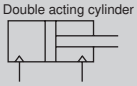


Medium bore size cylinder/
double acting/single rod

CMK2 Series

● Bore size: ø20/ø25/ø32/ø40

JIS symbol ● Double acting cylinder single rod



RoHS CAD

Specifications

Item		CMK2			
Bore size	mm	ø20	ø25	ø32	ø40
Actuation		Double acting			
Working fluid		Compressed air			
Max. working pressure	MPa	1.0 (≈150 psi, 10 bar)			
Min. working pressure	MPa	0.1 (≈15 psi, 1 bar)			
Proof pressure	MPa	1.6 (≈230 psi, 16 bar)			
Ambient temperature	°C	-10 (14°F) to 60 (140°F) (no freezing)			
Port size		Rc1/8			
Stroke tolerance	mm	$^{+2.0}_{0}$ (Up to 200), $^{+2.4}_{0}$ (More than 200)			
Working piston speed	mm/s	50 to 500			
Cushion		Rubber cushion			
Lubrication		Not required (use turbine oil ISO VG32 if necessary for lubrication)			
Allowable absorbed energy	J	0.166	0.308	0.424	0.639

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)		Min. stroke (mm)	
		Without bellows	With bellows	Without bellows Bellows "L"	Bellows "J"
ø20	25/50/75/100/ 150/200/250/ 300	750	750	5	25
ø25					
ø32					
ø40					

*1: The custom stroke is available in 1 mm increments.
*2: Single foot (LS) has the max. stroke of 50 mm.
*3: Contact CKD when stroke shorter than 25 mm is required for "J" bellows.

Min. stroke with switch

(Unit: mm)

Switch quantity	1					2					3				
	Proximity			Reed		Proximity			Reed		Proximity			Reed	
Bore size (mm)	T2, T3	T2W, T3W	T1, T*Y*	T0, T5	T8	T2, T3	T2W, T3W	T1, T*Y*	T0, T5	T8	T2, T3	T2W, T3W	T1, T*Y*	T0, T5	T8
ø20	10					25	30	35	25	35	50	55	55	50	55
ø25	10					25	30	35	25	35	50	55	55	50	55
ø32	10					25	30	35	25	35	50	55	55	50	55
ø40	10					25	30	35	25	35	50	55	55	50	55

*1: Up to 3 switches can be mounted.

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 programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay	For programmable controller, relay, IC circuit (without indicator lamp), serial connection		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 or less with 100 VAC, 2 mA or less with 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)

Bellows max. operating ambient temperature

Code	Bellows material	Max. ambient temp.	Instantaneous max. temp.
J	Polyolefin elastomer	100°C	200°C
L	Silicone rubber glass cloth	250°C	400°C

The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.

Cylinder weight

(Unit: kg)

Item/mounting / Bore size (mm)	Product weight when stroke (S) = 0 mm								Switch weight (per 1 pc.)	Switch rail + band weight	Additional weight per S = 10 mm
	Basic (00)	Axial foot (LB)	Axial foot (LS)	Flange (FA/FB)	Eye bracket (CA)	Clevis (CC)	Clevis bracket (CB)	Trunnion (TA/TB)			
ø20	0.17	0.32	0.25	0.23	0.32	0.18	0.32	0.22	Refer to the weight in the switch specifications.	0.005	0.01
ø25	0.26	0.52	0.39	0.41	0.50	0.26	0.50	0.36		0.005	0.01
ø32	0.30	0.56	0.43	0.45	0.54	0.30	0.54	0.40		0.009	0.02
ø40	0.48	0.74	0.61	0.63	0.72	0.50	0.72	0.64		0.009	0.02

(Example) Product weight of CMK2-FA-32-50-T0H-D

Product weight when S = 0 mm .....0.45 kg
Additional weight when S = 50 mm .....Additional weight when S = 10 mm 0.02 x $\frac{\text{Product stroke (50)}}{10}$ = 0.10kg
Weight of 2 switches.....0.036 kg
Weight of switch rail + 2 bands .....0.018 kg
Product weight.....0.45 kg+0.1 kg+0.036 kg+0.018 kg=0.604 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	0.8	0.9	1.0
ø20	Push	31.4	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	23.6	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	49.1	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	37.8	56.7	75.6	1.13×10^2	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	69.1	1.04×10^2	1.38×10^2	2.07×10^2	2.76×10^2	3.46×10^2	4.15×10^2	4.84×10^2	5.53×10^2	6.22×10^2	6.91×10^2
ø40	Push	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.10×10^2	1.65×10^2	2.21×10^2	3.31×10^2	4.41×10^2	5.51×10^2	6.62×10^2	7.72×10^2	8.82×10^2	9.92×10^2	1.10×10^3

How to order

No switch (built-in magnet for switch)

CMK2 - 00 - 20 ( ) - 100 ——— Y

With switch (built-in magnet for switch)

CMK2 - 00 - 20 ( ) - 100 - T0H - R - V Y

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Stroke

Ⓔ Switch model No.

Ⓕ Switch quantity *8

Ⓖ Option *4, *5

Ⓗ Accessory *5

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot (two sides)
LS	Axial foot (one side)
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CC	Eye bracket integrated
CC1	Eye bracket, bush pressfit
CB	Clevis bracket (pin and split washer pin included)
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)		
20	ø20	*9
25	ø25	*9
32	ø32	
40	ø40	

Ⓒ Port thread	
Blank	Rc thread
NN	NPT thread (made-to-order product)
GN	G thread (made-to-order product)

Ⓓ Stroke (mm)

Bore size	Stroke *2	Custom stroke
ø20	**5 to 750**	**In 1 mm increments**
ø25	**5 to 750**	
ø32	**5 to 750**	
ø40	**5 to 750**	

Ⓔ Switch model No.

Axial lead wire		Contact	Voltage AC	Voltage DC	Indicator	Lead wire
T0H*	**T0V***	Reed	●	●	1-color LED	2-wire
T5H*	**T5V***	Reed	●	●	No indicator lamp	2-wire
T8H*	**T8V***	Reed	●	●	1-color LED	2-wire
T1H*	**T1V***	Prox.	●		1-color LED	2-wire
T2H*	**T2V***	Prox.		●	1-color LED	2-wire
T3H*	**T3V***	Prox.		●	1-color LED	3-wire
T3PH*	**T3PV***	Prox.		●	1-color LED	3-wire
T2WH*	**T2WV***	Prox.		●	2-color LED	2-wire
T2YH*	**T2YV***	Prox.		●	2-color LED	2-wire
T3WH*	**T3WV***	Prox.		●	2-color LED	3-wire
T3YH*	**T3YV***	Prox.		●	2-color LED	3-wire
T2JH*	**T2JV***	Prox.		●	1-color LED off-delay	2-wire

*** 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	
F	With push-in fitting (straight)			
FE	With push-in fitting (elbow)			
M	Piston rod material (stainless steel)			*9
V	Boss cutoff			
P6	Copper and PTFE free			*10

Ⓗ Accessory	
I	Rod eye
Y	Rod clevis (pin and split washer pin 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 : For the min. stroke with switch and the max. and min. strokes with bellows, refer to page 86.
*3 : The compatible tube O.D. of F (with push-in fitting (straight)) and FE (with push-in fitting (elbow)) is ø6.
*4 : The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.
*5 : "I" and "Y" cannot be selected together.
*6 : Refer to Ending Page 85 for custom specifications of rod end form.
*7 : Refer to page 84 for combination of variations/ options.
*8 : Up to three switches can be installed. If four or more switches are required, switch mounting brackets for the extra switches must be prepared separately.
*9 : For 20 or 25 bore size, the rod is stainless steel as standard and the rod nut is zinc chromate. If a stainless steel rod nut is necessary, select the "M" option code.
*10 : The "CCI" mounting is not available for copper and PTFE free (P6).

[Example of model No.]

CMK2-00-20-100-T0H-R-VY

Model: Medium bore size cylinder Double acting/standard

Ⓐ Mounting : Basic
Ⓑ Bore size : ø20 mm
Ⓒ Port thread : Rc thread
Ⓓ Stroke : 100 mm
Ⓔ Switch model No. : Reed T0H switch, lead wire 1m
Ⓕ Switch quantity : 1 on rod side
Ⓖ Option : Boss cutoff
Ⓗ Accessory : Rod clevis

How to order switch

● Switch body + mounting bracket set

CMK2 - T0H - 20

- T0H: Switch model No. (Item E on page 88)
- 20: Bore size (Item B on page 88)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item E on page 88)

● Mounting bracket set

CMK2 - T - 20

- T: Mounting bracket
- 20: Bore size (Item B on page 88)

How to order mounting bracket

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40
Basic (00) *3	M1-00-20	M1-00-30	M1-00-30	M1-00-30
Axial foot (LB/LS)	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Flange (FA/FB)	M1-FA-20	M1-FA-30	M1-FA-30	M1-FA-30
Trunnion (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-30	M1-TA-40
Eye bracket (CA)	M1-CA-20	M1-CA-30	M1-CA-30	M1-CA-30
Clevis bracket (CB)	M1-CB-20	M1-CB-30	M1-CB-30	M1-CB-30

*1: Regarding mounting brackets, mounting nuts and toothed washers are supplied with the axial foot and flange. The trunnion includes mounting nuts.
*2: For axial foot (two-sided), 2 sets of the "M1-LB-*1" in the table above are required.
*3: Mounting nut, toothed washer only. Although 1 set is included with the basic of the product (00), use this when needed.

Specifications for rechargeable battery

(Catalog No. CC-1226A)

● Design compatible with rechargeable battery manufacturing process

CMK2 - ··· - P4*

* Contact CKD for details.