TENTEC AERO WT BOLT TENSIONERS FOR WIND TURBINES

The worldwide standard for wind turbine bolt tensioning tools.
We offer a range of Tentec bolt tensioning equipment specially designed for use on Wind Turbines. The Aero WT range comprises of bolt tensioning tools suitable for a complete wind turbine bolting installation or maintenance programme on many different types and models of wind turbines. By listening to customer requirements these feature rich, powerful bolt tensioning tools are packed full of operator requested features including quick release swivel fittings, automatic piston return and intuitive operation. The products are manufactured from aircraft quality high strength tensile steel and are compact and lightweight for ease of handling.

Support

Tentec bolt tensioning tools have been supplied to the wind industry for over 15 years. We have developed a class leading support and advise system

- Quick Delivery, Local Stock
- On-Site Support, Telephone Support
- On-Site Training, Technical Advise
- Easy On-Site Tool Maintenance

Safety & Reliability

Integrated into the design of Aero WT tensioners are multiple enhanced safety features including mechanisms to remove the hazard of premature puller failure. In addition we have developed a class leading high pressure seal technology. This mature seal technology is industry proven and offers many 1000’s of reliable and safe pressure cycles.

BOLT TIGHTENING SOLUTIONS

Why Use AERO WT - Wind Turbine Tensioners?

Real World Experience
Tentec Aero WT tensioners have been continually developed over a 15 year period. We know all the difficulties associated with wind turbine bolt tensioning. Every design feature of these tools is there for a good reason.

Versatile
The Aero WT Series consists of a purpose designed tools for every bolted joint on a Wind Turbine.

Adaptable
Aero WTB Tensioners are profile cut at the base to ensure they fit onto as many applications as possible. This interchangeable profile cut spacer gives the tensioner the flexibility to be used on many different applications.
**TENTEC AERO WTB TENSIONERS**

Fully aware of the difficulties associated with wind turbine blade tensioning, the new Tentec Aero WTB is a purpose designed range of hydraulic bolt tensioning tools to suit most wind turbine bolting applications. All WTB Tensioning tools have the capacity to achieve the specified proof load requirements as detailed in EN ISO 898-1:1999 and ASTM A490M for grade 10.9 Bolts. These feature packed tensioners have been designed with rapid tensioning in mind and offer a safe, reliable and consistent method to simultaneously tension many bolts.

---

**BOLT TIGHTENING SOLUTIONS**

**Aero WTB Applications**

- Rear Main Bearing
- Nacelle Frame
- Nacelle/Yaw Bearing
- Blade to Bearing
- Front Main Bearing
- Intermediate Tower Bolting

---

**Features & Benefits**

**Automatic Reset**
Internal heavy duty springs automatically resets the tensioner once the pressure has been released.

**High Life Puller**
All Aero WTB tensioners have a device that ensures the tool fails safely in the unlikely event of a puller failure.

**“Snap Down” Nut Drive**
To increase speed all Aero WTB tensioners are fitted with a spring loaded device that automatically engages the tensioner drive socket with the hexagon nut.

**Grip Surface**
For easy user handling

**Optional Cycle Counter**
For maintenance scheduling purposes all Aero WTB Tools offer an optional mechanical pressure cycle counter.

**Swivel Connection**
360º swivel operation allows the hydraulic hoses to be positioned in the best possible position to allow open access to the tensioning tools.

**Geared Nut Run Down**
The inclusion of a gear nut rundown mechanism offers a very rapid and consistent way of seating the hexagon nuts during the tensioning procedure.

**Best Fit**
The interchangeable profile cut spacer at the base of the tool gives the tensioner the flexibility to be used on many different applications.
TENTEC AERO WTB TENSIONERS

Maximum Working Pressure = 1350 bar

<table>
<thead>
<tr>
<th>Ident</th>
<th>Bolt Diameter</th>
<th>Stud Protrusion (mm)</th>
<th>Max Stroke</th>
<th>Maximum Load</th>
<th>Hydraulic Pressure Area</th>
<th>Dia A</th>
<th>Height B</th>
<th>D</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metric</td>
<td>Min</td>
<td>Max</td>
<td>mm</td>
<td>kN</td>
<td>lbs</td>
<td>mm²</td>
<td>in²</td>
<td>mm</td>
</tr>
<tr>
<td>WTB30</td>
<td>M30</td>
<td>59</td>
<td>69</td>
<td>8</td>
<td>465.38</td>
<td>104622</td>
<td>5.343</td>
<td>72</td>
<td>205</td>
</tr>
<tr>
<td>WTB33</td>
<td>M33</td>
<td>64</td>
<td>73</td>
<td>10</td>
<td>575.80</td>
<td>129444</td>
<td>6.611</td>
<td>79</td>
<td>217.5</td>
</tr>
<tr>
<td>WTB36</td>
<td>M36</td>
<td>71</td>
<td>81</td>
<td>10</td>
<td>678.26</td>
<td>152478</td>
<td>7.767</td>
<td>84.5</td>
<td>229.5</td>
</tr>
<tr>
<td>WTB42</td>
<td>M42</td>
<td>83</td>
<td>93</td>
<td>10</td>
<td>929.67</td>
<td>208999</td>
<td>10.674</td>
<td>97</td>
<td>262</td>
</tr>
<tr>
<td>WTB45</td>
<td>M45</td>
<td>88</td>
<td>98</td>
<td>10</td>
<td>1079.48</td>
<td>242682</td>
<td>12.394</td>
<td>105</td>
<td>275.5</td>
</tr>
<tr>
<td>WTB48</td>
<td>M48</td>
<td>94</td>
<td>104</td>
<td>10</td>
<td>1221.57</td>
<td>274620</td>
<td>14.025</td>
<td>111</td>
<td>286.5</td>
</tr>
<tr>
<td>WTB56</td>
<td>M56</td>
<td>110</td>
<td>120</td>
<td>10</td>
<td>1686.19</td>
<td>379070</td>
<td>19.359</td>
<td>132</td>
<td>314</td>
</tr>
<tr>
<td>WTB64</td>
<td>M64</td>
<td>124</td>
<td>134</td>
<td>10</td>
<td>2221.00</td>
<td>499300</td>
<td>25.515</td>
<td>150</td>
<td>352</td>
</tr>
</tbody>
</table>

TENTEC AERO WTB - LOW HEIGHT

Maximum Working Pressure = 1350 bar

<table>
<thead>
<tr>
<th>Ident</th>
<th>Bolt Diameter</th>
<th>Stud Protrusion (mm)</th>
<th>Max Stroke</th>
<th>Maximum Load</th>
<th>Hydraulic Pressure Area</th>
<th>Dia A</th>
<th>Height B</th>
<th>D</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metric</td>
<td>Min</td>
<td>Max</td>
<td>mm</td>
<td>kN</td>
<td>lbs</td>
<td>mm²</td>
<td>in²</td>
<td>mm</td>
</tr>
<tr>
<td>WTB30</td>
<td>M30</td>
<td>71</td>
<td>91</td>
<td>10</td>
<td>678.14</td>
<td>152452</td>
<td>7.79</td>
<td>123</td>
<td>167.5</td>
</tr>
<tr>
<td>WTB33</td>
<td>M33</td>
<td>83</td>
<td>103</td>
<td>10</td>
<td>930.15</td>
<td>209106</td>
<td>10.68</td>
<td>142.5</td>
<td>181.3</td>
</tr>
</tbody>
</table>

BOLT TIGHTENING SOLUTIONS

We have many years experience of designing bespoke bolt tensioning tools for instances where standard tools are not suitable. Contact us for more information.
TENTEC AERO WTF TENSIONERS

The Tentec Aero WTF is a purpose designed range of hydraulic bolt tensioning tools developed and designed to suit most wind turbine foundation bolting applications. The Aero WTF tensioning tools can be supplied to suit many different All Thread Bars and the more conventionally ISO metric and Imperial Unified thread forms. These feature packed tensioners have been designed with rapid tensioning in mind and offer a safe, reliable and consistent method to simultaneously tension many foundation bolts. The Tentec Aero WTF range of tensioning tools have been fully site evaluated in the wind energy industry.

Suitable Load Capacity for Grade 75ksi & 150ksi - All Thread Foundation Bolts.

Features & Benefits

Long Ram Stroke
The Aero WTF range of tensioners offer up to 25mm piston/ram stroke capability

Seal Reliability
Class leading high pressure seal technology

Geared Nut Run Down
The inclusion of a gear nut run-down mechanism offers a very rapid and consistent way of seating the hexagon nuts during the tensioning procedure

Handling Straps
For easy user handling

“Snap Down” Nut Drive
To increase speed all Aero WTB tensioners are fitted with a spring loaded device that automatically engages the tensioner drive socket with the hexagon nut.

Swivel Connection
360° swivel operation allows the hydraulic hoses to be positioned in the best possible position to allow open access to the tensioning tools.

25mm(1”) Ram stroke for ‘One Pull’ Tensioning
Due to the unusual length of foundation bolts and the methods used to anchor the bolts into the foundation structure, it is usual to experience relatively large amount of bolt extension during foundation bolt tensioning. For this reason it is very important that the bolt tensioning tool used has plenty of piston/ram stroke capacity. The Aero WTF range of tensioners offer up to 25mm piston/ram stroke capability for “One Pull” uninterrupted tensioning. Shorter stroke foundation tensioners are available from Tentec to be used where bar protrusion is limited.

Long Stud Protrusion Models
The amount of thread protruding from a foundation bolt nut can vary significantly from turbine to turbine. To overcome this variation the Aero WTF Bolt tensioning tool is available in both short and long stroke variations. An elliptical WTF tool is also available for use when clearance between the bolt and tower wall is restricted.

Short Stud Protrusion Models
When the stud protrusion is limited, the long stroke tensioners may not be suitable, in this instance a short stroke WTF tensioner is available.
### Technical Specification - WTF

**BOLT TIGHTENING SOLUTIONS**

**TENTEC Aero WTF Models**
- Long Ram Stroke Tensioner
- Short Ram Stroke Tensioner
- Metric Thread Tensioner
- Elliptical Tensioner

### Maximum Working Pressure = 1350bar

#### 75 KSI - All Thread Bar

<table>
<thead>
<tr>
<th>Tool Ident</th>
<th>Foundation Bolt Type</th>
<th>Gear Box</th>
<th>Stud Protrusion (mm)</th>
<th>Max Stroke</th>
<th>Maximum Load</th>
<th>Hydraulic Pressure Area</th>
<th>Dia A (mm)</th>
<th>Height B (mm)</th>
<th>D (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTF-8041</td>
<td>Grade 75ksi All Thread</td>
<td>Y</td>
<td>260</td>
<td>25</td>
<td>472.6</td>
<td>106244.7</td>
<td>5.426</td>
<td>110</td>
<td>231</td>
<td>56</td>
</tr>
<tr>
<td>WTF-8148</td>
<td>Grade 75ksi All Thread</td>
<td>N</td>
<td>260</td>
<td>25</td>
<td>472.6</td>
<td>106244.7</td>
<td>5.426</td>
<td>110</td>
<td>231</td>
<td>56.47</td>
</tr>
<tr>
<td>WTF-8040</td>
<td>Grade 75ksi All Thread</td>
<td>Y</td>
<td>200</td>
<td>10</td>
<td>472.6</td>
<td>106244.7</td>
<td>5.426</td>
<td>108</td>
<td>158</td>
<td>5.06</td>
</tr>
<tr>
<td>WTF-8147</td>
<td>Grade 75ksi All Thread</td>
<td>N</td>
<td>200</td>
<td>10</td>
<td>472.6</td>
<td>106244.7</td>
<td>5.426</td>
<td>108</td>
<td>158</td>
<td>5.69</td>
</tr>
<tr>
<td>WTF-7566</td>
<td>Elliptical</td>
<td>N</td>
<td>205</td>
<td>10</td>
<td>469.3</td>
<td>105502.8</td>
<td>4.85</td>
<td>142</td>
<td>144</td>
<td>4.10</td>
</tr>
</tbody>
</table>

#### 150 KSI - All Thread Bar

<table>
<thead>
<tr>
<th>Tool Ident</th>
<th>Foundation Bolt Type</th>
<th>Gear Box</th>
<th>Stud Protrusion (mm)</th>
<th>Max Stroke</th>
<th>Maximum Load</th>
<th>Hydraulic Pressure Area</th>
<th>Dia A (mm)</th>
<th>Height B (mm)</th>
<th>D (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTF-8342</td>
<td>Grade 150ksi All Thread</td>
<td>Y</td>
<td>270</td>
<td>25</td>
<td>762.45</td>
<td>171404.8</td>
<td>8.754</td>
<td>125</td>
<td>245</td>
<td>63.5</td>
</tr>
<tr>
<td>WTF-8343</td>
<td>Grade 150ksi All Thread</td>
<td>N</td>
<td>270</td>
<td>25</td>
<td>762.45</td>
<td>171404.8</td>
<td>8.754</td>
<td>125</td>
<td>245</td>
<td>63.5</td>
</tr>
<tr>
<td>WTF-8340</td>
<td>Grade 150ksi All Thread</td>
<td>Y</td>
<td>215</td>
<td>10</td>
<td>762.45</td>
<td>171404.8</td>
<td>8.754</td>
<td>123</td>
<td>175</td>
<td>62.5</td>
</tr>
<tr>
<td>WTF-8341</td>
<td>Grade 150ksi All Thread</td>
<td>N</td>
<td>215</td>
<td>10</td>
<td>762.45</td>
<td>171404.8</td>
<td>8.754</td>
<td>123</td>
<td>175</td>
<td>62.5</td>
</tr>
</tbody>
</table>

#### Metric Coarse Threads

<table>
<thead>
<tr>
<th>Tool Ident</th>
<th>Foundation Bolt Type</th>
<th>Gear Box</th>
<th>Stud Protrusion (mm)</th>
<th>Max Stroke</th>
<th>Maximum Load</th>
<th>Hydraulic Pressure Area</th>
<th>Dia A (mm)</th>
<th>Height B (mm)</th>
<th>D (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTF-9753</td>
<td>M36x4</td>
<td>Y</td>
<td>250</td>
<td>15</td>
<td>579.8</td>
<td>130344</td>
<td>5.992</td>
<td>108</td>
<td>210</td>
<td>50.6</td>
</tr>
<tr>
<td>WTF-9426</td>
<td>M42x4.5</td>
<td>Y</td>
<td>250</td>
<td>15</td>
<td>788</td>
<td>177078</td>
<td>8.139</td>
<td>124</td>
<td>210</td>
<td>62.25</td>
</tr>
</tbody>
</table>

Designs and specifications are subject to change without notice or obligation. Read all safety instructions in the manual before usage.

---

**TENTEC BOLT TIGHTENING SOLUTIONS**

ISO 14001 | BS OHSAS 18001 | ISO 9001

**COMMITTED TO SUSTAINABLE PRODUCTIVITY**

[www.bolttighteningsolutions.com](http://www.bolttighteningsolutions.com)

---

TDR15R1 2015.04 © 2015, Atlas Copco. All rights reserved.