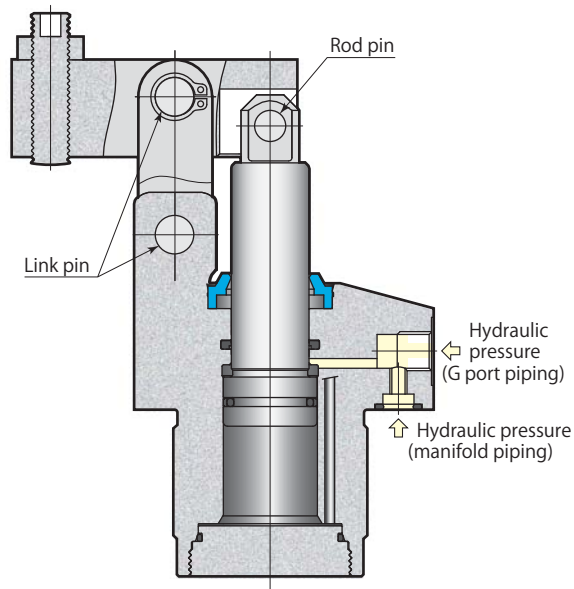
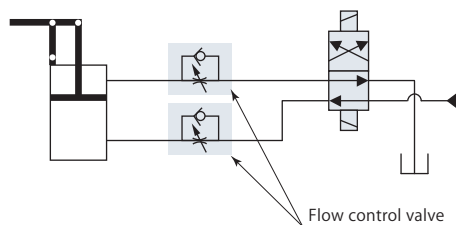


Link clamp

model **CLW**□-□Hydraulic circuit diagram

For flow control valve, we recommend the meter-in control. If meter-out control is used, due to the area difference, it will cause back pressure and become high pressure. This can lead to malfunction of the system. Please be aware when designing the circuit.

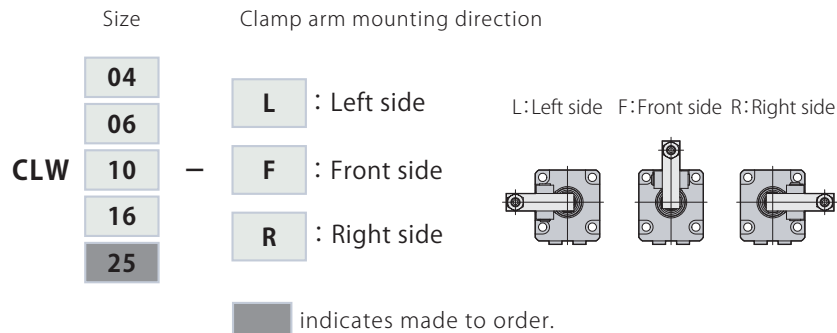
Only for model CLW04-□, flow control valve model VCH can be mounted for manifold piping.

Specifications page → 83

Dimensions page → 86

Mounting details page → 88

Specifications



Model		CLW04	CLW06	CLW10	CLW16	CLW25	
Cylinder force (hydraulic pressure 35 MPa)		kN	5.4	8.9	13.3	21.5	35.6
Cylinder inner diameter		mm	14	18	22	28	36
Rod diameter		mm	12	14	18	22.4	28
Effective area (clamp)		cm ²	1.54	2.54	3.80	6.16	10.18
Full stroke		mm	23.5	26	29.5	36	45
Clamp stroke		mm	20.5	23	26.5	33	42
Stroke margin		mm	3	3	3	3	3
Max. oil flow rate		L/min	0.38	0.69	1.18	2.39	5.08
Cylinder capacity	Clamp	cm ³	3.6	6.6	11.2	22.2	45.8
	Unclamp	cm ³	1.0	2.6	3.7	8.0	18.1
Mass		kg	0.9	1.7	2.3	4.4	7.4
Recommended tightening torque of mounting screws*		N·m	7	12	29	57	100

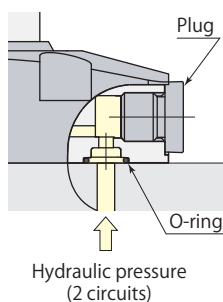
- Pressure range: 1~35 MPa (model CLW04: 3~35 MPa)
- Proof pressure: 52.5 MPa
- Operating temperature: 0~70 °C
- Fluid used: General mineral based hydraulic oil (ISO-VG32 equivalent)
- Seals are resistant to chlorine-based cutting fluid. (not thermal resistant specification)

*: ISO R898 class 12.9

Manifold piping and G port piping are available.

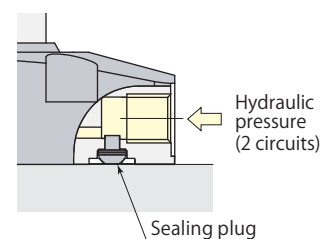
Manifold piping

Remove sealing plug when using manifold piping. An air bleeding valve (model VCE) is mountable on the G port of the clamp.

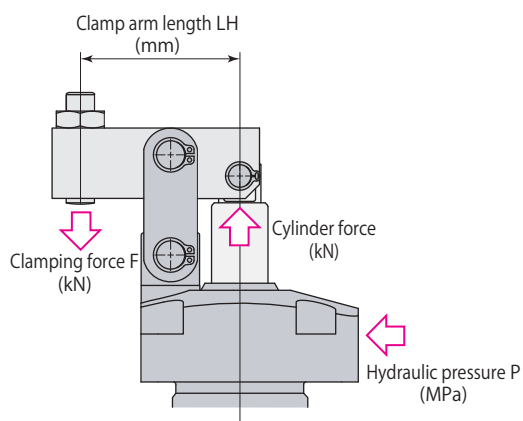
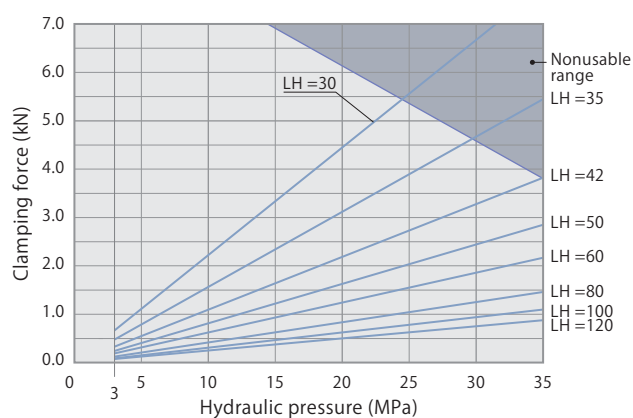
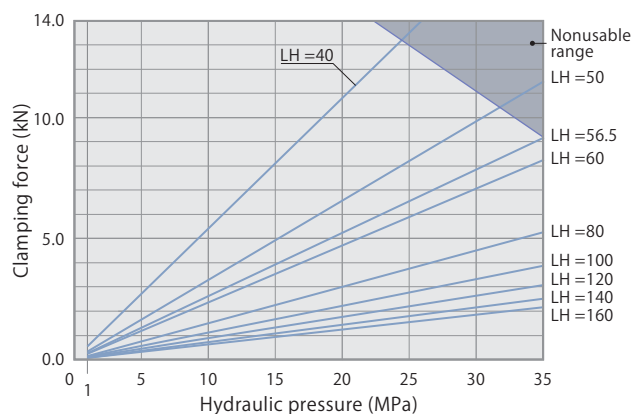
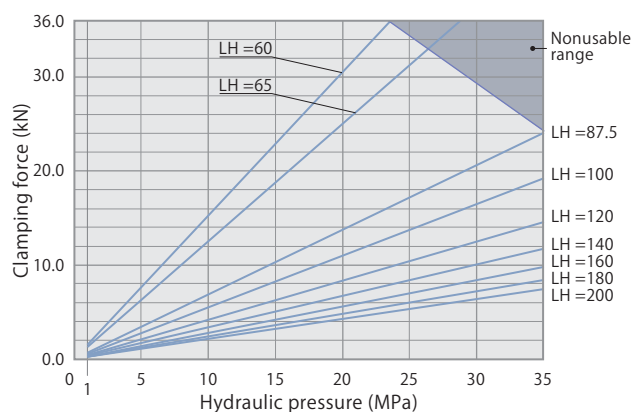


G port piping

Remove plug and O-ring when using G port piping. The flow control valve and the air bleeding valve should be installed in the middle of oil path.



Performance diagram

model **CLW04**model **CLW10**model **CLW25**

Clamping force varies depending on the clamp arm length (LH) and hydraulic pressure (P).

Clamping force calculation formula

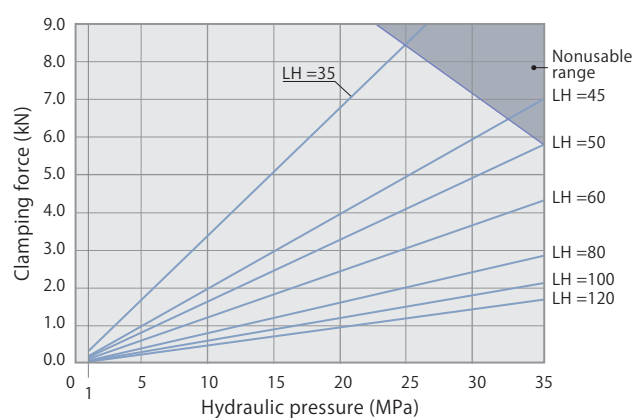
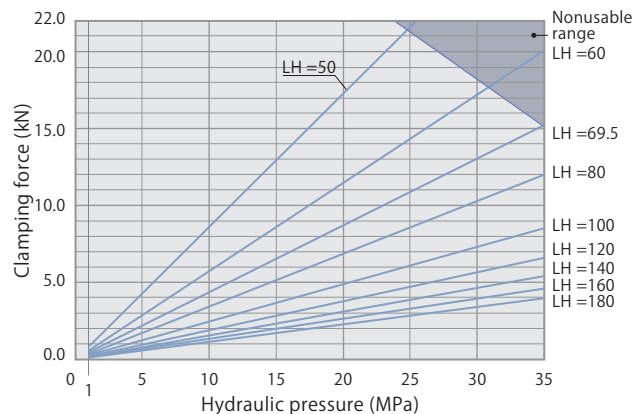
$$F = \text{Coefficient 1} \times P / (LH - \text{Coefficient 2})$$

F : Clamping force P : Hydraulic pressure LH : Clamp arm length

CLW10 with clamp arm length (LH) = 50 mm at hydraulic pressure of 25 MPa, Clamping force F is calculated by

$$8.38 \times 25 / (50 - 24.5) = 8.2 \text{ kN}$$

Do not use the clamp in the nonusable range. It may cause damage to the cylinder and rod.

model **CLW06**model **CLW16**

Performance table

model CLW04		Clamping force $F=2.56 \times P / (LH-18.5)$								
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN								Min. arm length Min. LH mm
		Clamp arm length LH mm								
		30	35	42	50	60	80	100	120	
35	5.4			3.8	2.8	2.2	1.5	1.1	0.9	42
30	4.6			3.3	2.4	1.9	1.2	0.9	0.8	35.3
25	3.9		3.9	2.7	2.0	1.5	1.0	0.8	0.6	30.5
20	3.1	4.5	3.1	2.2	1.6	1.2	0.8	0.6	0.5	30
15	2.3	3.3	2.3	1.6	1.2	0.9	0.6	0.5	0.4	↑
10	1.5	2.2	1.6	1.1	0.8	0.6	0.4	0.3	0.3	↑
5	0.8	1.1	0.8	0.5	0.4	0.3	0.2	0.2	0.1	↑
3	0.5	0.7	0.5	0.3	0.2	0.2	0.1	0.1	0.1	30
Max. pressure MPa		24.4	29.7	35	35	35	35	35	35	

indicates unusable range

model CLW06		Clamping force $F=4.81 \times P/(LH-21.0)$							
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN							Min. arm length Min. LH mm
		Clamp arm length LH mm							
		35	45	50	60	80	100	120	
35	8.9			5.8	4.3	2.9	2.1	1.7	50
30	7.6		6.0	5.0	3.7	2.4	1.8	1.5	41.5
25	6.4		5.0	4.1	3.1	2.0	1.5	1.2	35.5
20	5.1	6.9	4.0	3.3	2.5	1.6	1.2	1.0	35
15	3.8	5.2	3.0	2.5	1.9	1.2	0.9	0.7	↑
10	2.5	3.4	2.0	1.7	1.2	0.8	0.6	0.5	↑
5	1.3	1.7	1.0	0.8	0.6	0.4	0.3	0.2	↑
1	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	35
Max. pressure MPa		24.6	32.3	35	35	35	35	35	

indicates unusable range

model CLW10		Clamping force $F=8.38 \times P / (LH-24.5)$										
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN										Min. arm length Min. LH mm
		Clamp arm length LH mm										
		40	50	56.5	60	80	100	120	140	160		
35	13.3			9.2	8.3	5.3	3.9	3.1	2.5	2.2	56.5	
30	11.4		9.9	7.9	7.1	4.5	3.3	2.6	2.2	1.9	47	
25	9.5		8.2	6.5	5.9	3.8	2.8	2.2	1.8	1.5	40.5	
20	7.6	10.8	6.6	5.2	4.7	3.0	2.2	1.8	1.5	1.2	40	
15	5.7	8.1	4.9	3.9	3.5	2.3	1.7	1.3	1.1	0.9	↑	
10	3.8	5.4	3.3	2.6	2.4	1.5	1.1	0.9	0.7	0.6	↑	
5	1.9	2.7	1.6	1.3	1.2	0.8	0.6	0.4	0.4	0.3	↑	
1	0.4	0.5	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	40	
Max. pressure MPa		24.4	31.7	35	35	35	35	35	35	35		

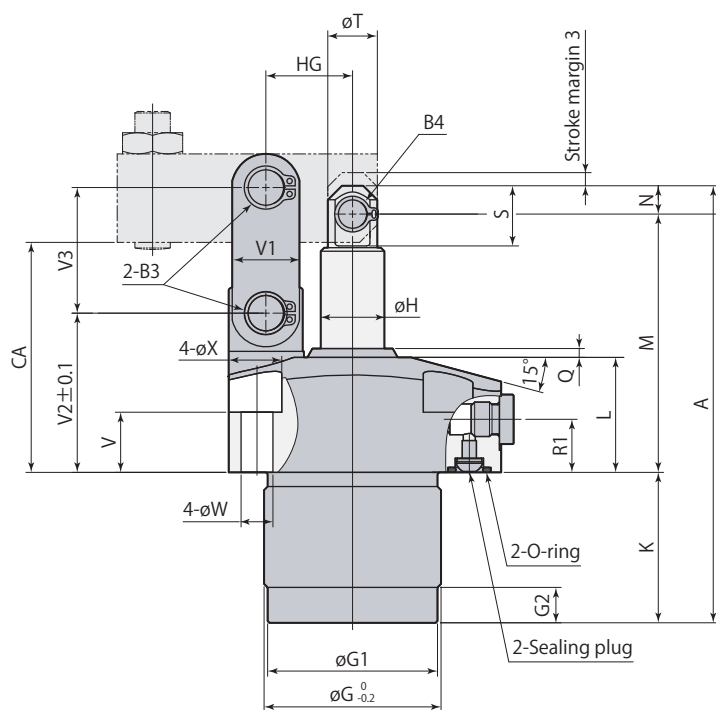
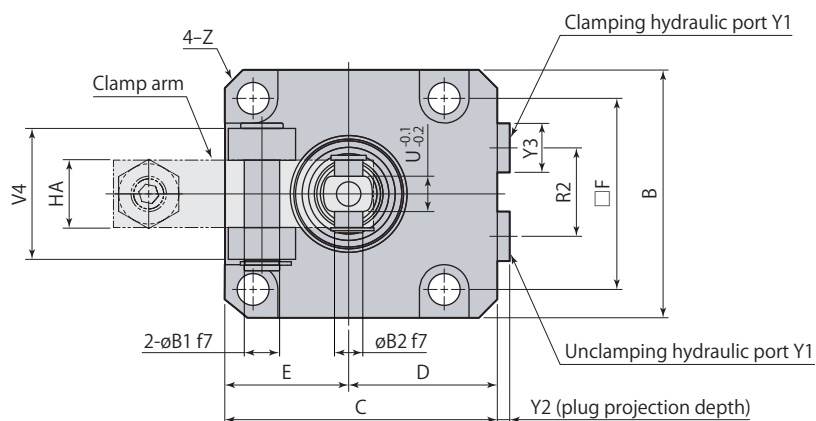
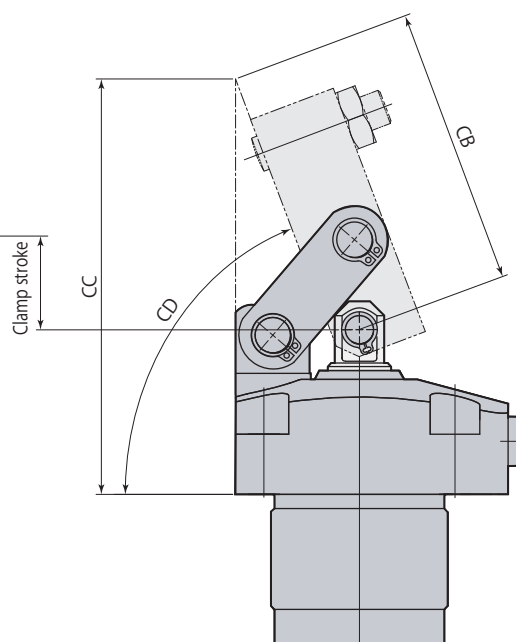
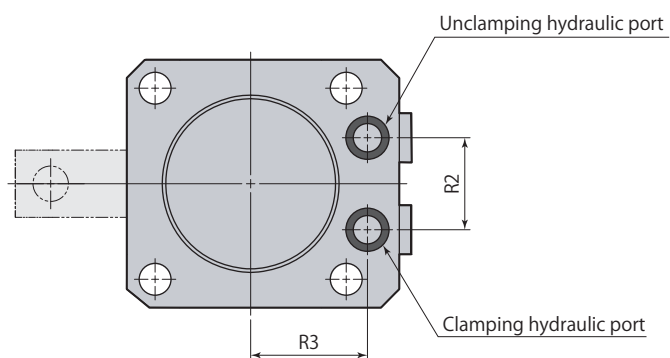
indicates unusable range

model CLW16		Clamping force $F=16.90 \times P / (LH-30.5)$									
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN									Min. arm length Min. LH mm
		Clamp arm length LH mm									
		50	60	69.5	80	100	120	140	160	180	
35	21.6			15.2	11.9	8.5	6.6	5.4	4.6	4.0	69.5
30	18.5		17.2	13.0	10.2	7.3	5.7	4.6	3.9	3.4	58.5
25	15.4		14.3	10.8	8.5	6.1	4.7	3.9	3.3	2.8	50.5
20	12.3	17.3	11.5	8.7	6.8	4.9	3.8	3.1	2.6	2.3	50
15	9.2	13.0	8.6	6.5	5.1	3.6	2.8	2.3	2.0	1.7	↑
10	6.2	8.7	5.7	4.3	3.4	2.4	1.9	1.5	1.3	1.1	↑
5	3.1	4.3	2.9	2.2	1.7	1.2	0.9	0.8	0.7	0.6	↑
1	0.6	0.9	0.6	0.4	0.3	0.2	0.2	0.2	0.1	0.1	50
Max. pressure MPa		24.8	30.9	35	35	35	35	35	35	35	

indicates unusable range

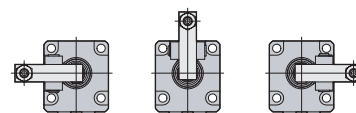
model CLW25		Clamping force $F=34.35 \times P / (LH-37.5)$										
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN										Min. arm length Min. LH mm
		Clamp arm length LH mm										
		60	65	87.5	100	120	140	160	180	200		
35	35.6			24.0	19.2	14.6	11.7	9.8	8.4	7.4	87.5	
30	30.5			20.6	16.5	12.5	10.1	8.4	7.2	6.3	73	
25	25.5		31.2	17.2	13.7	10.4	8.4	7.0	6.0	5.3	62.5	
20	20.4	30.5	25.0	13.7	11.0	8.3	6.7	5.6	4.8	4.2	60	
15	15.3	22.9	18.7	10.3	8.2	6.2	5.0	4.2	3.6	3.2	↑	
10	10.2	15.3	12.5	6.9	5.5	4.2	3.4	2.8	2.4	2.1	↑	
5	5.1	7.6	6.2	3.4	2.7	2.1	1.7	1.4	1.2	1.1	↑	
1	1.0	1.5	1.2	0.7	0.5	0.4	0.3	0.3	0.2	0.2	60	
Max. pressure MPa		23.5	26.3	35	35	35	35	35	35	35		

indicates unusable range

DimensionsClampUnclamp

- This diagram represents external contour of CLW □-F. CLW□-L and CLW□-R differ only in terms of mounting direction of clamp arm and otherwise all dimensions are identical to those of CLW□-F.

L: Left side F: Front side R: Right side



- Clamp arm and mounting screws are not included.

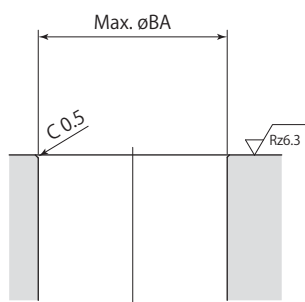
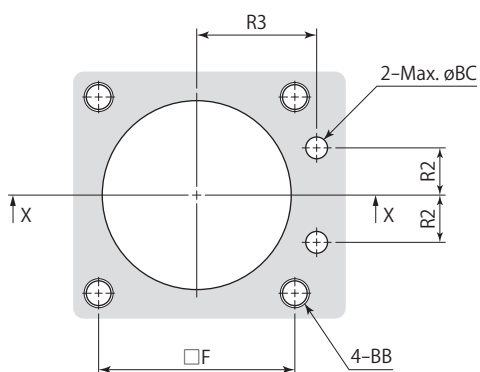
CLW □-□	Link clamp	35MPa	Double acting
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Model	CLW04-□	CLW06-□	CLW10-□	CLW16-□	CLW25-□
A	96	114	123.5	151	184.5
B	50	60	70	86	108
C	60	69	77	96	110
D	35	39	42	53	56
E	25	30	35	43	54
F	40	47	54	65	85
øG	35	45	50	60	70
øG1	–	43	48	57.5	67.5
G2	–	10	10	12	12
øH	12	14	18	22.4	28
K	31.5	42.5	42.5	51	63
L	26.5	31	32.5	40	47
M	58.5	65.5	73	89	108.5
N	6	6	8	11	13
Q	2	2	2.5	2.5	2.5
R1	12.5	15	15	17	17
R2	22	23	26	30	40
R3	27.5	30	33	40	43
S	13	13	17	21.8	27.5
øT	10	12	15	20	26
U (width across flats)	6	8	10	11	16
V	17	17	17	20	21
V1	13	15	19	25	32
V2	36	41.5	45	54.5	65
V3	26	30	35.5	44	53
V4	21	28	37	46	56
øW	5.5	6.8	9	11	14
øX	10	12	15	18.5	20.5
Y1	G1/8	G1/8	G1/8	G1/4	G1/4
Y2	3.8	3.8	3.8	4.8	4.8
Y3	14	14	14	19	19
Z	C2.5	C2.5	C3	C3.5	C5.5
øB1	6 ^{-0.010 -0.022}	8 ^{-0.013 -0.028}	10 ^{-0.013 -0.028}	14 ^{-0.016 -0.034}	16 ^{-0.016 -0.034}
øB2	6 ^{-0.010 -0.022}	6 ^{-0.010 -0.022}	8 ^{-0.013 -0.028}	12 ^{-0.016 -0.034}	14 ^{-0.016 -0.034}
B3 (snap ring)*1	STW-6	STW-8	STW-10	STW-14	STW-16
B4 (snap ring)*1	STW-6	STW-6	STW-8	STW-12	STW-14
CA	52.5	59.5	65	80	96
CB	59.6	71.7	78.7	98.2	133.5
CC	92.5	107.9	117.4	144.7	189.2
CD	About 71°	About 70°	About 70°	About 69°	About 72°
HA	12	16	19	22	32
HG	18.5	21	24.5	30.5	37.5
O-ring (fluorocarbon hardness Hs90)	P9	P9	P9	P9	P9
Flow control valve	VCH01	–	–	–	–
Air bleeding valve*2	VCE01	VCE01	VCE01	VCE02	VCE02

*1: Snap ring is made by Ochiai Corporation.

*2: Select the right model of VCE according to the size of the clamp.

Refer to each page for the details of options. ● Flow control valve **page → 46** ● Air bleeding valve **page → 46**

Mounting details

X-X

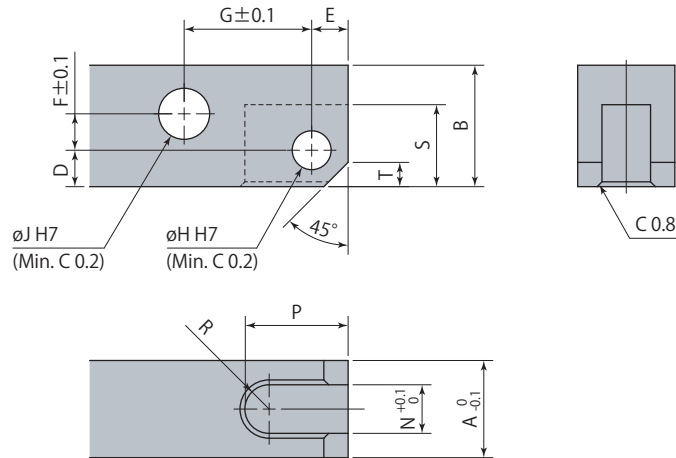
Rz: ISO4287(1997)

Model	CLW04-□	CLW06-□	CLW10-□	CLW16-□	CLW25-□
F	40	47	54	65	85
R2	11	11.5	13	15	20
R3	27.5	30	33	40	43
ϕ BA	36	47	52	62	72
BB	M5	M6	M8	M10	M12
ϕ BC	7	7	7	7	7

mm

Clamp arm mounting details

Clamp arm is not included. Manufacture a clamp arm with the dimensions shown in the table below.



Recommended material: S45C (HB167~229)

Link clamp	CLW04-□	CLW06-□	CLW10-□	CLW16-□	CLW25-□
A	12	16	19	22	32
B	16	20	25	31	38
D	6	6	8	9	12.5
E	6	6	7	10	13
F	3.5	6	7.5	9.5	9.5
G	18.5	21	24.5	30.5	37.5
ϕH	$6^{+0.012}_0$	$6^{+0.012}_0$	$8^{+0.015}_0$	$12^{+0.018}_0$	$14^{+0.018}_0$
ϕJ	$6^{+0.012}_0$	$8^{+0.015}_0$	$10^{+0.015}_0$	$14^{+0.018}_0$	$16^{+0.018}_0$
N	6	8	10	11	16
P	17	17	20	26.5	36
R	R3	R4	R5	R5.5	R8
S	13.5	13.5	17.5	22	28
T	4	4	5	7	8

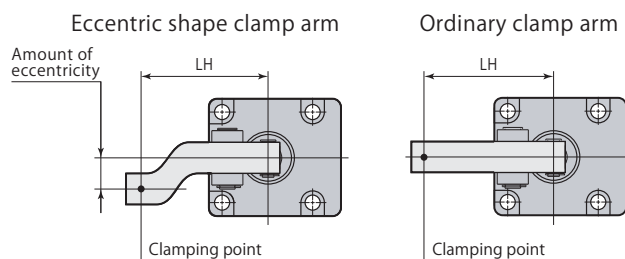
● When mounting the clamp arm, use included pins and snap rings.

Allowable eccentricity of clamp arm

An eccentric shape clamp arm, as shown in diagram on right can be used with link clamp model CLW, if it is not possible to set clamping point at tip section of clamp arm in alignment with center line of piston rod and clamp arm.

Amount of eccentricity, however, must be within allowable eccentricity shown below.

Using a clamp arm that exceeds allowable eccentricity results in significant eccentric load on link mechanism and piston rod, leading to malfunction.



model CLW04 indicates nonusable range										
Hydraulic pressure MPa	Allowable eccentricity mm									
	Clamp arm length LH mm									
	30	35	42	50	60	70	80	100	120	
35					7	11	16	24	33	
30				9	15	22	28	41	53	
25			6	18	27	36	45	60	60	
20		6	18	27	39	52	60	↑	↑	
15	8	17	29	42	59	60	↑	↑	↑	
10	19	32	51	60	60	↑	↑	↑	↑	
5	52	60	60	60	60	60	60	60	60	

model CLW06 indicates nonusable range										
Hydraulic pressure MPa	Allowable eccentricity mm									
	Clamp arm length LH mm									
	35	45	50	60	70	80	90	100	120	
35			8	8	8	8	8	8	8	
30		8	8	8	8	8	8	8	8	
25		8	8	8	8	8	8	8	8	
20	10	20	23	28	33	38	44	49	60	
15	19	43	50	65	80	80	80	80	80	
10	37	74	80	80	↑	↑	↑	↑	↑	
5	80	80	80	80	80	80	80	80	80	

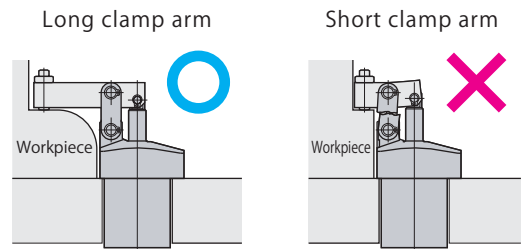
model CLW10 indicates nonusable range										
Hydraulic pressure MPa	Allowable eccentricity mm									
	Clamp arm length LH mm									
	40	50	56.5	60	80	100	120	140	160	
35			9	9	9	9	9	9	9	
30		9	11	11	12	13	14	15	16	
25		16	25	30	42	54	66	78	90	
20	9	27	38	45	80	95	95	95	95	
15	19	44	60	69	95	↑	↑	↑	↑	
10	40	79	95	95	↑	↑	↑	↑	↑	
5	95	95	95	95	95	95	95	95	95	

model CLW16 indicates nonusable range										
Hydraulic pressure MPa	Allowable eccentricity mm									
	Clamp arm length LH mm									
	50	60	69.5	80	100	120	140	160	180	
35			11	11	13	24	34	45	56	
30		11	11	16	32	48	65	81	96	
25		12	23	35	59	83	107	110	110	
20	11	29	46	64	99	110	110	↑	↑	
15	30	57	83	110	110	↑	↑	↑	↑	
10	67	110	110	↑	↑	↑	↑	↑	↑	
5	110	110	110	110	110	110	110	110	110	

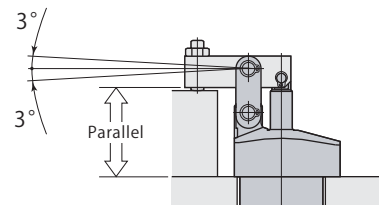
model CLW25 indicates nonusable range										
Hydraulic pressure MPa	Allowable eccentricity mm									
	Clamp arm length LH mm									
	60	65	87.5	100	120	140	160	180	200	
35			21	27	30	34	37	41	44	
30			31	46	70	83	97	110	123	
25		16	46	65	95	125	154	160	160	
20	16	25	68	92	131	160	160	↑	↑	
15	32	45	105	139	160	↑	↑	↑	↑	
10	65	86	160	160	↑	↑	↑	↑	↑	
5	160	160	160	160	160	160	160	160	160	

Caution in use

- With link clamps, force acting on link mechanism becomes larger as clamp arm becomes shorter. Exceeding maximum allowable load for link mechanism will lead to malfunction. Depending on clamp arm length, it would be necessary to lower clamping force (hydraulic pressure). Use a clamp at appropriate clamping force that is suitable for clamp arm length, referring to performance diagram and table.



- Determine height and mount clamp, ensuring that clamp arm becomes parallel to clamping surface and mounting surface when workpiece is clamped (allowable angle $\pm 3^\circ$).



- Using a method such as that shown in the diagram on the right will apply a transverse force on the piston rod and cause the piston rod to break. Please avoid the usage that may apply a non-axial force to the piston rod.

