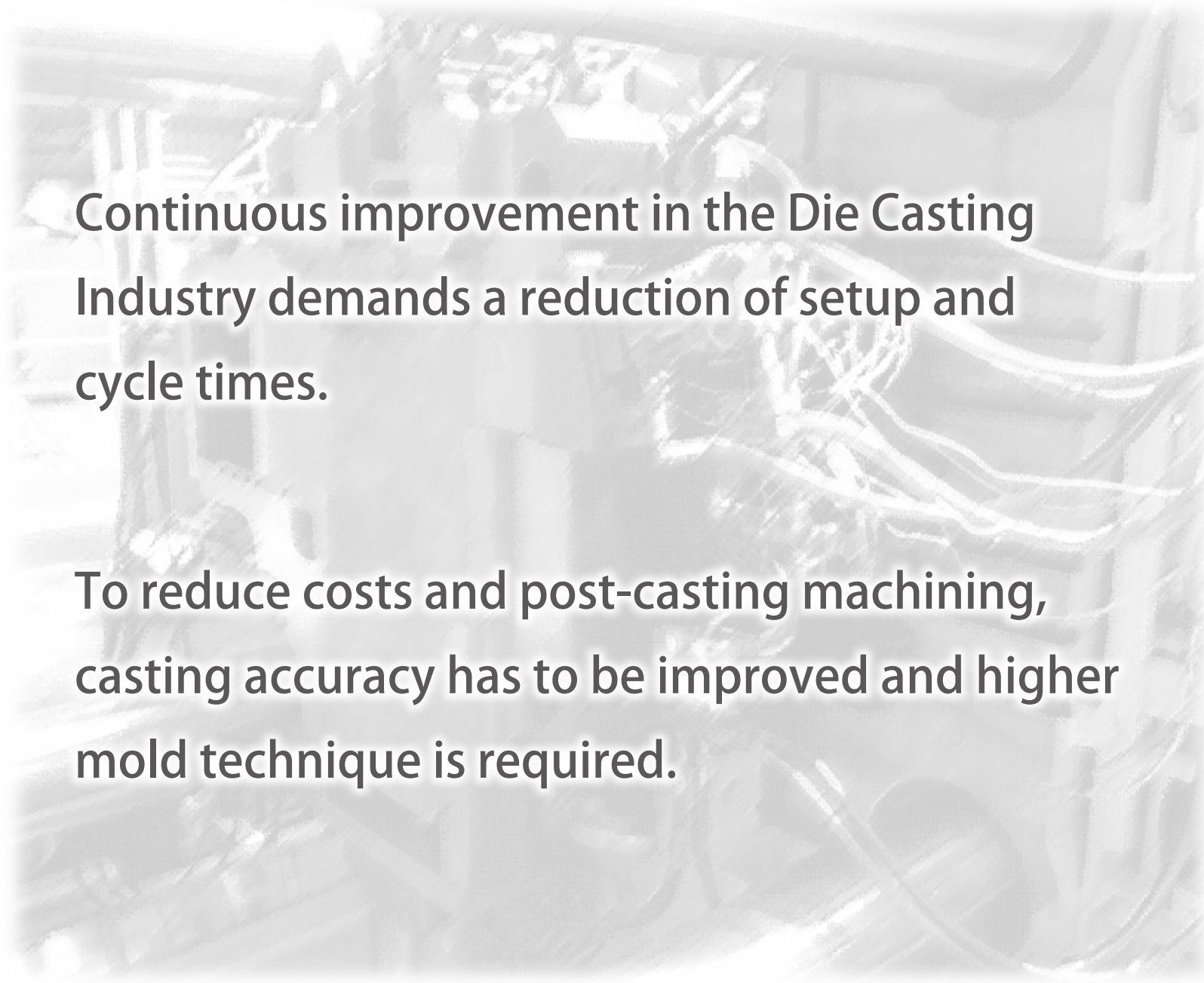


For Setup Time Reduction and Quality Improvement

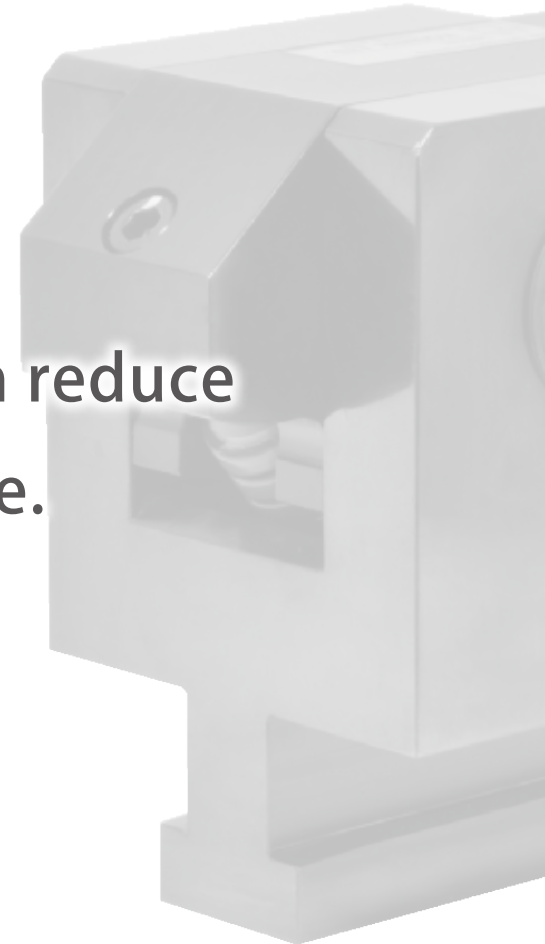
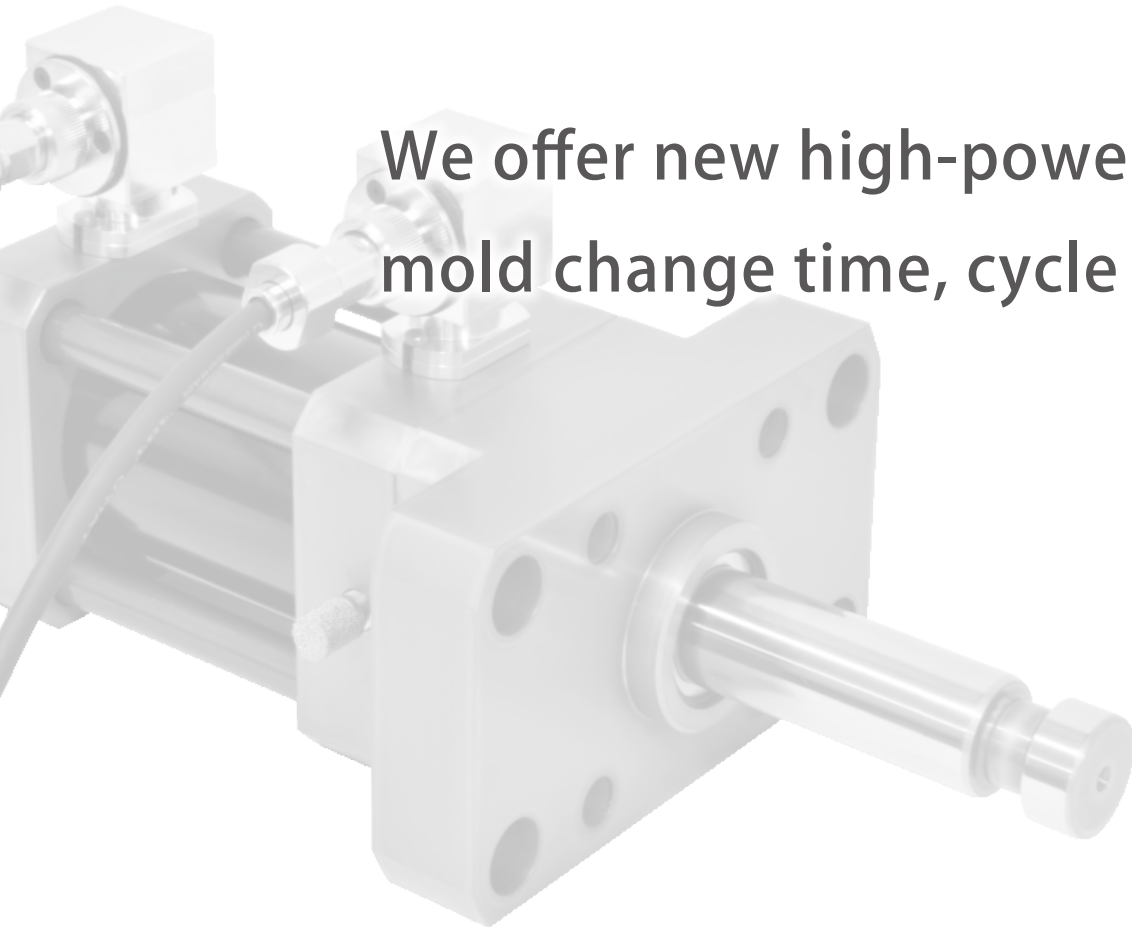
Kosmek Products for Diecast Machines



Continuous improvement in the Die Casting Industry demands a reduction of setup and cycle times.

To reduce costs and post-casting machining, casting accuracy has to be improved and higher mold technique is required.

We offer new high-power cylinders that can reduce mold change time, cycle time, and mold size.

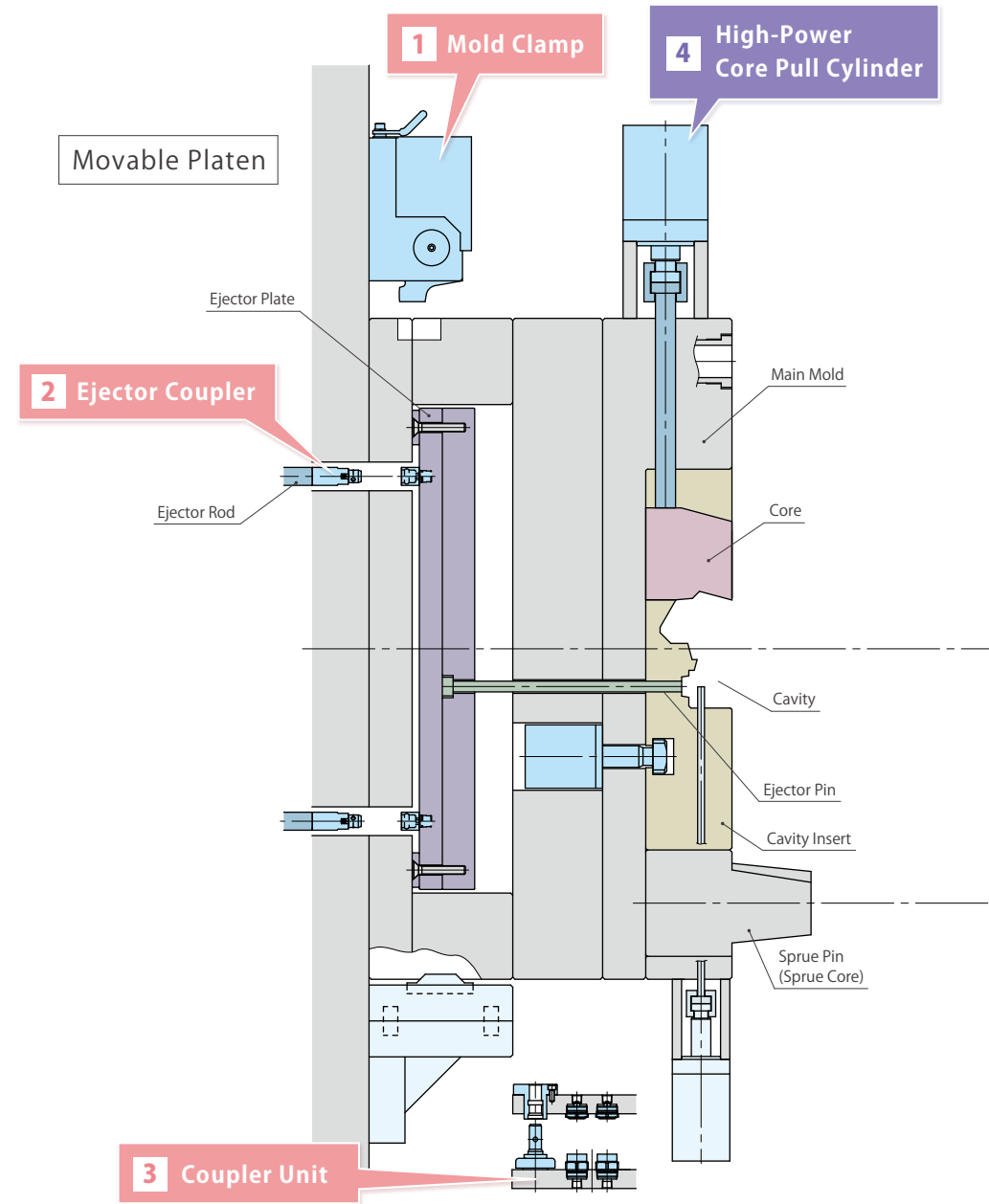


Machine Side Setup Time Reduction

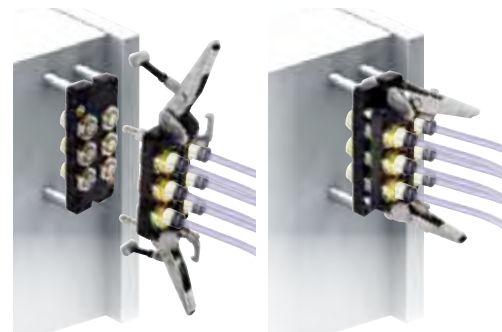
Kosmek Products



1 Mold Clamping System for Diecasting Machines



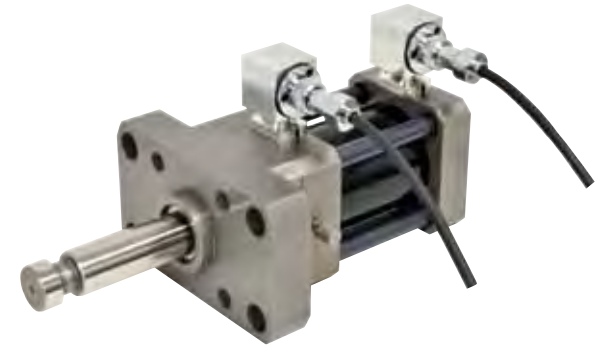
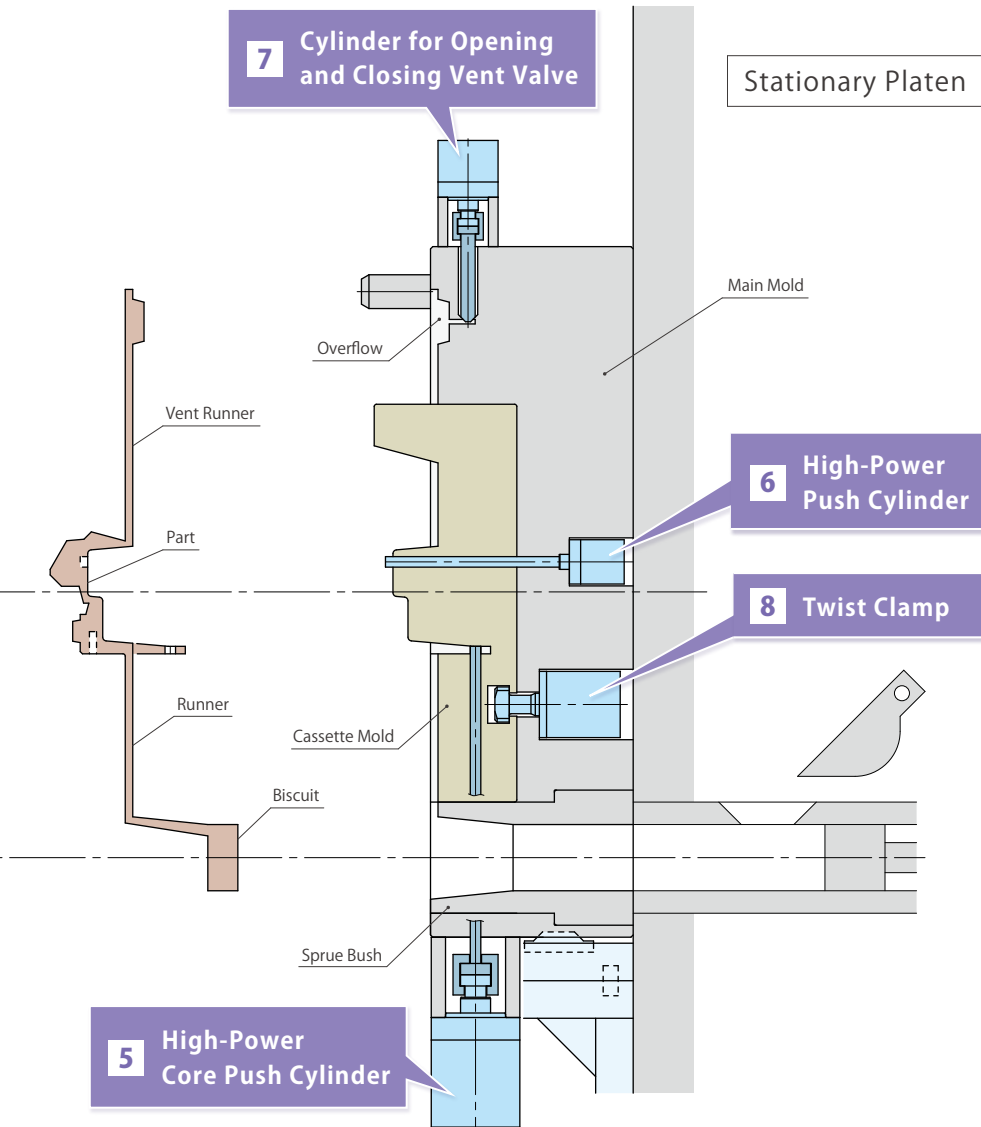
2 Ejector Coupler



3 Coupler Unit

Overview

Mold Side Cycle Time Reduction



- 4 High-Power Core Pull Cylinder**
- 5 High-Power Core Push Cylinder**



- 6 High-Power Push Cylinder**
- 7 Cylinder for Opening and Closing Vent Valve**



- 8 Twist Clamp**

Mold Clamping System for Diecasting Machines



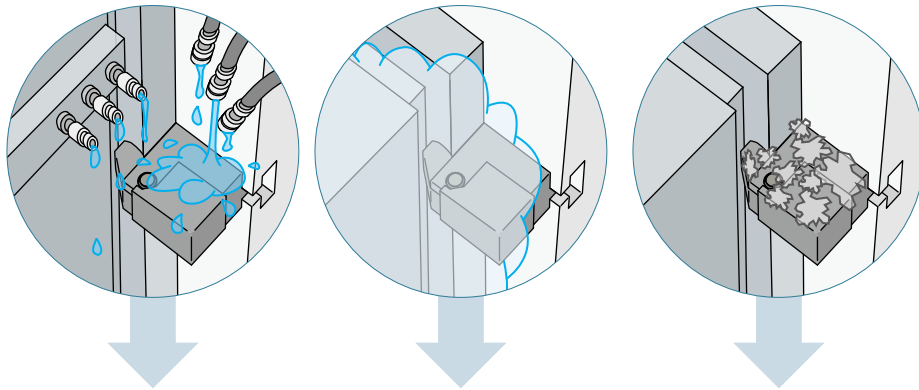
No Release Error Diecast Mold Clamp

Typical Severe Environment of Diecasting

Process Water

Mold Lubricant

Aluminum



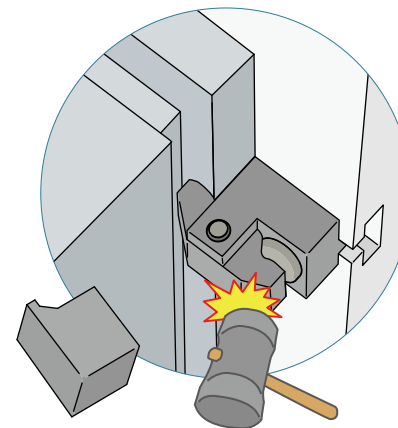
Corrosion • Oil Leak

Severe environment causes corrosion and oil leak of clamp...



Release Error

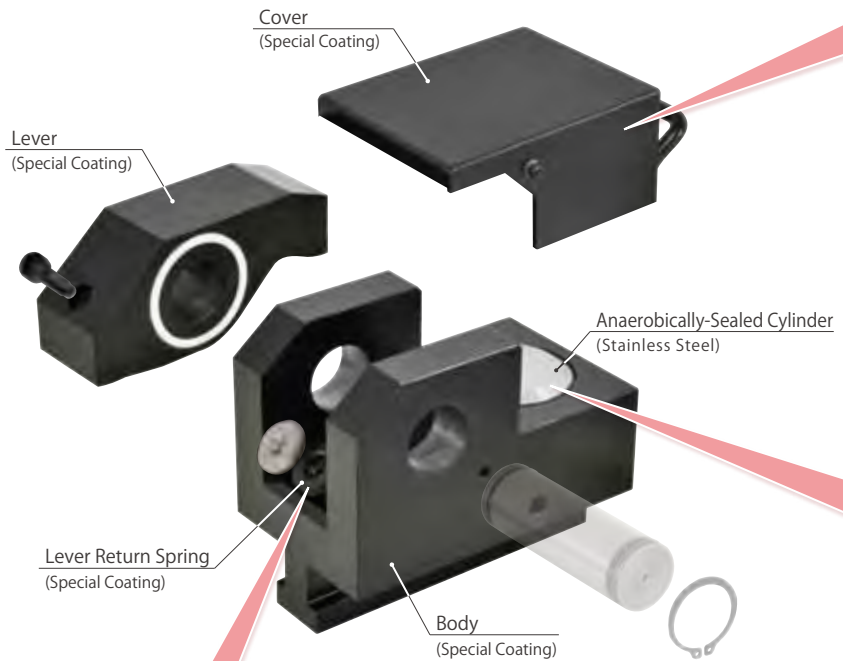
This leads to release error of clamp and affects mold change time.



Sometimes an adhered clamp lever has to be forcibly released by hitting it.

Caused by Mold Lubricant and Water **Anti-Corrosion Special Coating**

**Kosmek
Mold
Clamp**



Powerful Lever Return Spring

Powerful Lever Return Spring larger than that of the old model ensures lever release.

Special Coating Capability

Special coating greatly reduce the risk of corrosion.

General Blackening	
	Corrosion in a short period. Peeled corrosion may get into the sliding part and damage the sealing.

Kosmek Special Coating	
	No corrosion at all. Ensures stable movement for a long period.

※ 【Comparison Test】 Condition after soaked in 5% salt solution, washed after 200hours and dried after 24hours.

Longer Operation Life with Anaerobically-Sealed Cylinder

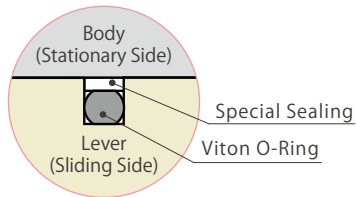
General Clamp Cylinder	
	Invasion of mold lubricant and water from air vent hole of cylinder release spring may cause spring damage and release error due to corrosion.

Kosmek Anaerobically-Sealed Cylinder	
	Anaerobically-sealed cylinder and scraper prevent invasion of foreign substances into clamp. This reduces the risk of release error.

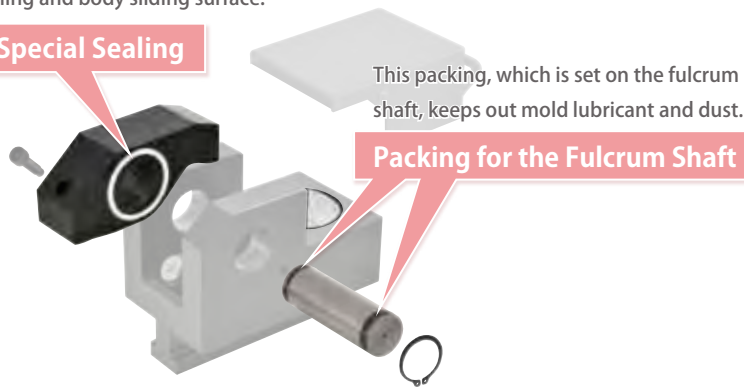
Mold Clamping System for Diecasting Machines

Sealing Technique Ensures Longer Operating Life

- Low Friction and Smooth Operation
- Wear Resistant and Longer Operating Life
- Maintains high-quality sealing with no clearance between special sealing and body sliding surface.



High Strength Special Sealing



Case Study of 5-Year-Old Clamp

Pin Hole Mounting Part

The pin hole part which affects the operation is clean. No invasion of foreign substance.



Pin

There is no invasion of foreign substance by the use of special seal and viton o-ring.



T-Leg Part

Special coating prevents it from rusting.

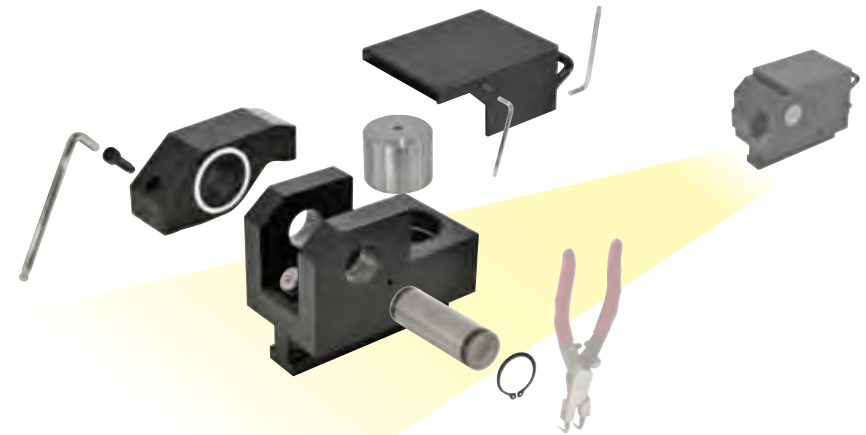
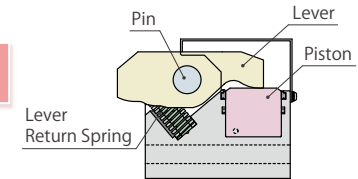


No invasion of foreign substance reduces release error.

Simplify Sudden Maintenance

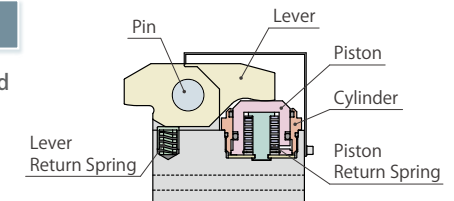
No Specific Skill is Required

No special tools are required for disassembly • assembly. Since anyone can assemble and disassemble the clamp, only a seal kit is needed to perform on-site maintenance.



Previous Model

Disassembly and assembly of the lever and cylinder required special tools and jigs...



Model **GKB/GKC**

Model **CT□/CU□**

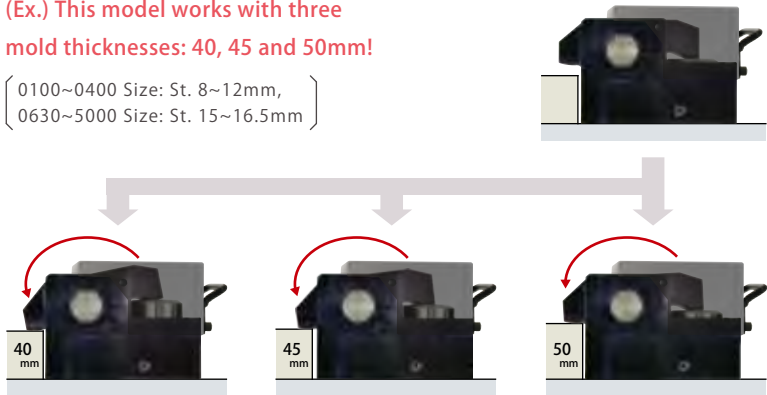
A Wide Range of Variations

Longer Stroke Model

The World's First Long Stroke Lever Clamp!

For model 0630, the full stroke is 15mm!
(Ex.) This model works with three mold thicknesses: 40, 45 and 50mm!

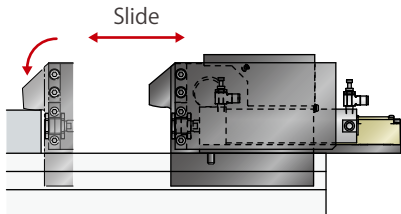
(0100~0400 Size: St. 8~12mm,
0630~5000 Size: St. 15~16.5mm)



T-Slot Auto Slide Model

Push button operation completes the clamp positioning and lock operation!

There is no need to go to the non-operation side. Clamp movement is automated.



More Time Reduction



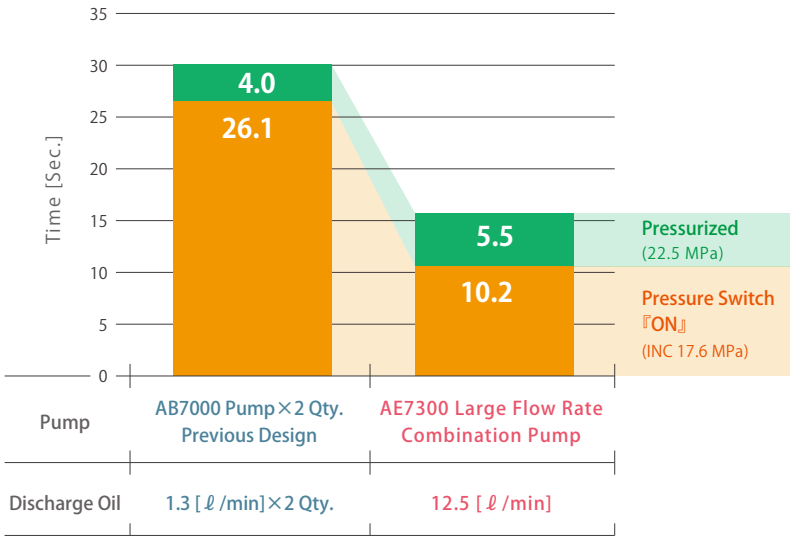
Newly Developed Large Flow Air-Hydraulic Combination Pump

Reduces 50% of Clamp Operation Time^{※1}

(In comparison with other Kosmek products.)

(Ex.) For an 850 ton machine with eight 2500 clamps^{※2}

clamp operation time is 16 seconds!!



Pump Pressurization Time Comparison

※1. Reduced time varies depending on piping, etc.
※2. Cylinder Capacity : About 700 mℓ

Ejector Coupler

One Touch to Connect Ejector Rods

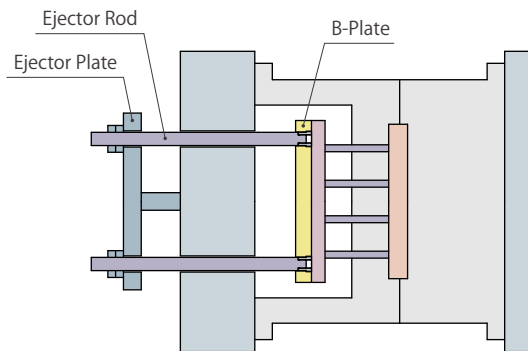
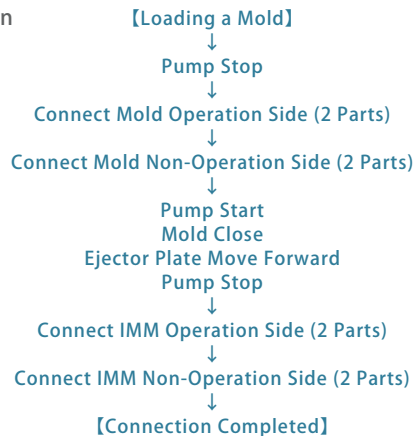
Various Problems of Current Ejector Rod Connection



When Connecting with Ejector Rods

To connect B-plate (mold side) and ejector plate (IMM side), total of eight positions need to be tightened/untightened. Also, it is dangerous to move around operation/non-operation side, and to work near the mold close device.

Ejector Rod Connection Procedure

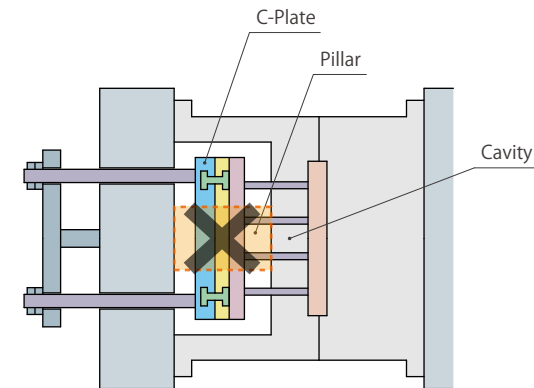


Poor Work Efficiency,
Dangerous and Takes Time



When Connecting with C-Plate

If installing C-plate to improve work efficiency, a pillar to support cavity cannot be placed. This leads to unstable product quality.

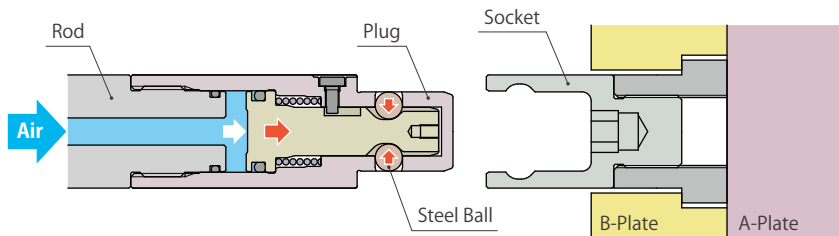


C-plate simplifies connection work, but quality is unstable since pillar cannot be installed.

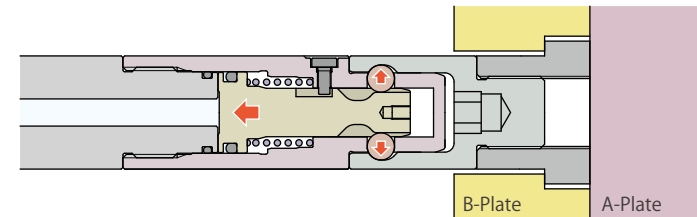
Ejector Coupler Connects Ejector Rod Instantly



Released State
By supplying air pressure, steel balls are free to move so the plug can be pulled out.



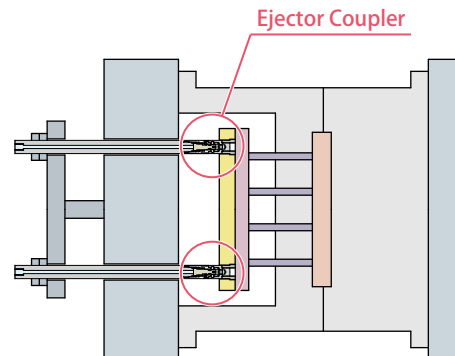
Locked State
By releasing air pressure, steel balls are pushed out with spring force, and the plug and socket are connected.



Kosmek
Ejector
Coupler

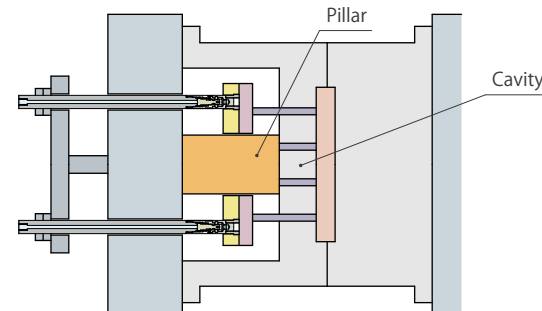
Safely Reduce Setup Time

Ejector rod is connected with ON/OFF of air pressure. No dangerous work is required and setup time is reduced.



Able to Install a Pillar

Since the rod part is connected, the pillar can be placed on the back side of the cavity which receives casting pressure. This makes product quality stable.



Ejector Coupler

Model **PMC**

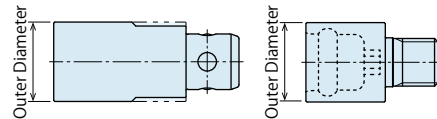
Model No.

PMC 025 0 - P

1 2 3

1 Body Size

- 025** : Outer Diameter ϕ 25mm
- 030** : Outer Diameter ϕ 30mm
- 040** : Outer Diameter ϕ 40mm

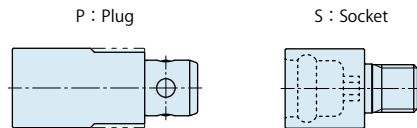


2 Design No.

0 : Revision Number

3 Classification

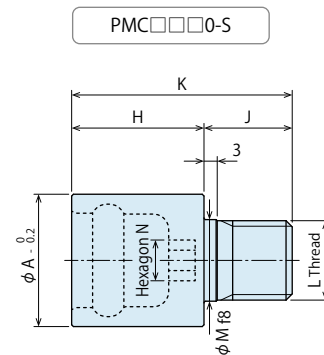
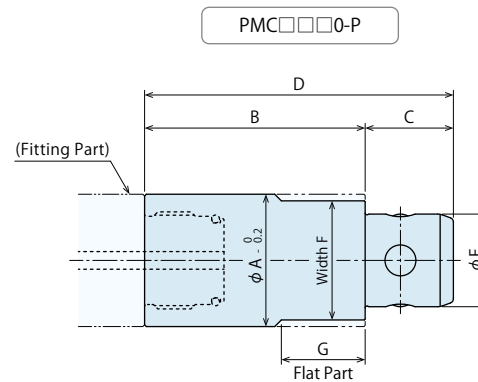
P : Plug
S : Socket



Specifications

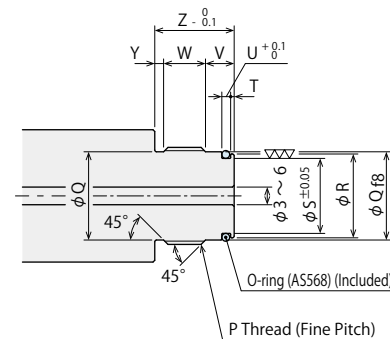
Model No.	PMC0250	PMC0300	PMC0400	
Max. Allowable Stretching Force	kN	10	16	25
Max. Allowable Compressive Force	kN	25	40	63
Release Cylinder Capacity	cm ³	0.90	1.73	3.53
Air Pressure	MPa	0.3~1.0		
Withstanding Pressure	MPa	1.5		
Operating Temperature	°C	0~120		

External Dimensions



Rod Edge Machining Dimensions

Prepared by Customer



Model No.	PMC0250	PMC0300	PMC0400	
Plug	A	25	30	40
	B	45	50	55
	C	17	20	26
	D	62	70	81
	E	17.5	21	28
	F	22	27	36
	G	14	18	22
Socket	H	25	30	38
	J	19	22	29
	K	44	52	67
	L	M16 x 2	M18 x 2.5	M24 x 3
	M	16.5 - $\begin{smallmatrix} 0.016 \\ 0.043 \end{smallmatrix}$	18.5 - $\begin{smallmatrix} 0.020 \\ 0.053 \end{smallmatrix}$	24.5 - $\begin{smallmatrix} 0.020 \\ 0.053 \end{smallmatrix}$
	N	8	10	12
	P	M18 x 1.5	M22 x 1.5	M26 x 1.5
Fitting Edge Machining Dimensions	Q	16	20	24
	Qf8	16 - $\begin{smallmatrix} 0.016 \\ 0.043 \end{smallmatrix}$	20 - $\begin{smallmatrix} 0.020 \\ 0.053 \end{smallmatrix}$	24 - $\begin{smallmatrix} 0.020 \\ 0.053 \end{smallmatrix}$
	R	15	19	23
	S	13	17	21
	T	0.8	0.8	0.8
	U	2	2	2
	V	6.5	6.5	6.5
	W	9.5	9.5	10
	Y	2	2	2
	Z	18	18	18.5
O-ring (AS568 Series)	AS568-014 (75)	AS568-016 (75)	AS568-019 (75)	

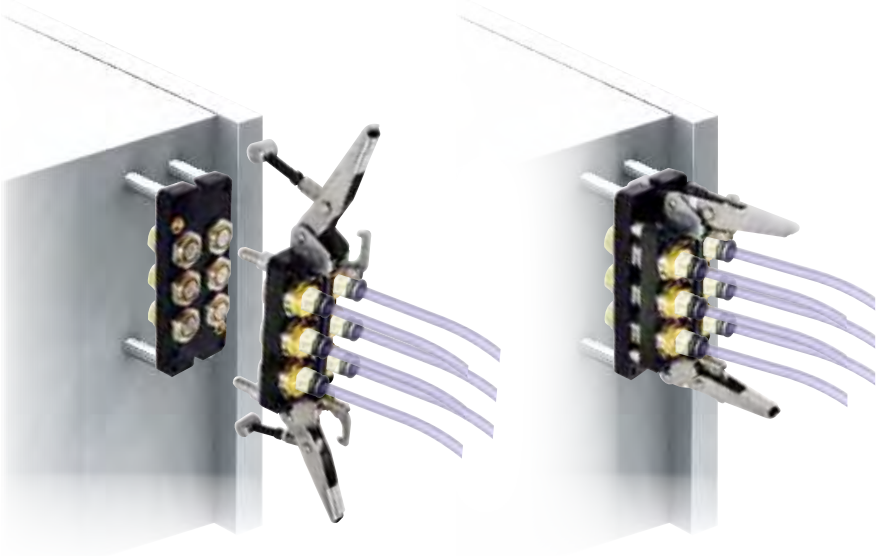
Coupler Unit

One Touch to Connect Multiple Couplers for Process Water

Manual Coupler Unit

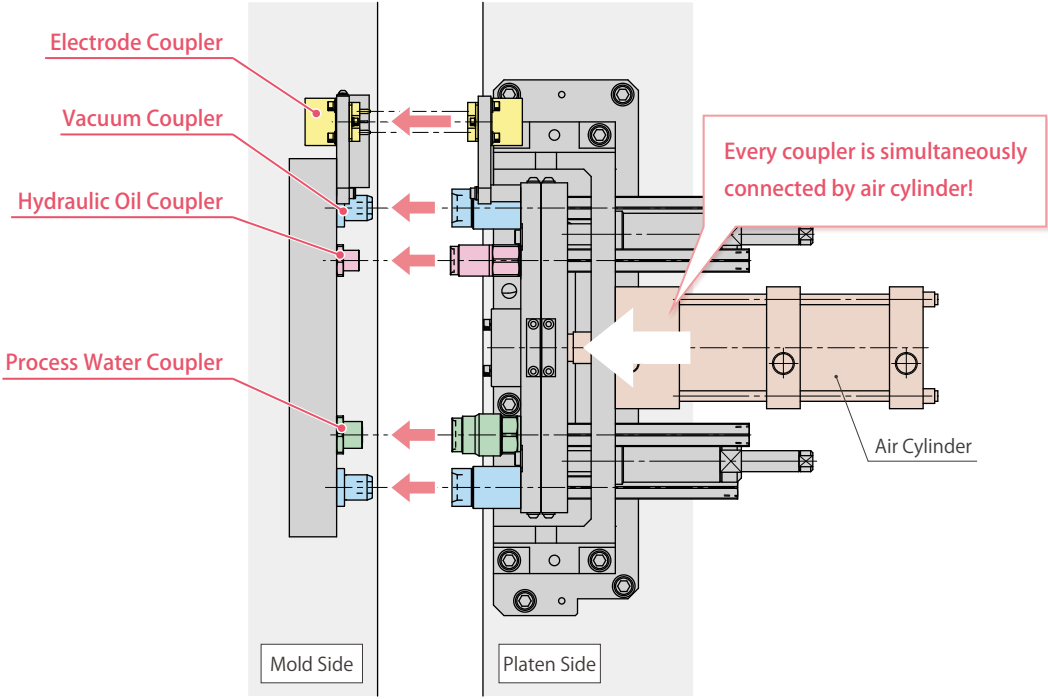
Even with check valve
pilot operation is not required!

User-Friendly Handle Operation
Easy to Connect/Disconnect!



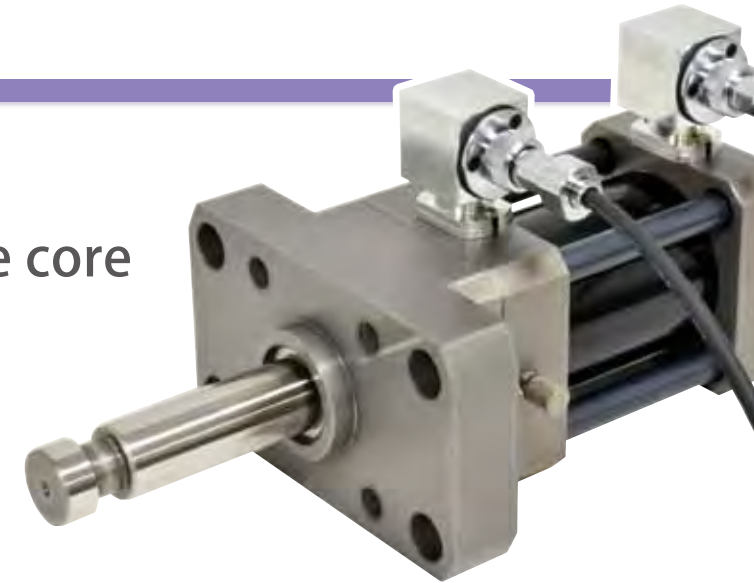
Auto Coupler Unit

Connection of fluid/electrode couplers are all automated!



High-Power Core Pull Cylinder PAT.P.

Exerts high power only when pulling out the core

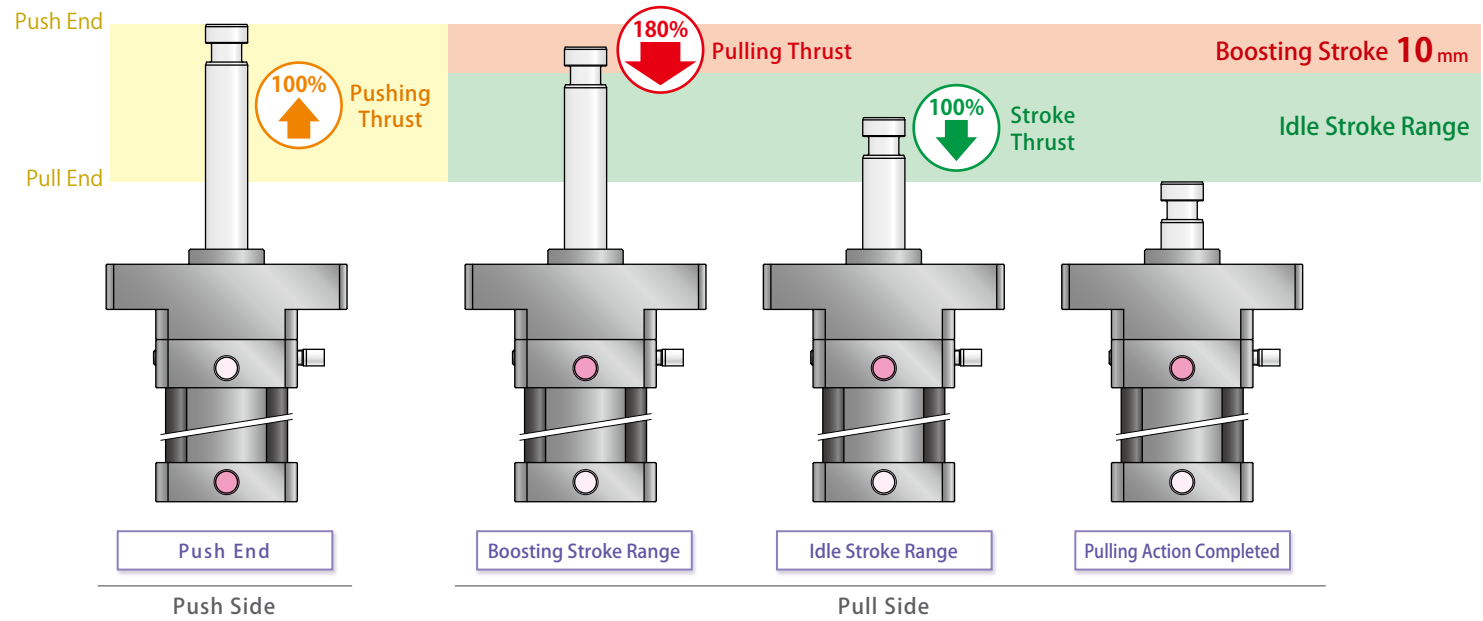
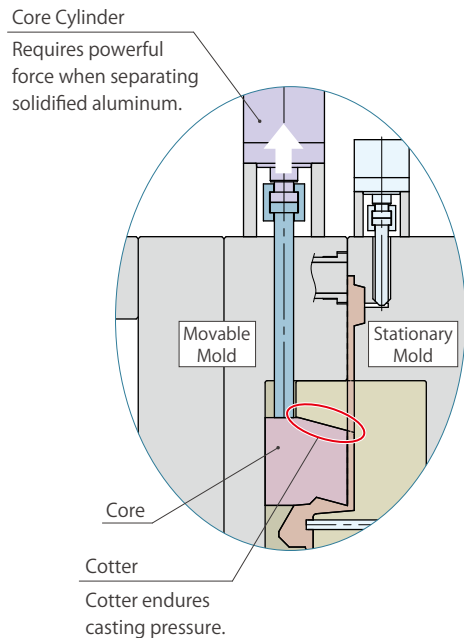


Required Points of Core Cylinder

Cylinder for slide core requires strong force when pulling out the core after casting. No great power is required when moving forward and backward.

High-Power Core Pull Cylinder

Kosmek High-Power Core Pull Cylinder exerts strong force of 180% only when pulling out the core, and exerts lower force of 100% when moving forward and backward which allows high-speed operation.

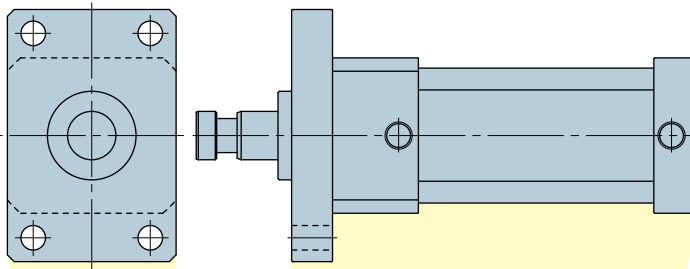


3 Size Smaller Compared to General Linear Cylinder

3 Size Down Ex.

General Linear Cylinder

Cylinder Inner Diameter ϕ 140 mm
 Pulling Thrust 184.1 kN
 Weight About 80 kg



Cylinder Capacity*

58%
Down!

Projected Area

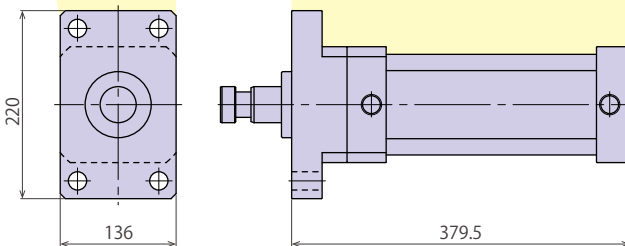
48%
Down!

Cylinder Capacity*

Push Side 49%
Down!
 Pull Side 47%
Down!

High-Power Core Pull Cylinder

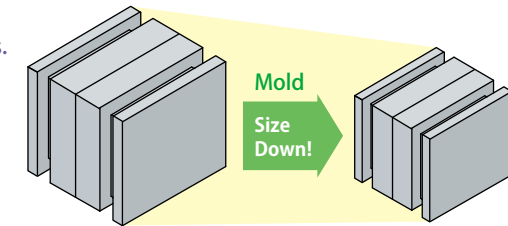
Cylinder Inner Diameter ϕ 100 mm
 Pulling Thrust 182.1 kN
 Weight About 33.4 kg



* At 200mm Stroke

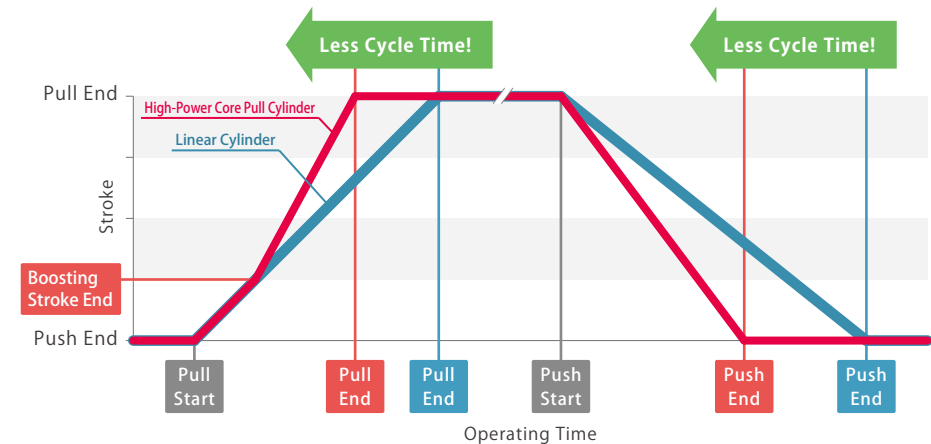
Smaller Projected Area Reduces Mold Size

Compact cylinder for slide core allows for smaller and lighter molds.



Smaller Cylinder Capacity Reduces Cycle Time

High-power core pull cylinder with smaller cylinder capacity is high speed and cycle time can be reduced.



Operating Time Image (Compared to cylinder with the same pulling thrust.)

High-Power Core Pull Cylinder PAT.P.

Model PCA

Model No.

PCA **1** **00** **0** - **A** **C** **F** - **150** - **V** - **0**

1 Cylinder Inner Diameter

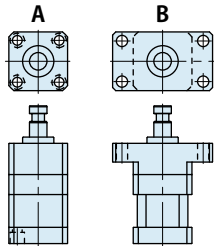
- 040** : ϕ 40 mm
- 063** : ϕ 63 mm
- 080** : ϕ 80 mm
- 100** : ϕ 100 mm
- 125** : ϕ 125 mm

2 Design No.

- 0** : Revision Number

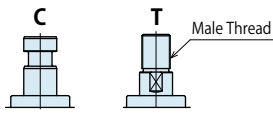
3 Mounting Shape

- A** : Compact Model (Flangeless)
- B** : Flange Model



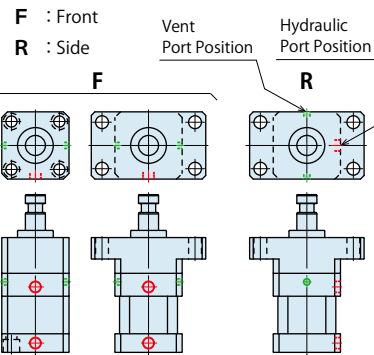
4 Rod Shape

- C** : Coupling
- T** : Male Thread



※. Only **C** can be selected for **125**.

5 Port Position



※. Only **F** can be selected for **A**.

6 Stroke

- When selecting **1040**, **3A**
15 ~ 150 : Select from Full Stroke 15~150mm
- When selecting **1040**, **3B**
15 ~ 200 : Select from Full Stroke 15~200mm
- When selecting **1063/080/100/125**, **3A**
15 ~ 200 : Select from Full Stroke 15~200mm
- When selecting **1063/080/100/125**, **3B**
15 ~ 250 : Select from Full Stroke 15~250mm

※. Select **6** Stroke in 5mm increments.

7 Operating Temperature

- N** : Standard 0 ~ 70 °C
- V** : High Temperature 0 ~ 120 °C

8 Usable Fluid ※. Please contact us.

- 0** : General Hydraulic Oil (Equivalent to ISO-VG-32)
- G** : Water·Glycol
- S** : Silicon Oil
- F** : Fatty Acid Ester

Specifications

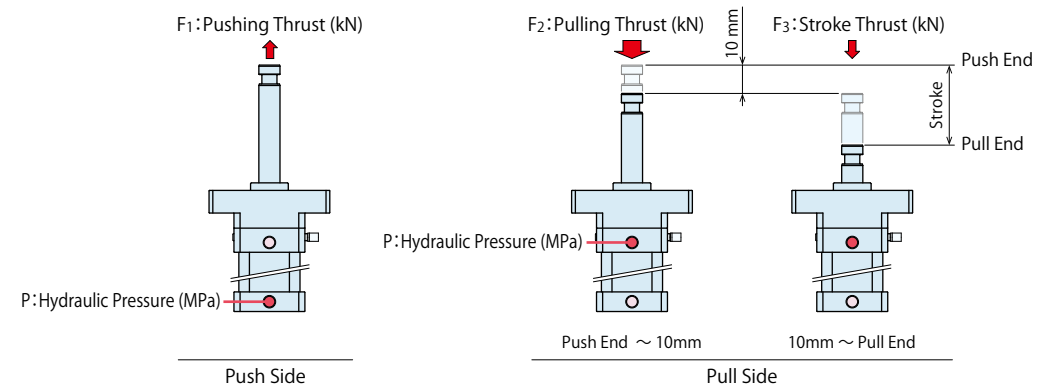
- ※1. The stroke in calculation of cylinder capacity and weight should be calculated in mm.
- ※2. Minimum pressure to operate the cylinder with no load.

Model No.	PCA0400	PCA0630	PCA0800	PCA1000	PCA1250
Cylinder Inner Diameter mm	ϕ 40	ϕ 63	ϕ 80	ϕ 100	ϕ 125
Stroke	3A Compact 15 ~ 150			15 ~ 200	
(5mm increments) mm	3B Flange 15 ~ 200			15 ~ 250	
Cylinder ^{※1}	1.26 × Stroke	3.12 × Stroke	5.03 × Stroke	7.85 × Stroke	12.27 × Stroke
Capacity cm ³	1.00 × Stroke + 8.4	2.50 × Stroke + 20.4	4.04 × Stroke + 35.5	6.26 × Stroke + 58.7	9.81 × Stroke + 77.4
Operating Pressure MPa	15.0				
Max. Operating Pressure MPa	16.0				
Min. Operating Pressure ^{※2} MPa	1.0				
Withstanding Pressure MPa	24.0				
Operating Temperature °C	7 N : Standard 0 ~ 70 V : High Temperature 0 ~ 120				
Weight ^{※1}	3A Compact 0.025 × Stroke + 4.5	0.050 × Stroke + 10.1	0.070 × Stroke + 17.2	0.096 × Stroke + 26.2	0.137 × Stroke + 44.3
kg	3B Flange 0.006 × Stroke + 4.5	0.013 × Stroke + 10.2	0.022 × Stroke + 17.0	0.034 × Stroke + 26.6	0.053 × Stroke + 45.5

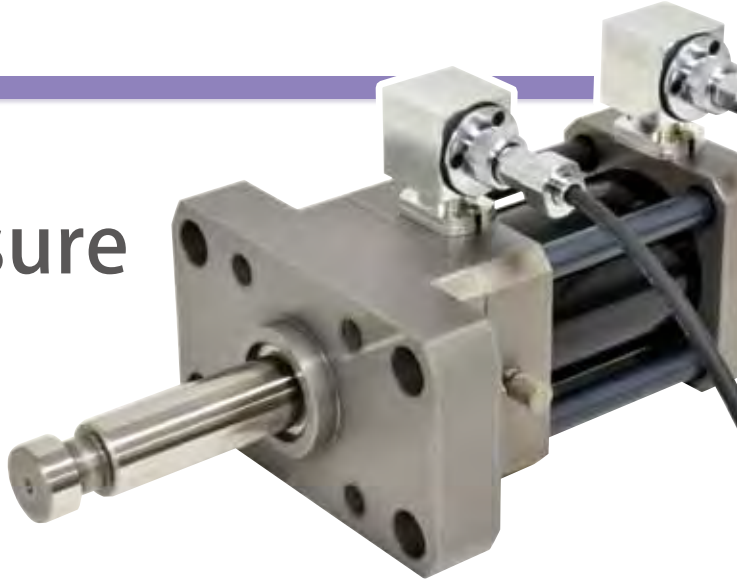
Ability

※3. F₁ : Pushing Thrust (kN), F₂ : Pulling Thrust (kN), F₃ : Stroke Thrust (kN), P : Hydraulic Pressure (MPa) (kN)

Model No.	PCA0400	PCA0630	PCA0800	PCA1000	PCA1250		
Pushing Thrust	At P: 15MPa	18.8	46.8	75.4	117.8	184.1	
	Calculation Formula ^{※3}	F ₁ =1.25 × P	F ₁ =3.12 × P	F ₁ =5.03 × P	F ₁ =7.85 × P	F ₁ =12.27 × P	
Pull Side	Pulling Thrust (Push End ~ 10mm)	At P: 15MPa	27.6	68.1	113.8	182.1	263.2
		Calculation Formula ^{※3}	F ₂ =1.84 × P	F ₂ =4.54 × P	F ₂ =7.59 × P	F ₂ =12.14 × P	F ₂ =17.55 × P
	Stroke Thrust (10mm ~ Pull End)	At P: 15MPa	15.0	37.5	60.6	94.0	147.1
		Calculation Formula ^{※3}	F ₃ =1.00 × P	F ₃ =2.50 × P	F ₃ =4.04 × P	F ₃ =6.27 × P	F ₃ =9.81 × P



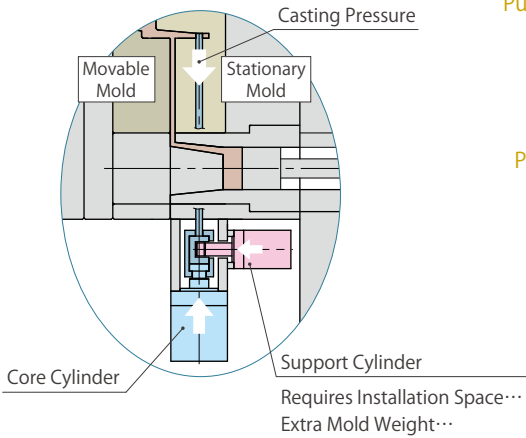
High-Power Core Push Cylinder PAT.P.



Mechanical Lock Withstands Casting Pressure

Required Points of Core Cylinder for Stationary Mold

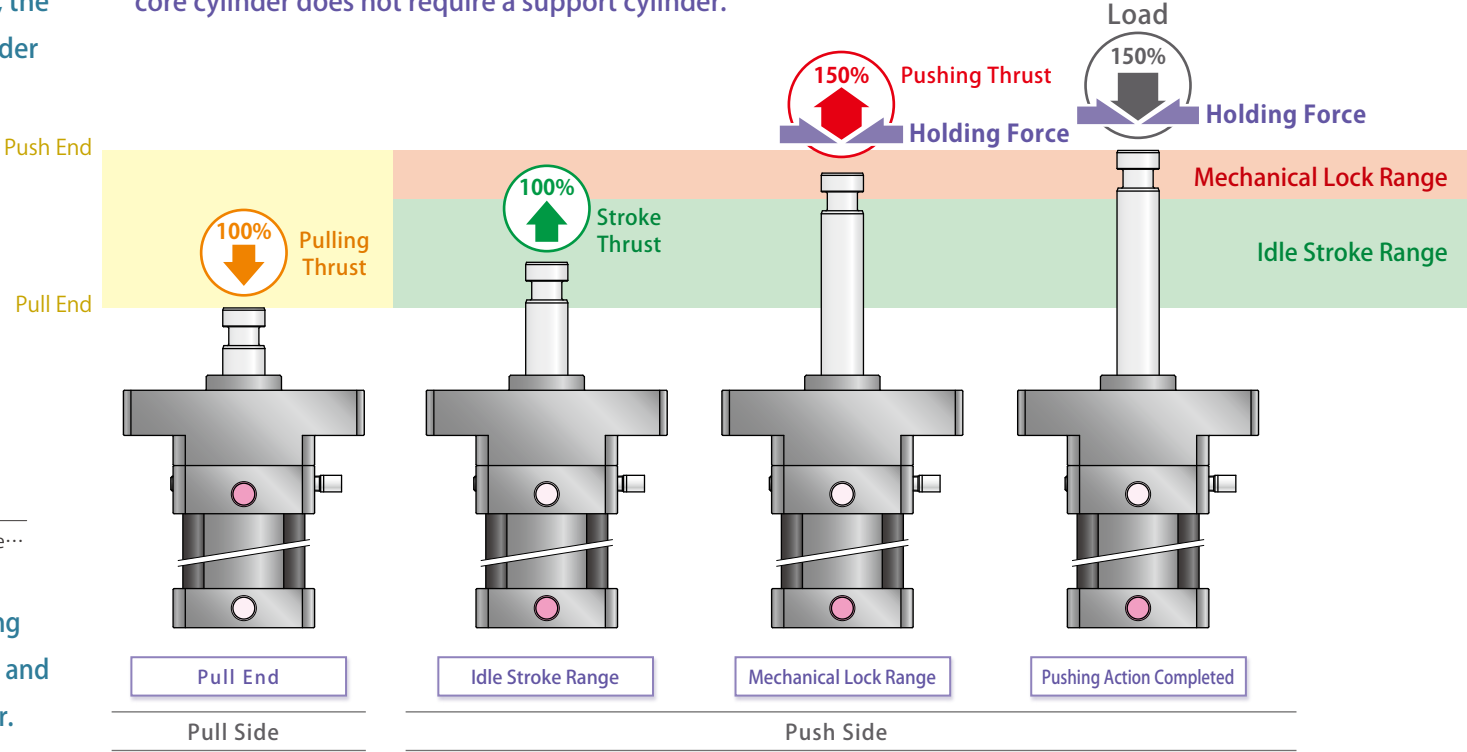
Cylinder for slide core installed on movable mold is able to withstand casting pressure with the cotter on the mold. However, **when installing core cylinder on stationary mold, the cotter cannot be installed so the core cylinder has to withstand the casting pressure.**



When a core cylinder cannot withstand casting pressure, it is required to fix the core cylinder and receive casting pressure by a support cylinder.

High-Power Core Push Cylinder

Compared to general cylinder, Kosmek High-Power Core Push Cylinder withstands load of 150% with mechanical lock function built in cylinder so that core cylinder does not require a support cylinder.



High-Power Push Cylinder PAT.



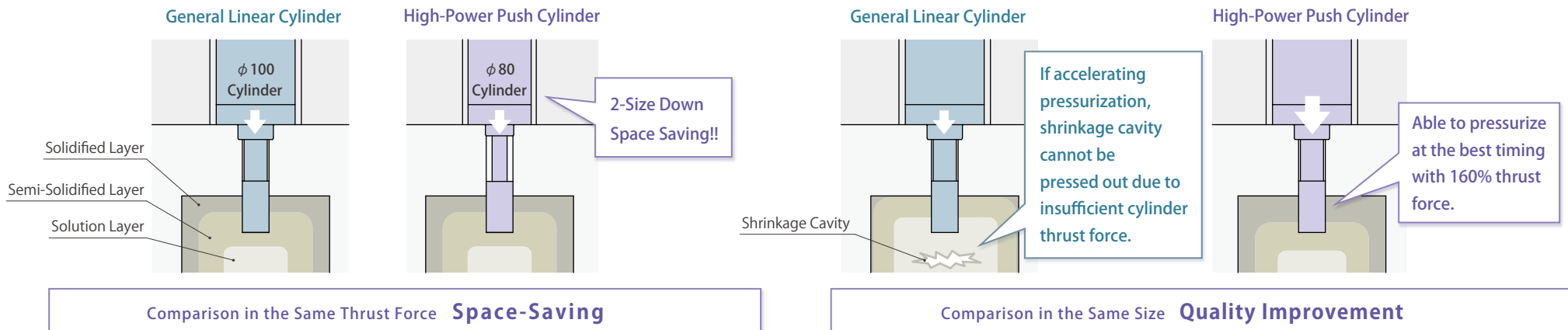
Suitable for Partial Pressurization **Space-Saving Cylinder**

Required Points of Partial Pressurization Cylinder

For partial pressurization it requires larger thrust force and cylinder to press out solidified layer, but mold space is limited. **Insufficient thrust force and pressurization cause "Shrinkage Cavity" leading to unstable quality.**

High-Power Core Push Cylinder

Compared to the same size cylinder, Kosmek High-Power Push Cylinder exerts 160% of thrust force at push end. Cylinder with required thrust force can be installed in smaller footprint. Also, it is able to delay the timing of pressurization, which improves the quality.



Comparison in the Same Thrust Force **Space-Saving**

Compared to a general linear cylinder, High-Power Core Push Cylinder is 2 size smaller even with the same thrust force. **More compact cylinder for smaller footprint.**

Comparison in the Same Size **Quality Improvement**

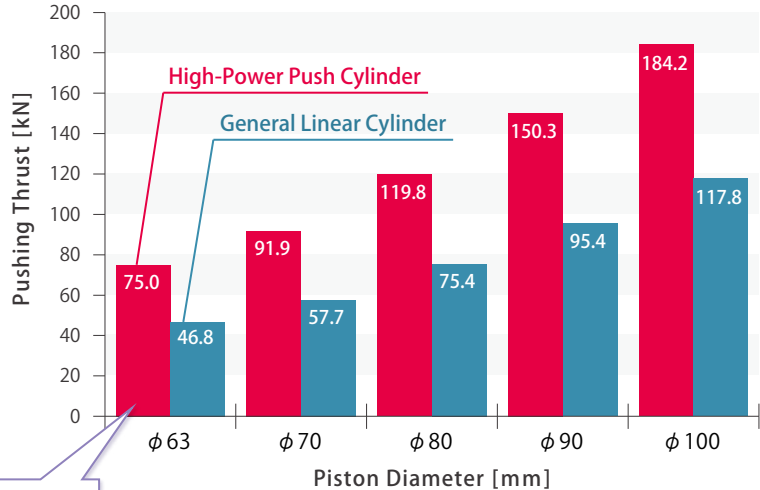
High-Power Core Push Cylinder can pressurize at the timing that a general linear cylinder cannot get through the solidified layer. **Pressurization at the best timing allows for stable quality.**

Suitable for Opening/Closing Vent Valves

High-Speed Cylinder

Ability Hydraulic Pressure At 15MPa

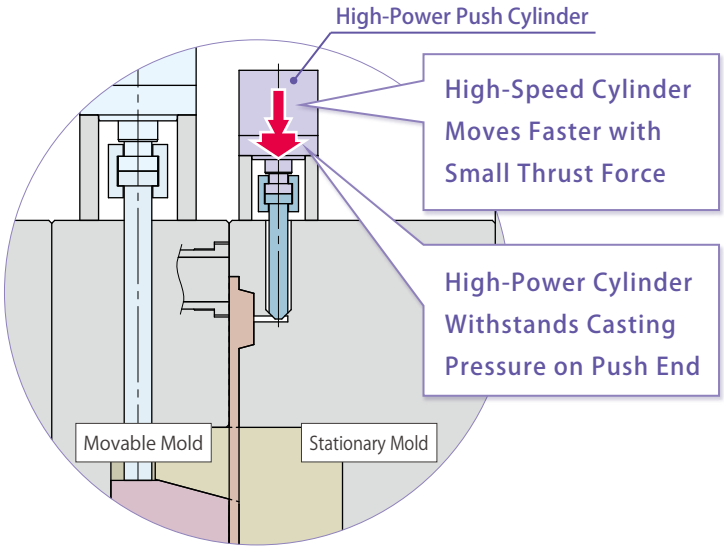
Piston Diameter	mm	φ 63	φ 70	φ 80	φ 90	φ 100	
Cylinder External Diameter	mm	□94	□100	□114	□120	□136	
Stroke	mm	8	8	8	10	10	
Thrust	Push Side	kN	75	91.9	119.8	150.3	184.2
Force	Pull Side	kN	26.9	31.2	41.7	52.7	64.5



Exerts 160% Thrust Force!
Pushing Thrust Force Comparison with General Linear Cylinder

Suitable for Opening/Closing Vent Valves

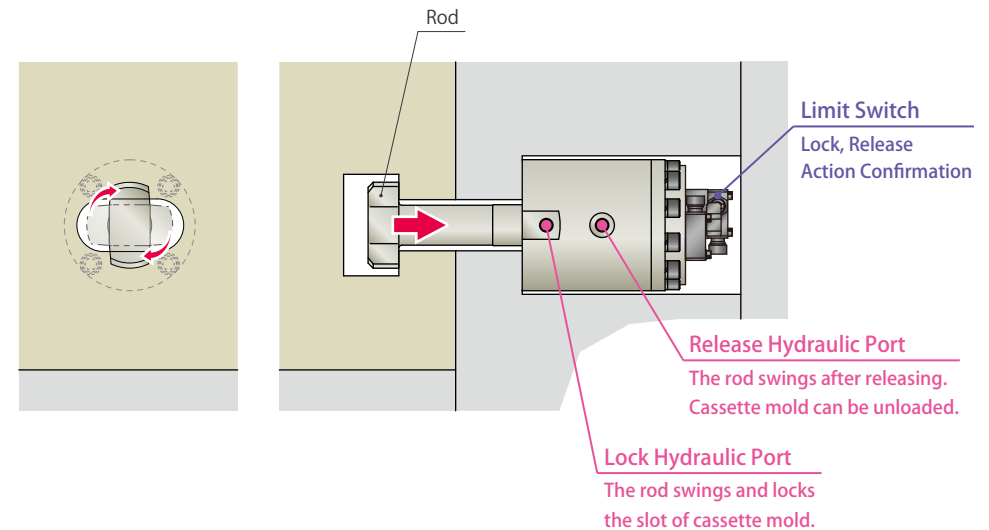
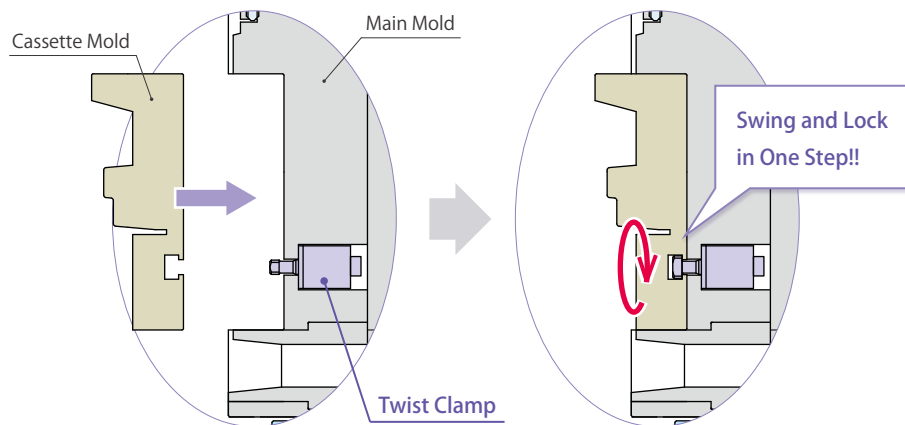
If receiving casting pressure on cylinder push end like a vent valve, we can offer high-power push cylinder that exerts high thrust force only on push side. It actuates faster with small thrust force in the middle of cylinder stroke, and withstands casting pressure with large thrust force at the last several millimeters.



Twist Clamp

Quick and Safe Cassette Mold Change

Cassette mold can be changed easily by installing the twist clamp inside a mold.



Simple Circuit

Twist Clamp has only one port for swing and lock. This allows for simple circuit and control with two ports: "Swing⇒Lock" and "Release⇒Swing".

Compact Body

Optimization of swing function allows for compact body. For space saving and downsizing of a mold.

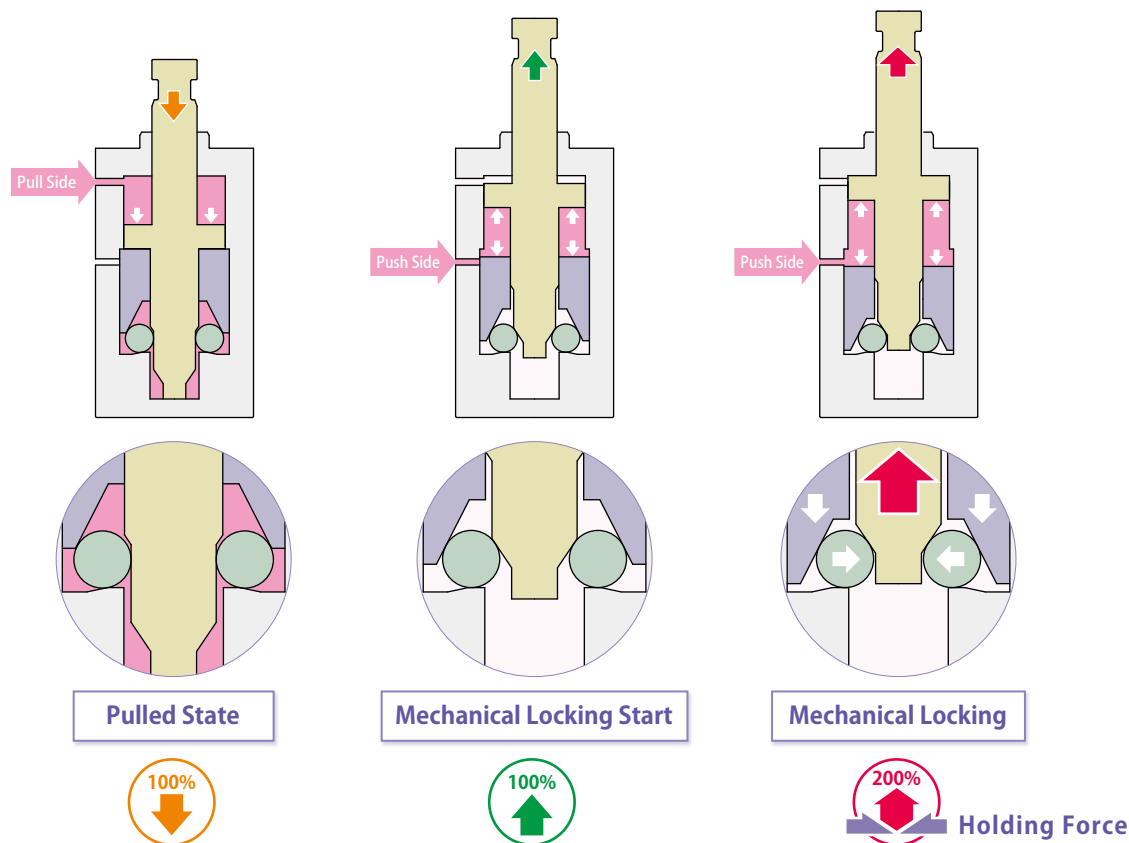
With Action Confirmation Limit Switch

Lock and release action can be detected by a limit switch. Safety is ensured by interlock with a diecast machine.

High-Power Technology

Kosmek High-Power Technology

"High-Power Technology" is the technology to exert required force only when necessary.



Mechanical Lock

Compared to the same size cylinder, our exclusive mechanical locking exerts 1.5~2 times of thrust force. Also it exerts thrust force only at required position. More eco-friendly and higher speed cylinder.

Eco-Friendly • High Speed

High-Power Model has smaller cylinder capacity compared to a general linear cylinder with the same thrust force. This reduces oil amount and improves action speed.

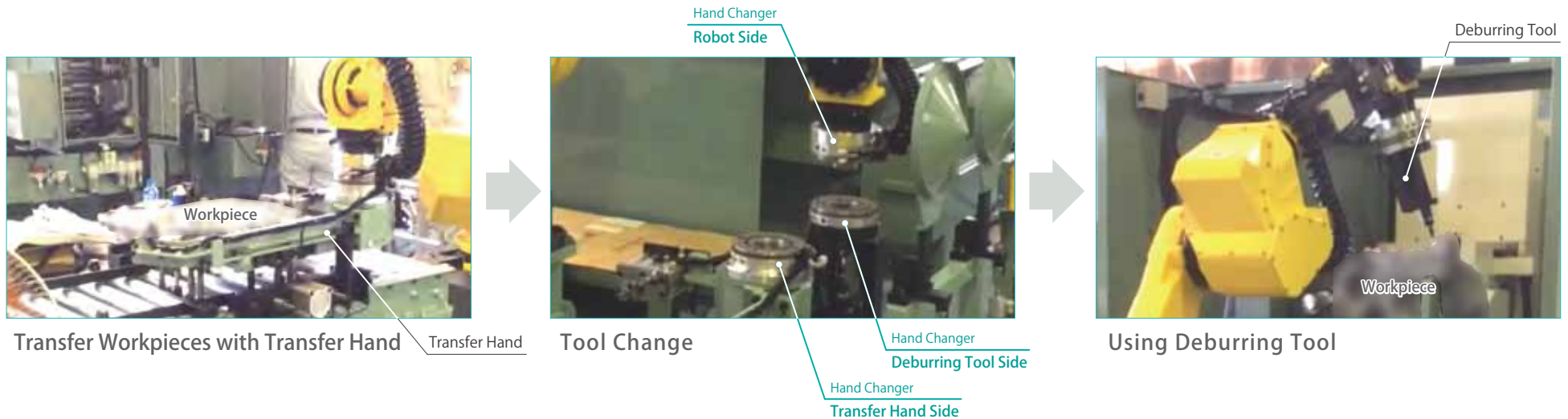
Space Saving

High-Power Model is smaller compared to a general linear cylinder with the same thrust force. This allows for space saving.

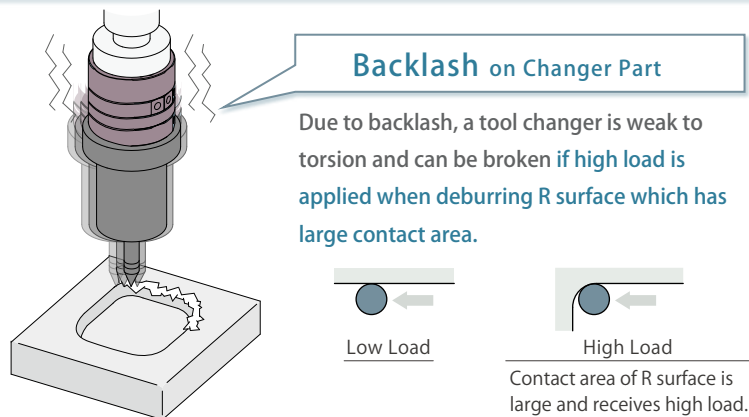
"High-Power Technology" for Further Mold Solutions



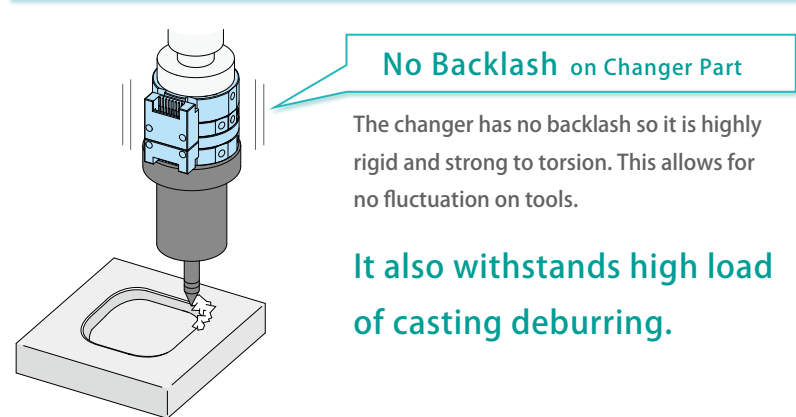
Tool Change of Transfer Hand and Deburring Tool



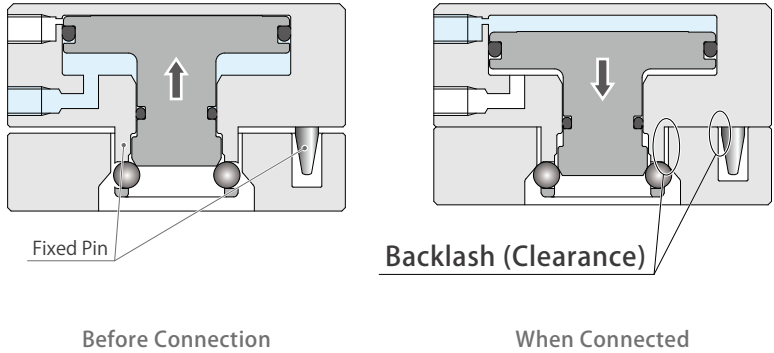
General Tool Changer



Kosmek Robotic Hand Changer

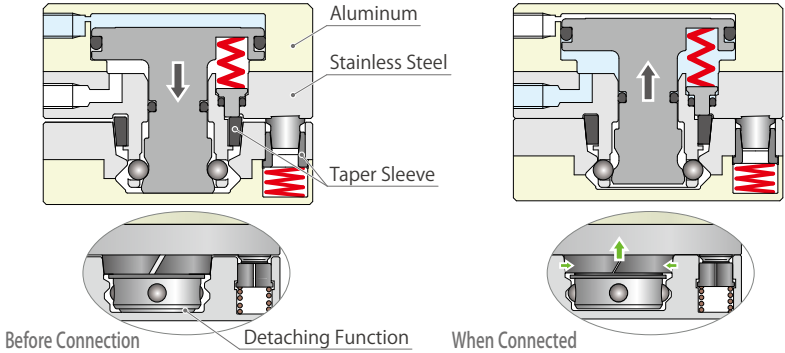


Zero backlash allows for **unequaled rigidity and durability.**



General Changer

Rigidity is low due to the clearance between the robot and tool.
Durability is low since aluminum is largely used to reduce the weight.



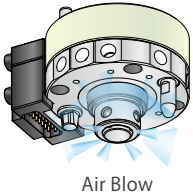
Kosmek Robotic Hand Changer

High Rigidity due to no clearance between the robot and tool.
(Locating Repeatability : 3 μm)
High durability since contact surface of the robot and tool is made with high-strength material.

Safe and Reliable Option Line-Ups for Diecasting

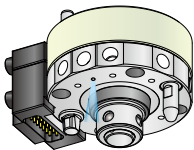
Air Blow Option

Air blow function for cleaning contact part of the changer.



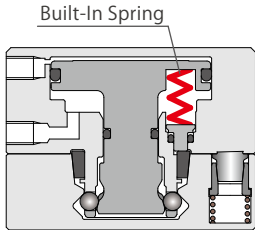
Connection Confirmation Option

Air sensor for connection confirmation of the robot and tool.



Self-Lock Function

Even when air pressure is at zero, it will stay locked with built-in spring and prevent falling of a tool.



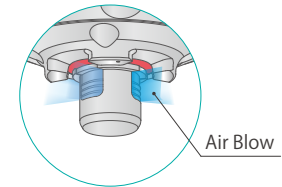
Thin and Light Transfer Hand

With High-Power Pneumatic Hole Clamp
Transfer Hand is **Thin and Light**



Save Energy with Light Hand

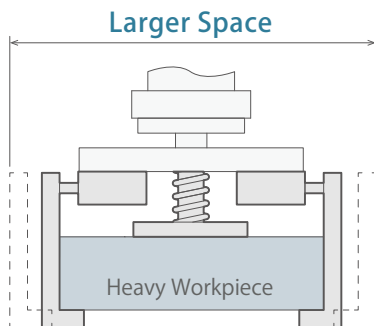
Reducing the weight of the hand increases the robot speed and maximizes utilization of the robot payload leading to downsizing of the robot.



Air Blow

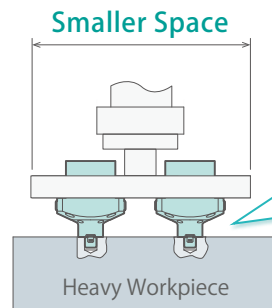
Hole clamp and workpiece hole can be cleaned by air blow.

Transfer Hand with Linear Cylinder



Reduce the Hand Weight

Transfer Hand with High-Power Pneumatic Hole Clamp



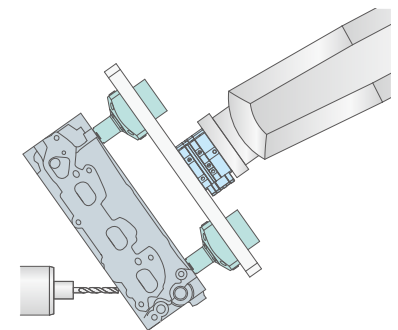
Gripper expands and pulls workpiece in.



Clamping Force **2 kN** (Air Pressure : 0.45 MPa)

Even at zero pressure, it will stay locked with internal spring and prevent falling of workpieces.

Clamping Force at 0MPa **0.25 kN**



Application Example

Deburring with Robots

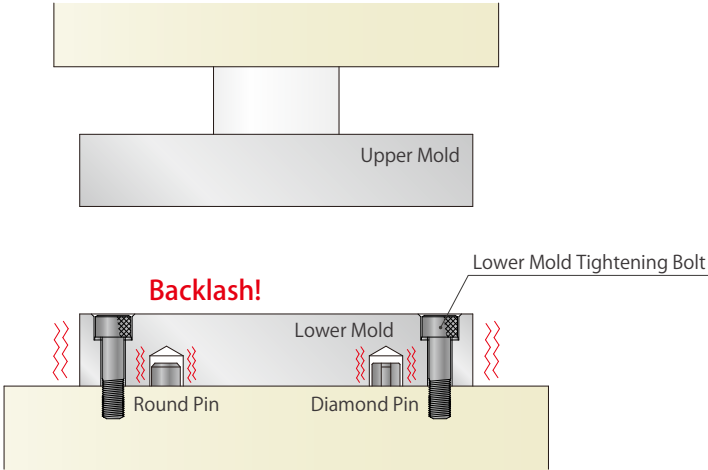
Using workpiece holes on the bottom enables deburring 5 faces at once.

Screw Locator Utility Model Registration

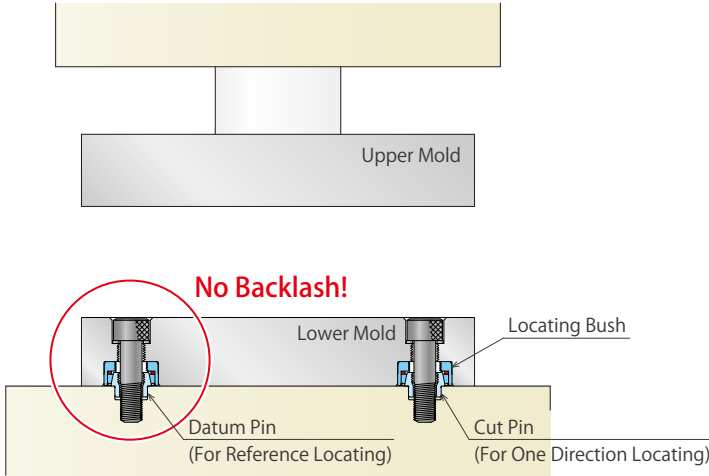


Locating Repeatability **3 μm** Trimming Press Mold Change

General Locating Pin



Screw Locator



Large Mounting Space

It requires large space since locating pin and tightening bolt are mounted separately.

Mold Position Adjustment

General locating pin has backlash, so it is required to adjust mold position every time changing molds, or to perform a re-teaching of transfer robot.

Minimal Mounting Space

Mounting space is reduced since screw locator and tightening bolt can be mounted on the same position.

Locating Repeatability **3 μm**

High accuracy locating with 3 μm locating repeatability. No mold adjusting or re-teaching of transfer robot is required.

Product Line-Up

We have various types of hydraulic and pneumatic products.
Please let us know your requirements, and we will make it happen.



FA • Robotic Automation

Factory Automation Industrial Robot Related Products

Robotic Hand Changer, Robotic Hand, Locating Equipment and other products improve automation, precision and setup of transfer, assembly, deburring, testing and various other processes.



Die Change System for Press Machine

Quick Die Change Systems

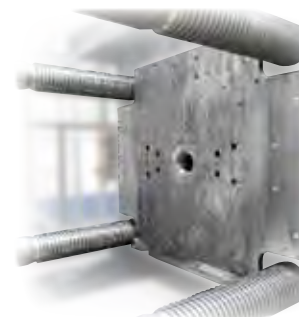
Kosmek Quick Die Change Systems are a cost effective way to improve the working environment, allow diversified and small-lot production, and reduce press down time. Available for a wide range of machines; from large size transfer-presses to smaller high speed presses.



Work Clamping System for Machine Tool

Kosmek Work Clamping Systems

Our clamping system enables boltless automation making loading and unloading workpieces easier. The non-leak valve enables the use of hydraulic source and fixtures in a disconnected condition after locking (clamping action).

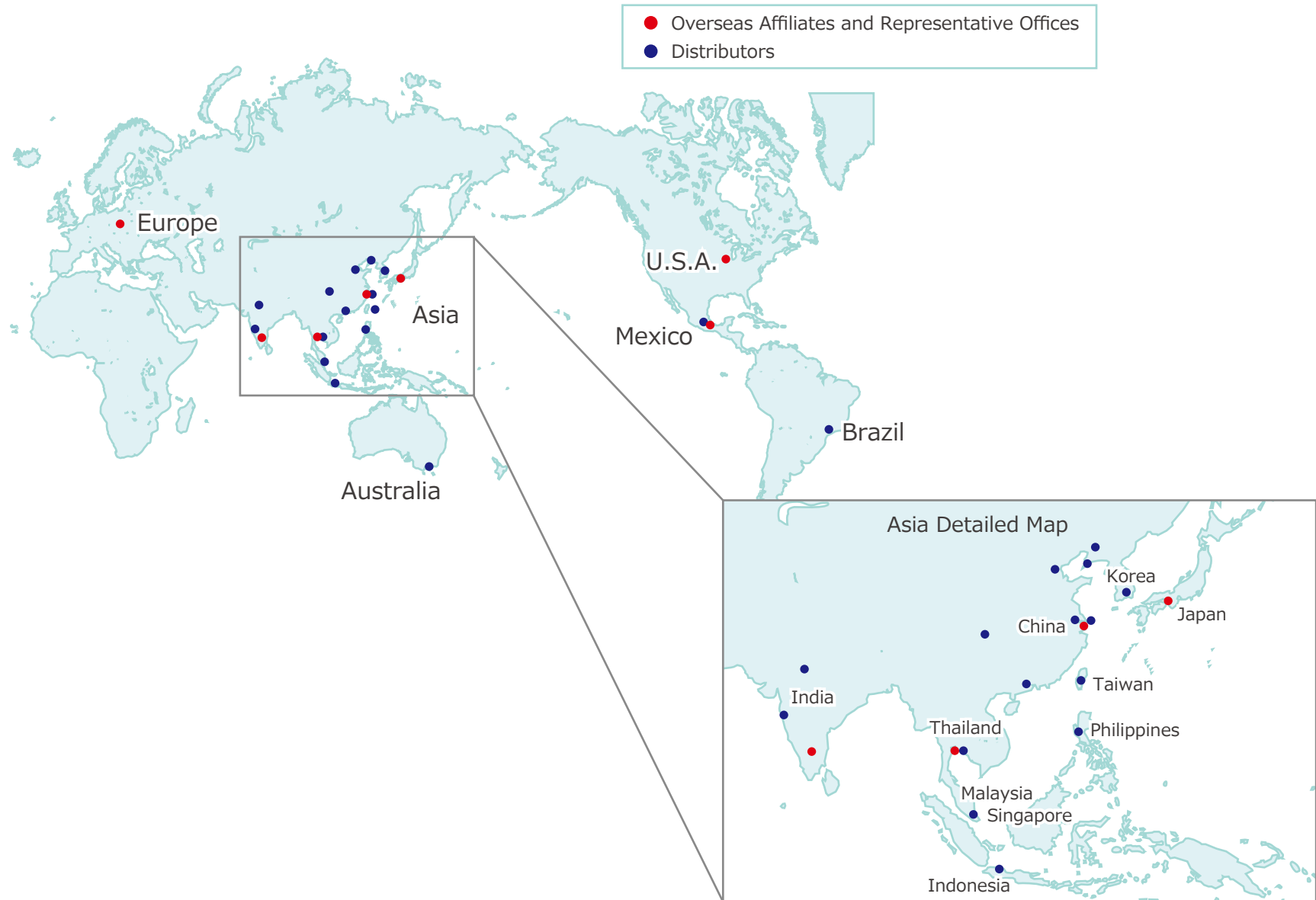


Mold Change System for IMM

Quick Mold Change Systems

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.

Global Network



<http://www.kosmek.co.jp>

KOSMEK

Harmony in Innovation

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