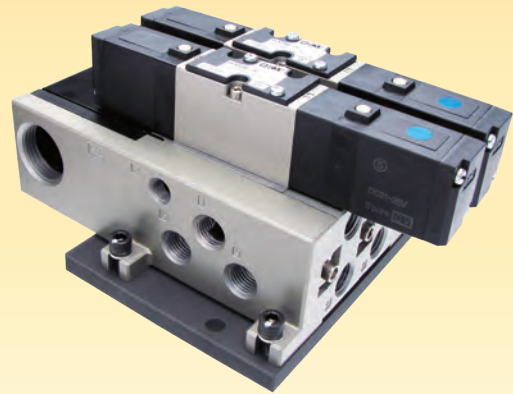


Air Valve Unit

For T-Slot Automatic-Slide Hydraulic Clamp

Model **MV**



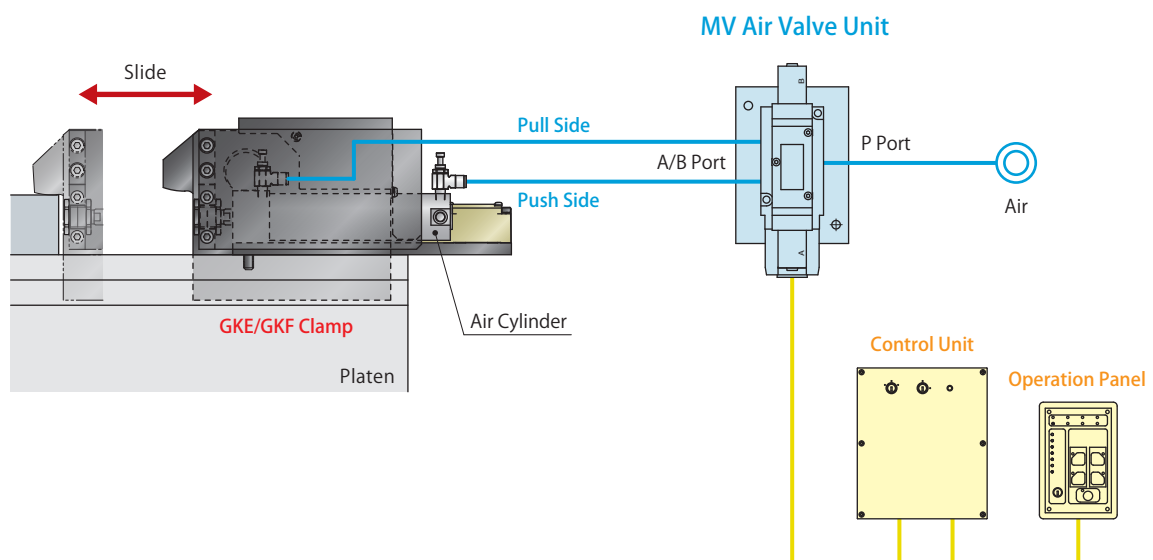
Air Valve Unit for GKE/GKF Automatic-Slide Clamp

Compact air valve unit controls the air cylinder of the automatic slide clamps.

The air directional control valve is actuated by an electrical signal. The GKE / GKF clamp slides automatically with the air cylinder.

Application Example

The drawing shows the air flow direction when controlling the push and pull sides of the air cylinder with the MV Air Valve Unit.



Model No. Indication

MV **302** **2** - **3** **5** - **N**

1 2 3 4 5

1 Size Code

- 301** : For Small/Medium Clamp
- 302** : For Large Clamp

2 Design No.

- 2** : Revision Number

3 Number of Circuit

- 1** : 1 Circuit
- 2** : 2 Circuits (Stationary Side/Movable Side, or Cross-Coupled Circuits etc.)
- 3** : 3 Circuits (One Stationary Circuit and Movable Side Cross-Coupled Circuits)

4 Valve Control Voltage

- 1** : AC100V
- 2** : AC200V
- 5** : DC24V (5~40mA)

5 Option

- Blank** : Standard
- N** : Piping Port NPT Thread ^{※1}

Notes:

- ※1. For **5** Option **N**: Piping Port NPT Thread, the dimensions in the specification sheet and other documents are in inches.
1. Please contact us when using a large number of clamps.

Specifications

Model No.	MV3012	MV3022
Valve	Metal Seal / Five-Port Pilot Operated	
Position/Number of Solenoid	Two-Position Double Solenoid	
Effective Area	mm ² 15	36
Pressurizing Agent	Dry Air ^{※2}	
Max. Operating Pressure	MPa 1.0	
Withstanding Pressure	MPa 1.5	
Operating Temperature	°C -10 ~ +60	
Oil Supply	No Oil Supply	
Protection	Dust Proof	
Solenoid Valve (SMC)	VFS2200	VFS3200

Note:

- ※2. Please supply filtered clean dry air.

Hydraulic Clamp

Hydraulic Unit

Operational Control Unit

Cautions Company Profile

Hydraulic Clamp

GKB

GKC

GKE

GKF

Hydraulic Unit

CTB

CTD

CTC

CTE

CUC

CUE

Air Valve Unit

MV

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QMCS

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KWCS

FA-Industrial Robot Related Products

Company Profile

Company Profile

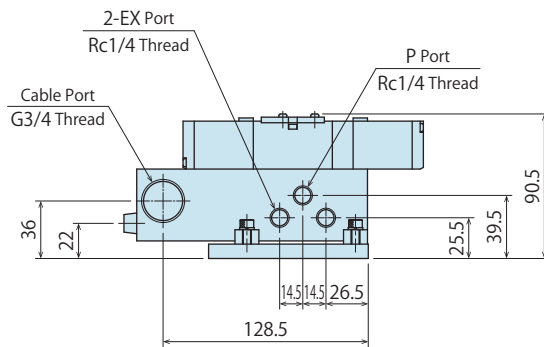
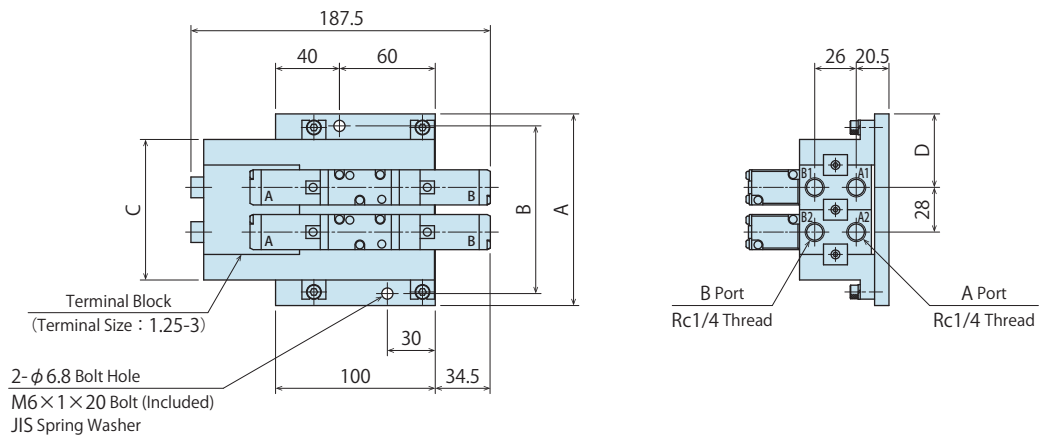
After-Sales Service

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Sales Offices

External Dimensions

※ This drawing shows MV3012-□□.



(mm)

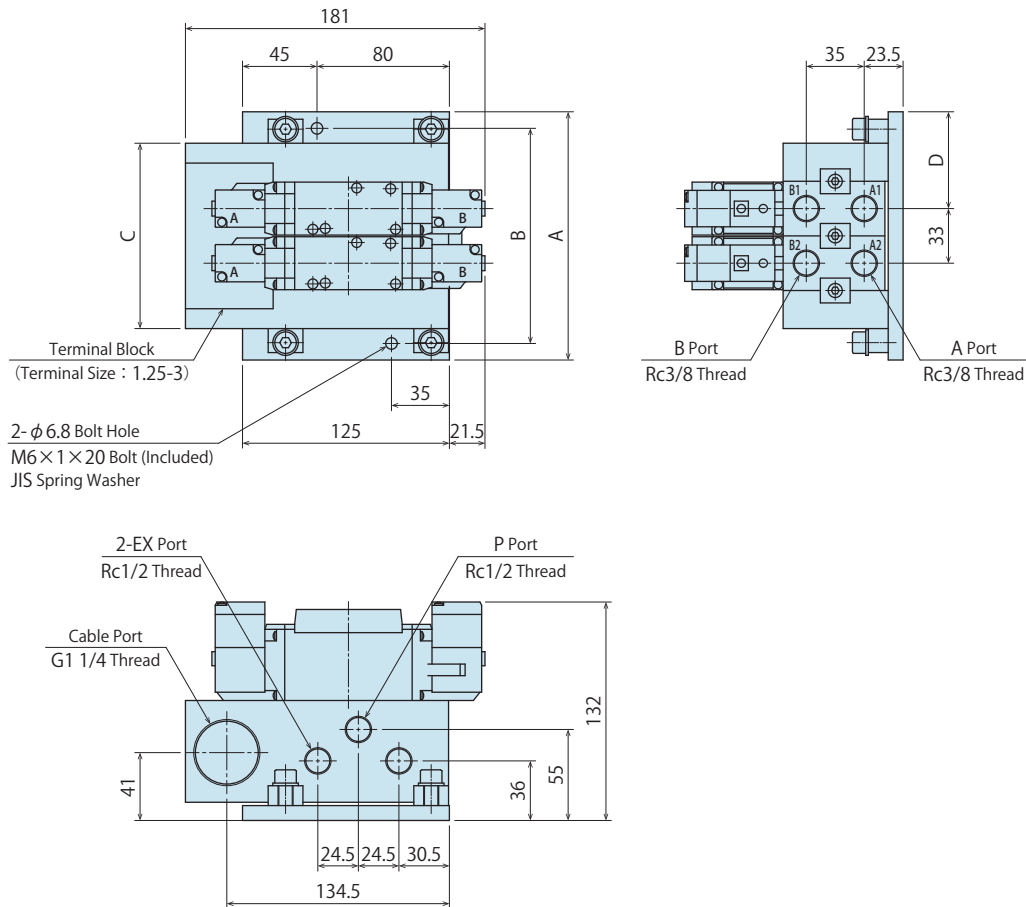
Number of Circuits	A	B	C	D
2	120	105	88	46
3	150	135	116	47

Note:

1. Please contact us for the dimensions for one circuit model.

External Dimensions

※ This drawing shows MV3022-□□.



(mm)

Number of Circuits	A	B	C	D
2	150	130	112	58.5
3	185	165	145	59.5

Note:

- Please contact us for the dimensions for one circuit model.

Hydraulic Clamp

Hydraulic Unit

Operational Control Unit

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Hydraulic Clamp

GKB

GKC

GKE

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Notes for Design

1) Check Specifications

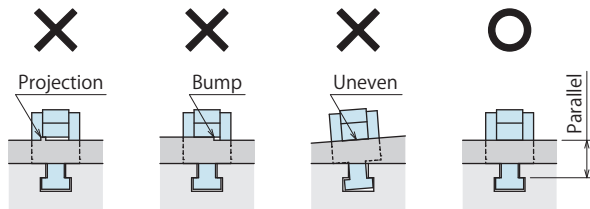
- Please use each product according to its specifications.
- Operating hydraulic pressure is 25 MPa.
Do not use clamps with excessive operating pressure. Falling down of the mold due to the damage on clamps leads to injury accident. In order to reduce clamping force, use them with lower operating pressure.

2) Check the thickness of the mold clamping part.

- Please check the thickness of the mold clamping part. If using molds other than specified, clamps cannot conduct locking action normally leading to injury accident.

3) The clamp surface and T-slot must be parallel to mounting surface of the mold.

- If clamp surface is not even or parallel, excessive force is applied to the clamp and it deforms main body and lever of the clamp resulting in falling off of the clamp and injury accident.



4) Make sure that advance/retraction of the clamp is smoothly conducted. (model GKE / GKF)

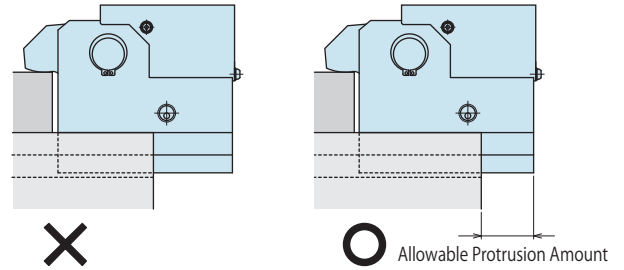
- Please control air cylinder for slide with two-position double solenoid (with detent).
- Supply more than 0.4MPa air pressure to air cylinder.
- Please adjust the moving speed of the clamp with speed controller to fully stroke within 1 to 2 seconds.
- Do not set the limit switch to the mold surface near the U-slot, because it is used as forward-end detection.
- The clamp sliding surface must be smooth (without any bumps).

5) Make sure that dust, sand, cutting chips or blank pieces do not enter the clamp.

- Clamp does not operate smoothly and may be damaged.

6) When the clamp cylinder sticks out of U-slot or T-slot, please use it within the allowable protrusion amount.

Model GKB / GKC / GKE / GKF

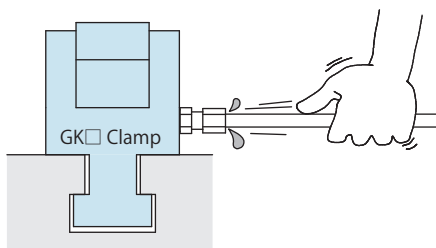


Allowable Protrusion Amount

Model No.	Allowable Protrusion Amount (mm)
GKB0100 / GKC0100	17.5
GKB0160 / GKC0160	21
GKB0250 / GKC0250	25
GKB0400 / GKC0400 / GKE0400 / GKF0400	32
GKB0630 / GKC0630 / GKE0630 / GKF0630	39
GKB1000 / GKC1000 / GKE1000 / GKF1000	45
GKB1600 / GKC1600 / GKE1600 / GKF1600	57
GKB2500 / GKC2500 / GKE2500 / GKF2500	69.5
GKB4000 / GKC4000 / GKE4000 / GKF4000	0
GKB5000 / GKC5000 / GKE5000 / GKF5000	0

● Installation Notes

- 1) Check the fluid to use.
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List.
 - If using hydraulic oil having viscosity higher than viscosity grade ISO-VG-32, action time will be longer.
 - If using it at low temperature, action time will be longer because the viscosity of hydraulic oil becomes higher.
- 2) Procedure before piping
 - The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing. The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
(The filter which removes contaminant in the hydraulic piping or hydraulic system is not provided.)
- 3) Applying sealing tape
 - Wrap with tape 1 to 2 times following the screwing direction. When piping, be careful that contaminants such as sealing tape do not enter in products.
Pieces of the sealing tape can lead to air leaks and malfunction.
- 4) Air bleeding in the hydraulic circuit
 - If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please conduct air bleeding with the end of the piping.
 - ① Reduce hydraulic supply pressure to less than 2MPa.
 - ② Please loosen the cap nut of pipe fitting that is closest to clamps by one full turn.
 - ③ Wiggle the pipeline to loosen the outlet of pipeline fitting. The hydraulic fluid mixed with air comes out.



- ④ Tighten the cap nut after bleeding.
 - ⑤ It is more effective to bleed air at the highest point inside the circuit or at the end of the circuit.
- 5) Checking Looseness and Retightening
 - At the beginning of the machine installation, the bolt/nut may be tightened lightly.
Check torque and re-tighten as required.
 - 6) Mounting the Clamp
 - After setting the clamp in the T-slot, use attached hex. socket bolts and tighten it with the torque shown below (model GKE / GKF)

Model No.	Thread Size	Tightening Torque (N·m)
GKE0400 / GKF0400	M5×0.8	6.3
GKE0630 / GKF0630	M6×1	10
GKE1000 / GKF1000	M8×1.25	25
GKE1600 / GKF1600	M10×1.5	50
GKE2500 / GKF2500	M12×1.75	80
GKE4000 / GKF4000	M16×2	200
GKE5000 / GKF5000	M16×2	200

- 7) Wiring of the Forward-End Confirmation Switch
 - Make sure there is enough slack in the wire so that the clamp can complete the sliding action without putting tension on the wire.

● Hydraulic Fluid List

- Please use appropriate fluid referring to the fluid lists below.
- Select the same fluid as Fluid Code of hydraulic clamp and unit.

● General Hydraulic Oil ISO Viscosity Grade ISO-VG-32

Maker	Anti-Wear Hydraulic Oil	Multi-Purpose Hydraulic Oil
Showa Shell Sekiyu	Tellus S2 M 32	Morlina S2 B 32
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32
JX Nippon Oil & Energy	Super Hyrando 32	Super Mulpus DX 32
Cosmo Oil	Cosmo Hydro AW32	Cosmo New Mighty Super 32
ExxonMobil	Mobil DTE 24	Mobil DTE 24 Light
Matsumura Oil	Hydol AW-32	
Castrol	Hyspin AWS 32	

● Water · Glycol ISO Viscosity Grade ISO-VG-32

Maker	Water · Glycol
JX Nippon Oil & Energy	Hyrando FRZ32
Cosmo Oil	Cosmo Fluid HQ46
Matsumura Oil	Hydol HAW32

● Silicon Oil ISO Viscosity Grade ISO-VG-68

Maker	Silicon Oil
Shin-Etsu Chemical	KF-50-100cs

● Fatty Acid Ester

Maker	Fatty Acid Ester	ISO Viscosity Grade
Showa Shell Sekiyu	Shell Iru Fluids DU56	(ISO-VG-56)
Idemitsu Kosan	Firgist ES	ISO-VG-68
JX Nippon Oil & Energy	Hyrando SS56	(ISO-VG-56)
Cosmo Oil	Cosmo Fluid E46	ISO-VG-46
Nippon Quaker Chemical	Quintolubric 822-200	ISO-VG-46

Note: As it may be difficult to purchase the products as shown in the table from overseas, please contact the respective manufacturer.

Hydraulic Clamp

Hydraulic Unit

Operational Control Unit

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Hydraulic Clamp

GKB
GKC
GKE
GKF

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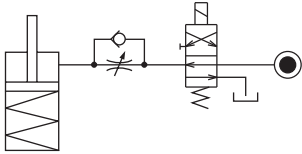
● Notes on Hydraulic Cylinder Speed Control Unit



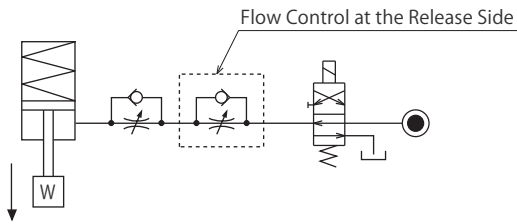
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● Flow Control Circuit for Single Acting Cylinder

For spring return single acting cylinders, restricting flow during release can extremely slow down or disrupt release action. The preferred method is to control the flow during the lock action using a valve that has free-flow in the release direction. It is also preferred to provide a flow control valve at each actuator.



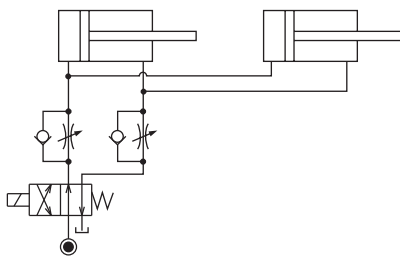
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow.



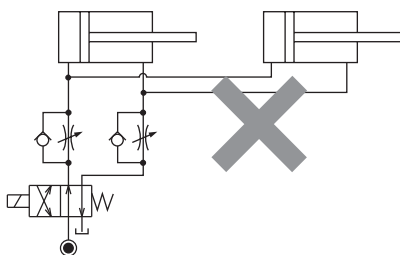
● Flow Control Circuit for Double Acting Cylinder

Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

【Meter-out Circuit】

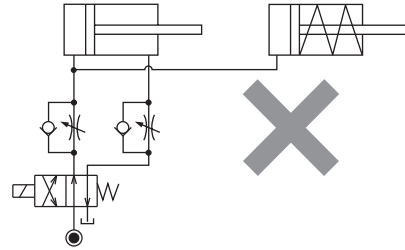


【Meter-in Circuit】



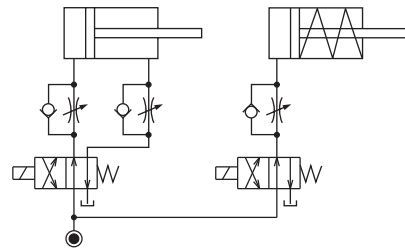
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- ① Single acting components should not be used in the same flow control circuit as the double acting components. The release action of the single acting cylinders may become erratic or very slow.

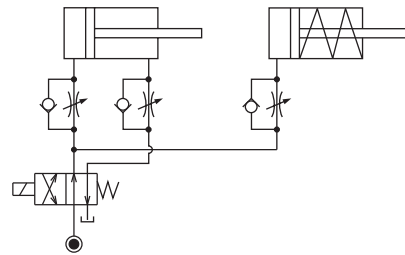


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

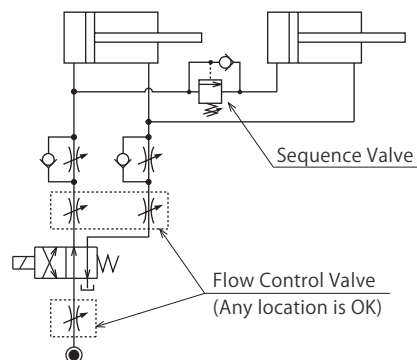
- Separate the control circuit.



- Reduce the influence of double acting cylinder control unit. However, due to the back pressure in tank line, single action cylinder is activated after double action cylinder works.



- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve or pressure switches for clamping detection. If the back pressure is more than the set pressure then the system will not work as it is designed to.



Hydraulic Clamp

Hydraulic Unit

Operational
Control UnitCautions
Company Profile

Hydraulic Clamp

GKB

GKC

GKE

GKF

Hydraulic Unit

CTB

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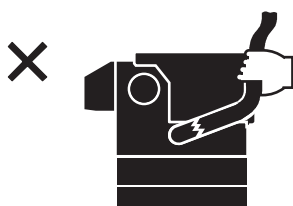
Sales Offices

● Notes on Handling

- 1) When stopping a machine, make sure no load is applied on clamps. Otherwise, a mold may fall causing an injury accident.
- 2) It should be handled by qualified personnel.
 - The hydraulic machine should be handled and maintained by qualified personnel.
- 3) Do not handle or remove the machine unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
 - ② Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic circuit.
 - ③ After stopping the machine, do not remove until the temperature cools down.
 - ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- 4) Do not touch clamps while they are working.
 - Otherwise, your hands may be injured due to clinching.



- 5) If there is a change for mold width, make sure to check the allowable protrusion amount.
 - If exceeding the allowable protrusion amount, excessive force is applied on clamps leading to deformation or dislocation which cause falling of a mold or an injury accident. Please refer to "Notes for Design 6" for allowable protrusion amount.
- 6) Please hold the main body of the clamp when moving or removing it.
 - If pulling on hydraulic hose or air tube, the clamp will fall off leading to injury accident. Also, rivet part of the hose will be loosened leading to fluid leakage.

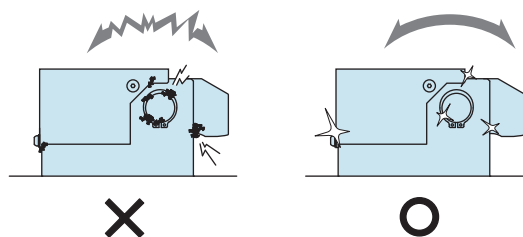


- 7) Do not disassemble or modify.
 - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
- 8) Do not get water or oil onto the equipment.
 - It may lead to malfunction or deterioration of the product and cause an accident.



● Maintenance • Inspection

- 1) Removal of the Machine and Shut-off of Pressure Source
 - Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
 - Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the equipment.
 - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage and air leaks.



- 3) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.
- 4) Regularly tighten bolts and pipe line, mounting bolts, nuts, circlips and cylinders to ensure proper use.
- 5) Make sure the hydraulic fluid has not deteriorated.
- 6) Make sure there is smooth action and no abnormal noise.
 - Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
- 7) The products should be stored in the cool and dark place without direct sunshine or moisture.
- 8) Please contact us for overhaul and repair.

● Warranty

- 1) Warranty Period
 - The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.
- 2) Warranty Scope
 - If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense. Defects or failures caused by the following are not covered.

- ① If the stipulated maintenance and inspection are not carried out.
- ② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
- ③ If it is used or handled in inappropriate way by the operator. (Including damage caused by the misconduct of the third party.)
- ④ If the defect is caused by reasons other than our responsibility.
- ⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
- ⑥ Other caused by natural disasters or calamities not attributable to our company.
- ⑦ Parts or replacement expenses due to parts consumption and deterioration. (Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty.



KOSMEK LTD. Head Office

Company Name	KOSMEK LTD.
Established	May 1986
Capital	¥99,000,000
Sales	55 billion yen (period ended March 2014)
Chairman	Keitaro Yonezawa
President	Tsutomu Shirakawa
Employee Count	220
Group Company	KOSMEK LTD. KOSMEK ENGINEERING LTD. KOSMEK (USA) LTD. KOSMEK (CHINA) LTD.
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, Tokyo-Mitsubishi bank, Ikeda bank

Major Machine Tool Devices (As of March 2014)

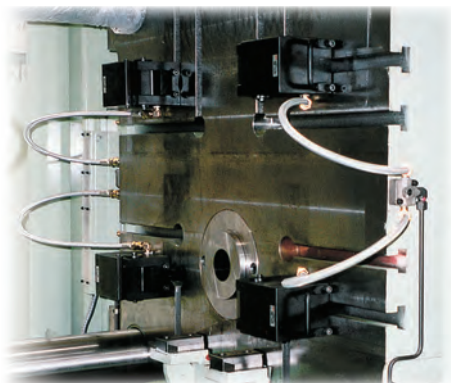
- Lathe machine devices etc. : Composite CNC lathe etc. (57units)
- Machining center devices etc. : Horizontal Machining center etc. (18 units)
- Grinding machine : Internal and external cylindrical NC grinding machine etc. (6 units)
- Other machine tools : Honing machine etc. (24 units)
- Measuring instruments : Precision 3D CMM etc. (9 units)
- Heat treatment etc. : Nitriding furnace etc. (5 units)

Major Industrial Property Rights

(Including patent right and patent pending as of March 2014)

- Domestic : 110
- International : 250 (USA, EU, Taiwan, South Korea, China, India, Brazil, Mexico, Thailand, Indonesia)

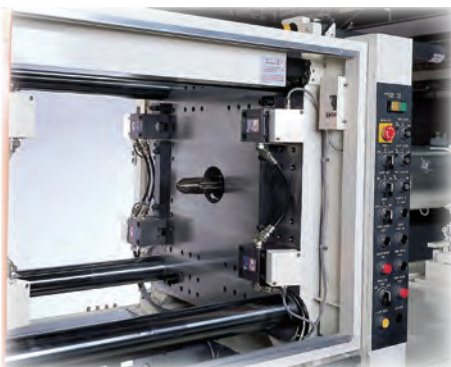
Product Line-Up



DIECAST CLAMPING SYSTEMS

For Diecast Machines

Kosmek Diecast Clamping Systems (KDCS) enable stable die clamping for die casting and magnesium molding machines that are subjected to severe conditions caused by exposure to mold release agents and high temperature.



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.



QUICK DIE CHANGE SYSTEMS

For Press Machines

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.



KOSMEK WORK CLAMPING SYSTEMS

Machine Tool Related Products

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).

Hydraulic Clamp

Hydraulic Unit

Operational Control Unit

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Hydraulic Clamp

GKB

GKC

GKE

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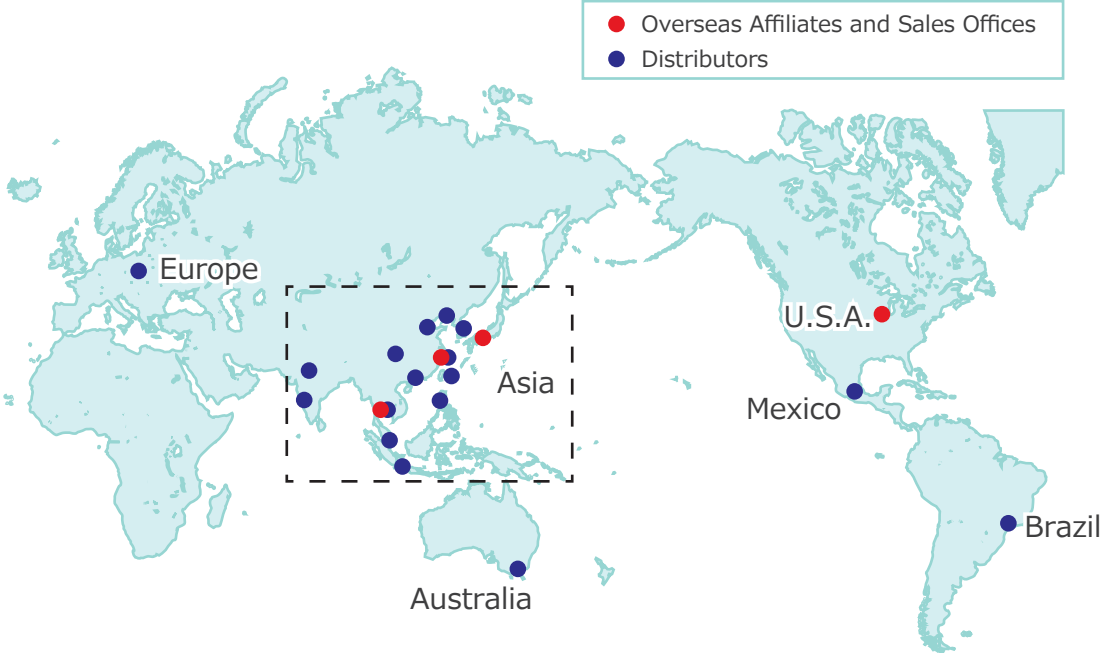
Sales Offices across the World

Japan	TEL. +81-78-991-5162	FAX. +81-78-991-8787
Overseas Sales	KOSMEK LTD. 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241 〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
USA	TEL. +1-630-241-3465	FAX. +1-630-241-3834
KOSMEK (USA) LTD.	1441 Branding Avenue, Suite 110, Downers Grove, IL 60515 USA	
China	TEL.+86-21-54253000	FAX.+86-21-54253709
KOSMEK (CHINA) LTD. 考世美(上海)貿易有限公司	21/F, Orient International Technology Building, No.58, Xiangchen Rd, Pudong Shanghai 200122., P.R.China 中国上海市浦东新区向城路58号东方国际科技大厦21F室 200122	
Thailand	TEL. +66-2-715-3450	FAX. +66-2-715-3453
Thailand Representative Office	67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250, Thailand	
Taiwan (Taiwan Exclusive Distributor)	TEL. +886-2-82261860	FAX. +886-2-82261890
Full Life Trading Co., Ltd. 盈生貿易有限公司	16F-4, No.2, Jian Ba Rd., Zhonghe District, New Taipei City Taiwan 23511 台湾新北市中和區建八路2號 16F-4 (遠東世紀廣場)	
Philippines (Philippines Exclusive Distributor)	TEL.+63-2-310-7286	FAX. +63-2-310-7286
G.E.T. Inc, Phil.	Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427	
Europe (Europe Exclusive Distributor)	TEL. +43-463-287587-10	FAX. +43-463-287587-20
KOS-MECH GmbH	Schleppeplatz 2 9020 Klagenfurt Austria	
Indonesia (Indonesia Exclusive Distributor)	TEL. +62-21-5818632	FAX. +62-21-5814857
P.T PANDU HYDRO PNEUMATICS	Ruko Green Garden Blok Z- II No.51 Rt.005 Rw.008 Kedoya Utara-Kebon Jeruk Jakarta Barat 11520 Indonesia	

Sales Offices in Japan

Head Office	TEL.078-991-5115	FAX.078-991-8787
Osaka Sales Office	〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
Overseas Sales		
Tokyo Sales Office	TEL.048-652-8839	FAX.048-652-8828
	〒331-0815 埼玉県さいたま市北区大成町4丁目81番地	
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	

Global Network



Asia Detailed Map



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