

Series 10-/11- 21-/22-**CG1-Z**

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Air Cylinder: Double acting, Single rod

RoHS

How to Order

Clean series

10	Relief type
11	Vacuum suction type

Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Type

N	Rubber bumper, ø20 to ø100
A	Air cushion, ø40 to ø63

Bore size (mm)

Mounting

B*	Basic
L	Axial foot
F	Rod flange
G	Head flange

Auto switch

Solid state	M9B, M9BW, K59, K59W
Reed switch	A93, B54


Number of auto switches

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

Rod end thread

Nil	Male rod end
F	Female rod end

* No trunnion mounting female thread is provided for clean series.



Cylinder stroke (mm)

Rod end thread

Auto switch

Number of auto switches

* The minimum stroke for auto switch mounting, operating range and auto switch mounting brackets/part no. are the same as standard products.

10 - C D G 1 B N 40 - 150 Z - M9BW

21 - C D G 1 B N 40 - 150 Z - M9BW

Model

	Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke ^{Note 2)} (mm)	Long stroke (mm) ^{Note 1) Note 2)}	Auto switch mounting		Cushion	
								Rubber	Air	Rubber	Air
Relief type	10-/21-CG1□20	20	1/8	Non-lube	Double acting, Single rod	25, 50, 75, 100, 125, 150, 200	Up to 1500	○	○	○	○
	10-/21-CG1□25	25									
	10-/21-CG1□32	32									
	10-/21-CG1□40	40									
	10-/21-CG1□50	50									
	10-/21-CG1□63	63									
Vacuum suction type	10-/21-CG1□80	80	1/8	Non-lube	Double acting, Single rod	25, 50, 75, 100, 125, 150, 200	Up to 1500	○	○	○	○
	10-/21-CG1□100	100									
	11-/22-CG1□20	20									
	11-/22-CG1□25	25									
	11-/22-CG1□32	32									
	11-/22-CG1□40	40									
	11-/22-CG1□50	50									
	11-/22-CG1□63	63									
11-/22-CG1□80	80										
11-/22-CG1□100	100										

Note 1) When exceeding the standard strokes above, the particle generation class may not be satisfied.

Note 2) Intermediate strokes and long strokes not listed above are produced upon receipt of order.

Specifications

Item	Bore size (mm)									
	20	25	32	40	50	63	80	100		
Proof pressure	1.5 MPa									
Maximum operating pressure	1.0 MPa									
Minimum operating pressure	0.05 MPa									
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)									
Piston speed	10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s									
Stroke length tolerance	Up to 1000 ^{+1,4} ₀ mm, Up to 1500 ^{+1,8} ₀ mm									
Mounting	Basic/Axial foot Rod flange/Head flange									
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease									
Cleanliness class (ISO class)	10-: Class 4, 21-: Class 5 11-/22-: Class 3									
Allowable kinetic energy (J)	Rubber bumper	Male rod end	0.28	0.41	0.66	1.20	2.00	3.40	5.90	9.90
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54
	Air cushion	Male rod end	—	—	—	1.80	3.40	4.90	—	—
		Female rod end	—	—	—	0.52	0.91	1.54	—	—

Note) Operate the cylinder within the allowable kinetic energy.

Suction Flow Rate of Vacuum Suction Type (Reference values)

Bore size	Suction flow rate L/min (ANR)
20/25/32/40	10
50/63/80/100	20

Applicable Auto Switches (Refer to the WEB catalog for auto switches not in the following table.)

Type	Special function	Electrical entry	Indicator/light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (mm) ²					Applicable load	
					DC	AC	Applicable bore size	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N	—	●	●	●	○	○	IC circuit	Relay, PLC
				—			G59	●	—	●	○	○			
				3-wire (PNP)	M9P		—	●	—	●	○	○			
				—	G5P		●	—	●	○	○				
				2-wire	M9B		—	●	●	●	○	○			
	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V		M9NW	—	●	—	●	○	○	IC circuit	
				—	G59W		●	—	●	○	○				
				3-wire (PNP)	5 V, 12 V		M9PW	—	●	—	●	○	○		
				—	G5PW		●	—	●	○	○				
				2-wire	M9BW		—	●	●	●	○	○			
Reed auto switch	—	Grommet	No	2-wire	24 V	100 V	A93	—	●	—	●	—	IC circuit	Relay, PLC	
						100 V or less	A90	—	●	—	●	—			
						100 V, 200 V	B54	—	●	—	●	—			
						200 V or less	B64	—	●	—	●	—			
						—	—	—	●	—	●	—			

* Lead wire length symbols: 0.5 m.....Nil (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

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

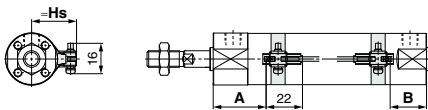
* For applicable auto switches other than listed above, refer to the table in the dashed line on the last page of the auto switch mounting section of the standard cylinder series in the WEB catalog.

Refer to page 889 for the applicable auto switch list.

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

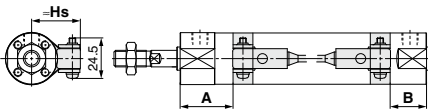
Solid state auto switch

D-M9□, M9□W
ø20 to ø63



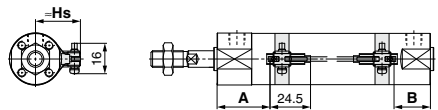
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-G5, K5, G5□W
D-K59W
ø20 to ø100



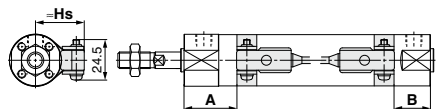
Reed auto switch

D-A9□
ø20 to ø63



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-B5, B6
ø20 to ø100



Auto Switch Proper Mounting Position (Detection at Stroke End) (mm) Auto Switch Mounting Height (mm)

Auto switch model	D-M9□ D-M9□W		D-A9□		D-G5□/K59 D-G5□W/K59W		D-B5□ D-B64		Auto switch model	D-M9□ D-M9□W D-A9□		D-G5/K5 D-G5□W D-K59W D-B5/B6	
	A	B	A	B	A	B	A	B		Bore size	Hs	Hs	Hs
Bore size	20	41	24 (32)	37	20 (28)	33	16 (24)	31.5	14.5 (22.5)	20	24.5	27.5	27.5
	25	40.5	24.5 (32.5)	36.5	20.5 (28.5)	32.5	16.5 (24.5)	31	15 (23)	25	27	30	30
	32	42	25 (33)	38	21 (29)	34	17 (25)	32.5	15.5 (23.5)	32	30.5	33.5	33.5
	40	39	27 (36)	35	23 (32)	31	19 (28)	29.5	17.5 (26.5)	40	35	38	38
	50	46	32 (44)	42	28 (40)	38	24 (36)	36.5	22.5 (34.5)	50	40.5	43.5	43.5
	63	44.5	33.5 (45.5)	40.5	29.5 (41.5)	36.5	25.5 (37.5)	35	24 (36)	63	47.5	50.5	50.5
	80	—	—	—	—	49.5	30.5 (44.5)	48	29 (43)	80	—	59	59
	100	—	—	—	—	48.5	31.5 (45.5)	47	30 (44)	100	—	69.5	69.5

Note 1) Values in parentheses are for the long stroke type.
Note 2) Adjust the auto switch after confirming the operating state in the actual setting.

Auto Switch Mounting Brackets/Part no.

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-M9□ D-M9□W D-A9□	BMA3-020 (A set of a, b, c, d)	BMA3-025 (A set of a, b, c, d)	BMA3-032 (A set of a, b, c, d)	BMA3-040 (A set of a, b, c, d)	BMA3-050 (A set of a, b, c, d)	BMA3-063 (A set of a, b, c, d)	—	—
<p>* Band (c) is mounted so that the projected part is on the internal side (contact side with the tube).</p>								
D-B5□/B64 D-G5□/K59 D-G5□W/K59W	BA-01 (A set of band and screw)	BA-02 (A set of band and screw)	BA-32 (A set of band and screw)	BA-04 (A set of band and screw)	BA-05 (A set of band and screw)	BA-06 (A set of band and screw)	BA-08 (A set of band and screw)	BA-10 (A set of band and screw)

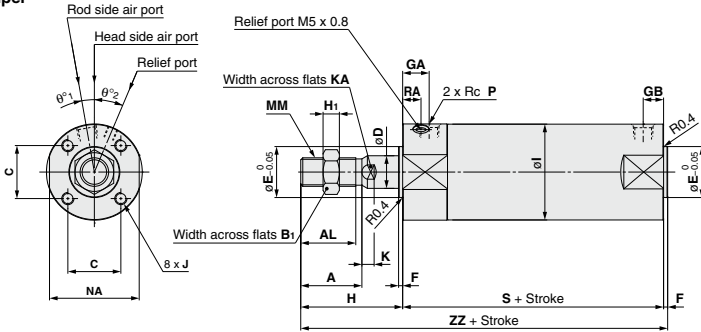
Note) Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used.
Please contact SMC regarding other chemicals.

Directional Control Valves
Air Cylinders
Rotary Actuators
Air Grippers
Air Preparation Equipment
Modular F. R.
Pressure Control Equipment
Fittings & Tubing
Flow Control Equipment
Pressure Switches/ Pressure Sensors

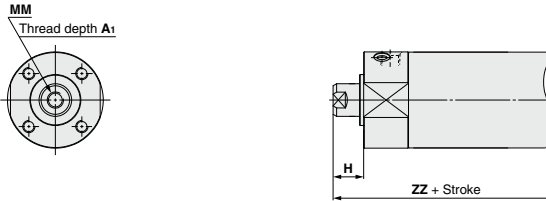
Air Cylinder 10-11-CG1-Z / 21-22-CG1-Z

Basic (B): 10-CG1B, 21-CG1B

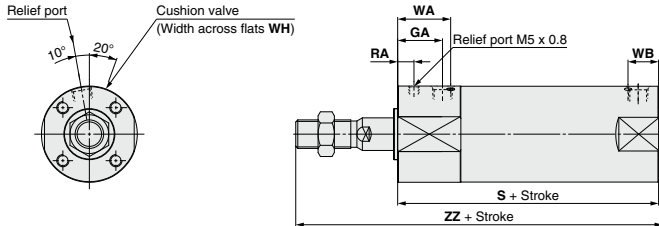
With rubber bumper



Female rod end



With air cushion



Bore size	Stroke range		A	AL	B ₁	C	D	E	F	GA	GB	H	H ₁	I	J	K	KA	MM	NA	P	RA	S	θ ¹	θ ²	ZZ
	Standard	Long																							
20	Up to 200	201 to 1500	18	15.5	13	14	8	12	2	20	10 (12)	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8	7	77 (85)	0	0	114 (122)
25			22	19.5	17	16.5	10	14	2	20	10 (12)	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8	7	77 (85)	0	0	119 (127)
32			22	19.5	17	20	12	18	2	20	10 (12)	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	7	79 (87)	0	0	121 (129)
40			30	27	19	26	16	25	2	13	10 (13)	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	9	78 (87)	10	23	130 (139)
50	Up to 300	301 to 1500	35	32	27	32	20	30	2	14	12 (14)	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	10	90 (102)	10	23	150 (162)
63			35	32	27	38	20	32	2	14	12 (14)	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	10	90 (102)	10	20	150 (162)
80			40	37	32	50	25	40	3	20	16 (20)	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	86	3/8	10	108 (122)	10	20	182 (196)
100			40	37	41	60	30	50	3	20	16 (20)	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	106	1/2	10	108 (122)	10	20	182 (196)

* No trunnion mounting female thread is provided for clean series.
() : Denotes the dimensions for long stroke.

Female rod end (mm)

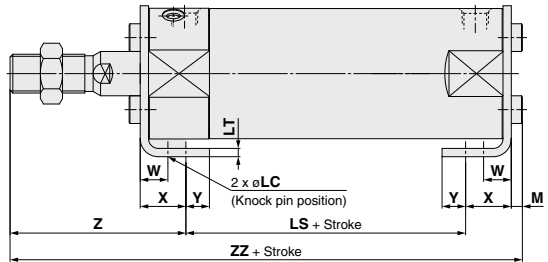
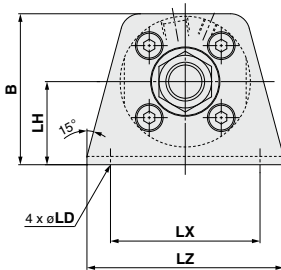
Bore size	A ₁	H	MM	ZZ	
				Rubber	Air
20	8	13	M4 x 0.7	92 (100)	—
25	8	14	M5 x 0.8	93 (101)	—
32	12	14	M6 x 1.0	95 (103)	—
40	13	15	M8 x 1.25	95 (104)	104 (113)
50	18	16	M10 x 1.5	108 (120)	120 (132)
63	18	16	M10 x 1.5	108 (120)	120 (132)
80	21	19	M14 x 1.5	130 (144)	—
100	25	22	M16 x 1.5	133 (147)	—

With air cushion (mm)

Bore size	GA	S	RA	WA	WB	WH	ZZ
40	22	87 (96)	8	26	15 (17)	1.5	139 (148)
50	26	102 (114)	9	30	16 (18)	3	162 (174)
63	26	102 (114)	9	30	17 (18)	3	162 (174)

Axial Foot (L): ¹⁰⁻CG1L, ²¹⁻CG1L

With rubber bumper



(mm)

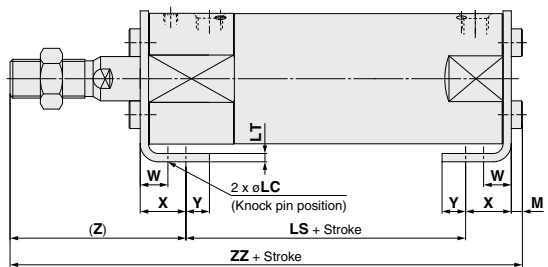
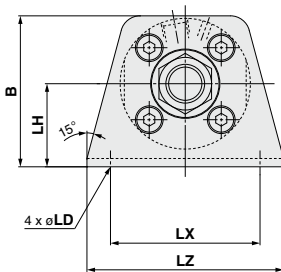
Bore size	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
20	34	4	6	20	53 (61)	3	32	44	3	10	15	7	47	118 (126)
25	38.5	4	6	22	53 (61)	3	36	49	3.5	10	15	7	52	123.5 (131.5)
32	45	4	7	25	53 (61)	3	44	58	3.5	10	16	8	53	125.5 (133.5)
40	54.5	4	7	30	51 (60)	3	54	71	4	10	16.5	8.5	63.5	135 (144)
50	70.5	5	10	40	55 (67)	4.5	66	86	5	17.5	22	11	75.5	157.5 (169.5)
63	82.5	5	12	45	55 (67)	4.5	82	106	5	17.5	22	13	75.5	157.5 (169.5)
80	101	6	11	55	60 (74)	4.5	100	125	5	20	28.5	14	95	188.5 (202.5)
100	121	6	14	65	60 (74)	6	120	150	7	20	30	16	95	192 (206)

* Other dimensions are the same as basic type.

* For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.

* Refer to the basic type for the female rod end.
Note () : Denotes the dimensions for long stroke.

With air cushion



(mm)

Bore size	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
40	54.5	4	7	30	60 (69)	3	54	71	4	10	16.5	8.5	63.5	144 (153)
50	70.5	5	10	40	67 (79)	4.5	66	86	5	17.5	22	11	75.5	169.5 (181.5)
63	82.5	5	12	45	67 (79)	4.5	82	106	5	17.5	22	13	75.5	169.5 (181.5)

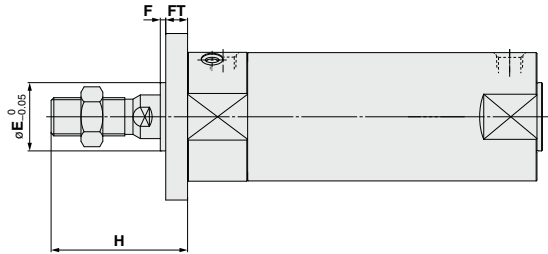
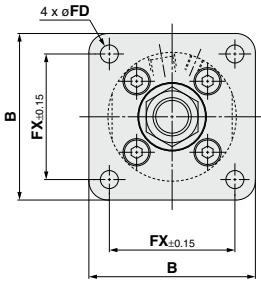
* Other dimensions are the same as basic type.

* For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.

* Refer to the basic type for the female rod end.
Note () : Denotes the dimensions for long stroke.

Rod Flange (F): ¹⁰⁻**CG1F**, ²¹⁻**CG1F**

With rubber bumper

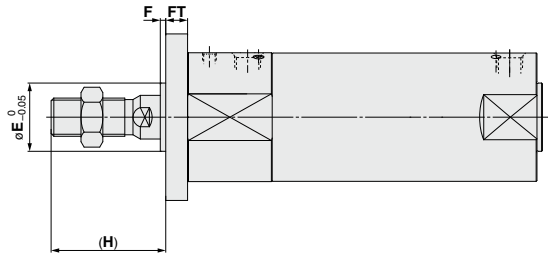
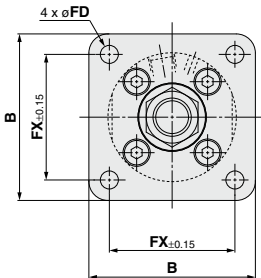


(mm)

Bore size	B	E	F	FX	FD	FT
20	40	12	2	28	5.5	6
25	44	14	2	32	5.5	7
32	53	18	2	38	6.6	7
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9
80	104	40	3	82	11	11
100	128	50	3	100	14	14

Note) End boss is machined on the flange for øE.
 * Other dimensions are the same as basic type.
 * Refer to the basic type for the female rod end.

With air cushion



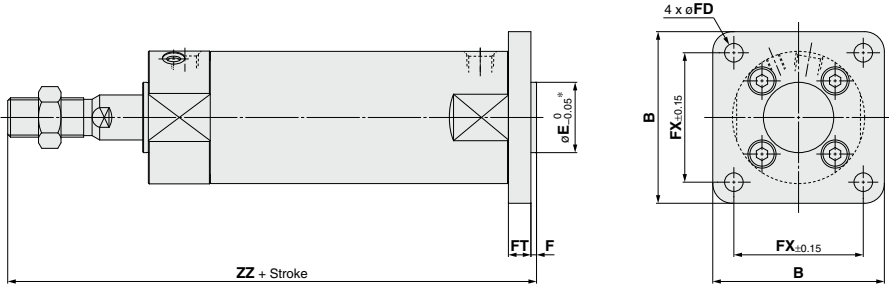
(mm)

Bore size	B	E	F	FX	FD	FT
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9

Note) End boss is machined on the flange for øE.
 * Other dimensions are the same as basic type.
 * Refer to the basic type for the female rod end.

Head Flange (G): 10-CG1G, 21-CG1G

With rubber bumper

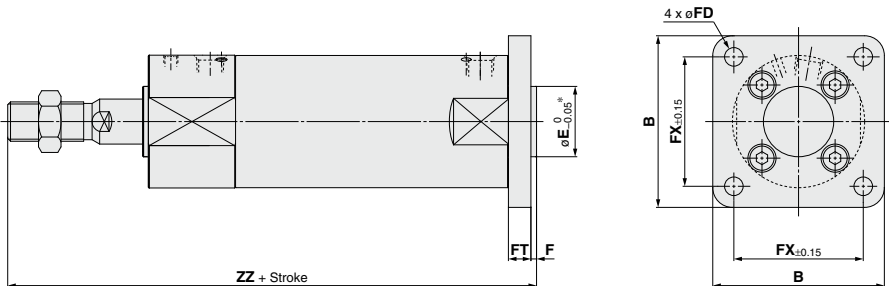


(mm)

Bore size	B	E	F	FX	FD	FT	ZZ
20	40	12	2	28	5.5	6	120 (128)
25	44	14	2	32	5.5	7	126 (134)
32	53	18	2	38	6.6	7	128 (136)
40	61	25	2	46	6.6	8	138 (147)
50	76	30	2	58	9	9	159 (171)
63	92	32	2	70	11	9	159 (171)
80	104	40	3	82	11	11	193 (207)
100	128	50	3	100	14	14	196 (210)

Note) End boss is machined on the flange for øE.
 * Other dimensions are the same as basic type.
 * Refer to the basic type for the female rod end.
 Note) () : Denotes the dimensions for long stroke.

With air cushion



(mm)

Bore size	B	E	F	FX	FD	FT	ZZ
40	61	25	2	46	6.6	8	147 (156)
50	76	30	2	58	9	9	171 (183)
63	92	32	2	70	11	9	171 (183)

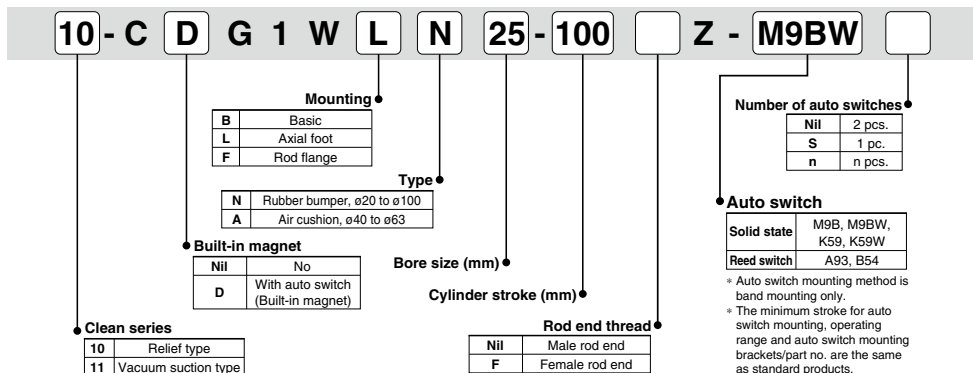
Note) End boss is machined on the flange for øE.
 * Other dimensions are the same as basic type.
 * Refer to the basic type for the female rod end.
 Note) () : Denotes the dimensions for long stroke.

Directional Control Valves
 Air Cylinders
 Rotary Actuators
 Air Grippers
 Air Preparation Equipment
 Modular F. R.
 Pressure Control Equipment
 Fittings & Tubing
 Flow Control Equipment
 Pressure Switches/ Pressure Sensors

Series 10-11-CG1W-Z ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Double Rod Cylinder

How to Order



The 10-CG1W series is available with the current model. For details, refer to the clean series CG1 in the [WEB catalog](#).

Model

	Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion					
								Rubber	Air				
Relief type	10-CG1W□20	20	1/8	Non-lube	Double acting, Double rod	25, 50, 75, 100, 125, 150, 200	○	○	(ø40 to ø63)				
	10-CG1W□25	25											
	10-CG1W□32	32											
	10-CG1W□40	40											
	10-CG1W□50	50											
	10-CG1W□63	63											
Vacuum suction type	10-CG1W□80	80	3/8		Non-lube	Double acting, Double rod				25, 50, 75, 100, 125, 150, 200	○	○	(ø40 to ø63)
	10-CG1W□100	100											
	11-CG1W□20	20											
	11-CG1W□25	25											
	11-CG1W□32	32											
	11-CG1W□40	40											
	11-CG1W□50	50											
	11-CG1W□63	63											
	11-CG1W□80	80											
	11-CG1W□100	100											

Specifications

Item	Bore size (mm)									
	20	25	32	40	50	63	80	100		
Proof pressure	1.5 MPa									
Maximum operating pressure	1.0 MPa									
Minimum operating pressure	0.05 MPa									
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C (No freezing)									
Piston speed	10-/11-: 30 to 400 mm/s									
Stroke length tolerance	Up to 300st ^{+1.4} mm									
Mounting	Basic/Axial foot/Rod flange									
Grease	10-/11-: Fluorine grease									
Cleanliness class (ISO class)	10-: Class 4									
	11-: Class 3									
Allowable kinetic energy (J)	Rubber bumper	Male rod end	0.28	0.41	0.66	1.20	2.00	3.40	5.90	9.90
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54

Suction Flow Rate of Vacuum Suction Type (Reference values)

Size	Suction flow rate L/min (ANR)
20/25/32/40	10
50/63/80/100	20

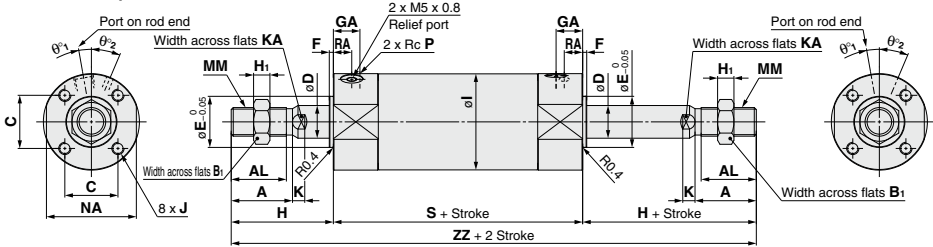
Auto Switch

Auto switch specifications and the proper mounting positions for stroke end detection are the same as those for double acting, single rod type.

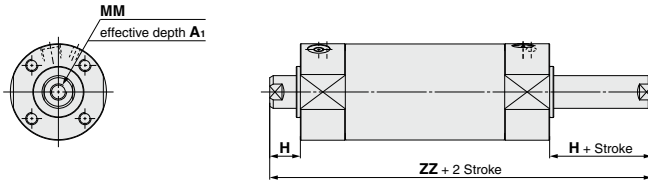
Refer to page 889 for the applicable auto switch list.

Basic (B): ¹⁰⁻/₁₁₋CG1WB

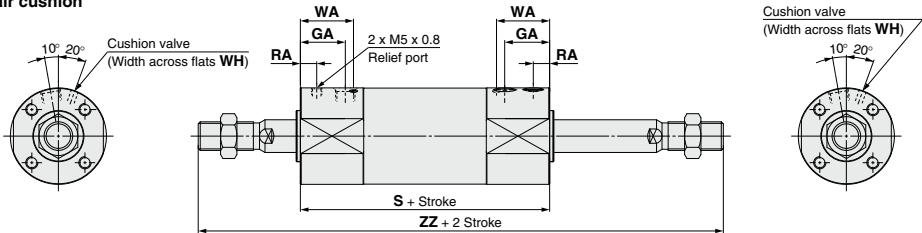
With rubber bumper



Female rod end



With air cushion



Bore size	Stroke range		A	AL	B ₁	C	D	E	F	GA	H	H ₁	I	J	K	KA	MM	NA	P	RA	S	θ ¹	θ ²	ZZ
	Standard	Long																						
20	Up to 200	201 to 1500	18	15.5	13	14	8	12	2	20	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8	7	93	0	0	163
25			22	19.5	17	16.5	10	14	2	20	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8	7	93	0	0	173
32			22	19.5	17	20	12	18	2	20	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	7	95	0	0	175
40			30	27	19	26	16	25	2	13	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	9	87	10	23	187
50	Up to 300	301 to 1500	35	32	27	32	20	30	2	14	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	10	102	10	23	218
63			35	32	27	38	20	32	2	14	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	10	102	10	20	218
80			40	37	32	50	25	40	3	20	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	86	3/8	10	122	10	20	264
100			40	37	41	60	30	50	3	20	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	106	1/2	10	122	10	20	264

Female rod end (mm)

Bore size	A ₁	H	MM	ZZ	
				Rubber	Air
20	8	13	M4 x 0.7	119	—
25	8	14	M5 x 0.8	121	—
32	12	14	M6 x 1.0	123	—
40	13	15	M8 x 1.25	117	135
50	18	16	M10 x 1.5	134	158
63	18	16	M10 x 1.5	134	158
80	21	19	M14 x 1.5	160	—
100	25	22	M16 x 1.5	166	—

With air cushion (mm)

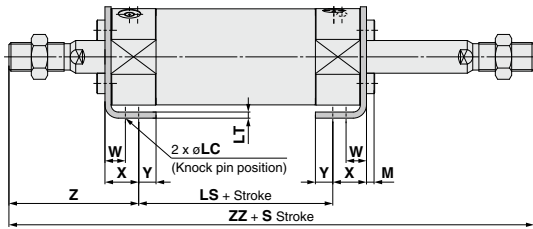
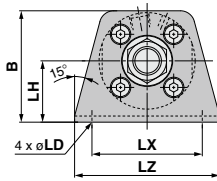
Bore size	Stroke range		GA	S	RA	WA	WH	ZZ
	Standard	Long						
40			22	105	8	26	1.5	205
50	Up to 300	301 to 1500	26	126	9	30	3	242
63			26	126	9	30	3	242

Directional Control Valves
 Air Cylinders
 Rotary Actuators
 Air Grippers
 Air Preparation Equipment
 Modular F. R.
 Pressure Control Equipment
 Fittings & Tubing
 Flow Control Equipment
 Pressure Switches/ Pressure Sensors

Air Cylinder $\frac{10}{11}$ -CG1W-Z

Axial Foot (L): $\frac{10}{11}$ -CG1WL

With rubber bumper



(mm)

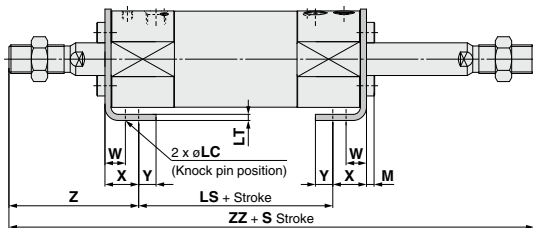
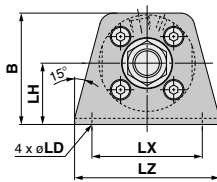
Bore size	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
20	34	4	6	20	69	3	32	44	3	10	15	7	47	163
25	38.5	4	6	22	69	3	36	49	3.5	10	15	7	52	173
32	45	4	7	25	69	3	44	58	3.5	10	16	8	53	175
40	54.5	4	7	30	60	3	54	71	4	10	16.5	8.5	63.5	187
50	70.5	5	10	40	67	4.5	66	86	5	17.5	22	11	75.5	218
63	82.5	5	12	45	67	4.5	82	106	5	17.5	22	13	75.5	218
80	101	6	11	55	74	4.5	100	125	5	20	28.5	14	95	264
100	121	6	14	65	74	6	120	150	7	20	30	16	95	264

* Other dimensions are the same as basic type.

* For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.

* Refer to the basic type for the female rod end.

With air cushion



(mm)

Bore size	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
40	54.5	4	7	30	78	3	54	71	4	10	16.5	8.5	63.5	205
50	70.5	5	10	40	91	4.5	66	86	5	17.5	22	11	75.5	242
63	82.5	5	12	45	91	4.5	82	106	5	17.5	22	13	75.5	242

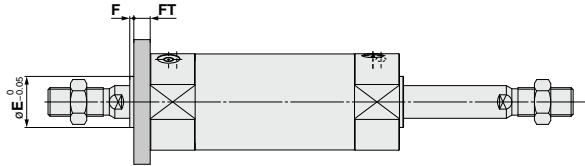
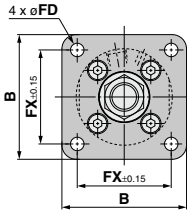
* Other dimensions are the same as basic type.

* For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.

* Refer to the basic type for the female rod end.

Rod Flange (F): ¹⁰⁻₁₇₋CG1WF

With rubber bumper

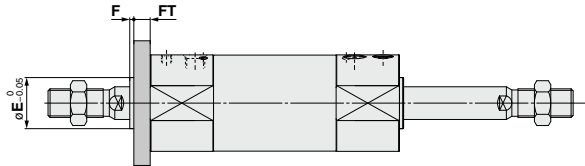
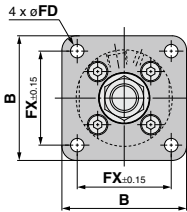


(mm)

Bore size	B	E	F	FX	FD	FT
20	40	12	2	28	5.5	6
25	44	14	2	32	5.5	7
32	53	18	2	38	6.6	7
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9
80	104	40	3	82	11	11
100	128	50	3	100	14	14

Note) End boss is machined on the flange for øE.
 * Other dimensions are the same as basic type.
 * Refer to the basic type for the female rod end.

With air cushion



(mm)

Bore size	B	E	F	FX	FD	FT
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9

Note) End boss is machined on the flange for øE.
 * Other dimensions are the same as basic type.
 * Refer to the basic type for the female rod end.

Directional Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation Equipment

Modular F. R.

Pressure Control Equipment

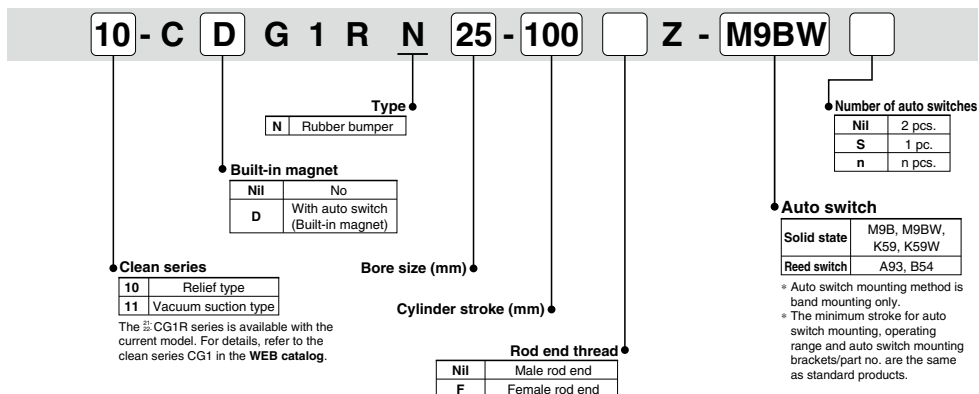
Fittings & Tubing

Flow Control Equipment

Pressure Switches/ Pressure Sensors

Series 10-11-CG1R-Z $\phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$ Direct Mount Cylinder

How to Order



Model

Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
							Rubber	Air
Relief type	10-CG1RN20	20	1/8	Non-lube	Double acting,	25, 50, 75, 100, 125, 150	○	○
	10-CG1RN25	25						
	10-CG1RN32	32						
	10-CG1RN40	40						
	10-CG1RN50	50						
	10-CG1RN63	63						
Vacuum suction type	11-CG1RN20	20	1/4	Single rod	25, 50, 75, 100, 125, 150, 200, 250, 300	○	○	
	11-CG1RN25	25						
	11-CG1RN32	32						
	11-CG1RN40	40						
	11-CG1RN50	50						
	11-CG1RN63	63						

Specifications

Item	Bore size (mm)							
	20	25	32	40	50	63		
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.05 MPa							
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C (No freezing)							
Piston speed	10/-11: 30 to 400 mm/s							
Stroke length tolerance	UP to 300 ⁺¹⁴ ₀ mm							
Grease	10/-11: Fluorine grease							
Cleanliness class (ISO class)	10: Class 4							
	11: Class 3							
Allowable kinetic energy (J)	Rubber bumper	Male rod end	0.28	0.41	0.66	1.20	2.00	3.40
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54

Suction Flow Rate of Vacuum Suction Type (Reference values)

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

Applicable Switch Specifications (Refer to the WEB catalog for auto switches not in the following table.)

Type	Special function	Electrical entry	Indicator/light	Wiring (Output)	Load voltage		Auto switch model/ Applicable bore size ø20 to ø63	Lead wire length (m) [*]				Pre-wired connector	Applicable load	
					DC	AC		0.5 (Nil)	1 (M)	3 (L)	5 (Z)		IC circuit	Relay, PLC
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N	●	●	●	○	○		
				3-wire (PNP)			M9P	●	—	●	○	○		
				2-wire	M9B		●	●	●	○	○			
	Diagnostic indication (2-color indication)			24 V	3-wire (NPN)		M9NW	●	●	●	○	○	IC circuit	—
					3-wire (PNP)		M9PW	●	—	●	○	○		
					2-wire		M9BW	●	●	●	○	○		
					2-wire		M9BW	●	●	●	○	○		
Reed auto switch	—	Grommet	Yes No Yes No	2-wire	24 V	12 V	100 V	A93	●	●	●	—	IC circuit	Relay, PLC
							100 V or less	A90	●	—	●	—		
							100 V, 200 V	B54	●	—	●	—		
							200 V or less	B64	●	—	●	—		

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
 1 m..... M (Example) M9NWM
 3 m..... L (Example) M9NWL
 5 m..... Z (Example) M9NWZ

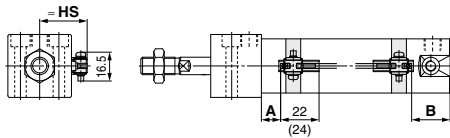
* Solid state auto switches marked with "○" are produced upon receipt of order.
 PLC: Programmable Logic Controller

Refer to page 889 for the applicable auto switch list.

* For applicable auto switches other than listed above, refer to the table in the dashed line on the last page of the auto switch mounting section of the standard cylinder series in the Web Catalog.

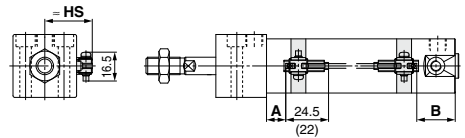
Auto Switch Proper Mounting Position (Detection at Stroke End)

D-M9□, M9□W



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-A9□



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

Auto Switch Proper Mounting Position (Detection at Stroke End) (mm)

Auto switch model	D-M9□ D-M9□W D-M9□A		D-A9□	
	A	B	A	B
20	12	24	8	20
25	11.5	24.5	7.5	20.5
32	13	25	9	21
40	18	27	14	23
50	20	32	16	28
63	18.5	33.5	14.5	29.5

Note) Adjust the auto switch after confirming the operating state in the actual setting.

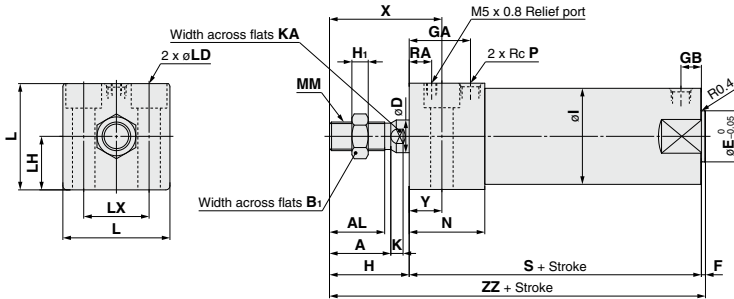
Auto Switch Mounting Height (mm)

Auto switch model	D-M9□ D-M9□W D-M9□A D-A9□
Bore size	Hs
20	26.5
25	29
32	32.5
40	37
50	42.5
63	49.5

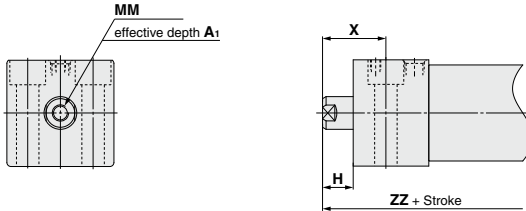
Air Cylinder 10-11-**CG1R-Z**

Basic: 19-11-**CG1RN**

Male thread type



Female thread type



Bore size	Stroke range	A	AL	B ₁	D	E	F	GA	GB	H	H ₁	I	K	KA	L	LD	LH	LX	MM	N	P	RA	S	X	Y	ZZ
20	Up to 150	18	15.5	13	8	12	2	20	10	27	5	26	5	6	30.4	ø5.5, ø9.5 counterbore depth 6	15	18	M8 x 1.25	27	1/8	8	75	38	11	104
25	Up to 200	22	19.5	17	10	14	2	22	10	32	6	31	5.5	8	36.4	ø6.6, ø11 counterbore depth 7	18	22	M10 x 1.25	29	1/8	9	77	44	12	111
32	Up to 200	22	19.5	17	12	18	2	26	10	32	6	38	5.5	10	42.4	ø9, ø14 counterbore depth 9	21	24	M10 x 1.25	33	1/8	9	83	45	13	117
40	Up to 300	30	27	19	16	25	2	30	10	39	8	47	6	14	52.4	ø11, ø17.5 counterbore depth 12	26	32	M14 x 1.5	37	1/8	11	94	55	16	135
50	Up to 300	35	32	27	20	30	2	33	12	45	11	58	7	18	64.5	ø14, ø20 counterbore depth 14	32	41	M18 x 1.5	44	1/4	12	108	62	17	155
63	Up to 300	35	32	27	20	32	2	39	12	45	11	72	7	18	76.6	ø18, ø26 counterbore depth 18	38	46	M18 x 1.5	50	1/4	12	114	64	19	161

Female rod end (mm)

Bore size	A ₁	H	MM	X	ZZ
20	8	13	M4 x 0.7	24	90
25	8	14	M5 x 0.8	26	93
32	12	14	M6 x 1.0	27	99
40	13	15	M8 x 1.25	31	111
50	18	16	M10 x 1.5	33	126
63	18	16	M10 x 1.5	35	132

Series 21-22-CG1W

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100
Double Rod Cylinder

How to Order

21 - C D G 1 W L N 25 - 100 - M9BW - C

- Mounting**

B	Basic
L	Axial foot
F	Rod flange
- Type**

N	Rubber bumper, ø20 to ø100
A	Air cushion, ø40 to ø63
- Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)
- Copper, fluorine and silicone-free + Low particle generation**

21	Relief type
22	Vacuum suction type
- Bore size (mm)**
- Port thread type**

Nil	Rc
TN	NPT
TF	G
- Cylinder stroke (mm)**
- Auto switch**

Solid state	M9B, M9BW
Reed	A93

* Auto switch mounting method is band mounting only.
- Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.
- Auto switch mounting brackets** (Note)

Note) This symbol is indicated when the D-A9□ or M9□ type auto switch is specified. This mounting bracket does not apply to other auto switches (D-C7□ and H7□, etc.) (Nil)

Model

Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
							Rubber	Air
Relief type	21-CG1W□20	20	Non-lube	Double acting, Double rod	25, 50, 75, 100, 125, 150, 200			
	21-CG1W□25	25						
	21-CG1W□32	32						
	21-CG1W□40	40						
	21-CG1W□50	50						
	21-CG1W□63	63						
Vacuum suction type	21-CG1W□80	80	Non-lube	Double acting, Double rod	25, 50, 75, 100, 125, 150, 200			
	22-CG1W□20	20						
	22-CG1W□25	25						
	22-CG1W□32	32						
	22-CG1W□40	40						
	22-CG1W□50	50						
	22-CG1W□63	63						
	22-CG1W□80	80						
	22-CG1W□100	100						

Specifications

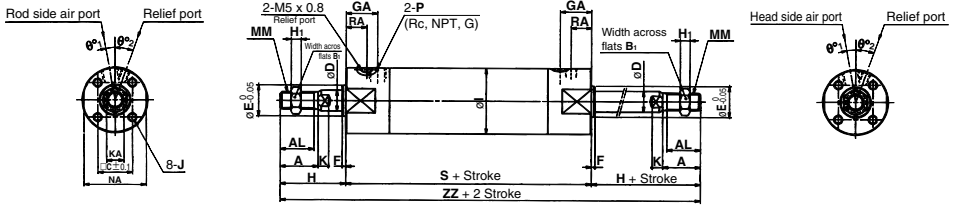
Item	Bore size (mm)
	20/25/32/40/50/63/80/100
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	21-/22-: 50 to 400 mm/s
Stroke length tolerance	Up to 300 ^{+1.4} st mm
Mounting	Basic/Axial foot/Rod flange
Grease	21-/22-: Lithium soap based grease
Cleanliness class (ISO class)	21-: Class 5 22-: Class 3

Suction Flow Rate of Vacuum Suction Type (Reference values)

Bore size	Suction flow rate [L/min (ANR)]
20/25/32/40	10
50/63/80/100	20

Basic Style (B) / 21-22-CG1WB****

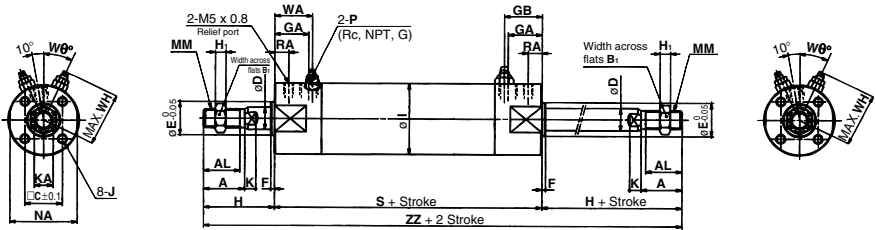
With rubber bumper



Bore size	(mm)																					
	A	AL	B1	C	D	E	F	GA	H	H1	I	J	K	KA	MM	NA	P	RA	S	θ°1	θ°2	ZZ
20	18	15.5	13	14	8	12	2	20	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8<M5 x 0.8>	7	93	0	0	163
25	22	19.5	17	16.5	10	14	2	20	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8<M5 x 0.8>	7	93	0	0	173
32	22	19.5	17	20	12	18	2	20<18>	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	7	95	0	0<23>	175
40	30	27	19	26	16	25	2	13<10>	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	9	87	10	23	187
50	35	32	27	32	20	30	2	14<12>	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	10	102	10	23	218
63	35	32	27	38	20	32	2	14<12>	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	10	102	10	20	218
80	40	37	32	50	25	40	3	20<17>	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	3/8	10	122	10	20	264
100	40	37	41	60	30	50	3	20<17>	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	1/2	10	122	10	20	264

Note) < >: Denotes the dimensions for G port.

With air cushion



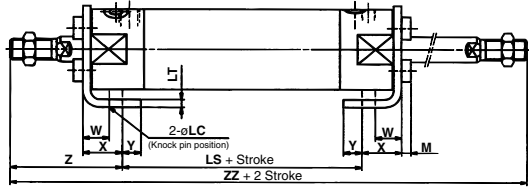
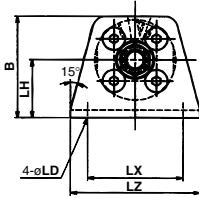
Bore size	(mm)																						
	A	AL	B1	C	D	E	F	GA	H	H1	I	J	K	KA	MM	NA	P	RA	S	WA	WH	Wθ	ZZ
40	30	27	19	26	16	25	2	22<19>	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	8	105	25	33	20°	205
50	35	32	27	32	20	30	2	26<24>	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	9	126	30	40.5	20°	242
63	35	32	27	38	20	32	2	26<24>	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	9	126	30	47.5	20°	242

Note) < >: Denotes the dimensions for G port.

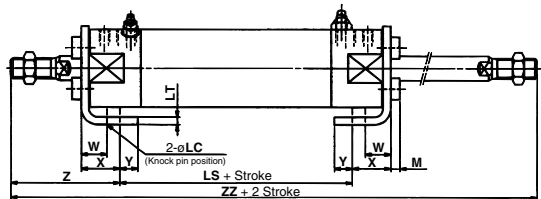
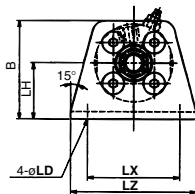
Air Cylinder ²¹⁻/₂₂₋CG1W

Axial foot style (L) / ²¹⁻/₂₂₋CG1WL

With rubber bumper



With air cushion



(mm)

Bore size	B	LCLD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ	
20	34	4	6	20	69	3	32	44	3	10	15	7	47	163
25	38.5	4	6	22	69	3	36	49	3.5	10	15	7	52	173
32	45	4	7	25	69	3	44	58	3.5	10	16	8	53	175
40	54.5	4	7	30	60	3	54	71	4	10	16.5	8.5	63.5	187
50	70.5	5	10	40	67	4.5	66	86	5	17.5	22	11	75.5	218
63	82.5	5	12	45	67	4.5	82	106	5	17.5	22	13	75.5	218
80	101	6	11	55	74	4.5	100	125	5	20	28.5	14	95	264
100	121	6	14	65	74	6	120	150	7	20	30	16	95	264

* Other dimensions are the same as basic style.

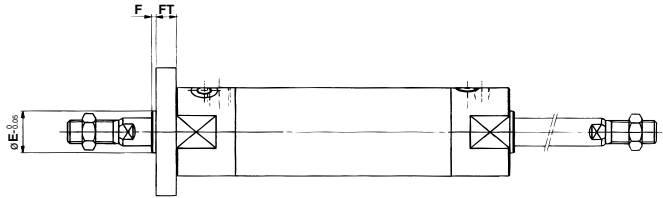
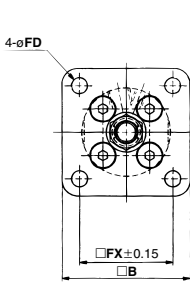
(mm)

Bore size	B	LCLD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ	
40	54.5	4	7	30	78	3	54	71	4	10	16.5	8.5	63.5	205
50	70.5	5	10	40	91	4.5	66	86	5	17.5	22	11	75.5	242
63	82.5	5	12	45	91	4.5	82	106	5	17.5	22	13	75.5	242

* Other dimensions are the same as basic style.

Rod side flange style (F) / 21-22-CG1WF****

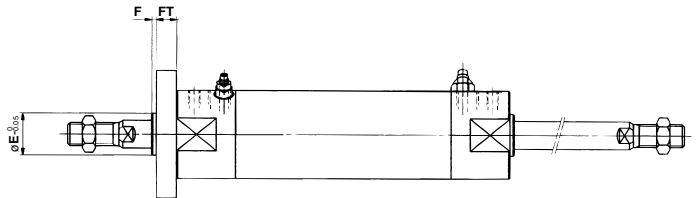
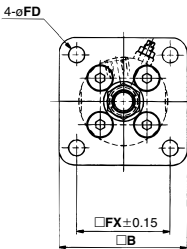
With rubber bumper



Bore size	B	E	F	FX	FD	FT
20	40	12	2	28	5.5	6
25	44	14	2	32	5.5	7
32	53	18	2	38	6.6	7
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9
80	104	40	3	82	11	11
100	128	50	3	100	14	14

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

With air cushion



Bore size	B	E	F	FX	FD	FT
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

Series 21-22-CG1R

ø20, ø25, ø32, ø40, ø50, ø63
Direct Mount Cylinder

How to Order

21 - C D G 1 R N 25 - **100** - **M9BW** - **C**

- Type**

N	Rubber bumper
---	---------------
- Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)
- Copper, fluorine and silicone-free + Low particle generation**

21	Relief type
22	Vacuum suction type
- Bore size (mm)**
- Port thread type**

Nil	Rc
TN	NPT
TF	G
- Cylinder stroke (mm)**
- Auto switch**

Solid state	M9B, M9BW
Reed	A93

* Auto switch mounting method is band mounting only.
- Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.
- Auto switch mounting brackets (Note)**

Note) This symbol is indicated when the D-A9□ or M9□ type auto switch is specified. This mounting bracket does not apply to other auto switches (D-C7□ and H7□, etc.) (Nil)

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion						
								Rubber	Air					
Relief type	21-CG1RN20	20	1/8	Non-lube	Double acting Single rod	25, 50, 75, 100, 125, 150	○	○	—					
	21-CG1RN25	25												
	21-CG1RN32	32												
	21-CG1RN40	40												
21-CG1RN50	50	1/4	25, 50, 75, 100, 125, 150, 200, 250, 300											
21-CG1RN63	63													
Vacuum suction type	22-CG1RN20	20	1/8			Non-lube				Double acting Single rod	25, 50, 75, 100, 125, 150	○	○	—
	22-CG1RN25	25												
	22-CG1RN32	32												
	22-CG1RN40	40												
	22-CG1RN50	50		1/4	25, 50, 75, 100, 125, 150, 200, 250, 300									
	22-CG1RN63	63												

Specifications

Item	Bore size (mm)
	20/25/32/40/50/63
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	21-/22-: 50 to 400 mm/s
Stroke length tolerance	Up to 300 ^{+1.4} st mm
Grease	21-/22-: Lithium soap based grease
Cleanliness class (ISO class)	21-: Class 5
	22-: Class 3

Suction Flow Rate of Vacuum Suction Type (Reference values)

Bore size	Suction flow rate [L/min (ANR)]
20/25/32/40	10
50/63	20

Applicable Switch Specifications (Refer to Best Pneumatics No. 2 for auto switches not in the following table.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)*				Pre-wired connector	Applicable load	
					DC	AC		Applicable bore size		0.5 (Nil)	1 (M)			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				—			●	—	●	○	○			
				3-wire (PNP)	M9P		●	●	●	○	○			
				—	●		—	●	○	○				
				2-wire	M9B		●	●	●	○	○			
	Diagnostic indication (2-color indicator)			24 V	3-wire (NPN)		M9NW	●	●	●	○	○	IC circuit	
					—		●	—	●	○	○			
				5 V, 12 V	3-wire (PNP)		M9PW	●	●	●	○	○		
					—		●	—	●	○	○			
				12 V	2-wire		M9BW	●	●	●	○	○		
Reed auto switch	—	Grommet	No Yes No	2-wire	24 V	100 V	A93	●	●	●	—	—	IC circuit	Relay, PLC
						100 V less	A90	●	—	●	—	—		
						100 V, 200 V	B54	●	●	●	—	—		
						200 V less	B64	●	—	●	—	—		

*Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
 1 m..... M (Example) M9NWM
 3 m..... L (Example) M9NWL
 5 m..... Z (Example) M9NWX

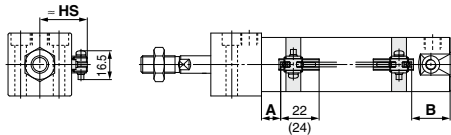
* Solid state auto switches marked with "○" are produced upon receipt of order.
 PLC: Programmable Logic Controller

Refer to page 182 for a list of applicable auto switches.

* For applicable auto switches other than listed above, refer to the table in the dashed line on the last page of the standard cylinder series in Best Pneumatics No. 2.

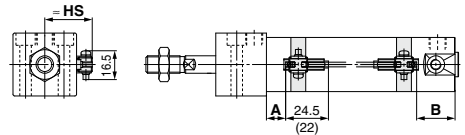
Auto Switches/Proper Mounting Position at Stroke end Detection

D-M9□, M9□W



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-A9□



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

Auto switch proper mounting position (Detection at stroke end) (mm)

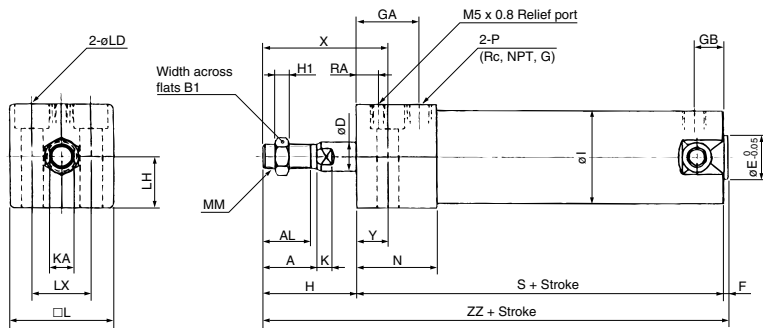
Auto switch model	D-M9□ D-M9□W D-M9□A		D-A9□	
	A	B	A	B
20	12	24	8	20
25	12	24	8	20
32	13	25	9	21
40	18	27	14	23
50	20	32	16	28
63	20	32	16	28

Note) Adjust the auto switch after confirming the operating condition in the actual setting.

Auto switch mounting height (mm)

Auto switch model	D-M9□ D-M9□W D-M9□A D-A9□
Bore size	Hs
20	26.5
25	29
32	32.5
40	37
50	42.5
63	49.5

Basic Style/²¹⁻/₂₂₋CG1RN



Bore size	Stroke range	A	AL	B ₁	D	E	F	GA	GB	H	H ₁	I	K	KA	L	LD	LH	LX	MM	N	P	RA	S	X	Y	ZZ
20	Up to 150	18	15.5	13	8	12	2	20	10	27	5	26	5	6	30.4	ø5.5,ø9.5 counterbore depth 6	15	18	M8 X 1.25	27	1/8 <M5 X 0.8>	7	75	38	11	104
25	Up to 200	22	19.5	17	10	14	2	22	10	32	6	31	5.5	8	36.4	ø6.6,ø11 counterbore depth 7	18	22	M10 X 1.25	29	1/8 <M5 X 0.8>	9	77	44	12	111
32	Up to 200	22	19.5	17	12	18	2	26	10	32	6	38	5.5	10	42.4	ø9,ø14 counterbore depth 9	21	24	M10 X 1.25	33	1/8	9	83	45	13	117
40	Up to 300	30	27	19	16	25	2	30	10	39	8	47	6	14	52.4	ø11,ø17.5 counterbore depth 12	26	32	M14 X 1.5	37	1/8	11	94	55	16	135
50	Up to 300	35	32	27	20	30	2	33	12	45	11	58	7	18	64.5	ø14,ø20 counterbore depth 14	32	41	M18 X 1.5	44	1/4	12	108	62	17	155
63	Up to 300	35	32	27	20	32	2	39	12	45	11	72	7	18	76.6	ø18,ø26 counterbore depth 18	38	46	M18 X 1.5	50	1/4	12	114	64	19	161

Note) < >: Denotes the dimensions for G port.