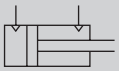


Medium bore size cylinder
Standard single rod

CMA2 Series

● Bore size: ø20/ø30/ø40

JIS symbol ● Double acting cylinder single rod



RoHS CAD

Specifications

Item	CMA2		
Bore size mm	ø20	ø30	ø40
Actuation	Double acting		
Working fluid	Compressed air		
Max. working pressure MPa	0.7 (≈100 psi, 7 bar)		
Min. working pressure MPa	0.1 (≈15 psi, 1 bar)		
Proof pressure MPa	1.05 (≈150 psi, 10.5 bar)		
Ambient temperature °C	-10 (14°F) to 60 (140°F) (no freezing)		
Port size	Rc1/8		
Stroke tolerance mm	$^{+1.0}_{0}$(to 200), $^{+1.2}_{0}$(to 1000)		
Working piston speed mm/s	50 to 500		
Cushion	None		
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)		
Allowable absorbed energy J	0.024	0.05	0.093

Note: This product cannot absorb high energy generated by an external load. We recommend using an external shock absorber.

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Available stroke (mm)	Min. stroke (mm)
ø20	25/50/75/100	700	1000	1
ø30	150/200/250		1200	
ø40	300		1500	

*1 : The custom stroke is available in 1 mm increments.
*2 : One side foot (LS) has the max. stroke of 50 mm.
*3 : The stroke will be 25 mm and over with bellows “J”. Contact CKD when stroke is shorter than 25 mm.
*4 : The min. working pressure of the cylinder must be less than 50% of working pressure in order to be effective in preventing the popping out. Refer to Ending Page 69.

Min. stroke with switch

Switch model No.	1	2	3
T0, T5, T2, T3	10	27	51
T2W, T3W	10	31	55
T2Y, T3Y, T1	10	25	49
T8	10	23	47

Switch specifications

● 1-color/2-color LED

Item	2-wire proximity	2-wire proximity			3-wire proximity				2-wire reed						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	For programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay		
Output method	-				NPN output	PNP output	NPN output	NPN output	-						
Pwr. supp. V.	-				10 to 28 VDC				-						
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Indicator	LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		No indicator lamp		LED (Lit when ON)		
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA						
Weight g	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142		

*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke (S) = 0 mm					Weight per switch		Additional weight per S = 10 mm
	Basic (00)	Axial foot (LB)	Flange (FA)	Clevis (CA)	Trunnion (TA/TB)	T	Switch rail + Band weight	
ø20	0.14	0.29	0.20	0.27	0.19	Refer to the weight in the switch specifications.	0.005	0.01
ø30	0.29	0.55	0.44	0.50	0.39		0.005	0.014
ø40	0.47	0.73	0.62	0.69	0.67		0.009	0.02

(Example) Product weight of CMA2-FA-30-50-TOH-D
- Product weight when S = 0 mm..... 0.44kg
- Additional weight when S = 50 mm ..... Additional weight when S = 10 mm 0.014 x $\frac{\text{Product stroke (50)}}{10}$ = 0.07 kg
- Weight of 2 switches..... 0.036 kg
- Product weight ..... 0.44 kg + 0.07 kg +0.036 kg = 0.546 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø20	Push	31.4	47.1	62.8	94.2	$1.26x10^2$	$1.57x10^2$	$1.88x10^2$	$2.20x10^2$
	Pull	23.6	35.3	47.1	70.7	94.2	$1.18x10^2$	$1.41x10^2$	$1.65x10^2$
ø30	Push	70.7	$1.06x10^2$	$1.41x10^2$	$2.12x10^2$	$2.83x10^2$	$3.53x10^2$	$4.24x10^2$	$4.95x10^2$
	Pull	59.4	89.1	$1.19x10^2$	$1.78x10^2$	$2.38x10^2$	$2.97x10^2$	$3.56x10^2$	$4.16x10^2$
ø40	Push	$1.26x10^2$	$1.88x10^2$	$2.51x10^2$	$3.77x10^2$	$5.03x10^2$	$6.28x10^2$	$7.54x10^2$	$8.80x10^2$
	Pull	$1.10x10^2$	$1.65x10^2$	$2.21x10^2$	$3.31x10^2$	$4.41x10^2$	$5.51x10^2$	$6.62x10^2$	$7.72x10^2$

How to order

No switch (built-in magnet for switch)

CMA2 - FA - 20 - 50 ——— P I

With switch (built-in magnet for switch)

CMA2 - FA - 20 - 50 - T0H - R - P I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Stroke

Ⓓ Switch model No.

Ⓔ Switch quantity

Ⓕ Option *3, *4

Ⓖ Accessory *5

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot (Both sides)
LS	Axial foot (One side)
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and washer included)
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
20	ø20
30	ø30
40	ø40

Ⓒ Stroke (mm)

Bore size	Stroke *2	Available stroke	Custom stroke
ø20	**1 to 700**	**1000**	**In 1 mm increments**
ø30	**1 to 700**	**1200**	
ø40	**1 to 700**	**1500**	

Ⓓ Switch model No.

Refer to the switch model No. table on the following page.

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓕ Option

		Max. ambient temp.	Instantaneous max. temp.
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
M	Piston rod material (stainless steel)		
P	Same port position		
P6	Copper and PTFE free		

Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (with pin and washer included)
B2	Clevis bracket (pin and snap ring included)

⚠ Precautions for model No. selection

*1 : One side foot (LS) has the max. stroke of 50 mm.
*2 : Refer to page 208 for the min. stroke with switch.
*3 : The stroke will be 25 mm and over with bellows "J". Contact CKD when stroke is shorter than 25 mm.
*4 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*5 : "I" and "Y" cannot be selected together.

[Example of model No.]

CMA2-FA-20-50-T0H-R-PI

Model: Medium bore size cylinder/double acting/single rod

Ⓐ Mounting : Rod side flange
Ⓑ Bore size : ø20 mm
Ⓒ Stroke : 50 mm
Ⓓ Switch model No. : Reed T0H switch, lead wire 1m
Ⓔ Switch quantity : 1 on rod side
Ⓕ Option : Same port position
Ⓖ Accessory : Rod eye

[D] Switch model No.

T-switch						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
TOH*	TOV*	Reed	●	●	1-color LED	2-wire
T5H*	T5V*		●	●	No indicator lamp	
T8H*	T8V*		●	●	1-color LED	
T1H*	T1V*	Proximity	●		1-color LED	2-wire
T2H*	T2V*			●		
T3H*	T3V*			●		3-wire
T3PH*	T3PV*			●	1-color LED	3-wire
T2WH*	T2WV*			●	2-color LED	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T2JH*	T2JV*			●	Off-delay	2-wire

How to order switch

[T-switch]

● Switch body + mounting bracket set

CMA2 - T0H - 40

- T0H: Switch model No. (Item Ⓓ)
- 40: Bore size (Item Ⓑ on page 210)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓓ)

● Mounting bracket set

CMA2 - T - 40

- T: Mounting bracket
- 40: Bore size (Item Ⓑ on page 210)

How to order mounting bracket

Bore size (mm) / Mounting bracket	ø20	ø30	ø40
Basic (00) *3	M1-00-20	M1-00-30	M1-00-30
Axial foot (LB/LS)	M1-LB-20	M1-LB-30	M1-LB-30
Flange (FA/FB)	M1-FA-20	M1-FA-30	M1-FA-30
Eye bracket (CA)	M1-CA-20	M1-CA-30	M1-CA-30
Clevis bracket (CB)	M1-CB-20	M1-CB-30	M1-CB-30
Trunnion (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-40

*1 : The mounting bracket model numbers above include tightening nut, toothed washer and parallel pin set.
2 : For axial foot (two-sided), 2 sets of "MI-LB-" are required.
*3 : Mounting nut, toothed washer only. Although 1 set is included with the basic of the product (00), use this when needed.