New

Link Clamp
-Retracting Model-

Model **LFW/LFA**

KOSMEK
Harmony in Innovation

Link Clamp
-Retracting Model-

Model **LFW/LFA**

Lever Retracted to Avoid Interference during Workpiece Loading/Unloading

Compact Lever Movement, with Various Action Confirmation Options

Features

Lever Retracted Lower than the Clamping Point

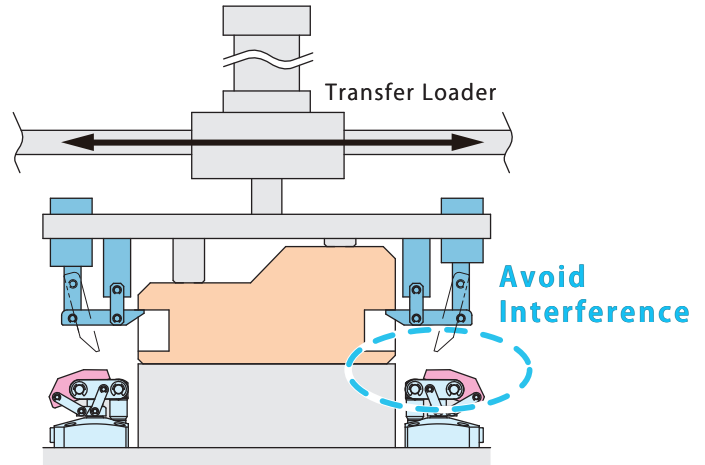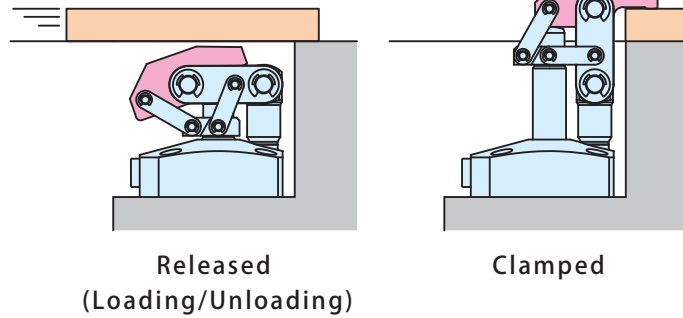Large lever retraction allows for wide angle of loading and unloading workpieces between operations.

Lever Retraction

Speed Control Valve Port (model BZL)
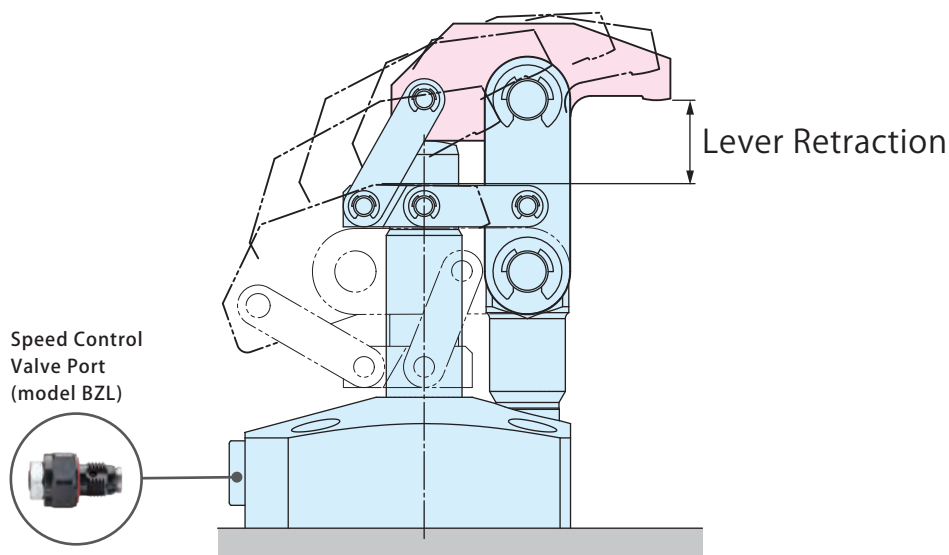
Model No.	LFW0480-C□J LFA0480-□□ LFA0480-□□D	LFW0550-C□J LFA0550-□□ LFA0550-□□D	LFW0650-C□J LFA0650-□□ LFA0650-□□D	LFW0750-C□J LFA0750-□□ LFA0750-□□D
Lever Retraction mm	16	16	25	25

※ It shows the lever retraction when using KOSMEK link lever (LZK□□□0－F).
　 Refer to P.20 for the link lever.

KOSMEK Harmony in Innovation

Application Examples

Avoid Interference during Transfer

Released (Loading/Unloading)　Clamped

Transfer Loader

Avoid Interference

### Avoid interference with a workpiece when loading and unloading.

Large lever retraction allows for wide angle of loading and unloading workpieces between operations.

Avoid interference with clamps on the robot hand.

The largely retracted lever avoids interference with the work clamping lever on the transfer robot hand.
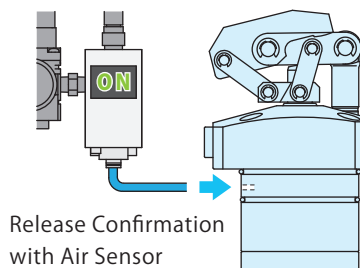
● Enables to clamp difficult clamping points.

The compact lever-operating range enables to clamp difficult clamping points.

No Interference

Workpiece
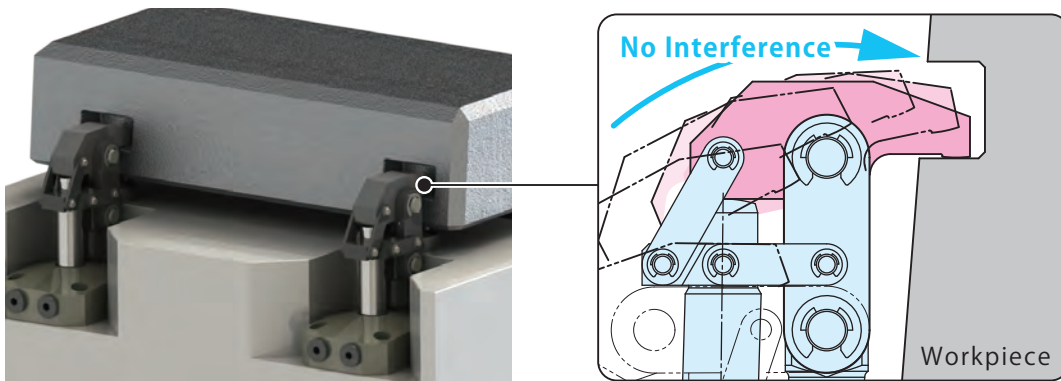
● Best for automation with action confirmation.

The action confirmation funciton ensures safe automation.
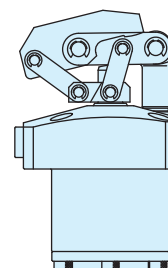
ON

Release Confirmation with Air Sensor
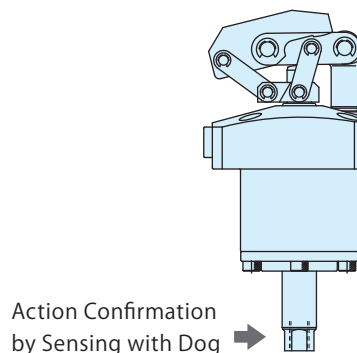
Action Confirmation by Sensing with Dog ➡

LFW - J
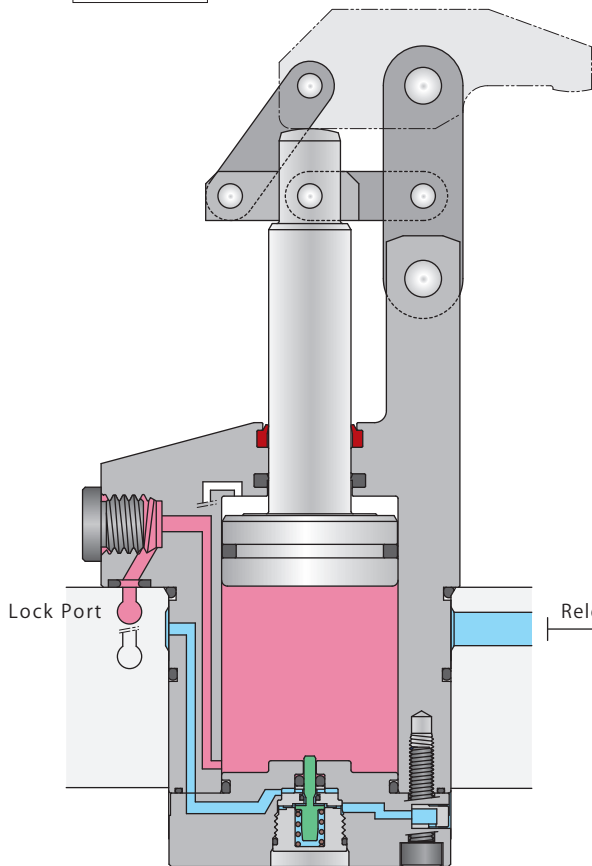Release Confirmation Model

LFA - D
Double End Rod Model

LFA
Standard Model (No Action Confirmation)

● LFW Action Description (Cross Section)

Lock

■ **Lock** (Supplying Hydraulic Pressure to Lock Port)

The piston rod ascends to clamp a workpiece.

Hydraulic Pressure		Air Catch Sensor
Lock Side	Release Side	Release Confirmation
ON	OFF	OFF

Lock Port

Release Confirmation — Air Catch Sensor (Circuit diagram differs depending on the sensor.)   0.1 ~ 0.2MPa (Recommended)   5μm
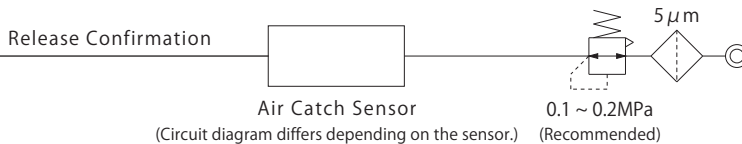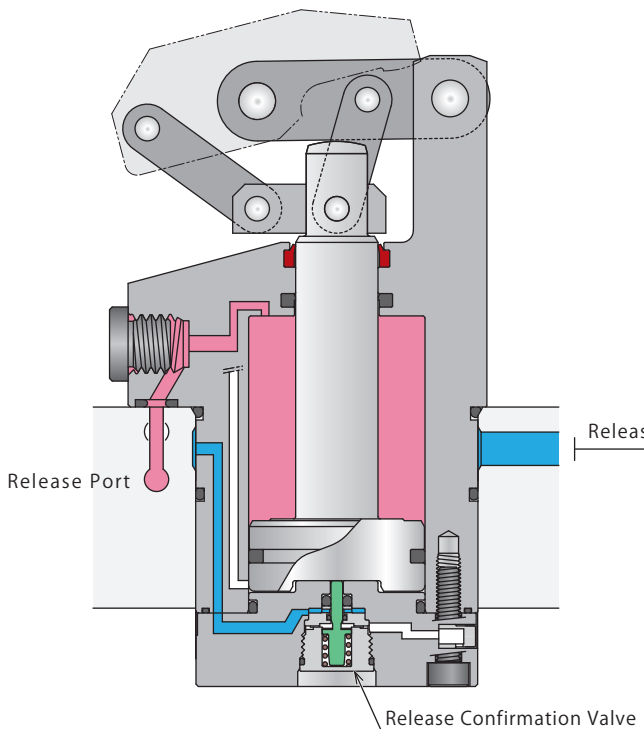
Release

■ **Release** (Supplying Hydraulic Pressure to Release Port)

The piston rod descends.
※ When hydraulic pressure on the release side is released in this state, the piston rod may be moved by the built-in spring force.

Hydraulic Pressure		Air Catch Sensor
Lock Side	Release Side	Release Confirmation
OFF	ON	ON

Release Port

Release Confirmation — Air Catch Sensor (Circuit diagram differs depending on the sensor.)   0.1 ~ 0.2MPa (Recommended)   5μm

Release Confirmation Valve
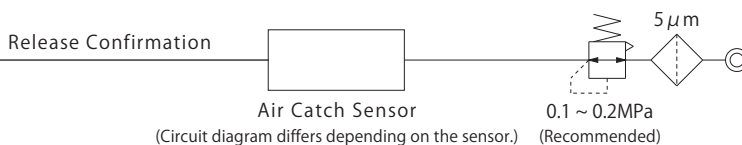
Release Confirmation Valve

| Hyd. Pressure to Lock Port | Air Catch Sensor | OFF |

Spool

Valve Opened

Air Supply

Air Vent

Built-in Spring

The spool is pushed forward by the built-in spring.
The valve is opened.

| Hyd. Pressure to Release Port | Air Catch Sensor | ON |

Piston Rod

Spool

Valve Closed

Air Supply
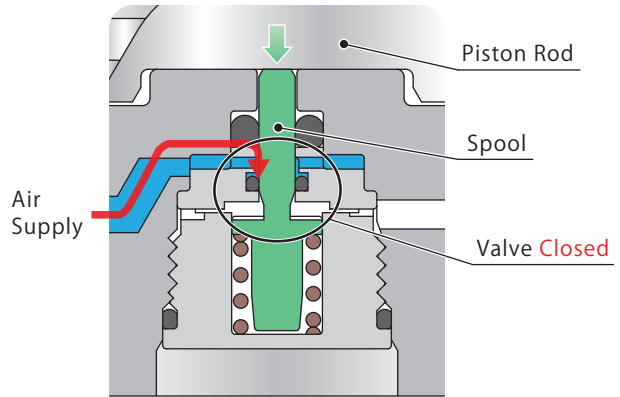
The spool is pushed back by the piston rod,
and the valve is closed.

● LFA Action Description (Cross Section)

Lock

Release

Lock Port

Release Port

4
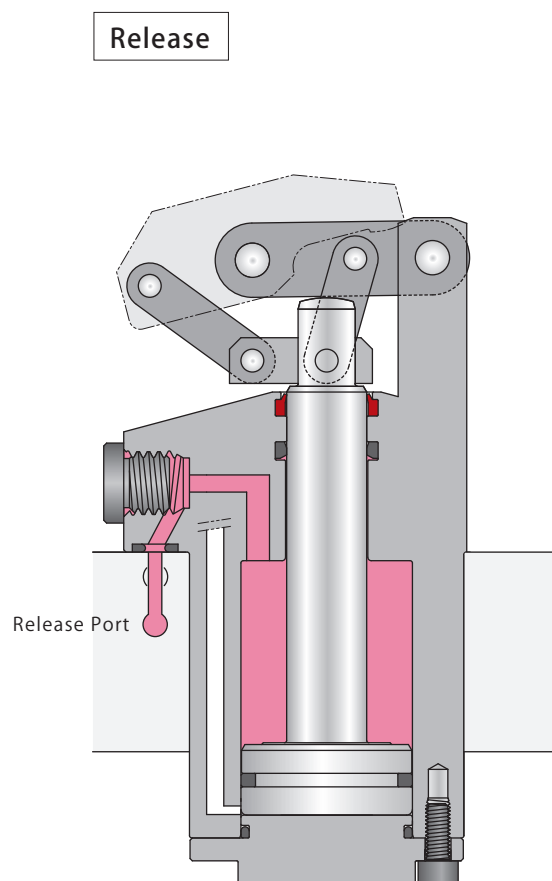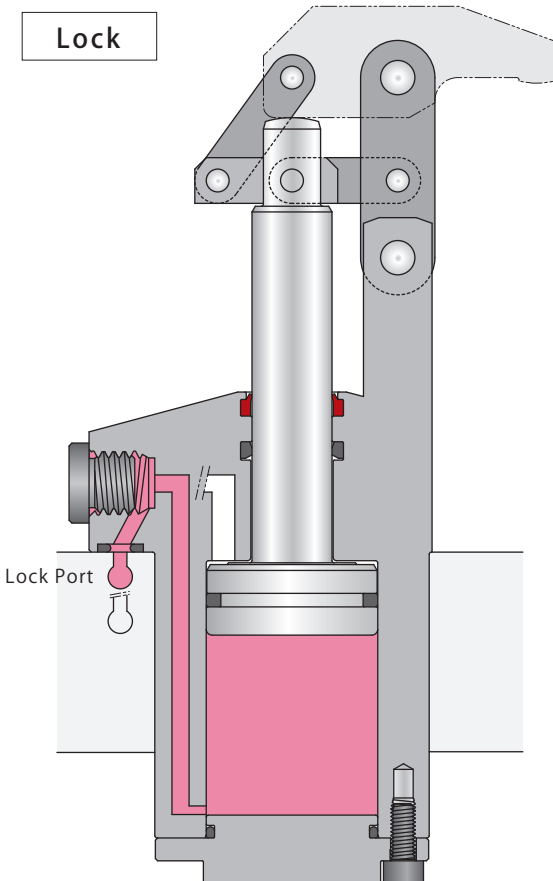
◉ Action Description (Air Sensing Chart Explanation)

Action confirmation can be conducted by detecting differential pressure with the air catch sensor.

Applicable Model

LFW 048 0 - C $\begin{array}{|c|}\text{L}\\\text{C}\\\text{R}\end{array}$ **J**

5 Sensing Valve
J : Release Confirmation

▪ About Air Catch Sensor

● The air catch sensor is necessary for action confirmation.

Sensing can be done by air catch sensor with the small air flow (recommended model in the list below).

Recommended Operating Air Pressure : 0.1 ~ 0.2 MPa

Recommended Air Catch Sensor

Manufacturer	SMC	CKD
Name	Air Catch Sensor	Gap Switch
Model	ISA3-G	GPS3-E

● Please refer to manufacturer's catalog etc. for the detail of the air sensor.
● The supply air pressure to the air catch sensor should be 0.1 ~ 0.2MPa.
● Continuously supply air pressure when in use.
● Refer to the drawing below for the air circuit structure.

Release Confirmation

Air Catch Sensor

5 μm

0.1 ~ 0.2MPa
(Recommended)
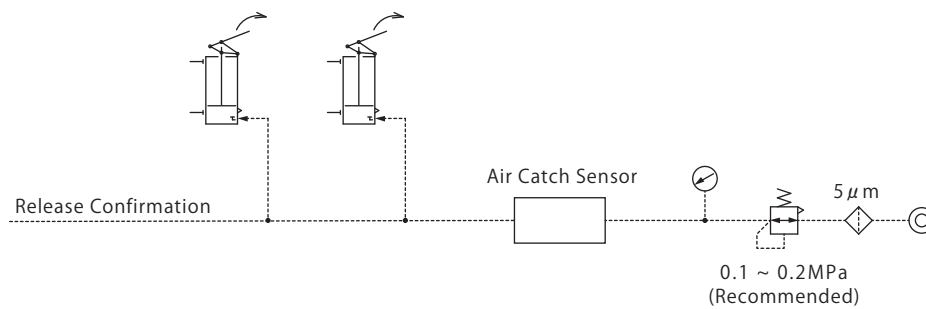
▪ Notes for Design・Installation・Use

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

● Prevention of Contaminants to the Air Vent Port
Coolant and chips can be prevented by setting a check valve with low cracking pressure. (Recommended check valve: SMC-made series AKH, cracking pressure: 0.005MPa)
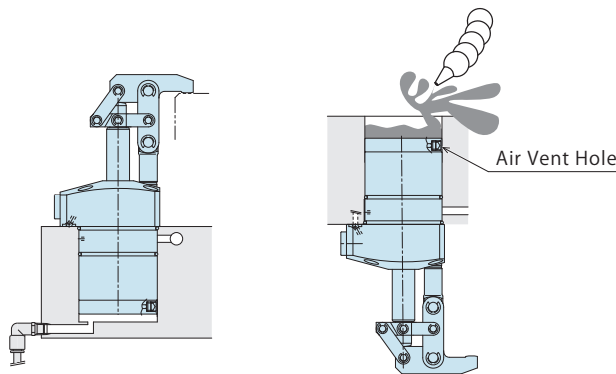
Air Vent Hole

O Keeping clear condition at the air vent hole.

X Coolant and chips entering from the air vent hole.

● Continuously supply air pressure to the air port when in use.

Check Valve

Attachment

Check Valve

KOSMEK
Harmony in Innovation
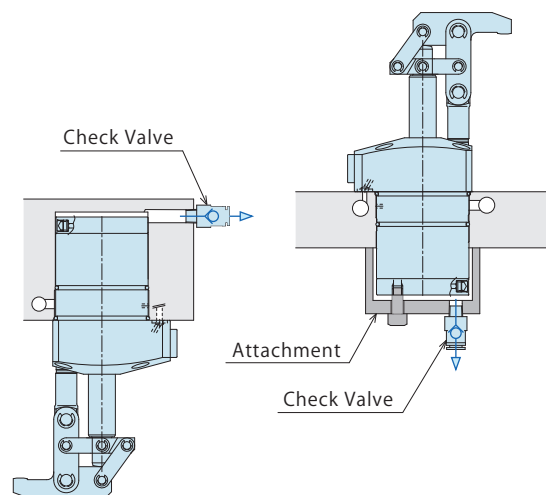
Air Sensing Chart

When Connected to 1 Clamp

Detected Release Air Pressure (MPa)

0.2

(Supply Air Pressure)

Air Catch Sensor Set Pressure (ON) ※1

When releasing after locked state

Differential Pressure for Detection

Pressure when Valve Opened ※2

Pressure when Valve Closed

0.5±0.5 (mm)

(Lock Stroke)

(Extra Stroke)

Full Stroke

Release End

Lock End

Extra Stroke

Full Stroke

Lock Stroke

Release Confirmation Air Catch Sensor

OFF

Air Vent

※ This drawing shows the locked state.
※ The air vent position of the release side differs depending on the body size. Please refer to the external dimensions.

Notes :
1. The sensing chart shows the relationship between the stroke and the detection circuit air pressure.
2. The specifications may vary depending on the air circuit. The hose length should be as short as possible. (Suggest less than 5m)
※1. The position where the air catch sensor turns ON signal output varies depending on the sensor setting.
※2. The sensor pressure when the valve is opened differs depending on a sensor.
In case of a sensor with large air consumption, the sensor pressure when the valve is opened increases and differential pressure decreases.

● Model No. Indication
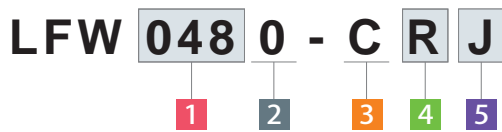
Built-in Sensing Valve Model
LFW 048 0 - C R J
1   2   3 4 5

Standard Model / Double End Rod Model
LFA 048 0 - C R ☐
1   2   3 4 6
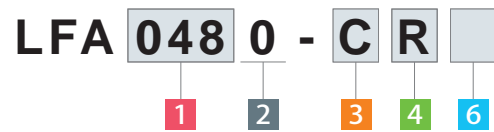
1 Body Size

048 ： φD=48mm
055 ： φD=55mm
065 ： φD=65mm
075 ： φD=75mm

※ Outer diameter (φD) of the cylinder.

φD
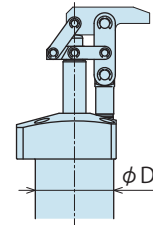
2 Design No.

0 ： Revision Number

3 Piping Method

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

※ Speed control valve (BZL) is sold separately.
　 Please refer to P.21.
※ Only **C**：Gasket Option is available for model LFW.

C   **S**
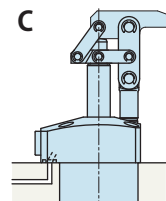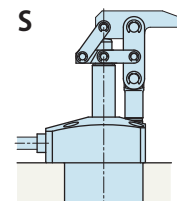
Gasket Option   Piping Option

With G Thread Plug Able to attach speed control valve (Order the valve separately Recommended：BZL-B)	Rc Thread 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**
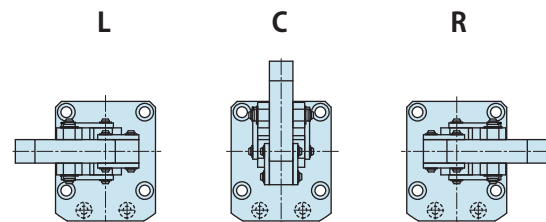
5 Sensing Valve   ※ In case of LFW

J ： Air Sensing Release Confirmation Model

J
Release Confirmation Model
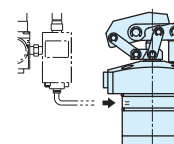
6 Action Confirmation Method   ※ In case of LFA

Blank ： None (Standard)
D　　 ： Double End Rod Model

Blank   **D**
Standard Model   Double End Rod Model

KOSMEK
Harmony in Innovation
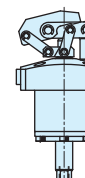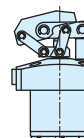
● Specifications

Model No.			LFW0480-C□J LFA0480-□□ LFA0480-□□D	LFW0550-C□J LFA0550-□□ LFA0550-□□D	LFW0650-C□J LFA0650-□□ LFA0650-□□D	LFW0750-C□J LFA0750-□□ LFA0750-□□D
Built-in Sensing Valve Model **LFW-C□J** Standard Model **LFA-□□**	Cylinder Area for Locking cm²		7.07	9.62	15.9	23.8
	Clamping Force ※1 (Calculation Formula) kN		$F = \dfrac{11.12 \times P}{L - 18.5}$	$F = \dfrac{17.17 \times P}{L - 21}$	$F = \dfrac{33.12 \times P}{L - 24.5}$	$F = \dfrac{60.58 \times P}{L - 30}$
	Cylinder Capacity cm³	Lock	24.4	37.0	70.0	119.0
		Release	19.1	29.3	56.2	99.8
Double End Rod Model **LFA-□□D**	Cylinder Area for Locking cm²		5.53	8.08	14.4	21.2
	Clamping Force ※1 (Calculation Formula) kN		$F = \dfrac{8.69 \times P}{L - 18.5}$	$F = \dfrac{14.43 \times P}{L - 21}$	$F = \dfrac{29.91 \times P}{L - 24.5}$	$F = \dfrac{54.09 \times P}{L - 30}$
	Cylinder Capacity cm³	Lock	19.1	31.2	63.2	106.1
		Release	19.1	29.3	56.2	99.8
Cylinder Inner Diameter ※2 mm			30	35	45	55
Rod Diameter ※2 mm			14	16	20	22
Full Stroke mm			34.5	38.5	44	50
Lock Stroke mm			31.5	35.5	41	47
Extra Stroke mm			3	3	3	3
Max. Operating Pressure MPa			7.0			
Min. Operating Pressure ※3 MPa			1.0			
Withstanding Pressure MPa			10.5			
Recommended Operating Air Pressure MPa			0.1 ~ 0.2			
Recommended Air Sensor			ISA3-G (Made by SMC) / GPS3-E (Made by CKD)			
Operating Temperature ℃			0 ~ 70			
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-32			
Weight ※4 kg	**LFW-C□J / LFA-□□**		1.5	2.0	3.3	5.0
	LFA-□□D		1.5	2.0	3.4	5.1

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 the 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 link lever.

● Clamping Force Curve

L：Lever Length (mm)

F：Clamping Force (kN)

P：Supply Hyd. Pressure (MPa)

s

Applicable Model

LFW ☐ 0 - C [L C R] J

1 Body Size

LFA ☐ 0 - [C S] [L C R] ☐

1 Body Size

6 Action Confirmation Method
Blank：None (Standard)

(Ex.) In case of LFW0480
When supply hydraulic pressure P is 5.0MPa and lever length L is 42mm, clamping force becomes about 2.4kN.

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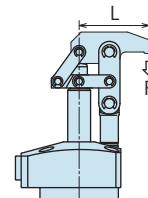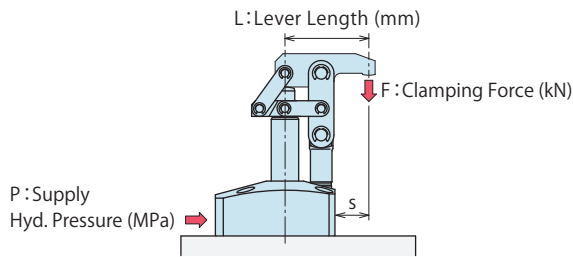2. Cylinder force (when L=0) cannot be calculated from the calculation formula of each specification list.
3. Clamping force in the non-usable range may cause damage and oil leakage.

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

LFW0480-C☐J / LFA0480-☐☐

Clamping Force ※1 Calculation Formula (kN)　$F = (11.12 \times P) / (L - 18.5)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm)					Min. Lever Length (L) (mm)
		L=30	L=35	L=42	L=50	L=60	
7	5.0			3.4	2.5	1.9	42
6.5	4.6			3.1	2.3	1.8	39
6	4.3			2.9	2.2	1.7	36
5.5	3.9		3.8	2.6	2.0	1.5	33
5	3.6		3.4	2.4	1.8	1.4	31
4.5	3.2	4.4	3.1	2.2	1.6	1.3	29
4	2.9	3.9	2.7	1.9	1.5	1.1	27
3.5	2.5	3.4	2.4	1.7	1.3	1.0	26
3	2.2	2.9	2.1	1.5	1.1	0.8	26
2.5	1.8	2.5	1.7	1.2	0.9	0.7	26
2	1.5	2.0	1.4	1.0	0.8	0.6	26
1.5	1.1	1.5	1.1	0.8	0.6	0.4	26
1	0.8	1.0	0.7	0.5	0.4	0.3	26
Max. Operating Pressure (MPa)		4.9	5.9	7.0	7.0	7.0	

L=30(s=4.5), Cylinder Force, L=35(s=9.5), Non-Usable Range (■), L=42(s=16.5), L=50(s=24.5), L=60(s=34.5)

Clamping Force (kN) vs Supply Hydraulic Pressure (MPa)

LFW0550-C☐J / LFA0550-☐☐

Clamping Force ※1 Calculation Formula (kN)　$F = (17.17 \times P) / (L - 21)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm)					Min. Lever Length (L) (mm)
		L=35	L=40	L=50	L=60	L=70	
7	6.8			4.2	3.1	2.5	50
6.5	6.3			3.9	2.9	2.3	46
6	5.8			3.6	2.7	2.1	42
5.5	5.3		5.0	3.3	2.5	2.0	38
5	4.9		4.6	3.0	2.2	1.8	36
4.5	4.4	5.6	4.1	2.7	2.0	1.6	33
4	3.9	5.0	3.7	2.4	1.8	1.4	31
3.5	3.4	4.3	3.2	2.1	1.6	1.3	30
3	2.9	3.7	2.8	1.8	1.4	1.1	30
2.5	2.5	3.1	2.3	1.5	1.1	0.9	30
2	2.0	2.5	1.9	1.2	0.9	0.7	30
1.5	1.5	1.9	1.4	0.9	0.7	0.6	30
1	1.0	1.3	0.9	0.6	0.5	0.4	30
Max. Operating Pressure (MPa)		4.9	5.8	7.0	7.0	7.0	

L=35(s=5), Cylinder Force, L=40(s=10), Non-Usable Range (■), L=50(s=20), L=60(s=30), L=70(s=40)

Clamping Force (kN) vs Supply Hydraulic Pressure (MPa)

KOSMEK
Harmony in Innovation

LFW0650-C☐J **LFA0650-☐☐**	Clamping Force [1] Calculation Formula (kN)	$F = (33.12 \times P) / (L - 24.5)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (▓)					Min. Lever Length (L) (mm)
		Lever Length L (mm)					
		L=40	L=50	L=56.5	L=80	L=100	
7	11.2			7.3	4.2	3.1	57
6.5	10.4			6.8	3.9	2.9	52
6	9.6		7.8	6.3	3.6	2.7	47
5.5	8.8		7.2	5.7	3.3	2.5	44
5	8.0		6.5	5.2	3.0	2.2	41
4.5	7.2	9.7	5.9	4.7	2.7	2.0	38
4	6.4	8.6	5.2	4.2	2.4	1.8	36
3.5	5.6	7.5	4.6	3.7	2.1	1.6	35
3	4.8	6.5	3.9	3.2	1.8	1.4	35
2.5	4.0	5.4	3.3	2.6	1.5	1.1	35
2	3.2	4.3	2.6	2.1	1.2	0.9	35
1.5	2.4	3.3	2.0	1.6	0.9	0.7	35
1	1.6	2.2	1.3	1.1	0.6	0.5	35
Max. Operating Pressure (MPa)		4.9	6.3	7.0	7.0	7.0	
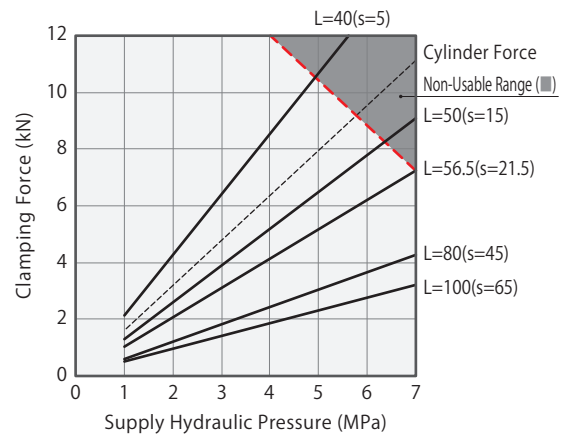
LFW0750-C☐J **LFA0750-☐☐**	Clamping Force [1] Calculation Formula (kN)	$F = (60.58 \times P) / (L - 30)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (▓)					Min. Lever Length (L) (mm)
		Lever Length L (mm)					
		L=50	L=60	L=67.5	L=80	L=100	
7	16.7			11.4	8.5	6.1	68
6.5	15.5			10.5	7.9	5.7	62
6	14.3		12.2	9.7	7.3	5.2	57
5.5	13.1		11.2	8.9	6.7	4.8	53
5	11.9	15.2	10.1	8.1	6.1	4.4	49
4.5	10.7	13.7	9.1	7.3	5.5	3.9	46
4	9.6	12.2	8.1	6.5	4.9	3.5	44
3.5	8.4	10.6	7.1	5.7	4.3	3.1	43
3	7.2	9.1	6.1	4.9	3.7	2.6	43
2.5	6.0	7.6	5.1	4.1	3.1	2.2	43
2	4.8	6.1	4.1	3.3	2.5	1.8	43
1.5	3.6	4.6	3.1	2.5	1.9	1.3	43
1	2.4	3.1	2.1	1.7	1.3	0.9	43
Max. Operating Pressure (MPa)		5.1	6.3	7.0	7.0	7.0	
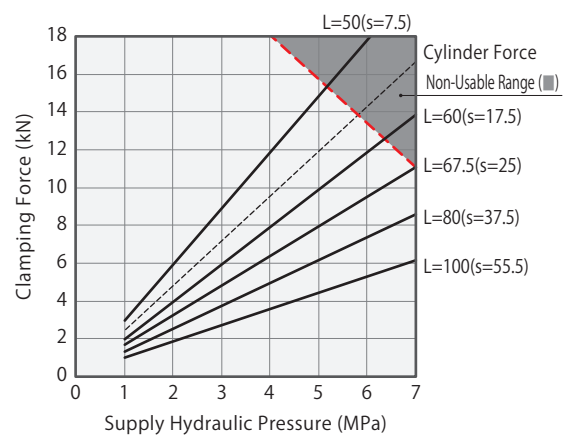
● Clamping Force Curve （Action Confirmation Method・・・D：Double End Rod Model)

L：Lever Length (mm)

F：Clamping Force (kN)

P：Supply
Hyd. Pressure (MPa)

s
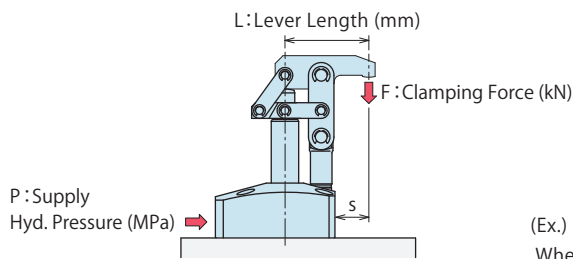
Applicable Model

LFA ☐ 0 - [C S] [L C R] **D**

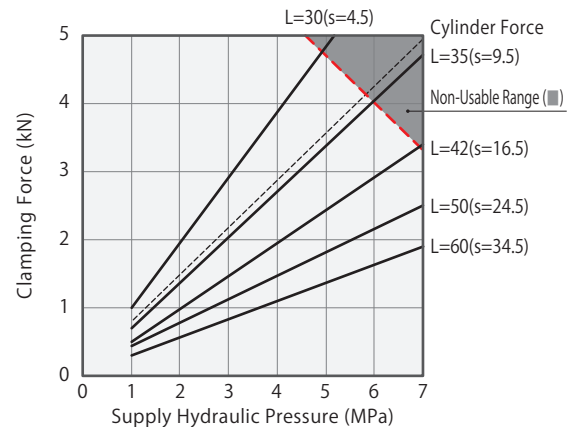**1** Body Size   **6** Action Confirmation Method：D

(Ex.) In case of LFA0480-☐☐D
When supply hydraulic pressure P is 5.0MPa and lever length L is 42mm,
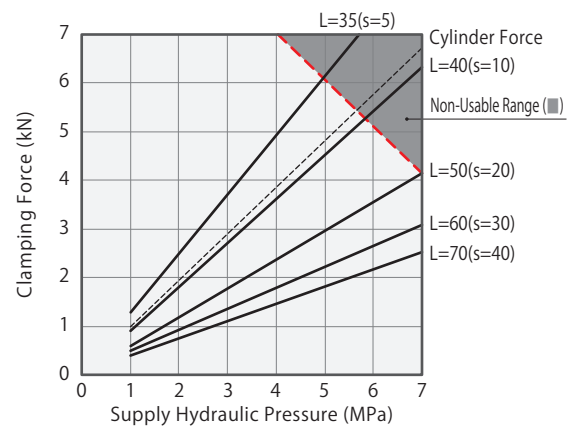clamping force becomes about 1.9kN.

Notes :
1. Tables and graphs show the relationship between the clamping force (kN) and the supply hydraulic pressure (MPa).
2. Cylinder force (when L=0) cannot be calculated from the calculation formula of each specification list.
3. Clamping force in the non-usable range may cause damage and oil leakage.
※1. F：Clamping Force (kN), P：Supply Hydraulic Pressure (MPa), L：Lever Length (mm).

LFA0480-☐☐D

Clamping Force ※1 (kN) Calculation Formula $F = (8.69 \times P) / (L - 18.5)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)					Min. Lever Length (L) (mm)
		Lever Length L (mm)					
		L=30	L=35	L=42	L=50	L=60	
7	3.9		3.7	2.6	2.0	1.5	33
6.5	3.6		3.5	2.4	1.8	1.4	31
6	3.4	4.6	3.2	2.3	1.7	1.3	30
5.5	3.1	4.2	2.9	2.1	1.6	1.2	28
5	2.8	3.8	2.7	1.9	1.4	1.1	27
4.5	2.5	3.4	2.4	1.7	1.3	1.0	26
4	2.3	3.1	2.2	1.5	1.1	0.9	26
3.5	2.0	2.7	1.9	1.3	1.0	0.8	26
3	1.7	2.3	1.6	1.2	0.9	0.7	26
2.5	1.4	1.9	1.4	1.0	0.7	0.6	26
2	1.2	1.6	1.1	0.8	0.6	0.5	26
1.5	0.9	1.2	0.8	0.6	0.5	0.4	26
1	0.6	0.8	0.6	0.4	0.3	0.3	26
Max. Operating Pressure (MPa)		6.2	7.0	7.0	7.0	7.0	

Non-Usable Range (■)
L=30(s=4.5)
Cylinder Force
L=35(s=9.5)
L=42(s=16.5)
L=50(s=24.5)
L=60(s=34.5)

Clamping Force (kN) vs Supply Hydraulic Pressure (MPa)

LFA0550-☐☐D

Clamping Force ※1 (kN) Calculation Formula $F = (14.43 \times P) / (L - 21)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)					Min. Lever Length (L) (mm)
		Lever Length L (mm)					
		L=35	L=40	L=50	L=60	L=70	
7	5.7			3.5	2.6	2.1	41
6.5	5.3		5.0	3.3	2.4	2.0	38
6	4.9		4.6	3.0	2.3	1.8	36
5.5	4.5	5.7	4.2	2.8	2.1	1.7	34
5	4.1	5.2	3.8	2.5	1.9	1.5	32
4.5	3.7	4.7	3.5	2.3	1.7	1.4	30
4	3.3	4.2	3.1	2.0	1.5	1.2	30
3.5	2.9	3.7	2.7	1.8	1.3	1.1	30
3	2.5	3.1	2.3	1.5	1.2	0.9	30
2.5	2.1	2.6	1.9	1.3	1.0	0.8	30
2	1.7	2.1	1.6	1.0	0.8	0.6	30
1.5	1.3	1.6	1.2	0.8	0.6	0.5	30
1	0.9	1.1	0.8	0.5	0.4	0.3	30
Max. Operating Pressure (MPa)		5.9	6.9	7.0	7.0	7.0	

L=35(s=5)
Non-Usable Range (■)
Cylinder Force
L=40(s=10)
L=50(s=20)
L=60(s=30)
L=70(s=40)

Clamping Force (kN) vs Supply Hydraulic Pressure (MPa)

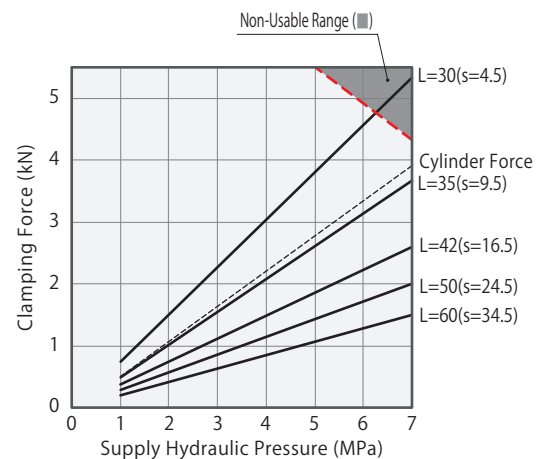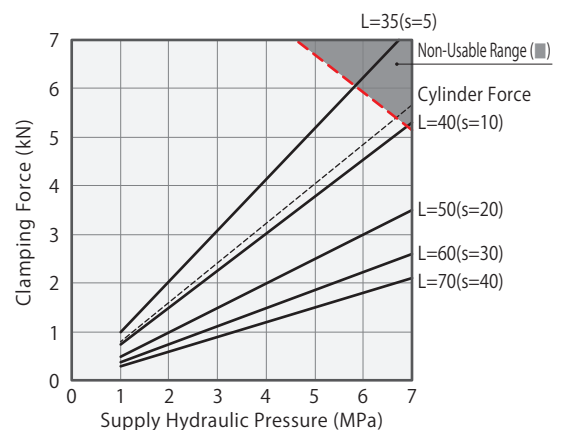| Features App. Ex. | Action Description | Model No. / Specifications | **Performance Curve** | External Dimensions | Lever Design Dimensions | Accessory | Cautions |

KOSMEK Harmony in Innovation

LFA0650-□□D

Clamping Force [1] Calculation Formula (kN): $F = (29.91 \times P) / (L - 24.5)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)					Min. Lever Length (L) (mm)
		Lever Length L (mm)					
		L=40	L=50	L=56.5	L=80	L=100	
7	10.1		8.3	6.5	3.8	2.8	50
6.5	9.4		7.7	6.1	3.5	2.6	46
6	8.7		7.1	5.7	3.3	2.4	43
5.5	7.9		6.5	5.2	3.0	2.2	41
5	7.2	9.7	5.9	4.7	2.7	2.0	38
4.5	6.5	8.7	5.3	4.3	2.5	1.8	36
4	5.8	7.8	4.7	3.8	2.2	1.6	35
3.5	5.1	6.8	4.2	3.3	1.9	1.4	35
3	4.4	5.8	3.6	2.8	1.7	1.2	35
2.5	3.6	4.9	3.0	2.4	1.4	1.0	35
2	2.9	3.9	2.4	1.9	1.1	0.8	35
1.5	2.2	2.9	1.8	1.4	0.9	0.6	35
1	1.5	2.0	1.2	1.0	0.6	0.4	35
Max. Operating Pressure (MPa)		5.4	7.0	7.0	7.0	7.0	
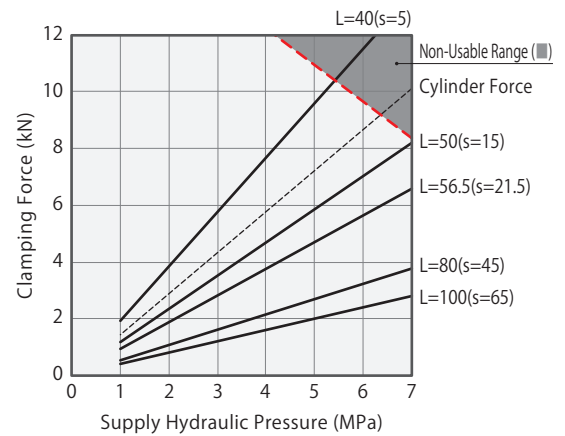
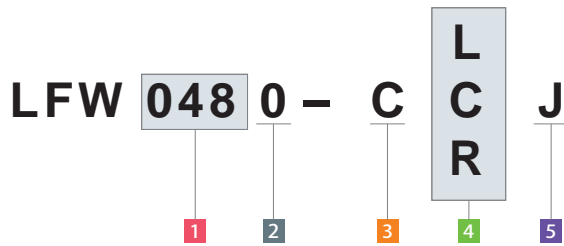## LFA0750-□□D

Clamping Force [1] Calculation Formula (kN): $F = (54.09 \times P) / (L - 30)$

Hydaulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)					Min. Lever Length (L) (mm)
		Lever Length L (mm)					
		L=50	L=60	L=67.5	L=80	L=100	
7	14.9		12.7	10.1	7.6	5.5	59
6.5	13.8		11.8	9.4	7.1	5.1	55
6	12.8		10.9	8.7	6.5	4.7	52
5.5	11.7	14.9	10.0	8.0	6.0	4.3	49
5	10.7	13.6	9.1	7.3	5.5	3.9	46
4.5	9.6	12.2	8.2	6.5	4.9	3.5	44
4	8.5	10.9	7.3	5.8	4.4	3.1	43
3.5	7.5	9.5	6.4	5.1	3.8	2.7	43
3	6.4	8.2	5.5	4.4	3.3	2.4	43
2.5	5.3	6.8	4.6	3.7	2.7	2.0	43
2	4.3	5.5	3.7	2.9	2.2	1.6	43
1.5	3.2	4.1	2.7	2.2	1.7	1.2	43
1	2.2	2.7	1.8	1.5	1.1	0.8	43
Max. Operating Pressure (MPa)		5.7	7.0	7.0	7.0	7.0	

● External Dimensions

※The drawing shows the locked state of LFW-CCJ.

Release Port : G Thread
(Speed Control Valve Port)

Lock Port : G Thread
(Speed Control Valve Port)

JA
B
H
J

Lever Direction
L type

2-Chamfer 1

φJB
□K
Ny
Ny
C
φL

Z

Link Lever (Prepared by customer)
Lever Direction C type

4-φR
Spot Facing φQ

Lever Direction
R type

4-φAC
☆※5
AA

Extra Stroke
Lock Stroke
AG※3
※3
Y
Lever Retraction
※3

φU
2-φAD

T
V
A
G
M
E
F

※1 15°

X
W ±0.1
S ※2

Release Confirmation
Air Port

φD −0.1 −0.2
O-ring (Included) DB
O-ring (Included) DC

CE
Air Vent Hole ※4

Lock Port：
O-ring (Included) DA

Nx
CB°

Ny
Ny

CA
CD°

Release Port：
O-ring (Included) DA

2-M3×0.5 Thread Depth 6 ※4

● Machining Dimensions of Mounting Area

Nx

Release Hyd. Port φP

Ny
Ny

Lock Hyd. Port φP

4-EA Thread ※6

□K

For Blind Hole

Release Confirmation
Air Port※7
φ4～φ6

φEB −0 −0.1
30°
ED
2.5

Remove all burrs
6.3S

EG or more

Remove all burrs

※7
★
EE
EF

30°
0.4

※8
◆

6.35

φEC H8

(Machining part for vent hole
on the bottom surface※8)

Vent Hole※8
φ4～φ6
(Any one of the side or
the bottom surface.)

For Through Hole

φEB −0 −0.1
30°
ED
2.5

Remove all burrs
6.3S

EF or more

Remove all burrs

※7
★
EE

30°

Release Confirmation
Air Port※7
φ4～φ6

6.35

φEC H8

Notes :

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

※7. Provide the release confirmation air port within the range of ★.

※8. Provide the vent hole either of the side or the bottom surface.
In case of machining from the side, prepare it within the range of ◆.
In case of machining from the bottom, prepare it within the range of φEC.

Notes :

※ 1. Flange inclination angle is 12° only for LFW0650.

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

※ 3. It shows the dimension in case of KOSMEK option lever (LZK□-F).

※ 4. Please keep clear condition at the air vent hole, and prevent coolant and chips from entering the hole.
If exposed to coolant and chips, use M3 thread and install an attachment to prevent contamination, but do not block the air vent hole.

※ 5. Due to the clamp structure, there is a 1mm-diameter gap between the lever hole and the pin (☆ part only).

1. Please use the provided pin (equivalent to φACf6、φADf6、 HRC60) as mounting pin for lever.

2. Speed control valve is sold separately. Please refer to P. 21.

◉ Model No. Indication

LFW 048 0 – C L C R J

1 2 3 4 5

(Model No. Example：LFW0550-CCJ, LFW0750-CRJ)

1 Body Size

2 Design No.

3 Piping Method

4 Lever Direction

5 Sensing Valve
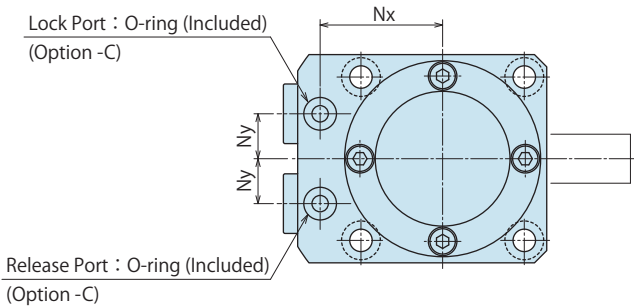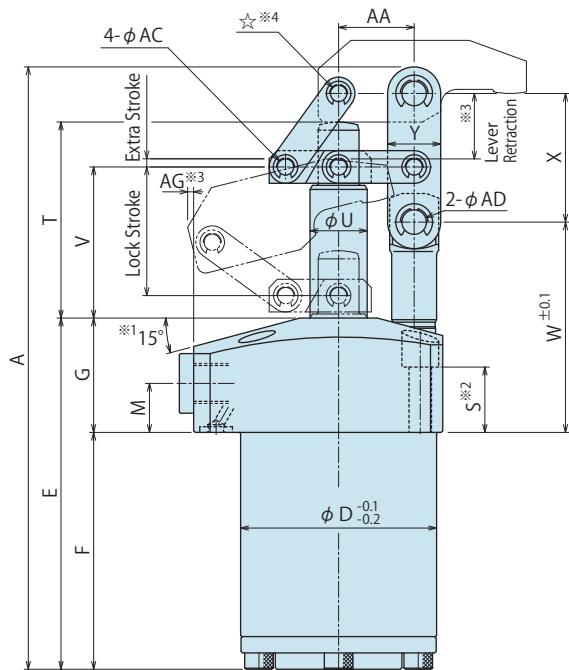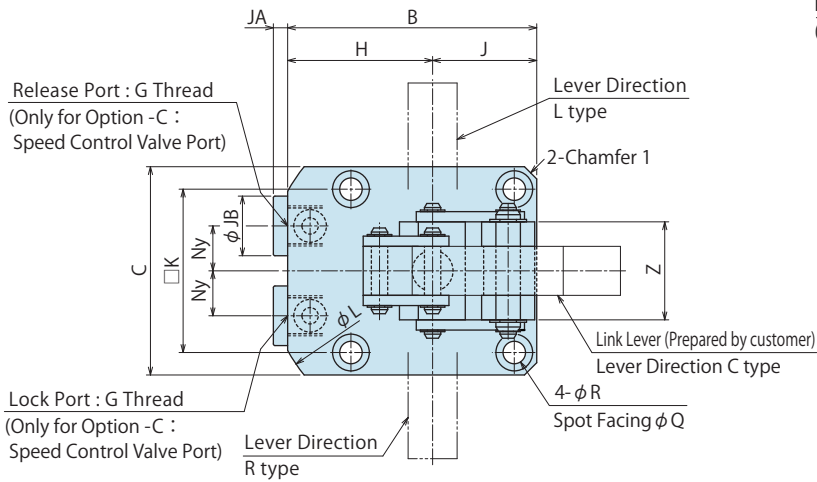(In case of **J**：Release Confirmation Model)

◉ External Dimensions and Machining Dimensions for Mounting
(mm)

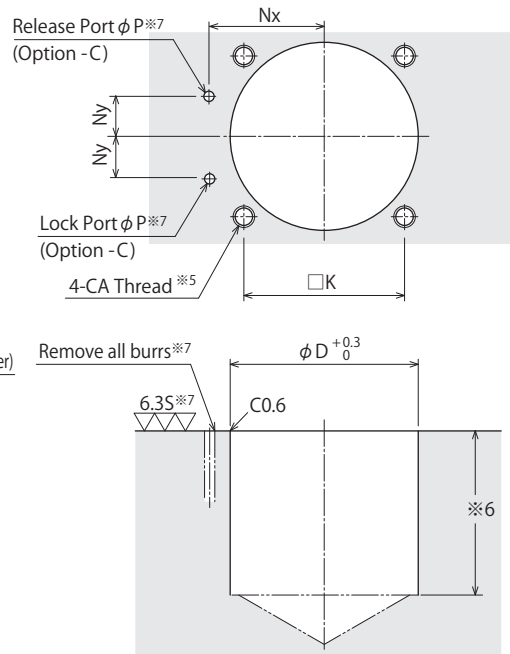| Model No.	LFW0480-C□J	LFW0550-C□J	LFW0650-C□J	LFW0750-C□J
Full Stroke	34.5	38.5	44	50
Lock Stroke	31.5	35.5	41	47
Extra Stroke	3	3	3	3
Lever Retraction	16	16	25	25
A	148	164	191	215.5
B	61	69	81	94.5
C	51	60	70	85
D	48	55	65	75
E	86.5	94	104.5	116.5
F	58.5	64	71.5	78.5
G	28	30	33	38
H	35.5	39	46	52
J	25.5	30	35	42.5
K	40	47	55	63
L	81	88	106	116
M	12	12	13	16
Nx	30	33.5	39.5	45
Ny	11	12	15	16
P	3	3	5	5
Q	9	11	11	14
R	5.5	6.8	6.8	9
S	16	15.5	19	18.5
T	48	54	67	74.5
U	14	16	20	22
V	37	42	49	55.5
W	51.5	57	64.5	74.5
X	31.5	35	45.5	50
Y	13	16	19	25
Z	24	28	37	40
Chamfer 1	C3	C3	C4	C10
Lock / Release Port : G Thread	G1/8	G1/8	G1/4	G1/4
AA	18.5	21	24.5	30
AC	4	5	6	6
AD	6	8	10	12
AG	1.6	2.2	6.2	6.6
CA	38	43	54	64
CB	0	0	0	30
CD	30	30	30	22.5
CE	4.5	4.5	5	5
O-ring DA	1BP5	1BP5	1BP7	1BP7
O-ring DB	AS568-031(70)	AS568-034(70)	AS568-037(70)	AS568-040(70)
O-ring DC	AS568-031(70)	AS568-033(70)	AS568-036(70)	AS568-039(70)
EA	M5×0.8	M6×1	M6×1	M8×1.25
EB	49	56	66	76
EC	$48^{+0.039}_{0}$	$55^{+0.046}_{0}$	$65^{+0.046}_{0}$	$75^{+0.046}_{0}$
ED	1.2	1.5	1.5	1.5
EE	14	16.5	23	24.5
EF	19.5	22	28.5	30
EG	59	64.5	72	79
JA	3.5	3.5	4.5	4.5
JB	14	14	19	19

External Dimensions

C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)
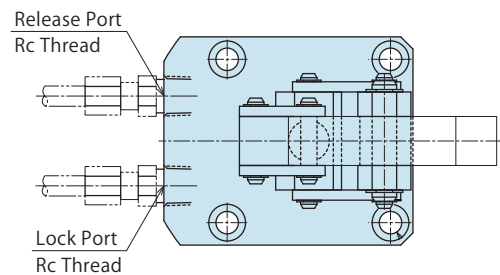
※The drawing shows the locked state of LFA-CC.

Release Port : G Thread
(Only for Option -C：
Speed Control Valve Port)

Lever Direction
L type

2-Chamfer 1

Link Lever (Prepared by customer)
Lever Direction C type

4-φR
Spot Facing φQ

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

Lever Direction
R type

4-φAC

☆※4

2-φAD

φU

※1 15°

φD ⁻⁰·¹₋₀.₂

Lock Port：O-ring (Included)
(Option -C)

Release Port：O-ring (Included)
(Option -C)

Machining Dimensions of Mounting Area

Release Port φP※7
(Option -C)

Lock Port φP※7
(Option -C)

4-CA Thread ※5

□K

Remove all burrs※7

6.3S※7

C0.6

φD $^{+0.3}_{0}$

※6

Notes :
※ 5. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.
※ 6. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'F'.
※ 7. The machining dimension is for -C：Gasket option.

Piping Method

S：Piping Option (Rc Thread)
※ The drawing shows the locked state of LFA-SC.

Release Port
Rc Thread

Lock Port
Rc Thread

Notes :
※ 1. Flange inclination angle is 12° only for LFA0650.
※ 2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.
※ 3. It shows the dimension in case of KOSMEK option lever (LZK□-F).
※ 4. Due to the clamp structure, there is a 1mm-diameter gap between the lever hole and the pin (☆ part only).
　 1. Please use the provided pin (equivalent to φACf6、φADf6、HRC60) as mounting pin for lever.
　 2. Speed control valve is sold separately. Please refer to P. 21.

KOSMEK
Harmony in Innovation

◉ Model No. Indication

LFA **048** 0 – **C S** **L C R**

1 2 3 4

(Model No. Example：LFA0550-CC, LFA0750-SR)

1 Body Size

2 Design No.

3 Piping Method

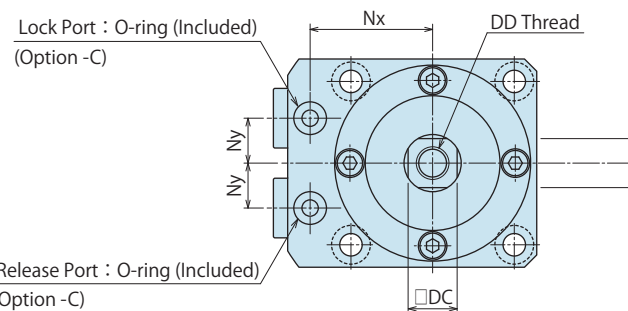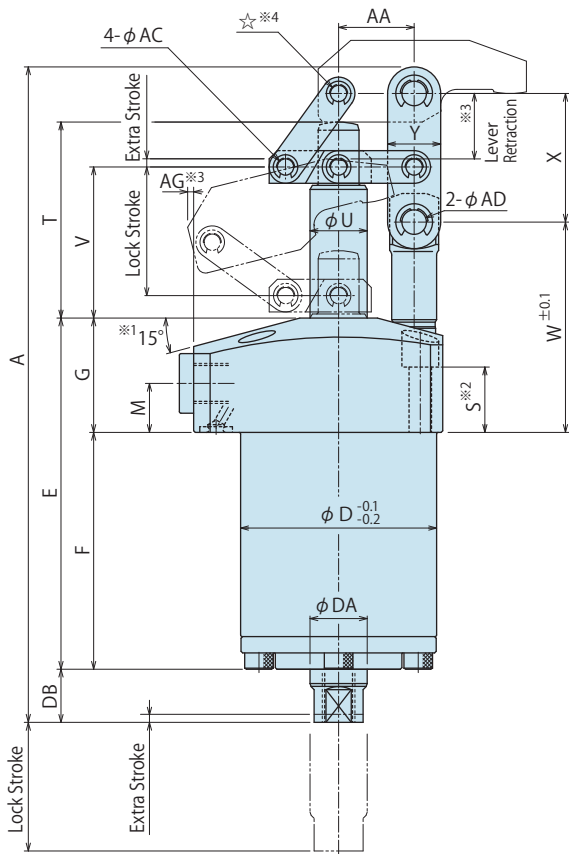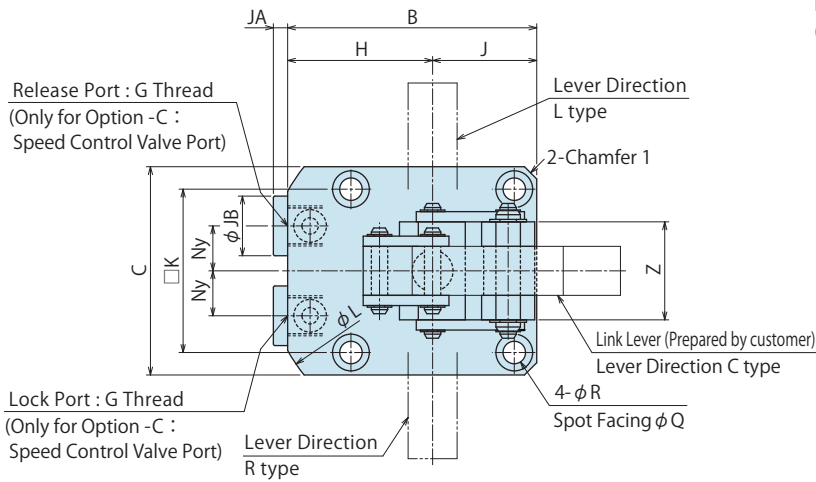4 Lever Direction

6 Action Confirmation Method (In case of Blank)

◉ External Dimensions and Machining Dimensions for Mounting
(mm)

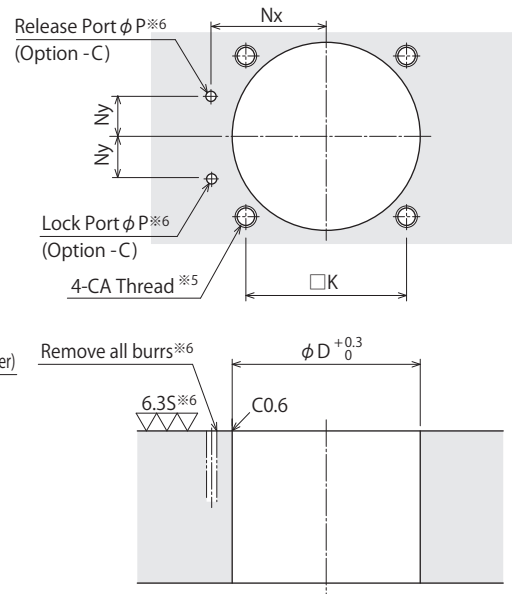| Model No.		LFA0480-☐☐	LFA0550-☐☐	LFA0650-☐☐	LFA0750-☐☐
Full Stroke		34.5	38.5	44	50
Lock Stroke		31.5	35.5	41	47
Extra Stroke		3	3	3	3
Lever Retraction		16	16	25	25
A		147.5	165	193	219
B		61	69	81	94.5
C		51	60	70	85
D		48	55	65	75
E		86	95	106.5	120
F		58	65	73.5	82
G		28	30	33	38
H		35.5	39	46	52
J		25.5	30	35	42.5
K		40	47	55	63
L		81	88	106	116
M		12	12	13	16
Nx		30	33.5	39.5	45
Ny		11	12	15	16
P		3	3	5	5
Q		9	11	11	14
R		5.5	6.8	6.8	9
S		16	15.5	19	18.5
T		48	54	67	74.5
U		14	16	20	22
V		37	42	49	55.5
W		51.5	57	64.5	74.5
X		31.5	35	45.5	50
Y		13	16	19	25
Z		24	28	37	40
Chamfer 1		C3	C3	C4	C10
Lock / Release Port	Option -C	G1/8	G1/8	G1/4	G1/4
	Option -S	Rc1/8	Rc1/8	Rc1/4	Rc1/4
O-ring (Option -C)		1BP5	1BP5	1BP7	1BP7
AA		18.5	21	24.5	30
AC		4	5	6	6
AD		6	8	10	12
AG		1.6	2.2	6.2	6.6
CA		M5×0.8	M6×1	M6×1	M8×1.25
JA		3.5	3.5	4.5	4.5
JB		14	14	19	19

● External Dimensions

C：Gasket Option (With Ports for Speed Controller：G-Thread Plug Included)
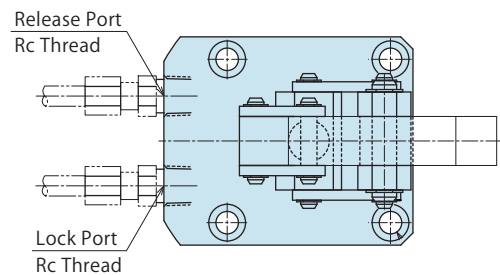※The drawing shows the locked state of LFA-CCD.

Release Port : G Thread
(Only for Option -C：
Speed Control Valve Port)

Lever Direction
L type

2-Chamfer 1

ΦJB

□K

ΦL

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

Lever Direction
R type

Link Lever (Prepared by customer)
Lever Direction C type

4-ΦR
Spot Facing ΦQ

4-ΦAC

☆※4

Extra Stroke

Lock Stroke

AG※3

※3
Y
Lever Retraction

ΦU

2-ΦAD

※1 15°

G

M

S※2

W ±0.1

ΦD $^{-0.1}_{-0.2}$

ΦDA

DB

Lock Stroke

Extra Stroke

Lock Port：O-ring (Included)
(Option -C)

DD Thread

Release Port：O-ring (Included)
(Option -C)

□DC

Notes :
※ 1. Flange inclination angle is 12° only for LFA0650.
※ 2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.
※ 3. It shows the dimension in case of KOSMEK option lever (LZK□-F).
※ 4. Due to the clamp structure, there is a 1mm-diameter gap between the lever hole and the pin (☆ part only).
　　 1. Please use the provided pin (equivalent to ΦACf6、ΦADf6、HRC60) as mounting pin for lever.
　　 2. Speed control valve is sold separately. Please refer to P. 21.

● Machining Dimensions of Mounting Area

Release Port Φ P※6
(Option -C)

Nx

Ny

Ny

Lock Port Φ P※6
(Option -C)

4-CA Thread ※5

□K

Remove all burrs※6

ΦD $^{+0.3}_{0}$

6.3S※6

C0.6

Notes :
※ 5. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.
※ 6. The machining dimension is for -C：Gasket option.

● Piping Method

S：Piping Option (Rc Thread)
※ The drawing shows the locked state of LFA-SCD.

Release Port
Rc Thread

Lock Port
Rc Thread

KOSMEK
Harmony in Innovation

◉ Model No. Indication

LFA 048 0 – CS LCR D

| 1 | 2 | 3 | 4 | 6 |

(Model No. Example：LFA0550-CCD, LFA0750-SRD)

1 Body Size
2 Design No.
3 Piping Method
4 Lever Direction
6 Action Confirmation Method (In case of D)

◉ External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	LFA0480-□□D	LFA0550-□□D	LFA0650-□□D	LFA0750-□□D
Full Stroke	34.5	38.5	44	50
Lock Stroke	31.5	35.5	41	47
Extra Stroke	3	3	3	3
Lever Retraction	16	16	25	25
A	160.5	178	206	232
B	61	69	81	94.5
C	51	60	70	85
D	48	55	65	75
E	86	95	106.5	120
F	58	65	73.5	82
G	28	30	33	38
H	35.5	39	46	52
J	25.5	30	35	42.5
K	40	47	55	63
L	81	88	106	116
M	12	12	13	16
Nx	30	33.5	39.5	45
Ny	11	12	15	16
P	3	3	5	5
Q	9	11	11	14
R	5.5	6.8	6.8	9
S	16	15.5	19	18.5
T	48	54	67	74.5
U	14	16	20	22
V	37	42	49	55.5
W	51.5	57	64.5	74.5
X	31.5	35	45.5	50
Y	13	16	19	25
Z	24	28	37	40
Chamfer 1	C3	C3	C4	C10
Lock / Release Port Option -C	G1/8	G1/8	G1/4	G1/4
Lock / Release Port Option -S	Rc1/8	Rc1/8	Rc1/4	Rc1/4
O-ring (Option -C)	1BP5	1BP5	1BP7	1BP7
AA	18.5	21	24.5	30
AC	4	5	6	6
AD	6	8	10	12
AG	1.6	2.2	6.2	6.6
CA	M5×0.8	M6×1	M6×1	M8×1.25
DA	14	14	14	18
DB	13	13	13	13
DC	12	12	12	16
DD (Nominal×Pitch×Depth)	M8×1.25×18	M8×1.25×18	M8×1.25×18	M10×1.5×21
JA	3.5	3.5	4.5	4.5
JB	14	14	19	19

18

● Link Lever Design Dimensions
※ Reference for designing link lever.
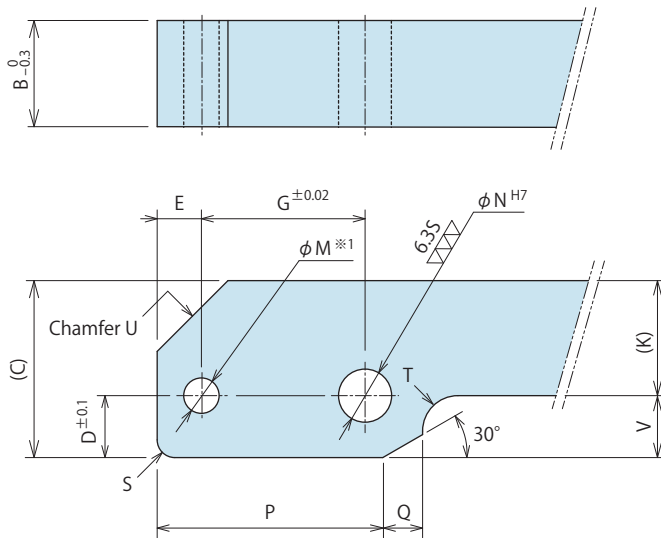
Applicable Model No. Indication

Built-in Sensing Valve Model

LFW ☐ 0 - C [L/C/R] J

1 Body Size

Standard Model / Double End Rod Model

LFA ☐ 0 - [C/S] [L/C/R] [Blank/D]

1 Body Size
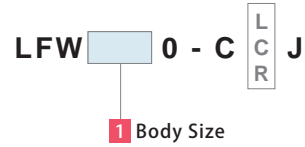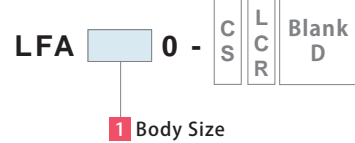
● Link Lever Design Dimension List

(mm)

Corresponding Model No.	LFW0480 LFA0480	LFW0550 LFA0550	LFW0650 LFA0650	LFW0750 LFA0750
B	12	16	19	22
C	20	23	28	34
D	7	8	10	12
E	5	7	7	9.5
G	18.5	21	24.5	30
K	13	15	18	22
M	5	6	7	7
N	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$	$12^{+0.018}_{0}$
P	25.5	31	35.5	42.5
Q	4.5	5	5.5	9.5
S	R2	R2	R3	R3
T	R4	R5	R6	R6
U	C8	C12	C14	C18
V	7	8	10	12

Notes :
　※1. Due to the clamp structure, there is a 1mm-diameter gap between the lever hole and the pin.
　　1. Please design the link lever length according to the performance curve.
　　2. If the link lever is not in accordance with the dimensions shown above, performance may be degraded and damage can occur.
　　3. Use the attached pin (equivalent to φACf6, φADf6, HRC60) as the lever mounting pin.
　　　(Refer to the external dimensions of the clamp body for the dimensions of φAC, φAD.)

KOSMEK Harmony in Innovation

◉ Accessory：Link Lever
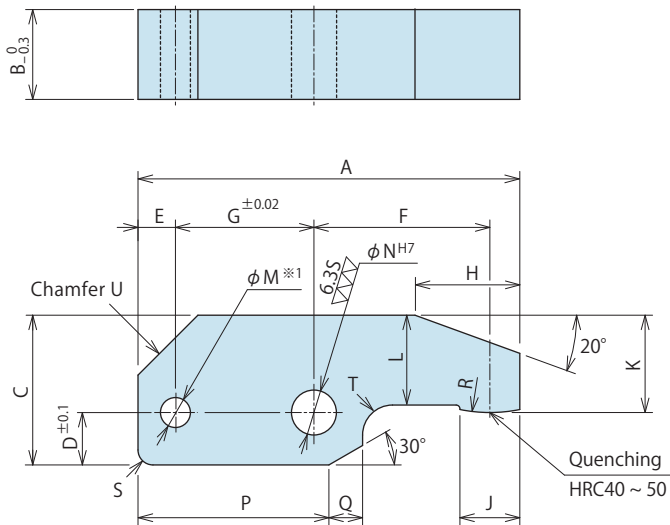
Model No. Indication

LZK **048** **0 – F**

Size (Refer to the table.)

Design No. (Revision Number)

(mm)

Model No.	**LZK0480-F**	**LZK0550-F**	**LZK0650-F**	**LZK0750-F**
Corresponding Model No.	LFW0480 LFA0480	LFW0550 LFA0550	LFW0650 LFA0650	LFW0750 LFA0750
A	51	61	67.5	81
B	12	16	19	22
C	20	23	28	34
D	7	8	10	12
E	5	7	7	9.5
F	23.5	29	32	37.5
G	18.5	21	24.5	30
H	14	18	25.5	28
J	8	8	8	8
K	13	15	18	22
L	12	14	17	21
M	5	6	7	7
N	$6^{+0.012}_{0}$	$8^{+0.015}_{0}$	$10^{+0.015}_{0}$	$12^{+0.018}_{0}$
P	25.5	31	35.5	42.5
Q	4.5	5	5.5	9.5
R	R20	R20	R25	R32
S	R2	R2	R3	R3
T	R4	R5	R6	R6
U	C8	C12	C14	C18
Weight g	69.7	122.2	189.3	329.5

Notes :
 ※1. Due to the clamp structure, there is a 1mm-diameter gap between the lever hole and the pin.
   1. Material：S50C   Surface Finishing：Alkaline Blackening
   2. Use the attached pin (equivalent to ϕACf6, ϕADf6, HRC60) as the lever mounting pin.
     (Refer to the external dimensions of the clamp body for the dimensions of ϕAC, ϕAD.)

◉ 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

Thread Part
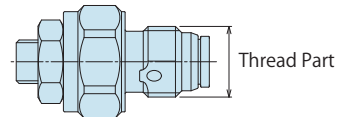
2 Design No.

1 ： Revision Number

3 Control Method

B ： Meter-out

B

Circuit Symbol ： Meter-out

P1 Port
Hyd. Pressure
Supply Side

P2 Port
Clamp Side
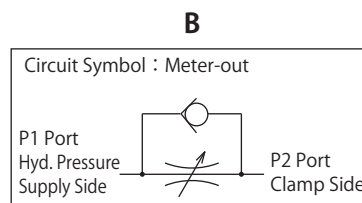
◉ Specifications

Model No.		BZL0101-B	BZL0201-B
Max. Operating Pressure	MPa	7	
Withstanding Pressure	MPa	10.5	
Control Method		Meter-out	
G Thread Size		G1/8A	G1/4A
Cracking Pressure	MPa	0.12	
Max. Passage Area	mm²	2.6	5.0
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32	
Operating Temperature	℃	0 ~ 70	
Tightening Torque for Main Body	N·m	10	25
Weight	g	12	26

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

◉ Applicable Products

Model No.	**LFW** (Double Action) Link Clamp-Retracting Model-	**LFA** (Double Action) Link Clamp-Retracting Model-
BZL0101-B	LFW0480-C□J LFW0550-C□J	LFA0480-C□□ LFA0550-C□□
BZL0201-B	LFW0650-C□J LFW0750-C□J	LFA0650-C□□ LFA0750-C□□

Note : 1. 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.

KOSMEK
Harmony in Innovation

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

BZL0101-B：Meter-out

Controlled Flow Direction

←Closed　Number of Turns of Adjusting Screw　Opened→

Free Flowing Direction

BZL0201-B：Meter-out

Controlled Flow Direction

←Closed　Number of Turns of Adjusting Screw　Opened→

Free Flowing Direction

● External Dimensions

● Machining Dimensions of Mounting Area
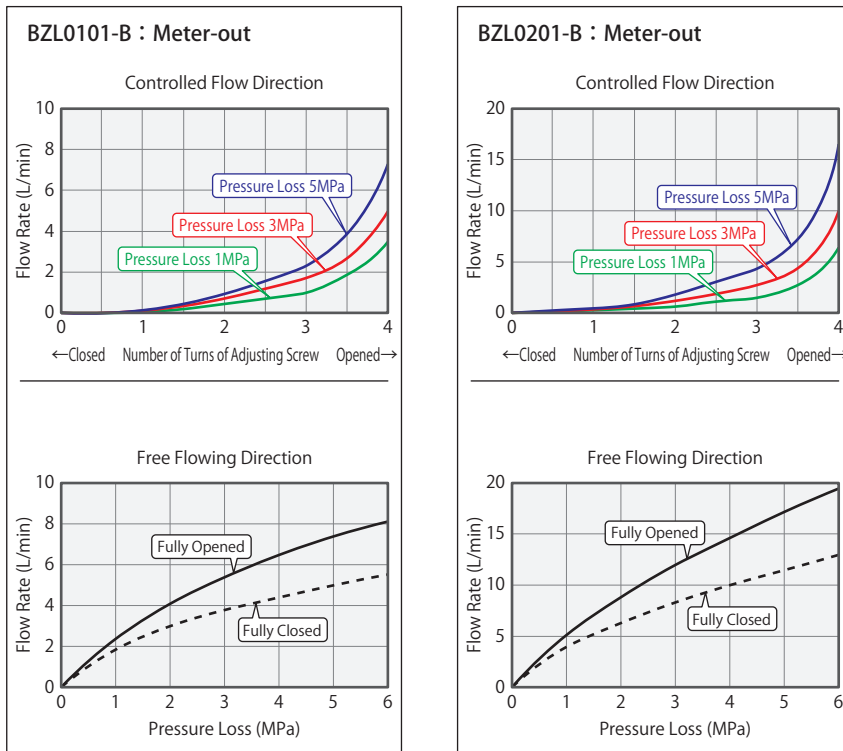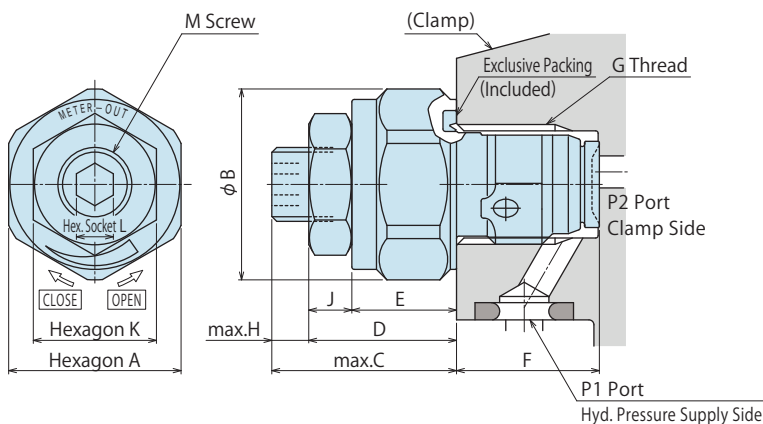
Model No.	BZL0101-B	BZL0201-B
A	14	18
B	15.5	20
C	15	16
D	12	13
E	8.5	9.5
F	(11.6)	(15.1)
G	G1/8	G1/4
H	3	3
J	3.5	3.5
K	10	10
L	3	3
M	M6×0.75	M6×0.75
N	11.5	15
P	8.5	11※1
Q	9	11.5
R (Flat Surface Area)	16	20.5
S	10	13.5
T	8.7	11.5
U	G1/8	G1/4
V	2 ~ 3	3 ~ 4
W	2.5 ~ 5	3.5 ~ 7

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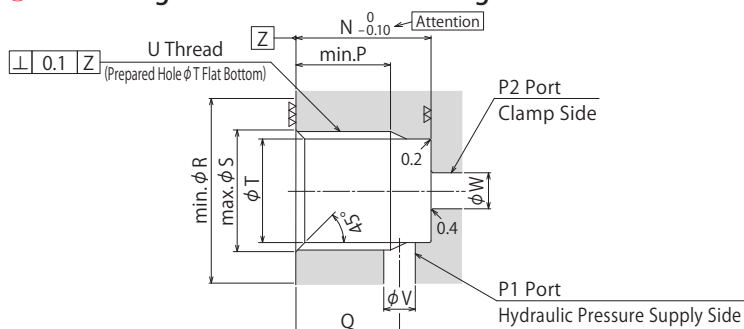
Notes :
1. Since the ▽▽▽ area is a sealing part, be careful not to damage it.
2. Since the ▽▽ area is the metal sealing part of BZL, be careful not to damage it. (Especially when deburring)
3. No cutting chips or burr should be at the tolerance part of machining hole.
4. As shown in the drawing, P1 port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

● Notes

1. Please read "Notes on Hydraulic Cylinder Speed Control Unit" for proper hydraulic circuit design.
   Improper circuit design may lead to malfunctions and damages. (Refer to P.28)
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.)

22

● 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

Thread Part
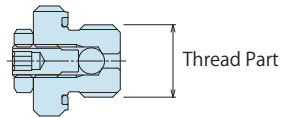
2 Design No.

0 ： Revision Number

● Specifications

| Model No.		BZX010	BZX020
Max. Operating Pressure	MPa	25	
Withstanding Pressure	MPa	37.5	
G Thread Size		G1/8A	G1/4A
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32	
Operating Temperature	℃	0 ~ 70	
Tightening Torque for Main Body	N・m	10	25
Weight	g	12	23
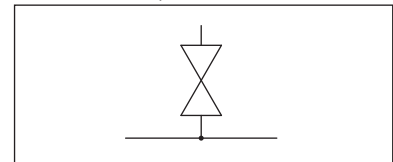
Notes : 　1. Do not over-loosen the plug during air venting.
　　　　　　　(Do not loosen further than 2 turns from the fully closed position.)
　　　　　2. Air bleeding under high pressure is dangerous. It must be done under lower pressure.
　　　　　　　(For reference : the minimum operation pressure range of the product within the circuit)
　　　　　3. Refer to the machining dimensions of BZL mounting area when installing BZX into a hydraulic circuit.

● Circuit Symbol

● Applicable Products

Model No.	LFW (Double Action) Link Clamp-Retracting Model-	LFA (Double Action) Link Clamp-Retracting Model-
BZX010	LFW0480-C□J LFW0550-C□J	LFA0480-C□□ LFA0550-C□□
BZX020	LFW0650-C□J LFW0750-C□J	LFA0650-C□□ LFA0750-C□□

● External Dimensions

Lock Nut
M6×1 (3 types)

Plug
M6×1

Body

Exclusive Packing (Included)

(Clamp)

G Thread

φB

3.6
3.8　E
D　　10.5
C

Hex. Socket 3
Hexagon 10
Hexagon A

(mm)

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

KOSMEK
Harmony in Innovation

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

JZG0 **1** 0
1 **2**

1 G Thread Size

1 ： Thread Part G1/8A Thread

2 ： Thread Part G1/4A Thread

Thread Part
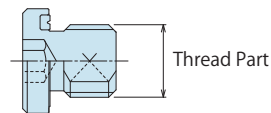
2 Design No.

0 ： Revision Number

● Specifications

Model No.		JZG010	JZG020
Max. Operating Pressure	MPa	35	
Withstanding Pressure	MPa	42	
G Thread Size		G1/8A	G1/4A
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32	
Operating Temperature	℃	0 ~ 70	
Tightening Torque for Main Body	N・m	10	25
Weight	g	7	15

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.

● Applicable Products

Model No.	**LFW** (Double Action) Link Clamp-Retracting Model-	**LFA** (Double Action) Link Clamp-Retracting Model-
JZG010	LFW0480-C☐J	LFA0480-C☐☐
	LFW0550-C☐J	LFA0550-C☐☐
JZG020	LFW0650-C☐J	LFA0650-C☐☐
	LFW0750-C☐J	LFA0750-C☐☐

● External Dimensions

Exclusive Packing (Included)

ø A

G Thread

Hex. Socket D

B   C
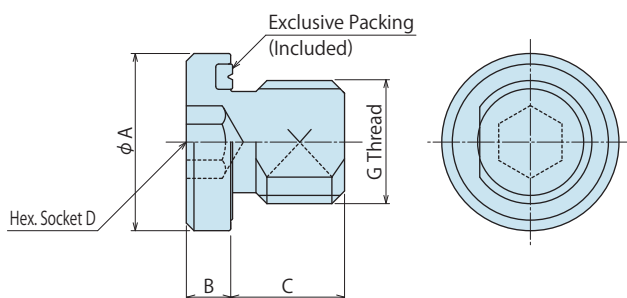
(mm)
Model No.	JZG010	JZG020
A	14	18
B	3.5	4.5
C	8	9
D	5	6
G	G1/8A	G1/4A

24

◉ 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.28)
   ● 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.
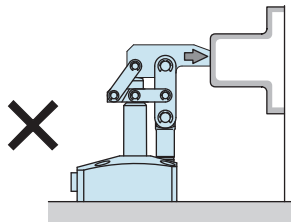
   ● Offset lever cannot be used. Offset load may damage of the product.
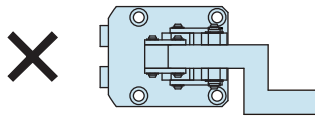
4) Protect the exposed area of the piston rod and the link plate
   when using on a welding fixture.
   ● If spatter attaches to the sliding surface it could lead to
     malfunction and fluid leakage.

5) When clamping on a sloped surface of the workpiece
   ● Make sure the clamping surface and the mounting surface of
     the clamp are parallel.
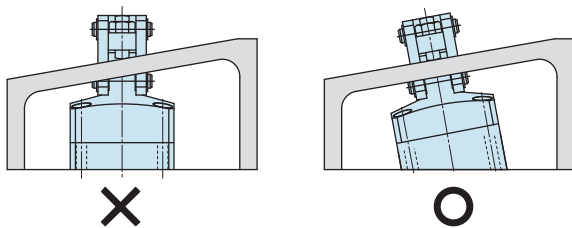
6) When using in a dry environment
   ● The link pin can be dried out. Grease it periodically or use
     a special pin. Contact us for the specifications of special pins.

7) Note for LFW
   ● In case of model LFW (air sensing with an air catch sensor), make
   sure to check the Notes for Design・Installation・Use (on P.5).

● Installation Notes

1) Check the Usable Fluid
● Please use the appropriate fluid by referring to the Hydraulic Fluid List (P.27).

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)
LFW0480/LFA0480	M5×0.8	8.0
LFW0550/LFA0550	M6×1	14
LFW0650/LFA0650	M6×1	14
LFW0750/LFA0750	M8×1.25	33

3) Installation / Removal of the Link Lever
● When inserting a 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.
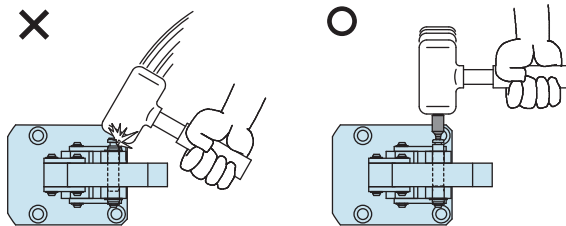
4) Note on Double Rod Model (-D) Application
● When installing a dog, secure the dog and prevent any rotation or torque on the piston rod, and fix the width part of the rod end with a spanner.
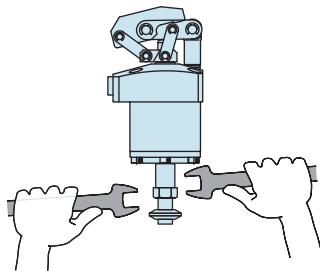
Model No.	Thread Size	Tightening Torque (N·m)
LFA0480-☐☐D	M8×1.25	25
LFA0550-☐☐D	M8×1.25	25
LFA0650-☐☐D	M8×1.25	25
LFA0750-☐☐D	M10×1.5	50

5) Speed Adjustment
● Adjust the speed so that the total operating time is 1 second or more. If the clamp operates too fast the parts will be worn out leading to premature damage and ultimately complete equipment failure.
● 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.

🔴 Cautions

● Installation Notes (For Hydraulic Series)

1) Check the Usable Fluid
● Please use the appropriate fluid by referring to the Hydraulic Fluid List.

2) Preparation for 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.
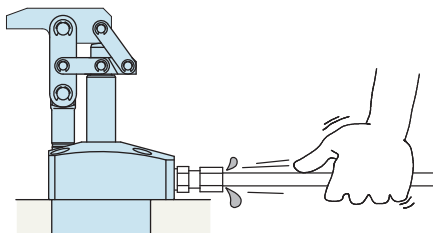
④ Tighten the cap nut after bleeding.
⑤ It is more effective to release air at the highest point inside the circuit or at the end of the circuit.
　 (Set an air bleeding valve at the highest point inside the circuit.)
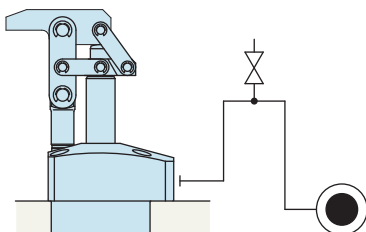
5) Checking Looseness and Retightening
● At the beginning of the machine installation, the bolt and nut may be tightened lightly. Check the looseness and re-tighten as required.

● 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.
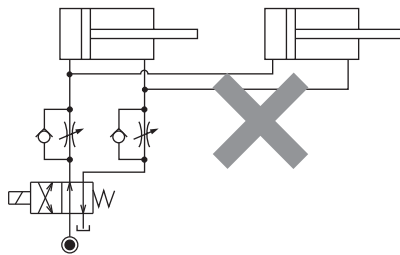
● Flow Control Circuit for Double Acting Cylinder
Flow control circuit for double acting cylinder should have meter-out circuits for both the lock side and the release side. Meter-in control can have adverse effect by presence of air in the system.

【Meter-out Circuit】
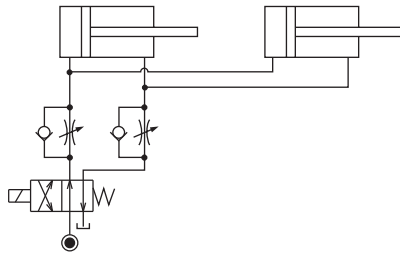
【Meter-in Circuit】

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

① Single acting components should not be used in the same flow control circuit as the double acting components. The release action of the single acting cylinders may become erratic or very slow.
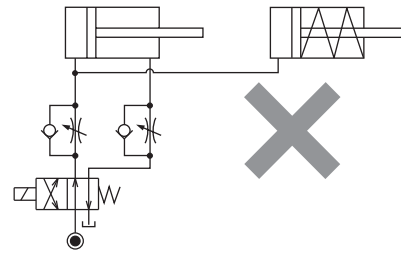
Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.
○ Separate the control circuit.
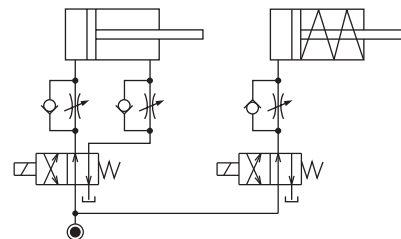
○ Reduce the influence of double acting cylinder control unit. However, due to the back pressure in tank line, single acting cylinder is activated after double acting cylinder works.
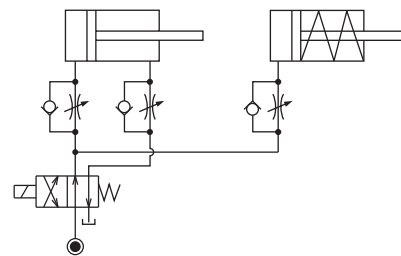

② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve or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

Sequence Valve

Flow Control Valve
(Any location is OK)
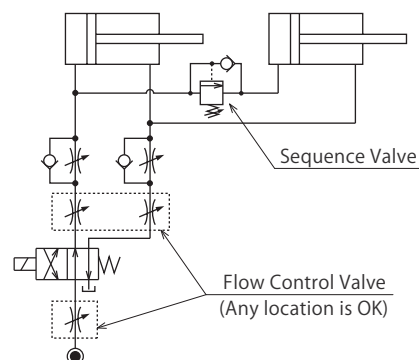
◉ Cautions

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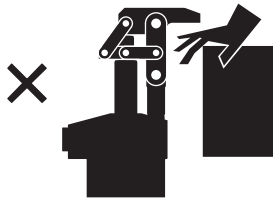
4) Do not disassemble or modify.
● If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

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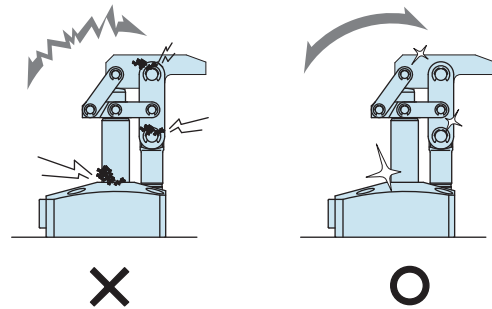
3) If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.

4) Regularly tighten pipe line, mounting bolt, snap ring and others to ensure proper use.

5) Make sure the hydraulic fluid has not deteriorated.

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

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

8) Please contact us for overhaul and repair.

KOSMEK
Harmony in Innovation

● 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.

WAHLTEC®
KNOWLEDGE | TRUST | SUCCESS

KOSMEK
Harmony in Innovation

KOSMEK LTD.
▶ http://www.kosmek.com/

HEAD OFFICE   1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241
TEL.+81-78-991-5162   FAX.+81-78-991-8787

WAHLTEC®
KNOWLEDGE | TRUST | SUCCESS

WAHLTEC GmbH
T: +49 (7584) 9238883
F: +49 (7584) 9238887
kosmek@wahltec.de
www.wahltec.de

■ For Further Information on Unlisted Specifications and Sizes, Please call us.
■ Specifications in this Leaflet are Subject to Change without Notice.

ISO 9001
JQA-QMA10823
KOSMEK HEAD OFFICE

MS
JAB
CM009