

# CMA2

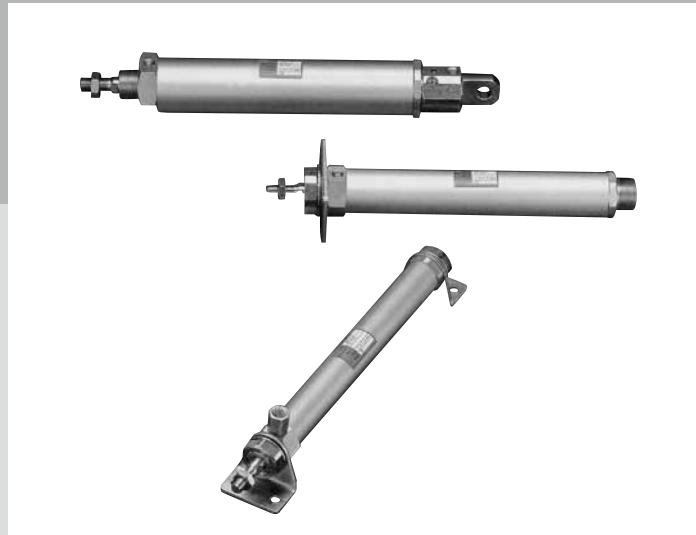
## Medium bore size cylinder

ø20/ø30/ø40

### Standard


#### Overview

Medium bore size (ø20 to ø40) series of general purpose cylinders that can be disassembled.



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● Double acting/single rod (CMA2)	208
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 For your safety, refer to precautions for general cylinders on Intro Page 73 and precautions for cylinder switches on Intro Page 80.

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



# Micro cylinder CMA2 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)	Available stroke length (mm)
			25	50	75	100	150	200	250	300				
Double acting/ single rod	CMA2 	$\varnothing 20$ $\varnothing 30$ $\varnothing 40$	●	●	●	●	●	●	●	●	1	700	1000 1200 1500	
Double acting/ direct	CMA2-E 	$\varnothing 20/\varnothing 30/\varnothing 40$	●	●	●	●	●	●	●	●	1	700	700	

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

	Custom stroke length (per mm)	Mounting									Option					Accessory			Switch	Page
		Basic	Axial foot Two sides	Axial foot One side	Rod side flange	Head side flange	Eye bracket	Clevis bracket	Rod side trunnion	Head side trunnion	Bellows (100°C)	Bellows (250°C)	Piston rod material change	Same port position	Copper and PTFE free	Rod eye	Rod clevis	Clevis bracket		
		00	LB	LS	FA	FB	CA	CB	TA	TB	J	L	M	P	P6	I	Y	B2		
1	●	●	●	●	●	●	●	●	●	◎	◎	◎	◎	◎	◎	◎	◎	◎	208	
1	■	■	●	●	■	■	■	■	■	■	■	◎	■	■	◎	◎	◎	◎	222	

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

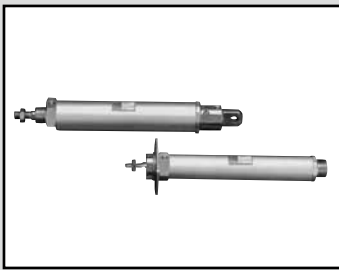
FJ

FK

Spd  
Contr

Ending

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

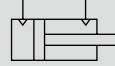


Medium bore size cylinder  
 Standard single rod

# CMA2 Series

● Bore size:  $\phi 20/\phi 30/\phi 40$

JIS symbol ● Double acting cylinder single rod



## Specifications

Item	CMA2		
Bore size mm	$\phi 20$	$\phi 30$	$\phi 40$
Actuation	Double acting		
Working fluid	Compressed air		
Max. working pressure MPa	0.7 ( $\approx 100$ psi, 7 bar)		
Min. working pressure MPa	0.1 ( $\approx 15$ psi, 1 bar)		
Proof pressure MPa	1.05 ( $\approx 150$ psi, 10.5 bar)		
Ambient temperature $^{\circ}\text{C}$	-10 (14 $^{\circ}\text{F}$ ) to 60 (140 $^{\circ}\text{F}$ ) (no freezing)		
Port size	Rc1/8		
Stroke tolerance mm	$^{+1.0}_0$ (to 200), $^{+1.2}_0$ (to 1000)		
Working piston speed mm/s	50 to 500		
Cushion	None		
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)		
Allowable absorbed energy J	0.024	0.05	0.093

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

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)
$\phi 20$	25/50/75/100	700	1000	1
$\phi 30$	150/200/250		1200	
$\phi 40$	300		1500	

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

\*2 : One side foot (LS) has the max. stroke length of 50 mm.

\*3 : The stroke length will be 25 mm and over with bellows "J". Contact CKD when stroke length is shorter than 25 mm.

\*4 : The min. working pressure of the cylinder must be less than 50% of working pressure in order to be effective in preventing the popping out. Refer to Ending Page 69.

## Min. stroke length with switch

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

### Switch specifications

● 1-color/2-color display

Item	Proximity 2-wire	Proximity 2-wire			Proximity 3-wire				Reed 2-wire						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V	T5H/T5V	T8H/T8V				
Applications	For programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay	For programmable controller, relay (no lamp), serial	For programmable controller, relay				
Output method	-			NPN output	PNP output	NPN output	NPN output	-							
Pwr. supp. V.	-			10 to 28 VDC				-							
Load voltage	85 to 265 VAC	10 to 30 VDC	24 VDC ±10%	30 VDC or less				12/24 VDC	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC	
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Indicator 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					Weight per switch		Additional weight per S = 10 mm
	Basic (00)	Axial foot (LB)	Flange (FA)	Clevis (CA)	Trunnion (TA/TB)	T		
Bore size (mm)						Refer to the weight in the switch specifications.	Switch rail + Band weight	
ø20	0.14	0.29	0.20	0.27	0.19		0.005	0.01
ø30	0.29	0.55	0.44	0.50	0.39		0.005	0.014
ø40	0.47	0.73	0.62	0.69	0.67	0.009	0.02	

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

### Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø20	Push	31.4	47.1	62.8	94.2	$1.26 \times 10^2$	$1.57 \times 10^2$	$1.88 \times 10^2$	$2.20 \times 10^2$
	Pull	23.6	35.3	47.1	70.7	94.2	$1.18 \times 10^2$	$1.41 \times 10^2$	$1.65 \times 10^2$
ø30	Push	70.7	$1.06 \times 10^2$	$1.41 \times 10^2$	$2.12 \times 10^2$	$2.83 \times 10^2$	$3.53 \times 10^2$	$4.24 \times 10^2$	$4.95 \times 10^2$
	Pull	59.4	89.1	$1.19 \times 10^2$	$1.78 \times 10^2$	$2.38 \times 10^2$	$2.97 \times 10^2$	$3.56 \times 10^2$	$4.16 \times 10^2$
ø40	Push	$1.26 \times 10^2$	$1.88 \times 10^2$	$2.51 \times 10^2$	$3.77 \times 10^2$	$5.03 \times 10^2$	$6.28 \times 10^2$	$7.54 \times 10^2$	$8.80 \times 10^2$
	Pull	$1.10 \times 10^2$	$1.65 \times 10^2$	$2.21 \times 10^2$	$3.31 \times 10^2$	$4.41 \times 10^2$	$5.51 \times 10^2$	$6.62 \times 10^2$	$7.72 \times 10^2$

- SCP\*3
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- CMA2**
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- MDC2
- MVC
- SMG
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- FC\*
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- MRG2
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- Spd  
Contr
- Ending

## How to order

Without switch (built-in magnet for switch)

**CMA2 - FA - 20 - 50 - P I**

With switch (built-in magnet for switch)

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

**A** Mounting  
\*1

**B** Bore size

**C** Stroke length

**D** Switch model No.

**E** Switch quantity

**F** Option  
\*3, \*4

**G** Accessory  
\*5

### ⚠ Precautions for model No. selection

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

[Example of model No.]

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

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

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

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

<b>B Bore size (mm)</b>	
20	ø20
30	ø30
40	ø40

<b>C Stroke length (mm)</b>			
Bore size	Stroke length *2	Available stroke length	Custom stroke length
ø20	1 to 700	1000	In 1 mm increments
ø30	1 to 700	1200	
ø40	1 to 700	1500	

<b>D Switch model No.</b>	
Refer to the switch model No. table on the following page.	

<b>* Lead wire length</b>	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

<b>E Switch quantity</b>	
R	1 on rod side
H	1 on head side
D	2
T	3

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

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

### [D] Switch model No.

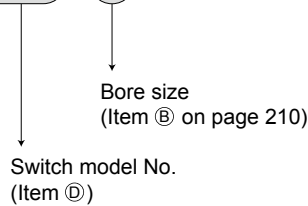
T switch						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
T0H*	TOV*	Reed	●	●	1-color display	2-wire
T5H*	T5V*		●	●	Without indicator lamp	
T8H*	T8V*		●	●	1-color display	
T1H*	T1V*	Proximity	●		1-color display	2-wire
T2H*	T2V*			●		
T3H*	T3V*			●		
T3PH*	T3PV*			●	1-color display	3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		
T3YH*	T3YV*			●	3-wire	
T2JH*	T2JV*			●	Off-delay	2-wire

### How to order switch

#### [T switch]

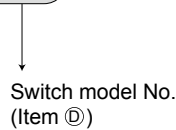
● Switch body + mounting bracket set

**CMA2** - **T0H** - **40**



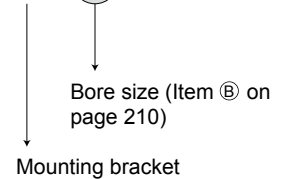
● Switch body only

**SW** - **T0H**



● Mounting bracket set

**CMA2** - **T** - **40**



### How to order mounting bracket

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

\*1 : The mounting bracket model numbers above include tightening nut, toothed washer and parallel pin set.

\*2 : For axial foot (two-sided), 2 sets of "MI-LB-\*" are required.

\*3 : Mounting nut, toothed washer only. Although 1 set is included with the basic of the product (00), use this when needed.

SCP\*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/  
COVP/N2

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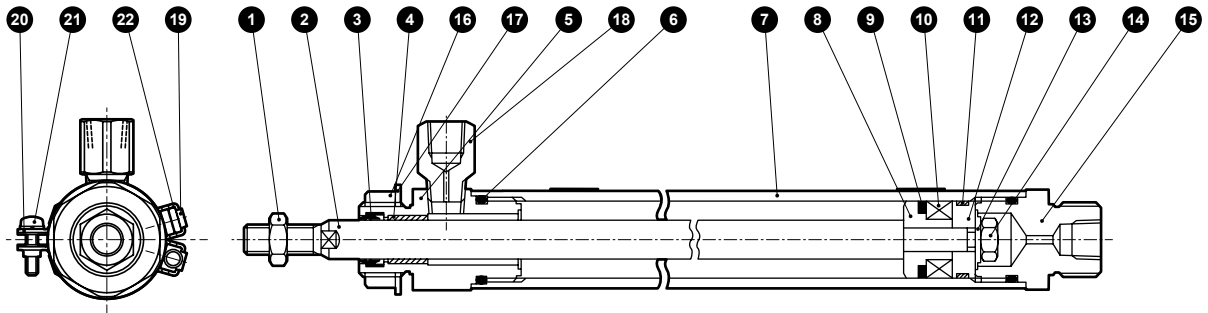
FK

Spd  
Contr

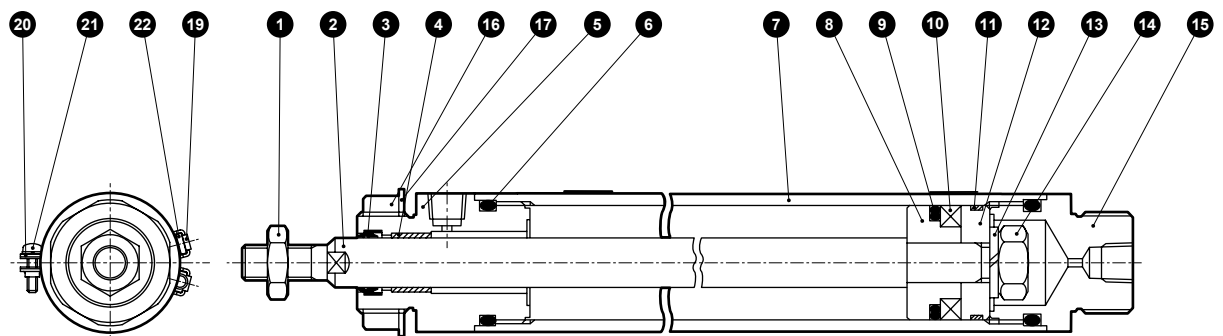
Ending

## Internal structure and parts list

●  $\phi 20$



●  $\phi 30/\phi 40$



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	12	Piston B	Aluminum alloy	
2	Piston rod	$\phi 20/\phi 30$ Stainless steel $\phi 40$ Carbon steel	Industrial chrome plating	13	Spring washer	Steel	Zinc chromate
3	Rod packing	Nitrile rubber		14	Hexagon nut	Steel	Zinc chromate
4	Bush	Dry bearing	*1	15	Head cover	Aluminum alloy	Chromate
5	Rod cover	Aluminum alloy	Chromate	16	Nut	Steel	Zinc chromate
6	Cylinder gasket	Nitrile rubber		17	Toothed washer	Steel	Zinc chromate
7	Cylinder tube	Aluminum alloy	Hard alumite	18	Port nipple	Copper alloy	*2
8	Piston A	Aluminum alloy		With switch			
9	Piston packing	Nitrile rubber		19	Switch body		
10	Magnet	Plastic		20	Band	Stainless steel	
11	Wear ring	Polyacetal resin		21	Pan head machine screw	Stainless steel	
				22	Switch rail	Stainless steel	

\*1 : Oleoresin bearing for copper and PTFE free.

\*2 : The copper alloy port nipple of copper and PTFE free is nickel plated.

## Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
$\phi 20$	CMA2-20K	
$\phi 30$	CMA2-30K	3 6 9 11
$\phi 40$	CMA2-40K	

## Material of mounting bracket

Mounting	Material
LB/LS	Steel
FA/FB	Steel
TA/TB	Steel
CA/CB	Steel

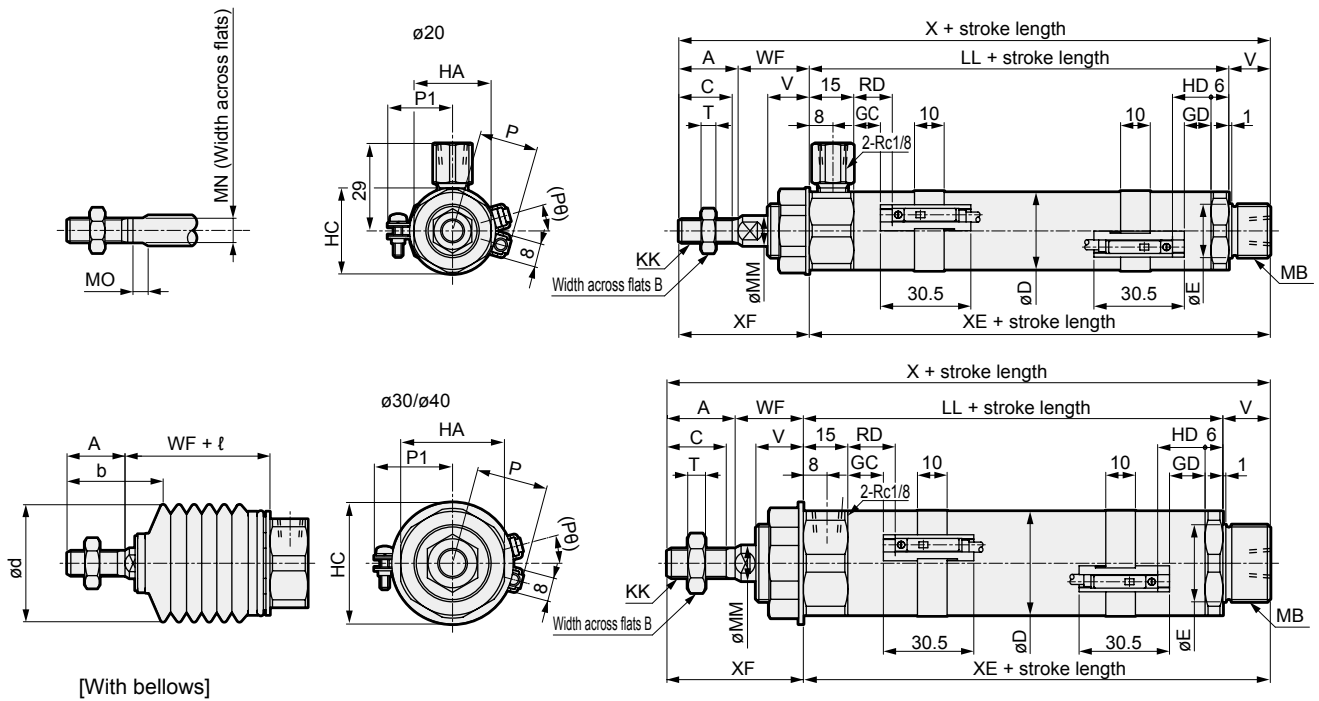
● Note: Mounting bracket will be shipped with the product.

However, if the product is supplied with bellows and the mounting bracket is LB, FA, or TA, it will be attached to the product.



## Dimensions

● Basic (00)



\*1 : A port nipple is included with the rod cover of ø20.

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

\*3 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.

\*4 : For the dimensions of the accessories, refer to page 221.

RD: Rod side max. sensitivity position  
HD: Head side max. sensitivity position

Code	Basic (00) basic dimensions																		
Bore size (mm)	A	B	C	D	E	HA	HC	KK	LL	MB	MN	MO	MM	T	V	WF	X	XE	XF
ø20	20	13	18	25	18	26	29	M8×1	66	M18×1.5	8	5	10	5	14	24	124	80	44
ø30	23	17	20	35	26	35	41	M10×1.25	72	M26×1.5	10	5	12	6	16	23	134	88	46
ø40	25	19	22	45	26	35	41	M12×1.5	74	M26×1.5	12	6	14	7	16	23	138	90	48

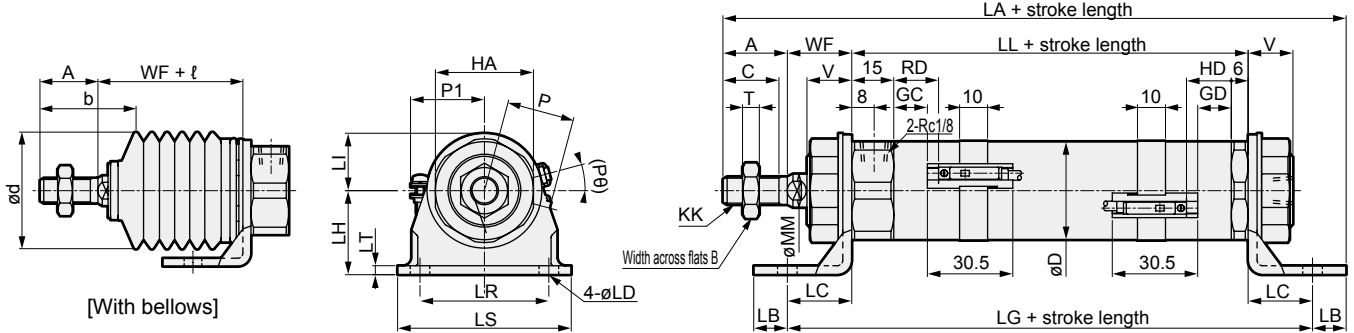
Code	With switch									With bellows						
	T0, T5, T2, T3				T2W, T3W				P	P1	(P0)°	A	WF	b	d	ℓ
Bore size (mm)	GC	GD	RD	HD	GC	GD	RD	HD								
ø20	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6
ø30	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7
ø40	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	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  
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Ending

## Dimensions



### ● Axial foot (LB)



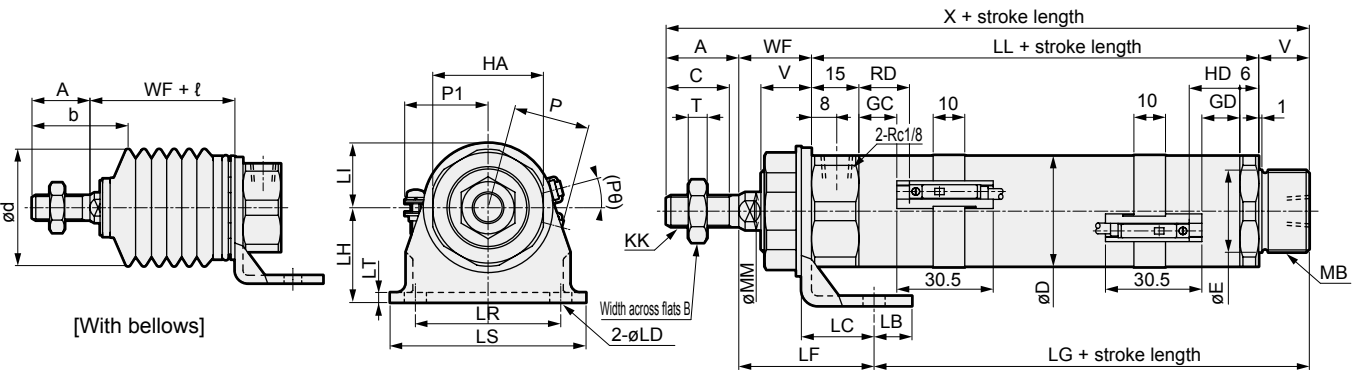
- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of ø20.
- \*3 : For the  $l$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

Code	Axial foot LB basic dimensions											Mounting dimensions									
	A	B	C	D	HA	KK	LL	MM	T	V	WF	LA	LB	LC	LD	LG	LH	LI	LR	LS	LT
ø20	20	13	18	25	26	M8×1	66	10	5	14	24	138	10	18	6	102	25	15	30	44	3.2
ø30	23	17	20	35	35	M10×1.25	72	12	6	16	23	153	12	23	7	118	30	20	46	62	3.2
ø40	25	19	22	45	35	M12×1.5	74	14	7	16	23	157	12	23	7	120	30	20	46	62	3.2

Code	With switch											With bellows				
	T0, T5, T2, T3				T2W, T3W				P	P1	(Pθ)°	A	WF	b	d	l
	GC	GD	RD	HD	GC	GD	RD	HD								
ø20	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6
ø30	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7
ø40	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	46	(Stroke length/3.25) + 7

### ● Axial foot (single) (LS)



- \*1 : Max. stroke length: 50.
- \*2 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*3 : A port nipple is included with the rod cover of ø20.
- \*4 : For the  $l$  dimension, round up below the decimal point.
- \*5 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*6 : For the dimensions of the accessories, refer to page 221.

Code	Axial foot (one side) (LS) basic dimensions											Mounting dimensions								
	A	B	C	D	E	HA	KK	LL	MB	MM	T	V	WF	X	LB	LC	LD	LF	LG	LH
ø20	20	13	18	25	18	26	M8×1	66	M18×1.5	10	5	14	24	124	10	18	6	38.8	65.2	25
ø30	23	17	20	35	26	35	M10×1.25	72	M26×1.5	12	6	16	23	134	12	23	7	42.8	68.2	30
ø40	25	19	22	45	26	35	M12×1.5	74	M26×1.5	14	7	16	23	138	12	23	7	42.8	70.2	30

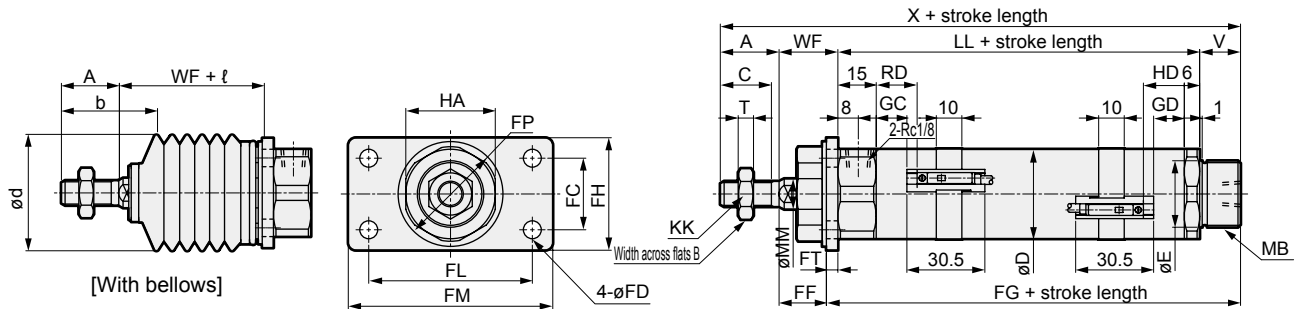
  

Code	With switch											With bellows								
	T0, T5, T2, T3				T2W, T3W				P	P1	(Pθ)°	A	WF	b	d	l				
	LI	LR	LS	LT	GC	GD	RD	HD									GC	GD	RD	HD
ø20	15	30	44	3.2	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6
ø30	20	46	62	3.2	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7
ø40	20	46	62	3.2	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	46	(Stroke length/3.25) + 7

### Dimensions



#### ● Rod side flange (FA)



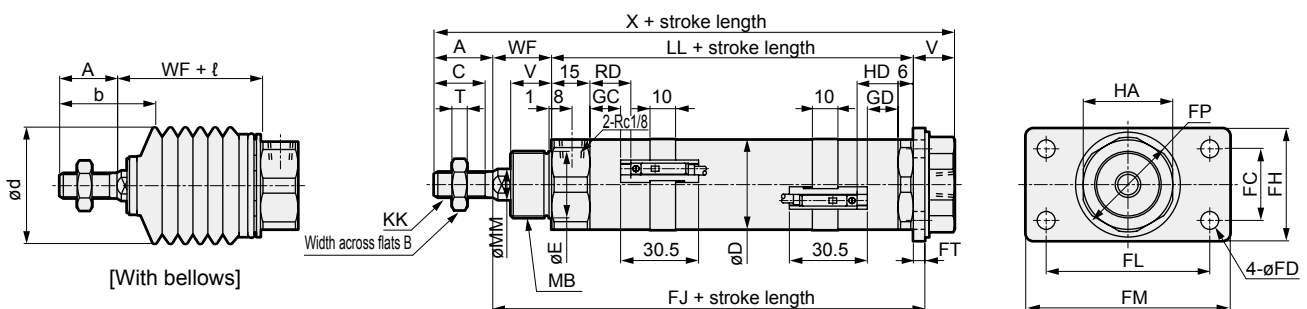
- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of  $\phi 20$ .
- \*3 : For the  $t$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

Code	Rod side flange (FA) basic dimensions													Mounting dimensions					
Bore size (mm)	A	B	C	D	E	HA	KK	LL	MB	MM	T	V	WF	X	FC	FD	FF	FG	FH
$\phi 20$	20	13	18	25	18	26	M8×1	66	M18×1.5	10	5	14	24	124	20	6	20.8	83.2	34
$\phi 30$	23	17	20	35	26	35	M10×1.25	72	M26×1.5	12	6	16	23	134	28	7	18.5	92.5	44
$\phi 40$	25	19	22	45	26	35	M12×1.5	74	M26×1.5	14	7	16	23	138	28	7	18.5	94.5	44

Code	With switch											With bellows					
	FL	FM	FP	FT	T0, T5, T2, T3				T2W, T3W				A	WF	b	d	$\ell$
					GC	GD	RD	HD	GC	GD	RD	HD					
$\phi 20$	40	54	29	3.2	9	9	13	13	11	11	15	15	20	24	32	30	(Stroke length/3) + 6
$\phi 30$	64	80	41	4.5	12	12	16	16	14	14	18	18	23	23	38	46	(Stroke length/3.25) + 7
$\phi 40$	64	80	41	4.5	13	13	17	17	15	15	19	19	25	23	40	46	(Stroke length/3.25) + 7

#### ● Head side flange (FB)



- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of  $\phi 20$ .
- \*3 : For the  $t$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

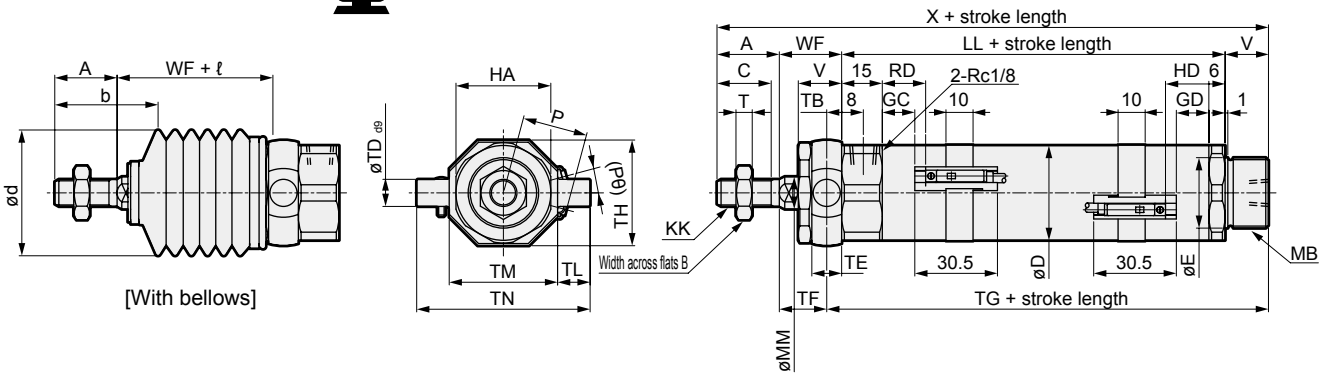
Code	Head side flange (FB) basic dimensions													Mounting dimensions					
Bore size (mm)	A	B	C	D	E	HA	KK	LL	MB	MM	T	V	WF	X	FC	FD	FH	FJ	FL
$\phi 20$	20	13	18	25	18	26	M8×1	66	M18×1.5	10	5	14	24	124	20	6	34	93.2	40
$\phi 30$	23	17	20	35	26	35	M10×1.25	72	M26×1.5	12	6	16	23	134	28	7	44	99.5	64
$\phi 40$	25	19	22	45	26	35	M12×1.5	74	M26×1.5	14	7	16	23	138	28	7	44	101.5	64

Code	With switch											With bellows				
	FM	FP	FT	T0, T5, T2, T3				T2W, T3W				A	WF	b	d	$\ell$
				GC	GD	RD	HD	GC	GD	RD	HD					
$\phi 20$	54	29	3.2	9	9	13	13	11	11	15	15	20	24	32	30	(Stroke length/3) + 6
$\phi 30$	80	41	4.5	12	12	16	16	14	14	18	18	23	23	38	46	(Stroke length/3.25) + 7
$\phi 40$	80	41	4.5	13	13	17	17	15	15	19	19	25	23	40	46	(Stroke length/3.25) + 7

## Dimensions

### ● Rod side trunnion (TA)

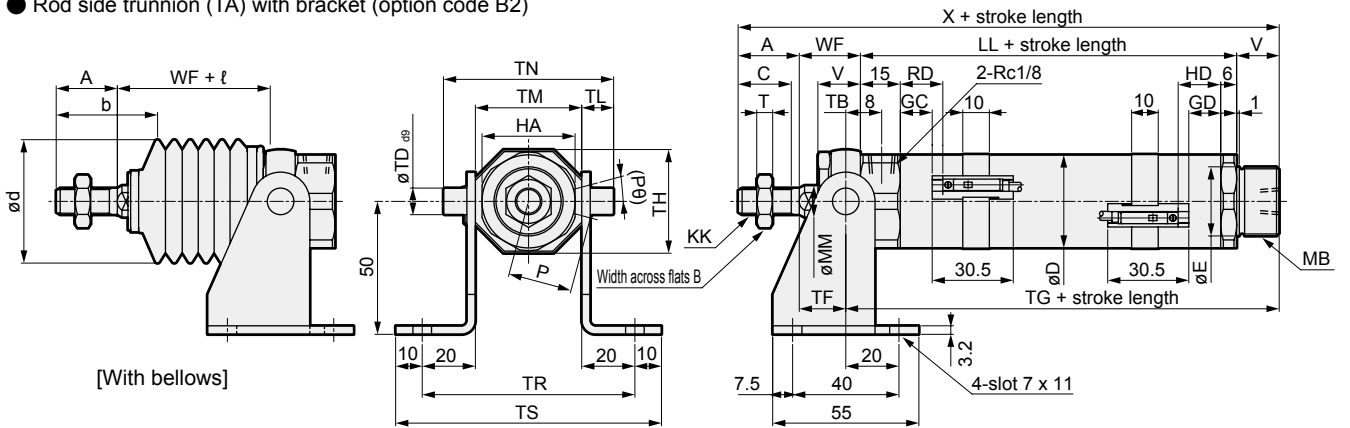


- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of  $\phi 20$ .
- \*3 : For the  $\ell$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

Code	Rod side trunnion (TA) basic dimensions														Mounting dimensions					
	Bore size (mm)	A	B	C	D	E	HA	KK	LL	MB	MM	T	V	WF	X	TB	TD	TE	TF	TG
$\phi 20$	20	13	18	25	18	26	M8×1.0	66	M18×1.5	10	5	14	24	124	4.5	8	9	19.5	84.5	29.5
$\phi 30$	23	17	20	35	26	35	M10×1.25	72	M26×1.5	12	6	16	23	134	5.5	10	11	17.5	93.5	39
$\phi 40$	25	19	22	45	26	35	M12×1.5	74	M26×1.5	14	7	16	23	138	5.5	10	11	17.5	95.5	44

Code	With switch												With bellows						
	Bore size (mm)	TL	TM	TN	T0, T5, T2, T3				T2W, T3W				P	(P $\theta$ )°	A	WF	b	d	$\ell$
					GC	GD	RD	HD	GC	GD	RD	HD							
$\phi 20$	8	30	46	9	9	13	13	11	11	15	15	19.5	19	20	24	32	30	(Stroke length/3) + 6	
$\phi 30$	12	40	64	12	12	16	16	14	14	18	18	24.5	15	23	23	38	46	(Stroke length/3.25) + 7	
$\phi 40$	9.5	53	72	13	13	17	17	15	15	19	19	29.5	12	25	23	40	46	(Stroke length/3.25) + 7	

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



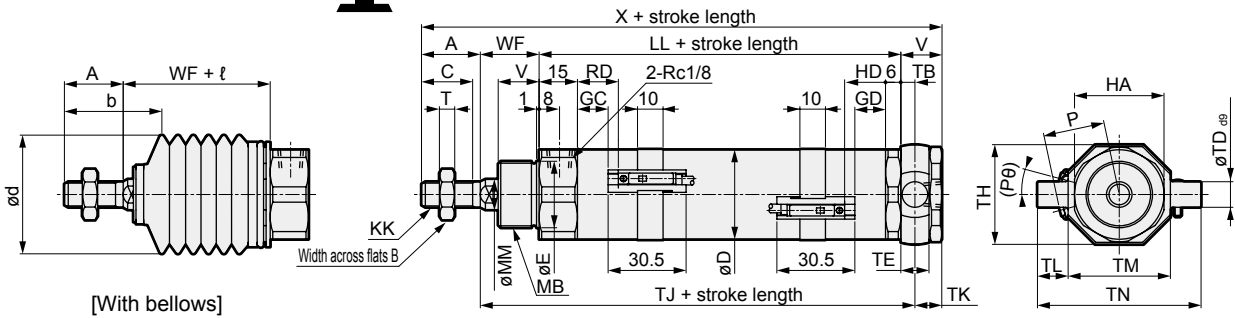
- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of  $\phi 20$ .
- \*3 : For the  $\ell$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

Code	Rod side trunnion (TA) with bracket (option code B2) basic dimensions														Mounting dimensions					
	Bore size (mm)	A	B	C	D	HA	KK	LL	MB	MM	T	V	WF	X	TB	TD	TF	TG	TH	TL
$\phi 20$	20	13	18	25	26	M8×1.0	66	M18×1.5	10	5	14	24	124	4.5	8	9	19.5	84.5	29.5	8
$\phi 30$	23	17	20	35	35	M10×1.25	72	M26×1.5	12	6	16	23	134	5.5	10	11	17.5	93.5	39	12
$\phi 40$	25	19	22	45	35	M12×1.5	74	M26×1.5	14	7	16	23	138	5.5	10	11	17.5	95.5	44	9.5

Code	With switch												With bellows							
	Bore size (mm)	TM	TN	TR	TS	T0, T5, T2, T3				T2W, T3W				P	(P $\theta$ )°	A	WF	b	d	$\ell$
						GC	GD	RD	HD	GC	GD	RD	HD							
$\phi 20$	30	46	70	90	9	9	13	13	11	11	15	15	19.5	19	20	24	32	30	(Stroke length/3) + 6	
$\phi 30$	40	64	80	100	12	12	16	16	14	14	18	18	24.5	15	23	23	38	46	(Stroke length/3.25) + 7	
$\phi 40$	53	72	93	113	13	13	17	17	15	15	19	19	29.5	12	25	23	40	46	(Stroke length/3.25) + 7	

## Dimensions

● Head side trunnion (TB)



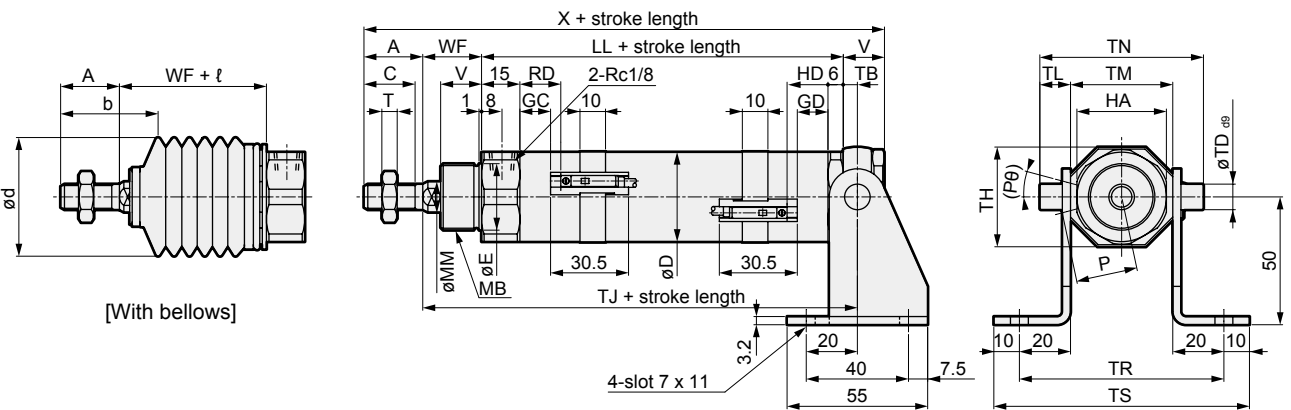
- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of ø20.
- \*3 : For the  $\ell$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

Code		Head side trunnion (TB) basic dimensions													Mounting dimensions					
Bore size (mm)		A	B	C	D	E	HA	KK	LL	MB	MM	T	V	WF	X	TB	TD	TE	TH	TJ
ø20		20	13	18	25	18	26	M8×1.0	66	M18×1.5	10	5	14	24	124	4.5	8	9	29.5	94.5
ø30		23	17	20	35	26	35	M10×1.25	72	M26×1.5	12	6	16	23	134	5.5	10	11	39	100.5
ø40		25	19	22	45	26	35	M12×1.5	74	M26×1.5	14	7	16	23	138	5.5	10	11	44	102.5

Code		With switch										With bellows								
Bore size (mm)		TK	TL	TM	TN	T0, T5, T2, T3				T2W, T3W				P	(Pθ)°	A	WF	b	d	ℓ
						GC	GD	RD	HD	GC	GD	RD	HD							
ø20		9.5	8	30	46	9	9	13	13	11	11	15	15	19.5	19	20	24	32	30	(Stroke length/3) + 6
ø30		10.5	12	40	64	12	12	16	16	14	14	18	18	24.5	15	23	23	38	46	(Stroke length/3.25) + 7
ø40		10.5	9.5	53	72	13	13	17	17	15	15	19	19	29.5	12	25	23	40	46	(Stroke length/3.25) + 7

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



- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of ø20.
- \*3 : For the  $\ell$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

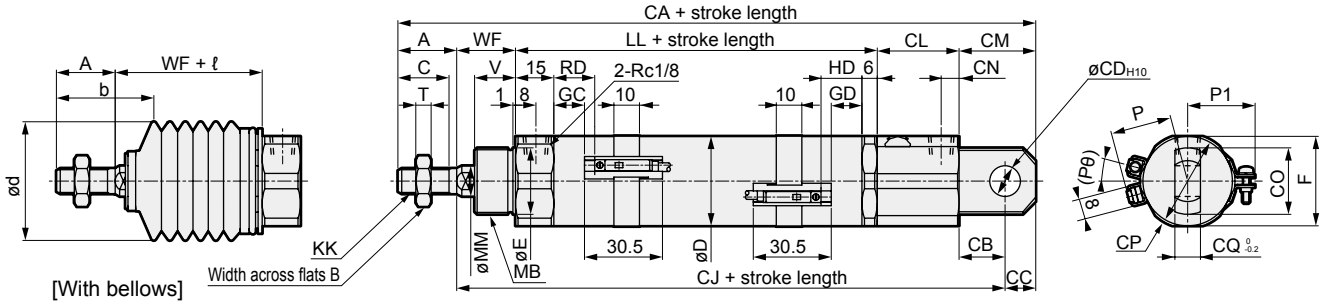
Code		Head side trunnion (TB) with bracket (option code B2) basic dimensions													Mounting dimensions					
Bore size (mm)		A	B	C	D	HA	KK	LL	MB	MM	T	V	WF	X	TB	TD	TH	TJ	TL	TM
ø20		20	13	18	25	26	M8×1.0	66	M18×1.5	10	5	14	24	124	4.5	8	29.5	94.5	8	30
ø30		23	17	20	35	35	M10×1.25	72	M26×1.5	12	6	16	23	134	5.5	10	39	100.5	12	40
ø40		25	19	22	45	35	M12×1.5	74	M26×1.5	14	7	16	23	138	5.5	10	44	102.5	9.5	53

Code		With switch										With bellows							
Bore size (mm)		TN	TR	TS	T0, T5, T2, T3				T2W, T3W				P	(Pθ)°	A	WF	b	d	ℓ
					GC	GD	RD	HD	GC	GD	RD	HD							
ø20		46	70	90	9	9	13	13	11	11	15	15	19.5	19	20	24	32	30	(Stroke length/3) + 6
ø30		64	80	100	12	12	16	16	14	14	18	18	24.5	15	23	23	38	46	(Stroke length/3.25) + 7
ø40		72	93	113	13	13	17	17	15	15	19	19	29.5	12	25	23	40	46	(Stroke length/3.25) + 7

## Dimensions

### ● Eye bracket (CA)



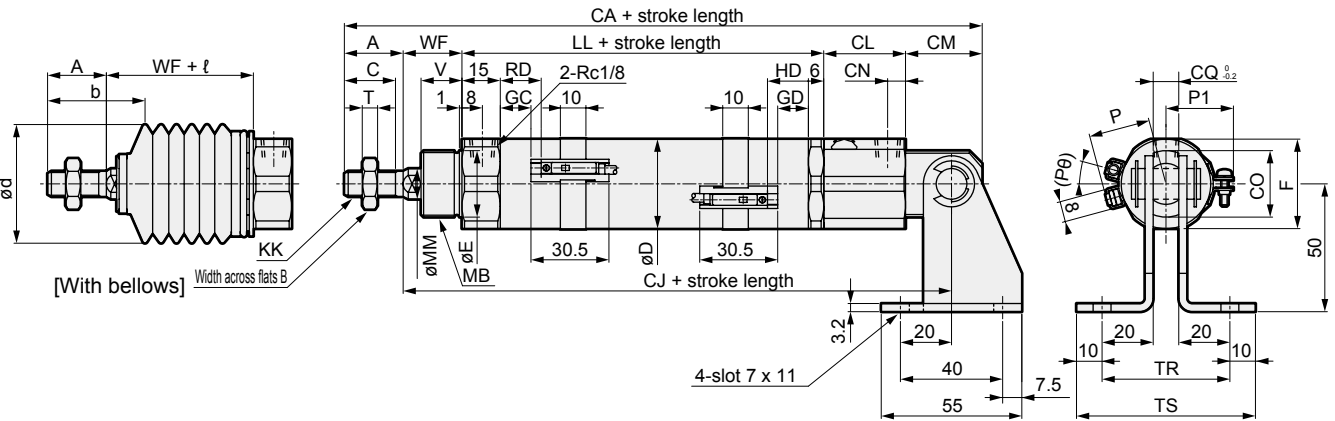
- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of ø20.
- \*3 : For the  $l$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

Code	Eye bracket (CA) basic dimensions												Mounting dimensions										
	Bore size (mm)		A	B	C	D	E	F	KK	LL	MB	MM	T	V	WF	CA	CB	CC	CD	CJ	CL	CM	CN
ø20	ø20		20	13	18	25	18	26	M8×1.0	66	M18×1.5	10	5	14	24	165	14	10	10	135	31	24	8
ø30	ø30		23	17	20	35	26	35	M10×1.25	72	M26×1.5	12	6	16	23	180	18	12	12	145	32	30	7
ø40	ø40		25	19	22	45	26	35	M12×1.5	74	M26×1.5	14	7	16	23	184	18	12	12	147	32	30	7

Code	With switch											With bellows								
	Bore size (mm)	CO	CP	CQ	T0, T5, T2, T3				T2W, T3W				P	P1	(Pθ)°	A	WF	b	d	l
					GC	GD	RD	HD	GC	GD	RD	HD								
ø20	22	28	8	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6	
ø30	26	37	10	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7	
ø40	26	37	10	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	46	(Stroke length/3.25) + 7	

### ● Eye bracket (CA) with bracket (option code B2)



- \*1 : For the width across flats of the rod, refer to the dimensions of the basic (00).
- \*2 : A port nipple is included with the rod cover of ø20.
- \*3 : For the  $l$  dimension, round up below the decimal point.
- \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.
- \*5 : For the dimensions of the accessories, refer to page 221.

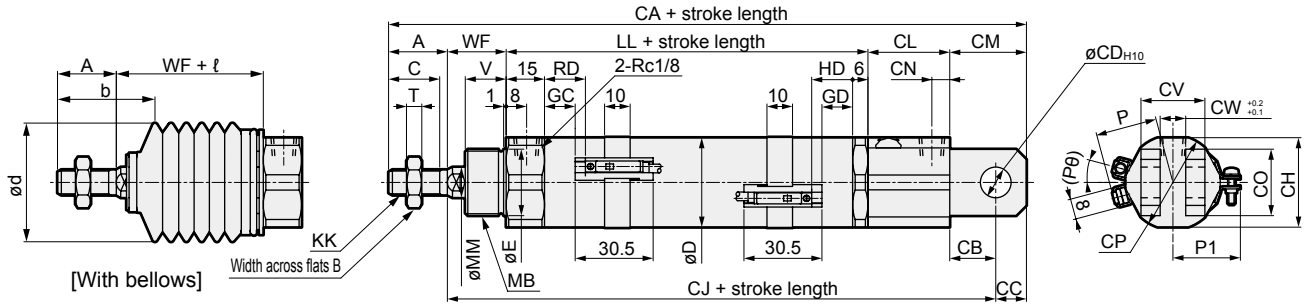
Code	Eye bracket (CA) with bracket (option code B2) basic dimensions												Mounting dimensions								
	Bore size (mm)		A	B	C	D	F	KK	LL	MB	MM	T	V	WF	CA	CJ	CL	CM	CN	CO	CQ
ø20	ø20		20	13	18	25	26	M8×1.0	66	M18×1.5	10	5	14	24	165	135	31	24	8	22	8
ø30	ø30		23	17	20	35	35	M10×1.25	72	M26×1.5	12	6	16	23	180	145	32	30	7	26	10
ø40	ø40		25	19	22	45	35	M12×1.5	74	M26×1.5	14	7	16	23	184	147	32	30	7	26	10

Code	With switch											With bellows							
	Bore size (mm)	TR	TS	T0, T5, T2, T3				T2W, T3W				P	P1	(Pθ)°	A	WF	b	d	l
				GC	GD	RD	HD	GC	GD	RD	HD								
ø20	48	68	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6	
ø30	50	70	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7	
ø40	50	70	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	46	(Stroke length/3.25) + 7	

## Dimensions

● Clevis bracket (CB)



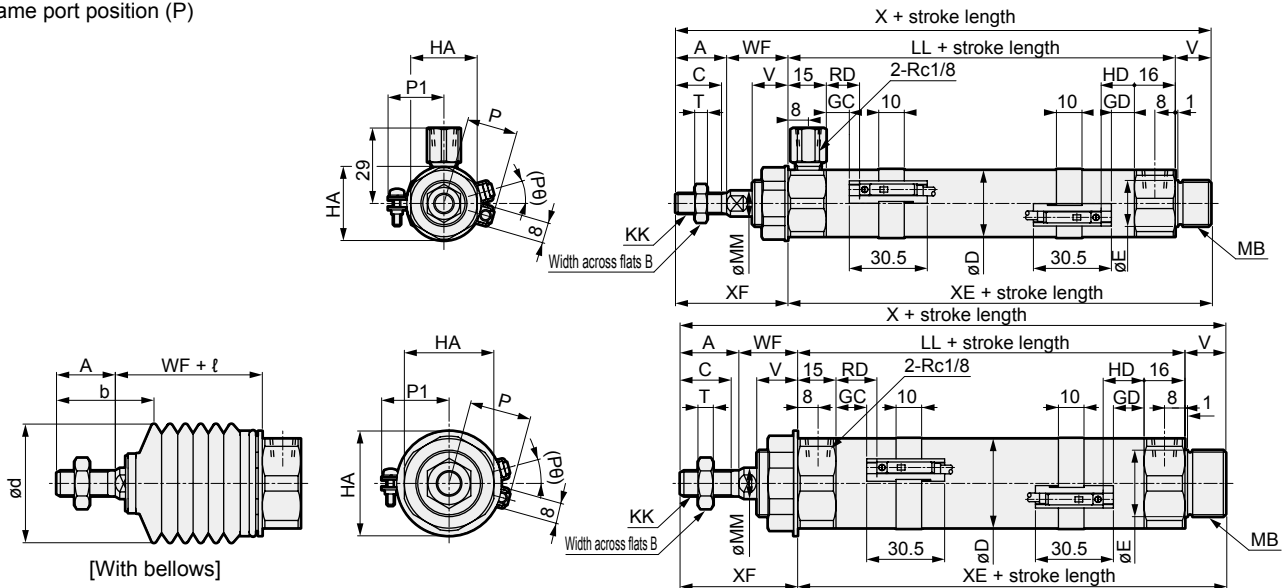
\*1 : For the width across flats of the rod, refer to the dimensions of the basic (00). \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.  
 \*2 : A port nipple is included with the rod cover of  $\phi 20$ . \*5 : For the dimensions of the accessories, refer to page 221.  
 \*3 : For the  $\ell$  dimension, round up below the decimal point.

Code	Clevis bracket (CB) basic dimensions											Mounting dimensions									
	A	B	C	D	E	KK	LL	MB	MM	T	V	WF	CA	CB	CC	CD	CH	CJ	CL	CM	CN
$\phi 20$	20	13	18	25	18	M8×1.0	66	M18×1.5	10	5	14	24	165	14	10	10	26	135	31	24	8
$\phi 30$	23	17	20	35	26	M10×1.25	72	M26×1.5	12	6	16	23	180	18	12	12	35	145	32	30	7
$\phi 40$	25	19	22	45	26	M12×1.5	74	M26×1.5	14	7	16	23	184	18	12	12	35	147	32	30	7

Code	With switch											With bellows								
	CO	CP	CV	CW	T0, T5, T2, T3				T2W, T3W				P	P1	P(θ)°	A	WF	b	d	ℓ
					GC	GD	RD	HD	GC	GD	RD	HD								
$\phi 20$	22	28	19	8	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6
$\phi 30$	26	37	25	10	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7
$\phi 40$	26	37	25	10	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	46	(Stroke length/3.25) + 7

● Same port position (P)



\*1 : A port nipple is included with the rod cover of  $\phi 20$ . \*4 : Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.  
 \*2 : For the width across flats of the rod, refer to the dimensions of the basic (00). \*5 : For the dimensions of the accessories, refer to page 221.  
 \*3 : For the  $\ell$  dimension, round up below the decimal point.

Code	Basic (00) basic dimensions											X	XE	XF			
	A	B	C	D	E	HA	HC	KK	LL	MB	MM				T	V	WF
$\phi 20$	20	13	18	25	18	26	29	M8×1.0	76	M18×1.5	10	5	14	24	134	90	44
$\phi 30$	23	17	20	35	26	35	41	M10×1.25	82	M26×1.5	12	6	16	23	144	98	46
$\phi 40$	25	19	22	45	26	35	41	M12×1.5	84	M26×1.5	14	7	16	23	148	100	48

Code	With switch											With bellows								
	GC	GD	RD	HD	T0, T5, T2, T3				T2W, T3W				P	P1	P(θ)°	A	WF	b	d	ℓ
					GC	GD	RD	HD	GC	GD	RD	HD								
$\phi 20$	9	9	13	13	11	11	15	15	19.5	21	19	20	24	32	30	(Stroke length/3) + 6				
$\phi 30$	12	12	16	16	14	14	18	18	24.5	26	15	23	23	38	46	(Stroke length/3.25) + 7				
$\phi 40$	13	13	17	17	15	15	19	19	29.5	31	12	25	23	40	46	(Stroke length/3.25) + 7				

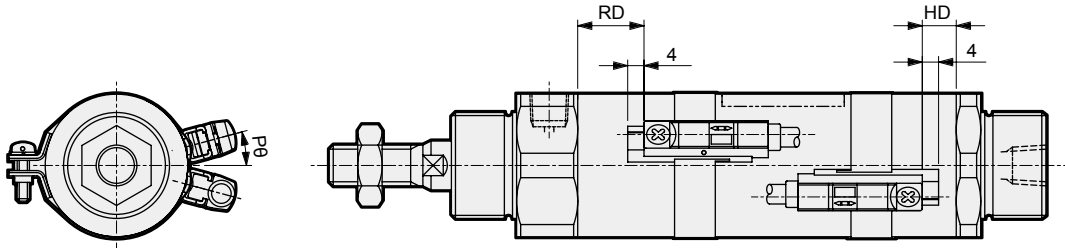
# CMA2 Series

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

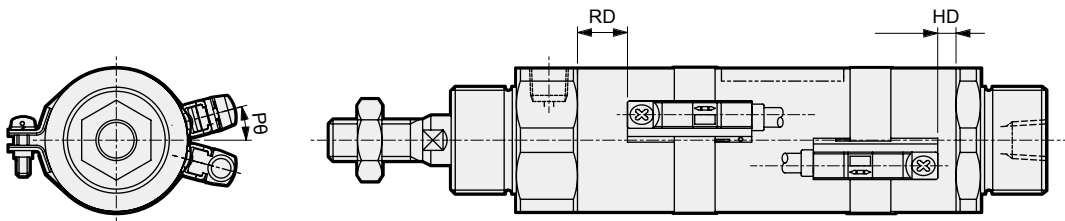
## CMA2 Series common dimensions (2-color display, off-delay, with T1\* and T8\* switches)

● CMA2-20 to 40 (2-color display, off-delay, T1\* switch: T2YH/V, T3YH/V, T2JH/V, T1H/V)

· Stroke length of less than 33 mm



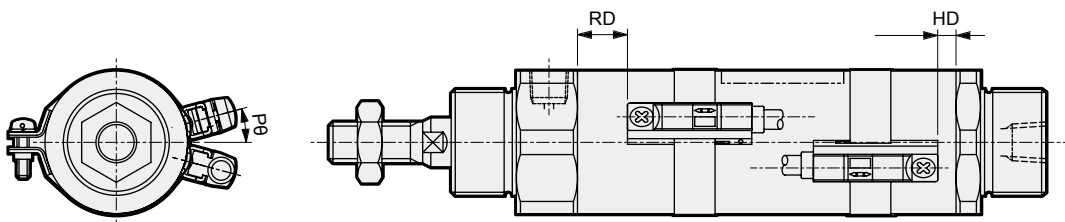
· Stroke length of 33 mm and over



Mounting dimensions of 2 color display, off-delay and T1\* switch

Code	RD	HD	(Pθ)°
Bore size (mm) / ø20	12	12	9
ø30	15	15	15
ø40	16	16	12

● CMA2-20 to 40 (T8 switch: T8\*H/V)



T8\* Switch mounting dimensions

Code	RD	HD	(Pθ)°
Bore size (mm) / ø20	7	7	19
ø30	10	10	15
ø40	11	11	12

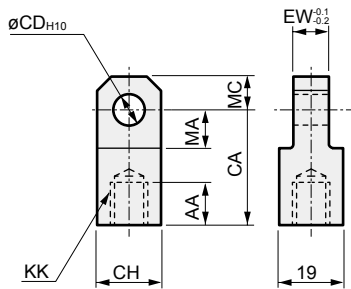


### CMA2 Series common accessory dimensions



#### ● Rod eye (I)

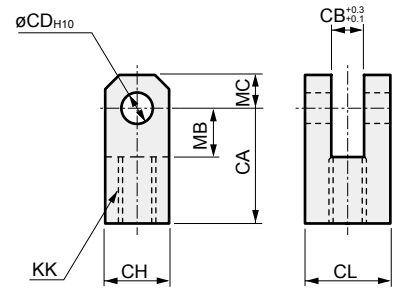
Material: Steel  
Zinc chromate treatment



Model No.	Applicable bore size (mm)	AA	CA	CD	CH	EW	KK	MA	MC	Weight (g)
M1-I-20	20	14	30	10	19	8	M8×1.0	13	10	60
M1-I-30	30	14	36	12	25	10	M10×1.25	16	12	106
M1-I-40	40	14	36	12	25	10	M12×1.5	16	12	100

#### ● Rod clevis (Y)

Material: Steel  
Zinc chromate treatment

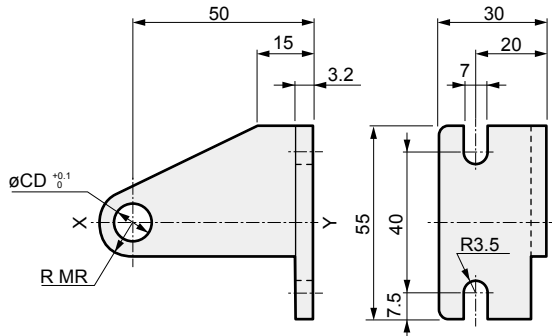


Note: A pin and washer are included.

Model No.	Applicable bore size (mm)	CA	CB	CD	CH	CL	KK	MB	MC	Weight (g)
M1-Y-20	20	30	8	10	19	19	M8×1.0	13	10	99
M1-Y-30	30	36	10	12	25	25	M10×1.25	16	12	197
M1-Y-40	40	36	10	12	25	25	M12×1.5	16	12	193

#### ● Clevis bracket (B2)

Material: Steel  
Zinc chromate treatment



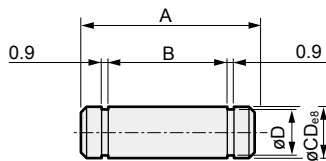
Model No.	Compatible model	Applicable bore size (mm)	CD	MR	Weight (g)
M1-B2-30-CA	CMA2-CA	20	10	11	158
M1-B2-40-CA	Clevis	30/40	12	11	162
M1-B2-20-TA	CMA2-TA/TB	20	8	8	132
M1-B2-30-TA	Trunnion	30/40	10	11	142

\*1: One pair is composed of two pieces with XY symmetry.

\*2: The model No. above includes snap ring and pin. (However, the pin and snap rings are not attached with the trunnion.)

#### ● Clevis bracket pin (P2)

Material: Steel  
Zinc chromate treatment

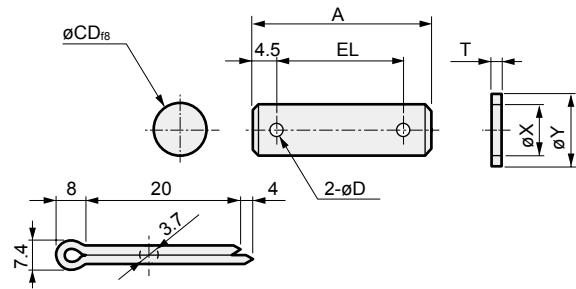


Model No.	Applicable bore size (mm)	A	B	CD	D	Applicable snap ring	Weight (g)
M1-P2-20	20	25	20	10	9	E9	16
M1-P2-30	30/40	27	22	12	9	E9	24

Note: A pin and snap ring for bracket use are included with the product. (However, the pin and snap rings are not attached with the trunnion.)

#### ● Rod clevis pin (P)

Material: Steel  
Zinc chromate treatment



Model No.	Applicable bore size (mm)	A	D	CD	EL	T	X	Y	Weight (g)
M1-P-20	20	37	4	10	28	2	10.5	18	29
M1-P-30	30/40	46	4	12	37	2.5	13	21	50

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

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

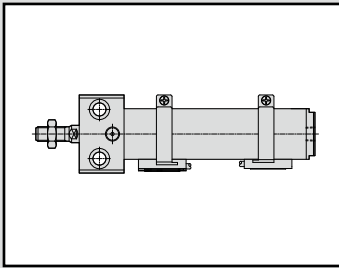
FJ

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

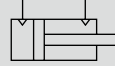


Medium bore size cylinder  
 Double acting/direct mounting

# CMA2-E Series

● Bore size:  $\varnothing 20/\varnothing 30/\varnothing 40$

JIS symbol ● Double acting cylinder single rod



## Specifications

Item	CMA2-E		
Bore size mm	$\varnothing 20$	$\varnothing 30$	$\varnothing 40$
Actuation	Double acting		
Working fluid	Compressed air		
Max. working pressure MPa	0.7 ( $\approx 100$ psi, 7 bar)		
Min. working pressure MPa	0.1 ( $\approx 15$ psi, 1 bar)		
Proof pressure MPa	1.0 ( $\approx 150$ psi, 10 bar)		
Ambient temperature $^{\circ}\text{C}$	-10 (14 $^{\circ}\text{F}$ ) to 60 (140 $^{\circ}\text{F}$ ) (no freezing)		
Port size	Rc1/8		
Stroke tolerance mm	$^{+1.0}_0$ ( to 200), $^{+1.2}_0$ ( to 700)		
Working piston speed mm/s	50 to 500		
Cushion	None		
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)		
Allowable absorbed energy J	0.024	0.05	0.093

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\varnothing 20$	25, 50, 75, 100,	700	1
$\varnothing 30$	150, 200, 250,		
$\varnothing 40$	300		

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

## Min. stroke length with switch (T switch)

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

### Switch specifications

● 1-color/2-color display

Item	Proximity 2-wire	Proximity 2-wire			Proximity 3-wire				Reed 2-wire						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay	For programmable controller, relay (no lamp), serial		For programmable controller, relay			
Output method	-			NPN output	PNP output	NPN output	NPN output	-							
Pwr. supp. V.	-			10 to 28 VDC				-							
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Indicator 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		1 m:18		1 m:33		1 m:33	
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49	3 m:87	3 m:49	3 m:49		3 m:49		3 m:87		3 m:87	
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80	5 m:142	5 m:80	5 m:80		5 m:80		5 m:142		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		Weight per switch		Additional weight per S = 10 mm
			T		
Bore size (mm)	Side foot	Flange	Refer to the weight in the switch specifications.	Switch rail + band weight	
	(LS)	(FA)			
ø20	0.18	0.16		0.005	0.01
ø30	0.36	0.31		0.005	0.014
ø40	0.61	0.51		0.009	0.02

(Example) Product weight of CMA2-E-FA-30-50-TOH-D

- Product weight when S = 0 mm..... 0.31kg
- Additional weight when S = 50 mm ..... Additional weight when S = 10 mm 0.014 ×  $\frac{\text{Product stroke length (50)}}{10}$  = 0.07 kg
- Weight of 2 switches..... 0.036 kg
- Product weight..... 0.31kg + 0.07 kg + 0.036 kg = 0.416kg

### Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø20	Push	31.4	47.1	62.8	94.2	1.26 × 10 <sup>2</sup>	1.57 × 10 <sup>2</sup>	1.88 × 10 <sup>2</sup>	2.20 × 10 <sup>2</sup>
	Pull	23.6	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>
ø30	Push	70.7	1.06 × 10 <sup>2</sup>	1.41 × 10 <sup>2</sup>	2.12 × 10 <sup>2</sup>	2.83 × 10 <sup>2</sup>	3.53 × 10 <sup>2</sup>	4.24 × 10 <sup>2</sup>	4.95 × 10 <sup>2</sup>
	Pull	59.4	89.1	1.19 × 10 <sup>2</sup>	1.78 × 10 <sup>2</sup>	2.38 × 10 <sup>2</sup>	2.97 × 10 <sup>2</sup>	3.56 × 10 <sup>2</sup>	4.16 × 10 <sup>2</sup>
ø40	Push	1.26 × 10 <sup>2</sup>	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>
	Pull	1.10 × 10 <sup>2</sup>	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>

# CMA2-E 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

## How to order

Without switch (built-in magnet for switch)

**CMA2-E - FA - 20 - 25 - M I**

With switch (built-in magnet for switch)

**CMA2-E - FA - 20 - 25 - T0H - R - M I**

**A** Mounting

**B** Bore size

**C** Stroke length

■ The custom stroke length is available in 1 mm increments.

**D** Switch model No.

**E** Switch quantity

**F** Option

**G** Accessory  
\*2

### ⚠ Precautions for model No. selection

\*1: Refer to page 222 for the min. stroke length with switch.

\*2: "I" and "Y" cannot be selected together.

[Example of model No.]

**CMA2-E-FA-20-25-T0H-R-MY**

Model: Medium bore size cylinder, double acting/direct mounting

- A** Mounting : Flange mounting
- B** Bore size :  $\varnothing$ 20 mm
- C** Stroke length : 25 mm
- D** Switch model No. : Reed T0H switch, lead wire 1m
- E** Switch quantity : 1 on rod side
- F** Option : Piston rod material change
- G** Accessory : Rod clevis

Code	Description	
<b>A Mounting</b>		
LS	Side foot mounting	
FA	Flange mounting	
<b>B Bore size (mm)</b>		
20	$\varnothing$ 20	
30	$\varnothing$ 30	
40	$\varnothing$ 40	
<b>C Stroke length (mm)</b>		
Bore size	Stroke length *1	Custom stroke length
$\varnothing$ 20	1 to 700	In 1 mm increments
$\varnothing$ 30	1 to 700	
$\varnothing$ 40	1 to 700	
<b>D Switch model No.</b>		
Refer to the switch model No. table on the following page.		
<b>* Lead wire length</b>		
Blank	1 m (standard)	
3	3 m (option)	
5	5 m (option)	
<b>E Switch quantity</b>		
R	1 on rod side	
H	1 on head side	
D	2	
T	3	
<b>F Option</b>		
M	Piston rod material (stainless steel)	
<b>G Accessory</b>		
I	Rod eye	
Y	Rod clevis (with pin and washer included)	

### [D] Switch model No.

T switch							
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire	
			AC	DC			
T0H*	TOV*	Reed	●	●	1-color display	2-wire	
T5H*	T5V*		●	●	Without indicator lamp		
T8H*	T8V*		●	●	1-color display		
T1H*	T1V*	Proximity	●		1-color display	2-wire	
T2H*	T2V*			●		1-color display	3-wire
T3H*	T3V*			●			
T3PH*	T3PV*			●	1-color display	3-wire	
T2WH*	T2WV*			●	2-color display	2-wire	
T2YH*	T2YV*			●			
T3WH*	T3WV*			●		3-wire	
T3YH*	T3YV*			●	Off-delay	2-wire	
T2JH*	T2JV*			●			

### How to order switch

#### [T switch]

● Switch body + mounting bracket set

**CMA2 - T0H - 40**

↓  
Switch model No.  
(Item ①)

↓  
Bore size  
(Item ② on page 224)

● Switch body only

**SW - T0H**

↓  
Switch model No.  
(Item ①)

● Mounting bracket set

**CMA2 - T - 40**

↓  
Mounting bracket

↓  
Bore size (Item ② on page 224)

### Internal structure

Same as standard. Refer to page 212.

SCP\*3

CMK2

**CMA2**

SCM

SCG

SCA2

SCS2

CKV2

CAV2/  
COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/  
MSDG

FC\*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd  
Contr

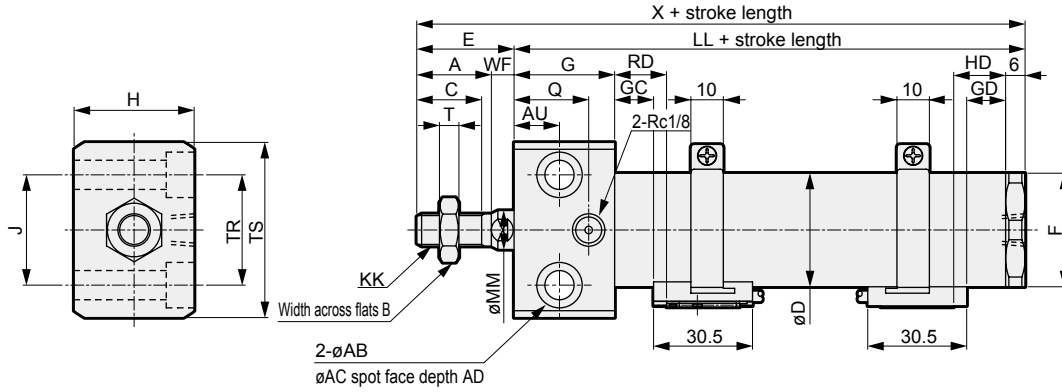
Ending

# CMA2-E Series

## Dimensions



### ● Side foot mounting (LS)



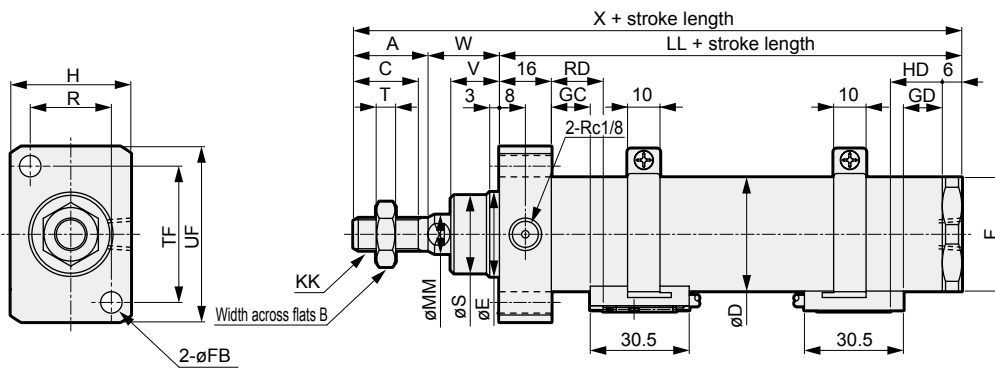
RD: Rod side max. sensitivity position  
HD: Head side max. sensitivity position

\*1: Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.

Code	A	AB	AC	AD	AU	B	C	D	E	F	G	H	J	KK	LL	MM	Q	T	TR	TS	
<b>Bore size (mm)</b>																					
ø20	20	6.6	11	6.5	9.5	13	18	25	31	26	28	28	22	M8×1.0	79	10	20	5	22	38	
ø30	23	9	14	8.6	14	17	20	35	30	35	31	37	30	M10×1.25	88	12	23	6	34	54	
ø40	25	11	17.5	10.8	15	19	22	45	31	46	32	48	41	M12×1.5	91	14	24	7	46	68	

Code	WF	X	With switch										P	P1	(Pθ)°
			T0, T5, T2, T3				T2W, T3W								
			GC	GD	RD	HD	GC	GD	RD	HD					
ø20	11	110	9	9	13	13	11	11	15	15	19.5	21	19		
ø30	7	118	12	12	16	16	14	14	18	18	24.5	26	15		
ø40	6	112	13	13	17	17	15	15	19	19	29.5	31	12		

### ● Flange mounting (FA)



RD: Rod side max. sensitivity position  
HD: Head side max. sensitivity position

\*1: Refer to page 220 for HD, RD, and protruding dimensions of T1\*, T8\* and 2-color display switches.

Code	A	B	C	D	E	F	FB	H	KK	LL	MM	R	S	T	TF	UF	V	W	
<b>Bore size (mm)</b>																			
ø20	20	13	18	25	18	26	5.5	28	M8×1.0	67	10	19	17	5	29	38	12	23	
ø30	23	17	20	35	26	35	6.6	37	M10×1.25	73	12	25	24	6	42	54	15	22	
ø40	25	19	22	45	26	46	9	48	M12×1.5	75	14	32	24	7	52	68	16	22	

Code	X	With switch										P	P1	(Pθ)°
		T0, T5, T2, T3				T2W, T3W								
		GC	GD	RD	HD	GC	GD	RD	HD					
ø20	110	9	9	13	13	11	11	15	15	19.5	21	19		
ø30	118	12	12	16	16	14	14	18	18	24.5	26	15		
ø40	112	13	13	17	17	15	15	19	19	29.5	31	12		

\* For the dimensions of the accessories, refer to page 221.