

Non-Leak Valve Unit

Model BC



Electric control type non-leak hydraulic valve unit.
Various choices of circuits and combinations.

Directional control valve that actuates the non-leak valve by switching internal air solenoid valve with electric control. It maintains pressure and prevents a die from falling even when pressure supply is cut from hydraulic pressure source.

- **Ensures safety with the pressure switch**

The pressure switch detects pressure reduction in case of accident such as hydraulic hose damage, and immediately stops a press machine.

- **Maintains the set pressure with the pressure relief valve** ※ Only when selecting pressure relief valve option.

Even if oil temperature rises by continuous operation of the press machine, the pressure relief valve maintains the set pressure 25MPa.

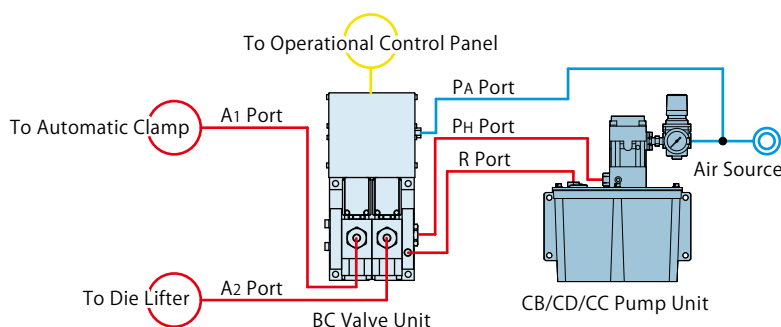
- **Free Layout**

Hydraulic pressure is easily supplied and controlled with CB/CD/CC Pump Unit.

Since the pump unit and non-leak valve unit are separated, it is more free to layout than the united type CP/CR/CP□/CQ□ unit.

- **Application Example**

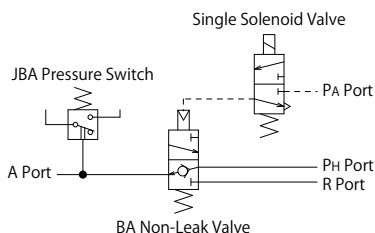
The drawing shows when controlling automatic clamp and die lifter separately by using with 2-circuit BC valve unit.



Circuit Symbol

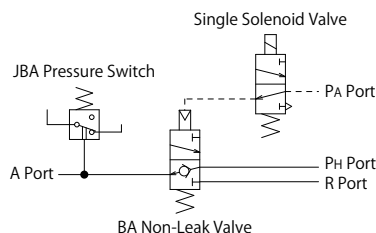
C : Single Solenoid Valve for Clamp (Normal Open)

Clamp locks under non-power distribution.



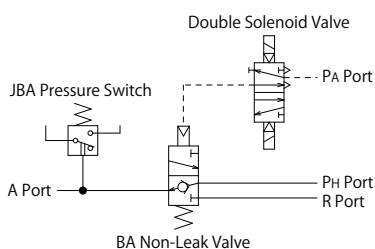
D : Single Solenoid Valve for Die Lifter (Normal Close)

Die lifter retracts under non-power distribution.



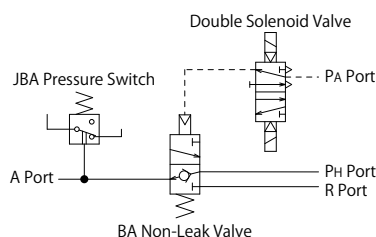
U : Double Solenoid Valve for Clamp

Clamp maintains the condition under non-power distribution.



V : Double Solenoid Valve for Die Lifter

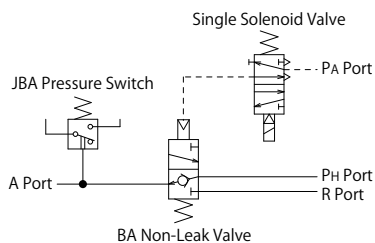
Die lifter maintains the condition under non-power distribution.



G : Single Solenoid Valve for Clamp (Normal Open)

Clamp locks under non-power distribution.

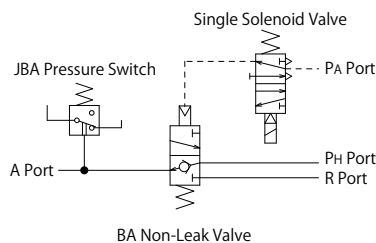
Select this option when using it with U circuit.



H : Single Solenoid Valve for Die Lifter (Normal Close)

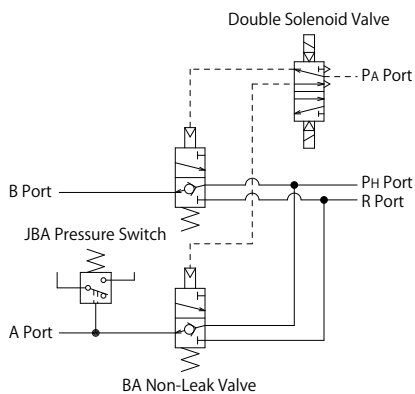
Die lifter retracts under non-power distribution.

Select this option when using it with U circuit.



PP : Double Solenoid Valve for Double-Acting Clamp

Clamp maintains the condition under non-power distribution.



R : Pressure Relief Valve

Pressure relief valve maintains the set pressure : 25 ± 2 MPa even when oil temperature rises. The drawing below shows the state that R circuit (with pressure relief valve) is combined with C circuit.



Notes:

1. PA Port: Air Source, PH Port: Hydraulic Source, R Port: Drain Port, A/B Port: To Automatic Clamp or RA Die Lifter
2. Filters are built in PH and A/B port.
3. Please contact us for circuits other than shown in the drawings.

Clamp • Unit
Operation Panel
Control Unit

Die Lifter
Pre-Roller

Accessories

Cautions
Company Profile

Clamp

GA

GD

GBB

GBC

GBE

GBF

GBP

GBQ

GN

GHA

Hydraulic Unit

CP

CR

CPB

CPD

CPC

CPE

CQC

CQE

Pump Unit

CB

CD

CC

Valve Unit

BC

BH

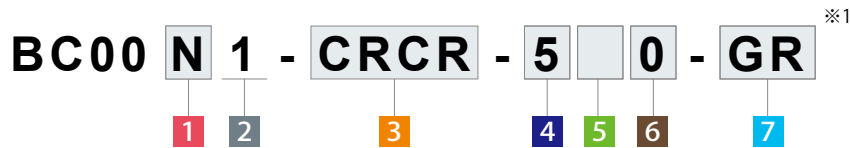
MV

Operation Panel Control Unit

YP

YAA

Model No. Indication



Note:

- ※1. For special-order products, “-Z□□□□□” will be added to the end of the model number. Please contact us for details.

1 Working Pressure Code

- M : 25 MPa Without Pressure Relief Valve
- N : 25 MPa With Pressure Relief Valve※2※3

2 Design No.

- 1 : Revision Number

3 Circuit Symbol

- C : Single Solenoid Valve for Clamp (Normal Open)
- D : Single Solenoid Valve for Die Lifter (Normal Close)
- U : Double Solenoid Valve for Clamp
- V : Double Solenoid Valve for Die Lifter
- G : Single Solenoid Valve for Clamp (Normal Open) ※4
- H : Single Solenoid Valve for Die Lifter (Normal Close) ※4
- PP : Double Solenoid Valve for Double-Acting Clamp (2 stations)
- R : Pressure Relief Valve ※2※3

Notes:

- ※2. Select the hydraulic unit with pressure relief valve when using hydraulic clamps under high temperature or large temperature change since there may be pressure fluctuation caused by temperature change.
- ※3. When selecting 1 Working Pressure Code N : With pressure relief valve, please select 3 Circuit Symbol R: Pressure relief valve after circuit symbol which requires pressure relief valve.
(Ex.) When selecting three circuits C, C and D
With pressure relief valve on every circuit : BC00N1-CRCRDR-□-□
With pressure relief valves only on C circuits : BC00N1-CRCRD-□-□
No pressure relief valve on circuits : BC00M1-CCD-□-□
- ※4. 3 Circuit Symbol G and H should be selected only when used with Circuit Symbol U.

4 Control Voltage

- 1 : AC 100 V
- 2 : AC 200 V
- 3 : AC 110 V
- 4 : AC 220 V
- 5 : DC 24 V

5 Common (Only when selecting 4 Control Voltage 5:DC24V)

- Blank : For 3 Circuit Symbol with Single Solenoid Valve only
- For 3 Circuit Symbol which includes Double Solenoid Valve
- A : + Common (Standard)
- B : - Common

6 Fluid Code

- 0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
- G : Water-Glycol
- S : Silicon Oil

7 Option

- Blank : Standard (Piping Block on the Right)
- GR : Primary Pressure Gauge on the Right (Piping Block on both side)
- GL : Primary Pressure Gauge on the Left (Piping Block on both side)
- H : Piping Block on both side (PH Port)
- N : Piping Port NPT Thread, Pressure Gauge in both PSI/MPa
- P : Pressure Gauge in both PSI/MPa

※ When selecting Option N, dimensions in the specification sheet and other documents are in inches.

Specifications

Model No.		BC00M1-□-□-□	BC00N1-□R-□-□	
Working Hydraulic Pressure		25 MPa		
Withstanding Pressure		37 MPa		
Operating Temperature		0 ~ 70 °C		
Use Frequency		2.5 min. / Cycle or less	20 Cycles / Day or less	
Main Components	Non-Leak Valve	Model No.	BA5011-0	BA5011-0 / BA5R11-0 (with Pressure Relief Valve)
		Orifice	12.6 mm ² (PH Port → A Port)	52.8 mm ² (A Port → R Port)
	Pressure Switch (for Clamp)	Model No.	JBA2700-0G	
		Operation Mode / Set Pressure	Pressure Increase Detection / INC. 17.6 MPa	
	Pressure Switch (for Die Lifter)	Model No.	JBA0700-0G	
		Operation Mode / Set Pressure	Pressure Decrease Detection / DEC. 2.94 MPa	
Pressure Relief Valve	Model No.	-	BR5N11-0	
	Set Pressure	-	25 ⁺² ₀ MPa	

Clamp • Unit
Operation Panel
Control Unit

Die Lifter
Pre-Roller

Accessories

Cautions
Company Profile

Clamp

GA
GD
GDB
GBC
GBE
GBF
GBP
GBQ
GN
GHA

Hydraulic Unit

CP
CR
CPB
CPD
CPC
CPE
CQC
CQE

Pump Unit

CB
CD
CC

Valve Unit

BC
BH
MV

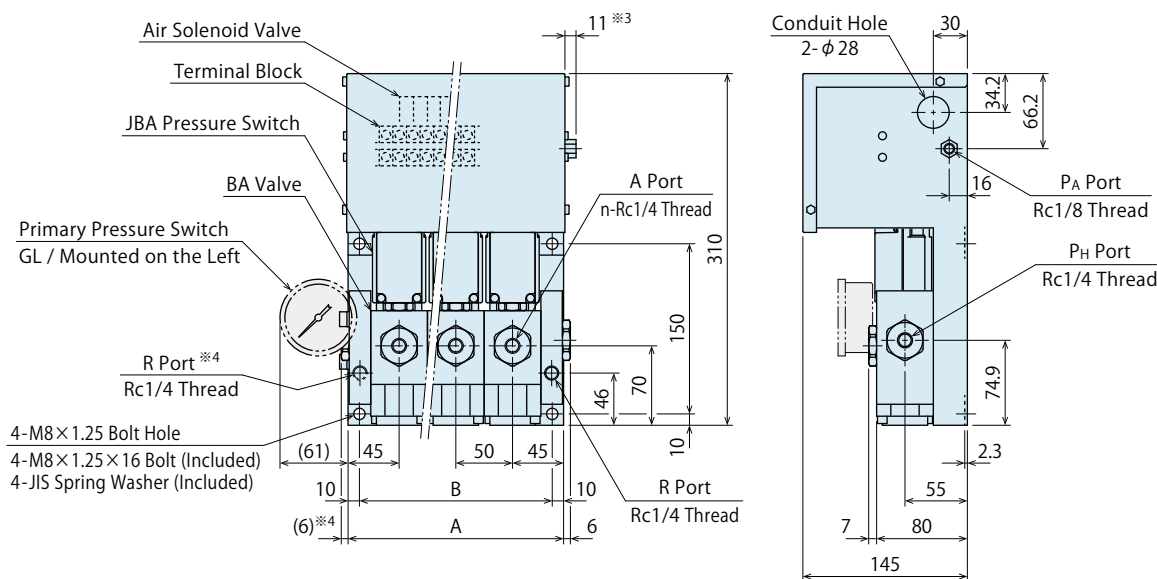
Operation Panel
Control Unit

YP
YAA

Notes:

- Please contact us for other special fluids.
- If fluid viscosity is higher than specified, action time will be longer.
- If using it at low temperature action time will be longer because of high viscosity of hydraulic oil.
- Be sure to set an automatic drain air filter when air contains a large amount of moisture, or air supplying pipe is located at the end.
- Operating pressure should be no more than working hydraulic pressure in the specification.
If using it at higher temperature than working hydraulic pressure, it leads to damage.

External Dimensions



(mm)

Number of Valve Connections (n)	1	2	3	4
A	90	140	190	240
B	70	120	170	220
Weight	kg 6	8.8	11.2	13.6

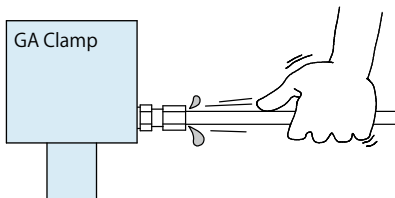
Notes:

- ※3. It shows the dimension in case of Circuit Symbol **U, V, G, H**.
 ※4. It shows the dimension in case of Option **H**: piping block on both side (PH port).

● Cautions

● Installation Notes (Cautions for Hydraulic Series)

- 1) Check the Usable Fluid
 - Please use the appropriate fluid by referring to the Hydraulic Fluid List.
 - If viscosity grade of hydraulic oil is higher than ISO-VG-32, action time becomes longer.
 - If using it at low temperature, action time will be longer because the viscosity of hydraulic oil becomes higher.
- 2) Procedure before Piping
 - Pipelines, piping connectors and others should be cleaned by thorough flushing.
 - Dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
 - Our products except some valves are not equipped with protective function that prevents contamination.
- 3) Applying Sealing Tape
 - Wrap with tape 1 to 2 times following the screw direction.
 - Pieces of the sealing tape can lead to fluid leakage and malfunction.
 - Please implement piping construction in a clear environment to prevent anything getting in products.
- 4) Air Bleeding of 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 perform the following steps.
 - ① Reduce hydraulic pressure to less than 2MPa.
 - ② Loosen the cap nut of pipe fitting closest to the clamp, RQA/RA Die Lifter by one full turn.
 - ③ Shake the pipeline to loosen the outlet of pipe fitting. Hydraulic fluid mixed with air comes out.



- ④ Tighten the cap nut after air bleeding.
 - ⑤ It is more effective to release 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 and nut may be tightened lightly. Check the looseness and re-tighten as required.

● Hydraulic Fluid List

Maker	ISO Viscosity Grade ISO-VG-32	
	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	

Note : Please contact manufacturers when customers require products in the list above.

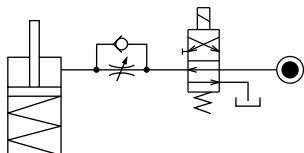
● Notes on Hydraulic Cylinder Speed Control Unit



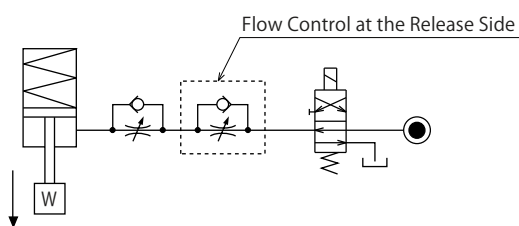
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

● 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.



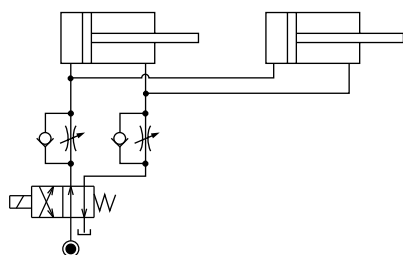
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow.



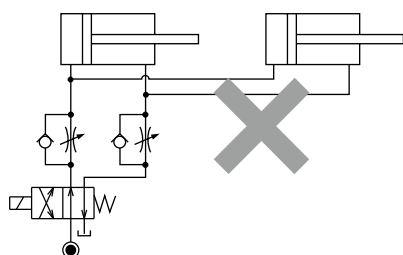
● Flow Control Circuit for Double-Acting Cylinder

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】

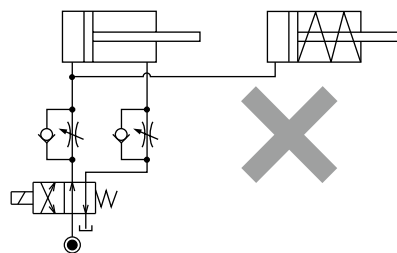


【Meter-in Circuit】



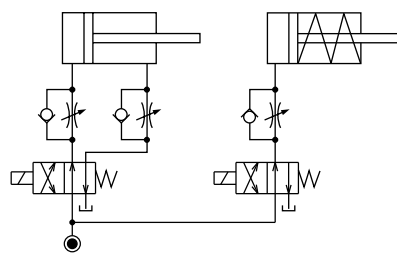
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

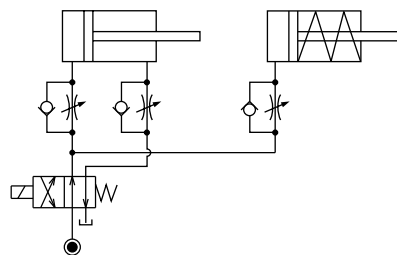


Refer to the following circuit when both the single-acting cylinder and double-acting cylinder are used together.

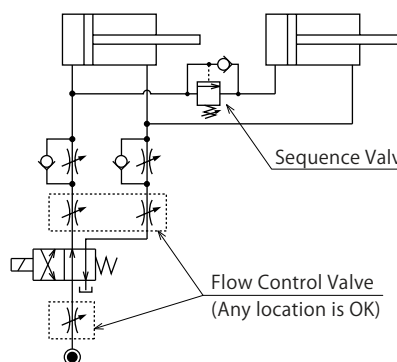
- Separate the control circuit.



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



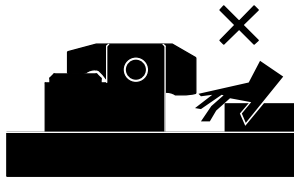
- ② In the case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve 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.



● Cautions

● Notes on Handling

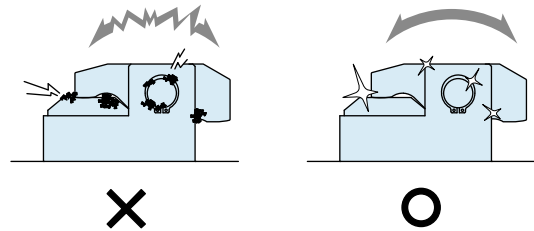
- 1) It should be operated by qualified personnel.
 - Hydraulic products, machines and devices should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
 - ① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
 - ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the hydraulic and air circuits.
 - ③ After stopping the product, do not remove until the temperature drops.
 - ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not touch a clamp (cylinder) while it is working. Otherwise, your hands may be injured.



- 4) Do not disassemble or modify.
 - If the product is taken apart or modified, the warranty will be voided even within the warranty period.

● Maintenance • Inspection

- 1) Removal of the Product and Shut-off of Pressure Source
 - Before removing the product, make sure that safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
 - Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the product.
 - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning and fluid leakage.



- 3) If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
- 4) Regularly tighten bolts, pipe line, mounting bolt, nut, snap ring, cylinder and others to ensure proper use.
- 5) Make sure the hydraulic fluid has not deteriorated.
- 6) Make sure there is a smooth action without an irregular 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 operated in an 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.

Clamp • Unit
Operation Panel
Control Unit

Die Lifter
Pre-Roller

Accessories

Cautions
Company Profile

Cautions

Installation Notes
(For Hyd. Series)

Hydraulic
Fluid List

Notes on Hyd. Cylinder
Speed Control Unit

Notes on
Handling

Maintenance /
Inspection

Warranty

Company Profile

Our Products

Company Profile

History

Sales Offices

Sales Offices

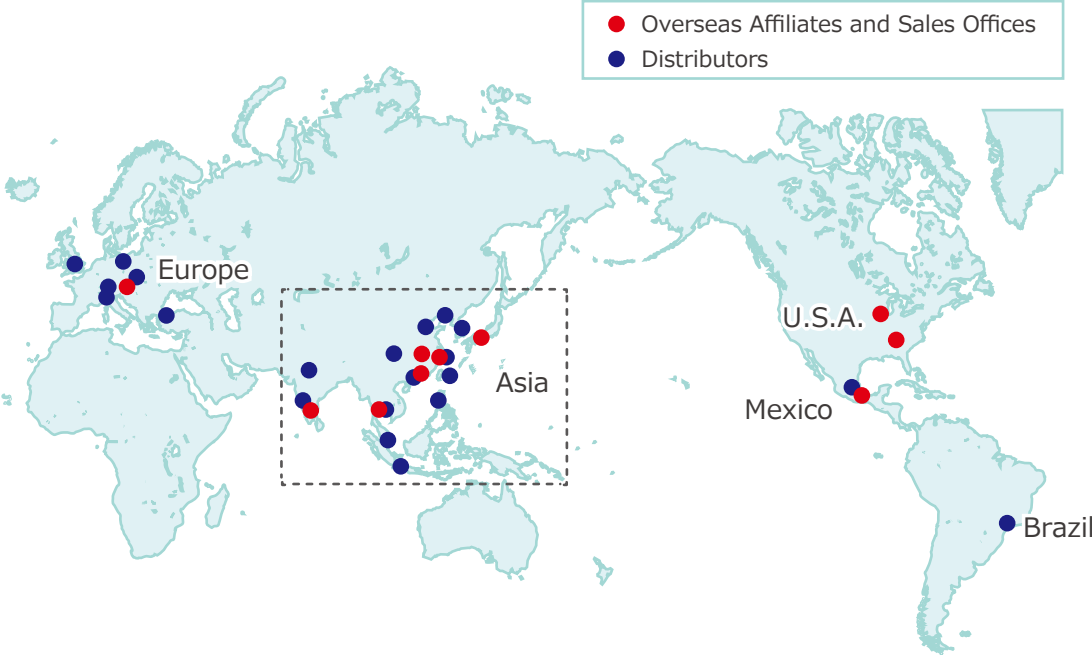
Sales Offices across the World

Japan	KOSMEK LTD. HEAD OFFICE	TEL. +81-78-991-5162 FAX. +81-78-991-8787 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241
USA	KOSMEK (USA) LTD. Overseas Subsidiary	TEL. +1-630-620-7650 FAX. +1-630-620-9015 650 Springer Drive, Lombard, IL 60148 USA
	KOSMEK USA ATLANTA BRANCH OFFICE	TEL. +1-630-620-7650 303 Perimeter Center North, Suite 300, Atlanta, GA 30346 USA
Mexico	KOSMEK USA MEXICO BRANCH OFFICE	TEL. +52-442-851-1377 Av. Loma Pinal de Amoles 320-piso PH oficina 504 interior 13, Vista Dorada, 76060 Santiago de Querétaro, Qro. Mexico
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China	KOSMEK (CHINA) LTD. Overseas Subsidiary	TEL.+86-21-54253000 FAX. +86-21-54253709 Room601, RIVERSIDE PYRAMID No.55, Lane21, Pusan Rd, Pudong Shanghai China
	KOSMEK (CHINA) LTD. Dongguan Office Overseas Subsidiary (Sales Office)	TEL.+86-769-85300880 Room 603, Xinchuang Power Building (No. 122-1 West Houjie Avenue), Houjie Town, Dongguan City, Guangdong Province, China
	KOSMEK (CHINA) LTD. Wuhan Office Overseas Subsidiary (Sales Office)	TEL.+86-15802172393 Room 309, Chuanggu Technology Building, 266 Taizihu Rd, Zhuankou Subdistrict, Caidian District, Wuhan 430056, Hubei Province, China
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Thailand	KOSMEK Thailand Representative Office Representative Office	TEL. +66(0)2-059-2010 No.139, Blue Chips Building, 4th Floor, Room No.422, Soi Sukhumvit 63 (Thong Lor 10), Sukhumvit Road, Khlong Tan Nuea, Wattana, Bangkok 10110, Thailand
Taiwan	FULL LIFE TRADING CO., LTD. Distributor	TEL. +886-2-82261860 FAX. +886-2-82261890 16F-4, No.2, Jian Ba Rd., Zhonghe District, New Taipei City Taiwan 23511
Philippines	G.E.T. Inc, Phil. Distributor	TEL.+63-2-310-7286 FAX. +63-2-310-7286 Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427
Indonesia	PT. Yamata Machinery Sales Distributor	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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Tokyo Sales Office	TEL. 048-652-8839 FAX. 048-652-8828 81, 4-chome, Onari-cho, Kita-ku, Saitama City, Saitama, 331-0815, Japan
Nagoya Sales Office	TEL. 0566-74-8778 FAX. 0566-74-8808 10-1, 2-chome, Misono-cho, Anjo City, Aichi, 446-0076, Japan
Fukuoka Sales Office	TEL. 092-433-0424 FAX. 092-433-0426 8-10-101, 1-chome, Kamimuta, Hakata-ku, Fukuoka City, Fukuoka, 812-0006, Japan

Global Network



Asia Detailed Map



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