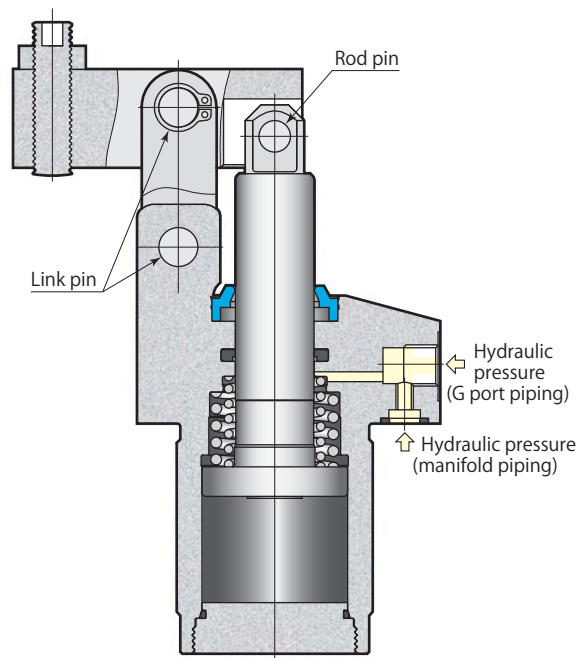
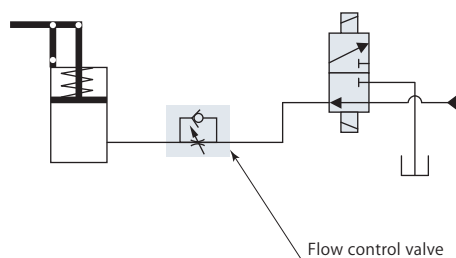


Link clamp

model **CLV**□-□Hydraulic circuit diagram

Use flow control valve for meter-in control.

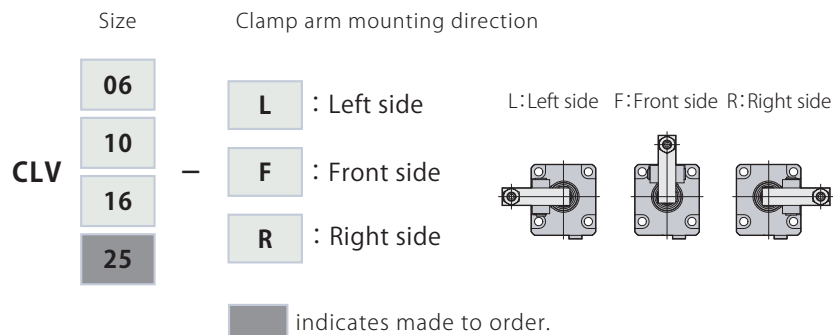
Flow control valve model VCH can not be mounted.

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Dimensions page → 96

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Specifications



Model		CLV06	CLV10	CLV16	CLV25
Cylinder force (hydraulic pressure 35 MPa)* ¹	kN	6.8	10.5	16.7	24.0
Rod diameter	mm	16	20	25	30
Effective area (clamp)	cm ²	2.01	3.14	4.91	7.07
Full stroke	mm	26	29.5	36	45
Clamp stroke	mm	23	26.5	33	42
Stroke margin	mm	3	3	3	3
Max. oil flow rate	L/min	0.54	1.00	1.93	3.55
Cylinder capacity	cm ³	5.2	9.3	17.7	31.8
Return spring force	Clamp	kN	0.26	0.45	0.52
	Unclamp	kN	0.13	0.19	0.30
Recommended piping inner diameter* ²	mm	ø4	ø4	ø6	ø6
Max. allowable mass of clamp arm* ³	kg	0.4	0.7	1.2	2.3
Mass	kg	1.6	2.3	4.4	7.4
Recommended tightening torque of mounting screws* ⁴	N·m	12	29	57	100

● Pressure range: 3.5~35 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: This is value for clamping position.

*2: Care must be taken when numerous clamps are used or when hydraulic piping is long.

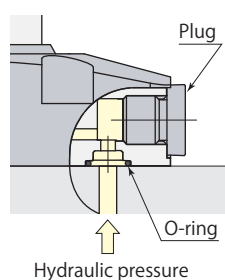
*3: This is clamp arm mass when shape of clamp arm being described in Dimensions is retained but length only has been extended.

*4: ISO R898 class 12.9

Manifold piping and G port piping are available.

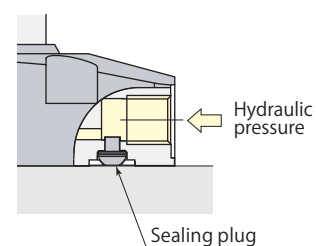
Manifold piping

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

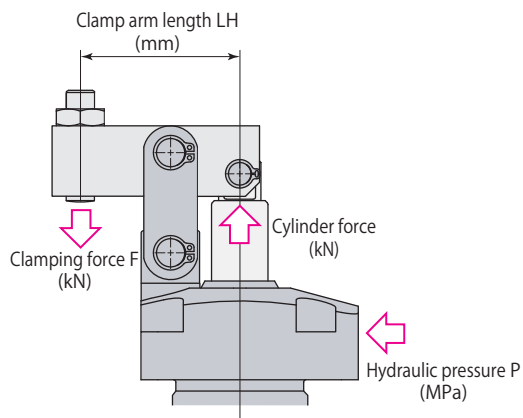


G port piping

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



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

Clamping force calculation formula

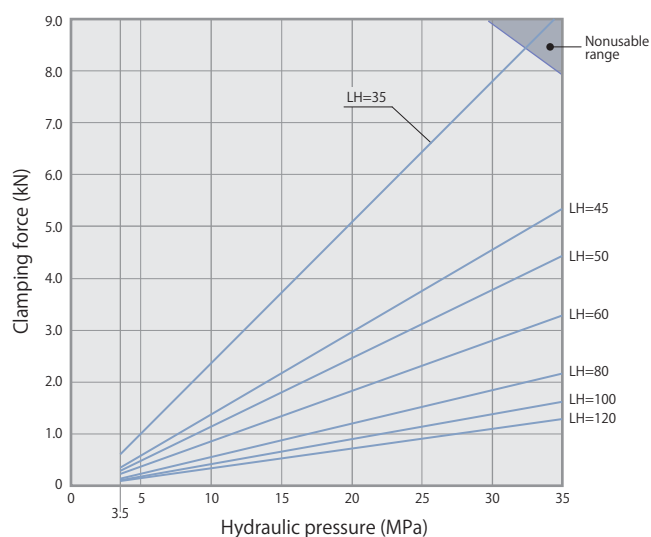
$$F = (\text{Coefficient } 1 \times P - \text{Coefficient } 2) / (\text{LH} - \text{Coefficient } 3)$$

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

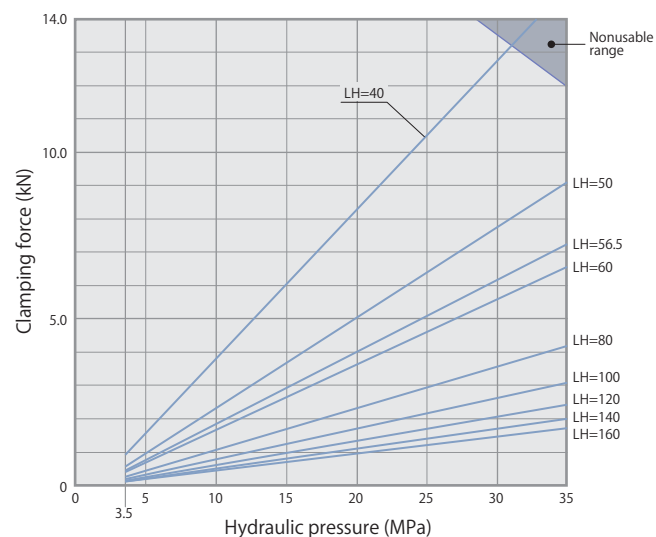
CLV10 with clamp arm length (LH) = 50 mm at hydraulic pressure of 35 MPa, Clamping force F is calculated by $(6.93 \times 35 - 9.92) / (50 - 24.5) = 9.1$ kN

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

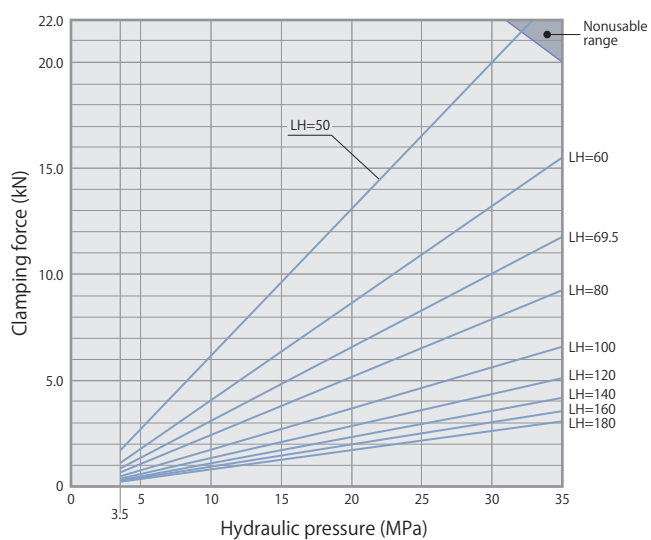
model **CLV06**



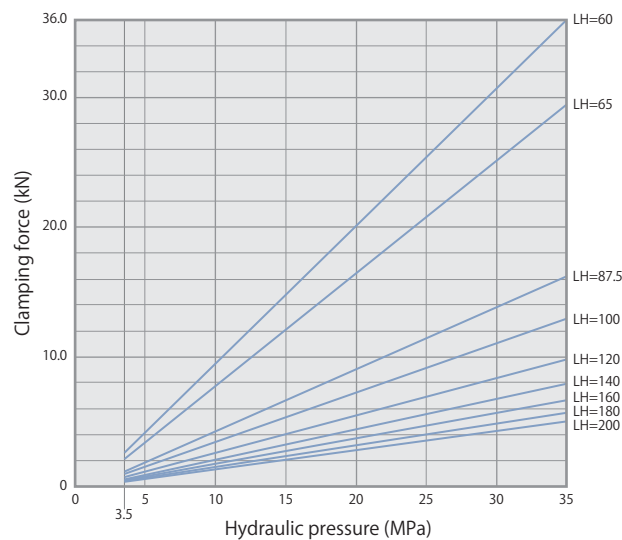
model **CLV10**



model **CLV16**



model **CLV25**



Performance table

model CLV06		Clamping force $F=(3.80 \times P-4.91)/(LH-21.0)$							
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	6.8		5.3	4.4	3.3	2.2	1.6	1.3	37.5
30	5.8	7.8	4.5	3.8	2.8	1.8	1.4	1.1	35
25	4.8	6.4	3.8	3.1	2.3	1.5	1.1	0.9	↑
20	3.8	5.1	3.0	2.5	1.8	1.2	0.9	0.7	↑
15	2.8	3.7	2.2	1.8	1.3	0.9	0.7	0.5	↑
10	1.8	2.4	1.4	1.1	0.8	0.6	0.4	0.3	↑
5	0.7	1.0	0.6	0.5	0.4	0.2	0.2	0.1	↑
3.5	0.4	0.6	0.3	0.3	0.2	0.1	0.1	0.1	35
Max. pressure MPa		32.4	35	35	35	35	35	35	

indicates unusable range

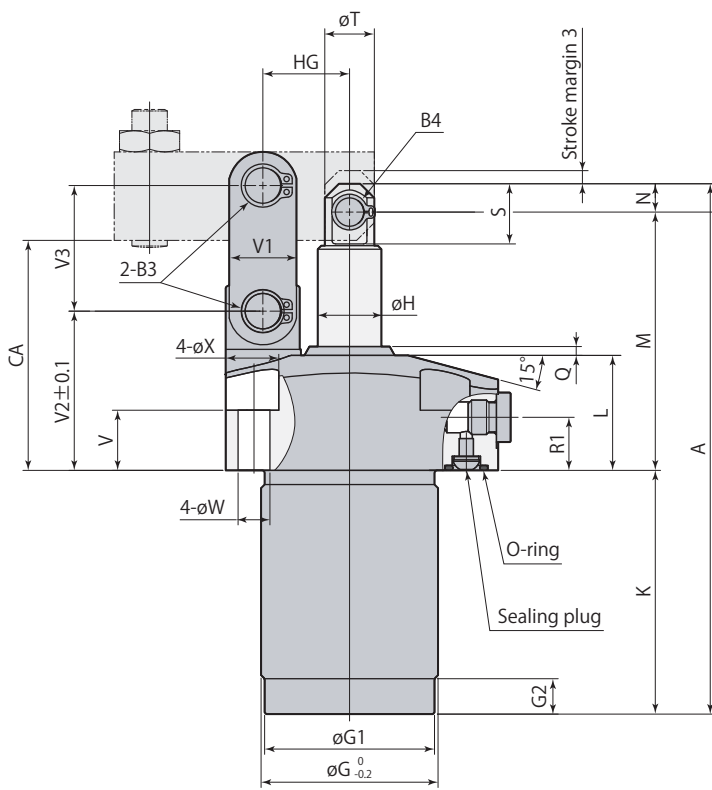
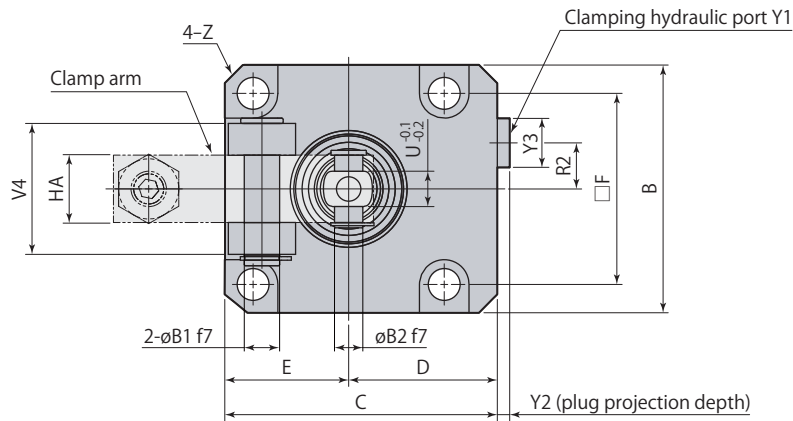
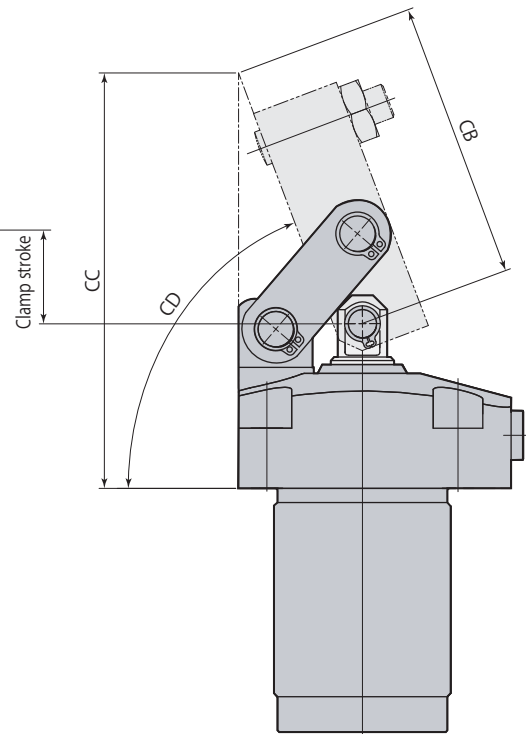
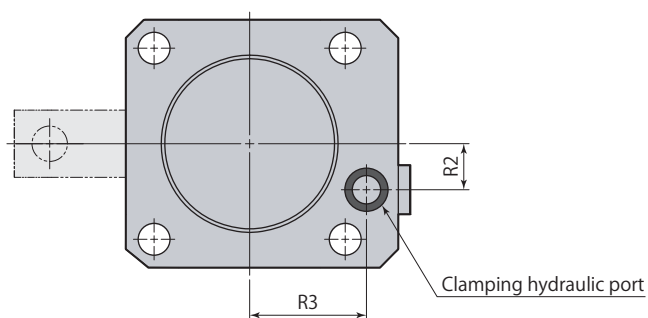
model CLV10		Clamping force $F=(6.93 \times P-9.92)/(LH-24.5)$										
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN										Min. arm length Min. LH mm
		Clamp arm length LH mm										
		40	50	56.5	60	80	100	120	140	160		
35	10.5		9.1	7.3	6.6	4.2	3.1	2.4	2.0	1.7	44	
30	9.0	12.8	7.8	6.2	5.6	3.6	2.6	2.1	1.7	1.5	40	
25	7.4	10.5	6.4	5.1	4.6	2.9	2.2	1.7	1.4	1.2	↑	
20	5.8	8.3	5.0	4.0	3.6	2.3	1.7	1.3	1.1	0.9	↑	
15	4.3	6.1	3.7	2.9	2.6	1.7	1.2	1.0	0.8	0.7	↑	
10	2.7	3.8	2.3	1.9	1.7	1.1	0.8	0.6	0.5	0.4	↑	
5	1.1	1.6	1.0	0.8	0.7	0.4	0.3	0.3	0.2	0.2	↑	
3.5	0.6	0.9	0.6	0.4	0.4	0.3	0.2	0.2	0.1	0.1	40	
Max. pressure MPa		31.0	35	35	35	35	35	35	35	35		

indicates unusable range

model CLV16		Clamping force $F=(13.47 \times P-14.27)/(LH-30.5)$										
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	16.7		15.5	11.7	9.2	6.6	5.1	4.2	3.5	3.1	53.5	
30	14.2	20.0	13.2	10.0	7.9	5.6	4.4	3.6	3.0	2.6	50	
25	11.8	16.5	10.9	8.3	6.5	4.6	3.6	2.9	2.5	2.2	↑	
20	9.3	13.1	8.6	6.5	5.2	3.7	2.9	2.3	2.0	1.7	↑	
15	6.8	9.6	6.4	4.8	3.8	2.7	2.1	1.7	1.5	1.3	↑	
10	4.4	6.2	4.1	3.1	2.4	1.7	1.3	1.1	0.9	0.8	↑	
5	1.9	2.7	1.8	1.4	1.1	0.8	0.6	0.5	0.4	0.4	↑	
3.5	1.2	1.7	1.1	0.8	0.7	0.5	0.4	0.3	0.3	0.2	50	
Max. pressure MPa		32.1	35	35	35	35	35	35	35	35		

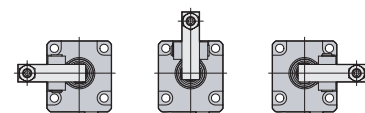
indicates unusable range

model CLV25		Clamping force $F=(23.86 \times P-25.31)/(LH-37.5)$									
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	24.0	36.0	29.4	16.2	13.0	9.8	7.9	6.6	5.7	5.0	60
30	20.5	30.7	25.1	13.8	11.0	8.4	6.7	5.6	4.8	4.2	↑
25	16.9	25.4	20.8	11.4	9.1	6.9	5.6	4.7	4.0	3.5	↑
20	13.4	20.1	16.4	9.0	7.2	5.5	4.4	3.7	3.2	2.8	↑
15	9.9	14.8	12.1	6.7	5.3	4.0	3.2	2.7	2.3	2.0	↑
10	6.3	9.5	7.8	4.3	3.4	2.6	2.1	1.7	1.5	1.3	↑
5	2.8	4.2	3.4	1.9	1.5	1.1	0.9	0.8	0.7	0.6	↑
3.5	1.7	2.6	2.1	1.2	0.9	0.7	0.6	0.5	0.4	0.4	60
Max. pressure MPa		35	35	35	35	35	35	35	35	35	

DimensionsClampUnclamp

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

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



- Clamp arm and mounting screws are not included.

CLV□-□	Single acting Link clamp	35MPa Single acting
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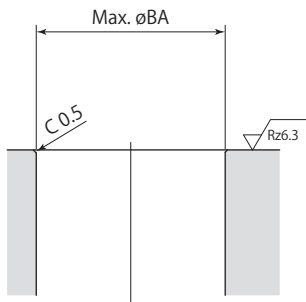
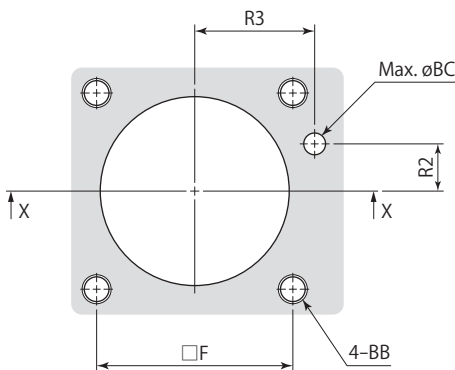
Model	CLV06-□	CLV10-□	CLV16-□	CLV25-□
A	122.5	139.5	170.5	208
B	60	70	86	108
C	69	77	96	110
D	39	42	53	56
E	30	35	43	54
F	47	54	65	85
øG	45 ⁰ _{-0.2}	50 ⁰ _{-0.2}	60 ⁰ _{-0.2}	70 ⁰ _{-0.2}
øG1	43	48	57.5	67.5
G2	10	10	12	12
øH	16	20	25	30
K	51	58.5	70.5	86.5
L	31	32.5	40	47
M	65.5	73	89	108.5
N	6	8	11	13
Q	2	2.5	2.5	2.5
R1	15	15	17	17
R2	11.5	13	15	20
R3	30	33	40	43
S	13	17	21.8	27.5
øT	12	15	20	26
U (width across flats)	8	10	11	16
V	17	17	20	21
V1	15	19	25	32
V2	41.5	45	54.5	65
V3	30	35.5	44	53
V4	28	37	46	56
øW	6.8	9	11	14
øX	12	15	18.5	20.5
Y1	G1/8	G1/8	G1/4	G1/4
Y2	3.8	3.8	4.8	4.8
Y3	14	14	19	19
Z	C2.5	C3	C3.5	C5.5
øB1	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}	8 ^{-0.013} _{-0.028}	12 ^{-0.016} _{-0.034}	14 ^{-0.016} _{-0.034}
B3 (snap ring)*1	STW-8	STW-10	STW-14	STW-16
B4 (snap ring)*1	STW-6	STW-8	STW-12	STW-14
CA	59.5	65	80	96
CB	71.7	78.7	98.2	133.5
CC	107.9	117.4	144.7	189.2
CD	About 70°	About 70°	About 69°	About 72°
HA	16	19	22	32
HG	21	24.5	30.5	37.5
O-ring (fluorocarbon hardness Hs90)	P9	P9	P9	P9
Air bleeding valve*2	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 **page → 810** for the details of air bleeding valve.

Mounting details



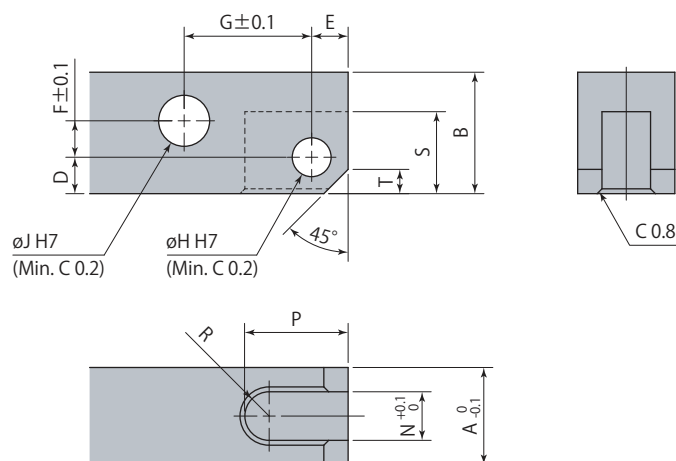
X-X

Rz: ISO4287(1997)

mm				
Model	CLV06-□	CLV10-□	CLV16-□	CLV25-□
F	47	54	65	85
R2	11.5	13	15	20
R3	30	33	40	43
øBA	47	52	62	72
BB	M6	M8	M10	M12
øBC	7	7	7	7

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	CLV06-□	CLV10-□	CLV16-□	CLV25-□
A	16	19	22	32
B	20	25	31	38
D	6	8	9	12.5
E	6	7	10	13
F	6	7.5	9.5	9.5
G	21	24.5	30.5	37.5
øH	$6^{+0.012}_0$	$8^{+0.015}_0$	$12^{+0.018}_0$	$14^{+0.018}_0$
øJ	$8^{+0.015}_0$	$10^{+0.015}_0$	$14^{+0.018}_0$	$16^{+0.018}_0$
N	8	10	11	16
P	17	20	26.5	36
R	R4	R5	R5.5	R8
S	13.5	17.5	22	28
T	4	5	7	8

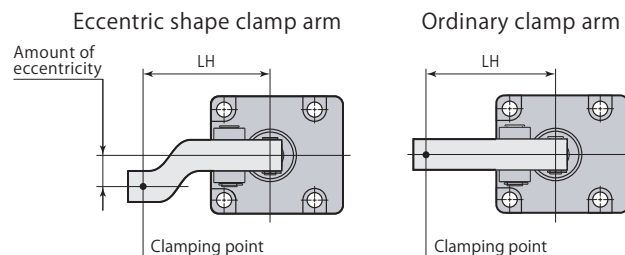
● When mounting the clamp arm, use included pins and snap rings.

Allowable eccentricity of clamp arm

An eccentric shape clamp arm, as shown in diagram on right can be used with link clamp model CLV, 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 CLV06 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	8
30	8	12	13	15	17	19	21	23	26
25	12	25	28	36	43	50	57	65	79
20	19	44	52	67	80	80	80	80	80
15	33	67	80	80	↑	↑	↑	↑	↑
10	62	80	↑	↑	↑	↑	↑	↑	↑
5	80	80	80	80	80	80	80	80	80

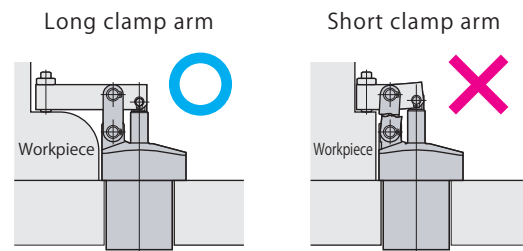
model CLV10 indicates nonusable range									
Hydraulic pressure MPa	Allowable eccentricity mm								
	Clamp arm length LH mm								
	40	50	56.5	60	80	100	120	140	160
35		12	18	19	24	30	35	41	46
30	9	19	28	34	53	69	85	95	95
25	10	28	40	47	83	95	95	↑	↑
20	18	42	58	67	95	↑	↑	↑	↑
15	33	67	89	95	↑	↑	↑	↑	↑
10	66	95	95	↑	↑	↑	↑	↑	↑
5	95	95	95	95	95	95	95	95	95

model CLV16 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	16	27	47	67	87	108	110
30	11	17	30	45	72	100	110	110	↑
25	14	33	51	71	110	110	↑	↑	↑
20	29	56	82	110	↑	↑	↑	↑	↑
15	56	97	110	↑	↑	↑	↑	↑	↑
10	110	110	↑	↑	↑	↑	↑	↑	↑
5	110	110	110	110	110	110	110	110	110

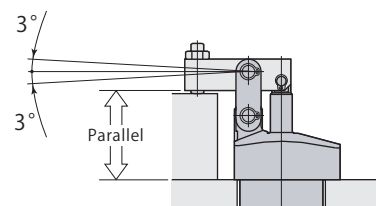
model CLV25									
Hydraulic pressure MPa	Allowable eccentricity mm								
	Clamp arm length LH mm								
	60	65	87.5	100	120	140	160	180	200
35	16	16	52	72	104	136	160	160	160
30	16	24	68	92	130	160	↑	↑	↑
25	25	37	91	121	160	↑	↑	↑	↑
20	41	56	126	160	↑	↑	↑	↑	↑
15	68	90	160	↑	↑	↑	↑	↑	↑
10	126	160	↑	↑	↑	↑	↑	↑	↑
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.

