

# High-Power Swing Clamp

## Hydraulic Double Action

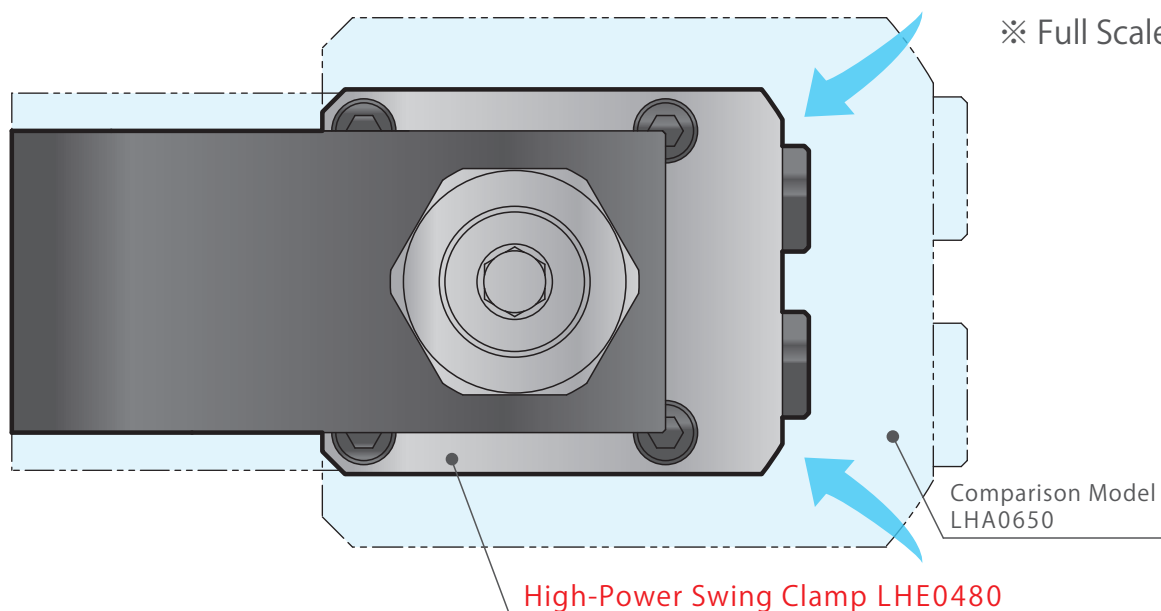
Model LHE



### Mechanical Locking System with Hydraulic Force

PAT. P.

Equivalent clamping force, **2 sizes smaller!!**



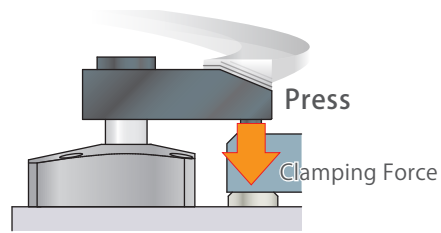
Hydraulic Swing Clamp (Comparison Model)  
Model LHA0650

**New** High-Power Swing Clamp  
Model LHE0480

Clamping Force ※ Hydraulic Pressure at 4MPa	4.5 kN (Lever Length : 56.5mm)	<b>Holding Force Newly Added</b>	4.2 kN (Holding Force <b>9.1 kN</b> ) (Lever Length : 42mm)
Mass ※ Weight of the clamp without clamp lever	2.8 kg	<b>43% Lighter</b>	1.6 kg
Projected Area	5670 mm <sup>2</sup> (81×70mm)	<b>45% Smaller</b>	3111 mm <sup>2</sup> (61×51mm)
Cylinder Capacity	Lock Side 26.7 cm <sup>3</sup> Release Side 40.9 cm <sup>3</sup>	<b>40% Less Volume</b>	Lock Side 16.2 cm <sup>3</sup> Release Side 22.7 cm <sup>3</sup>
Exterior Body Diameter	65.0 mm	<b>26% Smaller</b>	48.0 mm

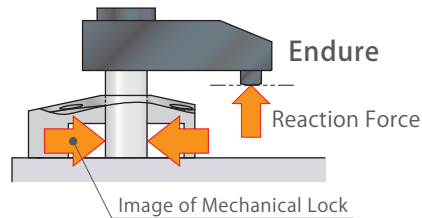
● **Strong Clamping Force with Mechanical Lock**

The mechanical locking system and hydraulic force allows the LHE model to exert **maximum 2.1 times** higher clamping force than the same size as the comparison model LHA.



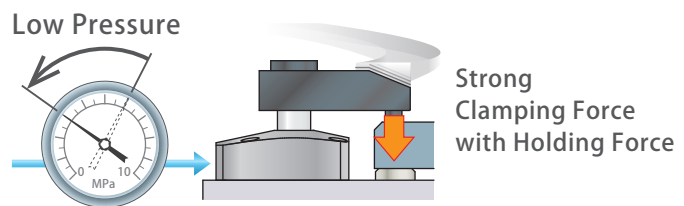
● **Holding Force**

Holding force is the force that endures reaction force (load), not the force that presses a workpiece. The high holding force enables heavy load machining and high accurate machining.



● **Energy-Saving**

LHE exerts high output force even with low pressure. The compact cylinder enables energy-saving by using less amount of oil.

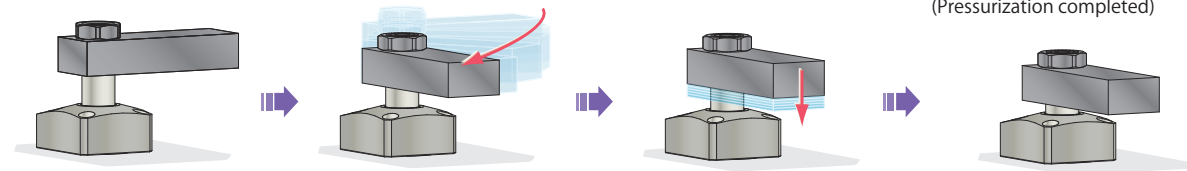


**Action Description**

Release Hydraulic Pressure : **ON**  
Lock Hydraulic Pressure : **OFF**

Release Hydraulic Pressure : **OFF**  
Lock Hydraulic Pressure : **ON** (Pressure rising)

Release Hydraulic Pressure : **OFF**  
Lock Hydraulic Pressure : **ON**  
(Pressurization completed)



Before swing  
(Released Condition)

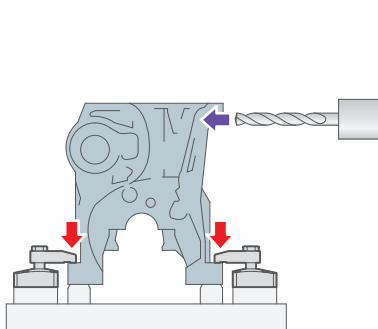
The lever descends as it swings.

After swing completion,  
it descends vertically.

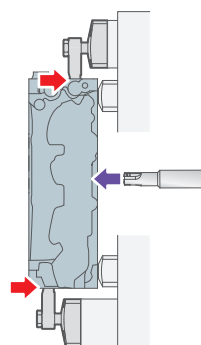
Action completed  
(Clamped Condition)

After clamping the workpiece, clamping and holding force will be generated by mechanical locking system and hydraulic force. (Workpiece should be clamped within the lock stroke range.)

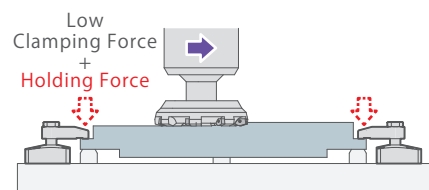
**Application Examples**



< For Space-Saving • Heavy Load Machining >



< For Backside Machining >



< For High Accurate Machining of Thin Workpiece >  
Holding force enables machining workpiece without deformation.

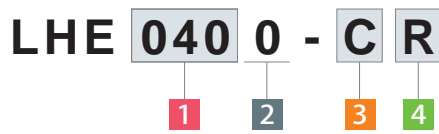
**High-Power Series**

- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others

**High-Power Hydraulic Swing Clamp**

- LHE**
- High-Power Hydraulic Link Clamp (LKE)
- High-Power Pneumatic Hole Clamp (SWE)
- High-Power Pneumatic Swing Clamp (WHE)
- High-Power Pneumatic Link Clamp (WCE)
- High-Power Pneumatic Work Support (WNC)
- High-Power Pneumatic Pallet Clamp (WVS)

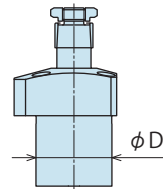
Model No. Indication



**1** Body Size

- 030** :  $\phi D=30\text{mm}$
- 036** :  $\phi D=36\text{mm}$
- 040** :  $\phi D=40\text{mm}$
- 048** :  $\phi D=48\text{mm}$
- 055** :  $\phi D=55\text{mm}$

※ Outer diameter ( $\phi D$ ) of the cylinder.



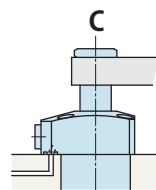
**2** Design No.

**0** : Revision Number

**3** Piping Method

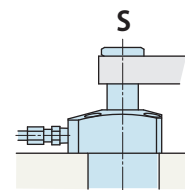
- C** : Gasket Option (With G Thread Plug)
- S** : Piping Option (With Rc Thread Port)

※ Speed control valve (BZL) is sold separately.  
Please refer to P.727.  
※ Meter-out circuit should be used for speed control.



Gasket Option

With G Thread Plug  
Able to attach  
speed control valve

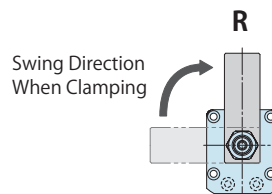


Piping Option

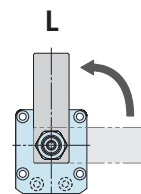
Rc Thread Port  
No Gasket Port

**4** Swing Direction When Clamping

- R** : Clockwise
- L** : Counter-Clockwise



Swing Direction  
When Clamping

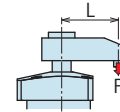


Swing Direction  
When Clamping

## Specifications

Model No.		LHE0300-□□	LHE0360-□□	LHE0400-□□	LHE0480-□□	LHE0550-□□
Cylinder Force (at 5MPa)	kN	2.3	3.5	5.1	6.7	10.3
Clamping Force ※1 (Calculation Formula)	kN	$F = \frac{P}{2.34+0.0118 \times L}$	$F = \frac{P}{1.59+0.0076 \times L}$	$F = \frac{P}{1.07+0.0044 \times L}$	$F = \frac{P}{0.82+0.0030 \times L}$	$F = \frac{P}{0.53+0.0017 \times L}$
Holding Force ※1 (Calculation Formula)	kN	$F_k = \frac{0.76 \times P}{1-0.0044 \times L}$	$F_k = \frac{1.03 \times P}{1-0.0042 \times L}$	$F_k = \frac{1.60 \times P}{1-0.0036 \times L}$	$F_k = \frac{1.98 \times P}{1-0.0032 \times L}$	$F_k = \frac{3.18 \times P}{1-0.0026 \times L}$
Full Stroke	mm	12	13	15	17	18.5
Swing Stroke (90°)	mm	7.5	8	9	11	12.5
Vertical Clamp Stroke	mm	4.5	5	6	6	6
(Break down)	Idle Stroke	mm	2	2	2.5	2.5
	Lock Stroke ※2	mm	2.5	3	3.5	3.5
Swing Angle Accuracy		90°±3°				
Swing Completion Position Repeatability		±0.75°	±0.5°			
Max. Operating Pressure	MPa	6.0				
Min. Operating Pressure ※3	MPa	1.5				
Withstanding Pressure	MPa	9.0				
Operating Temperature	°C	0~70				
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32				
Cylinder Capacity	Lock	3.5	6.5	11.1	16.2	27.2
	Release	4.9	8.8	14.9	22.7	36.3
Mass ※4	kg	0.6	0.8	1.1	1.6	2.3

Notes ※1. F : Clamping Force (kN), F<sub>k</sub> : Holding Force (kN), P : Supply Hydraulic Pressure (MPa),  
L : Distance between the piston center and the clamping point (mm).  
It might be within the non-usable range depending on the value of P and L, please check the clamping force curve on P. 17 and holding force curve on P. 19.



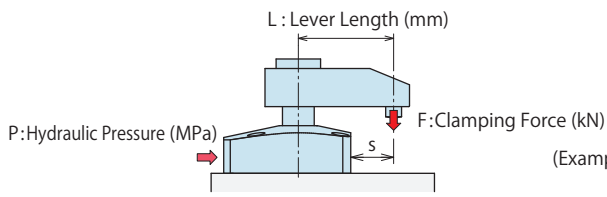
- ※2. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range.  
(Please refer to "The specification value is not fulfilled when clamping out of the lock stroke range." on P.29)
- ※3. Minimum pressure to operate the clamp without load.
- ※4. Mass of single swing clamp including taper sleeve and nut.
1. Please refer to P.29 for cautions and tightening torque when mounting the cylinder body and swing lever.

- High-Power Series
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- Cautions / Others

### High-Power Hydraulic Swing Clamp

- LHE
- High-Power Hydraulic Link Clamp
  - LKE
- High-Power Pneumatic Hole Clamp
  - SWE
- High-Power Pneumatic Swing Clamp
  - WHE
- High-Power Pneumatic Link Clamp
  - WCE
- High-Power Pneumatic Work Support
  - WNC
- High-Power Pneumatic Pallet Clamp
  - WVS

## Clamping Force Curve



Applicable Model

**LHE** 0 - C S R L

**1** Body Size

(Example) When using LHE0360

Supply Hydraulic Pressure 3.0MPa, Lever Length L=40mm, Clamping force is about 1.6kN.

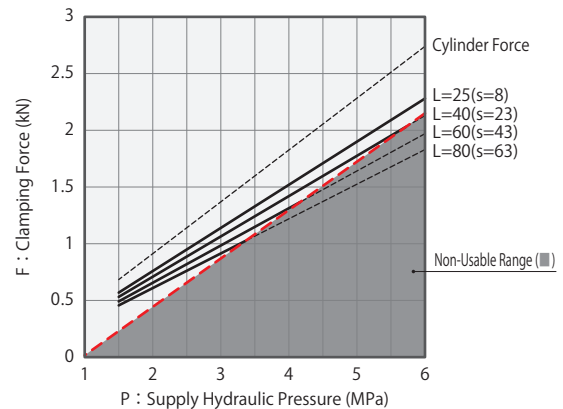
### Notes

- ※1. F : Clamping Force (kN), P : Supply Hydraulic Pressure (MPa), L : Lever Length (mm).
  1. Tables and graphs shown are the relationships between the clamping force (kN) and supply hydraulic pressure (MPa).
  2. Cylinder output (when L=0) cannot be calculated from the calculation formula of clamping force.
  3. There may be no lever swing action with large inertia depending on supply hydraulic pressure or lever mounting position.
  4. Clamping force shown in the below tables and graphs is the value when clamping within the lock stroke range (not the value for the idle stroke range).

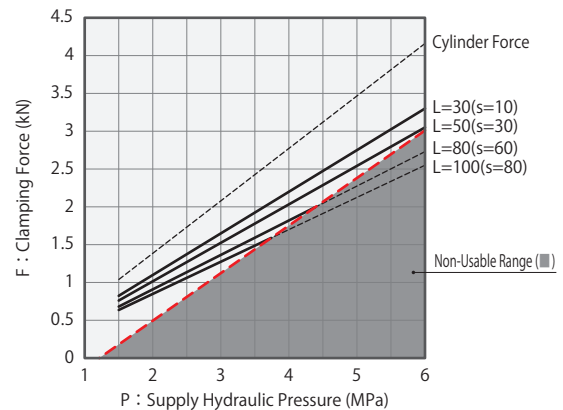
(Please refer to "The specification value is not fulfilled when clamping out of the lock stroke range." on P.29)

  5. The clamping force varies depending on the lever length. Set the supply hydraulic pressure suitable to the lever length.
  6. Using in the non-usable range may damage the clamp and lead to fluid leakage.

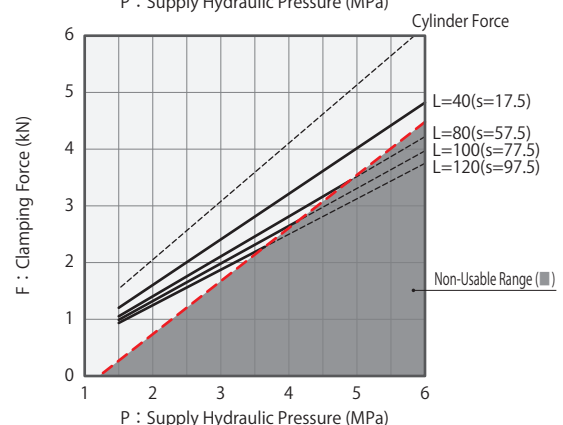
LHE0300		Clamping Force Calculation Formula ※1 (kN) $F = P / (2.34 + 0.0118 \times L)$										
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)	
		L=25	L=30	L=35	L=40	L=50	L=60	L=70	L=80			
6	2.7	2.3	2.2	2.2								38
5.5	2.5	2.1	2.0	2.0	2.0							42
5	2.3	1.9	1.9	1.8	1.8							47
4.5	2.1	1.7	1.7	1.6	1.6	1.5						54
4	1.8	1.5	1.5	1.5	1.4	1.4	1.3					63
3.5	1.6	1.3	1.3	1.3	1.2	1.2	1.1	1.1				75
3	1.4	1.1	1.1	1.1	1.1	1.0	1.0	0.9	0.9			90
2.5	1.1	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8			90
2	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6			90
1.5	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5			90
Max. Operating Pressure (MPa)		6.0	6.0	6.0	5.7	4.8	4.1	3.7	3.3			



LHE0360		Clamping Force Calculation Formula ※1 (kN) $F = P / (1.59 + 0.0076 \times L)$										
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)	
		L=30	L=40	L=50	L=60	L=70	L=80	L=90	L=100			
6	4.2	3.3	3.2	3.0								53
5.5	3.8	3.0	2.9	2.8								59
5	3.5	2.8	2.6	2.5	2.4							67
4.5	3.1	2.5	2.4	2.3	2.2	2.1						77
4	2.8	2.2	2.1	2.0	2.0	1.9	1.8	1.8				91
3.5	2.4	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.5			110
3	2.1	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3			120
2.5	1.7	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1			120
2	1.4	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.9			120
1.5	1.0	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6			120
Max. Operating Pressure (MPa)		6.0	6.0	6.0	5.4	4.8	4.4	4.0	3.7			



LHE0400		Clamping Force Calculation Formula ※1 (kN) $F = P / (1.07 + 0.0044 \times L)$										
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)	
		L=40	L=50	L=60	L=70	L=80	L=90	L=100	L=120			
6	6.2	4.8	4.7	4.5								61
5.5	5.6	4.4	4.3	4.1								69
5	5.1	4.0	3.9	3.7	3.6							78
4.5	4.6	3.6	3.5	3.4	3.3	3.2						89
4	4.1	3.2	3.1	3.0	2.9	2.8	2.7	2.6				105
3.5	3.6	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2			128
3	3.1	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9			145
2.5	2.6	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.6			145
2	2.1	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.3			145
1.5	1.5	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9			145
Max. Operating Pressure (MPa)		6.0	6.0	6.0	5.4	4.9	4.4	4.1	3.7			

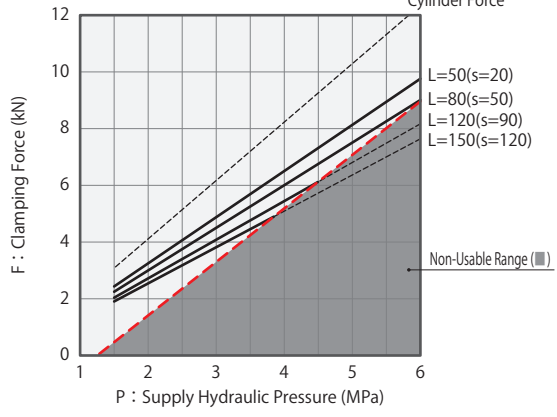
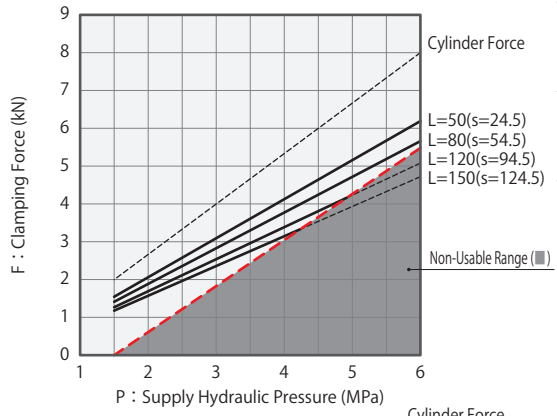


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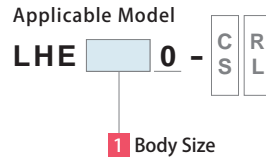
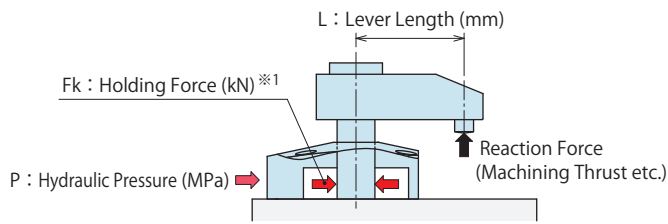
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LHE0480		Clamping Force Calculation Formula <sup>**1</sup> (kN) $F = P / (0.82 + 0.0030 \times L)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)
		L=50	L=60	L=70	L=80	L=90	L=100	L=120	L=150		
6	8.0	6.2	6.0	5.8	5.7	5.5					92
5.5	7.3	5.7	5.5	5.3	5.2	5.0	4.9				103
5	6.7	5.2	5.0	4.9	4.7	4.6	4.5				118
4.5	6.0	4.6	4.5	4.4	4.2	4.1	4.0	3.8			137
4	5.3	4.1	4.0	3.9	3.8	3.7	3.6	3.4	3.1		160
3.5	4.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.8		160
3	4.0	3.1	3.0	2.9	2.8	2.8	2.7	2.5	2.4		160
2.5	3.3	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0		160
2	2.7	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.6		160
1.5	2.0	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2		160
Max. Operating Pressure (MPa)		6.0	6.0	6.0	6.0	6.0	5.6	4.9	4.2		

LHE0550		Clamping Force Calculation Formula <sup>**1</sup> (kN) $F = P / (0.53 + 0.0017 \times L)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)
		L=50	L=60	L=70	L=80	L=90	L=100	L=120	L=150		
6	12.4	9.8	9.5	9.2	9.0						82
5.5	11.3	8.9	8.7	8.5	8.3	8.1					92
5	10.3	8.1	7.9	7.7	7.5	7.3	7.1				104
4.5	9.3	7.3	7.1	6.9	6.8	6.6	6.4	6.1			120
4	8.2	6.5	6.3	6.2	6.0	5.9	5.7	5.4			142
3.5	7.2	5.7	5.5	5.4	5.3	5.1	5.0	4.8	4.5		170
3	6.2	4.9	4.7	4.6	4.5	4.4	4.3	4.1	3.8		170
2.5	5.1	4.1	4.0	3.9	3.8	3.7	3.6	3.4	3.2		170
2	4.1	3.3	3.2	3.1	3.0	2.9	2.9	2.7	2.5		170
1.5	3.1	2.4	2.4	2.3	2.3	2.2	2.1	2.0	1.9		170
Max. Operating Pressure (MPa)		6.0	6.0	6.0	6.0	5.6	5.2	4.5	3.9		



## ● Holding Force Curve



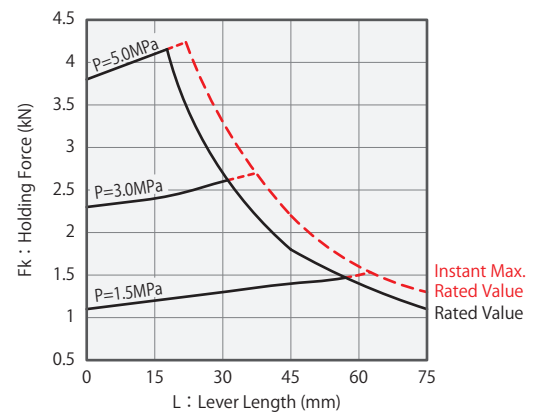
### Notes

- ※1. Holding force is the force that counters to reaction force in the clamping state, and differs from clamping force. Please keep in mind that it can produce displacement depending on lever rigidity even if the reaction force is below holding force. (If slight displacement is also not allowed, please keep the reaction force beyond clamping force from being applied.)
- ※2. Fk : Holding Force (kN), P : Supply Hydraulic Pressure (MPa), L : Lever Length (mm)  
 The non-usable range is when the calculated holding force exceeds the max. rated value. The max. holding force becomes the rated value.
  1. Tables and graphs shown are the relationships between the holding force (kN) and lever length (mm).
  2. Holding force shown in the graphs is the value when clamping within the lock stroke range (not the value for the idle stroke range). (Please refer to "The specification value is not fulfilled when clamping out of the lock stroke range." on P.29)
  3. Holding force varies depending on the lever length. Set the supply hydraulic pressure suitable to the lever length.
  4. The reaction force beyond holding force shown in the graph can cause deformation, galling and fluid leakage.
  5. Repetitive use at the range of instant maximum rated value will shorten the product life. It should be designed with allowance fully taken into consideration.

**LHE0300**

Holding Force Calculation Formula ※2 (kN)  $Fk = \frac{0.76 \times P}{1 - 0.0044 \times L}$   
 ( Fk ≤ Rated Value )

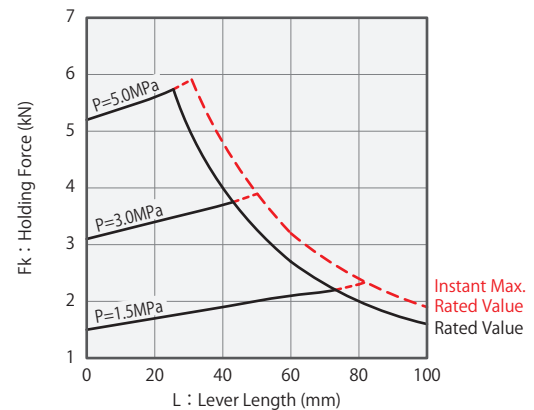
Hydraulic Pressure (MPa)	Holding Force(kN) Non-Usable Range (■)							
	Lever Length L(mm)							
	L=25	L=30	L=35	L=40	L=50	L=60	L=70	L=80
6	3.3	2.7	2.3					
5.5	3.3	2.7	2.3	2.0				
5	3.3	2.7	2.3	2.0				
4.5	3.3	2.7	2.3	2.0	1.6			
4	3.3	2.7	2.3	2.0	1.6	1.4		
3.5	3.0	2.7	2.3	2.0	1.6	1.4	1.2	
3	2.6	2.6	2.3	2.0	1.6	1.4	1.2	1.0
2.5	2.1	2.2	2.3	2.0	1.6	1.4	1.2	1.0
2	1.7	1.8	2.3	2.0	1.6	1.4	1.2	1.0
1.5	1.3	1.3	1.3	1.4	1.5	1.4	1.2	1.0



**LHE0360**

Holding Force Calculation Formula ※2 (kN)  $Fk = \frac{1.03 \times P}{1 - 0.0042 \times L}$   
 ( Fk ≤ Rated Value )

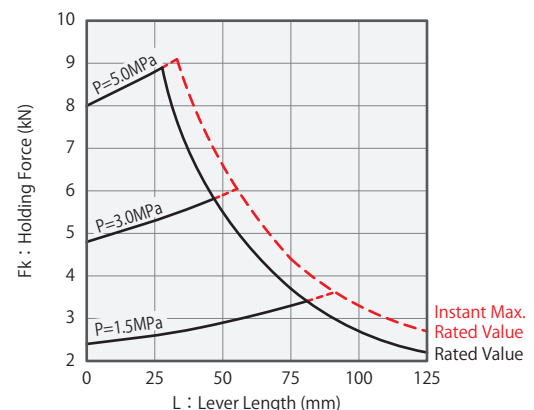
Hydraulic Pressure (MPa)	Holding Force(kN) Non-Usable Range (■)							
	Lever Length L(mm)							
	L=30	L=40	L=50	L=60	L=70	L=80	L=90	L=100
6	5.3	4.0	3.2					
5.5	5.3	4.0	3.2					
5	5.3	4.0	3.2	2.7				
4.5	5.3	4.0	3.2	2.7	2.3			
4	4.7	4.0	3.2	2.7	2.3	2.0	1.8	
3.5	4.1	4.0	3.2	2.7	2.3	2.0	1.8	1.6
3	3.5	3.7	3.2	2.7	2.3	2.0	1.8	1.6
2.5	2.9	3.1	3.2	2.7	2.3	2.0	1.8	1.6
2	2.4	2.5	2.6	2.7	2.3	2.0	1.8	1.6
1.5	1.8	1.9	2.0	2.1	2.2	2.0	1.8	1.6



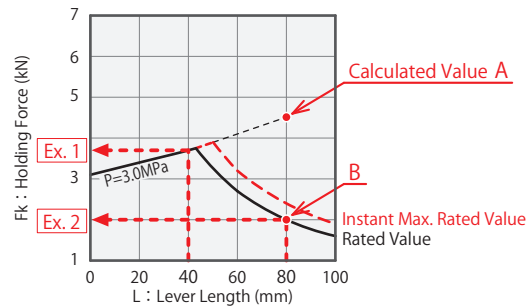
**LHE0400**

Holding Force Calculation Formula ※2 (kN)  $Fk = \frac{1.60 \times P}{1 - 0.0036 \times L}$   
 ( Fk ≤ Rated Value )

Hydraulic Pressure (MPa)	Holding Force(kN) Non-Usable Range (■)								
	Lever Length L(mm)								
	L=40	L=50	L=60	L=70	L=80	L=90	L=100	L=120	
6	6.9	5.5	4.6						
5.5	6.9	5.5	4.6						
5	6.9	5.5	4.6	3.9					
4.5	6.9	5.5	4.6	3.9	3.4				
4	6.9	5.5	4.6	3.9	3.4	3.1	2.7		
3.5	6.5	5.5	4.6	3.9	3.4	3.1	2.7	2.3	
3	5.6	5.5	4.6	3.9	3.4	3.1	2.7	2.3	
2.5	4.7	4.9	4.6	3.9	3.4	3.1	2.7	2.3	
2	3.7	3.9	4.1	3.9	3.4	3.1	2.7	2.3	
1.5	2.8	2.9	3.1	3.2	3.4	3.1	2.7	2.3	



- (Ex.1) When using LHE0360  
Supply Hydraulic Pressure 3.0MPa, Lever Length L=40mm  
Holding Force is about 3.7kN.
- (Ex.2) When using LHE0360  
Supply Hydraulic Pressure 3.0MPa, Lever Length L=80mm  
The calculated value is the holding force of point A, but it is in the non-usable range.  
The value of intersection B is the holding force that counters to reaction force, and it is about 2.0kN.



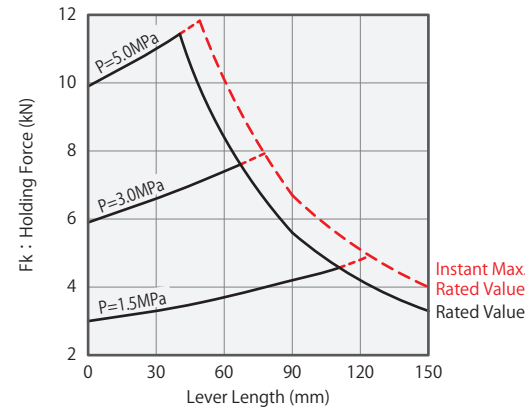
- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others

- High-Power Hydraulic Swing Clamp
  - LHE
- High-Power Hydraulic Link Clamp
  - LKE
- High-Power Pneumatic Hole Clamp
  - SWE
- High-Power Pneumatic Swing Clamp
  - WHE
- High-Power Pneumatic Link Clamp
  - WCE
- High-Power Pneumatic Work Support
  - WNC
- High-Power Pneumatic Pallet Clamp
  - WVS

**LHE0480**

Holding Force Calculation Formula <sup>\*\*2</sup> (kN)  $F_k = \frac{1.98 \times P}{1 - 0.0032 \times L}$   
(  $F_k \leq \text{Rated Value}$  )

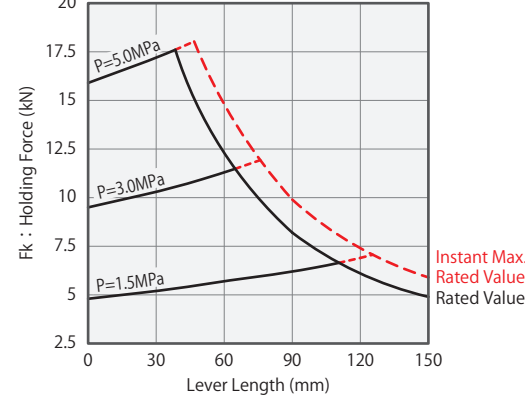
Hydraulic Pressure (MPa)	Holding Force(kN) Non-Usable Range(■)							
	Lever Length L(mm)							
	L=50	L=60	L=70	L=80	L=90	L=100	L=120	L=150
6	10.0	8.4	7.2	6.3	5.6	5.0	■	■
5.5	10.0	8.4	7.2	6.3	5.6	5.0	■	■
5	10.0	8.4	7.2	6.3	5.6	5.0	■	■
4.5	10.0	8.4	7.2	6.3	5.6	5.0	4.2	■
4	9.4	8.4	7.2	6.3	5.6	5.0	4.2	3.3
3.5	8.3	8.4	7.2	6.3	5.6	5.0	4.2	3.3
3	7.1	7.4	7.2	6.3	5.6	5.0	4.2	3.3
2.5	5.9	6.1	6.4	6.3	5.6	5.0	4.2	3.3
2	4.7	4.9	5.1	5.3	5.6	5.0	4.2	3.3
1.5	3.5	3.7	3.8	4.0	4.2	4.4	4.2	3.3



**LHE0550**

Holding Force Calculation Formula <sup>\*\*2</sup> (kN)  $F_k = \frac{3.18 \times P}{1 - 0.0026 \times L}$   
(  $F_k \leq \text{Rated Value}$  )

Hydraulic Pressure (MPa)	Holding Force(kN) Non-Usable Range(■)							
	Lever Length L(mm)							
	L=50	L=60	L=70	L=80	L=90	L=100	L=120	L=150
6	14.7	12.3	10.5	9.2	8.2	7.4	■	■
5.5	14.7	12.3	10.5	9.2	8.2	7.4	■	■
5	14.7	12.3	10.5	9.2	8.2	7.4	■	■
4.5	14.7	12.3	10.5	9.2	8.2	7.4	6.1	■
4	14.6	12.3	10.5	9.2	8.2	7.4	6.1	■
3.5	12.8	12.3	10.5	9.2	8.2	7.4	6.1	4.9
3	11.0	11.3	10.5	9.2	8.2	7.4	6.1	4.9
2.5	9.1	9.4	9.7	9.2	8.2	7.4	6.1	4.9
2	7.3	7.5	7.8	8.0	8.2	7.4	6.1	4.9
1.5	5.5	5.7	5.8	6.0	6.2	6.4	6.1	4.9



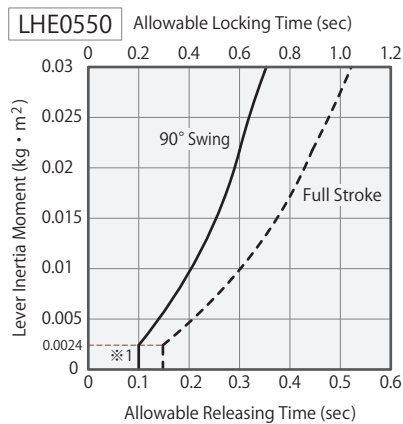
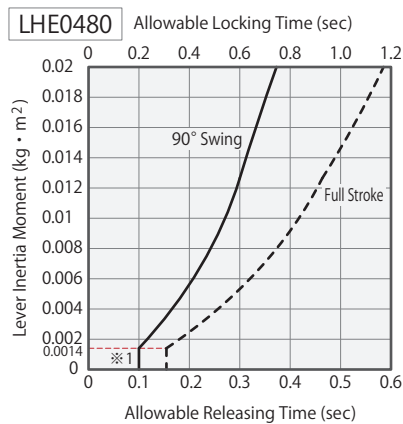
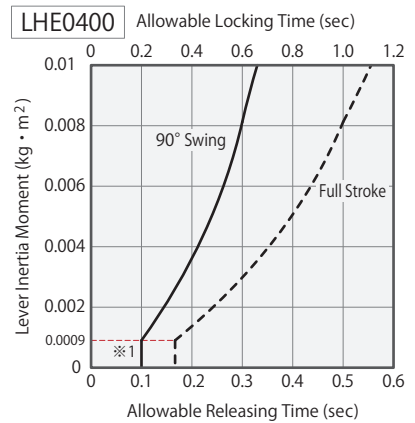
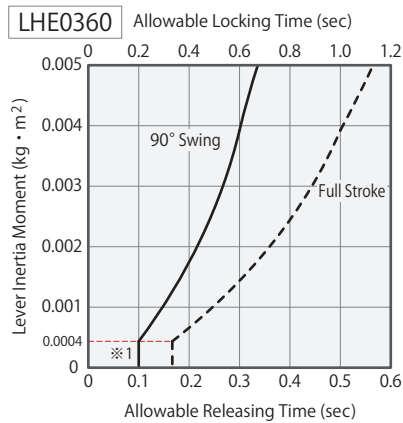
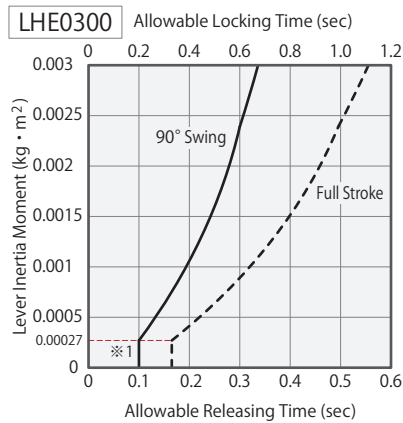
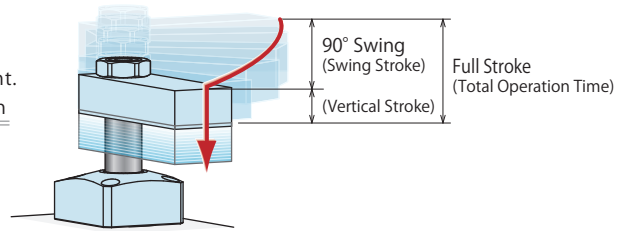


● Allowable Swing Time Graph

Adjustment of Swing Time

The graph shows allowable swing time against lever inertia moment. Please make sure that an operation time is more than the operation time shown in the graph.

Excessive action speed can reduce stopping accuracy and damage internal parts.



Notes

- ※ 1. For any lever inertia moment, minimum 90° swing time should be 0.2 sec for locking and 0.1 sec for releasing or more.
  1. The graph shows the allowable action time in regard to the lever inertia moment when the piston rod operates at constant speed.
  2. There may be no lever swing action with large inertia depending on supply hydraulic pressure, oil flow and lever mounting position.
  3. For speed adjustment of clamp lever, please use meter-out flow control valve.  
In case of meter-in control, the clamp lever may be accelerated by its own weight during swinging motion (clamp mounted horizontally) or the piston rod may be moving too fast. Please refer to P.1044 for speed control of the hydraulic cylinder.
  4. Excessive swing speed can reduce stopping accuracy and damage the internal parts.
  5. Please contact us if operational conditions differ from those shown on the graphs.

(How to read the allowable swing time graph)

When using LHE0360

Lever Inertia Moment : 0.0027 kg · m<sup>2</sup>

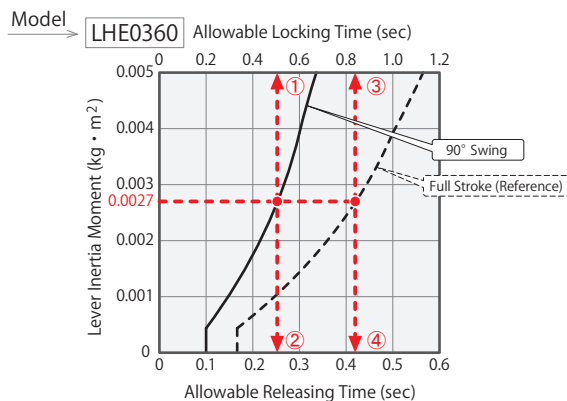
① 90° Swing Time when Locking : About 0.5 sec or more

② 90° Swing Time when Releasing : About 0.25 sec or more

③ Total Lock Operation Time : About 0.84 sec or more

④ Total Release Operation Time : About 0.42 sec or more

1. The total operation time on the graph represents the allowable operation time when fully stroked.

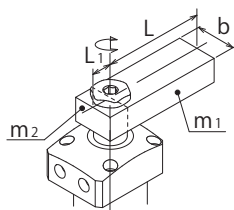


### How to calculate inertia moment (Estimated)

I : Inertia Moment (kg · m<sup>2</sup>)

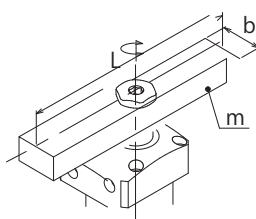
L, L<sub>1</sub>, L<sub>2</sub>, K, b : Length (m)    m, m<sub>1</sub>, m<sub>2</sub>, m<sub>3</sub> : Mass (kg)

- ① For a rectangular plate (cuboid), the rotating shaft is vertically on one side of the plate.



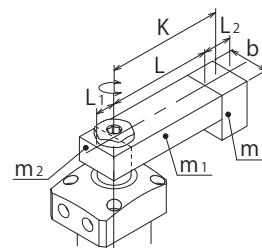
$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12}$$

- ② For a rectangular plate (cuboid), the rotating shaft is vertically on the gravity center of the plate.



$$I = m \frac{L^2 + b^2}{12}$$

- ③ Load is applied on the lever front end.



$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12} + m_3 K^2 + m_3 \frac{L_2^2 + b^2}{12}$$

#### High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

#### High-Power Hydraulic Swing Clamp

LHE

High-Power Hydraulic Link Clamp

LKE

High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp

WHE

High-Power Pneumatic Link Clamp

WCE

High-Power Pneumatic Work Support

WNC

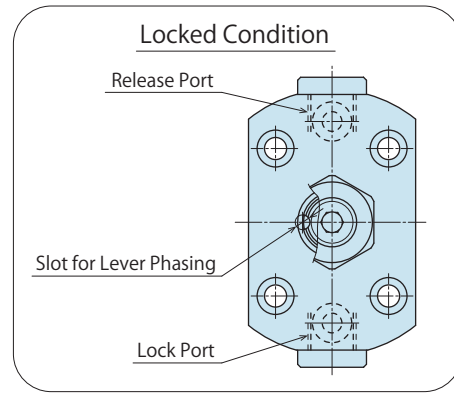
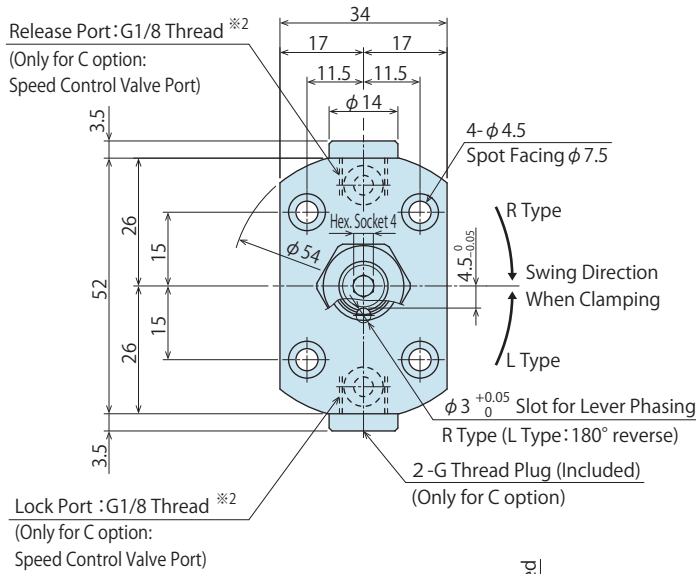
High-Power Pneumatic Pallet Clamp

WVS

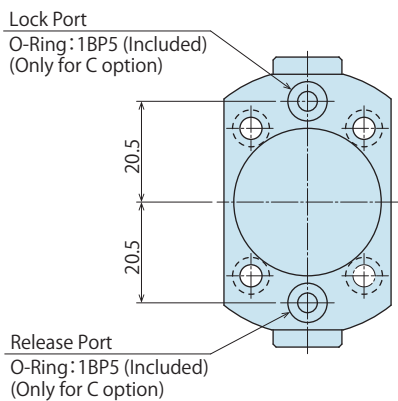
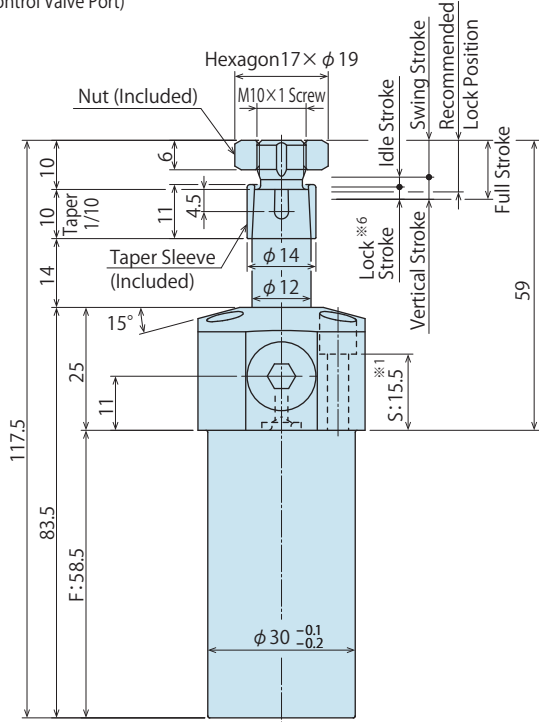
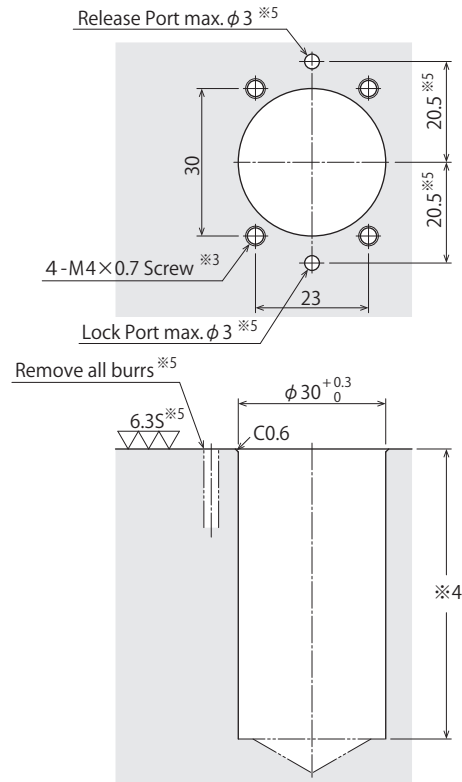
External Dimensions (LHE0300-□□)

C : Gasket Option (With G Thread Plug)

※ The drawing shows the released state of LHE0300-CR.



Machining Dimensions of Mounting Area



Notes

- ※1. Mounting bolts are not provided with the product. Please prepare them according to the mounting height referring to dimension 'S': 15.5.
- ※2. Speed control valve is sold separately. Please refer to P.727.

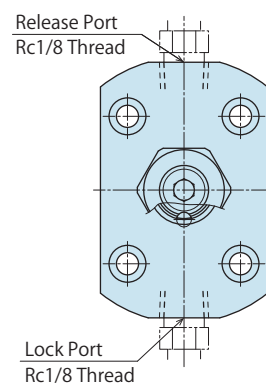
Notes

- ※3. M4x0.7 tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S': 15.5.
- ※4. The depth of the body mounting hole  $\phi 30^{+0.3}_0$  should be decided according to the mounting height referring to dimension 'F': 58.5.
- ※5. The machining dimension is for -C: Gasket option.

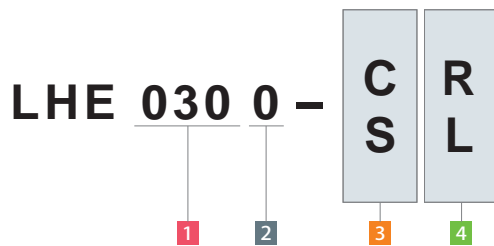
Piping Method

S : Piping Option (Rc Thread)

※ The drawing shows the released state of LHE0300-SR.



## Model No. Indication



(Format Example : LHE0300-CR, LHE0300-SL)

### 1 Body Size

Please refer to P. 25 and P.26 for 036 / 040 / 048 / 055.

### 2 Design No.

### 3 Piping Method

### 4 Swing Direction When Clamping

## Dimensions

(mm)

Model No.	LHE0300-□□	
Full Stroke	12	
Swing Stroke (90°)	7.5	
Vertical Clamp Stroke	4.5	
(Break down)	Idle Stroke	2
	Lock Stroke ※6	2.5
Recommended Lock Position	10.5	
Cylinder	Lock	3.5
	Release	4.9
Capacity cm <sup>3</sup>		
Mass ※7	kg	0.6

### Notes

※6. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range.

(The specification value is not fulfilled when clamping within the range of swing stroke and idle stroke.)

※7. Mass of single swing clamp including taper sleeve and nut.

### High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

### High-Power Hydraulic Swing Clamp

LHE

High-Power Hydraulic Link Clamp

LKE

High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp

WHE

High-Power Pneumatic Link Clamp

WCE

High-Power Pneumatic Work Support

WNC

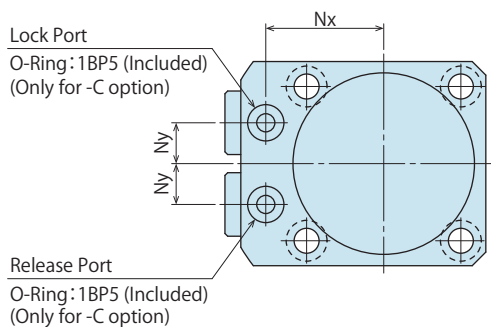
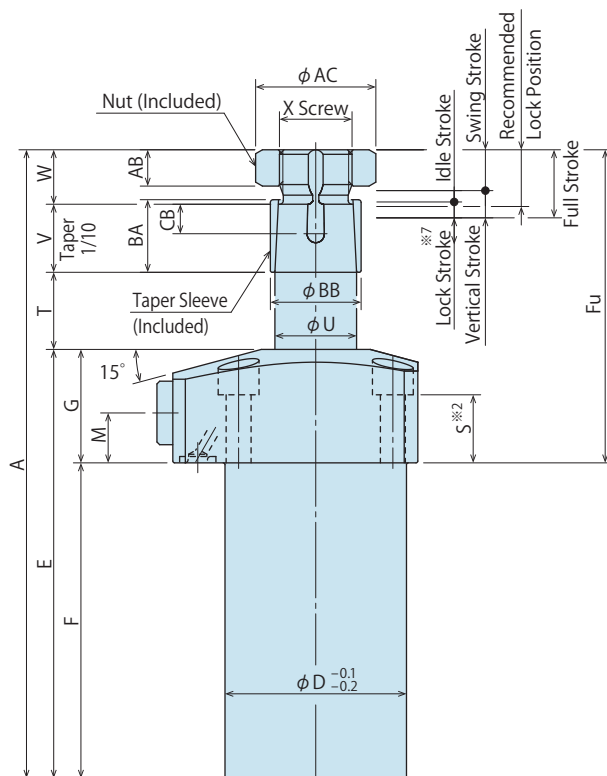
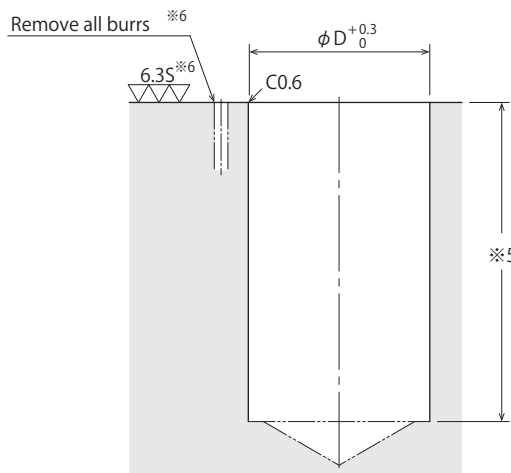
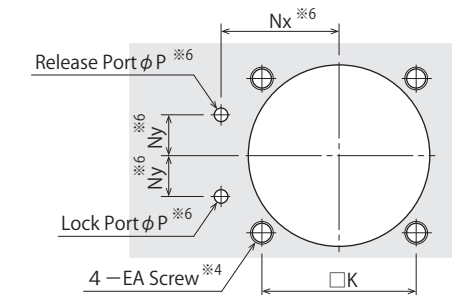
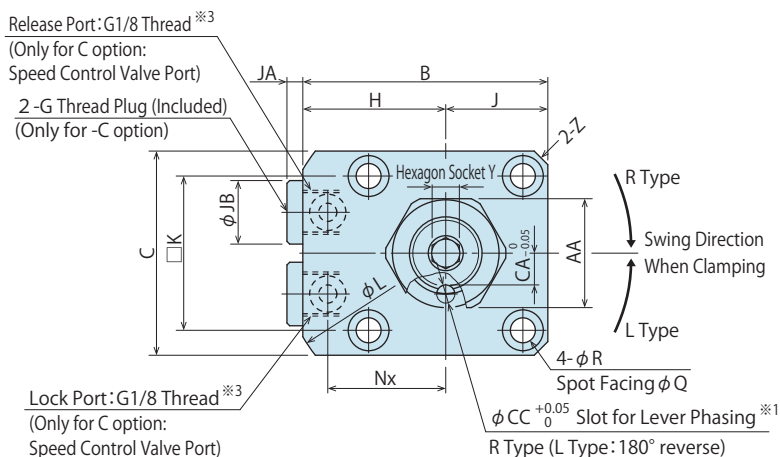
High-Power Pneumatic Pallet Clamp

WVS

## External Dimensions (LHE0360/0400/0480/0550-□□) Machining Dimensions of Mounting Area

C : Gasket Option (With G Thread Plug)

※ The drawing shows the released state of LHE□□-CR.



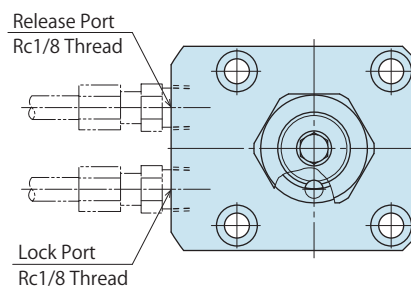
### Notes

- ※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 φ D should be decided according to the mounting height referring to dimension 'F'.
- ※6. The machining dimension is for -C: Gasket option.

### Piping Method

S : Piping Option (Rc Thread)

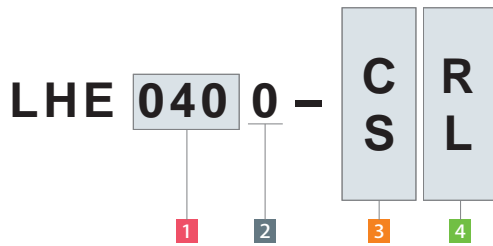
※ The drawing shows the released state of LHE□□-SR.



### Notes

- ※1. The slot for lever phasing faces the oil port side when locked.
- ※2. Mounting bolts are not provided.  
Please prepare them according to the mounting height referring to dimension 'S'.
- ※3. Speed control valve is sold separately. Please refer to P.727.

## Model No. Indication



(Format Example : LHE0360-CR, LHE0550-SL)

- 1** Body Size  
Please refer to page 23 and 24 for 030.
- 2** Design No.
- 3** Piping Method
- 4** Swing Direction When Clamping

## External Dimensions and Machining Dimensions for Mounting (mm)

Model No.	LHE0360-□□	LHE0400-□□	LHE0480-□□	LHE0550-□□	
Full Stroke	13	15	17	18.5	
Swing Stroke (90°)	8	9	11	12.5	
Vertical Clamp Stroke	5	6	6	6	
(Breakdown)	Idle Stroke	2	2.5	2	
	Lock Stroke <sup>※7</sup>	3	3.5	4	
Recommended Lock Position	11	12.5	14.5	15.5	
A	124.5	138.5	154	170.5	
B	49	54	61	69	
C	40	45	51	60	
D	36	40	48	55	
E	85.5	94.5	103	114	
F	60.5	69.5	75	84	
Fu	64	69	79	86.5	
G	25	25	28	30	
H	29	31.5	35.5	39	
J	20	22.5	25.5	30	
K	31.4	34	40	47	
L	66	73	83	88	
M	11	11	13	12	
Nx	23.5	26	30	33.5	
Ny	8	9	11	12	
P	max.3	max.3	max.3	max.3	
Q	7.5	9	9	11	
R	4.5	5.5	5.5	6.8	
S	16	15	17.5	17	
T	15	17	19	20.5	
U	15	18	22	25	
V	13	15	18	21	
W	11	12	14	15	
X (Nominal×Pitch)	M14×1.5	M16×1.5	M20×1.5	M22×1.5	
Y	5	6	8	8	
Z (Chamfer)	C2	C3	C3	C3	
AA	22	24	30	32	
AB	7	8	9	10	
AC	24.5	26.5	33	35.5	
BA	14	16	19	22	
BB	17	20	25	28	
CA	6	7	9	10	
CB	6.5	6.5	7.5	9.5	
CC	4	4	5	6	
EA (Nominal×Pitch)	M4×0.7	M5×0.8	M5×0.8	M6×1	
JA	3.5	3.5	3.5	3.5	
JB	14	14	14	14	
Cylinder Capacity	Lock	6.5	11.1	16.2	27.2
	Release	8.8	14.9	22.7	36.3
Mass <sup>※8</sup>	kg	0.8	1.1	1.6	2.3

### Notes

※7. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range. (The specification value is not fulfilled when clamping within the range of swing stroke and idle stroke.)

※8. Mass of single swing clamp including taper sleeve and nut.

### High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

### High-Power Hydraulic Swing Clamp

LHE

High-Power Hydraulic Link Clamp

LKE

High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp

WHE

High-Power Pneumatic Link Clamp

WCE

High-Power Pneumatic Work Support

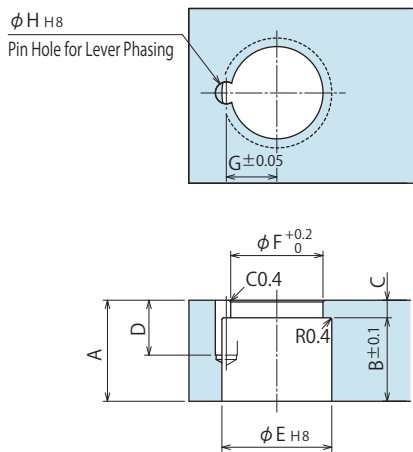
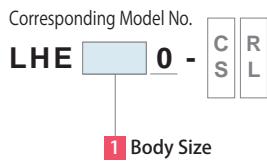
WNC

High-Power Pneumatic Pallet Clamp

WVS

### Taper Lock Lever Design Dimension

※ Please refer to this for designing swing lever of taper lock type.



Corresponding Model No.	(mm)				
	LHE0300	LHE0360	LHE0400	LHE0480	LHE0550
A	14	17	19	23	26
B	11	14	16	19	22
C	3	3	3	4	4
D	8.5	10.5	10.5	12.5	14.5
E	$14^{+0.027}_0$	$17^{+0.027}_0$	$20^{+0.033}_0$	$25^{+0.033}_0$	$28^{+0.033}_0$
F	11	15	17	21	23.5
G	6	8.1	9.1	11.6	13.1
H	$3^{+0.014}_0$	$4^{+0.018}_0$	$4^{+0.018}_0$	$5^{+0.018}_0$	$6^{+0.018}_0$
Phasing Pin (For reference)	$\phi 3(h8) \times 8$	$\phi 4(h8) \times 10$	$\phi 4(h8) \times 10$	$\phi 5(h8) \times 12$	$\phi 6(h8) \times 14$

Notes

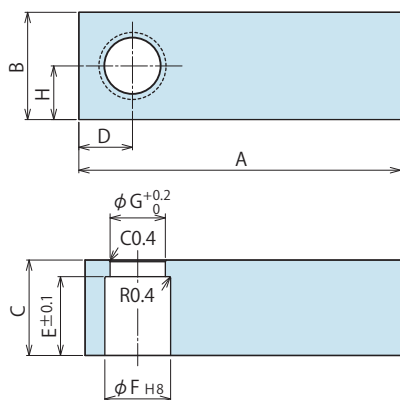
1. Swing lever should be designed with its length according to performance graph shown on P.17 and P.18 .
2. If the swing lever is not in accordance with the dimensions shown above, performance may be degraded and damage can occur.
3. The pin hole for lever phasing ( $\phi H$ ) should be added if necessary.

## Accessories : Material Swing Lever for Taper Lock Option

Model No. Indication

**LZH 040 0 - T**

 Size  
 (Refer to the table)

 Design No.  
 (Revision Number)


(mm)

Model No.	LZH0300 -T	LZH0360 -T	LZH0400 -T	LZH0480 -T	LZH0550 -T
Corresponding Model No.	LHE0300	LHE0360	LHE0400	LHE0480	LHE0550
A	90	120	145	160	170
B	21	26	32	40	45
C	14	17	19	23	26
D	10.5	13	16	20	23
E	11	14	16	19	22
F	14 <sup>+0.027</sup> <sub>0</sub>	17 <sup>+0.027</sup> <sub>0</sub>	20 <sup>+0.033</sup> <sub>0</sub>	25 <sup>+0.033</sup> <sub>0</sub>	28 <sup>+0.033</sup> <sub>0</sub>
G	11	15	17	21	23.5
H	10.5	13	16	20	22.5

### Notes

1. Material : S50CH
2. If necessary, the front end should be additionally machined.
3. When determining the phase, refer to the taper lock lever design dimensions for each model to do the additional machining.

### High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

### High-Power Hydraulic Swing Clamp

LHE

High-Power Hydraulic Link Clamp

LKE

High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp

WHE

High-Power Pneumatic Link Clamp

WCE

High-Power Pneumatic Work Support

WNC

High-Power Pneumatic Pallet Clamp

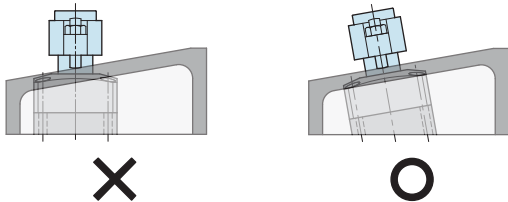
WVS



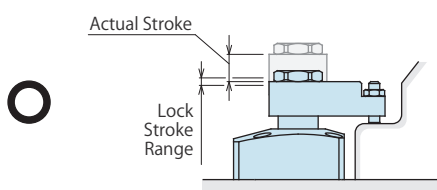
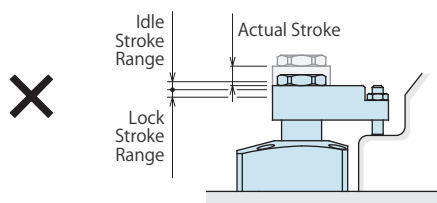
## Cautions

### Notes for Design

- 1) Check Specifications
  - Please use each product according to the specifications.
- 2) Notes for Circuit Design
  - Please read "Notes on Hydraulic Cylinder Speed Control Circuit" to assist with proper hydraulic circuit designing. Improper circuit design will lead to applications malfunction and damages. (Refer to P.1044)
  - Ensure there is no possibility of supplying hydraulic pressure to the lock and release ports simultaneously.
- 3) Swing lever should be designed so that the inertia moment is small.
  - Large moment of inertia will degrade the lever's stopping accuracy and cause undue wear to the clamp. Additionally, the clamp may not function, depending on supplied hydraulic pressure and lever mounting position.
  - Please set the allowable operating time after the inertia moment is calculated. Please make sure that the clamps work within allowable operating time while referring to the allowable operating time graph.
- 4) When using on a welding fixture, the exposed area of piston rod should be protected.
  - If spatter gets onto the sliding surface it could lead to malfunction and fluid leakage.
- 5) When clamping on a sloped surface of the workpiece
  - Make sure the clamp surface and mounting surface of the clamp are parallel.



- 6) The specification value is not fulfilled when clamping out of the lock stroke range.
  - The mechanical lock function will not work when clamping within the range of swing stroke and idle stroke, and the specification value of cylinder force, clamping force, holding force and swing completion position repeatability will not be fulfilled.



### Installation Notes

- 1) Check the Usable Fluid
  - Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1043).
- 2) Mounting the clamp
  - When mounting the clamp, use hexagon socket bolts as multiple bolt holes for mounting (with tensile strength of 12.9) and tighten them with the torque shown in the chart below. Tightening with greater torque than recommended can depress the seating surface or break the bolt.

Model No.	Thread Size	Tightening Torque (N·m)
LHE0300-□□	M4×0.7	4.0
LHE0360-□□	M4×0.7	4.0
LHE0400-□□	M5×0.8	8.0
LHE0480-□□	M5×0.8	8.0
LHE0550-□□	M6×1	14

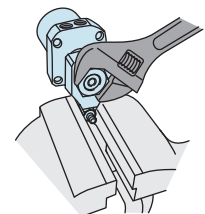
- 3) Installation / Removal of the Swing Lever
  - Oil or debris on the mating surfaces of the lever, taper sleeve or piston rod may cause the rod to loosen. Please clean thoroughly before assembly.
  - Please follow the tightening torque of swing lever shown below.

Model No.	Thread Size	Tightening Torque (N·m)
LHE0300-□□	M10×1	13
LHE0360-□□	M14×1.5	25
LHE0400-□□	M16×1.5	40
LHE0480-□□	M20×1.5	65
LHE0550-□□	M22×1.5	100

- If the piston rod is subjected to excessive torque or shock, the rod or the internal rotation mechanism may be damaged. Observe the following points to prevent these kinds of shocks.

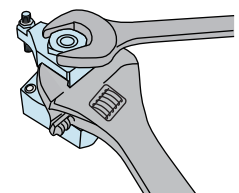
#### For Installation

- ① With the clamp positioned to the fixture, determine the lever position, and temporarily tighten the nut for fixing the lever.



- ② Remove the clamp from the fixture, fix the lever with machine vise etc., and tighten the nut.

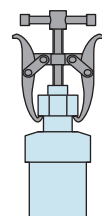
- ③ If tightening the nut with the clamp positioned to the fixture, please use a wrench to the hexagon part of piston rod, or fix the lever with a spanner. It is best to bring the lever to the middle of the swing stroke before tightening the nut.



#### For Removal

- ① While the clamp is fixed to the fixture or vise, use a wrench to bring the lever to the middle of the swing stroke and then loosen the nut.

- ② Loosen the nut after securing the lever two or three turns then remove the lever with a puller without any rotational torque applied on the piston rod.



**High-Power  
Series**

## Pneumatic Series

## Hydraulic Series

 Valve / Coupler  
Hydraulic Unit

 Manual Operation  
Accessories

## Cautions / Others

**High-Power Hydraulic  
Swing Clamp**
**LHE**

 High-Power Hydraulic  
Link Clamp

## LKE

 High-Power Pneumatic  
Hole Clamp

## SWE

 High-Power Pneumatic  
Swing Clamp

## WHE

 High-Power Pneumatic  
Link Clamp

## WCE

 High-Power Pneumatic  
Work Support

## WNC

 High-Power Pneumatic  
Pallet Clamp

## WVS

## 4) Swing Speed Adjustment

- Adjust the speed following "Allowable Swing Time Graph".  
If the clamp operates too fast the parts will wear out leading to premature damage and ultimately complete equipment failure.
- Please make sure to release air from the circuit before adjusting speed.  
It will be difficult to adjust the speed accurately with air mixed in the circuit.
- Turn the speed control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

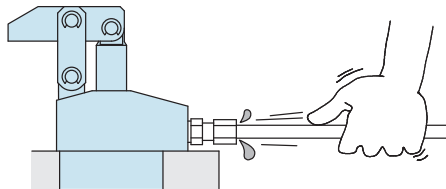
※ Please refer to P.1043 for common cautions.

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

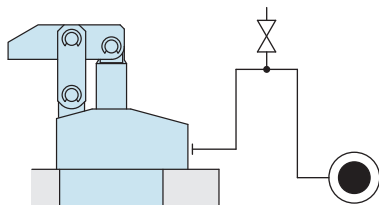
## ● Cautions

### ● Installation Notes (For Hydraulic Series)

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



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



### 5) Checking Looseness and Retightening

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

### ● Hydraulic Fluid List

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

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

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others

**Cautions**

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

**Company Profile**

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Sales Offices

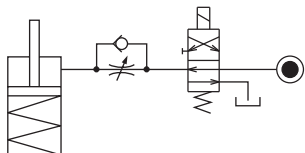
● Notes on Hydraulic Cylinder Speed Control Unit



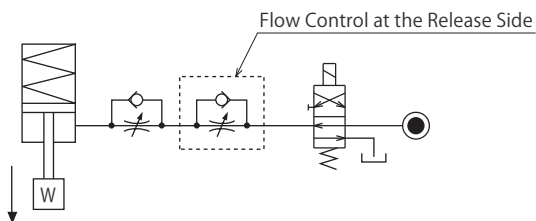
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● Flow Control Circuit for Single Acting Cylinder

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



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



● Flow Control Circuit for Double Acting Cylinder

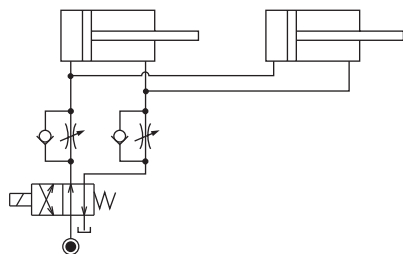
Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

However, in the case of controlling LKE, TMA, TLA, both lock side and release side should be meter-in circuit.

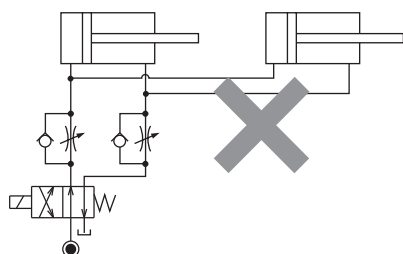
Refer to P.47 for speed adjustment of LKE.

For TMA and TLA, if meter-out circuit is used, abnormal high pressure is created, which causes oil leakage and damage.

【Meter-out Circuit】 (Except LKE/TMA/TLA)

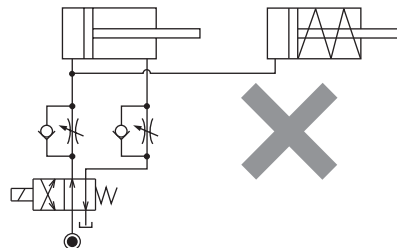


【Meter-in Circuit】 (LKE/TMA/TLA must be controlled with meter-in.)



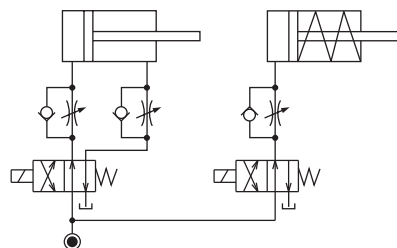
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

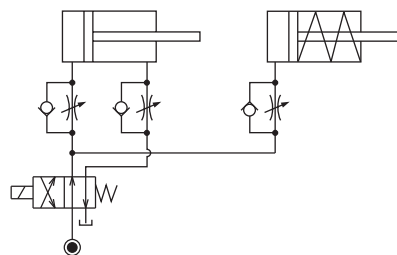


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

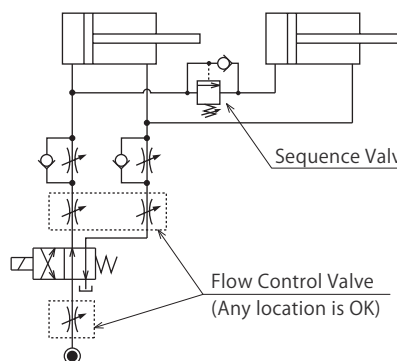
- Separate the control circuit.



- 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.



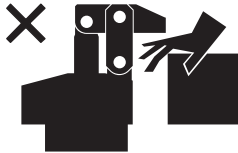
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve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

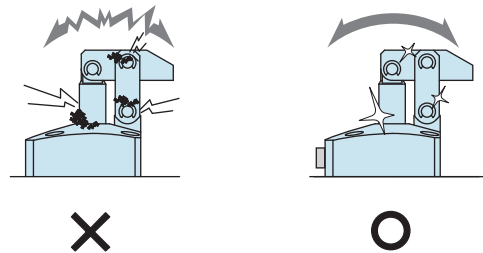
- 1) It should be handled by qualified personnel.
  - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
  - ① The machine and equipment can only be inspected or prepared when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



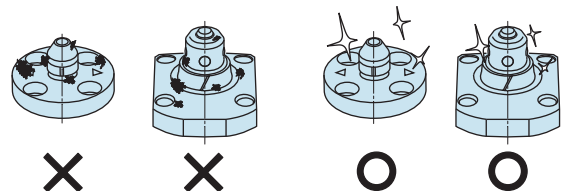
- 4) Do not disassemble or modify.
  - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

### ● Maintenance and Inspection

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



- 3) Please clean out the reference surface regularly (taper reference surface and seating surface) of locating machine. (VS/VT/VL/VM/VJ/VK/WVS/WM/WK/VX/VXF)
  - Location products, except VX/VXF model, can remove contaminants with cleaning functions. When installing pallets make sure there is no thick sludge like substances on pallets.
  - Continuous use with dirt on components will lead to locating functions not work properly, leaking and malfunction.



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

## ● Warranty

### 1) Warranty Period

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

### 2) Warranty Scope

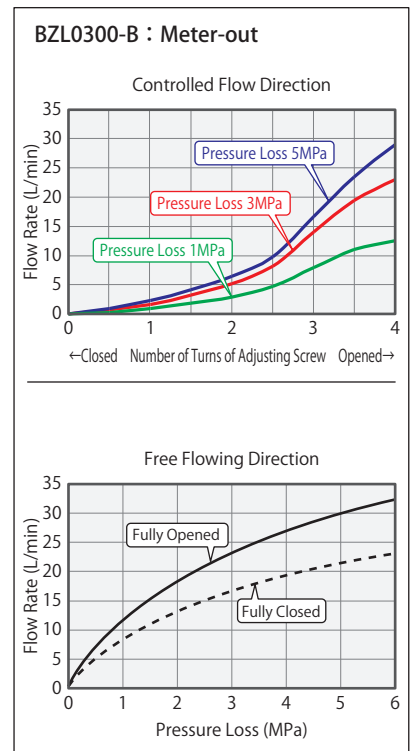
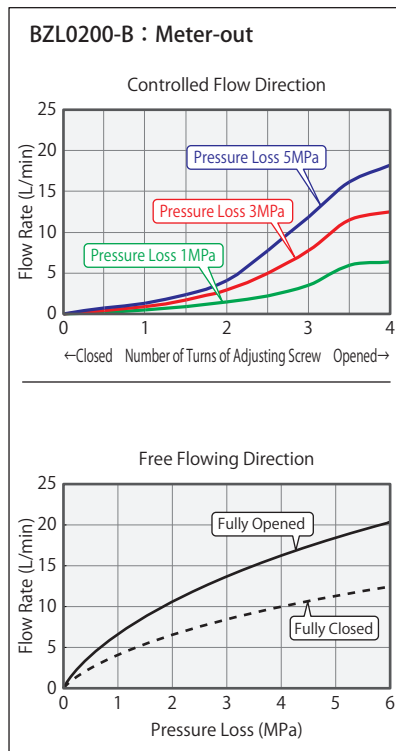
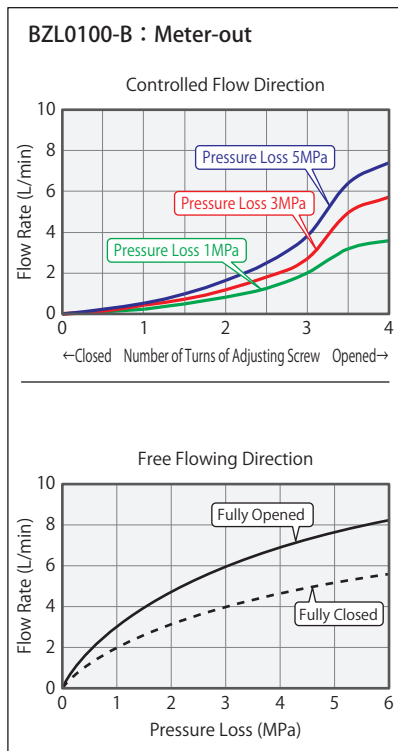
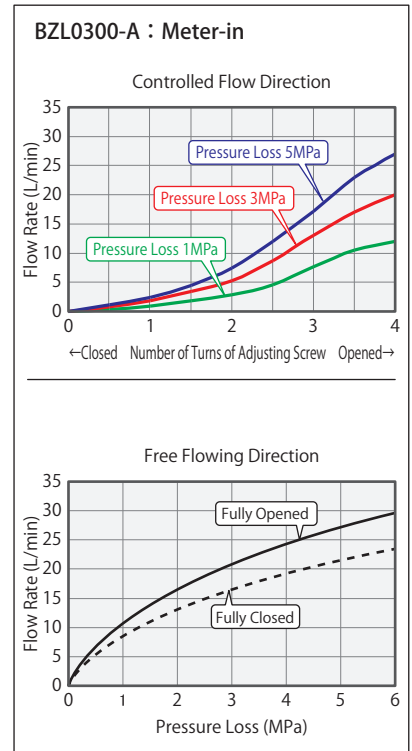
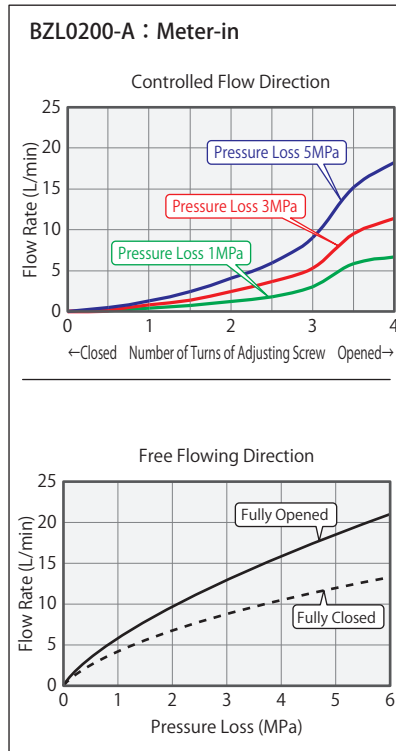
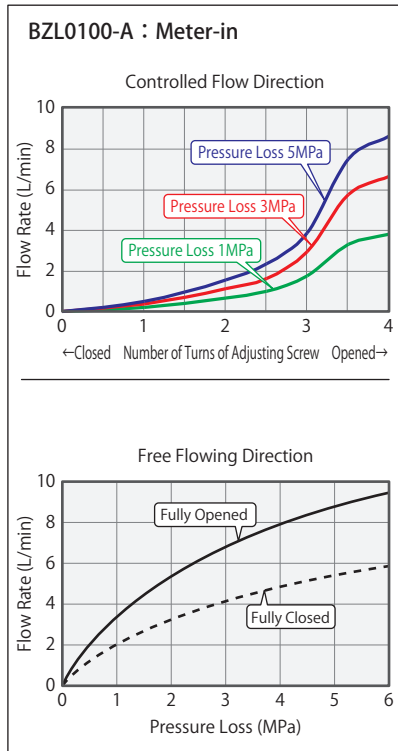
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.

Defects or failures caused by the following are not covered.

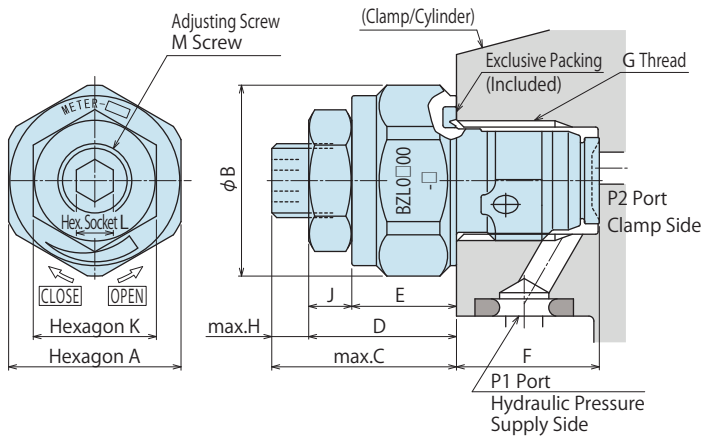
- ① If the stipulated maintenance and inspection are not carried out.
- ② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
- ③ If it is used or handled in inappropriate way by the operator.  
(Including damage caused by the misconduct of the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

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

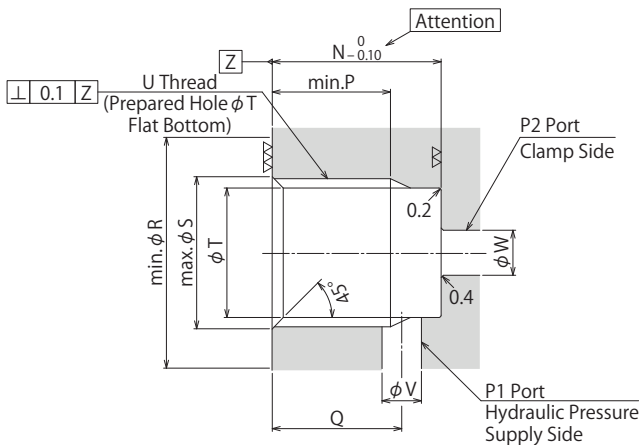
Flow Rate Graph < Hydraulic Fluids ISO-VG32 (25~35°C) >



## External Dimensions



## Machining Dimensions of Mounting Area



### Notes

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

## Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Circuit" to assist with proper hydraulic circuit design.  
If there is something wrong with the circuit design, it leads to the applications malfunction and damage. (Refer to P.1044)
2. It is dangerous to air bleed during operation under high pressure. It must be done under lower pressure.  
(For reference: the minimum operating range of the product within the circuit.)

(mm)

Model No.	BZL0100-□	BZL0200-□	BZL0300-□
A	14	18	22
B	15.5	20	24
C	15	16	19
D	12	13	16
E	8.5	9.5	11
F	(11.6)	(15.1)	(17.6)
G	G1/8	G1/4	G3/8
H	3	3	3
J	3.5	3.5	5
K	10	10	13
L	3	3	4
M	M6×0.75	M6×0.75	M8×0.75
N	11.5	15	17.5
P	8.5	11※1	13
Q	9	11.5	13
R (Flat Surface Area)	16	20.5	24.5
S	10	13.5	17
T	8.7	11.5	15
U	G1/8	G1/4	G3/8
V	2 ~ 3	3 ~ 4	4 ~ 5
W	2.5 ~ 5	3.5 ~ 7	4.5 ~ 9

High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

SFA  
SFC

Swing Clamp

LHA  
LHC  
LHS  
LHW  
LT/LG  
TLA-2  
TLB-2  
TLA-1

Link Clamp

LKA  
LKC  
LKW  
LM/LJ  
TMA-2  
TMA-1

Work Support

LD  
LC  
TNC  
TC

Air Sensing Lift Cylinder

LLW

Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

Block Cylinder

DBA  
DBC

Control Valve

BZL  
BZT  
BZX/JZG

Pallet Clamp

VS  
VT

Expansion Locating Pin

VL  
VM  
VJ  
VK

Pull Stud Clamp

FP  
FQ

Customized Spring Cylinder

DWA/DWB



# Control Valve

Model BZL

Model BZT

Model BZX

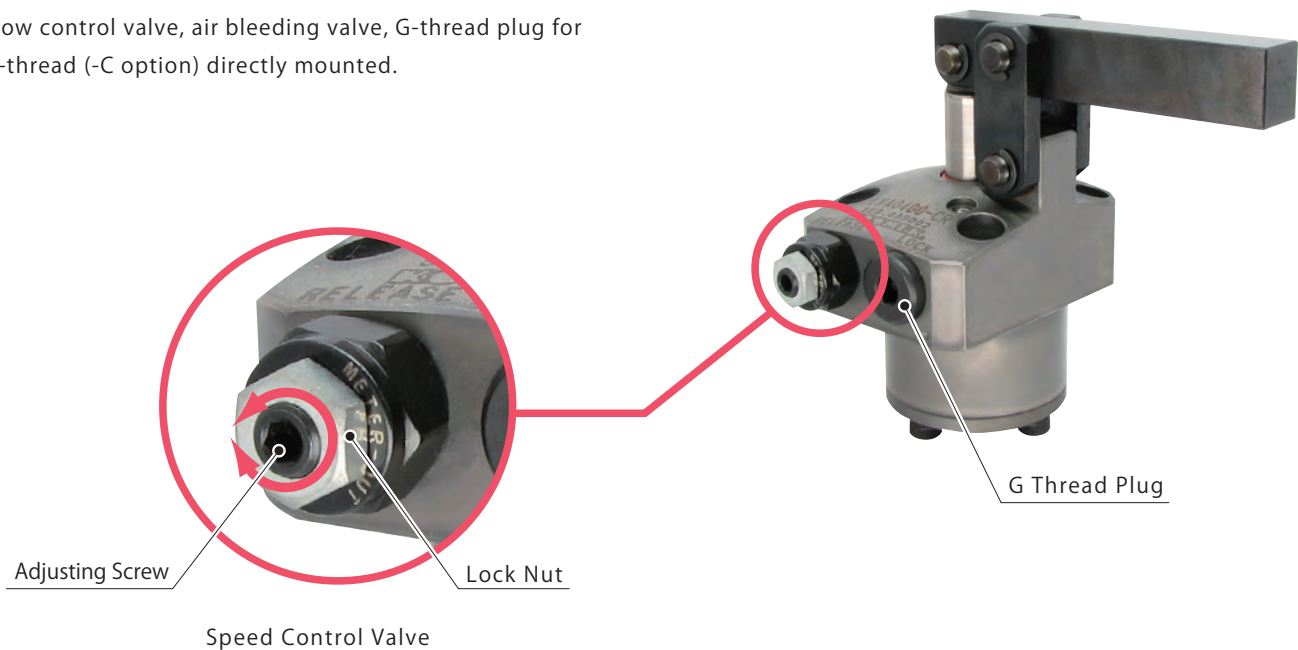
Model JZG



Directly mounted to clamps, flow control valve • Air bleeding • plug

- Directly mounted to clamps


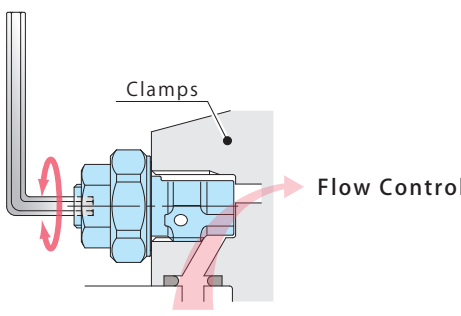
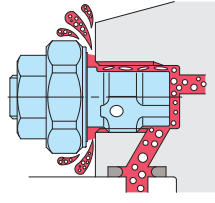

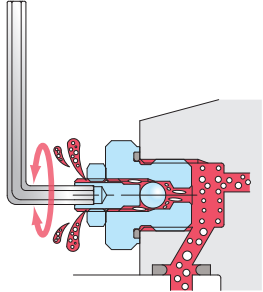

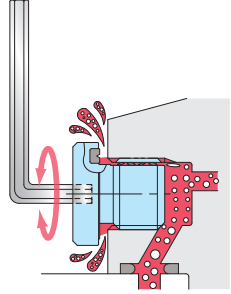
Flow control valve, air bleeding valve, G-thread plug for G-thread (-C option) directly mounted.



Speed Control Valve  
 Model BZL  
 Model BZT

Air Bleed Valve  
 Model BZX

G Thread Plug  
 Model JZG

	Operating Pressure Range	Action Description
<p>Speed Control Valve (For Low Pressure)</p> <p>Model <b>BZL</b> → P.729</p> 	7MPa or less	<p>Adjust the flow by wrench. It can adjust the clamping action speed individually.</p> 
<p>Speed Control Valve (For High Pressure)</p> <p>Model <b>BZT</b> → P.733</p>	35MPa or less	<p>Air bleeding in the circuit is possible by loosening flow control valve.</p> 
<p>Air Bleed Valve</p> <p>Model <b>BZX</b> → P.735</p> 	25MPa or less	<p>Air bleeding in the circuit is possible by wrench.</p> 
<p>G Thread Plug</p> <p>Model <b>JZG</b> → P.737</p> 	35MPa or less	<p>Air bleeding in the circuit is possible by loosening G thread plug.</p> 

- High-Power Series
- Pneumatic Series
- Hydraulic Series**
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others

Hole Clamp

- SFA
- SFC

Swing Clamp

- LHA
- LHC
- LHS
- LHW
- LT/LG
- TLA-2
- TLB-2
- TLA-1

Link Clamp

- LKA
- LKC
- LKW
- LM/LJ
- TMA-2
- TMA-1

Work Support

- LD
- LC
- TNC
- TC

Air Sensing Lift Cylinder

- LLW

Compact Cylinder

- LL
- LLR
- LLU
- DP
- DR
- DS
- DT

Block Cylinder

- DBA
- DBC

**Control Valve**

- BZL**
- BZT**
- BZX/JZG**

Pallet Clamp

- VS
- VT

Expansion Locating Pin

- VL
- VM
- VJ
- VK

Pull Stud Clamp

- FP
- FQ

Customized Spring Cylinder

- DWA/DWB

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

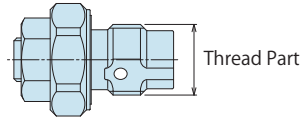
**BZL 0** 10 0 - B

1    2    3



**1** G Thread Size

- 10 : Thread Part G1/8A Thread
- 20 : Thread Part G1/4A Thread
- 30 : Thread Part G3/8A Thread

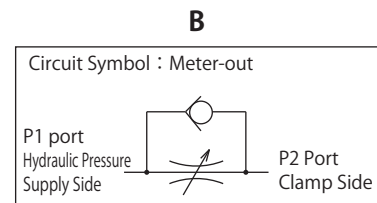
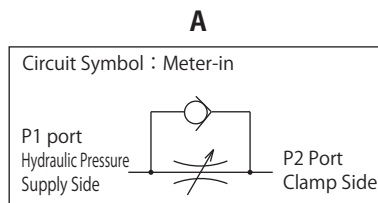


**2** Design No.

- 0 : Revision Number

**3** Control Method

- A : Meter-in
- B : Meter-out



Specifications

Model No.	BZL0100-A	BZL0200-A	BZL0300-A	BZL0100-B	BZL0200-B	BZL0300-B
Max. Operating Pressure MPa	7					
Withstanding Pressure MPa	10.5					
Control Method	Meter-in			Meter-out		
G Thread Size	G1/8A	G1/4A	G3/8A	G1/8A	G1/4A	G3/8A
Cracking Pressure MPa	0.04			0.12		
Max. Passage Area mm <sup>2</sup>	2.6	5.0	11.6	2.6	5.0	10.2
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32					
Operating Temperature °C	0 ~ 70					
Tightening Torque for Main Body N·m	10	25	35	10	25	35

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

## Applicable Products

Model No.	DBA (Single Action) Block Cylinder	DBC (Single Action) Block Cylinder	LC (Single Action) Work Support	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp
BZL0100-A	(DBA0250-C□) (DBA0320-C□)	(DBC0250-C□) (DBC0320-C□)	LC0402-C□□□ LC0482-C□□□ LC0552-C□□□ LC0652-C□□□	(LHA0360-C□□□) (LHA0400-C□□□) (LHA0480-C□□□) (LHA0550-C□□□)	(LHC0360-C□□□) (LHC0400-C□□□) (LHC0480-C□□□) (LHC0550-C□□□)	/	(LHS0360-C□□□) (LHS0400-C□□□) (LHS0480-C□□□) (LHS0550-C□□□)	(LHW0400-C□□□) (LHW0480-C□□□) (LHW0550-C□□□)
BZL0100-B	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	/	LHA0360-C□□□ LHA0400-C□□□ LHA0480-C□□□ LHA0550-C□□□	LHC0360-C□□□ LHC0400-C□□□ LHC0480-C□□□ LHC0550-C□□□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□□ LHS0400-C□□□ LHS0480-C□□□ LHS0550-C□□□	LHW0400-C□□□ LHW0480-C□□□ LHW0550-C□□□
BZL0200-A	(DBA0400-C□) (DBA0500-C□)	(DBC0400-C□) (DBC0500-C□)	LC0752-C□□□ LC0902-C□□□	(LHA0650-C□□□) (LHA0750-C□□□)	(LHC0650-C□□□)	/	(LHS0650-C□□□) (LHS0750-C□□□)	(LHW0650-C□□□)
BZL0200-B	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□	/	LHA0650-C□□□ LHA0750-C□□□	LHC0650-C□□□	/	LHS0650-C□□□ LHS0750-C□□□	LHW0650-C□□□
BZL0300-A	/	/	/	(LHA0900-C□□□) (LHA1050-C□□□)	/	/	(LHS0900-C□□□) (LHS1050-C□□□)	/
BZL0300-B	/	/	/	LHA0900-C□□□ LHA1050-C□□□	/	/	LHS0900-C□□□ LHS1050-C□□□	/

Model No.	LT/LG (Single Action) Swing Clamp	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKW (Double Action) Link Clamp	LM/LJ (Single Action) Link Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder
BZL0100-A	LT0360-C□ LT0400-C□ LT0480-C□ LT0550-C□	(LKA0360-C□□□) (LKA0400-C□□□) (LKA0480-C□□□) (LKA0550-C□□□)	(LKC0400-C□□□) (LKC0480-C□□□) (LKC0550-C□□□)	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	(LKW0400-C□□□) (LKW0480-C□□□) (LKW0550-C□□□)	LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	(LL0360-C□□□) (LL0400-C□□□) (LL0480-C□□□) (LL0550-C□□□)	(LLR0360-C□□□□) (LLR0400-C□□□□) (LLR0480-C□□□□) (LLR0550-C□□□□)
BZL0100-B	/	LKA0360-C□□□ LKA0400-C□□□ LKA0480-C□□□ LKA0550-C□□□	LKC0400-C□□□ LKC0480-C□□□ LKC0550-C□□□	/	LKW0400-C□□□ LKW0480-C□□□ LKW0550-C□□□	/	LL0360-C□□□ LL0400-C□□□ LL0480-C□□□ LL0550-C□□□	LLR0360-C□□□□ LLR0400-C□□□□ LLR0480-C□□□□ LLR0550-C□□□□
BZL0200-A	LT0650-C□ LT0750-C□	(LKA0650-C□□□) (LKA0750-C□□□)	(LKC0650-C□□□)	/	(LKW0650-C□□□)	LM0650-C□ LM0750-C□	(LL0650-C□□□) (LL0750-C□□□)	(LLR0650-C□□□□) (LLR0750-C□□□□)
BZL0200-B	/	LKA0650-C□□□ LKA0750-C□□□	LKC0650-C□□□	/	LKW0650-C□□□	/	LL0650-C□□□ LL0750-C□□□	LLR0650-C□□□□ LLR0750-C□□□□
BZL0300-A	LG0900-C□ LG1050-C□	(LKA0900-C□□□) (LKA1050-C□□□)	/	/	/	LJ0902-C□ LJ1052-C□	(LL0900-C□□□) (LL1050-C□□□)	(LLR0900-C□□□□) (LLR1050-C□□□□)
BZL0300-B	/	LKA0900-C□□□ LKA1050-C□□□	/	/	/	/	LL0900-C□□□ LL1050-C□□□	LLR0900-C□□□□ LLR1050-C□□□□

Model No.	LLW (Double Action) Lift Cylinder
BZL0100-A	(LLW0360-C□□□) (LLW0400-C□□□) (LLW0480-C□□□)
BZL0100-B	LLW0360-C□□□ LLW0400-C□□□ LLW0480-C□□□

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

## High-Power Series

## Pneumatic Series

## Hydraulic Series

## Valve / Coupler Hydraulic Unit

## Manual Operation Accessories

## Cautions / Others

## Hole Clamp

SFA  
SFC

## Swing Clamp

LHA  
LHC  
LHS  
LHW  
LT/LG  
TLA-2  
TLB-2  
TLA-1

## Link Clamp

LKA  
LKC  
LKW  
LM/LJ  
TMA-2  
TMA-1

## Work Support

LD  
LC  
TNC  
TC

## Air Sensing Lift Cylinder

LLW

## Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

## Block Cylinder

DBA  
DBC

## Control Valve

BZL  
BZT  
BZX/JZG

## Pallet Clamp

VS  
VT

## Expansion Locating Pin

VL  
VM  
VJ  
VK

## Pull Stud Clamp

FP  
FQ

## Customized Spring Cylinder

DWA/DWB

## Model No. Indication (Air Bleed Valve)

**BZX0 1 0**

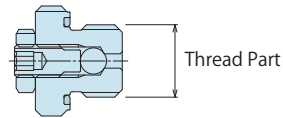
1    2

1    2



### 1 G Thread Size

- 1 : Thread Part G1/8A Thread
- 2 : Thread Part G1/4A Thread
- 3 : Thread Part G3/8A Thread



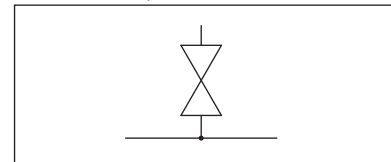
### 2 Design No.

- 0 : Revision Number

## Specifications

Model No.	BZX010	BZX020	BZX030
Max. Operating Pressure MPa	25		
Withstanding Pressure MPa	37.5		
G Thread Size	G1/8A	G1/4A	G3/8A
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32		
Operating Temperature °C	0 ~ 70		
Tightening Torque for Main Body N·m	10	25	35

## Circuit Symbol



- Notes
- Do not over loosen the plug during air venting.  
(Do not loosen for more than 2 turns from the fully closed position.)
  - It is dangerous to have air venting operation under high pressure. It must be done under lower pressure.  
(For reference: the minimum operation pressure range of the product within the circuit)
  - Refer to the processing dimensions for BZL mounting area.

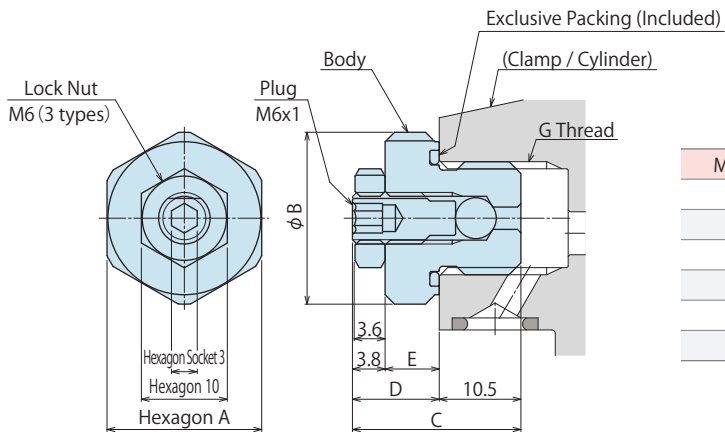
## Applicable Products

Model No.	DBA (Single Action) Block Cylinder	DBC (Single Action) Block Cylinder	LC (Single Action) Work Support	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp
BZX010	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	LC0402-C□□□ LC0482-C□□□ LC0552-C□□□ LC0652-C□□□	LHA0360-C□□□ LHA0400-C□□□ LHA0480-C□□□ LHA0550-C□□□	LHC0360-C□□□ LHC0400-C□□□ LHC0480-C□□□ LHC0550-C□□□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□□ LHS0400-C□□□ LHS0480-C□□□ LHS0550-C□□□	LHW0400-C□□□ LHW0480-C□□□ LHW0550-C□□□
BZX020	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□	LC0752-C□□□ LC0902-C□□□	LHA0650-C□□□ LHA0750-C□□□	LHC0650-C□□□		LHS0650-C□□□ LHS0750-C□□□	LHW0650-C□□□
BZX030				LHA0900-C□□□ LHA1050-C□□□			LHS0900-C□□□ LHS1050-C□□□	

Model No.	LT/LG (Single Action) Swing Clamp	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKW (Double Action) Link Clamp	LM/LJ (Single Action) Link Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder
BZX010	LT0360-C□ LT0400-C□ LT0480-C□ LT0550-C□	LKA0360-C□□□ LKA0400-C□□□ LKA0480-C□□□ LKA0550-C□□□	LKC0400-C□□□ LKC0480-C□□□ LKC0550-C□□□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	LKW0400-C□□□ LKW0480-C□□□ LKW0550-C□□□	LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LL0360-C□□□ LL0400-C□□□ LL0480-C□□□ LL0550-C□□□	LLR0360-C□□□□ LLR0400-C□□□□ LLR0480-C□□□□ LLR0550-C□□□□
BZX020	LT0650-C□ LT0750-C□	LKA0650-C□□□ LKA0750-C□□□	LKC0650-C□□□		LKW0650-C□□□	LM0650-C□ LM0750-C□	LL0650-C□□□ LL0750-C□□□	LLR0650-C□□□□ LLR0750-C□□□□
BZX030	LG0900-C□ LG1050-C□	LKA0900-C□□□ LKA1050-C□□□				LJ0902-C□ LJ1052-C□	LL0900-C□□□ LL1050-C□□□	LLR0900-C□□□□ LLR1050-C□□□□

Model No.	LLW (Double Action) Lift Cylinder
BZX010	LLW0360-C□□□ LLW0400-C□□□ LLW0480-C□□□

## External Dimensions



Model No.	BZX010	BZX020	BZX030
A	14	18	22
B	15.5	20	24
C	19.8	20.6	20.6
D	9.3	10.1	10.1
E	5.5	6.3	6.3
G	G1/8	G1/4	G3/8

(mm)

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic UnitManual Operation  
Accessories

Cautions / Others

Hole Clamp

SFA  
SFC

Swing Clamp

LHA  
LHC  
LHS  
LHW  
LT/LG  
TLA-2  
TLB-2  
TLA-1

Link Clamp

LKA  
LKC  
LKW  
LM/LJ  
TMA-2  
TMA-1

Work Support

LD  
LC  
TNC  
TCAir Sensing  
Lift Cylinder

LLW

Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

Block Cylinder

DBA  
DBC

Control Valve

BZL  
BZT

BZX/JZG

Pallet Clamp

VS  
VTExpansion  
Locating PinVL  
VM  
VJ  
VK

Pull Stud Clamp

FP  
FQCustomized  
Spring Cylinder

DWA/DWB

Model No. Indication (G Thread Plug with Air Bleeding Function)

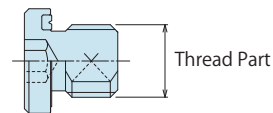
**JZG0 1 0**

1 2



1 G Thread Size

- 1 : Thread Part G1/8A Thread
- 2 : Thread Part G1/4A Thread
- 3 : Thread Part G3/8A Thread



2 Design No.

- 0 : Revision Number

Specifications

Model No.	JZG010	JZG020	JZG030
Max. Operating Pressure MPa	35		
Withstanding Pressure MPa	42		
G Thread Size	G1/8A	G1/4A	G3/8A
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32		
Operating Temperature °C	0 ~ 70		
Tightening Torque for Main Body N·m	10	25	35

- Notes
- It is dangerous to have air venting operation under high pressure. It must be done under lower pressure.  
(For reference: the minimum operation pressure range of the product within the circuit)
  - Refer to the processing dimensions for BZL mounting area.

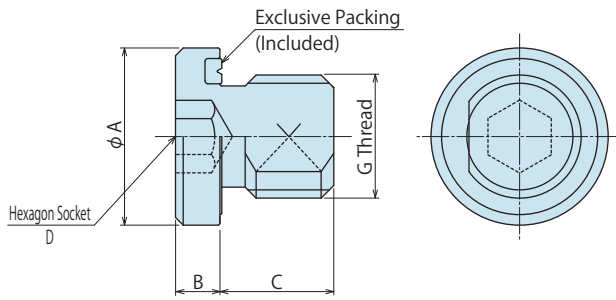
Applicable Products

Model No.	DBA (Single Action) Block Cylinder	DBC (Single Action) Block Cylinder	LC (Single Action) Work Support	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp
JZG010	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	LC0402-C□□□ LC0482-C□□□ LC0552-C□□□ LC0652-C□□□	LHA0360-C□□□ LHA0400-C□□□ LHA0480-C□□□ LHA0550-C□□□	LHC0360-C□□□ LHC0400-C□□□ LHC0480-C□□□ LHC0550-C□□□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□□ LHS0400-C□□□ LHS0480-C□□□ LHS0550-C□□□	LHW0400-C□□□ LHW0480-C□□□ LHW0550-C□□□
JZG020	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□	LC0752-C□□□ LC0902-C□□□	LHA0650-C□□□ LHA0750-C□□□	LHC0650-C□□□		LHS0650-C□□□ LHS0750-C□□□	LHW0650-C□□□
JZG030				LHA0900-C□□□ LHA1050-C□□□			LHS0900-C□□□ LHS1050-C□□□	

Model No.	LT/LG (Single Action) Swing Clamp	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKW (Double Action) Link Clamp	LM/LJ (Single Action) Link Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder
JZG010	LT0360-C□ LT0400-C□ LT0480-C□ LT0550-C□	LKA0360-C□□□ LKA0400-C□□□ LKA0480-C□□□ LKA0550-C□□□	LKC0400-C□□□ LKC0480-C□□□ LKC0550-C□□□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	LKW0400-C□□□ LKW0480-C□□□ LKW0550-C□□□	LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LL0360-C□□□ LL0400-C□□□ LL0480-C□□□ LL0550-C□□□	LLR0360-C□□□□□ LLR0400-C□□□□□ LLR0480-C□□□□□ LLR0550-C□□□□□
JZG020	LT0650-C□ LT0750-C□	LKA0650-C□□□ LKA0750-C□□□	LKC0650-C□□□		LKW0650-C□□□	LM0650-C□ LM0750-C□	LL0650-C□□□ LL0750-C□□□	LLR0650-C□□□□□ LLR0750-C□□□□□
JZG030	LG0900-C□ LG1050-C□	LKA0900-C□□□ LKA1050-C□□□				LJ0902-C□ LJ1052-C□	LL0900-C□□□ LL1050-C□□□	LLR0900-C□□□□□ LLR1050-C□□□□□

Model No.	LLW (Double Action) Lift Cylinder	TLA-2 (Double Action) Swing Clamp	TLB-2 (Double Action) Swing Clamp	TLA-1 (Single Action) Swing Clamp	TMA-2 (Double Action) Link Clamp	TMA-1 (Single Action) Link Clamp
JZG010	LLW0360-C□□□□□ LLW0400-C□□□□□ LLW0480-C□□□□□	TLA0401-2C□□□ TLA0601-2C□□□ TLA0801-2C□□□ TLA1001-2C□□□ TLA1601-2C□□□	TLB0401-2C□□□ TLB0601-2C□□□ TLB0801-2C□□□ TLB1001-2C□□□ TLB1601-2C□□□	TLA0402-1C□ TLA0602-1C□ TLA0802-1C□ TLA1002-1C□ TLA1602-1C□	TMA0250-2C□ TMA0400-2C□ TMA0600-2C□ TMA1000-2C□	TMA0250-1C□ TMA0400-1C□ TMA0600-1C□ TMA1000-1C□
JZG020		TLA2001-2C□□□ TLA2501-2C□□□ TLA4001-2C□□□	TLB2001-2C□□□ TLB2501-2C□□□ TLB4001-2C□□□	TLA2002-1C□ TLA2502-1C□ TLA4002-1C□	TMA1600-2C□ TMA2500-2C□ TMA3200-2C□	TMA1600-1C□ TMA2500-1C□ TMA3200-1C□

## External Dimensions



Model No.	JZG010	JZG020	JZG030
A	14	18	22
B	3.5	4.5	4.5
C	8	9	10
D	5	6	8
G	G1/8A	G1/4A	G3/8A

(mm)

### High-Power Series

### Pneumatic Series

### Hydraulic Series

### Valve / Coupler Hydraulic Unit

### Manual Operation Accessories

### Cautions / Others

#### Hole Clamp

SFA  
SFC

#### Swing Clamp

LHA  
LHC  
LHS  
LHW  
LT/LG  
TLA-2  
TLB-2  
TLA-1

#### Link Clamp

LKA  
LKC  
LKW  
LM/LJ  
TMA-2  
TMA-1

#### Work Support

LD  
LC  
TNC  
TC

#### Air Sensing Lift Cylinder

LLW

#### Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

#### Block Cylinder

DBA  
DBC

#### Control Valve

BZL  
BZT

#### BZX/JZG

#### Pallet Clamp

VS  
VT

#### Expansion Locating Pin

VL  
VM  
VJ  
VK

#### Pull Stud Clamp

FP  
FQ

#### Customized Spring Cylinder

DWA/DWB



# Manifold Block

Model WHZ-MD

Model LZY-MD

Model LZ-MS

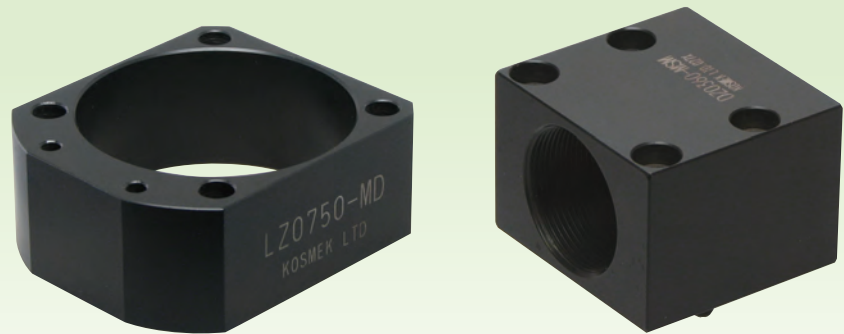
Model LZ-MP

Model TMZ-1MB

Model TMZ-2MB

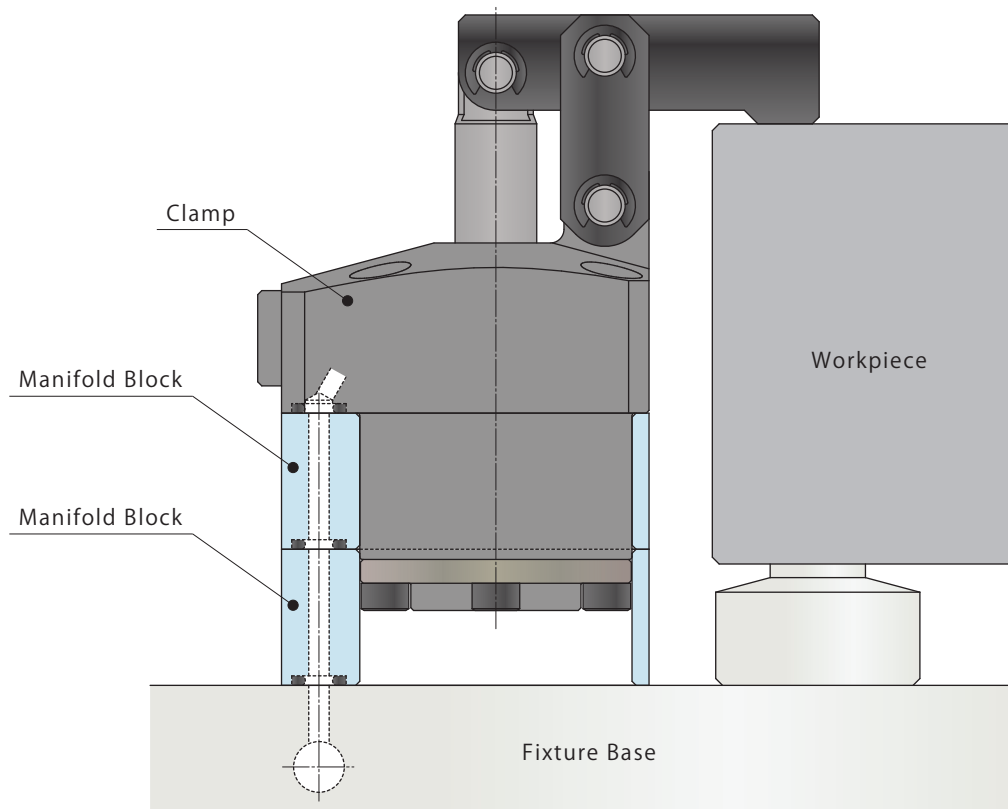
Model DZ-MG

Model DZ-MS



- **Manifold Block**

The mounting height of clamp is adjustable with the manifold block.



### Applicable Model

Manifold Block Model No.	Corresponding Item Model No.
Model <b>WHZ-MD</b>	Model <b>WCA</b> Model <b>WHA</b> Model <b>WCE</b> Model <b>WHE</b>
Model <b>LZY-MD</b>	Model <b>LKA</b> Model <b>LKE</b> Model <b>LHC</b> Model <b>LHS</b> Model <b>LKC</b> Model <b>LHA</b> Model <b>LHE</b> Model <b>LL</b>
Model <b>LZ-MS</b>	Model <b>LM</b> Model <b>LT</b> Model <b>LJ</b> Model <b>LG</b>
Model <b>LZ-MP</b>	Model <b>LC</b> Model <b>TC</b>
Model <b>TMZ-1MB</b>	Model <b>TMA-1</b>
Model <b>TMZ-2MB</b>	Model <b>TMA-2</b>
Model <b>DZ-MG□/MS□</b>	Model <b>DP</b>

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories**
- Cautions / Others

Screw Locator  
VXF

Manual Expansion Locating Pin  
VX

**Manifold Block**

- WHZ-MD
- LZY-MD
- LZ-MS
- LZ-MP
- TMZ-1MB
- TMZ-2MB
- DZ-M

Manifold Block / Nut

- DZ-R
- DZ-C
- DZ-P
- DZ-B
- LZ-S
- LZ-SQ
- TNZ-S
- TNZ-SQ

Pressure Switch  
JB

Pressure Gauge  
JGA/JGB

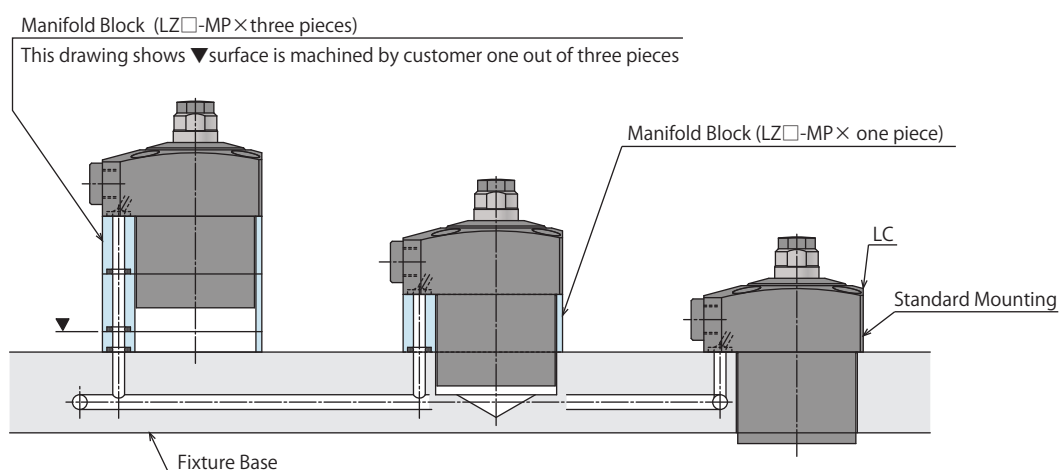
Manifold  
JX

Coupler Switch  
PS

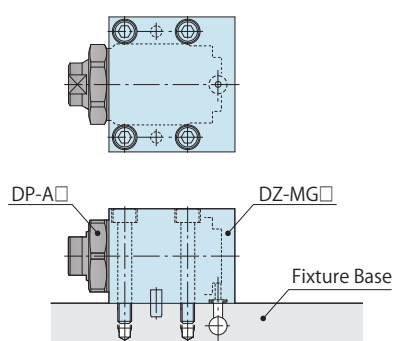
G-Thread Fitting

### Application Examples

#### • Work Support (LC) Application Example



#### • Push Cylinder (DP) Application Example



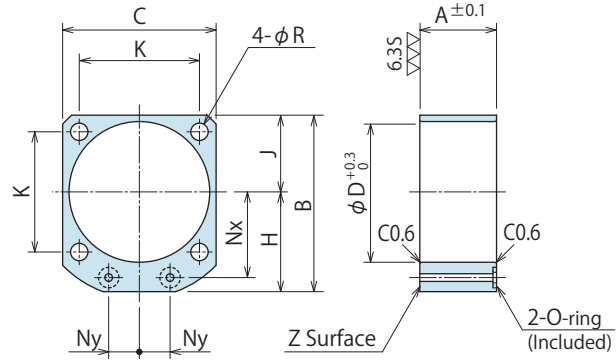
Manifold Block for WCA/WCE/WHA/WHE

Model No. Indication

**WHZ 048 0 - MD**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

Model No.	WHZ0600-MD	WHZ0320-MD	WHZ0400-MD	WHZ0500-MD	WHZ0630-MD
Corresponding Item Model Number	WCE0601 WHE0600	WCA0321 WHA0320	WCE1001 WHE1000	WCA0401 WHA0400	WCE1601 WHE1600
A	23	25	27	31	35
B	54	60	67	77	88.5
C	45	50	58	68	81
D	40	46	54	64	77
H	31.5	35	38	43	48
J	22.5	25	29	34	40.5
K	34	39	45	53	65
Nx	26	28	31	36	41
Ny	9	10	13	15	20
R	5.5	5.5	5.5	6.5	6.5
O-ring	1BP5	1BP7	1BP7	1BP7	1BP7
Mass kg	0.1	0.1	0.1	0.2	0.2

- Notes
1. Material: A2017BE-T4
  2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the A dimensions as a reference.
  3. If thickness other than A is required, perform additional machining on surface Z. Please refer to the drawing.

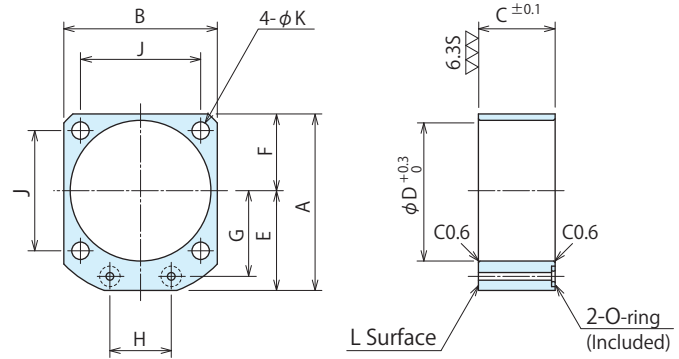
Manifold Block for LKA/LKC/LKE/LHA/LHC/LHE/LHS/LL

Model No. Indication

**LZY 048 0 - MD**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

Model No.	LZY0360-MD	LZY0400-MD	LZY0480-MD	LZY0550-MD	LZY0650-MD	LZY0750-MD	LZY0900-MD	LZY1050-MD
Corresponding Item Model Number	LKA0360 / LKE0360 LHA0360 / LHC0360 LHE0360 / LHS0360 LLO360	LKA0400 / LKC0400 LKE0400 / LHA0400 LHC0400 / LHE0400 LHS0400 / LLO400	LKA0480 / LKC0480 LKE0480 / LHA0480 LHC0480 / LHE0480 LHS0480 / LLO480	LKA0550 / LKC0550 LKE0550 / LHA0550 LHC0550 / LHE0550 LHS0550 / LLO550	LKA0650 / LKC0650 LHA0650 / LHC0650 LHS0650 LLO650	LKA0750 LHA0750 LHS0750 LLO750	LKA0900 LHA0900 LHS0900 LLO900	LKA1050 LHA1050 LHS1050 LLO1050
A	49	54	61	69	81	92	107	122
B	40	45	51	60	70	80	95	110
C	20	20	27	30	32	37	45	50
D	36	40	48	55	65	75	90	105
E	29	31.5	35.5	39	46	52	59.5	67
F	20	22.5	25.5	30	35	40	47.5	55
G	23.5	26	30	33.5	39.5	45	52.5	60
H	16	18	22	24	30	32	37	45
J	31.4	34	40	47	55	63	75	88
K	4.5	5.5	5.5	6.8	6.8	9	11	14
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Mass kg	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

- Notes
1. Material: S45C
  2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the C dimensions as a reference.
  3. If thickness other than C is required, perform additional machining on surface L. Please refer to the drawing.

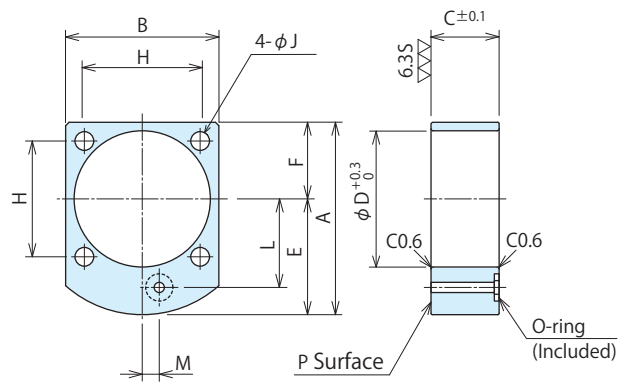
**Manifold Block for LM/LJ/LT/LG**

Model No. Indication

**LZ 048 0 - MS**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

Model No.	LZ0360-MS	LZ0400-MS	LZ0480-MS	LZ0550-MS	LZ0650-MS	LZ0750-MS	LZ0900-MS	LZ1050-MS
Corresponding Item Model Number	LT0360 LM0360	LT0400 LM0400	LT0480 LM0480	LT0550 LM0550	LT0650 LM0650	LT0750 LM0750	LG0900 LJ0902	LG1050 LJ1052
A	51.5	56.5	62	70	82	93	107	122
B	40	45	51	60	70	80	95	110
C	20	20	27	30	32	37	45	50
D	36	40	48	55	65	75	90	105
E	31.5	34	36.5	40	47	53	59.5	67
F	20	22.5	25.5	30	35	40	47.5	55
H	31.4	34	40	47	55	63	75	88
J	4.5	5.5	5.5	6.8	6.8	9	11	14
L	23.5	26	30	33.5	39.5	45	52.5	60
M	5	5	0	0	0	0	0	0
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Mass kg	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

- Notes
1. Material: S45C
  2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the C dimensions as a reference.
  3. If thickness other than C is required, perform additional machining on surface L. Please refer to the drawing.

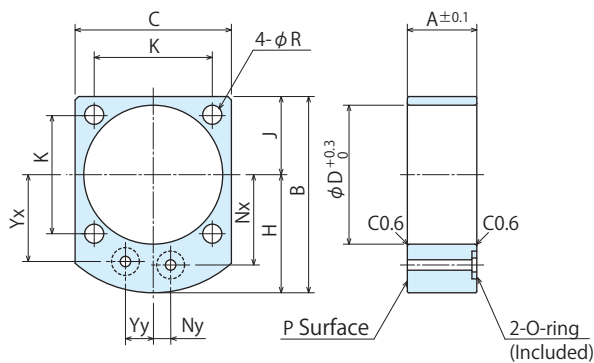
**Manifold Block for LC/TC**

Model No. Indication

**LZ 048 0 - MP**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

Model No.	LZ0400-MP	LZ0480-MP	LZ0550-MP	LZ0650-MP	LZ0750-MP	LZ0900-MP
Corresponding Item Model Number	LC0402 TC0402	LC0482 TC0482	LC0552 TC0552	LC0652 TC0652	LC0752 TC0752	LC0902
A	20	27	30	32	37	45
B	56.5	62	70	82	93	107
C	45	51	60	70	80	95
D	40	48	55	65	75	90
H	34	36.5	40	47	53	59.5
J	22.5	25.5	30	35	40	47.5
K	34	40	47	55	63	75
Nx	26	30	33.5	39.5	45	52.5
Ny	5	0	0	0	0	0
R	5.5	5.5	6.8	6.8	9	11
Yx	25	28	31	37	42.5	50
Yy	8	11	13	14	15	15
O-ring	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7
Mass kg	0.2	0.3	0.4	0.5	0.8	1.2

- Notes
1. Material: S45C
  2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the A dimensions as a reference.
  3. If thickness other than A is required, perform additional machining on surface P. Please refer to the drawing.

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Screw Locator
  - VXF
- Manual Expansion Locating Pin
  - VX
- Manifold Block
  - WHZ-MD
  - LZY-MD
  - LZ-MS
  - LZ-MP
  - TMZ-1MB
  - TMZ-2MB
  - DZ-M
- Manifold Block / Nut
  - DZ-R
  - DZ-C
  - DZ-P
  - DZ-B
  - LZ-S
  - LZ-SQ
  - TNZ-S
  - TNZ-SQ
- Pressure Switch
  - JB
- Pressure Gauge
  - JGA/JGB
- Manifold
  - JX
- Coupler Switch
  - PS
- G-Thread Fitting

# Sales Offices

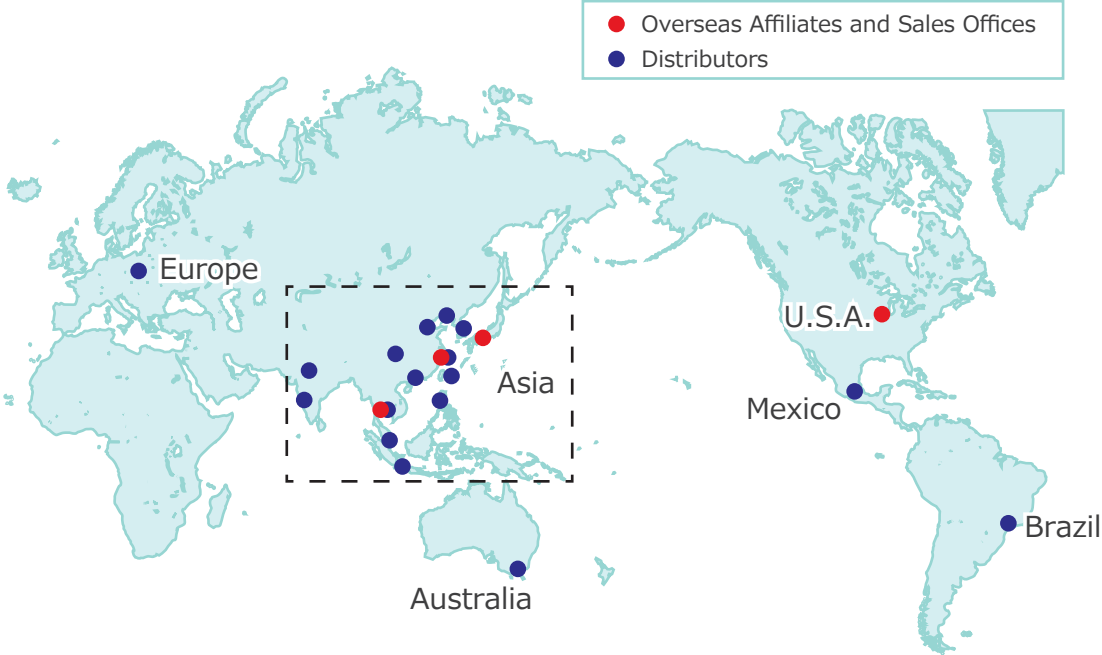
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Japan	<b>TEL. +81-78-991-5162</b>	<b>FAX. +81-78-991-8787</b>
Overseas Sales	KOSMEK LTD. 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241 〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
USA	<b>TEL. +1-630-241-3465</b>	<b>FAX. +1-630-241-3834</b>
KOSMEK (USA) LTD.	1441 Branding Avenue, Suite 110, Downers Grove, IL 60515 USA	
China	<b>TEL.+86-21-54253000</b>	<b>FAX.+86-21-54253709</b>
KOSMEK (CHINA) LTD. 考世美(上海)貿易有限公司	21/F, Orient International Technology Building, No.58, Xiangchen Rd, Pudong Shanghai 200122., P.R.China 中国上海市浦东新区向城路58号东方国际科技大厦21F室 200122	
Thailand	<b>TEL. +66-2-715-3450</b>	<b>FAX. +66-2-715-3453</b>
Thailand Representative Office	67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250, Thailand	
Taiwan (Taiwan Exclusive Distributor)	<b>TEL. +886-2-82261860</b>	<b>FAX. +886-2-82261890</b>
Full Life Trading Co., Ltd. 盈生貿易有限公司	16F-4, No.2, Jian Ba Rd., Zhonghe District, New Taipei City Taiwan 23511 台湾新北市中和區建八路2號 16F-4 (遠東世紀廣場)	
Philippines (Philippines Exclusive Distributor)	<b>TEL.+63-2-310-7286</b>	<b>FAX. +63-2-310-7286</b>
G.E.T. Inc, Phil.	Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427	
Europe (Europe Exclusive Distributor)	<b>TEL. +43-463-287587-10</b>	<b>FAX. +43-463-287587-20</b>
KOS-MECH GmbH	Schleppeplatz 2 9020 Klagenfurt Austria	
Indonesia (Indonesia Exclusive Distributor)	<b>TEL. +62-21-5818632</b>	<b>FAX. +62-21-5814857</b>
P.T PANDU HYDRO PNEUMATICS	Ruko Green Garden Blok Z- II No.51 Rt.005 Rw.008 Kedoya Utara-Kebon Jeruk Jakarta Barat 11520 Indonesia	

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Osaka Sales Office	〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
Overseas Sales		
Tokyo Sales Office	<b>TEL.048-652-8839</b>	<b>FAX.048-652-8828</b>
	〒331-0815 埼玉県さいたま市北区大成町4丁目81番地	
Nagoya Sales Office	<b>TEL.0566-74-8778</b>	<b>FAX.0566-74-8808</b>
	〒446-0076 愛知県安城市美園町2丁目10番地1	
Fukuoka Sales Office	<b>TEL.092-433-0424</b>	<b>FAX.092-433-0426</b>
	〒812-0006 福岡県福岡市博多区上牟田1丁目8-10-101	

# Global Network



Asia Detailed Map

