

# CKV2

## Compact cylinder with valve

ø20, ø25, ø32, ø40

With Valve



### CONTENTS

Product Introduction	654
Series System Chart	656
Variation/Option Combination Availability Table	658
● Double Acting, Single rod type (CKV2)	660
● Double Acting, Non-rotating Type (CKV2-M)	670
Accessories External Dimensions Diagram	677
Outer Dimensions Diagram with Switch	679
Custom Items	680
⚠ Precautions for Use	682

With Valve

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

Ending

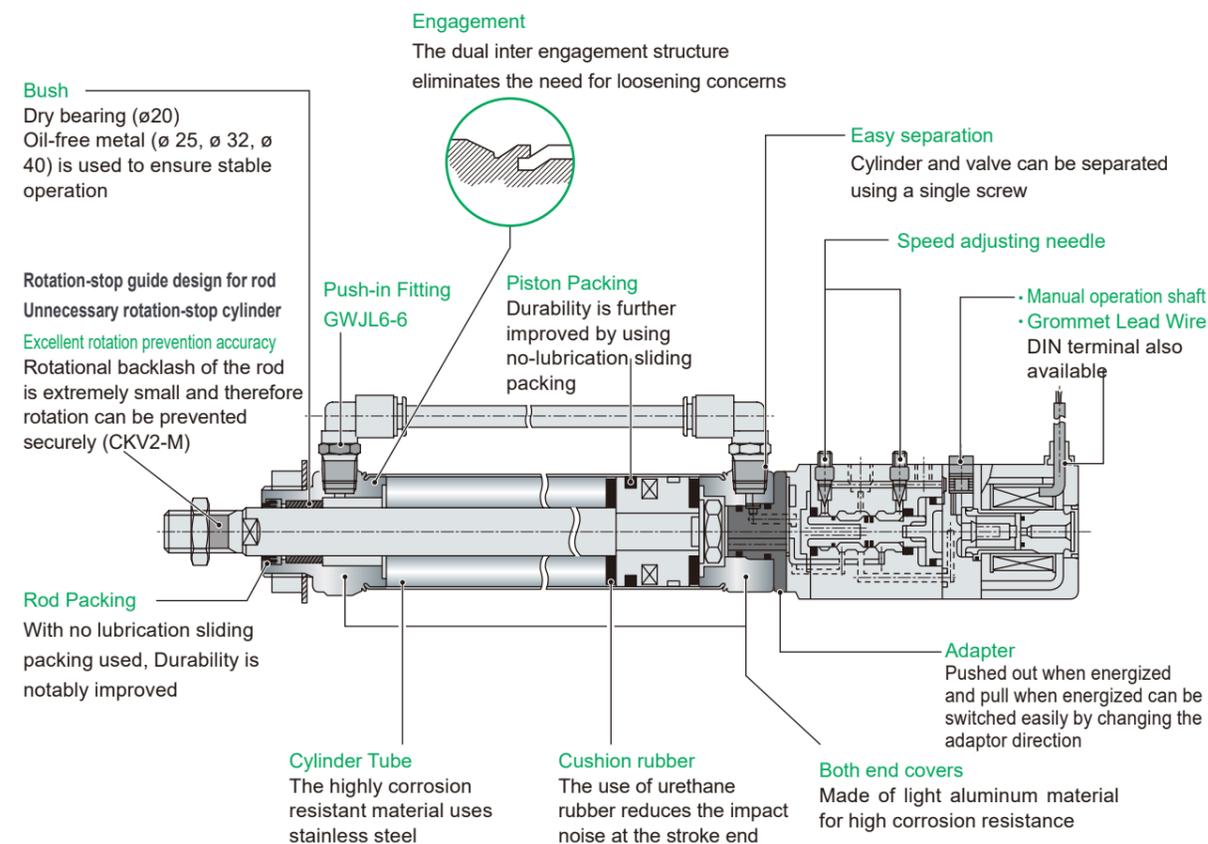
## Cylinder with valve integrating 4-port solenoid valve compactly into CMK2 Series

Since a speed adjustment valve is also built-in, it is space-saving and has excellent installability.



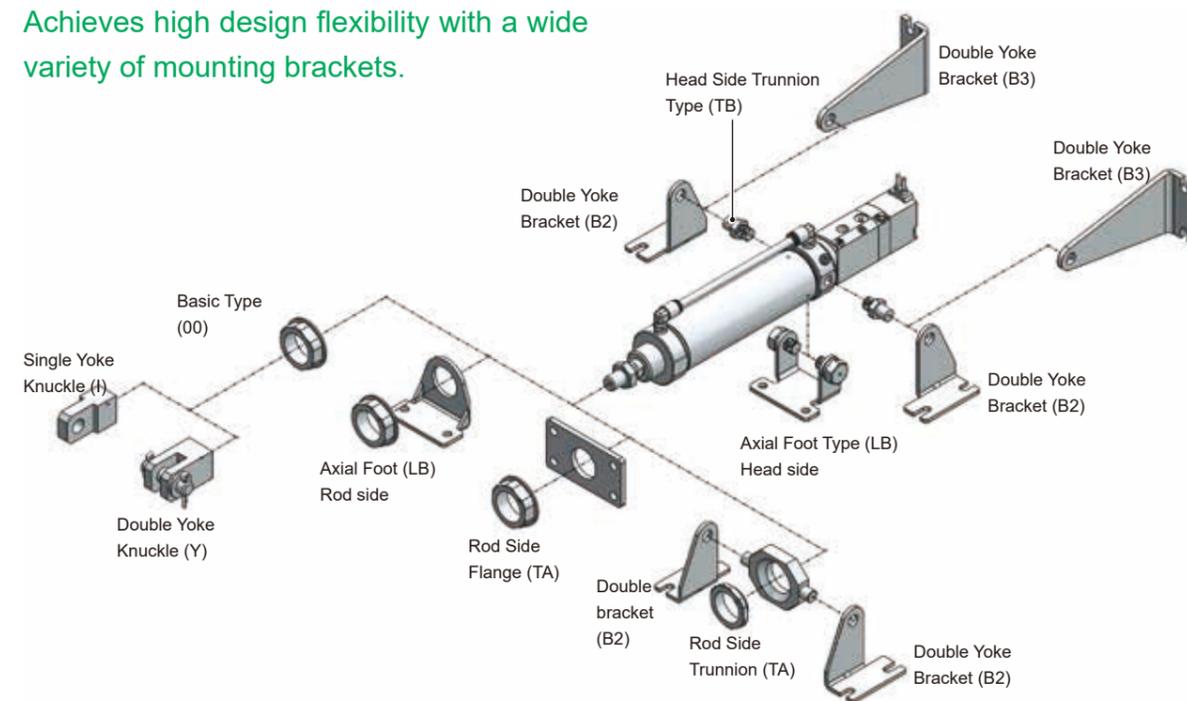
Bore Size:  $\phi 20$ ,  $\phi 25$ ,  $\phi 32$ ,  $\phi 40$

## Product Introduction



## Abundant Mounting Brackets

Achieves high design flexibility with a wide variety of mounting brackets.

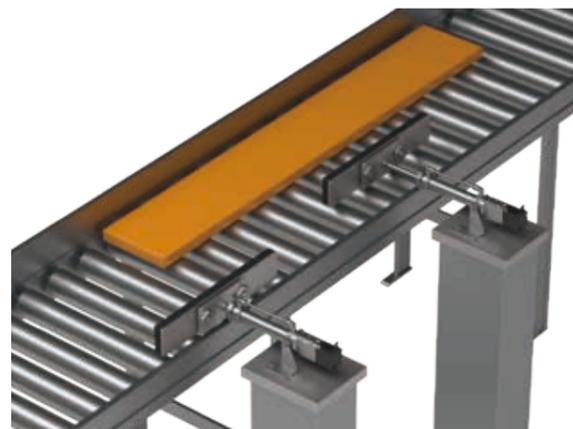


### Effect

- Reduced mounting and piping work
- Reduced installation space
- Reduced air consumption between valve and cylinder

### Application Example

Conveyor width adjustment



Panel clamp



With Valve

CKV2

CAV2/  
COVP/  
N2

With Valve

CKV2

CAV2/  
COVP/  
N2

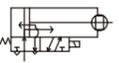
Cylinder Switch

Ending

Cylinder Switch

Ending

●: Standard, ◎: Option, ○: Custom Products

Variation	Model No. Circuit Diagram Code	Bore Size (mm)	Standard Stroke (mm)						Min Stroke (mm)	Max Stroke (mm)	Intermediate stroke (per mm)	Mounting Style			Option							Accessories				Switch	Page							
			25	50	75	100	150	200				Basic type	Axial Foot Type	Rod side flange type	Rod side trunnion type	Head side trunnion type	Bellows (100°C)	Bellows (250°C)	Piston Rod Material (Stainless Steel)	With Silencer	With Surge Suppressor	With Lamp	Energized retraction type	Single knuckle	Double Knuckle			Single bracket	Double clevis bracket Clevis type					
			00	LB		FA	TA	TB				J	L	M	W	G	E	X	I	Y	B2	B3												
Double Acting/ Single Rod Type 	CKV2	ø20, ø25, ø32, ø40	●	●	●	●	●	●	5	750	1	●	●		●	●	●	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	660
Double Acting/ Non-rotating Type 	CKV2-M	ø20, ø25, ø32, ø40	●	●	●	●	●	●	5	750	1	●	●		●	●	●	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	670	

With Valve

CKV2

CAV2/  
COVP/  
N2

With Valve

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

Ending

Cylinder  
Switch

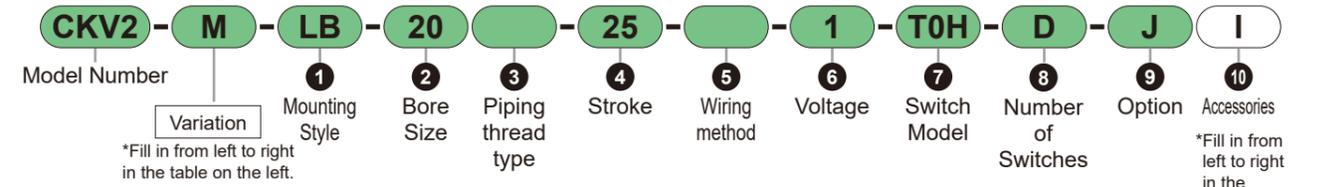
Ending

Variation and Option Item Combination Availability Table

Variation / Option Combination Availability Table

- Mark: Standard
- Mark: Option
- Mark: Custom Products
- △ Mark: Manufacturable depending on conditions (Please consult)
- × Mark: Not manufacturable

[Model No. Notation]



Model No.: Compact cylinder with valve

- Variation: Double Acting, non-rotating type
- 1 Mounting style: Axial Foot Type
- 2 Bore Size: ø20 mm
- 3 Port thread: Rc Thread
- 4 stroke: 25 mm
- 5 Wiring method: Grommet
- 6 Voltage: 100 VAC
- 7 Switch model No.: Solid State TOH Switch, Lead Wire 1 m
- 8 Switch quantity: With 2 pcs
- 9 Options: Bellows, max Ambient Temperature 100°C
- 10 Accessory: Single knuckle

Category	Code	Variation		Piping Screw			Option											
		Double Acting Basic Type	Non-rotating	NPT	Grommet	DIN terminal box	With bellows Polyolefin	With bellows Silicone rubber	Piston Rod Material (Stainless Steel)	Rod End Shape Modification	With Silencer	With Surge Suppressor	With neon lamp	Energized retraction type				
Piping Variation	Double Acting Basic Type	Blank	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
	Non-rotating	M	○	○	●	○	○	○	*2	○	○	○	○	○	○	○	○	○
	NPT	NN				○	○	○	○	○	○	○	○	○	○	○	○	○
Connection	Grommet	Blank				x	○	○	○	○	○	○	x	○				
	DIN Terminal Box	U					○	○	○	○	○	○	○	○	○	○	○	○
Option	With bellows Polyolefin	J						x	○	○	○	○	○	○	○	○	○	○
	With bellows Silicone rubber	L							○	○	○	○	○	○	○	○	○	○
	Piston Rod Material (Stainless Steel)	M								○	○	○	○	○	○	○	○	○
	Rod End Shape Modification	N								○	○	○	○	○	○	○	○	○
	With Silencer	W									○	○	○	○	○	○	○	○
	With Surge Suppressor	G										○	○	○	○	○	○	○
	With neon lamp	E											○	○	○	○	○	○
	Energized retraction type	X															○	○
	Accessories	Cylinder Switch	Separately Shown	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Single knuckle		I	○	○	○	○	○	○	○	*1	○	○	○	○	○	○	○	○
Double Knuckle		Y	○	○	○	○	○	○	○	*1	○	○	○	○	○	○	○	○
B2 Bracket		B2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
B3 Bracket		B3	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

\*1: If the thread size at the Piston Rod End changes, it is excluded from this combination. Please consult us separately.  
 \*2: The material of the non-rotating Piston Rod is Stainless Steel. If option M (Piston Rod material (Stainless Steel)) is selected, the rod nut material will be Stainless Steel.

With Valve

With Valve

CKV2

CAV2/  
COVP/  
N2

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

Cylinder  
Switch

Ending

Ending



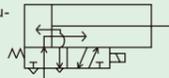
Small Cell Cylinder Double Acting/Single Rod Type

# CKV2 Series

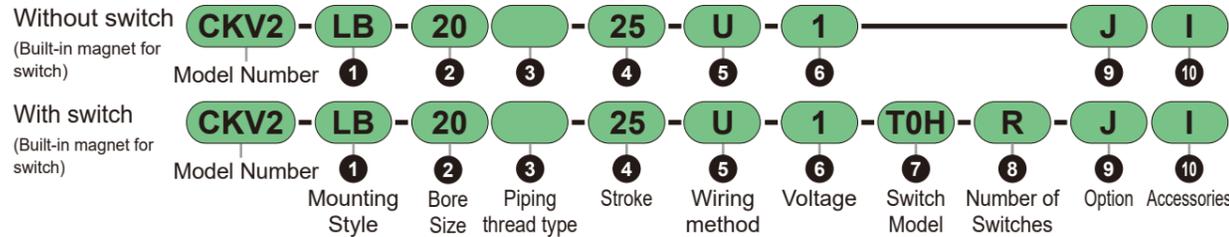
● Bore Size: ø20, ø25, ø32, ø40

Circuit Diagram Code

● Valve-equipped Double Acting cylinder



## Model No. Notation



### 1 Mounting Style

Mounting bracket is included for shipment. However, LB, FA, TA with bellows are assembled and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type (Double Side)	
FA	Rod side flange type	
TA	Rod side trunnion type	
TB	Head side trunnion type	

### 2 Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40

### 3 Piping thread type

Code	Content
Blank	M5 (Exhaust port) Rc1/8 (Air supply port)
NN	M5 (Exhaust port) NPT thread (Air supply port) (Custom product)

### 4 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø20	5 to 750	Every 1 mm
ø25	5 to 750	
ø32	5 to 750	
ø40	5 to 750	

Note: For minimum stroke with switch, refer to P. 662.

### 5 Wiring method

Code	Content	
Blank	Grommet lead wire (300 mm)	
U	DIN Terminal	

### 6 Voltage

Code	Content
1	100 VAC
2	200 VAC
3	24 VDC

### 7 Switch Model No.

For switch details, refer to P. 1457. Switches are shipped with the product.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	-	T1H□	T1V□	
			-	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	—	30 or less	—	100 or less	T3H□	T3V□	
	3-wire (PNP)	—	—	—	—	T3PH□	T3PV□		
	2-color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
			3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□
2-color Improved Water Resistance	1-Color Off-Delay Type	2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WL□	
			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
			-	-	-	-	T2HR3	T2VR3	
Contact Without Indicator Lamp	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	
			110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

\*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m

\*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length  
1 m T0H  
3 m T0H[3]  
5 m T0H[5]

### 8 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Note: The maximum number of switches mounted is limited to 3. If 4 or more are required, please arrange for the shortage of switch mounting brackets separately by single item model number.

### 10 Accessories

Code	Content	
I	Single knuckle	
Y	Double Knuckle (With pin, washer, split pin)	
B2	Double bracket	
B3	Double bracket (Cleviss type)	

\*1: "I" and "Y" cannot be selected at the same time.

### 9 Option

Code	Content	Content		
		Max Ambient Temperature	Instantaneous Max Temperature	
*1 *4 J	Bellows	100°C	200°C	
L		250°C	400°C	
*5 M	Piston Rod, Rod nut material (Stainless Steel)			
*2 W	With Silencer			
*3 G	With Surge Suppressor			
E	With Lamp			
X	Energized retraction type			

\*1: For bellows "J", stroke must be 25 mm or more. Please inquire each time for strokes less than 25 mm.

\*2: Surge suppressor "G" is attached when the wiring method is grommet lead wire.

\*3: With lamp "E" can be manufactured only when the wiring method is DIN terminal "U".

\*4: Instantaneous maximum temperature is the temperature when fire or chips momentarily hit the bellows.

\*5: When tube inner diameter ø20 or ø25 is selected, the Piston Rod material is already Stainless Steel. If option "M" is selected, the rod nut material will also be Stainless Steel.

About specifications of custom products  
For details, please refer to P. 680.

Code	Content
- D	Double solenoid type
Rod End Shape Modification	Refer to Ending P. 11.

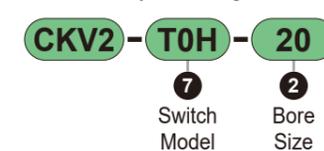
Model No. Ex.)

**CKV2 - D** - .....

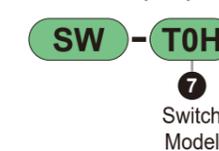
\* For combinations of variations and options, please refer to P. 658, 659.

### Switch Single Unit Model No. Notation

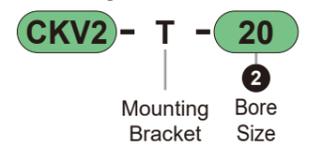
● Switch body+Mounting bracket set



● Switch body only



● Mounting bracket set



\*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

\*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating Ambient Temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

\*3: This does not guarantee the water resistance of the cylinder.

\*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, refer to P. 1457.

Specifications

Item	CKV2 (Standard type, with switch)			
Bore Size mm	ø20	ø25	ø32	ø40
Operation type	Double Acting / With Valve			
Operating Fluid	Compressed Air			
Max Operating Pressure MPa	1			
Min Operating Pressure MPa	0.15			
Proof Pressure MPa	1.6			
Ambient Temperature °C	-5 to 60 (However, no freezing)			
Port Size	Rc1/8			
Stroke Tolerance mm	<sup>+2.0</sup> / <sub>0</sub> (up to 200)		<sup>+2.4</sup> / <sub>0</sub> (201 to 750)	
Operating Piston Speed mm/s	50 to 500		50 to 430	50 to 300
Cushion	Rubber Cushion			
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Allowable Absorbed Energy J	0.166	0.308	0.424	0.639
<b>Solenoid Valve Specifications</b>				
Rated Voltage (Note) V	100 AC (50/60Hz)	200 AC (50/60Hz)	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%			
Heat Resistance Class	Equivalent to Class B			

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

Stroke (Unit: mm)

Bore Size	Standard Stroke	Max Stroke	Min Stroke
ø20	25, 50, 75, 100, 150, 200	750	5
ø25			
ø32			
ø40			

\*1: Intermediate strokes can be manufactured in 1 mm increments.

\*2: In the case of bellows "J", manufacturing is for strokes of 25 mm or more. Please contact us for strokes less than 25 mm.

Minimum stroke with switch (Unit: mm)

Number of Switches	Solid State						Contact			
	T2, T3		T2W, T3W, T2WL		T1		T0, T5		T8	
	1	2	1	2	1	2	1	2	1	2
Bore Size (mm)										
ø20	10	25	10	30	10	35	10	25	10	35
ø25										
ø32										
ø40										

Cylinder Weight (Unit: kg)

Item / Mounting Style	Product Weight at Stroke (S) = 0 mm					Switch Weight	Switch rail + band Weight	Added Weight per S = 10 mm
	Basic Type (OO)	Axial Foot Type (LB)	Rod Side Flange Type (FA)	Rod side trunnion type (TA)	Head Side Trunnion Type (TB)			
Bore Size (mm)								
ø20	0.47	0.63	0.53	0.52	0.49	Refer to the Weight listed in the Switch Specifications on P. 1457.	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 at S = 0 mm: ... 0.77 kg Additional weight when S = 50 mm. S = Additional weight when 10 mm $0.02 \times \frac{\text{Product Stroke (50)}}{10} = 0.10$ 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	Operating 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 <sup>2</sup>	1.57×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.20×10 <sup>2</sup>	2.51×10 <sup>2</sup>	2.83×10 <sup>2</sup>	3.14×10 <sup>2</sup>
	Pull	35.3	47.1	70.7	94.2	1.18×10 <sup>2</sup>	1.41×10 <sup>2</sup>	1.65×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.12×10 <sup>2</sup>	2.36×10 <sup>2</sup>
ø25	Push	73.6	98.2	1.47×10 <sup>2</sup>	1.96×10 <sup>2</sup>	2.45×10 <sup>2</sup>	2.95×10 <sup>2</sup>	3.44×10 <sup>2</sup>	3.93×10 <sup>2</sup>	4.42×10 <sup>2</sup>	4.91×10 <sup>2</sup>
	Pull	56.7	75.6	1.13×10 <sup>2</sup>	1.51×10 <sup>2</sup>	1.89×10 <sup>2</sup>	2.27×10 <sup>2</sup>	2.64×10 <sup>2</sup>	3.02×10 <sup>2</sup>	3.40×10 <sup>2</sup>	3.78×10 <sup>2</sup>
ø32	Push	1.21×10 <sup>2</sup>	1.61×10 <sup>2</sup>	2.41×10 <sup>2</sup>	3.22×10 <sup>2</sup>	4.02×10 <sup>2</sup>	4.83×10 <sup>2</sup>	5.63×10 <sup>2</sup>	6.43×10 <sup>2</sup>	7.24×10 <sup>2</sup>	8.04×10 <sup>2</sup>
	Pull	1.04×10 <sup>2</sup>	1.38×10 <sup>2</sup>	2.07×10 <sup>2</sup>	2.76×10 <sup>2</sup>	3.46×10 <sup>2</sup>	4.15×10 <sup>2</sup>	4.84×10 <sup>2</sup>	5.53×10 <sup>2</sup>	6.22×10 <sup>2</sup>	6.91×10 <sup>2</sup>
ø40	Push	1.88×10 <sup>2</sup>	2.51×10 <sup>2</sup>	3.77×10 <sup>2</sup>	5.03×10 <sup>2</sup>	6.28×10 <sup>2</sup>	7.54×10 <sup>2</sup>	8.80×10 <sup>2</sup>	1.01×10 <sup>3</sup>	1.13×10 <sup>3</sup>	1.26×10 <sup>3</sup>
	Pull	1.65×10 <sup>2</sup>	2.21×10 <sup>2</sup>	3.31×10 <sup>2</sup>	4.41×10 <sup>2</sup>	5.51×10 <sup>2</sup>	6.62×10 <sup>2</sup>	7.72×10 <sup>2</sup>	8.82×10 <sup>2</sup>	9.92×10 <sup>2</sup>	1.10×10 <sup>3</sup>

Mounting Bracket Model No. Notation

Bore Size (mm)	ø20	ø25	ø32	ø40
<b>Mounting Bracket</b>				
Axial Foot Type (LB) Rod Side	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Axial Foot Type (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: Regarding mounting brackets, mounting nuts/toothed washers are attached for axial foot type rod side and flange type, mounting nuts for trunnion type, and mounting bolts for axial foot type head side.

\*2: For the material of the mounting brackets, please refer to P. 669.

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

With Valve

With Valve

CKV2

CAV2/COVP/N2

CKV2

CAV2/COVP/N2

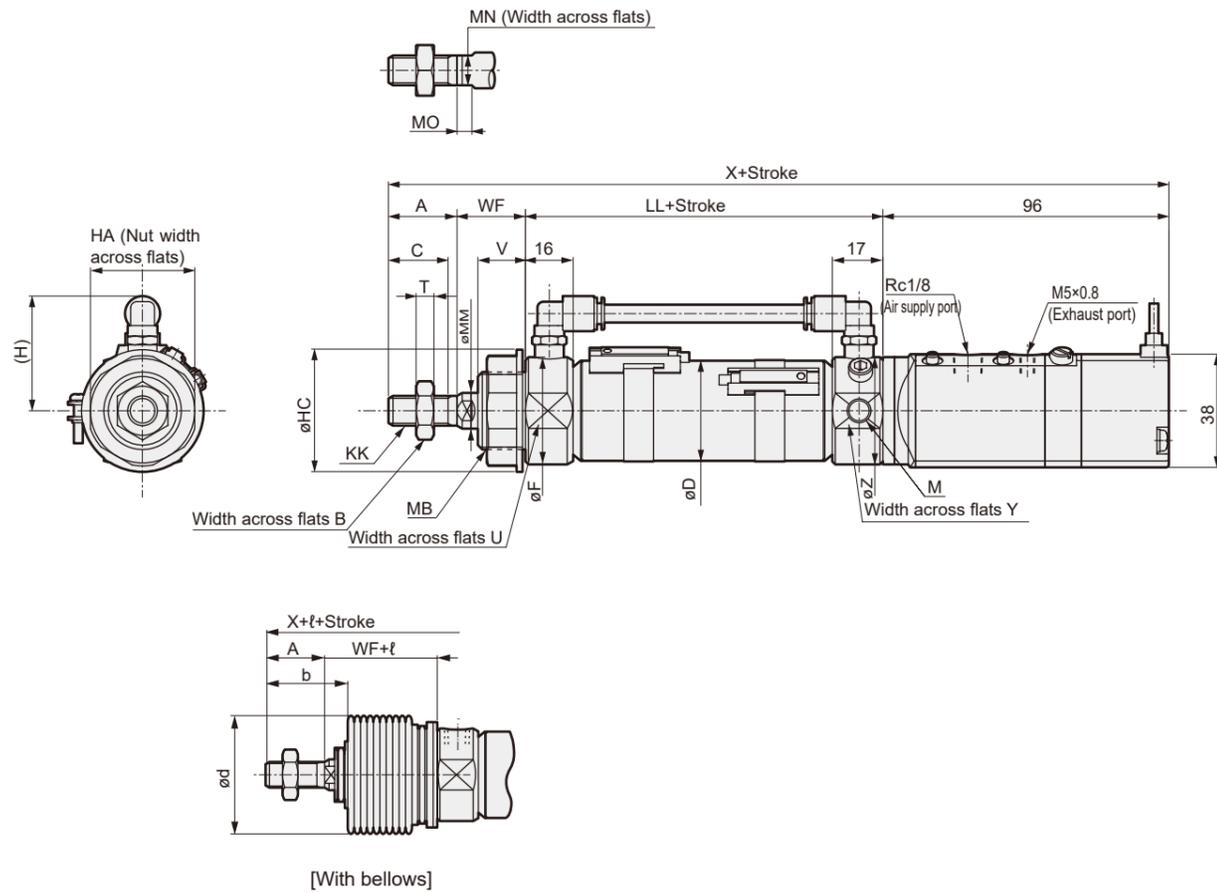
Cylinder Switch

Cylinder Switch

Ending

Ending

● Basic Type (OO)

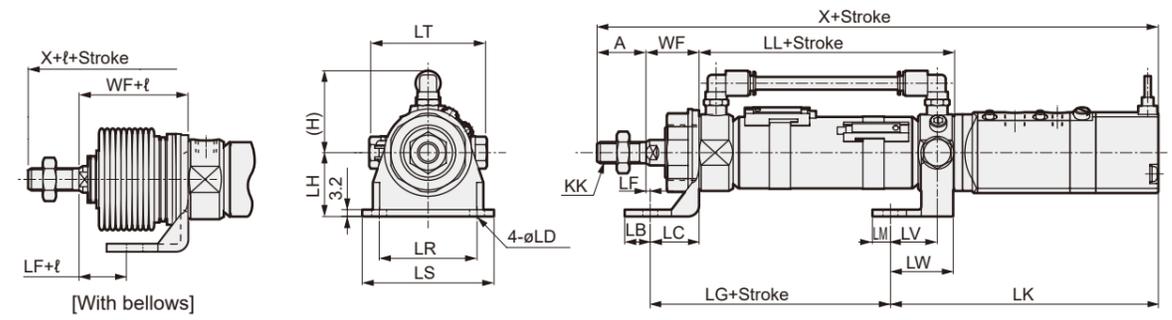


Code	Basic Type (OO) Basic Dimensions																	
Bore Size (mm)	A	B	C	D	F	(H)	HA	KK	LL	M	MB	MM	MN	MO	T	HC	U	V
ø20	20	13	18	21.4	28	38.5	26	M8x1.0	67	M8	M18x1.5	10	8	5	5	29	24	14
ø25	23	17	20	26.4	32	38.5	35	M10x1.25	70	M8	M26x1.5	12	10	5	6	41	30	16
ø32	23	17	20	33.6	36	38.5	35	M10x1.25	70	M8	M26x1.5	12	10	5	6	41	34	16
ø40	25	19	22	41.6	45	43.0	35	M12x1.5	74	M10	M26x1.5	14	12	6	7	41	43	16

Code	With Bellows						
Bore Size (mm)	WF	X	Y	Z	b	d	ℓ
ø20	24	207	34	36	30	30	(Stroke/3)+6
ø25	23	212	34	36	32	46	(Stroke/3.25)+7
ø32	23	212	34	36	32	46	(Stroke/3.25)+7
ø40	23	218	43	45	34	46	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

● Axial Foot Type (LB)

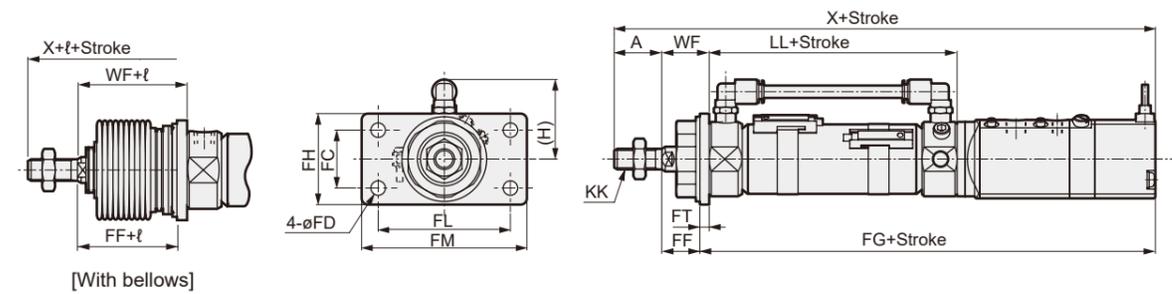


Code	Axial Foot Type (LB) Mounting Dimensions					
Bore Size (mm)	A	(H)	KK	LL	WF	X
ø20	20	38.5	M8x1.0	67	24	207
ø25	23	38.5	M10x1.25	70	23	212
ø32	23	38.5	M10x1.25	70	23	212
ø40	25	43	M12x1.5	74	23	218

Code	Mounting Dimensions												With Bellows	
Bore Size (mm)	LB	LC	LD	LF	LG	LH	LK	LM	LR	LS	LT	LV	LW	ℓ
ø20	10	18	6	6	55	25	126	7.5	30	44	55.4	22	29.5	(Stroke/3)+6
ø25	12	23	7	0	63	30	126	8.5	46	62	55.4	22	29.5	(Stroke/3.25)+7
ø32	12	23	7	0	63	30	126	8.5	46	62	55.4	22	29.5	(Stroke/3.25)+7
ø40	12	23	7	0	64	30	129	8	46	62	68.4	25	35	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

● Rod Side Flange Type (FA)



Code	Rod Side Flange Type (FA) Mounting Dimensions													
Bore Size (mm)	A	(H)	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø20	20	38.5	M8x1.0	67	24	207	20	6	20.8	166.2	34	40	54	3.2
ø25	23	38.5	M10x1.25	70	23	212	28	7	18.5	170.5	44	64	80	4.5
ø32	23	38.5	M10x1.25	70	23	212	28	7	18.5	170.5	44	64	80	4.5
ø40	25	43	M12x1.5	74	23	218	28	7	18.5	174.5	44	64	80	4.5

Code	With Bellows
Bore Size (mm)	ℓ
ø20	(Stroke/3)+6
ø25	(Stroke/3.25)+7
ø32	(Stroke/3.25)+7
ø40	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

With Valve

CKV2

CAV2/  
COVP/  
N2

With Valve

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

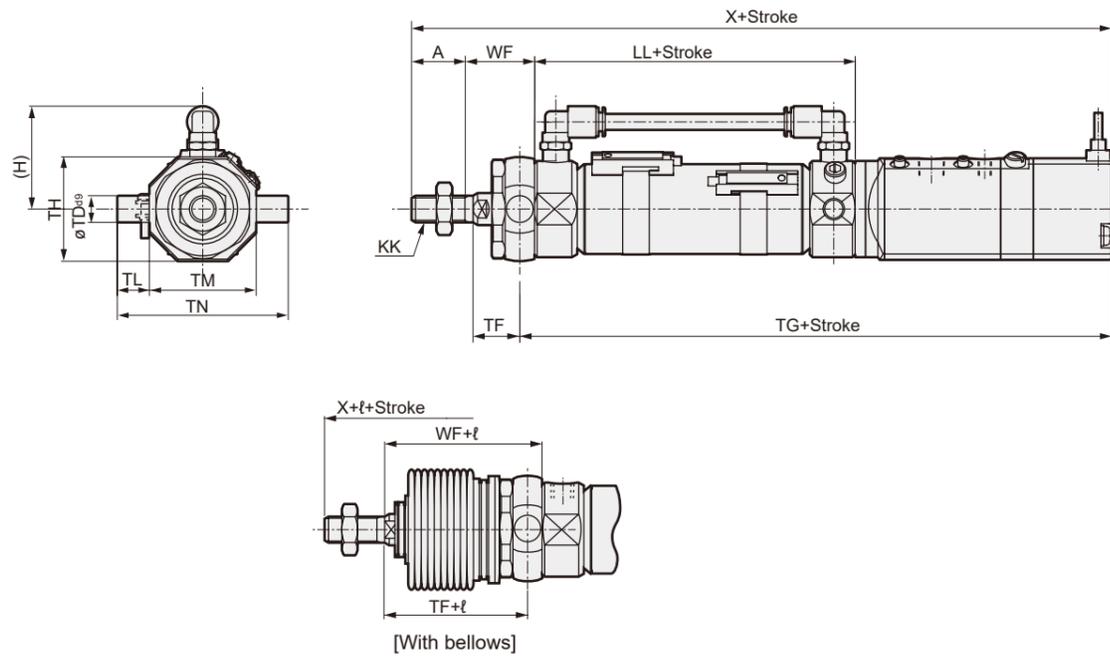
Ending

Cylinder  
Switch

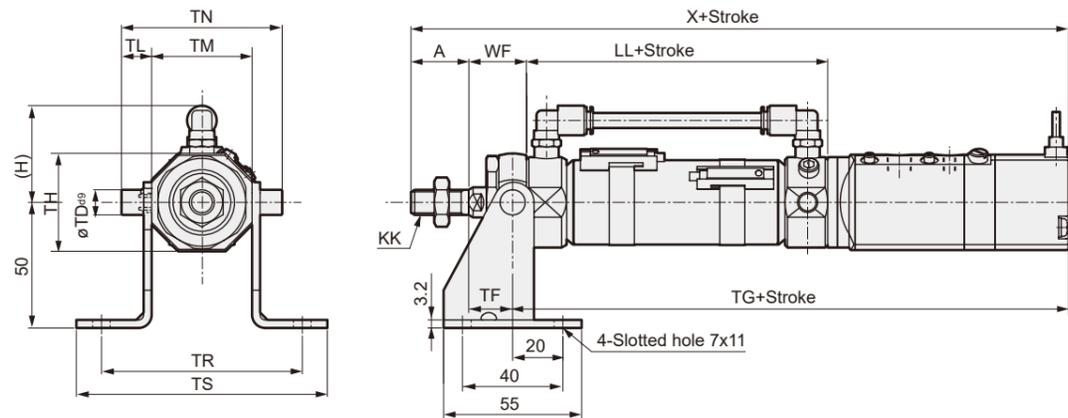
Ending

Dimensional Drawings

● Rod side trunnion type (TA)



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



Code	Rod Side Trunnion Type (TA) Mounting Dimensions					
Bore Size (mm)	A	(H)	KK	LL	WF	X
ø20	20	38.5	M8x1.0	67	24	207
ø25	23	38.5	M10x1.25	70	23	212
ø32	23	38.5	M10x1.25	70	23	212
ø40	25	43	M12x1.5	74	23	218

Code	Mounting Dimensions										With Bellows
	TD	TF	TG	TH	TL	TM	TN	TR	TS	ℓ	
ø20	8	19.5	167.5	29.5	8	30	46	70	90	(Stroke/3)+6	
ø25	10	17.5	171.5	39	12	40	64	80	100	(Stroke/3.25)+7	
ø32	10	17.5	171.5	39	12	40	64	80	100	(Stroke/3.25)+7	
ø40	10	17.5	175.5	44	9.5	53	72	93	113	(Stroke/3.25)+7	

\*1: Round up the ℓ dimension to the nearest integer.

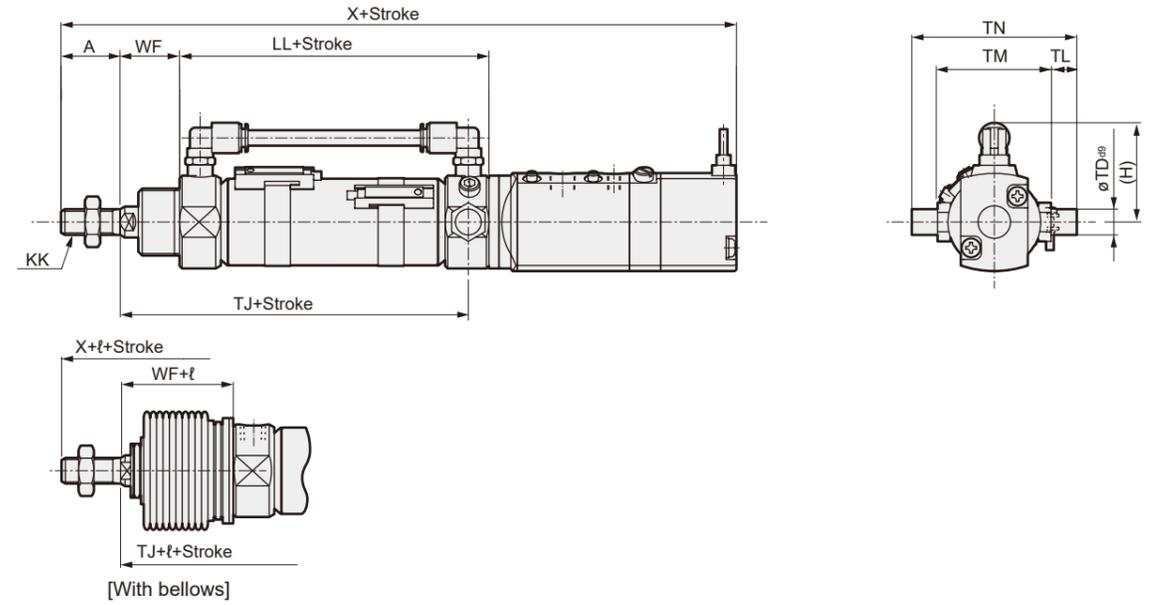
\*2: For dimensions with each switch, refer to P. 679.

\*3: For the external dimensions diagram of accessories, please refer to P. 677.

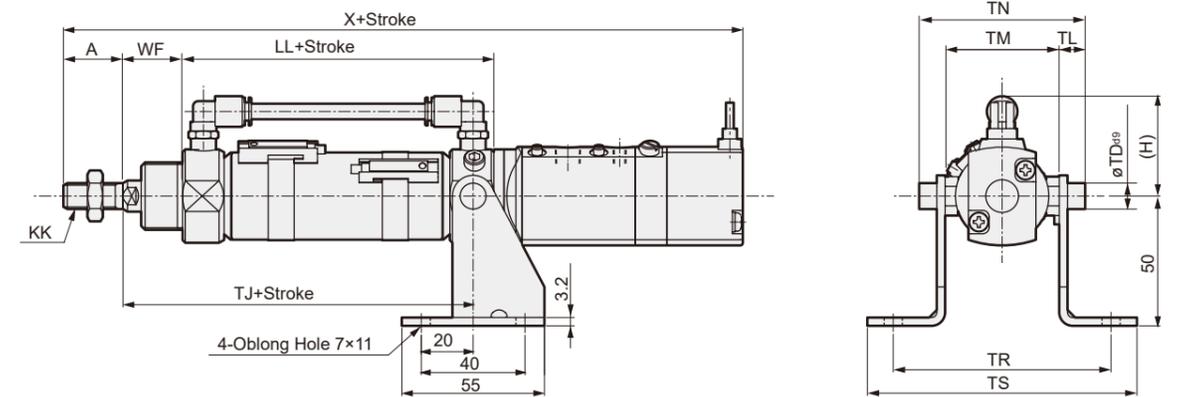
Dimensional Drawings

Dimensional Drawings

● Head Side Trunnion Type (TB)



● Head side trunnion type (TB) with bracket (Option Code B2)



Code	Head Side Trunnion Type (TB) Mounting Dimensions												With Bellows	
Bore Size (mm)	A	(H)	KK	LL	WF	X	TD	TJ	TL	TM	TN	TR	TS	ℓ
ø20	20	38.5	M8x1.0	67	24	207	8	83	8	44	60	84	104	(Stroke/3)+6
ø25	23	38.5	M10x1.25	70	23	212	10	85	10	44	64	84	104	(Stroke/3.25)+7
ø32	23	38.5	M10x1.25	70	23	212	10	85	10	44	64	84	104	(Stroke/3.25)+7
ø40	25	43	M12x1.5	74	23	218	10	89	10	53	73	93	113	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.

\*2: For dimensions with each switch, refer to P. 679.

\*3: For the external dimensions diagram of accessories, please refer to P. 677.

With Valve

CKV2

CAV2/  
COVP/  
N2

With Valve

CKV2

CAV2/  
COVP/  
N2

Cylinder Switch

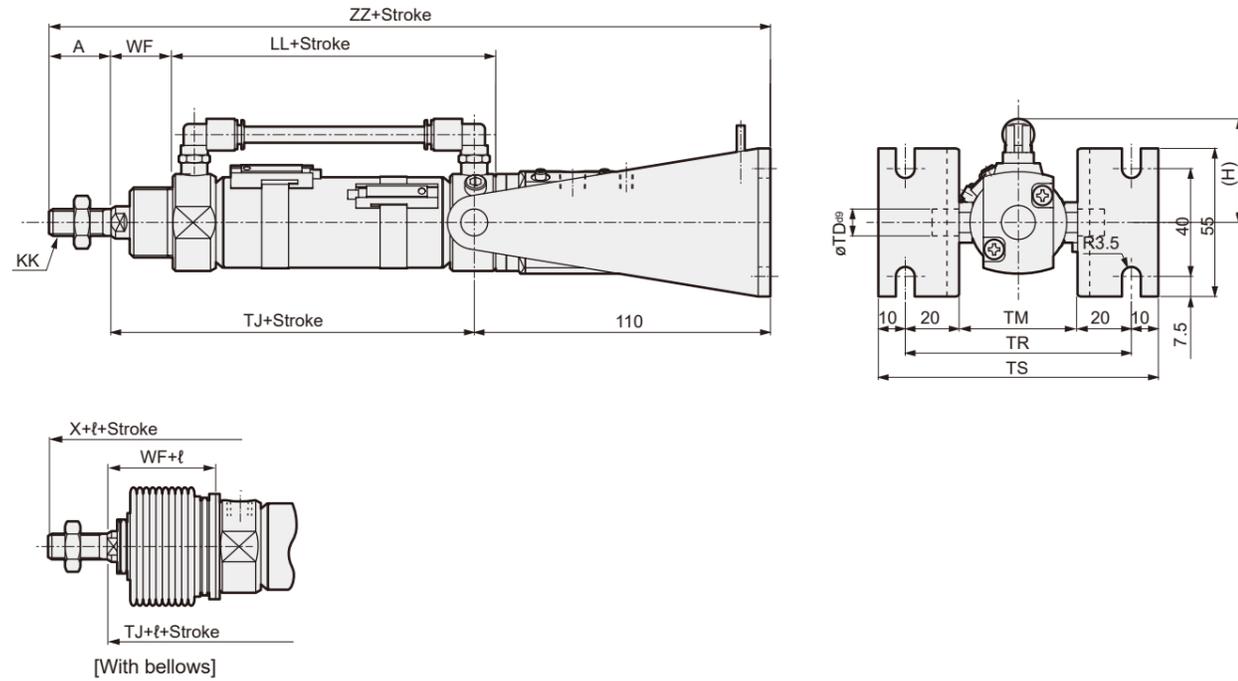
Ending

Cylinder Switch

Ending

Dimensional Drawings

● Head side trunnion type (TB) with bracket (Option Code B3)



Code	Head Side Trunnion Type (TB) With Bracket (Option Code B3) Mounting Dimensions												With Bellows
Bore Size (mm)	A	(H)	KK	LL	WF	TD	TJ	TL	TM	TN	TR	TS	ℓ
ø20	20	38.5	M8x1.0	67	24	8	83	8	44	60	84	104	(Stroke/3)+6
ø25	23	38.5	M10x1.25	70	23	10	85	10	44	64	84	104	(Stroke/3.25)+7
ø32	23	38.5	M10x1.25	70	23	10	85	10	44	64	84	104	(Stroke/3.25)+7
ø40	25	43	M12x1.5	74	23	10	89	10	53	73	93	113	(Stroke/3.25)+7

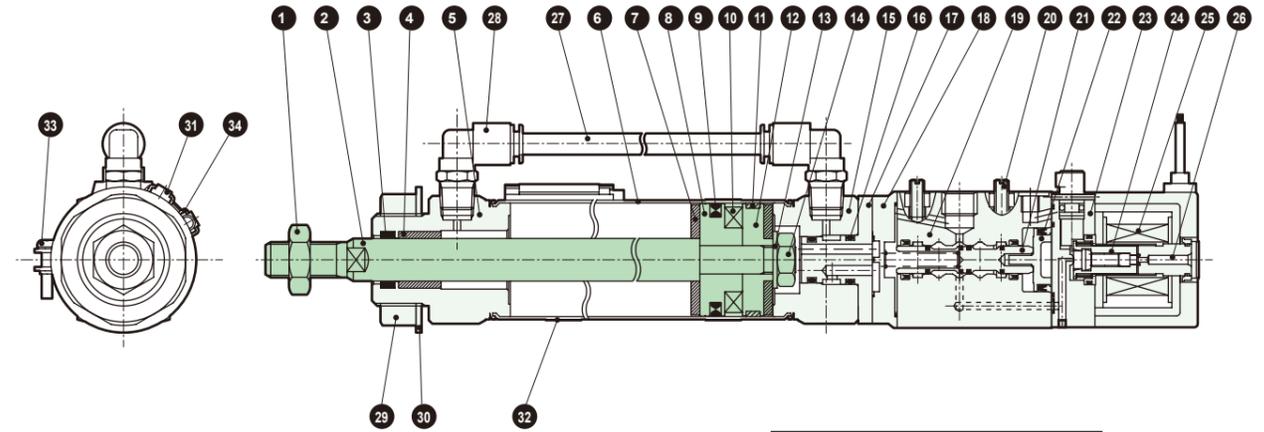
\*1: Round up the ℓ dimension to the nearest integer.

\*2: For dimensions with each switch, refer to P. 679.

\*3: For the external dimensions diagram of accessories, please refer to P. 677.

Internal Structure / Materials

● CKV2 (with switch)



**Do not disassemble**

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	17	Adapter	Steel	Zinc Chromate
2	Piston Rod	ø20, ø25: Stainless Steel	Industrial Chrome Plating	18	Cap	Aluminum Alloy	Chromate
		ø32, ø40: Carbon Steel		19	Valve Body	Aluminum Alloy	Alumite
3	Rod Packing	Nitrile Rubber		20	Speed adjustment needle	Alloy	
4	Bushing	ø20: Bearing Alloy		21	Spool Assembly		
		ø25, ø32, ø40: Oil Impregnated Bearing Alloy		22	Piston Assembly		
5	Rod Cover	Aluminum Alloy		23	Pilot Valve Body	Nylon	
6	Cylinder Tube	Stainless Steel		24	Plunger Assembly		
7	Cushion Rubber	Urethane Rubber		25	Coil Assembly		
8	Piston A	Aluminum Alloy		26	Core Assembly		
9	Piston Packing	Nitrile Rubber		27	Soft Nylon Tubing		
10	Magnet	Plastic		28	New Joint, Long Elbow		GWJL6-6 (CKD)
11	Wear Ring	Polyacetal		29	Nut	Steel	Zinc Chromate
12	Piston B	Aluminum Alloy		30	Toothed washer	Steel	Zinc Chromate
13	Spacer	Steel	Zinc Chromate (ø20 to ø32 only)	With switch			
14	Hexagon Nut	Steel	Zinc Chromate	31	Switch		
15	Head Cover	Aluminum Alloy		32	Band	Stainless Steel	
16	O-ring	Nitrile Rubber		33	Pan Head Screw	Stainless Steel	
				34	Switch Rail	Stainless Steel	

Mounting Bracket Material

Mounting Style	Material	Remarks
Axial Foot Type (LB)	Steel	Zinc Chromate
Rod Side Flange Type (FA)	Steel	Zinc Chromate
Rod side trunnion type (TA)	Steel	Zinc Chromate

Valve Part Consumable Parts List

Kit Number	Replacement Part Number
CKV2-VK	16 21 22

With Valve

CKV2

CAV2/  
COVP/  
N2

With Valve

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

Ending

Cylinder  
Switch

Ending



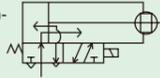
Small Cell Cylinder Double Acting/Non-Rotating Type

# CKV2-M Series

● Bore Size:  $\phi 20$ ,  $\phi 25$ ,  $\phi 32$ ,  $\phi 40$

Circuit Diagram Code

● Double Acting cylinder rotation-stop with valve

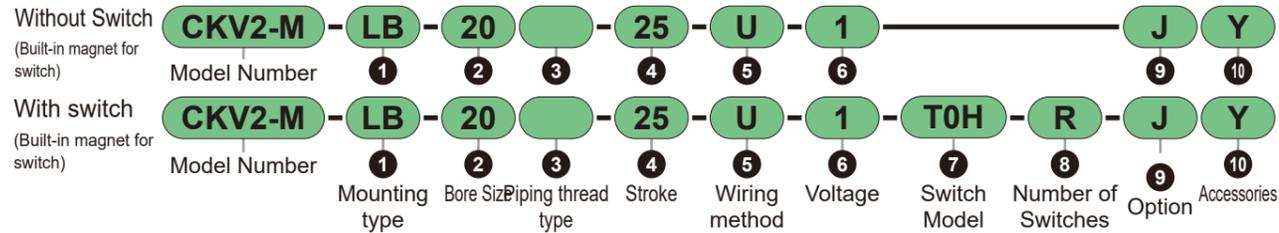


RoHS

## CKV2-M Series

Model No. Notation

### Model No. Notation



#### 1 Mounting Type

Mounting bracket is included for shipment. However, LB, FA, TA with bellows are assembled and shipped.

Code	Content	
00	Basic type	
LB	Axial Foot Type (Double Side)	
FA	Rod side flange type	
TA	Rod Side Trunnion Type	
TB	Head side trunnion type	

#### 5 Wiring method

Code	Content	
Blank	Grommet lead wire (300 mm)	
U	DIN Terminal	

#### 2 Bore Size (mm)

Code	Content
20	$\phi 20$
25	$\phi 25$
32	$\phi 32$
40	$\phi 40$

#### 4 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
$\phi 20$	5 to 750	in 1mm increments
$\phi 25$	5 to 750	
$\phi 32$	5 to 750	
$\phi 40$	5 to 750	

Note: For minimum stroke with switch, refer to P. 672.

#### 6 Voltage

Code	Content
1	100 VAC
2	200 VAC
3	24 VDC

#### 3 Piping thread type

Code	Content
Blank	M5 (Exhaust port) Rc1/8 (Air supply port)
NN	M5 (Exhaust port) NPT thread (Air supply port) (Custom product)

#### 7 Switch Model No.

For switch details, refer to P. 1457. Switches are shipped with the product.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1		
			AC	DC	AC	DC	Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	-	T1H□	T1V□	
			—	10 to 30	—	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	—	—	100 or less	—	T3H□	T3V□	
	2-color	2-wire	—	24 ± 10%	—	5 to 20	T2WH□	T2WV□	
			—	30 or less	—	50 or less	T3WH□	T3WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	T3WH□	T3WV□	
Improved Water Resistance	1-Color Off-Delay Type	2-wire	—	24 ± 10%	—	5 to 20	T2WLH□	T2WLV□	
			—	10 to 30	—	5 to 20 *2	T2JH□	T2JV□	
		1-color Flexible Lead Wire Type	-	-	-	-	T2HR3	T2VR3	
Reed	1-Color No Indicator LED	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
			110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-color	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□		

\*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (-) Lead Wire 0.3 m

\*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length  
1 m T0H  
3 m T0H[3]  
5 m T0H[5]

#### 8 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Note: The maximum number of switches that can be installed is 3. If 4 or more are required, please arrange for the shortage of switch mounting brackets separately by single item model number.

#### 10 Accessories

Code	Content	
I	Single knuckle	
Y	Double Knuckle (Pin, washer, split pin included)	
B2	Double bracket	
B3	Double bracket (Clevlis type)	

\*1: "I" and "Y" cannot be selected at the same time.

#### 9 Option

Code	Content	Max Ambient Temperature		Instantaneous Max Temperature		
		100°C	200°C	250°C	400°C	
J	Bellows	100°C	200°C			
L		250°C	400°C			
M	Piston Rod, Rod nut material (Stainless Steel)					
W	With Silencer					
G	With Surge Suppressor					
E	With Lamp					
X	Energized retraction type					

\*1

\*4

\*5

\*2

\*3

\*1: For bellows "J", stroke must be 25 mm or more. Please inquire each time for strokes less than 25 mm.

\*2: Surge suppressor "G" is attached when the wiring method is grommet lead wire.

\*3: With lamp "E" can be manufactured only when the wiring method is DIN terminal "U".

\*4: Instantaneous maximum temperature is the temperature when fire or chips momentarily hit the bellows.

\*5: When Bore size  $\phi 20$  or  $\phi 25$  is selected, the Piston Rod material is already Stainless Steel. If option "M" is selected, the rod nut material will also be Stainless Steel.

#### About specifications of custom products

For details, please refer to P. 680.

Code	Content
- D	Double solenoid type
Rod End Shape Modification	Refer to Ending P. 11.

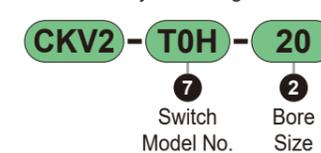
Model No. Ex.)

CKV2-D M-.....

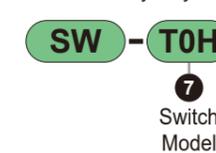
\* For combinations of variations and options, please refer to P. 658, 659.

#### Switch Single Unit Model No. Notation

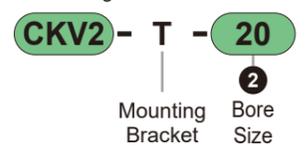
● Switch body+Mounting bracket set



● Switch body only



● Mounting bracket set



\*1: For "□" in the switch model number, enter the code selected from the "Lead wire length, connector specification" table.

\*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating Ambient Temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

\*3: This does not guarantee the water resistance of the cylinder.

\*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, refer to P. 1457.

Specifications

Item	CKV2-M				
	mm	ø20	ø25	ø32	ø40
Bore Size	mm	ø20	ø25	ø32	ø40
Actuation method		Double Acting, Non-Rotating Type			
Operating Fluid		Compressed Air			
Max Operating Pressure	MPa	1			
Min Operating Pressure	MPa	0.15			
Proof Pressure	MPa	1.6			
Ambient Temperature	°C	-5 to 60 (However, no freezing)			
Port Size		Rc1/8			
Stroke Tolerance	mm	+2.0 <sub>0</sub> (to 200) +2.4 <sub>0</sub> (201 to 750)			
Operating 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 lubricated)			
Non-rotating accuracy	*1 degree	±1.5		±1	
Allowable Absorbed Energy	J	0.166	0.308	0.424	0.639

\*1: Value at stroke 0 (excluding Piston Rod deflection)

Solenoid Valve Specifications				
Rated Voltage	V	100 AC (50/60Hz)	200 AC (50/60Hz)	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%		
Heat Resistance Class		Equivalent to Class B		

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

Stroke (Unit: mm)

Bore Size	Standard Stroke	Max Stroke	Min Stroke
ø20	25, 50, 75 100, 150, 200	750	5
ø25			
ø32			
ø40			

\*1: Intermediate strokes can be manufactured in 1 mm increments.

\*2: In the case of bellows "J", manufacturing is for strokes of 25 mm or more. Please contact us for strokes less than 25 mm.

Minimum stroke with switch (Unit: mm)

Number of Switches	Bore Size (mm)	Solid State					Contact				
		T2, T3		T2W, T3W, T2WL		T1		T0, T5		T8	
		1	2	1	2	1	2	1	2	1	2
	ø20	10	25	10	30	10	35	10	25	10	35
	ø25										
	ø32										
	ø40										

Cylinder Weight (Unit: kg)

Item / Mounting Style	Product Weight when stroke (S) = 0 mm					Switch Weight	Switch rail + band Weight	Added Weight per S = 10 mm
	Basic Type (00)	Axial Foot Type (LB)	Rod Side Flange Type (FA)	Rod side trunnion type (TA)	Head Side Trunnion Type (TB)			
ø20	0.47	0.63	0.53	0.52	0.49	Please refer to the mass described in the switch specifications on page 1457.	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 at S = 0 mm: ... 0.77 kg Additional weight when S = 50 mm S = Additional weight when 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	Operating 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 <sup>2</sup>	1.57×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.20×10 <sup>2</sup>	2.51×10 <sup>2</sup>	2.83×10 <sup>2</sup>	3.14×10 <sup>2</sup>
	Pull	35.3	47.1	70.7	94.2	1.18×10 <sup>2</sup>	1.41×10 <sup>2</sup>	1.65×10 <sup>2</sup>	1.88×10 <sup>2</sup>	2.12×10 <sup>2</sup>	2.36×10 <sup>2</sup>
ø25	Push	73.6	98.2	1.47×10 <sup>2</sup>	1.96×10 <sup>2</sup>	2.45×10 <sup>2</sup>	2.95×10 <sup>2</sup>	3.44×10 <sup>2</sup>	3.93×10 <sup>2</sup>	4.42×10 <sup>2</sup>	4.91×10 <sup>2</sup>
	Pull	56.7	75.6	1.13×10 <sup>2</sup>	1.51×10 <sup>2</sup>	1.89×10 <sup>2</sup>	2.27×10 <sup>2</sup>	2.64×10 <sup>2</sup>	3.02×10 <sup>2</sup>	3.40×10 <sup>2</sup>	3.78×10 <sup>2</sup>
ø32	Push	1.21×10 <sup>2</sup>	1.61×10 <sup>2</sup>	2.41×10 <sup>2</sup>	3.22×10 <sup>2</sup>	4.02×10 <sup>2</sup>	4.83×10 <sup>2</sup>	5.63×10 <sup>2</sup>	6.43×10 <sup>2</sup>	7.24×10 <sup>2</sup>	8.04×10 <sup>2</sup>
	Pull	1.04×10 <sup>2</sup>	1.38×10 <sup>2</sup>	2.07×10 <sup>2</sup>	2.76×10 <sup>2</sup>	3.46×10 <sup>2</sup>	4.15×10 <sup>2</sup>	4.84×10 <sup>2</sup>	5.53×10 <sup>2</sup>	6.22×10 <sup>2</sup>	6.91×10 <sup>2</sup>
ø40	Push	1.88×10 <sup>2</sup>	2.51×10 <sup>2</sup>	3.77×10 <sup>2</sup>	5.03×10 <sup>2</sup>	6.28×10 <sup>2</sup>	7.54×10 <sup>2</sup>	8.80×10 <sup>2</sup>	1.01×10 <sup>3</sup>	1.13×10 <sup>3</sup>	1.26×10 <sup>3</sup>
	Pull	1.65×10 <sup>2</sup>	2.21×10 <sup>2</sup>	3.31×10 <sup>2</sup>	4.41×10 <sup>2</sup>	5.51×10 <sup>2</sup>	6.62×10 <sup>2</sup>	7.72×10 <sup>2</sup>	8.82×10 <sup>2</sup>	9.92×10 <sup>2</sup>	1.10×10 <sup>3</sup>

Mounting Bracket Model No. Notation

Bore Size (mm)	ø20	ø25	ø32	ø40
Mounting Bracket				
Axial Foot Type (LB) Rod Side	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Axial Foot Type (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

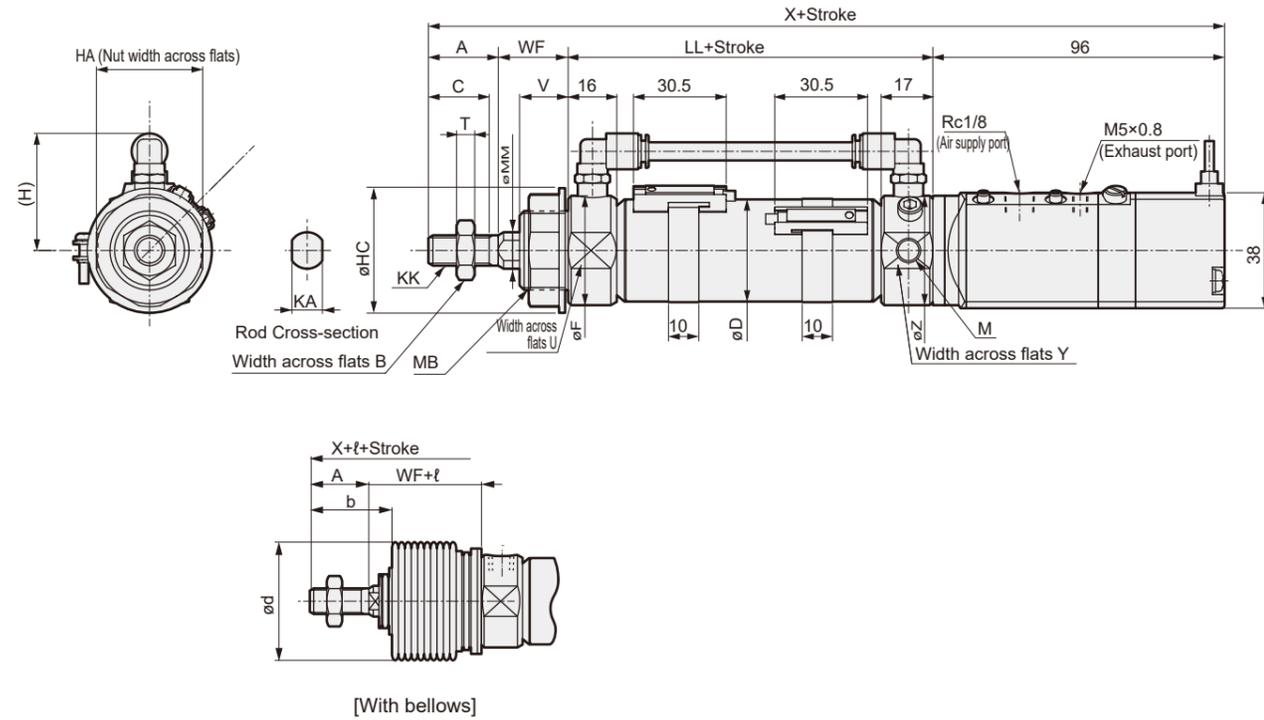
\*1: Regarding mounting brackets, mounting nuts/toothed washers are attached for axial foot type rod side and flange type, mounting nuts for trunnion type, and mounting bolts for axial foot type head side.

\*2: For the material of the mounting brackets, please refer to P. 669.

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

Dimensional Drawings

● Basic Type (OO)



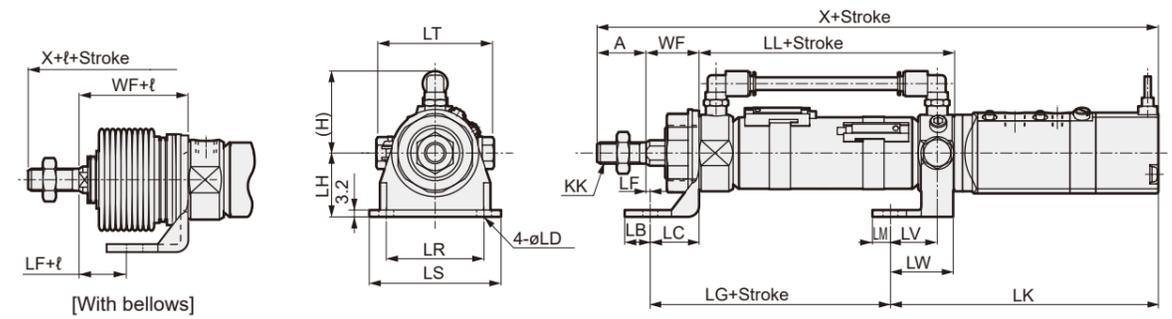
Code	Basic Type (OO) Basic Dimensions																	
Bore Size (mm)	A	B	C	D	F	(H)	HA	KA	KK	LL	M	MB	MM	T	HC	U	V	WF
ø20	20	13	18	21.4	28	38.5	26	8	M8x1.0	67	M8	M18x1.5	10	5	29	24	14	24
ø25	23	17	20	26.4	32	38.5	35	10	M10x1.25	70	M8	M26x1.5	12	6	41	30	16	23
ø32	23	17	20	33.6	36	38.5	35	10	M10x1.25	70	M8	M26x1.5	12	6	41	34	16	23
ø40	25	19	22	41.7	45	43.0	35	12	M12x1.5	74	M10	M26x1.5	14	7	41	43	16	23

Code	With Bellows					
	X	Y	Z	b	d	ℓ
ø20	207	34	36	30	30	(Stroke/3)+6
ø25	212	34	36	32	46	(Stroke/3.25)+7
ø32	212	34	36	32	46	(Stroke/3.25)+7
ø40	218	43	45	34	46	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

Dimensional Drawings

● Axial Foot Type (LB)

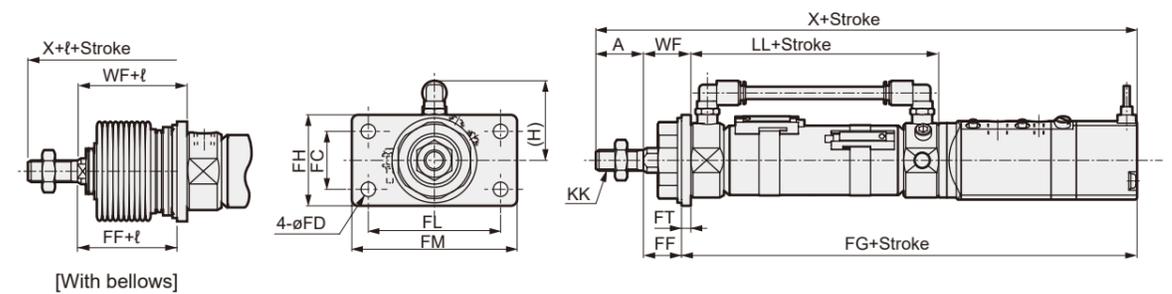


Code	Axial Foot Type (LB) Mounting Dimensions					
Bore Size (mm)	A	(H)	KK	LL	WF	X
ø20	20	38.5	M8x1.0	67	24	207
ø25	23	38.5	M10x1.25	70	23	212
ø32	23	38.5	M10x1.25	70	23	212
ø40	25	43	M12x1.5	74	23	218

Code	Mounting Dimensions												With Bellows	
	LB	LC	LD	LF	LG	LH	LK	LM	LR	LS	LT	LV	LW	ℓ
ø20	10	18	6	6	55	25	126	7.5	30	44	55.4	22	29.5	(Stroke/3)+6
ø25	12	23	7	0	63	30	126	8.5	46	62	55.4	22	29.5	(Stroke/3.25)+7
ø32	12	23	7	0	63	30	126	8.5	46	62	55.4	22	29.5	(Stroke/3.25)+7
ø40	12	23	7	0	64	30	129	8	46	62	68.4	25	35	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

● Rod Side Flange Type (FA)



Code	Rod Side Flange Type (FA) Mounting Dimensions					
Bore Size (mm)	A	(H)	KK	LL	WF	X
ø20	20	38.5	M8x1.0	67	24	207
ø25	23	38.5	M10x1.25	70	23	212
ø32	23	38.5	M10x1.25	70	23	212
ø40	25	43	M12x1.5	74	23	218

Code	Mounting Dimensions								With Bellows
	FC	FD	FF	FG	FH	FL	FM	FT	ℓ
ø20	20	6	20.8	166.2	34	40	54	3.2	(Stroke/3)+6
ø25	28	7	18.5	170.5	44	64	80	4.5	(Stroke/3.25)+7
ø32	28	7	18.5	170.5	44	64	80	4.5	(Stroke/3.25)+7
ø40	28	7	18.5	174.5	44	64	80	4.5	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

With Valve

With Valve

CKV2

CAV2/  
COVP/  
N2

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

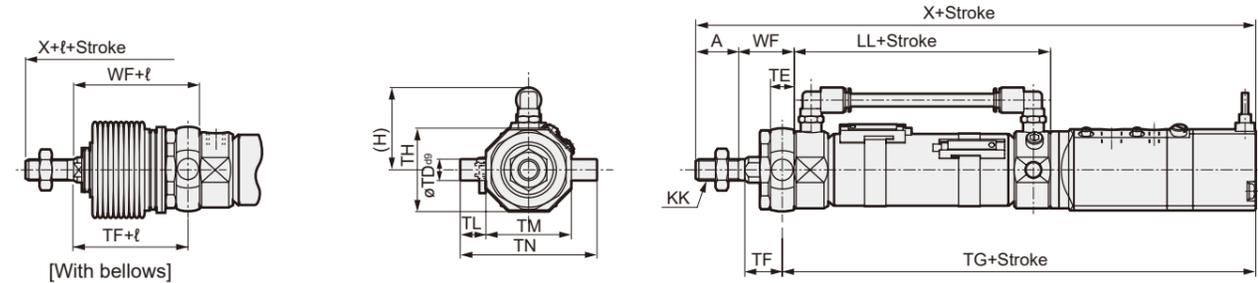
Cylinder  
Switch

Ending

Ending

Dimensional Drawings

● Rod side trunnion type (TA)

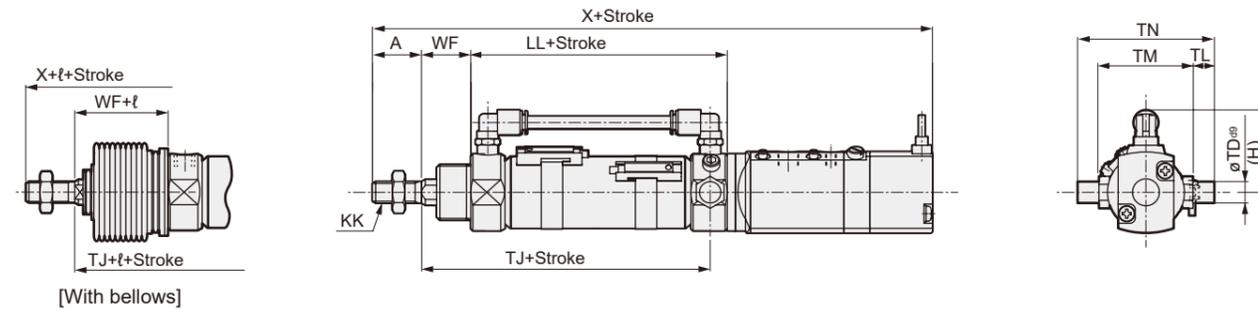


Code	Rod Side Trunnion Type (TA) Mounting Dimensions					
Bore Size (mm)	A	(H)	KK	LL	WF	X
ø20	20	38.5	M8x1.0	67	24	207
ø25	23	38.5	M10x1.25	70	23	212
ø32	23	38.5	M10x1.25	70	23	212
ø40	25	43	M12x1.5	74	23	218

Code	Mounting Dimensions										With Bellows
Bore Size (mm)	TD	TE	TF	TG	TH	TL	TM	TN	TR	TS	ℓ
ø20	8	9	19.5	167.5	29.5	8	30	46	70	90	(Stroke/3)+6
ø25	10	11	17.5	171.5	39	12	40	64	80	100	(Stroke/3.25)+7
ø32	10	11	17.5	171.5	39	12	40	64	80	100	(Stroke/3.25)+7
ø40	10	11	17.5	175.5	44	9.5	53	72	93	113	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

● Head Side Trunnion Type (TB)

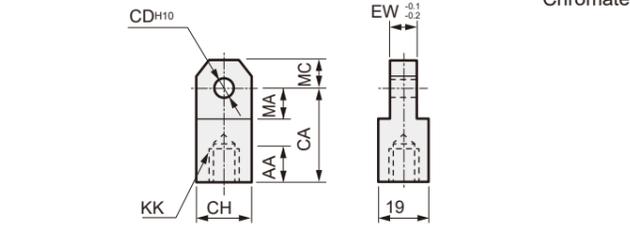


Code	Head Side Trunnion Type (TB) Mounting Dimensions												With Bellows	
Bore Size (mm)	A	(H)	KK	LL	WF	X	TD	TJ	TL	TM	TN	TR	TS	ℓ
ø20	20	38.5	M8x1.0	67	24	207	8	83	8	44	60	84	104	(Stroke/3)+6
ø25	23	38.5	M10x1.25	70	23	212	10	85	10	44	64	84	104	(Stroke/3.25)+7
ø32	23	38.5	M10x1.25	70	23	212	10	85	10	44	64	84	104	(Stroke/3.25)+7
ø40	25	43	M12x1.5	74	23	218	10	89	10	53	73	93	113	(Stroke/3.25)+7

\*1: Round up the ℓ dimension to the nearest integer.  
 \*2: For dimensions with each switch, refer to P. 679.  
 \*3: For the external dimensions diagram of accessories, please refer to P. 677.

Accessory External Dimensions

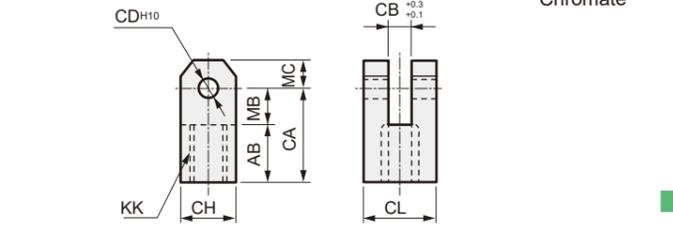
● Single Knuckle (I)



Model No.	Applicable Bore Size (mm)	AA	CA	CD	CH	EW	KK	MA	MC	Weight (g)
M1-I-20	ø20	14	30	10	19	8	M8x1.0	13	10	60
M1-I-30	ø25, ø32	14	36	12	25	10	M10x1.25	16	12	110
M1-I-40	ø40	14	36	12	25	10	M12x1.5	16	12	100

Material: Steel, Zinc Chromate

● Double Knuckle (Y)

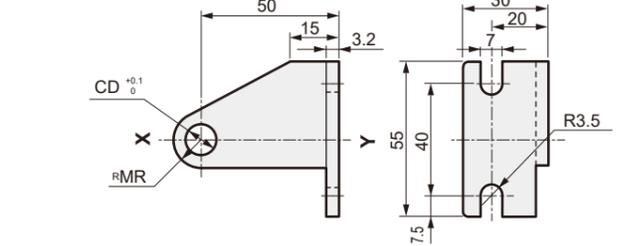


Model No.	Applicable Bore Size (mm)	AB	CA	CB	CD	CH	CL	KK	MB	MC	Weight (g)
M1-Y-20	ø20	17	30	8	10	19	19	M8x1.0	13	10	100
M1-Y-30	ø25, ø30	20	36	10	12	25	25	M10x1.25	16	12	210
M1-Y-40	ø40	20	36	10	12	25	25	M12x1.5	16	12	200

Material: Steel, Zinc Chromate

Note: Pin, washer, and split pin are attached.

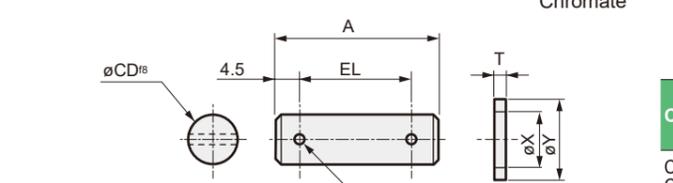
● Double Bracket (B2)



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

Material: Steel, Zinc Chromate

● Pin for Double Knuckle (P)

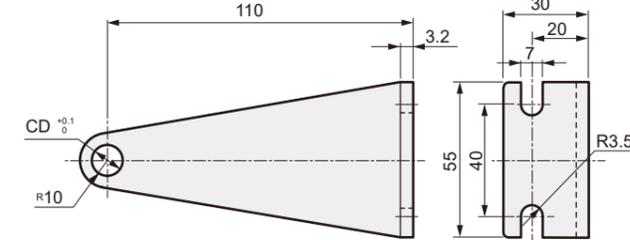


Model No.	Applicable Bore Size (mm)	A	D	CD	EL	T	X	Y	Weight (g)
M1-P-20	ø20	37	4	10	28	1.6	10.5	18	30
M1-P-30	ø25, ø32, ø40	46	4	12	37	2.3	12.5	22	50

Material: Steel, Zinc Chromate

Note: Pin, washer, and split pin for double knuckle use are attached to the product.

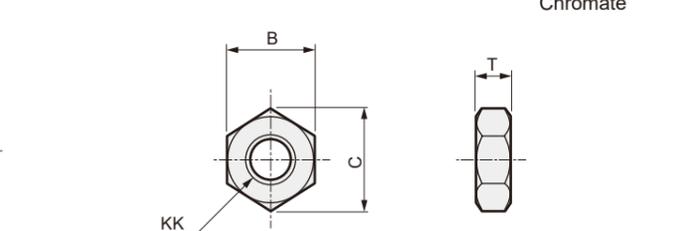
● Double Bracket (B3)



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

Material: Steel, Zinc Chromate

● Rod End nut (NR)

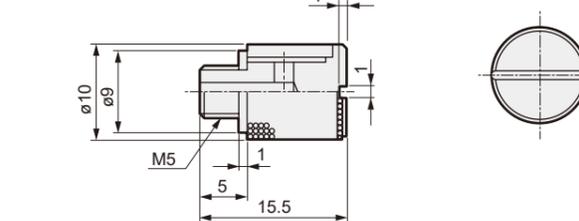


Model No.	Applicable Bore Size (mm)	B	C	KK	T	Weight (g)
M1-NR-20	ø20	13	15	M8x1.0	5	3
M1-NR-30	ø25, ø32	17	19.6	M10x1.25	6	7
M1-NR-40	ø40	19	21.9	M12x1.5	7	9

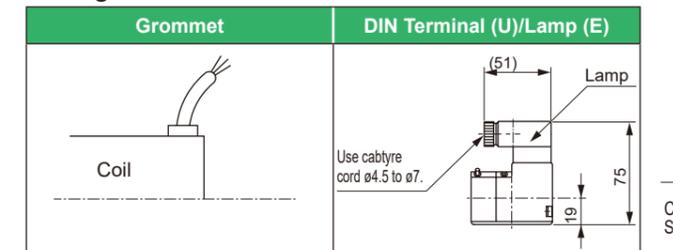
Material: Steel, Zinc Chromate

● Silencer (SL-M5)

\*Sales unit is 2 pieces per bag.



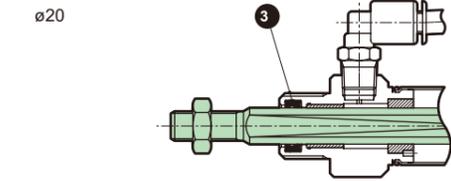
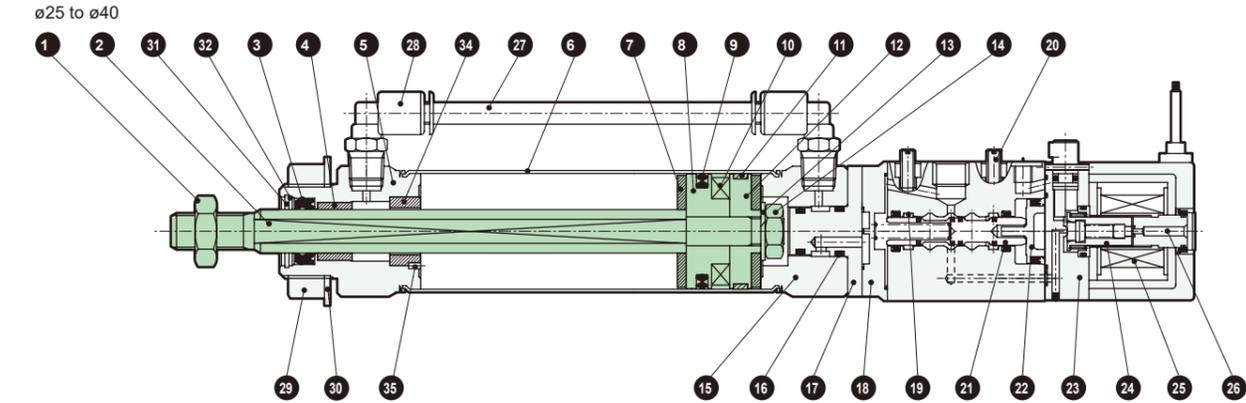
Wiring method



\*1: Lamps and surge suppressors cannot be incorporated into grommets.  
 \*2: For connection to the DIN terminal box, please refer to "Terminal Box Wiring Method" on P. 683.

Internal Structure / Materials

● CKV2-M (with switch)



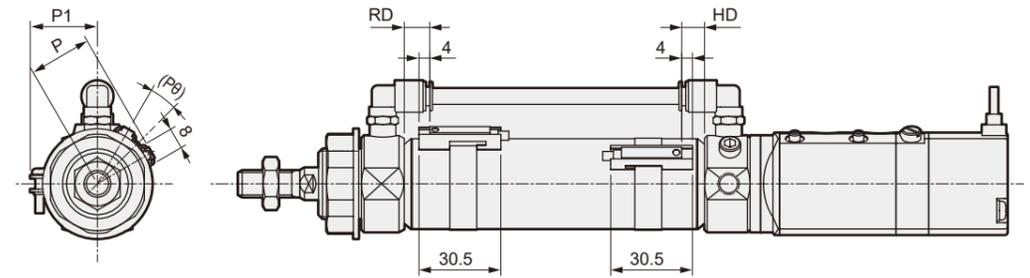
**Do not disassemble**

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	18	Cap	Aluminum Alloy	Chromate
2	Piston Rod	Stainless Steel		19	Valve Body	Aluminum Alloy	Alumite
3	Rod Packing	Nitrile Rubber		20	Speed adjustment needle	Brass	
4	Bushing	Oil-impregnated Bearing Alloy		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	Soft Nylon Tubing	—	
11	Wear Ring	Polyacetal		28	New Joint, Long Elbow	—	GWJL6-6 (CKD)
12	Piston B	Aluminum Alloy		29	Nut	Steel	Zinc Chromate
13	Spacer	Steel	Zinc Chromate (ø20 to ø32 only)	30	Toothed washer	Steel	Zinc Chromate
14	Hexagon Nut	Steel	Zinc Chromate	With Switch			
15	Head Cover	Aluminum Alloy		31	Packing Retainer	Steel	Zinc Chromate
16	O-ring	Nitrile Rubber		32	Retaining Ring	Steel	Zinc Phosphate treatment
17	Adapter	Steel	Zinc Chromate				

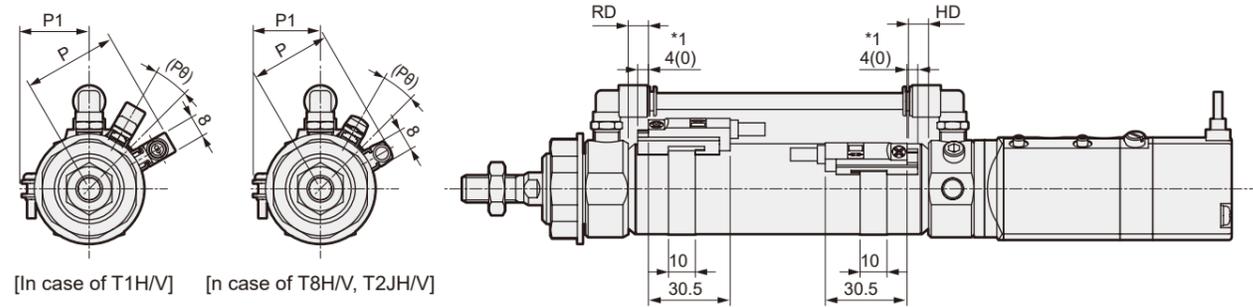
External Dimensions Diagram with Switch

CKV2 Series External Dimensions Diagram with Switch

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2WH/V, T3WH/V, T2WLH/V



● T1H/V, T8H/V, T2JH/V



Code	CKV2																	
	Bore Size (mm)	P1	P8	T0, T5, T2, T3, T3P			T2W, T3W, T2WL			T1			T2J			T8		
				RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P
ø20	19.5	22	8	7	17.3	10	9	17.3	7	6	28.5	7	6	23.1	2	1	23.1	
ø25	22	18	9.5	8.5	19.8	11.5	10.5	19.8	8.5	7.5	31	8.5	7.5	25.6	3.5	2.5	25.6	
ø32	25.5	15	9.5	8.5	24.3	11.5	10.5	24.3	8.5	7.5	35.5	8.5	7.5	30.1	3.5	2.5	30.1	
ø40	29.5	12	11.5	10.5	28.3	13.5	12.5	28.3	10.5	9.5	39.5	10.5	9.5	34.1	5.5	4.5	34.1	

\*1: For T1□, T2J□ switches and stroke of 35 mm or more, or for T8 switch, the dimension will be ( ).  
 \*2: For switch mountability, refer to the model number notation of each variation.

With Valve

With Valve

CKV2

CKV2

CAV2/  
COVP/  
N2

CAV2/  
COVP/  
N2

Cylinder  
Switch

Cylinder  
Switch

Ending

Ending

# CKV2 Series

Custom-made

■ Double solenoid type (-D)

Model No. Notation

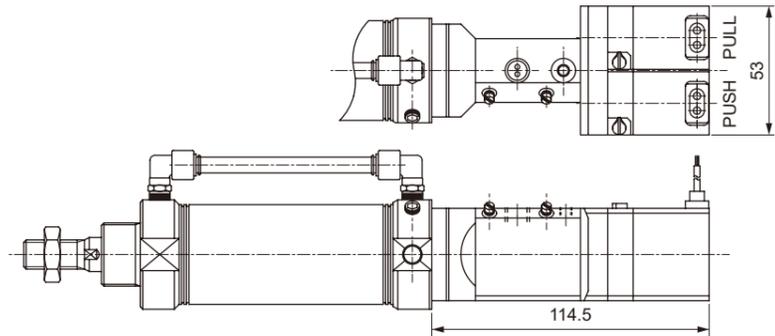
**CKV2** - **D** - **LB** - **20** - **100**

Model Number

Please see the CKV2 series model number display method.

## Dimensions

Except for the dimensions below, it is the same as the standard type.



MEMO

With Valve

With Valve

CKV2

CAV2/  
COVP/  
N2

CKV2

CAV2/  
COVP/  
N2

Cylinder  
Switch

Ending

Cylinder  
Switch

Ending



# To Use This Product Safely

Be sure to read this before use. For general cylinder information, see Intro 41, and for cylinder switches, see P. 1512.

## Individual Precautions: Small Cell Cylinder CKV2 Series

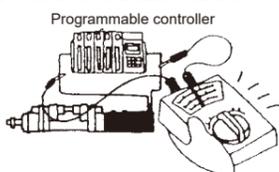
### Design / Selection

#### Warning

- Air may be taken in 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 or pipe the exhaust port downward.
  - The actuator will not operate correctly if the exhaust air is not discharged smoothly.

#### CAUTION

- Check leakage current to prevent malfunction caused by leakage current from other fluid control components.
  - When using a programmable controller, 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

For 100 VAC	3.0 mA or less
For 200 VAC	1.5 mA or less
For 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. If the device used is in continuous operation day and night or high frequency operation, it will reach the contact life region in a short period of time, so use a solid state switch that does not have a contact part.

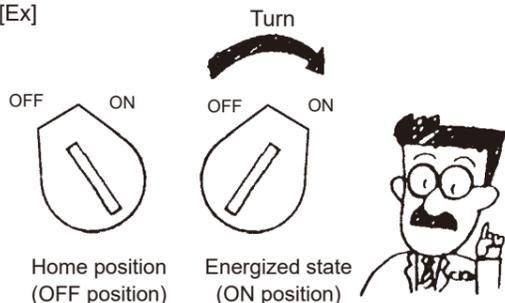
### During Use

#### 1. Common

#### Warning

- Manual operation causes the connected device to function. Make sure that there is no danger before performing manual operation. If the manual operating device of the valve has been activated, be sure to return it to the home position (OFF position) before operating the equipment. If it is not in the home position, supplying compressed air will simultaneously activate the cylinder, creating a dangerous situation.

[Ex]



#### 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 have no polarity. (Non-polar type)
- Applied voltage
  - When wiring the valve electrically, do not mistake the type of voltage (AC, DC) and the voltage. This will cause a malfunction or coil burnout.
- Checking wiring
  - After wiring is complete, check that there are no errors in the connection.

#### CAUTION

- When disassembling and assembling the valve, be sure to confirm that it operates normally according to the following work procedure.

#### Work procedure

1. Check that the manual override is at the origin (OFF position).
2. Set to low pressure. (0.15 MPa)
3. Switch the manual operating device to the operating side (ON position) and confirm that the cylinder operates.
4. Return the manual operating device to the initial position (OFF position) and confirm that the cylinder returns. (Operation confirmation by manual operation is complete.)
5. Perform operation check by electricity.
  - 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.

#### How to wire the terminal box

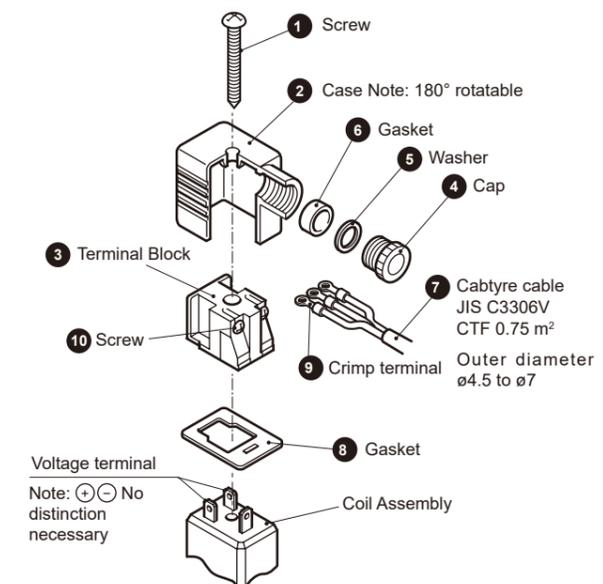
Refer to the diagram below and wire the terminal box according to steps ① to ③.

- ① Pass the cabtyre cable ⑦ through the cap ④, washer ⑤, and gasket ⑥ in that order, and ② insert it into the case.
  - ② When using crimp terminals, process the cabtyre cable ⑦ to an appropriate length as shown in the diagram and ⑨ crimp the crimp terminal to its end.
  - ③ Remove the ⑩ screw from the ③ terminal block, pass the ⑨ crimp terminal through (for Y-type terminals, loosen and insert), and tighten the ⑩ screw again.
- (Note) Tighten with a torque in the range of 0.5 N·m ±15%.

- Remarks:
- It is possible to wire the terminals with bare wires. In that case, loosen the screw, ⑩ insert the lead wire into the fitting, and tighten it 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				

If using other manufacturers, please use equivalent products.



With Valve

With Valve

CKV2

CAV2/COVP/N2

CKV2

CAV2/COVP/N2

Cylinder Switch

Ending

Cylinder Switch

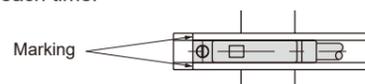
Ending

2. Common (With T-type Switch)

**CAUTION**

■ When Moving the Switch Position in the Stroke Direction

- The T2, T3, T0, and T5 switches can be fine-tuned by approximately ±3 mm from the default position of installation. If the adjustment range exceeds ±3 mm, or when finely adjusting the position of other switches, move the position of the band.
- Loosen the switch mounting screw, move the switch along the rail, and tighten at the specified position. For T2, T3, T0, T5, use a flat-head screwdriver (watchmaker's screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, tip shape width of 2.4 mm or less, and thickness of 0.3 mm or less to tighten the switch fixing screw with a tightening torque of 0.1 to 0.2 N·m. For T1, T□C, T2J, T2Y, T3Y, T8, tighten with a tightening torque of 0.5 to 0.7 N·m.
- The switch rail has a marking 4 mm from the end face of the rail. Use it as a guide for mounting position when replacing the switch. The switch rail marking is set to the switch maximum sensitivity position at factory shipment. If the switch type changes or the band is moved, the maximum sensitivity position changes, so adjust the position each time.

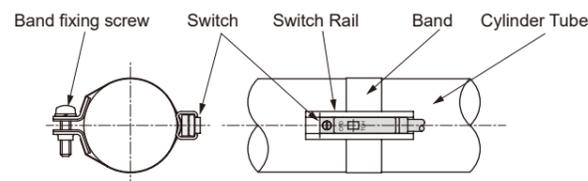


■ When Moving the Switch Position in the Circumferential Direction

- Loosen the band fixing screw, move the switch rail circumferentially, and tighten it at the specified position. The tightening torque is 0.6 to 0.8 N·m.

■ When Moving the Band Position

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



# CAV2, COVP<sub>N</sub>2

Cell Cylinder®

With Valve

ø50, ø75, ø100



CONTENTS

Product Introduction	686
Series variation	688
Variation/Option Combination Availability Table	690
Operating Explanation	692
● Double Acting/double solenoid/lubrication (CAV2)	694
● Double Acting, single solenoid, pushed out when energized, Lubricated Type (COVP2)	694
● Double Acting, single solenoid, pull when energized, Lubricated Type (COVN2)	694
● Double Acting, double solenoid, no-lubrication (CAV2-N)	694
● Double Acting, single solenoid, pushed out when energized, Non-lube Type (COVP2-N)	694
● Double Acting, single solenoid, pull when energized, no-lubrication (COVN2-N)	694
Short overall length type with cushion	
● Double Acting, double solenoid, lubrication (CAV2-S)	694
● Double Acting, single solenoid, pushed out when energized, lubrication (COVP2-S)	694
● Double Acting, single solenoid, pull when energized, Lubricated Type (COVN2-S)	694
● Double Acting, double solenoid, no lubrication (CAV2-NS)	694
● Double Acting, single solenoid, pushed out when energized, Lubricated Type (COVP2-NS)	694
● Double Acting/single solenoid, pull when energized, Lubricated Type (COVN2-NS)	694
Accessories External Dimensions Diagram	722
External Dimensions Diagram with Switch	726
Custom Items	727
⚠ Precautions for Use	728

For precautions during mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components product site (<https://www.ckd.co.jp/kiki/en/>) → "Model No." → [Instruction Manual].