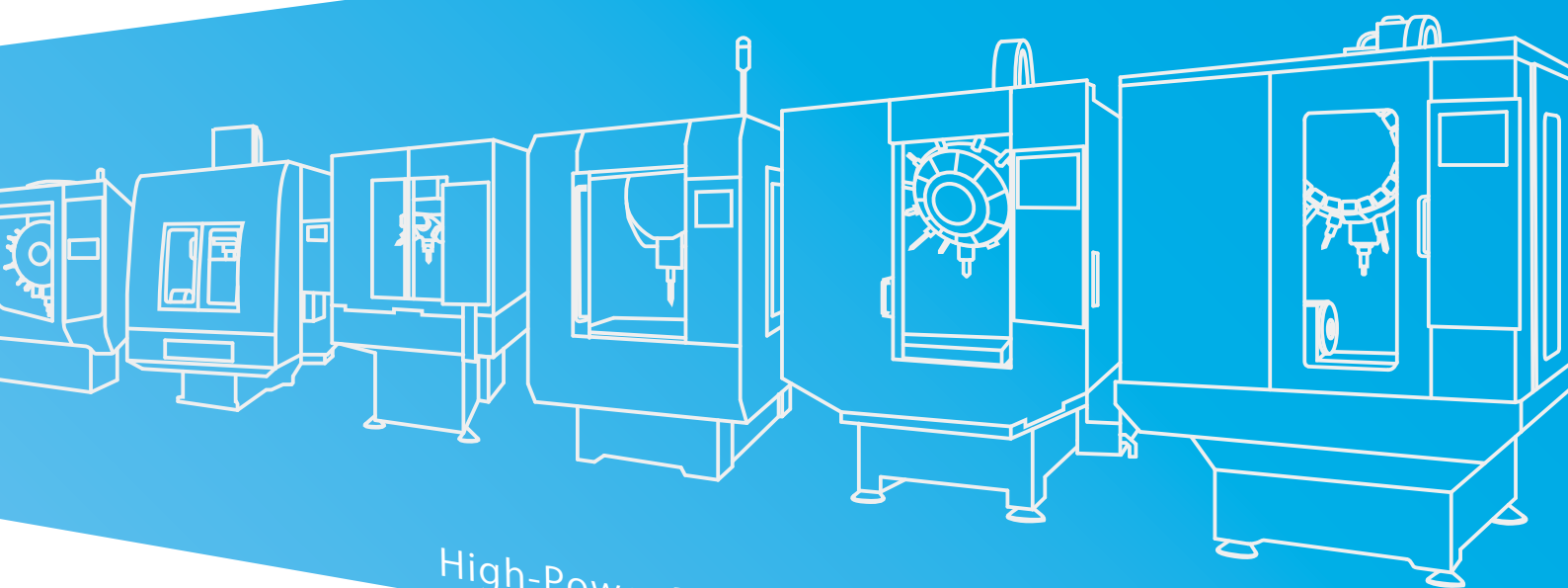


HIGH-POWER
Pneumatic
Series

High-Power Pneumatic Series *for BT30 Machining Centers*



High-Power Pneumatic Series for BT30 Machining Centers

High-Power Pneumatic Series

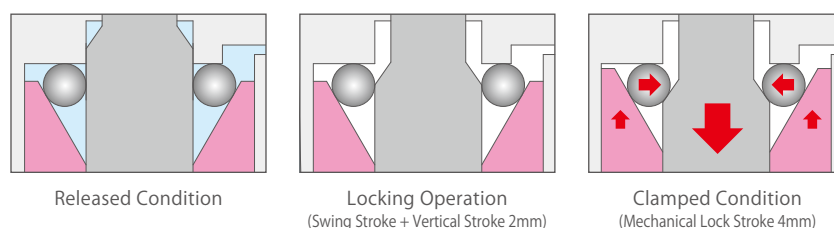
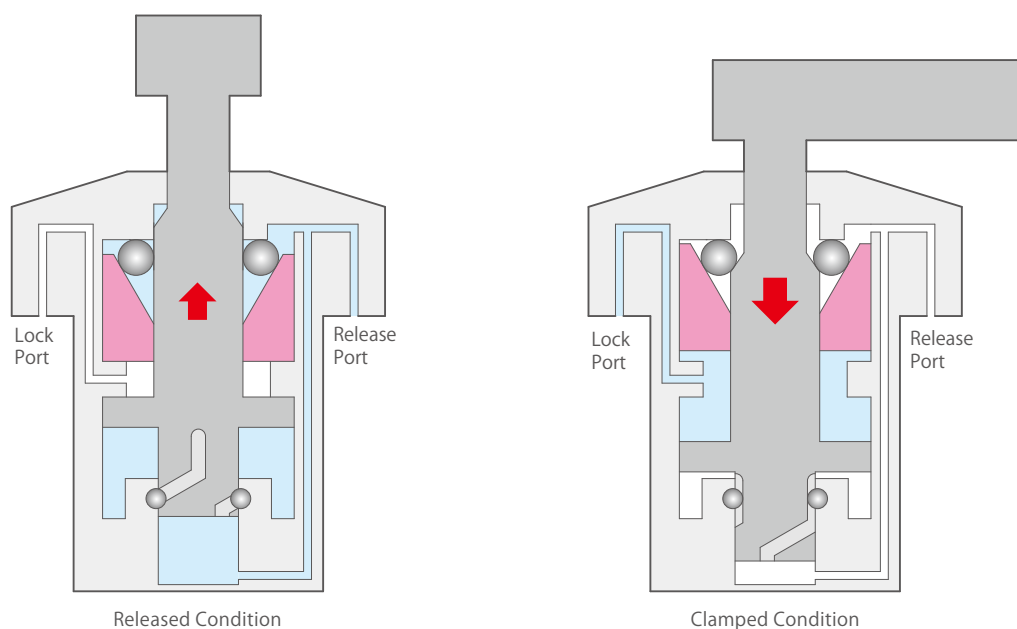
25,000 units of pneumatic

2011.11 ~ 2018.02

Higher Clamping Force with

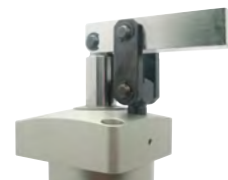
High-Power Pneumatic Clamp with Mechanical Locking System PAT. P

※ The drawing shows the swing clamp.





Model WHE



Model WCE

fixture systems have been sold!!

Built-In Mechanical Lock

(Wedge Mechanism)

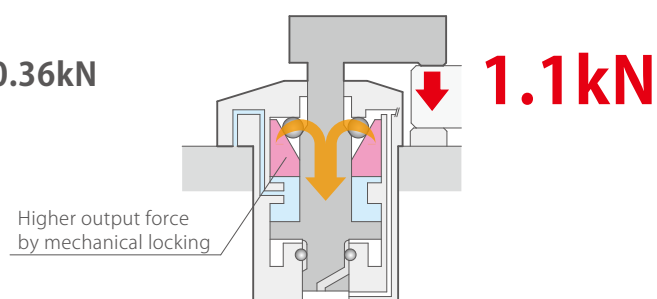
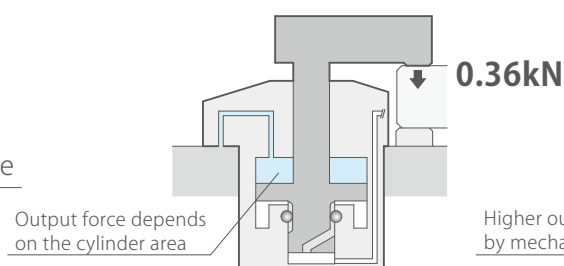
Main Features of High-Power Pneumatic Clamp

Reference comparison of cylinders with piston diameter $\phi 40$ (Air Pressure 0.4MPa, Lever Length 60mm)

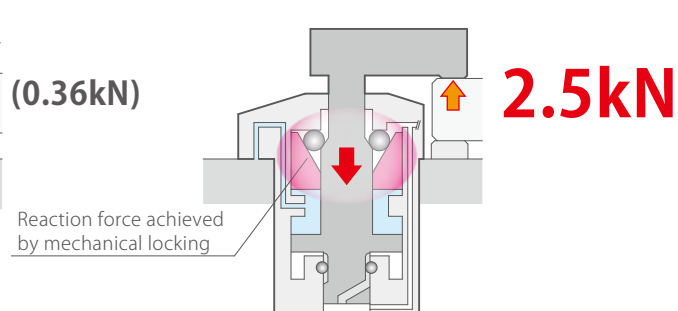
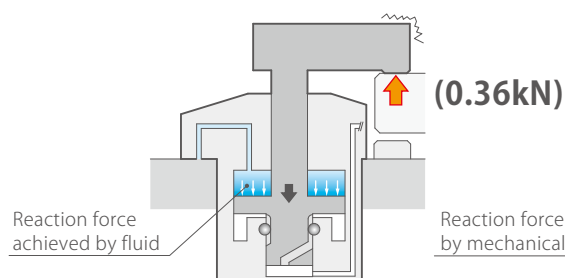
Comparison Pneumatic Clamp
model WHA0400

High-Power Pneumatic Clamp
model WHE1600

Clamping Force

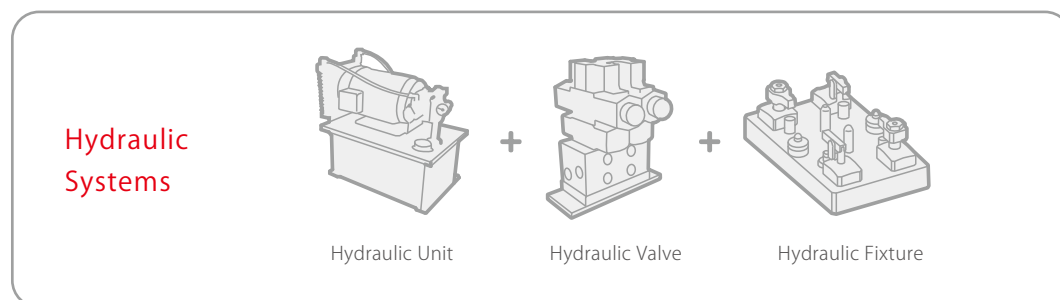


Holding Force



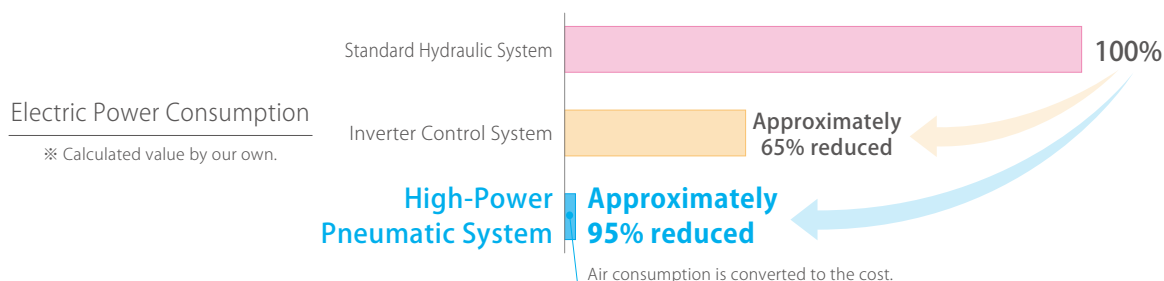
Advantages of High-Power

(**Hydraulic Clamp** → **High-Power Pneumatic Clamp**)



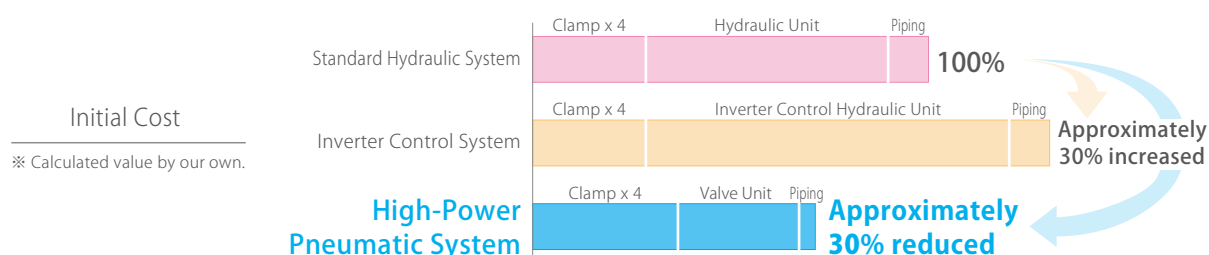
Energy-Saving

High-power pneumatic system requires only air resulting in cost reduction.
No hydraulic unit required. Reduction of electric power consumption/CO2.



Cost-Reduction

The initial cost of high-power pneumatic system is much less than that of hydraulic system.
The running cost is also reduced with less maintenance.



Pneumatic Systems



Model WHE



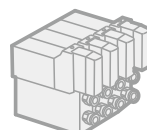
Model WCE

High-Power
Pneumatic
Systems



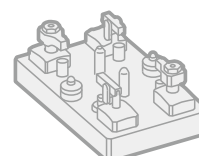
Air Compressor

+



Pneumatic Valve

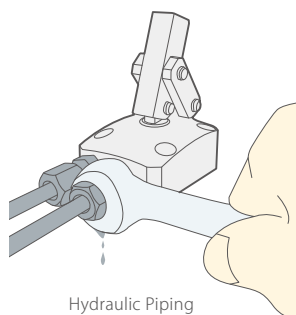
+



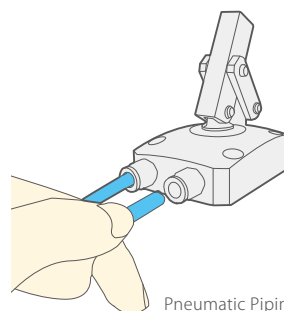
High-Power Pneumatic Fixture

Less Workload

Installation is easily done with air piping, since there is no need of hydraulic piping.
It is the solution to problems such as fluid leakage and temperature effects.



Hydraulic Piping



Pneumatic Piping

High Power

Holding force with mechanical locking (wedge) function withstands the reaction force similar to hydraulic clamps. Also, it enables high speed machining on both front and back faces.

Displacement Amount

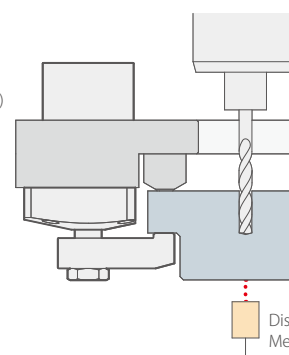
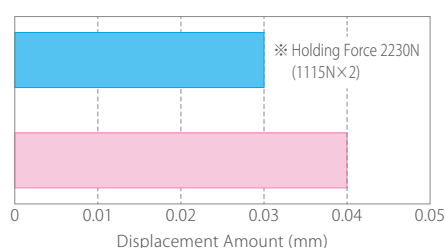
※ Results of machining by our own.

【 Machining Condition 】

Drill Diameter	8.5 mm	Cutting Speed	25 m/min
Main Axis Revolution	936 rpm	Feed Speed	0.100mm/rev
Workpiece Material	S45C	Clamping Force	860N (430N×2)

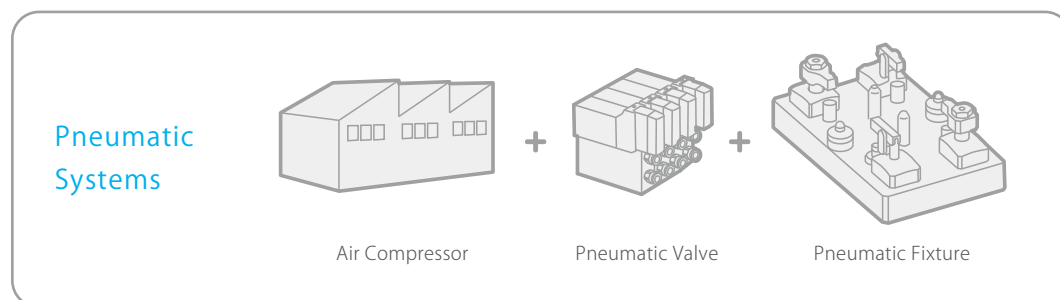
High-Power Pneumatic Clamp
(model WHE1000)

Hydraulic Clamp
(model LHA0360)


 Displacement Amount
Measurement Sensor

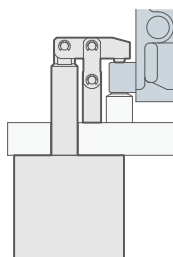
Advantages of High-Power

(Pneumatic Clamp → High-Power Pneumatic Clamp)

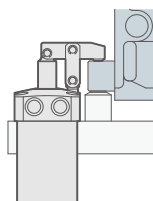


Smaller Footprint

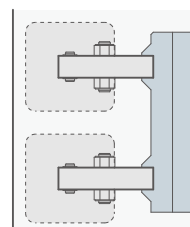
Smaller cylinders, more compact fixtures! High-power pneumatic clamp exerts approximately 3 times higher clamping force than the same size comparison pneumatic cylinder.



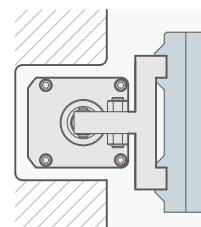
General Pneumatic Cylinder **High-Power Pneumatic Clamp**



More Compact



General Pneumatic Cylinder **High-Power Pneumatic Clamp**



The number of clamps can be reduced

High Speed

Holding force with mechanical locking (wedge) function enables high speed machining on the back face.

Displacement Amount

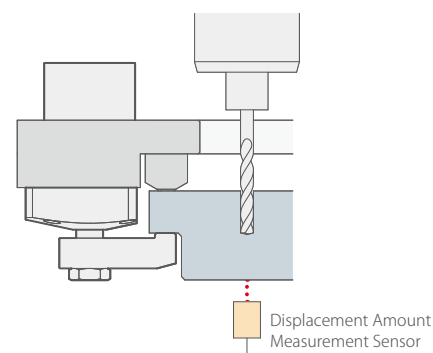
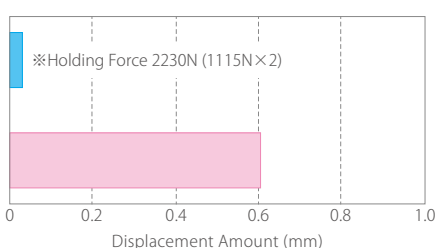
※ Results of machining by our own.

High-Power Pneumatic Clamp
(model WHE1000 Cylinder Outer Diameter $\phi 46$)

Comparison Pneumatic Clamp
(model WHA0320 Cylinder Outer Diameter $\phi 46$)

【 Machining Condition 】

Drill Diameter	8.5 mm	Cutting Speed	25 m/min
Main Axis Revolution	936 rpm	Feed Speed	0.100mm/rev
Workpiece Material	S45C	Clamping Force	860N (430N×2)



Pneumatic Systems



Model WHE



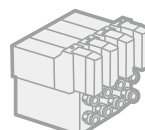
Model WCE

High-Power
Pneumatic
Systems



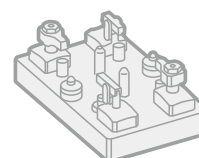
Air Compressor

+



Pneumatic Valve

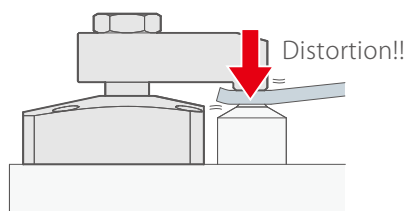
+



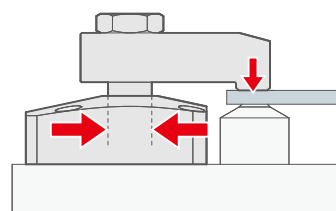
High-Power Pneumatic Fixture

High Quality

Optimum clamping force does not distort workpiece and holding force is strong enough to withstand machining loads.



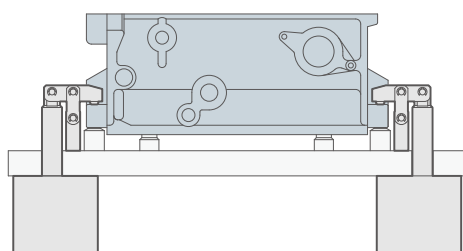
Strong clamping force distorts the workpiece.



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

Light Weight

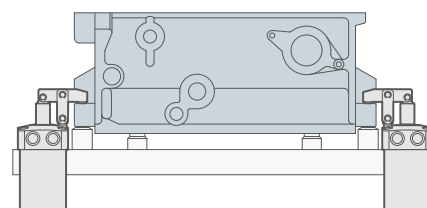
By reducing the weight of fixture, the load to equipment is minimized such as NC table.



General Pneumatic Cylinder

Fixture Weight
10% reduced

※ Reference when
workpiece size is 300×260



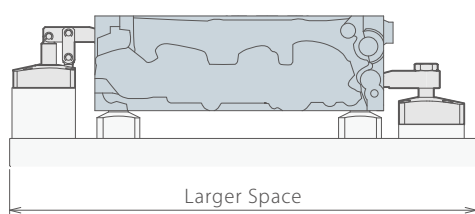
High-Power Pneumatic Clamp

High-Power Pneumatic Series

No Interference • Minimum Setup

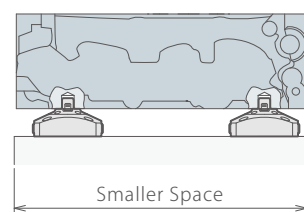
Smaller Footprint • Light Weight

By reducing the weight of fixture, the load to equipment is minimized such as NC table.



Comparison Pneumatic Clamp

Fixture Weight
25% reduced
※ Reference when
workpiece size is 300×230

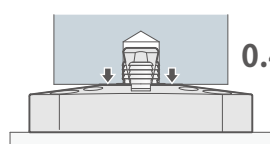


High-Power Pneumatic Hole Clamp

High Power

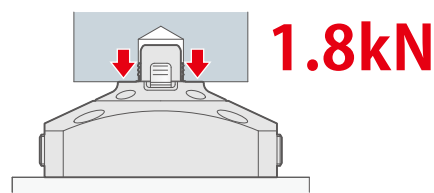
Equivalent clamping force to hydraulic clamp is achieved by mechanical locking (wedge) function.

Clamping Force at Air Pressure 0.4MPa



Comparison Pneumatic Hole Clamp
model SWH2

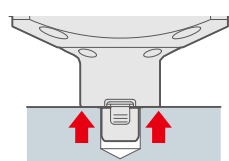
Clamping Force
About 3.75 times



High-Power Pneumatic Hole Clamp
model SWE2000

Safety Function

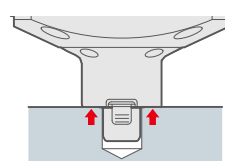
The self-lock function with mechanical lock and internal spring will ensure safety even at 0MPa.



Clamping Force

Air 0.4MPa

1.8kN



Clamping Force

Air 0MPa

0.25kN

※ Indicates the clamping force of SWE2000.



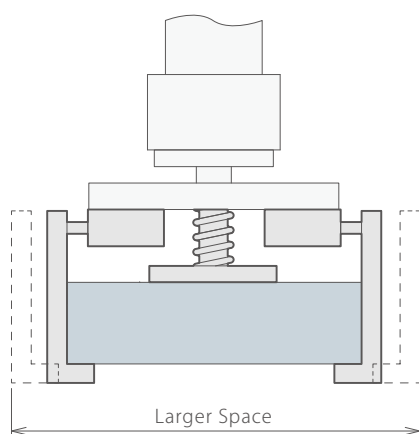
Model SWE

Hole Clamp

• Smaller Footprint

Transfer

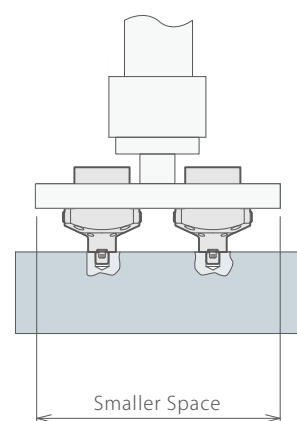
Compact and light weight loading/lifting hand part enables to downsize the transfer equipment.



Loading/Lifting Hand with Linear Cylinder

Mass of hand
45% reduced

※ Reference when
workpiece size is 300×230×120

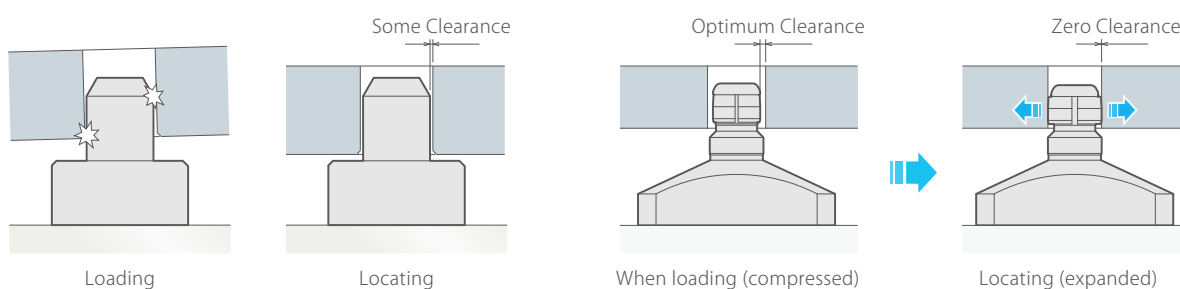


High-Power Pneumatic Hole Clamp

Using SWE with expansion locating pin secures loading/unloading and transfer with a robot.



Model VWM/VWK



Fixed Pin

Expansion Locating Pin

Fixture gets stuck.
Some Clearance

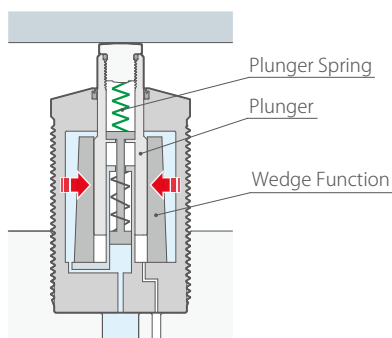
Easy Loading • Zero Clearance
= High Accuracy

High-Power Pneumatic Series

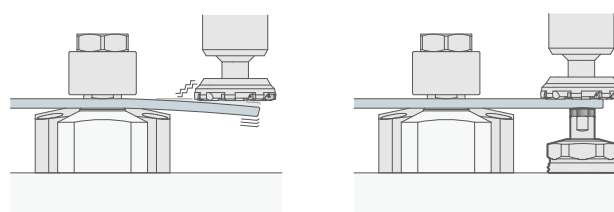
The prevention of chattering and

Chattering Prevention

After the plunger touches the workpiece with slight spring force, it is locked tightly with the wedge function, preventing chattering and deformation of the workpiece.



< Internal Action Image >

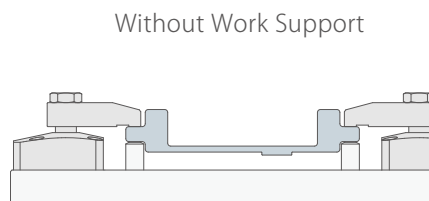


Chattering

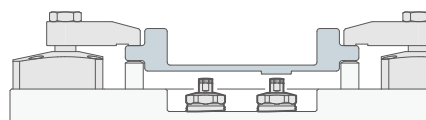
No Chattering!!

Deformation Prevention

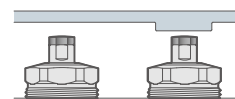
Plunger is locked where it touches the workpiece within the stroke range.



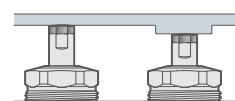
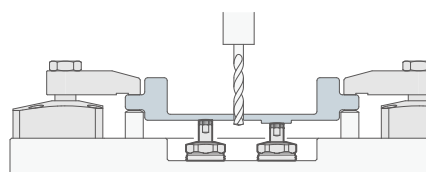
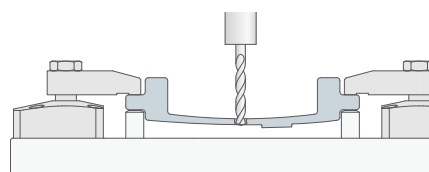
Without Work Support



With Work Support



Before plunger is lifted up



Locked after touching workpiece

Bending

No Bending!!



Model WNC

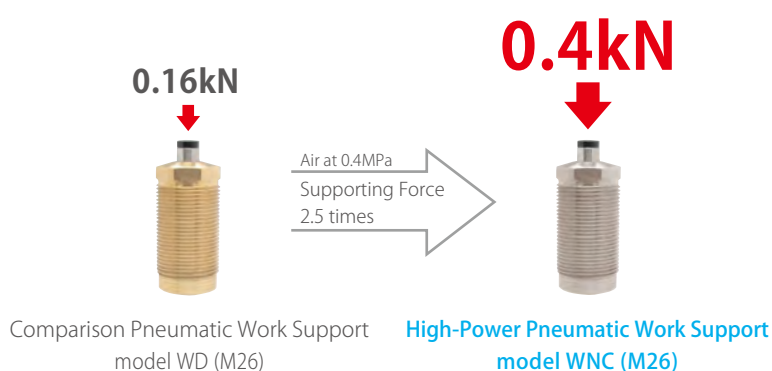
Work Support deformation improves accuracy.

The World's Smallest Work Support Model

The world's smallest size M22 is added



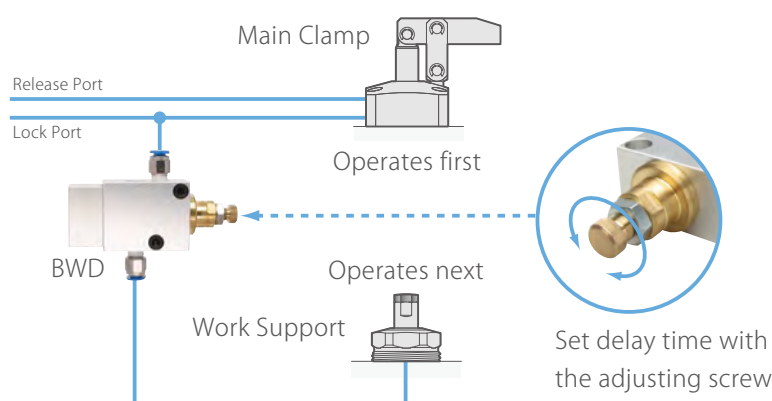
Supporting force is 2.5 times higher than comparison model.



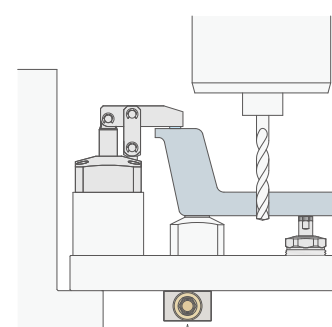
With air sequence valve, it is easy to
add a circuit for work support.



Model BWD



Add the work support circuit by separating clamp circuit.



Able to install BWD on the
back side of fixture

The Fastest Fixture Setup with Powerfully locks the fixtures,

Work Efficiency

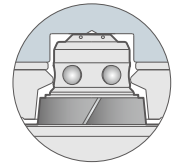
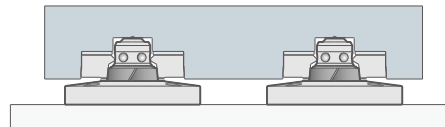
It is very difficult to position 10 kilogram workpiece on fixed pins.
For pallet clamp, anyone can change fixtures with high accuracy.

Fixed Pin + Manual Tightening with Bolt

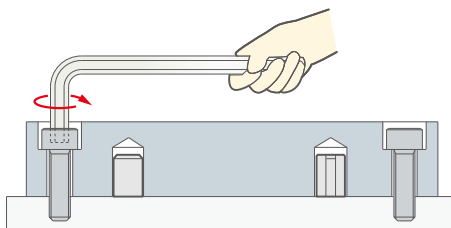


Difficult to load • Apt to get stuck

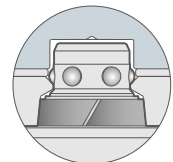
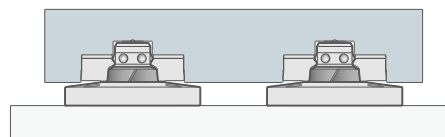
High-Power Pneumatic Pallet Clamp



Easy to load



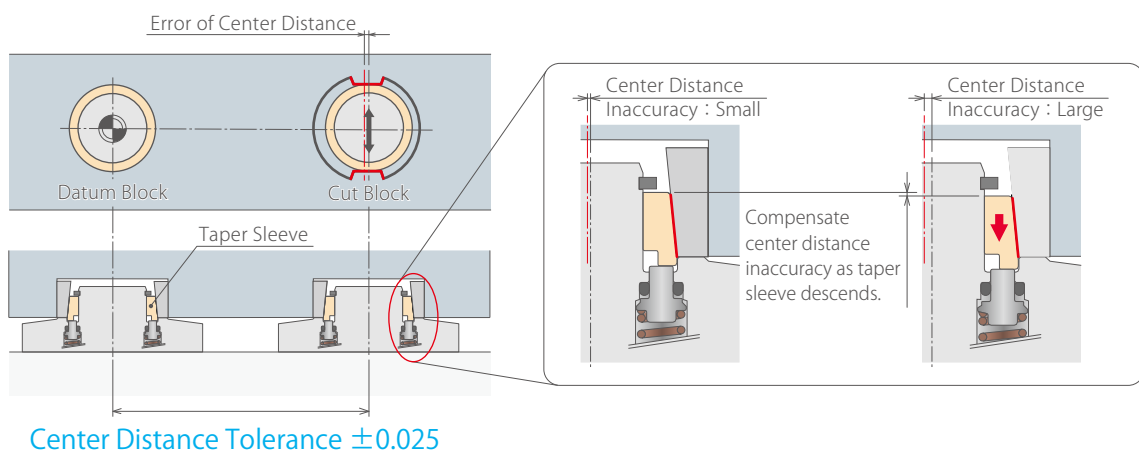
Manual Tightening
Accuracy correction required



Locking in mere seconds
No accuracy correction required

Ensures Accuracy

Locating repeatability is constantly $3\mu\text{m}$ no matter how many fixtures are set to a table ^{Table Fixture} (1 : n).
The Pallet Clamp can compensate center distance inaccuracies with our unique movable taper sleeve technology.



Center Distance Tolerance ± 0.025

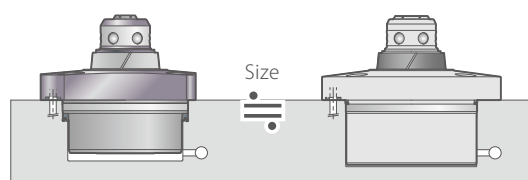


Model WVS

Kosmek Pallet Clamp and locating accuracy is $3\mu\text{m}$

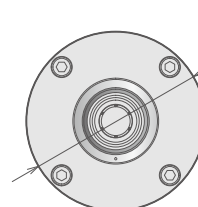
Compact

High-power pneumatic pallet clamp has the same size and equivalent force as hydraulic pallet clamp because of mechanical locking (wedge) function.



Hydraulic Pallet Clamp
model VS

High-Power Pneumatic Pallet Clamp
model WVS



Exterior Diameter : Clamping Force

$\phi 66$: MAX. 4.0kN

$\phi 76$: MAX. 6.3kN

$\phi 94$: MAX. 9.9kN

$\phi 118.5$: MAX. 15.7kN

※ Clamping force when air pressure is at 0.5MPa.

Screw Locator

Locating within $3\mu\text{m}$ just with bolts



Equivalent to
Round Pin

Equivalent to
Diamond Pin

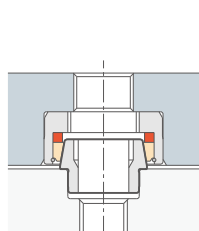
Model VXF

Work Efficiency

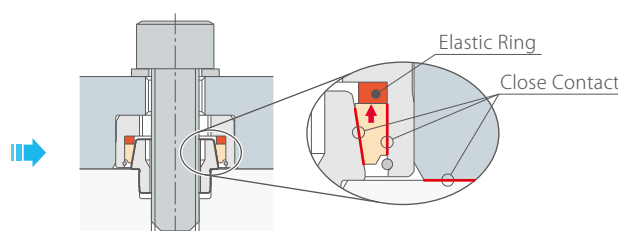
Taper pin prevents chattering, and anyone can change fixtures with high accuracy.

Ensures Accuracy

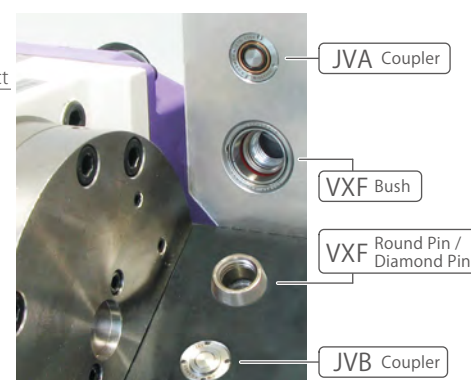
Similar to pneumatic pallet clamp, locating repeatability is consistently $3\mu\text{m}$ no matter how many fixtures are set to a table (1 : n).



< During Pallet Loading >



< Locating Completed >



JVA Coupler

VXF Bush

VXF Round Pin /
Diamond Pin

JVB Coupler

Auto Coupler

JVA/JVB auto coupler can be used with VXF.

Specifications

※ For detailed specifications please refer to our website or catalog.

High-Power Pneumatic Swing Clamp

model **WHE**



Model No.	Exterior Body Diameter	Cylinder Output Force	Operating Pressure Range
WHE0600	φ 40	0.23 ~ 0.57 kN	0.2 ~ 0.5MPa
WHE1000	φ 46	0.39 ~ 0.98 kN	
WHE1600	φ 54	0.63 ~ 1.57 kN	
WHE2500	φ 64	0.98 ~ 2.44 kN	
WHE4000	φ 77	1.54 ~ 3.86 kN	

※ Cylinder output force differs from clamping force/holding force.

High-Power Pneumatic Link Clamp

model **WCE**



Model No.	Exterior Body Diameter	Cylinder Output Force	Operating Pressure Range
WCE0602	φ 40	0.28 ~ 0.59 kN	0.2 ~ 0.5MPa
WCE1002	φ 46	0.45 ~ 0.94 kN	
WCE1602	φ 54	0.77 ~ 1.59 kN	
WCE2502	φ 64	1.20 ~ 2.46 kN	
WCE4002	φ 77	1.92 ~ 3.92 kN	

※ Cylinder output force differs from clamping force/holding force.

High-Power Pneumatic Hole Clamp

model **SWE**



Model No.	Exterior Body Diameter	Clamping Force	Workpiece Hole Diameter	Operating Pressure Range
SWE1000	φ 46	0.7 ~ 1.5 kN	$6.0^{+0.7}_{-0.3} \sim 9.0^{+0.7}_{-0.3}$	0.2 ~ 0.5MPa
SWE2000	φ 54	1.0 ~ 2.2 kN	$9.0^{+0.7}_{-0.3} \sim 13.0^{+0.7}_{-0.3}$	

※ Workpiece hole diameter should be specified in incremental of every 0.5mm.

※ Workpiece Hardness : Less than HB250

High-Power Pneumatic Work Support

model **WNC**



Model No.	Outer Diameter Thread Size	Supporting Force	Operating Pressure Range
WNC0350	M22×1.5	0.03 ~ 0.59 kN	0.25 ~ 0.7MPa
WNC0600	M26×1.5	0.1 ~ 1.0 kN	
WNC1000	M30×1.5	0.2 ~ 1.7 kN	
WNC1600	M36×1.5	0.3 ~ 2.5 kN	
WNC3000	M45×1.5	0.7 ~ 4.8 kN	
WNC6000	M60×2	1.6 ~ 9.0 kN	

High-Power Pneumatic Pallet Clamp

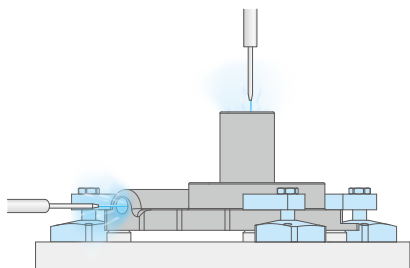
model **WVS**



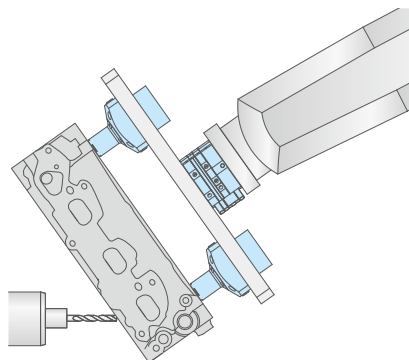
Model No.	Exterior Body Diameter	Clamping Force	Locating Repeatability	Operating Pressure Range
WVS0040	φ 45	2.4 ~ 4.0 kN	0.003mm	0.2 ~ 0.5MPa
WVS0060	φ 55	3.9 ~ 6.3 kN		
WVS0100	φ 69	5.8 ~ 9.9 kN		
WVS0160	φ 87.5	9.0 ~ 15.7 kN		

Application Examples for Non-Machining Equipment

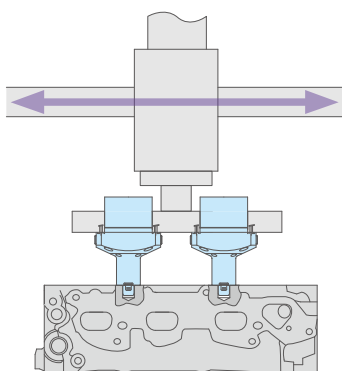
High-Power Pneumatic Series is used not only for machining equipment, but also for various production equipment.



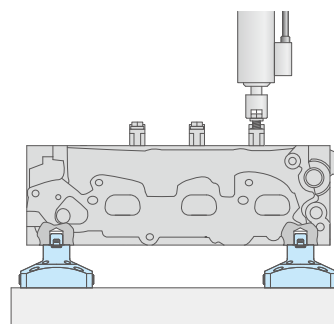
Washers



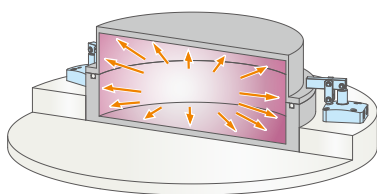
Deburring with Robots



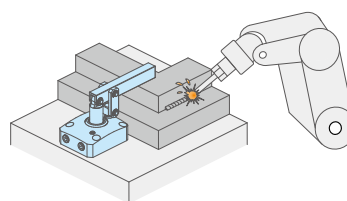
Transfer



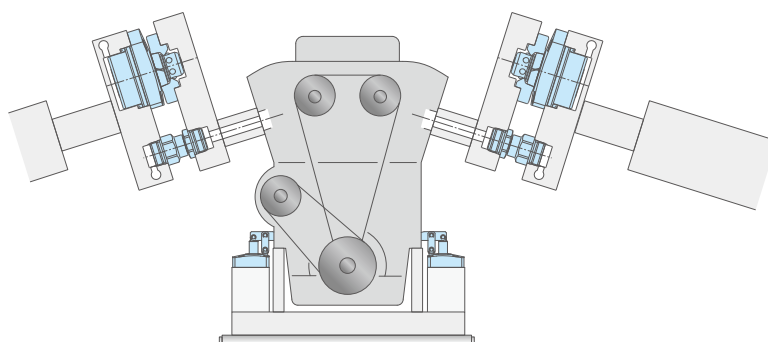
Assembling Equipment



Fixing Pressure Vessel



Welding ※ Please contact us when spatter measure is required.



Testing Equipment

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