

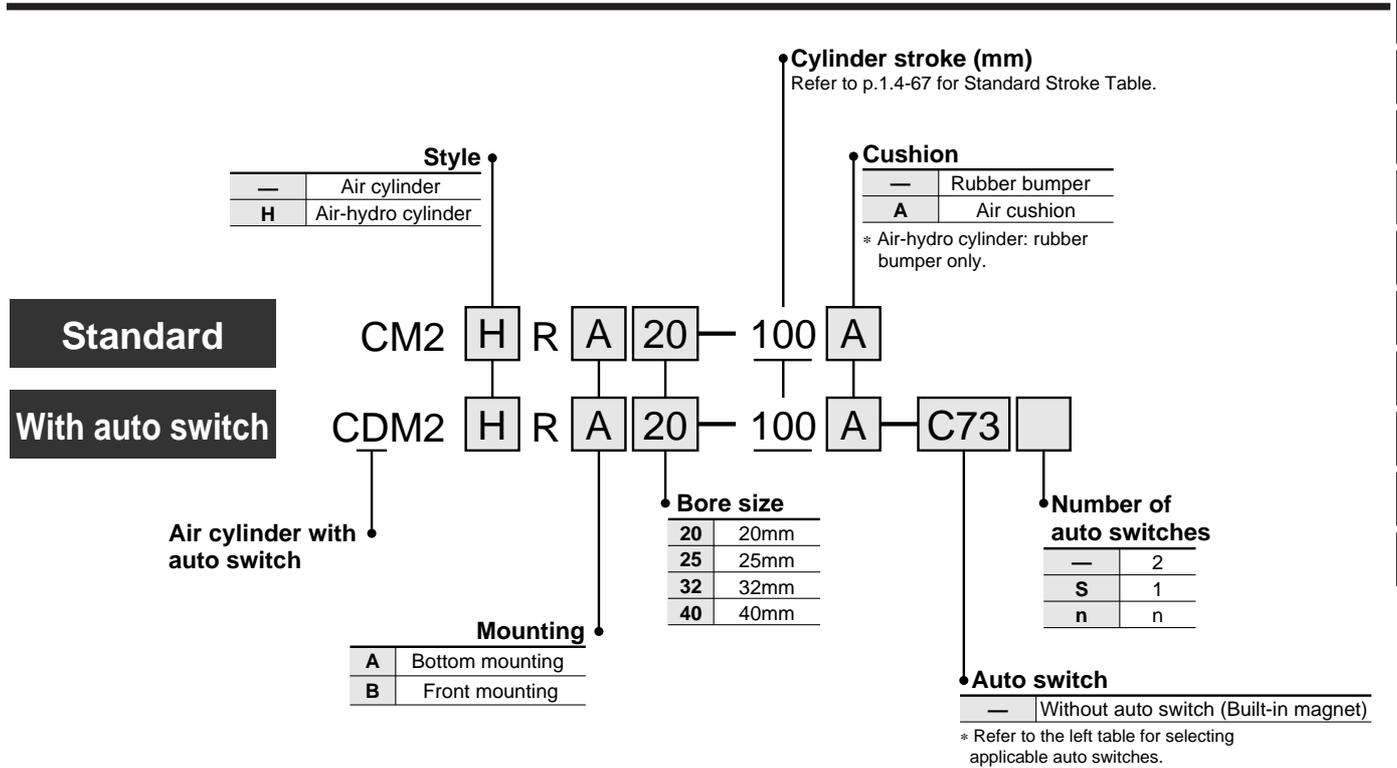
# Direct Mount: Double Acting Single Rod

# Series CM2R



ø20, ø25, ø32, ø40

## How to Order



- 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)	—	5V	—	●	●	—	—	IC	—																																																																																																
														24V	12V	100V	●	●	—	—	—	—	—	Relay PLC																																																																																					
																									5V, 12V	100V or less	●	●	—	—	—	—	—	—	IC																																																																										
																																				12V	—	●	●	●	—	—	—	—	—	PLC																																																															
																																															12V	100V, 200V	●	●	●	—	—	—	—	—	—																																																				
																																																										12V	200V or less	●	●	—	—	—	—	—	—	Relay PLC																																									
																																																																					12V	—	●	●	—	—	—	—	—	—	—																														
																																																																																Connector	Yes	24V or less	●	●	●	●	●	●	●	—	IC																		
																																																																																												No	5V, 12V	—	●	●	—	—	—	—	—	—	—						
																																																																																																								Terminal conduit	Yes	—	—	—	—
12V	—	—	—	—	—	—	—	—	—	—	PLC																																																																																																		
												DIN connector	Yes	100V, 200V	—	—	—	—	—	—	—	—	—	Relay PLC																																																																																					
																									No	—	—	—	—	—	—	—	—	—	—																																																																										
																																				Grommet	Yes	—	—	—	—	—	—	—	—	—																																																															
																																															Diagnostic indicator (2 color)	Grommet	Yes	—	—	—	—	—	—	—	—																																																				



\* 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 CM2R

**The CM2R Series direct mounting cylinder can be installed directly through the use of a square rod cover.**

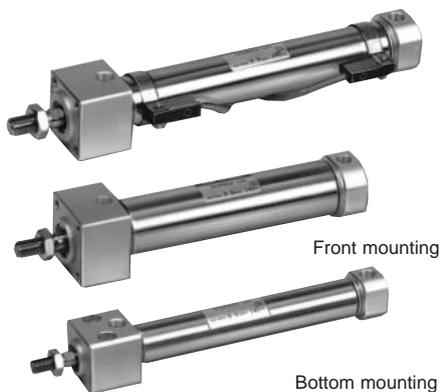
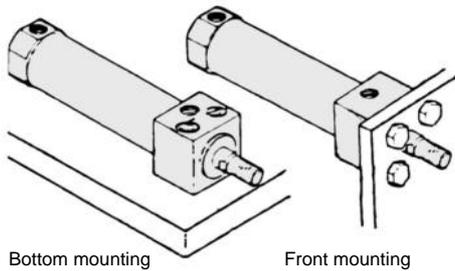
## Space saving configuration.

Because it is a directly mounted style without using brackets, its overall length is shorter, and its installation pitch can be made smaller. Thus, the space that is required for installation has been dramatically reduced.

## Improved installation accuracy and strength

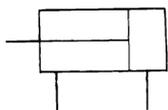
## Two styles of installation

Two styles of installations are available and can be selected according to the purpose: the front mounting style or the bottom mounting style.



## JIS symbol

Double acting



**Made to Order**

Refer to p.5.4-1 for made to order specifications of series CM2R.

## Specifications

Bore size (mm)	20	25	32	40
Action	Double acting/Single rod			
Fluid	Air			
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 750			
Cushion	Rubber bumper			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

## Standard Stroke

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

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

## Minimum Strokes for Auto Switches Mounting

Refer to p.1.4-4 for minimum stroke table.

## 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.)  
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

# Direct Mount: Double Acting Single Rod *Series CM2R*

## Accessories

Accessories	Standard	Option	
	Rod end nut	Single knuckle joint	Double knuckle joint (with pins) *
Bottom mounting	●	●	●
Front mounting	●	●	●

\* Knuckle pins and snap rings (cotter pins for ø40) are attached.

## Weight

Bore size (mm)		20	25	32	40
Basic weight	Bottom mounting	0.14	0.23	0.32	0.62
	Front mounting	0.14	0.22	0.32	0.61
Additional weight by each 50 stroke		0.04	0.06	0.08	0.13

(kg)

Calculation example: CM2RA32-100  
(ø32, 100 stroke, Bottom mounting)

- Basic weight: 0.32kg
- Additional weight: 0.08kg
- Cylinder stroke: 100mm

$$0.32 + 0.08 \times 100/50 = 0.48\text{kg}$$

## Air-hydro

CM2HR **Mounting** **Bore size** **Stroke**

• Air-hydro type

A low hydraulic pressure cylinder used at a pressures of 1.0MPa or below.

Through the concurrent use of a CC series air-hydro unit, it is possible to operate at a constant or low speeds or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.

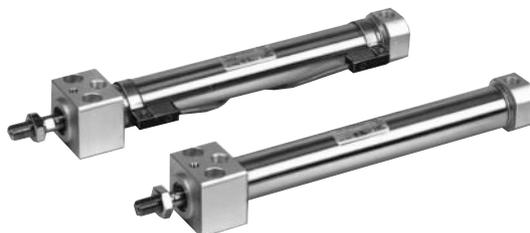


## Clean Series

10-CM2R **Mounting** **Bore size** **Stroke**

• Clean series (with relief port)

The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room. Thus, it can be used in a Class 100 clean room.



## Specifications

Style	Air-hydro
Fluid	Turbine oil
Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.18MPa
Piston speed	15 to 300mm/s
Cushion	Rubber bumper
Ambient and fluid temperature	+5 to +60°C
Thread tolerance	JIS class 2
Stroke tolerance	+1.4 0
Mounting	Bottom mounting, Front mounting

\* Auto switches can be mounted.  
Dimensions are the same as standard style.

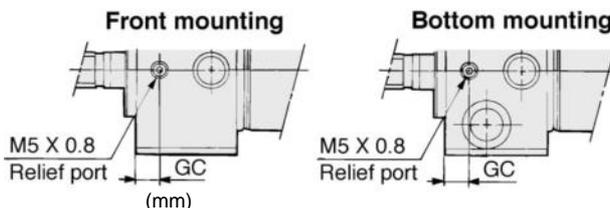
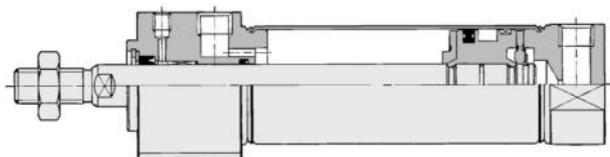
- Construction: Refer to p.1.4-70.
- Dimensions: Refer to p.1.4-71 and 1.4-72.

## 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 (standard equipment)
Relief port size	M5 X 0.8
Piston speed	30 to 400mm/s
Mounting	Bottom mounting, Front mounting

\* Auto switches can be mounted.

## Construction



Bore size	GC
20	6
25	6
32	7
40	9

CJ1

CJP

CJ2

CM2

C85

CG1

MB

C95

CA1

CS1

# Series CM2R

## With Air Cushion

CM2R 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
Piping	Screw-in
Piston speed	50 to 1000mm/s
Mounting	Bottom mounting, Front mounting

\* Auto switches can be mounted.

Bore size (mm)	Effective cushion length (mm)	Kinetic energy absorption
<b>20</b>	11.0	0.54J
<b>25</b>	11.0	0.78J
<b>32</b>	11.0	1.27J
<b>40</b>	11.8	2.35J

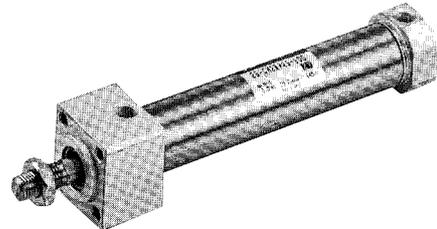
- Construction: Refer to p.1.4-70.
- Dimensions: Refer to p.1.4-71 and 1.4-72.
- Refer to p.1.4-67 for other specifications.

## Copper Free

20-CM2R 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

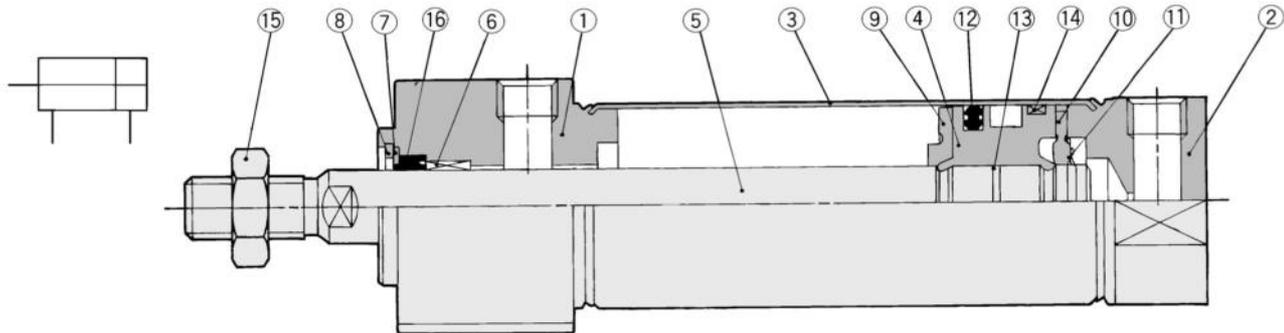
Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piston speed	50 to 750mm/s
Mounting	Bottom mounting, Front mounting

\* Auto switches can be mounted.

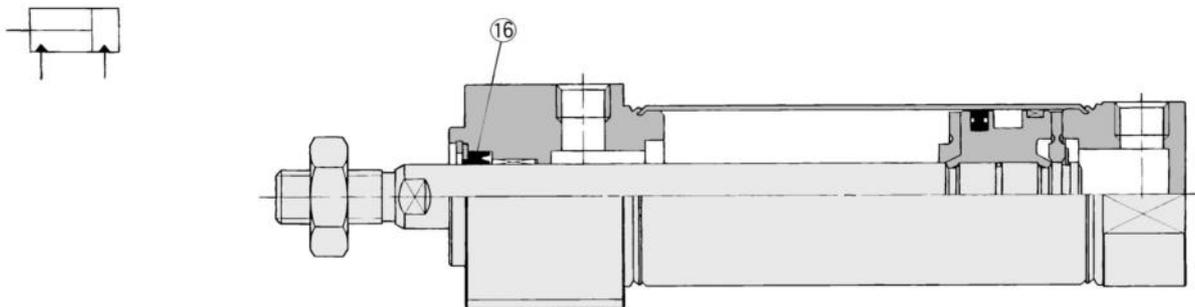
# Direct Mount: Double Acting Single Rod *Series CM2R*

## Construction

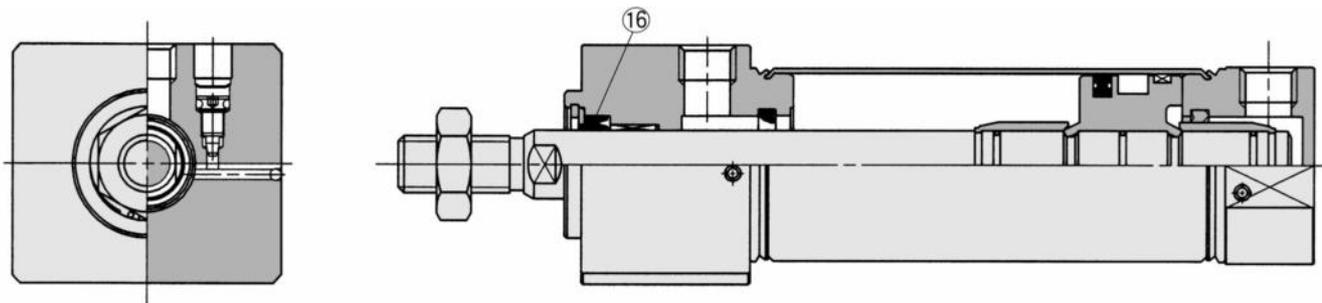
### Rubber bumper



### Air-hydro



### With air cushion



### Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②	Head cover	Aluminum alloy	White anodized
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bumper A	Urethane	
⑩	Bumper B	Urethane	
⑪	Snap ring	Stainless steel	
⑫	Piston seal	NBR	
⑬	Piston gasket	NBR	
⑭	Wearing	Resin	
⑮	Rod end nut	Carbon steel	Nickel plated

### Replacement Parts: With rubber bumper/With air cushion

No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
⑯	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

### Air-hydro style

No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
⑯	Rod seal	NBR	HDU-8	HDU-10	HDU-12L	HDU-14

CJ1

CJP

CJ2

**CM2**

C85

CG1

MB

C95

CA1

CS1

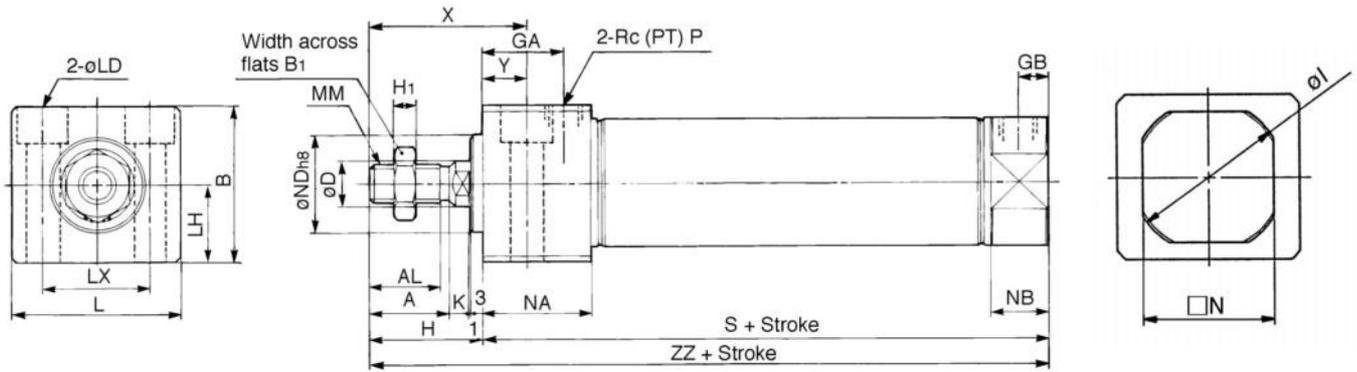
Refer to the auto switch setting position (at stroke end) for standard style (double acting/single rod) on p.1.4-21.

# Series CM2R

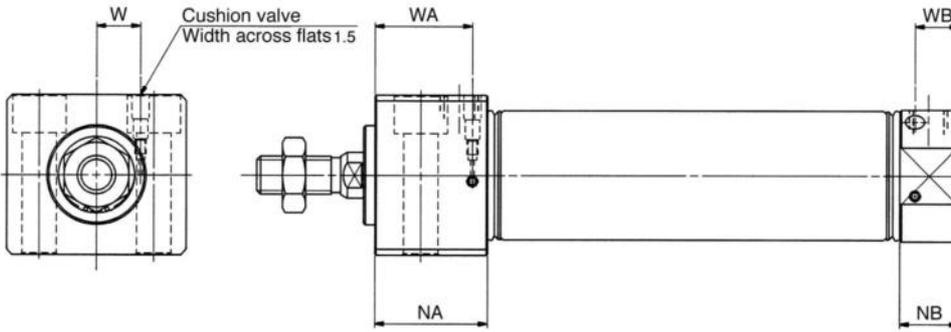
Bottom Mounting



CM2RA



## With air cushion



(mm)

Bore size	Stroke range
20	Up to 150
25	Up to 200
32	Up to 200
40	Up to 300

(mm)

Bore	A	AL	B	B <sub>1</sub>	D	GA	GB	H	H <sub>1</sub>	I	K	L	LD	LH	LX	MM	N	NA	NB	ND	P	S	X	Y	ZZ
20	18	15.5	30.3	13	8	22	8	27	5	28	5	33.5	ø5.5, ø9.5 Depth of counter bore 6.5	15	21	M8 X 1.25	24	29	15	20 <sup>0</sup> <sub>-0.033</sub>	1/8	76	39	12	103
25	22	19.5	36.3	17	10	22	8	31	6	33.5	5.5	39	ø6.6, ø11 Depth of counter bore 7.5	18	25	M10 X 1.25	30	29	15	26 <sup>0</sup> <sub>-0.033</sub>	1/8	76	43	12	107
32	22	19.5	42.3	17	12	22	8	31	6	37.5	5.5	47	ø9, ø14 Depth of counter bore 10	21	30	M10 X 1.25	34.5	29	15	26 <sup>0</sup> <sub>-0.033</sub>	1/8	78	43	12	109
40	24	21	52.3	22	14	27	11	34	8	46.5	7	58.5	ø11, ø17.5 Depth of counter bore 12.5	26	38	M14 X 1.5	42.5	37.5	21.5	32 <sup>0</sup> <sub>-0.039</sub>	1/4	104	49	15	138

## With air cushion

Bore	NA	NB	WA	WB	W
20	31.5	17.5	27	13	8.5
25	31.5	17.5	27	13	10.5
32	31.5	17.5	27	13	11.5
40	37.5	21.5	33.5	16	15



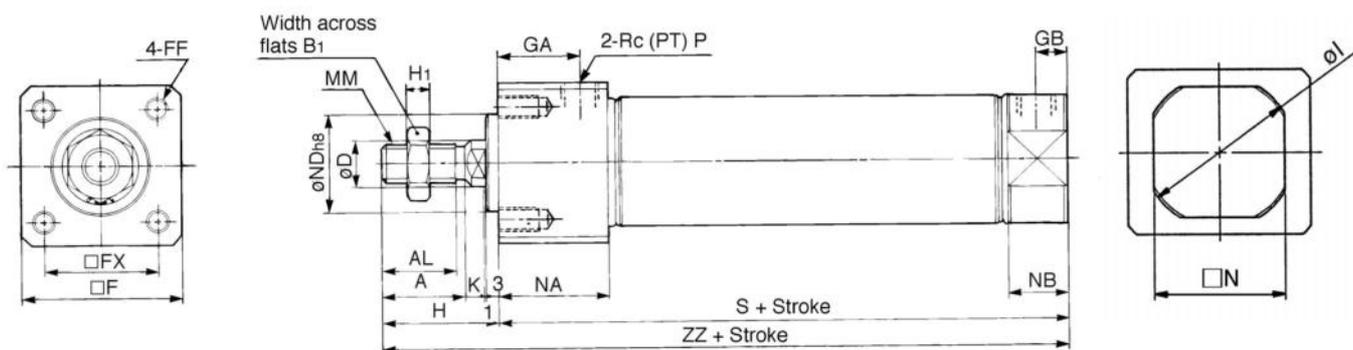
Bottom mounting Basic  
 CM2RA20.....SCM220B, #14  
 CM2RA25.....SCM225B, #14  
 CM2RA32.....SCM232B, #14  
 CM2RA40.....SCM240B, #14

# Direct Mount: Double Acting Single Rod *Series CM2R*

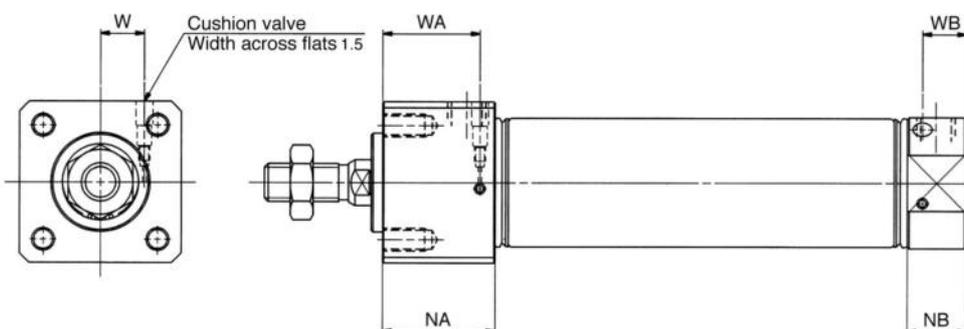
Front Mounting



CM2RB Bore size — Stroke



With air cushion



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

(mm)

Bore size	Stroke range
20	Up to 150
25	Up to 200
32	Up to 200
40	Up to 300

(mm)

Bore	A	AL	B1	D	F	FF	FX	GA	GB	H	H1	I	K	MM	N	NA	NB	ND	P	S	ZZ
20	18	15.5	13	8	30.4	M5 X 0.8 Depth 9	22	22	8	27	5	28	5	M8 X 1.25	24	29	15	20 <sup>0</sup> <sub>-0.033</sub>	1/8	76	103
25	22	19.5	17	10	36.4	M6 X 1 Depth 11	26	22	8	31	6	33.5	5.5	M10 X 1.25	30	29	15	26 <sup>0</sup> <sub>-0.033</sub>	1/8	76	107
32	22	19.5	17	12	42.4	M6 X 1 Depth 11	30	22	8	31	6	37.5	5.5	M10 X 1.25	34.5	29	15	26 <sup>0</sup> <sub>-0.033</sub>	1/8	78	109
40	24	21	22	14	52.4	M8 X 1.25 Depth 14	36	27	11	34	8	46.5	7	M14 X 1.5	42.5	37.5	21.5	32 <sup>0</sup> <sub>-0.039</sub>	1/4	104	138

With air cushion

Bore	NA	NB	WA	WB	W
20	31.5	17.5	27	13	8.5
25	31.5	17.5	27	13	10.5
32	31.5	17.5	27	13	11.5
40	37.5	21.5	33.5	16	15

Front side mounting Basic  
 CM2RB20.....SCM220B, #15  
 CM2RB25.....SCM225B, #15  
 CM2RB32.....SCM232B, #15  
 CM2RB40.....SCM240B, #15