

# Clamp Operation Time Reduction



Newly Developed Large Flow Air-Hydraulic Combination Pump

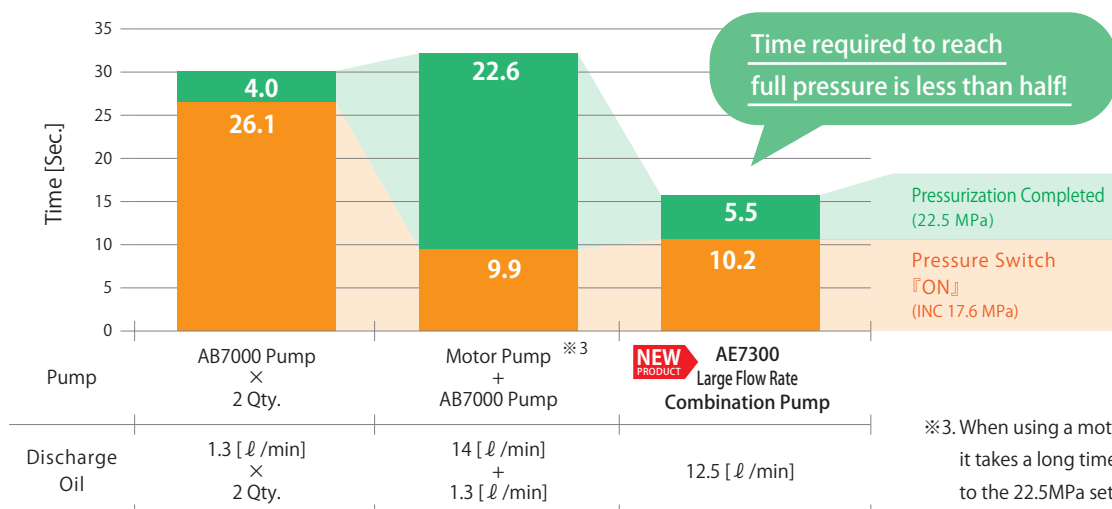
**Reduces 50% of O.T.**

※1 (In comparison with other Kosmek products.)

※1. O.T. = Operation Time  
Reduced time varies depending on piping, etc.

(Ex.) For an 850 ton machine with eight 2500 clamps, clamp operation time is **16 seconds!!**

※2. Cylinder Capacity : About 700 mℓ

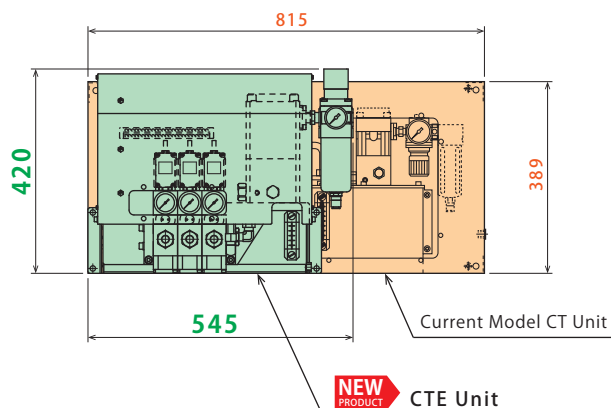


|               |                      |                          |              |
|---------------|----------------------|--------------------------|--------------|
| Discharge Oil | 1.3 [ℓ/min] × 2 Qty. | 14 [ℓ/min] + 1.3 [ℓ/min] | 12.5 [ℓ/min] |
|---------------|----------------------|--------------------------|--------------|

※3. When using a motor pump, it takes a long time to pressurize to the 22.5MPa set pressure after the pressure switch turns "ON".

Pump Pressurization Time Comparison

## Compact and Space-Saving!



The protective cover is a standard option to protect against mold lubricant/dust.

Pressure relief valve allows for temperature change in hydraulic circuit.

Compact, High Pressure and Large Discharge

# Additional Smaller and Larger Sizes

## Standard System

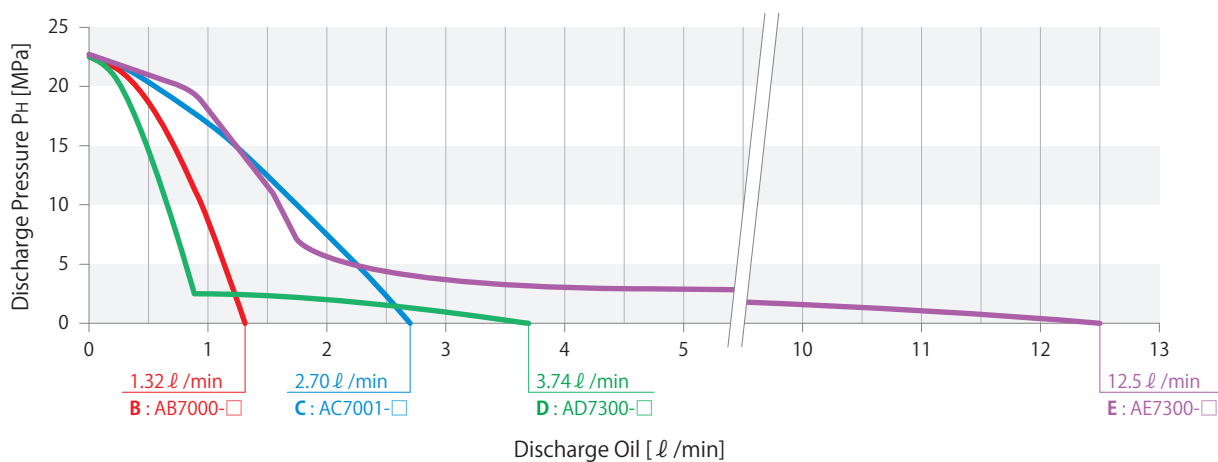
| Die Casting Machine Capacity | Clamp Size <sup>※1</sup> | Clamp Qty.                         | Stationary / Movable Clamping Force [kN] | Hydraulic Unit                       |  |                       | Mold Fall Prevention Block | Air Valve Unit (Only GKE/GKF) |                                  |        |
|------------------------------|--------------------------|------------------------------------|--|--------------------------------------|--|-----------------------|----------------------------|-------------------------------|----------------------------------|--------|
|                              |                          |                                    |  | Unit Model                           | Pump Model                                   | Clamp Operation Speed |                            |                               |                                  |        |
| ~ 350                        | <b>NEW</b> 0100          | 8<br>(Stationary: 4<br>Movable: 4) | 40                                       | CTBN□0<br>CTDN□0<br>CTCN□0<br>CTEN□0 | AB7000-□<br>AD7300-□<br>AC7001-□<br>AE7300-□ | ↓<br><b>Faster</b>    | MJ0010                     |                               |                                  |        |
| ~ 500                        | <b>NEW</b> 0160          |                                    | 64                                       |                                      |  |                       |                            |                               |                                  |        |
| ~ 750                        | <b>NEW</b> 0250          |                                    | 100                                      |                                      |  |                       |                            |                               |                                  |        |
| ~ 1500                       | 0400                     |                                    | 160                                      |                                      |  |                       | MJ0020                     |                               |                                  |        |
| ~ 2500                       | 0630                     |                                    | 252                                      |                                      |  |                       | MJ0020                     |                               | MV3012-25                        |        |
| ~ 5000                       | 1000                     |                                    | 400                                      |                                      |  |                       | CTDN□0<br>CTCN□0<br>CTEN□0 |                               | AD7300-□<br>AC7001-□<br>AE7300-□ | MJ0030 |
| ~ 6500                       | 1600                     |                                    | 640                                      |                                      |  |                       | CTCN□0<br>CTEN□0           |                               | AC7001-□<br>AE7300-□             | MJ0040 |
| ~ 11000                      | <b>NEW</b> 2500          |                                    | 1000                                     |                                      |  |                       | CTCN□0<br>CTEN□0           |                               | AC7001-□<br>AE7300-□             | MJ0050 |
| ~ 16500                      | <b>NEW</b> 4000          | 1600                               | CUEN□0                                   | AE7300-□                             | MJ0050                                       |                       | MV3022-25                  |                               |                                  |        |
| ~ 22500                      | <b>NEW</b> 5000          | 2000                               |  |                                      |  |                       |                            |                               |                                  |        |
| ~ 25000                      | <b>NEW</b> 4000          | 2400                               |  |                                      | Please contact us.                           |                       |                            |                               |                                  |        |
| ~ 30000                      | <b>NEW</b> 5000          | 3000                               |  |                                      | 12<br>(Stationary: 6<br>Movable: 6)          |                       |                            |                               |                                  |        |

Notes

※1. T-Slot Manual Slide (Model GKB/GKC): sizes 0100~5000, T-Slot Automatic Slide (Model GKE/GKF): sizes 0400~5000.  
Please contact us for T-slot automatic slide clamp sizes smaller than 0400.

1. The standard system above is just a reference. Please contact us for exact specifications for your machine.

## Pump Performance Curve



# Hydraulic Unit

Model CTB/CTD/CTC/CTE (5 ℓ Tank)

Model CUC/CUE (10 ℓ Tank)



## Converts Factory Compressed Air into Hydraulic Pressure.

Compact Hydraulic Unit Composed of Pump, Non-Leak Valve, Pressure Relief Valve, Pressure Switch and Oil Tank



### Protective Cover

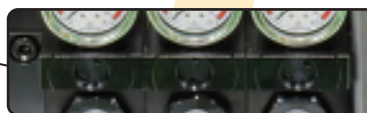
Prevents mold lubricant and dust infiltration that can cause malfunctions.



Pump

### Pressure Supply when Hydraulic Pressure Decreases

The pump supplies pressure when the hydraulic pressure in the circuit decreases because of temperature reduction, etc. This ensures a consistent clamping force.



Pressure Relief Valve

### Maintains Set Pressure with Pressure Relief Valve

The set pressure:  $25\text{MPa}^{+2}_0$  is maintained by the pressure relief valve (BR valve) even when hydraulic pressure rises during IMM operation.



Non-Leak Valve

### Maintains Hydraulic Pressure with Non-Leak Valves

Non-leak valve (BA valve) maintains hydraulic pressure even when air supply is stopped. This prevents the mold from falling.

### Larger Flow Rate Increases Clamping Speed

Wider oil path allows for larger flow rate. Increase of hydraulic clamp operation speed reduces mold change time.

## Model No. Indication

**C T E N 0 G 0 - 3US - 5 - K1**

1 2 3 4 5 6 7 8

### Notes:

- ※1. When selecting **8** Option **N**: Piping Port NPT Thread, dimensions in the specification sheet and other documents are in inches.
1. Please contact us for specifications and external dimensions for these options.

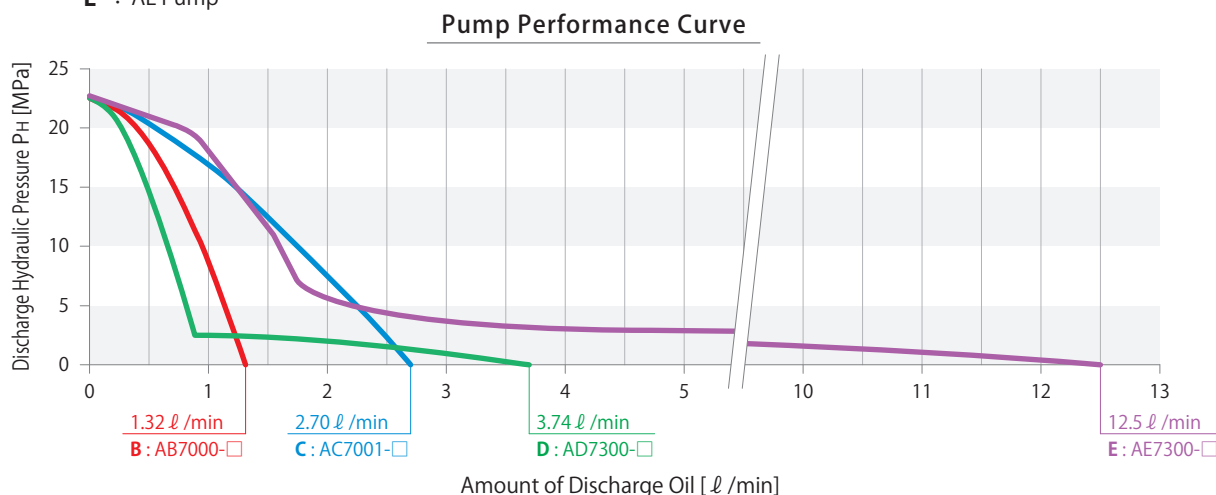
### 1 Unit

**T** : For Small/Medium Clamp (5 ℓ Tank)

**U** : For Large Clamp (10 ℓ Iron Tank) . . . Only when selecting **2** Pump Model **C**: AC Pump and **E**: AE Pump.

### 2 Pump Model

- B** : AB Pump  
**D** : AD Pump  
**C** : AC Pump  
**E** : AE Pump
- . . . Only when selecting **1** Unit **T**: For Small/Medium Clamp (5 ℓ Tank)



### 3 Pressure Code

**N** : Working Pressure 25MPa, Pressure Switch Set Pressure INC. 17.6MPa (Normal Pressure Rise Confirmation), 28.4MPa (Abnormal Pressure Rise Confirmation) / DEC. 2.94MPa, with Pressure Relief Valve

### 4 Fluid Code

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

### 5 Design No.

**0** : Revision Number

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

**US** : For Clamp Double Solenoid  
 With Pressure Relief Valve

### 7 Voltage Code

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

### 8 Option

- Blank** : Standard
- C** : +Common  
**D** : Digital Pressure Sensor  
**E** : Without Filter Regulator  
**F** : Manual-Drain Filter Regulator  
**G** : With Primary Pressure Gauge  
**H** : With Piping Block on the Left  
**J** : With Air Regulator  
**K0** : With Pressure Gauge for Each Circuit (Without Primary Pressure Gauge)  
**K1** : With Color Displayed Pressure Gauge for Each Circuit (Without Primary Pressure Gauge)  
**KG0** : With Pressure Gauge for Each Circuit (With Primary Pressure Gauge)  
**KG1** : With Color Displayed Pressure Gauge for Each Circuit (With Primary Pressure Gauge)  
**L** : With Pressure Switch Light  
**N** : Piping Port NPT Thread, Pressure Gauge in both PSI/MPa ※1  
**P** : Pressure Gauge in both PSI/MPa  
**Q0** : With Oil Level Switch (ON when Oil Level Drops)  
**Q1** : With Oil Level Switch (OFF when Oil Level Drops)  
**T** : Iron Tank (Only for CT□.) ※2

Hydraulic Clamp

Hydraulic Unit

Operational  
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Hydraulic Clamp

GKB

GKC

GKE

GKF

Hydraulic Unit

CTB

CTD

CTC

CTE

CUC

CUE

Air Valve Unit

MV

Operational  
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QMCS

QDCS

KWCS

FA-Industrial Robot  
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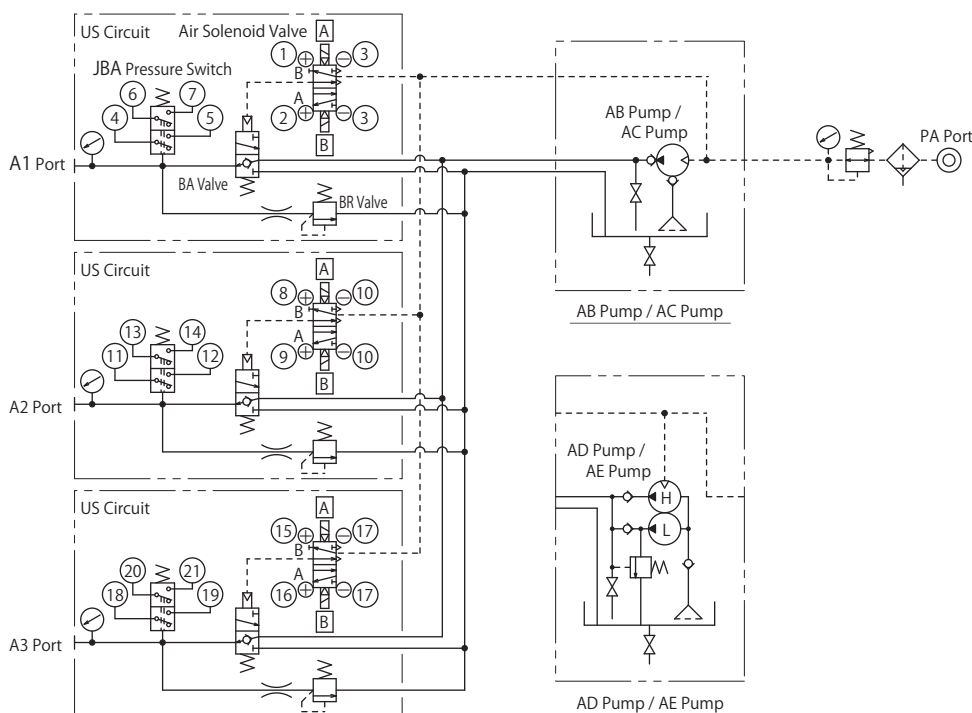
## Specifications

| Model No.                  |                             | CTBN0□0  | CTDN0□0  | CTCN0□0  | CTEN0□0         | CUCN0□0  | CUEN0□0         |          |
|----------------------------|-----------------------------|--|----------|----------|-----------------|--|-----------------|----------|
| Working Hydraulic Pressure | MPa                         | 25   |          |          |                 |  |                 |          |
| Withstanding Pressure      | MPa                         | 37   |          |          |                 |  |                 |          |
| Tank Capacity              | ℓ                           | 5 ℓ (Actual Amount for Use 3.7 ℓ : H.L.5 ℓ -L.L.1.3 ℓ) ※1  |          |          |                 | 10 ℓ (Actual Amount for Use 7 ℓ : H.L.10 ℓ -L.L.3 ℓ) |                 |          |
| Operating Temperature      | °C                          | 0 ~ 70   |          |          |                 |  |                 |          |
| Use Frequency              |                             | Less than 20 Cycles / Day Pressure Rising Time : Less than 2.5 min. / Cycle                      |          |          |                 |  |                 |          |
| Main Components            | Model No.                   | AB7000-□   | AD7300-□ | AC7001-□ | AE7300-□        | AC7001-□   | AE7300-□        |          |
|                            | Set Discharge Pressure      | MPa  | 22.5     | 22.5     | 22.5            | 22.5   | 22.5            |          |
|                            | Discharge Oil under No Load | ℓ /min   | 1.32     | 3.74     | 2.70            | 12.5   | 2.70            | 12.5     |
|                            | Set Air Pressure            | MPa  | 0.41     | 0.41     | 0.43            | 0.43   | 0.43            | 0.43     |
|                            | Air Consumption             | m <sup>3</sup> (normal)/min  | max. 0.4 | max. 0.4 | max. 1.0        | max. 1.0   | max. 1.0        | max. 1.0 |
|                            | Model No.                   | JF1030   | JF1030   | JF1030   | JF1040          | JF1030   | JF1040          |          |
|                            | Filtration Degree           | 174 μm (100 Mesh)  |          |          |                 |  |                 |          |
|                            | Model No.                   | BA5R11-0   | BA5R11-0 | BA5R11-0 | BA5R11-0-Z00102 | BA5R01-0   | BA5R01-0-Z00108 |          |
|                            | Model No.                   | JBA3800-0GD  |          |          |                 |  |                 |          |
|                            | Operation Mode/Set Pressure | Normal Pressure Rise Confirmation / INC. 17.6<br>Abnormal Pressure Rise Confirmation / INC. 28.4 |          |          |                 |  |                 |          |
| Model No.                  | BR5N11-0                    |  |          |          |                 |  |                 |          |
| Set Pressure               | MPa                         | 25 $\pm$ $\frac{2}{0}$   |          |          |                 |  |                 |          |

### Notes:

- ※1. Iron Tank Capacity is 5 ℓ (Actual Amount for Use 2.9 ℓ : H.L. 5.1 ℓ -L.L. 2.2 ℓ ).
- 1. If hydraulic viscosity is higher than specified, action time will be longer. Please refer to Hydraulic Fluid List on P.46.
- 2. If using it at low temperature, action time will be longer because the viscosity of hydraulic oil becomes higher.
- 3. When using a pressure gauge on a hydraulic circuit, install a damper or use an oil filled (glycerin) pressure gauge in order to prevent damage caused by surging pressure.
- 4. When installing, provide enough space at the top of the unit, taking into consideration the maintenance of the pump.
- 5. The pump stops in balance at 22.5MPa in order to prevent abnormal continuous operation considering 25.0 MPa relief pressure of the pressure relief valve.

## Circuit Symbol ※ This shows the circuit symbol : 3US, Option : K□.



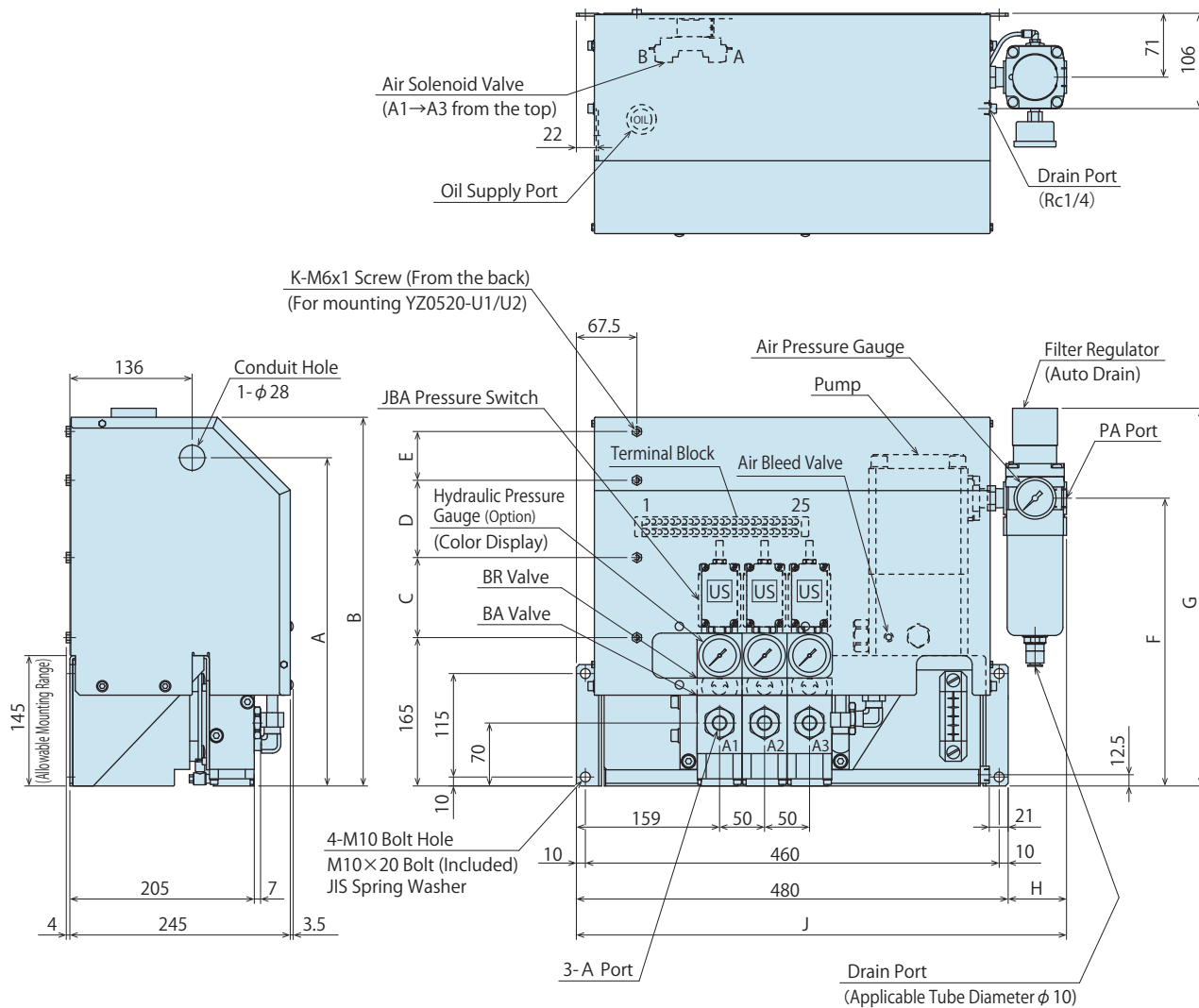
### Notes:

- 6. In the drawing, the ○ symbol indicates the terminal number and the □ symbol indicates the coil symbol.
- 7. The red cable of the solenoid valve is "+", and the black cable is "-".

## External Dimensions : CTB/CTD/CTC/CTE (5 ℓ Tank)

※ This drawing shows CT□N0G0-3US-□-K1 (Fluid Code **G**: Water • Glycol, Iron Tank).

Please contact us for other specifications and external dimensions for options. External dimensions for more than five circuits are different.



## External Dimensions

| Model No. | CTBN0G0-3US-□-K1 | CTDN0G0-3US-□-K1 | CTCN0G0-3US-□-K1 | CTEN0G0-3US-□-K1 |
|-----------|------------------|------------------|------------------|------------------|
| Pump      | AB7000-G         | AD7300-G         | AC7001-G         | AE7300-G         |
| A         | 290              | 290              | 365              | 365              |
| B         | 335              | 335              | 410              | 410              |
| C         | 55               | 55               | 90               | 90               |
| D         | 40               | 40               | 100              | 100              |
| E         | 60               | 60               | -                | -                |
| F         | 233.5            | 253.5            | 285              | 320              |
| G         | 317              | 337              | 385              | 420              |
| H         | 33               | 33               | 65               | 65               |
| J         | 513              | 513              | 545              | 545              |
| K         | 4                | 4                | 3                | 3                |
| PA Port   | Rc1/4            | Rc1/4            | Rc1/2            | Rc1/2            |
| A Port    | Rc1/4            | Rc1/4            | Rc1/4            | Rc3/8            |

Hydraulic Clamp

Hydraulic Unit

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Hydraulic Clamp

GKB

GKC

GKE

GKF

Hydraulic Unit

CTB

CTD

CTC

CTE

CUC

CUE

Air Valve Unit

MV

Operational  
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KWCS

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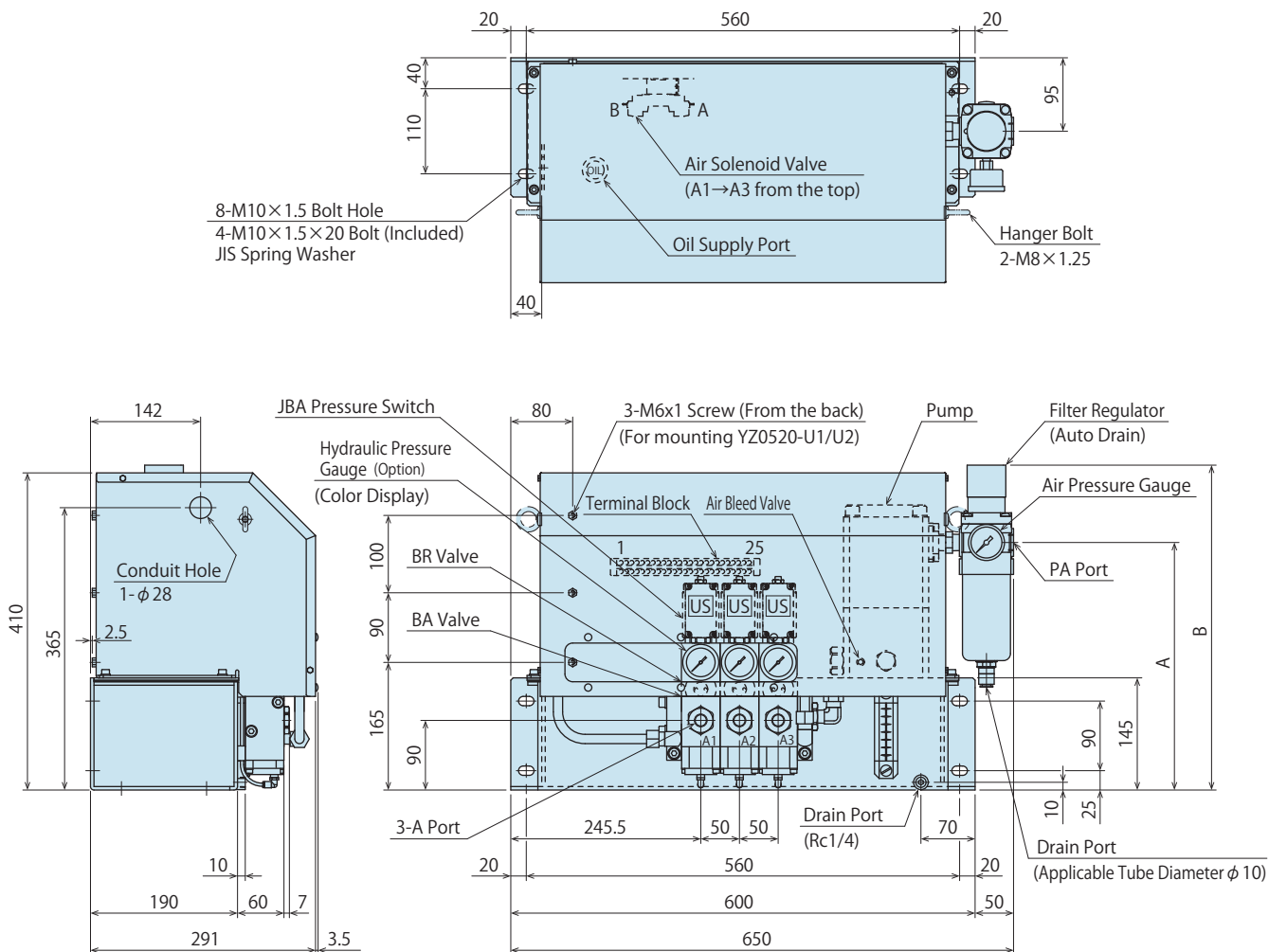
History

Sales Offices

External Dimensions : CUC/CUE (10 l Tank)

※ This drawing shows CU□N0□0-3US-□-K1.

Please contact us for other specifications and external dimensions for options. External dimensions for more than five circuits are different.



External Dimensions

| Model No. | CUCN0□0-3US-□-K1 | CUEN0□0-3US-□-K1 |
|-----------|------------------|------------------|
| Pump      | AC7001-□         | AE7300-□         |
| A         | 285              | 320              |
| B         | 385              | 420              |
| PA Port   | Rc1/2            | Rc1/2            |
| A Port    | Rc1/4            | Rc3/8            |

## Accessory : Unit Stand (Floor Mounted)

### Model No. Indication

**C Q SV00 0**

1                      2

### 1 Applicable Unit

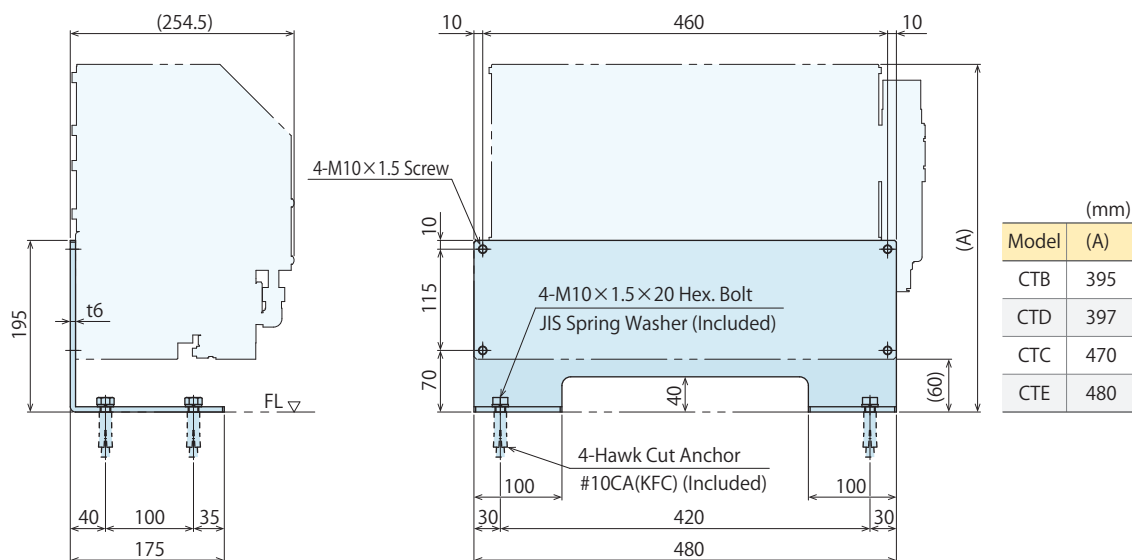
P : CTB / CTD / CTC / CTE (5 ℓ Tank)

Q : CUC / CUE (10 ℓ Tank)

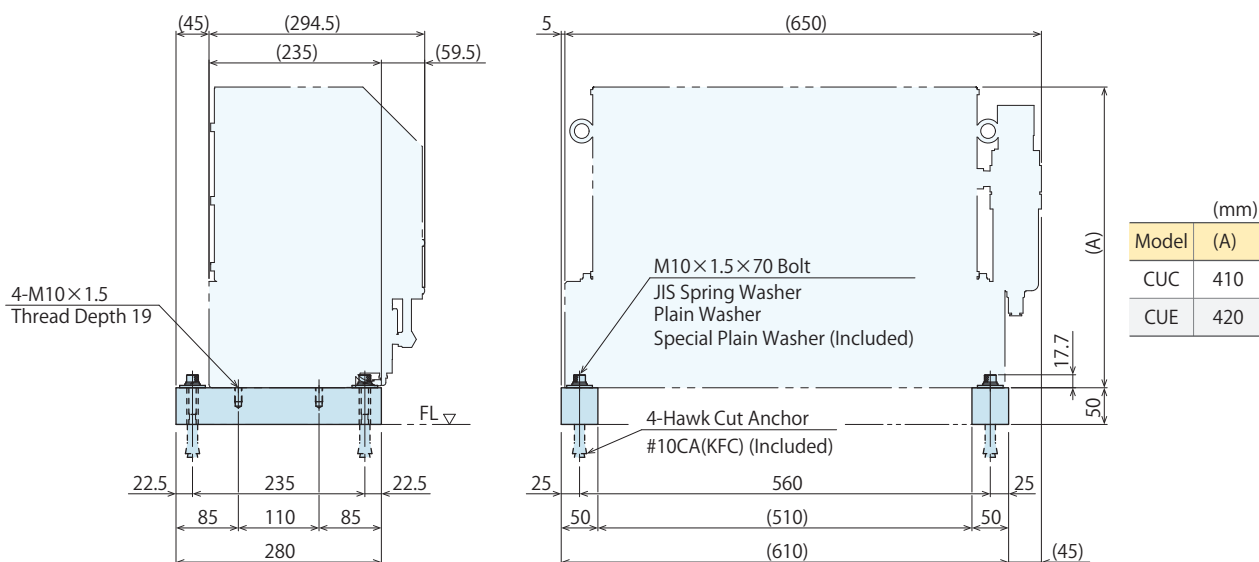
### 2 Design No.

0 : Revision Number

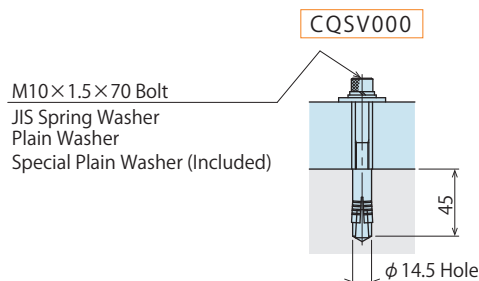
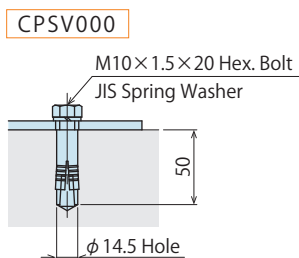
### External Dimensions : CPSV000 (Applicable Unit : CTB / CTD / CTC / CTE)



### External Dimensions : CQSV000 (Applicable Unit : CUC / CUE)



### Hawk Cut Anchor Machining Dimensions



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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## Cautions

### Notes for Design

#### 1) Check Specifications

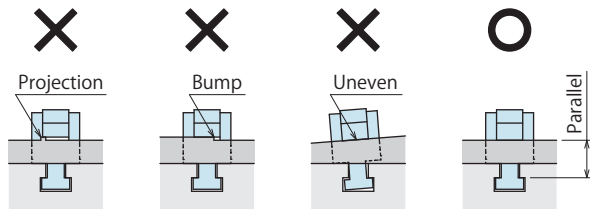
- Please use each product according to its specifications.
- Operating hydraulic pressure is 25 MPa.  
Do not use clamps with excessive operating pressure. Falling down of the mold due to the damage on clamps leads to injury accident. In order to reduce clamping force, use them with lower operating pressure.

#### 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.

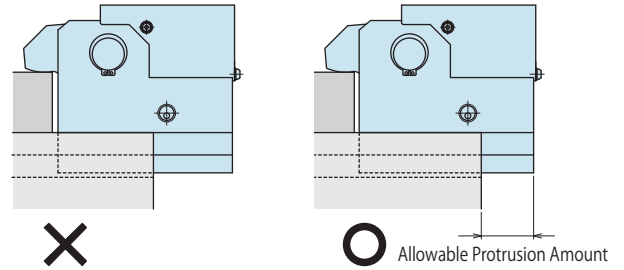
#### 3) The clamp surface and T-slot must be parallel to mounting surface of the mold.

- 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.



- 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                                |

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

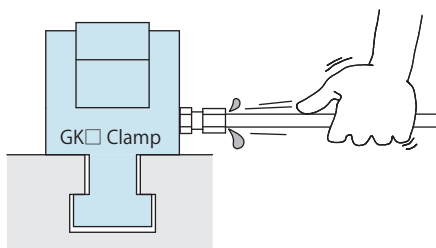
- Please control air cylinder for slide with two-position double solenoid (with detent).
- Supply more than 0.4MPa air pressure to air cylinder.
- Please adjust the moving speed of the clamp with speed controller to fully stroke within 1 to 2 seconds.
- Do not set the limit switch to the mold surface 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.

## ● 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 Iirus 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

### Cautions Company Profile

#### Hydraulic Clamp

GKB  
GKC  
GKE  
GKF

#### Hydraulic Unit

CTB  
CTD  
CTC  
CTE  
CUC  
CUE

#### Air Valve Unit

MV

#### Operational Control Unit

YMB080

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QMCS

QDCS

KWCS

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Related Products

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Company Profile

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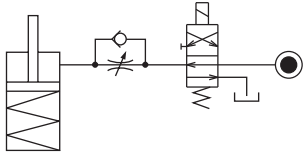
## ● Notes on Hydraulic Cylinder Speed Control Unit



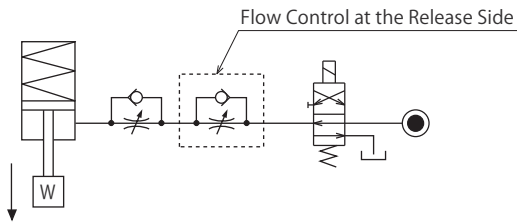
Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

### ● 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.



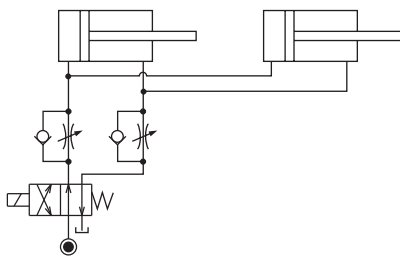
Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow.



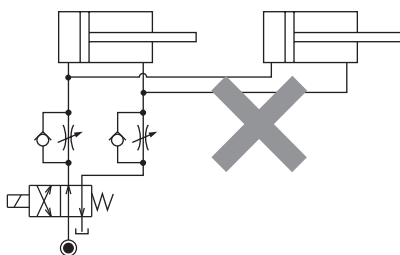
### ● Flow Control Circuit for Double Acting Cylinder

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】

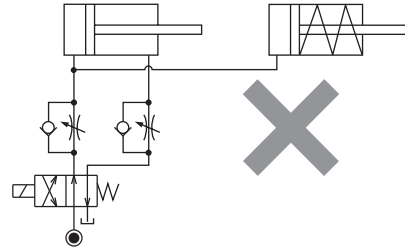


#### 【Meter-in Circuit】



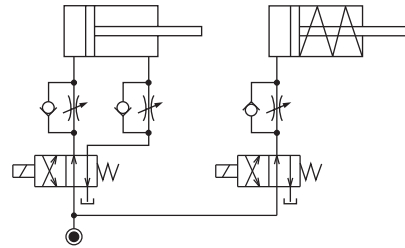
In the case of meter-out circuit, the hydraulic circuit should be designed with the following points.

- 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.

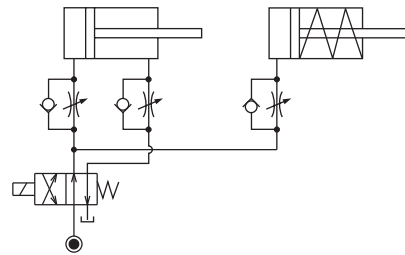


Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together.

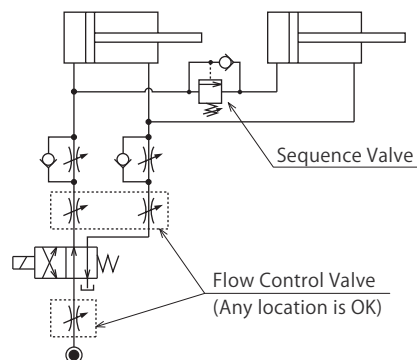
- Separate the control circuit.



- 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  
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## Hydraulic Clamp

GKB

GKC

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## Hydraulic Unit

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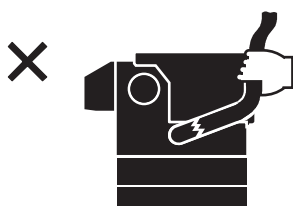
Sales Offices

## Notes on Handling

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



- 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.
- 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.

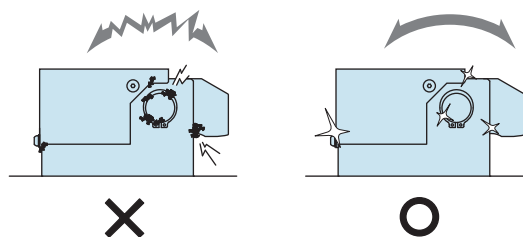


- Do not disassemble or modify.
  - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
- Do not get water or oil onto the equipment.
  - It may lead to malfunction or deterioration of the product and cause an accident.



## Maintenance • Inspection

- 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.
- 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.



- If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.
- Regularly tighten bolts and pipe line, mounting bolts, nuts, circlips and cylinders to ensure proper use.
- Make sure the hydraulic fluid has not deteriorated.
- 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.
- The products should be stored in the cool and dark place without direct sunshine or moisture.
- Please contact us for overhaul and repair.

## Warranty

- Warranty Period
  - The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.
- 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.

- If the stipulated maintenance and inspection are not carried out.
- If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
- If it is used or handled in inappropriate way by the operator. (Including damage caused by the misconduct of the third party.)
- If the defect is caused by reasons other than our responsibility.
- If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
- Other caused by natural disasters or calamities not attributable to our company.
- 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.<br>KOSMEK ENGINEERING LTD.<br>KOSMEK (USA) LTD.<br>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)

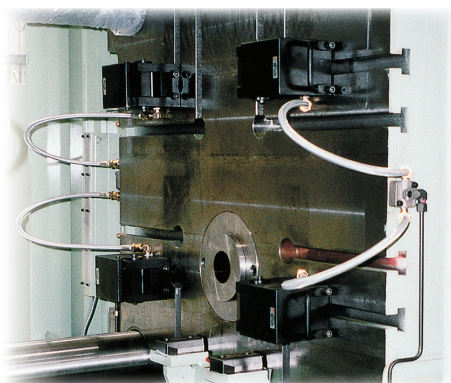
- Lathe machine devices etc. : Composite CNC lathe etc. (57units)
- Machining center devices etc. : Horizontal Machining center etc. (18 units)
- Grinding machine : Internal and external cylindrical NC grinding machine etc. (6 units)
- Other machine tools : Honing machine etc. (24 units)
- Measuring 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)

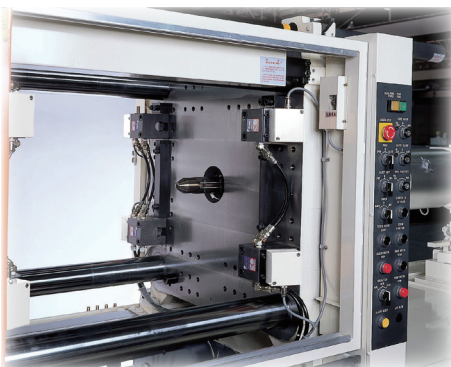
## Product Line-Up



### 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.

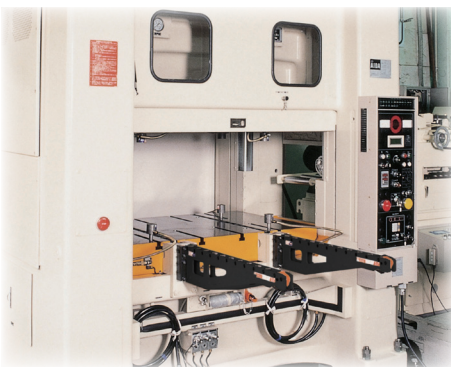


### QUICK MOLD CHANGE SYSTEMS

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).

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# Sales Offices

## Sales Offices across the World

|  |   |                               |
|--|---|-------------------------------|
| Japan  | <b>TEL. +81-78-991-5162</b>   | <b>FAX. +81-78-991-8787</b>   |
| Overseas Sales                                     | KOSMEK LTD. 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241<br>〒651-2241 兵庫県神戸市西区室谷2丁目1番5号                                 |                               |
| USA  | <b>TEL. +1-630-241-3465</b>   | <b>FAX. +1-630-241-3834</b>   |
| KOSMEK (USA) LTD.                                  | 1441 Branding Avenue, Suite 110, Downers Grove, IL 60515 USA  |                               |
| China  | <b>TEL.+86-21-54253000</b>  | <b>FAX.+86-21-54253709</b>    |
| KOSMEK (CHINA) LTD.<br>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<br>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   | <b>TEL. +66-2-715-3450</b>  | <b>FAX. +66-2-715-3453</b>    |
| Thailand Representative Office                     | 67 Soi 58, RAMA 9 Rd., Suanluang, Suanluang, Bangkok 10250, Thailand  |                               |
| Taiwan<br>(Taiwan Exclusive Distributor)           | <b>TEL. +886-2-82261860</b>   | <b>FAX. +886-2-82261890</b>   |
| Full Life Trading Co., Ltd.<br>盈生貿易有限公司            | 16F-4, No.2, Jian Ba Rd., Zhonghe District, New Taipei City Taiwan 23511<br>台湾新北市中和區建八路2號 16F-4 (遠東世紀廣場)                                      |                               |
| Philippines<br>(Philippines Exclusive Distributor) | <b>TEL.+63-2-310-7286</b>   | <b>FAX. +63-2-310-7286</b>    |
| G.E.T. Inc, Phil.                                  | Victoria Wave Special Economic Zone Mt. Apo Building, Brgy. 186, North Caloocan City, Metro Manila, Philippines 1427                          |                               |
| Europe<br>(Europe Exclusive Distributor)           | <b>TEL. +43-463-287587-10</b>   | <b>FAX. +43-463-287587-20</b> |
| KOS-MECH GmbH                                      | Schleppeplatz 2 9020 Klagenfurt Austria   |                               |
| Indonesia<br>(Indonesia Exclusive Distributor)     | <b>TEL. +62-21-5818632</b>  | <b>FAX. +62-21-5814857</b>    |
| 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          | <b>TEL.078-991-5115</b>           | <b>FAX.078-991-8787</b> |
| 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   | <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



**KOSMEK**  
Harmony in Innovation

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