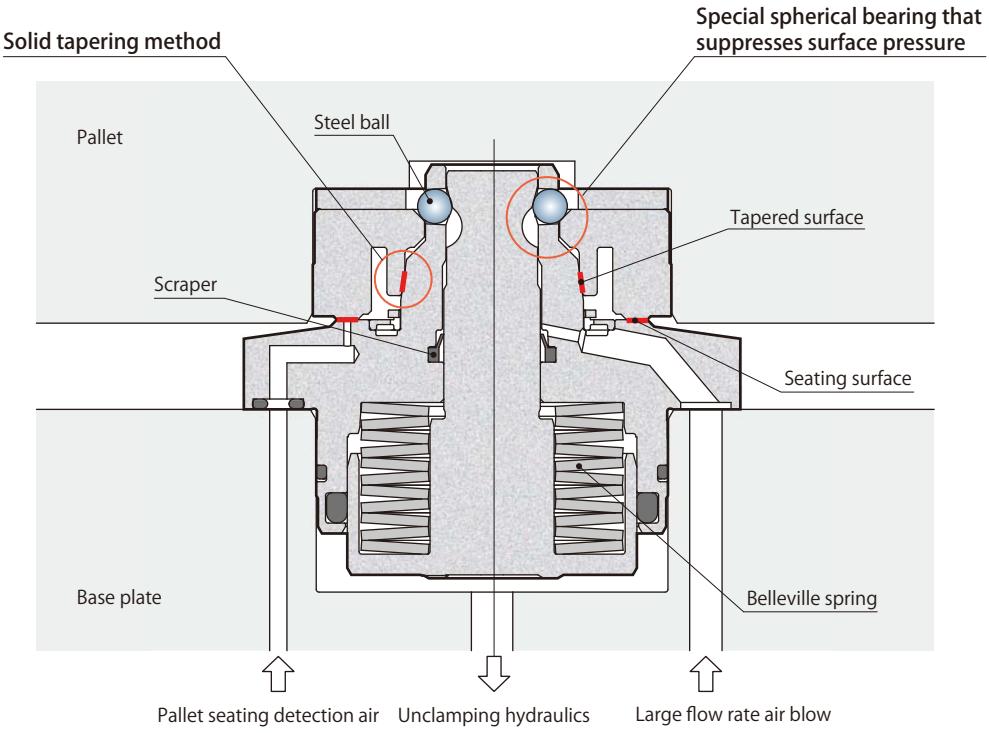
Spring clamp

model **CPC-□□H** US PAT.

Highly rigid pallet clamp and repeatability of 3 μm with dual surface contact
The mechanical clamp with high output, long-life belleville spring



Specifications

CPC – [Type] [Size] H

Type
- **A** : Taper cone circle
- **B** : Taper cone cut 45°
- **C** : Taper cone cut 90°
- **S** : Shim

Size
- 03
- 06
- 10
- 16
- 25
- 40

● Be sure to specify models and serial numbers when placing repeat orders. (Models and serial numbers are laser marked on clamps; For shim, same models and serial numbers as clamps may be specified.)

■ indicates made to order.

Model			CPC-□03H	CPC-□06H	CPC-□10H	CPC-□16H	CPC-□25H	CPC-□40H
Clamping force*1		kN	4.0	6.0	10.0	16.0	25.0	40.0
Cylinder capacity (unclamp)*1		cm^3	4.0	6.1	14.1	28.7	49.6	77.9
Full stroke		mm	4.4	4.4	5.0	6.5	7.0	7.5
Clamp stroke		mm	2.4	2.4	3.0	4.0	4.5	5.0
Safety stroke		mm	2.0	2.0	2.0	2.5	2.5	2.5
Lift stroke*2		mm	1					
Max. allowable eccentricity for pallet setting		mm	±1.0	±1.5	±2.0	±2.5	±3.5	±4.0
Lift force*1*3	Hydraulic pressure 3.5MPa	kN	0.4	0.4	1.5	3.2	4.6	4.6
	Hydraulic pressure 5MPa	kN	1.8	2.5	5.7	9.8	15.3	20.1
	Hydraulic pressure 7MPa	kN	3.6	5.2	11.4	18.7	29.4	40.9
Lift force calculation (P:Unclamping hydraulic pressure MPa)*1*3			0.91×P-2.73	1.39×P-4.46	2.83×P-8.42	4.42×P-12.25	7.09×P-20.18	10.39×P-31.80
Max. allowable load (including a pallet)*4	Horizontal mounting	kN	3.0	8.0	15.0	25.0	35.0	50.0
	Vertical mounting	kN	0.5	1.5	2.5	4.0	5.0	7.5
Mass*1		kg	0.5	0.7	1.6	3.0	5.6	9.6
Recommended tightening torque of mounting screws*5		N·m	7	7	12	29	57	100

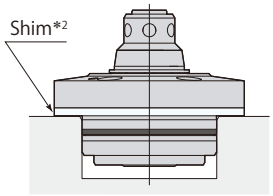
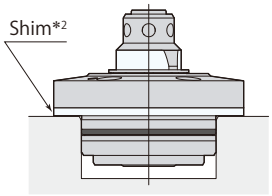
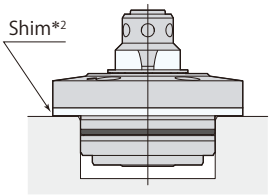
● Pressure range:3.5–7 MPa ● Proof pressure:10.5 MPa ● Operating temperature:0–70 ℃

● Fluid used:General mineral based hydraulic oil (ISO-VG32 equivalent) ● Recommended air blow pressure:0.3–0.5 MPa

*1:The figure indicates one piece of clamp. *2:This is the amount for lifting pallet when unclamping.

*3:Set the hydraulic pressure so that the lift force is equal to or greater than the max. allowable load.

*4:This is maximum allowable load of pallet, regardless of how many clamps are used. *5:ISO R898 class 12.9

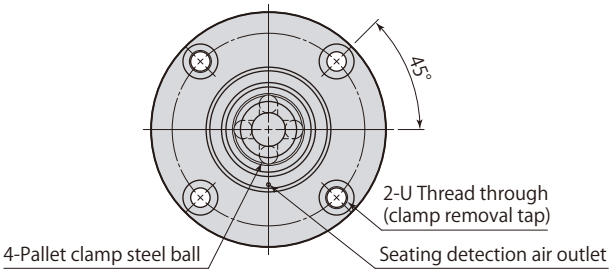
Pallet clamp type	A Taper cone circle	B*3 Taper cone cut 45°	C*3 Taper cone cut 90°
Spring clamp model **CPC***1	 model CPC-A□H	 model CPC-B□H	 model CPC-C□H

*1:Spring clamp model CPC and hydraulic clamp model CPH (**page →22**) cannot be used together.

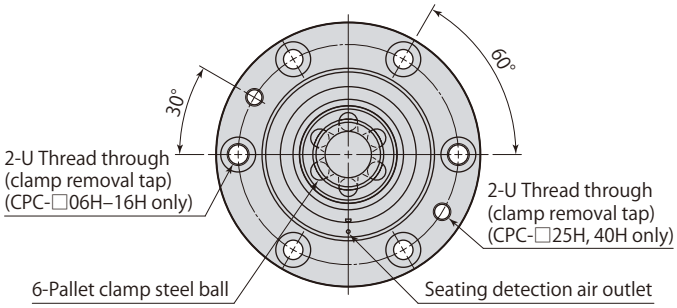
*2:Shim of pallet clamp can be used when heights of mounted clamps vary. (option)

*3:Taper cone cut can be selected from B type or C type.

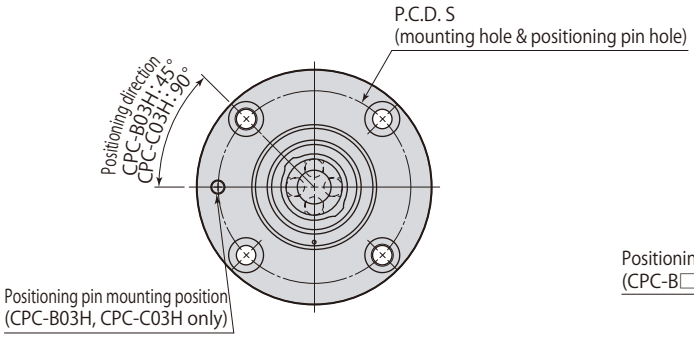
Dimensions



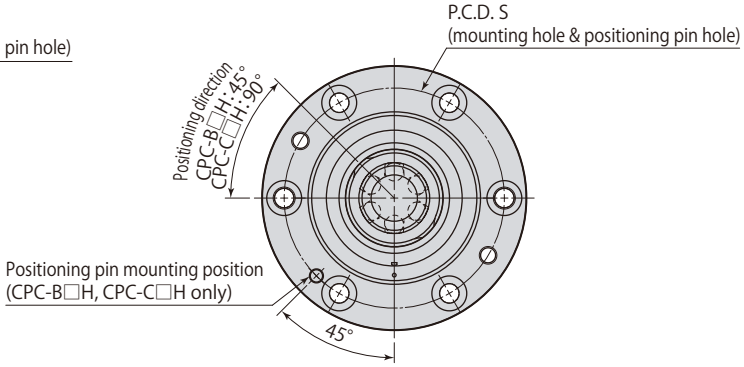
CPC-A03H



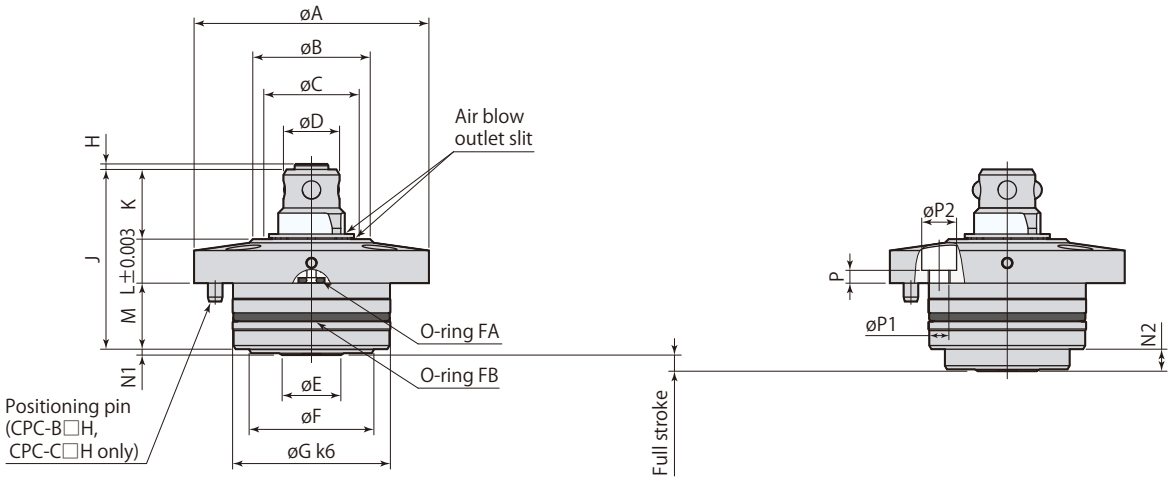
CPC-A06–40H



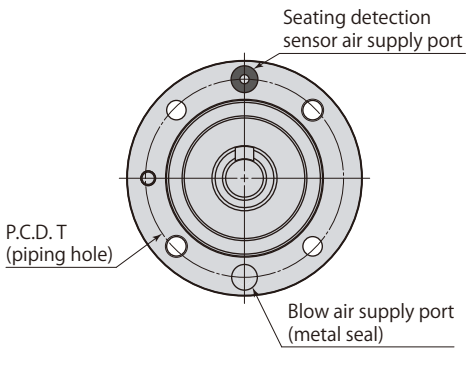
CPC-$^{B}_{C}$03H



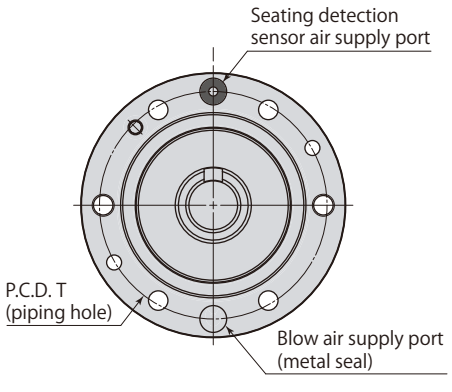
CPC-$^{B}_{C}$06–40H



Unclamp **Stroke end**



CPC-□03H



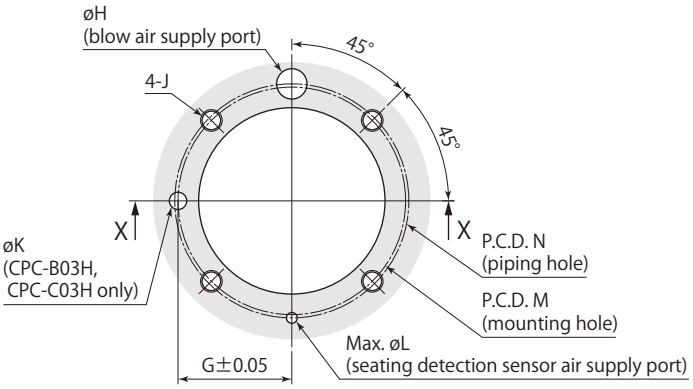
CPC-□06–40H

mm

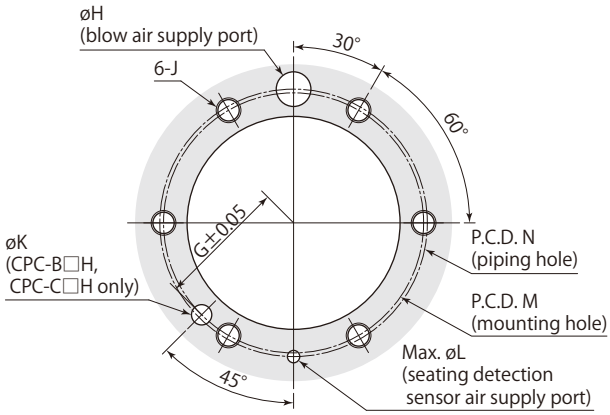
Model	CPC-□03H	CPC-□06H	CPC-□10H	CPC-□16H	CPC-□25H	CPC-□40H
øA	64	72	100	120	150	175
øB	32	45	48	66	78	94
øC	26	37	40	56	66	78
øD	15.3	19.3	23	29.4	37.3	46
øE	16	19	29	35	45	56
øF	34	42	60	75	95	115
øG	43 $^{+0.018}_{+0.002}$	51 $^{+0.021}_{+0.002}$	74 $^{+0.021}_{+0.002}$	89 $^{+0.025}_{+0.003}$	110 $^{+0.025}_{+0.003}$	130 $^{+0.028}_{+0.003}$
H	1.5	1.5	1.3	1.3	1.3	1.3
J	50.6	57.6	68	85.5	107	129.5
K	19	22.5	26	34	41	48
L	12	13	15	18	22	28
M	18	18	24	27	32	35
N1	1.6	4.1	3	6.5	12	18.5
N2	6	8.5	8	13	19	26
P	3.5	5	4	5	5	7
P1	5.3	5.3	6.8	9	11	14
P2	9.5	9.5	11	14	17.5	20
S	52.5	60	86	104	130	152
T	54	62	86	104	130	152
U	M6×1	M6×1	M8×1.25	M10×1.5	M10×1.5	M12×1.75
Positioning pin (dowel pin)	ø4(h8)×10	ø4(h8)×10	ø4(h8)×10	ø6(h8)×12	ø6(h8)×12	ø6(h8)×12
O-ring FA (FKM-90)	P4	P4	P4	P6	P8	P10
O-ring FB (FKM-90)	AS568-029	AS568-032	AS568-147	AS568-152	AS568-155	AS568-158

- Be sure to match up phase of pallet clamp steel balls and locate ring steel ball grooves.
- Positioning direction is the direction in which tapered surface has not been cut.
- Use øA, which has been ground at the same time as tapered surface, for positioning measurement after mounting.
- When mounting the pallet clamp, use positioning pin. The positioning pin is packed with a pallet clamp.
- Mounting screws are not included.
- Pal coupler (**pages →80–85**) recommended when using couplers in a set.
- ▭ dimensions are different from former pallet clamp (model CPC-□□F).

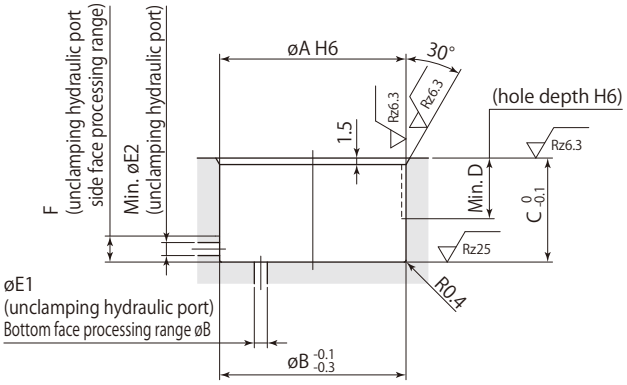
Mounting details



CPC-□03H



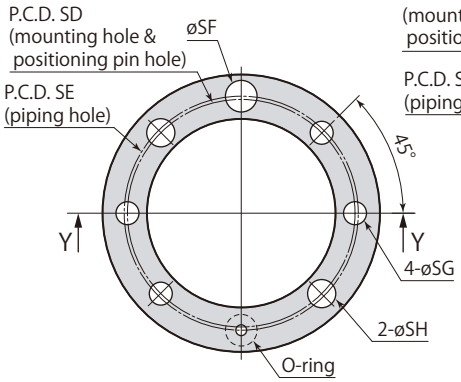
CPC-□06–40H



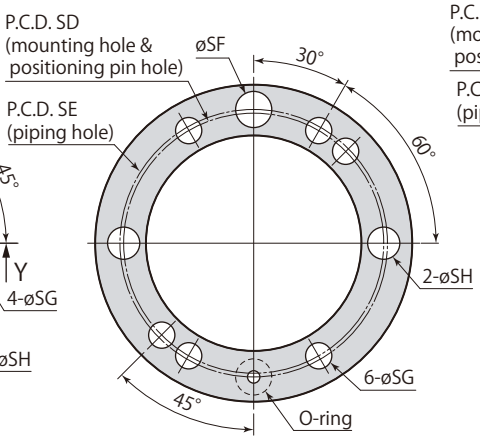
X-X

Rz: ISO4287(1997)

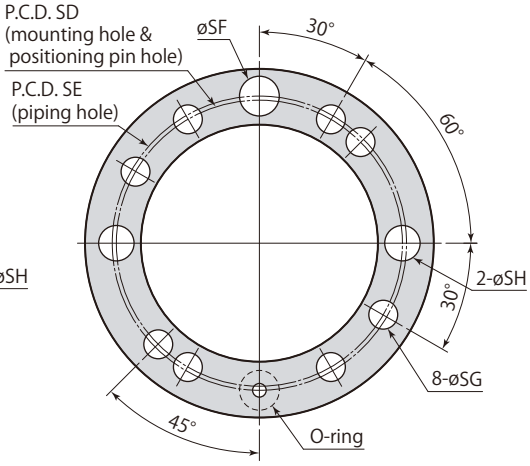
Shim (option)



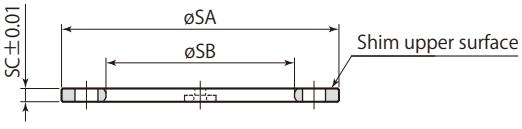
CPC-S03H



CPC-S06–16H



CPC-S25/40H



Y-Y

mm

Model	CPC-□03H	CPC-□06H	CPC-□10H	CPC-□16H	CPC-□25H	CPC-□40H
øA	43 $^{+0.016}_{0}$	51 $^{+0.019}_{0}$	74 $^{+0.019}_{0}$	89 $^{+0.022}_{0}$	110 $^{+0.022}_{0}$	130 $^{+0.025}_{0}$
øB	43	51	74	89	110	130
øE1	3–12	3–15	3–25	3–31	4–39	4–50
øE2	3	3	3	3	4	4
F	6	8.5	8	13	19	26
G	26.25	30	43	52	65	76
øH	4.5–7	4.5–7	5.5–8	6–9	7–11	7–13
J	M5	M5	M6	M8	M10	M12
øL	2.5	2.5	2.5	4	6	8
M	52.5	60	86	104	130	152
N	54	62	86	104	130	152
Not using shim (standard specifications)						
C	24	26.5	32	40	51	61
D	14	14	15	15	16	16
øK	4.1 $^{+0.1}_{0}$ depth 6	4.1 $^{+0.1}_{0}$ depth 6	4.1 $^{+0.1}_{0}$ depth 6	6.1 $^{+0.1}_{0}$ depth 6	6.1 $^{+0.1}_{0}$ depth 6	6.1 $^{+0.1}_{0}$ depth 6
Using shim (shim specifications)						
C	21	23.5	29	37	47	57
D	11	11	12	12	12	12
øK	4.1 $^{+0.1}_{0}$ depth 4	4.1 $^{+0.1}_{0}$ depth 4	4.1 $^{+0.1}_{0}$ depth 4	6.1 $^{+0.1}_{0}$ depth 4	6.1 $^{+0.1}_{0}$ depth 4	6.1 $^{+0.1}_{0}$ depth 4

- Process with shim specification dimensions when shim is attached. Processing with standard specification dimensions will result in clamp damage during full stroke.
- Process either bottom or side surface of unclamping hydraulic port.
- Be sure to match up phase of pallet clamp steel balls and locate ring steel ball grooves.
- ▭ dimensions are different from former pallet clamp (model CPC-□□F).

mm

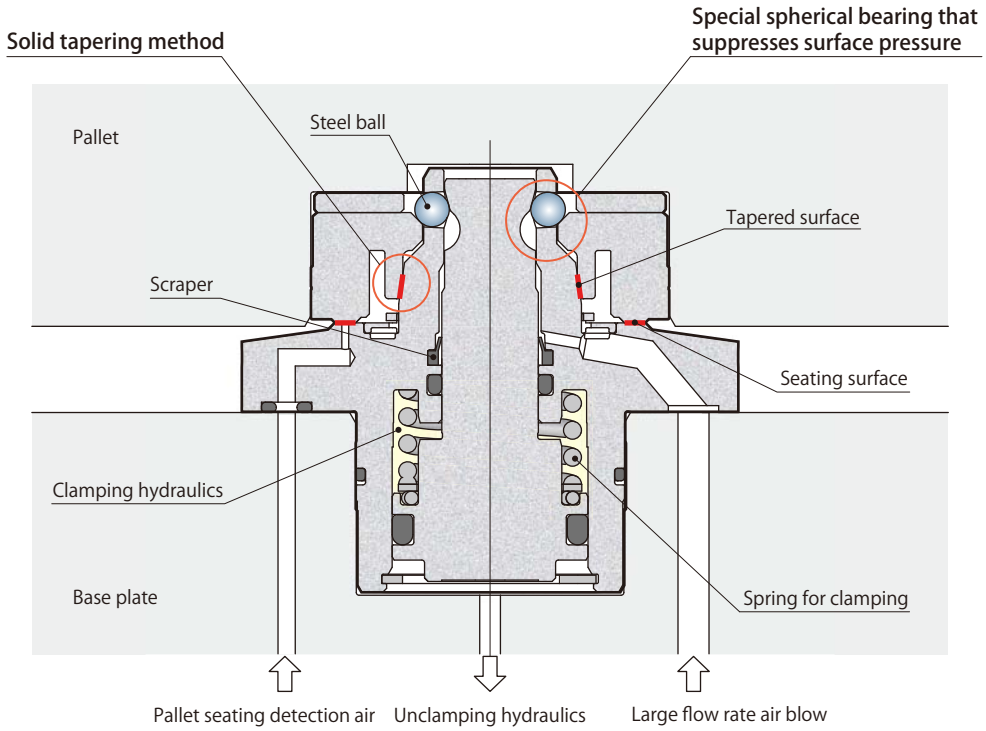
Shim	CPC-S03H	CPC-S06H	CPC-S10H	CPC-S16H	CPC-S25H	CPC-S40H
øSA	64	72	100	120	150	175
øSB	43.5	51.5	75	90	111	131
SC	3.05	3.05	3.05	3.05	4.05	4.05
SD	52.5	60	86	104	130	152
SE	54	62	86	104	130	152
øSF	7.3	7.3	8.2	9.2	11.2	13.2
øSG	5.3	5.3	6.3	9	11	14
øSH	6.5	6.5	9	11	11	14
O-ring (FKM-90)	P4	P4	P4	P6	P8	P10
Mass	0.04 kg	0.04 kg	0.07 kg	0.10 kg	0.22 kg	0.28 kg

- This diagram indicates dimensions at shipping.
- Adjust thickness of shim by grinding to ensure flatness of pallet.
- Grind shim upper surface (surface without O-ring) to adjust shim.
- ▭ dimensions are different from former pallet clamp (model CPC-□□F).

Hydraulic clamp

model **CPH-□□H** US PAT.

Highly rigid pallet clamp and repeatability of 3 μm with dual surface contact
Compact and reliable hydraulic clamp



Specifications

Type

A : Taper cone circle

B : Taper cone cut 45°

C : Taper cone cut 90°

S : Shim

Size

03 **06** **10** **16** **25** **40**

CPH — □ **H**

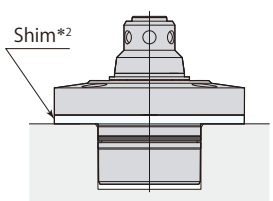
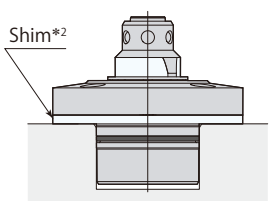
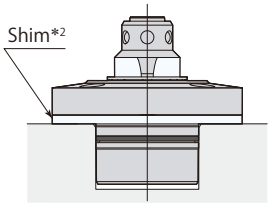
● Be sure to specify models and serial numbers when placing repeat orders. (Models and serial numbers are laser marked on clamps; For shim, same models and serial numbers as clamps may be specified.)

■ indicates made to order.

Model			CPH-□03H	CPH-□06H	CPH-□10H	CPH-□16H	CPH-□25H	CPH-□40H
Clamping force*1	Hydraulic pressure 0MPa*2	kN	0.3	0.3	0.4	0.5	0.6	0.8
	Hydraulic pressure 5MPa	kN	2.9	4.4	7.3	11.6	18.0	28.8
	Hydraulic pressure 7MPa	kN	4.0	6.0	10.0	16.0	25.0	40.0
Clamping force calculation (P:Hydraulic pressure MPa)*1			0.52×P+0.3	0.81×P+0.3	1.37×P+0.4	2.21×P+0.5	3.48×P+0.6	5.60×P+0.8
Cylinder capacity*1	Unclamp	cm^3	1.7	2.8	4.8	9.9	16.0	27.2
	Clamp	cm^3	1.3	2.1	3.8	7.8	12.6	21.4
Full stroke		mm	4.4	4.4	5.0	6.5	7.0	7.5
Clamp stroke		mm	2.4	2.4	3.0	4.0	4.5	5.0
Safety stroke		mm	2.0	2.0	2.0	2.5	2.5	2.5
Lift stroke*3		mm	1					
Max. allowable eccentricity for pallet setting		mm	±1.0	±1.5	±2.0	±2.5	±3.5	±4.0
Lift force*1*4	Hydraulic pressure 3.5MPa	kN	1.1	1.9	3.0	4.9	7.5	12.0
	Hydraulic pressure 5MPa	kN	1.7	2.9	4.4	7.2	11.0	17.5
	Hydraulic pressure 7MPa	kN	2.4	4.2	6.4	10.2	15.5	24.8
Lift force calculation (P:Unclamping hydraulic pressure MPa)*1*4			0.38×P-0.24	0.63×P-0.28	0.96×P-0.37	1.52×P-0.41	2.29×P-0.50	3.63×P-0.67
Max. allowable load (including a pallet)*5	Horizontal mounting	kN	3.0	8.0	15.0	25.0	35.0	50.0
	Vertical mounting	kN	0.5	1.5	2.5	4.0	5.0	7.5
Mass*1		kg	0.3	0.6	0.8	1.6	2.7	4.9
Recommended tightening torque of mounting screws*6		N·m	7	7	12	29	57	100

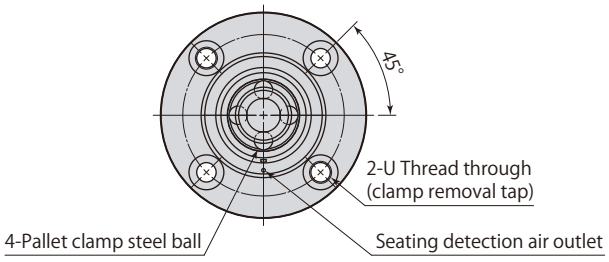
● Pressure range:5–7 MPa (model CPS-E), 2–7 MPa (model CPS-D, CPS-F) ● Proof pressure:10.5 MPa
● Operating temperature:0–70℃ ● Fluid used:General mineral based hydraulic oil (ISO-VG32 equivalent)
● Recommended air blow pressure:0.3–0.5 MPa

*1:The figure indicates one piece of clamp. *2:The value indicates the force generated by the spring.
*3:This is the amount for lifting pallet when unclamping.
*4:Set the hydraulic pressure so that the lift force is equal to or greater than the max allowable load.
*5:This is maximum allowable load of pallet, regardless of how many clamps are used. *6:ISO R898 class 12.9

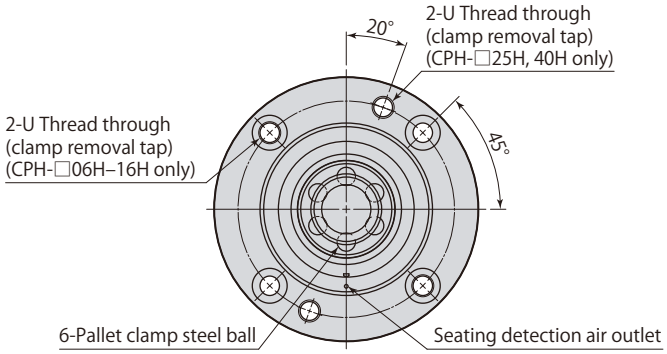
Pallet clamp type	A Taper cone circle	B*3 Taper cone cut 45°	C*3 Taper cone cut 90°
Hydraulic clamp model **CPH***1	 model CPH-A□H	 model CPH-B□H	 model CPH-C□H

*1:Hydraulic clamp model CPH and spring clamp model CPC (**page →16**) cannot be used together.
*2:Shim of pallet clamp can be used when heights of mounted clamps vary. (option)
*3:Taper cone cut can be selected from B type or C type.

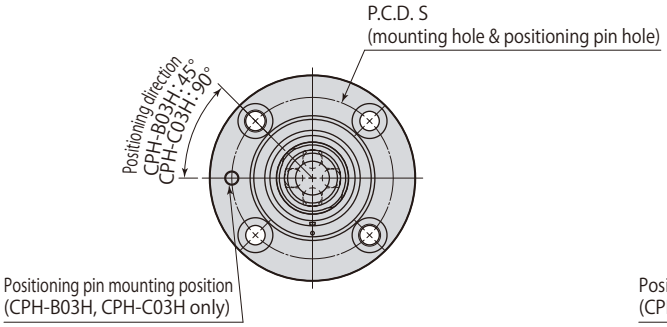
Dimensions



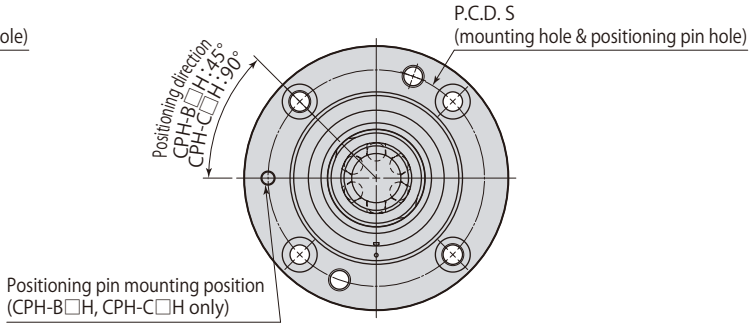
CPH-A03H



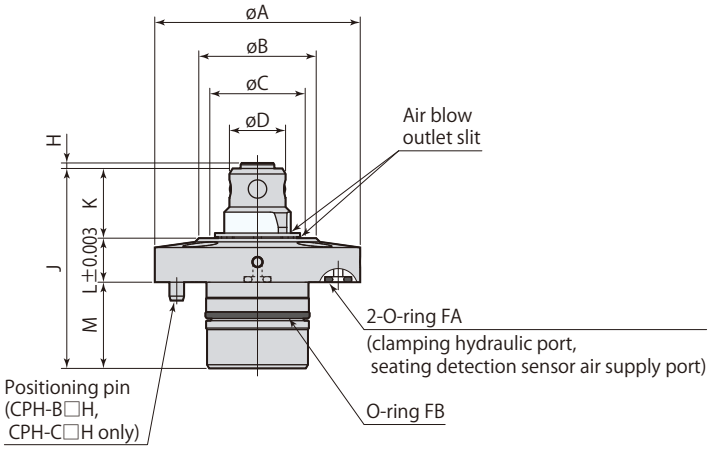
CPH-A06–40H



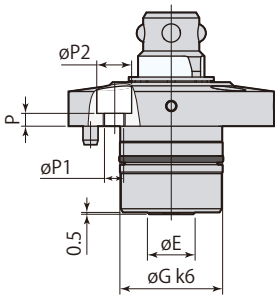
CPH-$^{B}_{C}$03H



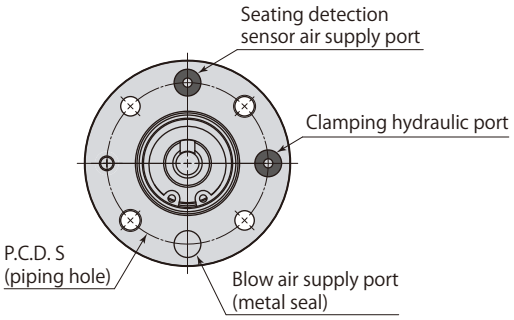
CPH-$^{B}_{C}$06–40H



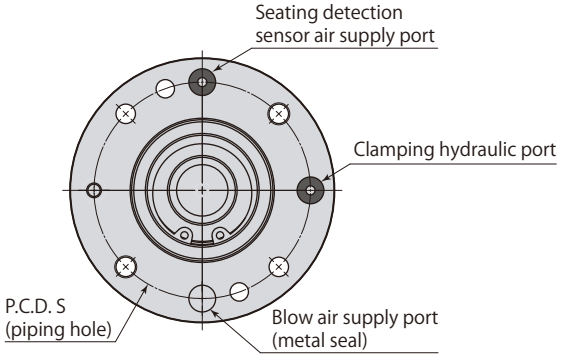
Unclamp



Stroke end



CPH-□03H



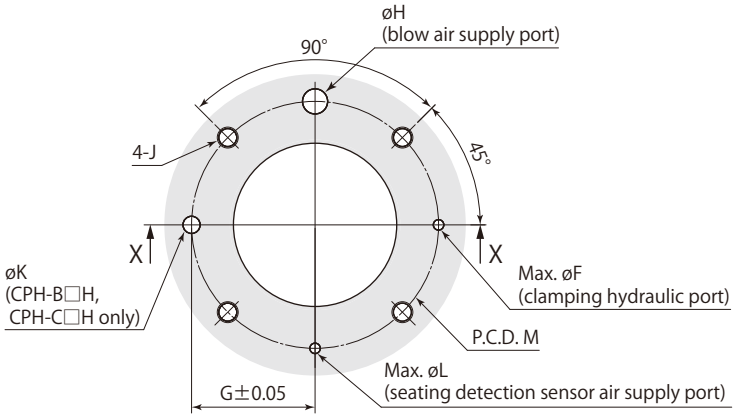
CPH-□06–40H

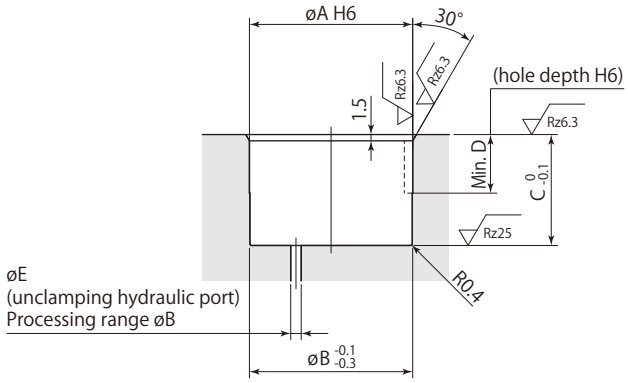
mm

Model	CPH-□03H	CPH-□06H	CPH-□10H	CPH-□16H	CPH-□25H	CPH-□40H
øA	56	72	76	100	120	145
øB	32	45	48	66	78	94
øC	26	37	40	56	66	78
øD	15.3	19.3	23	29.4	37.3	46
øE	13	19	21	28	38	48
øG	28 $^{+0.015}_{+0.002}$	39 $^{+0.018}_{+0.002}$	45 $^{+0.018}_{+0.002}$	54 $^{+0.021}_{+0.002}$	65 $^{+0.021}_{+0.002}$	80 $^{+0.021}_{+0.002}$
H	1.5	1.5	1.3	1.3	1.3	1.3
J	54.5	61.5	67.5	79.5	93.5	109.5
K	19	22.5	26	34	41	48
L	12	13	15	18	22	28
M	23.5	26	26.5	27.5	30.5	33.5
P	3.5	5	6	6	7	9
øP1	5.3	5.3	6.8	9	11	14
øP2	9.5	9.5	11	14	17.5	20
S	44	59	62	84	100	122
U	M6×1	M6×1	M8×1.25	M10×1.5	M10×1.5	M12×1.75
Positioning pin (dowel pin)	ø4(h8)×10	ø4(h8)×10	ø4(h8)×10	ø6(h8)×12	ø6(h8)×12	ø6(h8)×12
O-ring FA (FKM-90)	P4	P4	P4	P6	P8	P10
O-ring FB (FKM-90)	AS568-022	AS568-028	AS568-030	AS568-135	AS568-141	AS568-150

- Be sure to match up phase of pallet clamp steel balls and locate ring steel ball grooves.
- Positioning direction is the direction in which tapered surface has not been cut.
- Use øA, which has been ground at the same time as tapered surface, for positioning measurement after mounting.
- When mounting the pallet clamp, use positioning pin. The positioning pin is packed with a pallet clamp.
- Mounting screws are not included.
- Pal coupler (**pages →80–85**) recommended when using couplers in a set.
- 1.5 dimensions are different from former pallet clamp (model CPH-□□F).

Mounting details

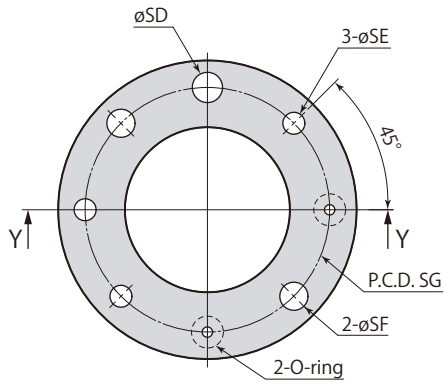




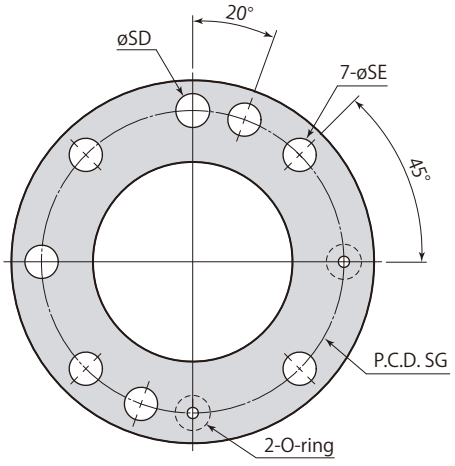
X-X

Rz: ISO4287(1997)

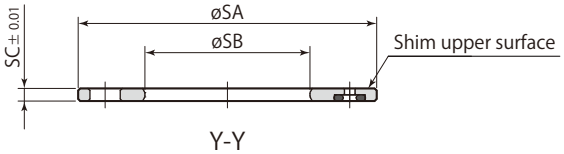
Shim (option)



CPH-S03–16H



CPH-S25/40H



Y-Y

mm

Model	CPH-□03H	CPH-□06H	CPH-□10H	CPH-□16H	CPH-□25H	CPH-□40H
øA	28 $^{+0.013}_{0}$	39 $^{+0.016}_{0}$	45 $^{+0.016}_{0}$	54 $^{+0.019}_{0}$	65 $^{+0.019}_{0}$	80 $^{+0.019}_{0}$
øB	28	39	45	54	65	80
øE	3–8	3–14	3–16	3–23	4–31	4–41
øF	2.5	2.5	2.5	4	6	8
G	22	29.5	31	42	50	61
øH	4.5–7	4.5–7	5.5–8	6–9	7–11	7–13
J	M5	M5	M6	M8	M10	M12
øL	2.5	2.5	2.5	4	6	8
M	44	59	62	84	100	122
Not using shim (standard specifications)						
C	24	26.5	27	28	31	34
D	14	14	14	15	16	16
øK	4.1 $^{+0.1}_{0}$ depth 6	4.1 $^{+0.1}_{0}$ depth 6	4.1 $^{+0.1}_{0}$ depth 6	6.1 $^{+0.1}_{0}$ depth 6	6.1 $^{+0.1}_{0}$ depth 6	6.1 $^{+0.1}_{0}$ depth 6
Using shim (shim specifications)						
C	21	23.5	24	25	27	30
D	11	11	11	12	12	12
øK	4.1 $^{+0.1}_{0}$ depth 4	4.1 $^{+0.1}_{0}$ depth 4	4.1 $^{+0.1}_{0}$ depth 4	6.1 $^{+0.1}_{0}$ depth 4	6.1 $^{+0.1}_{0}$ depth 4	6.1 $^{+0.1}_{0}$ depth 4

- Process with shim specification dimensions when shim is attached. Processing with standard specification dimensions will result in clamp damage during full stroke.
- Be sure to match up phase of pallet clamp steel balls and locate ring steel ball grooves.
- ☐ dimensions are different from former pallet clamp (model CPH-□□F).

mm

Shim	CPH-S03H	CPH-S06H	CPH-S10H	CPH-S16H	CPH-S25H	CPH-S40H
øSA	56	72	76	100	120	145
øSB	28.8	39.8	46	55	66	81
SC	3.05	3.05	3.05	3.05	4.05	4.05
øSD	7.3	7.3	8.2	9.2	11.2	13.2
øSE	5.3	5.3	6.3	9	11	14
øSF	6.8	6.8	9	11	–	–
SG	44	59	62	84	100	122
O-ring (FKM-90)	P4	P4	P4	P6	P8	P10
Mass	0.04 kg	0.06 kg	0.06 kg	0.12 kg	0.22 kg	0.32 kg

- This diagram indicates dimensions at shipping.
- Adjust thickness of shim by grinding to ensure flatness of pallet.
- Grind shim upper surface (surface without O-ring) to adjust shim.
- ☐ dimensions are different from former pallet clamp (model CPH-□□F).

Specifications

CPS – [Type] [Size] [Mounting method]

Type
- D : Repeatability 10 μm*1
- E : Repeatability 3 μm
- F : Seating surface positioning (Z axis positioning)
- S : Shim
- P : Protective plate*2

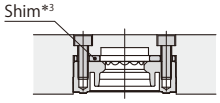
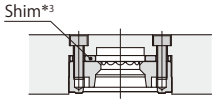
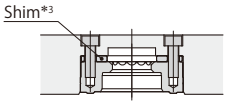
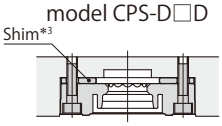
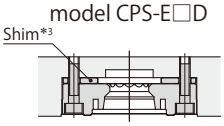
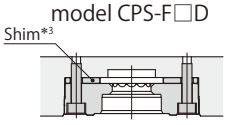
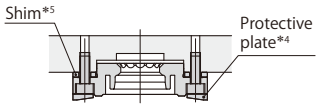
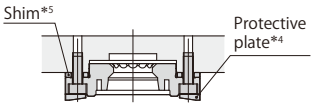
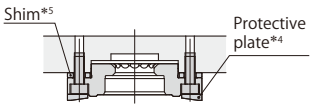
Size
03, 06, 10, 16, 25, 40

Mounting method
- T : Pallet upper surface mounting
- D : Pallet lower surface mounting
- F : Flange mounting

● Be sure to specify models and serial numbers when placing repeat orders.
(Models and serial numbers are laser marked on clamps; For shim, same models and serial numbers as clamps may be specified.)

■ indicates made to order.

*1 : model CPS-D (repeatability 10 μm) is limited to sizes of 03, 06, 10, and 16.
*2 : The protective plate is only flange mounting type.

Locate ring	D*1 Repeatability 10 μm	E*1 Repeatability 3 μm	F*2 Seating surface positioning (Z axis positioning)
T Pallet upper surface mounting	model CPS-D□T 	model CPS-E□T 	model CPS-F□T 
D Pallet lower surface mounting	model CPS-D□D 	model CPS-E□D 	model CPS-F□D 
F Flange mounting	model CPS-D□F 	model CPS-E□F 	model CPS-F□F 

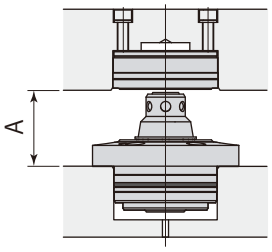
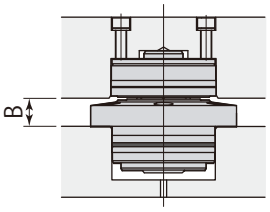
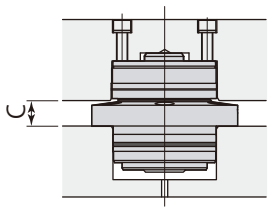
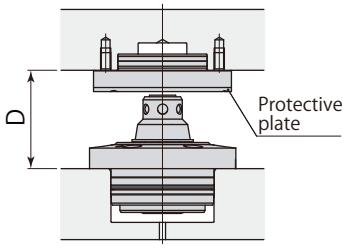
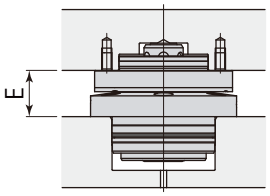
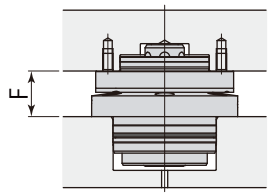
*1 : model CPS-D (repeatability 10 μm) and model CPS-E (repeatability 3 μm) of locate ring cannot be used together.
*2 : model CPS-F (seating surface positioning) needs the positioning of XY axes.
*3 : It is recommended to use a shim (option) to adjust mounting hole depth for the locate rings for pallet upper surface mounting and lower surface mounting. Grind shim to adjust thickness.
*4 : Protective plate (flange mounting only) can be used to prevent damage of seating surface, when pallet must be placed on the floor, etc. (option)
*5 : Shim of locate ring of flange mounting can be used when heights of mounted locate rings vary. (option)

Mass

kg

Locate ring		D Repeatability 10 μm				E Repeatability 3 μm						F Seating surface positioning (Z axis positioning)					
T Pallet upper surface mounting	Model	CPS-D03T	CPS-D06T	CPS-D10T	CPS-D16T	CPS-E03T	CPS-E06T	CPS-E10T	CPS-E16T	CPS-E25T	CPS-E40T	CPS-F03T	CPS-F06T	CPS-F10T	CPS-F16T	CPS-F25T	CPS-F40T
	Mass	0.1	0.2	0.3	0.7	0.1	0.2	0.3	0.7	1.2	2	0.1	0.2	0.3	0.7	1.1	1.8
D Pallet lower surface mounting	Model	CPS-D03D	CPS-D06D	CPS-D10D	CPS-D16D	CPS-E03D	CPS-E06D	CPS-E10D	CPS-E16D	CPS-E25D	CPS-E40D	CPS-F03D	CPS-F06D	CPS-F10D	CPS-F16D	CPS-F25D	CPS- F40D
	Mass	0.2	0.3	0.5	1.2	0.2	0.3	0.5	1.2	2	3.1	0.2	0.3	0.5	1.1	1.9	3
F Flange mounting	Model	CPS-D03F	CPS-D06F	CPS-D10F	CPS-D16F	CPS-E03F	CPS-E06F	CPS-E10F	CPS-E16F	CPS-E25F	CPS-E40F	CPS-F03F	CPS-F06F	CPS-F10F	CPS-F16F	CPS-F25F	CPS- F40F
	Mass	0.1	0.2	0.3	0.8	0.1	0.2	0.3	0.8	1.5	2.5	0.1	0.2	0.4	0.8	1.5	2.4

Height of pallet from base plate

Locate ring mounting method	Pallet changing	Pallet setting (Unclamp)	Clamp
T Pallet upper surface mounting **D** Pallet lower surface mounting			
F Flange mounting			

mm

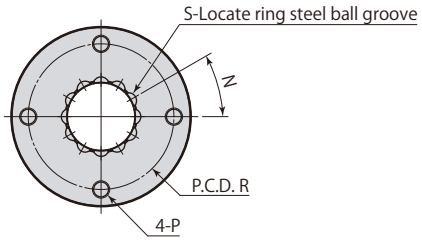
Spring clamp Hydraulic clamp		CPC CPH-□03H	CPC CPH-□06H	CPC CPH-□10H	CPC CPH-□16H	CPC CPH-□25H	CPC CPH-□40H
T Pallet upper surface mounting **D** Pallet lower surface mounting	A	Min. 33	Min. 38	Min. 44	Min. 55	Min. 66	Min. 79
	B	12.5	13.5	15.5	18.5	22.5	28.5
	C	11.5	12.5	14.5	17.5	21.5	27.5
F Flange mounting	D	Min. 43	Min. 48	Min. 56	Min. 71	Min. 86	Min. 104
	E	22	23.5	27.5	33.5	41	52
	F	21	22.5	26.5	32.5	40	51

- Pallet lift capacity for dimension A or D or more is needed to change pallet.
- The height from base plate to pallet varies when using shim for pallet clamp or locate ring (flange mounting).

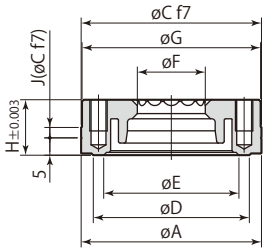
Former type pallet clamps (model CPC-□□F, CPH-□□F) have different lift stroke, air blow (air outlet, sealing method, connecting pipe diameter), locate ring mounting dimensions. Please bear this in mind when placing repeat orders.
Inquire separately regarding former type pallet clamps.

CPS-□□T	Locate ring Pallet upper surface mounting	7MPa

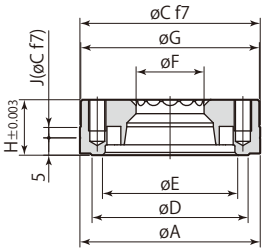
Dimensions



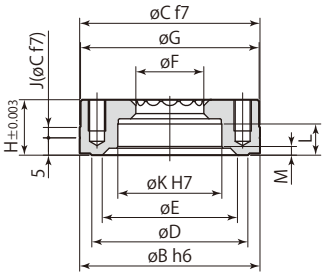
CPS-D03–16T Locate ring (D type)



CPS-E03–40T Locate ring (E type)



CPS-F03–40T Locate ring (F type)



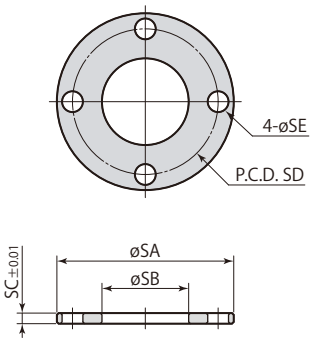
mm

Model	CPS-□03T	CPS-□06T	CPS-□10T	CPS-□16T	CPS-□25T	CPS-□40T
øA	40 $^{+0.005}_{-0.011}$	52 $^{+0.006}_{-0.013}$	60 $^{+0.006}_{-0.013}$	80 $^{+0.006}_{-0.013}$	95 $^{+0.007}_{-0.015}$	115 $^{+0.007}_{-0.015}$
øB	40 $^{0}_{-0.016}$	52 $^{0}_{-0.019}$	60 $^{0}_{-0.019}$	80 $^{0}_{-0.019}$	95 $^{0}_{-0.022}$	115 $^{0}_{-0.022}$
øC	40 $^{-0.025}_{-0.050}$	52 $^{-0.030}_{-0.060}$	60 $^{-0.030}_{-0.060}$	80 $^{-0.030}_{-0.060}$	95 $^{-0.036}_{-0.071}$	115 $^{-0.036}_{-0.071}$
øD	32	45	48	66	78	94
øE	28	39	42	58	68	80
øF	15.6	19.6	23.3	29.7	37.6	46.3
øG	39.5	51.5	59.5	79.5	94.5	114.5
H	13	16	20	25	30	35
J	3	3	3	3	3	4
øK	22 $^{+0.021}_{0}$	30 $^{+0.021}_{0}$	32 $^{+0.025}_{0}$	45 $^{+0.025}_{0}$	55 $^{+0.030}_{0}$	65 $^{+0.030}_{0}$
L	7	9	11	14	16	19
M	2	2.5	2.5	3	4	5
N*	45°	30°	30°	30°	30°	30°
P	M5×0.8 depth 6	M5×0.8 depth 9	M6×1 depth 11	M8×1.25 depth 15	M10×1.5 depth 18	M12×1.75 depth 21
R	31	42	48	64	75	90
S	8	12	12	12	12	12

∗: Be sure to match up phase of locate ring steel ball grooves and pallet clamp steel balls.

● Mounting screws are not included.

Shim (option)



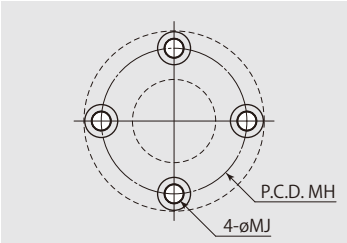
mm

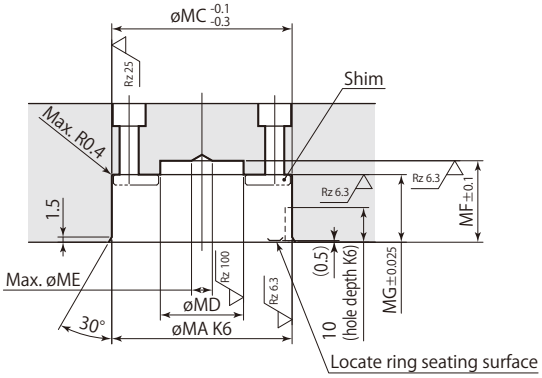
Shim	CPS-S03T	CPS-S06T	CPS-S10T	CPS-S16T	CPS-S25T	CPS-S40T
øSA	39	51	59	79	94	114
øSB	21	25	33	46	56	67
SC	2.05	3.05	3.05	3.05	4.05	4.05
SD	31	42	48	64	75	90
øSE	6	6	7	9	11	14
Mass	0.01 kg	0.03 kg	0.04 kg	0.07 kg	0.13 kg	0.14 kg

● This diagram indicates dimensions at shipping.

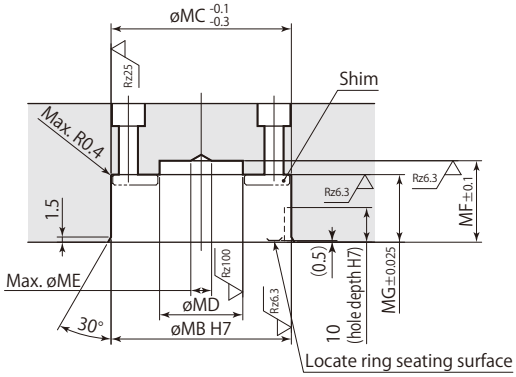
● Adjust thickness of shim by grinding to ensure flatness of pallet.

Mounting details





CPS-D03–16T, CPS-E03–40T



CPS-F03–40T

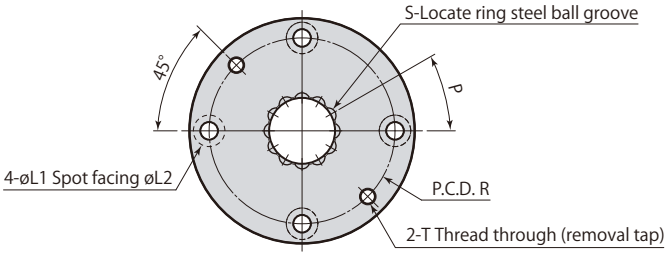
Rz: ISO4287(1997)

mm

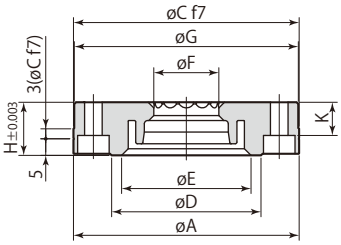
Model	CPS-□03T	CPS-□06T	CPS-□10T	CPS-□16T	CPS-□25T	CPS-□40T
øMA	40 $^{+0.003}_{-0.013}$	52 $^{+0.004}_{-0.015}$	60 $^{+0.004}_{-0.015}$	80 $^{+0.004}_{-0.015}$	95 $^{+0.004}_{-0.018}$	115 $^{+0.004}_{-0.018}$
øMB	40 $^{+0.025}_{0}$	52 $^{+0.030}_{0}$	60 $^{+0.030}_{0}$	80 $^{+0.030}_{0}$	95 $^{+0.035}_{0}$	115 $^{+0.035}_{0}$
øMC	40	52	60	80	95	115
øMD	20	24	28	36	50	60
øME	6	6	8	10	12	15
MF	20	23.5	26.8	34.8	41.8	48.8
MG	15.5	19.5	23.5	28.5	34.5	39.5
MH	31	42	48	64	75	90
øMJ	5.5	5.5	6.6	9	11	13.5

- Be sure to match up phase of locate ring steel ball grooves and pallet clamp steel balls.
- dimensions are different from former pallet clamp (model CPC-□□F, CPH-□□F).

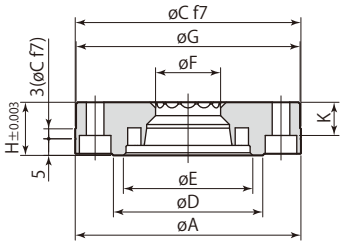
Dimensions



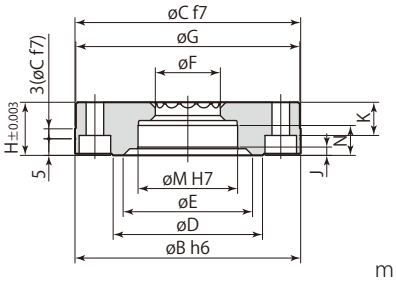
CPS-D03–16D Locate ring (D type)



CPS-E03–40D Locate ring (E type)



CPS-F03–40D Locate ring (F type)

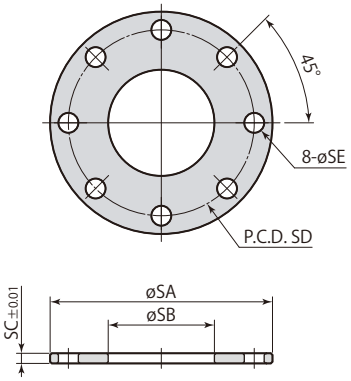


mm

Model	CPS-□03D	CPS-□06D	CPS-□10D	CPS-□16D	CPS-□25D	CPS-□40D
øA	55 $^{+0.006}_{-0.013}$	68 $^{+0.006}_{-0.013}$	75 $^{+0.006}_{-0.013}$	100 $^{+0.007}_{-0.015}$	120 $^{+0.007}_{-0.015}$	140 $^{+0.007}_{-0.018}$
øB	55 $^{0}_{-0.019}$	68 $^{0}_{-0.019}$	75 $^{0}_{-0.019}$	100 $^{0}_{-0.022}$	120 $^{0}_{-0.022}$	140 $^{0}_{-0.025}$
øC	55 $^{-0.030}_{-0.060}$	68 $^{-0.030}_{-0.060}$	75 $^{-0.030}_{-0.060}$	100 $^{-0.036}_{-0.071}$	120 $^{-0.036}_{-0.071}$	140 $^{-0.043}_{-0.083}$
øD	32	45	48	66	78	94
øE	28	39	42	58	68	80
øF	15.6	19.6	23.3	29.7	37.6	46.3
øG	54.5	67.5	74.5	99.5	119.5	139.5
H	13	16	20	25	30	35
J	2	2.5	2.5	3	4	5
K	7	10	13	16	19	22
øL1	5.3	5.3	6.8	9	11	14
øL2	9.5	9.5	11	14	17.5	20
øM	22 $^{+0.021}_{0}$	30 $^{+0.021}_{0}$	32 $^{+0.025}_{0}$	45 $^{+0.025}_{0}$	55 $^{+0.030}_{0}$	65 $^{+0.030}_{0}$
N	7	9	11	14	16	19
P*	45°	30°	30°	30°	30°	30°
R	43	56	61	82	98	116
S	8	12	12	12	12	12
T	M5×0.8	M5×0.8	M6×1	M8×1.25	M10×1.5	M12×1.75

∗: Be sure to match up phase of locate ring steel ball grooves and pallet clamp steel balls.

● Mounting screws are not included.



Shim (option)

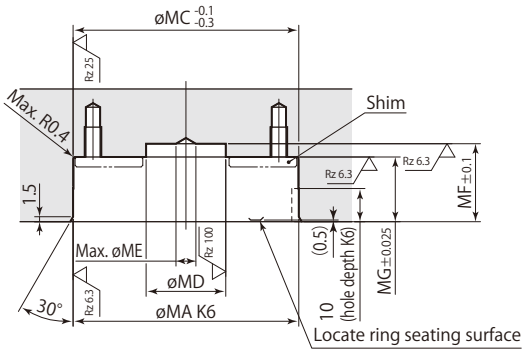
mm

Shim	CPS-S03D	CPS-S06D	CPS-S10D	CPS-S16D	CPS-S25D	CPS-S40D
øSA	54	67	74	99	119	139
øSB	24	32	39	55	65	77
SC	2.05	3.05	3.05	3.05	4.05	4.05
SD	43	56	61	82	98	116
øSE	6	6	7	9	11	14
Mass	0.06 kg	0.06 kg	0.07 kg	0.11 kg	0.22 kg	0.31 kg

● This diagram indicates dimensions at shipping.

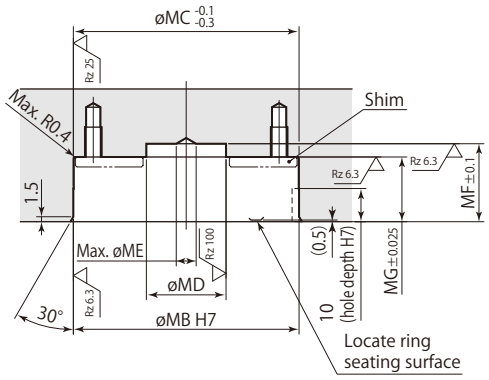
● Adjust thickness of shim by grinding to ensure flatness of pallet.

Mounting details

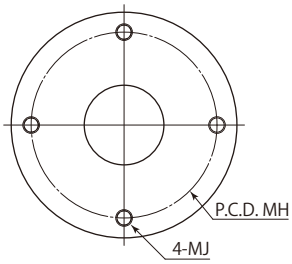


CPS-D03–16D, CPS-E03–40D

Rz: ISO4287(1997)



CPS-F03–40D

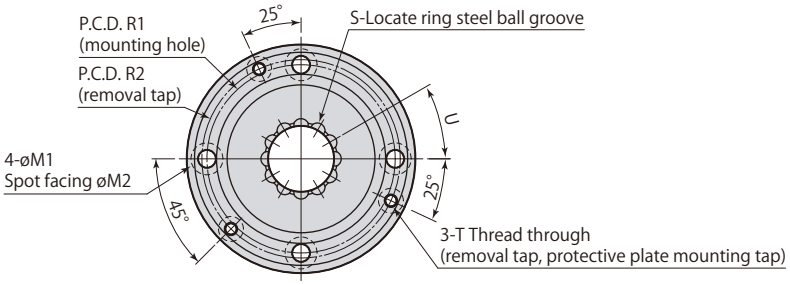


mm

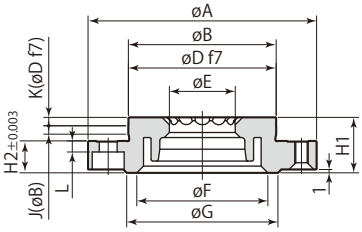
Model	CPS-□03D	CPS-□06D	CPS-□10D	CPS-□16D	CPS-□25D	CPS-□40D
øMA	55 $^{+0.004}_{-0.015}$	68 $^{+0.004}_{-0.015}$	75 $^{+0.004}_{-0.015}$	100 $^{+0.004}_{-0.018}$	120 $^{+0.004}_{-0.018}$	140 $^{+0.004}_{-0.021}$
øMB	55 $^{+0.030}_{0}$	68 $^{+0.030}_{0}$	75 $^{+0.030}_{0}$	100 $^{+0.035}_{0}$	120 $^{+0.035}_{0}$	140 $^{+0.035}_{0}$
øMC	55	68	75	100	120	140
øMD	20	24	28	36	50	60
øME	6	6	8	10	12	15
MF	20	23.5	26.8	34.8	41.8	48.8
MG	15.5	19.5	23.5	28.5	34.5	39.5
MH	43	56	61	82	98	116
MJ	M5	M5	M6	M8	M10	M12

- Be sure to match up phase of locate ring steel ball grooves and pallet clamp steel balls.
- dimensions are different from former pallet clamp (model CPC-□□F, CPH-□□F).

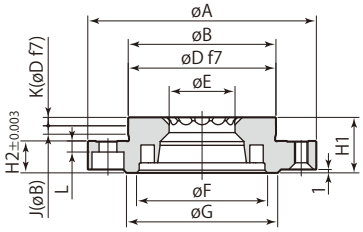
Dimensions



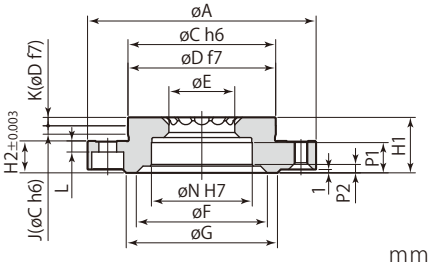
CPS-D03–16F Locate ring (D type)



CPS-E03–40F Locate ring (E type)



CPS-F03–40F Locate ring (F type)



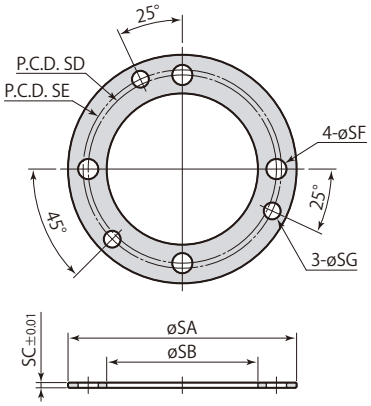
mm

Model	CPS-□03F	CPS-□06F	CPS-□10F	CPS-□16F	CPS-□25F	CPS-□40F
øA	55	68	75	100	120	140
øB	31 $^{+0.005}_{-0.011}$	44 $^{+0.005}_{-0.011}$	47 $^{+0.005}_{-0.011}$	66 $^{+0.006}_{-0.013}$	80 $^{+0.006}_{-0.013}$	95 $^{+0.007}_{-0.015}$
øC	31 $^{0}_{-0.016}$	44 $^{0}_{-0.016}$	47 $^{0}_{-0.016}$	66 $^{0}_{-0.019}$	80 $^{0}_{-0.019}$	95 $^{0}_{-0.022}$
øD	31 $^{-0.025}_{-0.050}$	44 $^{-0.025}_{-0.050}$	47 $^{-0.025}_{-0.050}$	66 $^{-0.030}_{-0.060}$	80 $^{-0.030}_{-0.060}$	95 $^{-0.036}_{-0.071}$
øE	15.6	19.6	23.3	29.7	37.6	46.3
øF	28	39	42	58	68	80
øG	32	45	48	66	78	94
H1	15.5	16.5	20	25	30	35
H2	9	9.5	11.5	14.5	18	23
J	2.4	2.5	3.2	4.7	4.2	4.2
K	2.1	2.5	2.8	3.3	3.8	3.8
L	2.8	3.3	4.2	5.2	6.5	9.5
øM1	5.3	5.3	6.8	9	11	14
øM2	9.5	9.5	11	14	17.5	20
øN	22 $^{+0.021}_{0}$	30 $^{+0.021}_{0}$	32 $^{+0.025}_{0}$	45 $^{+0.025}_{0}$	55 $^{+0.030}_{0}$	65 $^{+0.030}_{0}$
P1	7	9	11	14	16	19
P2	2	2.5	2.5	3	4	5
R1	43	56	61	82	98	116
R2	46	59	64	88	106	124
S	8	12	12	12	12	12
T	M4×0.7	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1
U*	45°	30°	30°	30°	30°	30°

∗: Be sure to match up phase of locate ring steel ball grooves and pallet clamp steel balls.

● Mounting screws are not included.

Shim (option)



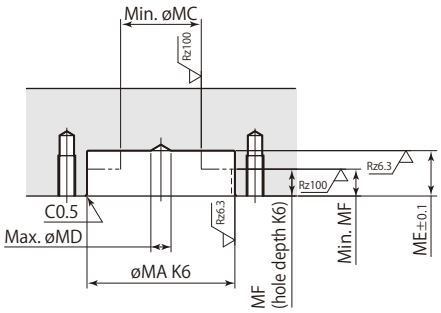
mm

Shim	CPS-S03F	CPS-S06F	CPS-S10F	CPS-S16F	CPS-S25F	CPS-S40F
øSA	55	68	75	100	120	140
øSB	32	45	48	67	81	96
SC	1.55	1.55	2.05	3.05	3.05	3.05
SD	43	56	61	82	98	116
SE	46	59	64	88	106	124
øSF	6	6	7	9	11	14
øSG	5	5	6	6	7	7
Mass	0.02 kg	0.02 kg	0.04 kg	0.09 kg	0.13 kg	0.17 kg

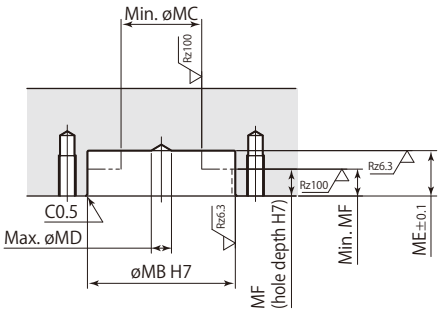
● This diagram indicates dimensions at shipping.

● Adjust thickness of shim by grinding to ensure flatness of pallet.

Mounting details

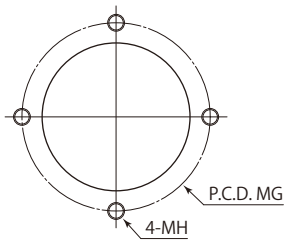


CPS-D03–16F, CPS-E03–40F



CPS-F03–40F

Rz: ISO4287(1997)

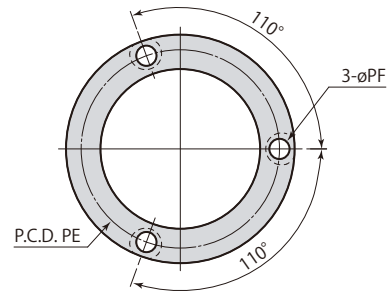


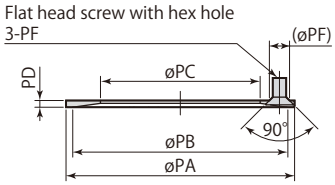
mm

Model	CPS-□03F	CPS-□06F	CPS-□10F	CPS-□16F	CPS-□25F	CPS-□40F
øMA	31 $^{+0.003}_{-0.013}$	44 $^{+0.003}_{-0.013}$	47 $^{+0.003}_{-0.013}$	66 $^{+0.004}_{-0.015}$	80 $^{+0.004}_{-0.015}$	95 $^{+0.004}_{-0.018}$
øMB	31 $^{+0.025}_{0}$	44 $^{+0.025}_{0}$	47 $^{+0.025}_{0}$	66 $^{+0.030}_{0}$	80 $^{+0.030}_{0}$	95 $^{+0.035}_{0}$
øMC	20	24	28	36	50	60
øMD	6	6	8	10	12	15
MG	43	56	61	82	98	116
MH	M5	M5	M6	M8	M10	M12
Not using shim (standard specifications)						
ME	10.5	13.5	14.8	19.8	23.3	25.3
MF	7.5	8	9.5	11.5	13	13
Using shim (shim specifications)						
ME	9	12	12.8	16.8	20.3	22.3
MF	6.5	6.5	7.5	8.5	10	10

- Be sure to match up phase of locate ring steel ball grooves and pallet clamp steel balls.
- ▭ dimensions are different from former pallet clamp (model CPC-□□F, CPH-□□F).

Protective plate (option)

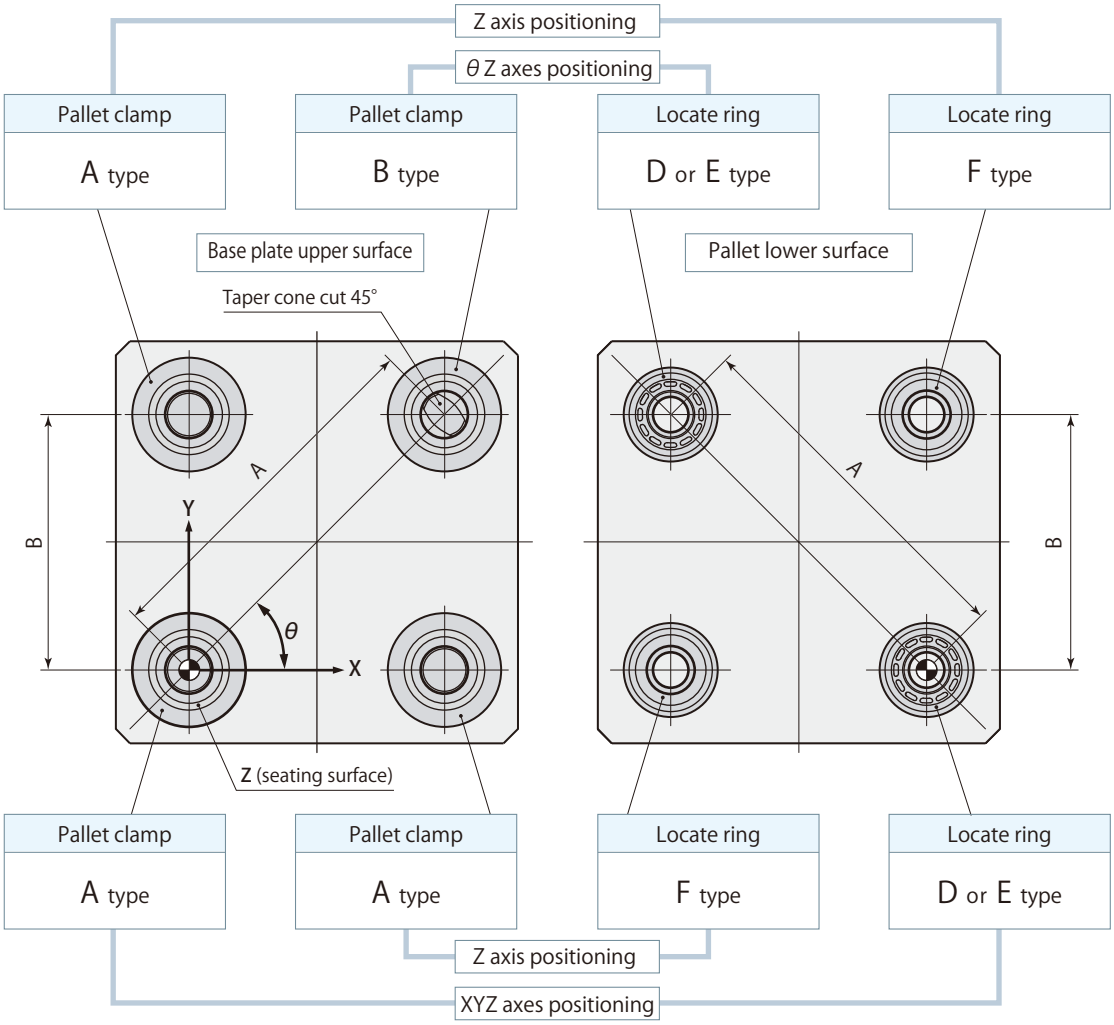




mm

Protective plate	CPS-P03F	CPS-P06F	CPS-P10F	CPS-P16F	CPS-P25F	CPS-P40F
øPA	55	68	75	100	120	140
øPB	51	64	68	94	114	132
øPC	34.5	47.5	50.5	68.5	80.5	96.5
PD	2	2	2	2.5	3	3
PE	46	59	64	88	106	124
øPF	6	6	8	8	9	9
Mass	0.02 kg	0.02 kg	0.03 kg	0.06 kg	0.1 kg	0.13 kg

Pitch tolerance of Pal system

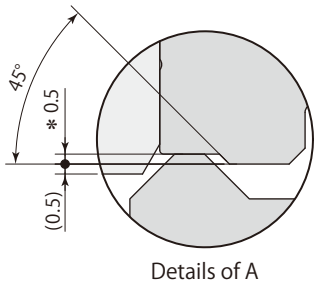


mm

Model (Size)	03	06	10	16	25	40
Pitch tolerance of A dimensions	±0.01			±0.02	±0.03	
Pitch tolerance of B dimensions	±0.03			±0.04	±0.05	

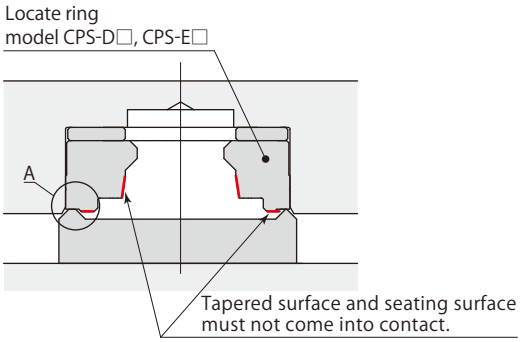
Method for positioning pallet changer setup table

Internal hole of model CPS-F (Seating surface positioning) can be used for positioning of setup table for pallet change with pallet changer. In order to sustain accuracy, do not allow surfaces other than those of pallet clamp model CPC or model CPH to come into contact with tapered surface or seating surface.

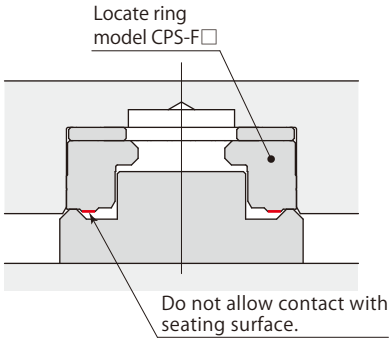


Details of A

Locate ring XYZ axes and θ Z axes positioning



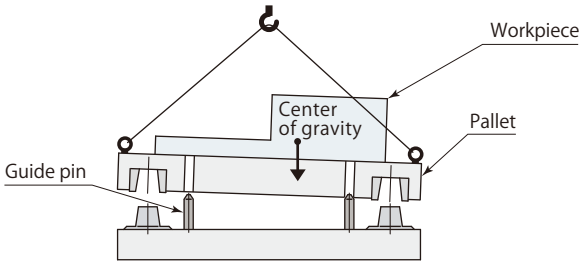
Locate ring Z axis positioning

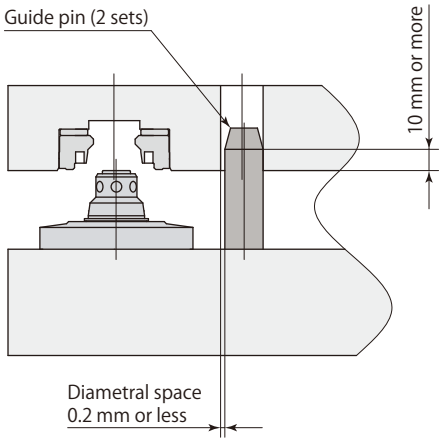


∗: 1mm for CPS-□□F (Locate ring for flange mounting)

Pallet change

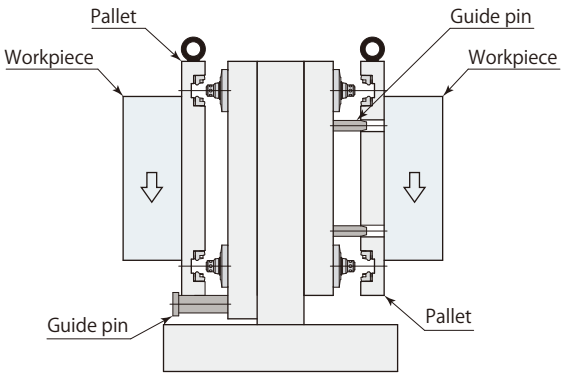
- When pallet changing, the pallet should be mounted or dismounted observing the figures shown in "Max. allowable eccentricity for pallet setting". (Refer to **page →17** (model CPC), **page →23** (model CPH) for max. allowable eccentricity for pallet setting.)
- Ensure that pallet does not lean to the side when pallet mounting or dismounting. When dismounting pallet in particular, pulling while in a tilted condition can damage pallet clamp and locate ring. A guide pin is recommended to prevent the pallet from leaning.

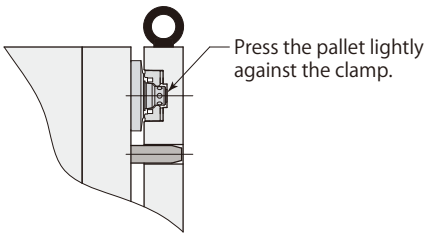




For vertical mounting of pallet

- A guide pin must be installed when mounting pallet vertically.
- Ensure spacing is set in order to ensure that mounted guide pin does not affect positioning.
- Ensure the pallet is closely contact with the base when it is clamped. Clamping with a space may cause the damage of both of clamp and locate ring.
  (Refer to **page →29** for the height of pallet from base plate when pallet setting.)





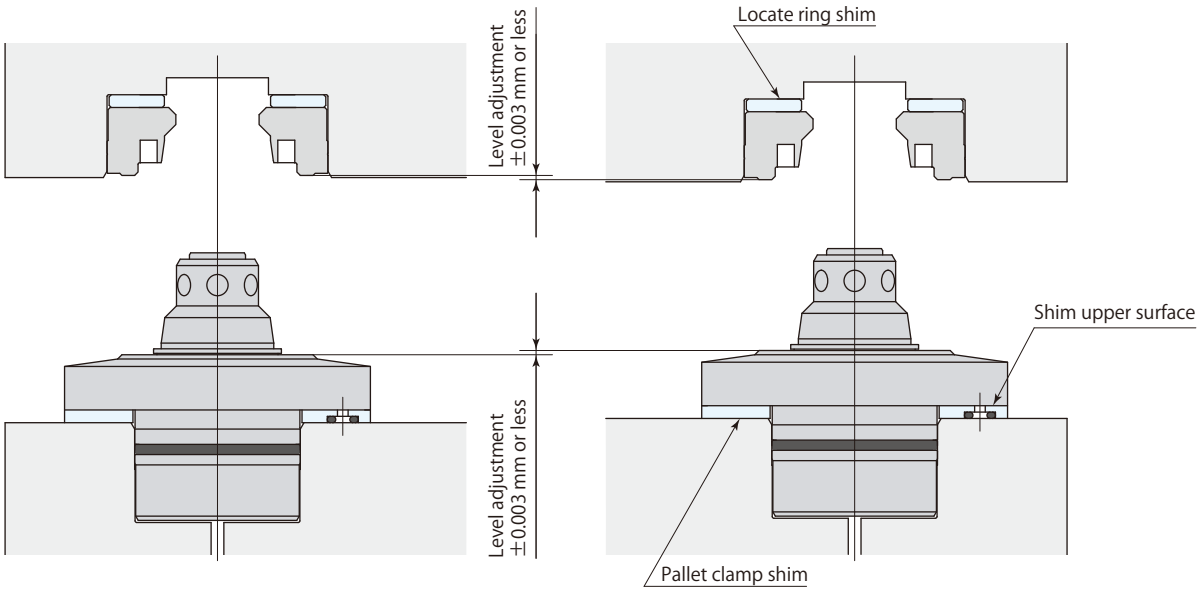
Level adjustment

Level adjustment of pallet clamp seating surface

- If level adjustment of pallet clamp seating surface is required, use pallet clamp shim (option). The level can be adjusted by grinding the shim.
- Grind shim upper surface (surface without O-ring).
- The measurement on the seating surface should be performed under the pallet clamped condition without locate rings. (Recommended adjustment figure : ±0.003mm)

Level adjustment of locate ring seating surface

- If level adjustment of locate ring seating surface is required, use locate ring shim (option). The level can be adjusted by grinding the shim. (Recommended adjustment figure : ±0.003mm)



Mounting & dismounting of clamp

Mounting of clamp

①The ring has been mounted on the clamp to avoid taking it apart during the shipment. Remove it after mounting the clamp on the base plate, supplying the hydraulic pressure for unclamping.

②The ring is an important part for dismounting the clamp. Store if for future maintenance.

Dismounting of clamp

①Mount the ring before dismounting the clamp from the base plate. Supply hydraulic pressure for unclamping to mount it.

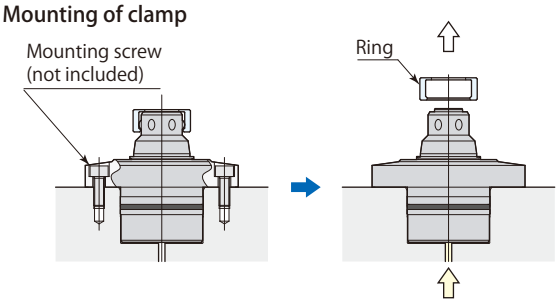
②Drain oil in the circuit and remove the mounting screws.

③Mount the set-screws on the mounting tap to protect the threads and clamp mounting surface.

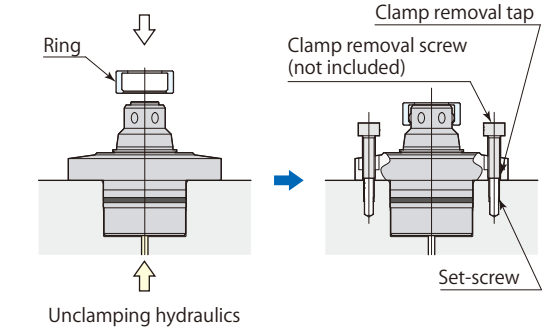
④Mount the clamp removal screw on the clamp removal tap and dismount the clamp.

⑤Retain the clamp upright condition when dismounting it.

Mounting of clamp



Dismounting of clamp



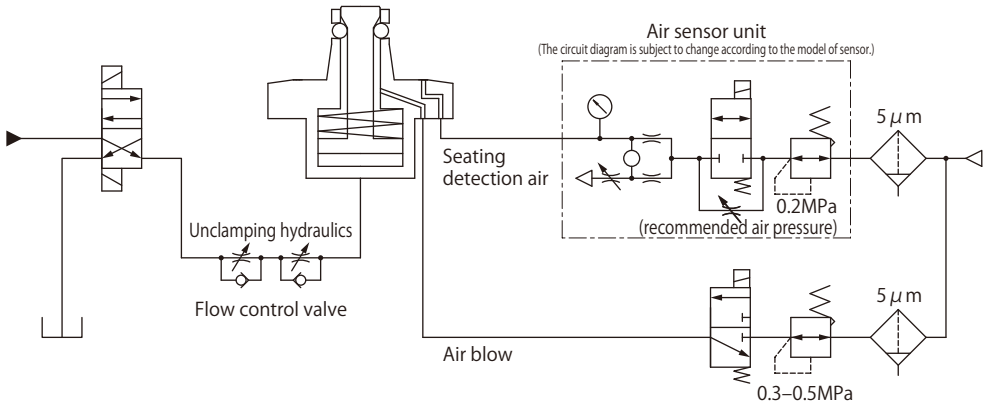
Air sensor unit recommended condition of use

Supplier and model	ISA3-F/G series manufactured by SMC
	GPS2-05, GPS3-E series manufactured by CKD
Air supply pressure	0.2 MPa
Inner diameter of piping	ø4 mm
Overall piping length	5 m or less

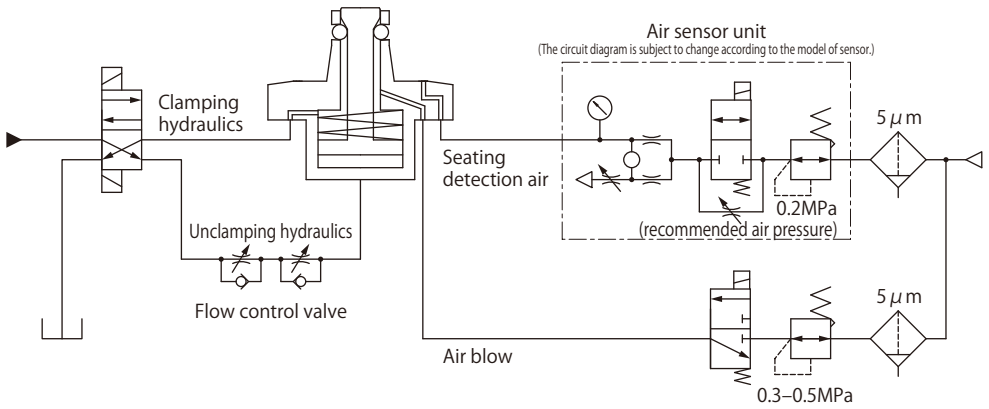
- Supply the dry and filtered air. Particulate size 5 μm or less is recommended.
- Use a solenoid valve with needle for air sensor unit and control it supplying air all the time in order to eliminate intrusion of chips or coolant.
- There is a case that air sensing cannot be made successfully as designed when it is used out of the usage shown on the left. Contact Technical service center for more details.
- Refer to the sensor supplier's instruction manual for the details of setting.
- Sensing performance such as detectable time and pressure differs depending on the supplier and model number of the sensor. Select the right model referring to sensor's application and characteristics.
- Clamp state observation or operating check by the air sensor should be made while air blow is OFF.

Hydraulic and pneumatic circuit diagram

Spring clamp model CPC



Hydraulic clamp model CPH



- Be sure to make inner diameter of air blow circuit 8 mm or more except for clamp mounting surface.
- Adjust full stroking time to be more than 1 second by a flow control valve to avoid impact at the time of clamp or unclamp action.