

CKV2

Small cylinder with valve

ø20/ø25/ø32/ø40

With valve

Overview

Small bore size (ø20 to ø40) standard cylinders with integrated high performance and power-efficient four-way valve enabled by compactly integrating the valve into CMK2 Series.

Features

Easy to add a switch

The cylinder is equipped with a magnet as standard so that you can easily add a switch by simply mounting the desired sensor switch.

Common exhaust

Common exhaust keeps the ambient environment clean.

Work and operation centralized on the top surface

Piping, wiring, speed adjustment and operation are all accessible on the top surface. Installation, operation and maintenance are easy.

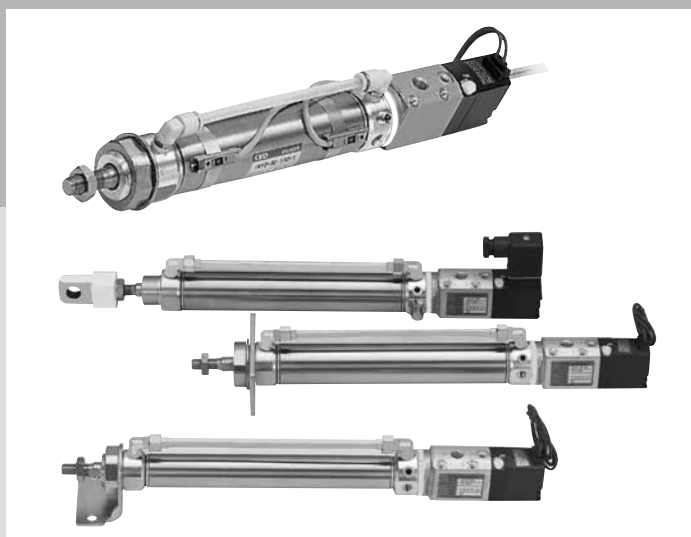
Easy speed adjustment

Speed adjustment is easy with the speed adjustment needle. The mechanism to lock the adjusted speed is built into the unit.

High corrosion resistance and long service life

Stainless steel tube used. Highly corrosion resistant and long-lasting.

Easy to switch between push when energized and pull when energized



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SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

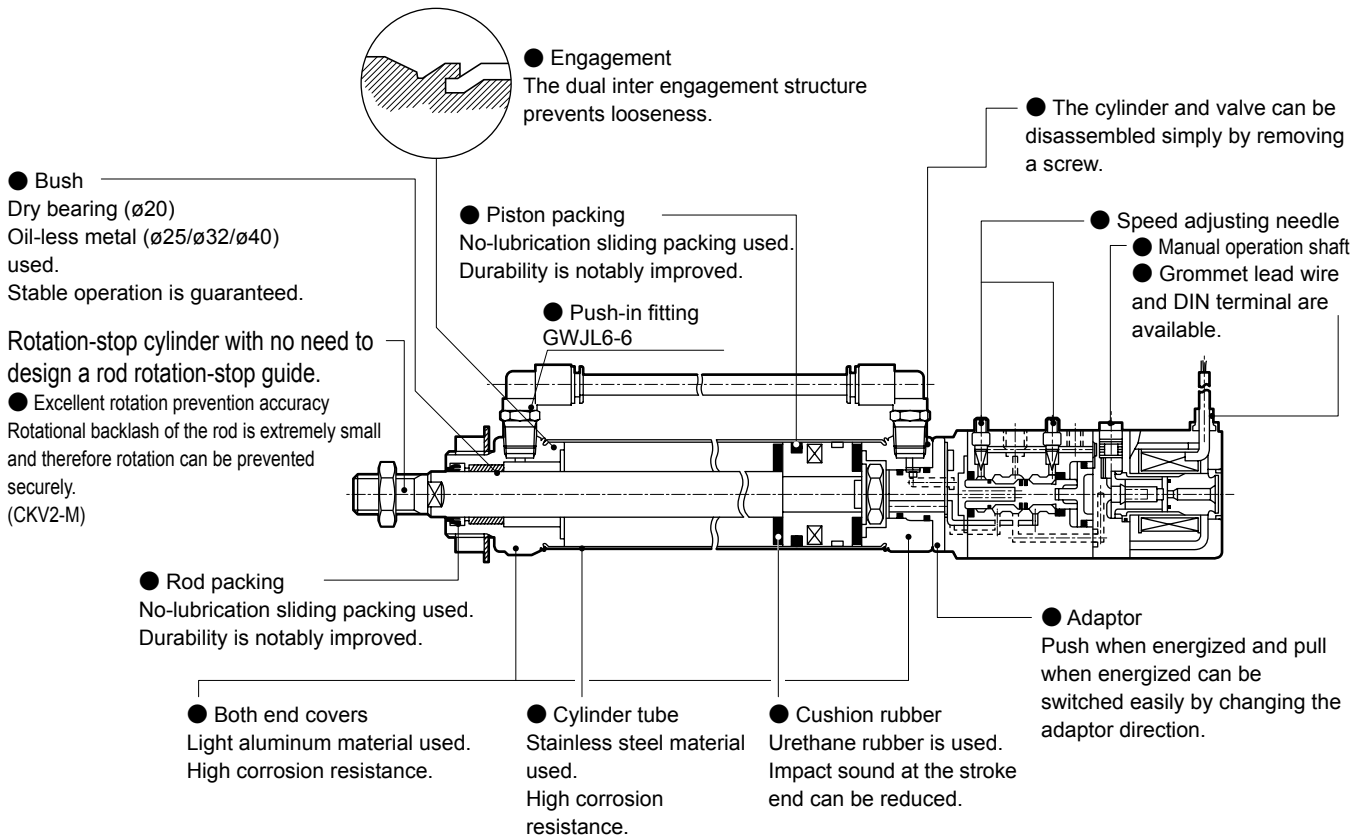
Series variation

Small cylinder with valve CKV2 Series

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2**
- CAV2/
COVPIN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/
MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd
Contr
- Ending

Variation	Model No. JIS symbol	Bore size (mm)	Standard stroke length (mm)						Min. stroke length (mm)	Max. stroke length (mm)	Custom stroke length(per mm)	Mounting	
			25	50	75	100	150	200				Basic	Axial foot
			00	LB									
Double acting/ single rod	CKV2	ø20/ø25/ ø32/ø40	●	●	●	●	●	●	5	750	1	●	●
Double acting/ rotation-stop	CKV2-M	ø20/ø25/ ø32/ø40	●	●	●	●	●	●	5	750	1	●	●

Product introduction



●: Standard, ◎: Option, ○: Made to order, ■: Not available

Mounting			Option									Accessory				Switch	Page
Rod side flange	Rod side trunnion	Head side trunnion	Bellows (100°C)	Bellows (250°C)	Piston rod material (stainless steel)	With silencer	With surge suppressor	With indicator lamp	Pull when energized	Copper and PTFE free	Rod eye	Rod clevis	Eye bracket	Clevis bracket clevis			
FA	TA	TB	J	L	M	W	G	F	X	P6	I	Y	B2	B3			
●	●	●	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	680	
●	●	●	◎	◎	◎	◎	◎	◎	◎	■	◎	◎	◎	◎	◎	692	

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd Contr

Ending

Variation and option combination selection table

- : Standard
- ◎: Option
- : Available (made-to-order product)
- △: Available depending on conditions (Contact CKD.)
- ×: Not available

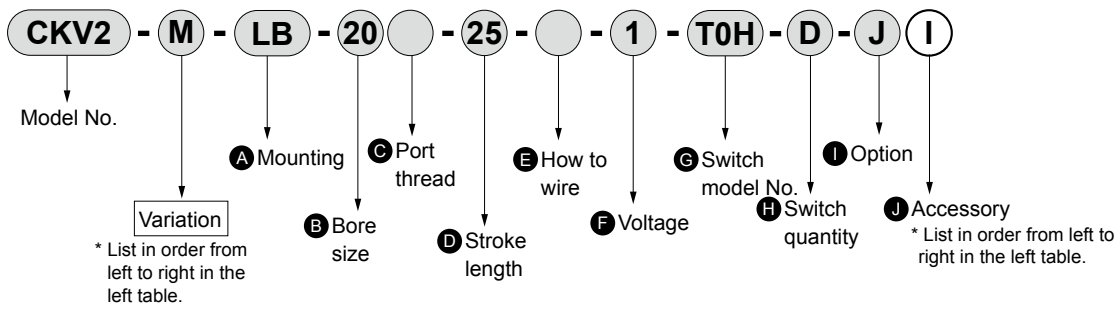
Category	Code	Variation		Port thread		Wiring		Option									
		Double acting basic	Rotation-stop	NPT	G	Grommet	DIN terminal box	Polyolefin with bellows	Silicone rubber with bellows	Piston rod material stainless steel	Specify piston rod end form	Copper and PTFE free	With silencer	With surge suppressor	With neon lamp	Pull when energized	
		None	M	N	G	None	U	J	L	M	N	P6	W	G	E	X	
Category	Blank	○	○	○	○	●	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	
	M	○	○	○	○	●	◎	◎	◎	◎	△	◎	◎	◎	◎	◎	
Wiring	NPT				×	○	○	○	○	○	○	○	○	○	○	○	
	G					○	○	○	○	○	○	○	○	○	○	○	
Option	Grommet					×	◎	◎	◎	◎	◎	◎	◎	◎	×	◎	
	DIN terminal box						◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
Accessory	Polyolefin with bellows							×	◎	◎	◎	◎	◎	◎	◎	◎	
	Silicone rubber with bellows								◎	◎	◎	◎	◎	◎	◎	◎	
Accessory	Piston rod material stainless steel									◎	◎	◎	◎	◎	◎	◎	
	Specify piston rod end form										◎	◎	◎	◎	◎	◎	
Accessory	Copper and PTFE free											◎	◎	◎	◎	◎	
	With silencer												◎	◎	◎	◎	
Accessory	With surge suppressor													◎	◎	◎	
	With neon lamp														◎	◎	
Accessory	Pull when energized															◎	
	Cylinder switch	Listed separately	◎	◎	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Accessory	Rod eye	I	◎	◎	○	○	◎	◎	◎	◎	◎	*1	◎	◎	◎	◎	◎
	Rod clevis	Y	◎	◎	○	○	◎	◎	◎	◎	◎	*1	◎	◎	◎	◎	◎
Accessory	B2 bracket	B2	◎	◎	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
	B3 bracket	B3	◎	◎	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

*1: The combinations above do not apply if the thread size of the end of the piston rod is different. Contact CKD separately.

*2: Rotation-stop piston rod is stainless steel.

If option M (piston rod material stainless steel) is selected, the rod nut will also be stainless steel.

[How to order]



Model No. : Small cylinder with valve

● Variation: Double acting, rotation-stop

● A Mounting : Axial foot

● B Bore size : ϕ 20 mm

● C Port thread : Rc thread

● D Stroke length : 25 mm

● E How to wire : Grommet

● F Voltage : 100 VAC

● G Switch model No. : Reed T0H switch, lead wire 1m

● H Switch quantity : 2

● I Option : Bellows for max. ambient temperature 100°C

● J Accessory : Rod eye

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

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SRT3

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MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

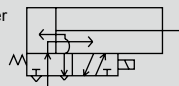


Small cylinder with valve double acting/single rod

CKV2 Series

● Bore size: $\phi 20/\phi 25/\phi 32/\phi 40$

JIS symbol ● Double acting cylinder with valve



Specifications

Item	CKV2 (Standard/with switch)				
Bore size	mm	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$
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	$^{\circ}\text{C}$	-5 (23 $^{\circ}\text{F}$) to 60 (140 $^{\circ}\text{F}$) (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		$\pm 10\%$			
Thermal class		Class B or equivalent			

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

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 20$	25/50/75/100/150/200	750	5
$\phi 25$			
$\phi 32$			
$\phi 40$			

*1: The custom stroke length is available in 1 mm increments.

*2: The stroke length will be 25 mm and over with bellows "J". Contact CKD when stroke length is shorter than 25 mm.

Min. stroke length with switch

(Unit: mm)

Switch quantity	1						2						3					
	Proximity			Reed			Proximity			Reed			Proximity			Reed		
	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			
Bore size (mm)																		
$\phi 20$	10						25	30	35	25	35	50	55	55	50	55		
$\phi 25$	10						25	30	35	25	35	50	55	55	50	55		
$\phi 32$	10						25	30	35	25	35	50	55	55	50	55		
$\phi 40$	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 display

Item	Proximity 2-wire		Proximity 2-wire			Proximity 3-wire				Reed 2-wire					
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T24VDC±10%	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 lamp	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)		Without 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	Product weight when stroke length (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)			
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 $0.02 \times \frac{\text{Product stroke length (50)}}{10} = 0.10$ 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	1.26×10^2	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	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	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	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	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	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	1.88×10^2	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	1.65×10^2	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

CKV2 Series

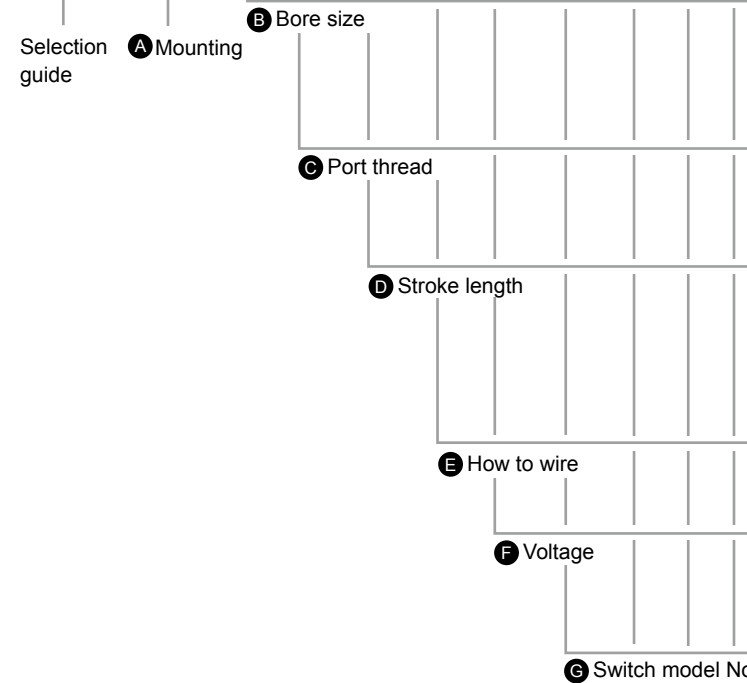
How to order

Without 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



⚠ Precautions for model No. selection

- *1 : Refer to page 680 for the min. stroke length with switch.
- *2 : The stroke length will be 25 mm and over with bellows "J". Contact CKD when stroke length 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

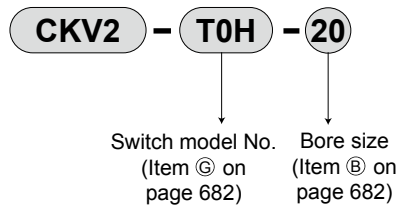
Model: Small cylinder with valve double acting/single rod

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

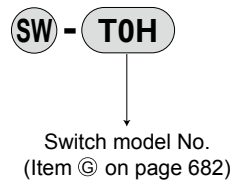
Code	Description					
A Mounting						
00	Basic					
LB	Axial foot					
FA	Rod side flange					
TA	Rod side trunnion					
TB	Head side trunnion					
B Bore size (mm)						
20	ø20					
25	ø25					
32	ø32					
40	ø40					
C Port thread						
Blank	Rc thread					
NN	NPT thread (made-to-order product)					
GN	G thread (made-to-order product)					
D Stroke length (mm)						
Bore size	Stroke length *1	Custom stroke length				
ø20	5 to 750	In 1 mm increments				
ø25	5 to 750					
ø32	5 to 750					
ø40	5 to 750					
E How to wire						
Blank	Grommet lead wire (300 mm)					
U	DIN terminal					
F Voltage						
1	100 VAC					
2	200 VAC					
3	24 VDC					
G Switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage	Display	Lead wire	
T0H*	T0V*	Reed	AC	●	1-color display	
T5H*	T5V*		DC	●		Without indicator lamp
T8H*	T8V*		●	●	1-color display	2-wire
T1H*	T1V*		●	●	1-color display	
T2H*	T2V*	Proximity	●	●	1-color display	
T3H*	T3V*		●	●		1-color display
T3PH*	T3PV*		●	●	1-color display	3-wire
T2WH*	T2WV*		●	●	2-color display	2-wire
T2YH*	T2YV*		●	●		
T3WH*	T3WV*		●	●	2-color display	3-wire
T3YH*	T3YV*	●	●	1-color display off-delay	2-wire	
T2JH*	T2JV*	●	●	1-color display off-delay	2-wire	
* Lead wire length						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
H Switch quantity						
R	1 on rod side					
H	1 on head side					
D	2					
T	3					
I Option						
J	Bellows	Max. ambient temperature	100°C	Instantaneous max. temp	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)					
J Accessory						
I	Rod eye					
Y	Rod clevis (pin, washer, split pin included)					
B2	Clevis bracket					
B3	Clevis bracket (clevis)					

How to order switch

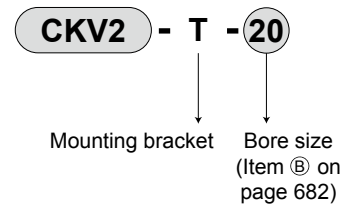
- Switch body + mounting bracket set



- Switch body only



- Mounting bracket set



How to order mounting bracket

Bore size (mm)	ø20	ø25	ø32	ø40
Mounting bracket				
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.

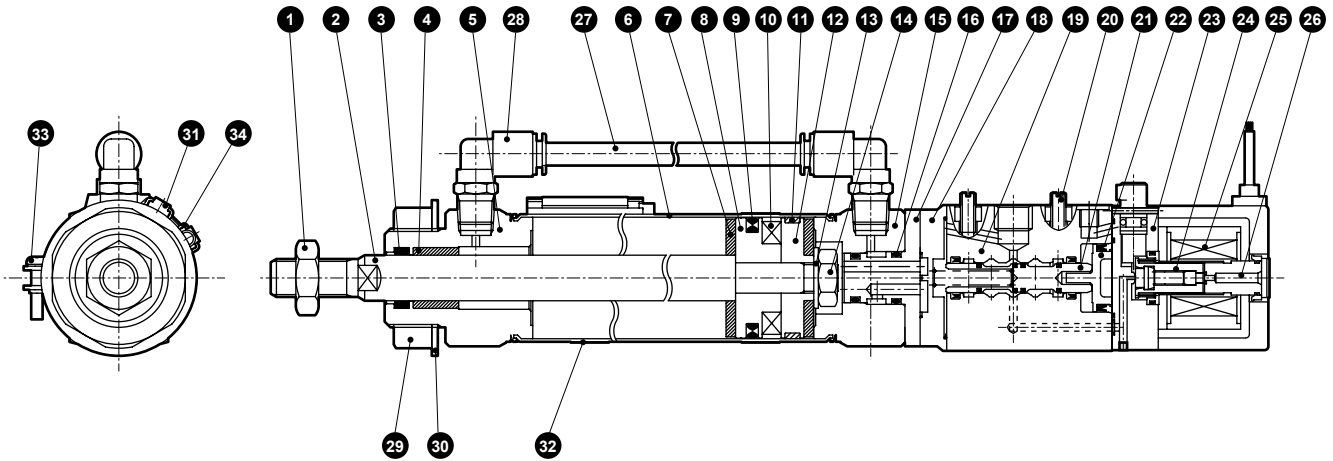
*2 : For material of the mounting bracket, refer to page 684.

3 : For axial foot, 1 set each of the above "M1-LB-" and "M1-LBV-*" is required.

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Internal structure and parts list

● CKV2 (with switch)



Cannot be disassembled

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	17	Adaptor	Steel	Zinc chromate
2	Piston rod	ø20, ø25: Stainless steel ø32, ø40: Carbon steel	Industrial chrome plating	18	Cap	Aluminum alloy die-casting	Chromate
3	Rod packing	Nitrile rubber		19	Valve body	Aluminum alloy	Alumite
4	Bush	ø20: Dry bearing ø25, ø32, ø40: Copper-based	*1	20	Speed adjustment needle	Copper alloy	
5	Rod cover	Aluminum alloy		21	Spool assembly	—	
6	Cylinder tube	Stainless steel		22	Piston assembly	—	
7	Cushion rubber	Urethane rubber		23	Pilot valve body	Nylon	
8	Piston A	Aluminum alloy		24	Plunger assembly	—	
9	Piston packing	Nitrile rubber		25	Coil assembly	—	
10	Magnet	Plastic		26	Core assembly	—	
11	Wear ring	Polyacetal		27	Pass-pipe	Nylon	
12	Piston B	Aluminum alloy		28	Fitting	—	GWJL6-6
13	Spacer	Steel	Zinc chromate	29	Nut	Steel	Zinc chromate
14	Hexagon nut	Steel	Zinc chromate	30	Toothed washer	Steel	Zinc chromate
15	Head cover	Aluminum alloy		With switch			
16	O-ring	Nitrile rubber		31	Switch body	—	
*1: Oil-impregnated cast iron bearing for copper and PTFE free.				32	Band	Stainless steel	
				33	Pan head machine screw	Stainless steel	
				34	Switch rail	Stainless steel	

Material of mounting bracket

Mounting	Material	Remarks
LB	Steel	Zinc chromate
FA	Steel	Zinc chromate
TA	Steel	Zinc chromate

Note: Mounting bracket will be shipped with the product.
However, LB, FA, and TA with bellows will be shipped assembled.

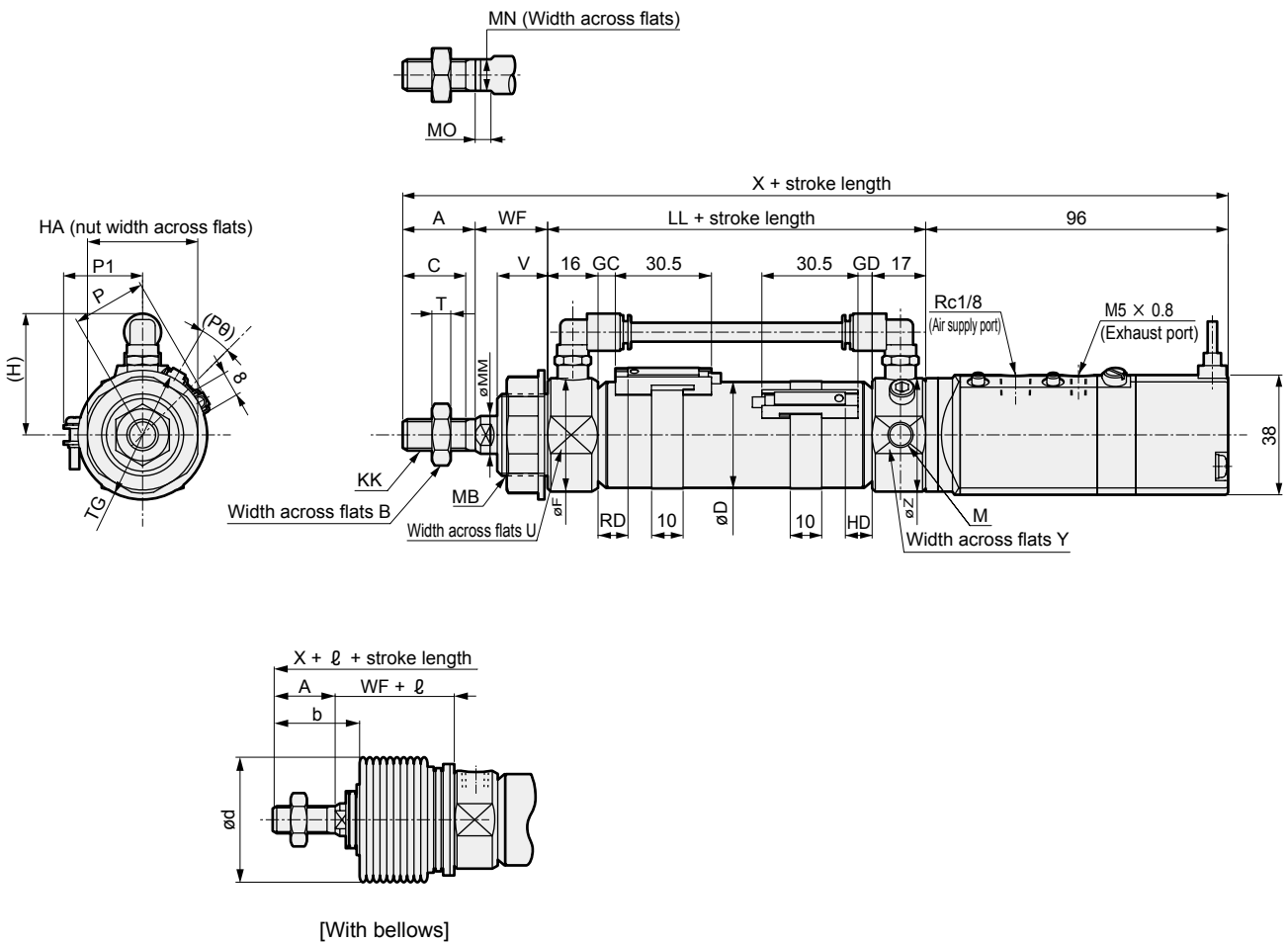
Repair parts list of valve section

Kit No.	Repair parts No.
CKV2-VK	16 21 22

Dimensions



● Basic (00)



1: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.

*2: For the l dimension, round up below the decimal point.

*3: For the dimensions of the accessories, refer to page 699.

Code	Basic (00) basic dimensions																	
Bore size (mm)	A	B	C	D	F	(H)	HA	KK	LL	M	MB	MM	MN	MO	T	TG	U	V
ø20	20	13	18	21.4	28	38.5	26	M8×1.0	67	M8	M18×1.5	10	8	5	5	29	24	14
ø25	23	17	20	26.4	32	38.5	35	M10×1.25	70	M8	M26×1.5	12	10	5	6	41	30	16
ø32	23	17	20	33.6	36	38.5	35	M10×1.25	70	M8	M26×1.5	12	10	5	6	41	34	16
ø40	25	19	22	41.6	45	43.0	35	M12×1.5	74	M10	M26×1.5	14	12	6	7	41	43	16

Code	With switch												With bellows					
	WF	X	Y	Z	T0, T5, T2, T3				T2W, T3W				P	P1	(Pθ)°	b	d	l
					GC	GD	RD	HD	GC	GD	RD	HD						
ø20	24	207	34	36	4	3	8	7	6	5	10	9	17.3	19.5	22	30	30	(Stroke length/3) + 6
ø25	23	212	34	36	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8	22.0	18	32	46	(Stroke length/3.25) + 7
ø32	23	212	34	36	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3	25.5	15	32	46	(Stroke length/3.25) + 7
ø40	23	218	43	45	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3	29.5	12	34	46	(Stroke length/3.25) + 7

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

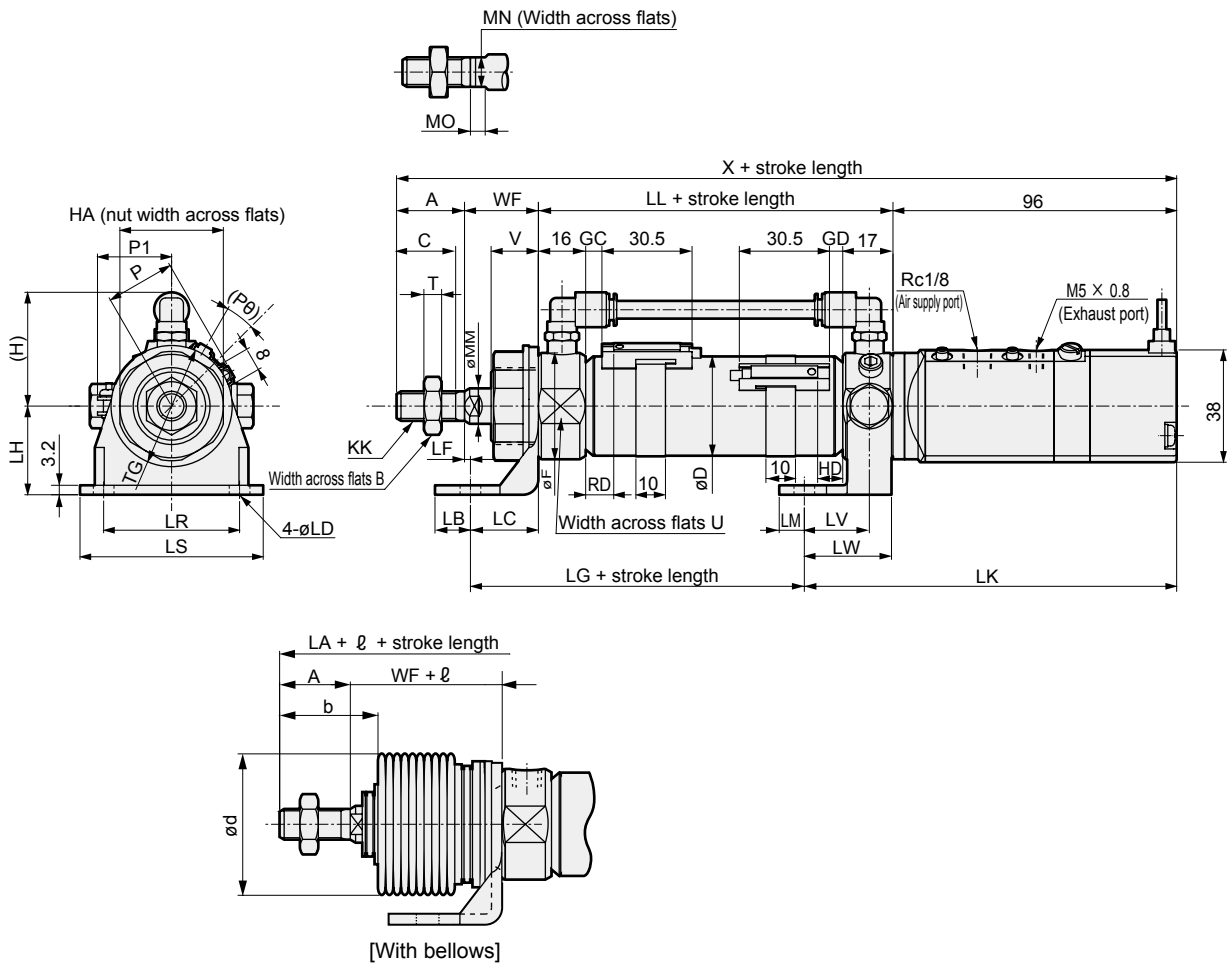
Spd
Contr

Ending

Dimensions



● Axial foot (LB)

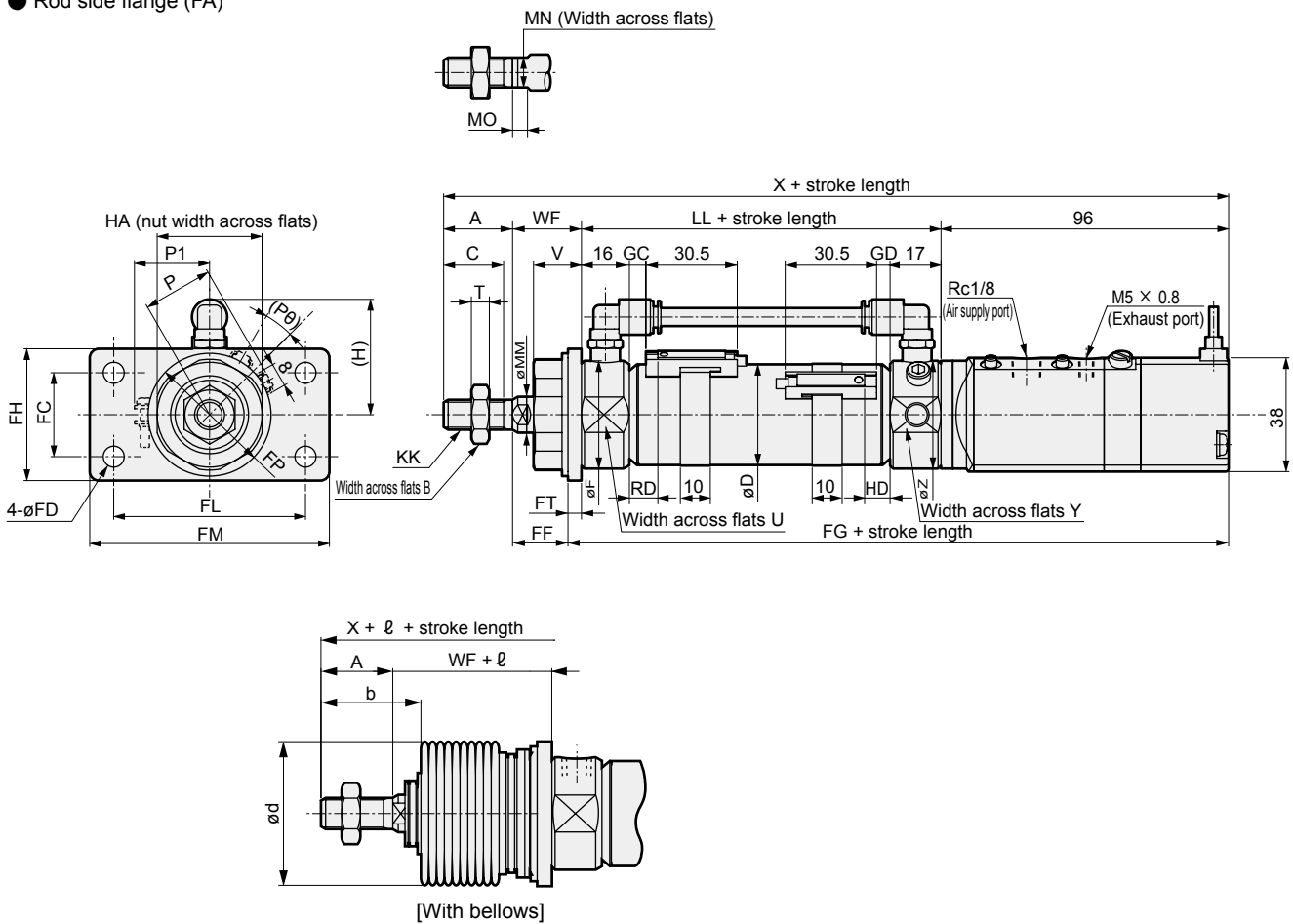


1: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.
 *2: For the dimensions of the accessories, refer to page 699.

Code	Axial foot (LB) basic dimensions																	Mounting dimensions			
	A	B	C	D	F	(H)	HA	KK	LL	MM	MN	MO	T	TG	U	V	WF	X	LB	LC	
Bore size (mm)																					
ϕ 20	20	13	18	21.4	28	38.5	26	M8x1.0	67	10	8	5	5	29	24	14	24	207	10	18	
ϕ 25	23	17	20	26.4	32	38.5	35	M10x1.25	70	12	10	5	6	41	30	16	23	212	12	23	
ϕ 32	23	17	20	33.6	36	38.5	35	M10x1.25	70	12	10	5	6	41	34	16	23	212	12	23	
ϕ 40	25	19	22	41.6	45	43	35	M12x1.5	74	14	12	6	7	41	43	16	23	218	12	23	
Code	Mounting dimensions											With switch									
	LD	LF	LG	LH	LK	LM	LR	LS	LT	LV	LW	T0, T5, T2, T3				T2W, T3W				P	
Bore size (mm)																					
ϕ 20	6	6	55	25	126	7.5	30	44	55.4	22	29.5	4	3	8	7	6	5	10	9	17.3	
ϕ 25	7	0	63	30	126	8.5	46	62	55.4	22	29.5	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8	
ϕ 32	7	0	63	30	126	8.5	46	62	55.4	22	29.5	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3	
ϕ 40	7	0	64	30	129	8	46	62	68.4	25	35	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3	
Code	With bellows																				
	P1	(P0) $^\circ$	b	d	ϱ																
Bore size (mm)																					
ϕ 20	19.5	22	30	30	(Stroke length/3) + 6																
ϕ 25	22.0	18	32	46	(Stroke length/3.25) + 7																
ϕ 32	25.5	15	32	46	(Stroke length/3.25) + 7																
ϕ 40	29.5	12	34	46	(Stroke length/3.25) + 7																

Dimensions

● Rod side flange (FA)



1: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.

*2: For the dimensions of the accessories, refer to page 699.

Code	Rod side flange (FA) basic dimensions																		
Bore size (mm)	A	B	C	D	F	(H)	HA	KK	LL	MM	MN	MO	T	U	V	WF	X	Y	Z
ø20	20	13	18	21.4	28	38.5	26	M8×1.0	67	10	8	5	5	24	14	24	207	34	36
ø25	23	17	20	26.4	32	38.5	35	M10×1.25	70	12	10	5	6	30	16	23	212	34	36
ø32	23	17	20	33.6	36	38.5	35	M10×1.25	70	12	10	5	6	34	16	23	212	34	36
ø40	25	19	22	41.6	45	43	35	M12×1.5	74	14	12	6	7	43	16	23	218	43	45

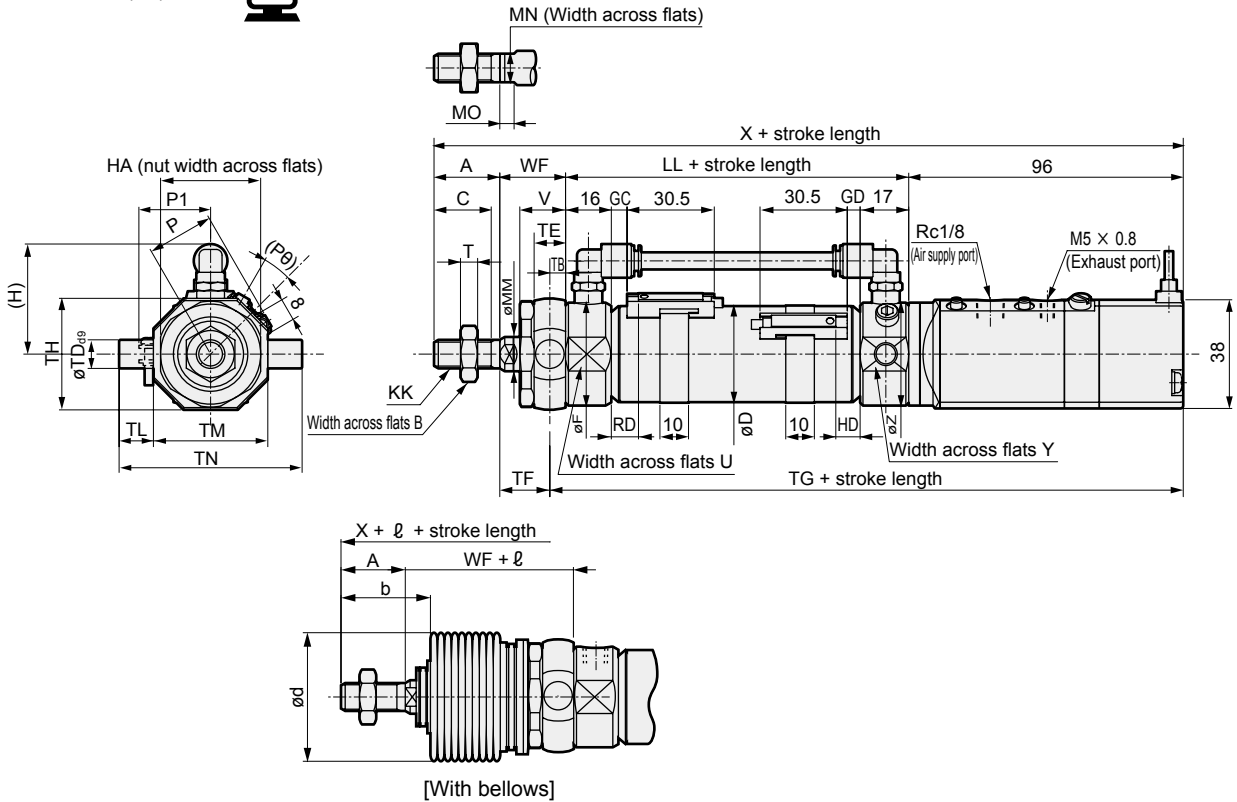
Code	Mounting dimensions									With switch								
Bore size (mm)	FC	FD	FF	FG	FH	FL	FM	FT	FP	T0, T5, T2, T3				T2W, T3W				P
										GC	GD	RD	HD	GC	GD	RD	HD	
ø20	20	6	20.8	166.2	34	40	54	3.2	29	4	3	8	7	6	5	10	9	17.3
ø25	28	7	18.5	170.5	44	64	80	4.5	41	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8
ø32	28	7	18.5	170.5	44	64	80	4.5	41	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3
ø40	28	7	18.5	174.5	44	64	80	4.5	41	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3

Code	With bellows				
Bore size (mm)	P1	(P0)°	b	d	l
ø25	22.0	18	32	46	(Stroke length/3.25) + 7
ø32	25.5	15	32	46	(Stroke length/3.25) + 7
ø40	29.5	12	34	46	(Stroke length/3.25) + 7

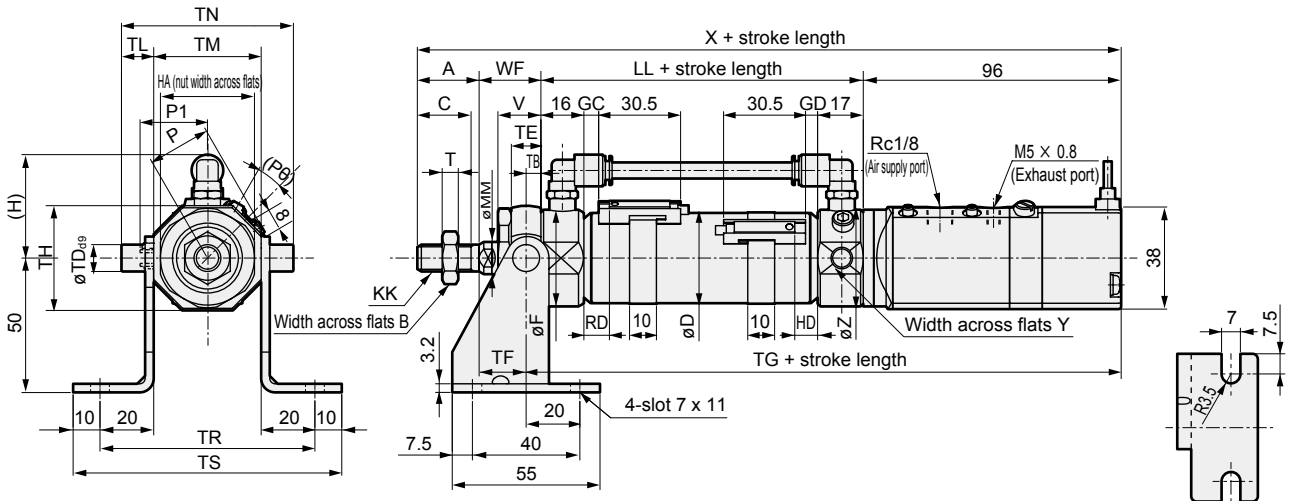
SCP*3
 CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS2
CKV2
 CAV2/
 COVP/N2
 SSD2
 SSG
 SSD
 CAT
 MDC2
 MVC
 SMG
 MSD/
 MSDG
 FC*
 STK
 SRL3
 SRG3
 SRM3
 SRT3
 MRL2
 MRG2
 SM-25
 ShkAbs
 FJ
 FK
 Spd
 Contr
 Ending

Dimensions

● Rod side trunnion (TA)



● Rod side trunnion (TA) bracket (option code B2)



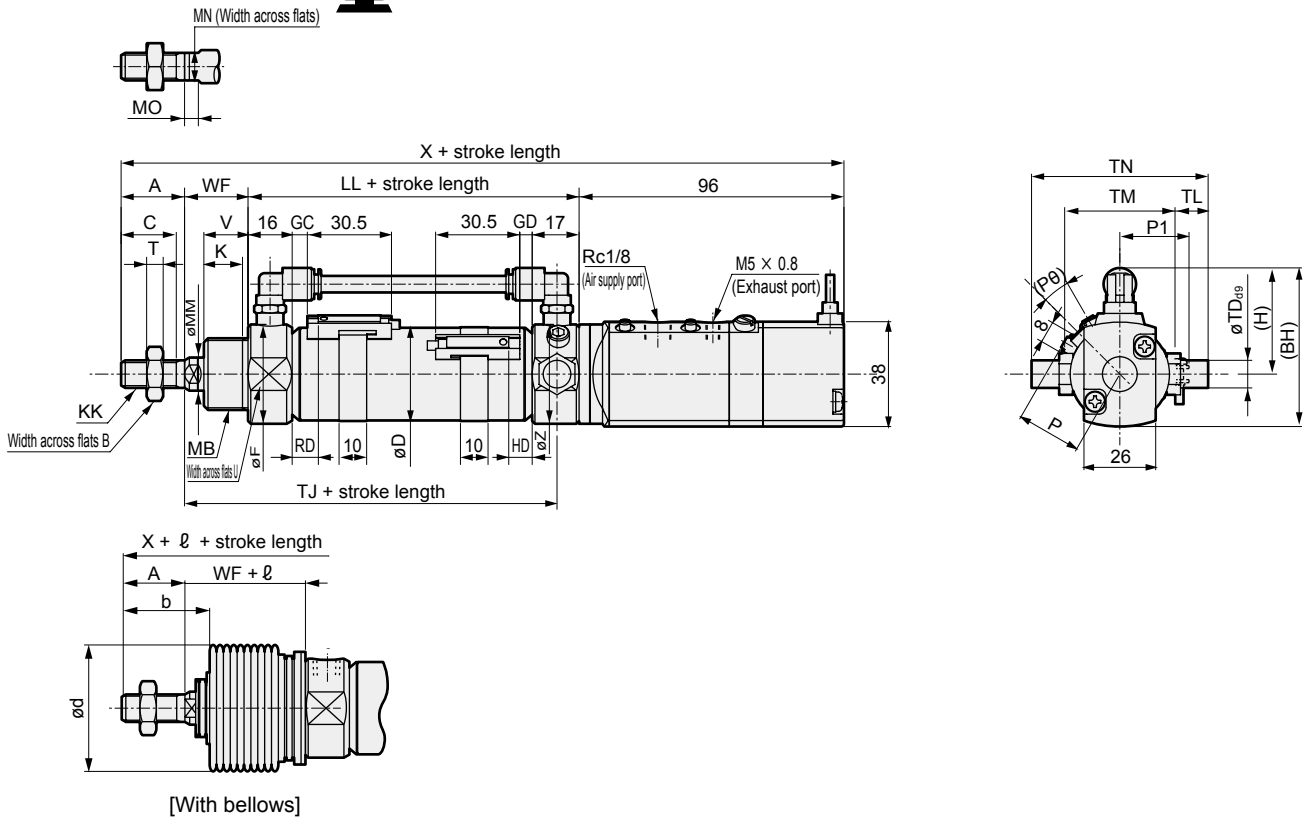
1: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.

*2: For the dimensions of the accessories, refer to page 699.

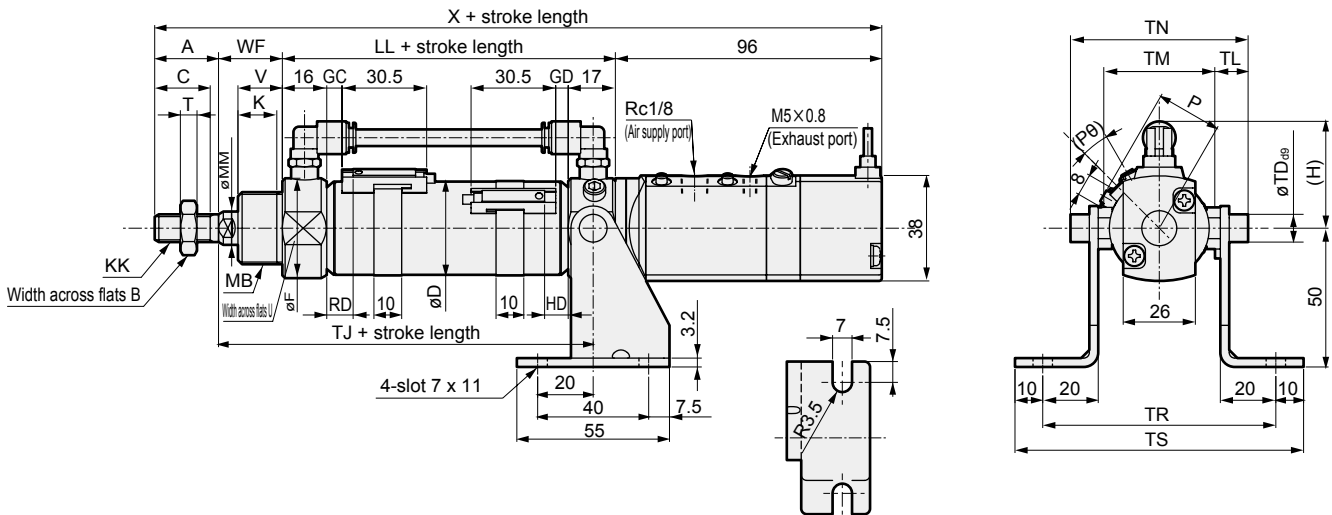
Code	Rod side trunnion (TA) basic dimensions																	Mounting dimensions						
	A	B	C	D	F	(H)	HA	KK	LL	MM	MN	MO	T	U	V	WF	X	Y	Z	TB	TD	TE	TF	TG
SM-25	20	13	18	21.4	28	38.5	26	M8×1.0	67	10	8	5	5	24	14	24	207	34	36	4.5	8	9	19.5	167.5
ShkAbs	25	17	20	26.4	32	38.5	35	M10×1.25	70	12	10	5	6	30	16	23	212	34	36	5.5	10	11	17.5	171.5
	32	17	20	33.6	36	38.5	35	M10×1.25	70	12	10	5	6	34	16	23	212	34	36	5.5	10	11	17.5	171.5
FJ	40	19	22	41.6	45	43	35	M12×1.5	74	14	12	6	7	43	16	23	218	43	45	5.5	10	11	17.5	175.5
Code	With switch						With bellows																	
	TH	TL	TM	TN	TR	TS	T0, T5, T2, T3				T2W, T3W				P	P1	(P8)°	b	d	l				
Bore size (mm)	GC	GD	RD	HD	GC	GD	RD	HD	P	P1	(P8)°	b	d	l										
	20	29.5	8	30	46	70	90	4	3	8	7	6	5	10	9	17.3	19.5	22	30	30	(Stroke length/3) + 6			
25	39	12	40	64	80	100	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8	22.0	18	32	46	(Stroke length/3.25) + 7				
32	39	12	40	64	80	100	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3	25.5	15	32	46	(Stroke length/3.25) + 7				
40	44	9.5	53	72	93	113	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3	29.5	12	34	46	(Stroke length/3.25) + 7				

Dimensions

● Head side trunnion (TB)



● Head end trunnion (TB) with bracket (option code B2)



1: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.
 *2: For the dimensions of the accessories, refer to page 699.

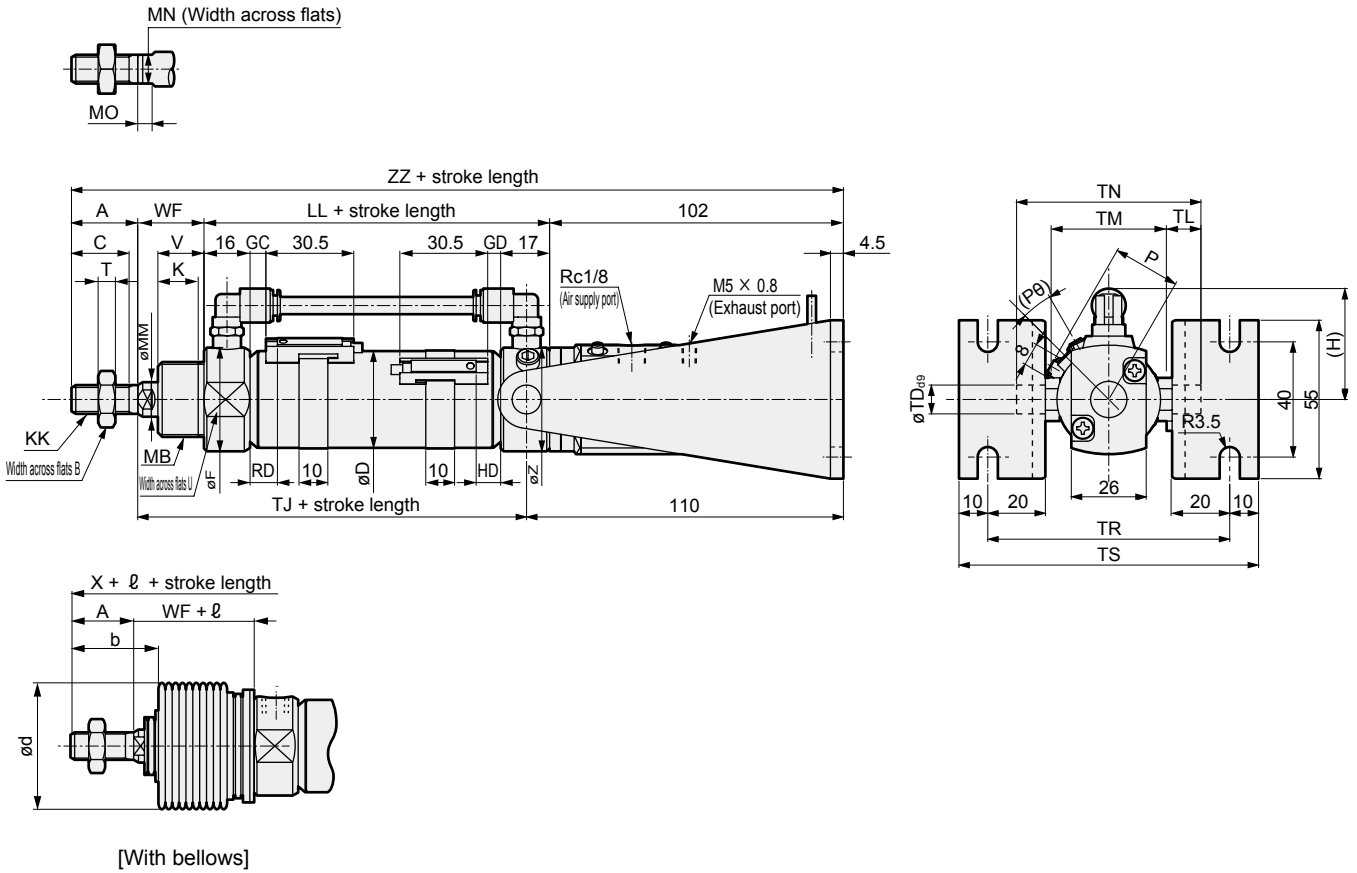
Code	Head side trunnion (TB) basic dimensions																			
Bore size (mm)	A	B	BH	C	D	F	(H)	K	KK	LL	MB	MM	MN	MO	T	U	V	WF	X	Z
ø20	20	13	57.5	18	21.4	28	38.5	12	M8×1.0	67	M18×1.5	10	8	5	5	24	14	24	207	36
ø25	23	17	57.5	20	26.4	32	38.5	14	M10×1.25	70	M26×1.5	12	10	5	6	30	16	23	212	36
ø32	23	17	57.5	20	33.6	36	38.5	14	M10×1.25	70	M26×1.5	12	10	5	6	34	16	23	212	36
ø40	25	19	62	22	41.6	45	43	14	M12×1.5	74	M26×1.5	14	12	6	7	43	16	23	218	45

Code	Mounting dimensions							With switch								With bellows					
	TD	TJ	TL	TM	TN	TR	TS	T0, T5, T2, T3				T2W, T3W				P	P1	(PØ)°	b	d	l
								GC	GD	RD	HD	GC	GD	RD	HD						
ø20	8	83	8	44	60	84	104	4	3	8	7	6	5	10	9	17.3	19.5	22	30	30	(Stroke length/3) + 6
ø25	10	85	10	44	64	84	104	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8	22.0	18	32	46	(Stroke length/3.25) + 7
ø32	10	85	10	44	64	84	104	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3	25.5	15	32	46	(Stroke length/3.25) + 7
ø40	10	89	10	53	73	93	113	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3	29.5	12	34	46	(Stroke length/3.25) + 7

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2**
- CAV2/COVP/N2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd Contr
- Ending

Dimensions

● Head side trunnion (TB) with bracket (option code B3)



1: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.
 *2: For the dimensions of the accessories, refer to page 699.

Code	Head side trunnion (TB) with bracket (option code B3) basic dimensions																	
Bore size (mm)	A	B	C	D	F	(H)	K	KK	LL	MB	MM	MN	MO	T	U	V	WF	ZZ
ø20	20	13	18	21.4	28	38.5	12	M8×1.0	67	M18×1.5	10	8	5	5	24	14	24	213
ø25	23	17	20	26.4	32	38.5	14	M10×1.25	70	M26×1.5	12	10	5	6	30	16	23	218
ø32	23	17	20	33.6	36	38.5	14	M10×1.25	70	M26×1.5	12	10	5	6	34	16	23	218
ø40	25	19	22	41.6	45	43	14	M12×1.5	74	M26×1.5	14	12	6	7	43	16	23	224

Code	Mounting dimensions							With switch							With bellows				
	TD	TJ	TL	TM	TN	TR	TS	T0, T5, T2, T3				T2W, T3W				P	(Pθ) ^o	b	d
								GC	GD	RD	HD	GC	GD	RD	HD				
ø20	8	83	8	44	60	84	104	4	3	8	7	6	5	10	9	17.3	22	30	30
ø25	10	85	10	44	64	84	104	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8	18	32	46
ø32	10	85	10	44	64	84	104	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3	15	32	46
ø40	10	89	10	53	73	93	113	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3	12	34	46

Code	Stroke length (mm)
ø20	(Stroke length/3) + 6
ø25	(Stroke length/3.25) + 7
ø32	(Stroke length/3.25) + 7
ø40	(Stroke length/3.25) + 7

MEMO

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

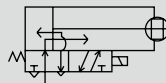


Small cylinder with valve double acting/rotation-stop

CKV2-M Series

● Bore size: $\varnothing 20/\varnothing 25/\varnothing 32/\varnothing 40$

JIS symbol ● Double acting cylinder rotation-stop with valve



Specifications

Item	CKV2-M				
	mm	$\varnothing 20$	$\varnothing 25$	$\varnothing 32$	$\varnothing 40$
Bore size	mm	$\varnothing 20$	$\varnothing 25$	$\varnothing 32$	$\varnothing 40$
Actuation		Double acting/rotation-stop			
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	$^{\circ}\text{C}$	-5 (23 $^{\circ}\text{F}$) to 60 (140 $^{\circ}\text{F}$) (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)			
Non-rotating accuracy Note	$^{\circ}$	± 1.5			± 1
Allowable absorbed energy	J	0.166	0.308	0.424	0.639

Note: Values of when the stroke length is 0 mm (except for flexure of the piston rod)

Solenoid valve specifications

Rated voltage	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		$\pm 10\%$		
Thermal class		Class B or equivalent		

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

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\varnothing 20$	25/50/75	750	5
$\varnothing 25$			
$\varnothing 32$	100/150/200	750	5
$\varnothing 40$			

*1: The custom stroke length is available in 1 mm increments.

*2: The stroke length will be 25 mm and over with bellows "J". Contact CKD when stroke length is shorter than 25 mm.

Min. stroke length with switch

(Unit: mm)

Switch quantity	1						2						3					
	Proximity			Reed			Proximity			Reed			Proximity			Reed		
	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			
Bore size (mm)	$\varnothing 20$	10			25	30	35	25	35	50	55	55	50	55				
	$\varnothing 25$	10			25	30	35	25	35	50	55	55	50	55				
Bore size (mm)	$\varnothing 32$	10			25	30	35	25	35	50	55	55	50	55				
	$\varnothing 40$	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 display/strong magnetic field proof

Item	Proximity 2-wire		Proximity 2-wire			Proximity 3-wire				Reed 2-wire						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T24VDC±10%	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 lamp	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)		Without 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	1 m:18	1 m:33	1 m:18	1 m:18		1 m:33	1 m:18	1 m:18			3 m:49		5 m:80	1 m:33	
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49	1 m:18			3 m:49		5 m:80	3 m:87	
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80	1 m:18			3 m:49		5 m:80	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 length (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)			
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-M-FA-32-50-1-TOH-D

Product weight when S = 0 mm 0.77 kg
 Additional weight when S = 50 mm ... Additional weight when S = 10 mm $0.02 \times \frac{\text{Product stroke length (50)}}{10} = 0.10$ 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	1.26×10^2	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	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	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	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	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	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	1.88×10^2	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	1.65×10^2	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

CKV2-M Series

How to order

Without switch (built-in magnet for switch)

CKV2-M-LB-20-25-U-1-J-Y

With switch (built-in magnet for switch)

CKV2-M-LB-20-25-U-1-T0H-R-J-Y

Selection **A** Mounting **B** Bore size
guide

C Port thread

D Stroke length

E How to wire

F Voltage

G Switch model No.

H Switch quantity

*10

I Option

*2/*3/*4/*5/*6

J Accessory

*7

⚠ Precautions for model No. selection

- *1 : Refer to page 692 for the min. stroke length with switch.
- *2 : The stroke length will be 25 mm and over with bellows "J". Contact CKD when stroke length is shorter than 25 mm.
- *3 : Units with a surge suppressor (G) will come with grommet lead wires.
- *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 : Piston rod material is stainless steel. If option M is selected, the rod nut material will be stainless steel.
- *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-M-LB-20-25-U-1-T0H-R-JY

Model: Small cylinder with valve double acting/rotation-stop

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

Code	Description					
A Mounting						
00	Basic					
LB	Axial foot					
FA	Rod side flange					
TA	Rod side trunnion					
TB	Head side trunnion					
B Bore size (mm)						
20	ø20					
25	ø25					
32	ø32					
40	ø40					
C Port thread						
Blank	Rc thread					
NN	NPT thread (made-to-order product)					
GN	G thread (made-to-order product)					
D Stroke length (mm)						
Bore size	Stroke length *1	Custom stroke length				
ø20	5 to 750	In 1 mm increments				
ø25	5 to 750					
ø32	5 to 750					
ø40	5 to 750					
E How to wire						
Blank	Grommet lead wire (300 mm)					
U	DIN terminal					
F Voltage						
1	100 VAC					
2	200 VAC					
3	24 VDC					
G Switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage	Display	Lead wire	
T0H*	T0V*	Reed	AC	●	1-color display	
T5H*	T5V*		DC	●		Without indicator lamp
T8H*	T8V*		●	●	1-color display	2-wire
T1H*	T1V*		●	●	1-color display	
T2H*	T2V*	Proximity	●	●	1-color display	
T3H*	T3V*		●	●		1-color display
T3PH*	T3PV*		●	●	1-color display	3-wire
T2WH*	T2WV*		●	●	1-color display	
T2YH*	T2YV*		●	●	2-color display	
T3WH*	T3WV*		●	●		1-color display
T3YH*	T3YV*		●	●	1-color display	3-wire
T2JH*	T2JV*		●	●	1-color display off-delay	
* Lead wire length						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
H Switch quantity						
R	1 on rod side					
H	1 on head side					
D	2					
T	3					
I Option						
		Max. ambient temperature		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					
J Accessory						
I	Rod eye					
Y	Rod clevis (pin, washer, split pin included)					
B2	Clevis bracket					
B3	Clevis bracket (clevis)					

How to order switch

● Switch body + mounting bracket set

CKV2 - T0H - 20

Switch model No.
(Item ㉔ on page 694)

Bore size
(Item ㉔ on page 694)

● Switch body only

SW - T0H

Switch model No.
(Item ㉔ on page 694)

● Mounting bracket set

CKV2 - T - 20

Mounting bracket

Bore size
(Item ㉔ on page 694)

How to order mounting bracket

Bore size (mm)	ø20	ø25	ø32	ø40
Mounting bracket				
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.

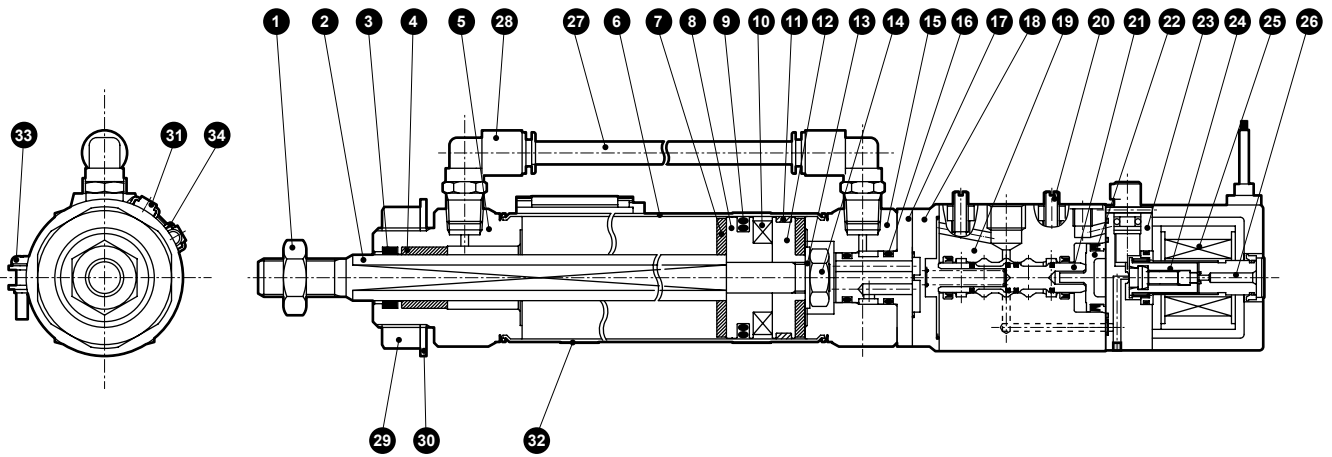
3 : For axial foot, 1 set each of the above "M1-LB-" and "M1-LBV-*" is required.

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

CKV2-M Series

Internal structure and parts list

● CKV2-M (with switch)

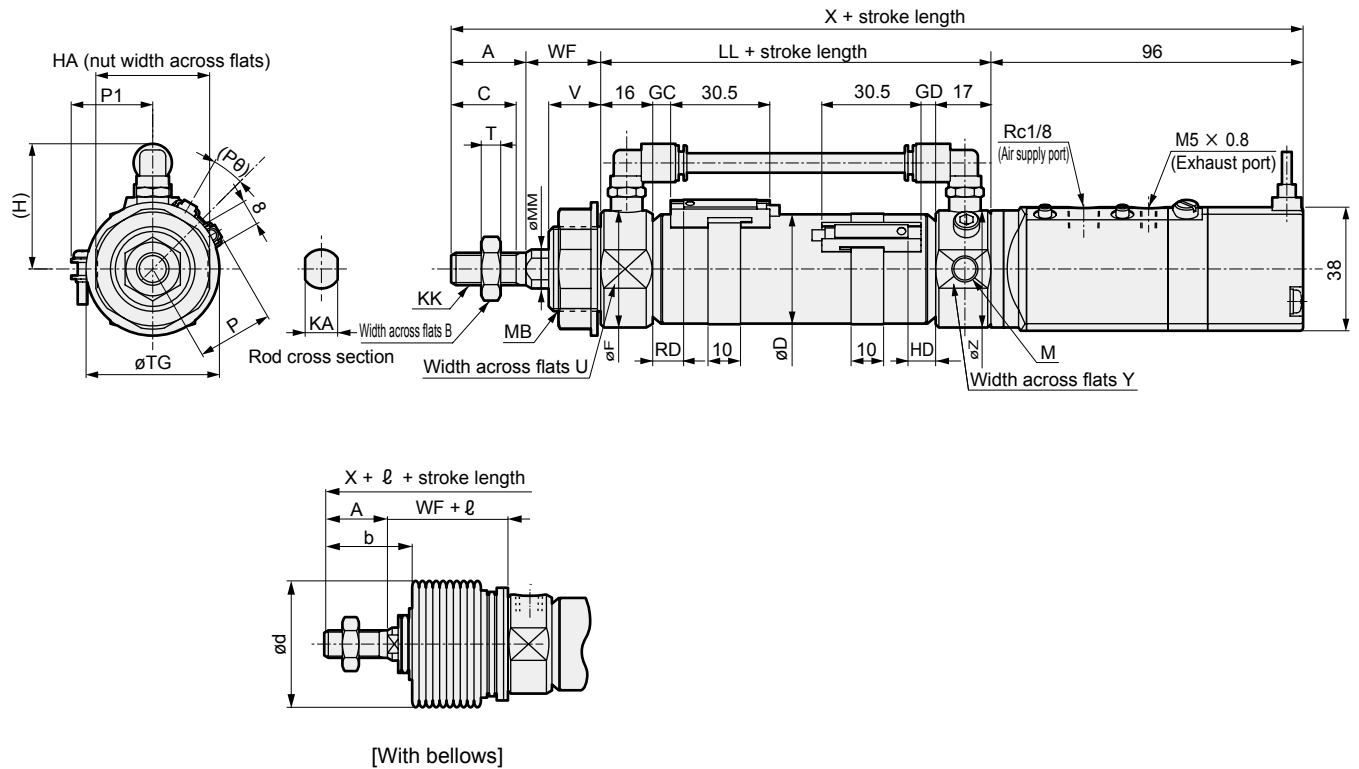


Cannot be disassembled

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	18	Cap	Aluminum alloy die-casting	Chromate
2	Piston rod	Stainless steel		19	Valve body	Aluminum alloy	Alumite
3	Rod packing	Nitrile rubber		20	Speed adjustment needle	Copper alloy	
4	Bush	Copper-based		21	Spool assembly	---	
5	Rod cover	Aluminum alloy		22	Piston assembly	---	
6	Cylinder tube	Stainless steel		23	Pilot valve body	Nylon	
7	Cushion rubber	Urethane rubber		24	Plunger assembly	---	
8	Piston A	Aluminum alloy		25	Coil assembly	---	
9	Piston packing	Nitrile rubber		26	Core assembly	---	
10	Magnet	Plastic		27	Pass-pipe	Nylon	
11	Wear ring	Polyacetal		28	Fitting	---	GWJL6-6
12	Piston B	Aluminum alloy		29	Nut	Steel	Zinc chromate
13	Spacer	Steel	Zinc chromate	30	Toothed washer	Steel	Zinc chromate
14	Hexagon nut	Steel	Zinc chromate	With switch			
15	Head cover	Aluminum alloy		31	Switch body	---	
16	O-ring	Nitrile rubber		32	Band	Stainless steel	
17	Adaptor	Steel	Zinc chromate	33	Pan head machine screw	Stainless steel	
				34	Switch rail	Stainless steel	

Dimensions

● Basic (00)



*1: For dimensions of other mounting formats, refer to pages 686 to 690.
 2: Refer to page 698 for HD, RD and protruding dimensions of T1, T8* and 2-color display switches.
 *3: For the dimensions of the accessories, refer to page 699.

Code	Basic (00) basic dimensions																	
Bore size (mm)	A	B	C	D	F	(H)	HA	KA	KK	LL	M	MB	MM	T	TG	U	V	WF
ø20	20	13	18	21.4	28	38.5	26	8	M8×1.0	67	M8	M18×1.5	10	5	29	24	14	24
ø25	23	17	20	26.4	32	38.5	35	10	M10×1.25	70	M8	M26×1.5	12	6	41	30	16	23
ø32	23	17	20	33.6	36	38.5	35	10	M10×1.25	70	M8	M26×1.5	12	6	41	34	16	23
ø40	25	19	22	41.7	45	43.0	35	12	M12×1.5	74	M10	M26×1.5	14	7	41	43	16	23

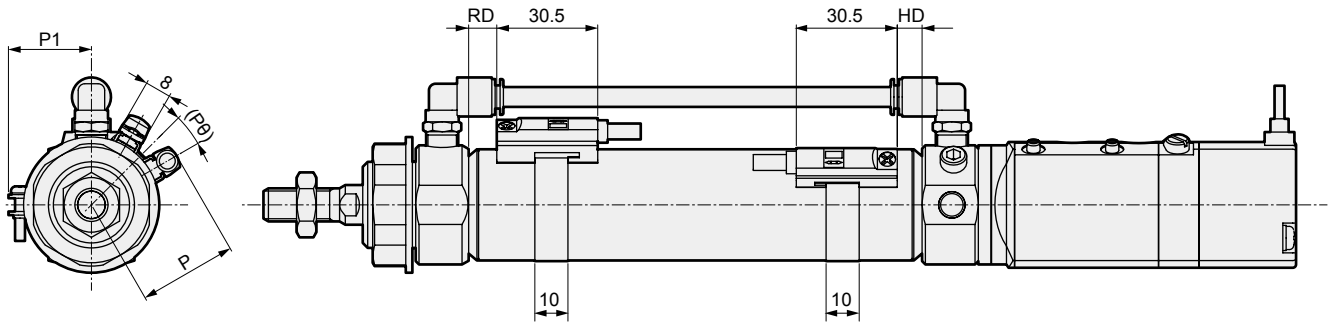
Code	With switch										With bellows						
	X	Y	Z	T0, T5, T2, T3				T2W, T3W				P	P1	(Pθ) ^o	b	d	l
				GC	GD	RD	HD	GC	GD	RD	HD						
ø20	207	34	36	4	3	8	7	6	5	10	9	17.3	19.5	22	30	30	(Stroke length/3) + 6
ø25	212	34	36	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	19.8	22.0	18	32	46	(Stroke length/3.25) + 7
ø32	212	34	36	5.5	4.5	9.5	8.5	7.5	6.5	11.5	10.5	24.3	25.5	15	32	46	(Stroke length/3.25) + 7
ø40	218	43	45	7.5	6.5	11.5	10.5	9.5	8.5	13.5	12.5	28.3	29.5	12	34	46	(Stroke length/3.25) + 7

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2**
- CAV2/COVP/N2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd Contr
- Ending

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2**
- CAV2/
COVPIN2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/
MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd
Contr
- Ending

CKV2 Series common dimensions (with T1*, T8* switches and 2-color display switch)

● CKV2-**-**-T₃²YH/V

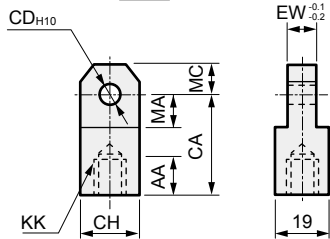


T1*, T8* switches and 2-color display switch mounting dimensions


Code	1-color display (T1, T8) 2-color display (T ₃ ² Y)				P		P1	(Pθ)°
	RD		HD		T1	T ₃ ² Y, T8		
Bore size (mm)	T1, T ₃ ² Y	T8	T1, T ₃ ² Y	T8	T1	T ₃ ² Y, T8		
ø20	7.0	2.0	6.0	1	28.5	23.1	19.5	22
ø25	8.5	3.5	7.5	2.5	31.0	25.6	22.0	18
ø32	8.5	3.5	7.5	2.5	35.5	30.1	25.5	15
ø40	10.5	5.5	9.5	4.5	39.5	34.1	29.5	12

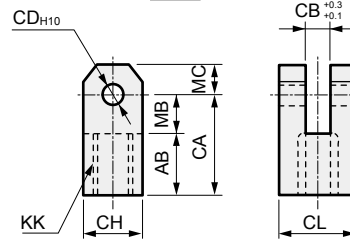
Accessory dimensions (rod eye/clevis bracket/pin)

● Rod eye (I)  Material: Steel
Zinc chromate treatment



Model No.	Applicable bore size (mm)	AA	CA	CD	CH	EW	KK	MA	MC	Wt (g)
M1-I-20	ø20	14	30	10	19	8	M8×1.0	13	10	60
M1-I-30	ø25/ø32	14	36	12	25	10	M10×1.25	16	12	110
M1-I-40	ø40	14	36	12	25	10	M12×1.5	16	12	100

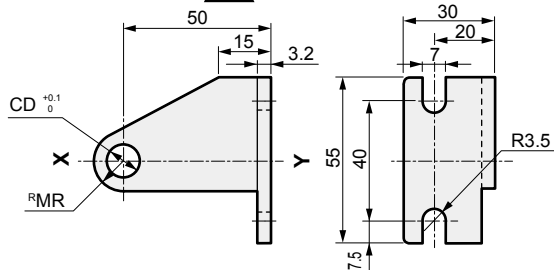
● Rod clevis (Y)  Material: Steel
Zinc chromate treatment



Model No.	Applicable bore size (mm)	AB	CA	CB	CD	CH	CL	KK	MB	MC	Wt (g)
M1-Y-20	ø20	17	30	8	10	19	19	M8×1.0	13	10	100
M1-Y-30	ø25/ø30	20	36	10	12	25	25	M10×1.25	16	12	210
M1-Y-40	ø40	20	36	10	12	25	25	M12×1.5	16	12	200

Note: A pin, a washer and a split pin are included.

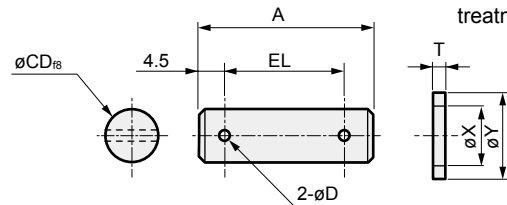
● Clevis bracket (B2)  Material: Steel, zinc chromate treatment



Model No.	Applicable bore size (mm)	CD	MR	Weight (g)
M1-B2-20-TA	ø20	8	8	130
M1-B2-30-TA	ø25/ø32/ø40	10	11	150

*1: One pair is composed of two pieces with XY symmetry.
*2: The snap ring and pin are not included.

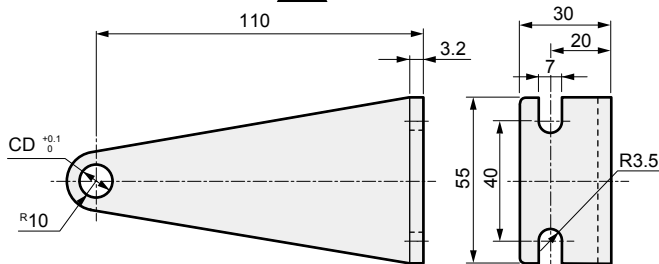
● Rod clevis pin (P)  Material: Steel
Zinc chromate treatment



Model No.	Applicable bore size (mm)	A	D	CD	EL	T	X	Y	Wt (g)
M1-P-20	ø20	37	4	10	28	2	10.5	18	30
M1-P-30	ø25/ø32/ø40	46	4	12	37	2.5	13	21	50

Note: A pin, a washer and a split pin for rod clevis use are included with the product.

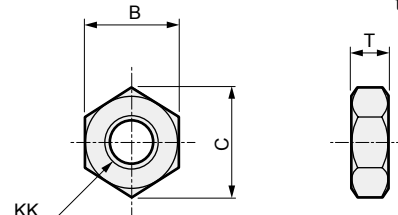
● Clevis bracket (B3)  Material: Steel, zinc chromate treatment



Model No.	Applicable bore size (mm)	CD	Weight (g)
M1-B3-20-TA	ø20	8	370
M1-B3-30-TA	ø25/ø32/ø40	10	360

Note: The snap ring and pin are not included.

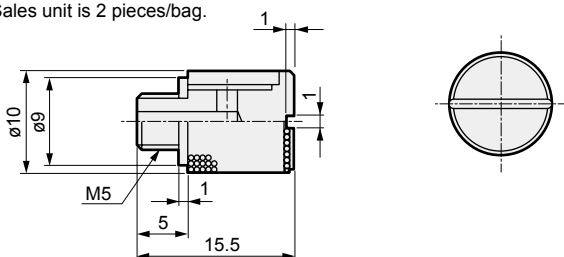
● Rod end nut (NR)  Material: Steel
Zinc chromate treatment



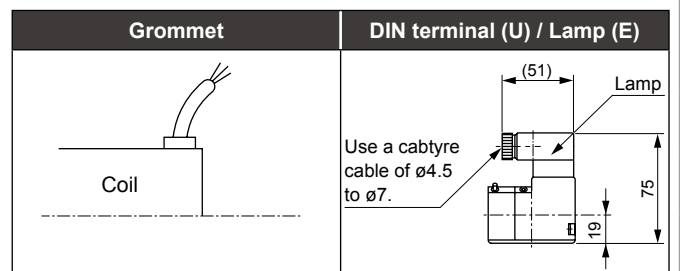
Model No.	Applicable bore size (mm)	B	C	KK	T	Weight (g)
M1-NR-20	ø20	13	15	M8×1.0	5	3
M1-NR-30	ø25/ø32	17	19.6	M10×1.25	6	7
M1-NR-40	ø40	19	21.9	M12×1.5	7	9

● Silencer (SL-M5)

* Sales unit is 2 pieces/bag.



How to wire



*1: Lights and surge suppressors cannot be built into grommets.
*2: Refer to "How to wire the terminal box" on page 701 when connecting the wires to the DIN terminal box.

- SCP*3
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS2
- CKV2**
- CAV2/COVP/N2
- SSD2
- SSG
- SSD
- CAT
- MDC2
- MVC
- SMG
- MSD/MSDG
- FC*
- STK
- SRL3
- SRG3
- SRM3
- SRT3
- MRL2
- MRG2
- SM-25
- ShkAbs
- FJ
- FK
- Spd Contr
- Ending



Pneumatic components

Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Compact cylinder with valve CKV2 Series

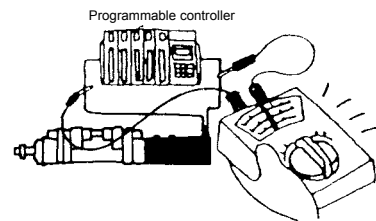
Design/selection

WARNING

- An inhale effect may be generated at the exhaust port of the valve due to valving element operation, causing the intake of foreign matter near the exhaust port. Foreign matter may also enter when the exhaust port is pointed upwards. Install a silencer and/or arrange the piping of the exhaust port to open facing downward.
 - The actuator will not operate correctly if the exhaust air is not discharged smoothly.

CAUTION

- Check for leakage current to avoid malfunction caused by leakage current from other fluid control components.
 - When a programmable controller is used, leakage current may affect the valve and cause a malfunction.
 - The values affected by leakage current depend on the voltage type. Refer to the table below.



Reference

Using 100 VAC	3.0 mA or less
Using 200 VAC	1.5 mA or less
Using 24 VDC	1.8 mA or less

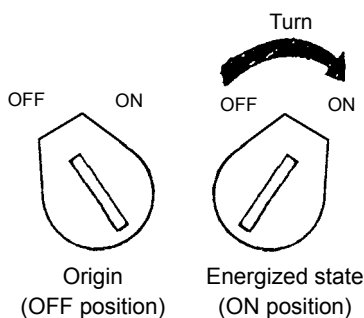
- Switch the valve at least once every 30 days to prevent malfunction.
- Although the contact service life of the reed switch varies depending on usage conditions, it will generally last several million cycles. The contact service life is reached sooner if the device is used continuously or operated at a high frequency. In this case, use a proximity switch with no contact.

Mounting, installation and adjustment

WARNING

- Manual operation causes the connected device to function. Make sure that there is no danger before performing manual operation. If you have activated the manual override of the valve, return it to the origin (OFF position) before operating the equipment. If compressed air is supplied when not at origin, the cylinder will become operational, creating hazardous conditions.

[Example]



CAUTION

- Be careful not to hit the solenoid valve with a tool or the equipment during mounting.
- Do not support the cylinder with pipes during mounting.
- Do not pick up the product by the coil lead wire.
 - This may lead to disconnection.
- Polarity
 - All series are without polarity. (Non-polar)
- Applied voltage
 - When wiring the valve, check that the voltage type (AC or DC) and voltage are correct. Failure to comply may cause defective operation or burnout of the coil.
- Checking wiring
 - After wiring, check that the connections are correct.

Use/maintenance

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/
COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/
MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd
Contr
Ending

1. Common

⚠ WARNING

- Manual operation causes the connected device to function. Make sure that there is no danger before performing manual operation.

⚠ CAUTION

- Infrequent use
 - Switch the valve at least once every 30 days to prevent malfunction.

- After disassembling and assembling the valve, be sure to check normal valve operation with the following procedure.

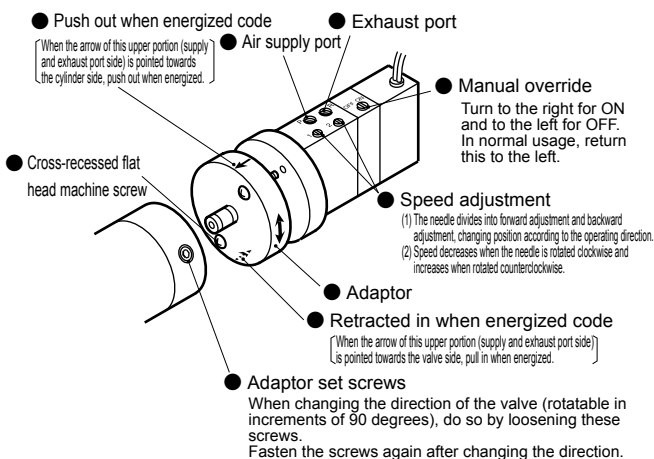
Work procedure

- Check that the manual override is at the origin (OFF position).
- Configure the unit to low pressure. (0.15MPa)
- Switch the manual override to the operation side (ON position) to check that the cylinder is operational.
- Return the manual override to the initial position (OFF position) and check that the cylinder returns. (Manual operation check is complete.)
- Check the operation electrically.
 - After manual operation check, energize/de-energize to confirm operation.

- With the DIN terminal box, as the ambient temperature is high and the gaskets will deteriorate due to heat when used with continuously powered specifications, be sure to regularly replace the gaskets.

Switching between push and pull when energized

- Loosen the adaptor set screws and the cross-recessed flat head machine screw.
- Rotate only the adaptor by 180 degrees in the direction of the arrow. (←→: Rotation direction)
- Fasten the cross-recessed flat head machine screws (tightening torque 1.7 N·m) and the adaptor set screws (tightening torque 9 N·m).



Speed adjustment	Forward adjustment	Backward adjustment
Operating direction		
Push out when energized	1	2
Pull when energized	2	1

How to wire the terminal box

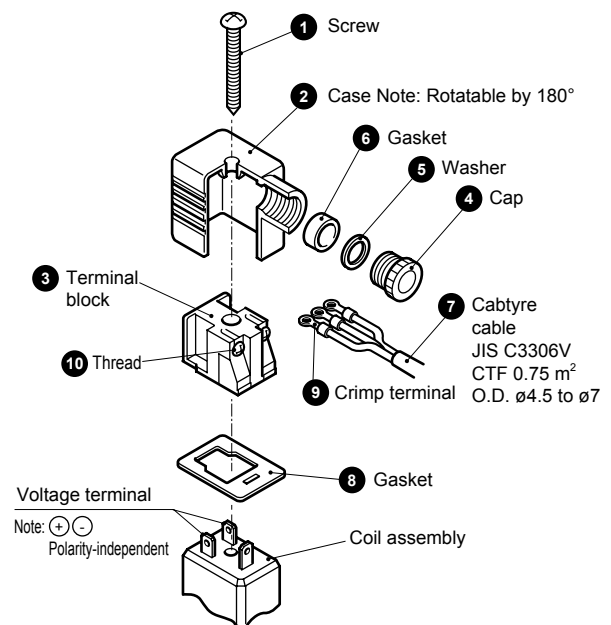
Wire the terminal box with steps (1) to (3) referring to the figure below.

- Pass the cabtyre cable ⑦ through the cap ④, washer ⑤ and gasket ⑥ in order, and insert into the case ②.
 - When using a crimping terminal, prepare the cabtyre cable ⑦ at an appropriate length as illustrated and crimp the crimping terminal ⑨ on the end thereof.
 - Remove the screws ⑩ from the terminal block ③, pass through the crimping terminal ⑨ (loosen and crimp when using a Y type terminal), and fasten the screws ⑩ again.
- (Note) Fasten the screw with a tightening torque of 0.5 N·m ±15%.

- Remarks:
- It is possible to wire the terminals with bare wires. In this case, loosen the screws ⑩, place the lead wires in the bracket, and fasten the screws again.
 - The orientation of the cord can be changed by pulling out the terminal block from the case, rotating it by 180°, and returning the block to the case.
 - The crimping terminals ⑨ listed in the table below can be used.

— Nichifu Terminal Industries Co., Ltd. —		— Fuji Terminal Industry Co., Ltd. —		— J.S.T. Mfg Co., Ltd. —	
O terminal	Y terminal	O terminal	Y terminal	O terminal	Y terminal
0.3-3	0.3-3	1.25-3	1.25-YAS3	0.5-3	0.25-B3A
1.25-3	1.25Y-3		1.25-YAS3.5	1.25-3	1.25-C3A
1.25-3S	1.25Y-3.5				

When using a product from a different manufacturer, be sure to use an equivalent item.

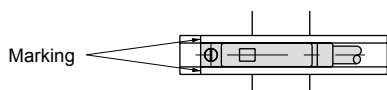


2. Common (With T switch)

⚠ CAUTION

- When moving the switch position to the stroke length direction
 - The T2, T3, T0, and T5 switches can be fine-tuned by approximately ± 3 mm from the default position of installation. If the adjusting range exceeds ± 3 mm, or when fine-tuning the position of any other switch, move the position of the band.
 - Loosen the switch fixing screw, shift the switch along the rail, then tighten at the specified position.
When using T2, T3, T0, or T5, use a flathead screwdriver (clockwork screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, a 2.4 mm or smaller tip, and a thickness of 0.3 mm or less to tighten the screws with a tightening torque of 0.1 to 0.2 N·m.
When using T1, T*C, T2J, T2Y, T3Y, or T8, tighten the screw with a tightening torque of 0.5 to 0.7 N·m.
 - The switch bracket rail has a marking 4 mm from the rail end. Use as a guide to the mounting position when replacing the switch.
Switch rail markings are set to the default switch max. sensitivity position.
The max. sensitivity position will change when the switch is changed or when the band is moved. Adjust the position accordingly in this case.

■ When moving the switch position to the circumferential direction



- Loosen the band fixing screw, shift the switch rail in the circumferential direction, then tighten at the specified position.
Tightening torque is 0.6 to 0.8 N·m.

■ Shifting the band position

- Loosen the band fixing screw, shift the switch rail and band along the cylinder tube, and tighten at the specified position.
Tightening torque is 0.6 to 0.8 N·m.

