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

KOSMEK
Harmony in Innovation

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

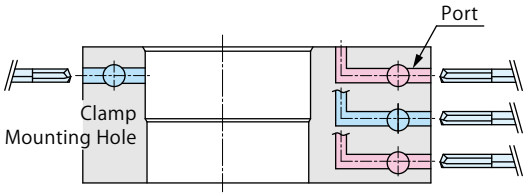
※ Shows the protection level of the sensor.

Quick Response※

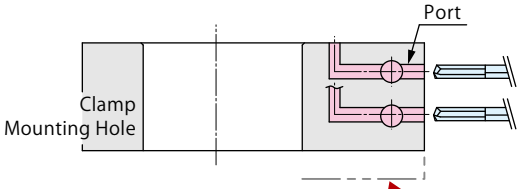
※ Compared with our conventional air sensing clamps.

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

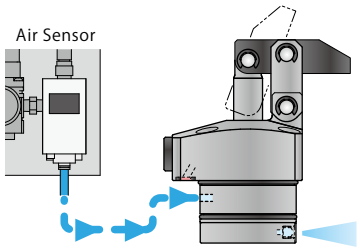
Conventional※ sensing function needed design and machining costs for ports.

Fixture is simplified.

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

Zero Air Consumption

Detect unclamp position via wireless communication.

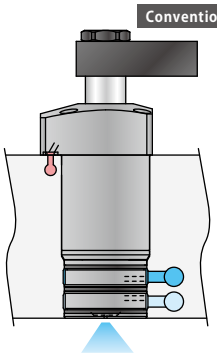
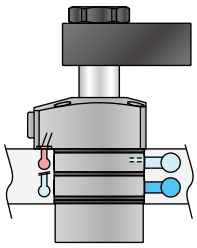
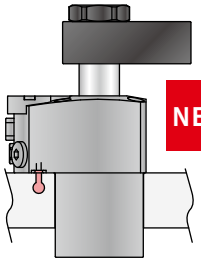


With Wireless Sensing

Consumes air for detection.

※ Using our conventional air sensing clamp.

Detects wirelessly, zero air consumption.

Changes in Sensing Clamps	Air Sensor Model (Conventional)	Air Sensing Valve Model (Conventional)	Wireless Sensing Model
Model			 NEW *No Air Port*
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

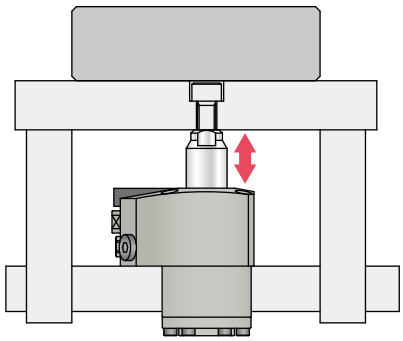
Repeater

Place：Near Fixture
Inside the Processing Machine

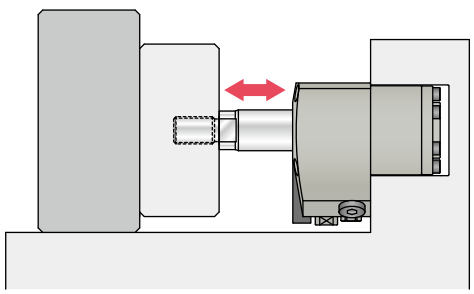
Linear Cylinder

Place：Fixture

Application Examples



For Lifting



For Shifting

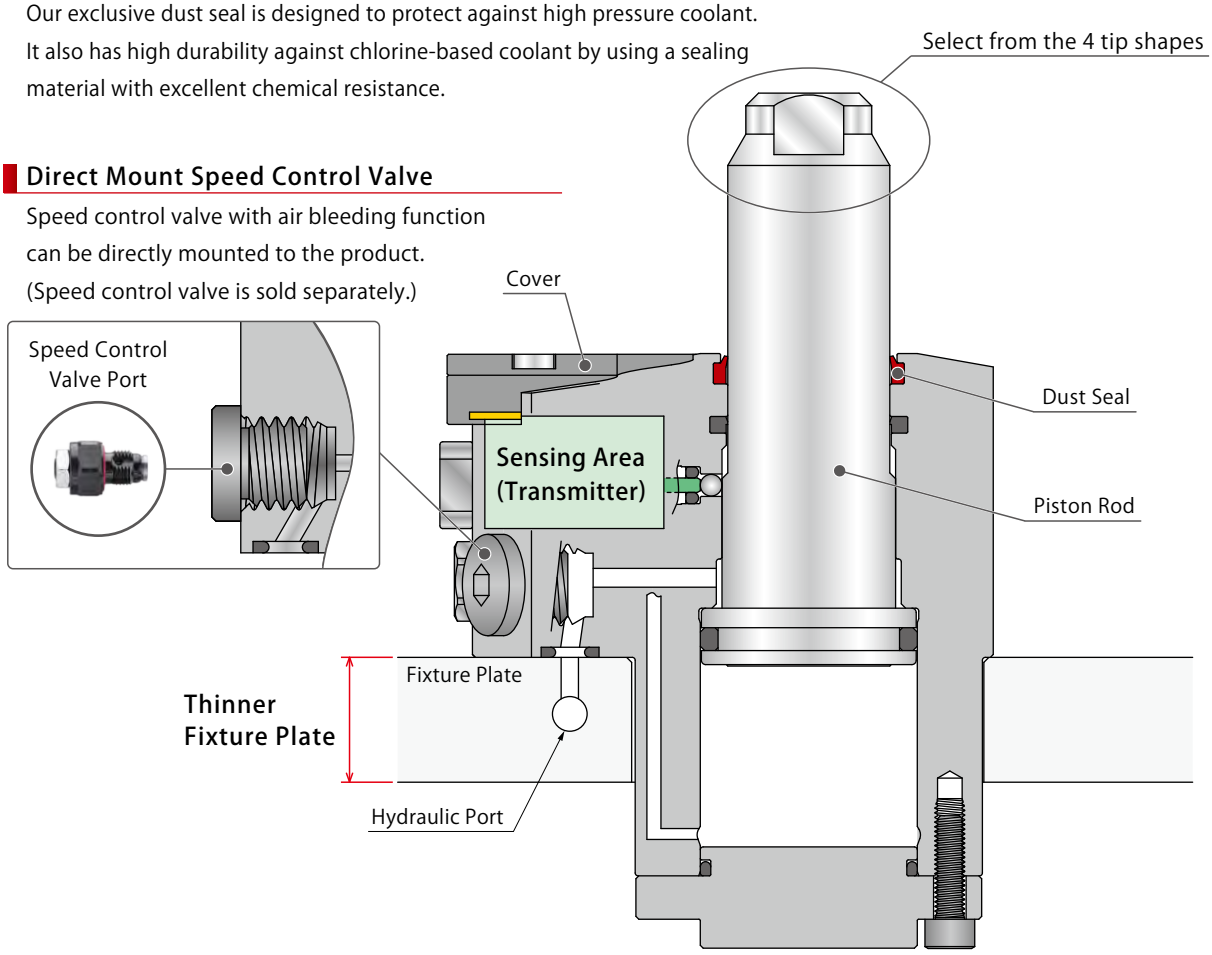
Cross Section ※ This drawing shows Model LLM-CAH-B□.

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.

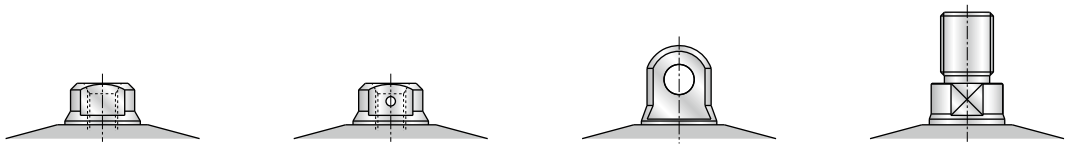
Direct Mount Speed Control Valve

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

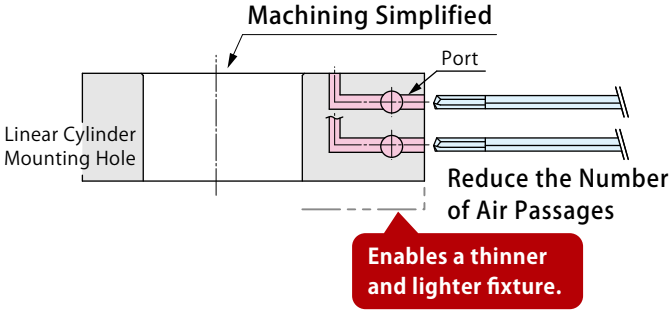
T: Male Threaded

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.

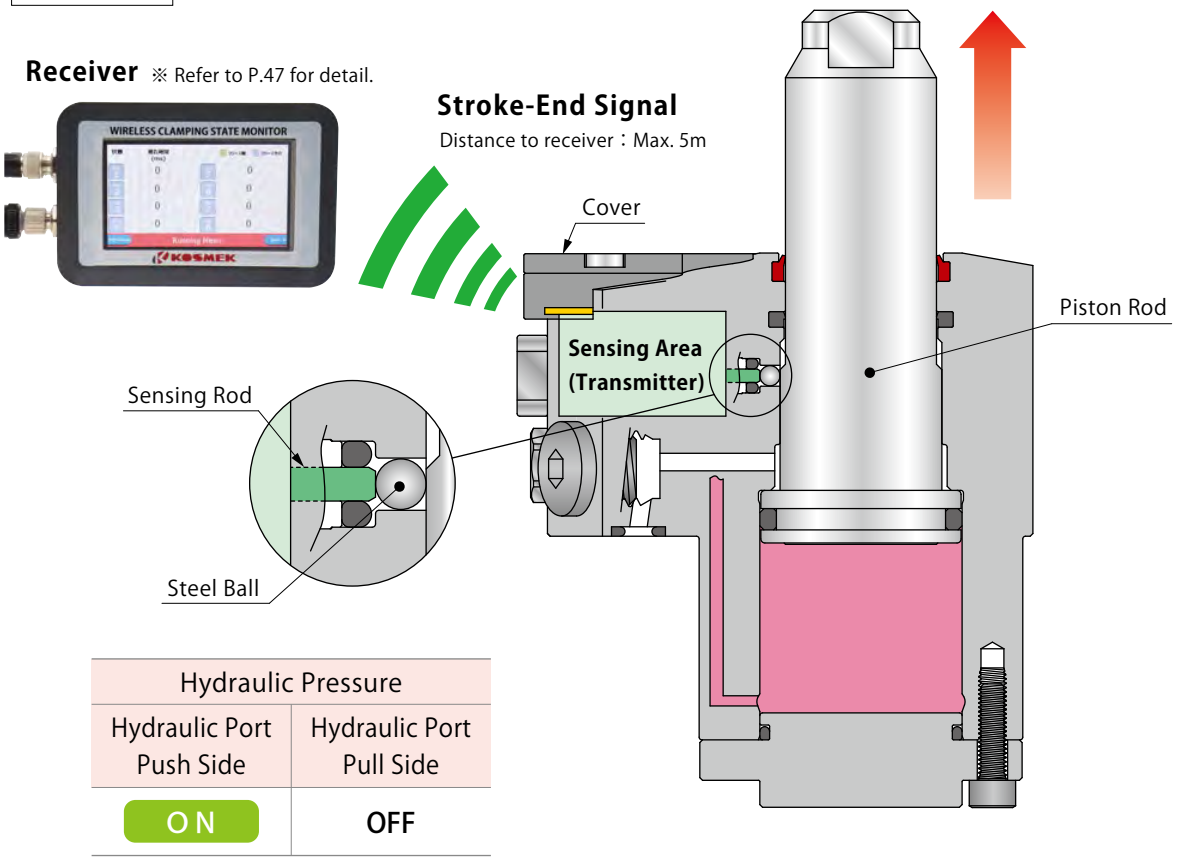
Minimized Number of Ports・Simple Machining

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.



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

Push



Hydraulic Pressure	
Hydraulic Port Push Side	Hydraulic Port Pull Side
ON	OFF

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

The piston rod ascends.

↓

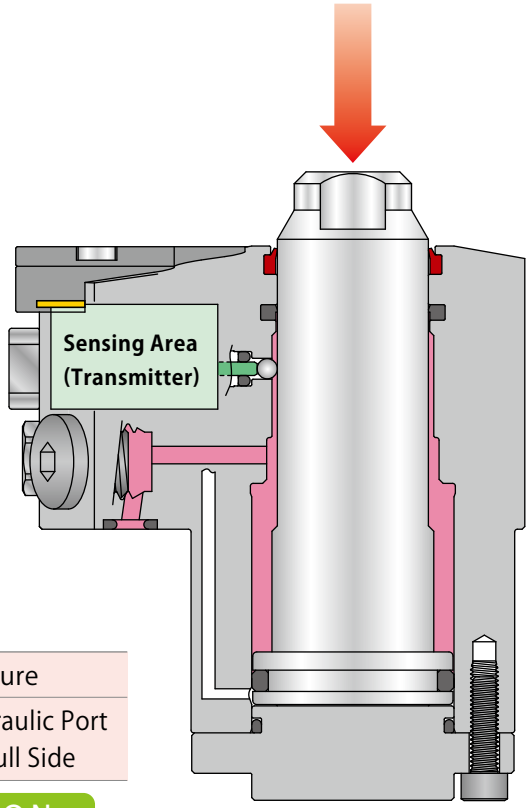
In case of 5 Sensing Option：H Push-end Confirmation ※Refer to P.39 for the sensing option.

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 Sensing Clamps / Linear Cylinders

When using multiple wireless sensing clamps / 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. Simultaneous operation may cause radio interference, which may result in failure to receive signals properly.

Pull



Hydraulic Pressure	
Hydraulic Port Push Side	Hydraulic Port Pull Side
OFF	ON

■ 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.

Model No. Indication

LLM 048 0 - C A H - 020 - B03

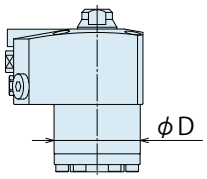
1 2 3 4 5 6 7

1 Body Size

048：φD=48mm

055：φD=55mm

※ Indicates the cylinder outer diameter (φD).



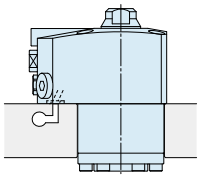
2 Design No.

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)

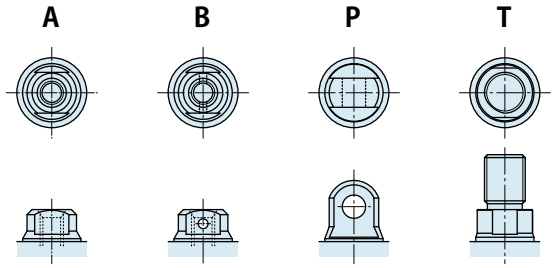
4 Shape of Piston Tip

A ：Female Threaded

B ：Female Threaded (With Anti-Rotation Pinhole)

P ：Pin-Hole

T ：Male Threaded



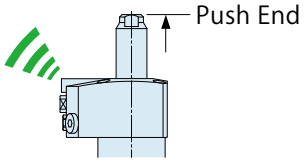
5 Sensing Option

H ：Push-end Confirmation

J ：Pull-end Confirmation

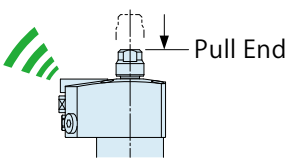
※ Please contact us when using multiple linear cylinders.

※ 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-YWA001-00□E) before making a selection.



H

Transmit the signal when reaching the push end.



J

Transmit the signal when reaching the pull end.

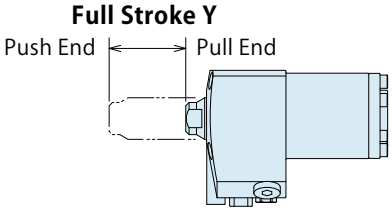
6 Stroke

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

B03 ： United States

B01 ： Japan

B02 ： China

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

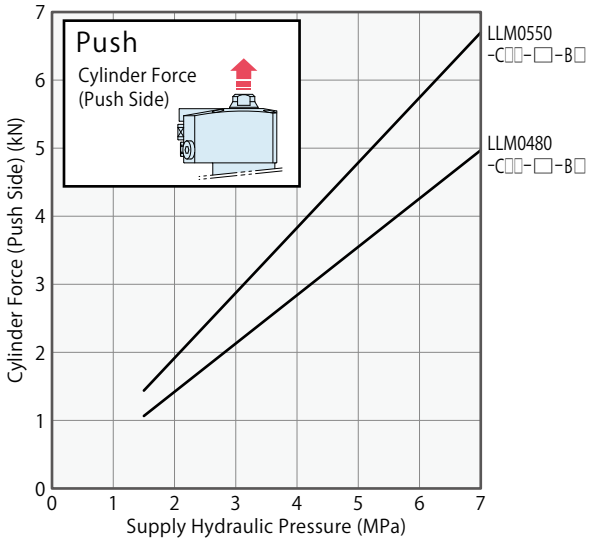
Specifications

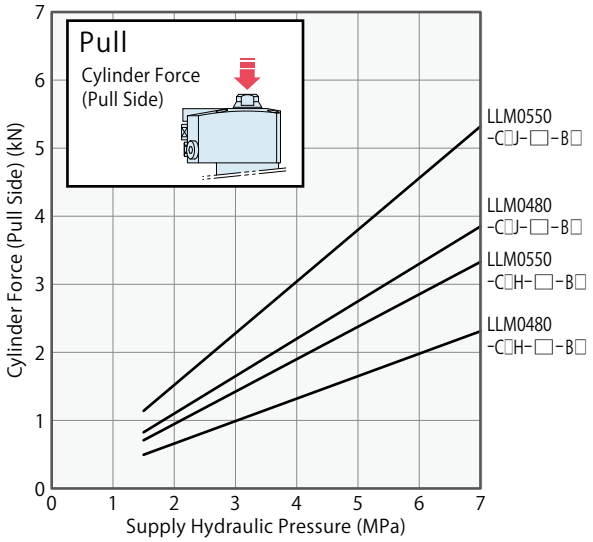
Model No.		Push-end Confirmation LLM0480-C□H-□-B□				Push-end Confirmation LLM0550-C□H-□-B□				Pull-end Confirmation LLM0480-C□J-□-B□				Pull-end Confirmation LLM0550-C□J-□-B□			
6 Stroke		010	015	020	025	010	015	020	025	010	015	020	025	010	015	020	025
Full Stroke Y $^{+0.5}_{0}$	mm	10	15	20	25	10	15	20	25	10	15	20	25	10	15	20	25
Cylinder Area	cm^2 Push Side	7.1				9.6				7.1				9.6			
	Pull Side	3.3				4.7				5.5				7.6			
Cylinder Force ※1 (Calculation Formula)	kN Push Side	P × 0.71				P × 0.96				P × 0.71				P × 0.96			
	Pull Side	P × 0.33				P × 0.47				P × 0.55				P × 0.76			
Cylinder Capacity	cm^3 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	℃	0 ~ 70 (Sensing Area: ~ 60℃)															
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32															
Wireless Sensing (Stroke-end Confirmation)	Frequency	7 When selecting **B03**：902MHz Band															
		7 When selecting **B01**：920MHz Band															
		7 When selecting **B02**：868MHz 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





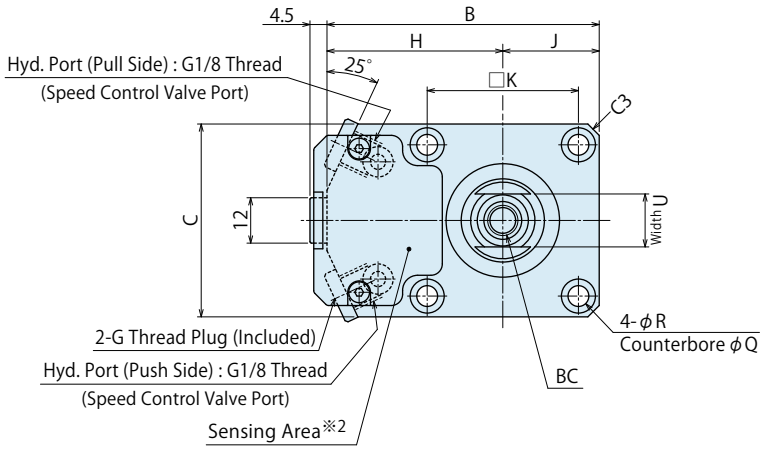
Notes :
1. The chart and graph show the relationship between the cylinder force and supply hydraulic pressure.
2. Cylinder force F (kN) is the theoretical value.
Actual force may decrease due to sliding friction of the cylinder and pressure loss in the hydraulic devices and piping.

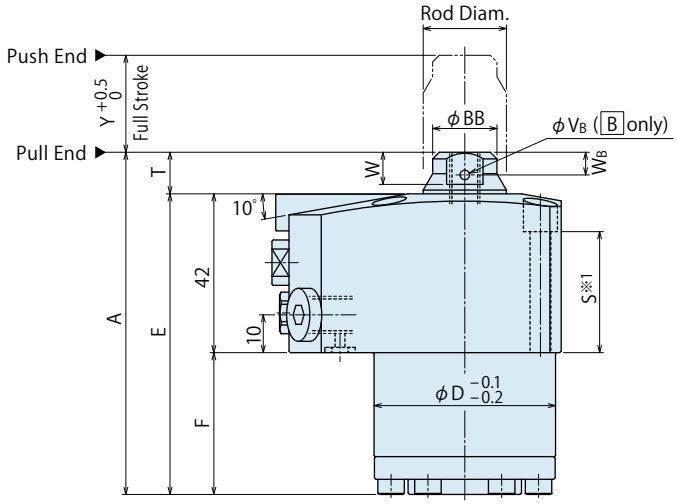
External Dimensions

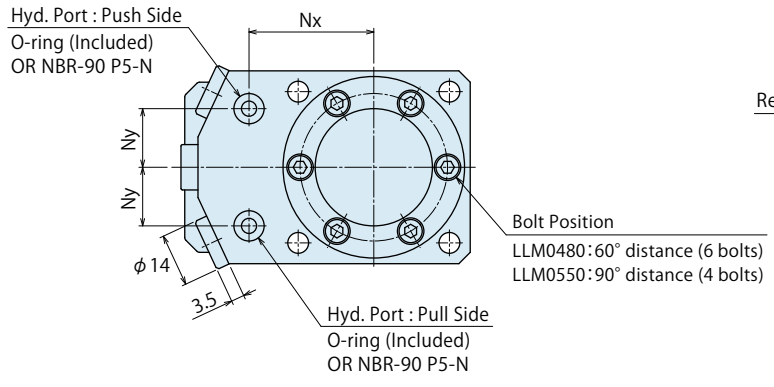
5 Sensing Option : H Push-end Confirmation

Tip Shape A : Female Threaded B : Female Threaded (with Anti-Rotation Pinhole)

※ The drawings show LLM-CBH-B□.



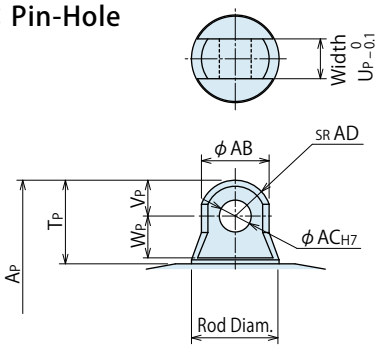




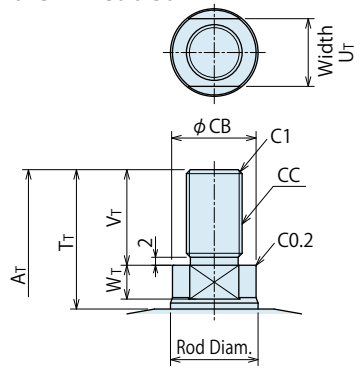
Tip Shape

Refer to A : Female Threaded dimensions for unlisted dimensions.

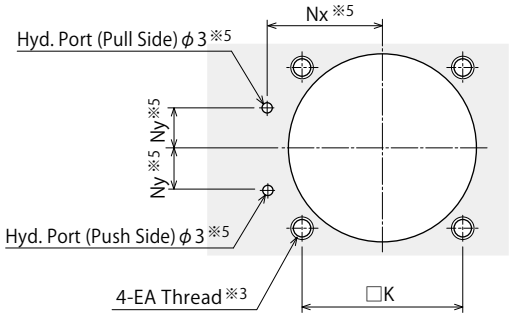
P : Pin-Hole

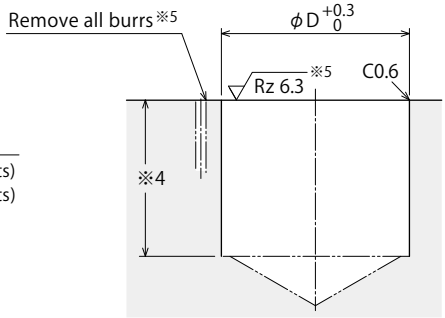


T : Male Threaded



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). It may obstruct radio wave transmission.

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

※4. The depth of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'F'.

※5. 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-CAH-010-B03, LLM0550-CTH-025-B03)

LLM 048 0 – C A/B/P/T H – 010/015/020/025 – B03/B01/B02

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

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_B 【B only】	2.5				2.5			
W_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
A_P	90.5	95.5	100.5	105.5	93	98	103	108
AB	17				19			
AC	$8^{+0.015}_{0}$				$10^{+0.015}_{0}$			
AD	9				10			
T_P	21				24			
U_P	10				11			
V_P	9				10			
W_P	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)

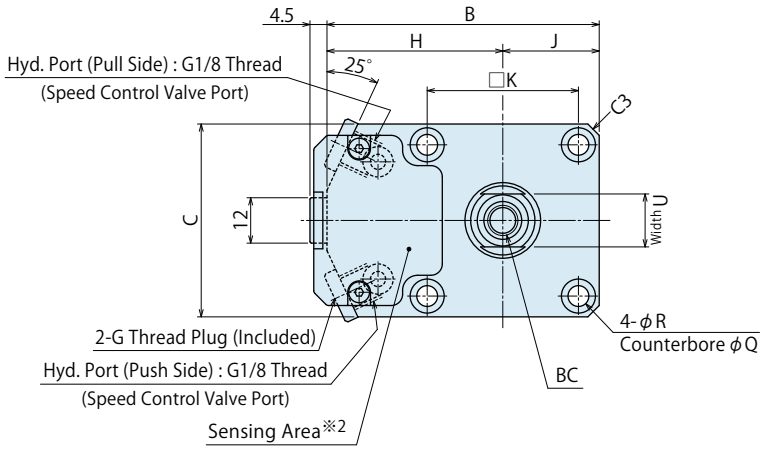
Model No.	LLM0480-CTH-□-B□				LLM0550-CTH-□-B□			
6 Stroke	010	015	020	025	010	015	020	025
Full Stroke Y	10	15	20	25	10	15	20	25
A_T	104.5	109.5	114.5	119.5	109	114	119	124
T_T	35				40			
U_T	17				17			
V_T	24				28			
W_T	8.5				9			
CB	21				24			
CC (Nominal×Pitch)	M14×1.5				M16×1.5			
Weight kg	1.3	1.4	1.4	1.5	1.8	1.9	1.9	2.0

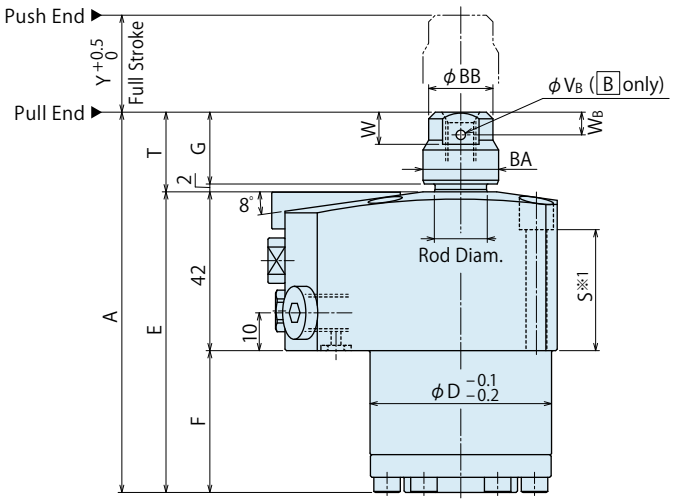
External Dimensions

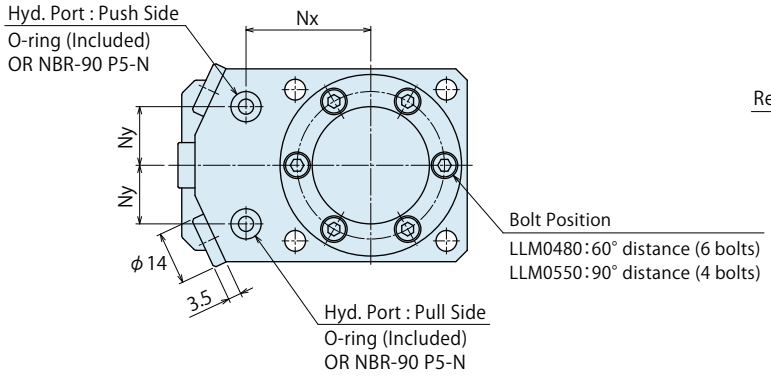
5 Sensing Option : J Pull-end Confirmation

Tip Shape A : Female Threaded B : Female Threaded (with Anti-Rotation Pinhole)

※ The drawings show LLM-CBJ-B□.



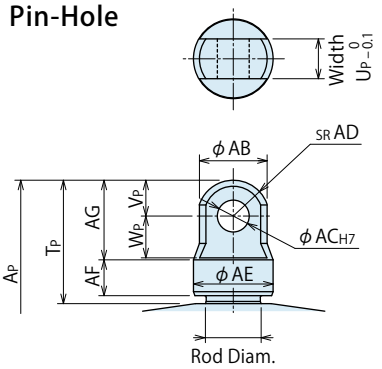




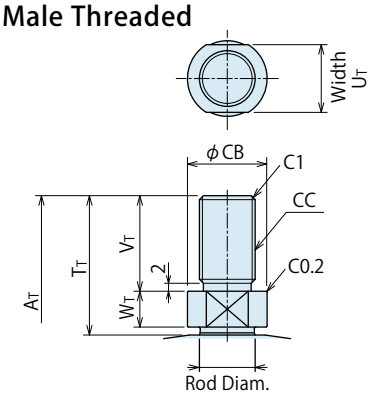
Tip Shape

Refer to A : Female Threaded dimensions for unlisted dimensions.

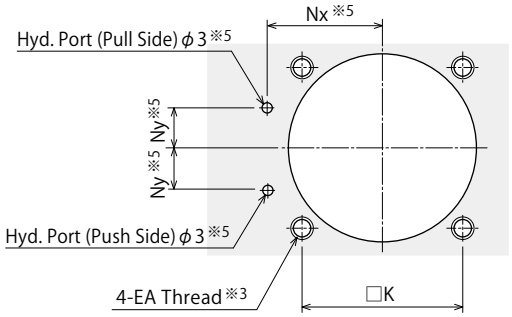
P : Pin-Hole

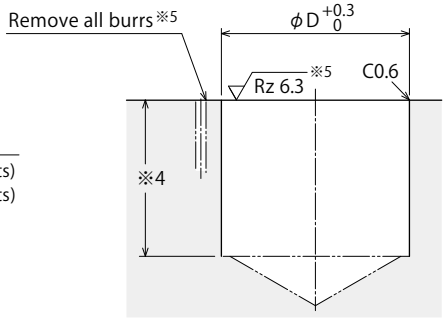


T : Male Threaded



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). It may obstruct radio wave transmission.

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

※4. The depth of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'F'.

※5. 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-B03, LLM0550-CTJ-025-B03)

LLM 048 0 – C A B P T J – 010 015 020 025 – B03 B01 B02

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_B 【B only】	2.5				2.5			
W_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
A_P	100.5	105.5	110.5	115.5	104	109	114	119
AB	17				19			
AC	$8^{+0.015}_{0}$				$10^{+0.015}_{0}$			
AD	9				10			
AE	20				22			
AF	9				10			
AG	20				23			
T_P	31				35			
U_P	10				11			
V_P	9				10			
W_P	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
A_T	104.5	109.5	114.5	119.5	109	114	119	124
T_T	35				40			
U_T	17				17			
V_T	24				28			
W_T	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

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.
  LLM□-C□□-□-B03 can be used in United States.

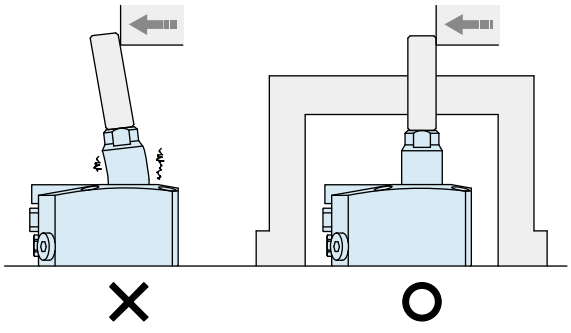
3) Notes for Circuit Design
- Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages. (Refer to P.60)
- Ensure there is no possibility of supplying hydraulic pressure to the push side and the pull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

4) 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.

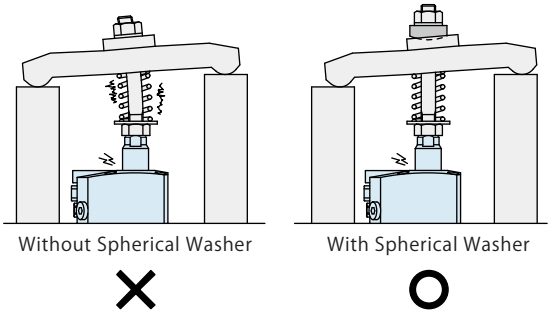
5) Protect the exposed area of the piston rod when using on a welding fixture.
- If spatter attaches to the sliding surface it could lead to malfunction and fluid leakage.

6) 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.

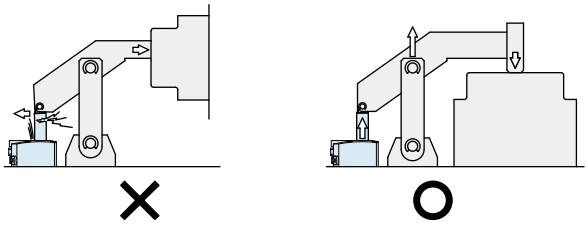
In case a load is applied except from the axial direction



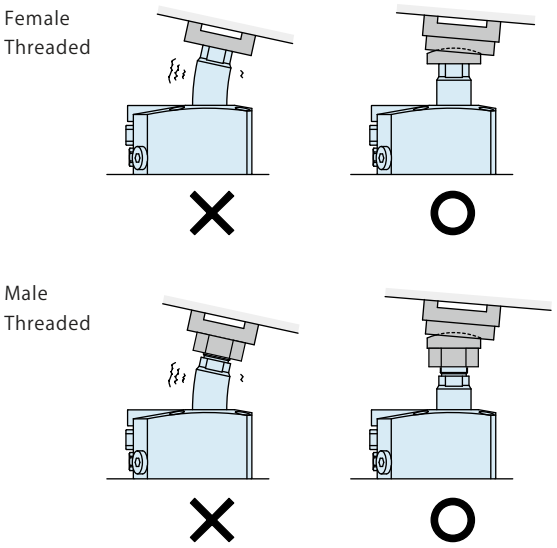
When clamping workpieces of different heights



A Combination with Link Mechanism



7) 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.)



Notes for Usage

1) Do not cover the top surface of the sensing area with metal objects (chips, sludge, etc.). It may obstruct radio wave transmission.
   The cover is made of plastic material and should be protected from chips.

Installation Notes

1) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.59).

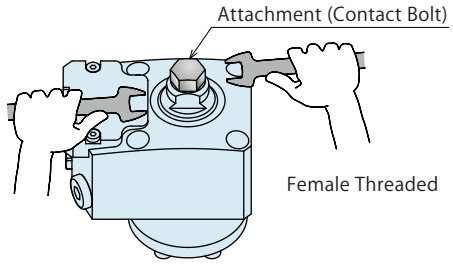
2) Installation of the Product

- When mounting the cylinder, use hexagonal socket bolts as multiple bolt holes for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the table below. Tightening with greater torque than recommended can dent the seating surface or break the bolt.

Model No.	Mounting Bolt Size	Tightening Torque (N·m)
LLM0480-C□□-□-B□	M5×0.8	6.3
LLM0550-C□□-□-B□	M6×1	10

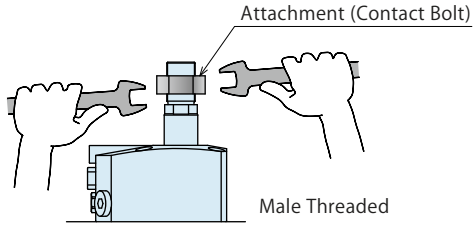
3) Installation / Removal of Attachment

- When installing or removing an attachment, always use a wrench on the piston rod to keep it from turning, and tighten it with the torque shown below.



LLM□-CA□-□-B□ / LLM□-CB□-□-B□ : Female Threaded

Model No.	Thread Size	Tightening Torque (N·m)
LLM0480-C $\frac{A}{B}$ □-□-B□	M8×1.25	16
LLM0550-C $\frac{A}{B}$ □-□-B□	M10×1.5	40



LLM□-CT□-□-B□ : Male Threaded

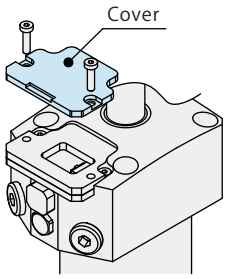
Model No.	Thread Size	Tightening Torque (N·m)
LLM0480-CT□-□-B□	M14×1.5	80
LLM0550-CT□-□-B□	M16×1.5	100

4) Speed Adjustment

- Adjust the operating speed of both the push and pull sides to be less than 100mm/sec. If the cylinder operates too fast the parts will be worn 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.
- When using multiple wireless sensing clamps / linear cylinders, provide an operating time difference of 100msec (0.1 sec.) or more. Simultaneous operation may cause radio interference, which may result in failure to receive unclamp signals properly. For adjusting the unclamp operation, please use a speed control valve.

5) Initial Connection Settings for the Receiver

During setup, it is necessary to perform the initial connection settings between the linear cylinder and the receiver.
(For detailed instructions, please refer to the instruction manual of receiver YWA1000.)
When attaching or removing the cover, be very careful to avoid any seals being pinched. Loss of sealing ability may allow chips or coolant to infiltrate, preventing normal operation.
When reassembling, tighten the bolts with the specified torque (0.8 N・m) using the attached bolts.



6) Cautions for Repeater Installation

The maximum distance between the linear cylinder and the receiver is 5 meters.
Check the radio wave strength displayed on the receiver and consider the location of the repeater. (Recommended Threshold：-85dBm)
It is recommended to install the repeater in locations such as the upper part inside the processing machine, where it is less likely to be exposed to coolant or chips.

Guidelines for Repeater Installation

① When the receiver cannot be installed at a height of 2 meters or more.
② When there is a radio wave obstruction between the linear cylinder and the receiver.
③ When the linear cylinder and the receiver are more than 3 meters apart.

※ Please refer to P.59 for common cautions. ・Installation Notes ・Hydraulic Fluid List ・Notes on Hydraulic Cylinder Speed Control Circuit ・Notes on Handling ・Maintenance/Inspection ・Warranty

Wireless Sensing Receiver • Repeater

Receiver Model YWA
Repeater Model YWB

System Configuration Products Required for Wireless Sensing

Model No. Indication

Receiver

YWA 100 0 – B03 – E
(1) (2) (3) (4)

1 Classification

100：Standard Model

2 Design No.

0 ：Revision Number

3 Available Country：Frequency

B03 ： United States
B01 ： Japan
B02 ： China

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

4 Monitor Display Language

E ： English
J ： Japanese
C ： Chinese (Simplified)

Repeater

YWB 100 0 – B03
(1) (2) (3)

1 Classification

100：Standard Model

2 Design No.

0 ：Revision Number

3 Available Country：Frequency

B03 ： United States
B01 ： Japan
B02 ： China

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

System Configuration Diagram

Customer Preparation (Machine Side)

Command Signal from Machine Side
Signal to control the receiver.
Reset Signal for Clamping State

Power DC24V

Clamping State Signal to Machine Side
Signal to identify the clamp operation.
Unclamp Signal of 1st Clamp
Unclamp Signal of 2nd Clamp
⋮
Unclamp Signal of 8th Clamp

Power DC24V

2-Circuit Hydraulic System
Clamp Hyd. Pressure
Unclamp Hyd. Pressure

Place : Outside Machine

Receiver
Clamp・Linear Cylinder
Max. Number of Connections：8

Input Connector
Output Connector

Transmit an unclamp/ stroke-end signal by radio wave

Place : Near Fixture
Inside the Processing Machine

Repeater
Improves radio wave strength and reliability.

Transmit an unclamp/ stroke-end signal by radio wave

Place : Near Fixture

Wireless Sensing Clamp/ Linear Cylinder

※ Max. distance between the clamp and the receiver : 5m
(when there is no obstruction.)

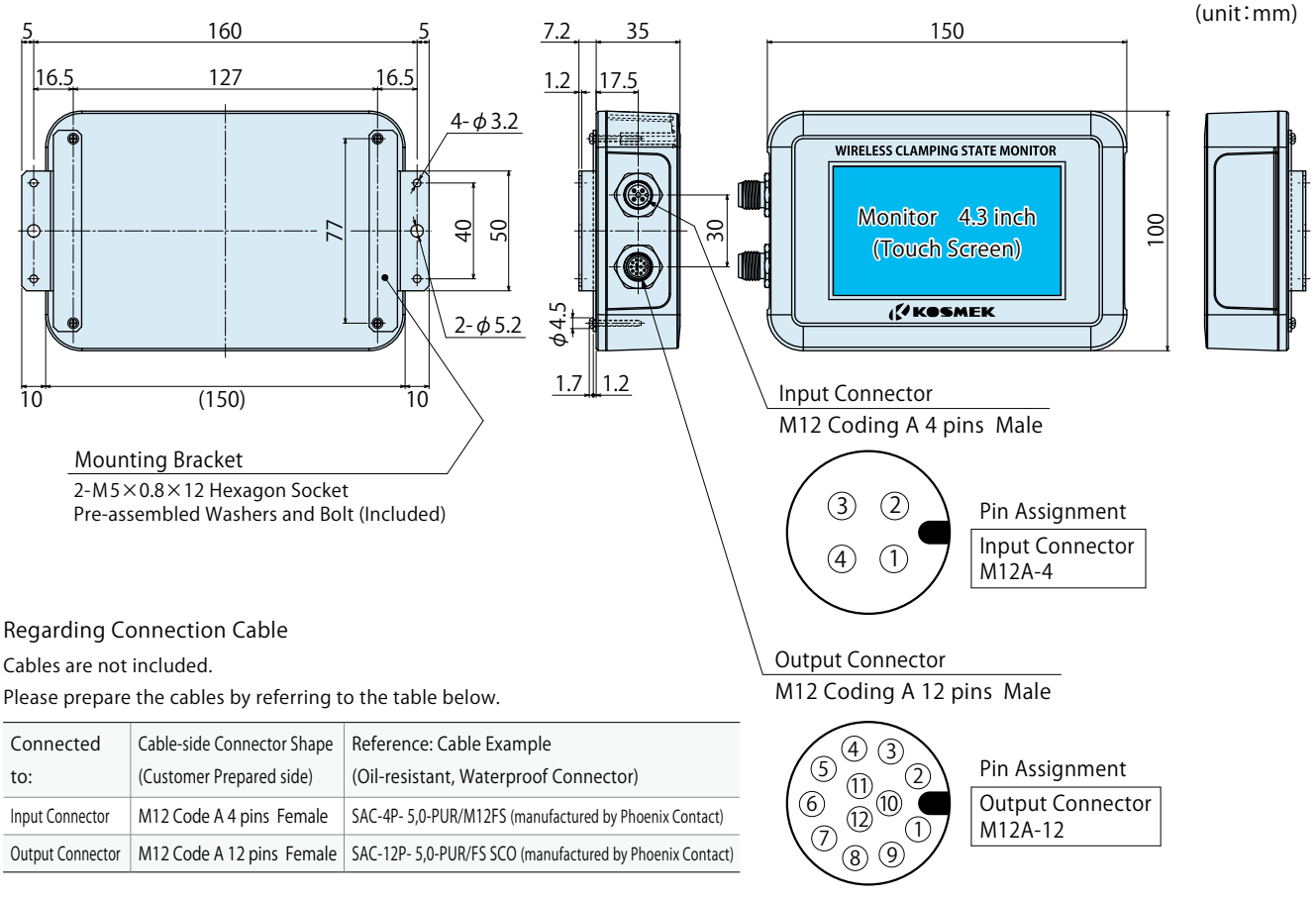
Specifications : Receiver model YWA1000-B□-□

This receiver receives unclamp and stroke-end confirmation signals from wireless sensing clamps, linear cylinders (model LHM / LKM / LLM), and repeater (model YWB) and displays them on a monitor and outputs them to an external device.
Clamping state, operating time, and radio wave condition can be checked on the monitor.
The output contact can be turned off and the operating time can be reset by switching the clamping state reset.

Model No.		YWA1000-B□-□
Receiving Frequency		3 When selecting **B03** : 902MHz Band
		3 When selecting **B01** : 920MHz Band
		3 When selecting **B02** : 868MHz Band
Receiving Sensitivity		−85dBm(25℃)
Number of Receivable Connections (Number of Wireless Sensing Clamps / Linear Cylinders Connected)		Up to 8 units
Response Time		≦100msec (from wireless detection to state output)
Number of Simultaneous Wireless Signals Received		1
Power Supply		DC24V±20% 0.6A
Operating Temperature and Humidity		−10℃ ~ 60℃ ・ 90% or less (at 40℃)
Storage Temperature and Humidity		−20℃ ~ 70℃ ・ 90% or less (at 60℃)
Clamping State Output	Number of Outputs	8 (M12 Coding A 12 pins)
	Output Attributes	8-output collective common (PNP/NPN switchable)
	Output Ratings	MAX DC24V±10% 0.45A
	Output Protection	Built-in overvoltage and overcurrent protection elements
Clamping State Reset Input	Number of Inputs	1 (M12 Coding A 4 pins)
	Input Terminals	Operation-end reset input by the signal linked with lock operation ON
	Input Attributes	External voltage input optocoupler (MAX DC24V)
Weight		500 g (including mounting bracket)

External Dimensions

(unit：mm)

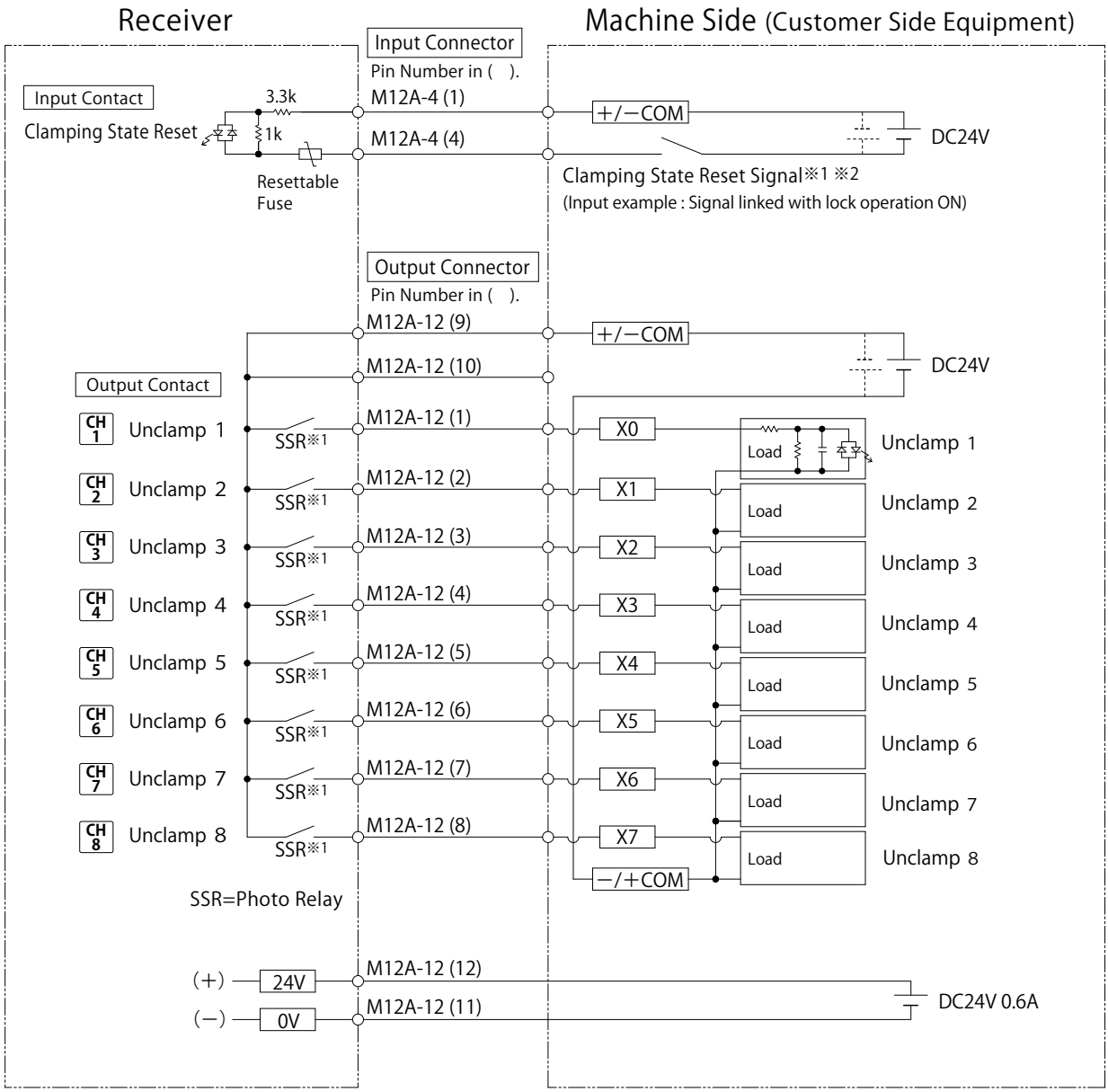


Regarding Connection Cable

Cables are not included.
Please prepare the cables by referring to the table below.

Connected to:	Cable-side Connector Shape (Customer Prepared side)	Reference: Cable Example (Oil-resistant, Waterproof Connector)
Input Connector	M12 Code A 4 pins Female	SAC-4P- 5,0-PUR/M12FS (manufactured by Phoenix Contact)
Output Connector	M12 Code A 12 pins Female	SAC-12P- 5,0-PUR/FS SCO (manufactured by Phoenix Contact)

Interface Diagram between Machine Tool and Receiver



Notes :

1. If the receiver power is turned OFF (in case of power failure), 'Unclamp 1-8' will be OFF (contact open). When power is restored, reactivate clamps or linear cylinders to resume operation.
2. If the clamps or linear cylinder inadvertently move from the operation ends, the corresponding unclamp signals will be turned OFF (contact open).

※1. When switching the clamping state reset signal (ON→OFF or OFF→ON), 'Unclamp 1-8' will be OFF (contact open). Also, the operating time of the receiver will be reset to "0".

※2. The clamping state reset signal is required in this system to ensure proper operating detection.

Accessory (Sold Separately : Wall-Mounted Magnet)

Model No. Indication

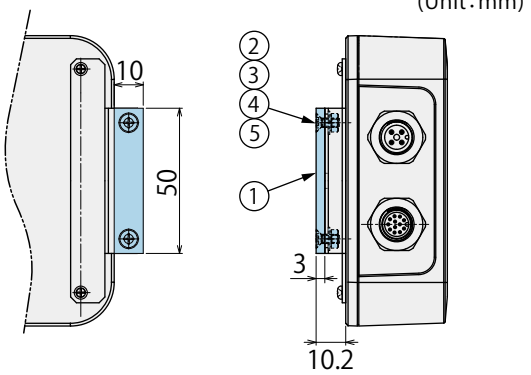
YL0270

Design No.
(Revision Number)

Model No.	No.	Name		Quantity
YL0270	①	Neodymium Magnet		2
	②	Phillips Head Countersunk Screw	M3×0.5×8	4
	③	Hex Nut	M3×0.5×8	4
	④	Spring Washer	M3 JIS	4
	⑤	Flat Washer	M3	4

YL0270 Mounting Dimensions

(Unit：mm)



Cautions for Receiver

1) 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. YWA1000-B03-□ can be used in United States.

2) Please read the instruction manual (IM-YWA001-00□E) carefully before designing and setting up.

The instruction manual can be downloaded from Kosmek website (product page for LHM/LKM/LLM/YWA/YWB).

- Screen Display and Operation Method

  Please refer to the instruction manual for the screen display and operation method of the receiver.

- Initial Connection Settings

  Initial connection settings are required to connect the receiver with the wireless sensing clamp/linear cylinder.
  Please refer to the instruction manual for the setting method.

- Control Design and Electrical Circuit Design

  Please check the operation timing chart in the instruction manual and design the appropriate control and electrical circuit.

- Repeater Configuration

  After completing the initial connection settings between the clamp/linear cylinder and the receiver, please proceed with the settings for the receiver and the repeater.
  Please refer to the instruction manual for the configuration method.

3) Cautions for Repeater Installation

- The maximum distance between the clamp and the receiver is 5 meters.
  Check the radio wave strength displayed on the receiver and consider the location of the repeater.
  (Recommended Threshold：−85dBm)
- It is recommended to install the repeater in locations such as the upper part inside the processing machine, where it is less likely to be exposed to coolant or chips.

[Guidelines for Repeater Installation]

- When the receiver cannot be installed at a height of 2 meters or more.
- When there is a radio wave obstruction between the clamp/linear cylinder and the receiver.
- When the clamp/linear cylinder and the receiver are more than 3 meters apart.

※ Please refer to P.61 for common cautions. ・Notes on Handling ・Maintenance/Inspection ・Warranty

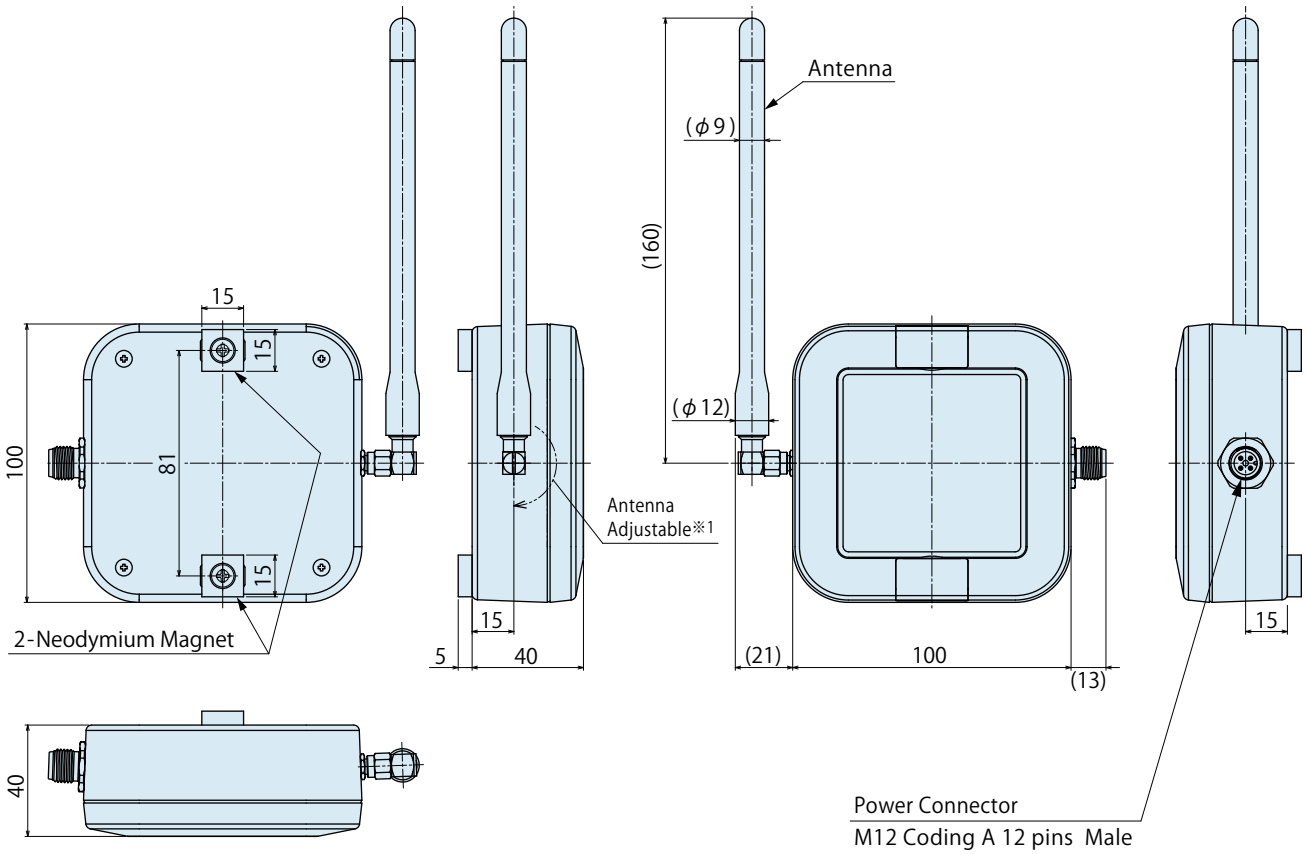
Specifications : Repeater model YWB1000-B□

This repeater receives wireless signals for unclamp and stroke-end confirmation from the wireless sensing clamp (model LHM / LKM / LLM), amplifies the radio signal strength, and transmits them to the receiver (model YWA).

Model No.		YWB1000−B□
Receiving Frequency		3 When selecting **B03** : 902MHz Band
		3 When selecting **B01** : 920MHz Band
		3 When selecting **B02** : 868MHz Band
Receiving Sensitivity		−85dBm(25℃)
Number of Simultaneous Wireless Connections		1
Operating Temperature and Humidity		−10℃ ~ 60℃ ・ 90% or less (at 40℃)
Storage Temperature and Humidity		−20℃ ~ 70℃ ・ 90% or less (at 60℃)
Power Input	Connector	M12 Coding A 4 pins
	Power	DC24V±20% 0.3A
Weight		300g
Waterproof Rating		Equivalent to IPX7 (when the housing is completely closed and a waterproof connector is attached)

External Dimensions

(unit：mm)



Note :

※1. Loosen the nut to change the direction of the antenna.

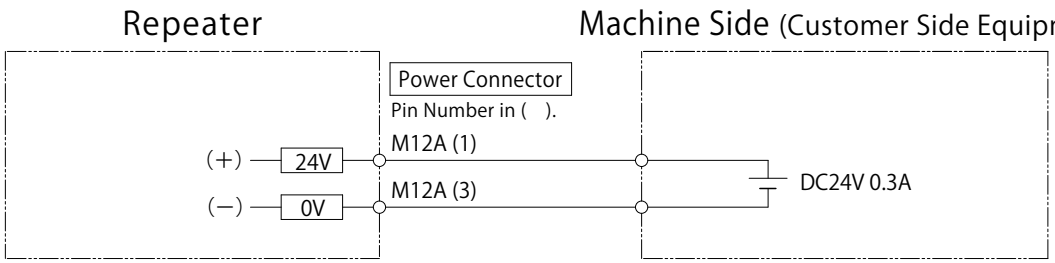
Regarding Connection Cable

Cables are not included.

Please prepare the cables by referring to the table below.

Connected to:	Cable-side Connector Shape (Customer Prepared side)	Reference: Cable Example (Oil-resistant, Waterproof Connector)
Power Connector	M12 Code A 4 pins Female	SAC-4P- 5,0-PUR/M12FS (manufactured by Phoenix Contact)

Interface Diagram of Repeater



Cautions for Repeater

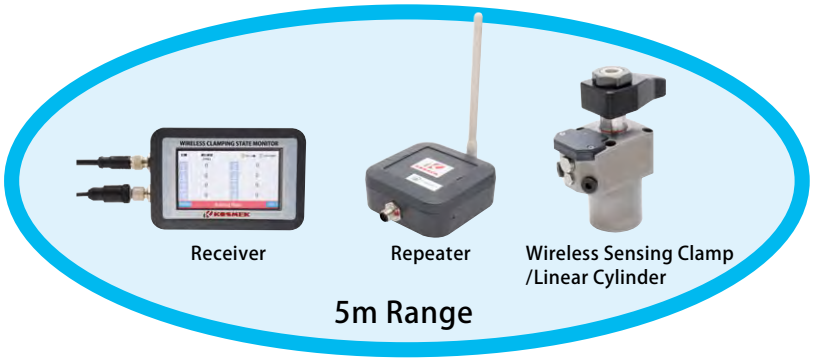
1. Radio Regulations
   There are restrictions on countries where the product can be used according to radio regulations.
   Please follow the regulatory requirements of each country. YWB1000-B03 can be used in United States.

2. Repeater Configuration
   After completing the initial connection settings between the clamp/linear cylinder and the receiver,
   please proceed with the settings for the receiver and the repeater.
   Please refer to the instruction manual of the receiver YWA (IM-YWA000-□E) for the configuration method.

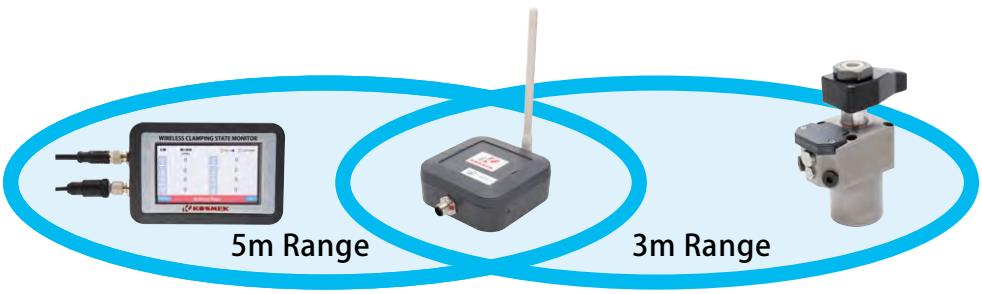
3. Cautions for Repeater Installation
   - The maximum distance between the clamp and the receiver is 5 meters. Check the radio wave strength displayed on the receiver and consider the location of the repeater. (Recommended Threshold：-85dBm)
     It is recommended to install the repeater in locations such as the upper part inside the processing machine, where it is less likely to be exposed to coolant or chips.

[Guidelines for Repeater Installation]
- When the receiver cannot be installed at a height of 2 meters or more.
- When there is a radio wave obstruction between the clamp/linear cylinder and the receiver.
- When the clamp/linear cylinder and the receiver are more than 3 meters apart.

○



○

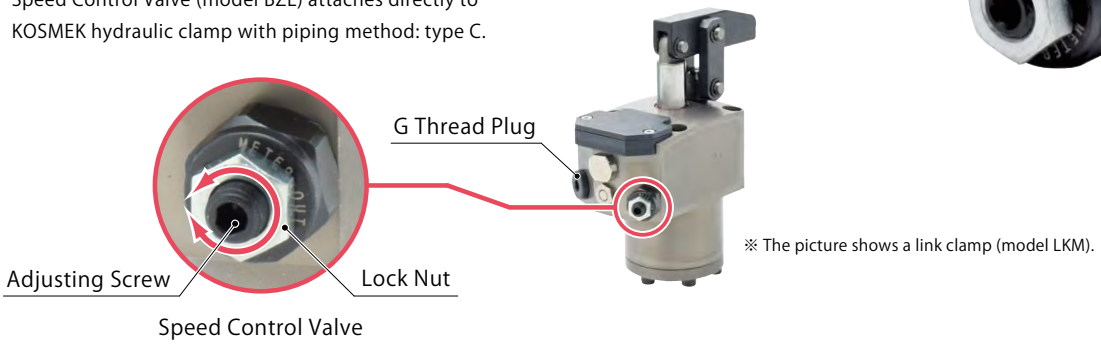


※ Please refer to P.61 for common cautions. ・Notes on Handling ・Maintenance/Inspection ・Warranty

Speed Control Valve (For Low Pressure)

Directly Mounted to Clamps / Cylinders

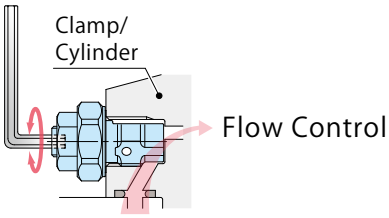
Speed Control Valve (model BZL) attaches directly to KOSMEK hydraulic clamp with piping method: type C.



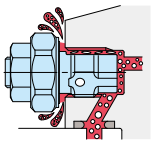
※ The picture shows a link clamp (model LKM).

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.



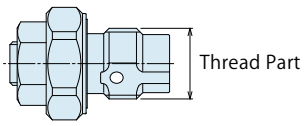
Model No. Indication (Speed Control Valve for Low Pressure)

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.

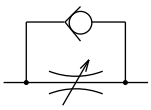
1 : Revision Number

3 Control Method

B : Meter-out (Recommended※1)
A : Meter-in

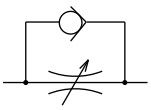
B

Circuit Symbol : Meter-out



A

Circuit Symbol : 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^2	2.6	5.0	2.6	5.0
Usable Fluid	℃	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

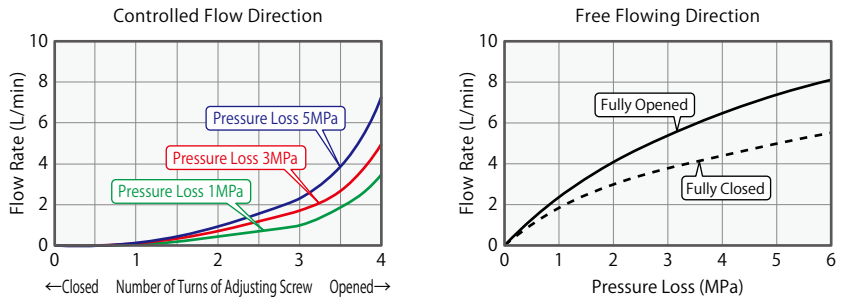
Notes : 1. It must be mounted with recommended torque. Because of the structure of the metal seal, if mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate.
2. Do not attach a used BZL to other clamps/cylinders. Flow control will not be made because the bottom depth difference of G thread makes metal seal insufficient.

Applicable Products

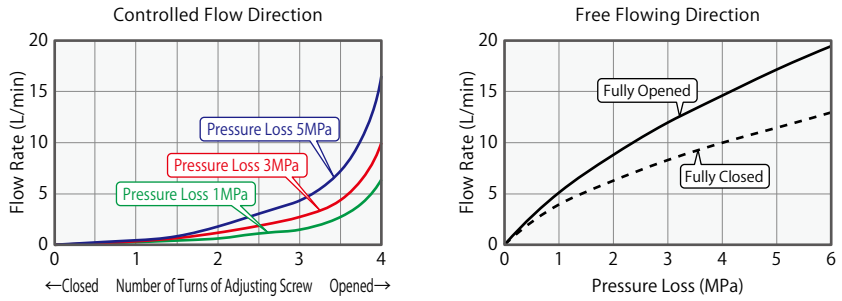
Model No.	LHM (Double Action) Swing Clamp	LKM (Double Action) Link Clamp	LLM (Double Action) Linear Cylinder
BZL0101-B	LHM0480-C□-B□ LHM0550-C□-B□	LKM0480-C□-B□ LKM0550-C□-B□	LLM0480-C□□-B□-□ LLM0550-C□□-B□-□
BZL0101-A	(LHM0480-C□-B□) (LHM0550-C□-B□)	(LKM0480-C□-B□) (LKM0550-C□-B□)	(LLM0480-C□□-B□-□)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

Flow Rate Graph <Hydraulic Fluids ISO-VG32 (25 ~ 35℃) >

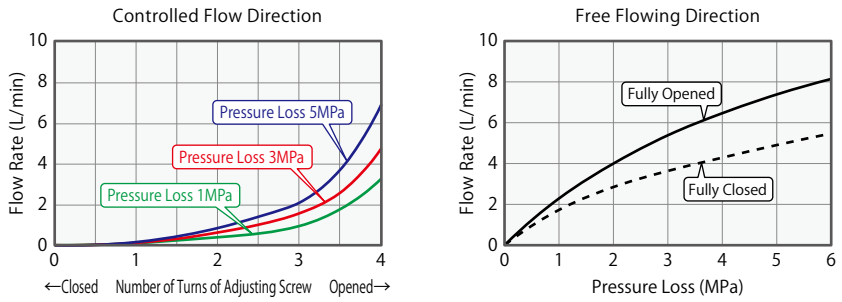
BZL0101-B : Meter-out



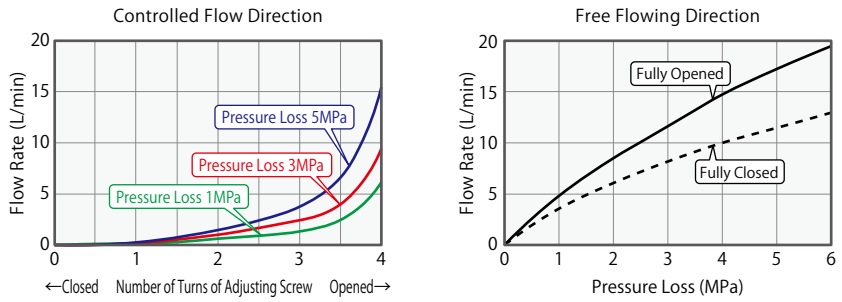
BZL0201-B : Meter-out



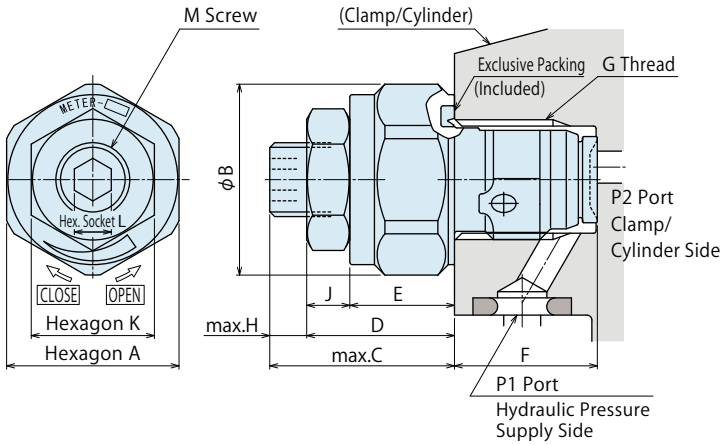
BZL0101-A : Meter-in



BZL0201-A : Meter-in



External Dimensions



(mm)

Model No.	BZL0101-□	BZL0201-□
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 (Nominal×Pitch)	M6×0.75	M6×0.75

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.

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.

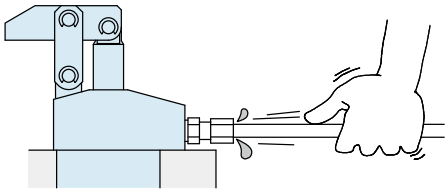
3) Applying Sealing Tape

- 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.

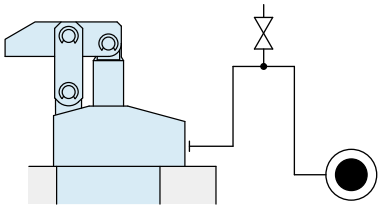
4) Air Bleeding of the Hydraulic Circuit

- 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	

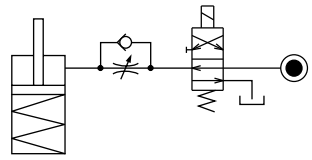
Note : Please contact manufacturers when customers require products in the list above.

Notes on Hydraulic Cylinder Speed Control Unit

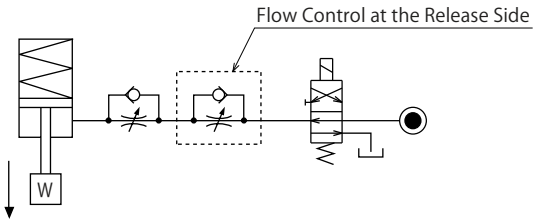
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

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.



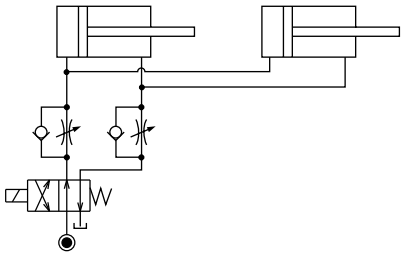
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



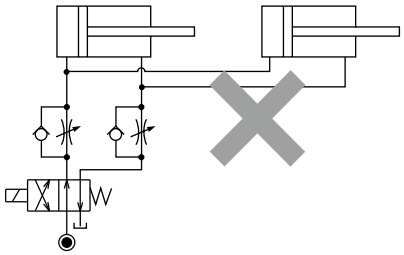
Flow Control Circuit for Double Acting Cylinder

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)

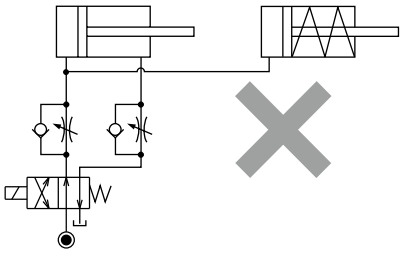


【Meter-in Circuit】(LKE/LSE/TLA/TLB/TMA/TLV/TMV/TTA must be controlled with meter-in.)



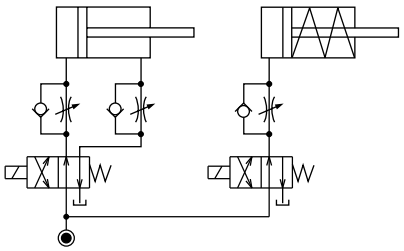
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

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.

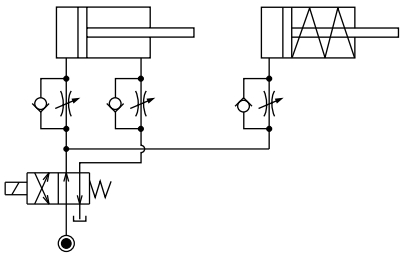


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

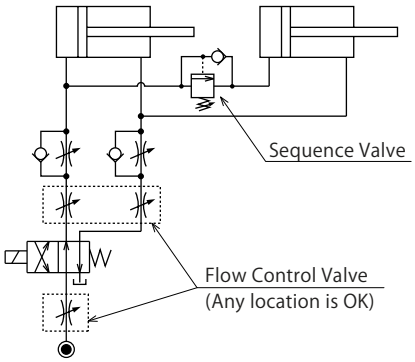
○ Separate the control circuit.



○ 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.



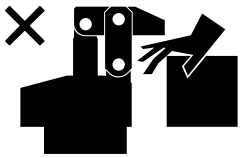
Cautions

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.

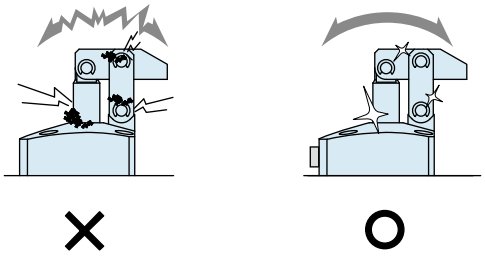


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

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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Harmony in Innovation

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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.

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