

Pipe						CDN		
						NEW	API PREMIUM	
Pipe size	<i>in</i>	4.500	<i>mm</i>	114.3	OD	<i>mm</i>	<b>114.3</b>	110.9
Pipe weight	<i>lb/ft</i>	16.60	<i>kg/m</i>	24.70	Thickness	<i>mm</i>	<b>8.6</b>	6.8
Upset Type		IEU			X-Sec Area	<i>cm<sup>2</sup></i>	<b>28.4</b>	22.4
Tube grade		S135			Section Modulus	<i>cm<sup>3</sup></i>	<b>70.0</b>	54.8
Range		3			Polar Section Modulus	<i>cm<sup>3</sup></i>	<b>140.0</b>	109.7
Tube Yield	<i>MPa</i>	931			Tensile Yield	<i>kdaN</i>	<b>265</b>	208
ID	<i>mm</i>	97.2			Torsional Yield	<i>ft-lbs</i>	<b>55,500</b>	43,500
					80% Torsional Yield	<i>ft-lbs</i>	<b>44,400</b>	34,800
					Internal Pressure Yield	<i>MPa</i>	<b>122.0</b>	111.7
					Collapse Yield	<i>MPa</i>	<b>115.8</b>	75.8
					D/t		<b>13.35</b>	16.19
					Connection/Tube Torsional Ratio		<b>0.977</b>	

Tool Joint						CDN		
						NEW		
Connection Type		450 DUO			OD	<i>mm</i>	<b>139.7</b>	
Material Yield Strength	<i>MPa</i>	896			Tensile Yield Strength	<i>kdaN</i>	<b>439</b>	
	OD	<i>mm</i>	139.7		Torsional Yield Strength	<i>ft-lbs</i>	<b>54,200</b>	
	ID	<i>mm</i>	76.2		Recommended Makeup Torque	<i>ft-lbs</i>	<b>32,500</b>	
Pin Shoulder Angle	<i>deg</i>	18			Maximum Makeup Torque	<i>ft-lbs</i>	<b>35,200</b>	
Pin Tool Joint Length	<i>mm</i>	356						
Box Tool Joint Length	<i>mm</i>	356						

Drill Pipe Assembly						CDN		
				Shoulder-Shoulder Length	<i>m</i>		<b>13.26</b>	
				Adjusted Weight	<i>kg/m</i>		<b>26.50</b>	
				Closed End Displacement	<i>L/m</i>	<b>10.56</b>	<i>m<sup>3</sup>/m</i>	<b>0.01056</b>
				Open End Displacement	<i>L/m</i>	<b>3.38</b>	<i>m<sup>3</sup>/m</i>	<b>0.00338</b>
				Fluid Capacity	<i>L/m</i>	<b>7.18</b>	<i>m<sup>3</sup>/m</i>	<b>0.00718</b>
				Drift Size	<i>mm</i>	<b>73.0</b>		

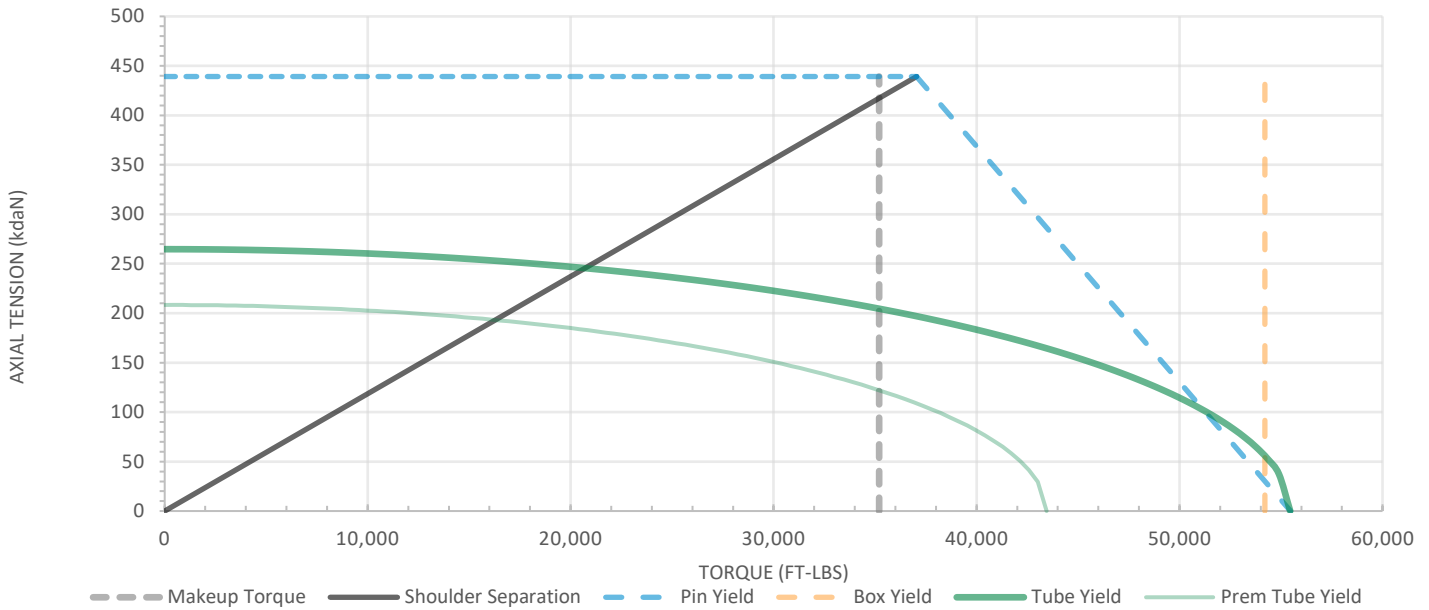
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Calculations are based on uniform wall thickness and outside diameter – no safety factor has been applied. The information provided for inspection classes is based on uniform wear and is not intended to recommend or confirm operational limits of any used product. It is recommended that drilling torque not exceed 80% of the makeup torque, however it is the responsibility of the end user to determine the acceptable use of the end product including appropriate performance ratings and safety factors where applicable. All connection torque calculations have been performed using a thread compound friction factor of 1.0. Complete Tubular Products does not endorse any specific thread compound and waives all responsibility in determining appropriate makeup torque values for any specific drilling circumstance. Modifying makeup torque values for any reason shall be done at the end users discretion and risk.

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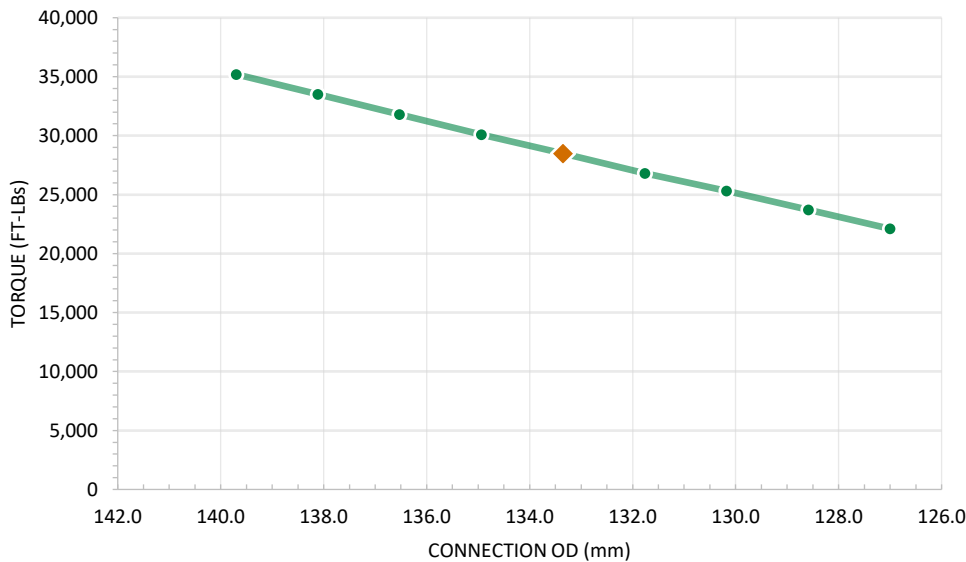
### Makeup Torque Then Tension Chart

CDN



### Connection Wear Chart

CDN



CONNECTION OD (mm)	MAXIMUM MAKEUP TORQUE (ft-lbs)
139.7	35,200
138.1	33,500
136.5	31,800
134.9	30,100
133.4	28,500
131.8	26,800
130.2	25,300
128.6	23,700
127.0	22,100
<b>MIN REC OD (mm)</b>	
133.4	28,500

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