Non-Leak Valve Unit
Model BC

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

Directional control valve that actuates the non-leak valve by switching internal air solenoid valve with electric control.

It maintains pressure and prevents a die from falling even when pressure supply is cut from hydraulic pressure source.

- **Ensures safety with the pressure switch**
  The pressure switch detects pressure reduction in case of accident such as hydraulic hose damage, and immediately stops the press machine.

- **Maintains the set pressure with the pressure relief valve**  ※ Only when selecting pressure relief valve option.
  Even if oil temperature rises by continuous operation of the press machine, the pressure relief valve maintains the set pressure 25MPa.

- **Free Layout**
  Hydraulic pressure is easily supplied and controlled with CB/CD/CC pump unit. Since the pump unit and non-leak valve unit are separated, it is more free to layout than the united type CP/CR/CP□/CQ□ unit.

- **Application Example**
  The drawing shows when controlling automatic clamp and RA die lifter separately used in the combination with two-circuit BC valve unit.
**Circuit Symbol**

- **C**: Single Solenoid Circuit for Clamp (Normal Open)
  Clamp locks under non-power distribution.

- **U**: Double Solenoid Circuit for Clamp
  Clamp maintains the condition under non-power distribution.

- **G**: Single Solenoid Circuit for Clamp (Normal Open)
  Clamp locks under non-power distribution.
  Select this option when using it with **U** circuit.

- **R**: Pressure Relief Valve
  Pressure relief valve maintains the set pressure: 25 ± 0.5 MPa even when oil temperature rises.
  The drawing below shows the state that **R** circuit (with pressure relief valve) is combined with **C** circuit.

- **D**: Single Solenoid Circuit for Die Lifter (Normal Close)
  Die lifter retracts under non-power distribution.

- **V**: Double Solenoid Circuit for Die Lifter
  Die lifter maintains the condition under non-power distribution.

- **H**: Single Solenoid Circuit for Die Lifter (Normal Close)
  Die lifter retracts under non-power distribution.
  Select this option when using it with **U** circuit.

**Notes**:
1. Pa Port: Air Source
2. Pn Port: Hydraulic Source
3. R Port: Drain Port
4. A Port: To Automatic Clamp or RA Die Lifter
5. Filters are built in Pn and A port.
6. Please contact us for circuits other than shown in the drawing.
# Model No. Indication

<table>
<thead>
<tr>
<th>BC00 N</th>
<th>CR CR</th>
<th>10</th>
<th>GR</th>
<th>P</th>
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<td>1</td>
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<tr>
<td>6</td>
<td>7</td>
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</tbody>
</table>

## 1 Working Pressure Code
- **M**: 25 MPa Without Pressure Relief Valve
- **N**: 25 MPa With Pressure Relief Valve

## 2 Design No.
- **1**: Revision Number

## 3 Circuit Symbol
- **C**: Single Solenoid Circuit for Clamp (Normal Open)
- **D**: Single Solenoid Circuit for Die Lifter (Normal Close)
- **U**: Double Solenoid Circuit for Clamp
- **V**: Double Solenoid Circuit for Die Lifter
- **G**: Single Solenoid Circuit for Clamp (Normal Open)
- **H**: Single Solenoid Circuit for Die Lifter (Normal Close)
- **R**: Pressure Relief Valve

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

## 4 Control Voltage
- **1**: AC 100 V
- **2**: AC 200 V
- **3**: AC 110 V
- **4**: AC 220 V
- **5**: DC 24 V

## 5 Fluid Code
- **0**: General Hydraulic Oil (Equivalent to ISO-VG-32)
- **G**: Water-Glycol
- **S**: Silicon Oil

## 6 Option
- **Blank**: Standard (Piping Block on the Right)
- **GR**: Primary Pressure Gauge on the Right (Piping Block on both side)
- **GL**: Primary Pressure Gauge on the Left (Piping Block on both side)
- **H**: Piping Block on both side (P Port)

## 7 Unit of Pressure Gauge
- **Blank**: MPa (Standard)
- **N**: PSI (used only in USA)/ NPT-Thread Fitting
- **P**: PSI (used only in USA)/ Rc-Thread Fitting
### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>BC00N1-□□□□</th>
<th>BC00N1-R□□□</th>
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<tbody>
<tr>
<td>Working Hydraulic Pressure</td>
<td>25 MPa</td>
<td></td>
</tr>
<tr>
<td>Withstanding Pressure</td>
<td>37 MPa</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 ~ 70 °C</td>
<td></td>
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<tr>
<td>Use Frequency</td>
<td>2.5 min / Cycle or less</td>
<td>20 Cycles / Day or less</td>
</tr>
<tr>
<td>Non-Leak Valve</td>
<td>Model No.</td>
<td>Model No.</td>
</tr>
<tr>
<td>Orifice</td>
<td>Model No.</td>
<td>BAS01-0</td>
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<tr>
<td>(For Clamp)</td>
<td>Operation Mode / Set Pressure</td>
<td>Pressure Increase Detection / INC. 17.6 MPa</td>
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<tr>
<td>Pressure Switch</td>
<td>Model No.</td>
<td>JBA2700-0G</td>
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<tr>
<td>(For RA Die Lifter)</td>
<td>Operation Mode / Set Pressure</td>
<td>Pressure Decrease Detection / DEC. 2.94 MPa</td>
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<tr>
<td>Pressure Relief Valve</td>
<td>Model No.</td>
<td>-</td>
</tr>
<tr>
<td>Set Pressure</td>
<td>-</td>
<td>25 * 5/8 MPa</td>
</tr>
</tbody>
</table>

**Notes:**

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

If using it at higher temperature than working hydraulic pressure, it leads to damage.

### External Dimensions

**Air Solenoid Valve**

**Terminal Block**

**BA Pressure Switch**

**BA Valve**

**Primary Pressure Switch**

**GL / Mounted on the Left**

**R Port */4**

**Rc1/4 Thread**

**4-M8 × 1.25 Bolt Hole**

**4-M8 × 1.25 × 16 Bolt (Included)**

**4-JIS Spring Washer (Included)**

**Valve Number of Connection (mm)**

<table>
<thead>
<tr>
<th>Valve Number of Connection (mm)</th>
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<th>3</th>
<th>4</th>
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<tr>
<td>A</td>
<td>90</td>
<td>140</td>
<td>190</td>
<td>240</td>
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<tr>
<td>B</td>
<td>70</td>
<td>120</td>
<td>170</td>
<td>220</td>
</tr>
</tbody>
</table>

**Notes:**

*3. Dimension when choosing Circuit Symbol U, V, G, H.*

*4. Dimension when choosing Option H: piping block on both side (Pv port).*
Cautions

Installation Notes (Cautions for Hydraulic Series)

1) Check the fluid to use
- Please use the appropriate fluid by referring to the Hydraulic Fluid List.
- If hydraulic oil with viscosity grade higher than ISO-VG-32 is used, action time would 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.
- Our products except some valves are not equipped with protective function to prevent dust and cutting chips going into the hydraulic system and pipeline.

3) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screwing direction.
- Pieces of the sealing tape can lead to air leaks and malfunction.
- In order to prevent a foreign substance from going into the product during piping, it should be carefully cleaned.

4) Air Bleeding in the Hydraulic Circuit
- If the hydraulic circuit has excessive air, the action time may become very long.
  - After installing the hydraulic circuit, or if the pump run out of oil, be sure to bleed air by the following step.
  ① Reduce hydraulic supply pressure to less than 2MPa.
  ② Please loosen the cap nut of pipe fitting that is closest to clamps・RA die lifters by one full turn.
  ③ Wiggle the pipeline to loosen the outlet of pipeline fitting. The hydraulic fluid mixed with air comes out.

  ② 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.

Hydraulic Fluid List

<table>
<thead>
<tr>
<th>ISO Viscosity Grade ISO-VG-32</th>
<th>Maker</th>
<th>Anti-Wear Hydraulic Oil</th>
<th>Multi-Purpose Hydraulic Oil</th>
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<tbody>
<tr>
<td>32</td>
<td>Showa Shell Sekiyu</td>
<td>Tellus S2 M 32</td>
<td>Morina S2 B 32</td>
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<td></td>
<td>Idemitsu Kosan</td>
<td>Daphne Hydraulic Fluid 32</td>
<td>Daphne Super Multi Oil 32</td>
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<td></td>
<td>JX Nippon Oil &amp; Energy</td>
<td>Super Hyrandio 32</td>
<td>Super Mulpus DX 32</td>
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<td>Cosmo Oil</td>
<td>Cosmo Hydro AW32</td>
<td>Cosmo New Mighty Super 32</td>
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<tr>
<td></td>
<td>ExxonMobil</td>
<td>Mobil DTE 24</td>
<td>Mobil DTE 24 Light</td>
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<td>Matsumura Oil</td>
<td>Hydol AW-32</td>
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<td></td>
<td>Castrol</td>
<td>Hyspin AWS 32</td>
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</table>

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

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.

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 handled by qualified personnel.
   • The hydraulic machine / air compressor should be handled and maintained by qualified personnel.

2) Do not handle or remove the machine unless the safety protocols are ensured.
   ① The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
   ② Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
   ③ After stopping the machine, do not remove until the temperature cools down.
   ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch clamps (cylinders) while they are working. Otherwise, your hands may be injured.

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 • Inspection

1) Removal of the Machine and Shut-off of Pressure Source
   • Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
   • Make sure there is no abnormality in the bolts and respective parts before restarting.

2) Regularly clean the area around the equipment.
   • If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage and air leaks.

   3) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.

   4) Regularly tighten bolts and pipe line, mounting bolts, nuts, circclips and cylinders to ensure proper use.

   5) Make sure the hydraulic fluid has not deteriorated.

   6) Make sure there is smooth action and no abnormal noise.
   • Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

   7) The products should be stored in the cool and dark place without direct sunshine or moisture.

   8) Please contact us for overhaul and repair.
Warranty

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

2) Warranty Scope
   - If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
   - Defects or failures caused by the following are not covered:
     ① If the stipulated maintenance and inspection are not carried out.
     ② If the product is used while it is not suitable for use based on the operator’s judgment, resulting in defect.
     ③ If it is used or handled in inappropriate way by the operator.
       (Including damage caused by the misconduct of the third party.)
     ④ If the defect is caused by reasons other than our responsibility.
     ⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
     ⑥ Other caused by natural disasters or calamities not attributable to our company.
     ⑦ Parts or replacement expenses due to parts consumption and deterioration.
       (Such as rubber, plastic, seal material and some electric components.)

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

## Sales Offices across the World

<table>
<thead>
<tr>
<th>Country</th>
<th>Office Name</th>
<th>TEL.</th>
<th>FAX.</th>
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<tbody>
<tr>
<td>Japan</td>
<td>KOSMEK LTD.</td>
<td>+81-78-991-5162</td>
<td>+81-78-991-8787</td>
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<tr>
<td>Overseas Sales</td>
<td>KOSMEK (USA) LTD.</td>
<td>+1-630-620-7650</td>
<td>+1-630-620-9015</td>
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<tr>
<td>USA</td>
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<tr>
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<td>+52-442-161-2347</td>
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<td>048-652-8828</td>
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<tr>
<td>Tokyo Sales Office</td>
<td>0566-74-8778</td>
<td>0566-74-8808</td>
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<tr>
<td>Nagoya Sales Office</td>
<td>092-433-0424</td>
<td>092-433-0426</td>
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**Notes:**

- For further information on unlisted specifications and sizes, please call us.
- Specifications in this catalog are subject to change without notice.
- Overseas affiliates and sales offices, distributors, Asia detailed map.
Global Network

Asia Detailed Map

Overseas Affiliates and Sales Offices
Distributors

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