

Drill Pipe Performance Characteristics Sheet

PTECH Drilling Tubulars, LLC

Patents: 9,885,214 9,493,993

Pipe Size and Weight: 2 3/8 6.65 EU

Pipe Grade: S-135

Range: 2

Tool Joint: 3 1/16 X 1 1/2 PTECH23+

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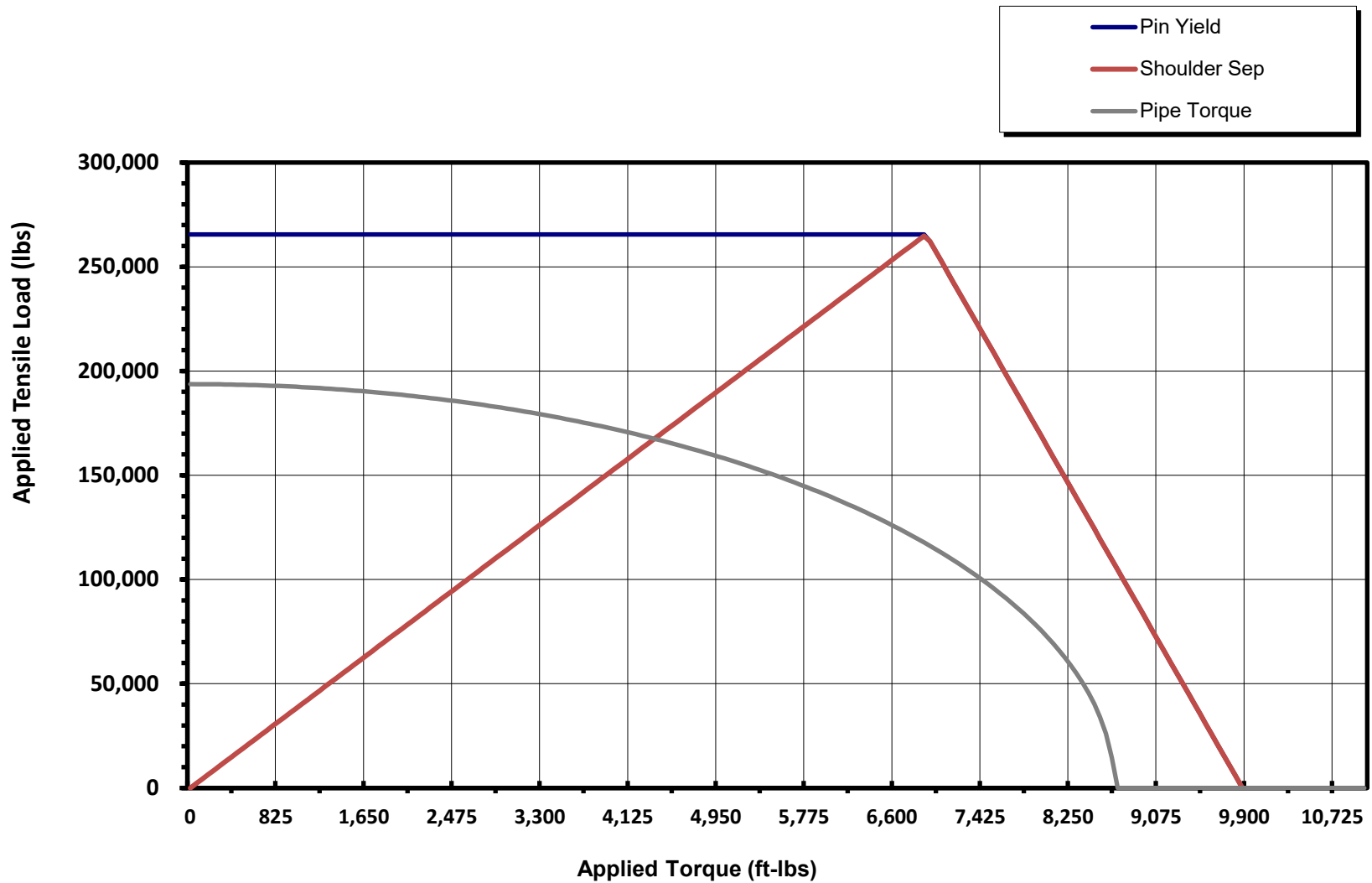
Pipe Body			
	New-API	New-95%RBW	Premium
OD (in)	2.375	2.375	2.263
Wall Thickness (in)	0.280	0.301	0.224
ID (in)	1.815	1.773	1.815
Calculated Plain End weights (lbs/ft)	6.262	6.664	4.876
Note: Premium properties are calculated based on uniform OD and wall thickness.			
Cross sectional area pipe body (in ²)	1.843	1.961	1.435
Cross sectional area OD (in ²)	4.430	4.430	4.022
Cross sectional area ID (in ²)	2.587	2.469	2.587
Section Modulus (in ³)	0.867	0.907	0.667
Polar Section Modulus (in ³)	1.733	1.813	1.334
	New-API	New-95%RBW	Premium
Torsional Strength (ft-lbs)	11,300	11,800	8,700
Tensile Strength (lbs)	248,800	264,800	193,700
80% Torsional Strength (ft-lbs)	9,000	9,400	7,000
Pressure Capacity (psi)	27,853	29,942	25,465
Collapse Capacity (psi)	28,079	29,882	24,080

Tool Joint	
	
PTECH23+	
OD (in)	3 1/16
ID (in)	1 1/2
Tool Joint with a Material Yield Strength of 135000 psi	
Pin Tong length (in)	11
Box Tong length (in)	14
Friction Factor	1.0 1.15
Torsional Strength (ft-lbs)	9,860 11,300
Severe Service Recommended Make-up Torque (ft-lbs) [70%]	6,900 7,900
Standard Service Recommended Make-up Torque (ft-lbs) [60%]	5,900 6,800
Min Recommended Make-up Torque (ft-lbs)	5,300 6,100
Balance OD (in)	3.041
Tensile Strength (lbs)	269,700
Tool joint/Drill pipe torsional ratio (New pipe)	0.87
Tool joint/Drill pipe torsional ratio (95% New pipe)	0.84
Tool joint/Drill pipe torsional ratio (Prem pipe)	1.13
Min OD for premium class (in)	2.843

Drill Pipe Assembly with PTECH+ Tool Joint		Drill Pipe Bend Radius	
API Adjusted weight (lbs/ft)	7.22	* These calculations are based on new pipe with nominal wall Based on Bending Stress (psi) at Pipe OD 15,000 Radius of Curvature (R) (ft.) (@ OD of pipe) 197.9	
95% Adjusted weight (lbs/ft)	7.60		
Approximate length (ft)	31.50		
95% Fluid Displacement (gal/ft)	0.116	BUR (dogleg) deg/100 ft.	29.0
API Fluid Displacement (gal/ft)	0.110		
Fluid Capacity (gal/ft)	0.130		
Drift Size	1.375		

TORQUE TENSION COMBINED LOAD CURVE

For PTECH23+ 3 1/16 X 1 1/2 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: 2.375 6.65 S-135 Premium Class.



PTECH23+ 3 1/16 X 1 1/2 TOOL JOINT OD WEAR CURVE

