‘B’ Class Expanded Beam Connector System
Subsea / Underwater / Marine

Introduction:
CRE’s range of metal shell Fibre Optic Fully Sealed Hermaphroditic Connectors focus on delivering high reliability in tough environments. The design offers a high integrity sealing arrangement, metal keyways, multiple options on size, along with our ability to design specific solutions for your application. They are designed for heavy duty use in the most rigorous underwater applications on the planet. Made of 316 stainless steel or custom built with any material specified, they come as standard with high open face pressure resistance. These robust and versatile connectors are rated to 4,000m and are designed for use with moulded or oil filled assemblies and tailored for the heaviest power, signal and electro-mechanical applications.

The most common applications:

- ROV
- Dive Bell Connectors
- Underwater Thruster

- Key Features:
  - Multi size shell body
  - 4 to 8 Channel Configurations
  - Multimode 50/125 and 62.5/125 versions
  - Singlemode 9/125 Fibre
  - Available as Patchcords and Pigtailed Bulkheads
  - Right angled Plug End also available
  - Pressure up to 9,300 Psi (Mated)
  - Open face pressure up to 6000 Psi
  - Oil filled available as standard (OF)
Options:

- Field Installable
- Bespoke design/configuration to suit customer requirements at no extra cost
- Available in alternative materials: Aluminium, Titanium etc.

Testing:

- Pressure testing up to 9,300 Psi
- Durability testing with 100 mate and re-mate cycles
- Open face pressure testing up to 6000 Psi

Part Numbering System - Bulkhead Example

BR B 04 SM 1000 ST 01

- INTERFACE TYPE
- FIBRE CONNECTION TYPE
- FIBRE LENGTH IN MM
- SM-SINGLEMODE
- NUMBER OF CHANNELS
- CONNECTOR SIZE
- BR - BULKHEAD CONNECTOR RECEPTACLE

Part Numbering System - Connector Example

PL B 04 SM 1000 ST OF 01

- INTERFACE TYPE
- OF-OIL FILLED
- FIBRE CONNECTION TYPE
- FIBRE LENGTH IN MM
- SM-SINGLEMODE
- NUMBER OF CHANNELS
- CONNECTOR SIZE
- PL - PLUG IN LINE
Standard Mechanical Specification:

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell Body</td>
<td>Stainless Steel 316L</td>
</tr>
<tr>
<td>Retaining Nut</td>
<td>Stainless Steel/Aluminium Bronze</td>
</tr>
<tr>
<td>'O' Rings</td>
<td>Nitrile NI70</td>
</tr>
</tbody>
</table>

Contact CRE for special order materials.

Electrical and Environmental:

- Singlemode Insertion Loss: 9/125 Fibre @ 1,310nm/1,1550nm : Up To 2.0dB
- Multimode Insertion Loss: 50/125 & 62.5/125 @850nm/1300nm : Up To 1.0dB
- Operating Temperature: -40C to + 85C
- Storage Temperature: -55C to + 85C
- Durability: 2000 Matings minimum
- Depth Rating: 4000 Meters

Fibre Characteristics:

Singlemode - 9/125 (SM)
- Attenuation: 0.38dB/km @ 1,310nm
- Attenuation: 0.25dB/km @ 1,550nm
- Dispersion: 3.5ps/nm.km @ 1310nm
- Dispersion: 18.0ps/nm.km @ 1,550nm
- NA: 1.470

Multimode - 50/125 (MM)
- Attenuation: 2.8dB/km @ 850nm
- Attenuation: 0.8dB/km @ 1,300nm
- Bandwidth: 500MHz/km @ 850nm
- Bandwidth: 500MHz/km @1,300nm
- NA: 0.20

Multimode - 62.5/125 (MM)
- Attenuation: 3.0dB/km @ 850nm
- Attenuation: 1.0dB/km @ 1,300nm
- Bandwidth: 200MHz/km @ 850nm
- Bandwidth: 500MHz/km @1,300nm
- NA: 0.27
Reference Dimensions 'B' Fibre Connector

Flanged Bulkhead Connector Receptacle-Composite (FR)

A | B | C | D | E | F | G-'O'Ring | H-'O'Ring | TYPE
---|---|---|---|---|---|-----------|-----------|-----
45 | 70 | 12.5 | 31.8 | 27 | 18 | BS118 | BS016 | 01

Flanged Bulkhead Connector Receptacle-Composite (FR)

A | B | C | D | E | F | G-'O'Ring | TYPE
---|---|---|---|---|---|-----------|-----
38 | 70 | 14 | 25.4 | 27 | 15.8 | BS116 | 02

All dimensions in mm

Revision 2018-01
Reference Dimensions 'B' Fibre Connector

Bulkhead Connector Receptacle-Composite (BR)

All dimension in mm

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G-'O'Ring</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>70</td>
<td>14</td>
<td>27</td>
<td>28</td>
<td>5/8”-18 UNF-2A</td>
<td>BS017</td>
<td>01</td>
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<td>30</td>
<td>70</td>
<td>14</td>
<td>27</td>
<td>28</td>
<td>3/4”-16 UNF-2A</td>
<td>BS019</td>
<td>02</td>
</tr>
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</table>

Thread to suit Bulkhead

Min. Spotface

0.8
Reference Dimensions 'B' Fibre Connector

Backshell Connector Receptacle (PL)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E-'O'Ring</th>
<th>F-'O'Ring</th>
<th>G-'O'Ring</th>
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<tbody>
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<td>12.5</td>
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<td>6 x 1.5</td>
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<td>31.7</td>
<td>19.5</td>
<td>21 x 1.65</td>
<td>6 x 1.5</td>
<td>22 x 2</td>
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Backshell Connector Receptacle (PR)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F-'O'Ring</th>
<th>G-'O'Ring</th>
<th>H-'O'Ring</th>
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<td>93.25</td>
<td>35.25</td>
<td>31.7</td>
<td>19.5</td>
<td>36</td>
<td>21 x 1.65</td>
<td>6 x 1.5</td>
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All dimension in mm

Revision 2018-01
Reference Dimensions 'B' Fibre Connector

Backshell Connector Receptacle-Straight/90° Moulded

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H-'O'Ring</th>
<th>J-'O'Ring</th>
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<td>22 x 2</td>
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</table>

All dimension in mm
Reference Dimensions 'B' Fibre Connector

Bulkhead Blanking Plug - PLBBC

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<th>C-‘O’Ring</th>
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<td>21.8</td>
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</table>

Cable Connector Blanking Plug - BRBBC

<table>
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<tr>
<th></th>
<th>A</th>
<th>B</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>29</td>
<td>36</td>
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Assembled Dimensions 'B' Fibre Connector

<table>
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<tr>
<th></th>
<th>PLBBC</th>
<th>PLBOF01</th>
<th>PLBOF02</th>
<th>PRBOF01</th>
<th>PRBOF02</th>
<th>PLB</th>
<th>PRB</th>
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<tbody>
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<td>137</td>
<td>142</td>
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<td>143.5</td>
<td>153</td>
<td>148.5</td>
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<tr>
<td>FRB01</td>
<td>79</td>
<td>137</td>
<td>142</td>
<td>143.5</td>
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<td>143.5</td>
<td>143.5</td>
<td>153</td>
<td>148.5</td>
</tr>
</tbody>
</table>

Note: Step files for design purposes available from engineering @CRE-marine.com

All dimension in mm

Revision 2018-01
FACE VIEW

4 CHANNEL

6 CHANNEL

8 CHANNEL

FIBRE TYPE-----SM / MM
TAILS WITH CONNECTION TO SUIT-ST/SC ETC.

All dimension in mm

Revision 2018-01