New Swing Clamp Option

Quick Change Lever Type A

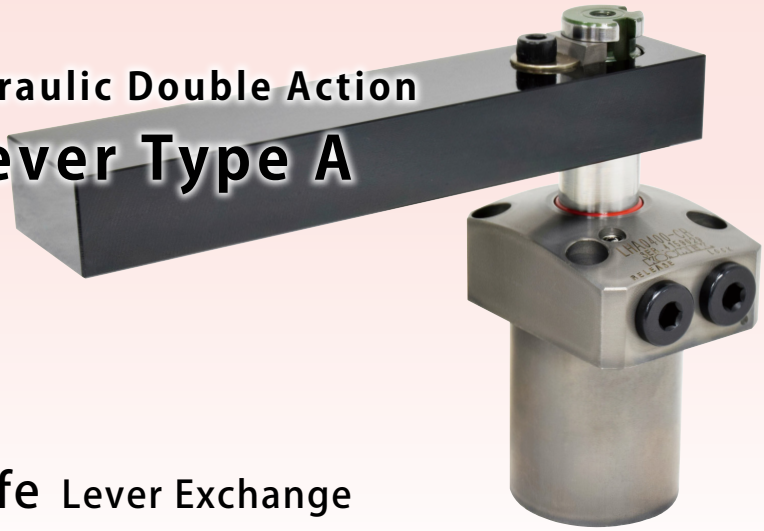
The Fastest Lever Change, With Only One Bolt

Model LHA-A

KOSMEK
Harmony in Innovation

Swing Clamp Hydraulic Double Action
Quick Change Lever Type A

Model LHA-A

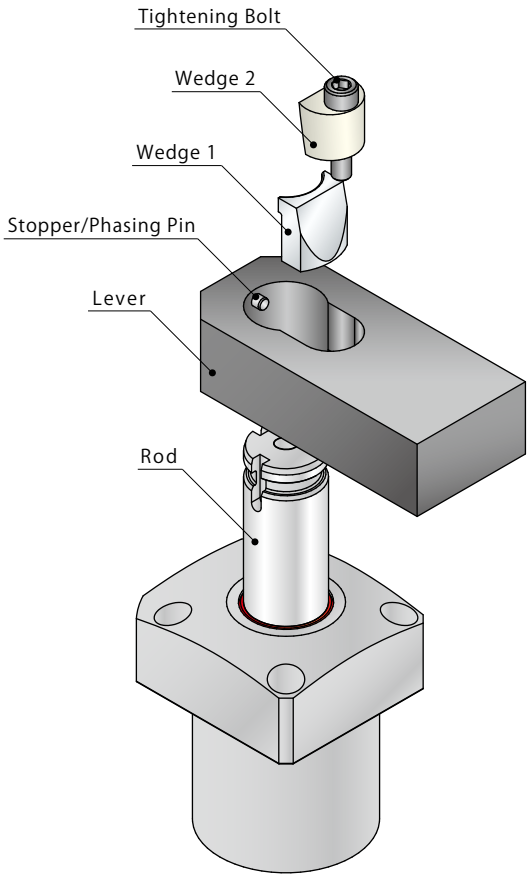


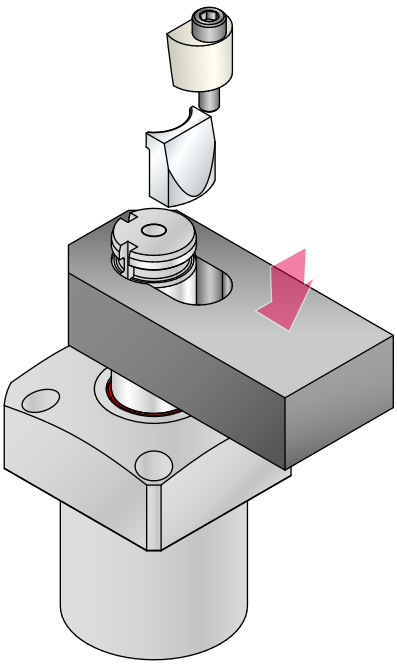
Simple, Quick and Safe Lever Exchange

Allows for simple exchange on a fixture plate. Suitable for lever change at general line.

PAT.

Lever Installation / Removal Procedure





Lever in Disassembled State

Install the Lever

・Insert the lever to the rod.

The Fastest Lever Change, with Only One Bolt

Only one bolt is required for lever installation and removal.
Allows for the fastest lever setup time.

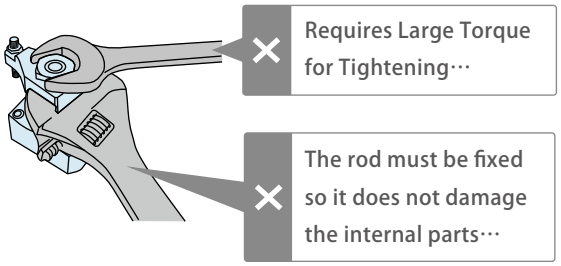
Remove the Lever with One Wrench

Wedge function will be released by loosening one bolt, so the lever can be easily removed.
Special tool or gear puller is not required.

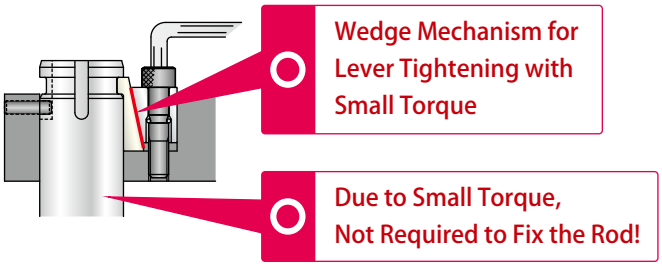
Secure Lever Tightening Even with Small Torque

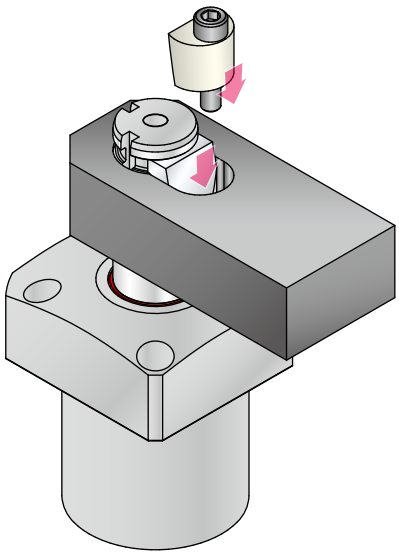
Even with small torque, a swing lever can be securely tightened with wedge function.
Compared to the standard model, tightening torque is reduced by 90%.
Even for large clamps, a lever can be simply tightened with small torque wrench.

Standard Model



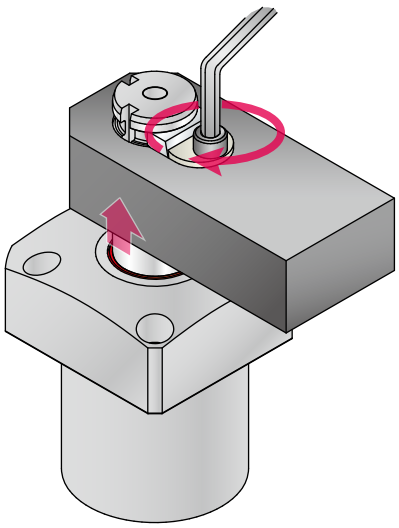
Quick Change Lever Type A





Install Wedge1 and 2

- Set Wedge 1 to the slot of the rod.
- Insert Wedge 2.



Tighten the Lever with Tightening Bolt

- Pull the lever towards the wedge side and tighten the tightening bolt with the specified torque.
- When removing the lever, follow the installation procedure reverse to the above.

Model No. Indication

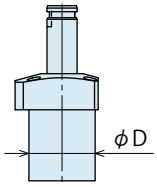
Clamp Body

LHA 048 0 - C R □ - A
1 2 3 4 5 6

1 Body Size

036 : φD=36mm
040 : φD=40mm
048 : φD=48mm
055 : φD=55mm
065 : φD=65mm
075 : φD=75mm

※ Indicates the cylinder outer diameter (φD).
※ Contact us for quick change lever type A for other body sizes.



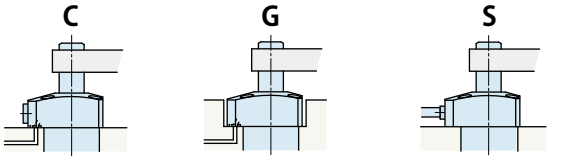
2 Design No.

0 : Revision Number

3 Piping Method

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

※ Speed control valve (BZL) is sold separately.
Please refer to page 13.



Gasket Option		Piping Option
With G Thread Plug Able to attach speed control valve	With R Thread Plug	Rc Thread Port No Gasket

4 Swing Direction When Clamping

R : Clockwise
L : Counter-Clockwise

5 Action Confirmation Method

Blank : None (Standard)

D	: Double End Rod Option for Dog
M	: Air Sensing Manifold Option
N□	: Air Sensing Piping Option

Refer to the complete catalog (KWCS20□-□-GB) for detail of action confirmation method.

6 Options

A : Quick Change Lever Type A

Blank	: None (Standard : Taper Lock Lever Option)
F	: Quick Change Lever Type F
P	: Balance Lever Option
Q□	: Long Stroke Option (□ stands for vertical stroke value.)
Y□	: Swing Angle Selectable Option (**Y30** : 30° / **Y45** : 45° / **Y60** : 60°)

Refer to the complete catalog (KWCS20□-□-GB) for detail of other options.

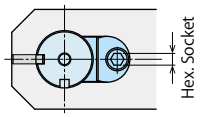
※ Please contact us when action check method have a combination with option.

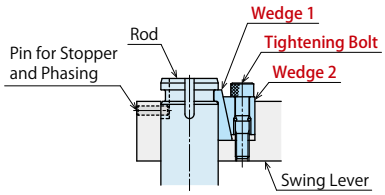
● Tightening Kit for Quick Change Lever Type A

Tightening Kit for mounting Quick Change Lever Type A.

Sold separately from clamp body.

【Contents of Tightening Kit】
・Wedge 1 ・Wedge 2 ・Tightening Bolt





LZH 048 0 - W

1 2

1 Corresponding Model No.

036：LHA0360-□-A　　**055**：LHA0550-□-A
040：LHA0400-□-A　　**065**：LHA0650-□-A
048：LHA0480-□-A　　**075**：LHA0750-□-A

2 Design No.

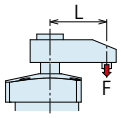
0：Revision Number

Specifications

● Clamp Body

Model No.		LHA0360-□-A	LHA0400-□-A	LHA0480-□-A	LHA0550-□-A	LHA0650-□-A	LHA0750-□-A
Cylinder Area for Locking cm2		3.54	5.00	6.95	10.3	13.4	20.3
Clamping Force ※1 (Calculation Formula) kN		$F=\frac{P(1-0.0021\times L)}{2.9379+0.0052\times L}$	$F=\frac{P(1-0.0016\times L)}{2.0920+0.0040\times L}$	$F=\frac{P(1-0.0009\times L)}{1.4892+0.0018\times L}$	$F=\frac{P(1-0.0011\times L)}{1.0039+0.0011\times L}$	$F=\frac{P(1-0.0009\times L)}{0.7822+0.0010\times L}$	$F=\frac{P(1-0.0007\times L)}{0.5175+0.0006\times L}$
Cylinder Capacity cm3	Lock	4.8	7.3	10.8	19.0	26.7	48.7
	Release	7.2	10.9	16.7	28.1	40.9	72.5
Full Stroke mm		13.5	14.5	15.5	18.5	20	24
Swing Stroke (90°) mm		5.5	6.5	7.5	8.5	10	12
Lock Stroke mm		8	8	8	10	10	12
Swing Angle Accuracy		90° ±3°					
Swing Completion Position Repeatability		±0.5°					
Hydraulic Pressure	Max. Operating Pressure MPa	7.0					
	Min. Operating Pressure ※2 MPa	1.5					
	Withstanding Pressure MPa	10.5					
Operating Temperature ℃		0～70					
Mass ※3 kg		0.7	0.9	1.3	1.9	2.8	4

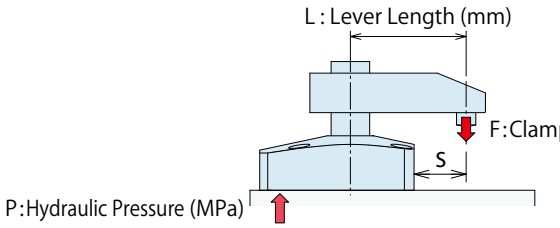
Notes：※1. F：Clamping Force (kN), P：Supply Hydraulic Pressure (MPa), L：Distance between the piston center and the clamping point (mm).
※2. Minimum pressure to operate the clamp without load.
※3. Mass of single swing clamp without the tightening kit and swing lever.



● Tightening Kit for Quick Change Lever Type A

Model No.	LZH0360-W	LZH0400-W	LZH0480-W	LZH0550-W	LZH0650-W	LZH0750-W
Corresponding Model No.	LHA0360-□-A	LHA0400-□-A	LHA0480-□-A	LHA0550-□-A	LHA0650-□-A	LHA0750-□-A
Nominal×Pitch of Tightening Bolt	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
Hex. Socket mm	3	4	4	5	5	6
Tightening Torque N·m	2.5	5.0	5.0	8.0	8.0	20

Clamping Force Curve ※ Clamping force curve is the same as that of standard model LHA.



(Example) When using LHA0480-A
Supply Hydraulic Pressure 5.0MPa, Lever Length L=50mm,
Clamping force is about 3.1kN.

Notes：

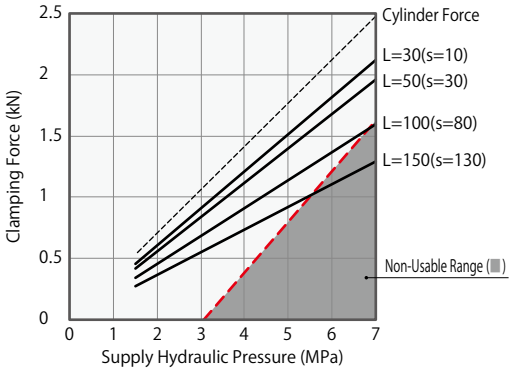
1. Tables and graphs shown are the relationships between the clamping force (kN) and supply hydraulic pressure (MPa).
2. Cylinder output (when L=0) cannot be calculated with the formula of clamping force.
3. There may be no lever swing action with large inertia depending on supply hydraulic pressure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

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

LHA0360-A

Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0021\times L) / (2.9379+0.0052\times L)$

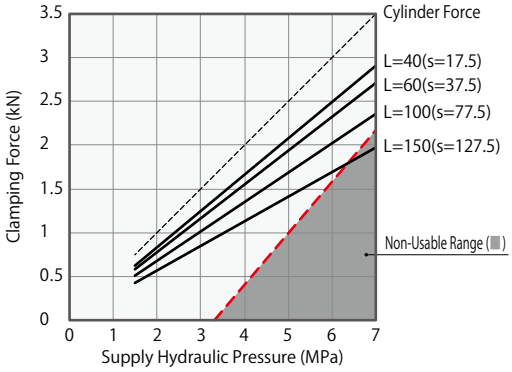
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=30	L=40	L=50	L=60	L=80	L=100	L=120	L=150	Max. Lever Length (L) (mm)
7	2.48	2.2	2.1	2.0	1.9	1.8				96
6.5	2.30	2.0	1.9	1.9	1.8	1.7	1.5			110
6	2.13	1.9	1.8	1.7	1.7	1.5	1.4	1.3		129
5.5	1.95	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.1	150
5	1.77	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.0	150
4.5	1.59	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9	150
4	1.42	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.8	150
3.5	1.24	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.7	150
3	1.06	1.0	0.9	0.9	0.9	0.8	0.7	0.7	0.6	150
2.5	0.89	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.5	150
2	0.71	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.4	150
1.5	0.53	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	150
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.6	



LHA0400-A

Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0016\times L) / (2.0920+0.0040\times L)$

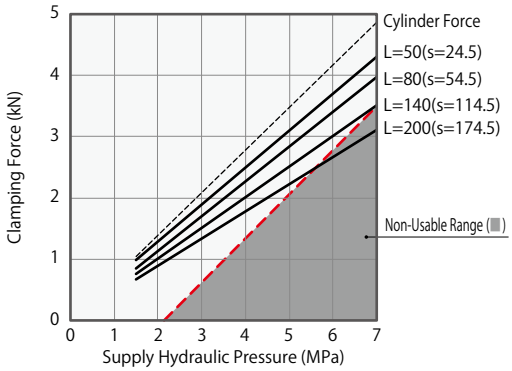
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=40	L=50	L=60	L=70	L=80	L=100	L=120	L=150	Max. Lever Length (L) (mm)
7	3.50	3.0	2.9	2.8	2.7	2.6	2.4	2.2		124
6.5	3.25	2.7	2.7	2.6	2.5	2.4	2.2	2.1		144
6	3.00	2.5	2.5	2.4	2.3	2.2	2.1	1.9	1.7	171
5.5	2.75	2.3	2.3	2.2	2.1	2.0	1.9	1.8	1.6	210
5	2.50	2.1	2.1	2.0	1.9	1.9	1.7	1.6	1.5	210
4.5	2.25	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.3	210
4	2.00	1.7	1.7	1.6	1.5	1.5	1.4	1.3	1.2	210
3.5	1.75	1.5	1.4	1.4	1.4	1.3	1.2	1.1	1.0	210
3	1.50	1.3	1.2	1.2	1.2	1.1	1.1	1.0	0.9	210
2.5	1.25	1.1	1.0	1.0	1.0	0.9	0.9	0.8	0.8	210
2	1.00	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.6	210
1.5	0.75	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	210
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	



LHA0480-A

Clamping Force Calculation Formula ※1 (kN) $F = P(1-0.0009\times L) / (1.4892+0.0018\times L)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=50	L=60	L=80	L=100	L=120	L=140	L=160	L=200	Max. Lever Length (L) (mm)
7	4.87	4.3	4.2	4.0	3.9	3.7	3.6			141
6.5	4.52	4.0	3.9	3.7	3.6	3.4	3.3			157
6	4.17	3.7	3.6	3.5	3.3	3.2	3.1	2.9		178
5.5	3.82	3.4	3.3	3.2	3.0	2.9	2.8	2.7	2.5	204
5	3.48	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.3	230
4.5	3.13	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.0	230
4	2.78	2.5	2.4	2.3	2.2	2.1	2.1	2.0	1.8	230
3.5	2.43	2.2	2.1	2.0	2.0	1.9	1.8	1.7	1.6	230
3	2.09	1.9	1.8	1.7	1.7	1.6	1.6	1.5	1.4	230
2.5	1.74	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.2	230
2	1.39	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	230
1.5	1.04	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.7	230
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.7	

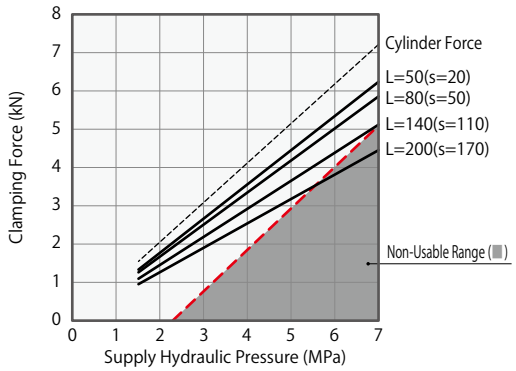


LHA0550-A

Clamping Force Calculation Formula ※1 (kN) $F = P(1\text{-}0.0011 \times L) / (1.0039 + 0.0011 \times L)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=50	L=60	L=80	L=100	L=120	L=140	L=160	L=200	Max. Lever Length (L) (mm)
7	7.21	6.3	6.2	5.9	5.6	5.4	5.2			142
6.5	6.69	5.8	5.7	5.5	5.2	5.0	4.8			159
6	6.18	5.4	5.3	5.1	4.8	4.6	4.4	4.2		180
5.5	5.66	5.0	4.8	4.6	4.4	4.2	4.1	3.9	3.6	209
5	5.15	4.5	4.4	4.2	4.0	3.9	3.7	3.5	3.2	245
4.5	4.63	4.1	4.0	3.8	3.6	3.5	3.3	3.2	2.9	245
4	4.12	3.6	3.5	3.4	3.2	3.1	3.0	2.8	2.6	245
3.5	3.60	3.2	3.1	3.0	2.8	2.7	2.6	2.5	2.3	245
3	3.09	2.7	2.7	2.6	2.4	2.3	2.2	2.1	2.0	245
2.5	2.57	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.6	245
2	2.06	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.3	245
1.5	1.54	1.4	1.4	1.3	1.2	1.2	1.1	1.1	1.0	245
Max. Operating Pressure (MPa)		7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.6	

Non-Usable Range (■)

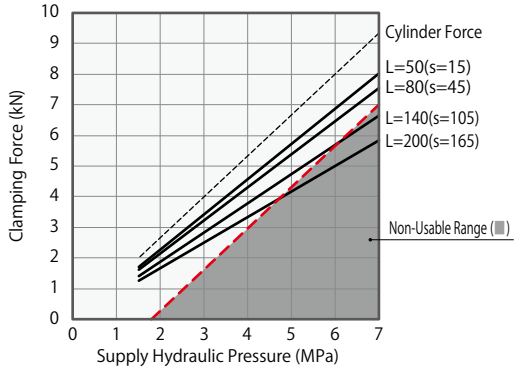


LHA0650-A

Clamping Force Calculation Formula ※1 (kN) $F = P(1\text{-}0.0009 \times L) / (0.7822 + 0.0010 \times L)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=50	L=60	L=80	L=100	L=120	L=140	L=160	L=200	Max. Lever Length (L) (mm)
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	

Non-Usable Range (■)

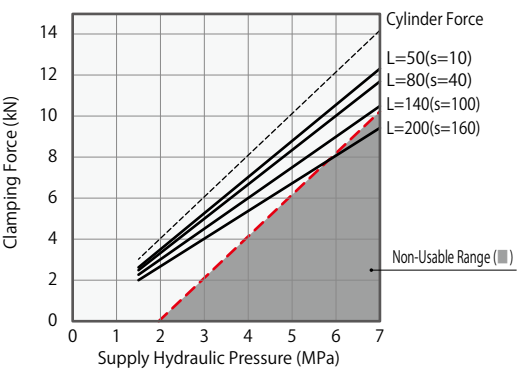


LHA0750-A

Clamping Force Calculation Formula ※1 (kN) $F = P(1\text{-}0.0007 \times L) / (0.5175 + 0.0006 \times L)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=50	L=60	L=80	L=100	L=120	L=140	L=160	L=200	Max. Lever Length (L) (mm)
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	

Non-Usable Range (■)



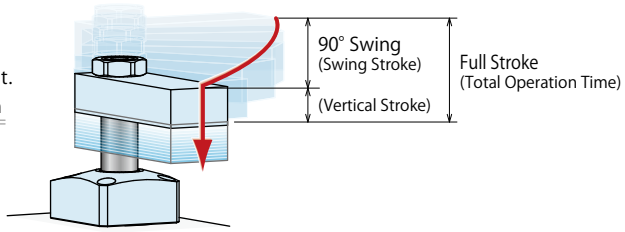
Allowable Swing Time Graph

※ Allowable swing time graph is the same as that of standard model LHA.

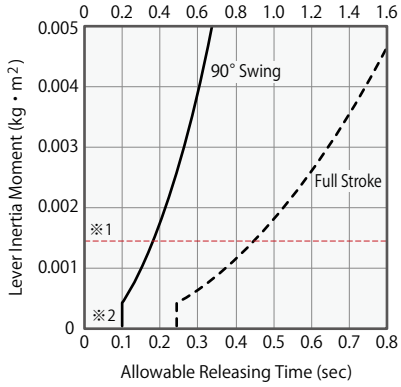
Adjustment of Swing Time

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.

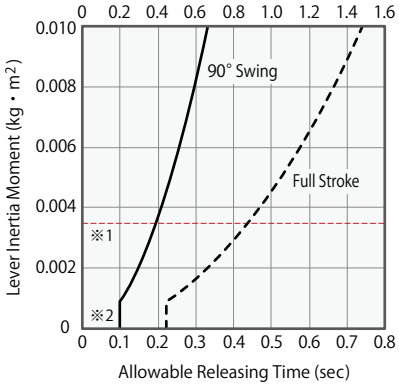
Excessive action speed can reduce stopping accuracy and damage internal parts.



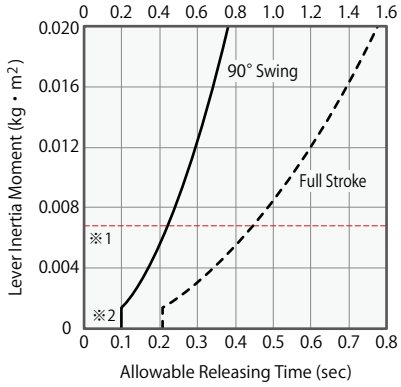
LHA0360-A



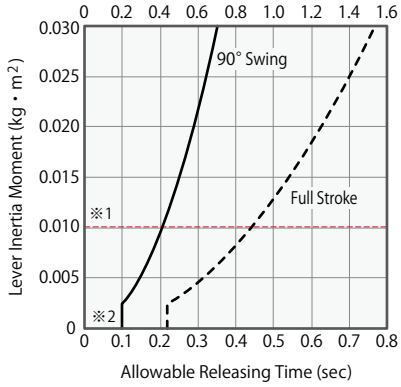
LHA0400-A



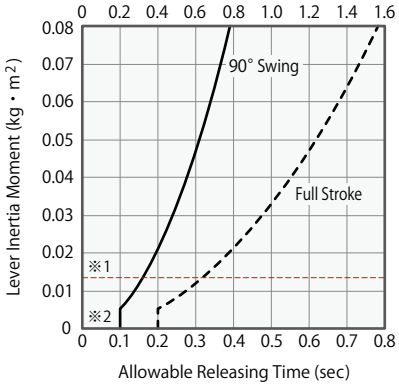
LHA0480-A



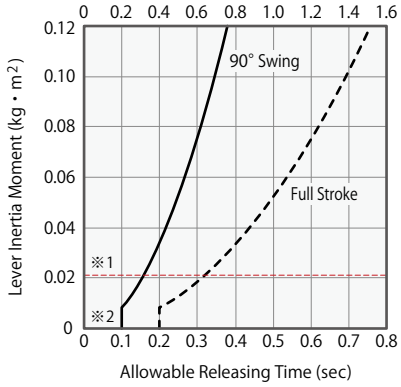
LHA0550-A



LHA0650-A



LHA0750-A



Notes:

※1. It shows the inertia moment of lever blank (LZH□-A).

※2. For any lever inertia moment, minimum 90° swing time should be 0.2 sec for locking and 0.1 sec for releasing or more.

1. The graph shows the allowable action time with respect to the lever inertia moment when the piston rod operates at constant speed.
2. There may be no lever swing action with large inertia depending on supply hydraulic pressure, oil flow and lever mounting position.
3. For speed adjustment of clamp lever, please use meter-out flow control valve.
   In case of meter-in control, the clamp lever may be accelerated by its own weight during swinging motion (clamp mounted horizontally) or the piston rod may be moving too fast.
   Please refer to page 17 for speed control of the hydraulic cylinder.
4. Excessive swing speed can reduce stopping accuracy and damage the internal parts.
5. Please contact us if operational conditions differ from those shown on the graphs.

(How to read the allowable swing time graph)

When using LHA0480-A

Lever Inertia Moment：0.0068kg・m²

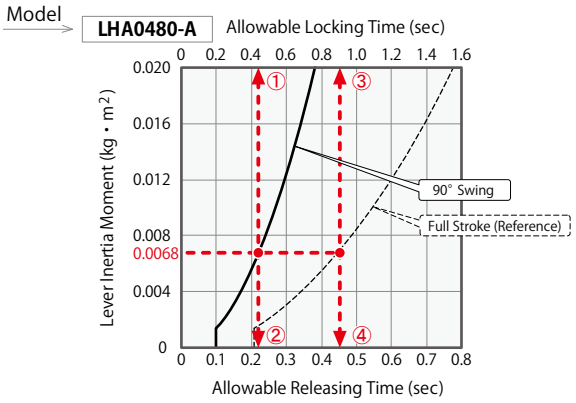
①90° Swing Time when Locking ： About 0.44 sec or more

②90° Swing Time when Releasing ： About 0.22 sec or more

③Total Lock Operation Time ： About 0.9 sec or more

④Total Release Operation Time ： About 0.45 sec or more

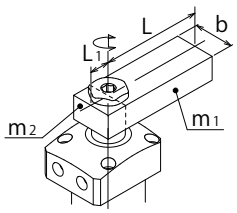
1. The full action time on the graph represents the allowable operation time when fully stroked.



How to calculate inertia moment (Estimated)

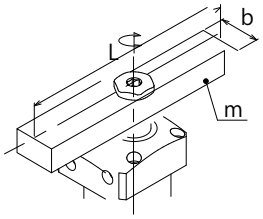
I：Inertia Moment (kg・m²)　　L,L₁,L₂,K,b：Length (m)　　m,m₁,m₂,m₃：Mass (kg)

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



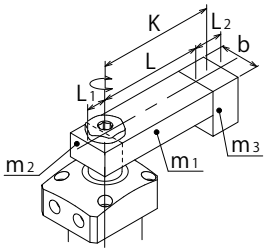
$$I = m_1 \frac{4L^2+b^2}{12} + m_2 \frac{4L_1^2+b^2}{12}$$

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.

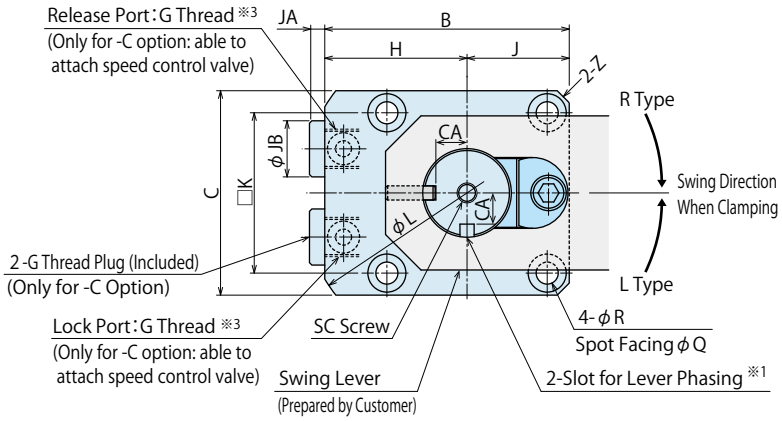


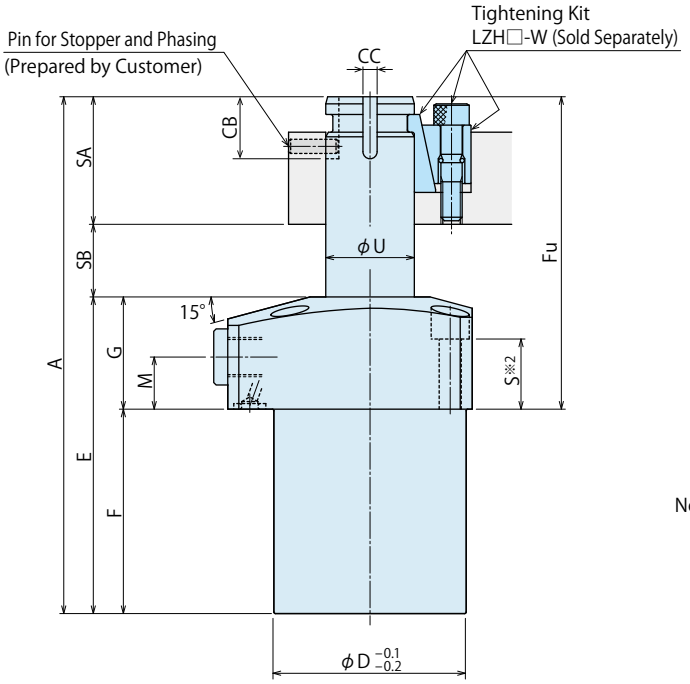
$$I = m_1 \frac{4L^2+b^2}{12} + m_2 \frac{4L_1^2+b^2}{12} + m_3K^2 + m_3 \frac{L_2^2+b^2}{12}$$

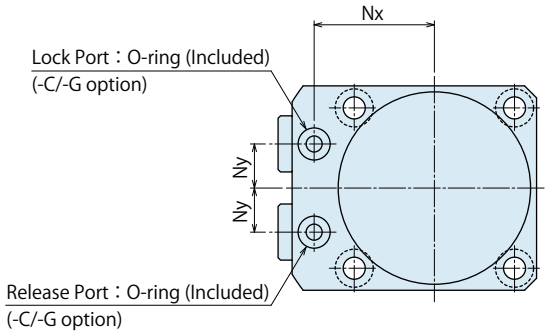
External Dimensions

C：Gasket Option (With G Thread Plug)

※ The drawing shows the released state of LHA-CR-A.







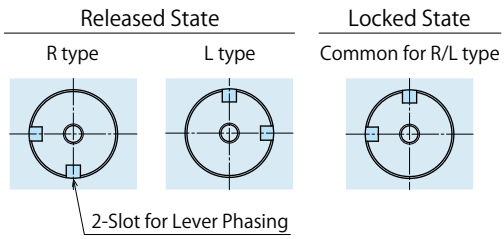
Notes：

※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

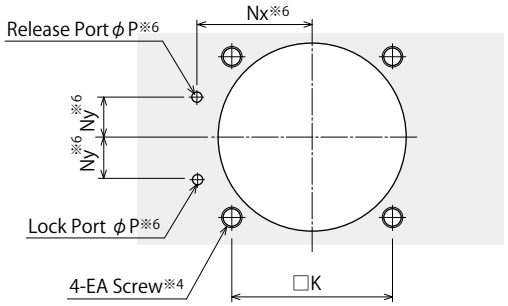
※3. Speed control valve is sold separately. Please refer to page 13.

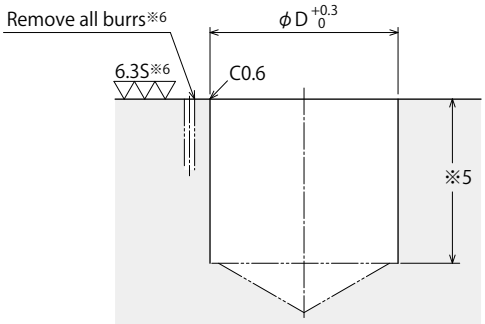
1. Please contact us if it has a combination with other options.

※1. Slot for Lever Phasing



Machining Dimensions of Mounting Area





Notes：

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

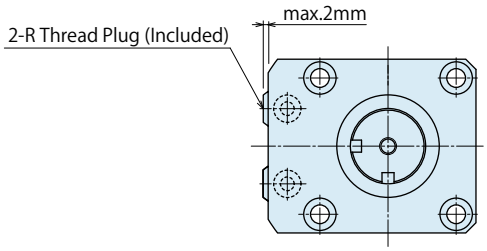
※5. The depth of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'F'.

※6. The machining dimension is for -C/-G：Gasket Option.

Piping Method

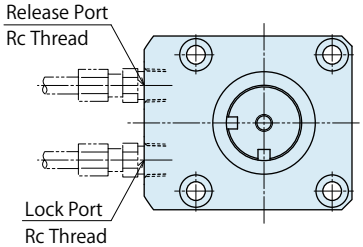
G：Gasket Option (With R Thread Plug)

※ The drawing shows the released state of LHA-GR-A.



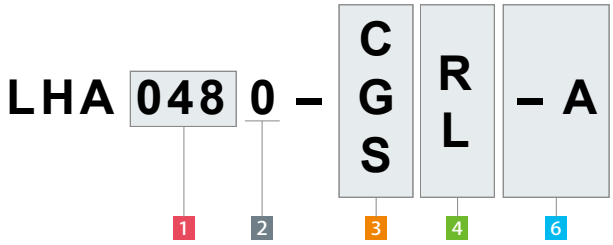
S：Piping Option (Rc Thread)

※ The drawing shows the released state of LHA-SR-A.



Model No. Indication

(Format Example：LHA0550-CR-A, LHA0750-SL-A)



1 Body Size
2 Design No.
3 Piping Method
4 Swing Direction When Clamping
5 Action Confirmation Method (When selecting Blank)
6 Options (When selecting A)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.		LHA0360-□-A	LHA0400-□-A	LHA0480-□-A	LHA0550-□-A	LHA0650-□-A	LHA0750-□-A
Full Stroke		13.5	14.5	15.5	18.5	20	24
Swing Stroke (90°)		5.5	6.5	7.5	8.5	10	12
Lock Stroke		8	8	8	10	10	12
A		104	115	128.5	145.5	156	181
B		49	54	61	69	81	92
C		40	45	51	60	70	80
D		36	40	48	55	65	75
E		64.5	71.5	79	89	94	109
F		39.5	46.5	51	59	63	71
Fu		64.5	68.5	77.5	86.5	93	110
G		25	25	28	30	31	38
H		29	31.5	35.5	39	46	52
J		20	22.5	25.5	30	35	40
K		31.4	34	40	47	55	63
L		66	73	83	88	106	116
M		11	11	13	12	13	16
Nx		23.5	26	30	33.5	39.5	45
Ny		8	9	11	12	15	16
P		3	3	3	3	5	5
Q		7.5	9	9	11	11	14
R		4.5	5.5	5.5	6.8	6.8	9
S		16	15	17.5	17	17	21
U		15	18	22	25	30	35.5
Z (Chamfer)		C2	C3	C3	C3	C4	C5
CA		4.8	5.8	7.8	8.8	10.5	12.5
CB		12	15	16	17.5	21.5	21.5
CC		3 $^{+0.028}_{+0.014}$	4 $^{+0.038}_{+0.020}$	4 $^{+0.038}_{+0.020}$	4 $^{+0.038}_{+0.020}$	6 $^{+0.038}_{+0.020}$	6 $^{+0.038}_{+0.020}$
EA (Nominal×Pitch)		M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
SA		24	27	32	36	40	46
SB		15.5	16.5	17.5	20.5	22	26
SC (Nominal×Pitch×Depth)		M4×0.7×7	M5×0.8×8	M5×0.8×8	M6×1×11	M6×1×11	M8×1.25×13
JA		3.5	3.5	3.5	3.5	4.5	4.5
JB		14	14	14	14	19	19
Lock Port / Release Port	-C option	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4
	-S option	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4
R Thread Plug	-G option	R1/8	R1/8	R1/8	R1/8	R1/4	R1/4
O-ring (-C/-G option)		1BP5	1BP5	1BP5	1BP5	1BP7	1BP7
Pin for Stopper and Phasing		ϕ3(m6)×8	ϕ4(m6)×10	ϕ4(m6)×12	ϕ4(m6)×14	ϕ6(m6)×14	ϕ6(m6)×16
Cylinder Capacity cm³	Lock	4.8	7.3	10.8	19	26.7	48.7
	Release	7.2	10.9	16.7	28.1	40.9	72.5
Mass ※7	kg	0.7	0.9	1.3	1.9	2.8	4

Notes： ※7.Mass of single swing clamp without the tightening kit and swing lever.

Quick Change Lever Type A Design Dimensions

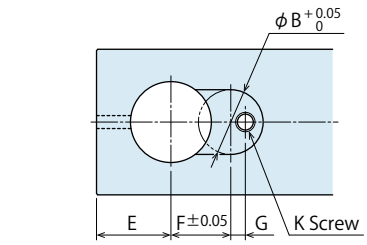
※ Reference for designing Quick Change Swing Lever Type A.

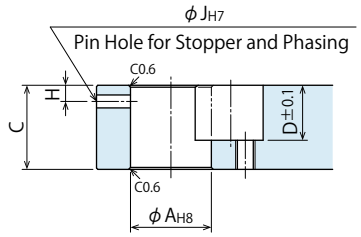
Corresponding Model No.

LHA □ 0 - C/G/S R/L - A

1 Body Size

6 Option When selecting A





(mm)

Corresponding Model No.	LHA0360 -□-A	LHA0400 -□-A	LHA0480 -□-A	LHA0550 -□-A	LHA0650 -□-A	LHA0750 -□-A
A	15 +0.027 0	18 +0.027 0	22 +0.033 0	25 +0.033 0	30 +0.033 0	35.5 +0.039 0
B	12	15	18	20	24	28
C	17	19	23	26	29	35
D	11	13	15.5	17	19	21
E	13	16	20	23	25	29
F	12.5	15	16.5	18.5	20.5	25
G	2	2.5	4	4.5	6.5	6.5
H	3	4	4	4	6	6
J	3 +0.010 0	4 +0.012 0	4 +0.012 0	4 +0.012 0	6 +0.012 0	6 +0.012 0
K	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
Pin for Stopper and Phasing	φ3(m6) ×8	φ4(m6) ×10	φ4(m6) ×12	φ4(m6) ×14	φ6(m6) ×14	φ6(m6) ×16

Notes：

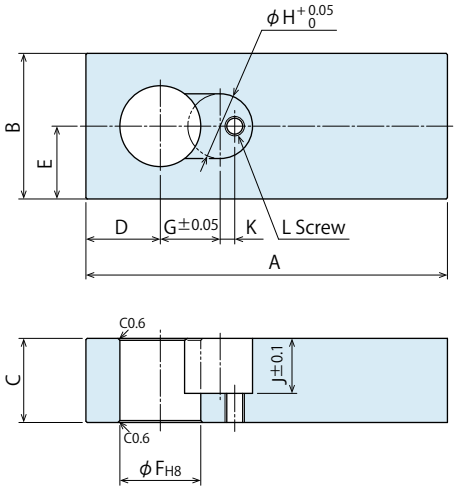
1. Swing lever should be designed with its length according to performance curve on page 5.
2. If the swing lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
3. The pin hole for stopper and phasing (φJ) should be appropriately machined according to the slot for lever phasing on the clamp body. Pin for stopper and phasing (prepared by customer) is used as phasing when mounting the lever and as stopper when removing the lever. If you are not using a pin for stopper and phasing, a stopper is required to remove the lever.
4. Tightening Kit (LZH□-W) for Quick Change Lever Type A is sold separately.

Accessories：Material Swing Lever for Quick Change Lever Type A

Model No. Indication

LZH 048 0 – A

- 048: Size (Refer to the table.)
- 0: Design No. (Revision Number)



(mm)

Model No.	LZH0360 -A	LZH0400 -A	LZH0480 -A	LZH0550 -A	LZH0650 -A	LZH0750 -A
Corresponding Model No.	LHA0360 -□-A	LHA0400 -□-A	LHA0480 -□-A	LHA0550 -□-A	LHA0650 -□-A	LHA0750 -□-A
A	120	145	160	170	175	185
B	26	32	40	45	50	58
C	17	19	23	26	29	35
D	13	16	20	23	25	29
E	13	16	20	22.5	25	29
F	$15^{+0.027}_{0}$	$18^{+0.027}_{0}$	$22^{+0.033}_{0}$	$25^{+0.033}_{0}$	$30^{+0.033}_{0}$	$35.5^{+0.039}_{0}$
G	12.5	15	16.5	18.5	20.5	25
H	12	15	18	20	24	28
J	11	13	15.5	17	19	21
K	2	2.5	4	4.5	6.5	6.5
L	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25

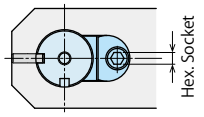
Notes：

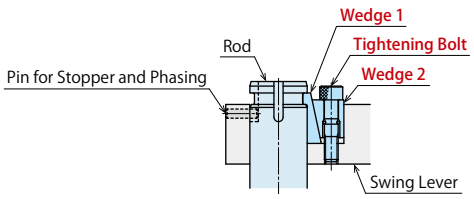
1. Material : S50CH
2. If necessary, the front end should be additionally machined.
3. The pin hole for stopper and lever phasing should be additionally machined by referring to Quick Change Lever Type A Design Dimensions.
4. Tightening Kit (LZH□-W) for Quick Change Lever Type A is sold separately.

Accessories：Tightening Kit for Quick Change Lever Type A

Tightening Kit for mounting Quick Change Lever Type A.
Sold separately from clamp body.

【Contents of Tightening Kit】
・Wedge 1 ・Wedge 2 ・Tightening Bolt





LZH 048 0 - W

- 048: 1
- 0: 2

1 Corresponding Model No.

036：LHA0360-□-A　　**055**：LHA0550-□-A
040：LHA0400-□-A　　**065**：LHA0650-□-A
048：LHA0480-□-A　　**075**：LHA0750-□-A

2 Design No.

0 ：Revision Number

Model No.	LZH0360-W	LZH0400-W	LZH0480-W	LZH0550-W	LZH0650-W	LZH0750-W
Corresponding Model No.	LHA0360-□-A	LHA0400-□-A	LHA0480-□-A	LHA0550-□-A	LHA0650-□-A	LHA0750-□-A
Nominal×Picth of Tightening Bolt	M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25
Hex. Socket mm	3	4	4	5	5	6
Tightening Torque N·m	2.5	5.0	5.0	8.0	8.0	20

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

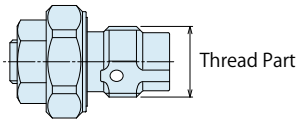
BZL 0 10 0 - B

1 2 3

1 G Thread Size

10 : Thread Part G1/8A Thread

20 : Thread Part G1/4A Thread



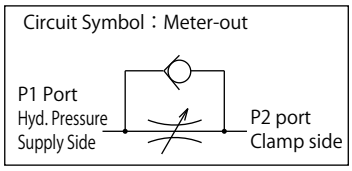
2 Design No.

0 : Revision Number

3 Control Method

B : Meter-out

B



Specifications

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

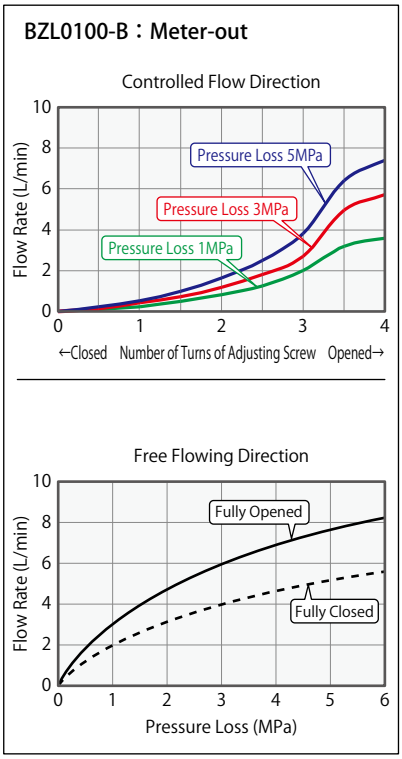
Notes: 1. Minimum passage area when control side is fully opened is same as the maximum passage area in the table above.
2. It must be mounted with recommended torque. If mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate because of the metal seal structure.
3. Do not attach a used BZL to other clamps. Flow control may not be done because the bottom depth difference of G thread makes metal sealing insufficient.

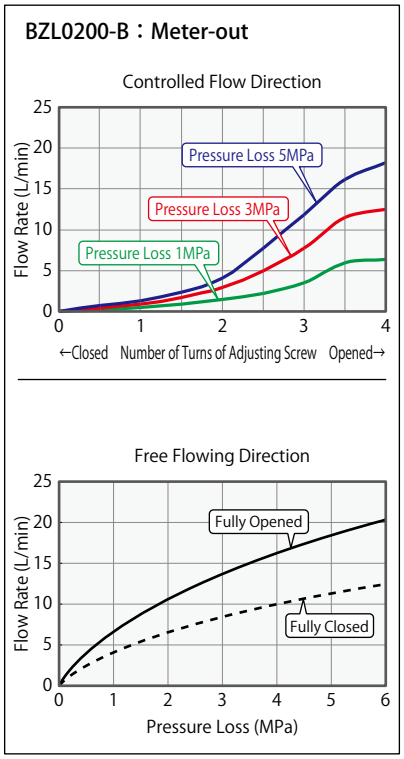
Applicable Product

Model No.	LHA-A Swing Clamp Quick Change Lever Type A
BZL0100-B	LHA0360-A LHA0400-A LHA0480-A LHA0550-A
BZL0200-B	LHA0650-A LHA0750-A

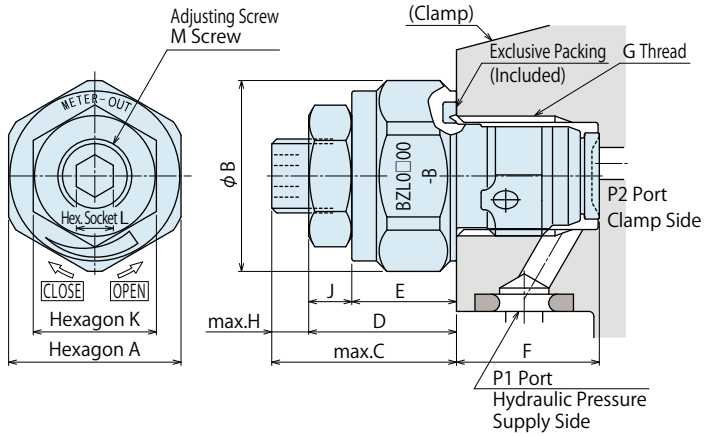
Notes: 1. Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control may have adverse effect by presence of air in the system.

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





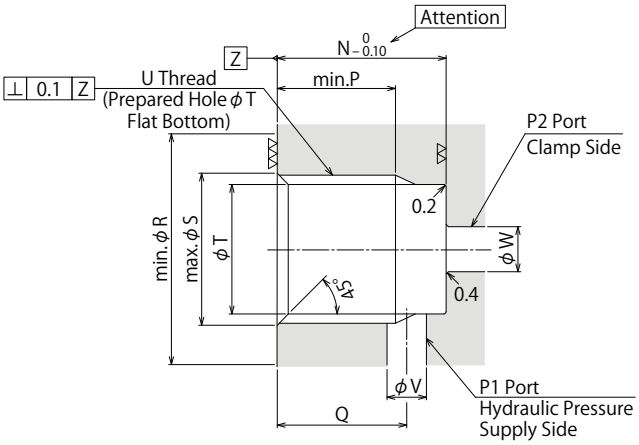
External Dimensions



(mm)

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

Machine Dimensions of Mounting Area



Notes：

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

Notes

1. Please read "Speed control circuit of hydraulic cylinder and notes" 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 page 17)
2. It is dangerous to air bleed during operation under high pressure. It must be done under lower pressure.
   (For reference: the minimum operating range of the product within the circuit.)

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 Unit" to assist with proper hydraulic circuit designing. Improper circuit design may lead to malfunctions and damages. (Refer to page 17)
- 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 moment of inertia is small.

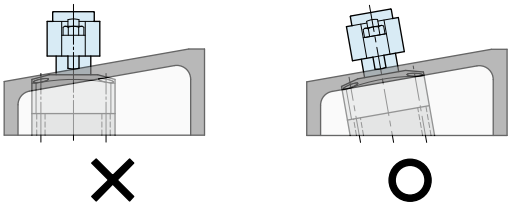
- Large moment of inertia will degrade the lever's stopping accuracy and cause undue wear to the clamp.
  Additionally, the clamp may not function, depending on supplied hydraulic pressure and lever mounting position.
- Please set the allowable operating time after the moment of inertia calculated.
  Please make sure that 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.

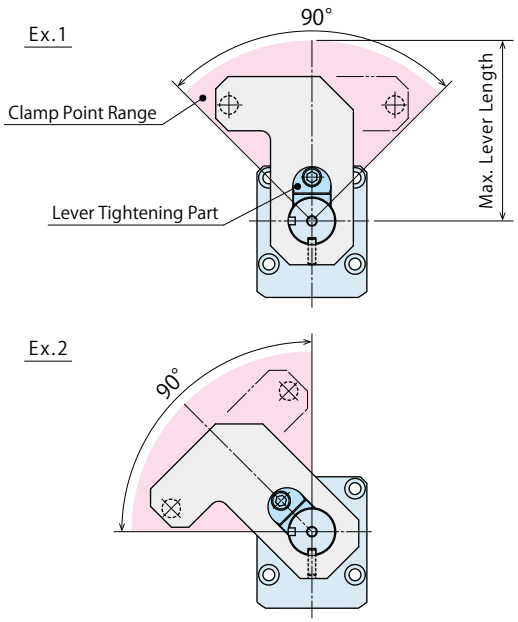
5) When clamping on a sloped surface of the workpiece

- Make sure the clamp surface and mounting surface of the clamp are parallel.



6) When using an offset lever for LHE-A (Quick Change Lever Type A)

- Clamp point should be in the range of 90° towards lever tightening part.



Installation Notes

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 air 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) Installation of the Product

- 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)
LHA0360-□-A	M4×0.7	4.0
LHA0400-□-A	M5×0.8	8.0
LHA0480-□-A	M5×0.8	8.0
LHA0550-□-A	M6×1	14
LHA0650-□-A	M6×1	14
LHA0750-□-A	M8×1.25	33

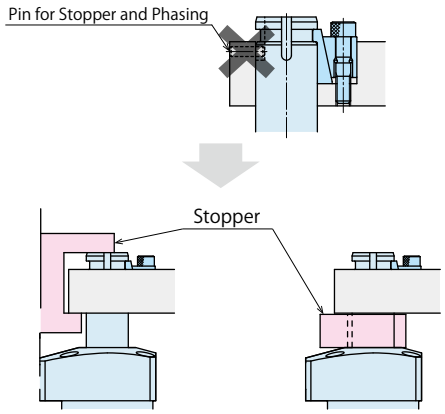
5) Installation / Removal of the Swing Lever

- Oil or debris on the mating surfaces of the lever, taper sleeve or piston rod may cause the rod to loosen. Please clean them thoroughly before assembly.
- Tighten the tightening bolt of swing lever with the torque shown below. Tightening with greater torque than recommended can damage the bolt and lever tightening function.

Model No.	Tightening Bolt Size	Tightening Torque (N·m)
LHA0360-□-A	M4×0.7	2.5
LHA0400-□-A	M5×0.8	5.0
LHA0480-□-A	M5×0.8	5.0
LHA0550-□-A	M6×1	8.0
LHA0650-□-A	M6×1	8.0
LHA0750-□-A	M8×1.25	20

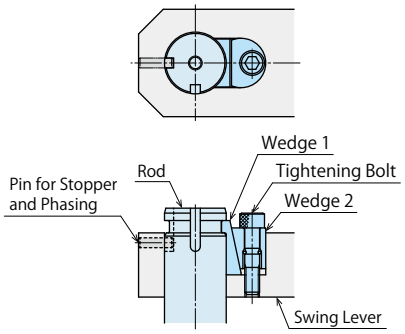
- Pin for stopper and phasing (prepared by customer) is used as phasing when mounting the lever and as stopper when removing the lever. If you are not using a pin for stopper and phasing, a stopper is required to remove the lever.

Stopper example for lever removal when not using pin for stopper and phasing.



- Installation Procedure
  ① Install in order of swing lever, wedge 1, wedge 2 to the rod.
  ② Pull the lever towards the wedge side and tighten the tightening bolt with the specified torque.

- Removal Procedure
  ① By loosening tightening bolt, wedge function is released and the lever can be removed.



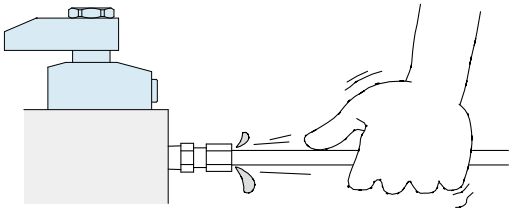
6) Swing Speed Adjustment

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

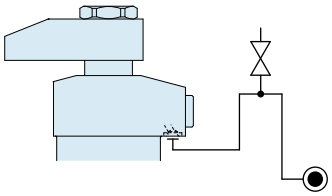
7) Air Bleeding of the Hydraulic Circuit

- 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.)



8) Checking looseness and retightening

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

Hydraulic Fluid List

ISO Viscosity Grade ISO-VG-32

Manufacturer Name	Wear Resistant Hydraulic Fluid	Multi Purpose Universal Fluid
Showa Shell Sekiyu	Tellus S2 M32	Morlina S2B 32
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32
JX Nippon Oil & Energy Corporation	SUPER HYRANDO 32	SUPER MULPUS DX 32
Cosmo Oil	COSMO HYDRO AW32	COSMO NEW MIGHTY SUPER 32
ExxonMobil	MOBIL DTE24	MOBIL DTE24LIGHT
Matsumura Oil	HYDROL AW32	
Castrol	HYSPIN AWS32	

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

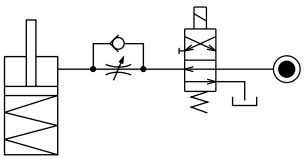
Cautions

Notes on Hydraulic Cylinder Speed Control Unit

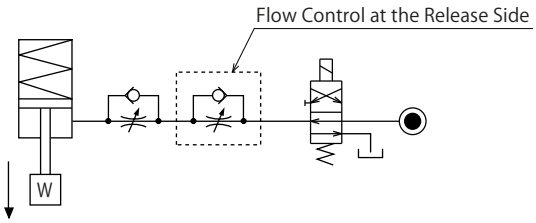
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

Flow Control Circuit for Single Acting Cylinder

For spring return single acting cylinders, restricting flow during release can extremely slow down or disturb release action. The preferred method is to control the flow during the lock action. It is also preferred to provide a flow control valve at each actuator which has limited action speed (swing clamp, hydraulic compact cylinder, etc.)



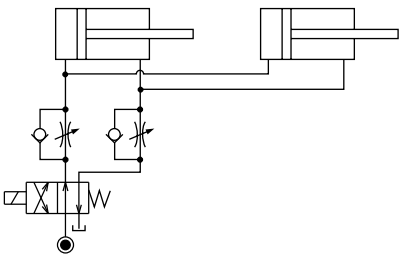
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Provide the flow control valve to the releasing side if the lever weight is applied during release action.)



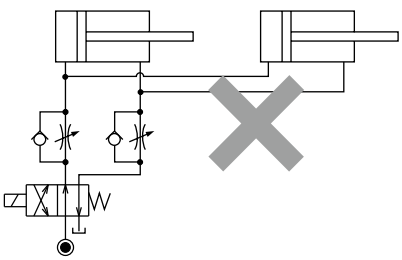
Flow Control Circuit for Double Acting Cylinder

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

【Meter-out Circuit】

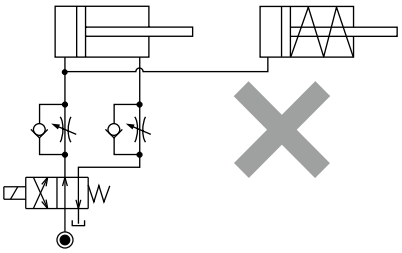


【Meter-in Circuit】



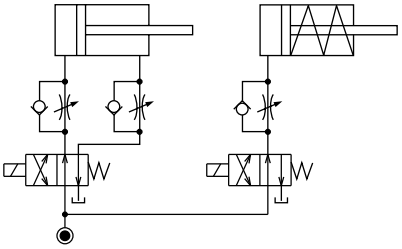
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

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

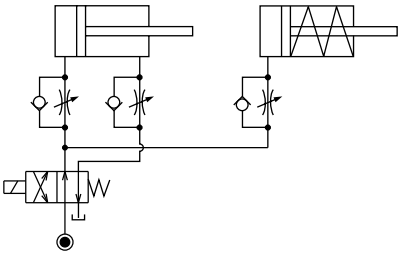


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

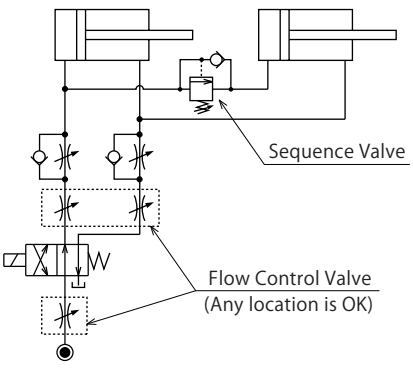
○ Separate the control circuit.



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



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

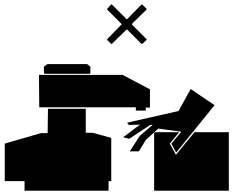


Notes on Handling

1) It should be handled by qualified personnel.
- The hydraulic machine / 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 while they are working. Otherwise, your hands may be injured.

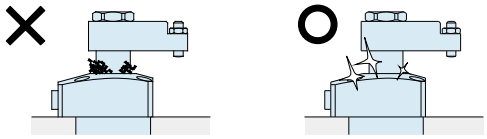


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance・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.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage and air leaks.



3) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.

4) Regularly tighten bolts and pipe line, mounting bolts, nuts, circlips and cylinders to ensure proper use.

5) Make sure the hydraulic fluid has not deteriorated.

6) Make sure there is smooth action and no abnormal noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

7) The products should be stored in the cool and dark place without direct sunshine or moisture.

8) Please contact us for overhaul and repair.

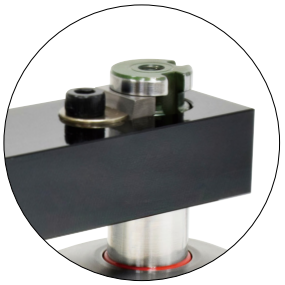
Warranty

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

2) Warranty Scope
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
Defects or failures caused by the following are not covered.

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

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



Please contact us separately for quick change lever type A of swing clamp other than Model LHA.

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- FOR FURTHER INFORMATION ON UNLISTED SPECIFICATIONS AND SIZES, PLEASE CALL US.
- SPECIFICATIONS IN THIS LEAFLET ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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