

**DRILL PIPE DATA SHEET**  
**DRILL PIPE: 4 1/2" IEU by 16.60 lb/ft by Grade S135 by Range 2 (31.5 ft)**  
**TOOL JOINT: 6 1/4" OD by 3" ID by TSDS46 (135 ksi SMYS)**

DRILL PIPE BODY DIMENSIONAL DATA		
	NEW	PREMIUM (80% RBW)
OD (in)	4.500	4.365
ID, Ref (in)	3.826	3.826
Wall Thickness (in)	0.337	0.270
Cross Sectional Area (in <sup>2</sup> )	4.407	3.469
Polar Section Modulus, J/c (in <sup>3</sup> )	8.543	6.694
Section Modulus, I/c (in <sup>3</sup> )	4.271	3.347

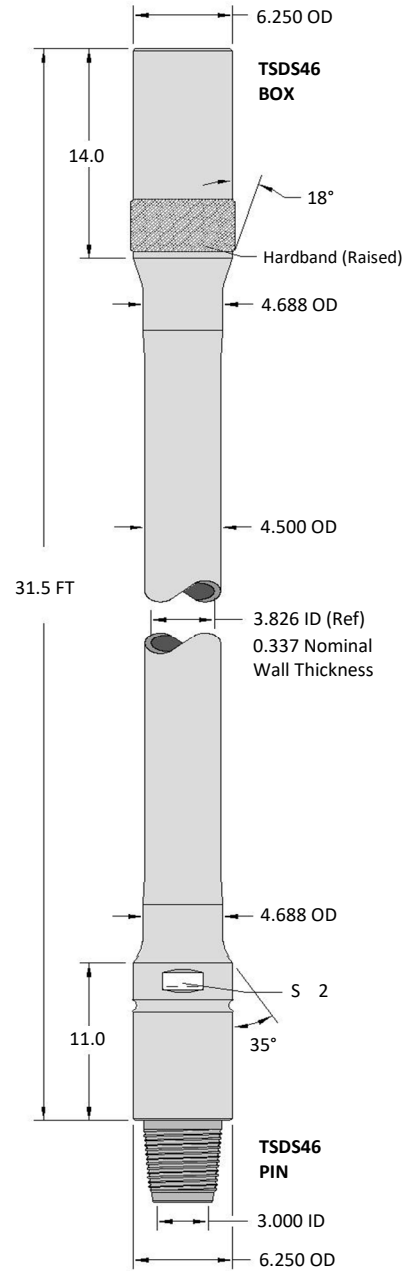
Premium class values based on a minimum wall thickness equal to 80% of New drill pipe body nominal wall thickness, reference API RP 7G-2.

DRILL PIPE BODY PERFORMANCE PROPERTIES		
	NEW	PREMIUM (80% RBW)
Tensile Yield (lb)	595,004	468,297
Torsional Yield (ft-lb)	55,453	43,450
Collapse Pressure (psi)	16,773	10,964
Internal Yield Pressure (psi)	17,693	16,176
Material Yield Strength (psi)	135,000	

Drill pipe body performance properties are based on API RP 7G. Class New drill pipe body data is for reference only and is not intended for drill string design purposes.

TOOL JOINT DATA (New)		
Connection Size	TSDS46	
OD (in)	6.250	
ID (in)	3.000	
Box Tool Joint OD Length (in)	14.0	
Pin Tool Joint OD Length (in)	11.0	
Connection Bevel Diameter (in)	5.719	
Material Yield Strength (psi)	135,000	
<b>Thread Compound Friction Factor</b>	<b>1.0 (a)</b>	<b>1.15 (b)</b>
Recommended Make-Up Torque (ft-lb)	36,000	41,400 (c)
Max Make-Up Torque (ft-lb)	41,900	48,200 (d)
Torsional Yield (ft-lb)	59,900	
Torsional Strength Ratio, TJ/DPB	1.08	
Approximate Tension to Yield Pin at Recommended Make-Up Torque (lb)	954,000	
Approximate Tension to Yield Pin at Max Make-Up Torque (lb)	719,000	
Tool Joint Tensile Yield (lb)	1,159,700	
Balanced OD (in)	5.865	

- (a) Make-Up Torque values shown under column 1.0 are based on using a 1.0 friction factor thread compound (0.08 coefficient of friction).
- (b) Make-Up Torque values shown under column 1.15 have been adjusted based on using a 1.15 friction factor thread compound. The make-up torque values are only applicable when using a thread compound rated by the manufacturer to have a 1.15 friction factor.
- (c) Recommended Make-Up Torque is based on 60% of the connection torsional yield, ref. API RP 7G.
- (d) Max Make-Up Torque is based on 70% of the connection torsional yield. It is the maximum make-up torque that can be applied to the connection to prevent downhole make-up, reference IADC Drilling Manual. Never exceed Max Make-Up Torque.



ASSEMBLY DATA (New)							
Weight (Approx.)		Capacity (Approx.)		Displacement Open Ends (Approx.)		Drift Diameter	Assembly Length Shld'r to Shld'r (Approx.)
(lb/Joint)	(lb/ft)	(US gallon/ft)	(BBL/ft)	(US gallon/ft)	(BBL/ft)	(in)	(ft)
671	21.30	0.5574	0.0133	0.3254	0.0077	2.875	31.5

Assembly data based on TSC 95% RBW New drill pipe nominal dimensions and no internal plastic coating. Conversion Factor: 1 BBL= 42 US gallons

**Notes:**

- 1. All data is calculated based on standard methods. No safety factor applied.
- 2. Premium Class drill pipe body data is based on a minimum wall thickness equal to 80% of New drill pipe nominal wall thickness, reference API RP 7G-2.
- 3. Drawing is for reference purposes only, not to scale, and based on New drill pipe nominal dimensions, units of inches unless otherwise indicated.

Tool Joint Make-Up Torque TSDS46 x 3.000" ID (135 ksi SMYS) 1.0 Friction Factor Thread Compound			
Tool Joint OD (in)	Recommended Make-Up Torque (1) (2) (ft-lb)	Max Make-Up Torque (1) (3) (ft-lb)	Torsional Yield Ref. (ft-lb)
6.250	36,000	41,900	59,900
5.875	36,000	41,900	59,900
5.750	32,600	38,000	54,400
5.625	29,100	33,900	48,500
5.531	26,500	30,900	44,200

(1)

Combined Torque and Tension to Yield Drill Pipe Body Premium Class (80% RBW) 4 1/2" IEU x 16.60 lb/ft x Grade S135	
Operational Torque (ft-lb)	Drill Pipe Body Max Tension (lb)
0	468,297
1,500	468,000
3,000	467,100
4,500	465,700
6,000	463,800
7,500	461,200
9,000	458,100
10,500	454,400
12,000	450,000
13,500	445,100
15,000	439,500
16,500	433,200
18,000	426,200
19,500	418,400
21,000	409,900
22,500	400,600
24,000	390,300
25,500	379,100
27,000	366,900
28,500	353,400
30,000	338,700
31,500	322,500
33,000	304,600

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Tool Joint Make-Up Torque TSDS46 x 3.000" ID (135 ksi SMYS) 1.15 Friction Factor Thread Compound		
Tool Joint OD (in)	Recommended Make-Up Torque (4) (2) (ft-lb)	Max Make-Up Torque (4) (3) (ft-lb)
6.250	41,400	48,200
5.875	41,400	48,200
5.750	37,500	43,700
5.625	33,500	39,000
5.531	30,500	35,600

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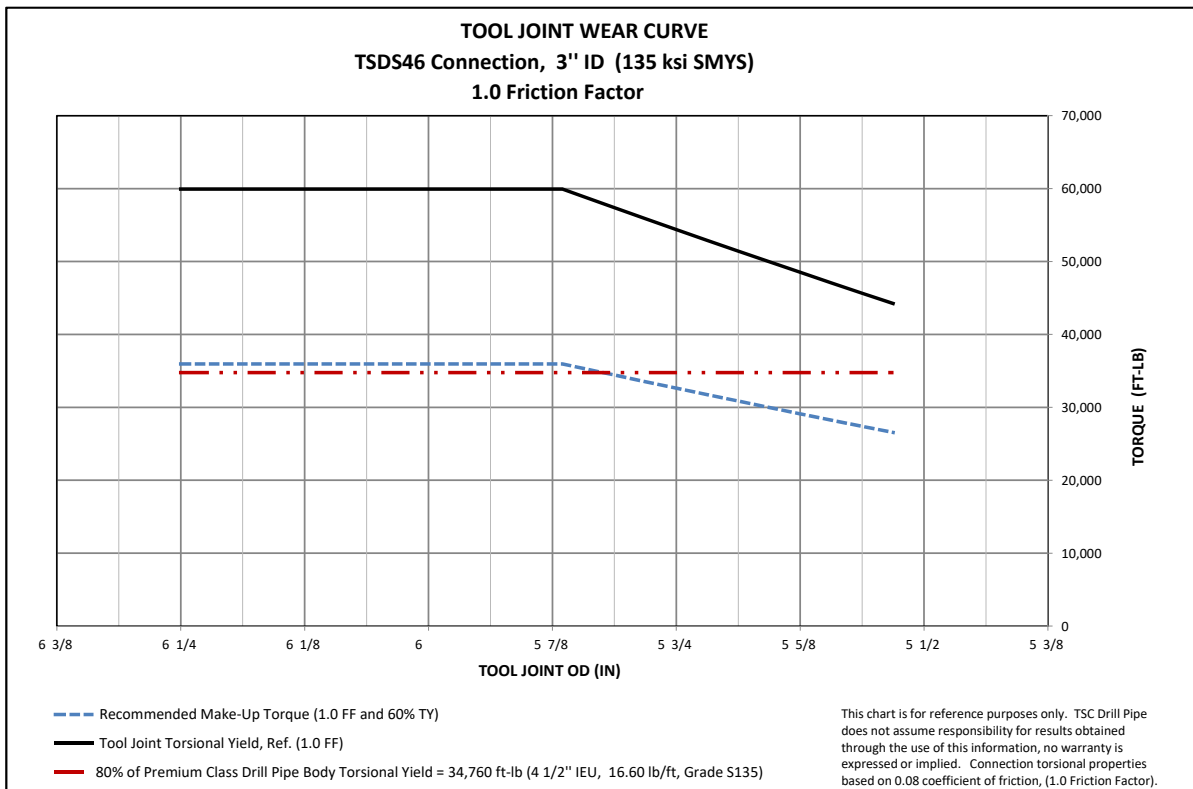
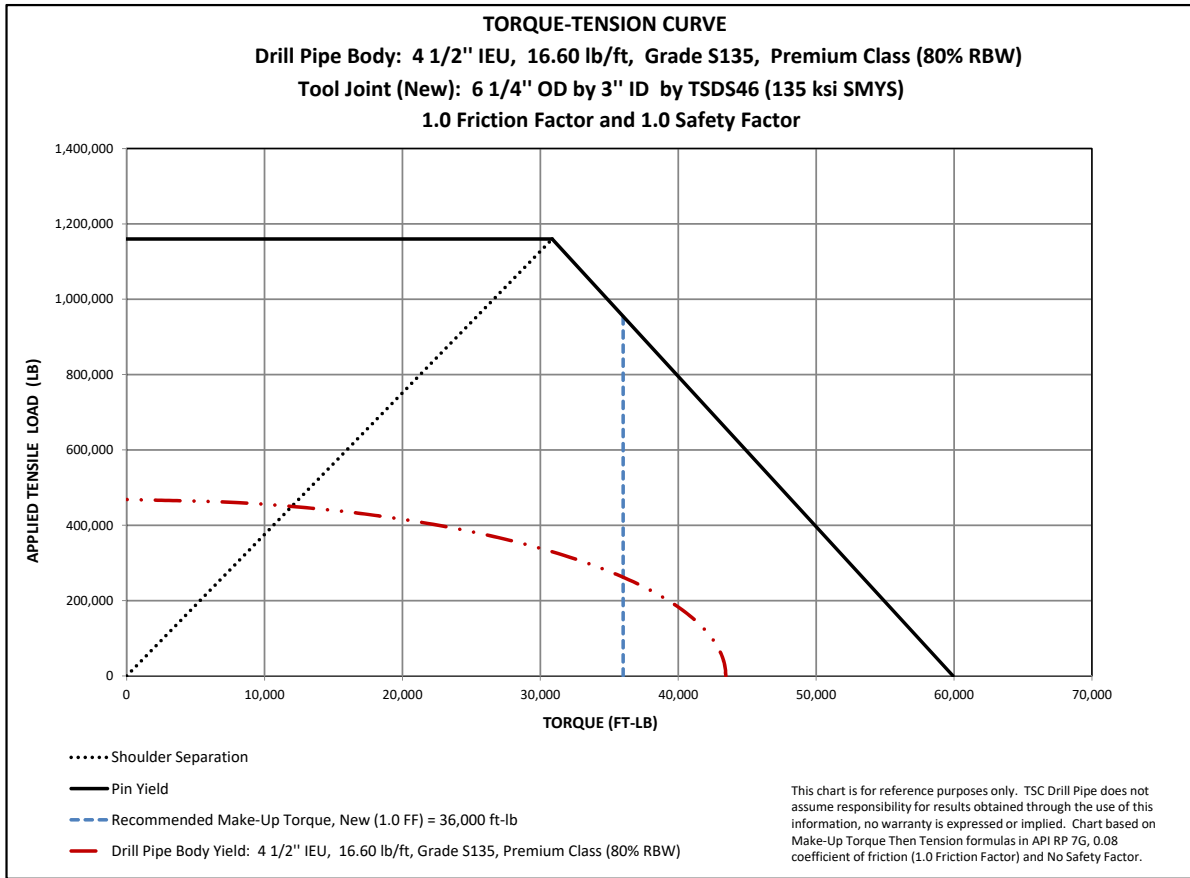
Caution: Operational (rotating) torque should never exceed 80% of the connection make-up torque, reference IADC Drilling Manual.

Estimated Elevator Hoist Capacity (lb)		
Tool Joint OD (in)	4.781" Dia. Assumed Elev. Bore	4.813" Dia. Assumed Elev. Bore
6.250	1,399,700	1,373,800
5.531	668,200	642,300

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Notes:

- Make-Up Torque values are based on 1.0 friction factor thread compound (0.08 coefficient of friction).
- Recommended Make-Up Torque is based on 60% of the connection torsional yield, ref. API RP 7G.
- Max Make-Up Torque is based on 70% of the connection torsional yield. It is the maximum make-up torque that can be applied to the connection to prevent downhole make-up, reference IADC Drilling Manual. Never exceed Max Make-Up Torque.
- Make-Up Torque values have been adjusted based on using a 1.15 friction factor thread compound. The make-up torque values are only applicable when using a thread compound rated by the manufacturer to have a 1.15 friction factor.
- Premium class drill pipe body based on 80% remaining pipe body wall and other requirements specified in API RP 7G-2. Drill pipe body combined torque and tension based on API RP 7G, no safety factor applied.
- Estimated elevator hoist capacity is for reference only and based on tool joint projected taper area, 110,000 psi SMYS and no safety factor. User is advised to contact their elevator manufacturer for elevator hoist capacity versus tool joint OD.



The technical information contained herein is for reference purposes only. TSC Drill Pipe does not assume responsibility for results obtained through the use of the technical information, no warranty is expressed or implied. User is fully responsible for the accuracy and suitability of use of the technical information and application of appropriate safety factor.