Hydraulic Booster Unit

Model CJB

Drastically Reduces Hydraulic Clamp Operating Time !

In case hydraulic supply from application side is possible, clamping time can be drastically reduced by a hydraulic source of an application + an air hydraulic pump.

Features

- **Drastically Reduces Hydraulic Clamp Operating Time !**

  Reduces clamping time with a hybrid unit composed of IMM hydraulic source + air hydraulic pump.

- **Compact Application Possible !**

  Application can be compact, because the hydraulic tank can be shared with IMM.

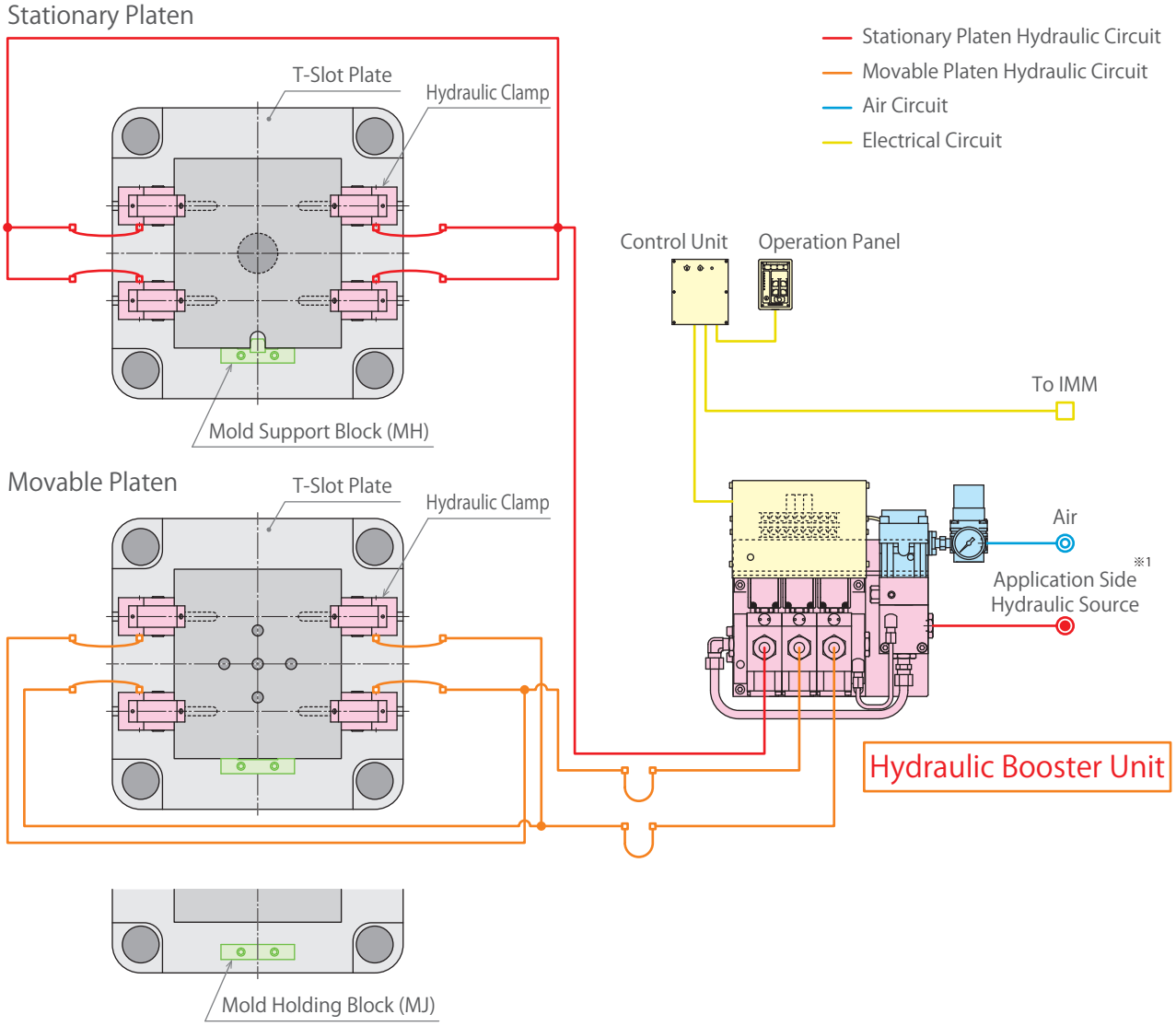
- **Centralized Control of Hydraulic Pressure Possible !**

  Enables centralized control of hydraulic pressure, because the hydraulic tank can be shared with IMM.

- **Setup Time Reduction Improves Machine Availability !**

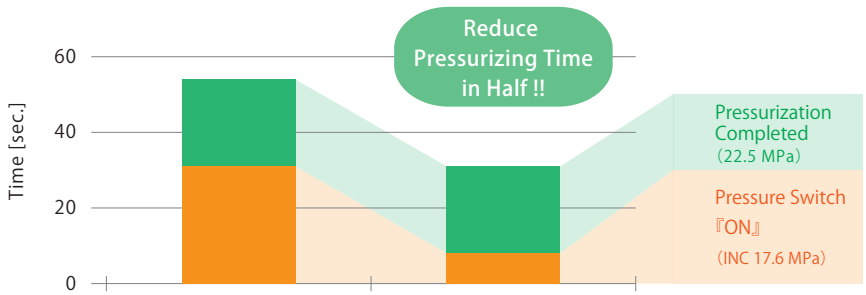
  Shorter clamping time reduces setup time and improves machine availability !

Circuit Example



Note :
※1. While hydraulic clamps are working, keep the application side hydraulic source in operation.

Clamping Time Comparison



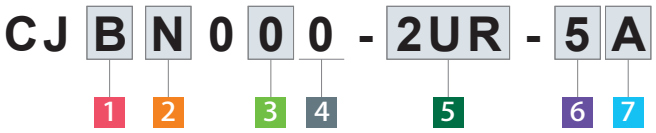
850ton IMM
GBC1600×8 Clamps

Pump	CPD Hydraulic Unit (AD7300 Pump)	Hydraulic Booster Unit IMM Hydraulic Source + AB7000 Pump
Amount of Discharge Oil	3.74 [ℓ/min]	50 [ℓ/min] + 1.32 [ℓ/min]

Pump Pressurization Time Comparison

※ Calculated value by our own.

Model No. Indication



1 Pump Model

B : AB Pump (Model No. AB7000-M□-Z0360□)

2 Pressure Code

N : Working Pressure 25MPa
Pressure Switch Setting INC. 17.6MPa (Normal Pressure Rise Confirmation),
INC. 28.4MPa (Abnormal High Pressure Confirmation)

3 Fluid Code

0 : General Hydraulic Oil
G : Water・Glycol
S : Silicon Oil
F : Fatty Acid Ester

4 Design No.

0 : Revision Number

5 Circuit Symbol (Indicate with the number of circuits and circuit symbol.)

U : For Clamp Double Solenoid

R : With Pressure Relief Valve (Normal Pressure Rise Confirmation)
S : With Pressure Relief Valve (Normal Pressure Rise Confirmation + Abnormal High Pressure Confirmation)

6 Voltage Code

1 : AC100V (50 / 60Hz)
2 : AC200V (50 / 60Hz)
3 : AC110V (50 / 60Hz)
4 : AC220V (50 / 60Hz)
5 : DC24V

7 Common (Only when selecting 6 Voltage Code **5**:DC24V)

A : + Common (Standard)
B : – Common

Note :
1. When using this unit, please select YM Control Unit with Pressure Switch / Pressure Source **2** "With Command Output for Increasing Hydraulic Pressure of Clamp / With Command Output for External Hydraulic Pump".

Specifications

Model No.		CJBN0□0-□-□
Working Hydraulic Pressure	MPa	25
Withstanding Pressure	MPa	37
Air Pressure	MPa	0.41 or more
Incoming side Hydraulic Pressure	MPa	14.0 or less
Control Voltage	V	DC 24V
Operating Temperature	℃	0 ～ 70
Usable Fluid		Refer to Model No. Indication
Use Frequency		Less than 20 Cycles / Day Pressure Rising Time： Less than 2.5 min. / Cycle
Weight kg	2 Circuits	Approx. 19
	3 Circuits	Approx. 22
	4 Circuits	Approx. 25

Notes :

2. If hydraulic viscosity is higher than specified, action time will be longer. Please use equivalent hydraulic oil to ISO-VG-32.
3. If using it at low temperature, action time will be longer because the viscosity of hydraulic oil becomes higher.
4. When setting a pressure gauge to a hydraulic circuit, install a damper or use an oil-filled (glycerin) pressure gauge in order to prevent damage caused by pressure surging.
5. Provide enough space at the top of the unit taking into consideration the maintenance of the pump.

Main Components

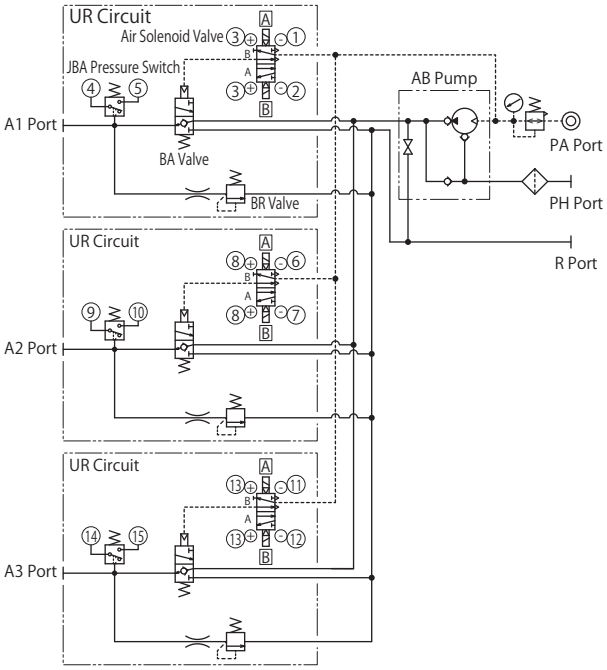
AB Pump		
Model No.		AB7000-M□-Z0360□
Discharge Hydraulic Pressure	MPa	22.5
Set Air Pressure	MPa	0.41
Discharge Oil under No Load	ℓ /min	1.32
BA Valve		
Model No.		BA5R11-0-Z00102
BR Valve (Pressure Relief Valve)		
Model No.		BR5N11-0
Relief Pressure (Set Pressure)	MPa	25.0 $^{+2}_{0}$
JBA Pressure Switch (R : Normal Pressure Rise Confirmation)		
Model No.		JBA2700-0G
Set Pressure (Normal Pressure Rise Confirmation)	MPa	INC. 17.6
JBA Pressure Switch (S : Abnormal High Pressure Confirmation)		
Model No.		JBA3800-0GD
Set Pressure (Normal Pressure Rise Confirmation)	MPa	INC. 17.6
Set Pressure (Abnormal Pressure Rise Confirmation)	MPa	INC. 28.4
Air Solenoid Valve (SMC made)		
Model No.		SYJ5240-5G

Note :

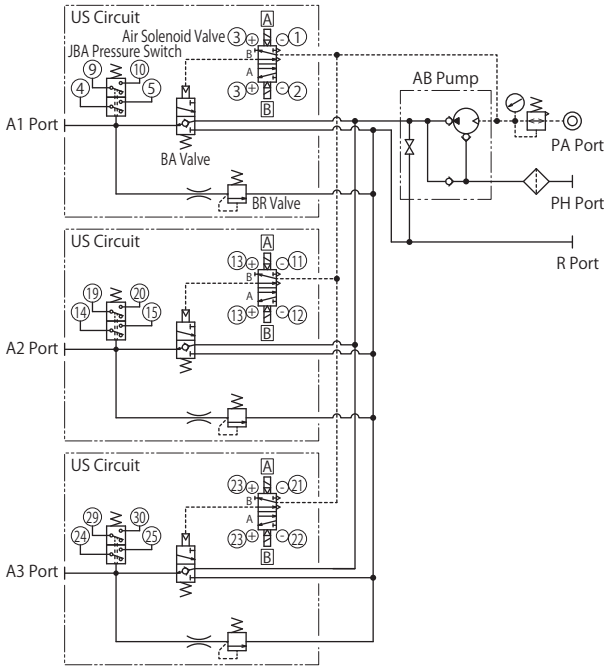
6. The pump stops in balance at 22.5MPa in order to prevent abnormal continuous operation considering 25.0 MPa relief pressure of BR valve (pressure relief valve).

Circuit Symbol

This shows the circuit symbol of CJBN0□0-3UR-5A.



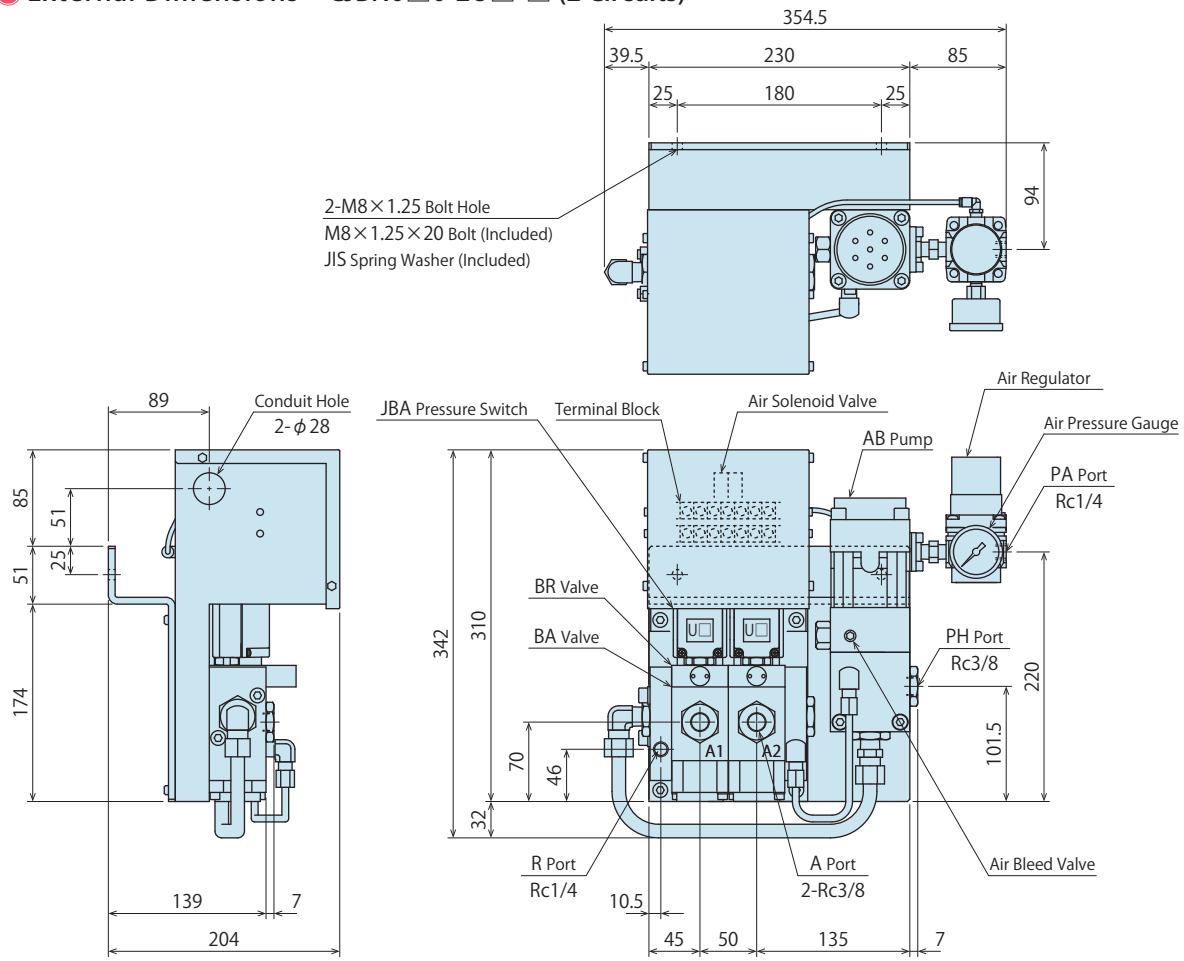
This shows the circuit symbol of CJBN0□0-3US-5A.



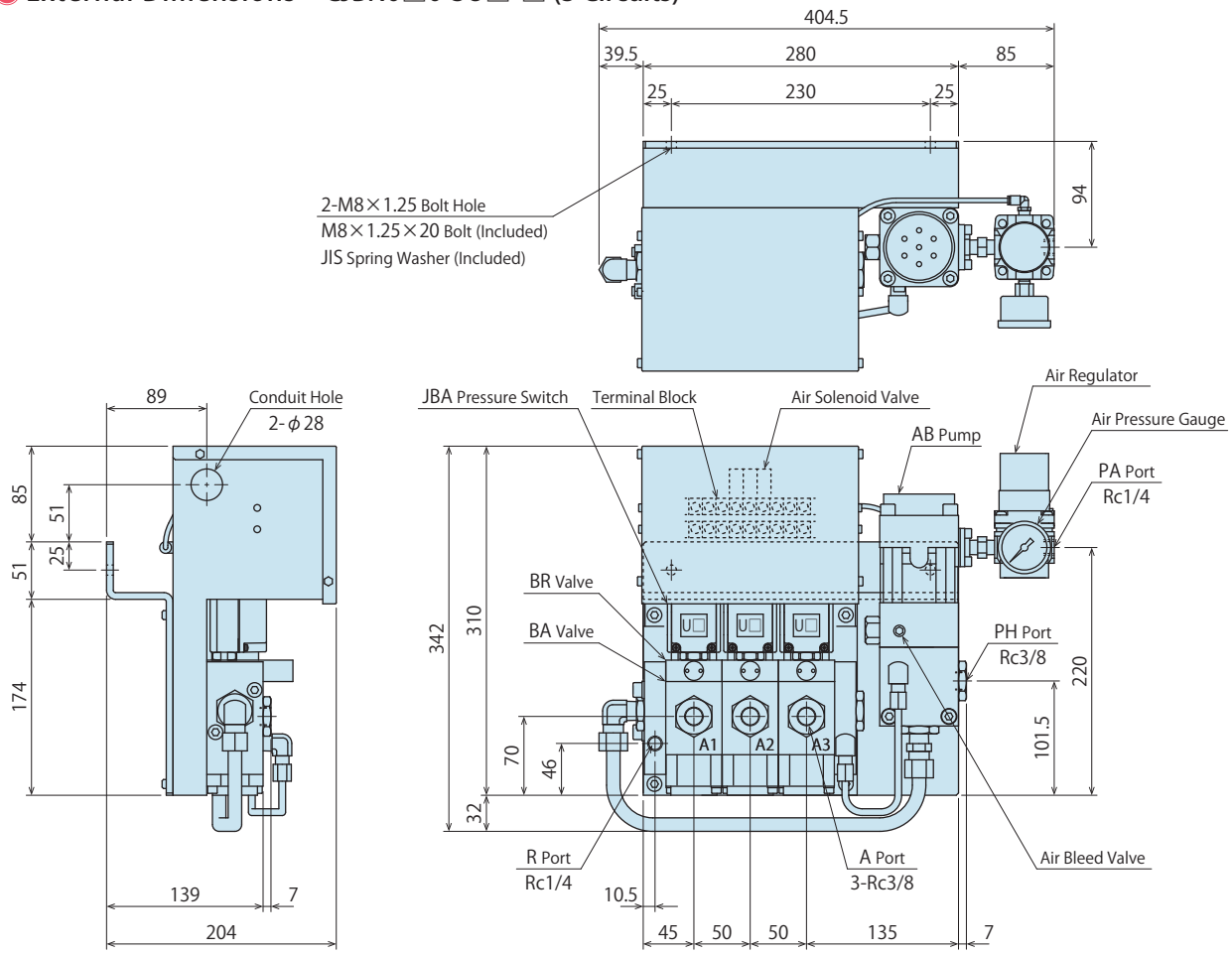
Notes :

7. ○ in the diagram indicates the terminal number.
8. □ in the diagram indicates the coil number.
9. The red cable of solenoid valve is "+", and the black cable is "-".
10. Hydraulic circuit of R port to the tank must be separated from others.
    A hydraulic circuit shared with other actuators causes back pressure leading to damage of internal parts.

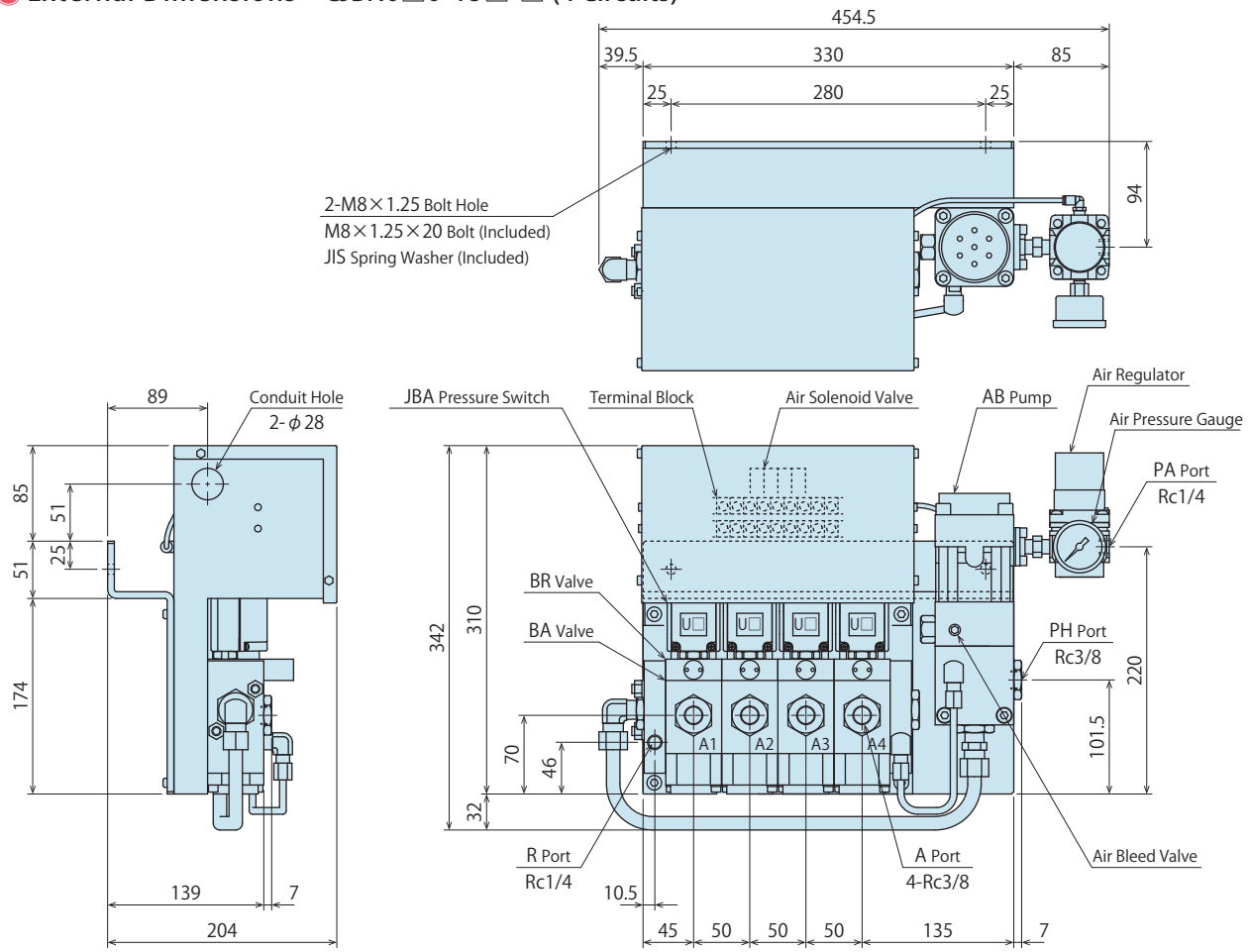
External Dimensions : CJBN0□0-2U□-□ (2 Circuits)



External Dimensions : CJBN0□0-3U□-□ (3 Circuits)



External Dimensions : CJBN0□0-4U□-□ (4 Circuits)



Cautions

Notes for Design

1) Check Specifications

- Please use each product according to its specifications.
- 【GBB/GBC/GBE/GBF/GBM/GBR】
  Operating hydraulic pressure is 25 MPa.
  Operate within the specified condition. Failure to do so may result in damage on clamps, falling of molds and injury.
  In order to reduce clamping force, use the product with lower operating pressure.
  【GWA/GLA】
  Operating hydraulic pressure is 14MPa. Hydraulic pressure must be continuously supplied.
  However, if using IMM hydraulic source and supply hydraulic pressure fluctuates, supply 14MPa hydraulic pressure to the clamp when opening the mold. Otherwise, the specification of the clamp is not satisfied and it may cause injury due to falling of the mold.
  Do not use clamps with excessive hydraulic pressure. Failure to do so may result in damage on clamps, falling of molds and injury.
- The ambient operating temperature of clamp should be 0 ~ 70℃. (High Temperature Model：0 ~ 120℃.)

2) Mold Clamping Thickness

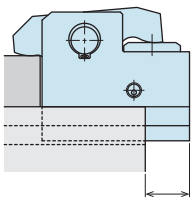
- 【GBB/GBC/GBE/GBF/GBM/GBR】
  Check the mold clamping thickness.
  【GWA/GLA】
  The mold clamping thickness should be h±0.5mm.
- Use of a mold other than specified may result in incomplete locking of the clamp, leading to injury due to falling of the mold.

3) Check the dimensions of T-slot.

- 【GBB/GBC/GBE/GBF/GLA】
  If the T-slot you are using differs from the clamp specification, the clamp will not operate properly, and this could lead to falling of the mold and injury.

4) Allowable Protrusion Amount when Clamping

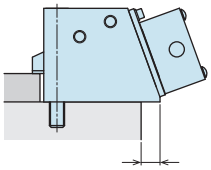
- 【GBB/GBC/GBE/GBF/GWA/GLA】
  Do not exceed the allowable protrusion amount. Otherwise, excessive force will be applied to the clamp, deforming or dropping the clamp out of T-slot. It may cause falling of a mold and injury.



Allowable Protrusion Amount (L)

Allowable Protrusion Amount

Model No.	L (mm)
GBB0100/GBC0100	17.5
GBB0160/GBC0160	21
GBB0250/GBC0250/GBE0250/GBF0250	25
GBB0400/GBC0400/GBE0400/GBF0400	32
GBB0630/GBC0630/GBE0630/GBF0630	39
GBB1000/GBC1000/GBE1000/GBF1000	45
GBB1600/GBC1600/GBE1600/GBF1600	57
GBB2500/GBC2500/GBE2500/GBF2500	69.5
GBB4000/GBC4000/GBE4000/GBF4000	0
GBB5000/GBC5000/GBE5000/GBF5000	0



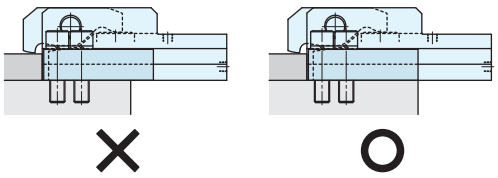
Allowable Protrusion Amount (L)

Allowable Protrusion Amount

Model No.	L (mm)
GWA0100/GLA0100	35
GWA0160/GLA0160	38
GWA0250/GLA0250	23
GWA0400/GLA0400	62
GWA0630/GLA0630	65
GWA1000/GLA1000	35
GWA1600/GLA1600	0
GWA2500/GLA2500	0
GWA4000/GLA4000	0
GWA5000/GLA5000	0

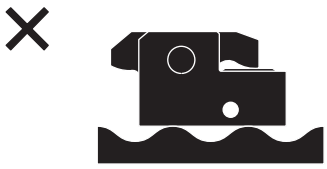
5) Be careful with a mounting position of a clamp.

- 【GBM/GBR】
  The mounting block should not protrude out from the mounting surface. Otherwise, excessive force will be applied to the clamp leading to deformation and dislocation which may cause falling of a mold leading to injury.



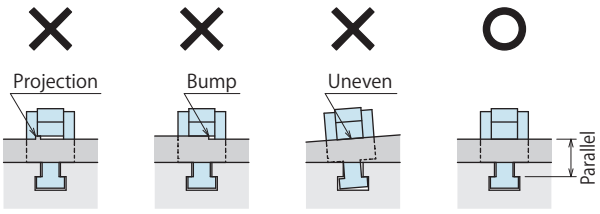
6) Make sure the sliding surface is smooth (without any bumps).

- 【GBB/GBC/GBE/GBF/GBM/GBR/GLA】
  If the sliding surface is not smooth, the clamp will not slide properly.



7) Mold clamping surface

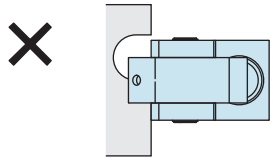
- 【GBB/GBC/GBE/GBF/GBM/GBR】
  The mold clamping surface and T-slot must be parallel to the mold mounting surface. If the clamping surface has a bump or is not flat, excessive force will be applied to the clamp. It may deform the clamp body, lever and pins, resulting in falling of the clamp or the mold and injury.



- 【GWA/GLA】
  The mold clamping surface must be parallel to the IMM platen. If the clamping surface has a bump or is not flat, excessive force will be applied to the clamp. It may deform the clamp body and the clamp piston, resulting in falling of the mold and injury.

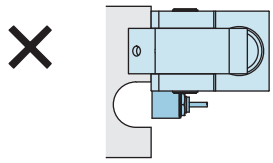
8) Make sure there is no notch such as U-cut on the clamping area of the mold.

● If there are U-cuts (notches) on the clamping area of a mold, the clamp will not be able to operate properly, leading to falling of the mold and injury.
For use of molds with U-cuts (notches) , please contact us.



9) Make sure there is no notch such as U-cut on the mold surface where the mold confirmation proximity switch contacts.

● The mold confirmation proximity switch does not operate properly if there are U-cuts (notches) on the mold surface where the mold confirmation proximity switch contacts.



10) Make sure that advance/retraction of the clamp is smoothly conducted.

● 【GBE/GBF/GBR/GLA】

① Supply more than 0.4MPa air pressure to air cylinder.
② Adjust the moving speed of the clamp with speed controllers to fully stroke within 1 to 2 seconds.
③ Proximity switch is used for forward-end confirmation. Make sure the mold surface on the switch side has no U-cut.
④ The clamp sliding surface must be smooth (without any bumps).

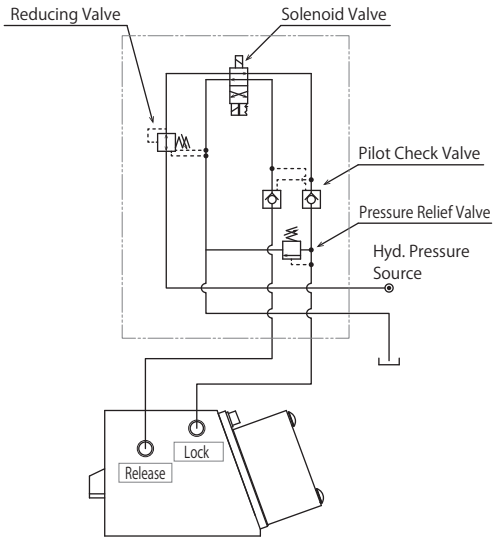
11) Interlock

● Make sure to control with the interlock so that clamps lock or release only when IMM is at mold close (pressurized) state.

12) Design the hydraulic circuit carefully.

● 【GWA/GLA】
When designing the hydraulic circuit, make sure to install a check valve in the circuit. Install a pressure relief valve in case the oil temperature in the circuit increases while clamping, since the pressure may exceed the value in the specification. Clamp damage may lead to falling of a mold and injury.

【Reference Circuit】



13) Control the solenoid valve carefully.

● 【GWA/GLA】
When controlling the solenoid valve, always energize the excitation circuits. If not energize the excitation circuits, it may be switched by unexpected causes resulting in falling of a mold and iinjury.

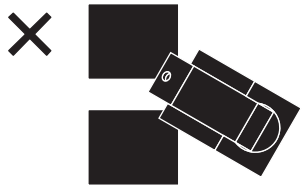
14) Clamp control

● 【GWA/GLA】
A micro switch of mechanical interface is used for confirming the lock/release operation. It may happen to disconnect the connection of the switch caused by vibration during the machine running.
It is recommended to install an off-delay timer in the control circuits of the program.

Cautions

Installation Notes

1) Prevent the clamps dropping out from the T slot.
【GBB/GBC/GBE/GBF/GLA】
● Fall of the clamp will lead to injury.



2) Check the Usable Fluid.
● Use the appropriate fluid by referring to the Hydraulic Fluid List. Please contact us when using fluid which is not on the list.

3) Pocedure before piping
● The pipeline and piping connector 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.)

4) Please supply filtered clean dry air.
● Install an air filter/air dryer in order to prevent rust and dirt. Otherwise it may lead to malfunction.

5) 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 fluid leakage and malfunction.

6) Installation of the Clamp
【GBE/GBF/GLA】
After setting the clamp in the T-slot, use attached hex. socket bolts and tighten them with the torque shown below.

Model No.	Bolt Size	Tightening Torque (N·m)
GBE/GBF025□	M5×0.8	6.3
GBE/GBF040□	M5×0.8	6.3
GBE/GBF063□	M6×1	10
GBE/GBF100□	M8×1.25	25
GBE/GBF160□	M10×1.5	50
GBE/GBF250□	M12×1.75	80
GBE/GBF400□	M16×2	200
GBE/GBF500□	M16×2	200

Model No.	Bolt Size	Tightening Torque (N·m)
GLA160□	M12×1.75	80
GLA250□	M16×2	200
GLA400□	M20×2.5	400
GLA500□	M20×2.5	400

【GBM/GBR】
After setting the clamp, use attached hex. socket bolts and tighten them with the torque shown below.

Model No.	Bolt Size	Tightening Torque (N·m)
GBM/GBR025□	M12×1.75	80
GBM/GBR040□	M16×2	200
GBM/GBR063□	M20×2.5	400
GBM/GBR100□	M24×3	630
GBM/GBR160□	M30×3.5	1250

【GWA】
Use attached hex. socket bolts and tighten them with the torque shown below.

Model No.	Bolt Size	Tightening Torque (N·m)
GWA010□	M8×1.25	6.3
GWA016□	M10×1.5	6.3
GWA025□	M12×1.75	10
GWA040□	M16×2	25
GWA063□	M20×2.5	50
GWA100□	M24×3	80
GWA160□	M20×2.5	200
GWA250□	M24×3	200
GWA400□	M30×3.5	1250 (800)
GWA500□	M33×3.5	1600 (1000)

Note: The table shows tightning torque when bolts and screw parts are dry.
Values in brackets indicate values when the bolt seating surfaces and screw parts are lubricated with grease.

7) Piping and Wiring
● For piping and wiring, make sure not to cut the hydraulic hoses and wiring by the clamp when it moves back and forth.

8) Air Bleeding of the Hydraulic Circuit
● Excessive air in the hydraulic circuit may result in insufficient clamping force or a longer operating time.
If air enters the circuit after connecting the pipes or when the oil tank is empty, bleed air at the ends of the pipes.

9) Wiring of Forward End Confirmation Switch
● For wiring, please make sure that the clamp does not cut the code of Forward End Confirmation Switch when it moves back and forth.

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

● Notes on Handling

1) Close the mold after molding is completed.
● Failure to do so may result in mold dropping and injury.

2) Do not disassemble or modify the air cylinder.
● Built-in spring is very strong and can be dangerous.
If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

3) It should be handled by qualified personnel.
● The hydraulic/pneumatic equipment should be handled and maintained by qualified personnel.

4) Do not handle 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 preventive devices are in place.

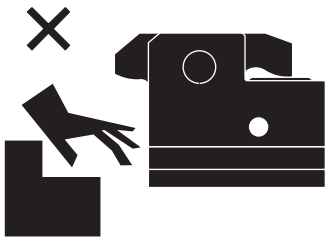
② Before removing the product, make sure that the above-mentioned safety measures are in place. Shut off the pressure and power source, and make sure no pressure exists in the hydraulic circuits.

③ After stopping the product, do not remove until the equipment cools down.

④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

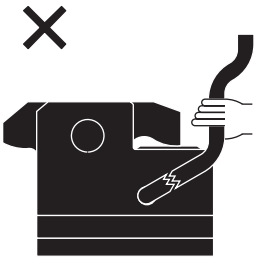
5) Do not apply load to the clamp when at 0MPa.
【GWA/GLA】
● In case of hydraulic source trouble, the clamp has holding force with mechanical lock even when hydraulic pressure is at 0MPa. However, do not apply load on the clamp at this state.

6) Do not touch clamps while they are working.
● Otherwise, your hands may be injured.

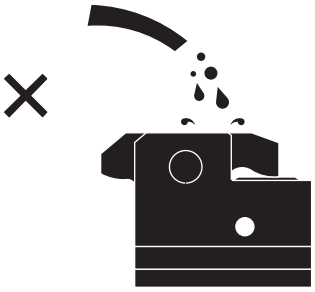


7) When changing a mold width, make sure to check the allowable protrusion amount.
● If using it with beyond allowable protrusion amount, excessive force is applied to the clamp which deforms or damages the clamp resulting in falling of the mold and injury. It may cause product malfunction or deterioration, which may lead to an accident.

8) Hold the clamp body when moving and removing the clamp.
【GBB/GBC/GBM】
● Pulling on a hose leads to a clamp fall and injury.
Also, rivet part of the hose will be loosened leading to fluid leakage.

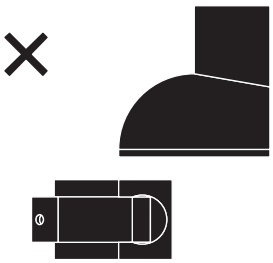


9) Do not pour water or oil over the product.
● It may lead to malfunction or deterioration of the product and cause an accident.



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

11) Do not apply excessive force to clamps.
● The clamp may be damaged or deformed, resulting in malfunction.



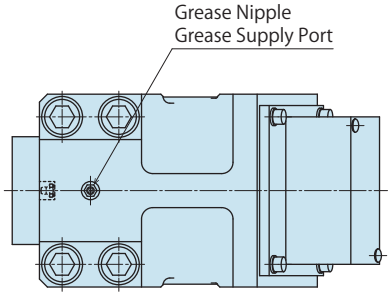
Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source

- Before removing the product, make sure that the safety measures mentioned earlier are in place. Shut off the pressure and power source, and make sure no pressure exists in the air/hydraulic circuits.
  Also, make sure there is no abnormality in the bolts and respective parts before restarting.

2) Lubricate grease periodically.
【GWA/GLA】

- Lubricate grease from the grease nipple periodically (once a year is recommended) to maintain clamp performance. Especially when process water often splashes on the clamps, release operation failure is likely to occur. In such cases, lubricate the clamps with grease more frequently than recommended, if necessary.



If release operation failure should occur, it is effective to lubricate grease and repeat lock and release actions of the clamp 2 to 3 times without the mold.

3) Regularly tighten pipes and mounting bolts to ensure proper use.

4) Periodically ensure that the supply hydraulic/air pressure is a specified value.

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 operates 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.

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 Affiliate	**TEL. +1-630-620-7650** FAX. +1-630-620-9015 650 Springer Drive, Lombard, IL 60148 USA
	KOSMEK (USA) LTD. Atlanta Branch Office	**TEL. +1-708-577-3275** 303 Perimeter Center North, Suite 300, Atlanta, GA 30346 USA
Mexico	KOSMEK (USA) LTD. Mexico Branch Office	**TEL. +52-1-55-3044-9983** Av. Santa Fe 103, Int. 59, col. Santa Fe Juriquilla, Queretaro, QRO, 76230, Mexico
Europe	KOSMEK EUROPE GmbH Overseas Affiliate	**TEL. +43-463-287587** FAX. +43-463-287587-20 Schleppeplatz 2 9020 Klagenfurt am Wörthersee Austria
China	KOSMEK (CHINA) LTD. Overseas Affiliate	**TEL.+86-21-54253000** FAX.+86-21-54253709 Room601, RIVERSIDE PYRAMID No.55, Lane21, Pusan Rd, Pudong Shanghai 200125, China
	KOSMEK (CHINA) LTD. Dongguan Office Overseas Affiliate (Sales Office)	**TEL.+86-769-85300880** Room301, AcerBuilding No.15, Dezheng(W)Road, Changan Town Dongguan Guangdong 523843., P.R.China
	KOSMEK (CHINA) LTD. Wuhan Office Overseas Affiliate (Sales Office)	**TEL.+86-27-59822303** Room502, Building A, Jingkai Future City, Zhuankou Economic Development Zone, Wuhan City, Hubei Province, 430050 China
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Thailand	KOSMEK Thailand Representative Office Representative Office	**TEL. +66-2-300-5132** FAX. +66-2-300-5133 67 Soi 58, RAMA 9 Rd., Phatthanakan, Suanluang, Bangkok 10250, Thailand
Taiwan	FULL LIFE TRADING CO., LTD. Taiwan Exclusive 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. Philippines Exclusive 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 Indonesia Exclusive 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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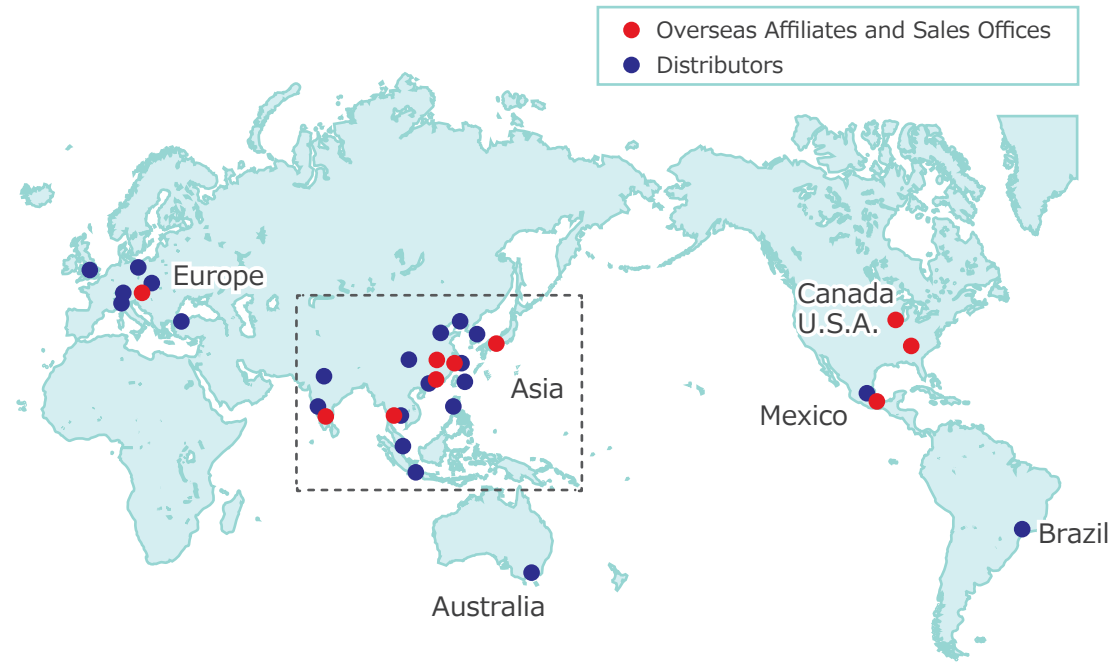
Nagoya Sales Office	**TEL. 0566-74-8778** FAX. 0566-74-8808 10-1, 2-chome, Misono-cho, Anjo City, Aichi, 446-0076, Japan
Fukuoka Sales Office	**TEL. 092-433-0424** FAX. 092-433-0426 8-10-101, 1-chome, Kamimuta, Hakata-ku, Fukuoka City, Fukuoka, 812-0006, Japan

Global Network



Asia Detailed Map

KOSMEK
Harmony in Innovation

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