

EMPIRE T O O L

Drill Pipe Specs
Size & Weight: 4-1/2" 16.60 IUE
Grade: S-135
Range: II
Connection: 400 Duo

Tube

| | New | | Premium | |
|----------------------------|------------------------|-------------------------|------------------------|-------------------------|
| | OD | 4.500 in | 114.30 mm | 4.365 in |
| Wall thickness | 0.337 in | 8.56 mm | 0.270 in | 6.86 mm |
| ID | 3.826 in | 97.18 mm | 3.826 in | 97.18 mm |
| Torsional strength | 55,453 ft-lbs | 75,184 N-m | 43,450 ft-lbs | 58,910 N-m |
| 80% Torsional strength | 44,362 ft-lbs | 60,147 N-m | 34,760 ft-lbs | 47,128 N-m |
| Tensile strength | 595,004 lbs | 264,671 daN | 468,297 lbs | 208,309 daN |
| Internal Pressure capacity | 17,693 psi | 121,989 kPa | 16,176 psi | 111,529 kPa |
| Collapse capacity | 16,773 psi | 115,646 kPa | 10,964 psi | 75,594 kPa |
| Cross sectional area body | 4.407 in ² | 2,843 mm ² | 3.469 in ² | 2,238 mm ² |
| Cross sectional area OD | 15.904 in ² | 10,261 mm ² | 14.966 in ² | 9,655 mm ² |
| Cross sectional area ID | 11.497 in ² | 7,417 mm ² | 11.497 in ² | 7,417 mm ² |
| Section modulus | 4.271 in ³ | 69,989 mm ³ | 3.347 in ³ | 54,848 mm ³ |
| Polar section modulus | 8.543 in ³ | 139,995 mm ³ | 6.694 in ³ | 109,695 mm ³ |

Tool Joint

| | New | | Premium | |
|----------------------------|-------------------------|-------------|---------------|-------------|
| | Material Yield Strength | 130,000 psi | 896,000 kPa | 130,000 psi |
| OD | 5.250 in | 133.35 mm | 5.125 in | 130.20 mm |
| ID | 2.688 in | 68.27 mm | 2.688 in | 68.27 mm |
| Torsional Strength | 48,600 ft-lbs | 65,900 N-m | 43,900 ft-lbs | 59,485 N-m |
| Max Make-up torque | 31,600 ft-lbs | 42,800 N-m | 28,500 ft-lbs | 38,615 N-m |
| Recommended Make-up Torque | 29,200 ft-lbs | 39,600 N-m | 26,300 ft-lbs | 35,635 N-m |
| Min Make-up torque | 24,300 ft-lbs | 32,925 N-m | 21,950 ft-lbs | 29,740 N-m |
| Tensile strength | 918,900 lbs | 408,747 daN | 918,900 lbs | 408,747 daN |

Drill Pipe Assembly with Connection

| | | |
|--------------------|------------------|-----------------------------|
| Adjusted weight | 18.73 lbs/ft | 27.88 kg/m |
| Approximate length | 31.50 ft | 9.60 m |
| Fluid displacement | 0.0063596 bbl/ft | 0.0033172 m ³ /m |
| Fluid capacity | 0.0137623 bbl/ft | 0.0071784 m ³ /m |
| Drift size | 2.5 in | 63.50 mm |

While every effort has been made to insure the accuracy of the tables herein, this material is presented as a reference guide only. Empire Tool Company Ltd. cannot assume responsibility for the results obtained through the use of this material. No expressed or implied warranty is intended. All torques are based on a 1.0 friction factor.

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