Hydraulic Unit

2 ℓ Tank

Model CP
Model CR

Air-Powered Hydraulic Unit
2 ℓ Tank for Space-Saving

CP/CR Hydraulic Unit is the united type of CB/CD Pump Unit and BC Non-Leak Valve Unit. Most suitable for hydraulic source of automatic clamp / RA Die Lifter.

**Specifications**

<table>
<thead>
<tr>
<th>Main Components</th>
<th>Model No.</th>
<th>CP20M1</th>
<th>CP20N1</th>
<th>CR2M31</th>
<th>CR2N31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump</td>
<td>Model No.</td>
<td>AB7000-0</td>
<td>AD7300-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set Discharge Pressure</td>
<td>25 MPa</td>
<td>22.5 MPa</td>
<td>25 MPa</td>
<td>22.5 MPa</td>
</tr>
<tr>
<td></td>
<td>Discharge Volume Under No Load</td>
<td>1.36 ℓ /min</td>
<td>1.32 ℓ /min</td>
<td>4.00 ℓ /min</td>
<td>3.74 ℓ /min</td>
</tr>
<tr>
<td></td>
<td>Set Air Pressure</td>
<td>0.45 MPa</td>
<td>0.41 MPa</td>
<td>0.45 MPa</td>
<td>0.41 MPa</td>
</tr>
<tr>
<td></td>
<td>Air Consumption</td>
<td>max. 0.4 m³ (Normal/m)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Use Frequency | 20 Cycles / Day or less | Pressure Rising Time : 2.5 min. / Cycle or less |

| Suction Filter | Model No. | JF1030 |
| Non-Leak Valve | Filtration Degree | 174 μm (100 Mesh) |

<table>
<thead>
<tr>
<th>Pressure Switch (For Clamp)</th>
<th>Operation Mode / Set Pressure</th>
<th>Pressure Increase Detection / INC. 17.6 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>JBA2700-0G</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressure Switch (For RA Die Lifter)</th>
<th>Operation Mode / Set Pressure</th>
<th>Pressure Decrease Detection / DEC. 2.94 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>JBA0700-0G</td>
<td></td>
</tr>
</tbody>
</table>

| Pressure Valve | Set Pressure | - | BR5N11-0 | - | BR5N11-0 |

| Notes: | 1. If hydraulic oil with viscosity grade higher than listed on Hydraulic Fluid List (ISO-VG-32 or equivalent), action time will be longer. |
|        | 2. If using it at low temperature action time will be longer because of high viscosity of hydraulic oil. |
|        | 3. 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. |
|        | 4. When setting a pressure gauge to 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 bottom of the unit to compensate for hydraulic oil change. (Tank cleaning and suction strainer tightening becomes easier.) |
1 Pump (Amount of Discharge Oil)

<table>
<thead>
<tr>
<th>P</th>
<th>AB Pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>AD Pump</td>
</tr>
</tbody>
</table>

2 Tank Capacity

2 ℓ (Actual Amount for Use 1.1 ℓ)
※ Please refer to Model CP□/CQ□ (P.075) for 5 ℓ/10 ℓ Tank.

3 Working Pressure Code

When selecting 1 Pump P
- 0M : 25MPa Supply Air Pressure=0.45MPa No Pressure Relief Valve
- ON : 25MPa Supply Air Pressure=0.41MPa With Pressure Relief Valve

When selecting 1 Pump R
- M3 : 25MPa Supply Air Pressure=0.45MPa No Pressure Relief Valve
- N3 : 25MPa Supply Air Pressure=0.41MPa With Pressure Relief Valve

4 Design No.

1 : Revision Number

5 Circuit Symbol
※ Please contact us for other types of circuits.

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

Notes:
※ 2. Select the hydraulic unit with pressure relief valve when using hydraulic clamps under high temperature or large temperature change since there may be pressure fluctuation caused by temperature change.
※ 3. When choosing 1 Pressure Code ON, N3: with pressure relief valve, please select R: Pressure relief valve at 1 Circuit Symbol after circuit symbol which requires pressure relief valve.

(Ex.) When choosing three circuits C, C, D
- With three pressure relief valves on every circuit: CP20N1-RCRCDR-□-□
- With pressure relief valves only on C circuits: CP20N1-RCRCD-□-□
- No pressure relief valve on circuits: CP20M1-CCD-□-□
※ 4. Please select 1 Circuit Symbol G, H only when using it with circuit symbol U.

6 Control Voltage

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

7 Fluid Code

- 0 : General Hydraulic Oil (Equivalent to ISO-VG-32)
- G : Water-Glycol (Tank is made of steel)
- S : Silicon Oil
※ For fluids other than described above, please contact us.

8 Option

- Blank : Standard (Air Regulator)
- D : With Filter Regulator (Auto-Drain Type)
- G : With Pressure Gauge (For Primary Pressure)
- H : With Piping Block (Px Port)
- Q : With Oil Level Switch
※ Please contact us for the details of option D, G, H and Q.

9 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


Circuit Symbol / Main Circuit Examples  ※Please contact us for other circuits.

<table>
<thead>
<tr>
<th>Circuit Symbol</th>
<th>Circuit Type (For Reference)</th>
<th>Number of Circuits</th>
<th>BA Valve Number of Connections</th>
<th>Air Solenoid Valve</th>
<th>Pressure Relief Valve</th>
<th>Pressure Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Clamp Circuit</td>
<td>1</td>
<td>1</td>
<td>Single Solenoid</td>
<td>–</td>
<td>○</td>
</tr>
<tr>
<td>CR</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Single Solenoid</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td>2</td>
<td>2</td>
<td>Single Solenoid</td>
<td>–</td>
<td>○</td>
</tr>
<tr>
<td>CRCR</td>
<td></td>
<td>2</td>
<td>2</td>
<td>Single Solenoid</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>U</td>
<td>Die Lifter Circuit</td>
<td>1</td>
<td>1</td>
<td>Single Solenoid</td>
<td>–</td>
<td>○</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Single Solenoid</td>
<td>–</td>
<td>○</td>
</tr>
<tr>
<td>V</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Double Solenoid</td>
<td>–</td>
<td>○</td>
</tr>
</tbody>
</table>

C Single Solenoid Valve for Clamp (Normal Open)

D Single Solenoid Valve for Die Lifter (Normal Close)

U Double Solenoid Valve for Clamp

V Double Solenoid Valve for Die Lifter
### External Dimensions: CP / CR

<table>
<thead>
<tr>
<th>Valve Number of Connection (n)</th>
<th>1 Connection</th>
<th>2 Connections</th>
<th>3 Connections</th>
<th>4 Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>295</td>
<td>345</td>
<td>395</td>
<td>445</td>
</tr>
<tr>
<td>B</td>
<td>90</td>
<td>140</td>
<td>190</td>
<td>240</td>
</tr>
<tr>
<td>C</td>
<td>359</td>
<td>409</td>
<td>459</td>
<td>510</td>
</tr>
</tbody>
</table>

Note:

1. Please contact us for the specification (water-glycol type, with filter regulator, with hydraulic pressure switch, with piping block, with oil level switch) other than the drawing above.
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.

   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.

Hydraulic Fluid List

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

**Meter-out Circuit**

**Meter-in Circuit**

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.
  2. Do not handle or remove the machine unless the safety protocols are ensured.
  3. Do not touch clamps (cylinders) while they are working. Otherwise, your hands may be injured.
  4. Do not disassemble or modify.

- **Maintenance • Inspection**

  1. Removal of the Machine and Shut-off of Pressure Source
  2. Regularly clean the area around the equipment.
  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, circlips 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.
  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.
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