Series 12-13-MGPL-Z

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63
Compact Guide Cylinder

How to Order

Clean series

12	Relief type (with specially treated sliding parts)
13	Vacuum suction type (with specially treated sliding parts)

12 - M G P L 25 □ - 50 Z - M9BW □

Ball bushing bearing

Bore size (mm)

Port type

Symbol	Type	Bore size
Nil	M5 x 0.8	ø12, ø16
	Rc	ø20 to ø63
TN	NPT	
TF	G	

Cylinder stroke (mm)

Auto switch

Nil	Without auto switch
Solid state	M9B, M9BW
Reed switch	A93

∗ The minimum stroke for auto switch mounting and operating range are the same as standard products.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Model

	Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke∗ (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Relief type (with specially treated sliding parts)	12-MGPL12	12	M5 x 0.8	Non-lube	Double acting	10, 20, 30, 40, 50, 75,100, 125, 150, 175, 200, 250	○	○ (Both sides)	—
	12-MGPL16	16							
	12-MGPL20	20	1/8			20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	12-MGPL25	25				25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	12-MGPL32	32							
	12-MGPL40	40							
	12-MGPL50	50	1/4						
	12-MGPL63	63							
Vacuum suction type (with specially treated sliding parts)	13-MGPL12	12	M5 x 0.8			10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250			
	13-MGPL16	16							
	13-MGPL20	20	1/8			20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	13-MGPL25	25				25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	13-MGPL32	32							
	13-MGPL40	40							
	13-MGPL50	50	1/4						
	13-MGPL63	63							

∗ Non-standard intermediate strokes are available by attaching a spacer.

Specifications

Item \ Bore size (mm)	12/16	20/25/32/40/50/63
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	0.12 MPa	0.1 MPa
Ambient and fluid temperature	–10°C to 60°C (No freezing)	
Piston speed	50 to 400 mm/s	
Stroke length tolerance	$^{+1.5}_{0}$	
Grease	12-/13-: Fluorine grease	
Cleanliness class (ISO class)	13-: Class 4	
	12-: Class 5	

Suction Flow Rate of Vacuum Suction Type (Reference values)

Size	Suction flow rate L/min (ANR)
12/16/20/25	5
32/40/50/63	10

Auto Switch Specifications (Refer to the **WEB catalog** for detailed specifications and auto switches not in the following table.)

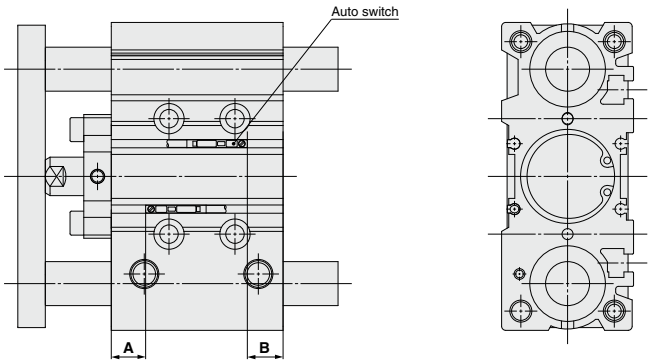
Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	Lead wire length (m)				Applicable load	
				DC		AC	Band mounting	0.5 (Nil)	1 (M)	3 (L)	5 (Z)		
Solid state auto switch	Grommet	Yes	2-wire	24 V	5 V 12 V	—	M9B	●	●	●	○	—	Relay, PLC
							M9BW	●	●	●	○	—	
Reed auto switch	Grommet	Yes	2-wire	24 V	12 V	100 V	A93	●	—	●	●	—	Relay, PLC

Note 1) Lead wire length symbols: 0.5 m..... Nil M9BW
1 m..... M M9BWM
3 m..... L M9BWL
5 m..... Z M9BWZ

Note 2) Solid state auto switches marked with "○" are produced upon receipt of order.
Note 3) PLC: Programmable Logic Controller

Refer to page 889 for the applicable auto switch list.

Auto Switch Proper Mounting Position (Detection at Stroke End)

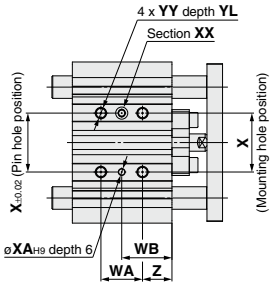


Auto Switch Proper Mounting Position (mm)

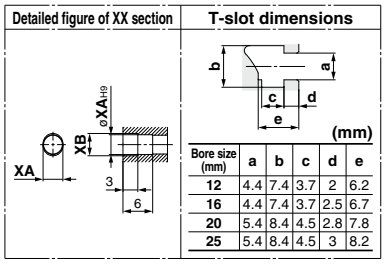
Bore size (mm) \ Auto switch model	D-M9□ D-M9□W		D-A9□	
	A	B	A	B
12	7.5	9.5	3.5	5.5
16	10.5	10.5	6.5	6.5
20	12.5	12.5	8.5	8.5
25	11.5	14	7.5	10
32	12.5	13	8.5	9
40	15.5	16.5	11.5	12.5
50	14.5	17	10.5	13
63	16.5	20	12.5	16

Note) The above values are a guide in the stroke end detection of the mounting positions of the auto switch.
Please adjust in an actual setting after confirming the operating state of the auto switch.

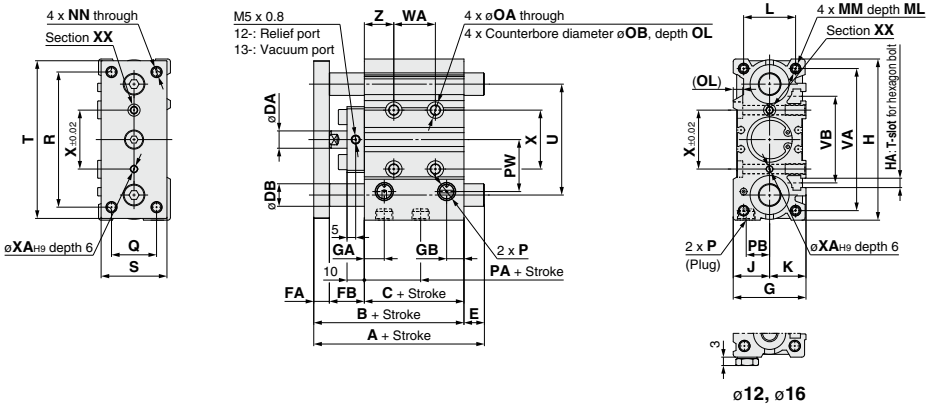
Basic: 12-13-MGPL 12 to 25



Bottom view



Bore size (mm)	a	b	c	d	e
12	4.4	7.4	3.7	2	6.2
16	4.4	7.4	3.7	2.5	6.7
20	5.4	8.4	4.5	2.8	7.8
25	5.4	8.4	4.5	3	8.2



∗ The use of a slot (width XA, length XB, depth 3) allows for a relaxed pin pitch tolerance, with the pin hole (øXAH9 depth 6) as the reference, without affecting mounting accuracy.
∗ For bore size ø12 and ø16, only M5 x 0.8 port is available.
∗ For bore size ø20 or more, choice of Rc, NPT, G port is available. (Refer to page 839.)

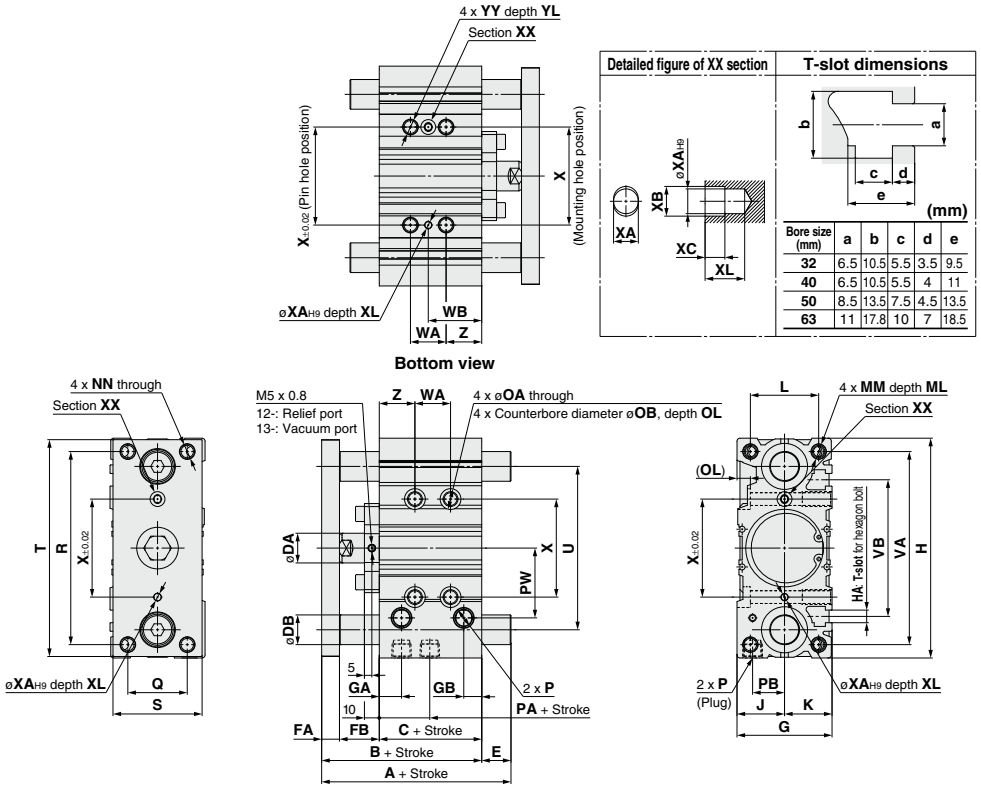
(mm)

Bore size (mm)	Standard stroke	A				B	C	DA	DB	E				FA	FB	G	GA
		30 st or less	Over 30 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st					30 st or less	Over 30 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st				
12	10,20,30,40,50,75,100	56	68	97.5	97.5	55	29	6	6	1	13	42.5	42.5	7	19	26	10
16	125,150,175,200,250	62	78	107.5	107.5	59	33	8	8	3	19	48.5	48.5	7	19	30	10.5
20	20,30,40,50,75,100,125,150	72	89	113	130.5	66	37	10	10	6	23	47	64.5	8	21	36	11.5
25	175,200,250,300,350,400	78.5	94.5	113.5	130.5	66.5	37.5	10	13	12	28	47	64	9	20	42	11.5

Bore size (mm)	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P			PA	PB	PW	Q	R	S	T
													Nil	TN	TF							
12	7	58	M4	13	13	18	M4 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	—	—	13	8	18	14	48	22	56
16	7.5	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	—	—	14.5	10	19	16	54	25	62
20	9	83	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.4	9.5	5.5	Rc1/8	NPT1/8	G1/8	13.5	10.5	25	18	70	30	81
25	10	93	M5	21	21	30	M6 x 1	15	M6 x 1	5.4	9.5	5.5	Rc1/8	NPT1/8	G1/8	12.5	13.5	30	26	78	38	91

Bore size (mm)	U	VA	VB	WA					WB					X	XA	XB	YY	YL	Z
				30 st or less	Over 30 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st and up to 300 st	Over 300 st	30 st or less	Over 30 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st and up to 300 st	Over 300 st						
12	41	50	37	20	40	110	200	—	15	25	60	105	—	23	3	3.5	M5 x 0.8	10	5
16	46	56	38	24	44	110	200	—	17	27	60	105	—	24	3	3.5	M5 x 0.8	10	5
20	54	72	44	24	44	120	200	300	29	39	77	117	167	28	3	3.5	M6 x 1	12	17
25	64	82	50	24	44	120	200	300	29	39	77	117	167	34	4	4.5	M6 x 1	12	17

Basic: 12-13-MGPL 32 to 63



∗ The use of a slot (width XA, length XB, depth XC) allows for a relaxed pin pitch tolerance, with the pin hole (øXAH9 depth XL) as the reference, without affecting mounting accuracy.
∗ Choice of Rc, NPT, G port is available. (Refer to page 839.)

(mm)

Bore size (mm)	Standard stroke	A				B	C	DA	DB	E				FA	FB	G	GA	GB
		50 st or less	Over 50 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st					50 st or less	Over 50 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st					
32	25,50,75,100 125,150,175 200,250,300 350,400	91.5	108.5	128.5	150.5	71.5	37.5	14	16	20	37	57	79	10	24	48	12	9
40		91.5	108.5	128.5	150.5	78	44	14	16	13.5	30.5	50.5	72.5	10	24	54	15	12
50		102.5	123.5	143.5	170.5	83	44	20	20	19.5	40.5	60.5	87.5	12	27	64	15	12
63		102.5	123.5	143.5	170.5	88	49	20	20	14.5	35.5	55.5	82.5	12	27	78	15.5	13.5

Bore size (mm)	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P			PA	PB	PW	Q	R	S	T	U	VA
												Nil	TN	TF									
32	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.7	11	7.5	Rc1/8	NPT1/8	G1/8	6.5	16	35.5	30	96	44	110	78	98
40	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.7	11	7.5	Rc1/8	NPT1/8	G1/8	13	18	39.5	30	104	44	118	86	106
50	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	Rc1/4	NPT1/4	G1/4	9	21.5	47	40	130	60	146	110	130
63	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	—	9	Rc1/4	NPT1/4	G1/4	13	28	58	50	130	70	158	124	142

Bore size (mm)	VB	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
		25 st or less	Over 25 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st and up to 300 st	Over 300 st	25 st or less	Over 25 st and up to 100 st	Over 100 st and up to 200 st	Over 200 st and up to 300 st	Over 300 st								
32	63	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40	72	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50	92	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	110	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

⚠ Specific Product Precautions

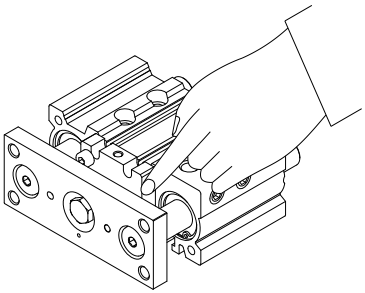
Be sure to read this before handling.

Mounting

⚠ Warning

1. Do not place your hands or fingers between the cylinder and the body.

Be careful not to get your hands or fingers caught between the cylinder body and the plate when air is applied.



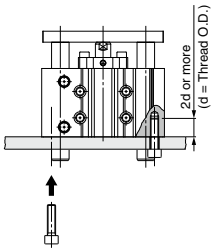
⚠ Caution

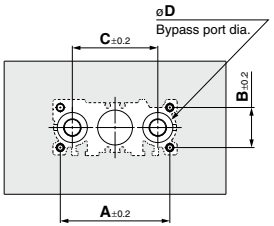
1. Be careful not to scratch or gouge the sliding portion of the piston rod and the guide rod.

Damaged seals may cause leakage or malfunction.

2. Bottom of cylinder

The guide rods protrude from the bottom of the cylinder at the end of the retracting stroke. Therefore, in cases where the cylinder is to be bottom mounted, it is necessary to provide bypass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head cap screws which are used for mounting.





Bore size (mm)	A (mm)	B (mm)	C (mm)	øD (mm)	Hexagon socket head cap screw
12	50	18	41	8	M4 x 0.7
16	56	22	46	10	M5 x 0.8
20	72	24	54	12	M5 x 0.8
25	82	30	64	15	M6 x 1.0
32	98	34	78	18	M8 x 1.25
40	106	40	86	18	M8 x 1.25
50	130	46	110	22	M10 x 1.5
63	142	58	124	22	M10 x 1.5

Series 21-/22-MGPL

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63
Compact Guide Cylinder

How to Order

Copper, fluorine and silicone-free + Low particle generation

21	Relief type
22	Vacuum suction type

21 - M G P L 25 □ - 50 - M9BW □

Ball bushing bearing

Bore size (mm)

Port type

Symbol	Type	Bore size
Nil	M5 x 0.8	ø12, ø16
	Rc	ø20 to ø63
N	NPT	
TF	G	

Cylinder stroke (mm)

Auto switch

Nil	Without auto switch
Solid state	M9B, M9BW
Reed switch	A93

Number of auto switches

Nil	2 pcs.
S	1 pc.

Model

	Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Relief type	21-MGPL12	12	M5 x 0.8	Non-lube	Double acting	10, 20, 30, 40, 50, 75,100, 125, 150, 175, 200, 250	○	○ (Both sides)	—
	21-MGPL16	16							
	21-MGPL20	20	1/8			20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	21-MGPL25	25							
	21-MGPL32	32				25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	21-MGPL40	40							
	21-MGPL50	50	1/4						
	21-MGPL63	63							
Vacuum suction type	22-MGPL12	12	M5 x 0.8			10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250			
	22-MGPL16	16							
	22-MGPL20	20	1/8			20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	22-MGPL25	25							
	22-MGPL32	32				25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	22-MGPL40	40							
	22-MGPL50	50	1/4						
	22-MGPL63	63							

Specifications

Item \ Bore size (mm)	12/16	20/25/32/40/50/63
Proof pressure	1.5 MPa	
Max. operating pressure	1.0 MPa	
Min. operating pressure	0.12 MPa	0.1 MPa
Ambient and fluid temperature	–10°C to 60°C (No freezing)	
Piston speed	50 to 400 mm/s	
Stroke length tolerance	$^{+1.5}_{0}$	
Grease	21-/22-: Lithium soap based grease	
Cleanliness class (ISO class)	21-: Class 6	
	22-: Class 5	

Suction Flow Rate of Vacuum Suction Type (Reference values)

Size	Suction flow rate L/min (ANR)
12/16/20/25	5
32/40/50/63	10

Auto Switch Specifications (Refer to the WEB catalog for detailed specifications and auto switches not in the following table.)

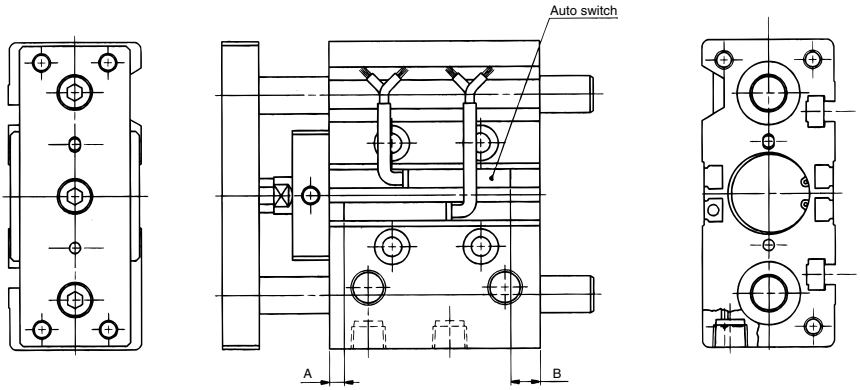
Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model Band mounting	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Applicable load	
Solid state auto switch	Grommet	Yes	2-wire	24 V	5 V, 12 V	—	M9B	●	●	●	○	—	Relay, PLC
							M9BW	●	●	●	○	—	
Reed auto switch	Grommet	Yes	2-wire	24 V	12 V	100 V	A93	●	—	●	●	—	Relay, PLC

Note 1) Lead wire length symbols: 0.5 m..... Nil M9BW
1 m..... M M9BWM
3 m..... L M9BWL
5 m..... Z M9BWZ

Note 2) Solid state auto switches marked with "○" are produced upon receipt of order.
Note 3) PLC: Programmable Logic Controller

Refer to page 889 for the applicable auto switch list.

Auto Switch Proper Mounting Position (Detection at Stroke End)

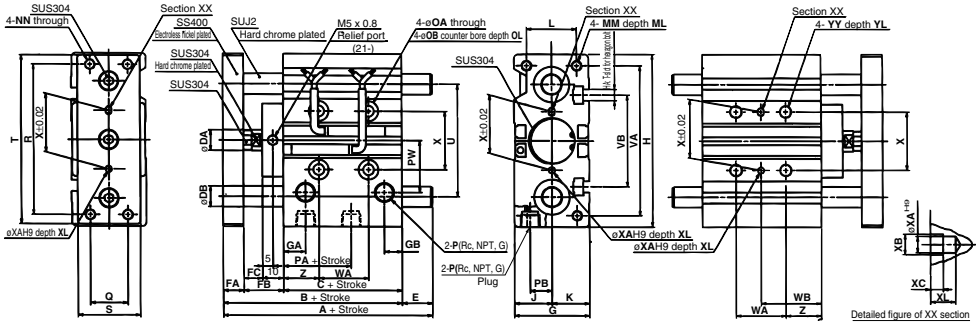


Proper Mounting Position (mm)

Auto switch model / Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-Z7□/Z80 D-Y59□/Y7P D-Y69□/Y7PV D-Y7□W D-Y7□WV D-Y7BA	
	A	B	A	B	A	B
12	6	8	2	4	1	3
16	9	9	5	5	4	4
20	9.5	12.5	5.5	8.5	4.5	7.5
25	9.5	13	5.5	9	4.5	8
32	10.5	12	6.5	8	5.5	7
40	14.5	14.5	10.5	10.5	9.5	9.5
50	12.5	16.5	8.5	12.5	7.5	11.5
63	15	19	11	15	10	14

Note 1) The minimum stroke for mounting auto switches is 10 stroke or more for two switches, and 5 stroke or more for one switch.
Note 2) The above-mentioned value is a guide for auto switch mounting positions for stroke end detection. When actually mounting the auto switch, adjust the position after confirming the operating state of the auto switch.

Basic: 21-/22-MGPL 12 to 25



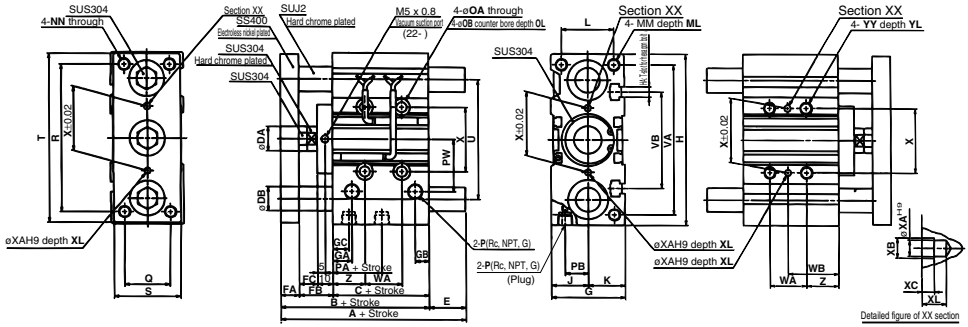
(mm)

Bore size	A				B	C	DA	DB	E				FA	FB	FC	G	GA	GB	H
	30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st					30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st							
12	56	68	98	98	55	29	6	6	1	13	43	43	8	18	8	26	11	7.5	58
16	62	78	108	108	59	33	8	8	3	19	49	49	8	18	8	30	11	8	64
20	76	93	117	135	66	37	10	10	10	27	51	69	10	19	9	36	10.5	8.5	83
25	82.5	98.5	117.5	135	66.5	37.5	12	13	16	32	51	68.5	10	19	9	42	11.5	9	93

Bore size	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB
12	M4	13	13	18	M4 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	13	8	18	14	48	22	56	41	50	37
16	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	15	10	19	16	54	25	62	46	56	38
20	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	1/8	12.5	10.5	25	18	70	30	81	54	72	44
25	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.6	9.5	5.5	1/8	12.5	13.5	28.5	26	78	38	91	64	82	50

Bore size	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
	30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st	30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st								
12	20	40	110	200	–	15	25	60	105	–	23	3	3.5	3	6	M5 x 0.8	10	5
16	24	44	110	200	–	17	27	60	105	–	24	3	3.5	3	6	M5 x 0.8	10	5
20	24	44	120	200	300	29	39	77	117	167	28	3	3.5	3	6	M6 x 1.0	12	17
25	24	44	120	200	300	29	39	77	117	167	34	4	4.5	3	6	M6 x 1.0	12	17

Basic: 21-22-MGPL 32 to 63



(mm)

Bore size	A				B	C	DA	DB	E				FA	FB	FC	G	GA	GB	GC
	50st or less	Over 50st and up to 100st	Over 100st and up to 200st	Over 200st					50st or less	Over 50st and up to 100st	Over 100st and up to 200st	Over 200st							
32	93	110	130	152	71.5	37.5	16	16	21.5	38.5	58.5	80.5	12	22	12	48	12.5	9	12.5
40	93	110	130	152	78	44	16	16	15	32	52	74	12	22	12	54	14	10	14
50	104	125	145	172	83	44	20	20	21	42	62	89	16	23	13	64	14	11	12
63	104	125	145	172	88	49	20	20	16	37	57	84	16	23	13	78	16.5	13.5	16.5

Bore size	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB
32	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	7	15	34	30	96	44	110	78	98	63
40	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	13	18	38	30	104	44	118	86	106	72
50	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	9	21.5	47	40	130	60	146	110	130	92
63	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	14	28	55	50	130	70	158	124	142	110

Bore size	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
	25st or less	Over 25st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st	25st or less	Over 25st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st								
32	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

⚠ Specific Product Precautions

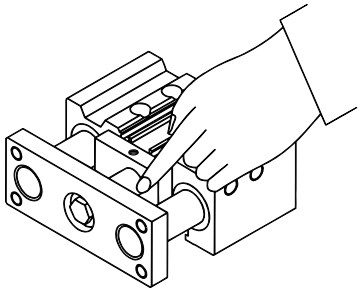
Be sure to read this before handling.

Mounting

⚠ Warning

1. Do not place your hands or fingers between the cylinder and the body.

Be careful not to get your hands or fingers caught between the cylinder body and the plate when air is applied.



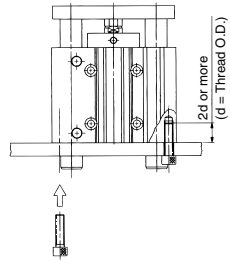
⚠ Caution

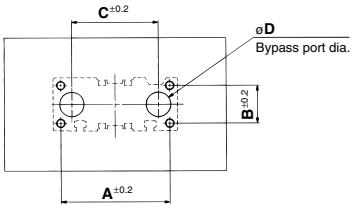
1. Be careful not to scratch or gouge the sliding portion of the piston rod and the guide rod.

Damaged seals may cause leakage or malfunction.

2. Bottom of cylinder

The guide rods protrude from the bottom of the cylinder at the end of the retracting stroke. Therefore, in cases where the cylinder is to be bottom mounted, it is necessary to provide bypass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head screws which are used for mounting.





Bore size (mm)	A (mm)	B (mm)	C (mm)	øD (mm)	Hexagon socket head cap screw
12	50	18	41	8	M4 x 0.7
16	56	22	46	10	M5 x 0.8
20	72	24	54	12	M5 x 0.8
25	82	30	64	15	M6 x 1.0
32	98	34	78	18	M8 x 1.25
40	106	40	86	18	M8 x 1.25
50	130	46	110	22	M10 x 1.5
63	142	58	124	22	M10 x 1.5