Low Cost & High Performance Casing Connection

GEOCONN 4-1/2" ~20"

GEOCONN

Examples of Application

- Geothermal wells
- API BTC GEOCONN
- Special RS rings enhance leak resistance against gas 100% API Burst pressure
- Feature of special resilient seal rings of GEOCONN-RS
- Dimensions of groove and ring are specified tighter than API modified coupling to control within tight range of fill ratio of ring

Influence of fill ratio are:
- Max. Groove volume vs. Min. ring volume
- Min. Groove volume vs. Max. ring volume

1. Increase chance of Leak
2. High hoop stress may induce SSC in sour environment or Jump-out of connection

1. Prevention of turbulence flow
2. Abutment works as metal seal during production at high temperature

PROBLEM SOLUTION

For high torque resistance

Drilling with Casing

Full string for Shale or tight plays

Shale Plays

Liner for SAGD wells

SAGD
**GEOCONN Feature of Design**

**Completely interchangeable with API BTC**
As GEOCONN is perfectly interchangeable with API Buttress, Casing accessories with Buttress thread may be used.

**Internally flush with pin abutment**
- Prevention of turbulence flow
- High over torque resistance
- Abutment works as metal seal under medium tension loads
- High fatigue resistance

These feature are added on API Buttress thread.

**API Buttress VS GEOCONN**

![API Buttress](image1)

![GEOCONN](image2)

**Manufacturing of GEOCONN**

Manufacturing of GEOCONN is almost same as Buttress, except shorter coupling length and mill end make up.

**GEOCONN Mill Make-up Position**
Mill tight end is made up deeper than field tight end to prevent mill end rotation during field end make-up.
Make up distance on both ends were chosen to provide good leak resistance and prevent from too high hoop stress on the coupling.
GEOCONN Technical Data

**Test results of over-torque to yielding**

<table>
<thead>
<tr>
<th>Size</th>
<th>Grade</th>
<th>GEOCONN Yield Torq.</th>
<th>API BTC Max. Torq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1/2&quot; x 20#</td>
<td>L80</td>
<td>15,600</td>
<td>3,400</td>
</tr>
<tr>
<td></td>
<td>P110</td>
<td>23,000</td>
<td>4,700</td>
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<tr>
<td>7&quot; x 26 #</td>
<td>L80</td>
<td>25,000</td>
<td>6,300</td>
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<td></td>
<td>P110</td>
<td>36,800</td>
<td>8,500</td>
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<td>9-5/8&quot; x 47#</td>
<td>L80</td>
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<td></td>
<td>P110</td>
<td>89,000</td>
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<td>13-3/8&quot; x 72#</td>
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<td>128,800</td>
<td>18,900</td>
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<tr>
<td></td>
<td>P110</td>
<td>183,600</td>
<td>26,000</td>
</tr>
</tbody>
</table>

**Tension to failure test after 100% Compression**

9-5/8" x 40# L80 GEOCONN

**Test Result**

- Actual failure load: 1,451 kips
- Pipe body yield load: 1,086 kips
- Joint Strength: 1,122 kips

**Finite Element Analysis Data**

Shoulder type seal works as good metal to metal seal as long as shoulder is closed. But high tension may open the gap on the shoulder. Figure shows how tension affects on the contact pressure (sealability) on the shoulder on 4-1/2" x 13.5# L80 GEOCONN.

This figure implies that even T80 (80% pipe body yield tension) does not open the shoulder.
**GEOCONN Examples of Application**

### Geothermal Wells
- Prevention of turbulence flow

### SAGD
- Liner for SAGD wells

### Drilling with Casing
- For high torque resistance

### Shale Plays
- Full string for Shale or tight plays

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**PROBLEM**

1. Gap at the center of coupling causes turbulence flow
2. Scale build up at gap
3. Buttress threads have poor leak resistance against gas = steam

**SOLUTION**

1. Prevention of turbulence flow
2. Abutment works as metal seal during production at high temperature

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**GEOCONN-RS**

1. Special RS rings enhance leak resistance against gas = 100% API Burst pressure
2. Feature of special resilient seal rings of GEOCONN-RS;
   - Dimensions of groove and ring are specified tighter than API modified coupling to control within tight range of fill ratio of ring. Influence of fill ratio are:
     - **Max.** Groove volume vs. Min. ring volume → Increase chance of Leak
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Special Resilient Seal Ring