

Air Cylinder

Series CM2

ø20, ø25, ø32, ø40

Series Variations

Series	Action	Rod	Cushion	Basic	Standard variations					Bore size (mm)	Page
					Built-in One-touch fitting	With rod boot	Air-hydro	Clean series	Copper/Fluorine-free		
Standard Series CM2 	Double acting	Single rod	Rubber	●	●	●	●	●	20 25 32 40	128	
		Double rod	Rubber	●	●	●	●	●		146	
	Single acting	Single rod (Spring return/Spring extend)	Rubber	●	●	●	●	●		156	
		Double rod	Rubber	●	●	●	●	●		171	
Non-rotating Rod Series CM2K 	Double acting	Single rod	Rubber	●	●	●	●	●	20	176	
		Double rod	Rubber	●	●	●	●	●	32	181	
	Single acting	Single rod (Spring return/Spring extend)	Rubber	●	●	●	●	●	40	186	
Direct Mount Series CM2R 	Double acting	Single rod	Rubber	●	●	●	●	●	193		
Direct Mount, Non-rotating Rod Series CM2RK 	Double acting	Single rod	Rubber	●	●	●	●	●	198		
Low Friction Series CM2Q 	Use the new "Smooth Cylinder Series CM2Y" to realize both-direction low friction and low-speed operation. (Refer to Best Pneumatics No. 3.)										
Centralized Piping Series CM2□P 	Double acting	Single rod	Rubber	●	●	●	●	●	20	199	
With End Lock Series CBM2 	Double acting	Single rod	Rubber	●	●	●	●	●	32 40	204	
			Air	●	●	●	●	●			
Low-speed cylinder Series CM2X 	Refer to Best Pneumatics No. 3.										

- CJ1
- CJP
- CJ2
- CM2**
- CG1
- MB
- MB1
- CA2
- CS1
- CS2

- D-□
- X□
- Individual -X□
- Technical data

Combinations of Standard Products and Made to Order Specifications

Series CM2

Series CM2

Use the new "Smooth Cylinder Series CM2Y" to realize both-direction low friction and low-speed operation. (Refer to Best Pneumatics No. 3.)

- : Standard
- : Made to Order specifications
- : Special product (Contact SMC for details.)
- : Not available

Symbol	Specification	Applicable bore size	Series		CM2 (Standard)		CM2K (Not-rotating)			CM2R (Direct mount)		CM2RK (Direct mount, Non-rotating)		CM2□P (Centralized Piping)		CM2□Q (Low Friction)		CBM2 (With end Lock)		CM2X (Low-speed cylinder)	
			Action/Type		Double acting		Single acting	Double acting		Single acting	Double acting		Double acting		Double acting	Double acting	Double acting		Double acting		
			Cushion		Single rod	Double rod	Single rod	Single rod	Double rod	Single rod	Single rod	Single rod	Single rod	Single rod	Single rod	Single rod	Single rod	Single rod	Single rod	Single rod	
			ø20 to ø40				ø20 to ø40														
Standard	Standard		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
D	Built-in magnet		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CM2□F	With one-touch fittings		●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○
CM2□-□ _k	With rod boot		●	●	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○
CM2□H	Air-hydro type	ø20 to ø40	●	—	●	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—
10-, 11-	Clean series		●	●	●	●	○	—	—	—	—	●	○	—	○	○	○	○	○	○	○
20-	Copper and Fluorine-free		●	●	●	●	●	●	●	●	●	●	●	●	●	○	—	○	○	○	○
CM2□ _R	Water resistant		●	●	●	○	○	—	—	—	—	○	○	—	○	○	○	○	○	○	○
CM2□X	Low-speed cylinder		●	○	○	○	—	—	—	—	—	—	●	—	—	○	○	○	○	○	○
XB6	Heat-resistant cylinder (-10 to 150°C) ^{Note 1)}		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XB7	Cold-resistant cylinder ^{Note 1)}		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XB9	Low-speed cylinder (5 to 50 mm/s)		○	○	○	○	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XB12	External stainless steel cylinder		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XB13	Low-speed cylinder (5 to 50 mm/s)		○	○	○	○	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC3	Special port position		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC4	With heavy duty scraper		○	○	○	○	○	—	—	—	—	○	○	—	○	○	○	○	○	○	○
XC5	Heat-resistant cylinder (-10 to 110°C) ^{Note 1)}		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC6	Made of stainless steel		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC8	Adjustable stroke cylinder/Adjustable extension type		○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC9	Adjustable stroke cylinder/Adjustable retraction type		○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC10	Dual stroke cylinder/Double rod type		○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC11	Dual stroke cylinder/Single rod type	ø20 to ø40	○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC12	Tandem cylinder		○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC13	Auto switch rail mounting		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC20	Head cover axial port		○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC22	Fluororubber seal		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC25	No fixed orifice of connecting port		○	—	○	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC27	Double clevis pins made of stainless steel (Stainless steel 304)		○	○	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC29	Double knuckle joint with spring pin		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
XC35	With coil scraper		○	○	○	○	○	—	—	—	—	○	○	—	○	○	○	○	○	○	○
XC38	Vacuum specification (Rod through-hole)		—	—	○	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XC52	Mounting nut with set screw		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Note 1) The products with an auto switch are not compatible.
 Note 2) Refer to Best Pneumatics No. 3 for Low-speed cylinders.
 Note 3) Available only for locking at head end.
 Note 4) Available only for locking on rod side.

- CJ1
- CJP
- CJ2
- CM2
- CG1
- MB
- MB1
- CA2
- CS1
- CS2

- D-□
- X□
- Individual -X□
- Technical data



Air Cylinder: Standard Type Double Acting, Single Rod Series **CM2** ø20, ø25, ø32, ø40

How to Order

B Basic style	T Head side trunnion style	Bore size	20 20 mm	Cylinder stroke (mm) (Refer to "Standard Stroke" on page 129.)	Cushion	Nil Rubber bumper
L Axial foot style	E Clevis integrated style		25 25 mm			A Air cushion
F Rod side flange style	BZ Boss-cut basic style	32 32 mm	Made to Order (Refer to page 129 for details.)	Port thread type	Rod boot	Nil None
G Head side flange style	FZ Boss-cut rod side flange style	40 40 mm				J Nylon tarpaulin
C Single clevis style	UZ Boss-cut rod side trunnion style					Number of auto switches
D Double clevis style						Nil 2 pcs.
U Rod side trunnion style						S 1 pc.
						n "n" pcs.

Auto switch

Nil	Without auto switch
------------	---------------------

* For the applicable auto switch model, refer to the table below.

With auto switch (Built-in magnet)

With auto switch

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDM2F32-100

* Air-hydro type: Rc only

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)					Pre-wired connector	Applicable load		
					DC	AC		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)				
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5V, 12V	—	M9N	●	●	●	○	—	○	IC circuit		
				3-wire (PNP)			M9P	●	●	●	○	—	○			
		Connector		2-wire	12V	M9B	●	●	●	○	—	○	—			
		Terminal conduit		3-wire (NPN)	5V, 12V	H7C	●	●	●	●	—	—	—			
	Diagnostic indication (2-color indication)	Grommet	Yes	2-wire	12V	—	G39A **	—	—	—	—	●	—	IC circuit		
				3-wire (NPN)	5V, 12V		K39A **	—	—	—	—	●	—	—		
				3-wire (PNP)	5V, 12V		M9NW	●	●	●	○	—	○	IC circuit		
				2-wire	12V		M9PW	●	●	●	○	—	○	—		
				Water resistant (2-color indication)	2-wire		12V	M9BW	●	●	●	○	—	○	—	
				With diagnostic output (2-color indication)	4-wire (NPN)		5V, 12V	H7BA	—	—	●	○	—	○	—	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	5V	—	A96	●	—	●	—	—	—	IC circuit		
				Connector	2-wire	24V	12V	A93	●	—	●	—	—	—	—	—
								A90	●	—	●	—	—	—	—	IC circuit
								B54 **	●	—	●	—	—	—	—	—
								B64 **	●	—	●	—	—	—	—	—
		Terminal conduit		2-wire	24V	12V	C73C	—	—	●	—	●	●	—	—	—
							C80C	—	—	●	—	●	●	—	IC circuit	
							A33A **	—	—	—	—	—	●	—	—	PLC
							A34A **	—	—	—	—	—	●	—	—	—
							A44A **	—	—	—	—	—	●	—	—	—
DIN terminal	2-wire	100V, 200V	B59W	●	—	●	—	—	—	—	IC circuit					

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
 1 m M (Example) M9NWM
 3 m L (Example) M9NWL
 5 m Z (Example) M9NWZ
 None N (Example) H7CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
 * D-A9□V/M9□V/M9□WV and D-M9□A(V)L cannot be mounted.
 * Do not indicate suffix "N" for no lead wire on D-A3□A/A44A/G39A/K39A models.
 ** D-A3□A/A44A/G39A/K39A/B54/B64 cannot be mounted on bore sizes ø20 and ø25 cylinder with air cushion.

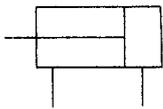
* Since there are other applicable auto switches than listed above, refer to page 218 for details.
 * For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
 * D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (However, auto switch mounting brackets are assembled when being shipped.)

Air Cylinder: Standard Type Double Acting, Single Rod **Series CM2**



Clevis integrated

JIS Symbol
Double acting,
Single rod



With air cushion



Made to Order Specifications (For details, refer to pages 1373 to 1498.)

Symbol	Specifications
—XA□	Change of rod end shape
—XB6	Heat resistant cylinder (150°C)
—XB7	Cold resistant cylinder
—XB9	Low speed cylinder (10 to 50 mm/s)
—XB12	External stainless steel cylinder
—XB13	Low speed cylinder (5 to 50 mm/s)
—XC3	Special port location
—XC4	With heavy duty scraper
—XC5	Heat resistant cylinder (110°C)
—XC6	Piston rod and rod end nut made of stainless steel
—XC8	Adjustable stroke cylinder/Adjustable extension type
—XC9	Adjustable stroke cylinder/Adjustable retraction type
—XC10	Dual stroke cylinder/Double rod type
—XC11	Dual stroke cylinder/Single rod type
—XC12	Tandem cylinder
—XC13	Auto switch mounting rail style
—XC20	Head cover axial port
—XC22	Fluororubber seals
—XC25	No fixed orifice of connecting port
—XC27	Double clevis pin and double knuckle pin made of stainless steel
—XC29	Double knuckle joint with spring pin
—XC35	With coil scraper
—XC52	Mounting nut with set screw

Rod Boot Material

Symbol	Rod boot material	Maximum ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C *

* Maximum ambient temperature for the rod boot itself.

Refer to pages 214 to 218 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket: Part no.

Specifications

Bore size (mm)		20	25	32	40
Type		Pneumatic			
Action		Double acting, Single rod			
Fluid		Air			
Proof pressure		1.5 MPa			
Maximum operating pressure		1.0 MPa			
Minimum operating pressure		0.05 MPa			
Ambient and fluid temperature		Without auto switch: -10 to +70°C (No freezing) With auto switch: -10 to +60°C (No freezing)			
Lubrication		Not required (Non-lube)			
Stroke length tolerance		+1.4 0 mm			
Piston speed		Rubber bumper: 50 to 750 mm/s, Air cushion: 50 to 1000 mm/s			
Cushion		Rubber bumper, Air cushion			
Allowable kinetic energy	Rubber bumper	0.27 J	0.4 J	0.65 J	1.2 J
	Air cushion (Effective cushion length (mm))	0.54 J (11.0)	0.78 J (11.0)	1.27 J (11.0)	2.35 J (11.8)

Standard Stroke

Bore size (mm)	Standard stroke ⁽¹⁾ (mm)	Maximum stroke (mm)
20	25, 50, 75, 100, 125, 150 200, 250, 300	1000
25		1500
32		2000
40		2000



Note 1) Other intermediate strokes can be manufactured upon receipt of order. Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Note 2) When exceeding 300 strokes, the allowable maximum stroke length is determined by the stroke selection table (front matter 28).

Boss-cut style

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



Comparison of the Full Length Dimension (Versus standard type)

		(mm)			
		ø20	ø25	ø32	ø40
		▲13	▲13	▲13	▲16

Mounting style

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

Mounting Bracket/Part No.

Mounting bracket	Min. order	Bore size (mm)				Description (for min. order)
		20	25	32	40	
Axial foot *	2	CM-L020B	CM-L032B	CM-L040B		2 foot, 1 mounting nut
Flange	1	CM-F020B	CM-F032B	CM-F040B		1 flange
Single clevis**	1	CM-C020B	CM-C032B	CM-C040B		1 single clevis, 3 liners
Double clevis*** (with pins)	1	CM-D020B	CM-D032B	CM-D040B		1 double clevis, 3 liners, 1 clevis pins, 2 retaining rings
Trunnion (with nuts)	1	CM-T020B	CM-T032B	CM-T040B		1 trunnion, 1 trunnion nut

* Order 2 foot brackets for each cylinder unit.

** 3 Liners are attached with a clevis bracket for adjusting the mounting angle.

*** Clevis pins and retaining rings (cotter pins for ø40) are attached.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

CS2

D-□

-X□

Individual -X□

Technical data

Mounting Style and Accessory

Mounting	Accessory	Standard equipment			Option					
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint ⁽³⁾	Clevis bracket ⁽⁴⁾	Rod boot	Pivot bracket ⁽⁶⁾	Pivot bracket pin ⁽⁷⁾	
Basic style	●(1 pc.)	●	—	●	●	—	●	—	—	
Axial foot style	●(2)	●	—	●	●	—	●	—	—	
Rod side flange style	●(1)	●	—	●	●	—	●	—	—	
Head side flange style	●(1)	●	—	●	●	—	●	—	—	
Clevis integrated style	— ⁽¹⁾	●	—	●	●	●	●	—	—	
Single clevis style	— ⁽¹⁾	●	—	●	●	—	●	●	●	
Double clevis style ⁽³⁾	— ⁽¹⁾	●	● ⁽⁵⁾	●	●	—	●	—	—	
Rod side trunnion style	●(1) ⁽²⁾	●	—	●	●	—	●	●	●	
Head side trunnion style	●(1) ⁽²⁾	●	—	●	●	—	●	●	●	
Boss-cut basic style	●(1)	●	—	●	●	—	●	—	—	
Boss-cut flange style	●(1)	●	—	●	●	—	●	—	—	
Boss-cut trunnion style	●(1)	●	—	●	●	—	●	—	—	



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

Note 2) Trunnion nuts are attached for rod side trunnion and head side trunnion styles.

Note 3) Knuckle pin and snap ring (cotter pin for ø40) are shipped together with double clevis and double knuckle joint.

Note 4) Pin and snap ring are shipped together with clevis bracket.

Note 5) Clevis pins come with retaining rings (cotter pins for ø40).

Note 6) Pivot brackets do not come with pins and retaining rings.

Note 7) Pivot bracket pins come with retaining rings.

Mounting Bracket, Accessory/Material, Surface Treatment

Segment	Component parts	Material	Surface treatment
Mounting bracket	Foot	Rolled steel plate	Nickel plated
	Flange	Rolled steel plate	Nickel plated
	Single clevis	Rolled steel	Nickel plated
	Double clevis	Rolled steel	Nickel plated
	Trunnion	Cast iron	Electroless nickel plated
Accessory	Rod end nut	Carbon steel	Nickel plated
	Mounting nut	Carbon steel	Nickel plated
	Trunnion nut	Carbon steel	Nickel plated
	Clevis bracket	Rolled steel plate	Nickel plated
	Clevis pin	Carbon steel	(None)
	Single knuckle joint	Rolled steel ø40: Sulfur easy chipping steel	Electroless nickel plated
	Double knuckle joint	Rolled steel ø40: Cast iron	Electroless nickel plated Metallic bronze color painted for ø40
	Double clevis pin	Carbon steel	(None)
	Double knuckle joint pin	Carbon steel	(None)
	Pivot bracket	Rolled steel plate	Nickel plated
Pivot bracket pin	Carbon steel	(None)	

Mass

(kg)

Bore size (mm)		20	25	32	40
Basic mass	Basic style	0.14	0.21	0.28	0.56
	Axial foot style	0.29	0.37	0.44	0.83
	Flange style	0.20	0.30	0.37	0.68
	Clevis integrated style	0.12	0.19	0.27	0.52
	Single clevis style	0.18	0.25	0.32	0.65
	Double clevis style	0.19	0.27	0.33	0.69
	Trunnion style	0.18	0.28	0.34	0.66
	Boss-cut basic style	0.13	0.19	0.26	0.53
	Boss-cut flange style	0.19	0.28	0.35	0.65
	Boss-cut trunnion style	0.17	0.26	0.32	0.63
Additional mass per each 50 mm of stroke		0.04	0.06	0.08	0.13
Option bracket	Clevis bracket (With pin)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (With pin)	0.07	0.07	0.07	0.20
	Pivot bracket	0.06	0.06	0.06	0.06
	Pivot bracket pin	0.02	0.02	0.02	0.03

Calculation: (Example) **CM2L32-100**

● Basic mass.....0.44 (Foot style, ø32)

● Additional mass.....0.08/50 stroke

● Cylinder stroke.....100 stroke

$$0.44 + 0.08 \times 100/50 = 0.60 \text{ kg}$$



Precautions

Be sure to read before handling. Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Operating Precautions

Warning

1. Do not rotate the cover.

If a cover is rotated when installing a cylinder or screwing a fitting into the port, it is likely to damage the junction part with cover.

2. Do not operate with the cushion needle in a fully closed condition.

Using it in the fully closed state will cause the cushion seal to be damaged. When adjusting the cushion needle, use the "Hexagon wrench key: nominal size 1.5".

3. Do not open the cushion needle wide excessively.

If the cushion needle were set to be completely wide (more than 3 turns from fully closed), it would be equivalent to the cylinder with no cushion, thus making the impacts extremely high. Do not use it in such a way. Besides, using with fully open could give damage to the piston or cover.

Caution

1. Not able to disassemble.

Cover and cylinder tube are connected to each other by caulking method, thus making it impossible to disassemble. Therefore, internal parts of a cylinder other than rod seal are not replaceable.

2. Use caution to the popping of a retaining ring.

When replacing rod seals and removing and mounting a snap ring, use a proper tool (retaining ring plier: tool for installing a type C retaining ring). Even if a proper tool is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier. Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

3. Do not touch the cylinder during operation.

Use caution when handling a cylinder, which is running at a high speed and a high frequency, because the surface of a cylinder tube could get so hot enough as to cause you get burned.

4. Do not use an air cylinder as an air-hydro cylinder.

If it uses turbine oil in place of fluids for cylinder, it may result in oil leakage.

5. Combine the rod end section, so that a rod boot might not be twisted.

If a rod boot is installed with being twisted when installing a cylinder, it will cause a rod boot to fail during operation.

Air-hydro

CM2H Mounting style Bore size Stroke Rod boot

• Air-hydro

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



Specifications

Type	Air-hydro
Fluid	Turbine oil
Action	Double acting single rod
Bore size (mm)	ø20, ø25, ø32, ø40
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Min. operating pressure	0.18 MPa
Piston speed	15 to 300 mm/s
Ambient and fluid temperature	+5 to +60°C
Stroke length tolerance	+1.4 0 mm
Cushion	Rubber bumper (Standard equipment)
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Rod side trunnion style, Head side trunnion style, Clevis integrated style, Boss-cut style

* Auto switch can be mounted. Dimensions are the same as standard type of series CM2.

- For construction, refer to page 134.
- Since the dimensions of mounting style is the same as pages 136 to 143, refer to those pages.

Built-in One-touch Fittings

CM2 Mounting style Bore size F Stroke

• Built-in One-touch fittings

This type has the One-touch fitting integrated in a cylinder, which enables to reduce the piping labor and installing space dramatically.



Specifications

Action	Double acting, Single rod
Bore size (mm)	ø20, ø25, ø32, ø40
Max. operating pressure	1.0 MPa
Min. operating pressure	0.05 MPa
Cushion	Rubber bumper
Piping	One-touch fittings
Piston speed	50 to 750 mm/s
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Rod side trunnion style, Head side trunnion style, Clevis integrated style, Boss-cut style

* Auto switch can be mounted.

Applicable Tubing O.D./I.D.

Bore size (mm)	20	25	32	40
Applicable tubing O.D./I.D. (mm)	6/4	6/4	6/4	8/6
Applicable tubing material	Can be used for either nylon, soft nylon or polyurethane tubing.			

⚠ Caution

- One-touch fitting cannot be replaced.
 - One-touch fitting is press-fit into the cover, thus cannot be replaced.
- Refer to Fittings and Tubing Precautions (Best Pneumatics No. 6) for handling one-touch fittings.

- For construction, refer to page 134.
- For dimensions of each mounting style, refer to pages 136 to 143.
- For other specifications, refer to page 129.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

CS2

D-□

-X□

Individual
-X□

Technical
data

Series CM2

Clean Series

10-CM2 **Mounting style** **Bore size** — **Stroke**

• Clean Series (With relief port)

The type which is applicable for using inside the clean room graded Class 100 by making an actuator's rod section a double seal construction and discharging by relief port directly to the outside of clean room.

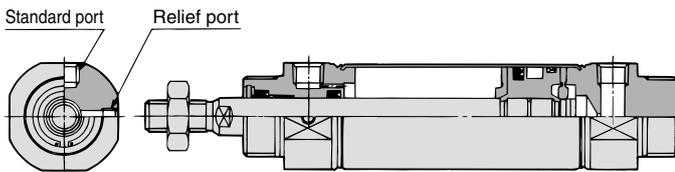


Specifications

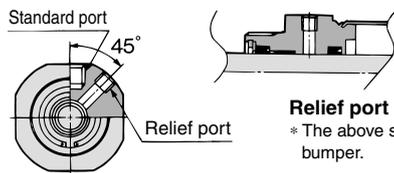
Action	Double acting, Single rod
Bore size (mm)	ø20, ø25, ø32, ø40
Max. operating pressure	1.0 MPa
Min. operating pressure	0.05 MPa
Cushion	Rubber bumper, Air cushion
Relief port size	M5 x 0.8
Piston speed	30 to 400 mm/s
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Boss-cut style

* Auto switch can be mounted.

Construction



ø20, ø25



ø32, ø40

Relief port
* The above shows the case of rubber bumper.

For details, refer to the separate catalog, "Pneumatic Clean Series".

Copper/Fluorine-free

20-CM2 **Mounting style** **Bore size** — **Stroke**

• Copper/fluorine-free

The type which prevents copper based ions from generating by changing the copper based materials into electroless nickel plated treatment or non-copper materials in order to eliminate the effects by copper based ions or fluororesins over the color cathode ray tube.



Specifications

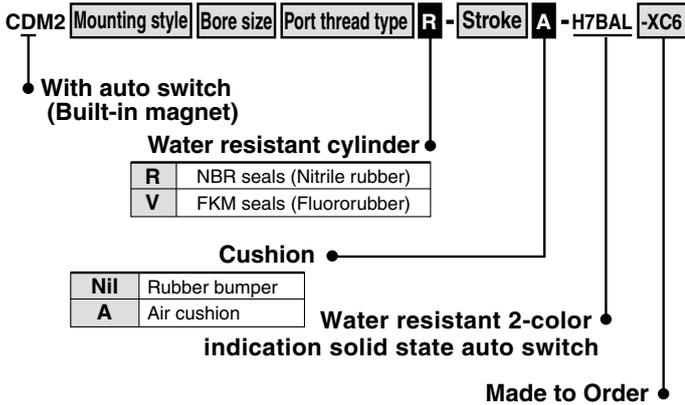
Action	Double acting, Single rod	
Bore size (mm)	ø20, ø25, ø32, ø40	
Max. operating pressure	1.0 MPa	
Min. operating pressure	0.05 MPa	
Cushion	Rubber bumper	Air cushion
Piston speed	50 to 750 mm/s	50 to 1000 mm/s
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Rod side trunnion style, Head side trunnion style, Clevis integrated style, Boss-cut style	

* Auto switch can be mounted.

Construction



Water Resistant



Ideal for use in a machine tool environment exposed to coolant mist. Also suited for use in areas in which water splashes, such as food processing equipment or car washers.



⚠ Caution

- Rod seal and scraper is not replaceable.
- Scraper is press-fit into the rod cover, thus cannot be replaced.

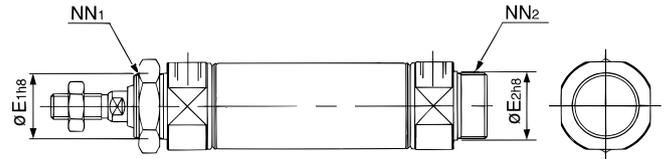
Details → Page 895

Specifications

Action	Double acting, Single rod
Bore size (mm)	20, 25, 32, 40
Cushion	Rubber bumper, Air cushion
Auto switch mounting	Band mounting
Made to Order	Piston rod, Rod end nut made of stainless steel (-XC6)

* Specifications other than the above are the same as the standard basic type.

Dimensions



Bore size (mm)	E ₁	E ₂ *	NN ₁	NN ₂ *
20	22 ⁰ _{-0.033}	20 ⁰ _{-0.033}	M22 x 1.5	M20 x 1.5

* Other dimensions are the same as double acting, single rod, standard type. (*: Same as the standard.)

Mounting Bracket/Part No.

Mounting bracket	Min. order	Bore size (mm)	Description (for min. order)
		20	
Axial foot **	2	CM-L020C	2 foot, 1 mounting nut
Flange	1	CM-F020C	1 flange
Trunnion (with nuts)	1	CM-T020C	1 trunnion, 1 trunnion nut

* ø25 to ø40: Same as the standard type

** Order 2 foot brackets for every cylinder.

Low-speed Cylinder



Smooth operation with a little sticking and slipping at low speed. Can start smoothly with a little ejection even after being rendered for hours.



The dimensions are the same as the double acting, single rod type. Refer to Best Pneumatics No. 3 for details.

Specifications

Bore size (mm)	20, 25, 32, 40
Type	Pneumatic
Action	Double acting, Single rod
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Min. operating pressure	0.025 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Cushion	Rubber bumper

Piston Speed

Bore size (mm)	20	25	32	40
Piston speed (mm/s)	0.5 to 300			
Allowable kinetic energy (J)	0.27	0.4	0.65	1.2

Refer to Best Pneumatics No. 3 for details.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

CS2

D-□

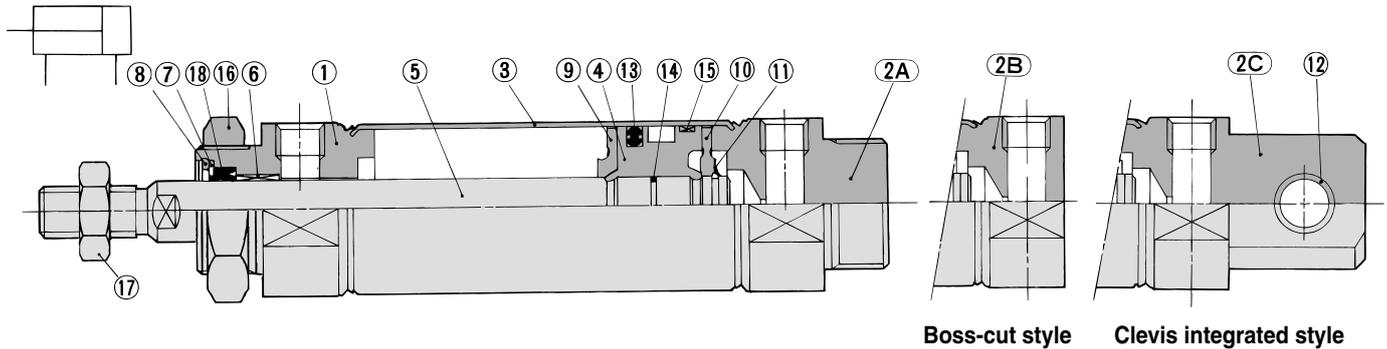
-X□

Individual
-X□

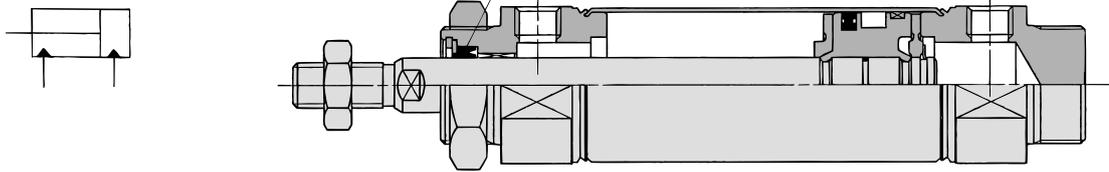
Technical
data

Series CM2

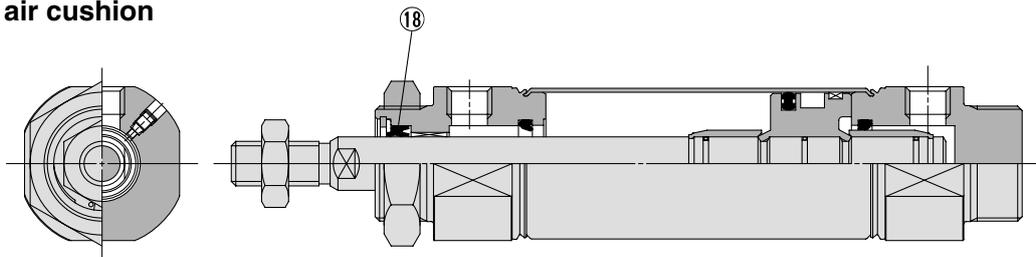
Rubber bumper



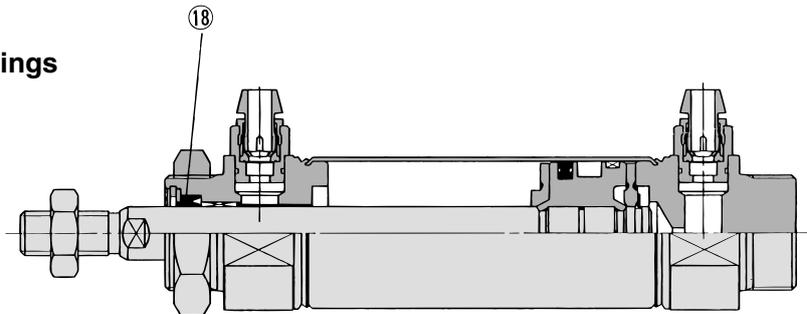
Air-hydro



With air cushion



Built-in One-touch fittings



Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear anodized
2A	Head cover A	Aluminum alloy	Clear anodized *
2B	Head cover B	Aluminum alloy	Clear anodized **
2C	Head cover C	Aluminum alloy	Clear anodized ***
3	Cylinder tube	Stainless steel	
4	Piston	Aluminum alloy	Chromated
5	Piston rod	Carbon steel	Hard chrome plated
6	Bushing	Copper oil-impregnated sintered alloy	
7	Seal retainer	Stainless steel	
8	Retaining ring	Carbon steel	Phosphate coated
9	Bumper A	Urethane	
10	Bumper B	Urethane	
11	Retaining ring	Stainless steel	

* Basic style, ** Boss-cut style, *** Clevis integrated style

No.	Description	Material	Note
12	Clevis bushing	Copper oil-impregnated sintered alloy	
13	Piston seal	NBR	
14	Piston gasket	NBR	
15	Wear ring	Resin	
16	Mounting nut	Carbon steel	Nickel plated
17	Rod end nut	Carbon steel	Nickel plated

Replacement Part: Seal

● With rubber bumper/With air cushion/Built-in One-touch fittings

No.	Description	Material	Part no.			
			20	25	32	40
18	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

● Air-hydro

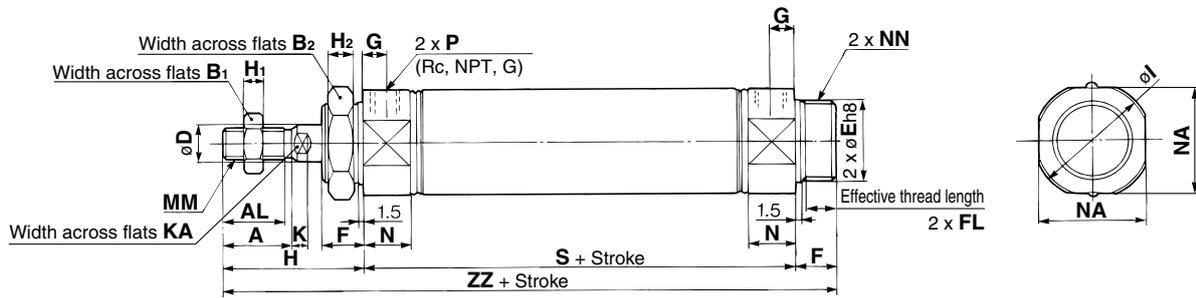
18	Rod seal	NBR	HDU-8	HDU-10	HDU-12L	HDU-14
----	----------	-----	-------	--------	---------	--------

* Since the seal kit does not include a grease pack, order it separately.

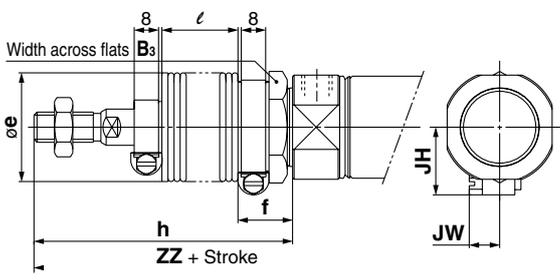
Grease pack part no.: GR-S-010 (10 g)

Basic Style (B)

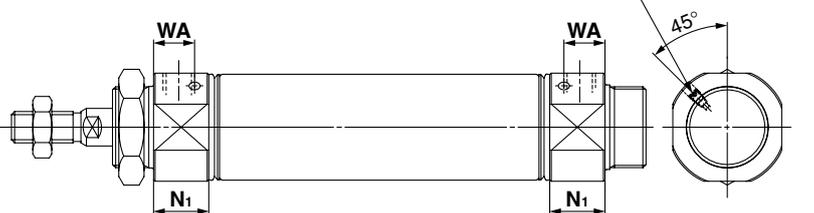
CM2B Bore size — Stroke



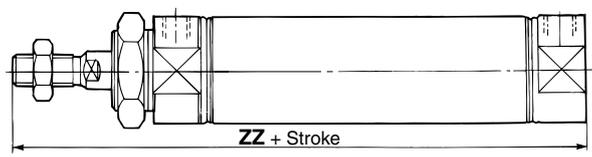
With rod boot



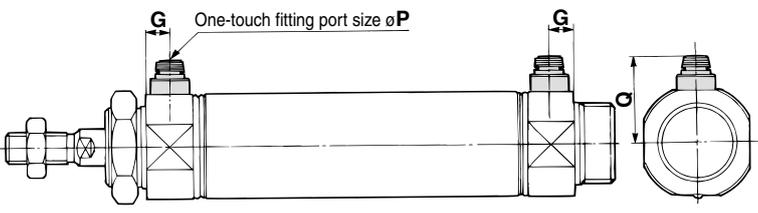
With air cushion



Boss-cut style



Built-in One-touch fittings



Bore size	A	AL	B ₁	B ₂	D	E	F	FL	G	H	H ₁	H ₂	I	K	KA	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	8	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	116
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	8	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	120
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	8	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	122
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	10	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	154

With Rod Boot

Symbol Stroke	B ₃	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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500											
20	30	36	18	68	81	93	106	131	156	181	12.5	25	37.5	50	75	100	125	143	156	168	181	206	231	256											
25	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	147	160	172	185	210	235	260											
32	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	149	162	174	187	212	237	262											
40	41	46	20	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	181	194	206	219	244	269	294											

With Rod Boot (mm)

Bore size	JH	JW
20	23.5	10.5
25	23.5	10.5
32	23.5	10.5
40	27	10.5

Boss-cut Style (mm)

Bore size	ZZ											
	Without rod boot	With rod boot										
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500					
20	103	130	143	155	168	193	218	243				
25	107	134	147	159	172	197	222	247				
32	109	136	149	161	174	199	224	249				
40	138	165	178	190	203	228	253	278				

With Air Cushion (mm)

Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings (mm)

Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

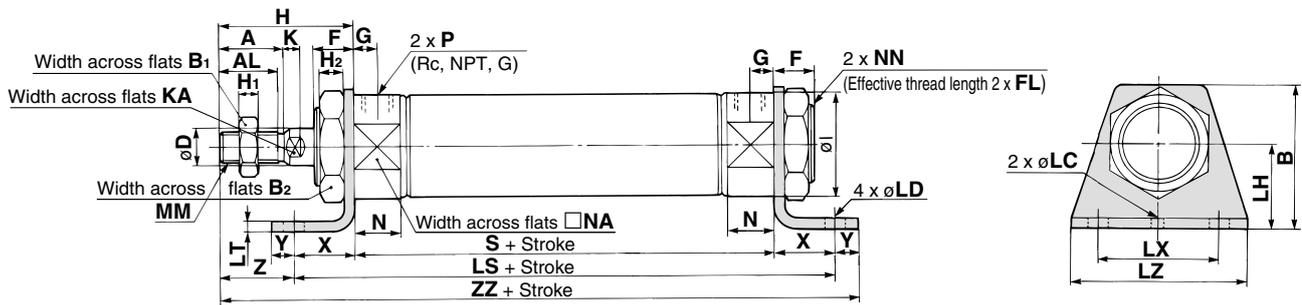
- CJ1
- CJP
- CJ2
- CM2
- CG1
- MB
- MB1
- CA2
- CS1
- CS2

- D-□
- X□
- Individual
- X□
- Technical data

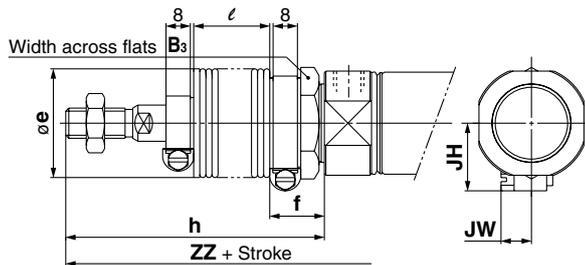
Series CM2

Axial Foot Style (L)

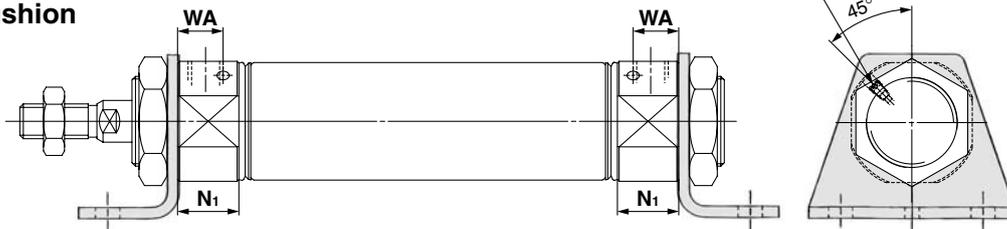
CM2L Bore size — Stroke



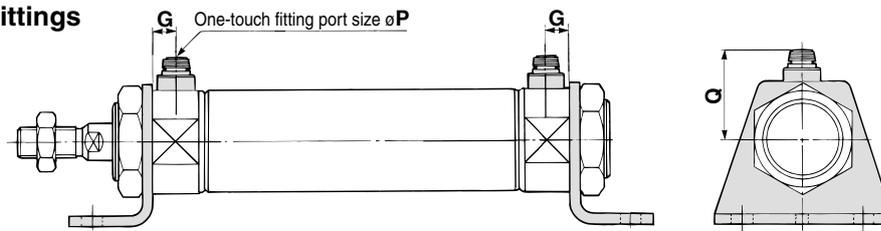
With rod boot



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B	B ₁	B ₂	D	F	FL	G	H	H ₁	H ₂	I	K	KA	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	18	15.5	40	13	26	8	13	10.5	8	41	5	8	28	5	6	4	6.8	25	102	3.2	40	55	M8 x 1.25	15	24	M20 x 1.5	1/8	62	20	8	21	131
25	22	19.5	47	17	32	10	13	10.5	8	45	6	8	33.5	5.5	8	4	6.8	28	102	3.2	40	55	M10 x 1.25	15	30	M26 x 1.5	1/8	62	20	8	25	135
32	22	19.5	47	17	32	12	13	10.5	8	45	6	8	37.5	5.5	10	4	6.8	28	104	3.2	40	55	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	20	8	25	137
40	24	21	54	22	41	14	16	13.5	11	50	8	10	46.5	7	12	4	7	30	134	3.2	55	75	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	23	10	27	171

With Rod Boot

Symbol Stroke	B ₃	e	f	h								ℓ								Z							
				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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	30	36	19.2	68	81	93	106	131	156	181	12.5	25	37.5	50	75	100	125	48	61	73	86	111	136	161			
25	32	36	19.2	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	52	65	77	90	115	140	165			
32	32	36	19.2	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	52	65	77	90	115	140	165			
40	41	46	21.2	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	54	67	79	92	117	142	167			

With Rod Boot

Symbol Stroke	ZZ (mm)								JH	JW
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	158	171	183	196	221	246	271	23.5	10.5	
25	162	175	187	200	225	250	275	23.5	10.5	
32	164	177	189	202	227	252	277	23.5	10.5	
40	198	211	223	236	261	286	311	27	10.5	

With Air Cushion

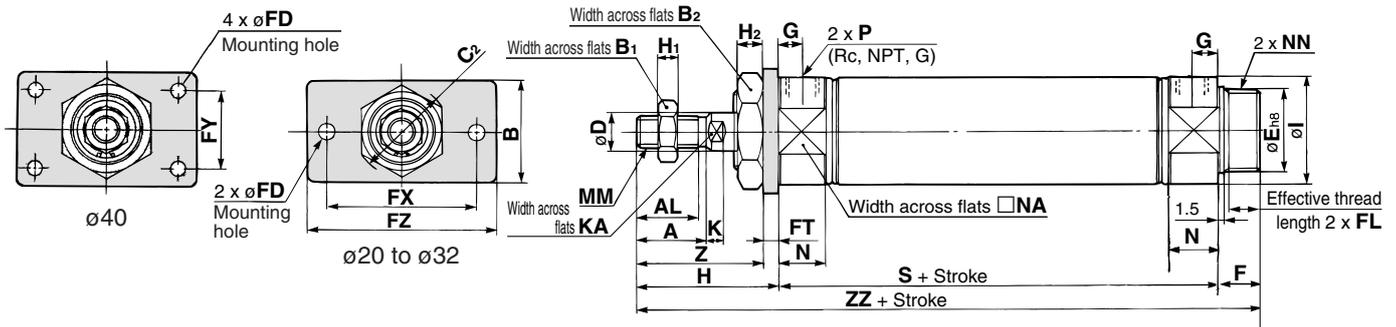
Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings

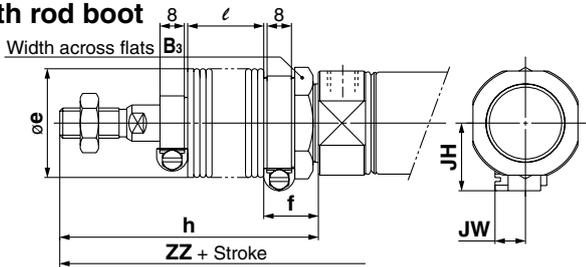
Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

Rod Side Flange Style (F)

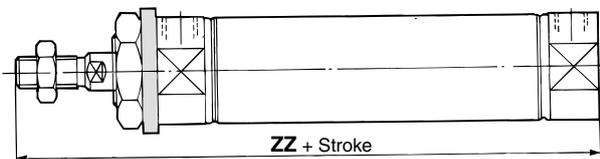
CM2F Bore size — Stroke



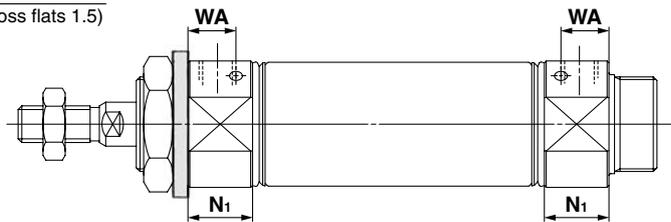
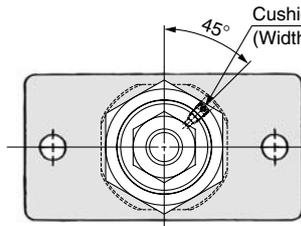
With rod boot



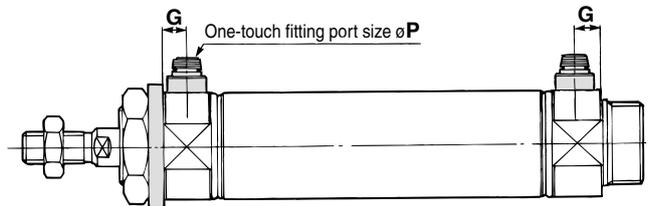
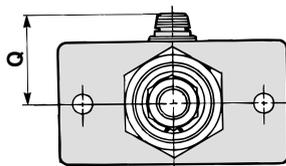
Boss-cut style



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FL	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I	K	KA	MM	N	NA	NN	P	S	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	41	5	8	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	37	116
25	22	19.5	40	17	32	37	10	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	41	120
32	22	19.5	40	17	32	37	12	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	41	122
40	24	21	52	22	41	47.3	14	32 ⁰ _{-0.039}	16	13.5	7	5	66	36	82	11	50	8	10	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	45	154

With Rod Boot

Symbol Stroke Bore size	B ₃	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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	30	36	20	68	81	93	106	131	156	181	12.5	25	37.5	50	75	100	125	143	156	168	181	206	231	256			
25	32	36	20	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	147	160	172	185	210	235	260			
32	32	36	20	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	149	162	174	187	212	237	262			
40	41	46	23	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	181	194	206	219	244	269	294			

With Rod Boot (mm)

Bore size	JH	JW
20	23.5	10.5
25	23.5	10.5
32	23.5	10.5
40	27	10.5

Boss-cut Style (mm)

Bore size	ZZ							
	Without rod boot	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	103	130	143	155	168	193	218	243
25	107	134	147	159	172	197	222	247
32	109	136	149	161	174	199	224	249
40	138	165	178	190	203	228	253	278

With Air Cushion (mm)

Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings (mm)

Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

CS2

D-□

-X□

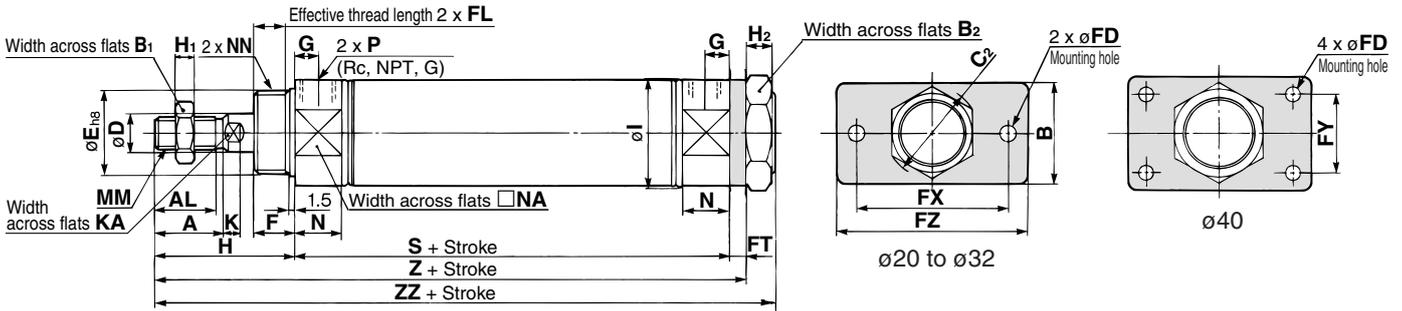
Individual -X□

Technical data

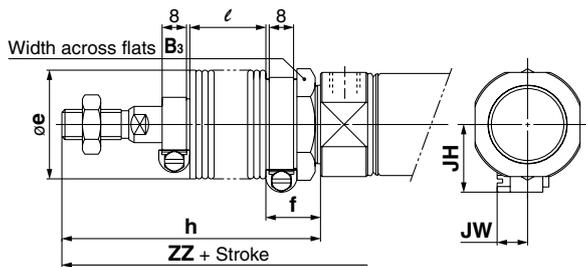
Series CM2

Head Side Flange Style (G)

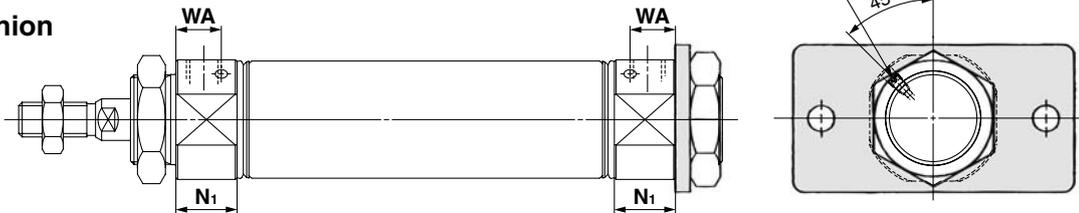
CM2G —



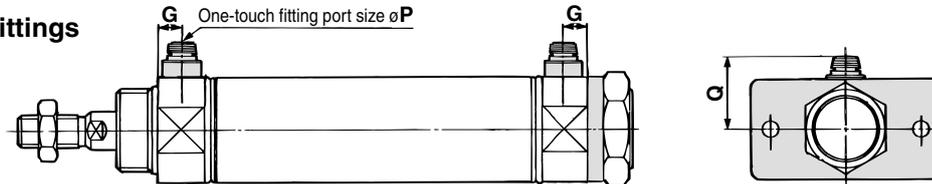
With rod boot



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FL	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I
20	18	15.5	34	13	26	30	8	20 ^{-0.033} ₀	13	10.5	7	4	60	—	75	8	41	5	8	28
25	22	19.5	40	17	32	37	10	26 ^{-0.033} ₀	13	10.5	7	4	60	—	75	8	45	6	8	33.5
32	22	19.5	40	17	32	37	12	26 ^{-0.033} ₀	13	10.5	7	4	60	—	75	8	45	6	8	37.5
40	24	21	52	22	41	47.3	14	32 ^{-0.039} ₀	16	13.5	7	5	66	36	82	11	50	8	10	46.5

Bore size	K	KA	MM	N	NA	NN	P	S	Z	ZZ
20	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	107	116
25	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	111	120
32	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	113	122
40	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	143	154

Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

With Rod Boot

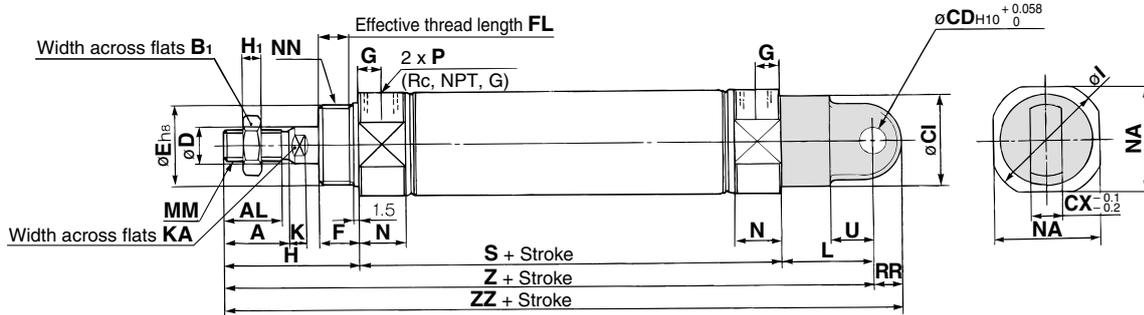
Symbol Stroke	B ₃	e	f	h								ℓ								ZZ							
				1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	30	36	18	68	81	93	106	131	156	181	12.5	25	37.5	50	75	100	125	143	156	168	181	206	231	256			
25	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	147	160	172	185	210	235	260			
32	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	149	162	174	187	212	237	262			
40	41	46	20	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	181	194	206	219	244	269	294			

With Rod Boot (mm)

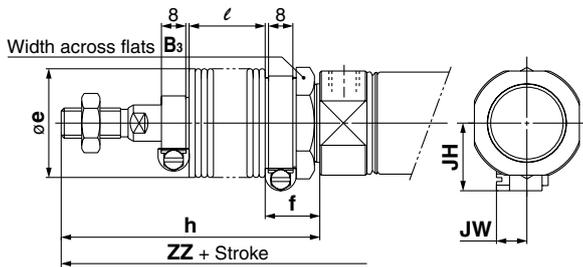
Bore size	JH	JW
20	23.5	10.5
25	23.5	10.5
32	23.5	10.5
40	27	10.5

Single Clevis Style (C)

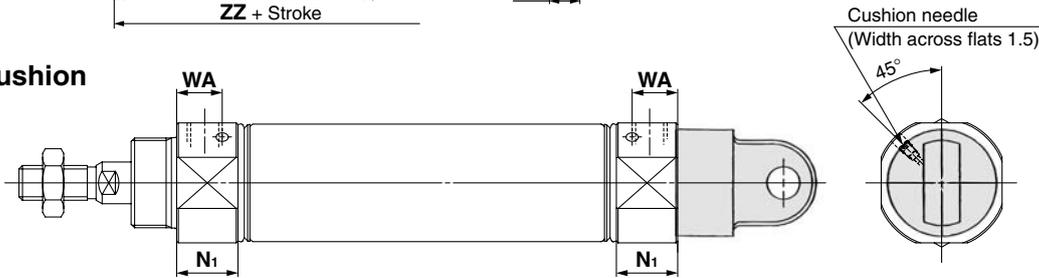
CM2C Bore size — Stroke



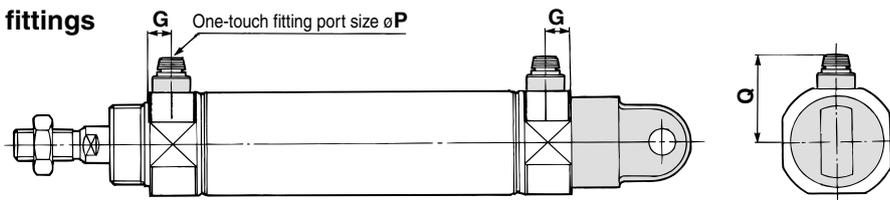
With rod boot



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B ₁	CI	CD	CX	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ
20	18	15.5	13	24	9	10	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	30	M8 x 1.25	15	24	M20 x 1.5	1/8	9	62	14	133	142
25	22	19.5	17	30	9	10	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	30	M10 x 1.25	15	30	M26 x 1.5	1/8	9	62	14	137	146
32	22	19.5	17	30	9	10	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	9	64	14	139	148
40	24	21	22	38	10	15	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	11	88	18	177	188

With Rod Boot

Symbol Stroke	B ₃	e	f	h								ℓ								Z							
				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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	30	36	18	68	81	93	106	131	156	181	12.5	25	37.5	50	75	100	125	160	173	185	198	223	248	273			
25	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	164	177	189	202	227	252	277			
32	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	166	179	191	204	229	254	279			
40	41	46	20	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	204	217	229	242	267	292	317			

With Rod Boot

Symbol Stroke	ZZ								JH	JW
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	169	182	194	207	232	257	282	23.5	10.5	
25	173	186	198	211	236	261	286	23.5	10.5	
32	175	188	200	213	238	263	288	23.5	10.5	
40	215	228	240	253	278	303	328	27	10.5	

With Air Cushion

Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings

Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

CS2

D-□

-X□

Individual

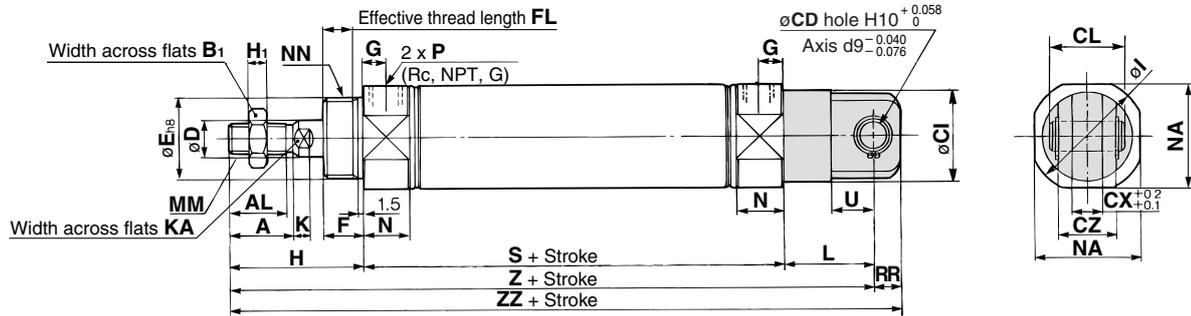
-X□

Technical data

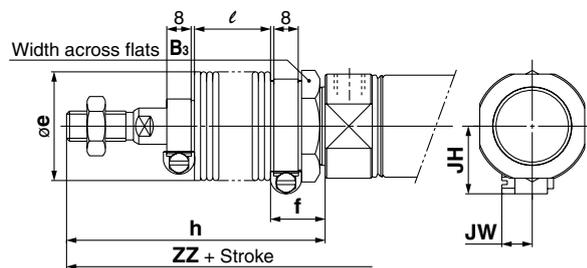
Series CM2

Double Clevis Style (D)

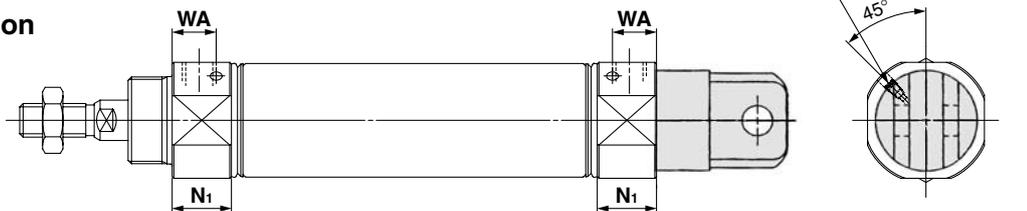
CM2D Bore size — Stroke



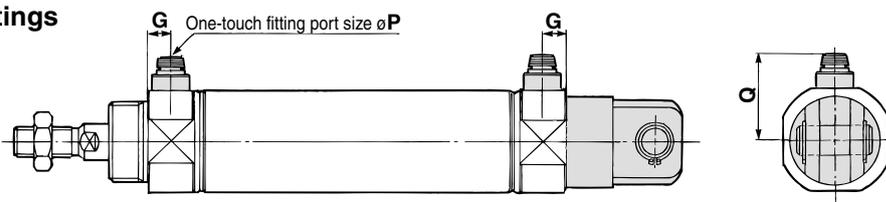
With rod boot



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B ₁	CD	CI	CL	CX	CZ	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ
20	18	15.5	13	9	24	25	10	19	8	20 ^{-0.033}	13	10.5	8	41	5	28	5	6	30	M8 x 1.25	15	24	M20 x 1.5	1/8	9	62	14	133	142
25	22	19.5	17	9	30	25	10	19	10	26 ^{-0.033}	13	10.5	8	45	6	33.5	5.5	8	30	M10 x 1.25	15	30	M26 x 1.5	1/8	9	62	14	137	146
32	22	19.5	17	9	30	25	10	19	12	26 ^{-0.033}	13	10.5	8	45	6	37.5	5.5	10	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	9	64	14	139	148
40	24	21	22	10	38	41.2	15	30	14	32 ^{-0.039}	16	13.5	11	50	8	46.5	7	12	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	11	88	18	177	188

(mm)

* Clevis pin and snap ring (cotter pin for bore size ø40) are shipped together.

With Rod Boot

Symbol Stroke	B ₃	e	f	h								l								Z							
				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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	30	36	18	68	81	93	106	131	156	181	12.5	25	37.5	50	75	100	125	160	173	185	198	223	248	273			
25	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	164	177	189	202	227	252	277			
32	32	36	18	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	166	179	191	204	229	254	279			
40	41	46	20	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	204	217	229	242	267	292	317			

With Rod Boot

Symbol Stroke	ZZ								JH	JW
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500			
20	169	182	194	207	232	257	282	23.5	10.5	
25	173	186	198	211	236	261	286	23.5	10.5	
32	175	188	200	213	238	263	288	23.5	10.5	
40	215	228	240	253	278	303	328	27	10.5	

With Air Cushion

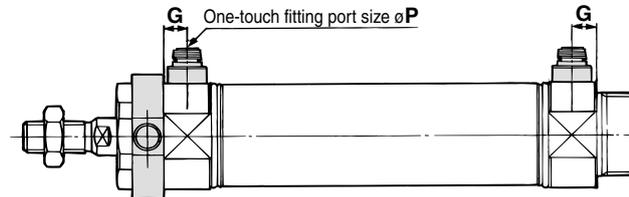
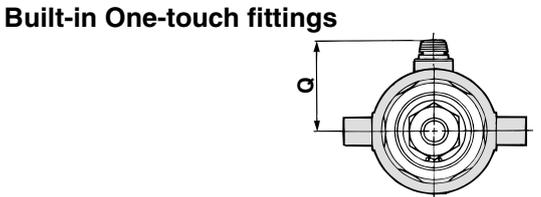
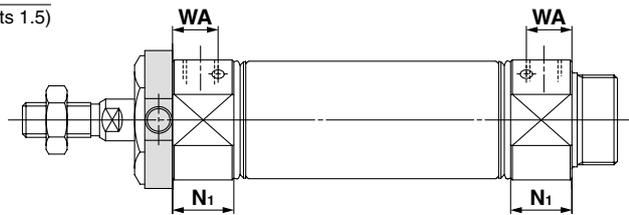
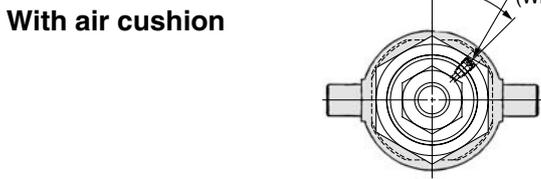
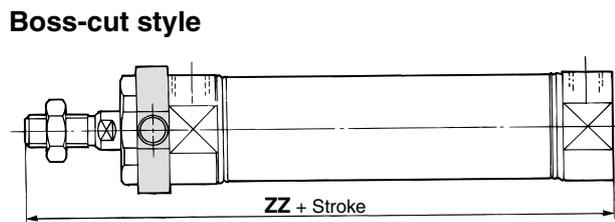
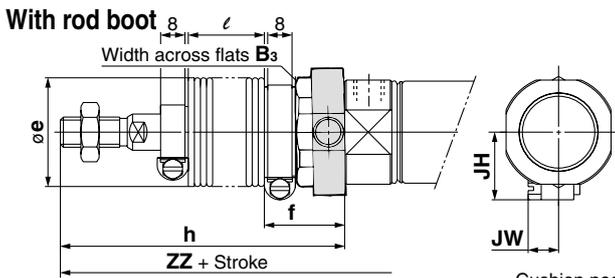
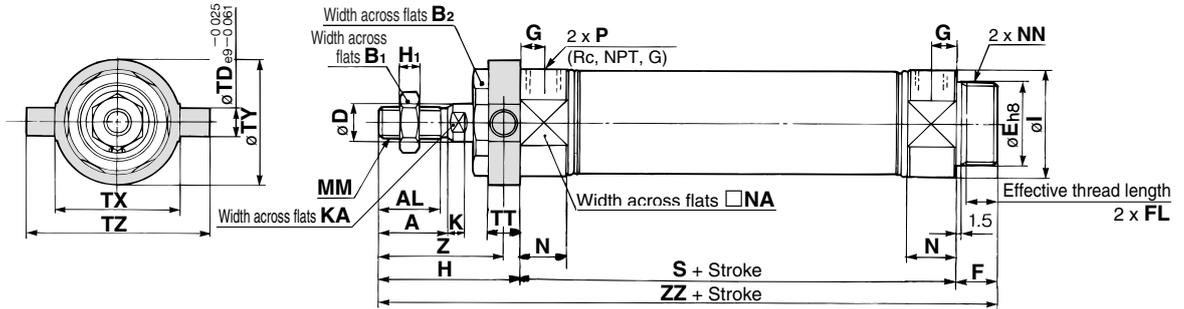
Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings

Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

Rod Side Trunnion Style (U)

CM2U Bore size — Stroke



- CJ1
- CJP
- CJ2
- CM2
- CG1
- MB
- MB1
- CA2
- CS1
- CS2

Bore size	A	AL	B ₁	B ₂	D	E	F	FL	G	H	H ₁	I	K	KA	MM	N	NA	NN	P
20	18	15.5	13	26	8	20 ^{-0.033}	13	10.5	8	41	5	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8
25	22	19.5	17	32	10	26 ^{-0.033}	13	10.5	8	45	6	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8
32	22	19.5	17	32	12	26 ^{-0.033}	13	10.5	8	45	6	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8
40	24	21	22	41	14	32 ^{-0.039}	16	13.5	11	50	8	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4

(mm)

Bore size	S	TD	TT	TX	TY	TZ	Z	ZZ
20	62	8	10	32	32	52	36	116
25	62	9	10	40	40	60	40	120
32	64	9	10	40	40	60	40	122
40	88	10	11	53	53	77	44.5	154

With Rod Boot (mm)

Bore size	Symbol	Stroke	B ₃	e	f	h							
						1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	
20			30	36	25	68	81	93	106	131	156	181	
25			32	36	25	72	85	97	110	135	160	185	
32			32	36	25	72	85	97	110	135	160	185	
40			41	46	26	77	90	102	115	140	165	190	

With Rod Boot (mm)

Bore size	Symbol	Stroke	l							Z					ZZ					JH	JW				
			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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150			151 to 200	201 to 300	301 to 400	401 to 500
20			12.5	25	37.5	50	75	100	125	63	76	88	101	126	151	176	143	156	168	181	206	231	256	23.5	10.5
25			12.5	25	37.5	50	75	100	125	67	80	92	105	130	155	180	147	160	172	185	210	235	260	23.5	10.5
32			12.5	25	37.5	50	75	100	125	67	80	92	105	130	155	180	149	162	174	187	212	237	262	23.5	10.5
40			12.5	25	37.5	50	75	100	125	71.5	84.5	96.5	109.5	134.5	159.5	184.5	181	194	206	219	244	269	294	27	10.5

Boss-cut Style (mm)

Bore size	Without rod boot	ZZ						
		With rod boot						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	103	130	143	155	168	193	218	243
25	107	134	147	159	172	197	222	247
32	109	136	149	161	174	199	224	249
40	138	165	178	190	203	228	253	278

With Air Cushion (mm)

Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings (mm)

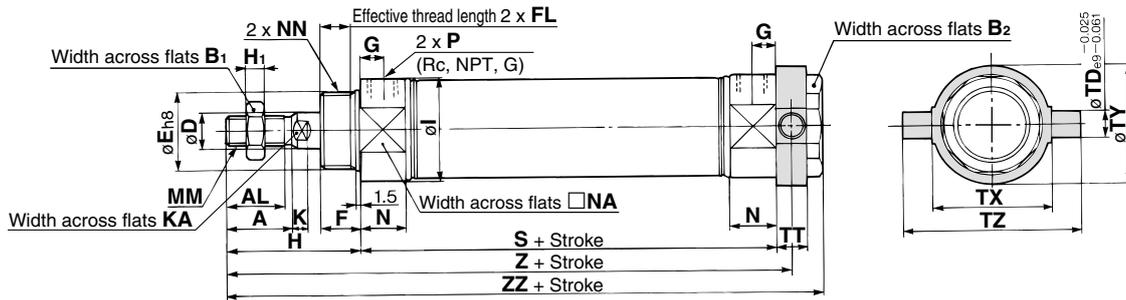
Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

- D-□
- X□
- Individual
- X□
- Technical data

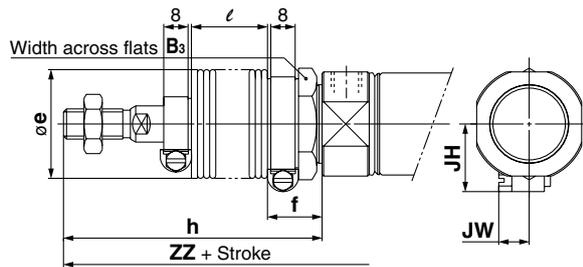
Series CM2

Head Side Trunnion Style (T)

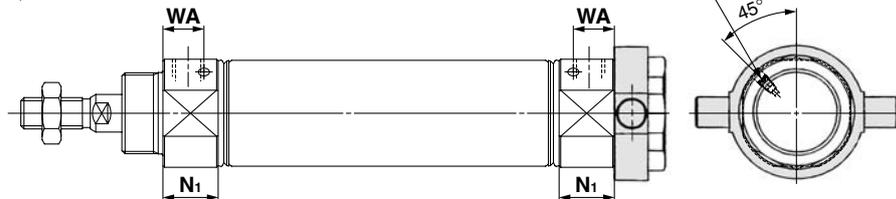
CM2T Bore size — Stroke



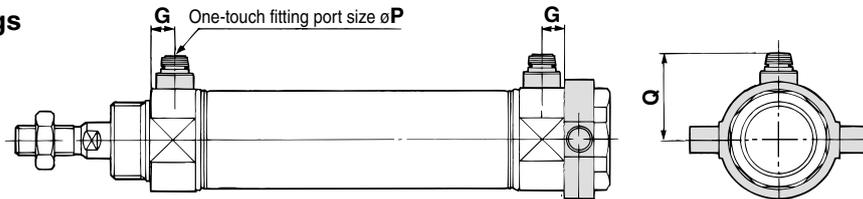
With rod boot



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B ₁	B ₂	D	E	F	FL	G	H	H ₁	I	K	KA	MM	N	NA	NN	P
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4

Bore size	S	TD	TT	TX	TY	TZ	Z	ZZ
20	62	8	10	32	32	52	108	118
25	62	9	10	40	40	60	112	122
32	64	9	10	40	40	60	114	124
40	88	10	11	53	53	77	143.5	154

With Rod Boot

Bore size	Symbol	Stroke	B ₃	e	f	h							
						1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	
20			30	36	18	68	81	93	106	131	156	181	
25			32	36	18	72	85	97	110	135	160	185	
32			32	36	18	72	85	97	110	135	160	185	
40			41	46	20	77	90	102	115	140	165	190	

With Rod Boot

Bore size	Symbol	Stroke	l							Z							ZZ							JH	JW
			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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500		
20			12.5	25	37.5	50	75	100	125	135	148	160	173	198	223	248	145	158	170	183	208	233	258	23.5	10.5
25			12.5	25	37.5	50	75	100	125	139	152	164	177	202	227	252	149	162	174	187	212	237	262	23.5	10.5
32			12.5	25	37.5	50	75	100	125	141	154	166	179	204	229	254	151	164	176	189	214	239	264	23.5	10.5
40			12.5	25	37.5	50	75	100	125	170.5	183.5	195.5	208.5	233.5	258.5	283.5	181	194	206	219	244	269	294	27	10.5

With Air Cushion

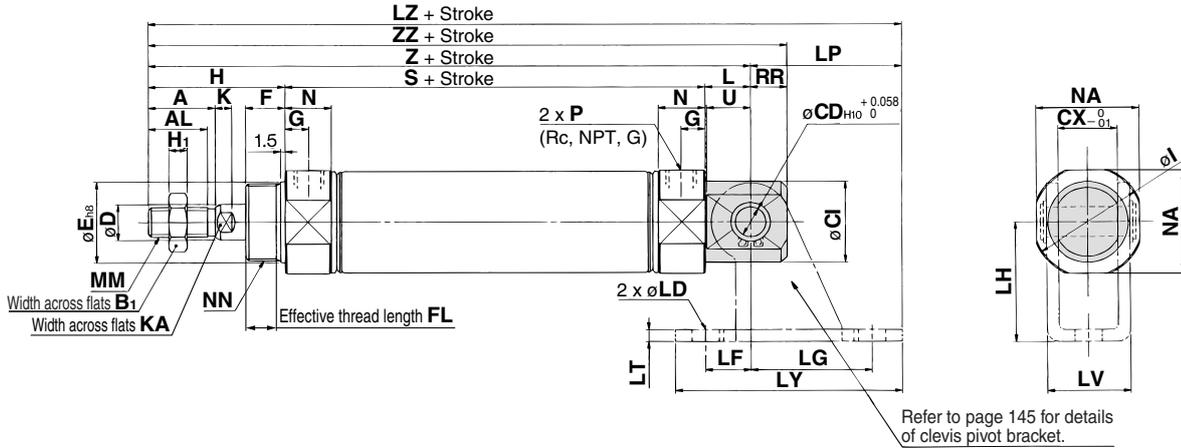
Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings

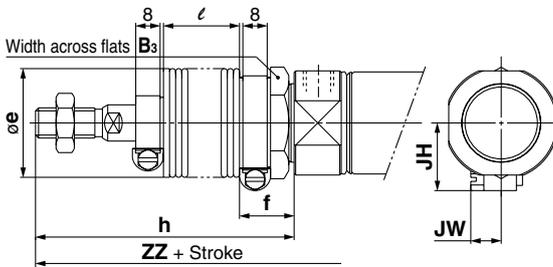
Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

Clevis Integrated Style (E)

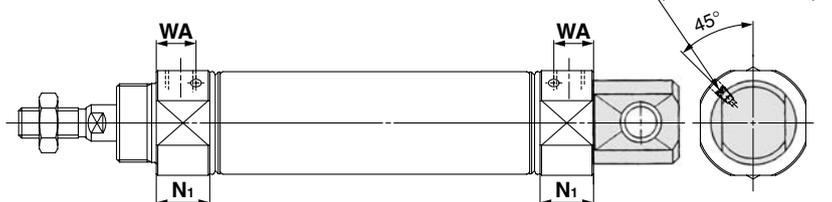
CM2E Bore size — Stroke



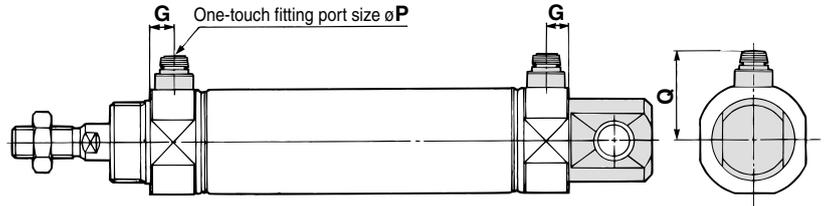
With rod boot



With air cushion



Built-in One-touch fittings



Bore size	A	AL	B ₁	CD	CI	CX	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN
20	18	15.5	13	8	20	12	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	12	M8 x 1.25	15	24	M20 x 1.5
25	22	19.5	17	8	22	12	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	12	M10 x 1.25	15	30	M26 x 1.5
32	22	19.5	17	10	27	20	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	15	M10 x 1.25	15	34.5	M26 x 1.5
40	24	21	22	10	33	20	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	15	M14 x 1.5	21.5	42.5	M32 x 2

(mm)

Bore size	P	RR	S	U	Z	ZZ
20	1/8	9	62	11.5	115	124
25	1/8	9	62	11.5	119	128
32	1/8	12	64	14.5	124	136
40	1/4	12	88	14.5	153	165

With Rod Boot (mm)

Symbol Stroke	B ₃	e	f	h							
				1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	
20	30	36	18	68	81	93	106	131	156	181	
25	32	36	18	72	85	97	110	135	160	185	
32	32	36	18	72	85	97	110	135	160	185	
40	41	46	20	77	90	102	115	140	165	190	

With Rod Boot

(mm)

Symbol Stroke	ℓ								Z								ZZ								JH	JW
	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	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500					
20	12.5	25	37.5	50	75	100	125	142	155	167	180	205	230	255	151	164	176	189	214	239	264	23.5	10.5			
25	12.5	25	37.5	50	75	100	125	146	159	171	184	209	234	259	155	168	180	193	218	243	268	23.5	10.5			
32	12.5	25	37.5	50	75	100	125	151	164	176	189	214	239	264	163	176	188	201	226	251	276	23.5	10.5			
40	12.5	25	37.5	50	75	100	125	180	193	205	218	243	268	293	192	205	217	230	255	280	319	27	10.5			

With Air Cushion (mm)

Bore size	N ₁	WA
20	17.5	13
25	17.5	13
32	17.5	13
40	21.5	16

Built-in One-touch Fittings (mm)

Bore size	G	P	Q
20	8	6	21.5
25	8	6	24.5
32	8	6	27
40	11	8	32.5

Clevis Pivot Bracket (mm)

Bore size	LD	LF	LG	LH	LP	LT	LV	LY	LZ
20	6.8	15	30	30	37	3.2	18.4	59	152
25	6.8	15	30	30	37	3.2	18.4	59	156
32	9	15	40	40	50	4	28	75	174
40	9	15	40	40	50	4	28	75	203

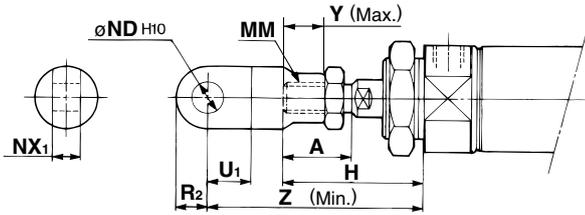
- CJ1
- CJP
- CJ2
- CM2
- CG1
- MB
- MB1
- CA2
- CS1
- CS2

- D-□
- X□
- Individual
- X□
- Technical data

Accessory Bracket Dimensions

Single Knuckle Joint

(mm)

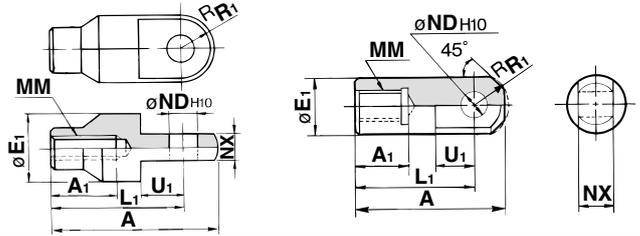


Bore size	A	H	MM	ND _{H10}	NX ₁	U ₁	R ₂	Y	Z
20	18	41	M8 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	14	10	11	66
25, 32	22	45	M10 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	14	10	14	69
40	24	50	M14 x 1.5	12 ^{+0.070} ₀	16 ^{-0.1} _{-0.3}	20	14	13	92

Single Knuckle Joint

(mm)

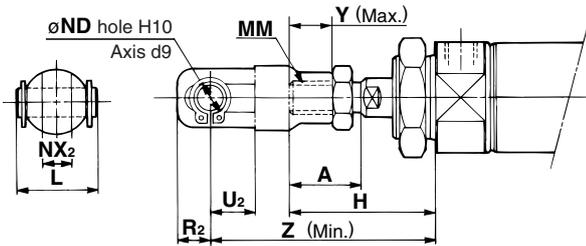
I-020B/032B Material: Rolled steel **I-040B** Material: Free cutting sulfur steel



Part no.	Applicable bore size	A	A ₁	E ₁	L ₁	MM	ND _{H10}	NX	R ₁	U ₁
I-020B	20	46	16	20	36	M8 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	10	14
I-032B	25, 32	48	18	20	38	M10 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	10	14
I-040B	40	69	22	24	55	M14 x 1.5	12 ^{+0.070} ₀	16 ^{-0.1} _{-0.3}	15.5	20

Double Knuckle Joint

(mm)

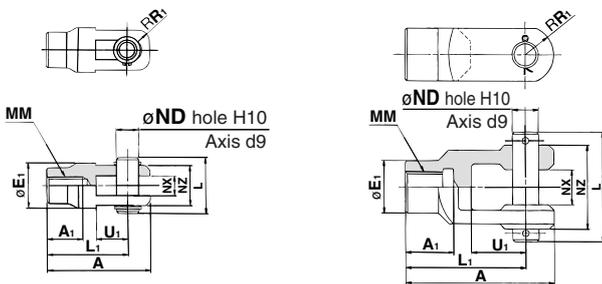


Bore size	A	H	L	MM	ND	NX ₂	R ₂	U ₂	Y	Z
20	18	41	25	M8 x 1.25	9	9 ^{+0.2} _{+0.1}	10	14	11	66
25, 32	22	45	25	M10 x 1.25	9	9 ^{+0.2} _{+0.1}	10	14	14	69
40	24	50	49.7	M14 x 1.5	12	16 ^{+0.3} _{+0.1}	13	25	13	92

Double Knuckle Joint

(mm)

Y-020B/Y-032B Material: Rolled steel **Y-040B** Material: Cast iron



Part no.	Applicable bore size	A	A ₁	E ₁	L	L ₁	MM	ND	NX	NZ	R ₁	U ₁	Applicable pin part number	Retaining ring size
Y-020B	20	46	16	20	25	36	M8 x 1.25	9	9 ^{+0.2} _{+0.1}	18	5	14	CDP-1	Type C 9 for axis
Y-032B	25, 32	48	18	20	25	38	M10 x 1.25	9	9 ^{+0.2} _{+0.1}	18	5	14	CDP-1	Type C 9 for axis
Y-040B	40	68	22	24	49.7	55	M14 x 1.5	12	16 ^{+0.3} _{+0.1}	38	13	25	CDP-3	ø3 x 18ℓ

* Clevis pin and retaining ring (cotter pin for 40) are attached.

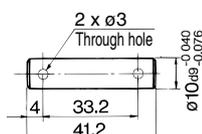
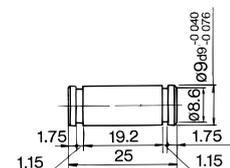
Double Clevis Pin

Material: Carbon steel

(mm)

Bore size/ø20, ø25, ø32
CDP-1

Bore size/ø40
CDP-2



Retaining ring: Type C9 for axis

Cotter pin ø3 x 18ℓ

* Retaining rings (cotter pins for ø40) are attached.

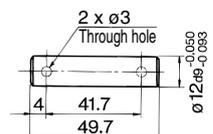
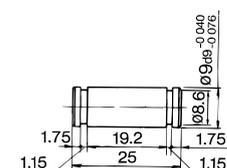
Double Knuckle Pin

Material: Carbon steel

(mm)

Bore size/ø20, ø25, ø32
CDP-1

Bore size/ø40
CDP-3



Retaining ring: Type C9 for axis

Cotter pin ø3 x 18ℓ

* Retaining rings (cotter pins for ø40) are attached.