

# Hydraulic Link Clamp

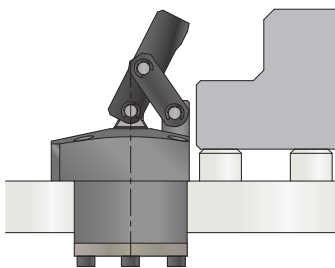
- Model LKA
- Model LKC
- Model LKW
- Model LM/LJ
- Model TMA-2
- Model TMA-1



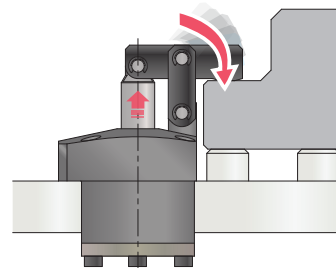
Compact cylinder with built-in link mechanism.

Link design is not required.

## Action Description

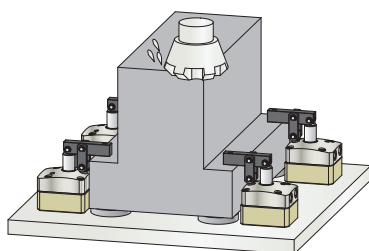


Released State

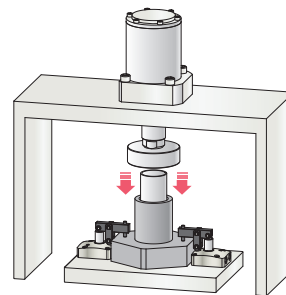


Locked State

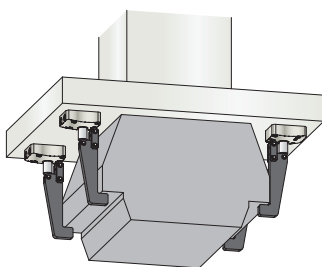
## Application Examples



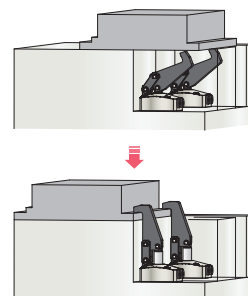
Machining



Press Fitting



Transfer • Gantry Loader



Interference Prevention

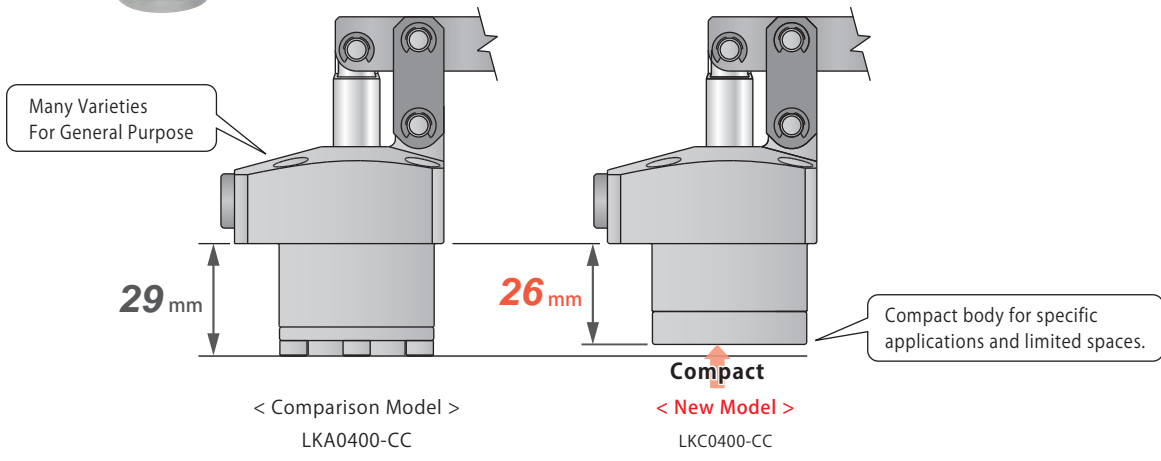
New Products



**Compact Link Clamp**

Model **LKC**

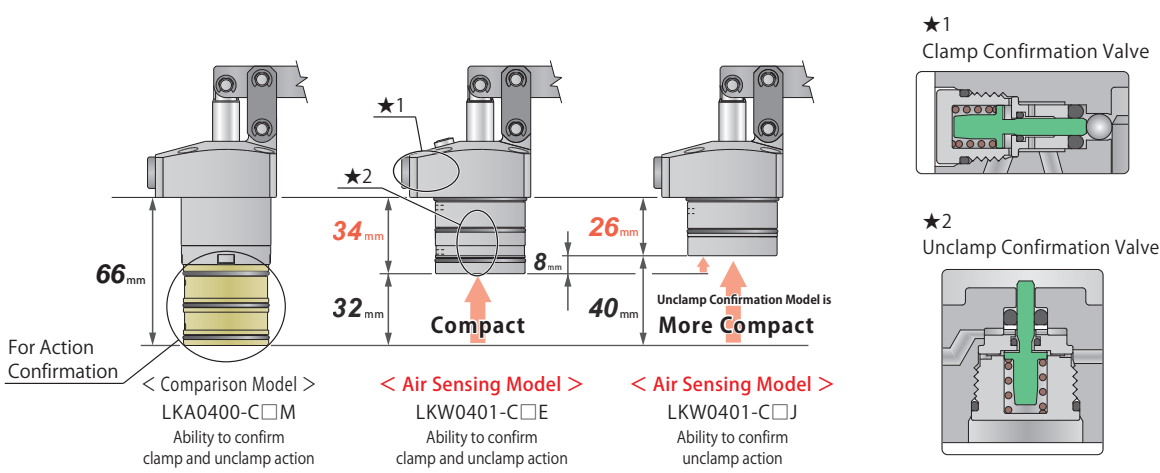
Compact link clamps for small footprint fixtures.



**Air Sensing Link Clamp**

Model **LKW**

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



**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. 31 for further information.

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

- Hole Clamp
  - SFA
  - SFC

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

- Link Clamp**
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2
  - TMA-1

- Work Support
  - LD
  - LC
  - TNC
  - TC

- Air Sensing Lift Cylinder
  - LLW

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

- Block Cylinder
  - DBA
  - DBC




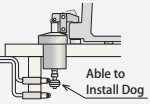
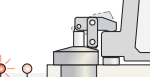
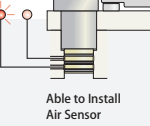

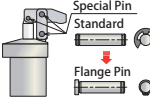



- Control Valve
  - BZL
  - BZT
  - BZX/JZG

- Pallet Clamp
  - VS
  - VT







- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK


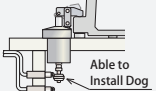
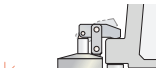
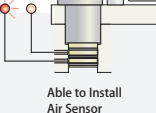
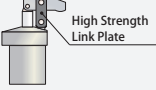
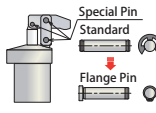



- Pull Stud Clamp
  - FP
  - FQ

- Customized Spring Cylinder
  - DWA/DWB


Low Pressure Model MAX. 7MPa		 Model <b>LKA</b> → P.451	 Model <b>LKC</b> → P.475	 Model <b>LKW</b> → P.487
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.463	External Dimensions → P.483	—
Action Confirmation	Double End Rod Option for Dog  Able to Install Dog	External Dimensions → P.465	—	—
	Air Sensing Manifold Option 	External Dimensions → P.467	—	—
	Air Sensing Piping Option  Able to Install Air Sensor	External Dimensions → P.469	—	—
	Built-in Sensing Valve Model	—	—	External Dimensions → P.499
Option	High Strength Link Plate Option  High Strength Link Plate	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  Special Pin Standard Flange Pin	★	★	★
Accessories	Lever 	LZK-L → P.474	LZK-L → P.486	LZK-L → P.506
	Manifold Block 	LZY-MD	→ P.1025	—
	Speed Control Valve Plug 	BZL, BZX, JZG		→ P.727

※ Please contact us for detail dimension at ★ part.

High Pressure Model MAX. 35MPa		 Model <b>TMA-2</b> → P.519	 Model <b>TMA-1</b> → P.531
Classification		Double Action	Single Action (Spring Release)
Operating Pressure Range		3.5~35MPa	3.5~35MPa
Accessories	Lever 	LZ-LJ3 LZ-LJ2 → P.530	LZ-LJ3 LZ-LJ2 → P.542
	Manifold Block 	TMZ-2MB → P.1027	TMZ-1MB → P.1027
	Speed Control Valve Plug 	BZT, JZG	→ P.727
	G-Thread Fitting 	G-Thread Fitting (Made by Ihara Science) → P.1039	

<b>Low Pressure Model</b> MAX. 7MPa		 Model <b>LM/LJ</b> → P.507
<b>Classification</b>		<b>Single Action (Spring Release)</b>
<b>Operating Pressure Range</b>		2.5~7MPa
<b>Standard Model</b>		External Dimensions → P.515
<b>Action Confirmation</b>	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	—
<b>Option</b>	High Strength Link Plate Option  High Strength Link Plate	—
	Flange Pin with C-type Circlip  Special Pin Standard Flange Pin	—
<b>Accessories</b>	Lever  LZ-LJ1 LZ-LJ2 → P.518	
	Manifold Block  LZ-MS → P.1026	
	Speed Control Valve Plug  BZL, BZX, JZG → P.727	

※ 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. 31 for further information.

- High-Power Series
- Pneumatic Series
- Hydraulic Series**
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
  
- Hole Clamp
  - SFA
  - SFC
- Swing Clamp
  - LHA
  - LHC
  - LHS
  - LHW
  - LT/LG
  - TLA-2
  - TLB-2
  - TLA-1
- Link Clamp**
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2
  - TMA-1
- Work Support
  - LD
  - LC
  - TNC
  - TC
- Air Sensing Lift Cylinder
  - LLW
- Compact Cylinder
  - LL
  - LLR
  - LLU
  - DP
  - DR
  - DS
  - DT
- Block Cylinder
  - DBA
  - DBC
- Control Valve
  - BZL
  - BZT
  - BZX/JZG
- Pallet Clamp
  - VS
  - VT
- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK
- Pull Stud Clamp
  - FP
  - FQ
- Customized Spring Cylinder
  - DWA/DWB

# Hydraulic Double Action Link Clamp

Model TMA-2

High Pressure (3.5~35MPa)

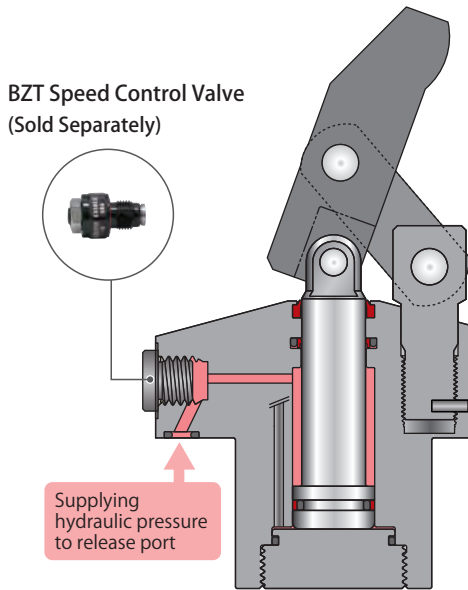
High Power • Compact Clamp



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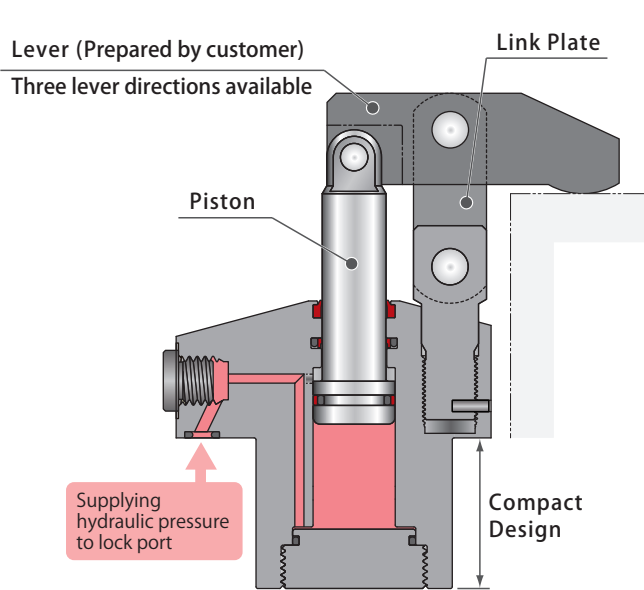
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• Notes on Handling • Maintenance/Inspection • Warranty	

● **Action Description**



**When releasing**

Perform the release action by supplying hydraulic pressure to release port.

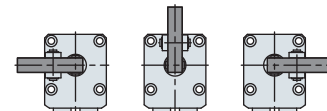


**When locking**

Perform the lock action by supplying hydraulic pressure to lock port.

● **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.

● **Able to Attach Speed Control Valve Directly**

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

High-Power Series
Pneumatic Series
<b>Hydraulic Series</b>
Valve / Coupler Hydraulic Unit
Manual Operation Accessories
Cautions / Others
Hole Clamp
SFA
SFC
Swing Clamp
LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1
<b>Link Clamp</b>
LKA
LKC
LKW
LM/LJ
<b>TMA-2</b>
TMA-1
Work Support
LD
LC
TNC
TC
Air Sensing Lift Cylinder
LLW
Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT
Block Cylinder
DBA
DBC
Control Valve
BZL
BZT
BZX/JZG
Pallet Clamp
VS
VT
Expansion Locating Pin
VL
VM
VJ
VK
Pull Stud Clamp
FP
FQ
Customized Spring Cylinder
DWA/DWB

## Model No. Indication

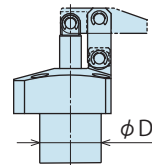
Double Action Model

**TMA** **040** **0** - **2** **C** **C**

1
2
3
4

### 1 Body Size (Clamping Force)

<b>025</b> : $\phi D=33\text{mm}$	<b>160</b> : $\phi D=60\text{mm}$
<b>040</b> : $\phi D=36\text{mm}$	<b>250</b> : $\phi D=70\text{mm}$
<b>060</b> : $\phi D=43\text{mm}$	<b>320</b> : $\phi D=85\text{mm}$
<b>100</b> : $\phi D=48\text{mm}$	



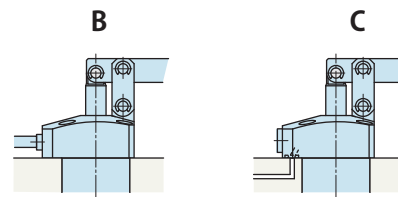
※ Outer diameter ( $\phi D$ ) of the cylinder.

### 2 Design No.

**0** : Revision Number

### 3 Piping Method

**B** : G Thread Piping Option (No Gasket Port)  
**C** : Gasket Option (With G Thread Plug)



Piping Option

Gasket Option

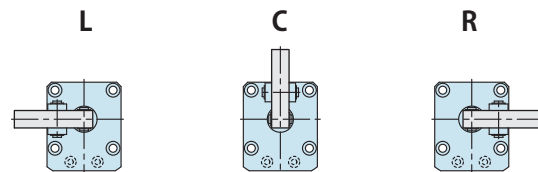
G Thread  
No Gasket Port

With G Thread Plug  
Possible to attach  
speed control valve

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

### 4 Lever Direction

**L** : Left  
**C** : Center  
**R** : Right

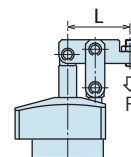


※ This images show the lever direction  
when the piping port is placed in front of you.

## Specifications

Model No.	TMA0250-2□□	TMA0400-2□□	TMA0600-2□□	TMA1000-2□□	TMA1600-2□□	TMA2500-2□□	TMA3200-2□□		
Cylinder Area for Locking	cm <sup>2</sup>	1.039	1.539	2.545	3.801	6.158	11.341		
Clamping Force (Calculation Formula) ※1	kN	$F = \frac{1.50 \times P}{L - 16}$	$F = \frac{2.56 \times P}{L - 18.5}$	$F = \frac{4.81 \times P}{L - 21}$	$F = \frac{8.38 \times P}{L - 24.5}$	$F = \frac{16.63 \times P}{L - 30}$	$F = \frac{26.06 \times P}{L - 36}$	$F = \frac{44.91 \times P}{L - 44}$	
Full Stroke	mm	20.5	23.5	26	29.5	35	41	49	
Lock Stroke	mm	17.5	20.5	23	26.5	32	38	46	
Extra Stroke	mm	3	3	3	3	3	3	3	
Capacity	Lock	cm <sup>3</sup>	2.1	3.6	6.6	11.2	21.6	33.0	55.6
	Release	cm <sup>3</sup>	0.5	1.0	2.6	3.7	8.2	7.7	16.2
Max. Operating Pressure	MPa	35.0							
Min. Operating Pressure※2	MPa	3.5							
Operating Temperature	°C	0~70							
Mass※3	kg	0.7	0.9	1.3	2.0	3.3	5.1	8.3	

- Notes
- ※ 1. F : Clamping Force (kN) , P : Supply Hydraulic Pressure (MPa) , L : Distance between the piston center and the clamping point (mm).
  - ※ 2. Minimum pressure to operate the clamp with no load.
  - ※ 3. Mass of single clamp without the link lever.



### High-Power Series

### Pneumatic Series

### Hydraulic Series

### Valve / Coupler Hydraulic Unit

### Manual Operation Accessories

### Cautions / Others

#### Hole Clamp

SFA  
SFC

#### Swing Clamp

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

#### Link Clamp

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

#### Work Support

LD  
LC  
TNC  
TC

#### Air Sensing Lift Cylinder

LLW

#### Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

#### Block Cylinder

DBA  
DBC

#### Control Valve

BZL  
BZT  
BZX/JZG

#### Pallet Clamp

VS  
VT

#### Expansion Locating Pin

VL  
VM  
VJ  
VK

#### Pull Stud Clamp

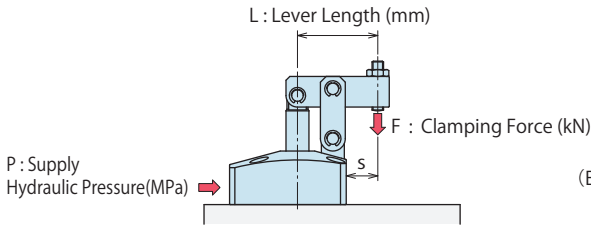
FP  
FQ

#### Customized Spring Cylinder

DWA/DWB



Clamping Force Curve



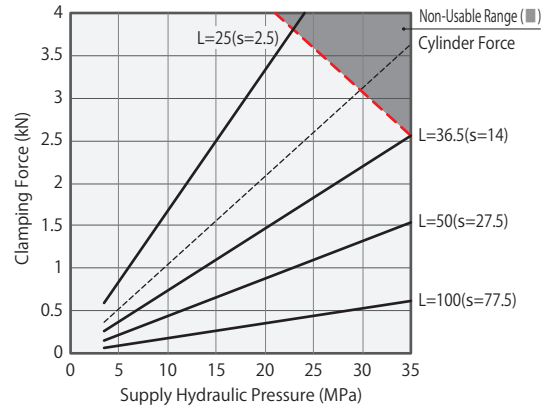
Applicable Model

Double Action Model  
**TMA** 0 - 2 BC LCR  
**1** Body Size

(Example) When using TMA1000-2  
 Supply Hydraulic Pressure 30 MPa, Lever Length L=56.5 mm  
 Clamping force is about 7.9 kN.

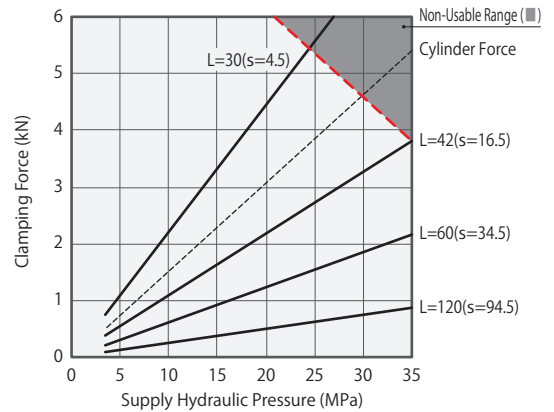
**TMA0250-2** Clamping Force Calculation Formula  $F = (1.50 \times P) / (L - 16)$  (kN)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100		
35.0	3.6			2.6	2.2	1.5	1.2	0.8	0.6	36.5	
32.5	3.4			2.4	2.0	1.4	1.1	0.8	0.6	33.5	
30.0	3.1			2.2	1.9	1.3	1.0	0.7	0.5	31	
27.5	2.9		2.9	2.0	1.7	1.2	0.9	0.6	0.5	28.5	
25.0	2.6		2.7	1.8	1.6	1.1	0.9	0.6	0.4	26.5	
22.5	2.3	3.8	2.4	1.6	1.4	1.0	0.8	0.5	0.4	25	
20.0	2.1	3.3	2.1	1.5	1.3	0.9	0.7	0.5	0.4	23.5	
17.5	1.8	2.9	1.9	1.3	1.1	0.8	0.6	0.4	0.3	23.5	
15.0	1.6	2.5	1.6	1.1	0.9	0.7	0.5	0.4	0.3	23.5	
12.5	1.3	2.1	1.3	0.9	0.8	0.6	0.4	0.3	0.2	23.5	
10.0	1.0	1.7	1.1	0.7	0.6	0.4	0.3	0.2	0.2	23.5	
7.5	0.8	1.3	0.8	0.5	0.5	0.3	0.3	0.2	0.1	23.5	
5.0	0.5	0.8	0.5	0.4	0.3	0.2	0.2	0.1	0.1	23.5	
3.5	0.4	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.1	23.5	
Max. Operating Pressure (MPa)		22.8	29.3	35.0	35.0	35.0	35.0	35.0	35.0		



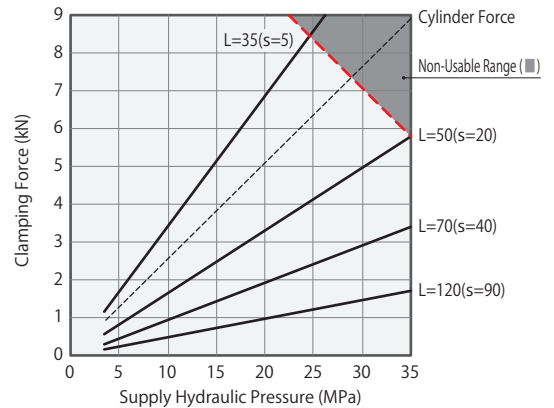
**TMA0400-2** Clamping Force Calculation Formula  $F = (2.56 \times P) / (L - 18.5)$  (kN)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120		
35.0	5.4			3.8	2.8	2.2	1.5	1.1	0.9	42	
32.5	5.0			3.5	2.6	2.0	1.4	1.0	0.8	38.5	
30.0	4.6			3.3	2.4	1.9	1.2	0.9	0.8	35.5	
27.5	4.2		4.3	3.0	2.2	1.7	1.1	0.9	0.7	33	
25.0	3.8		3.9	2.7	2.0	1.5	1.0	0.8	0.6	30.5	
22.5	3.5	5.0	3.5	2.5	1.8	1.4	0.9	0.7	0.6	29	
20.0	3.1	4.5	3.1	2.2	1.6	1.2	0.8	0.6	0.5	27	
17.5	2.7	3.9	2.7	1.9	1.4	1.1	0.7	0.5	0.4	25.5	
15.0	2.3	3.3	2.3	1.6	1.2	0.9	0.6	0.5	0.4	25.5	
12.5	1.9	2.8	1.9	1.4	1.0	0.8	0.5	0.4	0.3	25.5	
10.0	1.5	2.2	1.6	1.1	0.8	0.6	0.4	0.3	0.3	25.5	
7.5	1.2	1.7	1.2	0.8	0.6	0.5	0.3	0.2	0.2	25.5	
5.0	0.8	1.1	0.8	0.5	0.4	0.3	0.2	0.2	0.1	25.5	
3.5	0.5	0.8	0.5	0.4	0.3	0.2	0.1	0.1	0.1	25.5	
Max. Operating Pressure (MPa)		24.4	29.7	35.0	35.0	35.0	35.0	35.0	35.0		



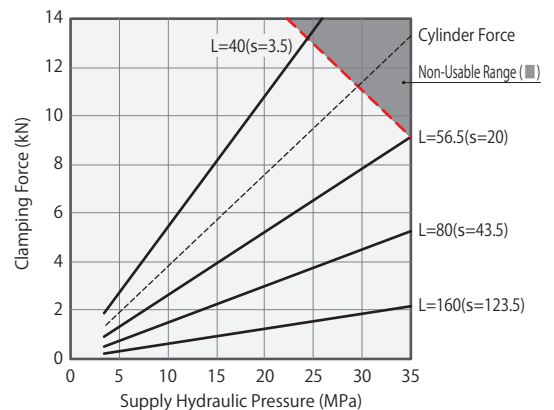
**TMA0600-2** Clamping Force Calculation Formula  $F = (4.81 \times P) / (L - 21)$  (kN)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120		
35.0	8.9			5.8	4.3	3.4	2.9	2.1	1.7	50	
32.5	8.3			5.4	4.0	3.2	2.6	2.0	1.6	45.5	
30.0	7.6			5.0	3.7	2.9	2.4	1.8	1.5	41.5	
27.5	7.0		7.0	4.6	3.4	2.7	2.2	1.7	1.3	38.5	
25.0	6.4		6.3	4.1	3.1	2.5	2.0	1.5	1.2	35.5	
22.5	5.7	7.7	5.7	3.7	2.8	2.2	1.8	1.4	1.1	33.5	
20.0	5.1	6.9	5.1	3.3	2.5	2.0	1.6	1.2	1.0	31.5	
17.5	4.5	6.0	4.4	2.9	2.2	1.7	1.4	1.1	0.9	30	
15.0	3.8	5.2	3.8	2.5	1.9	1.5	1.2	0.9	0.7	30	
12.5	3.2	4.3	3.2	2.1	1.5	1.2	1.0	0.8	0.6	30	
10.0	2.5	3.4	2.5	1.7	1.2	1.0	0.8	0.6	0.5	30	
7.5	1.9	2.6	1.9	1.2	0.9	0.7	0.6	0.5	0.4	30	
5.0	1.3	1.7	1.3	0.8	0.6	0.5	0.4	0.3	0.2	30	
3.5	0.9	1.2	0.9	0.6	0.4	0.3	0.3	0.2	0.2	30	
Max. Operating Pressure (MPa)		24.5	28.9	35.0	35.0	35.0	35.0	35.0	35.0		



**TMA1000-2** Clamping Force Calculation Formula  $F = (8.38 \times P) / (L - 24.5)$  (kN)

Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)						Non-Usable Range (mm)	Min. Lever Length (L) (mm)		
		Lever Length L (mm)									
		L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160		
35.0	13.3			9.2	5.3	3.9	3.1	2.5	2.2	56.5	
32.5	12.4			8.5	4.9	3.6	2.9	2.4	2.0	51.5	
30.0	11.4			9.9	7.9	4.5	3.3	2.6	2.2	47.5	
27.5	10.5			9.0	7.2	4.2	3.1	2.4	2.0	44	
25.0	9.5		8.2	6.5	3.8	2.8	2.2	1.8	1.5	41	
22.5	8.6	12.2	7.4	5.9	3.4	2.5	2.0	1.6	1.4	38.5	
20.0	7.6	10.8	6.6	5.2	3.0	2.2	1.8	1.5	1.2	36.5	
17.5	6.7	9.5	5.8	4.6	2.6	1.9	1.5	1.3	1.1	36.5	
15.0	5.7	8.1	4.9	3.9	2.3	1.7	1.3	1.1	0.9	36.5	
12.5	4.8	6.8	4.1	3.3	1.9	1.4	1.1	0.9	0.8	36.5	
10.0	3.8	5.4	3.3	2.6	1.5	1.1	0.9	0.7	0.6	36.5	
7.5	2.9	4.1	2.5	2.0	1.1	0.8	0.7	0.5	0.5	36.5	
5.0	1.9	2.7	1.6	1.3	0.8	0.6	0.4	0.4	0.3	36.5	
3.5	1.3	1.9	1.2	0.9	0.5	0.4	0.3	0.3	0.2	36.5	
Max. Operating Pressure (MPa)		24.4	31.7	35.0	35.0	35.0	35.0	35.0	35.0		

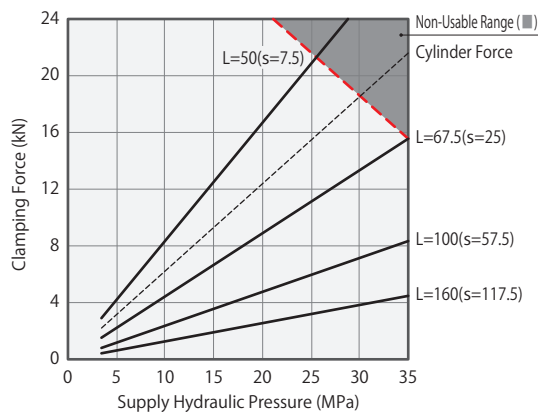


- High-Power Series
- Pneumatic Series
- Hydraulic Series**
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
  - SFA
  - SFC
- Swing Clamp
  - LHA
  - LHC
  - LHS
  - LHW
  - LT/LG
  - TLA-2
  - TLB-2
  - TLA-1
- Link Clamp**
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2**
  - TMA-1
- Work Support
  - LD
  - LC
  - TNC
  - TC
- Air Sensing Lift Cylinder
  - LLW
- Compact Cylinder
  - LL
  - LLR
  - LLU
  - DP
  - DR
  - DS
  - DT
- Block Cylinder
  - DBA
  - DBC
- Control Valve
  - BZL
  - BZT
  - BZX/JZG
- Pallet Clamp
  - VS
  - VT
- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK
- Pull Stud Clamp
  - FP
  - FQ
- Customized Spring Cylinder
  - DWA/DWB

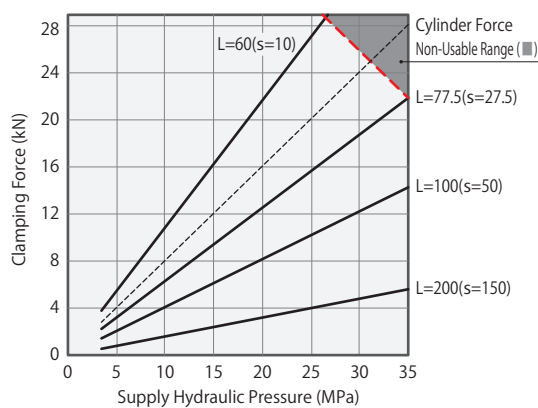
Notes

1. Tables and graphs shown are the relationships between the clamping force (kN) and supply hydraulic pressure (MPa).
  2. Cylinder output (when L=0) cannot be calculated from the calculation formula of clamping force.
  3. Using in the non-usable range may damage the clamp and lead to fluid leakage.
- ※1. F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), L: Lever Length (mm)

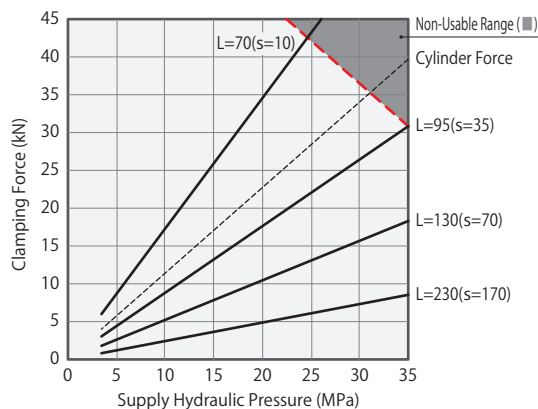
TMA1600-2		Clamping Force Calculation Formula ※1 (kN) $F = (16.63 \times P) / (L - 30)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (■)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160		
35.0	21.6			15.5	11.6	8.3	6.5	5.3	4.5	67.5	
32.5	20.0			14.4	10.8	7.7	6.0	4.9	4.2	62	
30.0	18.5		16.6	13.3	10.0	7.1	5.5	4.5	3.8	57	
27.5	16.9		15.2	12.2	9.1	6.5	5.1	4.2	3.5	53	
25.0	15.4	20.8	13.9	11.1	8.3	5.9	4.6	3.8	3.2	49.5	
22.5	13.9	18.7	12.5	10.0	7.5	5.3	4.2	3.4	2.9	46.5	
20.0	12.3	16.6	11.1	8.9	6.7	4.8	3.7	3.0	2.6	43.5	
17.5	10.8	14.6	9.7	7.8	5.8	4.2	3.2	2.6	2.2	42.5	
15.0	9.2	12.5	8.3	6.7	5.0	3.6	2.8	2.3	1.9	42.5	
12.5	7.7	10.4	6.9	5.5	4.2	3.0	2.3	1.9	1.6	42.5	
10.0	6.2	8.3	5.5	4.4	3.3	2.4	1.8	1.5	1.3	42.5	
7.5	4.6	6.2	4.2	3.3	2.5	1.8	1.4	1.1	1.0	42.5	
5.0	3.1	4.2	2.8	2.2	1.7	1.2	0.9	0.8	0.6	42.5	
3.5	2.2	2.9	1.9	1.6	1.2	0.8	0.6	0.5	0.4	42.5	
Max. Operating Pressure (MPa)	25.6	31.6	35.0	35.0	35.0	35.0	35.0	35.0			



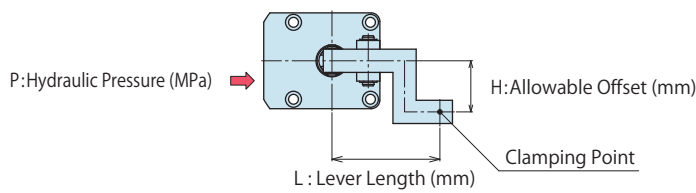
TMA2500-2		Clamping Force Calculation Formula ※1 (kN) $F = (26.06 \times P) / (L - 36)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (■)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=60	L=70	L=77.5	L=100	L=120	L=140	L=160	L=200		
35.0	28.1			22.0	14.3	10.9	8.8	7.4	5.6	77.5	
32.5	26.1			20.4	13.2	10.1	8.1	6.8	5.2	71.5	
30.0	24.1		23.0	18.8	12.2	9.3	7.5	6.3	4.8	66.5	
27.5	22.1		21.1	17.3	11.2	8.5	6.9	5.8	4.4	62	
25.0	20.1	27.1	19.2	15.7	10.2	7.8	6.3	5.3	4.0	58	
22.5	18.1	24.4	17.2	14.1	9.2	7.0	5.6	4.7	3.6	54.5	
20.0	16.1	21.7	15.3	12.6	8.1	6.2	5.0	4.2	3.2	51.5	
17.5	14.1	19.0	13.4	11.0	7.1	5.4	4.4	3.7	2.8	50	
15.0	12.1	16.3	11.5	9.4	6.1	4.7	3.8	3.2	2.4	50	
12.5	10.1	13.6	9.6	7.8	5.1	3.9	3.1	2.6	2.0	50	
10.0	8.0	10.9	7.7	6.3	4.1	3.1	2.5	2.1	1.6	50	
7.5	6.0	8.1	5.7	4.7	3.1	2.3	1.9	1.6	1.2	50	
5.0	4.0	5.4	3.8	3.1	2.0	1.6	1.3	1.1	0.8	50	
3.5	2.8	3.8	2.7	2.2	1.4	1.1	0.9	0.7	0.6	50	
Max. Operating Pressure (MPa)	26.5	31.9	35.0	35.0	35.0	35.0	35.0	35.0			



TMA3200-2		Clamping Force Calculation Formula ※1 (kN) $F = (44.91 \times P) / (L - 44)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (■)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=70	L=80	L=95	L=100	L=130	L=160	L=200	L=230		
35.0	39.7			30.8	28.1	18.3	13.6	10.1	8.5	95	
32.5	36.9			28.6	26.1	17.0	12.6	9.4	7.8	87.5	
30.0	34.0			26.4	24.1	15.7	11.6	8.6	7.2	81	
27.5	31.2		34.3	24.2	22.1	14.4	10.6	7.9	6.6	75.5	
25.0	28.4		31.2	22.0	20.0	13.1	9.7	7.2	6.0	71	
22.5	25.5	38.9	28.1	19.8	18.0	11.7	8.7	6.5	5.4	67	
20.0	22.7	34.5	25.0	17.6	16.0	10.4	7.7	5.8	4.8	63	
17.5	19.8	30.2	21.8	15.4	14.0	9.1	6.8	5.0	4.2	60	
15.0	17.0	25.9	18.7	13.2	12.0	7.8	5.8	4.3	3.6	60	
12.5	14.2	21.6	15.6	11.0	10.0	6.5	4.8	3.6	3.0	60	
10.0	11.3	17.3	12.5	8.8	8.0	5.2	3.9	2.9	2.4	60	
7.5	8.5	13.0	9.4	6.6	6.0	3.9	2.9	2.2	1.8	60	
5.0	5.7	8.6	6.2	4.4	4.0	2.6	1.9	1.4	1.2	60	
3.5	4.0	6.0	4.4	3.1	2.8	1.8	1.4	1.0	0.8	60	
Max. Operating Pressure (MPa)	24.6	29.6	35.0	35.0	35.0	35.0	35.0	35.0			



## Allowable Offset Graph



(Example) When using TMA1600  
Supply Hydraulic Pressure 30 MPa, Lever Length L=140 mm  
Allowable offset is about 20 mm.

### Applicable Model

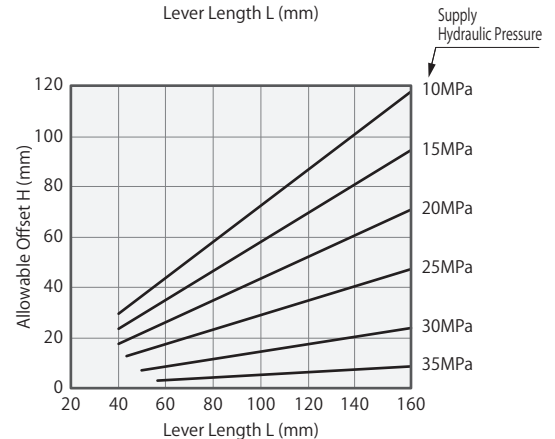
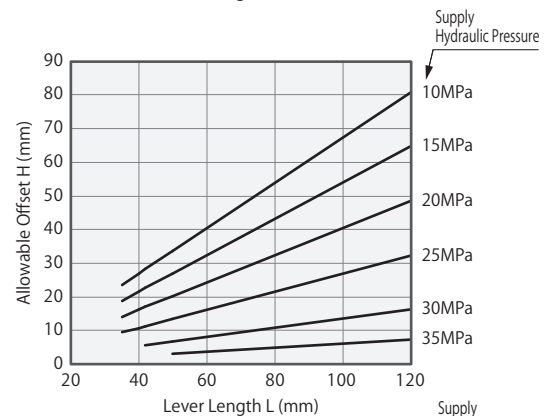
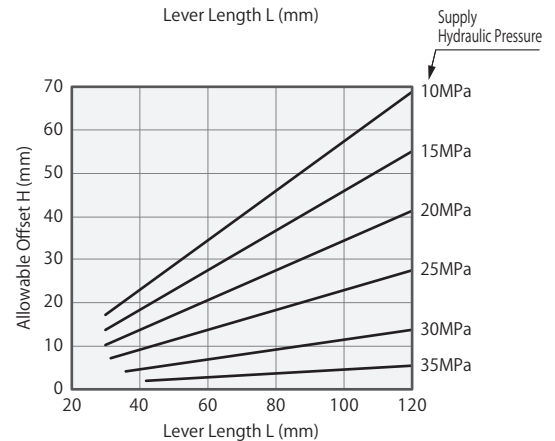
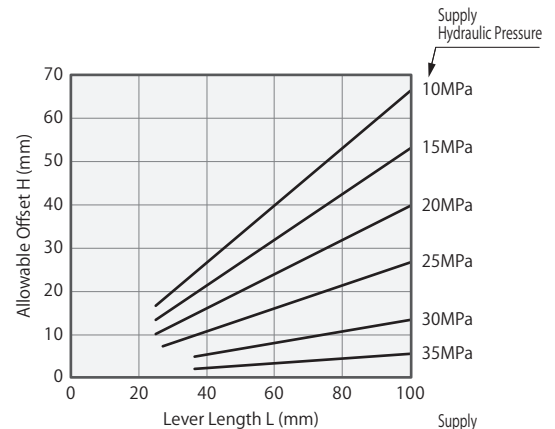
Double Action Model  
**TMA** 0 - 2  
Body Size BC LCR

TMA0250-2		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100	
35	■	■	2	2	3	3	4	5	
32.5	■	■	2	3	3	4	5	7	
30	■	■	5	5	7	8	11	13	
27.5	■	6	7	8	10	12	16	20	
25	■	8	10	11	13	16	21	27	
22.5	8	10	12	13	17	20	27	33	
20	10	12	15	16	20	24	32	40	
17.5	12	14	17	19	23	28	37	46	
15	13	16	19	21	27	32	42	53	
12.5	15	18	22	24	30	36	48	60	
10	17	20	24	27	33	40	53	66	

TMA0400-2		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120	
35	■	■	2	2	3	4	5	5	
32.5	■	■	2	3	3	5	6	7	
30	■	■	5	6	7	9	11	14	
27.5	■	6	7	9	10	14	17	21	
25	■	8	10	11	14	18	23	28	
22.5	9	10	12	14	17	23	29	34	
20	10	12	14	17	21	28	34	41	
17.5	12	14	17	20	24	32	40	48	
15	14	16	19	23	28	37	46	55	
12.5	15	18	22	26	31	41	52	62	
10	17	20	24	29	34	46	57	69	

TMA0600-2		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120	
35	■	■	3	4	4	5	6	7	
32.5	■	■	3	4	5	5	7	8	
30	■	■	7	8	9	11	13	16	
27.5	■	8	10	12	14	16	20	24	
25	9	11	13	16	19	22	27	32	
22.5	12	13	17	20	24	27	34	40	
20	14	16	20	24	28	32	40	48	
17.5	16	19	24	28	33	38	47	57	
15	19	22	27	32	38	43	54	65	
12.5	21	24	30	36	42	48	61	73	
10	24	27	34	40	47	54	67	81	

TMA1000-2		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160	
35	■	■	3	4	5	6	7	9	
32.5	■	■	4	6	7	9	10	12	
30	■	7	8	12	15	18	20	23	
27.5	■	11	12	18	22	26	31	35	
25	■	15	17	24	29	35	41	47	
22.5	15	18	21	29	37	44	51	59	
20	18	22	25	35	44	53	62	71	
17.5	21	26	29	41	51	62	72	82	
15	24	29	33	47	59	71	82	94	
12.5	26	33	37	53	66	79	93	106	
10	29	37	42	59	73	88	103	118	



Hole Clamp  
SFA  
SFC

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

**Link Clamp**  
LKA  
LKC  
LKW  
LM/LJ  
**TMA-2**  
TMA-1

Work Support  
LD  
LC  
TNC  
TC

Air Sensing Lift Cylinder  
LLW

Compact Cylinder  
LL  
LLR  
LLU  
DP  
DR  
DS  
DT

Block Cylinder  
DBA  
DBC

Control Valve  
BZL  
BZT  
BZX/JZG

Pallet Clamp  
VS  
VT

Expansion Locating Pin  
VL  
VM  
VJ  
VK

Pull Stud Clamp  
FP  
FQ

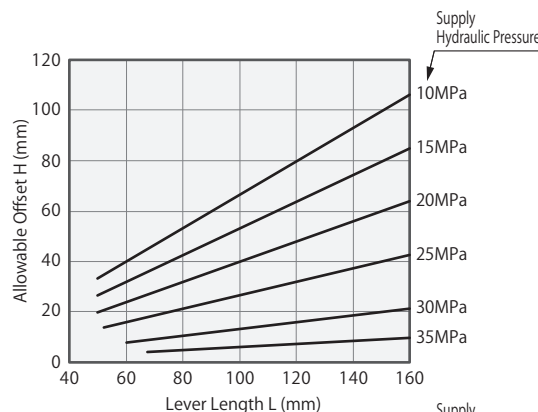
Customized Spring Cylinder  
DWA/DWB

Notes

1. Tables and graphs shown are the relationships between the lever length (mm) for supply hydraulic pressure (MPa) and the allowable offset (mm).
2. Using the lever beyond allowable offset may cause deformation, galling 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.

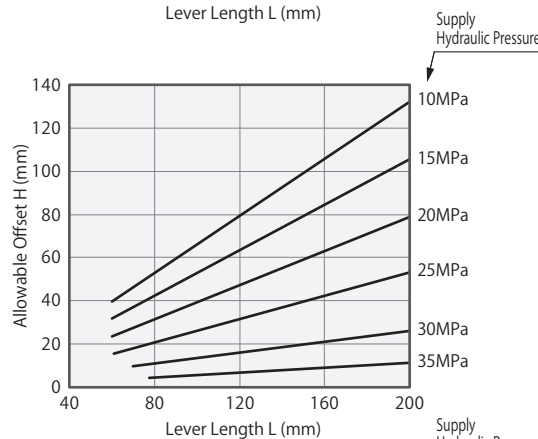
**TMA1600-2**

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	
35	■	■	4	5	6	7	9	10	
32.5	■	■	4	5	7	8	9	11	
30	■	■	8	9	11	13	16	19	21
27.5	■	■	12	13	16	20	24	28	32
25	■	■	16	18	21	27	32	37	43
22.5	17	20	22	27	33	40	47	53	
20	20	24	27	32	40	48	56	64	
17.5	23	28	31	37	47	56	65	74	
15	27	32	36	43	53	64	74	85	
12.5	30	36	40	48	60	72	84	96	
10	33	40	45	53	66	80	93	106	



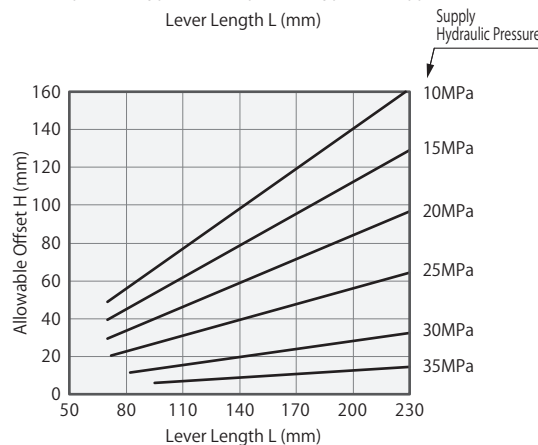
**TMA2500-2**

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	
35	■	■	4	6	7	8	9	11	
32.5	■	■	5	7	8	9	11	13	
30	■	■	9	10	13	16	19	21	26
27.5	■	■	14	15	20	24	28	32	40
25	■	■	18	20	26	32	37	42	53
22.5	20	23	26	33	40	46	53	66	
20	24	28	31	40	48	56	63	79	
17.5	28	32	36	46	56	65	74	93	
15	32	37	41	53	63	74	85	106	
12.5	36	42	46	59	71	83	95	119	
10	40	46	51	66	79	93	106	132	



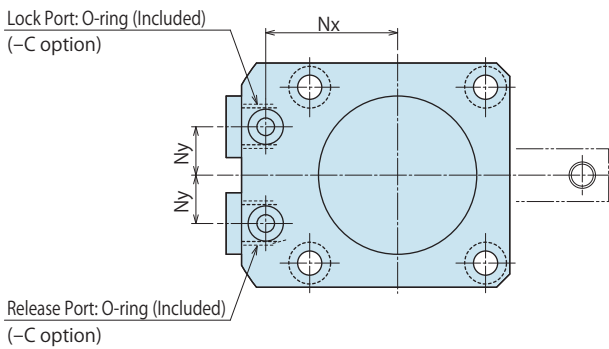
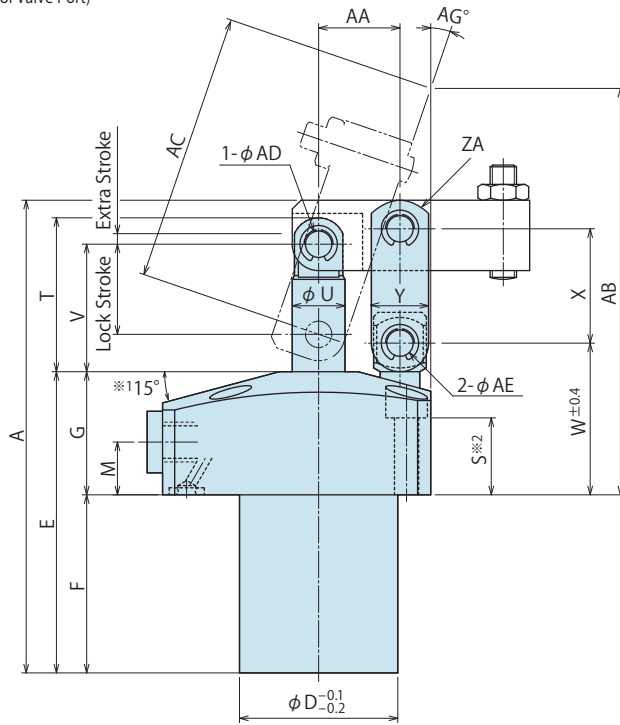
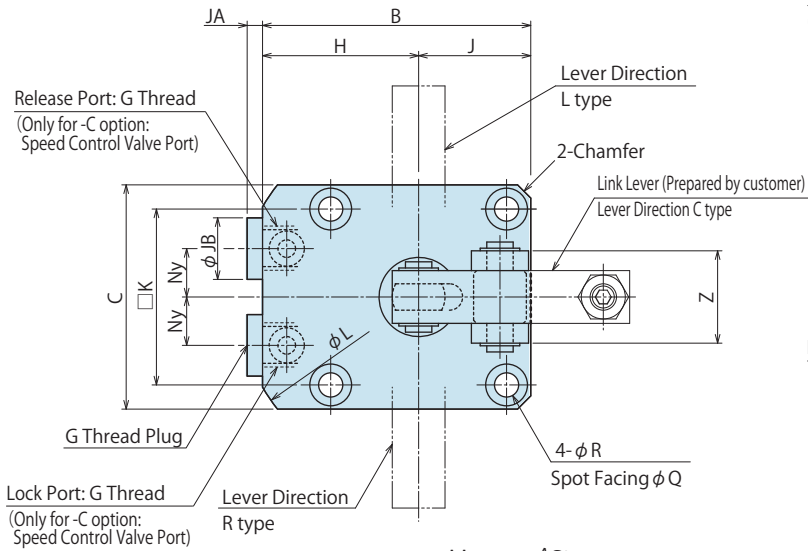
**TMA3200-2**

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)								
	Lever Length L (mm)								
	L=70	L=80	L=95	L=100	L=130	L=160	L=200	L=230	
35	■	■	6	6	8	10	13	14	
32.5	■	■	7	7	9	11	14	16	
30	■	■	13	14	18	22	28	32	
27.5	■	■	17	20	21	27	34	42	48
25	■	■	22	27	28	36	45	56	65
22.5	25	28	33	35	46	56	70	81	
20	29	34	40	42	55	67	84	97	
17.5	34	39	47	49	64	79	98	113	
15	39	45	53	56	73	90	112	129	
12.5	44	50	60	63	82	101	126	145	
10	49	56	67	70	91	112	140	161	



External Dimensions

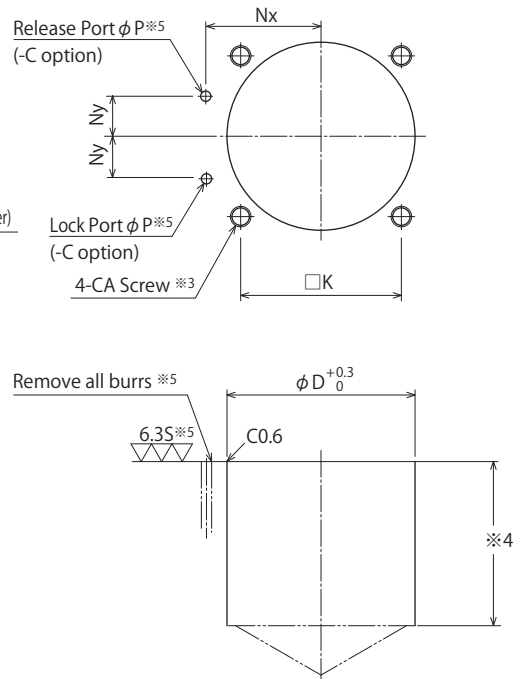
C : Gasket Option (With G Thread Plug)  
 ※The drawing shows the locked state of TMA-2CC.



Notes

- ※ 1. Flange inclination angle is 12° only for TMA1000.
- ※ 2. Mounting bolts are not provided. Customer should prepare based on dimension "S".
- 1. Please use the pin supplied (equivalent to phi ADf6, phi AEf6, HRC60) for mounting pin for lever.

Machining Dimensions of Mounting Area

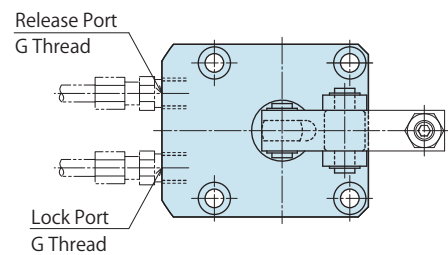


Notes

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

Piping Method

B : Piping Option (G Thread)  
 ※The drawing shows the locked state of TMA-2BC.



## External Dimensions and Machining Dimensions for Mounting

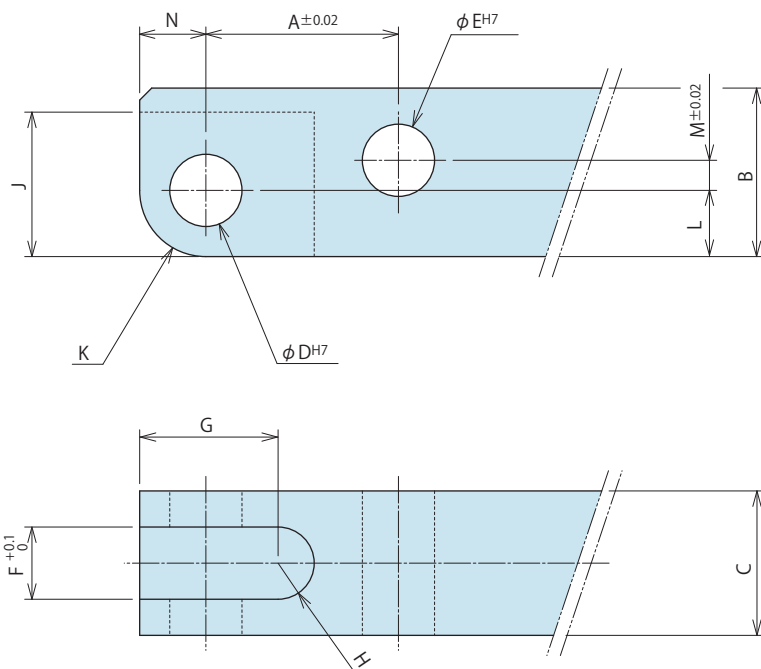
(mm)

Model No.	TMA0250-2□□	TMA0400-2□□	TMA0600-2□□	TMA1000-2□□	TMA1600-2□□	TMA2500-2□□	TMA3200-2□□
Full Stroke	20.5	23.5	26	29.5	35	41	49
Lock Stroke	17.5	20.5	23	26.5	32	38	46
Extra Stroke	3	3	3	3	3	3	3
A	87	97.5	108.5	122.5	151	175.5	205
B	54	61	69	82.5	94.5	109.5	127
C	45	51	60	73	85	100	120
D	33	36	43	48	60	70	85
E	53.5	58.5	63	68.5	84	96.5	111
F	27.5	30.5	33	35.5	46	54.5	61
G	26	28	30	33	38	42	50
H	31.5	35.5	39	46	52	59.5	67
J	22.5	25.5	30	36.5	42.5	50	60
K	34	40	47	57	65	75	88
L	73	81	88	103	116	136	147
M	11	12	13	14	16	17	19
Nx	26	30	33.5	40	45	52.5	60
Ny	9	10	12	15	16	18.5	20
P	3	3	3	3	5	5	5
Q	9	9	11	14	17.5	20	20
R	5.5	5.5	6.8	9	11	14	14
S	15.5	16.5	16	17.5	17.5	18	24
T	30.5	35	37.5	45	55	64.5	77
U	10	12	14	18	22	28	32
V	25	29	31.5	37	45	52	62
W	31.5	34.5	37.5	42	49	54.5	64
X	22	26	30	35.5	43.5	52.5	64
Y	13	13	16	19	25	28	32
Z	21	21	28	37	40	49	64
ZA	R7.5	R7.5	R10	R12	R15	R16	R18
Chamfer	3	3	3	4	5	8	(φ147)
AA	16	18.5	21	24.5	30	36	44
AB	78.7	92.4	103.9	118.4	131.8	148.5	173.6
AC	50.2	61.2	71.7	83	90.8	104.6	122.5
AD	6	6	6	8	10	12	15
AE	6	6	8	10	12	15	18
AG	20.2	18.9	19.9	20.5	21.5	22.4	23.1
CA (Nominal × Pitch)	M5×0.8	M5×0.8	M6×1	M8×1.25	M10×1.5	M12×1.75	M12×1.75
JA	3	3	3	3	3.5	3.5	3.5
JB	14	14	14	14	19	19	19
G Thread	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G1/4
O-ring (-C option)	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
  - SFA
  - SFC
- Swing Clamp
  - LHA
  - LHC
  - LHS
  - LHW
  - LT/LG
  - TLA-2
  - TLB-2
  - TLA-1
- Link Clamp
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2**
  - TMA-1
- Work Support
  - LD
  - LC
  - TNC
  - TC
- Air Sensing Lift Cylinder
  - LLW
- Compact Cylinder
  - LL
  - LLR
  - LLU
  - DP
  - DR
  - DS
  - DT
- Block Cylinder
  - DBA
  - DBC
- Control Valve
  - BZL
  - BZT
  - BZX/JZG
- Pallet Clamp
  - VS
  - VT
- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK
- Pull Stud Clamp
  - FP
  - FQ
- Customized Spring Cylinder
  - DWA/DWB

● Link Lever Design Dimension

※ Reference for designing link lever.



● Calculation List of Link Lever Design Dimension

Corresponding Model No.	TMA0250	TMA0400	TMA0600	TMA1000	TMA1600	TMA2500	TMA3200
A	16	18.5	21	24.5	30	36	44
B	14	16	20	25	32	38	45
C	12 <sup>0</sup> <sub>-0.3</sub>	12 <sup>0</sup> <sub>-0.3</sub>	16 <sup>0</sup> <sub>-0.3</sub>	19 <sup>0</sup> <sub>-0.3</sub>	22 <sup>0</sup> <sub>-0.3</sub>	25 <sup>0</sup> <sub>-0.3</sub>	32 <sup>0</sup> <sub>-0.4</sub>
D	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>
E	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>	18 <sup>+0.018</sup> <sub>0</sub>
F	6	6	8	10	11	13	16
G	11.5	13	12.5	16	20	24	28
H	R3	R3	R4	R5	R5.5	R6.5	R8
J	12	13	13	17.5	22	26	30.5
K	R5.5	R6	R6	R8	R10	R11	R13
L	5.5	6	6	8	10	11	13
M	2.5	3.5	6	7.5	9.5	13	16
N	5.5	6	6	8	10	11	13

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. Please use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the mounting pin for lever.  
(Please refer to each external dimension of TMA for the dimensions φAD and φAE.)

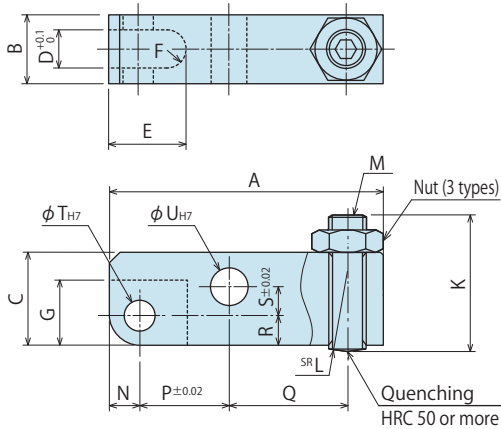
## Accessories : Link Lever (LZ-LJ3)

### Model No. Indication

# LZ 048 0 - LJ3

Size (Refer to the graph on the right)

Design No. (Revision Number)



Model No.	LZ0400-LJ3	LZ0480-LJ3	LZ0550-LJ3	LZ0650-LJ3	LZ0750-LJ3	LZ0900-LJ3	LZ1050-LJ3
Corresponding Model No.	TMA0250	TMA0400	TMA0600	TMA1000	TMA1600	TMA2500	TMA3200
A	48	54	64	74.5	88.5	102.5	125
B	12 <sup>-0.3</sup>	12 <sup>-0.3</sup>	16 <sup>-0.3</sup>	19 <sup>-0.3</sup>	22 <sup>-0.3</sup>	25 <sup>-0.3</sup>	32 <sup>-0.4</sup>
C	14	16	20	25	32	38	45
D	6	6	8	10	11	13	16
E	14.5	16	16.5	21	25.5	30.5	36
F	R3	R3	R4	R5	R5.5	R6.5	R8
G	12	13	13	17.5	22	26	30.5
K	23	26	32	39	47	56	65
L	10	10	15	20	30	45	60
M	M6×1	M6×1	M8×1.25	M10×1.5	M12×1.75	M16×2	M20×2.5
N	5.5	6	6	8	10	11	13
P	16	18.5	21	24.5	30	36	44
Q	20.5	23.5	29	32	37.5	41.5	51
R	5.5	6	6	8	10	11	13
S	2.5	3.5	6	7.5	9.5	13	16
T	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>
U	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>	18 <sup>+0.018</sup> <sub>0</sub>

- Notes
1. Material S45C
  2. Please use the attached pin (equivalent to φ ADf6, φ AEF6, HRC60) as the mounting pin for lever.

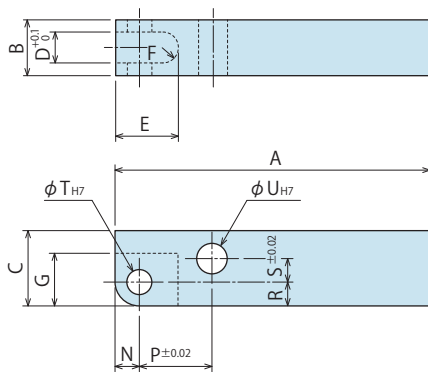
## Accessories : Material Link Lever (LZ-LJ2)

### Model No. Indication

# LZ 048 0 - LJ2

Size (Refer to the graph on the right)

Design No. (Revision Number)



Model No.	LZ0400-LJ2	LZ0480-LJ2	LZ0550-LJ2	LZ0650-LJ2	LZ0750-LJ2	LZ0900-LJ2	LZ1050-LJ2
Corresponding Model No.	TMA0250	TMA0400	TMA0600	TMA1000	TMA1600	TMA2500	TMA3200
A	75	85	90	105	110	160	220
B	12 <sup>-0.3</sup>	12 <sup>-0.3</sup>	16 <sup>-0.3</sup>	19 <sup>-0.3</sup>	22 <sup>-0.3</sup>	25 <sup>-0.3</sup>	32 <sup>-0.4</sup>
C	14	16	20	25	32	38	45
D	6	6	8	10	11	13	16
E	14.5	16	16.5	21	25.5	30.5	36
F	R3	R3	R4	R5	R5.5	R6.5	R8
G	12	13	13	17.5	22	26	30.5
N	5.5	6	6	8	10	11	13
P	16	18.5	21	24.5	30	36	44
R	5.5	6	6	8	10	11	13
S	2.5	3.5	6	7.5	9.5	13	16
T	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>
U	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>	18 <sup>+0.018</sup> <sub>0</sub>

- Notes
1. Material S45C
  2. If necessary, the front end should be additionally machined.
  3. Please use the attached pin (equivalent to φ ADf6, φ AEF6, HRC60) as the mounting pin for lever.

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic UnitManual Operation  
Accessories

Cautions / Others

Hole Clamp

SFA

SFC

Swing Clamp

LHA

LHC

LHS

LHW

LT/LG

TLA-2

TLB-2

TLA-1

Link Clamp

LKA

LKC

LKW

LM/LJ

TMA-2

TMA-1

Work Support

LD

LC

TNC

TC

Air Sensing  
Lift Cylinder

LLW

Compact Cylinder

LL

LLR

LLU

DP

DR

DS

DT

Block Cylinder

DBA

DBC

Control Valve

BZL

BZT

BZX/JZG

Pallet Clamp

VS

VT

Expansion  
Locating Pin

VL

VM

VJ

VK

Pull Stud Clamp

FP

FQ

Customized  
Spring Cylinder

DWA/DWB



# Hydraulic Single Action Link Clamp

Model TMA-1

High Pressure (3.5~35MPa)

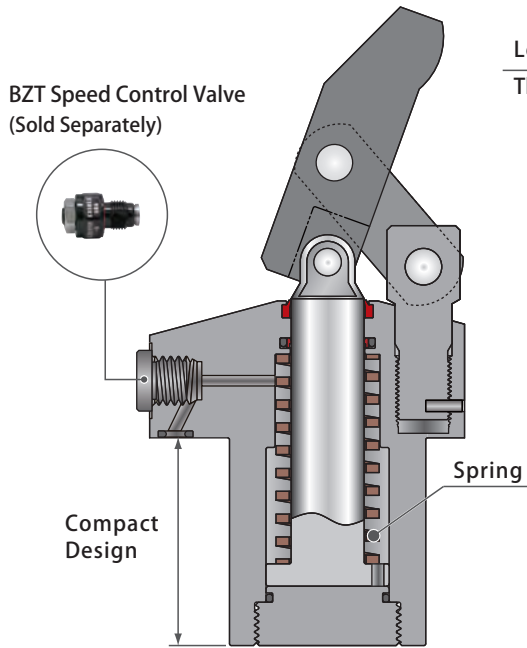
High Power • Compact Clamp



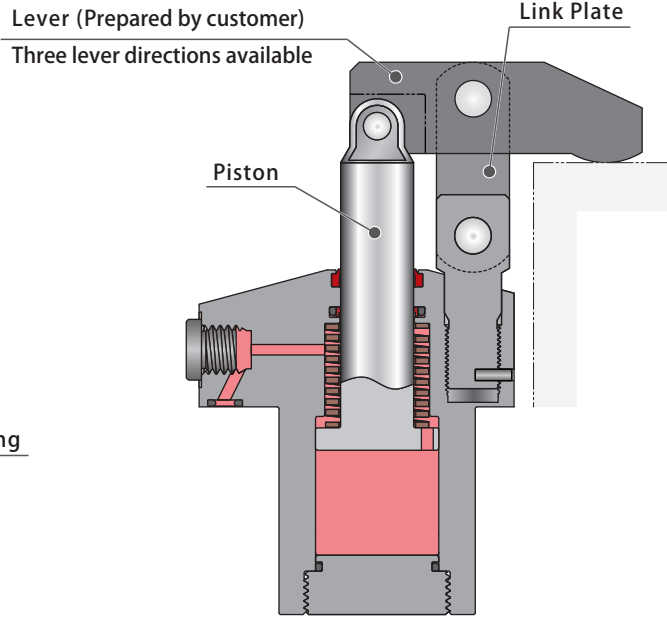
## Index

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Performance Curve	
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• Speed Control Valve•Plug	P.727
• Manifold Block (Common Items of Other Models)	P.1027
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• Notes for Hydraulic Link Clamps	P.543
• Cautions (Common)	P.1043
• Installation Notes • Hydraulic Fluid List • Notes on Hydraulic Cylinder Speed Control Circuit	
• Notes on Handling • Maintenance/Inspection • Warranty	

**Action Description**



**When releasing**  
Cut off hydraulic supply,  
release action is done by spring.



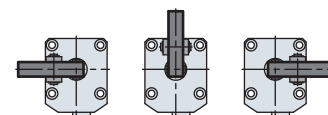
**When locking**  
When supplying oil to oil port,  
do the locking action.

**Long Life (With Use of Oil Bath)**

Spring chamber is sealed from the outside atmosphere.  
Since the coolant is prevented from entering inside the cylinder, corrosion is eliminated.  
Also, cumbersome vent port isn't required.

**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.

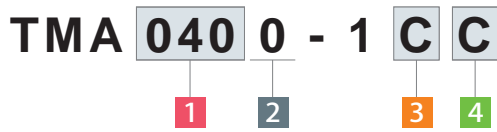
**Able to Attach Speed Control Valve Directly**

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

High-Power Series
Pneumatic Series
<b>Hydraulic Series</b>
Valve / Coupler Hydraulic Unit
Manual Operation Accessories
Cautions / Others
Hole Clamp
SFA
SFC
Swing Clamp
LHA
LHC
LHS
LHW
LT/LG
TLA-2
TLB-2
TLA-1
<b>Link Clamp</b>
LKA
LKC
LKW
LM/LJ
TMA-2
<b>TMA-1</b>
Work Support
LD
LC
TNC
TC
Air Sensing Lift Cylinder
LLW
Compact Cylinder
LL
LLR
LLU
DP
DR
DS
DT
Block Cylinder
DBA
DBC
Control Valve
BZL
BZT
BZX/JZG
Pallet Clamp
VS
VT
Expansion Locating Pin
VL
VM
VJ
VK
Pull Stud Clamp
FP
FQ
Customized Spring Cylinder
DWA/DWB

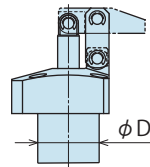
## Model No. Indication

Single Action Model



### 1 Body Size (Clamping Force)

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| <b>025</b> : $\phi D=33\text{mm}$ | <b>160</b> : $\phi D=60\text{mm}$ |
| <b>040</b> : $\phi D=36\text{mm}$ | <b>250</b> : $\phi D=70\text{mm}$ |
| <b>060</b> : $\phi D=43\text{mm}$ | <b>320</b> : $\phi D=85\text{mm}$ |
| <b>100</b> : $\phi D=48\text{mm}$ |                                   |



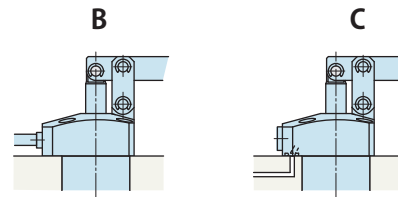
※ Outer diameter ( $\phi D$ ) of the cylinder.

### 2 Design No.

**0** : Revision Number

### 3 Piping Method

- B** : G Thread Piping Option (No Gasket Port)
- C** : Gasket Option (With G Thread Plug)



Piping Option

Gasket Option

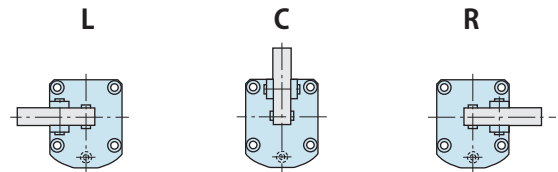
G Thread  
No Gasket Port

With G Thread Plug  
Possible to attach  
speed control valve

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

### 4 Lever Direction

- L** : Left
- C** : Center
- R** : Right

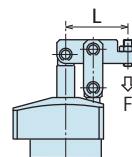


※ This images show the lever direction  
when the piping port is placed in front of you.

## Specifications

Model No.	TMA0250-1□□	TMA0400-1□□	TMA0600-1□□	TMA1000-1□□	TMA1600-1□□	TMA2500-1□□	TMA3200-1□□
Cylinder Area for Locking cm <sup>2</sup>	0.785	1.131	2.011	3.142	4.909	6.158	8.042
Clamping Force (Calculation Formula) ※1 kN	$F = \frac{1.13 \times P - 1.71}{L - 16}$	$F = \frac{1.88 \times P - 3.13}{L - 18.5}$	$F = \frac{3.80 \times P - 4.04}{L - 21}$	$F = \frac{6.93 \times P - 6.35}{L - 24.5}$	$F = \frac{13.25 \times P - 13.26}{L - 30}$	$F = \frac{19.95 \times P - 19.93}{L - 36}$	$F = \frac{31.85 \times P - 28.24}{L - 44}$
Full Stroke mm	20.5	23.5	26	29.5	35	41	49
Lock Stroke mm	17.5	20.5	23	26.5	32	38	46
Extra Stroke mm	3	3	3	3	3	3	3
Cylinder Capacity cm <sup>3</sup>	1.6	2.7	5.2	9.3	17.2	25.2	39.4
Return Spring Force kN	0.04 ~ 0.13	0.05 ~ 0.21	0.09 ~ 0.23	0.14 ~ 0.31	0.23 ~ 0.52	0.27 ~ 0.64	0.33 ~ 0.74
Max. Operating Pressure MPa	35.0						
Min. Operating Pressure ※2 MPa	3.5						
Operating Temperature °C	0~70						
Mass ※3 kg	0.7	0.9	1.4	2.2	3.6	5.6	9.2

- Notes
- ※ 1. F : Clamping Force (kN) , P : Supply Hydraulic Pressure (MPa) , L : Distance between the piston center and the clamping point (mm).
  - ※ 2. Minimum pressure to operate the clamp with no load.
  - ※ 3. Mass of single clamp without the link lever.



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

- Hole Clamp
  - SFA
  - SFC

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

- Link Clamp
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2
  - TMA-1**

- Work Support
  - LD
  - LC
  - TNC
  - TC

- Air Sensing Lift Cylinder
  - LLW

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

- Block Cylinder
  - DBA
  - DBC

- Control Valve
  - BZL
  - BZT
  - BZX/JZG

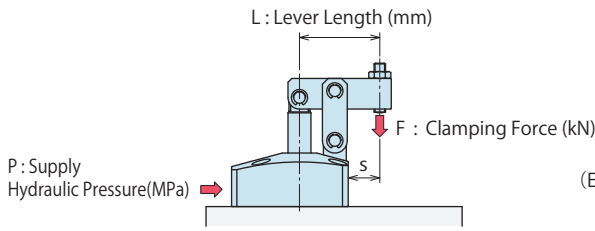
- Pallet Clamp
  - VS
  - VT

- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK

- Pull Stud Clamp
  - FP
  - FQ

- Customized Spring Cylinder
  - DWA/DWB

## Clamping Force Curve

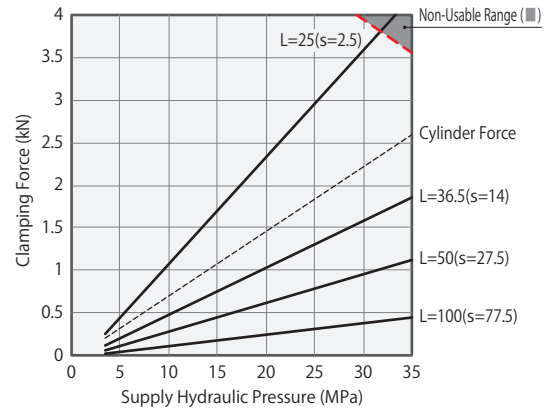


### Applicable Model

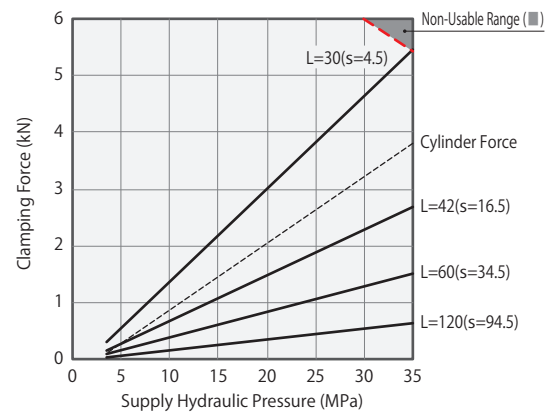
Single Action Model  
**TMA** 0 - 1 BC LCR  
**1** Body Size

(Example) When using TMA1000-1  
 Supply Hydraulic Pressure 30 MPa, Lever Length L=56.5 mm  
 Clamping force is about 6.3 kN.

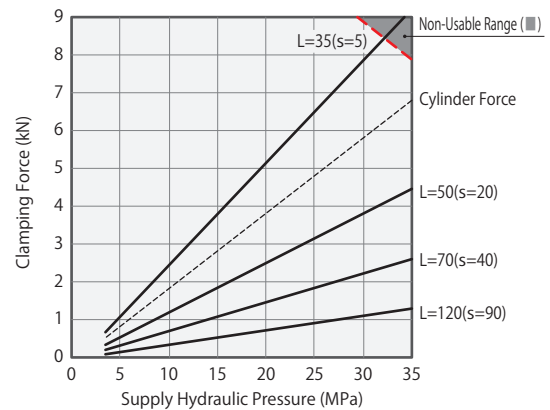
TMA0250-1		Clamping Force Calculation Formula <sup>※1</sup> (kN) $F = (1.13 \times P - 1.71) / (L - 16)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100		
35.0	2.6		2.7	1.8	1.6	1.1	0.9	0.6	0.5	27	
32.5	2.4		2.5	1.7	1.5	1.0	0.8	0.5	0.4	25.5	
30.0	2.3		3.6	2.3	1.6	1.3	0.9	0.7	0.5	24.5	
27.5	2.1		3.3	2.1	1.4	1.2	0.9	0.7	0.5	23.5	
25.0	1.9		2.9	1.9	1.3	1.1	0.8	0.6	0.4	22.5	
22.5	1.7		2.6	1.7	1.2	1.0	0.7	0.5	0.4	22.5	
20.0	1.5		2.3	1.5	1.0	0.9	0.6	0.5	0.3	22.5	
17.5	1.3		2.0	1.3	0.9	0.8	0.5	0.4	0.3	22.5	
15.0	1.1		1.7	1.1	0.7	0.6	0.4	0.3	0.2	22.5	
12.5	0.9		1.4	0.9	0.6	0.5	0.4	0.3	0.2	22.5	
10.0	0.7		1.1	0.7	0.5	0.4	0.3	0.2	0.1	22.5	
7.5	0.5		0.8	0.5	0.3	0.3	0.2	0.2	0.1	22.5	
5.0	0.3		0.4	0.3	0.2	0.2	0.1	0.1	0.0	22.5	
3.5	0.2		0.2	0.2	0.1	0.1	0.0	0.0	0.0	22.5	
Max. Operating Pressure (MPa)		31.7	35.0	35.0	35.0	35.0	35.0	35.0	35.0		



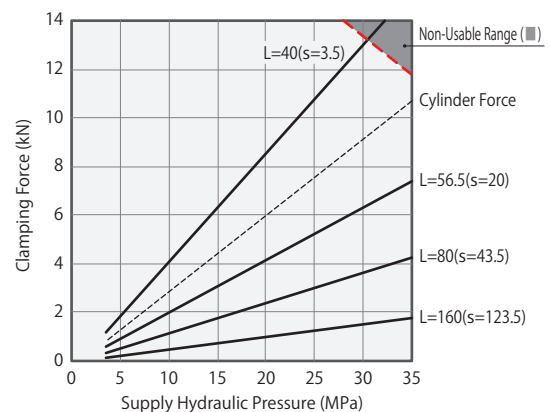
TMA0400-1		Clamping Force Calculation Formula <sup>※1</sup> (kN) $F = (1.88 \times P - 3.13) / (L - 18.5)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120		
35.0	3.8		3.8	2.7	2.0	1.5	1.0	0.8	0.6	30.5	
32.5	3.5		5.0	3.5	2.5	1.8	1.4	0.9	0.7	29	
30.0	3.2		4.6	3.2	2.3	1.7	1.3	0.9	0.7	27.5	
27.5	2.9		4.2	2.9	2.1	1.5	1.2	0.8	0.6	26.5	
25.0	2.6		3.8	2.7	1.9	1.4	1.1	0.7	0.5	25.5	
22.5	2.4		3.4	2.4	1.7	1.2	0.9	0.6	0.5	25.5	
20.0	2.1		3.0	2.1	1.5	1.1	0.8	0.6	0.4	25.5	
17.5	1.8		2.6	1.8	1.3	0.9	0.7	0.5	0.4	25.5	
15.0	1.5		2.2	1.5	1.1	0.8	0.6	0.4	0.3	25.5	
12.5	1.2		1.8	1.2	0.9	0.6	0.5	0.3	0.2	25.5	
10.0	0.9		1.4	0.9	0.7	0.5	0.4	0.3	0.2	25.5	
7.5	0.7		1.0	0.7	0.5	0.3	0.3	0.2	0.1	25.5	
5.0	0.4		0.5	0.4	0.3	0.2	0.2	0.1	0.1	25.5	
3.5	0.2		0.3	0.2	0.1	0.1	0.1	0.0	0.0	25.5	
Max. Operating Pressure (MPa)		34.9	35.0	35.0	35.0	35.0	35.0	35.0	35.0		



TMA0600-1		Clamping Force Calculation Formula <sup>※1</sup> (kN) $F = (3.80 \times P - 4.04) / (L - 21)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (mm)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120		
35.0	6.8		6.8	4.4	3.3	2.6	2.2	1.6	1.3	37.5	
32.5	6.3		6.3	4.1	3.1	2.4	2.0	1.5	1.2	35.5	
30.0	5.8		7.9	5.8	3.8	2.8	2.2	1.9	1.4	33.5	
27.5	5.3		7.2	5.3	3.5	2.6	2.1	1.7	1.3	32	
25.0	4.8		6.5	4.8	3.1	2.3	1.9	1.5	1.2	30.5	
22.5	4.3		5.8	4.3	2.8	2.1	1.7	1.4	1.0	30	
20.0	3.8		5.1	3.8	2.5	1.8	1.5	1.2	0.9	30	
17.5	3.3		4.5	3.3	2.2	1.6	1.3	1.1	0.8	30	
15.0	2.8		3.8	2.8	1.8	1.4	1.1	0.9	0.7	30	
12.5	2.3		3.1	2.3	1.5	1.1	0.9	0.7	0.6	30	
10.0	1.8		2.4	1.8	1.2	0.9	0.7	0.6	0.4	30	
7.5	1.3		1.7	1.3	0.8	0.6	0.5	0.4	0.3	30	
5.0	0.8		1.1	0.8	0.5	0.4	0.3	0.3	0.2	30	
3.5	0.5		0.7	0.5	0.3	0.2	0.2	0.2	0.1	30	
Max. Operating Pressure (MPa)		32.1	35.0	35.0	35.0	35.0	35.0	35.0	35.0		



TMA1000-1		Clamping Force Calculation Formula <sup>※1</sup> (kN) $F = (6.93 \times P - 6.35) / (L - 24.5)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)						Non-Usable Range (mm)	Min. Lever Length (L) (mm)		
		Lever Length L (mm)									
		L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160		
35.0	10.7		9.3	7.4	4.3	3.1	2.5	2.0	1.7	45	
32.5	9.9		8.6	6.8	3.9	2.9	2.3	1.9	1.6	42	
30.0	9.1		13.0	7.9	6.3	3.6	2.7	2.1	1.7	39.5	
27.5	8.4		11.9	7.2	5.8	3.3	2.4	1.9	1.6	38	
25.0	7.6		10.8	6.5	5.2	3.0	2.2	1.7	1.4	36.5	
22.5	6.8		9.7	5.9	4.7	2.7	2.0	1.6	1.3	36.5	
20.0	6.0		8.5	5.2	4.1	2.4	1.8	1.4	1.1	36.5	
17.5	5.2		7.4	4.5	3.6	2.1	1.5	1.2	1.0	36.5	
15.0	4.4		6.3	3.8	3.1	1.8	1.3	1.0	0.8	36.5	
12.5	3.6		5.2	3.1	2.5	1.4	1.1	0.8	0.7	36.5	
10.0	2.9		4.1	2.5	2.0	1.1	0.8	0.7	0.5	36.5	
7.5	2.1		2.9	1.8	1.4	0.8	0.6	0.5	0.4	36.5	
5.0	1.3		1.8	1.1	0.9	0.5	0.4	0.3	0.2	36.5	
3.5	0.8		1.2	0.7	0.6	0.3	0.2	0.2	0.1	36.5	
Max. Operating Pressure (MPa)		30.4	35.0	35.0	35.0	35.0	35.0	35.0	35.0		

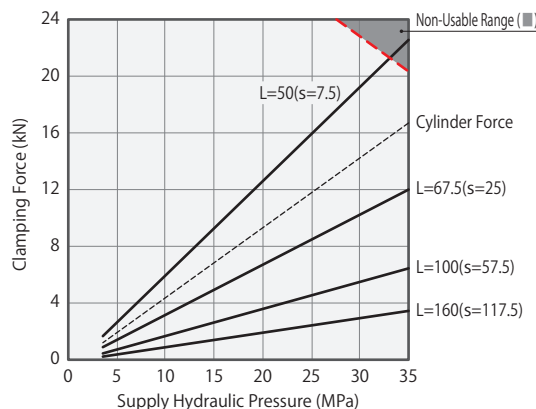


- High-Power Series
- Pneumatic Series
- Hydraulic Series**
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
  - SFA
  - SFC
- Swing Clamp
  - LHA
  - LHC
  - LHS
  - LHW
  - LT/LG
  - TLA-2
  - TLB-2
  - TLA-1
- Link Clamp**
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2
  - TMA-1**
- Work Support
  - LD
  - LC
  - TNC
  - TC
- Air Sensing Lift Cylinder
  - LLW
- Compact Cylinder
  - LL
  - LLR
  - LLU
  - DP
  - DR
  - DS
  - DT
- Block Cylinder
  - DBA
  - DBC
- Control Valve
  - BZL
  - BZT
  - BZX/JZG
- Pallet Clamp
  - VS
  - VT
- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK
- Pull Stud Clamp
  - FP
  - FQ
- Customized Spring Cylinder
  - DWA/DWB

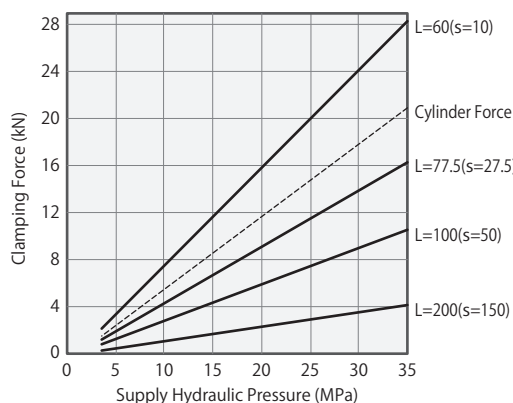
Notes

1. Tables and graphs shown are the relationships between the clamping force (kN) and supply hydraulic pressure (MPa).
  2. Cylinder output (when L=0) cannot be calculated from the calculation formula of clamping force.
  3. Using in the non-usable range may damage the clamp and lead to fluid leakage.
- ※1. F: Clamping Force (kN), P: Supply Hydraulic Pressure (MPa), L: Lever Length (mm)

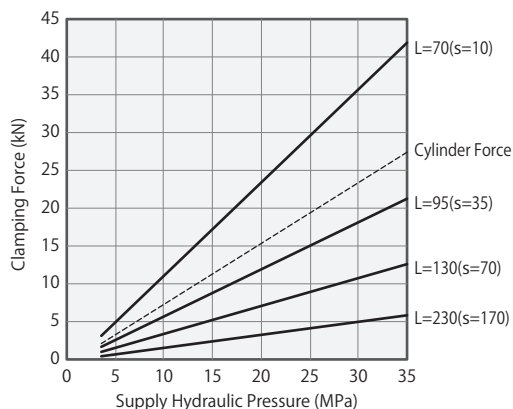
TMA1600-1		Clamping Force Calculation Formula ※1 (kN) $F = (13.25 \times P - 13.26) / (L - 30)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (■)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160		
35.0	16.7		15.0	12.0	9.0	6.4	5.0	4.1	3.5	52.5	
32.5	15.4	20.9	13.9	11.1	8.3	6.0	4.6	3.8	3.2	49.5	
30.0	14.2	19.2	12.8	10.2	7.7	5.5	4.3	3.5	3.0	47	
27.5	13.0	17.6	11.7	9.4	7.0	5.0	3.9	3.2	2.7	45	
25.0	11.8	15.9	10.6	8.5	6.4	4.5	3.5	2.9	2.4	43	
22.5	10.5	14.2	9.5	7.6	5.7	4.1	3.2	2.6	2.2	42.5	
20.0	9.3	12.6	8.4	6.7	5.0	3.6	2.8	2.3	1.9	42.5	
17.5	8.1	10.9	7.3	5.8	4.4	3.1	2.4	2.0	1.7	42.5	
15.0	6.9	9.3	6.2	4.9	3.7	2.6	2.1	1.7	1.4	42.5	
12.5	5.6	7.6	5.1	4.1	3.0	2.2	1.7	1.4	1.2	42.5	
10.0	4.4	6.0	4.0	3.2	2.4	1.7	1.3	1.1	0.9	42.5	
7.5	3.2	4.3	2.9	2.3	1.7	1.2	1.0	0.8	0.7	42.5	
5.0	1.9	2.6	1.8	1.4	1.1	0.8	0.6	0.5	0.4	42.5	
3.5	1.2	1.7	1.1	0.9	0.7	0.5	0.4	0.3	0.3	42.5	
Max. Operating Pressure (MPa)		33.1	35.0	35.0	35.0	35.0	35.0	35.0	35.0		



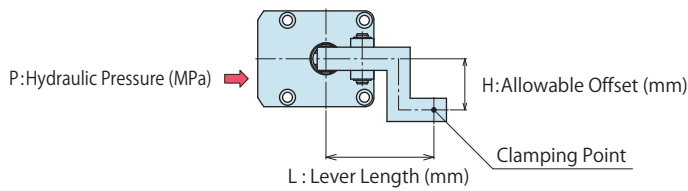
TMA2500-1		Clamping Force Calculation Formula ※1 (kN) $F = (19.95 \times P - 19.93) / (L - 36)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (■)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=60	L=70	L=77.5	L=100	L=120	L=140	L=160	L=200		
35.0	20.9	28.3	20.0	16.3	10.6	8.1	6.5	5.5	4.1	59.5	
32.5	19.4	26.2	18.5	15.1	9.8	7.5	6.0	5.1	3.8	56.5	
30.0	17.8	24.1	17.0	13.9	9.0	6.9	5.6	4.7	3.5	54	
27.5	16.3	22.0	15.5	12.7	8.3	6.3	5.1	4.3	3.2	52	
25.0	14.8	20.0	14.1	11.5	7.5	5.7	4.6	3.9	2.9	50	
22.5	13.2	17.9	12.6	10.3	6.7	5.1	4.1	3.5	2.6	50	
20.0	11.7	15.8	11.1	9.1	5.9	4.5	3.6	3.1	2.3	50	
17.5	10.1	13.7	9.7	7.9	5.1	3.9	3.2	2.7	2.0	50	
15.0	8.6	11.6	8.2	6.7	4.4	3.3	2.7	2.3	1.7	50	
12.5	7.1	9.6	6.7	5.5	3.6	2.7	2.2	1.9	1.4	50	
10.0	5.5	7.5	5.3	4.3	2.8	2.1	1.7	1.4	1.1	50	
7.5	4.0	5.4	3.8	3.1	2.0	1.5	1.2	1.0	0.8	50	
5.0	2.4	3.3	2.3	1.9	1.2	1.0	0.8	0.6	0.5	50	
3.5	1.5	2.1	1.5	1.2	0.8	0.6	0.5	0.4	0.3	50	
Max. Operating Pressure (MPa)		35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0		



TMA3200-1		Clamping Force Calculation Formula ※1 (kN) $F = (31.85 \times P - 28.24) / (L - 44)$									
Hydraulic Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Non-Usable Range (■)	Min. Lever Length (L) (mm)
		Lever Length L (mm)									
		L=70	L=80	L=95	L=100	L=130	L=160	L=200	L=230		
35.0	27.4	41.8	30.2	21.3	19.4	12.6	9.4	7.0	5.8	69.5	
32.5	25.4	38.7	28.0	19.7	18.0	11.7	8.7	6.5	5.4	66.5	
30.0	23.4	35.7	25.8	18.2	16.6	10.8	8.0	5.9	5.0	64	
27.5	21.4	32.6	23.5	16.6	15.1	9.9	7.3	5.4	4.6	61.5	
25.0	19.4	29.5	21.3	15.1	13.7	8.9	6.6	4.9	4.1	60	
22.5	17.4	26.5	19.1	13.5	12.3	8.0	5.9	4.4	3.7	60	
20.0	15.4	23.4	16.9	11.9	10.9	7.1	5.2	3.9	3.3	60	
17.5	13.4	20.4	14.7	10.4	9.4	6.2	4.6	3.4	2.8	60	
15.0	11.4	17.3	12.5	8.8	8.0	5.2	3.9	2.9	2.4	60	
12.5	9.3	14.2	10.3	7.3	6.6	4.3	3.2	2.4	2.0	60	
10.0	7.3	11.2	8.1	5.7	5.2	3.4	2.5	1.9	1.6	60	
7.5	5.3	8.1	5.9	4.1	3.8	2.4	1.8	1.4	1.1	60	
5.0	3.3	5.0	3.6	2.6	2.3	1.5	1.1	0.8	0.7	60	
3.5	2.1	3.2	2.3	1.6	1.5	1.0	0.7	0.5	0.4	60	
Max. Operating Pressure (MPa)		35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0		



## Allowable Offset Graph



(Example) When using TMA1600  
 Supply Hydraulic Pressure 30 MPa, Lever Length L=140 mm  
 Allowable offset is about 20 mm.

### Applicable Model

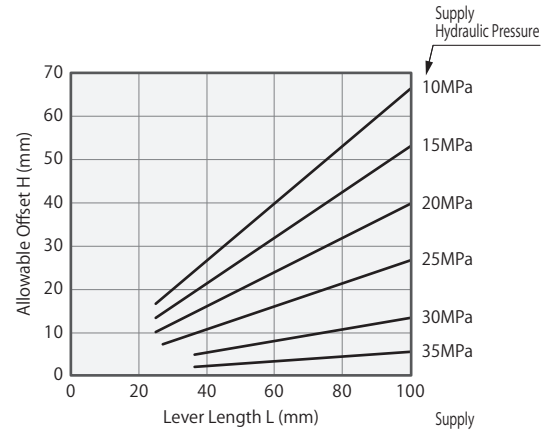
Single Action Model

**TMA** 0 - 1

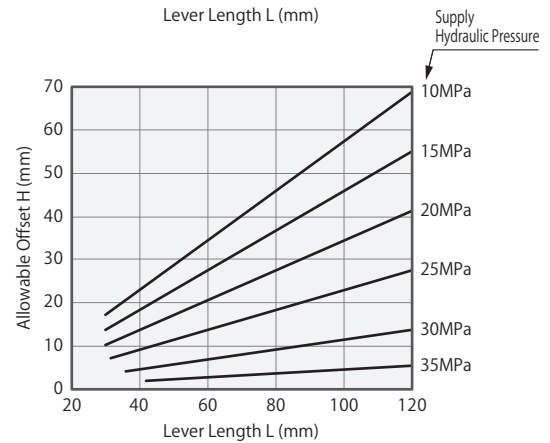
B  
C  
R

1 Body Size

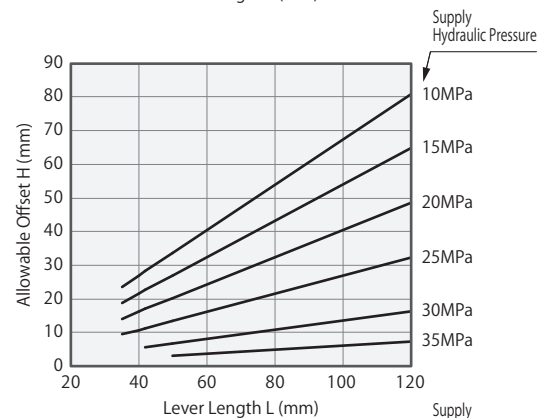
TMA0250-1		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=25	L=30	L=36.5	L=40	L=50	L=60	L=80	L=100	
35	■	■	2	2	3	3	4	5	
32.5	■	■	2	3	3	4	5	7	
30	■	■	5	5	7	8	11	13	
27.5	■	6	7	8	10	12	16	20	
25	■	8	10	11	13	16	21	27	
22.5	8	10	12	13	17	20	27	33	
20	10	12	15	16	20	24	32	40	
17.5	12	14	17	19	23	28	37	46	
15	13	16	19	21	27	32	42	53	
12.5	15	18	22	24	30	36	48	60	
10	17	20	24	27	33	40	53	66	



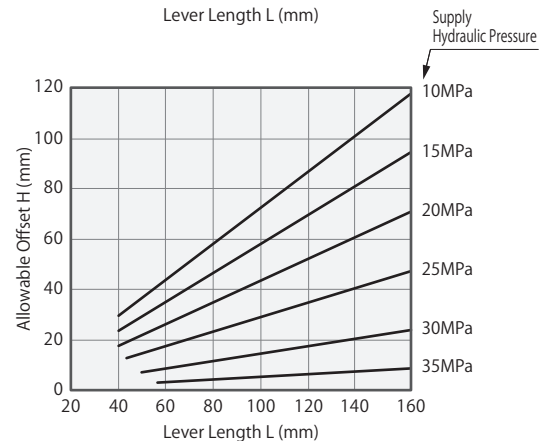
TMA0400-1		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=30	L=35	L=42	L=50	L=60	L=80	L=100	L=120	
35	■	■	2	2	3	4	5	5	
32.5	■	■	2	3	3	5	6	7	
30	■	■	5	6	7	9	11	14	
27.5	■	6	7	9	10	14	17	21	
25	■	8	10	11	14	18	23	28	
22.5	9	10	12	14	17	23	29	34	
20	10	12	14	17	21	28	34	41	
17.5	12	14	17	20	24	32	40	48	
15	14	16	19	23	28	37	46	55	
12.5	15	18	22	26	31	41	52	62	
10	17	20	24	29	34	46	57	69	



TMA0600-1		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=35	L=40	L=50	L=60	L=70	L=80	L=100	L=120	
35	■	■	3	4	4	5	6	7	
32.5	■	■	3	4	5	5	7	8	
30	■	■	7	8	9	11	13	16	
27.5	■	8	10	12	14	16	20	24	
25	9	11	13	16	19	22	27	32	
22.5	12	13	17	20	24	27	34	40	
20	14	16	20	24	28	32	40	48	
17.5	16	19	24	28	33	38	47	57	
15	19	22	27	32	38	43	54	65	
12.5	21	24	30	36	42	48	61	73	
10	24	27	34	40	47	54	67	81	



TMA1000-1		Allowable Offset H (mm) Non-Usable Range (■)							
Hydraulic Pressure (MPa)	Lever Length L (mm)								
	L=40	L=50	L=56.5	L=80	L=100	L=120	L=140	L=160	
35	■	■	3	4	5	6	7	9	
32.5	■	■	4	6	7	9	10	12	
30	■	■	7	8	12	15	18	23	
27.5	■	11	12	18	22	26	31	35	
25	■	15	17	24	29	35	41	47	
22.5	15	18	21	29	37	44	51	59	
20	18	22	25	35	44	53	62	71	
17.5	21	26	29	41	51	62	72	82	
15	24	29	33	47	59	71	82	94	
12.5	26	33	37	53	66	79	93	106	
10	29	37	42	59	73	88	103	118	

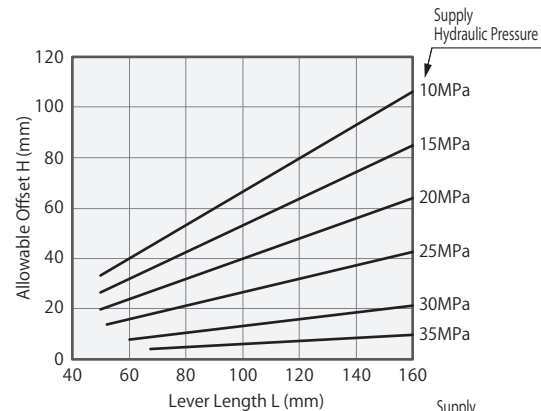


**Notes**

1. Tables and graphs shown are the relationships between the lever length (mm) for supply hydraulic pressure (MPa) and the allowable offset (mm).
2. Using the lever beyond allowable offset may cause deformation, galling 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.

**TMA1600-1**

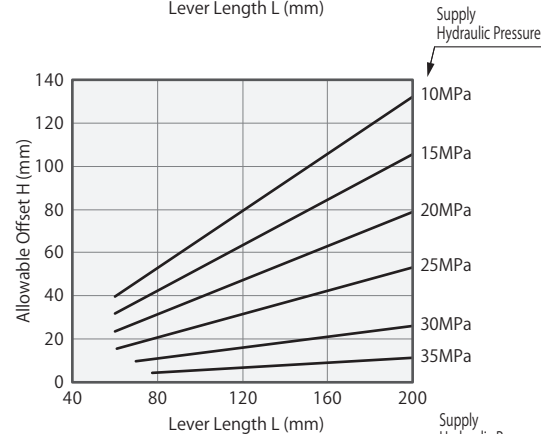
Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)								
	Lever Length L (mm)								
	L=50	L=60	L=67.5	L=80	L=100	L=120	L=140	L=160	
35	■	■	4	5	6	7	9	10	
32.5	■	■	4	5	7	8	9	11	
30	■	■	8	9	11	13	16	19	21
27.5	■	■	12	13	16	20	24	28	32
25	■	■	16	18	21	27	32	37	43
22.5	17	20	22	27	33	40	47	53	
20	20	24	27	32	40	48	56	64	
17.5	23	28	31	37	47	56	65	74	
15	27	32	36	43	53	64	74	85	
12.5	30	36	40	48	60	72	84	96	
10	33	40	45	53	66	80	93	106	



- Hole Clamp
  - SFA
  - SFC
- Swing Clamp
  - LHA
  - LHC
  - LHS
  - LHW
  - LT/LG
  - TLA-2
  - TLB-2
  - TLA-1

**TMA2500-1**

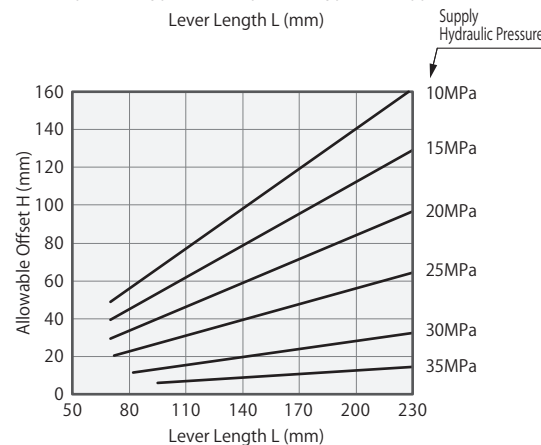
Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)								
	Lever Length L (mm)								
	L=60	L=70	L=77.5	L=100	L=120	L=140	L=160	L=200	
35	■	■	4	6	7	8	9	11	
32.5	■	■	5	7	8	9	11	13	
30	■	■	9	10	13	16	19	21	26
27.5	■	■	14	15	20	24	28	32	40
25	■	■	18	20	26	32	37	42	53
22.5	20	23	26	33	40	46	53	66	
20	24	28	31	40	48	56	63	79	
17.5	28	32	36	46	56	65	74	93	
15	32	37	41	53	63	74	85	106	
12.5	36	42	46	59	71	83	95	119	
10	40	46	51	66	79	93	106	132	



- Link Clamp**
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2
  - TMA-1**
- Work Support
  - LD
  - LC
  - TNC
  - TC
- Air Sensing Lift Cylinder
  - LLW

**TMA3200-1**

Hydraulic Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)								
	Lever Length L (mm)								
	L=70	L=80	L=95	L=100	L=130	L=160	L=200	L=230	
35	■	■	6	6	8	10	13	14	
32.5	■	■	7	7	9	11	14	16	
30	■	■	13	14	18	22	28	32	
27.5	■	■	17	20	21	27	34	42	48
25	■	■	22	27	28	36	45	56	65
22.5	25	28	33	35	46	56	70	81	
20	29	34	40	42	55	67	84	97	
17.5	34	39	47	49	64	79	98	113	
15	39	45	53	56	73	90	112	129	
12.5	44	50	60	63	82	101	126	145	
10	49	56	67	70	91	112	140	161	

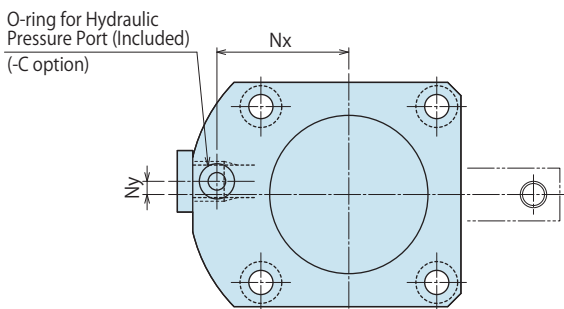
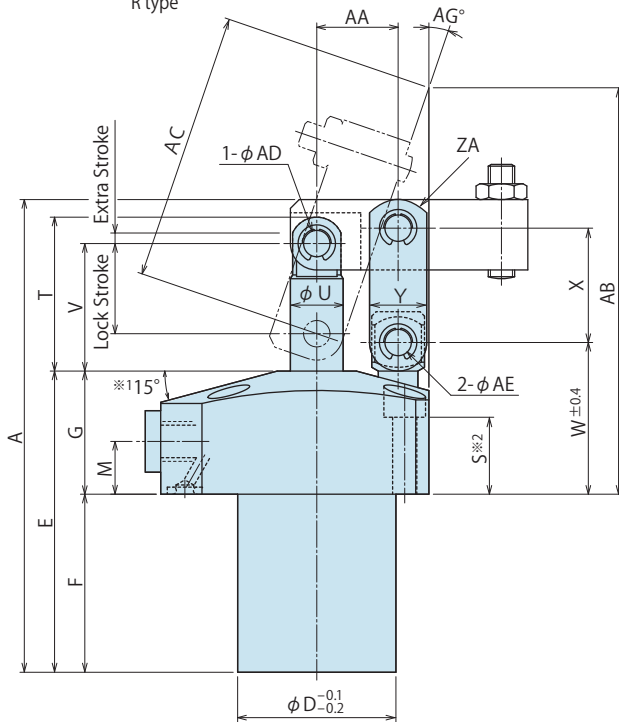
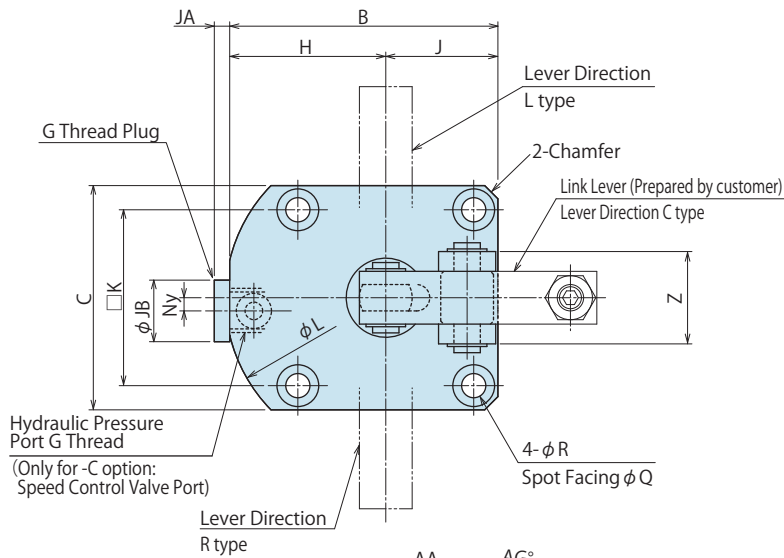


- Compact Cylinder
  - LL
  - LLR
  - LLU
  - DP
  - DR
  - DS
  - DT
- Block Cylinder
  - DBA
  - DBC
- Control Valve
  - BZL
  - BZT
  - BZX/JZG
- Pallet Clamp
  - VS
  - VT
- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK
- Pull Stud Clamp
  - FP
  - FQ
- Customized Spring Cylinder
  - DWA/DWB



## External Dimensions

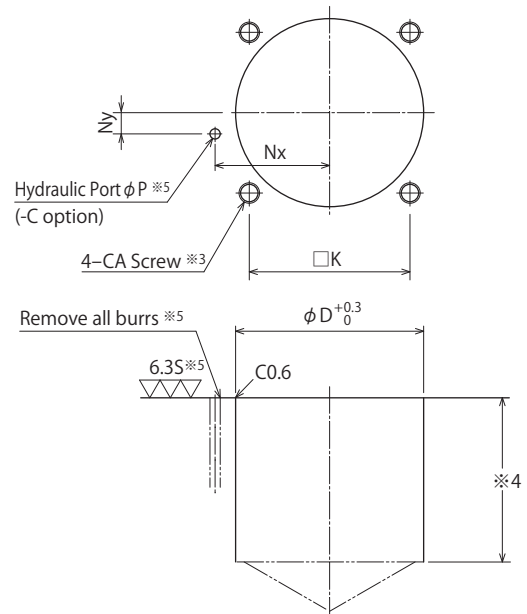
C : Gasket Option (With G Thread Plug)  
 ※The drawing shows the locked state of TMA-1CC.



### Notes

- ※1. Flange inclination angle is 12° only for TMA1000.
- ※2. Mounting bolts are not provided.  
Customer should prepare based on dimension "S".

## Machining Dimensions of Mounting Area

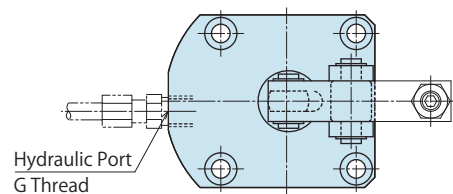


### Notes

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

## Piping Method

B : Piping Option (G Thread)  
 ※The drawing shows the locked state of TMA-1BC.



## External Dimensions and Machining Dimensions for Mounting

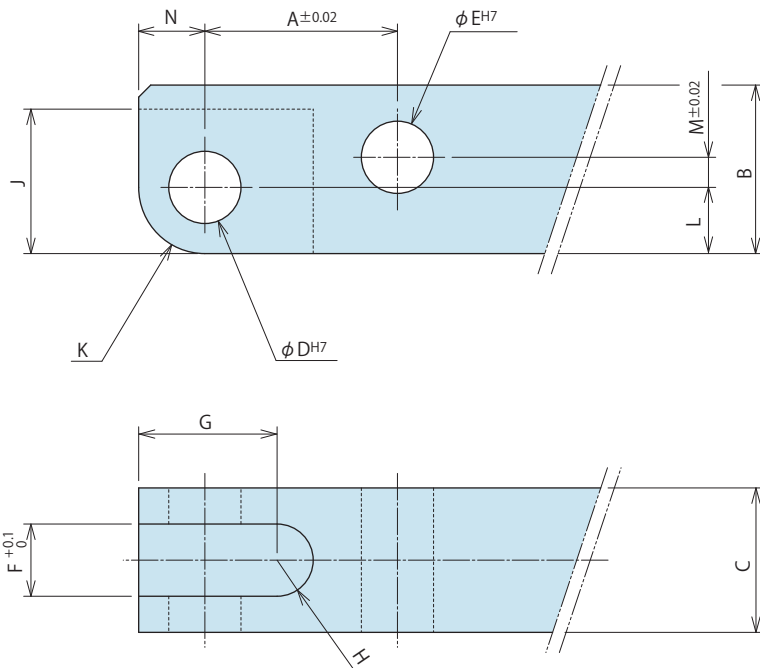
(mm)

Model No.	TMA0250-1□□	TMA0400-1□□	TMA0600-1□□	TMA1000-1□□	TMA1600-1□□	TMA2500-1□□	TMA3200-1□□
Full Stroke	20.5	23.5	26	29.5	35	41	49
Lock Stroke	17.5	20.5	23	26.5	32	38	46
Extra Stroke	3	3	3	3	3	3	3
A	94	107.5	121	140.5	173	202	233
B	54	61	69	82.5	94.5	109.5	127
C	45	51	60	73	85	100	120
D	33	36	43	48	60	70	85
E	60.5	68.5	75.5	86.5	106	123	139
F	34.5	40.5	45.5	53.5	68	81	89
G	26	28	30	33	38	42	50
H	31.5	35.5	39	46	52	59.5	67
J	22.5	25.5	30	36.5	42.5	50	60
K	34	40	47	57	65	75	88
L	68	73	80	97	112	129	147
M	11	12	13	14	16	17	19
Nx	26	30	33.5	40	45	52.5	60
Ny	5	0	0	0	0	0	0
P	3	3	3	3	5	5	5
Q	9	9	11	14	17.5	20	20
R	5.5	5.5	6.8	9	11	14	14
S	15.5	16.5	16	17.5	17.5	18	24
T	30.5	35	37.5	45	55	64.5	77
U	10	12	16	20	25	28	32
V	25	29	31.5	37	45	52	62
W	31.5	34.5	37.5	42	49	54.5	64
X	22	26	30	35.5	43.5	52.5	64
Y	13	13	16	19	25	28	32
Z	21	21	28	37	40	49	64
ZA	R7.5	R7.5	R10	R12	R15	R16	R18
Chamfer	3	3	(φ80)	(φ97)	(φ112)	(φ129)	(φ147)
AA	16	18.5	21	24.5	30	36	44
AB	78.7	92.4	103.9	118.4	131.8	148.5	173.6
AC	50.2	61.2	71.7	83	90.8	104.6	122.5
AD	6	6	6	8	10	12	15
AE	6	6	8	10	12	15	18
AG	20.2	18.9	19.9	20.5	21.5	22.4	23.1
CA (Nominal × Pitch)	M5×0.8	M5×0.8	M6×1	M8×1.25	M10×1.5	M12×1.75	M12×1.75
JA	3	3	3	3	3.5	3.5	3.5
JB	14	14	14	14	19	19	19
G Thread	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	G1/4
O-ring (-C option)	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7

- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Hole Clamp
  - SFA
  - SFC
- Swing Clamp
  - LHA
  - LHC
  - LHS
  - LHW
  - LT/LG
  - TLA-2
  - TLB-2
  - TLA-1
- Link Clamp
  - LKA
  - LKC
  - LKW
  - LM/LJ
  - TMA-2
  - TMA-1**
- Work Support
  - LD
  - LC
  - TNC
  - TC
- Air Sensing Lift Cylinder
  - LLW
- Compact Cylinder
  - LL
  - LLR
  - LLU
  - DP
  - DR
  - DS
  - DT
- Block Cylinder
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  - DBC
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  - BZL
  - BZT
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- Expansion Locating Pin
  - VL
  - VM
  - VJ
  - VK
- Pull Stud Clamp
  - FP
  - FQ
- Customized Spring Cylinder
  - DWA/DWB

**Link Lever Design Dimension**

※Refer to it for designing the link lever.



**Calculation List of Link Lever Design Dimension**

Corresponding Model No.	TMA0250	TMA0400	TMA0600	TMA1000	TMA1600	TMA2500	TMA3200
A	16	18.5	21	24.5	30	36	44
B	14	16	20	25	32	38	45
C	12 <sup>0</sup> <sub>-0.3</sub>	12 <sup>0</sup> <sub>-0.3</sub>	16 <sup>0</sup> <sub>-0.3</sub>	19 <sup>0</sup> <sub>-0.3</sub>	22 <sup>0</sup> <sub>-0.3</sub>	25 <sup>0</sup> <sub>-0.3</sub>	32 <sup>0</sup> <sub>-0.4</sub>
D	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>
E	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>	18 <sup>+0.018</sup> <sub>0</sub>
F	6	6	8	10	11	13	16
G	11.5	13	12.5	16	20	24	28
H	R3	R3	R4	R5	R5.5	R6.5	R8
J	12	13	13	17.5	22	26	30.5
K	R5.5	R6	R6	R8	R10	R11	R13
L	5.5	6	6	8	10	11	13
M	2.5	3.5	6	7.5	9.5	13	16
N	5.5	6	6	8	10	11	13

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. Please use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the mounting pin for lever.  
(Please refer to each external dimension of TMA for the dimensions φAD and φAE.)

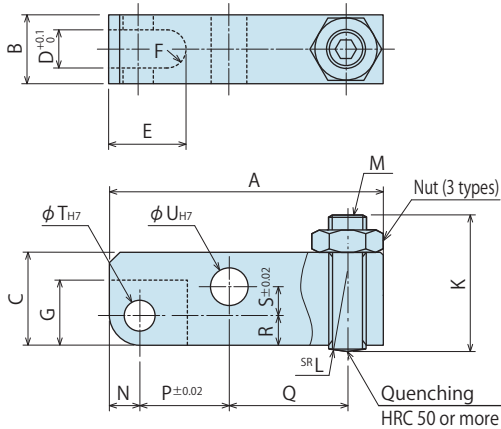
## Accessories : Link Lever (LZ-LJ3)

### Model No. Indication

# LZ 048 0 - LJ3

Size (Refer to the graph on the right)

Design No. (Revision Number)



Model No.	LZ0400-LJ3	LZ0480-LJ3	LZ0550-LJ3	LZ0650-LJ3	LZ0750-LJ3	LZ0900-LJ3	LZ1050-LJ3
Corresponding Model No.	TMA0250	TMA0400	TMA0600	TMA1000	TMA1600	TMA2500	TMA3200
A	48	54	64	74.5	88.5	102.5	125
B	12 <sup>-0.3</sup> <sub>0</sub>	12 <sup>-0.3</sup> <sub>0</sub>	16 <sup>-0.3</sup> <sub>0</sub>	19 <sup>-0.3</sup> <sub>0</sub>	22 <sup>-0.3</sup> <sub>0</sub>	25 <sup>-0.3</sup> <sub>0</sub>	32 <sup>-0.4</sup> <sub>0</sub>
C	14	16	20	25	32	38	45
D	6	6	8	10	11	13	16
E	14.5	16	16.5	21	25.5	30.5	36
F	R3	R3	R4	R5	R5.5	R6.5	R8
G	12	13	13	17.5	22	26	30.5
K	23	26	32	39	47	56	65
L	10	10	15	20	30	45	60
M	M6×1	M6×1	M8×1.25	M10×1.5	M12×1.75	M16×2	M20×2.5
N	5.5	6	6	8	10	11	13
P	16	18.5	21	24.5	30	36	44
Q	20.5	23.5	29	32	37.5	41.5	51
R	5.5	6	6	8	10	11	13
S	2.5	3.5	6	7.5	9.5	13	16
T	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>
U	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>	18 <sup>+0.018</sup> <sub>0</sub>

- Notes
1. Material S45C
  2. Please use the attached pin (equivalent to  $\phi ADf6$ ,  $\phi AEF6$ , HRC60) as the mounting pin for lever.

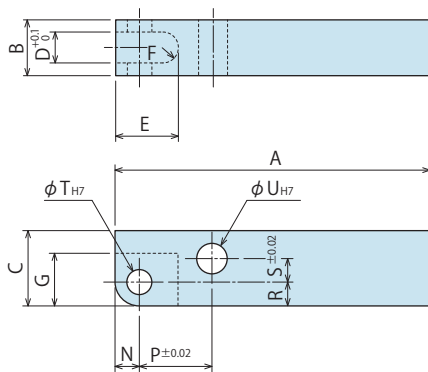
## Accessories : Material Link Lever (LZ-LJ2)

### Model No. Indication

# LZ 048 0 - LJ2

Size (Refer to the graph on the right)

Design No. (Revision Number)



Model No.	LZ0400-LJ2	LZ0480-LJ2	LZ0550-LJ2	LZ0650-LJ2	LZ0750-LJ2	LZ0900-LJ2	LZ1050-LJ2
Corresponding Model No.	TMA0250	TMA0400	TMA0600	TMA1000	TMA1600	TMA2500	TMA3200
A	75	85	90	105	110	160	220
B	12 <sup>-0.3</sup> <sub>0</sub>	12 <sup>-0.3</sup> <sub>0</sub>	16 <sup>-0.3</sup> <sub>0</sub>	19 <sup>-0.3</sup> <sub>0</sub>	22 <sup>-0.3</sup> <sub>0</sub>	25 <sup>-0.3</sup> <sub>0</sub>	32 <sup>-0.4</sup> <sub>0</sub>
C	14	16	20	25	32	38	45
D	6	6	8	10	11	13	16
E	14.5	16	16.5	21	25.5	30.5	36
F	R3	R3	R4	R5	R5.5	R6.5	R8
G	12	13	13	17.5	22	26	30.5
N	5.5	6	6	8	10	11	13
P	16	18.5	21	24.5	30	36	44
R	5.5	6	6	8	10	11	13
S	2.5	3.5	6	7.5	9.5	13	16
T	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>
U	6 <sup>+0.012</sup> <sub>0</sub>	6 <sup>+0.012</sup> <sub>0</sub>	8 <sup>+0.015</sup> <sub>0</sub>	10 <sup>+0.015</sup> <sub>0</sub>	12 <sup>+0.018</sup> <sub>0</sub>	15 <sup>+0.018</sup> <sub>0</sub>	18 <sup>+0.018</sup> <sub>0</sub>

- Notes
1. Material S45C
  2. If necessary, the front end should be additionally machined.
  3. Please use the attached pin (equivalent to  $\phi ADf6$ ,  $\phi AEF6$ , HRC60) as the mounting pin for lever.

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic UnitManual Operation  
Accessories

Cautions / Others

Hole Clamp

SFA  
SFC

Swing Clamp

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

Link Clamp

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

Work Support

LD  
LC  
TNC  
TCAir Sensing  
Lift Cylinder

LLW

Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

Block Cylinder

DBA  
DBC

Control Valve

BZL  
BZT  
BZX/JZG

Pallet Clamp

VS  
VTExpansion  
Locating PinVL  
VM  
VJ  
VK

Pull Stud Clamp

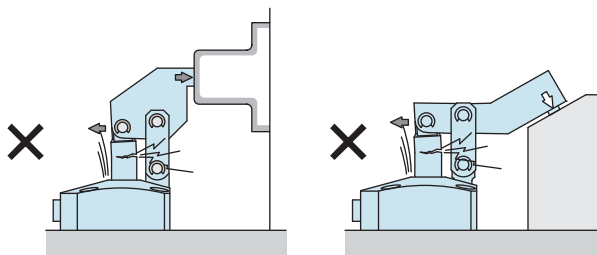
FP  
FQCustomized  
Spring Cylinder

DWA/DWB

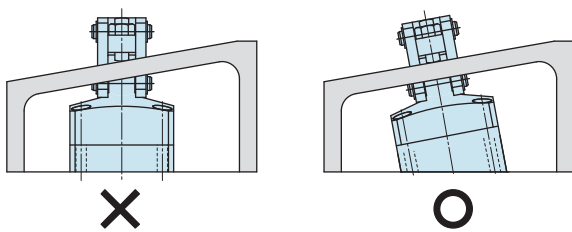
**Cautions**

● Notes for Design

- 1) Check Specifications
  - Please use each product according to the specifications.
- 2) Notes for Circuit Design
  - Please read "Notes on Hydraulic Cylinder Speed Control Circuit" on P.1044 to assist with proper hydraulic circuit designing.
  - Ensure there is no possibility of supplying hydraulic pressure to the lock and release ports simultaneously.
- 3) Notes for Link Lever Design
  - Make sure no force is applied to the piston rod except the axial direction. (Make sure the clamp surface and the mounting surface on the workpiece are parallel.) 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) When using on a welding fixture, the exposed area of piston rod and link plate should be protected.
    - If spatter gets onto the sliding surface it may lead to malfunction and fluid leakage.
  - 5) When clamping on a sloped surface on the workpiece.
    - Make sure the clamp surface and the mounting surface on the workpiece are parallel.



- 6) When using in a dry environment.
  - The link pin can dry out. Grease it periodically or use a special pin. Contact us for the specifications for 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.471.
    - Link clamp with air sensing valve LKW: Refer to P.491.

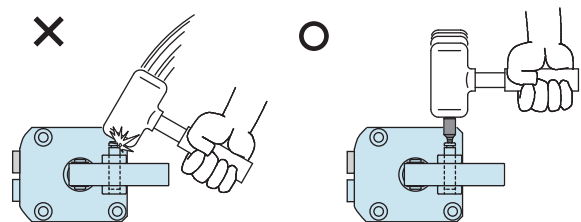
● Notes on installation.

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

	Model No.	Thread Size	Tightening Torque (N·m)
LKA LKC LKW	LKA0360	M4×0.7	4.0
	LKA0400	M5×0.8	8.0
	LKC0400/LKW0400		
	LKA0480	M5×0.8	8.0
	LKC0480/LKW0480		
	LKA0550	M6×1	14
	LKC0550/LKW0550		
	LKA0650	M6×1	14
	LKC0650/LKW0650		
	LM/LJ	LKA0750	M8×1.25
LKA0900		M10×1.5	65
LKA1050		M12×1.75	114
LM0360		M4×0.7	3.2
LM0400		M5×0.8	6.3
LM0480		M5×0.8	6.3
LM0550		M6×1	10
LM0650		M6×1	10
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

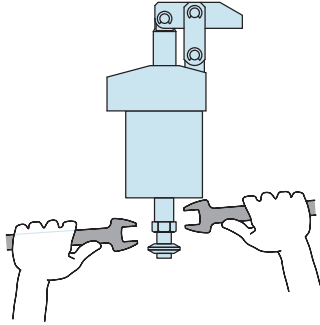
- When inserting the link pin, do not hit the pin directly with a hammer. When using a hammer to insert the pin, always use a cover plate with a smaller diameter than the snap ring groove on the pin.



4) 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 wear out leading to premature damage and ultimately complete equipment failure.
- Please make sure to release air from the circuit before adjusting speed. It will be difficult to adjust the speed accurately with air mixed in the circuit.
- Turn the speed control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

- 5) Notes on double end rod option (-D) for dog application.
- When installing dog or cam onto rod end, secure the dog or cam and prevent any rotation or torque on the piston rod. Fix the width part at the front of the dog and then mount it. Torque values for the mounting screw are 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

※ Please refer to P.1043 for common cautions.

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

High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

- SFA
- SFC

Swing Clamp

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

Link Clamp

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

Work Support

- LD
- LC
- TNC
- TC

Air Sensing Lift Cylinder

- LLW

Compact Cylinder

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

Block Cylinder

- DBA
- DBC

Control Valve

- BZL
- BZT
- BZX/JZG

Pallet Clamp

- VS
- VT

Expansion Locating Pin

- VL
- VM
- VJ
- VK

Pull Stud Clamp

- FP
- FQ

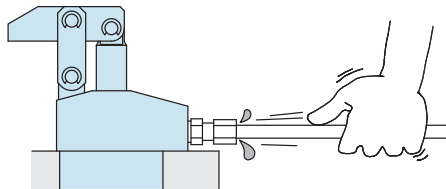
Customized Spring Cylinder

- DWA/DWB

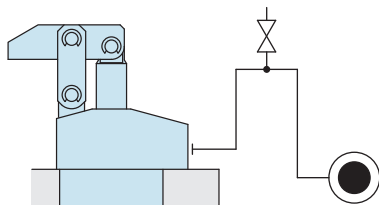
## ● Cautions

### ● Installation Notes (For Hydraulic Series)

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



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



### 5) Checking Looseness and Retightening

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

### ● Hydraulic Fluid List

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

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

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

**Cautions**

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

**Company Profile**

- Company Profile
- Our Products
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**Sales Offices**

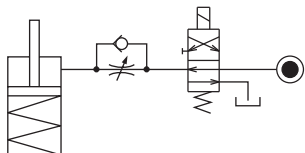
● Notes on Hydraulic Cylinder Speed Control Unit



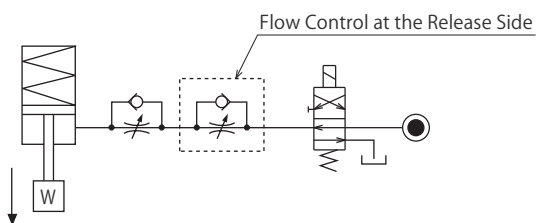
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● Flow Control Circuit for Single Acting Cylinder

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



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



● Flow Control Circuit for Double Acting Cylinder

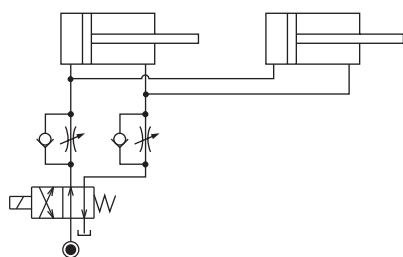
Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

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

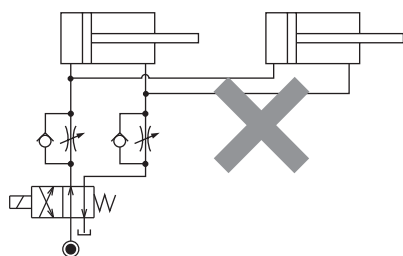
Refer to P.47 for speed adjustment of LKE.

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

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

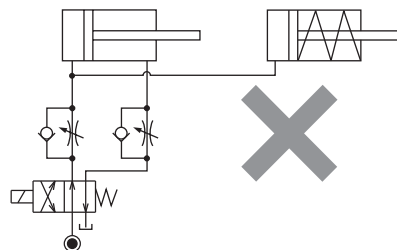


【Meter-in Circuit】 (LKE/TMA/TLA must be controlled with meter-in.)



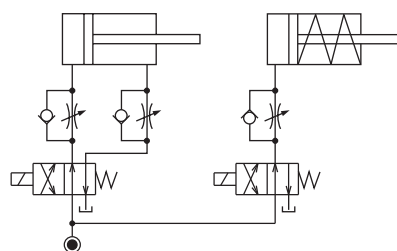
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

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

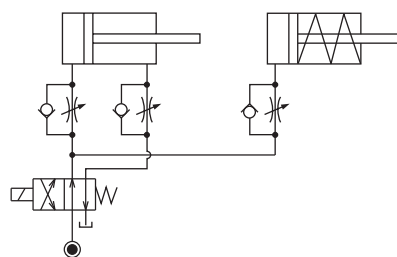


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

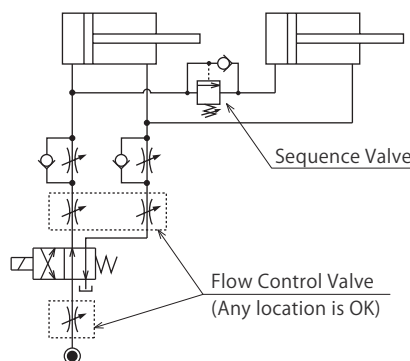
- Separate the control circuit.



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



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

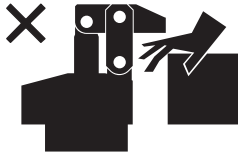




## ● Cautions

### ● Notes on Handling

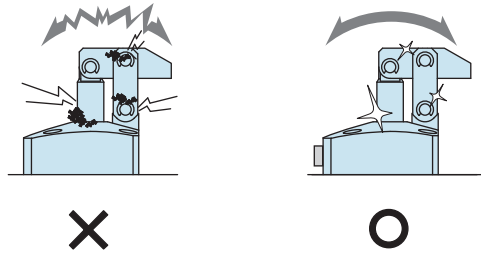
- 1) It should be handled by qualified personnel.
  - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
  - ① The machine and equipment can only be inspected or prepared when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



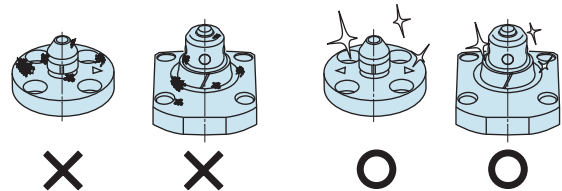
- 4) Do not disassemble or modify.
  - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

### ● Maintenance and Inspection

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



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



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

## ● Warranty

### 1) Warranty Period

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

### 2) Warranty Scope

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

Defects or failures caused by the following are not covered.

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

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

# Control Valve

Model BZL

Model BZT

Model BZX

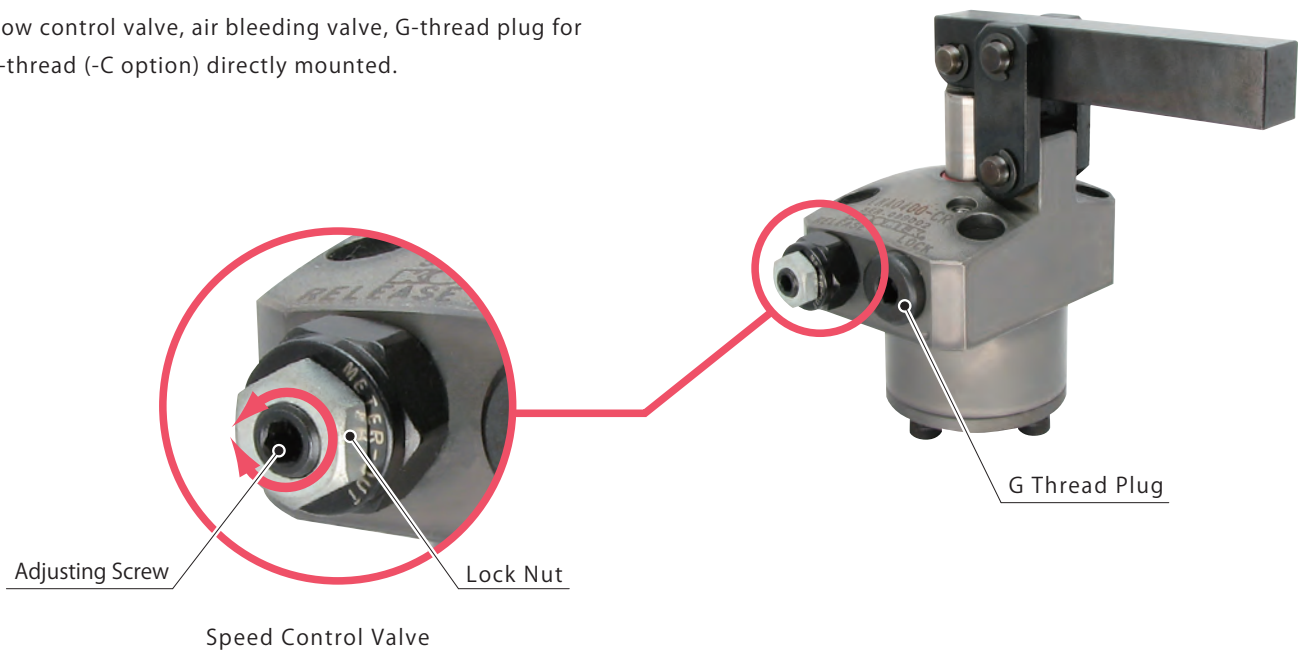
Model JZG



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

- Directly mounted to clamps


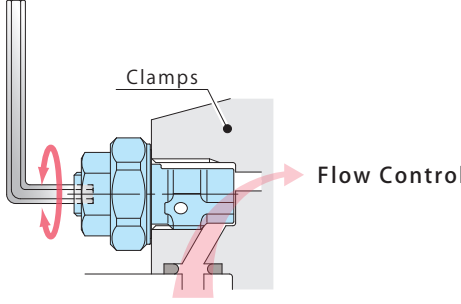
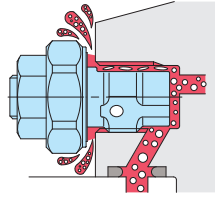

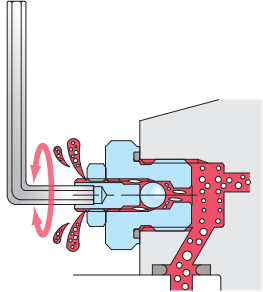

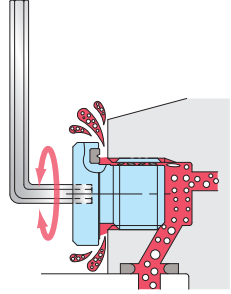
Flow control valve, air bleeding valve, G-thread plug for G-thread (-C option) directly mounted.



Speed Control Valve  
 Model BZL  
 Model BZT

Air Bleed Valve  
 Model BZX

G Thread Plug  
 Model JZG

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

High-Power Series

Pneumatic Series

**Hydraulic Series**

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Hole Clamp

- SFA
- SFC

Swing Clamp

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

Link Clamp

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

Work Support

- LD
- LC
- TNC
- TC

Air Sensing Lift Cylinder

- LLW

Compact Cylinder

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

Block Cylinder

- DBA
- DBC

**Control Valve**

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

Pallet Clamp

- VS
- VT

Expansion Locating Pin

- VL
- VM
- VJ
- VK

Pull Stud Clamp

- FP
- FQ

Customized Spring Cylinder

- DWA/DWB

## Model No. Indication (Speed Control Valve for High Pressure)

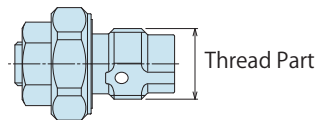
**BZT 0** **10** **0** - **A**

1
2
3



### 1 G Thread Size

- 10** : Thread Part G1/8A Thread
- 20** : Thread Part G1/4A Thread



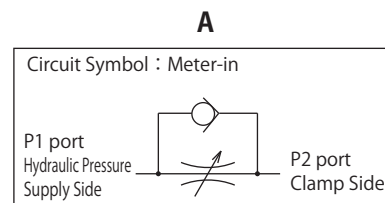
### 2 Design No.

- 0** : Revision Number

### 3 Control Method

- A** : Meter-in

※BZT doesn't have meter-out specification.



## Specifications

Model No.	BZT0100-A	BZT0200-A
Max. Operating Pressure	MPa	35
Min. Operating Pressure	MPa	10
Control Method	Meter-in	
G Thread Size	G1/8A	G1/4A
Cracking Pressure	MPa	0.04
Min. Passage Area (P2→P1:Free Flowing Direction)	mm <sup>2</sup>	3.1
Max. Passage Area	mm <sup>2</sup>	5.0
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32	
Operating Temperature	°C	
Tightening Torque for Main Body	N·m	25

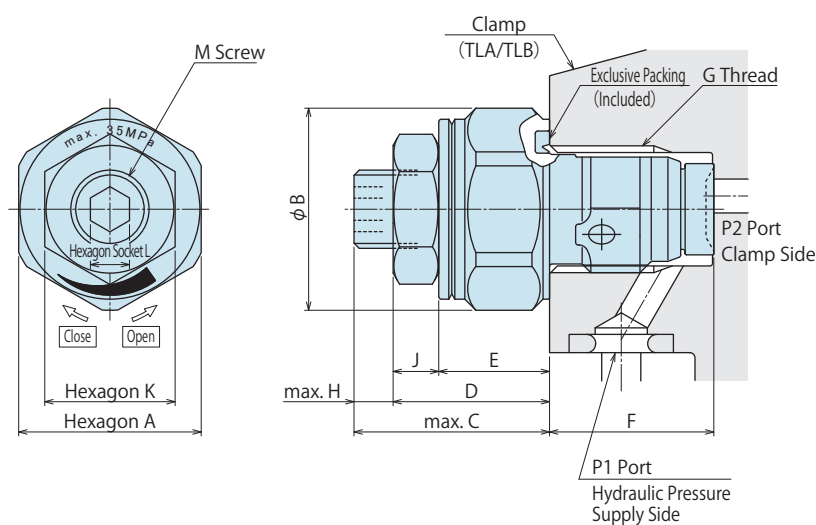
- Notes
1. Minimum passage area when fully opened is the same as the maximum passage area in the table above.
  2. It must be mounted with recommended torque. Because of the structure of the metal seal, if mounting torque is insufficient, the flow control valve may not be able to adjust the flow rate.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

## Applicable Products

Model	TLA-2 (Double Action) Swing Clamp	TLB-2 (Double Action) Swing Clamp	TLA-1 (Single Action) Swing Clamp	TMA-2 (Double Action) Link Clamp	TMA-1 (Single Action) Link Clamp
BZT0100-A	TLA0801-2C□□	TLB0801-2C□□	TLA0802-1C□	TMA0250-2C□	TMA0250-1C□
	TLA1001-2C□□	TLB1001-2C□□	TLA1002-1C□	TMA0400-2C□	TMA0400-1C□
	TLA1601-2C□□	TLB1601-2C□□	TLA1602-1C□	TMA0600-2C□	TMA0600-1C□
				TMA1000-2C□	TMA1000-1C□
BZT0200-A	TLA2001-2C□□	TLB2001-2C□□	TLA2002-1C□	TMA1600-2C□	TMA1600-1C□
	TLA2501-2C□□	TLB2501-2C□□	TLA2502-1C□	TMA2500-2C□	TMA2500-1C□
	TLA4001-2C□□	TLB4001-2C□□	TLA4002-1C□	TMA3200-2C□	TMA3200-1C□

- Notes
1. It is not recommended that using flow control valve for TL□040□, TL□060□ because it is difficult to adjust the speed.
  2. In the case of controlling TMA, TLA, both lock side and release side should be meter-in circuit.  
If meter-out circuit is used, abnormal high pressure is created, which causes oil leakage and damage.

## External Dimensions



(mm)		
Model	BZT0100-A	BZT0200-A
A	14	18
B	15.5	20
C	15	16
D	12	13
E	8.5	9.5
F	(12.6)	(16.1)
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

### Notes

- Please mount it directly to the clamps made by KOSMEK (Model : TLA,TLB,TMA).  
(This cannot be used for other actuators such as our low pressure series.)
- Contact us if it is used in the hydraulic circuit for a different purpose.

## Notes

- Please read "Notes on Hydraulic Cylinder Speed Control Circuit" to assist with proper hydraulic circuit design.  
If there is something wrong with the circuit design, it leads to the applications malfunction and damage. (Refer to P.1044)
- It is dangerous to air bleed during operation under high pressure. It must be done under lower pressure.  
(For reference: the minimum operating range of the product within the circuit.)
- When the cylinder capacity is small, it is highly possible that the speed of flow cannot be controlled properly.  
(Recommended cylinder capacity : 3cm<sup>3</sup> or more)

High-Power  
Series

Pneumatic Series

**Hydraulic Series**
Valve / Coupler  
Hydraulic UnitManual Operation  
Accessories

Cautions / Others

Hole Clamp

SFA  
SFC

Swing Clamp

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

Link Clamp

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

Work Support

LD  
LC  
TNC  
TCAir Sensing  
Lift Cylinder

LLW

Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

Block Cylinder

DBA  
DBC
**Control Valve**
BZL  
**BZT**  
BZX/JZG

Pallet Clamp

VS  
VTExpansion  
Locating PinVL  
VM  
VJ  
VK

Pull Stud Clamp

FP  
FQCustomized  
Spring Cylinder

DWA/DWB

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

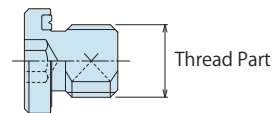
**JZG0 1 0**

1 2



**1 G Thread Size**

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



**2 Design No.**

- 0 : Revision Number

Specifications

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

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

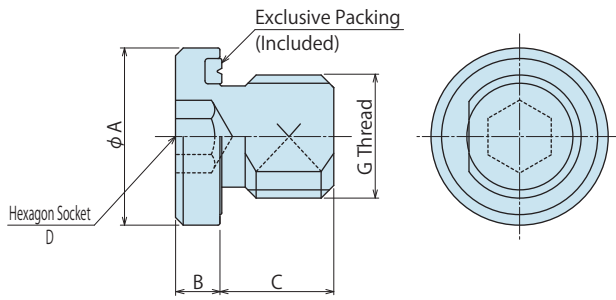
Applicable Products

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

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

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

## External Dimensions



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

(mm)

### High-Power Series

### Pneumatic Series

### Hydraulic Series

### Valve / Coupler Hydraulic Unit

### Manual Operation Accessories

### Cautions / Others

#### Hole Clamp

SFA  
SFC

#### Swing Clamp

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

#### Link Clamp

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

#### Work Support

LD  
LC  
TNC  
TC

#### Air Sensing Lift Cylinder

LLW

#### Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

#### Block Cylinder

DBA  
DBC

#### Control Valve

BZL  
BZT

#### BZX/JZG

#### Pallet Clamp

VS  
VT

#### Expansion Locating Pin

VL  
VM  
VJ  
VK

#### Pull Stud Clamp

FP  
FQ

#### Customized Spring Cylinder

DWA/DWB



# Manifold Block

Model WHZ-MD

Model LZY-MD

Model LZ-MS

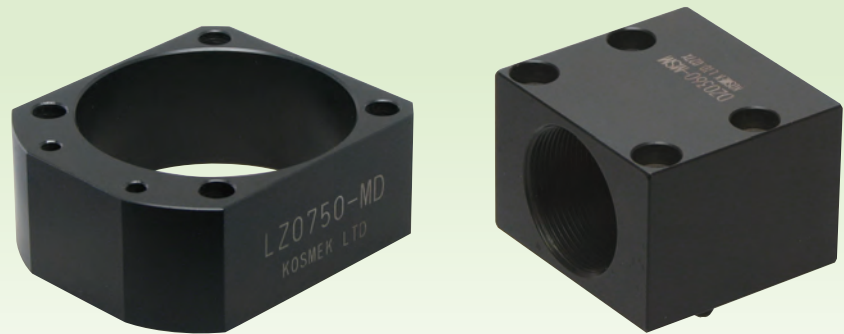
Model LZ-MP

Model TMZ-1MB

Model TMZ-2MB

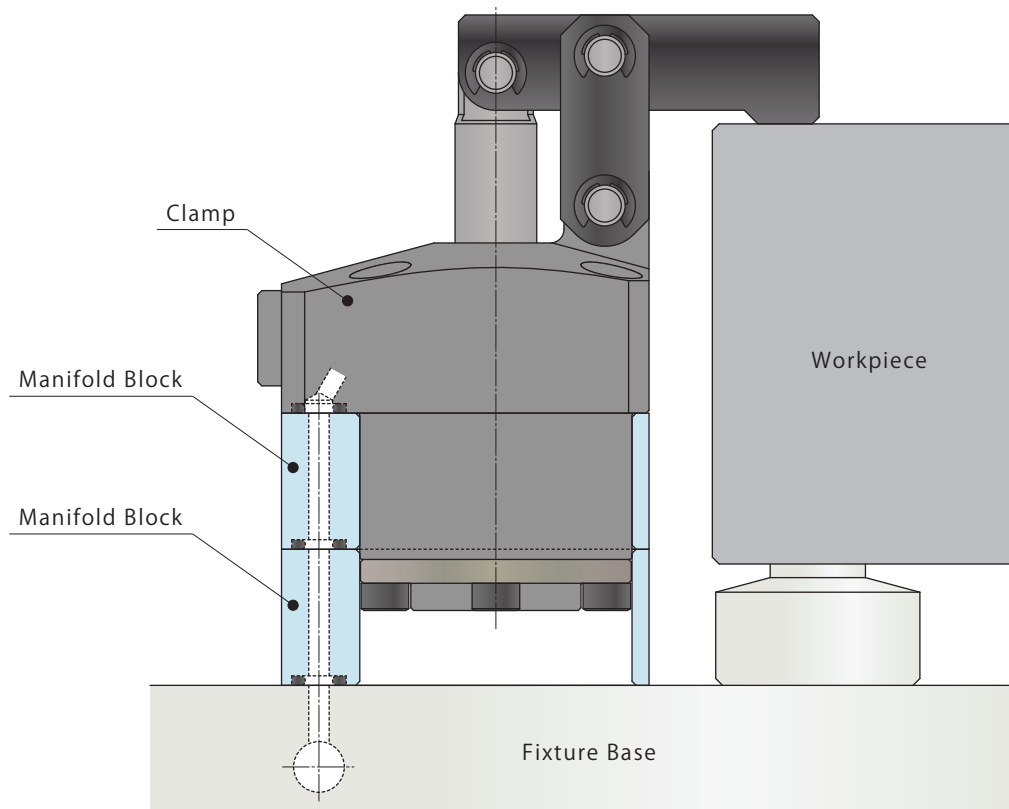
Model DZ-MG

Model DZ-MS



- **Manifold Block**

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



### Applicable Model

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

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

Screw Locator  
VXF

Manual Expansion Locating Pin  
VX

**Manifold Block**

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

Manifold Block / Nut

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

Pressure Switch  
JB

Pressure Gauge  
JGA/JGB

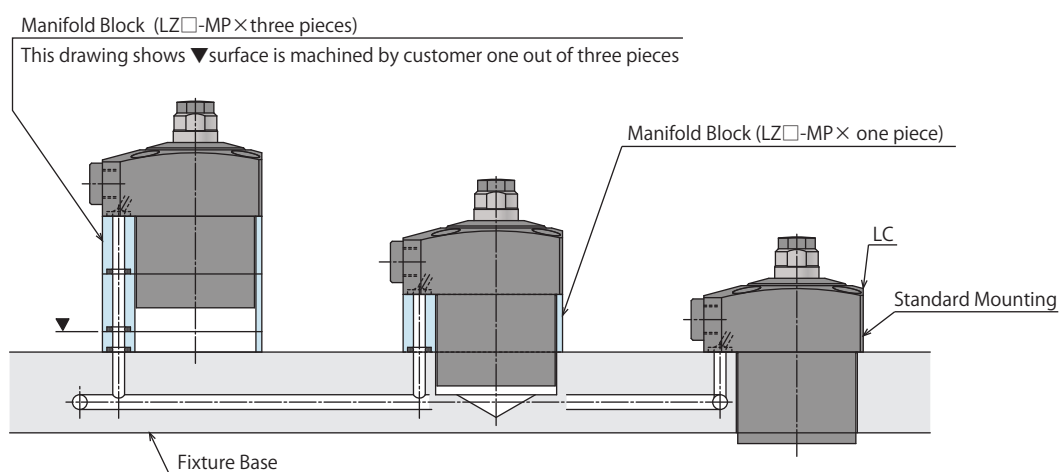
Manifold  
JX

Coupler Switch  
PS

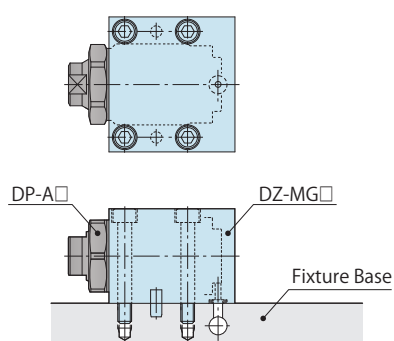
G-Thread Fitting

### Application Examples

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



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



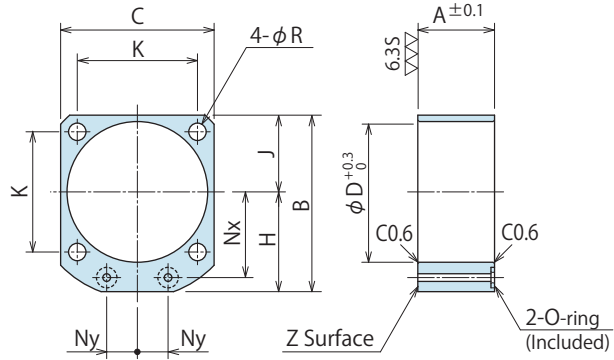
Manifold Block for WCA/WCE/WHA/WHE

Model No. Indication

**WHZ 048 0 - MD**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

Model No.	WHZ0600-MD	WHZ0320-MD	WHZ0400-MD	WHZ0500-MD	WHZ0630-MD
Corresponding Item Model Number	WCE0601 WHE0600	WCA0321 WCE1001 WHA0320 WHE1000	WCA0401 WCE1601 WHA0400 WHE1600	WCA0501 WCE2501 WHA0500 WHE2500	WCA0631 WCE4001 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
R	5.5	5.5	5.5	6.5	6.5
O-ring	1BP5	1BP7	1BP7	1BP7	1BP7
Mass kg	0.1	0.1	0.1	0.2	0.2

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

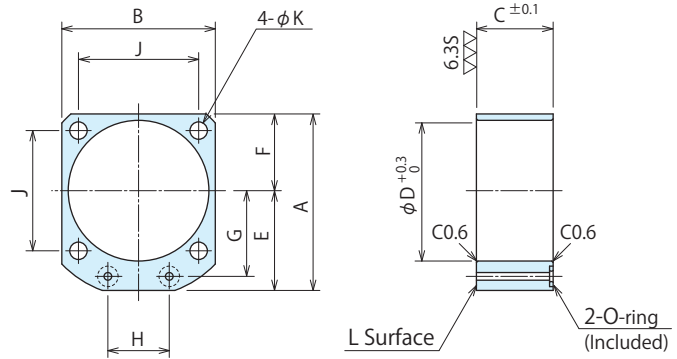
Manifold Block for LKA/LKC/LKE/LHA/LHC/LHE/LHS/LL

Model No. Indication

**LZY 048 0 - MD**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

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

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

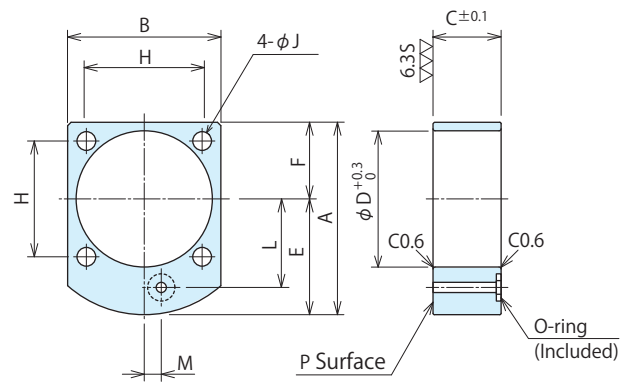
● **Manifold Block for LM/LJ/LT/LG**

Model No. Indication

**LZ 048 0 - MS**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

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

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

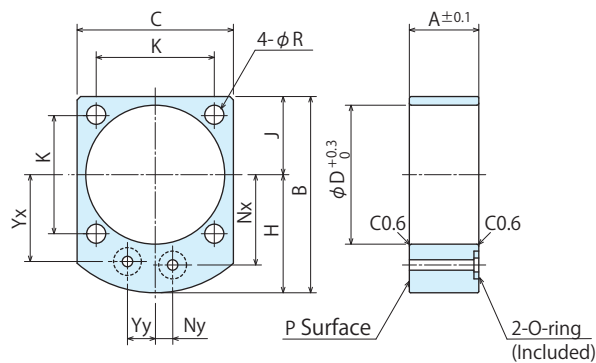
● **Manifold Block for LC/TC**

Model No. Indication

**LZ 048 0 - MP**

Size  
(Refer to following table)

Design No.  
(Revision Number)



(mm)

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

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

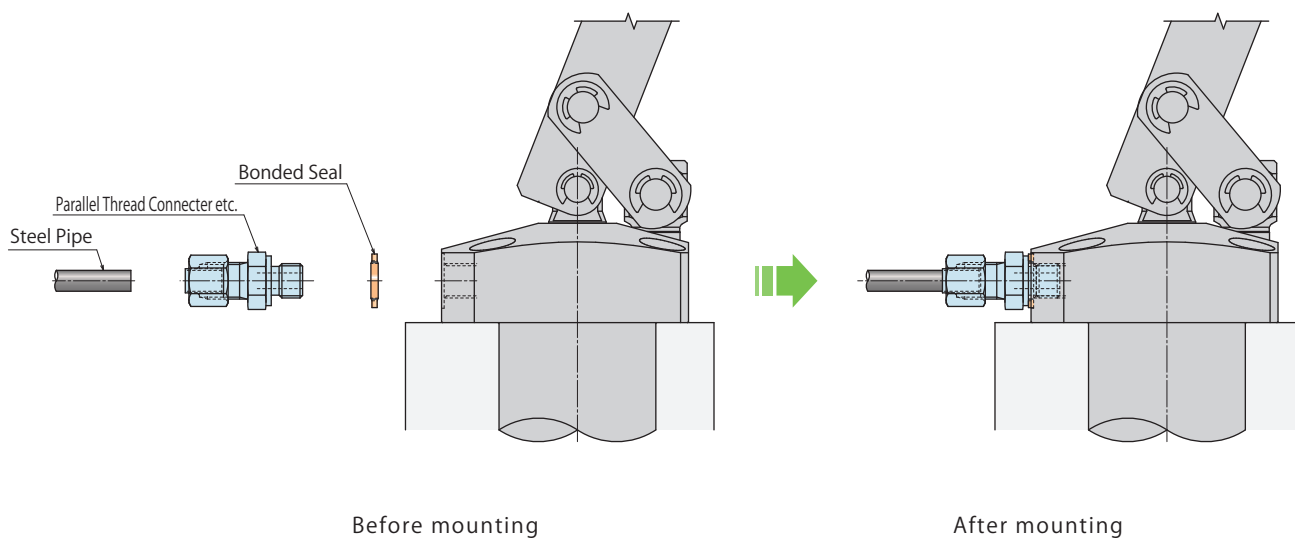
- High-Power Series
- Pneumatic Series
- Hydraulic Series
- Valve / Coupler Hydraulic Unit
- Manual Operation Accessories
- Cautions / Others
- Screw Locator
  - VXF
- Manual Expansion Locating Pin
  - VX
- Manifold Block
  - WHZ-MD
  - LZY-MD
  - LZ-MS
  - LZ-MP
  - TMZ-1MB
  - TMZ-2MB
  - DZ-M
- Manifold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

# G-Thread Fitting



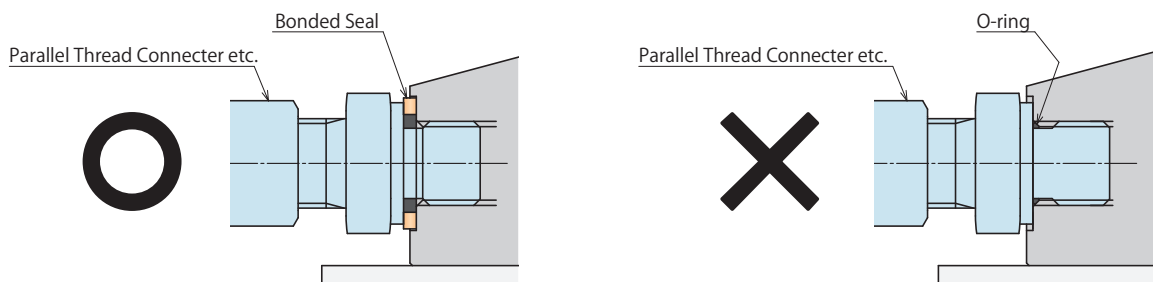
The fitting as shown is made by Ihara Science Corp.

## Mounting



### Notes

- ※ Please put bonded seal between clamp and parallel connector etc (fitting) for sealing G-thread with our clamp. It cannot be used in models with O-rings seal type.



Please put bonded seal between clamp and parallel connector etc (fitting).

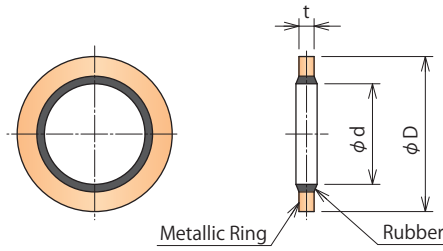
It cannot be used in models with O-rings seal type.

**Bonded Seal**

Model No. Indication

**9UKP0C000 1**

BSPP Thread (G-Thread) Size  
(Refer to following table.)



(mm)

Model No.	9UKP0C0001	9UKP0C0002	9UKP0C0003
Applicable Thread	G1/8	G1/4	G3/8
d	9.9	13.3	16.8
D	17	20.5	24
t	2	2	2

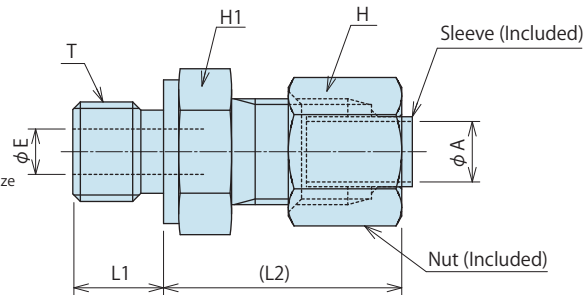
Note 1. Rubber material is NBR, metallic ring is SPCC of JWG3141 (Cold pressure deferred steel sheet) used as standard specification. (Operating temperature -20°~120°C)

**Parallel Thread Connector**

Model No. Indication

**9UKC0 06 0 1 E**

BSPP Thread (G-Thread) Size  
(Refer to following table)  
Applicable Pipe External Diameter  
(Refer to following table)



(mm)

Model No.	9UKC00601E	9UKC00801E	9UKC00602E	9UKC00802E	9UKC01203E
Applicable Pipe External Diameter φA	6	8	6	8	12
Applicable Thread T	G1/8	G1/8	G1/4	G1/4	G3/8
E	4	4	4	6	8
Hexagon Opposite Side H1	14	17	19	19	22
Hexagon Opposite Side H	14	17	14	17	22
L1	8	8	12	12	12
Tighten by Hand (L2)	(30.5)	(30.5)	(31.5)	(31.5)	(33.5)
Mass (kg)	0.030	0.042	0.048	0.053	0.087

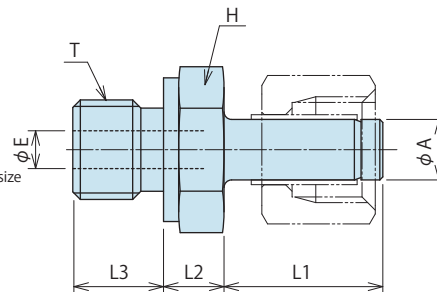
Note 1. Bonded seal is not included to this product. Please prepare separately.

**Parallel Thread Adapter**

Model No. Indication

**9UKHB 06 0 1 E**

BSPP Thread (G-Thread) size  
(Refer to following table)  
Applicable Pipe External Diameter  
(Refer to following table)



(mm)

Model No.	9UKHB0601E	9UKHB0802E	9UKHB1203E
Applicable Pipe External Diameter φA	6	8	12
Applicable Thread T	G1/8	G1/4	G3/8
E	3	5	8
Hexagon Opposite Side H	14	19	22
L1	21	21	22.5
L2	7	8	9.5
L3	8	12	12
Mass (kg)	0.016	0.033	0.051

Note 1. Bonded seal is not included to this product. Please prepare separately.

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

- Screw Locator
- VXF

- Manual Expansion Locating Pin
- VX

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

- Manifold Block / Nut
- DZ-R
- DZ-C
- DZ-P
- DZ-B
- LZ-S
- LZ-SQ
- TNZ-S
- TNZ-SQ

- Pressure Switch
- JB

- Pressure Gauge
- JGA/JGB

- Manifold
- JX

- Coupler Switch
- PS

**G-Thread Fitting**

## Stud Elbow Fitting

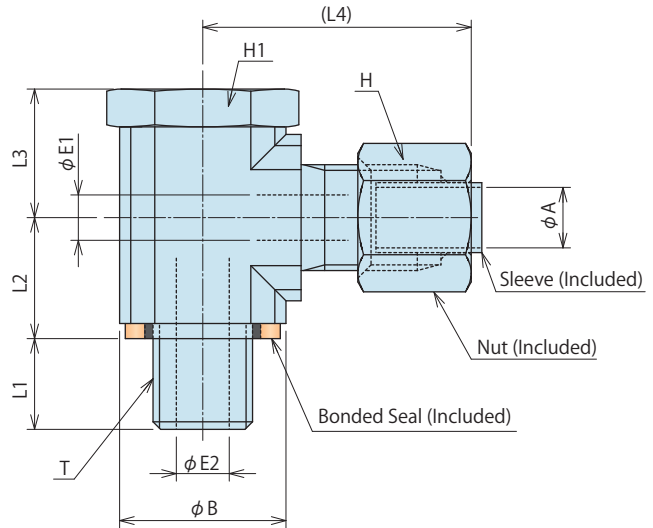
Model No. Indication

# 9UKMB 06 0 1 E

BSPP Thread (G-Thread) Size  
(Refer to following table)

Applicable Pipe External Diameter  
(Refer to following table)

Model No.	9UKMB0601E	9UKMB0802E	9UKMB1203E
Applicable Pipe External Diameter $\phi A$	6	8	12
Applicable Thread T	G1/8	G1/4	G3/8
E1	4	6	10
E2	4	7	9
Hexagon Opposite Side H1	17	22	27
Hexagon Opposite Side H	14	17	22
L1	8	12	12
L2	13	16	19
L3	14	17	22
Tighten by Hand (L4)	(33.5)	(35.5)	(40.5)
Mass (kg)	0.078	0.127	0.232



Note 1. Do not use it as an alternative one of swivel fitting to make a turn.

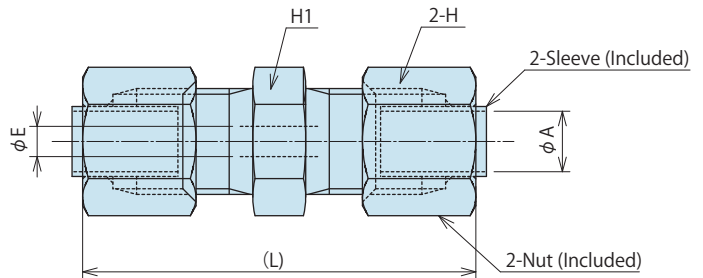
## Union Fitting

Model No. Indication

# 9UKUA 06 00E

Applicable Pipe External Diameter  
(Refer to following table)

Model No.	9UKUA0600E	9UKUA0800E	9UKUA1200E
Pipe External Diameter $\phi A$	6	8	12
E	4	6	10
Hex. Opposite Side H1	14	17	19
Hex. Opposite Side H	14	17	22
Tighten by Hand (L)	(51)	(52)	(54)
Mass (kg)	0.042	0.059	0.093



## Union Fitting (Elbow)

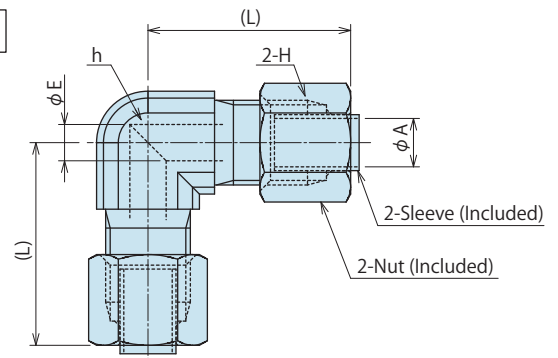
Model No. Indication

# 9UKLA 06 00E

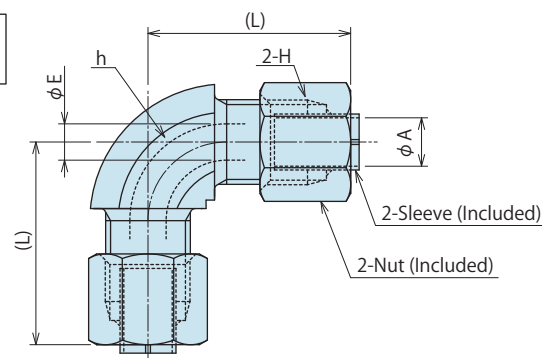
Applicable Pipe External Diameter  
(Refer to following table)

Model No.	9UKLA0600E	9UKLA0800E	9UKLA1200E
Pipe External Diameter $\phi A$	6	8	12
E	4	6	10
Width across Flats h	14	17	19
Hex. Opposite Side H	14	17	22
Tighten by Hand (L)	(30.5)	(33.5)	(35.5)
Mass (kg)	0.048	0.081	0.116

9UKLA0600E



9UKLA0800E  
9UKLA1200E



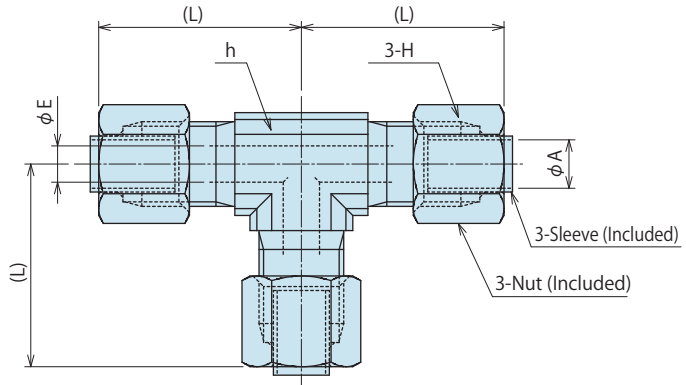
**Union Fitting (Tee-Union Fitting)**

Model No. Indication

**9UKTA 06 00E**

Applicable Pipe External Diameter.  
(Refer to following table)

Model No.	9UKTA0600E	9UKTA0800E	9UKTA1200E
Applicable Pipe External Diameter $\phi A$	6	8	12
E	4	6	10
Width across Flats h	14	17	19
Hexagon Opposite Side H	14	17	22
Tighten by Hand (L)	(30.5)	(33.5)	(35.5)
Mass kg	0.069	0.122	0.172

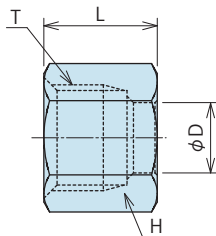


**Nut**

Model No. Indication

**9UKKN 06 00E**

Applicable Pipe External Diameter  
(Refer to following table)



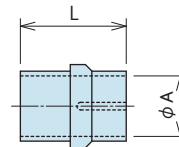
Model No.	9UKKN0600E	9UKKN0800E	9UKKN1200E
Applicable Pipe External Diameter $\phi A$	6	8	12
D	7.3	9.3	13.3
T	M12×1.5	M14×1.5	M18×1.5
Hexagon Opposite Side H	14	17	22
L	15	15	16
Mass kg	0.010	0.015	0.026

**Sleeve**

Model No. Indication

**9UKK0 06 00E**

Applicable Pipe External Diameter  
(Refer to following table)



Model No.	9UKK00600E	9UKK00800E	9UKK01200E
Applicable Pipe External Diameter $\phi A$	6	8	12
L	14	14	15
Mass kg	0.002	0.003	0.004

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

- Screw Locator
- VXF

- Manual Expansion Locating Pin
- VX

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

- Manifold Block / Nut
- DZ-R
- DZ-C
- DZ-P
- DZ-B
- LZ-S
- LZ-SQ
- TNZ-S
- TNZ-SQ

- Pressure Switch
- JB

- Pressure Gauge
- JGA/JGB

- Manifold
- JX

- Coupler Switch
- PS

**G-Thread Fitting**



# Sales Offices

## Sales Offices across the World

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

## Sales Offices in Japan

Head Office	<b>TEL.078-991-5115</b>	<b>FAX.078-991-8787</b>
Osaka Sales Office	〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
Overseas Sales		
Tokyo Sales Office	<b>TEL.048-652-8839</b>	<b>FAX.048-652-8828</b>
	〒331-0815 埼玉県さいたま市北区大成町4丁目81番地	
Nagoya Sales Office	<b>TEL.0566-74-8778</b>	<b>FAX.0566-74-8808</b>
	〒446-0076 愛知県安城市美園町2丁目10番地1	
Fukuoka Sales Office	<b>TEL.092-433-0424</b>	<b>FAX.092-433-0426</b>
	〒812-0006 福岡県福岡市博多区上牟田1丁目8-10-101	

# Global Network



Asia Detailed Map



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