

Hydraulic Swing Clamp

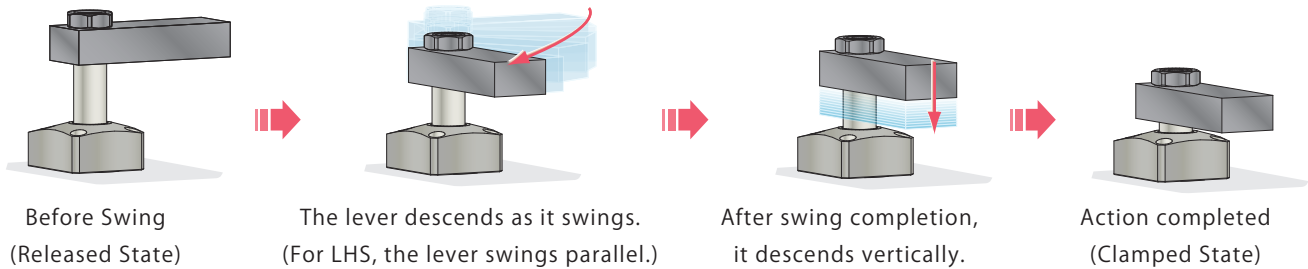
- | | |
|-----------|-------------|
| Model LHA | Model LT/LG |
| Model LHC | Model TLA-2 |
| Model LHS | Model TLA-1 |
| Model LHW | Model TLB-2 |



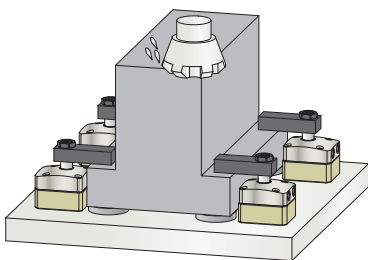
High Rigidity • Long Life • High Accuracy

High Speed • High Rigidity • Swing Completion Position Repeatability $\pm 0.5^\circ$ ($\pm 0.75^\circ$ only for LHS)

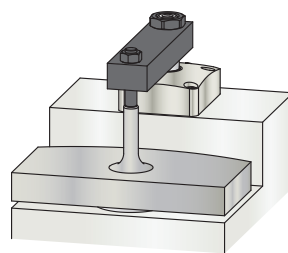
Action Description



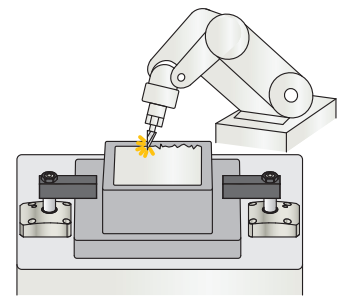
Application Examples



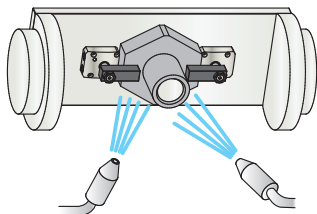
Machining



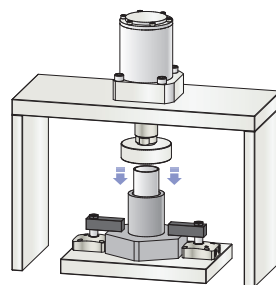
For the applications which require clamp position repeatability



Deburring



Cleaning



Press Fitting

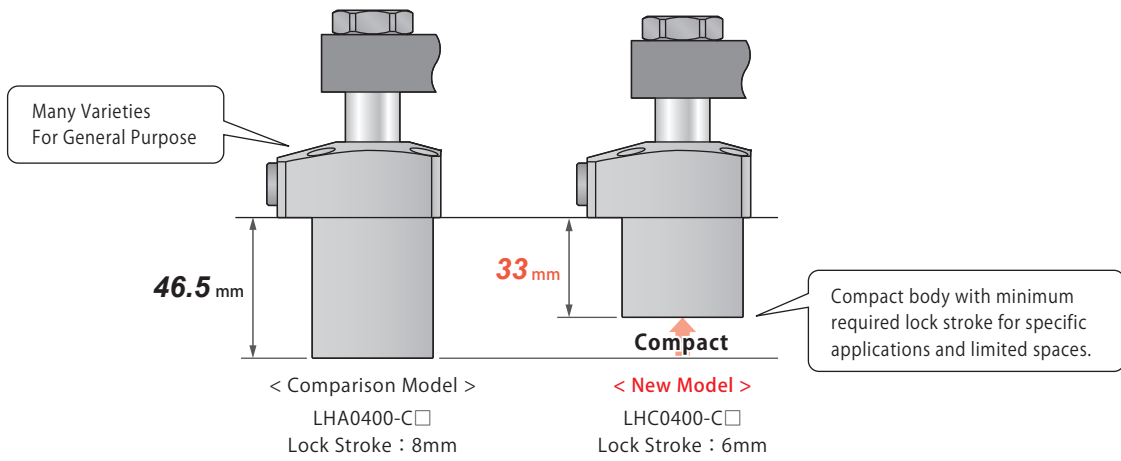
New Products



Compact Swing Clamp

Model LHC

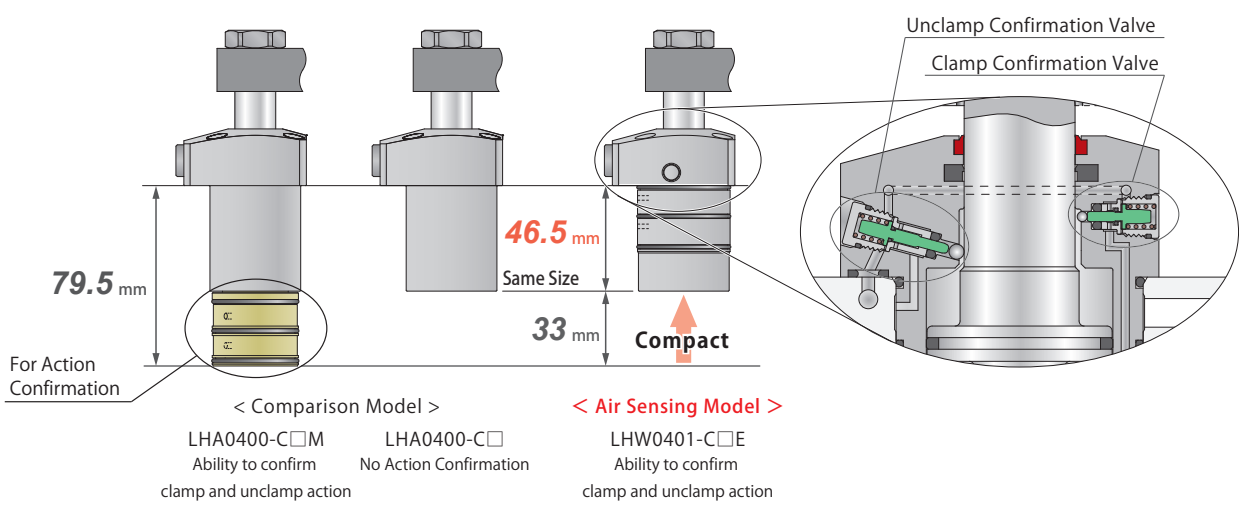
Compact swing clamps for small footprint fixtures designed with minimum required stroke.



Air Sensing Swing Clamp

Model LHW

Clamp-unclamp confirmation with built-in air catch sensor for smaller footprint fixtures.
















High-Power Swing Clamp Hydraulic Double Action










Model LHE





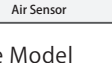







2 sizes smaller with equivalent clamping force. Mechanical lock and hydraulic pressure allow for strong clamping and holding force. Refer to P. 13 for further information.

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

Low Pressure Model MAX. 7MPa		 Model LHA → P.289	 Model LHC → P.319	 Model LHS → P.331
Classification		Double Action	Double Action Compact	Double Action Parallel Swing Action
Operating Pressure Range		1.5~7MPa	1.5~7MPa	1.5~7MPa
Standard Model		External Dimensions → P.297	External Dimensions → P.327	External Dimensions → P.339
Action Confirmation	Double End Rod Option for Dog 	External Dimensions → P.299	—	★
	Air Sensing Manifold Option 	External Dimensions → P.301	—	★
	Air Sensing Piping Option 	External Dimensions → P.303	—	★
	Built-in Sensing Valve Model	—	—	—
Option	Quick Change Lever Option 	External Dimensions → P.305	★	External Dimensions → P.341
	Balance Lever Option 	External Dimensions → P.307	★	External Dimensions → P.343
	Long Stroke Option 	External Dimensions → P.309	—	★
	Swing Angle Selectable Option 	External Dimensions → P.313	★	External Dimensions → P.345
Accessories	Lever 	LZH-T, LZH-F, LZH-B → P.318	LZH-T → P.330	LZH-T, LZH-F, LZH-B → P.348
	Manifold Block 	LZY-MD		→ P.1025
	Speed Control Valve Plug 	BZL, BZX, JZG		→ P.727

※ Please contact us for detail dimension at ★ part.

High Pressure Model MAX. 35MPa		 Model TLA-2 → P.387	 Model TLB-2 → P.413	 Model TLA-1 → P.431
Classification		Double Action Top Flange	Double Action Bottom Flange	Single Action (Spring Release) Top Flange
Operating Pressure Range		7~35MPa	7~35MPa	7~35MPa
Standard Model		External Dimensions → P.395	External Dimensions → P.421	External Dimensions → P.439
Option	Balance Lever Option 	External Dimensions → P.399	External Dimensions → P.423	—
	Long Stroke Option 	External Dimensions → P.403	External Dimensions → P.425	—
	Swing Angle Selectable Option 	External Dimensions → P.407	External Dimensions → P.427	—
Accessories	Lever 	TLZ-L2, TLZ-LB → P.412	TLZ-L2, TLZ-LB → P.429	TLZ-L2, TLZ-LB → P.443
	Speed Control Valve Plug 	BZT, JZG		→ P.727
	G-Thread Fitting 	G-Thread Fitting (Made by Ihara Science)		→ P.1039

Low Pressure Model MAX. 7MPa		 Model LHW → P.349	 Model LT/LG → P.367
Classification		Double Action Built-in Sensing Valve	Single Action (Spring Release)
Operating Pressure Range		1.5~7MPa	2.5~7MPa
Standard Model		—	External Dimensions → P.375
Action Confirmation	Double End Rod Option for Dog  Able to Install Dog	—	—
	Air Sensing Manifold Option 	—	—
	Air Sensing Piping Option  Able to Install Air Sensor	—	—
	Built-in Sensing Valve Model	External Dimensions → P.359	—
Option	Quick Change Lever Option 	★	External Dimensions → P.377
	Balance Lever Option 	★	External Dimensions → P.379
	Long Stroke Option  Long	—	—
	Swing Angle Selectable Option  30° 45° 60°	★	External Dimensions → P.381
Accessories	Lever 	LZH-T → P.366	LZ-LE1、LZ-LE2 LZH-F、LZH-B → P.384
	Manifold Block 	—	LZ-MS → P.1026
	Speed Control Valve Plug 	BZL、BZX、JZG	→ P.727



High-Power Swing Clamp Hydraulic Double Action

Model **LHE**

2 sizes smaller with equivalent clamping force. Mechanical lock and hydraulic pressure allow for strong clamping and holding force. Refer to P. 13 for further information.

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

PAT.

Hydraulic Double Action Parallel Swing Clamp

Model LHS

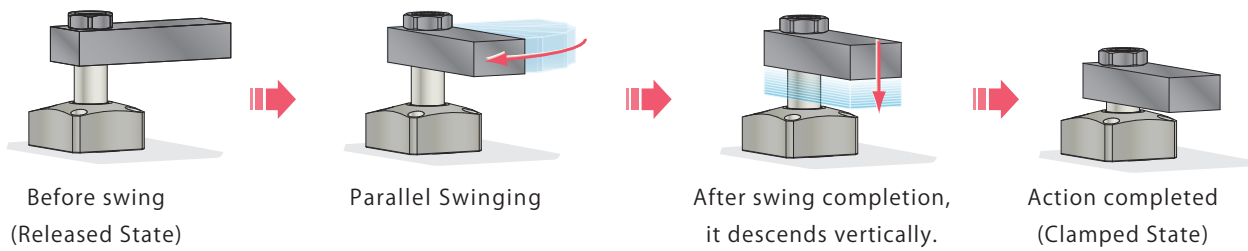
Low Pressure (1.5~7MPa)
Parallel-Rotation • High Power



Index

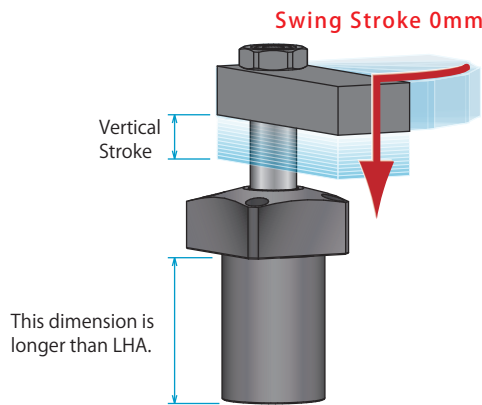
Hydraulic Swing Clamp Digest	P.285
Action Description	P.332
Model No. Indication	P.333
Specifications	P.334
Performance Curve	
• Clamping Force Curve	P.335
• Allowable Swing Time Graph	P.337
External Dimensions	
• Standard Model (LHS)	P.339
• Quick Change Lever Option (LHS-F)	P.341
• Balance Lever Option (LHS-P)	P.343
• Swing Angle Selectable Option (LHS-Y□)	P.345
Lever Design Dimensions	P.347
Accessories	
• Material Swing Lever for LHS	P.348
• Speed Control Valve•Plug	P.727
• Manifold Block (Common Items of Other Models)	P.1025
Cautions	
• Notes for Hydraulic Swing Clamps	P.445
• Cautions (Common)	P.1043
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit	
• Notes on Handling • Maintenance/Inspection • Warranty	

Action Description



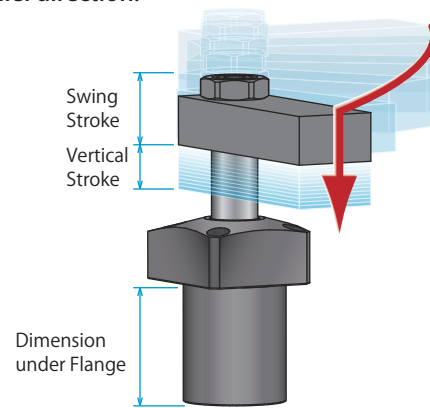
Features

Clamp piston never goes down, before completing swing movement.
Lever swings to parallel direction.



Model **LHS**

Interlock function to avoid wrong movement.



Model **LHA**

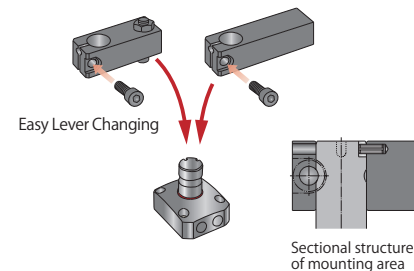
Standard Swing Clamp

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.

Easy Fabrication of Swing Lever (Taper sleeve is standard accessory)

As taper sleeve is standard accessory, tapering process while manufacturing clamp lever is eliminated. Supplied lever sleeve incorporates taper simplifying clamping lever design. Quick change lever type that is available as option is easy to attach and detach the lever with one wrench. (Refer to the drawing on the right.)



Quick Change Lever Option

Able to Attach Speed Control Valve Directly

When fitting the gasket (-C option), it is able to attach the speed control valve with air venting function. (Speed control valve is sold separately.)

LHS / LHA Compatibility

- Clamping Force : Same as LHA
- Swing Angle Accuracy : Different
- Vertical Stroke : Same as LHA
- Swing Completion Position Repeatability : Different
- Lever Design Dimensions : Same as LHA
- Allowable Swing Time : Different (Same as 90° Swing Time of LHA when locking)
- External Dimensions : Dimension under flange is longer than LHA.

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
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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

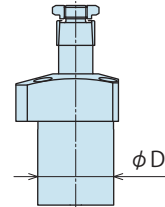
LHS **048** **0** - **C** **R** -

1
 2
 3
 4
 5

1 Body Size

036 : $\phi D=36\text{mm}$	065 : $\phi D=65\text{mm}$
040 : $\phi D=40\text{mm}$	075 : $\phi D=75\text{mm}$
048 : $\phi D=48\text{mm}$	090 : $\phi D=90\text{mm}$
055 : $\phi D=55\text{mm}$	105 : $\phi D=105\text{mm}$

※ Outer diameter (ϕD) of body cylinder.



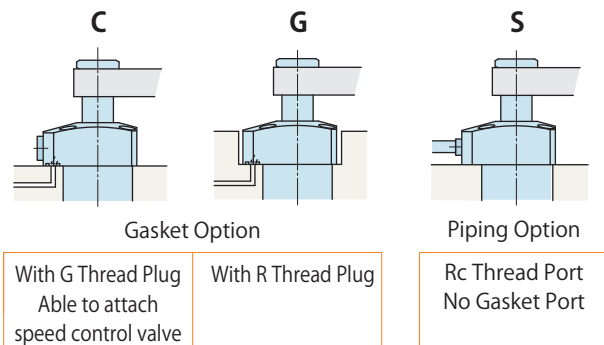
2 Design No.

0 : Revision Number

3 Piping Method

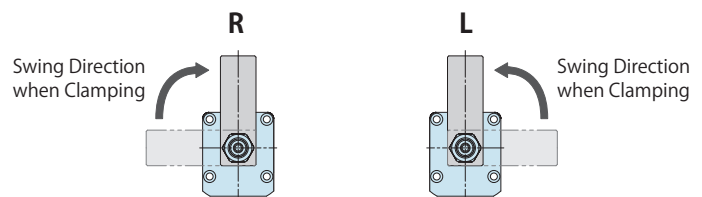
C : Gasket Option (With G Thread Plug)
G : Gasket Option (With R Thread Plug)
S : Piping Option (Rc Thread Port)

※ Speed control valve (BZL) is sold separately.
 Refer to P.727.



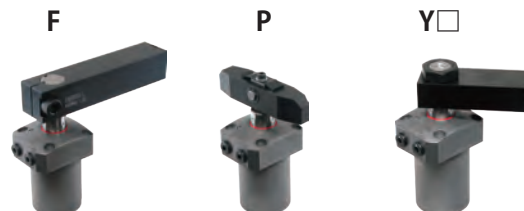
4 Swing Direction when Clamping

R : Clockwise
L : Counter-Clockwise



5 Option

Blank : None (Standard: Taper Lock Lever)
F : Quick Change Lever Option
P : Balance Lever Option
Y□ : Swing Angle Selectable Option
 (Y30 : 30° / Y45 : 45° / Y60 : 60°)



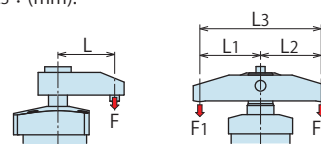
Specifications

Model No.	LHS0360			LHS0400			LHS0480			LHS0550					
Cylinder Area for Locking	cm ² 3.54			5.00			6.95			10.3					
Clamping Force (Calculation Formula) ^{※1} kN	5 Blank/F/Y□ selected			$F = \frac{P(1-0.0021 \times L)}{2.9379+0.0052 \times L}$			$F = \frac{P(1-0.0016 \times L)}{2.0920+0.0040 \times L}$			$F = \frac{P(1-0.0009 \times L)}{1.4892+0.0018 \times L}$			$F = \frac{P(1-0.0011 \times L)}{1.0039+0.0011 \times L}$		
	5 P selected			F ₁ = (L ₂ /L ₃) × 0.354 × P F ₂ = (L ₁ /L ₃) × 0.354 × P			F ₁ = (L ₂ /L ₃) × 0.5 × P F ₂ = (L ₁ /L ₃) × 0.5 × P			F ₁ = (L ₂ /L ₃) × 0.695 × P F ₂ = (L ₁ /L ₃) × 0.695 × P			F ₁ = (L ₂ /L ₃) × 1.03 × P F ₂ = (L ₁ /L ₃) × 1.03 × P		
5 Blank/F/P selected	Full Stroke (Vertical)			mm 8			8			8			10		
	Swing Angle Accuracy			90° ± 2°											
Swing Completion Position Repeatability			± 0.75°												
5 Y□ selected	Option			Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60
	Full Stroke (Vertical)			mm 8			8			8			10		
	Swing Angle Accuracy			30° ± 2° 45° ± 2° 60° ± 2°			30° ± 2° 45° ± 2° 60° ± 2°			30° ± 2° 45° ± 2° 60° ± 2°			30° ± 2° 45° ± 2° 60° ± 2°		
	Swing Completion Position Repeatability			± 0.75°											
Max. Operating Pressure			MPa 7												
Min. Operating Pressure ^{※2}			MPa 1.5												
Withstanding Pressure			MPa 10.5												
Operating Temperature			°C 0 ~ 70												
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32												

Model No.	LHS0650			LHS0750			LHS0900			LHS1050					
Cylinder Area for Locking	cm ² 13.4			20.3			29.5			41.3					
Clamping Force (Calculation Formula) ^{※1} kN	5 Blank/F/Y□ selected			$F = \frac{P(1-0.0009 \times L)}{0.7822+0.0010 \times L}$			$F = \frac{P(1-0.0007 \times L)}{0.5175+0.0006 \times L}$			$F = \frac{P(1-0.0009 \times L)}{0.3547+0.0004 \times L}$			$F = \frac{P(1-0.0008 \times L)}{0.2495+0.0002 \times L}$		
	5 P selected			F ₁ = (L ₂ /L ₃) × 1.34 × P F ₂ = (L ₁ /L ₃) × 1.34 × P			F ₁ = (L ₂ /L ₃) × 2.03 × P F ₂ = (L ₁ /L ₃) × 2.03 × P			F ₁ = (L ₂ /L ₃) × 2.95 × P F ₂ = (L ₁ /L ₃) × 2.95 × P			F ₁ = (L ₂ /L ₃) × 4.13 × P F ₂ = (L ₁ /L ₃) × 4.13 × P		
5 Blank/F/P selected	Full Stroke (Vertical)			mm 10			12			12			16		
	Swing Angle Accuracy			90° ± 2°											
Swing Completion Position Repeatability			± 0.75°												
5 Y□ selected	Option			Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60
	Full Stroke (Vertical)			mm 10			12			12			16		
	Swing Angle Accuracy			30° ± 2° 45° ± 2° 60° ± 2°			30° ± 2° 45° ± 2° 60° ± 2°			30° ± 2° 45° ± 2° 60° ± 2°			30° ± 2° 45° ± 2° 60° ± 2°		
	Swing Completion Position Repeatability			± 0.75°											
Max. Operating Pressure			MPa 7												
Min. Operating Pressure ^{※2}			MPa 1.5												
Withstanding Pressure			MPa 10.5												
Operating Temperature			°C 0 ~ 70												
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32												

Notes ※1. F, F₁, F₂ : Clamping Force (kN) P : Operating Hydraulic Pressure (MPa)
L, L₁, L₂ : Distance between the piston center and the clamping point (mm) L₃ : (mm).

- ※2. Minimum pressure to operate the clamp with no load.
1. Please see the external dimension if you need the information of mass and cylinder volume.



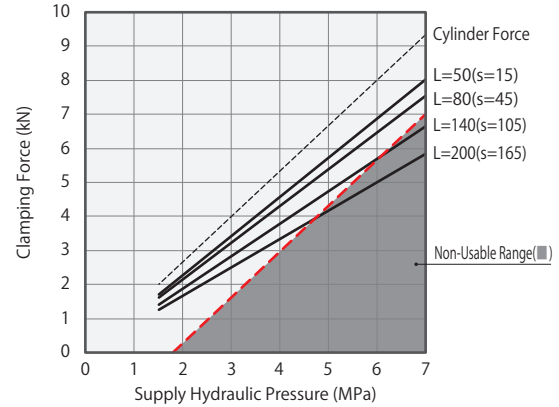
- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
 - SFA
 - SFC
- Swing Clamp
 - LHA
 - LHC
 - LHS
 - LHW
 - LT/LG
 - TLA-2
 - TLB-2
 - TLA-1
- Link Clamp
 - LKA
 - LKC
 - LKW
 - LM/LJ
 - TMA-2
 - 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
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 - VS
 - VT
- Expansion Locating Pin
 - VL
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 - VJ
 - VK
- Pull Stud Clamp
 - FP
 - FQ
- Customized Spring Cylinder
 - DWA/DWB

Notes

1. Tables and graphs shown are the relationships between the clamping force (kN) and supply hydraulic pressure (MPa).
2. Cylinder output (when L=0) cannot be calculated from the calculation formula of clamping force.
3. There may be no lever swing action with large inertia depending on supply hydraulic pressure or lever mounting position.
4. The clamping force is shown with lever in the locked position.
5. The clamping force varies as per the lever length. Use the hydraulic supply pressure suitable to the lever length.
6. Operation in the non-usable range can damage the clamp and lead to fluid leakage.
7. The tables and graphs are only for reference. The exact results should be calculated based on the formula in the specification column.

※1. F : Clamping Force (kN) , P : Supply Hydraulic Pressure (MPa) , L : Lever Length (mm).

LHS0650		Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0009 \times L) / (0.7822+0.0010 \times L)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)
		L=50	L=60	L=80	L=100	L=120	L=140	L=160	L=200		
7	9.35	8.1	7.9	7.6	7.3						115
6.5	8.68	7.5	7.3	7.0	6.7	6.5					127
6	8.02	6.9	6.8	6.5	6.2	6.0	5.7				142
5.5	7.35	6.4	6.2	6.0	5.7	5.5	5.3	5.0			161
5	6.68	5.8	5.7	5.4	5.2	5.0	4.8	4.6			187
4.5	6.01	5.2	5.1	4.9	4.7	4.5	4.3	4.1	3.8		221
4	5.34	4.6	4.5	4.4	4.2	4.0	3.8	3.7	3.4		260
3.5	4.68	4.1	4.0	3.8	3.7	3.5	3.4	3.2	3.0		260
3	4.01	3.5	3.4	3.3	3.1	3.0	2.9	2.8	2.5		260
2.5	3.34	2.9	2.9	2.7	2.6	2.5	2.4	2.3	2.1		260
2	2.67	2.3	2.3	2.2	2.1	2.0	1.9	1.9	1.7		260
1.5	2.00	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.3		260
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	6.8	6.1	5.6	4.8		



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- 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

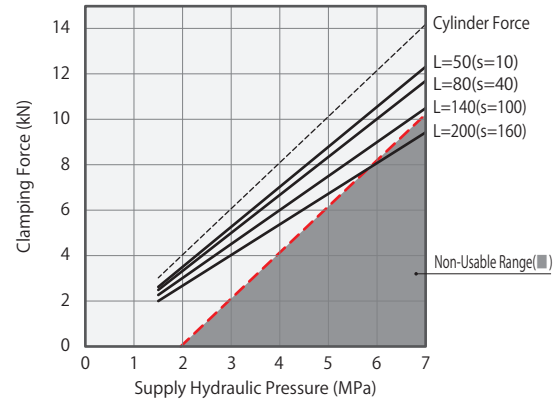
- Control Valve
 - BZL
 - BZT
 - BZX/JZG

- Pallet Clamp
 - VS
 - VT
- Expansion Locating Pin
 - VL
 - VM
 - VJ
 - VK

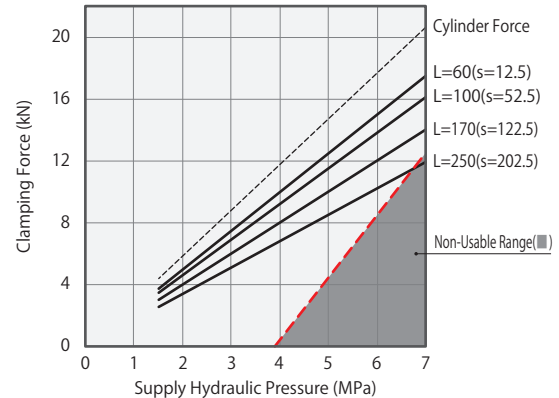
- Pull Stud Clamp
 - FP
 - FQ

- Customized Spring Cylinder
 - DWA/DWB

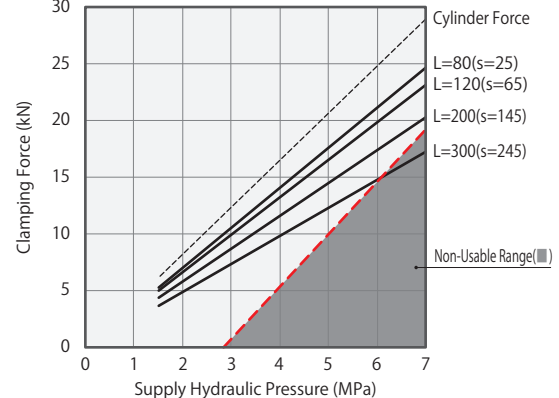
LHS0750		Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0007 \times L) / (0.5175+0.0006 \times L)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)
		L=50	L=60	L=80	L=100	L=120	L=140	L=160	L=200		
7	14.21	12.4	12.2	11.7	11.3	10.9	10.5				147
6.5	13.19	11.5	11.3	10.9	10.5	10.2	9.8	9.5			163
6	12.18	10.6	10.4	10.1	9.7	9.4	9.0	8.7			184
5.5	11.16	9.7	9.6	9.2	8.9	8.6	8.3	8.0	7.5		209
5	10.15	8.9	8.7	8.4	8.1	7.8	7.5	7.3	6.8		244
4.5	9.13	8.0	7.8	7.6	7.3	7.0	6.8	6.6	6.1		280
4	8.12	7.1	7.0	6.7	6.5	6.3	6.0	5.8	5.4		280
3.5	7.10	6.2	6.1	5.9	5.7	5.5	5.3	5.1	4.8		280
3	6.09	5.3	5.2	5.1	4.9	4.7	4.5	4.4	4.1		280
2.5	5.07	4.5	4.4	4.2	4.1	3.9	3.8	3.7	3.4		280
2	4.06	3.6	3.5	3.4	3.3	3.2	3.0	2.9	2.7		280
1.5	3.04	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1		280
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.9		



LHS0900		Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0009 \times L) / (0.3547+0.0004 \times L)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)								Non-Usable Range (mm)	Max. Lever Length (L) (mm)
		L=60	L=75	L=100	L=120	L=140	L=170	L=200	L=250		
7	20.62	17.5	17.0	16.2	15.6	14.9	14.1	13.3			245
6.5	19.15	16.3	15.8	15.0	14.4	13.9	13.1	12.3	11.1		292
6	17.68	15.0	14.6	13.9	13.3	12.8	12.1	11.4	10.3		330
5.5	16.20	13.8	13.4	12.7	12.2	11.7	11.1	10.4	9.4		330
5	14.73	12.5	12.2	11.6	11.1	10.7	10.1	9.5	8.6		330
4.5	13.26	11.3	11.0	10.4	10.0	9.6	9.1	8.5	7.7		330
4	11.78	10.0	9.7	9.3	8.9	8.6	8.1	7.6	6.9		330
3.5	10.31	8.8	8.5	8.1	7.8	7.5	7.1	6.6	6.0		330
3	8.84	7.5	7.3	7.0	6.7	6.4	6.1	5.7	5.2		330
2.5	7.37	6.3	6.1	5.8	5.6	5.4	5.1	4.8	4.3		330
2	5.89	5.0	4.9	4.7	4.5	4.3	4.1	3.8	3.5		330
1.5	4.42	3.8	3.7	3.5	3.4	3.2	3.1	2.9	2.6		330
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8		



LHS1050		Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0008 \times L) / (0.2495+0.0002 \times L)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm)						Non-Usable Range (mm)	Max. Lever Length (L) (mm)		
		L=80	L=100	L=120	L=140	L=170	L=200				
7	28.90	24.7	23.9	23.2	22.4	21.4	20.4				219
6.5	26.83	23.0	22.2	21.5	20.8	19.9	18.9				249
6	24.77	21.2	20.5	19.9	19.2	18.3	17.5	16.1	14.8		288
5.5	22.70	19.4	18.8	18.2	17.6	16.8	16.0	14.7	13.6		342
5	20.64	17.7	17.1	16.6	16.0	15.3	14.6	13.4	12.3		380
4.5	18.58	15.9	15.4	14.9	14.4	13.8	13.1	12.1	11.1		380
4	16.51	14.1	13.7	13.3	12.8	12.2	11.7	10.7	9.9		380
3.5	14.45	12.4	12.0	11.6	11.2	10.7	10.2	9.4	8.6		380
3	12.38	10.6	10.3	10.0	9.6	9.2	8.8	8.1	7.4		380
2.5	10.32	8.9	8.6	8.3	8.0	7.7	7.3	6.7	6.2		380
2	8.26	7.1	6.9	6.7	6.4	6.1	5.9	5.4	5.0		380
1.5	6.19	5.3	5.2	5.0	4.8	4.6	4.4	4.1	3.7		380
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8		

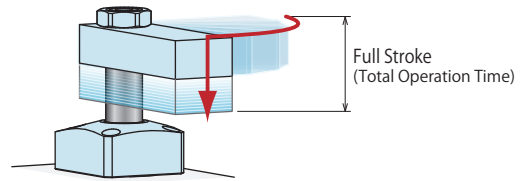


● Allowable Swing Time Graph

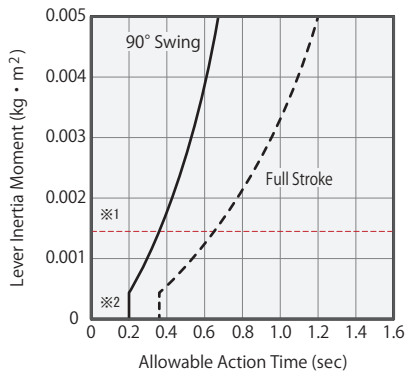
Adjustment of Swing Time

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.

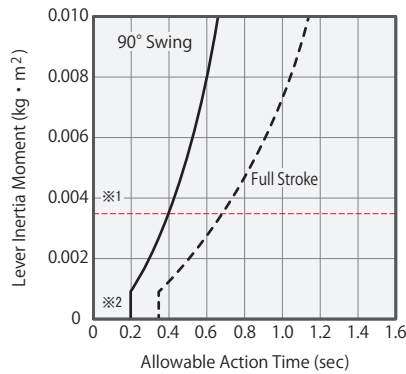
Excessive action speed can reduce stopping accuracy and damage internal parts.



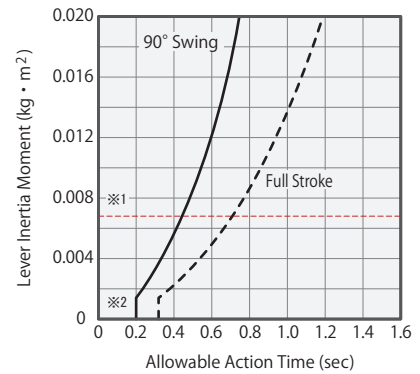
LHS0360



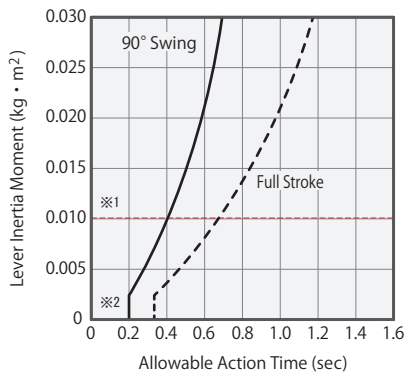
LHS0400



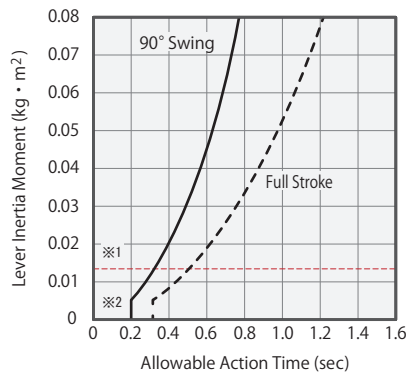
LHS0480



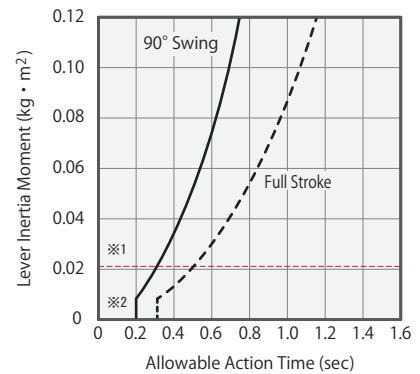
LHS0550



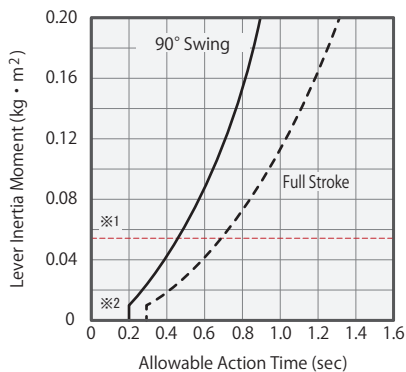
LHS0650



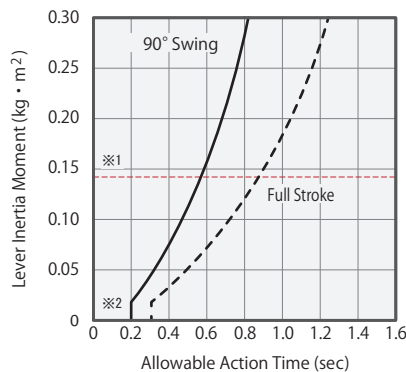
LHS0750



LHS0900



LHS1050



Notes

- ※1. It shows the inertia moment with material lever (LZH□-T).
- ※2. For any lever inertia moment, minimum 90° swing time should be 0.2 sec or more.
 1. The graph shows the action time tolerance with regard to the lever inertia moment when the clamp piston is operating 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 action speed can reduce stopping accuracy and damage the internal parts.
 5. Please contact us if operational conditions differ from those shown on the graphs.

- 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 → LHS0480

(How to read the allowable swing time graph)

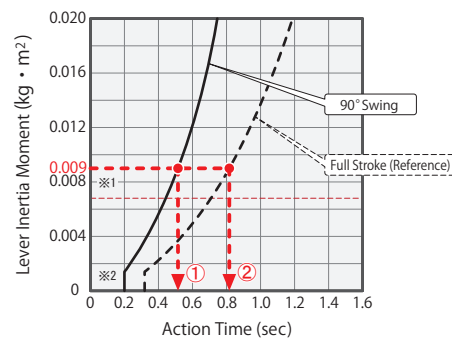
When using LHS0480

Lever Inertia Moment : 0.009 kg·m²

① 90° Swing Time : About 0.52 sec or more

② Total Action Time : About 0.82 sec or more

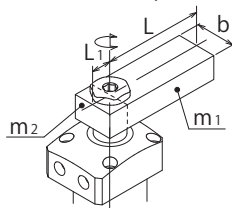
1. The total operation time on the graph represents the allowable operation time when fully stroked.



How to calculate inertia moment (Estimation)

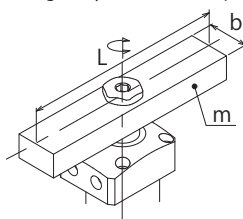
I : Inertia Moment (kg·m²) L, L₁, L₂, K, b : Length (m) m, m₁, m₂, m₃ : Mass (kg)

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



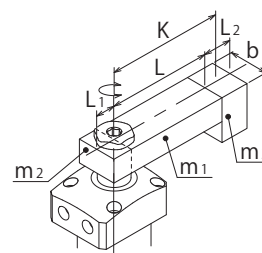
$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12}$$

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.

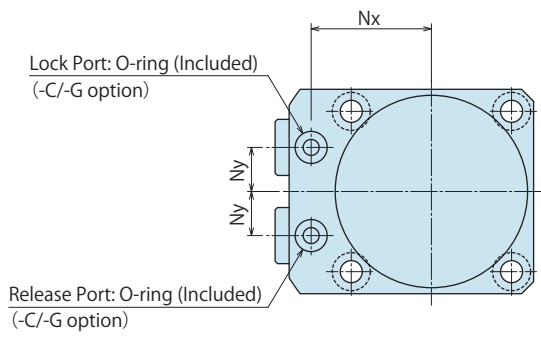
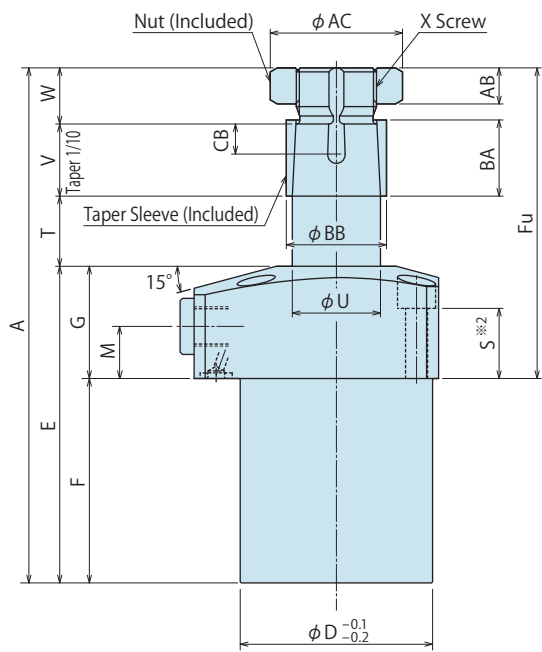
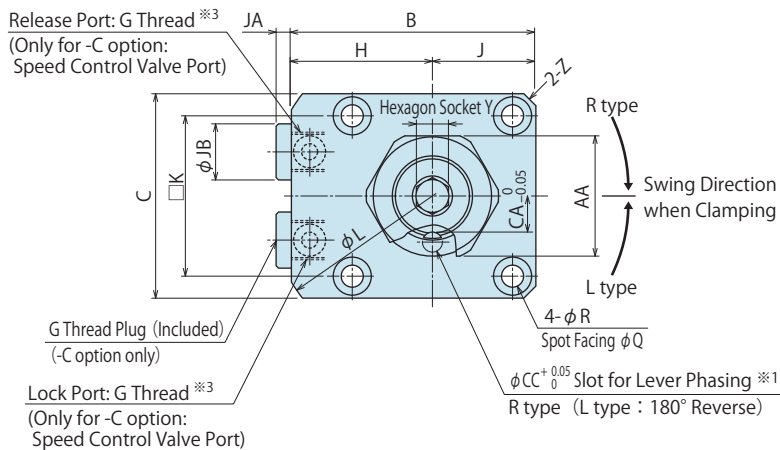


$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12} + m_3 K^2 + m_3 \frac{L_2^2 + b^2}{12}$$

External Dimensions

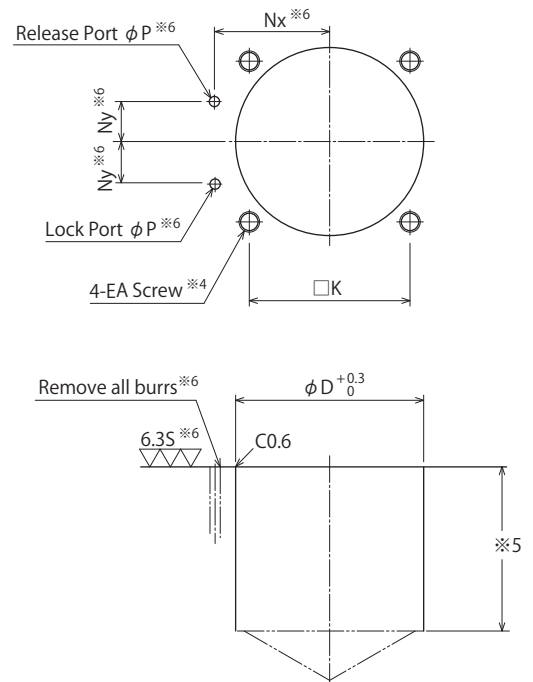
C : Gasket Option (With G Thread Plug)

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



- Notes
- ※1. The slot for determining the lever phase faces the port side if locked.
 - ※2. Mounting bolts are not provided.
Customer should prepare based on dimension "S".
 - ※3. Speed control valve is sold separately.
Please prepare using reference to P.727.

Machining Dimensions of Mounting Area

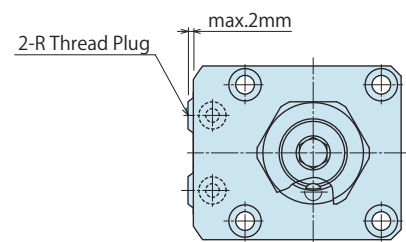


- Notes
- ※4. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
 - ※5. The φD depth of the body mounting hole should be decided from dimension F.
 - ※6. This process indicates -C/-G : Gasket option.

Piping Method

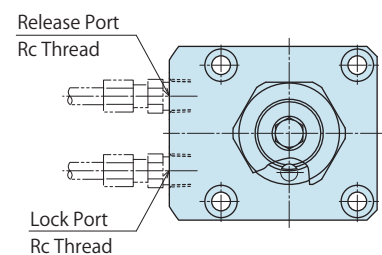
G : Gasket Option (with R Thread Plug)

※The drawing shows the released state of LHS-GR.

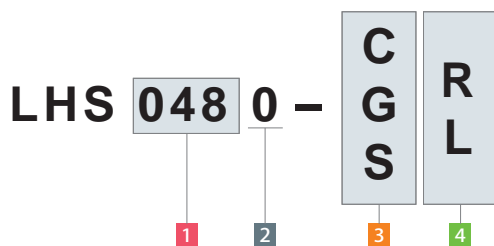


S : Piping Option (Rc Thread)

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



Model No. Indication



(Format Example : LHS0550-CR, LHS0750-SL)

- 1 Body size
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Option (When Blank is chosen)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	LHS0360-□□	LHS0400-□□	LHS0480-□□	LHS0550-□□	LHS0650-□□	LHS0750-□□	LHS0900-□□	LHS1050-□□	
Full Stroke (Vertical) ※8	8	8	8	10	10	12	12	16	
A ※8	110	117	133.5	150.5	164.5	192.5	220	258.5	
B	49	54	61	69	81	92	107	122	
C	40	45	51	60	70	80	95	110	
D	36	40	48	55	65	75	90	105	
E ※8	76	80	91.5	102.5	112.5	132.5	151	178.5	
F ※8	51	55	63.5	72.5	81.5	94.5	105	122.5	
Fu ※8	59	62	70	78	83	98	115	136	
G	25	25	28	30	31	38	46	56	
H	29	31.5	35.5	39	46	52	59.5	67	
J	20	22.5	25.5	30	35	40	47.5	55	
K	31.4	34	40	47	55	63	75	88	
L	66	73	83	88	106	116	136	152	
M	11	11	13	12	13	16	19	22	
Nx	23.5	26	30	33.5	39.5	45	52.5	60	
Ny	8	9	11	12	15	16	18.5	22.5	
P	3	3	3	3	5	5	5	5	
Q	7.5	9	9	11	11	14	17.5	20	
R	4.5	5.5	5.5	6.8	6.8	9	11	14	
S	16	15	17.5	17	17	21	25	32	
T ※8	10	10	10	12	12	14	14	18	
U	15	18	22	25	30	35.5	45	55	
V	13	15	18	21	24	30	37	43	
W	11	12	14	15	16	16	18	19	
X (Nominal × Pitch)	M14×1.5	M16×1.5	M20×1.5	M22×1.5	M27×1.5	M30×1.5	M39×1.5	M48×1.5	
Y	5	6	8	8	10	10	14	14	
Z (Chamfer)	C2	C3	C3	C3	C4	C5	C6	C6	
AA	22	24	30	32	41	46	55	65	
AB	7	8	9	10	11	11	12	12	
AC	24.5	26.5	33	35.5	45	50	60	71	
BA	14	16	19	22	25	31	38	44	
BB	17	20	25	28	34	40	49	60	
CA	6	7	9	10	12.5	14	18.5	23	
CB	6.5	6.5	7.5	9.5	11.5	12.5	11.5	13.5	
CC	4	4	5	6	6	8	8	10	
EA (Nominal × Pitch)	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25	M10×1.5	M12×1.75	
JA	3.5	3.5	3.5	3.5	4.5	4.5	4.5	4.5	
JB	14	14	14	14	19	19	22	22	
Lock Port/ Release Port	-C option -S option	G1/8 Rc1/8	G1/8 Rc1/8	G1/8 Rc1/8	G1/8 Rc1/8	G1/4 Rc1/4	G1/4 Rc1/4	G3/8 Rc3/8	G3/8 Rc3/8
R Thread Plug	-G option	R1/8	R1/8	R1/8	R1/8	R1/4	R1/4	R3/8	R3/8
O-ring (-C/-G option)		1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity ※8	Lock	6.8	10.1	15.8	27.4	39.1	72.0	119.8	202.3
cm ³	Release	8.2	12.1	18.9	32.3	46.2	83.8	138.9	240.3
Mass ※7 ※8	kg	0.8	1.0	1.5	2.2	3.1	5.1	8.3	11.9

Notes ※7. Mass of single swing clamp including taper sleeve and nut.
※8. It shows different dimensions than LHA□□0-□□.

- 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

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- LC
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- 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

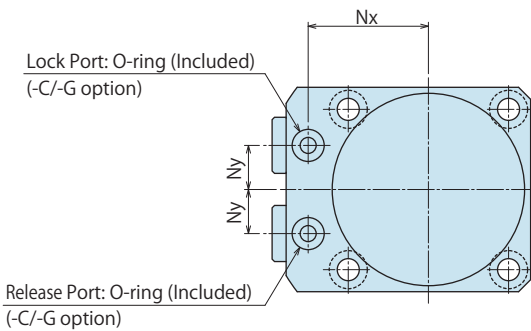
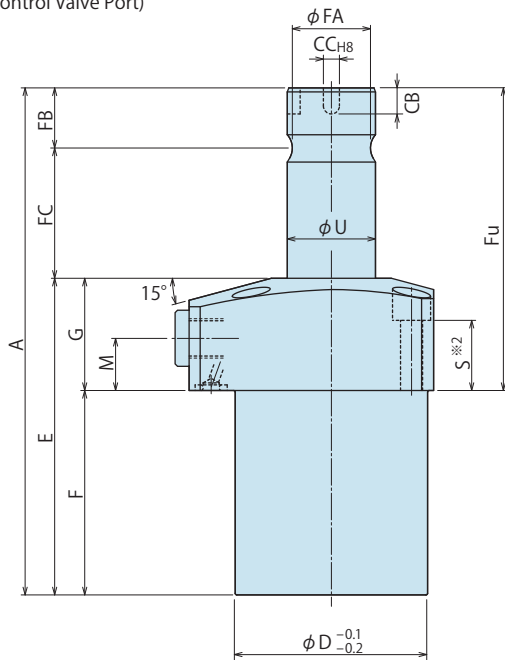
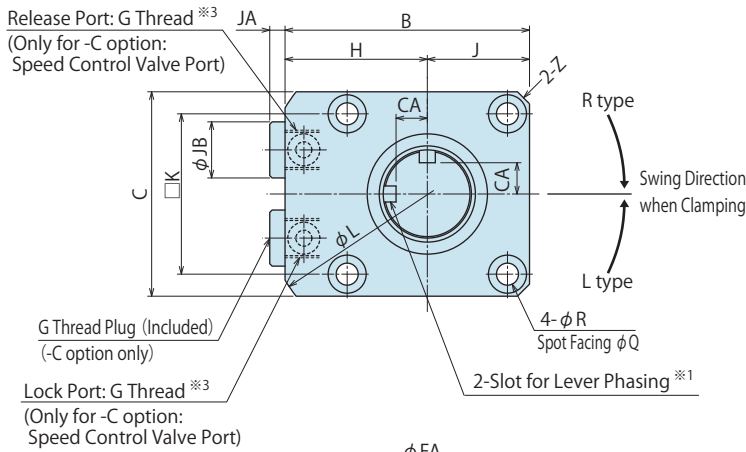
- Pull Stud Clamp
- FP
- FQ

- Customized Spring Cylinder
- DWA/DWB

External Dimensions

C : Gasket Option (With G Thread Plug)

※The drawing shows the released state of LHS-CR-F.

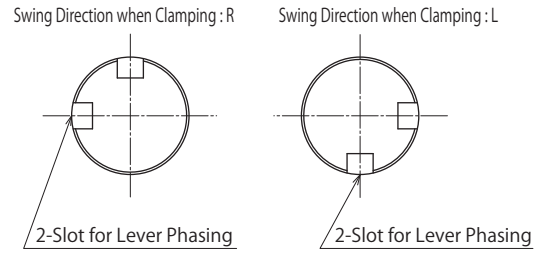


Notes

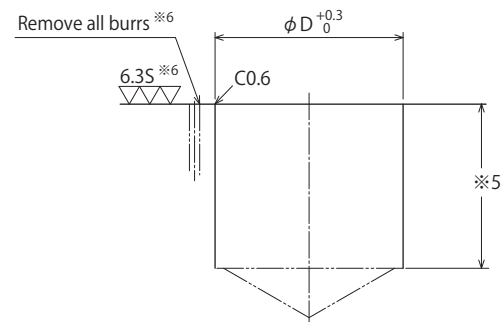
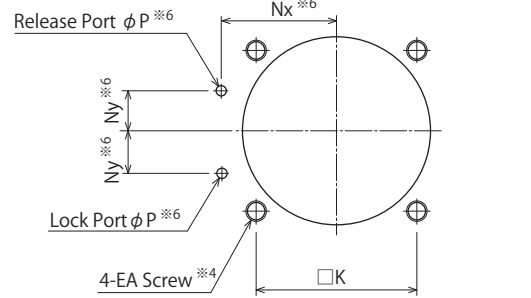
- ※2. Mounting bolts are not provided.
Customer should prepare based on dimension "S".
- ※3. Speed control valve is sold separately.
Please prepare using reference to P.727.
- 1. Please contact us when you require options in combination.

※1. Slot for Lever Phasing (Released State)

The slot position varies as per the lock swinging direction.



Machining Dimensions of Mounting Area



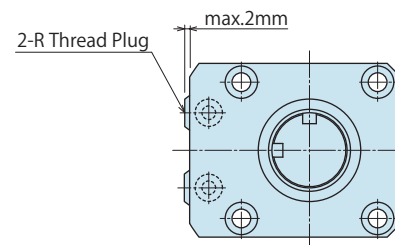
Notes

- ※4. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
- ※5. The φD depth of the body mounting hole should be decided from dimension F.
- ※6. This process indicates -C/-G : Gasket option.

Piping Method

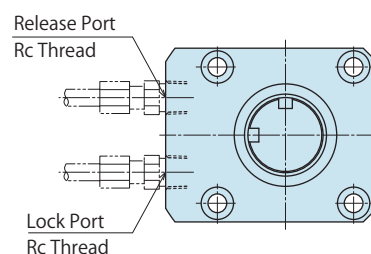
G : Gasket Option (with R Thread Plug)

※The drawing shows the released state of LHS-GR-F.

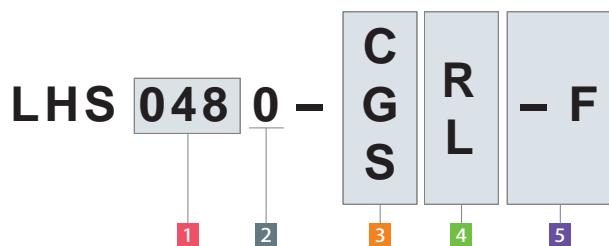


S : Piping Option (Rc Thread)

※The drawing shows the released state of LHS-SR-F.



Model No. Indication



(Format Example : LHS0550-CR-F, LHS0750-SL-F)

- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Option (When F is chosen)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	LHS0360-□□-F	LHS0400-□□-F	LHS0480-□□-F	LHS0550-□□-F	LHS0650-□□-F	LHS0750-□□-F	LHS0900-□□-F	LHS1050-□□-F	
Full Stroke (Vertical) ※8	8	8	8	10	10	12	12	16	
A ※8	108	115	131.5	148.5	164.5	192.5	220	256.5	
B	49	54	61	69	81	92	107	122	
C	40	45	51	60	70	80	95	110	
D	36	40	48	55	65	75	90	105	
E ※8	76	80	91.5	102.5	112.5	132.5	151	178.5	
F ※8	51	55	63.5	72.5	81.5	94.5	105	122.5	
Fu ※8	57	60	68	76	83	98	115	134	
G	25	25	28	30	31	38	46	56	
H	29	31.5	35.5	39	46	52	59.5	67	
J	20	22.5	25.5	30	35	40	47.5	55	
K	31.4	34	40	47	55	63	75	88	
L	66	73	83	88	106	116	136	152	
M	11	11	13	12	13	16	19	22	
Nx	23.5	26	30	33.5	39.5	45	52.5	60	
Ny	8	9	11	12	15	16	18.5	22.5	
P	3	3	3	3	5	5	5	5	
Q	7.5	9	9	11	11	14	17.5	20	
R	4.5	5.5	5.5	6.8	6.8	9	11	14	
S	16	15	17.5	17	17	21	25	32	
U	15	18	22	25	30	35.5	45	55	
Z (Chamfer)	C2	C3	C3	C3	C4	C5	C6	C6	
CA	5	5.8	7.8	9	10	13.25	17.5	22.5	
CB	5	6.5	6.5	7	9.5	9.5	13	13.5	
CC	3 ^{+0.014} ₀	4 ^{+0.018} ₀	4 ^{+0.018} ₀	4 ^{+0.018} ₀	6 ^{+0.018} ₀	6 ^{+0.018} ₀	8 ^{+0.022} ₀	8 ^{+0.022} ₀	
EA (Nominal × Pitch)	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25	M10×1.5	M12×1.75	
FA	13.5	16	19.5	22	26	31	39.5	48	
FB	11	12.5	15	17	20	23	27.5	30	
FC ※8	21	22.5	25	29	32	37	41.5	48	
JA	3.5	3.5	3.5	3.5	4.5	4.5	4.5	4.5	
JB	14	14	14	14	19	19	22	22	
Lock Port/ Release Port	-C option	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
	-S option	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
R Thread Plug	-G option	R1/8	R1/8	R1/8	R1/8	R1/4	R1/4	R3/8	R3/8
O-ring (-C/-G option)		1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity ※8	Lock	6.8	10.1	15.8	27.4	39.1	72.0	119.8	202.3
	cm ³ Release	8.2	12.1	18.9	32.3	46.2	83.8	138.9	240.3
Mass ※7 ※8	kg	0.8	1.0	1.5	2.2	3.1	5.1	8.3	11.9

- Notes
- ※7. Mass of individual swing clamp.
 - ※8. It shows different dimensions than LHA□□0-□□-F.

- 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

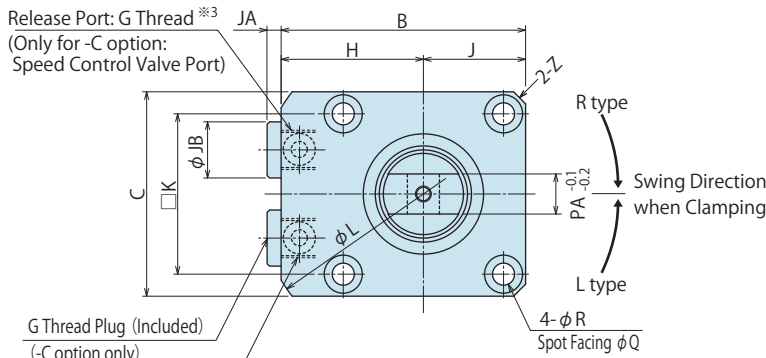
Customized Spring Cylinder

- DWA/DWB

External Dimensions

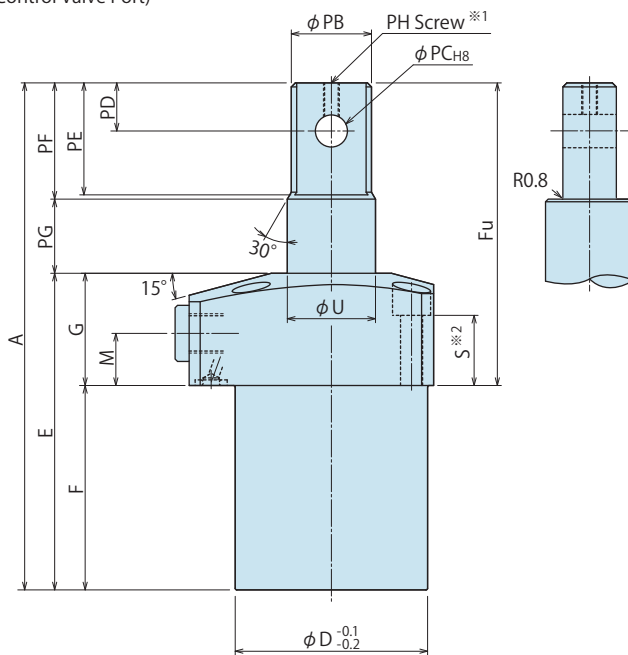
C : Gasket Option (With G Thread Plug)

※The drawing shows the released state of LHS-CR-P.

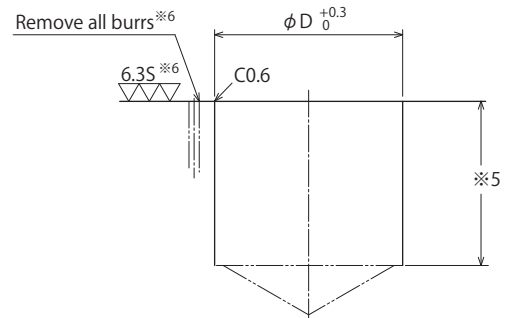
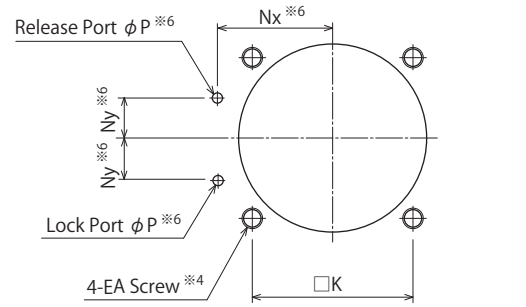


G Thread Plug (Included)
(-C option only)

Lock Port: G Thread
(Only for -C option:
Speed Control Valve Port)



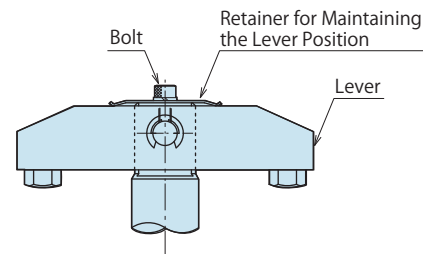
Machining Dimensions of Mounting Area



Notes

- ※4. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
- ※5. The φD depth of the body mounting hole should be decided from dimension F.
- ※6. This process indicates -C/-G : Gasket option.

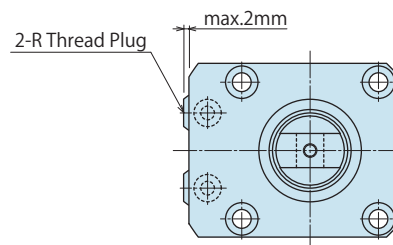
Balance Lever Reference Drawing



Piping Method

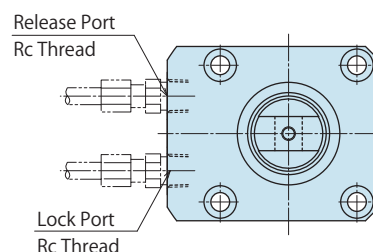
G : Gasket Option (with R Thread Plug)

※The drawing shows the released state of LHS-G□-P.



S : Piping Option (Rc Thread)

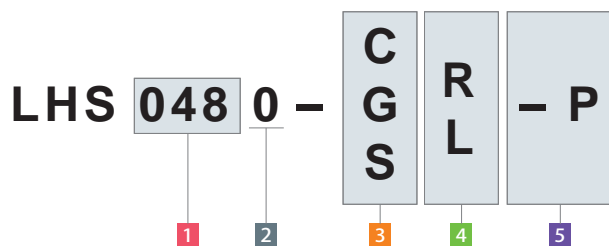
※The drawing shows the released state of LHA-S□-P.



Notes

- ※1. Use the tapped hole (PH thread) on top of rod to attach retainer for lever.
- ※2. Mounting bolts are not provided. Customer should prepare based on dimension "S".
- ※3. Speed control valve is sold separately. Please prepare using reference to P.727.
- 1. Please contact us when you require options in combination.

Model No. Indication



(Format Example : LHS0550-CR-P, LHS0750-SL-P)

- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Option (When P is chosen)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	LHS0360-□□-P	LHS0400-□□-P	LHS0480-□□-P	LHS0550-□□-P	LHS0650-□□-P	LHS0750-□□-P	LHS0900-□□-P	LHS1050-□□-P	
Full Stroke (Vertical) ※8	8	8	8	10	10	12	12	16	
A ※8	108	115	131.5	148.5	164.5	192.5	220	256.5	
B	49	54	61	69	81	92	107	122	
C	40	45	51	60	70	80	95	110	
D	36	40	48	55	65	75	90	105	
E ※8	76	80	91.5	102.5	112.5	132.5	151	178.5	
F ※8	51	55	63.5	72.5	81.5	94.5	105	122.5	
Fu ※8	57	60	68	76	83	98	115	134	
G	25	25	28	30	31	38	46	56	
H	29	31.5	35.5	39	46	52	59.5	67	
J	20	22.5	25.5	30	35	40	47.5	55	
K	31.4	34	40	47	55	63	75	88	
L	66	73	83	88	106	116	136	152	
M	11	11	13	12	13	16	19	22	
Nx	23.5	26	30	33.5	39.5	45	52.5	60	
Ny	8	9	11	12	15	16	18.5	22.5	
P	3	3	3	3	5	5	5	5	
Q	7.5	9	9	11	11	14	17.5	20	
R	4.5	5.5	5.5	6.8	6.8	9	11	14	
S	16	15	17.5	17	17	21	25	32	
U	15	18	22	25	30	35.5	45	55	
Z (Chamfer)	C2	C3	C3	C3	C4	C5	C6	C6	
EA (Nominal×Pitch)	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25	M10×1.5	M12×1.75	
PA	7	8	10	12	14	16	22	26	
PB	13.5	16	20	23	28	33.5	43	53	
PC	6 ^{+0.018} ₀	6 ^{+0.018} ₀	8 ^{+0.022} ₀	10 ^{+0.022} ₀	13 ^{+0.027} ₀	13 ^{+0.027} ₀	16 ^{+0.027} ₀	20 ^{+0.033} ₀	
PD	9	11	12	12.5	16.5	19	23.5	25.5	
PE	21	24	27.5	31.5	38.5	43.5	52.5	58.5	
PF	22	25	29	33	40	45	54	60	
PG ※8	10	10	11	13	12	15	15	18	
PH (Nominal×Pitch)	M3×0.5	M3×0.5	M4×0.7	M5×0.8	M6×1	M6×1	M8×1.25	M8×1.25	
JA	3.5	3.5	3.5	3.5	4.5	4.5	4.5	4.5	
JB	14	14	14	14	19	19	22	22	
Lock Port/ Release Port	-C option -S option	G1/8 Rc1/8	G1/8 Rc1/8	G1/8 Rc1/8	G1/8 Rc1/8	G1/4 Rc1/4	G1/4 Rc1/4	G3/8 Rc3/8	G3/8 Rc3/8
R-Thread Plug	-G option	R1/8	R1/8	R1/8	R1/8	R1/4	R1/4	R3/8	R3/8
O-ring (-C/-G option)		1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity ※8	Lock	6.8	10.1	15.8	27.4	39.1	72.0	119.8	202.3
	cm ³ Release	8.2	12.1	18.9	32.3	46.2	83.8	138.9	240.3
Mass ※7 ※8	kg	0.8	1.0	1.5	2.2	3.1	5.1	8.3	11.9

Notes ※7. Mass of single swing clamp.

※8. It shows different dimensions than LHA□□0-□□-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

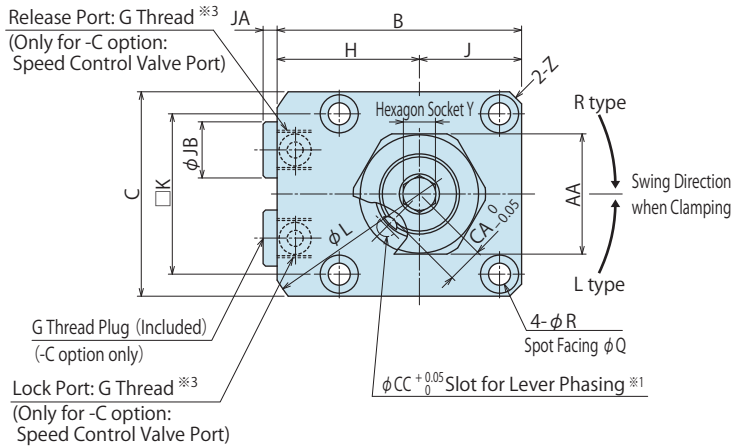
Customized Spring Cylinder

- DWA/DWB

External Dimensions

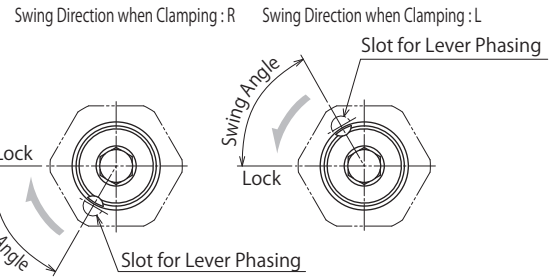
C : Gasket Option (With G Thread Plug)

※The drawing shows the released state of LHS-CR-Y45.

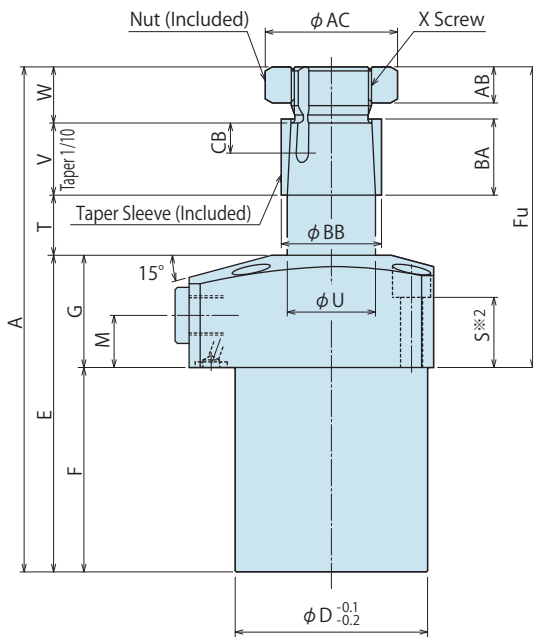
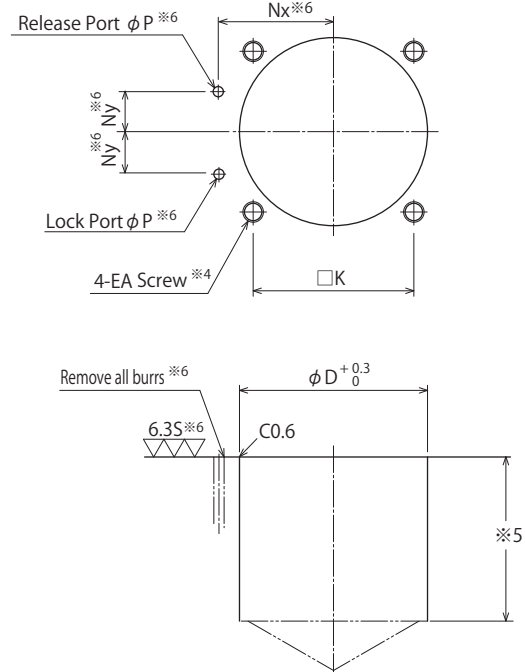


※1. Slot for Lever Phasing (Released State)

The slot position varies as per the lock swinging direction and swinging angle.

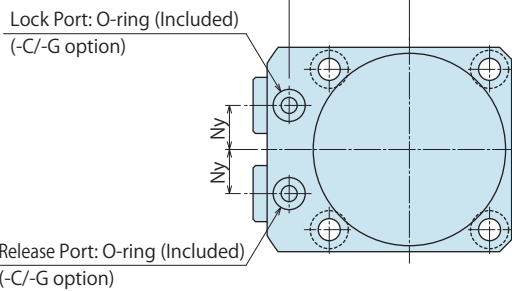


Machining Dimensions of Mounting Area



Notes

- ※4. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
- ※5. The φD depth of the body mounting hole should be decided from dimension F.
- ※6. This process indicates -C/-G : Gasket option.



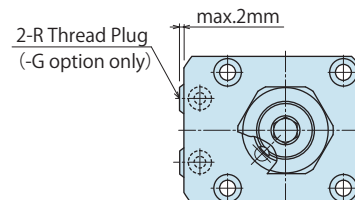
Notes

- ※1. The slot for determining the lever phase faces the port side if locked.
- ※2. Mounting bolts are not provided. Customer should prepare based on dimension "S".
- ※3. Speed control valve is sold separately. Please prepare using reference to P.727.
- 1. Please contact us when you require options in combination.

Piping Method

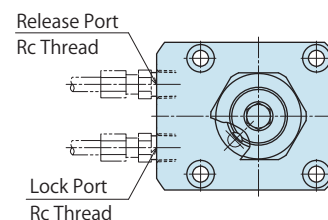
G : Gasket Option (with R Thread Plug)

※The drawing shows the released state of LHS-GR-Y45.



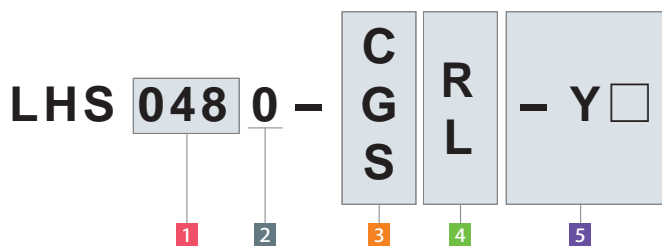
S : Piping Option (Rc Thread)

※The drawing shows the released state of LHS-SR-Y45.



Model No. Indication

(Format Example : LHS0550-CR-Y30、LHS0750-SL-Y45)



- 1 Body Size
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Option (When Y□ is chosen)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	LHS0360-□□-Y□			LHS0400-□□-Y□			LHS0480-□□-Y□			LHS0550-□□-Y□			LHS0650-□□-Y□			LHS0750-□□-Y□			LHS0900-□□-Y□			LHS1050-□□-Y□			
Option Form	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	Y30	Y45	Y60	
Swing Angle	30°	45°	60°	30°	45°	60°	30°	45°	60°	30°	45°	60°	30°	45°	60°	30°	45°	60°	30°	45°	60°	30°	45°	60°	
Full Stroke (Vertical) ※8	8			8			8			10			10			12			12			16			
A ※8	110			117			133.5			150.5			164.5			192.5			220			258.5			
B	49			54			61			69			81			92			107			122			
C	40			45			51			60			70			80			95			110			
D	36			40			48			55			65			75			90			105			
E ※8	76			80			91.5			102.5			112.5			132.5			151			178.5			
F ※8	51			55			63.5			72.5			81.5			94.5			105			122.5			
Fu ※8	59			62			70			78			83			98			115			136			
G	25			25			28			30			31			38			46			56			
H	29			31.5			35.5			39			46			52			59.5			67			
J	20			22.5			25.5			30			35			40			47.5			55			
K	31.4			34			40			47			55			63			75			88			
L	66			73			83			88			106			116			136			152			
M	11			11			13			12			13			16			19			22			
Nx	23.5			26			30			33.5			39.5			45			52.5			60			
Ny	8			9			11			12			15			16			18.5			22.5			
P	3			3			3			3			5			5			5			5			
Q	7.5			9			9			11			11			14			17.5			20			
R	4.5			5.5			5.5			6.8			6.8			9			11			14			
S	16			15			17.5			17			17			21			25			32			
T ※8	10			10			10			12			12			14			14			18			
U	15			18			22			25			30			35.5			45			55			
V	13			15			18			21			24			30			37			43			
W	11			12			14			15			16			16			18			19			
X (Nominal × Pitch)	M14×1.5			M16×1.5			M20×1.5			M22×1.5			M27×1.5			M30×1.5			M39×1.5			M48×1.5			
Y	5			6			8			8			10			10			14			14			
Z (Chamfer)	C2			C3			C3			C3			C4			C5			C6			C6			
AA	22			24			30			32			41			46			55			65			
AB	7			8			9			10			11			11			12			12			
AC	24.5			26.5			33			35.5			45			50			60			71			
BA	14			16			19			22			25			31			38			44			
BB	17			20			25			28			34			40			49			60			
CA	6			7			9			10			12.5			14			18.5			23			
CB	6.5			6.5			7.5			9.5			11.5			12.5			11.5			13.5			
CC	4			4			5			6			6			8			8			10			
EA (Nominal × Pitch)	M4×0.7			M5×0.8			M5×0.8			M6×1			M6×1			M8×1.25			M10×1.5			M12×1.75			
JA	3.5			3.5			3.5			3.5			4.5			4.5			4.5			4.5			
JB	14			14			14			14			19			19			22			22			
Lock Port/ Release Port	-C option	G1/8			G1/8			G1/8			G1/8			G1/4			G1/4			G3/8			G3/8		
	-S option	Rc1/8			Rc1/8			Rc1/8			Rc1/8			Rc1/4			Rc1/4			Rc3/8			Rc3/8		
R Thread Plug	-G option	R1/8			R1/8			R1/8			R1/8			R1/4			R1/4			R3/8			R3/8		
O-ring (-C/-G option)		1BP5			1BP5			1BP5			1BP5			1BP7			1BP7			1BP7			1BP7		
Cylinder Capacity ※8	Lock	5.0	5.5	5.9	7.3	8.0	8.7	11.2	12.4	13.6	19.7	21.6	23.5	27.5	30.4	33.2	50.0	55.6	61.1	81.5	90.9	100.6	140.5	155.9	171.4
	Release	6.4	6.9	7.3	9.4	10.0	10.8	14.2	15.5	16.6	24.6	26.5	28.4	34.5	37.5	40.3	61.9	67.5	73.0	100.6	110.0	119.7	178.5	194.0	209.4
Mass ※7 ※8	kg	0.8			1.0			1.5			2.2			3.1			5.1			8.3			11.9		

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

※8. It shows different dimensions than LHA□□0-□□-Y□.

- 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

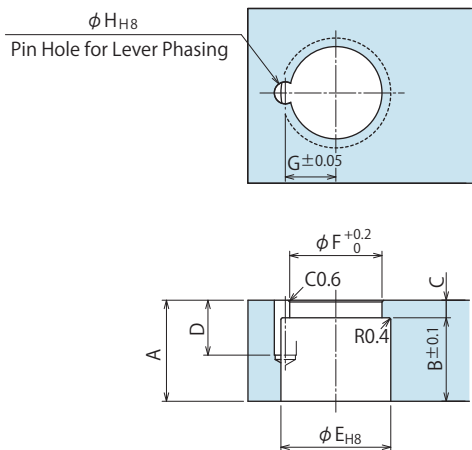
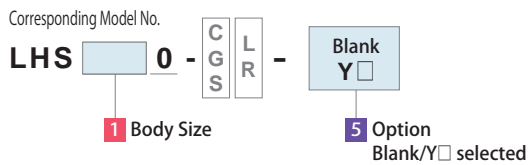
- FP
- FQ

Customized Spring Cylinder

- DWA/DWB

Taper Lock Lever Design Dimensions

※ Reference for designing taper lock swing lever.



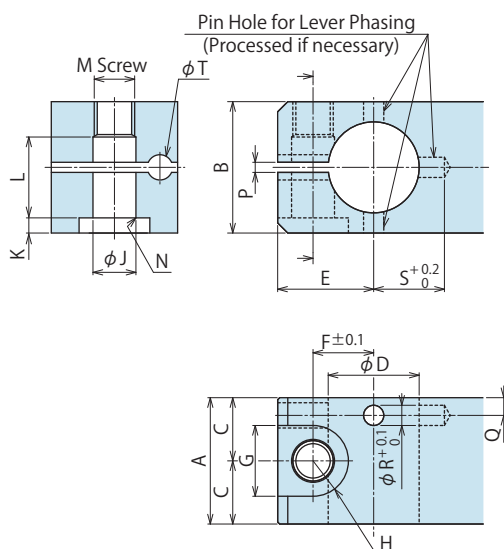
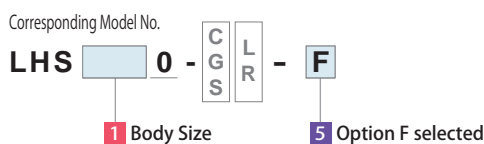
Corresponding Model No. #1	LHS0360	LHS0400	LHS0480	LHS0550	LHS0650	LHS0750	LHS0900	LHS1050
A	17	19	23	26	29	35	43	50
B	14	16	19	22	25	31	38	44
C	3	3	4	4	4	4	5	6
D	10.5	10.5	12.5	14.5	16.5	17.5	17.5	20.5
E	$17^{+0.027}$	$20^{+0.033}$	$25^{+0.033}$	$28^{+0.033}$	$34^{+0.039}$	$40^{+0.039}$	$49^{+0.039}$	$60^{+0.046}$
F	15	17	21	23.5	29	33	42	51
G	8	9	11.5	13	15.5	18	22.5	28
H	$4^{+0.018}$	$4^{+0.018}$	$5^{+0.018}$	$6^{+0.018}$	$6^{+0.018}$	$8^{+0.022}$	$8^{+0.022}$	$10^{+0.022}$
Phasing Pin (Reference)	$\phi 4(h8) \times 10$	$\phi 4(h8) \times 10$	$\phi 5(h8) \times 12$	$\phi 6(h8) \times 14$	$\phi 6(h8) \times 16$	$\phi 8(h8) \times 16$	$\phi 8(h8) \times 16$	$\phi 10(h8) \times 20$

Notes

- Swing lever should be designed with its length according to performance graph shown on P.335,P.336.
 - If the swing lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
 - The pin hole (ϕH) for determining the lever phase should be added, if necessary.
- ※1. Please refer to the swing lever design dimension for quick change lever option that is described below when -F option (quick change lever option) is used. Please make self preparation, when P option is chosen (balance lever option).

Quick-Change Lever Design Dimensions

※ Reference for designing quick change swing lever.



Corresponding Model No.	LHS0360 -□□-F	LHS0400 -□□-F	LHS0480 -□□-F	LHS0550 -□□-F	LHS0650 -□□-F	LHS0750 -□□-F	LHS0900 -□□-F	LHS1050 -□□-F
A	22	25	30	34	40	46	55	60
B	22	26	32	36	45	53	70	82
C	11	12.5	15	17	20	23	27.5	30
D	$15^{+0.016}$	$18^{+0.016}$	$22^{+0.020}$	$25^{+0.020}$	$30^{+0.020}$	$35.5^{+0.025}$	$45^{+0.025}$	$55^{+0.030}$
E	15	19	23	26.5	31.5	36.5	46	55
F	9.75	12	14.75	17	20	23.5	29.75	36
G	11	14	17.5	20	23	26	32	39
H	R5.5	R7	R8.75	R10	R11.5	R13	R16	R19.5
J	6.5	8.5	10.5	12.5	14.5	16.5	21	25
K	2	3	4	4	5	7	9	11
L	13.5	16	18	22	26.5	31	42	46
M	M6×1	M8×1	M10×1.25	M12×1.5	M14×1.5	M16×1.5	M20×2	M24×2
N	C0.4	C0.6	C0.6	C1	C1	C1	C1	C1
P	2	2	2	2	2	2	2	2
Q	2.5	3.5	3.5	4	5.5	5.5	7.5	8
R	3	4	4	4	6	6	8	8
S	13.5	14	18	19.5	24.5	27.75	38	45
T	3.4	4.5	4.5	4.5	6.5	6.5	9	9
Phasing Pin (Reference)	$\phi 3 \times 8$	$\phi 4 \times 8$	$\phi 4 \times 10$	$\phi 4 \times 10$	$\phi 6 \times 14$	$\phi 6 \times 14$	$\phi 8 \times 20$	$\phi 8 \times 22$

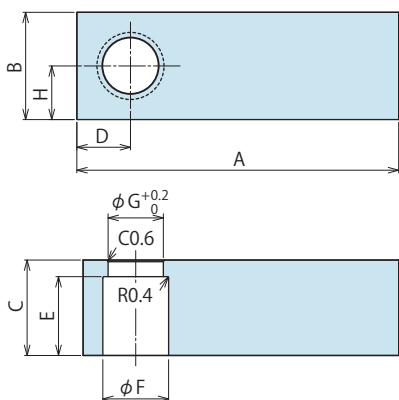
Notes

- Swing lever should be designed with its length according to performance graph shown on P.335,P.336.
- If the swing lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
- The pin hole (ϕR) for determining the lever phase should be added, if necessary.
- Sells the tightening bolt (LZH□0-B) for lever separately.

● Accessories : Material Swing Lever for Taper Lock Option

Model No. Indication

LZH 048 0 - T
Size (Refer to the graph on the right) Design No. (Revision Number)



Model No.	LZH0360 -T	LZH0400 -T	LZH0480 -T	LZH0550 -T	LZH0650 -T	LZH0750 -T	LZH0900 -T	LZH1050 -T
Corresponding Model No. ^{※2}	LHS0360	LHS0400	LHS0480	LHS0550	LHS0650	LHS0750	LHS0900	LHS1050
A	120	145	160	170	175	185	220	270
B	26	32	40	45	50	58	75	90
C	17	19	23	26	29	35	43	50
D	13	16	20	23	25	29	38	45
E	14	16	19	22	25	31	38	44
F	17	20	25	28	34	40	49	60
G	15	17	21	23.5	29	33	42	51
H	13	16	20	22.5	25	29	37.5	45

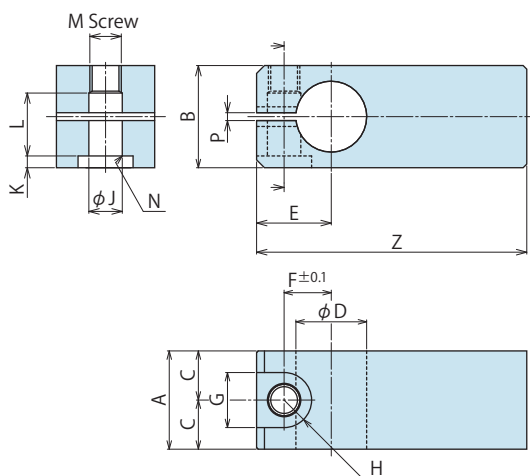
Notes

1. Material : S50CH
2. If necessary, the front end should be additionally machined.
3. When determining the phase, refer to taper lock lever design dimensions for each model for the additional machining.
- ※2. Please refer to the accessory for quick change lever option when "F" option (quick change lever option) is used.
Please make self preparation, when P option is chosen (balance lever option).

● Accessories : Material Swing Lever for Quick Change Option

Model No. Indication

LZH 048 0 - F
Size (Refer to the graph on the right) Design No. (Revision Number)



Model No.	LZH0360 -F	LZH0400 -F	LZH0480 -F	LZH0550 -F	LZH0650 -F	LZH0750 -F	LZH0900 -F	LZH1050 -F
Corresponding Model No.	LHS0360 -□□-F	LHS0400 -□□-F	LHS0480 -□□-F	LHS0550 -□□-F	LHS0650 -□□-F	LHS0750 -□□-F	LHS0900 -□□-F	LHS1050 -□□-F
A	22	25	30	34	40	46	55	60
B	22	26	32	36	45	53	70	82
C	11	12.5	15	17	20	23	27.5	30
D	15 ^{-0.016}	18 ^{-0.016}	22 ^{0 -0.020}	25 ^{-0.020}	30 ^{0 -0.020}	35.5 ^{0 -0.025}	45 ^{0 -0.025}	55 ^{0 -0.030}
E	15	19	23	26.5	31.5	36.5	46	55
F	9.75	12	14.75	17	20	23.5	29.75	36
G	11	14	17.5	20	23	26	32	39
H	R5.5	R7	R8.75	R10	R11.5	R13	R16	R19.5
J	6.5	8.5	10.5	12.5	14.5	16.5	21	25
K	2	3	4	4	5	7	9	11
L	13.5	16	18	22	26.5	31	42	46
M	M6×1	M8×1	M10×1.25	M12×1.5	M14×1.5	M16×1.5	M20×2	M24×2
N	C0.4	C0.6	C0.6	C1	C1	C1	C1	C1
P	2	2	2	2	2	2	2	2
Z	120	145	160	170	175	185	220	270

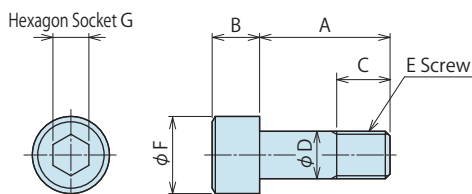
Notes

1. Material : S50CH
2. If necessary, the front end should be additionally machined.
3. For the phase determination, the design dimensions of swinging lever should be additionally machined with reference of the quick change option (-F).
4. Sells the tightening bolt (LZH□□0-B) for lever separately.

● Accessories : Tightening Bolts for Quick Change Lever

Model No. Indication

LZH 048 0 - B
Size (Refer to the graph on the right) Design No. (Revision Number)



Model No.	LZH0360 -B	LZH0400 -B	LZH0480 -B	LZH0550 -B	LZH0650 -B	LZH0750 -B	LZH0900 -B	LZH1050 -B
Corresponding Model No.	LHS0360 -□□-F	LHS0400 -□□-F	LHS0480 -□□-F	LHS0550 -□□-F	LHS0650 -□□-F	LHS0750 -□□-F	LHS0900 -□□-F	LHS1050 -□□-F
A	20	23	28	32	40	46	61	71
B	6	8	10	12	14	16	20	24
C	7	10	11	13	16	18	23	27
D	6	8	10	12	14	16	20	24
E	M6×1	M8×1	M10×1.25	M12×1.5	M14×1.5	M16×1.5	M20×2	M24×2
F	10	13	16	18	21	24	30	36
G	5	6	8	10	12	14	17	19

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

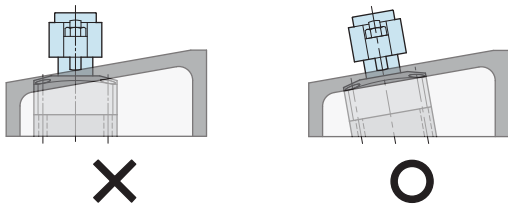
Customized Spring Cylinder

DWA/DWB

Cautions

● Notes for Design

- 1) Check Specifications
 - Please use each product according to the specifications.
- 2) Notes for Circuit Design
 - Please read "Notes on Hydraulic Cylinder Speed Control Circuit" on P. 1044 to assist with proper hydraulic circuit designing.
 - 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 let the clamps work within allowable operating time 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) Notes for LHA-M/N, LHW

- When using air sensing swing clamp (LHA-M/N, LHW), make sure to check the Notes for Design • Installation • Use (Pages shown below).
 - Swing clamp with air sensing option LHA-M/N: Refer to P.315.
 - Swing clamp with air sensing valve LHW: Refer to P.353.

● 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)	
LHA LHC LHS LHW	LHA0360 / LHS0360	M4×0.7	4.0	
	LHA0400 / LHC0400 LHS0400 / LHW040□	M5×0.8	8.0	
	LHA0480 / LHC0480 LHS0480 / LHW048□	M5×0.8	8.0	
	LHA0550 / LHC0550 LHS0550 / LHW055□	M6×1	14	
	LHA0650 / LHC0650 LHS0650 / LHW065□	M6×1	14	
	LHA0750 / LHS0750 LHW0751	M8×1.25	33	
	LHA0900 / LHS0900	M10×1.5	65	
	LHA1050 / LHS1050	M12×1.75	114	
	LT/LG	LT0301 / LG0301	M4×0.7	3.2
		LT036□ / LG036□	M4×0.7	3.2
LT040□ / LG040□		M5×0.8	6.3	
LT048□ / LG048□		M5×0.8	6.3	
LT055□ / LG055□		M6×1	10	
LT065□ / LG065□		M6×1	10	
LT075□ / LG075□		M8×1.25	25	
LG090□		M10×1.5	58.8	
LG105□		M12×1.75	98	
TLA-2 TLB-2 TLA-1		TL□040□-□	M5×0.8	6.9
	TL□060□-□	M6×1	11.8	
	TL□080□-□	M6×1	11.8	
	TL□100□-□	M8×1.25	25	
	TL□160□-□	M8×1.25	25	
	TL□200□-□	M10×1.5	58.8	
	TL□250□-□	M10×1.5	58.8	
	TL□400□-□	M12×1.75	98	

3) Mounting and removing the swing lever.

- Oil or debris on the mating surfaces of the lever, taper sleeve or piston rod can cause the rod to loosen. Clean carefully before assembly.
- Lever arm mounting bolt torques are shown below.

LHA/LHC/LHS/LHW/LT/LG Standard : Taper Lock Lever

	形式	Thread Size	Tightening Torque (N·m)
LHA LHC LHS LHW	LHA0360 / LHS0360	M14×1.5	21 ~ 25
	LHA0400 / LHC0400 LHS0400 / LHW040□	M16×1.5	33 ~ 40
	LHA0480 / LHC0480 LHS0480 / LHW048□	M20×1.5	54 ~ 65
	LHA0550 / LHC0550 LHS0550 / LHW055□	M22×1.5	84 ~ 100
	LHA0650 / LHC0650 LHS0650 / LHW065□	M27×1.5	120 ~ 145
	LHA0750 / LHS0750 LHW0751	M30×1.5	175 ~ 210
	LHA0900 / LHS0900	M39×1.5	280 ~ 335
	LHA1050 / LHS1050	M48×1.5	333 ~ 400
	LT/LG	LT0301 / LG0301	M8×1
LT036□ / LG036□		M10×1	15 ~ 18
LT040□ / LG040□		M12×1.5	24 ~ 29
LT048□ / LG048□		M16×1.5	37 ~ 45
LT055□ / LG055□		M18×1.5	59 ~ 71
LT065□ / LG065□		M22×1.5	93 ~ 112
LT075□ / LG075□		M28×1.5	147 ~ 177
LG090□		M36×1.5	235 ~ 282
LG105□		M45×1.5	300 ~ 360

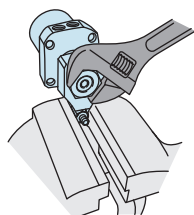
LHA/LHS-F Quick Change Lever, TLA-2/TLB-2/TLA-1 Standard

	Model No.	Thread Size	Tightening Torque (N·m)	
LHA-F LHS-F LT-F LG-F	LT0301-F / LG0301-F	M5×0.8	7.5	
	LHA0360-F / LHS0360-F LT036□-F / LG036□-F	M6	14	
	LHA0400-F / LHS0400-F LT040□-F / LG040□-F	M8×1	33	
	LHA0480-F / LHS0480-F LT048□-F / LG048□-F	M10×1.25	65	
	LHA0550-F / LHS0550-F LT055□-F / LG055□-F	M12×1.5	100 ~ 114	
	LHA0650-F / LHS0650-F LT065□-F / LG065□-F	M14×1.5	160 ~ 180	
	LHA0750-F / LHS0750-F LT075□-F / LG075□-F	M16×1.5	250 ~ 280	
	LHA0900-F / LHS0900-F LG090□-F	M20×2	500 ~ 540	
	LHA1050-F / LHS1050-F LG105□-F	M24×2	760 ~ 810	
	TLA-2 TLB-2 TLA-1	TL□040□-□	M6	13
		TL□060□-□	M8×1	32
		TL□080□-□	M8×1	32
		TL□100□-□	M10×1.25	63
		TL□160□-□	M12×1.5	100
TL□200□-□		M14×1.5	160	
	TL□250□-□	M16×1.5	250	
	TL□400□-□	M20×2	500	

- If the piston rod is subjected to excessive torque or shock, the rod or the internal mechanism may be damaged. Observe the following points to prevent such shock.

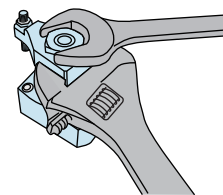
During mounting

① When the clamp is positioned with fixture, determine the lever position, and temporarily tighten the nut for fixing the lever.



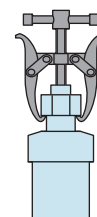
② Remove the clamp from a fixture, fix the lever by machine vise etc., and tighten the nut.

- ③ If clamp can't be removed from fixture for final tightening, secure the lever while tightening the nut. It is best to bring the lever to the middle of the swing stroke before tightening the nut.



During removal

- ① While the clamp is in the fixture or vise, use a hex wrench to bring the arm to the middle of the swing stroke and then loosen the nut.
- ② Loosen the taper sleeve nut two or three turns then remove the lever with puller. Do not put any rotating torque on the piston rod.



4) Swinging Speed Adjustment

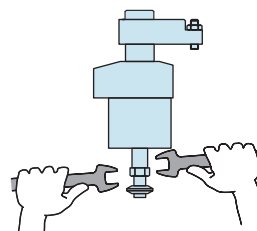
- Adjust the speed following "Allowable Swing Time Graph". If the clamp operates too fast the parts will wear out leading to premature damage and ultimately complete equipment failure.
- Please make sure to release air from the circuit before adjusting speed. It will be difficult to adjust the speed 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.

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.

6) Notes on dual rod option (-D) for dog application.

- When attaching dog, set up the piston so that it will not turn around. Please secure the dog or cam and prevent any rotation or torque on the piston rod. Torque values for the mounting screw are shown in the table below.



Model No.	Thread Size	Tightening Torque (N·m)
LHA0360-□□D	M4×0.7	3.2
LHA0400-□□D	M6×1	10
LHA0480-□□D	M8×1.25	25
LHA0550-□□D	M8×1.25	25
LHA0650-□□D	M8×1.25	25
LHA0750-□□D	M10×1.5	50
LHA0900-□□D	M10×1.5	50
LHA1050-□□D	M10×1.5	50

※ 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

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

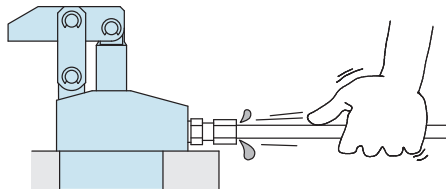
Customized Spring Cylinder

DWA/DWB

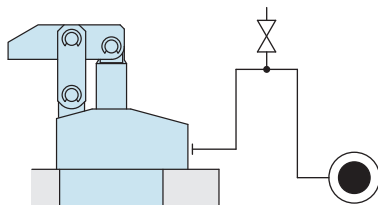
● Cautions

● 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

- Company Profile
- Our Products
- History

Index

- Search by Alphabetical Order

Sales Offices

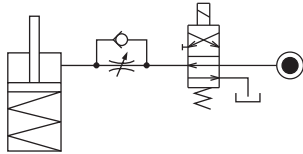
● Notes on Hydraulic Cylinder Speed Control Unit



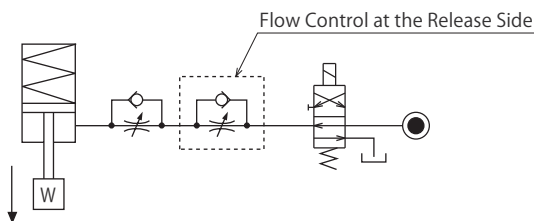
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● 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

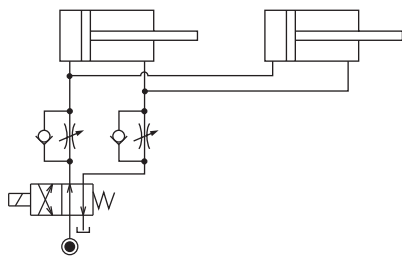
Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

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

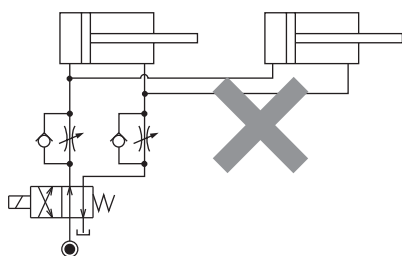
Refer to P.47 for speed adjustment of LKE.

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)

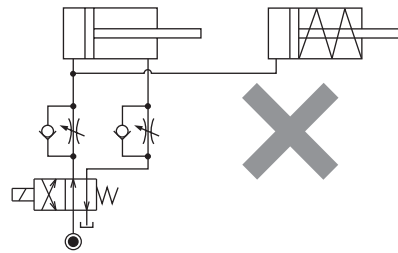


【Meter-in Circuit】 (LKE/TMA/TLA must be controlled with meter-in.)



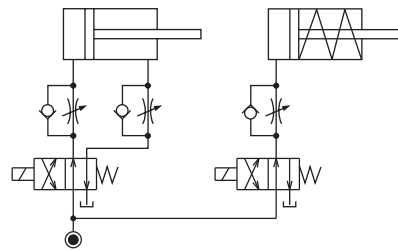
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

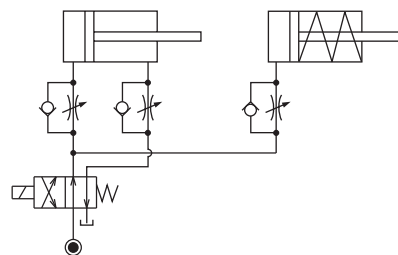


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

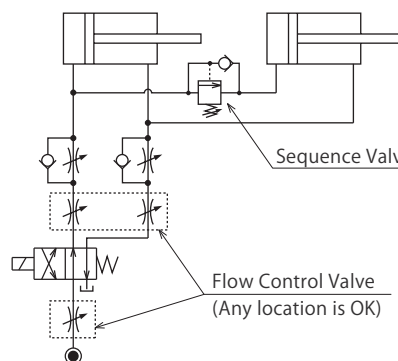
- Separate the control circuit.



- 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.



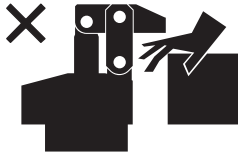
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve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

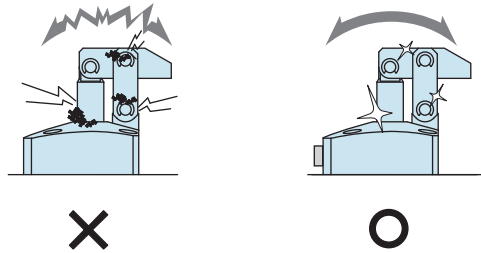
- 1) It should be handled by qualified personnel.
 - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when 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.



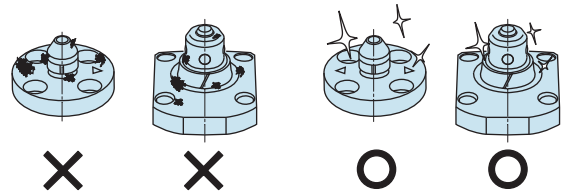
- 4) Do not disassemble or modify.
 - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

● 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.

Cautions

[Installation Notes
\(For Hydraulic Series\)](#)
[Hydraulic Fluid List](#)
[Notes on Hydraulic Cylinder
Speed Control Circuit](#)
[Notes on Handling](#)
[Maintenance/
Inspection](#)
[Warranty](#)

Company Profile

[Company Profile](#)
[Our Products](#)
[History](#)

Index

[Search by
Alphabetical Order](#)

Sales Offices

● 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.

Control Valve

Model BZL

Model BZT

Model BZX

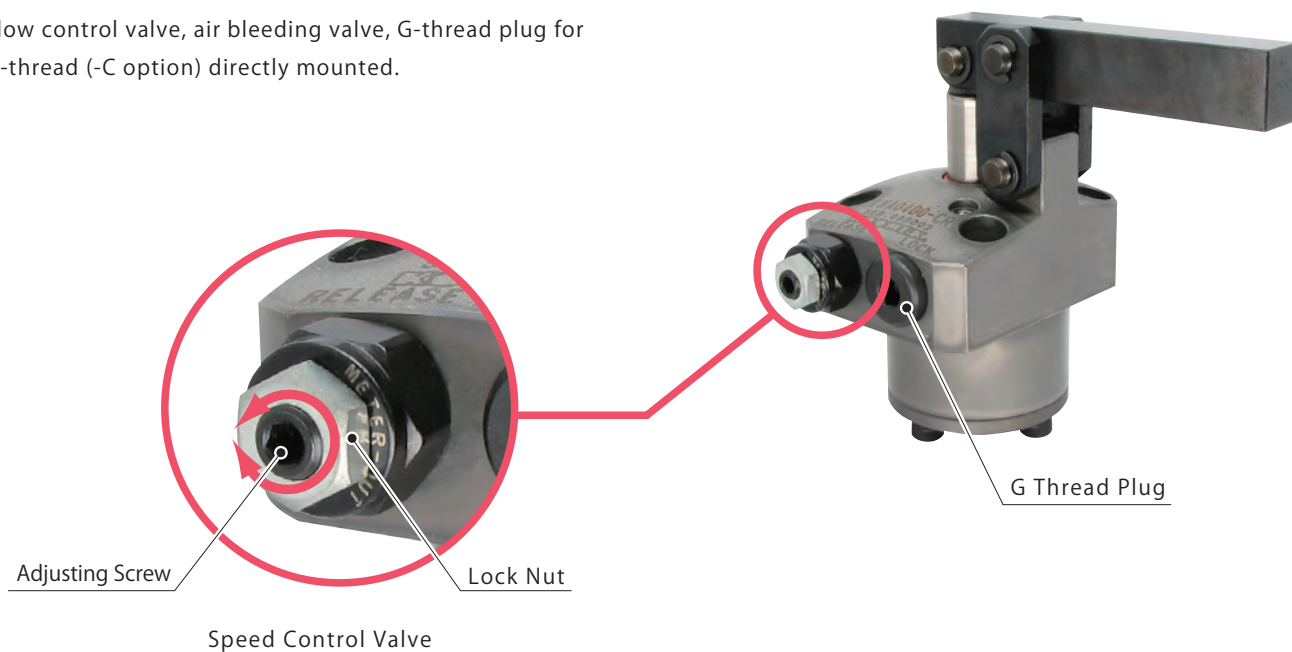
Model JZG



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




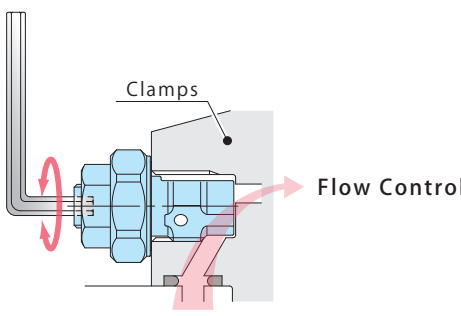
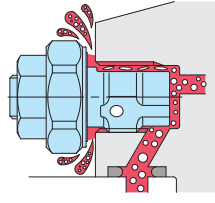

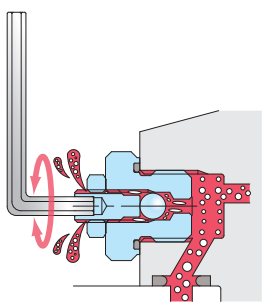

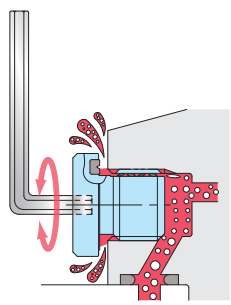
Air Bleed Valve

Model BZX



G Thread Plug

Model JZG

	Operating Pressure Range	Action Description
<p>Speed Control Valve (For Low Pressure)</p> <p>Model BZL → 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 BZT → 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 BZX → P.735</p> 	25MPa or less	<p>Air bleeding in the circuit is possible by wrench.</p> 
<p>G Thread Plug</p> <p>Model JZG → 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)

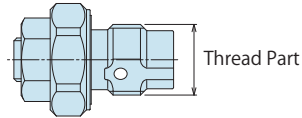
BZL 0 **10** **0** - **B**

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

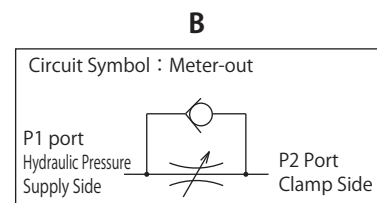
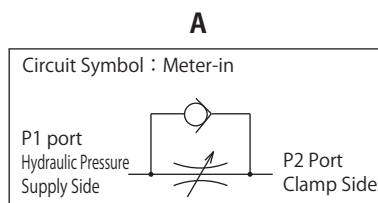


2 Design No.

- 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 ²	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

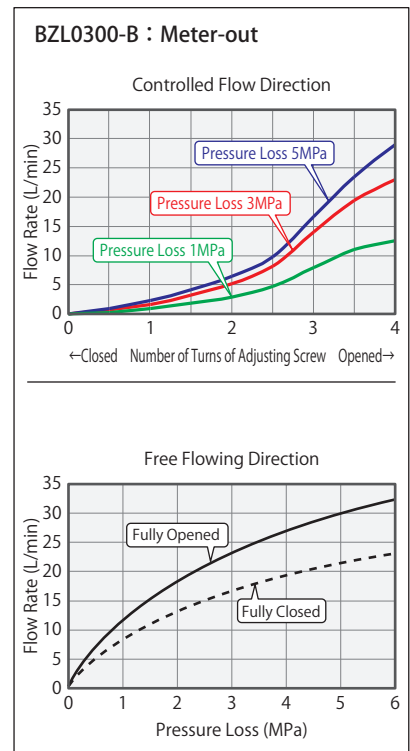
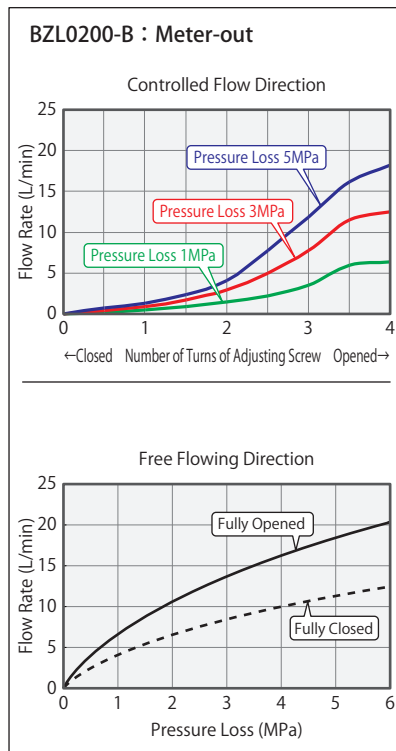
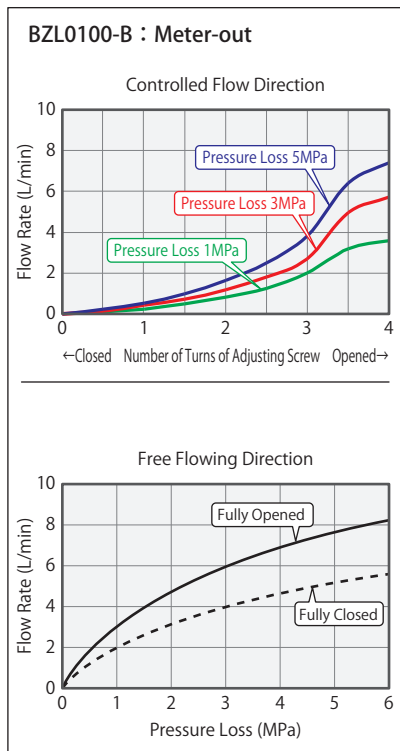
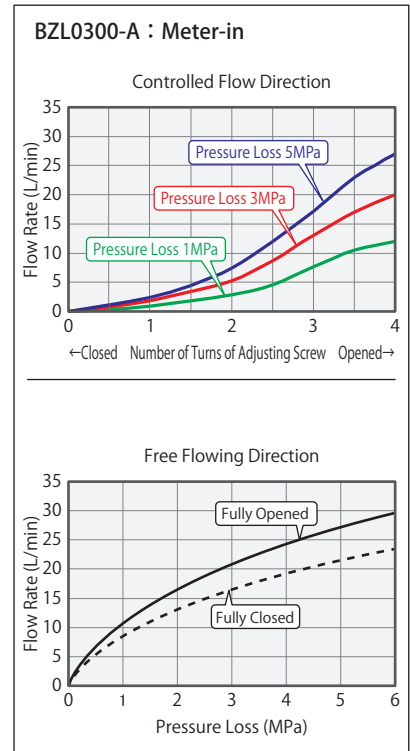
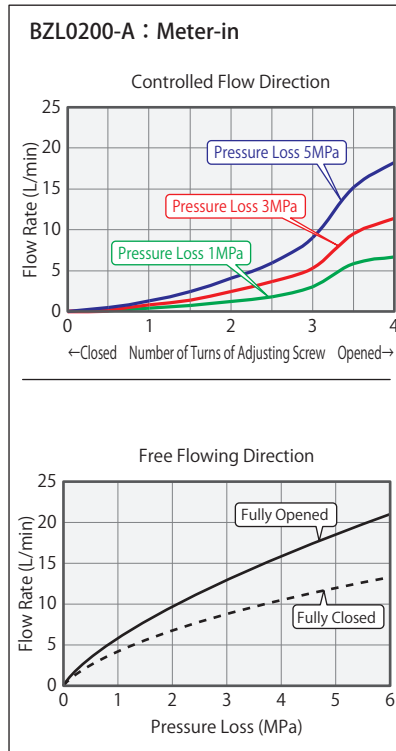
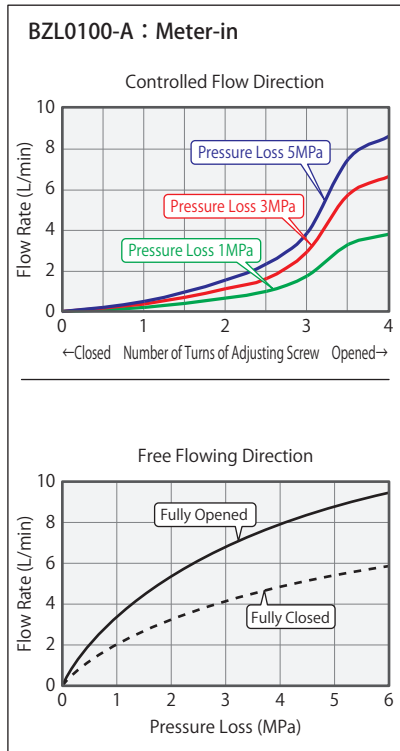
Pull Stud Clamp

FP
FQ

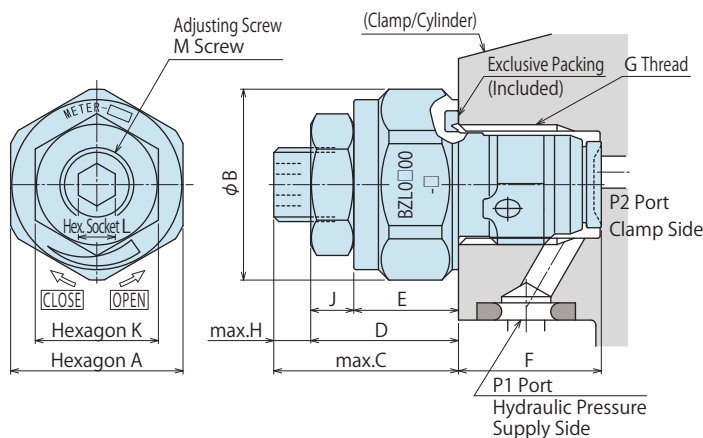
Customized Spring Cylinder

DWA/DWB

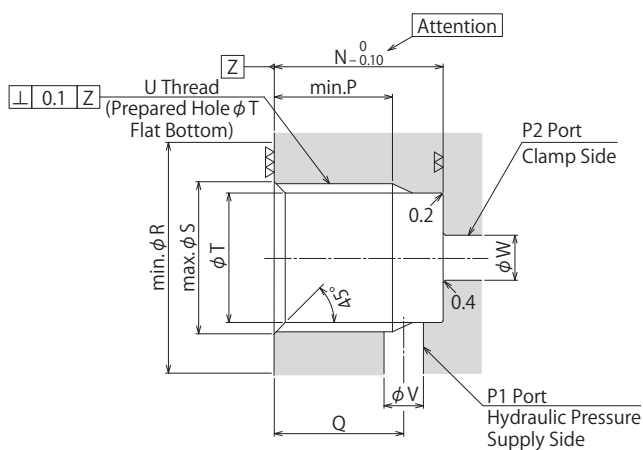
● Flow Rate Graph < Hydraulic Fluids ISO-VG32 (25~35°C) >



External Dimensions



Machining Dimensions of Mounting Area



Notes

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

Notes

- 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)
- 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

Model No. Indication (Air Bleed Valve)

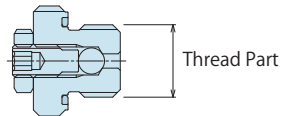
BZX0 1 0

1 2



1 G Thread Size

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



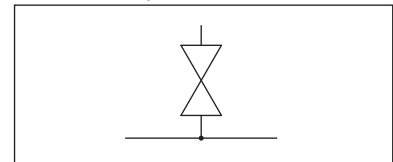
2 Design No.

- 0 : Revision Number

Specifications

Model No.	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.

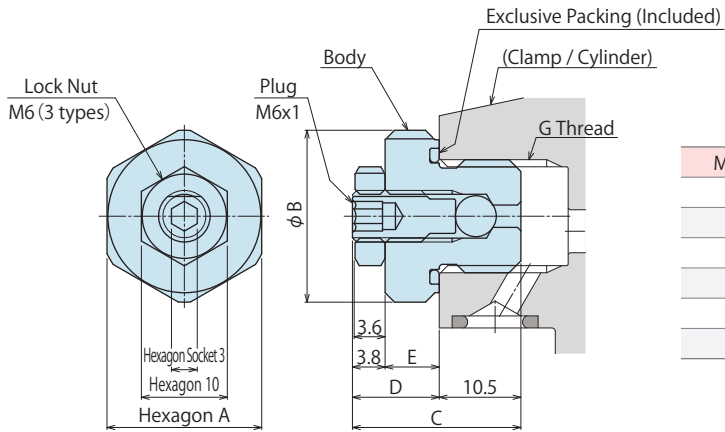
Applicable Products

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)

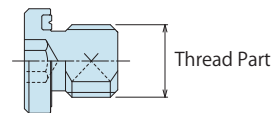
JZG0 1 0

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

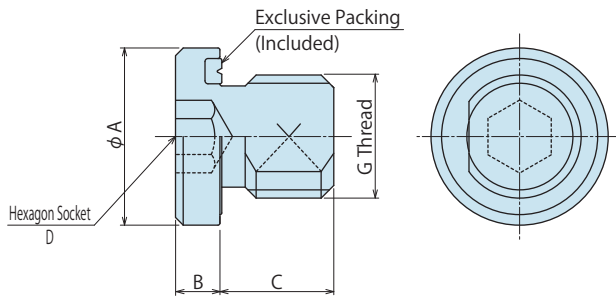
Model No.	JZG010	JZG020	JZG030
Max. Operating Pressure MPa	35		
Withstanding Pressure MPa	42		
G Thread Size	G1/8A	G1/4A	G3/8A
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32		
Operating Temperature °C	0 ~ 70		
Tightening Torque for Main Body N·m	10	25	35

- 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 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

Manifold Block

Model WHZ-MD

Model LZY-MD

Model LZ-MS

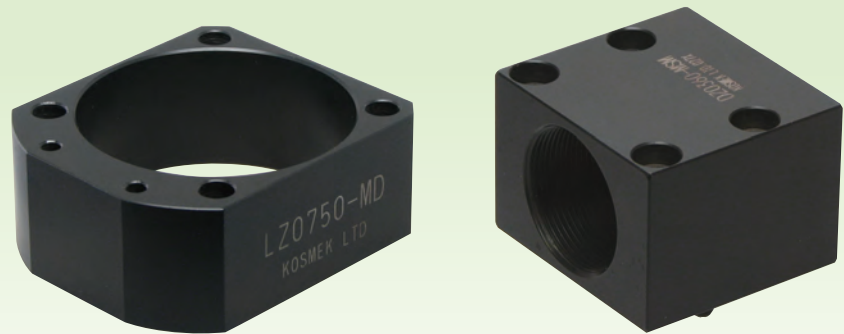
Model LZ-MP

Model TMZ-1MB

Model TMZ-2MB

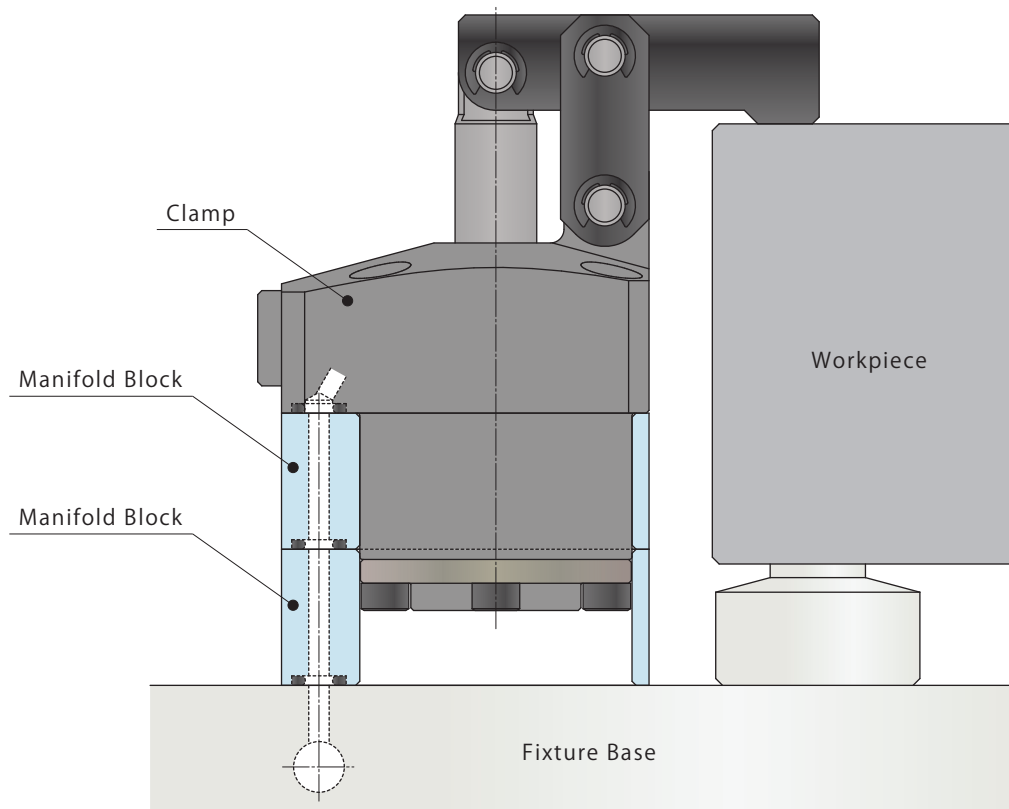
Model DZ-MG

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 WHZ-MD	Model WCA Model WHA Model WCE Model WHE
Model LZY-MD	Model LKA Model LKE Model LHC Model LHS Model LKC Model LHA Model LHE Model LL
Model LZ-MS	Model LM Model LT Model LJ Model LG
Model LZ-MP	Model LC Model TC
Model TMZ-1MB	Model TMA-1
Model TMZ-2MB	Model TMA-2
Model DZ-MG□/MS□	Model DP

- 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

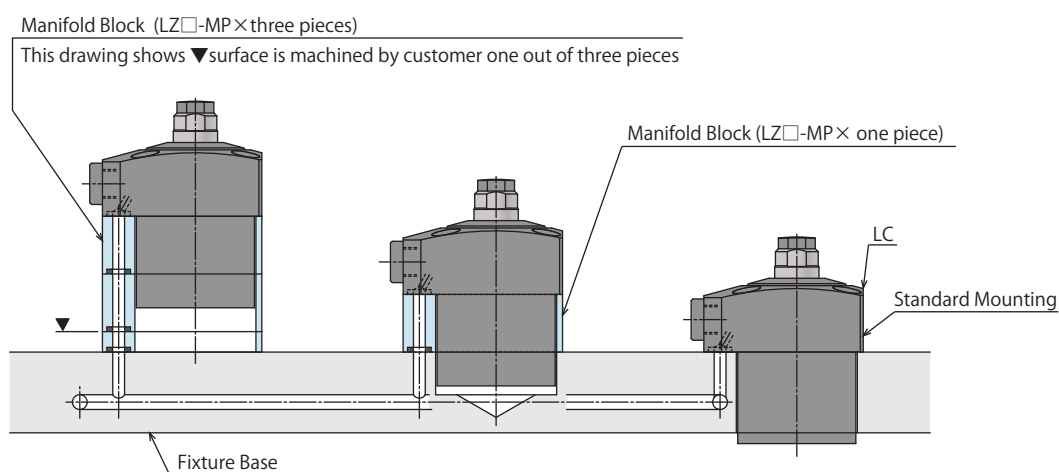
- Manifold
 - JX

- Coupler Switch
 - PS

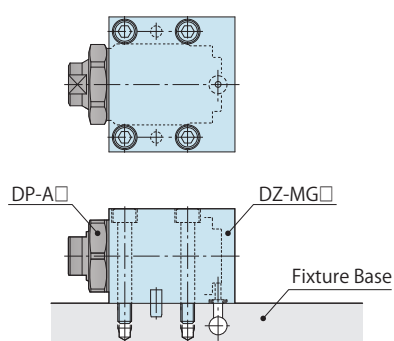
- G-Thread Fitting

Application Examples

• Work Support (LC) Application Example



• Push Cylinder (DP) Application Example



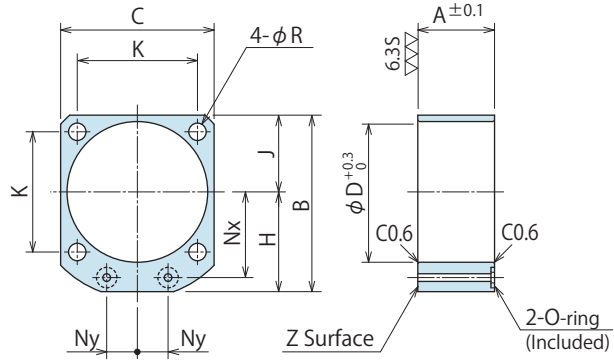
Manifold Block for WCA/WCE/WHA/WHE

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.

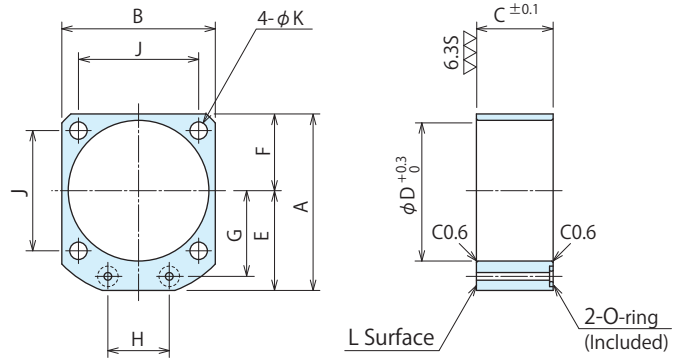
Manifold Block for LKA/LKC/LKE/LHA/LHC/LHE/LHS/LL

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.

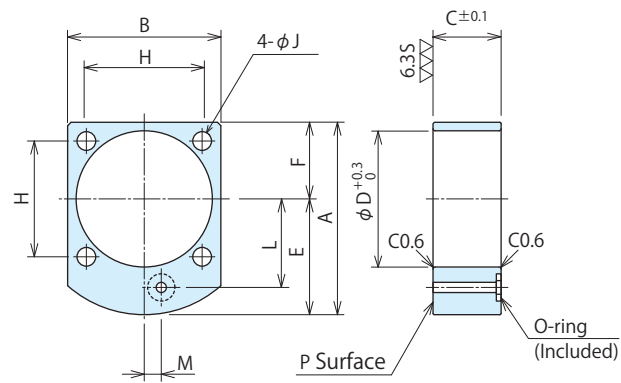
Manifold Block for LM/LJ/LT/LG

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.

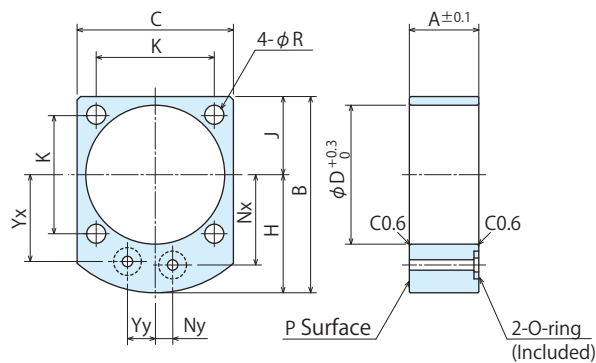
Manifold Block for LC/TC

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

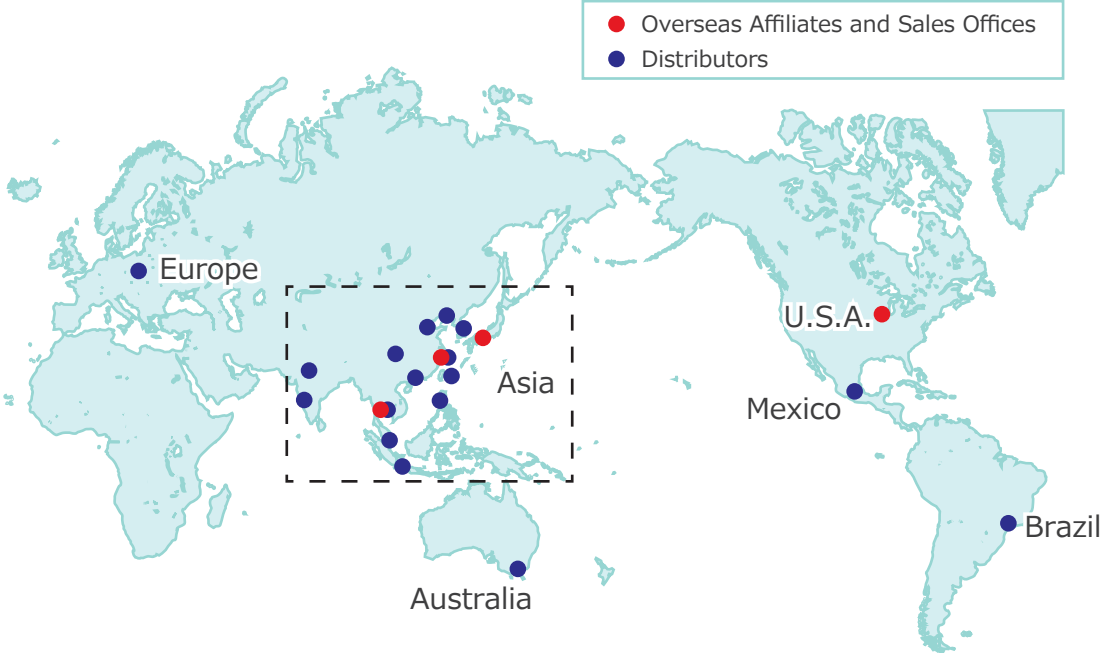
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KOS-MECH GmbH	Schleppeplatz 2 9020 Klagenfurt Austria	
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Asia Detailed Map



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