

Drill Pipe Performance Characteristics Sheet

Patent: 9,885,214
Pipe Size and Weight: 5 1/2 21.90 IEU
Pipe Grade: S-135
Range: 2
Tool Joint: 6 5/8 X 4 1/4 PTECH55+

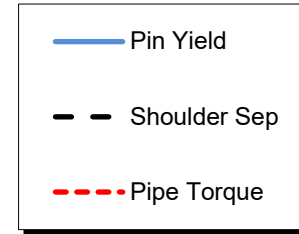
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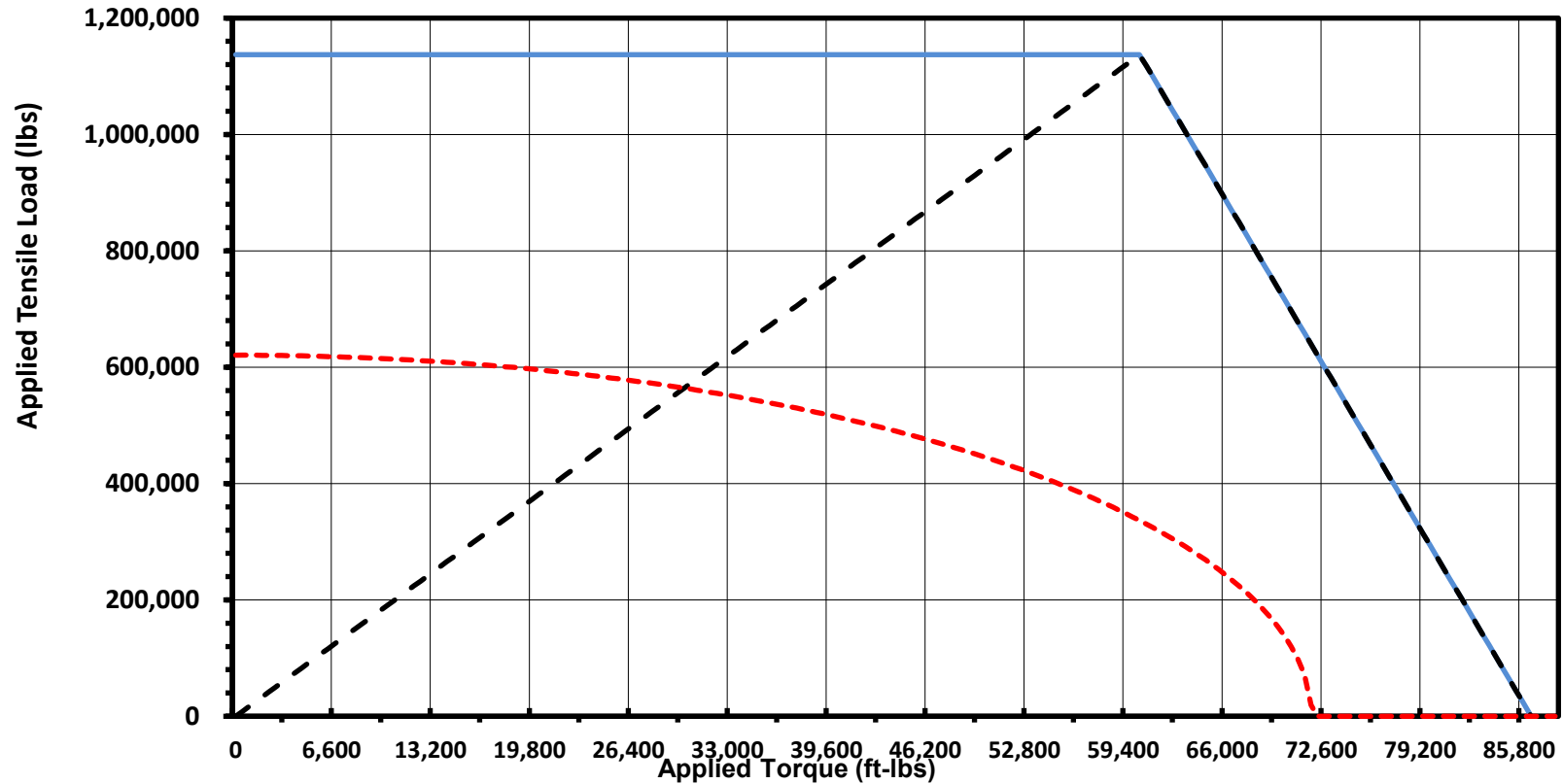
Pipe Body				
		New-API	New-95%RBW	Premium
OD (in)		5.500	5.500	5.356
Wall Thickness (in)		0.361	0.388	0.289
ID (in)		4.778	4.724	4.778
Calculated Plain End weights (lbs/ft)		19.804	21.177	15.621
Note: Premium properties are calculated based on uniform OD and wall thickness.				
Cross sectional area pipe body (in ²)		5.828	6.232	4.597
Cross sectional area OD (in ²)		23.758	23.758	22.527
Cross sectional area ID (in ²)		17.930	17.526	17.930
Section Modulus (in ³)		7.031	7.445	5.527
Polar Section Modulus (in ³)		14.062	14.891	11.054
		New-API	New-95%RBW	Premium
Torsional Strength (ft-lbs)		91,300	96,700	71,800
Tensile Strength (lbs)		786,800	841,400	620,600
80% Torsional Strength (ft-lbs)		73,000	77,400	57,400
Pressure Capacity (psi)		15,507	16,670	14,177
Collapse Capacity (psi)		16,559	17,707	7,491
Tool Joint				
PTECH+ CONNECTION		PTECH55+		
		OD (in)	6 5/8	
		ID (in)	4 1/4	
Tool Joint with a Material Yield Strength of 135000 psi				
	Pin Tong length (in)	13		
	Box Tong length (in)	15		
	Friction Factor	1.00	1.15	
	Torsional Strength (ft-lbs)	86,400	99,400	
	Severe Service Recommended Make-up Torque (ft-lbs) [70%]	60,500	69,600	
	Standard Service Recommended Make-up Torque (ft-lbs) [60%]	51,800	59,600	
	Min Recommended Make-up Torque (ft-lbs)	40,800	46,900	
	Balance OD (in)	6.605		
	Tensile Strength (lbs)	1,147,500		
	Tool joint/Drill pipe torsional ratio (New pipe)	0.95		
	Tool joint/Drill pipe torsional ratio (95% New pipe)	0.89		
	Tool joint/Drill pipe torsional ratio (Prem pipe)	1.20		
	Min OD for premium class (in)	6.156		
Minimum make-up is based on shoulder separation caused by bending.				
Drill Pipe Assembly with PTECH55+ Tool Joint		Drill Pipe Bend Radius		
API Adjusted weight (lbs/ft)	24.22	* These calculations are based on new pipe with nominal wall		
95% Adjusted weight (lbs/ft)	25.48	Based on Bending Stress (psi) at Pipe OD	15,000	
Approximate length (ft)	31.50	Radius of Curvature (R) (ft.) (@ OD of pipe)	458.3	
95% Fluid Displacement (gal/ft)	0.390	BUR (dogleg) deg/100 ft.	12.5	
API Fluid Displacement (gal/ft)	0.370			
Fluid Capacity (gal/ft)	0.907			
Drift Size	4.125			

This Performance Sheet was generated by Nels Wickander.

TORQUE TENSION COMBINED LOAD CURVE



For PTECH55+ 6 5/8 X 4 1/4 Tool Joint with a Material Strength of 135000 psi, using a Coefficient of Friction factor of 0.08 and a Safety Factor of 1.0. On Pipe: 5.5 21.90 S-135 Premium Class.





PTECH55+ 6 5/8 X 4 1/4 TOOL JOINT OD WEAR CURVE

