

# air Link clamp

Boost model Double acting 0.5 MPa

model **CLY**



Air link clamp **boost model**  
model CLY40-F

Boost model

model **CLY**□-□ PAT.

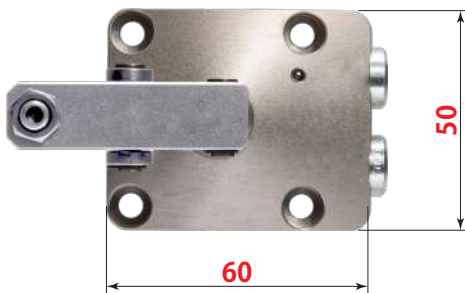


New boosting mechanism makes cylinder force 2.5 times larger.

Air link clamp boost model

**CLY32**

Cylinder force : 1070 N  
(Air pressure 0.5MPa)



Less space

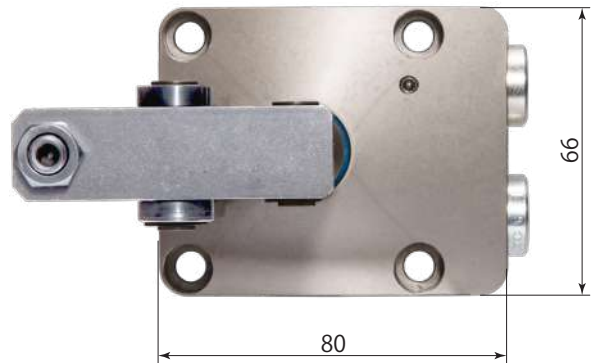
Flange area approx. 57%



Air link clamp

**CLX50**

Cylinder force : 982 N  
(Air pressure 0.5MPa)



Height from mounting surface approx. 80%



Clamp

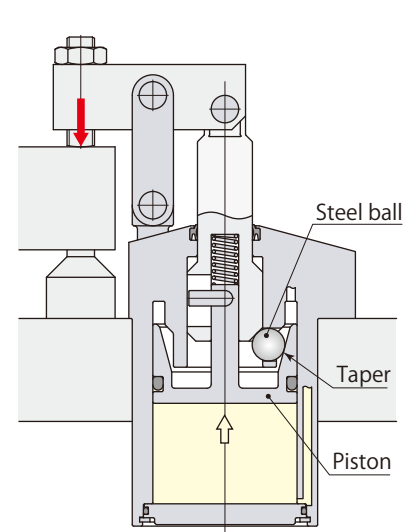
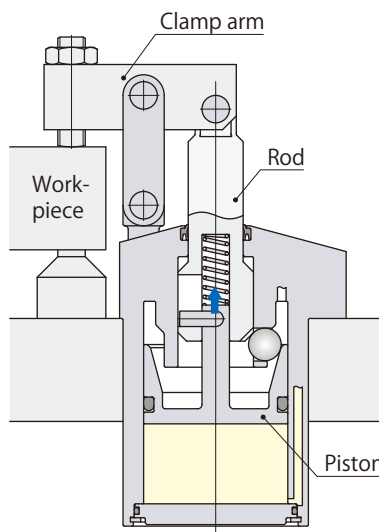
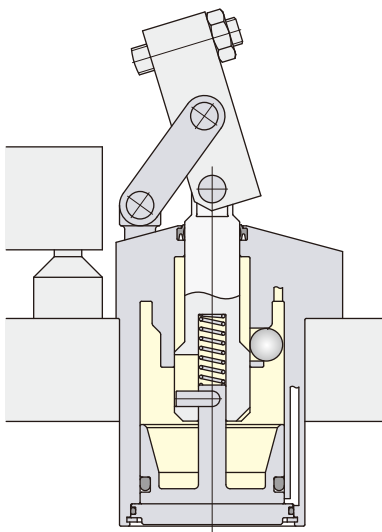
① Unclamp



② Clamping position



③ Clamping force boosted



● The rod and piston go up at the same time until a clamp arm contacts to workpiece. Designing the circuit to generate the back pressure on unclamp chamber of the cylinder ensures smoother operation.

● Only a piston goes up, the clamping force is boosted up by the taper and steel balls.

Unclamp

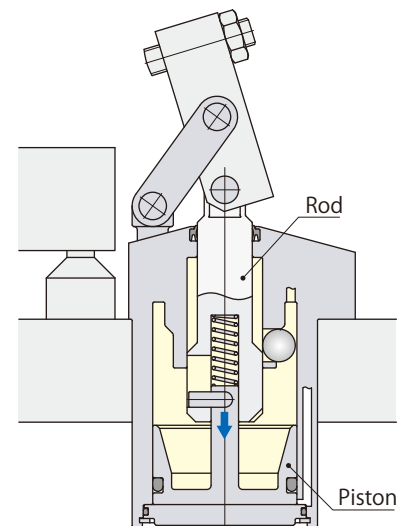
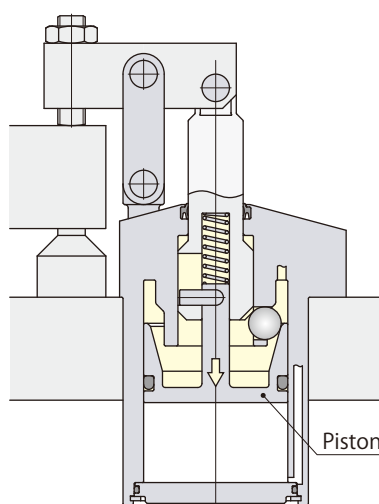
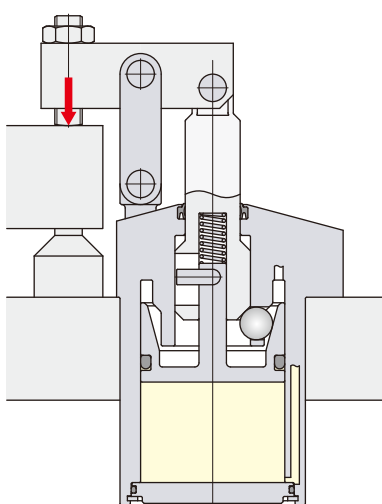
① Clamping force boosted



② Taper-lock released






③ Unclamp



● Only a piston goes down, Taper-lock is released firmly.

● The rod and piston go down at the same time. The rod may go down too far if no air pressure remains in the unclamping side. Keep supplying air as much as possible when the clamp is in unclamped condition.

Specifications

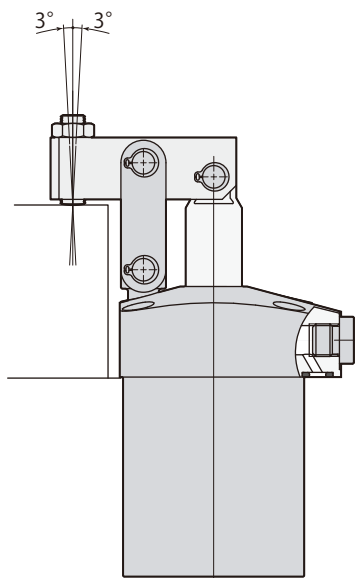
Size	Clamp arm mounting direction
32	<b>L</b> : Left side 
40	— <b>F</b> : Front side 
50	
63	<b>R</b> : Right side 

 indicates made to order.

Model		CLY32	CLY40	CLY50	CLY63	
Cylinder force (air pressure 0.5MPa)	N	1070	1600	2400	3590	
Boost range angle*1		±3.5°				
Cylinder inner diameter	mm	36	44	54	66	
Rod diameter	mm	14	16	20	25	
Effective area (clamp)	cm <sup>2</sup>	10.2	15.2	22.9	34.2	
Rod clamp stroke*2	mm	21.0	23.0	26.5	31.5	
Safety stroke	mm	1.5	1.6	1.9	2.3	
Cylinder capacity	Clamp	cm <sup>3</sup>	32.6	53.5	93.9	165.2
	Unclamp	cm <sup>3</sup>	29.1	48.6	84.9	148.6
Mass	kg	0.53	0.75	1.28	2.12	
Recommended tightening torque of mounting screws*3	N·m	4.0	4.0	5.9	5.9	

- Pressure range:0.1–0.5 MPa    ● Proof pressure:0.75 MPa    ● Operating temperature:0–70 °C
- Fluid used:Air\*4    ● Oil supply:Not required
- Seals are resistant to chlorine-based cutting fluid. (not thermal resistant specification)

\*1:Cylinder cannot exert the rated value in case the angle is out of range.  
 \*2:Indicates a distance from unclamping position to clamping point.    \*3:ISO R898 class 12.9  
 \*4:Supply the dry and filtered air. Particulate size 5 μm or less is recommended.



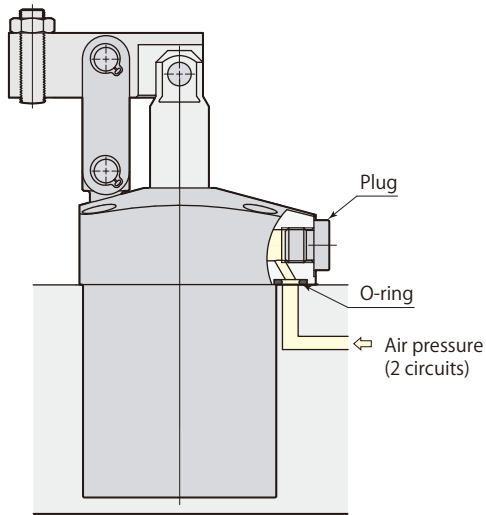
Clamping point

When clamping the workpiece, the clamp arm should be situated like the sketch as shown left. (Clamping point) Please avoid any non-axial force such as the bending moment toward the piston rod. (Allowable angle ±3°)

Manifold piping and G port piping are available.

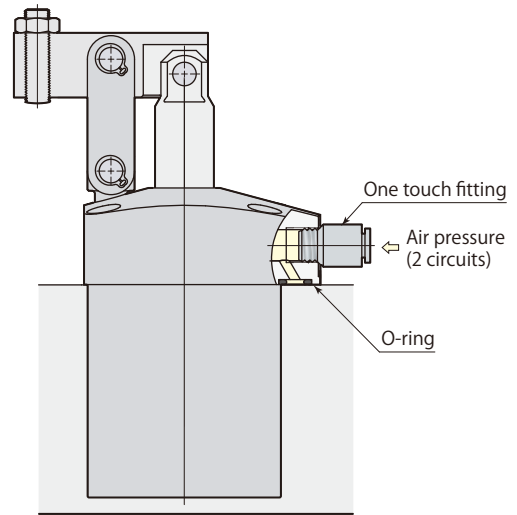
Manifold piping

When choosing manifold piping, a speed controller model VCL is mountable on the G ports of the clamp.



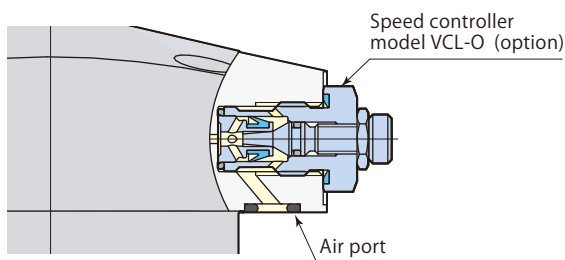
G port piping

When choosing G port piping, remove plugs. (O-ring must be used.) The one touch fitting or the speed controller with one touch fitting should be mounted when choosing G port piping.

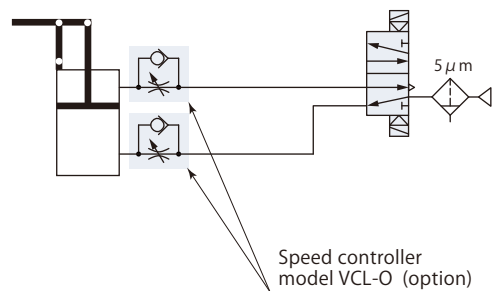


Speed controller model VCL-O

Page →118



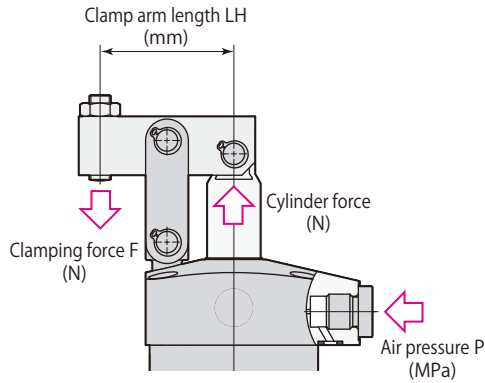
Pneumatic circuit diagram



The meter-out control is recommended for speed controller.



Performance diagram



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

Clamping force calculation formula

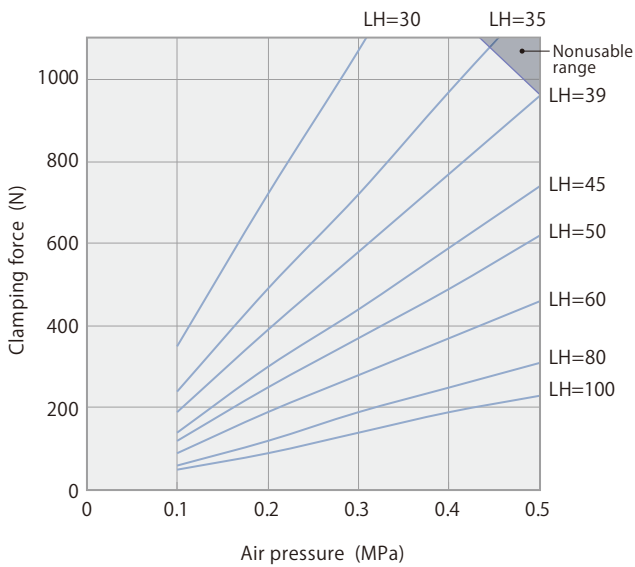
$$F = \text{Coefficient 1} \times P \times 1000 / (\text{LH} - \text{Coefficient 2})$$

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

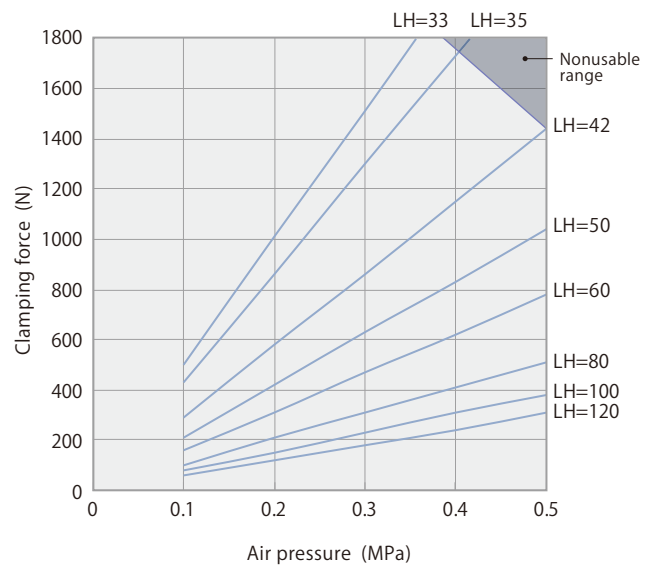
CLY50 with clamp arm length (LH) 50 mm at air pressure of 0.5 MPa, Clamping force F is calculated by  $108.23 \times 0.5 \times 1000 / (50 - 25.0) = 2160 \text{ N}$

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

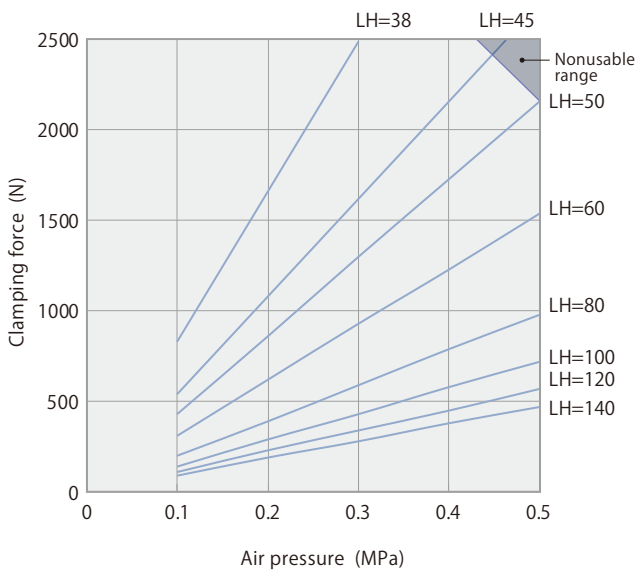
model CLY32



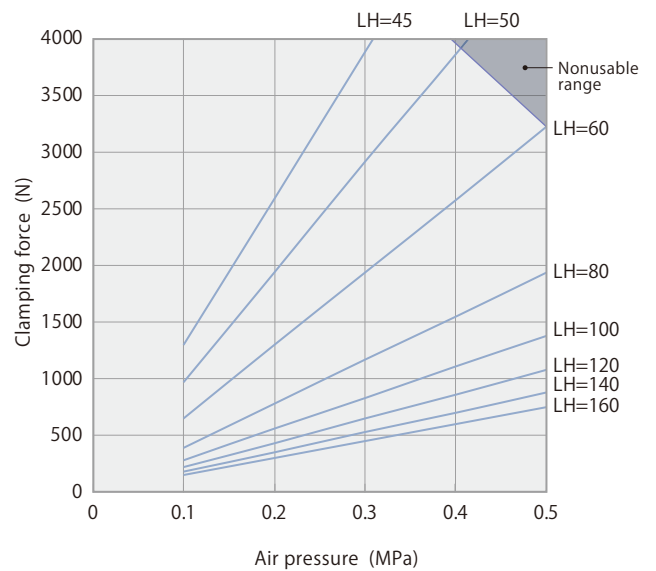
model CLY40



model CLY50



model CLY63



Performance table

**model CLY32** Clamping force  $F=37.52 \times P \times 1000 / (LH-19.5)$

Air pressure MPa	Cylinder force N	Clamping force N								Min. arm length Min. LH mm
		Clamp arm length LH mm								
		30	35	39	45	50	60	80	100	
0.5	1070			960	740	620	460	310	230	39
0.4	860		970	770	590	490	370	250	190	33
0.3	640	1070	720	580	440	370	280	190	140	28
0.2	430	720	490	390	300	250	190	120	90	26
0.1	210	350	240	190	140	120	90	60	50	26

■ indicates nonusable range

**model CLY40** Clamping force  $F=60.36 \times P \times 1000 / (LH-21.0)$

Air pressure MPa	Cylinder force N	Clamping force N								Min. arm length Min. LH mm
		Clamp arm length LH mm								
		33	35	42	50	60	80	100	120	
0.5	1600			1440	1040	780	510	380	310	42
0.4	1280		1730	1150	830	620	410	310	240	35
0.3	960	1510	1300	860	630	470	310	230	180	30
0.2	640	1010	860	580	420	310	210	150	120	29
0.1	320	500	430	290	210	160	100	80	60	29

■ indicates nonusable range

**model CLY50** Clamping force  $F=108.23 \times P \times 1000 / (LH-25.0)$

Air pressure MPa	Cylinder force N	Clamping force N								Min. arm length Min. LH mm
		Clamp arm length LH mm								
		38	45	50	60	80	100	120	140	
0.5	2400			2160	1540	980	720	570	470	50
0.4	1920		2160	1730	1230	790	580	450	380	42
0.3	1440	2490	1620	1300	930	590	430	340	280	36
0.2	960	1660	1080	860	620	390	290	230	190	34
0.1	480	830	540	430	310	200	140	110	90	34

■ indicates nonusable range

**model CLY63** Clamping force  $F=193.97 \times P \times 1000 / (LH-30.0)$

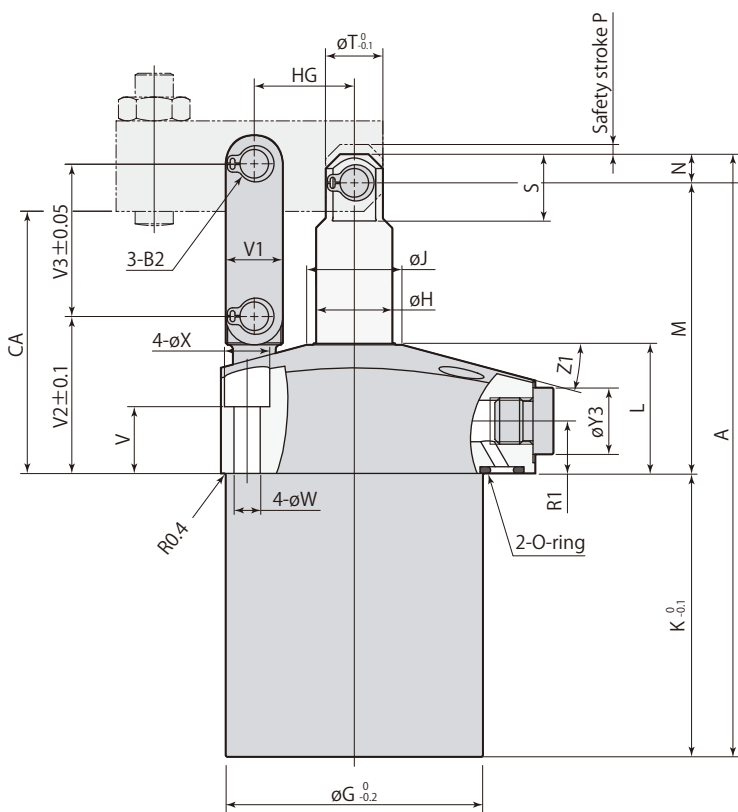
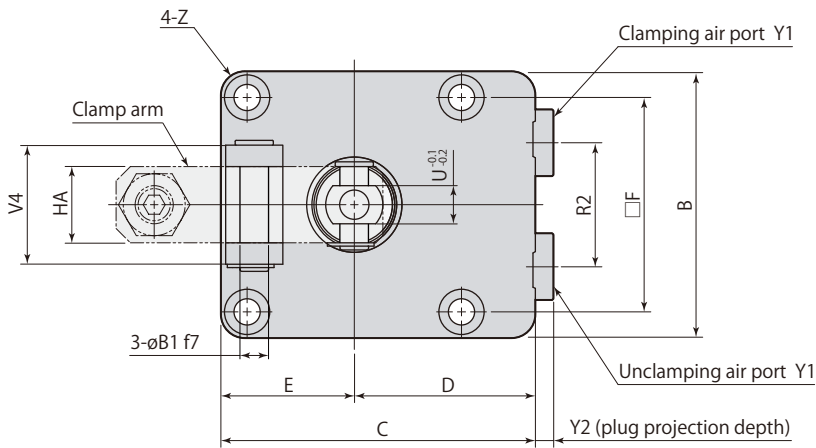
Air pressure MPa	Cylinder force N	Clamping force N								Min. arm length Min. LH mm
		Clamp arm length LH mm								
		45	50	60	80	100	120	140	160	
0.5	3590			3230	1940	1380	1080	880	750	60
0.4	2870		3870	2580	1550	1110	860	700	600	50
0.3	2160	3890	2920	1940	1170	830	650	530	450	43
0.2	1440	2590	1940	1300	780	560	430	350	300	40
0.1	720	1300	970	650	390	280	220	180	150	40

■ indicates nonusable range

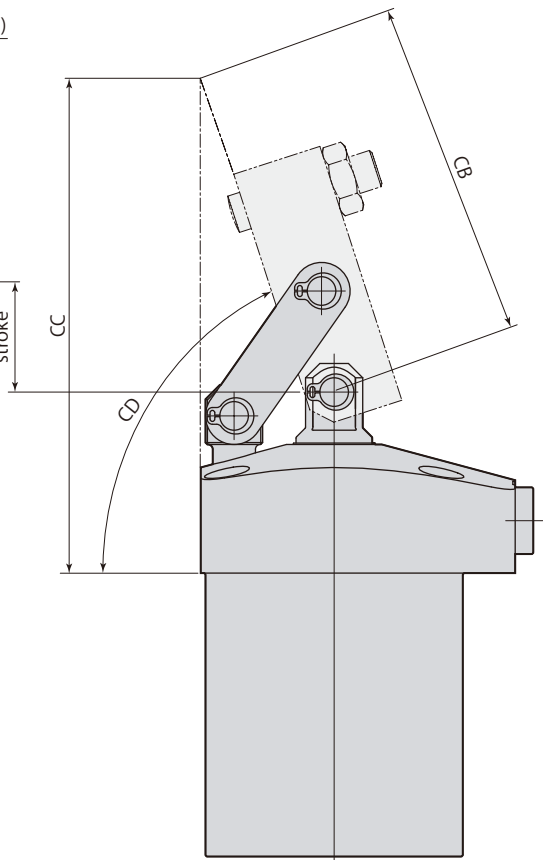
Air link clamp

CLY Boost model

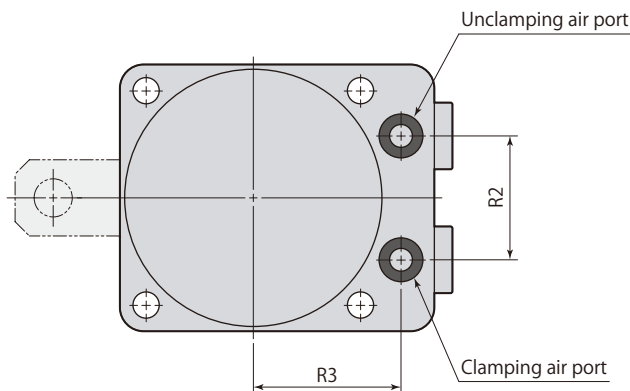
Dimensions



Clamp

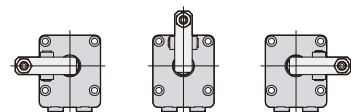


Unclamp



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

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



● Clamp arm and mounting screws are not included.



<b>CLY</b> □-□	<b>Air link clamp Boost model</b>			<b>air</b> Double acting
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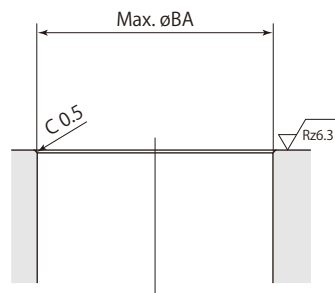
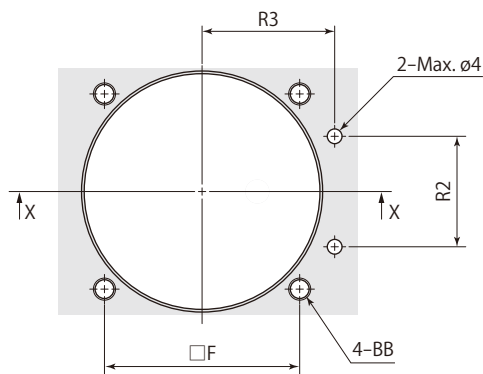
Model	CLY32-□	CLY40-□	CLY50-□	CLY63-□
A	115	126.5	146.5	173
B	50	56	66	78
C	60	66	80	91
D	35	38	47	52
E	25	28	33	39
F	39	45	53	65
øG	46	54	64	77
øH	14	16	20	25
øJ	18	20	24	30
K	53	59.5	67	84.5
L	27	27	32	32
M	57	61	71.5	78.5
N	5	6	8	10
P	1.5	1.6	1.9	2.3
R1	11	11	12.5	12.5
R2	20	26	30	40
R3	28	31	36	41
S	11.5	14	17.5	21.5
øT	11	12	16	21
U (width across flats)	7	8	11	13
V	14	14	17	17
V1	10	12	16	18
V2	31.5	33	38.5	39.5
V3	28.5	32	38	44
V4	20	25	28	34
øW	5.5	5.5	6.8	6.8
øX	9.5	9.5	11	11
Y1	G1/8	G1/8	G1/4	G1/4
Y2	3.8	3.8	4.8	4.8
øY3	14	14	19	19
Z	R5	R5	R6	R6
Z1	15°	15°	13°	13°
øB1	5 <sup>-0.010</sup> <sub>-0.022</sub>	6 <sup>-0.010</sup> <sub>-0.022</sub>	8 <sup>-0.013</sup> <sub>-0.028</sub>	10 <sup>-0.013</sup> <sub>-0.028</sub>
B2 (snap ring)*1	STW-5	STW-6	STW-8	STW-10
CA	52	55	63.5	69.5
CB	59.1	72.5	73.3	82.4
CC	89.7	105.2	110.9	120.2
CD	About 70°	About 72°	About 70°	About 68°
HA	14	16	19	22
HG	19.5	21	25	30
O-ring (FKM-90)	P6	P6	P6	P6
Speed controller (Meter-out)*2	VCL01-O	VCL01-O	VCL02-O	VCL02-O

\*1: Snap ring is made by Ochiai Corporation.

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

● Refer to **page →118** for the details of speed controller.

Mounting details



X-X

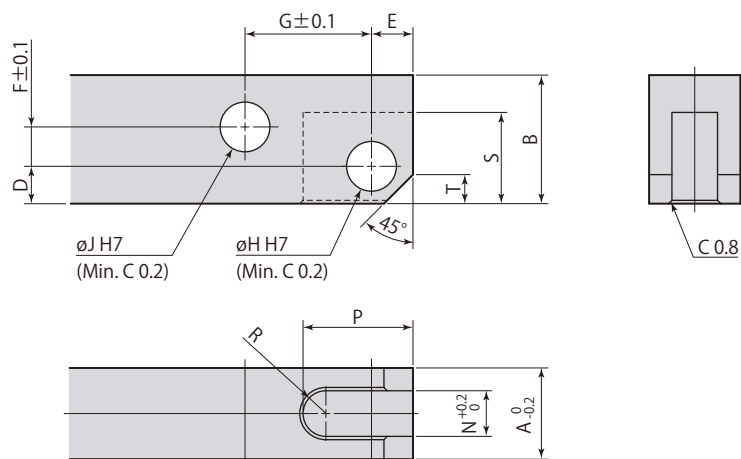
Rz: ISO4287(1997)

Model	CLY32-□	CLY40-□	CLY50-□	CLY63-□
F	39	45	53	65
R2	20	26	30	40
R3	28	31	36	41
øBA	46.5	54.5	64.5	77.5
BB	M5	M5	M6	M6

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	mm			
	CLY32-□	CLY40-□	CLY50-□	CLY63-□
A	14	16	19	22
B	16	19	22	25
D	5	6	8	9
E	5	6	8	10
F	3	4	5	5
G	19.5	21	25	30
$\varnothing H$	$5^{+0.012}_0$	$6^{+0.012}_0$	$8^{+0.015}_0$	$10^{+0.015}_0$
$\varnothing J$	$5^{+0.012}_0$	$6^{+0.012}_0$	$8^{+0.015}_0$	$10^{+0.015}_0$
N	7	8	11	13
P	16	20	22	27
R	R3.5	R4	R5.5	R6.5
S	12	15	18	22
T	3	4	5	6

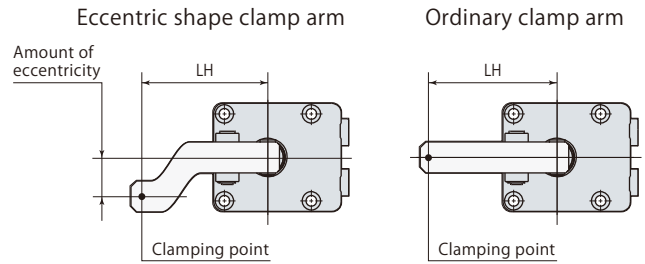
● When mounting the clamp arm, use included pins and snap rings.

Clamp arm allowable eccentricity

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



Air link clamp

CLY Boost model

**model CLY32**  indicates nonusable range

Air pressure MPa	Allowable eccentricity mm							
	Clamp arm length LH mm							
	30	35	39	45	50	60	80	100
0.5					3	7	15	24
0.4			1	4	7	13	24	36
0.3		2	6	11	15	23	40	56
0.2	3	10	15	23	30	43	60	60
0.1	19	33	39	45	50	60	60	60

**model CLY40**  indicates nonusable range

Air pressure MPa	Allowable eccentricity mm							
	Clamp arm length LH mm							
	33	35	42	50	60	80	100	120
0.5					3	11	19	27
0.4				3	8	19	30	41
0.3			3	10	17	33	49	64
0.2	2	5	13	23	36	61	80	80
0.1	19	24	42	50	60	80	80	80

**model CLY50**  indicates nonusable range

Air pressure MPa	Allowable eccentricity mm							
	Clamp arm length LH mm							
	38	45	50	60	80	100	120	140
0.5				6	18	29	41	53
0.4		1	5	13	28	44	59	75
0.3		8	13	24	46	68	90	100
0.2	8	20	29	47	80	100	100	↑
0.1	33	45	50	60	80	100	100	100

**model CLY63**  indicates nonusable range

Air pressure MPa	Allowable eccentricity mm							
	Clamp arm length LH mm							
	45	50	60	80	100	120	140	160
0.5				12	24	36	48	60
0.4			6	22	38	54	70	86
0.3		5	16	39	61	84	106	120
0.2	9	18	36	71	100	120	120	↑
0.1	39	50	60	80	100	120	120	120