Hydraulic Lever Clamp

T-Slot Manual-Slide

Model GBB

NEW (Conventional Model GB)

No U-cut is required on the die.
Basic circuit structure with a single hydraulic circuit.
We provide a variety of options to meet your needs.

Action Description

Locked State
When hydraulic pressure is supplied, the piston lifts up, and the clamp lever pivots on the pin and locks the die.

Released State
When hydraulic pressure is released, the piston descends with built-in spring force and the clamp lever returns to the released state. The clamp can now be moved in the T-slot.

※ We provide GBB clamp according to the die clamping thickness and T-slot dimension. Please refer to the external dimensions for detail.
**System Structure Example**

The basic structure with GBB clamps that slide manually in the T-slot. This system is able to control the upper die circuit, lower die circuit, and RA die lifter circuit individually by using a three-circuit hydraulic unit.

- **Upper Clamp**: GBB Clamp
- **Lower Clamp**: GBB Clamp
- **Loading / Unloading the Die**: MR Pre-Roller + RA Die Lifter
- **Hydraulic Source**: CP Unit / CQ Unit

We are able to provide different models of clamp for the upper die and lower die. Please contact us for further information.
Model No. Indication

GBB 040 0 - DP - 5 L - S

1 Clamping Force

010 : Clamping Force= 10kN
016 : Clamping Force= 16kN
025 : Clamping Force= 25kN
040 : Clamping Force= 40kN
063 : Clamping Force= 63kN
100 : Clamping Force= 100kN
160 : Clamping Force= 160kN
250 : Clamping Force= 250kN
400 : Clamping Force= 400kN
500 : Clamping Force= 500kN

2 Design No.

0 : Revision Number

3 Option ※ Please contact us for specifications / external dimensions.

Blank : Standard
A : Slide Rod (For U-Cut)
B : Slide Rod (For Tap)
D : With Handle (GBB0630 or larger)
E : Reinforced Body
H : Extra Height Body (When h dimension is more than max. h dimension shown in the external dimension.)
J : Low Lever (When h dimension is less than min. h dimension shown in the external dimension.)
K : Rear Port
L □ : Wide Lever (For U-Cut of Die) ※1
M □ : For Die with Notch
N : NPT Port ※2
P : With Die Confirmation Proximity Switch ※4
R : Longer D Dimension of T-Leg
T : T-Slot Locking
U □ : With Grease Nipple (Only for GBB0400~2500) (Standard Option for GBB4000/GBB5000)
V : High Temperature (0~120°C) ※3
W : With Check Valve (GBB1000 or larger)
X : With Cover

Notes:
※1. Please indicate the U-cut dimension of the die.
※2. Dimensions in the specification sheet and other documents are in written in inches.
※3. Select the hydraulic unit with pressure relief valve when using under high temperature since there may be pressure fluctuation caused by temperature change.

4 Switch Load Voltage (Current) ※4. Only when P (Proximity Switch for Die Detection) is chosen.

1 : AC100V
2 : AC200V
5 : DC24V (5~40mA)

5 Switch Mounting Position ※4. Only when P (Proximity Switch for Die Detection) is chosen.

L : Left (Left Side as Seen from Clamp Back Side)
R : Right (Right Side as Seen from Clamp Back Side)

6 Production Number

This number represents the main specification of the clamp’s T-slot stem and the clamping height. After the specification is confirmed, we will create a number.
Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>GBB0100</th>
<th>GBB0160</th>
<th>GBB0250</th>
<th>GBB0400</th>
<th>GBB0630</th>
<th>GBB1000</th>
<th>GBB1600</th>
<th>GBB2500</th>
<th>GBB4000</th>
<th>GBB5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping Force (kN)</td>
<td>10</td>
<td>16</td>
<td>25</td>
<td>40</td>
<td>63</td>
<td>100</td>
<td>160</td>
<td>250</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>Working Pressure (MPa)</td>
<td>25 (For Rated Clamp Force)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Withstanding Pressure (MPa)</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Stroke (mm)</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Clamp Stroke (mm)</td>
<td>3</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Extra Stroke (mm)</td>
<td>3</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cylinder Capacity (At Full Stroke) (cm³)</td>
<td>2.5</td>
<td>4.6</td>
<td>7.2</td>
<td>11.5</td>
<td>20.6</td>
<td>33.6</td>
<td>53.8</td>
<td>83.8</td>
<td>130.8</td>
<td>166.0</td>
</tr>
<tr>
<td>Operating Temperature (°C)</td>
<td>0<del>70 (V: High temperature option is available for 0</del>120°C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Frequency</td>
<td>20 Cycles / Day or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pressurizing Agent: General Hydraulic Oil Equivalent to ISO-VG-32

Notes:

#5. Option V: High Temperature (0~120°C) is for operating in temperatures of 70°C or more.
#6. Please contact us for more frequent use.
#7. Please contact us for fluids other than those mentioned on the list.
#8. If hydraulic viscosity is higher than specified, action time will be longer.
#9. If using it at low temperature, action time will be longer because the viscosity of hydraulic oil becomes higher.
#10. It shows reference dimensions. The dimension may differ from specification depending on T-slot (T-leg) dimension, dimension of clamp cylinder that sticks out of T-slot during lock action, or body material.

Option

- **Slide Rod (For U-Cut)**: Put a stick into the U-cut to move the backside clamp (For tap)
- **Model GBB-A**

- **Slide Rod (For Tap)**: Move the clamp by a stick mounted in the thread part
- **Model GBB-B**

- **Extra Height Body**
- **Model GBB-H**

- **Low Lever**
- **Model GBB-J**

- **Rear Port**
- **Model GBB-K**

- **NPT Port**
- **Model GBB-N**

- **With Handle (GBB0630 or larger)**
- **Model GBB-D**

- **Reinforced Body**
- **Model GBB-E**

- **For Die with Notch**
- **Model GBB-M**

- **Piping Port**
- **NPT Thread**
- **Model GBB-T**

- **With Die Confirmation Proximity Switch**
- **Model GBB-P**

- **Grease Nipple**
- **Model GBB-U**

- **Grease Nipple**
- **Model GBB-V**

- **Grease Nipple**
- **Model GBB-W**

Note:

1. Specifications/external dimensions for these options are different from standard model. Please contact us for further information.
Hydraulic Lever Clamp  T-Slot Manual-Slide

model GBB

External Dimensions
- This drawing shows GBB0100–GBB2500 standard model. Contact us for external dimensions for options.

- This drawing shows GBB4000 standard model. Contact us for external dimensions for options.

- Only T-leg part of GBB5000 is different from GBB4000. GBB5000 has two T-legs. Contact us for external dimensions for options.

Notes:
1. Do not exceed the clamping force on the specification.
2. Specifications/Contents in this catalog are subject to change without prior notice. Ask for the approval drawing before deciding to purchase.
## External Dimensions

<table>
<thead>
<tr>
<th>Model No.</th>
<th>GB80100</th>
<th>GB80160</th>
<th>GB80250</th>
<th>GB80400</th>
<th>GB80630</th>
<th>GB81000</th>
<th>GB81600</th>
<th>GB82500</th>
<th>GB84000</th>
<th>GB85000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Stroke</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Clamp Stroke</td>
<td>3</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Extra Stroke</td>
<td>3</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>min. E</td>
<td>42.5</td>
<td>49</td>
<td>58</td>
<td>66</td>
<td>81</td>
<td>105.5</td>
<td>122.5</td>
<td>144.5</td>
<td>177.5</td>
<td>202.5</td>
</tr>
<tr>
<td>F</td>
<td>43</td>
<td>53</td>
<td>63</td>
<td>73</td>
<td>93</td>
<td>103</td>
<td>124</td>
<td>152</td>
<td>175</td>
<td>200</td>
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<tr>
<td>J</td>
<td>20</td>
<td>26</td>
<td>32</td>
<td>38</td>
<td>50</td>
<td>60</td>
<td>73</td>
<td>85</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>15</td>
<td>17</td>
<td>19</td>
<td>22</td>
<td>25</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>35</td>
<td>37</td>
</tr>
<tr>
<td>L</td>
<td>58</td>
<td>70</td>
<td>84</td>
<td>105.5</td>
<td>130</td>
<td>159</td>
<td>199</td>
<td>240</td>
<td>300</td>
<td>340</td>
</tr>
<tr>
<td>M (h)</td>
<td>73</td>
<td>87</td>
<td>103</td>
<td>127.5</td>
<td>155</td>
<td>189</td>
<td>229</td>
<td>270</td>
<td>335</td>
<td>377</td>
</tr>
</tbody>
</table>

Notes:
1. If you would like to change the ratio of clamp stroke and extra stroke, please contact us.
2. All dimensions are determined by Kosmek according to the T-slot dimensions.
3. When making an order, please indicate a, b, c, d dimension of T-slot and h dimensions of die clamping thickness.
4. Please indicate the dimensions of a, b, c, d and h in 0.1mm increments.

## GBB Clamp The Allowable Protrusion Amount of Cylinder

### GBB Clamp

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Min. T-Leg Set Amount</th>
<th>Allowable Protrusion Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB80100</td>
<td>40.5</td>
<td>17.5</td>
</tr>
<tr>
<td>GB80160</td>
<td>49.0</td>
<td>21.0</td>
</tr>
<tr>
<td>GB80250</td>
<td>59.0</td>
<td>25.0</td>
</tr>
<tr>
<td>GB80400</td>
<td>73.5</td>
<td>32.0</td>
</tr>
<tr>
<td>GB80630</td>
<td>91.0</td>
<td>39.0</td>
</tr>
<tr>
<td>GB81000</td>
<td>114.0</td>
<td>45.0</td>
</tr>
<tr>
<td>GB81600</td>
<td>142.0</td>
<td>57.0</td>
</tr>
<tr>
<td>GB82500</td>
<td>170.5</td>
<td>69.5</td>
</tr>
<tr>
<td>GB84000</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>GB85000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note:
1. The dimensions on the list are for reference.
2. The dimensions may differ from specification depending on T-slot (T-leg) dimension or body material.

## Accessory : GBH Clamp Hook

### Clamp Hook

<table>
<thead>
<tr>
<th>Model No.</th>
<th>GBH181</th>
<th>GBH221</th>
<th>GBH281</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>18</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>H</td>
<td>100</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>L</td>
<td>19</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>W1</td>
<td>60</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>W2</td>
<td>10</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Note:
1. Please do not operate the press machine continuously with clamp suspended from clamp hook.
2. Clamp hook should be used only during the die change.

### Hydraulic Unit

- CP
- CR
- CPB
- CPFD
- CPE
- QCQ
- COE

### Pump Unit

- CB
- CD
- CC

### Valve Unit

- BC
- BH
- MV

### Operational Control Panel

- YP
- YA

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**Clamp Hydraulic Unit Operation Control Panel**

- Die Lifters
- Pre-Roller
- Accessories
- Cautions
- Company Profile

**Clamp**

- GA
- GD
- GB
- GBC
- GBP
- GBQ
- GN
- CP
- CR
- CPB
- CPFD
- CPE
- QCQ
- COE

**Pump Unit**

- CB
- CD
- CC

**Valve Unit**

- BC
- BH
- MV

**Operational Control Panel**

- YP
- YA

---

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Cautions

Notes for Design

1) Check Specifications
   - Please use each product according to its specifications.
   - Operating pressure is 25MPa.
     Operating pressure of GN clamp: Hydraulic pressure for lock is 25MPa.
     Pneumatic pressure for release is 0.4–0.5MPa.
   - Do not use clamps with excessive operating pressure.
   - Falling down of the die 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 Die Clamping Thickness
   - Please check the die clamping thickness.
     The die clamping thickness of GN clamp should be h±0.5mm.
     If using dies other than prescribed, clamps cannot conduct locking action normally and it leads to accident or injury.

3) Clamp surface and T-slot must be parallel to mounting surface of the die.
   - 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 accident or injury.

4) Make sure that advance/retraction of the clamp is smoothly conducted. (Model GD / GBE / GBF)
   - Please control air cylinder for slide with two-position double solenoid (with detent).
   - Supply 0.4MPa or more air pressure to air cylinder.
   - Please adjust the moving speed of the clamp with speed controller to be fully stroked within 1 to 2 seconds.
   - Do not set the proximity switch to the die surface near the U-cut, since 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.

6) When the clamp cylinder sticks out of U-cut or T-slot, please use it within the allowable protrusion amount.
   - U-Cut of the Die  ● ● Model GA / GD
   - T-Slot of the Slider / Bolster  ● ● Model GBB / GBE / GBC / GBF

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Allowable Protrusion Amount (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA0100</td>
<td>13</td>
</tr>
<tr>
<td>GA0160</td>
<td>14</td>
</tr>
<tr>
<td>GA0250</td>
<td>17</td>
</tr>
<tr>
<td>GA0400</td>
<td>20</td>
</tr>
<tr>
<td>GA0630</td>
<td>26</td>
</tr>
<tr>
<td>GA1000</td>
<td>32</td>
</tr>
<tr>
<td>GA1600</td>
<td>42</td>
</tr>
<tr>
<td>GA2500</td>
<td>50</td>
</tr>
</tbody>
</table>

Model GBB / GBE / GBC / GBF

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Allowable Protrusion Amount (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBB0100</td>
<td>17.5</td>
</tr>
<tr>
<td>GBB0160</td>
<td>21</td>
</tr>
<tr>
<td>GBB0250</td>
<td>25</td>
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<td>GBB0400</td>
<td>32</td>
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<td>GBB0630</td>
<td>39</td>
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<td>GBB1000</td>
<td>45</td>
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<tr>
<td>GBB1600</td>
<td>57</td>
</tr>
<tr>
<td>GBB2500</td>
<td>69.5</td>
</tr>
<tr>
<td>GBB4000</td>
<td>0</td>
</tr>
<tr>
<td>GBB5000</td>
<td>0</td>
</tr>
</tbody>
</table>

7) Be careful with mounting position of the clamp. (Model GBP/GBQ only)
   - Make sure that main body of the clamp is not out of the mounting surface. Excessive force is applied to the clamp and it deforms the clamp or damages mounting bolt resulting in falling off of the die and accident or injury.
● 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.
   (There is no filter provided with this product for prevention of contaminants in the hydraulic piping or hydraulic system.)

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 oil 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 no air in the oil tank, please conduct air bleeding with the end of the piping.
   ① Reduce supply hydraulic pressure to less than 2MPa.
   ② Please loosen the cap nut of pipe fitting that is closest to clamps • RA Die Lifter 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 GD / GBE / GFB).

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Thread Size</th>
<th>Tightening Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GD0250</td>
<td>M6 x 1</td>
<td>10</td>
</tr>
<tr>
<td>GD0400</td>
<td>M6 x 1</td>
<td>10</td>
</tr>
<tr>
<td>GD0630</td>
<td>M6 x 1</td>
<td>10</td>
</tr>
<tr>
<td>GD1000</td>
<td>M8 x 1.25</td>
<td>25</td>
</tr>
<tr>
<td>GD1600</td>
<td>M8 x 1.25</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Thread Size</th>
<th>Tightening Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBE0250 / GB0250</td>
<td>M5 x 0.8</td>
<td>6.3</td>
</tr>
<tr>
<td>GBE0400 / GB0400</td>
<td>M5 x 0.8</td>
<td>6.3</td>
</tr>
<tr>
<td>GBE0630 / GB0630</td>
<td>M6 x 1</td>
<td>10</td>
</tr>
<tr>
<td>GBE1000 / GB1000</td>
<td>M8 x 1.25</td>
<td>25</td>
</tr>
<tr>
<td>GBE1600 / GB1600</td>
<td>M10 x 1.5</td>
<td>50</td>
</tr>
<tr>
<td>GBE2500 / GB2500</td>
<td>M12 x 1.75</td>
<td>80</td>
</tr>
<tr>
<td>GBE4000 / GB4000</td>
<td>M16 x 2</td>
<td>200</td>
</tr>
<tr>
<td>GBE5000 / GB5000</td>
<td>M16 x 2</td>
<td>200</td>
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</table>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Thread Size</th>
<th>Tightening Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GN0250</td>
<td>M6 x 1</td>
<td>12</td>
</tr>
<tr>
<td>GN0401</td>
<td>M8 x 1.25</td>
<td>30</td>
</tr>
<tr>
<td>GN0631</td>
<td>M8 x 1.25</td>
<td>30</td>
</tr>
<tr>
<td>GN1001</td>
<td>M8 x 1.25</td>
<td>30</td>
</tr>
</tbody>
</table>

7) Wiring of the Forward End Detection 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

<table>
<thead>
<tr>
<th>ISO Viscosity Grade ISO-VG-32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showa Shell Sekiyu Telliol M2 32</td>
</tr>
<tr>
<td>Idemitsu Kosan Daphne Hydraulic Fluid 32</td>
</tr>
<tr>
<td>JX Nippon Oil &amp; Energy Super Hyrano 32</td>
</tr>
<tr>
<td>Cosmo Oil Cosmo Hydro AW32</td>
</tr>
<tr>
<td>ExxonMobil Mobil DTE 24</td>
</tr>
<tr>
<td>Matsumura Oil Hydrol AW-32</td>
</tr>
<tr>
<td>Castrol Hypsin AWS 32</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.

※ Please refer to P.177 for common caution. • Speed Control Circuit of Hydraulic Cylinder & Notes • Maintenance / Inspection • Warranty
Cautions

Notes on Handling

1) Shutting down of the machine should be done without load applied to the clamp.
   - This can result in the dropping of a die.
   - When using it with a press machine, make sure to stop the slide at bottom dead point.

2) It should be handled by qualified personnel.
   - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.

3) 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.

4) 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.

5) After stopping the machine, do not remove until the temperature cools down.

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

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

5) When changing the width of the die, 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 off of the die and accident or injury. Please refer to “Notes for Design (6)” on P.067 for the allowable protrusion amount.

6) 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 accident or injury. Also, rivet part of the hose will be loosened leading to fluid leakage.

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

8) Please do not pour water / oil over the product.
   - It may lead to malfunction or deterioration of the product and cause an accident.

※ Please refer to P.177 for common caution.
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 AW 32</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.

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, 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.
   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.
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Global Network

Asia Detailed Map

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