
2. Service conditions:
   - DOT rated service pressure: 156 bar (2265 psi)
   - Hydraulic test pressure: 260 bar (3775 psi)

3. Material:
   - Cr-Wo-Steel, Fully killed and made to fine grain practice by basic oxygen or electric furnace process

4. Manufacture:
   - Spun-tube cylinder

5. Cylinder leaking test:
   - The cylinder needs to be done air-tightness test. Test pressure is 156 bar, holding 60s, not leak is qualified.

6. Heat Treatment: Quenching and Tempering

<table>
<thead>
<tr>
<th>Quench</th>
<th>Quench context</th>
<th>Temper</th>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Additive</td>
<td>680±10°C</td>
<td>30 min</td>
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</tr>
</tbody>
</table>

7. Mechanical Properties: (at room temperature)
   - Tensile (Rm): ≥7200MPa (1044000 psi)
   - Yield (Re): ≥5400MPa (783000 psi)
   - Elongation (A): ≥20% on 2" G.L. for DOT
   - Flattening test: Flatten to 6Xt without cracks

8. MT flaw detection: Each cyl, per DOT-3AA

9. Cylinder hydraulic test:
   - Carry out hydraulic test with test pressure of 260 bar and cylinder should be found no distortion or leakage, the ratio of permanent volumetric expansion ≤10%

8. D.O.T. Wall Stress Calculations:

   \[ S = \frac{P(1.307 + 0.125)}{(D-d)^2} \]

   \[ P = \text{Test pressure}, \text{psi} \]

   \[ D = \text{Outside diameter}, \text{inch} \]

   \[ d = \text{Inside diameter}, \text{inch} \]

   \[ Rm = \text{The minimum tensile strength}, \text{psi} \]

   \[ s = \frac{3775[(1.307(7.008)^2 + 0.34(6.677)^2)]}{(7.008 + 6.677)^2} \]

   \[ s = 67864 \text{ psi} < 70000 \text{ psi} \]

   Then the minimum wall thickness will be:

   \[ t = \frac{1}{2} (D - d) = \frac{1}{2} (7.008 - 6.677) = 0.166 \text{ inch} \]

   \[ 0.67Rm = 1044000 \text{ psi} < 70.67 \text{ psi} \]

   \[ S = 67864 \text{ psi} \times 0.67 = 99948 \text{ psi} \]

   \[ S = 67864 \text{ psi} < 70000 \text{ psi} \]

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Min WATER</th>
<th>LENGTH &quot;L&quot;</th>
<th>APPROX WEIGHT ±5%</th>
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<tr>
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<td>CAPACITY</td>
<td>LITERS</td>
<td>MM</td>
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<td>15.7L</td>
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<td>15.7</td>
<td>957</td>
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<tr>
<td>Vain</td>
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<td>476</td>
<td>488</td>
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<tr>
<td>Vmax</td>
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<td>1115</td>
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<table>
<thead>
<tr>
<th>DRAWN</th>
<th>DESCRIPTION</th>
<th>DOT 3AA 2265</th>
<th>SCALE</th>
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<tbody>
<tr>
<td>CHECKED</td>
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<td>DATE</td>
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<tr>
<td>APPROVED</td>
<td>DWG NO.</td>
<td>ISSUE</td>
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