

Drill Pipe Performance Characteristics Sheet



Pipe Size and Weight: 4 HWDP 0
Pipe Grade: 0
Range: 2
Tool Joint: 4 15/16 X 2 9/16 PTECH39+

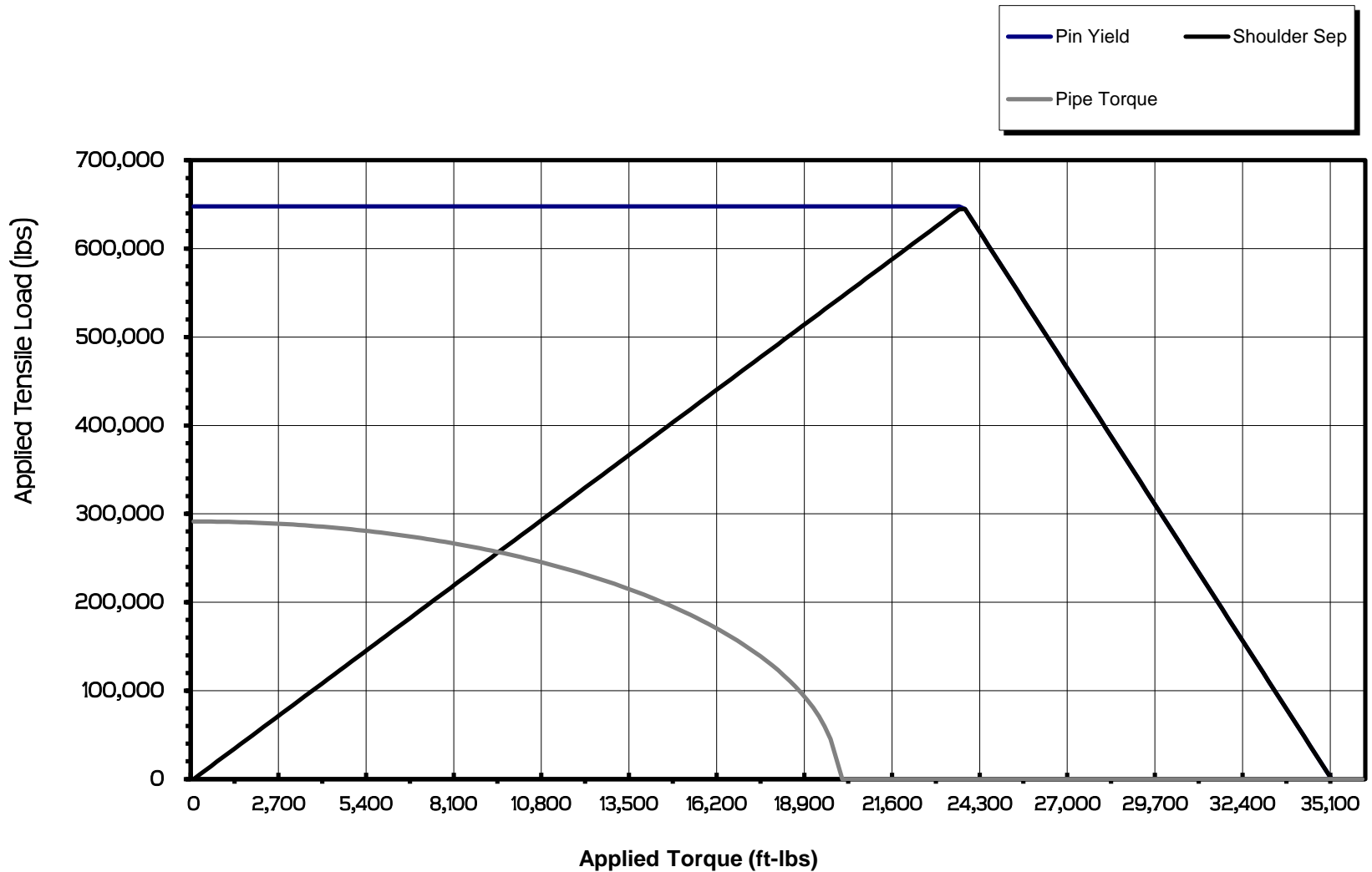
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Revision 1 - April 20, 2013

| Pipe Body | | | |
|--|----------------|---|----------------|
| | New-API | New-95%RBW | Premium |
| OD (in) | 4.000 | | 3.738 |
| Wall Thickness (in) | 0.656 | | 0.525 |
| ID (in) | 2.688 | | 2.688 |
| Calculated Plain End weights (lbs/ft) | 23.417 | | 17.999 |
| Note: Premium properties are calculated based on uniform OD and wall thickness. | | | |
| Cross sectional area pipe body (in ²) | 6.892 | | 5.297 |
| Cross sectional area OD (in ²) | 12.566 | | 10.972 |
| Cross sectional area ID (in ²) | 5.675 | | 5.675 |
| Section Modulus (in ³) | 5.002 | | 3.755 |
| Polar Section Modulus (in ³) | 10.004 | | 7.509 |
| | | | |
| | New-API | New-95%RBW | Premium |
| Torsional Strength (ft-lbs) | 26,500 | | 19,900 |
| Tensile Strength (lbs) | 379,000 | | 291,300 |
| 80% Torsional Strength (ft-lbs) | 21,200 | | 15,900 |
| Pressure Capacity (psi) | 15,785 | | 14,432 |
| Collapse Capacity (psi) | 15,081 | | 13,277 |
| Tool Joint | | | |
| | | PTECH39+ OD (in) 4 15/16 ID (in) 2 9/16 Tool Joint with a Material Yield Strength of 110000 psi Pin Tong length (in) 24 Box Tong length (in) 24 Torsional Strength (ft-lbs) 34,540 Max Recommended Make-up Torque (ft-lbs) 20,700 Min Recommended Make-up Torque (ft-lbs) 16,300 Balance OD (in) 4.955 Tensile Strength (lbs) 653,800 Tool joint/Drill pipe torsional ratio (New pipe) 1.30 Tool joint/Drill pipe torsional ratio (95% New pipe) Tool joint/Drill pipe torsional ratio (Prem pipe) 1.74 Min OD for premium class (in) 4.281 | |
| Minimum make-up is based on shoulder separation caused by bending. | | | |
| Drill Pipe Assembly with PTECH+ Tool Joint | | Drill Pipe Bend Radius | |
| | | * These calculations are based on new pipe with nominal wall | |
| API Adjusted weight (lbs/ft) | 26.80 | Based on Bending Stress (psi) at Pipe OD | 9,683 |
| 95% Adjusted weight (lbs/ft) | | Radius of Curvature (R) (ft.) (@ OD of pipe) | 516.4 |
| Approximate length (ft) | 31.20 | BUR (dogleg) deg/100 ft. | 11.1 |
| 95% Fluid Displacement (gal/ft) | | | |
| API Fluid Displacement (gal/ft) | 0.410 | | |
| Fluid Capacity (gal/ft) | 0.288 | | |
| Drift Size | 2.438 | | |

TORQUE TENSION COMBINED LOAD CURVE

For PTECH39+ 4 15/16 X 2 9/16 Tool Joint with a Material Strength of 110000 psi, using a Coefficient of Friction factor of 0.08 and a Safety Factor of 1.0. On Pipe: 4 HWDP Premium Class.



PTECH39+ 4 15/16 X 2 9/16 TOOL JOINT OD WEAR CURVE

