DOUBLE UNIVERSAL JOINT (DUJ) shafts
For driven steering axles, marine stern drive and special applications
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DRIVESHAFTS PRODUCT RANGE

DOUBLE UNIVERSAL JOINT (DUJ) SHAFTS

The DUJ range for the off-highway sector include DUJ shafts for vehicles with driven steering axles, DUJ shafts for sterndrives for boats and Universal-joint shafts for special applications.

CARDAN SHAFTS

Our application-matched cardan shafts are rugged assemblies that withstand the requirements of today's more powerful engines and transmissions. Precision balancing assures smooth, vibration-free operation.

Our wide range of cardan shafts are backed by years of proven performance in some of the most extreme applications. They have set the industry standard for quality for years, and are backed by the technology, systems and people to meet even the highest expectations.

CONSTANT VELOCITY (CV) SHAFTS

The CV-sidshafts with Constant Velocity ball joints are used in vehicles with independent suspension. These driveshafts represent an alternative to conventional sidshafts with centered double cardan joints. A wide range of different joint sizes are available.

CENTRED DOUBLE CARDAN (CDC) SHAFTS

The sidshafts with centered double cardan joints are especially developed for extreme working conditions and allow high continuous angles at high speed. The joints are robustly designed, and also have a maximum deflection angle of 50°, thereby guaranteeing maneuverability of the vehicle. These shafts are predestined for the use in all-terrain vehicles.

PTO SHAFTS

We also design and manufacture an extensive range of Power Take Off (PTO) shafts for the agricultural industry under the Walterscheid brand.
B300-SERIES

Fixed side

Axle for agricultural tractors and construction machines
DUJ B-SERIES

Sliding side

Pivot Center

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<table>
<thead>
<tr>
<th>Size</th>
<th>$T_{max}$ [Nm]</th>
<th>$B_{max}$ [deg]</th>
<th>$\varnothing A_{max}$</th>
<th>$B$</th>
<th>$C_{\min}$</th>
<th>$F_{\min}$</th>
<th>$\varnothing G_{\min}$</th>
<th>$\varnothing D$</th>
<th>$Y$</th>
<th>$X$</th>
</tr>
</thead>
<tbody>
<tr>
<td>B300</td>
<td>1550</td>
<td>$52^\circ$ $55^\circ$ $60^\circ$</td>
<td>85.8</td>
<td>56</td>
<td>57</td>
<td>120</td>
<td>120</td>
<td>32</td>
<td>33</td>
<td>27</td>
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<tr>
<td>B310</td>
<td>2300</td>
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<td>96.3</td>
<td>62</td>
<td>64</td>
<td>134</td>
<td>138</td>
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<td>37</td>
<td>39</td>
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<tr>
<td>B320</td>
<td>3400</td>
<td>$52^\circ$ $55^\circ$</td>
<td>110.3</td>
<td>70</td>
<td>72</td>
<td>152</td>
<td>156</td>
<td>41</td>
<td>42</td>
<td>35</td>
</tr>
<tr>
<td>B330</td>
<td>5100</td>
<td>$52^\circ$ $55^\circ$</td>
<td>127.5</td>
<td>81</td>
<td>83</td>
<td>173</td>
<td>177</td>
<td>46</td>
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<td>40</td>
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<tr>
<td>B340</td>
<td>7500</td>
<td>$52^\circ$ $55^\circ$ $60^\circ$</td>
<td>142</td>
<td>92</td>
<td>94</td>
<td>198</td>
<td>204</td>
<td>53</td>
<td>55</td>
<td>57</td>
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</table>

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$T_{max}$ = Functional limit torque of joint components without shafts
$G$ = Equivalent shaft diameter for QT-steel Rm ≥ 930 N/mm²
$D$ = Required space at max. deflection angle
$B$ = max. deflection angle

The transmission capacity of a double cardan joint decreases as the deflection angle becomes greater. Our engineers should be consulted. See diagram ‘Transmission Capacity / Deflection Angle’.
Double Universal Joints B3000:
Significantly more torque without additional space requirements

More torque, same space: New B3000 Double Universal Joints

The Double Universal Joint (DUJ) B3000 series allows the transmission of significantly more torque – up to 20 percent – without increasing space requirements. Transmitting higher torque in the same space as the previous B300 series can result in substantial weight savings when new B3000 series DUJs are integrated into an axle, as the axle structure can be smaller and lighter than previously required for the given torque.

Reducing the structural weight makes vehicles more responsive to the operator’s inputs for acceleration and deceleration. Whilst vehicle manufacturers aim at increasing the available torque, there are limitations when more torque requires larger and heavier components. This can result in weight increases of both the DUJ and the axle.

As the torque capacity of the DUJ B3000 series was increased within the same space requirements, however, there is no need for a larger axle, thus avoiding additional weight and cost.

<table>
<thead>
<tr>
<th>Size</th>
<th>( T_{\text{max}} )</th>
<th>( B_{\text{max}} )</th>
<th>( \Theta A_{\text{max}} )</th>
<th>( B )</th>
<th>( C_{\text{min}} )</th>
<th>( F_{\text{min}} )</th>
<th>( \Theta G_{\text{min}} )</th>
<th>( \Theta D )</th>
<th>( Y )</th>
<th>( X )</th>
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<tbody>
<tr>
<td>B3300</td>
<td>1900</td>
<td>55° 60°</td>
<td>85.8 57</td>
<td>123</td>
<td>33</td>
<td>131</td>
<td>3.63 4.41</td>
<td>7.26 8.82</td>
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<td></td>
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<tr>
<td>B3310</td>
<td>2800</td>
<td>55° 60°</td>
<td>96.3 64</td>
<td>138</td>
<td>37</td>
<td>148</td>
<td>4.07 4.95</td>
<td>8.15 9.90</td>
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<td></td>
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<tr>
<td>B3320</td>
<td>4100</td>
<td>55°</td>
<td>110.3 72</td>
<td>156</td>
<td>42</td>
<td>166</td>
<td>4.58</td>
<td>9.17</td>
<td></td>
<td></td>
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<tr>
<td>B3330</td>
<td>6000</td>
<td>55°</td>
<td>127.5 83</td>
<td>177</td>
<td>47</td>
<td>190</td>
<td>5.28 10.57</td>
<td></td>
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</tr>
</tbody>
</table>

\( T_{\text{max}} \) = Functional limit torque of joint components without shafts
\( G \) = Equivalent shaft diameter for QT-steel Rm ≥ 930 N/mm²
\( D \) = Required space at max. deflection angle
\( \beta \) = max. deflection angle

The transmission capacity of a double cardan joint decreases as the deflection angle becomes greater. Our engineers should be consulted. See diagram ‘Transmission Capacity / Deflection Angle’!
**T-SERIES**

**Fixed side**

**Sliding side**

**Pivot Center**

**Axle for trucks and special off-road machines**

**DUJ T-SERIES**

**Y = offset from pivot centre**

For reducing the nonuniformity of the rotation and for reaching the maximum deflection angle the centre of the joint must be shifted by the distance Y to the fixed side.

**X = Displacement at \( \beta_{\text{max}} \)**

During deflection of the double cardan joint an axial displacement of the driveshaft occurs. This displacement X must be considered, when dimensioning the spline length and the bearing seat.

<table>
<thead>
<tr>
<th>Size</th>
<th>( T_{\text{max}} ) [Nm]</th>
<th>( \beta_{\text{max}} ) [deg]</th>
<th>( \varnothing A )</th>
<th>( B )</th>
<th>( B1 )</th>
<th>( C_{\text{min}} )</th>
<th>( F_{\text{min}} )</th>
<th>( \varnothing G_{\text{min}} )</th>
<th>( \varnothing K )</th>
<th>( \varnothing D )</th>
<th>( Y )</th>
<th>( X ) [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>569.10</td>
<td>4000</td>
<td>50°</td>
<td>112</td>
<td>72</td>
<td>58</td>
<td>134</td>
<td>31</td>
<td>35</td>
<td>115</td>
<td>163</td>
<td>17</td>
<td>742</td>
</tr>
<tr>
<td>569.20</td>
<td>6700</td>
<td>42°, 50°</td>
<td>128</td>
<td>76</td>
<td>82</td>
<td>60</td>
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<td>138</td>
<td>153</td>
<td>31</td>
<td>35</td>
<td>131, 131.5</td>
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<td>569.30</td>
<td>8000</td>
<td>42°, 50°</td>
<td>138</td>
<td>84</td>
<td>90</td>
<td>66</td>
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<td>152</td>
<td>167</td>
<td>34</td>
<td>38.5</td>
<td>141, 142</td>
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<td>569.32</td>
<td>9000</td>
<td>42°, 50°</td>
<td>138</td>
<td>84</td>
<td>90</td>
<td>68</td>
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<td>167</td>
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<td>569.36</td>
<td>11500</td>
<td>42°, 50°</td>
<td>152</td>
<td>90</td>
<td>97</td>
<td>72</td>
<td>79</td>
<td>164</td>
<td>181</td>
<td>37</td>
<td>42</td>
<td>155.5, 156.5</td>
</tr>
<tr>
<td>569.38</td>
<td>14300</td>
<td>42°, 50°</td>
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<td>95</td>
<td>103</td>
<td>75</td>
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<tr>
<td>569.40</td>
<td>16000</td>
<td>42°</td>
<td>168</td>
<td>100</td>
<td>80</td>
<td>185</td>
<td>42.5</td>
<td>56</td>
<td>172</td>
<td>226</td>
<td>24</td>
<td>711</td>
</tr>
</tbody>
</table>

\( T_{\text{max}} \) = Functional limit torque of joint components without shafts

\( G \) = Equivalent shaft diameter for QT-steel \( R_m \geq 1.200 \) N/mm²

\( K \) = Rotational diameter at max. deflection angle

\( D \) = Required space at max. deflection angle

\( \beta \) = max. deflection angle

The transmission capacity of a double cardan joint decreases as the deflection angle becomes greater. Our engineers should be consulted. See diagram ‘Transmission Capacity / Deflection Angle’.
During deflection of the double cardan joint an axial displacement of the driveshaft occurs. This displacement \( X \) must be considered, when dimensioning the spline length and the bearing seat.

\[ X = \text{Displacement at } \beta_{\text{max}} \]

The transmission capacity of a double cardan joint decreases as the deflection angle becomes greater. Our engineers should be consulted. See diagram "Transmission Capacity / Deflection Angle"!

<table>
<thead>
<tr>
<th>Size</th>
<th>( T_{\text{max}} )</th>
<th>( T_{\text{cont}} )</th>
<th>( \beta_{\text{max}} )</th>
<th>( \varnothing A )</th>
<th>( B )</th>
<th>( C_{\text{min}} )</th>
<th>( F_{\text{min}} )</th>
<th>( X )</th>
</tr>
</thead>
<tbody>
<tr>
<td>B210</td>
<td>1500</td>
<td>390</td>
<td>2( \times )32° (64°)</td>
<td>89</td>
<td>67</td>
<td>151</td>
<td>42</td>
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<tr>
<td>M2185</td>
<td>2000</td>
<td>700</td>
<td>2( \times )30° (60°)</td>
<td>93</td>
<td>68.5</td>
<td>156.5</td>
<td>44</td>
<td>10.6</td>
</tr>
</tbody>
</table>

\( T_{\text{max}} \) = Functional limit torque of joint components without shafts
\( T_{\text{cont}} \) = These continuous torques will provide approximately 1000 hours operations at a speed of 3500RPM and at angle of 6° (2\( \times \)3°)
\( \beta \) = max. deflection angle

Diagram: Transmission Capacity / Deflection Angle
Innovations and technologies from Walterscheid such as the new B3000 double universal joints increase the efficiency of mobile machinery. In addition, our products improve comfort and reliability, thus contributing to a sustained increase in productivity.

- THINK THE FUTURE.
- DEVELOP THE IDEAS.
- LIVE THE TECHNOLOGY.
- MASTER THE CHALLENGES.