

**New** Wireless Sensing Clamp **HYD. LOCK / HYD. RELEASE**  
Swing / Link Clamp • Linear Cylinder



Swing Clamp  
model **LHM**



Link Clamp  
model **LKM**



Linear Cylinder  
model **LLM**

**Wirelessly Detect Unclamp Position**

**No External Power Supply**

**Required for Sensor**

**NEW**

HYD. LOCK / HYD. RELEASE

# Wireless Sensing Clamp



Swing Clamp  
model **LHM**



Link Clamp  
model **LKM**



Linear Cylinder  
model **LLM**

## Wirelessly Detect Unclamp Position

## No External Power Supply Required for Sensor



### Individual Detection

Separate unclamp detection is possible for each clamp.



Waterproof Rating

Equivalent to **IPX7**

※ Shows the protection level of the sensor.



Response Time

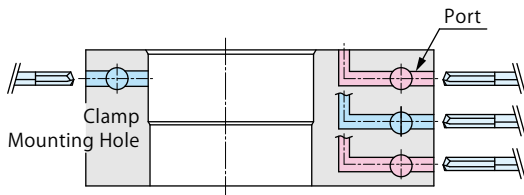
**0.1sec.**

Quick Response<sup>※</sup>

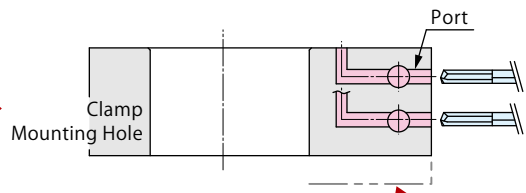
※ Compared with our conventional air sensing clamps.

## Minimized Number of Ports

Solution to fixture port shortage.



With  
Wireless  
Sensing



### Conventional Fixture※ : Multiple Ports

Hydraulic Port × 2, Air Port × 1, Vent Port × 1

※Using our conventional air sensing clamp (model LHW-J)

### Air port is not required.

Hydraulic Port × 2

Enables a thinner  
and lighter fixture.

## Lower Design • Fixture Cost

Design & machining costs for sensing ports are not required.

※ Image compared with our conventional air sensing clamps.



With  
Wireless  
Sensing



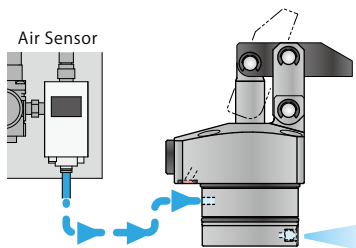
### Conventional※ sensing function needed design and machining costs for ports.

※ For conventional models, please see the "Changes in Sensing Clamps" .

### Fixture is simplified.

## Zero Air Consumption

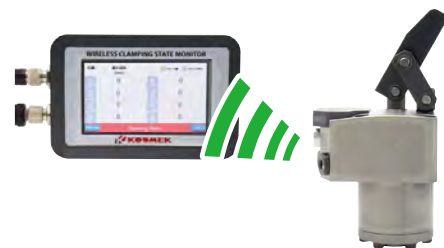
Detect unclamp position via wireless communication.



### Consumes air for detection.

※ Using our conventional air sensing clamp.

With  
Wireless  
Sensing



### Detects wirelessly, zero air consumption.

### Changes in Sensing Clamps

Model	Air Sensor Model Conventional	Air Sensing Valve Model Conventional	Wireless Sensing Model NEW
Air Consumption	High	Low	Zero
Cylinder Length	Long (High Interference)	Short	Short

Please contact us when considering the wireless sensing clamp.

# Wireless Sensing Linear Cylinder

Hydraulic Double Action

Model LLM



## Wirelessly Detect Stroke End Position Number of Ports is Reduced.

No External Power Supply Required for Sensor

Detects stroke end position wirelessly.

**Receiver**

Place : Outside Machine



Amplify and  
transmit the signal

**Repeater**

Place : Near Fixture  
Inside the Processing Machine



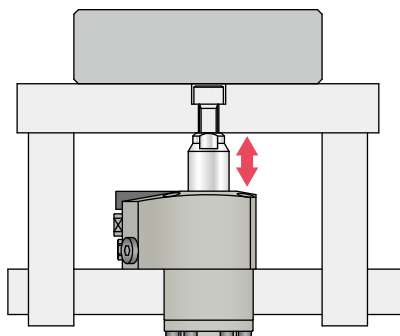
Transmit a signal  
by radio wave

**Linear Cylinder**

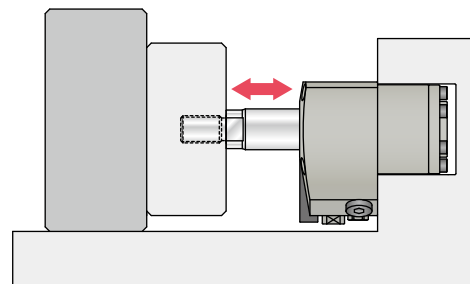
Place : Fixture



Application Examples



For Lifting



For Shifting

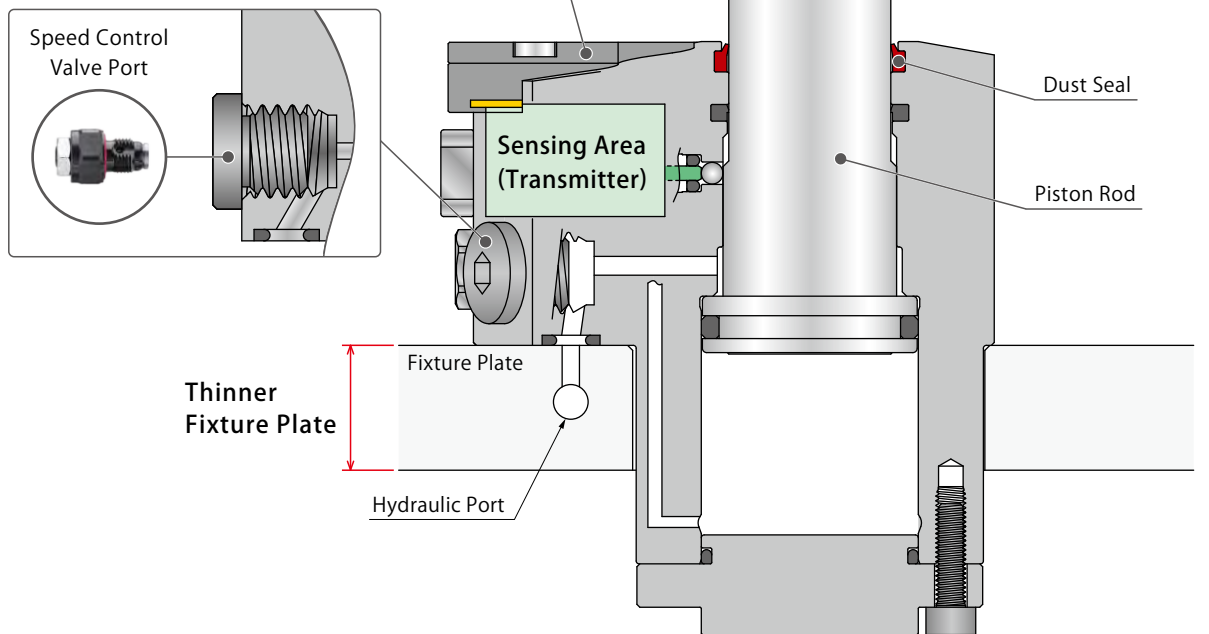
## ● Cross Section ※ This drawing shows Model LLM-CAH-B□.

### Excellent Coolant Resistance

Our exclusive dust seal is designed to protect against high pressure coolant. It also has high durability against chlorine-based coolant by using a sealing material with excellent chemical resistance.

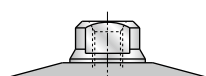
### Direct Mount Speed Control Valve

Speed control valve with air bleeding function can be directly mounted to the product. (Speed control valve is sold separately.)

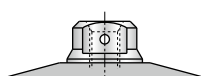


Stroke is selectable from 10mm, 15mm, 20mm or 25mm

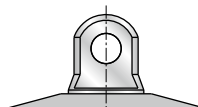
Tip shape is selectable from 4 types



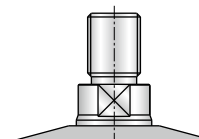
**A:** Female Threaded



**B:** Female Threaded  
(with Anti-Rotation  
Pinhole)



**P:** Pin-Hole Option



**T:** Male Threaded

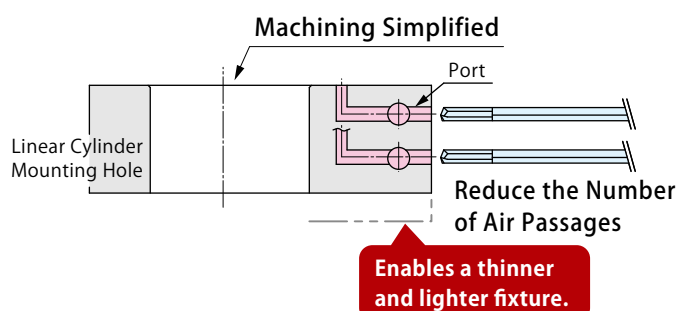
### Zero Air Consumption

Detects positions (push end or pull end) via wireless communication. Unlike our conventional air sensing cylinders, air for action confirmation is not required.



### Minimized Number of Ports • Simple Machining

Integrating ports allows for reducing the number of ports for Rotary Joint and machining for air passage of fixture plate, and simplifying the machining of mounting hole, etc.



#### Wireless Sensing Clamp

#### Accessory

#### Common Cautions

Wireless Sensing  
Swing Clamp

LHM

Wireless Sensing  
Link Clamp

LKM

Wireless Sensing  
Linear Cylinder

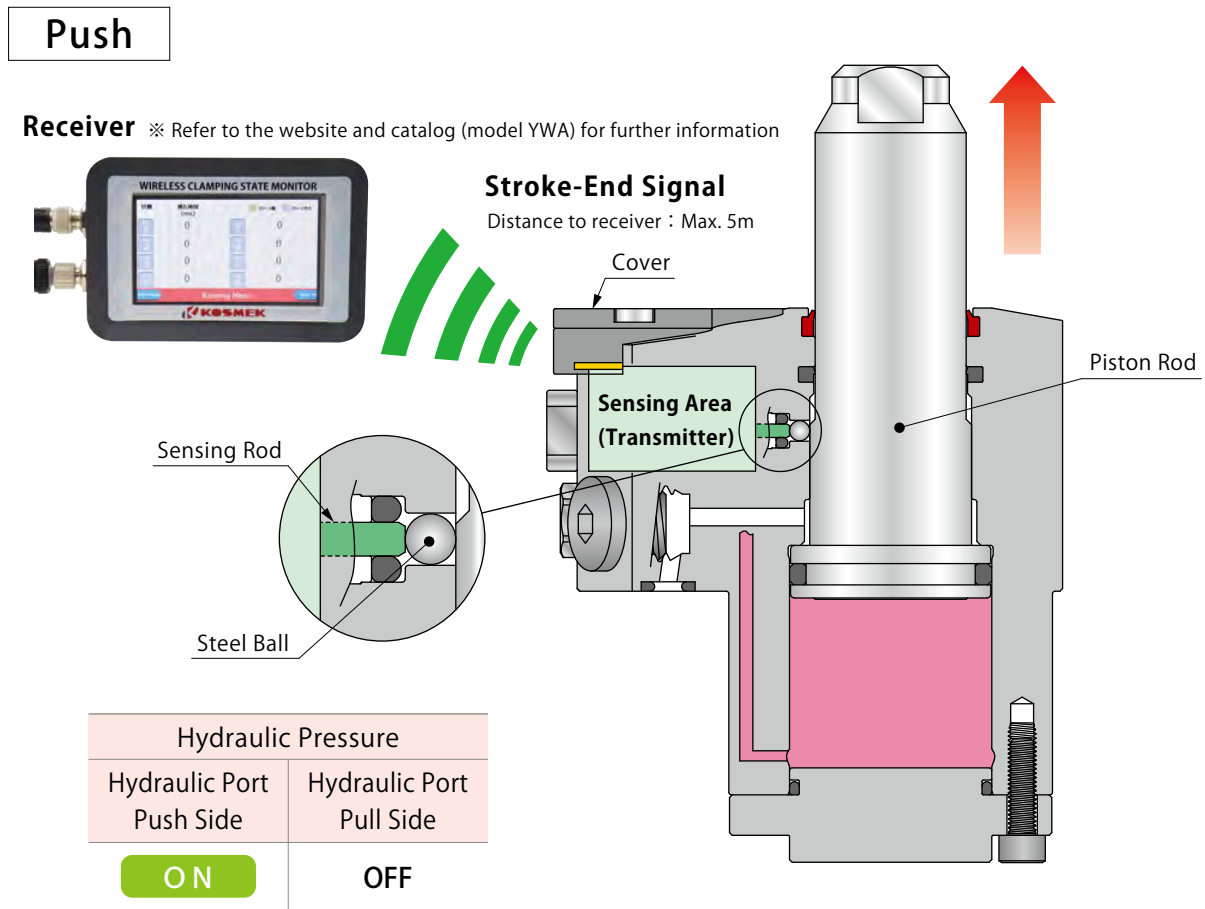
LLM

Receiver •  
Repeater

YWA

YWB

● Action Description (Internal Structure) ※ The figure shows the push-end confirmation of Model LLM-CAH-B□.



■ Push (During Hydraulic Pressure Supply to Hydraulic Port : Push Side)

The piston rod ascends.



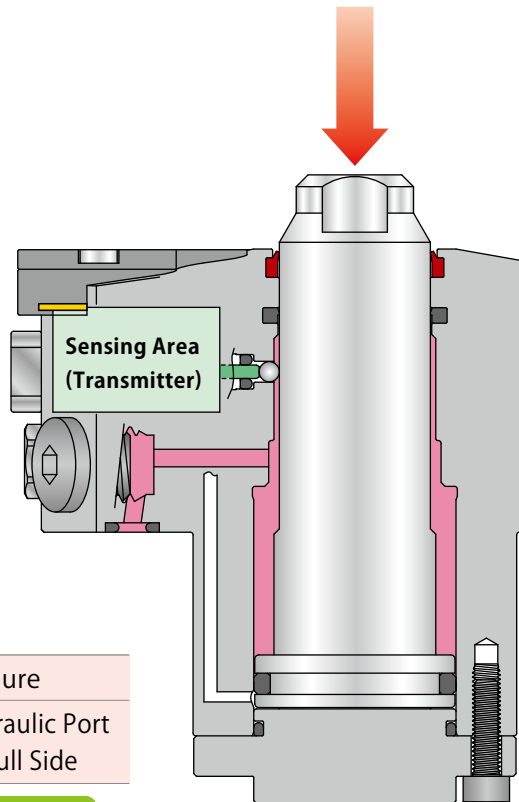
In case of 5 Sensing Option : H Push-end Confirmation ※Refer to P.39 for the sensing option.

When the piston rod pushes the sensing rod via the steel ball at the push end, a stroke-end signal is transmitted from the sensing area.

**Connecting Multiple Wireless Linear Cylinders**

When using multiple wireless sensing linear cylinders, provide an operating time difference of 100msec (0.1 sec.) or more. Please check the operating time at the receiver, and adjust the operating time with the speed control valve if it is within 100msec. Otherwise, signals cannot be received properly due to radio interference.

Pull



Hydraulic Pressure	
Hydraulic Port Push Side	Hydraulic Port Pull Side
OFF	<b>ON</b>

### ■ Pull (During Hydraulic Pressure Supply to Hydraulic Port : Pull Side)

The piston rod descends.



In case of **5** Sensing Option : J Pull-end Confirmation ※Refer to P.39 for the sensing option.

When the piston rod pushes the sensing rod via the steel ball at the pull end, a stroke-end signal is transmitted from the sensing area.

※ This figure shows H : Push-end Confirmation, and is different from the structure of J : Pull-end Confirmation.

#### Wireless Sensing Clamp

##### Accessory

##### Common Cautions

Wireless Sensing Swing Clamp

LHM

Wireless Sensing Link Clamp

LKM

Wireless Sensing Linear Cylinder

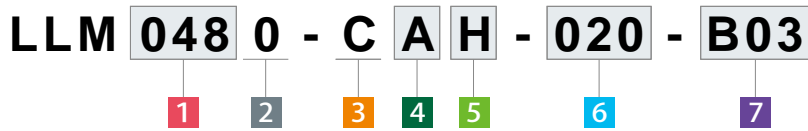
LLM

Receiver · Repeater

YWA

YWB

Model No. Indication

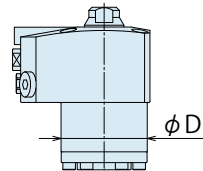


1 Body Size

**048** :  $\phi D=48\text{mm}$

**055** :  $\phi D=55\text{mm}$

※ Indicates the cylinder outer diameter ( $\phi D$ ).



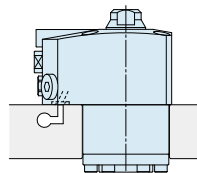
2 Design No.

**0** : Revision Number

3 Piping Method

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

※ Speed control valve (BZL) is sold separately. Please refer to P. 55.



With G Thread Plug  
Able to attach speed control valve  
( Order the valve separately )  
Recommended: BZL-B

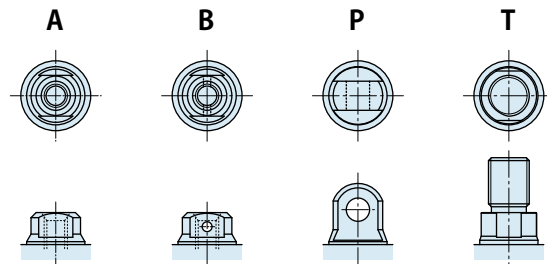
4 Shape of Piston Tip

**A** : Female Threaded

**B** : Female Threaded (With Anti-Rotation Pinhole)

**P** : Pin-Hole

**T** : Male Threaded



5 Sensing Option

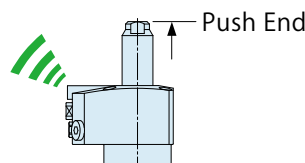
**H** : Push-end Confirmation

**J** : Pull-end Confirmation

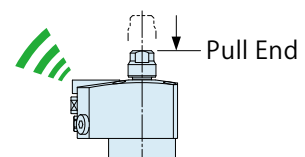
※ Please contact us when using multiple linear cylinders.

※ When using the linear cylinder with a clamp (LHM/LKM), H: Push-end Confirmation is recommended.

Please have a thorough understanding of the operation timing chart in the receiver's instruction manual (IM-YWA00□) before making a selection.



**H**  
Transmit the signal when reaching the push end.



**J**  
Transmit the signal when reaching the pull end.

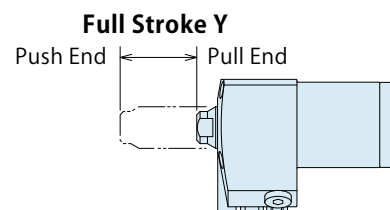
6 Stroke

**010** : Full Stroke Y:  $10^{+0.5}_0$  mm

**015** : Full Stroke Y:  $15^{+0.5}_0$  mm

**020** : Full Stroke Y:  $20^{+0.5}_0$  mm

**025** : Full Stroke Y:  $25^{+0.5}_0$  mm



7 Available Country : Frequency

**B01** : Japan

**B02** : Europe, China

**B03** : United States

※ There are restrictions on countries where the product can be used according to radio regulations. Please follow the regulatory requirements of each country.

## Specifications

Model No.	Push-end Confirmation				Push-end Confirmation				Pull-end Confirmation				Pull-end Confirmation							
	LLM0480-C□H-□-B□				LLM0550-C□H-□-B□				LLM0480-C□J-□-B□				LLM0550-C□J-□-B□							
6 Stroke	010	015	020	025	010	015	020	025	010	015	020	025	010	015	020	025				
Full Stroke Y <sup>+0.5</sup> <sub>0</sub> mm	10	15	20	25	10	15	20	25	10	15	20	25	10	15	20	25				
Cylinder Area cm <sup>2</sup>	Push Side				9.6				7.1				9.6							
	Pull Side				4.7				5.5				7.6							
Cylinder Force ※1 (Calculation Formula) kN	Push Side				P × 0.96				P × 0.71				P × 0.96							
	Pull Side				P × 0.47				P × 0.55				P × 0.76							
Cylinder Capacity cm <sup>3</sup>	Push Side				7.1	10.6	14.1	17.7	9.6	14.4	19.2	24.1	7.1	10.6	14.1	17.7	9.6	14.4	19.2	24.1
	Pull Side				3.3	4.9	6.5	8.2	4.7	7.1	9.4	11.8	5.5	8.3	11.1	13.8	7.6	11.4	15.2	19
Cylinder Inner Diameter mm	30				35				30				35							
Rod Diameter mm	22				25				14				16							
Max. Operating Pressure MPa	7																			
Min. Operating Pressure ※2 MPa	1.5																			
Withstanding Pressure MPa	10.5																			
Operating Temperature °C	0 ~ 70 (Sensing Area: ~ 60°C)																			
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32																			
Wireless Sensing (Stroke-end Confirmation)	Frequency				7 When selecting <b>B01</b> : 920MHz Band ----- 7 When selecting <b>B02</b> : 868MHz Band ----- 7 When selecting <b>B03</b> : 902MHz Band															
	Distance to Receiver				Max. 5m ※3															
	Sensing Position				ON from 2±0.5 mm before the push end.				ON from 1.5±0.5 mm before the pull end.											
	Waterproof Rating				Equivalent to IPX7 (When the cover of the sensing area is completely closed.)															

Notes : ※1. P : Supply Hydraulic Pressure (MPa)

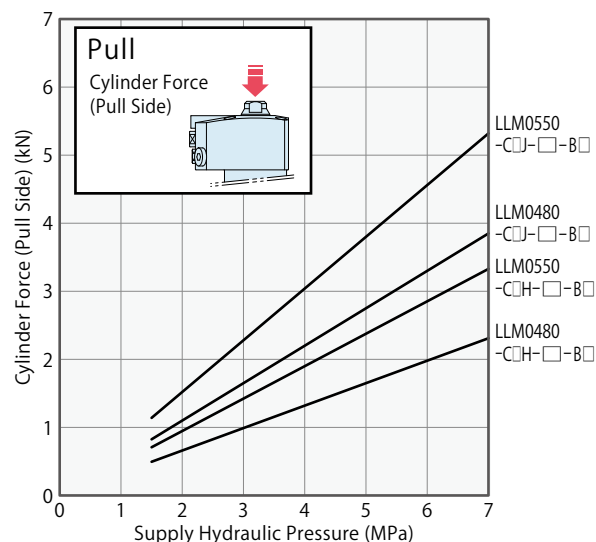
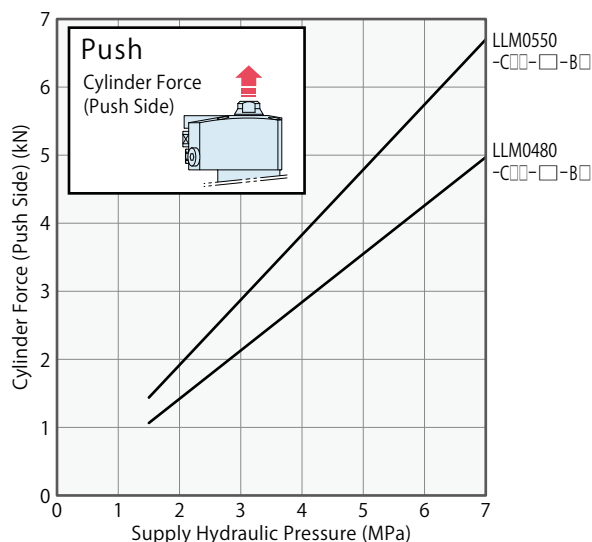
※2. Minimum pressure to operate the linear cylinder without load.

※3. The maximum distance when there is no obstruction. Check the radio wave strength displayed on the receiver and consider the location of the repeater. (Recommended Threshold Value: -85dBm)

1. Please refer to the external dimensions for product weight.

## Performance Curve

Model No.	Cylinder Force (Push Side) (kN)						Cylinder Force (Pull Side) (kN)					
	2MPa	3MPa	4MPa	5MPa	6MPa	7MPa	2MPa	3MPa	4MPa	5MPa	6MPa	7MPa
LLM0480-C□H-□-B□	1.4	2.1	2.8	3.6	4.3	5.0	0.7	1.0	1.3	1.7	2.0	2.3
LLM0480-C□J-□-B□	1.4	2.1	2.8	3.6	4.3	5.0	1.1	1.7	2.2	2.8	3.3	3.9
LLM0550-C□H-□-B□	1.9	2.9	3.8	4.8	5.8	6.7	0.9	1.4	1.9	2.4	2.8	3.3
LLM0550-C□J-□-B□	1.9	2.9	3.8	4.8	5.8	6.7	1.5	2.3	3.0	3.8	4.6	5.3



Notes :

1. The chart and graph show the relationship between the cylinder force and supply hydraulic pressure.

2. Cylinder force F (kN) is the theoretical value.

Actual force may decrease due to sliding friction of the cylinder and pressure loss in the hydraulic devices and piping.

### Wireless Sensing Clamp

#### Accessory

#### Common Cautions

Wireless Sensing Swing Clamp  
LHM

Wireless Sensing Link Clamp  
LKM

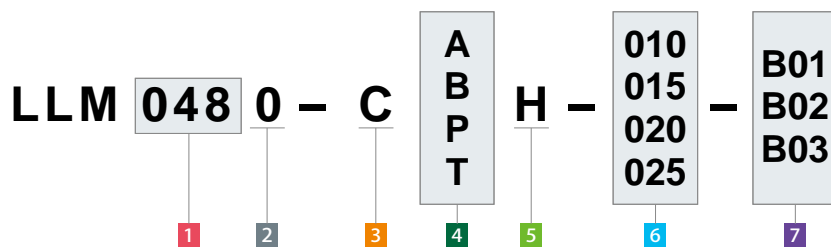
Wireless Sensing Linear Cylinder  
LLM

Receiver · Repeater  
YWA  
YWB



## Model No. Indication

(Format Example : LLM0480-CAH-010-B02,  
LLM0550-CTH-025-B03)



- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Shape of Piston Tip
- 5 Sensing Option : Push-end Confirmation
- 6 Stroke
- 7 Available Country : Frequency

### Wireless Sensing Clamp

Accessory

Common Cautions

Wireless Sensing Swing Clamp

LHM

Wireless Sensing Link Clamp

LKM

Wireless Sensing Linear Cylinder

LLM

Receiver · Repeater

YWA

YWB

## External Dimensions and Machining Dimensions for Mounting

**A** : Female Threaded **B** : Female Threaded (with Anti-Rotation Pinhole) (mm)

Model No.	LLM0480-CAH-□-B□				LLM0550-CAH-□-B□				
	6 Stroke	010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25	
Rod Diameter	22				25				
A	80.5	85.5	90.5	95.5	81	86	91	96	
B	72				78				
C	51				60				
D	48				55				
E	69.5	74.5	79.5	84.5	69	74	79	84	
F	27.5	32.5	37.5	42.5	27	32	37	42	
H	46.5				48				
J	25.5				30				
K	40				47				
Nx	33				34.5				
Ny	15.5				16				
Q	9				10.5				
R	5.5				6.8				
S	32				30				
T	11				12				
U	14				17				
W	8.5				9				
BB	17				19				
BC (Nominal×Pitch×Depth)	M8×1.25×16				M10×1.5×19				
V <sub>B</sub> [ <b>B</b> only]	2.5				2.5				
W <sub>B</sub> [ <b>B</b> only]	6				6.5				
EA	M5×0.8				M6×1				
Weight kg	1.3	1.3	1.4	1.5	1.7	1.8	1.9	2.0	

**P** : Pin-Hole Refer to the dimensions of option A for unlisted dimensions. (mm)

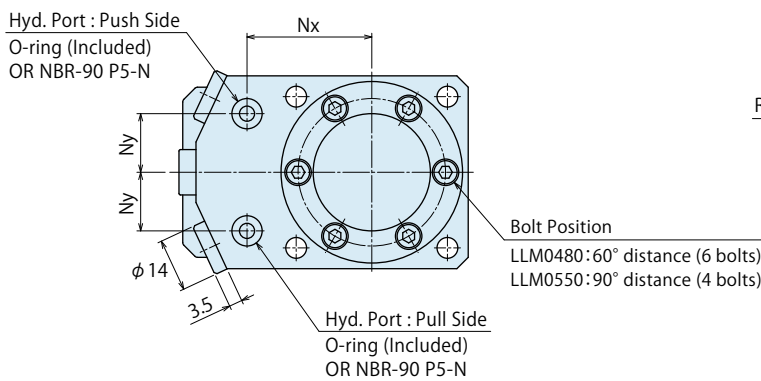
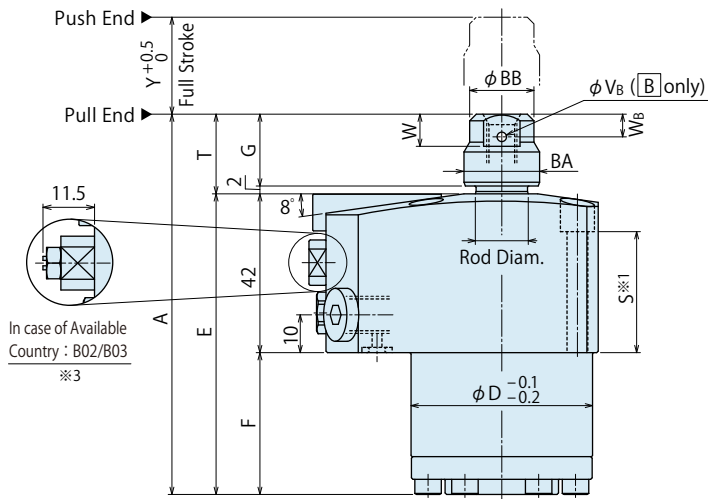
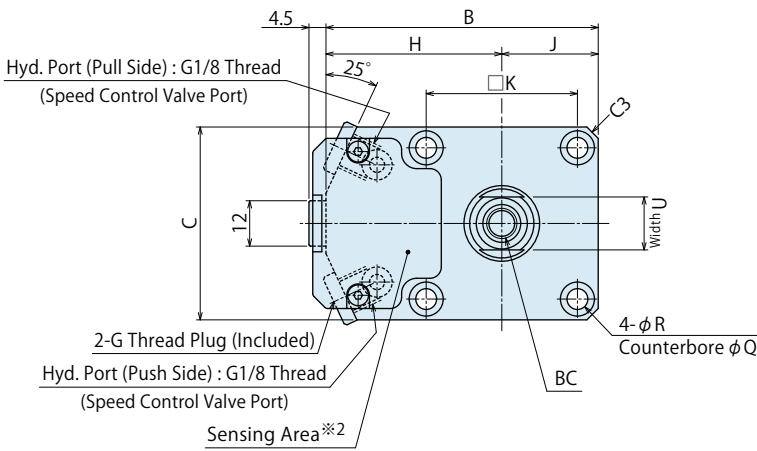
Model No.	LLM0480-CPH-□-B□				LLM0550-CPH-□-B□				
	6 Stroke	010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25	
AP	90.5	95.5	100.5	105.5	93	98	103	108	
AB	17				19				
AC	8 <sup>+0.015</sup> <sub>0</sub>				10 <sup>+0.015</sup> <sub>0</sub>				
AD	9				10				
T <sub>P</sub>	21				24				
U <sub>P</sub>	10				11				
V <sub>P</sub>	9				10				
W <sub>P</sub>	10.5				12				
Weight kg	1.3	1.4	1.4	1.5	1.7	1.8	1.9	2.0	

**T** : Male Threaded Refer to the dimensions of option A for unlisted dimensions. (mm)

Model No.	LLM0480-CTH-□-B□				LLM0550-CTH-□-B□				
	6 Stroke	010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25	
AT	104.5	109.5	114.5	119.5	109	114	119	124	
T <sub>T</sub>	35				40				
U <sub>T</sub>	17				17				
V <sub>T</sub>	24				28				
W <sub>T</sub>	8.5				9				
CB	21				24				
CC (Nominal×Pitch)	M14×1.5				M16×1.5				
Weight kg	1.3	1.4	1.4	1.5	1.8	1.9	1.9	2.0	

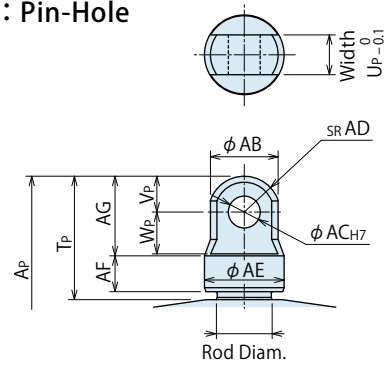
**External Dimensions** S Sensing Option : J Pull-end Confirmation

Tip Shape A : Female Threaded B : Female Threaded (with Anti-Rotation Pinhole)  
 ※ The drawings show LLM-CBJ-B□.

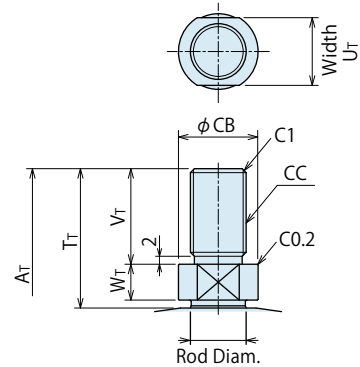


**Tip Shape** Refer to A : Female Threaded dimensions for unlisted dimensions.

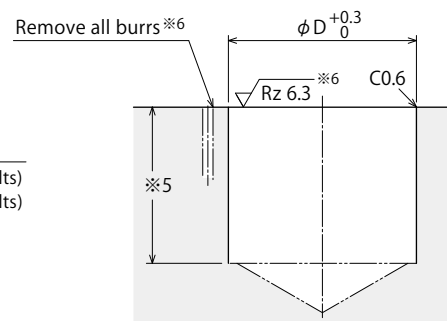
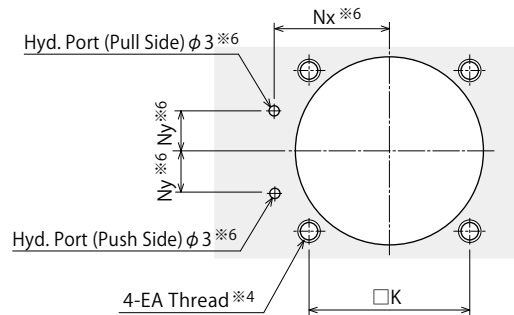
P : Pin-Hole



T : Male Threaded



**Machining Dimensions for Mounting Area**

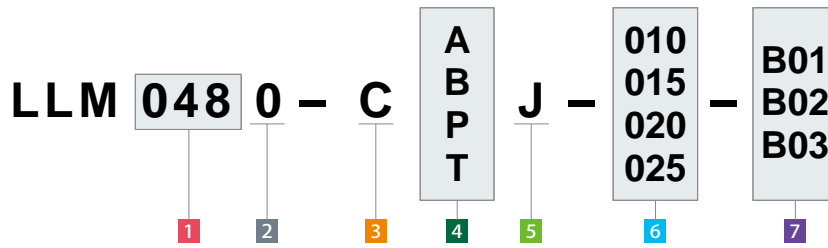


Notes :

- ※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.
- ※2. Do not cover the top surface of the sensing area with metal objects (chips, sludge, etc.). It may obstruct radio wave transmission.
- ※3. Please refer to P.45 "Notes for Design 2) Radio Regulations".
- ※4. EA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.
- ※5. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'F'.
- ※6. The machining dimension is for -C: Gasket Option.
  1. Speed control valve is sold separately. Please refer to P.55. It is necessary to provide an operation time difference of at least 100 msec. For adjusting the operation, please use a speed control valve.

## Model No. Indication

(Format Example : LLM0480-CAJ-010-B02,  
LLM0550-CTJ-025-B03)



- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Shape of Piston Tip
- 5 Sensing Option : Pull-end Confirmation
- 6 Stroke
- 7 Available Country : Frequency

## External Dimensions and Machining Dimensions for Mounting

**A** : Female Threaded **B** : Female Threaded (with Anti-Rotation Pinhole) (mm)

Model No.	LLM0480-CAJ-□-B□				LLM0550-CAJ-□-B□			
	6 Stroke 010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25
Rod Diameter	14				16			
A	90.5	95.5	100.5	105.5	91	96	101	106
B	72				78			
C	51				60			
D	48				55			
E	69.5	74.5	79.5	84.5	69	74	79	84
F	27.5	32.5	37.5	42.5	27	32	37	42
G	19				20			
H	46.5				48			
J	25.5				30			
K	40				47			
Nx	33				34.5			
Ny	15.5				16			
Q	9				10.5			
R	5.5				6.8			
S	32				30			
T	21				22			
U	14				17			
W	8.5				9			
BA	20				22			
BB	17				19			
BC (Nominal×Pitch×Depth)	M8×1.25×16				M10×1.5×19			
V <sub>B</sub> [ <b>B</b> only]	2.5				2.5			
W <sub>B</sub> [ <b>B</b> only]	6				6.5			
EA	M5×0.8				M6			
Weight kg	1.2	1.3	1.3	1.4	1.7	1.8	1.9	2.0

**P** : Pin-Hole Refer to the dimensions of option A for unlisted dimensions. (mm)

Model No.	LLM0480-CPJ-□-B□				LLM0550-CPJ-□-B□			
	6 Stroke 010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25
AP	100.5	105.5	110.5	115.5	104	109	114	119
AB	17				19			
AC	8 <sup>+0.015</sup> <sub>0</sub>				10 <sup>+0.015</sup> <sub>0</sub>			
AD	9				10			
AE	20				22			
AF	9				10			
AG	20				23			
TP	31				35			
UP	10				11			
VP	9				10			
WP	10.5				12			
Weight kg	1.2	1.3	1.3	1.4	1.7	1.8	1.9	2.0

**T** : Male Threaded Refer to the dimensions of option A for unlisted dimensions. (mm)

Model No.	LLM0480-CTJ-□-B□				LLM0550-CTJ-□-B□			
	6 Stroke 010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25
AT	104.5	109.5	114.5	119.5	109	114	119	124
Tt	35				40			
UT	17				17			
Vt	24				28			
Wt	9				10			
CB	20				22			
CC (Nominal×Pitch)	M14×1.5				M16×1.5			
Weight kg	1.2	1.3	1.4	1.4	1.8	1.9	1.9	2.0

Wireless Sensing Clamp

Accessory

Common Cautions

Wireless Sensing Swing Clamp

LHM

Wireless Sensing Link Clamp

LKM

Wireless Sensing Linear Cylinder

LLM

Receiver Repeater

YWA

YWB

**Cautions**

**Notes for Design**

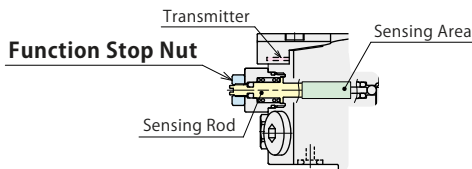
- 1) Check Specifications
  - Please use each product according to the specifications.
- 2) Radio Regulations
  - There are restrictions on countries where the product can be used according to radio regulations. Please follow the regulatory requirements of each country. (Ex.) LLM□-C□□-□-B03 can be used in United States.

**Regarding LHM□-C□-B02/B03**

- At shipment, the signal transmission is in a disabled state, with the function stop nut attached. When enabling signal transmission, please remove the "function stop nut" before use.

**Signal Transmission Function OFF Setting**

- If it is absolutely necessary to operate this product in a country other than the available country, please disable the signal transmission function using the following settings.  
By attaching the "function stop nut" and fixing the sensing rod to prevent movement, the signal transmission function can be stopped.



※ 5 Available Country : B01 does not support this function. (Please contact us separately if necessary.)

**Notes for Circuit Design**

- Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages. (Refer to P.60)
- Ensure there is no possibility of supplying hydraulic pressure to the push side and the pull side simultaneously.

**Notes for Pipe Design**

- It is recommended to select as large diameter pipe as possible. The back pressure is proportional to the pipe size, so if the pipes are small the operating time will be longer.

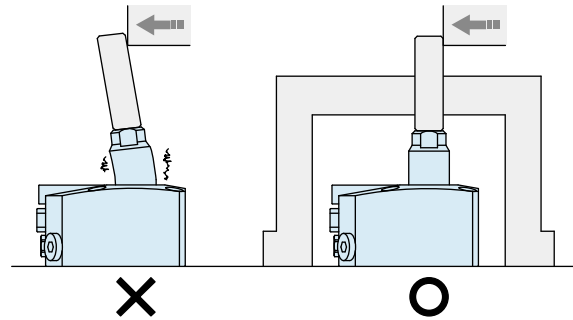
**Protect the exposed area of the piston rod when using on a welding fixture.**

- If spatter attaches to the sliding surface it could lead to malfunction and fluid leakage.

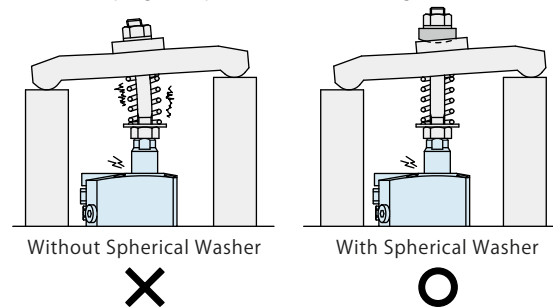
**The Load Direction Given to the Piston Rod**

- Make sure no force is applied to the piston rod except from the axial direction. Usage like the ones shown in the figure below will apply a large bending stress to the piston rod and must be avoided.

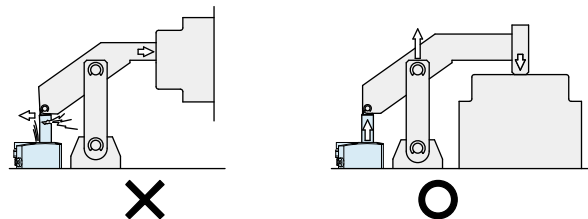
In case a load is applied except from the axial direction



When clamping workpieces of different heights

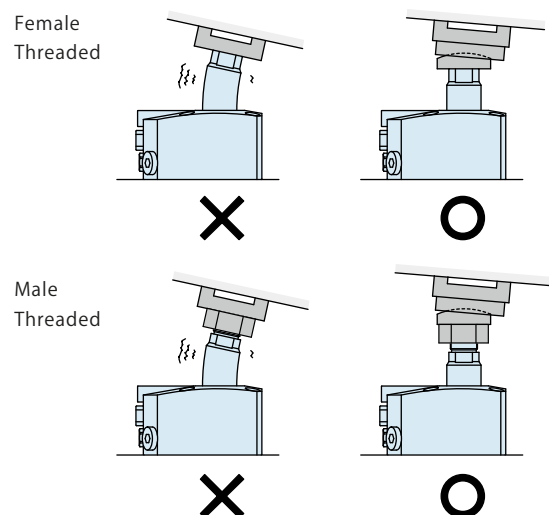


A Combination with Link Mechanism



**When clamping on a sloped surface of the workpiece**

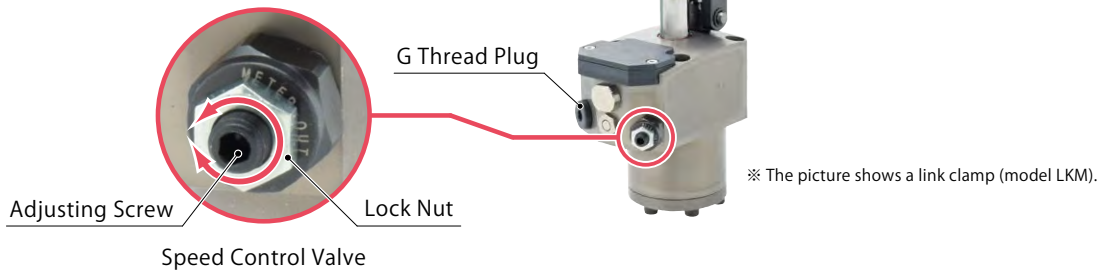
- When clamping an inclined surface, make sure that the clamping area is level when looking from the cylinder side. The clamping surface and the cylinder mounting surface should be parallel. A workpiece may move and a piston rod may slip when a cylinder is used on an inclined surface. (When the workpiece is a casting, it is recommended that a spiked attachment be used for a cylinder on draft angle.)





Speed Control Valve (For Low Pressure)

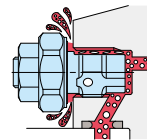
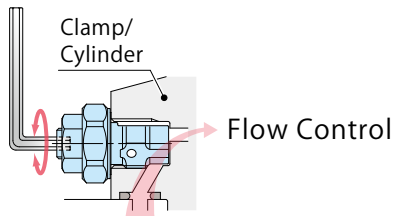
**Directly Mounted to Clamps / Cylinders**  
 Speed Control Valve (model BZL) attaches directly to KOSMEK hydraulic clamp with piping method: type C.



**Action Description**

Control the flow with a wrench. Able to change the operating speed of a clamp/cylinder individually.

Able to release the air in the circuit by loosening the Speed Control Valve.



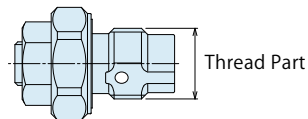
Model No. Indication (Speed Control Valve for Low Pressure)

**BZL 0 10 1 - B**

1
2
3

**1 G Thread Size**

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



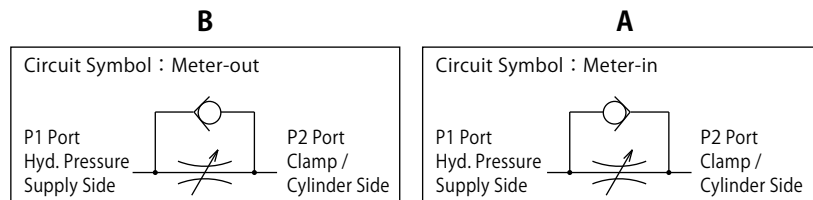
**2 Design No.**

- 1 : Revision Number

**3 Control Method**

**B** : Meter-out (Recommended<sup>※1</sup>)

**A** : Meter-in



※1. Flow control circuit for double-acting clamp/cylinder should have meter-out circuits for both the clamp and unclamp sides (except model LKE/TLA/TMA). Meter-in circuits can be adversely affected by any air in the system.

## Specifications

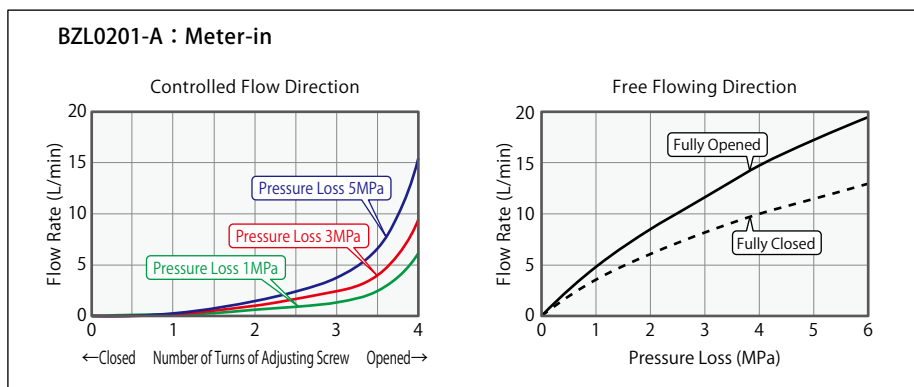
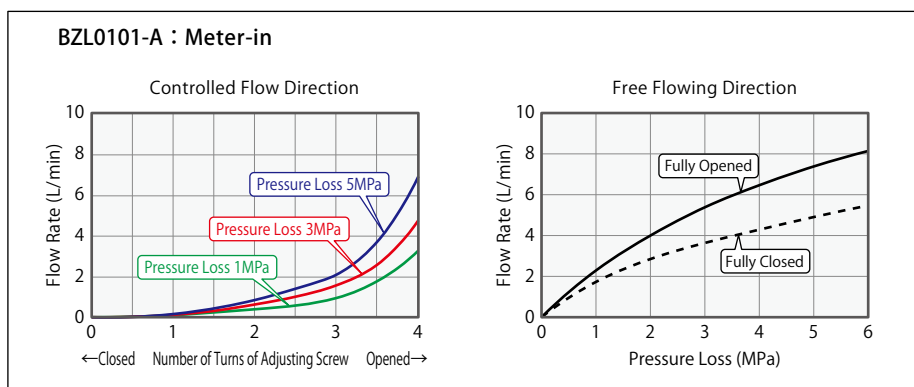
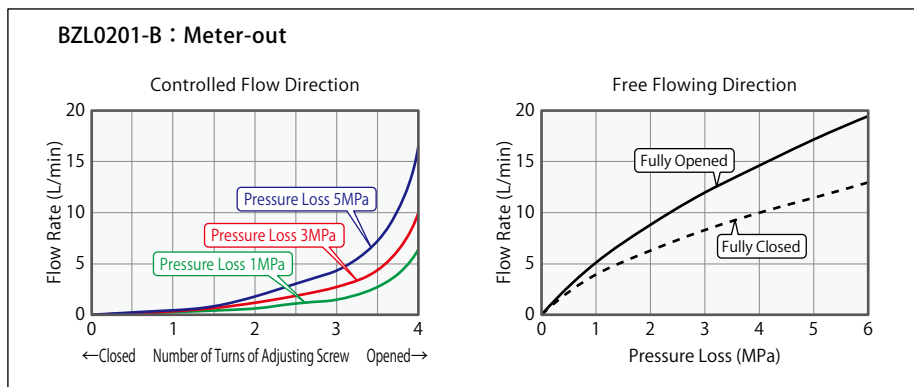
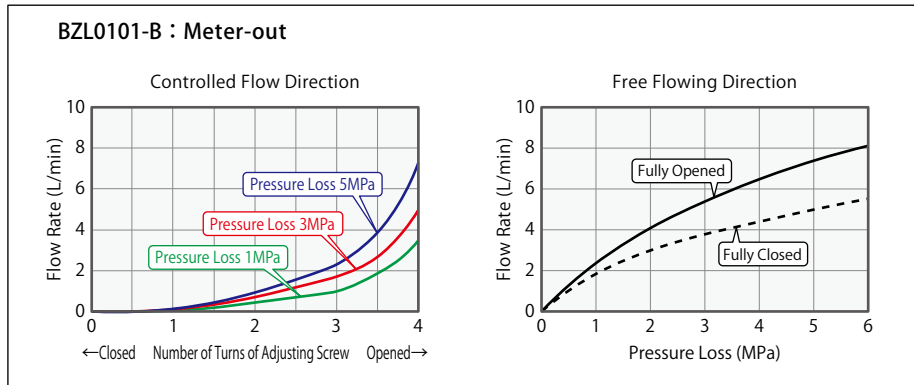
Model No.	BZL0101-B	BZL0201-B	BZL0101-A	BZL0201-A	
Max. Operating Pressure	MPa	7			
Withstanding Pressure	MPa	10.5			
Control Method	Meter-out		Meter-in		
G Thread Size	G1/8A	G1/4A	G1/8A	G1/4A	
Cracking Pressure	MPa	0.12		0.04	
Max. Passage Area	mm <sup>2</sup>	2.6	5.0	2.6	5.0
Usable Fluid	°C	0 ~ 70			
Operating Temperature	General Hydraulic Oil Equivalent to ISO-VG-32				
Tightening Torque for Main Body	N·m	10	25	10	25
Weight	g	12	26	12	26

- Notes : 1. 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.
2. Do not attach a used BZL to other clamps/cylinders.  
Flow control will not be made because the bottom depth difference of G thread makes metal seal insufficient.

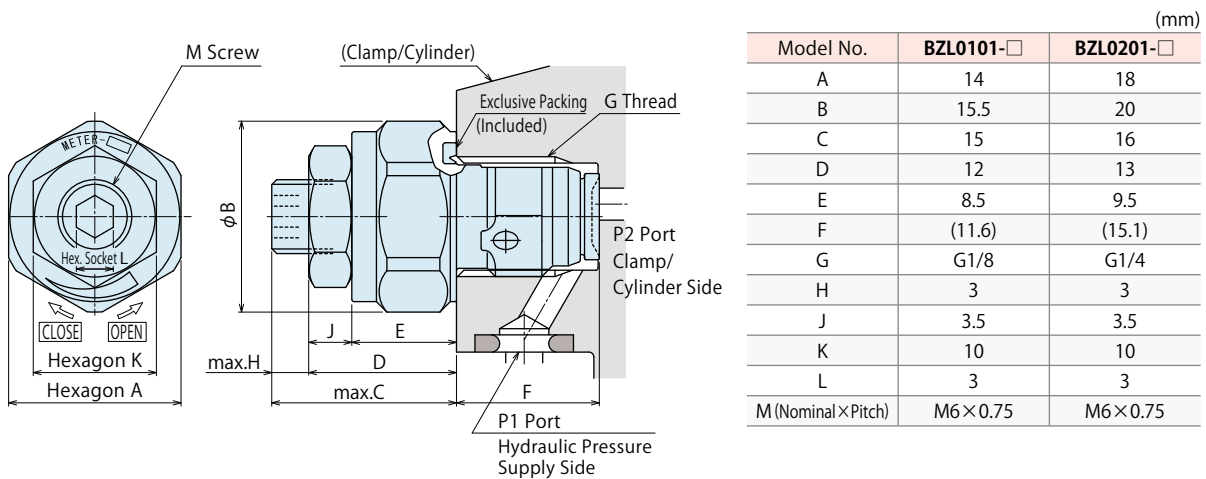
## Applicable Products

Model No.	LHM (Double Action) Swing Clamp	LKM (Double Action) Link Clamp	LLM (Double Action) Linear Cylinder
<b>BZL0101-B</b>	LHM0480-C□-B□ LHM0550-C□-B□	LKM0480-C□-B□ LKM0550-C□-B□	LLM0480-C□□-B□-□ LLM0550-C□□-B□-□
<b>BZL0101-A</b>	(LHM0480-C□-B□) (LHM0550-C□-B□)	(LKM0480-C□-B□) (LKM0550-C□-B□)	(LLM0480-C□□-B□-□) (LLM0550-C□□-B□-□)
<b>BZL0201-B</b>	LHM0650-C□-B□ LHM0750-C□-B□	LKM0650-C□-B□ LKM0750-C□-B□	
<b>BZL0201-A</b>	(LHM0650-C□-B□) (LHM0750-C□-B□)	(LKM0650-C□-B□) (LKM0750-C□-B□)	

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



## External Dimensions



## Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages. (Refer to P.60)
2. It is dangerous to release the air 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-acting clamp/cylinder should have meter-out circuits for both the clamp and unclamp sides (except model LKE/TLA/TMA). Meter-in circuits can be adversely affected by any air in the system.

 Wireless  
 Sensing Clamp

Accessory

 Common  
 Cautions

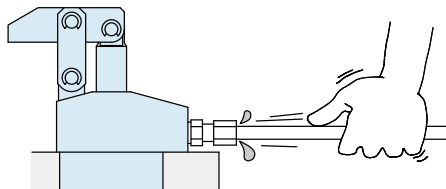
Control Valve

BZL

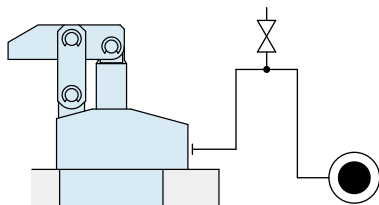
## ● Cautions

### ● 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.
  - Please implement piping construction in a clear environment to prevent anything getting in products.
- 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 Shake 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 release 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 machine installation, the bolt and nut may be tightened lightly. Check the looseness and re-tighten as required.

### ● Hydraulic Fluid List

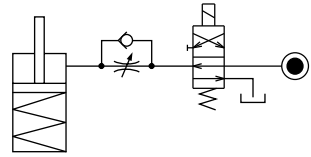
ISO Viscosity Grade ISO-VG-32		
Maker	Anti-Wear Hydraulic Oil	Multi-Purpose Hydraulic Oil
Showa Shell Sekiyu	Tellus S2 M 32	Morlina S2 B 32
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32
JX Nippon Oil & Energy	Super Hyrando 32	Super Mulpus DX 32
Cosmo Oil	Cosmo Hydro AW32	Cosmo New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

Note : Please contact manufacturers when customers require products in the list above.

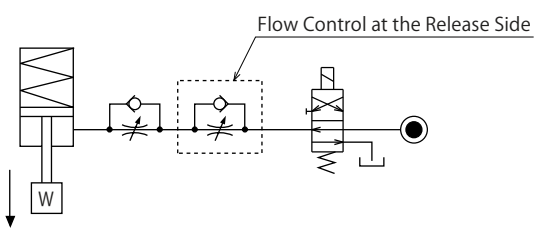
● Notes on Hydraulic Cylinder Speed Control Unit

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.

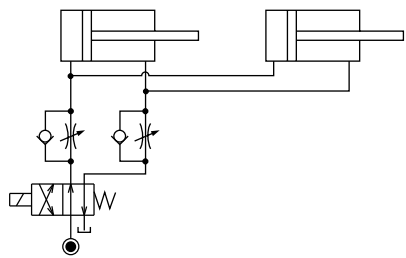


Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)

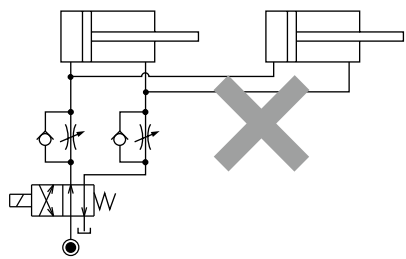


● Flow Control Circuit for Double Acting Cylinder  
Flow control circuit for double-acting cylinder (except LKE/LSE/TLA/TLB/TMA/TLV/TMV/TTA) should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system. However, in the case of controlling LKE, LSE, TLA, TLB, TMA, TLV, TMV, TTA both lock side and release side should be meter-in circuit. If meter-out circuit is used for TLA, TLB, TMA, TLV, TMV, TTA, abnormal high pressure is created, which causes oil leakage and damage.

【Meter-out Circuit】 (Except LKE/LSE/TLA/TLB/TMA/TLV/TMV/TTA)

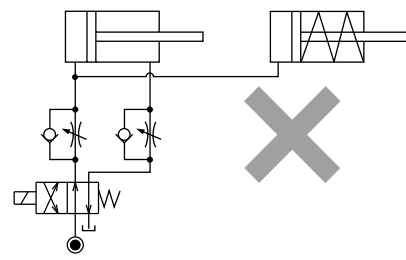


【Meter-in Circuit】 (LKE/LSE/TLA/TLB/TMA/TLV/TMV/TTA must be controlled with meter-in.)



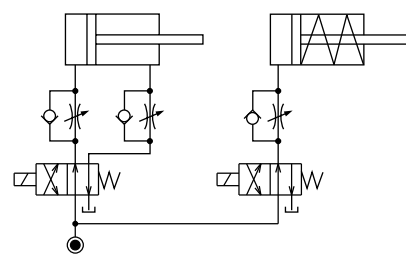
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

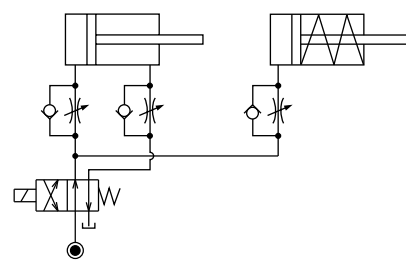


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

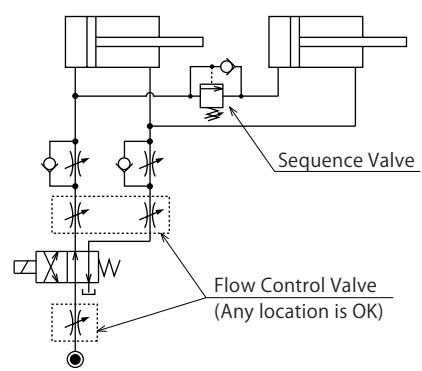
- Separate the control circuit.



- 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.



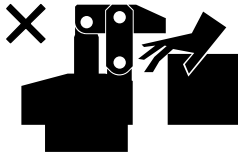
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve 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

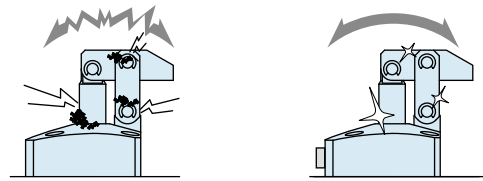
- 1) It should be operated by qualified personnel.
  - Machines and devices with hydraulic and pneumatic products should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
  - ① Machines and devices can only be inspected or prepared when it is confirmed that the safety devices are in place.
  - ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
  - ③ After stopping the product, do not remove until the temperature drops.
  - ④ Make sure there is no trouble/issue in the bolts and respective parts before restarting a machine or device.
- 3) Do not touch a clamp (cylinder) while it 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 Machine and Shut-off of Pressure Source
  - Before the machine is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
  - Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the piston rod.
  - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning and fluid leakage.



- 3) If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
- 4) Regularly tighten pipe line, mounting bolt, nut, snap ring, cylinder and others to ensure proper use.
- 5) Make sure the hydraulic fluid has not deteriorated.
- 6) Make sure there is a smooth action without an irregular 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 operated in an 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.

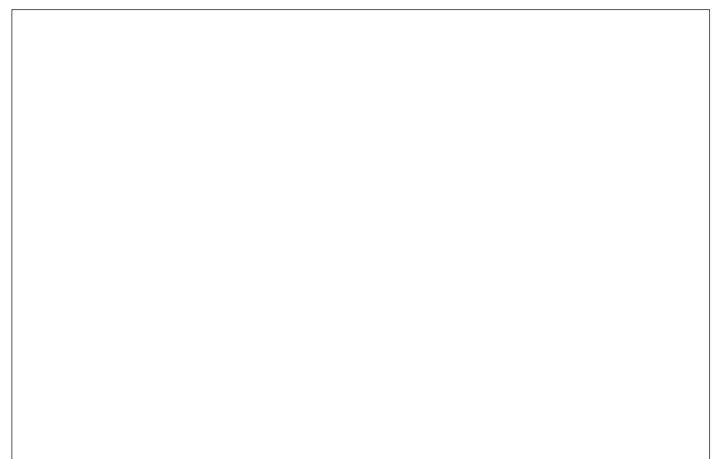


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- For Further Information on Unlisted Specifications and Sizes, Please call us.
- Specifications in this Leaflet are Subject to Change without Notice.

