

# Air Cylinder

Standard: Double Acting, Single Rod

## Series CG1

RoHS

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

### How to Order

**CG1 B N 20-100 Z- V-**

**With auto switch** **CDG1 D N 20-100 Z-NW-M9BW-**

**With auto switch**  
(Built-in magnet)

**Mounting**

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

\* Not available for ø80 or ø100.  
\* 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).

**Bore size**

<b>20</b>	20 mm
<b>25</b>	25 mm
<b>32</b>	32 mm
<b>40</b>	40 mm
<b>50</b>	50 mm
<b>63</b>	63 mm
<b>80</b>	80 mm
<b>100</b>	100 mm

**Cylinder stroke (mm)**  
Refer to the next page for standard strokes.

**Pivot bracket**

<b>Nil</b>	None
<b>N</b>	Pivot bracket is shipped together with the product, but not assembled.

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

**Rod end thread**

<b>Nil</b>	Male rod end
<b>F</b>	Female rod end

**Rod end bracket**

<b>Nil</b>	None
<b>V</b>	Single knuckle joint
<b>W</b>	Double knuckle joint

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

**Made to Order**  
For details, refer to the next page.

**Number of auto switches**

<b>Nil</b>	2 pcs.
<b>S</b>	1 pc.
<b>n</b>	"n" pcs.

**Auto switch**

<b>Nil</b>	Without auto switch
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\* For applicable auto switches, refer to the table below.

**Applicable Auto Switches**/Refer to pages 1263 to 1371 in Best Pneumatics No. 2 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			
							Applicable bore size			0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
					DC	AC	ø20 to ø63	In-line	ø80, ø100 In-line										
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	—	●	●	●	○	—	○	IC circuit	Relay, PLC		
				3-wire (PNP)			M9PV	M9P	—	●	●	●	○	—	○				
				2-wire			M9BV	M9B	—	●	●	●	○	—	○				
		Connector		—			—	K59	●	—	●	○	—	○					
				—			H7C	—	●	—	●	●	●	—	—				
				—			M9NWV	M9NW	—	●	●	●	○	—	○				
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		—	—	G59W	●	—	●	○	—	○	IC circuit			
				3-wire (PNP)			M9PWV	M9PW	—	●	●	●	○	—	○				
				2-wire			—	—	G5PW	●	—	●	○	—	○				
				Grommet			M9BWV	M9BW	—	●	●	●	○	—	○			—	
							—	—	K59W	●	—	●	○	—	○				
							3-wire (NPN)	M9NAV***	M9NA***	—	○	○	●	○	—				○
	Water resistant (2-color indication)	Grommet		3-wire (PNP)	M9PAV***		M9PA***	—	○	○	●	○	—	○					
				2-wire	M9BAV***		M9BA***	—	○	○	●	○	—	○	—				
—			—	G5BA***	●	—	●	○	—	○									
With diagnostic output (2-color indication)			—	4-wire (NPN)	5 V, 12 V	—	—	H7NF	G59F	●	—	●	○	—	○	IC circuit			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	24 V	5 V	12 V	A96V	A96	—	●	—	●	—	—	IC circuit	Relay, PLC	
				100 V					A93V	A93	—	●	—	●	●	—			—
				100 V or less					A90V	A90	—	●	—	●	—	—			—
		100 V, 200 V		—					—	B54	●	—	●	●	—	—			
		200 V or less		—					—	B64	●	—	●	—	—	—			
		—		—					—	—	—	—	—	—	—	—			
	Connector	Yes		—	—		C73C		—	●	—	●	●	●	—	IC circuit			
		No		—	—		C80C		—	●	—	●	●	●	—				
		Grommet		Yes	—		—		—	B59W	●	—	●	—	—		—		
				No	—		—		—	—	—	—	—	—	—		—		

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

A water-resistant type cylinder is recommended for use in an environment which requires water resistance. However, please contact SMC for water-resistant products of ø20 and ø25.

\* 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  
None.....N (Example) H7CN

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* Since there are other applicable auto switches than listed above, refer to page 16 for details.

\* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329 in Best Pneumatics No. 2.

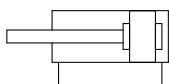
\* The D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

# Air Cylinder Standard: Double Acting, Single Rod **Series CG1**



## JIS Symbol

Double acting



Refer to pages 13 to 16 for cylinders with auto switches

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.



**Made to Order**  
(For details, refer to page 18.)

Symbol	Specifications
-XC85	Grease for food processing equipment
-X446	PTFE grease

## Specifications

Bore size (mm)		20	25	32	40	50	63	80	100
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 to 70°C With auto switch: -10 to 60°C (No freezing)							
Piston speed		50 to 1000 mm/s						50 to 700 mm/s	
Stroke length tolerance		Up to 200 st <sup>+1.4</sup> <sub>0</sub> mm (ø20) Up to 300 st <sup>+1.4</sup> <sub>0</sub> mm (ø25 to ø100)							
Cushion		Rubber bumper							
Mounting*		Basic, Basic (without trunnion mounting female thread), Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis (used for changing the port location by 90°)							
Allowable kinetic energy	Male rod end	0.28 J	0.41 J	0.66 J	1.20 J	2.00 J	3.40 J	5.90 J	9.90 J
	Female rod end	0.11 J	0.18 J	0.29 J	0.52 J	0.91 J	1.54 J	2.71 J	4.54 J

\* Cylinder sizes ø80 and ø100 do not have basic type (without trunnion mounting female thread), rod trunnion type and head trunnion type.  
Foot type, flange type and clevis type of cylinder sizes from ø20 to ø63 do not have trunnion mounting female thread. Operate the cylinder within the allowable kinetic energy. Refer to page 4 for details.

## Accessories

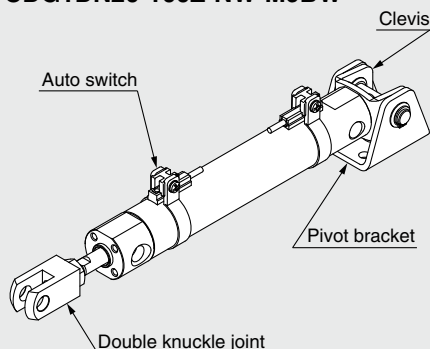
Mounting		Basic	Axial foot	Rod flange	Head flange	Rod trunnion	Head trunnion	Clevis
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)**	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●*	●*	●

\* Not available for ø80 and ø100.

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

## Ordering Example of Cylinder Assembly

**Cylinder model:**  
**CDG1DN20-100Z-NW-M9BW**



**Mounting D: Clevis**  
**Pivot bracket N: Yes**  
**Rod end bracket W: Double knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**

\* Pivot bracket, double knuckle joint and auto switch are shipped together with the product, but not assembled.

## Standard Strokes

Bore size (mm)	Standard stroke (mm) <small>Note</small>
20	25, 50, 75, 100, 125, 150, 200
25	25, 50, 75, 100, 125, 150, 200, 250, 300
32	
40	
50, 63	
80	
100	

Note) Manufacture of intermediate strokes in 1 mm intervals is possible. (Spacers are not used.)  
Produced upon receipt of order.