

# Control Valve

Model BZL

Model BZT

Model BZX

Model JZG

Model BZS

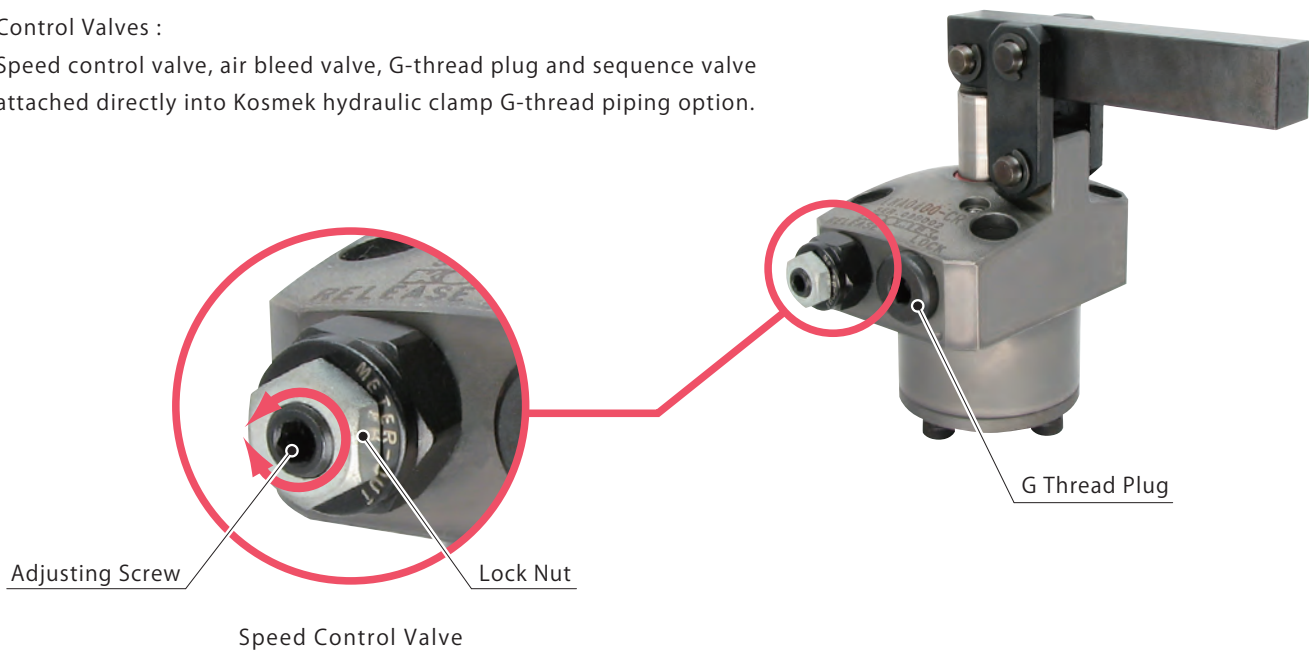


## Directly-Attached Speed Control Valve, Air Bleed Valve, G-Thread Plug and Sequence Valve

### • Directly Attached to Clamps

Control Valves :

Speed control valve, air bleed valve, G-thread plug and sequence valve attached directly into Kosmek hydraulic clamp G-thread piping option.



Speed Control Valve

Model BZL  
Model BZT



Air Bleed Valve

Model BZX



G Thread Plug

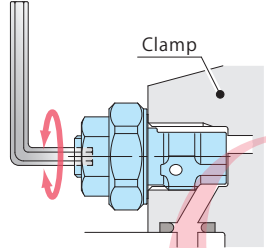
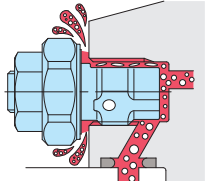
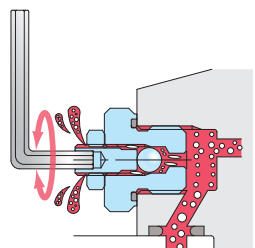
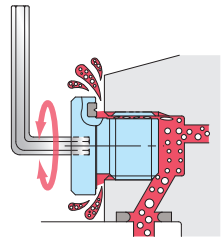
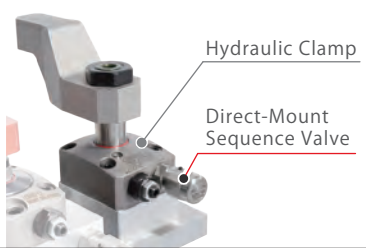
Model JZG



Direct-Mount Sequence Valve

Model BZS



	Operating Pressure Range	Action Description
<b>Speed Control Valve</b> (For Low Pressure)  Model <b>BZL</b> → P.949	7MPa or less	Adjust the flow rate with a wrench. Able to adjust the clamping speed individually. 
<b>Speed Control Valve</b> (For High Pressure)  Model <b>BZT</b> → P.953	35MPa or less	Air bleeding in the circuit is possible by loosening the speed control valve. 
<b>Air Bleed Valve</b>  Model <b>BZX</b> → P.955	25MPa or less	Air bleeding in the circuit is possible by wrench. 
<b>G Thread Plug</b>  Model <b>JZG</b> → P.957	35MPa or less	Air bleeding in the circuit is possible by loosening the G thread plug. 
<b>Direct-Mount Sequence Valve</b>  Model <b>BZS</b> → P.959	7MPa or less	Sequence Valve directly attaches to KOSMEK hydraulic clamp's G-thread piping option. Controls the operating sequence of each actuator. 

## High-Power Series

## Pneumatic Series

## Hydraulic Series

## Valve / Coupler Hydraulic Unit

## Manual Operation Accessories

## Cautions / Others

## Hole Clamp

SFA  
SFC

## Swing Clamp

LHA  
LHC  
LHS  
LHW  
LG/LT  
TLA-2  
TLB-2  
TLA-1

## Link Clamp

LKA  
LKC  
LKW  
LJ/LM  
TMA-2  
TMA-1

## Work Support

LD  
LC  
TNC  
TC

## Air Sensing Lift Cylinder

LLW

## Linear Cylinder / Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

## Block Cylinder

DBA/DBC

## Centering Vise

FVA  
FVD  
FVC

## Control Valve

BZL  
BZT  
BZX/JZG  
BZS

## Pallet Clamp

VS/VT

## Expansion Locating Pin

VFL/VFM  
VFJ/VFK

## Pull Stud Clamp

FP  
FQ

## Customized Spring Cylinder

DWA/DWB



PAT.P.

# Direct-Mount Sequence Valve

Model BZS

Attaches directly into Kosmek hydraulic clamps G-thread piping option.  
Easily and securely controls the operating sequence of actuators.



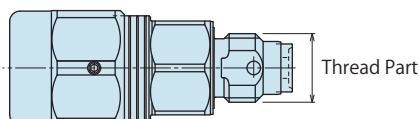
## Model No. Indication

**BZS 0 10 0**

1
2

### 1 G Thread Size

- 10** : G1/8A Thread  
**20** : G1/4A Thread  
**30** : G3/8A Thread



### 2 Design No.

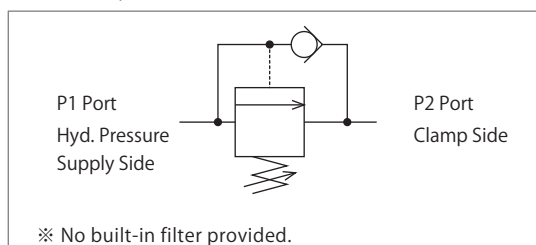
- 0** : Revision Number

## Specifications

Model No.		BZS0100	BZS0200	BZS0300
Sequence Operating Pressure Adjustable Range	MPa	1.0 ~ 6.0		
Operating Pressure Range	MPa	2.0 ~ 7.0		
Withstanding Pressure	MPa	10.5		
G Thread Size		G1/8A	G1/4A	G3/8A
Cracking Pressure	MPa	0.03		
Adjusting Screw Turn Ratio:Reference	MPa/Rev	1.5	1.3	1.1
Min. Passage Area mm <sup>2</sup>	P1 → P2	2.0	5.7	8.5
	P2 → P1	2.0	5.0	8.2
Usable Fluid	General Hydraulic Oil Equivalent to ISO-VG-32			
Operating Temperature	°C	0 ~ 70		
Tightening Torque	N·m	10	25	35
Weight	g	35	82	155

- Notes:
- Please mount to an actuator using Hex. E shown in External Dimensions on P.961 with the tightening torque shown in the list above. Insufficient or excessive tightening torque leads to malfunction.
  - Do not attach a used BZS to other clamps.  
Sequence movement may not be done because the bottom depth difference of G thread makes metal sealing insufficient.
  - The difference between the set pressure and the supplying pressure should be 1MPa or more.
  - For using multiple sequence valves to operate cylinders in sequence, the difference of each set pressure should be 1MPa or more.
  - Depending on circuit system (actuator capacity, hydraulic pipe diameter, passage length, etc.), sometimes it is necessary to reduce hydraulic flow rate to achieve proper sequence movement. Make sure you are able to control flow rate.  
(Since BZS is directly mounted on and used exclusively for one actuator, it is easily affected by hydraulic flow rate.)
  - Filter is not built in this product. Please note that contaminants such as cutting chips and sealing tapes entering into the product cause malfunction. Also when internal parts are damaged, it will not operate properly even after removing contaminants.

## Circuit Symbol



### What is a Sequence Valve?

The sequence valve controls the clamping and positioning sequence of multiple actuators.

When the incoming side pressure (P1 port) reaches the sequence setting pressure value, the pressure will be supplied to the outgoing side (P2 port). Refer to P.962 for the action description.



## Applicable Products

Model No.	DBA (Double Action) Block Cylinder	DBC (Double Action) Block Cylinder	FVA (Double Action) Centering Vise	FVC (Double Action) Centering Vise	FVD (Double Action) Centering Vise	LHA (Double Action) Swing Clamp	LHC (Double Action) Swing Clamp	LHD (Double Action) Swing Clamp	LHE (Double Action) High-Power Swing Clamp
<b>BZS0100</b>	DBA0250-C□ DBA0320-C□	DBC0250-C□ DBC0320-C□	FVA0401 FVA0631 FVA1001	FVC0630	FVD1600 FVD2500	LHA0360-C□□□ LHA0400-C□□□ LHA0480-C□□□ LHA0550-C□□□	LHC0360-C□□□ LHC0400-C□□□ LHC0480-C□□□ LHC0550-C□□□	LHD0400-C□□□ LHD0480-C□□□ LHD0550-C□□□	LHE0300-C□ LHE0360-C□ LHE0400-C□ LHE0480-C□ LHE0550-C□
<b>BZS0200</b>	DBA0400-C□ DBA0500-C□	DBC0400-C□ DBC0500-C□		FVC1000 FVC1600※1	FVD4000	LHA0650-C□□□ LHA0750-C□□□	LHC0650-C□□□		
<b>BZS0300</b>						LHA0900-C□□□ LHA1050-C□□□			

Model No.	LHS (Double Action) Swing Clamp	LHV (Double Action) Swing Clamp	LHW (Double Action) Swing Clamp	LT (Single Action) Swing Clamp	LG (Single Action) Swing Clamp	LGV (Single Action) Swing Clamp	LKA (Double Action) Link Clamp	LKC (Double Action) Link Clamp	LKE (Double Action) High-Power Link Clamp
<b>BZS0100</b>	LHS0360-C□□□ LHS0400-C□□□ LHS0480-C□□□ LHS0550-C□□□	LHV0400-C□□□ LHV0480-C□□□ LHV0550-C□□□	LHW0401-C□□□ LHW0481-C□□□ LHW0551-C□□□	LT0301-C□□□ LT0361-C□□□ LT0401-C□□□ LT0481-C□□□ LT0551-C□□□	LG0301-C□□□ LG0361-C□□□ LG0401-C□□□ LG0481-C□□□ LG0551-C□□□	LGV0400-C□□□ LGV0480-C□□□ LGV0550-C□□□	LKA0360-C□□□ LKA0400-C□□□ LKA0480-C□□□ LKA0550-C□□□	LKC0400-C□□□ LKC0480-C□□□ LKC0550-C□□□	LKE0300-C□ LKE0360-C□ LKE0400-C□ LKE0480-C□ LKE0550-C□
<b>BZS0200</b>	LHS0650-C□□□ LHS0750-C□□□	LHV0650-C□□□ LHV0750-C□□□	LHW0651-C□□□ LHW0751-C□□□	LT0651-C□□□ LT0751-C□□□	LG0651-C□□□ LG0751-C□□□	LGV0650-C□□□ LGV0750-C□□□	LKA0650-C□□□ LKA0750-C□□□	LKC0650-C□□□	
<b>BZS0300</b>	LHS0900-C□□□ LHS1050-C□□□				LG0901-C□□□ LG1051-C□□□		LKA0900-C□□□ LKA1050-C□□□		

Model No.	LKK (Double Action) Universal Clamp	LKV (Double Action) Link Clamp	LKW (Double Action) Link Clamp	LM (Single Action) Link Clamp	LJ (Single Action) Link Clamp	LJV (Single Action) Link Clamp
<b>BZS0100</b>	LKK0360-C□ LKK0400-C□ LKK0480-C□ LKK0550-C□	LKV0400-C□□□ LKV0480-C□□□ LKV0550-C□□□	LKW0401-C□□□ LKW0481-C□□□ LKW0551-C□□□	LM0300-C□ LM0360-C□ LM0400-C□ LM0480-C□ LM0550-C□	LJ0302-C□ LJ0362-C□ LJ0402-C□ LJ0482-C□ LJ0552-C□	LJV0400-C□□□ LJV0480-C□□□ LJV0550-C□□□
<b>BZS0200</b>	LKK0650-C□	LKV0650-C□□□ LKV0750-C□□□	LKW0651-C□□□ LKW0751-C□□□	LM0650-C□ LM0750-C□	LJ0652-C□ LJ0752-C□	LJV0650-C□□□ LJV0750-C□□□
<b>BZS0300</b>					LJ0902-C□ LJ1052-C□	

Model No.	LFW (Double Action) Link Clamp	LFA (Double Action) Link Clamp	LSA (Double Action) Side Clamp	LSE (Double Action) High-Power Side Clamp	LL (Double Action) Linear Cylinder	LLR (Double Action) Linear Cylinder	LLV (Double Action) Lift Cylinder	LLW (Double Action) Lift Cylinder
<b>BZS0100</b>	LFW0480-C□□ LFW0550-C□□	LFA0480-C□□ LFA0550-C□□	LSA0360-C□	LSE0360-C□	LL0360-C□□□ LL0400-C□□□ LL0480-C□□□ LL0550-C□□□	LLR0360-C□□□ LLR0400-C□□□ LLR0480-C□□□ LLR0550-C□□□	LLV0360-C□□□ LLV0400-C□□□ LLV0480-C□□□	LLW0361-C□□□ LLW0401-C□□□ LLW0481-C□□□
<b>BZS0200</b>	LFW0650-C□□ LFW0750-C□□	LFA0650-C□□ LFA0750-C□□			LL0650-C□□□ LL0750-C□□□	LLR0650-C□□□ LLR0750-C□□□		
<b>BZS0300</b>					LL0900-C□□□ LL1050-C□□□	LLR0900-C□□□ LLR1050-C□□□		

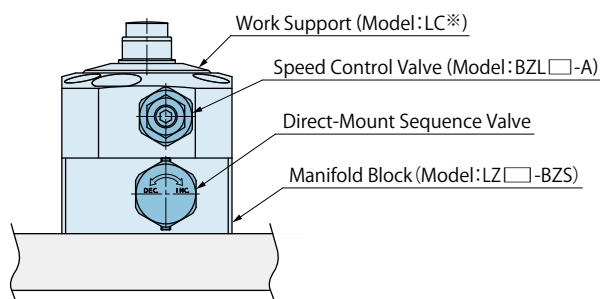
Note : ※1. It is not possible to install two BZS valves to FVC1000.

### [In case of Work Support]

For using Direct-Mount Sequence Valve for Work Support (Model: LC※), mount Speed Control Valve (Model: BZL □ □ -A) on Work Support and mount Direct-Mount Sequence Valve on the Manifold Block as shown in the drawing below.

Please refer to P.962A for Manifold Block (Model: LZ □ □ -BZS).

※Please contact us when considering the installation to model LCW.



#### High-Power Series

#### Pneumatic Series

#### Hydraulic Series

#### Valve / Coupler Hydraulic Unit

#### Manual Operation Accessories

#### Cautions / Others

#### Hole Clamp

SFA  
SFC

#### Swing Clamp

LHA  
LHC  
LHS  
LHW  
LG/LT  
TLA-2  
TLB-2  
TLA-1

#### Link Clamp

LKA  
LKC  
LKW  
LJ/LM  
TMA-2  
TMA-1

#### Work Support

LD  
LC  
TNC  
TC

#### Air Sensing Lift Cylinder

LLW

#### Linear Cylinder / Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

#### Block Cylinder

DBA/DBC

#### Centering Vise

FVA  
FVD  
FVC

#### Control Valve

BZL  
BZT  
BZX/JZG  
**BZS**

#### Pallet Clamp

VS/VT

#### Expansion Locating Pin

VFL/VFM  
VFJ/VFK

#### Pull Stud Clamp

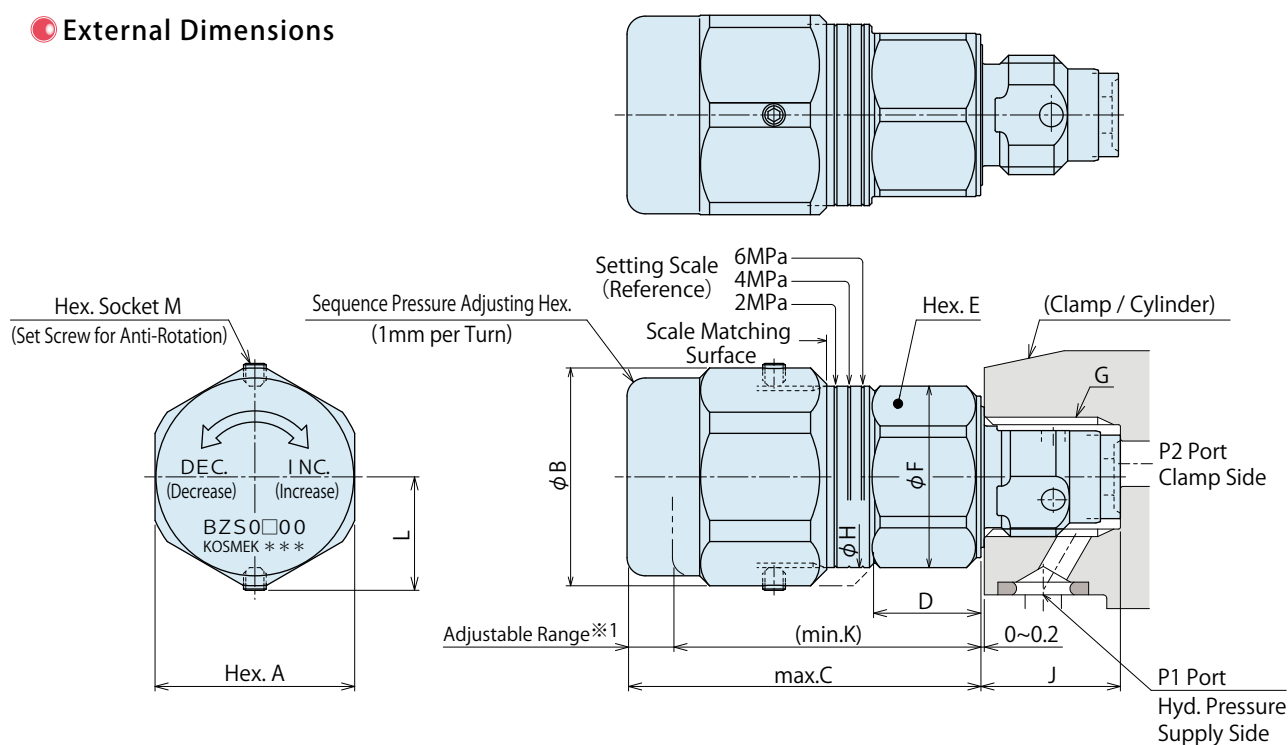
FP  
FQ

#### Customized Spring Cylinder

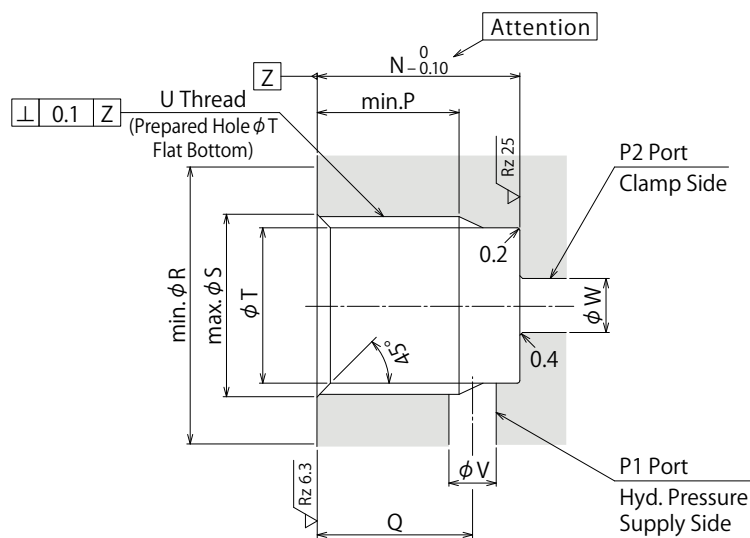
DWA/DWB



## External Dimensions



## Machining Dimensions of Mounting Area



(mm)

Model No.	BZS0100	BZS0200	BZS0300
A	16	22	27
B	17.5	24	29.5
C	30.5	39	49.5
D	7.5	12	15
E	14	18	22
F	15.5	20	24
G	G1/8	G1/4	G3/8
H	13.8	20	24
J ※2	(11.6)	(15.1)	(17.6)
K	(26.5)	(34)	(44)
L	9.5	12.5	15
M	1.3	1.3	1.5
N	11.5	15	17.5
P	8.5	11※3	13
Q	9	11.5	13
R (Flat Surface Area)	16	20.5	24.5
S	10	13.5	17
T	8.7	11.5	15
U	G1/8	G1/4	G3/8
V	2 ~ 3	3 ~ 4	4 ~ 5
W	2.5 ~ 5	3.5 ~ 7	4.5 ~ 9

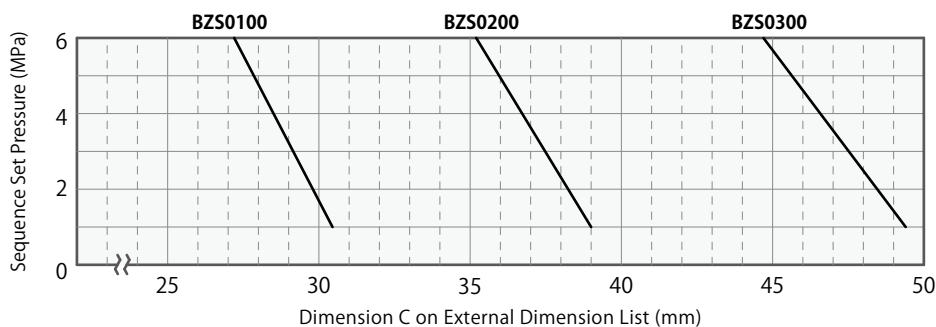
### Notes:

- Since the  $\sqrt{Rz 6.3}$  area is sealing part, be careful not to damage it.
  - Since the  $\sqrt{Rz 12.5}$  area is the metal sealing part at the edge of BZS, be careful not to damage it (especially when deburring).
  - No cutting chips or burr should be at the tolerance part of machining hole.
  - As shown in the drawing, P1 port is used as the hydraulic supply and P2 port as the clamp side.
- ※1. Use the sequence pressure adjusting hex. within the adjustable range of ※2 (the dimensions K~C in the above).  
Please note that if it is loosened further than max. C, pressure adjusting hex. part and internal spring will come off.
- ※2. Dimension when mounted. (+0.5mm before mounted.)
- ※3. If mounting plugs or fittings with G thread specification available in the market, the dimension '※3' should be 12.5.



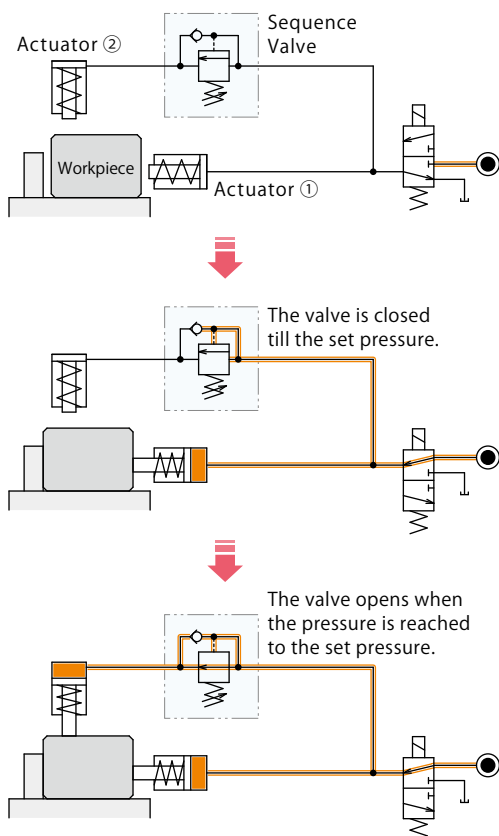
## ● Cautions

1. Please design hydraulic circuit properly. Improper circuit design may lead to malfunctions and damages.
2. Filter is not built in this product. Be aware that contaminants such as cutting chips and sealing tapes entering into the product cause malfunction. Also when internal parts are damaged, it will not operate properly even after removing contaminants.
3. Depending on circuit system (actuator capacity, hydraulic pipe diameter, passage length, etc.), sometimes it is necessary to reduce hydraulic flow rate to achieve proper sequence movement. Make sure you are able to control flow rate.  
(Since BZS is directly mounted on and used exclusively for one actuator, it is easily affected by hydraulic flow rate.)
4. The difference between the set pressure and the supplying pressure should be 1MPa or more.
5. For using multiple sequence valves to operate cylinders in sequence, the difference of each set pressure should be 1MPa or more.
6. For using multiple sequence valves to operate cylinders simultaneously, adjust them gradually by checking their actions.
7. Please keep in mind that the minimum passage area of each actuator will be decreased by mounting this product and thus operating time may become longer.
8. Please mount to an actuator using Hex. E shown in External Dimensions on P.961 with the tightening torque shown in the specification list on P.959. Insufficient or excessive tightening torque leads to malfunction.
9. Air bleeding is required as air mixed in the circuit causes malfunction.
10. At shipment, sequence pressure is not adjusted. Please adjust it by referring to the graph below. Install a pressure gauge on the circuit to check pressure as necessary. After adjustment, tighten one or more set screw for anti-rotation. (Tightening torque: 0.2N·m)



(This graph is a reference, and the values will not be guaranteed.)

## ● Action Description



Operating Procedure		Note
Locking	Hydraulic pressure is ON.	
	Actuator ① is activated.	
	Pressure increases to the sequence operation set pressure.	The difference between the operating pressure and the sequence operation set pressure should be 1MPa or more.
	The sequence valve circuit opens.	
	Actuator ② is activated.	
Releasing	Locking action is completed.	
	Machining, etc.	
	Hydraulic pressure is OFF.	
	The actuators ① and ② are released almost simultaneously.	The check valve in the sequence valve opens when the incoming side pressure decreases.
	Releasing action is completed.	

### High-Power Series

### Pneumatic Series

### Hydraulic Series

### Valve / Coupler Hydraulic Unit

### Manual Operation Accessories

### Cautions / Others

#### Hole Clamp

SFA  
SFC

#### Swing Clamp

LHA  
LHC  
LHS  
LHW  
LG/LT  
TLA-2  
TLB-2  
TLA-1

#### Link Clamp

LKA  
LKC  
LKW  
LJ/LM  
TMA-2  
TMA-1

#### Work Support

LD  
LC  
TNC  
TC

#### Air Sensing Lift Cylinder

LLW

#### Linear Cylinder / Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

#### Block Cylinder

DBA/DBC

#### Centering Vise

FVA  
FVD  
FVC

#### Control Valve

BZL  
BZT  
BZX/JZG  
BZS

#### Pallet Clamp

VS/VT

#### Expansion Locating Pin

VFL/VFM  
VFJ/VFK

#### Pull Stud Clamp

FP  
FQ

#### Customized Spring Cylinder

DWA/DWB



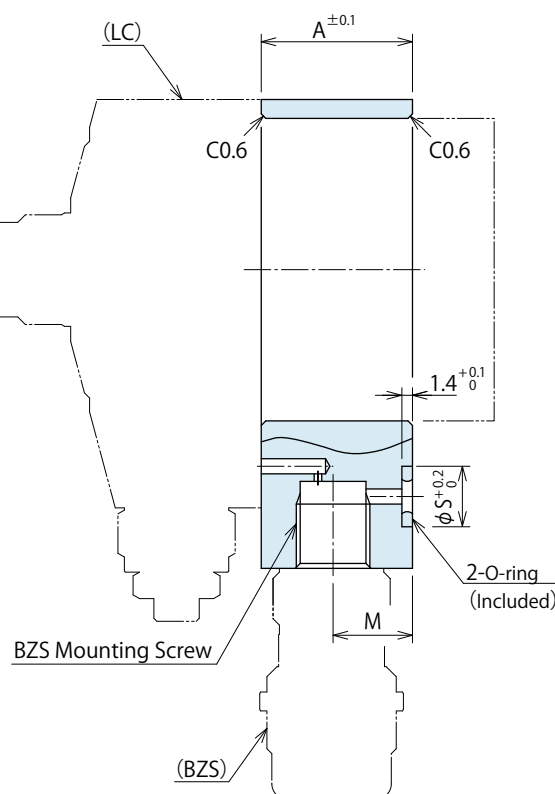
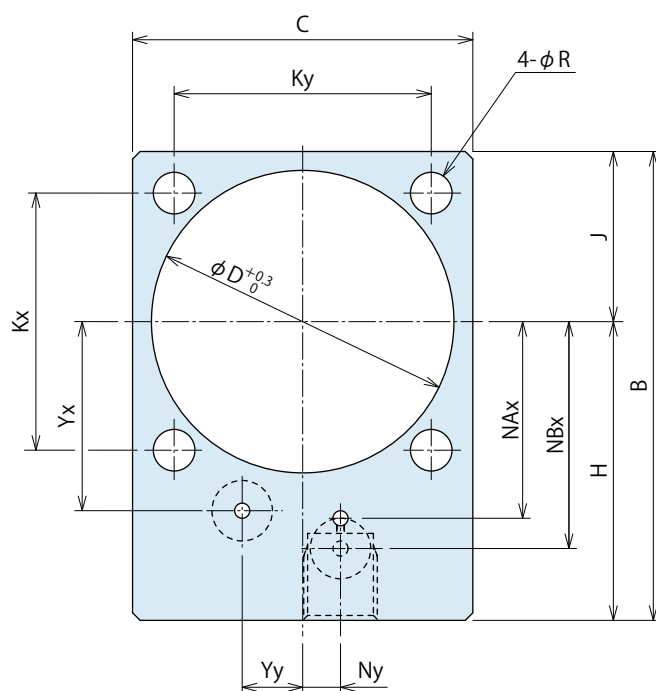
Accessories : Manifold Block for LC (Direct-Mount Sequence Valve)

Model No. Indication

**LZ 040 0 - BZS**

Size  
(Refer to the table.)

Design No.  
(Revision Number)



(mm)

Model No.	LZ0260-BZS	LZ0300-BZS	LZ0360-BZS	LZ0400-BZS	LZ0480-BZS	LZ0550-BZS	LZ0650-BZS	LZ0750-BZS	LZ0900-BZS
Corresponding Model No.	LC0263 BZL0101-A BZS0100	LC0303 BZL0101-A BZS0100	LC0363 BZL0101-A BZS0100	LC0403 BZL0101-A BZS0100	LC0483 BZL0101-A BZS0100	LC0553 BZL0101-A BZS0100	LC0653 BZL0101-A BZS0100	LC0753 BZL0201-A BZS0200	LC0903 BZL0201-A BZS0200
A	20	20	20	20	20	20	20	27	27
B	48.5	53.5	57	62	69	77	89	103	118
C	29	34	40	45	51	60	70	80	95
D	26	30	36	40	48	55	65	75	90
H	32	34	37	39.5	43.5	47	54	63	70.5
J	16.5	19.5	20	22.5	25.5	30	35	40	47.5
Kx	25	30	31.4	34	40	47	55	63	75
Ky	21	23	31.4	34	40	47	55	63	75
M	10.5	10.5	10.5	10.5	10.5	10.5	10.5	14.5	14.5
NAX	18.5	20.5	23.5	26	30	33.5	39.5	45	52.5
NBx	22.5	24.5	27.5	30	34	37.5	44.5	50.5	58
Ny	3	3	5	5	0	0	0	0	0
R	3.4	4.5	4.5	5.5	5.5	6.8	6.8	9	11
S	8	8	8	8	8	8	10	10	10
Yx	18.5	20.5	23.5	26	28	31	37	42.5	50
Yy	7	7	8	8	11	13	14	15	15
O-ring	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P5-N	OR NBR-90 P7-N	OR NBR-90 P7-N	OR NBR-90 P7-N
BZS Mounting Screw	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8	G1/4	G1/4
Weight kg	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.8	0.9

Notes : 1. Material S45C Surface Finishing : Alkaline Blackening

2. Mounting bolts are not provided. Please prepare them according to the mounting height referring to dimension 'A'.



	Control Valve Digest P.947	Model No. Indication	Specifications	Applicable Products	External Dimensions	Accessories
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## MEMO

High-Power  
Series

Pneumatic Series

**Hydraulic Series**

Valve / Coupler  
Hydraulic Unit

Manual Operation  
Accessories

Cautions / Others

Hole Clamp

SFA  
SFC

Swing Clamp

LHA  
LHC  
LHS  
LHW  
LG/LT  
TLA-2  
TLB-2  
TLA-1

Link Clamp

LKA  
LKC  
LKW  
LJ/LM  
TMA-2  
TMA-1

Work Support

LD  
LC  
TNC  
TC

Air Sensing  
Lift Cylinder

LLW

Linear Cylinder /  
Compact Cylinder

LL  
LLR  
LLU  
DP  
DR  
DS  
DT

Block Cylinder

DBA/DBC

Centering Vise

FVA  
FVD  
FVC

**Control Valve**

BZL  
BZT  
BZX/JZG  
**BZS**

Pallet Clamp

VS/VT

Expansion  
Locating Pin

VFL/VFM  
VFJ/VFK

Pull Stud Clamp

FP  
FQ

Customized  
Spring Cylinder

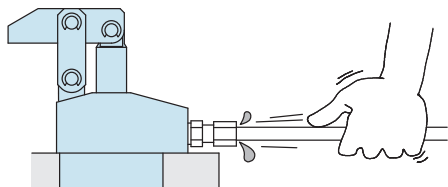
DWA/DWB



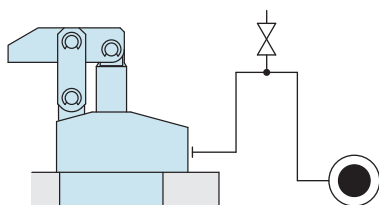
## Cautions

### ● Installation Notes (For Hydraulic Series)

- 1) Check the Usable Fluid
  - Please use the appropriate fluid by referring to the Hydraulic Fluid List.
- 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.
  - There is no filter provided with Kosmek's product except for a part of valves which prevents foreign materials and contaminants from getting into the circuit.
- 3) Applying Sealing Tape
  - Wrap with tape 1 to 2 times following the screw direction.
  - Pieces of the sealing tape can lead to oil 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 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 bleeding.
- ⑤ It is more effective to release air at the highest point inside the circuit or at the end of the circuit.  
(Set an air bleeding valve at the highest point inside 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

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	

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



## Cautions

Installation Notes  
(For Hydraulic Series)

Hydraulic Fluid List

Notes on Hydraulic Cylinder  
Speed Control Circuit

Notes on Handling

Maintenance/  
Inspection

Warranty

## Company Profile

Company Profile

Our Products

History

## Index

Search by  
Alphabetical Order

Sales Offices

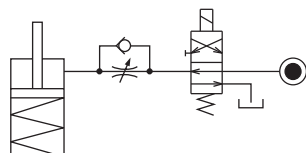
## Notes on Hydraulic Cylinder Speed Control Unit



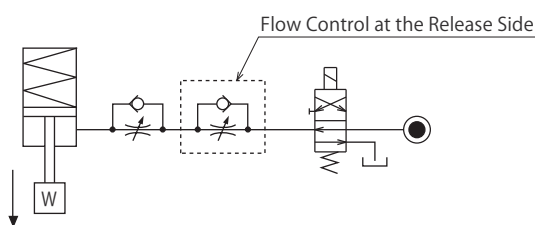
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

### 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. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



### Flow Control Circuit for Double Acting Cylinder

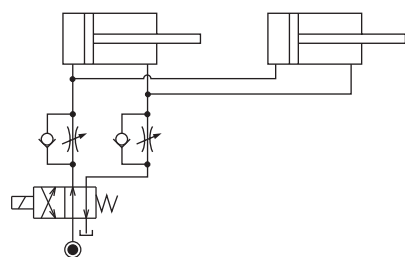
Flow control circuit for double acting cylinder should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

However, in the case of controlling LKE, TMA, TLA, both lock side and release side should be meter-in circuit.

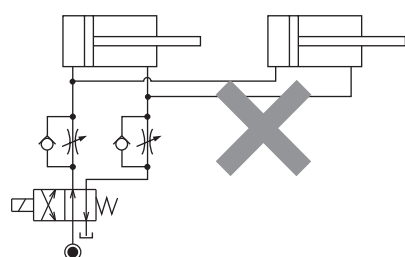
Refer to P.75 for speed adjustment of LKE.

For TMA and TLA, if meter-out circuit is used, abnormal high pressure is created, which causes oil leakage and damage.

【Meter-out Circuit】 (Except LKE/TMA/TLA)

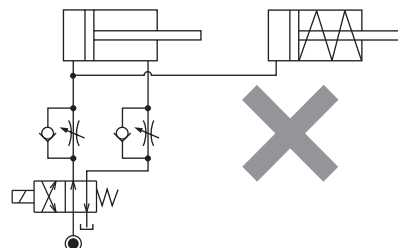


【Meter-in Circuit】 (LKE/TMA/TLA must be controlled with meter-in.)



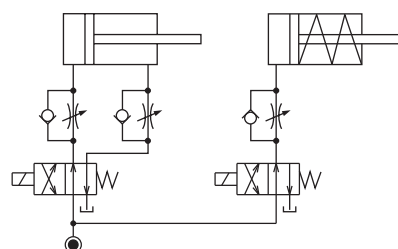
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

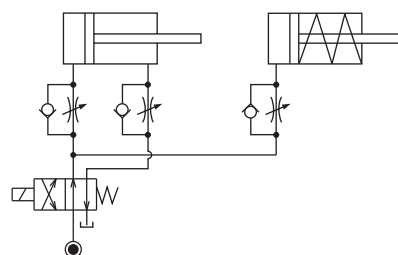


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

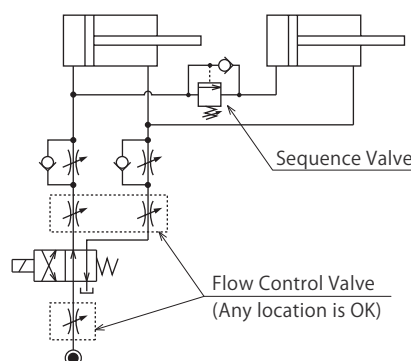
- Separate the control circuit.



- 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.

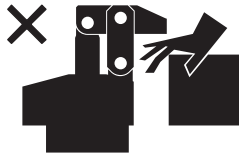




## ● Cautions

### ● Notes on Handling

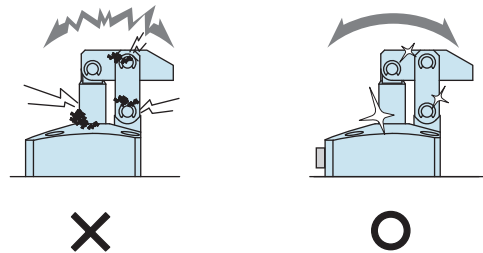
- 1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
  - ① The machine and equipment can only be inspected or prepared 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 air and hydraulic 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 due to clinching.



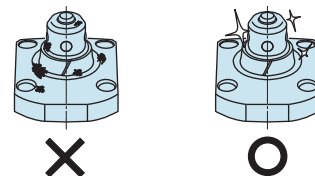
- 4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

### ● Maintenance and Inspection

- 1) Removal of the Machine and Shut-off of Pressure Source
  - Before the machine is removed, make sure that safety devices and preventive 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 piston rod and plunger.
  - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning and fluid leakage.



- 3) Please clean out the reference surfaces on a regular basis (taper reference surface and seating surface) of the locating products. (VS/VT/VFL/VFM/VFJ/VFK/WVS/VWM/VWK/VX/VXE/VXF)
  - The locating products, except VX/VXE/VXF model, can remove contaminants with cleaning functions. However, hardened cutting chips, adhesive coolant and others may not be removed. Make sure there are no contaminants before installing a workpiece/pallet.
  - Continuous use with contaminant on components will lead to locating accuracy failure, malfunction and fluid leakage.



- 4) If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
- 5) Regularly tighten nut, bolt, pin, cylinder, pipe line and others to ensure proper use.
- 6) Make sure the hydraulic fluid has not deteriorated.
- 7) 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.
- 8) The products should be stored in the cool and dark place without direct sunshine or moisture.
- 9) Please contact us for overhaul and repair.



**Cautions**[Installation Notes  
\(For Hydraulic Series\)](#)[Hydraulic Fluid List](#)[Notes on Hydraulic Cylinder  
Speed Control Circuit](#)[Notes on Handling](#)[Maintenance/  
Inspection](#)[Warranty](#)**Company Profile**[Company Profile](#)[Our Products](#)[History](#)**Index**[Search by  
Alphabetical Order](#)**Sales Offices**

## ● 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.



# Sales Offices

## Sales Offices across the World

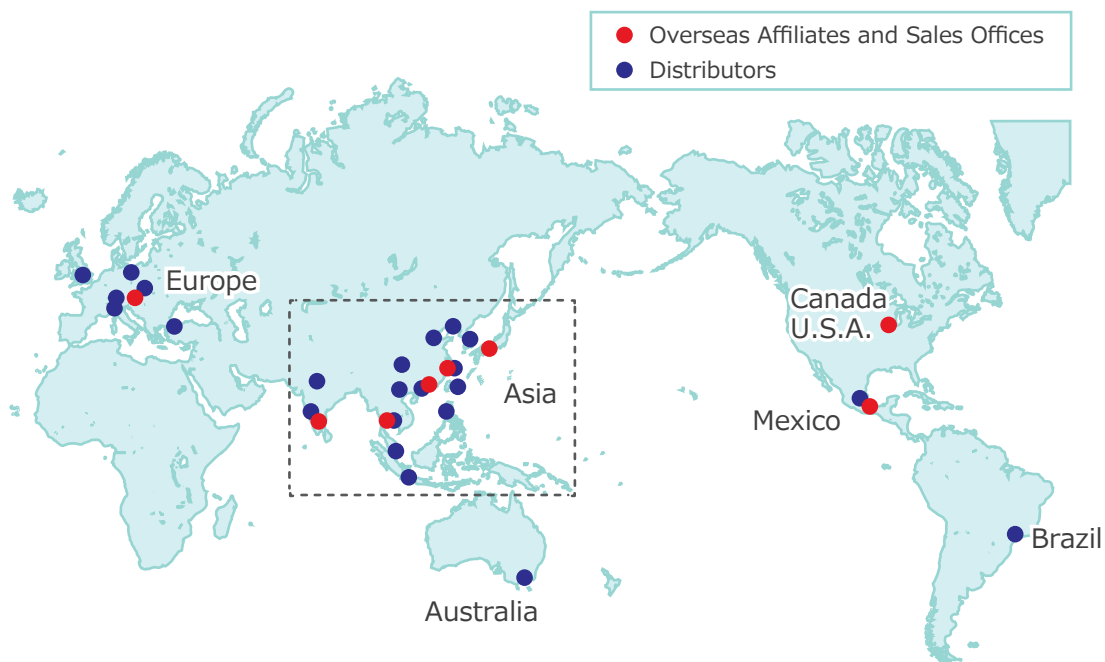
JAPAN HEAD OFFICE Overseas Sales	<b>TEL. +81-78-991-5162</b>	<b>FAX. +81-78-991-8787</b>
	KOSMEK LTD. 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241 〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
United States of America SUBSIDIARY KOSMEK (USA) LTD.	<b>TEL. +1-630-620-7650</b>	<b>FAX. +1-630-620-9015</b>
	650 Springer Drive, Lombard, IL 60148 USA	
MEXICO REPRESENTATIVE OFFICE KOSMEK USA Mexico Office	<b>TEL. +52-1-55-3044-9983</b>	
	Av. Santa Fe 103, Int. 59, col. Santa Fe Juriquilla, Queretaro, QRO, 76230, Mexico	
EUROPE SUBSIDIARY KOSMEK EUROPE GmbH	<b>TEL. +43-463-287587</b>	<b>FAX. +43-463-287587-20</b>
	Schleppeplatz 2 9020 Klagenfurt am Wörthersee Austria	
CHINA KOSMEK (CHINA) LTD. 考世美(上海)贸易有限公司	<b>TEL. +86-21-54253000</b>	<b>FAX. +86-21-54253709</b>
	Room601, RIVERSIDE PYRAMID No.55, Lane21, Pusan Rd, Pudong Shanghai 200125, China 中国上海市浦东新区浦三路21弄55号银亿滨江中心601室 200125	
INDIA BRANCH OFFICE KOSMEK LTD - INDIA	<b>TEL. +91-9880561695</b>	
	4A/Old No:649, Ground Floor, 4th D cross, MM Layout, Kavalbyrasandra, RT Nagar, Bangalore -560032 India	
THAILAND REPRESENTATIVE OFFICE KOSMEK Thailand Representation Office	<b>TEL. +66-2-300-5132</b>	<b>FAX. +66-2-300-5133</b>
	67 Soi 58, RAMA 9 Rd., Phatthanakan, Suanluang, Bangkok 10250, Thailand	
TAIWAN (Taiwan Exclusive Distributor) Full Life Trading Co., Ltd. 盈生貿易有限公司	<b>TEL. +886-2-82261860</b>	<b>FAX. +886-2-82261890</b>
	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) G.E.T. Inc, Phil.	<b>TEL. +63-2-310-7286</b>	<b>FAX. +63-2-310-7286</b>
	Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427	
INDONESIA (Indonesia Exclusive Distributor) PT. Yamata Machinery	<b>TEL. +62-21-29628607</b>	<b>FAX. +62-21-29628608</b>
	Delta Commercial Park I, Jl. Kenari Raya B-08, Desa Jayamukti, Kec. Cikarang Pusat Kab. Bekasi 17530 Indonesia	

## Sales Offices in Japan

Head Office Osaka Sales Office Overseas Sales	<b>TEL. 078-991-5162</b>	<b>FAX. 078-991-8787</b>
	〒651-2241 兵庫県神戸市西区室谷2丁目1番5号	
Tokyo Sales Office	<b>TEL. 048-652-8839</b>	<b>FAX. 048-652-8828</b>
	〒331-0815 埼玉県さいたま市北区大成町4丁目81番地	
Nagoya Sales Office	<b>TEL. 0566-74-8778</b>	<b>FAX. 0566-74-8808</b>
	〒446-0076 愛知県安城市美園町2丁目10番地1	
Fukuoka Sales Office	<b>TEL. 092-433-0424</b>	<b>FAX. 092-433-0426</b>
	〒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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