

Work positioning cylinder

Double acting 7 MPa

model **CEK**



X & Y axes positioning model CEK-A



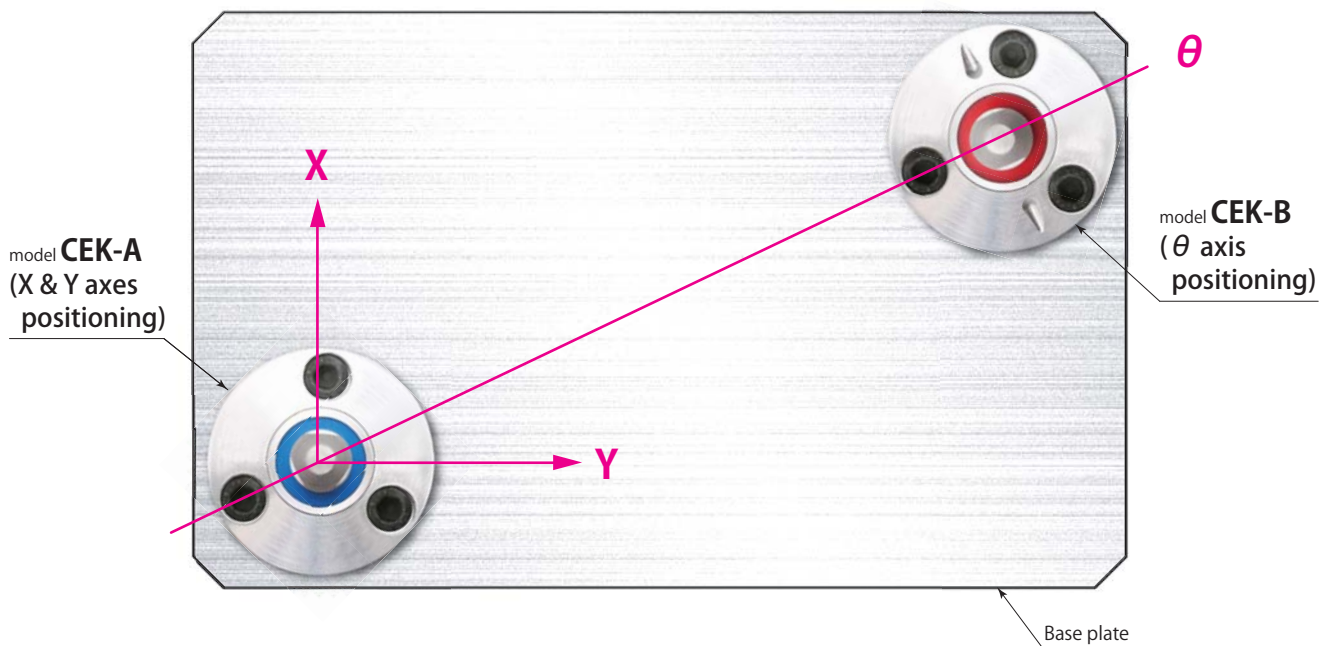
θ axis positioning model CEK-B

X & Y axes positioning

model **CEK-A** □ JP PAT. θ axis positioningmodel **CEK-B** □ JP PAT.

Enables high accuracy positioning of the workpiece
and maintains machining accuracy under between operations.

Repeatability: within 5 μ m

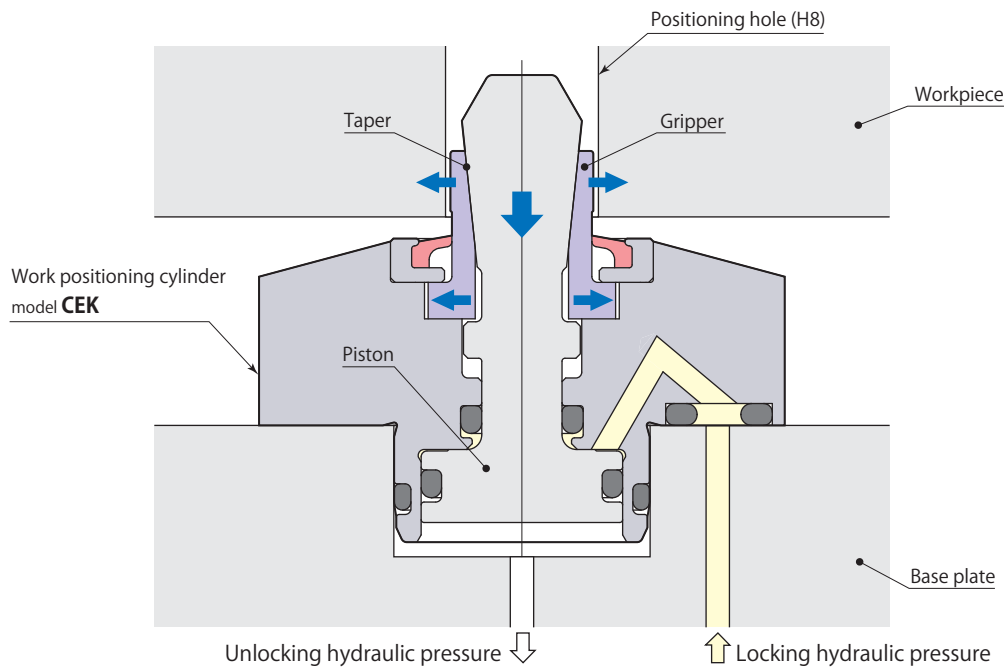


XY axes and θ axis constraint allow high accuracy positioning.

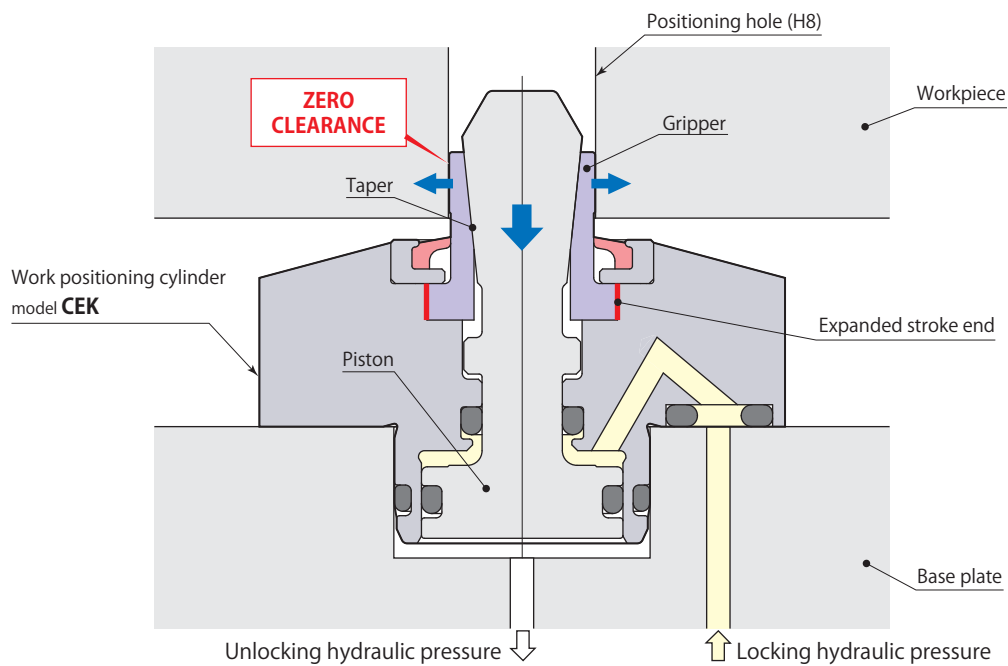
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Gripper expansion

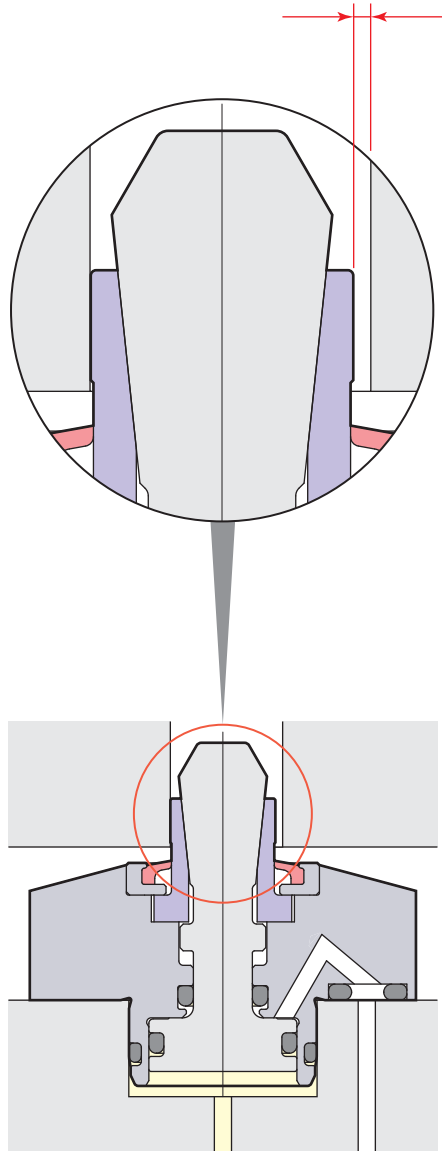
A piston lowers by locking hydraulic pressure then a gripper expands horizontally along the taper face of the piston.

Workpiece positioning

The gripper deforms elastically in radial direction when it comes to the stroke end and the clearance between hole and the gripper is infilled by the deformation, which ensures accurate positioning.

Enables workpiece change smooth**Clearance : 0.2mm**

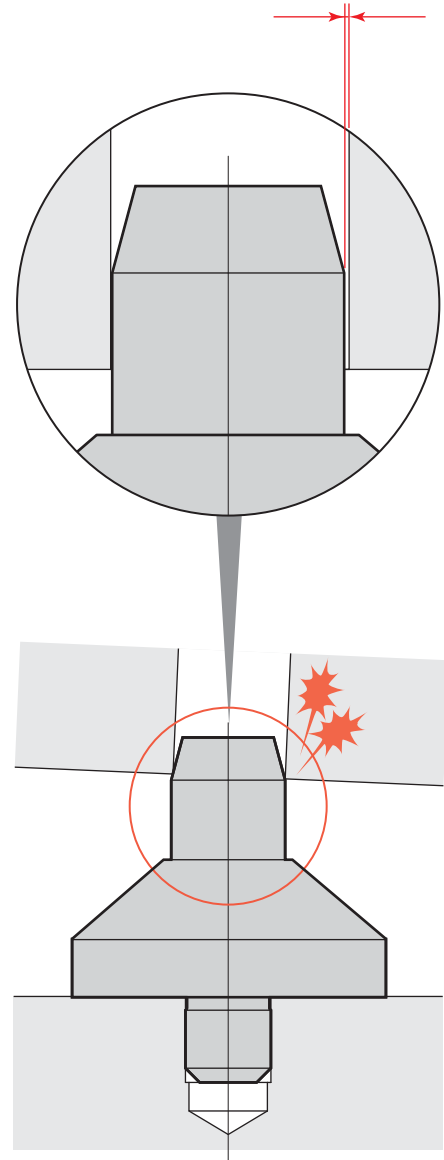
Enough clearance to make the change quick and easy

**Work positioning cylinder**

Model CEK has long expansion stroke to make an enough clearance (0.2mm) to change the workpiece easily and quickly.

Clearance : 0.01–0.03mm

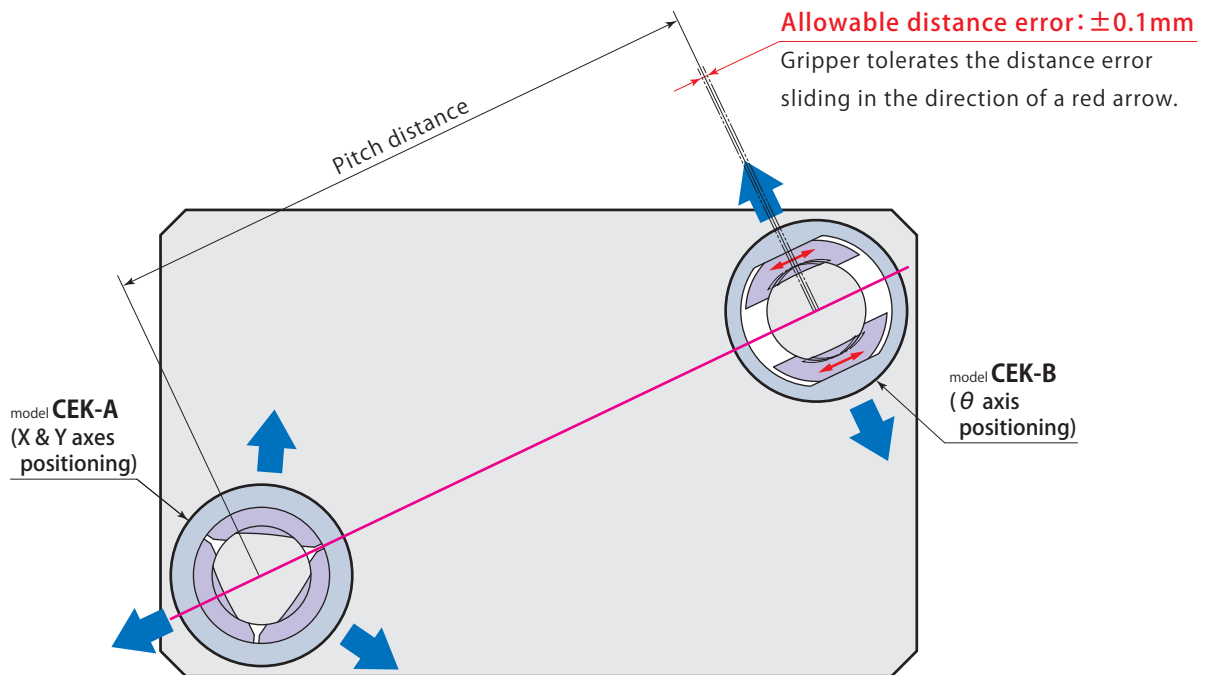
Difficult to change due to very small clearance

**Positioning pin**

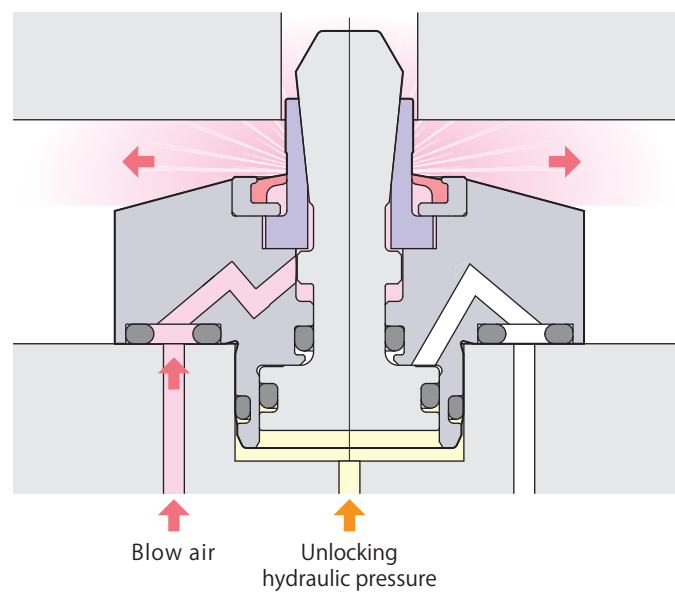
A positioning pin requires very small clearance to achieve accurate positioning, which makes it difficult to engage or disengage the pin.

Do not have an impact on gripper and piston since it employs many parts and has less strength than positioning pin.

Positioning hole pitch error can be tolerated

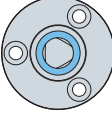
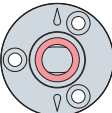


Incorporating strong air blow circuit



Air blows out from the gap between rod, gripper and scraper to protect the positioning hole from the intrusion of chips and coolant.

Specifications

Type	Size	Positioning hole diameter				
A : X & Y axes positioning 	01	08	09	10	11	12
	02	13	14	15	16	
B : θ axis positioning 	03	17	18	19	20	

Model		CEK-A01- <small>Positioning hole diameter</small>	CEK-A02- <small>Positioning hole diameter</small>	CEK-A03- <small>Positioning hole diameter</small>	
		CEK-B01- <small>Positioning hole diameter</small>	CEK-B02- <small>Positioning hole diameter</small>	CEK-B03- <small>Positioning hole diameter</small>	
Positioning hole diameter	mm	8–12	13–16	17–20	
Radial expansion force	Hydraulic pressure 2.5MPa	kN	1.21	1.78	2.52
	Hydraulic pressure 5MPa	kN	2.43	3.56	5.03
	Hydraulic pressure 7MPa	kN	3.40	4.99	7.05
Full stroke	mm	1.35	1.35	1.4	
Cylinder capacity	Lock	cm ³	0.17	0.25	0.37
	Unlock	cm ³	0.20	0.32	0.47
Allowable distance error*1	mm	±0.1			
Repeatability	μm	5			
Recommended air blow pressure	MPa	0.3–0.4			
Mass	kg	0.10	0.14	0.21	
Recommended tightening torque of mounting screws*2	N·m	3.6	3.6	7.2	

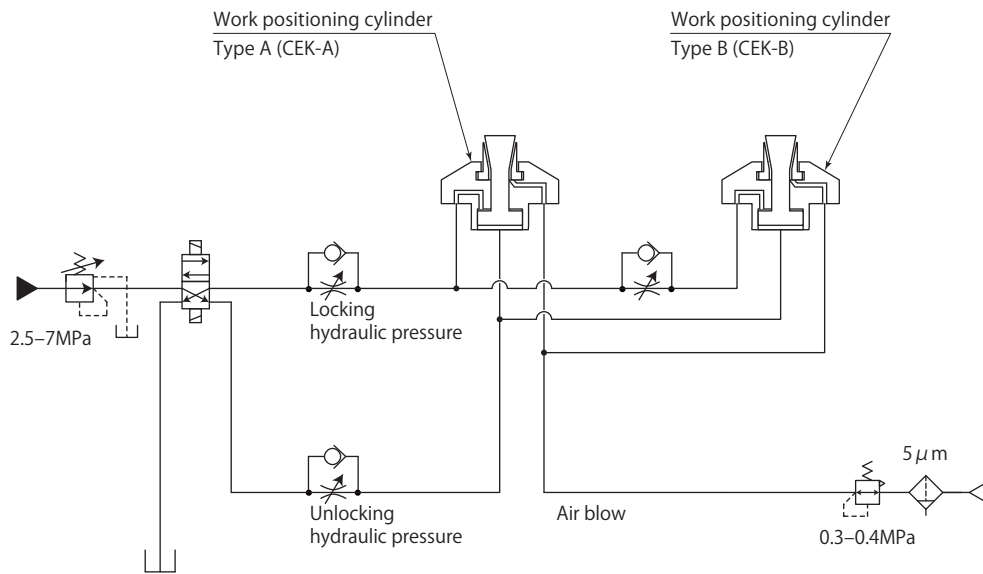
● Pressure range: 2.5–7 MPa ● Proof pressure: 10.5 MPa ● Operating temperature: 0–70 °C

● Fluid used: General mineral based hydraulic oil (ISO-VG32 equivalent)

*1: This is value when CEK-A and CEK-B are used in combination. The value is achievable only when CEK-A and CEK-B are used together.

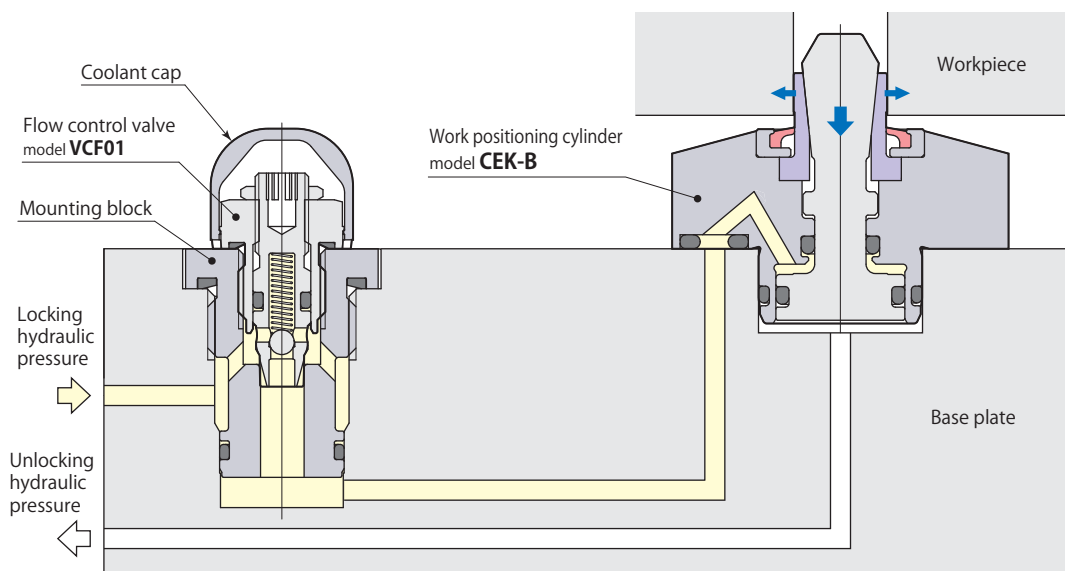
*2: ISO R898 class 12.9

Hydraulic and pneumatic circuit diagram



For stable positioning accuracy, the circuit should be built to have Type A actuate first.

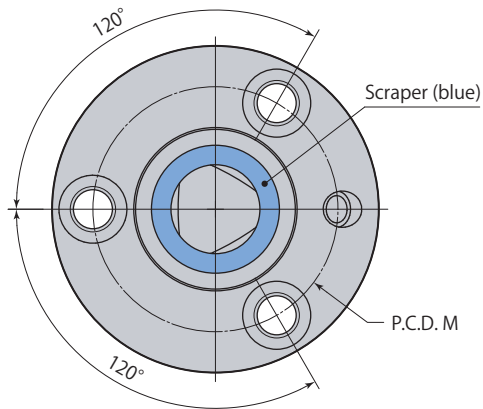
Flow control valve mounting example



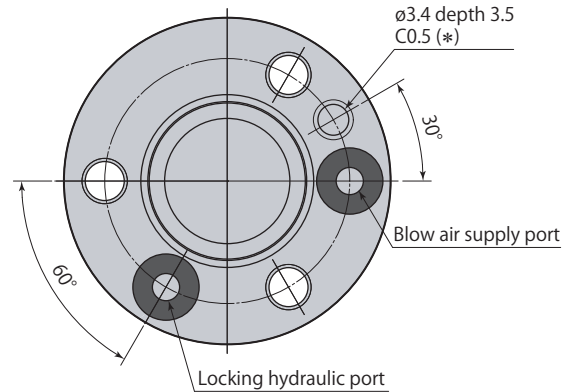
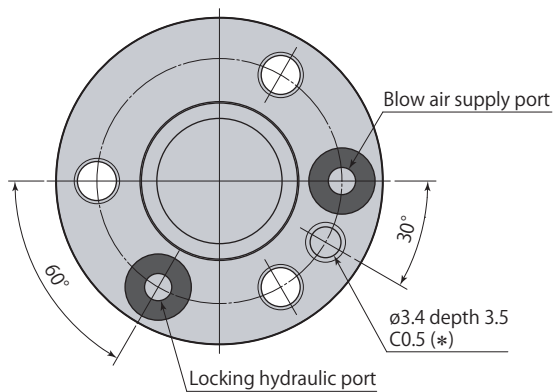
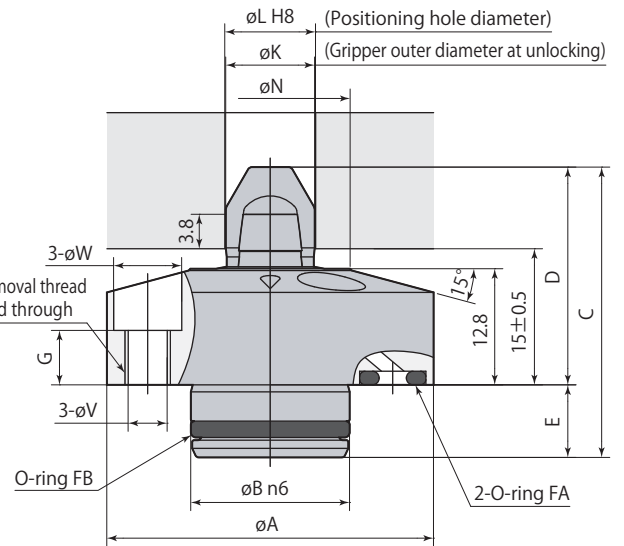
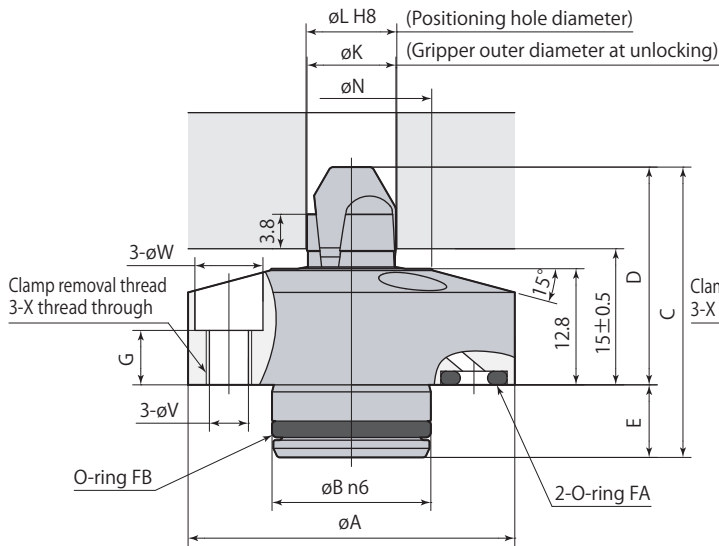
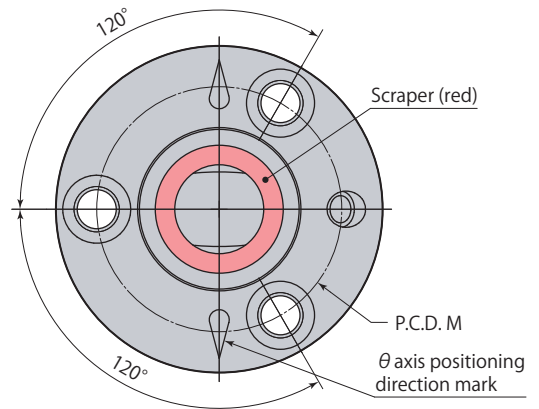
Refer to **page →146** for details on flow control valve model VCF.

Dimensions

CEK-A



CEK-B



* : Positioning pin is used to prevent positioning mistake (recommended positioning pin : Spring pin ø3×8).

Work positioning cylinder

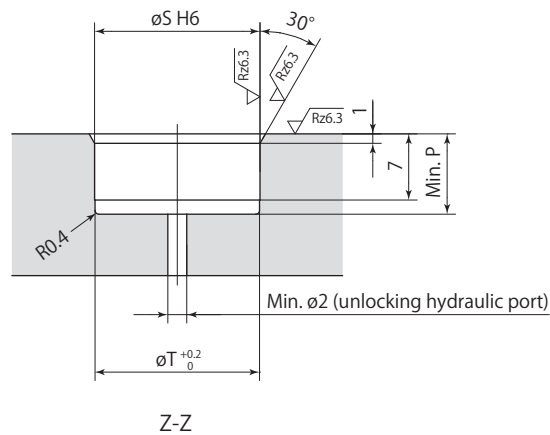
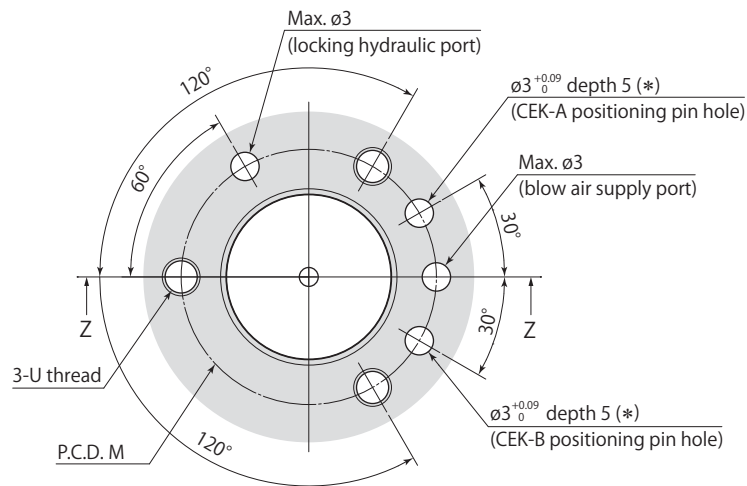
CEK

mm

Model	CEK-A01- <small>Positioning hole diameter</small>					CEK-A02- <small>Positioning hole diameter</small>				CEK-A03- <small>Positioning hole diameter</small>			
	CEK-B01- <small>Positioning hole diameter</small>					CEK-B02- <small>Positioning hole diameter</small>				CEK-B03- <small>Positioning hole diameter</small>			
Positioning hole diameter	8	9	10	11	12	13	14	15	16	17	18	19	20
øA	36					40				47			
øB	17.5 ^{+0.023} / _{+0.012}					21 ^{+0.028} / _{+0.015}				26 ^{+0.028} / _{+0.015}			
C	32					35				38			
D	24					25				26			
E	8					10				12			
G	6					6				5			
øK	7.8	8.8	9.8	10.8	11.8	12.8	13.8	14.8	15.8	16.8	17.8	18.8	19.8
øL	8 ^{+0.022} / ₀	9 ^{+0.022} / ₀	10 ^{+0.022} / ₀	11 ^{+0.027} / ₀	12 ^{+0.027} / ₀	13 ^{+0.027} / ₀	14 ^{+0.027} / ₀	15 ^{+0.027} / ₀	16 ^{+0.027} / ₀	17 ^{+0.027} / ₀	18 ^{+0.027} / ₀	19 ^{+0.033} / ₀	20 ^{+0.033} / ₀
M	27					31				36			
øN	18					22				25.6			
øV	4.3					4.3				5.5			
øW	7.5					7.5				9			
X	M5×0.8					M5×0.8				M6×1			
O-ring FA (fluorocarbon hardness Hs90)	P4					P4				P4			
O-ring FB (fluorocarbon hardness Hs90)	S15					S18				AS568-020			

- The diagram indicates unlocked condition.
- Mounting screws, positioning pin are not included.
- Use øA for positioning measurement after mounting.

Mounting details



Rz: ISO4287(1997)

* : Positioning pin is used to prevent positioning mistake (recommended positioning pin : Spring pin $\varnothing 3 \times 8$).

mm

Model	CEK-A01 - Positioning hole diameter	CEK-A02 - Positioning hole diameter	CEK-A03 - Positioning hole diameter
	CEK-B01 - Positioning hole diameter	CEK-B02 - Positioning hole diameter	CEK-B03 - Positioning hole diameter
M	27	31	36
P	8.5	10.5	12.5
$\varnothing S$	$17.5^{+0.011}_0$	$21^{+0.013}_0$	$26^{+0.013}_0$
$\varnothing T$	17.3	20.8	25.8
U	M4	M4	M5