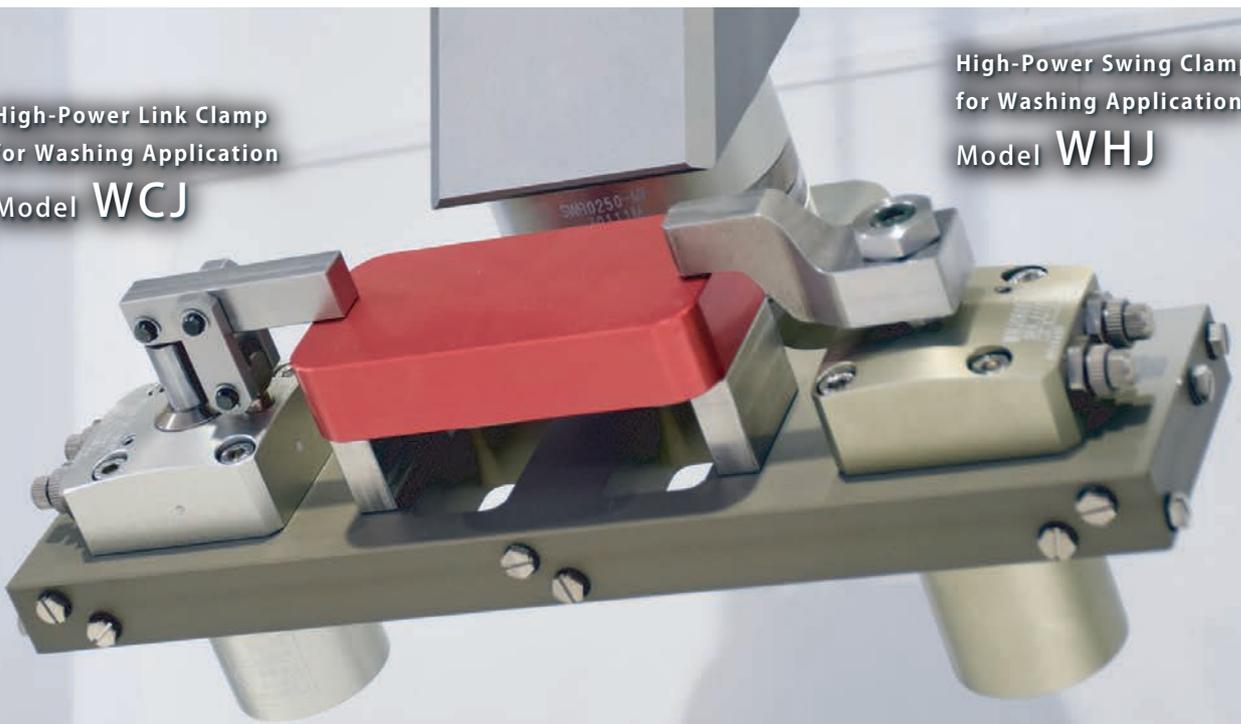


New For setup improvement of washing applications

Kosmek Products for Washing Application

High-Power Link Clamp
for Washing Application
Model **WCJ**

High-Power Swing Clamp
for Washing Application
Model **WHJ**



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



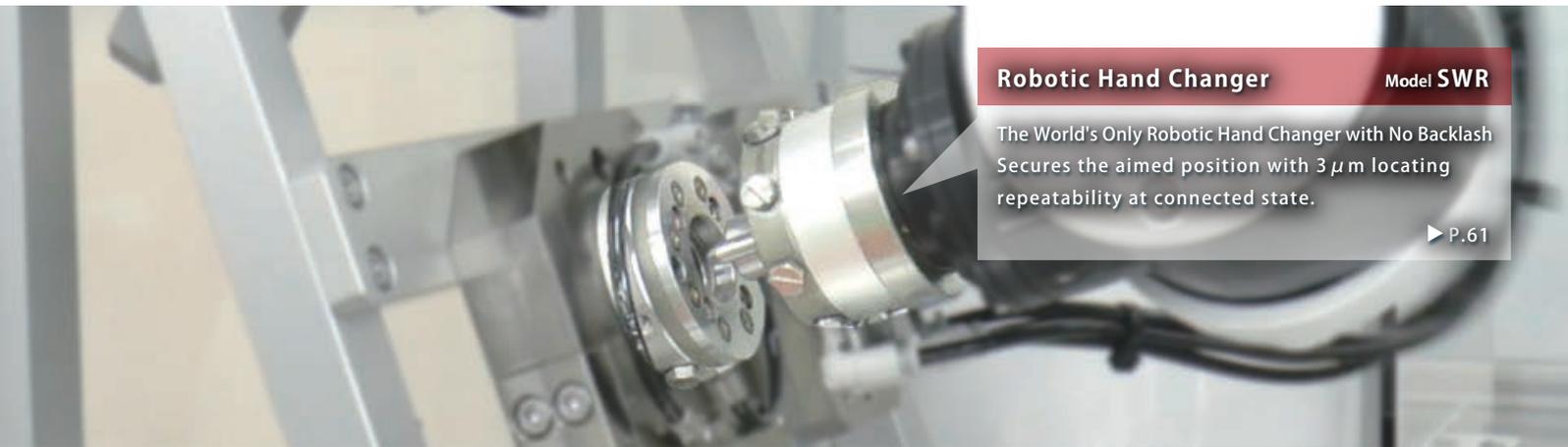
For High-Pressure Washing



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

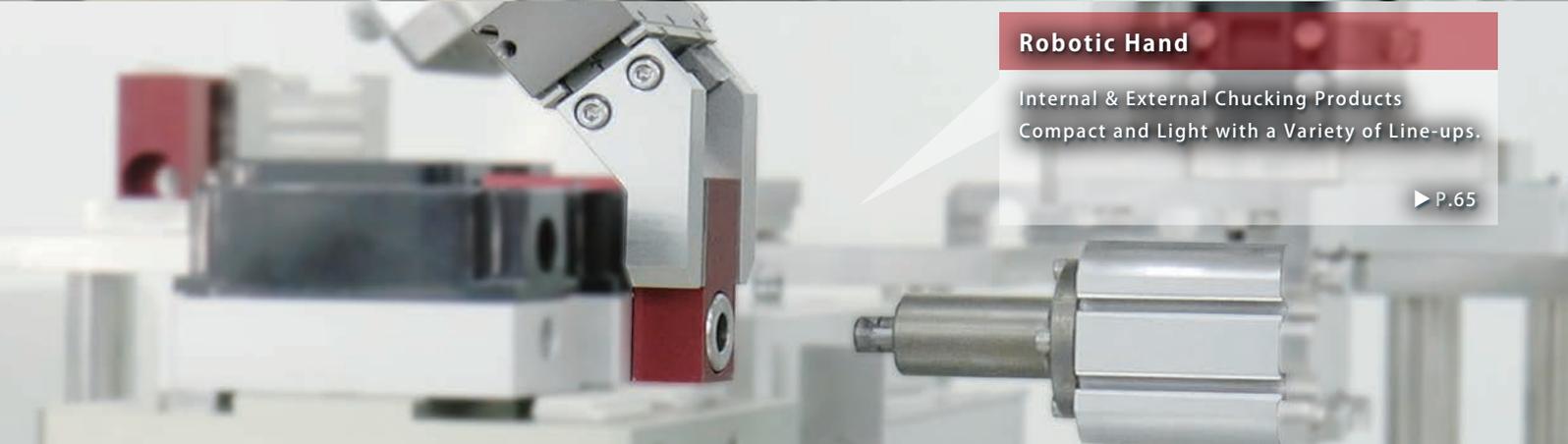


Robotic Hand Changer

Model **SWR**

The World's Only Robotic Hand Changer with No Backlash
Secures the aimed position with 3 μ m 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 μ m 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



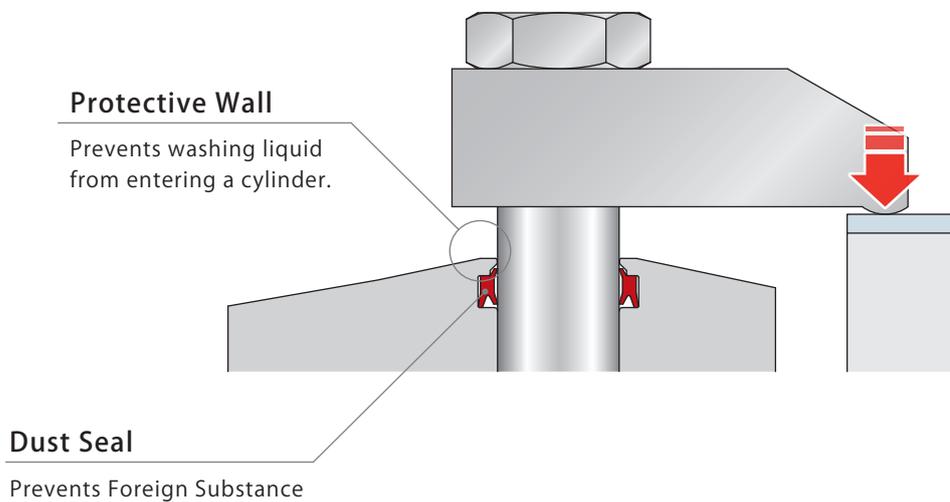
Suitable for High-Pressure Washing

PAT.

Features

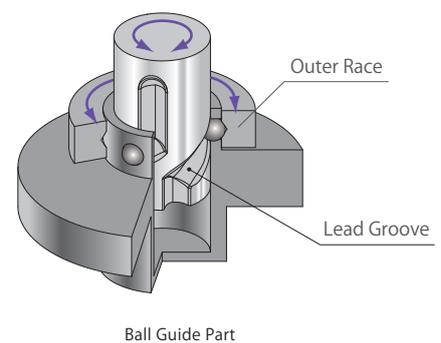
Durability

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.)



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

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

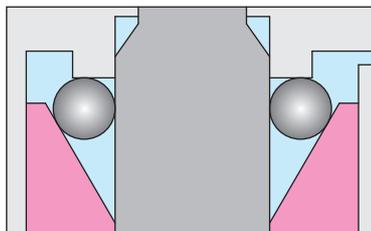
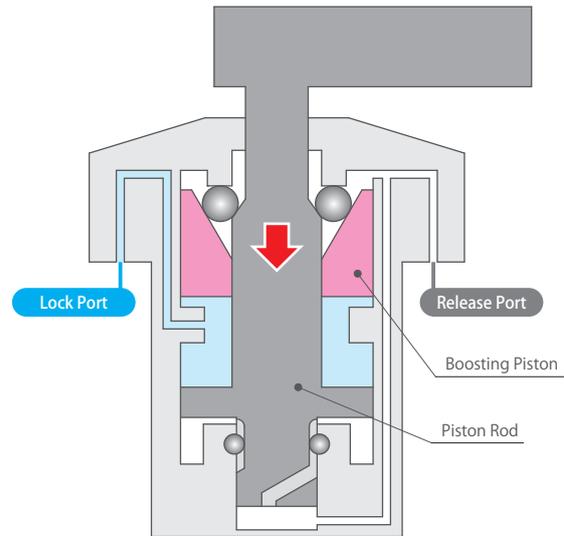
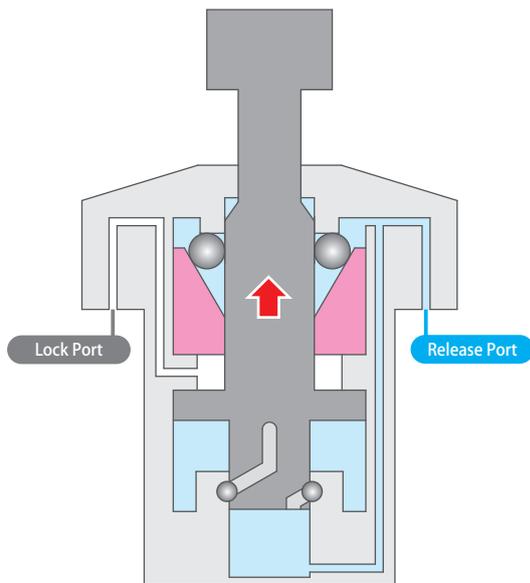
WHZ-MD

General Cautions

Related Products for Washing Application

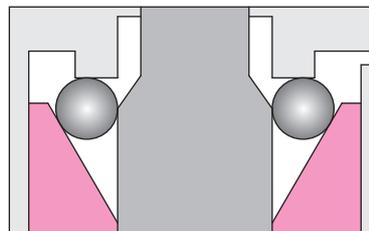
Company Profile Sales Offices

Action Description



Released State

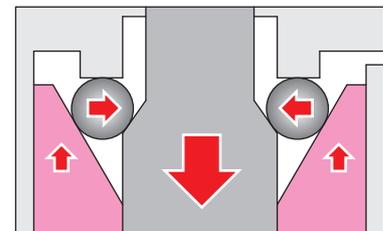
The piston rod ascends to release.



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.



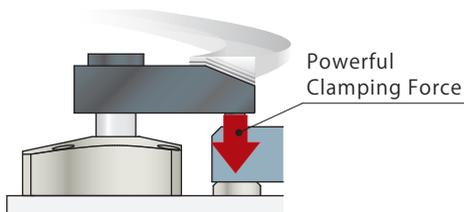
Locked State

(Boosting Stroke 4mm)

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

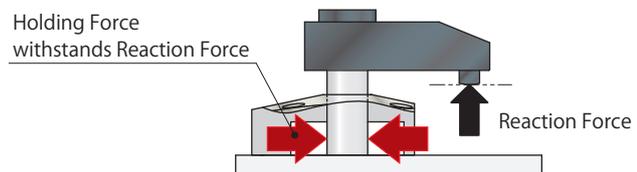
No Hydraulic Use

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



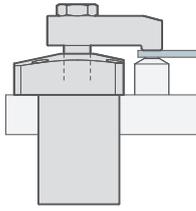
Holding Force

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

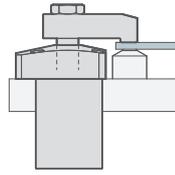


Smaller Footprint

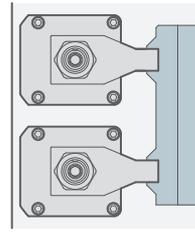
Exerts three times clamping force compared to the same size general air cylinder. Smaller cylinder allows for more compact fixtures.



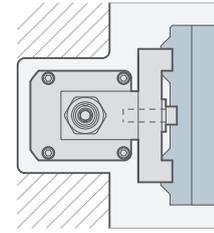
General Air Cylinder



High-Power Pneumatic Clamp



General Air Cylinder



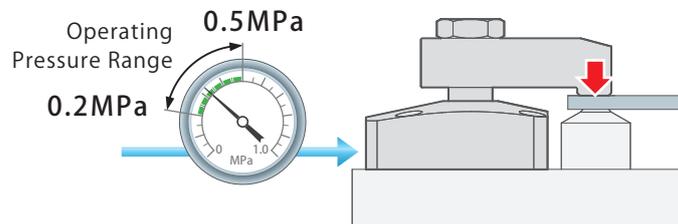
High-Power Pneumatic Clamp

Downsized

Reduced Number of Clamps

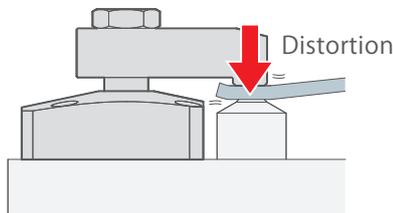
Energy Saving

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

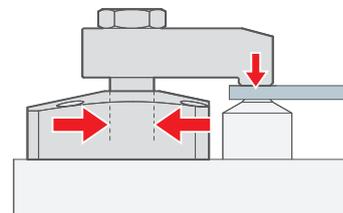


High Quality

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



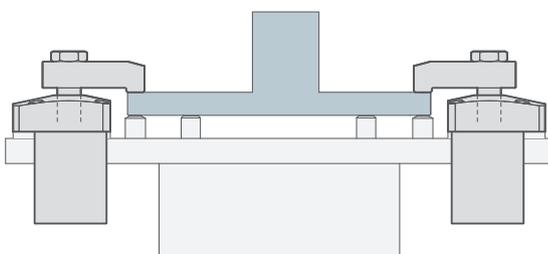
Strong clamping force distorts workpiece.



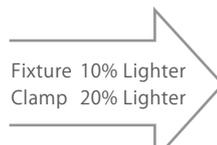
Clamping force is lowered, yet workpiece can be supported with holding force.

Light Weight

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

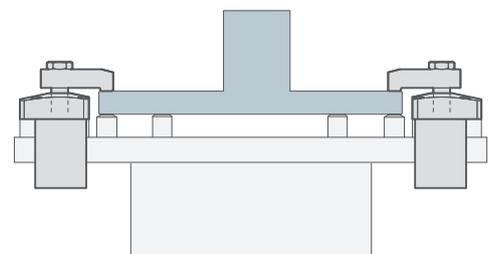


General Air Cylinder



Fixture 10% Lighter
Clamp 20% Lighter

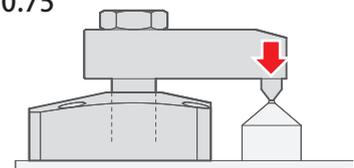
※ Reference when workpiece size is 300×260.



High-Power Pneumatic Clamp

High Accuracy

High locating accuracy at locked position allows for precise clamping. Swing Complete Position Repeatability : $\pm 0.75^\circ$



Lineup

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

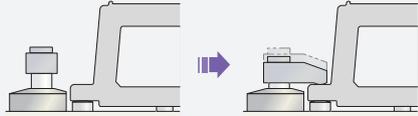
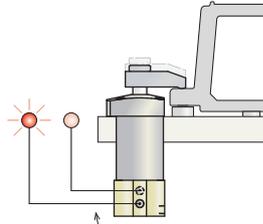
Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

<p>Standard Model</p> <p>Model WHJ</p> <p>External Dimensions → P.15</p>		<p>Clamp with 90° swing</p> 
Action Description	<p>Air Sensing Manifold Option</p> <p>Model WHJ-M</p> <p>External Dimensions → P.17</p>	<p>Clamping action can be confirmed with air catch sensor</p>  <p>Able to Install Air Sensor</p>
	<p>Air Sensing Piping Option</p> <p>Model WHJ-N</p> <p>External Dimensions → P.19</p>	

Accessories

Speed Control Valve

Model **BZW-B**



→ P.53

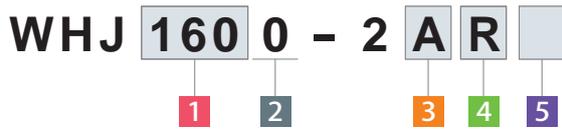
Manifold Block

Model **WHZ-MD**



→ P.55

Model No. Indication



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.

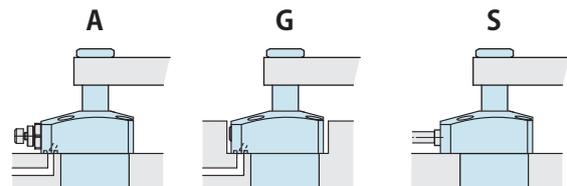
2 Design No.

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.



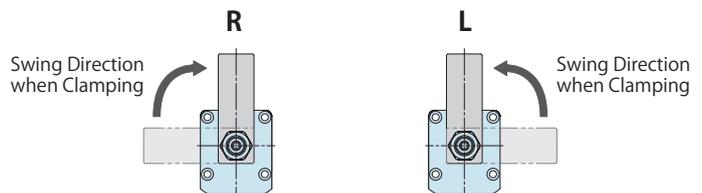
Gasket Option

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	$F=(1.1666-0.00287 \times L) \times P$	$F=(1.8842-0.00346 \times L) \times P$	$F=(3.0603-0.00505 \times L) \times P$	$F=(4.7875-0.00654 \times L) \times P$	$F=(7.6871-0.00947 \times L) \times P$
Holding Force (Calculation Formula) ※1	kN	$F_k = \frac{2.771 \times P}{1-0.0025 \times L}$	$F_k = \frac{4.08 \times P}{1-0.0021 \times L}$	$F_k = \frac{6.628 \times P}{1-0.0012 \times L}$	$F_k = \frac{10.481 \times P}{1-0.0008 \times L}$	$F_k = \frac{16.806 \times P}{1-0.0006 \times L}$
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				
	Lock Stroke ※2	mm				
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	°C	0 ~ 70				
Usable Fluid		Dry Air				

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

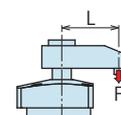
General Cautions

Related Products for Washing Application

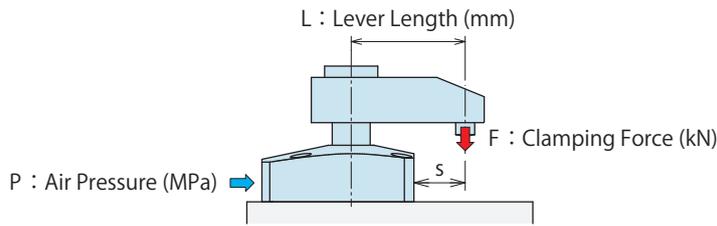
Company Profile Sales Offices

Notes :

- ※1. F : Clamping Force (kN), F_k: 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



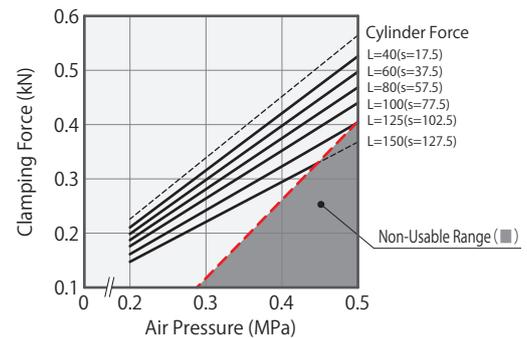
(How to read the Clamping Force Curve)

- When using WHJ1600
- Supply Air Pressure 0.4MPa
- Lever Length L=60mm
- Clamping force is about 1.1kN.

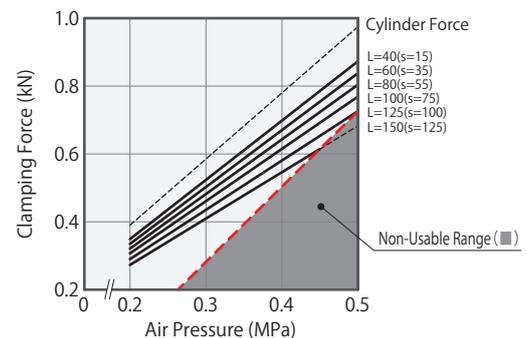
Notes:

- ※ 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.

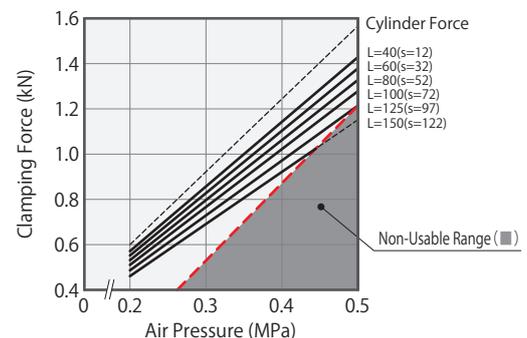
WHJ0600		Clamping Force Calculation Formula ^{※1} (kN) $F=(1.1666 - 0.00287 \times L) \times P$						
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Max. Lever Length (mm)
		Lever Length L (mm)						
		40	60	80	100	125	150	
0.5	0.57	0.53	0.50	0.47	0.44	■	■	120
0.4	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 (■)						Max. Lever Length (mm)
		Lever Length L (mm)						
		40	60	80	100	125	150	
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 (■)						Max. Lever Length (mm)
		Lever Length L (mm)						
		40	60	80	100	125	150	
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	



High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

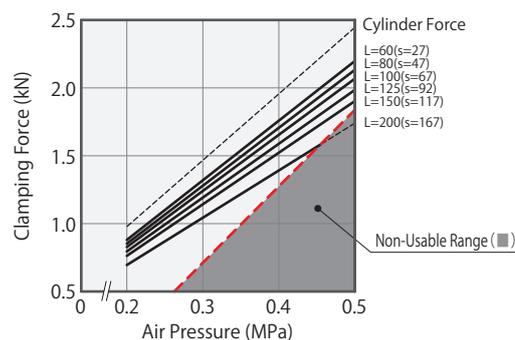
WHZ-MD

General Cautions

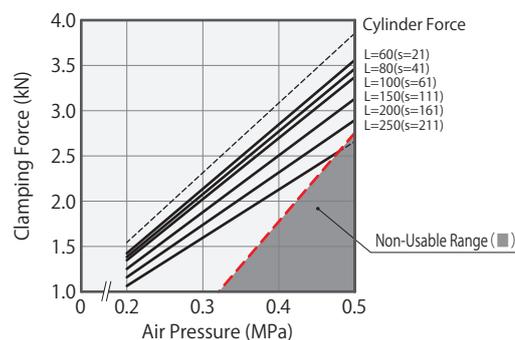
Related Products for Washing Application

Company Profile Sales Offices

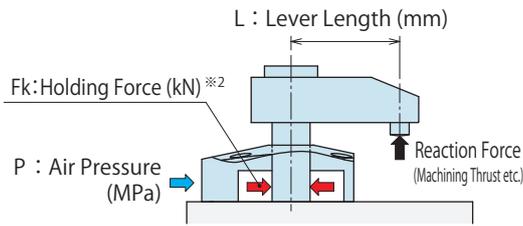
WHJ2500		Clamping Force Calculation Formula ^{※1} (kN) $F=(4.7875 - 0.00654 \times L) \times P$						
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Max. Lever Length (mm)
		Lever Length L (mm)						
		60	80	100	125	150	200	
0.5	2.44	2.20	2.13	2.07	1.99	1.90	■	170
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 (■)						Max. Lever Length (mm)
		Lever Length L (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	

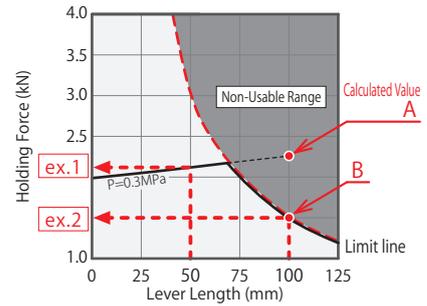


● Holding Force Curve



(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.

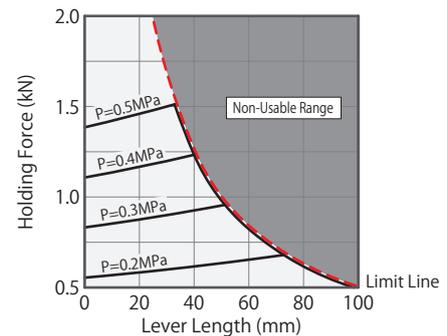
(How to read the Holding Force Curve: ex.2)
 When using WHJ1600,
 Supply Air Pressure 0.3MPa, Lever Length L=100mm
 The calculated value is the holding force of point A, but it is in the non-usable range.
 The value of intersection B is the holding force that counters the reaction force, and it is about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



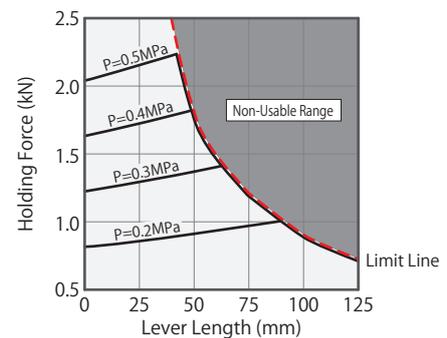
Notes:

- ※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.

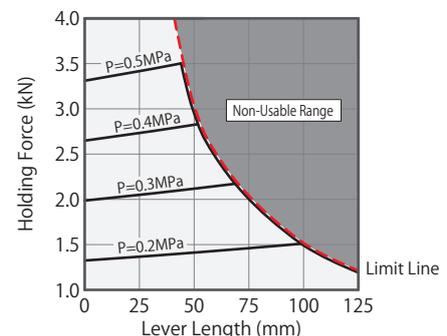
WHJ0600	Holding Force Formula ^{※3} (kN) $F_k = \frac{2.771 \times P}{1 - 0.0025 \times L}$					
	(Fk ≤ Limit Line Value)					
Air Pressure (MPa)	Holding Force (kN) Non-Usable Range (■)					
	Lever Length L (mm)					
	40	60	80	100	125	150
0.5	1.23	0.82	0.62	0.49	■	■
0.4	1.23	0.82	0.62	0.49	0.40	0.33
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} (kN) $F_k = \frac{4.08 \times P}{1 - 0.0021 \times L}$					
	(Fk ≤ Limit Line Value)					
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} (kN) $F_k = \frac{6.628 \times P}{1 - 0.0012 \times L}$					
	(Fk ≤ Limit Line Value)					
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



High-Power Swing Clamp for Washing Application
WHJ

Air Flow Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

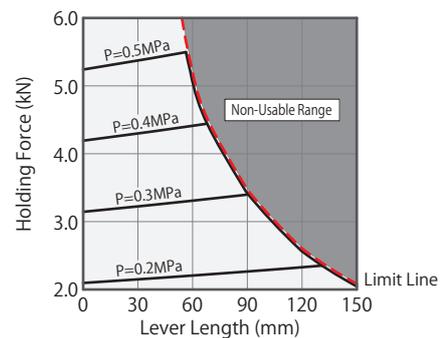
Related Products for Washing Application

Company Profile Sales Offices

WHJ2500

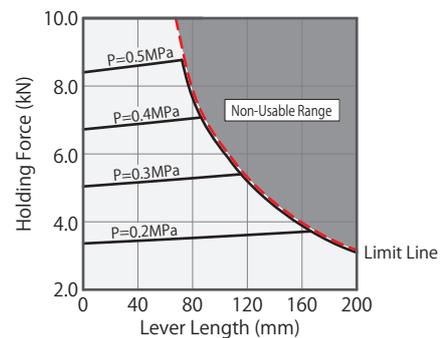
 Holding Force Formula ^{※3} (kN) $F_k = \frac{10.481 \times P}{1 - 0.0008 \times L}$
 ($F_k \leq$ Limit Line Value)

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} (kN) $F_k = \frac{16.806 \times P}{1 - 0.0006 \times L}$
 ($F_k \leq$ Limit Line Value)

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

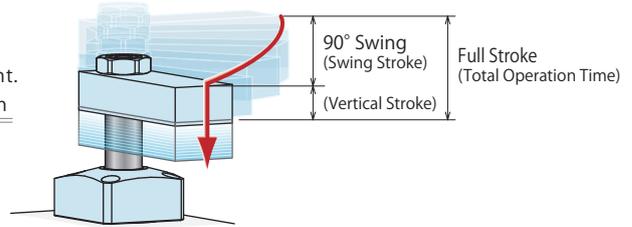


Allowable Swing Time Graph

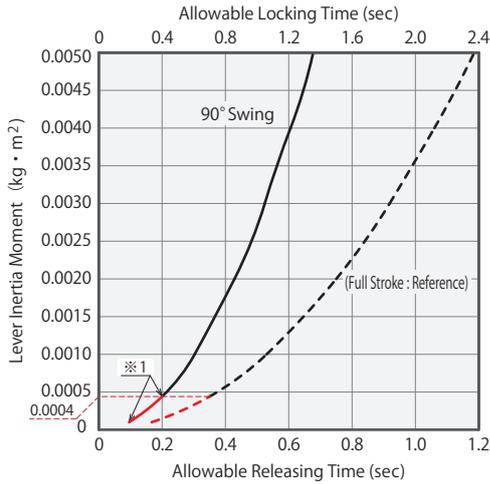
Adjustment of Swing Time

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.

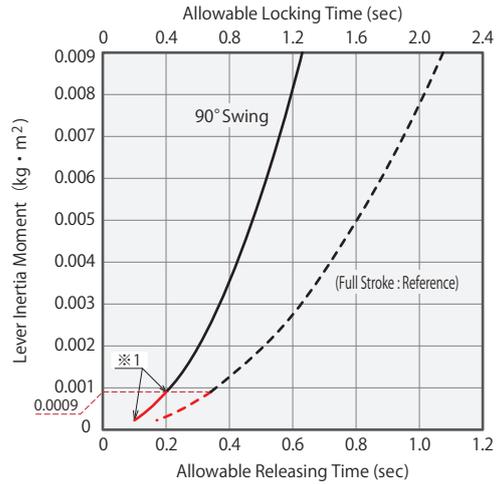
Excessive action speed can reduce stopping accuracy and damage internal parts.



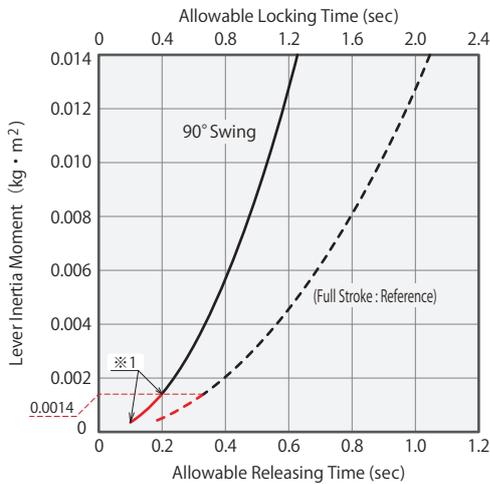
WHJ0600



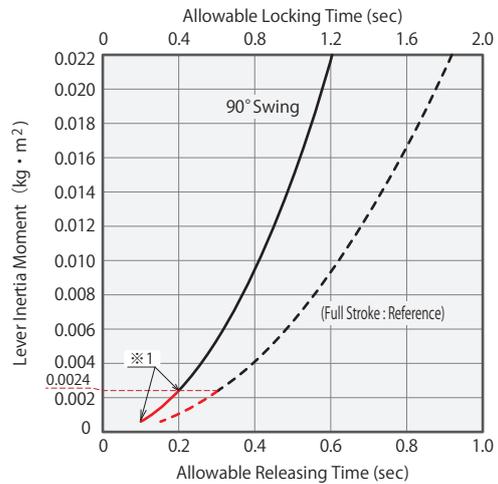
WHJ1000



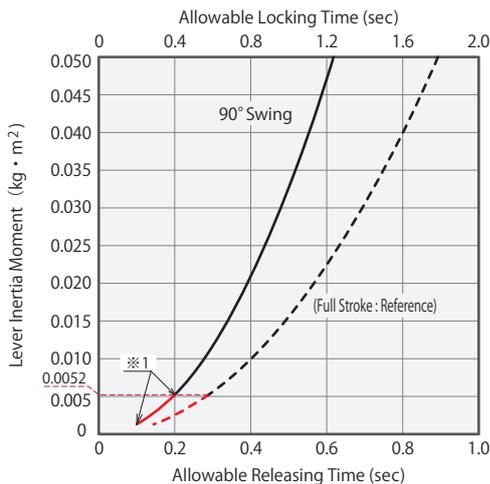
WHJ1600



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

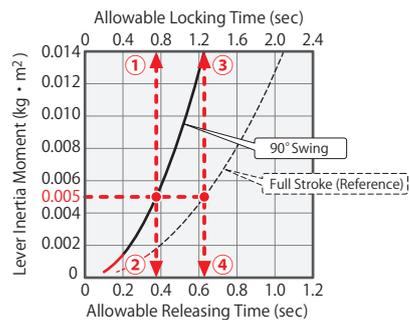
① 90° Swing Time when Locking : About 0.76 sec or more

② 90° Swing Time when Releasing : About 0.38 sec or more

③ Total Lock Operation Time : About 1.27 sec or more

④ Total Release Operation Time : About 0.63 sec or more

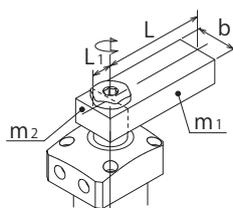
1. The total operation time on the graph represents the allowable operation time when fully stroked.



How to calculate inertia moment (Estimated)

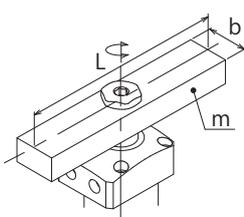
I : Inertia Moment (kg·m²) L, L₁, L₂, K, b : Length(m) m, m₁, m₂, m₃ : Mass(kg)

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



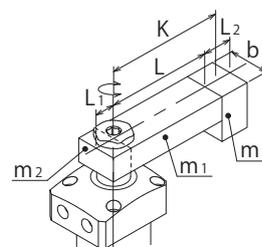
$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12}$$

- 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.

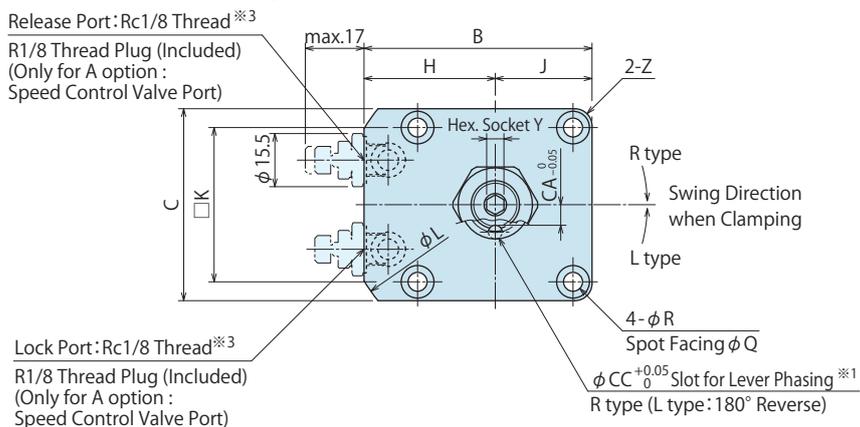


$$I = m_1 \frac{4L^2 + b^2}{12} + m_2 \frac{4L_1^2 + b^2}{12} + m_3 K^2 + m_3 \frac{L_2^2 + b^2}{12}$$

External Dimensions

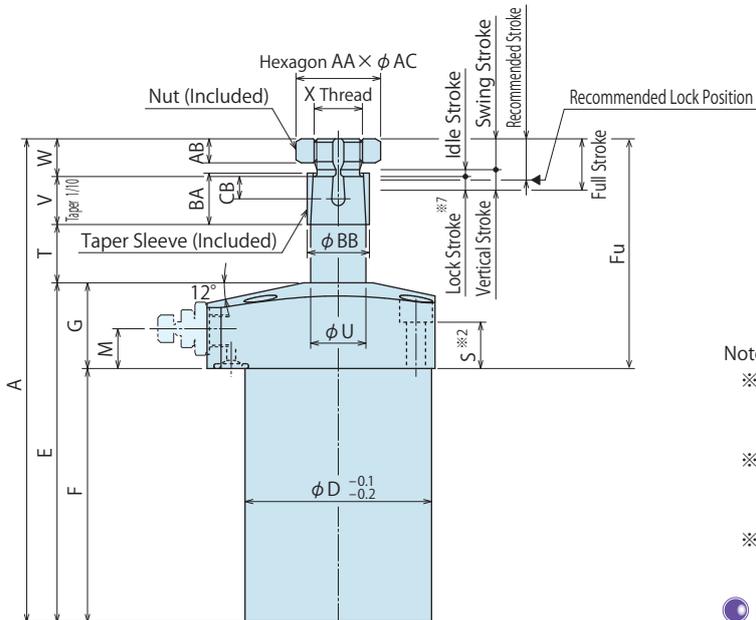
A : Gasket Option (With Ports for Speed Controller : R-Thread Plug Included)

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

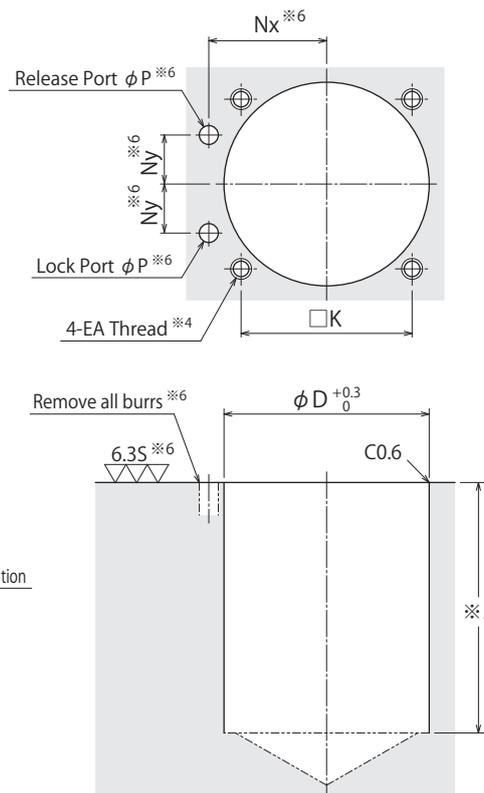


Release Port: Rc1/8 Thread^{※3}
R1/8 Thread Plug (Included)
(Only for A option :
Speed Control Valve Port)

Lock Port: Rc1/8 Thread^{※3}
R1/8 Thread Plug (Included)
(Only for A option :
Speed Control Valve Port)



Machining Dimensions of Mounting Area



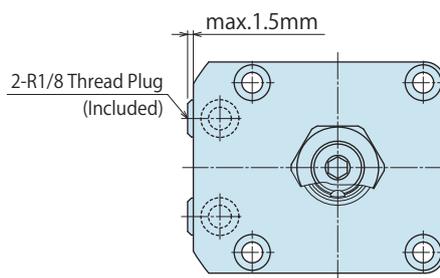
Notes :

- ※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

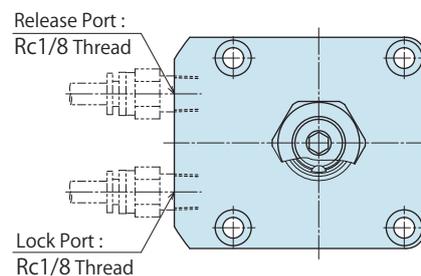
G : Gasket Option (With R Thread Plug)

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

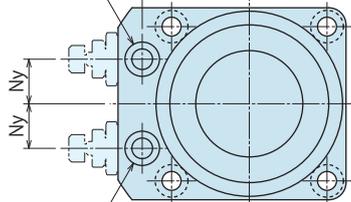


S : Piping Option (Rc Thread)

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



Lock Port : O-ring (Included)
(-A / -G option)



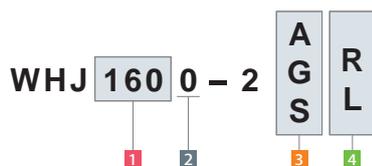
Release Port : O-ring (Included)
(-A / -G option)

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.

Model No. Indication

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



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

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

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				
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	Lock	12.8	21.8	35.5	61.3
	Release	15.2	25.5	40.3	69.2
Mass ^{※8} kg	0.5	0.8	1.0	1.7	2.8

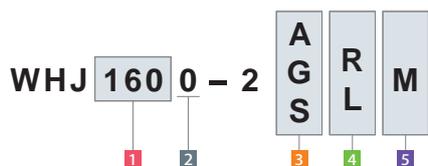
Notes:

※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.

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)

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

External Dimensions and Machining Dimensions for Mounting

(mm)

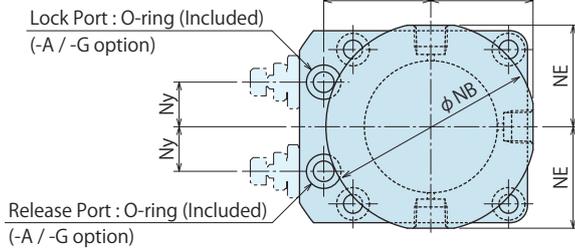
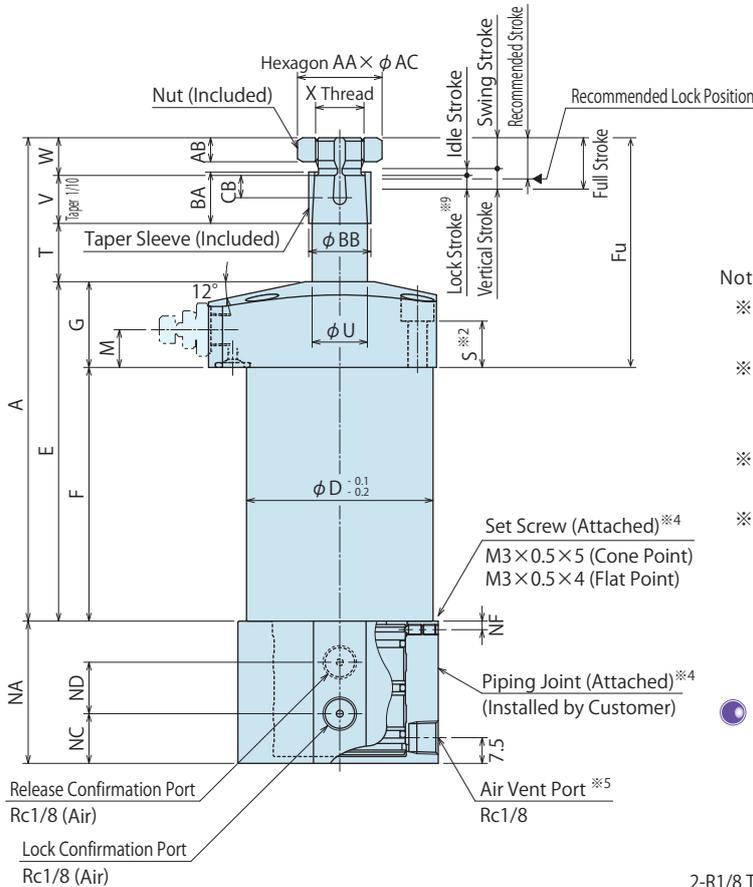
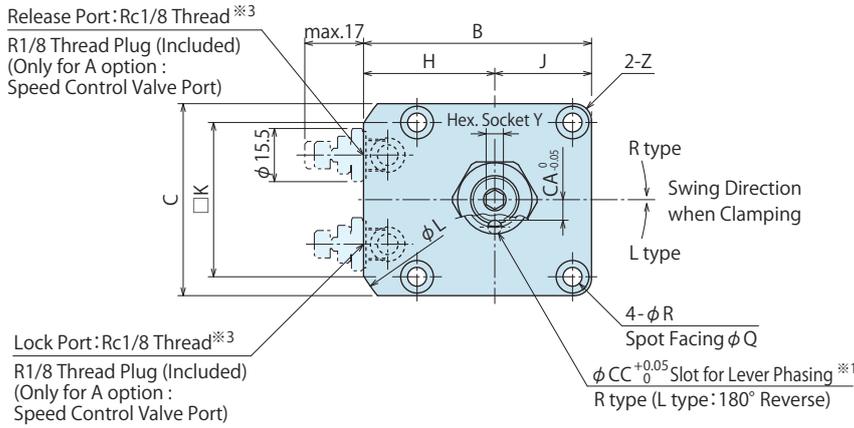
Model No.	WHJ0600-2□□M	WHJ1000-2□□M	WHJ1600-2□□M	WHJ2500-2□□M	WHJ4000-2□□M
Full Stroke	14	14.5	15	17.5	19.5
Swing Stroke (90°)	8	8.5	9	11.5	13.5
Vertical Stroke			6		
(Break Idle Stroke			2		
down) Lock Stroke ^{※8}			4		
Recommended Stroke	11	11.5	12	14.5	16.5
A	125	134.5	141	167	185.5
B	54	60	66	76	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	38 +0.039	38 +0.039	45 +0.039	45 +0.039
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					
Lock	12.8	21.8	35.5	61.3	103.8
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

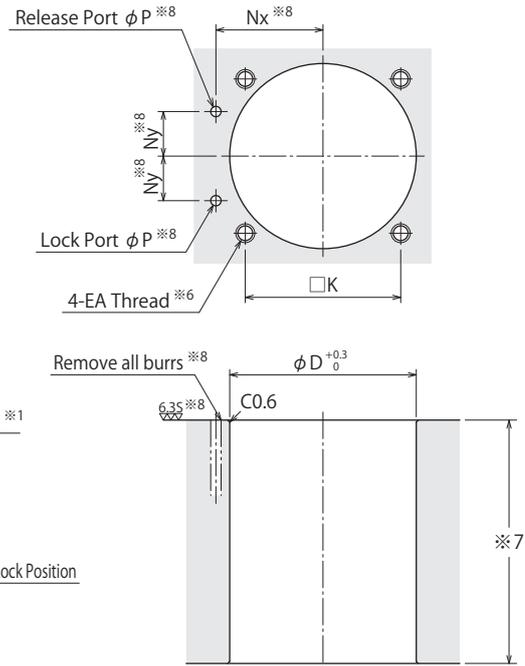
A : Gasket Option (With Ports for Speed Controller : R-Thread Plug Included)
 ※ The drawing shows the released state (piping joint installed) of WHJ-2ARN.



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



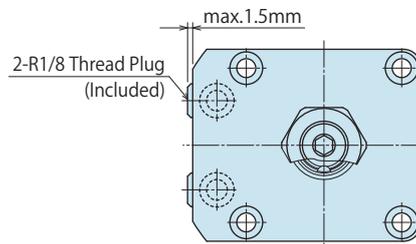
Notes:

- ※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 φ D should be less than dimension 'F'.
- ※8. The machining dimension is for -A/-G : Gasket Option.

Piping Method

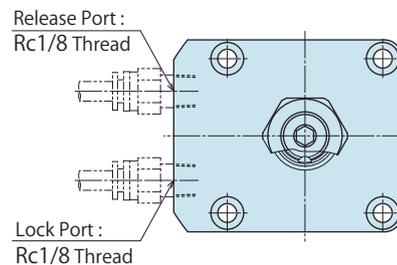
G : Gasket Option (With R Thread Plug)

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

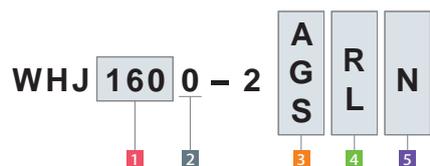


S : Piping Option (Rc Thread)

※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)

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

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					
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 cm ³	Lock	12.8	21.8	35.5	61.3	103.8
	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



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

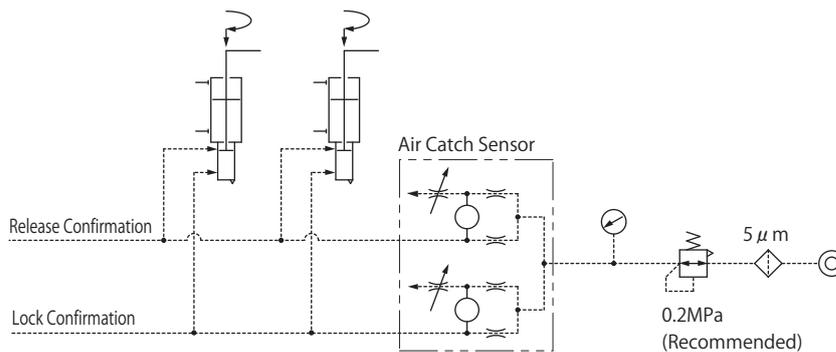
Recommended Air Catch Sensor

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.

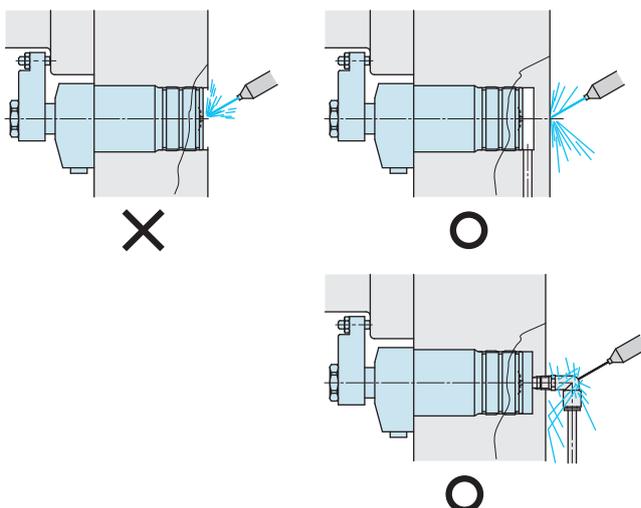
The air pressure to the air catch sensor should be 0.2MPa.

Refer to the drawing below for the air circuit composition.



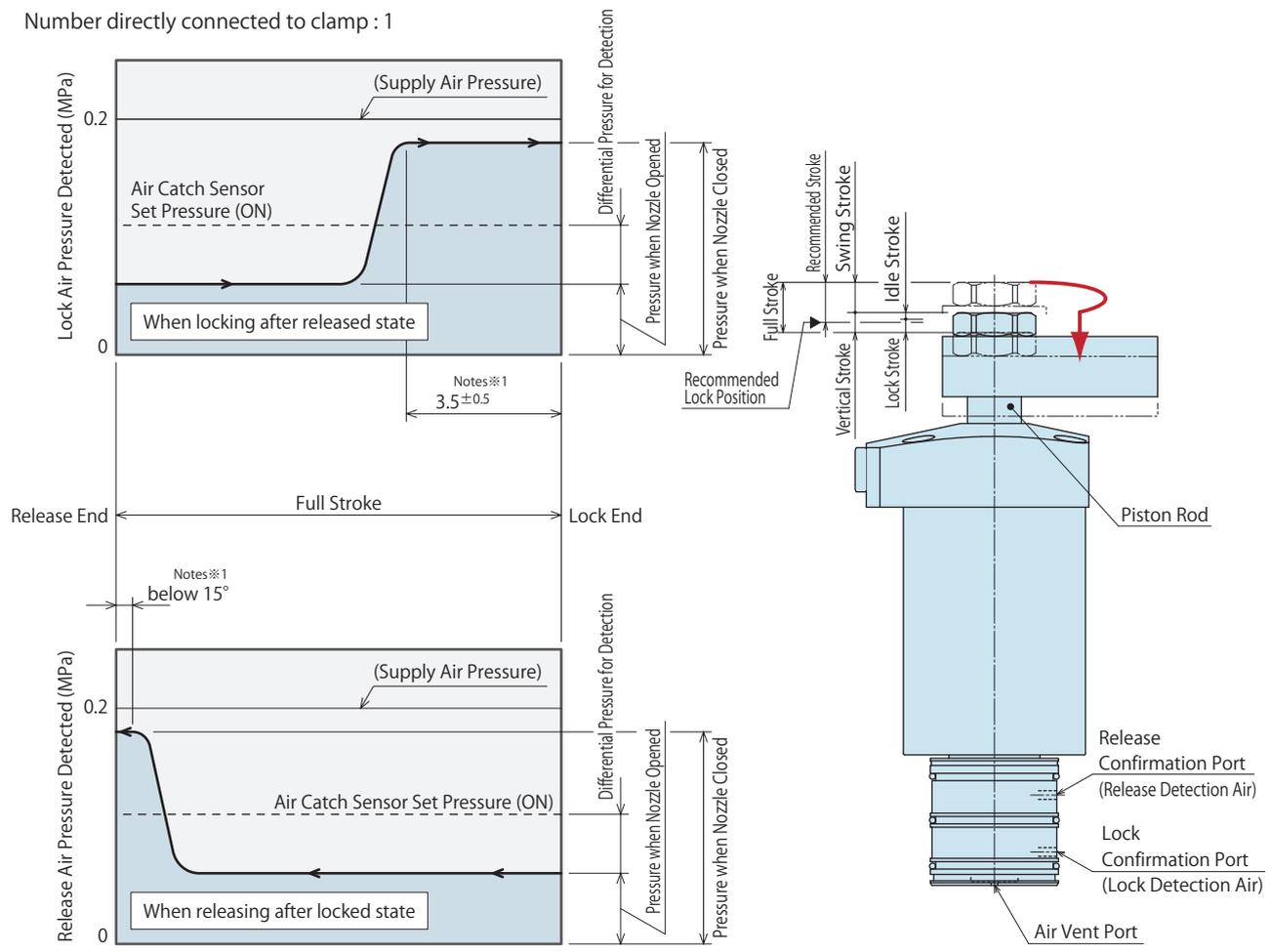
Notes for Use and Installation

- 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.
- 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

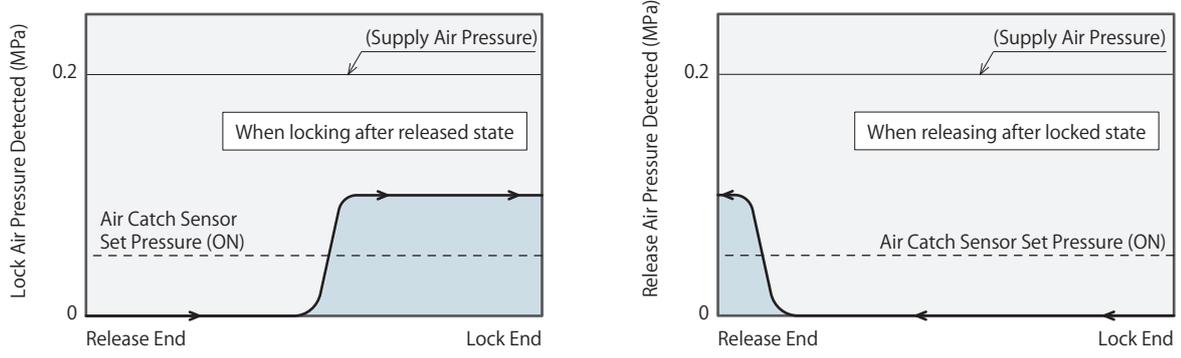


Notes :

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)



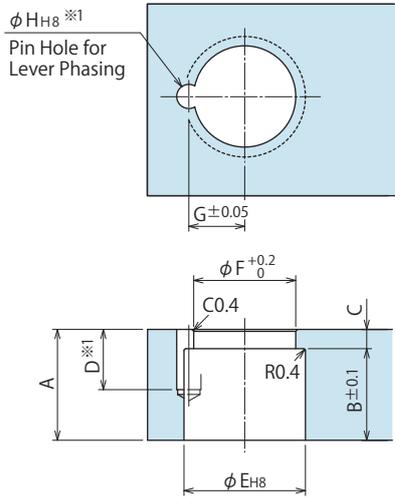
Taper Lock Lever Design Dimensions

※ Reference for designing taper lock swing lever.

Corresponding Model No.

WHJ 0 - 2 A G S L R M N

1 Cylinder Force



Corresponding Model No.	(mm)				
	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 $\begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	16 $\begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	18 $\begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	22 $\begin{smallmatrix} +0.033 \\ 0 \end{smallmatrix}$	28 $\begin{smallmatrix} +0.033 \\ 0 \end{smallmatrix}$
F	11	13	15	17	23.5
G	6	7.1	8.1	10.1	13.1
H	3 $\begin{smallmatrix} +0.014 \\ 0 \end{smallmatrix}$	4 $\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	4 $\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	4 $\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$	6 $\begin{smallmatrix} +0.018 \\ 0 \end{smallmatrix}$
Phasing Pin (Reference)※2	$\phi 3(h8) \times 8$	$\phi 4(h8) \times 8$	$\phi 4(h8) \times 10$	$\phi 4(h8) \times 10$	$\phi 6(h8) \times 14$

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.

High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

WHZ-MD

General Cautions

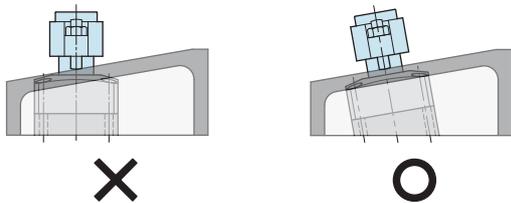
Related Products
for Washing Application

Company Profile
Sales Offices

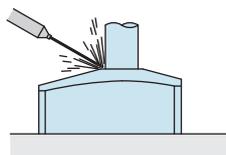
Cautions

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.

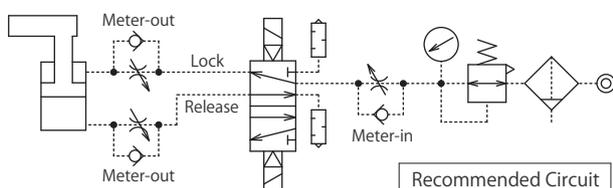


- 5) Do not inject high-pressure washing liquid directly to a clamp.
 - Direct injection of high-pressure washing liquid to a clamp leads to damage and invasion of washing liquid.



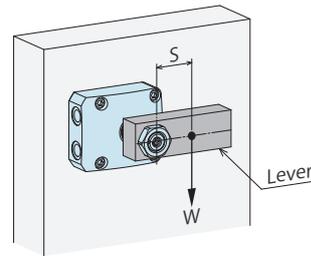
Swing Speed Adjustment

- 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.



Notes for Lever Design

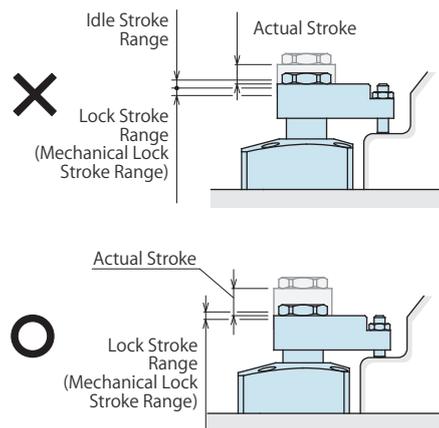
- Please design the lever as light as possible, and it should be no larger than necessary.
- The clamp may not function depending on supplying air pressure, mounting position and shape of the lever. If using a large lever with the mounting position shown below, it may stop in the middle of swing action. 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.

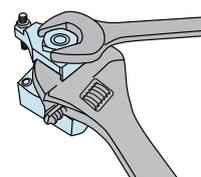
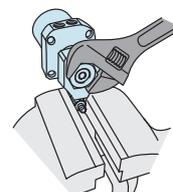
Standard : Taper Lock Lever Option

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

- ① With the clamp positioned to the fixture, determine the lever position, and temporarily tighten the nut for fixing the lever.
- ② Remove the clamp from the fixture, fix the lever with machine vise etc., and tighten the nut.
- ③ If 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.

High-Power Link Clamp for Washing Application

Model WCJ



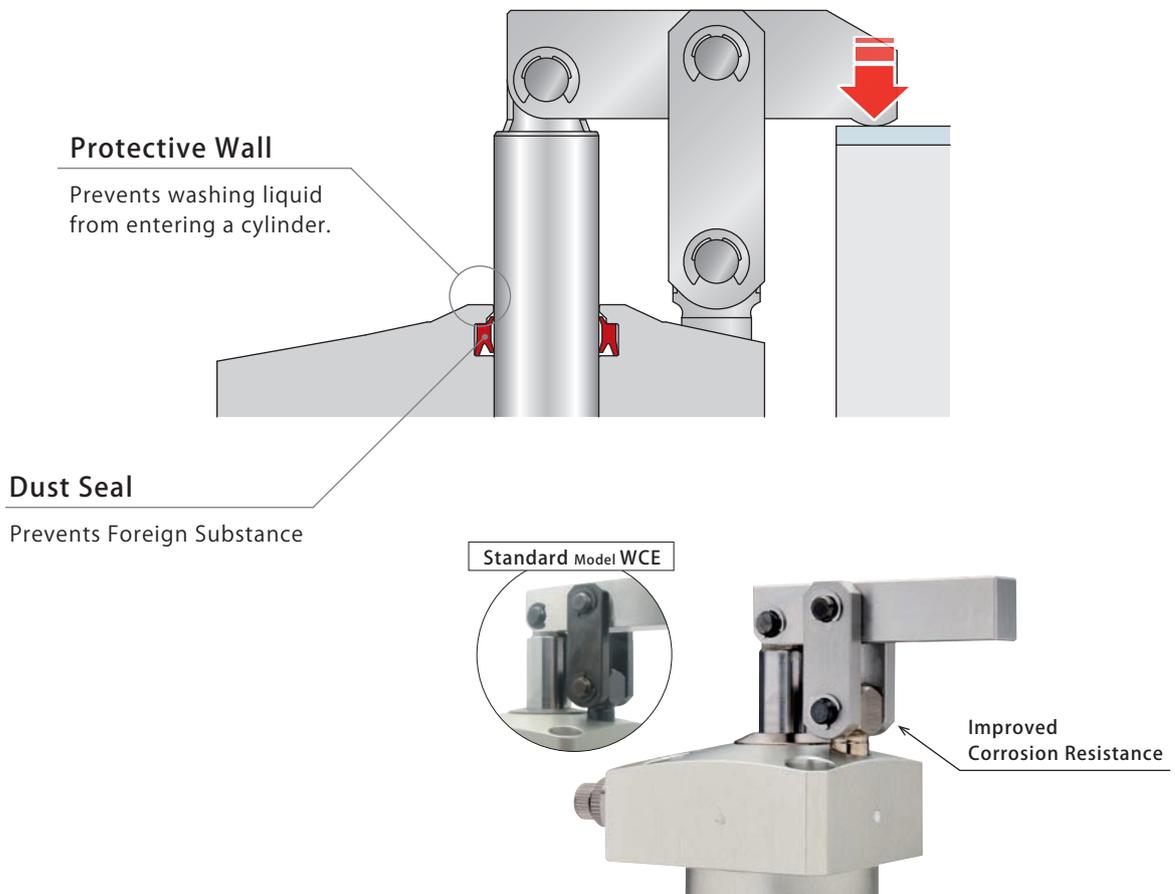
Suitable for High-Pressure Washing

PAT.

Features

Durability
Anticorrosion

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



Highly Durable Parts Designed for Washing Applications

This model has high corrosion resistance in each part, improving anti-rust performance, compared to the standard High-Power Pneumatic Link Clamp (model WCE).

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

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

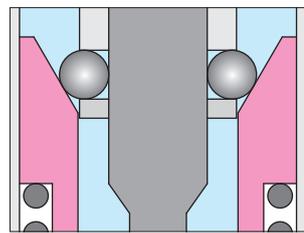
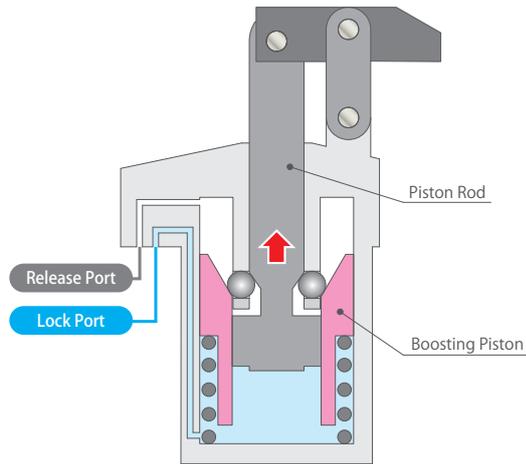
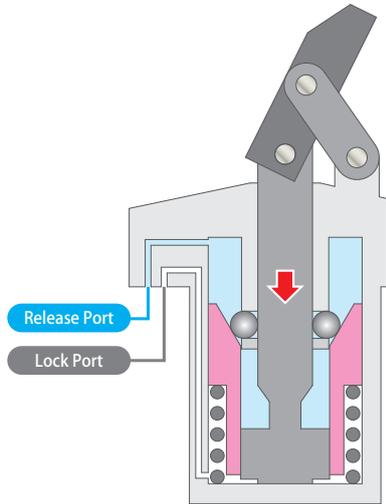
WHZ-MD

General Cautions

Related Products for Washing Application

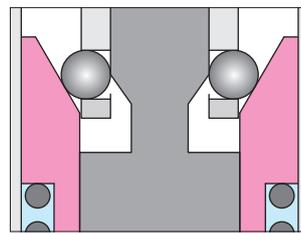
Company Profile Sales Offices

Action Description

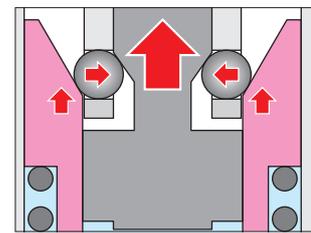


Released State

The piston rod descends to release.

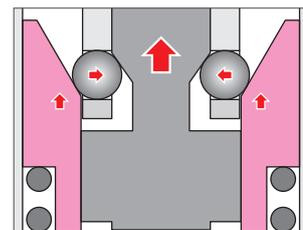
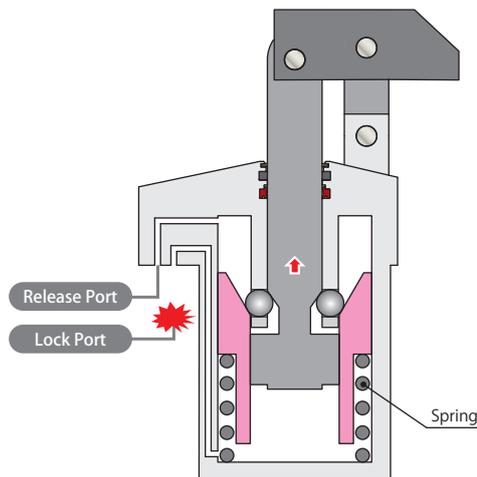


Locking Operation
(Idle Stroke Completed)



Locked State
(Boosting Stroke)

The piston rod ascends and the boosting piston activates. It exerts strong clamping force and holding force with the wedge mechanism.



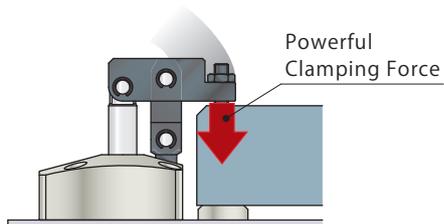
Self-Locking State

(Holding with Spring Force + Mechanical Lock)

If lock air pressure drops to zero at locked state, lock pressure is maintained with the internal spring and mechanical lock.

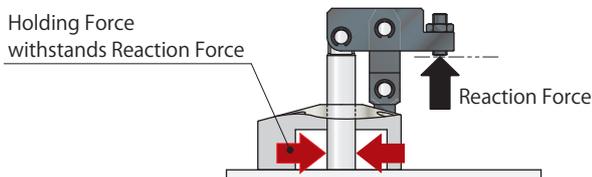
No Hydraulic Use

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



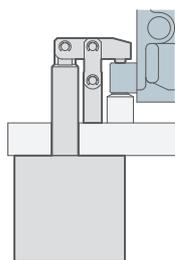
Holding Force

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

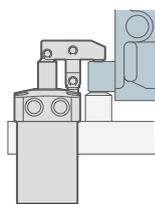


Smaller Footprint

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

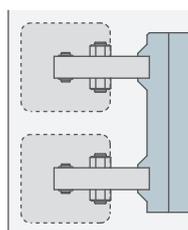


General Air Cylinder

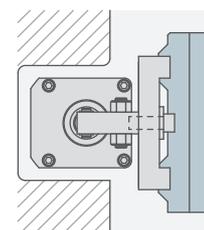


Downsized

High-Power Pneumatic Clamp



General Air Cylinder

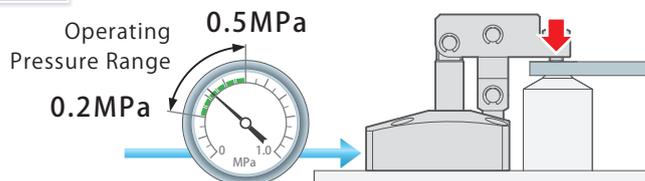


Reduced Number of Clamps

High-Power Pneumatic Clamp

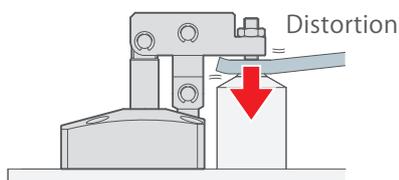
Energy Saving

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

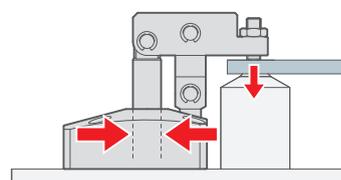


High Quality

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



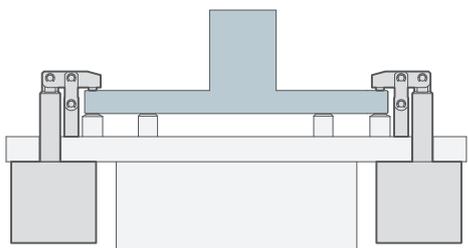
Strong clamping force distorts workpiece.



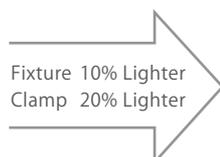
Clamping force is lowered, yet workpiece can be supported with holding force.

Light Weight

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

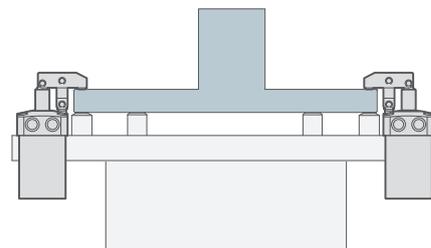


General Air Cylinder



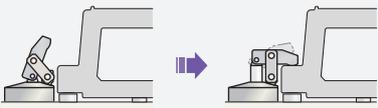
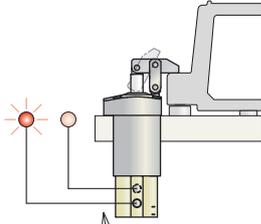
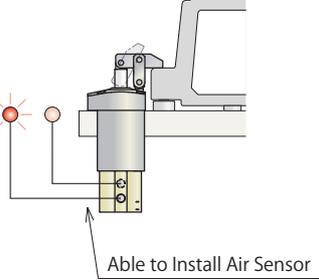
Fixture 10% Lighter
Clamp 20% Lighter

※ Reference when workpiece size is 300×260.



High-Power Pneumatic Clamp

Lineup

<p>Standard Model</p> <p>Model WCJ</p> <p>External Dimensions → P.41</p>		<p>Clamp with link mechanism</p> 
<p>Air Sensing Manifold Option</p> <p>Model WCJ-M</p> <p>External Dimensions → P.43</p>		<p>Clamping action can be confirmed with air catch sensor</p> 
<p>Air Sensing Piping Option</p> <p>Model WCJ-N</p> <p>External Dimensions → P.45</p>		<p>Able to Install Air Sensor</p> 

- High-Power Swing Clamp for Washing Application
- WHJ
- High-Power Link Clamp for Washing Application
- WCJ**
- Air Flow Control Valve
- BZW
- Manifold Block
- WHZ-MD
- General Cautions
- Related Products for Washing Application
- Company Profile
- Sales Offices

Accessories

Speed Control Valve

Model **BZW-A**



→ P.53

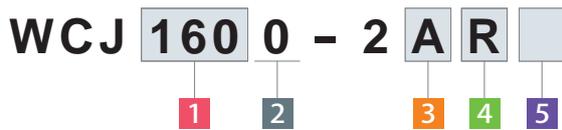
Manifold Block

Model **WHZ-MD**



→ P.55

Model No. Indication



1 Cylinder Force

- 060** : Cylinder Force 0.6kN (Pneumatic Pressure 0.5MPa)
 - 100** : Cylinder Force 0.9kN (Pneumatic Pressure 0.5MPa)
 - 160** : Cylinder Force 1.6kN (Pneumatic Pressure 0.5MPa)
 - 250** : Cylinder Force 2.5kN (Pneumatic Pressure 0.5MPa)
 - 400** : Cylinder Force 3.9kN (Pneumatic Pressure 0.5MPa)
- ※ Cylinder force differs from clamping force and holding force.

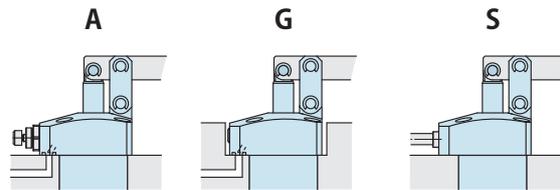
2 Design No.

- 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

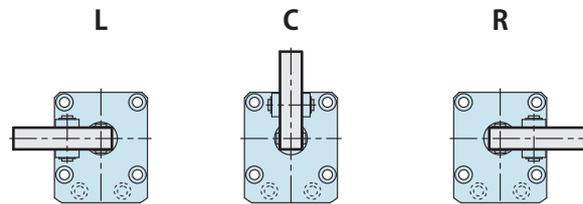
Piping Option

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

4 Lever Direction

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

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



5 Action Confirmation Method

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

Specifications

Model No.		WCJ0600-2□□□	WCJ1000-2□□□	WCJ1600-2□□□	WCJ2500-2□□□	WCJ4000-2□□□	
Cylinder Force (at 0.5MPa)	kN	0.6	0.9	1.6	2.5	3.9	
Clamping Force		Refer to "Clamping Force Curve" on P.33					
Holding Force		Refer to "Holding Force Curve" on P.35					
Clamping Force and Holding Force at 0MPa		Refer to "Clamping Force and Holding Force Curve at 0 MPa" on P.37					
Full Stroke	mm	19.5	22	23.5	27.5	33	
(Break down):	Idle Stroke	mm	16	18	19.5	23.5	29
	Lock Stroke ^{※1}	mm	3.5	4	4	4	4
Cylinder Capacity	Lock	5 Blank	12.1	22.4	35.8	56.1	95.6
		5 M/N	11.0	20.6	33.9	53.0	91.9
	Release	cm ³	10.5	19.9	32.1	50.6	85.2
Spring Force	N	36.8 ~ 54.4	60.8 ~ 78.4	83.5 ~ 140.9	146.5 ~ 218.8	234.1 ~ 334.6	
Max. Operating Pressure	MPa	0.5					
Min. Operating Pressure ^{※2}	MPa	0.2					
Withstanding Pressure	MPa	0.75					
Operating Temperature	°C	0 ~ 70					
Usable Fluid		Dry Air					

Notes:

- ※1. The specification value of cylinder force, clamping force and holding force is fulfilled only when clamping within the lock stroke range. (The specification value is not fulfilled when clamping within the range of idle stroke.)
- ※2. Minimum pressure to operate the clamp without load.
 1. Please see the external dimension if you need the information of mass.

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

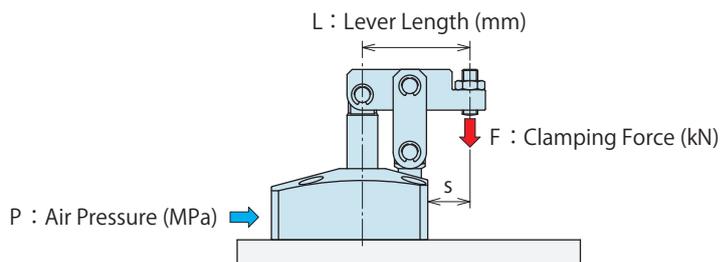
WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

Clamping Force Curve



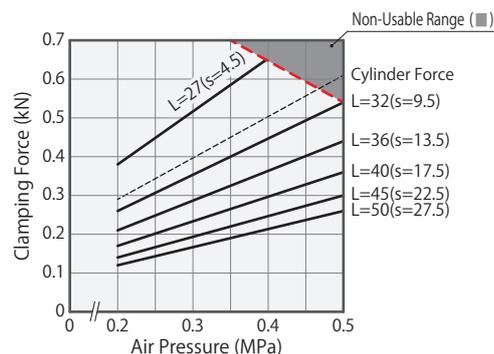
(How to read the Clamping Force Curve)

- When using WCJ2500-2□□□
- Supply Air Pressure 0.3MPa
- Lever Length L=50mm
- Clamping force is about 1.46kN.

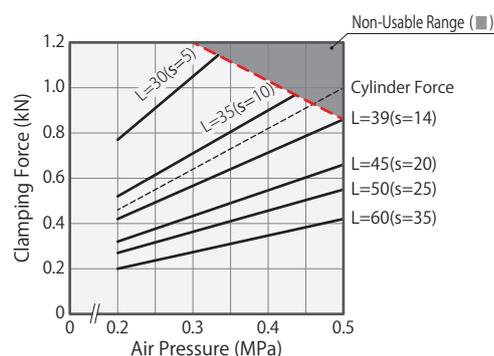
Notes:

- ※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 shows capability when a lever locks in a horizontal position.
- 4. The clamping force varies as per the lever length. Please use it with supply pneumatic pressure suitable for lever length.
- 5. Operation in the non-usable range can damage the clamp and lead to fluid leakage.

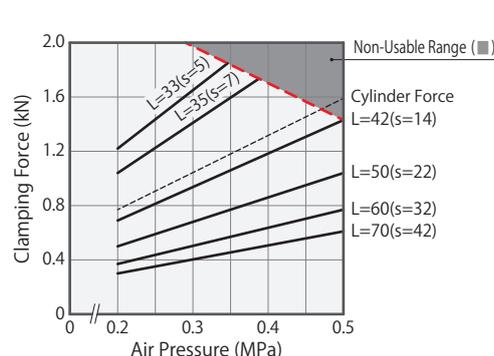
WCJ0600-2□□□		Clamping Force Calculation Formula ^{※1} (kN)						$F = \frac{14.7 \times P + 1.1}{L - 16}$	
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Min. Lever Length (mm)	
		Lever Length L (mm)							
		27	32	36	40	45	50		
0.5	0.59	■	0.53	0.42	0.35	0.29	0.25	32	
0.4	0.49	0.63	0.44	0.35	0.29	0.24	0.21	27	
0.3	0.38	0.50	0.34	0.28	0.23	0.19	0.16	24	
0.2	0.28	0.37	0.25	0.20	0.17	0.14	0.12	23	
Max. Operating Pressure (MPa)		0.40	0.50	0.50	0.50	0.50	0.50		



WCJ1000-2□□□		Clamping Force Calculation Formula ^{※1} (kN)						$F = \frac{28.6 \times P + 2.2}{L - 19.5}$	
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Min. Lever Length (mm)	
		Lever Length L (mm)							
		30	35	39	45	50	60		
0.5	0.94	■	■	0.85	0.65	0.54	0.41	39	
0.4	0.78	■	0.88	0.70	0.54	0.45	0.34	33	
0.3	0.62	1.03	0.70	0.55	0.42	0.35	0.27	29	
0.2	0.45	0.76	0.51	0.41	0.31	0.26	0.20	25	
Max. Operating Pressure (MPa)		0.33	0.43	0.50	0.50	0.50	0.50		



WCJ1600-2□□□		Clamping Force Calculation Formula ^{※1} (kN)						$F = \frac{51.6 \times P + 4.3}{L - 21}$	
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Min. Lever Length (mm)	
		Lever Length L (mm)							
		33	35	42	50	60	70		
0.5	1.59	■	■	1.43	1.04	0.77	0.61	42	
0.4	1.32	■	■	1.19	0.86	0.64	0.51	36	
0.3	1.05	1.65	1.41	0.94	0.68	0.51	0.40	31	
0.2	0.77	1.22	1.04	0.70	0.50	0.37	0.30	28	
Max. Operating Pressure (MPa)		0.35	0.39	0.50	0.50	0.50	0.50		



High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

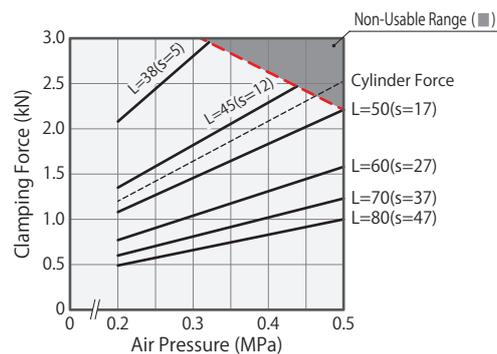
WHZ-MD

General Cautions

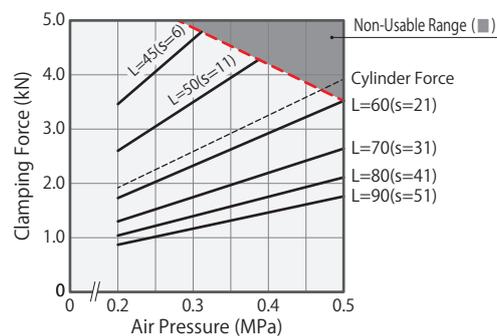
Related Products
for Washing Application

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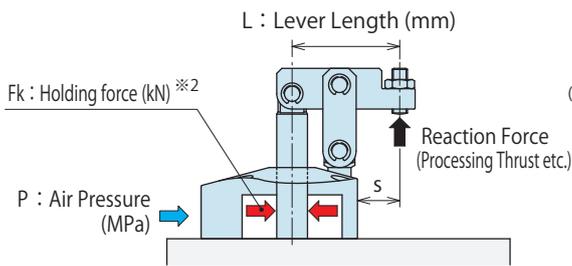
WCJ2500-2		Clamping Force Calculation Formula ^{**1} (kN) $F = \frac{93.9 \times P + 8.3}{L - 25}$						
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Min. Lever Length (mm)
		Lever Length L (mm)						
		38	45	50	60	70	80	
0.5	2.46	■	■	2.21	1.58	1.23	1.00	50
0.4	2.04	■	2.29	1.83	1.31	1.02	0.83	42
0.3	1.62	2.81	1.82	1.46	1.04	0.81	0.66	37
0.2	1.20	2.08	1.35	1.08	0.77	0.60	0.49	33
Max. Operating Pressure (MPa)		0.32	0.43	0.50	0.50	0.50	0.50	



WCJ4000-2		Clamping Force Calculation Formula ^{**1} (kN) $F = \frac{179.2 \times P + 16.1}{L - 30}$						
Air Pressure (MPa)	Cylinder Force (kN)	Clamping Force (kN) Non-Usable Range (■)						Min. Lever Length (mm)
		Lever Length L (mm)						
		45	50	60	70	80	90	
0.5	3.92	■	■	3.52	2.64	2.11	1.76	60
0.4	3.25	■	■	2.93	2.19	1.76	1.46	51
0.3	2.59	4.66	3.49	2.33	1.75	1.40	1.16	44
0.2	1.92	3.46	2.60	1.73	1.30	1.04	0.87	39
Max. Operating Pressure (MPa)		0.31	0.39	0.50	0.50	0.50	0.50	

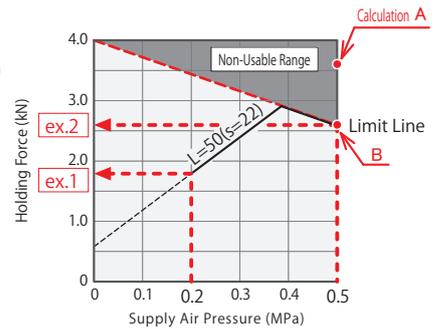


● Holding Force Curve



(Reading of holding force: example1)
 When WCJ1600-2□□□ is used.
 Supply Air Pressure 0.2MPa, Lever Length L=50mm
 Holding force is about 1.79kN.

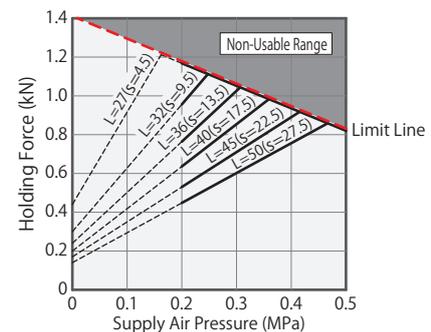
(Reading of holding force: example2)
 In the case of using WCJ1600-2□□□
 Supply Air Pressure 0.5MPa, Lever Length L= 50 mm
 A calculated value becomes the holding force.
 The value of tolerance part B which met the
 limit line becomes holding force which can
 counter to reaction force, and holding force
 becomes about 2.58 kN(s).



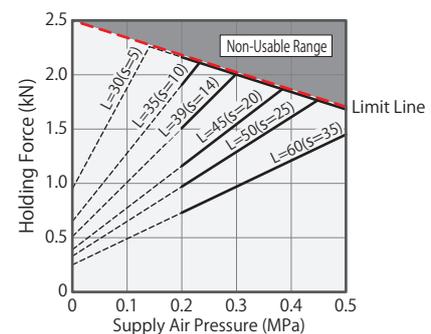
Notes:

- ※2. Holding force shows the force which can counter to reaction force in the clamping state, and differ from clamp 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 clamp force from being added.)
- ※3. Fk : Holding force (kN) , P : Supply air pressure (MPa) , L : Lever length (mm).
 When a holding force calculated value exceeds the value of a limit line, holding force becomes a value of a limit line.
 1. This table and the graph show the relation between holding force (kN) and supply pneumatic pressure (MPa).
 2. Holding force shows capability when a lever locks in a horizontal position.
 3. Holding force changes with lever length. Please use it with supply pneumatic pressure suitable for lever length.
 4. Operation in the non-usable range can damage the clamp and lead to fluid leakage.

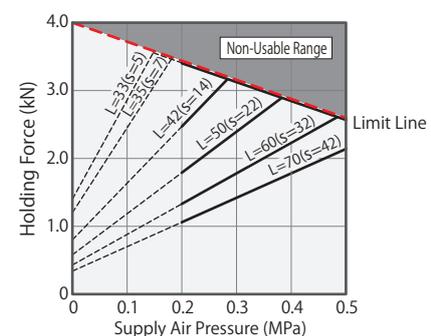
WCJ0600-2□□□		Holding Force Formula ※3 (kN) (Fk ≤ Limit Line Value)		$Fk = \frac{52.4 \times P + 4.8}{L - 16}$			
Supply Air Pressure (MPa)	Holding Force (kN) Non-Usable Range (■)						Non-Usable Range Limit Line Value (kN)
	Lever Length L (mm)						
	27	32	36	40	45	50	
0.5	■	0.82	0.82	0.82	0.82	0.82	0.82
0.4	0.94	0.94	0.94	0.94	0.89	0.76	0.94
0.3	1.05	1.05	1.03	0.86	0.71	0.60	1.05
0.2	1.17	0.96	0.76	0.64	0.53	0.45	1.17



WCJ1000-2□□□		Holding Force Formula ※3 (kN) (Fk ≤ Limit Line Value)		$Fk = \frac{97.6 \times P + 10.0}{L - 19.5}$			
Supply Air Pressure (MPa)	Holding Force (kN) Non-Usable Range (■)						Non-Usable Range Limit Line Value (kN)
	Lever Length L (mm)						
	30	35	39	45	50	60	
0.5	■	■	1.67	1.67	1.67	1.45	1.67
0.4	■	1.84	1.84	1.84	1.61	1.21	1.84
0.3	2.01	2.01	2.01	1.54	1.29	0.97	2.01
0.2	2.18	1.90	1.51	1.16	0.97	0.73	2.18



WCJ1600-2□□□		Holding Force Formula ※3 (kN) (Fk ≤ Limit Line Value)		$Fk = \frac{175.2 \times P + 16.8}{L - 21}$			
Supply Air Pressure (MPa)	Holding Force (kN) Non-Usable Range (■)						Non-Usable Range Limit Line Value (kN)
	Lever Length L (mm)						
	33	35	42	50	60	70	
0.5	■	■	2.58	2.58	2.58	2.13	2.58
0.4	■	■	2.86	2.86	2.23	1.77	2.86
0.3	3.14	3.14	3.14	2.39	1.78	1.42	3.14
0.2	3.42	3.42	2.47	1.79	1.33	1.06	3.42



High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

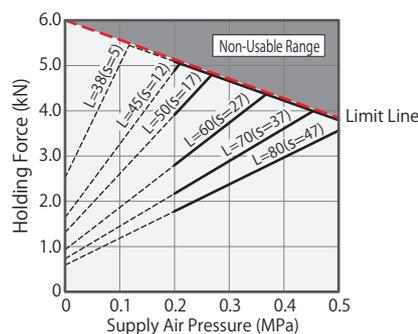
WHZ-MD

General Cautions

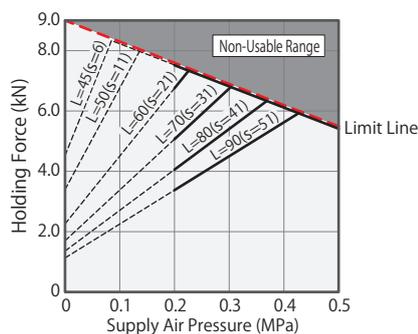
Related Products
for Washing Application

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Sales Offices

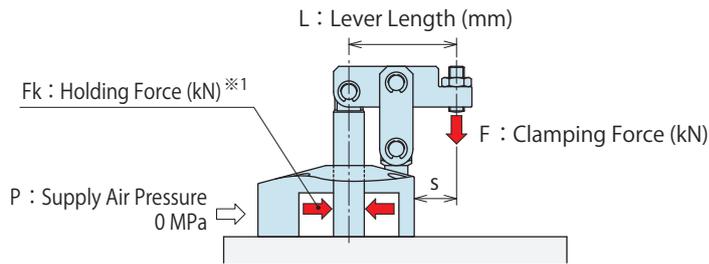
WCJ2500-2		Holding Force Formula ^{**3} (kN) $F_k = \frac{325.6 \times P + 32.6}{L - 25}$ ($F_k \leq$ Limit Line Value)					
Supply Air Pressure (MPa)	Holding Force (kN) Non-Usable Range (■)						Non-Usable Range Limit Line Value (kN)
	Lever Length L (mm)						
	38	45	50	60	70	80	
0.5	■	■	3.81	3.81	3.81	3.55	3.81
0.4	■	4.24	4.24	4.24	3.62	2.96	4.24
0.3	4.67	4.67	4.67	3.72	2.90	2.37	4.67
0.2	5.10	4.89	3.91	2.79	2.17	1.78	5.10



WCJ4000-2		Holding Force Formula ^{**3} (kN) $F_k = \frac{673.9 \times P + 68}{L - 30}$ ($F_k \leq$ Limit Line Value)					
Supply Air Pressure (MPa)	Holding Force (kN) Non-Usable Range (■)						Non-Usable Range Limit Line Value (kN)
	Lever Length L (mm)						
	45	50	60	70	80	90	
0.5	■	■	5.48	5.48	5.48	5.48	5.48
0.4	■	■	6.16	6.16	6.16	5.63	6.16
0.3	6.85	6.85	6.85	6.75	5.40	4.50	6.85
0.2	7.53	7.53	6.76	5.07	4.06	3.38	7.53



Clamping Force and Holding Force Curve at 0MPa



(Reading of the clamping force and holding force curve at zero air pressure)

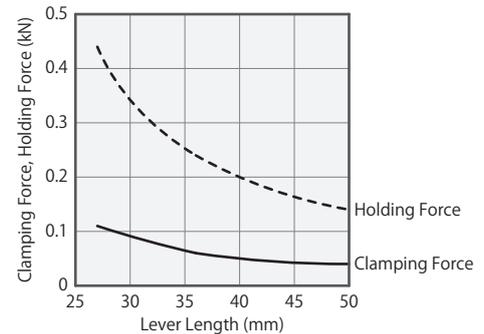
When using WCJ1600-2□□□
 When air supply is shut off at clamped state:
 Supply Air Pressure = 0MPa
 Lever Length L = 50 mm
 Clamping force becomes about 0.15 kN.
 Holding force becomes about 0.58 kN.

Notes:

- ※1. Holding force shows the force which can counter to reaction force at clamped state, and differs 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 clamp force from being added.)
- ※2. F : Clamping force (kN) , Fk : Holding force (kN) , L : Lever length (mm).
 1. This table and the graph show the relation between lever length (mm) and the clamping force (kN) and holding force (kN) at the time of 0MPa.
 2. The clamping force and holding force at the time of zero air pressure show capability when a lever locks in a level position.
 3. Clamping force and holding force change with lever length.

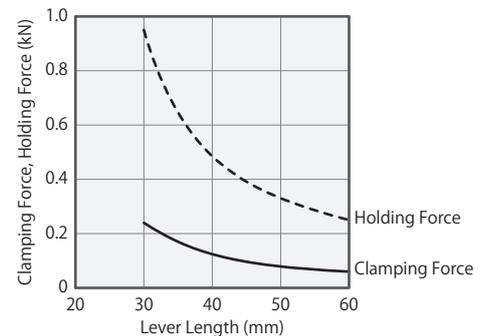
WCJ0600-2□□□

Clamping Force Formula at 0MPa ^{※2} (kN)	$F = \frac{1.1}{L - 16}$					
Holding Force Formula at 0MPa ^{※2} (kN)	$Fk = \frac{4.8}{L - 16}$					
Lever Length (mm)	27	32	36	40	45	50
Clamping Force Reference Value at 0MPa (kN)	0.10	0.07	0.06	0.05	0.04	0.03
Holding Force Reference Value at 0MPa (kN)	0.44	0.30	0.24	0.20	0.17	0.14



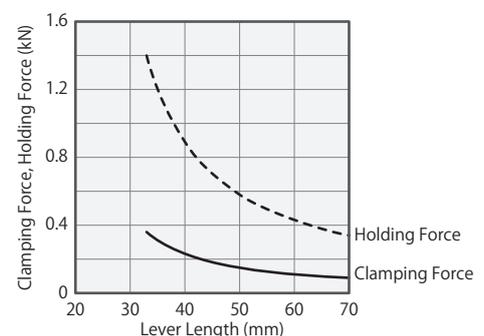
WCJ1000-2□□□

Clamping Force Formula at 0MPa ^{※2} (kN)	$F = \frac{2.2}{L - 19.5}$					
Holding Force Formula at 0MPa ^{※2} (kN)	$Fk = \frac{10.0}{L - 19.5}$					
Lever Length (mm)	30	35	39	45	50	60
Clamping Force Reference Value at 0MPa (kN)	0.21	0.14	0.11	0.09	0.07	0.05
Holding Force Reference Value at 0MPa (kN)	0.95	0.65	0.51	0.39	0.33	0.25



WCJ1600-2□□□

Clamping Force Formula at 0MPa ^{※2} (kN)	$F = \frac{4.3}{L - 21}$					
Holding Force Formula at 0MPa ^{※2} (kN)	$Fk = \frac{16.8}{L - 21}$					
Lever Length (mm)	33	35	42	50	60	70
Clamping Force Reference Value at 0MPa (kN)	0.36	0.31	0.20	0.15	0.11	0.09
Holding Force Reference Value at 0MPa (kN)	1.40	1.20	0.80	0.58	0.43	0.34



High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

WHZ-MD

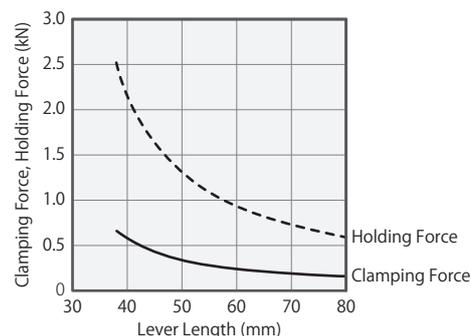
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Related Products
for Washing Application

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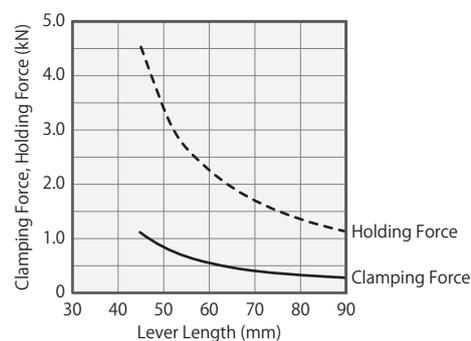
WCJ2500-2□□□

Clamping Force Formula at OMPa ※2 (kN)	$F = \frac{8.3}{L - 25}$						
Holding Force Formula at OMPa ※2 (kN)	$Fk = \frac{32.6}{L - 25}$						
Lever Length (mm)	38	45	50	60	70	80	
Clamping Force Reference Value at OMPa (kN)	0.64	0.42	0.33	0.24	0.18	0.15	
Holding Force Reference Value at OMPa (kN)	2.51	1.63	1.30	0.93	0.72	0.59	

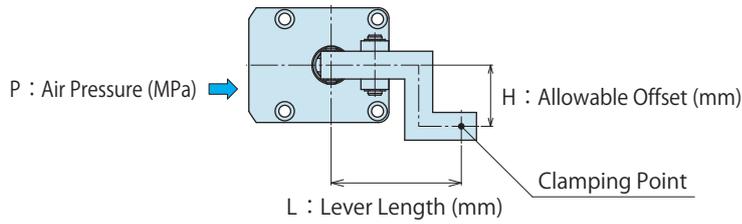


WCJ4000-2□□□

Clamping Force Formula at OMPa ※2 (kN)	$F = \frac{16.1}{L - 30}$						
Holding Force Formula at OMPa ※2 (kN)	$Fk = \frac{68.0}{L - 30}$						
Lever Length (mm)	45	50	60	70	80	90	
Clamping Force Reference Value at OMPa (kN)	1.07	0.80	0.54	0.40	0.32	0.27	
Holding Force Reference Value at OMPa (kN)	4.53	3.40	2.27	1.70	1.36	1.13	



Allowable Offset Graph



(Reading of the Allowable Offset Graph)

When using WCJ2500-2□□□

Supply Air Pressure 0.3MPa,

Lever Length L=50mm,

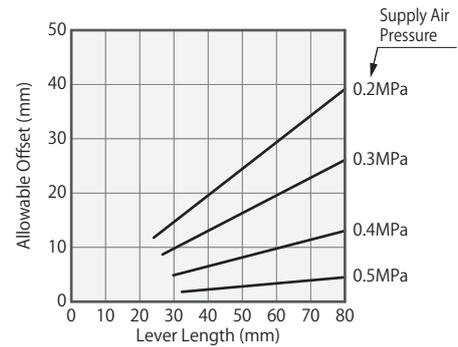
Allowable Offset is about 18mm.

Notes:

1. Tables and graphs shown are the relationships between the lever length (mm) for supply air pressure (MPa) and the allowable offset (mm).
2. Using the lever beyond allowable offset may cause deformation, galling and fluid leakage etc.
3. The tables and graphs are only for reference. The design should be carried out with allowance fully taken into consideration.

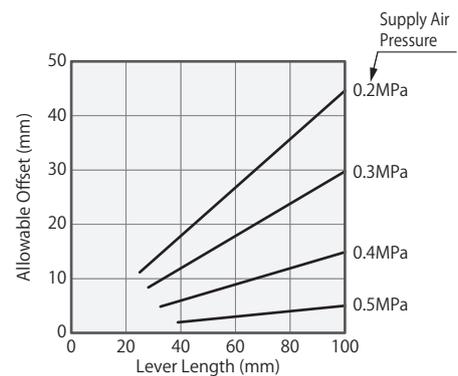
WCJ0600-2□□□

Supply Air Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)					
	L=27	L=32	L=36	L=40	L=45	L=50
0.5	■	2	2	2	3	3
0.4	4	5	6	7	7	8
0.3	9	10	12	13	15	16
0.2	13	16	18	20	22	24



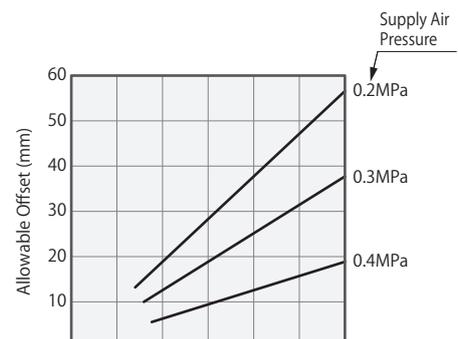
WCJ1000-2□□□

Supply Air Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)					
	L=30	L=35	L=39	L=45	L=50	L=60
0.5	■	■	2	2	3	3
0.4	■	5	6	7	7	9
0.3	9	10	12	13	15	18
0.2	13	16	17	20	22	27



WCJ1600-2□□□

Supply Air Pressure (MPa)	Allowable Offset H (mm) Non-Usable Range (■)					
	L=33	L=35	L=42	L=50	L=60	L=70
0.5	■	■	2	3	3	4
0.4	■	■	7	8	9	11
0.3	10	11	13	16	19	22
0.2	16	17	20	24	28	33



High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
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Manifold
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WHZ-MD

General Cautions

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for Washing Application

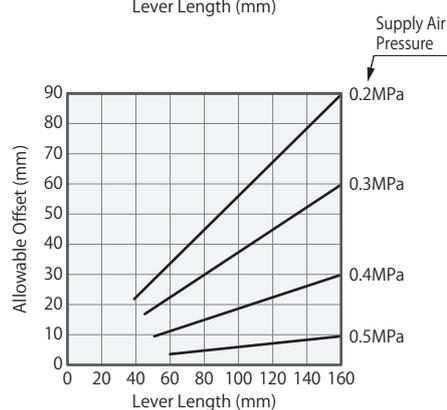
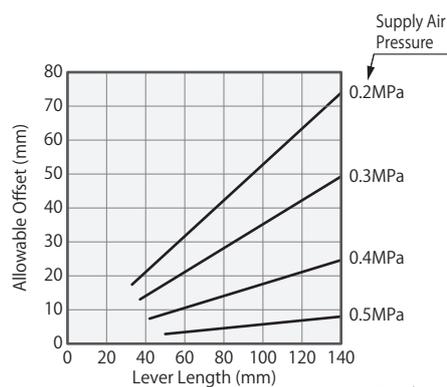
Company Profile
Sales Offices

WCJ2500-2□□□

Supply Air Pressure (MPa)	Allowable Offset H (mm)						Non-Usable Range (■)
	L=38	L=45	L=50	L=60	L=70	L=80	
0.5	■	■	3	3	4	5	
0.4	■	8	9	11	12	14	
0.3	13	16	18	21	25	28	
0.2	20	24	26	32	37	42	

WCJ4000-2□□□

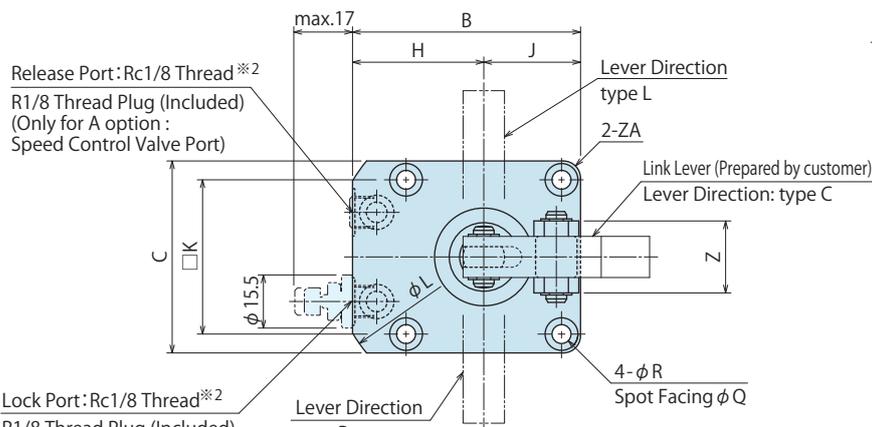
Supply Air Pressure (MPa)	Allowable Offset H (mm)						Non-Usable Range (■)
	L=45	L=50	L=60	L=70	L=80	L=90	
0.5	■	■	4	4	5	5	
0.4	■	■	11	13	15	17	
0.3	17	19	22	26	30	34	
0.2	25	28	34	39	45	50	



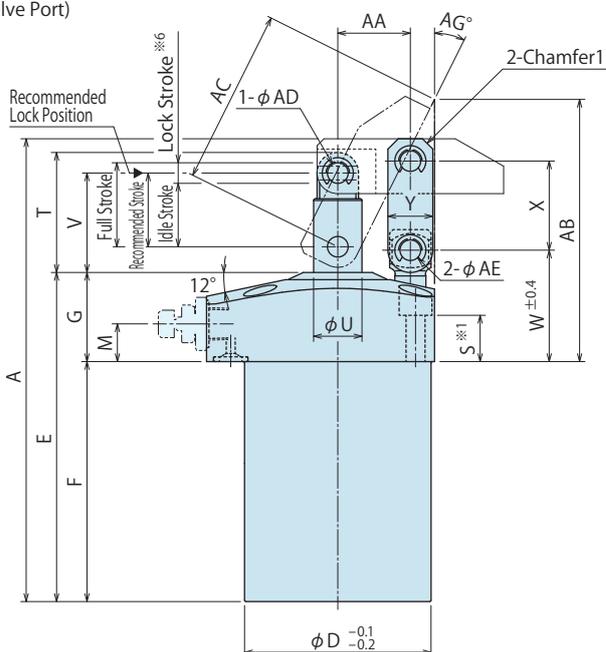
External Dimensions

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

※ The drawing shows the locked state of WCJ-2AC.



Lock Port: Rc1/8 Thread^{※2}
R1/8 Thread Plug (Included)
(Only for A option :
Speed Control Valve Port)



Recommended Lock Position

Full Stroke

Recommended Stroke

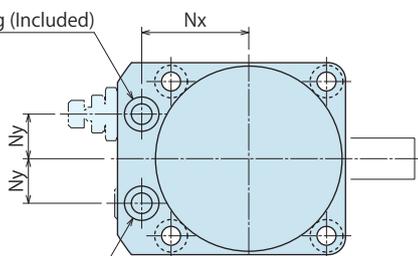
Idle Stroke

Lock Stroke^{※6}

12°

φD^{-0.1/-0.2}

Lock Port : O-ring (Included)
(-A / -G option)

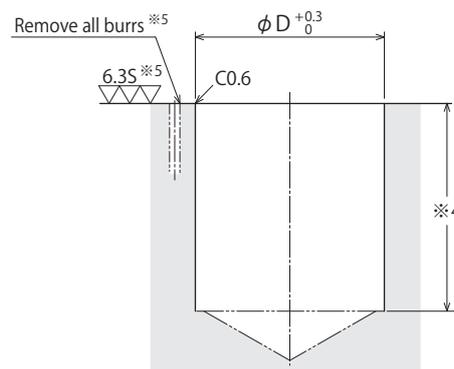
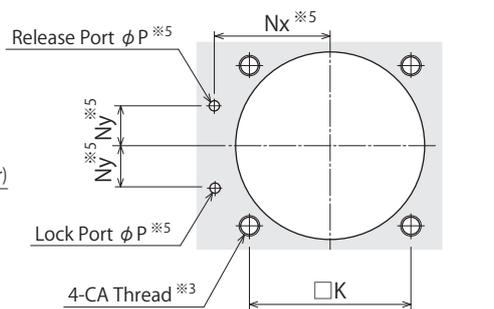


Release Port : O-ring (Included)
(-A / -G option)

Notes :

- ※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.
- ※2. Speed control valve is sold separately. Please refer to P.53.
 1. Please use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the mounting pin for lever.

Machining Dimensions of Mounting Area



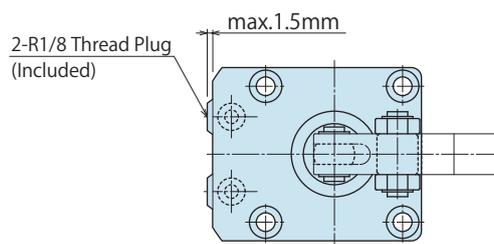
Notes:

- ※3. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.
- ※4. The depth of the body mounting hole φD should be decided according to the mounting height referring to dimension 'F'.
- ※5. The machining dimension is for -A/-G : Gasket Option.

Piping Method

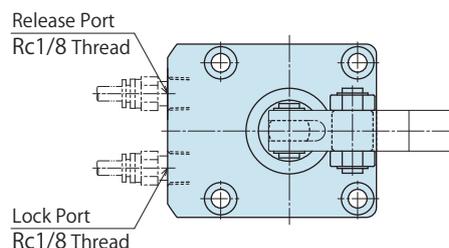
G : Gasket Option (with R Thread Plug)

※The drawing shows the locked state of WCJ-2GC.



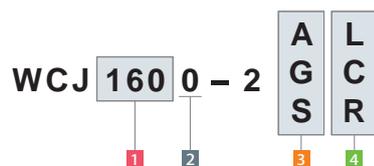
S : Piping Option (Rc Thread)

※The drawing shows the locked state of WCJ-2SC.



Model No. Indication

(Format Example : WCJ1000-2AR, WCJ2500-2SL)



- 1 Cylinder Force
- 2 Design No.
- 3 Piping Method
- 4 Lever Direction

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WCJ0600-2□□	WCJ1000-2□□	WCJ1600-2□□	WCJ2500-2□□	WCJ4000-2□□
Full Stroke	19.5	22	23.5	27.5	33
(Break down) Idle Stroke	16	18	19.5	23.5	29
Lock Stroke ※6	3.5	4	4	4	4
Recommended Stroke	17.5	20	21.5	25.5	31
A	111.5	123	134.5	157.5	184
B	54	60	66	76	87
C	45	50	56	66	78
D	40	46	54	64	77
E	80.5	89	95.5	110.5	126
F	54.5	63	69.5	79.5	94.5
G	26	26	26	31	31.5
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	11	11
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	27.5	30.5	35	39	49
U	10	12	14	16	20
V	23	26	29	33	41
W	31	31	32.5	37.5	40.5
X	20.5	23.5	26	32.5	39.5
Y	11	11	13	16	18
Z	19	19	21	28	37
Chamfer 1	C2.5	C2.5	C3	C3	C5
AA	16	19.5	21	25	30
AB	76.1	72	76.5	92.2	105.7
AC	49.8	46.9	50.9	62.7	74.7
AD	5	5	6	6	8
AE	5	5	6	8	10
AG	21.6°	26.5°	26.4°	26.1°	25.2°
CA (Nominal × Pitch)	M5×0.8	M5×0.8	M5×0.8	M6×1	M6×1
ZA (Chamfer)	C3	R5	R5	R6	R6
O-ring (-A/-G option)	1BP5	1BP7	1BP7	1BP7	1BP7
Mass※7 kg	0.5	0.6	0.9	1.4	2.3

Notes: ※6. The specification value of cylinder force, clamping force and holding force is fulfilled only when clamping within the lock stroke range.

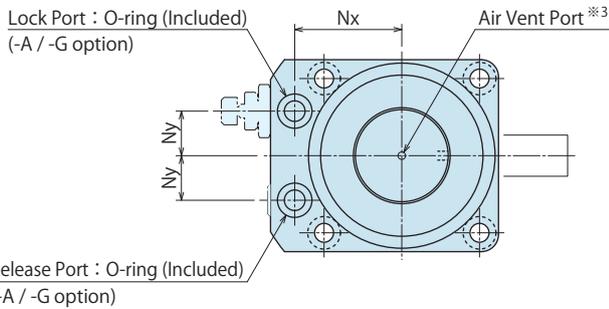
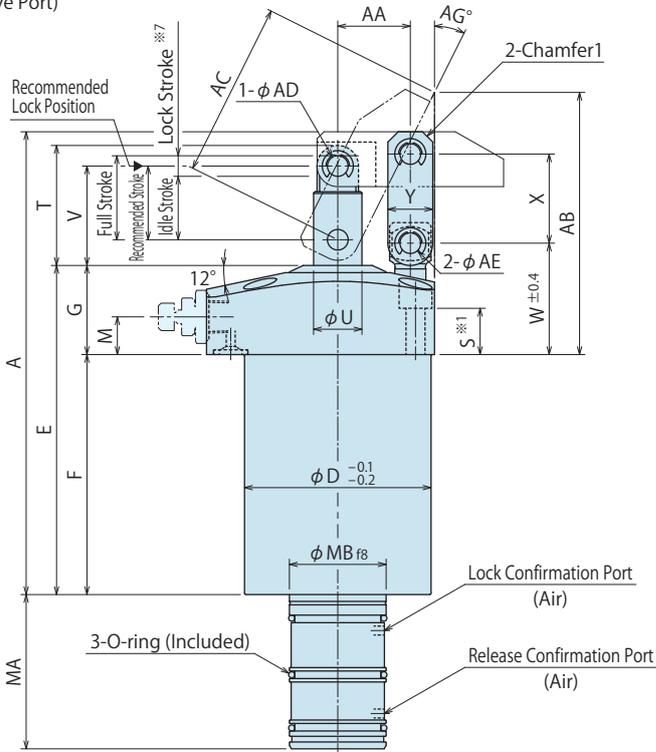
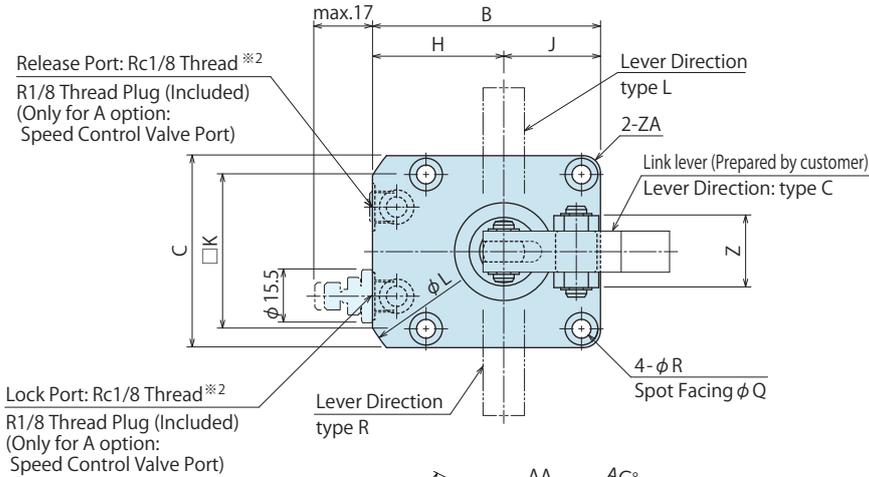
(The specification value is not fulfilled when clamping within the range of idle stroke.)

※7. Mass of single clamp without the link lever.

External Dimensions

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

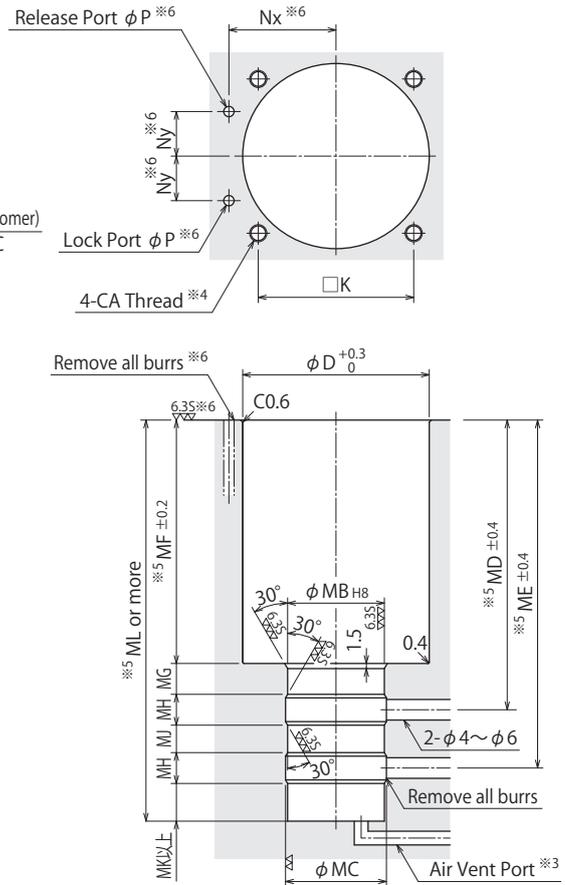
※ The drawing shows the locked state of WCJ-2ACM.



Notes :

- ※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.
- ※2. Speed control valve is sold separately. Please refer to P.53.
 1. Please use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the mounting pin for lever.
 2. Please refer to P.47~48 for air sensing chart.

Machining Dimensions of Mounting Area



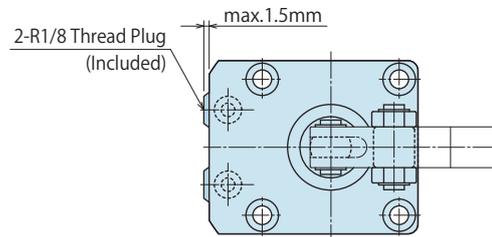
Notes:

- ※3. Air vent port must be open to the atmosphere, and prevent washing liquid.
- ※4. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.
- ※5. The dimensions indicate those under the flange.
- ※6. The machining dimension is for -A/-G : Gasket Option.

Piping Method

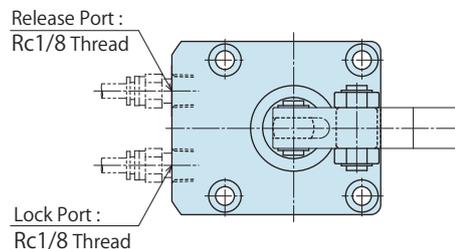
G : Gasket Option (With R Thread Plug)

※The drawing shows the locked state of WCJ-2GCM.

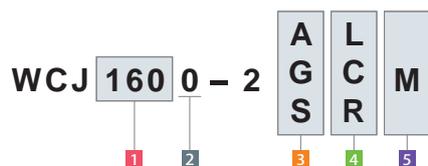


S : Piping Option (Rc Thread)

※The drawing shows the locked state of WCJ-2SCM.



Model No. Indication



(Format Example : WCJ1000-2ARM, WCJ2500-2SLM)

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

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

External Dimensions and Machining Dimensions for Mounting

(mm)

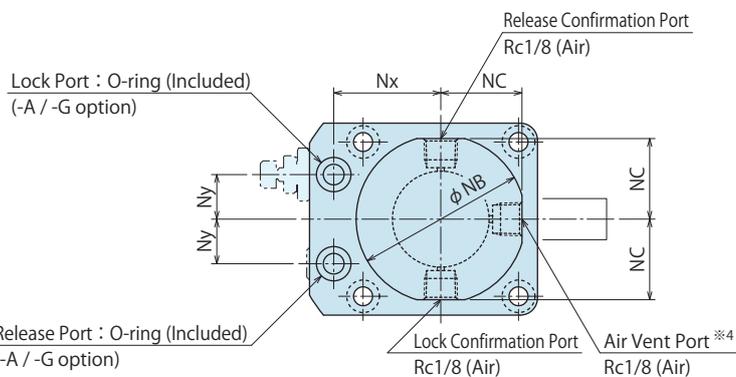
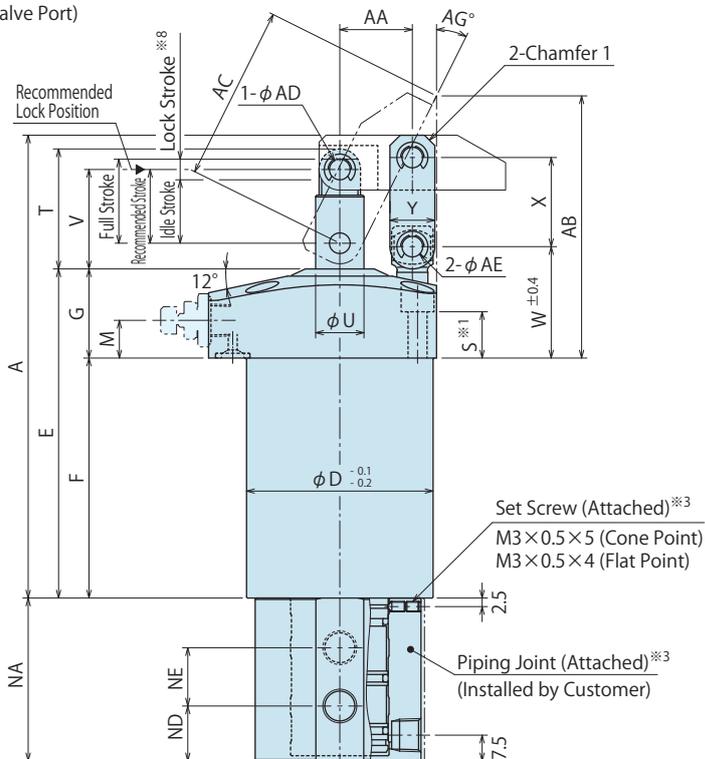
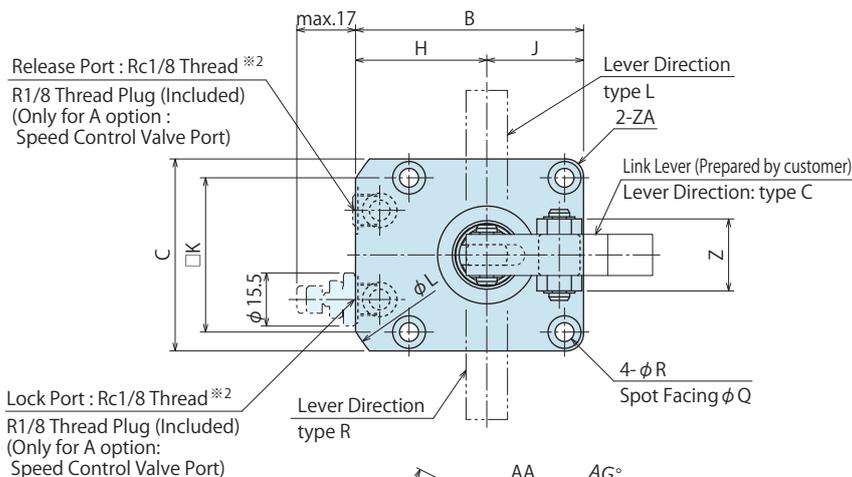
Model No.	WCJ0600-2□□M	WCJ1000-2□□M	WCJ1600-2□□M	WCJ2500-2□□M	WCJ4000-2□□M
Full Stroke	19.5	22	23.5	27.5	33
(Break down)	Idle Stroke	16	18	19.5	23.5
	Lock Stroke**7	3.5	4	4	4
Recommended Stroke	17.5	20	21.5	25.5	31
A	111.5	123	134.5	157.5	184
B	54	60	66	76	87
C	45	50	56	66	78
D	40	46	54	64	77
E	80.5	89	95.5	110.5	126
F	54.5	63	69.5	79.5	94.5
G	26	26	26	31	31.5
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	11	11
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	27.5	30.5	35	39	49
U	10	12	14	16	20
V	23	26	29	33	41
W	31	31	32.5	37.5	40.5
X	20.5	23.5	26	32.5	39.5
Y	11	11	13	16	18
Z	19	19	21	28	37
Chamfer 1	C2.5	C2.5	C3	C3	C5
AA	16	19.5	21	25	30
AB	76.1	72	76.5	92.2	105.7
AC	49.8	46.9	50.9	62.7	74.7
AD	5	5	6	6	8
AE	5	5	6	8	10
AG	21.6°	26.5°	26.4°	26.1°	25.2°
CA (Nominal × Pitch)	M5×0.8	M5×0.8	M5×0.8	M6×1	M6×1
MA	40	43.5	45	50	55
MB f8	20 ^{-0.020} _{-0.053}	28 ^{-0.020} _{-0.053}	28 ^{-0.020} _{-0.053}	38 ^{-0.025} _{-0.064}	38 ^{-0.025} _{-0.064}
MB H8	20 ^{+0.033}	28 ^{+0.033}	28 ^{+0.033}	38 ^{+0.039}	38 ^{+0.039}
MC	21.2	29.2	29.2	39.2	39.2
MD	68	77.5	84	95	112
ME	82	92.5	101	115	134
MF	55.5	64	70.5	80.5	95.5
MG	8	9	9	10	12
MH	9	9	9	9	9
MJ	5	6	8	11	13
MK	10	11.5	11	12	13
ML	96.5	108.5	116.5	131.5	151.5
ZA (Chamfer)	C3	R5	R5	R6	R6
O-ring (-A/-G option)	1BP5	1BP7	1BP7	1BP7	1BP7
3-O-ring	AS568-016 (70°)	AS568-021 (70°)	AS568-021 (70°)	AS568-028 (70°)	AS568-028 (70°)
Mass**8	kg 0.6	0.7	1.0	1.6	2.5

Notes: **7. The specification value of cylinder force, clamping force and holding force is fulfilled only when clamping within the lock stroke range. (The specification value is not fulfilled when clamping within the range of idle stroke.)

**8. Mass of single clamp without the link lever.

External Dimensions

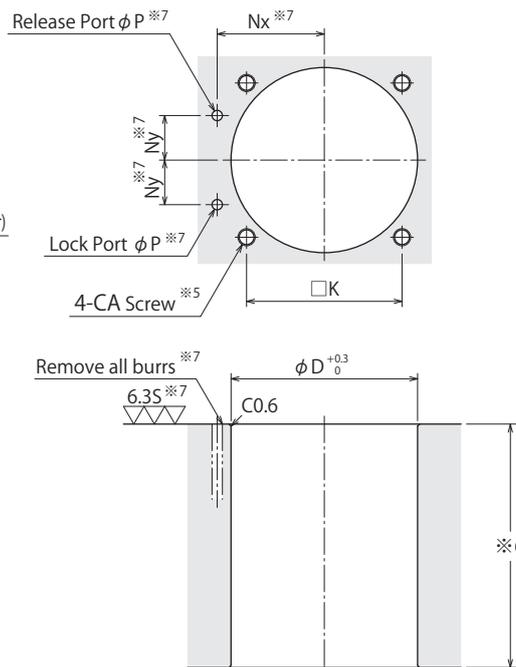
A : Gasket Option (With Ports for Speed Controller : R-Thread Plug Included)
 ※ The drawing shows the locked state (piping joint installed) of WCJ-2ACN.



Notes :

- ※1. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'S'.
- ※2. Speed control valve is sold separately. Please refer to P.53.
- ※3. 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. As for the set screw, mount in order of ① cone point and ② flat point.
 1. Please use the attached pin (equivalent to φADf6, φAEf6, HRC60) as the mounting pin for lever.
 2. Please refer to P.47~48 for air sensing chart.

Machining Dimensions of Mounting Area



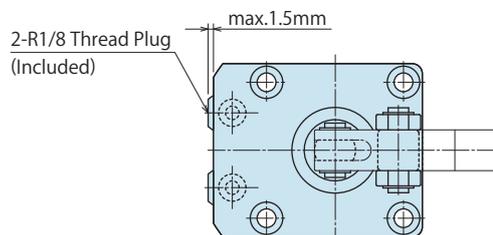
Notes :

- ※4. Air vent port must be open to the atmosphere, and prevent washing liquid.
- ※5. CA tapping depth of the mounting bolt should be decided according to the mounting height referring to dimension 'S'.
- ※6. The depth of the body mounting hole φD should be less than 'Dimension F'.
- ※7. The machining dimension is for -A/-G : Gasket Option.

Piping Method

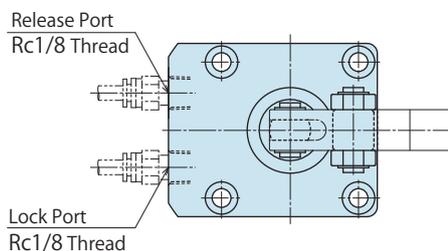
G : Gasket Option (with R Thread Plug)

※The drawing shows the locked state of WCJ-2GCN.



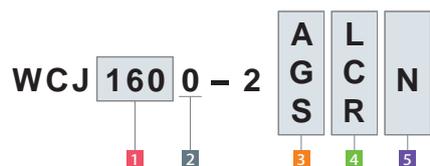
S : Piping Option (Rc Thread)

※The drawing shows the locked state of WCJ-2SCN.



Model No. Indication

(Format Example : WCJ1000-2ARN, WCJ2500-2SLN)



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

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

External Dimensions and Machining Dimensions for Mounting

(mm)

Model No.	WCJ0600-2□□N	WCJ1000-2□□N	WCJ1600-2□□N	WCJ2500-2□□N	WCJ4000-2□□N
Full Stroke	19.5	22	23.5	27.5	33
(Break down) Idle Stroke	16	18	19.5	23.5	29
Lock Stroke ^{※8}	3.5	4	4	4	4
Recommended Stroke	17.5	20	21.5	25.5	31
A	111.5	123	134.5	157.5	184
B	54	60	66	76	87
C	45	50	56	66	78
D	40	46	54	64	77
E	80.5	89	95.5	110.5	126
F	54.5	63	69.5	79.5	94.5
G	26	26	26	31	31.5
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	11	11
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	27.5	30.5	35	39	49
U	10	12	14	16	20
V	23	26	29	33	41
W	31	31	32.5	37.5	40.5
X	20.5	23.5	26	32.5	39.5
Y	11	11	13	16	18
Z	19	19	21	28	37
Chamfer 1	C2.5	C2.5	C3	C3	C5
AA	16	19.5	21	25	30
AB	76.1	72	76.5	92.2	105.7
AC	49.8	46.9	50.9	62.7	74.7
AD	5	5	6	6	8
AE	5	5	6	8	10
AG	21.6°	26.5°	26.4°	26.1°	25.2°
CA (Nominal × Pitch)	M5×0.8	M5×0.8	M5×0.8	M6×1	M6×1
NA	42.5	46	47.5	52.5	57.5
NB	42	49	49	59	59
NC	19.5	23.5	23.5	28.5	28.5
ND	15	16.5	16	17	18
NE	16	15	17	20	22
ZA (Chamfer)	C3	R5	R5	R6	R6
O-ring (-A/-G option)	1BP5	1BP7	1BP7	1BP7	1BP7
Mass ^{※9} kg	0.7	0.8	1.1	1.8	2.7

Notes: ^{※8}. The specification value of cylinder force, clamping force and holding force is fulfilled only when clamping within the lock stroke range. (The specification value is not fulfilled when clamping within the range of idle stroke.)

^{※9}. Mass of single clamp without the link lever.

● 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

WCJ 160 0 - 2



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

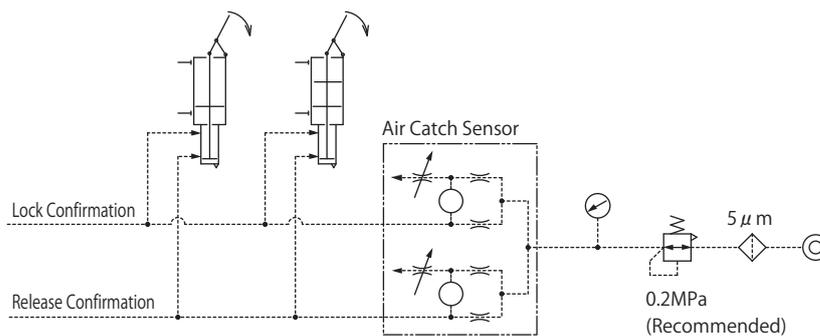
Recommended Air Catch Sensor

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.

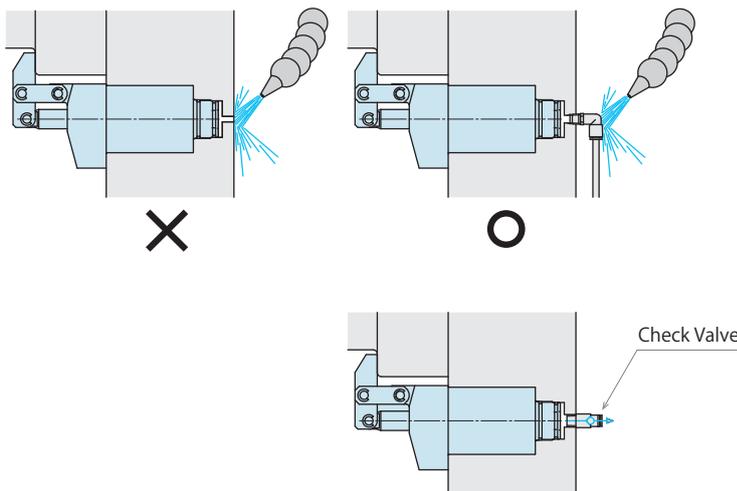
The air pressure to the air catch sensor should be 0.2MPa.

Refer to the drawing below for the air circuit composition.



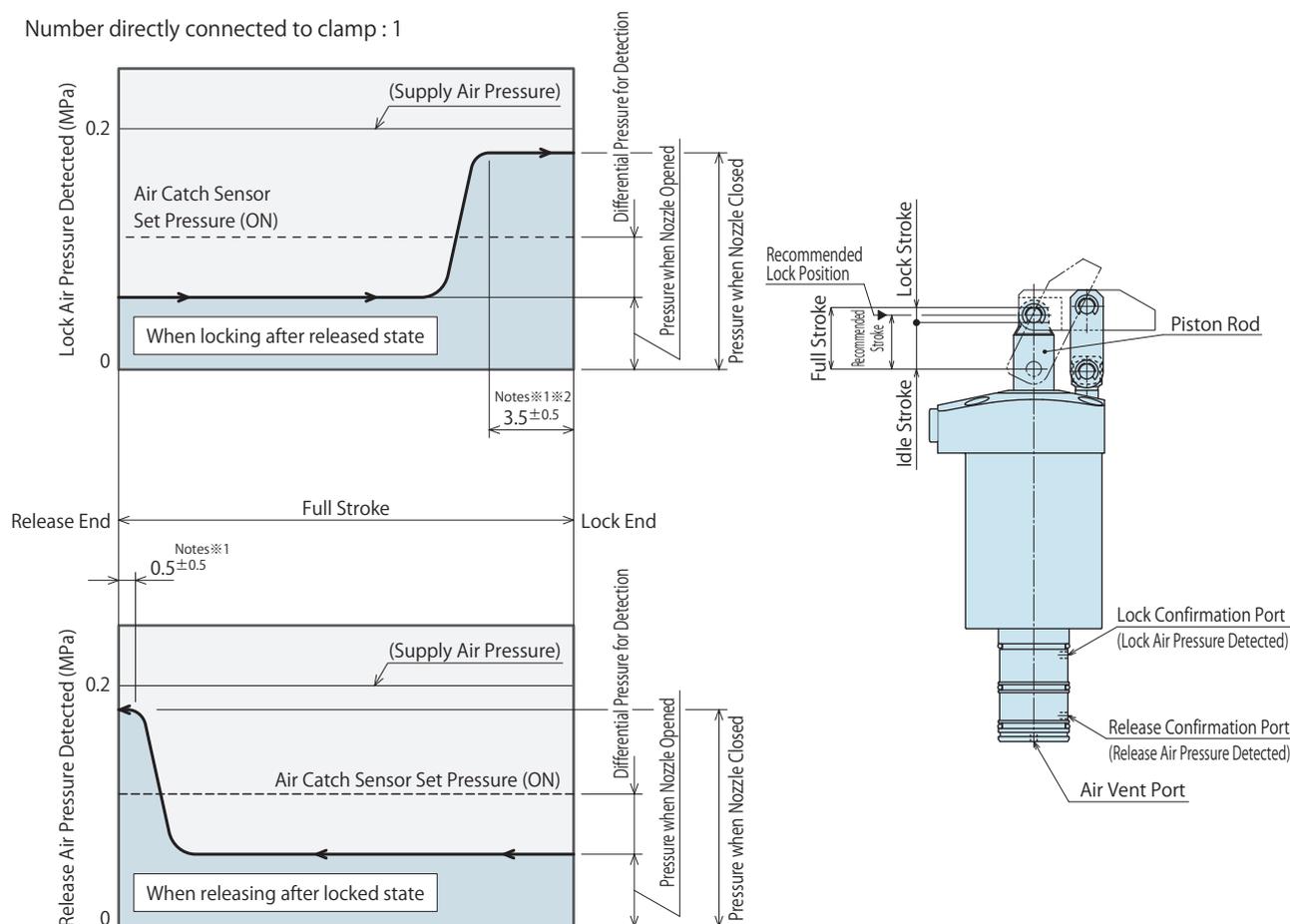
Notes for Use and Installation

- 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.
- 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

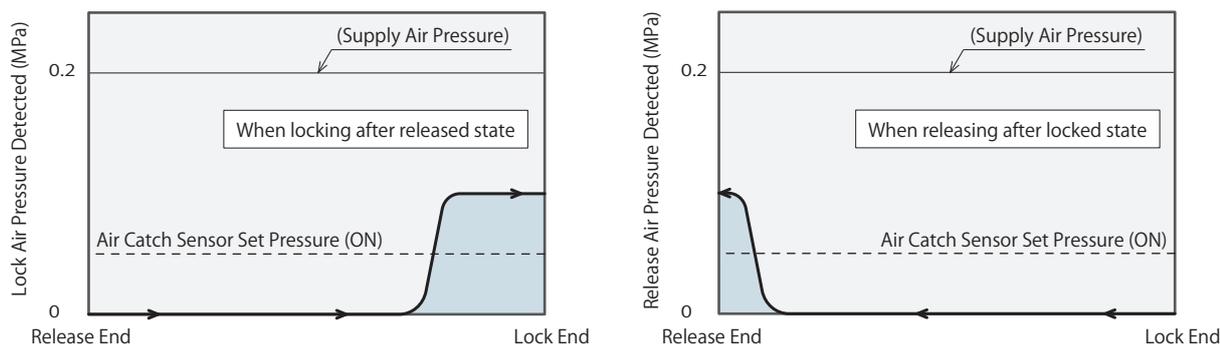


Notes :

1. Sensing chart shown is the relationship between the cylinder 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 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.)
- ※2. WCJ0600-2□□M/N : the position where the pressure for fully closing the detection nozzle is 3.0 ± 0.5 mm.

Model No.	WCJ0600-2□□M/N	WCJ1000-2□□M/N	WCJ1600-2□□M/N	WCJ2500-2□□M/N	WCJ4000-2□□M/N	
Full Stroke	mm	19.5	22	23.5	27.5	33

Number Directly Connected to Clamp : 4 (for reference)



High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

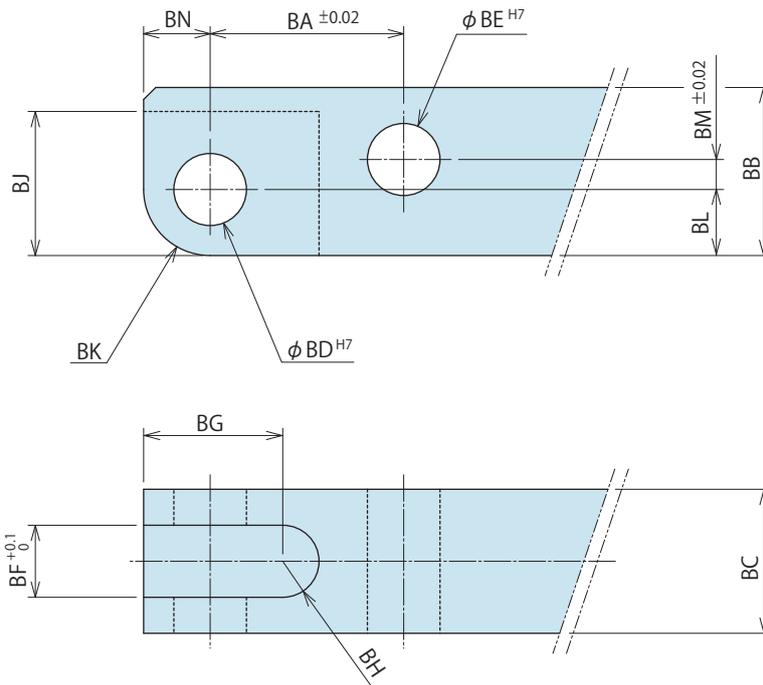
General Cautions

Related Products for Washing Application

Company Profile Sales Offices

Link Lever Design Dimension

※ Reference for designing link lever.



Link Lever Design Dimension List

(mm)

Corresponding Model No.	WCJ0600	WCJ1000	WCJ1600	WCJ2500	WCJ4000
BA	16	19.5	21	25	30
BB	12.5	12.5	16	20	25
BC	10 ⁰ _{-0.2}	10 ⁰ _{-0.2}	12 ⁰ _{-0.3}	16 ⁰ _{-0.3}	19 ⁰ _{-0.3}
BD	5 ^{+0.012} ₀	5 ^{+0.012} ₀	6 ^{+0.012} ₀	6 ^{+0.012} ₀	8 ^{+0.015} ₀
BE	5 ^{+0.012} ₀	5 ^{+0.012} ₀	6 ^{+0.012} ₀	8 ^{+0.015} ₀	10 ^{+0.015} ₀
BF	5	5	6	8	10
BG	10	10	13	13	17
BH	R2.5	R2.5	R3	R4	R5
BJ	10	10	13	13	17.5
BK	R4.5	R4.5	R6	R6	R8
BL	4.5	4.5	6	6	8
BM	2.5	2.5	3.5	6	7.5
BN	4.5	4.5	6	6	8

Notes :

1. Design the link lever length according to the performance curve.
2. If the link lever is not in accordance with the dimension shown above, performance may be degraded and damage can occur.
3. Please use the attached pin (equivalent to φ ADf6, φ AEF6, HRC60) as the mounting pin for lever.
(Please refer to each external dimension of WCJ for the dimensions φ AD and φ AE.)

● **Accessories : Others**

- We offer more accessories for model WCJ.

Speed Control Valve

Model **BZW-A**

※Use BZW□-A for WCJ.



Refer to P.53 for reference.

Manifold Block

Model **WHZ-MD**



Refer to P.55 for reference.

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

Cautions

Notes for Design

1) Check Specifications

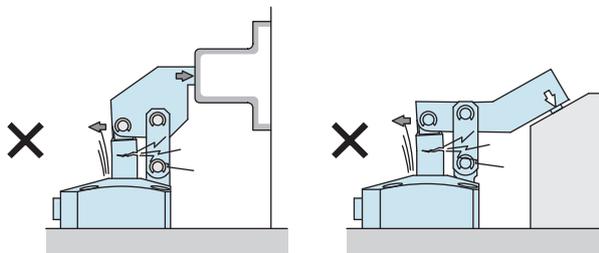
- Please use each product according to the specifications.
- The mechanical lock mechanism of this clamp has the clamping force and holding force even when air pressure falls to zero. (Refer to clamping force and holding force curve.)

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.

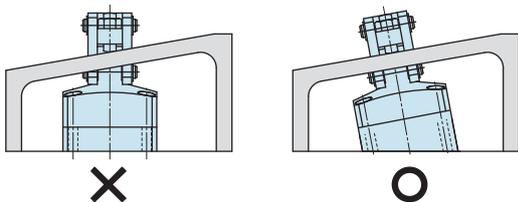
3) Notes for Link Lever Design

- Make sure no force is applied to the piston rod except the axial direction. (Make sure the clamp surface and the mounting surface on the workpiece are parallel.) The usage like the one shown in the drawing below will apply a large bending stress to the piston rod and must be avoided.



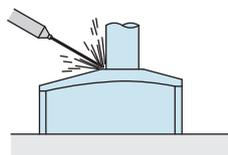
4) When clamping on a sloped surface of a workpiece

- Make sure the clamping surface and the mounting surface on the workpiece are parallel.



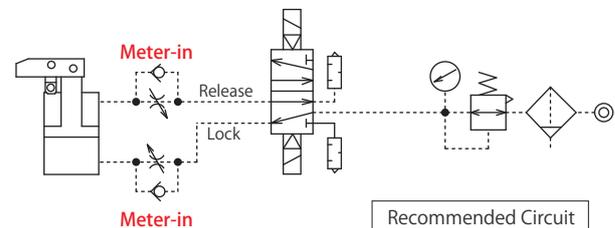
5) Do not inject high-pressure washing liquid directly to a clamp.

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



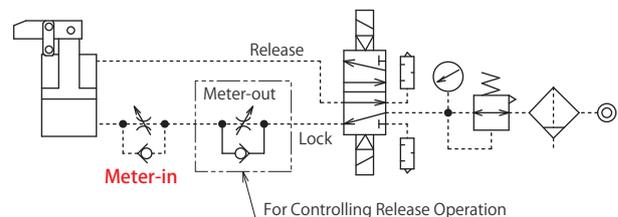
6) Speed Adjustment

- If the clamp operates too fast the parts will wear out and become damaged more quickly leading to equipment failure. Do not adjust the Meter-out valve outside the cylinder because there is an orifice of meter-out connected internally. (The operating time of mechanical locking system will be very long if there is back pressure in the circuit.) Adjust speed control of locking operation speed within 0.5 seconds by installing Meter-in speed control valve into the lock port.
- If the adjustment time is longer than that, pressure rising will be slow and eventually takes more time to achieve the clamping force corresponding to the catalog data. Even if there is stick-slip or acceleration movement under low pressure and small volume of air, it is not malfunction. (Please set under above condition when you have to adjust action movement time over 1.0 second.)



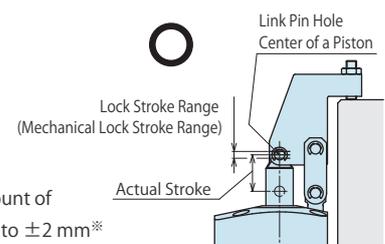
For multiple clamps operating simultaneously, please install the speed controller (meter-in) to each clamp.

Also, when load is applied to the release action direction during release action, adjust the speed by installing the speed controller (meter-out) on the lock port side.



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

- When the center of link pin hole of piston rod clamps out of the lock stroke range, the mechanical lock function does not work. As a result, the specification value of clamping force and holding force will not be fulfilled. Moreover, there will be no clamping or holding force at zero air pressure.



Please design the amount of actual stroke to be set to ± 2 mm^{*} of recommended lock position.

(The specification value is fulfilled since the center of link pin hole of piston rod is within the lock stroke (mechanical lock stroke) range.)

^{*} For WCJ0600, please design the amount of actual stroke to be set to -1.5 mm \sim $+2$ mm of recommended lock position.

● **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 table below. Tightening with greater torque than recommended can depress the seating surface or break the bolt.

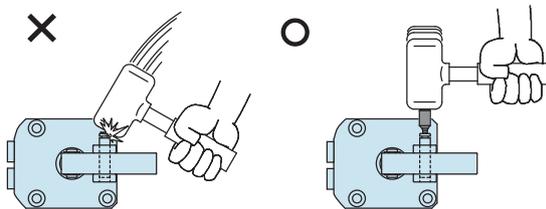
Model No.	Thread Size	Tightening Torque (N·m)
WCJ0600	M5×0.8	6.3
WCJ1000	M5×0.8	6.3
WCJ1600	M5×0.8	6.3
WCJ2500	M6×1	10
WCJ4000	M6×1	10

5) Installing Flow Control Valve

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

6) Installation / Removal of the Link Lever

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



7) Speed Adjustment

- Adjust the locking action to be about 0.5 seconds. Excessively fast operating speed of the clamp may lead to wear-out or damage the internal components.
- 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 installation, bolts may be tightened lightly. Check torque and re-tighten as required.

9) Please do not carry out manual operation of a clamp.

- When a piston or a lever raises a piston by manual operation at the time of not supplying pneumatic, if it goes into the range of lock stroke, the mechanical lock mechanism will operate and the piston will operate till a rise to a rise end or locking action completion. Since a hand is pinched and it becomes a cause of an injury, please do not carry out manual operation of a clamp.

During shipment, clamps are in locked state (with mechanical lock function) to prevent accidents. Even when shipping them to users after installing clamps to fixtures or systems, make sure clamps are in locked state (with mechanical lock function) to prevent accidents.

During locked state, clamps cannot be operated manually because of the mechanical lock. Supply release air pressure to conduct release action.



10) The cautions at the time of a test run.

- If large flow air is supplied right after installation, the action time may become extremely fast, resulting in major clamp damage. Install the speed controller (meter-in) beside the air source and gradually supply air.

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

Company Profile Sales Offices

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

Air Flow Control Valve

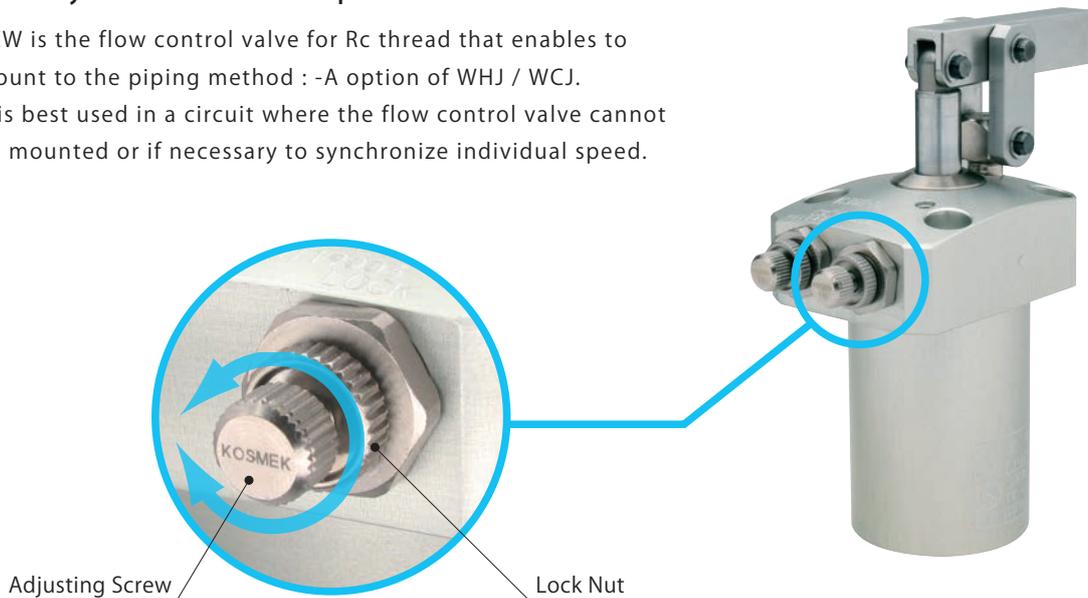
Model BZW



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.

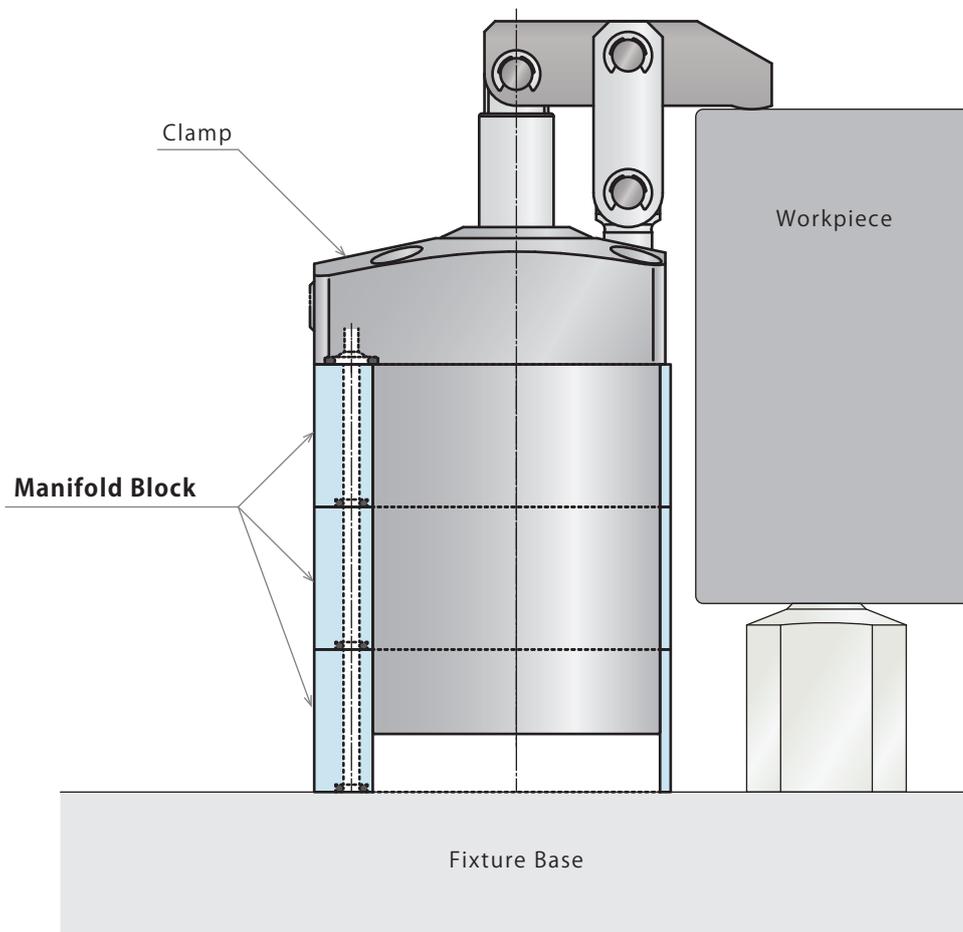
Manifold Block

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

High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

**Manifold
Block**

WHZ-MD

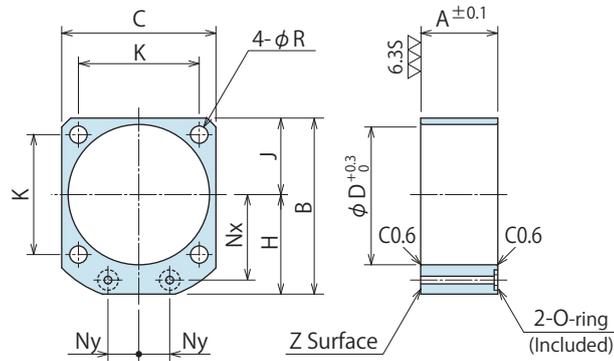
● Manifold Block for WCJ/WHJ

Model No. Indication

WHZ 048 0 - MD

Size
(Refer to
following table)

Design No.
(Revision Number)



(mm)

Model No.	WHZ0600-MD	WHZ0320-MD	WHZ0400-MD	WHZ0500-MD	WHZ0630-MD
Corresponding Item Model Number	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.

General Cautions

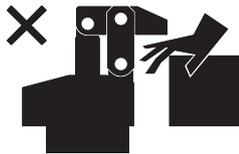
Related Products
for Washing Application

Company Profile
Sales Offices

● Cautions

● Notes on Handling

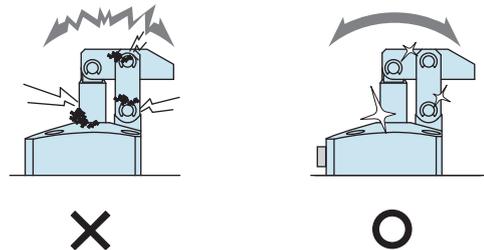
- 1) It should be handled by qualified personnel.
- The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
- 2) Do not handle or remove the product unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when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

High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

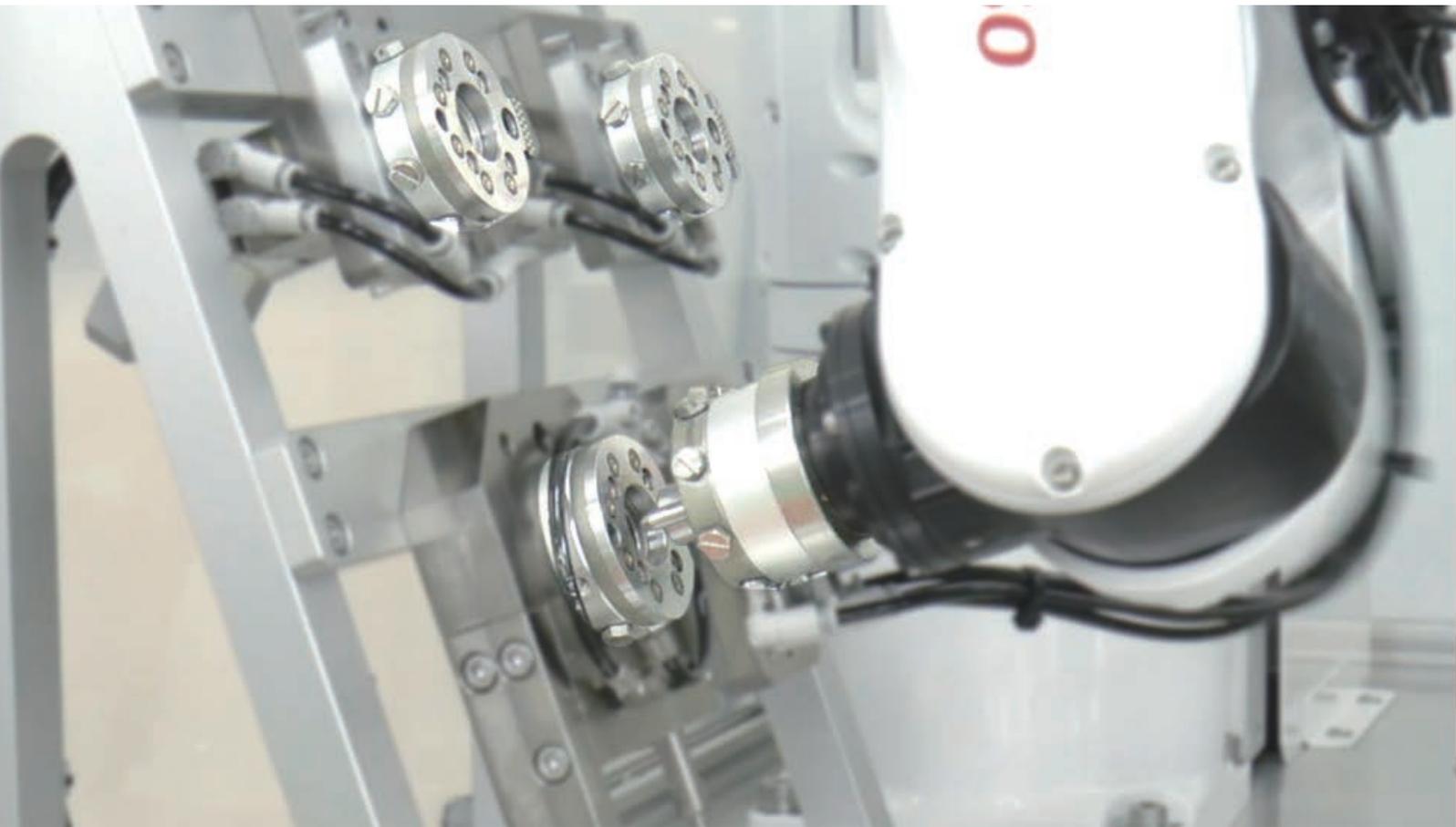
Manifold
Block

WHZ-MD

General Cautions

Related Products
for Washing Application

Company Profile
Sales Offices



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/>).

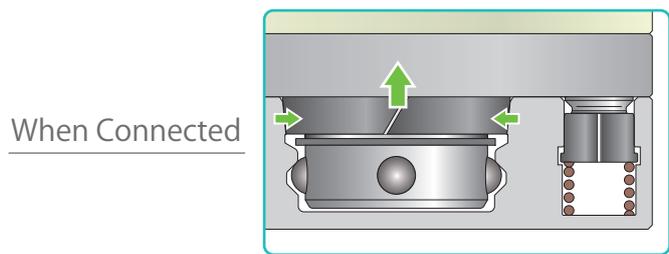
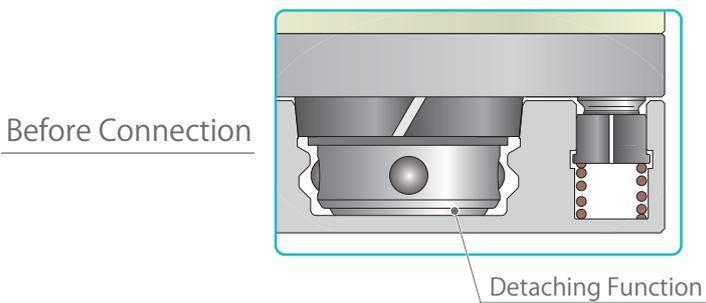
The World's Only Robotic Hand Changer with Zero Backlash

Model SWR



Air Lock / Air Release
Self-Lock Function with Spring

KOSMEK Exclusive Non-Backlash Mechanism

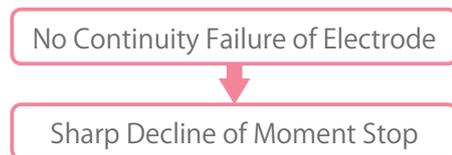
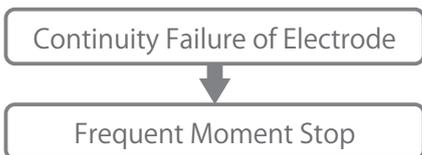
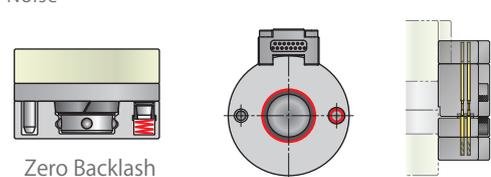
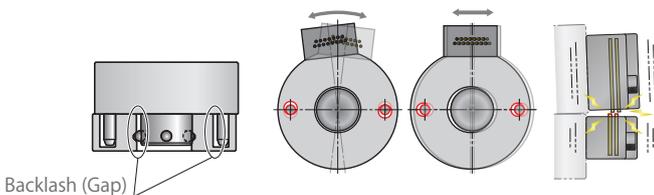


Zero-Backlash Connection with Dual Contact

Backlash of Changer Causes Electrode Error
Noise and Continuity Failure due to Friction of Contact Probe

Kosmek Hand Changer with No Backlash
Prevents Electrode Error

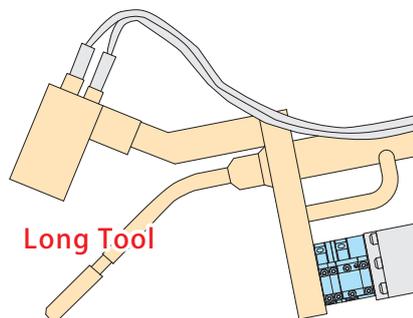
No Noise



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.



High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

General Cautions

Related Products for Washing Application

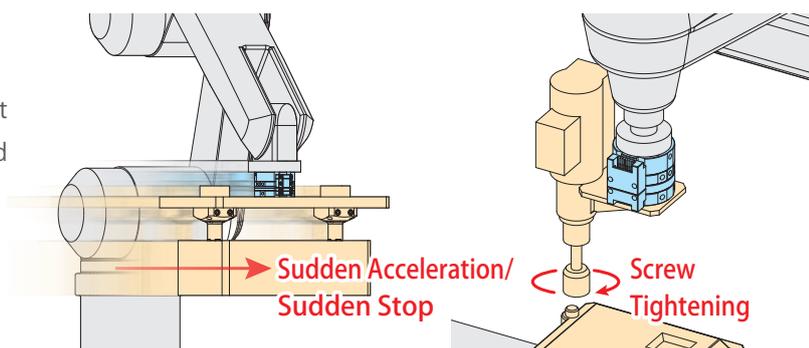
Company Profile
Sales Offices

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.



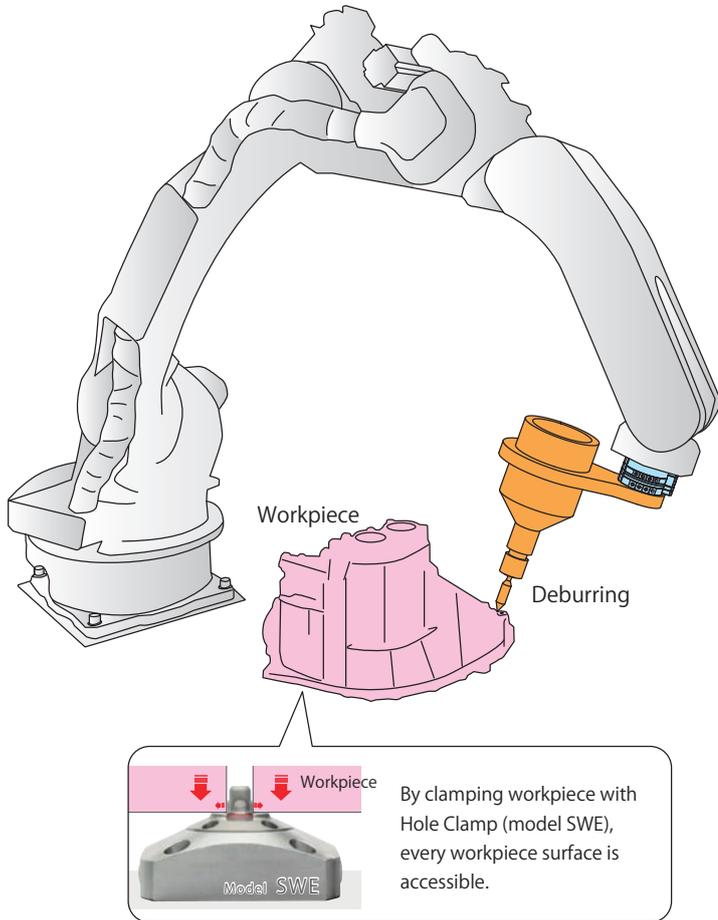
Allowable Weight : 3kg ~ 120kg

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



Hand Change

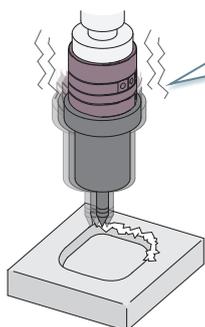


Withstands Heavy Load with Non-Backlash Function

Strong to "bending" and "torsion" with high rigidity.

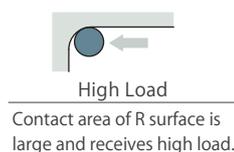
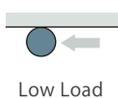
It ensures stable production even with offset transfer hand or heavy load deburring.

General Changer

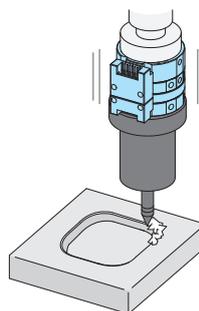


Backlash on Changer Part

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.



Kosmek Robotic Hand Changer



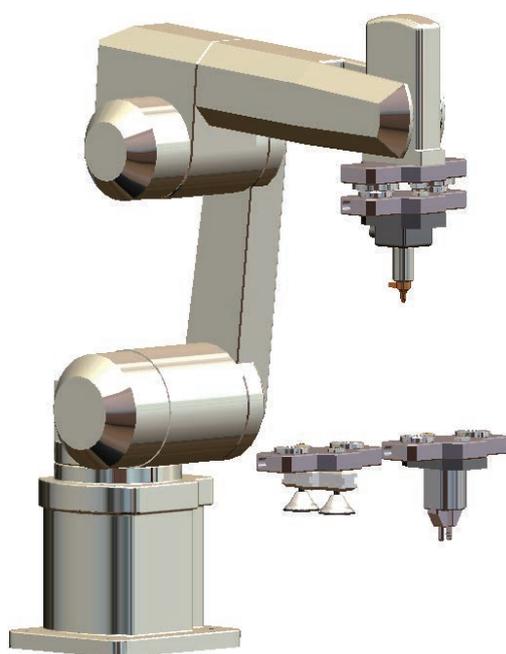
No Backlash on Changer Part

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

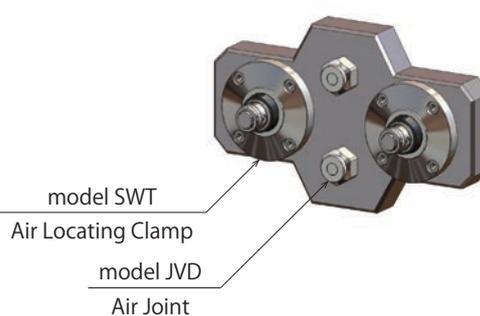
It also withstands high load of casting deburring.

Increase in Allowable Weight with SWT Air Locating Clamp

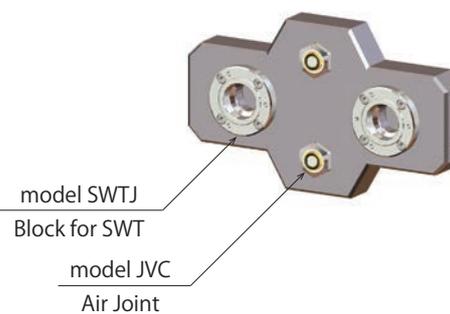
By using Kosmek Air Locating Clamp SWT, Robotic Hand Changer can be used for larger robots. It is able to install Kosmek Air Joint as well.



Master Side (Robot Side)



Tool Side



High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

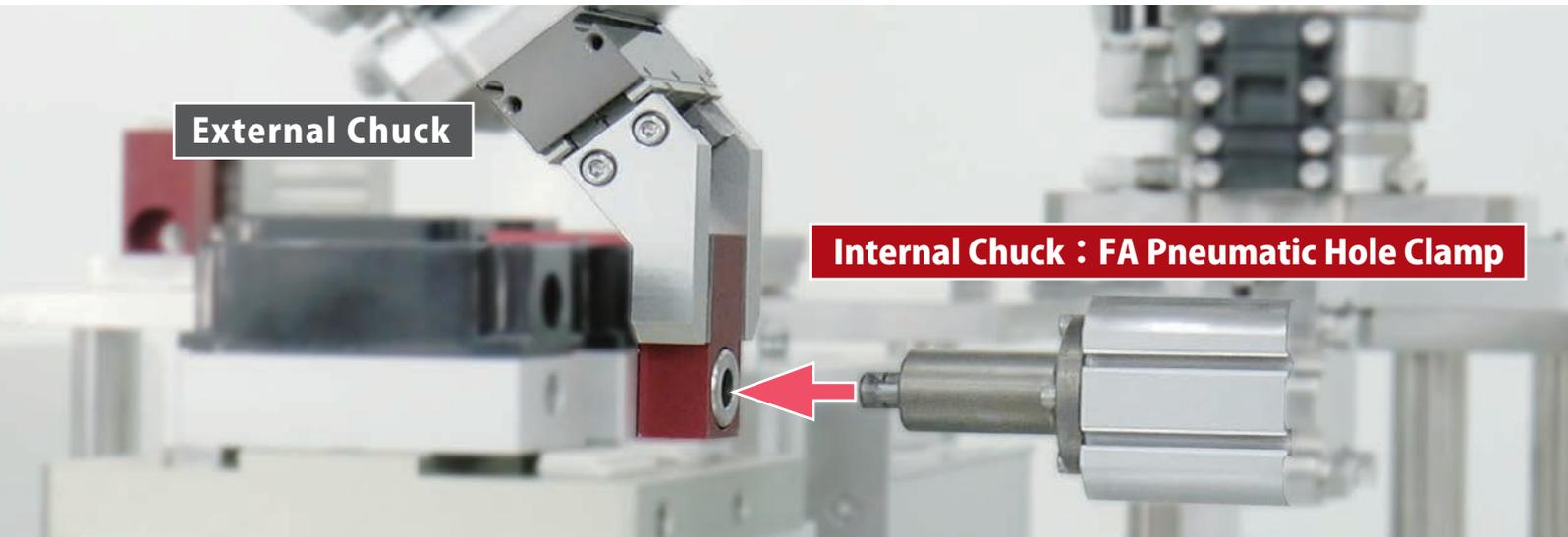
WHZ-MD

General Cautions

Related Products
for Washing Application

Company Profile
Sales Offices

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 $\phi 6 \sim \phi 13$ 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 $\phi 6 \sim \phi 14$ 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



Air Lock / Air Release



Workpiece Washing Examples with High-Power Pneumatic Hole Clamp

Model SWE

High-Power Swing Clamp for Washing Application

WHJ

High-Power Link Clamp for Washing Application

WCJ

Air Flow Control Valve

BZW

Manifold Block

WHZ-MD

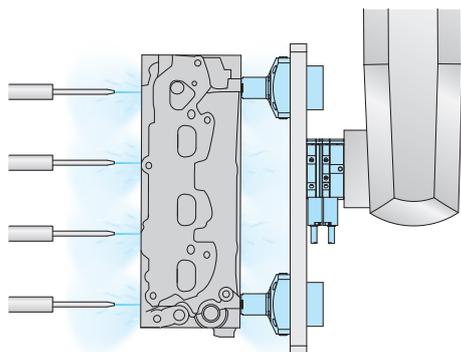
General Cautions

Related Products for Washing Application

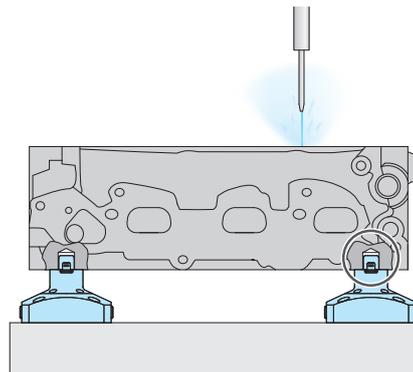
Company Profile
Sales Offices

Chuckling Inside of Workpiece Holes Allows for

Thorough Washing with no interference



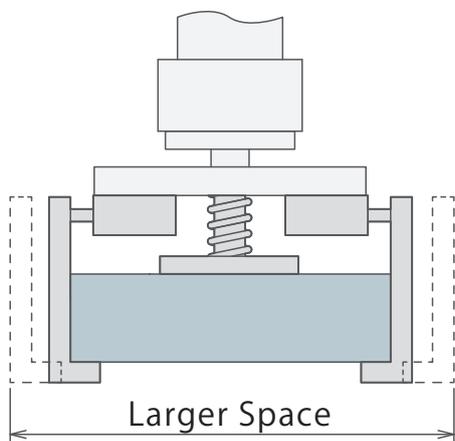
As Robotic Hand



As Fixture Pallet

Chuckling Inside of Workpiece Holes Allows for

Compact and Light Applications

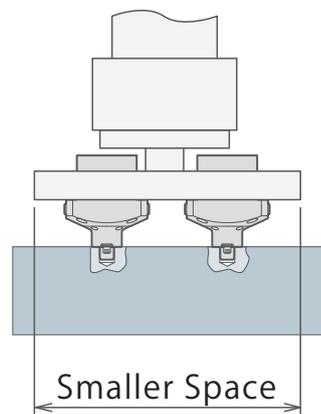


Larger Space

Linear Cylinder Holding Periphery



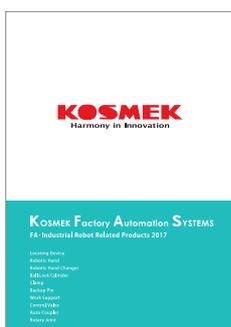
Reduce the Hand Weight



Smaller Space

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

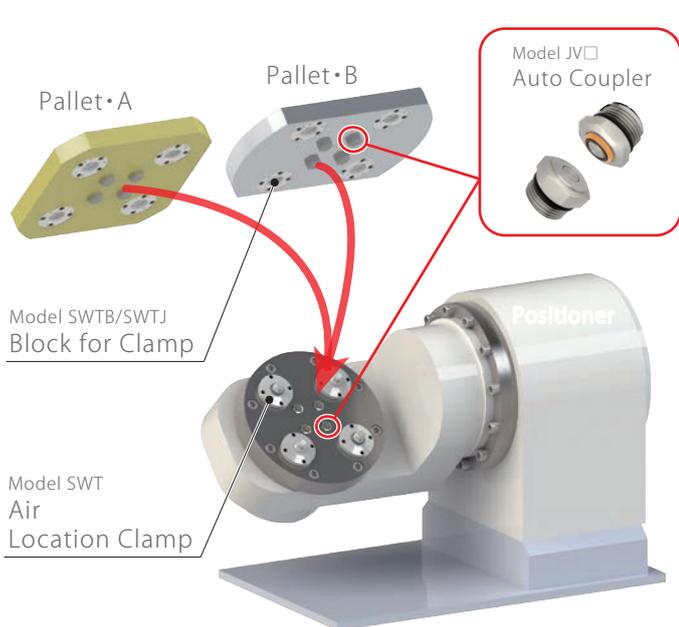
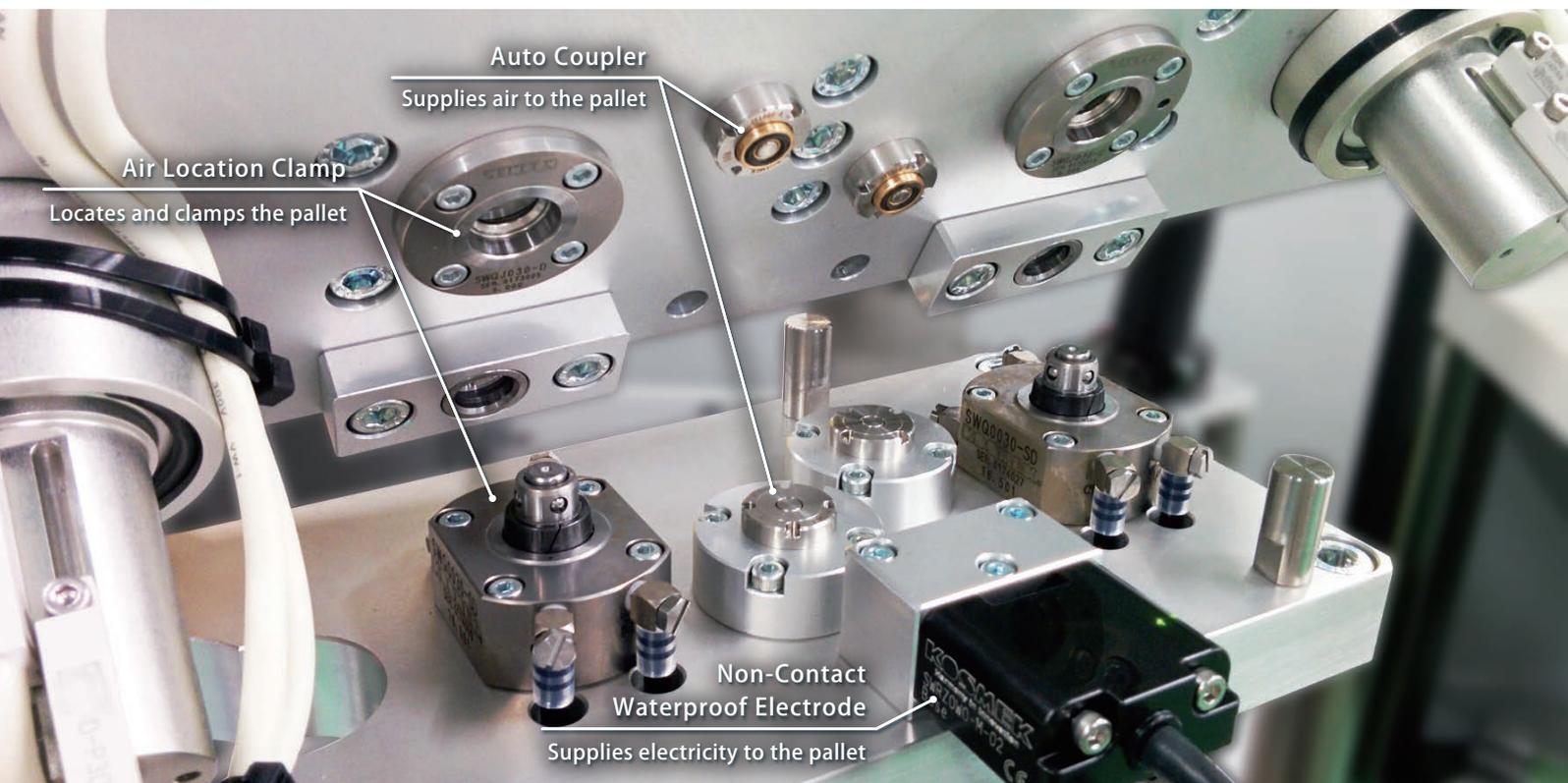
Compact Location Clamp

Model SWQ

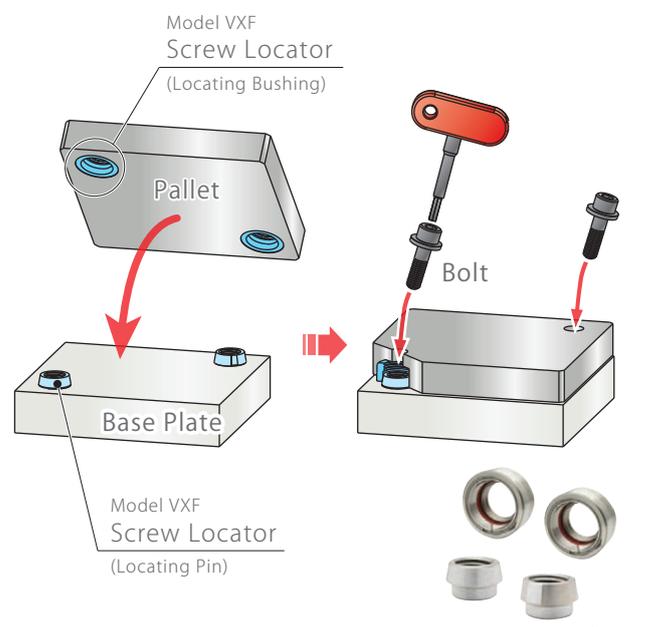
Locates and clamps a fixture on a positioner simultaneously.

[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



Pneumatic Location Clamp

Model **SWT**

With Foreign Substance Prevention for Machine Tools, etc.

Locating Repeatability : 3 μm



High-Power Pneumatic Pallet Clamp

Model **WVS**

High-power model that exerts equivalent clamping force with hydraulic clamps.

Locating Repeatability : 3 μm



High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

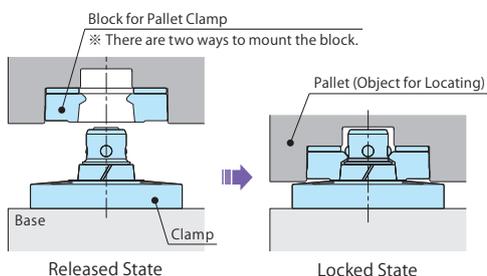
WHZ-MD

General Cautions

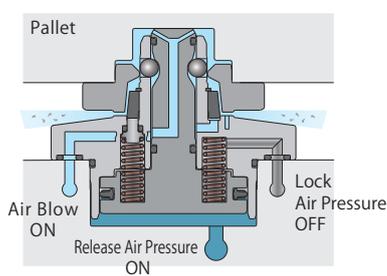
Related Products
for Washing Application

Company Profile
Sales Offices

Action Description



Air Blow and Seating Check

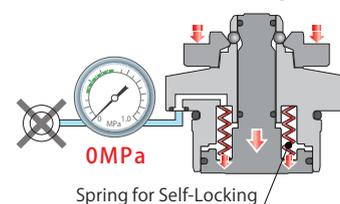


Foreign substance dust is flushed out by air blow.
Seating surface is provided with the air hole.
Use the gap sensor for seat check.

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

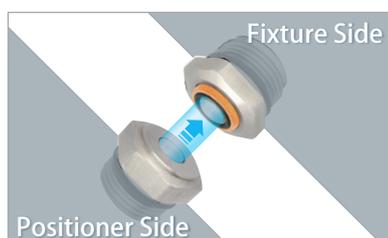
Auto Coupler

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

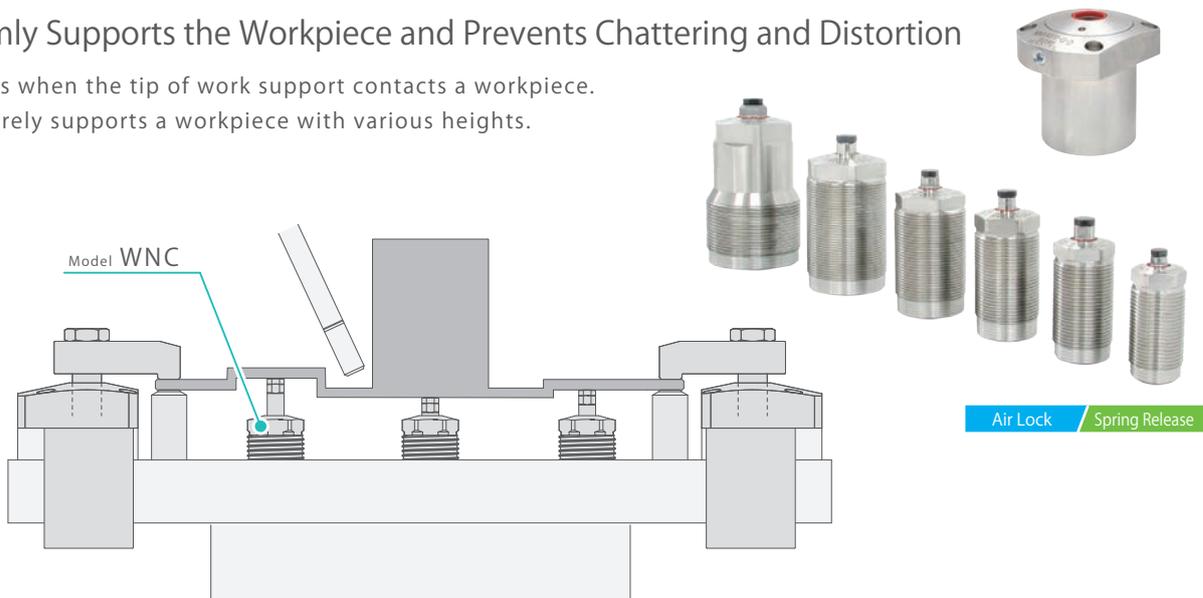
Powerful Support for Unstable Parts

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

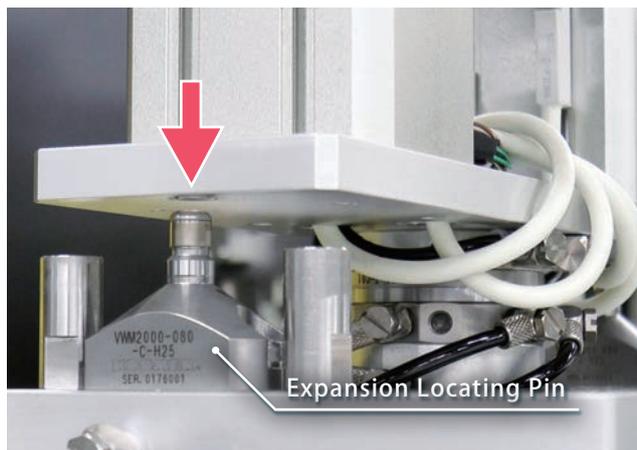
Model WNC / WNA

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.



High Accuracy Locating of Workpiece • Pallet



Expansion Locating Pin

Model VWM / VX

Zero Clearance with High Accuracy Locating Pin

Workpiece Hole Diameter : $\phi 8 \sim \phi 20$



Model VWM

Locating Repeatability $3 \mu\text{m}$

Air + Spring Lock / Air Release

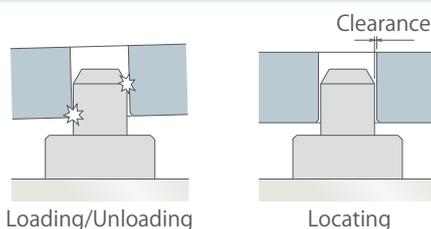


Model VX

Locating Repeatability $5 \mu\text{m}$

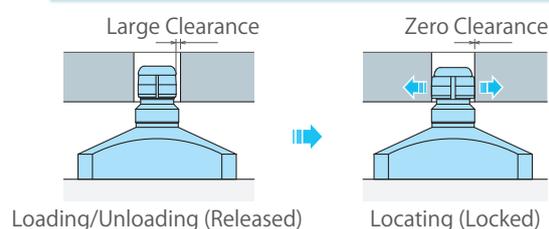
Manual Lock / Manual Release

Fixed Pin



Difficult to Load/Unload
Some Clearance

Expansion Locating Pin



Easy to Load/Unload
Zero Clearance and High Accuracy

MEMO

High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

WHZ-MD

General Cautions

**Related Products
for Washing Application**

Company Profile
Sales Offices

Product Line-up



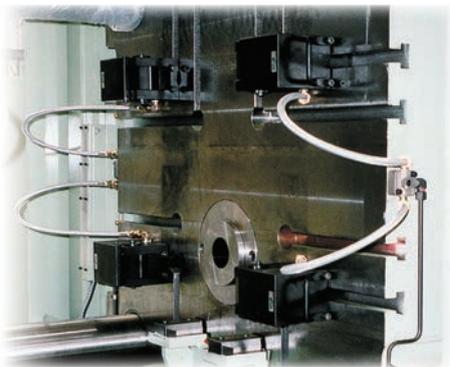
■ Quick Die Change Systems

FOR PRESS MACHINES



■ Kosmek Factory Automation Systems

FACTORY AUTOMATION INDUSTRIAL ROBOT RELATED PRODUCTS



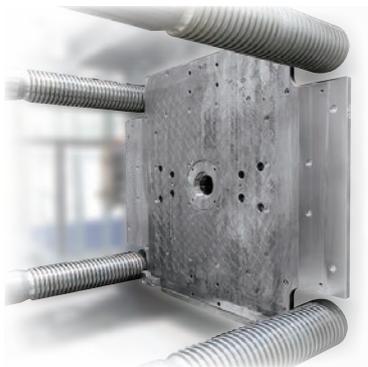
■ Diecast Clamping Systems

FOR DIECAST MACHINES



■ Kosmek Work Clamping Systems

MACHINE TOOL RELATED PRODUCTS



■ Quick Mold Change Systems

FOR INJECTION MOLDING MACHINES

High-Power
Swing Clamp for
Washing Application

WHJ

High-Power
Link Clamp for
Washing Application

WCJ

Air Flow
Control Valve

BZW

Manifold
Block

WHZ-MD

General Cautions

Related Products
for Washing Application

Company Profile
Sales Offices

KOSMEK

Harmony in Innovation

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