

SCP\*2  
 CMK2  
 CMA2  
 SCM  
 SCG  
 SCA2  
 SCS  
 CKV2  
 CA/OV2  
 SSD  
 CAT  
 MDC2  
 MVC  
 SMD2  
 MSD\*  
 FC\*  
 STK  
 ULK\*  
 JSK/M2  
 JSG  
 JSC3  
 USSD  
 USC  
 JSB3  
 LMB  
 STG  
 STS/L  
 LCS  
 LCG  
 LCM  
 LCT  
 LCY  
 STR2  
 UCA2  
 HCM  
 HCA  
 SRL2  
 SRG  
 SRM  
 SRT  
 MRL2  
 MRG2  
 SM-25  
 CAC3  
 UCAC  
 RCC2  
 MFC  
 SHC  
 GLC  
 Ending



Medium bore size cylinder, double acting, flow control valve integrated type

# CMK2-Z Series

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

RoHS

## Specifications

Descriptions		CMK2-Z			
Bore size	mm	$\phi$ 20	$\phi$ 25	$\phi$ 32	$\phi$ 40
Actuation		Double acting integrated flow control valve type			
Working fluid		Compressed air			
Max. working pressure	MPa	1.0			
Min. working pressure	MPa	0.1			
Withstanding pressure	MPa	1.6			
Ambient temperature	°C	-10 to 60 (no freezing)			
Port size		Rc1/8			
Stroke tolerance	mm	$^{+2.0}_{-0}$ (up to 200), $^{+2.4}_{-0}$ (over 200)			
Working piston speed	mm/s	50 to 300			
Cushion		Rubber cushion			
Lubrication		Not required (when lubricating, use turbine oil Class 1 ISO VG32.)			
Allowable energy absorption	J	0.166	0.308	0.424	0.639

## Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi$ 20	25, 50, 75, 100, 150, 200, 250, 300	750	5
$\phi$ 25			
$\phi$ 32			
$\phi$ 40			

Note 1: Custom stroke length is available per 1 mm increment.  
 Note 2: For single foot type (LS type), maximum stroke length is 50 mm.  
 Note 3: For bellows "J" type, stroke length should be longer than 25 mm.  
 Consult with CKD when stroke length is shorter than 25 mm.

## Min. stroke length of type with switch

(Unit: mm)

Switch quantity	1					2				3			
	Proximity		Reed			Proximity		Reed		Proximity		Reed	
	T2, T3	T1, T*Y*	T0, T5	T8		T2, T3	T1, T*Y*	T0, T5	T8	T2, T3	T1, T*Y*	T0, T5	T8
Bore size (mm)													
$\phi$ 20	10					25	35	25	35	50	55	50	55
$\phi$ 25	10					25	35	25	35	50	55	50	55
$\phi$ 32	10					25	35	25	35	50	55	50	55
$\phi$ 40	10					25	35	25	35	50	55	50	55

Note 1: Up to three switches can be mounted.

### Switch specifications

● 1 color/2 color indicator

\* The T0/T5 switch can be used with 220 VAC.  
Contact CKD for working conditions.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	TOH/TOV		T5H/T5V		T8H/T8V		
Applications	Programmable controller Relay, small solenoid valve	Programmable controller dedicated		Programmable controller, relay			Programmable controller, relay		Programmable controller, relay, IC circuit (w/o light), serial connection		Programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		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
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/Green LED (ON lighting)	LED (ON lighting)		Without indicator light		LED (ON lighting)		
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0 mA						

● With preventive maintenance output

Descriptions		Proximity 3-wire	Proximity 4-wire	Proximity 3-wire	Proximity 4-wire
		T2YFH/V	T3YFH/V	T2YMH/V	T3YMH/V
Applications		Programmable controller dedicated	Programmable controller, relay	Programmable controller dedicated	Programmable controller, relay
Output method		NPN output			
Light	Installation position adjustment	Red/Green LED (ON lighting)			
	Preventive maintenance output	-		Yellow LED (ON lighting)	
Regular Output section	Power voltage	-	10 to 28 VDC	-	10 to 28 VDC
	Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	30 VDC or less
	Load current	5 to 20 mA	50 mA or less	5 to 20 mA	50 mA or less
	Leakage current	1 mA or less	10 $\mu$ A or less	1.2 mA or less	10 $\mu$ A or less
Preventive maintenance Output section	Load voltage	30 VDC or less			
	Load current	20 mA or less	50 mA or less	5 to 20 mA or less	50 mA or less
	Leakage current	10 $\mu$ A or less			

Note 1: Refer to Ending 1 for other switches.

Note 2: The above maximum load current of 20 mA applies at 25 °C. If the switch's working ambient temperature exceeds 25 °C, the load current will be lower than 20 mA.  
(5 to 10 mA when 60 °C )

### Cylinder weight

(Unit: kg)

Descriptions/mounting style	Product weight when stroke length (S) = 0 mm								Switch weight	Switch rail + band weight	Additional weight per S = 10 mm
	Basic type (00)	Axial foot type (LB)	Flange type (LS)	Flange type (FA/FB)	Eye bracket type (CA)	Clevis type (CC)	Clevis bracket type (CB)	Trunnion type (TA/TB)	Grommet		
Bore size (mm)											
φ 20	0.18	0.33	0.26	0.24	0.33	0.19	0.33	0.23	0.018	0.005	0.01
φ 25	0.28	0.54	0.41	0.43	0.52	0.28	0.52	0.38	0.018	0.005	0.01
φ 32	0.32	0.58	0.45	0.47	0.56	0.32	0.56	0.42	0.018	0.009	0.02
φ 40	0.51	0.77	0.64	0.66	0.75	0.53	0.75	0.67	0.018	0.009	0.02

(E.g.) Product weight of  
CMK2-Z-FA-32-50-T0H-D

When S = 0 mm, product weight is 0.47 kg  
Additional weight at S = 50 mm is additional weight at S = 10 mm 0.02 X  $\frac{\text{Product stroke length (50)}}{10}$  = 0.10 kg  
Weight of two switches is 0.036 kg  
Weight of switch rail and two bands is 0.018 kg  
Product weights is 0.47 kg + 0.1 kg + 0.036 kg + 0.018 kg = 0.624 kg

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
RCC2  
MFC  
SHC  
GLC  
Ending  
Medium bore size cylinder  
Standard type

## How to order

Without switch

CMK2-Z - 00 - 20 - 100 - V Y

With switch

CMK2-Z - 00 - 20 - 100 - T0H - R - V Y

A Mounting style  
Note 1

B Bore size

C Port thread type

D Stroke length

E Switch model no.

F Switch quantity  
Note 9

G Option  
Note 3, Note 4, Note 5

H Accessory  
Note 6

## Note on model no. selection

Note 1: The maximum stroke of the single-end foot type (LS type) is 50 mm.

Note 2: Refer to page 172 for min. stroke length with switch.

Note 3: Applicable tube O.D. of F; push-in joint (straight), FE; push-in joint (elbow) is  $\phi$  6.

Note 4: For bellows "J" type, stroke length should be more than 25 mm. Consult with CKD when stroke length is shorter than 25 mm.

Note 5: Instantaneous maximum temperature is the temperature when spark and spatter etc. instantaneously contacts to bellows.

Note 6: "I" "Y" can not be selected at the same time.

Note 7: Refer to Ending 89 for the custom order specifications of rod end form.

Note 8: Refer to page 84 for variation and combinations of options.

Note 9: Up to three switches can be mounted. If more than four switches are required, switch mounting brackets for the extra switches must be prepared separately.

<Example of model number>

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

Model: Medium bore size cylinder, double acting, speed controller integrated type

A Mounting style : Basic type

B Bore size :  $\phi$  20 mm

C Port thread type : Rc thread

D Stroke length : 100 mm

E Switch model no. : Reed T0H switch and lead wire 1 m

F Switch quantity : One on rod end

G Option : Boss cut off

H Accessory : Rod clevis

Symbol	Descriptions
<b>A Mounting style</b>	
00	Basic type
LB	Axial foot type (both sides)
LS	Axial foot type (single)
FA	Rod side flange type
FB	Head side flange type
CA	Eye bracket type
CC	Fixed eye
CC1	Eye and bush press fitted type
CB	Clevis bracket type (pin and washer split pin attached)
TA	Rod side trunnion type
TB	Head side trunnion type

<b>B Bore size (mm)</b>	
20	$\phi$ 20
25	$\phi$ 25
32	$\phi$ 32
40	$\phi$ 40

<b>C Port thread type</b>	
Blank	Rc thread
NN	NPT thread (custom order)
GN	G thread (custom order)

<b>D Stroke length (mm)</b>		
Bore size	Stroke length Note 2	Bore size
$\phi$ 20	5 to 750	By 1 mm increment
$\phi$ 25	5 to 750	
$\phi$ 32	5 to 750	
$\phi$ 40	5 to 750	

<b>E Switch model no.</b>				
Lead wire	Lead wire	Contact	Indicator	Lead wire
Straight type	L type			
T0H*	T0V*	Reed	1 color	2-wire
T5H*	T5V*		Without indicator light	
T8H*	T8V*		1 color	
T1H*	T1V*	Proximity	1 color	2-wire
T2H*	T2V*		1 color (custom order)	3-wire
T3H*	T3V*			
T3PH*	T3PV*		2 color	2-wire
T2YH*	T2YV*		2 color (w/o light for preventive maintenance output)	3-wire
T3YH*	T3YV*			4 wire
T2YFH*	T2YFV*		2 color	3-wire
T3YFH*	T3YFV*		2 color (Light available for preventive maintenance output (1 color))	4 wire
T2YMH*	T2YMV*			3-wire
T3YMH*	T3YMV*		Off-delay type	2-wire
T2JH*	T2JV*			

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

<b>F Switch quantity</b>	
R	One on rod end
H	One on head end
D	Two
T	Three

<b>G Option</b>			
		Max. ambient	Max. instantaneous
J	Bellows	100 °C	200 °C
L	Bellows	250 °C	400 °C
F	Push-in joint (straight)		
FE	Push-in joint (elbow)		
M	Piston rod material (stainless steel)		
V	Boss cut off		
P6	Copper and PTFE free (custom order)		

<b>H Accessory</b>	
I	Rod eye
Y	Rod clevis (pin and washer split pin attached)
B2	Clevis bracket (pin and snap ring attached)

### How to order switch

- Switch body + mounting bracket

**CMK2** - **T0H** - **20**

Switch model no. (item ⑤ on previous page) Bore size (item ③ on previous page)

- Only switch body

**SW** - **T0H**

Switch model no. (item ⑤ on previous page)

- Mounting bracket

**CMK2** - **T** - **20**

Bracket Bore size (item ③ on previous page)

### How to order mounting bracket

Bore size (mm)	φ20	φ25	φ32	φ40
Mounting bracket				
Axial foot type (LB/LS)	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Flange (FA/FB)	M1-FA-20	M1-FA-30	M1-FA-30	M1-FA-30
Trunnion (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-30	M1-TA-40
Eye bracket type (CA)	M1-CA-20	M1-CA-30	M1-CA-30	M1-CA-30
Clevis bracket type (CB)	M1-CB-20	M1-CB-30	M1-CB-30	M1-CB-30

Note 1: Mounting nut/toothed washer are attached to each mounting bracket.

Note 2: Two sets of "M1-LB-\*" in the above table are required for the axial direction foot (double-sided).

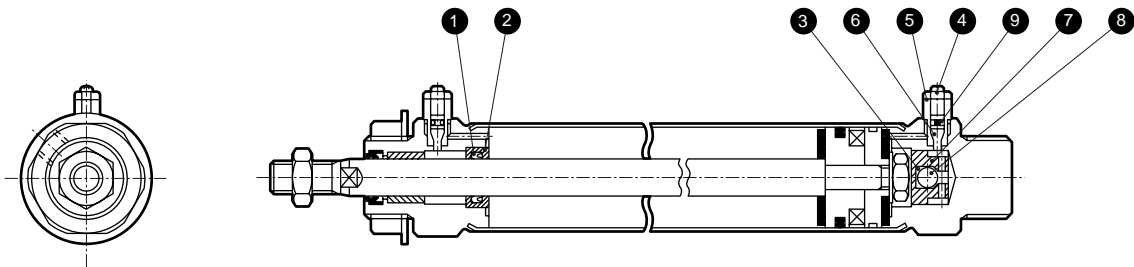
SCP*2
<b>CMK2</b>
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Medium bore size cylinder  
Standard type

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Internal structure and parts list

● CMK2-Z

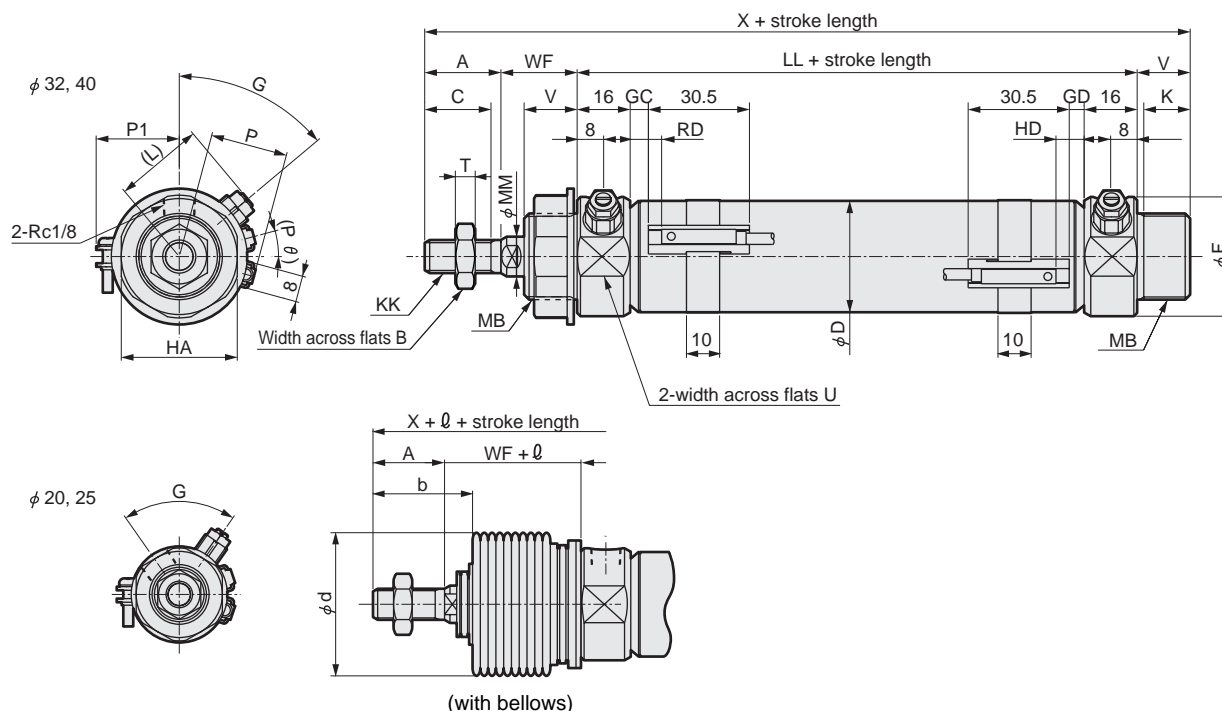


● Note: This caulking type cannot be disassembled.

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Check packing seal	Nitrile rubber		5	Needle holder	Steel	Zinc chromate
2	Packing seal adaptor	Carbon steel	Chromate	6	Needle	Steel	Zinc chromate
3	Check ball holder	Steel	Zinc chromate	7	Check ball holder	Carbon steel	Blackening
4	Hexagon nut	Steel	Zinc chromate	8	Urethane ball	Urethane rubber	
				9	Needle gasket	Nitrile rubber	

### Dimensions

#### ● Integrated flow control valve type



Note 1: Refer to page 188 for the HD, RD, and projecting dimensions of the T1\* and T8\* switches and 2-color indicator switch with preventive maintenance output.

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

Note 2: For  $\ell$  dimensions, round up decimal point or less.

Note 3: Refer to page 190 for dimensions of accessories.

Symbol	Basic type (00) basic dimensions																	
Bore size (mm)	A	B	C	D	F	G	HA	K	KK	L	LL	MB	MM	T	U	V	WF	X
$\phi 20$	20	13	18	21.4	28	70°	26	12	M8 x 1.0	23	66	M18 x 1.5	10	5	24	14	24	124
$\phi 25$	23	17	20	26.4	32	60°	35	14	M10 x 1.25	26	69	M26 x 1.5	12	6	30	16	23	131
$\phi 32$	23	17	20	33.6	36	50°	35	14	M10 x 1.25	27	69	M26 x 1.5	12	6	34	16	23	131
$\phi 40$	25	19	22	41.6	45	50°	35	14	M12 x 1.5	31	73	M26 x 1.5	14	7	43	16	23	137
Symbol	With switch								With bellows									
Bore size (mm)	GC	GD	RD	HD	P	P1	(P $\theta$ )°	b	d	$\ell$								
$\phi 20$	4.0	3.0	8.0	7.0	17.3	19.5	22	30	30	(stroke length/3) + 6								
$\phi 25$	5.5	4.5	9.5	8.5	19.8	22.0	18	32	46	(stroke length/3.25) + 7								
$\phi 32$	5.5	4.5	9.5	8.5	24.3	25.5	15	32	46	(stroke length/3.25) + 7								
$\phi 40$	7.0	6.5	11.5	10.5	28.3	29.5	12	34	46	(stroke length/3.25) + 7								

Dimensions of each mounting type are same as standard type. Refer to pages 96 to 101.

SCP\*2  
CMK2  
CMA2  
SCM  
SCG  
SCA2  
SCS  
CKV2  
CA/OV2  
SSD  
CAT  
MDC2  
MVC  
SMD2  
MSD\*  
FC\*  
STK  
ULK\*  
JSK/M2  
JSG  
JSC3  
USSD  
USC  
JSB3  
LMB  
STG  
STS/L  
LCS  
LCG  
LCM  
LCT  
LCY  
STR2  
UCA2  
HCM  
HCA  
SRL2  
SRG  
SRM  
SRT  
MRL2  
MRG2  
SM-25  
CAC3  
UCAC  
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MFC  
SHC  
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Ending

Medium bore size cylinder  
Standard type