

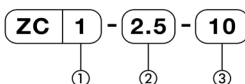
Z series

Air Cylinder / Standard Type(Single acting)

Ø2.5, Ø4



Ordering Instructions



① Action

Single-acting spring return

② Bore(mm)

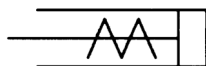
2.5 : Ø2.5

4 : Ø4

③ Stroke A(mm)

Bore	Stroke
Ø2.5	5, 10
Ø4	5, 10

JIS Label



Single acting (Spring return)

Value shown in this catalog is shown in SI unit. However, value within this output table is in generic unit. Use the following formula to convert to SI unit :

Pressure Y(MPa) =

$X(\text{kgf/cm}^2) \times 9.80665 \times 10^{-2}$

Force Y(N) =

$X(\text{kgf}) \times 9.80665$

Specifications

Action	Unit	Single-acting
Fluid		Non-lubricated air
Pressure range	MPa[kgf/cm ²]	0.35~0.7[3.6~7.1]
Temperature range	°C	5~60
Proof pressure	MPa[kgf/cm ²]	1.05[10.7]
Piston speed range	mm/s	50~500
Cushion		Unavailable
Piston Stroke allowance	mm	$\begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$
Mounting		Base mounting (Standard)

Note: converted to SI unit: 0.1Mpa = 1.02kgf/cm²

Standard Stroke

(Unit: mm)

Bore	Standard stroke	Max. stroke
Ø2.5	5, 10	10
Ø4	5, 10	10

Spring Tension

(Unit: kgf)

Bore(mm)	Stroke = 0	Max. stroke
Ø2.5	0.06	0.12
Ø4	0.15	0.29

Theoretical Output(Out stroke)

(Unit: kgf)

Bore (mm)	Operating pressure(kgf/cm ²)			
	4	5	6	7
Ø2.5	0.19	0.24	0.29	0.34
Ø4	0.50	0.62	0.75	0.87

Note: Effective output = Theoretical output x 0.85

Output of a single acting cylinder is calculated by subtracting the spring tensile strength.

Cylinder Mass

(Unit: g)

Bore(mm)	Stroke(mm)	
	5	10
Ø2.5	1.5	2
Ø4	4.5	5

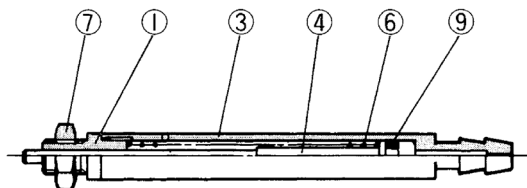
Accessories

Name		Nose mounting (Standard)
Standard	Nose nut	○
	Rod end nut	○ (Not provided for Ø2.5)

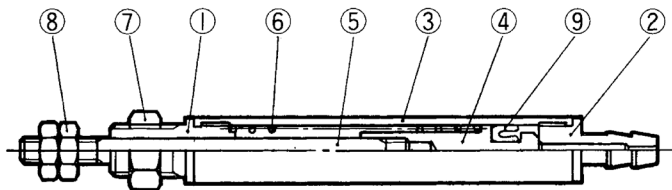
Applicable Tube

Type of tube	Material	Size(mm)		Tube model No.
		O.D.	I.D.	
Millimeter size	Nylon	4	2.5	100U04

ZC1-2.5-□



ZC1-4-□

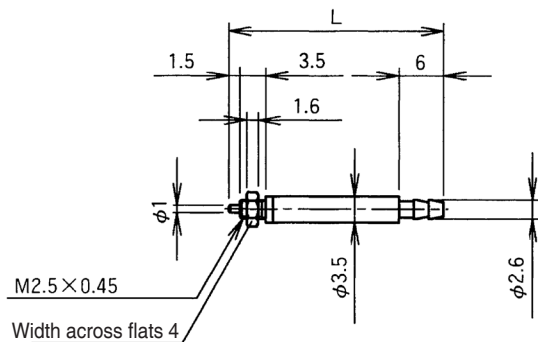


List of Parts

No.	Name
1	Rod cover
2	Head cover
3	Cylinder tube
4	Piston
5	Piston rod
6	Return spring
7	Nose nut
8	Rod end nut
9	Piston cushion

ZC1-2.5-□

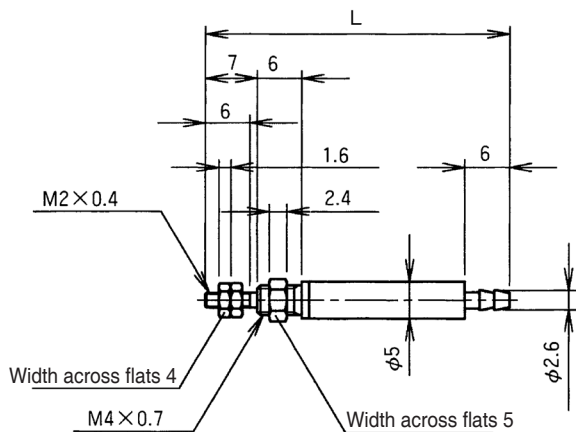
(Unit: mm)



L	
5st	10st
29	38

ZC1-4-□

(Unit: mm)



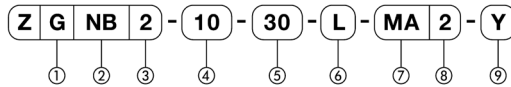
L	
5st	10st
41	50

Z series

Air Cylinder / Standard Type

Ø6, Ø10, Ø16

Ordering Instructions



① Magnet

C: No magnet (switch unavailable)

G: With built-in magnet (switch available)

② Port position

No label : At right angles to piston axis
(Standard)

NB : In direction of piston axis

③ Action

2: Double-acting, single rod

1: Single-acting (Spring return)

0: Single-acting (Spring extend)

④ Bore (mm)

6 : Ø6

10 : Ø10

16 : Ø16

⑤ Stroke (mm)

Bore	Stroke
Ø6	15, 30, 45, 60
Ø10	15, 30, 45, 60
Ø16	15, 30, 45, 60

Model No. of Switch Mounting Bracket

Bore (mm)	M type switch
Ø6	Z6-MJ
Ø10	Z10-MJ
Ø16	Z16-MJ

⑥ Mounting

N : One side nose mounting

L : One side foot mounting

A : Flange mounting

W : Female clevis (Except Ø6)

⑦ Sensor switch type

No label	No switch	
MA	MA-1 (AC110V, DC24V)	M type reed switch
MB	MD-1 (DC24V)	
MC	MD-3 (DC5, 6V)	
MD	MR (AC, DC5~110V)	
ME	MA-2L (AC110V)	
MF	MA-2H (AC220V)	M type proximity switch
MG	MT-3 (DC5~30V)	
MH	MT-3U (DC5~30V)	
MJ	MT-2 (DC24V)	
MK	MT-2U (DC24V)	

⑧ Number of switches

No label : No switch

2 : With 2 units

1 : With 1 unit

⑨ Accessories

No mark: With rod end nut

Y : Rod end female clevis

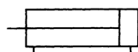
I : Rod end male clevis

Model No. of Mounting Bracket

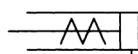
Bore (mm)	Ø6	Ø10	Ø16
Foot mounting	Z6-L	Z10-L	Z16-L
Flange mounting	Z6-A	Z10-A	Z16-A
Rear hinge	Z6-BY	Z10-BY	Z16-BY



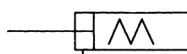
JIS Label



Double acting



Single acting(Spring return)



Single acting(Spring extend)

Value shown in this catalog is shown in SI unit. However, value within this output table is in generic unit. Use the following formula to convert to SI unit :

Pressure :

$$Y(\text{MPa}) = X(\text{kgf/cm}^2) \times 9.80665 \times 10^{-2}$$

Force :

$$Y(\text{N}) = X(\text{kgf}) \times 9.80665$$

Spring Tension

(Unit: kgf)

Bore(mm)	At stroke 0	At max stroke
∅6	0.2	0.53
∅10	0.3	0.55
∅16	0.67	1.3

Head Cover Port Position

In case of nose mounting, the head cover port position would differ depending on the type :

No mark	
	At right angles to piston axis(Standard)
NB	
	In direction of piston axis

Specifications

Action	Unit	Double-acting	Single-acting
Fluid		Non-lubricated air (Lubricated air)	
Pressure range	∅6	MPa (kgf/cm ²)	0.12~0.7 (1.2~7.1)
	∅10, ∅16	MPa (kgf/cm ²)	0.1~0.7 (1~7.1)
Proof pressure	MPa (kgf/cm ²)	1.05 (10.7)	
Temperature range	°C	5~60	
Piston speed range	mm/s	50~500	
Cushion		Built-in gasket	
Piston stroke allowance	mm	+1.0 0	
Mounting		Nose mounting, Foot mounting, Flange mounting, Female clevis	

Accessories

Name		Nose mounting	Foot mounting	Mounting flange	Female clevis
Standard	Nose nut	○	○	○	-
	Rod end nut	○	○	○	○
	Clevis pin	-	-	-	○
	Air chuck	○	○	○	○
Optional	Rod end female clevis	Except for ∅6	○	○	○
	Rod end male clevis		○	○	○
	Rear hinge		-	-	○
			-	-	-

Standard Stroke(Out stroke)

(Unit: mm)

Acting	Bore	Standard Stroke	Max. Stroke
Double acting	∅6	15, 30, 45, 60	100
	∅10		150
	∅16		
Single acting	∅6	15, 30, 45, 60	60
	∅10		90
	∅16		

Theoretical Output(Out stroke)

(Unit: kgf)

Bore (mm)	Operating pressure					
	2	3	4	5	6	7
∅6	0.57	0.84	1.12	1.40	1.68	1.96
∅10	0.57	2.36	3.14	3.93	4.71	5.50
∅16	4.02	6.03	8.04	10.05	12.06	14.07

Note: Effective output = Theoretical output x 0.85

The output of single acting cylinder is calculated by subtracting the spring tension.

Single acting

(Unit: g)

Bore (mm)	Mounting	Stroke(mm)			
		15	30	45	60
Ø6	Nose mounting	18	20	23	26
	Female clevis	24	27	29	32
Ø10	Nose mounting	27	34	41	48
	Female clevis	40	47	54	61
Ø16	Nose mounting	54	68	82	96
	Female clevis	86	100	114	128

Double acting

(Unit: g)

Bore (mm)	Mounting	Stroke(mm)			
		15	30	45	60
Ø6	Nose mounting	16	18	19	21
	Female clevis	22	24	25	27
Ø10	Nose mounting	28	32	36	40
	Female clevis	42	45	49	53
Ø16	Nose mounting	53	61	69	77
	Female clevis	86	93	101	109

Model With Switch**M Type Reed Switch****Lead Wire Type**

Model No.	Rated voltage(V)	Rated current range(mA)	Pilot lamp (Lights up at ON)	Application
MA-1	AC110	5~45	○	Relay / PLC
	DC24	5~45		
MD-1	DC24	25~65	○	Relay
MD-3	DC5,6	Max.50(Inductive load) Max.300(Resistive load)	○	IC circuit
MR	AC 5~110 DC 5~110	Max.50(Inductive load) Max.300(Resistive load)	Without indicator light	Relay / PLC
MA-2L	AC100/110	5~150	○	Relay
MA-2H	AC200/220	5~150	○	Relay

M Type Proximity Switch**Lead Wire Type**

Model No.	Rated voltage (V)	Rated current range(mA)	Pilot lamp (Lights up at CN)	Application
MT-2 MT-2U	DC24 (DC10~30)	5~100	○	Relay / PLC
MT-3 MT-3U	DC5~30	5~200	○	Relay / PLC IC circuit

Minimum Stroke With M Type Switch(Unit: mm)

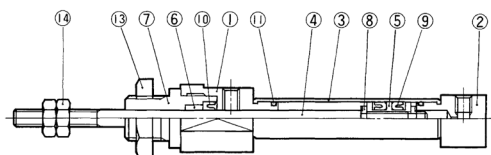
Bore	Number of switches		
	With 2 units (On the same surface)	With 2 units (On different surface)	With 1 unit
Ø6	40	15	15
Ø10			
Ø16	35		

Note: The MA-2L is the same as the MA-1 except that MA-2L is also equipped with protective circuit SS-2L.

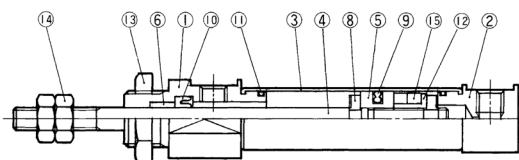
The MA-2H is the same as the MA-1 except that MA-2H is also equipped with protective circuit SS-2H.

Double acting (Indecomposable)

Ø6



Ø10, Ø16

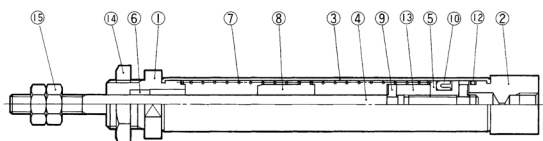


No.	Name	No.	Name	No.	Name
1	Rod cover	6	Bearing	11	O-ring
2	Head cover	7	Bearing bush	12	Magnet holder
3	Cylinder tube	8	Damper cushion	13	Nose nut
4	Piston	9	Piston parking	14	Rod end nut
5	Piston rod	10	Rod parking	15	Magnet

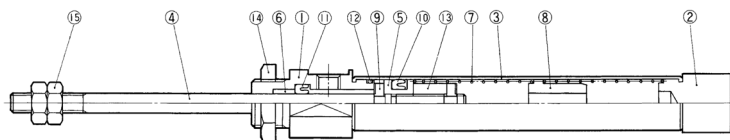
Note: Can't be disassembled.

Single acting (Indecomposable)

Spring return



Spring extend

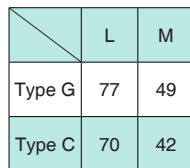


No.	Name	No.	Name	No.	Name
1	Rod cover	6	Bearing	11	Rod parking
2	Head cover	7	Return spring	12	O-ring
3	Cylinder tube	8	Spring base	13	Collar
4	Piston	9	Gasket cushion	14	Nose nut
5	Piston rod	10	Piston parking	15	Rod end nut

Note: Can't be disassembled.

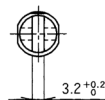
(Unit: mm)

Series



	Lg	Li
Type G	56	60
Type C	49	53

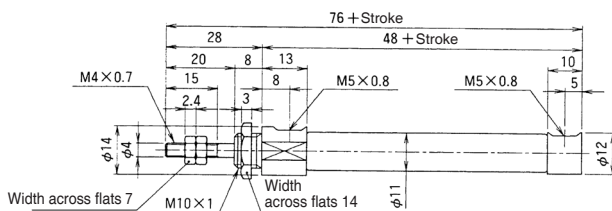
	L	M
Type G	85	57
Type C	78	50



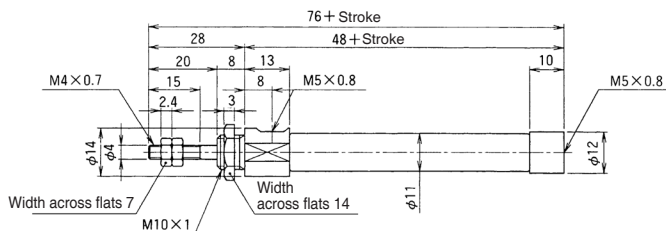
Double-acting $\varnothing 10$ / ZG2-10

(Unit: mm)

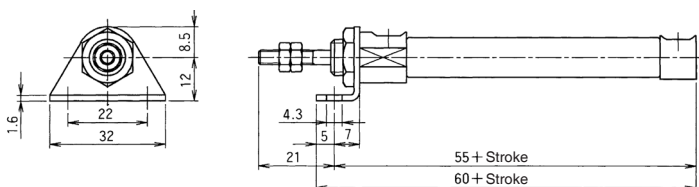
One side nose mounting / N



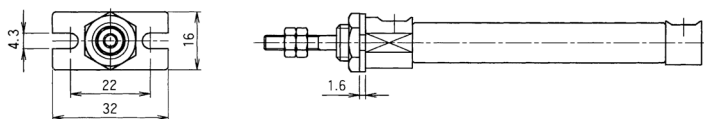
One side nose mounting / N port position NB (Z□NB2)



One side foot mounting / L

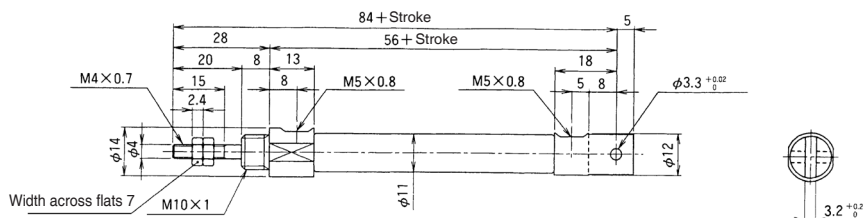


Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)

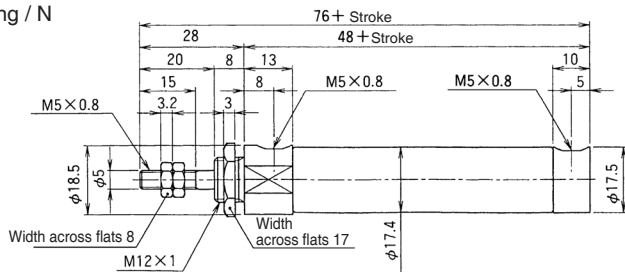


Note: The minimum standard is 15 mm stroke.

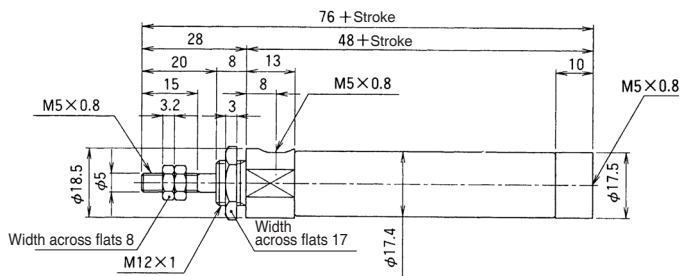
Double-acting $\varnothing 16$ / ZG2-16

(Unit: mm)

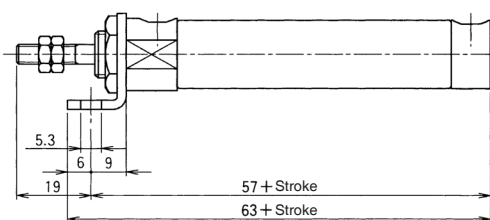
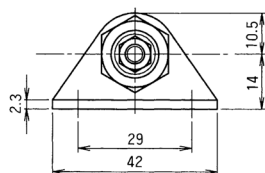
One side nose mounting / N



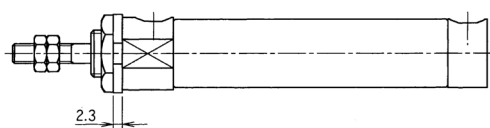
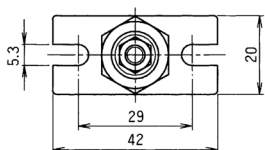
One side nose mounting / N port position NB (Z□NB2)



One side foot mounting / L

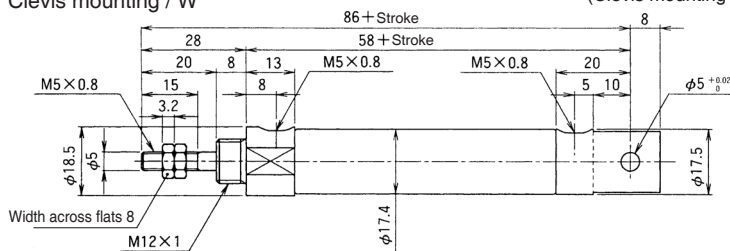


Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)

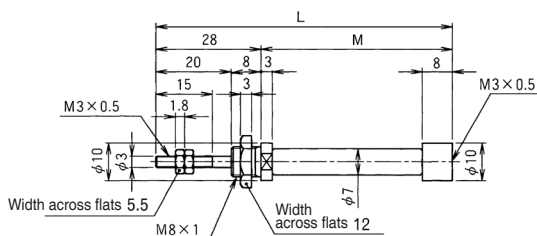


Note: The minimum standard is 15 mm stroke.

Single-acting spring return type $\varnothing 6$ / Z□1-6

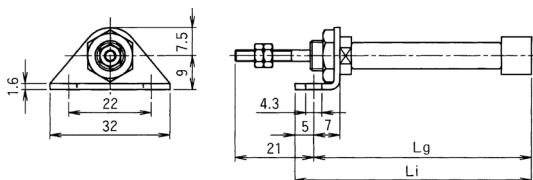
(Unit: mm)

One side nose mounting / N Port position NB (Z□NB1)



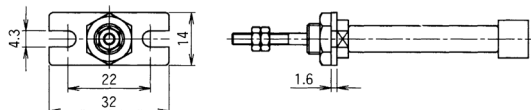
		15 st	30 st	45 st	60 st
L	Type C	79	106	133	160
	Type G	86	113	140	167
M	Type C	51	78	105	132
	Type G	58	85	112	139

One side foot mounting / L



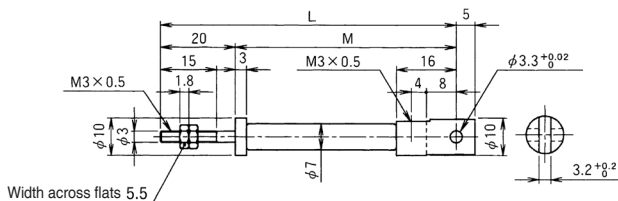
		15 st	30 st	45 st	60 st
Lg	Type C	58	85	112	139
	Type G	65	92	119	146
Li	Type C	63	90	117	144
	Type G	70	97	124	151

Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)



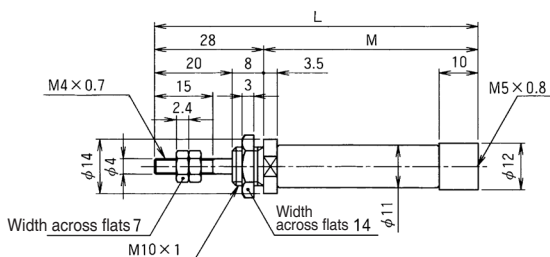
		15 st	30 st	45 st	60 st
L	Type C	79	106	133	160
	Type G	96	113	140	167
M	Type C	59	86	113	140
	Type G	66	93	120	147

Note: The minimum standard is 15 mm stroke.

Single-acting spring return type $\varnothing 10$ / Z□1-10

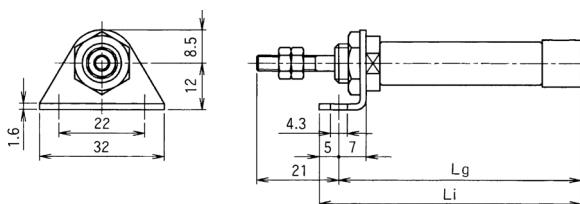
(Unit: mm)

One side nose mounting / N Port position NB (Z□NB1)



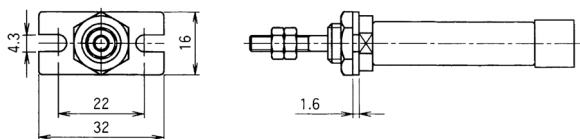
		15 st	30 st	45 st	60 st
L	Type C	83	110	137	164
	Type G	89	116	143	170
M	Type C	55	82	109	136
	Type G	61	88	115	142

One side foot mounting / L



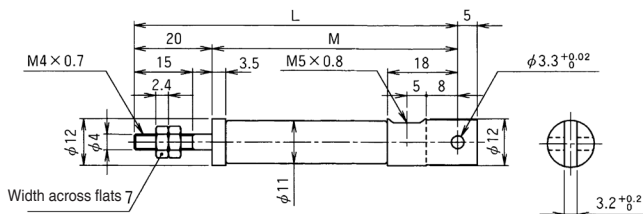
		15 st	30 st	45 st	60 st
Lg	Type C	62	89	116	143
	Type G	68	95	122	149
Li	Type C	67	94	121	148
	Type G	73	100	127	154

Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)

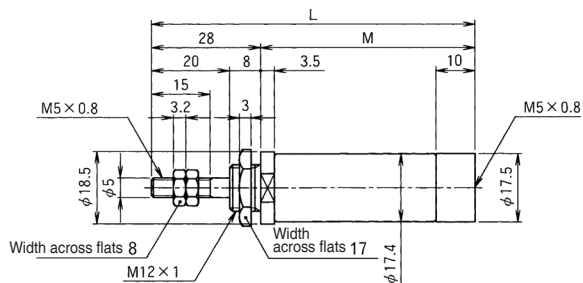


		15 st	30 st	45 st	60 st
L	Type C	83	110	137	164
	Type G	89	116	143	170
M	Type C	63	90	117	144
	Type G	69	96	123	150

Note: The minimum standard is 15 mm stroke.

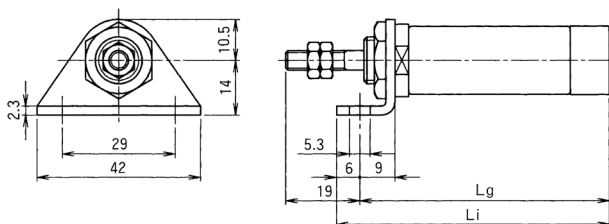
Single-acting spring return type $\varnothing 16$ / $\square 1-16$

(Unit: mm)

One side nose mounting / N Port position NB ($\square$ NB1)

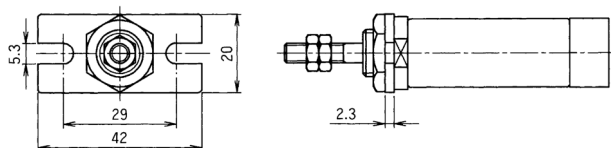
		15 st	30 st	45 st	60 st
L	Type C	83	110	137	164
	Type G	89	116	143	170
M	Type C	55	82	109	136
	Type G	61	88	115	142

One side foot mounting / L



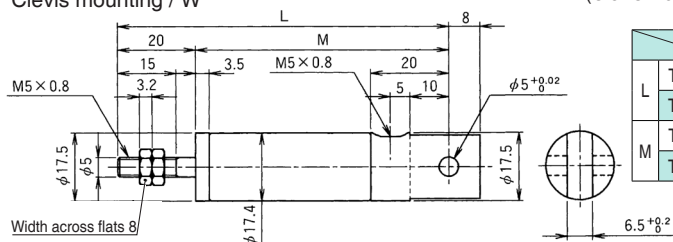
		15 st	30 st	45 st	60 st
Lg	Type C	64	91	118	145
	Type G	70	97	124	151
Li	Type C	70	97	124	151
	Type G	76	103	130	157

Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)

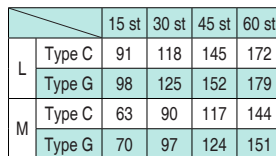


		15 st	30 st	45 st	60 st
L	Type C	85	112	139	166
	Type G	91	118	145	172
M	Type C	65	92	119	146
	Type G	71	98	125	152

Note: The minimum standard is 15 mm stroke.

(Unit: mm)

Series



Technical drawing of a 1/2 inch NPT female plug. The drawing includes two views: a front view (left) and a side view (right). The front view shows a circular plug with a central threaded hole. Dimensions include a total width of 32, a central hole diameter of 22, a flange thickness of 1.6, and a flange height of 9.5. The side view shows the plug's profile with a total length of L_g and a threaded section length of L_i . Other dimensions include a 4.3 mm gap, a 5 mm gap, and a 7 mm gap.

		15 st	30 st	45 st	60 st
Lg	Type C	70	97	124	151
	Type G	77	104	131	158
Li	Type C	75	102	129	156
	Type G	82	109	136	163

[illegible]

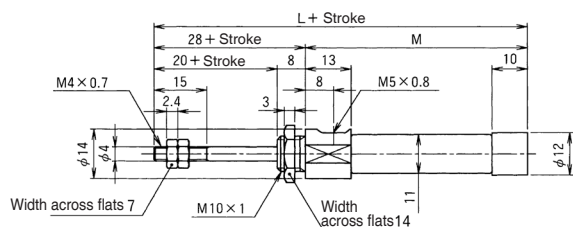
		15 st	30 st	45 st	60 st
L	Type C	99	126	153	180
	Type G	106	133	160	187
M	Type C	71	98	125	152
	Type G	78	105	132	159



Single-acting spring extend type Ø10 / Z□0-10

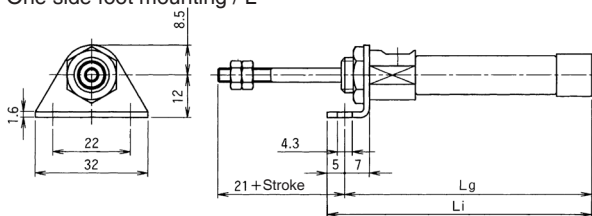
(Unit: mm)

One side nose mounting / N



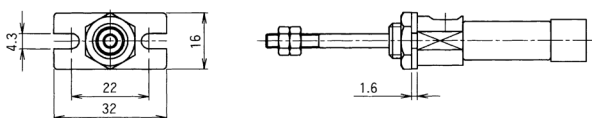
		15 st	30 st	45 st	60 st
L	Type C	92.5	119.5	146.5	173.5
	Type G	98.5	125.5	152.5	179.5
M	Type C	64.5	91.5	118.5	145.5
	Type G	70.5	97.5	124.5	151.5

One side foot mounting / L



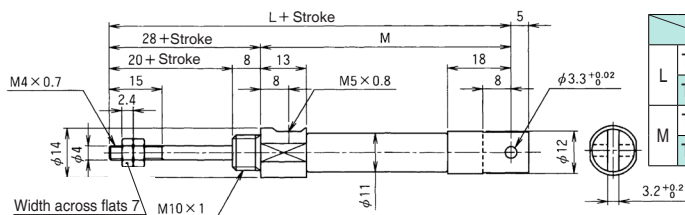
		15 st	30 st	45 st	60 st
Lg	Type C	71.5	98.5	125.5	152.5
	Type G	77.5	104.5	131.5	158.5
Li	Type C	76.5	103.5	130.5	157.5
	Type G	82.5	109.5	136.5	163.5

Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)



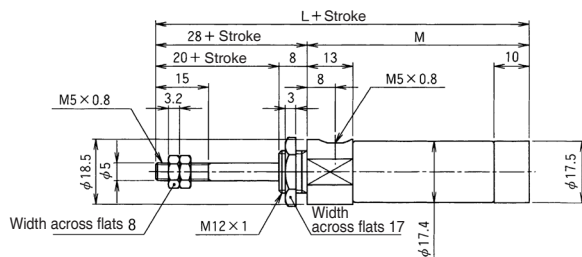
		15 st	30 st	45 st	60 st
L	Type C	100.5	127.5	154.5	181.5
	Type G	106.5	133.5	160.5	187.5
M	Type C	72.5	99.5	126.5	153.5
	Type G	78.5	105.5	132.5	159.5

Note: The minimum standard is 15 mm stroke.

Single-acting spring extend type $\varnothing 16$ / Z□0-16

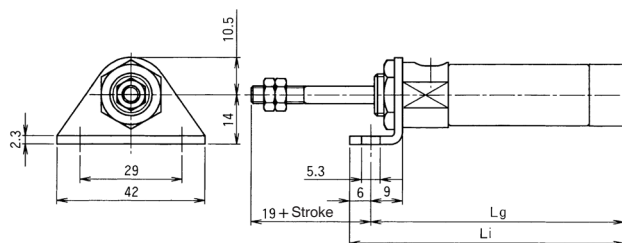
(Unit: mm)

One side nose mounting / N



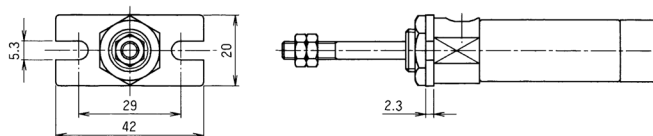
		15 st	30 st	45 st	60 st
L	Type C	92.5	119.5	146.5	173.5
	Type G	98.5	125.5	152.5	179.5
M	Type C	64.5	91.5	118.5	145.5
	Type G	70.5	97.5	124.5	151.5

One side foot mounting / L



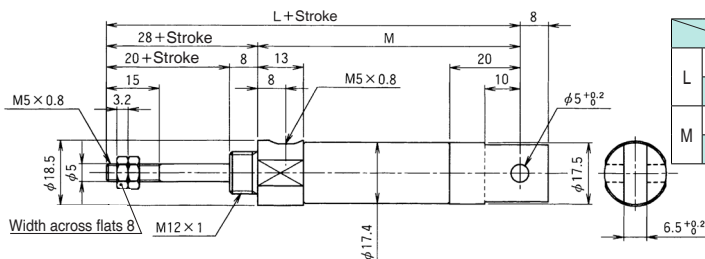
		15 st	30 st	45 st	60 st
Lg	Type C	73.5	100.5	127.5	154.5
	Type G	79.5	106.5	133.5	160.5
Li	Type C	79.5	106.5	133.5	160.5
	Type G	85.5	112.5	139.5	166.5

Flange mounting / A



Clevis mounting / W

(Clevis mounting with c ring and latch)

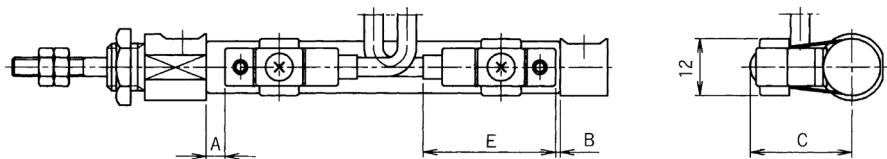


		15 st	30 st	45 st	60 st
L	Type C	102.5	129.5	156.5	183.5
	Type G	108.5	135.5	162.5	189.5
M	Type C	74.5	101.5	128.5	155.5
	Type G	80.5	107.5	134.5	161.5

Note: The minimum standard is 15 mm stroke.

Switch Set Position

(Unit: mm)



Action	Bore	M type reed switch		M type proximity switch		C
		A	B	A	B	
Double acting	∅6	7	1	10	5	20
	∅10	6	1	9	5	22
	∅16	5	2	9	5	25.5
Single acting (Spring return)	∅6	15st	13	1	16	20
		30st	25	1	28	
		45st	37	1	40	
		60st	49	1	52	
	∅10	15st	13	1	17	22
		30st	25	1	29	
		45st	37	1	41	
		60st	49	1	53	
	∅16	15st	13	2	16	25.5
		30st	25	2	28	
		45st	37	2	40	
		60st	49	2	52	
Single acting (Spring extend)	∅6	15st	1	13	5	20
		30st	1	25	5	
		45st	1	37	5	
		60st	1	49	5	
	∅10	15st	6	9	9	22
		30st	6	21	9	
		45st	6	33	9	
		60st	6	45	9	
	∅16	15st	5	9	9	25.5
		30st	5	21	9	
		45st	5	33	9	
		60st	5	45	9	

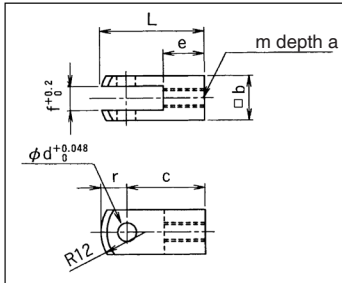
Switch	E
M type reed switch	28
M type proximity switch	26.5(24)

Note: The size in () is MT-※U type.

Accessories

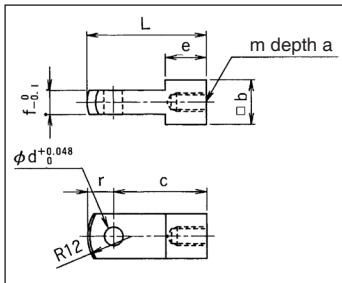
(Unit: mm)

Rod end female clevis



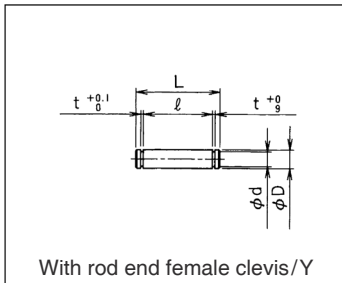
Model No.	Bore	L	a	b	c	d	e	f	m	r
Z10-Y	∅10	28	8	12	21	3.3	11	3.2	M4x0.7	7
Z16-Y	∅16	28	11	12	21	5	11	6.5	M5x0.8	7

Rod end male clevis



Model No.	Bore	L	a	b	c	d	e	f	m	r
Z10-I	∅10	28	8	12	21	3.3	12	3.1	M4x0.7	7
Z16-I	∅16	32	8	12	25	5	11	6.4	M5x0.8	7

Pin for rod end female clevis/Y

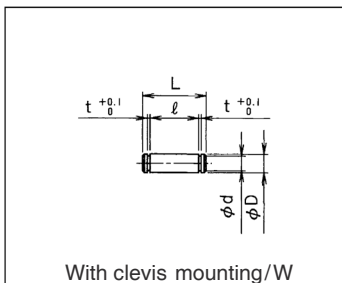


Model No.	Bore	D	L	d	l	t	C ring
Z10-WP	∅10	3.3 $^{+0.01}_{-0.03}$	17	2 $^{+0.06}_0$	13	0.5 $^{+0.05}_0$	E2
Z16-YP	∅16	5 $^{+0.01}_{-0.03}$	17	4 $^{+0.07}_0$	13	0.7 $^{+0.1}_0$	E4

Note: For common use with ∅10 Pin

Note: Attached to the rod end female clevis/Y

Pin for clevis mounting/W

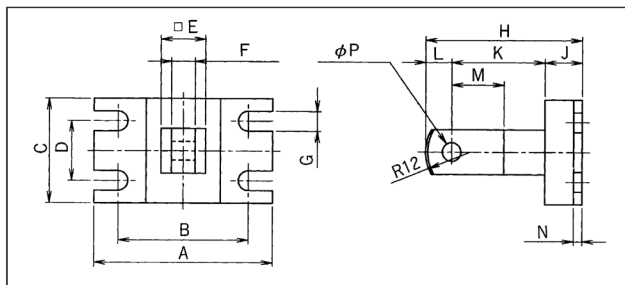


Model No.	Bore	D	a	b	l	t	C ring
Z6-WP	∅6	3.3 $^{+0.01}_{-0.03}$	15	2 $^{+0.06}_0$	11	0.5 $^{+0.05}_0$	E2
Z10-WP	∅10	3.3 $^{+0.01}_{-0.03}$	17	2 $^{+0.07}_0$	13	0.5 $^{+0.05}_0$	E2
Z16-YP	∅16	5 $^{+0.01}_{-0.03}$	22.5	4 $^{+0.07}_0$	18.5	0.7 $^{+0.1}_0$	E4

Note: Attached to the clevis mounting/W

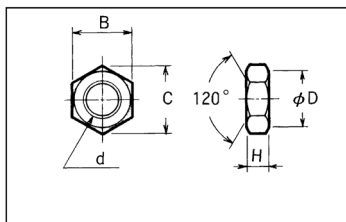
Accessories

(Unit: mm)



Model No.	Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P
Z10-BY	∅6, ∅10	40	30	22	12	12	3.1 _{-0.1} ⁰	4.3	36	8	21	7	9	2.3	3.3 ₀ ^{+0.04}
Z16-BY	∅16	48	35	28	16	12	6.4 _{-0.1} ⁰	5.3	42	10	25	7	14	2.3	5 ₀ ^{+0.048}

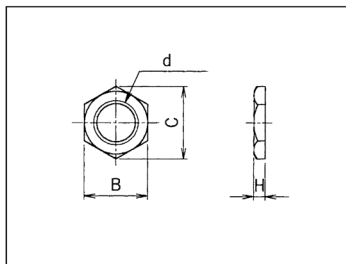
Rod end nut



Model No.	Bore	d	H	B	C	D
Z4-RN	∅4	M2x0.4	1.6	4	4.6	3.8
Z6-RN	∅6	M3x0.5	1.8	5.5	6.4	5.3
Z10-RN	∅10	M4x0.7	2.4	7	8.1	6.8
Z16-RN	∅16	M5x0.8	3.2	8	9.2	7.8

Note: Two Rod end nuts are provided by default

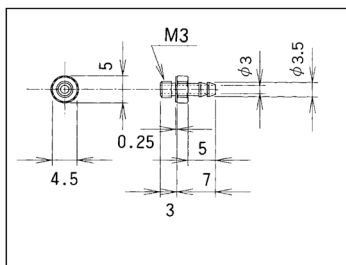
Nose nut



Model No.	Bore	d	H	B	C
Z2.5-NN	∅2.5	M2.5x0.45	1.6	4	4.6
Z4-NN	∅4	M2x0.7	2.4	5	5.7
Z6-NN	∅6	M8x1	3	12	13.9
Z10-NN	∅10	M10x1	3	14	16.2
Z16-NN	∅16	M12x1	3	17	19.6

Note: A Nose nut is provided by default

Air chuck



Model No.	Bore
BC-03-M3	∅4x ∅2.5(PU tube)

Note: Can only work with ∅6 cylinders