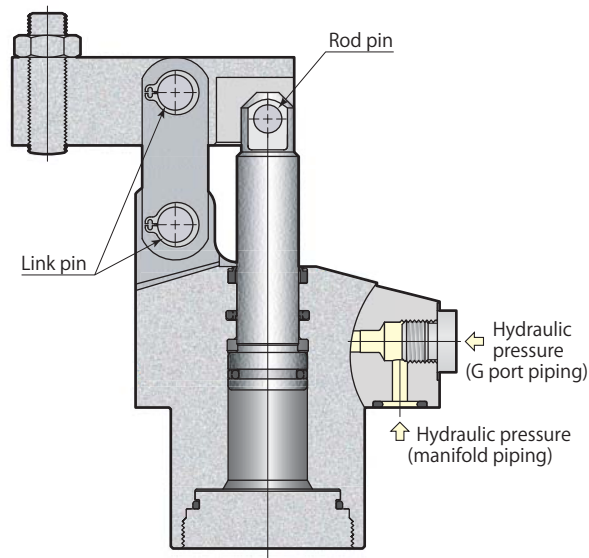
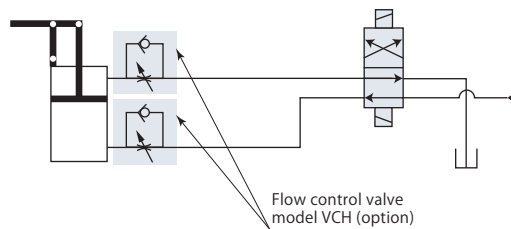


Compact model

model CLW□-□N



Hydraulic circuit diagram



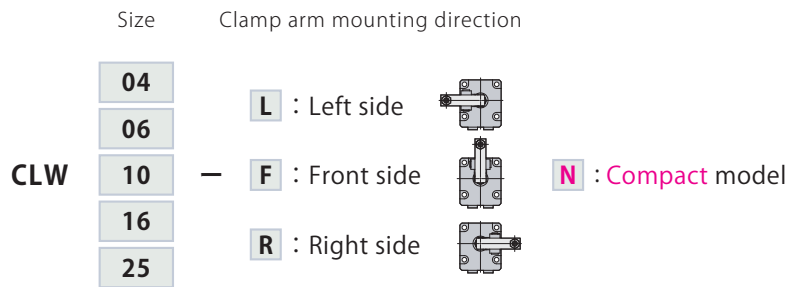
For flow control valve, we recommend the meter-in control. If meter-out control is used, due to the area difference, it will cause back pressure and become high pressure. This can lead to malfunction of the system. Please be aware when designing the circuit.

Specifications page → 89

Dimensions page → 92

Mounting details page → 94

Specifications



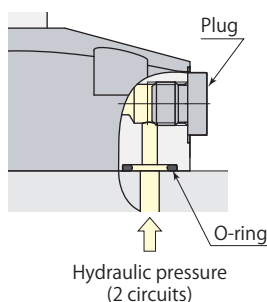
Model		CLW04	CLW06	CLW10	CLW16	CLW25	
Cylinder force (hydraulic pressure 35MPa)	kN	5.4	8.9	13.3	21.6	35.6	
Cylinder inner diameter	mm	14	18	22	28	36	
Rod diameter	mm	12	14	18	22.4	28	
Effective area (clamp)	cm ²	1.5	2.5	3.8	6.2	10.2	
Full stroke	mm	23.5	26	29.5	36	45	
Clamp stroke*1	mm	20.5	23	26.5	33	42	
Safety stroke	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	1.3	1.9	3.5	5.7	
Recommended tightening torque of mounting screws*2		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)
- *1: Indicates a distance from unclamping position to clamping point.
 *2: ISO R898 class 12.9

Manifold piping and G port piping are available.

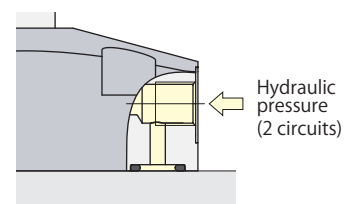
Manifold piping

When choosing manifold piping, a flow control valve (model VCH) and an air bleeding valve (model VCE) are mountable on the G ports of the clamp.

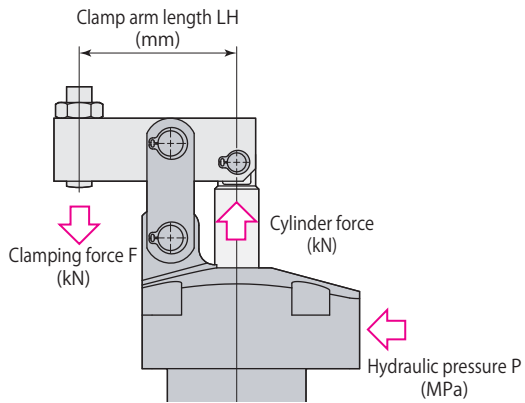


G port piping

Remove plugs when choosing G port piping. (O-ring must be used.) The flow control valve and the air bleeding valve should be installed in the middle of oil path.



Performance diagram



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

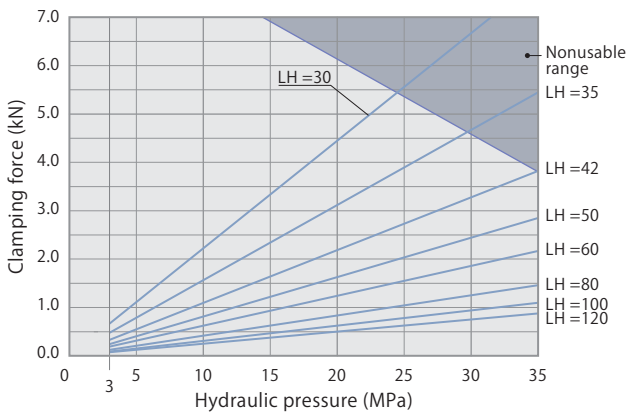
Clamping force calculation formula
 $F = \text{Coefficient 1} \times P / (\text{LH} - \text{Coefficient 2})$

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

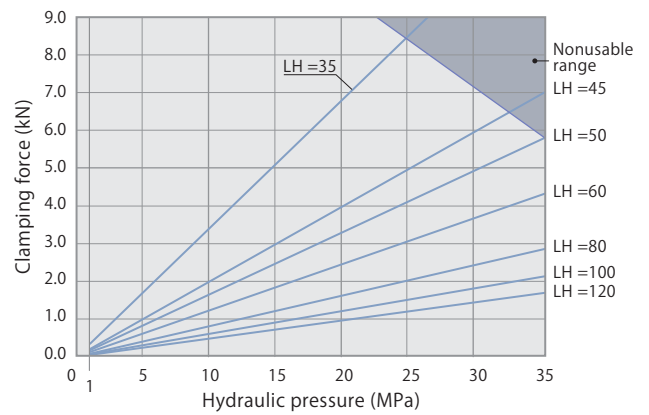
CLW10 with clamp arm length (LH) = 50 mm at hydraulic pressure of 25 MPa, Clamping force F is calculated by $8.38 \times 25 / (50 - 24.5) = 8.2$ kN

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

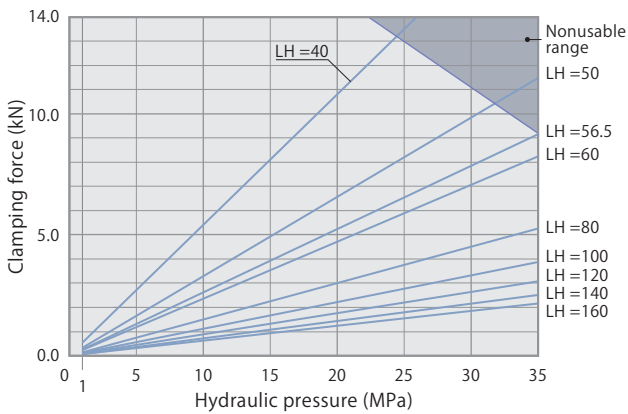
model CLW04



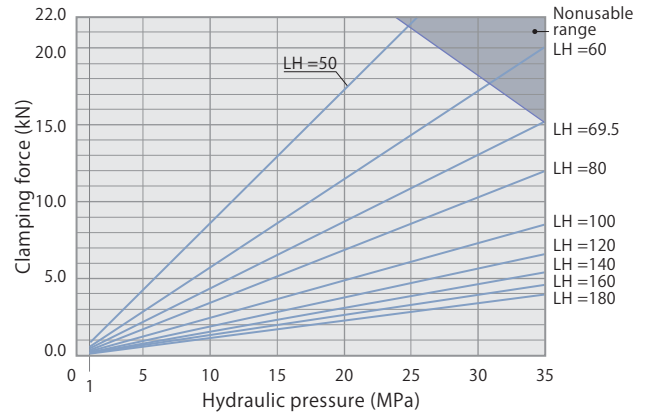
model CLW06



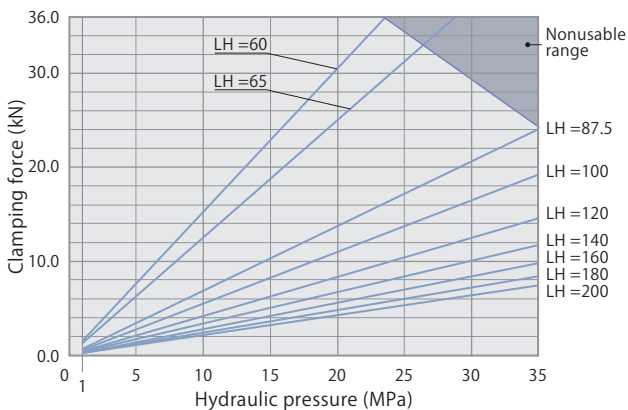
model CLW10



model CLW16



model CLW25



Link clamp

CLW-N Compact model

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 nonusable 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 nonusable 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 nonusable range

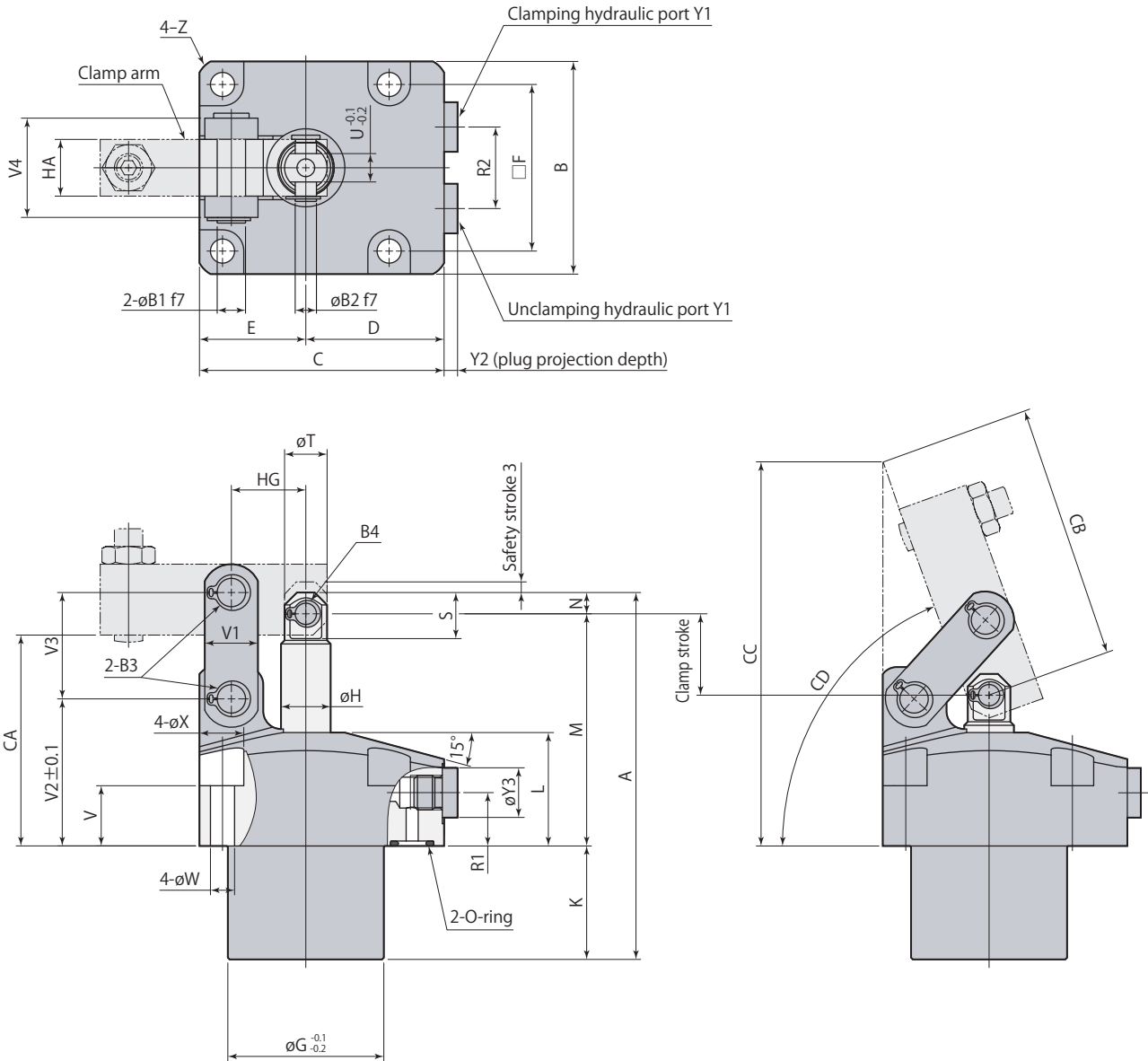
model CLW16		Clamping force $F=16.90 \times P / (LH-30.5)$									
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN								Min. arm length Min. LH mm	
		Clamp arm length LH mm									
		50	60	69.5	80	100	120	140	160		180
35	21.6			15.2	11.9	8.5	6.6	5.4	4.6	4.0	69.5
30	18.5		17.2	13.0	10.2	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 nonusable 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	

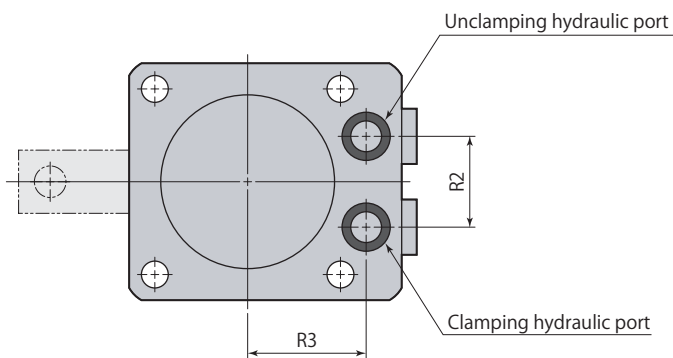
indicates nonusable range

Dimensions



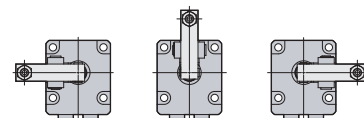
Clamp

Unclamp



● This diagram represents external contour of CLW □-FN. CLW□-LN and CLW□-RN differ only in terms of mounting direction of clamp arm and otherwise all dimensions are identical to those of CLW□-FN.

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



● Clamp arm and mounting screws are not included.

Link clamp

CLW-N Compact model

CLW□-□N	Link clamp Compact model				35MPa	Double acting
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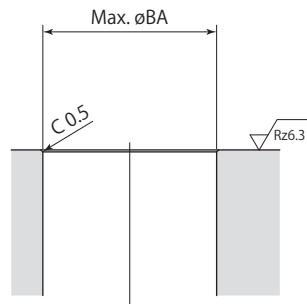
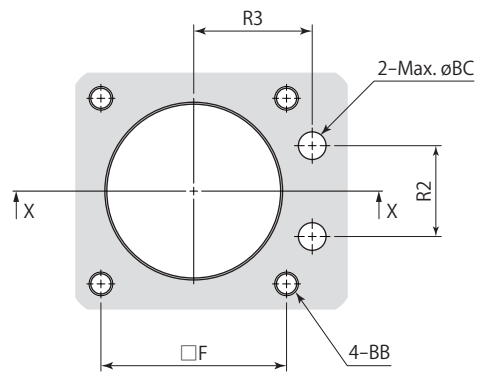
Model	CLW04-□N	CLW06-□N	CLW10-□N	CLW16-□N	CLW25-□N
A	96	103.5	116.5	143.5	171.5
B	50	60	70	86	108
C	60	69	77	96	110
D	35	39	42	53	56
E	25	30	35	43	54
F	40	47	54	65	85
øG	35	44	48	58	66
øH	12	14	18	22.4	28
K	31.5	32	35.5	43.5	50
L	27.7	32	33.5	41	47
M	58.5	65.5	73	89	108.5
N	6	6	8	11	13
R1	12.5	15	15	17	21
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 (meter-in)*2	VCH01	VCH01	VCH01	VCH02	VCH02
Air bleeding valve*2	VCE01	VCE01	VCE01	VCE02	VCE02

*1: Snap ring is made by Ochiai Corporation.

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

Refer to each page for the details of options. ● Flow control valve **page →108** ● Air bleeding valve **page →110**

Mounting details



X-X

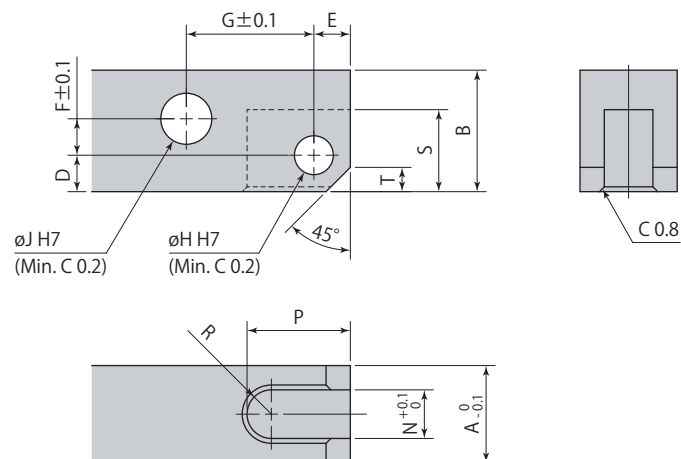
Rz: ISO4287(1997)

Model	CLW04-□N	CLW06-□N	CLW10-□N	CLW16-□N	CLW25-□N
F	40	47	54	65	85
R2	22	23	26	30	40
R3	27.5	30	33	40	43
øBA	36	47	52	62	72
BB	M5	M6	M8	M10	M12
øBC	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-□N	CLW06-□N	CLW10-□N	CLW16-□N	CLW25-□N
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
$\varnothing H$	$6^{+0.012}_0$	$6^{+0.012}_0$	$8^{+0.015}_0$	$12^{+0.018}_0$	$14^{+0.018}_0$
$\varnothing J$	$6^{+0.012}_0$	$8^{+0.015}_0$	$10^{+0.015}_0$	$14^{+0.018}_0$	$16^{+0.018}_0$
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

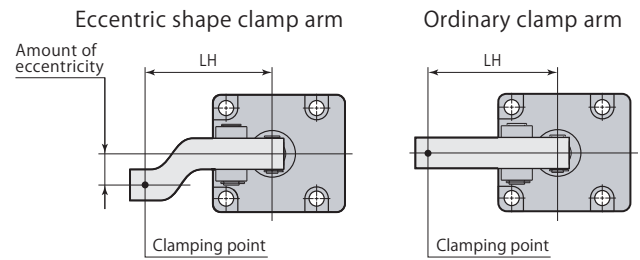
● When mounting the clamp arm, use included pins and snap rings.

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.



Link clamp

CLW-N Compact model

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.

