Pascal

Sensing air Link clamp

Boost model Double acting 0.5 MPa

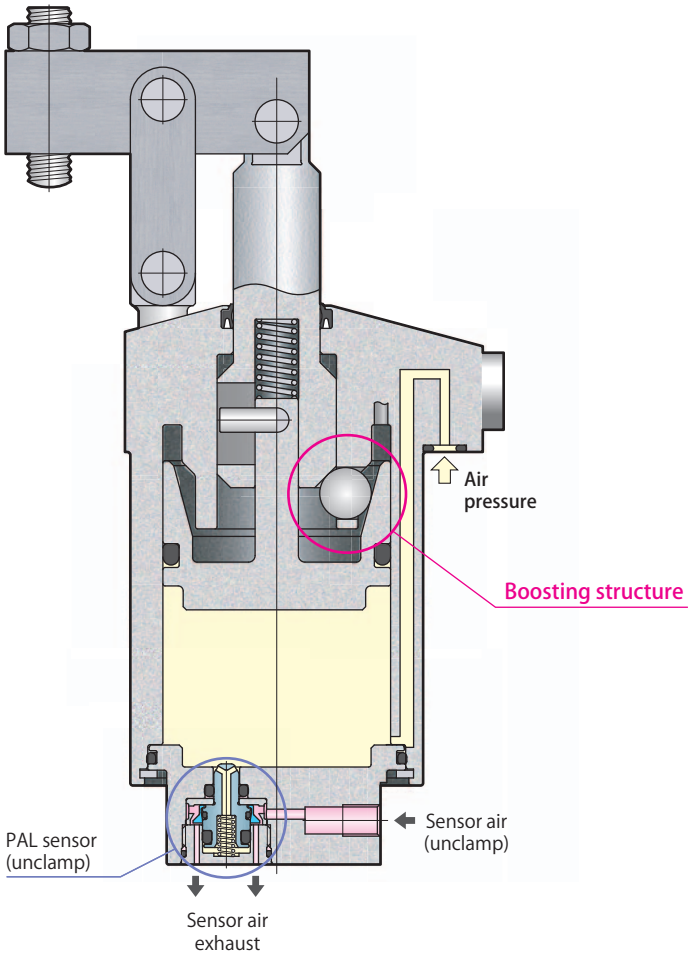
Unclamp sensor model model CLY-B

Unclamp sensor model
model CLY32-FB

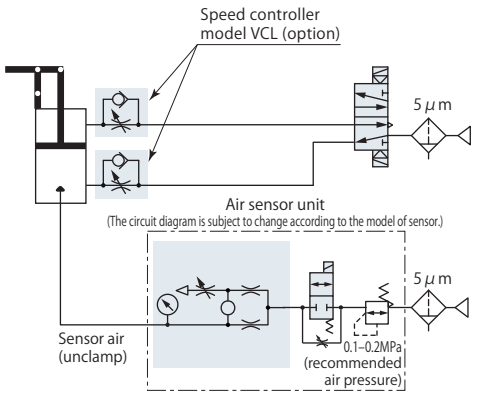
Unclamp sensor model B

model CLY□-□B PAT.

Automation of loading with unclamp detection.



Pneumatic circuit diagram



Specifications

Size: 32 / 40 / 50 / 63

Clamp arm mounting direction

CLY — L : Left side 

F : Front side 

R : Right side 

B : Unclamp sensor model

indicates made to order.

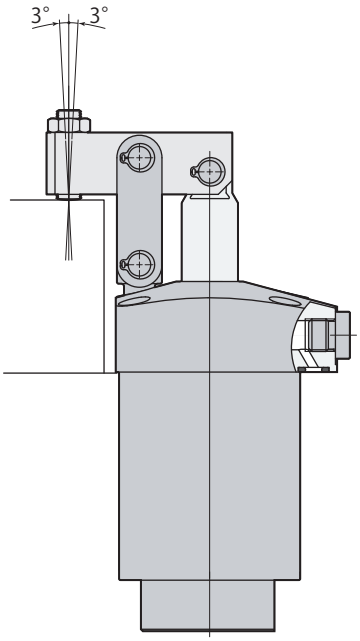
Model			CLY32-□B	CLY40-□B	CLY50-□B	CLY63-□B
Cylinder force (Air pressure0.5MPa)		N	1070	1600	2400	3590
Boost range angle*1			±3.5°			
Cylinder inner diameter		mm	36	44	54	66
Rod diameter		mm	14	16	20	25
Effective area (clamp)		cm^2	10.2	15.2	22.9	34.2
Rod clamp stroke*2		mm	21.0	23.0	26.5	31.5
Stroke margin		mm	1.5	1.6	1.9	2.3
Cylinder capacity	Clamp	cm^3	32.6	53.5	93.9	165.2
	unclamp	cm^3	29.1	48.6	84.9	148.6
Mass		kg	0.56	0.78	1.32	2.16
Recommended tightening torque of mounting screws*3		N·m	4.0	4.0	5.9	5.9

● Air pressure range：0.1～0.5 MPa ● Proof pressure：0.75 MPa ● Operating temperature：0～70 ℃ ● Fluid used：Air (∗4)
● Seals are resistant to chlorine-based cutting fluid.

∗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

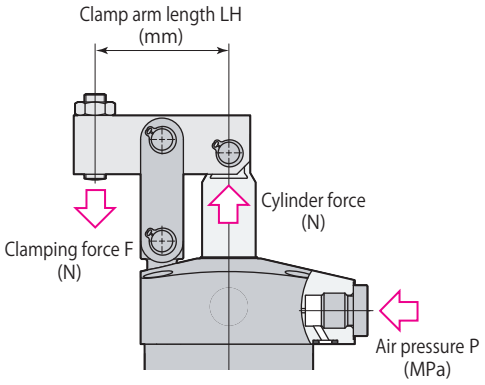
∗4：Supply the dry and filtered air. Particulate size 5 μm or less is recommended.



Clamping point

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

Performance diagram



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

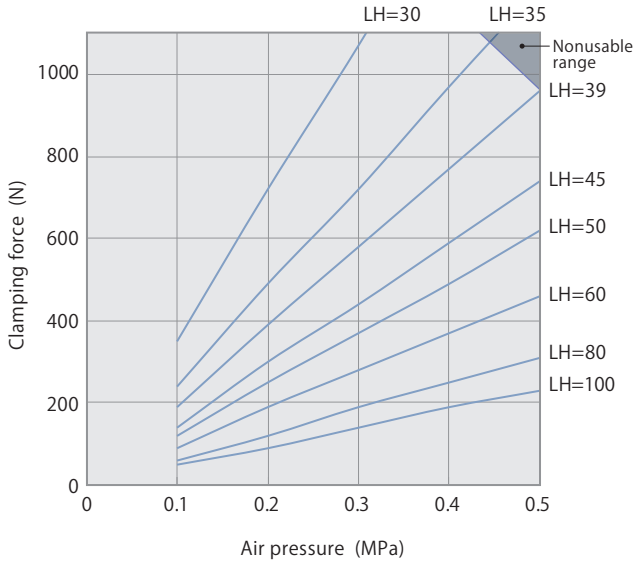
Clamping force calculation formula

F = Coefficient 1 × P × 1000/ (LH - Coefficient 2)
F : Clamping force P : Air pressure LH : Clamp arm length

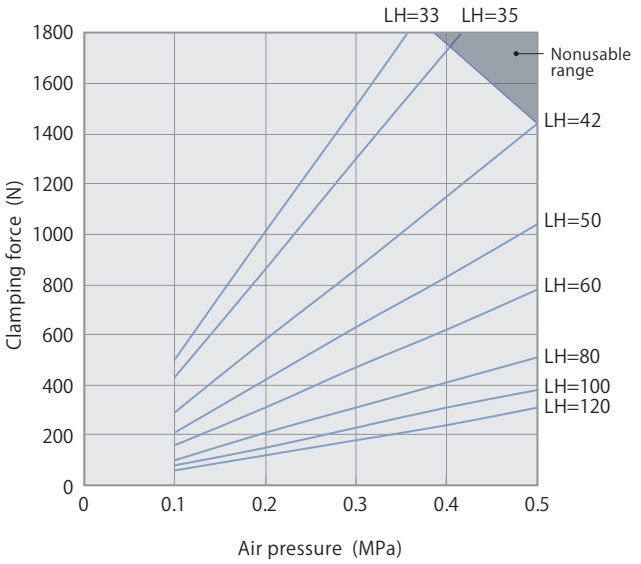
CLY50 with clamp arm length (LH) 50 mm at air pressure of 0.5 MPa, Clamping force F is calculated by
108.23 × 0.5 × 1000/(50-25.0) = 2160 N

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

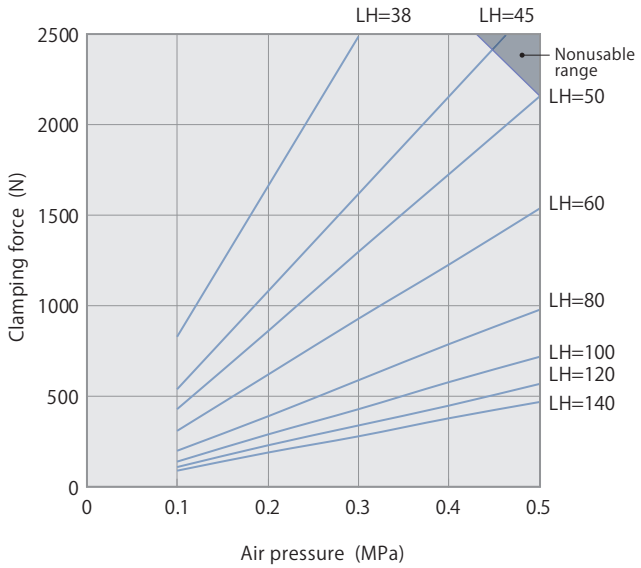
model CLY32-□B



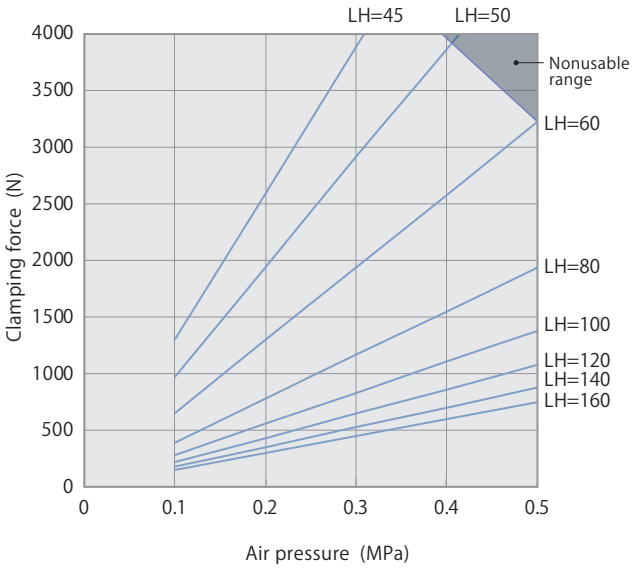
model CLY40-□B



model CLY50-□B



model CLY63-□B



Performance table

model CLY32-□B Clamping force F=37.52×P×1000/(LH-19.5)

Air pressure MPa	Cylinder force N	Clamping force N — Clamp arm length LH mm								Min. arm length Min. 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-□B Clamping force F=60.36×P×1000/(LH-21.0)

Air pressure MPa	Cylinder force N	Clamping force N — Clamp arm length LH mm								Min. arm length Min. 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-□B Clamping force F=108.23×P×1000/(LH-25.0)

Air pressure MPa	Cylinder force N	Clamping force N — Clamp arm length LH mm								Min. arm length Min. 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

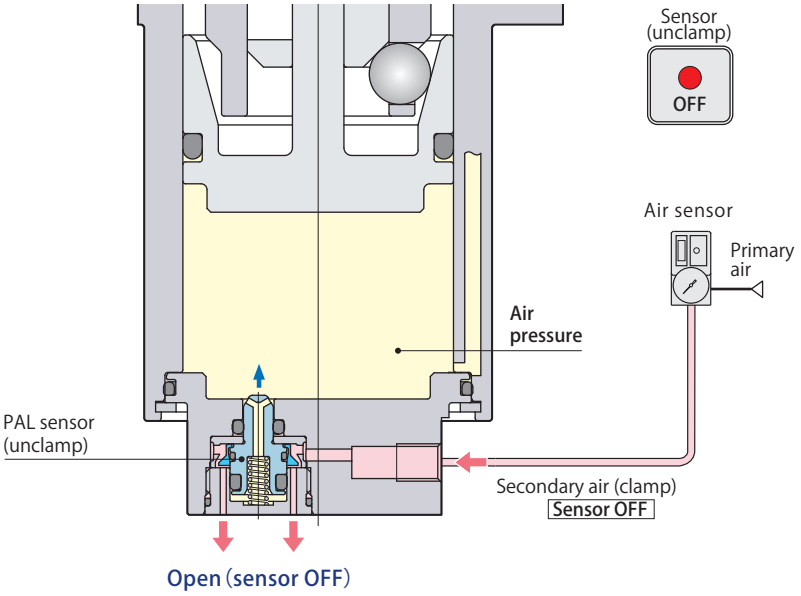
indicates nonusable range

model CLY63-□B Clamping force F=193.97×P×1000/(LH-30.0)

Air pressure MPa	Cylinder force N	Clamping force N — Clamp arm length LH mm								Min. arm length Min. 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

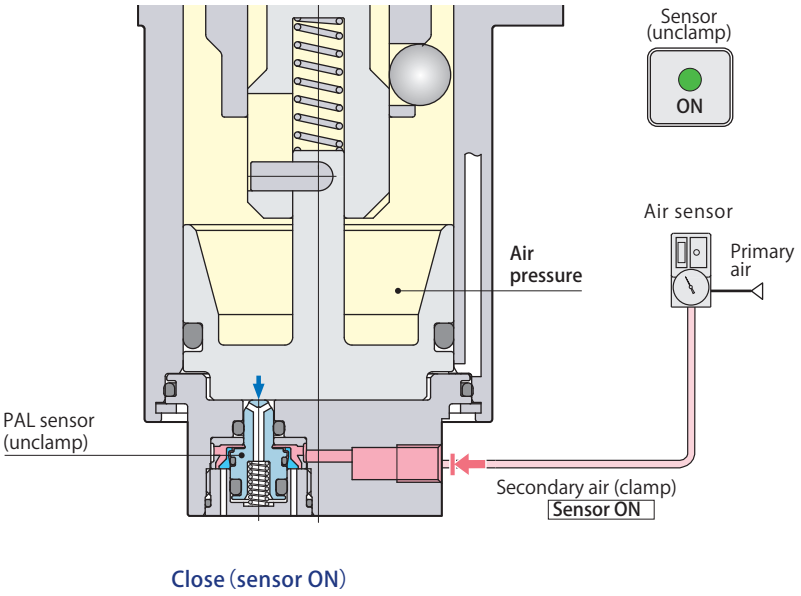
indicates nonusable range

In the middle of clamp stroke



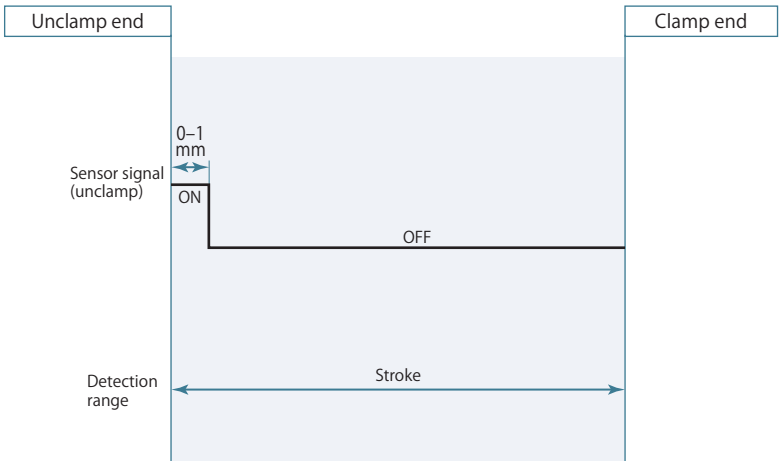
Sensor signal (unclamp)	OFF	In the middle of clamp stroke

Unclamp detection



Sensor signal (unclamp)	ON	Unclamp

Air sensor triggering point



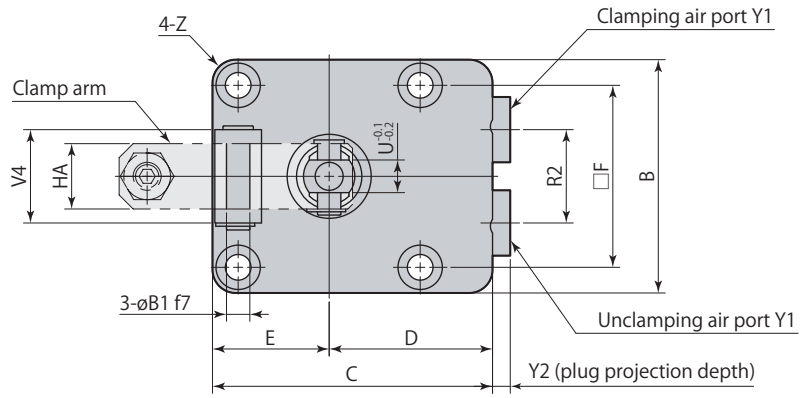
- Refer to the sensor supplier's instruction manual for the details of setting.
- Sensing performance such as detectable time and pressure differs depending on the supplier and model number of the sensor. Select the right model referring to sensor's application and characteristics.

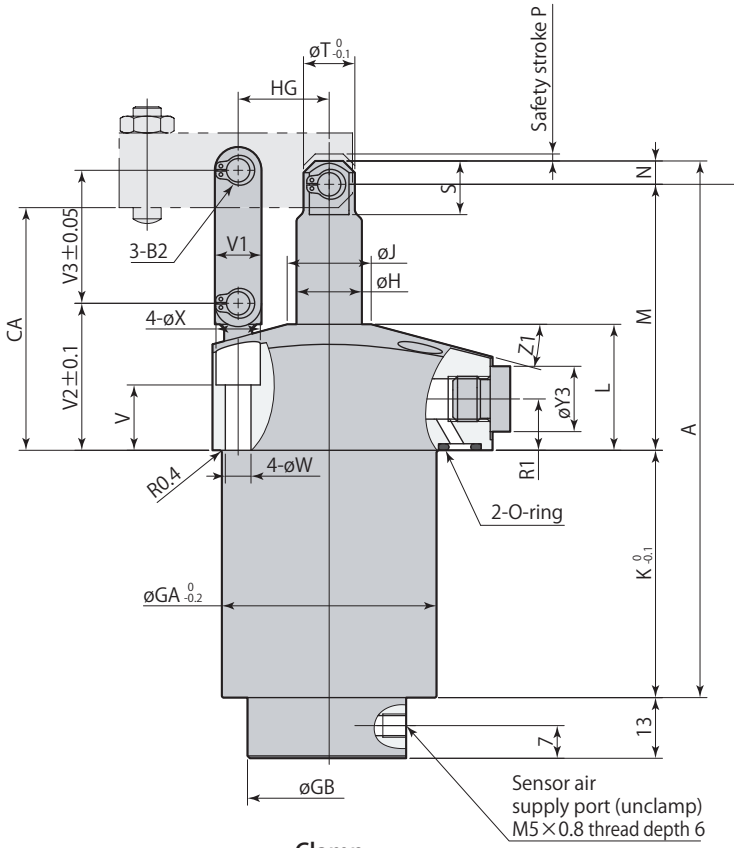
Air sensor unit recommended condition of use

Supplier and model	ISA3-F/G series manufactured by SMC
	GPS2-05, GPS3-E series manufactured by CKD
Air supply pressure	0.1–0.2 MPa
Inner diameter of piping	ø4 mm (ISA3-F：ø2.5 mm)
Overall piping length	5 m or less

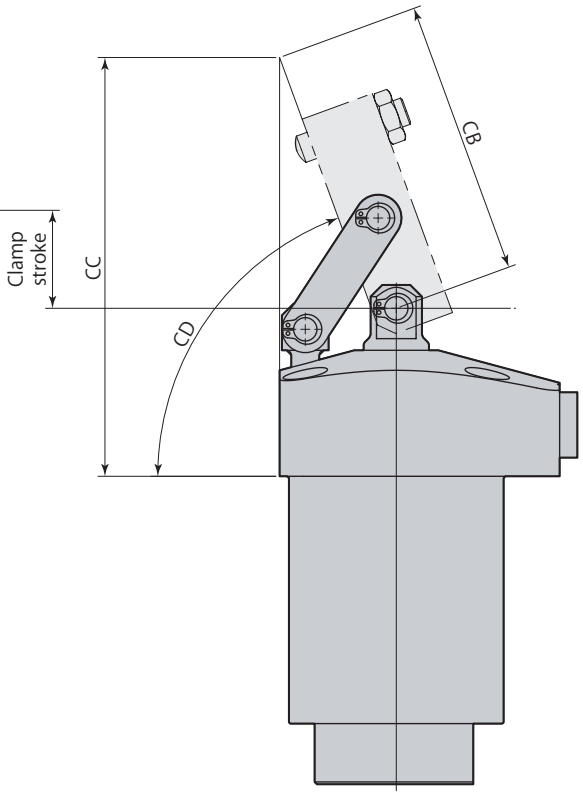
- Supply the dry and filtered air. Particulate size 5 μm or less is recommended.
- Use a solenoid valve with needle for air sensor unit and control it supplying air all the time in order to eliminate intrusion of chips or coolant.
- There is a case that air sensing cannot be successfully made as designed when it is used out of the above usage. Contact Technical service center for more details.

Dimensions

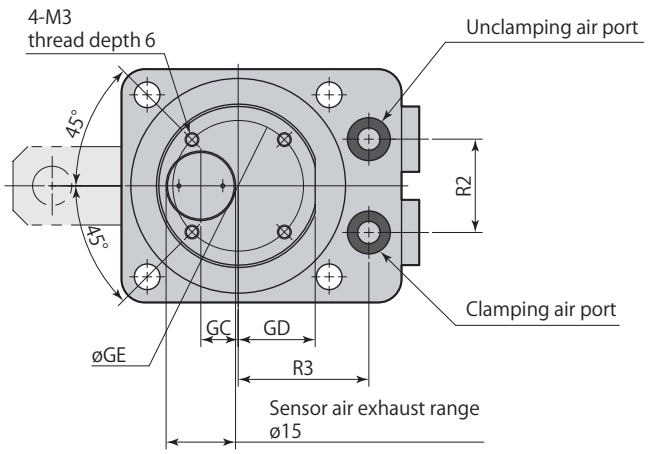




Clamp

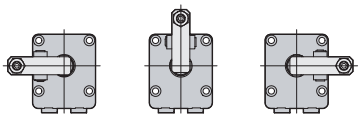


Unclamp



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

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



- Clamp arm and mounting screws are not included.
- The direction of the sensor air supply port can be changed. (Rotate slowly with no pressure.)

CLY□-□B	Air link clamp Boost model　Unclamp sensor model	air Double acting

mm

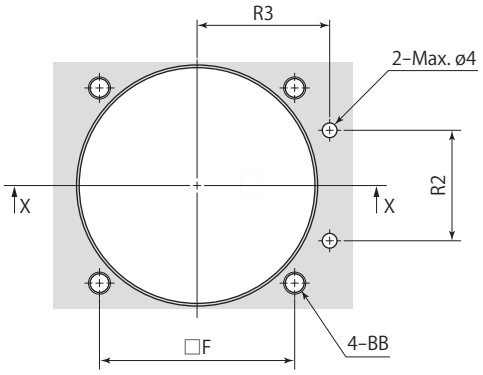
Model	CLY32-□B	CLY40-□B	CLY50-□B	CLY63-□B
A	115	126.5	146.5	173
B	50	56	66	78
C	60	66	80	91
D	35	38	47	52
E	25	28	33	39
F	39	45	53	65
øGA	46	54	64	77
øGB	35	35	39	39
GC	8	8	10	10
GD	16.5	16.5	18.5	18.5
øGE	28	28	32	32
øH	14	16	20	25
øJ	18	20	24	30
K	53	59.5	67	84.5
L	27	27	32	32
M	57	61	71.5	78.5
N	5	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	$5^{-0.010}_{-0.022}$	$6^{-0.010}_{-0.022}$	$8^{-0.013}_{-0.028}$	$10^{-0.013}_{-0.028}$
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	約70°	約72°	約70°	約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

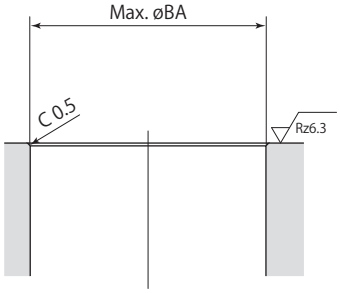
∗1：Snap ring is made by Ochiai Corporation.

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

● Refer to **page →13** for the details of speed controller.

Mounting details





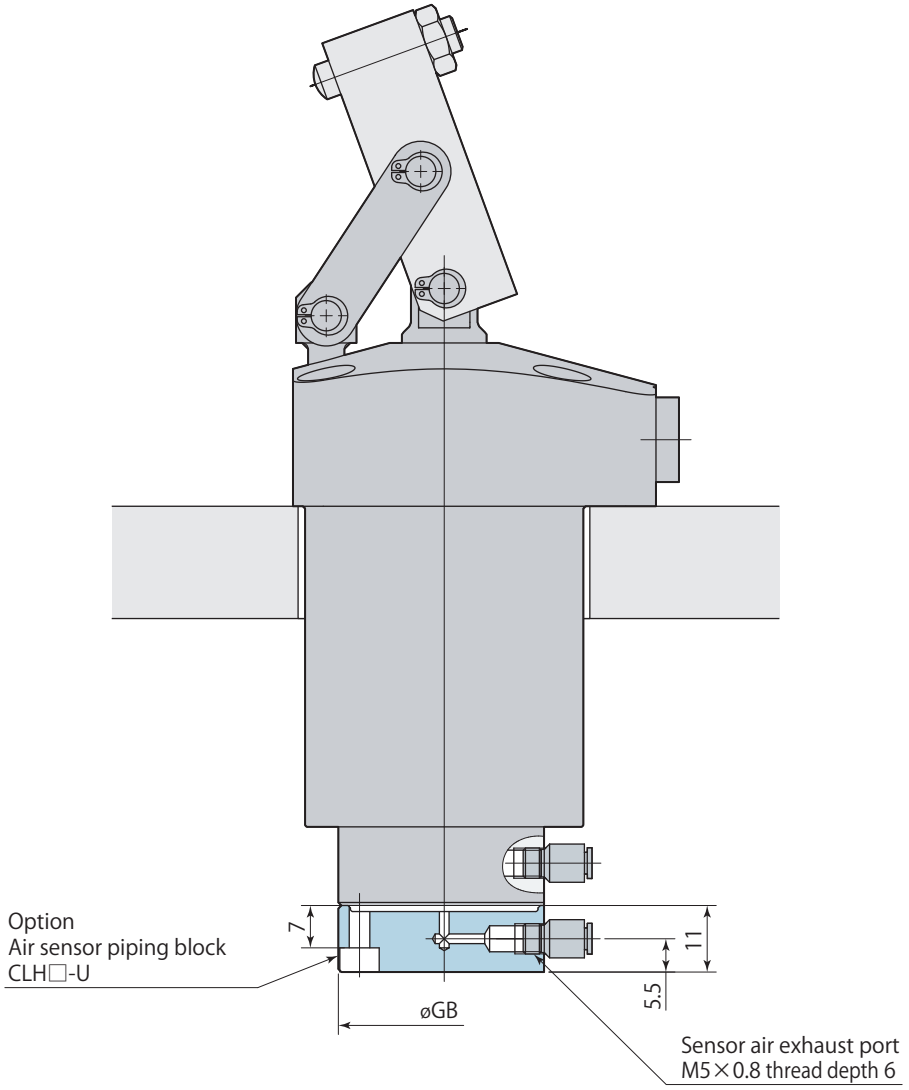
X-X

mm

Model	CLY32-□B	CLY40-□B	CLY50-□B	CLY63-□B
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

Caution for piping

Refer to the diagram shown below for the sensor air exhaust port.



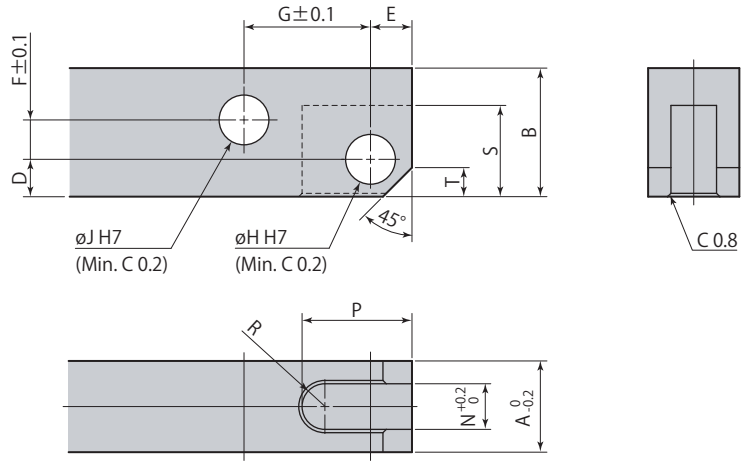
- Use a check valve with cracking pressure of 0.005 MPa or less if there is a risk of metal chips or coolant intrusion. Recommended check valve : AKH or AKB series manufactured by SMC.
- Furnish the piping by means of the pipe flange when mounting in a through hole. The flange is mountable with M3 threads at the bottom of the clamp. Be sure to provide an opening not to cover the exhaust port. See the sketch shown above.
- Piping block CLH□-U is available as an option. Refer to the table below for applicable clamps of the piping block.

Piping block	**CLH32-U**	**CLH50-U**
Clamp model	CLY32-□B	CLY50-□B
	CLY40-□B	CLY63-□B

- Mounting screws are not included.

Clamp arm mounting details

Clamp arm is not included.Manufacture a clamp arm with the dimensions shown in the table below.



Recommended material (recommended air pressure)：S45C (HB167～229)

mm

Model	CLY32-□B	CLY40-□B	CLY50-□B	CLY63-□B
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
øH	$5^{+0.012}_{0}$	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$
øJ	$5^{+0.012}_{0}$	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$
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.

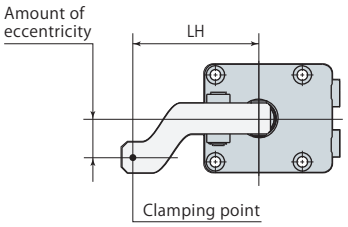
Clamp arm allowable eccentricity

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.

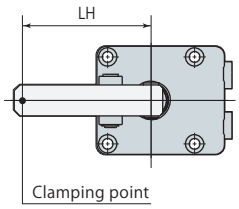
Amount of eccentricity, however, must be within allowable eccentricity shown below.

Using a clamp arm that exceeds allowable eccentricity results in significant eccentric load on link mechanism and piston rod,leading to malfunction.

Eccentric shape clamp arm



Ordinary clamp arm



model CLY32-□B ▒ 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-□B ▒ 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-□B ▒ 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-□B ▒ 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

Specifications

I : Meter-in

Locknut color : Silver

O : Meter-out

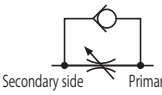
Locknut color : Black

VCL — G port size

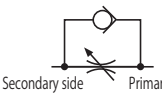
- 01 : G1/8
- 02 : G1/4

Control method

I : Meter-in



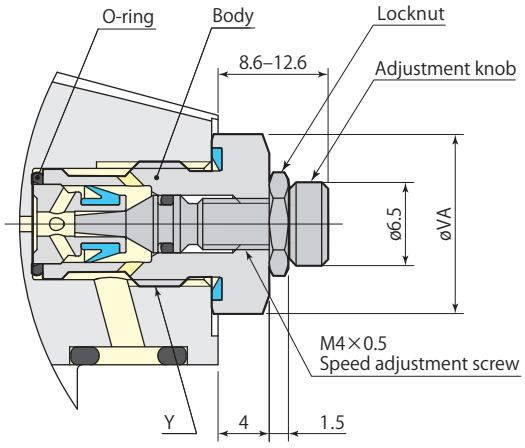
O : Meter-out

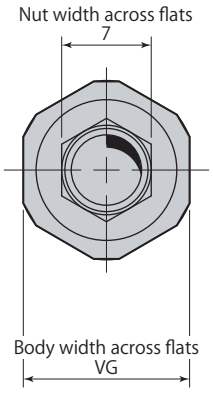


Model		VCL01-I	VCL01-O	VCL02-I	VCL02-O
G port size		G1/8		G1/4	
Orifice area	mm²	2.8		6.2	
Recommended tightening torque	N·m	7		15	
Mass	kg	0.01		0.02	

● Pressure range : 0.1–1.0 MPa ● Proof pressure : 1.5 MPa ● Operating temperature : 0–70 ℃ ● Fluid used : Air*

∗ : Supply the dry and filtered air. Particulate size 5 μm or less is recommended.





mm

Model	VCL01	VCL02
Y	G1/8	G1/4
øVA	14	19
VG	13	17
Adjustment screw number of turns	8 rotations	
O-ring*1	6.0×1.0*2	8.0×1.0*2

∗1 : FKM-90

∗2 : Inner diameter × Thickness

● Use a closed wrench or socket wrench for mounting and dismounting.

● Speed controller can be mounted on air port (G port) when using manifold piping.

● This diagram depicts mounted condition for meter-out (VCL□-O).

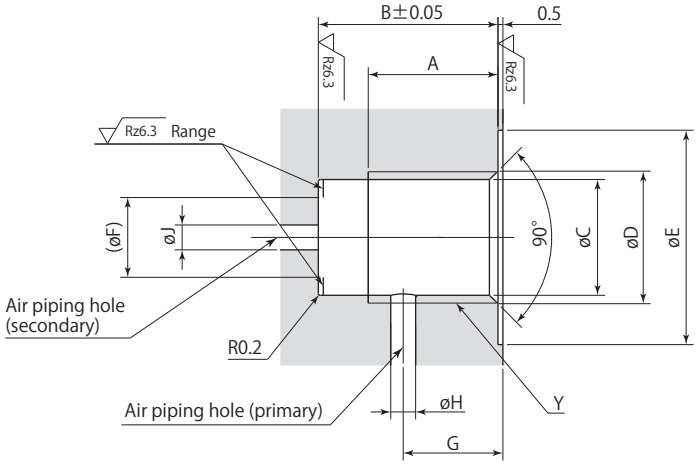
● VCL is shipped with the valve fully open. Adjust the flow rate by loosening the screw after it is tighted up to close the valve. Tighten the locknut after adjustment is completed.

Applicable clamp

Model	VCL01	VCL02
Air swing clamp	CTX32, CTX40 CTY25, CTY32, CTY40	CTX50, CTX63 CTY50, CTY63
Air link clamp	CLX32, CLX40 CLY32, CLY40* CLZ25	CLX50, CLX63 CLY50, CLY63*

∗ : Air link clamp boost model CLY are meter-out only.

Mounting details



mm

Model	VCL01	VCL02
A	9	13
B	14	18
øC	$8.7^{+0.1}_{0}$	$11.6^{+0.1}_{0}$
øD	9.9	13.3
øE	17.5	21.5
øF	6	8
G	8–11	9–12.5
øH	2	3
øJ	2	3
Y	G1/8	G1/4

Rz: ISO4287(1997)

Mounting & dismounting of speed controller

- When mounting or dismounting a speed controller, be sure to set pressure within air circuit to 0 MPa before starting.
- When mounting a speed controller, be sure to tighten it with the recommended tightening torque.

Pascal

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CERTIFICATE OF APPROVAL ISO9001

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