

Pipe						CDN		
						NEW	API PREMIUM	
Pipe size	<i>in</i>	4.500	<i>mm</i>	114.3	OD	<i>mm</i>	114.3	110.9
Pipe weight	<i>lb/ft</i>	16.60	<i>kg/m</i>	24.70	Thickness	<i>mm</i>	8.6	6.8
Upset Type		IEU			X-Sec Area	<i>cm²</i>	28.4	22.4
Tube grade		S135			Section Modulus	<i>cm³</i>	70.0	54.8
Range		2			Polar Section Modulus	<i>cm³</i>	140.0	109.7
Tube Yield	<i>MPa</i>	931			Tensile Yield	<i>kdaN</i>	265	208
ID	<i>mm</i>	97.2			Torsional Yield	<i>ft-lbs</i>	55,500	43,500
					80% Torsional Yield	<i>ft-lbs</i>	44,400	34,800
					Internal Pressure Yield	<i>MPa</i>	122.0	111.7
					Collapse Yield	<i>MPa</i>	115.8	75.8
					D/t		13.35	16.19
					Connection/Tube Torsional Ratio		0.806	

Tool Joint						CDN		
						NEW		
Connection Type		450 DUO			OD	<i>mm</i>	139.7	
Material Yield Strength	<i>MPa</i>	896			Tensile Yield Strength	<i>kdaN</i>	368	
OD	<i>mm</i>	139.7			Torsional Yield Strength	<i>ft-lbs</i>	44,700	
ID	<i>mm</i>	82.6			Recommended Makeup Torque	<i>ft-lbs</i>	26,800	
Pin Shoulder Angle	<i>deg</i>	18			Maximum Makeup Torque	<i>ft-lbs</i>	29,100	
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>	9.60	
					Adjusted Weight	<i>kg/m</i>	27.39	
					Closed End Displacement	<i>L/m</i>	10.68	<i>m³/m</i> 0.01068
					Open End Displacement	<i>L/m</i>	3.49	<i>m³/m</i> 0.00349
					Fluid Capacity	<i>L/m</i>	7.18	<i>m³/m</i> 0.00718
					Drift Size	<i>mm</i>	79.4	

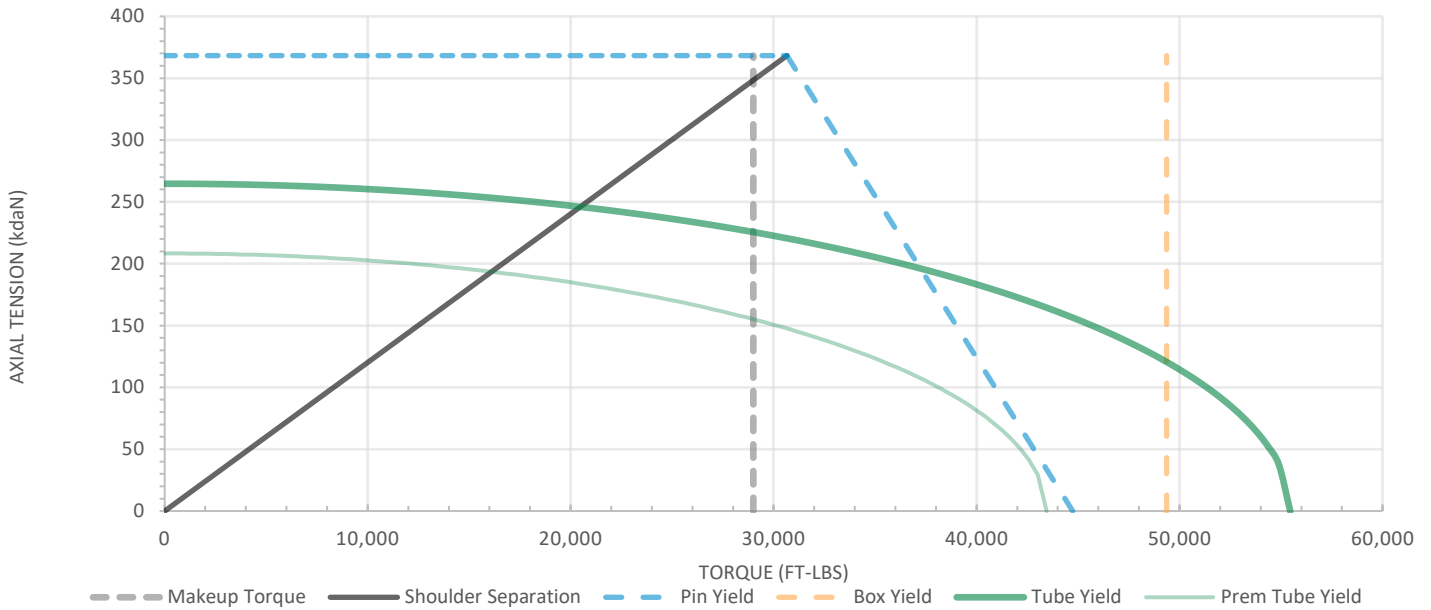
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Calculations are based on uniform wall thickness and outside diameter – no safety factor has been applied. The information provided for inspection classes is based on uniform wear and is not intended to recommend or confirm operational limits of any 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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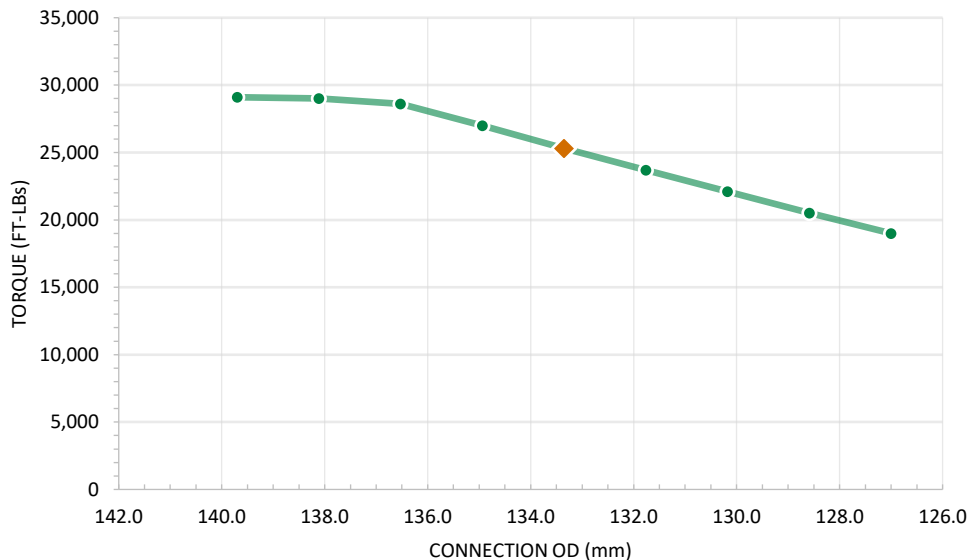
Makeup Torque Then Tension Chart

CDN



Connection Wear Chart

CDN



CONNECTION OD (mm)	MAXIMUM MAKEUP TORQUE (ft-lbs)
139.7	29,100
138.1	29,000
136.5	28,600
134.9	27,000
133.4	25,300
131.8	23,700
130.2	22,100
128.6	20,500
127.0	19,000
MIN REC OD (mm)	
133.4	25,300

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