Depth Pressure Compensators

Datem’s range of Single Diaphragm Depth Pressure Compensators provides pressure compensation for oil-filled sub-sea equipment. Using tried and tested techniques previously established by Impaq Limited, these Compensators are rugged and cost effective.

This range uses a fabric reinforced rolling rubber diaphragm principle with a spring-loaded hard wearing thermo-plastic piston arrangement.

**CONSTRUCTION:**
Manufactured from spun marine grade stainless steel and machined thermo-plastic, these Compensators are rugged, reliable, and highly corrosion resistant while minimising excess weight. All fastenings and any sensor fitted also use marine grade stainless steel enabling many years service in the extremes of the offshore environment.

**SAFETY:**
All Datem compensators are supplied with an appropriate stainless steel compression spring to generate approximately 6 - 10psi of positive pressure above ambient depending upon capacity. See note §. All are supplied as standard with a Nickel-Plated Brass Pressure Relief Valve rated at 20psi to protect the compensator casing. When used with a Datem Subsea Motor, the Pressure Relief Valve on the compensator also protects the motor casing. Options are available by special request including a lower rated Relief Valve in the range of 12 - 20psi, along with the option of marine grade stainless steel.

**MONITORING:**
All Datem compensators incorporate an indicator rod with annular markers at 25% intervals to provide visual confirmation of the current percentage stroke. Remote sensing is available using either Datem’s Low Oil Warning Switch Module or Analogue Position Sensor. Low Oil Switch Modules provide a switched output when the unit goes below approx. 25% capacity, while the Analogue Position Sensor can provide either a 4-20mA or 0.5-5V output. Standard configuration includes no remote sensing, but sensors can be factory fitted at time of ordering, or retro-fitted later if necessary.

§ Even a lightly compressed spring can be dangerous, always follow instructions in the manual when dismantling and re-assembling the compensator.
GENERAL DIMENSIONS:

![Diagram of a compensator with dimensions](image)

**Options:**

**Capacity:**
The compensators are manufactured in a range of standard capacities from 0.5L to 10L. The actual capacities are listed below in the Product Code section. Where higher capacities are required, bespoke solutions can be provided using multiples of standard sizes.

**Sensor:**
All Single Diaphragm Compensators are configured for installation of a Piston Stroke Sensor. This can be Datem's Low Oil Warning Switch or an Analogue Position Sensor. The Low Oil Warning Switch is closed circuit in normal operation and open circuit below approx. 25% stroke. The Analogue Position Sensor can be specified for either 4-20mA Current Loop or 0.5-5V Signal output. Standard configuration is to fit a blanking plug and no sensing. Sensor can be retro-fitted later if required.

B: Blanking Plug, no sensor (this is the standard arrangement)
LS: Low Oil Warning Switch, with MCBH2MSS connector
PSV: Analogue Position Sensor, Voltage O/P with MCBH3MSS connector
PSC: Analogue Position Sensor, Current O/P with MCBH4MSS connector

**Mounting:**
Standard configuration is to supply Single Diaphragm Compensators with 2 mounting brackets, but they can be requested with no brackets if preferred.

B2: 2 Mounting Brackets (this is the standard arrangement)
0: No Mounting Brackets

**Relief Valve:**
A ¼” NPT Nickel-Plated Brass Pressure Relief Valve set at 20psi is fitted as standard to all Datem Compensators. Other pressures from 12 to 20psi and/or 316 Stainless Steel can be specified as below.

0: No Relief Valve fitted
##: Nickel-Plated Brass but with non-standard pressure, where ## is a two digit integer number representing pressure in psi up to 20. Pressure above 20psi can not be specified.
20: Std. 20psi in Nickel-Plated Brass
20SS: Std. 20psi Relief Valve but supplied in 316 st/st
#SS: Both Non-std. pressure as above and supplied in 316 st/st

**Product Code:**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>ØA</th>
<th>ØB</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>Weight *</th>
<th>Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5L</td>
<td>206</td>
<td>153</td>
<td>213</td>
<td>180</td>
<td>118</td>
<td>42</td>
<td>7</td>
<td>104</td>
<td>89</td>
<td>3.85 (4.25) kg</td>
<td>3 x 1/4&quot; BSPP'</td>
</tr>
<tr>
<td>1.2L</td>
<td>209</td>
<td>162</td>
<td>219</td>
<td>209</td>
<td>185</td>
<td>30</td>
<td>15</td>
<td>155</td>
<td>84</td>
<td>6.0 (6.8) kg</td>
<td>1 x 1/4&quot; BSPP', 2 x 3/8&quot; BSPP'</td>
</tr>
<tr>
<td>2.4L</td>
<td>257</td>
<td>203</td>
<td>269</td>
<td>257</td>
<td>233</td>
<td>49</td>
<td>30</td>
<td>173</td>
<td>106</td>
<td>10.0 (12.3) kg</td>
<td>3 x 1/4&quot; BSPP'</td>
</tr>
<tr>
<td>3.0L</td>
<td>257</td>
<td>203</td>
<td>269</td>
<td>257</td>
<td>233</td>
<td>49</td>
<td>30</td>
<td>173</td>
<td>106</td>
<td>10.0 (12.3) kg</td>
<td>3 x 1/4&quot; BSPP'</td>
</tr>
<tr>
<td>5.0L</td>
<td>303</td>
<td>245</td>
<td>312</td>
<td>300</td>
<td>355</td>
<td>40</td>
<td>96</td>
<td>162</td>
<td>176</td>
<td>18.0 (22.7) kg</td>
<td>2 x 1/4&quot; BSPP', 1 x 3/4&quot; BSPP'</td>
</tr>
</tbody>
</table>

* All weights listed represent approximate weight in air, indicating two weights: empty (75% filled with oil).

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NOTE: Where a compensator is specified without Relief Valve, it is the client’s responsibility to ensure a correct Relief Valve is fitted by a competent technician, to a maximum of 20psi.