PT Wedge Manufacturing Process, Quality Control and Tolerances

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Wedge Seating and Stress Distribution

• VIDEO #1
2010 - 2013
Hayes Research at ND

Wedge taper angle differential

Wedge crown thickness
Wedge Taper Angle Differential

• VIDEO #2
Wedge Crown Thickness

• VIDEO #3
Failure Mode versus Performance

- **0.5-in strand**

- **0.6-in strand**

- **Ultimate strand strain (in./in.)**

- **Number of exterior wire slips**

- **Number of wire fractures**
Dimensional Parameters versus Failure Mode

- **Wedge taper angle, WA (degrees)**
  - Number of wire fractures
  - 0.5-in strand

- **Wedge thickness, WT (in.)**
  - Number of wire fractures
  - 0.5-in strand
## PT Wedge Manufacturing Tolerances

<table>
<thead>
<tr>
<th>Component</th>
<th>Current industry mean</th>
<th>Current industry tolerance</th>
<th>Proposed mean</th>
<th>Proposed tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wedge taper angle 0.5”</td>
<td>7.0 deg (no differential)</td>
<td>+/- 0.1 deg</td>
<td>8.0 deg (+1.0 deg differential)</td>
<td>+/- 0.25 deg</td>
</tr>
<tr>
<td>Wedge taper angle 0.6”</td>
<td>7.0 deg (no differential)</td>
<td>+/- 0.1 deg</td>
<td>8.1 deg (+1.1 deg differential)</td>
<td>+/- 0.40 deg</td>
</tr>
<tr>
<td>Wedge crown thickness 0.5”</td>
<td>0.468”</td>
<td>+/- 0.015”</td>
<td>0.488”</td>
<td>+/- 0.01”</td>
</tr>
<tr>
<td>Wedge crown thickness 0.6”</td>
<td>0.530”</td>
<td>+/- 0.015”</td>
<td>0.549”</td>
<td>+/- 0.01”</td>
</tr>
</tbody>
</table>