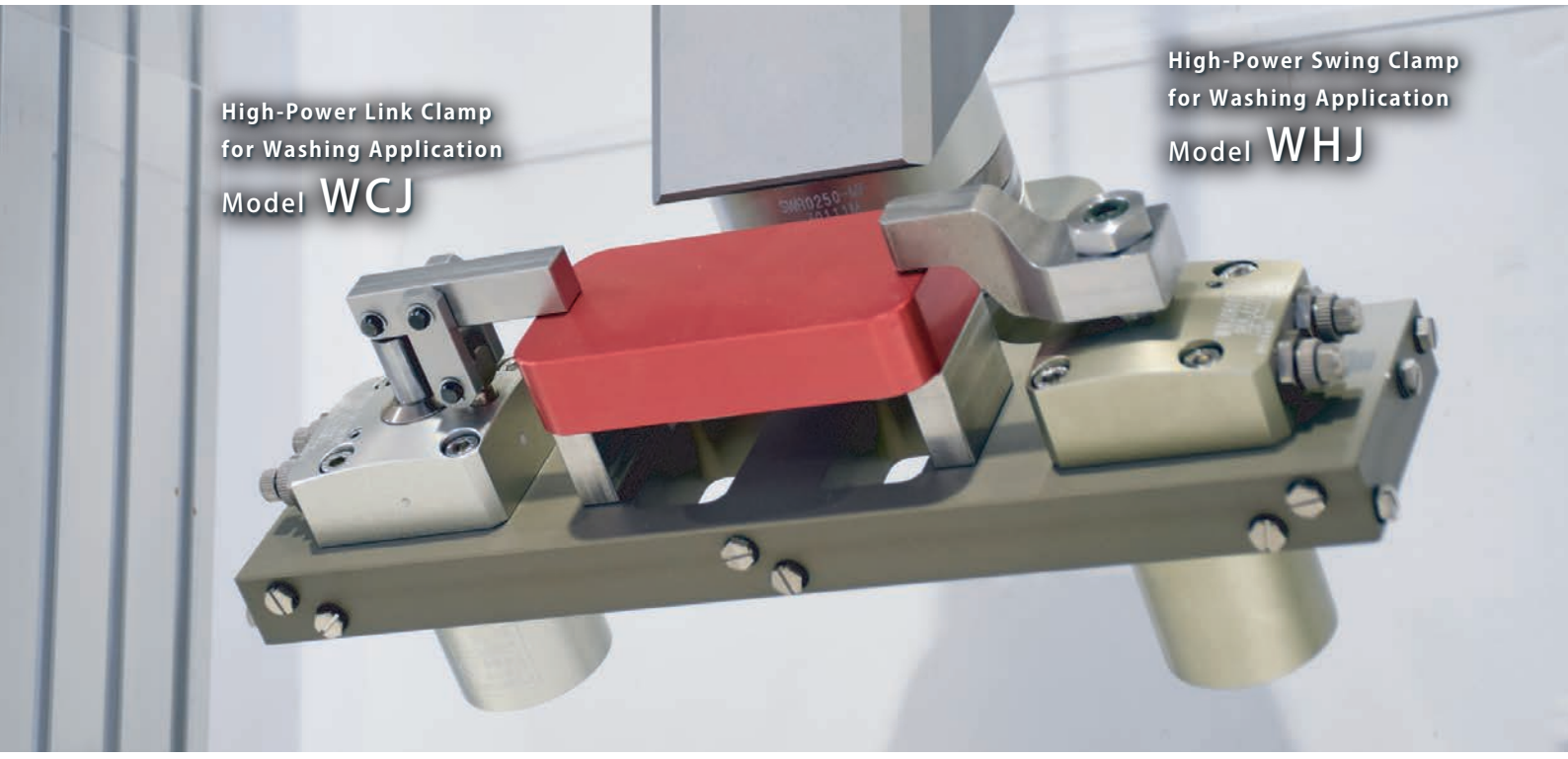
New For setup improvement of washing applications

Kosmek Products for Washing Application



KOSMEK
Harmony in Innovation

High-Power Swing Clamp for Washing Application Model WHJ

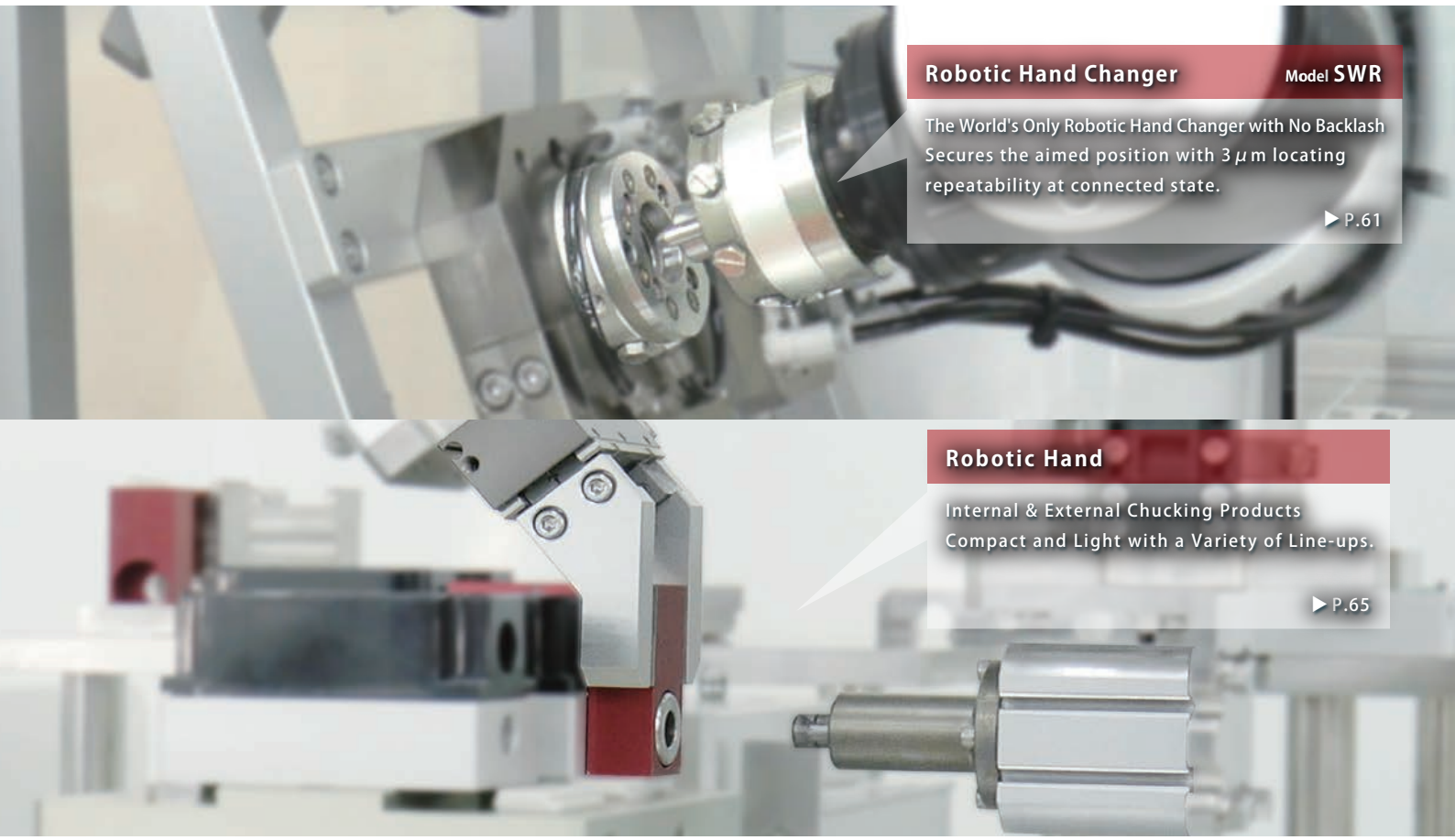
Suitable for High-Pressure Washing and with Powerful Clamping Force and Holding Force Equivalent to Hydraulic Clamps
The lever swings 90° to clamp workpiece. ▶ P.03

For High-Pressure Washing

High-Power Link Clamp for Washing Application Model WCJ

Suitable for High-Pressure Washing and with Powerful Clamping Force and Holding Force Equivalent to Hydraulic Clamps
The lever pivots to clamp workpiece.

▶ P.27



Robotic Hand Changer Model SWR

The World's Only Robotic Hand Changer with No Backlash
Secures the aimed position with 3 μm locating repeatability at connected state.

▶ P.61

Robotic Hand

Internal & External Chucking Products
Compact and Light with a Variety of Line-ups.

▶ P.65

Before / After Washing Process

Compact Location Clamp Model SWQ

For Pallet Exchange Automation
Clamping and locating at once
with 3 μm locating repeatability

▶ P.67

Auto Coupler

With the location clamp locked, air circuit is automatically connected to the pallet by Auto Coupler.

▶ P.68

High-Power Swing Clamp for Washing Application

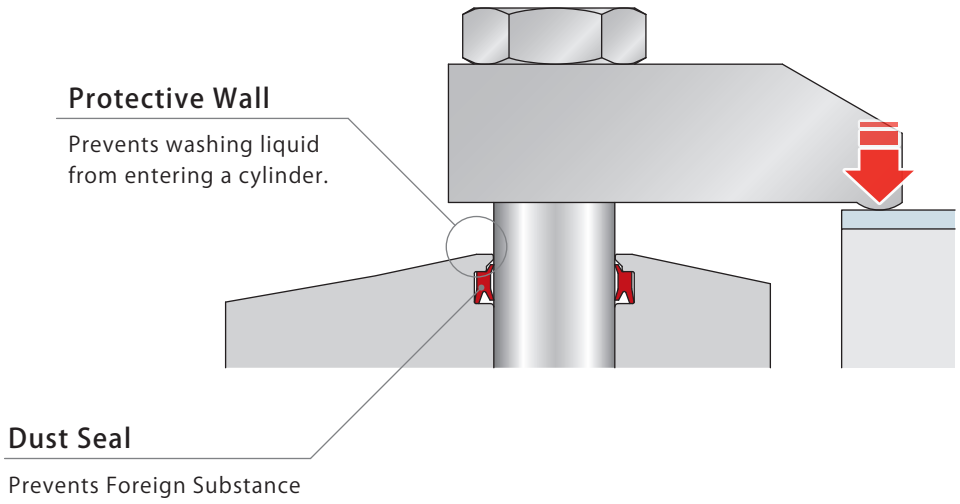
Model WHJ

Suitable for High-Pressure Washing

PAT.

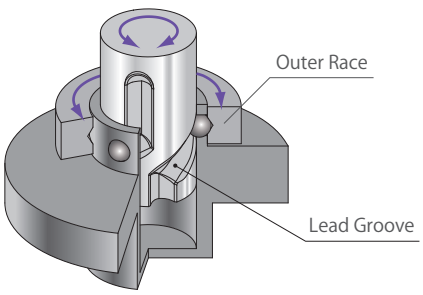
Features

Durability The protective wall over the dust seal keeps washing liquid out.



- **Swing Mechanism with High Speed and High Durability**

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



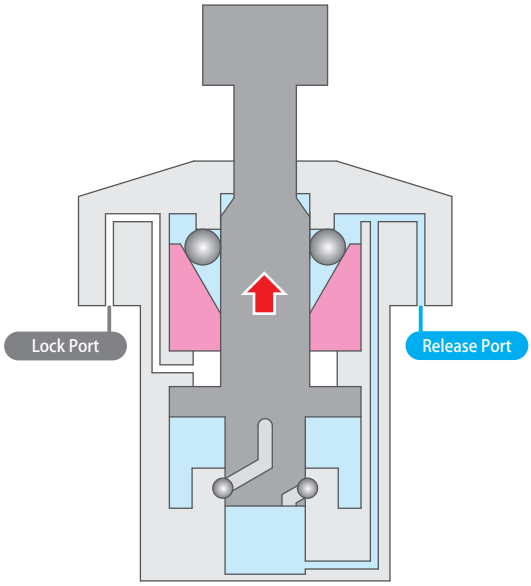
Ball Guide Part

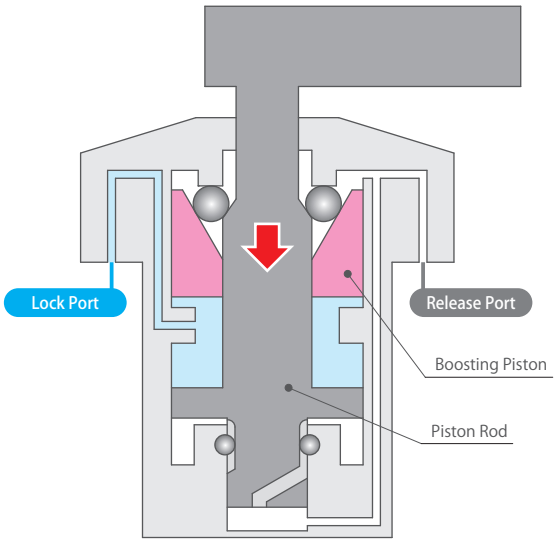
The High-Power Pneumatic Swing Clamp is a hybrid system using air pressure and a mechanical lock.

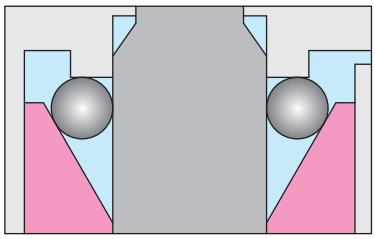
Action Description

Released State
Lock Air OFF
Release Air ON

Locked State
Lock Air ON
Release Air OFF

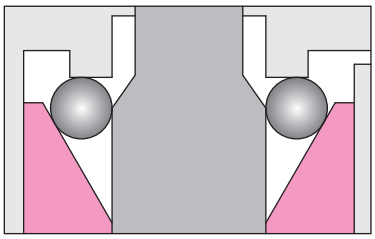






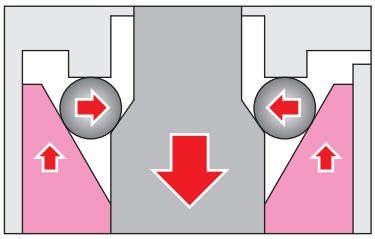
Released State

The piston rod ascends to release.



Locking Operation
(Swing Stroke+Vertical Stroke 2mm)

① The piston rod rotates while it descends along the cam.
② After swing completion, the piston rod descends vertically until the lever clamps the workpiece.

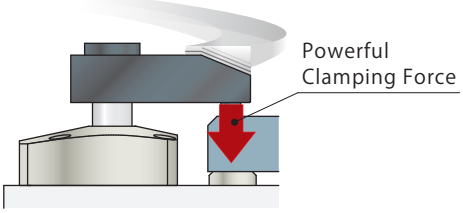


Locked State
(Boosting Stroke 4mm)

The piston rod descends and the boosting piston activates. Exerts strong clamping force and holding force with the wedge mechanism.

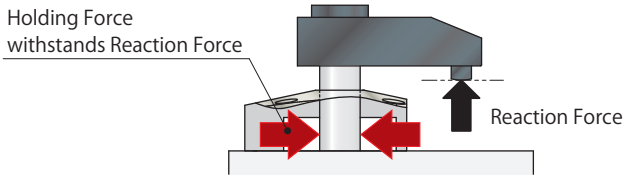
No Hydraulic Use

Washing fixture system with high-power pneumatic clamps exerting equivalent force to hydraulic clamps needs no hydraulic pressure.



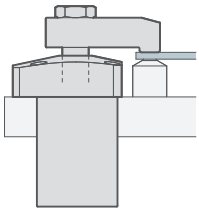
Holding Force

Minimal clamping force and powerful holding force minimize workpiece deformation. Mechanical locking allows holding force to exert 3 times the clamping force at most.

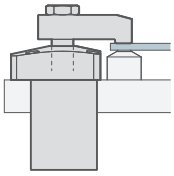


Smaller Footprint

Exerts three times clamping force compared to the same size general air cylinder. Smaller cylinder allows for more compact fixtures.

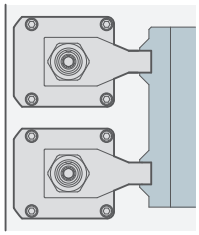


General Air Cylinder

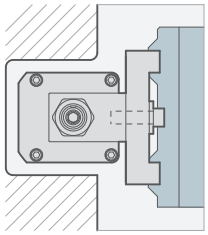


High-Power Pneumatic Clamp

Downsized



General Air Cylinder

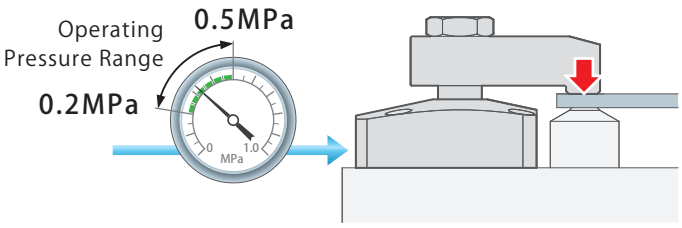


High-Power Pneumatic Clamp

Reduced Number of Clamps

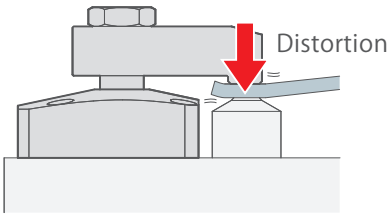
Energy Saving

Energy-saving clamp exerts high clamping force with low pressure.

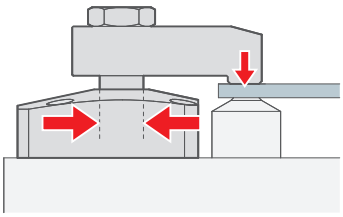


High Quality

Optimum clamping force does not distort workpiece and holding force is strong enough to withstand washing load.



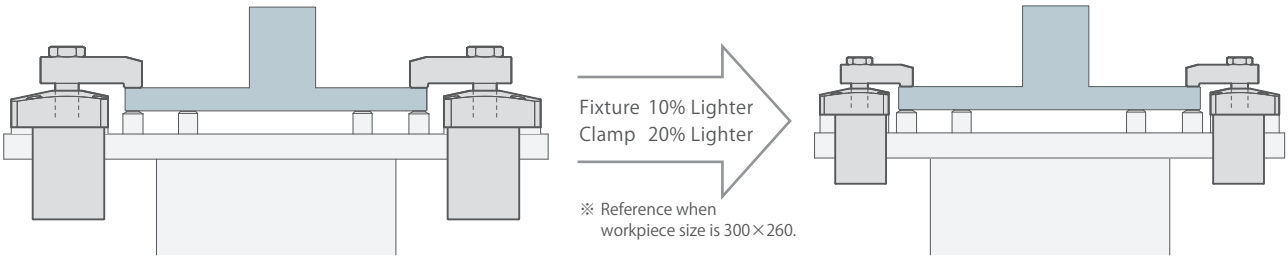
Strong clamping force distorts workpiece.



Clamping force is lowered, yet workpiece can be supported with holding force.

Light Weight

High-Power Clamp for Washing Application allows for lighter fixture, minimizing load to the positioner.

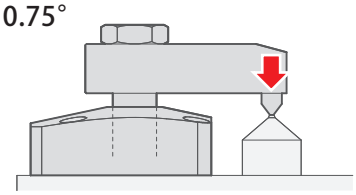


General Air Cylinder

High-Power Pneumatic Clamp

High Accuracy

High locating accuracy at locked position allows for precise clamping.
Swing Complete Position Repeatability：±0.75°



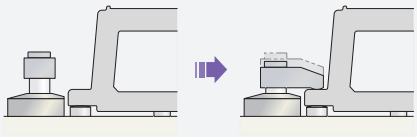
Lineup

Standard Model

Model **WHJ**

External Dimensions
→ P.15

Clamp with 90° swing



Action Description

Air Sensing Manifold Option

Model **WHJ-M**

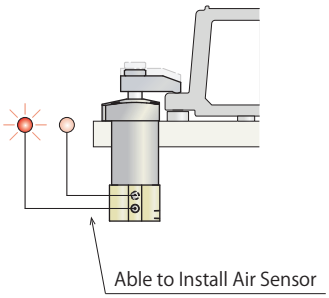
External Dimensions
→ P.17

Air Sensing Piping Option

Model **WHJ-N**

External Dimensions
→ P.19

Clamping action can be confirmed with air catch sensor



Accessories

Speed Control Valve

Model **BZW-B**

→ P.53

Manifold Block

Model **WHZ-MD**

→ P.55

Model No. Indication

WHJ 160 0 - 2 A R
1 2 3 4 5

1 Cylinder Force

060 : Cylinder Force 0.6 kN (Pneumatic Pressure 0.5MPa)
100 : Cylinder Force 1.0 kN (Pneumatic Pressure 0.5MPa)
160 : Cylinder Force 1.6 kN (Pneumatic Pressure 0.5MPa)
250 : Cylinder Force 2.4 kN (Pneumatic Pressure 0.5MPa)
400 : Cylinder Force 3.9 kN (Pneumatic Pressure 0.5MPa)

※ Cylinder force differs from clamping force and holding force.

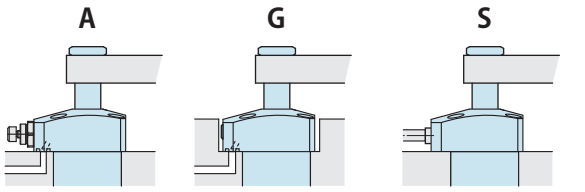
2 Design No.

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)

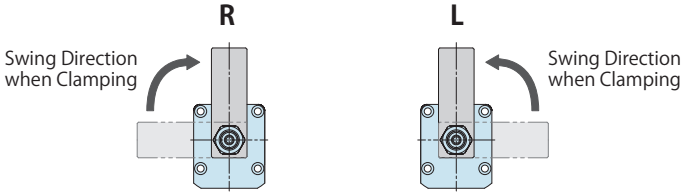
※ Speed control valve (BZW) is sold separately.
Please refer to P.53.



Gasket Option		Piping Option
With Ports for Speed Controller Includes R Thread Plug (order speed controller separately)	with R Thread Plug	Rc Thread No Gasket Port

4 Swing Direction when Clamping

R : Clockwise
L : Counter-Clockwise

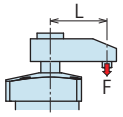


5 Action Confirmation Method

Blank : None (Standard)
M : Air Sensing Manifold Option
N : Air Sensing Piping Option

Specifications

Model No.		WHJ0600-2□□□	WHJ1000-2□□□	WHJ1600-2□□□	WHJ2500-2□□□	WHJ4000-2□□□
Cylinder Force (at 0.5MPa)	kN	0.6	1.0	1.6	2.4	3.9
Clamping Force (Calculation Formula) ※1	kN	F=(1.1666-0.00287×L)×P	F=(1.8842-0.00346×L)×P	F=(3.0603-0.00505×L)×P	F=(4.7875-0.00654×L)×P	F=(7.6871-0.00947×L)×P
Holding Force (Calculation Formula) ※1	kN	$Fk=\frac{2.771\times P}{1-0.0025\times L}$	$Fk=\frac{4.08\times P}{1-0.0021\times L}$	$Fk=\frac{6.628\times P}{1-0.0012\times L}$	$Fk=\frac{10.481\times P}{1-0.0008\times L}$	$Fk=\frac{16.806\times P}{1-0.0006\times L}$
Full Stroke	mm	14	14.5	15	17.5	19.5
Swing Stroke (90°)	mm	8	8.5	9	11.5	13.5
Vertical Stroke	mm	6				
(Break down) Idle Stroke	mm	2				
(Break down) Lock Stroke※2	mm	4				
Swing Angle Accuracy		90° ±3°				
Swing Completion Position Repeatability		±0.75°				
Max. Operating Pressure	MPa	0.5				
Min. Operating Pressure※3	MPa	0.2				
Withstanding Pressure	MPa	0.75				
Operating Temperature	℃	0～70				
Usable Fluid		Dry Air				



Notes：

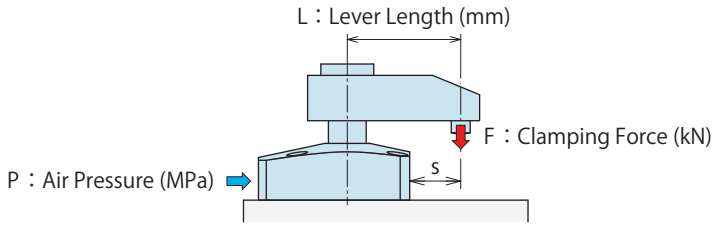
※1. F：Clamping Force (kN), Fk：Holding Force (kN), P：Supply Air Pressure (MPa),
L：Distance between the piston center and the clamping point (mm).

※2. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range.
(Please refer to "The specification value is not fulfilled when clamping out of the lock stroke range." on P.25.)

※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.25.)

1. Please refer to External Dimensions for cylinder capacity and mass.

Clamping Force Curve



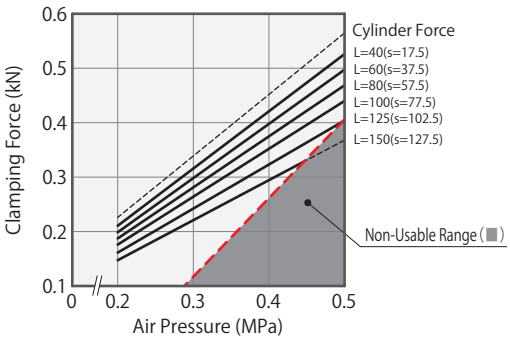
(How to read the Clamping Force Curve)
When using WHJ1600
Supply Air Pressure 0.4MPa
Lever Length L=60mm
Clamping force is about 1.1kN.

Notes:
※1. F : Clamping Force (kN), P : Supply Air Pressure (MPa), L : Lever Length (mm).
1. Tables and graphs shown are the relationship between the clamping force (kN) and supply air pressure (MPa).
2. Cylinder force (When L=0) cannot be calculated from the calculation formula of clamping force.
3. Clamping force shown in the below tables and graphs is the value when clamping within the lock stroke range. (Please refer to "The specification value is not fulfilled when clamping out of the lock stroke range." on P.25.)
4. The clamping force is shown with lever in the locked position.
5. The clamping force varies as per the lever length. Please use it with supply pneumatic pressure suitable for lever length.
6. Operation in the non-usable range can damage the clamp and lead to fluid leakage.

WHJ0600

Clamping Force Calculation Formula※1(kN) $F = (1.1666 - 0.00287 \times L) \times P$

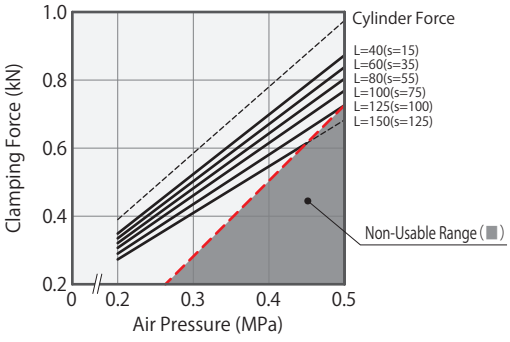
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm) 40	60	80	100	125	150	Max. Lever Length (mm)
0.5	0.57	0.53	0.50	0.47	0.44			120
0.4	0.45	0.42	0.40	0.37	0.35	0.32	0.29	180
0.3	0.34	0.32	0.30	0.28	0.26	0.24	0.22	180
0.2	0.23	0.21	0.20	0.19	0.18	0.16	0.15	180
Max. Operating Pressure (MPa)		0.5	0.5	0.5	0.5	0.49	0.44	



WHJ1000

Clamping Force Calculation Formula※1(kN) $F = (1.8842 - 0.00346 \times L) \times P$

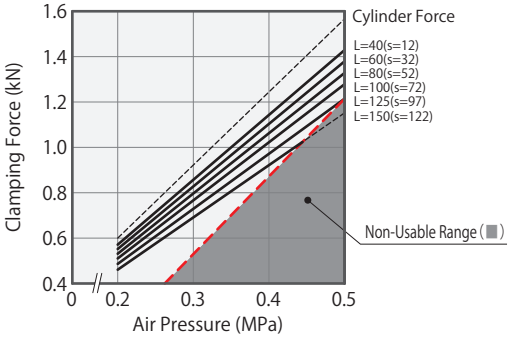
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm) 40	60	80	100	125	150	Max. Lever Length (mm)
0.5	0.98	0.87	0.84	0.80	0.77	0.73		125
0.4	0.78	0.70	0.67	0.64	0.62	0.58	0.55	180
0.3	0.59	0.52	0.50	0.48	0.46	0.44	0.41	190
0.2	0.39	0.35	0.34	0.32	0.31	0.29	0.27	190
Max. Operating Pressure (MPa)		0.5	0.5	0.5	0.5	0.5	0.44	



WHJ1600

Clamping Force Calculation Formula※1(kN) $F = (3.0603 - 0.00505 \times L) \times P$

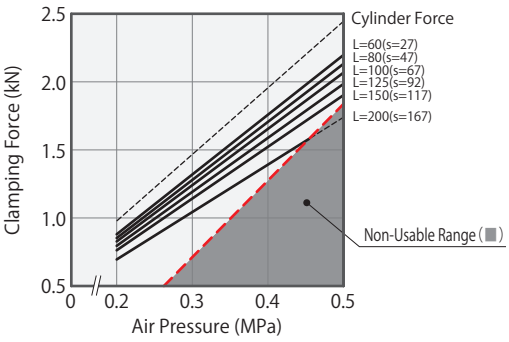
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm) 40	60	80	100	125	150	Max. Lever Length (mm)
0.5	1.57	1.43	1.38	1.33	1.28	1.22		125
0.4	1.25	1.14	1.10	1.06	1.02	0.97	0.92	174
0.3	0.94	0.86	0.83	0.80	0.77	0.73	0.69	200
0.2	0.63	0.57	0.55	0.53	0.51	0.49	0.46	200
Max. Operating Pressure (MPa)		0.5	0.5	0.5	0.5	0.5	0.44	



WHJ2500

Clamping Force Calculation Formula※1 (kN) $F = (4.7875 - 0.00654 \times L) \times P$

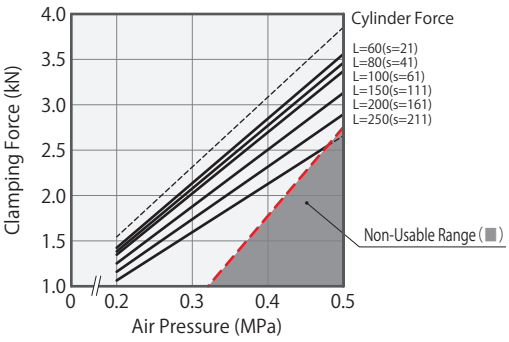
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm)						Max. Lever Length (mm)
		60	80	100	125	150	200	
0.5	2.44	2.20	2.13	2.07	1.99	1.90		170
0.4	1.96	1.76	1.71	1.65	1.59	1.52	1.39	245
0.3	1.47	1.32	1.28	1.24	1.19	1.14	1.04	270
0.2	0.98	0.88	0.85	0.83	0.79	0.76	0.70	270
Max. Operating Pressure (MPa)		0.5	0.5	0.5	0.5	0.5	0.45	



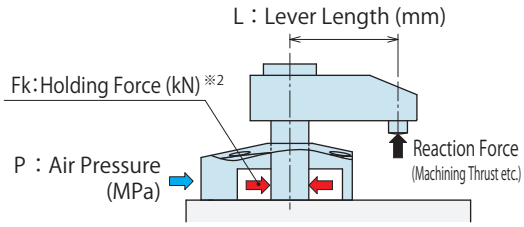
WHJ4000

Clamping Force Calculation Formula※1 (kN) $F = (7.6871 - 0.00947 \times L) \times P$

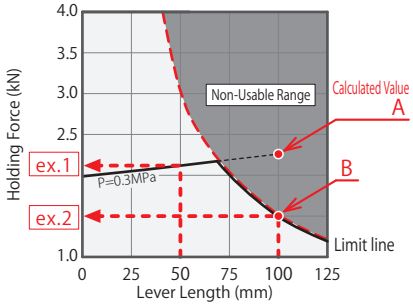
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■) Lever Length L (mm)						Max. Lever Length (mm)
		60	80	100	150	200	250	
0.5	3.86	3.56	3.46	3.37	3.13	2.90		230
0.4	3.09	2.85	2.77	2.70	2.51	2.32	2.13	330
0.3	2.32	2.14	2.08	2.02	1.88	1.74	1.60	330
0.2	1.54	1.42	1.39	1.35	1.25	1.16	1.06	330
Max. Operating Pressure (MPa)		0.5	0.5	0.5	0.5	0.5	0.48	



Holding Force Curve



(How to read the Holding Force Curve：ex.1)
When using WHJ1600,
Supply Air Pressure 0.3MPa, Lever Length L=50mm
Holding force is about 2.1kN.
(How to read the Holding Force Curve：ex.2)
When using WHJ1600,
Supply Air Pressure 0.3MPa, Lever Length L=100mm
The calculated value is the holding force of point A, but it is in the non-usable range.
The value of intersection B is the holding force that counters the reaction force, and it is about 1.5kN.



Notes：

※2. Holding force shows the force which can counter to reaction force in the clamping state, and differ from clamping force.
Moreover, keep in mind that it may produce displacement depending on lever rigidity even if it is the reaction force below holding force.
(When slight displacement is also not allowed, please keep the reaction force beyond clamping force from being added.)

※3. Fk : Holding Force (kN) , P : Supply Air Pressure (MPa) , L : Lever Length (mm).
When holding force calculated value exceeds the value of a limit line, holding force is a value of a limit line.

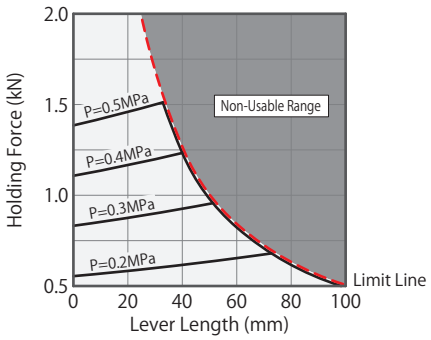
1. This table and the graph show the relation between holding force (kN) and lever length (mm).
2. Holding force shown in the below tables and graphs is the value when clamping within the lock stroke range.
(Please refer to "The specification value is not fulfilled when clamping out of the lock stroke range." on P.25.)
3. Holding force indicates the value when the lever locks a workpiece in horizontal position.
4. Holding force varies depending on the lever length. Set the supply air pressure suitable to the lever length.
5. Using in the non-usable range may damage the clamp and lead to fluid leakage.

WHJ0600

Holding Force Formula ※3 (Fk ≦ Limit Line Value) (kN)

$$Fk = \frac{2.771 \times P}{1 - 0.0025 \times L}$$

Air Pressure (MPa)	Holding Force (kN) Non-Usable Range( ) Lever Length L (mm)					
	40	60	80	100	125	150
0.5	1.23	0.82	0.62	0.49		
0.4	1.23	0.82	0.62	0.49	0.40	0.33
0.3	0.93	0.82	0.62	0.49	0.40	0.33
0.2	0.62	0.65	0.62	0.49	0.40	0.33

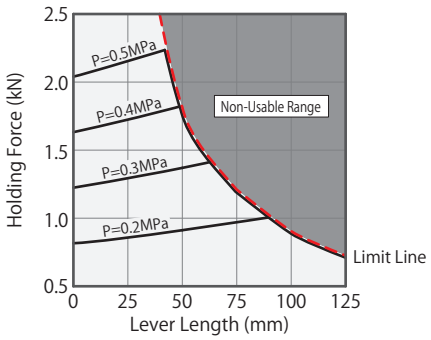


WHJ1000

Holding Force Formula ※3 (Fk ≦ Limit Line Value) (kN)

$$Fk = \frac{4.08 \times P}{1 - 0.0021 \times L}$$

Air Pressure (MPa)	Holding Force (kN) Non-Usable Range( ) Lever Length L (mm)					
	40	60	80	100	125	150
0.5	2.23	1.51	1.13	0.91	0.73	
0.4	1.78	1.51	1.13	0.91	0.73	0.61
0.3	1.34	1.40	1.13	0.91	0.73	0.61
0.2	0.89	0.93	0.98	0.91	0.73	0.61

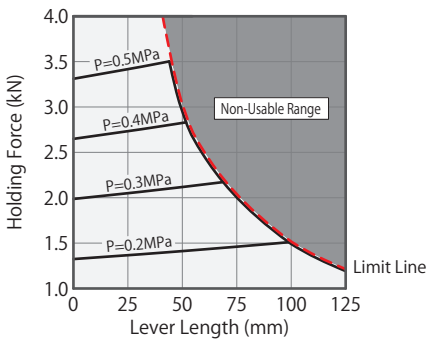


WHJ1600

Holding Force Formula ※3 (Fk ≦ Limit Line Value) (kN)

$$Fk = \frac{6.628 \times P}{1 - 0.0012 \times L}$$

Air Pressure (MPa)	Holding Force (kN) Non-Usable Range( ) Lever Length L (mm)					
	40	60	80	100	125	150
0.5	3.48	2.53	1.90	1.52	1.22	
0.4	2.79	2.53	1.90	1.52	1.22	1.01
0.3	2.09	2.14	1.90	1.52	1.22	1.01
0.2	1.39	1.43	1.47	1.51	1.22	1.01

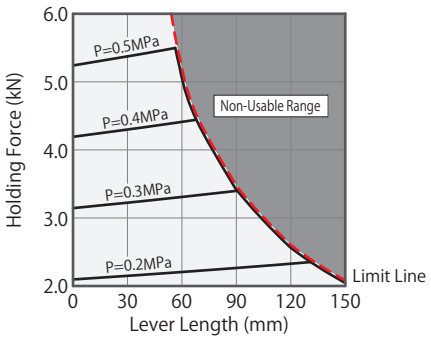


WHJ2500

Holding Force Formula ※3 (Fk ≦ Limit Line Value) (kN)

$$Fk = \frac{10.481 \times P}{1 - 0.0008 \times L}$$

Air Pressure (MPa)	Holding Force (kN) Non-Usable Range( ) Lever Length L (mm)					
	60	80	100	125	150	200
0.5	5.21	3.91	3.12	2.50	2.08	
0.4	4.40	3.91	3.12	2.50	2.08	1.56
0.3	3.30	3.36	3.12	2.50	2.08	1.56
0.2	2.20	2.24	2.28	2.33	2.08	1.56

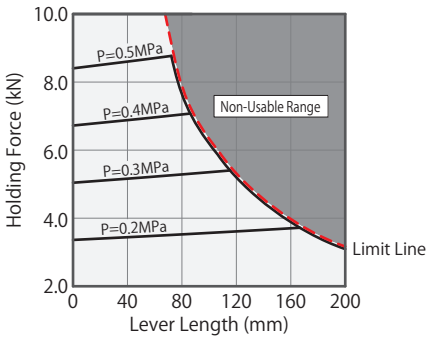


WHJ4000

Holding Force Formula ※3 (Fk ≦ Limit Line Value) (kN)

$$Fk = \frac{16.806 \times P}{1 - 0.0006 \times L}$$

Air Pressure (MPa)	Holding Force (kN) Non-Usable Range( ) Lever Length L (mm)					
	60	80	100	150	200	250
0.5	8.72	7.92	6.34	4.22	3.17	
0.4	6.97	7.06	6.34	4.22	3.17	2.53
0.3	5.23	5.30	5.36	4.22	3.17	2.53
0.2	3.49	3.53	3.58	3.69	3.17	2.53

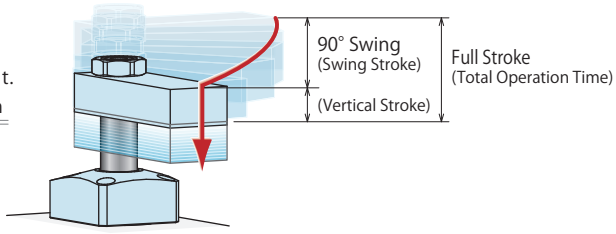


Allowable Swing Time Graph

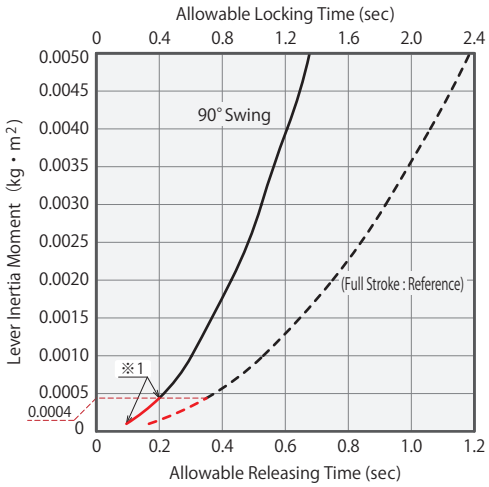
Adjustment of Swing Time

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.

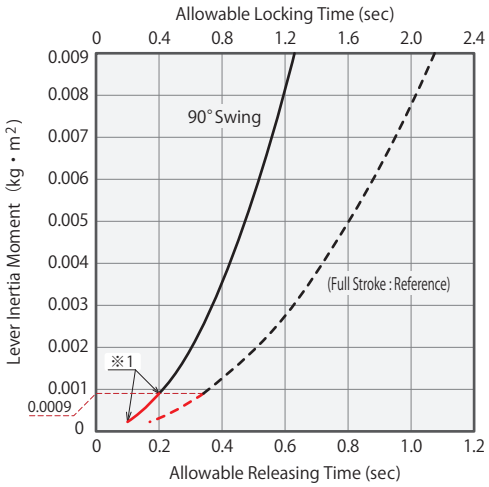
Excessive action speed can reduce stopping accuracy and damage internal parts.



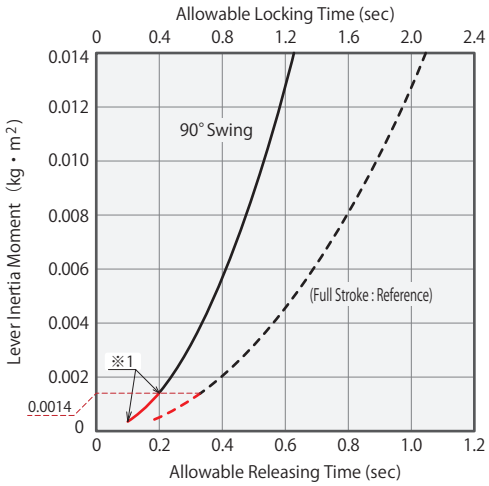
WHJ0600



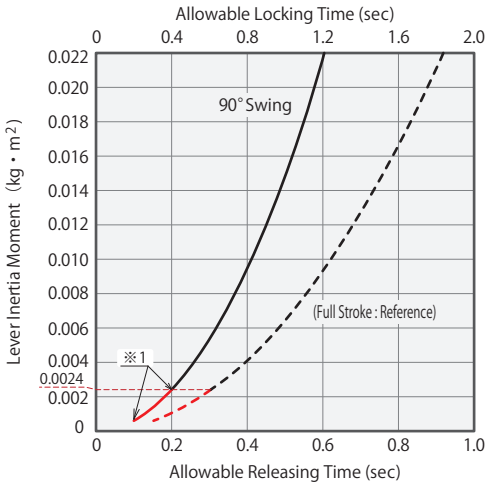
WHJ1000



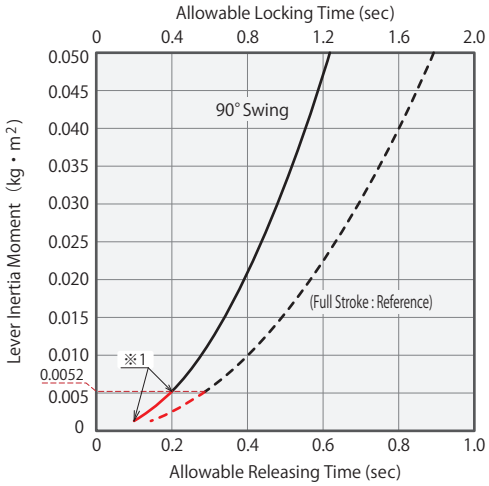
WHJ1600



WHJ2500



WHJ4000



Notes:

※1. For any lever inertia moment, minimum 90° swing time should be 0.2 sec.

1. There may be no lever swing action with large inertia depending on supply air pressure, flow and lever mounting position.
2. 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.25 for speed adjustment.)
3. Please contact us if operational conditions differ from those shown on the graphs.

(How to read the Allowable Swing Time Graph)

When using WHJ1600

Lever Inertia Moment : 0.005 kg·m²

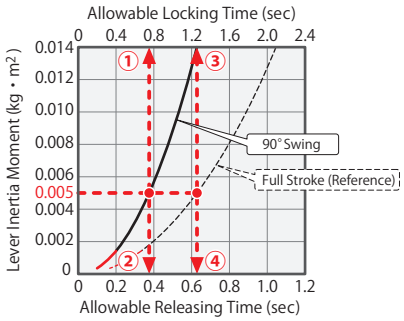
①90° Swing Time when Locking : About 0.76 sec or more

②90° Swing Time when Releasing : About 0.38 sec or more

③Total Lock Operation Time : About 1.27 sec or more

④Total Release Operation Time : About 0.63 sec or more

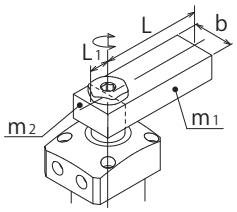
1. The total operation time on the graph represents the allowable operation time when fully stroked.



How to calculate inertia moment (Estimated)

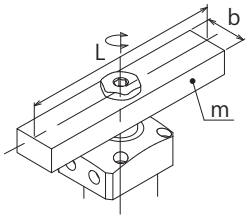
I : Inertia Moment (kg・m²) L, L_1, L_2, K, b : Length (m) m, m_1, m_2, m_3 : Mass (kg)

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



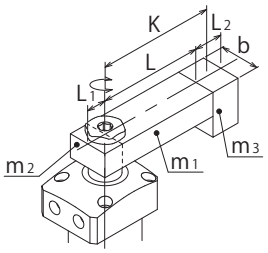
$$I = m_1 \frac{4L^2+b^2}{12} + m_2 \frac{4L_1^2+b^2}{12}$$

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.

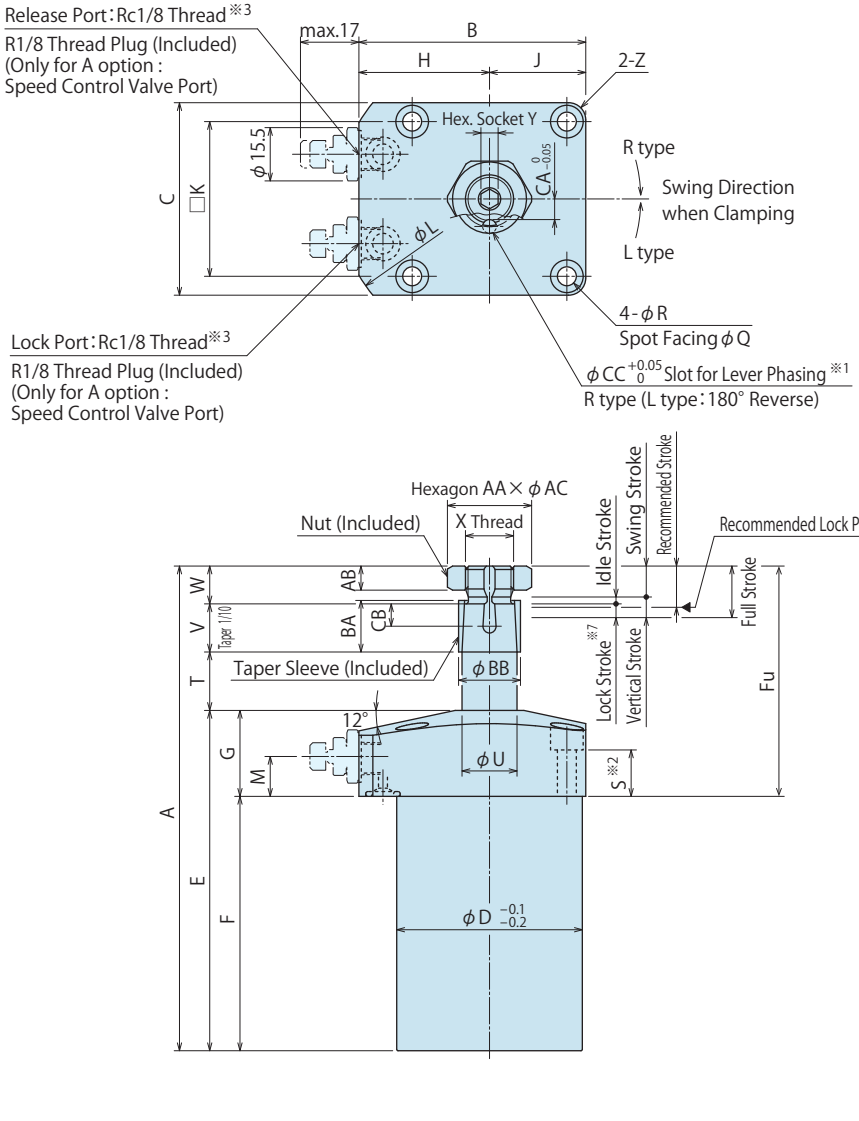


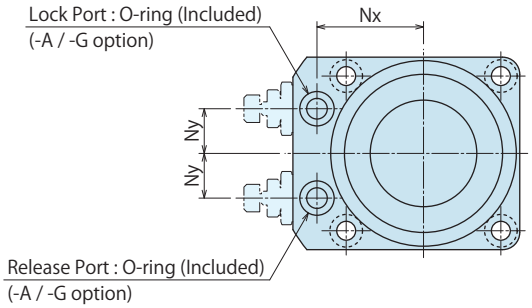
$$I = m_1 \frac{4L^2+b^2}{12} + m_2 \frac{4L_1^2+b^2}{12} + m_3K^2 + m_3 \frac{L_2^2+b^2}{12}$$

External Dimensions

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

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





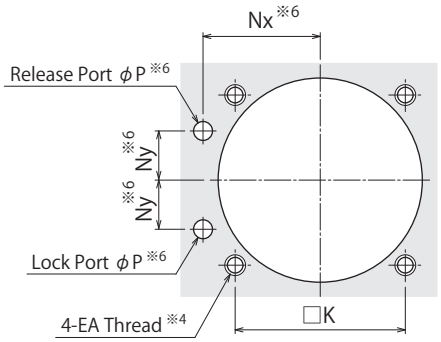
Notes：

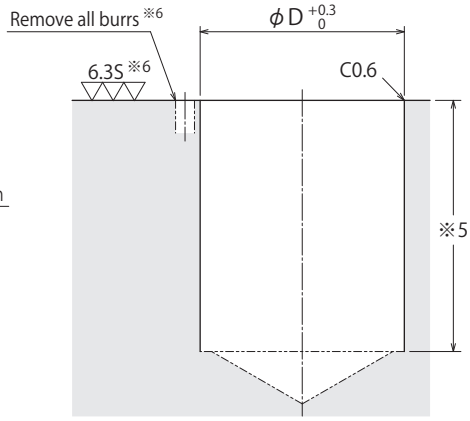
※1. The slot for lever phasing faces the port side when locked.

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

※3. Speed control valve is sold separately. Please refer to P.53.

Machining Dimensions of Mounting Area





Notes：

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

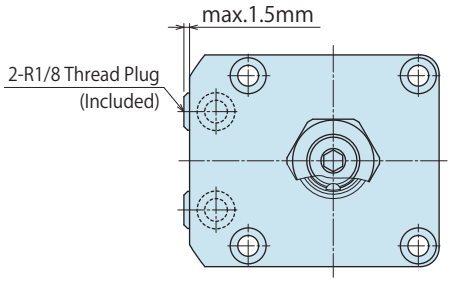
※5. The depth of the body mounting hole ϕD should be decided according to the mounting height referring to dimension 'F'.

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

Piping Method

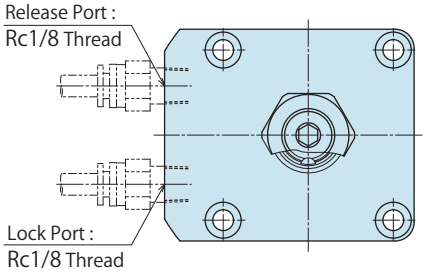
G：Gasket Option (With R Thread Plug)

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

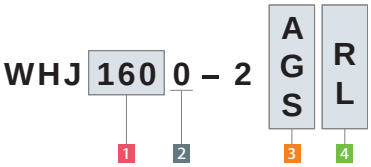


S：Piping Option (Rc Thread)

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



Model No. Indication



(Format Example：WHJ1000-2AR, WHJ2500-2SL)

1 Cylinder Force
2 Design No.
3 Piping Method
4 Swing Direction when Clamping

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WHJ0600-2□□	WHJ1000-2□□	WHJ1600-2□□	WHJ2500-2□□	WHJ4000-2□□
Full Stroke	14	14.5	15	17.5	19.5
Swing Stroke (90°)	8	8.5	9	11.5	13.5
Vertical Stroke			6		
(Break down) Idle Stroke			2		
(Break down) Lock Stroke ※7			4		
Recommended Stroke	11	11.5	12	14.5	16.5
A	125	134.5	141	167	185.5
B	54	60	66	76	87
C	45	50	56	66	78
D	40	46	54	64	77
E	89	95.5	99	117.5	128
F	64	70.5	74	87.5	98
Fu	61	64	67	79.5	87.5
G	25	25	25	30	30
H	31.5	35	38	43	48
J	22.5	25	28	33	39
K	34	39	45	53	65
L	72	79	88	98	113
M	11	11	11	13	13
Nx	26	28	31	36	41
Ny	9	10	13	15	20
P	max. ϕ3	max. ϕ5	max. ϕ5	max. ϕ5	max. ϕ5
Q	9.5	9.5	9.5	11	11
R	5.5	5.5	5.5	6.8	6.8
S	15.5	14	13.5	16	15
T	16	16.5	17	19.5	21.5
U	12	14	16	20	25
V	10	12	14	17	21
W	10	10.5	11	13	15
X (Nominal × Pitch)	M10×1	M12×1.5	M14×1.5	M16×1.5	M22×1.5
Y	4	5	5	6	8
Z (Chamfer)	C3	R5	R5	R6	R6
AA	17	19	22	24	32
AB	6	6.5	7	8	10
AC	19	21.2	24.5	26.5	35.5
BA	11	13	15	18	22
BB	14	16	18	22	28
CA	4.5	5	6	8	10
CB	4.5	4.5	6.5	5.5	9.5
CC	3	4	4	4	6
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M5×0.8	M6×1	M6×1
O-ring (-A/-G option)	1BP5	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	12.8	21.8	35.5	61.3	103.8
Cylinder Capacity cm³ Release	15.2	25.5	40.3	69.2	117.6
Mass ※8 kg	0.5	0.8	1.0	1.7	2.8

Notes：

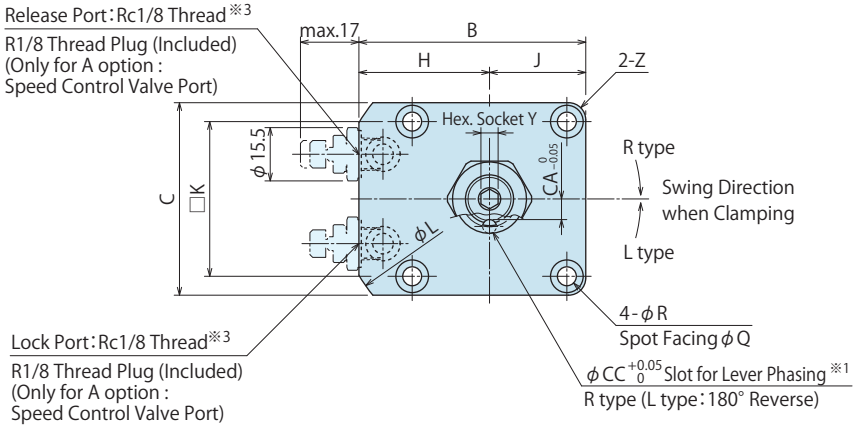
※7. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range.
(The specification value is not fulfilled when clamping within the range of swing stroke and idle stroke.)

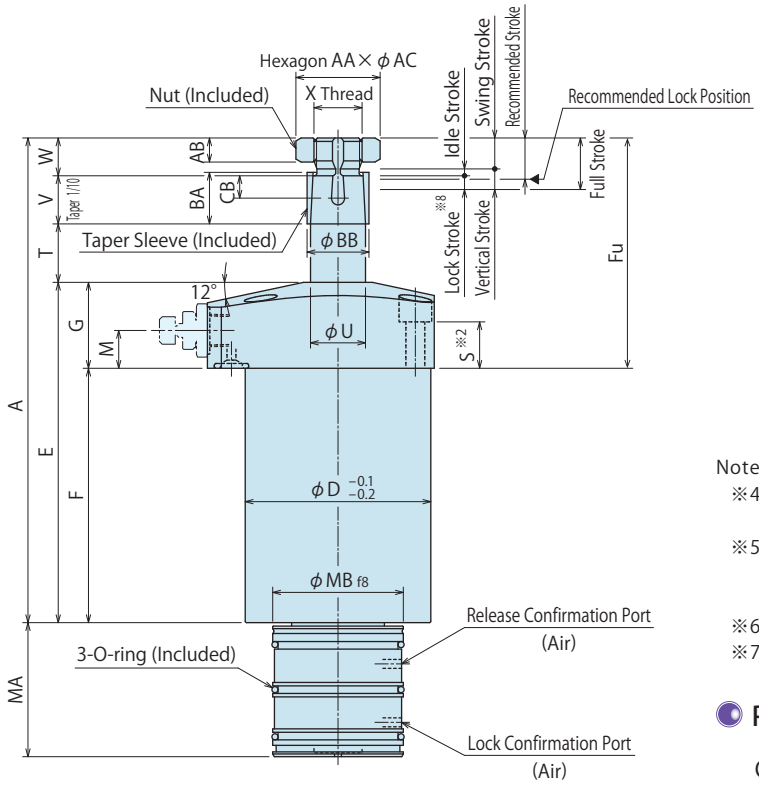
※8. Mass of single swing clamp including taper sleeve and nut.

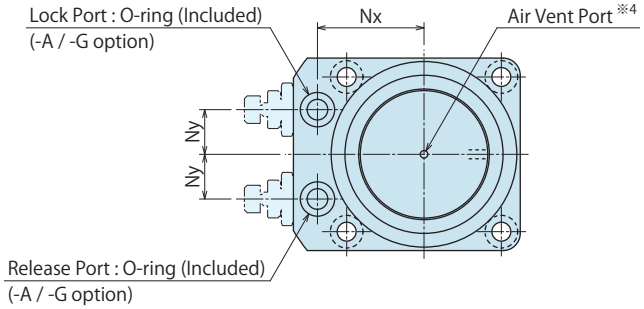
External Dimensions

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

※ The drawing shows the released state of WHJ-2ARM.







Notes：

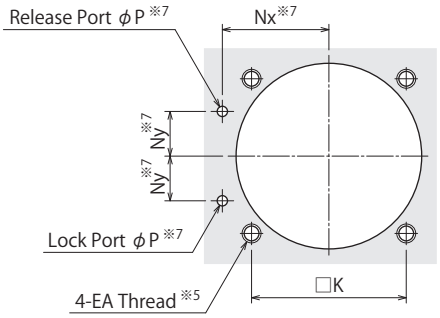
※1. The slot for lever phasing faces the port side when locked.

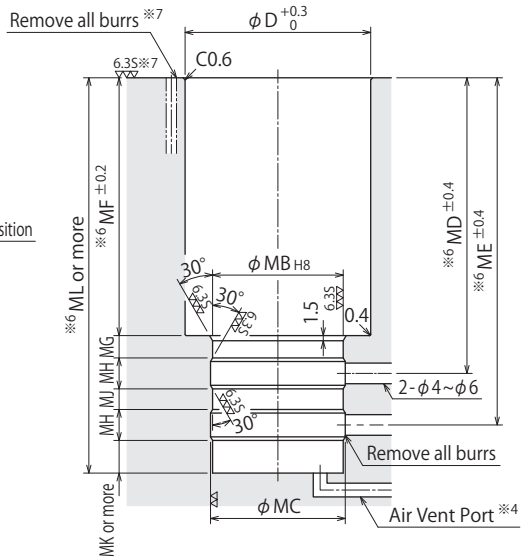
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. Speed control valve is sold separately. Please refer to P.53.

1. Please contact us when you require options in combination.
2. Please refer to P.21～P.22 for Air Sensing Chart.

Machining Dimensions of Mounting Area





Notes：

※4. Air vent port must be open to the atmosphere, and prevent washing liquid.

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

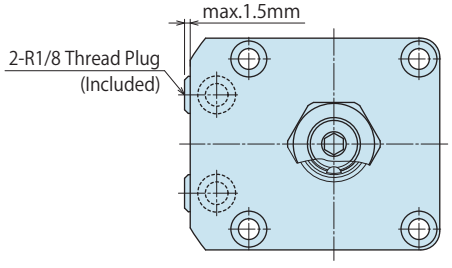
※6. The dimensions indicate those under the flange.

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

Piping Method

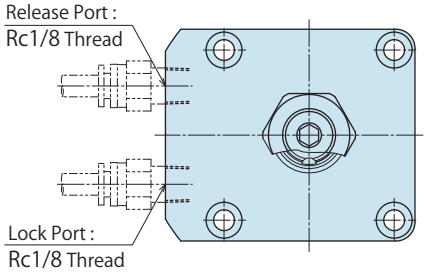
G：Gasket Option (With R Thread Plug)

※The drawing shows the released state of WHJ-2GRM.



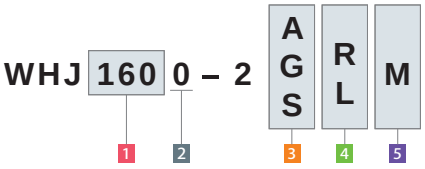
S：Piping Option (Rc Thread)

※The drawing shows the released state of WHJ-2SRM.



Model No. Indication

(Format Example：WHJ1000-2ARM, WHJ2500-2SLM)



1 Cylinder Force
2 Design No.
3 Piping Method
4 Swing Direction when Clamping
5 Action Confirmation (When M is chosen)

External Dimensions and Machining Dimensions for Mounting

(mm)

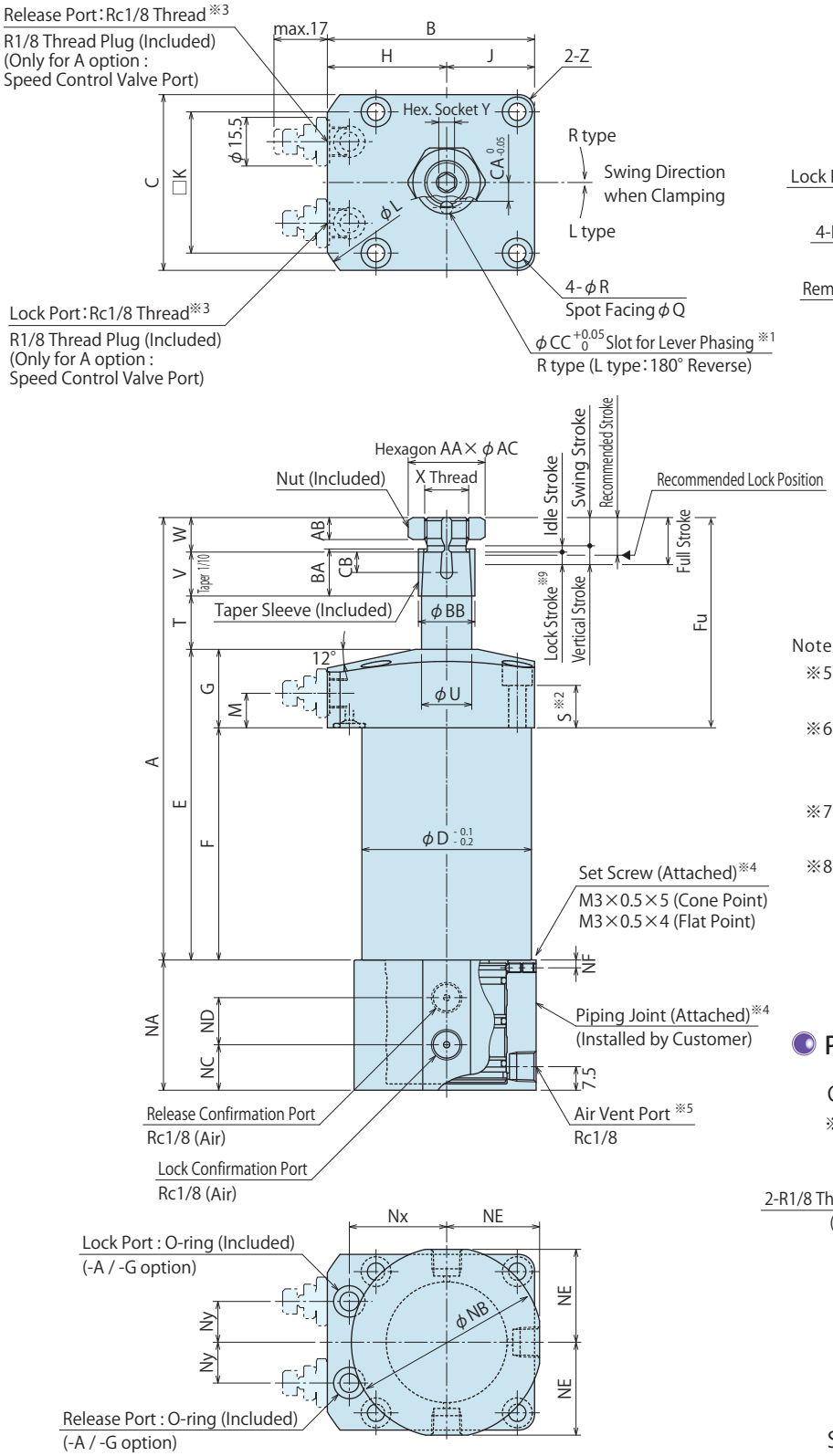
Model No.	WHJ0600-2□□M	WHJ1000-2□□M	WHJ1600-2□□M	WHJ2500-2□□M	WHJ4000-2□□M
Full Stroke	14	14.5	15	17.5	19.5
Swing Stroke (90°)	8	8.5	9	11.5	13.5
Vertical Stroke			6		
(Break down) Idle Stroke			2		
(Break down) Lock Stroke ※8			4		
Recommended Stroke	11	11.5	12	14.5	16.5
A	125	134.5	141	167	185.5
B	54	60	66	76	87
C	45	50	56	66	78
D	40	46	54	64	77
E	89	95.5	99	117.5	128
F	64	70.5	74	87.5	98
Fu	61	64	67	79.5	87.5
G	25	25	25	30	30
H	31.5	35	38	43	48
J	22.5	25	28	33	39
K	34	39	45	53	65
L	72	79	88	98	113
M	11	11	11	13	13
Nx	26	28	31	36	41
Ny	9	10	13	15	20
P	max. ϕ3	max. ϕ5	max. ϕ5	max. ϕ5	max. ϕ5
Q	9.5	9.5	9.5	11	11
R	5.5	5.5	5.5	6.8	6.8
S	15.5	14	13.5	16	15
T	16	16.5	17	19.5	21.5
U	12	14	16	20	25
V	10	12	14	17	21
W	10	10.5	11	13	15
X (Nominal × Pitch)	M10×1	M12×1.5	M14×1.5	M16×1.5	M22×1.5
Y	4	5	5	6	8
Z (Chamfer)	C3	R5	R5	R6	R6
AA	17	19	22	24	32
AB	6	6.5	7	8	10
AC	19	21.2	24.5	26.5	35.5
BA	11	13	15	18	22
BB	14	16	18	22	28
CA	4.5	5	6	8	10
CB	4.5	4.5	6.5	5.5	9.5
CC	3	4	4	4	6
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M5×0.8	M6×1	M6×1
MA	36	39	39	44	44
MB f8	$28^{-0.020}_{-0.053}$	$38^{-0.025}_{-0.064}$	$38^{-0.025}_{-0.064}$	$45^{-0.025}_{-0.064}$	$45^{-0.025}_{-0.064}$
MB H8	$28^{+0.033}_{0}$	$38^{+0.039}_{0}$	$38^{+0.039}_{0}$	$45^{+0.039}_{0}$	$45^{+0.039}_{0}$
MC	29.2	39.2	39.2	46.2	46.2
MD	75.5	82.5	86	100	110.5
ME	88.5	97.5	101	118.5	129
MF	65	71.5	75	88.5	99
MG	6	6.5	6.5	7	7
MH	9	9	9	9	9
MJ	4	6	6	9.5	9.5
MK	9	9.5	9.5	10.5	10.5
ML	102	111.5	115	133.5	144
O-ring (-A/-G option)	1BP5	1BP7	1BP7	1BP7	1BP7
3-O-ring	AS568-021 (70°)	AS568-028 (70°)	AS568-028 (70°)	AS568-030 (70°)	AS568-030 (70°)
Cylinder Capacity cm³ Lock	12.8	21.8	35.5	61.3	103.8
Cylinder Capacity cm³ Release	14.5	24.4	39.1	67.2	115.4
Mass ※9 kg	0.6	1.0	1.2	2.0	3.1

Notes：
※8. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range.
(The specification value is not fulfilled when clamping within the range of swing stroke and idle stroke.)
※9. Mass of single swing clamp including taper sleeve and nut.

External Dimensions

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

※ The drawing shows the released state (piping joint installed) of WHJ-2ARN.



Notes：

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

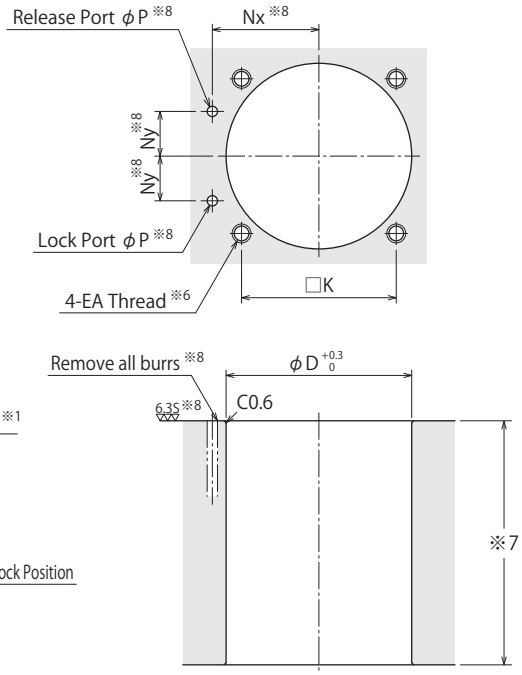
※2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.

※3. Speed control valve is sold separately. Please refer to P.53.

※4. Piping joint and set screw will be shipped as attachments. Make sure not to damage O-ring and insert the piping joint from the bottom of the cylinder and fix it with set screw.

1. Please contact us when you require options in combination.
2. Please refer to P.21～P.22 for Air Sensing Chart.

Machining Dimensions of Mounting Area



Notes：

※5. Air vent port must be open to the atmosphere, and prevent washing liquid.

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

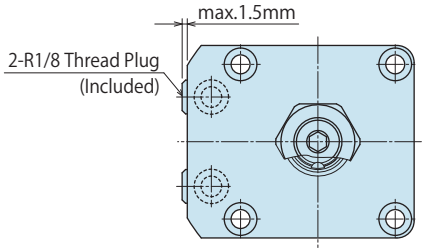
※7. The depth of mounting hole φD should be less than dimension 'F'.

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

Piping Method

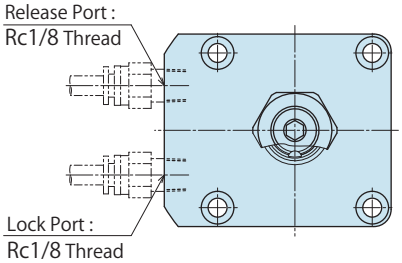
G：Gasket Option (With R Thread Plug)

※The drawing shows the released state of WHJ-2GRN.



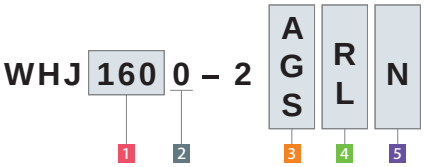
S：Piping Option (Rc Thread)

※The drawing shows the released state of WHJ-2SRN.



Model No. Indication

(Format Example：WHJ1000-2ARN, WHJ2500-2SLN)



1 Cylinder Force
2 Design No.
3 Piping Method
4 Swing Direction when Clamping
5 Action Confirmation (When N is chosen)

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WHJ0600-2□□N	WHJ1000-2□□N	WHJ1600-2□□N	WHJ2500-2□□N	WHJ4000-2□□N
Full Stroke	14	14.5	15	17.5	19.5
Swing Stroke (90°)	8	8.5	9	11.5	13.5
Vertical Stroke			6		
(Break down) Idle Stroke			2		
(Break down) Lock Stroke ※9			4		
Recommended Stroke	11	11.5	12	14.5	16.5
A	125	134.5	141	167	185.5
B	54	60	66	76	87
C	45	50	56	66	78
D	40	46	54	64	77
E	89	95.5	99	117.5	128
F	64	70.5	74	87.5	98
Fu	61	64	67	79.5	87.5
G	25	25	25	30	30
H	31.5	35	38	43	48
J	22.5	25	28	33	39
K	34	39	45	53	65
L	72	79	88	98	113
M	11	11	11	13	13
Nx	26	28	31	36	41
Ny	9	10	13	15	20
P	max. ϕ3	max. ϕ5	max. ϕ5	max. ϕ5	max. ϕ5
Q	9.5	9.5	9.5	11	11
R	5.5	5.5	5.5	6.8	6.8
S	15.5	14	13.5	16	15
T	16	16.5	17	19.5	21.5
U	12	14	16	20	25
V	10	12	14	17	21
W	10	10.5	11	13	15
X (Nominal × Pitch)	M10×1	M12×1.5	M14×1.5	M16×1.5	M22×1.5
Y	4	5	5	6	8
Z (Chamfer)	C3	R5	R5	R6	R6
AA	17	19	22	24	32
AB	6	6.5	7	8	10
AC	19	21.2	24.5	26.5	35.5
BA	11	13	15	18	22
BB	14	16	18	22	28
CA	4.5	5	6	8	10
CB	4.5	4.5	6.5	5.5	9.5
CC	3	4	4	4	6
EA (Nominal×Pitch)	M5×0.8	M5×0.8	M5×0.8	M6×1	M6×1
NA	38.5	41.5	41.5	46.5	46.5
NB	49	59	59	66	66
NC	14	14.5	14.5	15.5	15.5
ND	13	15	15	18.5	18.5
NE	23.5	28.5	28.5	32	32
NF	2.5	2.5	2.5	3	3
O-ring (-A/-G option)	1BP5	1BP7	1BP7	1BP7	1BP7
Cylinder Capacity cm³ Lock	12.8	21.8	35.5	61.3	103.8
Cylinder Capacity cm³ Release	14.5	24.4	39.1	67.2	115.4
Mass ※10 kg	0.7	1.0	1.2	2.0	3.1

Notes：

※9. The specification value of cylinder force, clamping force, holding force and swing completion position repeatability is fulfilled only when clamping within the lock stroke range.
(The specification value is not fulfilled when clamping within the range of swing stroke and idle stroke.)

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

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

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

Applicable Model

WHJ 160 0 - 2 [A G S] [L R] [M N]

5 Action Confirmation Method
：When M/N is chosen

About Air Catch Sensor

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

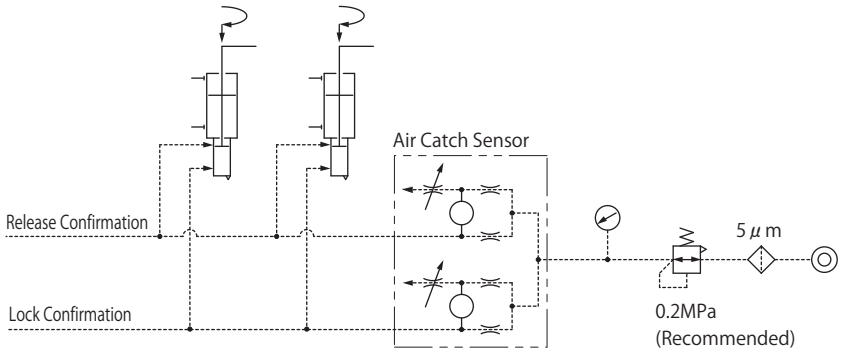
The essential condition: Air catch sensor with consumption rate more than 22～25L/min (at 0.2 MPa)

Recommended Operating Air Pressure : 0.2 MPa

Recommended Air Catch Sensor

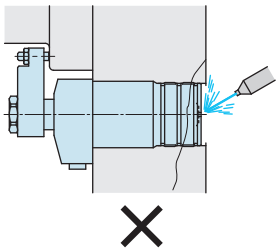
Maker	SMC	CKD
Name	Air Catch Sensor	Gap Switch
Model No.	ISA2-H	GPS2-07-15

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



Notes for Use and Installation

- Air vent port must be open to the atmosphere and kept free of coolant, chips or other debris.
  The air catch sensor can malfunction if the air vent port is blocked.



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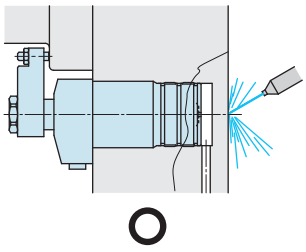

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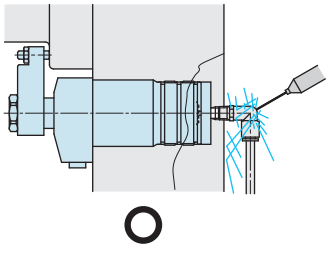
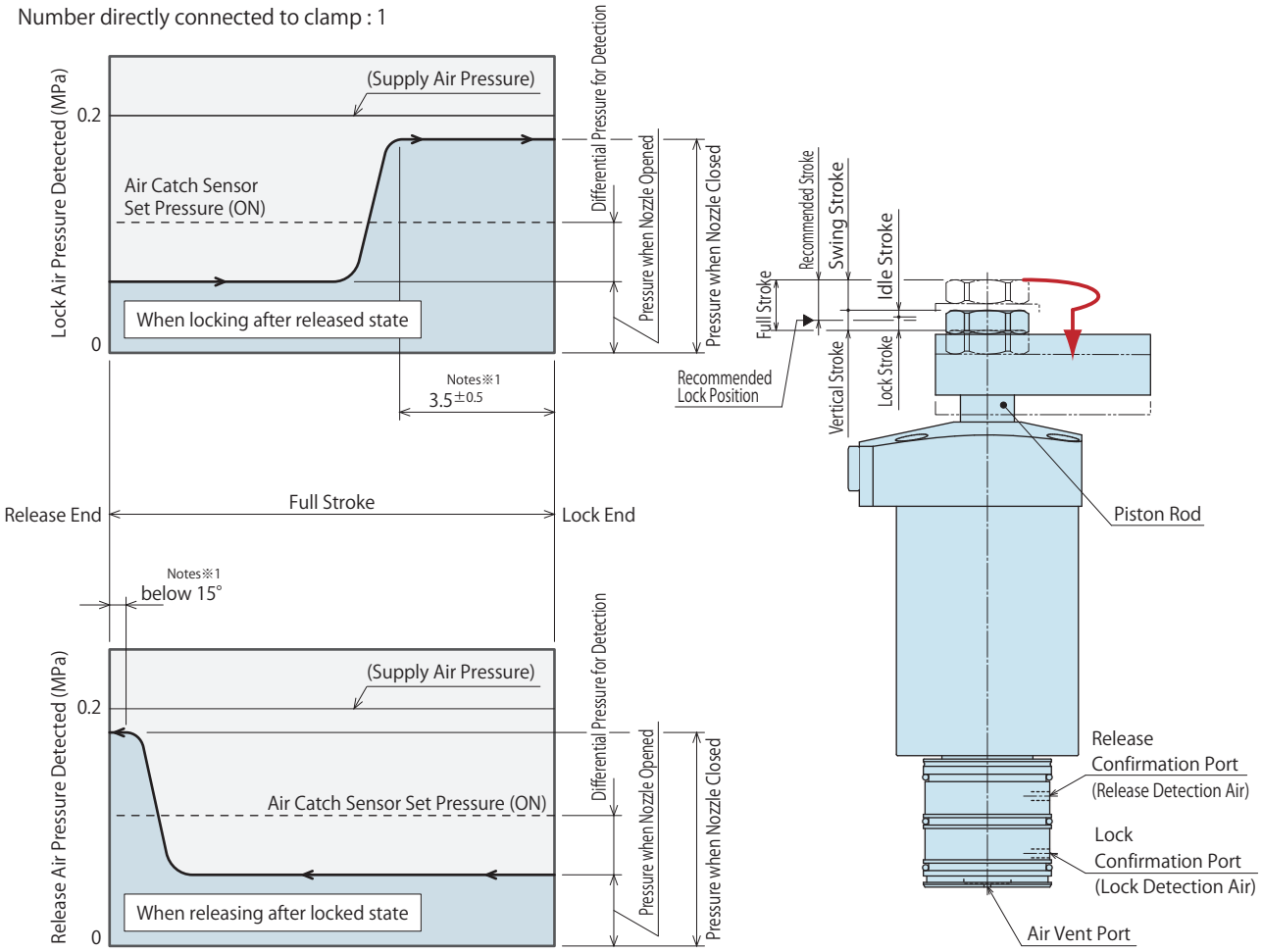


○

- Grease the O-ring before assembly to fixture.
  If it is mounted under dry state, the O-ring may have twisting or be defective.
  If excessive grease is applied, the grease may overflow to block the detection port, resulting in malfunctioning of the air catch sensor.

Air Sensing Chart

Number directly connected to clamp : 1



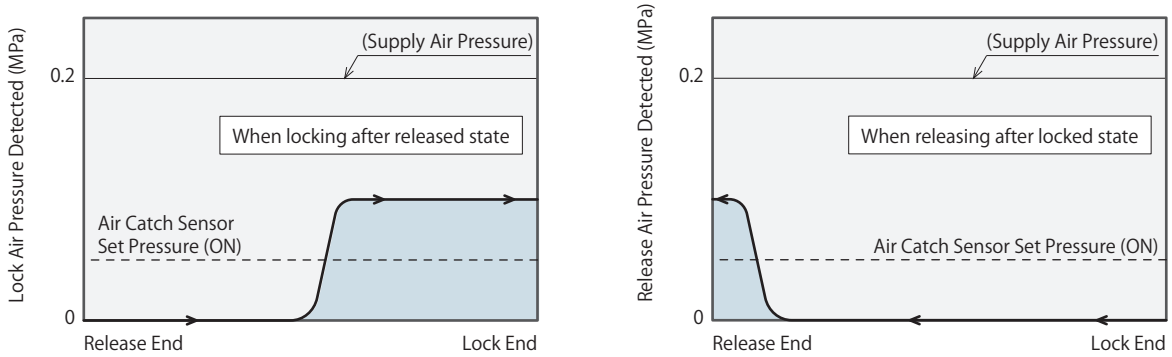
Notes :

1. Sensing chart shown is the relationship between the stroke and detection circuit air pressure.
2. The position where the air catch sensor has ON signal output varies depending on the sensor setting.
3. The detection pressure varies depending on the number of clamps connected per circuit. (Maximum number of clamps connected : 4)
4. The features may vary depending on the air circuit structure. Please contact us for further information.

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

Model No.		WHJ0600-2□□M/N	WHJ1000-2□□M/N	WHJ1600-2□□M/N	WHJ2500-2□□M/N	WHJ4000-2□□M/N
Full Stroke	mm	14	14.5	15	17.5	19.5

Number directly connected to clamp : 4 (for reference)



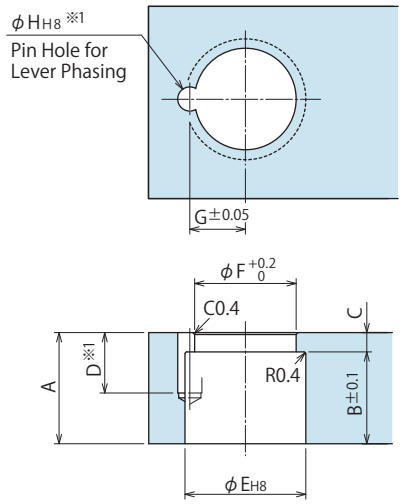
Taper Lock Lever Design Dimensions

※ Reference for designing taper lock swing lever.

Corresponding Model No.

WHJ □ 0 - 2 [A G S] [L R] [M N]

1 Cylinder Force



(mm)

Corresponding Model No.	WHJ0600-2□□□	WHJ1000-2□□□	WHJ1600-2□□□	WHJ2500-2□□□	WHJ4000-2□□□
A	14	16	18	22	26
B	11	13	15	18	22
C	3	3	3	4	4
D	8.5	8.5	10.5	10.5	14.5
E	$14^{+0.027}_{0}$	$16^{+0.027}_{0}$	$18^{+0.027}_{0}$	$22^{+0.033}_{0}$	$28^{+0.033}_{0}$
F	11	13	15	17	23.5
G	6	7.1	8.1	10.1	13.1
H	$3^{+0.014}_{0}$	$4^{+0.018}_{0}$	$4^{+0.018}_{0}$	$4^{+0.018}_{0}$	$6^{+0.018}_{0}$
Phasing Pin (Reference)※2	ϕ3(h8)×8	ϕ4(h8)×8	ϕ4(h8)×10	ϕ4(h8)×10	ϕ6(h8)×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 dimensions shown above, performance may be degraded and damage can occur.

※1. The pin hole (ϕH) for determining the lever phase should be added, if necessary. Additional machining is not required if there is no phasing needed.

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

Accessories : Others

● We offer more accessories for model WHJ.

Speed Control Valve
Model **BZW-B**

※Use BZW□-B for WHJ.

Refer to P.53 for reference.

Manifold Block
Model **WHZ-MD**

Refer to P.55 for reference.

Cautions

Notes for Design

1) Check Specifications

- Please use each product according to the specifications.

2) Notes for Circuit Design

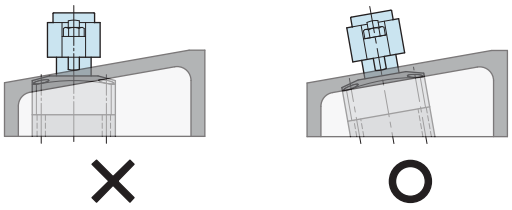
- Ensure there is no possibility of supplying air pressure to the lock and release ports simultaneously. Improper circuit design may lead to malfunctions and damages.

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 air pressure and lever mounting position.
- Please set the operating time after the inertia moment is calculated. Please make sure that the clamps work within allowable operating time referring to the allowable operating time graph.
- 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.

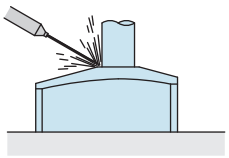
4) When clamping on a sloped surface of a workpiece

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



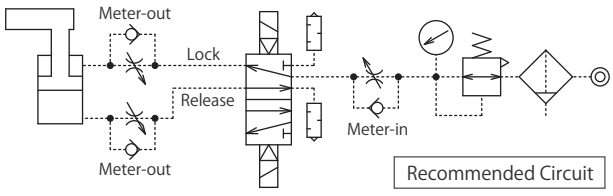
5) Do not inject high-pressure washing liquid directly to a clamp.

- Direct injection of high-pressure washing liquid to a clamp leads to damage and invasion of washing liquid.



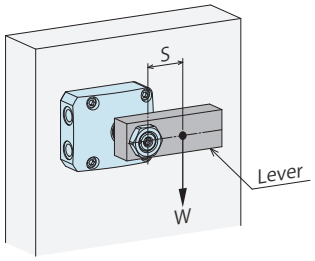
6) Swing Speed Adjustment

- If the clamp operates too fast the parts will wear out and leads to damage more quickly leading to complete equipment failure. Adjust the speed following "Allowable Swing Time Graph".
- 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.



7) Notes for 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 with the mounting position 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 below list.

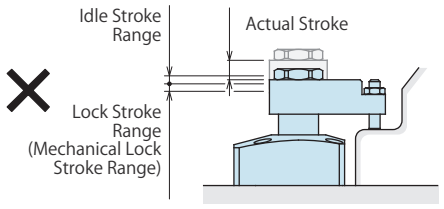


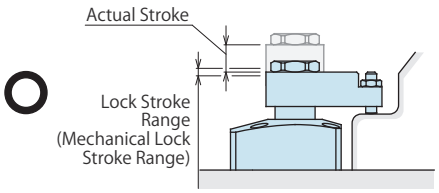
Model No.	(Lever Length W) × (Center of Gravity S) (N·m)
WHJ0600	0.08
WHJ1000	0.10
WHJ1600	0.20
WHJ2500	0.45
WHJ4000	0.90

8) The specification value is not fulfilled when clamping out of the lock stroke range.

- The mechanical lock function will not work when clamping within the range of swing stroke and idle stroke, and the specification value of cylinder force, clamping force, holding force and swing completion position repeatability will not be fulfilled.

The actual stroke of the piston that descends from the release-end to lock-end should be designed to have the same value as the recommended stroke listed in the external dimensions.





Installation Notes

1) Usable Fluid

- Please supply filtered clean dry air. (Install the 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.
  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 screw direction.
  Wrapping in the wrong direction will cause leakage and malfunction.
- Pieces of the sealing tape can lead to air leakage and malfunction.
- When piping, be careful that contaminant such as sealing tape does not enter in products.

4) Installation of the Product

- 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	Thread Size	Tightening Torque(N·m)
WHJ0600	M5×0.8	6.3
WHJ1000	M5×0.8	6.3
WHJ1600	M5×0.8	6.3
WHJ2500	M6×1	10
WHJ4000	M6×1	10

5) Installing 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 mating surfaces of the lever, taper sleeve or piston rod can cause the rod to loosen.
  Please clean them thoroughly before assembly.
- Lever mounting bolt torques are shown below.

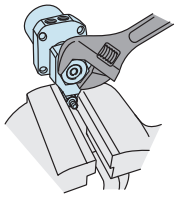
Standard：Taper Lock Lever Option

Model	Thread Size	Tightening Torque (N·m)
WHJ0600	M10×1	10 ~ 13
WHJ1000	M12×1.5	17 ~ 20
WHJ1600	M14×1.5	21 ~ 25
WHJ2500	M16×1.5	33 ~ 40
WHJ4000	M22×1.5	84 ~ 100

- 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.

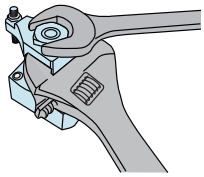
For Installation

①With the clamp positioned to the fixture, determine the lever position, and temporarily tighten the nut for fixing the lever.



②Remove the clamp from the fixture, fix the lever with machine vise etc., and tighten the nut.

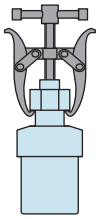
③If tightening the nut with the clamp positioned to the fixture, please use a wrench to the hexagon part of piston rod, or fix the lever with a spanner. It is best to bring the lever to the middle of the swing stroke before tightening the nut.



For Removal

① While the clamp is fixed to the fixture or vise, use a wrench to bring the lever to the middle of the swing stroke and then loosen the nut.

② Loosen the nut after securing the lever two or three turns then remove the lever with a puller without any rotational torque applied on the piston rod.



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

※ Please refer to P.57 for common cautions. ・Notes on Handling ・Maintenance/Inspection ・Warranty

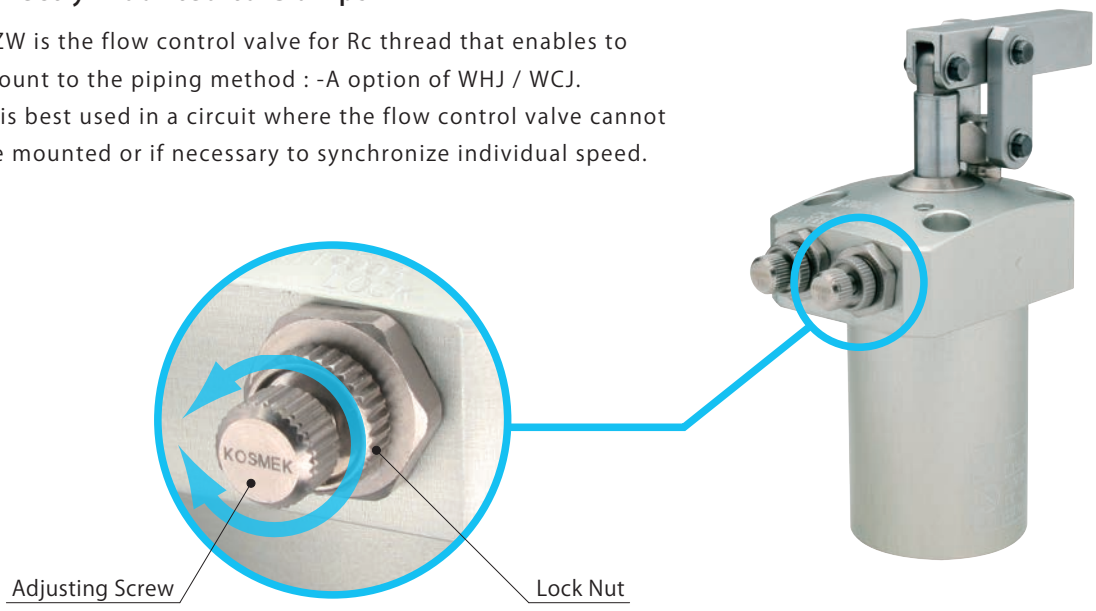
Air Flow Control Valve

Model **BZW**

Directly mounted to clamps, easy adjusting

Directly Mounted to Clamps

BZW is the flow control valve for Rc thread that enables to mount to the piping method : -A option of WHJ / WCJ.
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

Clamp	BZW Model No.	Clamp Model No.
High-Power Link Clamp for Washing Application	BZW0100-**A**	WCJ□0-2 **A**□
High-Power Swing Clamp for Washing Application	BZW0100-**B**	WHJ□0-2 **A**□

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

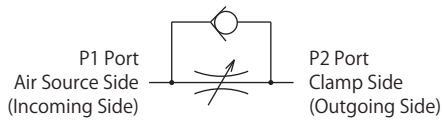
- **B**: Control Method — **B** : Meter-out, **A** : Meter-in
- **0**: Design No. — **0** : Revision Number
- **010**: R Thread Size — **010** : Rc1/8

Specifications

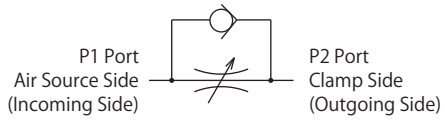
Model No.	BZW0100-B	BZW0100-A
Control Method	Meter-out	Meter-in
Operating Pressure MPa	0.1 ~ 1.0	
Withstanding Pressure MPa	1.5	
Adjust Screw Number of Rotations	10 Rotations	
Tightening Torque N•m	5 ~ 7	
Corresponding Model No.	WHJ□-2A□	WCJ□-2A□

Circuit Symbol

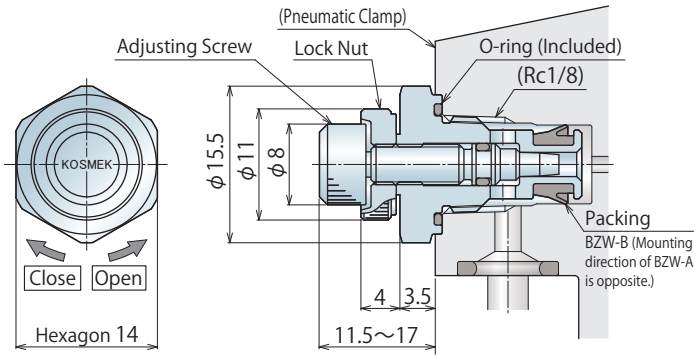
BZW0100-B : Meter-out



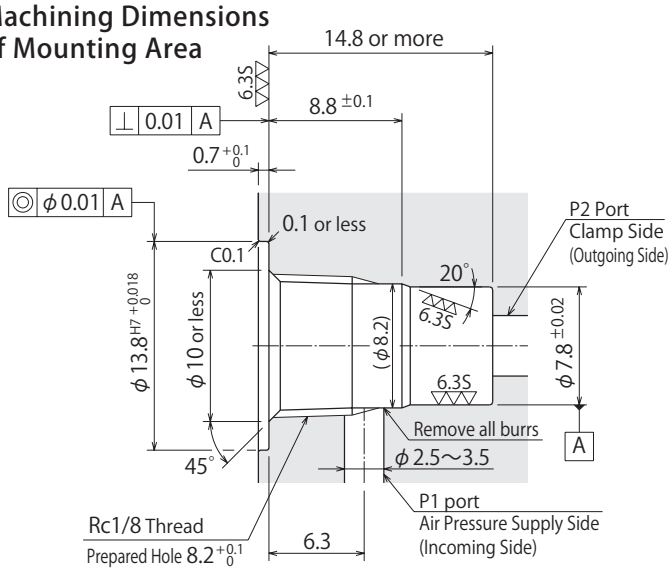
BZW0100-A : Meter-in



External Dimensions



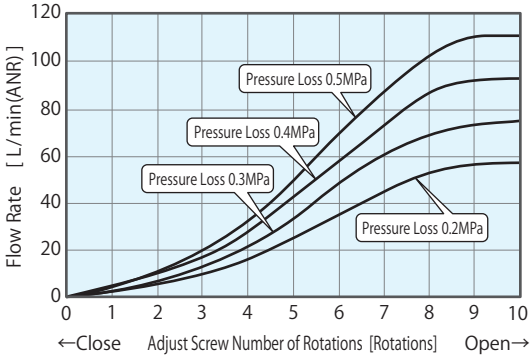
Machining Dimensions of Mounting Area



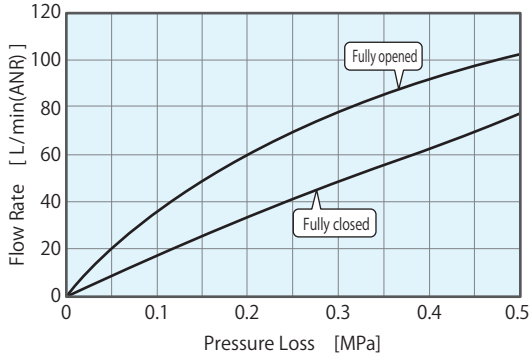
Flow Rate Graph

BZW0100-B/BZW0100-A common

Controlled Flow Direction



Free Flowing Direction



Notes :

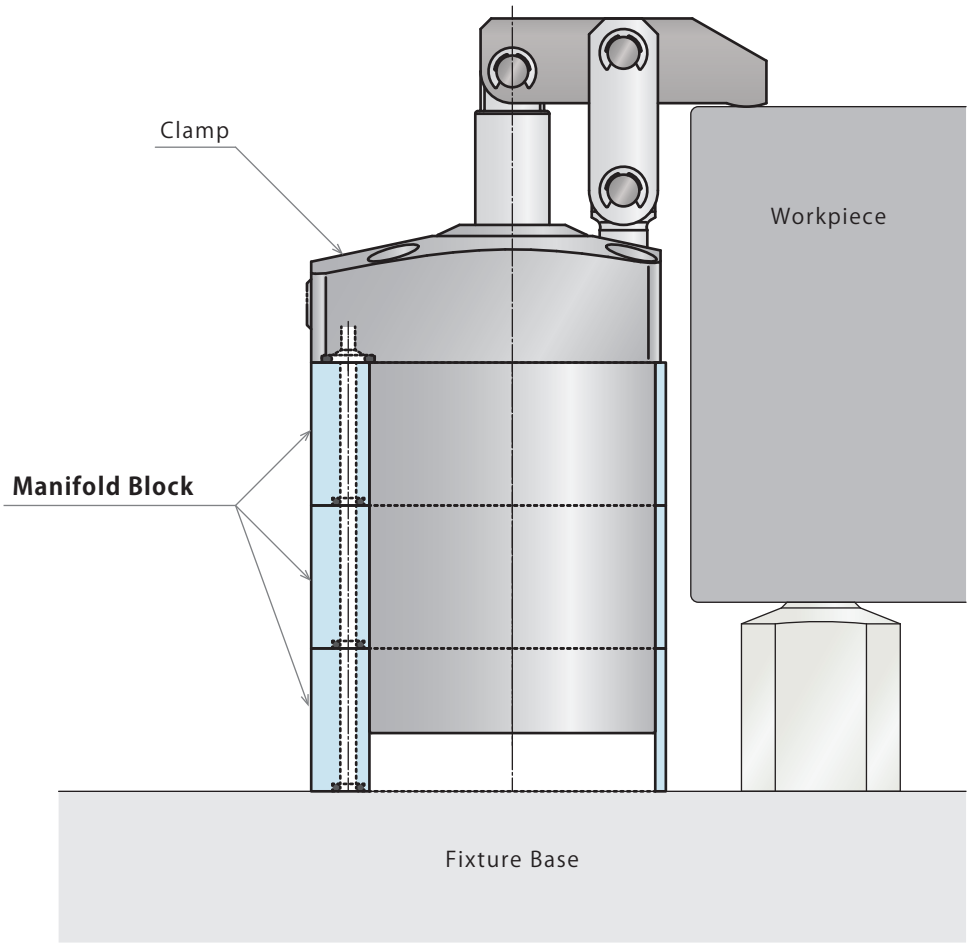
1. Since the ▽▽▽ area is sealing part, be careful not to damage it.
2. No cutting chips or burr shoud be at the tolerance part of machining hole.
3. As shown in the drawing, P1 port is used as the air supply side and P2 port as the clamp side.

Manifold Block

Model **WHZ-MD**

Manifold Block

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



Applicable Model

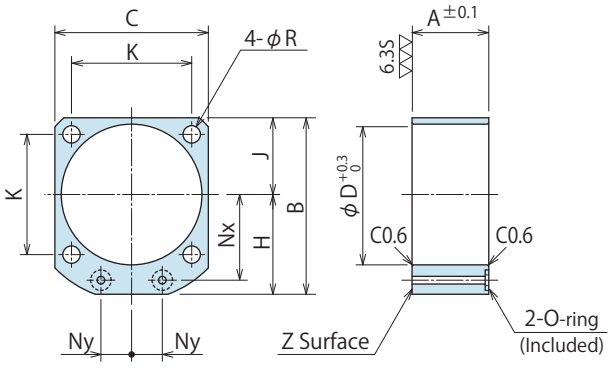
Manifold Block Model No.	Corresponding Item Model No.
Model WHZ-MD	Model WCJ Model WHJ

Manifold Block for WCJ/WHJ

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 Item Model Number	WCJ0600 WHJ0600	WCJ1000 WHJ1000	WCJ1600 WHJ1600	WCJ2500 WHJ2500	WCJ4000 WHJ4000
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.

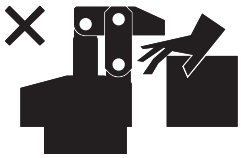
Cautions

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 product 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 product 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 clamp (cylinder) while clamp (cylinder) is working. Otherwise, your hands may be injured due to clinching.

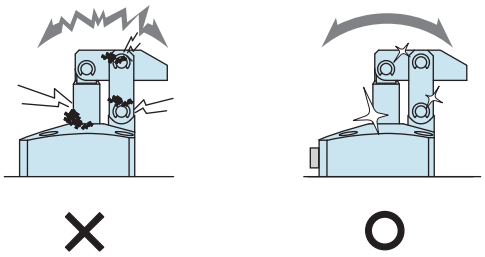


4) Do not disassemble or modify.
- If the product is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source
- Before the product 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.
- 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) Regularly tighten pipings, mounting bolts, nuts, snap rings and cylinders to ensure proper use.

4) 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.

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

6) Please contact us for overhaul and repair.

Warranty

1) Warranty Period

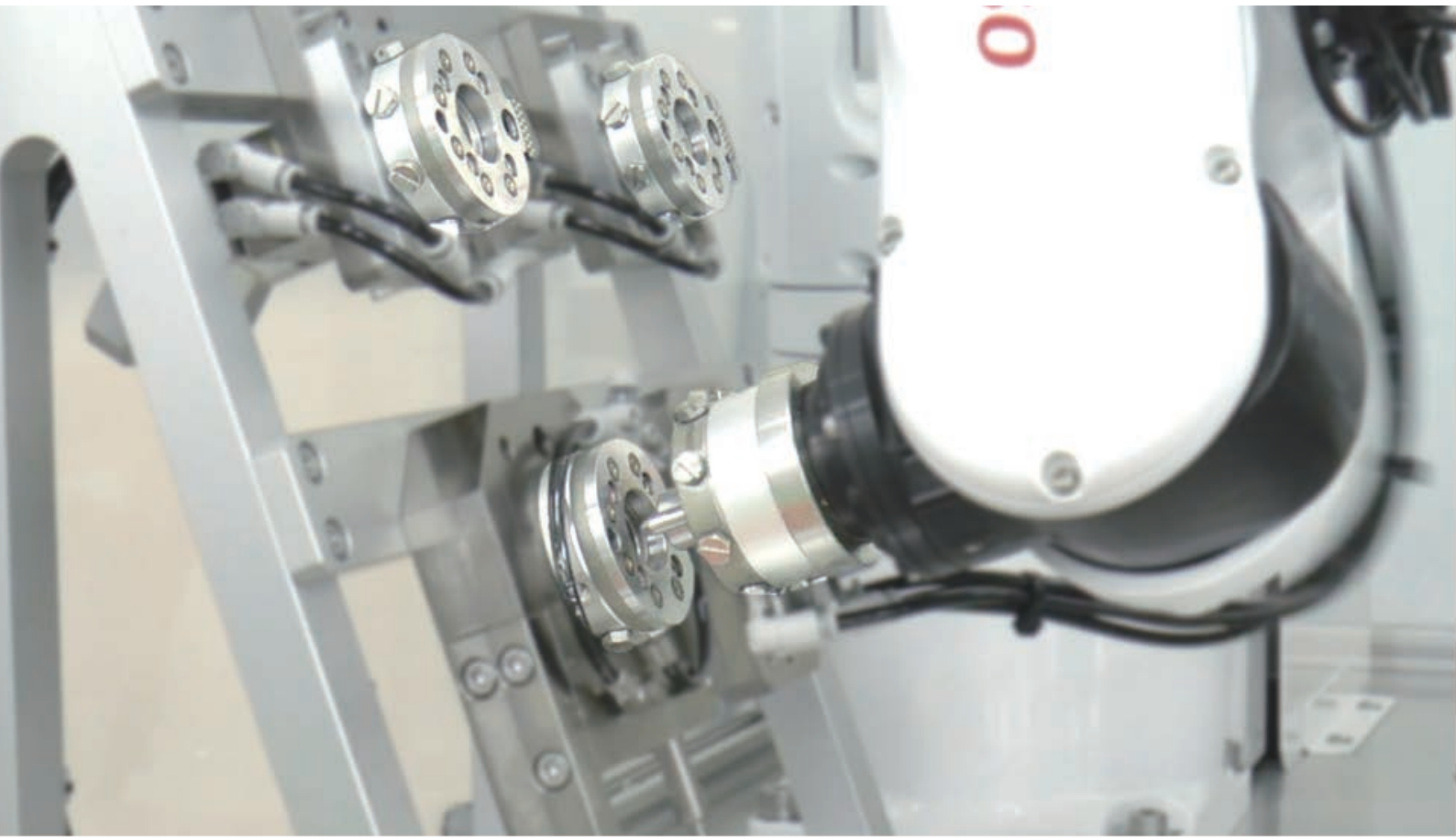
- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope

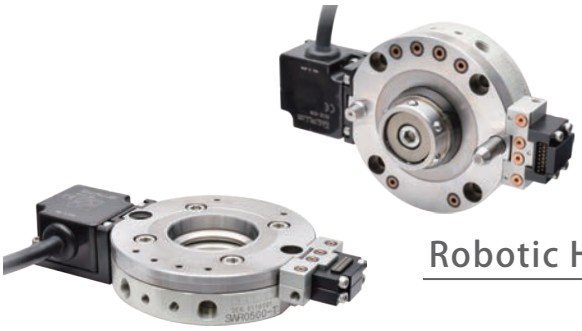
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
  Defects or failures caused by the following are not covered.

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.



Introducing Kosmek Products



Robotic Hand Changer

▶P.61

Robotic Hand Series

▶P.65

High Accuracy Locating・Clamping

▶P.67

for Washing Application

Auto Coupler

▶P.68

Work Support

▶P.69

FA・Industrial Robot Related Products Complete Catalog

Please find further information on our complete catalog.
You can order from our website (http://www .kosmek.co.jp/english/).

The World's Only

Robotic Hand Changer with Zero Backlash

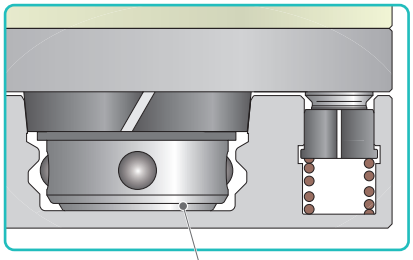
Model SWR

Air Lock / Air Release

Self-Lock Function with Spring

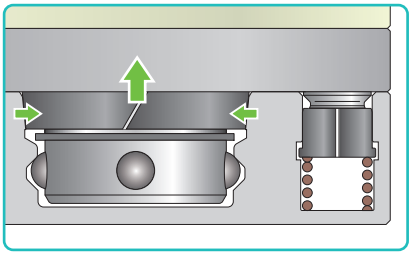
KOSMEK Exclusive Non-Backlash Mechanism

Before Connection



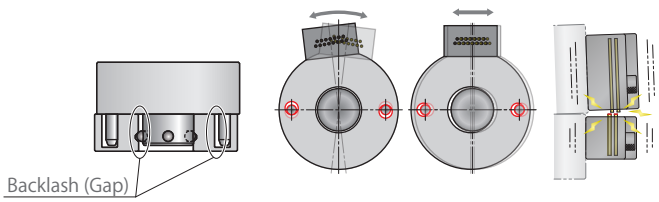
Detaching Function

When Connected



Backlash of Changer Causes Electrode Error

Noise and Continuity Failure due to Friction of Contact Probe



Continuity Failure of Electrode

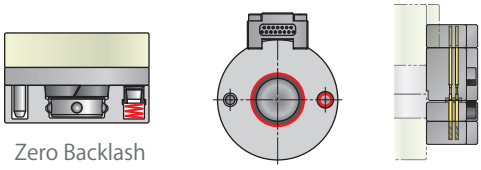
↓

Frequent Moment Stop

Zero-Backlash Connection with Dual Contact

Kosmek Hand Changer with No Backlash Prevents Electrode Error

No Noise



No Continuity Failure of Electrode

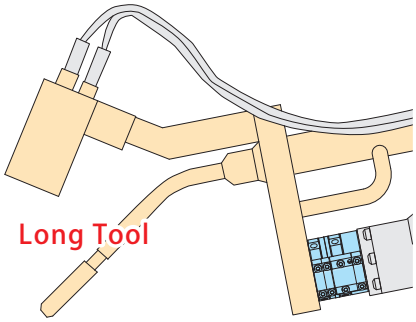
↓

Sharp Decline of Moment Stop

Secures the Aimed Position

When Connected, Locating Repeatability is 3 μm

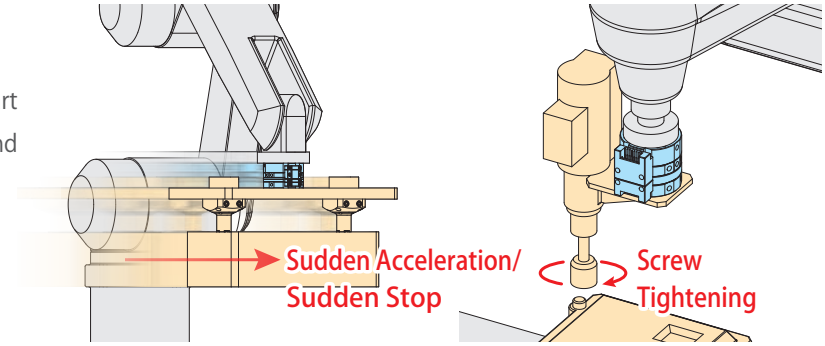
Even with long tools or hands, fluctuation of the edge is extremely small. It secures high accuracy processing even after tool change.



24-Hour Continuous Operation is Possible

Uncomparably High Rigidity and Durability

Strong to "bending" and "torsion" with high rigidity obtained by non-backlash function.
Also, high strength material is used in all the contact part of the master and tool so that it ensures high durability and 3 μm locating repeatability even after 1 million cycles.

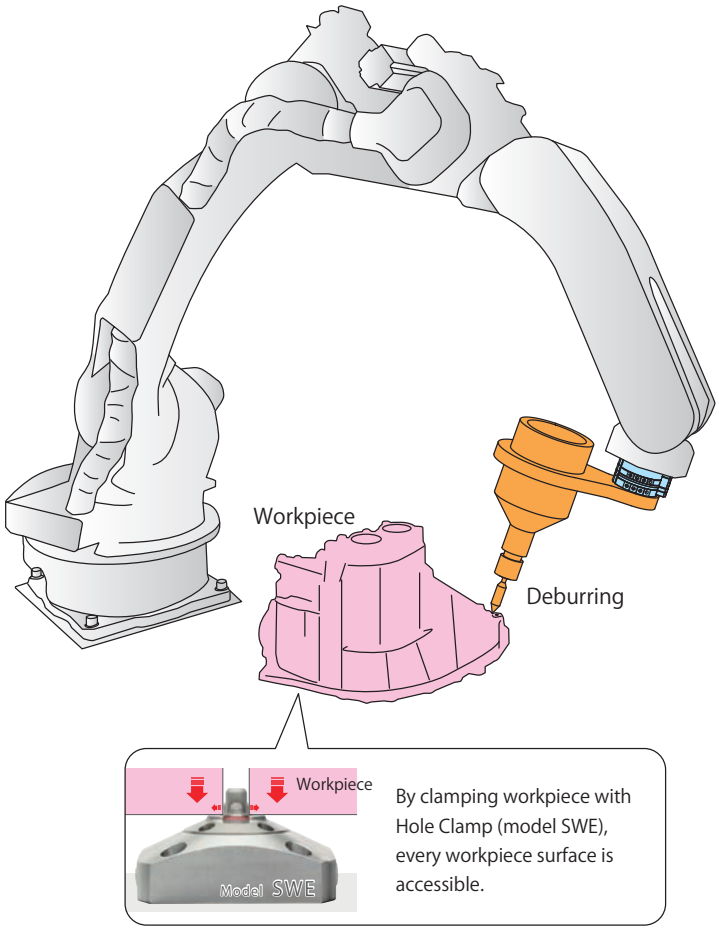


Allowable Weight：3kg ～ 120kg

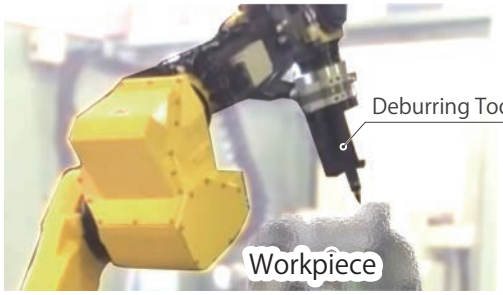
A Variety of Electrode/Air Joint Options

- Resin Connector Electrode
- Solder Terminal
- Solder Terminal with Cable
- Waterproof Electrode (Simple Waterproof)
  Only when connected：Equivalent to IP54
- D-sub Connector
- Circular Connector (Connector Based on JIS C 5432)
- Compact Electric Power Transmission (Ability to Transmit AC/DC200V 5A)
- Power Transmission Option (Connector Based on MIL-DTL-5015)
- High Current Transmission Option
  (Connector Based on MIL-DTL-5015)
- Waterproof Electrode (Noncontact Waterproof) IP67 Compact Model
- Waterproof Electrode (Noncontact Waterproof) IP67
- Air Joint with Larger Port (3 Port Option)
- Air Joint (2 Port Option)
- Air Joint (4 Port・Solder Terminal Extensible Option)
- Air Port with Check Valve

Change the Transfer Hand and Deburring Tool with High Rigidity



By clamping workpiece with Hole Clamp (model SWE), every workpiece surface is accessible.



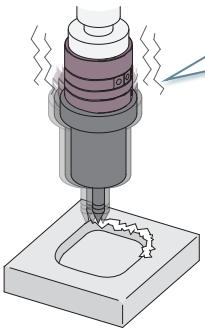
Hand Change

Workpiece Transfer Tool

Withstands Heavy Load with Non-Backlash Function

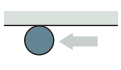
Strong to "bending" and "torsion" with high rigidity.
It ensures stable production even with offset transfer hand or heavy load deburring.

General Changer

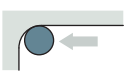


Backlash on Changer Part

Due to backlash, a tool changer is weak to torsion and can be broken if high load is applied when deburring R surface which has large contact area.



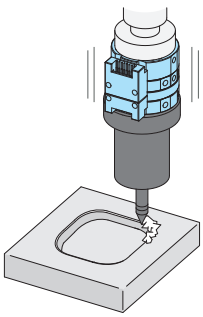
Low Load



High Load

Contact area of R surface is large and receives high load.

Kosmek Robotic Hand Changer



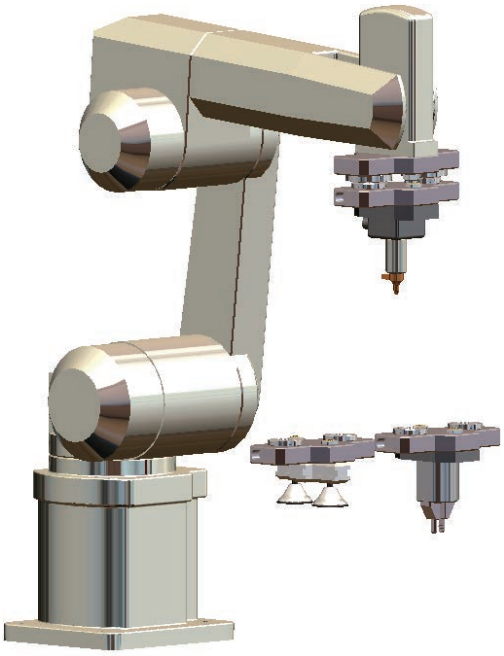
No Backlash on Changer Part

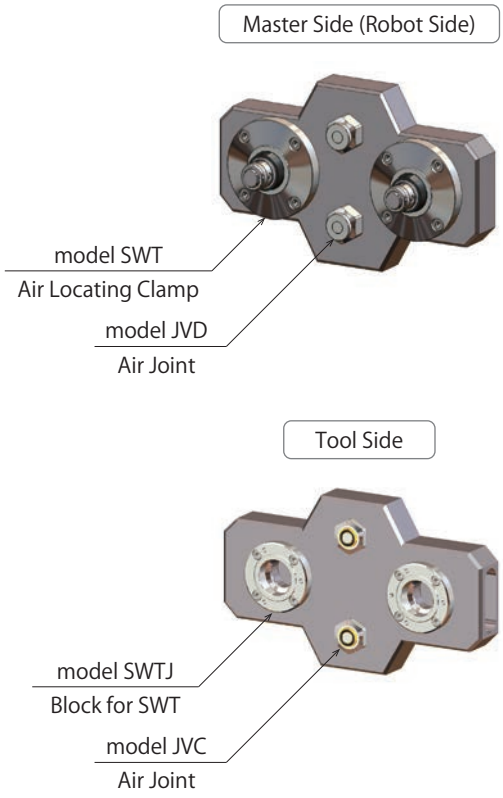
The changer has no backlash so it is highly rigid and strong to torsion. This allows for no fluctuation on tools.

It also withstands high load of casting deburring.

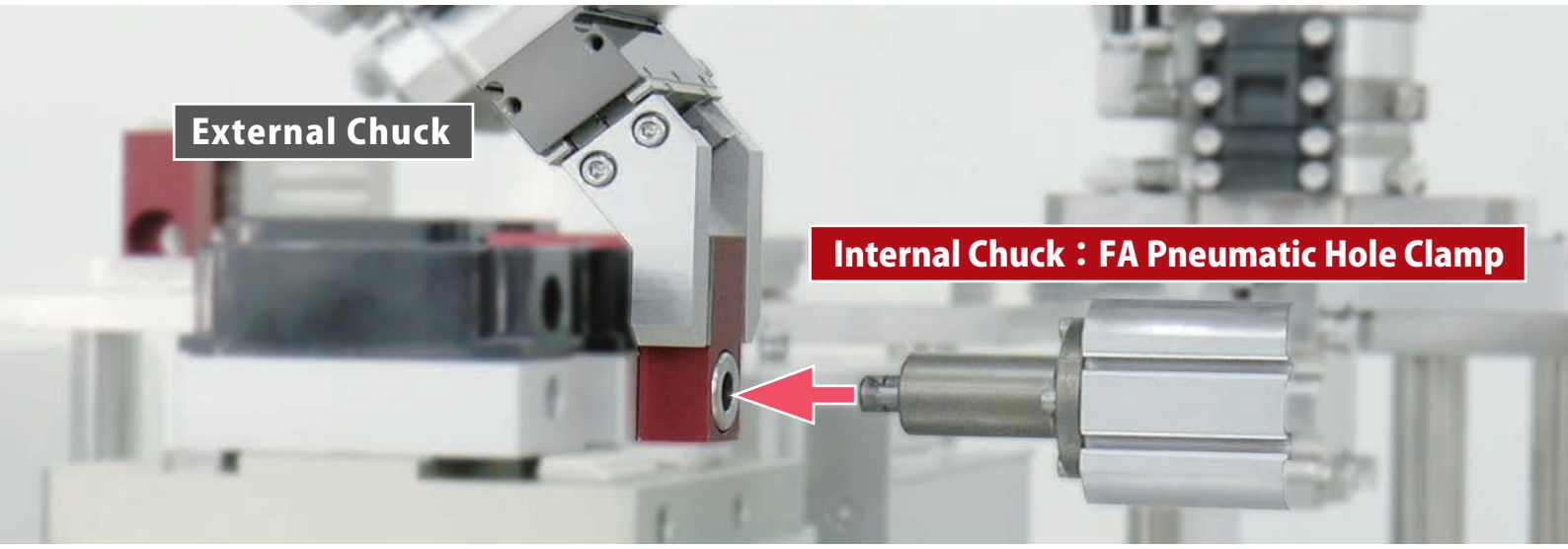
Increase in Allowable Weight with SWT Air Locating Clamp

By using Kosmek Air Locating Clamp SWT, Robotic Hand Changer can be used for larger robots. It is able to install Kosmek Air Joint as well.





Light and Compact Robotic Hand Series for Factory Automation



Kosmek Exclusive Internal Chuck Series

High-Power Pneumatic Hole Clamp
Model SWE

Can be used in machine tools. Gripper expands and pulls workpiece in.

High Power with Foreign Substance Prevention for Machine Tools, etc.

Workpiece Diameter ϕ6～ϕ13 in 0.5mm increments.

Air Lock / Air Release

Self-Lock Function with Spring

FA Pneumatic Hole Clamp
Model WKH

Gripper expands and pulls workpiece in.

Light Body with Selectable Functions : Locating and Floating

Workpiece Diameter ϕ6～ϕ14 in 0.5mm increments.

Air Lock / Air Release

Self-Lock Function with Spring

Ball Lock Cylinder
Model WKA

Secures/Transfers a pallet and prevents falling off with steel balls.

Powerful, Light and Compact

Pull-Out Load Capacity (Holding Force) : 50N / 70N / 100N

Spring Lock / Air Release

External Chuck Series

Robotic Hands
Model WPS / WPA
WPH / WPP / WPQ

Compact Body with High Gripping Force

Highly Versatile Robotic Hands for Various Usage

High-Power Parallel Gripper
Model WPS

Parallel Gripper
Model WPA

Parallel Gripper
Model WPH

Three-Jaw Chuck
Model WPP

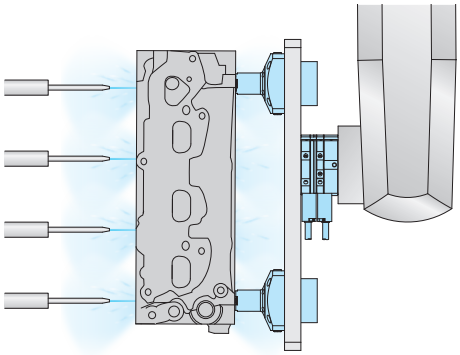
Two-Jaw Chuck
Model WPQ

Air Lock / Air Release

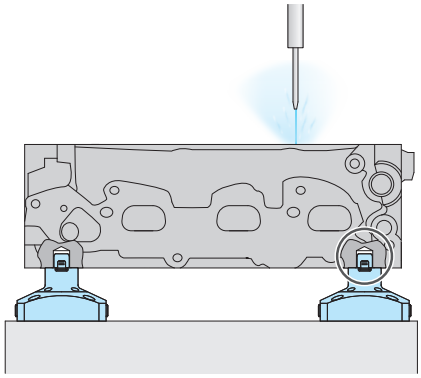
Workpiece Washing Examples with High-Power Pneumatic Hole Clamp

Model SWE

Chucking Inside of Workpiece Holes Allows for **Thorough Washing** with no interference

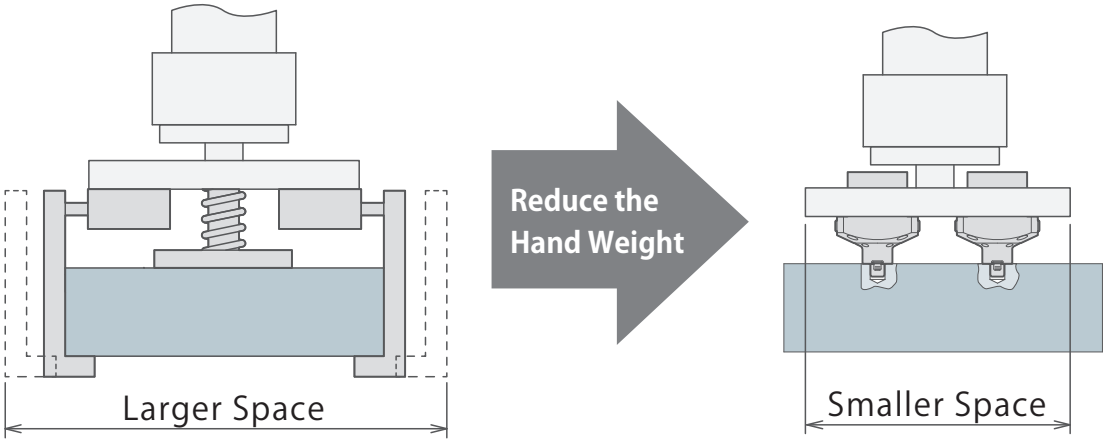


As Robotic Hand



As Fixture Pallet

Chucking Inside of Workpiece Holes Allows for **Compact** and **Light** Applications



Linear Cylinder
Holding Periphery

Compact Transfer Application
with High-Power Pneumatic Clamp

Please refer to【FA・Industrial Robot Related Products Complete Catalog】for further information.

FA・Industrial Robot Related Products

FA・Industrial Robot Related Products Complete Catalog

- Locating Device
- Robotic Hand
- Robotic Hand Changer
- Ball Lock Cylinder
- Clamp (High-Power Pneumatic Hole Clamp)
- Backup Pin
- Work Support
- Control Valve
- Auto Coupler
- Rotary Joint

High Speed and High Accuracy Fixture Setup

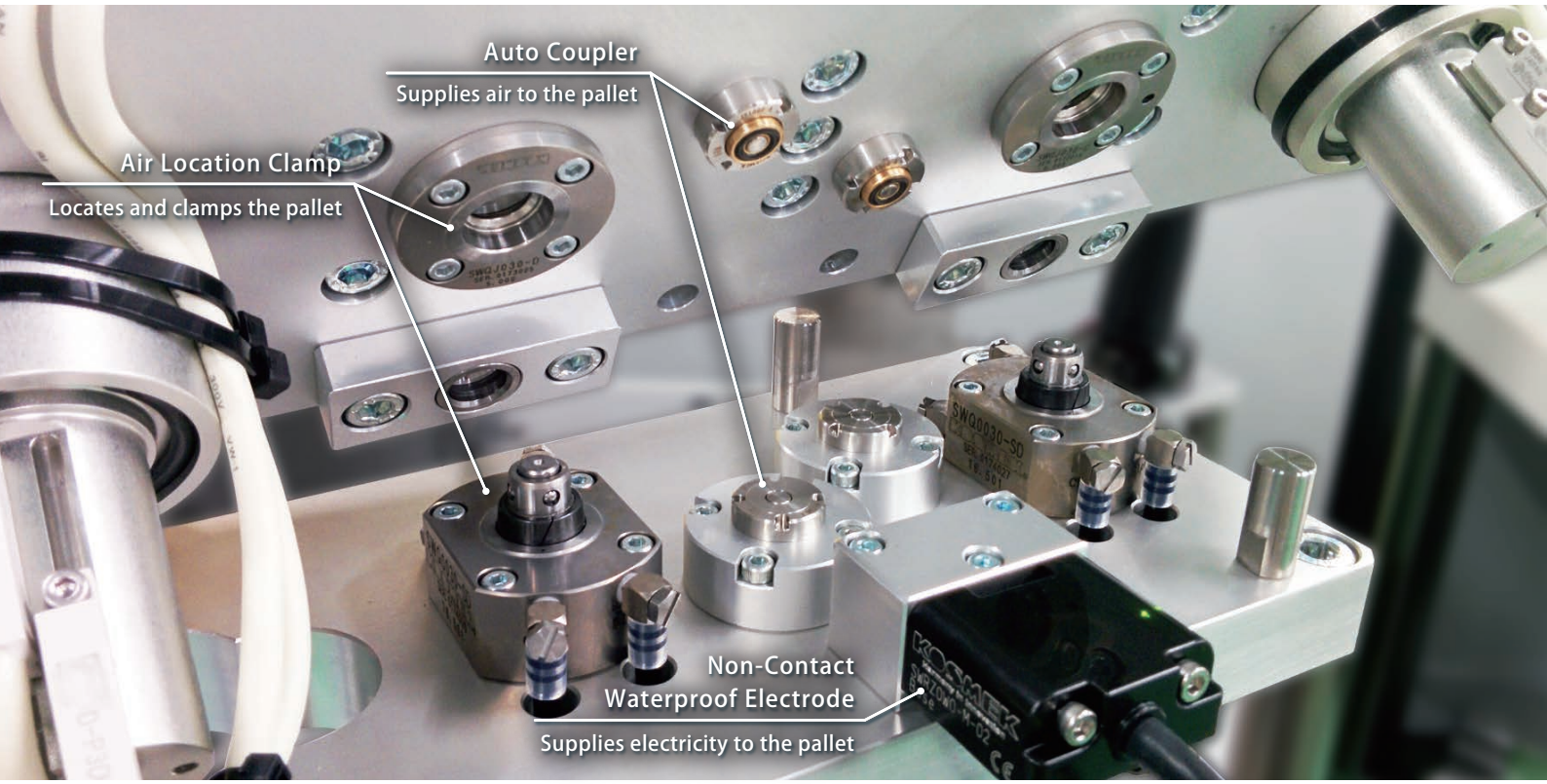
Compact Location Clamp

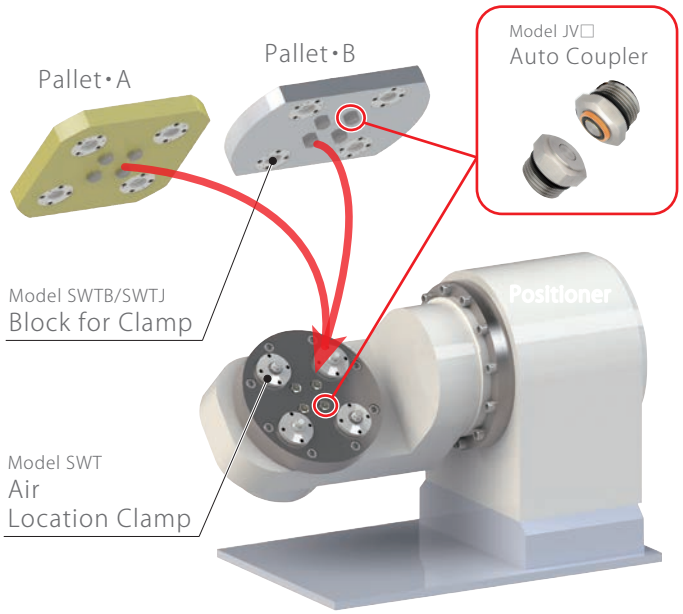
Model SWQ

Locates and clamps a fixture
on a positioner simultaneously.

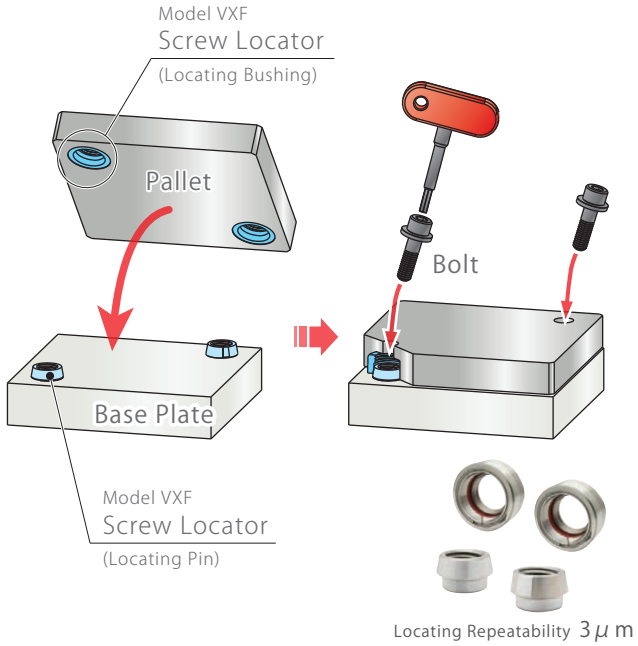
【Locating Repeatability 3 μm】

Allows for setup time reduction and productivity improvement.





Fixture Setup of the Positioner



Manual Pallet Change

Pneumatic Location Clamp Series

Compact Pneumatic Location Clamp
Model SWQ

Compact Model. Suitable for setup of compact pallets and light fixtures.
Locating Repeatability : 3 μm

Air + Spring Lock / Air Release

Pneumatic Location Clamp
Model SWT

With Foreign Substance Prevention for Machine Tools, etc.
Locating Repeatability : 3 μm

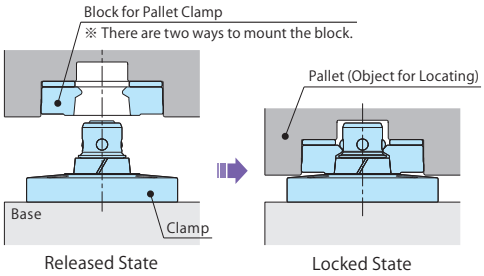
Air + Spring Lock / Air Release

High-Power Pneumatic Pallet Clamp
Model WVS

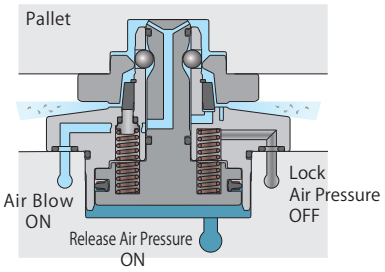
High-power model that exerts equivalent clamping force with hydraulic clamps.
Locating Repeatability : 3 μm

Air + Spring Lock / Air Release

Action Description



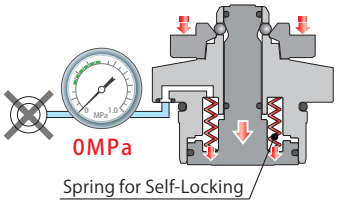
Air Blow and Seating Check



Foreign substance dust is flushed out by air blow.
Seating surface is provided with the air hole.
Use the gap sensor for seat check.

Self Lock (Safety) Function
(Holding Force at 0MPa Air Pressure)

Maintains clamped state.

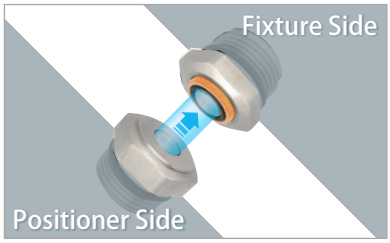


Even if air pressure is at zero, it will stay locked with self-locking spring.
※ More than the minimum operating air pressure is required for locating.

Automatic Air Supply to a Pallet on a Positioner

Auto Coupler
Model JVA/JVB JVC/JVD JVE/JVF

Compact Coupler to Connect Hydraulic/Pneumatic/Coolant Circuits
Connection Stroke : 1mm Commonly Used with Screw Locator and Pneumatic Location Clamp



Automation Products

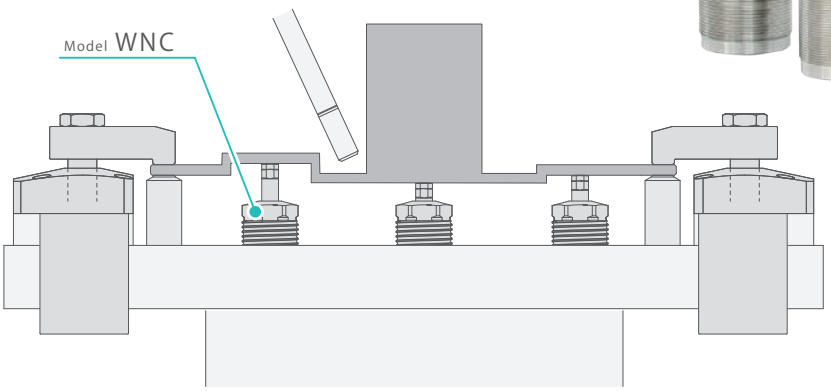
Powerful Support for Unstable Parts

High-Power Pneumatic Work Support (Standard / Rodless Hollow)

Model WNC / WNA

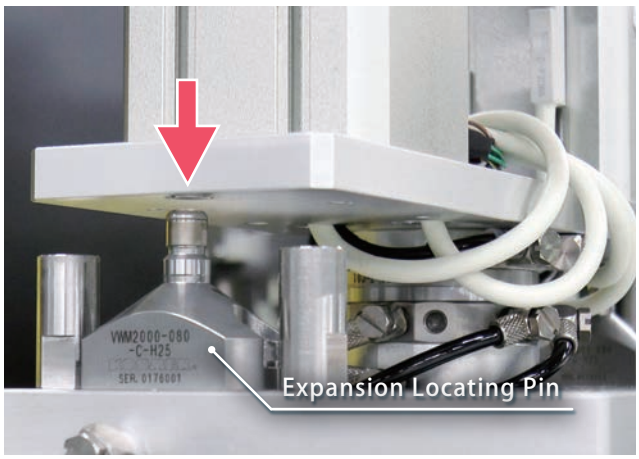
Firmly Supports the Workpiece and Prevents Chattering and Distortion

Locks when the tip of work support contacts a workpiece.
Securely supports a workpiece with various heights.



Air Lock / Spring Release

High Accuracy Locating of Workpiece • Pallet



Expansion Locating Pin

Model VWM / VX

Zero Clearance with High Accuracy Locating Pin

Workpiece Hole Diameter : ϕ8 ~ ϕ20

Model VWM

Locating Repeatability 3 μm

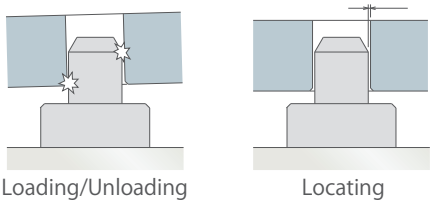
Air + Spring Lock / Air Release

Model VX

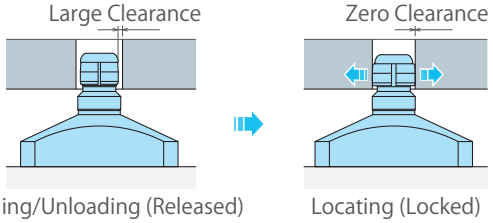
Locating Repeatability 5 μm

Manual Lock / Manual Release

Fixed Pin



Expansion Locating Pin



Difficult to Load/Unload
Some Clearance

Easy to Load/Unload
Zero Clearance and High Accuracy

MEMO

Company Profile

KOSMEK LTD. Head Office

Company Name	KOSMEK LTD.
Established	May 1986
Capital	¥99,000,000
Chairman	Keitaro Yonezawa
President	Tsutomu Shirakawa
Employee Count	250
Group Company	KOSMEK LTD.　KOSMEK ENGINEERING LTD. KOSMEK (USA) LTD.　KOSMEK EUROPE GmbH KOSMEK (CHINA) LTD.　KOSMEK LTD. - INDIA
Business Fields	Design, production and sales of precision products, and hydraulic and pneumatic equipment
Customers	Manufacturers of automobiles, industrial machinery, semiconductors and electric appliances
Banks	Resona bank, Tokyo-Mitsubishi bank, Ikeda bank

Sales Offices

Sales Offices across the World

Japan 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
USA KOSMEK（USA）LTD.	**TEL. +1-630-620-7650**　FAX. +1-630-620-9015 650 Springer Drive, Lombard, IL 60148 USA
Mexico KOSMEK USA Mexico Office	**TEL. +52-442-161-2347** Blvd Jurica la Campana 1040, B Colonia Punta Juriquilla, Queretaro, QRO 76230 Mexico
EUROPE 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 KOSMEK LTD. - INDIA	**TEL. +91-9880561695** F 203, Level-2, First Floor, Prestige Center Point, Cunningham Road, Bangalore -560052 India
Thailand Thailand Representative Office	**TEL. +66-2-300-5132**　FAX. +66-2-300-5133 67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250, Thailand
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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
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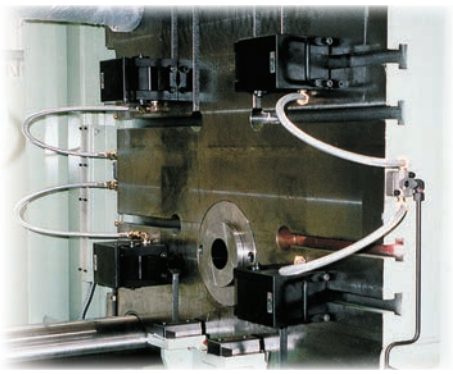
Product Line-up

■ Quick Die Change Systems

FOR PRESS MACHINES

■ Kosmek Factory Automation Systems

FACTORY AUTOMATION INDUSTRIAL ROBOT RELATED PRODUCTS

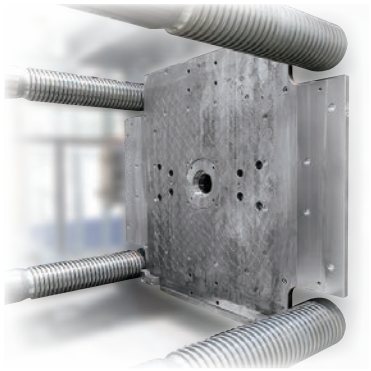


■ Diecast Clamping Systems

FOR DIECAST MACHINES

■ Kosmek Work Clamping Systems

MACHINE TOOL RELATED PRODUCTS



■ Quick Mold Change Systems

FOR INJECTION MOLDING MACHINES

KOSMEK

Harmony in Innovation

HEAD OFFICE	1-5, 2-Chome, Murotani, Nishi-ku, Kobe 651-2241 TEL.+81-78-991-5162 FAX.+81-78-991-8787
BRANCH OFFICE (U.S.A.)	KOSMEK (U.S.A.) LTD. 650 Springer Drive, Lombard, IL 60148 USA TEL. +1-630-620-7650 FAX. +1-630-620-9015
MEXICO REPRESENTATIVE OFFICE	KOSMEK USA Mexico Office Blvd Jurica la Campana 1040, B Colonia Punta Juriquilla Queretaro,QRO 76230 Mexico TEL.+52-442-161-2347
BRANCH OFFICE (EUROPE)	KOSMEK EUROPE GmbH Schleppeplatz 2 9020 Klagenfurt am Wörthersee Austria TEL.+43-463-287587 FAX.+43-463-287587-20
BRANCH OFFICE (INDIA)	KOSMEK LTD - INDIA F 203, Level-2, First Floor, Prestige Center Point, Cunningham Road, Bangalore -560052 India TEL.+91-9880561695
THAILAND REPRESENTATIVE OFFICE	67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250 TEL. +66-2-300-5132 FAX. +66-2-300-5133

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