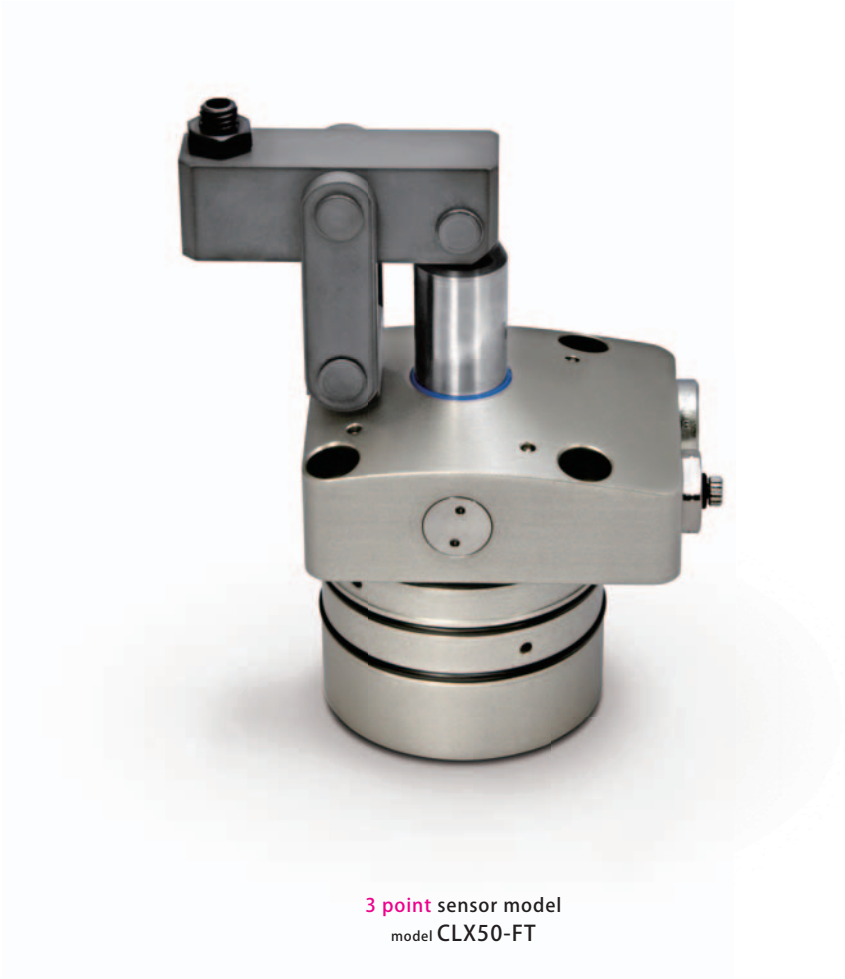
# Sensing air Link clamp

## Double acting 1 MPa

## model CLX-T



3 point sensor model
model CLX50-FT

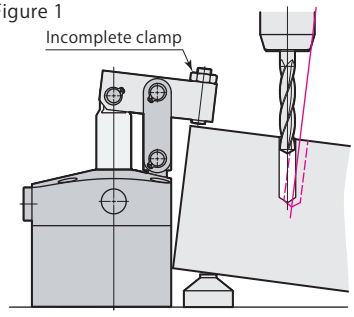
# Sensing air Link clamp model CLX-T

## The extremely small sensing clamp can detect the loading miss and setting miss of a workpiece firmly.

3 point sensor model

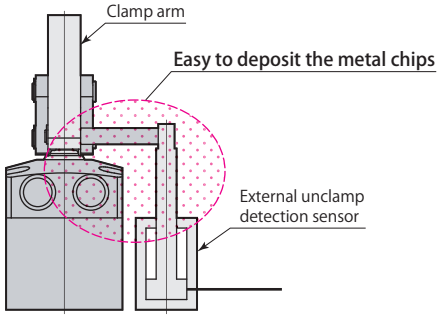
- Sensor model can prevent tool breakage and defective machining due to incomplete clamp. (Figure 1)
- Unclamp PAL sensor moves along with the piston rod and can positively detect unclamping point, thereby enabling a high-speed production line by fully synchronizing operation with workpiece lifters.
- Built-in sensors enable a compact and simple jig.
- Unclamp detection failure due to the metal chips deposit on an independent external detector can be reduced. (Figure 2)

Figure 1




Machining failure due to incomplete clamp

Figure 2



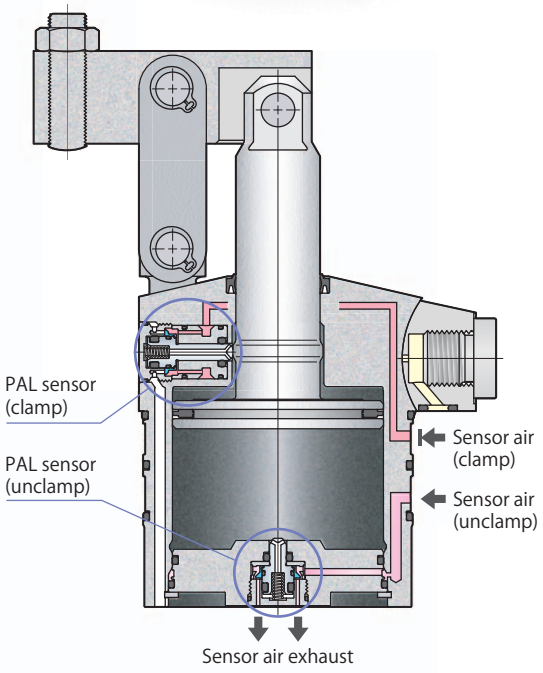
## 3 point sensor model T

Clamp, Unclamp, Over clamp stroke (Incomplete clamp) detection

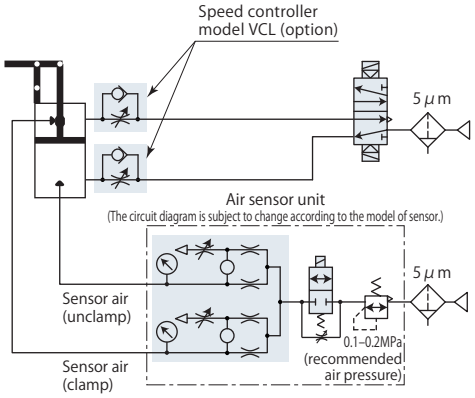
model **CLX□-□T** PAT.

The 3 point sensor model can detect the status of clamp, unclamp and over clamp stroke with just 2 circuits of air.

Refer to **pages** →**68**–**71** for the details.




### Pneumatic circuit diagram



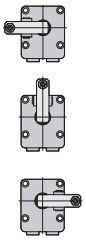


| | |
|---|---|
| Specifications | **page** → **64** |
| Piping | **page** → **65** |
| PAL sensor | **page** → **68** |
| Dimensions | **page** → **72** |
| Mounting details | **page** → **74** |

## Specifications

CLX — Size: 32 / 40 / 50 / 63 — Clamp arm mounting direction:

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



T : 3 point sensor model
Clamp, Unclamp, Over clamp stroke (Incomplete clamp) detection

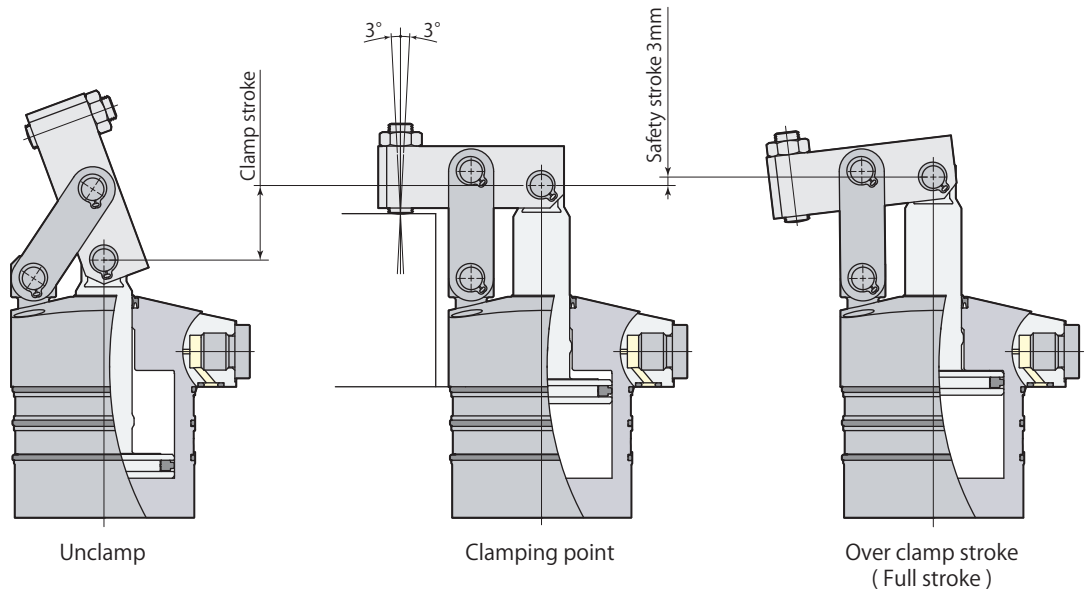
| Model | | | CLX32-□T | CLX40-□T | CLX50-□T | CLX63-□T |
|---|---|---|---|---|---|---|
| Cylinder force (air pressure 0.5MPa) | | N | 400 | 630 | 980 | 1560 |
| Cylinder inner diameter | | mm | 32 | 40 | 50 | 63 |
| Rod diameter | | mm | 14 | 16 | 20 | 25 |
| Effective area (clamp) | | $mm^2$ | 804 | 1257 | 1963 | 3117 |
| Full stroke | | mm | 24 | 26 | 29.5 | 34.5 |
| Clamp stroke*1 | | mm | 21 | 23 | 26.5 | 31.5 |
| Safety stroke | | mm | 3 | 3 | 3 | 3 |
| Cylinder capacity | Clamp | $cm^3$ | 19.3 | 32.7 | 57.9 | 107.5 |
| | Unclamp | $cm^3$ | 15.6 | 27.4 | 48.7 | 90.6 |
| Mass | | kg | 0.44 | 0.59 | 0.99 | 1.54 |
| Recommended tightening torque of mounting screws*2 | | N·m | 4.0 | 4.0 | 5.9 | 5.9 |

- Pressure range : 0.1–1 MPa
- Proof pressure : 1.5 MPa
- Operating temperature : 0–70 ℃
- Fluid used : Air*3
- Oil supply : Not required
- Seals are resistant to chlorine-based cutting fluid. (not thermal resistant specification)

*1 : Indicates a distance from unclamping position to clamping point.

*2 : ISO R898 class 12.9 *3 : Supply the dry and filtered air. Particulate size 5 μm or less is recommended.

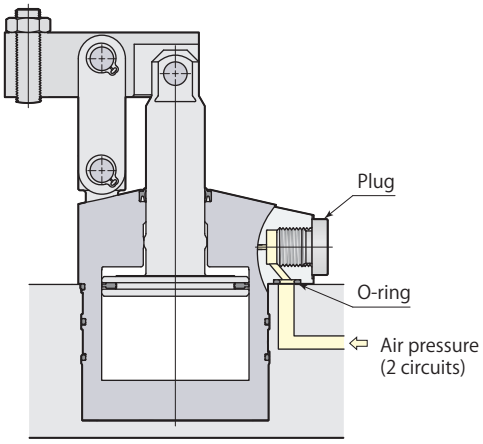
When clamping the workpiece, the clamp arm should be situated like the sketch as shown below. (Clamping point)
Please avoid any non-axial force such as the bending moment toward the piston rod. (Allowable angle ±3°)



## Manifold piping and G port piping are available.

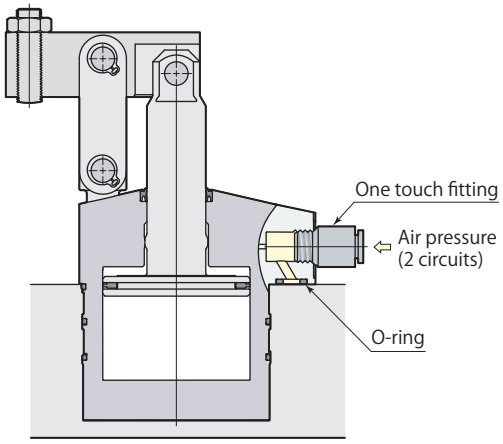
### Manifold piping

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

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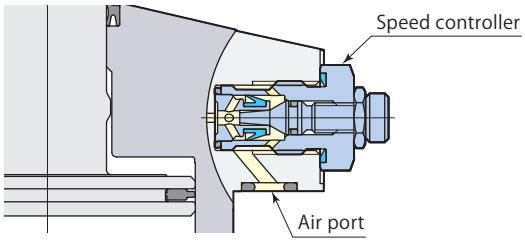
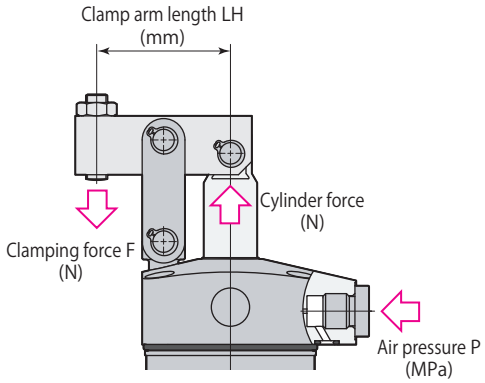



## Performance diagram



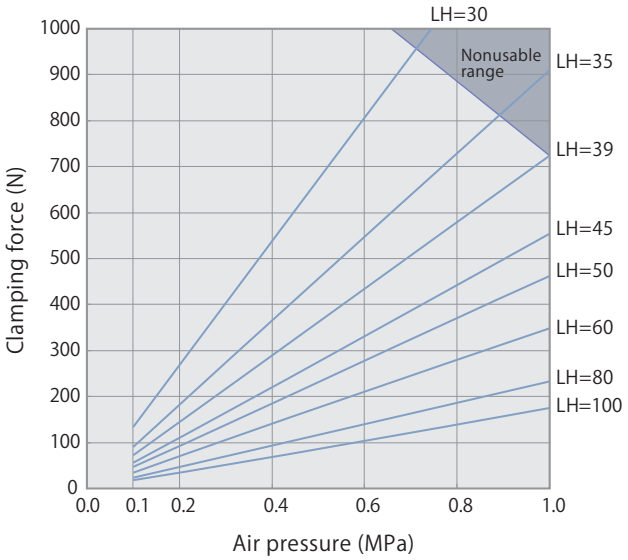

Clamping force varies depending on the clamp arm length (LH) and air pressure (P).

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

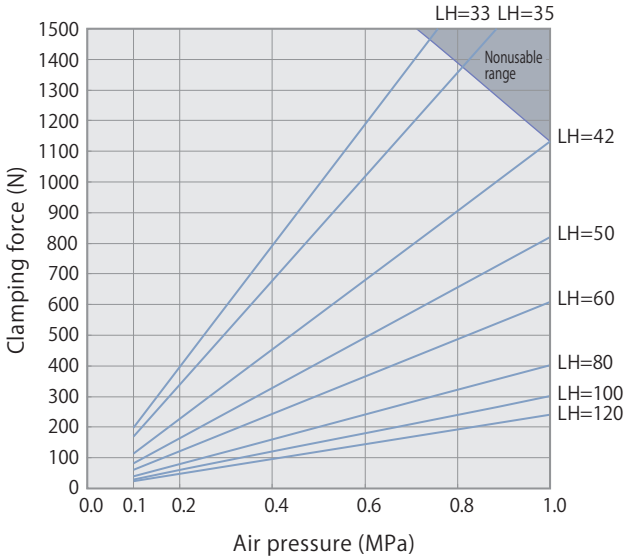
CLX50-T with clamp arm length (LH) 50 mm at air pressure of 0.5 MPa, Clamping force F is calculated by
44.18×0.5×1000/(50-25.0)=880 N

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

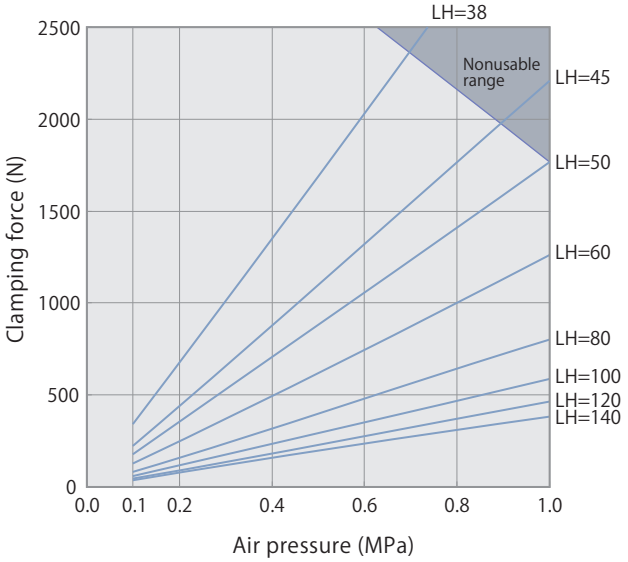
### model CLX32-□T



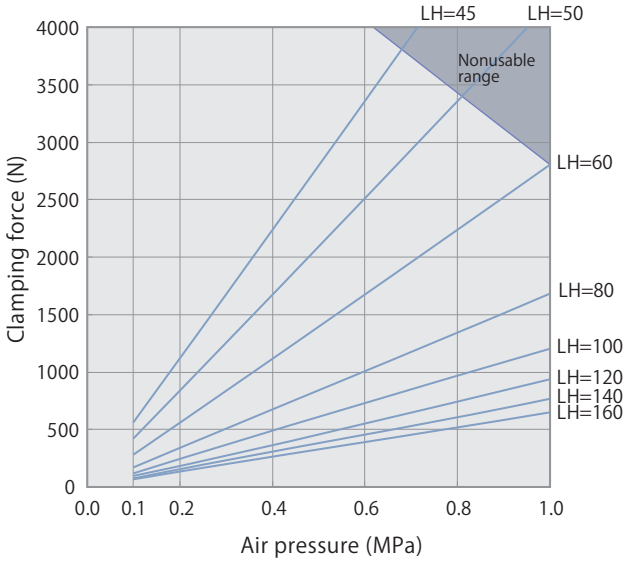

### model CLX40-□T




### model CLX50-□T




### model CLX63-□T



## Performance table

**model CLX32-□T** Clamping force F=14.11×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 | |
| 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 |

indicates nonusable range

**model CLX40-□T** Clamping force F=23.75×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 | |
| 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 |

indicates nonusable range

**model CLX50-□T** Clamping force F=44.18×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 | |
| 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 | | 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 |

indicates nonusable range

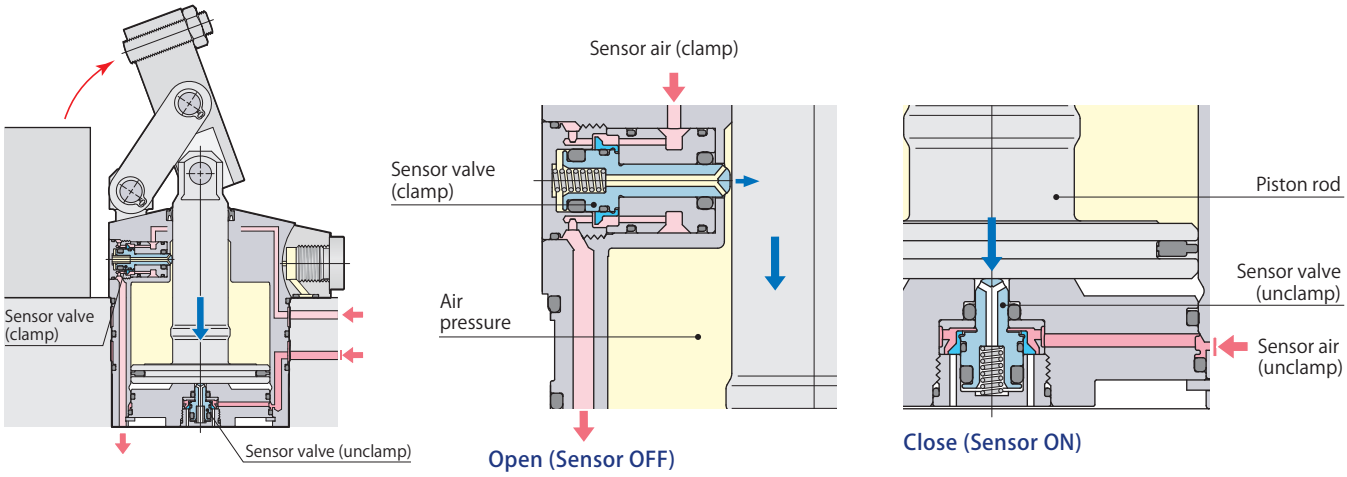
**model CLX63-□T** Clamping force F=84.16×P×1000/(LH-30.0)

| 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 | |
| 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 | | 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 |

indicates nonusable range

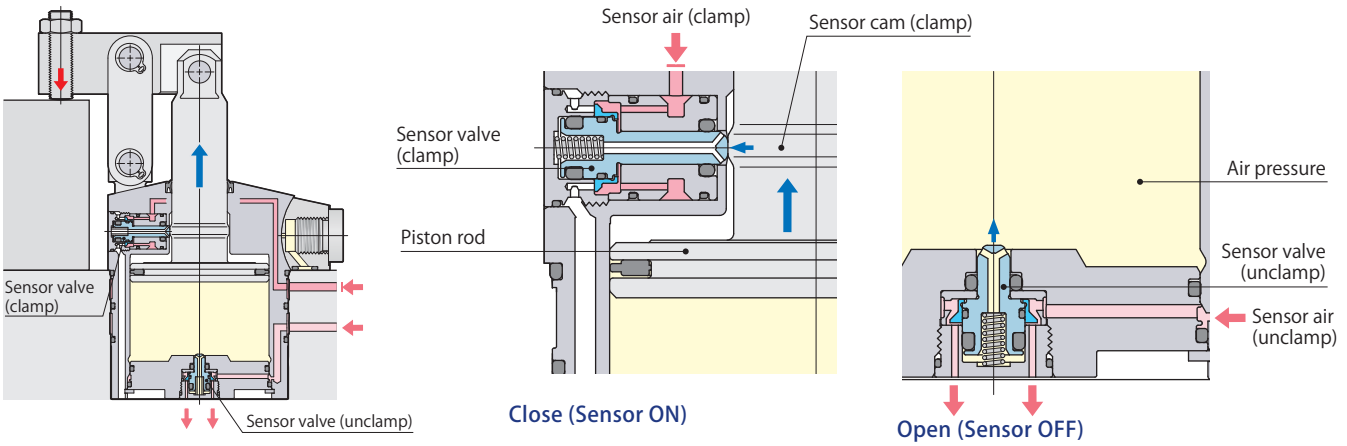
## PAL sensor function and structure

### Unclamp detection




● The sensor valve (unclamp) is pushed down by the piston rod and shuts off the sensor air flow when the piston rod reaches the unclamp end. The sensor valve (clamp) is pushed up by the air pressure to open for air exhaust and detects the unclamped condition.

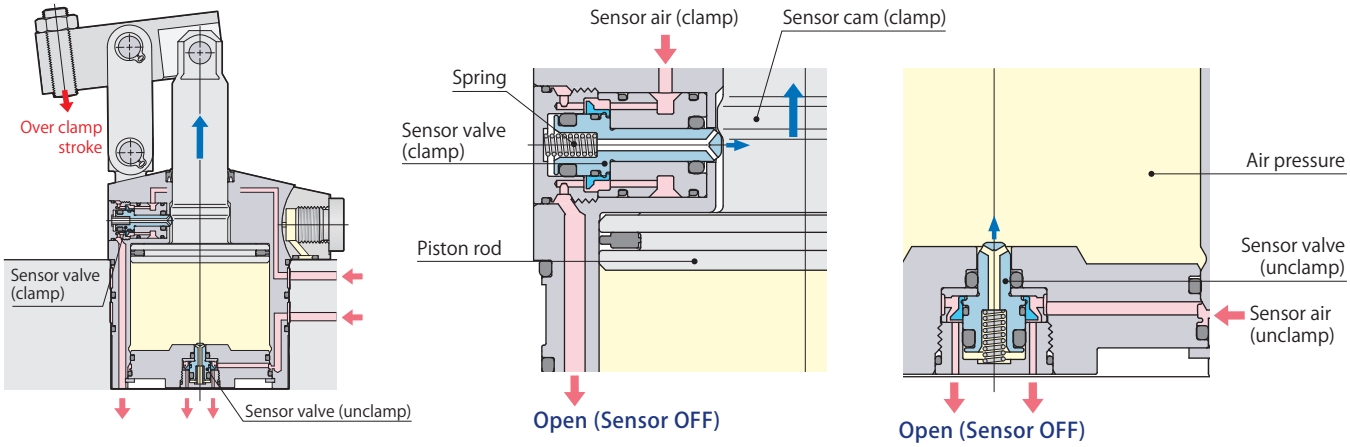
### Clamp detection




● The sensor valve (clamp) is pushed down by the sensor cam (clamp) and shuts off the sensor air flow when the piston rod reaches the clamping point. The sensor valve (unclamp) is pushed up by the air pressure to open for air exhaust and detects the clamped condition.

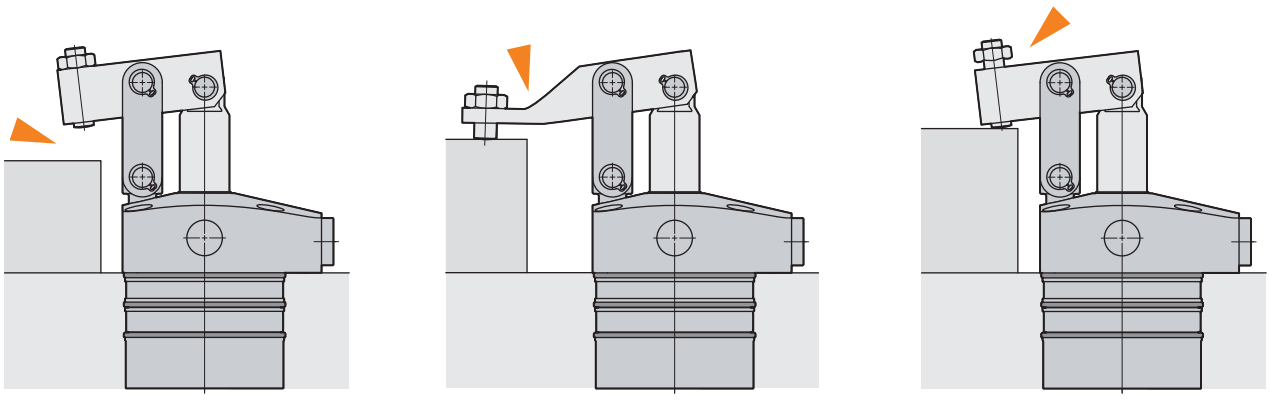
## PAL sensor function and structure

### Over clamp stroke (Incomplete clamp) detection




- The sensor cam passes the clamping point, the sensor valve (clamp) is pushed up by the spring and exhausts the sensor air. Also the sensor valve (unclamp) exhausts the air and detects the over clamp stroked (incomplete clamp) condition.

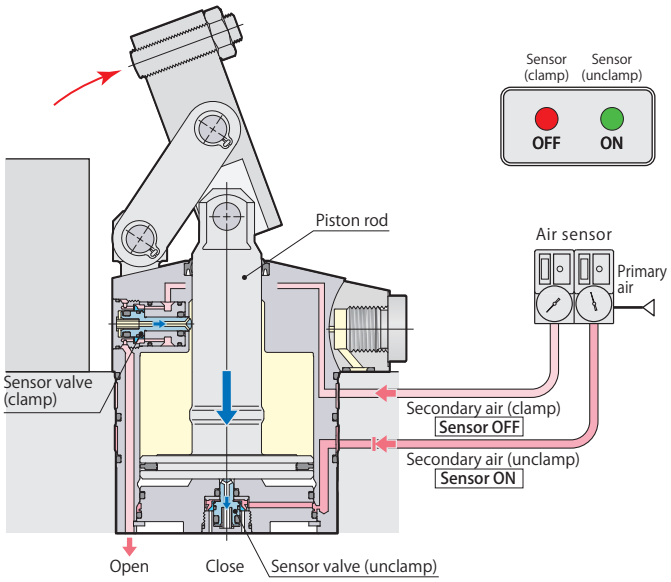
### Over clamp stroke (Incomplete clamp) detection example



- Clamp disabled due to missetting workpiece.
- Clamp disabled due to the deflection of clamp arm.
- Clamp disabled due to the damage of piston rod or loose adjustment bolt.
- Clamp disabled due to the abrasion on the tip of clamp arm during prolonged use.

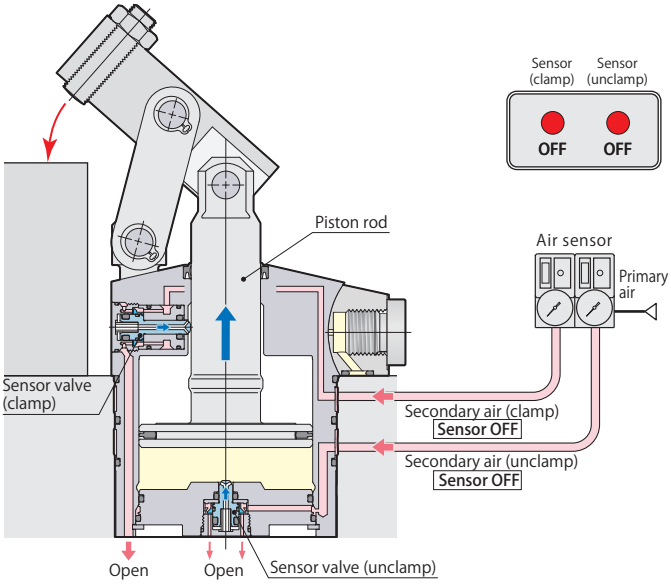
## Clamp, Unclamp, Over clamp stroke detection signal

### Unclamp detection



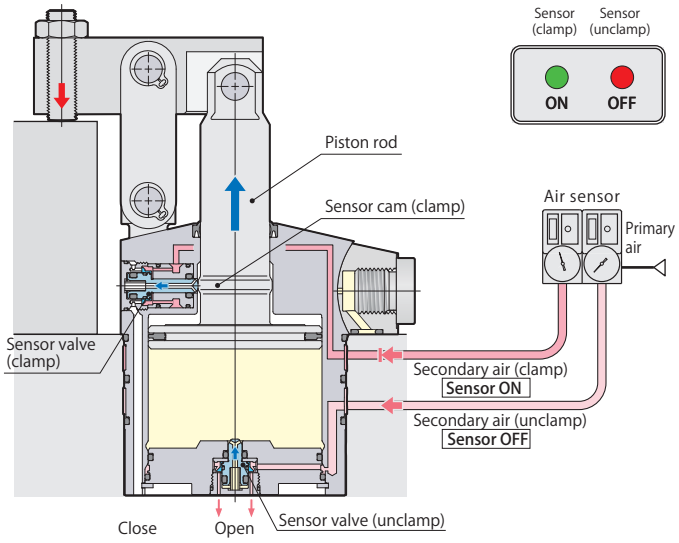

| | | |
|---|---|---|
| Sensor signal (clamp) | OFF | Unclamp |
| Sensor signal (unclamp) | ON | |

### In the middle of clamp stroke



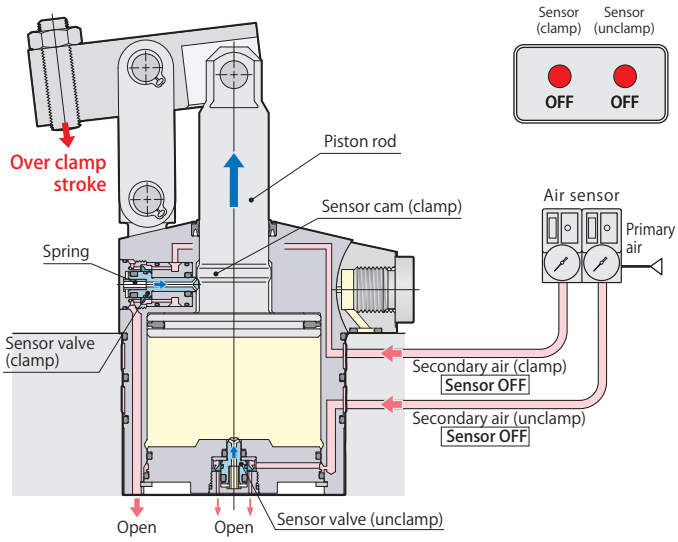

| | | |
|---|---|---|
| Sensor signal (clamp) | OFF | In the middle of clamp stroke |
| Sensor signal (unclamp) | OFF | |

### Clamp detection



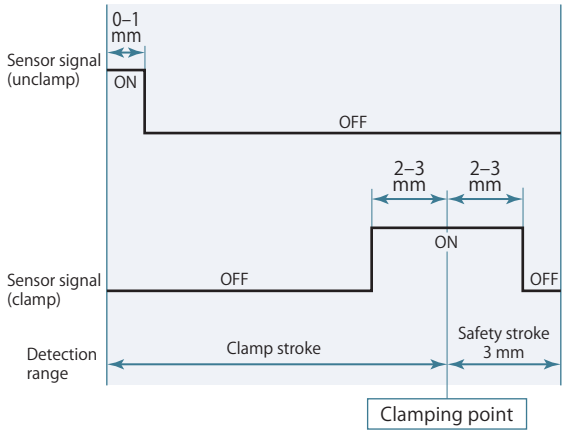

| | | |
|---|---|---|
| Sensor signal (clamp) | ON | Clamp |
| Sensor signal (unclamp) | OFF | |

### Over clamp stroke (Incomplete clamp) detection




| | | |
|---|---|---|
| Sensor signal (clamp) | OFF | Over clamp stroke (Incomplete clamp) |
| Sensor signal (unclamp) | OFF | |

## Air sensor triggering point



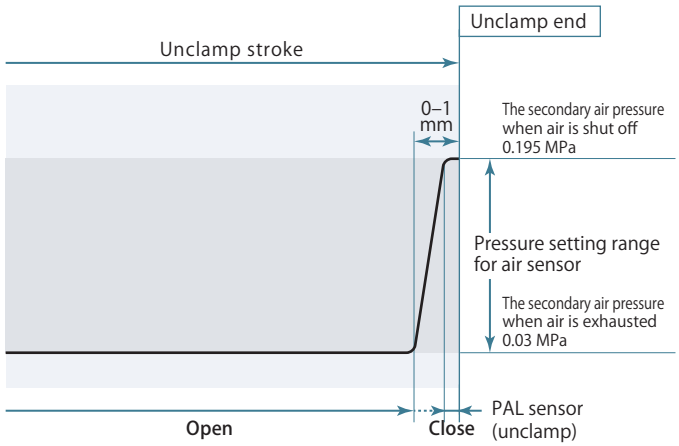

- Refer to the sensor supplier's instruction manual for the details of setting.
- Sensing performance such as detectable time and pressure differs depending on the supplier and model number of the sensor. Select the right model referring to sensor's application and characteristics.

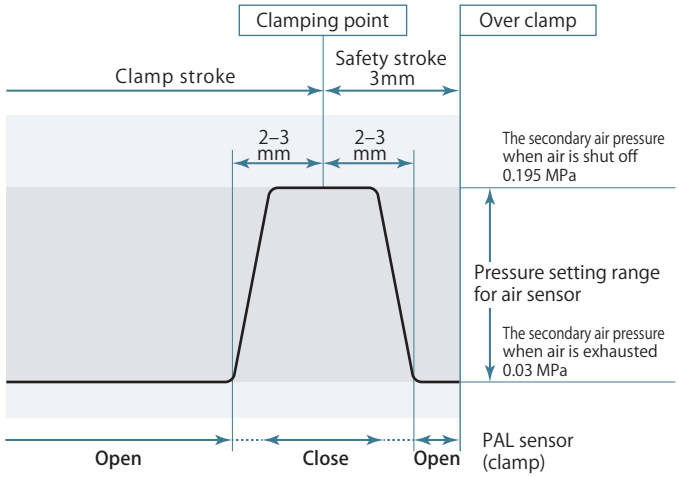
## Air sensor unit recommended condition of use

| | |
|---|---|
| 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.

## Relation between sensor air pressure, PAL sensor and piston stroke



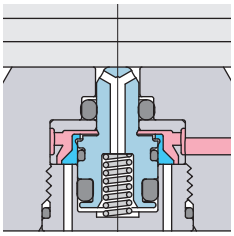




The diagram shown on the left indicates the relation between the PAL sensor, piston stroke, and secondary air pressure. (The pressure shown in the diagram is a reference based on the 0.2 MPa of primary air pressure for one piece of clamp.)

Since the new PAL sensor works with less air-leakage compared to previous sensor valve,

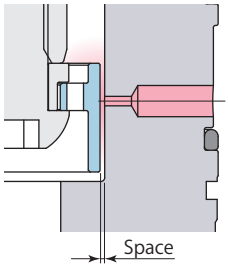
- Enhances the pressure setting range of the sensor which enables the sensor to set easily.
  (Ex. Pressure setting range 0.03–0.195 MPa in the diagram)
- Allows the use for a number of clamps by one air sensor because of better pressure holding when air is shut off.
  (Maximum number of clamps to be detected by one sensor is 10.)
- Allows to choose less air-consumed, i.e. small orifice diameter type, air sensor.
- Can create large differential-pressure when opening and closing the PAL sensor so that sensor primary pressure can be set as low as possible and reduce the consumption of air.

New PAL sensor



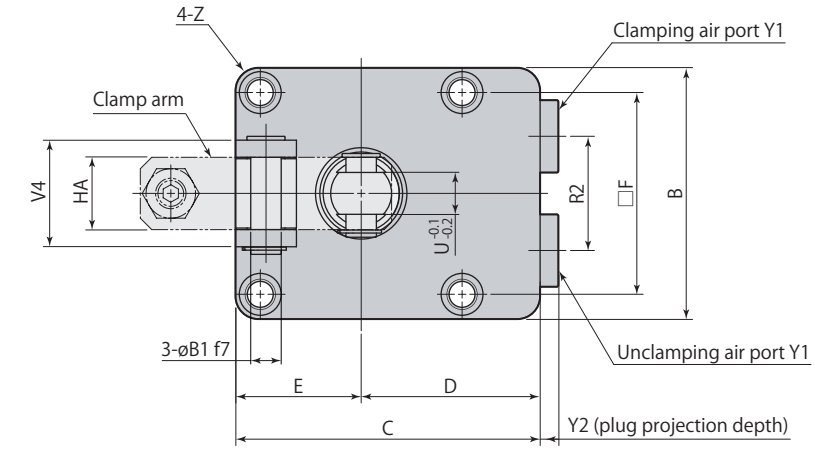
Poppet structure ensures superior sealing performance and can create large differential-pressure when the valve is opening and closing, and air leakage can be minimized.

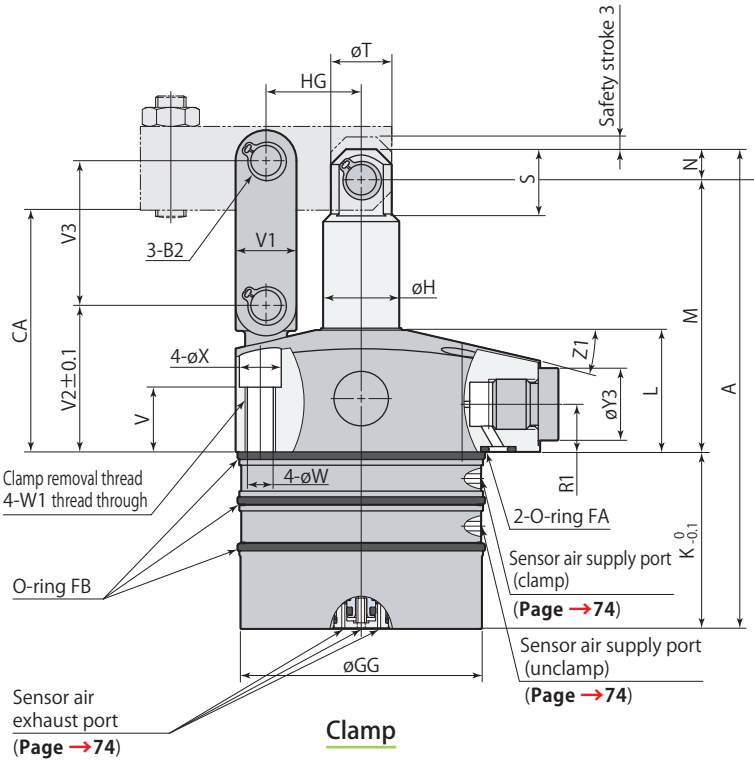
Previous sensor valve



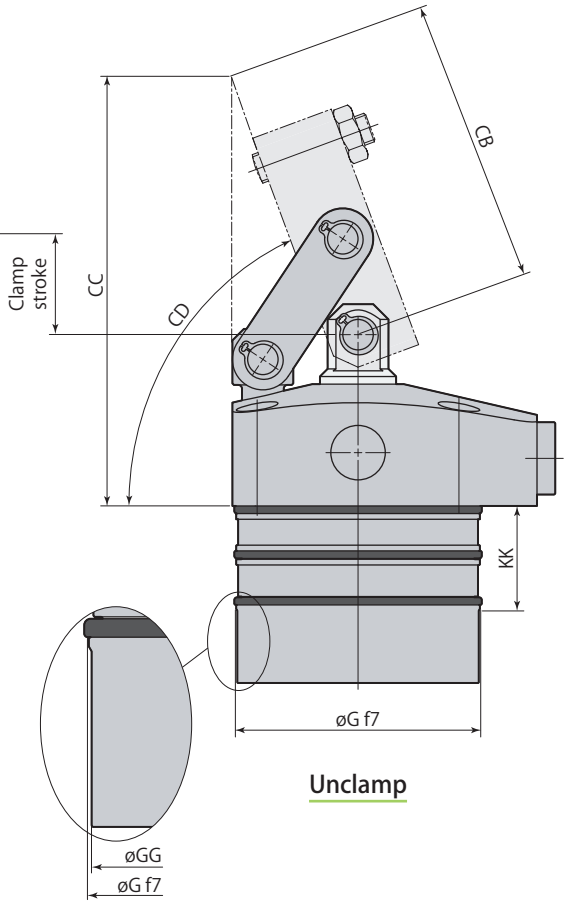

Air leaks easily due to a large space.

## Dimensions

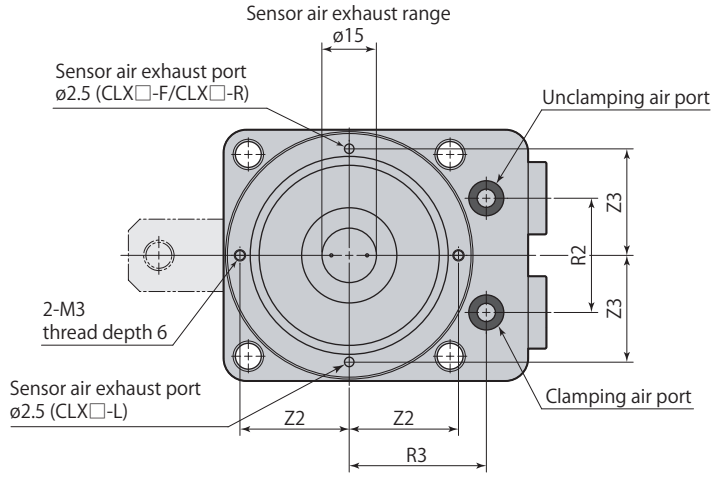



### Clamp

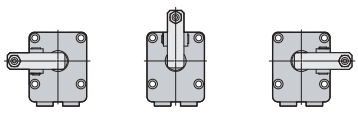



### Unclamp




- This diagram represents external contour of CLX□-FT, CLX□-LT and CLX□-RT differ only in terms of mounting direction of clamp arm and otherwise all dimensions are identical to those of CLX□-FT.

L：Left side F：Front side R：Right side



- Clamp arm and mounting screws are not included.

mm

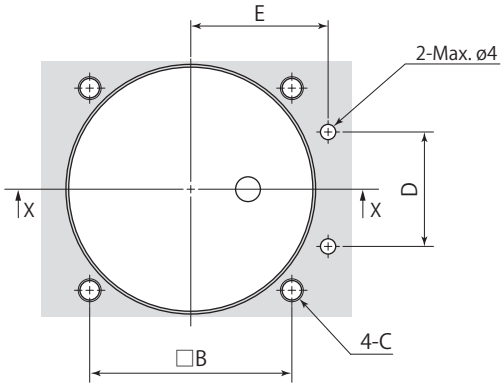
| Model | | CLX32-□T | CLX40-□T | CLX50-□T | CLX63-□T |
|---|---|---|---|---|---|
| A | | 101.5 | 110 | 126 | 144.5 |
| B | | 50 | 56 | 66 | 78 |
| C | | 60 | 66 | 80 | 91 |
| D | | 35 | 38 | 47 | 52 |
| E | | 25 | 28 | 33 | 39 |
| F | | 39 | 45 | 53 | 65 |
| øG | | 46 $^{-0.025}_{-0.050}$ | 54 $^{-0.030}_{-0.060}$ | 64 $^{-0.030}_{-0.060}$ | 77 $^{-0.030}_{-0.060}$ |
| øGG | | 45.4 | 53.4 | 63.4 | 76.4 |
| øH | | 14 | 16 | 20 | 25 |
| K | | 39.5 | 43 | 46.5 | 56 |
| KK | | 27 | 27 | 27 | 29 |
| L | | 27 | 27 | 32 | 32 |
| M | | 57 | 61 | 71.5 | 78.5 |
| N | | 5 | 6 | 8 | 10 |
| 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 |
| W1 | | M6 | M6 | M8 | M8 |
| 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° |
| Z2 | | 19.5 | 23.5 | 28.7 | 35.3 |
| Z3 | | 19.2 | 23.2 | 28 | 34.7 |
| 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 | | About 70° | About 72° | About 70° | About 68° |
| HA | | 14 | 16 | 19 | 22 |
| HG | | 19.5 | 21 | 25 | 30 |
| O-ring FA (fluorocarbon hardness Hs90) | | P6 | P6 | P6 | P6 |
| O-ring FB (fluorocarbon hardness Hs70) | | AS568-030 | AS568-033 | AS568-036 | AS568-040 |
| Speed controller*2 | Meter-in | VCL01-I | VCL01-I | VCL02-I | VCL02-I |
| | Meter-out | VCL01-O | VCL01-O | VCL02-O | VCL02-O |

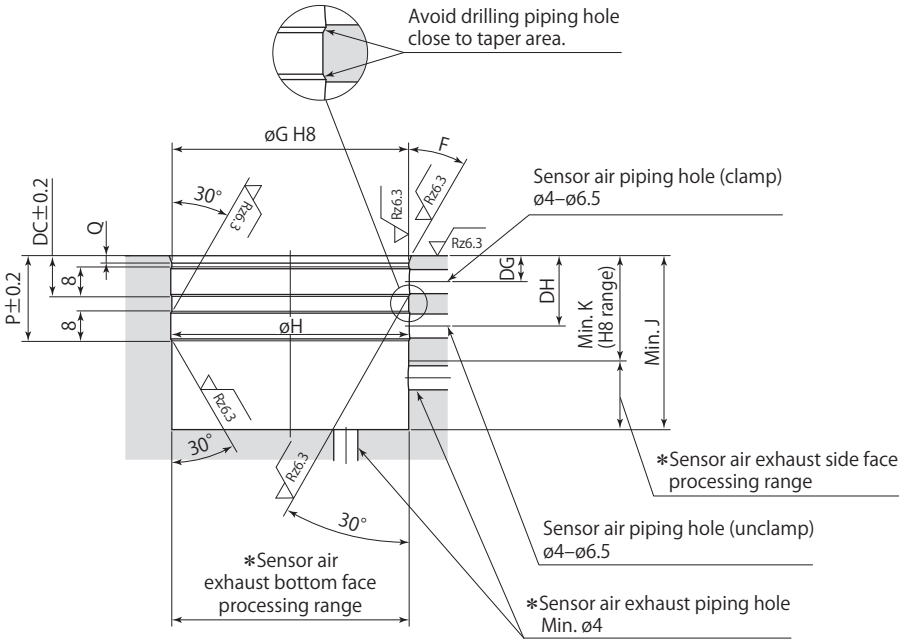
*1: Snap ring is made by Ochiai Corporation.

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

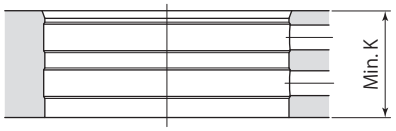
● Refer to **page →106** for the details of speed controller.

## Mounting details




In blind hole X-X

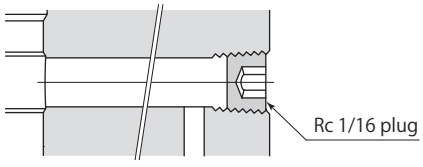



In through hole X-X

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

Rz: ISO4287(1997)

- 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.
- No sensor air piping hole (unclamp) is needed unless unclamp sensor is used. Contact Pascal for the details.
- The sensor air piping hole can be used for a pilot hole of Rc 1/16 plug.



## Mounting details

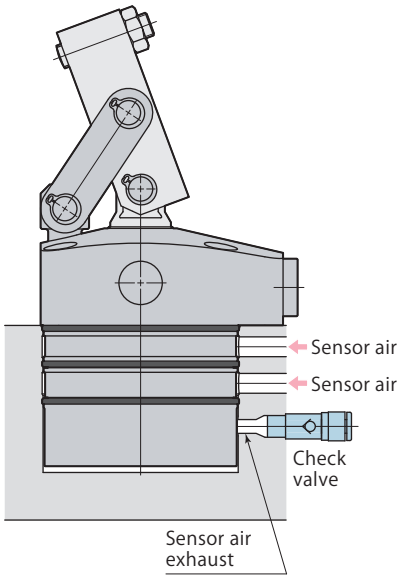
mm

| Model | CLX32-□T | CLX40-□T | CLX50-□T | CLX63-□T |
|---|---|---|---|---|
| B | 39 | 45 | 53 | 65 |
| C | M5 | M5 | M6 | M6 |
| D | 20 | 26 | 30 | 40 |
| E | 28 | 31 | 36 | 41 |
| F | 20° | 20° | 20° | 30° |
| øG | 46 $^{+0.039}_{0}$ | 54 $^{+0.046}_{0}$ | 64 $^{+0.046}_{0}$ | 77 $^{+0.046}_{0}$ |
| øH | 46.6 | 54.6 | 64.6 | 77.6 |
| J | 40 | 43.5 | 47 | 56.5 |
| K | 28 | 28 | 28 | 30 |
| P | 23 | 23 | 23 | 25 |
| Q | 2 | 2 | 2 | 1 |
| DC | 11 | 11 | 11 | 13 |
| DG | 7 | 7 | 7 | 9 |
| DH | 19 | 19 | 19 | 21 |

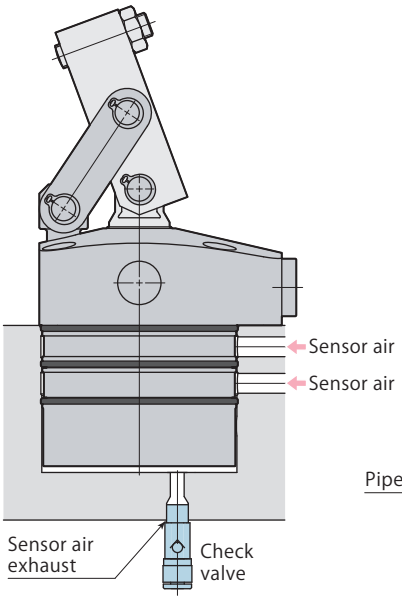
## Caution for piping

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

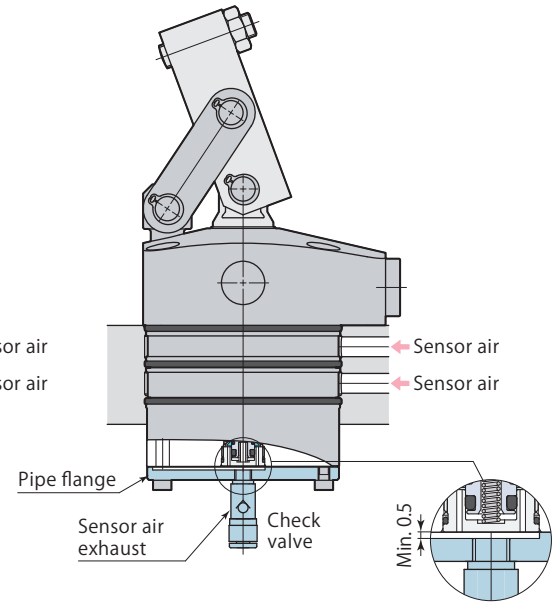
Mounting in blind hole
(Sensor air exhaust：side face)




Mounting in blind hole
(Sensor air exhaust：bottom face)



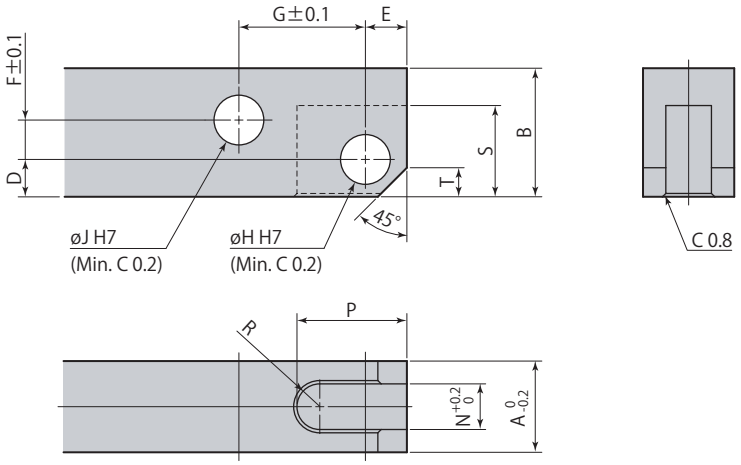

Mounting in through hole




- 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.

## 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

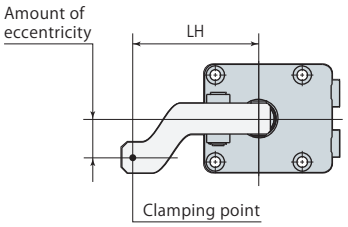
| Link clamp | CLX32-□T | CLX40-□T | CLX50-□T | CLX63-□T |
|---|---|---|---|---|
| A | 14 | 16 | 19 | 22 |
| B | 16 | 19 | 22 | 25 |
| D | 5 | 6 | 8 | 9 |
| E | 5 | 6 | 8 | 10 |
| F | 3 | 4 | 5 | 5 |
| G | 19.5 | 21 | 25 | 30 |
| øH | 5 $^{+0.012}_{0}$ | 6 $^{+0.012}_{0}$ | 8 $^{+0.015}_{0}$ | 10 $^{+0.015}_{0}$ |
| 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.

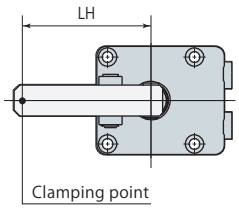
## Clamp arm allowable eccentricity

An eccentric shape clamp arm, as shown in diagram on right can be used with link clamp model CLX-T, 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 CLX32-□T** ▒ indicates nonusable range

| Air pressure MPa | Allowable eccentricity mm / 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 |

**model CLX40-□T** ▒ indicates nonusable range

| Air pressure MPa | Allowable eccentricity mm / 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 |

**model CLX50-□T** ▒ indicates nonusable range

| Air pressure MPa | Allowable eccentricity mm / 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 |

**model CLX63-□T** ▒ indicates nonusable range

| Air pressure MPa | Allowable eccentricity mm / 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 |