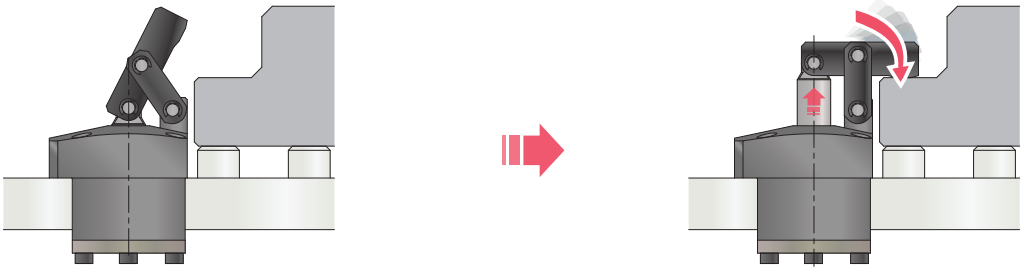
Hydraulic Link Clamp

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

Compact Cylinder with Built-in Link Mechanism

Link design is not required.

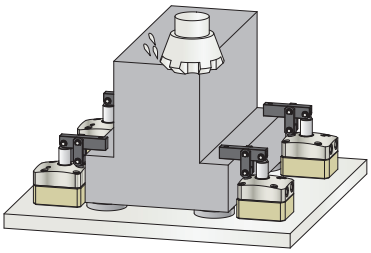
Action Description



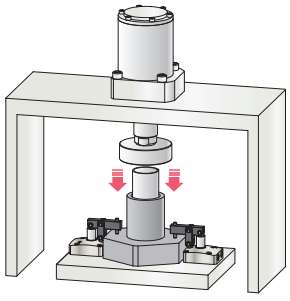
Released State

Locked State

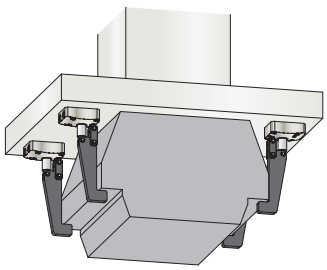
Application Examples



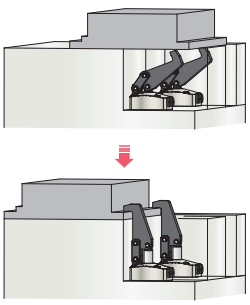
Machining



Press Fitting



Transfer • Gantry Loader



Interference Prevention

Link Clamp
Quick Change Lever Option A

Model LKA-A / LKC-A / LKW-A / LJ-A / LM-A

Quickest Lever Setup Time Possible by One Bolt Exchange

● Quick Change Lever Option A is Suitable for Frequent Lever Change

When changing a standard lever, a special tool is required to install/remove a snap ring which fixes the lever pin and rod pin. Installation/Removal of the snap ring takes time and there is a possibility of deformation/loss of the snap ring.
Option A, however, does not require snap rings or special tools, but only one wrench and bolt which is suitable especially for frequent lever change.

● Lever Removal Procedure

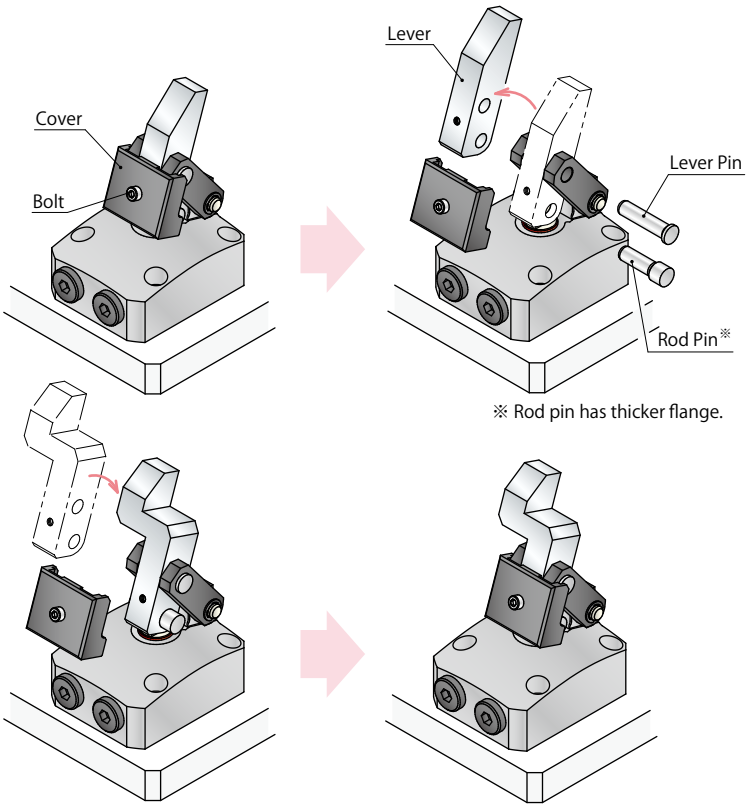
Loosen the bolt on the cover top and remove the cover.
(The bolt does not fall from the cover.)

Pull out the rod pin and the lever pin, and remove the cover.

● Lever Installation Procedure

Set another lever and insert the rod pin and the lever pin. (The pins can also be inserted from the other side.)

Set the cover and tighten the bolt.
Lever installation is now completed.

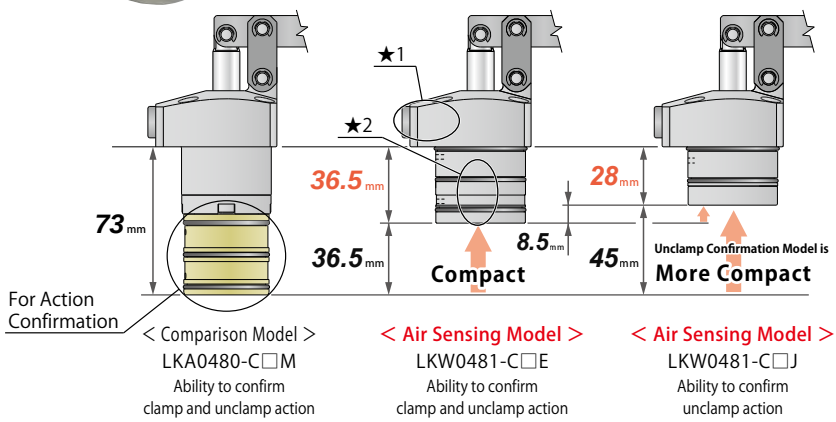


※ Rod pin has thicker flange.

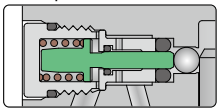
Air Sensing Link Clamp

Model LKW

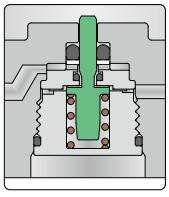
Clamp-unclamp confirmation with built-in air catch sensor for smaller footprint fixtures.



★1
Clamp Confirmation Valve



★2
Unclamp Confirmation Valve



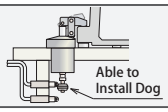
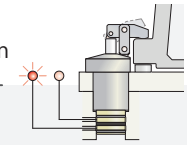
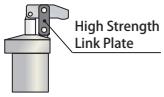
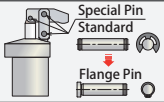
Low Pressure Model

MAX. 7MPa

Model LKA → P.611

Model LKC → P.637

Model LKW → P.651

Classification		Double Action	Double Action Compact	Double Action Built-in Sensing Valve
Operating Pressure Range		0.5 ~ 7MPa	0.5 ~ 7MPa	0.5 ~ 7MPa
Standard Model		External Dimensions → P.623	External Dimensions → P.645	–
Action Confirmation	Double End Rod Option for Dog 	External Dimensions → P.625	–	–
	Air Sensing Manifold Option 	External Dimensions → P.627	–	–
	Air Sensing Piping Option	External Dimensions → P.629	–	–
	Built-in Sensing Valve Model	–	–	External Dimensions → P.665
Option	Quick Change Lever Option A 	External Dimensions → P.631	External Dimensions → P.647	External Dimensions → P.671
	High Strength Link Plate Option 	Allowable offset increases. (External dimension is the same as standard model.)	Allowable offset increases. (External dimension is the same as standard model.)	Allowable offset increases. (External dimension is the same as standard model.)
	Flange Pin with C-type Circlip 	★	★	★
Accessories	Lever 	LZK-L LZK-W → P.636	LZK-L LZK-W → P.650	LZK-L LZK-W → P.674
	Manifold Block 	LZY-MD → P.1335		–
	Speed Control Valve Plug 	BZL, BZX, JZG, BZS → P.947		

※ Please contact us for detail dimension at ★ part.

High Pressure Model

MAX. 35MPa

Model TMA-2 → P.691

Model TMA-1 → P.703

Model TMV-2

Classification		Double Action	Single Action (Spring Release)	Double Action with Action Confirmation
Operating Pressure Range		3.5 ~ 35MPa	3.5 ~ 35MPa	3.5 ~ 35MPa
Accessories	Lever 	LZ-LJ3 LZ-LJ2 → P.702	LZ-LJ3 LZ-LJ2 → P.714	Further information on the website.
	Manifold Block 	TMZ-2MB → P.1337	TMZ-1MB → P.1337	
	Speed Control Valve Plug 	BZT, JZG → P.947		
	G-Thread Fitting 	G-Thread Fitting (Made by Ihara Science) → P.1351		

Low Pressure Model

MAX. 7MPa

		Model LJ/LM → P.675	Model LKK	Model LKV
Classification		Single Action (Spring Release)	Double Action 360° Rotatable Lever	Double Action 1-Port Sensing
Operating Pressure Range		2.5 ~ 7MPa	0.5 ~ 7MPa	1 ~ 7MPa
Standard Model		External Dimensions → P.683	Further information on the website.	Further information on the website.
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	–		
Option	Quick Change Lever Option A	External Dimensions → P.685		
	High Strength Link Plate Option (High Strength Link Plate)	–		
	Flange Pin with C-type Circlip (Special Pin Standard, Flange Pin)	–		
Accessories	Lever	LZ-LJ1, LZ-LJ2 LZK-W → P.688		
	Manifold Block	LZ-MS → P.1336		
	Speed Control Valve Plug	BZL, BZX, JZG, BZS → P.947		

※ Please contact us for detail dimension at ★ part.

High-Power Link Clamp Hydraulic Double Action

Model **LKE**

2 sizes smaller with equivalent clamping force. Mechanical lock and hydraulic pressure allow for strong clamping and holding force.
Refer to P. 53 for further information.

Hydraulic Double-Acting Link Clamp

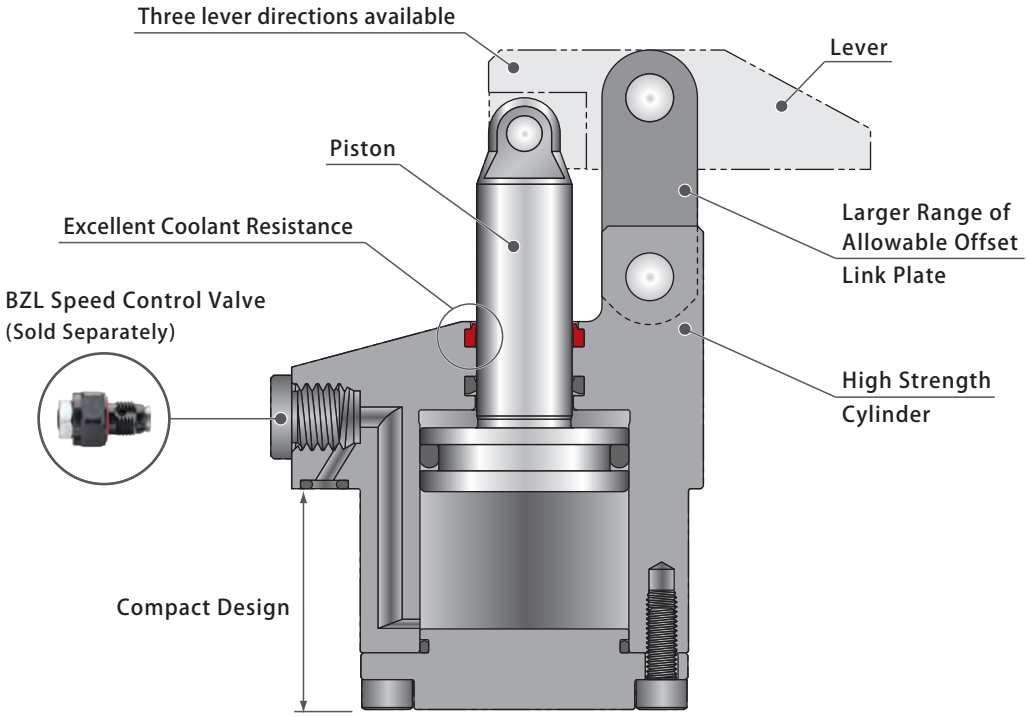
Model LKA

Low Pressure (0.5~7MPa)

High Power・Compact Clamp

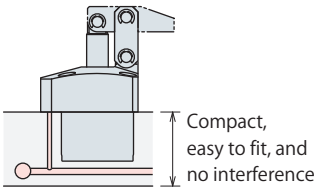
Index

Cross Section



Compact

The dimension below flange is shortened by 40 percent to enable thinner and lighter fixtures.
The compact body allows the internal fitting without interference and makes fixture design more engineer friendly.

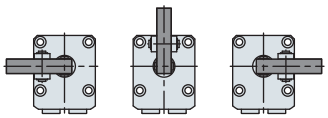


High Strength Supporting Point

The compact body is able to retain similar clamping and holding forces by including a high strength supporting point within the body cylinder.
Its strength is the best in the industry, by way of casting.

Lever in Three Directions Available

Lever positioning is available in three directions; L : Left, C : Center, R : Right.
As seen from the port side.

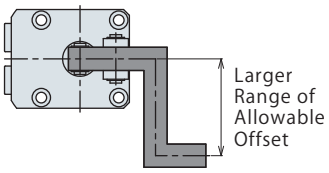


Excellent Coolant Resistance

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.

A Larger Range of Allowable Offset

High strength link plate option is available for larger tolerance.



Able to Attach Speed Control Valve Directly

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

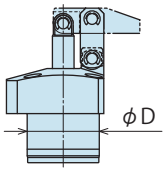
Model No. Indication

LKA 048 0 - C R □ - □

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
090 : ϕD=90mm
105 : ϕD=105mm



※ Outer diameter (ϕD) of the cylinder.

2 Design No.

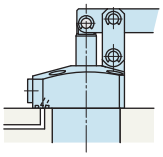
0 : Revision Number

3 Piping Method

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

※ Speed control valve (BZL) is sold separately.
Refer to P.947.

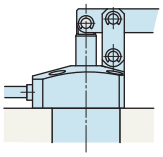
C



Gasket Option

With G Thread Plug (able to attach Speed Control Valve)
(Order the valve separately Recommended : BZL-B)

S



Piping Option

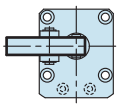
Rc Thread Port
No Gasket Port

4 Lever Direction

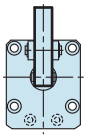
L : Left
C : Center
R : Right

※ The images show the lever direction when the piping port is placed in front of you.

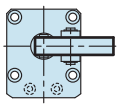
L



C



R



5 Action Confirmation Method

Blank : None (Standard)
D : Double End Rod Option for Dog
M : Air Sensing Manifold Option
N□ : Air Sensing Piping Option
(**N** : Standard Air Sensor Port Phase
NC/NL/NR : Refer to external dimensions for air sensor port phase.)

D

M

N

Air sensor port phase is selectable from 4 directions.
(Refer to External Dimensions.)

6 Option

Blank : None (Standard)
A : Quick Change Lever Option A
H : High Strength Link Plate Option (Increase in Allowable Offset)
K : Flange Pin with C Type Circlip

※ Option **H** is only available in case of 1 Body Size (036/040/048/055/065/075).
※ Please let us know if you have a question about a combination of options.

Blank

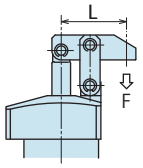
A

Specifications

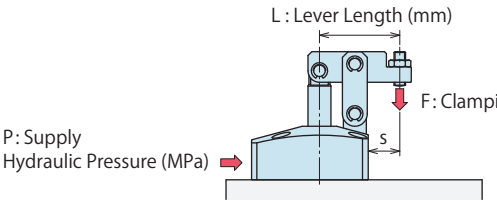
Model No.			LKA0360	LKA0400	LKA0480	LKA0550
No Action Confirmation 5 Option Blank	Cylinder Area for Locking cm²		4.52	5.31	7.07	9.62
	Clamping Force (Calculation Formula) ※1 kN		$F=\frac{5.90 \times P}{L-14.5}$	$F=\frac{7.64 \times P}{L-16}$	$F=\frac{11.76 \times P}{L-18.5}$	$F=\frac{18.18 \times P}{L-21}$
	Cylinder Capacity cm³	Lock	8.4	10.9	16.6	25.0
		Release	6.9	8.6	13.0	19.8
With Action Confirmation 5 Option D/M/N	Cylinder Area for Locking cm²		4.02	4.18	5.53	8.08
	Clamping Force (Calculation Formula) ※1 kN		$F=\frac{5.24 \times P}{L-14.5}$	$F=\frac{6.02 \times P}{L-16}$	$F=\frac{9.20 \times P}{L-18.5}$	$F=\frac{15.27 \times P}{L-21}$
	Cylinder Capacity cm³	Lock	7.4	8.6	13.0	21.0
		Release	6.9	8.6	13.0	19.8
Cylinder Inner Diameter ※2 mm			24	26	30	35
Rod Diameter ※2 mm			10	12	14	16
Full Stroke mm			18.5	20.5	23.5	26
Lock Stroke mm			16	17.5	20.5	23
Extra Stroke mm			2.5	3	3	3
Max. Operating Pressure MPa			7.0			
Min. Operating Pressure※3 MPa			0.5			
Withstanding Pressure MPa			10.5			
Operating Temperature ℃			0 ~ 70			
Weight ※4 kg	5 Option Blank		0.5	0.6	1.0	1.3
	5 Option D		0.5	0.7	1.0	1.3
	5 Option M / N		0.6	0.8	1.3	1.6

Model No.			LKA0650	LKA0750	LKA0900	LKA1050
No Action Confirmation 5 Option Blank	Cylinder Area for Locking cm²		15.9	23.8	36.3	50.3
	Clamping Force (Calculation Formula) ※1 kN		$F=\frac{35.06 \times P}{L-24.5}$	$F=\frac{64.14 \times P}{L-30}$	$F=\frac{117.66 \times P}{L-36}$	$F=\frac{199.05 \times P}{L-44}$
	Cylinder Capacity cm³	Lock	46.9	83.2	148.9	246.3
		Release	37.7	69.8	123.7	197.8
With Action Confirmation 5 Option D/M/N	Cylinder Area for Locking cm²		14.4	21.2	33.8	47.7
	Clamping Force (Calculation Formula) ※1 kN		$F=\frac{31.67 \times P}{L-24.5}$	$F=\frac{57.27 \times P}{L-30}$	$F=\frac{109.42 \times P}{L-36}$	$F=\frac{188.97 \times P}{L-44}$
	Cylinder Capacity cm³	Lock	42.4	74.2	138.5	233.8
		Release	37.7	69.8	123.7	197.8
Cylinder Inner Diameter ※2 mm			45	55	68	80
Rod Diameter ※2 mm			20	22	28	35.5
Full Stroke mm			29.5	35	41	49
Lock Stroke mm			26.5	32	38	46
Extra Stroke mm			3	3	3	3
Max. Operating Pressure MPa			7.0			
Min. Operating Pressure※3 MPa			0.5			
Withstanding Pressure MPa			10.5			
Operating Temperature ℃			0 ~ 70			
Weight ※4 kg	5 Option Blank		2.2	3.3	5.8	8.6
	5 Option D		2.3	3.4	5.9	8.7
	5 Option M / N		2.6	3.9	6.5	9.9

Notes:
※ 1. F : Clamping Force (kN), P : Supply Hydraulic Pressure (MPa), L : Distance between the piston center and the clamping point (mm).
※ 2. Clamping force cannot be calculated from the cylinder inner diameter and rod diameter. Please refer to the clamping force curve.
※ 3. Minimum pressure to operate the clamp without load.
※ 4. It shows the weight of single clamp without the link lever.



Clamping Force Curve (Action Confirmation Method···Blank：Standard Model)



Applicable Model

LKA □ 0 - CS / LCR □ - Blank / A / H / K

1 Body Size

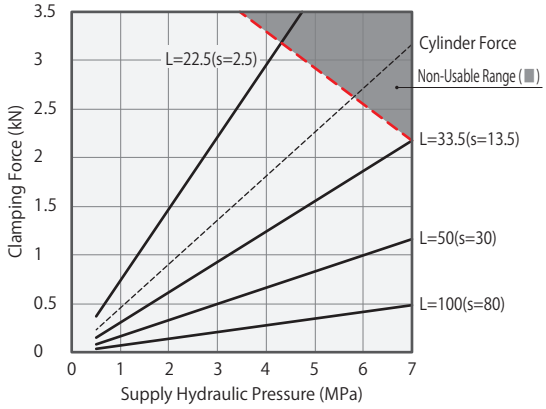
5 Action Confirmation Method : Blank selected

(Ex.)
In case of LKA0480 : When supply hydraulic pressure P is 5.0MPa and lever length L is 42mm, clamping force becomes about 2.6kN.

LKA0360-□□-□

Clamping Force Calculation Formula※1 (kN) $F = (5.90 \times P) / (L - 14.5)$

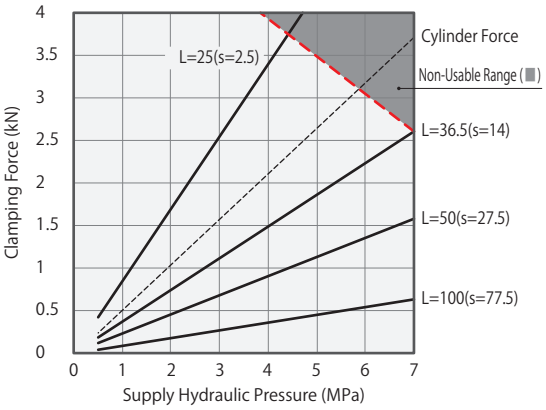
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=22.5	L=27.5	L=33.5	L=40	L=50	L=60	L=80	L=100	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	3.2			2.2	1.7	1.2	1.0	0.7	0.5	33.5
6.5	3.0			2.1	1.6	1.1	0.9	0.6	0.5	31
6	2.8			1.9	1.4	1.0	0.8	0.6	0.5	29
5.5	2.5		2.5	1.8	1.3	1.0	0.8	0.5	0.4	27
5	2.3		2.3	1.6	1.2	0.9	0.7	0.5	0.4	25
4.5	2.1		2.1	1.4	1.1	0.8	0.6	0.5	0.4	24
4	1.9	3.0	1.9	1.3	1.0	0.7	0.6	0.4	0.3	22
3.5	1.6	2.6	1.6	1.1	0.9	0.6	0.5	0.4	0.3	21
3	1.4	2.3	1.4	1.0	0.7	0.5	0.4	0.3	0.3	20
2.5	1.2	1.9	1.2	0.8	0.6	0.5	0.4	0.3	0.2	20
2	1.0	1.5	1.0	0.7	0.5	0.4	0.3	0.2	0.2	20
1.5	0.7	1.2	0.7	0.5	0.4	0.3	0.2	0.2	0.2	20
1	0.5	0.8	0.5	0.4	0.3	0.2	0.2	0.1	0.1	20
0.5	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	20
Max. Operating Pressure (MPa)		4.4	5.8	7.0	7.0	7.0	7.0	7.0	7.0	



LKA0400-□□-□

Clamping Force Calculation Formula※1 (kN) $F = (7.64 \times P) / (L - 16)$

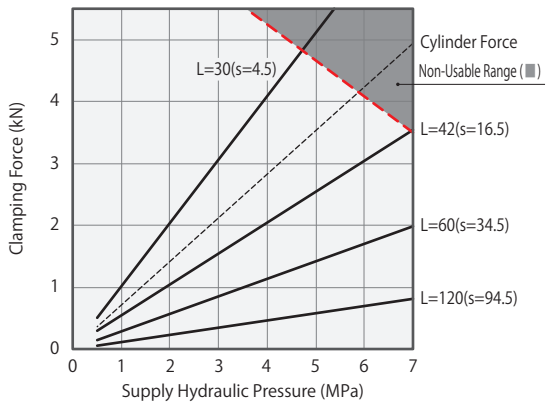
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	3.8			2.7	2.3	1.6	1.3	0.9	0.7	36.5
6.5	3.5			2.5	2.1	1.5	1.2	0.8	0.6	34
6	3.2			2.3	2.0	1.4	1.1	0.8	0.6	32
5.5	3.0		3.1	2.2	1.8	1.3	1.0	0.7	0.6	29
5	2.7		2.8	2.0	1.6	1.2	0.9	0.6	0.5	27
4.5	2.4	3.9	2.5	1.8	1.5	1.1	0.8	0.6	0.5	26
4	2.2	3.4	2.2	1.6	1.3	0.9	0.7	0.5	0.4	24
3.5	1.9	3.0	2.0	1.4	1.2	0.8	0.7	0.5	0.4	23
3	1.6	2.6	1.7	1.2	1.0	0.7	0.6	0.4	0.3	23
2.5	1.4	2.2	1.4	1.0	0.8	0.6	0.5	0.3	0.3	23
2	1.1	1.7	1.1	0.8	0.7	0.5	0.4	0.3	0.2	23
1.5	0.8	1.3	0.9	0.6	0.5	0.4	0.3	0.2	0.2	23
1	0.6	0.9	0.6	0.4	0.4	0.3	0.2	0.2	0.1	23
0.5	0.3	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1	23
Max. Operating Pressure (MPa)		4.5	5.8	7.0	7.0	7.0	7.0	7.0	7.0	



LKA0480-□□-□

Clamping Force Calculation Formula※1 (kN) $F = (11.76 \times P) / (L - 18.5)$

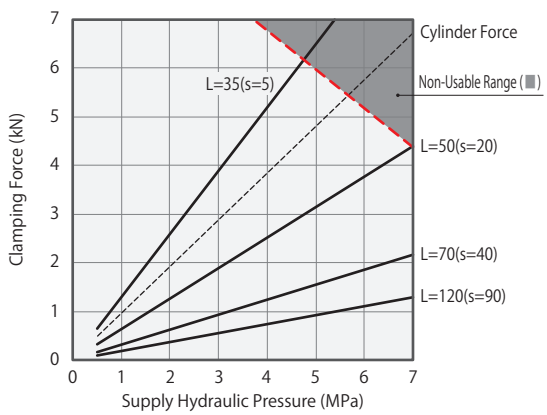
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	5.0			3.6	2.7	2.0	1.4	1.1	0.9	42
6.5	4.6			3.3	2.5	1.9	1.3	1.0	0.8	39
6	4.3			3.1	2.3	1.8	1.2	0.9	0.7	36
5.5	3.9		4.0	2.8	2.1	1.6	1.1	0.8	0.7	34
5	3.6		3.6	2.6	1.9	1.5	1.0	0.8	0.6	32
4.5	3.2	4.7	3.3	2.3	1.7	1.3	0.9	0.7	0.6	30
4	2.9	4.1	2.9	2.1	1.5	1.2	0.8	0.6	0.5	28
3.5	2.5	3.6	2.5	1.8	1.4	1.0	0.7	0.6	0.5	26
3	2.2	3.1	2.2	1.6	1.2	0.9	0.6	0.5	0.4	26
2.5	1.8	2.6	1.8	1.3	1.0	0.8	0.5	0.4	0.3	26
2	1.5	2.1	1.5	1.1	0.8	0.6	0.4	0.3	0.3	26
1.5	1.1	1.6	1.1	0.8	0.6	0.5	0.3	0.3	0.2	26
1	0.8	1.1	0.8	0.6	0.4	0.3	0.2	0.2	0.2	26
0.5	0.4	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.1	26
Max. Operating Pressure (MPa)		4.8	5.9	7.0	7.0	7.0	7.0	7.0	7.0	



LKA0550-□□-□

Clamping Force Calculation Formula※1 (kN) $F = (18.18 \times P) / (L - 21)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	6.8			4.4	3.3	2.6	2.2	1.7	1.3	50
6.5	6.3			4.1	3.1	2.5	2.1	1.5	1.2	46
6	5.8			3.8	2.8	2.3	1.9	1.4	1.2	43
5.5	5.3		5.3	3.5	2.6	2.1	1.7	1.3	1.1	39
5	4.9		4.8	3.2	2.4	1.9	1.6	1.2	1.0	37
4.5	4.4	5.9	4.4	2.9	2.1	1.7	1.4	1.1	0.9	34
4	3.9	5.2	3.9	2.6	1.9	1.5	1.3	1.0	0.8	32
3.5	3.4	4.6	3.4	2.2	1.7	1.3	1.1	0.9	0.7	30
3	2.9	3.9	2.9	1.9	1.4	1.2	1.0	0.7	0.6	30
2.5	2.5	3.3	2.4	1.6	1.2	1.0	0.8	0.6	0.5	30
2	2.0	2.6	2.0	1.3	1.0	0.8	0.7	0.5	0.4	30
1.5	1.5	2.0	1.5	1.0	0.7	0.6	0.5	0.4	0.3	30
1	1.0	1.3	1.0	0.7	0.5	0.4	0.4	0.3	0.2	30
0.5	0.5	0.7	0.5	0.4	0.3	0.2	0.2	0.2	0.1	30
Max. Operating Pressure (MPa)		4.8	5.7	7.0	7.0	7.0	7.0	7.0	7.0	



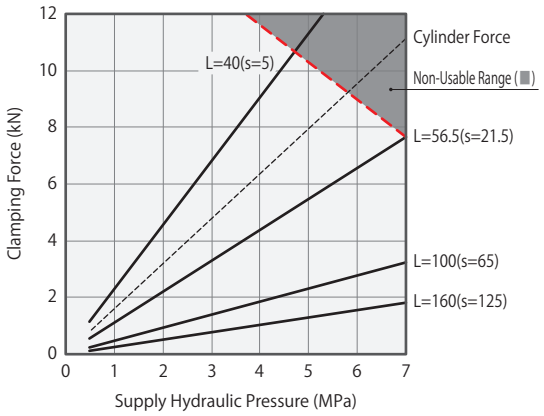
Notes：

1. Tables and graphs show the relationship between the clamping force (kN) and supply hydraulic pressure (MPa).
2. Cylinder force (when L=0) cannot be calculated from the calculation formula of clamping force.
3. Clamping force in the non-usable range may cause damage and fluid leakage.

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

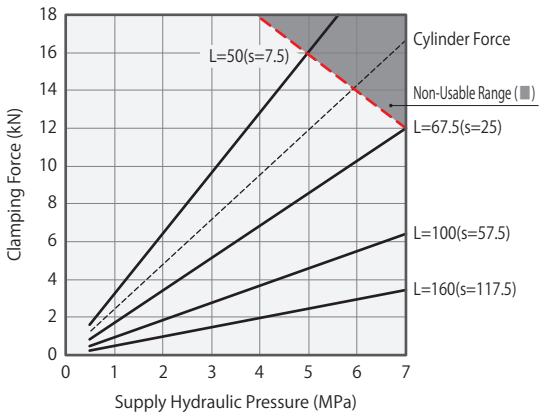
LKA0650-□□-□ Clamping Force Calculation Formula※1 (kN) $F = (35.06 \times P) / (L - 24.5)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	11.2			7.7	4.5	3.3	2.6	2.2	1.9	56.5
6.5	10.4			7.2	4.2	3.1	2.4	2.0	1.7	52
6	9.6		8.3	6.6	3.8	2.8	2.3	1.9	1.6	48
5.5	8.8		7.6	6.1	3.5	2.6	2.1	1.7	1.5	45
5	8.0		6.9	5.5	3.2	2.4	1.9	1.6	1.3	42
4.5	7.2	10.2	6.2	5.0	2.9	2.1	1.7	1.4	1.2	39
4	6.4	9.1	5.5	4.4	2.6	1.9	1.5	1.3	1.1	37
3.5	5.6	8.0	4.9	3.9	2.3	1.7	1.3	1.1	1.0	35
3	4.8	6.8	4.2	3.3	1.9	1.4	1.2	1.0	0.8	35
2.5	4.0	5.7	3.5	2.8	1.6	1.2	1.0	0.8	0.7	35
2	3.2	4.6	2.8	2.2	1.3	1.0	0.8	0.7	0.6	35
1.5	2.4	3.4	2.1	1.7	1.0	0.7	0.6	0.5	0.4	35
1	1.6	2.3	1.4	1.1	0.7	0.5	0.4	0.4	0.3	35
0.5	0.8	1.2	0.7	0.6	0.4	0.3	0.2	0.2	0.2	35
Max. Operating Pressure (MPa)		4.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	



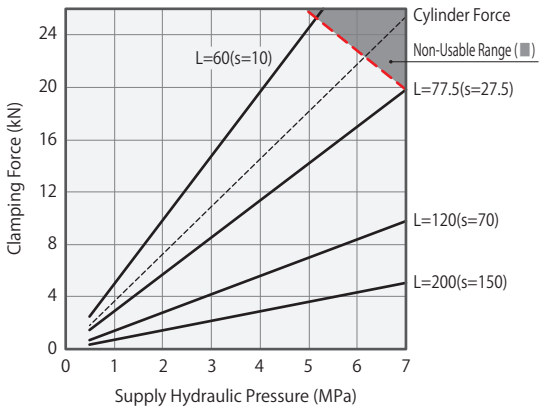
LKA0750-□□-□ Clamping Force Calculation Formula※1 (kN) $F = (64.14 \times P) / (L - 30)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	16.7			12.0	9.0	6.5	5.0	4.1	3.5	67.5
6.5	15.5			11.2	8.4	6.0	4.7	3.8	3.3	63
6	14.3		12.9	10.3	7.7	5.5	4.3	3.5	3.0	58
5.5	13.1		11.8	9.5	7.1	5.1	4.0	3.3	2.8	54
5	11.9	16.1	10.7	8.6	6.5	4.6	3.6	3.0	2.5	51
4.5	10.7	14.5	9.7	7.7	5.8	4.2	3.3	2.7	2.3	48
4	9.6	12.9	8.6	6.9	5.2	3.7	2.9	2.4	2.0	45
3.5	8.4	11.3	7.5	6.0	4.5	3.3	2.5	2.1	1.8	43
3	7.2	9.7	6.5	5.2	3.9	2.8	2.2	1.8	1.5	43
2.5	6.0	8.1	5.4	4.3	3.3	2.3	1.8	1.5	1.3	43
2	4.8	6.5	4.3	3.5	2.6	1.9	1.5	1.2	1.0	43
1.5	3.6	4.9	3.3	2.6	2.0	1.4	1.1	0.9	0.8	43
1	2.4	3.3	2.2	1.8	1.3	1.0	0.8	0.6	0.5	43
0.5	1.2	1.7	1.1	0.9	0.7	0.5	0.4	0.3	0.3	43
Max. Operating Pressure (MPa)		5.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0	



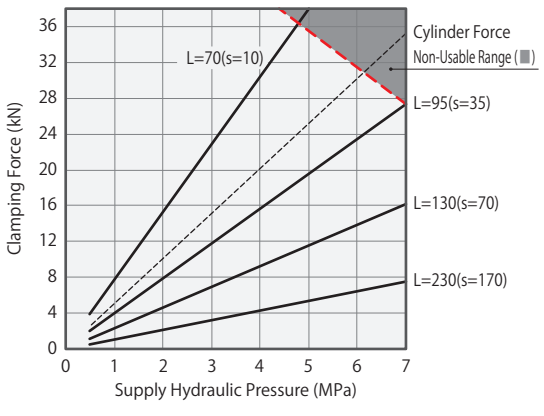
LKA0900-□□-□ Clamping Force Calculation Formula※1 (kN) $F = (117.66 \times P) / (L - 36)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=60	L=70	L=77.5	L=100	L=120	L=140	L=160	L=200	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	25.5			19.9	12.9	9.9	8.0	6.7	5.1	77.5
6.5	23.7			18.5	12.0	9.2	7.4	6.2	4.7	72
6	21.8		20.8	17.1	11.1	8.5	6.8	5.7	4.4	67
5.5	20.0		19.1	15.6	10.2	7.8	6.3	5.3	4.0	63
5	18.2	24.6	17.4	14.2	9.2	7.1	5.7	4.8	3.6	59
4.5	16.4	22.1	15.6	12.8	8.3	6.4	5.1	4.3	3.3	56
4	14.6	19.7	13.9	11.4	7.4	5.7	4.6	3.8	2.9	53
3.5	12.8	17.2	12.2	10.0	6.5	5.0	4.0	3.4	2.6	50
3	10.9	14.8	10.4	8.6	5.6	4.3	3.4	2.9	2.2	50
2.5	9.1	12.3	8.7	7.1	4.6	3.6	2.9	2.4	1.8	50
2	7.3	9.9	7.0	5.7	3.7	2.9	2.3	1.9	1.5	50
1.5	5.5	7.4	5.2	4.3	2.8	2.2	1.7	1.5	1.1	50
1	3.7	5.0	3.5	2.9	1.9	1.5	1.2	1.0	0.8	50
0.5	1.9	2.5	1.8	1.5	1.0	0.8	0.6	0.5	0.4	50
Max. Operating Pressure (MPa)		5.2	6.4	7.0	7.0	7.0	7.0	7.0	7.0	



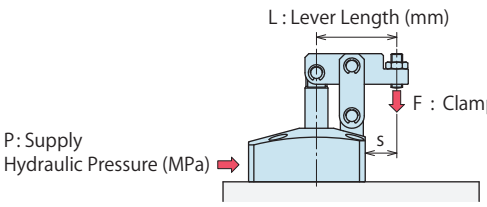
LKA1050-□□-□ Clamping Force Calculation Formula※1 (kN) $F = (199.05 \times P) / (L - 44)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=70	L=80	L=95	L=110	L=130	L=150	L=170	L=230	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	35.2			27.4	21.2	16.3	13.2	11.1	7.5	95
6.5	32.7			25.4	19.7	15.1	12.3	10.3	7.0	89
6	30.2			23.5	18.1	13.9	11.3	9.5	6.5	83
5.5	27.7		30.5	21.5	16.6	12.8	10.4	8.7	5.9	77
5	25.2		27.7	19.6	15.1	11.6	9.4	7.9	5.4	73
4.5	22.7	34.5	24.9	17.6	13.6	10.5	8.5	7.2	4.9	68
4	20.2	30.7	22.2	15.7	12.1	9.3	7.6	6.4	4.3	65
3.5	17.6	26.8	19.4	13.7	10.6	8.2	6.6	5.6	3.8	61
3	15.1	23.0	16.6	11.8	9.1	7.0	5.7	4.8	3.3	60
2.5	12.6	19.2	13.9	9.8	7.6	5.8	4.7	4.0	2.7	60
2	10.1	15.4	11.1	7.9	6.1	4.7	3.8	3.2	2.2	60
1.5	7.6	11.5	8.3	5.9	4.6	3.5	2.9	2.4	1.7	60
1	5.1	7.7	5.6	4.0	3.1	2.4	1.9	1.6	1.1	60
0.5	2.6	3.9	2.8	2.0	1.6	1.2	1.0	0.8	0.6	60
Max. Operating Pressure (MPa)		4.8	5.9	7.0	7.0	7.0	7.0	7.0	7.0	



Clamping Force Curve

(Action Confirmation Method･･･D：Double End Rod Option for Dog / M：Air Sensing Manifold Option / N：Air Sensing Piping Option)



Applicable Model

LKA □ 0 - C S / L C R / D M N - Blank A H K

1 Body size

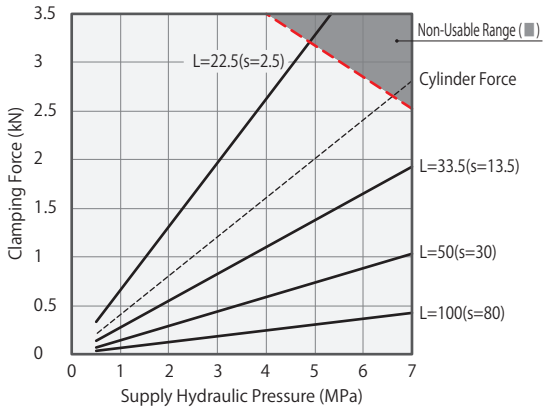
5 Action Confirmation Method : D/M/N selected

(Ex.)
In case of LKA0480-□□D/M/N : When supply hydraulic pressure P is 5.0MPa and lever length L is 42mm, clamping force becomes about 2.0kN.

LKA0360-□□D/M/N-□

Clamping Force Calculation Formula※1 (kN) F = (5.24 × P) ／ (L − 14.5)

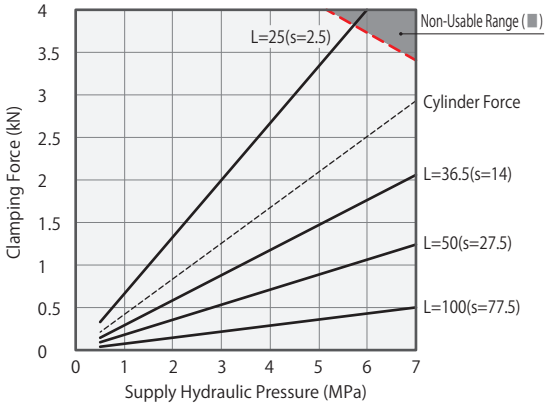
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=22.5	L=27.5	L=33.5	L=40	L=50	L=60	L=80	L=100	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	2.9			2.0	1.5	1.1	0.9	0.6	0.5	29
6.5	2.7		2.7	1.8	1.4	1.0	0.8	0.6	0.4	28
6	2.5		2.5	1.7	1.3	0.9	0.7	0.5	0.4	26
5.5	2.3		2.3	1.6	1.2	0.9	0.7	0.5	0.4	25
5	2.1		2.1	1.4	1.1	0.8	0.6	0.4	0.4	23
4.5	1.9	3.0	1.9	1.3	1.0	0.7	0.6	0.4	0.3	22
4	1.7	2.7	1.7	1.2	0.9	0.6	0.5	0.4	0.3	21
3.5	1.5	2.3	1.5	1.0	0.8	0.6	0.5	0.3	0.3	20
3	1.3	2.0	1.3	0.9	0.7	0.5	0.4	0.3	0.2	20
2.5	1.1	1.7	1.1	0.7	0.6	0.4	0.3	0.2	0.2	20
2	0.9	1.4	0.9	0.6	0.5	0.3	0.3	0.2	0.2	20
1.5	0.7	1.0	0.7	0.5	0.4	0.3	0.2	0.2	0.1	20
1	0.5	0.7	0.5	0.3	0.3	0.2	0.2	0.1	0.1	20
0.5	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	20
Max. Operating Pressure (MPa)		4.9	6.6	7.0	7.0	7.0	7.0	7.0	7.0	



LKA0400-□□D/M/N-□

Clamping Force Calculation Formula※1 (kN) F = (6.02 × P) ／ (L − 16)

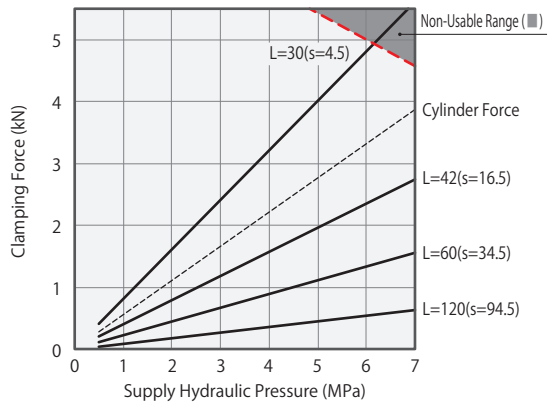
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	3.0		3.1	2.2	1.8	1.3	1.0	0.7	0.6	29
6.5	2.8		2.8	2.0	1.7	1.2	0.9	0.7	0.5	27
6	2.6		2.6	1.9	1.6	1.1	0.9	0.6	0.5	26
5.5	2.3	3.7	2.4	1.7	1.4	1.0	0.8	0.6	0.4	25
5	2.1	3.4	2.2	1.6	1.3	0.9	0.7	0.5	0.4	24
4.5	1.9	3.1	2.0	1.4	1.2	0.8	0.7	0.5	0.4	23
4	1.7	2.7	1.8	1.3	1.1	0.8	0.6	0.4	0.3	23
3.5	1.5	2.4	1.6	1.1	0.9	0.7	0.5	0.4	0.3	23
3	1.3	2.1	1.3	1.0	0.8	0.6	0.5	0.3	0.3	23
2.5	1.1	1.7	1.1	0.8	0.7	0.5	0.4	0.3	0.2	23
2	0.9	1.4	0.9	0.7	0.6	0.4	0.3	0.2	0.2	23
1.5	0.7	1.1	0.7	0.5	0.4	0.3	0.3	0.2	0.2	23
1	0.5	0.7	0.5	0.4	0.3	0.2	0.2	0.1	0.1	23
0.5	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	23
Max. Operating Pressure (MPa)		5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	



LKA0480-□□D/M/N-□

Clamping Force Calculation Formula※1 (kN) F = (9.20 × P) ／ (L − 18.5)

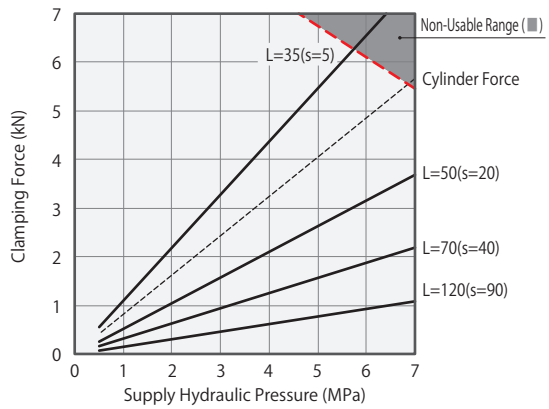
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	3.9		4.0	2.8	2.1	1.6	1.1	0.8	0.7	33
6.5	3.6		3.7	2.6	1.9	1.5	1.0	0.8	0.6	31
6	3.4	4.8	3.4	2.4	1.8	1.4	0.9	0.7	0.6	30
5.5	3.1	4.4	3.1	2.2	1.7	1.3	0.9	0.7	0.5	29
5	2.8	4.0	2.8	2.0	1.5	1.2	0.8	0.6	0.5	27
4.5	2.5	3.6	2.6	1.8	1.4	1.0	0.7	0.6	0.5	26
4	2.3	3.2	2.3	1.6	1.2	0.9	0.6	0.5	0.4	26
3.5	2.0	2.8	2.0	1.4	1.1	0.8	0.6	0.4	0.4	26
3	1.7	2.4	1.7	1.2	0.9	0.7	0.5	0.4	0.3	26
2.5	1.4	2.0	1.4	1.0	0.8	0.6	0.4	0.3	0.3	26
2	1.2	1.6	1.2	0.8	0.6	0.5	0.3	0.3	0.2	26
1.5	0.9	1.2	0.9	0.6	0.5	0.4	0.3	0.2	0.2	26
1	0.6	0.8	0.6	0.4	0.3	0.3	0.2	0.2	0.1	26
0.5	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	26
Max. Operating Pressure (MPa)		6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	



LKA0550-□□D/M/N-□

Clamping Force Calculation Formula※1 (kN) F = (15.27 × P) ／ (L − 21)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120	Non-Usable Range(■) Min. Lever Length (L) (mm)
7	5.7			3.7	2.8	2.2	1.9	1.4	1.1	41
6.5	5.3		5.3	3.5	2.6	2.1	1.7	1.3	1.1	39
6	4.9		4.9	3.2	2.4	1.9	1.6	1.2	1.0	37
5.5	4.5	6.0	4.5	2.9	2.2	1.8	1.5	1.1	0.9	35
5	4.1	5.5	4.1	2.7	2.0	1.6	1.3	1.0	0.8	33
4.5	3.7	5.0	3.7	2.4	1.8	1.5	1.2	0.9	0.7	31
4	3.3	4.4	3.3	2.2	1.6	1.3	1.1	0.8	0.7	30
3.5	2.9	3.9	2.9	1.9	1.4	1.1	1.0	0.7	0.6	30
3	2.5	3.3	2.5	1.6	1.2	1.0	0.8	0.6	0.5	30
2.5	2.1	2.8	2.1	1.4	1.0	0.8	0.7	0.5	0.4	30
2	1.7	2.2	1.7	1.1	0.8	0.7	0.6	0.4	0.4	30
1.5	1.3	1.7	1.3	0.8	0.6	0.5	0.4	0.3	0.3	30
1	0.9	1.1	0.9	0.6	0.4	0.4	0.3	0.2	0.2	30
0.5	0.5	0.6	0.5	0.3	0.2	0.2	0.2	0.1	0.1	30
Max. Operating Pressure (MPa)		5.8	6.9	7.0	7.0	7.0	7.0	7.0	7.0	



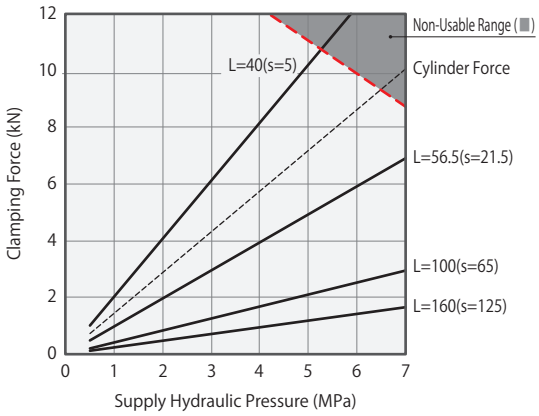
Notes：

1. Tables and graphs show the relationship between the clamping force (kN) and supply hydraulic pressure (MPa).
2. Cylinder force (when L=0) cannot be calculated from the calculation formula of clamping force.
3. Clamping force in the non-usable range may cause damage and fluid leakage.

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

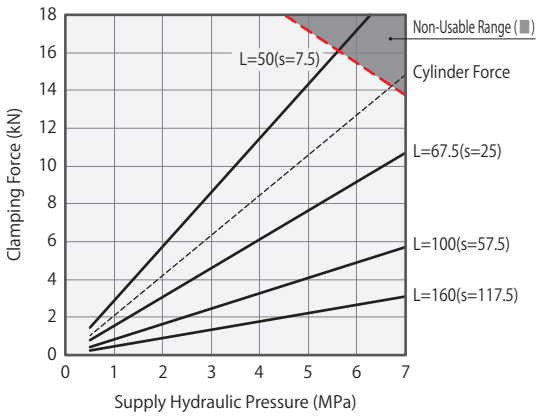
LKA0650-□□D/M/N-□ Clamping Force Calculation Formula※1 (kN) $F=(31.67\times P)/(L-24.5)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) Non-Usable Range(■)								Min. Lever Length (L) (mm)
		L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160	
7	10.1		8.7	7.0	4.0	3.0	2.4	2.0	1.7	50
6.5	9.4		8.1	6.5	3.8	2.8	2.2	1.8	1.6	47
6	8.7		7.5	6.0	3.5	2.6	2.0	1.7	1.5	44
5.5	8.0		6.9	5.5	3.2	2.4	1.9	1.6	1.3	42
5	7.2	10.3	6.3	5.0	2.9	2.1	1.7	1.4	1.2	39
4.5	6.5	9.2	5.6	4.5	2.6	1.9	1.5	1.3	1.1	37
4	5.8	8.2	5.0	4.0	2.3	1.7	1.4	1.1	1.0	35
3.5	5.1	7.2	4.4	3.5	2.0	1.5	1.2	1.0	0.9	35
3	4.4	6.2	3.8	3.0	1.8	1.3	1.0	0.9	0.8	35
2.5	3.6	5.2	3.2	2.5	1.5	1.1	0.9	0.7	0.6	35
2	2.9	4.1	2.5	2.0	1.2	0.9	0.7	0.6	0.5	35
1.5	2.2	3.1	1.9	1.5	0.9	0.7	0.5	0.5	0.4	35
1	1.5	2.1	1.3	1.0	0.6	0.5	0.4	0.3	0.3	35
0.5	0.8	1.1	0.7	0.5	0.3	0.3	0.2	0.2	0.2	35
Max. Operating Pressure (MPa)		5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	



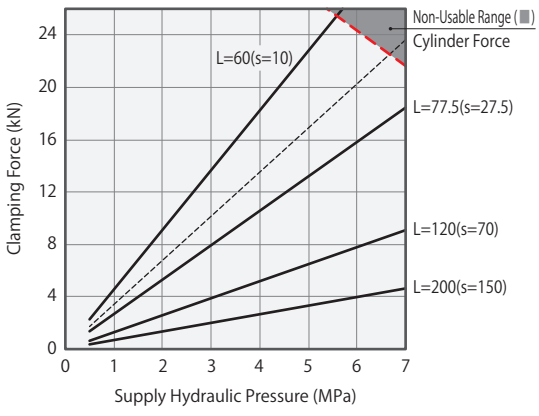
LKA0750-□□D/M/N-□ Clamping Force Calculation Formula※1 (kN) $F=(57.27\times P)/(L-30)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) Non-Usable Range(■)								Min. Lever Length (L) (mm)
		L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160	
7	14.9		13.4	10.7	8.1	5.8	4.5	3.7	3.1	60
6.5	13.8		12.5	10.0	7.5	5.4	4.2	3.4	2.9	56
6	12.8		11.5	9.2	6.9	5.0	3.9	3.2	2.7	53
5.5	11.7	15.8	10.5	8.4	6.3	4.5	3.5	2.9	2.5	50
5	10.7	14.4	9.6	7.7	5.8	4.1	3.2	2.7	2.3	47
4.5	9.6	12.9	8.6	6.9	5.2	3.7	2.9	2.4	2.0	45
4	8.5	11.5	7.7	6.2	4.6	3.3	2.6	2.1	1.8	43
3.5	7.5	10.1	6.7	5.4	4.1	2.9	2.3	1.9	1.6	43
3	6.4	8.6	5.8	4.6	3.5	2.5	2.0	1.6	1.4	43
2.5	5.4	7.2	4.8	3.9	2.9	2.1	1.6	1.4	1.2	43
2	4.3	5.8	3.9	3.1	2.3	1.7	1.3	1.1	0.9	43
1.5	3.2	4.3	2.9	2.3	1.8	1.3	1.0	0.8	0.7	43
1	2.2	2.9	2.0	1.6	1.2	0.9	0.7	0.6	0.5	43
0.5	1.1	1.5	1.0	0.8	0.6	0.5	0.4	0.3	0.3	43
Max. Operating Pressure (MPa)		5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	



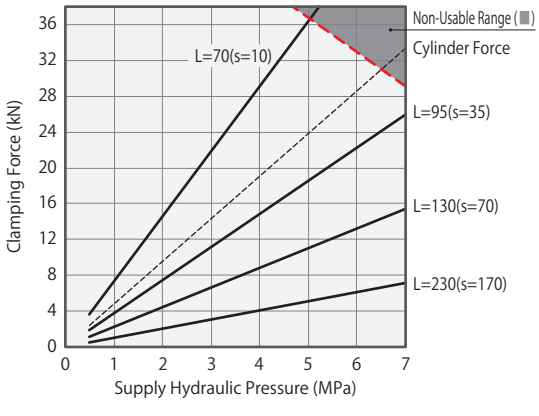
LKA0900-□□D/M/N-□ Clamping Force Calculation Formula※1 (kN) $F=(109.42\times P)/(L-36)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) Non-Usable Range(■)								Min. Lever Length (L) (mm)
		L=60	L=70	L=77.5	L=100	L=120	L=140	L=160	L=200	
7	23.7			18.5	12.0	9.2	7.4	6.2	4.7	72
6.5	22.0		21.0	17.2	11.2	8.5	6.9	5.8	4.4	67
6	20.3		19.4	15.9	10.3	7.9	6.4	5.3	4.1	63
5.5	18.6	25.1	17.8	14.6	9.5	7.2	5.8	4.9	3.7	60
5	16.9	22.8	16.1	13.2	8.6	6.6	5.3	4.5	3.4	57
4.5	15.2	20.6	14.5	11.9	7.7	5.9	4.8	4.0	3.1	54
4	13.6	18.3	12.9	10.6	6.9	5.3	4.3	3.6	2.7	51
3.5	11.9	16.0	11.3	9.3	6.0	4.6	3.7	3.1	2.4	50
3	10.2	13.7	9.7	8.0	5.2	4.0	3.2	2.7	2.1	50
2.5	8.5	11.4	8.1	6.6	4.3	3.3	2.7	2.3	1.7	50
2	6.8	9.2	6.5	5.3	3.5	2.7	2.2	1.8	1.4	50
1.5	5.1	6.9	4.9	4.0	2.6	2.0	1.6	1.4	1.1	50
1	3.4	4.6	3.3	2.7	1.8	1.4	1.1	0.9	0.7	50
0.5	1.7	2.3	1.7	1.4	0.9	0.7	0.6	0.5	0.4	50
Max. Operating Pressure (MPa)		5.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	

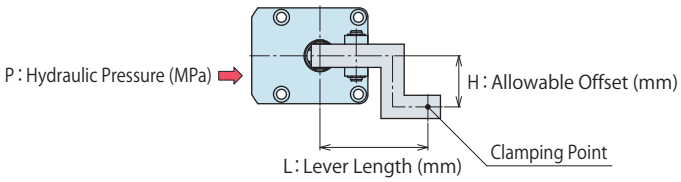


LKA1050-□□D/M/N-□ Clamping Force Calculation Formula※1 (kN) $F=(188.97\times P)/(L-44)$

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L (mm) Non-Usable Range(■)								Min. Lever Length (L) (mm)
		L=70	L=80	L=95	L=110	L=130	L=150	L=170	L=230	
7	33.5			26.0	20.1	15.4	12.5	10.5	7.2	90
6.5	31.1			24.1	18.7	14.3	11.6	9.8	6.7	84
6	28.7		31.5	22.3	17.2	13.2	10.7	9.0	6.1	79
5.5	26.3		28.9	20.4	15.8	12.1	9.9	8.3	5.6	74
5	23.9	36.4	26.3	18.6	14.4	11.0	9.0	7.5	5.1	70
4.5	21.5	32.8	23.7	16.7	12.9	9.9	8.1	6.8	4.6	66
4	19.1	29.1	21.0	14.9	11.5	8.8	7.2	6.0	4.1	63
3.5	16.8	25.5	18.4	13.0	10.1	7.7	6.3	5.3	3.6	60
3	14.4	21.9	15.8	11.2	8.6	6.6	5.4	4.5	3.1	60
2.5	12.0	18.2	13.2	9.3	7.2	5.5	4.5	3.8	2.6	60
2	9.6	14.6	10.5	7.5	5.8	4.4	3.6	3.0	2.1	60
1.5	7.2	11.0	7.9	5.6	4.3	3.3	2.7	2.3	1.6	60
1	4.8	7.3	5.3	3.8	2.9	2.2	1.8	1.5	1.1	60
0.5	2.4	3.7	2.7	1.9	1.5	1.1	0.9	0.8	0.6	60
Max. Operating Pressure (MPa)		5.1	6.2	7.0	7.0	7.0	7.0	7.0	7.0	



Allowable Offset Graph (Option • • • Blank: Standard)



Applicable Model

LKA □ 0 - (C S / L C R / Blank D M N) - (Blank A K)

1 Body Size

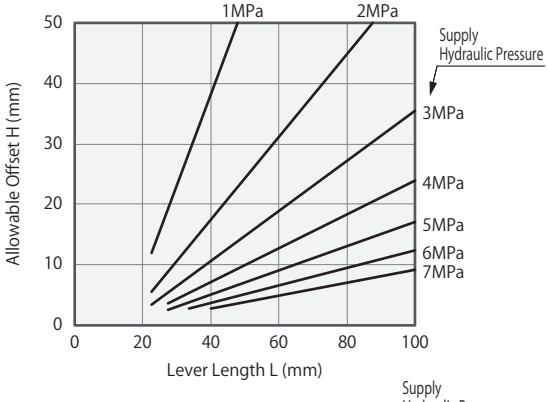
6 Option Blank (Or A/K)

Ex.) In case of LKA0480 :

When supply hydraulic pressure P is 5.0MPa and lever length L is 80mm, allowable offset becomes about 10mm.

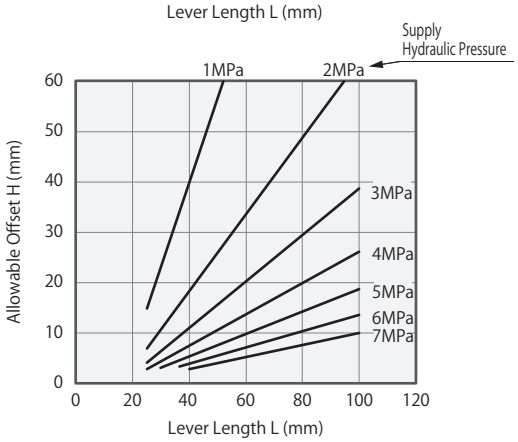
LKA0360-□□□/LKA0360-□□□-A/LKA0360-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=22.5	L=27.5	L=33.5	L=40	L=50	L=60	L=80	L=100
7				3	4	5	7	9
6.5				3	4	6	8	11
6			3	4	5	7	10	12
5.5		2	3	4	6	8	11	15
5		3	4	5	7	9	13	17
4.5		3	4	6	8	11	15	20
4	2	4	5	7	10	13	18	24
3.5	3	4	6	9	12	15	22	29
3	3	5	8	11	15	19	27	36
2.5	4	7	10	13	19	24	34	45
2	5	9	13	17	24	31	45	50
1.5	8	12	18	24	34	43	50	50
1	12	19	28	38	50	50	50	50



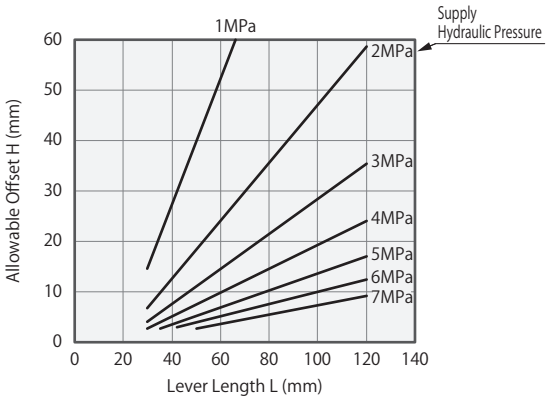
LKA0400-□□□/LKA0400-□□□-A/LKA0400-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100
7				3	4	5	8	10
6.5			3	3	5	6	9	12
6			3	4	5	7	10	14
5.5		3	4	5	6	8	12	16
5		3	5	5	8	10	14	19
4.5		4	5	6	9	12	17	22
4	3	4	6	7	11	14	20	26
3.5	3	5	8	9	13	17	24	32
3	4	6	9	11	16	20	30	39
2.5	5	8	12	14	20	26	37	49
2	7	11	16	18	26	34	49	60
1.5	10	15	22	26	36	47	60	60
1	15	23	34	40	57	60	60	60



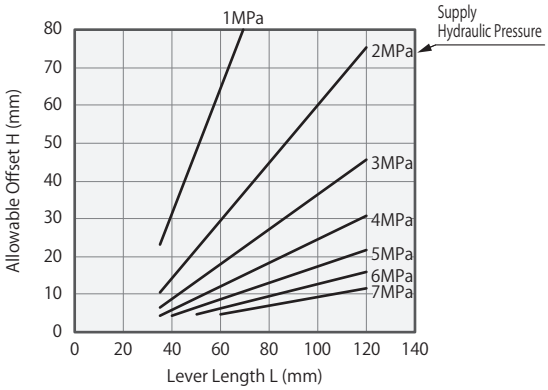
LKA0480-□□□/LKA0480-□□□-A/LKA0480-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120
7				3	4	6	7	9
6.5			2	3	4	6	9	11
6			3	4	5	8	10	12
5.5		2	3	5	6	9	12	15
5		3	4	5	7	10	14	17
4.5		3	5	6	8	12	16	20
4	3	4	6	7	10	15	19	24
3.5	3	5	7	9	12	18	23	29
3	4	6	8	11	15	22	29	36
2.5	5	7	10	14	18	27	36	45
2	7	10	14	18	24	36	47	59
1.5	9	13	19	25	33	50	60	60
1	14	21	30	40	52	60	60	60



LKA0550-□□□/LKA0550-□□□-A/LKA0550-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120
7				5	6	7	9	12
6.5			4	5	7	8	11	14
6			5	6	8	10	13	16
5.5			5	7	9	11	15	19
5		4	6	9	11	13	17	22
4.5		5	8	10	13	15	21	26
4	4	6	9	12	15	18	25	31
3.5	5	7	11	15	18	22	30	37
3	6	9	13	18	23	27	36	46
2.5	8	11	17	23	28	34	46	57
2	11	14	22	30	37	45	60	75
1.5	15	20	31	41	52	62	80	80
1	23	31	48	65	80	80	80	80

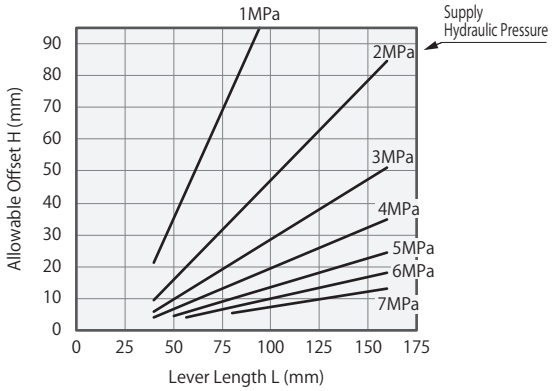


Notes：

1. Tables and graphs show the relationship between the lever length and the allowable offset according to the supply hydraulic pressure.
2. Using the lever beyond allowable offset may cause deformation, seizure and fluid leakage etc.
3. The tables and graphs are only for reference. The design should be carried out with allowance fully taken into consideration.

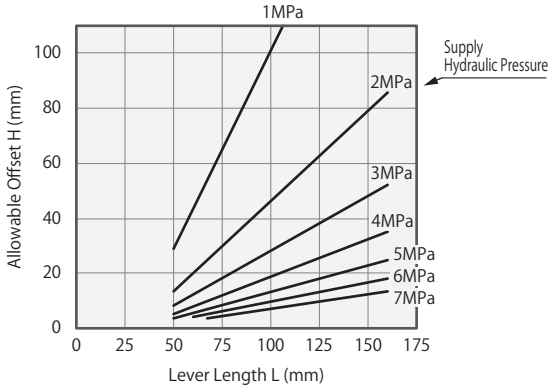
LKA0650-□□□/LKA0650-□□□-A/LKA0650-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160
7	■	■	■	5	7	9	11	13
6.5	■	■	4	6	9	11	13	15
6	■	■	4	7	10	13	15	18
5.5	■	4	5	9	12	15	18	21
5	■	5	6	10	14	17	21	25
4.5	3	5	7	12	16	20	25	29
4	4	7	8	14	19	24	30	35
3.5	5	8	10	17	23	29	36	42
3	6	10	12	21	29	36	44	51
2.5	7	12	15	26	36	46	55	65
2	10	16	20	35	47	60	72	85
1.5	13	22	28	48	66	83	95	95
1	21	35	44	76	95	95	95	95



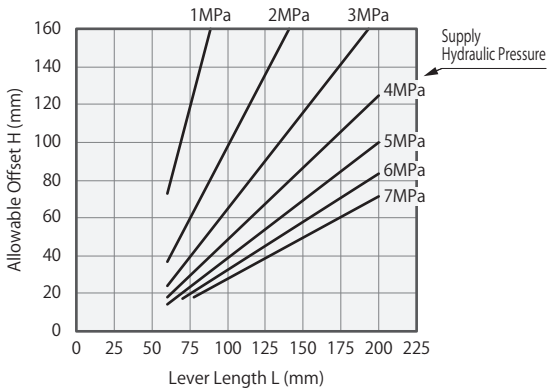
LKA0750-□□□/LKA0750-□□□-A/LKA0750-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160
7	■	■	■	5	7	9	11	13
6.5	■	■	5	6	8	11	13	16
6	■	4	5	7	10	13	15	18
5.5	■	5	6	8	11	15	18	21
5	4	6	7	10	13	17	21	25
4.5	5	7	9	11	16	20	25	30
4	5	8	10	14	19	24	30	35
3.5	7	10	12	16	23	29	36	42
3	8	12	15	20	28	36	44	52
2.5	10	15	19	25	35	45	56	66
2	13	20	25	33	46	60	73	86
1.5	18	28	35	46	65	83	101	110
1	29	43	54	72	101	110	110	110



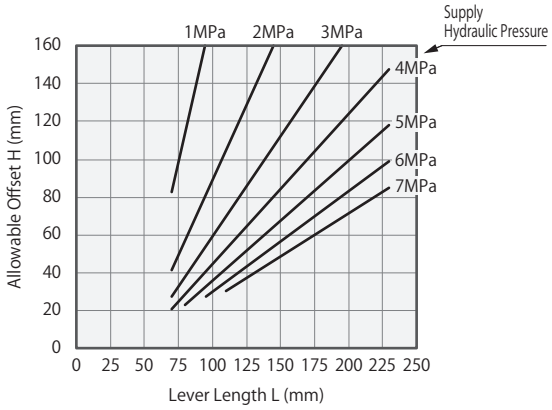
LKA0900-□□□/LKA0900-□□□-A/LKA0900-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=60	L=70	L=77.5	L=100	L=120	L=140	L=160	L=200
7	■	■	■	28	37	45	54	71
6.5	■	■	19	30	39	49	58	77
6	■	■	21	33	43	53	63	83
5.5	■	19	23	35	47	58	69	91
5	■	21	25	39	51	63	76	100
4.5	16	23	28	43	57	70	84	111
4	18	26	32	49	64	79	94	125
3.5	21	30	36	56	73	91	108	143
3	24	35	42	65	85	106	126	160
2.5	29	41	51	78	102	127	151	160
2	37	52	63	98	128	158	160	160
1.5	49	69	84	130	160	160	160	160
1	73	104	126	160	160	160	160	160

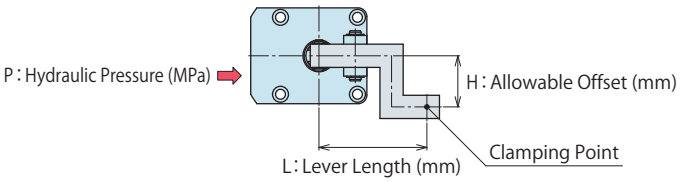


LKA1050-□□□/LKA1050-□□□-A/LKA1050-□□□-K

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=70	L=80	L=95	L=110	L=130	L=150	L=170	L=230
7	■	■	■	30	39	48	57	84
6.5	■	■	25	32	42	52	62	91
6	■	■	27	35	46	56	67	99
5.5	■	■	29	38	50	61	73	107
5	■	23	32	42	55	67	80	118
4.5	■	25	36	47	61	75	89	131
4	21	29	41	52	68	84	100	148
3.5	24	33	46	60	78	96	114	160
3	28	38	54	70	91	112	133	160
2.5	33	46	65	84	109	135	160	160
2	41	57	81	105	137	160	160	160
1.5	55	76	108	140	160	160	160	160
1	83	114	160	160	160	160	160	160



Allowable Offset Graph (Option···H : High Strength Link Plate)



Applicable Model

LKA □ 0 - (C S / L C R / Blank D M N) - H

1 Body Size

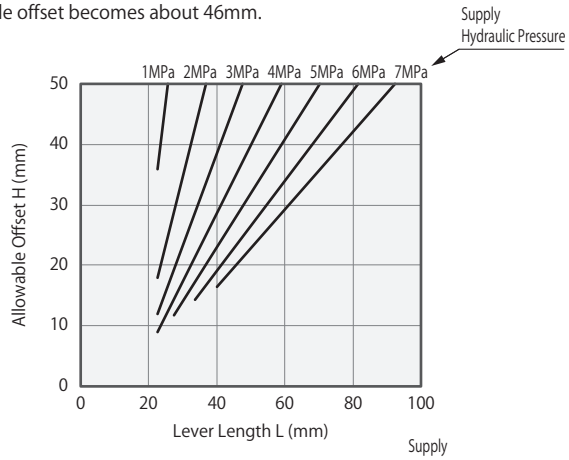
6 Option : H selected

(Ex.) In case of LKA0480-□□□-H :

When supply hydraulic pressure P is 5.0MPa and lever length L is 80mm, allowable offset becomes about 46mm.

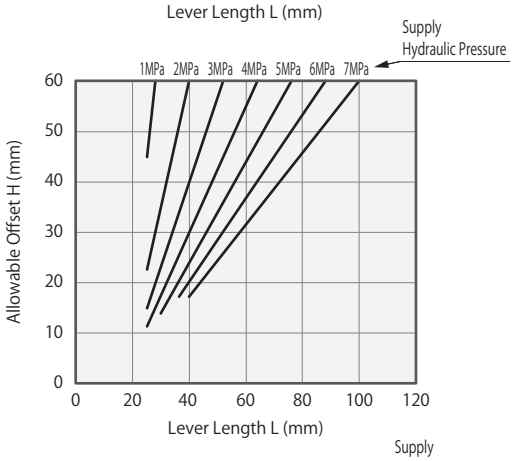
LKA0360-□□□-H

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=22.5	L=27.5	L=33.5	L=40	L=50	L=60	L=80	L=100
7				16	23	29	42	50
6.5			13	18	25	31	45	50
6			14	19	27	34	49	50
5.5		11	16	21	29	37	50	50
5		12	17	23	32	41	50	50
4.5		13	19	25	35	45	50	50
4	9	15	21	29	40	50	50	50
3.5	10	17	24	33	46	50	50	50
3	12	19	28	38	50	50	50	50
2.5	14	23	34	46	50	50	50	50
2	18	29	43	50	50	50	50	50
1.5	24	39	50	50	50	50	50	50
1	36	50	50	50	50	50	50	50



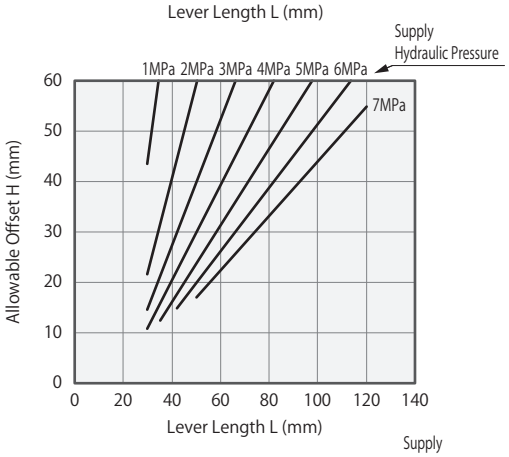
LKA0400-□□□-H

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100
7				17	24	31	46	60
6.5			16	18	26	34	49	60
6			17	20	28	37	53	60
5.5		13	19	22	31	40	58	60
5		14	20	24	34	44	60	60
4.5		16	23	27	38	49	60	60
4	11	17	26	30	42	55	60	60
3.5	13	20	29	34	48	60	60	60
3	15	23	34	40	57	60	60	60
2.5	18	28	41	48	60	60	60	60
2	22	35	51	60	60	60	60	60
1.5	30	47	60	60	60	60	60	60
1	45	60	60	60	60	60	60	60



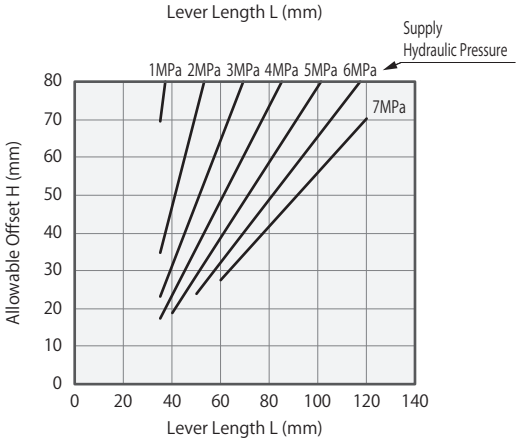
LKA0480-□□□-H

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120
7				17	22	33	44	55
6.5			14	18	24	36	47	59
6			15	20	26	39	51	60
5.5		11	16	22	29	42	56	60
5		12	18	24	31	46	60	60
4.5		14	20	26	35	52	60	60
4	11	16	22	30	39	58	60	60
3.5	12	18	25	34	45	60	60	60
3	14	21	30	40	52	60	60	60
2.5	17	25	36	48	60	60	60	60
2	22	31	44	60	60	60	60	60
1.5	29	42	59	60	60	60	60	60
1	43	60	60	60	60	60	60	60



LKA0550-□□□-H

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120
7				28	35	42	56	70
6.5			22	30	37	45	60	76
6			24	32	41	49	65	80
5.5			26	35	44	53	71	80
5		19	29	39	49	59	79	80
4.5		21	32	43	54	65	80	80
4	17	24	36	48	61	73	80	80
3.5	20	27	41	55	70	80	80	80
3	23	31	48	65	80	80	80	80
2.5	28	38	58	78	80	80	80	80
2	35	47	72	80	80	80	80	80
1.5	46	63	80	80	80	80	80	80
1	70	80	80	80	80	80	80	80

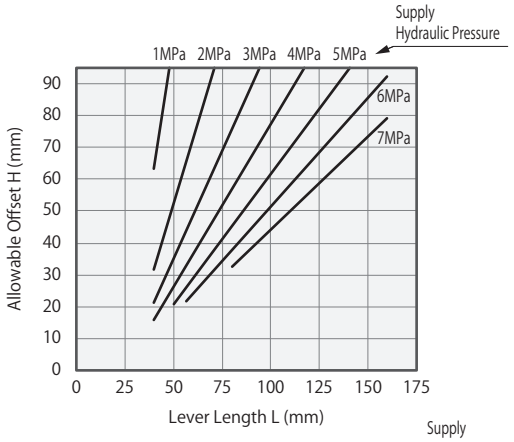


Notes：

1. Tables and graphs show the relationship between the lever length and the allowable offset according to the supply hydraulic pressure.
2. Using the lever beyond allowable offset may cause deformation, seizure and fluid leakage etc.
3. The tables and graphs are only for reference. The design should be carried out with allowance fully taken into consideration.
4. The allowable offset graph of LKA0900 and LKA1050 is the same as that of Standard Model (Option：Blank).

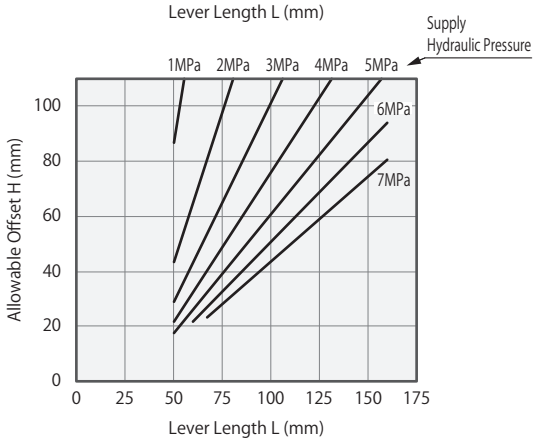
LKA0650-□□□-H

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160
7	■	■	■	32	44	56	67	79
6.5	■	■	20	35	47	60	73	85
6	■	■	22	38	51	65	79	92
5.5	■	19	24	41	56	71	86	95
5	■	21	26	45	62	78	94	95
4.5	14	23	29	50	69	87	95	95
4	16	26	33	57	77	95	95	95
3.5	18	30	37	65	88	95	95	95
3	21	35	44	76	95	95	95	95
2.5	25	42	52	91	95	95	95	95
2	32	52	65	95	95	95	95	95
1.5	42	70	87	95	95	95	95	95
1	63	95	95	95	95	95	95	95



LKA0750-□□□-H

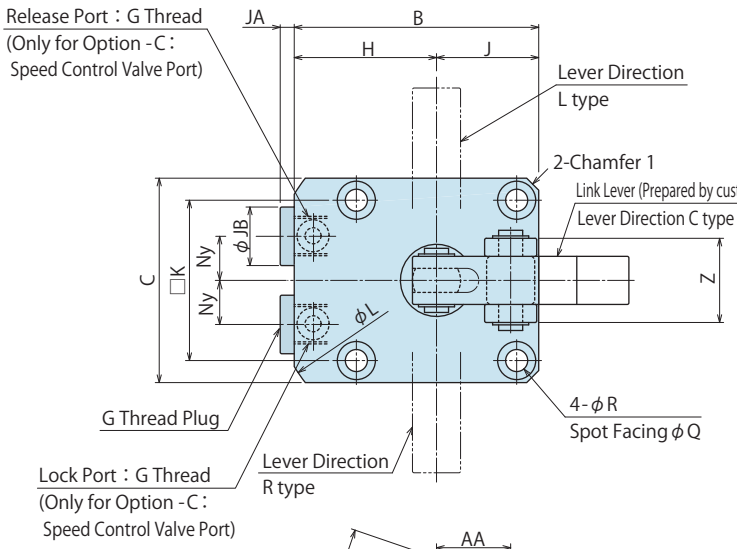
Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■) Lever Length L (mm)							
	L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160
7	■	■	■	31	43	56	68	80
6.5	■	■	25	33	47	60	73	87
6	■	22	27	36	51	65	79	94
5.5	■	24	30	39	55	71	87	102
5	17	26	32	43	61	78	95	110
4.5	19	29	36	48	67	87	106	110
4	22	32	41	54	76	97	110	110
3.5	25	37	46	62	87	110	110	110
3	29	43	54	72	101	110	110	110
2.5	35	52	65	87	110	110	110	110
2	43	65	81	108	110	110	110	110
1.5	58	87	108	110	110	110	110	110
1	87	110	110	110	110	110	110	110

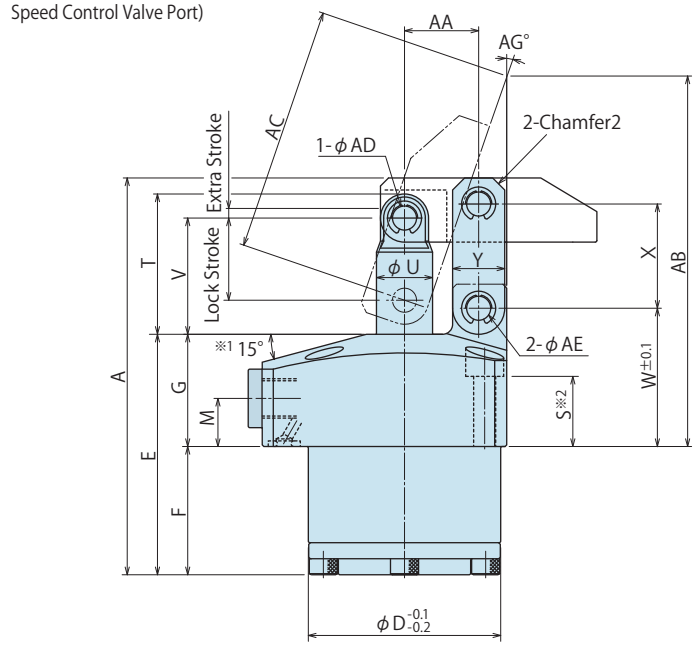


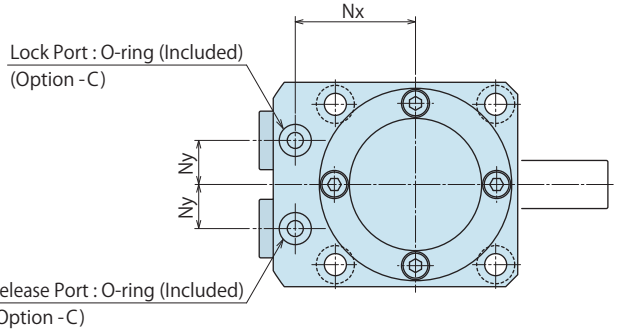
External Dimensions

C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)

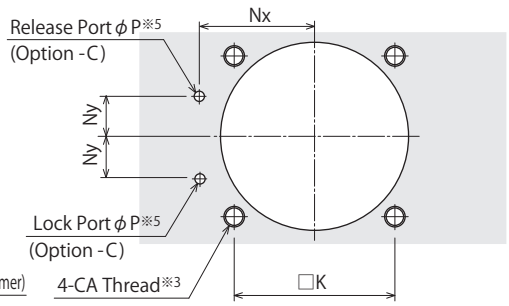
※The drawing shows the locked state of LKA-CC.

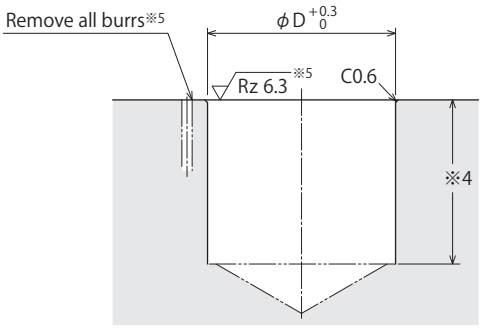






Machining Dimensions of Mounting Area





Notes：

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

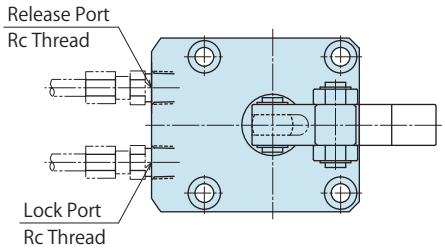
※4. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'F'.

※5. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※The drawing shows the locked state of LKA-SC.



Notes：

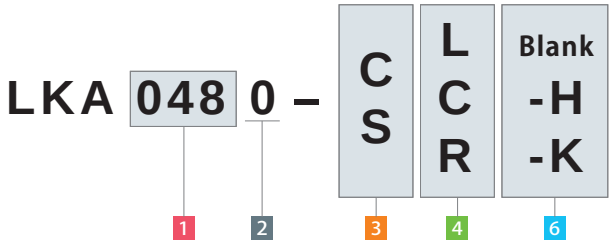
※1. Flange inclination angle is 12°only for LKA0650.

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

1. Please use the provided pin (equivalent to φADf6, φAEf6, HRC60) as mounting pin for lever.
2. Please prepare speed control valve (Refer to P.947) if necessary.

Model No. Indication

(Format Example：LKA0550-CC, LKA0750-SR-H)



1 Body Size
2 Design No.
3 Piping Method
4 Lever Direction
5 Action Confirmation (When Blank is chosen)
6 Option

Notes :
1. For option -H, the material of link plate has higher intensity than that of standard plate, and the form of chamfering 2 is round.
2. For option -K, flange pin is used as link pin (3 parts) and C type circlip is used as stop ring.

External Dimensions and Machining Dimensions for Mounting

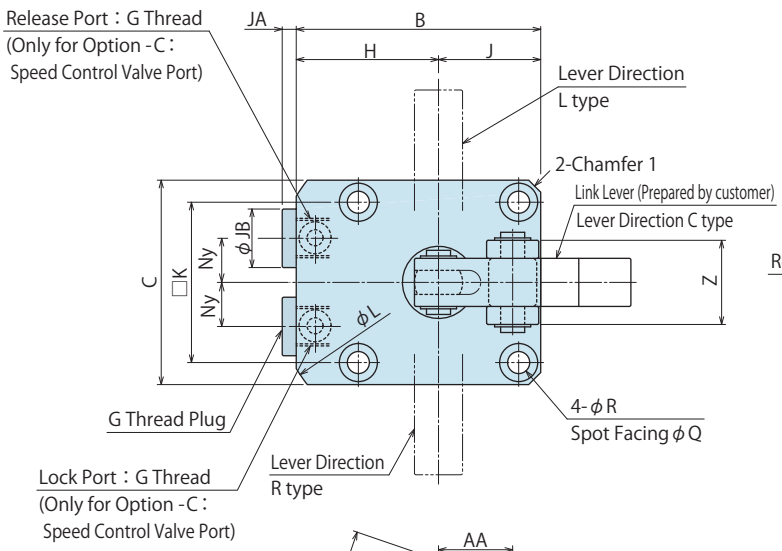
(mm)

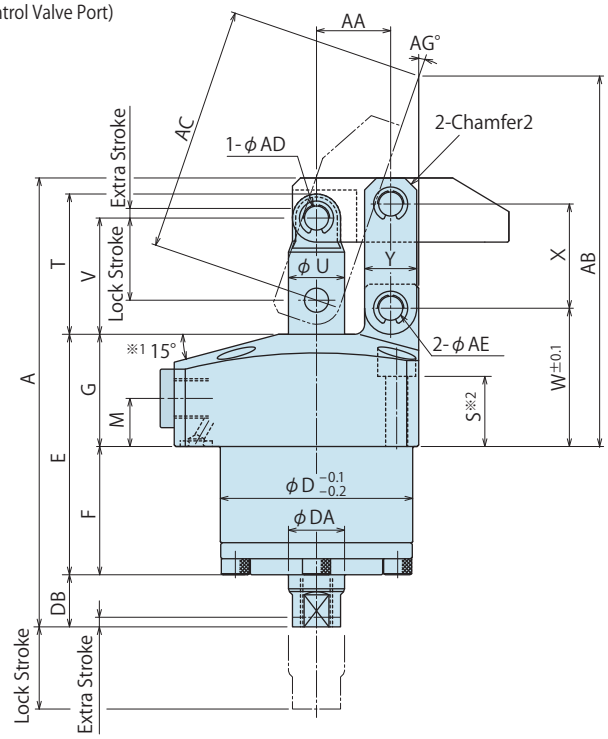
Model No.	LKA0360-□□	LKA0400-□□	LKA0480-□□	LKA0550-□□	LKA0650-□□	LKA0750-□□	LKA0900-□□	LKA1050-□□
Full Stroke	18.5	20.5	23.5	26	29.5	35	41	49
Lock Stroke	16	17.5	20.5	23	26.5	32	38	46
Extra Stroke	2.5	3	3	3	3	3	3	3
A	78.5	87.5	99	110.5	127.5	151	180	209
B	49	54	61	69	81	94.5	109.5	127
C	40	45	51	60	70	85	100	120
D	36	40	48	55	65	75	90	105
E	48	54	60	65	73.5	84	101	115
F	23	29	32	37	43.5	47	61	65
G	25	25	28	28	30	37	40	50
H	29	31.5	35.5	39	46	52	59.5	67
J	20	22.5	25.5	30	35	42.5	50	60
K	31.4	34	40	47	55	63	75	88
L	66	72	81	88	106	116	136	152
M	11	11	12	12	13	16	16	19
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	15.5	15	16	13.5	16	17.5	17	23
T	27	30.5	35	37.5	45	55	64.5	77
U	10	12	14	16	20	22	28	35.5
V	22.5	25	29	31.5	37	45	52	62
W	30	30.5	34.5	35.5	39	48	52.5	64
X	20	22	26	30	35.5	43.5	52.5	64
Y	11	13	13	16	19	25	28	32
Z	19	21	24	28	37	40	49	64
Chamfer 1	C2	C3	C3	C3	C4	C10	C11	(ϕ152)
Chamfer 2	C2.5	C3	C3	C3	C5	C5	R16	R18
AA	14.5	16	18.5	21	24.5	30	36	44
AB	74.3	77.7	92.4	101.9	111.4	130.8	146.5	173.6
AC	47.3	50.2	61.2	71.7	78.7	90.8	104.6	122.5
AD	5	6	6	6	8	10	12	15
AE	5	6	6	8	10	12	15	18
AG	19.6	20.2	18.9	19.9	20.5	21.4	22.4	23.1
CA (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 / Release Port Option -C	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
Lock / Release Port Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
O-ring (Option -C)	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7

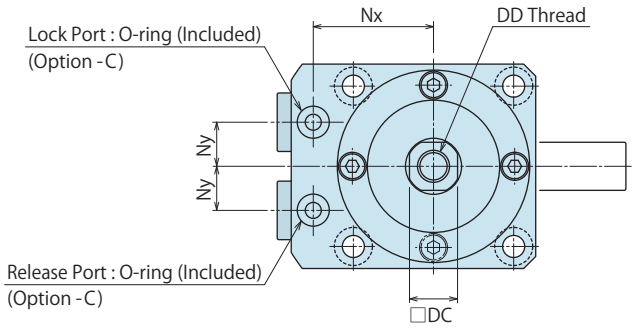
External Dimensions

C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)

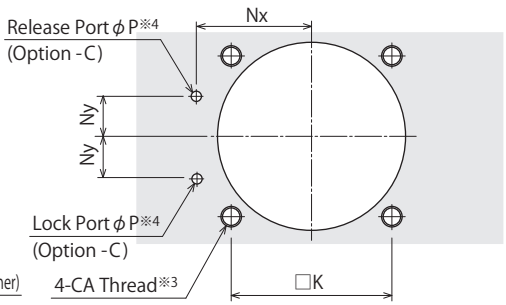
※The drawing shows the locked state of LKA-CCD.

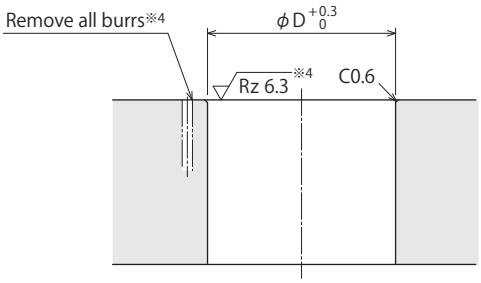






Machining Dimensions of Mounting Area





Notes：

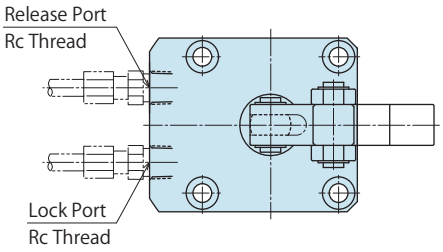
※3. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

※4. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※The drawing shows the locked state of LKA-SCD.



Notes：

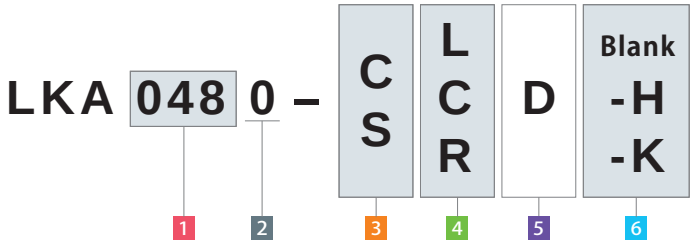
※1. Flange inclination angle is 12°only for LKA0650.

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

1. Please use the provided pin (equivalent to ϕADf6, ϕAEf6, HRC60) as mounting pin for lever.
2. Please prepare speed control valve (Refer to P.947) if necessary.

Model No. Indication

(Format Example : LKA0550-CCD, LKA0750-SRD-H)



1 Body Size
2 Design No.
3 Piping Method
4 Lever Direction
5 Action Confirmation (When D is chosen)
6 Option

Notes :
1. For option -H, the material of link plate has higher intensity than that of standard plate, and the form of chamfering 2 is round.
2. For option -K, flange pin is used as link pin (3 parts) and C type circlip is used as stop ring.

External Dimensions and Machining Dimensions for Mounting

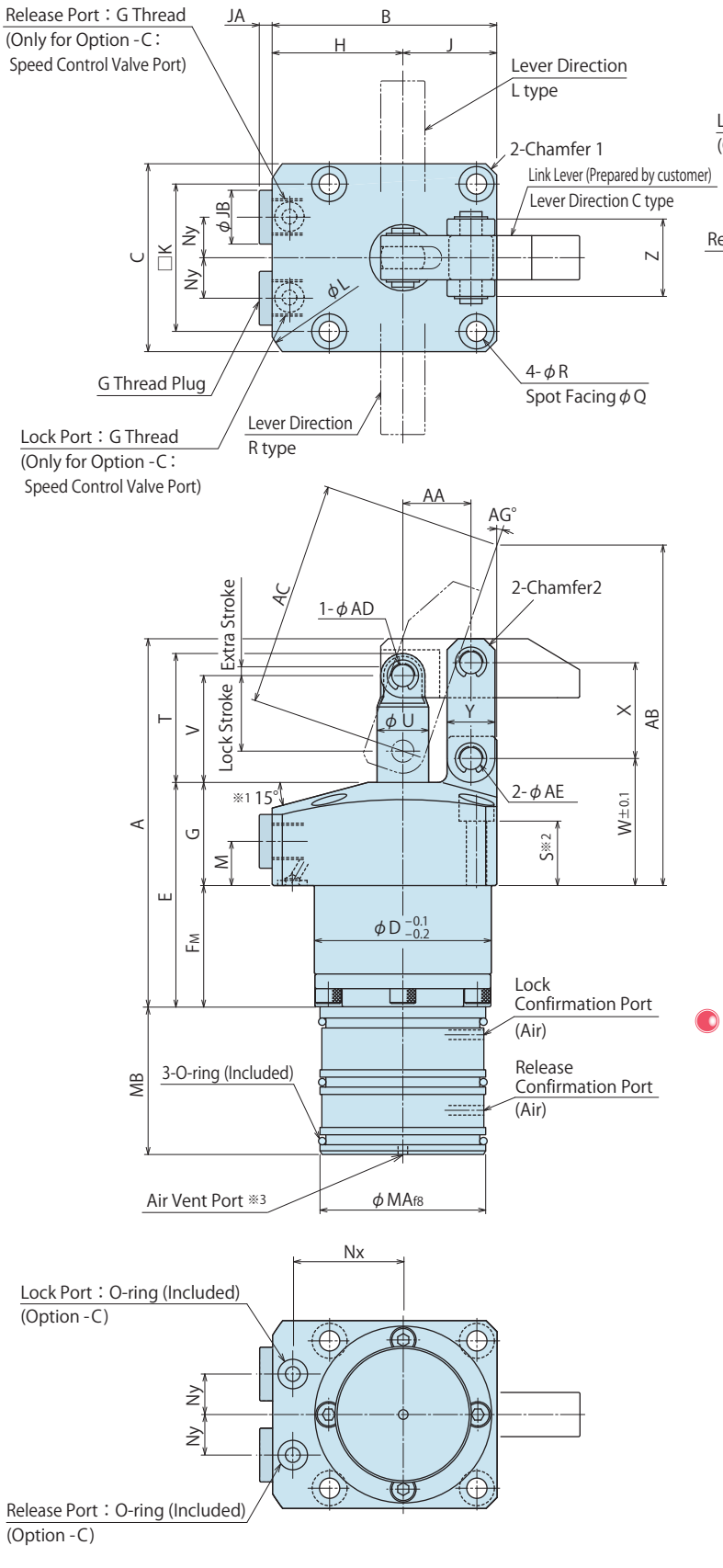
(mm)

Model No.	LKA0360-□□D	LKA0400-□□D	LKA0480-□□D	LKA0550-□□D	LKA0650-□□D	LKA0750-□□D	LKA0900-□□D	LKA1050-□□D
Full Stroke	18.5	20.5	23.5	26	29.5	35	41	49
Lock Stroke	16	17.5	20.5	23	26.5	32	38	46
Extra Stroke	2.5	3	3	3	3	3	3	3
A	89	100.5	112	123.5	140.5	164	193	222
B	49	54	61	69	81	94.5	109.5	127
C	40	45	51	60	70	85	100	120
D	36	40	48	55	65	75	90	105
E	48	54	60	65	73.5	84	101	115
F	23	29	32	37	43.5	47	61	65
G	25	25	28	28	30	37	40	50
H	29	31.5	35.5	39	46	52	59.5	67
J	20	22.5	25.5	30	35	42.5	50	60
K	31.4	34	40	47	55	63	75	88
L	66	72	81	88	106	116	136	152
M	11	11	12	12	13	16	16	19
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	15.5	15	16	13.5	16	17.5	17	23
T	27	30.5	35	37.5	45	55	64.5	77
U	10	12	14	16	20	22	28	35.5
V	22.5	25	29	31.5	37	45	52	62
W	30	30.5	34.5	35.5	39	48	52.5	64
X	20	22	26	30	35.5	43.5	52.5	64
Y	11	13	13	16	19	25	28	32
Z	19	21	24	28	37	40	49	64
Chamfer 1	C2	C3	C3	C3	C4	C10	C11	(ϕ152)
Chamfer 2	C2.5	C3	C3	C3	C5	C5	R16	R18
AA	14.5	16	18.5	21	24.5	30	36	44
AB	74.3	77.7	92.4	101.9	111.4	130.8	146.5	173.6
AC	47.3	50.2	61.2	71.7	78.7	90.8	104.6	122.5
AD	5	6	6	6	8	10	12	15
AE	5	6	6	8	10	12	15	18
AG	19.6	20.2	18.9	19.9	20.5	21.4	22.4	23.1
CA (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
DA	8	12	14	14	14	18	18	18
DB	10.5	13	13	13	13	13	13	13
DC	6	10	12	12	12	16	16	16
DD (Nominal×Pitch×Depth)	M4×0.7×10	M6×1×15	M8×1.25×18	M8×1.25×18	M8×1.25×18	M10×1.5×21	M10×1.5×21	M10×1.5×21
Lock / Release Port Option -C	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
Lock / Release Port Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
O-ring (Option -C)	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7

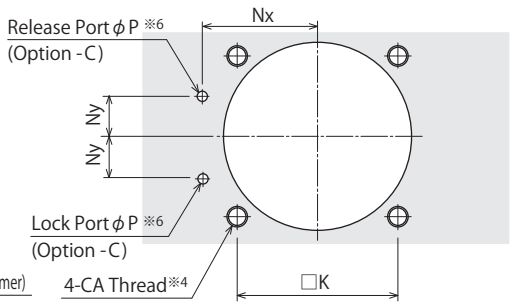
External Dimensions

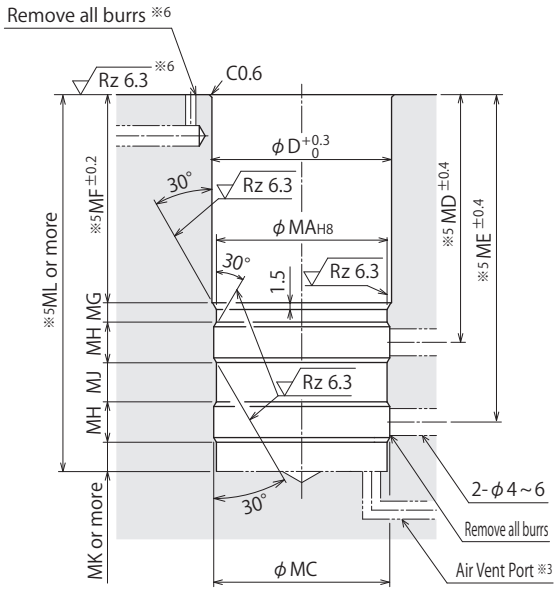
C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)

※The drawing shows the locked state of LKA-CCM.



Machining Dimensions of Mounting Area





Notes：

※3. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port.

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

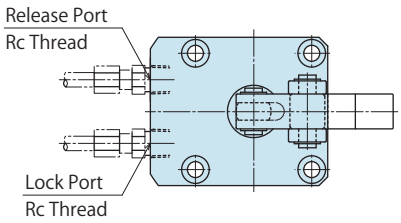
※5. The dimensions indicate those under the flange.

※6. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※The drawing shows the locked state of LKA-SCM.



Notes：

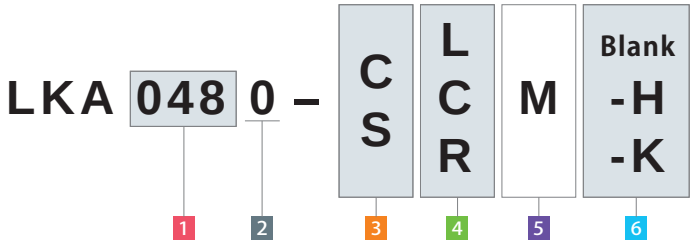
※1. Flange inclination angle is 12°only for LKA0650.

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

1. Please use the provided pin (equivalent to ϕADf6, ϕAEf6, HRC60) as mounting pin for lever.
2. Please prepare speed control valve (Refer to P.947) if necessary.

Model No. Indication

(Format Example : LKA0550-CCM, LKA0750-SRM-H)



1 Body Size
2 Design No.
3 Piping Method
4 Lever Direction
5 Action Confirmation (When M is chosen)
6 Option

Notes :
1. For option -H, the material of link plate has higher intensity than that of standard plate, and the form of chamfering 2 is round.
2. For option -K, flange pin is used as link pin (3 parts) and C type circlip is used as stop ring.

External Dimensions and Machining Dimensions for Mounting

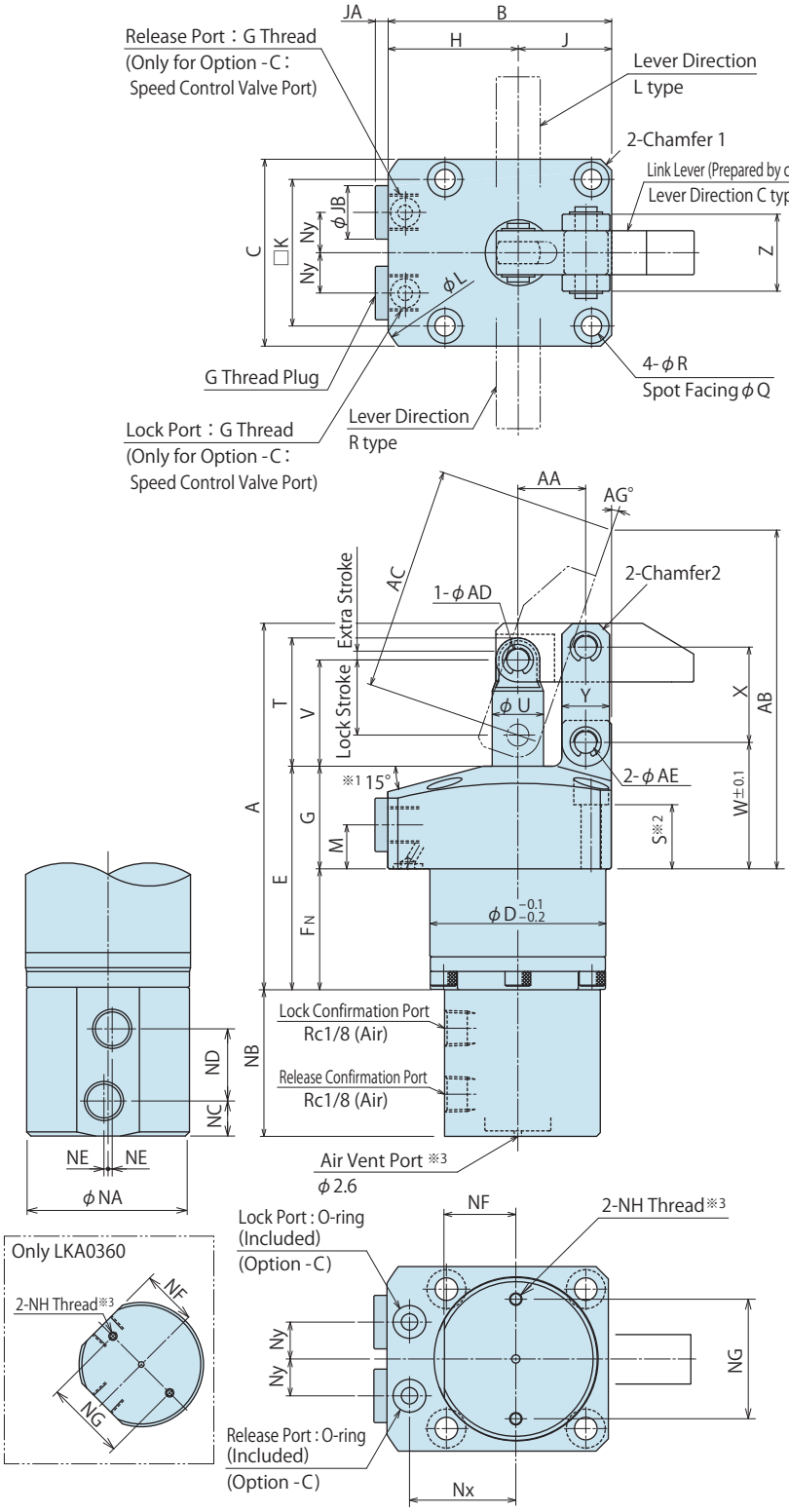
(mm)

Model No.	LKA0360-□□M	LKA0400-□□M	LKA0480-□□M	LKA0550-□□M	LKA0650-□□M	LKA0750-□□M	LKA0900-□□M	LKA1050-□□M
Full Stroke	18.5	20.5	23.5	26	29.5	35	41	49
Lock Stroke	16	17.5	20.5	23	26.5	32	38	46
Extra Stroke	2.5	3	3	3	3	3	3	3
A	78.5	88.5	100	114	134.5	153	186	223
B	49	54	61	69	81	94.5	109.5	127
C	40	45	51	60	70	85	100	120
D	36	40	48	55	65	75	90	105
E	48	55	61	68.5	80.5	86	107	129
FM	23	30	33	40.5	50.5	49	67	79
G	25	25	28	28	30	37	40	50
H	29	31.5	35.5	39	46	52	59.5	67
J	20	22.5	25.5	30	35	42.5	50	60
K	31.4	34	40	47	55	63	75	88
L	66	72	81	88	106	116	136	152
M	11	11	12	12	13	16	16	19
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	15.5	15	16	13.5	16	17.5	17	23
T	27	30.5	35	37.5	45	55	64.5	77
U	10	12	14	16	20	22	28	35.5
V	22.5	25	29	31.5	37	45	52	62
W	30	30.5	34.5	35.5	39	48	52.5	64
X	20	22	26	30	35.5	43.5	52.5	64
Y	11	13	13	16	19	25	28	32
Z	19	21	24	28	37	40	49	64
Chamfer 1	C2	C3	C3	C3	C4	C10	C11	(φ152)
Chamfer 2	C2.5	C3	C3	C3	C5	C5	R16	R18
AA	14.5	16	18.5	21	24.5	30	36	44
AB	74.3	77.7	92.4	101.9	111.4	130.8	146.5	173.6
AC	47.3	50.2	61.2	71.7	78.7	90.8	104.6	122.5
AD	5	6	6	6	8	10	12	15
AE	5	6	6	8	10	12	15	18
AG	19.6	20.2	18.9	19.9	20.5	21.4	22.4	23.1
CA (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
MAf8	$34.5^{-0.025}_{-0.064}$	$38^{-0.025}_{-0.064}$	$45^{-0.025}_{-0.064}$	$45^{-0.025}_{-0.064}$	$45^{-0.025}_{-0.064}$	$53^{-0.030}_{-0.076}$	$53^{-0.030}_{-0.076}$	$53^{-0.030}_{-0.076}$
MAH8	$34.5^{+0.039}_{0}$	$38^{+0.039}_{0}$	$45^{+0.039}_{0}$	$45^{+0.039}_{0}$	$45^{+0.039}_{0}$	$53^{+0.046}_{0}$	$53^{+0.046}_{0}$	$53^{+0.046}_{0}$
MB	31	36	40	40	40	59.5	59.5	59.5
MC	35.7	39.2	46.2	46.2	46.2	54.2	54.2	54.2
MD	32.5	40	43	50.5	60.5	61	79	91
ME	45.5	56.5	63.5	71	81	93.5	111.5	123.5
MF	23.5	30.5	33.5	41	51	49.5	67.5	79.5
MG	4.5	5	5	5	5	5.5	5.5	5.5
MH	9	9	9	9	9	12	12	12
MJ	4	7.5	11.5	11.5	11.5	20.5	20.5	20.5
MK	6	7	7	7	7	11	11	11
ML	56	68	75	82.5	92.5	110.5	128.5	140.5
Lock / Release Port Option -C	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
Lock / Release Port Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
O-ring (Option -C)	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
3-O-ring	AS568-025(70)	AS568-028(70)	AS568-030(70)	AS568-030(70)	AS568-030(70)	AS568-032(70)	AS568-032(70)	AS568-032(70)

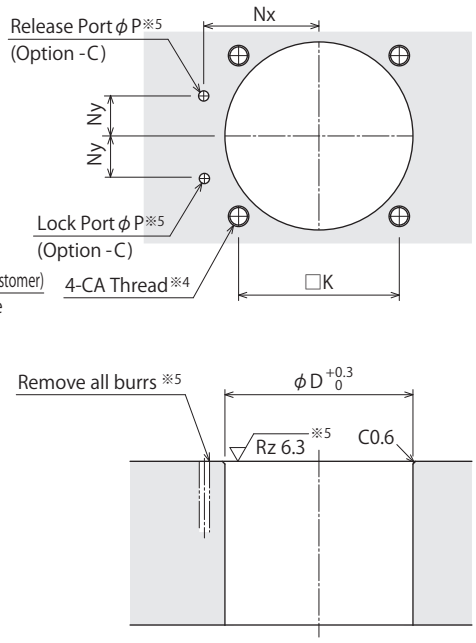
External Dimensions

C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)

※The drawing shows the locked state of LKA-CCN.



Machining Dimensions of Mounting Area



Notes：

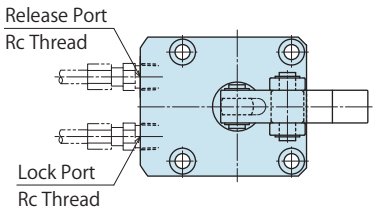
※4. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

※5. The machining dimension is for -C：Gasket option.

Piping Method

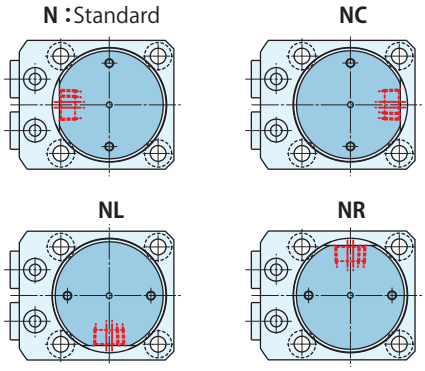
S：Piping Option (Rc Thread)

※The drawing shows the locked state of LKA-SCN.



Lock/Release Confirmation Port Phase

※ The drawings show LKA0400~LKA1050.



Notes：

※1. Flange inclination angle is 12°only for LKA0650.

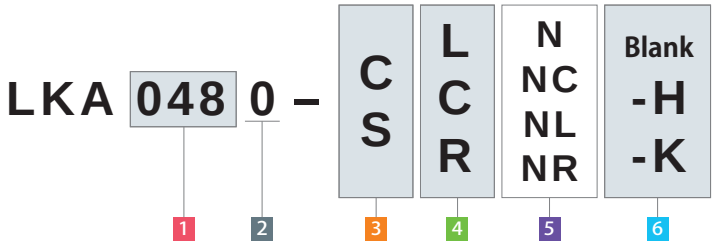
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. If exposed to coolant and chips, use NH thread of the bottom and install an attachment to prevent contamination, but do not block the air vent port.

1. Please use the provided pin (equivalent to φADf6, φAEf6, HRC60) as mounting pin for lever.
2. Please prepare speed control valve (Refer to P.947) if necessary.

Model No. Indication

(Format Example：LKA0550-CCN, LKA0750-SRNC-H)



1 Body Size
2 Design No.
3 Piping Method
4 Lever Direction
5 Action Confirmation (When N□ is chosen)
6 Option

Notes :
1. For option -H, the material of link plate has higher intensity than that of standard plate, and the form of chamfering 2 is round.
2. For option -K, flange pin is used as link pin (3 parts) and C type circlip is used as stop ring.

External Dimensions and Machining Dimensions for Mounting

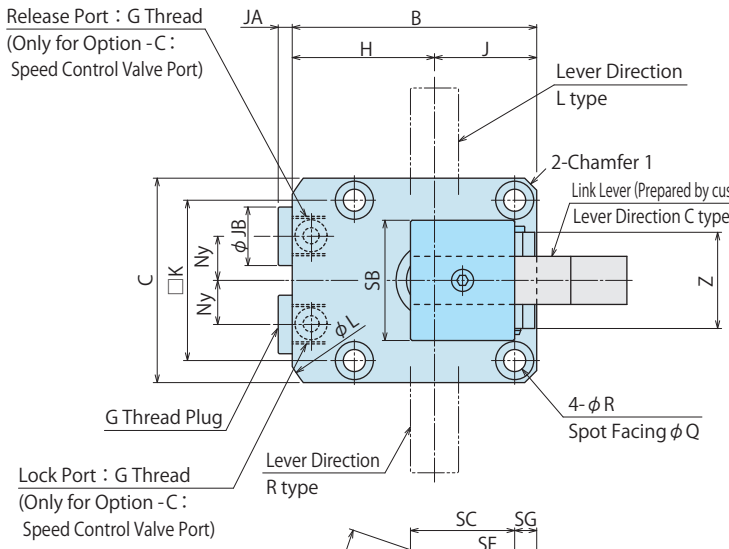
(mm)

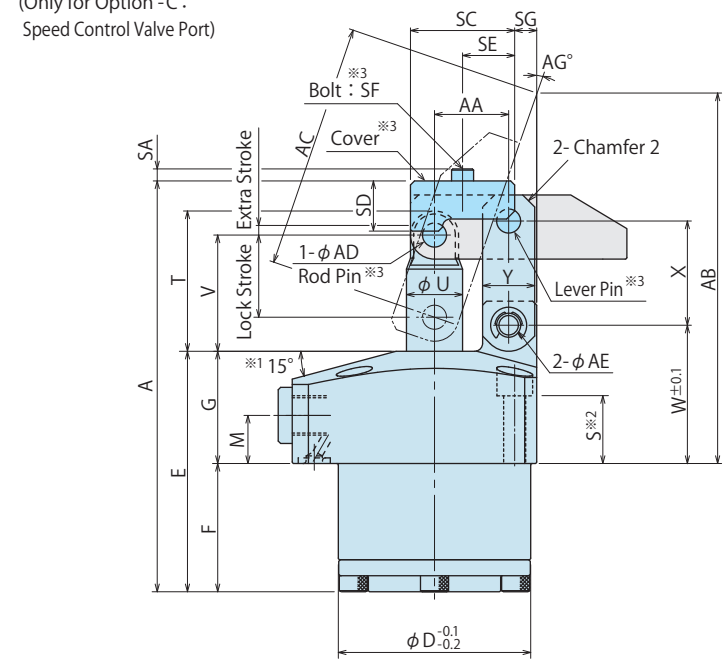
Model No.	LKA0360-□□N□	LKA0400-□□N□	LKA0480-□□N□	LKA0550-□□N□	LKA0650-□□N□	LKA0750-□□N□	LKA0900-□□N□	LKA1050-□□N□
Full Stroke	18.5	20.5	23.5	26	29.5	35	41	49
Lock Stroke	16	17.5	20.5	23	26.5	32	38	46
Extra Stroke	2.5	3	3	3	3	3	3	3
A	78.5	88.5	100	114	134.5	153	186	223
B	49	54	61	69	81	94.5	109.5	127
C	40	45	51	60	70	85	100	120
D	36	40	48	55	65	75	90	105
E	48	55	61	68.5	80.5	86	107	129
FN	23	30	33	40.5	50.5	49	67	79
G	25	25	28	28	30	37	40	50
H	29	31.5	35.5	39	46	52	59.5	67
J	20	22.5	25.5	30	35	42.5	50	60
K	31.4	34	40	47	55	63	75	88
L	66	72	81	88	106	116	136	152
M	11	11	12	12	13	16	16	19
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	15.5	15	16	13.5	16	17.5	17	23
T	27	30.5	35	37.5	45	55	64.5	77
U	10	12	14	16	20	22	28	35.5
V	22.5	25	29	31.5	37	45	52	62
W	30	30.5	34.5	35.5	39	48	52.5	64
X	20	22	26	30	35.5	43.5	52.5	64
Y	11	13	13	16	19	25	28	32
Z	19	21	24	28	37	40	49	64
Chamfer 1	C2	C3	C3	C3	C4	C10	C11	(ϕ152)
Chamfer 2	C2.5	C3	C3	C3	C5	C5	R16	R18
AA	14.5	16	18.5	21	24.5	30	36	44
AB	74.3	77.7	92.4	101.9	111.4	130.8	146.5	173.6
AC	47.3	50.2	61.2	71.7	78.7	90.8	104.6	122.5
AD	5	6	6	6	8	10	12	15
AE	5	6	6	8	10	12	15	18
AG	19.6	20.2	18.9	19.9	20.5	21.4	22.4	23.1
CA (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
NA	35.5	39.5	45	45	45	53	53	53
NB	31	36	40	40	40	59.5	59.5	59.5
NC	9	8.5	12	12	12	20	20	20
ND	12.5	17.5	18	18	18	29.5	29.5	29.5
NE	-	1	2	2	2	3	3	3
NF	17	18.5	20	20	20	24	24	24
NG	25	29	29	29	29	38	38	38
NH (Nominal×Pitch×Depth)	M3×0.5×6	M3×0.5×6	M3×0.5×6	M3×0.5×6	M3×0.5×6	M4×0.7×7	M4×0.7×7	M4×0.7×7
Lock / Release Port Option -C	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
Lock / Release Port Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
O-ring (Option -C)	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7

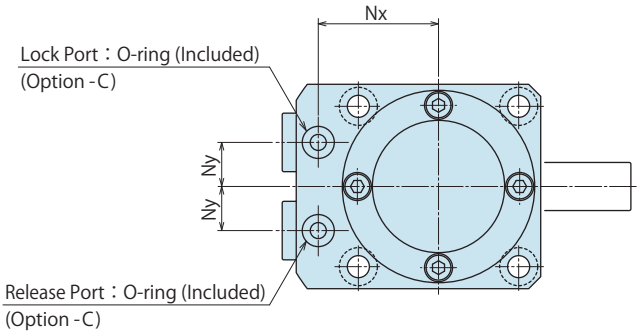
External Dimensions

C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)

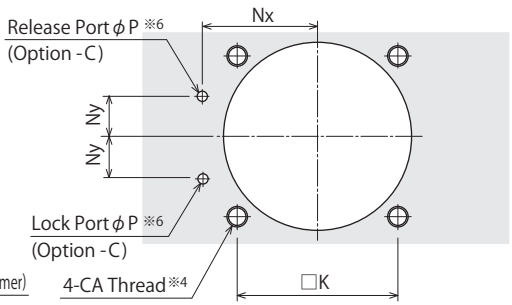
※The drawing shows the locked state of LKA-CC-A.

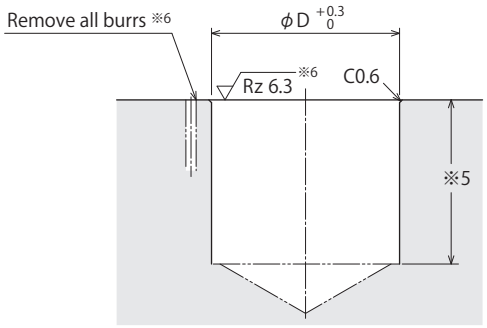






Machining Dimensions of Mounting Area





Notes：

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

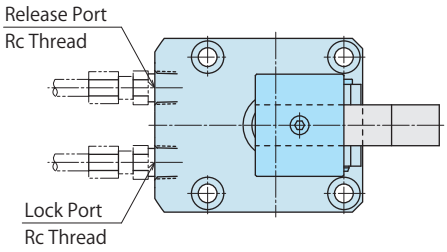
※5. The machining dimension of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'F'.

※6. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)

※The drawing shows the locked state of LKA-SC-A.



Notes：

※1. Flange inclination angle is 12°only for LKA0650.

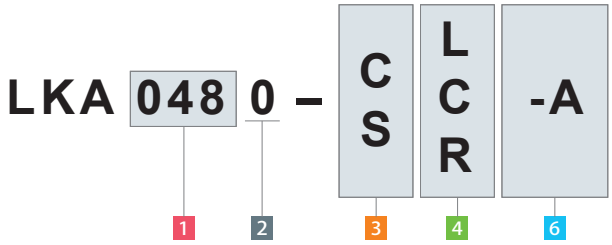
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. Tightening Kit (LZK□-W) including the cover (with bolt), rod pin and lever pin is sold separately.

1. Please prepare speed control valve (Refer to P.947) if necessary.

Model No. Indication

(Format Example：LKA0550-CC-A, LKA0750-SR-A)



1 Body Size
2 Design No.
3 Piping Method
4 Lever Direction
5 Action Confirmation (Blank)
6 Option A

Note :
1. In case of 6 Option **A**, unlike **Blank/H/K**, the lever mounting pin is not included. The dimensions of clamp main body are the same as **Blank/H/K**.

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.		LKA0360-□□-A	LKA0400-□□-A	LKA0480-□□-A	LKA0550-□□-A	LKA0650-□□-A	LKA0750-□□-A	LKA0900-□□-A	LKA1050-□□-A
Full Stroke		18.5	20.5	23.5	26	29.5	35	41	49
Lock Stroke		16	17.5	20.5	23	26.5	32	38	46
Extra Stroke		2.5	3	3	3	3	3	3	3
A		81.7	90.7	102.2	115	132	155.5	184.5	213.5
B		49	54	61	69	81	94.5	109.5	127
C		40	45	51	60	70	85	100	120
D		36	40	48	55	65	75	90	105
E		48	54	60	65	73.5	84	101	115
F		23	29	32	37	43.5	47	61	65
G		25	25	28	28	30	37	40	50
H		29	31.5	35.5	39	46	52	59.5	67
J		20	22.5	25.5	30	35	42.5	50	60
K		31.4	34	40	47	55	63	75	88
L		66	72	81	88	106	116	136	152
M		11	11	12	12	13	16	16	19
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		15.5	15	16	13.5	16	17.5	17	23
T		27	30.5	35	37.5	45	55	64.5	77
U		10	12	14	16	20	22	28	35.5
V		22.5	25	29	31.5	37	45	52	62
W		30	30.5	34.5	35.5	39	48	52.5	64
X		20	22	26	30	35.5	43.5	52.5	64
Y		11	13	13	16	19	25	28	32
Z		19	21	24	28	37	40	49	64
Chamfer 1		C2	C3	C3	C3	C4	C10	C11	(ϕ152)
Chamfer 2		C2.5	C3	C3	C3	C5	C5	R16	R18
AA		14.5	16	18.5	21	24.5	30	36	44
AB		74.3	77.7	92.4	101.9	111.4	130.8	146.5	173.6
AC		47.3	50.2	61.2	71.7	78.7	90.8	104.6	122.5
AD		5	6	6	6	8	10	12	15
AE		5	6	6	8	10	12	15	18
AG		19.6	20.2	18.9	19.9	20.5	21.4	22.4	23.1
CA (Nominal×Pitch)		M4×0.7	M5×0.8	M5×0.8	M6×1	M6×1	M8×1.25	M10×1.5	M12×1.75
SA		3	3	3	3	4	4	5	5
SB		24	26	30	35	45	50	58	73
SC		21	24	26	29	34.5	43	50	60
SD		10.5	11.5	13	17	20	25	32	36
SE		11	12.5	13	16.5	18.5	23	26	32
SF (Nominal×Pitch×Depth)		M3×0.5×6	M3×0.5×6	M3×0.5×6	M3×0.5×8	M4×0.7×8	M4×0.7×10	M5×0.8×12	M5×0.8×12
SG		3.5	4	5.5	7	8.5	9.5	11	13
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/ Release Port	Option -C	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8	G3/8
	Option -S	Rc1/8	Rc1/8	Rc1/8	Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc3/8
O-ring (Option -C)		OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P7-N	OR NBR-90 P7-N	OR NBR-90 P7-N	OR NBR-90 P7-N

Air Sensing Option (Action Confirmation Method･･･M：Air Sensing Manifold Option / N：Air Sensing Piping Option)

Action confirmation can be conducted by detecting differential pressure with the air catch sensor connected to the lock confirmation port and the release confirmation port.

Applicable Model

LKA 048 0 - [C S] [L C R] [M N] - [Blank A H K]

5 Action Confirmation Method
：In case of M/N

Air Catch Sensor

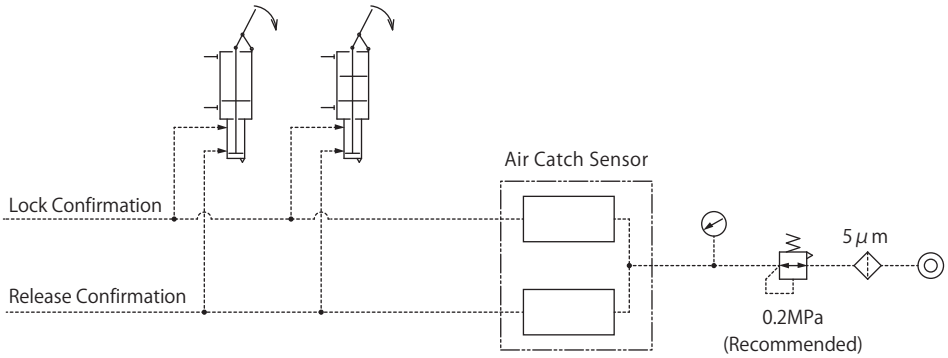
Air catch sensor is required in order to conduct the action confirmation of the piston rod.

Recommended Operating Air Pressure : 0.2 MPa

Recommended Air Catch Sensor

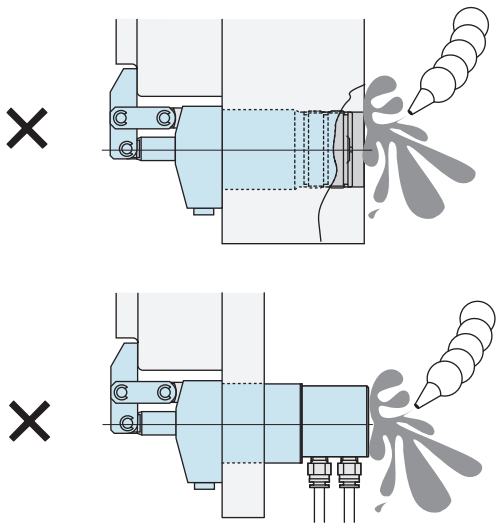
Manufacturer	SMC	CKD
Name	Air Catch Sensor	Gap Switch
Model No.	ISA3-G	GPS3-E

In order to carry out stabilized detection, the number of clamps connected per air catch sensor should be no more than 4.
The air pressure to the air catch sensor should be 0.2MPa.
Refer to the drawing below for the air circuit structure.

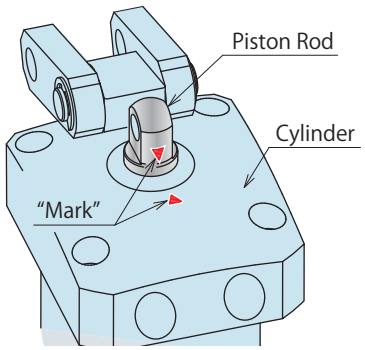


Notes for Design・Installation・Use

- Please keep clear condition at the air vent port, and prevent coolant and chips from entering the port. The air catch sensor can malfunction if the air vent port is blocked.



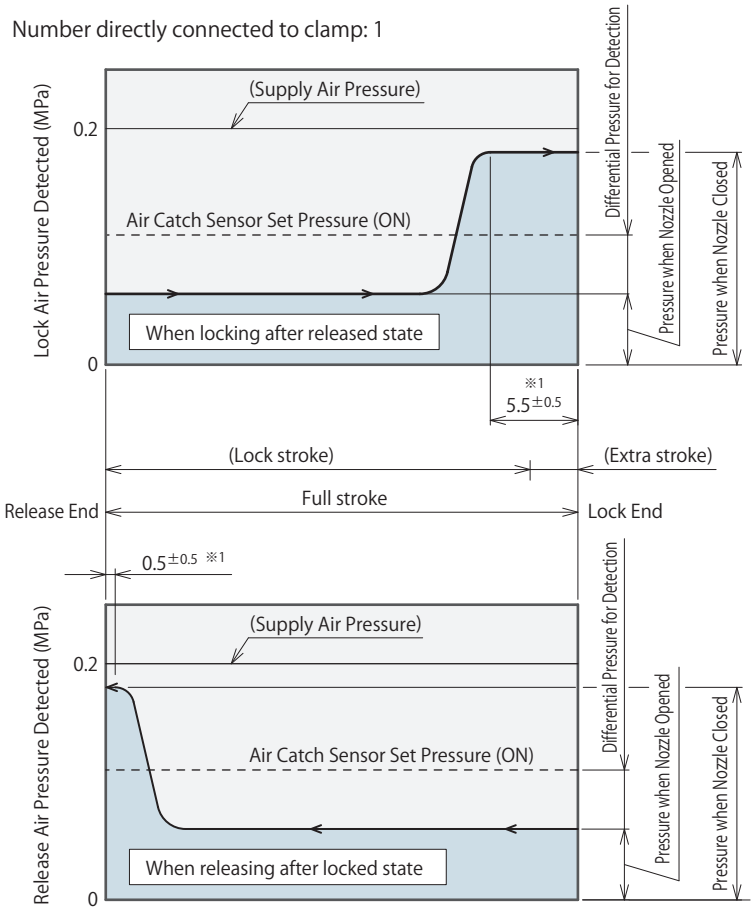
- When mounting a lever, match the marks on the piston rod and the cylinder. Detection is not possible if it is mounted reversely by 180° .

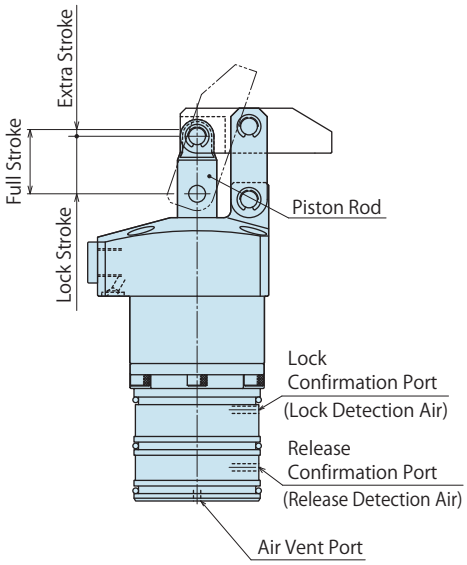


- Before mounting M：Manifold Model, apply adequate amounts of grease on O-ring of the manifold. The O-ring can be twisted or damaged when in a dry state. If too much grease is applied, the air catch sensor can malfunction due to overflow grease blocking the detection port.

Air Sensing Chart

Number directly connected to clamp: 1





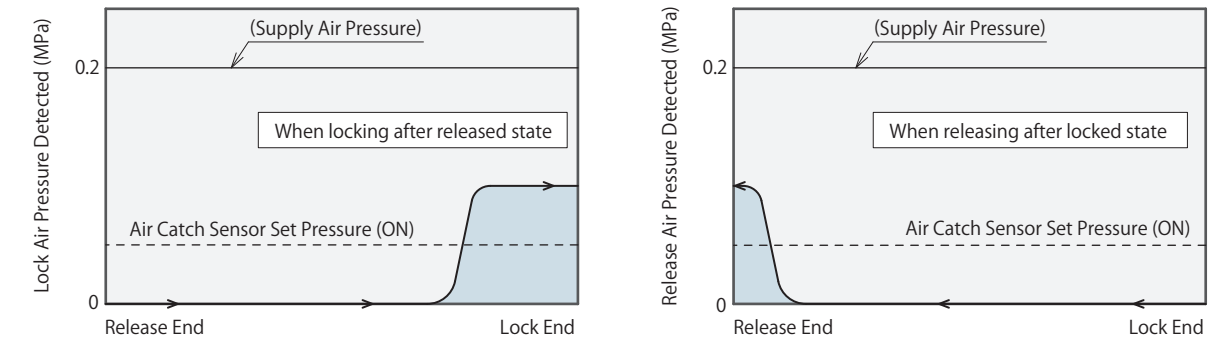
Notes :

1. The sensing chart shows the relationship between the stroke and detection circuit air pressure.
2. The location of a signal from air sensor output varies depending on the sensor setting.
3. The detection pressure varies depending on the number of clamps connected per circuit. (Maximum number of clamps connected : 4)
4. The features may vary depending on the air circuit structure. Please contact us for further information.

※1. There is a certain tolerance with regard to the position where the pressure for fully closing the detection nozzle is reached depending on the clamp structure. (Refer to the sensing chart.)

Model No.		LKA0360-□□M LKA0360-□□N	LKA0400-□□M LKA0400-□□N	LKA0480-□□M LKA0480-□□N	LKA0550-□□M LKA0550-□□N	LKA0650-□□M LKA0650-□□N	LKA0750-□□M LKA0750-□□N	LKA0900-□□M LKA0900-□□N	LKA1050-□□M LKA1050-□□N
Full Stroke	mm	18.5	20.5	23.5	26	29.5	35	41	49
Lock Stroke	mm	16	17.5	20.5	23	26.5	32	38	46
Extra Stroke	mm	2.5	3	3	3	3	3	3	3

Number directly connected to clamp : 4 (for reference)



Link Lever Design Dimensions

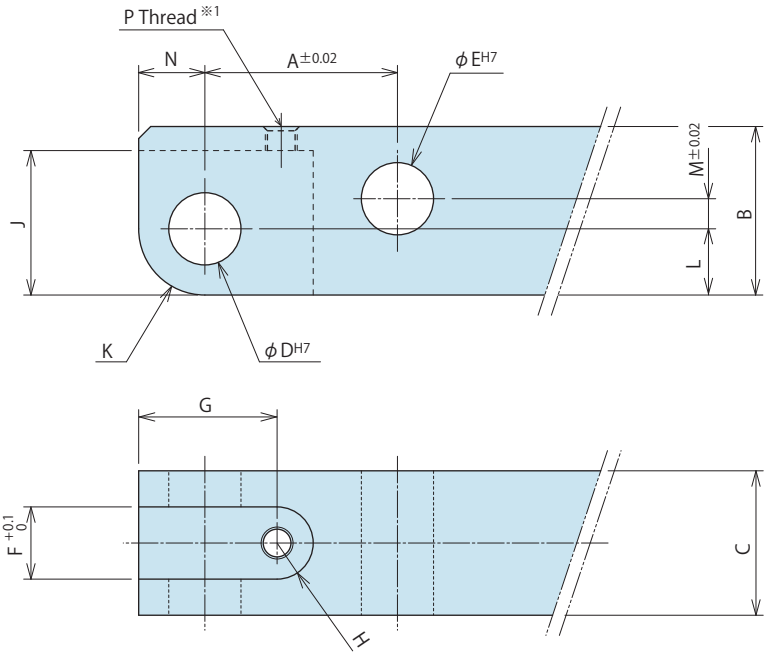
※ Reference for designing link lever.

Corresponding Model No.

LKA [ ] 0 - [C / S] [L / C / R] [Blank / M / N] - [Blank / A / H / K]

1 Body Size

6 Option



Calculation List of Link Lever Design Dimension

(mm)

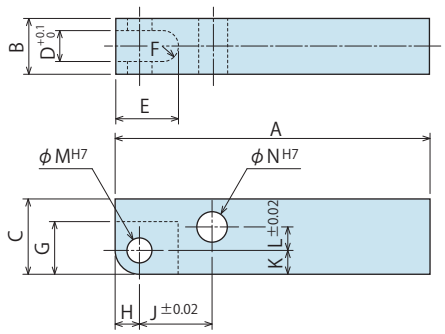
Corresponding Model No.	LKA0360	LKA0400	LKA0480	LKA0550	LKA0650	LKA0750	LKA0900	LKA1050
A	14.5	16	18.5	21	24.5	30	36	44
B	12.5	14	16	20	25	32	38	45
C	$10^{0}_{-0.2}$	$12^{0}_{-0.3}$	$12^{0}_{-0.3}$	$16^{0}_{-0.3}$	$19^{0}_{-0.3}$	$22^{0}_{-0.3}$	$25^{0}_{-0.3}$	$32^{0}_{-0.4}$
D	$5^{+0.012}_{0}$	$6^{+0.012}_{0}$	$6^{+0.012}_{0}$	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$	$12^{+0.018}_{0}$	$15^{+0.018}_{0}$
E	$5^{+0.012}_{0}$	$6^{+0.012}_{0}$	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$	$12^{+0.018}_{0}$	$15^{+0.018}_{0}$	$18^{+0.018}_{0}$
F	5	6	6	8	10	11	13	16
G	10	11.5	13	12.5	16	20	24	28
H	R2.5	R3	R3	R4	R5	R5.5	R6.5	R8
J	10	12	13	13	17.5	22	26	30.5
K	R4.5	R5.5	R6	R6	R8	R10	R11	R13
L	4.5	5.5	6	6	8	10	11	13
M	2.5	2.5	3.5	6	7.5	9.5	13	16
N	4.5	5.5	6	6	8	10	11	13
P (Nominal×Depth) ※1	M3×0.5 Through	M3×0.5 Through	M3×0.5 Through	M3×0.5×6	M4×0.7 Through	M4×0.7×7	M5×0.8×8	M5×0.8×8

Notes :

1. Please design the link lever length according to the performance curve.
2. If the link lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
3. For 6 Option **Blank/H/K**, use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the lever mounting pin.
   (Refer to external dimensions of the clamp body for the dimensions of φAD, φAE.)
4. For 6 Option **A**, the lever mounting pin is not included in the clamp.
   Please order Tightening Kit for Quick Change Lever Option A (LZK□-W).

※1. Machining of P Thread is required only when using Tightening Kit for Quick Change Lever Option A (LZK□-W).

Accessories：Material Link Lever



Model No. Indication

LZK 048 0 – L

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

(mm)

Model No.	LZK0360-L	LZK0400-L	LZK0480-L	LZK0550-L	LZK0650-L	LZK0750-L	LZK0900-L	LZK1050-L
Corresponding Model No.	LKA0360	LKA0400	LKA0480	LKA0550	LKA0650	LKA0750	LKA0900	LKA1050
A	65	75	85	90	105	110	160	220
B	$10^{\ 0}_{-0.2}$	$12^{\ 0}_{-0.3}$	$12^{\ 0}_{-0.3}$	$16^{\ 0}_{-0.3}$	$19^{\ 0}_{-0.3}$	$22^{\ 0}_{-0.3}$	$25^{\ 0}_{-0.3}$	$32^{\ 0}_{-0.4}$
C	12.5	14	16	20	25	32	38	45
D	5	6	6	8	10	11	13	16
E	12.5	14.5	16	16.5	21	25.5	30.5	36
F	R2.5	R3	R3	R4	R5	R5.5	R6.5	R8
G	10	12	13	13	17.5	22	26	30.5
H	4.5	5.5	6	6	8	10	11	13
J	14.5	16	18.5	21	24.5	30	36	44
K	4.5	5.5	6	6	8	10	11	13
L	2.5	2.5	3.5	6	7.5	9.5	13	16
M	$5^{\ +0.012}_{\ 0}$	$6^{\ +0.012}_{\ 0}$	$6^{\ +0.012}_{\ 0}$	$6^{\ +0.012}_{\ 0}$	$8^{\ +0.015}_{\ 0}$	$10^{\ +0.015}_{\ 0}$	$12^{\ +0.018}_{\ 0}$	$15^{\ +0.018}_{\ 0}$
N	$5^{\ +0.012}_{\ 0}$	$6^{\ +0.012}_{\ 0}$	$6^{\ +0.012}_{\ 0}$	$8^{\ +0.015}_{\ 0}$	$10^{\ +0.015}_{\ 0}$	$12^{\ +0.018}_{\ 0}$	$15^{\ +0.018}_{\ 0}$	$18^{\ +0.018}_{\ 0}$

Notes：

1. Material S45C　Surface Finishing：Alkaline Blackening
2. If necessary, the front end should be additionally machined and finished.
3. For 6 Option **Blank/H/K**, use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the lever mounting pin.
4. For 6 Option **A**, the lever mounting pin is not included in the clamp.
   Please order Tightening Kit for Quick Change Lever Option A (LZK□-W).
5. When using Tightening Kit for Quick Change Lever Option A (LZK□-W), a tapped hole should be additionally machined.
   Refer to the link lever design dimensions (P Thread part) for additional machining.

Accessories：Tightening Kit for Quick Change Lever Option A

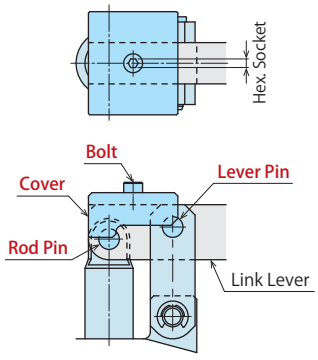
Model No. Indication

LZK 040 0 – W

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

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

【Contents of Tightening Kit】
・Cover (with Bolt)　・Rod Pin　・Lever Pin



Model No.	LZK0360-W	LZK0400-W	LZK0480-W	LZK0550-W	LZK0650-W	LZK0750-W	LZK0900-W	LZK1050-W
Corresponding Model No.	LKA0360-□-A	LKA0400-□-A	LKA0480-□-A	LKA0550-□-A	LKA0650-□-A	LKA0750-□-A	LKA0900-□-A	LKA1050-□-A
Nominal×Pitch of Bolt	M3×0.5	M3×0.5	M3×0.5	M3×0.5	M4×0.7	M4×0.7	M5×0.8	M5×0.8
Hex. Socket mm	2.5	2.5	2.5	2.5	3	3	4	4
Tightening Torque N·m	1.3	1.3	1.3	1.3	3.2	3.2	6.3	6.3

Cautions

Notes for Design

1) Check Specifications

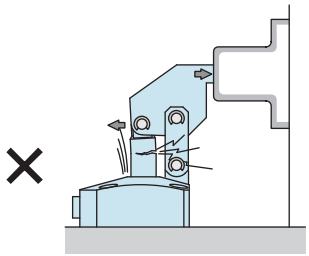
- Please use each product according to the specifications.

2) Notes for Circuit Design

- Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages. (Refer to P.1356)
- Ensure there is no possibility of supplying hydraulic pressure to the lock port and the release port simultaneously.

3) Notes for Link Lever Design

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



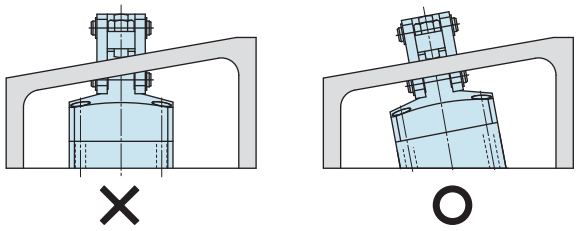
- If offset load is applied on the link part, use it within the allowable range of "Allowable Offset Graph".

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

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

5) When clamping on a sloped surface of the workpiece

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



6) When using in a dry environment

- The link pin can be dried out. Grease it periodically or use a special pin. Contact us for the specifications of special pins.

7) Notes for LKA-M/N, LKW

- When using air sensing link clamp (LKA-M/N, LKW), make sure to check the Notes for Design・Installation・Use (Pages shown below).
  - ・Link clamp with air sensing option LKA-M/N：Refer to P.633.
  - ・Link clamp with air sensing valve LKW：Refer to P.655.

Installation Notes

1) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.1355).

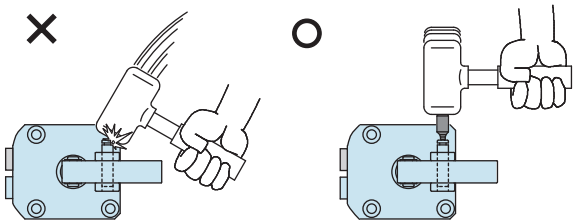
2) Installation of the Product

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

Model No.		Thread Size	Tightening Torque (N·m)
LKA LKC LKW	LKA0360	M4×0.7	4.0
	LKA0400 LKC0400/LKW0401	M5×0.8	8.0
	LKA0480 LKC0480/LKW0481	M5×0.8	8.0
	LKA0550 LKC0550/LKW0551	M6×1	14
	LKA0650 LKC0650/LKW0651	M6×1	14
	LKA0750/LKW0751	M8×1.25	33
	LKA0900	M10×1.5	65
	LKA1050	M12×1.75	114
LJ/LM	LJ0302/LM0300	M4×0.7	3.2
	LJ0362/LM0360	M4×0.7	3.2
	LJ0402/LM0400	M5×0.8	6.3
	LJ0482/LM0480	M5×0.8	6.3
	LJ0552/LM0550	M6×1	10
	LJ0652/LM0650	M6×1	10
	LJ0752/LM0750	M8×1.25	25
	LJ0902	M10×1.5	58.8
	LJ1052	M12×1.75	98
TMA	TMA0250	M5×0.8	6.9
	TMA0400	M5×0.8	6.9
	TMA0600	M6×1	11.8
	TMA1000	M8×1.25	25
	TMA1600	M10×1.5	58.8
	TMA2500	M12×1.75	98
	TMA3200	M12×1.75	98

3) Installation / Removal of the Link Lever

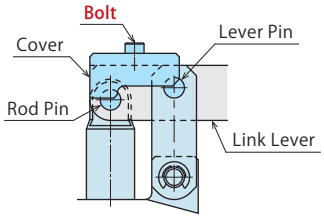
- When inserting the link pin, do not hit the pin directly with a hammer. When using a hammer to insert the pin, always use a cover plate with a smaller diameter than the spring ring groove on the pin.



- The following shows the tightening torque for the mounting bolt of the quick change lever option A.

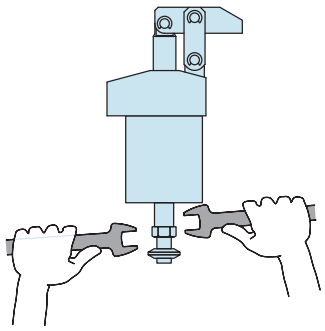
Quick Change Lever Option A

Model No.	Thread Size	Tightening Torque (N·m)
LKA0360-□□-A **LJ0362-□□-A / LM0360-□□-A**	M3×0.5	1.3
LKA0400-□□-A **LKC0400-□□-A / LKW0401-□□-A** **LJ0402-□□-A / LM0400-□□-A**	M3×0.5	1.3
LKA0480-□□-A **LKC0480-□□-A / LKW0481-□□-A** **LJ0482-□□-A / LM0480-□□-A**	M3×0.5	1.3
LKA0550-□□-A **LKC0550-□□-A / LKW0551-□□-A** **LJ0552-□□-A / LM0550-□□-A**	M3×0.5	1.3
LKA0650-□□-A **LKC0650-□□-A / LKW0651-□□-A** **LJ0652-□□-A / LM0650-□□-A**	M4×0.7	3.2
LKA0750-□□-A / LKW0751-□□-A **LJ0752-□□-A / LM0750-□□-A**	M4×0.7	3.2
LKA0900-□□-A	M5×0.8	6.3
LKA1050-□□-A	M5×0.8	6.3



4) 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. Tightening torque of mounting screw is shown in the table below.



Model No.		Thread Size	Tightening Torque (N·m)
LKA-D	**LKA0360-□□D**	M4×0.7	3.2
	LKA0400-□□D	M6×1	10
	LKA0480-□□D	M8×1.25	25
	LKA0550-□□D	M8×1.25	25
	LKA0650-□□D	M8×1.25	25
	LKA0750-□□D	M10×1.5	50
	LKA0900-□□D	M10×1.5	50
	LKA1050-□□D	M10×1.5	50

5) Speed Adjustment

- Adjust the speed so that the total operating time is one second or more. If the clamp operates too fast the parts will be worn out leading to premature damage and ultimately complete equipment failure.
- Please make sure to release air from the circuit before adjusting speed. It will be difficult to adjust the speed accurately with air mixed in the circuit.
- Turn the speed control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

※ Please refer to P.1355 for common cautions.
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit
• Notes on Handling • Maintenance/Inspection • Warranty

Cautions

Installation Notes (For Hydraulic Series)

1) Check the Usable Fluid

- Please use the appropriate fluid by referring to the Hydraulic Fluid List.

2) Procedure before Piping

- The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing.
- The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
- There is no filter provided with Kosmek's product except for a part of valves which prevents foreign materials and contaminants from getting into the circuit.

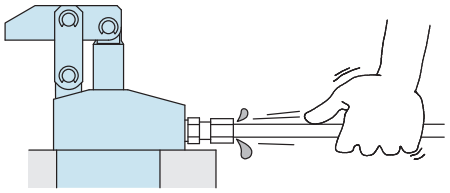
3) Applying Sealing Tape

- Wrap with tape 1 to 2 times following the screw direction.
- Pieces of the sealing tape can lead to oil leakage and malfunction.
- Please implement piping construction in a clear environment to prevent anything getting in products.

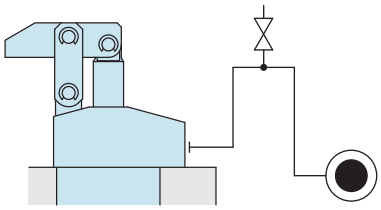
4) Air Bleeding of the Hydraulic Circuit

- If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please perform the following steps.

① Reduce hydraulic pressure to less than 2MPa.
② Loosen the cap nut of pipe fitting closest to the clamp by one full turn.
③ Shake the pipeline to loosen the outlet of pipe fitting.
Hydraulic fluid mixed with air comes out.



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



5) Checking Looseness and Retightening

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

Hydraulic Fluid List

ISO Viscosity Grade ISO-VG-32

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

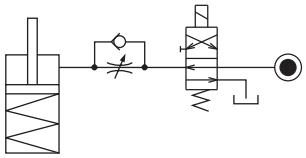
Note : Please contact manufacturers when customers require products in the list above.

Notes on Hydraulic Cylinder Speed Control Unit

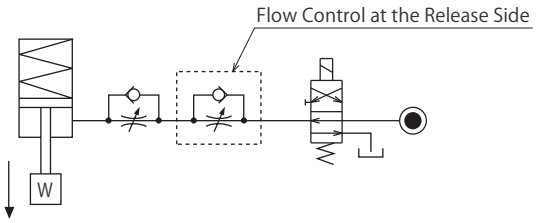
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

Flow Control Circuit for Single Acting Cylinder

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



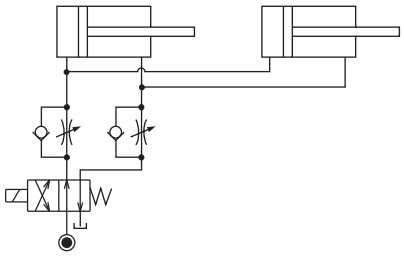
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



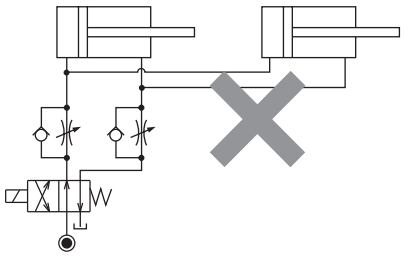
Flow Control Circuit for Double Acting Cylinder

Flow control circuit for double acting cylinder 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.75 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)

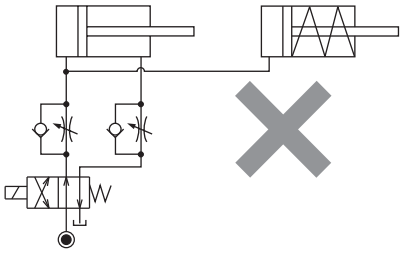


【Meter-in Circuit】(LKE/TMA/TLA must be controlled with meter-in.)



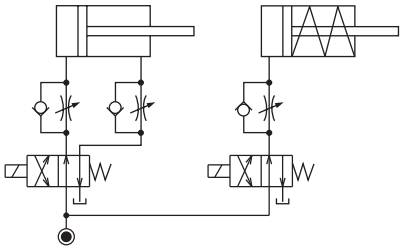
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

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.

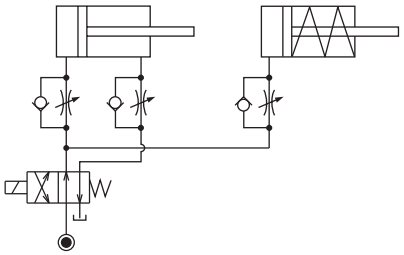


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

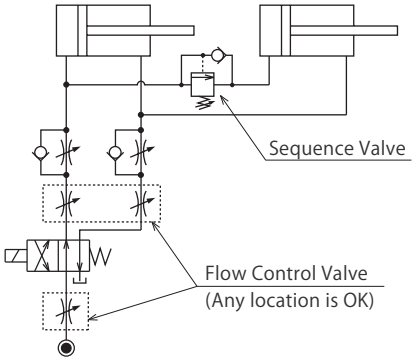
○ Separate the control circuit.



○ 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.



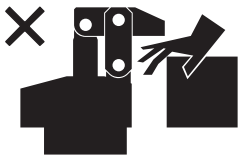
Cautions

Notes on Handling

1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
③ After stopping the product, do not remove until the temperature drops.
④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch a clamp (cylinder) while it is working.
Otherwise, your hands may be injured due to clinching.

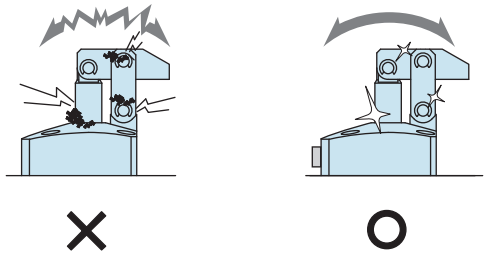


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

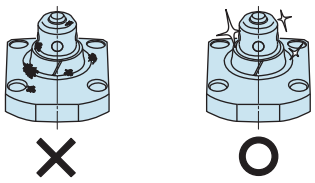
Maintenance and Inspection

1) Removal of the Machine and Shut-off of Pressure Source
- Before the machine is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- Make sure there is no abnormality in the bolts and respective parts before restarting.

2) Regularly clean the area around the piston rod and plunger.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning and fluid leakage.



3) Please clean out the reference surfaces on a regular basis (taper reference surface and seating surface) of the locating products. (VS/VT/VFL/VFM/VFJ/VFK/WVS/VWM/VWK/VX/VXE/VXF)
- The locating products, except VX/VXE/VXF model, can remove contaminants with cleaning functions. However, hardened cutting chips, adhesive coolant and others may not be removed. Make sure there are no contaminants before installing a workpiece/pallet.
- Continuous use with contaminant on components will lead to locating accuracy failure, malfunction and fluid leakage.



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

5) Regularly tighten nut, bolt, pin, cylinder, pipe line and others to ensure proper use.

6) Make sure the hydraulic fluid has not deteriorated.

7) Make sure there is a smooth action without an irregular noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

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

9) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

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

2) Warranty Scope

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

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

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

Control Valve

Model BZL
Model BZT
Model BZX
Model JZG
Model BZS

Directly-Attached Speed Control Valve, Air Bleed Valve, G-Thread Plug and Sequence Valve

● Directly Attached to Clamps

Control Valves :
Speed control valve, air bleed valve, G-thread plug and sequence valve attached directly into Kosmek hydraulic clamp G-thread piping option.

Speed Control Valve

Speed Control Valve

Model BZL
Model BZT

Air Bleed Valve

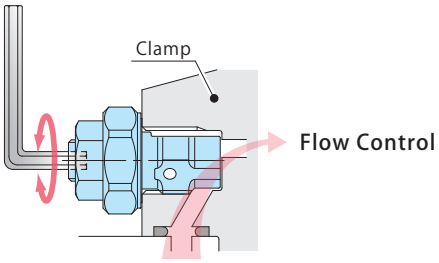
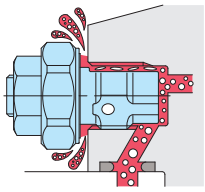
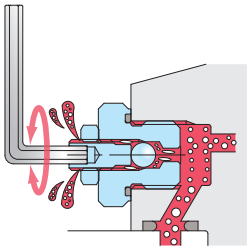
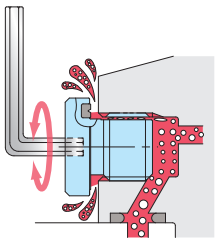
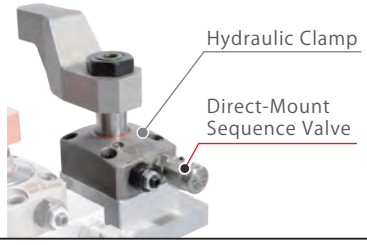
Model BZX

G Thread Plug

Model JZG

Direct-Mount Sequence Valve

Model BZS

	Operating Pressure Range	Action Description
Speed Control Valve (For Low Pressure) Model **BZL** → P.949 	7MPa or less	Adjust the flow rate with a wrench. Able to adjust the clamping speed individually. 
Speed Control Valve (For High Pressure) Model **BZT** → P.953	35MPa or less	Air bleeding in the circuit is possible by loosening the speed control valve. 
Air Bleed Valve Model **BZX** → P.955 	25MPa or less	Air bleeding in the circuit is possible by wrench. 
G Thread Plug Model **JZG** → P.957 	35MPa or less	Air bleeding in the circuit is possible by loosening the G thread plug. 
Direct-Mount Sequence Valve Model **BZS** → P.959 	7MPa or less	Sequence Valve directly attaches to KOSMEK hydraulic clamp's G-thread piping option. Controls the operating sequence of each actuator. 

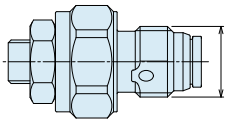
Model No. Indication (Speed Control Valve for Low Pressure)

BZL 0 10 1 - B

1 2 3

1 G Thread Size

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



2 Design No.

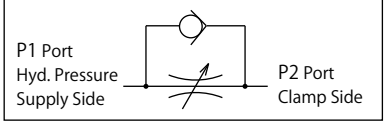
1 : Revision Number

3 Control Method

A : Meter-in
B : Meter-out

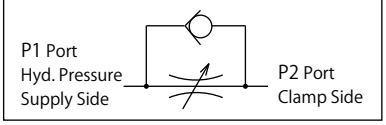
A

Circuit Symbol : Meter-in



B

Circuit Symbol : Meter-out



Specifications

Model No.		BZL0101-A	BZL0201-A	BZL0301-A	BZL0101-B	BZL0201-B	BZL0301-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	℃	0 ~ 70					
Tightening Torque for Main Body	N·m	10	25	35	10	25	35
Weight	g	12	26	48	12	26	48

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

Applicable Products

Model No.	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LC (Single Action) Work Support	LCW (Single Action) Work Support
BZL0101-A	(DBA0250-C□) (DBA0320-C□)	(DBC0250-C□) (DBC0320-C□)	(FVA0401) (FVA0631) (FVA1001)	(FVC0630)	(FVD1600) (FVD2500)	LC0263-C□-□ LC0303-C□□-□ LC0363-C□□-□ LC0403-C□□-□ LC0483-C□□-□ LC0553-C□□-□ LC0653-C□□-□	LCW0363-C□ LCW0403-C□ LCW0483-C□ LCW0553-C□ LCW0653-C□
BZL0101-B	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500		
BZL0201-A	(DBA0400-C□) (DBA0500-C□)	(DBC0400-C□) (DBC0500-C□)		(FVC1000) (FVC1600)	(FVD4000)	LC0753-C□□-□ LC0903-C□□-□	
BZL0201-B	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600	FVD4000		

Applicable Products

Model No.	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp
BZL0101-A	(LHA0360-C□□-□) (LHA0400-C□□-□) (LHA0480-C□□-□) (LHA0550-C□□-□)	(LHC0360-C□□-□) (LHC0400-C□□-□) (LHC0480-C□□-□) (LHC0550-C□□-□)	(LHD0400-C□-□) (LHD0480-C□-□) (LHD0550-C□-□)		(LHS0360-C□□-□) (LHS0400-C□□-□) (LHS0480-C□□-□) (LHS0550-C□□-□)	(LHV0400-C□E-□) (LHV0480-C□E-□) (LHV0550-C□E-□)	(LHW0401-C□□-□) (LHW0481-C□□-□) (LHW0551-C□□-□)	LT0301-C□-□ LT0361-C□-□ LT0401-C□-□ LT0481-C□-□ LT0551-C□-□	LG0301-C□-□ LG0361-C□-□ LG0401-C□-□ LG0481-C□-□ LG0551-C□-□
BZL0101-B	LHA0360-C□□-□ LHA0400-C□□-□ LHA0480-C□□-□ LHA0550-C□□-□	LHC0360-C□□-□ LHC0400-C□□-□ LHC0480-C□□-□ LHC0550-C□□-□	LHD0400-C□-□ LHD0480-C□-□ LHD0550-C□-□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□-□ LHS0400-C□□-□ LHS0480-C□□-□ LHS0550-C□□-□	LHV0400-C□E-□ LHV0480-C□E-□ LHV0550-C□E-□	LHW0401-C□□-□ LHW0481-C□□-□ LHW0551-C□□-□		
BZL0201-A	(LHA0650-C□□-□) (LHA0750-C□□-□)	(LHC0650-C□□-□)			(LHS0650-C□□-□) (LHS0750-C□□-□)	(LHV0650-C□E-□) (LHV0750-C□E-□)	(LHW0651-C□□-□) (LHW0751-C□□-□)	LT0651-C□-□ LT0751-C□-□	LG0651-C□-□ LG0751-C□-□
BZL0201-B	LHA0650-C□□-□ LHA0750-C□□-□	LHC0650-C□□-□			LHS0650-C□□-□ LHS0750-C□□-□	LHV0650-C□E-□ LHV0750-C□E-□	LHW0651-C□□-□ LHW0751-C□□-□		
BZL0301-A	(LHA0900-C□□-□) (LHA1050-C□□-□)				(LHS0900-C□□-□) (LHS1050-C□□-□)				LG0901-C□-□ LG1051-C□-□
BZL0301-B	LHA0900-C□□-□ LHA1050-C□□-□				LHS0900-C□□-□ LHS1050-C□□-□				

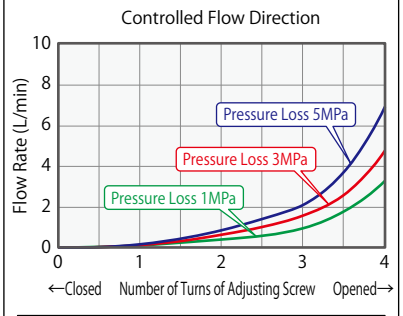
Model No.	LGV (Single Action) Swing Clamp	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp
BZL0101-A	LGV0400-C□□ LGV0480-C□□ LGV0550-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□	(LKK0360-C-□) (LKK0400-C-□) (LKK0480-C-□) (LKK0550-C-□)	(LKV0400-C□E-□) (LKV0480-C□E-□) (LKV0550-C□E-□)	(LKW0401-C□□-□) (LKW0481-C□□-□) (LKW0551-C□□-□)	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□
BZL0101-B		LKA0360-C□□-□ LKA0400-C□□-□ LKA0480-C□□-□ LKA0550-C□□-□	LKC0400-C□-□ LKC0480-C□-□ LKC0550-C□-□		LKK0360-C-□ LKK0400-C-□ LKK0480-C-□ LKK0550-C-□	LKV0400-C□E-□ LKV0480-C□E-□ LKV0550-C□E-□	LKW0401-C□□-□ LKW0481-C□□-□ LKW0551-C□□-□		
BZL0201-A	LGV0650-C□□ LGV0750-C□□	(LKA0650-C□□-□) (LKA0750-C□□-□)	(LKC0650-C□-□)		(LKK0650-C-□)	(LKV0650-C□E-□) (LKV0750-C□E-□)	(LKW0651-C□□-□) (LKW0751-C□□-□)	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□
BZL0201-B		LKA0650-C□□-□ LKA0750-C□□-□	LKC0650-C□-□		LKK0650-C-□	LKV0650-C□E-□ LKV0750-C□E-□	LKW0651-C□□-□ LKW0751-C□□-□		
BZL0301-A		(LKA0900-C□□-□) (LKA1050-C□□-□)							LJ0902-C□ LJ1052-C□
BZL0301-B		LKA0900-C□□-□ LKA1050-C□□-□							

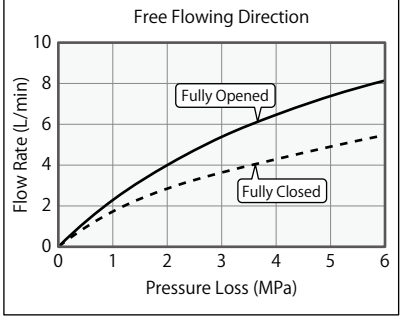
Model No.	LJV (Single Action) Link Clamp	LFW (Double Action) Link Clamp	LFA (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder
BZL0101-A	LJV0400-C□□ LJV0480-C□□ LJV0550-C□□	(LFW0480-C□J) (LFW0550-C□J)	(LFA0480-C□□) (LFA0550-C□□)	(LSA0360-C-□)	LSE0360-C-□	(LL0360-C□□-□) (LL0400-C□□-□) (LL0480-C□□-□) (LL0550-C□□-□)	(LLR0360-C□□-□-□) (LLR0400-C□□-□-□) (LLR0480-C□□-□-□) (LLR0550-C□□-□-□)	(LLV0360-C□E-□) (LLV0400-C□E-□) (LLV0480-C□E-□)	(LLW0361-C□□-□) (LLW0401C□□-□) (LLW0481-C□□-□)
BZL0101-B		LFW0480-C□J LFW0550-C□J	LFA0480-C□□ LFA0550-C□□	LSA0360-C-□		LL0360-C□□-□ LL0400-C□□-□ LL0480-C□□-□ LL0550-C□□-□	LLR0360-C□□-□-□ LLR0400-C□□-□-□ LLR0480-C□□-□-□ LLR0550-C□□-□-□	LLV0360-C□E-□ LLV0400-C□E-□ LLV0480-C□E-□	LLW0361-C□□-□ LLW0401-C□□-□ LLW0481-C□□-□
BZL0201-A	LJV0650-C□□ LJV0750-C□□	(LFW0650-C□J) (LFW0750-C□J)	(LFA0650-C□□) (LFA0750-C□□)			(LL0650-C□□-□) (LL0750-C□□-□)	(LLR0650-C□□-□-□) (LLR0750-C□□-□-□)		
BZL0201-B		LFW0650-C□J LFW0750-C□J	LFA0650-C□□ LFA0750-C□□			LL0650-C□□-□ LL0750-C□□-□	LLR0650-C□□-□-□ LLR0750-C□□-□-□		
BZL0301-A						(LL0900-C□□-□) (LL1050-C□□-□)	(LLR0900-C□□-□-□) (LLR1050-C□□-□-□)		
BZL0301-B						LL0900-C□□-□ LL1050-C□□-□	LLR0900-C□□-□-□ LLR1050-C□□-□-□		

Note : 1. Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides (except model LKE/LSE). Meter-in circuits can be adversely affected by any air in the system.

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

BZL0101-A：Meter-in





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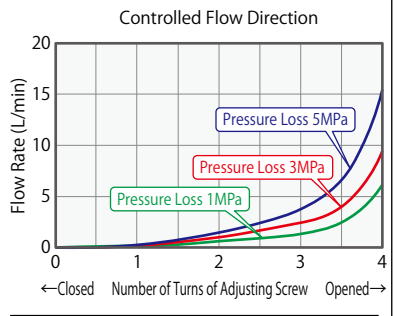
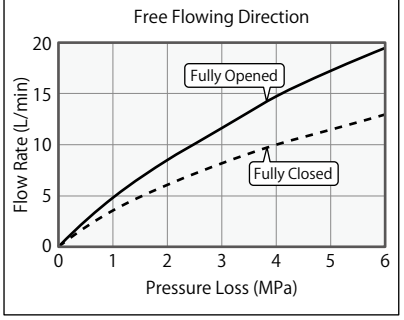
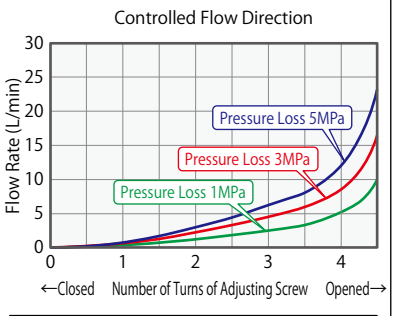
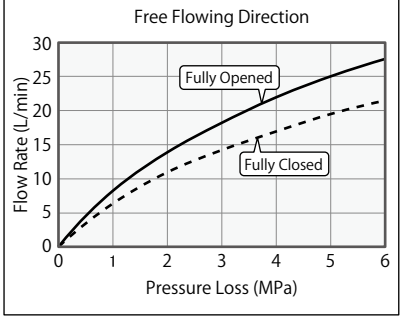




BZL0301-A：Meter-in





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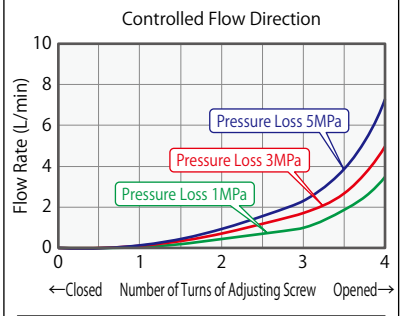
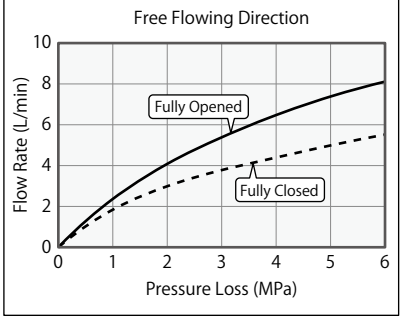
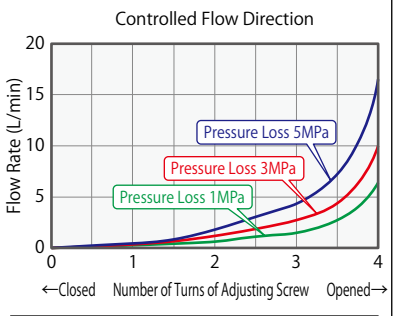
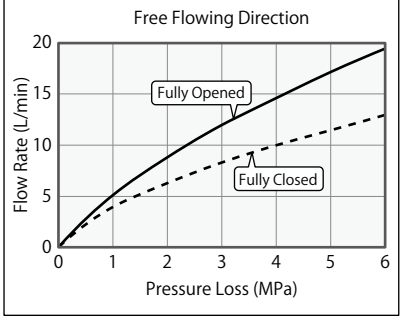


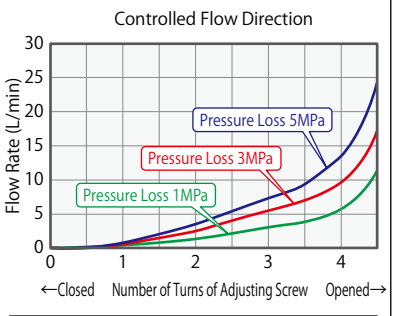


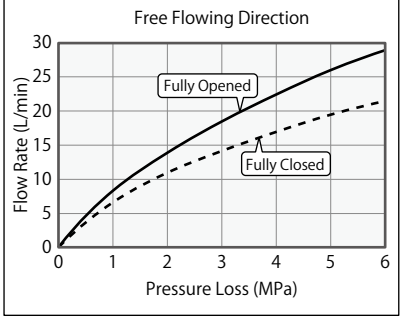
BZL0201-B：Meter-out



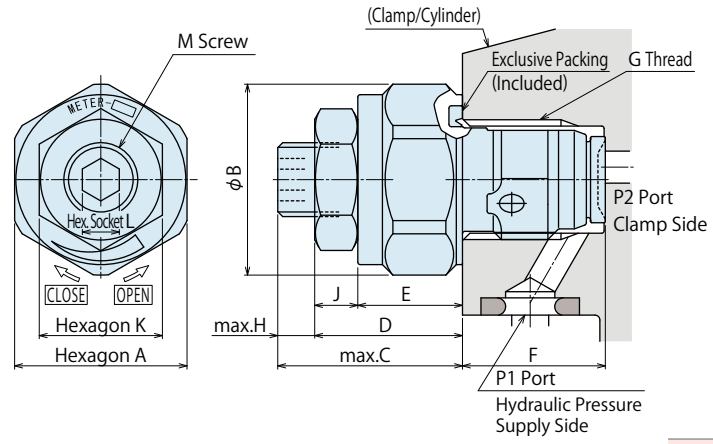


BZL0301-B：Meter-out

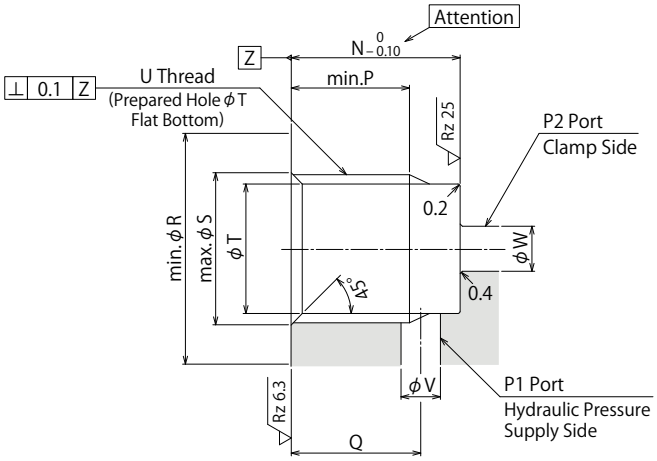




External Dimensions



Machining Dimensions of Mounting Area



(mm)

Model No.	BZL0101-□	BZL0201-□	BZL0301-□
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 (Nominal×Pitch)	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

Notes :

1. Since the ▽Rz 6.3 area is sealing part, be careful not to damage it.
2. Since the ▽Rz 12.5 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 side and P2 port as the clamp side.
5. If mounting plugs or fittings with G thread specification available in the market, the dimension '※1' should be 12.5.

Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design.
   Improper circuit design may lead to malfunctions and damages. (Refer to P.1356)
2. It is dangerous to release the air under high pressure. It must be done under lower pressure.
   (For reference : the minimum operating range of the product within the circuit.)

Model No. Indication (Air Bleed Valve)

BZX0 1 0

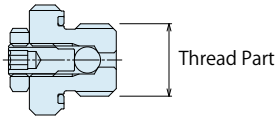
1 2

1 G Thread Size

1 : Thread Part G1/8A Thread

2 : Thread Part G1/4A Thread

3 : Thread Part G3/8A Thread



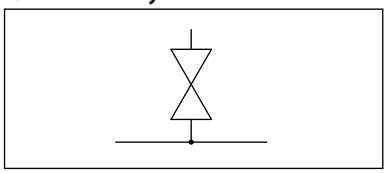
2 Design No.

0 : Revision Number

Specifications

Model No.		BZX010	BZX020	BZX030
Max. Operating Pressure	MPa	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	℃	0 ~ 70		
Tightening Torque for Main Body	N·m	10	25	35
Weight	g	12	23	36

Circuit Symbol



Notes : 1. Do not over-loosen the plug during air venting.
(Do not loosen further than 2 turns from the fully closed position.)
2. Air bleeding under high pressure is dangerous. It must be done under lower pressure.
(For reference : the minimum operation pressure range of the product within the circuit)
3. Refer to the machining dimensions of BZL mounting area when installing BZX into a hydraulic circuit.

Applicable Products

Model No.	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LC (Single Action) Work Support	LCW (Single Action) Work Support	TC (Single Action) Work Support
BZX010	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500	LC0263-C□-□ LC0303-C□□-□ LC0363-C□□-□ LC0403-C□□-□ LC0483-C□□-□ LC0553-C□□-□ LC0653-C□□-□	LCW0363-C□ LCW0403-C□ LCW0483-C□ LCW0553-C□ LCW0653-C□	TC0403-C□-□-□ TC0483-C□-□-□ TC0553-C□-□-□ TC0653-C□-□-□ TC0753-C□-□-□
BZX020	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600	FVD4000	LC0753-C□□-□ LC0903-C□□-□		

Applicable Products

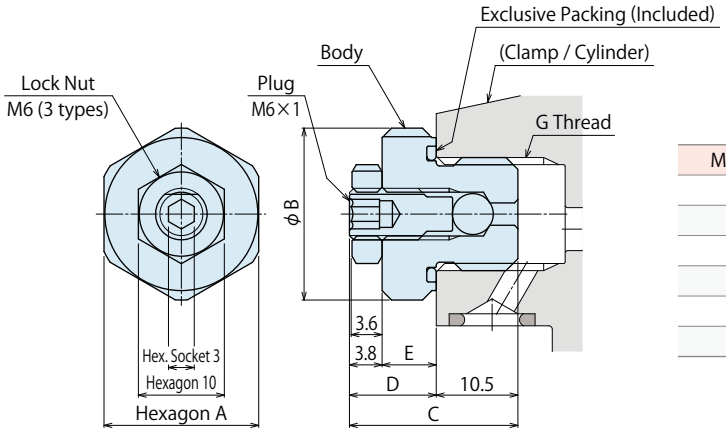
Model No.	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp
BZX010	LHA0360-C□□-□ LHA0400-C□□-□ LHA0480-C□□-□ LHA0550-C□□-□	LHC0360-C□□-□ LHC0400-C□□-□ LHC0480-C□□-□ LHC0550-C□□-□	LHD0400-C□-□ LHD0480-C□-□ LHD0550-C□-□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□-□ LHS0400-C□□-□ LHS0480-C□□-□ LHS0550-C□□-□	LHV0400-C□E-□ LHV0480-C□E-□ LHV0550-C□E-□	LHW0401-C□□-□ LHW0481-C□□-□ LHW0551-C□□-□	LT0301-C□-□ LT0361-C□-□ LT0401-C□-□ LT0481-C□-□ LT0551-C□-□	LG0301-C□-□ LG0361-C□-□ LG0401-C□-□ LG0481-C□-□ LG0551-C□-□
BZX020	LHA0650-C□□-□ LHA0750-C□□-□	LHC0650-C□□-□			LHS0650-C□□-□ LHS0750-C□□-□	LHV0650-C□E-□ LHV0750-C□E-□	LHW0651-C□□-□ LHW0751-C□□-□	LT0651-C□-□ LT0751-C□-□	LG0651-C□-□ LG0751-C□-□
BZX030	LHA0900-C□□-□ LHA1050-C□□-□				LHS0900-C□□-□ LHS1050-C□□-□				LG0901-C□-□ LG1051-C□-□

Model No.	LGV (Single Action) Swing Clamp
BZX010	LGV0400-C□□ LGV0480-C□□ LGV0550-C□□
BZX020	LGV0650-C□□ LGV0750-C□□
BZX030	

Model No.	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp	LJV (Single Action) Link Clamp
BZX010	LKA0360-C□□-□ LKA0400-C□□-□ LKA0480-C□□-□ LKA0550-C□□-□	LKC0400-C□-□ LKC0480-C□-□ LKC0550-C□-□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	LKK0360-C-□ LKK0400-C-□ LKK0480-C-□ LKK0550-C-□	LKV0400-C□E-□ LKV0480-C□E-□ LKV0550-C□E-□	LKW0401-C□□-□ LKW0481-C□□-□ LKW0551-C□□-□	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□	LJV0400-C□□ LJV0480-C□□ LJV0550-C□□
BZX020	LKA0650-C□□-□ LKA0750-C□□-□	LKC0650-C□-□		LKK0650-C-□	LKV0650-C□E-□ LKV0750-C□E-□	LKW0651-C□□-□ LKW0751-C□□-□	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□	LJV0650-C□□ LJV0750-C□□
BZX030	LKA0900-C□□-□ LKA1050-C□□-□							LJ0902-C□ LJ1052-C□	

Model No.	LFW (Double Action) Link Clamp	LFA (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder	TTA (Double Action) Linear Cylinder
BZX010	LFW0480-C□J LFW0550-C□J	LFA0480-C□□ LFA0550-C□□	LSA0360-C-□	LSE0360-C-□	LL0360-C□□-□ LL0400-C□□-□ LL0480-C□□-□ LL0550-C□□-□	LLR0360-C□□-□-□ LLR0400-C□□-□-□ LLR0480-C□□-□-□ LLR0550-C□□-□-□	LLV0360-C□E-□ LLV0400-C□E-□ LLV0480-C□E-□	LLW0361-C□□-□ LLW0401-C□□-□ LLW0481-C□□-□	TTA0360-C□-□ TTA0400-C□-□ TTA0480-C□-□ TTA0550-C□-□
BZX020	LFW0650-C□J LFW0750-C□J	LFA0650-C□□ LFA0750-C□□			LL0650-C□□-□ LL0750-C□□-□	LLR0650-C□□-□-□ LLR0750-C□□-□-□			TTA0650-C□-□
BZX030					LL0900-C□□-□ LL1050-C□□-□	LLR0900-C□□-□-□ LLR1050-C□□-□-□			

External Dimensions



(mm)

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

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

JZG0 1 0

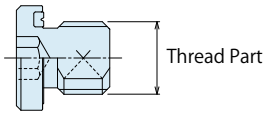
1 2

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	℃	0 ~ 70		
Tightening Torque for Main Body N·m	Female Thread Side Material : Steel	10	25	35
	Female Thread Side Material : Aluminum (For LT/LM※1)	8	20	28
Weight	g	7	15	23

Notes : 1. Air bleeding under high pressure is dangerous. It must be done under lower pressure.
(For reference : the minimum operation pressure range of the product within the circuit)
2. Refer to the machining dimensions of BZL mounting area when installing JZG into a hydraulic circuit.
※1. Body material of LT/LM is aluminum alloy, so install it with the tightening torque for aluminum.

Applicable Products

Model No.	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp
JZG010	LHA0360-C□□-□ LHA0400-C□□-□ LHA0480-C□□-□ LHA0550-C□□-□	LHC0360-C□□-□ LHC0400-C□□-□ LHC0480-C□□-□ LHC0550-C□□-□	LHD0400-C□-□ LHD0480-C□-□ LHD0550-C□-□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□	LHS0360-C□□-□ LHS0400-C□□-□ LHS0480-C□□-□ LHS0550-C□□-□	LHV0400-C□E-□ LHV0480-C□E-□ LHV0550-C□E-□	LHW0401-C□□-□ LHW0481-C□□-□ LHW0551-C□□-□	LT0301-C□-□ LT0361-C□-□ LT0401-C□-□ LT0481-C□-□ LT0551-C□-□	LG0301-C□-□ LG0361-C□-□ LG0401-C□-□ LG0481-C□-□ LG0551-C□-□
JZG020	LHA0650-C□□-□ LHA0750-C□□-□	LHC0650-C□□-□			LHS0650-C□□-□ LHS0750-C□□-□	LHV0650-C□E-□ LHV0750-C□E-□	LHW0651-C□□-□ LHW0751-C□□-□	LT0651-C□-□ LT0751-C□-□	LG0651-C□-□ LG0751-C□-□
JZG030	LHA0900-C□□-□ LHA1050-C□□-□				LHS0900-C□□-□ LHS1050-C□□-□				LG0901-C□-□ LG1051-C□-□

Model No.	LGV (Single Action) Swing Clamp	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LC (Single Action) Work Support	LCW (Single Action) Work Support	TC (Single Action) Work Support
JZG010	LGV0400-C□□ LGV0480-C□□ LGV0550-C□□	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500	LC0263-C□-□ LC0303-C□□-□ LC0363-C□□-□ LC0403-C□□-□ LC0483-C□□-□ LC0553-C□□-□ LC0653-C□□-□	LCW0363-C□ LCW0403-C□ LCW0483-C□ LCW0553-C□ LCW0653-C□	TC0403-C□-□-□ TC0483-C□-□-□ TC0553-C□-□-□ TC0653-C□-□-□ TC0753-C□-□-□
JZG020	LGV0650-C□□ LGV0750-C□□	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600	FVD4000	LC0753-C□□-□ LC0903-C□□-□		

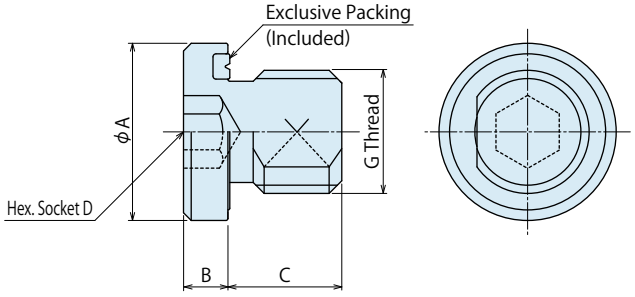
Applicable Products

Model No.	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp	LJV (Single Action) Link Clamp
JZG010	LKA0360-C□□-□ LKA0400-C□□-□ LKA0480-C□□-□ LKA0550-C□□-□	LKC0400-C□-□ LKC0480-C□-□ LKC0550-C□-□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□	LKK0360-C-□ LKK0400-C-□ LKK0480-C-□ LKK0550-C-□	LKV0400-C□E-□ LKV0480-C□E-□ LKV0550-C□E-□	LKW0401-C□□-□ LKW0481-C□□-□ LKW0551-C□□-□	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□	LJV0400-C□□ LJV0480-C□□ LJV0550-C□□
JZG020	LKA0650-C□□-□ LKA0750-C□□-□	LKC0650-C□-□		LKK0650-C-□	LKV0650-C□E-□ LKV0750-C□E-□	LKW0651-C□□-□ LKW0751-C□□-□	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□	LJV0650-C□□ LJV0750-C□□
JZG030	LKA0900-C□□-□ LKA1050-C□□-□							LJ0902-C□ LJ1052-C□	

Model No.	TLA-1 (Single Action) Swing Clamp	TLA-2 (Double Action) Swing Clamp	TLB-2 (Double Action) Swing Clamp	TLV-2 (Double Action) Swing Clamp	TMA-1 (Double Action) Link Clamp	TMA-2 (Double Action) Link Clamp	TMV-2 (Double Action) Link Clamp
JZG010	TLA0402-1C□ TLA0602-1C□ TLA0802-1C□ TLA1002-1C□ TLA1602-1C□	TLA0401-2C□-□ TLA0601-2C□-□ TLA0801-2C□-□ TLA1001-2C□-□ TLA1601-2C□-□	TLB0401-2C□-□ TLB0601-2C□-□ TLB0801-2C□-□ TLB1001-2C□-□ TLB1601-2C□-□	TLV0800-2C□□ TLV1000-2C□□ TLV1600-2C□□	TMA0250-1C□ TMA0400-1C□ TMA0600-1C□ TMA1000-1C□	TMA0250-2C□ TMA0400-2C□ TMA0600-2C□ TMA1000-2C□	TMV0400-2C□□ TMV0600-2C□□ TMV1000-2C□□
JZG020	TLA2002-1C□ TLA2502-1C□ TLA4002-1C□	TLA2001-2C□-□ TLA2501-2C□-□ TLA4001-2C□-□	TLB2001-2C□-□ TLB2501-2C□-□ TLB4001-2C□-□	TLV2000-2C□□	TMA1600-1C□ TMA2500-1C□ TMA3200-1C□	TMA1600-2C□ TMA2500-2C□ TMA3200-2C□	TMV1600-2C□□

Model No.	LFA (Double Action) Link Clamp	LFW (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder	TTA (Double Action) Linear Cylinder
JZG010	LFA0480-C□□ LFA0550-C□□	LFW0480-C□J LFW0550-C□J	LSA0360-C-□	LSE0360-C-□	LL0360-C□□-□ LL0400-C□□-□ LL0480-C□□-□ LL0550-C□□-□	LLR0360-C□□-□-□ LLR0400-C□□-□-□ LLR0480-C□□-□-□ LLR0550-C□□-□-□	LLV0360-C□E-□ LLV0400-C□E-□ LLV0480-C□E-□	LLW0361-C□□-□ LLW0401-C□□-□ LLW0481-C□□-□	TTA0360-C□-□ TTA0400-C□-□ TTA0480-C□-□ TTA0550-C□-□
JZG020	LFA0650-C□□ LFA0750-C□□	LFW0650-C□J LFW0750-C□J			LL0650-C□□-□ LL0750-C□□-□	LLR0650-C□□-□-□ LLR0750-C□□-□-□			TTA0650-C□-□
JZG030					LL0900-C□□-□ LL1050-C□□-□	LLR0900-C□□-□-□ LLR1050-C□□-□-□			

External Dimensions



(mm)

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

PAT.P.

Direct-Mount Sequence Valve

Model BZS

Attaches directly into Kosmek hydraulic clamps G-thread piping option.
Easily and securely controls the operating sequence of actuators.

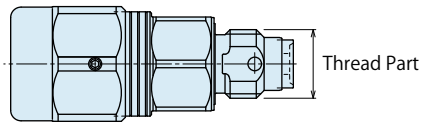
Model No. Indication

BZS 0 10 0

1 2

1 G Thread Size

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



2 Design No.

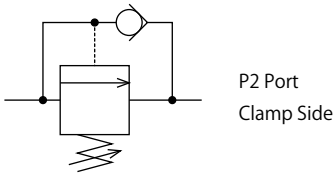
0 : Revision Number

Specifications

Model No.		BZS0100	BZS0200	BZS0300
Sequence Operating Pressure Adjustable Range MPa		1.0 ~ 6.0		
Operating Pressure Range MPa		2.0 ~ 7.0		
Withstanding Pressure MPa		10.5		
G Thread Size		G1/8A	G1/4A	G3/8A
Cracking Pressure MPa		0.03		
Adjusting Screw Turn Ratio:Reference MPa/Rev		1.5	1.3	1.1
Min. Passage Area	P1 → P2	2.0	5.7	8.5
mm^2	P2 → P1	2.0	5.0	8.2
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32		
Operating Temperature ℃		0 ~ 70		
Tightening Torque N·m		10	25	35
Weight g		35	82	155

Notes: 1. Please mount to an actuator using Hex. E shown in External Dimensions on P.961A with the tightening torque shown in the list above. Insufficient or excessive tightening torque leads to malfunction.
2. Do not attach a used BZS to other clamps. Sequence movement may not be done because the bottom depth difference of G thread makes metal sealing insufficient.
3. The difference between the set pressure and the supplying pressure should be 1MPa or more.
4. For using multiple sequence valves to operate cylinders in sequence, the difference of each set pressure should be 1MPa or more.
5. Depending on circuit system (actuator capacity, hydraulic pipe diameter, passage length, etc.), sometimes it is necessary to reduce hydraulic flow rate to achieve proper sequence movement. Make sure you are able to control flow rate. (Since BZS is directly mounted on and used exclusively for one actuator, it is easily affected by hydraulic flow rate.)
6. Filter is not built in this product. Please note that contaminants such as cutting chips and sealing tapes entering into the product cause malfunction. Also when internal parts are damaged, it will not operate properly even after removing contaminants.

Circuit Symbol



※ No built-in filter provided.

What is a Sequence Valve?

The sequence valve controls the clamping and positioning sequence of multiple actuators.

When the incoming side pressure (P1 port) reaches the sequence setting pressure value, the pressure will be supplied to the outgoing side (P2 port). Refer to P.961B for the action description.

Applicable Products

Model No.	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp
BZS0100	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500	LHA0360-C□□-□ LHA0400-C□□-□ LHA0480-C□□-□ LHA0550-C□□-□	LHC0360-C□□-□ LHC0400-C□□-□ LHC0480-C□□-□ LHC0550-C□□-□	LHD0400-C□-□ LHD0480-C□-□ LHD0550-C□-□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□
BZS0200	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600※1	FVD4000	LHA0650-C□□-□ LHA0750-C□□-□	LHC0650-C□□-□		
BZS0300						LHA0900-C□□-□ LHA1050-C□□-□			

Model No.	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp	LGV (Single Action) Swing Clamp	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp
BZS0100	LHS0360-C□□-□ LHS0400-C□□-□ LHS0480-C□□-□ LHS0550-C□□-□	LHV0400-C□E-□ LHV0480-C□E-□ LHV0550-C□E-□	LHW0401-C□□-□ LHW0481-C□□-□ LHW0551-C□□-□	LT0301-C□-□ LT0361-C□-□ LT0401-C□-□ LT0481-C□-□ LT0551-C□-□	LG0301-C□-□ LG0361-C□-□ LG0401-C□-□ LG0481-C□-□ LG0551-C□-□	LGV0400-C□□ LGV0480-C□□ LGV0550-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□
BZS0200	LHS0650-C□□-□ LHS0750-C□□-□	LHV0650-C□E-□ LHV0750-C□E-□	LHW0651-C□□-□ LHW0751-C□□-□	LT0651-C□-□ LT0751-C□-□	LG0651-C□-□ LG0751-C□-□	LGV0650-C□□ LGV0750-C□□	LKA0650-C□□-□ LKA0750-C□□-□	LKC0650-C□-□	
BZS0300	LHS0900-C□□-□ LHS1050-C□□-□				LG0901-C□-□ LG1051-C□-□		LKA0900-C□□-□ LKA1050-C□□-□		

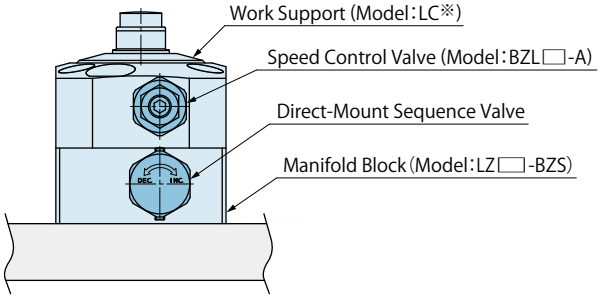
Model No.	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp	LJV (Single Action) Link Clamp
BZS0100	LKK0360-C-□ LKK0400-C-□ LKK0480-C-□ LKK0550-C-□	LKV0400-C□E-□ LKV0480-C□E-□ LKV0550-C□E-□	LKW0401-C□□-□ LKW0481-C□□-□ LKW0551-C□□-□	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□	LJV0400-C□□ LJV0480-C□□ LJV0550-C□□
BZS0200	LKK0650-C-□	LKV0650-C□E-□ LKV0750-C□E-□	LKW0651-C□□-□ LKW0751-C□□-□	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□	LJV0650-C□□ LJV0750-C□□
BZS0300					LJ0902-C□ LJ1052-C□	

Model No.	LFW (Double Action) Link Clamp	LFA (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder
BZS0100	LFW0480-C□J LFW0550-C□J	LFA0480-C□□ LFA0550-C□□	LSA0360-C-□	LSE0360-C-□	LL0360-C□□-□ LL0400-C□□-□ LL0480-C□□-□ LL0550-C□□-□	LLR0360-C□□-□-□ LLR0400-C□□-□-□ LLR0480-C□□-□-□ LLR0550-C□□-□-□	LLV0360-C□E-□ LLV0400-C□E-□ LLV0480-C□E-□	LLW0361-C□□-□ LLW0401-C□□-□ LLW0481-C□□-□
BZS0200	LFW0650-C□J LFW0750-C□J	LFA0650-C□□ LFA0750-C□□			LL0650-C□□-□ LL0750-C□□-□	LLR0650-C□□-□-□ LLR0750-C□□-□-□		
BZS0300					LL0900-C□□-□ LL1050-C□□-□	LLR0900-C□□-□-□ LLR1050-C□□-□-□		

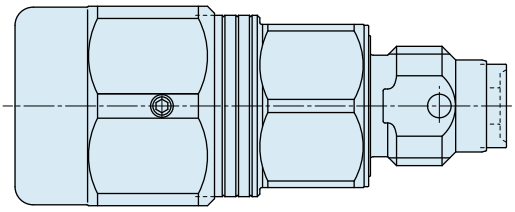
Note : ※1. It is not possible to install two BZS valves to FVC1000.

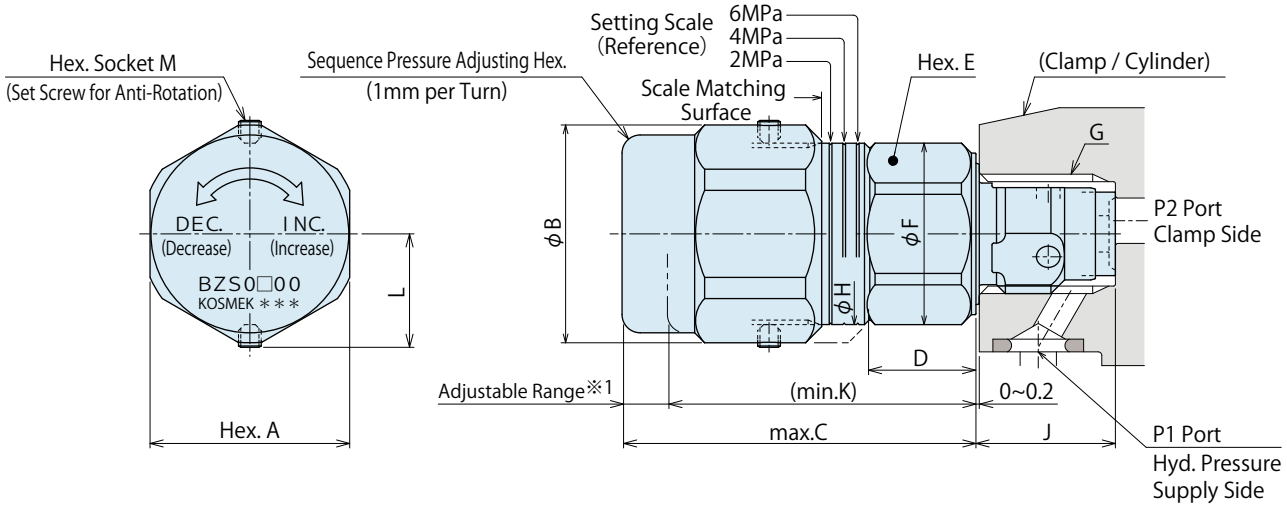
【In case of Work Support】

For using Direct-Mount Sequence Valve for Work Support (Model:LC※), mount Speed Control Valve (Model:BZL□-A) on Work Support and mount Direct-Mount Sequence Valve on the Manifold Block as shown in the drawing below.
Please refer to P.962A for Manifold Block (Model:LZ□-BZS).
※Please contact us when considering the installation to model LCW.

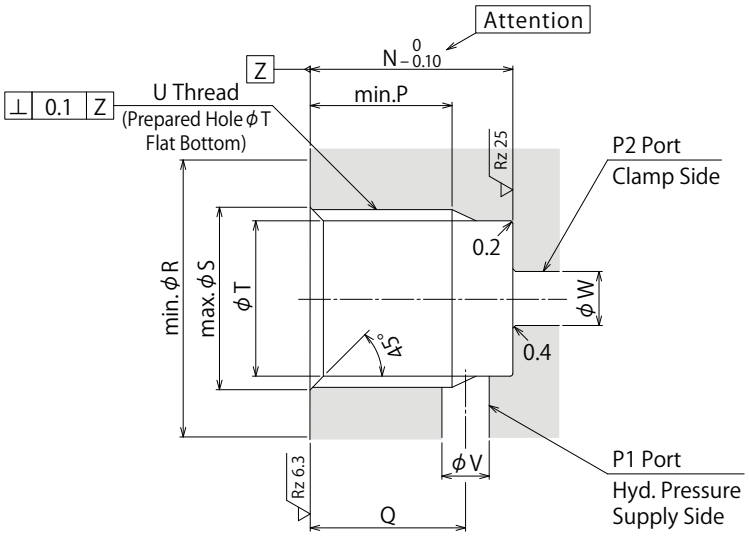


External Dimensions





Machining Dimensions of Mounting Area



(mm)

Model No.	BZS0100	BZS0200	BZS0300
A	16	22	27
B	17.5	24	29.5
C	30.5	39	49.5
D	7.5	12	15
E	14	18	22
F	15.5	20	24
G	G1/8	G1/4	G3/8
H	13.8	20	24
J ※2	(11.6)	(15.1)	(17.6)
K	(26.5)	(34)	(44)
L	9.5	12.5	15
M	1.3	1.3	1.5
N	11.5	15	17.5
P	8.5	11※3	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

Notes:

1. Since the ▽Rz 6.3 area is sealing part, be careful not to damage it.
2. Since the ▽Rz 12.5 area is the metal sealing part at the edge of BZS, 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.

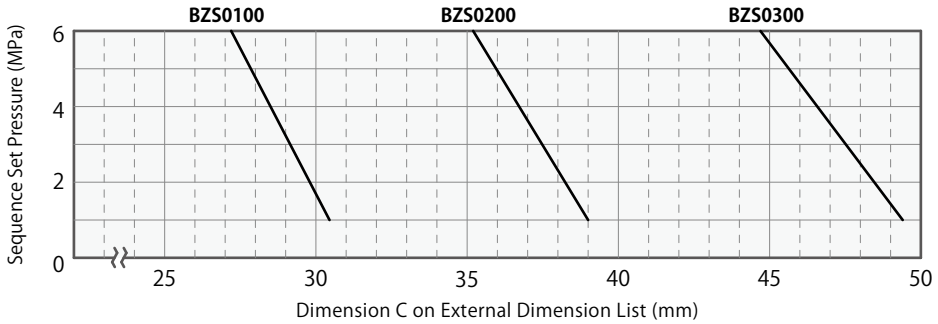
※1. Use the sequence pressure adjusting hex. within the adjustable range of ※2 (the dimensions K~C in the above).
Please note that if it is loosened further than max. C, pressure adjusting hex. part and internal spring will come off.

※2. Dimension when mounted. (+0.5mm before mounted.)

※3. If mounting plugs or fittings with G thread specification available in the market, the dimension '※3' should be 12.5.

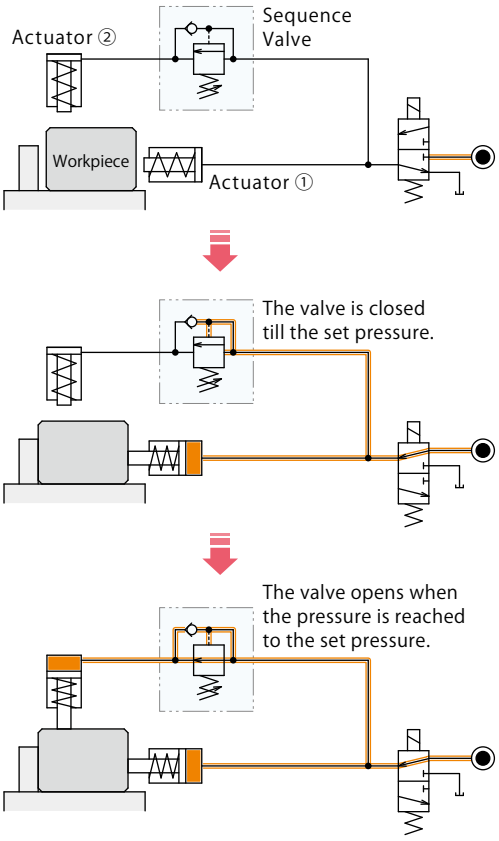
Cautions

1. Please design hydraulic circuit properly. Improper circuit design may lead to malfunctions and damages.
2. Filter is not built in this product. Be aware that contaminants such as cutting chips and sealing tapes entering into the product cause malfunction. Also when internal parts are damaged, it will not operate properly even after removing contaminants.
3. Depending on circuit system (actuator capacity, hydraulic pipe diameter, passage length, etc.), sometimes it is necessary to reduce hydraulic flow rate to achieve proper sequence movement. Make sure you are able to control flow rate. (Since BZS is directly mounted on and used exclusively for one actuator, it is easily affected by hydraulic flow rate.)
4. The difference between the set pressure and the supplying pressure should be 1MPa or more.
5. For using multiple sequence valves to operate cylinders in sequence, the difference of each set pressure should be 1MPa or more.
6. For using multiple sequence valves to operate cylinders simultaneously, adjust them gradually by checking their actions.
7. Please keep in mind that the minimum passage area of each actuator will be decreased by mounting this product and thus operating time may become longer.
8. Please mount to an actuator using Hex. E shown in External Dimensions on P.961 with the tightening torque shown in the specification list on P.959. Insufficient or excessive tightening torque leads to malfunction.
9. Air bleeding is required as air mixed in the circuit causes malfunction.
10. At shipment, sequence pressure is not adjusted. Please adjust it by referring to the graph below. Install a pressure gauge on the circuit to check pressure as necessary. After adjustment, tighten one or more set screw for anti-rotation. (Tightening torque：0.2N･m)



(This graph is a reference, and the values will not be guaranteed.)

Action Description



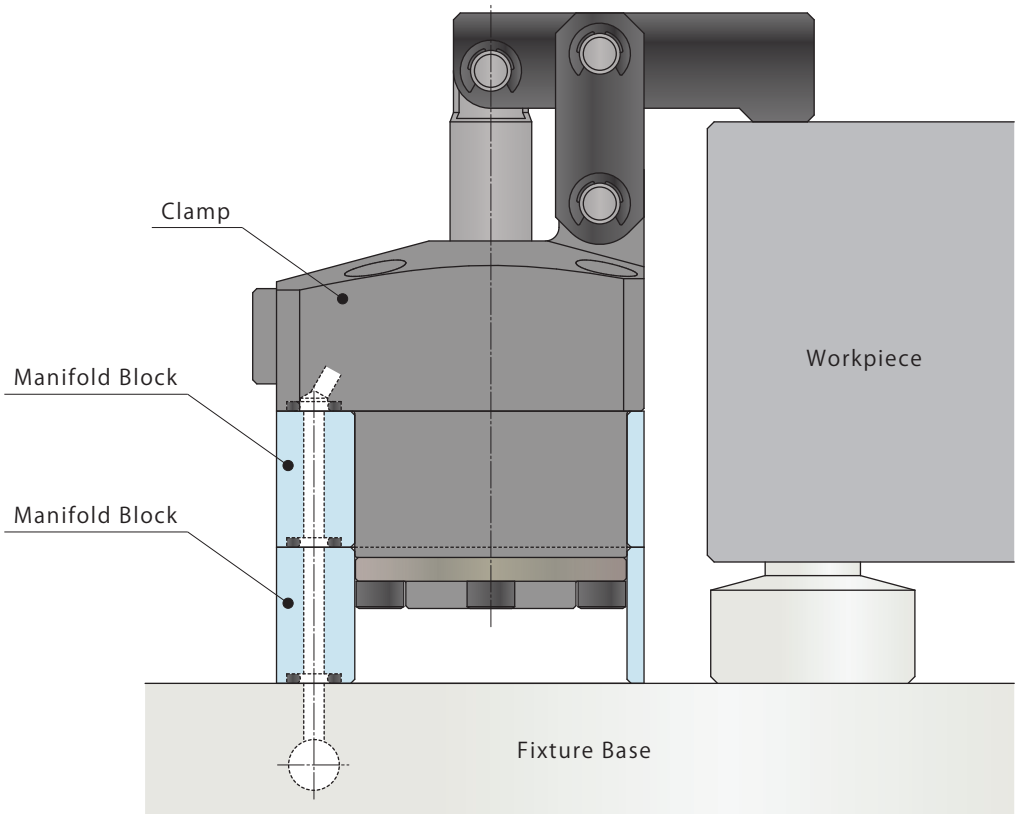
	Operating Procedure	Note
Locking	Hydraulic pressure is ON.	
	Actuator ① is activated.	
	Pressure increases to the sequence operation set pressure.	The difference between the operating pressure and the sequence operation set pressure should be 1MPa or more.
	The sequence valve circuit opens.	
	Actuator ② is activated.	
	Locking action is completed.	
	Machining, etc.	
Releasing	Hydraulic pressure is OFF.	
	The actuators ① and ② are released almost simultaneously.	The check valve in the sequence valve opens when the incoming side pressure decreases.
	Releasing action is completed.	

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.

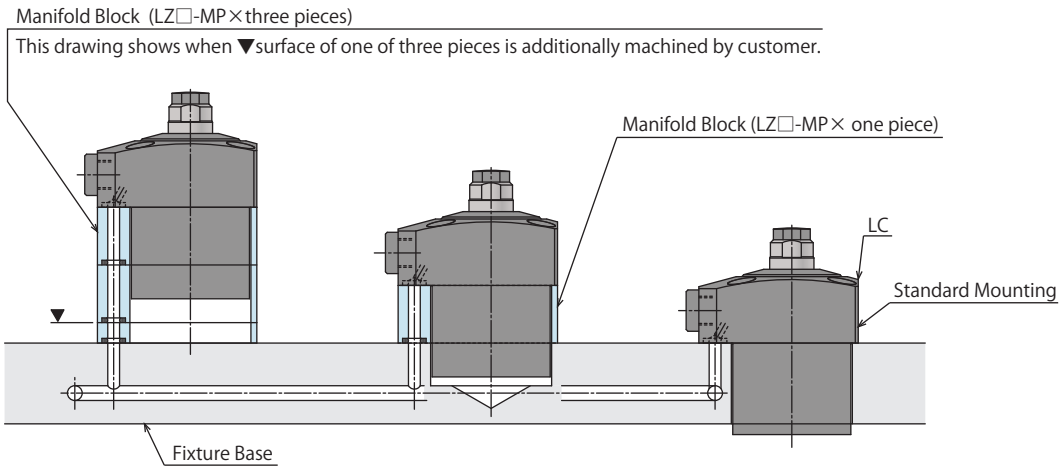


Applicable Model

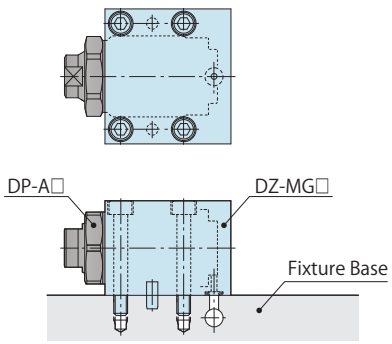
Manifold Block Model No.	Corresponding Item Model No.
Model WHZ-MD	Model WCA, Model WHA, Model WCE, Model WHE
Model LZY-MD	Model LKA, Model LKE, Model LHC, Model LHS, Model LKC, Model LHA, Model LHE, Model LL
Model LZ-MS	Model LJ, Model LG, Model LM, Model LT
Model LZ-MP	Model LC, Model TC
Model TMZ-1MB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

Application Examples

Work Support (LC) Application Example



Push Cylinder (DP) Application Example

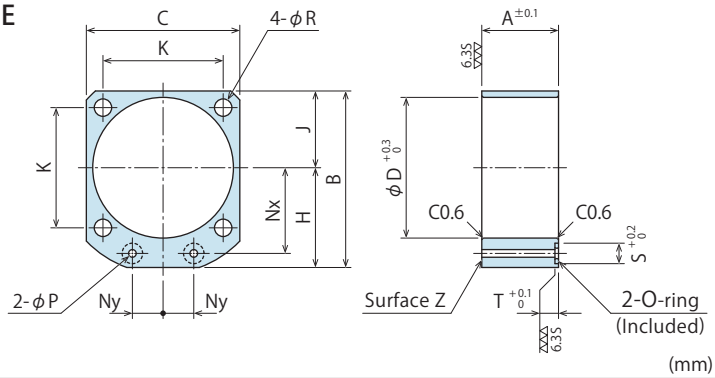


Manifold Block for WCA/WCE/WHA/WHE

Model No. Indication

WHZ 048 0 – MD

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



(mm)

Model No.	WHZ0600-MD	WHZ0320-MD	WHZ0400-MD	WHZ0500-MD	WHZ0630-MD
Corresponding Model No.	WCE0602 WHE0600	WCA0321 WCE1002 WHA0320 WHE1000	WCA0401 WCE1602 WHA0400 WHE1600	WCA0501 WCE2502 WHA0500 WHE2500	WCA0631 WCE4002 WHA0630 WHE4000
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
P	3	5	5	5	5
R	5.5	5.5	5.5	6.5	6.5
S	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.1	0.1	0.1	0.2	0.2

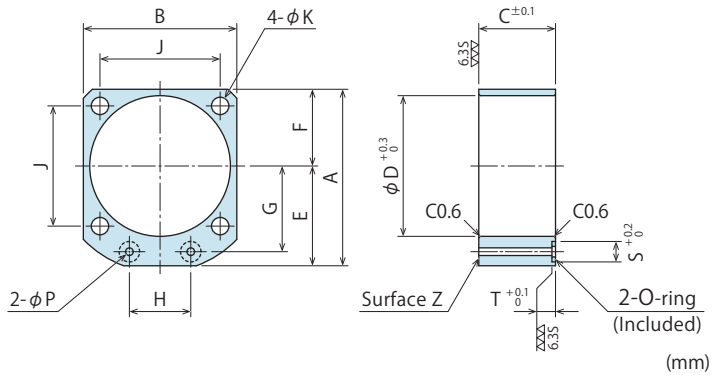
Notes : 1. Material : A2017BE-T4 Surface Finishing : Zircon Finishing (Zirconium Chemical Conversion Treatment)
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension A as a reference.
3. For other block thickness (dim. A), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

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

Model No. Indication

LZY 048 0 – MD

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



(mm)

Model No.	LZY0360-MD	LZY0400-MD	LZY0480-MD	LZY0550-MD	LZY0650-MD	LZY0750-MD	LZY0900-MD	LZY1050-MD
Corresponding Model No.	LKA0360 / LKE0360 LHA0360 / LHC0360 LHE0360 / LHS0360 LL0360	LKA0400 / LKC0400 LKE0400 / LHA0400 LHC0400 / LHE0400 LHS0400 / LL0400	LKA0480 / LKC0480 LKE0480 / LHA0480 LHC0480 / LHE0480 LHS0480 / LL0480	LKA0550 / LKC0550 LKE0550 / LHA0550 LHC0550 / LHE0550 LHS0550 / LL0550	LKA0650 / LKC0650 LHA0650 / LHC0650 LHS0650 LL0650	LKA0750 LHA0750 LHS0750 LL0750	LKA0900 LHA0900 LHS0900 LL0900	LKA1050 LHA1050 LHS1050 LL1050
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
P	3	3	3	3	5	5	5	5
S	8	8	8	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

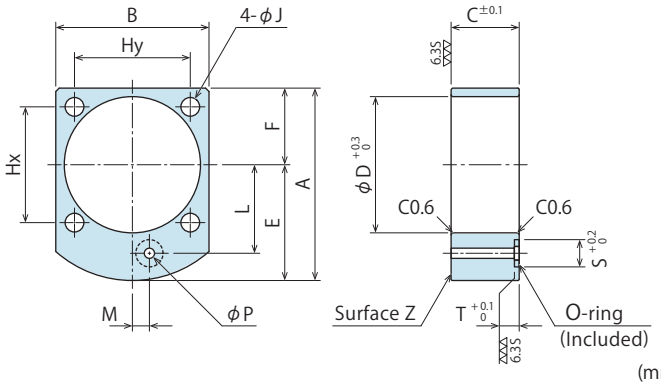
Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.
3. For other block thickness (dim. C), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

Manifold Block for LJ/LM/LG/LT

Model No. Indication

LZ 048 0 – MS

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



(mm)

Model No.	LZ0300-MS	LZ0360-MS	LZ0400-MS	LZ0480-MS	LZ0550-MS	LZ0650-MS	LZ0750-MS	LZ0900-MS	LZ1050-MS
Corresponding Model No.	LG0301 / LT0301 LJ0302 / LM0300	LG036□ / LT036□ LJ0362 / LM0360	LG040□ / LT040□ LJ0402 / LM0400	LG048□ / LT048□ LJ0482 / LM0480	LG055□ / LT055□ LJ0552 / LM0550	LG065□ / LT065□ LJ0652 / LM0650	LG075□ / LT075□ LJ0752 / LM0750	LG090□ LJ0902	LG105□ LJ1052
A	48	51.5	56.5	62	70	82	93	107	122
B	34	40	45	51	60	70	80	95	110
C	18	20	20	27	30	32	37	45	50
D	30	36	40	48	55	65	75	90	105
E	28.5	31.5	34	36.5	40	47	53	59.5	67
F	19.5	20	22.5	25.5	30	35	40	47.5	55
Hx	30	31.4	34	40	47	55	63	75	88
Hy	23	31.4	34	40	47	55	63	75	88
J	4.5	4.5	5.5	5.5	6.8	6.8	9	11	14
L	20.5	23.5	26	30	33.5	39.5	45	52.5	60
M	3	5	5	0	0	0	0	0	0
P	3	3	3	3	3	5	5	5	5
S	8	8	8	8	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.1	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

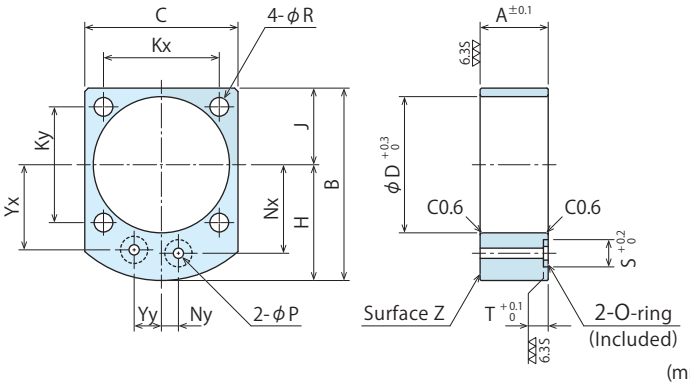
Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.
3. For other block thickness (dim. C), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

Manifold Block for LC/TC

Model No. Indication

LZ 048 0 – MP

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



(mm)

Model No.	LZ0260-MP	LZ0300-MP	LZ0360-MP	LZ0400-MP	LZ0480-MP	LZ0550-MP	LZ0650-MP	LZ0750-MP	LZ0900-MP
Corresponding Model No.	LC0262	LC0302	LC0362	LC0402 / TC0402	LC0482 / TC0482	LC0552 / TC0552	LC0652 / TC0652	LC0752 / TC0752	LC0902
A	18	18	20	20	27	30	32	37	45
B	43	48	51.5	56.5	62	70	82	93	107
C	29	34	40	45	51	60	70	80	95
D	26	30	36	40	48	55	65	75	90
H	26.5	28.5	31.5	34	36.5	40	47	53	59.5
J	16.5	19.5	20	22.5	25.5	30	35	40	47.5
Kx	25	30	31.4	34	40	47	55	63	75
Ky	21	23	31.4	34	40	47	55	63	75
Nx	18.5	20.5	23.5	26	30	33.5	39.5	45	52.5
Ny	3	3	5	5	0	0	0	0	0
R	3.4	4.5	4.5	5.5	5.5	6.8	6.8	9	11
Yx	18.5	20.5	23.5	25	28	31	37	42.5	50
Yy	7	7	8	8	11	13	14	15	15
P	3	3	3	3	3	3	5	5	5
S	8	8	8	8	8	8	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7
Weight kg	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.8	1.2

Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension A as a reference.
3. For other block thickness (dim. A), machine the surface Z or design a block referring to the drawing and apply surface treatment if necessary.

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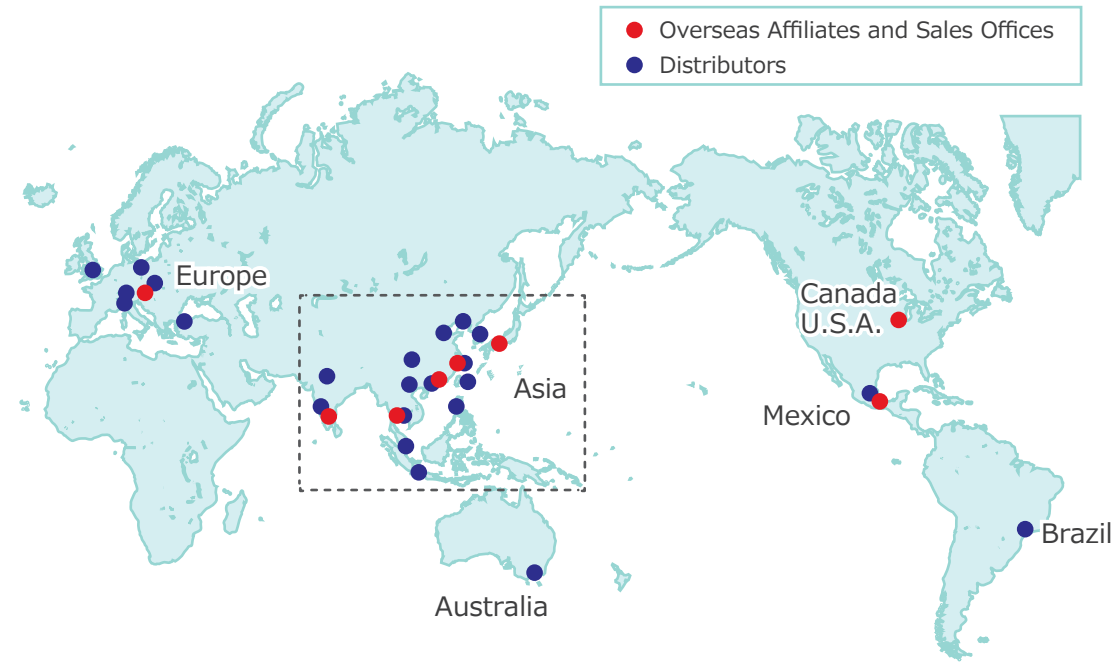
Global Network



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