HYDROCAM®

The ultimate in flexible cam design*

* HYDROCAM is protected by U. S. and international patents.
HYDROCAM® – The standard cam with user flexibility

*powerful* • *compact* • *reliable* • *interchangeable*

HYDROCAM® transfers the vertical press stroke into a precise cam action patented hydraulic technology. Standard stocks units combine into systems. Customers can easily mount their own tooling to the machinable front plate creating a customized application.

**Here is how HYDROCAM® operates:**
The press ram lowers, activating the piston rod of the H1 pump. Hydraulic pressure or force is transferred high pressure hoses to one or multiple H2 units.

The H2 unit has an adjustable return force using proven nitrogen gas technology.

- One H1 can serve up to four H2 units.
- Mount the H2 at any angle up to 2 meters away from H1.
- Each H2 can deliver from 2 to 31 tons of force.
- H2 units are available with 25, 50, 75 and 100 mm stroke lengths depending on model selected.
- **Ideal for retrofits and engineering changes.**

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**Piercing • Forming • Trimming**
HYDROCAM® has been carefully designed for maximum user flexibility.

Our customers can easily mount the specialized tooling required for their application to our standard HYDROCAM® systems.
Order standard units from stock.

Before
• Costly and complicated mechanical cams.
• Increased maintenance costs due to mechanical wear.

After
• HYDROCAM® makes retrofits easy.
• Decreased maintenance costs and downtime.

HYDROCAM® – Ideal for retrofits and engineering changes

Automotive die … piercing

HYDROCAM® systems shown with control panel option to monitor and adjust nitrogen pressure in the H2 piercing/forming unit.
HYDROCAM® – Selecting charts

Selecting chart H1

<table>
<thead>
<tr>
<th>H1</th>
<th>5</th>
<th>8</th>
<th>13</th>
<th>20</th>
<th>40</th>
<th>66</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT Total Volume</td>
<td>cm³</td>
<td>50</td>
<td>80</td>
<td>130</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>V1 Volume/Stroke mm</td>
<td>cm³</td>
<td>2.23</td>
<td>3.32</td>
<td>3.32</td>
<td>7.85</td>
<td>13.27</td>
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</table>

Selecting chart H2

<table>
<thead>
<tr>
<th>H2</th>
<th>Model</th>
<th>2,0</th>
<th>3,2</th>
<th>5,0</th>
<th>7,8</th>
<th>12,5</th>
<th>20,0</th>
<th>31,0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force</td>
<td>kN</td>
<td>19.63</td>
<td>31.98</td>
<td>49.98</td>
<td>78.01</td>
<td>124.73</td>
<td>199.98</td>
<td>309.97</td>
</tr>
<tr>
<td>VC Volume/Stroke mm</td>
<td>cm³/mm</td>
<td>0.49</td>
<td>0.8</td>
<td>1.26</td>
<td>1.97</td>
<td>3.11</td>
<td>5.03</td>
<td>7.85</td>
</tr>
<tr>
<td>Max. Force</td>
<td>kN</td>
<td>17.87</td>
<td>28.85</td>
<td>45.45</td>
<td>70.94</td>
<td>113.19</td>
<td>188.19</td>
<td>288.17</td>
</tr>
<tr>
<td>Return Force at 100 bar</td>
<td>kN</td>
<td>1.76</td>
<td>3.13</td>
<td>4.53</td>
<td>7.07</td>
<td>11.54</td>
<td>11.79</td>
<td>21.8</td>
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</tbody>
</table>

Quick selecting chart

<table>
<thead>
<tr>
<th>H2</th>
<th>H1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 2,0</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (13,4)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (18,9)</td>
</tr>
<tr>
<td>Model 3,2</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (16,9)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (25,9)</td>
</tr>
<tr>
<td>75 mm</td>
<td>1 (36,4)</td>
</tr>
<tr>
<td>Model 5,0</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (22,1)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (26,9)</td>
</tr>
<tr>
<td>75 mm</td>
<td>1 (36,4)</td>
</tr>
<tr>
<td>Model 7,8</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (22,1)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (26,9)</td>
</tr>
<tr>
<td>75 mm</td>
<td>1 (36,4)</td>
</tr>
<tr>
<td>Model 12,5</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (31,4)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (37,8)</td>
</tr>
<tr>
<td>75 mm</td>
<td>1 (45,9)</td>
</tr>
<tr>
<td>100 mm</td>
<td>1 (54,6)</td>
</tr>
<tr>
<td>Model 20,0</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (24,9)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (26,9)</td>
</tr>
<tr>
<td>75 mm</td>
<td>1 (36,4)</td>
</tr>
<tr>
<td>100 mm</td>
<td>1 (45,9)</td>
</tr>
<tr>
<td>Model 31,0</td>
<td></td>
</tr>
<tr>
<td>25 mm</td>
<td>1 (22,7)</td>
</tr>
<tr>
<td>50 mm</td>
<td>1 (37,5)</td>
</tr>
<tr>
<td>75 mm</td>
<td>1 (52,3)</td>
</tr>
</tbody>
</table>

Example:

**Step 1 and 2** Locate the H2 unit and its stroke. In this example: model 3.2, stroke 25 mm.

**Step 3** Locate the number of H2 units to the right of the stroke length. The H1 pump’s piston rod travel is listed next to that number in parentheses.

**Step 4** Read up to the column heading. This is the H1 model you need. In his example: H1, model 5.
**HYDROCAM® – Calculations**

**Example:**

Piercing of 2 holes on each ends of a formed part.

Hole diameter: 12 mm, Thickness of material 2 mm;
Material strenght: $\tau_{aB} = 370 \text{ N/mm}^2$

The piercing units makes a stroke of 17 mm before they were stopped by external tool stops.

**Piercing unit **HYDROCAM H2

$A = d \cdot \pi \cdot s = 12 \text{ mm} \cdot \pi \cdot 2 \text{ mm} = 75,4 \text{ mm}^2$

$F = A \cdot \tau_{aB} = 75,4 \text{ mm}^2 \cdot 370 \text{ N/mm}^2 = 27898 \text{ N} = 27,9 \text{ kN}$

Note the needed force $F$ should be maximum of 80 % of the working force $F_2$:

$$F_{2\text{min}} = \frac{F}{0,8} = \frac{27,9 \text{ kN}}{0,8} = 34,87 \text{ kN}$$

Need: Piercing unit **HYDROCAM 2 – 5 x 25**

**Pump **HYDROCAM H1

Needed volume for each piercing unit $V_{N1}$

$V_{N1} = V_C \cdot Hub = 1,26 \text{ cm}^3/\text{mm} \cdot 17 \text{ mm} = 21,42 \text{ cm}^3$

$VT = V_{N1} \cdot 2 = 21,42 \text{ cm}^3 \cdot 2 = 42,84 \text{ cm}^3$

Note the needed volume should be maximum of 90% of the Total volume $VT$:

$$VT_{min} = \frac{V}{0,9} = \frac{42,84 \text{ cm}^3}{0,9} = 47,6 \text{ cm}^3$$

Need: Pump **HYDROCAM 1 – 5**

**Max. Volume stroke $Ht4$**

$$Ht4 = \frac{VT}{VI} = \frac{42,84 \text{ cm}^3}{2,25 \text{ cm}^3/\text{mm}} = 19,2 \text{ mm}$$

**Total stroke $H$**

$$H = Ht4 + Ht5 = 19,2 \text{ mm} + 8 \text{ mm} = 27,2 \text{ mm}$$

**Optional stroke gauge ring thickness $t$**

$$t = Ht3 - H = 31 \text{ mm} - 27,2 \text{ mm} = 3,8 \text{ mm}$$

Changes of construction and errors of printing reserved. All pictures, sketches and details are not binding.
Compact power with user flexibility

The H2 piercing unit can be ordered from Danly with high pressure hose and connectors you specify. The H2 has seven standard stock sizes. The amount of force needed determines the size. Units deliver from 2 up to 31 tons of force at any angle selected. Standard stroke lenghts of 25, 50, 75 and 100 mm, depending on unit size.

Standard features:
• H2 unit comes with adjustable nitrogen gas return force.
• Machinable front plate for customers to mount their tooling by application.
• Compact and interchangeable for today’s demanding applications.

Popular options:
• Control panel option: DANLY recommends using this to monitor and adjust nitrogen return force.
• Direct punch option: Remove front plate and piston will accept a head type punch. Punch size and shank limitations are noted on the H2 dimension chart, see D8 below. A special "lockung nut" must be ordered.
• Oil return option: Used on special applications. Must be engineered, please call Danly for support.

Mounting suggestions
• Mount H2 units against keys.
• Provide a mounting platform that will resist any deflection.
• The standard front plate should be guided during work stroke. Avoid off-centered loading.
• Use always an stop block to limit the stroke of the unit H2.

Example how to order:

HYDROCAM® H2 – 5,0 x 25 + Standard front plate

Note: 1 kN = 102 kg

<table>
<thead>
<tr>
<th>H2 Chart</th>
<th>Piercing unit</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>H2</th>
<th>2,0</th>
<th>3,2</th>
<th>5,0</th>
<th>7,8</th>
<th>12,5</th>
<th>20,0</th>
<th>31,0</th>
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</thead>
<tbody>
<tr>
<td>Force</td>
<td>20 kN</td>
<td>32 kN</td>
<td>50 kN</td>
<td>78 kN</td>
<td>125 kN</td>
<td>200 kN</td>
<td>310 kN</td>
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<tr>
<td>L1 Stroke 25 mm</td>
<td>108</td>
<td>128</td>
<td>141</td>
<td>149</td>
<td>172</td>
<td>190</td>
<td>211</td>
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<tr>
<td>L1 Stroke 50 mm</td>
<td>133</td>
<td>154</td>
<td>166</td>
<td>174</td>
<td>197</td>
<td>215</td>
<td>236</td>
</tr>
<tr>
<td>L1 Stroke 75 mm</td>
<td>-</td>
<td>179</td>
<td>191</td>
<td>199</td>
<td>222</td>
<td>240</td>
<td>261</td>
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<tr>
<td>L1 Stroke 100 mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>247</td>
<td>265</td>
<td>-</td>
</tr>
<tr>
<td>L2</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>15</td>
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<td>L4</td>
<td>31</td>
<td>42</td>
<td>45</td>
<td>48</td>
<td>55</td>
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<td>70</td>
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<tr>
<td>L5 Stroke 25 mm</td>
<td>101</td>
<td>120</td>
<td>132</td>
<td>138</td>
<td>158</td>
<td>172</td>
<td>190</td>
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<tr>
<td>L5 Stroke 50 mm</td>
<td>126</td>
<td>145</td>
<td>157</td>
<td>163</td>
<td>183</td>
<td>197</td>
<td>215</td>
</tr>
<tr>
<td>L5 Stroke 75 mm</td>
<td>-</td>
<td>170</td>
<td>182</td>
<td>188</td>
<td>208</td>
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<td>240</td>
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<tr>
<td>L5 Stroke 100 mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>233</td>
<td>247</td>
<td>265</td>
</tr>
<tr>
<td>L6</td>
<td>12</td>
<td>15</td>
<td>20</td>
<td>22</td>
<td>25</td>
<td>30</td>
<td>35</td>
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<tr>
<td>L7</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
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<td>B1</td>
<td>60</td>
<td>75</td>
<td>85</td>
<td>100</td>
<td>130</td>
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<td>180</td>
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<tr>
<td>B2</td>
<td>44</td>
<td>55</td>
<td>65</td>
<td>76</td>
<td>100</td>
<td>110</td>
<td>140</td>
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<tr>
<td>B3</td>
<td>59</td>
<td>74</td>
<td>84</td>
<td>99</td>
<td>129</td>
<td>139</td>
<td>179</td>
</tr>
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<td>H1</td>
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<td>70</td>
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<td>100</td>
<td>110</td>
<td>150</td>
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<td>H2</td>
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<td>30</td>
<td>35</td>
<td>40</td>
<td>50</td>
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<td>75</td>
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<td>H3</td>
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<td>35</td>
<td>40</td>
<td>50</td>
<td>55</td>
<td>75</td>
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<td>H4</td>
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<td>59</td>
<td>69</td>
<td>79</td>
<td>99</td>
<td>109</td>
<td>149</td>
</tr>
<tr>
<td>D1</td>
<td>20</td>
<td>25</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>70</td>
<td>85</td>
</tr>
<tr>
<td>D2 H7 (x2)</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>D3 H7 g6 (x2)</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>D4 Depth</td>
<td>M12x1,0</td>
<td>M16x1,5</td>
<td>M20x1,5</td>
<td>M20x1,5</td>
<td>M30x2,0</td>
<td>M38x2,0</td>
<td>M48x2,0</td>
</tr>
<tr>
<td>D5</td>
<td>15</td>
<td>18</td>
<td>20</td>
<td>26</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>D6 (DIN 75 Km) (x4)</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>16</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>D7 Piston-Ø</td>
<td>25</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>63</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>D8 Nominal head-Ø Punch shank-Ø</td>
<td>-</td>
<td>13</td>
<td>16</td>
<td>13</td>
<td>23</td>
<td>28</td>
<td>35</td>
</tr>
<tr>
<td>D9 Thread size of bolt</td>
<td>M8</td>
<td>M10</td>
<td>M12</td>
<td>M16</td>
<td>M20</td>
<td>M20</td>
<td>M20</td>
</tr>
</tbody>
</table>
HYDROCAM® – H2 Specifications

Direct punch option

Optional: Direct punch mount

Option: Standard front mounting plate

Option: Standard front mounting plate

Cutaway photo:
The H1 pump is available in six standard sizes. Each pump has four ports to activate up to four H2 units. The quality, size and stroke length of the H2 units hosed to each pump determines the size and oil volume of the pump needed. Pumps can be up to six feet away from H2 units. This allows you to free up critical die space and balance die loads.

Piston rod travel
Piston rod travel controls oil volume going to H2 unit(s). Our selection example on page 5 provides you the formulas for calculation. Multiple H2 units activated by a common pump will effect piston rod travel, find the quick select chart on page 4.

Optional stroke gauge ring
Used as a visual gauge to assist in set-up. Ring is located on top of pump body and made to the appropriate height based upon piston rod travel calculation. This stroke gauge ring is not a stop block. See quick select chart on page 4 and calculate example on page 5 how to calculate.

Mounting Suggestions:
• The piston rod must always face up, perpendicular to ram/driver.
  Always activate piston rod with driver that is larger in diameter than the piston rod.
  Driver may need to be custom ground to exact working height during HYDROCAM® system set-up.
  Locate pump higher in elevation than all H2 units it activates.
  Specify hose length and allow for safe access from pump to H2 unit(s).
  Always use stop blocks.
• Die storage blocks are recommended. Never store pump with piston rod depressed.

HYDROCAM® – H1 Pump

<table>
<thead>
<tr>
<th>H1 Chart Pump</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1</strong></td>
</tr>
<tr>
<td><strong>V1</strong></td>
</tr>
<tr>
<td>Total volume</td>
</tr>
<tr>
<td><strong>Ht 1</strong></td>
</tr>
<tr>
<td>Die open height</td>
</tr>
<tr>
<td><strong>Ht 2</strong></td>
</tr>
<tr>
<td>Height of base</td>
</tr>
<tr>
<td><strong>Ht 3</strong></td>
</tr>
<tr>
<td>Total stroke</td>
</tr>
<tr>
<td><strong>D1</strong></td>
</tr>
<tr>
<td>Piston-Ø</td>
</tr>
<tr>
<td><strong>D2</strong></td>
</tr>
<tr>
<td>Rod-Ø</td>
</tr>
<tr>
<td><strong>D3</strong> Base cross corners</td>
</tr>
<tr>
<td>Body-Ø</td>
</tr>
<tr>
<td><strong>D6</strong> Optional gauge</td>
</tr>
<tr>
<td>4-kt 1</td>
</tr>
<tr>
<td>P Piston area</td>
</tr>
</tbody>
</table>

Example how to order:
HYDROCAM® H1 – 20
Connecting the \textit{H1} pump, \textit{H2} piercing unit(s) and Nitrogen return control panel.

1. \textbf{Minimize} the number of fittings in the hose system.
2. Do not use a hose system that involves a fitting \textendash{} to fitting \textendash{} to fitting series of connections.
3. Hose each identical \textit{H2} unit to a \textit{H1} Pump with its own hose. Do not hose in series. Provide simple access for hose routing. Use only approved hose and fittings.
4. Provide additional hose length to ensure appropriate radius and safe routing. Avoid high spots in the oil hose route that will trap and create air pockets.
5. Maximum hose length is 2 m. Do not substitute the supplied hydraulic hose with a smaller or lighter duty hose.
6. Rotating the \textit{H1} Pump 45° may simplify hose routing.
7. Avoid turning fittings. If a hose turn requires a turning fitting, select a 45° fitting as a choice and a 90° fitting second. See page 12, 13 and 14 for accessories.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|}
\hline
\textbf{Model} & \textbf{\textit{H} dimensions} \\
\hline
HYDROCAM H1-5 & 21 mm \\
HYDROCAM H1-8 & 25 mm \\
HYDROCAM H1-13 & 25 mm \\
HYDROCAM H1-20 & 25 mm \\
HYDROCAM H1-40 & 30 mm \\
HYDROCAM H1-66 & 30 mm \\
\hline
\end{tabular}
\end{table}

\textbf{Requied positions of \textit{H1} as compared to \textit{H2}}

\begin{itemize}
\item Standard \textit{HYDROCAM®} systems operate using a simple hydraulic driven extension with a nitrogen return and require no special conditions or procedure to operate them.
\item \textbf{DO NOT SUBSTITUTE ANY COMPONENT IN THIS SYSTEM!} IMPROPER SUBSTITUTIONS MAY RESULT IN PERFORMANCE PROBLEMS ANS/OR SAFETY HAZARDS.
\item \textbf{USE ONLY A PREMIUM GRADE HYDRAULIC OIL.}
\item As with any air, hydraulic or nitrogen cylinder, neither the \textit{H1} Pump nor the \textit{H2} unit is designed to withstand side-thrust forces. Properly guiding the tool and cam station will limit damage to the cylinder and increase seal life.
\item \textbf{THE MOST COMMON \textit{HYDROCAM®} OPERATING PROBLEM IS AIR CAUGHT IN THE HOSE SYSTEM. ENSURE THAT YOU HAVE PROPERLY LOCATED THE \textit{H1} PUMP, AVOIDED HIGH SPOTS INSIDE THE HOSE SYSTEM AND BLED THE SYSTEM OF AIR.}
\item Complete engineering assistance, seminars and service support are available should a need arise for any our full line of metal forming products. Contact your representative for details.
\end{itemize}

\textit{NOTE:} We understand that a few applications will exceed this guide. Contact your representative for application support.
HYDROCAM® Cutaway photos

Follow the instructions for engineering and production to give a long lifetime of HYDROCAM® applications:

Installation H2

- The H2 piercing units should always be fixed by a thrust key.
- The pins give only the position.
- The H2 unit is designed to provide force, not guidance. As with any air, hydraulic or nitrogen cylinder, neither the H1 Pump nor the H2 unit is designed to withstand side-thrust forces. Properly guiding the tool and cam station will minimize wear to the cylinders and increase seal life. This is especially true in applications with long strokes, heavy or large tooling mounted, or in applications that approach the work in a non-perpendicular presentation.

Note for secure:
Only use fittings and hoses which are proofed to run with 400 bar.

Installation H1

- Use max. hoses with 2 m.
- The position of the piston should always be right angled and vertical to the driver.
- It doesn’t work reverse.
- Put the Pump higher than the piercing unit(s).
- Limit the stroke of the tool with a stop block.
- Don’t use more stroke than calculated, compare with the gauge stop ring thickness.
- Fill oil in up to the middle of the oil sight glass.
- Remove the air in the hoses with initial strokes.
Nitrogen accessories control panel

Control panel KA 110-01-250

DANLY suggests to run each H2 with a single Control Panel. It can use to fill with gas and monitor the pressure. Each control console has build in a safety plug.

1. Safety plug  
2. Inlet valve  
3. Exhaust valve  
4. Pressure gauge

Fitting NP1000-3 Order-No. NP1000-3

Fill and control panel RTUAL-04.0

This is a multi functual unit. Used to refill and monitor the pressure of gas filled H2 systems.

Hoses to connect the control panels

Important: The length should be 5% longer than the measured distance. While the systems are filled with high pressured gas the length of the hoses will be decreased under pressure.

Note: Rebuild the inlet valve of the hoses units while working with an assembled control panel.

<table>
<thead>
<tr>
<th>Part-No.</th>
<th>Hose I.D.</th>
<th>Hose O.D.</th>
<th>Max. oper. pressure (bar)</th>
<th>Min. Burst pressure (bar)</th>
<th>Min. Bend radius</th>
<th>Thread size</th>
<th>A</th>
<th>6-kts H</th>
<th>6-kts W</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT520410655-(*)</td>
<td>mm 4,8</td>
<td>10,9</td>
<td>345</td>
<td>1380</td>
<td>38</td>
<td>7/16-20</td>
<td>55</td>
<td>16</td>
<td>17</td>
<td>30</td>
</tr>
</tbody>
</table>

Changes of construction and errors of printing reserved. All pictures, sketches and details are not binding.
Nitrogen accessories fittings

37° Fittings

**Straight connector***

Order-No. RT4F40MX-S

**Swivel nut elbow 135°**

Order-No. RT4V40MX-S

**90° Degree elbow***

Order-No. RT4C40MX-S

* not to connect directly at HYDROCAM

**Swivel nut run tee**

Order-No. RT4R6X-S

**Swivel nut run tee**

Order-No. RT4S6X-S

**90° Degree elbow**

Order-No. RT4C6X-S

**Hollow hex plug**

<table>
<thead>
<tr>
<th>Part-No.</th>
<th>T5</th>
<th>6-kt</th>
<th>C5</th>
<th>I1</th>
<th>L1</th>
<th>X Ø</th>
<th>Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSTI-R1/8ED</td>
<td>G-1/8</td>
<td>mm 5</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>VSTI-R1/4ED</td>
<td>G-1/4</td>
<td>mm 6</td>
<td>12</td>
<td>17</td>
<td>19</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>VSTI-R3/8ED</td>
<td>G-3/8</td>
<td>mm 8</td>
<td>12</td>
<td>17</td>
<td>22</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

**Quick connect fittings**

Order-No.:  
RT-QDM-6554-A male  
RT-QDF-0202 (G1/4) Europa female

**Connecting hose for nitrogen-gas-bottle**

Order-No. NPLS01

**Adaptor**

Order-No. HDG14JIC12

**Quick connector**

Order-No. RT-QDF-0202

Changes of construction and errors of printing reserved. All pictures, sketches and details are not binding.
Hydraulic fittings

Flexible high pressure hoses and connectors
- Minimize the number of fittings in the hose system.
- Do not use a hose system that involves a fitting – to fitting – to fitting of connections.
- Hose each H2 unit to an H1 pump with its own hose. Do not hose in series. Provide simple access for hose routing.
- Provide additional hose length to ensure appropriate radius and safety routing. Avoid high spots in the oil hose route that will trap and create pockets.

Hose to connect H1 to H2

<table>
<thead>
<tr>
<th>Part-No.</th>
<th>Hose I.D.</th>
<th>Hose O.D.</th>
<th>Max. oper. pressure (bar)</th>
<th>Min. Burst pressure (bar)</th>
<th>Min. Bend radius</th>
<th>Thread size</th>
<th>A 6-kt H</th>
<th>6-kt W</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1H2-10</td>
<td>mm</td>
<td>10</td>
<td>21</td>
<td>445</td>
<td>1780</td>
<td>180</td>
<td>3/4-16</td>
<td>61</td>
<td>18</td>
</tr>
<tr>
<td>H1H2-12</td>
<td>mm</td>
<td>12</td>
<td>25</td>
<td>415</td>
<td>1660</td>
<td>230</td>
<td>3/4-16</td>
<td>66</td>
<td>21</td>
</tr>
</tbody>
</table>

In case of order the hose length is needed.

DANLY Hand pump of 1,8 litre capacity (250 bar maximum output)
Reduce HYDROCAM® Set-up time by using this hand pump. This oil hand pump can be used for three different purposes:

1. Directly connected to the H2 unit, it moves the piston to allow the toolmaker to align punch and die within the tool.
2. Filling the H1 pump when the system is in the tool.
3. Filling the oil/nitrogen-accumulator if using oil return option.

DANLY suggest to use filtered oil SHELL TELLUS 32.
Order-No. HYDPUMPAS
For fast quotes … copy this and fax DANLY the details.

Name: __________________________ Title: __________________________

Company: __________________________

Address: __________________________

City: __________________________ State: __________________________ Zip: __________________________

Telephone: __________________________ Fax: __________________________

Project, Part No.: __________________________

**Selection Criteria**

- **Part material:** __________________________
- **Part thickness:** __________________________
- **Tensile strength:** __________________________ N/mm²
- **Stripping force:** __________________________
- **RAM travel of press:** __________________________
- **RAM Strokes/minute:** __________________________
- **CAM Stroke length:** __________________________

**Proximity H1 pump to CAM unit**

- The **H1** pump will be connected by:
  - **Hose length** __________________________
  - **Special fittings needed:** __________________________

**Are you piercing holes?**

<table>
<thead>
<tr>
<th>Hole</th>
<th>Part A (mm)</th>
<th>Part B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Punch/matrix clearance per side:** __________________________ (% of part thickness)

**What type of stripper?**

- **Method used to strip:** __________________________
- **Is this used for all holes:** __________________________
- **Comments:** __________________________

**What CAM stroke length needed?**

- **H2 #1** __________ mm to be piercing hole #1
- **H2 #2** __________ mm to be piercing hole #2
- **H2 #3** __________ mm to be piercing hole #3
- **H2 #4** __________ mm to be piercing hole #4

**Do you want a standard front plate:** __________________________

or direct punch mount option: __________________________

**Proximity nitrogen return control panel to CAM unit**

The control panel will be connected by:

- **Hose length:** __________________________
- **Special fittings needed:** __________________________

Please note special concerns/timing:

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Sent your worksheet paper for inquiries and orders to:

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Our factories and offices:

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