DBEP Load Measuring Pin / Shear Pin Load Cell

Key Features:
• Standard Capacities 0-2.5t to 0-50t
• Special Capacities 0-200kg up to 0-1500t Available
• Sealed to IP67 (IP68 available)
• Robust Construction
• Output 1.5mV/V nominal
• Custom Design Versions Available
• Anti-Rotation Plates Available
• 3 Year Warranty

For Measuring Bi-Directional Forces in General Applications

The DBEP shear pin load cells are designed for the measurement of both tension and compression forces in general applications such as process monitoring, offshore, civil engineering, industrial and marine to name a few. They are environmentally sealed to IP67 as standard which can be enhanced to IP68 for fully submersible applications in sea water of 6500 metres or more.

We can integrate either analogue or digital signal conditioning to provide an output compatible with any existing monitoring or control system.

We can offer standard versions or fully customised versions for a direct replacement of the existing load pin. The DBEP can be supplied as ‘pin only’ or with our extensive range of instrumentation for a complete system setup, please contact our technical sales team.

Options:
• IP68 Submersible Versions
• Special Sizes and Ranges Available
• Anti-Rotation Plate Available
• Hose Protected Cable
• Dual Strain Gauge Bridge for Redundancy
• Integrated Analogue or Digital Signal Conditioning
• Dual Axis Version for Fx/Fy Measurements
• High Temperature Versions
• Single or Multi-Channel PC-Based Monitoring & Data Logging System
• TEDS (Transducer Electronic Data Sheet)
• TEDS Allows Plug & Play with TEDS Enabled Instrumentation.
• USB Version (via DSC-USB)
• Wireless Version (via T24 instrumentation)

Applications:
• Process Monitoring
• Offshore Applications
• Civil Engineering
• Industrial
• Marine
• Crane/Lifting Applications
• General Bi Directional Force Applications
• Subsea Load Monitoring
• ROV Applications

3 Mercury House Calleva Park Aldermaston Berkshire RG7 8PN
DBEP Issue: 19 July 2018
**Specification:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Capacity (RC)</td>
<td>tonnes 0-0.5, 0-1, 0-2.5, 0-3.5, 0-6.5, 0-15, 0-25, 0-50, 0-250, 0-500, 0-750, 0-1000, 0-1500</td>
</tr>
<tr>
<td>Operating Modes</td>
<td>Tension/Compression / Tension &amp; Compression</td>
</tr>
<tr>
<td>Sensitivity (RO)</td>
<td>mV/V 1 – 1.5 nominal (dependent on range)</td>
</tr>
<tr>
<td>Zero Balance/Offset</td>
<td>±%/Rated Output &lt;1.0</td>
</tr>
<tr>
<td>Symmetry (tension vs. compression)</td>
<td>±%/Rated Output &lt;1 typical</td>
</tr>
<tr>
<td>Non-Linearity</td>
<td>±%/Rated Capacity &lt;0.5 to 2</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>±%/Rated Output &lt;0.5 to 2 typical</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±%/Rated Capacity 1 typical *</td>
</tr>
<tr>
<td>Temperature Effect on Zero</td>
<td>±%/Rated Output/ °C &lt;0.010</td>
</tr>
<tr>
<td>Temperature Effect on Sensitivity</td>
<td>±%/Applied Load/ °C &lt;0.010</td>
</tr>
<tr>
<td>Input Resistance</td>
<td>Ohms 375 nominal</td>
</tr>
<tr>
<td>Output Resistance</td>
<td>Ohms 350 nominal</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Megohms &gt;5000 @ 50Vdc</td>
</tr>
<tr>
<td>Excitation Voltage</td>
<td>Volts AC or DC 10 recommended (2-15 acceptable)</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>°C -20 to +70</td>
</tr>
<tr>
<td>Compensated Temperature Range</td>
<td>°C -10 to +50</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>°C -20 to +70</td>
</tr>
<tr>
<td>Safe Overload</td>
<td>% of Rated Capacity 150</td>
</tr>
<tr>
<td>Ultimate Overload</td>
<td>% of Rated Capacity 300</td>
</tr>
<tr>
<td>IP Rating (Environmental Protection)</td>
<td>IP67 (IP68 submersible options)</td>
</tr>
<tr>
<td>Weight (excluding cable)</td>
<td>See dimension table</td>
</tr>
<tr>
<td>Fatigue Life</td>
<td>10^9 cycles typical (10^8 cycles on fatigue-rated version)</td>
</tr>
<tr>
<td>Cable Length (as standard)</td>
<td>metres 3</td>
</tr>
<tr>
<td>Cable Type</td>
<td>4-core screened, PUR sheath, Ø5</td>
</tr>
<tr>
<td>Construction Material</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 part in 250,000 (with appropriate instrumentation)</td>
</tr>
</tbody>
</table>

*Note: Due to varying load pin geometry, which is governed by the location and application, non-linearity and non-repeatability performance may vary.*

**Wiring Diagram:**

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>+ve excitation</td>
</tr>
<tr>
<td>Blue</td>
<td>-ve excitation</td>
</tr>
<tr>
<td>Green</td>
<td>+ve signal</td>
</tr>
<tr>
<td>Yellow</td>
<td>-ve signal</td>
</tr>
<tr>
<td>Screen</td>
<td>To ground - not connected to load cell body</td>
</tr>
</tbody>
</table>
Dimensions (mm):

<table>
<thead>
<tr>
<th>CAPACITY (tonnes)</th>
<th>D</th>
<th>L¹</th>
<th>L²</th>
<th>L³</th>
<th>WEIGHT (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2.5</td>
<td>25</td>
<td>100</td>
<td>70</td>
<td>45</td>
<td>0.4</td>
</tr>
<tr>
<td>0-3.5</td>
<td>30</td>
<td>105</td>
<td>75</td>
<td>50</td>
<td>0.6</td>
</tr>
<tr>
<td>0-6.5</td>
<td>40</td>
<td>125</td>
<td>95</td>
<td>63</td>
<td>1.3</td>
</tr>
<tr>
<td>0-15</td>
<td>50</td>
<td>150</td>
<td>114</td>
<td>75</td>
<td>2.5</td>
</tr>
<tr>
<td>0-25</td>
<td>63</td>
<td>195</td>
<td>152</td>
<td>89</td>
<td>4.9</td>
</tr>
<tr>
<td>0-50</td>
<td>75</td>
<td>225</td>
<td>178</td>
<td>102</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Ordering Codes:

<table>
<thead>
<tr>
<th>Core Product</th>
<th>Capacity (inc Engineering Units)</th>
<th>Cable Length (m)</th>
<th>Specials Code</th>
<th>Example Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBEP</td>
<td>1t</td>
<td>003</td>
<td>000</td>
<td>DBEP-1t-003-000</td>
</tr>
<tr>
<td>DBEP</td>
<td>2.5t</td>
<td>003</td>
<td>000</td>
<td>DBEP-2.5t-003-000</td>
</tr>
<tr>
<td>DBEP</td>
<td>3.5t</td>
<td>003</td>
<td>000</td>
<td>DBEP-3.5t-003-000</td>
</tr>
<tr>
<td>DBEP</td>
<td>6.5t</td>
<td>003</td>
<td>000</td>
<td>DBEP-6.5t-003-000</td>
</tr>
<tr>
<td>DBEP</td>
<td>15t</td>
<td>003</td>
<td>000</td>
<td>DBEP-15t-003-000</td>
</tr>
<tr>
<td>DBEP</td>
<td>25t</td>
<td>003</td>
<td>000</td>
<td>DBEP-25t-003-000</td>
</tr>
<tr>
<td>DBEP</td>
<td>50t</td>
<td>003</td>
<td>000</td>
<td>DBEP-50t-003-000</td>
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</tbody>
</table>

Associated Products:

- TR150 Handheld Indicator
- T24 Wireless Telemetry Range
- Intuitive4-L Panel-Mount Indicator
- DSC-USB USB Signal Digitiser
- ICA Miniature Strain Gauge Amplifier
- SGA Signal Conditioner/Amplifier
Associated Case Studies:

Creating 1000 Times More Power with Submersible Load Measuring Pins

Measuring the strut force in Deep Green’s underwater tidal energy kite assembly. The measuring device needed to withstand permanent underwater submersion. [Read more...]

Shear Pin Load Cells and Draw Wire Sensors Deliver Flawless Results in Sub-Zero Temperatures

Using customised DBEP shear pin load cells, the RICE team were able to successfully extract a 763m deep ice core from an ice cap on Roosevelt Island. [Read more...]