

Air Cylinder: Non-rotating Rod Type Double Acting

CG1K Series

ø20, ø25, ø32, ø40, ø50, ø63

RoHS

How to Order

Type

N	Rubber bumper
A	Air cushion (ø40 to ø63 only)

Cylinder stroke (mm)
Refer to "Standard Strokes" on page 414.

Pivot bracket

Nil	None
N	Pivot bracket is shipped together with the product.

* Only for D, U, T mounting types
* Pivot bracket is shipped together with the product, but not assembled.

CG1K B N 25-100 Z- - -

With auto switch **CDG1K B N 25-100 Z- - - M9BW - - -**

With auto switch (Built-in magnet)
Double acting, Non-rotating rod type

Mounting

B	Basic	G	Head flange
Z*	Basic (without trunnion mounting female thread)	U	Rod trunnion
L	Axial foot	T	Head trunnion
F	Rod flange	D	Clevis

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

Rod end bracket

Nil	None
V	Single knuckle joint
W	Double knuckle joint

* No bracket is provided for the female rod end.
* Rod end bracket is shipped together with the product, but not assembled.
* A knuckle joint pin is not provided with the single knuckle joint.

Number of auto switches

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

Auto switch

Nil	Without auto switch
-----	---------------------

* For applicable auto switches, refer to the table below.

Rod end thread

Nil	Male rod end
F	Female rod end

Made to Order
For details, refer to page 414.

Note) Mounting bracket is shipped together with the product, but not assembled.
* The cylinder for F, G, L, D mounting types is Z: Basic (without trunnion mounting female thread).

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.

(Example) CDG1KFA32-100Z

Applicable Auto Switches/Refer to pages 1271 to 1365 for further information on auto switches.

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 ø20 to ø63		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							Perpendicular	In-line										
Solid state auto switch	_____	Grommet	Yes	3-wire (NPN) 3-wire (PNP)	24 V	5 V, 12 V	—	M9NV M9PV M9BV	M9N M9P M9B	● ● ●	● ● ●	● ● ○	— — —	○ ○ ○	IC circuit	Relay, PLC		
		Connector		2-wire				12 V	M9BV —	M9B H7C	● ●	— ●	● ●	○ ●			— —	○ —
	Grommet			3-wire (NPN) 3-wire (PNP)				5 V, 12 V	M9NVW M9PVW	M9NW M9PW	● ●	● ●	○ ○	— —			○ ○	IC circuit
	Diagnostic indication (2-color indicator)	Grommet		2-wire				12 V	M9BWV M9NAV ^{*1}	M9BW M9NA ^{*1}	● ○	● ○	● ○	○ ○			— —	— —
				Water resistant (2-color indicator)	3-wire (NPN) 3-wire (PNP)	5 V, 12 V	M9PAV ^{*1} M9BAV ^{*1}	M9PA ^{*1} M9BA ^{*1}	○ ○	○ ○	● ●	○ ○	— —	— —	— —			
		Diagnostic output (2-color indicator)			Grommet	2-wire	12 V	—	—	○ ●	○ ●	○ ○	— —	— —	— —	— —		
				4-wire (NPN)		5 V, 12 V	—	H7NF	● —	— ●	○ ○	— —	— —	— —	— —			
	Reed auto switch	_____		Grommet	Yes	3-wire (Equiv. to NPN)	—	5 V	—	A96V —	A96	● —	— ●	— —	— —	— —	IC circuit	—
						No				100 V 100 V or less	A93V ^{*2} A90V	A93 A90	● ●	● —	● —	— —	— —	
		Yes		100 V, 200 V 200 V or less		— B64	— ●	— —	● ●	— —	— —	— —	— —					
Connector		—	—	— C73C		— ●	— —	— ●	— ●	— —	— —	— —						
		No	24 V or less	— C80C		— ●	— —	— ●	— ●	— —	— —	— —						
Diagnostic indication (2-color indicator)		Grommet	—	—		— B59W	— ●	— —	— ●	— —	— —	— —	— —					
			Yes	—		—	—	—	—	—	—	—	—	—				

*1 Water resistant type auto switches can be mounted on the above models, but in this case SMC cannot guarantee water resistance.

Please consult with SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW 5 m..... Z (Example) M9NWZ * Solid state auto switches marked with "○" are produced upon receipt of order.
1 m..... M (Example) M9NWM None..... N (Example) H7CN
3 m..... L (Example) M9NWL

* Since there are other applicable auto switches than listed above, refer to page 446 for details.

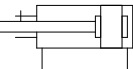
* For details about auto switches with pre-wired connector, refer to pages 1340 and 1341.

* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

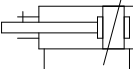


Symbol

Rubber bumper



Air cushion



Made to Order
[Click here for details](#)

Symbol	Specifications
-XA□	Change of rod end shape
-XC8	Adjustable stroke cylinder/Adjustable extension type*1
-XC9	Adjustable stroke cylinder/Adjustable retraction type*1
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type*1
-XC12	Tandem cylinder*1
-XC13	Auto switch rail mounting*1
-XC20	Head cover axial port*1
-XC27	Double clevis and double knuckle joint pins made of stainless steel

*1 Only compatible with cylinders with rubber bumper.

Refer to pages 440 to 446 for cylinders with auto switches.
• Auto switch proper mounting position (detection at stroke end) and its mounting height
• Minimum stroke for auto switch mounting
• Auto switch mounting brackets/Part no.
• Operating range
• Cylinder mounting bracket, by stroke/ Auto switch mounting surfaces



Precautions

Refer to page 448 before handling.

Specifications

Bore size (mm)	20	25	32	40	50	63
Action	Double acting, Single rod					
Lubricant	Not required (Non-lube)					
Fluid	Air					
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	50 to 500 mm/s					
Stroke length tolerance	Up to 1000 st ^{+1.4} / ₀ mm, Up to 1500 st ^{+1.8} / ₀ mm					
Cushion	Rubber bumper, Air cushion (ø40 to ø63 only)					
Rod non-rotating accuracy ^(Note)	±1°	±0.8°			±0.5°	
Mounting	Basic, Basic (without trunnion mounting female thread), Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis					

Note) The values are for standard strokes.

Accessories Refer to page 395 for part numbers and dimensions.

Mounting		Basic	Axial foot	Rod flange	Head flange	Rod trunnion	Head trunnion	Clevis
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint*1 (With pin)	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●	●	●

*1 A double knuckle joint pin and retaining rings are shipped together.

*2 Stainless steel mounting brackets and accessories are also available.
Refer to page 396 for details.

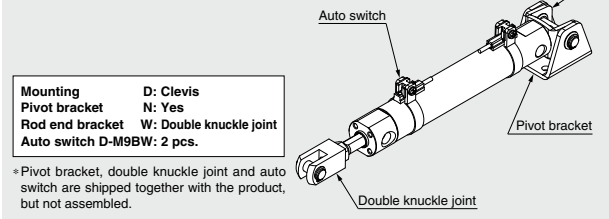
Standard Strokes

Bore size	Standard stroke ^{Note 1)}	Manufacturable stroke ^(mm)
20	25, 50, 75, 100, 125, 150, 200	1 to 1500
25	25, 50, 75, 100, 125, 150, 200, 250, 300	1 to 1500
32		
40		
50, 63		

Note 1) Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)
Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on pages 8 to 19. In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Ordering Example of Cylinder Assembly

Cylinder model: CDG1KDN20-100Z-NW-M9BW



Weights

		(kg)					
Bore size (mm)		20	25	32	40	50	63
Basic weight	Basic	0.10	0.17	0.26	0.41	0.77	1.07
	Axial foot	0.21	0.30	0.42	0.63	1.25	1.79
	Flange	0.18	0.27	0.40	0.61	1.11	1.57
	Trunnion	0.11	0.19	0.29	0.46	0.91	1.21
	Clevis	0.15	0.25	0.41	0.64	1.17	1.75
Pivot bracket		0.08	0.09	0.17	0.25	0.44	0.80
Single knuckle joint		0.05	0.09	0.09	0.10	0.22	0.22
Double knuckle joint (with pin)		0.05	0.09	0.09	0.13	0.26	0.26
Additional weight per 50 mm of stroke		0.05	0.07	0.09	0.15	0.22	0.26
Additional weight with air cushion		—	—	—	0	0.01	0.04
Additional weight for long stroke		0.01	0.01	0.02	0.03	0.06	0.12
Weight reduction for female rod end		-0.01	-0.02	-0.02	-0.05	-0.10	-0.10

Calculation (Example) **CG1KLN20-100Z**

(Foot, ø20, 100 stroke)

• Basic weight..... 0.21 (Foot, ø20)

• Additional weight..... 0.05/50 stroke

• Air cylinder stroke..... 100 stroke

0.21 + 0.05 x 100/50 = **0.31 kg**

Mounting Brackets/Part No.

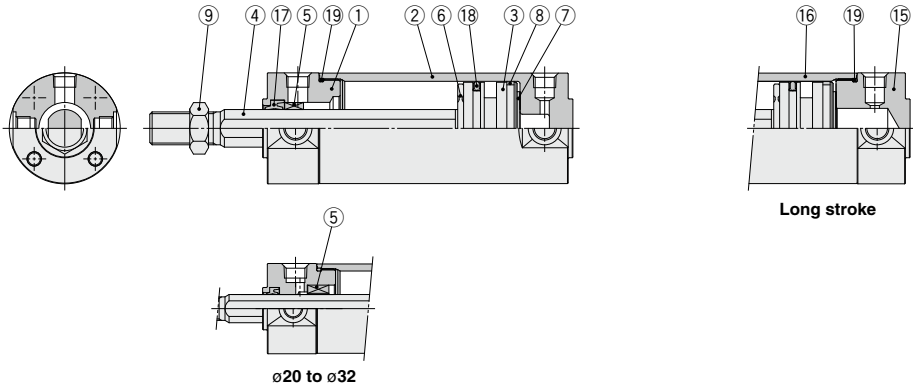
Mounting bracket	Order q'ty.	Bore size (mm)						Contents
		20	25	32	40	50	63	
Axial foot	2 Note)	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	2 feet, 8 mounting bolts
Flange	1	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	1 flange, 4 mounting bolts
Trunnion pin	1	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	2 trunnion pins, 2 trunnion bolts, 2 flat washers
Clevis	1	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	1 clevis, 4 mounting bolts, 1 clevis pin, 2 retaining rings
Pivot bracket	1	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	1 pivot bracket

Note) Order two feets per cylinder.

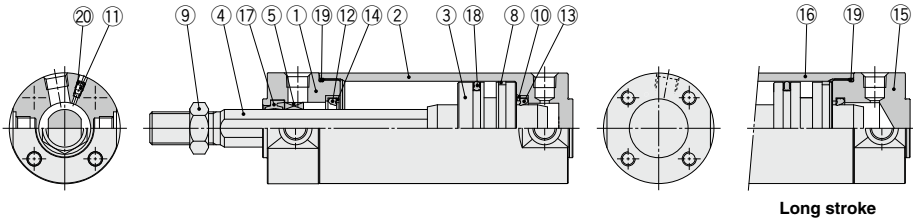
CG1K Series

Construction

With rubber bumper



With air cushion



Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Anodized
2	Tube cover	Aluminum alloy	Hard anodized
3	Piston	Aluminum alloy	
4	Piston rod	Stainless steel Carbon steel*	For ø20 or ø25 with built-in magnet Hard chrome plating*
5	Non-rotating guide	Bearing alloy	
6	Bumper	Resin	ø32 or larger is common.
7	Bumper	Resin	
8	Wear ring	Resin	
9	Rod end nut	Carbon steel	Zinc chromated
10	Seal retainer	Rolled steel	Zinc chromated
11	Cushion valve	ø40 or smaller Carbon steel	Electroless nickel plating
		ø50 or larger Steel wire	Zinc chromated
12	Cushion seal A	Urethane	ø32 or larger is common.
13	Cushion seal B	Urethane	
14	Cushion seal holder	Aluminum alloy	
15	Head cover	Aluminum alloy	Anodized
16	Cylinder tube	Aluminum alloy	Hard anodized
17	Rod seal	NBR	
18	Piston seal	NBR	
19	Tube gasket	NBR	
20	Valve seal	NBR	

Note) For cylinders with auto switches, the magnet is installed in the piston.

* The material is stainless steel for ø20 to ø32.

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
20	CG1KN20Z-PS	Set of the nos. 17, 18, 19
25	CG1KN25Z-PS	
32	CG1KN32Z-PS	
40	CG1KN40Z-PS	

Note) As sizes ø50 and larger cannot be disassembled, the seal cannot be replaced.

Note) Refer to the Specific Product Precautions on page 448 for Disassembly/Replacement.

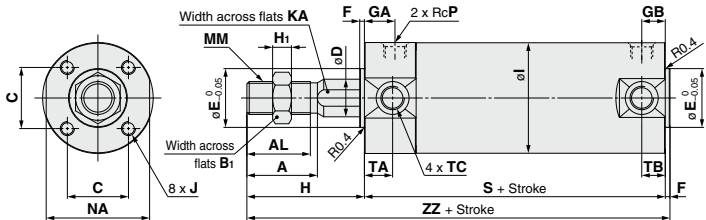
* The seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

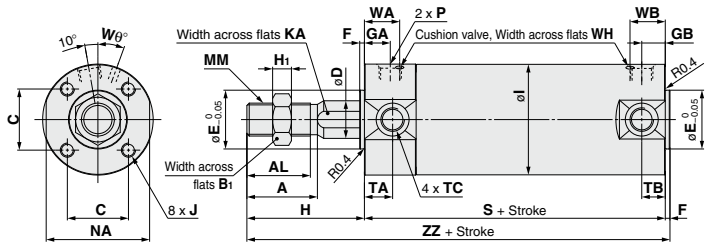
Grease pack part number: GR-S-010 (10 g)

Basic

With rubber bumper
ø20 to ø63



With air cushion
ø40 to ø63

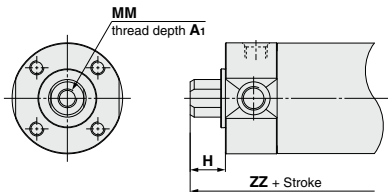


With Air Cushion (mm)

Bore size	WA	WB	Wθ	WH
40	17	15 (17)	20°	1.5
50	18	16 (18)	20°	3
63	18	17 (18)	20°	3

Note) (): Denotes the dimensions for long stroke.

Female rod end



Female Rod End (mm)

Bore size	A1	H	MM	ZZ
20	8	13	M4 x 0.7	84 (92)
25	8	14	M5 x 0.8	85 (93)
32	12	14	M6 x 1	87 (95)
40	13	15	M8 x 1.25	95 (104)
50	18	16	M10 x 1.5	108 (120)
63	18	16	M10 x 1.5	108 (120)

Bore size	Stroke range		A	AL	B1	C	D	E	F	GA	GB	H	H1	I	J	KA	MM	NA	P	S	TA	TB	TC	ZZ
	Standard	Long stroke																						
20	Up to 200	201 to 1500	18	15.5	13	14	9.2	12	2	12	10 (12)	35	5	26	M4 x 0.7 depth 7	8	M8 x 1.25	24	1/8	69 (77)	11	11	M5 x 0.8	106 (114)
25	Up to 300	301 to 1500	22	19.5	17	16.5	11	14	2	12	10 (12)	40	6	31	M5 x 0.8 depth 7.5	10	M10 x 1.25	29	1/8	69 (77)	11	11	M6 x 0.75	111 (119)
32	Up to 300	301 to 1500	22	19.5	17	20	12	18	2	12	10 (12)	40	6	38	M5 x 0.8 depth 8	10	M10 x 1.25	35.5	1/8	71 (79)	11	10 (11)	M8 x 1.0	113 (121)
40	Up to 300	301 to 1500	30	27	19	26	16	25	2	13	10 (13)	50	8	47	M6 x 1 depth 12	14	M14 x 1.5	44	1/8	78 (87)	12	10 (12)	M10 x 1.25	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	18	M18 x 1.5	55	1/4	90 (102)	13	12 (13)	M12 x 1.25	150 (162)
63	Up to 300	301 to 1500	35	32	27	38	20	32	2	14	12 (14)	58	11	72	M10 x 1.5 depth 16	18	M18 x 1.5	69	1/4	90 (102)	13	12 (13)	M14 x 1.5	150 (162)

Note 1) Dimensions for each mounting bracket are the same as those for the CG1 standard or long stroke model. Refer to pages 387 to 393.
Note 2) (): Denotes the dimensions for long stroke.

CG1 Series

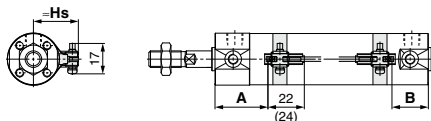
Auto Switch Mounting

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

Solid state auto switch

D-M9□/M9□W, D-M9□A

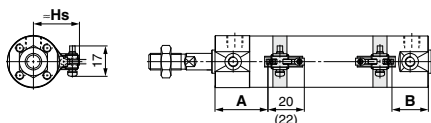
ø20 to ø63



(): Dimension of the D-M9□A
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V/M9□WV, D-M9□AV

ø20 to ø63

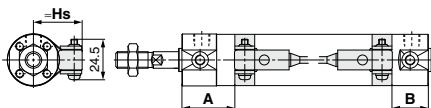


(): Dimension of the D-M9□AV
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-G5/K5/G5□W/G5BA

D-K59W, D-G59F, D-G5NT

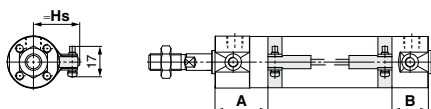
ø20 to ø100



D-H7□/H7□W

D-H7NF/H7BA/D-H7C

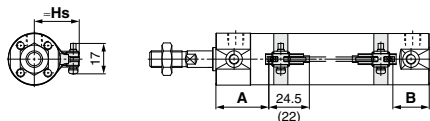
ø20 to ø63



Reed auto switch

D-A9□

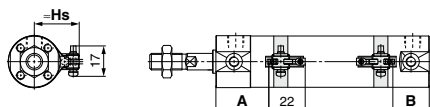
ø20 to ø63



(): Dimension of the D-A96
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-A9□V

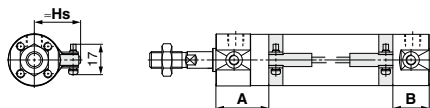
ø20 to ø63



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

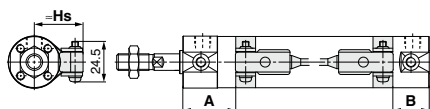
D-C7/C8, D-C73C/C80C

ø20 to ø63



D-B5/B6/B59W

ø20 to ø100



Auto Switch Mounting Height

(mm)

Auto switch model Bore size	D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□(V)	D-H7□ D-H7□W D-H7NF D-H7BA D-C7/C8	D-C73C D-C80C	D-G5/K5 D-G5□W D-K59W D-B5/B6 D-B59W	D-G5NT D-G59F D-H7C D-G5BA
	Hs	Hs	Hs	Hs	Hs
20	26.5	—	27	—	27.5
25	29	—	29.5	—	30
32	32.5	—	33	—	33.5
40	37	—	37.5	—	38
50	42.5	—	43	—	43.5
63	49.5	—	50	—	50.5
80	—	—	—	—	59
100	—	—	—	—	69.5

Auto Switch Proper Mounting Position (Detection at Stroke End)

Except Single Acting, Direct Mount Type (CG1R, CG1KR) and With End Lock (CBG1)

(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-H7□W D-H7NF D-H7BA D-H7□ D-H7C		D-C7□ D-C80 D-C73C D-C80C		D-G5□/K59 D-G5□W/K59W D-G59F D-G5NT D-G5BA		D-B5□ D-B64		D-B59W	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	33	24 (32)	29	20 (28)	28.5	19.5 (27.5)	29.5	20.5 (28.5)	25	16 (24)	23.5	14.5 (22.5)	26.5	17.5 (25.5)
25	32.5	24.5 (32.5)	28.5	20.5 (28.5)	28	20 (28)	29	21 (29)	24.5	16.5 (24.5)	23	15 (23)	26	18 (26)
32	34	25 (33)	30	21 (29)	29.5	20.5 (28.5)	30.5	21.5 (29.5)	26	17 (25)	24.5	15.5 (23.5)	27.5	18.5 (26.5)
40	39	27 (36)	35	23 (32)	34.5	22.5 (31.5)	35.5	23.5 (32.5)	31	19 (28)	29.5	17.5 (26.5)	32.5	20.5 (29.5)
50	46	32 (44)	42	28 (40)	41.5	27.5 (39.5)	42.5	28.5 (40.5)	38	24 (36)	36.5	22.5 (34.5)	39.5	25.5 (37.5)
63	44.5	33.5 (45.5)	40.5	29.5 (41.5)	40	29 (41)	41	30 (42)	36.5	25.5 (37.5)	35	24 (36)	38	27 (39)
80	—	—	—	—	—	—	—	—	49.5	30.5 (44.5)	48	29 (43)	51	32 (46)
100	—	—	—	—	—	—	—	—	48.5	31.5 (45.5)	47	30 (44)	50	33 (47)

Note 1) The values in () are for long stroke.

Note 2) Adjust the auto switch after confirming the operating condition in the actual setting.

Single Acting, Spring Return Type (S)

Auto switch model	Bore size	A dimensions				B
		Up to 50 st	51 to 100 st	101 to 125 st	126 to 200 st	
D-M9□(V) D-M9□W(V) D-M9□A(V)	20	58	83	108	—	24
	25	57.5	82.5	107.5	132.5	24.5
	32	59	84	109	134	25
	40	64	89	114	139	27
D-A9□(V)	20	54	79	104	—	20
	25	53.5	78.5	103.5	128.5	20.5
	32	55	80	105	130	21
	40	60	85	110	135	23
D-H7□ D-H7□W D-H7C D-H7BA D-H7NF	20	53.5	78.5	103.5	—	19.5
	25	53	78	103	128	20
	32	54.5	79.5	109.5	129.5	20.5
	40	59.5	84.5	109.5	134.5	22.5
D-C7□ D-C80 D-C73C D-C80C	20	54.5	79.5	104.5	—	20.5
	25	54	79	104	129	21
	32	55.5	80.5	105.5	130.5	21.5
	40	60.5	85.5	110.5	135.5	23.5
D-G5NT D-G59F	20	50	75	100	—	16
	25	49.5	74.5	99.5	124.5	16.5
	32	51	76	101	126	17
	40	56	81	106	131	19
D-B5□ D-B64	20	48.5	73.5	98.5	—	14.5
	25	48	73	98	123	15
	32	49.5	74.5	99.5	124.5	15.5
	40	54.5	79.5	104.5	129.5	17.5
D-B59W	20	51.5	76.5	101.5	—	17.5
	25	51	76	101	126	18
	32	52.5	77.5	102.5	127.5	18.5
	40	57.5	82.5	107.5	132.5	20.5

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

Auto Switch Proper Mounting Position (Detection at Stroke End)

Single Acting, Spring Extend Type (T)							(mm)
Auto switch model	Bore size	A	B dimensions				
			Up to 50 st	51 to 100 st	101 to 125 st	126 to 200 st	
D-M9□(V) D-M9□W(V) D-M9□A(V)	20	33	49	74	99	—	
	25	32.5	49.5	74.5	99.5	124.5	
	32	34	50	75	100	125	
	40	39	52	77	102	127	
D-A9□(V)	20	29	45	70	95	—	
	25	28.5	45.5	70.5	95.5	120.5	
	32	30	46	71	96	121	
	40	35	48	73	98	123	
D-H7□ D-H7□W D-H7C D-H7BA D-H7NF	20	28.5	44.5	69.5	94.5	—	
	25	28	45	70	95	120	
	32	29.5	45.5	70.5	95.5	120.5	
	40	34.5	47.5	72.5	97.5	122.5	
D-C7□ D-C80 D-C73C D-C80C	20	29.5	45.5	70.5	95.5	—	
	25	29	46	71	96	121	
	32	30.5	46.5	71.5	96.5	121.5	
	40	35.5	48.5	73.5	98.5	123.5	
D-G5NT D-G59F	20	25	41	66	91	—	
	25	24.5	41.5	66.5	91.5	116.5	
	32	26	42	67	92	117	
	40	31	44	69	94	119	
D-B5□ D-B64	20	23.5	39.5	64.5	89.5	—	
	25	23	40	65	90	115	
	32	24.5	40.5	65.5	90.5	115.5	
	40	29.5	42.5	67.5	92.5	117.5	
D-B59W	20	26.5	42.5	67.5	92.5	—	
	25	26	43	68	93	118	
	32	27.5	43.5	68.5	93.5	118.5	
	40	32.5	45.5	70.5	95.5	120.5	

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

Direct Mount Type (CG1R, CG1KR)														(mm)
Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-H7□W D-H7NF D-H7BA D-H7□ D-H7C		D-C7□ D-C80 D-C73C D-C80C		D-G59F D-G5NT		D-B5□ D-B64		D-B59W	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	12	24	8	20	7.5	19.5	8.5	20.5	4	16	2.5	14.5	5.5	17.5
25	11.5	24.5	7.5	20.5	7	20	8	21	3.5	16.5	2	15	5	18
32	13	25	9	21	8.5	20.5	9.5	21.5	5	17	3.5	15.5	6.5	18.5
40	18	27	14	23	13.5	22.5	14.5	23.5	10	19	8.5	17.5	11.5	20.5
50	20	32	16	28	15.5	27.5	16.5	28.5	12	24	10.5	22.5	13.5	25.5
63	18.5	33.5	14.5	29.5	14	29	15	30	10.5	25.5	9	24	12	27

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

Auto Switch Proper Mounting Position (Detection at Stroke End)

With End Lock (CBG1)

(mm)

Auto switch model Bore size	Lock position	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-H7□ D-H7C D-H7□W D-H7BA D-H7NF		D-G5□W D-K59W D-G59F D-G5 D-K5 D-G5NT D-G5BA		D-C7 D-C8 D-C73C D-C80C		D-B5 D-B6		D-B59W	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	Head end	33	36	29	32	28.5	31.5	25	28	29.5	32.5	23.5	26.5	26.5	29.5
	Rod end	44	24 (32)	40	20 (28)	39.5	19.5 (27.5)	36	16 (24)	40.5	20.5 (28.5)	34.5	14.5 (22.5)	37.5	17.5 (25.5)
	Double end	44	36	40	32	39.5	31.5	36	28	40.5	32.5	34.5	26.5	37.5	29.5
25	Head end	33	36	29	32	28.5	31.5	25	28	29.5	32.5	23.5	26.5	26.5	29.5
	Rod end	44	24 (32)	40	20 (28)	39.5	19.5 (27.5)	36	16 (24)	40.5	20.5 (28.5)	34.5	14.5 (22.5)	37.5	17.5 (25.5)
	Double end	44	36	40	32	39.5	31.5	36	28	40.5	32.5	34.5	26.5	37.5	29.5
32	Head end	34	35	30	31	29.5	30.5	26	27	30.5	31.5	24.5	25.5	27.5	28.5
	Rod end	44	25 (33)	40	21 (29)	39.5	20.5 (28.5)	36	17 (25)	40.5	21.5 (29.5)	34.5	15.5 (23.5)	37.5	18.5 (26.5)
	Double end	44	35	40	31	39.5	30.5	36	27	40.5	31.5	34.5	25.5	37.5	28.5
40	Head end	39	41	35	37	34.5	36.5	31	33	35.5	37.5	29.5	31.5	32	34.5
	Rod end	48	27 (36)	44	23 (32)	43.5	22.5 (31.5)	40	19 (28)	44.5	23.5 (32.5)	38.5	17.5 (26.5)	41	20.5 (29.5)
	Double end	48	41	44	37	43.5	36.5	40	33	44.5	37.5	38.5	31.5	41	34.5
50	Head end	46	49	42	45	41.5	44.5	38	41	42.5	45.5	36.5	39.5	39.5	42.5
	Rod end	58	32 (44)	54	28 (40)	53.5	27.5 (39.5)	50	24 (36)	54.5	28.5 (40.5)	48.5	22.5 (34.5)	51.5	25.5 (37.5)
	Double end	58	49	54	45	53.5	44.5	50	41	54.5	45.5	48.5	39.5	51.5	42.5
63	Head end	46	49	42	45	41.5	44.5	38	41	42.5	45.5	36.5	39.5	39.5	42.5
	Rod end	58	32 (44)	54	28 (40)	53.5	27.5 (39.5)	50	24 (36)	54.5	28.5 (40.5)	48.5	22.5 (34.5)	51.5	25.5 (37.5)
	Double end	58	49	54	45	53.5	44.5	50	41	54.5	45.5	48.5	39.5	51.5	42.5
80	Head end							48	54			46.5	52.5	49.5	55.5
	Rod end	—	—	—	—	—	—	64	32 (46)	—	—	62.5	30.5 (44.5)	65.5	33.5 (47.5)
	Double end							64	54			62.5	52.5	65.5	55.5
100	Head end							48	54			46.5	52.5	49.5	55.5
	Rod end	—	—	—	—	—	—	64	32 (46)	—	—	62.5	30.5 (44.5)	65.5	33.5 (47.5)
	Double end							64	54			62.5	52.5	65.5	55.5

Note 1) The values in () are for long stroke.

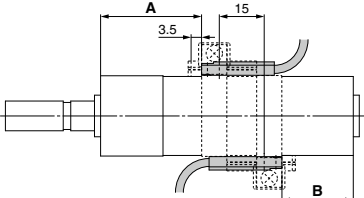
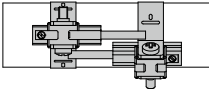
Note 2) Adjust the auto switch after confirming the operating condition in the actual setting.

Minimum Stroke for Auto Switch Mounting

n: Number of auto switches (mm)					
Auto switch model	Number of auto switches				
	With 1 pc.	With 2 pcs.		With n pcs.	
		Different surfaces	Same surface	Different surfaces	Same surface
D-M9□	5	15 <small>Note 1)</small>	40 <small>Note 1)</small>	$20 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$55 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-M9□W	10	15 <small>Note 1)</small>	40 <small>Note 1)</small>	$20 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$55 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-M9□A	10	25	40 <small>Note 1)</small>	$25 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$60 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-A9□	5	15	30 <small>Note 1)</small>	$15 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$50 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-M9□V	5	20	35	$20 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$35 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-A9□V	5	15	25	$15 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$25 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-M9□WV D-M9□AV	10	20	35	$20 + 35 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$35 + 35 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-C7□ D-C80	5	15	50	$15 + 45 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$50 + 45 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-H7□ D-H7□W D-H7BA D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$60 + 45 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-H7C D-C73C D-C80C	5	15	65	$15 + 50 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$65 + 50 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-G5□ D-K59□ D-B5□ D-B64	5	15	75	$15 + 50 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$75 + 55 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>
D-B59W	10	20	75	$20 + 50 \frac{(n-2)}{2}$ <small>(n = 2, 4, 6...) Note 3)</small>	$75 + 55 (n-2)$ <small>(n = 2, 3, 4, 5...)</small>

Note 1) Auto switch mounting

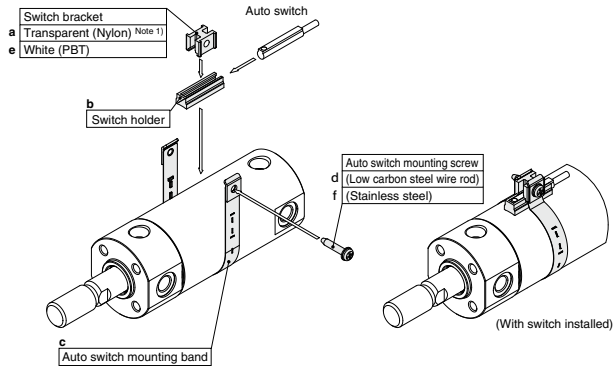
Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

Auto switch model	With 2 auto switches	
	Different surfaces <small>Note 1)</small>	Same surface <small>Note 1)</small>
	<div></div> <p>Correct auto switch mounting position is 3.5 mm from the back face of the switch holder.</p>	<div></div> <p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p>
D-M9□ D-M9□W	Less than 20 stroke <small>Note 2)</small>	Less than 55 stroke <small>Note 2)</small>
D-M9□A	Less than 20 stroke <small>Note 2)</small>	Less than 60 stroke <small>Note 2)</small>
D-A9□	—	Less than 50 stroke <small>Note 2)</small>

Note 2) Minimum stroke for auto switch mounting in types other than those mentioned in Note 1.

Auto Switch Mounting Brackets/Part No.

Auto switch model	Bore size (mm)						
	20	25	32	40	50	63	100
D-M9□(V) D-M9□W(V) D-A9□(V)	Note 1) BMA3-020 (A set of a, b, c, d)	Note 1) BMA3-025 (A set of a, b, c, d)	Note 1) BMA3-032 (A set of a, b, c, d)	Note 1) BMA3-040 (A set of a, b, c, d)	Note 1) BMA3-050 (A set of a, b, c, d)	Note 1) BMA3-063 (A set of a, b, c, d)	—
D-M9□A(V) Note 2)	BMA3-020S (A set of b, c, e, f)	BMA3-025S (A set of b, c, e, f)	BMA3-032S (A set of b, c, e, f)	BMA3-040S (A set of b, c, e, f)	BMA3-050S (A set of b, c, e, f)	BMA3-063S (A set of b, c, e, f)	—



D-H7□ D-H7□W D-H7NF D-C7□/C80 D-C73C/C80C	BMA2-020A (A set of c and d)	BMA2-025A (A set of c and d)	BMA2-032A (A set of c and d)	BMA2-040A (A set of c and d)	BMA2-050A (A set of c and d)	BMA2-063A (A set of c and d)	—	—
D-H7BA	BMA2-020AS (A set of c and f)	BMA2-025AS (A set of c and f)	BMA2-032AS (A set of c and f)	BMA2-040AS (A set of c and f)	BMA2-050AS (A set of c and f)	BMA2-063AS (A set of c and f)	—	—
D-G5□/K59 D-G5□W/K59W D-G5BA/G59F D-G5NT D-B5□/B64 D-B59W	BA-01 (A set of c and d)	BA-02 (A set of c and d)	BA-32 (A set of c and d)	BA-04 (A set of c and d)	BA-05 (A set of c and d)	BA-06 (A set of c and d)	BA-08 (A set of c and d)	BA-10 (A set of c and d)

Note 1) 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.

Note 2) When mounting a D-M9□A(V) type auto switch, if the switch bracket is mounted on the indicator light, it may damage the auto switch. Therefore, be sure to avoid mounting the switch bracket on the indicator light.

Band Mounting Brackets Set Part No.

Set part no.	Contents
BJ4-1	· Switch bracket (White/PBT) (e) · Switch holder (b)
BJ5-1	· Switch bracket (Transparent/Nylon) (a) · Switch holder (b)

[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment.
(Since the auto switch mounting bracket is not included, order it separately.)

BBA3: D-B5/B6/G5/K5 types

Note) Refer to page 1369 for details on the BBA3.







When the D-G5BA type auto switch is shipped independently, the BBA3 is attached.

Operating Range

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-M9□(V) D-M9□W(V) D-M9□A(V)	4.5	5.0	4.5	5.5	5.0	5.5	—	—
D-A9□	7	6	8	8	8	9	—	—
D-C7/C80 D-C73C/C80C	8	10	9	10	10	11	—	—
D-B5□/B64 D-B59W	8	10	9	10	10	11	11	11
D-H7□/H7□W D-H7NF/H7BA	4	4	4.5	5	6	6.5	—	—
D-H7C	7	8.5	9	10	9.5	10.5	—	—
D-G5□/G5□W/G59F D-G5BA/K59/K59W	4	4	4.5	5	6	6.5	6.5	7
D-G5NT	4	4	4.5	5	6	6.5	6.5	7

* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Cylinder Mounting Bracket, by Stroke/Auto Switch Mounting Surfaces

Auto switch model	Basic, Foot, Flange, Clevis			Trunnion		
	With 1 pc. (Rod cover side)	With 2 pcs. (Different surfaces)	With 2 pcs. (Same surface)	With 1 pc. (Rod cover side)	With 2 pcs. (Different surfaces)	With 2 pcs. (Same surface)
Auto switch mounting surface	Port surface 	Port surface 	Port surface 			
Auto switch type						
D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□	10 st or more	15 to 44 st	45 st or more	10 st or more	15 to 44 st	45 st or more
D-C7/C8	10 st or more	15 to 49 st	50 st or more	10 st or more	15 to 49 st	50 st or more
D-H7□/H7□W D-H7BA/H7NF	10 st or more	15 to 59 st	60 st or more	10 st or more	15 to 59 st	60 st or more
D-H7C/C73C/C80C	10 st or more	15 to 64 st	65 st or more	10 st or more	15 to 64 st	65 st or more
D-G5/K5/B5/B6 D-G5□W/K59W/G5BA D-G59F/G5NT	10 st or more	15 to 74 st	75 st or more	10 st or more	15 to 74 st	75 st or more
D-B59W	15 st or more	20 to 74 st	75 st or more	15 st or more	20 to 74 st	75 st or more

* Trunnion type is not available for ø80 and ø100.
* Adjust the auto switch mounting angle according to the customer's application.

Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.

Refer to pages 1271 to 1365 for the detailed specifications.

Type	Model	Electrical entry	Features	Applicable bore size
Solid state	D-H7A1, H7A2, H7B	Grommet (In-line)	—	ø20 to ø63
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indicator)	
	D-H7BA		Water resistant (2-color indicator)	
	D-G5NT		With timer	ø20 to ø100
Reed	D-C73, C76		—	ø20 to ø63
	D-C80		Without indicator light	
	D-B53		—	ø20 to ø100

* With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1340 and 1341.
* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) are also available. For details, refer to page 1290.



1 PTFE Grease

Symbol

-X446

Applicable to environments incompatible with mineral oil
PTFE grease (fluorine grease) is used as the lubricating grease.

Applicable Series

Description	Model	Action	Note
Standard type	CG1	Double acting, Single rod	Except with air cushion

Specifications: Same as standard type

Dimensions: Same as standard type

* When grease is necessary for maintenance, grease pack is available,
please order it separately.
GR-F-005 (Grease: 5 g)

How to Order

Standard model no.

- X446

PTFE grease ●