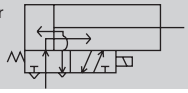


Small cylinder with valve double acting/single rod

CKV2 Series

● Bore size: ø20/ø25/ø32/ø40

JIS symbol ● Double acting cylinder with valve



RoHS CAD

Specifications

Item		CKV2 (Standard/with switch)			
Bore size	mm	ø20	ø25	ø32	ø40
Actuation		Double acting/with valve			
Working fluid		Compressed air			
Max. working pressure	MPa	1 (≈150 psi, 10 bar)			
Min. working pressure	MPa	0.15 (≈22 psi, 1.5 bar)			
Proof pressure	MPa	1.6 (≈230 psi, 16 bar)			
Ambient temperature	°C	-5 (23°F) to 60 (140°F) (no freezing)			
Port size		Rc1/8			
Stroke tolerance	mm	$^{+2.0}_{0}$ (to 200)		$^{+2.4}_{0}$ (201 to 750)	
Working piston speed	mm/s	50 to 500		50 to 430	50 to 300
Cushion		Rubber cushion			
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)			
Allowable absorbed energy	J	0.166	0.308	0.424	0.639
Solenoid valve specifications					
Rated voltage (note)	V	100 AC(50/60 Hz)	200 AC(50/60 Hz)	24 DC	
Starting current	A	0.056/0.048	0.028/0.024	0.110	
Holding current	A	0.028/0.024	0.014/0.012		
Power consumption	W	2.0	2.0	2.5	
Voltage fluctuation range		±10%			
Thermal class		Class B or equivalent			

● Note: 100 VAC and 200 VAC are available with 110 VAC and 220 VAC (60 Hz).

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Min. stroke (mm)
ø20	25/50/75/100/150/200	750	5
ø25			
ø32			
ø40			

*1: The custom stroke is available in 1 mm increments.
*2: The stroke will be 25 mm and over with bellows "J". Contact CKD when stroke is shorter than 25 mm.

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 (no 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 at 100 VAC, ≤ 2 mA at 200 VAC	1mA 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	Product weight when stroke (S) = 0 mm					Switch weight	Switch rail + band weight	Additional weight per S = 10 mm
Bore size (mm)	Basic (00)	Axial foot (LB)	Rod side flange (FA)	Rod side trunnion (TA)	Head side trunnion (TB)			
ø20	0.47	0.63	0.53	0.52	0.49	Refer to the weight in the switch specifications.	0.005	0.01
ø25	0.57	0.79	0.72	0.67	0.60		0.005	0.01
ø32	0.62	0.84	0.77	0.72	0.65		0.009	0.02
ø40	0.81	1.08	0.96	0.97	0.85		0.009	0.02

(Example) Product weight of CKV2-FA-32-50-1-T0H-D

Product weight when S = 0 mm ..... 0.77 kg
Additional weight when S = 50 mm ... Additional weight when S = 10 mm 0.02 x $\frac{\text{Product stroke (50)}}{10}$ = 0.10 kg
Weight of 2 switches ..... 0.036 kg
Weight of switch rail + 2 bands ..... 0.018 kg
Product weight ..... 0.77 kg + 0.1 kg + 0.036 kg + 0.018 kg = 0.924 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	47.1	62.8	94.2	$1.26x10^2$	$1.57x10^2$	$1.88x10^2$	$2.20x10^2$	$2.51x10^2$	$2.83x10^2$	$3.14x10^2$
	Pull	35.3	47.1	70.7	94.2	$1.18x10^2$	$1.41x10^2$	$1.65x10^2$	$1.88x10^2$	$2.12x10^2$	$2.36x10^2$
ø25	Push	73.6	98.2	$1.47x10^2$	$1.96x10^2$	$2.45x10^2$	$2.95x10^2$	$3.44x10^2$	$3.93x10^2$	$4.42x10^2$	$4.91x10^2$
	Pull	56.7	75.6	$1.13x10^2$	$1.51x10^2$	$1.89x10^2$	$2.27x10^2$	$2.64x10^2$	$3.02x10^2$	$3.40x10^2$	$3.78x10^2$
ø32	Push	$1.21x10^2$	$1.61x10^2$	$2.41x10^2$	$3.22x10^2$	$4.02x10^2$	$4.83x10^2$	$5.63x10^2$	$6.43x10^2$	$7.24x10^2$	$8.04x10^2$
	Pull	$1.04x10^2$	$1.38x10^2$	$2.07x10^2$	$2.76x10^2$	$3.46x10^2$	$4.15x10^2$	$4.84x10^2$	$5.53x10^2$	$6.22x10^2$	$6.91x10^2$
ø40	Push	$1.88x10^2$	$2.51x10^2$	$3.77x10^2$	$5.03x10^2$	$6.28x10^2$	$7.54x10^2$	$8.80x10^2$	$1.01x10^3$	$1.13x10^3$	$1.26x10^3$
	Pull	$1.65x10^2$	$2.21x10^2$	$3.31x10^2$	$4.41x10^2$	$5.51x10^2$	$6.62x10^2$	$7.72x10^2$	$8.82x10^2$	$9.92x10^2$	$1.10x10^3$

How to order

No switch (built-in magnet for switch)

CKV2 - LB - 20 ( ) - 25 - U - 1 ——— J I

With switch (built-in magnet for switch)

CKV2 - LB - 20 ( ) - 25 - U - 1 - T0H - R - J I

Selection guide

Ⓐ Mounting

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Stroke

Ⓔ How to wire

Ⓕ Voltage

Ⓖ Switch model No.

Ⓗ Switch quantity *1

Ⓘ Option *2/*3/*4/*5/*6

Ⓙ Accessory *7

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
TA	Rod side trunnion
TB	Head side trunnion

Ⓑ Bore size (mm)	
20	ø20
25	ø25
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 *1	Custom stroke
ø20	**5 to 750**	**In 1 mm increments**
ø25	**5 to 750**	
ø32	**5 to 750**	
ø40	**5 to 750**	

Ⓔ How to wire	
Blank	Grommet lead wire (300 mm)
U	DIN terminal

Ⓕ Voltage	
1	100 VAC
2	200 VAC
3	24 VDC

Ⓖ Switch model No.

Axial lead wire	Radial 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***	Proximity	●		1-color LED	2-wire
T2H*	**T2V***	Proximity		●	1-color LED	2-wire
T3H*	**T3V***	Proximity		●	1-color LED	3-wire
T3PH*	**T3PV***	Proximity		●	1-color LED	3-wire
T2WH*	**T2WV***	Proximity		●	2-color LED	2-wire
T2YH*	**T2YV***	Proximity		●	2-color LED	2-wire
T3WH*	**T3WV***	Proximity		●	2-color LED	3-wire
T3YH*	**T3YV***	Proximity		●	2-color LED	3-wire
T2JH*	**T2JV***	Proximity		●	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
M	Piston rod material (stainless steel)		
W	With silencer		
G	With surge suppressor		
E	With indicator lamp		
X	Pull when energized		
P6	Copper and PTFE free specification (made-to-order product)		

Ⓙ Accessory	
I	Rod eye
Y	Rod clevis (pin, washer, split pin included)
B2	Clevis bracket
B3	Clevis bracket (clevis)

⚠ Precautions for model No. selection

*1 : Refer to page 680 for the min. stroke with switch.
*2 : The stroke will be 25 mm and over with bellows "J". Contact CKD when stroke is shorter than 25 mm.
*3 : The surge suppressor (G) is included when the wiring method is grommet lead wire.
*4 : The type with lamp (E) is available only for the DIN terminal (U) wiring method.
*5 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*6 : For copper and PTFE free (P6), check the delivery date as it is a made-to-order product.
*7 : "I" and "Y" cannot be selected together.
*8 : Refer to Ending Page 85 for custom specifications of rod end form.
*9 : Refer to page 678 for combination of variations/ options.
*10 : Up to 3 switches can be mounted. If four or more switches are required, switch mounting brackets for the extra switches must be prepared separately.

[Example of model No.]

CKV2-LB-20-25-U-1-T0H-R-JI

Model: Small cylinder with valve double acting/single rod

Ⓐ Mounting : Axial foot
Ⓑ Bore size : ø20 mm
Ⓒ Port thread : Rc thread
Ⓓ Stroke : 25 mm
Ⓔ How to wire : DIN terminal
Ⓕ Voltage : 100 VAC
Ⓖ Switch model No. : Reed T0H switch, lead wire 1m
Ⓗ Switch quantity : 1 on rod side
Ⓘ Option : Bellows for max. ambient temperature 100°C
Ⓙ Accessory : Rod eye

How to order switch

● Switch body + mounting bracket set

CKV2 – T0H – 20

- T0H: Switch model No. (Item Ⓖ on page 682)
- 20: Bore size (Item Ⓑ on page 682)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓖ on page 682)

● Mounting bracket set

CKV2 - T - 20

- T: Mounting bracket
- 20: Bore size (Item Ⓑ on page 682)

How to order mounting bracket

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40
Axial foot (LB) rod side	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Axial foot (LB) head side	M1-LBV-20	M1-LBV-30	M1-LBV-30	M1-LBV-40
Flange (FA)	M1-FA-20	M1-FA-30	M1-FA-30	M1-FA-30
Trunnion (TA)	M1-TA-20	M1-TA-30	M1-TA-30	M1-TA-40
Bolt for head side trunnion (TB)	M1-TB-20	M1-TB-30	M1-TB-30	M1-TB-40

*1 : With regard to mounting brackets, the axial foot rod side and the flange include mounting nuts and toothed washers, the trunnion includes mounting nuts, and the axial foot head side includes mounting bolts.
*2 : For material of the mounting bracket, refer to page 684.
3 : For axial foot, 1 set each of the above “M1-LB-” and “M1-LBV-*” is required.