

# Cylinder with Lock

## Double Acting, Single Rod/Double Rod

# CP96N Series

ø32, ø40, ø50, ø63, ø80, ø100

RoHS

### How to Order

**CP96N** **B** **32** - **100** **C** **J** **W** - **□** **□** - **□**

**With auto switch** **CP96N D** **B** **32** - **100** **C** **J** **W** - **□** **□** - **M9BW** **S** - **□**

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

**Mounting**

Symbol	Description	Single rod	Double rod
<b>B</b>	Basic	○	○
<b>L</b>	Axial foot	○	○
<b>F</b>	Rod flange	○	○
<b>G</b>	Head flange	○	○
<b>C</b>	Single clevis	○	—
<b>D</b>	Double clevis	○	—

\* Mounting brackets are shipped together with the product but do not come assembled.  
\* The single clevis with ball joint should be ordered separately.

**Bore size**

Symbol	Bore size [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 page 10 for standard strokes.

**Air cushion on both ends + Bumper cushion**

**Rod boot**

Symbol	Description
<b>Nil</b>	Without rod boot
<b>J</b>	Nylon tarpaulin (One end)
<b>JJ</b>	Nylon tarpaulin (Both ends)
<b>K</b>	Heat-resistant tarpaulin (One end)
<b>KK</b>	Heat-resistant tarpaulin (Both ends)

**Rod**

Symbol	Description
<b>Nil</b>	Single rod
<b>W</b>	Double rod

**Pivot bracket**

Symbol	Description
<b>Nil</b>	No bracket
<b>N</b>	Pivot bracket

\* Only for the D mounting type  
\* The double clevis pivot bracket and clevis pivot bracket with ball joint should be ordered separately.

**Rod end bracket**

Symbol	Description
<b>Nil</b>	No bracket
<b>W</b>	Rod clevis

\* The floating joint and rod end should be ordered separately.

**Made to order**

Refer to page 10 for details.

**Number of auto switches**

Symbol	Number
<b>Nil</b>	2
<b>S</b>	1
<b>3</b>	3
<b>n</b>	n

**Auto switch**

Symbol	Description
<b>Nil</b>	Without auto switch

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

**Refer to the Ordering Example of Cylinder Assembly on page 10.**

### Applicable Auto Switches/Refer to the Web Catalog or Best Pneumatics Catalog 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	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)					
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)		12 V		M9PV	M9P	●	●	●	○	○			—
				2-wire		M9BV		M9B	●	●	●	○	○				
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)		5 V, 12 V		M9NWV	M9NW	●	●	●	○	○	IC circuit		
				3-wire (PNP)		M9PWV		M9PW	●	●	●	○	○	—			
				2-wire		M9BWV		M9BW	●	●	●	○	○				
	Water-resistant (2-color indicator)	Grommet		3-wire (NPN)		5 V, 12 V		M9NAV*1	M9NA*1	○	○	●	○	○	IC circuit		
				3-wire (PNP)		M9PAV*1		M9PA*1	○	○	●	○	○	—			
				2-wire		M9BAV*1		M9BA*1	○	○	●	○	○				
	Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—		IC circuit
2-wire					24 V	12 V	100 V	A93V*2	A93	●	●	●	●	—	—		
No				2-wire	24 V	12 V	100 V or less	A90V	A90	●	—	●	—	—	—	IC circuit	Relay, PLC

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

\*2 The 1 m lead wire is only applicable to the D-A93.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NV  
1 m ..... M (Example) M9NM  
3 m ..... L (Example) M9NL  
5 m ..... Z (Example) M9NZ

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

\* Since there are applicable auto switches other than those listed above, refer to page 23 for details.

\* The D-A9□/M9□/M9□/M9□ auto switches are shipped together with the product but do not come assembled. (Only the auto switch mounting brackets are assembled before shipment.)

\* The D-Y59A, Y69A, Y7P, Y7□W, Z7□, Z80 cannot be mounted.

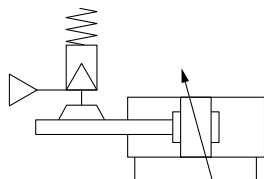
Moreover, the D-M9□ and A9□ auto switches cannot be mounted on square groove.

# Cylinder with Lock Double Acting, Single Rod/Double Rod **CP96N Series**



## Symbol

Air cushion + Bumper cushion



**Made to Order Individual Specifications**  
(For details, refer to pages 45-1 to 45-4.)

Symbol	Specifications
-X3030	With lock status indication
-X3075	ISO 13849-1 safety standard compliant product / Cylinder with brake/lock unit

**Made to Order Common Specifications**  
[Click here for details.](#)

Symbol	Specifications
-XA	Change of rod end shape (Single rod only)
-XC35	With coil scraper

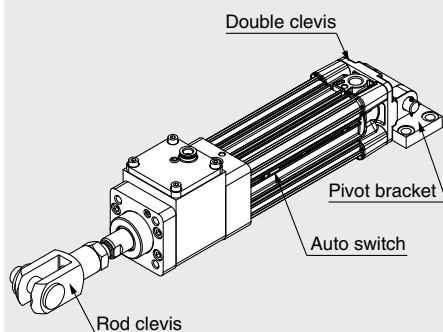
For details of **cylinders with auto switches**

⇒ page 23

- Auto Switch Proper Mounting Position (Detection at stroke end)
- Minimum Stroke for Auto Switch Mounting
- Operating Range

## Ordering Example of Cylinder Assembly

Cylinder model: CP96NDD50-100C-NW-M9BW



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

\* Pivot bracket, rod clevis, and auto switch are shipped together with the product but do not come assembled.

## Cylinder Specifications

Bore size [mm]	32	40	50	63	80	100
Action	Double acting					
Fluid	Air					
Proof pressure	1.5 MPa					
Max. operating pressure	1.0 MPa					
Min. operating pressure	0.08 MPa					
Ambient and fluid temperatures	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)					
Lubricant	Not required (Non-lube)					
Piston speed	50 to 1000 mm/s*1					
Stroke length tolerance	Up to 500 st: $\begin{smallmatrix} +2.0 \\ 0 \end{smallmatrix}$ , 501 to 1000 st: $\begin{smallmatrix} +2.4 \\ 0 \end{smallmatrix}$ , 1001 to 1500 st: $\begin{smallmatrix} +2.8 \\ 0 \end{smallmatrix}$ , 1501 to 2000 st: $\begin{smallmatrix} +3.2 \\ 0 \end{smallmatrix}$					
Cushion	Air cushion on both ends + Bumper cushion					
Port size	G1/8	G1/4		G3/8		G1/2
Mounting	Basic, Axial foot, Rod flange, Head flange Single clevis, Double clevis					

\*1 Load limits exist depending upon the piston speed when locked, mounting direction, and operating pressure.

## Lock Unit Specifications

Bore size [mm]	32	40	50	63	80	100
<b>Locking action</b>	Exhaust locking					
<b>Max. operating pressure</b>	1.0 MPa					
<b>Min. operating pressure</b>	0.3 MPa					
<b>Locking direction</b>	Both directions					
<b>Holding force (Max. static load) [N]*1</b>	630	980	1570	2450	3920	6080

\*1 The holding force (max. static load) shows the maximum capability and does not show the normal holding capability. Be sure to select a cylinder using the method described in Model Selection (page 6).

## Standard Strokes

\* When using with auto switches, refer to the Minimum Stroke for Auto Switch Mounting table on page 23.

Bore size	Standard stroke	Max. stroke
<b>32</b>	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	2000
<b>40</b>	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	2000
<b>50</b>	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2000
<b>63</b>	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2000
<b>80</b>	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	2000
<b>100</b>	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	2000

- \* The manufacturing of intermediate strokes is possible. (Spacers are not used.)
- \* Applicable strokes should be confirmed according to the usage. For details, refer to the Air Cylinders Model Selection in the **Web Catalog** or Best Pneumatics Catalog. In addition, products that exceed the standard stroke might not be able to fulfill the specifications due to deflection, etc.
- \* When using a rod boot, a stroke range of up to 1000 mm is available. Please consult with SMC when exceeding a 1000 mm stroke.

## Stopping Accuracy

Bore size [mm]	32	40	50	63	80	100
<b>Lock type</b>	Exhaust locking					
<b>Stopping accuracy [mm]</b>	±1.0					
<b>Conditions</b>	<ul style="list-style-type: none"> <li>· Mounting orientation: Horizontal</li> <li>· Supply pressure: 0.5 MPa</li> <li>· Piston speed: 300 mm/s</li> <li>· Load condition: Upper limit of allowed value</li> </ul> Solenoid valve for locking is mounted on the unlock port. Maximum value of stopping position dispersion from 100 measurements					

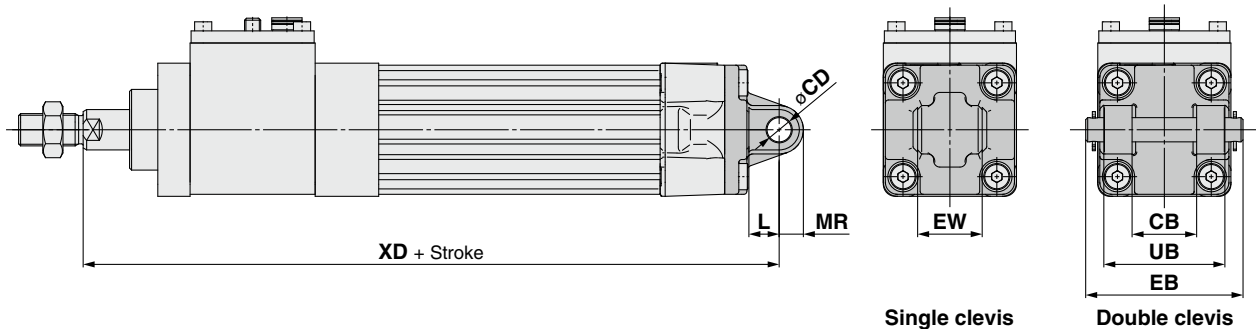
# CP96N Series

## Dimensions: With Mounting Bracket

\* Refer to Basic (B) for other dimensions.

Single clevis: CP96NC

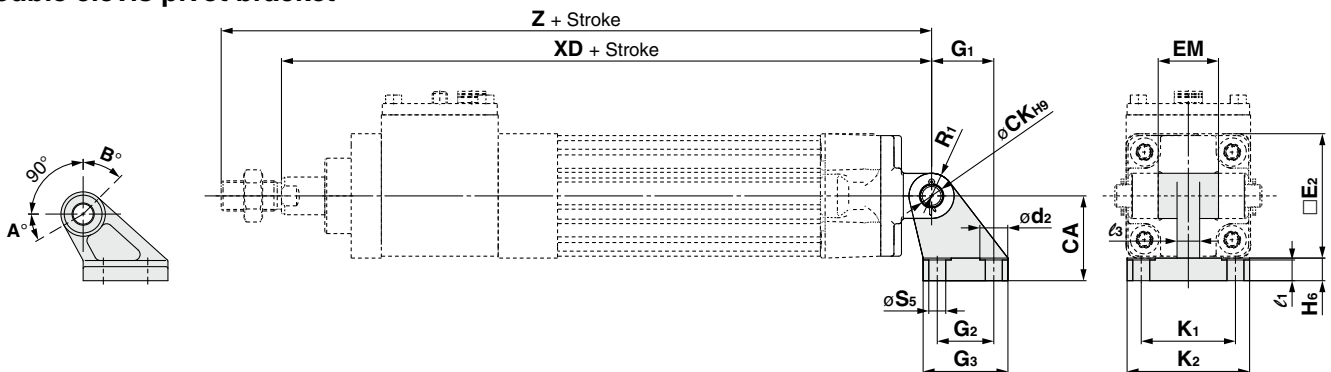
Double clevis: CP96ND



Bore size	CB <sub>H14</sub>	CD <sub>H9</sub>	EB	EW	L	MR	UB <sub>H14</sub>	XD
32	26	10	65	26 <sup>-0.2</sup> <sub>-0.6</sub>	12	9.5	45	200
40	28	12	75	28 <sup>-0.2</sup> <sub>-0.6</sub>	15	12	52	226
50	32	12	80	32 <sup>-0.2</sup> <sub>-0.6</sub>	15	12	60	245
63	40	16	90	40 <sup>-0.2</sup> <sub>-0.6</sub>	20	16	70	269.5
80	50	16	110	50 <sup>-0.2</sup> <sub>-0.6</sub>	20	16	90	320
100	60	20	140	60 <sup>-0.2</sup> <sub>-0.6</sub>	25	20	110	353.5

## Pivot Bracket: Double Clevis Pivot Bracket

Double clevis pivot bracket



Bore size	Part no.	CA	øCK	ød2	□E2	EM	G1	G2	G3 (Max.)	H6	K1	K2 (Max.)	ℓ1	ℓ3 (Max.)	R1	øS5	XD	Z
32	E5032	32	10	11	47	26 <sup>-0.2</sup> <sub>-0.6</sub>	21	18	31	8	38	51	7	10	10	6.6	200	222
40	E5040	36	12	11	54	28 <sup>-0.2</sup> <sub>-0.6</sub>	24	22	35	10	41	54	9	10	11	6.6	226	250
50	E5050	45	12	15	66	32 <sup>-0.2</sup> <sub>-0.6</sub>	33	30	45	12	50	65	11	12	12	9	245	277
63	E5063	50	16	15	77	40 <sup>-0.2</sup> <sub>-0.6</sub>	37	35	50	12	52	67	11	14	15	9	269.5	301.5
80	E5080	63	16	18	99	50 <sup>-0.2</sup> <sub>-0.6</sub>	47	40	60	14	66	86	12.5	18	15	11	320	360
100	E5100	71	20	18	118	60 <sup>-0.2</sup> <sub>-0.6</sub>	55	50	70	15	76	96	13.5	20	19	11	353.5	393.5

## Rotating Angle

Bore size [mm]	A°	B°	A° + B° + 90°
32, 40	25°	45°	160°
50, 63	40°	60°	190°
80, 100	30°	55°	175°