

Pipe						METRIC		
						NEW	API PREMIUM	
Pipe size	<i>in</i>	4.750	<i>mm</i>	120.7	OD	<i>mm</i>	120.7	117.2
Pipe weight	<i>lb/ft</i>	17.50	<i>kg/m</i>	26.04	Thickness	<i>mm</i>	8.6	6.8
Upset Type		IEU			X-Sec Area	<i>cm<sup>2</sup></i>	30.1	23.7
Tube grade		S135			Section Modulus	<i>cm<sup>3</sup></i>	78.9	61.9
Range		2			Polar Section Modulus	<i>cm<sup>3</sup></i>	157.9	123.9
Tube Yield	<i>MPa</i>	931			Tensile Yield	<i>kdaN</i>	281	221
ID	<i>mm</i>	103.5			Torsional Yield	<i>N-m</i>	84,700	66,600
					80% Torsional Yield	<i>N-m</i>	67,800	53,300
					Internal Pressure Yield	<i>MPa</i>	115.8	105.5
					Collapse Yield	<i>MPa</i>	103.4	65.5
					D/t		14.09	17.12
					Connection/Tube Torsional Ratio		0.824	

Tool Joint						METRIC		
						NEW		
Connection Type		480 DUO			OD	<i>mm</i>	146.1	
Material Yield Strength	<i>MPa</i>	896			Tensile Yield Strength	<i>kdaN</i>	409	
OD	<i>mm</i>	146.1			Torsional Yield Strength	<i>N-m</i>	69,800	
ID	<i>mm</i>	92.1			Recommended Makeup Torque	<i>N-m</i>	41,900	
Pin Shoulder Angle	<i>deg</i>	18			Maximum Makeup Torque	<i>N-m</i>	45,400	
Pin Tool Joint Length	<i>mm</i>	356						
Box Tool Joint Length	<i>mm</i>	356						

Drill Pipe Assembly						METRIC		
					Shoulder-Shoulder Length	<i>m</i>	9.60	
					Adjusted Weight	<i>kg/m</i>	28.53	
					Closed End Displacement	<i>L/m</i>	11.85	
					Open End Displacement	<i>L/m</i>	3.64	
					Fluid Capacity	<i>L/m</i>	8.22	
					Drift Size	<i>mm</i>	88.9	

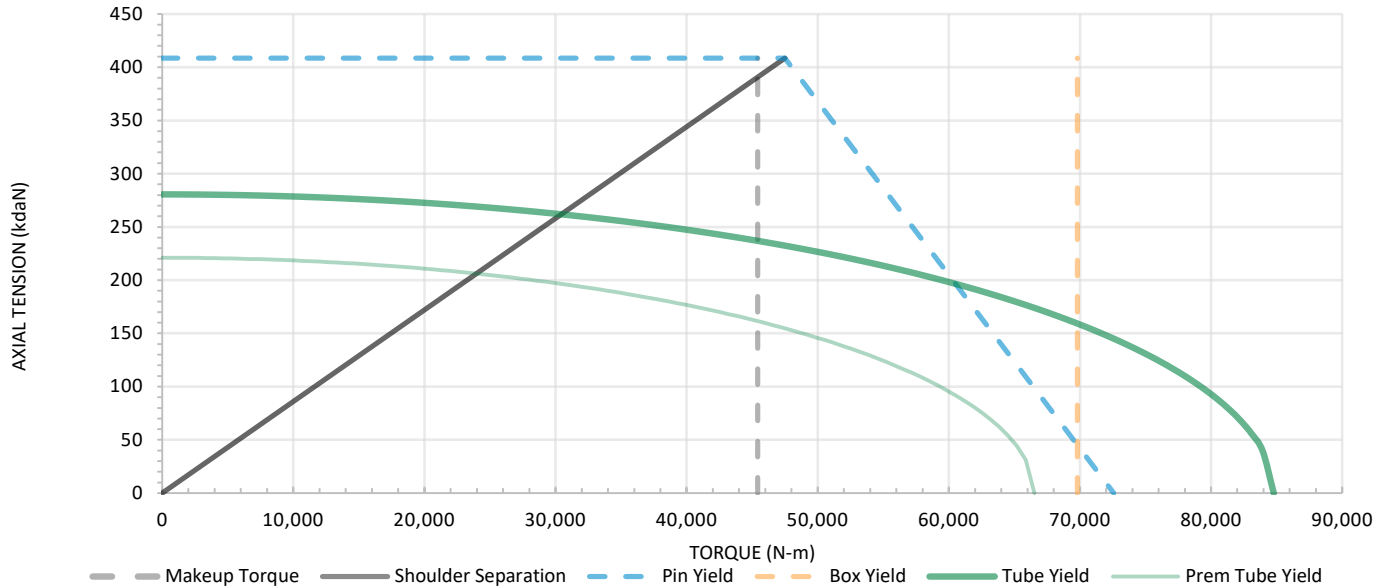
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Calculations are based on uniform wall thickness and outside diameter – no safety factor has been applied. The information provided for inspection classes is based on uniform wear and is not intended to recommend or confirm operational limits of any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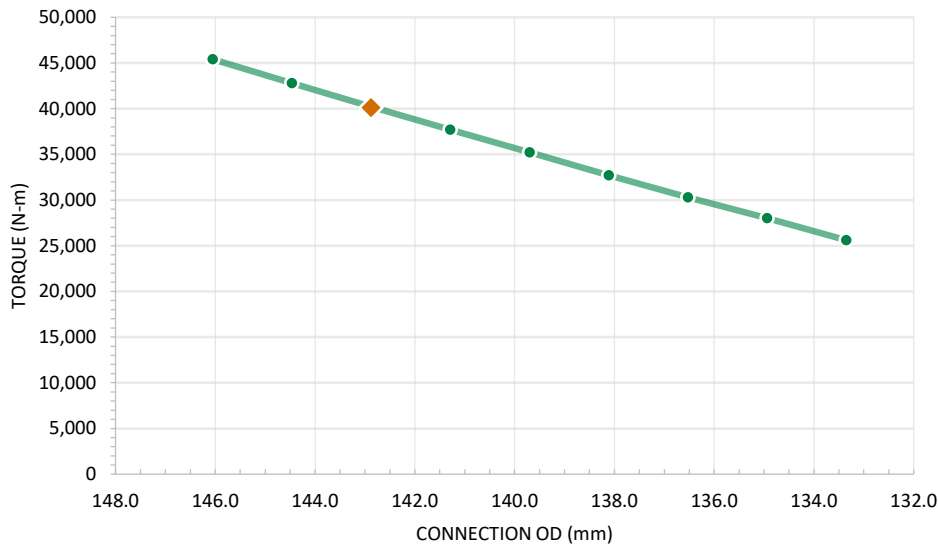
### Makeup Torque Then Tension Chart

METRIC



### Connection Wear Chart

METRIC



CONNECTION OD (mm)	MAXIMUM MAKEUP TORQUE (N-m)
146.1	45,400
144.5	42,800
142.9	40,200
141.3	37,700
139.7	35,200
138.1	32,700
136.5	30,300
134.9	28,000
133.4	25,600
MIN REC OD (mm)	142.9
MIN REC OD (mm)	40,100

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