30	55	0,02
20	8	6,5	6,5	–	50	39	62	6,5	–	48	39	60	0,02
25	8	7	6,5	–	50	42	62	6,5	–	52	42	64	0,04
32	8	9	7	32	64	48	76	5,5	34	56	48	65	0,06
40	8	9	9	36	72	54	88	5,5	40	62	54	72	0,15
50	9	9	9	45	90	67	106	6,5	50	76	67	89	0,16
63	9	9	9	50	100	80	116	0,35	60	92	80	108	0,32
80	11	9	12	63	126	99	150	0,43	77	116	99	134	0,40
100	11	11	14	75	150	117	178	0,43	94	136	117	154	0,70

For basic cylinder dimensions, see pages N 1.5.099.04 ... N 1.5.099.12

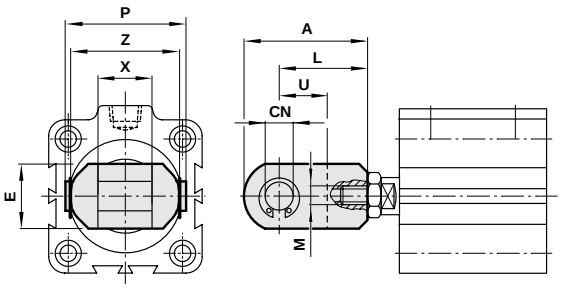
Accessories

Piston rod clevis

Ø 12 ... 25 mm



Ø 32 ... 100 mm



Ø	Model Inch	Metric	CN	M	L	U	X	Z	P	E	A	kg
12	QC/99012/25	QM/99012/25	5	M5 x 0,8 deep	16	7	5,3	10	14	10	21,5	0,01
16	QC/99016/25	QM/99016/25	5	M6 x 1,0 deep	21	10	6,6	12	16	12	28	0,01
20	QC/99020/25	QM/99020/25	8	M8 x 1,25 deep	25	11,5	8,3	16	21	16	34	0,01
25	QC/99025/25	QM/99025/25	10	M10 x 1,25 deep	30	14	10,3	20	25	20	41	0,01
32	QC/99032/25	QM/99032/25	10	M14 x 1,5 deep	30	14	18,4	36,6	41	22	42	0,02
40	QC/99040/25	QM/99032/25	10	M14 x 1,5 deep	30	14	18,4	36,6	41	22	42	0,02
50	QC/99050/25	QM/99050/25	14	M18 x 1,5 deep	40	20	22,4	44,5	50	28	56	0,04
63	QC/99050/25	QM/99050/25	14	M18 x 1,5 deep	40	20	22,4	44,5	50	28	56	0,09
80	QC/99080/25	QM/99080/25	18	M22 x 1,5 deep	50	27	28,4	55,6	62,5	38	71	0,22
100	QC/99100/25	QM/99100/25	22	M26 x 1,5 deep	55	31	32,4	63,5	70,6	44	79	0,22

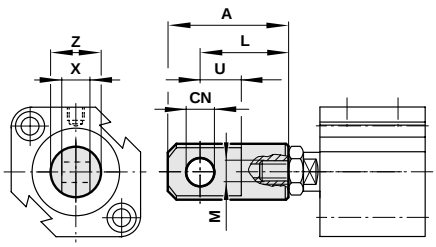
For basic cylinder dimensions, see pages N 1.5.099.04 ... N 1.5.099.12

Ordering information

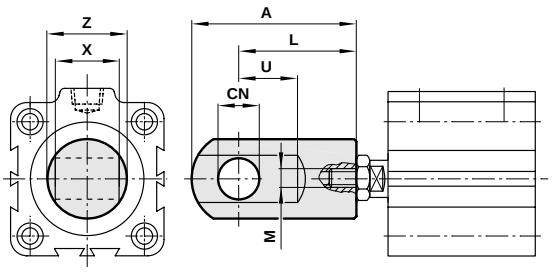
To order a basic 25 mm bore cylinder with a 10 mm stroke, quote: **DM/99025/10** plus piston rod clevis mounting: **QM/99025/25**

Piston rod eye

Ø 12 ... 25 mm



Ø 32 ... 100 mm



Ø	Model Inch	Metric	CN	M	L	U	X	Z	A	kg
12	QC/99012/32	QM/99012/32	5	M5 x 0,8 deep	16	7	4,7	9,7	21	0,02
16	QC/99016/32	QM/99016/32	5	M6 x 1,0 deep	25	14	6,2	11,2	32	0,02
20	QC/99020/32	QM/99020/32	8	M8 x 1,25 deep	25	11,5	7,7	16	34	0,05
25	QC/99025/32	QM/99025/32	10	M10 x 1,25 deep	30	14	9,7	19	41	0,07
32	QC/99032/32	QM/99032/32	10	M14 x 1,5 deep	30	14	17,5	22	42	0,09
40	QC/99040/32	QM/99032/32	10	M14 x 1,5 deep	30	14	17,5	22	42	0,13
50	QC/99050/32	QM/99050/32	14	M18 x 1,5 deep	40	20	21,5	27	56	0,33
63	QC/99050/32	QM/99050/32	14	M18 x 1,5 deep	40	20	21,5	27	56	0,33
80	QC/99080/32	QM/99080/32	18	M22 x 1,5 deep	50	27	27,5	38	71	0,67
100	QC/99100/32	QM/99100/32	22	M26 x 1,5 deep	55	31	31,5	44,5	79	0,67

For basic cylinder dimensions, see pages N 1.5.099.04 ... N 1.5.099.12

Ordering information

To order a basic 25 mm bore cylinder with a 10 mm stroke, quote: **DM/99025/10** plus piston rod eye mounting: **QM/99025/32**

Spares

Cylinder	Spares kit
D*/99012	QM/99012/00
D*/99016	QM/99016/00
D*/99020	QM/99020/00
D*/99025	QM/99025/00
D*/99032	QM/99032/00
D*/99040	QM/99040/00
D*/99050	QM/99050/00
D*/99063	QM/99063/00
D*/99080	QM/99080/00
D*/99100	QM/99100/00
D*/99125	QM/99125/00
D*/99160	QM/99160/00

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.