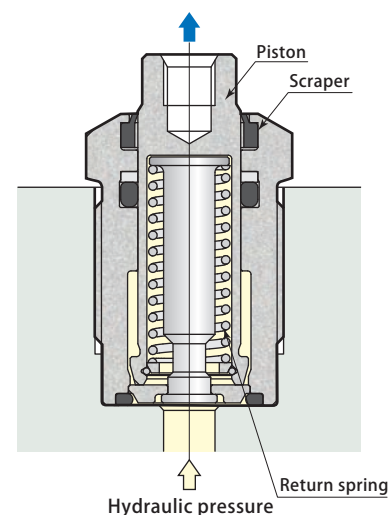


Push cylinder

model **CMC**



- This is a push-type cylinder with threaded body.
- Air vent hole was eliminated to solve problems of coolant intrusion.
- Scraper is placed for moving parts to prevent adhesion of foreign substance.

Specifications

Model		CMC01			CMC03			CMC04				CMC06				
Stroke	(mm)	5	10	15	5	10	15	5	10	15	20	5	10	15	20	
Cylinder force *1 (kN)	Hydraulic pressure 3.5 MPa	0.18			0.4			0.5				0.9				
	Hydraulic pressure 7 MPa	0.35			0.8			1.1				1.8				
	Hydraulic pressure 25 MPa	1.26			2.8			3.8				6.4				
	Hydraulic pressure 35 MPa	1.76			4.0			5.4				8.9				
Rod diameter	(mm)	8			12			14				18				
Effective area	(cm <sup>2</sup> )	0.50			1.13			1.54				2.55				
Max. oil flow rate	(ℓ/min)	0.15			0.34			0.46				0.76				
Cylinder capacity	(cm <sup>3</sup> )	0.3	0.5	0.8	0.6	1.1	1.7	0.8	1.5	2.3	3.1	1.3	2.5	3.8	5.1	
Return spring force *2	(N)	13 ~ 19			28 ~ 42			38 ~ 59				62 ~ 100				
Mass	(kg)	0.05	0.06	0.08	0.07	0.10	0.13	0.09	0.12	0.15	0.20	0.16	0.21	0.26	0.32	
Working pressure range	(MPa)	1 ~ 35														
Proof pressure	(MPa)	52.5														
Operating temperature	(°C)	0 ~ 70														
Fluid used		General mineral based hydraulic oil (ISO-VG32 equivalent)														

\*1 : Cylinder force indicated is net value before subtracting return spring force.

\*2 : Figures are for "lower end ~ upper end" of piston action.

## Model designation

CMC ①-②③④ (Example: CMC06-5RV)

	① Size (refer to specification table)	② Stroke (refer to specification table)	③ Tip section shape of rod	④ Variation code
CMC	01	5 10 15	(Nil) : Threaded top type (standard)  R : Round top type	(Nil) : Scraper seal NBR (standard)  V* : Scraper seal fluorocarbon (except model CMC10, 20, 40 or 60)  * : Fluorocarbon has been adopted as a measure for the use of chlorine-based cutting fluid and also for thermal resistance (max. 150°C) specifications.
	03	5 10 15		
	04	5 10 15 20		
	06	5 10 15 20		
	10	5 10 15 25		
	20	10 15 20 32		
	25	12 20 32		
	40	16 25 40		
	60	16 25 40		

## Specifications

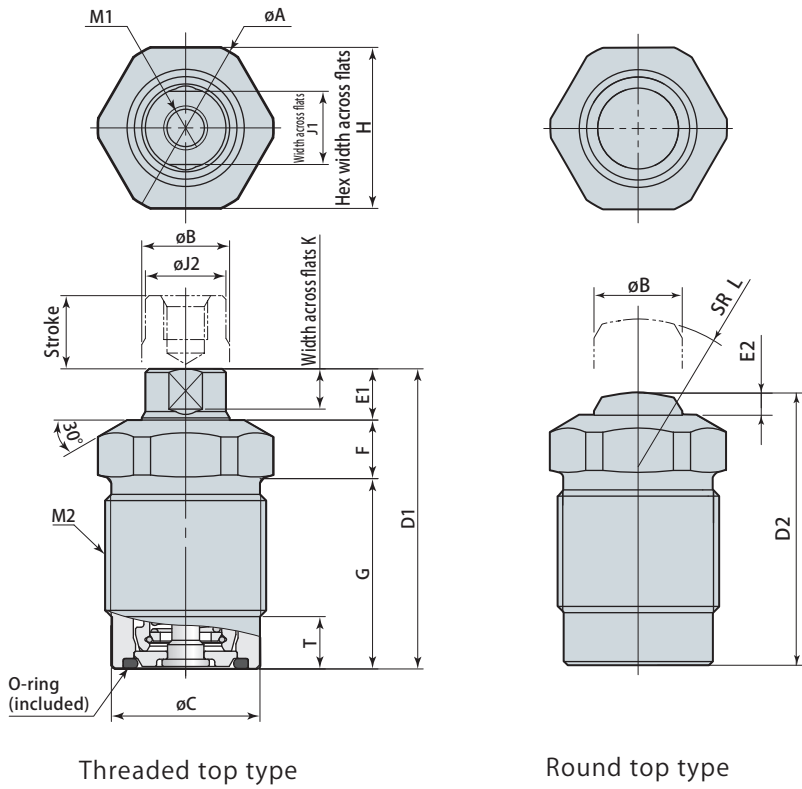
Model		CMC10				CMC20				CMC25			CMC40			CMC60		
Stroke	(mm)	5	10	15	25	10	15	20	32	12	20	32	16	25	40	16	25	40
Cylinder force *1 (kN)	Hydraulic pressure 3.5 MPa	1.4				2.8				3.5			5.6			8.3		
	Hydraulic pressure 7 MPa	2.8				5.6				6.9			11.1			16.6		
	Hydraulic pressure 25 MPa	9.9				20.0				24.7			39.8			59.4		
	Hydraulic pressure 35 MPa	13.8				28.1				34.6			55.7			83.2		
Rod diameter	(mm)	22.4				32				35.5			45			55		
Effective area	(cm <sup>2</sup> )	3.94				8.04				9.90			15.90			23.76		
Max. oil flow rate	(ℓ/min)	1.18				2.41				2.97			4.77			7.13		
Cylinder capacity	(cm <sup>3</sup> )	2.0	3.9	5.9	9.9	8.0	12.0	16.0	20.1	11.9	19.8	31.7	25.4	39.8	63.6	38.0	59.4	95.0
Return spring force *2	(N)	97 ~ 160				200 ~ 310				240 ~ 405			370 ~ 600			570 ~ 1010		
Mass	(kg)	0.24	0.30	0.35	0.60	0.63	0.78	0.91	1.38	0.81	1.02	1.36	1.45	1.8	2.46	2.59	3.23	4.3
Working pressure range	(MPa)	1 ~ 35																
Proof pressure	(MPa)	52.5																
Operating temperature	(°C)	0 ~ 70																
Fluid used		General mineral based hydraulic oil (ISO-VG32 equivalent)																

\*1 : Cylinder force indicated is net value before subtracting return spring force.

\*2 : Figures are for "lower end ~ upper end" of piston action.

Dimensions

CMC 01 5  
03 10  
04 12  
06 15  
10-16-18 (R)  
20 20  
25 25  
40 32  
60 40

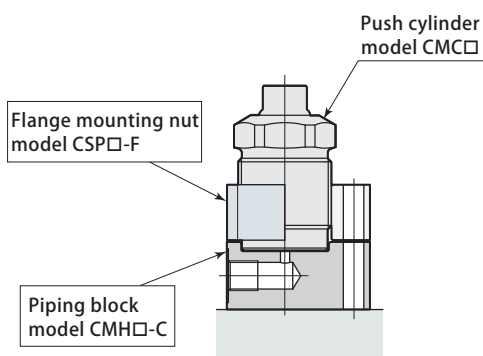
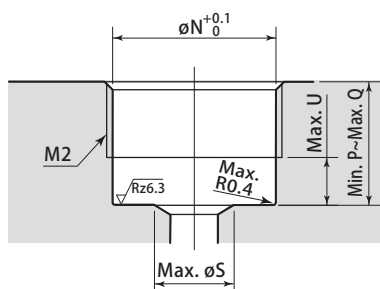


(mm)

Model	CMC01			CMC03			CMC04				CMC06			
Stroke	5	10	15	5	10	15	5	10	15	20	5	10	15	20
A	15.5			24			26				33			
B	8			12			14				18			
C	14.3			20.3			23.3				28.3			
D1	31	41	50	31	41	51.5	36	47	58	68	40.5	51.5	62.5	72.5
D2	27	37	46	27	37	47.5	31	42	53	63	34	45	56	66
E1	5.5			7			8.5				10			
E2	1.5			3			3.5				3.5			
F	6			8			9				10.5			
G	19.5	29.5	38.5	16	26	36.5	18.5	29.5	40.5	50.5	20	31	42	52
H	14			22			24				30			
J1	7			10			12				14			
J2	7.5			11			13				17			
K	4.5			5.5			6.5				7.5			
L	16			20			25				32			
M1	M5×0.8 depth 8			M6×1 depth 6			M6×1 depth 11				M8×1.25 depth 13			
M2	M16×1.5			M22×1.5			M25×1.5				M30×1.5			
N	14.5			20.5			23.5				28.5			
P	12			13			14				15			
Q	19	29	38	15.5	25.5	36	18	29	40	50	19.5	30.5	41.5	51.5
S	5			8			10				14			
T	7			7			7				7			
U	6			6			6				6			
O-ring	AS568-012(90)			AS568-015(90)			AS568-016(90)				AS568-019(90)			
Tightening torque	10 N·m			30 N·m			40 N·m				60 N·m			

**Dimensions**

Mounting details



Note 1. Mounting surface finish must be no rougher than Rz6.3 (ISO4287:1997).

2. Included O-ring must be used at all times.
3. Refer to table below for tightening torque for mounting.
4. Hardness at top of round type piston is HRC54.
5. When mounting an attachment, be sure to hold the width across flats at the tip section by a spanner, etc., to prevent the piston from rotating before tightening the screw. Do not attempt to tighten it with a hydraulic-powered resistance against rotation.
6. Flange mounting nut and piping block (left diagram) are available as options. Refer to pages → 141 and 142 for details.
7. Please avoid the usage that may apply eccentric load and non-axial force to the piston. This may break the piston.

(mm)

Model	CMC10				CMC20				CMC25			CMC40			CMC60		
Stroke	5	10	15	25	10	15	20	32	12	20	32	16	25	40	16	25	40
A	40				50				55			66			80		
B	22.4				32				35.5			45			55		
C	34.3				46				52.6			62.6			77.6		
D1	44.5	54.5	66.5	87.5	67.5	80.5	92	118.5	67	81.5	104.5	79	94	122	89	107	138
D2	36.5	46.5	58.5	79.5	57	70	81.5	108	56	70.5	93.5	65	80	108	76	94	125
E1	12				16				17.5			21.5			20		
E2	4				5.5				6.5			7.5			7		
F	12.5				14				15			17			15		
G	20	30	42	63	37.5	50.5	62	88.5	34.5	49	72	40.5	55.5	83.5	54	72	101
H	36				46				50			60			75		
J1	19				27				30			36			41		
J2	21.4				30				32.5			43			52		
K	9.5				12.5				13.5			15.5			17		
L	40				50				60			70			80		
M1	M8×1.25 depth 13				M12×1.75 depth 18				M12×1.75 depth 18			M16×2.0 depth 18			M20×2.5 depth 22		
M2	M36×1.5				M48×1.5				M55×2.0			M65×2.0			M80×2.0		
N	34.5				46.5				53			63			78		
P	17				20				24			27			29		
Q	19.5	29.5	41.5	62.5	37	50	61.5	88	33.5	48	71	40	55	83	53.5	71.5	100.5
S	19				26				34			44			56		
T	7				7				10			10			10		
U	6				6				9			9			9		
O-ring	AS568-022(90)				AS568-126(90)				AS568-129(90)			AS568-135(90)			AS568-143(90)		
Tightening torque	110 N·m				270 N·m				360 N·m			620 N·m			1160 N·m		

## Mounting of clamp and work support

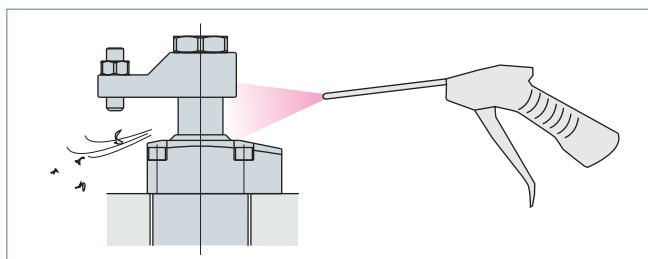
Use screws with strength class of 12.9 for mounting clamp and work support and be sure to apply specified torque for tightening, by referring to recommended tightening torque of mounting screws indicated below.

Recommended tightening torque of mounting screws (strength class 12.9)

Mounting screws size	Tightening torque
M4 ×0.7	2.8 N·m
M5 ×0.8	7 N·m
M6 ×1	11 N·m
M8 ×1.25	25 N·m
M10×1.5	49 N·m
M12×1.75	60 N·m

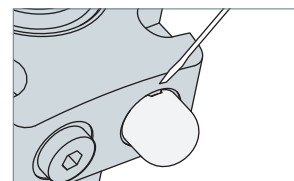
## Caution in use of equipment

1. Clamp and work supports have been developed for the purpose of clamping workpiece for machine tools. Do not use them for other purposes.
2. Always protect them with a cover to ensure sliding surfaces are not exposed to weld slags when using them as fixture for welding.
3. Clean sliding surfaces and top part of clamp body with air blowing periodically to ensure smooth operations.



## Mounting & dismantling of optional parts

1. When mounting or dismantling a flow control valve or air bleeding valve, be sure to set pressure within hydraulic circuit to 0 MPa before starting.
2. When mounting a flow control valve or air bleeding valve, be sure to tighten it with the specified tightening torque (refer to pages → 145 and 146 for recommended tightening torque).
3. When mounting a coolant cap (resin : POM), firmly press the body of cover. If it is not mounting properly, use a plastic mallet to tap it into place.
4. When dismantling a coolant cap, use a sharp-pointed tool such as a precision screw driver by hooking the notched portion.



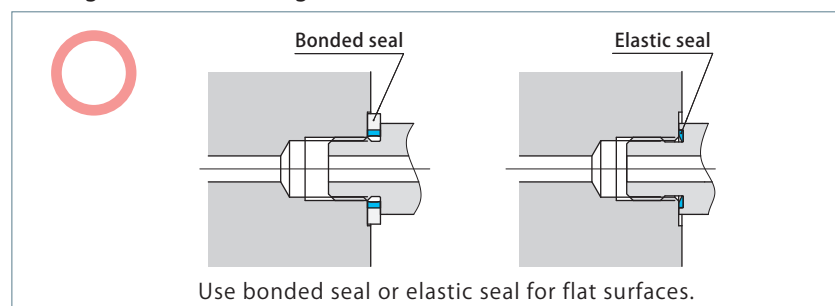
## Caution for hydraulic piping

1. Most problems that occur with hydraulic equipment are caused by foreign substances such as metal chips and dust that enter into hydraulic circuits. Refer to "Piping Hydraulic & Pneumatic Equipment-Practical Notes" provided with the product for mounting and hydraulic piping of the product.
2. After performing hydraulic piping, always be sure to bleed out air in the hydraulic circuit. Insufficient bleeding can lead to malfunction.
3. When using multiple clamps, operating speeds and timings vary due to variance in pipe resistance and internal resistance of clamps. Adjust operating speeds and timings using flow control valve.
4. The special scraper has superior scraping capability to remove oil film on the surface of the rod, there are cases where grease and working fluid (oil films) inside the clamp are scraped and expelled to the outside. This may result in accumulation of oil in the external perimeters of piston rod on the upper part of the scraper, but this does not indicate an oil leak.

## BSPB port sealing method

1. "Sealing method for flange surfaces" has been adopted as standard means for this product. Use fittings and connectors of bonded seal or elastic body seal. Do not use fittings of "Sealing method for tapered surfaces" (O-ring seal method).
2. Seal tapes and liquid packing are not necessary. Seal fittings with included with packing.
3. When mounting, clean metal chips and dust off surfaces that will come into contact with packing.

### Sealing method for flange surfaces



### Sealing method for tapered surfaces

