

KOSMEK Work Clamping Systems

Work Efficiency Improvement

Installation Guide



Factory Automation

1. Shifting to General-Purpose Machines

The Key Products for Machining Fixtures of General-Purpose Machines

Swing Clamp

Standard Clamp Cylinder with 90° Lever Swing
Excellent in clamping force, draining cutting chips and loading/unloading workpieces!



Link Clamp

Link-type Standard Clamp Cylinder
The simple model of a linear cylinder equipped with link mechanism.



Work Support

Best-Selling product for preventing workpiece chattering.
Installed under a workpiece, it enables more stable machining.

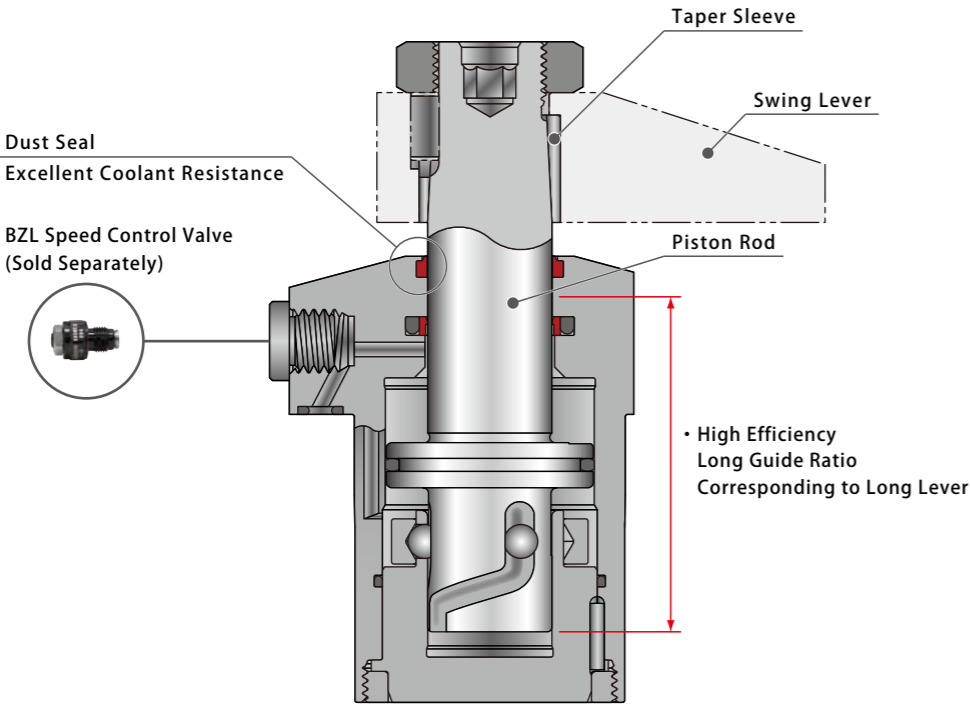


Centering Vise

The Hydraulic Vise to grip and locate a cylindrical workpiece.
We offer Kosmek-exclusive compact/high accuracy model and long stroke model, etc.

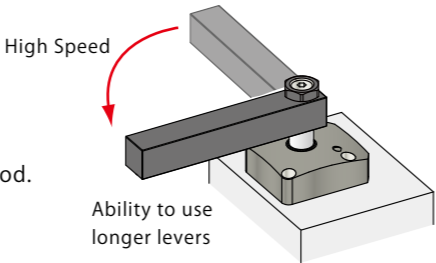


Swing Clamp



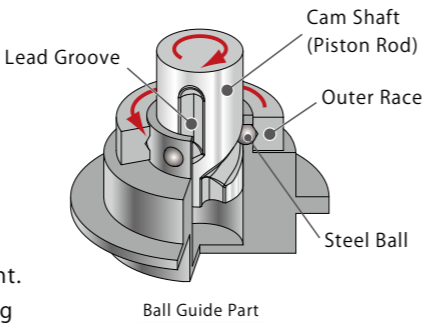
Able to Use Longer Levers

The long guide ratio allows for longer clamping levers by supporting the rod. The guide is located between the flange and at the edge of the rod.



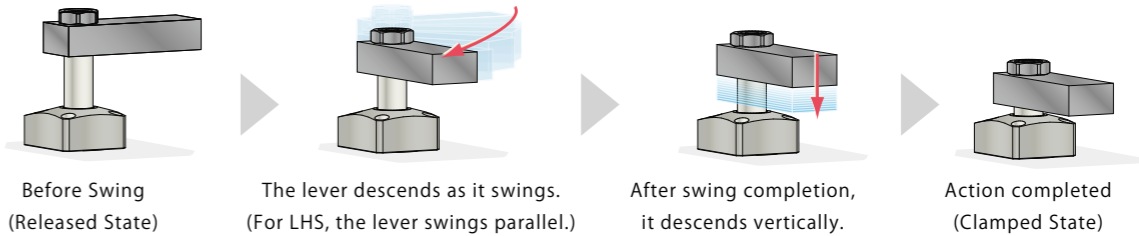
High Speed and High Durability with Rotation Mechanism

The resistance created by the swing action is minimized by having the outer race rotate in accordance with the steel ball movement. High endurance is achieved by enlarging rod diameter which decreases torque and by using bigger steel balls and making the lead groove. (Swing Complete Position Repeatability : within $\pm 0.5^\circ$)


















Excellent Coolant Resistance

Our exclusive dust seal is designed to protect against high pressure coolant. It also has high durability against chlorine-based coolant by using a sealing material with excellent chemical resistance.










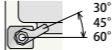
Low Pressure Model

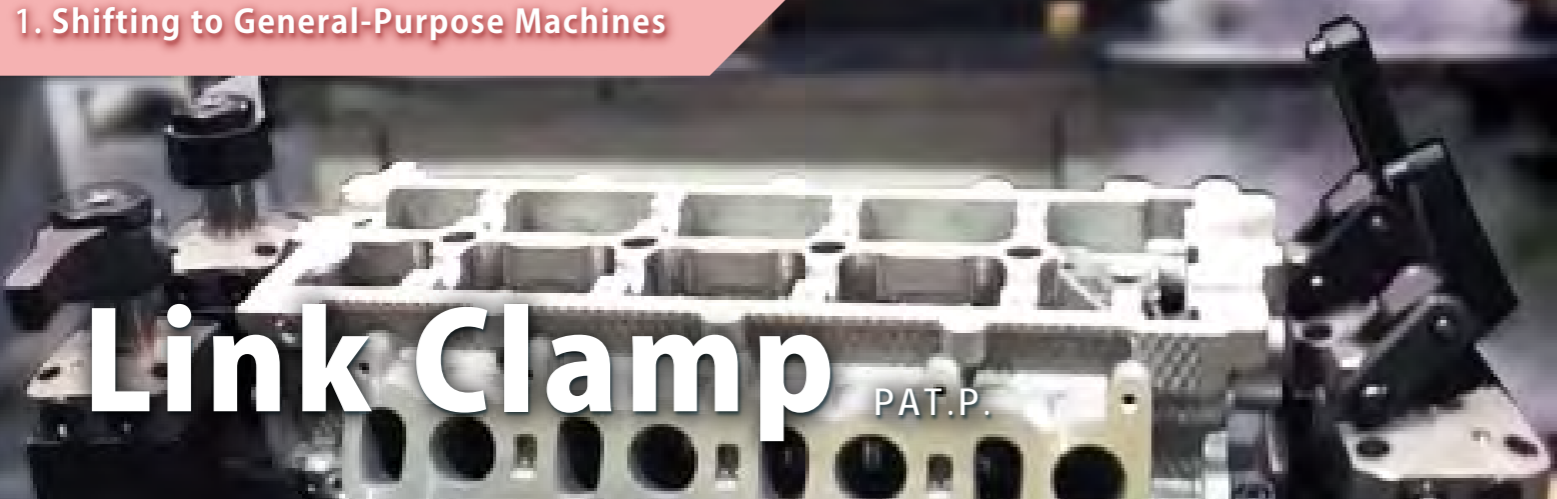
MAX. 7MPa

Low Pressure Model			Air Sensing Model					
								
MAX. 7MPa			Model LHA	Model LHC	Model LHS	Model LHW	Model LHV	Model LT/LG
Classification			Double Action Standard	Double Action Compact	Double Action Parallel Swing	Double Action Built-in Sensing Valve	Double Action Built-in Sensing Valve	Single Action (Spring Release)
Operating Pressure Range			1.5 ~ 7MPa	1.5 ~ 7MPa	1.5 ~ 7MPa	1.5 ~ 7MPa	1.5(2.0) ~ 7MPa	2.5 ~ 7MPa
Standard Model			○	○	○	—	—	○
Action Confirmation	Double End Rod Option for Dog		○	—	○	—	—	—
	Air Sensing Manifold Option		○	—	○	—	—	—
	Air Sensing Piping Option		○	—	○	—	—	—
	Built-in Sensing Valve Option		—	—	—	○	○	—
Option	Quick Change Lever Option A		○	○	○	○	○	○
	Quick Change Lever Option F		○	○	○	○	○	○
	Balance Lever Option		○	○	○	○	○	○
	Long Stroke Option		○	—	○	—	—	—
	Swing Angle Selectable Option		○	○	○	○	○	○

High Pressure Model

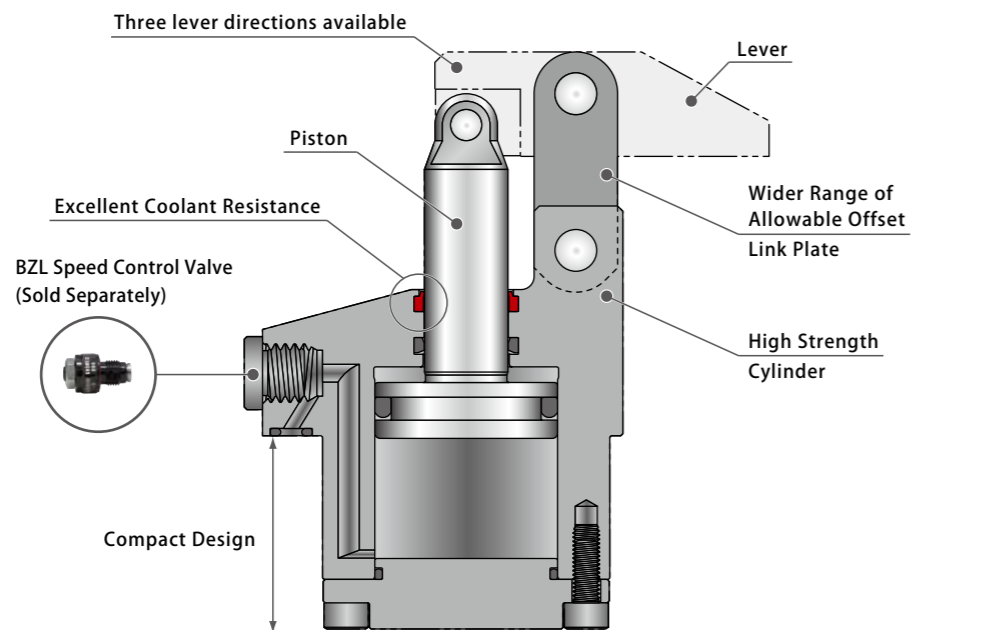
MAX. 35MPa

High Pressure Model					Air Sensing Model			
MAX. 35MPa								
								
					Model TLA-2	Model TLB-2	Model TLA-1	Model TLV-2
Classification					Double Action Top Flange	Double Action Bottom Flange	Single Action (Spring Release) Top Flange	Double Action Top Flange Built-in Sensing Valve
Operating Pressure Range					7 ~ 35MPa	7 ~ 35MPa	7 ~ 35MPa	7 ~ 35MPa
Standard Model					○	○	○	—
Option	Built-in Sensing Valve Option		—	—	—	—	—	○
	Balance Lever Option		○	○	—	—	—	—
	Long Stroke Option		○	○	—	—	—	—
	Swing Angle Selectable Option		○	○	—	—	—	—



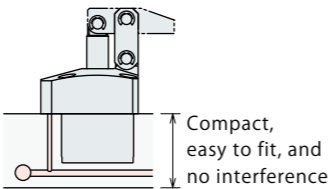
Link Clamp

PAT.P.



Compact

The dimension below flange is shortened by 40 percent to enable thinner and lighter fixtures.
The compact body allows the internal fitting without interference and makes fixture design more engineer friendly.



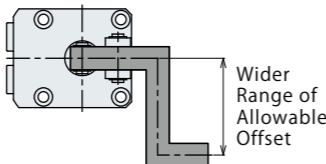
High Strength Supporting Point















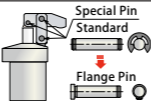
The compact body is able to retain similar clamping and holding forces by including a high strength supporting point within the body cylinder. Its strength is the best in the industry, by way of casting.






A Wider Range of Allowable Offset






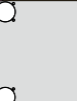

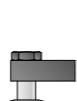




High strength link plate option is available for larger tolerance.








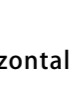











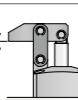
Low Pressure Model		Air Sensing Model							
		 Model LKA	 Model LKC	 Model LKK	 Model LFA	 Model LKW	 Model LFW	 Model LKV	 Model LM/LJ
MAX. 7MPa									
Classification		Double Action Standard	Double Action Compact	Double Action 360° Clamp	Double Action Lever Retraction	Double Action Built-in Sensing Valve	Double Action Lever Retraction Built-in Sensing Valve	Double Action Built-in Sensing Valve	Single Action (Spring Release)
Op. Pressure Range		0.5 ~ 7MPa	0.5 ~ 7MPa	0.5 ~ 7MPa	1.0 ~ 7MPa	0.5 ~ 7MPa	1.0 ~ 7MPa	1.0 ~ 7MPa	2.5 ~ 7MPa
Standard Model		○	○	○	○	—	—	—	○
Action Confirmation	Double End Rod Option for Dog 	○	—	—	○	—	—	—	—
	Air Sensing Manifold Option 	○	—	—	—	—	—	—	—
	Air Sensing Piping Option 	○	—	—	—	—	—	—	—
	Built-in Sensing Valve Option 	—	—	—	—	○	○	○	—
Option	Quick Change Lever Option A 	○	○	○	—	○	—	○	○
	High Strength Link Plate Option 	○	○	—	—	○	—	○	—
	Flange Pin with C-type Circlip 	○	○	○	—	○	—	○	—

		Air Sensing Model		
High Pressure Model MAX. 35MPa		 Model TMA-2	 Model TMA-1	 Model TMV-2
Classification		Double Action	Single Action (Spring Release)	Double Action Built-in Sensing Valve
Op. Pressure Range		3.5 ~ 35MPa	3.5 ~ 35MPa	3.5 ~ 35MPa
Standard Model		○	○	—
Built-in Sensing Valve Option		—	—	○

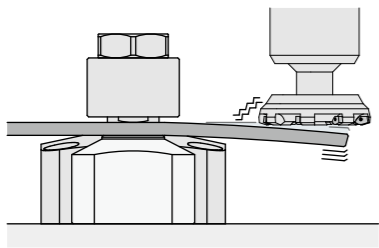
Features of Single Action and Double Action

	 Single Action Hyd. Lock • Spring Release	 Double Action Hyd. Lock • Hyd. Release
Operating Speed	 Unable to control releasing speed	 Easy to control speed with the double-acting circuit
Fixture Cost	 Reduce fixture costs because hydraulic pipe is needed only for lock side	 The fixture is complicated because both lock and release sides need hydraulic pipes
Number of Ports	 Able to reduce the number of ports for a rotary joint	 Twice the number of ports of single acting model is required
Cylinder Mass	 Lighter cylinder body made of aluminum alloy	 Steel made
Action Confirmation	 Visual Inspection Lock and release actions need to be checked by an operator	 Sensor Lock and release actions can be checked by air sensors (option)
Applicable Equipment	Manual Transfer Line General-purpose equipment that requires frequent fixture changeover	Automated Transfer Line

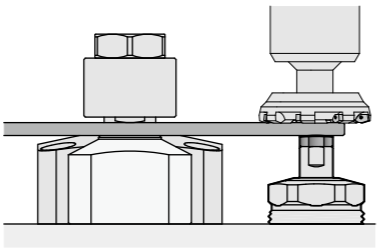
Features of Swing Clamp and Link Clamp

	 Swing Clamp	 Link Clamp
Cost	 Complicated structure: internal swing mechanism	 Simple structure: linear cylinder with link mechanism
Action Interference	 Horizontal	 Horizontal
	 Vertical	 Vertical
Clamping Force	 Efficient : Cylinder force is directly applied	 Not so efficient: Cylinder force is applied via link mechanism
Workpiece Loading	 Not affected by lever length when loading/unloading	 May be interfered depending on lever length when loading/unloading
Transfer Level	 The height at released state is not affected by lever length	 The height at released state varies depending on lever length
Cutting Chips Draining	 No bumps on the flange top Cutting chips will be drained	 Cutting chips may be stuck in the link mechanism part
Workpiece Variation	 Available Usable at any position within vertical stroke ※ Only within lock stroke for high-power series.	 Not Available Usable only with a lever in parallel state

Work Support

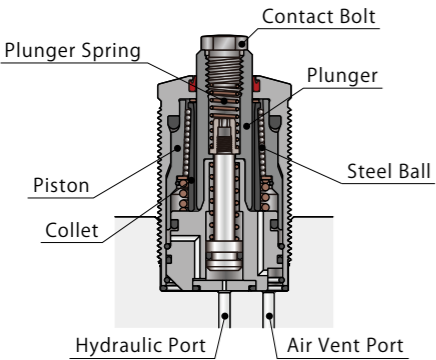


Without Work Support
Chattering!

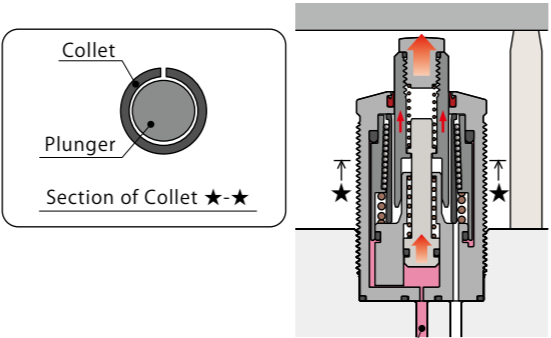


With Work Support
No Chattering!

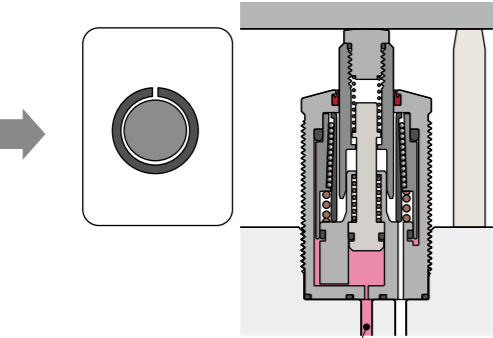
Hydraulic Advance Model



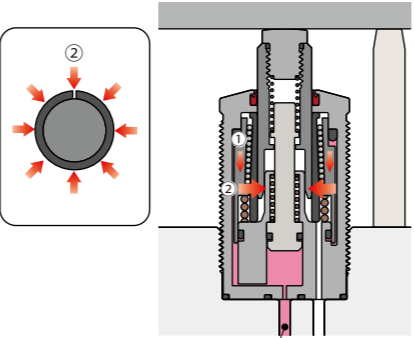
Released State (Cross Section)



Plunger Advancing



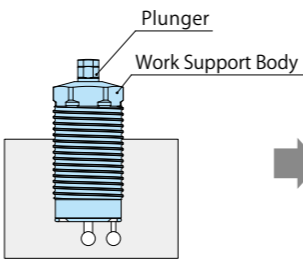
Contact bolt touches the workpiece



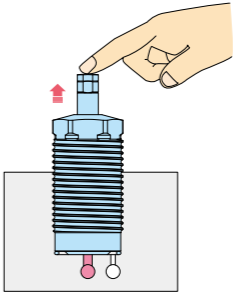
Locked State

- ① The piston starts to press down via hydraulic pressure.
- ② The tapering action between the piston and collet affects the steel ball so that the collet can grip the plunger with even and strong power to generate the supporting force.

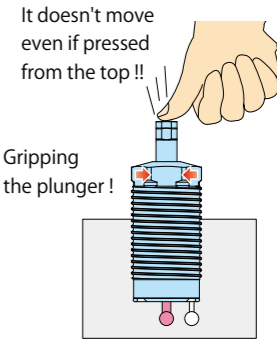
Hydraulic Advance Model










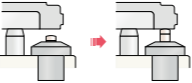
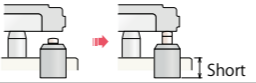

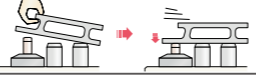

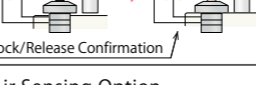
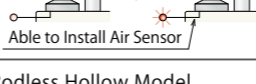


Hydraulic Pressure : OFF
The state of the plunger down.



Hydraulic Pressure : ON
The plunger advances with hydraulic pressure and stops after touching a workpiece.

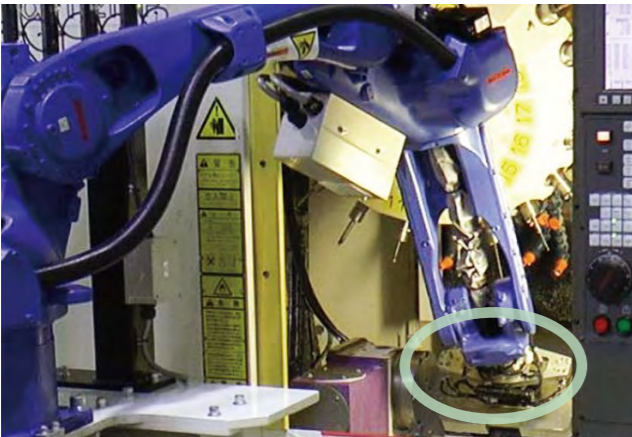


Hydraulic Pressure : ON
Once it is in the stopped position where it touches the workpiece, the plunger doesn't go down even if pressed from above.

	 Model LD	 Model LDD	 Model LC	 Model LCW	 Model TND	 Model TNC	 Model TC
Classification	Low Pressure Single Action External Thread	Low Pressure Double Action External Thread	Low Pressure Single Action Top Flange	Low Pressure Single Action Built-in Sensing Valve	High Pressure Double Action External Thread	High Pressure Single Action External Thread	High Pressure Single Action Top Flange
Operating Pressure Range	2.5 ~ 7MPa	2.5 ~ 7MPa	2.5 ~ 7MPa	2.5 ~ 7MPa	7 ~ 35MPa	7 ~ 35MPa	7 ~ 25MPa
Standard : Hydraulic Advance							
Hydraulic Advance Short Model							
Hydraulic Advance Long Stroke Model							
Spring Advance Model							
Spring Advance Short Model							
Spring Advance Long Stroke Model							
Built-in Sensing Valve Model							
Air Sensing Option							
Rodless Hollow Model							

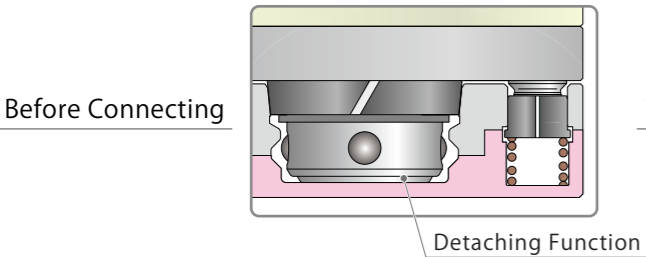
Robotic Hand Changer PAT.

KOSMEK Robotic Tool Changer Designed to Meet the Demand for Machining!

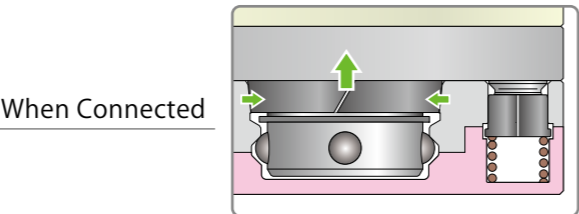


Model SWR

KOSMEK Exclusive Non-Backlash Mechanism



Before Connecting



When Connected

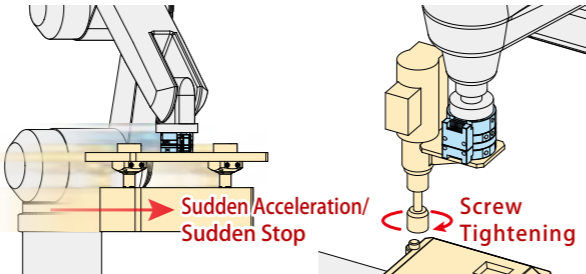
Zero-Backlash Connection with Dual Contact

Backlash of a Tool Changer Causes Electrode Errors
Such as noises and continuity failure due to friction of contact probes

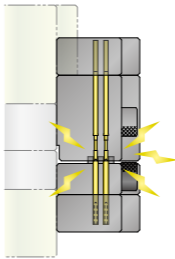
Kosmek Hand Changer with No Backlash
Prevents Electrode Errors

Uncomparably High Rigidity & Durability

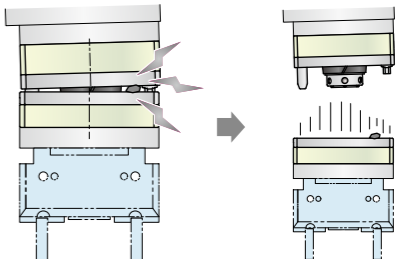
Strong to "bend" and "twist" with high rigidity obtained by non-backlash function.
Also, high strength material is used in all the contact parts of the master and the tool so that it ensures high durability and 3 μ m locating repeatability even after 1 million cycles.



Contaminants such as coolant mist and cutting chips cause errors during machining.



Cutting chips and coolant enter into the electrode part, causing short circuit of the electrode and momentary stops...

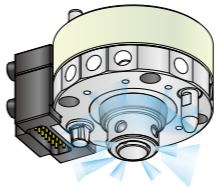


Catching cutting chips when connecting causes clamping failure, resulting in dropping a workpiece during transfer.

Designed to meet the machining demands, KOSMEK tool changer is able to detect and prevent various troubles!

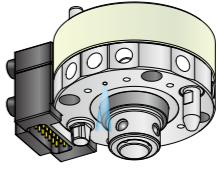
Air Blow

Air blow from the inside the master side allows for air purge of the master side and air blow to the tool side.



Connection Check

Even when contaminants enter into the SWR, the contact check of the connecting surface prevents troubles before they happen.



Offering Waterproof Electrodes rated IP67 and IP54 to prevent electrode troubles!

IP67



Noncontact Waterproof

IP54



Simple Waterproof

Robotic Hand Changer Lineup



from 0.5kg Payload → to 360kg Payload

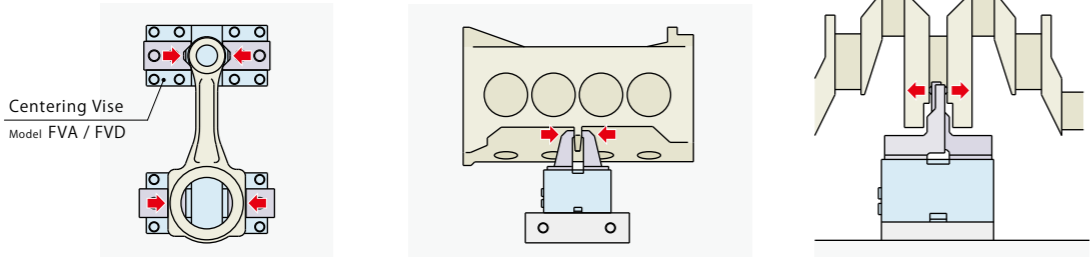
Applicable Payload	0.5 ~ 1 kg	1 ~ 3 kg	3 ~ 7 kg	7 ~ 12 kg	12 ~ 25 kg	25 ~ 50 kg	50 ~ 75 kg	75 ~ 120 kg	120 ~ 360 kg
Recommended Payload	0.5kg	3kg	7kg	12kg	25kg	50kg	75kg	120kg	230kg
Model No.	SWR0010	SWR0030	SWR0070	SWR0120	SWR0250	SWR0500	SWR0750	SWR1200	SWR2300

※ Only SWR0010 has repeatability of 5 μ m.

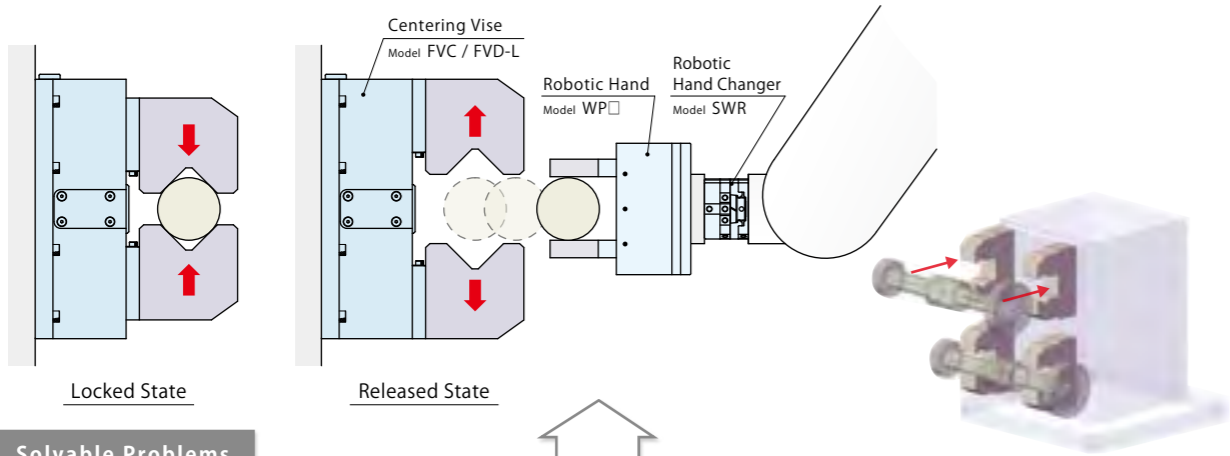
Centering Vise

Compact + High-Accuracy Model and Long Stroke Model for Automation

High Accuracy Model for Locating a Workpiece



Long Stroke Model for Automatic Transfer with a Robot



Solvable Problems

When Loading from the Front

A short-stroke vise is unable to secure enough clearance for loading a workpiece.

Short Stroke Vise
Released State

When Loading from the Side

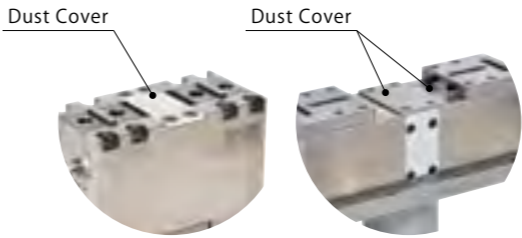
A robot cannot keep a long workpiece horizontal.

Robotic Hand
Model WP□

It is unable to secure enough clearance for loading an irregular-shape workpiece.

Robotic Hand
Model WP□

Equipped with Dust Cover



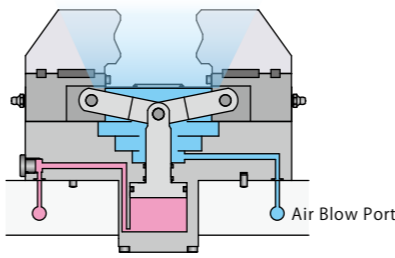
Easy to Machine the Mounting Surface of the Clamp Lever

Only key slot and bolt hole need to be machined for mounting the clamp lever.
Complicated serration machining is not required.

Secure Locking of Workpiece with Powerful Gripping Force

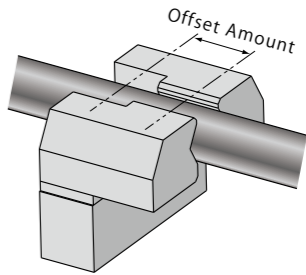
Air Blow Function FVA/FVC Only

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



Offset Available FVC Only

Offset of a workpiece is available.
Drill tools are more accessible to the workpiece.
Easier to avoid interference with a loader, etc.
※ Please contact us when using it with offset.



Double Action MAX. 7 MPa	 Model FVA		 Model FVD	 Model FVD-L	 Model FVC
	Slide Block Model		Link Motion Model		
Classification	Compact	High Power	Long Stroke	Long Stroke	
Cross Section	 Slide Block			 Link Lever	
Features	High Accuracy	High Accuracy and High Power	High Accuracy and Long Stroke	Long Stroke of Link Motion Model	
Locating Repeatability (X-axis Direction)	±0.01 mm			±0.03 mm	
Slider Stroke (One Side)	FVA0401 : 5 mm FVA0631 : 5 mm FVA1001 : 5 mm	FVD1600 : 6 mm FVD2500 : 8 mm FVD4000 : 8 mm	FVD1600-L : 12 mm FVD2500-L : 16 mm FVD4000-L : 16 mm	FVC0630 : 10 mm FVC1000 : 15 mm FVC1600 : 20 mm	






Pallet Clamp

No Skills Required!
The Fastest Fixture Setup



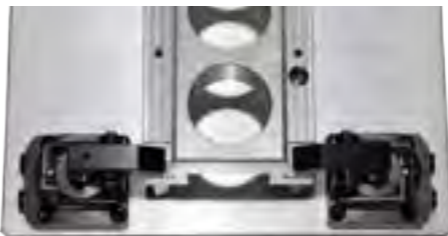
Simultaneous clamping + locating with 3 μ m locating repeatability is possible!
Fixture setup skills are no longer required.

	 Model VS	 Model VT	 Model WVS
Classification	Single Action Spring Lock / Hyd. Release	Double Action Hyd. Lock / Hyd. Release	Double Action Air Lock / Air Release
Operating Pressure Range	3.5 ~ 7 MPa	1.5 ~ 7 MPa	0.25 ~ 0.5 MPa
Clamping Force	2.5 ~ 40 kN	4 ~ 16 MPa	4 ~ 15.7 MPa

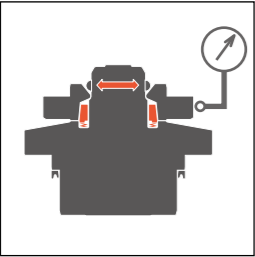
Universal Clamp

360° Rotatable Lever
Enables to Clamp Various Workpieces

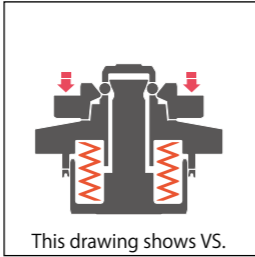
Clamp Cylinder with the Rotatable Clamp Lever at 360 Degrees



Pallet Clamp PAT.



Locating
Repeatability
3 μm



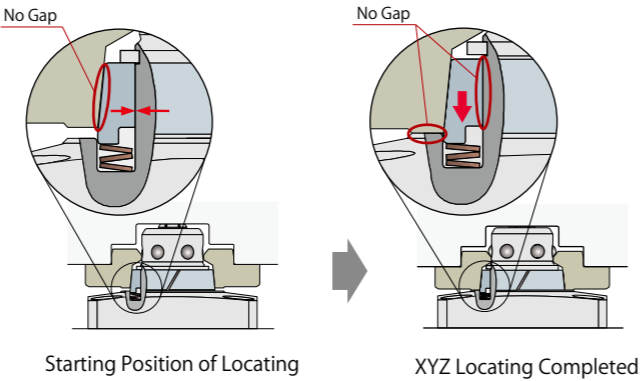
Clamping Force
2.5 ~ 40 kN

This drawing shows VS.

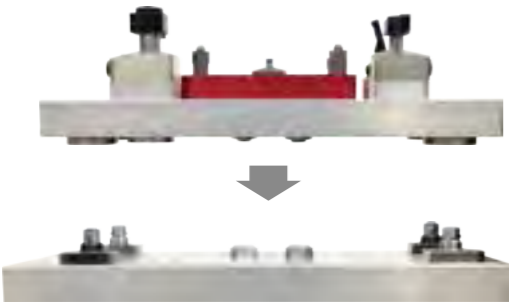
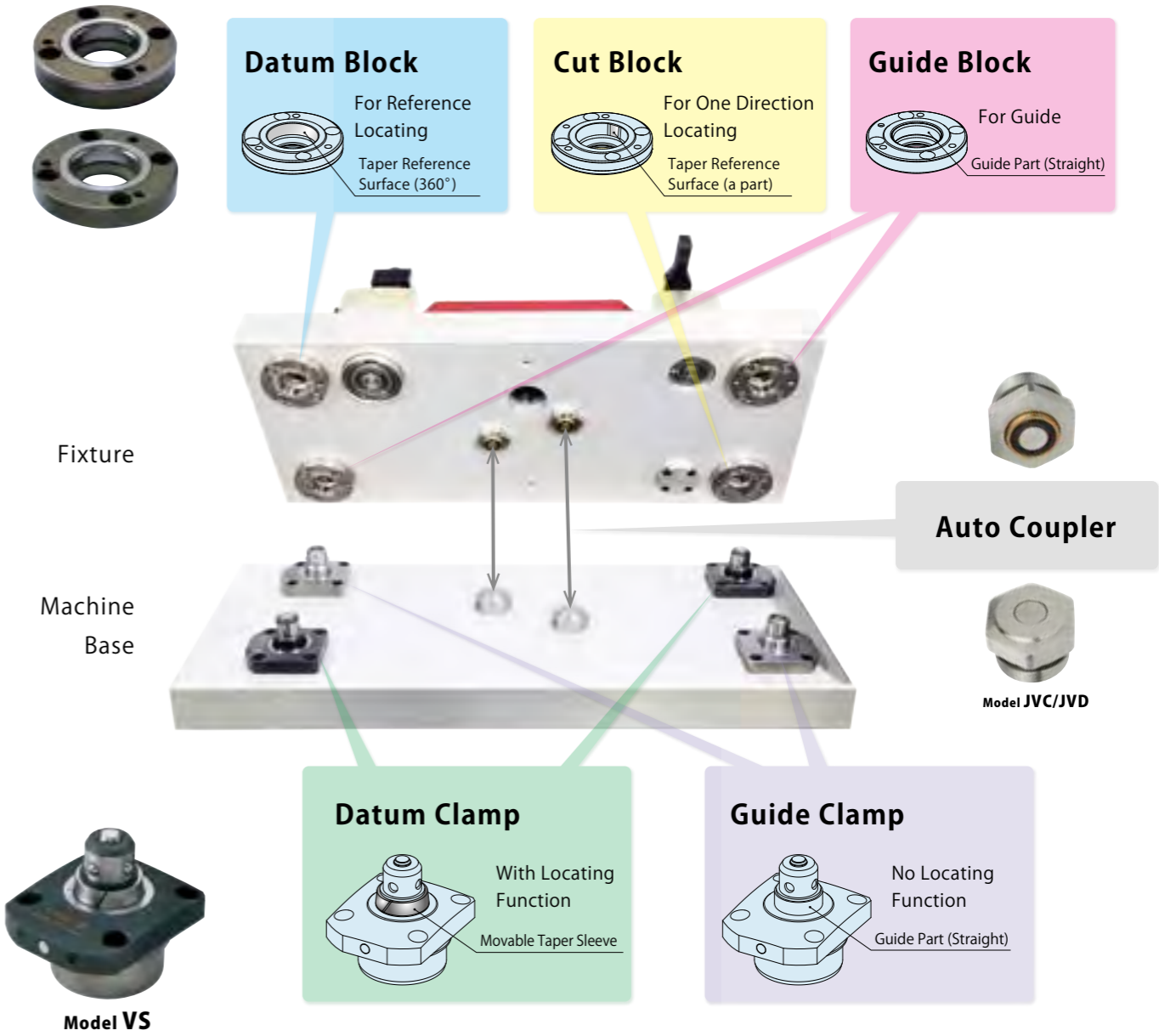
KOSMEK Exclusive Non-Backlash Mechanism

Dual Contact Enables High Rigidity + High Accuracy

KOSMEK Pallet Clamp enables anyone, even robots, to switch fixtures at once. KOSMEK exclusive locating function allows for high accuracy locating with 3 μm repeatability and clamping simultaneously.



KOSMEK Pallet Clamping Systems



① Loading the fixture ~ ② Loading completed

Release

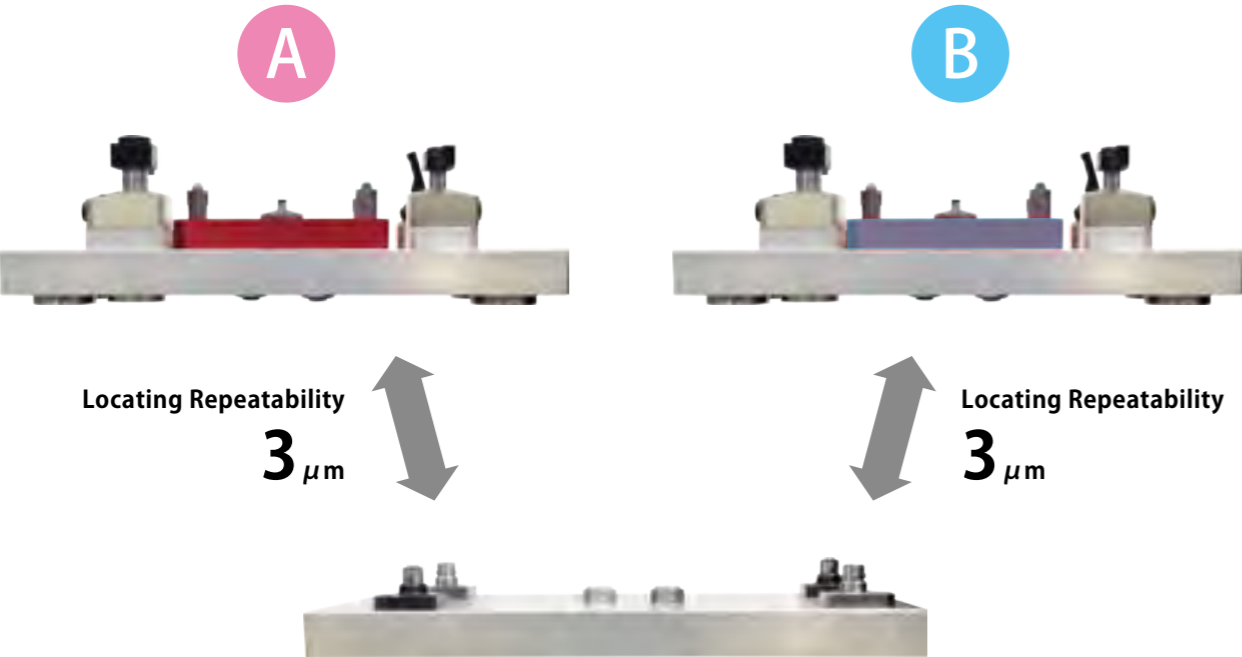


③ Locating + clamping of the fixture completed

Lock

- ① High accuracy is not required when loading a fixture. Anyone can load a fixture without technique.
- ② When loading is completed, the lift-up function of the Pallet Clamp will secure a gap to protect the locating part.
- ③ Fixture locating and clamping will be completed just by locking the Pallet Clamp from outside the machine. Also, using with auto couplers enables to supply hydraulic or air pressure to the fixture side.

Pallet Clamp PAT.



KOSMEK Pallet Clamp has 3 μm Locating Repeatability

Kosmek Pallet Clamp enables a fixture to be located within 3 μm accuracy as the last time the fixture was located. Machining a workpiece can be started as soon as its program is activated, resulting in drastic setup time reduction.

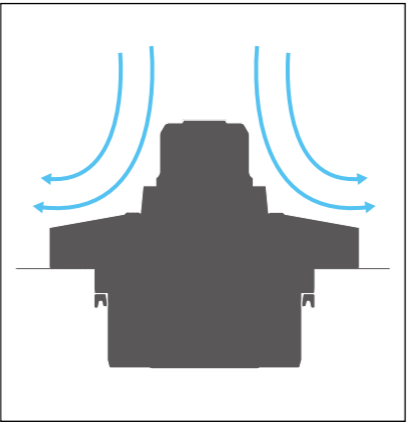
The Case Study of the Pallet Clamps: Used in the Machine Table (Tapered Cone) of the Machine Tool



Set-up Side

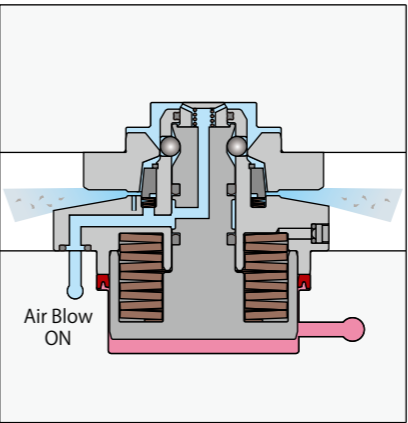
Inside the Machine

- Non-Leak Coupler (model: BGC/BGD) maintains hydraulic pressure after detached (Pallet Change: between set-up side and inside the machine). Additional hydraulic circuit is not required.
- The Pallet Clamps on the set-up side reduce setup time of fixture change, secure safety and connect the non-leak couplers.



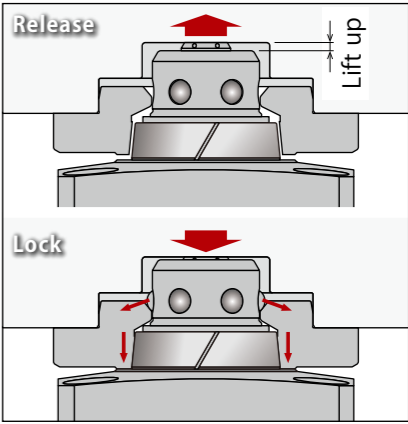
Easy-to-Clean Body Shape

The body shape allows for removing contaminants easily.



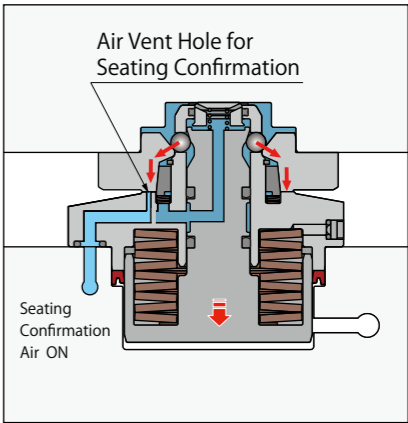
Air Blow Function

The air blow from inside the clamp removes cutting chips and coolant effectively.



Lift-up Function

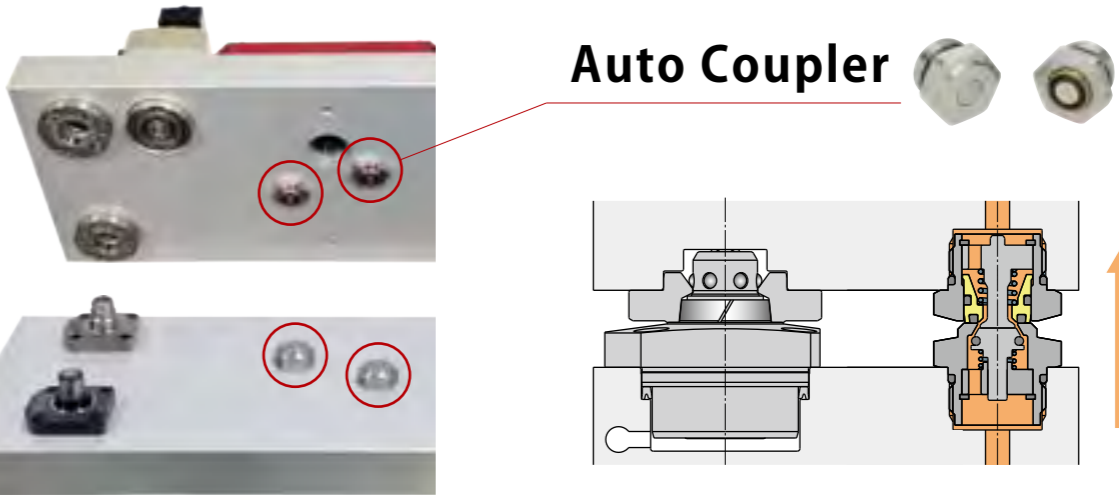
When setting a fixture, there is a gap between the tapered reference surface and seating surface to protect the locating part.



Seat Check Function

The air vent hole for seating confirmation detects contaminants.

Using with the Auto Coupler enables to supply hydraulic/air pressure to a fixture by auto connection.

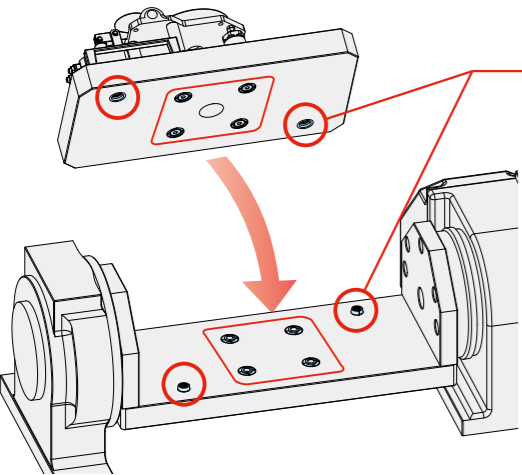
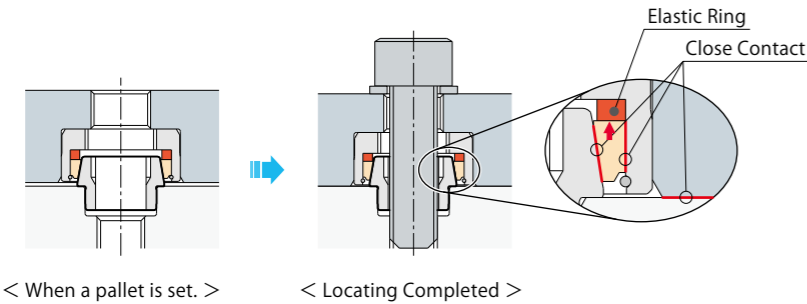
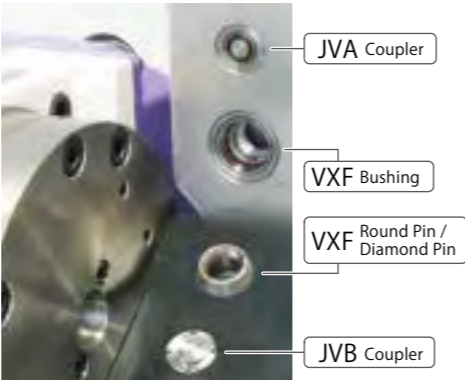


Screw Locator

Screw Locator

Just by tightening with a bolt
Locating Repeatability 3 μ m

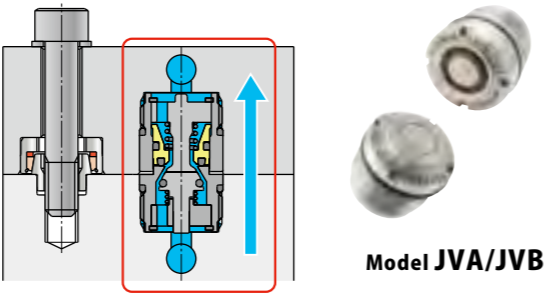
The same locating function as Pallet Clamp enables high accurate locating just by tightening a fixture with a bolt.



For Locating/Setup of Fixtures for Machining Applications

Auto Coupler

Using with the Auto Coupler enables to supply hydraulic or air pressure from the base plate to the pallet.



360° Rotatable Lever Enables to Clamp Various Workpieces

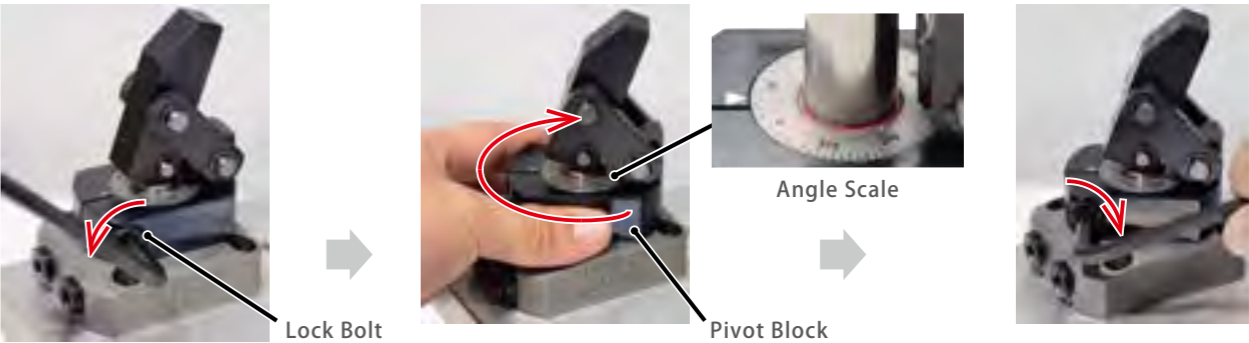
Ex.) Turn the Lever by 30° to clamp two different workpieces.



Just One Wrench to Position the 360° Rotatable Lever in Any Direction!

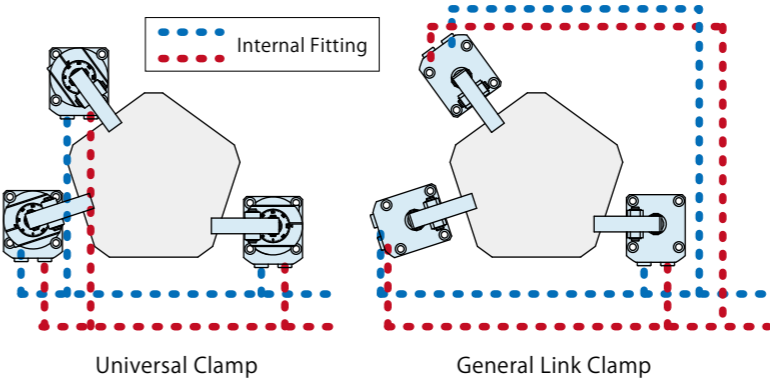
Lever Direction Changing Procedure

- ① Loosen the Lock Bolt at released state. ② Turn the Pivot Block. (Angle Scale in 5° increments.) ③ Tighten the Lock Bolt.



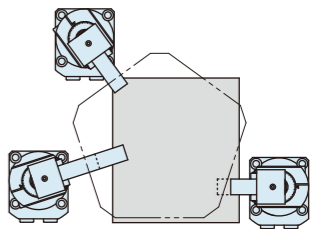
Simpler Internal Fitting Design Possible!

Since the lever direction is 360° rotatable, internal fitting design can be so simple and there is no need to consider cylinder directions.



Quick Lever Change Possible!

Simpler and quicker lever changing is possible by using Quick Change Lever (option A).



Company Profile



KOSMEK LTD. Head Office

Company Name	KOSMEK LTD.
Established	May 1986
Capital	¥99,000,000
President	Tsutomu Shirakawa
Employee Count	270
Group Company	KOSMEK LTD. KOSMEK ENGINEERING LTD. KOSMEK (USA) LTD. KOSMEK EUROPE GmbH KOSMEK (CHINA) LTD. KOSMEK LTD. - INDIA
Business Fields	Design, production and sales of precision products, and hydraulic and pneumatic equipment
Customers	Manufacturers of automobiles, industrial machinery, semiconductors and electric appliances
Banks	Resona Bank, MUFG Bank, The Senshu Ikeda Bank

Sales Offices

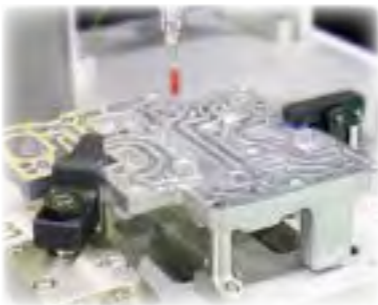
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INDONESIA (Indonesia Exclusive Distributor) PT. Yamata Machinery	TEL. +62-21-29628607 FAX. +62-21-29628608 Delta Commercial Park I, Jl. Kenari Raya B-08, Desa Jayamukti, Kec. Cikarang Pusat Kab. Bekasi 17530 Indonesia

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Nagoya Sales Office	TEL. 0566-74-8778 FAX. 0566-74-8808 〒446-0076 愛知県安城市美園町2丁目10番地1
Fukuoka Sales Office	TEL. 092-433-0424 FAX. 092-433-0426 〒812-0006 福岡県福岡市博多区上牟田1丁目8-10-101

Our Products



KOSMEK WORK CLAMPING SYSTEMS

Machine Tool Related Products

Our clamping system enables boltless automation to load and unload workpieces easier.
Non-leak valve enables the use of hydraulic source and fixtures in a disconnected condition after locking (clamping action).
We offer a wide range of products such as hydraulic/pneumatic actuators, supports, positioning equipment, valves, couplers, etc.



KOSMEK FACTORY AUTOMATION SYSTEMS

FA • Industrial Robot Related Products

KOSMEK robotic hand changer, robotic hand, positioning equipment and other products improve automation, precision and setup of transfer, assembly, deburring, testing and various other processes.



DIECAST CLAMPING SYSTEMS

For Diecast Machines

Kosmek Diecast Clamping Systems (KDCS) save the time of the changeover of die casting and magnesium molding machines under severe conditions. ex) mold release agents and high temperature.



QUICK DIE CHANGE SYSTEMS

For Press Machines

Kosmek Quick Die Change Systems are a cost effective tool to improve the working environment, allow diversified and small-lot production, and reduce press down time.
Available for a wide range of machines; from large size transfer-presses to smaller high speed presses.



QUICK MOLD CHANGE SYSTEMS

For Injection Molding Machines

Automatic clamping systems have reduced mold change times and increased production efficiency for plastics manufacturers in a multitude of industries.
We offer a variety of different clamping options, including hydraulically powered clamps, pneumatic clamps with a force multiplying mechanism, and magnetic clamping systems.