

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 air cushioned

CMK2-C Series

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

JIS symbol ● Double acting

RoHS

Specifications

| Descriptions | CMK2-C | | | |
|-------------------------------|--|-----------|-----------|-----------|
| Bore size mm | $\phi 20$ | $\phi 25$ | $\phi 32$ | $\phi 40$ |
| Actuation | Double acting air cushioned | | | |
| 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 700 | | | |
| Cushion | Air cushion | | | |
| Effective cushion length mm | 12 | | | |
| Allowable energy absorption J | 0.34 | 0.46 | 0.88 | 1.27 |
| Lubrication | Not required (when lubricating, use turbine oil Class 1 ISO VG32.) | | | |

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 μ A or less | 1.2 mA or less | 10 μ 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 μ 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 (00) | Axial foot (LB) | Axial foot (LS) | Flange (FA/FB) | Eye bracket (CA) | Clevis (CC) | Clevis bracket (CB) | Trunnion (TA/TB) | Grommet | | |
| φ 20 | 0.17 | 0.32 | 0.25 | 0.23 | 0.32 | 0.18 | 0.32 | 0.22 | 0.018 | 0.005 | 0.01 |
| φ 25 | 0.26 | 0.52 | 0.39 | 0.41 | 0.50 | 0.26 | 0.50 | 0.36 | 0.018 | 0.005 | 0.01 |
| φ 32 | 0.30 | 0.56 | 0.43 | 0.45 | 0.54 | 0.30 | 0.54 | 0.40 | 0.018 | 0.009 | 0.02 |
| φ 40 | 0.48 | 0.74 | 0.61 | 0.63 | 0.72 | 0.50 | 0.72 | 0.64 | 0.018 | 0.009 | 0.02 |

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

When S = 0 mm, product weight is 0.45 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 weight is 0.45 kg + 0.1 kg + 0.036 kg + 0.018 kg = 0.604 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-C - 00 - 20 - 100 - V I

With switch

CMK2-C - 00 - 20 - 100 - T0H - R - V I

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 138 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" and "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-C-00-20-100-T0H-R-VI

Model: Medium bore size cylinder, double acting, air cushioned

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 eye

| Symbol | Descriptions |
|-------------------------|---|
| A Mounting style | |
| 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 Bore size (mm) | |
| 20 | $\phi 20$ |
| 25 | $\phi 25$ |
| 32 | $\phi 32$ |
| 40 | $\phi 40$ |

| | |
|---------------------------|---------------------------|
| C Port thread type | |
| Blank | Rc thread |
| NN | NPT thread (custom order) |
| GN | G thread (custom order) |

| D Stroke length (mm) | | |
|-----------------------------|----------------------|----------------------|
| Bore size | Stroke length Note 2 | Custom stroke length |
| $\phi 20$ | 5 to 750 | By 1 mm increment |
| $\phi 25$ | 5 to 750 | |
| $\phi 32$ | 5 to 750 | |
| $\phi 40$ | 5 to 750 | |

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

| | |
|---------------------------|----------------|
| * Lead wire length | |
| Blank | 1 m (standard) |
| 3 | 3 m (option) |
| 5 | 5 m (option) |

| | |
|--------------------------|-----------------|
| F Switch quantity | |
| R | One on rod end |
| H | One on head end |
| D | Two |
| T | Three |

| G Option | | | |
|-----------------|---------------------------------------|--------------|--------------------|
| | | 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 | | |

| | |
|--------------------|--|
| H Accessory | |
| 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 ③ on previous page) Bore size (item ⑤ on previous page)

- Only switch body

SW - **T0H**

Switch model no. (item ③ on previous page)

- Mounting bracket

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

Bracket Bore size (item ⑤ 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).

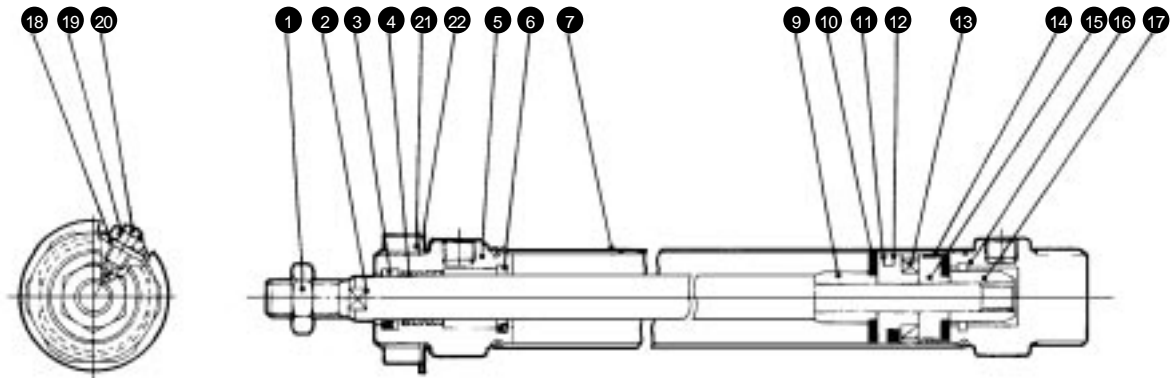
| |
|-------------|
| SCP*2 |
| CMK2 |
| CMA2 |
| SCM |
| SCG |
| SCA2 |
| SCS |
| CKV2 |
| CA/OV2 |
| SSD |
| CAT |
| MDC2 |
| MVC |
| SMD2 |
| MSD* |
| FC* |
| STK |
| ULK* |
| JSK/M2 |
| JSG |
| JSC3 |
| USSD |
| USC |
| JSB3 |
| LMB |
| STG |
| STS/L |
| LCS |
| LCG |
| LCM |
| LCT |
| LCY |
| STR2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

Medium bore size cylinder
Standard type

| |
|--------|
| 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-C

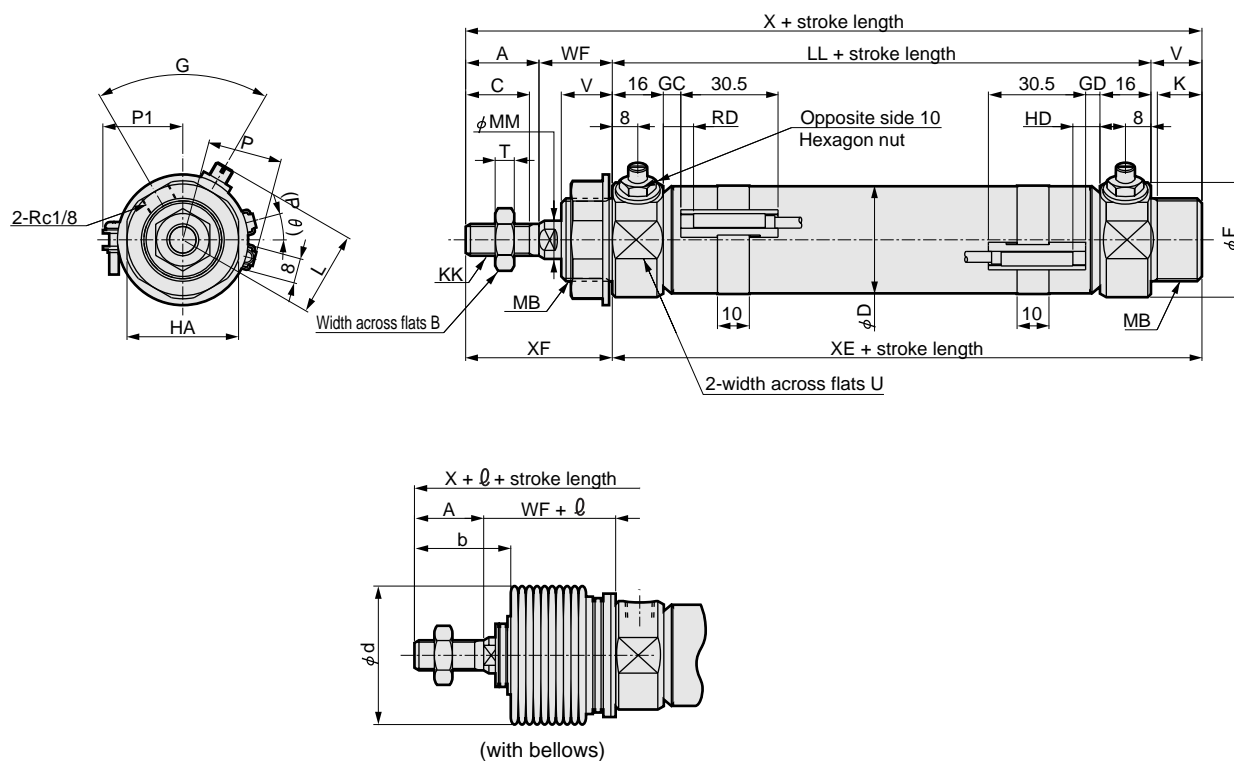


● Note: This caulking type cannot be disassembled.

| No. | Parts name | Material | Remarks | No. | Parts name | Material | Remarks |
|-----|----------------------|---|---------------------------|-----|---------------------------|--------------------------|---------------|
| 1 | Rod nut | Steel | Zinc chromate | 14 | Wear ring | Polyacetal | |
| 2 | Piston rod | $\phi 20, \phi 25$: Stainless steel $\phi 32, \phi 40$: Carbon steel | Industrial chrome plating | 15 | Piston B | Aluminum alloy | |
| 3 | Rod packing seal | Nitrile rubber | | 16 | Head cover | Aluminum alloy | |
| 4 | Bush | $\phi 20, \phi 25, \phi 32$: Dry bearing $\phi 40$: Copper | | 17 | Cushion ring B | Aluminum alloy | |
| 5 | Rod cover | Aluminum alloy | | 18 | Die thread | Nitrile rubber and steel | |
| 6 | Cushion packing seal | Urethane rubber | | 19 | Hexagon nut | Steel | Zinc chromate |
| 7 | Cylinder tube | Stainless steel | | 20 | Cushion adjustment needle | Copper | Zinc chromate |
| 9 | Cushion ring A | Aluminum alloy | | 21 | Nut | Steel | Zinc chromate |
| 10 | Cushion rubber | Urethane rubber | | 22 | The toothed washer | Steel | Zinc chromate |
| 11 | Piston A | Aluminum alloy | | | | | |
| 12 | Piston packing seal | Nitrile rubber | | | | | |
| 13 | Magnet | Plastic | | | | | |

Dimensions

- Basic type (00)
- T type with switch



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 ℓ dimensions, round up decimal point or less.

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

| Symbol | A | B | C | D | F | G | HA | K | KK | L | LL | MB | MM | T | U | V | WF | X | XE | XF |
|----------------|-------------|-----|------|------|------|------|----------------------------|--------------|------------|--------------------------|----|-----------|----|---|----|----|----|-----|----|----|
| Bore size (mm) | | | | | | | | | | | | | | | | | | | | |
| $\phi 20$ | 20 | 13 | 18 | 21.4 | 28 | 70 | 26 | 12 | M8 x 1.0 | 23 to 25 | 66 | M18 x 1.5 | 10 | 5 | 24 | 14 | 24 | 124 | 80 | 44 |
| $\phi 25$ | 23 | 17 | 20 | 26.4 | 32 | 60 | 35 | 14 | M10 x 1.25 | 25 to 27 | 69 | M26 x 1.5 | 12 | 6 | 30 | 16 | 23 | 131 | 85 | 46 |
| $\phi 32$ | 23 | 17 | 20 | 33.6 | 36 | 60 | 35 | 14 | M10 x 1.25 | 25 to 26.5 | 69 | M26 x 1.5 | 12 | 6 | 34 | 16 | 23 | 131 | 85 | 46 |
| $\phi 40$ | 25 | 19 | 22 | 41.6 | 45 | 60 | 35 | 14 | M12 x 1.5 | 31.5 to 33 | 73 | M26 x 1.5 | 14 | 7 | 43 | 16 | 23 | 137 | 89 | 48 |
| Symbol | With switch | | | | | | | With bellows | | | | | | | | | | | | |
| Bore size (mm) | GC | GD | RD | HD | P | P1 | (P θ) ^a | b | d | ℓ | | | | | | | | | | |
| $\phi 20$ | 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
RCC2
MFC
SHC
GLC
Ending

Medium bore size cylinder
Standard type