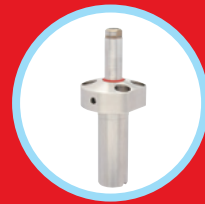


Casebook for Machine Maker

For Improvement of Machine Tools

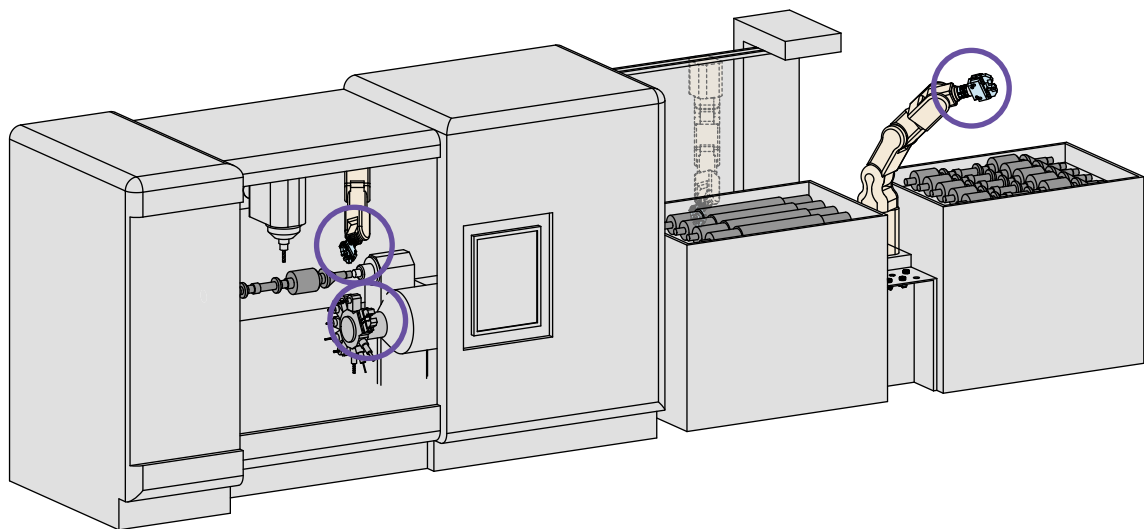


Fusion of Robot + Machining Device

Robotic Hand Changer with Waterproof Electrode

Workpiece Transfer by Hole Clamp and Various Hand Tools

Example : Machining Device with Robot



High-Power
Parallel Gripper



model WPS

Parallel Gripper



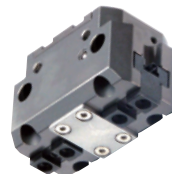
model WPA

Parallel Gripper



model WPH

Two-Jaw Chuck



model WPQ

Three-Jaw Chuck



model WPP

FA Pneumatic Hole Clamp



model WKH

Ball Lock Cylinder



model WKA

High Accuracy Hydraulic Centering Vise



model FVA



model FVD

Robotic Hand Changer with Waterproof Electrode

- **Light • Compact**

Light and Compact Designed Suitable for Small Payload Robots

- **IP67 Protection**

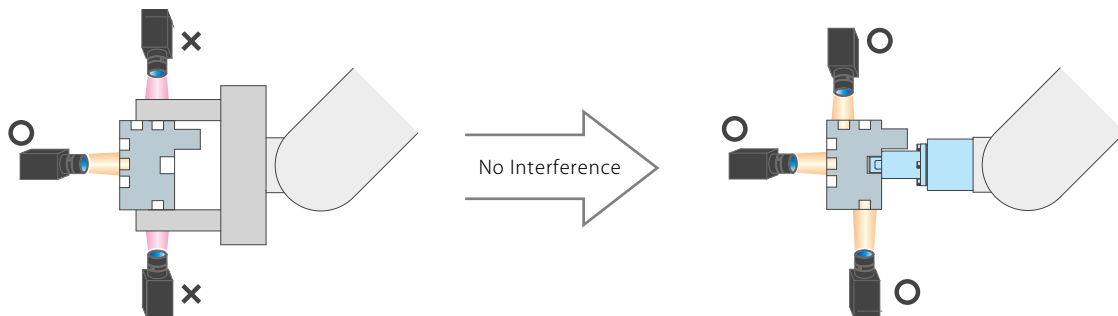
Possible to be used in environment where regular electrode cannot be used.



FA Pneumatic Hole Clamp for Transfer

- **No Interference**

Able to access 5 faces of a workpiece and improves work efficiency.



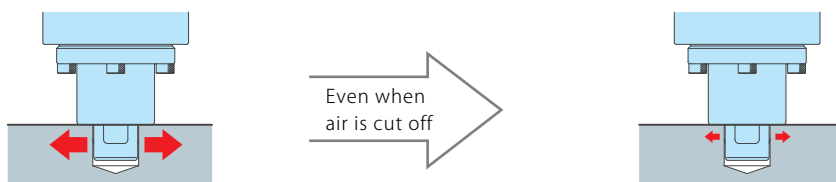
Interference with the hand when holding a workpiece.

5 Faces Accessible with No Interference

- **High Power • Self-Lock Function**

Powerful gripping and clamping force with mechanical lock.

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



Air 0.4MPa

Gripping
Force

1600N

Air 0MPa

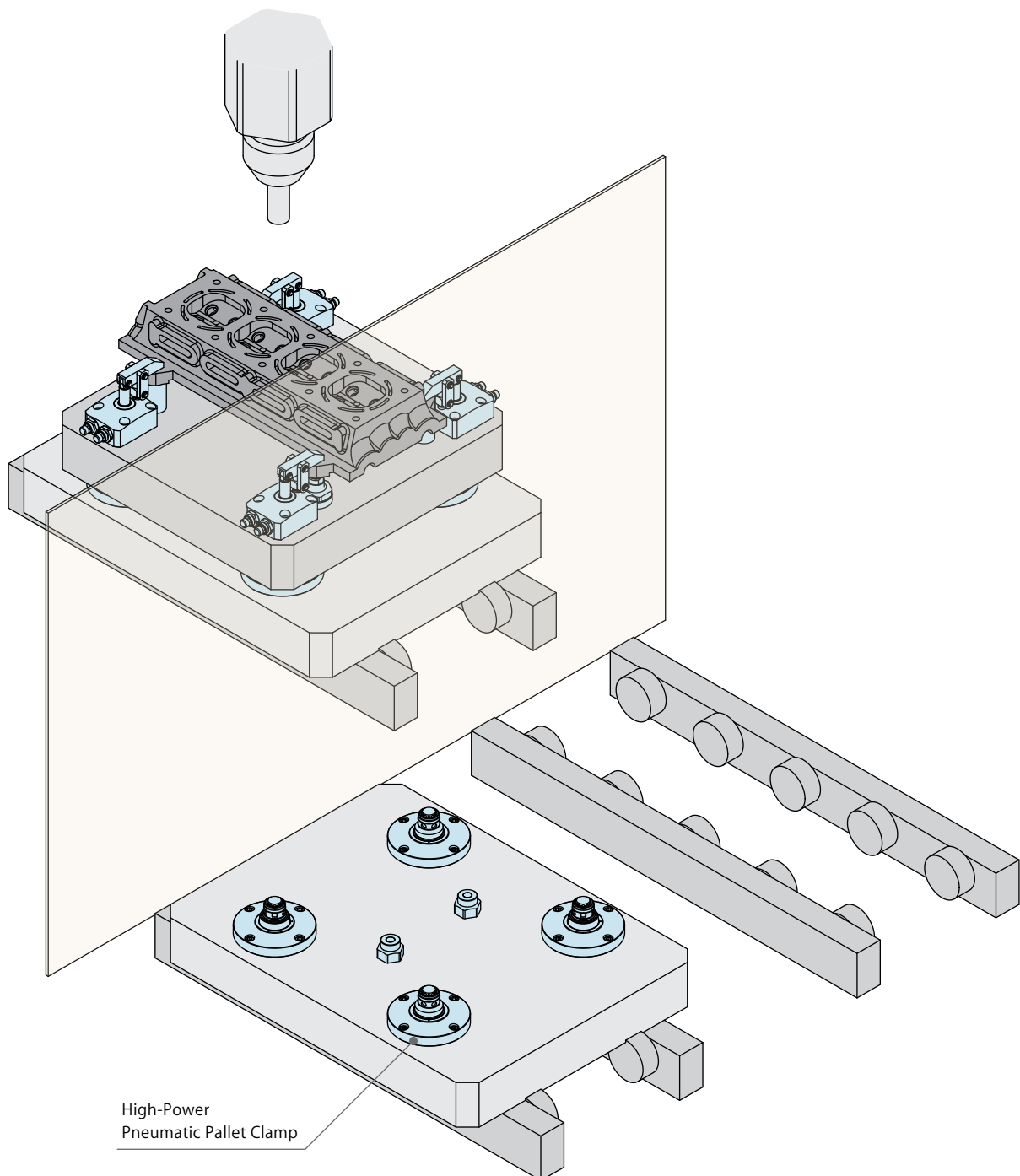
Gripping
Force

220N

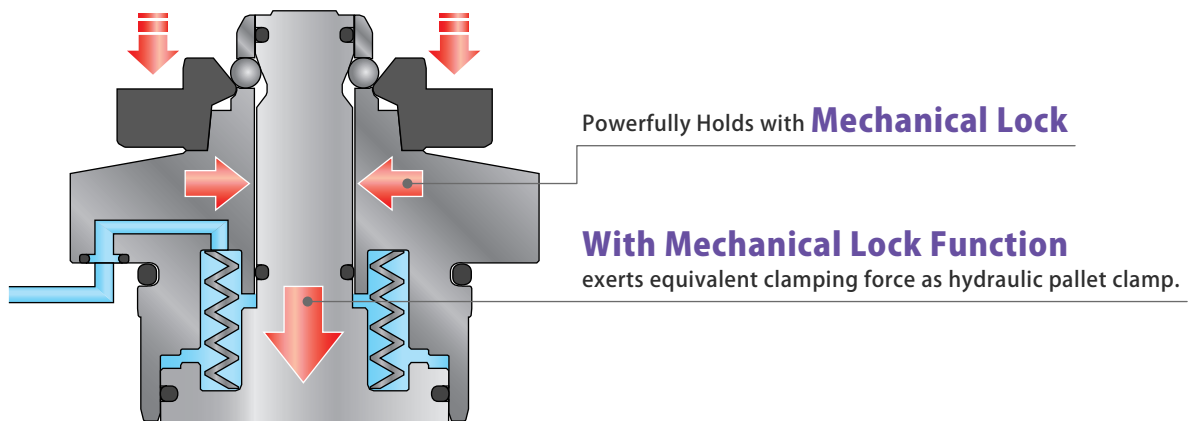
Complete Hydraulic-Less Machine

WVS High-Power Pneumatic Pallet Clamp

Example : Shuttle APC Pallet Clamp

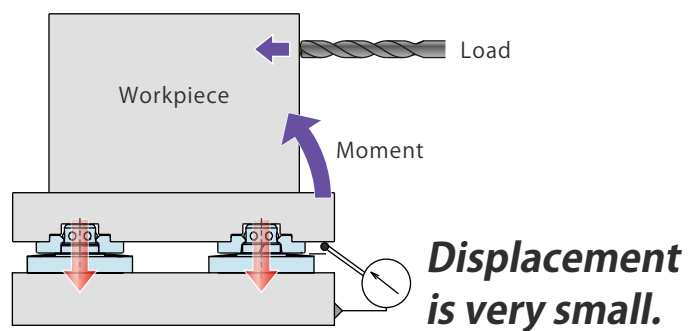


● Stronger Holding Force with Mechanical Lock



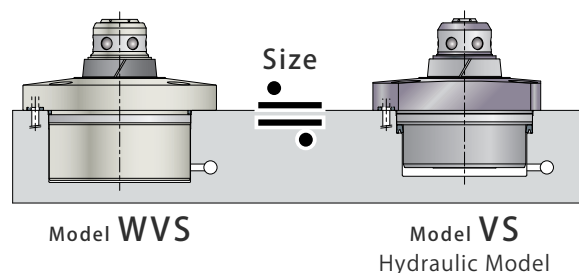
● High Rigidity

With the powerful holding force, it has the equivalent or more rigidity as hydraulic pallet clamp. Also it withstands high machining load.



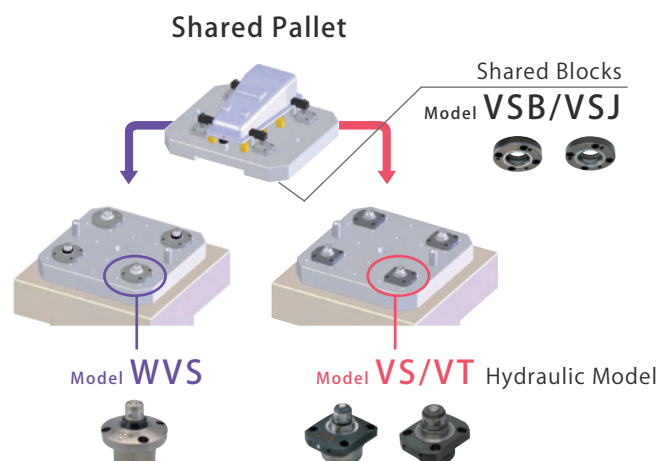
● Compact

WVS is the same size as hydraulic pallet clamp (model VS), yet exerts the equivalent clamping force.



● Shared Pallets

The blocks for pallet clamps (VSB/VSJ) attached to the pallet side are common with WVS clamp and hydraulic clamp (VS/VT). This allows for sharing pallets for both hydraulic pallet clamp (VS/VT) and pneumatic pallet clamp (WVS).



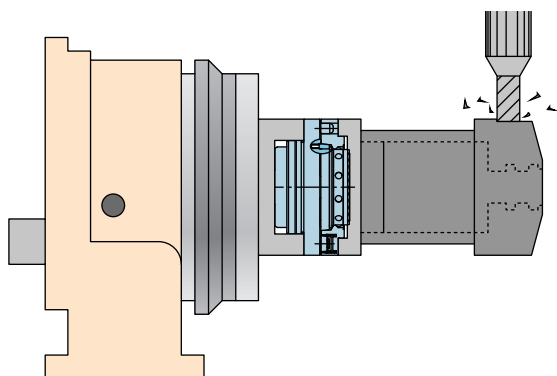
Using only 1 Clamp

High Precision Locating + Powerful Clamping!

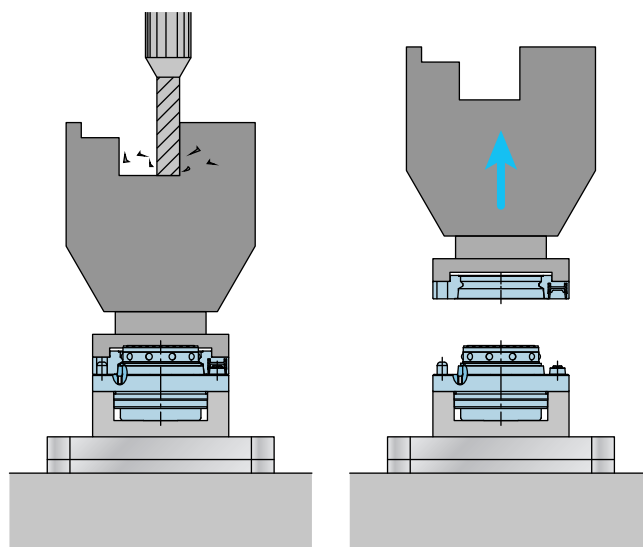
Centering Pallet Clamp

All-In-One High Precision Locating and Powerful Clamping

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

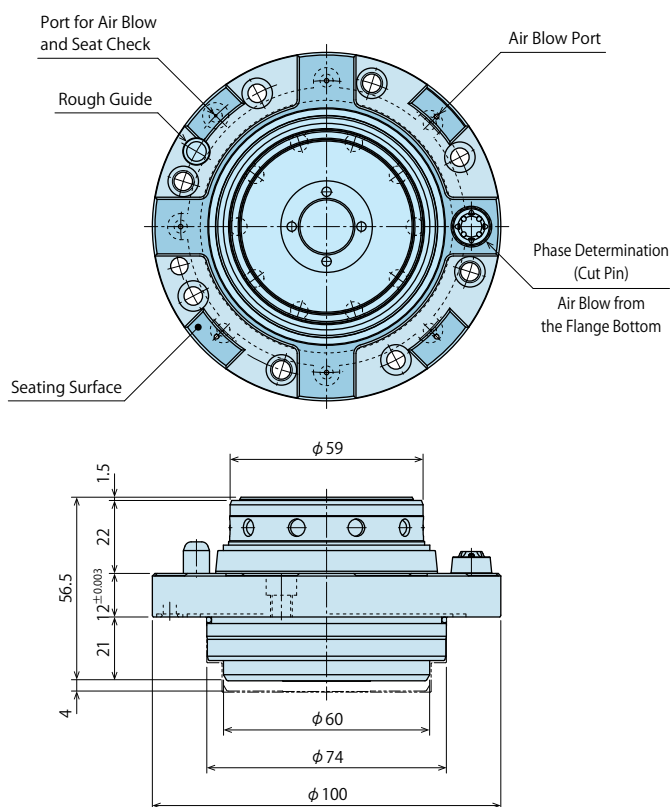


For Index Table



For Machining Centers

Reference Specifications/External Dimensions



Please note this is 10kN clamping force as example. Please contact us for other clamping force, diameter details, and mounting dimension.

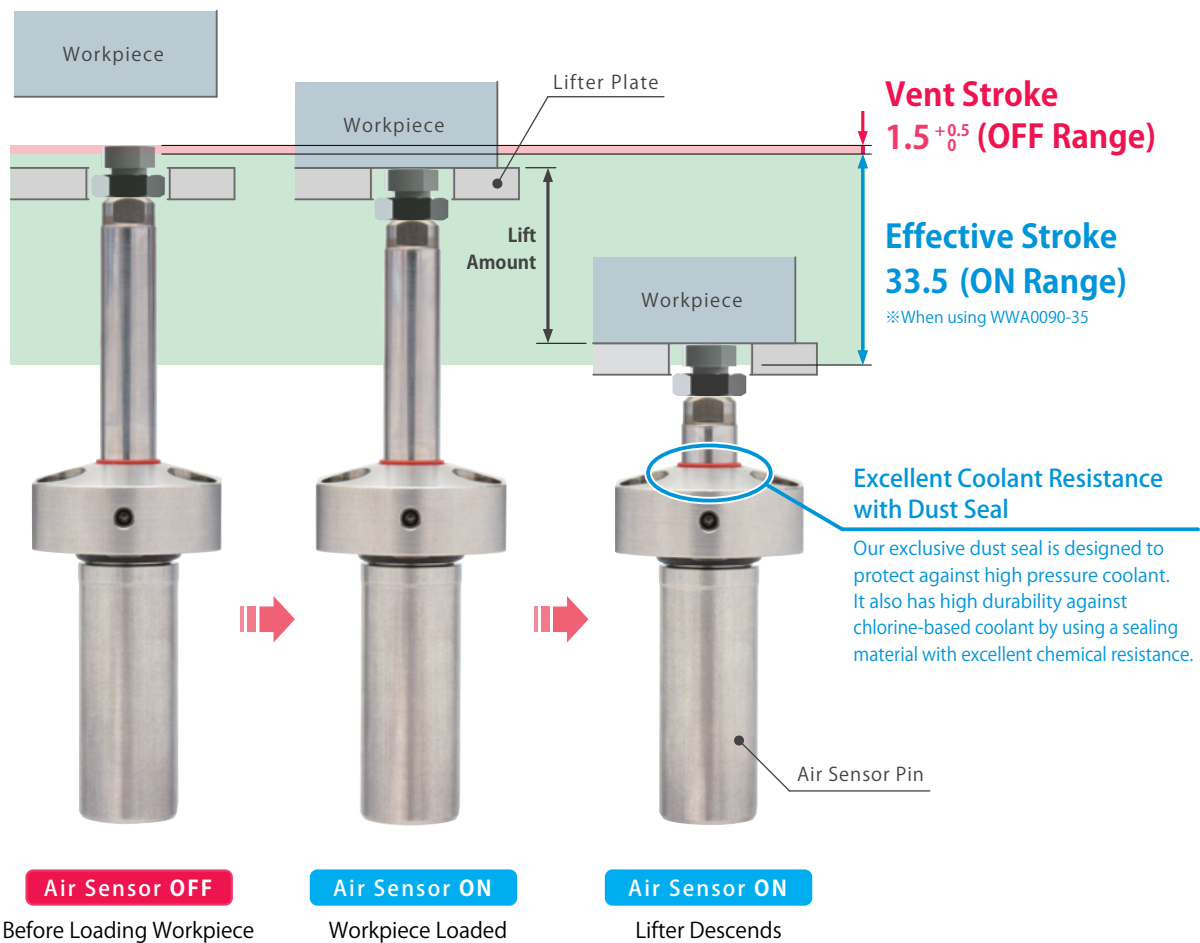
Clamping Force	kN	10
Locating Repeatability	mm	0.003
Full Stroke	mm	3.4
Lift Up Stroke	mm	1.0
Allowable Offset when fixture plate is set	mm	1.2
Lift Up Force	at 7.0 MPa	11.0
	at 5.0 MPa	5.4
	at 3.5 MPa	1.2
Max. Loading Weight	kg	1000
Releasing Cylinder Capacity	cm ³	9.6
Operating Pressure	MPa	7.0
Withstanding Pressure	MPa	3.5
Operating Air Pressure (Air Blow Use)	MPa	10.5
Operating Temperature	°C	070
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32	

Note :

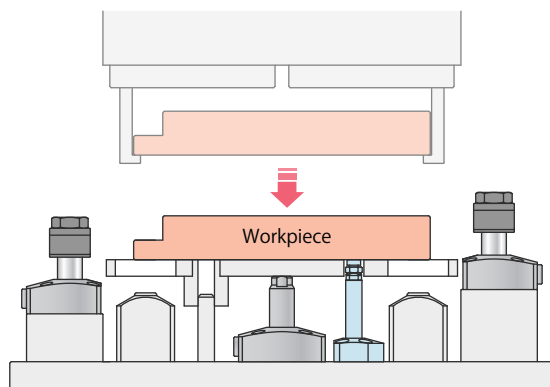
1. This drawing shows the released state.

Detection and Distinction of Workpieces at Automatic Transfer Line!

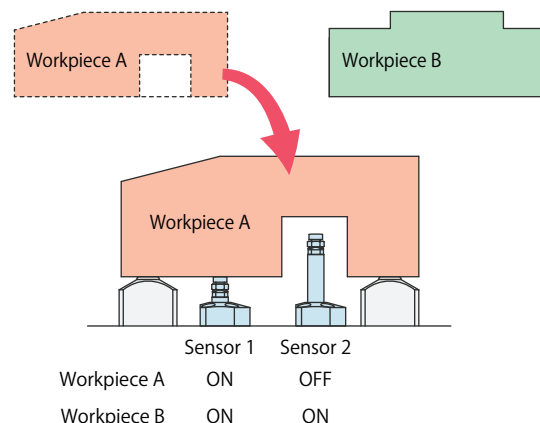
With one air circuit, workpieces can be distinguished by Pneumatic Sensor Pin (model WWA) with air catch sensor.



Application Examples



Detects Workpiece on Automatic Transfer Equipment

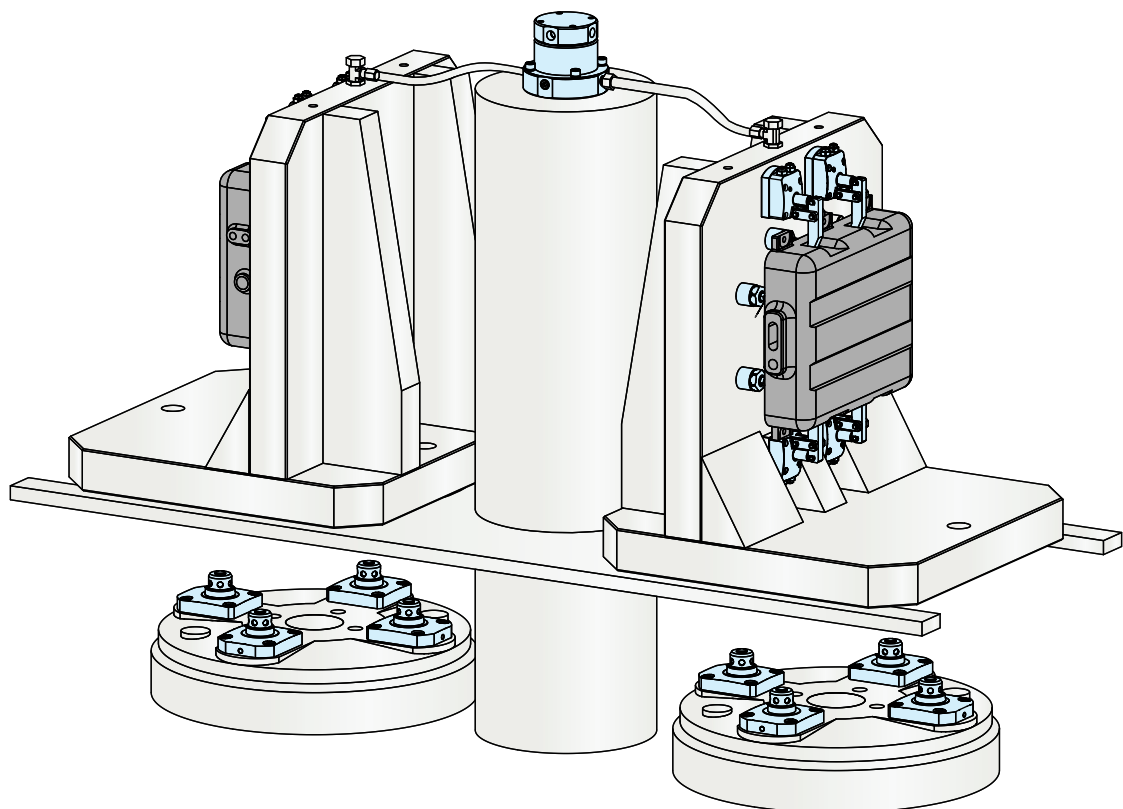


Automatically Distinguishes Different Workpieces (Two Air Sensors)

More Rigidity, Higher Precision for Machine!

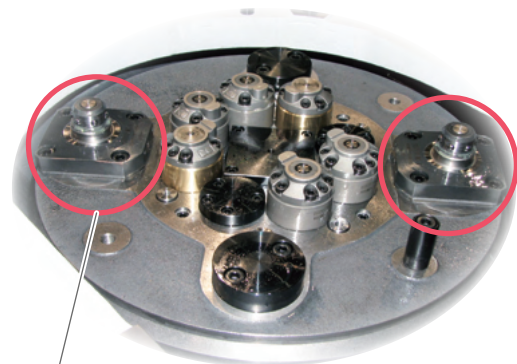
VS Pallet Clamp

Example : Pallet Clamp for APC



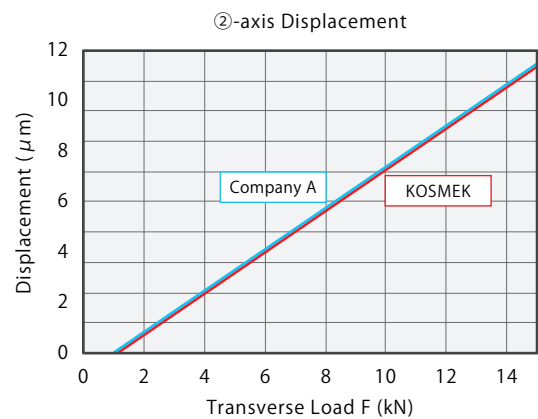
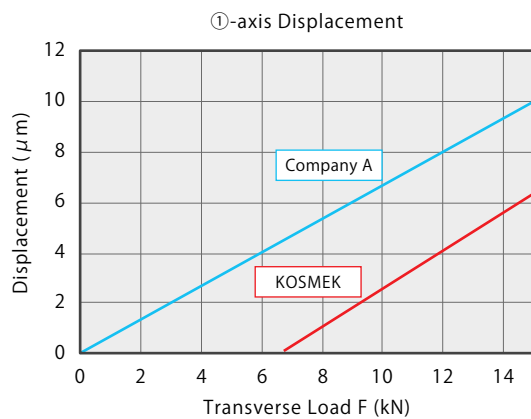
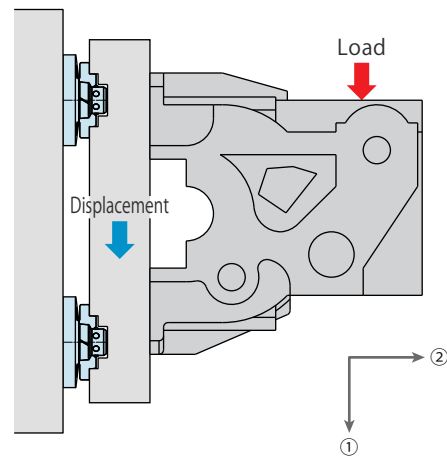
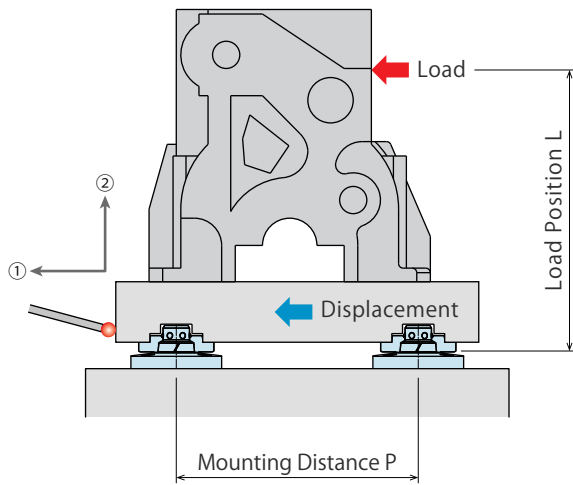
Inside Machine

Set-up Side



VS Pallet Clamp

● Minimal Displacement against Transverse Load



● Components

【Clamp】

VS0100-MD×2 Units
VS0100-MG×2 Units

【Block】

VSJ0100-D×1 Unit
VSJ0100-C×1 Unit
VSJ0100-G×1 Unit

● Requirements

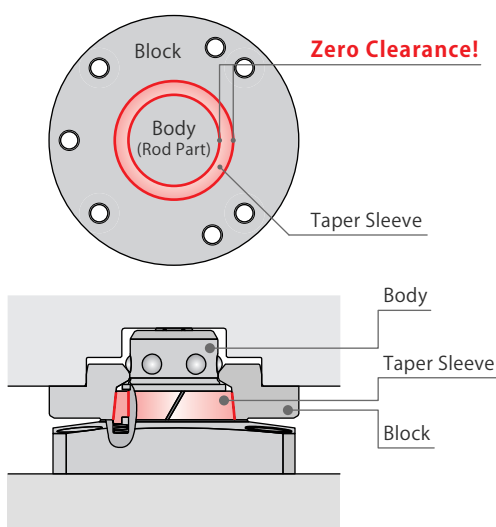
Mounting Distance $P=300\text{mm}$
Load Position $L=350\text{mm}$

● Clamping Force

Total 40kN (10kN×4)

※ Calculated value by our own.

● At clamped state, the body is completely rigid with zero clearance.

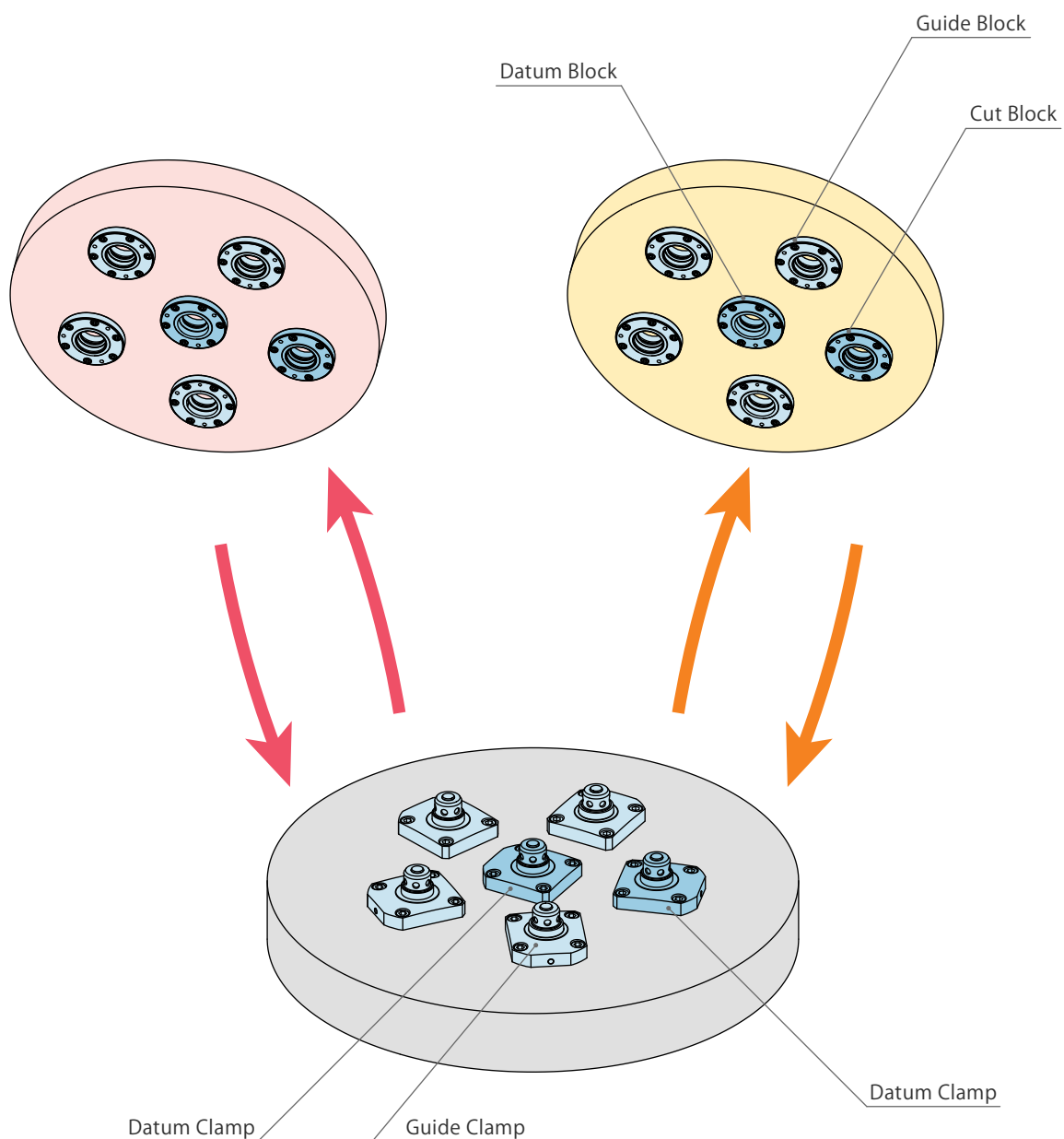


- At clamped state, the body is completely rigid with zero clearance of block, taper sleeve and body.
- Clearance of block, taper sleeve and body is zero. High strength with solid structure.

Centripetal-Requiring Pallet Application

VS Clamp for Turning Lathe Machine

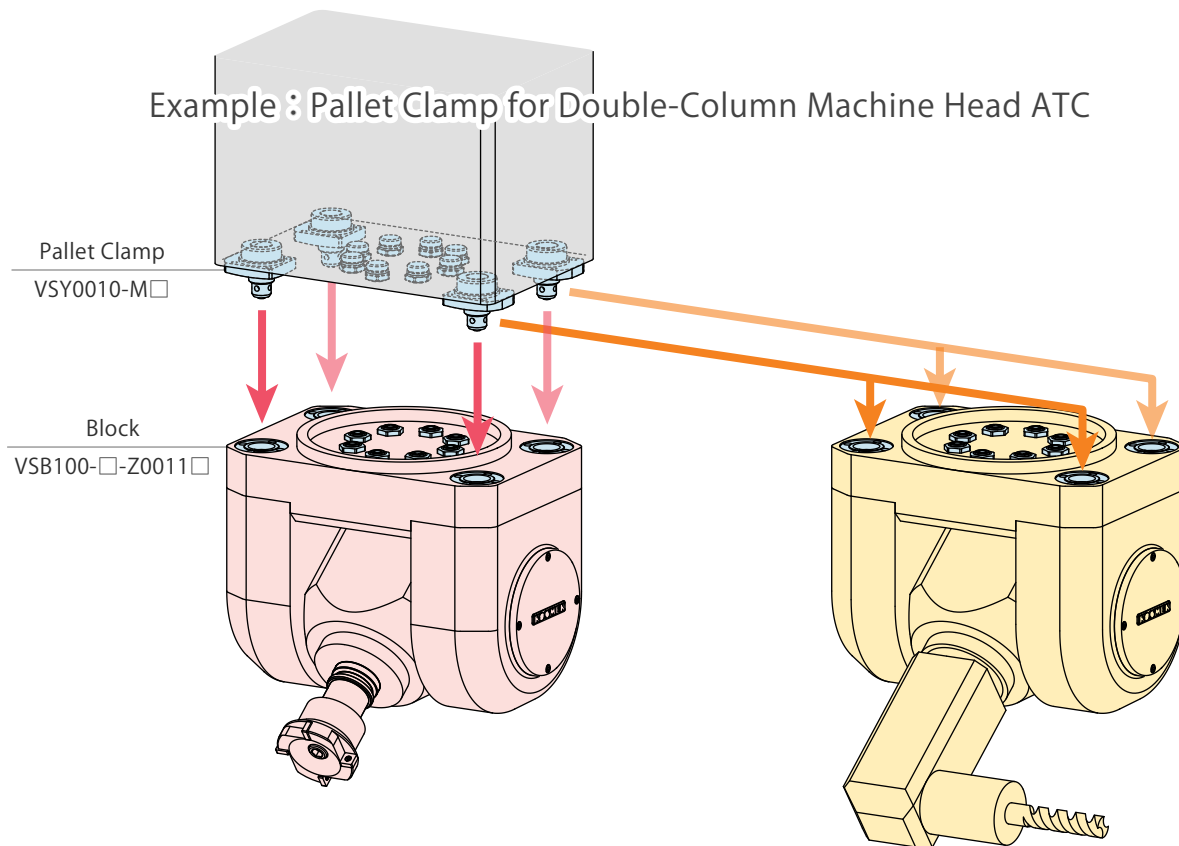
Example : Pallet Clamp for Turning Lathe Machine



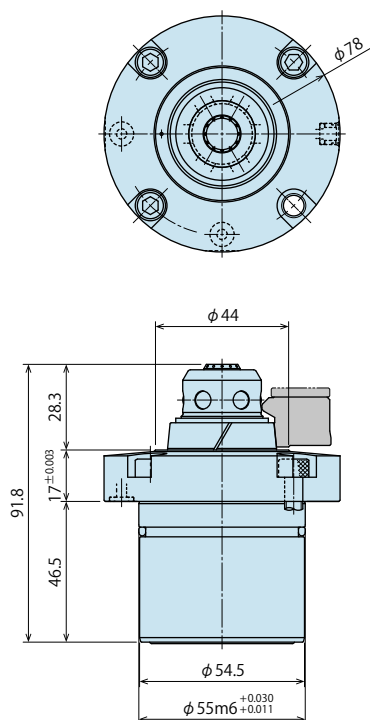
- Datum Clamp is mounted at the center of turning table and Datum Block is mounted at the center of pallet side to operate zero point locating. It is suitable when requiring centripetal at the center axis.

Space Saving ATC for Double Column Machining Center

Spindle Head Clamp



Reference Specifications/External Dimensions



This is one example of custom-made clamp. Please contact us for block dimension, other details and mounting dimension.

Model No.		VSY0010-M□
Clamping Force		kN10.0
Locating Repeatability of Single Clamp		mm0.003
Full Stroke		mm4.0
Lift Up Stroke		mm1.0
Allowable Offset when fixture plate is set		mm2.0
Allowable Weight for Locating※1		kg1200
Lift Up Force		(2.7)
	at 7.0MPa	
kN	at 6.0MPa	(0.9)
Releasing Cylinder Capacity		cm³7.2
Releasing Pressure	Operating Pressure	6 ~ 7
	MPa	Withstanding Pressure
		10.5
Operating Air Pressure (Air Blow Use)		MPa0.4 ~ 0.5
Operating Temperature		℃-10 ~ 70
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32
Mass		kg1.5

Notes :

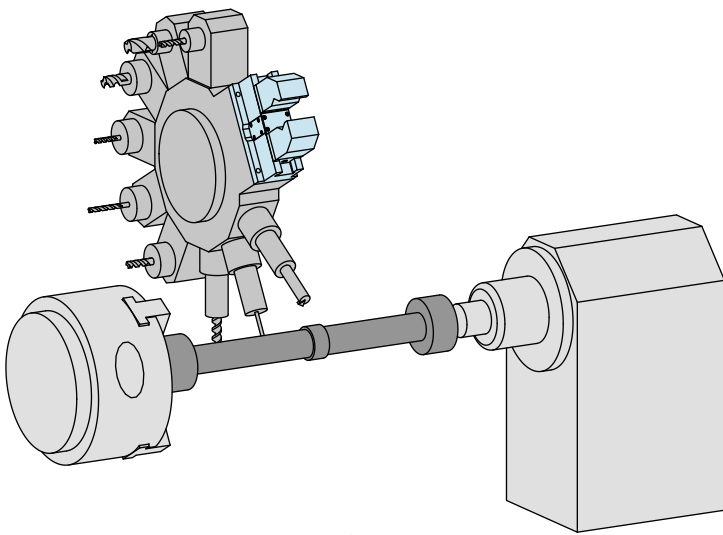
- This drawing shows the released state.
- Shows the specifications per clamp.
(※1 Allowable weight for locating is the value when using four clamps.)
- This application example is also available with standard VS clamp.

Machining and Additional-axis Processes in Common

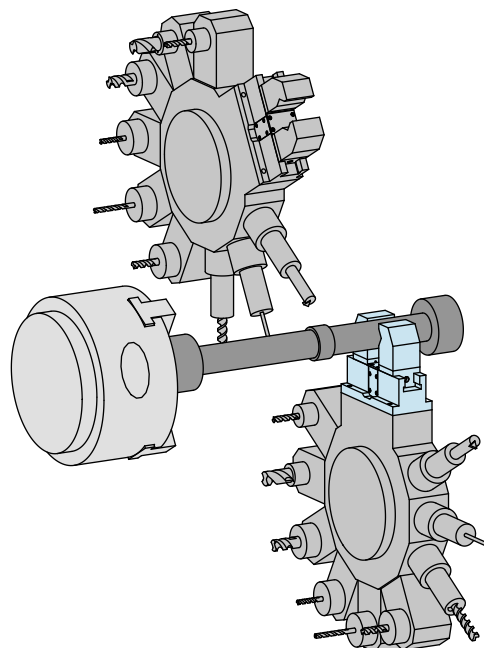
High Precision Centering Vise

Example : Centering Vise Mounted on Turret

Centering with Tail Stock



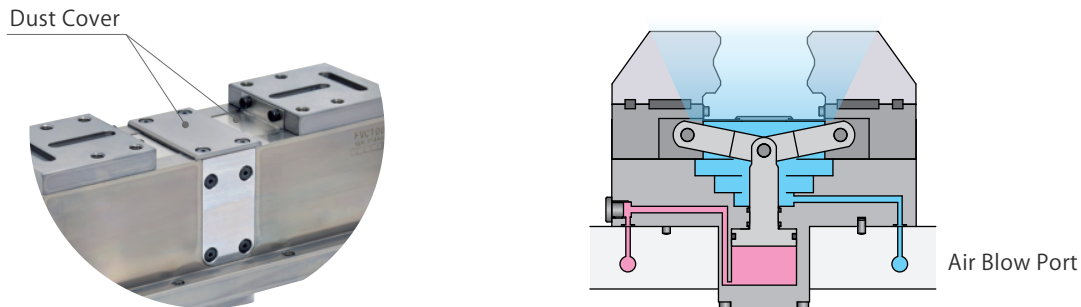
Centering with Vise



Machining Process and
Additional-axis Process in Common

- Equipped with Dust Cover
- With Air Blow Function (FVC)

The dust cover and air blow prevent foreign substance and enable a longer operational life span.



- Easy to Machine the Mounting Surface of the Clamp Lever

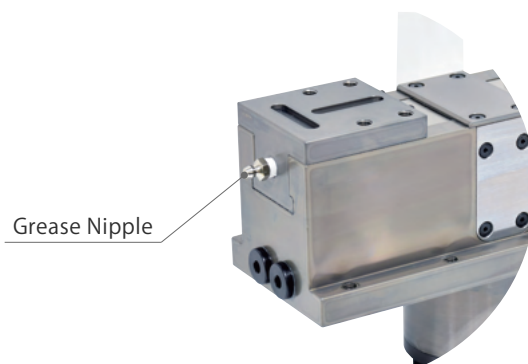
Only key slot and bolt hole need to be machined for mounting the clamp lever.

No need complicated serration machining.

- Secure Locking of Workpiece with Powerful Gripping Force

- Excellent Maintainability

The grease nipple is equipped for lubricating internal parts.

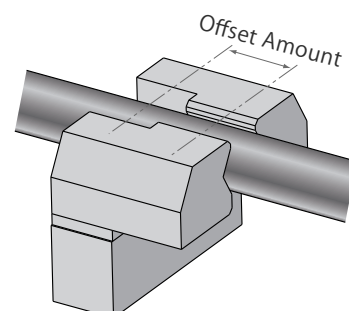


- Offset Available (FVC)

Offset of the workpiece is available.

Drill tools are accessible avoiding interference with loaders etc.

※ Please contact us when using it with offset.



Zero Reaction Force by Hydraulic Pressure

Non-Leak Coupler with Pilot Check Valve

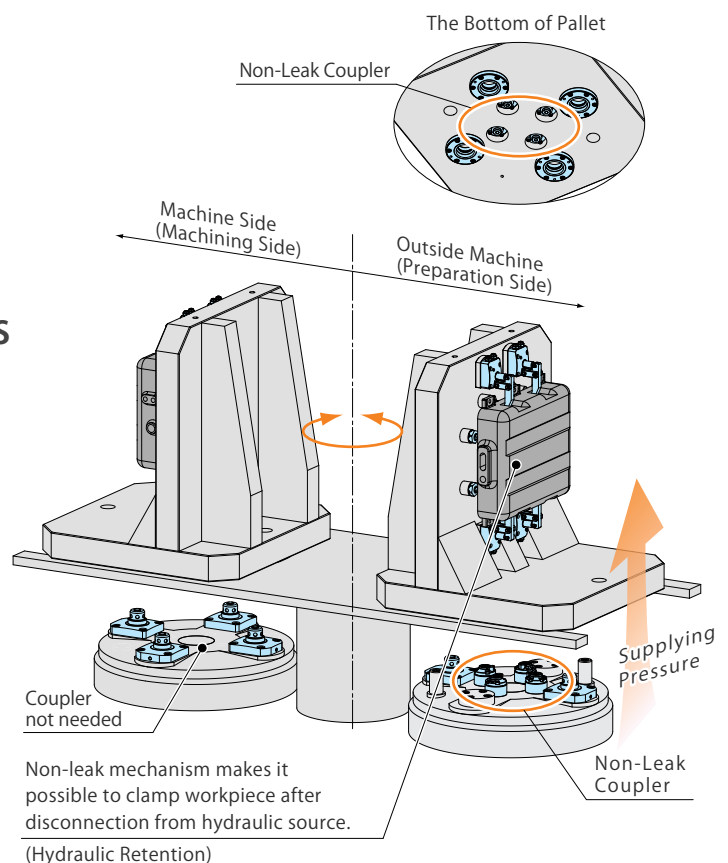
Pilot check system does not lift up fixture even if hydraulic pressure is ON.

● Reduce Circuit Applications

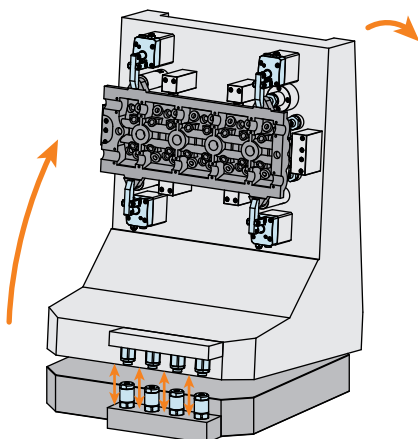
The installation of rotary joint for work clamp circuit or couplers at machine side is unnecessary due to pressure retention with non-leak function.

● Energy Saving

Hydraulic pressure is needed only when exchanging workpiece. After disconnection, hydraulic source can be shut off.

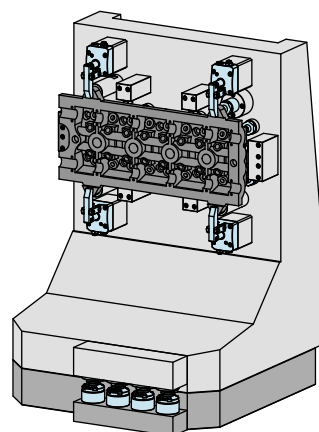


Problem



In case of normal coupler, reaction force makes fixture lifted up when hydraulic pressure is provided.

Solution



In case of pilot check coupler, it makes a smooth connection and disconnection with no reaction force.

Maximum Passage Area!

Large Flow Rate Coupler for High Cycle

Problem

During high speed cycle machining, it is required to supply hydraulic pressure instantly, but sometimes the passage area of a coupler is not large enough for high speed cycle machining.

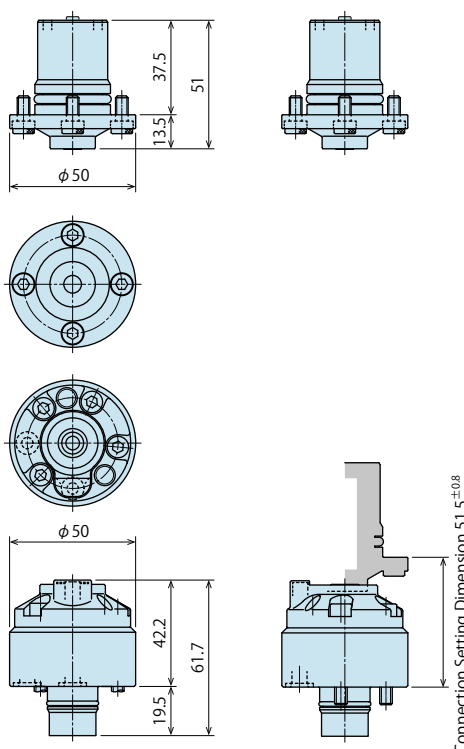
Solution

Using Non-Leak Coupler with Pilot Check Valve [BGC221-Z00301/BGD221-Z00301], it is compact and also has maximum passage area.

Minimum Passage Area : 16.5mm²

<Reference> Minimum Passage Area of Equivalent Model in the market : 12.6mm²

● Reference Specifications/External Dimensions



This is only for reference. Please contact us for detailed dimensions and mounting dimensions, etc.

Model No.	Plug Side	BGC221-Z00301
	Socket Side	BGD221-Z00301
Operating Pressure	MPa	1.0 ~ 7.0
Withstanding Pressure	MPa	10.5
Minimum Passage Area	mm²	16.5
Offset Tolerance	mm	±0.7
Angle Error Tolerance	DEG.	0.3
Operating Temperature	°C	0 ~ 70
Usable Fluid		General Hydraulic Oil Equivalent to ISO-VG-32
Pilot Pressure	MPa	2MPa or more (at Holding Pressure 7MPa)
Spring Force when Connecting	kN	0.08
Reaction Force when Pressurized (at P MPa)	kN	0.1227 × P + 0.08

Notes:

1. The check valve provided in the socket side fixture circuit P (R) to open automatically at the connection is not non-leak model.
2. Please do not connect or disconnect while pressurizing each port of socket side.
3. Take precautionary measures not to produce back pressure in ports B and P (R) of BGD side when pressure supply is stopped.
4. Do not connect in the condition that chips or coolant are left on the end surface. (Completely remove the adhering chips or coolant by air blow, etc.)
5. With over using offset tolerance, internal parts will be damaged. (Please install a guide separately.)
6. When pressing up to the connection limit, use the force higher than the reaction force and lower than 6.0 kN.

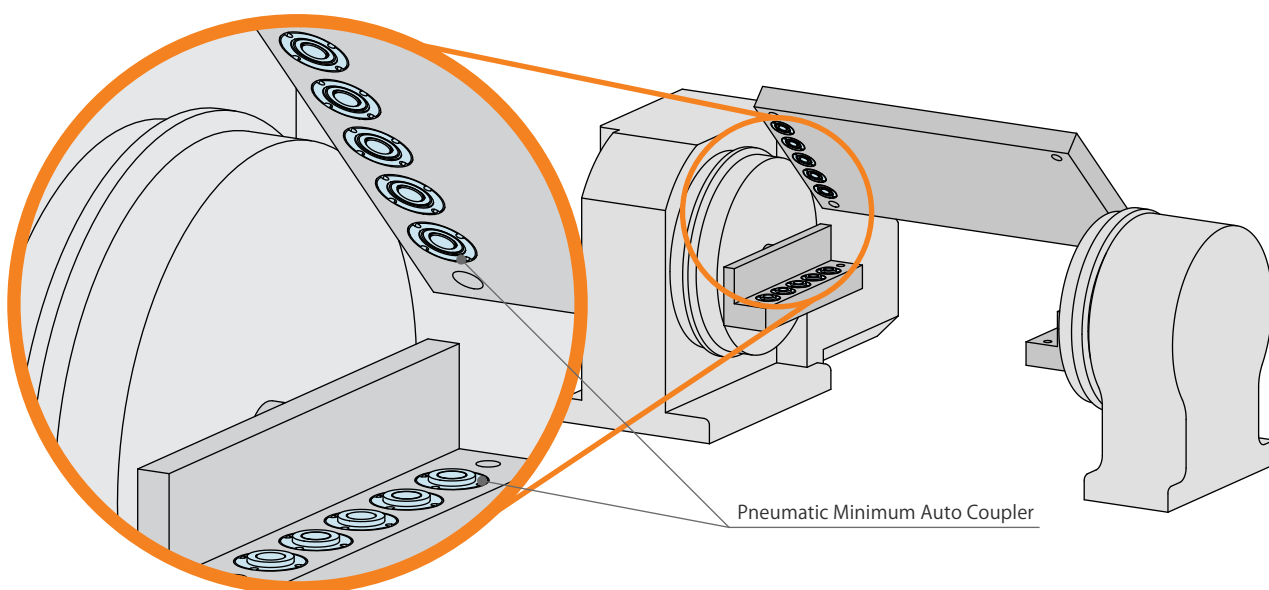
Challenge for **the World's Smallest!**

Pneumatic Minimum Auto Coupler

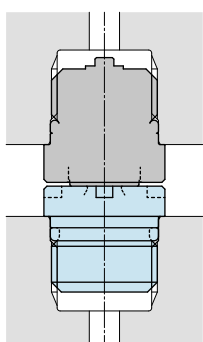
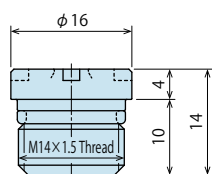
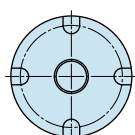
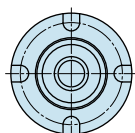
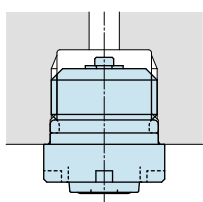
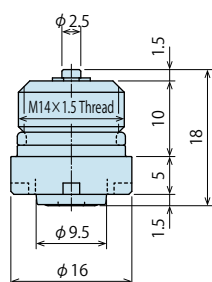
Multiple layout is possible even in limited space.

No leaking when disconnected.*

※ There will be slight air leak if pressurized while disconnected.



● Reference Specifications/External Dimensions



Connection Setting Dimension 9.5 - 0.4
(Reference : Connection Setting Dimension (Single Set Use) 9. 0.2.)

This is only for reference. Please contact us for detailed dimensions and mounting dimensions, etc.

Model No.	O-ring Side of Connection Surface		JY1800-A
	Metal Side of Connection Surface		JY1800-B
Operating Pressure		MPa	0.5
Minimum Passage Area		mm ²	5
Offset Tolerance		mm	±0.5
Angle Error Tolerance		DEG.	0.3
Operating Temperature		°C	0 ~ 70
Usable Fluid			Air
Reaction Force kN	Operating Pressure	at 0.5 MPa	0.066
		at P MPa	0.071×P+0.03

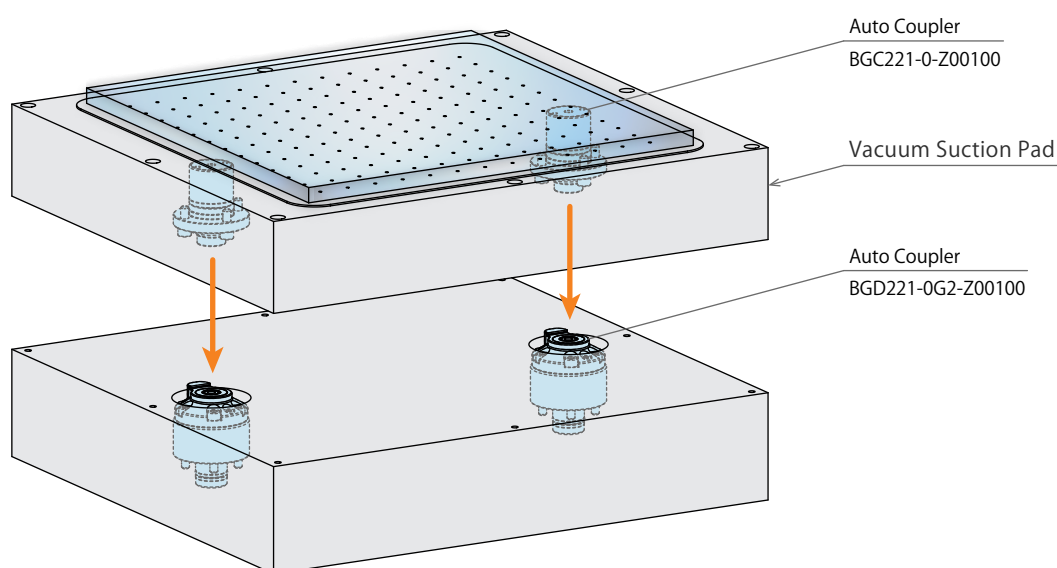
Notes:

- Do not connect in the condition that chips or coolant are left on the end surface.
(Completely remove the adhering chips or coolant by air blow, etc.)
- With over using offset tolerance, internal parts will be damaged.
(Please install a guide separately.)
- The packing inside the product is made by fluorine rubber.
- Since each check valve is a metal seal, there will be slight air leak if pressurized while disconnected.

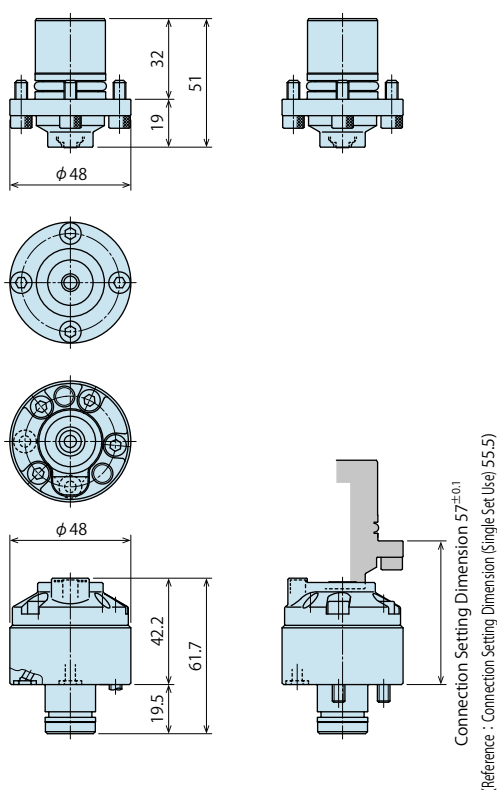
Disconnection of Negative Pressure Circuit

Vacuum Applicable Coupler

Suitable Use for Disconnection of Negative Pressure Circuit



Reference Specifications/External Dimensions



This is only for reference. Please contact us for detailed dimensions and mounting dimensions, etc.

Model No.	Plug Side	BGC221-0-Z00100
	Socket Side	BGD221-0G2-Z00100
Operating Pressure		Negative Pressure (Vacuum)
Minimum Passage Area	mm ²	10.2
Offset Tolerance	mm	±1
Angle Error Tolerance	DEG.	0.3
Operating Temperature	°C	0 ~ 70
Spring Force when Connecting	kN	0.10

Notes:

1. Make sure that negative pressure (vacuum state) acts only when connecting coupler/socket. (The coupler is not always in vacuum state.)
2. Malfunctions caused by rusted parts are out of warranty.
3. Do not connect in the condition that chips or coolant are left on the end surface. (Completely remove the adhering chips or coolant by air blow, etc.)
4. Provide piping and oil passage holes with sufficient flushing.
Note that no filter is provided to the socket.
5. When pressing up to the connection limit, use the force higher than the reaction force and lower than 6.0 kN.

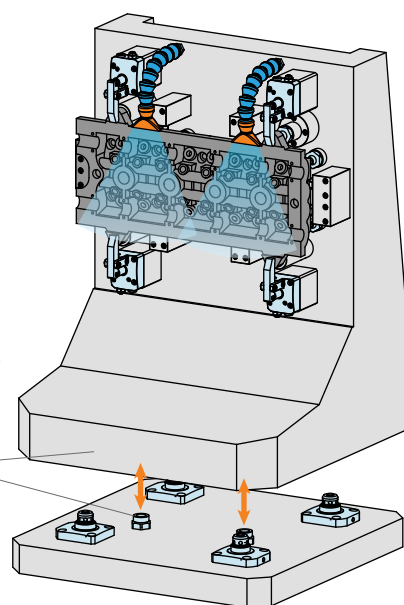
Chip Evacuation by **Large Flow Rate Coolant!**

Coolant Coupler for Large Flow Rate

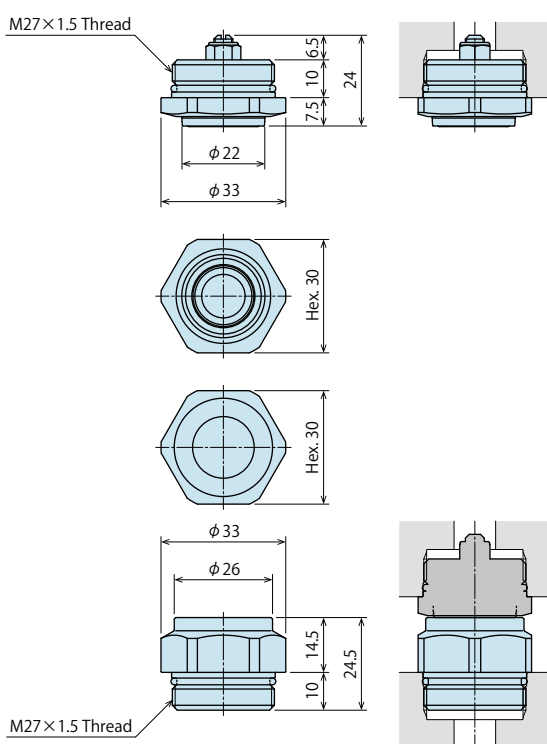
Maximum Passage Area with Compact Design

Minimum Passage Area : **49.5mm²**

Coolant Coupler for Large Flow Rate
JVE0300-H-Z00900
JVF0300-H-SJ02-Z00901



● Reference Specifications/External Dimensions



This is only for reference of VS0020 and VSJ020 combined model.
Please contact us for combination with other VS clamps.

Model No.	Fixture Side	JVE0300-H-Z00900
	Pressure Source Side	JVF0300-H-SJ02-Z00901
Operating Pressure	MPa	max. 1.0
Withstanding Pressure	MPa	1.5
Minimum Passage Area	mm²	49.5
Offset Tolerance	mm	±0.5
Angle Error Tolerance	DEG.	0.3
Operating Temperature	°C	0 ~ 70
Usable Fluid		Coolant / Air
Reaction Force when Pressurized (at P MPa)	kN	$0.380 \times P + 0.06$

Notes:

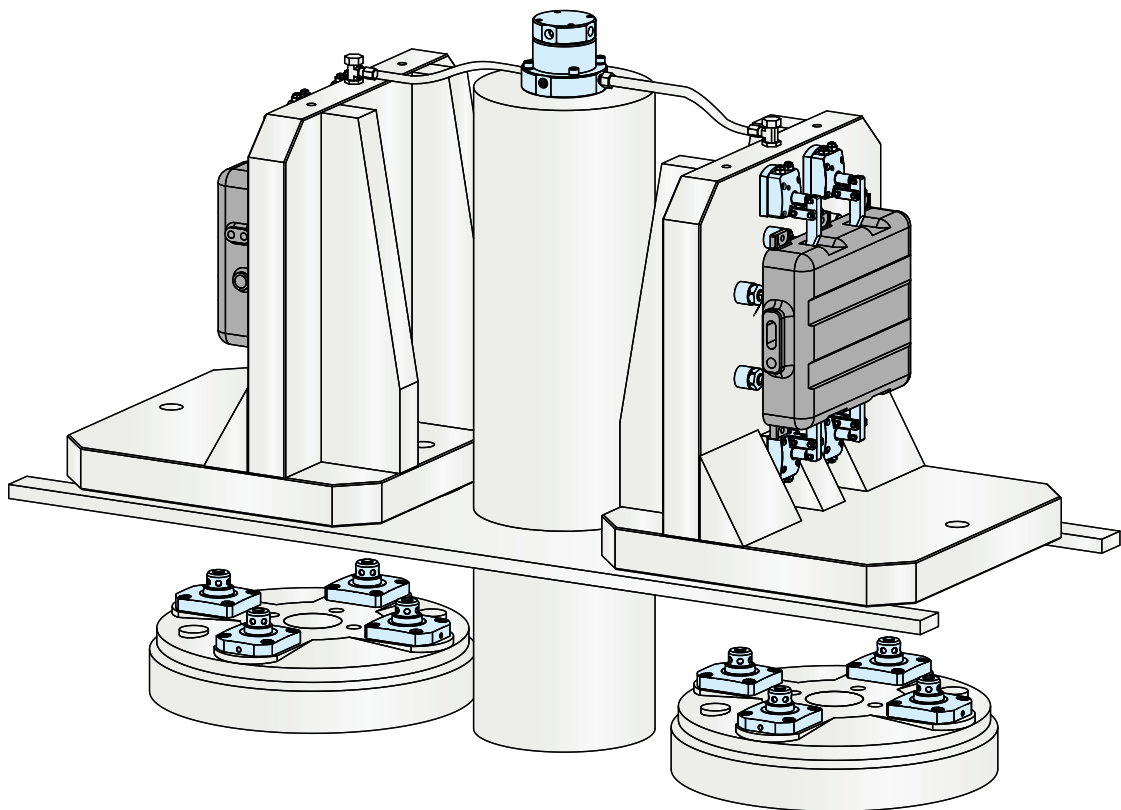
1. Fluid supply should be after connection is completed.
2. Do not connect in the condition that chips or coolant are left on the end surface. (Completely remove the adhering chips or coolant by air blow, etc.)
3. The check valve of JVF is a metal seal, and there will be slight air leak if pressurized while disconnected.
4. With over using offset tolerance, internal parts will be damaged. (Please install a guide separately.)

Connection Setting Dimension 20 ± 0.05
(Reference : Connection Setting Dimension (Single Set Use) 19.5)

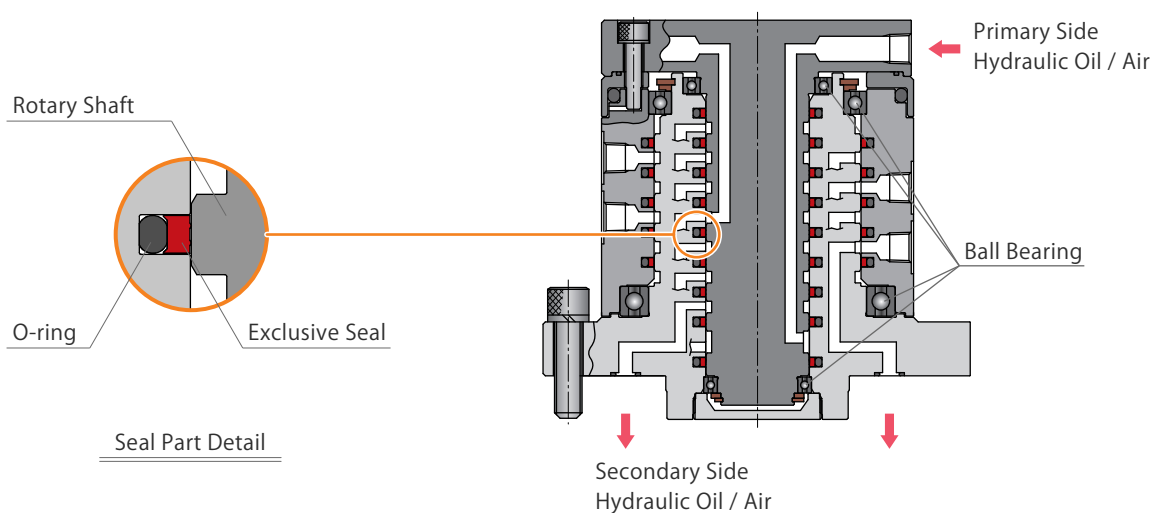
High Speed, Long Life, Excellent Sealing

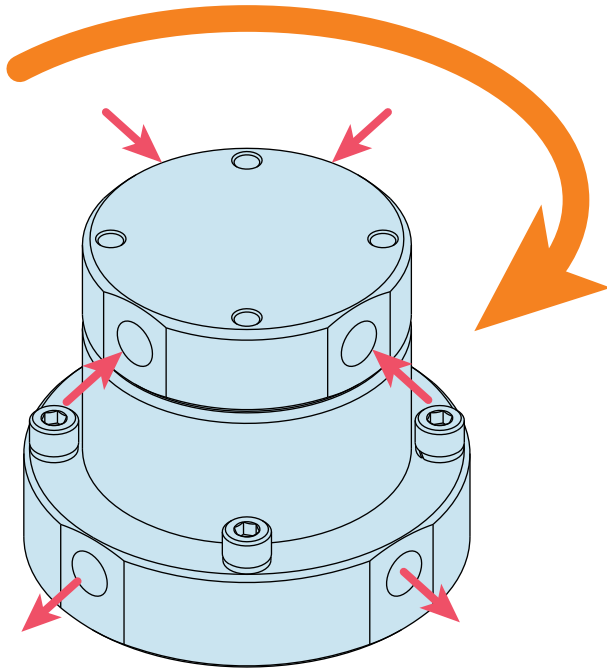
JR Rotary Joint

Rotary Joint APC Example



● Cross Section





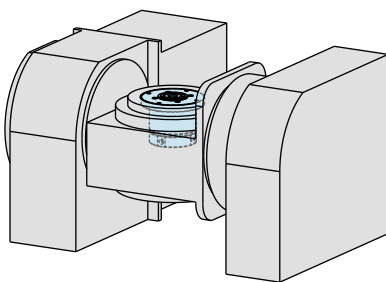
Application for High-Speed Rotation

280 rpm

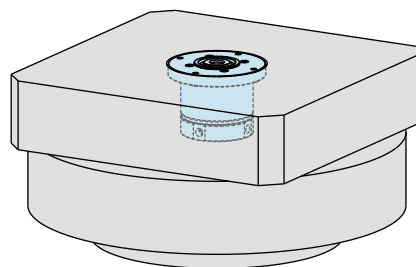
Model : JRC0400 (4 Ports)
Pressure : 7MPa

● Special Application Example

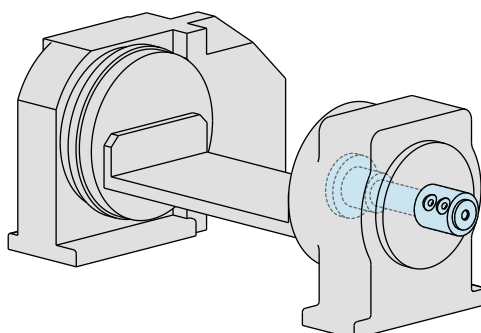
NC Rotary Table



For B-axis of Machine



Tail Stock

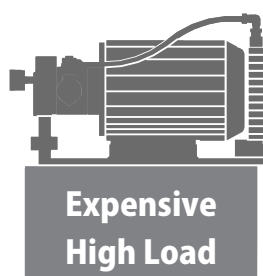


Easy Boosting Hydraulic Pressure (2 · 3 · 5 times)!

Continuous Discharge Booster

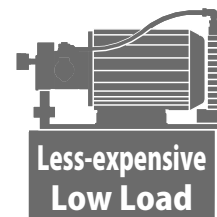
Advantages of Continuous Discharge Booster (Model AU)

- 50% Cost Reduction Compared to High Pressure Device Use ※1
- Boosting Up with Existing Motor Pump + Model AU
- Reduction of Inner Volume of Electric Motor ※1. This is an estimated value which is calculated by our applications.



High Pressure Motor Pump

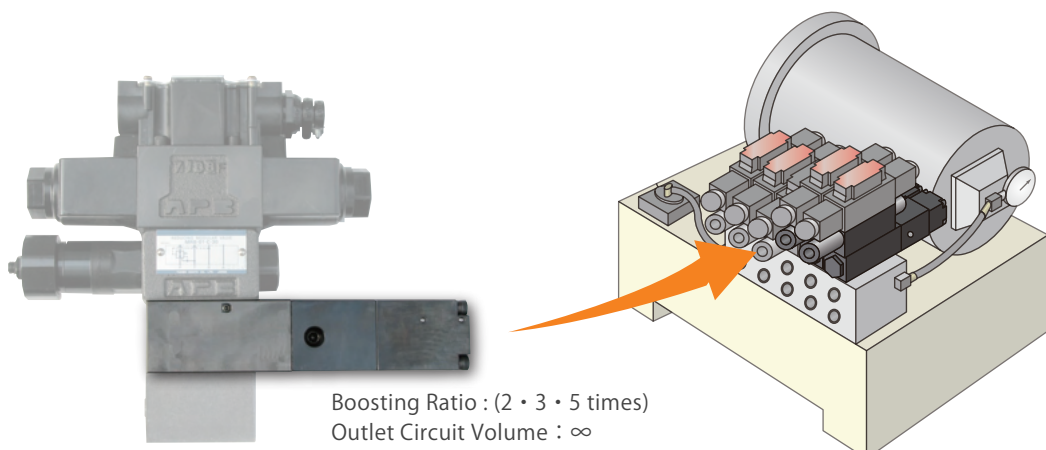
**Model AU saves
both Environment and Cost**



General Motor Pump

● Modular Option

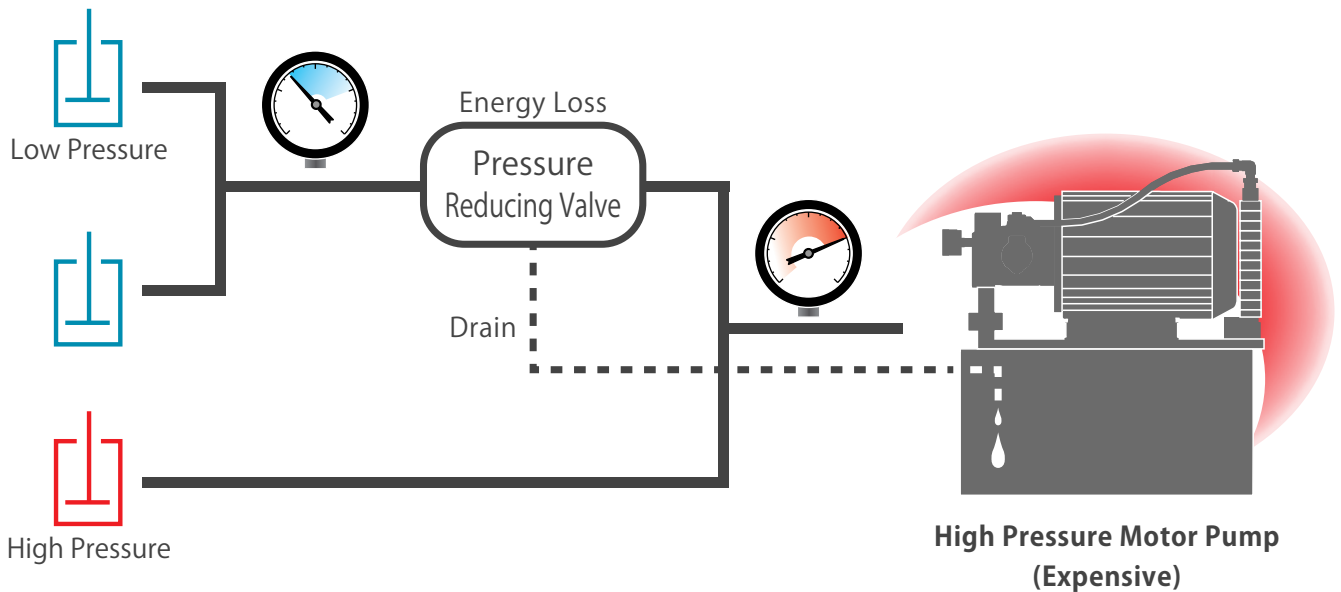
Possible to pile up on control valves of motor pump. Based on ISO 4401-03 standard.



● Cost Reduction Example

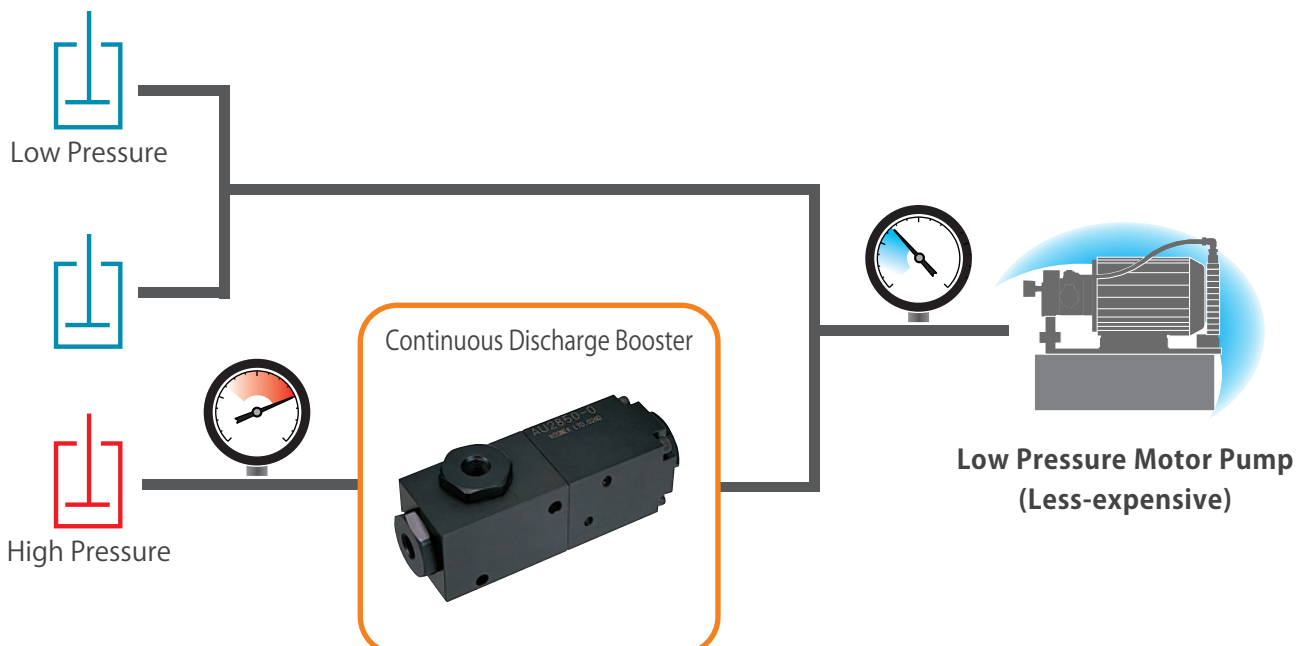
Before : General Case

High pressure motor pump is used only for high pressure actuators. <Much Energy Loss>



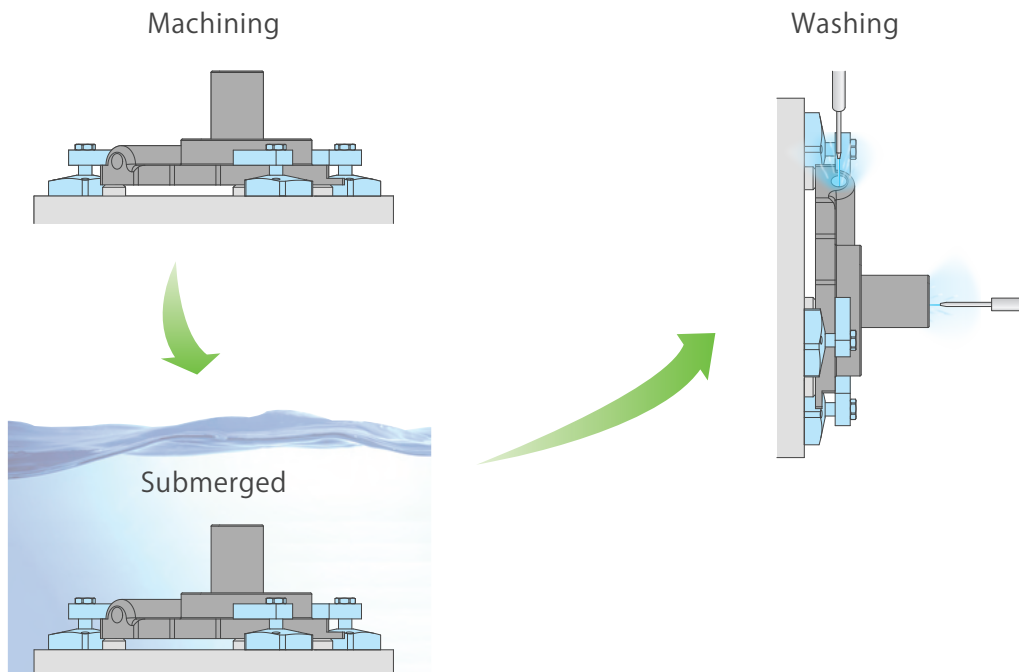
After : Continuous Discharge Booster

Continuous Discharge Booster used only for the actuator which requires high pressure. Hydraulic pressure source is general low pressure motor pump.

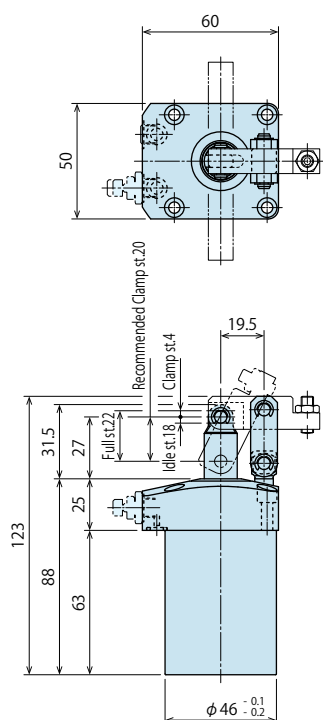


Submerged Leak Testing Application

Challenge for Washing Machine



● Reference Specifications/External Dimensions



This drawing shows cylinder force 1.0 kN (supply air pressure 0.5 MPa) as reference. Please contact us for further information.

Model No.		WCE100□-2□□-Z002□□
Cylinder Thrust (at Air Pressure 0.5MPa)		kN1.0
Full Stroke		mm22.0
(Breakdown)	Idle Stroke	mm18.0
	Clamp Stroke	mm4.0
Recommended Clamp Stroke		mm20.0
Cylinder Capacity cm³	Lock Side	21.2
	Release Side	17.8
Spring Force		N58.9 ~ 97.8
Maximum Operating Pressure		MPa0.5
Minimum Operating Pressure		MPa0.2
Withstanding Pressure		MPa0.75
Operating Temperature		℃0 ~ 70

Notes:

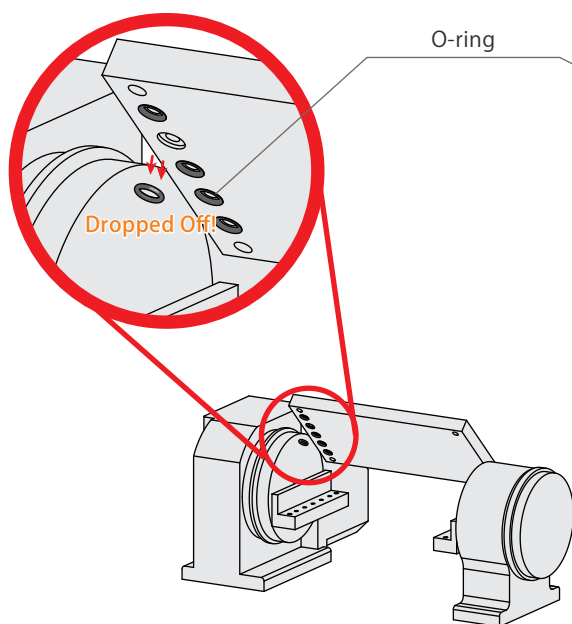
1. This drawing shows the clamped state.
2. Cylinder thrust shows the value within the clamp stroke range.
3. Clamping force varies depending on the lever length.
Please contact us for details of clamping force.



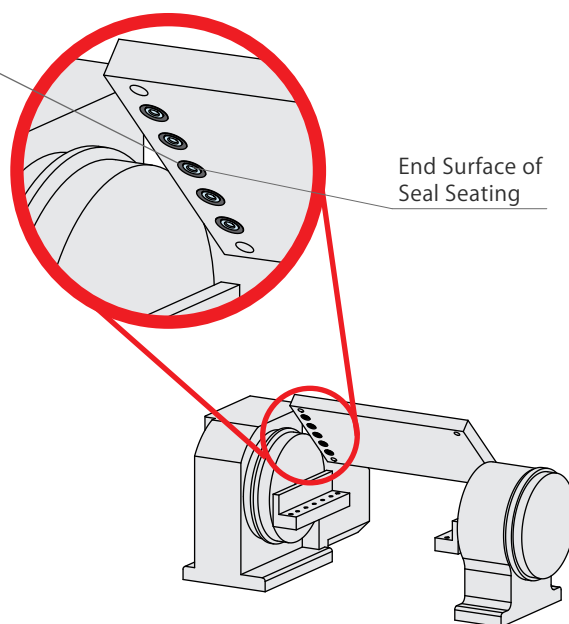
KOSMEK idea

Prevent O-ring from being dropped off!

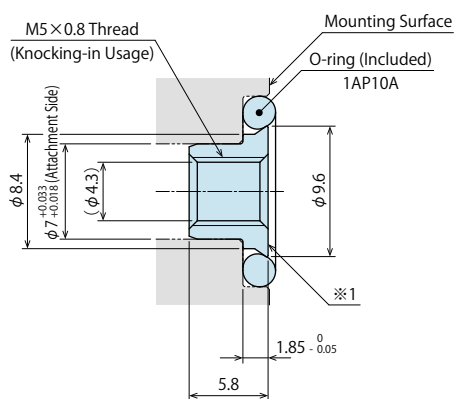
No Falling Prevention of O-ring



O-ring Falling Prevention by Seal Seating



● Reference Specifications/External Dimensions



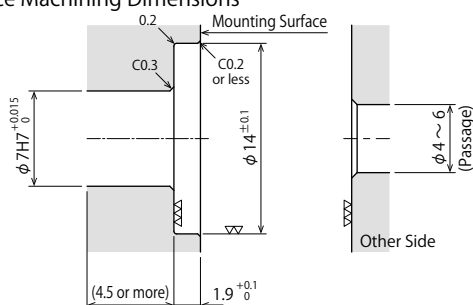
This drawing shows an example in the case of using O-ring : 1AP10A.
Please contact us for more details of other size of O-ring.

Model No.	JY1920
Operating Pressure	MPa max. 7
Material	S45C
Surface Finishing	Blackening

Notes:

- ※ 1. Please insert the coupler to the end so that it does not protrude from the mounting surface.
- 1. Please make sure there is no oil contaminated in O-ring before installation.
(Remove oil by air blow.)
- 2. When using, please make the other side completely tight.

Mounting Surface Machining Dimensions





Line-ups on Kosmek Work Clamping System Complete Catalog 20□□

← You will find what you need.

KOSMEK WORK CLAMPING SYSTEMS

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High-Power Series

High-Power Hydraulic Swing Clamp



High-Power Hydraulic Link Clamp



High-Power Pneumatic Hole Clamp



HIGH-POWER
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Series

Pneumatic Series

Pneumatic Hole Clamp



Pneumatic Swing Clamp



New

Double Piston Pneumatic Swing Clamp



Hydraulic Series

Hole Clamp



Swing Clamp



Link Clamp



New

Centering Vise



Control Valve

Speed Control Valve
Air Bleed Valve
Plug
Sequence Valve



New

Pallet Clamp



Valves Couplers • Pumps

Air Sequence Valve



Non-Leak Coupler



Auto Coupler

Hydraulic Pressure
Air
Coolant
Water



New

Manual Products

Screw Locator



New

Manual Expansion Locating Pin



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We have various types of hydraulic and pneumatic products.
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High-Power Pneumatic Work Support Pneumatic Lock Cylinder

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High-Power Pneumatic Pallet Clamp

HIGH-POWER
Pneumatic
Series



Pneumatic Link Clamp



Air Flow Control Valve



Pneumatic Expansion Locating Pin



Pneumatic Sensor Pin



Work Support



Air Sensing Lift Cylinder



Compact Cylinder

Linear Cylinder
Push Cylinder
Pull Cylinder
Hollow Cylinder



Block Cylinder



Expansion Locating Pin



Pull Stud Clamp



Customized Spring Cylinder



Rotary Joint

Hydraulic
Pressure
Air
Coolant



Hydraulic Valve



Air Hydraulic Unit



Options

Optional Parts

Manifold Block
Piping Block / Nut



Accessories

Pressure Switch
Pressure Gauge
Coupler Switch
Manifold



G-Thread Fitting



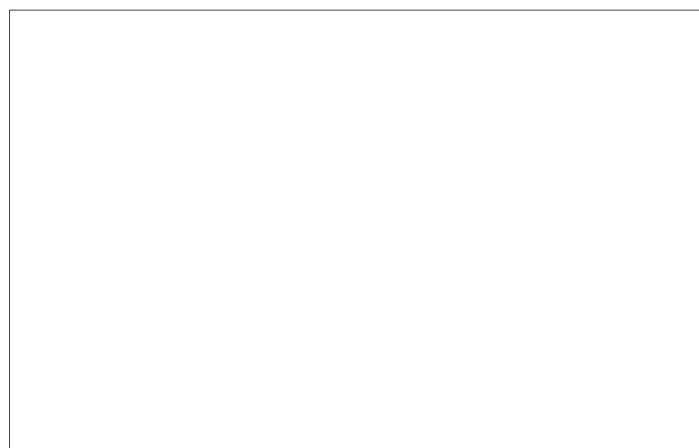


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- For Further Information on Unlisted Specifications and Sizes, Please call us.
- Specifications in this Leaflet are Subject to Change without Notice.

