**Style 1102 Rubber Expansion Joint**

78” ID x 16” F/F (DN1950mm x 406.4mm) - 150-lb Drilling | 1102-0078-3.16

### Bill of Materials

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MATERIAL</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining Ring</td>
<td>Carbon Steel</td>
<td>Hot Dipped Galvanized</td>
</tr>
<tr>
<td></td>
<td>Stainless Steel</td>
<td>Plain</td>
</tr>
<tr>
<td>Gusset</td>
<td>Carbon Steel</td>
<td>Hot Dipped Galvanized</td>
</tr>
<tr>
<td></td>
<td>Stainless Steel</td>
<td>Plain</td>
</tr>
<tr>
<td>Rods</td>
<td>ASTM A193 B7 Alloy Steel</td>
<td>Hot Dipped Galvanized</td>
</tr>
<tr>
<td></td>
<td>ASTM A193 B8M 316 SS</td>
<td>Plain</td>
</tr>
<tr>
<td>Nuts</td>
<td>ASTM A194 2H Steel</td>
<td>Hot Dipped Galvanized</td>
</tr>
<tr>
<td></td>
<td>ASTM A194 8M 316 SS</td>
<td>Plain</td>
</tr>
<tr>
<td>Spherical Washers</td>
<td>Stainless Steel</td>
<td>Plain</td>
</tr>
<tr>
<td>Textile Reinforcement</td>
<td>High Tensile Steel</td>
<td>Rubber Embedded</td>
</tr>
<tr>
<td>Cover</td>
<td>Steel</td>
<td></td>
</tr>
<tr>
<td>Reinforcement Tube</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tire Cord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Optional Control Units

- No Control Units
- Outer Washer, Inner Bare (W/B) (shown above)
- Inner Nuts (W/W)
- Spherical Washer (SW/B)
- Spherical Washer (SW/SW)

### Section Detail

- Unfilled Arch
- Filled Arch (reduce movements by 50%, increase spring rates by 400%)

### Movement

- Non-Concurrent
- Comp. in [mm]: 5 [127]
- Ext. in [mm]: 2 1/2 [64]
- Lateral in [mm]: 3 [76]
- Angular deg.: 5.2
- Torsional deg.: 3

### Spring Rate

- Comp. lb/in [N/mm]: 3,210 [562]
- Ext. lb/in [N/mm]: 3,925 [687]
- Lateral lb/in [N/mm]: 3,285 [575]
- Angular ft-lb/deg [N-m/deg]: 3,948 [5,353]
- Torsional ft-lb/deg [N-m/deg]: 6,912 [9,371]

### Pressure

- Pressure psig [barg]: 80 [5.5]
- Vacuum in-Hg [barg]: 10 [-0.3]
- RBW with Rings lbs [kg]: 1,088 [495]
- Control Unit lbs [kg]: 367 [167]

### Maximum Temperature Rating

- Pure Gum: 180 [82]º F / 180 [82]º C
- Neoprene: 225 [107]º F / 225 [107]º C
- Butyl: 250 [121]º F / 250 [121]º C
- Nitrile (Buna-N): 210 [99]º F / 210 [99]º C
- EPDM: 250 [121]º F / 250 [121]º C
- Viton® (FKM): 250 [121]º F / 250 [121]º C

*Maximum Temperature rating based on lowest temperature material selected. EPDM or Butyl w/Polyester Tire Cord rated 300ºF (149ºC) for Air Service up to 25 psig (1.7 barg)*

*Gusset thickness and pressures listed above are for carbon steel gussets and ASTM A193 B7 rods. Contact General Rubber for stainless steel pressures and thicknesses.