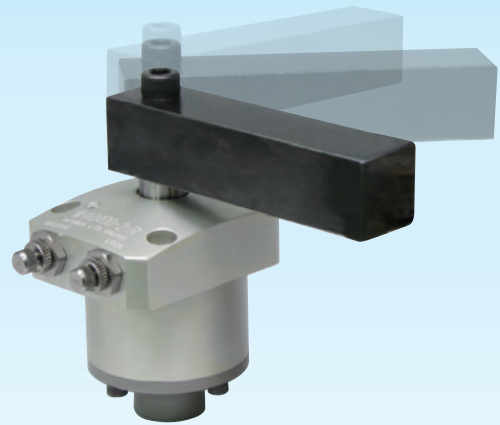


# Pneumatic Swing Clamp

Model WHA



Our strong hydraulic clamps mechanism is used to pneumatic clamps

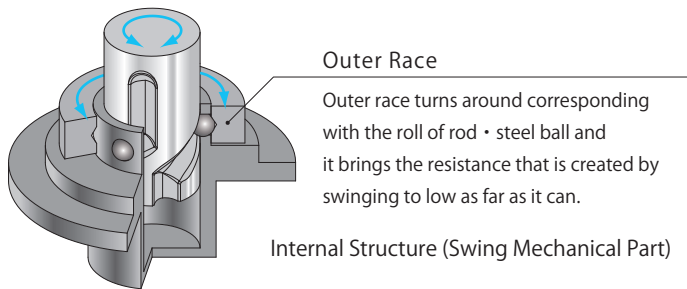
High speed/High Rigidity with  $\pm 0.5^\circ$  swing angle position repeatability.

PAT.

- **Ball Type Swing Mechanism with Outer Race**

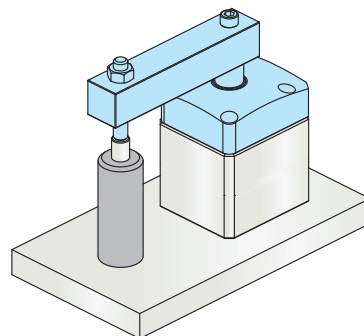
Our strong hydraulic clamps mechanism is used to pneumatic clamps.

Makes it faster with 3 lines of lead groove + outer race.  
(High Rigidity makes it possible to a use long lever.)

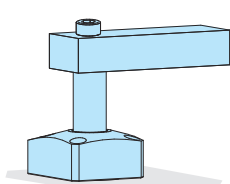


- **Lock Angle Repeatability with High Accuracy**

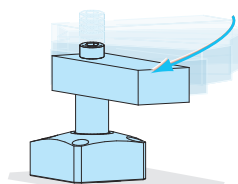
Since the swing angle position repeatability is  $\pm 0.5$ , clamping on a very small area is possible easily.



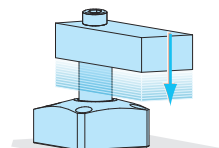
## Action Description



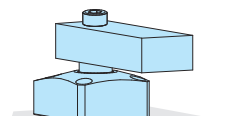
Before Swing  
(Released State)



The lever descends  
as it swings

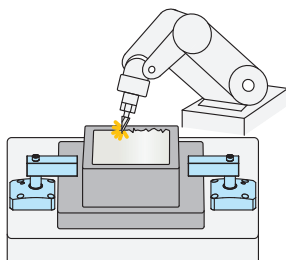


After swing completion,  
it descends vertically.

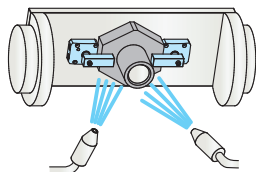


Action completed  
(Clamped State)

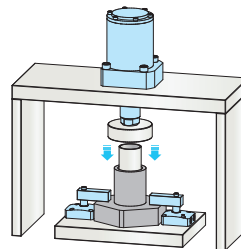
## Application Examples



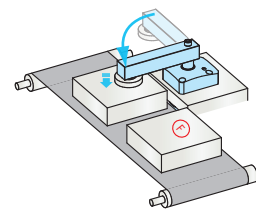
In machining and deburring



In the cleaning process  
and transportation



In the press fit process



In stamping

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic Unit

Manual Operation  
Accessories

Cautions / Others

Pneumatic  
Hole Clamp

SWH

Pneumatic  
Swing Clamp

WHA

Pneumatic  
Link Clamp

WCA

Air Flow  
Control Valve

BZW

Pneumatic Expansion  
Locating Pin

WM

WK

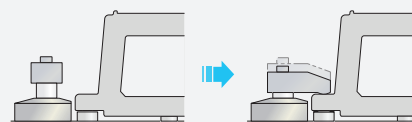
### Standard Model

Model **WHA**

External Dimensions  
→ P.187



Clamp with 90° swing



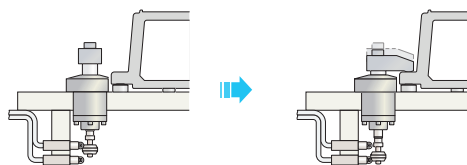
### Double End Rod Option for Dog

Model **WHA-D**

External Dimensions  
→ P.189



Clamp/ Unclamp movement  
can be detected by  
a limit switch



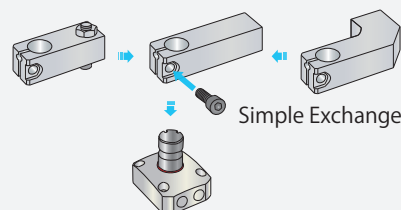
### Quick Change Lever Option

Model **WHA-F**

External Dimensions  
→ P.191



Quick change lever type that  
is available as option is easy  
to attach and detach the lever  
with one wrench



Simple Exchange

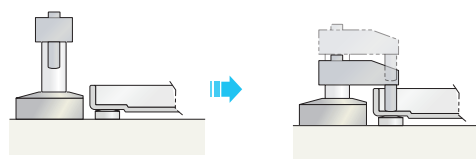
### Long Stroke Option

Model **WHA-Q**

External Dimensions  
→ P.193



The long stroke is applicable  
to a variety of work shapes.



## Accessories

Lever

Model **WHZ-T/F, LZH-B**



→ P.196

Manifold Block

Model **WHZ-MD**



→ P.1025

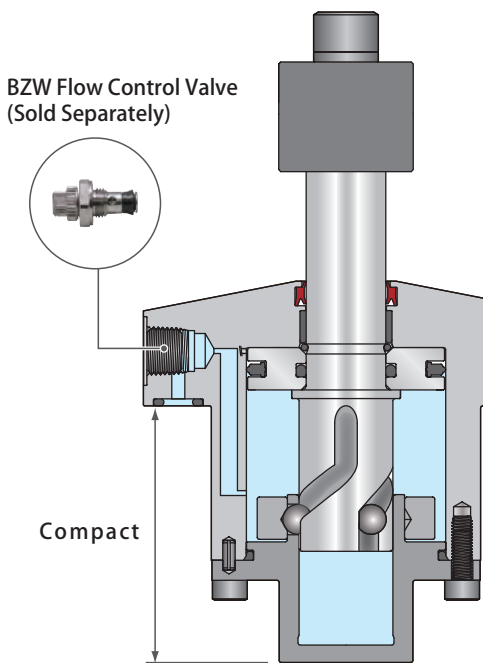
Speed Control Valve

Model **BZW**



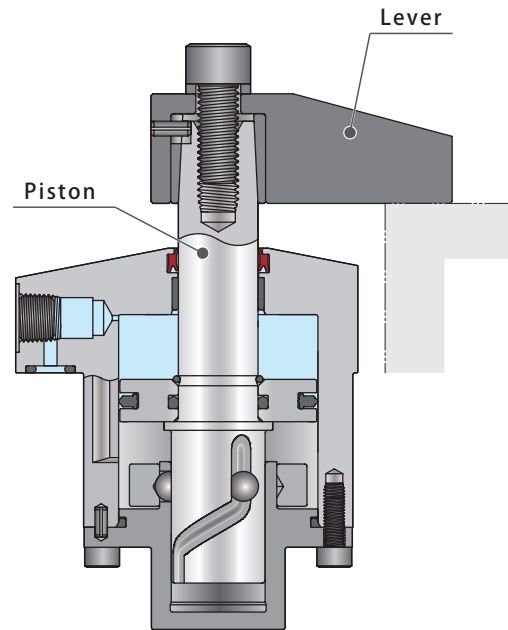
→ P.213

● Action Description



**When releasing**

When air is supplied to release port, release action is proceeded.



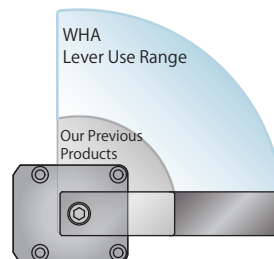
**When locking**

When air is supplied to lock port, lock action is proceeded.

● Able to use longer levers

The long guide ratio and high efficiency of each part ensures high rigidity.

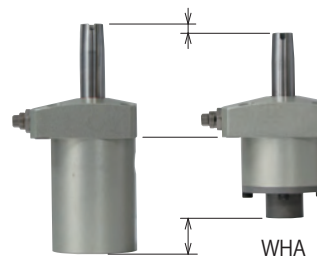
Largely expanded the useable range of the long lever than current model. (max. 2.4 times)



● Compact design

The underside of flange is designed as short as it can be and it resulted in reducing the length up to 34% than our previous product.

This saves space, machining and weight.



● Excellent Coolant Resistance

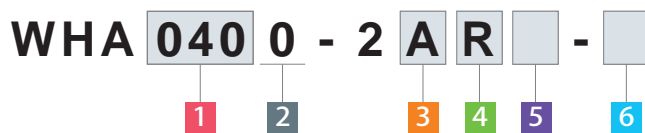
Our exclusive dust seal is designed to protect against high pressure coolant.

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 using the gasket (-A type) as piping method, it is available for directly mounting the speed control valve (BZW-B) with air venting function (speed control valve is sold separately).

## Model No. Indication



### 1 Cylinder Inside Diameter

**032** : Cylinder Inside Diameter=φ 32mm

**040** : Cylinder Inside Diameter=φ 40mm

**050** : Cylinder Inside Diameter=φ 50mm

**063** : Cylinder Inside Diameter=φ 63mm

### 2 Design No.

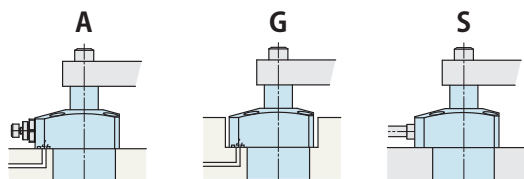
**0** : Revision Number

### 3 Piping Method

**A** : Gasket Option (With Ports for Speed Controller)

**G** : Gasket Option (with R Thread Plug)

**S** : Piping Option (Rc Thread)



Gasket Option

Piping Option

With Ports for Speed Controller  
R thread plug is included  
(order speed controller separately)

With R Thread Plug

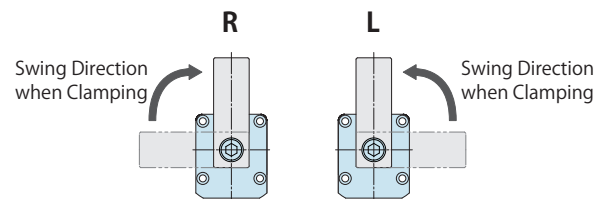
Rc Thread  
No Gasket Port

※ Speed control valve (BZW) is sold separately. Please refer to P.213.

### 4 Swing Direction when Clamping

**R** : Clockwise

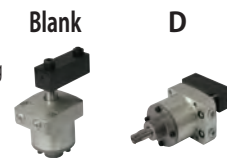
**L** : Counter-Clockwise



### 5 Action Confirmation Method

**Blank** : Standard

**D** : Double End Rod Option for Dog

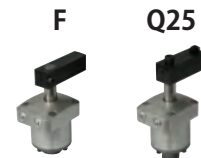


### 6 Option

**Blank** : Standard (Taper Lock Lever)

**F** : Quick Change Lever Option

**Q25** : Long Stroke Option



## Specifications

Model No.		WHA0320-2□□□-□	WHA0400-2□□□-□	WHA0500-2□□□-□	WHA0630-2□□□-□	
Cylinder Area for Locking	cm <sup>2</sup>	6.5	10.56	16.49	26.26	
Clamping Force (Calculation Formula) ※1	kN	$F = P(0.625 - 0.0014L)$	$F = P(1.034 - 0.0021L)$	$F = P(1.616 - 0.0028L)$	$F = P(2.626 - 0.0040L)$	
Swing Stroke (90°)	mm	10	11	14	16.5	
Standard Stroke Model	Full Stroke	mm	20	21	24	26.5
	Vertical Stroke	mm	10	10	10	10
Long Stroke Model	Full Stroke	mm	35	36	39	41.5
	Vertical Stroke	mm	25	25	25	25
Max. Operating Pressure	MPa	1.0				
Min. Operating Pressure ※2	MPa	0.1				
Withstanding Pressure	MPa	1.5				
Operating Temperature	°C	0~70				
Usable Fluid		Dry Air				
90° Swing Angle Accuracy		90° ±3°				
Swing Completion Position Repeatability		±0.5°				

#### Notes

※ 1. F: Clamping Force (kN), P: Supply Air Pressure (MPa), L: Distance between the piston center and the clamping point (mm).

※ 2. Minimum pressure to operate the clamp with no load.

The swinging may stop in the middle of action due to the lever shape. (Refer to P.197 for consideration for lever design.)

1. Please see the external dimension if you need the information of mass and cylinder volume.

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic Unit

Manual Operation  
Accessories

Cautions / Others

Pneumatic  
Hole Clamp

SWH

Pneumatic  
Swing Clamp

WHA

Pneumatic  
Link Clamp

WCA

Air Flow  
Control Valve

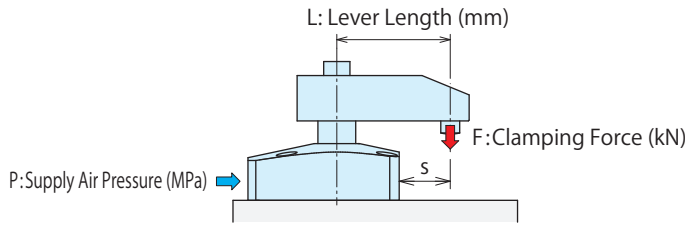
BZW

Pneumatic Expansion  
Locating Pin

WM

WK

Clamping Force Curve



(How to read the clamping force curve)

When using WHA0500

Supply Air Pressure 0.4MPa Lever Length L=60mm

The clamping force is about 0.58kN.

Notes

1. Cylinder output cannot be calculated from the calculation formula of clamping force shown at ※1

WHA0320		Clamping Force Calculation Formula ※1 (kN) $F = P (0.625 - 0.0014 \times L)$								
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Max. Lever Length (L) (mm)
		Lever Length L(mm)								
		35	50	60	70	80	90	100	120	
1.0	0.65	0.58	0.56	0.54	0.53	0.51	0.50	0.49	0.47	103
0.9	0.59	0.52	0.50	0.49	0.47	0.46	0.45	0.44	0.41	120
0.8	0.52	0.46	0.44	0.43	0.42	0.41	0.40	0.39	0.37	147
0.7	0.46	0.40	0.39	0.38	0.37	0.36	0.35	0.34	0.32	190
0.6	0.39	0.35	0.33	0.32	0.32	0.31	0.30	0.29	0.27	190
0.5	0.33	0.29	0.28	0.27	0.26	0.26	0.25	0.24	0.23	190
0.4	0.26	0.23	0.22	0.22	0.21	0.21	0.20	0.19	0.18	190
0.3	0.20	0.17	0.17	0.16	0.16	0.15	0.15	0.15	0.14	190
0.2	0.13	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.09	190
0.1	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	190
Max. Operating Pressure (MPa)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	

WHA0400		Clamping Force Calculation Formula ※1 (kN) $F = P (1.034 - 0.0021 \times L)$								
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Max. Lever Length (L) (mm)
		Lever Length L(mm)								
		50	60	70	80	90	100	120	150	
1.0	1.06	0.93	0.91	0.89	0.87	0.85	0.82	0.74	0.70	117
0.9	0.95	0.84	0.82	0.80	0.78	0.76	0.74	0.70	0.63	137
0.8	0.84	0.74	0.73	0.71	0.69	0.68	0.66	0.63	0.58	171
0.7	0.74	0.65	0.64	0.62	0.61	0.59	0.58	0.55	0.50	200
0.6	0.63	0.56	0.54	0.53	0.52	0.51	0.49	0.47	0.43	200
0.5	0.53	0.46	0.45	0.44	0.43	0.42	0.41	0.39	0.36	200
0.4	0.42	0.37	0.36	0.35	0.35	0.34	0.33	0.31	0.29	200
0.3	0.32	0.28	0.27	0.27	0.26	0.25	0.25	0.23	0.22	200
0.2	0.21	0.19	0.18	0.18	0.17	0.17	0.16	0.16	0.14	200
0.1	0.11	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.07	200
Max. Operating Pressure (MPa)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.8	

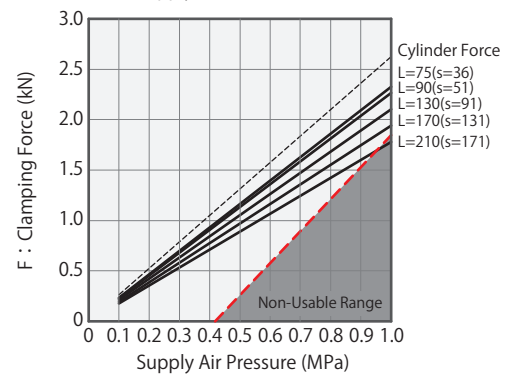
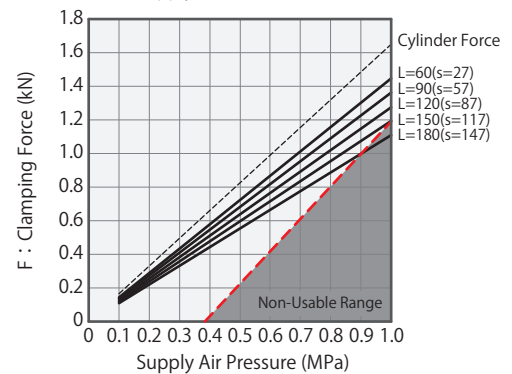
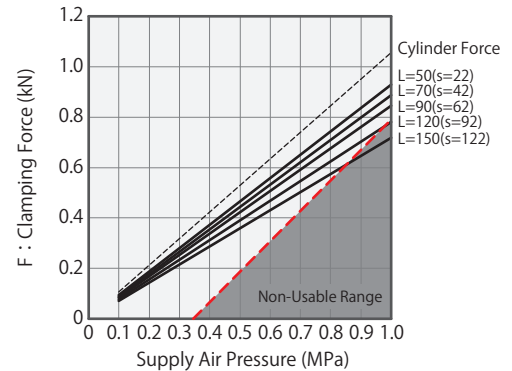
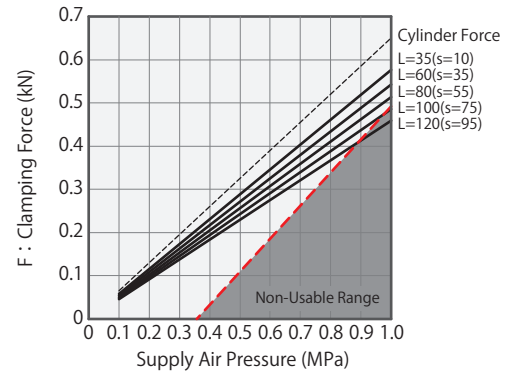
WHA0500		Clamping Force Calculation Formula ※1 (kN) $F = P (1.616 - 0.0028 \times L)$								
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Max. Lever Length (L) (mm)
		Lever Length L(mm)								
		60	70	80	90	100	120	150	180	
1.0	1.65	1.45	1.42	1.39	1.36	1.34	1.28	1.20	1.00	151
0.9	1.48	1.30	1.28	1.25	1.23	1.20	1.15	1.08	1.00	180
0.8	1.32	1.16	1.14	1.11	1.09	1.07	1.02	0.96	0.89	236
0.7	1.15	1.01	0.99	0.97	0.95	0.94	0.90	0.84	0.78	270
0.6	0.99	0.87	0.85	0.84	0.82	0.80	0.77	0.72	0.67	270
0.5	0.82	0.72	0.71	0.70	0.68	0.67	0.64	0.60	0.56	270
0.4	0.66	0.58	0.57	0.56	0.55	0.53	0.51	0.48	0.44	270
0.3	0.49	0.43	0.43	0.42	0.41	0.40	0.38	0.36	0.33	270
0.2	0.33	0.29	0.28	0.28	0.27	0.27	0.26	0.24	0.22	270
0.1	0.16	0.14	0.14	0.14	0.14	0.13	0.13	0.12	0.11	270
Max. Operating Pressure (MPa)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	

WHA0630		Clamping Force Calculation Formula ※1 (kN) $F = P (2.626 - 0.0040 \times L)$								
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN)								Max. Lever Length (L) (mm)
		Lever Length L(mm)								
		75	90	110	130	150	170	190	210	
1.0	2.63	2.33	2.27	2.19	2.11	2.03	1.95	1.87	1.75	191
0.9	2.36	2.09	2.04	1.97	1.90	1.82	1.75	1.68	1.61	234
0.8	2.10	1.86	1.81	1.75	1.68	1.62	1.56	1.49	1.43	330
0.7	1.84	1.63	1.59	1.53	1.47	1.42	1.36	1.31	1.25	330
0.6	1.58	1.40	1.36	1.31	1.26	1.22	1.17	1.12	1.07	330
0.5	1.31	1.16	1.13	1.09	1.05	1.01	0.97	0.93	0.89	330
0.4	1.05	0.93	0.91	0.87	0.84	0.81	0.78	0.75	0.71	330
0.3	0.79	0.70	0.68	0.66	0.63	0.61	0.58	0.56	0.54	330
0.2	0.53	0.47	0.45	0.44	0.42	0.41	0.39	0.37	0.36	330
0.1	0.26	0.23	0.23	0.22	0.21	0.20	0.19	0.19	0.18	330
Max. Operating Pressure (MPa)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	

Notes

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

1. There may be no lever swing action with large inertia depending on different supply air pressure, flow and lever mounting position.
2. Tables and graphs shown are the relationships between the clamping force (kN) and supply air pressure (MPa).
3. The clamping force is shown with lever in the locked position.
4. The clamping force varies as per the lever length. Please use it with supply pneumatic pressure suitable for lever length.
5. Using in the non-usable range may damage the clamp and lead to deformation, dragging or air leakage.

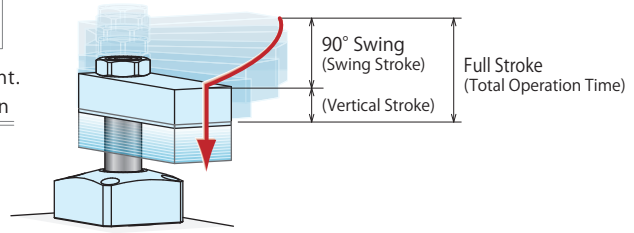


## Allowable Swing Time Graph

### Adjustment of Swing Time

The graph shows allowable swing time against lever inertia moment. Please make sure that an operation time is more than the operation time shown in the graph.

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



High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Pneumatic Hole Clamp

SWH

Pneumatic Swing Clamp

WHA

Pneumatic Link Clamp

WCA

Air Flow Control Valve

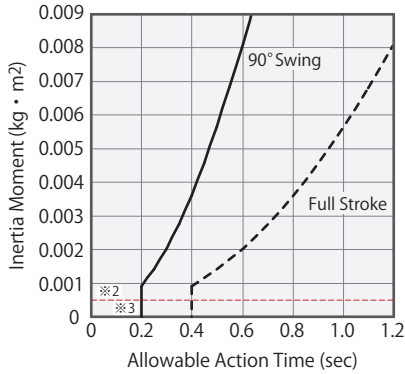
BZW

Pneumatic Expansion Locating Pin

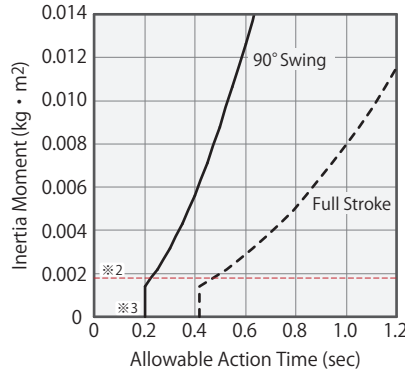
WM

WK

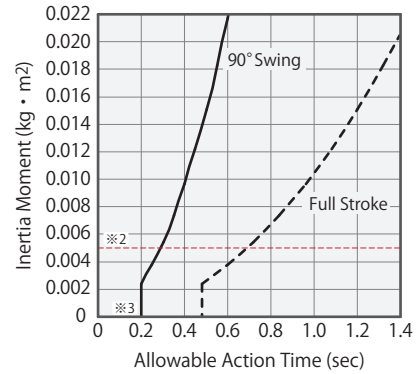
### WHA0320



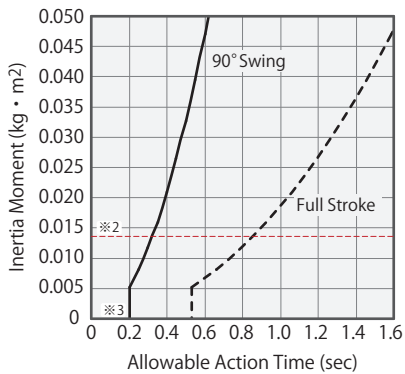
### WHA0400



### WHA0500



### WHA0630



(How to read the allowable swing time graph)

When using WHA0500

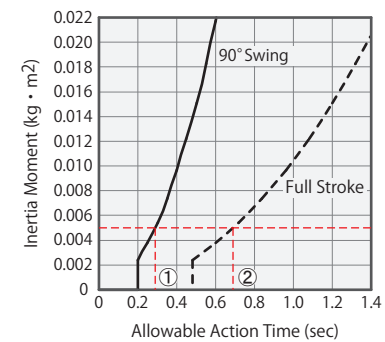
Lever Inertia Moment : 0.0050kg·m<sup>2</sup>

①90° Swing Time : About 0.29 sec

②Total Operation Time : About 0.69 sec

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

WHA0500 ← Model No.



#### Notes

1. In the case of long stroke type, the full action time is different from what is shown on the graph. It should be calculated via the formula below.

(The 90° swing time is shown in the graph.)

※2. The inertia moment of lever blank (WZH-T) is displayed.

※3. Minimum 90° swing time should be 0.2sec.

#### Calculation Formula of Total Operation Time

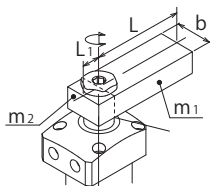
$$\text{Total Operation Time (sec)} = 90^\circ \text{ Swing Action Time (sec)} \times \frac{\text{Full Stroke (mm)}}{\text{Swing Stroke (mm)}}$$

#### How to calculate inertia moment (Estimated)

I : Inertia Moment (kg·m<sup>2</sup>)

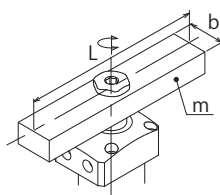
L, L<sub>1</sub>, L<sub>2</sub>, K, b : Length(m) m, m<sub>1</sub>, m<sub>2</sub>, m<sub>3</sub> : Mass(kg)

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



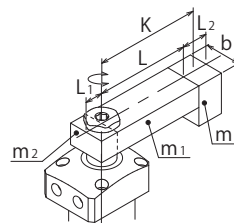
$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12}$$

② For a rectangular plate (cuboid), the rotating shaft is vertically on the gravity center of the plate.



$$I = m \frac{L^2 + b^2}{12}$$

③ The load is applied on the lever front end.



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

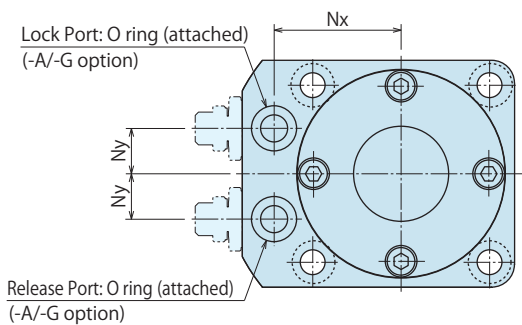
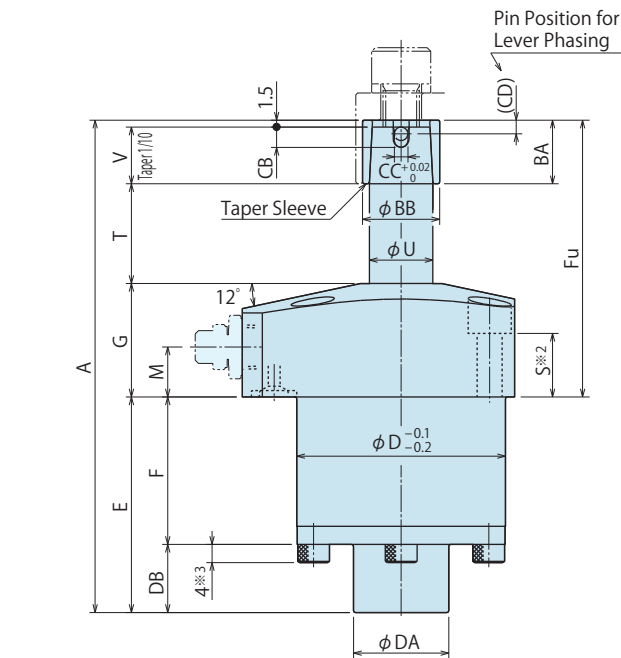
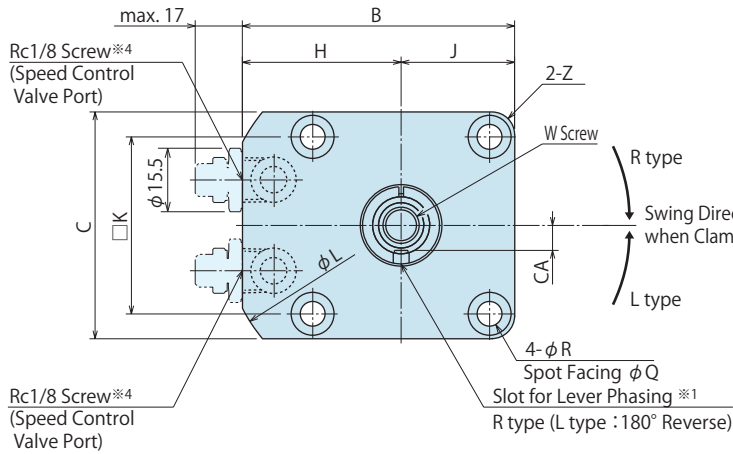
#### Notes

- The graph shows the allowable action time in regard to the lever moment of inertia when the piston rod operates at constant speed.
- There may be no lever swing action with large inertia depending on different supply air pressure, flow and lever mounting position.
- For speed adjustment of clamp lever, please use meter-out flow control valve.  
In case of meter-in control, the clamp lever may be accelerated by its own weight during swinging motion (clamp mounted horizontally) or the piston rod may be moving too fast. Please refer to P.1044 for speed control of the hydraulic cylinder.
- Excessive swing speed can reduce stopping accuracy and damage the internal parts.
- Please contact us if operational conditions differ from those shown on the graphs.

External Dimensions

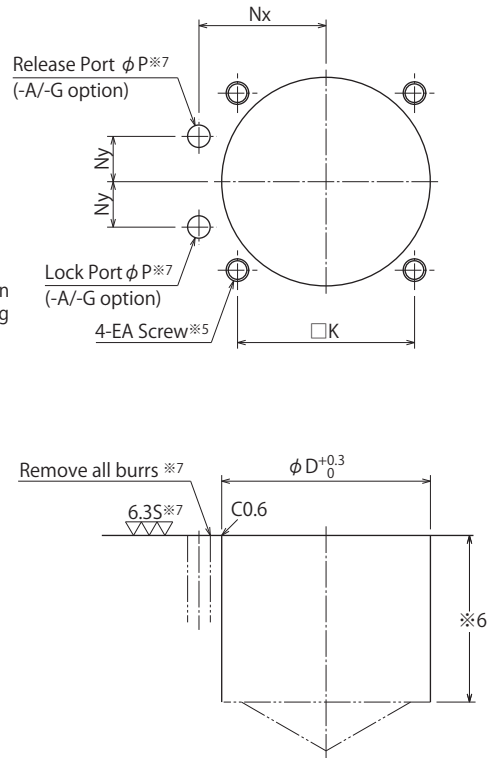
A : Gasket Option (Speed Control Valve Corresponding Option (Include R-Thread Plug))

※The drawing shows the released state of WHA-2AR.



- Notes
- ※ 1. The slot for determining the lever phase faces the port side if locked.
  - ※ 2. Mounting bolts are not provided.  
Customer should prepare based on dimension "S".
  - ※ 3. The number of bottom bolts, may vary as per type.
  - ※ 4. Speed control valve is sold separately.  
Please order separately (see P.213).

Machining Dimensions of Mounting Area

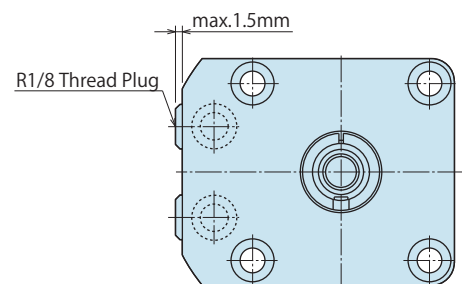


- Notes
- ※ 5. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
  - ※ 6. The φ D depth of the body mounting hole should be decided based on the mounting height with reference to E size.
  - ※ 7. This process is for -A/-G gasket option.

Piping Method

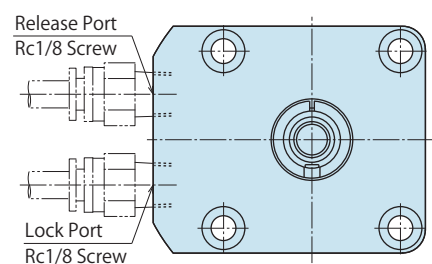
G: Gasket Option (R Thread Plug)

※The drawing shows the released state of WHA-2GR.

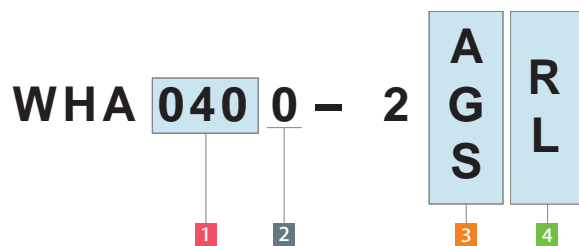


S: Piping Option (Rc Thread)

※The drawing shows the released state of WHA-2SR.



## Model No. Indication



(Format Example : WHA0500-2AR)

- 1 Cylinder Inside Diameter
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Action Confirmation (When Blank is chosen)
- 6 Option (When Blank is chosen)

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic Unit

Manual Operation  
Accessories

Cautions / Others

Pneumatic  
Hole Clamp

SWH

Pneumatic  
Swing Clamp

WHA

Pneumatic  
Link Clamp

WCA

Air Flow  
Control Valve

BZW

Pneumatic Expansion  
Locating Pin

WM

WK

## External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WHA0320-2□□	WHA0400-2□□	WHA0500-2□□	WHA0630-2□□
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	108.5	117.5	136	149
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	47.5	51.5	58	66.5
F	32.5	35	41	46.5
Fu	61	66	78	82.5
G	25	25	30	30
H	35	38	43	48
J	25	28	33	39
K	39	45	53	65
L	79	88	98	113
M	11	11	13	13
Nx	28	31	36	41
Ny	10	13	15	20
P	5	5	5	5
Q	9.5	9.5	11	11
R	5.5	5.5	6.8	6.8
S	14	13.5	16	15
T	22	23	26	28.5
U	14	16	20	25
V	12.5	16.5	20.5	22.5
W (Nominal×Pitch×Depth)	M8×1.25×16	M8×1.25×16	M10×1.5×20	M12×1.75×24
Z (Chamfer)	R5	R5	R6	R6
BA	14	18	22	24
BB	17	19	24	29
CA	5.5	5.5	6.5	9
CB	4.5	4.5	5.5	5.5
CC	3	3	4	4
(CD)	3	3	3.5	3.5
DA	21	24	27	34
DB	15	16.5	17	20
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1
O-ring (-A/-G option)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm <sup>3</sup>	Lock	13.0	22.2	39.6
	Release	16.1	26.4	47.1
Mass <sup>**8</sup> kg	0.5	0.6	1.0	1.7

Note

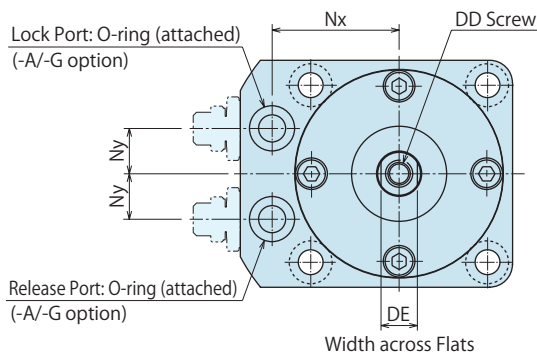
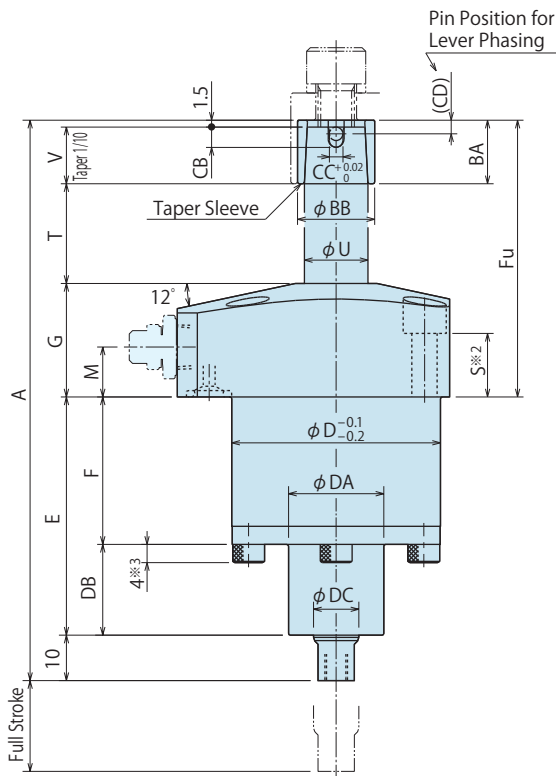
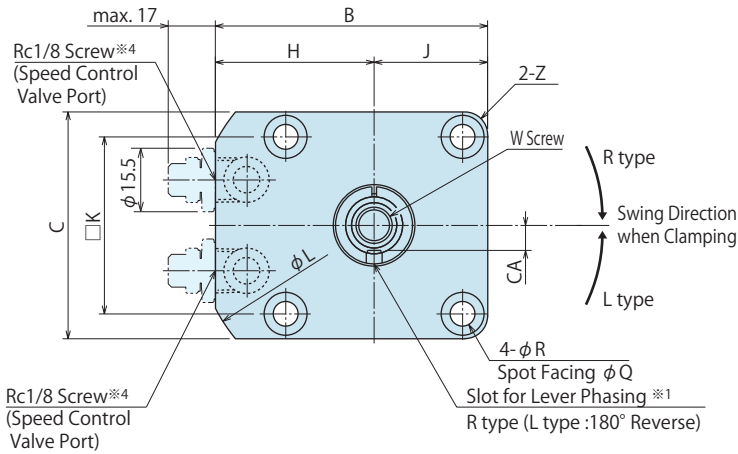
※ 8. Mass of single swing clamp including taper sleeve and nut.



External Dimensions

A : Gasket Option (Speed Control Valve Corresponding Option (Include R-Thread Plug))

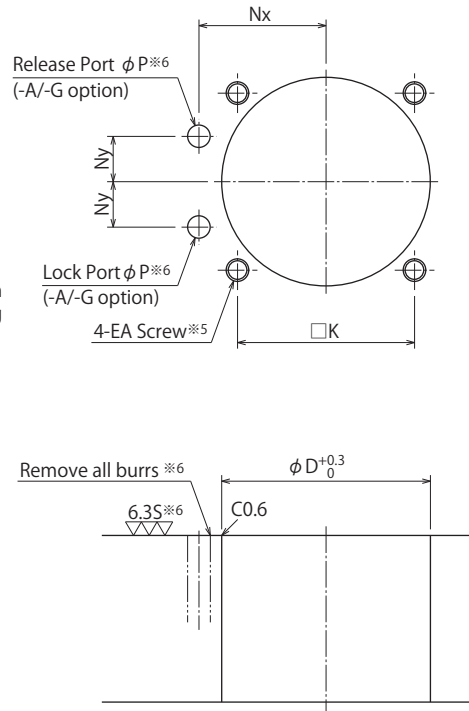
※The drawing shows the released state of WHA-2ARD.



Notes

- ※ 1. The slot for determining the lever phase faces the port side if locked.
- ※ 2. Mounting bolts are not provided. Customer should prepare based on dimension "S".
- ※ 3. The number of bottom bolts, may vary as per type.
- ※ 4. Speed control valve is sold separately. Please order separately (see P.213).

Machining Dimensions of Mounting Area



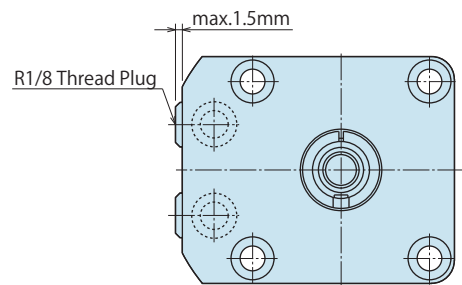
Notes

- ※ 5. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
- ※ 6. This process is for -A/-G gasket option.

Piping Method

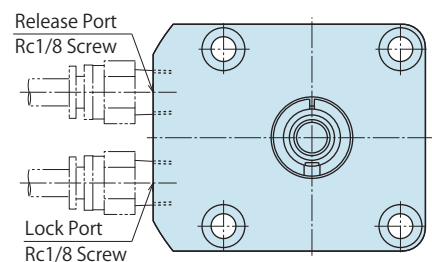
G: Gasket Option (R Thread Plug)

※The drawing shows the released state of WHA-2GRD.

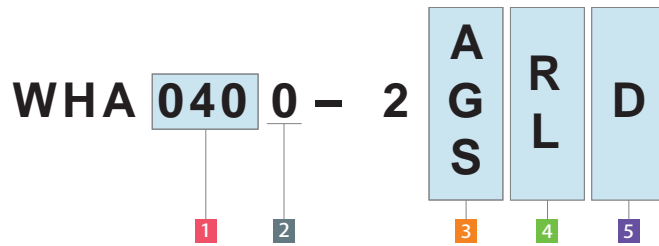


S: Piping Option (Rc Thread)

※The drawing shows the released state of WHA-2SRD.



## Model No. Indication



(Format Example : WHA0500-2ARD)

- 1 Cylinder Inside Diameter
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Action Confirmation  
(When D is chosen : Double End Rod Option for Dog)
- 6 Option (When Blank is chosen)

## External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WHA0320-2□□D	WHA0400-2□□D	WHA0500-2□□D	WHA0630-2□□D
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	123.5	133	151.5	164
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	52.5	57	63.5	71.5
F	32.5	35	41	46.5
Fu	61	66	78	82.5
G	25	25	30	30
H	35	38	43	48
J	25	28	33	39
K	39	45	53	65
L	79	88	98	113
M	11	11	13	13
Nx	28	31	36	41
Ny	10	13	15	20
P	5	5	5	5
Q	9.5	9.5	11	11
R	5.5	5.5	6.8	6.8
S	14	13.5	16	15
T	22	23	26	28.5
U	14	16	20	25
V	12.5	16.5	20.5	22.5
W (Nominal×Pitch×Depth)	M8×1.25×16	M8×1.25×16	M10×1.5×20	M12×1.75×24
Z (Chamfer)	R5	R5	R6	R6
BA	14	18	22	24
BB	17	19	24	29
CA	5.5	5.5	6.5	9
CB	4.5	4.5	5.5	5.5
CC	3	3	4	4
(CD)	3	3	3.5	3.5
DA	21	24	27	34
DB	20	22	22.5	25
DC	10	12	14	14
DD (Nominal×Pitch×Depth)	M5×0.8×12	M6×1×15	M8×1.25×18	M8×1.25×18
DE	8	10	12	12
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1
O-ring (-A/-G option)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm <sup>3</sup>	Lock	13.0	22.2	39.6
	Release	14.5	24.0	43.4
Mass <sup>※7</sup> kg	0.5	0.7	1.1	1.7

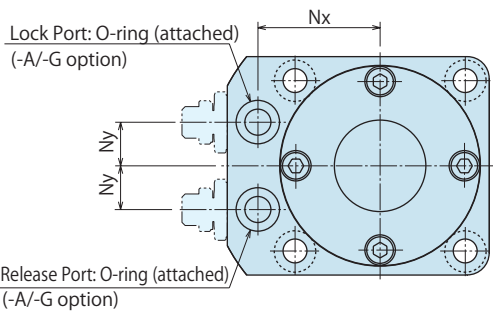
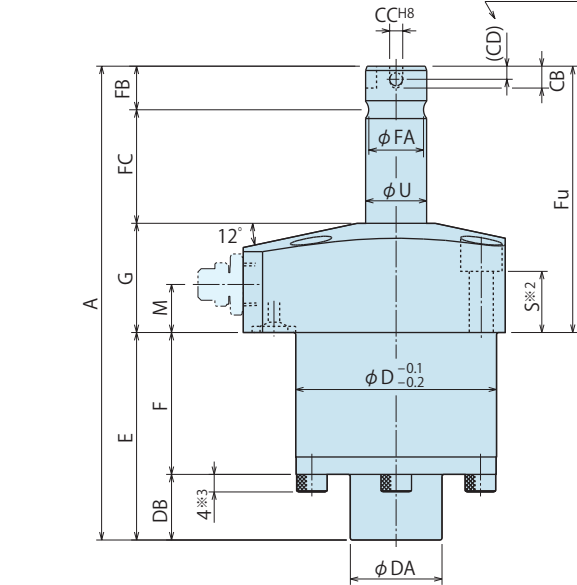
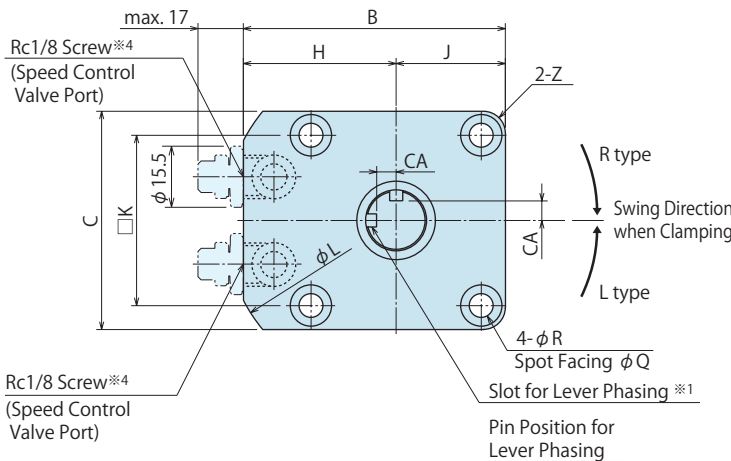
Note

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

**External Dimensions**

A : Gasket Option (Speed Control Valve Corresponding Option (Include R-Thread Plug))

※The drawing shows the released state of WHA-2AR-F.

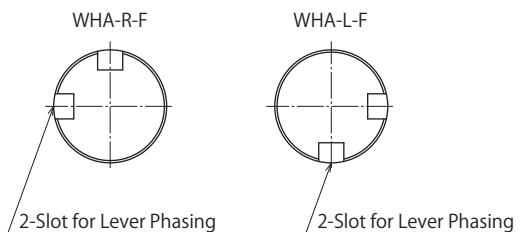


**Notes**

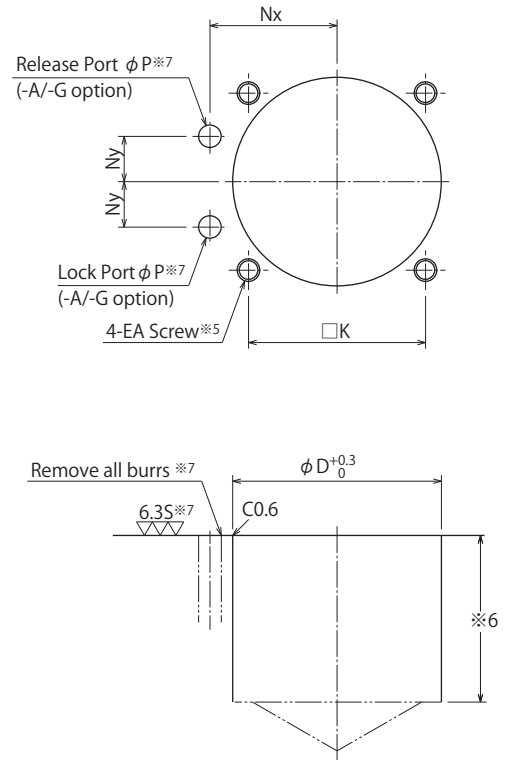
- ※ 2. Mounting bolts are not provided. Customer should prepare based on dimension "S".
- ※ 3. The number of bottom bolts, may vary as per type.
- ※ 4. Speed control valve is sold separately. Please order separately (see P.213).

**※ 1 Slot for Lever Phasing (Released State)**

The slot position varies as per the lock swinging direction.



**Machining Dimensions of Mounting Area**



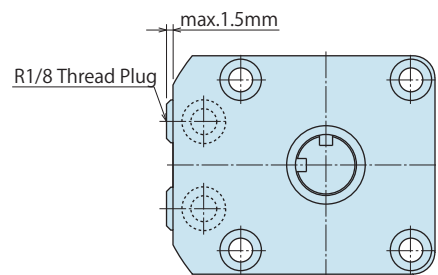
**Notes**

- ※ 5. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
- ※ 6. The φD depth of the body mounting hole should be decided based on the mounting height with reference to E size.
- ※ 7. This process is for -A/-G gasket option.

**Piping Method**

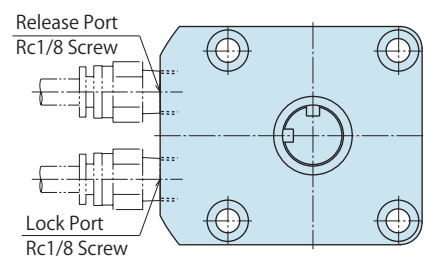
G: Gasket Option (R Thread Plug)

※The drawing shows the released state of WHA-2GR-F.

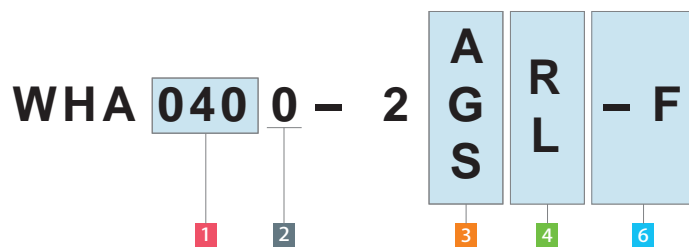


S: Piping Option (Rc Thread)

※The drawing shows the released state of WHA-2SR-F.



## Model No. Indication



(Format Example : WHA0500-2ARD)

- 1 Cylinder Inside Diameter
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Action Confirmation (When Blank is chosen)
- 6 Option  
(When F is chosen : Quick-Change Lever Option)

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic Unit

Manual Operation  
Accessories

Cautions / Others

Pneumatic  
Hole Clamp

SWH

Pneumatic  
Swing Clamp

WHA

Pneumatic  
Link Clamp

WCA

Air Flow  
Control Valve

BZW

Pneumatic Expansion  
Locating Pin

WM

WK

## External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WHA0320-2□□-F	WHA0400-2□□-F	WHA0500-2□□-F	WHA0630-2□□-F
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	114.5	121.5	142	160
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	47.5	51.5	58	66.5
F	32.5	35	41	46.5
Fu	67	70	84	93.5
G	25	25	30	30
H	35	38	43	48
J	25	28	33	39
K	39	45	53	65
L	79	88	98	113
M	11	11	13	13
Nx	28	31	36	41
Ny	10	13	15	20
P	5	5	5	5
Q	9.5	9.5	11	11
R	5.5	5.5	6.8	6.8
S	14	13.5	16	15
U	14	16	20	25
Z (Chamfer)	R5	R5	R6	R6
CA	4.5	5.5	6.8	9.3
CB	5	5	6.5	6.5
CC	3 <sup>+0.014</sup> <sub>0</sub>	3 <sup>+0.014</sup> <sub>0</sub>	4 <sup>+0.018</sup> <sub>0</sub>	4 <sup>+0.018</sup> <sub>0</sub>
(CD)	2.5	2.5	3.5	3.5
DA	21	24	27	34
DB	15	16.5	17	20
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1
FA	12.5	14.5	18	22.5
FB	10	11	14	17.5
FC	32	34	40	46
O-ring (-A/-G option)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity	Lock	13.0	22.2	39.6
	Release	16.1	26.4	47.1
Mass <sup>**8</sup>	kg	0.5	0.6	1.0

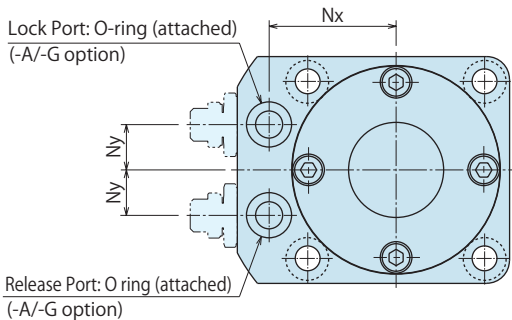
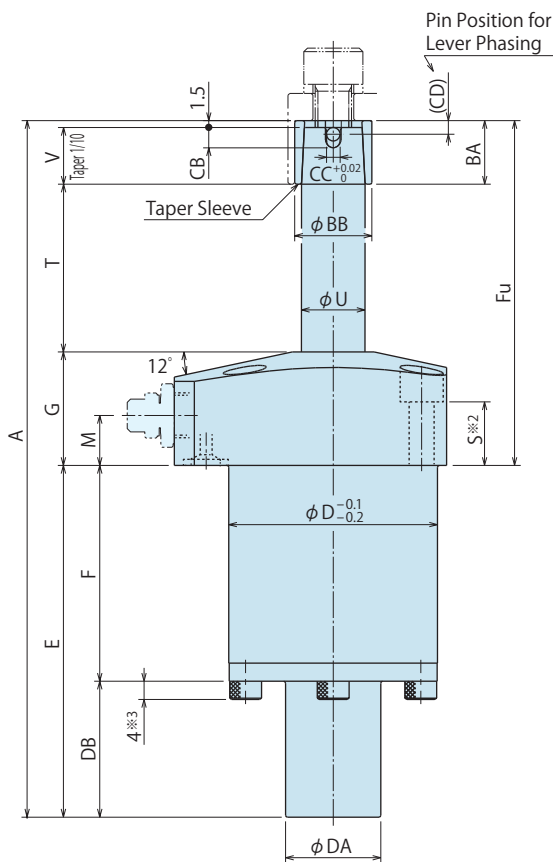
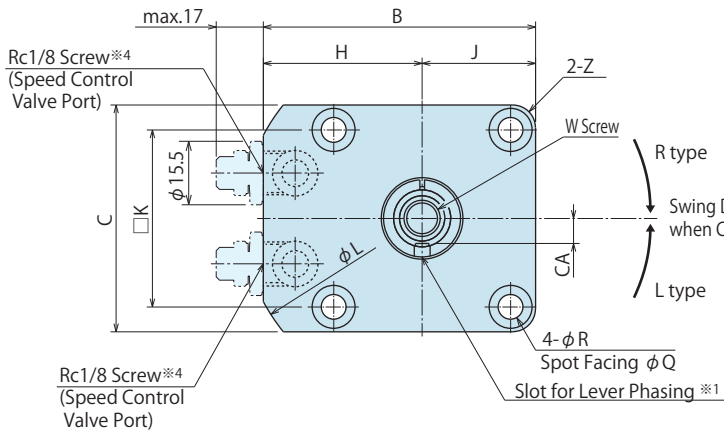
Note

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

External Dimensions

A : Gasket Option (Speed Control Valve Corresponding Option (Include R-Thread Plug))

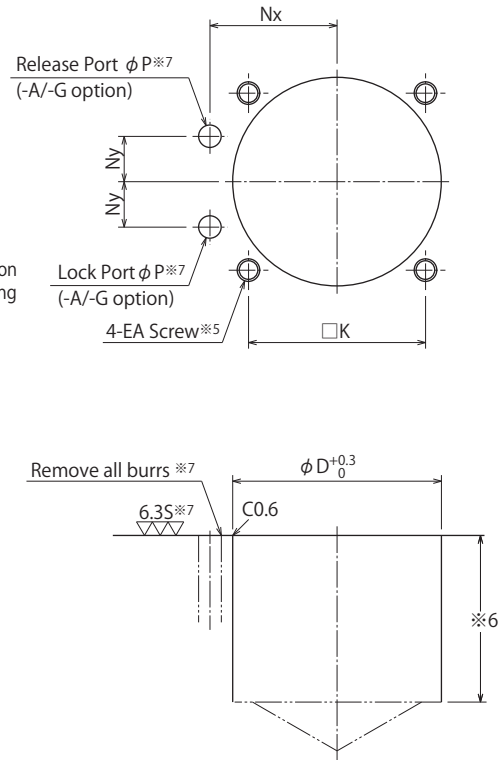
※The drawing shows the released state of WHA-2AR-Q□.



Notes

- ※ 1. The slot for determining the lever phase faces the port side if locked
- ※ 2. Mounting bolts are not provided. Customer should prepare based on dimension "S".
- ※ 3. The number of bottom bolts, may vary as per type.
- ※ 4. Speed control valve is sold separately. Please order separately (see P.213).

Machining Dimensions of Mounting Area



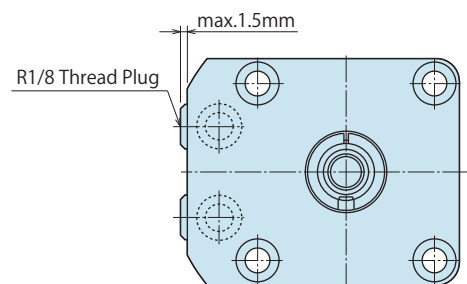
Notes

- ※ 5. EA tapping depth should be calculated so that mounting bolts engage fixture by at least 1.5 x bolt diameter.
- ※ 6. The φD depth of the body mounting hole should be decided based on the mounting height with reference to E size.
- ※ 7. This process is for -A/-G gasket option.

Piping Method

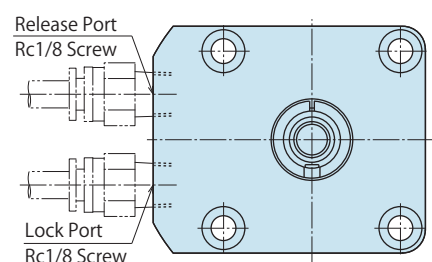
G: Gasket Option (R Thread Plug)

※The drawing shows the released state of WHA-2GR-Q□.

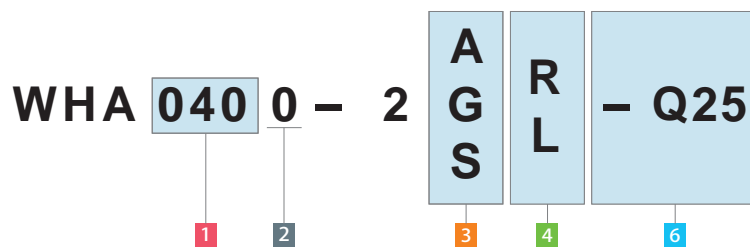


S: Piping Option (Rc Thread)

※The drawing shows the released state of WHA-2SR-Q□.



## Model No. Indication



(Format Example : WHA0500-2ARD)

- 1 Cylinder Inside Diameter
- 2 Design No.
- 3 Piping Method
- 4 Swing Direction when Clamping
- 5 Action Confirmation (When Blank is chosen)
- 6 Option  
(When Q25 is chosen : Long Stroke Option)

## External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WHA0320-2□□-Q25	WHA0400-2□□-Q25	WHA0500-2□□-Q25	WHA0630-2□□-Q25
Full Stroke	35	36	39	41.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	25	25	25	25
A	153.5	162.5	181	194
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	77.5	81.5	88	96.5
F	47.5	50	56	61.5
Fu	76	81	93	97.5
G	25	25	30	30
H	35	38	43	48
J	25	28	33	39
K	39	45	53	65
L	79	88	98	113
M	11	11	13	13
Nx	28	31	36	41
Ny	10	13	15	20
P	5	5	5	5
Q	9.5	9.5	11	11
R	5.5	5.5	6.8	6.8
S	14	13.5	16	15
T	37	38	41	43.5
U	14	16	20	25
V	12.5	16.5	20.5	22.5
W (Nominal×Pitch×Depth)	M8×1.25×16	M8×1.25×16	M10×1.5×20	M12×1.75×24
Z (Chamfer)	R5	R5	R6	R6
BA	14	18	22	24
BB	17	19	24	29
CA	5.5	5.5	6.5	9
CB	4.5	4.5	5.5	5.5
CC	3	3	4	4
(CD)	3	3	3.5	3.5
DA	21	24	27	34
DB	30	31.5	32	35
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1
O-ring (-A/-G option)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm <sup>3</sup>	Lock	22.8	38.0	64.3
	Release	28.1	45.3	76.6
Mass <sup>**8</sup> kg	0.5	0.7	1.1	1.8

Note

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

High-Power  
Series

Pneumatic Series

Hydraulic Series

Valve / Coupler  
Hydraulic Unit

Manual Operation  
Accessories

Cautions / Others

Pneumatic  
Hole Clamp

SWH

Pneumatic  
Swing Clamp

WHA

Pneumatic  
Link Clamp

WCA

Air Flow  
Control Valve

BZW

Pneumatic Expansion  
Locating Pin

WM

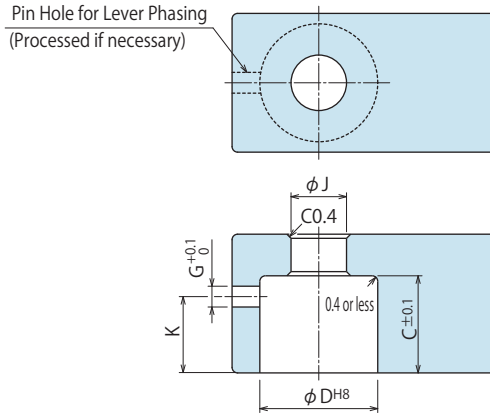
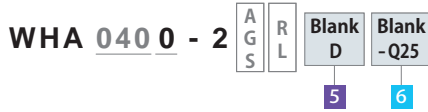
WK

● **Swing Lever Design Dimensions**

※ Reference for designing taper lock swing lever.

**Taper Lock Lever Option**

Corresponding Model No.



	(mm)			
Corresponding Model No.	WHA0320-2□□	WHA0400-2□□	WHA0500-2□□	WHA0630-2□□
	WHA0320-2□□D	WHA0400-2□□D	WHA0500-2□□D	WHA0630-2□□D
	WHA0320-2□□-Q25	WHA0400-2□□-Q25	WHA0500-2□□-Q25	WHA0630-2□□-Q25
C	14	18	22	24
D	17 <sup>+0.027</sup> <sub>0</sub>	19 <sup>+0.033</sup> <sub>0</sub>	24 <sup>+0.033</sup> <sub>0</sub>	29 <sup>+0.033</sup> <sub>0</sub>
G	3	3	4	4
J	9	9	11	14
K	11	15	18.5	20.5
Locating Pin (Reference)	φ3×6	φ3×6	φ4×8	φ4×10

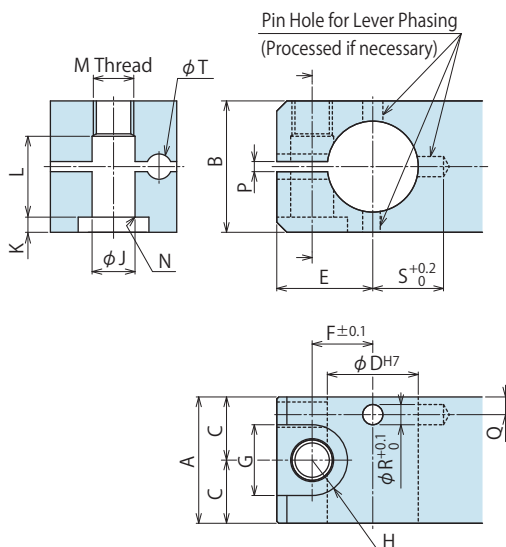
Notes

1. Swing lever should be designed with its length according to performance graph.
2. If the swing lever is not in accordance with the dimensions shown above, performance may be degraded and damage can occur.
3. The pin hole for lever phasing (φG) should be added if necessary.

**Quick Change Lever Option (-F)**

※ Reference for designing quick change lever.

Corresponding Model No.



	(mm)			
Corresponding Model No.	WHA0320-2□□-F	WHA0400-2□□-F	WHA0500-2□□-F	WHA0630-2□□-F
A	20	22	28	35
B	22	22	26	32
C	10	11	14	17.5
D	14 <sup>+0.018</sup> <sub>0</sub>	16 <sup>+0.018</sup> <sub>0</sub>	20 <sup>+0.021</sup> <sub>0</sub>	25 <sup>+0.021</sup> <sub>0</sub>
E	14.5	15.5	20	24.5
F	9.25	10.25	13	16.25
G	11	11	14	17.5
H	R5.5	R5.5	R7	R8.75
J	6.5	6.5	8.5	10.5
K	2	2	3	4
L	13.5	13.5	16	18
M	M6×1	M6×1	M8×1	M10×1.25
N	C0.4	C0.4	C0.6	C0.6
P	2	2	2	2
Q	2.5	2.5	3.5	3.5
R	3	3	4	4
S	13	14	15	19.5
T	3.4	3.4	4.5	4.5
Locating Pin (Reference)	φ3×8	φ3×8	φ4×8	φ4×10

Notes

1. Swing lever should be designed with its length according to performance graph.
2. If the swing lever is not in accordance with the dimensions shown above, performance may be degraded and damage can occur.
3. The pin hole for lever phasing (φR) should be added if necessary.
4. Sells the tightening bolt (LZH□0-B) for lever separately.

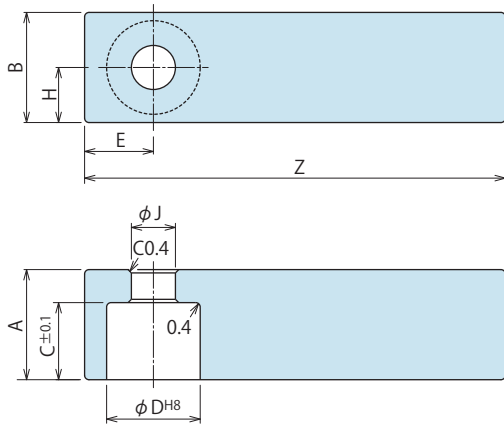
## Accessories : Material Swing Lever for Taper Lock Option

Model No. Indication

**WHZ 040 0 - T**

Size  
(Refer to following table)

Design No.  
(Revision Number)



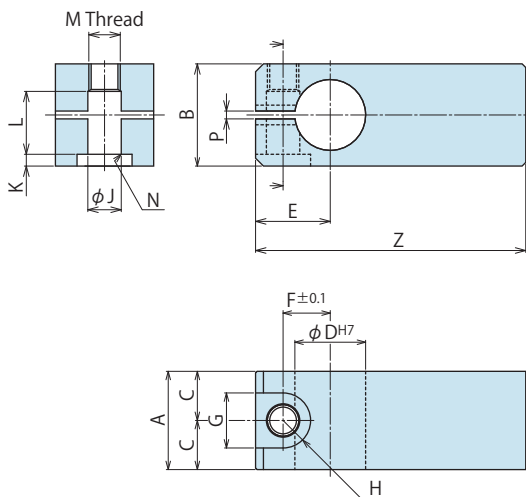
## Material Swing Lever for Quick Change Option

Model No. Indication

**WHZ 040 0 - F**

Size  
(Refer to following table)

Design No.  
(Revision Number)



## Tightening Bolts for Quick Change Lever

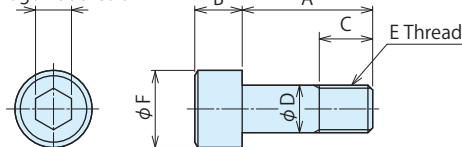
Model No. Indication

**LZH 036 0 - B**

Size  
(Refer to following table)

Design No.  
(Revision Number)

Hexagon Socket G



(mm)

Model No.	WHZ0320-T	WHZ0400-T	WHZ0500-T	WHZ0630-T
Corresponding Model No.	WHA0320-2□□ WHA0320-2□□-Q25	WHA0400-2□□ WHA0400-2□□-Q25	WHA0500-2□□ WHA0500-2□□-Q25	WHA0630-2□□ WHA0630-2□□-Q25
A	20	22	28	35
B	20	22	28	35
C	14	18	22	24
D	17 <sup>+0.027</sup> <sub>0</sub>	19 <sup>+0.033</sup> <sub>0</sub>	24 <sup>+0.033</sup> <sub>0</sub>	29 <sup>+0.033</sup> <sub>0</sub>
E	12.5	13	16	19
H	10	11	14	17.5
J	9	9	11	14
Z	90	125	150	180

Notes

1. Material S45C
2. If necessary, the front end should be additionally machined.
3. When determining the phase, refer to taper lock lever design dimensions for each model for the additional machining.

(mm)

Model No.	WHZ0320-F	WHZ0400-F	WHZ0500-F	WHZ0630-F
Corresponding Model No.	WHA0320-2□□-F	WHA0400-2□□-F	WHA0500-2□□-F	WHA0630-2□□-F
A	20	22	28	35
B	22	22	26	32
C	10	11	14	17.5
D	14 <sup>+0.018</sup> <sub>0</sub>	16 <sup>+0.018</sup> <sub>0</sub>	20 <sup>+0.021</sup> <sub>0</sub>	25 <sup>+0.021</sup> <sub>0</sub>
E	14.5	15.5	20	24.5
F	9.25	10.25	13	16.25
G	11	11	14	17.5
H	R5.5	R5.5	R7	R8.75
J	6.5	6.5	8.5	10.5
K	2	2	3	4
L	13.5	13.5	16	18
M	M6×1	M6×1	M8×1	M10×1.25
N	C0.4	C0.4	C0.6	C0.6
P	2	2	2	2
Z	90	125	150	180

Notes

1. Material S45C
2. If necessary, the front end should be additionally machined.
3. When determining the phase, refer to quick change lever design dimensions for each model for the additional machining.
4. Sells the tightening bolt (LZH□0-B) for lever separately.

(mm)

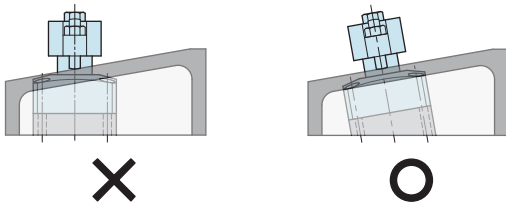
Model No.	LZH0360-B	LZH0400-B	LZH0480-B
Corresponding Model No.	WHA0320-2□□-F / WHA0400-2□□-F	WHA0500-2□□-F	WHA0630-2□□-F
A	20	23	28
B	6	8	10
C	7	10	11
D	6	8	10
E	M6×1	M8×1	M10×1.25
F	10	13	16
G	5	6	8



**Cautions**

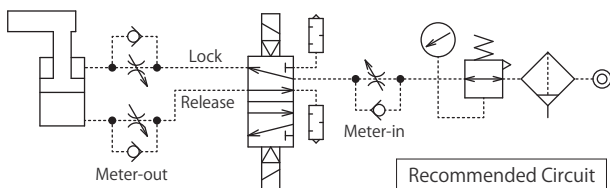
● Notes for Design

- 1) Check Specifications
  - Please use each product according to the specifications.
- 2) Notes for Circuit Design
  - Never supply pressure simultaneously to lock and release ports. If there is something wrong with the circuit design, it leads to get the applications damaged and work wrongly.
- 3) Swing lever should be designed so that the inertia moment is small.
  - Large inertia moment will degrade the lever's stopping accuracy and cause undue wear to the clamp. Additionally, the clamp may not function, depending on supplied hydraulic pressure and lever mounting position.
  - Please set the allowable operating time after the inertia moment is calculated. Please make sure that the clamps work within allowable operating time while referring to the allowable operating time graph.
  - If large flow air is supplied right after installation, the action time may become extremely fast, resulting in major clamp damage. Install the speed controller (meter-in) beside the air source and gradually supply air.
- 4) When using on a welding fixture, the exposed area of piston rod should be protected.
  - If spatter gets onto the sliding surface it could lead to malfunction and fluid leakage.
- 5) When clamping on a sloped surface of the workpiece
  - Make sure the clamp surface and mounting surface of the clamp are parallel.



6) Swing Speed Adjustment

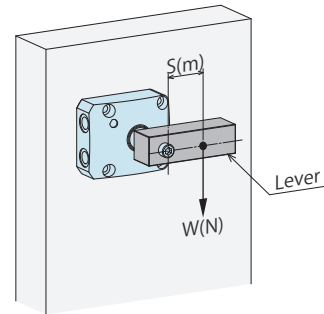
- Adjust the speed following "Allowable Swing Time Graph". If the clamp operates too fast the parts will wear out leading to premature damage and ultimately complete equipment failure.
- Install the speed controller (meter-out), and gradually adjust the speed to the setting from low speed (the status of small flow). If the speed control is carried out from high speed (the status of big flow), the machine and equipment may be damaged.



- Please set one speed controller for each clamp (meter-out) if multiple clamps are synchronized for action.

7) Consideration for Lever Design

- The lever should be as light as possible. The rotation may not be done because of the air pressure, lever mounting position and shape. The swinging may be stopped in the middle of action if a large lever horizontally mounted is used. Use the lever where the value of (Lever Weight W) × (Gravity Center S) is below that in the table below.



Model No.	(Lever Length W) × (Center of Gravity S) (N·m)
WHA0320	0.10
WHA0400	0.20
WHA0500	0.45
WHA0630	0.90

High-Power Series
Pneumatic Series
Hydraulic Series
Valve / Coupler Hydraulic Unit
Manual Operation Accessories
Cautions / Others
Pneumatic Hole Clamp
SWH
Pneumatic Swing Clamp
WHA
Pneumatic Link Clamp
WCA
Air Flow Control Valve
BZW
Pneumatic Expansion Locating Pin
WM
WK

### ● Installation Notes

- 1) Check the fluid to use
  - Please supply filtered clean dry air.
  - Oil supply with a lubricator etc. is unnecessary. Oil supply with a lubricator may cause loss of the initial lubricant. The operation under low pressure and low speed may be unstable. (When using secondary lubricant, please supply lubricant continuously. Otherwise, the initial grease applied from KOSMEK will be removed from the secondary lubricant.)

- 2) Procedure before Piping
  - The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly. The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
  - There is no filter provided with this product for prevention of contaminants in the air circuit.

- 3) Applying Sealing Tape
  - Wrap with tape 1 to 2 times following the screwing direction. Wrapping in the wrong direction will cause leaks and malfunction.
  - Pieces of the sealing tape can lead to air leaks and malfunction.
  - When piping, be careful that contaminant such as sealing tape does not enter in products.

- 4) Mounting the Unit
  - When mounting the product use four hexagon socket bolts (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)
WHA0320	M5×0.8	6.3
WHA0400	M5×0.8	6.3
WHA0500	M6×1	10
WHA0630	M6×1	10

- 5) Installing Flow Control Valve
  - Torque to 5 – 7Nm.

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

Standard: Taper Lock Lever Option

Model No.	Thread Size	Tightening Torque (N·m)
WHA0320	M8×1.25	20 ~ 24
WHA0400	M8×1.25	20 ~ 24
WHA0500	M10×1.5	32 ~ 38
WHA0630	M12×1.75	63 ~ 76

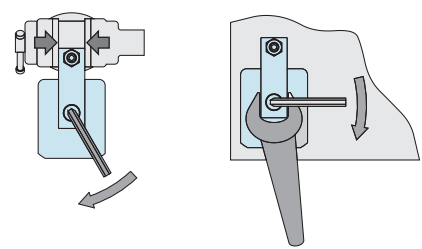
-F : Quick-Change Lever Option

Model No.	Thread Size	Tightening Torque (N·m)
WHA0320-F	M6×1	14
WHA0400-F	M6×1	14
WHA0500-F	M8×1	33
WHA0630-F	M10×1.25	65

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

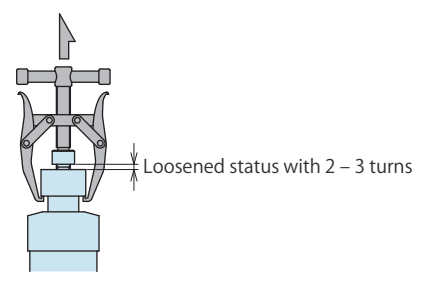
#### For Installation

- ① Fix the swinging lever with vise or spanner and tighten it with lever fixing torque.



#### For Removal

- ① Fix the swinging lever with vise or spanner and loosen it by 2-3 turns with lever fixing torque.
- ② Pull out the swinging lever with coupler while the piston rod is not inflicted with rotary torque.



#### 7) Swing Speed Adjustment

- Adjust the speed following "Allowable Swing Time Graph". If the clamp operates too fast the parts will wear out leading to premature damage and ultimately complete equipment failure.
- Turn the flow control valve gradually from the low-speed side (small flow) to the high-speed side (large flow) to adjust the speed.

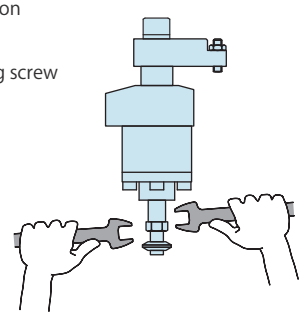
#### 8) Checking looseness and retightening

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

#### 9) Notes on double end rod option (-D) for dog application.

- When attaching dog, set up the piston so that it will not turn around. Please secure the dog or cam and prevent any rotation or torque on the piston rod.

Torque values for the mounting screw are shown in the table below.



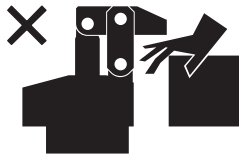
Model No.	Thread Size	Tightening Torque (N·m)
WHA0320-2□□D	M5×0.8	6.3
WHA0400-2□□D	M6×1	10
WHA0500-2□□D	M8×1.25	25
WHA0630-2□□D	M8×1.25	25

※ Please refer to P.1045 for common cautions. • Notes on Handling • Maintenance/Inspection • Warranty

## ● Cautions

### ● Notes on Handling

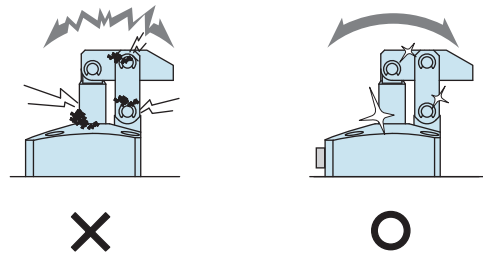
- 1) It should be handled by qualified personnel.
  - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the machine unless the safety protocols are ensured.
  - ① The machine and equipment can only be inspected or prepared when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



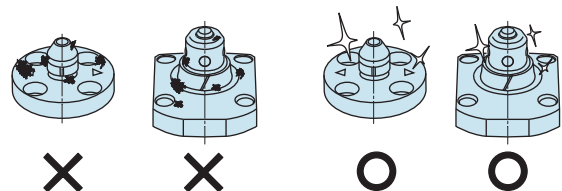
- 4) Do not disassemble or modify.
  - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

### ● 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.

# Air Flow Control Valve

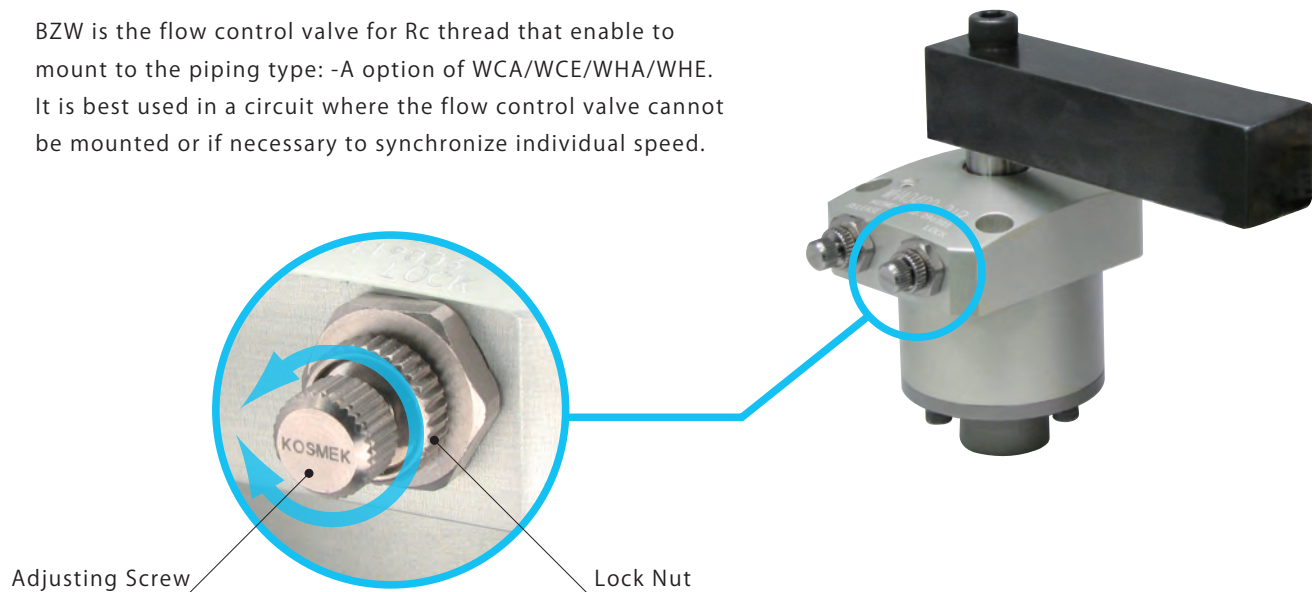
Model BZW



Directly mounted to clamps, easy adjusting

- Directly mounted to clamps

BZW is the flow control valve for Rc thread that enable to mount to the piping type: -A option of WCA/WCE/WHA/WHE. It is best used in a circuit where the flow control valve cannot be mounted or if necessary to synchronize individual speed.



## Corresponding Product Model

Clamps	BZW Model No.	Clamp Model No.
High-Power Pneumatic Link Clamp	BZW0100-A	WCE□1-2 <b>A</b> □
High-Power Pneumatic Swing Clamp	BZW0100-B	WHE□0-2 <b>A</b> □
Pneumatic Swing Clamp		WHA□0-2 <b>A</b> □
Pneumatic Link Clamp		WCA□1-2 <b>A</b> □

Corresponding to piping method -A option.  
 ※ When mounting BZW to piping method G, take off R thread plug and remove the seal tape not to get inside cylinder.

## Model No. Indication

# BZW 010 0 - B

Control Method  
**B** : Meter-out  
**A** : Meter-in

Design No.  
**0** : Revision Number

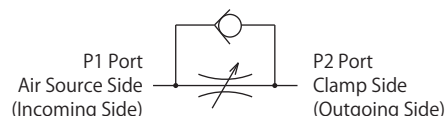
R Thread Size  
**010** : Rc1/8

## Specifications

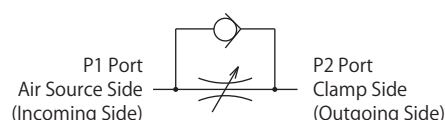
Model No.	BZW0100-B	BZW0100-A
Control Method	Meter-out	Meter-in
Operating Pressure MPa	0.1 ~ 1.0	
Withstanding Pressure MPa	1.5	
Adjust Screw Number of Rotations	10 Rotations	
Tightening Torque N·m	5 ~ 7	
Corresponding Product Model	WHE□0-2A□ WHA□0-2A□ WCA□1-2A□	WCE□1-2A□

## Circuit Symbol

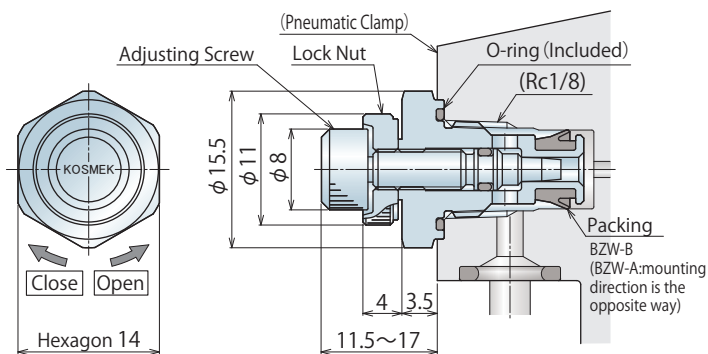
### BZW0100-B : Meter-out



### BZW0100-A : Meter-in

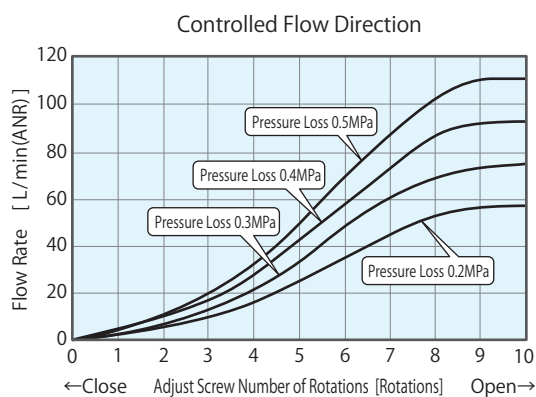


## External Dimensions

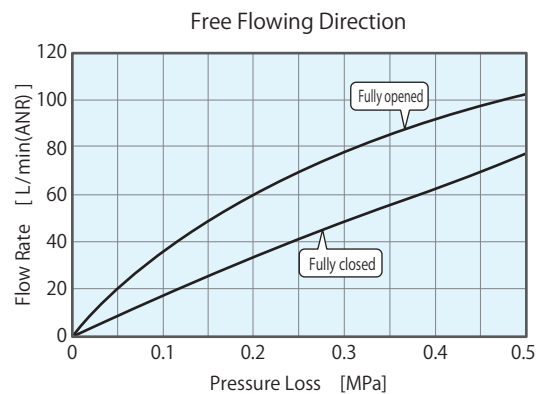
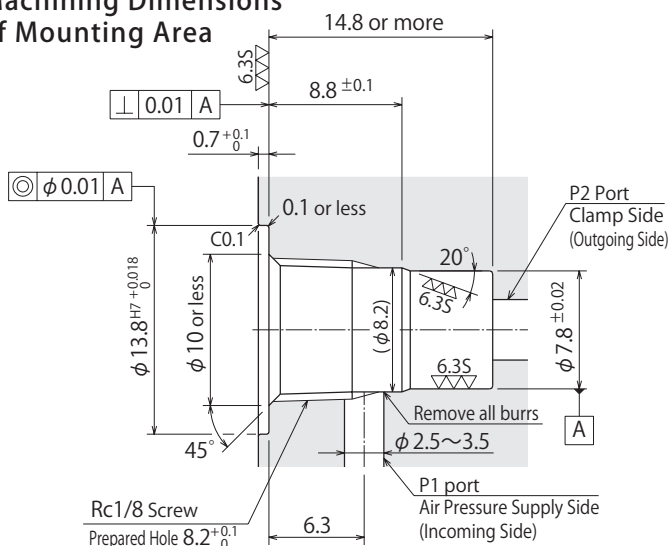


## Flow Rate Graph

### BZW0100-B/BZW0100-A common



## Machining Dimensions of Mounting Area



### Notes

- As the  $\nabla\nabla\nabla$  area is sealing part, pay attention not to damage it.
- Pay attention to have no cutting chips and burring at the tolerance part of the machining hole.
- As shown in the drawing, P1 port is used as the air supply and P2 port as the clamping supply.

High-Power Series

Pneumatic Series

Hydraulic Series

Valve / Coupler Hydraulic Unit

Manual Operation Accessories

Cautions / Others

Pneumatic Hole Clamp

SWH

Pneumatic Swing Clamp

WHA

Pneumatic Link Clamp

WCA

Air Flow Control Valve

BZW

Pneumatic Expansion Locating Pin

WM

WK

# Manifold Block

Model WHZ-MD

Model LZY-MD

Model LZ-MS

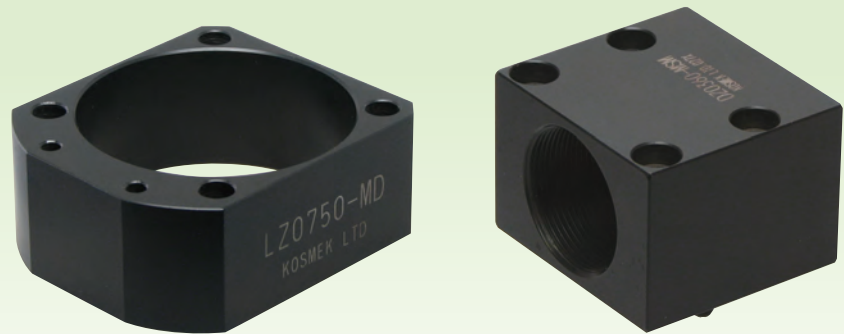
Model LZ-MP

Model TMZ-1MB

Model TMZ-2MB

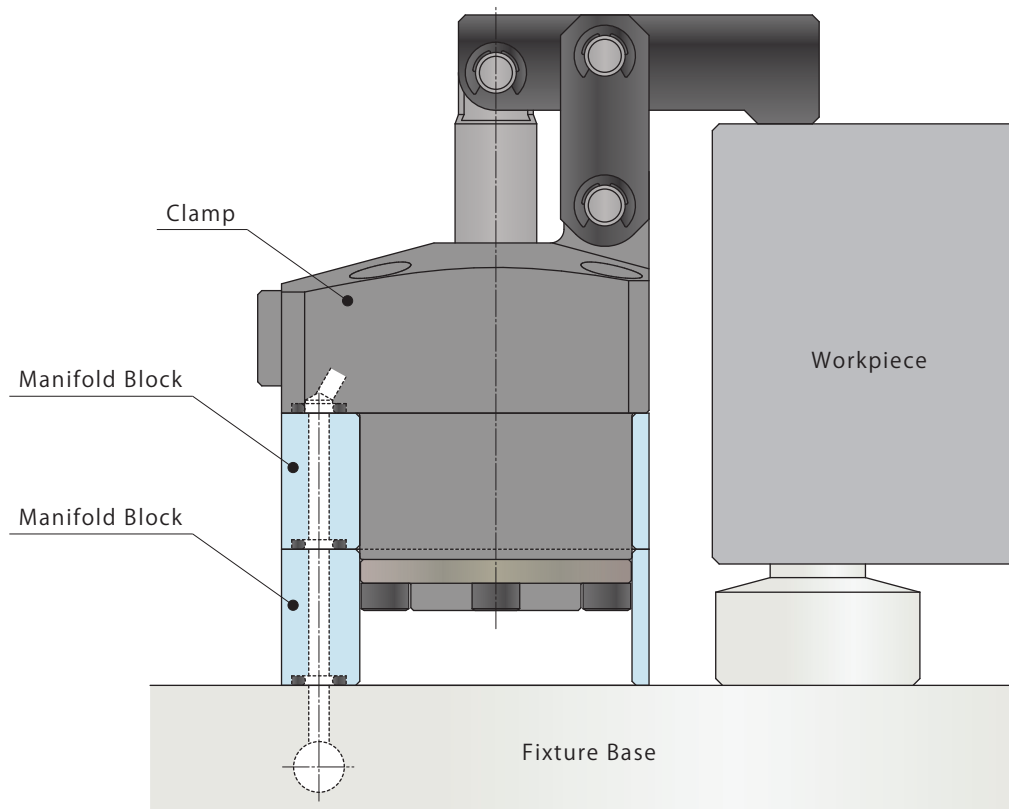
Model DZ-MG

Model DZ-MS



- **Manifold Block**

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



- 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

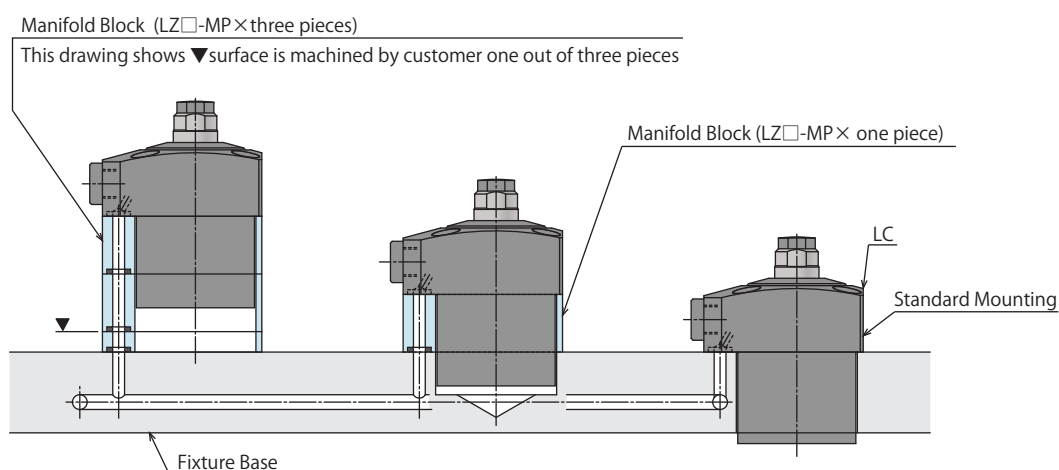
G-Thread Fitting

### Applicable Model

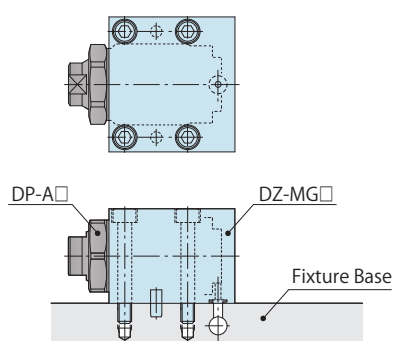
Manifold Block Model No.	Corresponding Item Model No.
Model <b>WHZ-MD</b>	Model <b>WCA</b> Model <b>WHA</b> Model <b>WCE</b> Model <b>WHE</b>
Model <b>LZY-MD</b>	Model <b>LKA</b> Model <b>LKE</b> Model <b>LHC</b> Model <b>LHS</b> Model <b>LKC</b> Model <b>LHA</b> Model <b>LHE</b> Model <b>LL</b>
Model <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>

### Application Examples

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



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





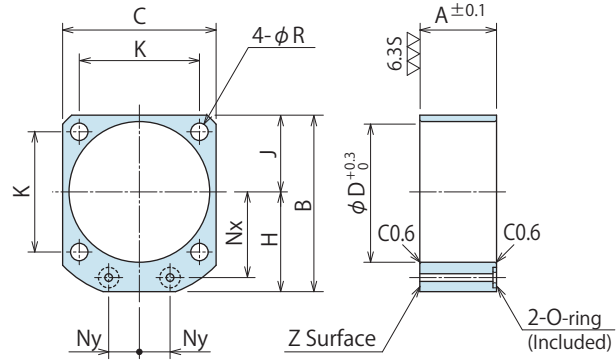
Manifold Block for WCA/WCE/WHA/WHE

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.

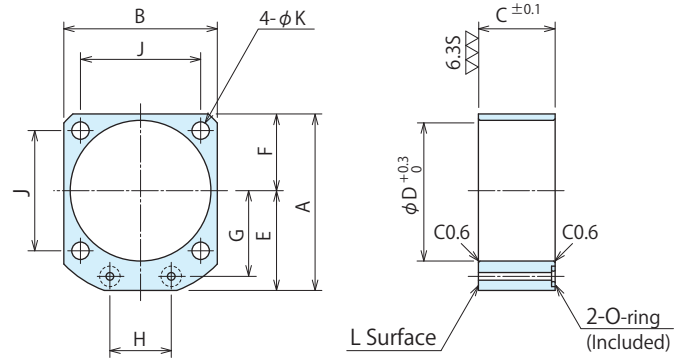
Manifold Block for LKA/LKC/LKE/LHA/LHC/LHE/LHS/LL

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.

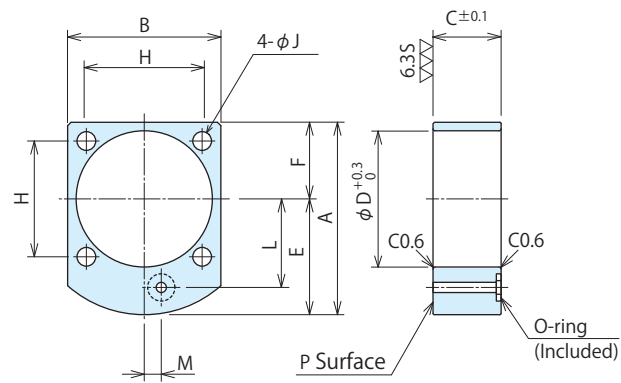
**Manifold Block for LM/LJ/LT/LG**

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.

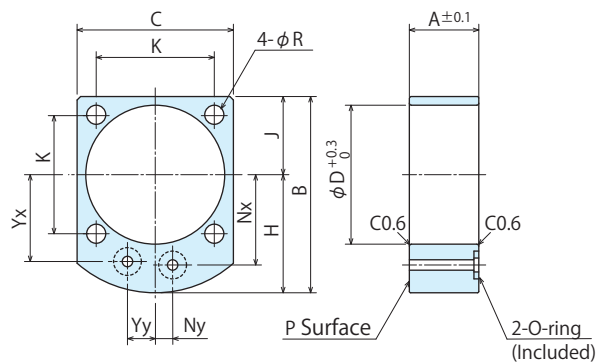
**Manifold Block for LC/TC**

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
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- Pressure Gauge
  - JGA/JGB
- Manifold
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- Coupler Switch
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# Global Network



Asia Detailed Map



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