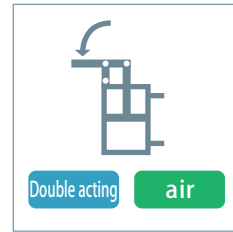
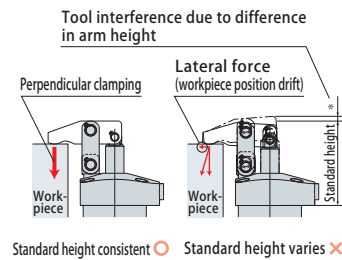


air  
**Link clamp**  
model  
**CLX**



**Compact high performance link clamp with high output and high durability**

Link support components improved

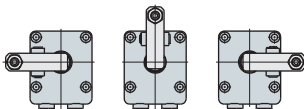


Flange bottom surface to link pin height accuracy has been improved through improvement of link support components, resulting in elimination of standard height variance among individual units. Positional drifts of workpiece due to tilted clamp and tool interference due to tilted clamp arm will not occur.

Three-directional clamp arm

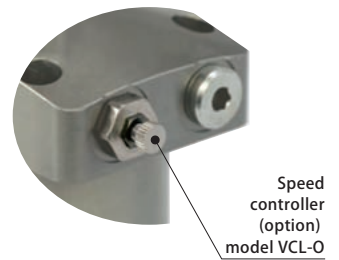
Three types, each with different clamp arm mounting direction, are available. These may be selected to accommodate fixture layout, such as workpiece or hydraulic piping.

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

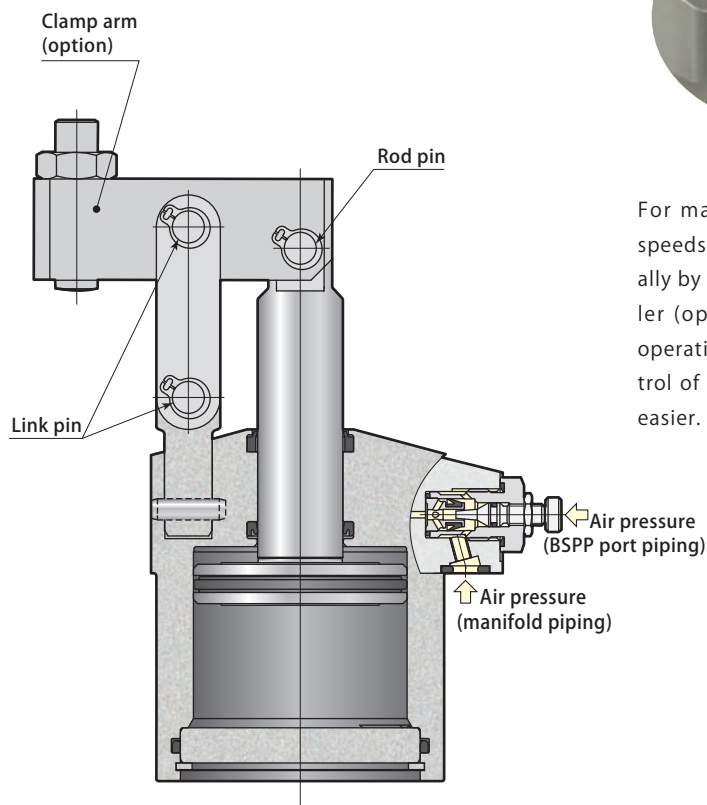


Furthermore, clamp arms are available as optional components. [page → 294](#)

Speed controller



For manifold piping, operating speeds can be adjusted individually by mounting a speed controller (option), making sequential operation on same circuit or control of synchronization operation easier. [page → 297](#)



2-way air piping

BSPP piping connection port and manifold piping connection port are available.

Piping method can be selected simply by mounting an included plug.

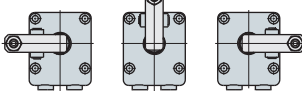
Specifications

Model		CLX32	CLX40	CLX50	CLX63	
Cylinder force (air pressure 0.5 MPa)	(N)	402	628	982	1559	
Cylinder inner diameter	(mm)	32	40	50	63	
Rod diameter	(mm)	14	16	20	25	
Effective area (clamp)	(mm <sup>2</sup> )	804	1257	1963	3117	
Full stroke	(mm)	24.0	26.0	29.5	34.5	
Clamp stroke	(mm)	21.0	23.0	26.5	31.5	
Stroke margin	(mm)	3.0	3.0	3.0	3.0	
Cylinder capacity	Clamp	(cm <sup>3</sup> )	19.3	32.7	57.9	107.5
	Unclamp	(cm <sup>3</sup> )	15.6	27.4	48.7	90.6
Mass	(kg)	0.39	0.54	0.92	1.44	

Working air pressure range : 0.1 ~ 1 MPa Proof pressure : 1.5 MPa Operating temperature: 0 ~ 70°C Oil supply : Not required  
 Fluid used: Air  
 Fluorocarbon has been adopted for seal sections where cutting fluid is applied, as a measure for the use of chlorine-based cutting fluid (this is not thermal resistant specification.)

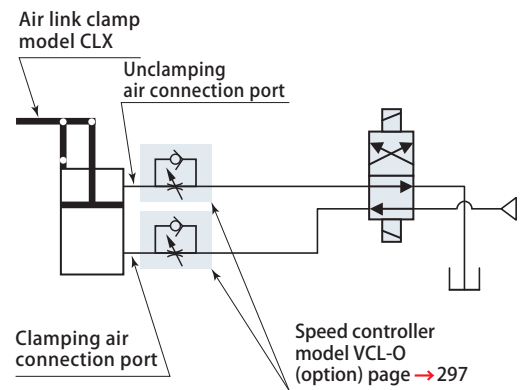
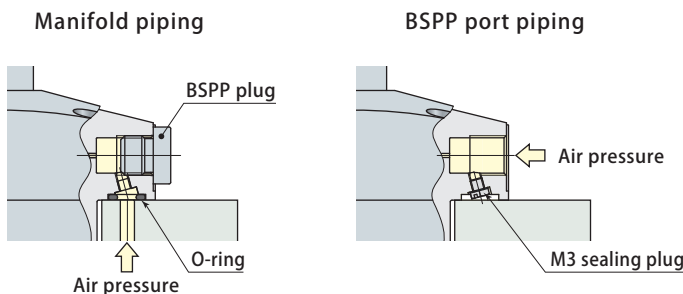
Model designation

CLX ①-②③ (Example : CLX40-RE)

<b>CLX</b>	① Size (refer to specification table)	② Clamp arm mounting direction	③ Variation code
	32 40 50 63	L : Left side      L: Left side    F: Front side    R: Right side F : Front side R : Right side 	(Nil): Standard  E : Dual rod page → 292

Piping method

Air circuit diagram (reference)



Two piping methods are available for model CLX, manifold piping and BSPP port piping.

For BSPP port piping, dismount BSPP plug and O-ring and mount M3 sealing plug that is included. (M3 sealing plug is not mounted with shipment.) If it is difficult to obtain a BSPP fitting, use of Uni one-touch fitting made by SMC is recommended. (Refer to catalog issued by manufacturer for details.)

**Performance table**

Clamping force varies depending on clamp arm length and air pressure. Select an appropriate clamp model based on considerations for clamp arm length, working air pressure and mounting dimensions. (Refer to the next page for details on values that do not appear on performance table.)

Note: With link clamps, force acting on link mechanism becomes larger as arm becomes shorter. Do not use the product in the nonusable range.

**How to read performance table (Example 1)**

For clamp arm length (LH) of 50 mm and where clamping force of 420 N or more is necessary, the working air pressure for each model is :

- 0.9 MPa for CLX32
- 0.6 MPa for CLX40
- 0.3 MPa for CLX50
- 0.1 MPa for CLX63

**How to read performance table (Example 2)**

When working air pressure is 1 MPa with CLX40, clamping force necessary for clamp arm length (LH) is :

- 240 N for LH=120 mm
- 400 N for LH=80 mm
- 820 N for LH=50 mm
- Not usable with LH=35 mm

F: Clamping force (N)    P: Working air pressure (MPa)    LH: Clamp arm length (mm)

**CLX32**     $F = \frac{14.11 \times P}{LH - 19.5} \times 1000$     indicates nonusable range

Air pressure (MPa)	Cylinder force (N)	Clamping force (N)								Min. arm length (mm)
		Clamp arm length LH (mm)								
		30	35	39	45	50	60	80	100	
1.0	800			720	550	460	350	230	180	39
0.9	720			650	500	420	310	210	160	36
0.8	640		730	580	440	370	280	190	140	33
0.7	560	940	640	510	390	320	240	160	120	30
0.6	480	810	550	430	330	280	210	140	110	28
0.5	400	670	460	360	280	230	170	120	90	26
0.4	320	540	360	290	220	190	140	90	70	↑
0.3	240	400	270	220	170	140	100	70	50	↑
0.2	160	270	180	140	110	90	70	50	40	↑
0.1	80	130	90	70	60	50	30	20	20	26

**CLX40**     $F = \frac{23.75 \times P}{LH - 21.0} \times 1000$     indicates nonusable range

Air pressure (MPa)	Cylinder force (N)	Clamping force (N)								Min. arm length (mm)
		Clamp arm length LH (mm)								
		33	35	42	50	60	80	100	120	
1.0	1260			1130	820	610	400	300	240	42
0.9	1130			1020	740	550	360	270	220	38
0.8	1010		1360	900	660	490	320	240	190	35
0.7	880	1390	1190	790	570	430	280	210	170	32
0.6	750	1190	1020	680	490	370	240	180	140	30
0.5	630	990	850	570	410	300	200	150	120	29
0.4	500	790	680	450	330	240	160	120	100	↑
0.3	380	590	510	340	250	180	120	90	70	↑
0.2	250	400	340	230	160	120	80	60	50	↑
0.1	130	200	170	110	80	60	40	30	20	29

**CLX50**     $F = \frac{44.18 \times P}{LH - 25.0} \times 1000$     indicates nonusable range

Air pressure (MPa)	Cylinder force (N)	Clamping force (N)								Min. arm length (mm)
		Clamp arm length LH (mm)								
		38	45	50	60	80	100	120	140	
1.0	1960			1770	1260	800	590	470	380	50
0.9	1770			1590	1140	720	530	420	350	46
0.8	1570		1770	1410	1010	640	470	370	310	42
0.7	1370	2380	1550	1240	880	560	410	330	270	39
0.6	1180	2040	1330	1060	760	480	350	280	230	36
0.5	980	1700	1100	880	630	400	290	230	190	34
0.4	790	1360	880	710	500	320	240	190	150	↑
0.3	590	1020	660	530	380	240	180	140	120	↑
0.2	390	680	440	350	250	160	120	90	80	↑
0.1	200	340	220	180	130	80	60	50	40	34

**CLX63**     $F = \frac{84.16 \times P}{LH - 30.0} \times 1000$     indicates nonusable range

Air pressure (MPa)	Cylinder force (N)	Clamping force (N)								Min. arm length (mm)
		Clamp arm length LH (mm)								
		45	50	60	80	100	120	140	160	
1.0	3120			2810	1680	1200	940	770	650	60
0.9	2810			2520	1510	1080	840	690	580	55
0.8	2490		3370	2240	1350	960	750	610	520	50
0.7	2180	3930	2950	1960	1180	840	650	540	450	46
0.6	1870	3370	2520	1680	1010	720	560	460	390	43
0.5	1560	2810	2100	1400	840	600	470	380	320	40
0.4	1250	2240	1680	1120	670	480	370	310	260	↑
0.3	940	1680	1260	840	500	360	280	230	190	↑
0.2	620	1120	840	560	340	240	190	150	130	↑
0.1	310	560	420	280	170	120	90	80	60	40

**Performance diagram**

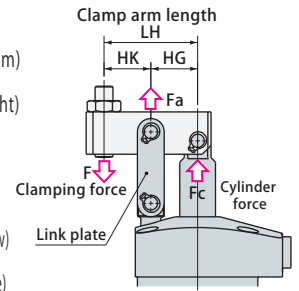
1. Clamping force varies depending on clamp arm length and air pressure. Use following clamping force calculation formula to obtain clamping force.

$$F = F_c \times \frac{HG}{(LH - HG)} \times \eta$$

2. When using clamp arm with HK dimension that is shorter than those shown in table to the right, determine maximum working pressure using maximum working pressure calculation formula below. Force that applies on link mechanism becomes greater as HK dimension becomes shorter. Exceeding maximum allowable load  $F_a$  will result in excessive loads on link mechanism, leading to malfunction.

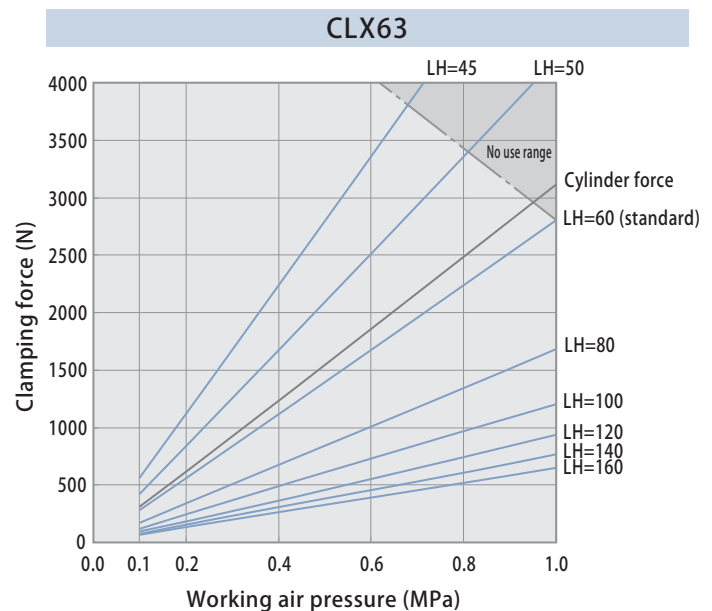
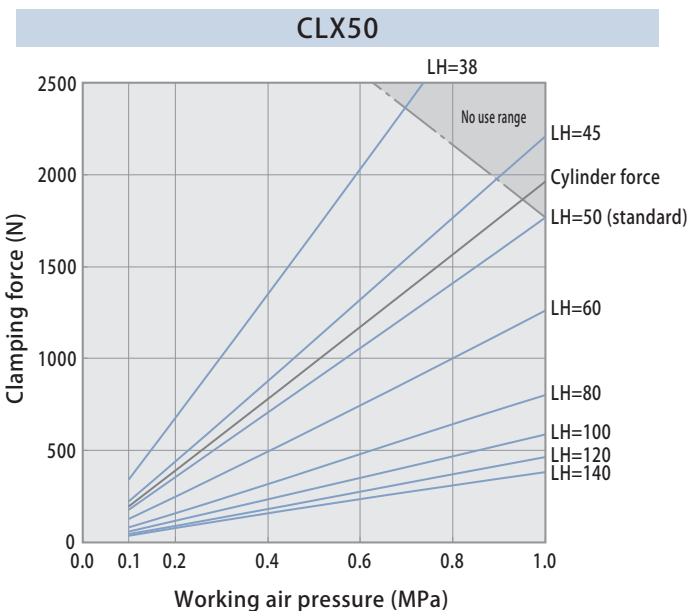
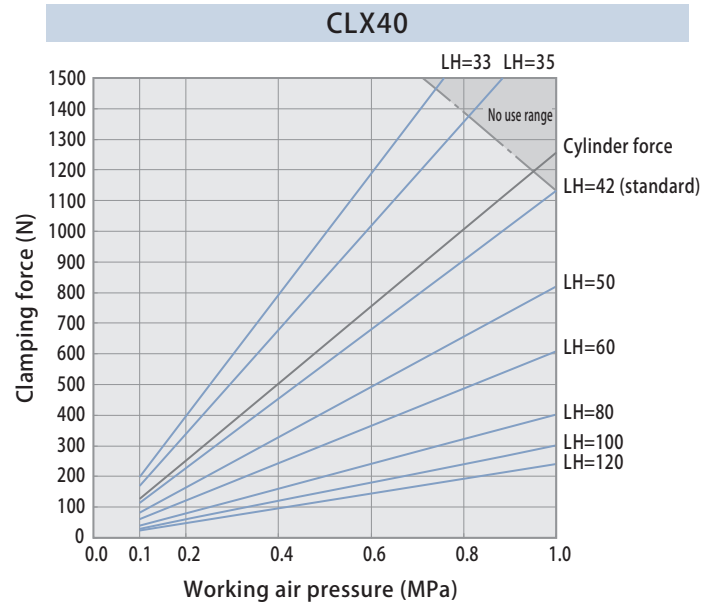
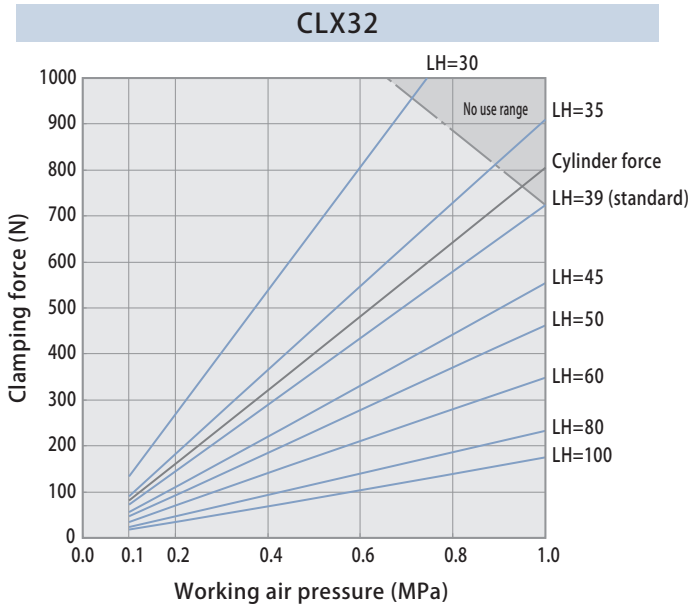
$$P_a \leq \frac{F_a \times (LH - HG)}{A (HG \times \eta + LH - HG)}$$

- F** : Clamping force N
- F<sub>c</sub>** : Cylinder force N (refer to performance diagram)
- LH=HG+HK** : Clamp arm length mm (refer to diagram on right)
- η** : Output efficiency (0.9)
- P<sub>a</sub>** : Max. working pressure MPa
- F<sub>a</sub>** : Link section max. allowable load N (refer to table below)
- A** : Effective area (clamp) mm<sup>2</sup> (refer to specification table)

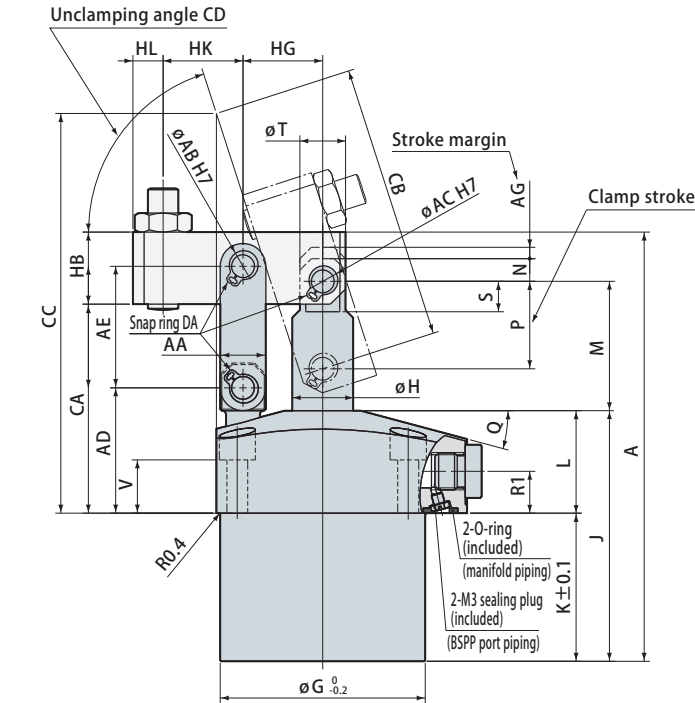
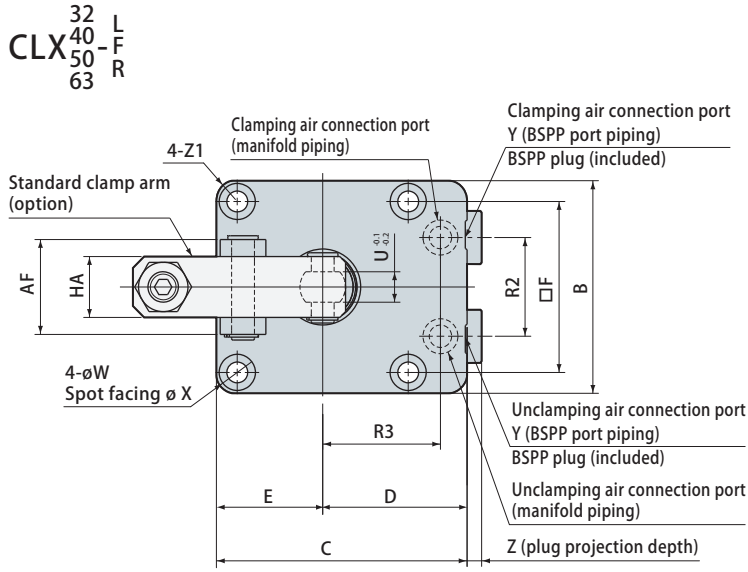


Model	CLX32	CLX40	CLX50	CLX63
HG (mm)	19.5	21	25	30
LH * (mm)	39	42	50	60
F <sub>a</sub> (N)	1528	2388	3730	5923

\* : Standard clamp arm length.



Dimension



Mounting details

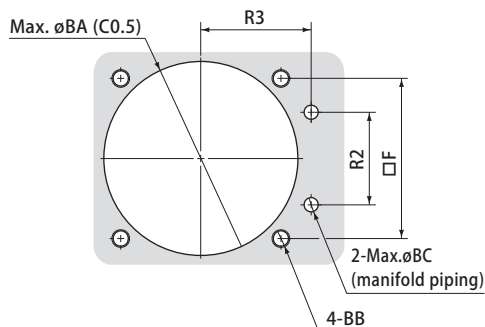


Diagram above represents external contour of CLX□-F. CLX□-L and CLX□-R differ only in terms of mounting direction of clamp arm and otherwise all dimensions are identical to those of CLX□-F.

(mm)

Model	CLX32- <sup>L</sup> / <sub>R</sub>	CLX40- <sup>L</sup> / <sub>R</sub>	CLX50- <sup>L</sup> / <sub>R</sub>	CLX63- <sup>L</sup> / <sub>R</sub>
A	103	113	128	147.5
B	50	56	66	78
C	60	66	80	91
D	35	38	47	52
E	25	28	33	39
F	39	45	53	65
G	46	54	64	77
H	14	16	20	25
J	62	66	74.5	85
K	35	39	42.5	53
L	27	27	32	32
M	30	34	39.5	46.5
N	5	6	8	10
P	21	23	26.5	31.5
Q	15°	15°	13°	13°
R1	11	11	12.5	12.5
R2	20	26	30	40
R3	28	31	36	41
S	6.5	8	9.5	11.5
T	11	12	16	21
U	7	8	11	13
V	14	14	17	17
W	5.5	5.5	6.8	6.8
X	9.5	9.5	11	11
Y	G1/8	G1/8	G1/4	G1/4
Z	3.8	3.8	4.8	4.8
Z1	R5	R5	R6	R6
O-ring *1	P6	P6	P6	P6
AA	10	12	16	18
AB	5 <sup>+0.012</sup> / <sub>0</sub>	6 <sup>+0.012</sup> / <sub>0</sub>	8 <sup>+0.015</sup> / <sub>0</sub>	10 <sup>+0.015</sup> / <sub>0</sub>
AC	5 <sup>+0.012</sup> / <sub>0</sub>	6 <sup>+0.012</sup> / <sub>0</sub>	8 <sup>+0.015</sup> / <sub>0</sub>	10 <sup>+0.015</sup> / <sub>0</sub>
AD	31.5±0.1	33±0.1	38.5±0.1	39.5±0.1
AE	28.5	32	38	44
AF	20	25	28	34
AG	3	3	3	3
BA	46.5	54.5	64.5	77.5
BB	M5	M5	M6	M6
BC	4	4	4	4
CA	52	55	63.5	69.5
CB	59	72.5	73.3	82.4
CC	89.7	105.2	110.9	120.2
CD	70°	72°	70°	68°
DA *2	STW-5	STW-6	STW-8	STW-10
HA	14	16	19	22
HB	16	19	22	25
HG	19.5	21	25	30
HK	19.5	21	25	30
HL	6	8	8	10

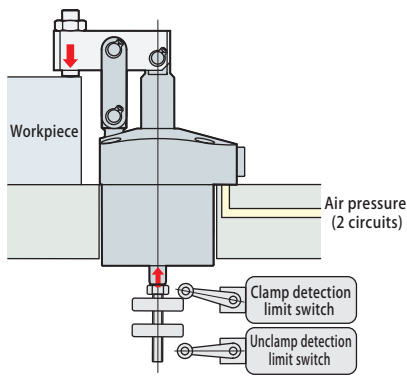
\*1: Material of O-ring is fluorocarbon (with hardness Hs90).

\*2: Snap ring is made by Ochiai Corporation.

Note 1. The mounting surface finish must be no rougher than Rz6.3 (ISO4287:1997) for manifold piping.

2. Mounting screws are not included.

Usage example



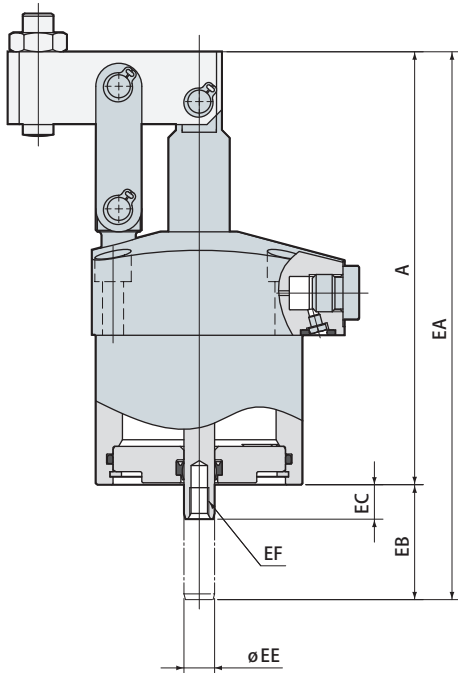
Model designation

CLX ①-②

CLX	① Size	② Clamp arm mounting direction	
	32	-	E : Dual rod
	40		
	50		
63			

Dimensions

CLX <sup>32</sup><sub>40</sub><sub>50</sub><sub>63</sub> - <sup>L</sup><sub>F</sub><sub>R</sub> <sup>E</sup>



Model	CLX32- <sup>L</sup> <sub>R</sub> - <sup>E</sup>	CLX40- <sup>L</sup> <sub>R</sub> - <sup>E</sup>	CLX50- <sup>L</sup> <sub>R</sub> - <sup>E</sup>	CLX63- <sup>L</sup> <sub>R</sub> - <sup>E</sup>
Effective area (clamp)	754 mm <sup>2</sup>	1206 mm <sup>2</sup>	1885 mm <sup>2</sup>	3039 mm <sup>2</sup>
Cylinder capacity (clamp)	18.1 cm <sup>3</sup>	31.4 cm <sup>3</sup>	55.6 cm <sup>3</sup>	104.8 cm <sup>3</sup>
A	103	113	128	147.5
EA	133	145	163.5	188
EB	30	32	35.5	40.5
EC	9	9	9	9
EE	8	8	10	10
EF	M5×0.8 depth 8	M5×0.8 depth 8	M6×1 depth 11	M6×1 depth 11
Mass	0.41 kg	0.56 kg	0.95 kg	1.47 kg

Note 1. The mounting surface finish must be no rougher than Rz6.3 (ISO4287:1997) for manifold piping.

2. Mounting screws are not included.

3. Refer to section on standard models for details on specifications (page → 288) and for dimensions (page → 291) other than those above.

Clamping performance

Dual rod models have smaller effective area on clamping side, which slightly reduces clamping force. Obtain clamping force by multiplying standard clamping force obtained from performance table (page → 289) or performance diagram (page → 290) by coefficient shown in table below.

Calculation example

For models CLX50-FE, with working air pressure of 0.5 MPa and clamp arm length of 60 mm:

Clamping force of standard specification CLX50-F : 630 N

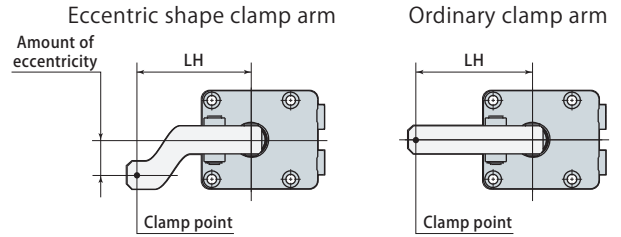
Clamping force of CLX50-FE : 630 × 0.96 = 604.8 N

Model	CLX32- <sup>L</sup> <sub>R</sub> - <sup>E</sup>	CLX40- <sup>L</sup> <sub>R</sub> - <sup>E</sup>	CLX50- <sup>L</sup> <sub>R</sub> - <sup>E</sup>	CLX63- <sup>L</sup> <sub>R</sub> - <sup>E</sup>
Clamping performance coefficient	0.94	0.96	0.96	0.97

**Allowable eccentricity of clamp arm**

An eccentric shape clamp arm as shown in diagram on right can be used with air link clamp model CLX, if it is not possible to set clamp 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.



**CLX 32**

indicates nonusable range

Air pressure (MPa)	Allowable eccentricity							
	Clamp arm length LH (mm)							
	30	35	39	45	50	60	80	100
1.0					7	12	24	35
0.9				8	11	18	32	47
0.8			7	12	17	26	44	60
0.7		7	12	18	24	35	58	↑
0.6	5	12	18	26	34	48	60	↑
0.5	9	19	26	38	47	60	↑	↑
0.4	16	29	39	54	60	↑	↑	↑
0.3	28	46	60	60	↑	↑	↑	↑
0.2	51	60	↑	↑	↑	↑	↑	↑
0.1	60	60	60	60	60	60	60	60

**CLX 40**

indicates nonusable range

Air pressure (MPa)	Allowable eccentricity							
	Clamp arm length LH (mm)							
	33	35	42	50	60	80	100	120
1.0				6	13	26	39	53
0.9			5	11	20	36	53	70
0.8			9	17	28	49	70	80
0.7	3	6	15	25	39	65	80	↑
0.6	7	11	23	36	53	80	↑	↑
0.5	14	18	33	51	73	↑	↑	↑
0.4	23	29	50	73	80	↑	↑	↑
0.3	38	47	77	80	↑	↑	↑	↑
0.2	67	80	80	↑	↑	↑	↑	↑
0.1	80	80	80	80	80	80	80	80

**CLX 50**

indicates nonusable range

Air pressure (MPa)	Allowable eccentricity							
	Clamp arm length LH (mm)							
	38	45	50	60	80	100	120	140
1.0				10	24	37	51	65
0.9			7	16	33	50	67	85
0.8		7	12	23	44	66	87	100
0.7		12	19	33	59	86	100	↑
0.6	8	20	28	45	79	100	↑	↑
0.5	14	30	41	63	100	↑	↑	↑
0.4	24	45	60	90	↑	↑	↑	↑
0.3	41	70	92	100	↑	↑	↑	↑
0.2	74	100	100	↑	↑	↑	↑	↑
0.1	100	100	100	100	100	100	100	100

**CLX 63**

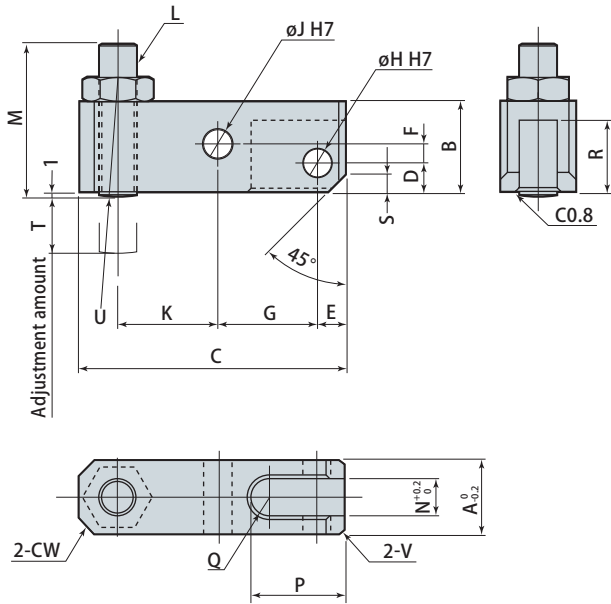
indicates nonusable range

Air pressure (MPa)	Allowable eccentricity							
	Clamp arm length LH (mm)							
	45	50	60	80	100	120	140	160
1.0			4	19	33	48	62	76
0.9			9	27	45	63	81	99
0.8		5	16	38	60	83	105	120
0.7		10	24	52	80	108	120	↑
0.6	9	18	35	71	106	120	↑	↑
0.5	17	28	51	97	120	↑	↑	↑
0.4	29	44	75	120	↑	↑	↑	↑
0.3	48	70	114	↑	↑	↑	↑	↑
0.2	87	120	120	↑	↑	↑	↑	↑
0.1	120	120	120	120	120	120	120	120

Clamp arm

CLH<sup>32</sup><sub>40</sub><sup>50</sup><sub>63</sub>-L1

(mm)

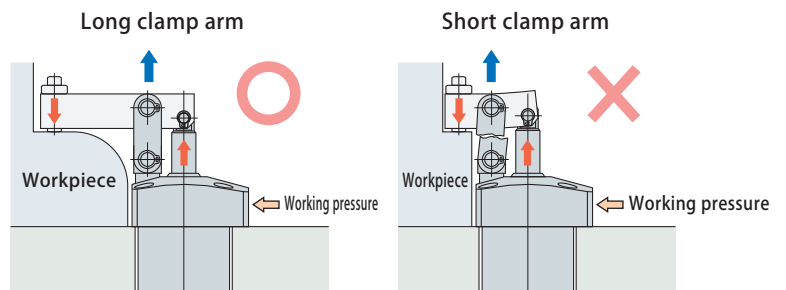


Model	CLH32-L1	CLH40-L1	CLH50-L1	CLH63-L1
A	14	16	19	22
B	16	19	22	25
C	50	56	66	80
D	5	6	8	9
E	5	6	8	10
F	3	4	5	5
G	19.5	21	25	30
H	5	6	8	10
J	5	6	8	10
K	19.5	21	25	30
L	M6	M8	M8	M10
M	26	32	32	39
N	7	8	11	13
P	16	20	22	27
Q	R3.5	R4	R5.5	R6.5
R	12	15	18	22
S	3	4	5	6
T	9	12	9	13
U	R20	R25	R25	R30
V	C1	C1.5	C2	C2
W	3	3	3	4
Arm mass	0.08 kg	0.12 kg	0.18 kg	0.28 kg

Material: S45C

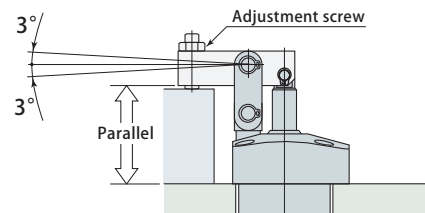
**Caution in use**

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 may be necessary to lower clamping force (working pressure). Use clamping force that is appropriate for clamp arm length.



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

Adjustment screw at tip section may be used for adjustment when using standard clamp arm.



**Mounting of clamp**

Use screws with strength class of 12.9 for mounting clamps and be sure to apply specified torque for tightening, by referring to recommended tightening torque of mounting screws indicated to the right.

Recommended tightening torque of mounting screws (strength class 12.9)

Model	Mounting screws size	Tightening torque
CLX32	M5×0.8	4.2 N·m
CLX40	M5×0.8	4.2 N·m
CLX50	M6×1	7.0 N·m
CLX63	M6×1	7.0 N·m