

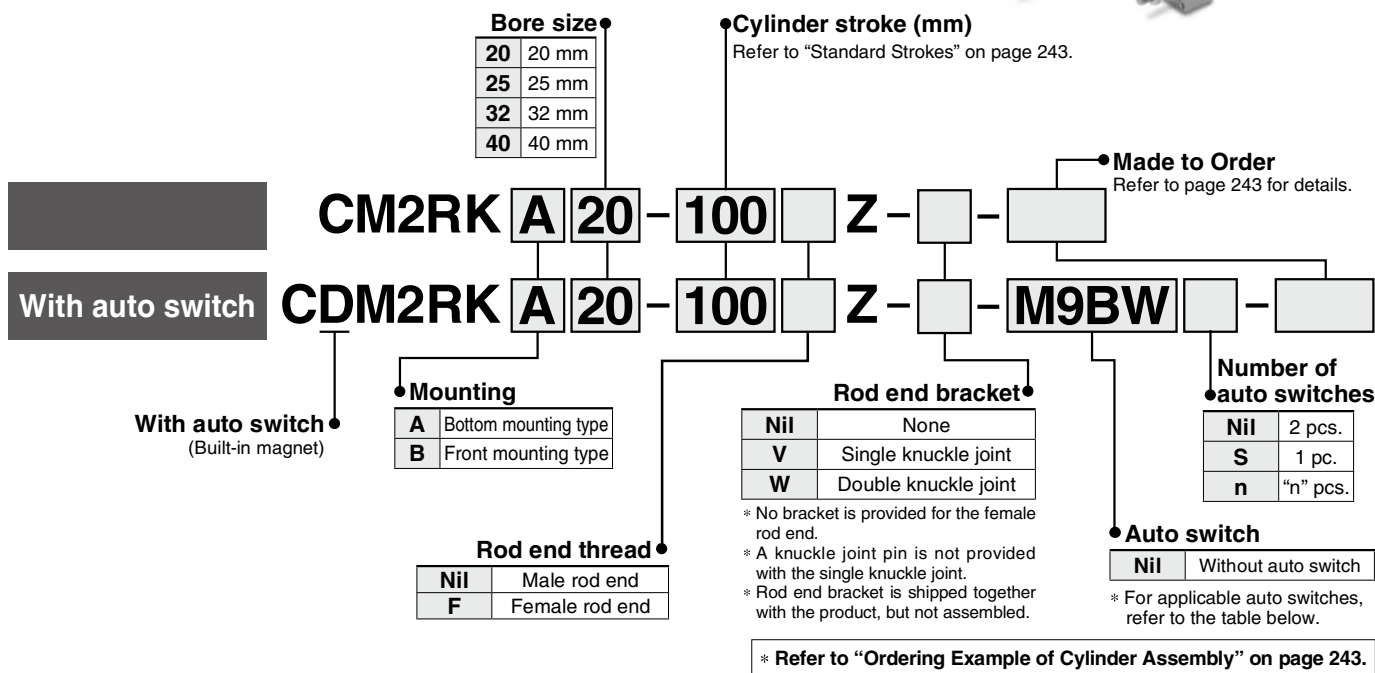
Air Cylinder: Direct Mount, Non-rotating Rod Type Double Acting, Single Rod

CM2RK Series

∅20, ∅25, ∅32, ∅40



How to Order



Applicable Auto Switches/Refer to pages 1575 to 1701 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	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)		Relay, PLC	IC circuit						
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	5 V, 12 V	M9NV	M9N	●	●	●	○	—	○	—	—					
				3-wire (PNP)				M9PV	M9P	●	●	●	○	—	○							
		2-wire		M9BV				M9B	●	●	●	○	—	○								
		—		H7C				●	●	●	●	—	—	—								
	Diagnostic indication (2-color indicator)	Terminal conduit	Yes	3-wire (NPN)	24 V	—	5 V, 12 V	—	G39A	—	—	—	—	●	—	—	IC circuit					
				2-wire				—	K39A	—	—	—	—	●	—	—	—					
	Water resistant (2-color indicator)	Grommet	Yes	3-wire (NPN)	24 V	—	5 V, 12 V	M9N WV	M9N W	●	●	●	○	—	○	—	—					
				3-wire (PNP)				M9P WV	M9P W	●	●	●	○	—	○							
				2-wire				M9B WV	M9B W	●	●	●	○	—	○							
				3-wire (NPN)				M9NA V*1	M9NA	○	○	●	○	—	○			—	IC circuit			
With diagnostic output (2-color indicator)	Grommet	Yes	3-wire (PNP)	24 V	—	12 V	M9PA V*1	M9PA	○	○	●	○	—	○	—	—						
			2-wire				M9BA V*1	M9BA	○	○	●	○	—	○								
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	—	5 V	A96V	A96	●	—	●	—	—	—	—	IC circuit					
				2-wire				100 V	A93V*2	A93	●	●	●	●	—	—	—	—				
								100 V or less	A90V	A90	●	—	●	—	—	—	—	—	IC circuit			
								100 V, 200 V	—	B54	●	—	●	●	—	—	—	—				
								200 V or less	—	B64	●	—	●	—	—	—	—	—				
		Connector		No				24 V or less	—	C73C	●	—	●	●	●	—	—	—	—	—	—	
								—	—	C80C	●	—	●	●	●	—	—	—	—	IC circuit		
		Terminal conduit		Yes				—	—	A33A	—	—	—	—	—	●	—	—	—	—	—	PLC
								100 V, 200 V	—	A34A	—	—	—	—	—	●	—	—	—	—	—	—
		DIN terminal		Yes				—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—		—		—	—	—	—	—	—	—	—	—	—	—	—						
Grommet	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Grommet	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
 1 m M (Example) M9N WV
 3 m L (Example) M9N WL
 5 m Z (Example) M9N WZ
 None N (Example) H7CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
 * Do not indicate suffix "N" for no lead wire on D-A3□□/A44A/G39A/K39A models.

* Since there are other applicable auto switches than listed above, refer to page 266 for details.

* For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.

* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

Air Cylinder: Direct Mount, Non-rotating Rod Type **CM2RK Series** Double Acting, Single Rod

The CM2RK direct mount cylinder can be installed directly through the use of a square rod cover.

Non-rotating accuracy

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

$\varnothing 20, \varnothing 25 — \pm 0.7^\circ$
 $\varnothing 32, \varnothing 40 — \pm 0.5^\circ$

Space-saving has been realized.

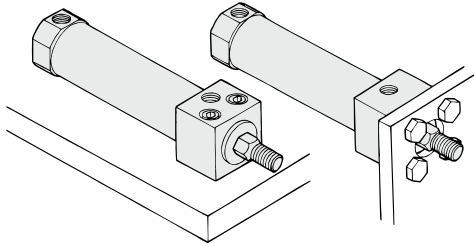
Because it is a directly mounted type without using brackets, its overall length is shorter, and its installation pitch can be made smaller. Thus, the space that is required for installation has been dramatically reduced.

Improved installation accuracy and strength

A centering boss has been provided to improve the installation accuracy. Also, because it is the directly mounted type, the strength has been increased.

Two types of installation

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

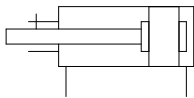


Bottom mounting type

Front mounting type

Symbol

Rubber bumper



Made to Order

[Click here for details](#)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (-10 to 150°C)
-XC3	Special port location
-XC6	Made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC11	Dual stroke cylinder/Single rod type
-XC13	Auto switch rail mounting
-XC20	Head cover axial port
-XC22	Fluororubber seal
-XC25	No fixed throttle of connection port
-XC85	Grease for food processing equipment
-X446	PTFE grease

Accessories

Refer to pages 189 and 190 for accessories, since it is the same as standard type, double acting, single rod.

Specifications

Bore size (mm)	20	25	32	40	
Rod non-rotating accuracy	$\pm 0.7^\circ$		$\pm 0.5^\circ$		
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°C to 70°C With auto switch: -10°C to 60°C (No freezing)				
Lubrication	Not required (Non-lube)				
Stroke length tolerance	$^{+1.4}_0$ mm				
Piston speed	50 to 500 mm/s				
Cushion	Rubber bumper				
Allowable kinetic energy	Male thread	0.27 J	0.4 J	0.65 J	1.2 J
	Female thread	0.11 J	0.18 J	0.29 J	0.52 J

Standard Strokes

Bore size (mm)	Standard stroke (mm) ^{Note 1)}	Max. manufacturable stroke (mm)
20	25, 50, 75, 100, 125, 150	1000
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. Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

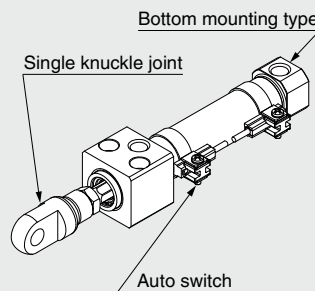
Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on front matter pages. In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Tightening Torque: Tighten the cylinder mounting bolts for the bottom mounting type (CM2RKA series) with the following tightening torque.

Bore size (mm)	Hexagon socket head cap bolt size	Tightening torque (N·m)
20	M5 x 0.8	2.4 to 3.6
25	M6	4.2 to 6.2
32	M8	10.0 to 15.0
40	M10	19.6 to 29.4

Option: Ordering Example of Cylinder Assembly

Cylinder model: CDM2RKA20-100Z-V-M9BW



Mounting A: Bottom mounting type
Rod end bracket V: Single knuckle joint
Auto switch D-M9BW: 2 pcs.

* Single knuckle joint and auto switch are shipped together with the product, but not assembled.

* No bracket is provided for the female rod end.

Refer to pages 262 to 266 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

D-□

-X□

Technical Data

CM2RK Series

Accessories

Accessories	Standard	Option	
	Rod end nut	Single knuckle joint	Double knuckle joint (with pin) *1
Bottom mounting type	●	●	●
Front mounting type	●	●	●

*1 A knuckle pin and retaining rings (split pin for ø40) are shipped together.
 *2 For dimensions and part numbers of options, refer to pages 189 and 190.
 *3 Stainless steel accessories are also available. Refer to page 190 for details.

Weights

Bore size (mm)		20	25	32	40
Basic weight	Bottom mounting type	0.14	0.23	0.32	0.62
	Front mounting type	0.14	0.22	0.32	0.61
Additional weight per 50 mm of stroke		0.04	0.06	0.08	0.13
Weight reduction for female rod end		-0.01	-0.02	-0.02	-0.04

(kg)

Calculation:
 (Example) **CM2RKA32-100Z**
 (ø32, 100 stroke, Bottom mounting)

- Basic weight.....0.32 kg
- Additional weight.....0.08 kg
- Cylinder stroke.....100 stroke

0.32 + 0.08 x 100/50 = **0.48 kg**

⚠ Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Handling/Disassembly

⚠ Warning

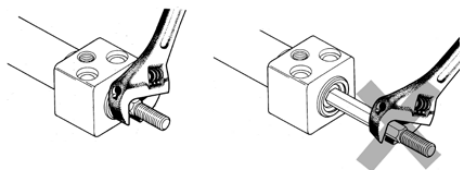
- Do not rotate the cover.**
If a cover is rotated when installing a cylinder or screwing a fitting into the port, it is likely to damage the junction part with cover.
- In the case of exceeding the standard stroke length, implement an intermediate support.**
When using cylinder with longer stroke, implement an intermediate support for preventing the joint of rod cover and cylinder tube from being broken by vibration or external load.

⚠ Caution

- 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 (N·m or less)	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. Tighten it by giving consideration to prevent the tightening torque from being applied to the non-rotating guide.



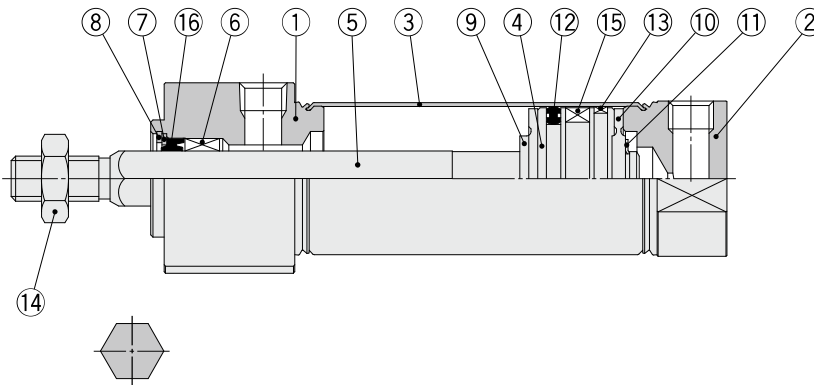
⚠ Caution

- When replacing rod seals, please contact SMC.**
Air leakage may be happened, depending on the position in which a rod seal is fitted. Thus, please contact SMC when replacing them.
- 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.
- 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.
- The oil stuck to the cylinder is grease.**
- The base oil of grease may seep out.**
- When using a rod end bracket, make sure it does not interfere with other brackets, workpieces and rod section, etc.**

Air Cylinder: Direct Mount, Non-rotating Rod Type **CM2RK Series**

Double Acting, Single Rod

Construction



Rod section

Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Anodized
2	Head cover	Aluminum alloy	Anodized
3	Cylinder tube	Stainless steel	
4	Piston	Aluminum alloy	
5	Piston rod	Stainless steel	
6	Non-rotating guide	Bearing alloy	
7	Seal retainer	Carbon steel	Nickel plating
8	Retaining ring	Carbon steel	Phosphate coating
9	Bumper	Resin	
10	Bumper	Resin	
11	Retaining ring	Stainless steel	
12	Piston seal	NBR	

No.	Description	Material	Note
13	Wear ring	Resin	
14	Rod end nut	Carbon steel	Zinc chromated
15	Magnet	—	CDM2RK□20 to 40-□Z
16	Rod seal	NBR	

Replacement Part: Seal

No.	Description	Material	Part no.			
			20	25	32	40
16	Rod seal	NBR	CM2K20-PS	CM2K25-PS	CM2K32-PS	CM2K40-PS

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

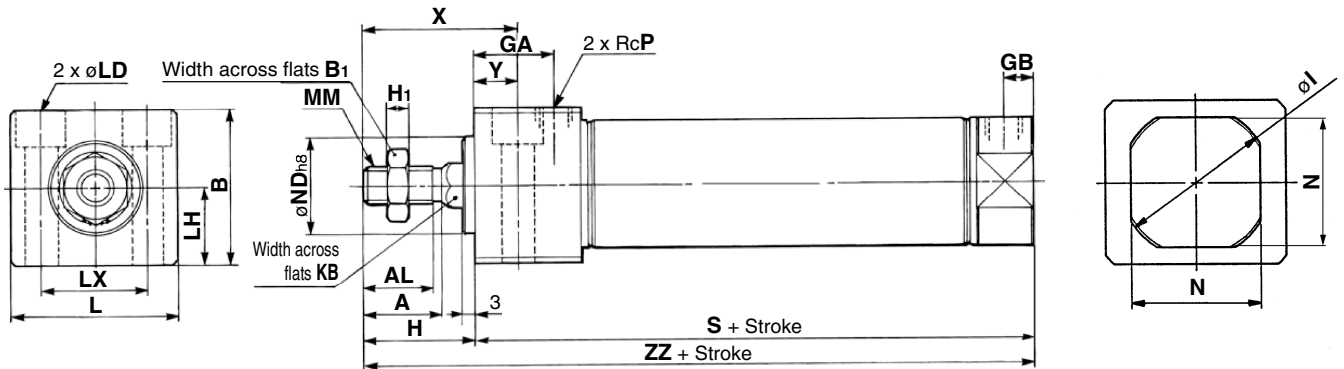
Grease pack part number: GR-S-010 (10 g)

- CJ1
- CJP
- CJ2
- JCM
- CM2**
- CM3
- CG1
- CG3
- JMB
- MB
- MB1
- CA2
- CS1
- CS2

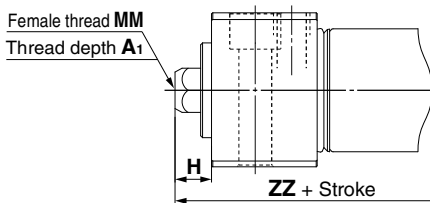
Air Cylinder: Direct Mount, Non-rotating Rod Type **CM2RK Series**

Bottom Mounting Type

CM2RKA Bore size – Stroke Z



Female rod end



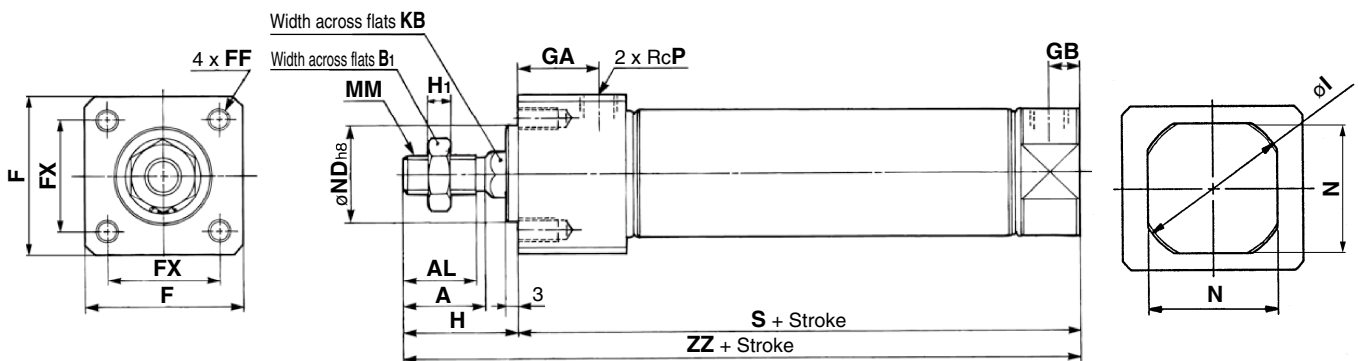
Female Rod End (mm)				
Bore size	A ₁	H	MM	ZZ
20	8	10	M4 x 0.7	86
25	8	10	M5 x 0.8	86
32	12	10	M6 x 1	88
40	13	10	M8 x 1.25	114

* When female thread is used, use a thin wrench when tightening the piston rod.
 * When female thread is used, use a washer etc. to prevent the contact part at the rod end from being deformed depending on the material of the workpiece.

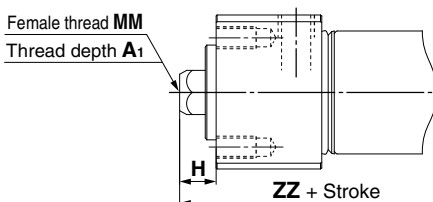
Bore size	Stroke range	A	AL	B	B ₁	GA	GB	H	H ₁	I	KB	L	LD	LH	LX	MM	N	ND	P	S	X	Y	ZZ
20	1 to 150	18	15.5	30.3	13	22	8	27	5	28	8.2	33.5	ø5.5, ø9.5 counterbore depth 6.5	15	21	M8 x 1.25	24	20 ⁰ _{-0.033}	1/8	76	39	12	103
25	1 to 200	22	19.5	36.3	17	22	8	31	6	33.5	10.2	39	ø6.6, ø11 counterbore depth 7.5	18	25	M10 x 1.25	30	26 ⁰ _{-0.033}	1/8	76	43	12	107
32	1 to 200	22	19.5	42.3	17	22	8	31	6	37.5	12.2	47	ø9, ø14 counterbore depth 10	21	30	M10 x 1.25	34.5	26 ⁰ _{-0.033}	1/8	78	43	12	109
40	1 to 300	24	21	52.3	22	27	11	34	8	46.5	14.2	58.5	ø11, ø17.5 counterbore depth 12.5	26	38	M14 x 1.5	42.5	32 ⁰ _{-0.039}	1/4	104	49	15	138

Front Mounting Type

CM2RKB Bore size – Stroke Z



Female rod end



Female Rod End (mm)				
Bore size	A ₁	H	MM	ZZ
20	8	10	M4 x 0.7	86
25	8	10	M5 x 0.8	86
32	12	10	M6 x 1	88
40	13	10	M8 x 1.25	114

* When female thread is used, use a thin wrench when tightening the piston rod.
 * When female thread is used, use a washer etc. to prevent the contact part at the rod end from being deformed depending on the material of the workpiece.

Bore size	Stroke range	A	AL	B ₁	F	FF	FX	GA	GB	H	H ₁	I	KB	MM	N	ND	P	S	ZZ
20	1 to 150	18	15.5	13	30.4	M5 x 0.8 depth 9	22	22	8	27	5	28	8.2	M8 x 1.25	24	20 ⁰ _{-0.033}	1/8	76	103
25	1 to 200	22	19.5	17	36.4	M6 x 1 depth 11	26	22	8	31	6	33.5	10.2	M10 x 1.25	30	26 ⁰ _{-0.033}	1/8	76	107
32	1 to 200	22	19.5	17	42.4	M6 x 1 depth 11	30	22	8	31	6	37.5	12.2	M10 x 1.25	34.5	26 ⁰ _{-0.033}	1/8	78	109
40	1 to 300	24	21	22	52.4	M8 x 1.25 depth 14	36	27	11	34	8	46.5	14.2	M14 x 1.5	42.5	32 ⁰ _{-0.039}	1/4	104	138

- CJ1
- CJP
- CJ2
- JCM
- CM2**
- CM3
- CG1
- CG3
- JMB
- MB
- MB1
- CA2
- CS1
- CS2

- D-□
- X□
- Technical Data