

# Non-rotating Rod: Double Acting Single Rod

# Series CM2K



ø20, ø25, ø32, ø40

## How to Order

Mounting			
<b>B</b>	Basic	<b>T</b>	Rear trunnion
<b>L</b>	Axial foot	<b>E</b>	Integrated clevis
<b>F</b>	Front flange	<b>BZ</b>	Boss-cut basic
<b>G</b>	Rear flange	<b>FZ</b>	Boss-cut front flange
<b>C</b>	Single clevis	<b>UZ</b>	Boss-cut front trunnion
<b>D</b>	Double clevis		
<b>U</b>	Front trunnion		

**Cylinder stroke(mm)**  
Refer to p.1.4-51 for Standard Stroke Table.

Cushion	
—	Rubber bumper
<b>A</b>	Air cushion

Standard

With auto switch

CM2K **L** **40** — **150** **A** **J**

CDM2K **L** **40** — **150** **A** **J** — **C73**

Bore size	
<b>20</b>	20mm
<b>25</b>	25mm
<b>32</b>	32mm
<b>40</b>	40mm

Rod boot	
—	Without rod boot
<b>J</b>	Nylon tarpaulin
<b>K</b>	Heat resistant tarpaulin

Number of auto switches	
—	2
<b>S</b>	1
<b>n</b>	n

**Auto switch**

—	Without auto switch (Built-in magnet)
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\* Refer to the table below for selecting applicable auto switches.

- CJ1
- CJP
- CJ2
- CM2
- C85
- CG1
- MB
- C95
- CA1
- CS1

### Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Auto switch model	Lead wire* (m)				Applicable load	
					DC	AC		0.5 (—)	3 (L)	5 (Z)	None (N)		
Reed switch	—	Grommet	Yes	3 wire (NPN)	24V	5V	—	<b>C76</b>	●	●	—	—	IC
						12V	100V	<b>C73</b>	●	●	●	—	Relay PLC
						5V, 12V	100V or less	<b>C80</b>	●	●	—	—	IC
						12V	—	<b>B53</b>	●	●	●	—	PLC
						12V	100V, 200V	<b>B54</b>	●	●	●	—	—
						12V	200V or less	<b>B64</b>	●	●	—	—	Relay PLC
						12V	—	<b>C73C</b>	●	●	●	●	—
						5V, 12V	24V or less	<b>C80C</b>	●	●	●	●	IC
						12V	—	<b>A33A</b>	—	—	—	●	PLC
						12V	100V, 200V	<b>A34A</b>	—	—	—	●	—
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	<b>H7A1</b>	●	●	○	—	IC
						12V	—	<b>H7A2</b>	●	●	○	—	—
						12V	—	<b>H7B</b>	●	●	○	—	—
						12V	—	<b>H7C</b>	●	●	●	●	—
						5V, 12V	—	<b>G39A</b>	—	—	—	●	IC
						12V	—	<b>K39A</b>	—	—	—	●	—
						5V, 12V	—	<b>H7NW</b>	●	●	○	—	Relay PLC
						5V, 12V	—	<b>H7PW</b>	●	●	○	—	IC
						12V	—	<b>H7BW</b>	●	●	○	—	—
						12V	—	<b>H7BA</b>	—	●	○	—	—
Diagnostic indicator (2color)	Water resistant (2color)	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	<b>G5NT</b>	—	●	○	—	IC
						12V	—	<b>H7NF</b>	●	●	○	—	—
						12V	—	<b>H7LF</b>	●	●	○	—	—
						5V, 12V	—	—	—	—	—	—	—
						—	—	—	—	—	—	—	—
Diagnostic output (2color)	Latch with diagnostic output (2color)	Grommet	Yes	4 wire (NPN)	24V	—	—	—	—	—	—	—	



\* Lead wire length  
 0.5m : —  
 3m : L  
 5m : Z  
 None: N  
 e.g.) C80CZ, C80CN

\* Solid state switches marked with "○" are manufactured upon receipt of order.  
 \* Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

# Series CM2K

A cylinder in which the rod does not rotate because of its hexagonal shape.

**Non-rotating accuracy**  
**ø20, ø25—±0.7°**  
**ø32, ø40—±0.5°**

**Can operate without lubrication.**

**The same installation dimensions as the standard cylinder.**

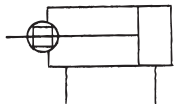
**Auto switches can also be mounted.**

It can be installed with auto switches to detect the stroke position of the cylinder.



## JIS symbol

Double acting/Single rod



**Made to Order**

Refer to p.5.4-1 for made to order specifications of series CM2K.

## Specifications

Bore size (mm)	ø20	ø25	ø32	ø40
Rod non-rotating accuracy	±0.7°		±0.5°	
Style	Air cylinder			
Action	Double acting/Single rod			
Fluid	Air			
Cushion	Rubber bumper			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.05MPa			
Ambient and fluid temperature	Without auto switch: -10 to +70°C (No freezing) With auto switch: -10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	+1.4 0			
Piston speed (mm/s)	50 to 500			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

## Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)
20	
25	25, 50, 75, 100, 125, 150
32	200, 250, 300
40	



Note 1) Other intermediate strokes can be manufactured upon receipt of order. Contact SMC for longer strokes.

## Minimum Strokes for Auto Switch Mounting

Auto switches can be mounted. Refer to p.1.4-4 for minimum stroke table.

## Rod Boot Materials

Symbol	Material	Max. ambient temp.
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

\* Maximum ambient temperature for the gaiter only.

## Mounting Bracket Part No.

Bore size (mm)	20	25	32	40
Axial foot*	CM-L020B	CM-L032B	CM-L040B	CM-L040B
Flange	CM-F020B	CM-F032B	CM-F040B	CM-F040B
Single clevis	CM-C020B	CM-C032B	CM-C040B	CM-C040B
Double clevis** (with pins)	CM-D020B	CM-D032B	CM-D040B	CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B	CM-T040B	CM-T040B

\* Two foot brackets and a mounting nut are attached.

\*\* Clevis pins and snap rings (cotter pins for bore size 40) are attached.

## Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040



Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)

BBA3: D-B5/B6/G5  
BBA4: D-C7/C8/H7

· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.

When a switch only is shipped, "BBA4" screws are attached.

# Non-rotating Rod: Double Acting Single Rod *Series CM2K*

## Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.



### Comparison of total cylinder length with standard style (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

### Mounting

- Boss-cut basic (BZ)
- Boss-cut flange (FZ)
- Boss-cut trunnion (UZ)

## ⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instruction and common precautions and refer to p.1.4-5 for those on CM2 series.

### Handling

### ⚠ Cautions

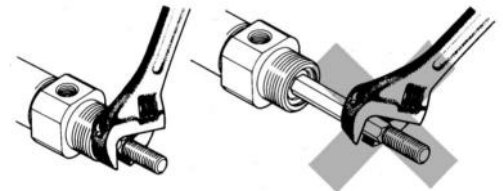
① Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

· If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.

Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque (Nm)	ø20	ø25	ø32	ø40
	0.2	0.25	0.25	0.44

· To screw a bracket or a nut onto the threaded portion at the tip of the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.



② To replace a rod seal, contact SMC.

A rod seal could lead to an air leak, depending on the position in which it is fitted. Therefore, make sure to contact SMC if a rod seal must be replaced.

## Mounting Accessories

Accessories	Standard			Option			
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint (3)	Pivot bracket	Rod boot
Basic	●(1 pc.)	●	—	●	●	—	●
Axial foot	●(2)	●	—	●	●	—	●
Front flange	●(1)	●	—	●	●	—	●
Rear flange	●(1)	●	—	●	●	—	●
Integrated clevis	—(1)	●	—	●	●	●	●
Single clevis	—(1)	●	—	●	●	—	●
Double clevis (3)	—(1)	●	●	●	●	—	●
Front trunnion	●(1)(2)	●	—	●	●	—	●
Rear trunnion	●(1)(2)	●	—	●	●	—	●
Boss-cut basic	●(1)	●	—	●	●	—	●
Boss-cut flange	●(1)	●	—	●	●	—	●
Boss-cut trunnion	●(1)	●	—	●	●	—	●
Note					With pins	With pins	



Note 1) Mounting nuts are not attached for the integrated clevis, the single clevis, and the double clevis styles.

Note 2) Trunnion nuts are attached for the front trunnion and the rear trunnion style.

Note 3) Pins and snap rings (cotter pins for bore size 40) are attached for double clevis and the double knuckle joint.

## Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic	0.14	0.21	0.28	0.57
	Axial foot	0.29	0.37	0.44	0.84
	Flange	0.20	0.30	0.37	0.69
	Integrated clevis	0.12	0.19	0.27	0.53
	Single clevis	0.18	0.25	0.32	0.66
	Double clevis	0.19	0.27	0.33	0.70
	Trunnion	0.18	0.28	0.34	0.67
	Boss-cut basic	0.13	0.19	0.26	0.53
	Boss-cut flange	0.19	0.28	0.35	0.66
Boss-cut trunnion	0.17	0.26	0.32	0.63	
Additional weight by each 50 stroke		0.04	0.07	0.09	0.14
Accessory	Pivot bracket (with pins)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Calculation example: CM2KL32-100

- Basic weight: 0.44 (Foot, ø32)
  - Additional weight: 0.09/50 stroke
  - Cylinder stroke: 100 stroke
- 0.44 + 0.09 X 100/50 = 0.62kg

# Series CM2K

## Copper Free

20-CM2K Mounting Bore size Stroke

• Copper free

This cylinder eliminates any influences of copper ions or fluororesins on color CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.



### Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piston speed	50 to 500mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

## With Air Cushion

CM2K Mounting Bore size Stroke **A**

• With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.



### Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Air cushion
Piston speed	50 to 500mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

\*Auto switches can be mounted.

### Allowable Kinetic Energy

Bore size (mm)	Effective cushion length (mm)	Allowable kinetic energy
20	11.0	0.54J
25	11.0	0.78J
32	11.0	1.27J
40	11.8	2.35J

- Construction: Refer to p.1.4-54.
- Dimensions: Refer to p.1.4-55.
- Refer to p.1.4-51 for other specifications.

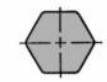
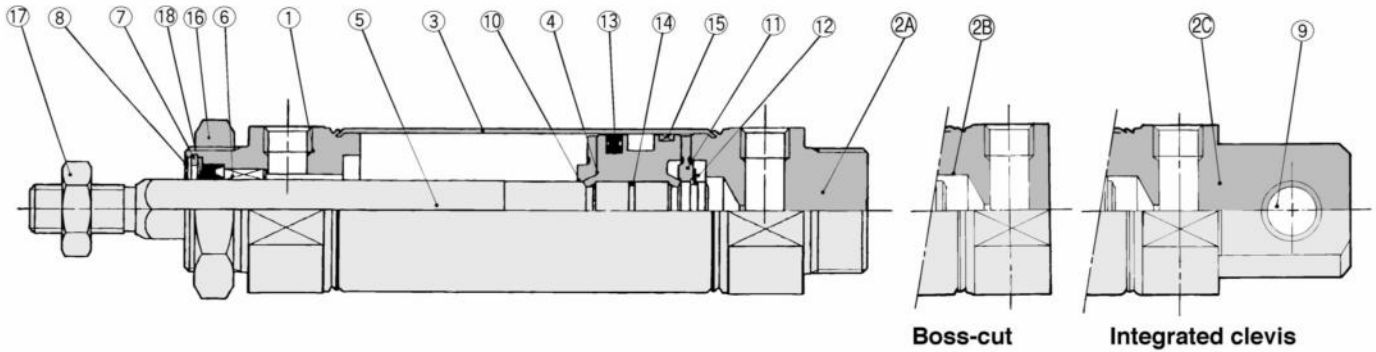
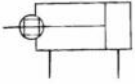
### Auto switch mounting position

Refer to the standard type (double acting/single rod) on p.1.4-21.

# Non-rotating Rod: Double Acting Single Rod *Series CM2K*

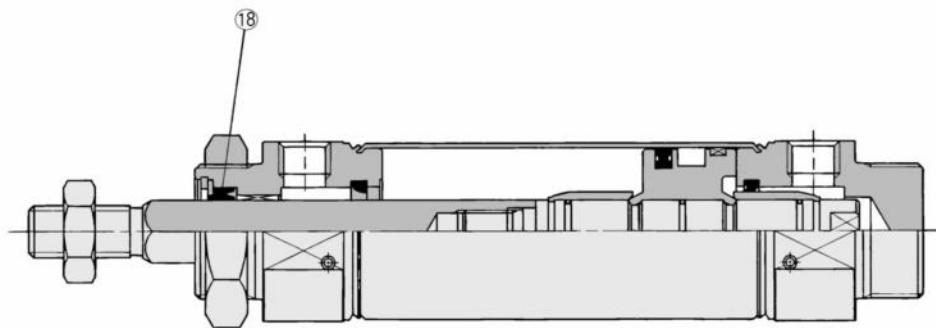
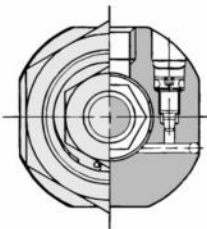
## Construction

### Rubber bumper



Rod section

### With air cushion



Rod section

### Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②A	Head cover A	Aluminum alloy	White anodized(Standard style)
②B	Head cover B	Aluminum alloy	White anodized(Boss-cut style)
②C	Head cover C	Aluminum alloy	White anodized(Integrated clevis style)
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Stainless steel	
⑥	Non-rotating guide	Oil impregnated sintered metal	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bushing for clevis	Oil impregnated sintered metal	
⑩	Bumper A	Urethane	
⑪	Bumper B	Urethane	

No.	Description	Material	Note
⑫	Snap ring	Stainless steel	
⑬	Piston seal	NBR	
⑭	Piston gasket	NBR	
⑮	Wearing	Resin	
⑯	Mounting nut	Carbon steel	Nickel plated
⑰	Rod end nut	Carbon steel	Nickel plated

### Replacement Parts

No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
⑱	Rod seal	NBR	PDR-8W	PDR-10W	PDR-12W	PDR-14W

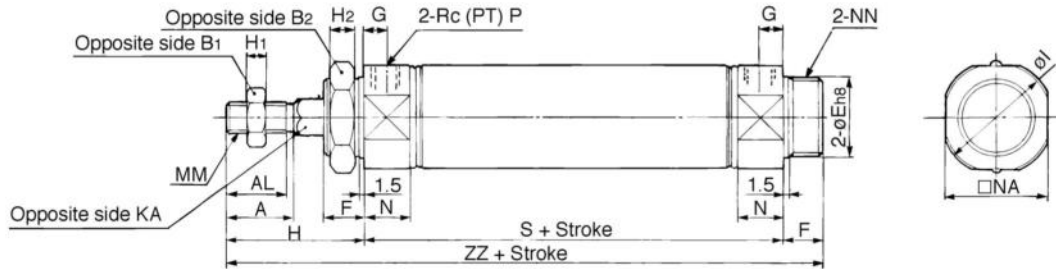
CJ1
CJP
CJ2
<b>CM2</b>
C85
CG1
MB
C95
CA1
CS1

# Series CM2K

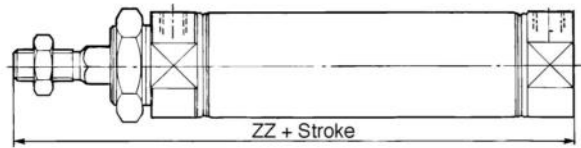
Basic (B)



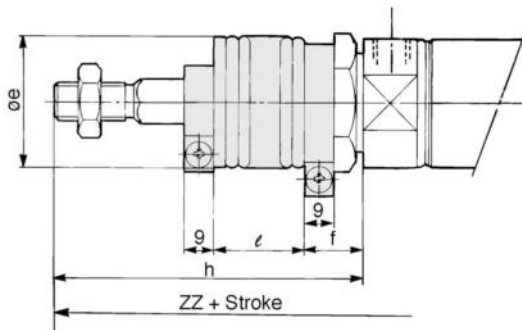
CM2KB Bore size Stroke



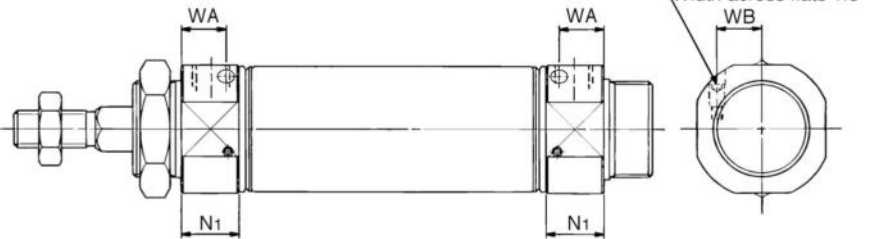
## Boss-cut



## With rod boot



## With air cushion



Bore	A	AL	B1	B2	E	F	G	H	H1	H2	I	KA	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	20 <sup>0</sup> <sub>-0.033</sub>	13	8	41	5	8	28	8.2	M8 X 1.25	15	24	M20 X 1.5	1/8	62	116
25	22	19.5	17	32	26 <sup>0</sup> <sub>-0.033</sub>	13	8	45	6	8	33.5	10.2	M10 X 1.25	15	30	M26 X 1.5	1/8	62	120
32	22	19.5	17	32	26 <sup>0</sup> <sub>-0.033</sub>	13	8	45	6	8	37.5	12.2	M10 X 1.25	15	34.5	M26 X 1.5	1/8	64	122
40	24	21	22	41	32 <sup>0</sup> <sub>-0.039</sub>	16	11	50	8	10	46.5	14.2	M14 X 1.5	21.5	42.5	M32 X 2	1/4	88	154

## With rod boot

Symbol Stroke Bore	e	f	h							l					ZZ				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131	156	—	12.5	25	37.5	50	75	143	156	168	181	206
25	36	17	72	85	97	110	135	160	185	12.5	25	37.5	50	75	147	160	172	185	210
32	36	17	72	85	97	110	135	160	185	12.5	25	37.5	50	75	149	162	174	187	212
40	46	19	77	90	102	115	140	165	190	12.5	25	37.5	50	75	181	194	206	219	244

## Boss-cut

Bore	ZZ					
	Without gaiter	With gaiter				
		1to50	51to100	101to150	151to200	201to300
20	103	130	143	155	168	193
25	107	134	147	159	172	197
32	109	136	149	161	174	199
40	138	165	178	190	203	228

## With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15



Basic style  
 CM2KB20.....SCM220A, #1  
 CM2KB25.....SCM225A, #1  
 CM2KB32.....SCM232A, #1  
 CM2KB40.....SCM240A, #1  
 \* The data shows auto switch equipped styles.  
 Please delete the unnecessary part.



## Dimensions for Other Mounting Brackets

The dimensions are the same as standard style (double acting/single rod), except for the configuration of the piston rod. Refer to p.1.4-10 to 1.4-18. Specifications for the auto switch equipped style are the same as CDM2 series standard style.