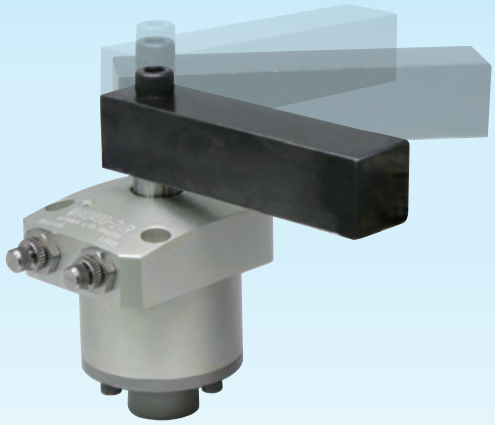
Pneumatic Swing Clamp

Model **WHA**



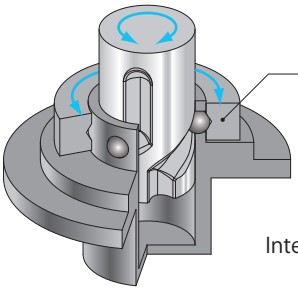
Our strong hydraulic clamp mechanism is used in pneumatic clamps.

High Speed/High Rigidity with ±0.5° Swing Angle Position Repeatability

PAT.

● Ball Type Swing Mechanism with Outer Race

Our strong hydraulic clamp mechanism is also used in pneumatic clamps.
Makes it faster with 3 lines of lead groove + outer race.
(High Rigidity makes it possible to a use long lever.)



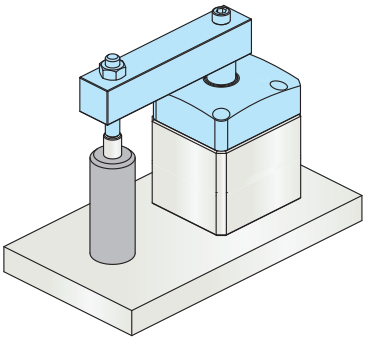
Outer Race

Outer race turns around corresponding with the roll of rod・steel ball and it brings the resistance that is created by swinging to low as far as it can.

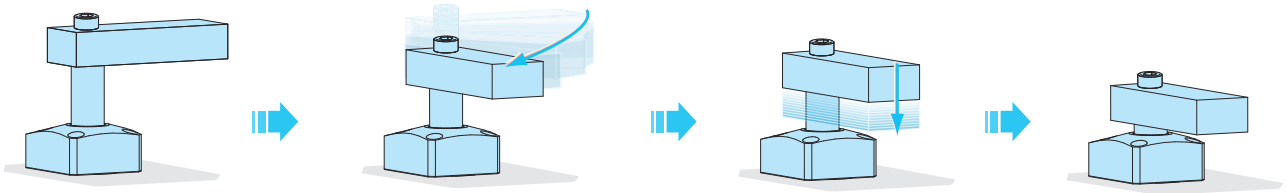
Internal Structure (Swing Mechanical Part)

● Lock Angle Repeatability with High Accuracy

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



Action Description



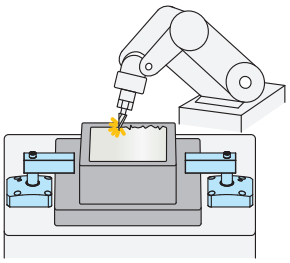
Before Swing (Released State)

The lever descends as it swings.

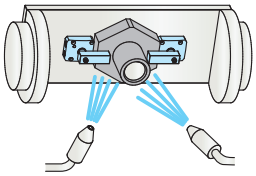
After swing completion, it descends vertically.

Action Completed (Clamped State)

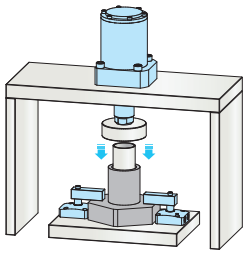
Application Examples



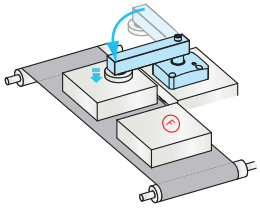
In machining and deburring



In the cleaning process and transportation



In the press fit process

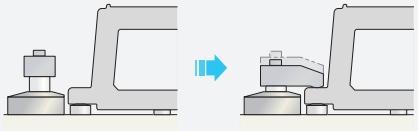


In stamping

Standard Model

Model **WHA**

Clamp after 90° swing

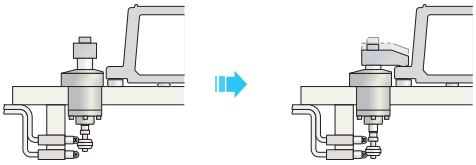


External Dimensions → P.261

Double End Rod Option for Dog

Model **WHA-D**

Piston rod condition can be detected by a limit switch etc.

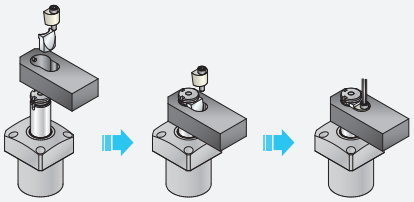


External Dimensions → P.263

Quick Change Lever Option A

Model **WHA-A**

Quick and easy to change levers with Quick Change Lever Option A

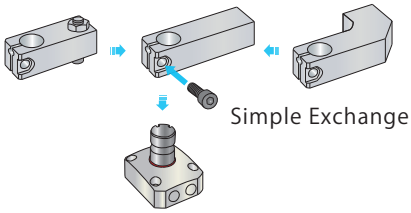


External Dimensions → P.265

Quick Change Lever Option F

Model **WHA-F**

Quick and easy to change levers with Quick Change Lever Option F

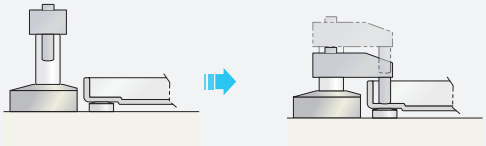


External Dimensions → P.267

Long Stroke Option

Model **WHA-Q**

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



External Dimensions → P.269

Accessories

Lever

Model **WHZ-T、WHZ-A/W WHZ-F、LZH-B**

→ P.273

Manifold Block

Model **WHZ-MD**

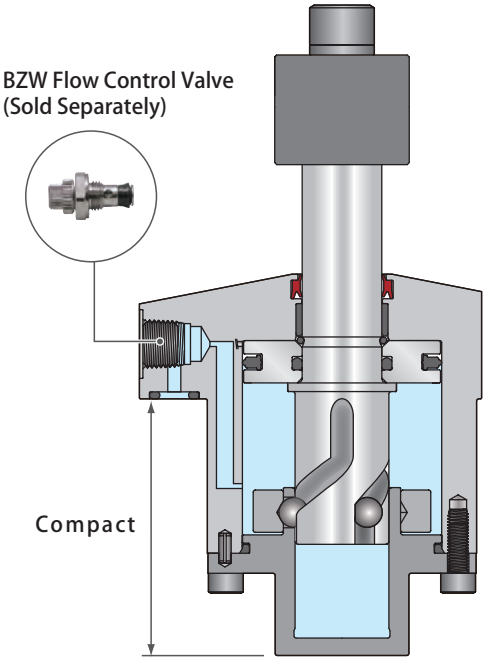
→ P.1335

Speed Control Valve

Model **BZW**

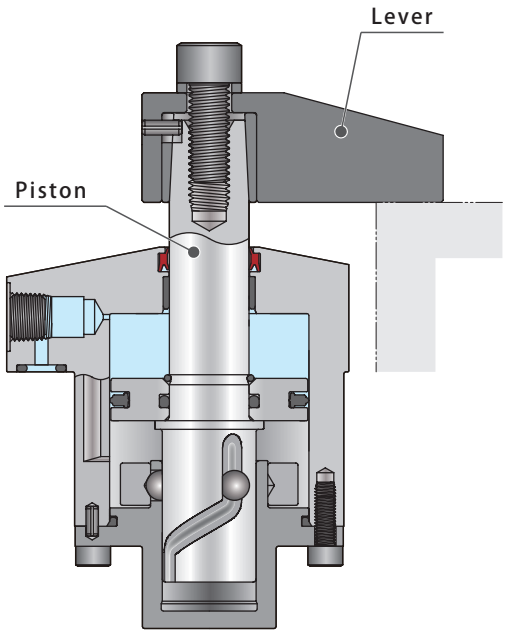
→ P.309

Action Description



When Releasing

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

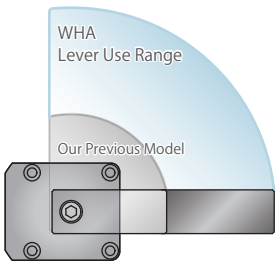


When Locking

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

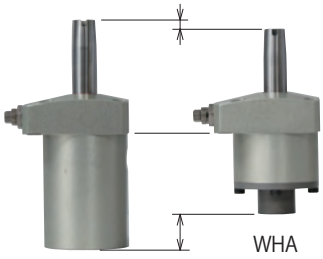
Able to Use Longer Levers

The long guide ratio and high efficiency of each part ensures high rigidity.
Largely expanded the usable 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.



Our Previous Model

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 (piping option -A) 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

WHA 040 0 - 2 A R □ - □

1 2 3 4 5 6

1 Cylinder Inner Diameter

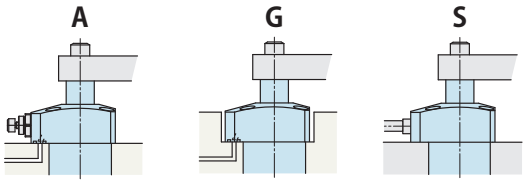
032 : Cylinder Inner Diameter = ϕ32mm
040 : Cylinder Inner Diameter = ϕ40mm
050 : Cylinder Inner Diameter = ϕ50mm
063 : Cylinder Inner Diameter = ϕ63mm

2 Design No.

0 : Revision Number

3 Piping Method

A : Gasket Option (with Speed Control Valve Port)
G : Gasket Option (with R Thread Plug)
S : Piping Option (Rc Thread)

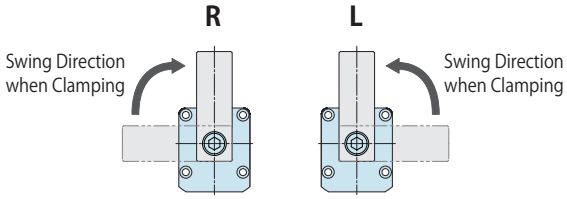


Gasket Option		Piping Option
With R Thread Plug (able to attach Speed Control Valve) (Order the valve separately. Recommended : BZW-B	With R Thread Plug	Rc Thread No Gasket Port

※ Speed control valve (BZW) is sold separately. Please refer to P.309.

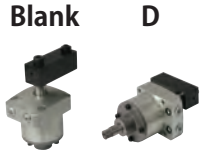
4 Swing Direction when Clamping

R : Clockwise
L : Counter-Clockwise



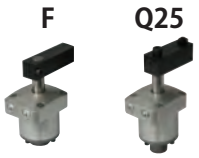
5 Action Confirmation Method

Blank : None (Standard)
D : Double End Rod Option for Dog



6 Option

Blank : None (Standard : Taper Lock Lever Option)
A : Quick Change Lever Option A
F : Quick Change Lever Option F
Q25 : Long Stroke Option

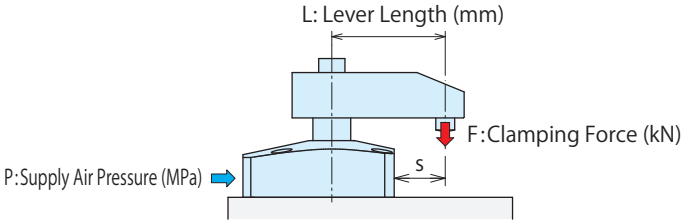


Specifications

Model No.			WHA0320-2□□□-□	WHA0400-2□□□-□	WHA0500-2□□□-□	WHA0630-2□□□-□
Cylinder Area for Locking		cm^2	6.5	10.56	16.49	26.26
Cylinder Inner Diameter ※1		mm	32	40	50	63
Rod Diameter ※1		mm	14	16	20	25
Clamping Force (Calculation Formula) ※2		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
6 Option **Blank / A / F**	Vertical Stroke	mm	10	10	10	10
Long Stroke Model	Full Stroke	mm	35	36	39	41.5
6 Option **Q**	Vertical Stroke	mm	25	25	25	25
Max. Operating Pressure		MPa	1.0			
Min. Operating Pressure ※3		MPa	0.1			
Withstanding Pressure		MPa	1.5			
Operating Temperature		℃	0 ~ 70			
Usable Fluid			Dry Air			
90° Swing Angle Accuracy			90° ±3°			
Swing Completion Position Repeatability			±0.5°			

Notes :
※ 1. Clamping force cannot be calculated from the cylinder inner diameter and rod diameter. Please refer to the clamping force curve.
※ 2. F : Clamping Force (kN), P : Supply Air Pressure (MPa), L : Distance between the piston center and the clamping point (mm).
※ 3. Minimum pressure to operate the clamp without load.
The clamp may stop in the middle of swing action depending on the lever shape. (Refer to "Notes on Lever Design" on P.275.)
1. Please refer to External Dimensions for cylinder capacity and weight.

Clamping Force Curve



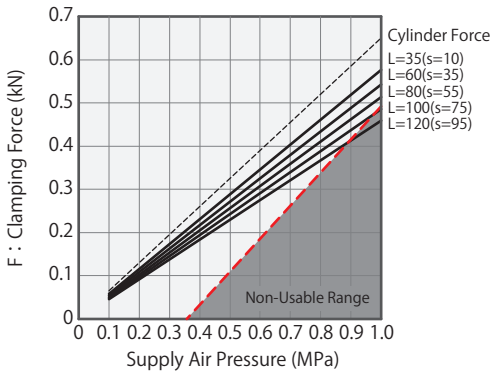
(How to read the clamping force curve)
In case of WHA0500 : When supply air pressure P is 0.4MPa and lever length L is 60mm, clamping force becomes about 0.58kN.

Note :
1. Cylinder output cannot be calculated with the formula of clamping force shown at ※1

WHA0320

Clamping Force Calculation Formula ※1 (kN) $F = P\,(0.625 - 0.0014 \times L)$

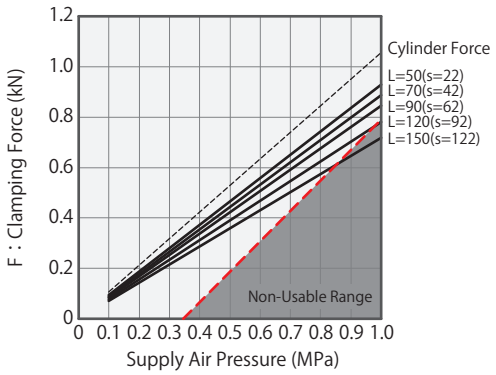
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L(mm) 35	50	60	70	80	90	100	120	Max. Lever Length (L) (mm)
1.0	0.65	0.58	0.56	0.54	0.53	0.51	0.50	0.49		103
0.9	0.59	0.52	0.50	0.49	0.47	0.46	0.45	0.44	0.41	120
0.8	0.52	0.46	0.44	0.43	0.42	0.41	0.40	0.39	0.37	147
0.7	0.46	0.40	0.39	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	0.9	



WHA0400

Clamping Force Calculation Formula ※1 (kN) $F = P\,(1.034 - 0.0021 \times L)$

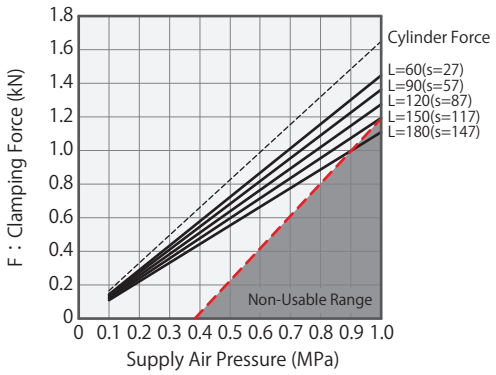
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L(mm) 50	60	70	80	90	100	120	150	Max. Lever Length (L) (mm)
1.0	1.06	0.93	0.91	0.89	0.87	0.85	0.82			117
0.9	0.95	0.84	0.82	0.80	0.78	0.76	0.74	0.70		137
0.8	0.84	0.74	0.73	0.71	0.69	0.68	0.66	0.63	0.58	171
0.7	0.74	0.65	0.64	0.62	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	0.9	0.8	



WHA0500

Clamping Force Calculation Formula ※1 (kN) $F = P\,(1.616 - 0.0028 \times L)$

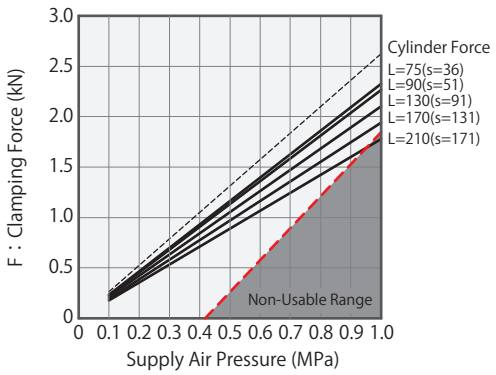
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Lever Length L(mm) 60	70	80	90	100	120	150	180	Max. Lever Length (L) (mm)
1.0	1.65	1.45	1.42	1.39	1.36	1.34	1.28	1.20		151
0.9	1.48	1.30	1.28	1.25	1.23	1.20	1.15	1.08	1.00	180
0.8	1.32	1.16	1.14	1.11	1.09	1.07	1.02	0.96	0.89	236
0.7	1.15	1.01	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	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) Lever Length L(mm) 75	90	110	130	150	170	190	210	Max. Lever Length (L) (mm)
1.0	2.63	2.33	2.27	2.19	2.11	2.03	1.95	1.87		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	0.9	



Notes :

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

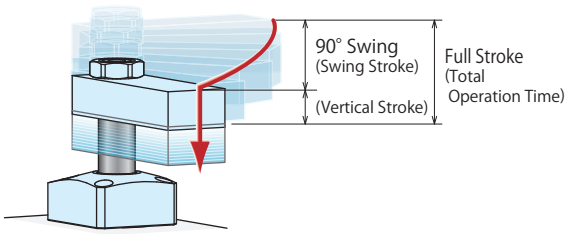
1. Lever with a large inertia sometimes does not work depending on supply air pressure, air flow rate and lever mounting position.
2. The tables and graphs show the relationship between the clamping force (kN) and supply air pressure (MPa).
3. Values in below charts indicate clamping force when the lever locks a workpiece in horizontal position.
4. The clamping force varies depending on the lever length. Set the suitable supply air pressure based on the lever length.
5. Clamping force in the non-usable range may cause deformation, seizure and fluid leakage etc.

Allowable Swing Time Graph

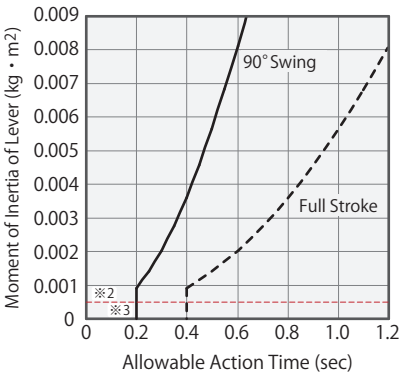
Adjustment of Swing Time

The graph shows allowable swing time against the moment of inertia of a lever.
An operation time should be longer than the operation time shown in the graph.

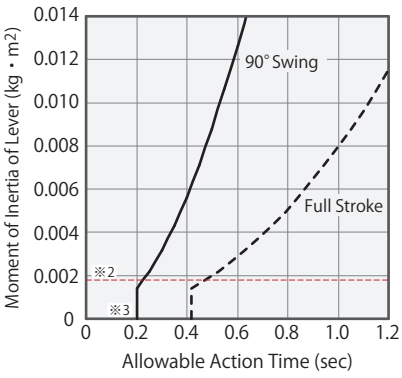
Excessive action speed can reduce stopping accuracy and damage internal components.



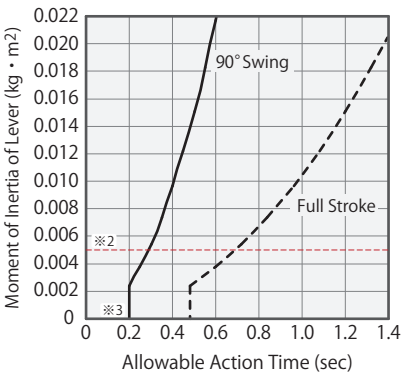
WHA0320



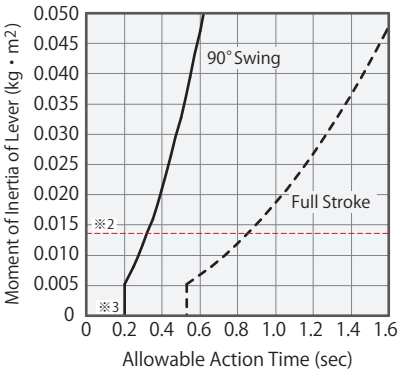
WHA0400



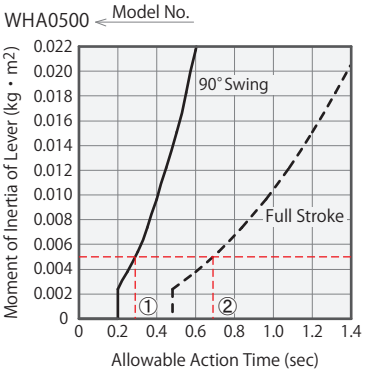
WHA0500



WHA0630



(How to read the allowable swing time graph)
In case of WHA0500
The moment of inertia of a lever : 0.0050kg・m²
① 90° Swing Time : About 0.29 sec
② Total Operation Time : About 0.69 sec
1. The total operation time on the graph represents the allowable operation time when fully stroked.



Notes :
1. For WHA-Q：Long Stroke Model, the total operation time is different from what is shown in the graph. It should be calculated with the formula below. (90° swing time is as shown in the graph.)

※2. It shows the inertia moment of the lever (WZH-T).
※3. Minimum 90° swing time should be 0.2 sec.

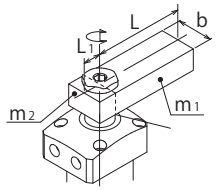
Calculation Formula of Total Operation Time

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

How to Calculate the Moment of Inertia (Estimated)

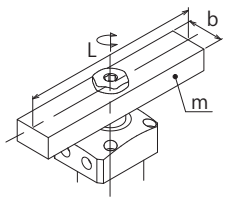
I：Moment of Inertia (kg・m²) L,L₁,L₂,K,b：Length (m) m,m₁,m₂,m₃：Mass (kg)

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



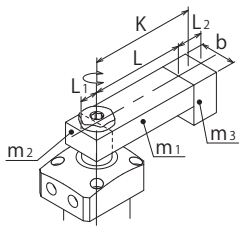
$$I = m_1 \frac{4L^2+b^2}{12} + m_2 \frac{4L_1^2+b^2}{12}$$

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



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

③ The load is applied on the lever front end.



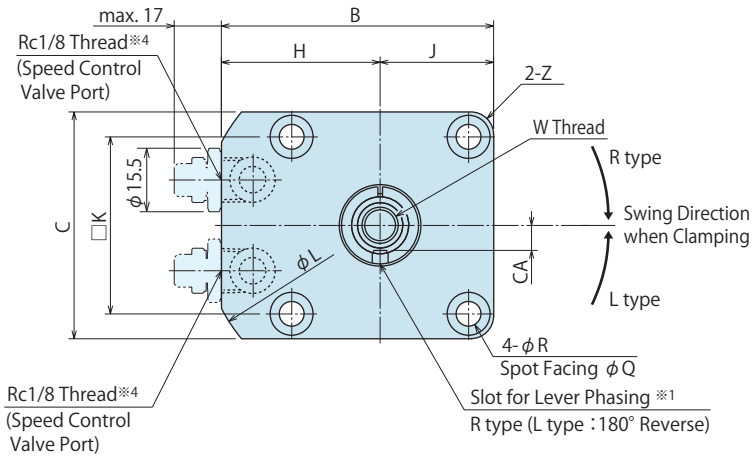
$$I = m_1 \frac{4L^2+b^2}{12} + m_2 \frac{4L_1^2+b^2}{12} + m_3K^2 + m_3 \frac{L_2^2+b^2}{12}$$

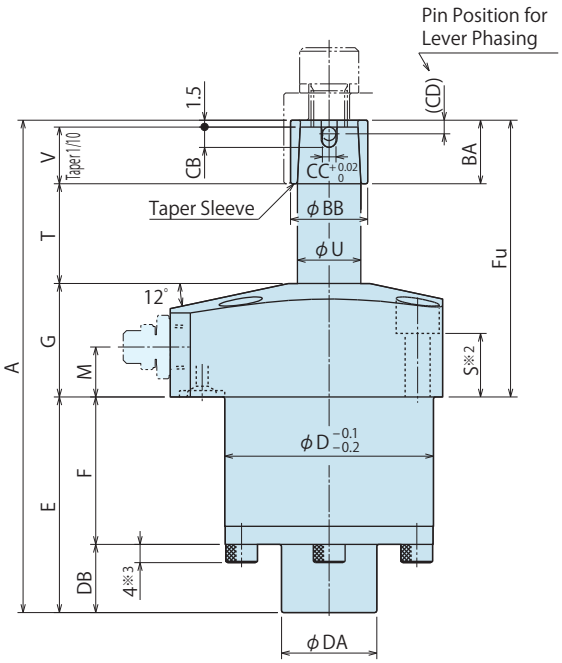
Notes :
1. The graph shows the allowable action time in regard to the moment of inertia of lever when the piston rod operates at constant speed.
2. Lever with a large inertia sometimes does not work depending on supply air pressure, air flow rate and lever mounting position.
3. For speed adjustment of clamp lever, please use meter-out flow control valve. In case of meter-in control, the clamp lever may be accelerated by its own weight during swinging motion (clamp mounted horizontally) or the piston rod may be moving too fast.
4. Excessive swing speed can reduce stopping accuracy and damage the internal parts.
5. Please contact us if operational conditions differ from those shown on the graphs.

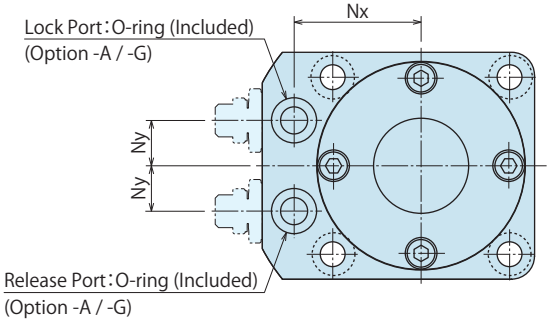
External Dimensions

A：Gasket Option (With Ports for Speed Controller：R-Thread Plug Included)

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







Notes：

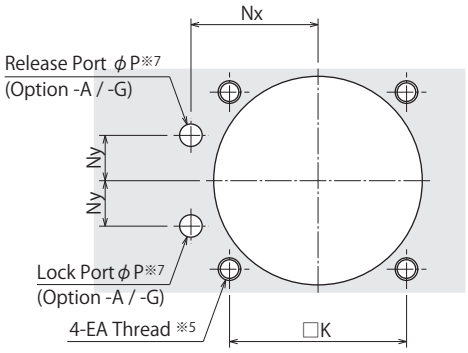
※1. The slot for lever phasing faces the port side when locked.

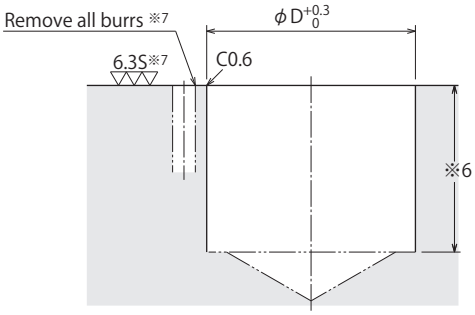
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. The number of bolts on the bottom differs depending on the model.

※4. Speed control valve is sold separately. Please refer to P.309.

Machining Dimensions of Mounting Area





Notes：

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

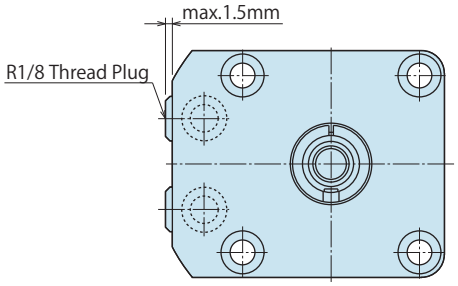
※6. The depth of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'E'.

※7. The machining dimension is for -A/-G：Gasket Option.

Piping Method

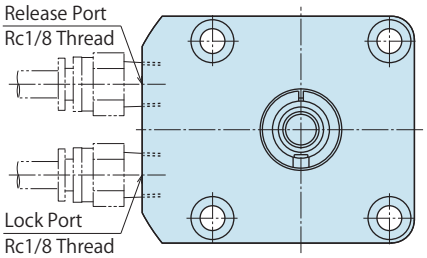
G：Gasket Option (R Thread Plug)

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

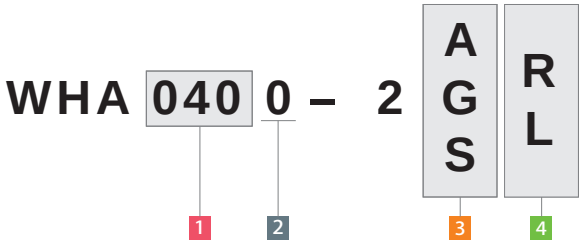


S：Piping Option (Rc Thread)

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



Model No. Indication



(Model No. : WHA0500-2AR)

1. Cylinder Inner 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)

External Dimensions and Machining Dimensions for Mounting

(mm)

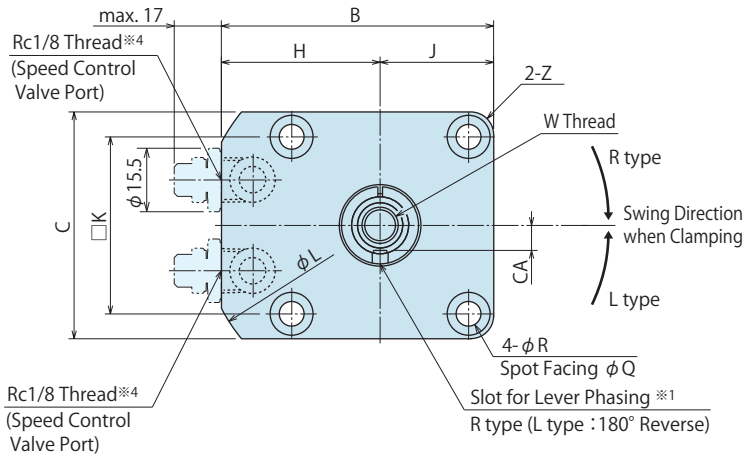
Model No.	WHA0320-2□□	WHA0400-2□□	WHA0500-2□□	WHA0630-2□□
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	108.5	117.5	136	149
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	47.5	51.5	58	66.5
F	32.5	35	41	46.5
Fu	61	66	78	82.5
G	25	25	30	30
H	35	38	43	48
J	25	28	33	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 (Piping Option A/G)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	13.0	22.2	39.6	69.6
Cylinder Capacity cm³ Release	16.1	26.4	47.1	82.6
Weight ※8 kg	0.5	0.6	1.0	1.7

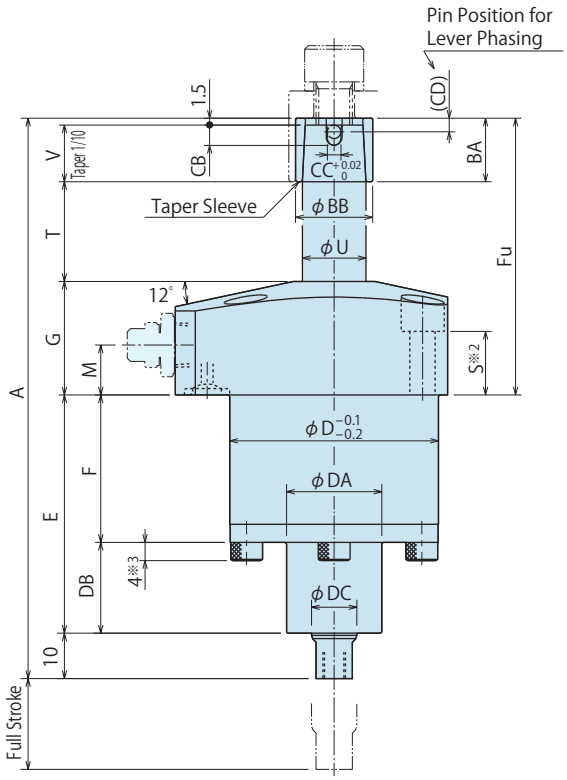
Note :
※ 8. It shows the weight of single swing clamp including taper sleeve.

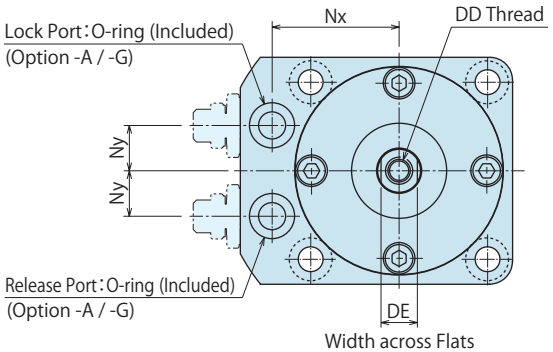
External Dimensions

A：Gasket Option (With Ports for Speed Controller：R-Thread Plug Included)

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







Notes：

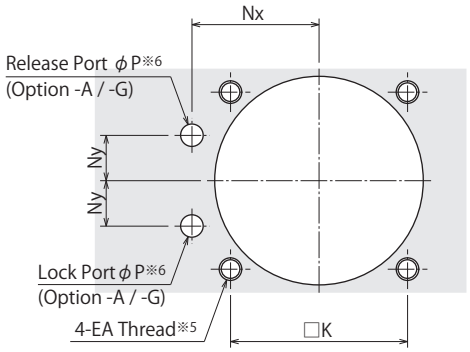
※1. The slot for lever phasing faces the port side when locked.

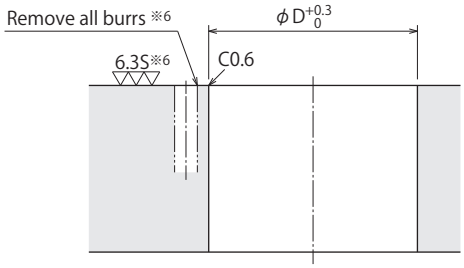
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. The number of bolts on the bottom differs depending on the model.

※4. Speed control valve is sold separately. Please refer to P.309.

Machining Dimensions of Mounting Area





Notes：

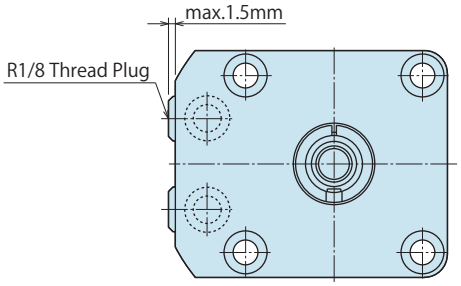
※5. EA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.

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

Piping Method

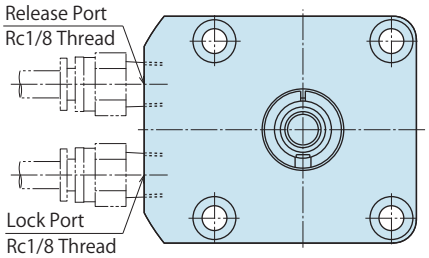
G：Gasket Option (R Thread Plug)

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

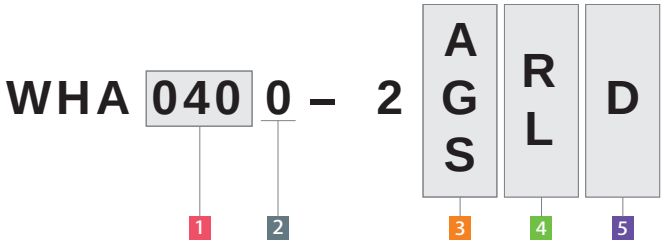


S：Piping Option (Rc Thread)

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



Model No. Indication



(Model No.：WHA0500-2ARD)

1 Cylinder Inner 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)

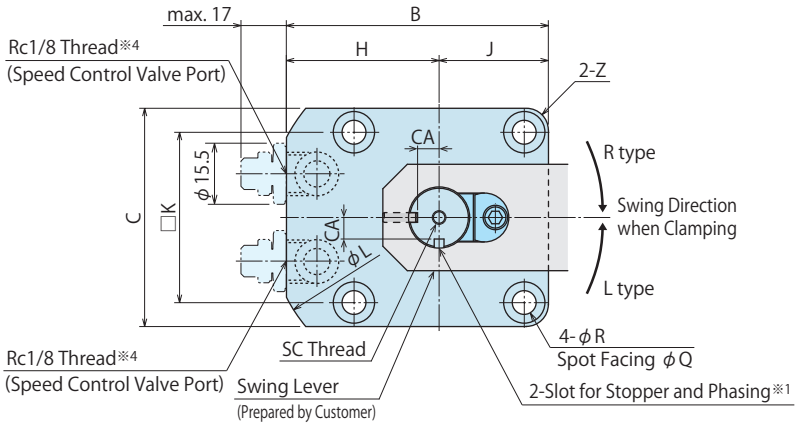
Model No.	WHA0320-2□□D	WHA0400-2□□D	WHA0500-2□□D	WHA0630-2□□D
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	123.5	133	151.5	164
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	52.5	57	63.5	71.5
F	32.5	35	41	46.5
Fu	61	66	78	82.5
G	25	25	30	30
H	35	38	43	48
J	25	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 (Piping Option A/G)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	13.0	22.2	39.6	69.6
Cylinder Capacity cm³ Release	14.5	24.0	43.4	78.5
Weight ※7 kg	0.5	0.7	1.1	1.7

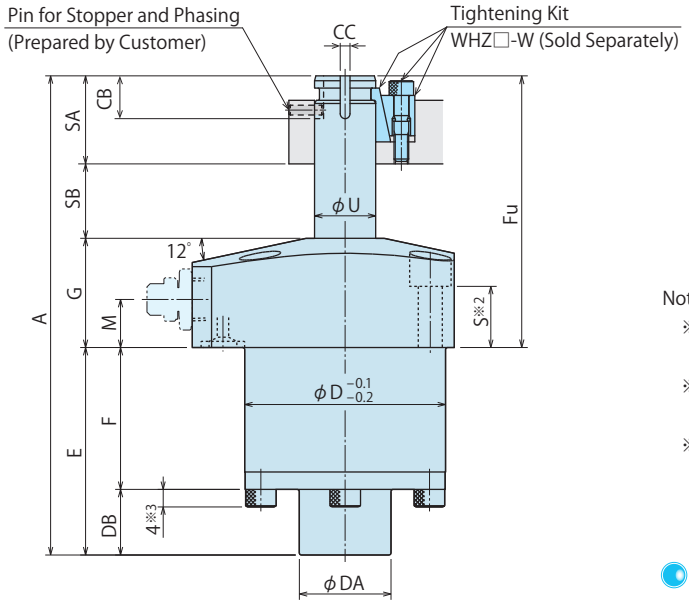
Note :
※ 7. It shows the weight of single swing clamp including taper sleeve.

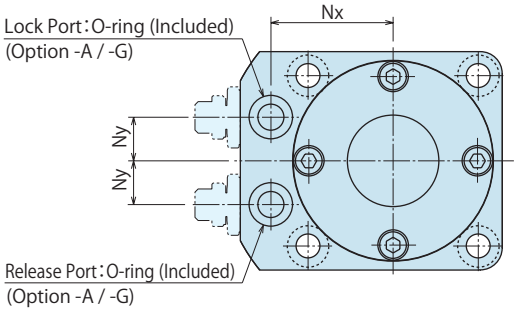
External Dimensions

A：Gasket Option (With Ports for Speed Controller：R-Thread Plug Included)

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







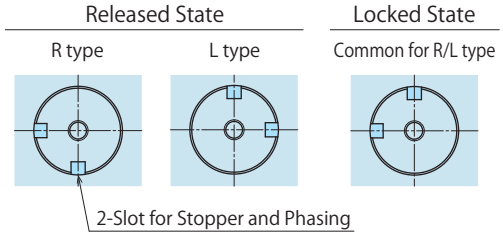
Notes：

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

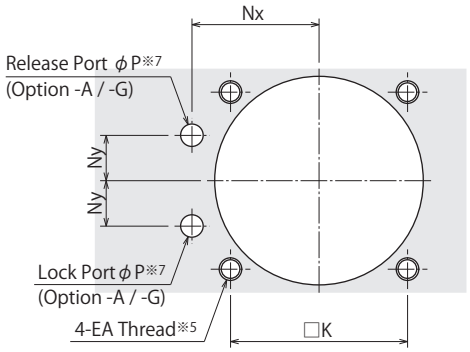
※3. The number of bolts on the bottom differs depending on the model.

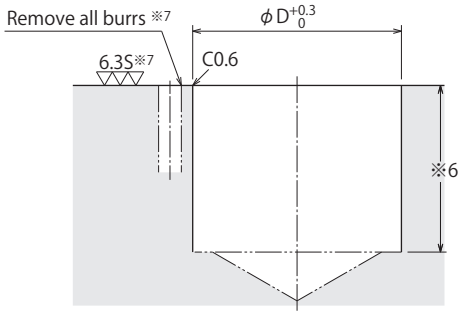
※4. Speed control valve is sold separately. Please refer to P.309.

※1. Slot for Stopper and Phasing



Machining Dimensions of Mounting Area





Notes：

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

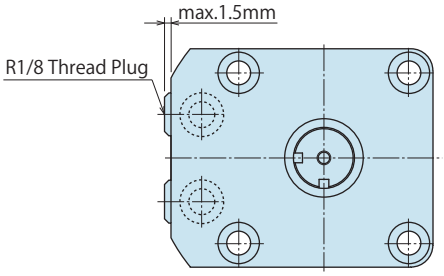
※6. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'E'.

※7. The machining dimension is for -A/-G：Gasket Option.

Piping Method

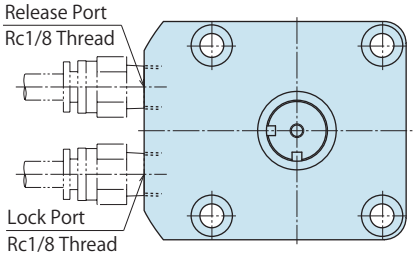
G：Gasket Option (R Thread Plug)

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

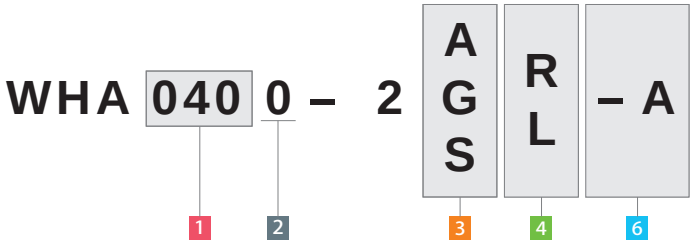


S：Piping Option (Rc Thread)

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



Model No. Indication



(Model No.：WHA0500-2AR-A)

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

External Dimensions and Machining Dimensions for Mounting

(mm)

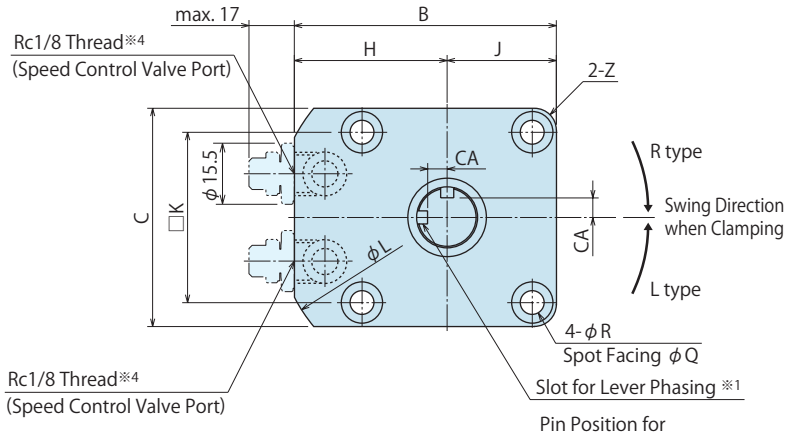
Model No.	WHA0320-2□□-A	WHA0400-2□□-A	WHA0500-2□□-A	WHA0630-2□□-A
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	117	124.5	144	161
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	47.5	51.5	58	66.5
F	32.5	35	41	46.5
Fu	69.5	73	86	94.5
G	25	25	30	30
H	35	38	43	48
J	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	4.3	5.8	6.8	8.8
CB	11.5	14	15	17.5
CC	$3^{+0.028}_{+0.014}$	$4^{+0.038}_{+0.020}$	$4^{+0.038}_{+0.020}$	$4^{+0.038}_{+0.020}$
DA	21	24	27	34
DB	15	16.5	17	20
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M6×1	M6×1
SA	22.5	25	30	36
SB	22	23	26	28.5
SC (Nominal×Pitch×Depth)	M4×0.7×7	M4×0.7×7	M5×0.8×8	M6×1×11
O-ring (Piping Option A/G)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	13.0	22.2	39.6	69.6
Cylinder Capacity cm³ Release	16.1	26.4	47.1	82.6
Weight ※8 kg	0.5	0.6	1.0	1.7

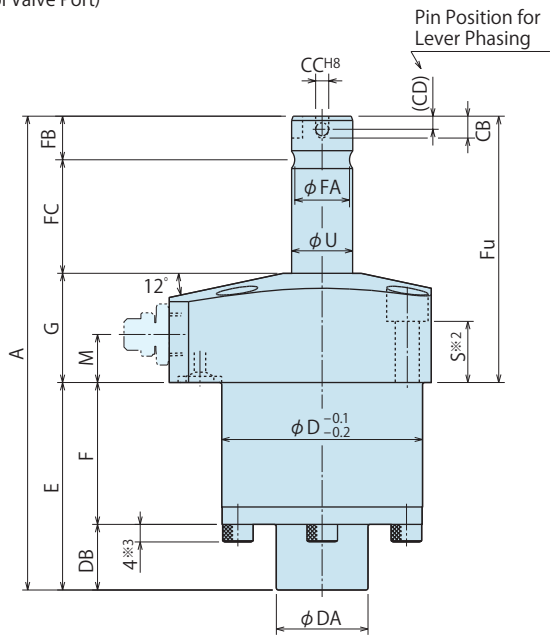
Note :
※ 8. It shows the weight of single swing clamp including taper sleeve.

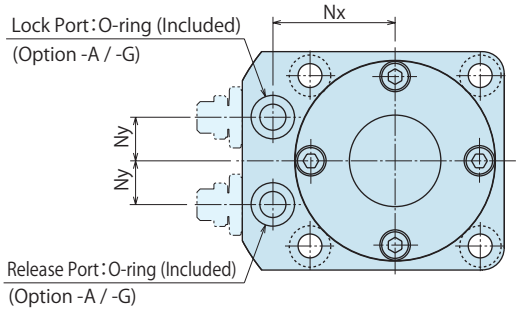
External Dimensions

A：Gasket Option (With Ports for Speed Controller：R-Thread Plug Included)

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







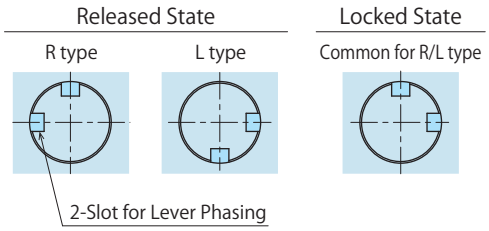
Notes：

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

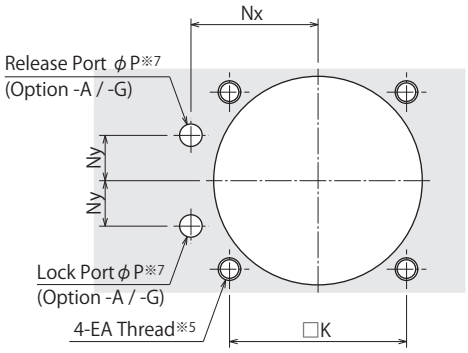
※3. The number of bolts on the bottom differs depending on the model.

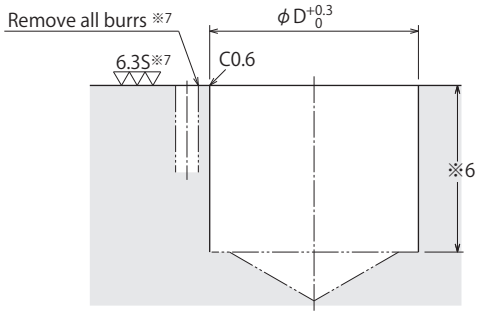
※4. Speed control valve is sold separately. Please refer to P.309.

※1. Slot for Lever Phasing



Machining Dimensions of Mounting Area





Notes：

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

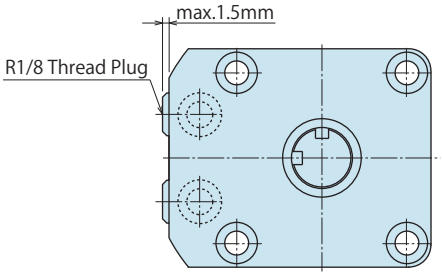
※6. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'E'.

※7. The machining dimension is for -A/-G：Gasket Option.

Piping Method

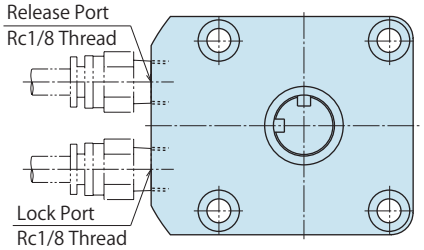
G：Gasket Option (R Thread Plug)

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

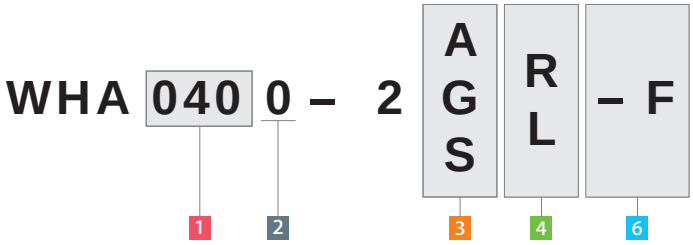


S：Piping Option (Rc Thread)

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



Model No. Indication



(Model No.：WHA0500-2AR-F)

1 Cylinder Inner 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 F)

External Dimensions and Machining Dimensions for Mounting

(mm)

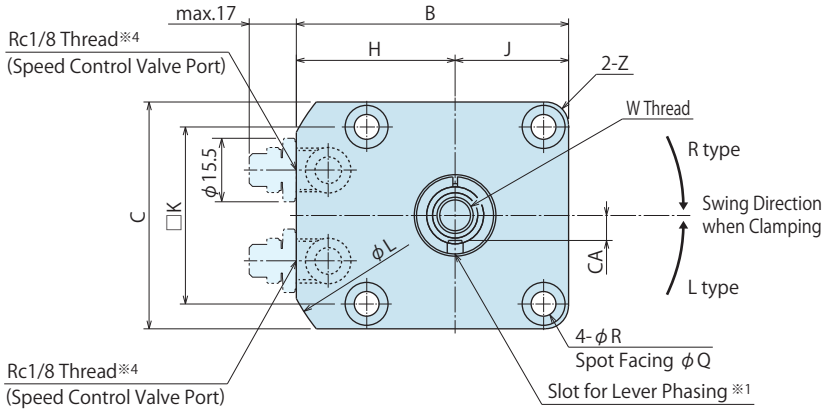
Model No.	WHA0320-2□□-F	WHA0400-2□□-F	WHA0500-2□□-F	WHA0630-2□□-F
Full Stroke	20	21	24	26.5
Swing Stroke (90°)	10	11	14	16.5
Vertical Stroke	10	10	10	10
A	114.5	121.5	142	160
B	60	66	76	87
C	50	56	66	78
D	46	54	64	77
E	47.5	51.5	58	66.5
F	32.5	35	41	46.5
Fu	67	70	84	93.5
G	25	25	30	30
H	35	38	43	48
J	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	$3^{+0.014}_{0}$	$3^{+0.014}_{0}$	$4^{+0.018}_{0}$	$4^{+0.018}_{0}$
(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 (Piping Option A/G)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	13.0	22.2	39.6	69.6
Cylinder Capacity cm³ Release	16.1	26.4	47.1	82.6
Weight ※8 kg	0.5	0.6	1.0	1.7

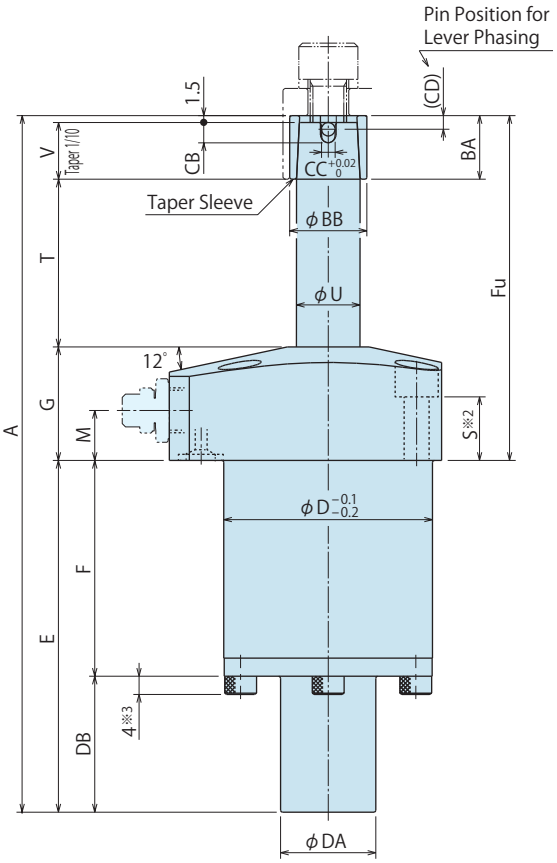
Note :
※ 8. It shows the weight of single swing clamp including taper sleeve.

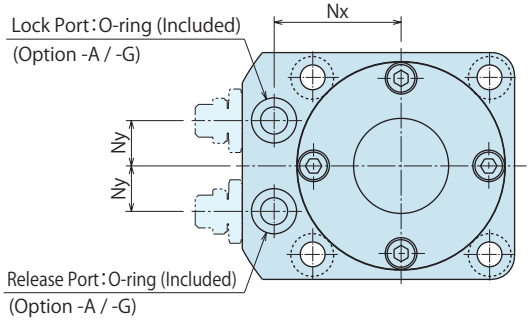
External Dimensions

A：Gasket Option (With Ports for Speed Controller：R-Thread Plug Included)

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







Notes：

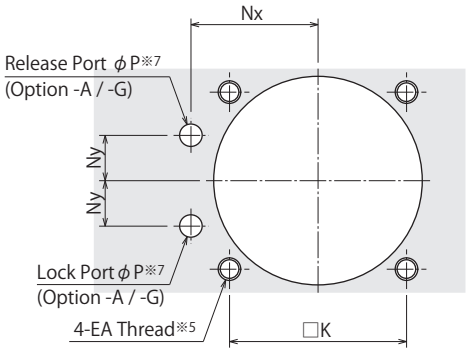
※1. The slot for lever phasing faces the port side when locked.

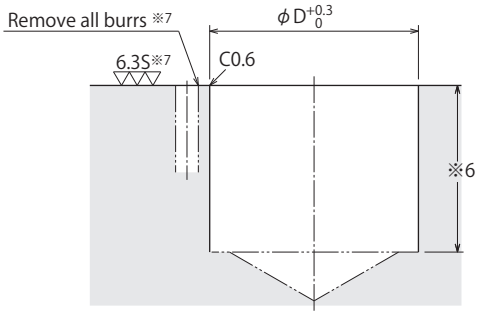
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. The number of bolts on the bottom differs depending on the model.

※4. Speed control valve is sold separately. Please refer to P.309.

Machining Dimensions of Mounting Area





Notes：

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

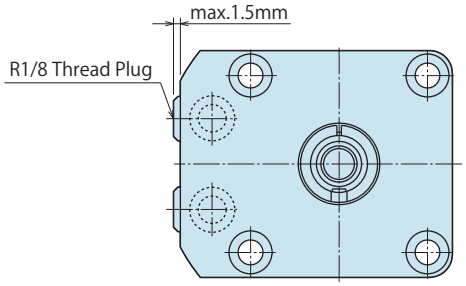
※6. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'E'.

※7. The machining dimension is for -A/-G：Gasket Option.

Piping Method

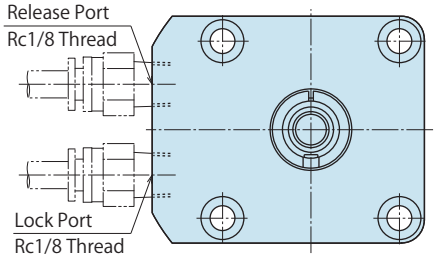
G：Gasket Option (R Thread Plug)

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



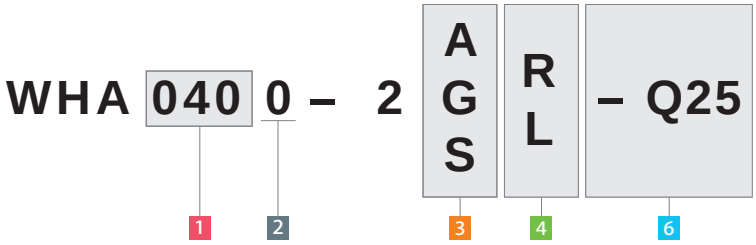
S：Piping Option (Rc Thread)

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



Model No. Indication

(Model No.：WHA0500-2AR-Q25)



1 Cylinder Inner 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 (Piping Option A/G)	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	22.8	38.0	64.3	109.0
Cylinder Capacity cm³ Release	28.1	45.3	76.6	129.4
Weight ※8 kg	0.5	0.7	1.1	1.8

Note :
※ 8. It shows the weight of single swing clamp including taper sleeve.

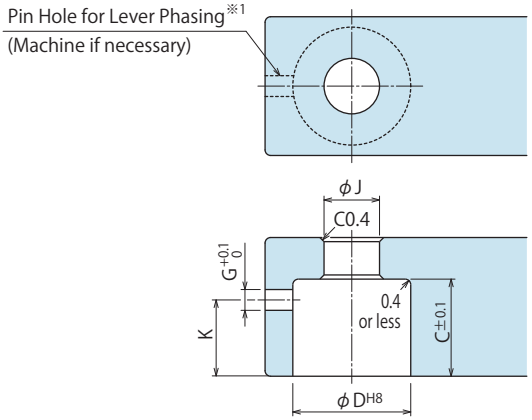
Taper Lock Lever Design Dimensions

※ Reference for designing a taper lock swing lever.

Corresponding Model No.

WHA 040 0 - 2 [A G S] [R L] [Blank D] - [Blank Q25]

6



(mm)

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

Notes :

1. Swing lever should be designed with its length according to performance curve.
2. If the swing lever is not in accordance with the dimensions shown above, performance may be degraded and damage can occur.

※1. The pin hole (ϕG) for determining the lever phase should be added, if necessary.
※2. Phasing pin is not included. Prepare it separately.
※3. Refer to Design Dimensions of Quick Change Lever Option A for -A (Quick Change Lever Option A).
Refer to Design Dimensions of Quick Change Lever Option F for -F (Quick Change Lever Option F).
For -P (Balance Lever Option), it should be designed by customer.

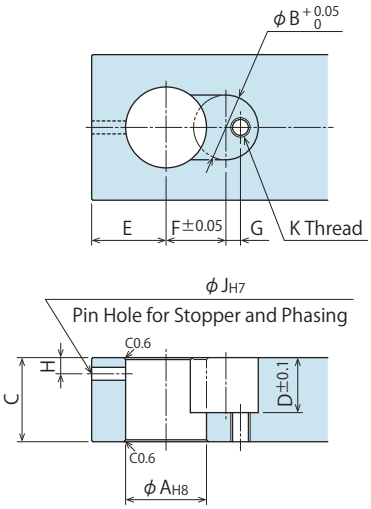
Quick Change Lever Option A Design Dimensions

※ Reference for designing Quick Change Swing Lever Option A.

Corresponding Model No.

WHA 040 0 - 2 [A G S] [R L] [Blank D] - [A]

6 When selecting A : Quick Change Lever Option A



(mm)

Corresponding Model No.	WHA0320-2□□□-A	WHA0400-2□□□-A	WHA0500-2□□□-A	WHA0630-2□□□-A
A	14 +0.027 0	16 +0.027 0	20 +0.033 0	25 +0.033 0
B	12	12	15	20
C	16	18	22	26
D	11	11	13	17
E	12.5	14	17	23
F	12	13	16	18.5
G	2	2	2.5	4.5
H	3	4	4	4
J	3 +0.010 0	4 +0.012 0	4 +0.012 0	4 +0.012 0
K	M4×0.7	M4×0.7	M5×0.8	M6×1
Pin for Stopper and Phasing	ϕ3 (m6) ×8	ϕ4 (m6) ×8	ϕ4 (m6) ×10	ϕ4 (m6) ×14

Notes :

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

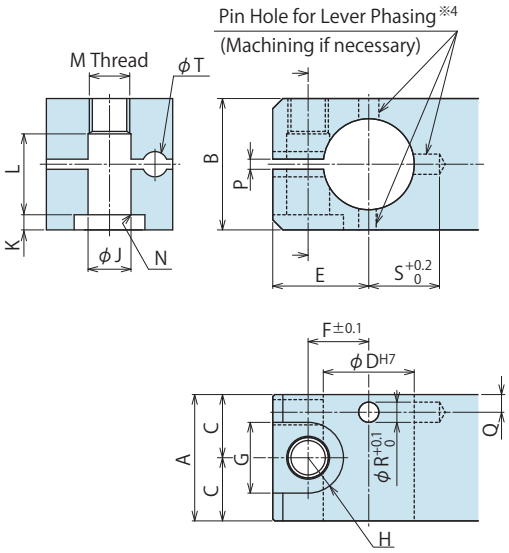
Quick Change Lever Option F Design Dimensions

※ Reference for designing Quick Change Swing Lever Option F.

Corresponding Model No.

WHA 040 0 - 2 [A G S] [R L] [Blank D] - **F**

6 When selecting F : Quick Change Lever Option F



(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	$14^{+0.018}_{0}$	$16^{+0.018}_{0}$	$20^{+0.021}_{0}$	$25^{+0.021}_{0}$
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
Phasing Pin (Reference)※5	φ3×8	φ3×8	φ4×8	φ4×10

Notes :

1. Swing lever should be designed with its length according to performance curve.
2. If the swing lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
3. Tightening Bolt (LZH□-B) for Quick Change Lever is sold separately.

※4. The pin hole (φR) for determining the lever phase should be added, if necessary.

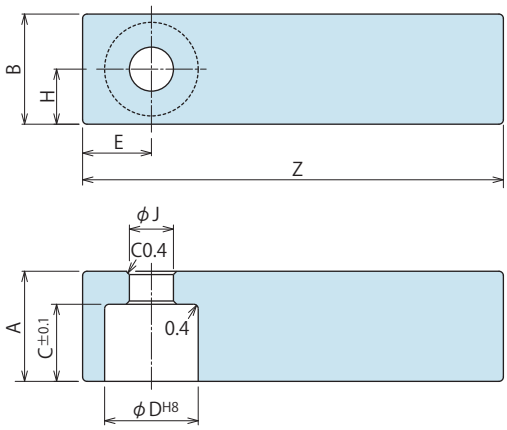
※5. Phasing pin is not included. Prepare it separately.

Accessory：Material Swing Lever for Taper Lock Option

Model No. Indication

WHZ 040 0 – T

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



(mm)

Model No.	WHZ0320-T	WHZ0400-T	WHZ0500-T	WHZ0630-T
Corresponding Model No. ※1	WHA0320-2□□ WHA0320-2□□D WHA0320-2□□-Q25	WHA0400-2□□ WHA0400-2□□D WHA0400-2□□-Q25	WHA0500-2□□ WHA0500-2□□D WHA0500-2□□-Q25	WHA0630-2□□ WHA0630-2□□D WHA0630-2□□-Q25
A	20	22	28	35
B	20	22	28	35
C	14	18	22	24
D	$17^{+0.027}_{0}$	$19^{+0.033}_{0}$	$24^{+0.033}_{0}$	$29^{+0.033}_{0}$
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　Surface Finishing：Alkaline Blackening
2. If necessary, the front end should be additionally machined and finished.
3. When determining the phase, refer to taper lock lever design dimensions for each model for the additional machining.

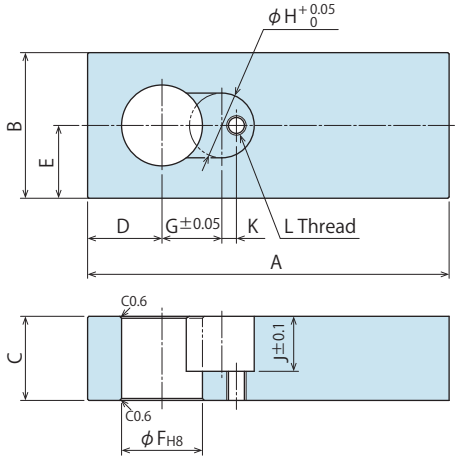
※1. Refer to Accessory of Quick Change Lever Option A for -A (Quick Change Lever Option A). Refer to Accessory of Quick Change Lever Option F for -F (Quick Change Lever Option F). For -P (Balance Lever Option), it should be designed by customer.

Accessory：Material Swing Lever for Quick Change Lever Option A

Model No. Indication

WHZ 160 0 – A

- 160: Size (Refer to the table.)
- 0: Design No. (Revision Number)
- A: Quick Change Lever Option A



(mm)

Model No.	WHZ1000-A	WHZ1600-A	WHZ2500-A	WHZ4000-A
Corresponding Model No.	WHA0320-2□□□-A	WHA0400-2□□□-A	WHA0500-2□□□-A	WHA0630-2□□□-A
A	90	125	150	170
B	25	28	34	45
C	16	18	22	26
D	12.5	14	17	23
E	12.5	14	17	22.5
F	$14^{+0.027}_{0}$	$16^{+0.027}_{0}$	$20^{+0.033}_{0}$	$25^{+0.033}_{0}$
G	12	13	16	18.5
H	12	12	15	20
J	11	11	13	17
K	2	2	2.5	4.5
L	M4×0.7	M4×0.7	M5×0.8	M6×1

Notes :

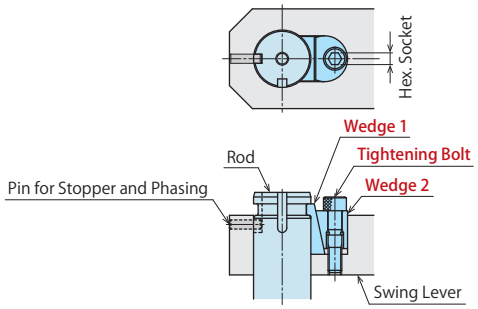
1. Material：S50CH　Surface Finishing：Alkaline Blackening
2. If necessary, the front end should be additionally machined and finished.
3. The pin hole for stopper and lever phasing should be additionally machined by referring to Quick Change Lever Option A Design Dimensions.
4. Tightening Kit (WHZ□-W)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

Accessory：Tightening Kit for Quick Change Lever Option A

Model No. Indication

WHZ 160 1 – W

- 160: Size (Refer to the table.)
- 1: Design No. (Revision Number)
- W: Tightening Kit for Quick Change Lever Option A



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

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

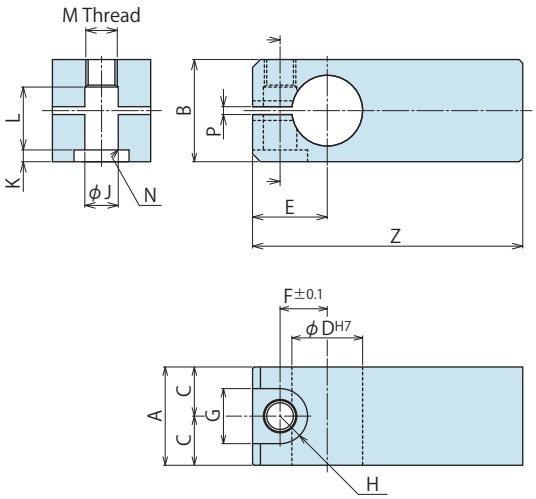
Model No.	WHZ1001-W	WHZ1601-W	WHZ2501-W	WHZ4001-W
Corresponding Model No.	WHA0320 -2□□□-A	WHA0400 -2□□□-A	WHA0500 -2□□□-A	WHA0630 -2□□□-A
Nominal×Pitch of Tightening Bolt	M4×0.7	M4×0.7	M5×0.8	M6×1
Hex. Socket mm	2.5	2.5	3	4
Tightening Torque N·m	2.5	2.5	5.0	8.0

Accessory：Material Swing Lever for Quick Change Lever Option F

Model No. Indication

WHZ 040 0 – F

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



(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 $^{+0.018}_{0}$	16 $^{+0.018}_{0}$	20 $^{+0.021}_{0}$	25 $^{+0.021}_{0}$
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 :

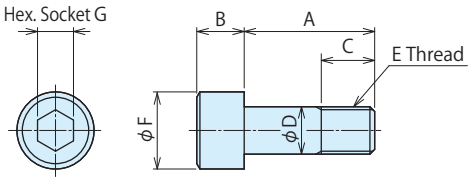
1. Material：S45C　Surface Finishing：Alkaline Blackening
2. If necessary, the front end should be additionally machined and finished.
3. When determining the phase, refer to Quick Change Lever Option F Design Dimensions for the additional machining.
4. Tightening Kit (LZH□-B) for Quick Change Lever Option F is sold separately.

Accessory：Tightening Bolts for Quick Change Lever Option F

Model No. Indication

LZH 036 0 – B

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



(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

● Ensure there is no possibility of supplying air pressure to the lock port and the release port simultaneously. Improper circuit design may lead to malfunctions and damages.

3) Swing lever should be designed to make the moment of inertia 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 air pressure and lever mounting position.

● Set the allowable operation time after the moment of inertia is calculated. Refer to "Allowable Swing Time Graph" and make sure to operate clamps within the allowable operation time.

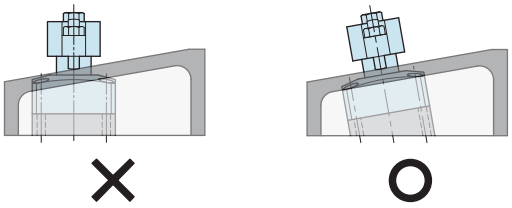
● If supplying a large amount of air right after installation, action time will be extremely fast leading to severe damage on a clamp. Install the speed controller (Meter-in) near the air source and gradually supply air pressure.

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

● If spatter attaches to the sliding surface it could lead to malfunction and air leakage.

5) When clamping on a sloped surface of the workpiece

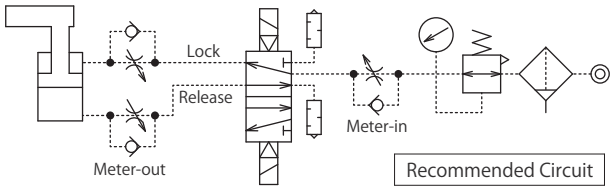
● Make sure the clamping surface and the mounting surface of the clamp are parallel.



6) Swing Speed Adjustment

● Adjust the speed following "Allowable Swing Time Graph". If the clamp operates too fast the parts will be worn out leading to premature damage and ultimately complete equipment failure.

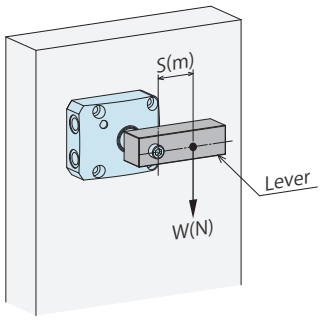
● Install a speed control valve (meter-out) and gradually control the flow rate from the low-speed side (small flow) to the designated speed. Controlling from the high-speed side (large flow) causes excessive surge pressure or overload to the clamp leading to damage of a machine or device.



● When operating multiple clamps simultaneously, please install the speed controller (meter-out) to each clamp.

7) Notes on Lever Design

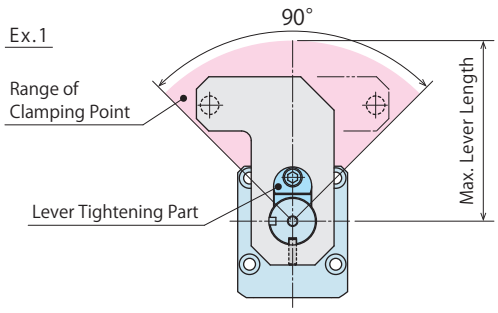
● Please design the lever as light as possible, and it should be no larger than necessary.
The clamp may not function depending on supplying air pressure, mounting position and shape of the lever. If using a large lever in the mounting position as shown below, it may stop in the middle of swing action. Please use a lever with (Lever Weight W) × (Gravity Center S) lighter than shown in the following table.

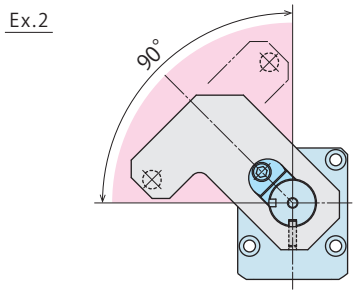


Model No.	(Lever Length W) × (Center of Gravity S) (N·m)
WHA0320	0.10
WHA0400	0.20
WHA0500	0.45
WHA0630	0.90

8) When using an offset lever for WHA-A (Quick Change Lever Option A)

● Clamping point should be in the range of 90° towards the lever tightening part.





Installation Notes

1) Check the fluid to use.

- Please supply filtered clean dry air. (Install a drain removing device.)
- 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. Dust and cutting chips in the circuit can lead to air 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 screw direction. Wrapping in the wrong direction will cause air leakage and malfunction.
- Pieces of the sealing tape can lead to air leakage and malfunction.
- When piping, be careful that contaminants such as sealing tape do not enter in products.

4) Installation of the Product

- When mounting the product use four hexagonal socket bolts (with tensile strength of 12.9) and tighten them with the torque shown in the list below. Tightening with greater torque than recommended can dent the seating surface or break the bolt.

Model No.	Mounting Bolt 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) Installation of the Flow Control Valve

- Tightening torque for installing flow control valve is 5 to 7 N・m.

6) Installation / Removal of the Swing Lever

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

Standard：Taper Lock Lever Option

Model No.	Thread Size	Tightening Torque (N·m)
WHA0320–2□□□	M8×1.25	20 ~ 24
WHA0400–2□□□	M8×1.25	20 ~ 24
WHA0500–2□□□	M10×1.5	32 ~ 38
WHA0630–2□□□	M12×1.75	63 ~ 76

–F：Quick Change Lever Option F

Model No.	Tightening Bolt Size	Tightening Torque (N·m)
WHA0320–2□□□–F	M6×1	14
WHA0400–2□□□–F	M6×1	14
WHA0500–2□□□–F	M8×1	33
WHA0630–2□□□–F	M10×1.25	65

–A：Quick Change Lever Option A

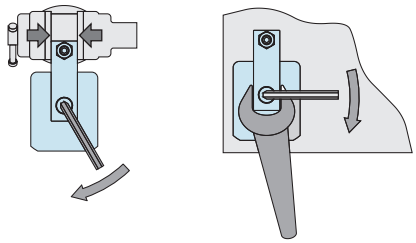
Model No.	Tightening Bolt Size	Tightening Torque (N·m)
WHA0320–2□□□–A	M4×0.7	2.5
WHA0400–2□□□–A	M4×0.7	2.5
WHA0500–2□□□–A	M5×0.8	5.0
WHA0630–2□□□–A	M6×1	8.0

- When Using WHA Standard (Taper Lock Lever)

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.

Installation Procedure

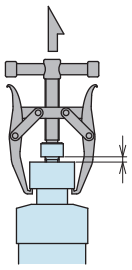
① Fix the swing lever with vise or spanner and tighten it with the lever tightening torque.



Removal Procedure

① Fix the swing lever with a vise or a spanner and loosen it 2 or 3 turns with the lever tightening torque.

② Pull out the swing lever with a puller so that rotary torque is not applied on the piston rod.



Continuing “Installation Notes” on the Next Page

※ Please refer to P.1357 for common cautions. ・Notes on Handling ・Maintenance/Inspection ・Warranty

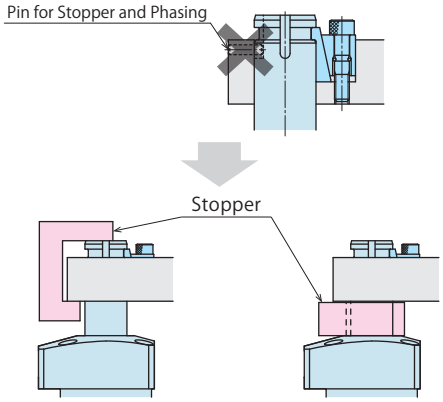
Cautions

Installation Notes (Continued)

6) Installation / Removal of the Swing Lever (Continued)

- When Using WHA-A (Quick Change Lever Option A)
  A pin for stopper and phasing (prepared by customer) is used for phasing when mounting the lever and as a stopper when removing the lever. If you are not using the pin for stopper and phasing, a stopper is required to remove the lever.

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

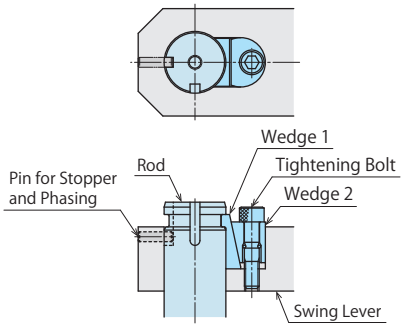


Installation Procedure

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

Removal Procedure

① By loosening the tightening bolt, the wedges are released and the lever can be removed.



7) Swing Speed Adjustment

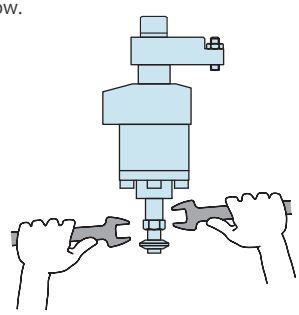
- Adjust the speed following "Allowable Swing Time Graph".
  If the clamp operates too fast the parts will be worn out leading to premature damage and ultimately complete equipment failure.
- Turn the speed control valve gradually from the low-speed side (small flow) to the high-speed side (large flow)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

8) Checking Looseness and Retightening

- At the beginning of the product 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. Tightening torque of mounting screw is 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.1357 for common cautions. • Notes on Handling • Maintenance/Inspection • Warranty

MEMO

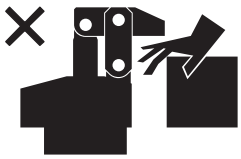
Cautions

Notes on Handling

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

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

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

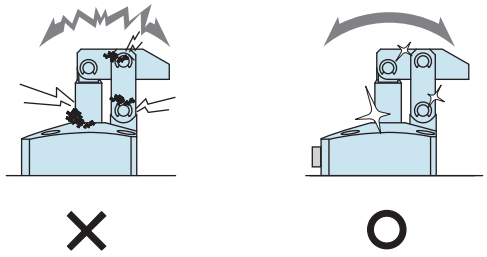


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

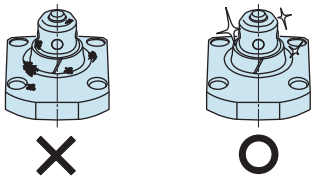
Maintenance and Inspection

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

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



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



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

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

6) Make sure the hydraulic fluid has not deteriorated.

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

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

9) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

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

2) Warranty Scope

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

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

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

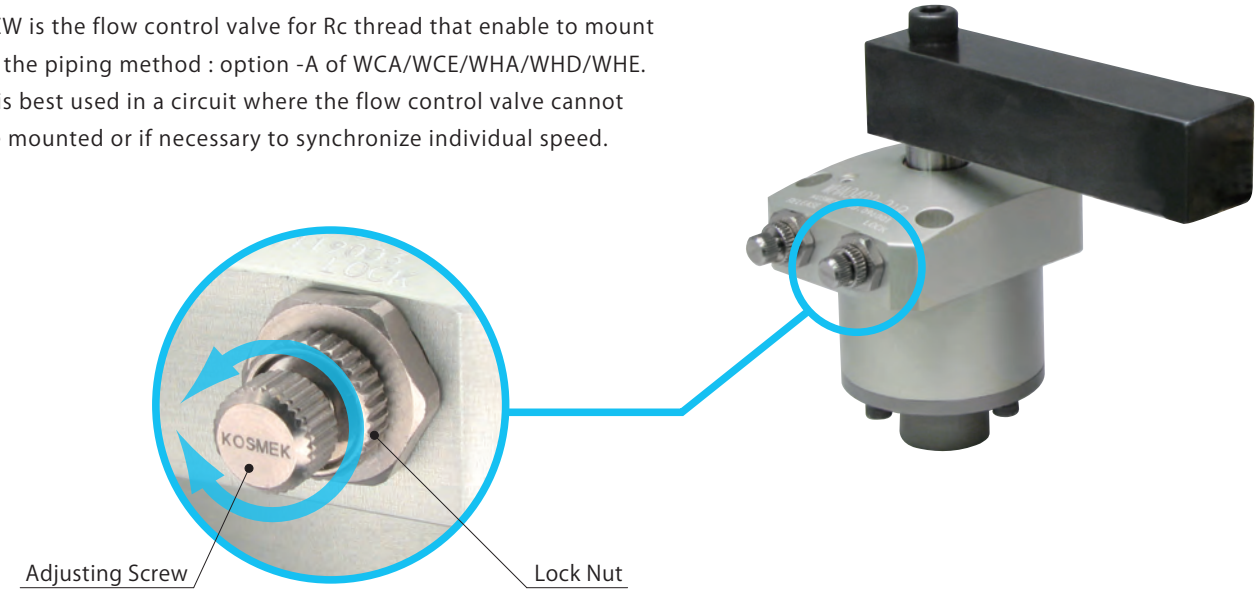
Air Flow Control Valve

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 method : option -A of WCA/WCE/WHA/WHD/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**□2-2**A**□
High-Power Pneumatic Swing Clamp	BZW0100-**B**	WHE□0-2**A**□
Pneumatic Swing Clamp		WHA□0-2**A**□
Double Piston Pneumatic Swing Clamp		WHD□0-2**A**□
Pneumatic Link Clamp		WCA□1-2**A**□

Corresponding to piping method -A option.

※ When mounting BZW to the piping method G, take off R thread plug and remove the sealing tape not to get inside the cylinder.

Model No. Indication

BZW 010 0 – B

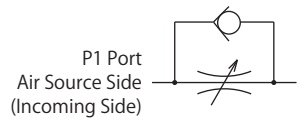
- Control Method
  B : Meter-out
  A : Meter-in
  ※ Select **A** : Meter-in when using BZW for WCE.
- Design No.
  0 : Revision Number
- R Thread Size
  010 : Rc1/8

Specifications

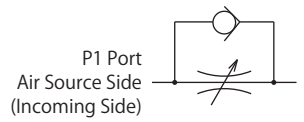
Model No.	BZW0100-B	BZW0100-A
Control Method	Meter-out	Meter-in
Operating Pressure MPa	0.1 ~ 1.0	
Withstanding Pressure MPa	1.5	
Adjusting Screw Number of Rotations	10	
Tightening Torque N•m	5 ~ 7	
Weight g	13	13
Corresponding Model No.	WHE□0-2A□ WHA□0-2A□ WHD□0-2A□ WCA□1-2A□	WCE□2-2A□

Circuit Symbol

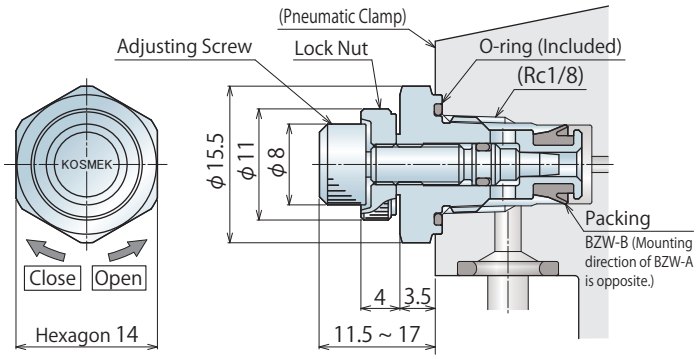
BZW0100-B : Meter-out



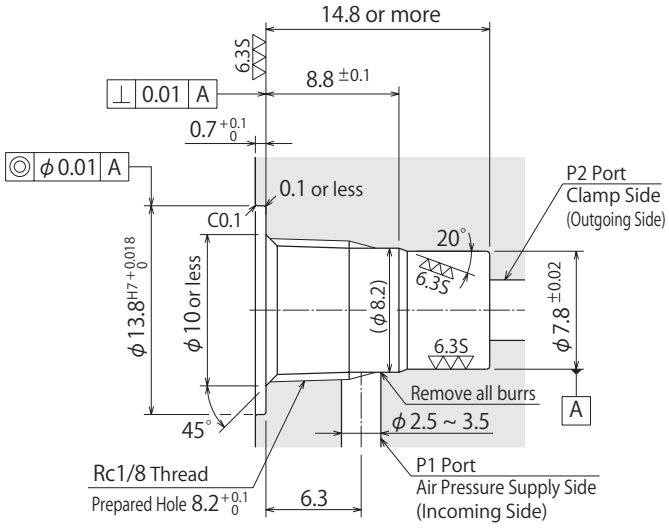
BZW0100-A : Meter-in



External Dimensions



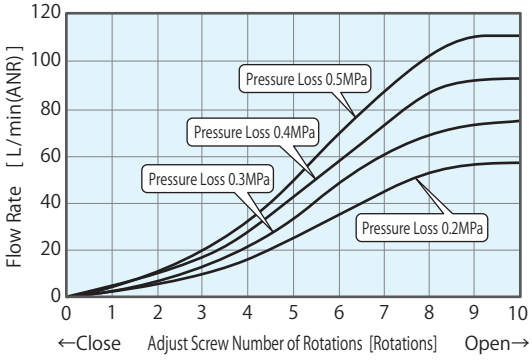
Machining Dimensions of Mounting Area



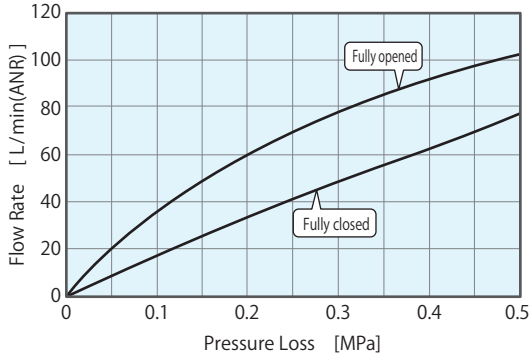
Flow Rate Graph

BZW0100-B/BZW0100-A common

Controlled Flow Direction



Free Flowing Direction



Notes :

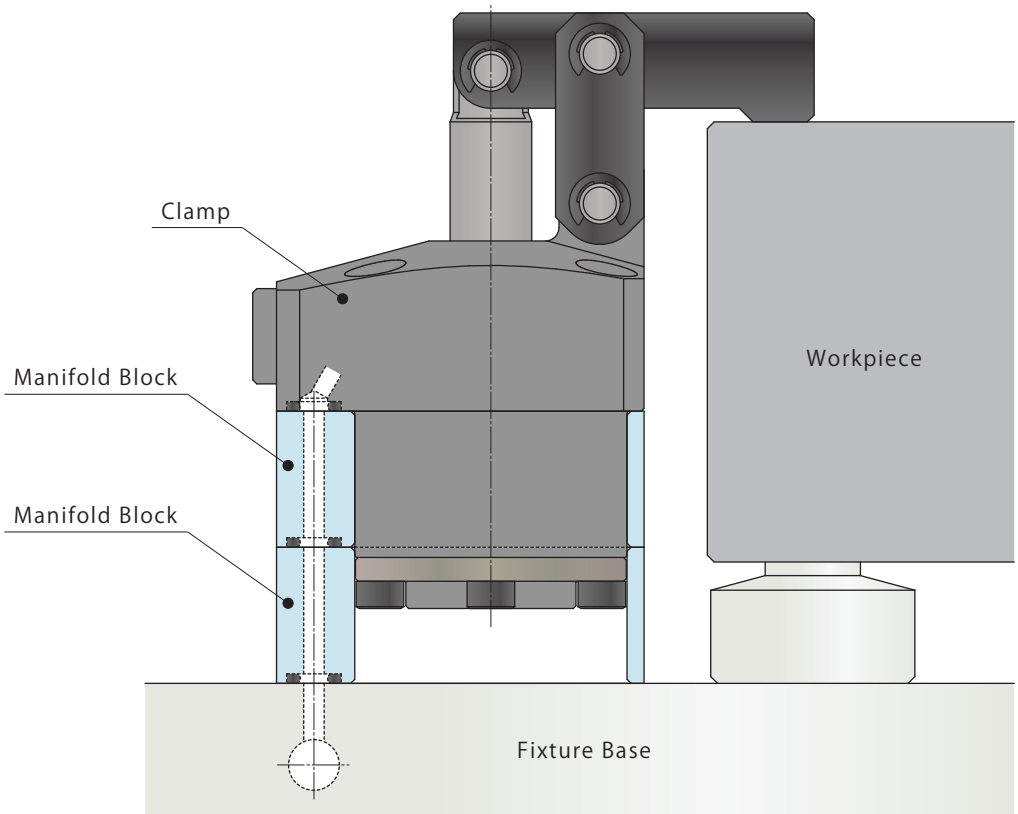
1. Since the ▽▽▽ area is sealing part, be careful not to damage it.
2. No cutting chips or burr shoud be at the tolerance part of machining hole.
3. As shown in the drawing, P1 port is used as the air supply side and P2 port as the clamp side.

Manifold Block

Model WHZ-MD
Model LZY-MD
Model LZ-MS
Model LZ-MP
Model TMZ-1MB
Model TMZ-2MB
Model DZ-MG□
Model DZ-MS□

Manifold Block

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

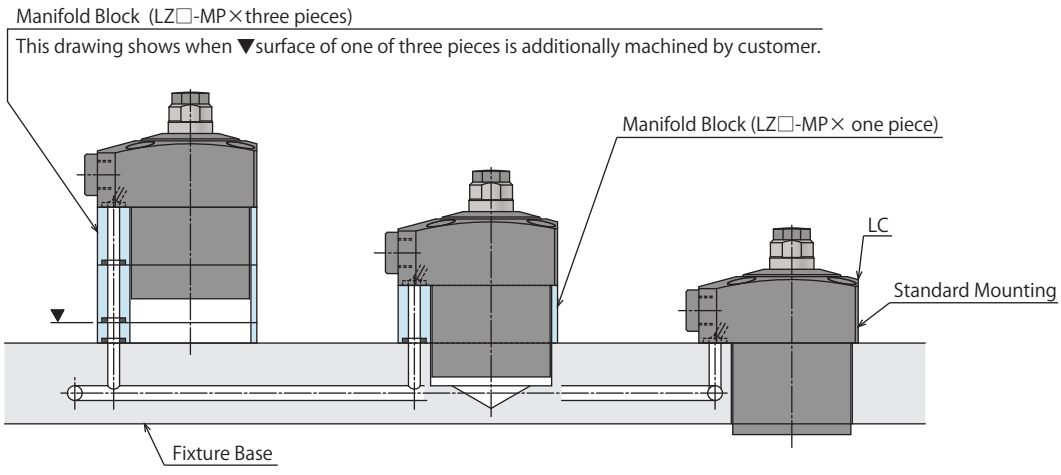


Applicable Model

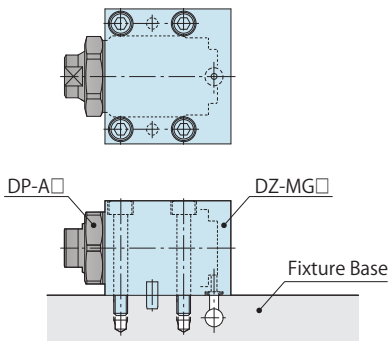
Manifold Block Model No.	Corresponding Item Model No.
Model WHZ-MD	Model WCA, Model WHA, Model WCE, Model WHE
Model LZY-MD	Model LKA, Model LKE, Model LHC, Model LHS, Model LKC, Model LHA, Model LHE, Model LL
Model LZ-MS	Model LJ, Model LG, Model LM, Model LT
Model LZ-MP	Model LC, Model TC
Model TMZ-1MB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

Application Examples

Work Support (LC) Application Example



Push Cylinder (DP) Application Example

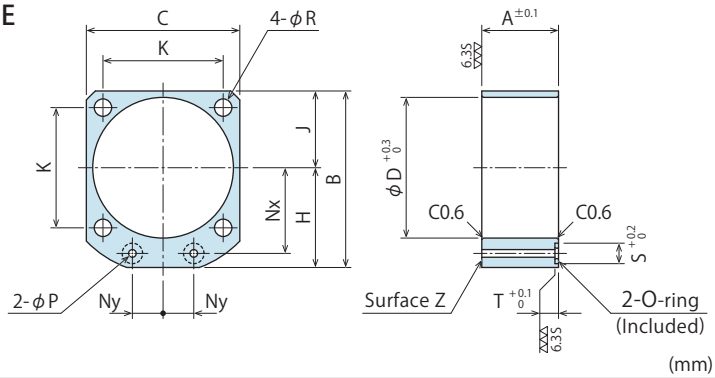


Manifold Block for WCA/WCE/WHA/WHE

Model No. Indication

WHZ 048 0 – MD

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



(mm)

Model No.	WHZ0600-MD	WHZ0320-MD	WHZ0400-MD	WHZ0500-MD	WHZ0630-MD
Corresponding Model No.	WCE0602 WHE0600	WCA0321 WCE1002 WHA0320 WHE1000	WCA0401 WCE1602 WHA0400 WHE1600	WCA0501 WCE2502 WHA0500 WHE2500	WCA0631 WCE4002 WHA0630 WHE4000
A	23	25	27	31	35
B	54	60	67	77	88.5
C	45	50	58	68	81
D	40	46	54	64	77
H	31.5	35	38	43	48
J	22.5	25	29	34	40.5
K	34	39	45	53	65
Nx	26	28	31	36	41
Ny	9	10	13	15	20
P	3	5	5	5	5
R	5.5	5.5	5.5	6.5	6.5
S	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.1	0.1	0.1	0.2	0.2

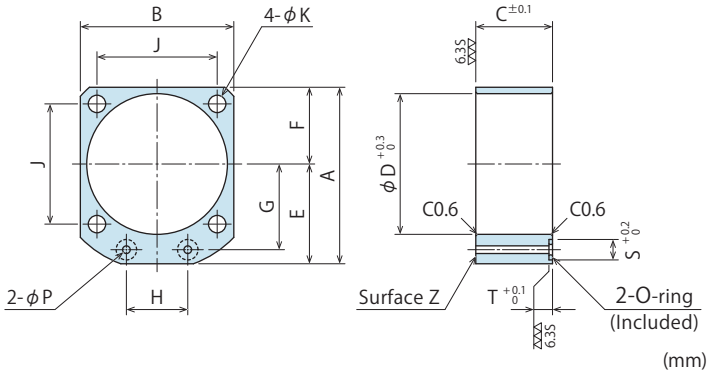
Notes : 1. Material : A2017BE-T4 Surface Finishing : Zircon Finishing (Zirconium Chemical Conversion Treatment)
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension A as a reference.
3. For other block thickness (dim. A), machine the surface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

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

Model No. Indication

LZY 048 0 – MD

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



(mm)

Model No.	LZY0360-MD	LZY0400-MD	LZY0480-MD	LZY0550-MD	LZY0650-MD	LZY0750-MD	LZY0900-MD	LZY1050-MD
Corresponding Model No.	LKA0360 / LKE0360 LHA0360 / LHC0360 LHE0360 / LHS0360 LL0360	LKA0400 / LKC0400 LKE0400 / LHA0400 LHC0400 / LHE0400 LHS0400 / LL0400	LKA0480 / LKC0480 LKE0480 / LHA0480 LHC0480 / LHE0480 LHS0480 / LL0480	LKA0550 / LKC0550 LKE0550 / LHA0550 LHC0550 / LHE0550 LHS0550 / LL0550	LKA0650 / LKC0650 LHA0650 / LHC0650 LHS0650 LL0650	LKA0750 LHA0750 LHS0750 LL0750	LKA0900 LHA0900 LHS0900 LL0900	LKA1050 LHA1050 LHS1050 LL1050
A	49	54	61	69	81	92	107	122
B	40	45	51	60	70	80	95	110
C	20	20	27	30	32	37	45	50
D	36	40	48	55	65	75	90	105
E	29	31.5	35.5	39	46	52	59.5	67
F	20	22.5	25.5	30	35	40	47.5	55
G	23.5	26	30	33.5	39.5	45	52.5	60
H	16	18	22	24	30	32	37	45
J	31.4	34	40	47	55	63	75	88
K	4.5	5.5	5.5	6.8	6.8	9	11	14
P	3	3	3	3	5	5	5	5
S	8	8	8	8	10	10	10	10
T	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
O-ring	1BP5	1BP5	1BP5	1BP5	1BP7	1BP7	1BP7	1BP7
Weight kg	0.2	0.2	0.3	0.4	0.5	0.8	1.2	1.7

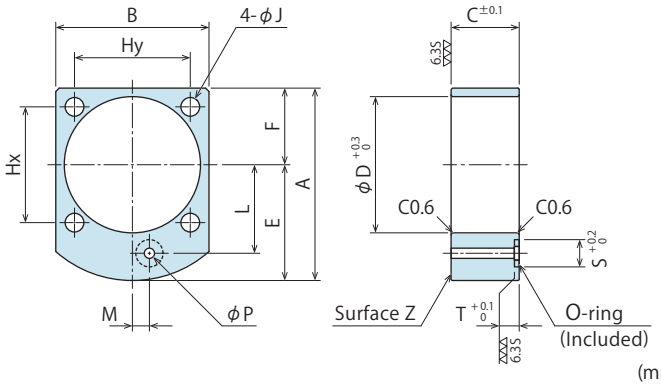
Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.
3. For other block thickness (dim. C), machine the surface Z or design a block referring to the drawing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

Manifold Block for LJ/LM/LG/LT

Model No. Indication

LZ 048 0 – MS

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



(mm)

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

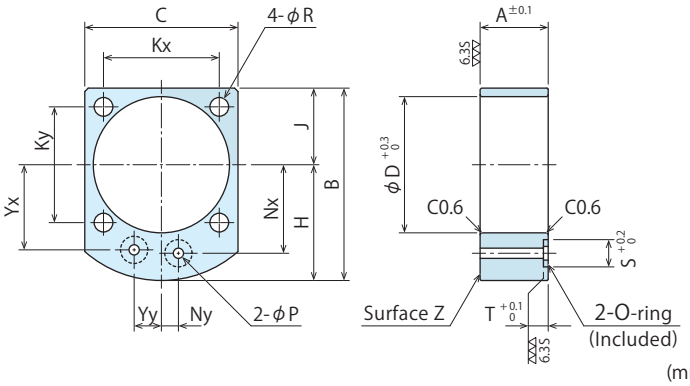
Notes : 1. Material : S45C Surface Finishing : Alkaline Blackening
2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the dimension C as a reference.
3. For other block thickness (dim. C), machine the surface Z or design a block referring to the drawing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

Manifold Block for LC/TC

Model No. Indication

LZ 048 0 – MP

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



(mm)

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

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

Sales Offices

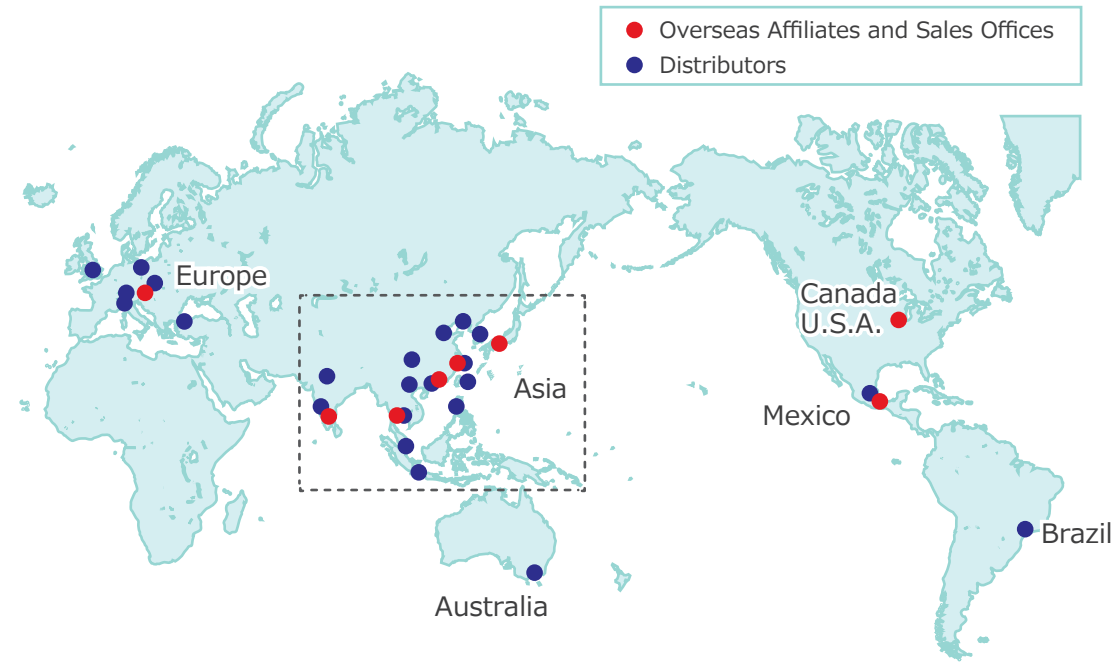
Sales Offices across the World

JAPAN HEAD OFFICE Overseas Sales	**TEL. +81-78-991-5162**	FAX. +81-78-991-8787 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
United States of America SUBSIDIARY KOSMEK (USA) LTD.	**TEL. +1-630-620-7650**	FAX. +1-630-620-9015 650 Springer Drive, Lombard, IL 60148 USA
MEXICO REPRESENTATIVE OFFICE KOSMEK USA Mexico Office	**TEL. +52-442-161-2347**	Av. Santa Fe #103 int 59 Col. Santa Fe Juriquilla C.P. 76230 Queretaro, Qro Mexico
EUROPE SUBSIDIARY KOSMEK EUROPE GmbH	**TEL. +43-463-287587**	FAX. +43-463-287587-20 Schleppeplatz 2 9020 Klagenfurt am Wörthersee Austria
CHINA KOSMEK (CHINA) LTD. 考世美(上海)貿易有限公司	**TEL. +86-21-54253000**	FAX. +86-21-54253709 Room601, RIVERSIDE PYRAMID No.55, Lane21, Pusan Rd, Pudong Shanghai 200125, China 中国上海市浦东新区浦三路21弄55号银亿滨江中心601室 200125
INDIA BRANCH OFFICE KOSMEK LTD - INDIA	**TEL. +91-9880561695**	F 203, Level-2, First Floor, Prestige Center Point, Cunningham Road, Bangalore -560052 India
THAILAND REPRESENTATIVE OFFICE KOSMEK Thailand Representation Office	**TEL. +66-2-300-5132**	FAX. +66-2-300-5133 67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250, Thailand
TAIWAN (Taiwan Exclusive Distributor) Full Life Trading Co., Ltd. 盈生貿易有限公司	**TEL. +886-2-82261860**	FAX. +886-2-82261890 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) G.E.T. Inc, Phil.	**TEL. +63-2-310-7286**	FAX. +63-2-310-7286 Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427
INDONESIA (Indonesia Exclusive Distributor) PT. Yamata Machinery	**TEL. +62-21-29628607**	FAX. +62-21-29628608 Delta Commercial Park I, Jl. Kenari Raya B-08, Desa Jayamukti, Kec. Cikarang Pusat Kab. Bekasi 17530 Indonesia

Sales Offices in Japan

Head Office Osaka Sales Office Overseas Sales	**TEL. 078-991-5162**	FAX. 078-991-8787 〒651-2241　兵庫県神戸市西区室谷2丁目1番5号
Tokyo Sales Office	**TEL. 048-652-8839**	FAX. 048-652-8828 〒331-0815　埼玉県さいたま市北区大成町4丁目81番地
Nagoya Sales Office	**TEL. 0566-74-8778**	FAX. 0566-74-8808 〒446-0076　愛知県安城市美園町2丁目10番地1
Fukuoka Sales Office	**TEL. 092-433-0424**	FAX. 092-433-0426 〒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

KOSMEK
Harmony in Innovation

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

ISO 9001
JQA-QMA10823
KOSMEK HEAD OFFICE

MS
JAB
CM009