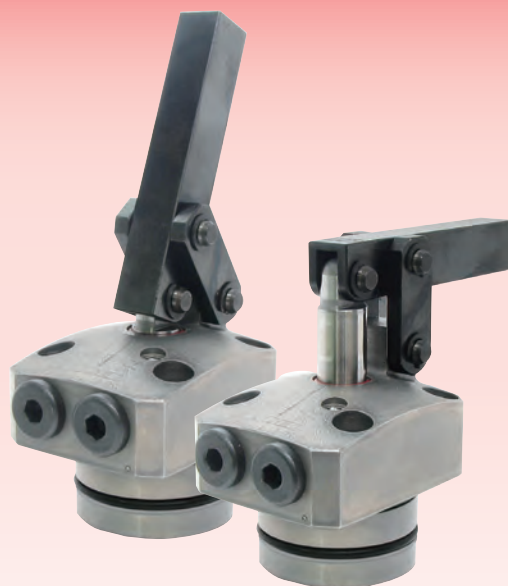


Air Sensing Link Clamp

Hydraulic Double Action

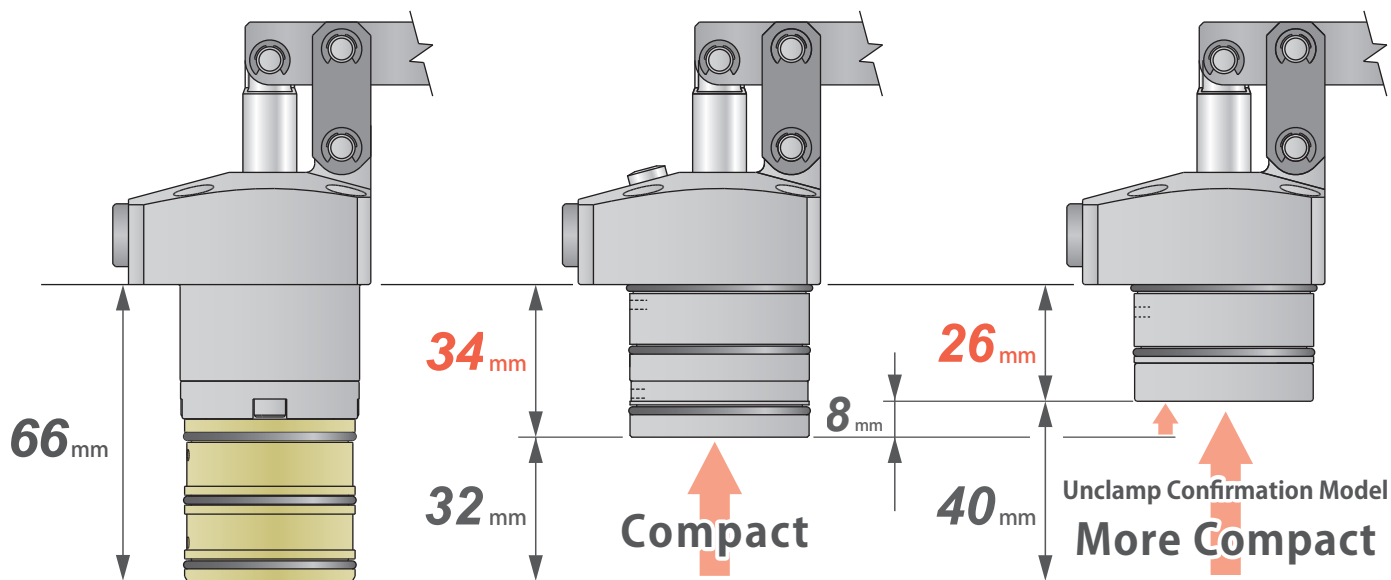
Model LKW



Redeveloped Clamp - Unclamp Confirmation for Smaller Footprint

Ideal for automated equipment, with the built-in action confirmation valve.

Comparison diagram of standard LKA model vs. LKW model



< Comparison Model >

LKA0400-C□M

Ability to confirm
clamp and unclamp action

< Air Sensing Model >

LKW0401-C□E

Ability to confirm
clamp and unclamp action

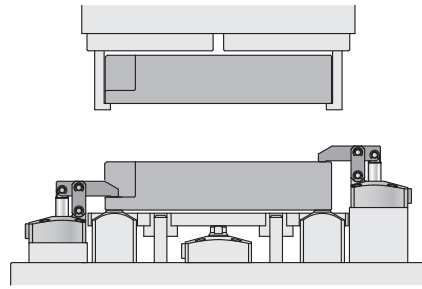
< Air Sensing Model >

LKW0401-C□J

Ability to confirm
unclamp action

Body Size 075 Has Been Introduced.

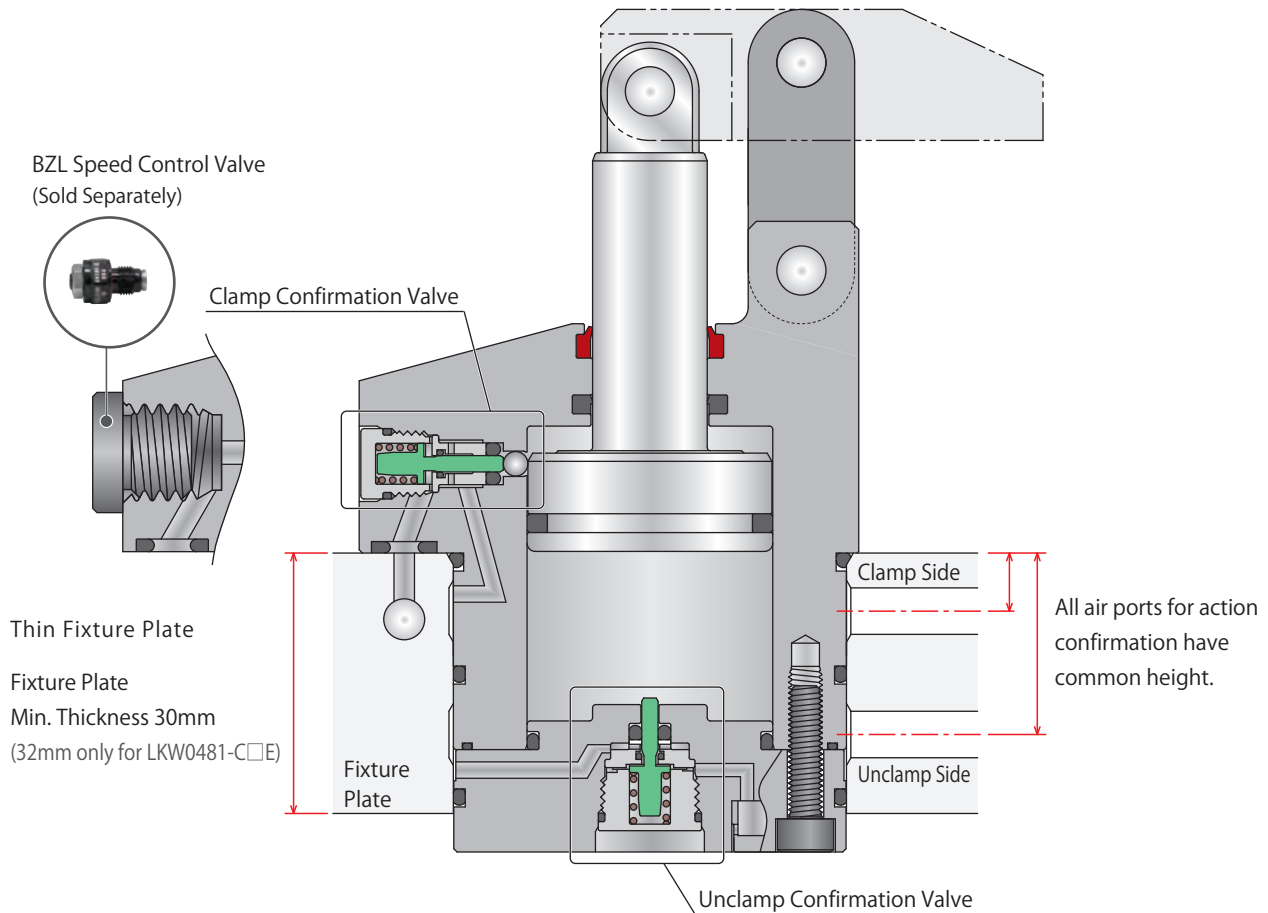
Application Examples



For automated setup
requiring action confirmation

Cross Section

※ This drawing shows clamp - unclamp confirmation model (LKW-C□E).

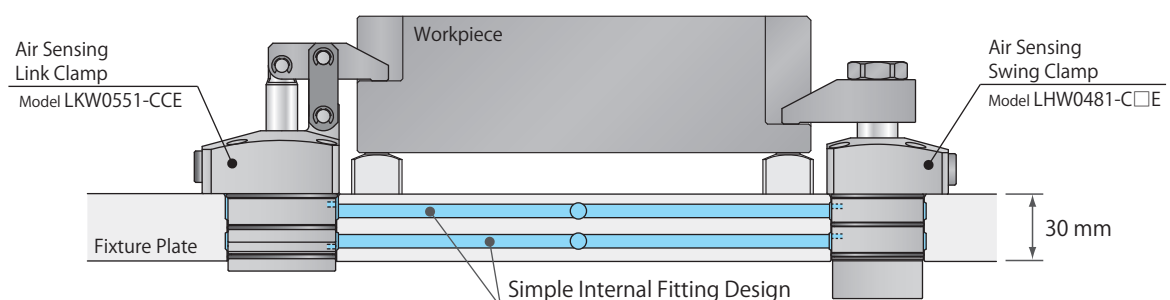


- Action confirmation allows for safe and secure loading and unloading of workpieces.
- Built-in sensing valves enable for thinner fixture designing.
Zero air leakage when the valve is closed. Air sensor with limited flow rate is available.

Simpler Internal Fitting Design

Common air port height for action confirmation allows for simpler circuit designing as shown below.

- When using different sizes of link clamps (Model LKW-C□E).
- When using link clamp (Model LKW-C□E) in combination with swing clamp (Model LHW-C□E).



Hydraulic Series

Accessories

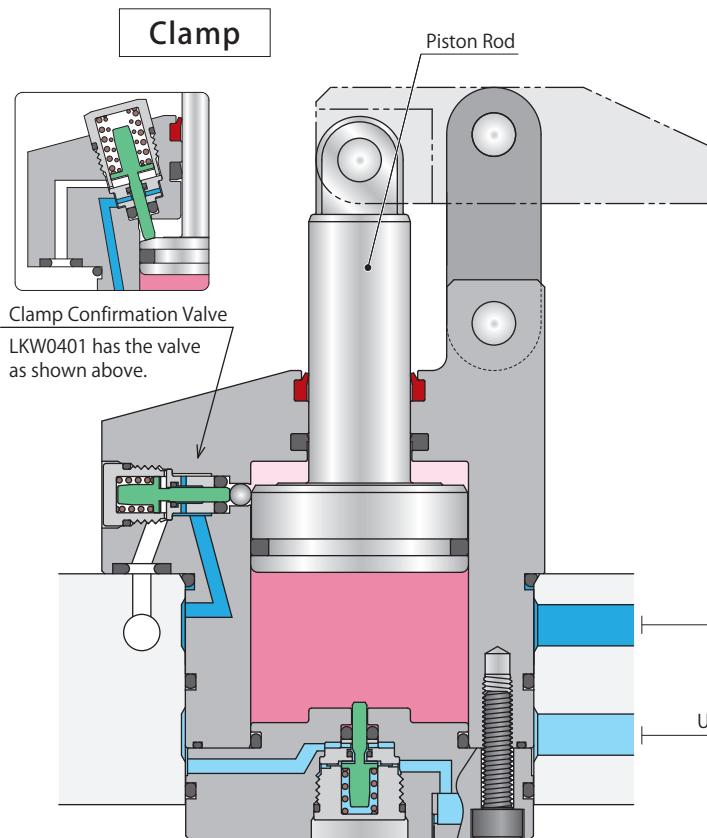
Cautions

Air Sensing
Swing Clamp
LHW

Air Sensing
Link Clamp
LKW

Air Sensing
Lift Cylinder
LLW

Action Description ※ This drawing shows clamp - unclamp action confirmation model (LKW-C□E).

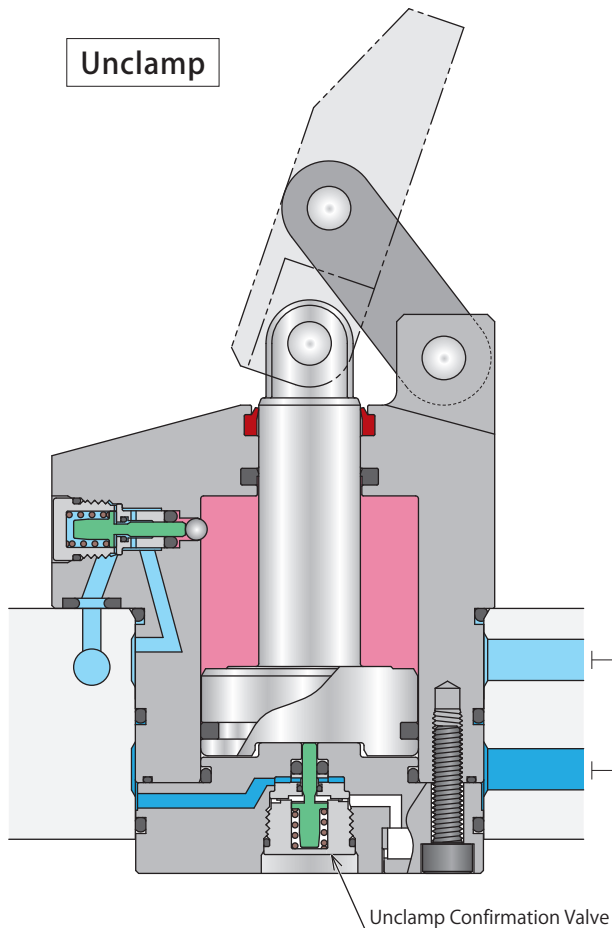
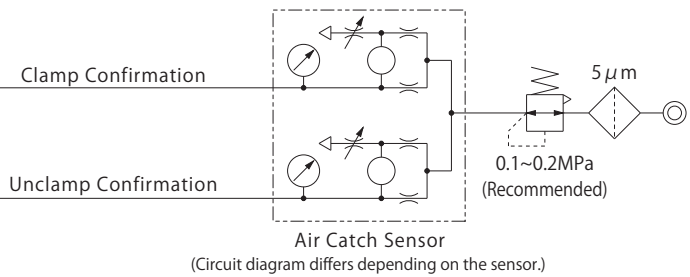


■ **Clamp (Supplying hydraulic pressure to clamp port)**

The piston rod ascends and clamps the workpiece.

※ Only for LKW0401, if releasing the lock pressure at this state, the piston rod may move with the built-in spring force.

| Hydraulic Pressure | | Air Catch Sensor | |
|--------------------|--------------|--------------------|----------------------|
| Clamp Side | Unclamp Side | Clamp Confirmation | Unclamp Confirmation |
| ON | OFF | ON | OFF |

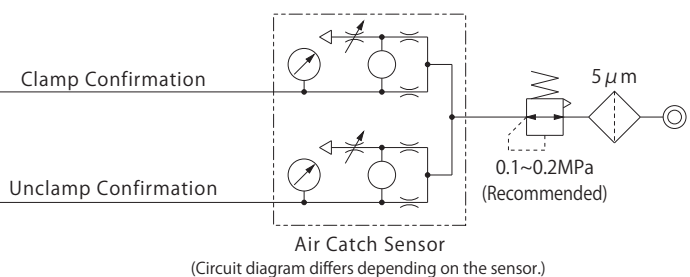


■ **Unclamp (Supplying hydraulic pressure to unclamp port)**

The piston rod descends.

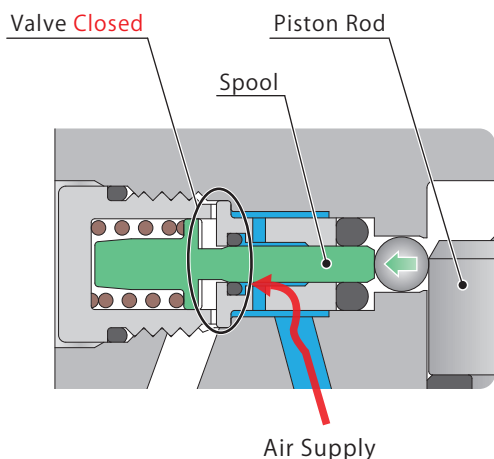
※ If releasing the release pressure at this state, the piston rod may move with the built-in spring force.

| Hydraulic Pressure | | Air Catch Sensor | |
|--------------------|--------------|--------------------|----------------------|
| Clamp Side | Unclamp Side | Clamp Confirmation | Unclamp Confirmation |
| OFF | ON | OFF | ON |



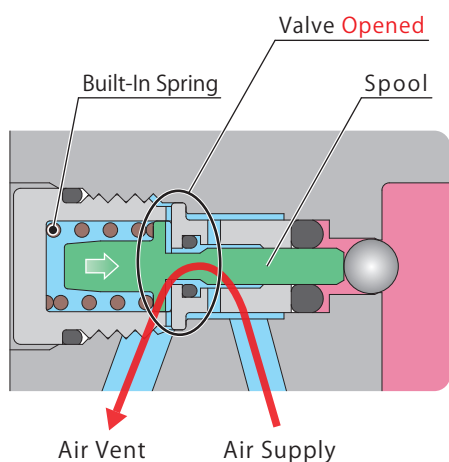
Clamp Confirmation Valve

Hyd. Pressure to Clamp Port

Air Catch Sensor **ON**

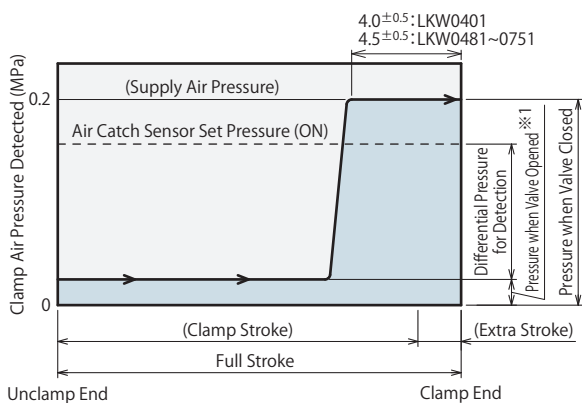
The spool is pushed back by the piston rod, and the valve is closed.

Hyd. Pressure to Unclamp Port

Air Catch Sensor **OFF**

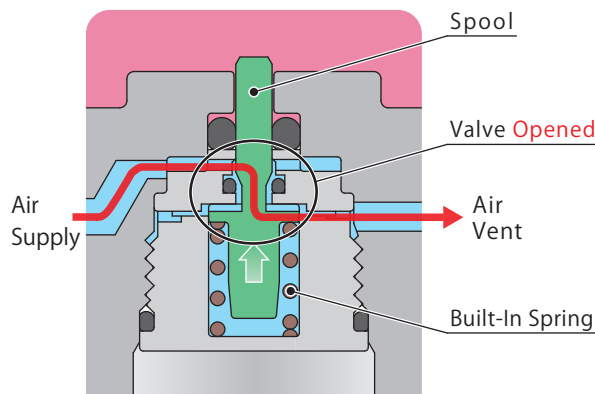
The spool is pushed forward by the built-in spring, and the valve is opened.

Sensing Chart for Clamp Confirmation



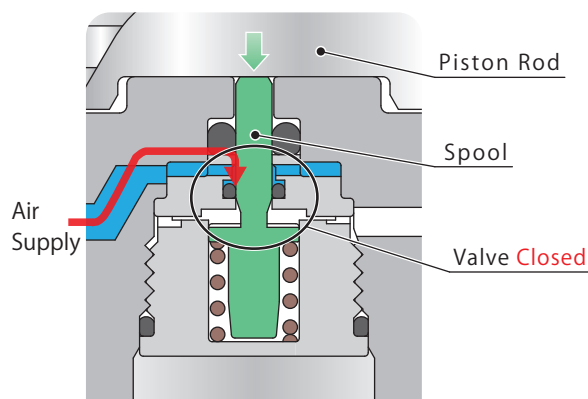
Unclamp Confirmation Valve

Hyd. Pressure to Clamp Port

Air Catch Sensor **OFF**

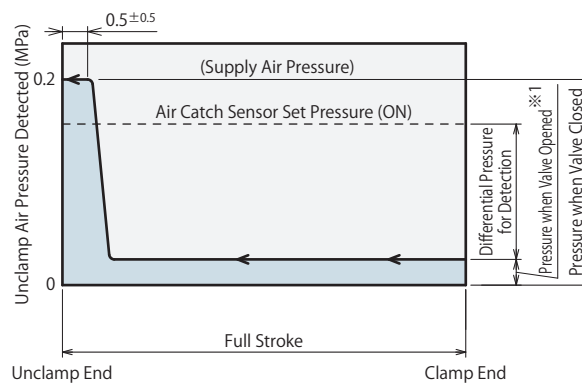
The spool is pushed forward by the built-in spring, and the valve is opened.

Hyd. Pressure to Unclamp Port

Air Catch Sensor **ON**

The spool is pushed back by the piston rod, and the valve is closed.

Sensing Chart for Unclamp Confirmation



Hydraulic Series

Accessories

Cautions

Air Sensing
Swing Clamp

LHW

Air Sensing
Link Clamp

LKW

Air Sensing
Lift Cylinder

LLW

※ 1. The sensor pressure for opening the valve depends on the sensor.

With air sensor with large air flow, the sensor pressure for opening the valve is higher and the differential pressure for detection is lower.

Action Description (Air Sensing Chart Explanation)

Action confirmation can be conducted by detecting differential pressure with the built-in valve for air catch sensor.

Applicable Model

LKW 048 1 - C R L E H J - Blank H K

5 Sensing Valve

- E : Clamp - Unclamp Confirmation (Both)
- H : Clamp Confirmation Only
- J : Unclamp Confirmation Only

Air Catch Sensor

- Air catch sensor is required in order to conduct the action confirmation.

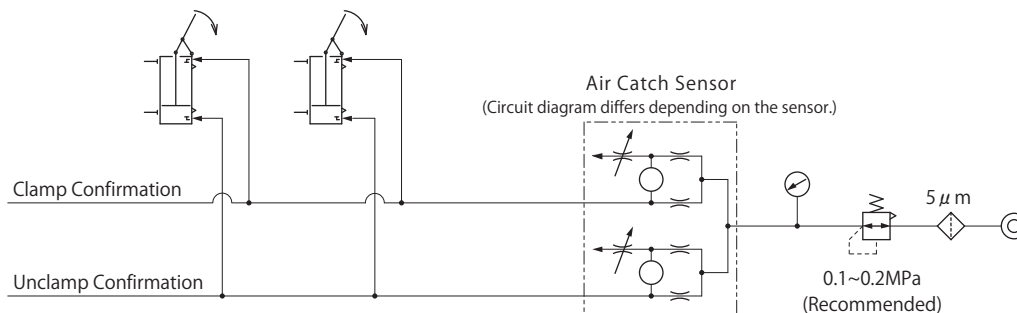
Sensing can be done by the air catch sensor with small air flow (recommended models are in the chart below).

Recommended Operating Air Pressure : 0.1~0.2MPa

Recommended Air Catch Sensor

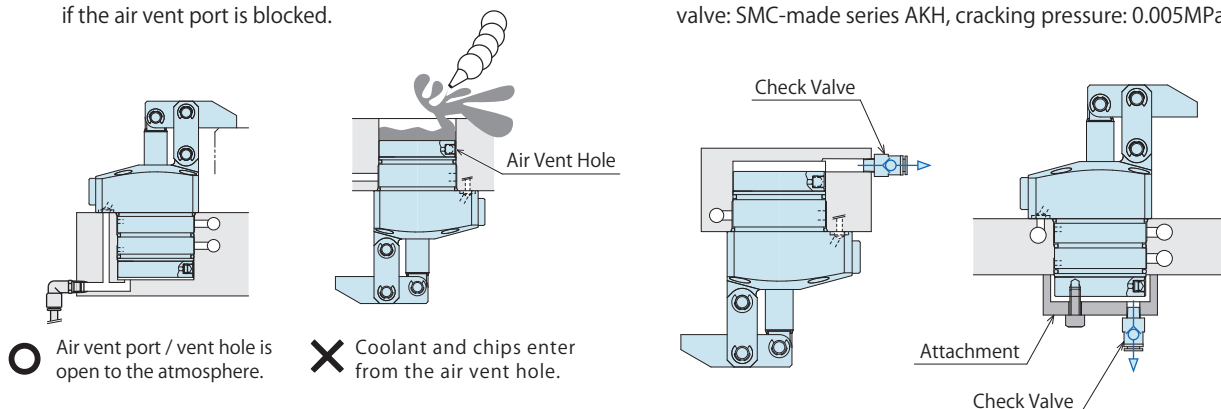
| Maker | SMC | CKD |
|-----------|------------------------|------------|
| Name | Air Catch Sensor | Gap Switch |
| Model No. | ISA3-F, ISA3-G, ISA2-G | GPS2-05-15 |

- Please refer to maker's catalog etc. for the detail of the air catch sensor.
- The air pressure to the air catch sensor should be 0.1~0.2MPa.
- Continuously supply air pressure to the clamps when in use.
- Refer to the drawing below for the pneumatic circuit construction.



Notes for Design • Installation • Use

- Air vent port / vent hole must be open to the atmosphere, and prevent coolant and chips from entering the air vent port / vent hole. The air catch sensor can malfunction if the air vent port is blocked.
- Prevention of Foreign Substance to the Air Vent Port / Vent Hole
Coolant and chips can be prevented by setting a check valve with low cracking pressure. (Recommended check valve: SMC-made series AKH, cracking pressure: 0.005MPa)



- Air vent port / vent hole is open to the atmosphere.
- ✗ Coolant and chips enter from the air vent hole.

- Continuously supply air pressure to the air port when in use.

Air Sensing Chart

Hydraulic Series

Accessories

Cautions

Air Sensing
Swing Clamp

LHW

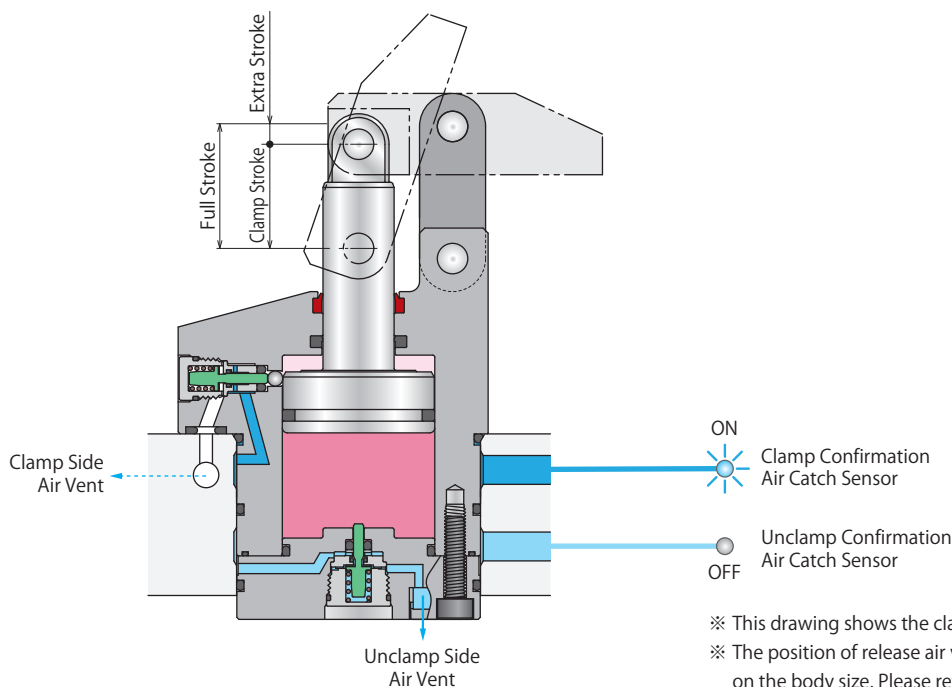
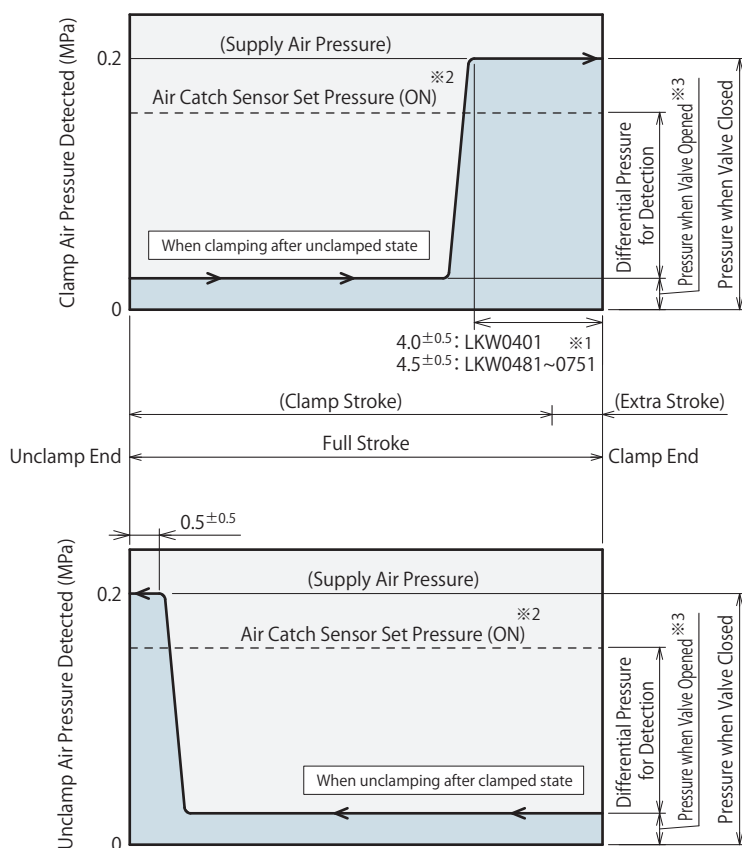
Air Sensing
Link Clamp

LKW

Air Sensing
Lift Cylinder

LLW

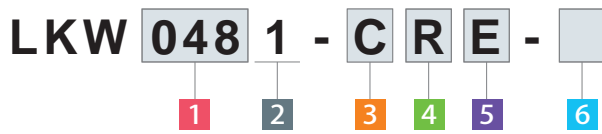
Number Directly Connected to Clamp: 1, Air Catch Sensor ISA3-F, Supply Air Pressure 0.2MPa



Notes:

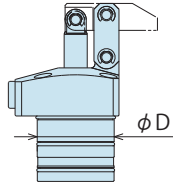
- Sensing chart shown is the relationship between the stroke and detection circuit air pressure.
 - The specifications may vary depending on the air circuit. The hose length should be as short as possible. (Less than 5m)
 - There is only clamp confirmation for sensing valve symbol **H**, and only unclamp confirmation for sensing valve symbol **J**.
- ※1. There is a certain tolerance with regard to the position where the pressure for closing the valve is reached depending on the sensor structure. (Refer to the sensing chart.)
- ※2. The position where the air catch sensor has ON signal output varies depending on the sensor setting.
- ※3. The sensor pressure for opening the valve depends on the sensor.
- With air sensor with large air flow, the sensor pressure for opening the valve is higher and the differential pressure for detection is lower.

Model No. Indication



1 Body Size

- 040** : $\phi D=40\text{mm}$
- 048** : $\phi D=48\text{mm}$
- 055** : $\phi D=55\text{mm}$
- 065** : $\phi D=65\text{mm}$
- 075** : $\phi D=75\text{mm}$



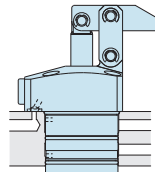
※ Outer diameter (ϕD) of the cylinder.

2 Design No.

- 1** : Revision Number

3 Piping Method

- C** : Gasket Option (With G Thread Plug)



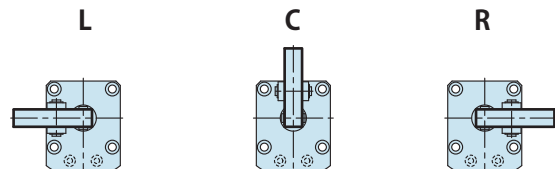
With G Thread Plug
 Able to attach speed control valve

※ Speed control valve (BZL) is sold separately.
Please refer to P.59.

4 Lever Direction

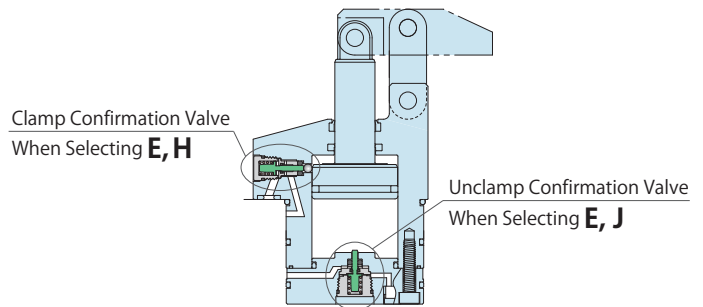
- L** : Left
- C** : Center
- R** : Right

※ The images show the lever direction when the piping port is placed in front of you.



5 Sensing Valve

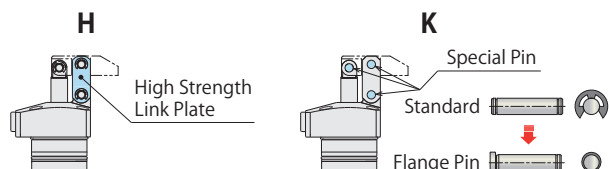
- E** : Clamp - Unclamp Confirmation (Both)
- H** : Clamp Confirmation Only
- J** : Unclamp Confirmation Only



6 Option

- Blank** : Standard
- H** : High Strength Link Plate (Increase in Allowable Offset)
- K** : Flange Pin with C Type Circlip

※ Please contact us for a combination of option.



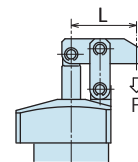
Specifications

| Model No. | LKW0401-C□□-□ | LKW0481-C□□-□ | LKW0551-C□□-□ | LKW0651-C□□-□ | LKW0751-C□□-□ | |
|--|-----------------------|--|---------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|
| Cylinder Area for Clamping | cm ² | 5.31 | 7.07 | 9.62 | 15.9 | 23.8 |
| Clamping Force (Calculation Formula) ^{※1} | kN | $F = \frac{7.64 \times P}{L - 16}$ | $F = \frac{11.76 \times P}{L - 18.5}$ | $F = \frac{18.18 \times P}{L - 21}$ | $F = \frac{35.06 \times P}{L - 24.5}$ | $F = \frac{64.14 \times P}{L - 30}$ |
| Cylinder Capacity | Clamp | 10.9 | 16.6 | 25.0 | 46.9 | 83.2 |
| | Unclamp | 8.6 | 13.0 | 19.8 | 37.7 | 69.8 |
| Full Stroke | mm | 20.5 | 23.5 | 26 | 29.5 | 35 |
| Clamp Stroke | mm | 17.5 | 20.5 | 23 | 26.5 | 32 |
| Extra Stroke | mm | 3 | 3 | 3 | 3 | 3 |
| Maximum Operating Pressure | MPa | 7.0 | | | | |
| Minimum Operating Pressure ^{※2} | MPa | 0.5 | | | | |
| Withstanding Pressure | MPa | 10.5 | | | | |
| Recommended Operating Air Pressure | | 0.1 ~ 0.2 | | | | |
| Recommended Air Catch Sensor | | ISA3-F, ISA3-G, ISA2-G (SMC) / GPS2-05-15(CKD) | | | | |
| Operating Temperature | °C | 0~70 | | | | |
| Mass ^{※3} | S E、H Selected | 0.8 | 1.2 | 1.6 | 2.7 | 3.8 |
| | S J Selected | 0.7 | 1.1 | 1.6 | 2.7 | 3.8 |

Notes: ※1. F : Clamping Force (kN), P : Supply Hydraulic Pressure (MPa), L : Distance between the piston center and the clamping point (mm).

※2. Minimum pressure to operate the clamp without load.

※3. Mass of single clamp without the link lever.



Hydraulic Series

Accessories

Cautions

Air Sensing
Swing Clamp
LHW

Air Sensing
Link Clamp
LKW

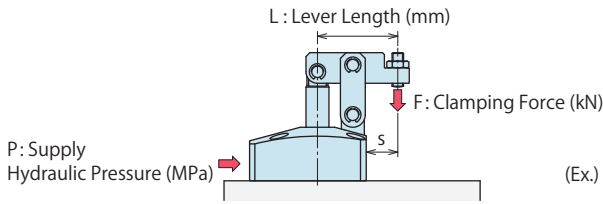
Air Sensing
Lift Cylinder
LLW

Clamping Force Curve

Applicable Model

LKW 1 - C L C R E H J Blank H K

1 Body Size

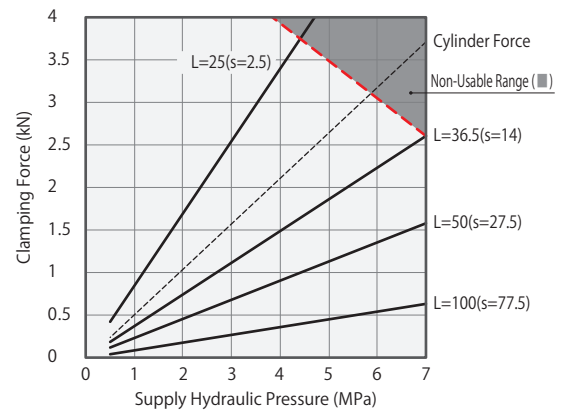


(Ex.) When using LKW0481
Supply Hydraulic Pressure 5.0MPa, Lever Length L=42mm
Clamping force is about 2.6kN.

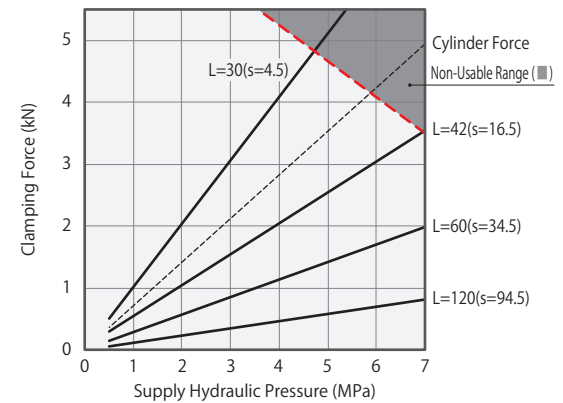
Notes:

1. Tables and graphs shown are the relationships between the clamping force (kN) and supply hydraulic pressure (MPa).
 2. Cylinder output (when L=0) cannot be calculated from the calculation formula of clamping force.
 3. Using in the non-usable range may damage the clamp and lead to fluid leakage.
- ※1. F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), L: Lever Length (mm)

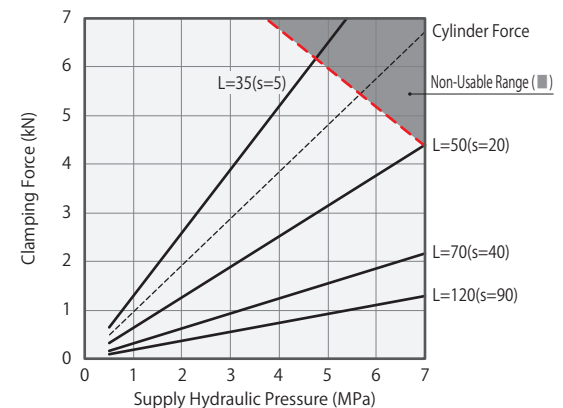
| LKW0401 | | Clamping Force Calculation Formula ※1 (kN) $F = (7.64 \times P) / (L - 16)$ | | | | | | | | |
|-------------------------------|---------------------|---|------|--------|------|------|------|------|-------|----------------------------|
| Hydraulic Pressure (MPa) | Cylinder Force (kN) | Clamping Force (kN) Non-Usable Range (■) | | | | | | | | Min. Lever Length (L) (mm) |
| | | L=25 | L=30 | L=36.5 | L=40 | L=50 | L=60 | L=80 | L=100 | |
| 7 | 3.8 | | | 2.7 | 2.3 | 1.6 | 1.3 | 0.9 | 0.7 | 36.5 |
| 6.5 | 3.5 | | | 2.5 | 2.1 | 1.5 | 1.2 | 0.8 | 0.6 | 34 |
| 6 | 3.2 | | | 2.3 | 2.0 | 1.4 | 1.1 | 0.8 | 0.6 | 32 |
| 5.5 | 3.0 | | 3.1 | 2.2 | 1.8 | 1.3 | 1.0 | 0.7 | 0.6 | 29 |
| 5 | 2.7 | | 2.8 | 2.0 | 1.6 | 1.2 | 0.9 | 0.6 | 0.5 | 27 |
| 4.5 | 2.4 | 3.9 | 2.5 | 1.8 | 1.5 | 1.1 | 0.8 | 0.6 | 0.5 | 26 |
| 4 | 2.2 | 3.4 | 2.2 | 1.6 | 1.3 | 0.9 | 0.7 | 0.5 | 0.4 | 24 |
| 3.5 | 1.9 | 3.0 | 2.0 | 1.4 | 1.2 | 0.8 | 0.7 | 0.5 | 0.4 | 23 |
| 3 | 1.6 | 2.6 | 1.7 | 1.2 | 1.0 | 0.7 | 0.6 | 0.4 | 0.3 | 23 |
| 2.5 | 1.4 | 2.2 | 1.4 | 1.0 | 0.8 | 0.6 | 0.5 | 0.3 | 0.3 | 23 |
| 2 | 1.1 | 1.7 | 1.1 | 0.8 | 0.7 | 0.5 | 0.4 | 0.3 | 0.2 | 23 |
| 1.5 | 0.8 | 1.3 | 0.9 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 23 |
| 1 | 0.6 | 0.9 | 0.6 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 23 |
| 0.5 | 0.3 | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 23 |
| Max. Operating Pressure (MPa) | | 4.5 | 5.8 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | |



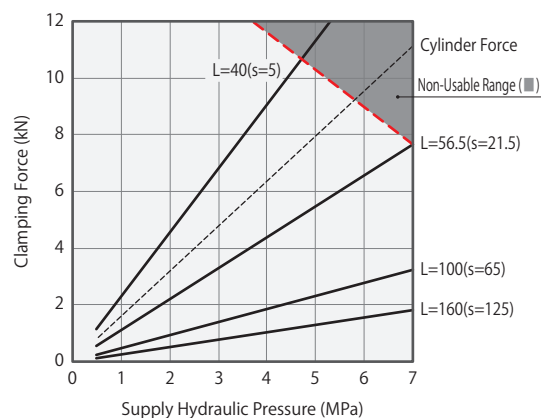
| LKW0481 | | Clamping Force Calculation Formula ※1 (kN) $F = (11.76 \times P) / (L - 18.5)$ | | | | | | | | |
|-------------------------------|---------------------|--|------|------|------|------|------|-------|-------|----------------------------|
| Hydraulic Pressure (MPa) | Cylinder Force (kN) | Clamping Force (kN) Non-Usable Range (■) | | | | | | | | Min. Lever Length (L) (mm) |
| | | L=30 | L=35 | L=42 | L=50 | L=60 | L=80 | L=100 | L=120 | |
| 7 | 5.0 | | | 3.6 | 2.7 | 2.0 | 1.4 | 1.1 | 0.9 | 42 |
| 6.5 | 4.6 | | | 3.3 | 2.5 | 1.9 | 1.3 | 1.0 | 0.8 | 39 |
| 6 | 4.3 | | | 3.1 | 2.3 | 1.8 | 1.2 | 0.9 | 0.7 | 36 |
| 5.5 | 3.9 | | 4.0 | 2.8 | 2.1 | 1.6 | 1.1 | 0.8 | 0.7 | 34 |
| 5 | 3.6 | | 3.6 | 2.6 | 1.9 | 1.5 | 1.0 | 0.8 | 0.6 | 32 |
| 4.5 | 3.2 | 4.7 | 3.3 | 2.3 | 1.7 | 1.3 | 0.9 | 0.7 | 0.6 | 30 |
| 4 | 2.9 | 4.1 | 2.9 | 2.1 | 1.5 | 1.2 | 0.8 | 0.6 | 0.5 | 28 |
| 3.5 | 2.5 | 3.6 | 2.5 | 1.8 | 1.4 | 1.0 | 0.7 | 0.6 | 0.5 | 26 |
| 3 | 2.2 | 3.1 | 2.2 | 1.6 | 1.2 | 0.9 | 0.6 | 0.5 | 0.4 | 26 |
| 2.5 | 1.8 | 2.6 | 1.8 | 1.3 | 1.0 | 0.8 | 0.5 | 0.4 | 0.3 | 26 |
| 2 | 1.5 | 2.1 | 1.5 | 1.1 | 0.8 | 0.6 | 0.4 | 0.3 | 0.3 | 26 |
| 1.5 | 1.1 | 1.6 | 1.1 | 0.8 | 0.6 | 0.5 | 0.3 | 0.3 | 0.2 | 26 |
| 1 | 0.8 | 1.1 | 0.8 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 26 |
| 0.5 | 0.4 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 26 |
| Max. Operating Pressure (MPa) | | 4.8 | 5.9 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | |



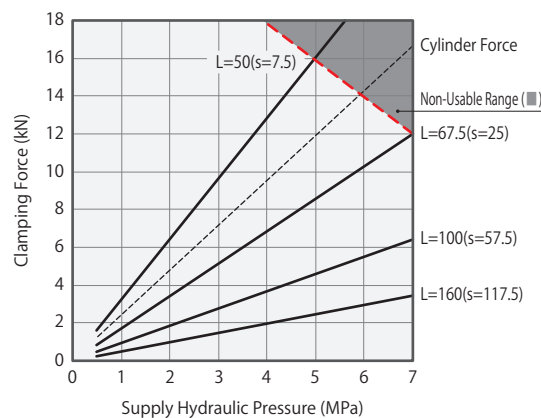
| LKW0551 | | Clamping Force Calculation Formula ※1 (kN) $F = (18.18 \times P) / (L - 21)$ | | | | | | | | |
|-------------------------------|---------------------|--|------|------|------|------|------|-------|-------|----------------------------|
| Hydraulic Pressure (MPa) | Cylinder Force (kN) | Clamping Force (kN) Non-Usable Range (■) | | | | | | | | Min. Lever Length (L) (mm) |
| | | L=35 | L=40 | L=50 | L=60 | L=70 | L=80 | L=100 | L=120 | |
| 7 | 6.8 | | | 4.4 | 3.3 | 2.6 | 2.2 | 1.7 | 1.3 | 50 |
| 6.5 | 6.3 | | | 4.1 | 3.1 | 2.5 | 2.1 | 1.5 | 1.2 | 46 |
| 6 | 5.8 | | | 3.8 | 2.8 | 2.3 | 1.9 | 1.4 | 1.2 | 43 |
| 5.5 | 5.3 | | 5.3 | 3.5 | 2.6 | 2.1 | 1.7 | 1.3 | 1.1 | 39 |
| 5 | 4.9 | | 4.8 | 3.2 | 2.4 | 1.9 | 1.6 | 1.2 | 1.0 | 37 |
| 4.5 | 4.4 | 5.9 | 4.4 | 2.9 | 2.1 | 1.7 | 1.4 | 1.1 | 0.9 | 34 |
| 4 | 3.9 | 5.2 | 3.9 | 2.6 | 1.9 | 1.5 | 1.3 | 1.0 | 0.8 | 32 |
| 3.5 | 3.4 | 4.6 | 3.4 | 2.2 | 1.7 | 1.3 | 1.1 | 0.9 | 0.7 | 30 |
| 3 | 2.9 | 3.9 | 2.9 | 1.9 | 1.4 | 1.2 | 1.0 | 0.7 | 0.6 | 30 |
| 2.5 | 2.5 | 3.3 | 2.4 | 1.6 | 1.2 | 1.0 | 0.8 | 0.6 | 0.5 | 30 |
| 2 | 2.0 | 2.6 | 2.0 | 1.3 | 1.0 | 0.8 | 0.7 | 0.5 | 0.4 | 30 |
| 1.5 | 1.5 | 2.0 | 1.5 | 1.0 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 30 |
| 1 | 1.0 | 1.3 | 1.0 | 0.7 | 0.5 | 0.4 | 0.4 | 0.3 | 0.2 | 30 |
| 0.5 | 0.5 | 0.7 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 30 |
| Max. Operating Pressure (MPa) | | 4.8 | 5.7 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | |



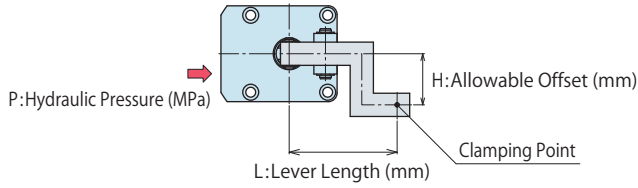
| LKW0651 | | Clamping Force Calculation Formula ^{**1} (kN) $F = (35.06 \times P) / (L - 24.5)$ | | | | | | | | |
|-------------------------------|---------------------|--|------|--------|------|-------|-------|-------|-------|----------------------------|
| Hydraulic Pressure (MPa) | Cylinder Force (kN) | Clamping Force (kN) Non-Usable Range (■) | | | | | | | | Min. Lever Length (L) (mm) |
| | | Lever Length L (mm) | | | | | | | | |
| | | L=40 | L=50 | L=56.5 | L=80 | L=100 | L=120 | L=140 | L=160 | |
| 7 | 11.2 | | | 7.7 | 4.5 | 3.3 | 2.6 | 2.2 | 1.9 | 56.5 |
| 6.5 | 10.4 | | | 7.2 | 4.2 | 3.1 | 2.4 | 2.0 | 1.7 | 52 |
| 6 | 9.6 | | | 6.6 | 3.8 | 2.8 | 2.3 | 1.9 | 1.6 | 48 |
| 5.5 | 8.8 | | | 6.1 | 3.5 | 2.6 | 2.1 | 1.7 | 1.5 | 45 |
| 5 | 8.0 | | | 5.5 | 3.2 | 2.4 | 1.9 | 1.6 | 1.3 | 42 |
| 4.5 | 7.2 | 10.2 | 6.2 | 5.0 | 2.9 | 2.1 | 1.7 | 1.4 | 1.2 | 39 |
| 4 | 6.4 | 9.1 | 5.5 | 4.4 | 2.6 | 1.9 | 1.5 | 1.3 | 1.1 | 37 |
| 3.5 | 5.6 | 8.0 | 4.9 | 3.9 | 2.3 | 1.7 | 1.3 | 1.1 | 1.0 | 35 |
| 3 | 4.8 | 6.8 | 4.2 | 3.3 | 1.9 | 1.4 | 1.2 | 1.0 | 0.8 | 35 |
| 2.5 | 4.0 | 5.7 | 3.5 | 2.8 | 1.6 | 1.2 | 1.0 | 0.8 | 0.7 | 35 |
| 2 | 3.2 | 4.6 | 2.8 | 2.2 | 1.3 | 1.0 | 0.8 | 0.7 | 0.6 | 35 |
| 1.5 | 2.4 | 3.4 | 2.1 | 1.7 | 1.0 | 0.7 | 0.6 | 0.5 | 0.4 | 35 |
| 1 | 1.6 | 2.3 | 1.4 | 1.1 | 0.7 | 0.5 | 0.4 | 0.4 | 0.3 | 35 |
| 0.5 | 0.8 | 1.2 | 0.7 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 35 |
| Max. Operating Pressure (MPa) | 4.8 | 6.3 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | |



| LKW0751 | | Clamping Force Calculation Formula ^{**1} (kN) $F = (64.14 \times P) / (L - 30)$ | | | | | | | | |
|-------------------------------|---------------------|--|------|--------|------|-------|-------|-------|-------|----------------------------|
| Hydraulic Pressure (MPa) | Cylinder Force (kN) | Clamping Force (kN) Non-Usable Range (■) | | | | | | | | Min. Lever Length (L) (mm) |
| | | Lever Length L (mm) | | | | | | | | |
| | | L=50 | L=60 | L=67.5 | L=80 | L=100 | L=120 | L=140 | L=160 | |
| 7 | 16.7 | | | 12.0 | 9.0 | 6.5 | 5.0 | 4.1 | 3.5 | 67.5 |
| 6.5 | 15.5 | | | 11.2 | 8.4 | 6.0 | 4.7 | 3.8 | 3.3 | 63 |
| 6 | 14.3 | | | 10.3 | 7.7 | 5.5 | 4.3 | 3.5 | 3.0 | 58 |
| 5.5 | 13.1 | | | 9.5 | 7.1 | 5.1 | 4.0 | 3.3 | 2.8 | 54 |
| 5 | 11.9 | 16.1 | 10.7 | 8.6 | 6.5 | 4.6 | 3.6 | 3.0 | 2.5 | 51 |
| 4.5 | 10.7 | 14.5 | 9.7 | 7.7 | 5.8 | 4.2 | 3.3 | 2.7 | 2.3 | 48 |
| 4 | 9.6 | 12.9 | 8.6 | 6.9 | 5.2 | 3.7 | 2.9 | 2.4 | 2.0 | 45 |
| 3.5 | 8.4 | 11.3 | 7.5 | 6.0 | 4.5 | 3.3 | 2.5 | 2.1 | 1.8 | 43 |
| 3 | 7.2 | 9.7 | 6.5 | 5.2 | 3.9 | 2.8 | 2.2 | 1.8 | 1.5 | 43 |
| 2.5 | 6.0 | 8.1 | 5.4 | 4.3 | 3.3 | 2.3 | 1.8 | 1.5 | 1.3 | 43 |
| 2 | 4.8 | 6.5 | 4.3 | 3.5 | 2.6 | 1.9 | 1.5 | 1.2 | 1.0 | 43 |
| 1.5 | 3.6 | 4.9 | 3.3 | 2.6 | 2.0 | 1.4 | 1.1 | 0.9 | 0.8 | 43 |
| 1 | 2.4 | 3.3 | 2.2 | 1.8 | 1.3 | 1.0 | 0.8 | 0.6 | 0.5 | 43 |
| 0.5 | 1.2 | 1.7 | 1.1 | 0.9 | 0.7 | 0.5 | 0.4 | 0.3 | 0.3 | 43 |
| Max. Operating Pressure (MPa) | 5.0 | 6.3 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | |



Allowable Offset Graph (Option . . . Blank: Standard)



(Ex.) When using LKW0481-C□□
 Supply Hydraulic Pressure 5.0MPa, Lever Length L=80mm
 Allowable Offset is about 10mm.

Applicable Model

LKW **1** - C L C R E H J - Blank K

1 Body Size

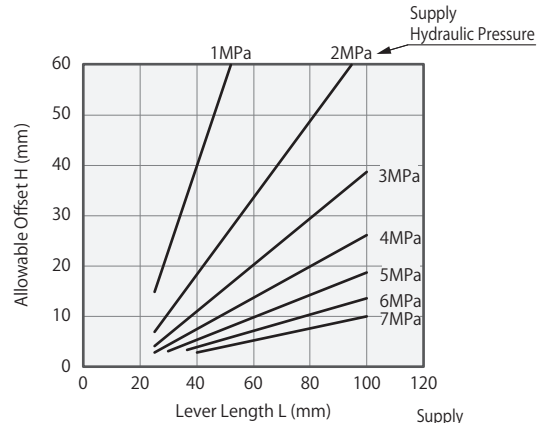
6 Option
 When Blank (or K) is chosen.

Notes:

1. Tables and graphs shown are the relationships between the lever length (mm) for supply hydraulic pressure (MPa) and the allowable offset (mm).
2. Using the lever beyond allowable offset may cause deformation, galling and fluid leakage etc.
3. The tables and graphs are only for reference. The design should be carried out with allowance fully taken into consideration.

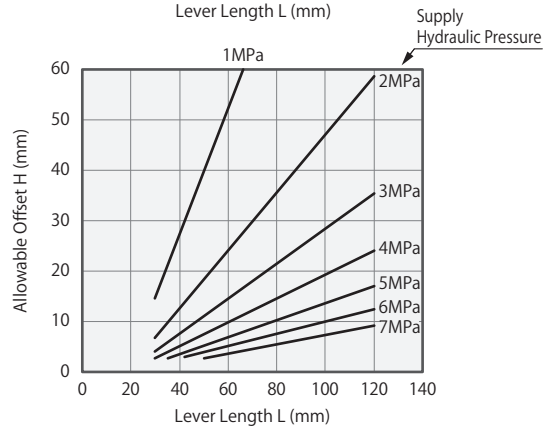
LKW0401-C□□

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | | |
|--------------------------|--|------|--------|------|------|------|------|-------|--|
| | Lever Length L (mm) | | | | | | | | |
| | L=25 | L=30 | L=36.5 | L=40 | L=50 | L=60 | L=80 | L=100 | |
| 7 | ■ | ■ | ■ | 3 | 4 | 5 | 8 | 10 | |
| 6.5 | ■ | ■ | 3 | 3 | 5 | 6 | 9 | 12 | |
| 6 | ■ | ■ | 3 | 4 | 5 | 7 | 10 | 14 | |
| 5.5 | ■ | 3 | 4 | 5 | 6 | 8 | 12 | 16 | |
| 5 | ■ | 3 | 5 | 5 | 8 | 10 | 14 | 19 | |
| 4.5 | ■ | 4 | 5 | 6 | 9 | 12 | 17 | 22 | |
| 4 | 3 | 4 | 6 | 7 | 11 | 14 | 20 | 26 | |
| 3.5 | 3 | 5 | 8 | 9 | 13 | 17 | 24 | 32 | |
| 3 | 4 | 6 | 9 | 11 | 16 | 20 | 30 | 39 | |
| 2.5 | 5 | 8 | 12 | 14 | 20 | 26 | 37 | 49 | |
| 2 | 7 | 11 | 16 | 18 | 26 | 34 | 49 | 64 | |
| 1.5 | 10 | 15 | 22 | 26 | 36 | 47 | 68 | 89 | |
| 1 | 15 | 23 | 34 | 40 | 57 | 73 | 106 | 140 | |



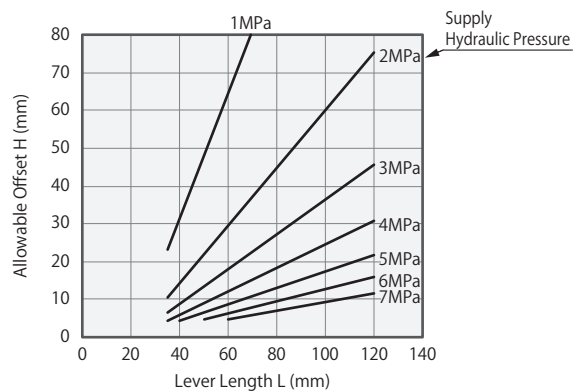
LKW0481-C□□

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | | |
|--------------------------|--|------|------|------|------|------|-------|-------|--|
| | Lever Length L (mm) | | | | | | | | |
| | L=30 | L=35 | L=42 | L=50 | L=60 | L=80 | L=100 | L=120 | |
| 7 | ■ | ■ | ■ | 3 | 4 | 6 | 7 | 9 | |
| 6.5 | ■ | ■ | 2 | 3 | 4 | 6 | 9 | 11 | |
| 6 | ■ | ■ | 3 | 4 | 5 | 8 | 10 | 12 | |
| 5.5 | ■ | 2 | 3 | 5 | 6 | 9 | 12 | 15 | |
| 5 | ■ | 3 | 4 | 5 | 7 | 10 | 14 | 17 | |
| 4.5 | ■ | 3 | 5 | 6 | 8 | 12 | 16 | 20 | |
| 4 | 3 | 4 | 6 | 7 | 10 | 15 | 19 | 24 | |
| 3.5 | 3 | 5 | 7 | 9 | 12 | 18 | 23 | 29 | |
| 3 | 4 | 6 | 8 | 11 | 15 | 22 | 29 | 36 | |
| 2.5 | 5 | 7 | 10 | 14 | 18 | 27 | 36 | 45 | |
| 2 | 7 | 10 | 14 | 18 | 24 | 36 | 47 | 59 | |
| 1.5 | 9 | 13 | 19 | 25 | 33 | 50 | 66 | 82 | |
| 1 | 14 | 21 | 30 | 40 | 52 | 77 | 103 | 128 | |



LKW0551-C□□

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | | |
|--------------------------|--|------|------|------|------|------|-------|-------|--|
| | Lever Length L (mm) | | | | | | | | |
| | L=35 | L=40 | L=50 | L=60 | L=70 | L=80 | L=100 | L=120 | |
| 7 | ■ | ■ | ■ | 5 | 6 | 7 | 9 | 12 | |
| 6.5 | ■ | ■ | 4 | 5 | 7 | 8 | 11 | 14 | |
| 6 | ■ | ■ | 5 | 6 | 8 | 10 | 13 | 16 | |
| 5.5 | ■ | ■ | 5 | 7 | 9 | 11 | 15 | 19 | |
| 5 | ■ | 4 | 6 | 9 | 11 | 13 | 17 | 22 | |
| 4.5 | ■ | 5 | 8 | 10 | 13 | 15 | 21 | 26 | |
| 4 | 4 | 6 | 9 | 12 | 15 | 18 | 25 | 31 | |
| 3.5 | 5 | 7 | 11 | 15 | 18 | 22 | 30 | 37 | |
| 3 | 6 | 9 | 13 | 18 | 23 | 27 | 36 | 46 | |
| 2.5 | 8 | 11 | 17 | 23 | 28 | 34 | 46 | 57 | |
| 2 | 11 | 14 | 22 | 30 | 37 | 45 | 60 | 75 | |
| 1.5 | 15 | 20 | 31 | 41 | 52 | 62 | 84 | 105 | |
| 1 | 23 | 31 | 48 | 65 | 81 | 98 | 131 | 164 | |

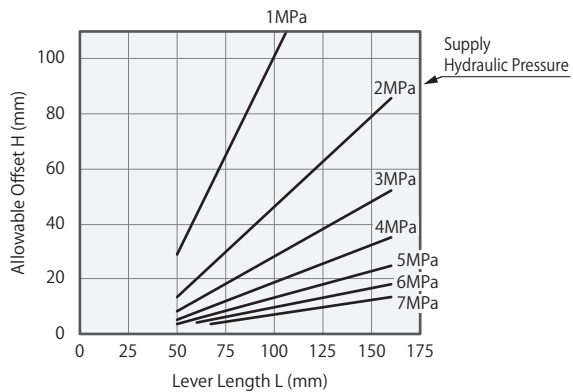
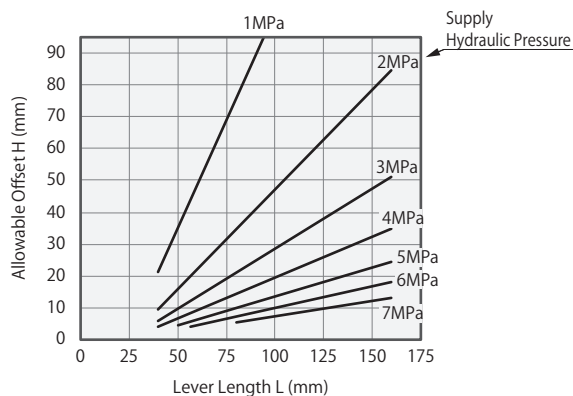


LKW0651-C□□

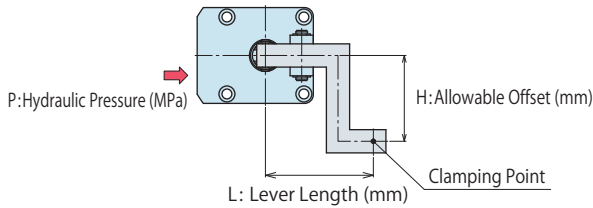
| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|--------|------|-------|-------|-------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=40 | L=50 | L=56.5 | L=80 | L=100 | L=120 | L=140 | L=160 |
| 7 | | | | 5 | 7 | 9 | 11 | 13 |
| 6.5 | | | 4 | 6 | 9 | 11 | 13 | 15 |
| 6 | | | 4 | 7 | 10 | 13 | 15 | 18 |
| 5.5 | | 4 | 5 | 9 | 12 | 15 | 18 | 21 |
| 5 | | 5 | 6 | 10 | 14 | 17 | 21 | 25 |
| 4.5 | 3 | 5 | 7 | 12 | 16 | 20 | 25 | 29 |
| 4 | 4 | 7 | 8 | 14 | 19 | 24 | 30 | 35 |
| 3.5 | 5 | 8 | 10 | 17 | 23 | 29 | 36 | 42 |
| 3 | 6 | 10 | 12 | 21 | 29 | 36 | 44 | 51 |
| 2.5 | 7 | 12 | 15 | 26 | 36 | 46 | 55 | 65 |
| 2 | 10 | 16 | 20 | 35 | 47 | 60 | 72 | 85 |
| 1.5 | 13 | 22 | 28 | 48 | 66 | 83 | 101 | 118 |
| 1 | 21 | 35 | 44 | 76 | 103 | 130 | 157 | 185 |

LKW0751-C□□

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|--------|------|-------|-------|-------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=50 | L=60 | L=67.5 | L=80 | L=100 | L=120 | L=140 | L=160 |
| 7 | | | | 5 | 7 | 9 | 11 | 13 |
| 6.5 | | | 5 | 6 | 8 | 11 | 13 | 16 |
| 6 | | 4 | 5 | 7 | 10 | 13 | 15 | 18 |
| 5.5 | | 5 | 6 | 8 | 11 | 15 | 18 | 21 |
| 5 | 4 | 6 | 7 | 10 | 13 | 17 | 21 | 25 |
| 4.5 | 5 | 7 | 9 | 11 | 16 | 20 | 25 | 30 |
| 4 | 5 | 8 | 10 | 14 | 19 | 24 | 30 | 35 |
| 3.5 | 7 | 10 | 12 | 16 | 23 | 29 | 36 | 42 |
| 3 | 8 | 12 | 15 | 20 | 28 | 36 | 44 | 52 |
| 2.5 | 10 | 15 | 19 | 25 | 35 | 45 | 56 | 66 |
| 2 | 13 | 20 | 25 | 33 | 46 | 60 | 73 | 86 |
| 1.5 | 18 | 28 | 35 | 46 | 65 | 83 | 101 | 120 |
| 1 | 29 | 43 | 54 | 72 | 101 | 130 | 159 | 188 |

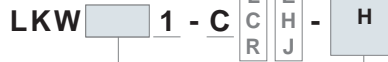


Allowable Offset Graph (Option . . . H : High Strength Link Plate)



(Example) When using LKW0481-C□□-H
 Supply Hydraulic Pressure 5.0MPa, Lever Length L=80mm
 Allowable Offset is about 46mm.

Applicable Model



1 Body Size

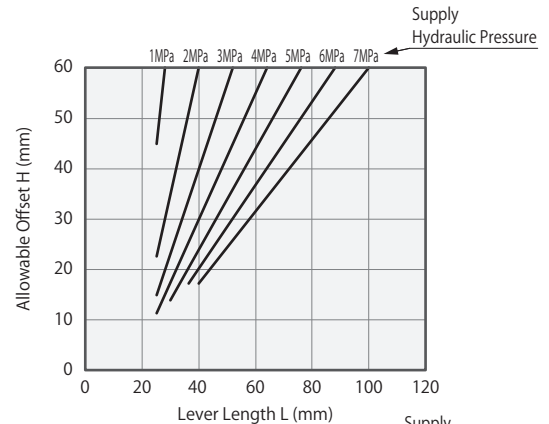
6 Option : When H is chosen.

Notes:

1. Tables and graphs shown are the relationships between the lever length (mm) for supply hydraulic pressure (MPa) and the allowable offset (mm).
2. Using the lever beyond allowable offset may cause deformation, galling and fluid leakage etc.
3. The tables and graphs are only for reference. The design should be carried out with allowance fully taken into consideration.

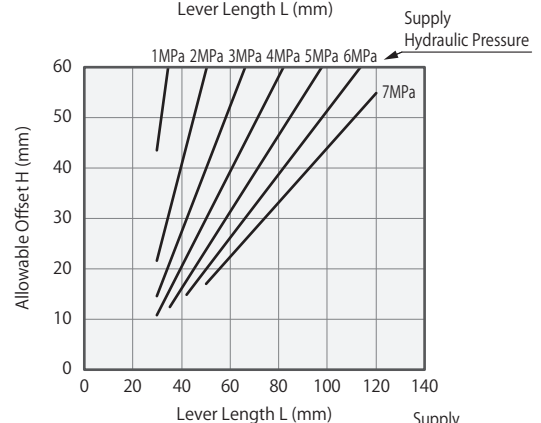
LKW0401-C□□-H

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|--------|------|------|------|------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=25 | L=30 | L=36.5 | L=40 | L=50 | L=60 | L=80 | L=100 |
| 7 | ■ | ■ | ■ | 17 | 24 | 31 | 46 | 60 |
| 6.5 | ■ | ■ | 16 | 18 | 26 | 34 | 49 | 64 |
| 6 | ■ | ■ | 17 | 20 | 28 | 37 | 53 | 70 |
| 5.5 | ■ | 13 | 19 | 22 | 31 | 40 | 58 | 76 |
| 5 | ■ | 14 | 20 | 24 | 34 | 44 | 64 | 84 |
| 4.5 | ■ | 16 | 23 | 27 | 38 | 49 | 71 | 93 |
| 4 | 11 | 17 | 26 | 30 | 42 | 55 | 80 | 105 |
| 3.5 | 13 | 20 | 29 | 34 | 48 | 63 | 91 | 120 |
| 3 | 15 | 23 | 34 | 40 | 57 | 73 | 106 | 140 |
| 2.5 | 18 | 28 | 41 | 48 | 68 | 88 | 128 | 168 |
| 2 | 22 | 35 | 51 | 60 | 85 | 110 | 160 | 210 |
| 1.5 | 30 | 47 | 68 | 80 | 113 | 146 | 213 | 279 |
| 1 | 45 | 70 | 102 | 120 | 170 | 220 | 319 | 419 |



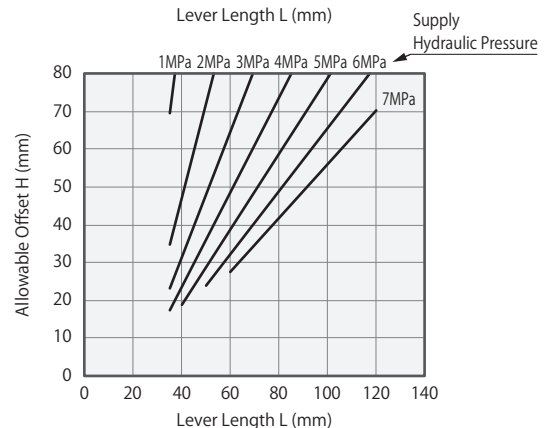
LKW0481-C□□-H

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|------|------|------|------|-------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=30 | L=35 | L=42 | L=50 | L=60 | L=80 | L=100 | L=120 |
| 7 | ■ | ■ | ■ | 17 | 22 | 33 | 44 | 55 |
| 6.5 | ■ | ■ | 14 | 18 | 24 | 36 | 47 | 59 |
| 6 | ■ | ■ | 15 | 20 | 26 | 39 | 51 | 64 |
| 5.5 | ■ | 11 | 16 | 22 | 29 | 42 | 56 | 70 |
| 5 | ■ | 12 | 18 | 24 | 31 | 46 | 62 | 77 |
| 4.5 | ■ | 14 | 20 | 26 | 35 | 52 | 68 | 85 |
| 4 | 11 | 16 | 22 | 30 | 39 | 58 | 77 | 96 |
| 3.5 | 12 | 18 | 25 | 34 | 45 | 66 | 88 | 110 |
| 3 | 14 | 21 | 30 | 40 | 52 | 77 | 103 | 128 |
| 2.5 | 17 | 25 | 36 | 48 | 63 | 93 | 123 | 153 |
| 2 | 22 | 31 | 44 | 60 | 78 | 116 | 154 | 192 |
| 1.5 | 29 | 42 | 59 | 79 | 105 | 155 | 205 | 256 |
| 1 | 43 | 62 | 89 | 119 | 157 | 232 | 308 | 384 |



LKW0551-C□□-H

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|------|------|------|------|-------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=35 | L=40 | L=50 | L=60 | L=70 | L=80 | L=100 | L=120 |
| 7 | ■ | ■ | ■ | 28 | 35 | 42 | 56 | 70 |
| 6.5 | ■ | ■ | 22 | 30 | 37 | 45 | 60 | 76 |
| 6 | ■ | ■ | 24 | 32 | 41 | 49 | 65 | 82 |
| 5.5 | ■ | ■ | 26 | 35 | 44 | 53 | 71 | 89 |
| 5 | ■ | 19 | 29 | 39 | 49 | 59 | 79 | 98 |
| 4.5 | ■ | 21 | 32 | 43 | 54 | 65 | 87 | 109 |
| 4 | 17 | 24 | 36 | 48 | 61 | 73 | 98 | 123 |
| 3.5 | 20 | 27 | 41 | 55 | 70 | 84 | 112 | 141 |
| 3 | 23 | 31 | 48 | 65 | 81 | 98 | 131 | 164 |
| 2.5 | 28 | 38 | 58 | 78 | 97 | 117 | 157 | 197 |
| 2 | 35 | 47 | 72 | 97 | 122 | 147 | 196 | 246 |
| 1.5 | 46 | 63 | 96 | 129 | 162 | 196 | 262 | 328 |
| 1 | 70 | 94 | 144 | 194 | 244 | 293 | 393 | 492 |



Hydraulic Series

Accessories

Cautions

Air Sensing Swing Clamp
LHW

Air Sensing Link Clamp
LKW

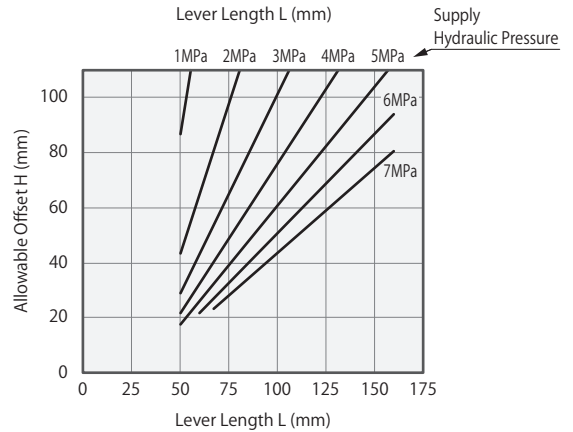
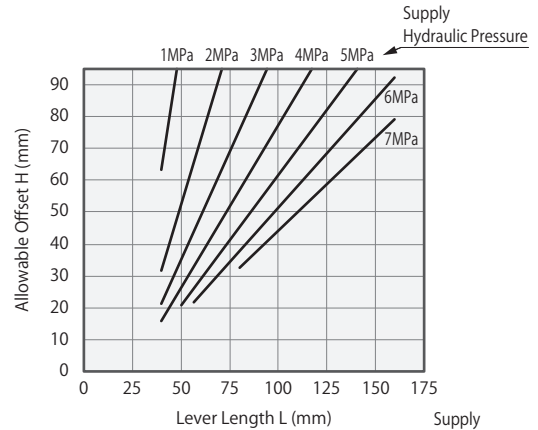
Air Sensing Lift Cylinder
LLW

LKW0651-C□□-H

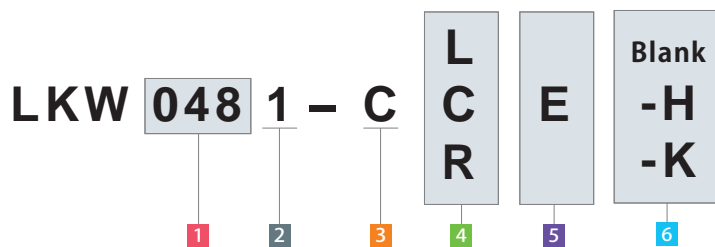
| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|--------|------|-------|-------|-------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=40 | L=50 | L=56.5 | L=80 | L=100 | L=120 | L=140 | L=160 |
| 7 | ■ | ■ | ■ | 32 | 44 | 56 | 67 | 79 |
| 6.5 | ■ | ■ | 20 | 35 | 47 | 60 | 73 | 85 |
| 6 | ■ | ■ | 22 | 38 | 51 | 65 | 79 | 92 |
| 5.5 | ■ | 19 | 24 | 41 | 56 | 71 | 86 | 101 |
| 5 | ■ | 21 | 26 | 45 | 62 | 78 | 94 | 111 |
| 4.5 | 14 | 23 | 29 | 50 | 69 | 87 | 105 | 123 |
| 4 | 16 | 26 | 33 | 57 | 77 | 98 | 118 | 139 |
| 3.5 | 18 | 30 | 37 | 65 | 88 | 112 | 135 | 158 |
| 3 | 21 | 35 | 44 | 76 | 103 | 130 | 157 | 185 |
| 2.5 | 25 | 42 | 52 | 91 | 123 | 156 | 189 | 222 |
| 2 | 32 | 52 | 65 | 113 | 154 | 195 | 236 | 277 |
| 1.5 | 42 | 70 | 87 | 151 | 206 | 260 | 315 | 369 |
| 1 | 63 | 104 | 131 | 227 | 309 | 390 | 472 | 554 |

LKW0751-C□□-H

| Hydraulic Pressure (MPa) | Allowable Offset H (mm) Non-Usable Range (■) | | | | | | | |
|--------------------------|--|------|--------|------|-------|-------|-------|-------|
| | Lever Length L (mm) | | | | | | | |
| | L=50 | L=60 | L=67.5 | L=80 | L=100 | L=120 | L=140 | L=160 |
| 7 | ■ | ■ | ■ | 31 | 43 | 56 | 68 | 80 |
| 6.5 | ■ | ■ | 25 | 33 | 47 | 60 | 73 | 87 |
| 6 | ■ | 22 | 27 | 36 | 51 | 65 | 79 | 94 |
| 5.5 | ■ | 24 | 30 | 39 | 55 | 71 | 87 | 102 |
| 5 | 17 | 26 | 32 | 43 | 61 | 78 | 95 | 113 |
| 4.5 | 19 | 29 | 36 | 48 | 67 | 87 | 106 | 125 |
| 4 | 22 | 32 | 41 | 54 | 76 | 97 | 119 | 141 |
| 3.5 | 25 | 37 | 46 | 62 | 87 | 111 | 136 | 161 |
| 3 | 29 | 43 | 54 | 72 | 101 | 130 | 159 | 188 |
| 2.5 | 35 | 52 | 65 | 87 | 121 | 156 | 190 | 225 |
| 2 | 43 | 65 | 81 | 108 | 152 | 195 | 238 | 281 |
| 1.5 | 58 | 87 | 108 | 144 | 202 | 260 | 317 | 375 |
| 1 | 87 | 130 | 162 | 216 | 303 | 390 | 476 | 563 |



Model No. Indication



(Format Example : LKW0481-CCE, LKW0551-CLE-H)

- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Lever Direction
- 5 Sensing Valve
(When selecting E :
Clamp - Unclamp Confirmation)
- 6 Option

Notes:

1. For option -H, the material of link plate has higher intensity than that of standard plate, and the form of chamfering 2 is round.
2. For option -K, flange pin is used as link pin (3 parts) and C type circlip is used as stop ring.

External Dimensions and Machining Dimensions of Mounting (mm)

| Model No. | LKW0401-C□E-□ | LKW0481-C□E-□ | LKW0551-C□E-□ | LKW0651-C□E-□ | LKW0751-C□E-□ | |
|-------------------------|-----------------------------------|--|-----------------------------------|-----------------------------------|-----------------------------------|----------------|
| Full Stroke | 20.5 | 23.5 | 26 | 29.5 | 35 | |
| Clamp Stroke | 17.5 | 20.5 | 23 | 26.5 | 32 | |
| Extra Stroke | 3 | 3 | 3 | 3 | 3 | |
| A | 92.5 | 103.5 | 110.5 | 124.5 | 145.5 | |
| B | 54 | 61 | 69 | 81 | 94.5 | |
| C | 45 | 51 | 60 | 70 | 85 | |
| D | 40 | 48 | 55 | 65 | 75 | |
| E | 59 | 64.5 | 65 | 70.5 | 78.5 | |
| F | 34 | 36.5 | 37 | 40.5 | 41.5 | |
| G | 25 | 28 | 28 | 30 | 37 | |
| H | 31.5 | 35.5 | 39 | 46 | 52 | |
| J | 22.5 | 25.5 | 30 | 35 | 42.5 | |
| K | 34 | 40 | 47 | 55 | 63 | |
| L | 72 | 81 | 88 | 106 | 116 | |
| M | 11 | 12 | 12 | 13 | 16 | |
| Nx | 26 | 30 | 33.5 | 39.5 | 45 | |
| Ny | 9 | 11 | 12 | 15 | 16 | |
| P | 3 | 3 | 3 | 5 | 5 | |
| Q | 9 | 9 | 11 | 11 | 14 | |
| R | 5.5 | 5.5 | 6.8 | 6.8 | 9 | |
| S | 15 | 16 | 13.5 | 16 | 17.5 | |
| T | 30.5 | 35 | 37.5 | 45 | 55 | |
| U | 12 | 14 | 16 | 20 | 22 | |
| V | 25 | 29 | 31.5 | 37 | 45 | |
| W | 30.5 | 34.5 | 35.5 | 39 | 48 | |
| X | 22 | 26 | 30 | 35.5 | 43.5 | |
| Y | 13 | 13 | 16 | 19 | 25 | |
| Z | 21 | 24 | 28 | 37 | 40 | |
| Chamfer 1 | C3 | C3 | C3 | C4 | C10 | |
| Chamfer 2 | C3 | C3 | C3 | C5 | C5 | |
| AA | 16 | 18.5 | 21 | 24.5 | 30 | |
| AB | 77.7 | 92.4 | 101.9 | 111.4 | 130.8 | |
| AC | 50.2 | 61.2 | 71.7 | 78.7 | 90.8 | |
| AD | 6 | 6 | 6 | 8 | 10 | |
| AE | 6 | 6 | 8 | 10 | 12 | |
| AG | 20.2 | 18.9 | 19.9 | 20.5 | 21.4 | |
| BA | 31.6 | 38 | 43 | 54 | 64 | |
| BB | 0° | 0° | 0° | 0° | 30° | |
| BC | R 10.5 | R 10.5 | R 10.5 | - | - | |
| BD | 30° | 30° | 30° | 30° | 22.5° | |
| BE | - | - | - | 5 | 5 | |
| EA (Nominal×Pitch) | M5×0.8 | M5×0.8 | M6×1 | M6×1 | M8×1.25 | |
| FA | 40.8 | 49 | 56 | 66 | 76 | |
| FB | 40 ^{+0.039} ₀ | 48 ^{+0.039} ₀ | 55 ^{+0.046} ₀ | 65 ^{+0.046} ₀ | 75 ^{+0.046} ₀ | |
| FC | 1.2 | 1.2 | 1.5 | 1.5 | 1.5 | |
| FD | 40.6 | 48.6 | 55.6 | 65.6 | 75.6 | |
| FE | 30 | 32 | 30 | 30 | 30 | |
| FF | 34.5 | 37 | 37.5 | 41 | 42 | |
| JA | 3.5 | 3.5 | 3.5 | 4.5 | 4.5 | |
| JB | 14 | 14 | 14 | 19 | 19 | |
| Clamp Port : G Thread | G1/8 | G1/8 | G1/8 | G1/4 | G1/4 | |
| Unclamp Port : G Thread | G1/8 | G1/8 | G1/8 | G1/4 | G1/4 | |
| O-Ring | DA | 1BP5 | 1BP5 | 1BP7 | 1BP7 | |
| | DB | AS568-007(90°) | 1BP5 | 1BP5 | 1BP7 | |
| | DC | 38×1.5 (Internal Diameter × Wire Diameter) | AS568-031(70°) | AS568-033(70°) | AS568-036(70°) | AS568-040(70°) |
| | DD | AS568-028(70°) | AS568-031(70°) | AS568-033(70°) | AS568-036(70°) | AS568-039(70°) |

Hydraulic Series

Accessories

Cautions

Air Sensing
Swing Clamp

LHW

Air Sensing
Link Clamp

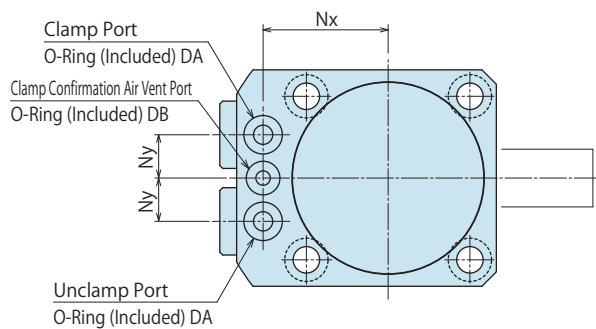
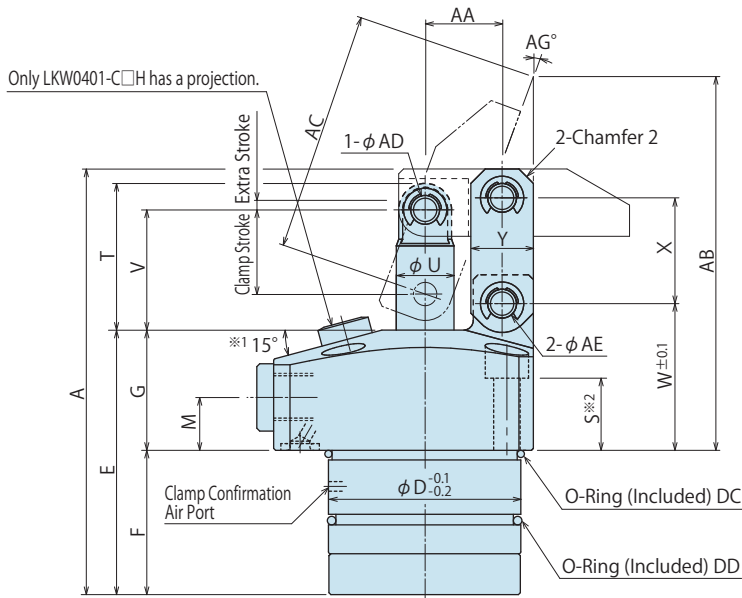
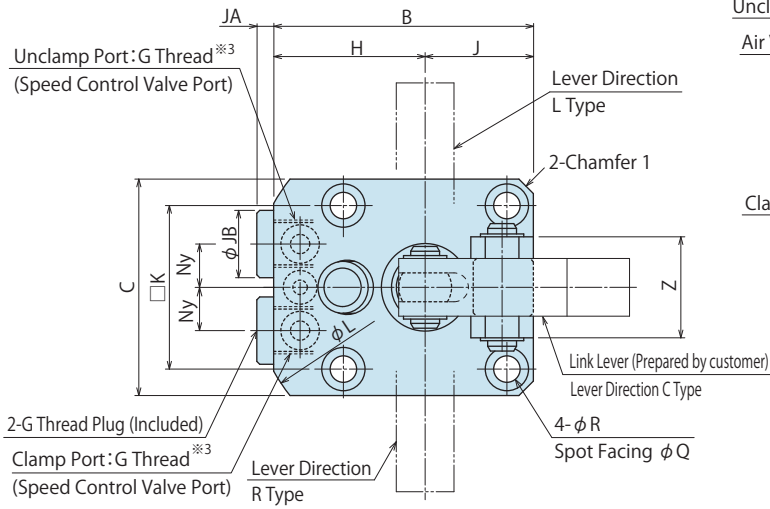
LKW

Air Sensing
Lift Cylinder

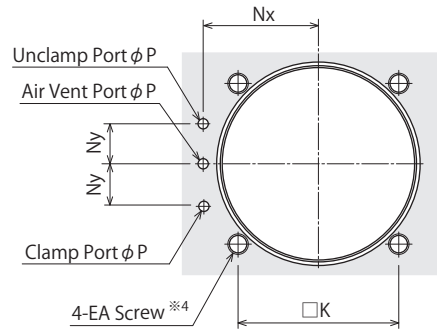
LLW

External Dimensions (Clamp Confirmation Only)

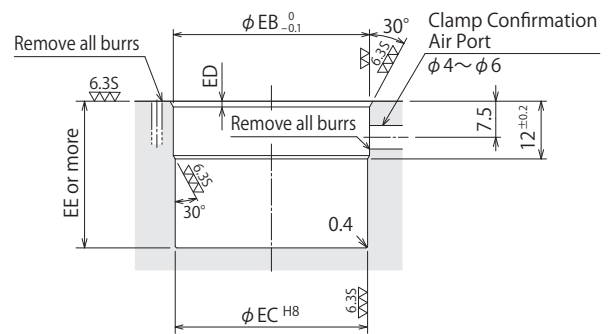
※The drawing shows the clamped state of LKW-CCH.



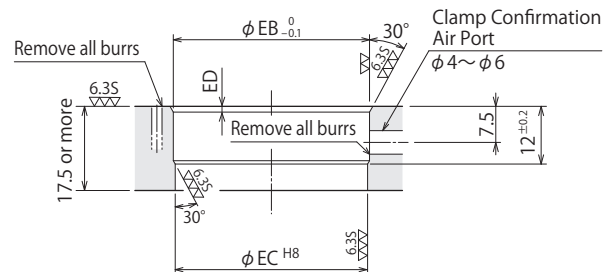
Machining Dimensions of Mounting Area



For Blind Hole



For Through Hole



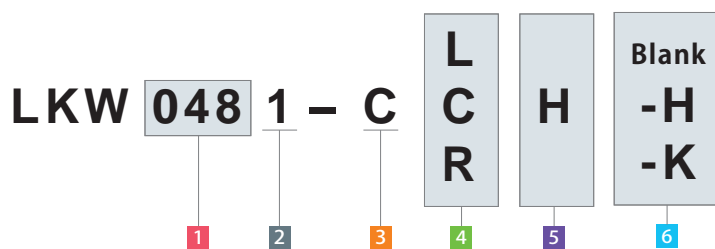
Note:

※4. EA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimensions 'S'.

Notes:

- ※ 1. Flange inclination angle is 12° only for LKW0651.
- ※ 2. Mounting bolts are not provided with the product.
Please prepare them according to the mounting height referring to dimension 'S'.
- ※ 3. Speed control valve is sold separately. Please refer to P.59 for detail.
1. Please use the provided pin (equivalent to φ ADf6, φ AEf6, HRC60) as mounting pin for lever.

Model No. Indication



(Format Example : LKW0481-CCH, LKW0551-CLH-H)

- 1** Body Size
- 2** Design No.
- 3** Piping Method
- 4** Lever Direction
- 5** Sensing Valve
(When selecting H : Clamp Confirmation Only)
- 6** Option

Notes:

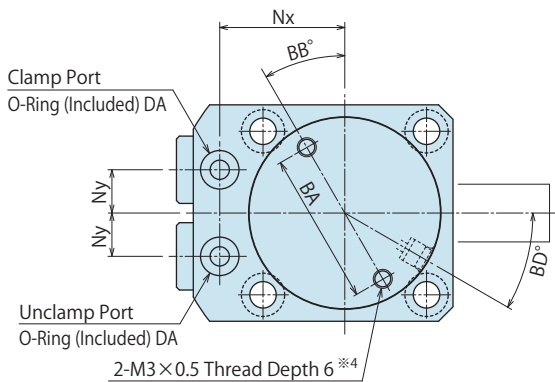
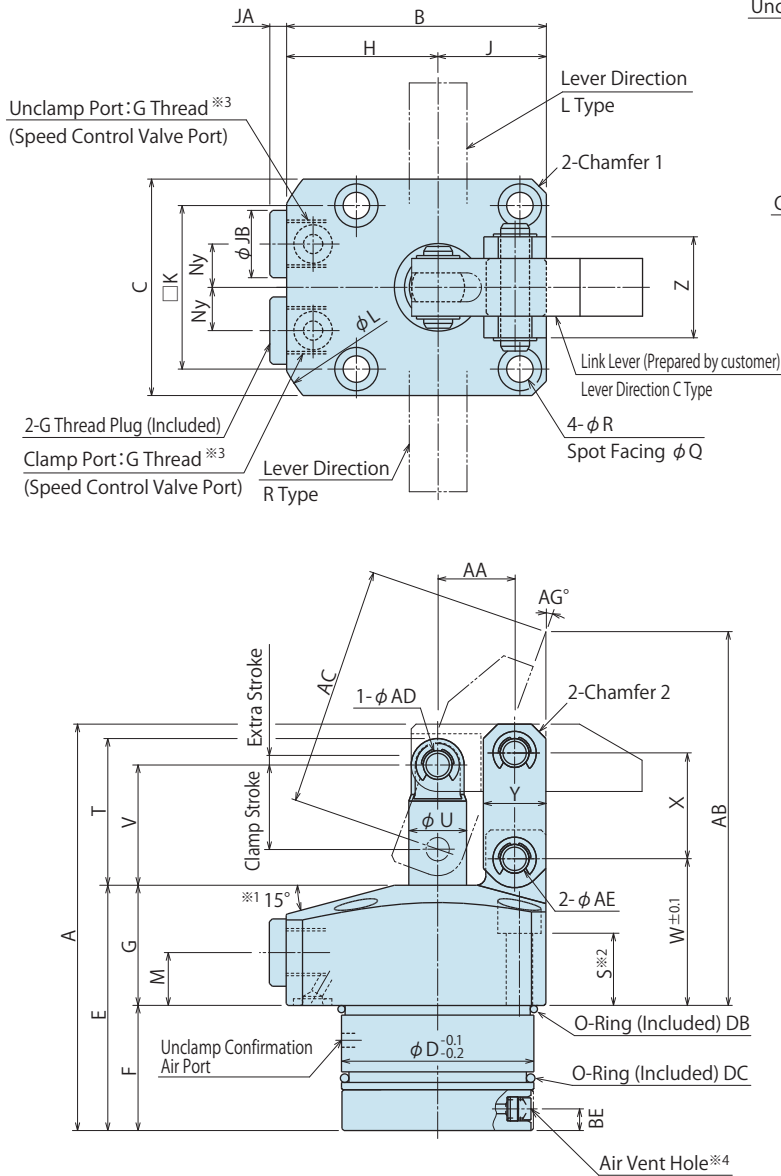
- When -H is chosen, the material of link plate has higher intensity than that of standard type. The form of chamfering 2 is round.
- When -K is chosen, pin with flange is used as link pin and stop ring is used as C type circlip.

External Dimensions and Machining Dimensions of Mounting (mm)

| Model No. | LKW0401-C□H-□ | LKW0481-C□H-□ | LKW0551-C□H-□ | LKW0651-C□H-□ | LKW0751-C□H-□ | |
|--|-----------------------------------|--|-----------------------------------|-----------------------------------|-----------------------------------|----------------|
| Full Stroke | 20.5 | 23.5 | 26 | 29.5 | 35 | |
| Clamp Stroke | 17.5 | 20.5 | 23 | 26.5 | 32 | |
| Extra Stroke | 3 | 3 | 3 | 3 | 3 | |
| A | 88.5 | 99.5 | 109 | 124.5 | 145.5 | |
| B | 54 | 61 | 69 | 81 | 94.5 | |
| C | 45 | 51 | 60 | 70 | 85 | |
| D | 40 | 48 | 55 | 65 | 75 | |
| E | 55 | 60.5 | 63.5 | 70.5 | 78.5 | |
| F | 30 | 32.5 | 35.5 | 40.5 | 41.5 | |
| G | 25 | 28 | 28 | 30 | 37 | |
| H | 31.5 | 35.5 | 39 | 46 | 52 | |
| J | 22.5 | 25.5 | 30 | 35 | 42.5 | |
| K | 34 | 40 | 47 | 55 | 63 | |
| L | 72 | 81 | 88 | 106 | 116 | |
| M | 11 | 12 | 12 | 13 | 16 | |
| Nx | 26 | 30 | 33.5 | 39.5 | 45 | |
| Ny | 9 | 11 | 12 | 15 | 16 | |
| P | 3 | 3 | 3 | 5 | 5 | |
| Q | 9 | 9 | 11 | 11 | 14 | |
| R | 5.5 | 5.5 | 6.8 | 6.8 | 9 | |
| S | 15 | 16 | 13.5 | 16 | 17.5 | |
| T | 30.5 | 35 | 37.5 | 45 | 55 | |
| U | 12 | 14 | 16 | 20 | 22 | |
| V | 25 | 29 | 31.5 | 37 | 45 | |
| W | 30.5 | 34.5 | 35.5 | 39 | 48 | |
| X | 22 | 26 | 30 | 35.5 | 43.5 | |
| Y | 13 | 13 | 16 | 19 | 25 | |
| Z | 21 | 24 | 28 | 37 | 40 | |
| Chamfer 1 | C3 | C3 | C3 | C4 | C10 | |
| Chamfer 2 | C3 | C3 | C3 | C5 | C5 | |
| AA | 16 | 18.5 | 21 | 24.5 | 30 | |
| AB | 77.7 | 92.4 | 101.9 | 111.4 | 130.8 | |
| AC | 50.2 | 61.2 | 71.7 | 78.7 | 90.8 | |
| AD | 6 | 6 | 6 | 8 | 10 | |
| AE | 6 | 6 | 8 | 10 | 12 | |
| AG | 20.2 | 18.9 | 19.9 | 20.5 | 21.4 | |
| EA (Nominal × Pitch) | M5×0.8 | M5×0.8 | M6×1 | M6×1 | M8×1.25 | |
| EB | 40.8 | 49 | 56 | 66 | 76 | |
| EC | 40 ^{+0.039} ₀ | 48 ^{+0.039} ₀ | 55 ^{+0.046} ₀ | 65 ^{+0.046} ₀ | 75 ^{+0.046} ₀ | |
| ED | 1.2 | 1.2 | 1.5 | 1.5 | 1.5 | |
| EE | 30.5 | 33 | 36 | 41 | 42 | |
| JA | 3.5 | 3.5 | 3.5 | 4.5 | 4.5 | |
| JB | 14 | 14 | 14 | 19 | 19 | |
| Clamp Port : G Thread Unclamp Port : G Thread | G1/8 | G1/8 | G1/8 | G1/4 | G1/4 | |
| O-Ring | DA | 1BP5 | 1BP5 | 1BP5 | 1BP7 | |
| | DB | AS568-007(90°) | 1BP5 | 1BP5 | 1BP7 | |
| | DC | 38×1.5 (Internal Diameter × Wire Diameter) | AS568-031(70°) | AS568-033(70°) | AS568-036(70°) | AS568-040(70°) |
| | DD | AS568-028(70°) | AS568-031(70°) | AS568-033(70°) | AS568-036(70°) | AS568-039(70°) |

External Dimensions (Unclamp Confirmation Only)

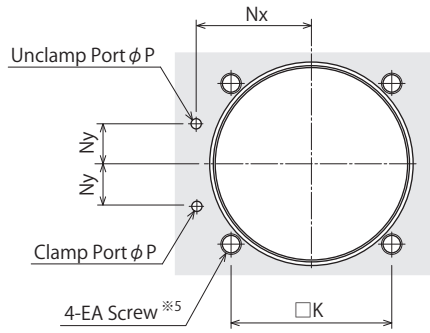
※The drawing shows the clamped state of LKW-CCJ.



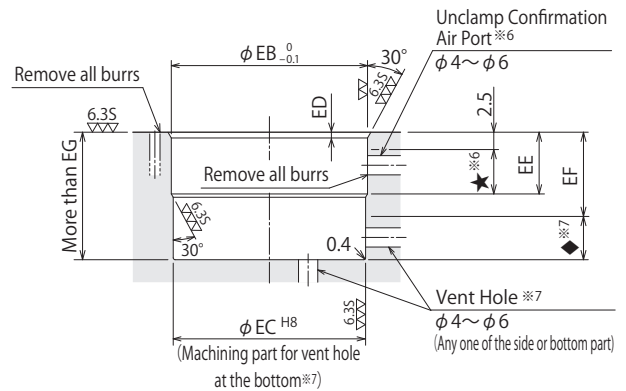
Notes:

- ※ 1. Flange inclination angle is 12° only for LKW0651.
- ※ 2. Mounting bolts are not provided with the product.
Please prepare them according to the mounting height referring to dimension 'S'.
- ※ 3. Speed control valve is sold separately. Please refer to P.59 for detail.
- ※ 4. Air vent hole must be open to the atmosphere, and prevent coolant and chips from entering the air vent hole.
If exposed to coolant, install an attachment on M3 screw to prevent coolant and chips, but do not block the air vent hole.
1. Please use the provided pin (equivalent to φADf6, φAEf6, HRC60) as mounting pin for lever.

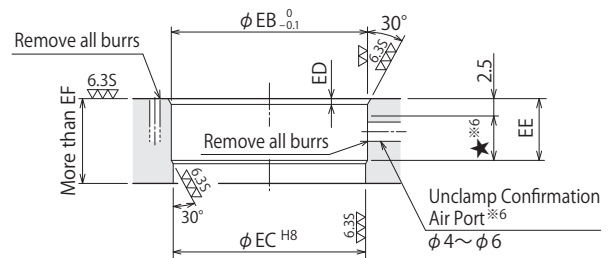
Machining Dimensions of Mounting Area



For Blind Hole



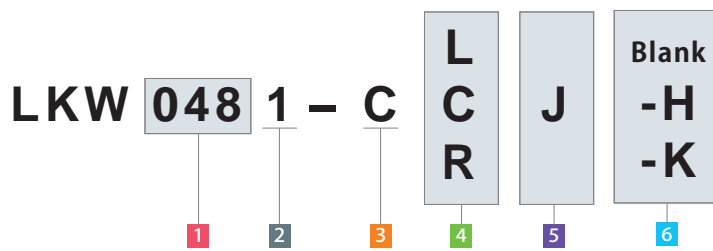
For Through Hole



Notes:

- ※5. EA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimensions 'S'.
- ※6. Prepare the air port for unclamp confirmation within the range of ★ mark.
- ※7. Prepare the vent hole at either side or bottom.
When machining the vent hole at the side, it should be prepared within the range of ◆ mark.
When machining the vent hole at the bottom, it should be prepared within the range of φEC.

Model No. Indication



(Format Example : LKW0481-CCJ, LKW0551-CLJ-H)

- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Lever Direction
- 5 Sensing Valve
(When selecting J : Unclamp Confirmation Only)
- 6 Option

Notes:

1. When -H is chosen, the material of link plate has higher intensity than that of standard type. The form of chamfering 2 is round.
2. When -K is chosen, pin with flange is used as link pin and stop ring is used as C type circlip.

External Dimensions and Machining Dimensions of Mounting (mm)

| Model No. | LKW0401-C□J-□ | LKW0481-C□J-□ | LKW0551-C□J-□ | LKW0651-C□J-□ | LKW0751-C□J-□ | |
|--|-----------------------------------|--|-----------------------------------|-----------------------------------|-----------------------------------|----------------|
| Full Stroke | 20.5 | 23.5 | 26 | 29.5 | 35 | |
| Clamp Stroke | 17.5 | 20.5 | 23 | 26.5 | 32 | |
| Extra Stroke | 3 | 3 | 3 | 3 | 3 | |
| A | 84.5 | 95 | 104 | 121.5 | 144.5 | |
| B | 54 | 61 | 69 | 81 | 94.5 | |
| C | 45 | 51 | 60 | 70 | 85 | |
| D | 40 | 48 | 55 | 65 | 75 | |
| E | 51 | 56 | 58.5 | 67.5 | 77.5 | |
| F | 26 | 28 | 30.5 | 37.5 | 40.5 | |
| G | 25 | 28 | 28 | 30 | 37 | |
| H | 31.5 | 35.5 | 39 | 46 | 52 | |
| J | 22.5 | 25.5 | 30 | 35 | 42.5 | |
| K | 34 | 40 | 47 | 55 | 63 | |
| L | 72 | 81 | 88 | 106 | 116 | |
| M | 11 | 12 | 12 | 13 | 16 | |
| Nx | 26 | 30 | 33.5 | 39.5 | 45 | |
| Ny | 9 | 11 | 12 | 15 | 16 | |
| P | 3 | 3 | 3 | 5 | 5 | |
| Q | 9 | 9 | 11 | 11 | 14 | |
| R | 5.5 | 5.5 | 6.8 | 6.8 | 9 | |
| S | 15 | 16 | 13.5 | 16 | 17.5 | |
| T | 30.5 | 35 | 37.5 | 45 | 55 | |
| U | 12 | 14 | 16 | 20 | 22 | |
| V | 25 | 29 | 31.5 | 37 | 45 | |
| W | 30.5 | 34.5 | 35.5 | 39 | 48 | |
| X | 22 | 26 | 30 | 35.5 | 43.5 | |
| Y | 13 | 13 | 16 | 19 | 25 | |
| Z | 21 | 24 | 28 | 37 | 40 | |
| Chamfer 1 | C3 | C3 | C3 | C4 | C10 | |
| Chamfer 2 | C3 | C3 | C3 | C5 | C5 | |
| AA | 16 | 18.5 | 21 | 24.5 | 30 | |
| AB | 77.7 | 92.4 | 101.9 | 111.4 | 130.8 | |
| AC | 50.2 | 61.2 | 71.7 | 78.7 | 90.8 | |
| AD | 6 | 6 | 6 | 8 | 10 | |
| AE | 6 | 6 | 8 | 10 | 12 | |
| AG | 20.2 | 18.9 | 19.9 | 20.5 | 21.4 | |
| BA | 31.6 | 38 | 43 | 54 | 64 | |
| BB | 0° | 0° | 0° | 0° | 30° | |
| BD | 30° | 30° | 30° | 30° | 22.5° | |
| BE | 4.5 | 4.5 | 4.5 | 5 | 5 | |
| EA (Nominal × Pitch) | M5×0.8 | M5×0.8 | M6×1 | M6×1 | M8×1.25 | |
| EB | 40.8 | 49 | 56 | 66 | 76 | |
| EC | 40 ^{+0.039} ₀ | 48 ^{+0.039} ₀ | 55 ^{+0.046} ₀ | 65 ^{+0.046} ₀ | 75 ^{+0.046} ₀ | |
| ED | 1.2 | 1.2 | 1.5 | 1.5 | 1.5 | |
| EE | 12 | 14 | 16.5 | 23 | 24.5 | |
| EF | 17.5 | 19.5 | 22 | 28.5 | 30 | |
| EG | 26.5 | 28.5 | 31 | 38 | 41 | |
| JA | 3.5 | 3.5 | 3.5 | 4.5 | 4.5 | |
| JB | 14 | 14 | 14 | 19 | 19 | |
| Clamp Port :G Thread Unclamp Port :G Thread | G1/8 | G1/8 | G1/8 | G1/4 | G1/4 | |
| O-Ring | DA | 1BP5 | 1BP5 | 1BP5 | 1BP7 | |
| | DB | 38×1.5 (Internal Diameter × Wire Diameter) | AS568-031(70°) | AS568-033(70°) | AS568-036(70°) | AS568-040(70°) |
| | DC | AS568-028(70°) | AS568-031(70°) | AS568-033(70°) | AS568-036(70°) | AS568-039(70°) |

Hydraulic Series

Accessories

Cautions

Air Sensing
Swing Clamp

LHW

Air Sensing
Link Clamp

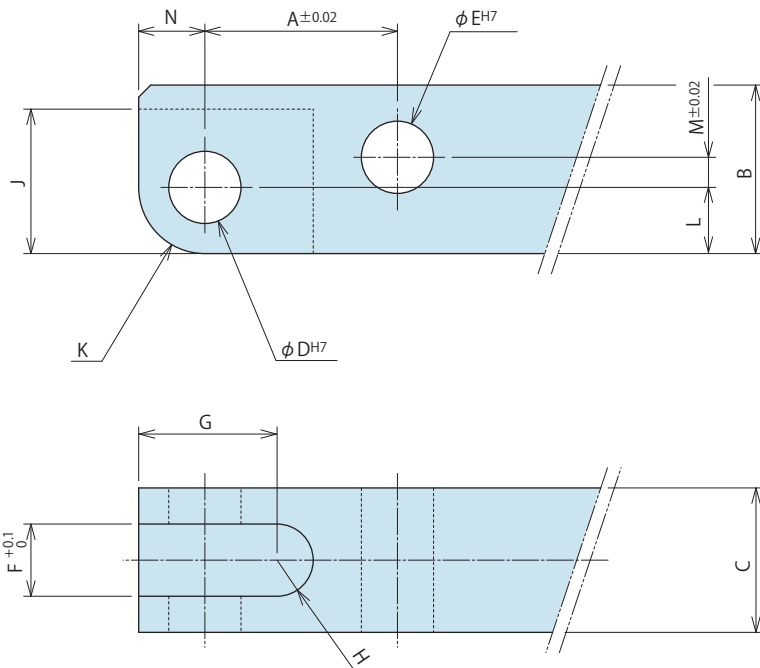
LKW

Air Sensing
Lift Cylinder

LLW

Link Lever Design Dimension

※ Reference for designing link lever.



Link Lever Design Dimension List

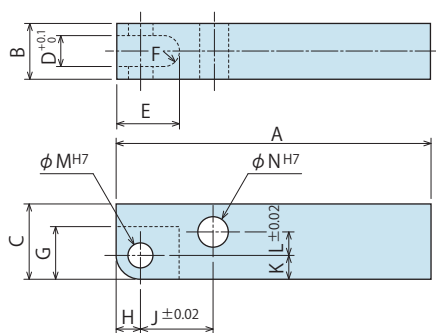
(mm)

| Corresponding Model No. | LKW0401 | LKW0481 | LKW0551 | LKW0651 | LKW0751 |
|-------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| A | 16 | 18.5 | 21 | 24.5 | 30 |
| B | 14 | 16 | 20 | 25 | 32 |
| C | 12 ⁰ _{-0.3} | 12 ⁰ _{-0.3} | 16 ⁰ _{-0.3} | 19 ⁰ _{-0.3} | 22 ⁰ _{-0.3} |
| D | 6 ^{+0.012} ₀ | 6 ^{+0.012} ₀ | 6 ^{+0.012} ₀ | 8 ^{+0.015} ₀ | 10 ^{+0.015} ₀ |
| E | 6 ^{+0.012} ₀ | 6 ^{+0.012} ₀ | 8 ^{+0.015} ₀ | 10 ^{+0.015} ₀ | 12 ^{+0.018} ₀ |
| F | 6 | 6 | 8 | 10 | 11 |
| G | 11.5 | 13 | 12.5 | 16 | 20 |
| H | R3 | R3 | R4 | R5 | R5.5 |
| J | 12 | 13 | 13 | 17.5 | 22 |
| K | R5.5 | R6 | R6 | R8 | R10 |
| L | 5.5 | 6 | 6 | 8 | 10 |
| M | 2.5 | 3.5 | 6 | 7.5 | 9.5 |
| N | 5.5 | 6 | 6 | 8 | 10 |

Notes:

1. Please design the link lever length according to the performance curve.
2. If the link lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
3. Please use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the mounting pin for lever.
(Please refer to each external dimension of LKW for the dimensions φAD and φAE.)

● Accessory : Material Link Lever



Model No. Indication

LZK 048 0 - L

Size (Refer to the table) Design No. (Revision Number)

(mm)

| Model No. | LZK0400-L | LZK0480-L | LZK0550-L | LZK0650-L | LZK0750-L |
|-------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| Corresponding Model No. | LKW0401 | LKW0481 | LKW0551 | LKW0651 | LKW0751 |
| A | 75 | 85 | 90 | 105 | 110 |
| B | 12 ⁰ _{-0.3} | 12 ⁰ _{-0.3} | 16 ⁰ _{-0.3} | 19 ⁰ _{-0.3} | 22 ⁰ _{-0.3} |
| C | 14 | 16 | 20 | 25 | 32 |
| D | 6 | 6 | 8 | 10 | 11 |
| E | 14.5 | 16 | 16.5 | 21 | 25.5 |
| F | R3 | R3 | R4 | R5 | R5.5 |
| G | 12 | 13 | 13 | 17.5 | 22 |
| H | 5.5 | 6 | 6 | 8 | 10 |
| J | 16 | 18.5 | 21 | 24.5 | 30 |
| K | 5.5 | 6 | 6 | 8 | 10 |
| L | 2.5 | 3.5 | 6 | 7.5 | 9.5 |
| M | 6 ^{+0.012} ₀ | 6 ^{+0.012} ₀ | 6 ^{+0.012} ₀ | 8 ^{+0.015} ₀ | 10 ^{+0.015} ₀ |
| N | 6 ^{+0.012} ₀ | 6 ^{+0.012} ₀ | 8 ^{+0.015} ₀ | 10 ^{+0.015} ₀ | 12 ^{+0.018} ₀ |

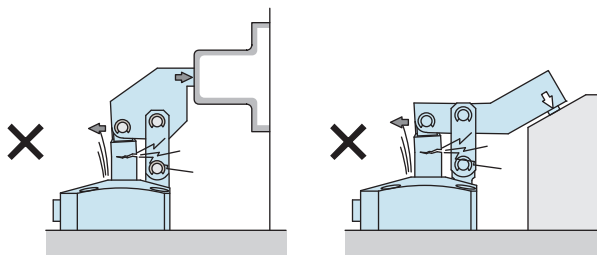
Notes: 1. Material S45C

- If necessary, the front end should be additionally machined.
- Please use the attached pin (equivalent to ϕ ADF6, ϕ AEF6, HRC60) as the mounting pin for lever.

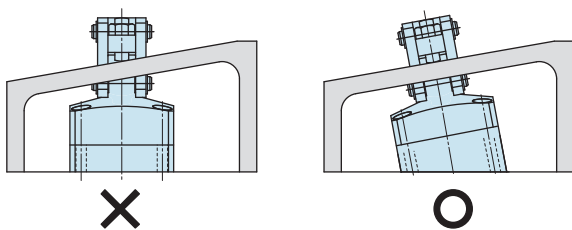
Cautions

● Notes for Design

- 1) Check Specifications
 - Please use each product according to the specifications.
- 2) Notes for Circuit Design
 - Please read "Notes on Hydraulic Cylinder Speed Control Circuit" on P.64 to assist with proper hydraulic circuit designing.
 - Ensure there is no possibility of supplying hydraulic pressure to the lock and release ports simultaneously.
- 3) Notes for Link Lever Design
 - Make sure no force is applied to the piston rod except the axial direction. (Make sure the clamp surface and the mounting surface on the workpiece are parallel.) The usage like the one shown in the drawing below will apply a large bending stress to the piston rod and must be avoided.



- If offset load is applied on the link part, use it within the allowable range of "Allowable Offset Graph".
- 4) When using on a welding fixture, the exposed area of piston rod and link plate should be protected.
 - If spatter gets onto the sliding surface it may lead to malfunction and fluid leakage.
 - 5) When clamping on a sloped surface on the workpiece.
 - Make sure the clamp surface and the mounting surface on the workpiece are parallel.



- 6) When using in a dry environment.
 - The link pin can dry out. Grease it periodically or use a special pin. Contact us for the specifications for special pins.
- 7) Notes on Sensing Valve
 - Please refer to the notes for design, installation and use on P. 27.

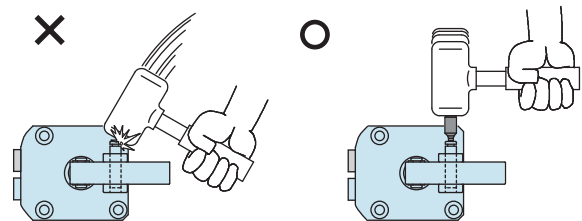
● Notes on installation.

- 1) Check the fluid to use.
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.63).
- 2) Mounting / Removing clamp.
 - When mounting the clamp, use hexagon socket bolts as multiple bolt holes for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the chart below. Tightening with greater torque than recommended can depress the seating surface or break the bolt.

| | Model No. | Thread Size | Tightening Torque (N·m) |
|-----|-----------|-------------|-------------------------|
| LKW | LKW0401 | M5×0.8 | 8.0 |
| | LKW0481 | M5×0.8 | 8.0 |
| | LKW0551 | M6×1 | 14 |
| | LKW0651 | M6×1 | 14 |
| | LKW0751 | M8×1.25 | 33 |

3) Installation / Removal of the Link Lever

- When inserting the link pin, do not hit the pin directly with a hammer. When using a hammer to insert the pin, always use a cover plate with a smaller diameter than the snap ring groove on the pin.



4) Speed Adjustment

- Adjust the speed so that the total operating time is one second or more. If the clamp operates too fast the parts will wear out leading to premature damage and ultimately complete equipment failure.
- Please make sure to release air from the circuit before adjusting speed. It will be difficult to adjust the speed accurately with air mixed in the circuit.
- Turn the speed control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

| | | | | | | | |
|----------|---------------|--------------------|-------------------------------------|-------------------|---------------------|-------------------------------------|----------|
| Features | Cross Section | Action Description | Model No. Indication Specifications | Performance Curve | External Dimensions | Lever Design Dimensions Accessories | Cautions |
|----------|---------------|--------------------|-------------------------------------|-------------------|---------------------|-------------------------------------|----------|

Hydraulic Series

Accessories

Cautions

Air Sensing
Swing Clamp
LHW

**Air Sensing
Link Clamp**
LKW

Air Sensing
Lift Cylinder
LLW

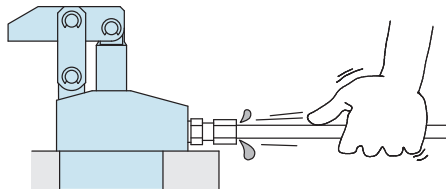
※ Please refer to P.63 for common cautions.

- Installation Notes
- Hydraulic Fluid List
- Notes on Hydraulic Cylinder Speed Control Circuit
- Notes on Handling
- Maintenance/Inspection
- Warranty

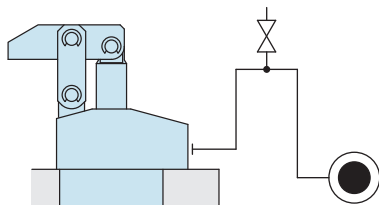
● Cautions

● Installation Notes (For Hydraulic Series)

- 1) Check the Usable Fluid
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List.
- 2) Procedure before Piping
 - The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing.
 - The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
 - There is no filter provided with Kosmek' s product except for a part of valves which prevents foreign materials and contaminants from getting into the circuit.
- 3) Applying Sealing Tape
 - Wrap with tape 1 to 2 times following the screw direction.
 - Pieces of the sealing tape can lead to oil leakage and malfunction.
 - In order to prevent a foreign substance from going into the product during the piping work, it should be carefully cleaned before working.
- 4) Air Bleeding of the Hydraulic Circuit
 - If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please perform the following steps.
 - ① Reduce hydraulic pressure to less than 2MPa.
 - ② Loosen the cap nut of pipe fitting closest to the clamp by one full turn.
 - ③ Wiggle the pipeline to loosen the outlet of pipe fitting.
Hydraulic fluid mixed with air comes out.



- ④ Tighten the cap nut after bleeding.
- ⑤ It is more effective to bleed air at the highest point inside the circuit or at the end of the circuit.
(Set an air bleeding valve at the highest point inside the circuit.)



5) Checking Looseness and Retightening

- At the beginning of the product installation, the bolt and nut may be tightened lightly. Check the looseness and re-tighten as required.

● Hydraulic Fluid List

| Maker | ISO Viscosity Grade ISO-VG-32 | |
|------------------------|-------------------------------|-----------------------------|
| | Anti-Wear Hydraulic Oil | Multi-Purpose Hydraulic Oil |
| Showa Shell Sekiyu | Tellus S2 M 32 | Morlina S2 B 32 |
| Idemitsu Kosan | Daphne Hydraulic Fluid 32 | Daphne Super Multi Oil 32 |
| JX Nippon Oil & Energy | Super Hyrando 32 | Super Mulpus DX 32 |
| Cosmo Oil | Cosmo Hydro AW32 | Cosmo New Mighty Super 32 |
| ExxonMobil | Mobil DTE 24 | Mobil DTE 24 Light |
| Matsumura Oil | Hydol AW-32 | |
| Castrol | Hyspin AWS 32 | |

Note As it may be difficult to purchase the products as shown in the table from overseas, please contact the respective manufacturer.

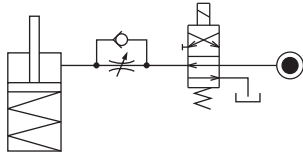
● Notes on Hydraulic Cylinder Speed Control Unit



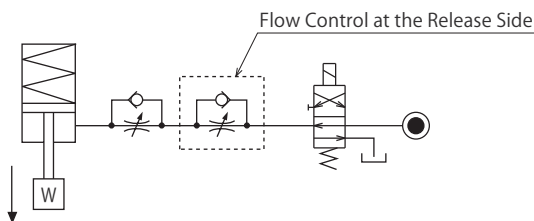
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● Flow Control Circuit for Single Acting Cylinder

For spring return single acting cylinders, restricting flow during release can extremely slow down or disrupt release action. The preferred method is to control the flow during the lock action using a valve that has free-flow in the release direction. It is also preferred to provide a flow control valve at each actuator.



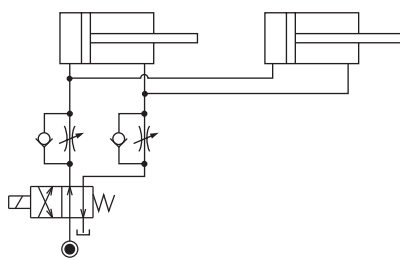
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



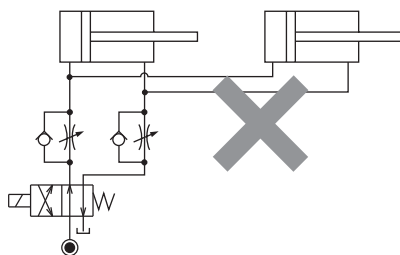
● Flow Control Circuit for Double Acting Cylinder

Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

【Meter-out Circuit】

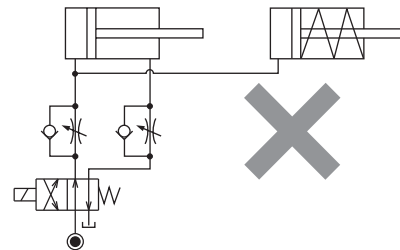


【Meter-in Circuit】



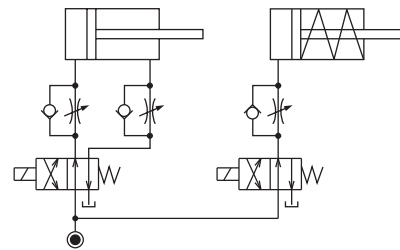
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- ① Single acting components should not be used in the same flow control circuit as the double acting components. The release action of the single acting cylinders may become erratic or very slow.

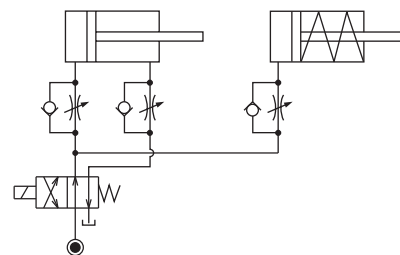


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

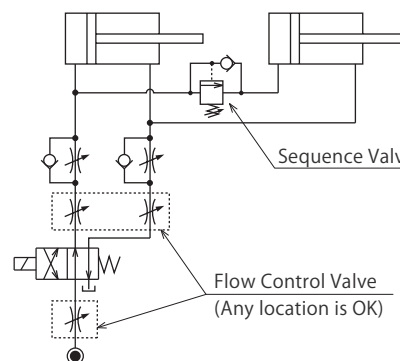
- Separate the control circuit.



- Reduce the influence of double acting cylinder control unit. However, due to the back pressure in tank line, single action cylinder is activated after double action cylinder works.



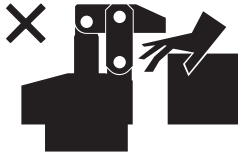
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve or pressure switches for clamping detection. If the back pressure is more than the set pressure then the system will not work as it is designed to.



ⓘ Cautions

● Notes on Handling

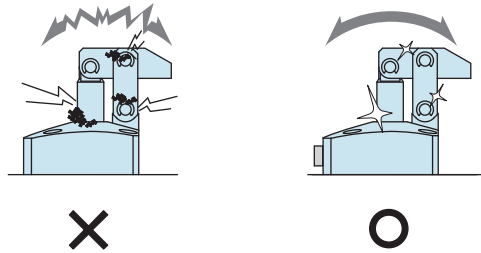
- 1) It should be handled by qualified personnel.
 - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
 - ② Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
 - ③ After stopping the machine, do not remove until the temperature cools down.
 - ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not touch clamps (cylinder) while clamps (cylinder) is working. Otherwise, your hands may be injured due to clinching.



- 4) Do not disassemble or modify.
 - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

● Maintenance and Inspection

- 1) Removal of the Product and Shut-off of Pressure Source
 - Before the product is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
 - Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the piston rod and plunger.
 - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage and air leaks.



- 3) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.
- 4) Regularly tighten nuts, bolts, pins, cylinders and pipe line to ensure proper use.
- 5) Make sure the hydraulic fluid has not deteriorated.
- 6) Make sure there is smooth action and no abnormal noise.
 - Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
- 7) The products should be stored in the cool and dark place without direct sunshine or moisture.
- 8) Please contact us for overhaul and repair.

● Warranty

1) Warranty Period

- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope

- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.

Defects or failures caused by the following are not covered.

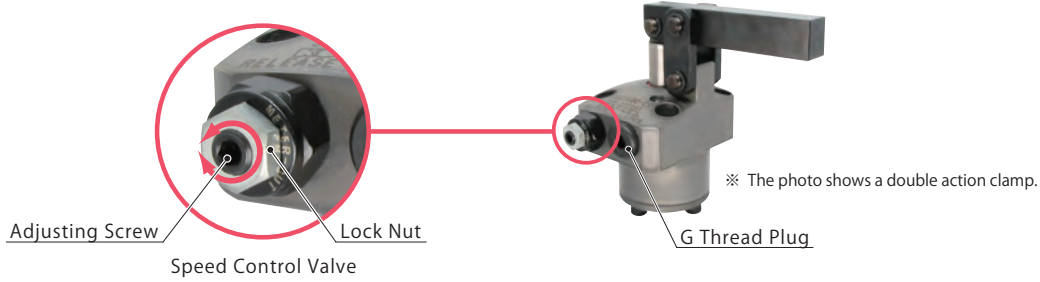
- ① If the stipulated maintenance and inspection are not carried out.
- ② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
- ③ If it is used or handled in inappropriate way by the operator.
(Including damage caused by the misconduct of the third party.)
- ④ If the defect is caused by reasons other than our responsibility.
- ⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
- ⑥ Other caused by natural disasters or calamities not attributable to our company.
- ⑦ Parts or replacement expenses due to parts consumption and deterioration.
(Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty.

Speed Control Valve for Low Pressure PAT.

Directly Mounted to Clamps

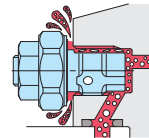
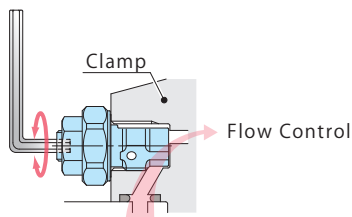
Flow control valve (model BZL) can be directly mounted to hydraulic clamps/work supports with G-thread (-C option).



Action Description

Adjust the flow by wrench.
It can adjust the clamping action speed individually.

Air bleeding in the circuit is possible
by loosening flow control valve.



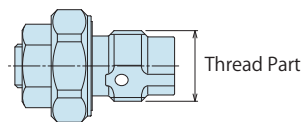
Model No. Indication (Speed Control Valve for Low Pressure)

BZL 0 10 0 - B

1
2
3

1 G Thread Size

- 10 : Thread Part G1/8A Thread
- 20 : Thread Part G1/4A Thread

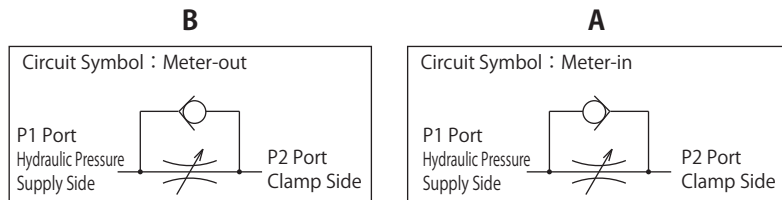


2 Design No.

- 0 : Revision Number

3 Control Method

- B** : Meter-out (Recommended^{※1})
- A** : Meter-in



※1. Flow control circuit for double action cylinder both should have meter-out circuits for the lock side and release side except model LKE/TLA/TMA.
Meter-in controls can be adversely affected by any air in the system.

Specifications

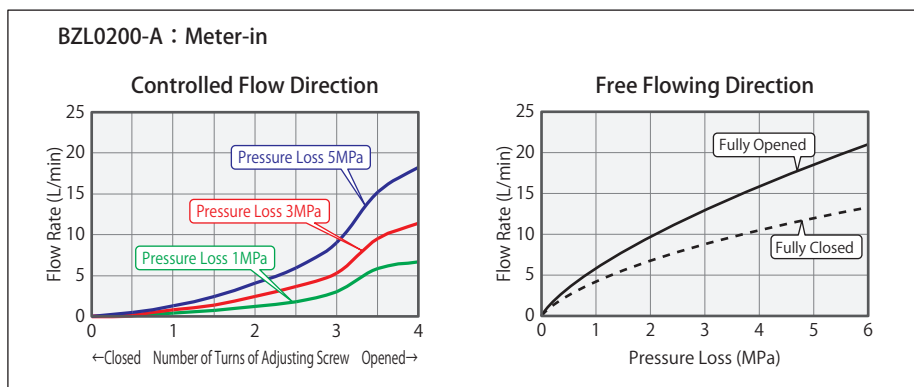
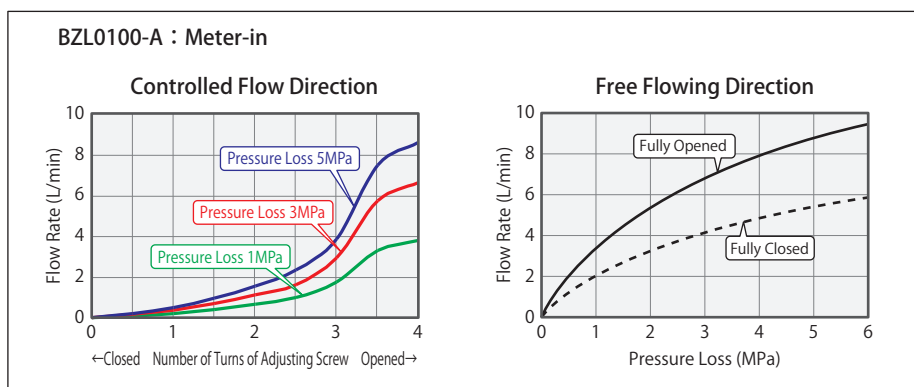
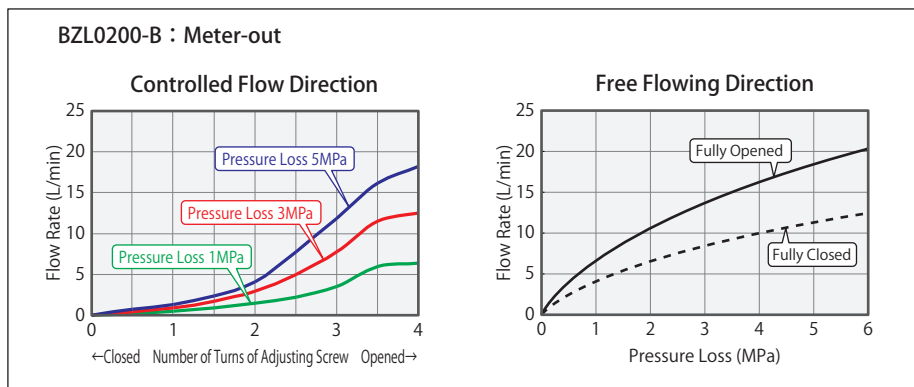
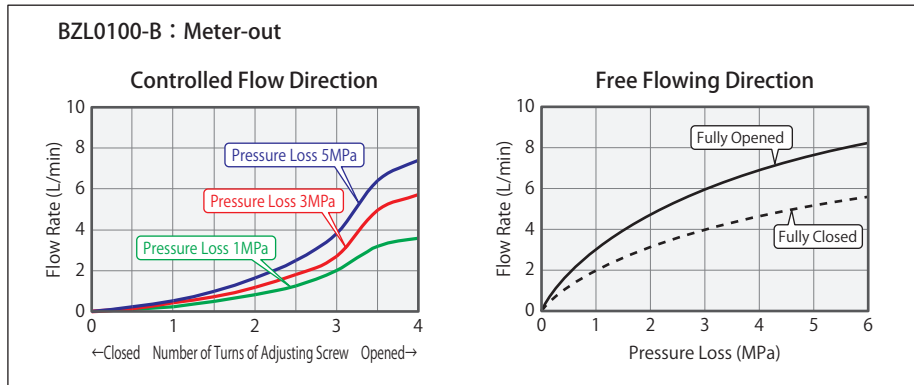
| Model No. | BZL0100-B | BZL0200-B | BZL0100-A | BZL0200-A | |
|---------------------------------|---|-----------|-----------|-----------|-----|
| Max. Operating Pressure | MPa | 7 | | | |
| Withstanding Pressure | MPa | 10.5 | | | |
| Control Method | Meter-out | | Meter-in | | |
| G Thread Size | G1/8A | G1/4A | G1/8A | G1/4A | |
| Cracking Pressure | MPa | 0.12 | | 0.04 | |
| Max. Passage Area | mm ² | 2.6 | 5.0 | 2.6 | 5.0 |
| Usable Fluid | General Hydraulic Oil Equivalent to ISO-VG-32 | | | | |
| Operating Temperature | °C | 0 ~ 70 | | | |
| Tightening Torque for Main Body | N·m | 10 | 25 | 10 | 25 |

- Notes:
1. Minimum passage area when fully opened is the same as the maximum passage area in the table above.
 2. It must be mounted with recommended torque. Because of the structure of the metal seal, if mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate.
 3. Don't use used BZL to other clamps.
Flow control will not be made because the bottom depth difference of G thread makes metal seal insufficient.

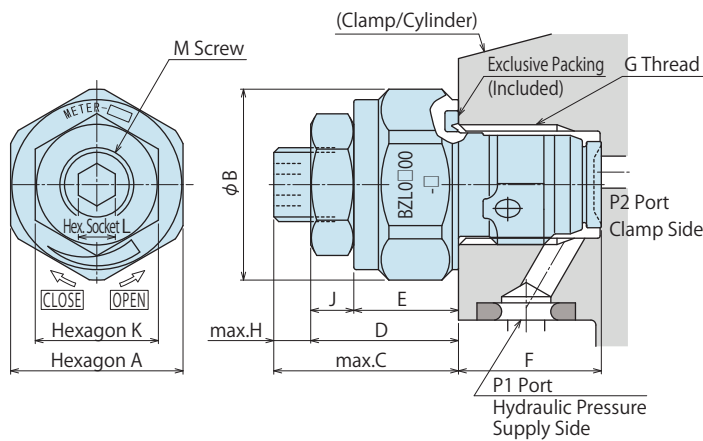
Applicable Products

| Model No. | LHW (Double Action) | LKW (Double Action) | LLW (Double Action) |
|-----------|---------------------|---------------------|---------------------|
| | Swing Clamp | Link Clamp | Lift Cylinder |
| BZL0100-B | LHW0401-C□□-□ | LKW0401-C□□-□ | LLW0361-C□□-□ |
| | LHW0481-C□□-□ | LKW0481-C□□-□ | LLW0401-C□□-□ |
| | LHW0551-C□□-□ | LKW0551-C□□-□ | LLW0481-C□□-□ |
| BZL0100-A | (LHW0401-C□□-□) | (LKW0401-C□□-□) | (LLW0361-C□□-□) |
| | (LHW0481-C□□-□) | (LKW0481-C□□-□) | (LLW0401-C□□-□) |
| | (LHW0551-C□□-□) | (LKW0551-C□□-□) | (LLW0481-C□□-□) |
| BZL0200-B | LHW0651-C□□-□ | LKW0651-C□□-□ | |
| | LHW0751-C□□-□ | LKW0751-C□□-□ | |
| BZL0200-A | (LHW0651-C□□-□) | (LKW0651-C□□-□) | |
| | (LHW0751-C□□-□) | (LKW0751-C□□-□) | |

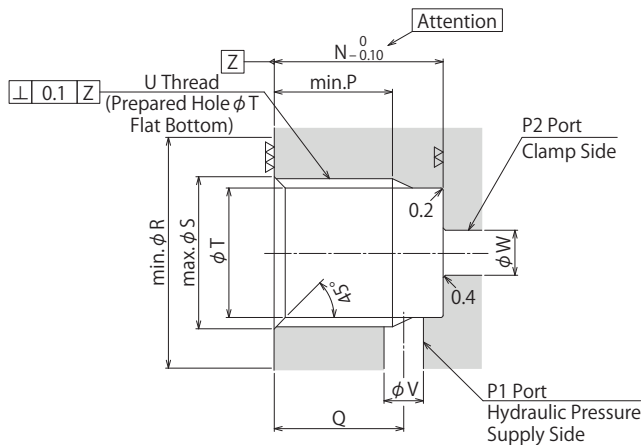
● Flow Rate Graph < Hydraulic Fluids ISO-VG32 (25~35°C) >



External Dimensions



Machining Dimensions of Mounting Area



| Model No. | BZL0100-□ | BZL0200-□ |
|-----------------------|-----------|-----------|
| A | 14 | 18 |
| B | 15.5 | 20 |
| C | 15 | 16 |
| D | 12 | 13 |
| E | 8.5 | 9.5 |
| F | (11.6) | (15.1) |
| G | G1/8 | G1/4 |
| H | 3 | 3 |
| J | 3.5 | 3.5 |
| K | 10 | 10 |
| L | 3 | 3 |
| M | M6×0.75 | M6×0.75 |
| N | 11.5 | 15 |
| P | 8.5 | 11※1 |
| Q | 9 | 11.5 |
| R (Flat Surface Area) | 16 | 20.5 |
| S | 10 | 13.5 |
| T | 8.7 | 11.5 |
| U | G1/8 | G1/4 |
| V | 2 ~ 3 | 3 ~ 4 |
| W | 2.5 ~ 5 | 3.5 ~ 7 |

Notes:

1. Since the $\nabla\nabla$ area is sealing part, be careful not to damage it.
2. Since the ∇ area is the metal sealing part of BZL, be careful not to damage it. (Especially when deburring)
3. No cutting chips or burr should be at the tolerance part of machining hole.
4. As shown in the drawing, P1 port is used as the hydraulic supply and P2 port as the clamp side.
5. If mounting plugs or fittings with G thread specification available in the market, the dimension '※1' should be 12.5.

Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Circuit" to assist with proper hydraulic circuit design.
If there is something wrong with the circuit design, it leads to the applications malfunction and damage. (Refer to P.64)
2. It is dangerous to air bleed during operation under high pressure. It must be done under lower pressure.
(For reference: the minimum operating range of the product within the circuit.)
3. Flow control circuit for double action cylinder both should have meter-out circuits for the lock side and release side except model LKE/TLA/TMA. Meter-in controls can be adversely affected by any air in the system.

Sales Offices

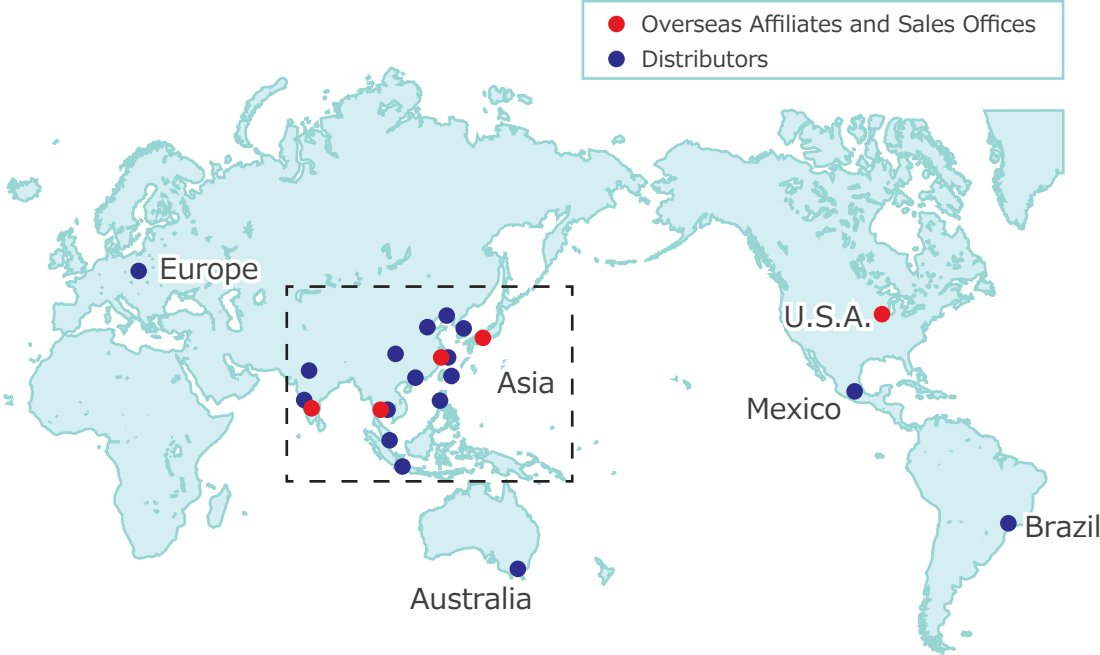
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| USA | TEL. +1-630-241-3465 | FAX. +1-630-241-3834 |
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| Thailand | TEL. +66-2-715-3450 | FAX. +66-2-715-3453 |
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Global Network



Asia Detailed Map

