Link clamp

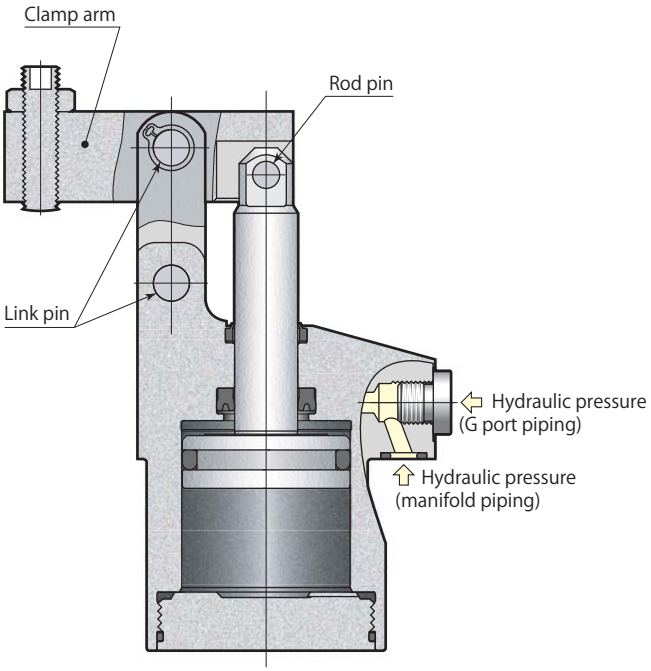
Double acting 7 MPa

model CLU

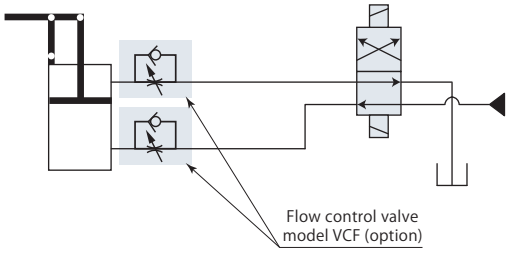
Standard model
model CLU06-F

Standard model

model **CLU□-□**



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 → 61**
Standard	**page → 64**
Dual rod	**page → 67**
Air sensor	**page → 68**

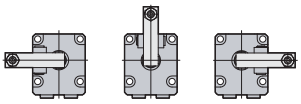
Specifications

Size / Clamp arm mounting direction / Variation code

CLU — 02 / 04 / 06 / 10 / 16 / 25*

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

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



(Nil) : Standard
E : Dual rod
A : Air sensor

*:CLU25-LE and CLU25-RE are made to order.

indicates made to order.

Model			CLU02	CLU04	CLU06	CLU10	CLU16	CLU25
Cylinder force (hydraulic pressure 7MPa)		kN	3.4	5.0	6.7	10.6	17.2	26.9
Cylinder inner diameter		mm	25	30	35	44	56	70
Rod diameter		mm	12	14	14	16	22.4	28
Effective area (clamp)		cm^2	4.9	7.1	9.6	15.2	24.6	38.5
Full stroke		mm	20.5	23.5	26	29.5	36	45
Clamp stroke		mm	17.5	20.5	23	26.5	33	42
Safety stroke		mm	3	3	3	3	3	3
Max. oil flow rate		L/min	1.0	1.6	2.6	4.7	9.5	18.9
Cylinder capacity	Clamp	cm^3	10.0	16.7	25.0	44.8	88.6	173.3
	Unclamp	cm^3	7.7	13.0	21.0	38.9	74.5	145.5
Mass		kg	0.7	1.0	1.4	2.3	4.0	7.4
Recommended tightening torque of mounting screws*		N·m	7	7	12	29	57	100

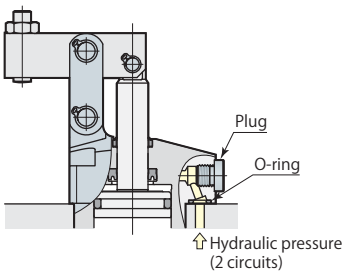
- Pressure range : 1–7 MPa
- Proof pressure : 10.5 MPa
- Operating temperature : 0–70 ℃
- Fluid used : General mineral based hydraulic oil (ISO-VG32 equivalent)
- Seals are resistant to chlorine-based cutting fluid. (not thermal resistant specification)

*:ISO R898 class 12.9

Manifold piping and G port piping are available.

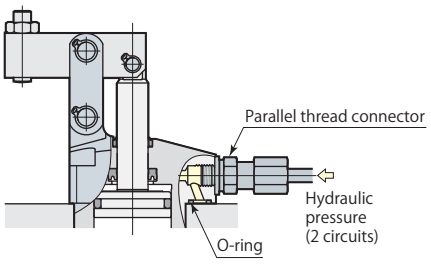
Manifold piping

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

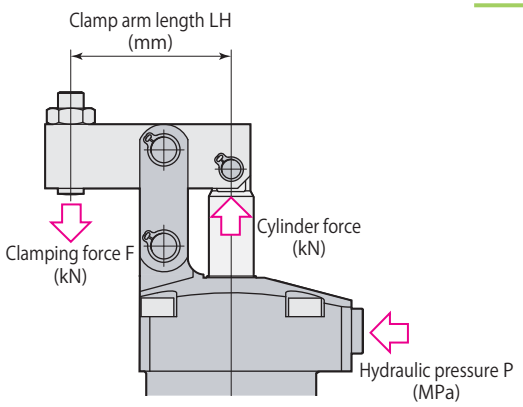


G port piping

Remove plugs when choosing G port piping. (O-ring must be used.) Refer to **page →174** for details on G port piping flareless fitting. The flow control valve and the air bleeding valve should be installed in the middle of oil path.



Performance diagram



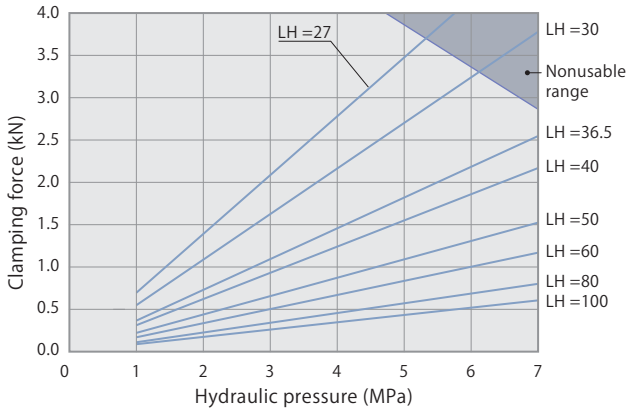
Clamping force varies depending on the clamp arm length (LH) and hydraulic pressure (P).

Clamping force calculation formula
F = Coefficient 1 × P/(LH - Coefficient 2)
F : Clamping force P : Hydraulic pressure LH : Clamp arm length

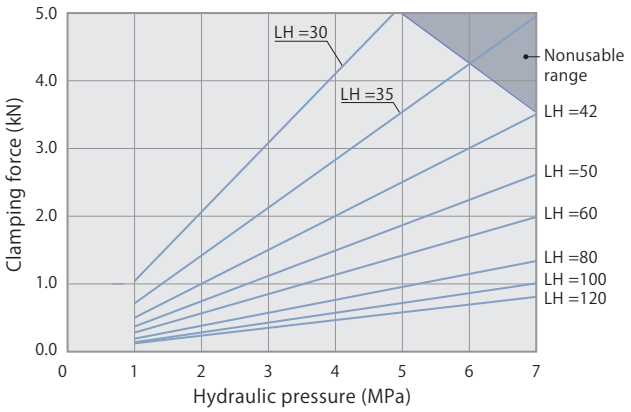
CLU06 with clamp arm length (LH) = 50 mm at hydraulic pressure of 7 MPa, Clamping force F is calculated by
18.18 × 7/(50-21.0) = 4.4 kN

Do not use the clamp in the nonusable range. It may cause damage of link mechanism.

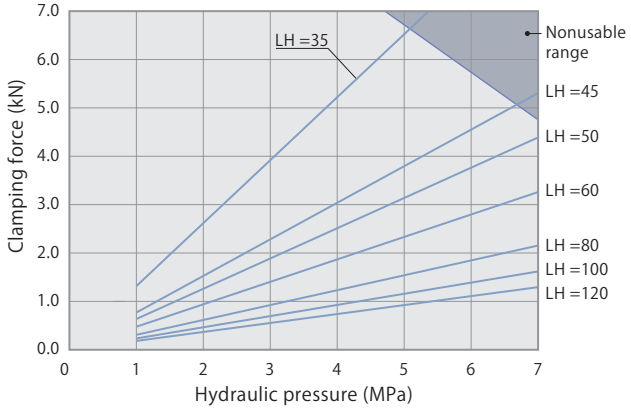
model CLU02



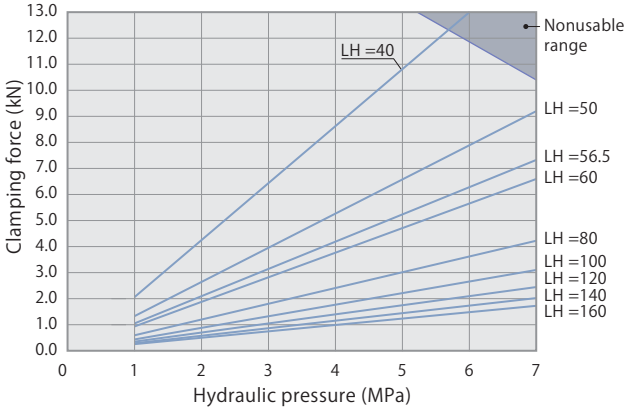
model CLU04



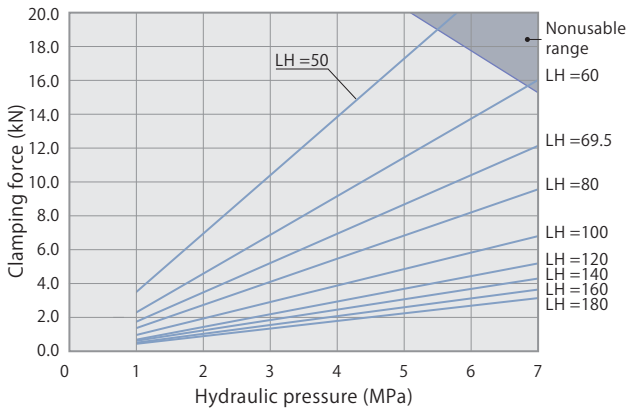
model CLU06



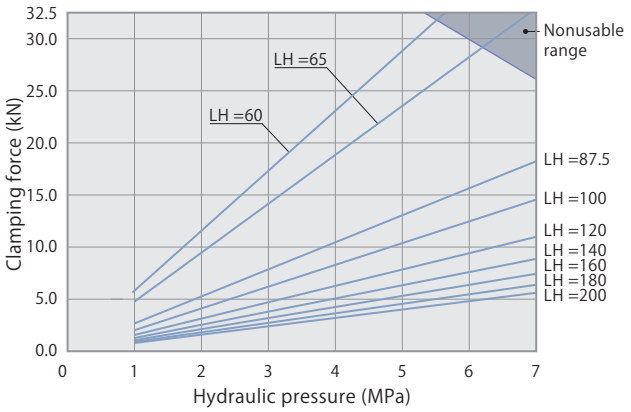
model CLU10



model CLU16



model CLU25



Performance table

model CLU02 — Clamping force F=7.29×P/(LH-16.5)

Hydraulic pressure MPa	Cylinder force kN	Clamping force kN — Clamp arm length LH mm								Min. arm length Min. LH mm
		27	30	36.5	40	50	60	80	100	
7	3.4			2.6	2.2	1.5	1.2	0.8	0.6	35
6.5	3.2			2.4	2.0	1.4	1.1	0.7	0.6	32
6	3.0		3.2	2.2	1.9	1.3	1.0	0.7	0.5	30
5.5	2.7		3.0	2.0	1.7	1.2	0.9	0.6	0.5	28
5	2.5	3.5	2.7	1.8	1.6	1.1	0.8	0.6	0.4	26
4.5	2.2	3.1	2.4	1.6	1.4	1.0	0.8	0.5	0.4	25
4	2.0	2.8	2.2	1.5	1.2	0.9	0.7	0.5	0.3	24
3.5	1.7	2.4	1.9	1.3	1.1	0.8	0.6	0.4	0.3	↑
3	1.5	2.1	1.6	1.1	0.9	0.7	0.5	0.3	0.3	↑
2.5	1.2	1.7	1.4	0.9	0.8	0.5	0.4	0.3	0.2	↑
2	1.0	1.4	1.1	0.7	0.6	0.4	0.3	0.2	0.2	↑
1.5	0.7	1.0	0.8	0.5	0.5	0.3	0.3	0.2	0.1	↑
1	0.5	0.7	0.5	0.4	0.3	0.2	0.2	0.1	0.1	24
Max. pressure MPa		5.3	6.1	7.0	7.0	7.0	7.0	7.0	7.0	

indicates nonusable range

model CLU04 — Clamping force F=11.77×P/(LH-18.5)

Hydraulic pressure MPa	Cylinder force kN	Clamping force kN — Clamp arm length LH mm								Min. arm length Min. LH mm
		30	35	42	50	60	80	100	120	
7	5.0			3.5	2.6	2.0	1.3	1.0	0.8	42
6.5	4.6			3.3	2.4	1.8	1.2	0.9	0.8	39
6	4.2			3.0	2.2	1.7	1.1	0.9	0.7	36
5.5	3.9		3.9	2.8	2.1	1.6	1.1	0.8	0.6	33
5	3.5		3.6	2.5	1.9	1.4	1.0	0.7	0.6	31
4.5	3.2	4.6	3.2	2.3	1.7	1.3	0.9	0.6	0.5	29
4	2.8	4.1	2.9	2.0	1.5	1.1	0.8	0.6	0.5	27
3.5	2.5	3.6	2.5	1.8	1.3	1.0	0.7	0.5	0.4	26
3	2.1	3.1	2.1	1.5	1.1	0.9	0.6	0.4	0.3	↑
2.5	1.8	2.6	1.8	1.3	0.9	0.7	0.5	0.4	0.3	↑
2	1.4	2.0	1.4	1.0	0.7	0.6	0.4	0.3	0.2	↑
1.5	1.1	1.5	1.1	0.8	0.6	0.4	0.3	0.2	0.2	↑
1	0.7	1.0	0.7	0.5	0.4	0.3	0.2	0.1	0.1	26
Max. pressure MPa		4.9	5.9	7.0	7.0	7.0	7.0	7.0	7.0	

indicates nonusable range

model CLU06 — Clamping force F=18.18×P/(LH-21.0)

Hydraulic pressure MPa	Cylinder force kN	Clamping force kN — Clamp arm length LH mm							Min. arm length Min. LH mm
		35	45	50	60	80	100	120	
7	6.7			4.4	3.3	2.2	1.6	1.3	48
6.5	6.3		4.9	4.1	3.0	2.0	1.5	1.2	44
6	5.8		4.5	3.8	2.8	1.8	1.4	1.1	40
5.5	5.3		4.2	3.4	2.6	1.7	1.3	1.0	37
5	4.8	6.5	3.8	3.1	2.3	1.5	1.2	0.9	35
4.5	4.3	5.8	3.4	2.8	2.1	1.4	1.0	0.8	33
4	3.9	5.2	3.0	2.5	1.9	1.2	0.9	0.7	31
3.5	3.4	4.5	2.7	2.2	1.6	1.1	0.8	0.6	30
3	2.9	3.9	2.3	1.9	1.4	0.9	0.7	0.6	↑
2.5	2.4	3.2	1.9	1.6	1.2	0.8	0.6	0.5	↑
2	1.9	2.6	1.5	1.3	0.9	0.6	0.5	0.4	↑
1.5	1.4	1.9	1.1	0.9	0.7	0.5	0.3	0.3	↑
1	1.0	1.3	0.8	0.6	0.5	0.3	0.2	0.2	30
Max. pressure MPa		5.1	6.7	7.0	7.0	7.0	7.0	7.0	

indicates nonusable range

model CLU10 — Clamping force F=33.54×P/(LH-24.5)

Hydraulic pressure MPa	Cylinder force kN	Clamping force kN — Clamp arm length LH mm									Min. arm length Min. LH mm
		40	50	56.5	60	80	100	120	140	160	
7	10.6		9.2	7.3	6.6	4.2	3.1	2.5	2.0	1.7	48
6.5	9.9		8.5	6.8	6.1	3.9	2.9	2.3	1.9	1.6	45
6	9.1		7.9	6.3	5.7	3.6	2.7	2.1	1.7	1.5	42
5.5	8.4	11.9	7.2	5.8	5.2	3.3	2.4	1.9	1.6	1.4	40
5	7.6	10.8	6.6	5.2	4.7	3.0	2.2	1.8	1.5	1.2	37
4.5	6.8	9.7	5.9	4.7	4.3	2.7	2.0	1.6	1.3	1.1	36
4	6.1	8.7	5.3	4.2	3.8	2.4	1.8	1.4	1.2	1.0	↑
3.5	5.3	7.6	4.6	3.7	3.3	2.1	1.6	1.2	1.0	0.9	↑
3	4.6	6.5	3.9	3.1	2.8	1.8	1.3	1.1	0.9	0.7	↑
2.5	3.8	5.4	3.3	2.6	2.4	1.5	1.1	0.9	0.7	0.6	↑
2	3.0	4.3	2.6	2.1	1.9	1.2	0.9	0.7	0.6	0.5	↑
1.5	2.3	3.2	2.0	1.6	1.4	0.9	0.7	0.5	0.4	0.4	↑
1	1.5	2.2	1.3	1.0	0.9	0.6	0.4	0.4	0.3	0.2	36
Max. pressure MPa		5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	

indicates nonusable range

model CLU16 — Clamping force F=67.61×P/(LH-30.5)

Hydraulic pressure MPa	Cylinder force kN	Clamping force kN — Clamp arm length LH mm									Min. arm length Min. LH mm
		50	60	69.5	80	100	120	140	160	180	
7	17.2			12.1	9.6	6.8	5.3	4.3	3.7	3.2	62
6.5	16.0		14.9	11.3	8.9	6.3	4.9	4.0	3.4	2.9	58
6	14.8		13.8	10.4	8.2	5.8	4.5	3.7	3.1	2.7	54
5.5	13.6		12.6	9.5	7.5	5.4	4.2	3.4	2.9	2.5	51
5	12.3	17.3	11.5	8.7	6.8	4.9	3.8	3.1	2.6	2.3	48
4.5	11.1	15.6	10.3	7.8	6.1	4.4	3.4	2.8	2.3	2.0	45
4	9.9	13.9	9.2	6.9	5.5	3.9	3.0	2.5	2.1	1.8	44
3.5	8.6	12.1	8.0	6.1	4.8	3.4	2.6	2.2	1.8	1.6	↑
3	7.4	10.4	6.9	5.2	4.1	2.9	2.3	1.9	1.6	1.4	↑
2.5	6.2	8.7	5.7	4.3	3.4	2.4	1.9	1.5	1.3	1.1	↑
2	4.9	6.9	4.6	3.5	2.7	1.9	1.5	1.2	1.0	0.9	↑
1.5	3.7	5.2	3.4	2.6	2.0	1.5	1.1	0.9	0.8	0.7	↑
1	2.5	3.5	2.3	1.7	1.4	1.0	0.8	0.6	0.5	0.5	44
Max. pressure MPa		5.4	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	

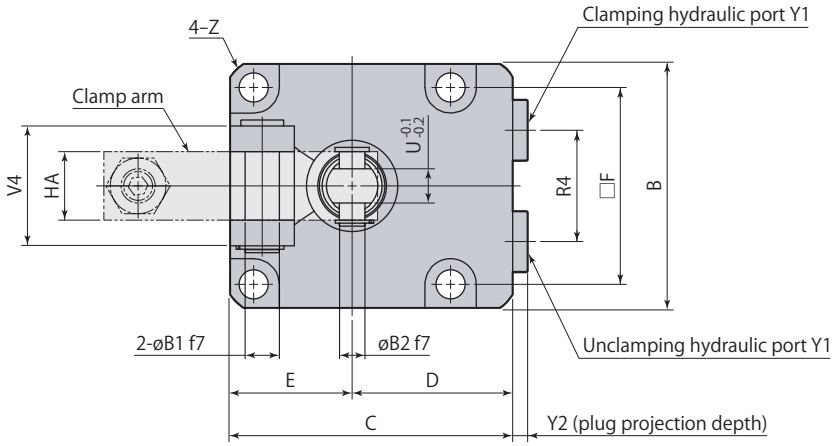
indicates nonusable range

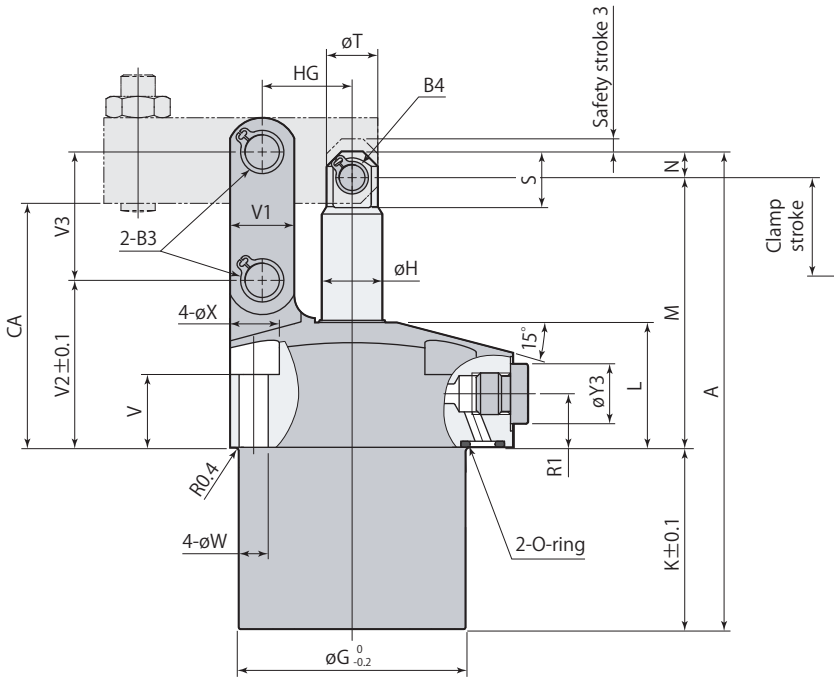
model CLU25 — Clamping force F=129.87×P/(LH-37.5)

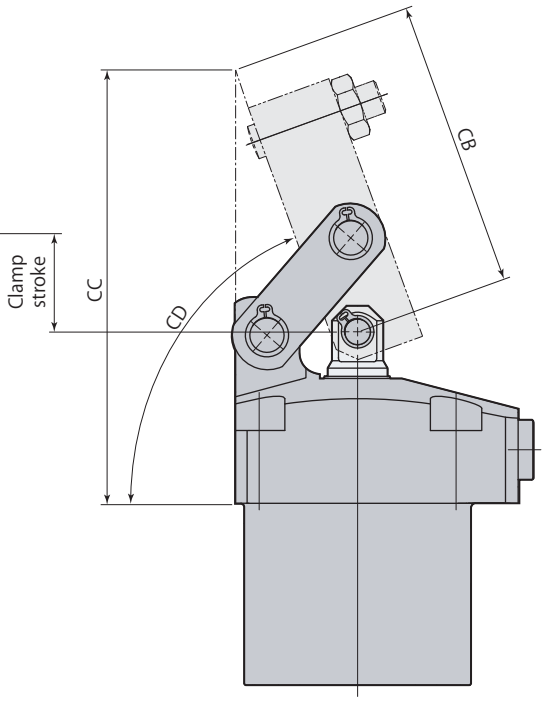
Hydraulic pressure MPa	Cylinder force kN	Clamping force kN — Clamp arm length LH mm									Min. arm length Min. LH mm
		60	65	87.5	100	120	140	160	180	200	
7	26.9			18.2	14.5	11.0	8.9	7.4	6.4	5.6	73
6.5	25.0			16.9	13.5	10.2	8.2	6.9	5.9	5.2	68
6	23.1		28.3	15.6	12.5	9.4	7.6	6.4	5.5	4.8	64
5.5	21.2	31.7	26.0	14.3	11.4	8.7	7.0	5.8	5.0	4.4	60
5	19.2	28.9	23.6	13.0	10.4	7.9	6.3	5.3	4.6	4.0	57
4.5	17.3	26.0	21.3	11.7	9.4	7.1	5.7	4.8	4.1	3.6	55
4	15.4	23.1	18.9	10.4	8.3	6.3	5.1	4.2	3.6	3.2	↑
3.5	13.5	20.2	16.5	9.1	7.3	5.5	4.4	3.7	3.2	2.8	↑
3	11.6	17.3	14.2	7.8	6.2	4.7	3.8	3.2	2.7	2.4	↑
2.5	9.6	14.4	11.8	6.5	5.2	3.9	3.2	2.7	2.3	2.0	↑
2	7.7	11.5	9.4	5.2	4.2	3.1	2.5	2.1	1.8	1.6	↑
1.5	5.8	8.7	7.1	3.9	3.1	2.4	1.9	1.6	1.4	1.2	↑
1	3.9	5.8	4.7	2.6	2.1	1.6	1.3	1.1	0.9	0.8	55
Max. pressure MPa		5.5	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	

indicates nonusable range

Dimensions

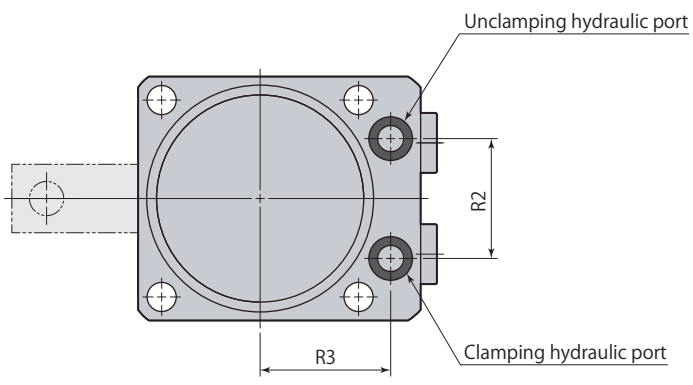






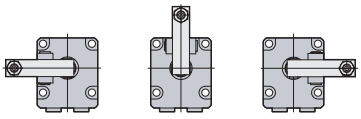
Clamp

Unclamp



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

L：Left side F：Front side R：Right side



- Clamp arm and mounting screws are not included.

mm

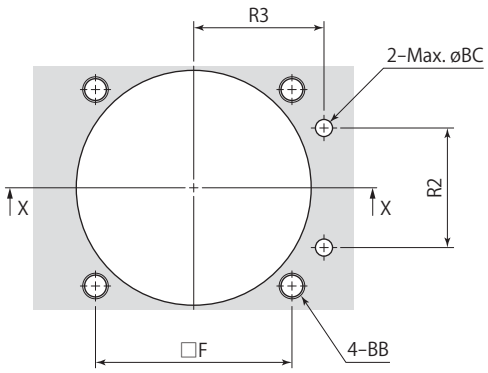
Model	CLU02-□	CLU04-□	CLU06-□	CLU10-□	CLU16-□	CLU25-□
A	93.5	104	111.5	131	155	186.5
B	45	50	57	70	86	108
C	55	60	66	82	96	120
D	32.5	35	37.5	47	53	66
E	22.5	25	28.5	35	43	54
F	35	40	46	56	68	88
øG	39	47	53	63	78	100
øH	12	14	14	16	22.4	28
K	33.5	39.5	42.5	47	55	65
L	27.5	27.7	29.3	36.3	41.5	47
M	55	58.5	63	76	89	108.5
N	5	6	6	8	11	13
R1	12.5	12.5	12.5	14	14	21
R2	22	24	28	36	45	50
R3	25	28	30.5	36	42	57
R4	20	22	26	30	38	50
S	11.5	13	13	17	21.8	27.5
øT	10	12	12	14	20	26
U (width across flats)	6	6	8	10	11	16
V	18	17	17	20	20	20
V1	11	13	15	19	25	32
V2	34	36	39	48	54.5	65
V3	24	26	30	35.5	44	53
V4	21	21	28	37	46	56
øW	5.5	5.5	6.8	9	11	14
øX	10	10	12	15	18.5	20
Y1	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8
Y2	3.8	3.8	3.8	4.8	4.8	4.8
øY3	14	14	14	19	19	22
Z	C1.5	C2.5	C2.5	C3	C3.5	C5.5
øB1	$6^{-0.010}_{-0.022}$	$6^{-0.010}_{-0.022}$	$8^{-0.013}_{-0.028}$	$10^{-0.013}_{-0.028}$	$14^{-0.016}_{-0.034}$	$16^{-0.016}_{-0.034}$
øB2	$6^{-0.010}_{-0.022}$	$6^{-0.010}_{-0.022}$	$6^{-0.010}_{-0.022}$	$8^{-0.013}_{-0.028}$	$12^{-0.016}_{-0.034}$	$14^{-0.016}_{-0.034}$
B3 (snap ring)*1	STW-6	STW-6	STW-8	STW-10	STW-14	STW-16
B4 (snap ring)*1	STW-6	STW-6	STW-6	STW-8	STW-12	STW-14
CA	49.5	52.5	57	68	80	96
CB	48	59.6	67.3	78.7	98.2	133.5
CC	80.2	92.5	101.3	120.4	144.7	189.2
CD	About 69°	About 71°	About 70°	About 70°	About 69°	About 72°
HA	12	12	16	19	22	32
HG	16.5	18.5	21	24.5	30.5	37.5
O-ring (fluorocarbon hardness Hs90)	P7	P7	P7	P8	P8	P10
Flow control valve*2 Meter-in	VCF01	VCF01	VCF01	VCF02	VCF02	VCF03
Flow control valve*2 Meter-out	VCF01-O	VCF01-O	VCF01-O	VCF02-O	VCF02-O	VCF03-O
Air bleeding valve*2	VCE01	VCE01	VCE01	VCE02	VCE02	VCE03

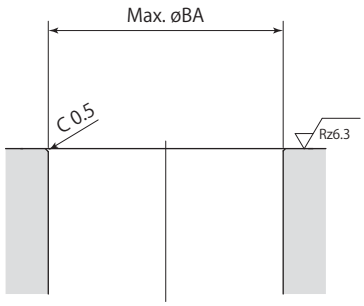
*1 : Snap ring is made by Ochiai Corporation.

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

Refer to each page for the details of options. ● Flow control valve **page →86** ● Air bleeding valve **page →88**

Mounting details





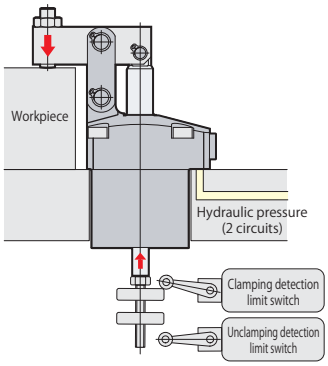
X-X

Rz: ISO4287(1997)

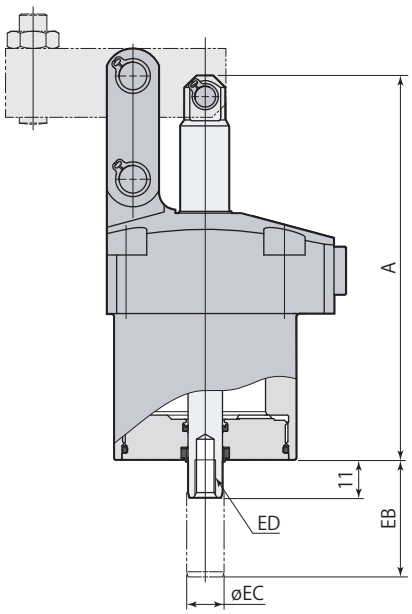
mm

Model	CLU02-□	CLU04-□	CLU06-□	CLU10-□	CLU16-□	CLU25-□
F	35	40	46	56	68	88
R2	22	24	28	36	45	50
R3	25	28	30.5	36	42	57
øBA	40	48	54	64	79	101
BB	M5	M5	M6	M8	M10	M12
øBC	4	4	4	6	6	8

Usage example



Dimensions



mm

Model	CLU02-□E	CLU04-□E	CLU06-□E	CLU10-□E	CLU16-□E	CLU25-□E
Cylinder capacity (clamp)	9.0 cm³	14.8 cm³	22.9 cm³	41.6 cm³	84.6 cm³	164.3 cm³
A	93.5	104	111.5	131	155	186.5
EB	28.5	31.5	34	37.5	44	53
øEC	8	10	10	12	12	16
ED	M5×0.8 depth 8	M6×1 depth 11	M6×1 depth 11	M8×1.25 depth 15	M8×1.25 depth 15	M10×1.5 depth 18
Mass	0.7 kg	1.0 kg	1.4 kg	2.4 kg	4.0 kg	7.4 kg

- Refer to specifications (**page →61**), dimensions (**page →64**) for other specifications and dimensions that are not shown in the diagram.
- CLU25-LE and CLU25-RE are made to order.

Clamping performance

Dual rod and air sensor models have smaller effective area on clamping side, which slightly reduces clamping force. Obtain clamping force by multiplying standard clamping force obtained from performance diagram (**page →62**) or performance table (**page →63**) by coefficient shown in table below.

Calculation example

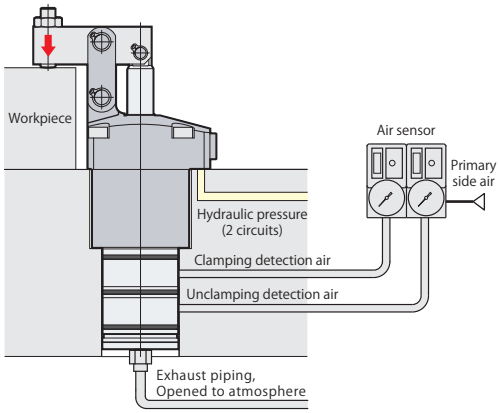
For models CLU10-FE or CLU10-FA, with hydraulic pressure of 7.0 MPa and clamp arm length of 60 mm:

Clamping force of standard specification CLU10-F : 6.6 kN

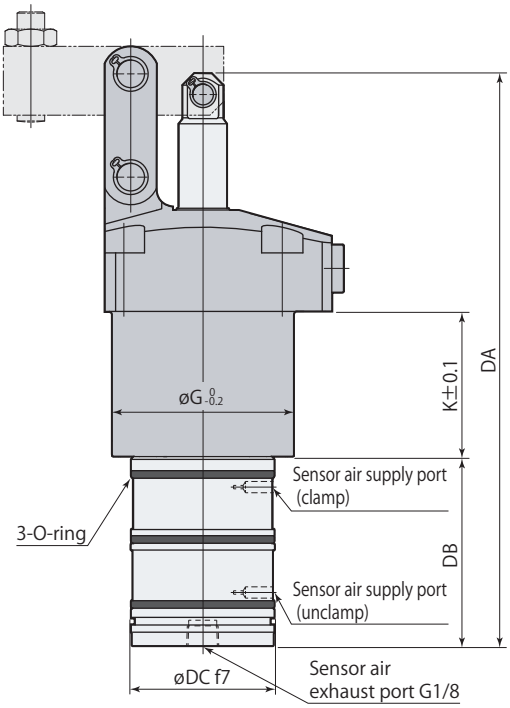
Clamping force of CLU10-FE or CLU10-FA : 6.6 × 0.93 = 6.1 kN

Model	CLU02-□E CLU02-□A	CLU04-□E CLU04-□A	CLU06-□E CLU06-□A	CLU10-□E CLU10-□A	CLU16-□E CLU16-□A	CLU25-□E CLU25-□A
Clamping performance coefficient	0.90	0.89	0.92	0.93	0.95	0.95

Usage example



Dimensions



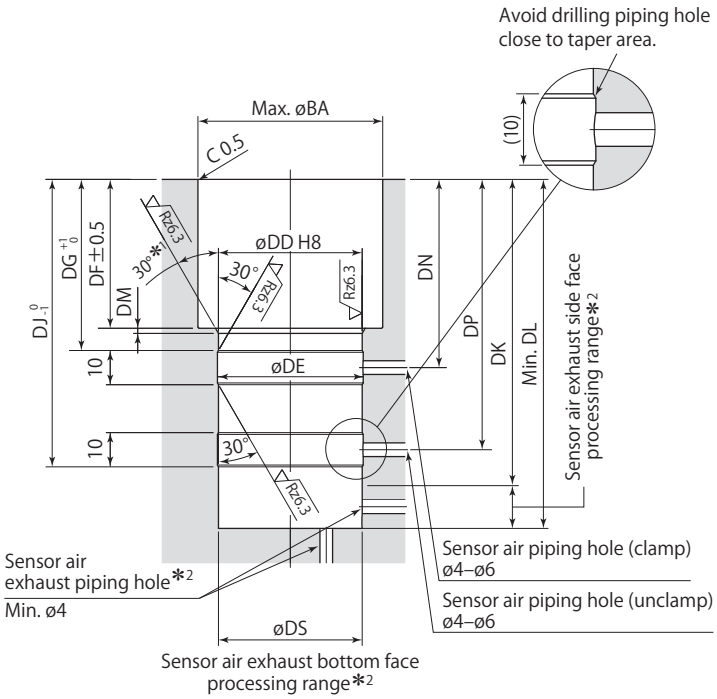
- Exhaust port must be opened to atmosphere.
  If sensor is embedded in a jig, prepare an exhaust piping hole.
  Furthermore, provide the piping if there is a risk of coolant or metal chips intrusion.
  Use one-touch fittings manufactured by SMC for G port piping. (See SMC catalog for the details of the fitting.)
- Refer to specifications (**page →61**), dimensions (**page →64**) for other specifications and dimensions that are not shown in the diagram. (Refer to **page →67** for details on clamping performance.)

mm

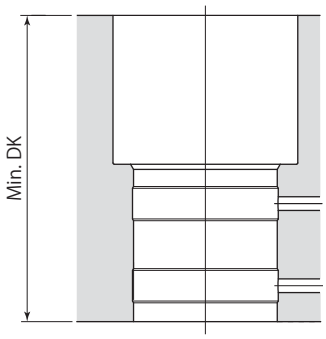
Model	CLU02-□A	CLU04-□A	CLU06-□A	CLU10-□A	CLU16-□A	CLU25-□A
Cylinder capacity (clamp)	9.0 cm³	14.8 cm³	22.9 cm³	41.6 cm³	84.6 cm³	164.3 cm³
DA	142.5	158	167.5	191	221.5	260
DB	49	54	56	60	66.5	73.5
øDC	38 $^{-0.025}_{-0.050}$	42 $^{-0.025}_{-0.050}$	42 $^{-0.025}_{-0.050}$	45 $^{-0.025}_{-0.050}$	45 $^{-0.025}_{-0.050}$	52 $^{-0.030}_{-0.060}$
øG	39	47	53	63	78	100
K	33.5	39.5	42.5	47	55	65
O-ring (fluorocarbon hardness Hs70)	AS568-028	AS568-029	AS568-029	AS568-030	AS568-030	AS568-032
Mass	0.9 kg	1.2 kg	1.6 kg	2.7 kg	4.3 kg	7.9 kg

- CLU□-□A (Air sensor) is made to order.

Mounting details



In blind hole



In through hole

Rz: ISO4287(1997)

*1 : 15° only for CLU02-A

*2 : Sensor air exhaust piping hole must be made on either side or bottom face.

- Apply an appropriate amount of grease to the chamfer and the bore when mounting. Excessive grease may be a blockage in the air passage, causing malfunction of the sensor.
- The 30° taper machining must be provided to avoid the damage of the O-ring. Ensure that there are no interference on taper area when drilling the hole for sensor air.

mm

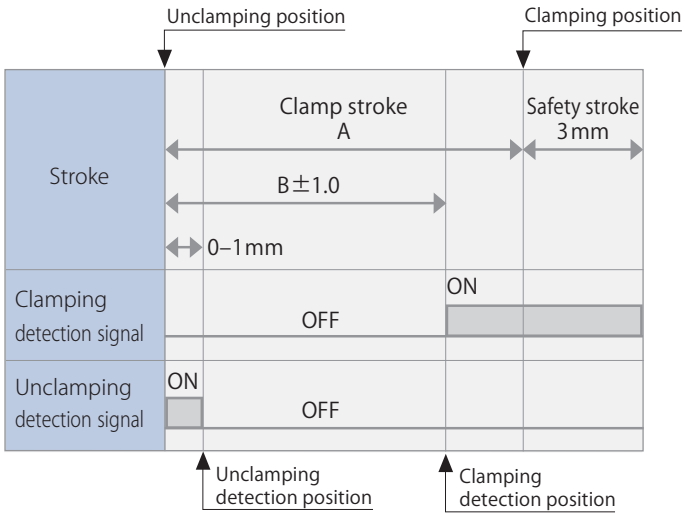
Model	CLU02-□A	CLU04-□A	CLU06-□A	CLU10-□A	CLU16-□A	CLU25-□A
øDD	38 +0.039 0	42 +0.039 0	42 +0.039 0	45 +0.039 0	45 +0.039 0	52 +0.046 0
øDE	38.6	42.6	42.6	45.6	45.6	52.6
DF	34.5	40.5	43.5	48	56	66
DG	41	47	50	54.5	62.5	72.5
DJ	70	79	84	92.5	107	123.5
DK	76	85	90	98.5	113	129.5
DL	86.5	97.5	102.5	111	125.5	142.5
DM	1	1.5	1.5	1.5	1.5	1.5
DN	46	52	55	59.5	67.5	77.5
DP	65	74	79	87.5	102	118.5
øDS	38	42	42	45	45	52
øBA	40	48	54	64	79	101

Air sensor unit

Supplier and model	ISA3-G series manufactured by SMC
	GPS2-05 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 successfully made 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.
- Maximum 6 pieces of clamp can be detected at 0.2MPa air pressure by means of 1 piece of sensor. In case of 0.1MPa air pressure, maximum 3 pieces of clamp are detectable.

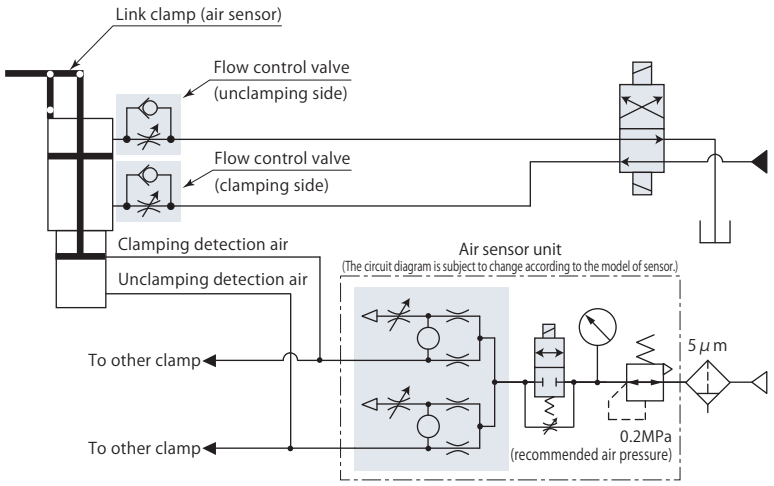
Air sensor triggering point



mm

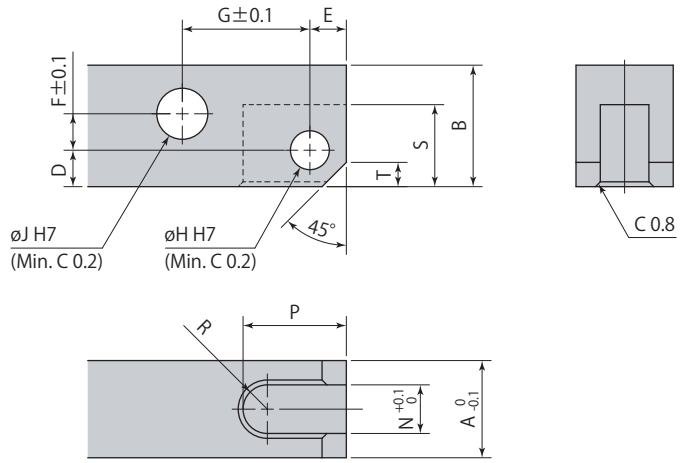
Model	Clamp stroke A	Clamping detection position B
CLU02-□A	17.5	15.5
CLU04-□A	20.5	18.5
CLU06-□A	23.0	21.0
CLU10-□A	26.5	24.5
CLU16-□A	33.0	31.0
CLU25-□A	42.0	40.0

Hydraulic and pneumatic circuit diagram



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)

mm

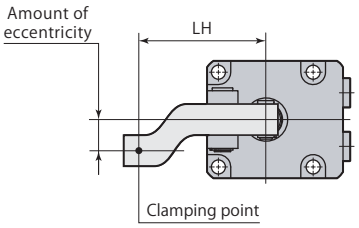
Link clamp	CLU02	CLU04	CLU06	CLU10	CLU16	CLU25
A	12	12	16	19	22	32
B	14	16	20	25	31	38
D	5.5	6	6	8	9	12.5
E	5.5	6	6	7	10	13
F	3	3.5	6	7.5	9.5	9.5
G	16.5	18.5	21	24.5	30.5	37.5
øH	$6^{+0.012}_{0}$	$6^{+0.012}_{0}$	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$12^{+0.018}_{0}$	$14^{+0.018}_{0}$
øJ	$6^{+0.012}_{0}$	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$	$14^{+0.018}_{0}$	$16^{+0.018}_{0}$
N	6	6	8	10	11	16
P	14	17	17	20	26.5	36
R	R3	R3	R4	R5	R5.5	R8
S	12	13.5	13.5	17.5	22	28
T	3	4	4	5	7	8

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

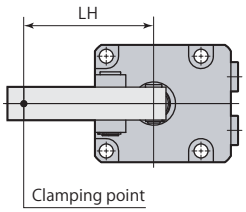
Clamp arm allowable eccentricity

An eccentric shape clamp arm, as shown in diagram on right can be used with link clamp model CLU, 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.

Eccentric shape clamp arm



Ordinary clamp arm



model CLU02 (shaded = nonusable range)

Hydraulic pressure MPa	Allowable eccentricity mm — Clamp arm length LH mm							
	27	30	36.5	40	50	60	80	100
7			16	20	34	47	60	60
6.5			18	23	38	52	↑	↑
6		11	21	27	43	58	↑	↑
5.5		13	24	30	48	60	↑	↑
5	10	16	28	35	55	↑	↑	↑
4.5	12	19	33	41	60	↑	↑	↑
4	15	23	39	48	↑	↑	↑	↑
3.5	20	28	47	57	↑	↑	↑	↑
3	25	35	58	60	↑	↑	↑	↑
2.5	33	45	60	↑	↑	↑	↑	↑
2	44	60	↑	↑	↑	↑	↑	↑
1.5	60	↑	↑	↑	↑	↑	↑	↑
1	60	60	60	60	60	60	60	60

model CLU04 (shaded = nonusable range)

Hydraulic pressure MPa	Allowable eccentricity mm — Clamp arm length LH mm							
	30	35	42	50	60	80	100	120
7			7	13	21	36	51	60
6.5			9	15	24	41	57	↑
6			11	18	27	46	60	↑
5.5		6	13	21	32	52	↑	↑
5		8	16	25	37	60	↑	↑
4.5	6	11	20	30	43	↑	↑	↑
4	6	14	24	36	51	↑	↑	↑
3.5	9	18	30	44	60	↑	↑	↑
3	13	23	37	54	↑	↑	↑	↑
2.5	18	30	48	60	↑	↑	↑	↑
2	26	42	60	↑	↑	↑	↑	↑
1.5	39	60	↑	↑	↑	↑	↑	↑
1	60	60	60	60	60	60	60	60

model CLU06 (shaded = nonusable range)

Hydraulic pressure MPa	Allowable eccentricity mm — Clamp arm length LH mm						
	35	45	50	60	80	100	120
7			8	8	8	8	8
6.5		8	8	8	8	8	8
6		12	13	15	19	23	26
5.5		18	20	24	32	41	49
5	11	24	28	35	48	62	76
4.5	15	32	37	48	68	80	80
4	19	42	49	64	80	↑	↑
3.5	24	51	65	80	↑	↑	↑
3	31	63	79	↑	↑	↑	↑
2.5	41	80	80	↑	↑	↑	↑
2	55	↑	↑	↑	↑	↑	↑
1.5	80	↑	↑	↑	↑	↑	↑
1	80	80	80	80	80	80	80

model CLU10 (shaded = nonusable range)

Hydraulic pressure MPa	Allowable eccentricity mm — Clamp arm length LH mm								
	40	50	56.5	60	80	100	120	140	160
7		12	17	18	23	28	33	38	43
6.5		15	24	26	35	45	54	64	73
6		18	27	33	50	65	79	94	95
5.5	9	22	32	38	67	88	95	95	↑
5	9	27	38	45	80	95	↑	↑	↑
4.5	12	32	46	53	93	↑	↑	↑	↑
4	17	40	55	63	95	↑	↑	↑	↑
3.5	22	49	66	76	↑	↑	↑	↑	↑
3	30	61	82	93	↑	↑	↑	↑	↑
2.5	40	79	95	95	↑	↑	↑	↑	↑
2	56	95	↑	↑	↑	↑	↑	↑	↑
1.5	82	↑	↑	↑	↑	↑	↑	↑	↑
1	95	95	95	95	95	95	95	95	95

model CLU16 (shaded = nonusable range)

Hydraulic pressure MPa	Allowable eccentricity mm — Clamp arm length LH mm								
	50	60	69.5	80	100	120	140	160	180
7			16	26	46	66	86	107	110
6.5		11	22	34	58	81	104	110	↑
6		17	29	44	71	98	110	↑	↑
5.5		23	38	55	87	110	↑	↑	↑
5	13	31	49	68	105	↑	↑	↑	↑
4.5	19	41	62	85	110	↑	↑	↑	↑
4	27	53	78	105	↑	↑	↑	↑	↑
3.5	37	69	98	110	↑	↑	↑	↑	↑
3	51	90	110	↑	↑	↑	↑	↑	↑
2.5	71	110	↑	↑	↑	↑	↑	↑	↑
2	96	↑	↑	↑	↑	↑	↑	↑	↑
1.5	110	↑	↑	↑	↑	↑	↑	↑	↑
1	110	110	110	110	110	110	110	110	110

model CLU25 (shaded = nonusable range)

Hydraulic pressure MPa	Allowable eccentricity mm — Clamp arm length LH mm								
	60	65	87.5	100	120	140	160	180	200
7			41	59	87	115	142	160	160
6.5			48	67	97	128	158	↑	↑
6		18	55	76	110	143	160	↑	↑
5.5	16	22	64	87	124	160	↑	↑	↑
5	18	28	75	100	142	↑	↑	↑	↑
4.5	24	35	88	117	160	↑	↑	↑	↑
4	31	44	104	137	↑	↑	↑	↑	↑
3.5	41	56	125	160	↑	↑	↑	↑	↑
3	53	71	153	↑	↑	↑	↑	↑	↑
2.5	71	93	160	↑	↑	↑	↑	↑	↑
2	97	125	↑	↑	↑	↑	↑	↑	↑
1.5	141	160	↑	↑	↑	↑	↑	↑	↑
1	160	160	160	160	160	160	160	160	160