FOR REFERENCE ONLY

DRILL PIPE DATA SHEET
DRILL PIPE: 5 1/2" IEU by 21.90 lb/ft by Grade S135 by Range 2 (31.5 ft)
TOOL JOINT: 7" OD by 4" ID by TSDS55 (135 ksi SMYS)

DRILL PIPE BODY DIMENSIONAL DATA	NEW	PREMIUM (80% RBW)
OD (in)	5.500	5.356
ID, Ref (in)	4.778	4.778
Wall Thickness (in)	0.361	0.289
Cross Sectional Area (in^2)	5.828	4.597
Polar Section Modulus, J/c (in^3)	14.062	11.054
Section Modulus, I/c (in^3)	7.031	5.527

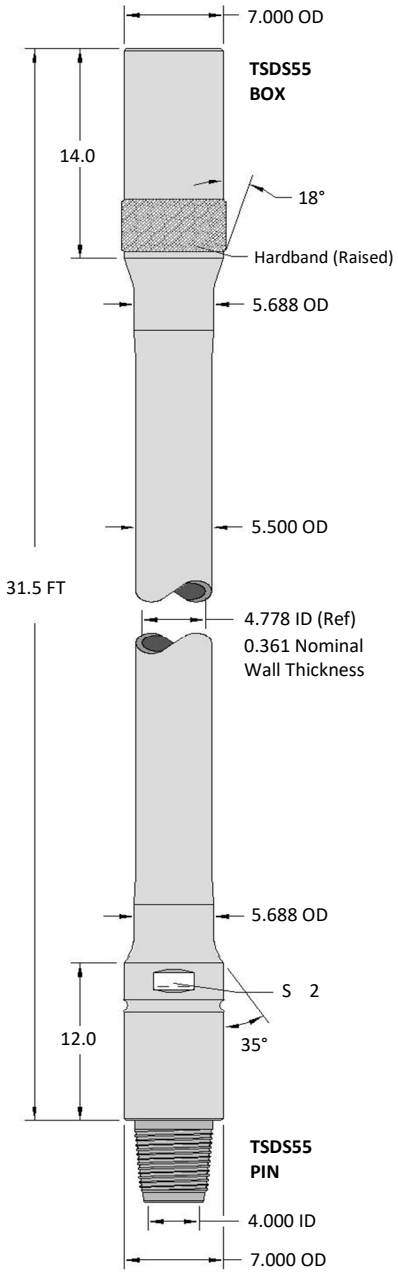
Premium class values based on a minimum wall thickness equal to 80% of New drill pipe body nominal wall thickness, reference API RP 7G-2.

DRILL PIPE BODY PERFORMANCE PROPERTIES	NEW	PREMIUM (80% RBW)
Tensile Yield (lb)	786,809	620,604
Torsional Yield (ft-lb)	91,278	71,754
Collapse Pressure (psi)	12,679	7,496
Internal Yield Pressure (psi)	15,507	14,177
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	TSDS55		
OD (in)	7.000		
ID (in)	4.000		
Box Tool Joint OD Length (in)	14.0		
Pin Tool Joint OD Length (in)	12.0		
Connection Bevel Diameter (in)	6.719		
Material Yield Strength (psi)	135,000		
Thread Compound Friction Factor	**1.0** (a)	**1.15** (b)	
Recommended Make-Up Torque (ft-lb)	49,500	56,900	(c)
Max Make-Up Torque (ft-lb)	57,700	66,300	(d)
Torsional Yield (ft-lb)	82,500		
Torsional Strength Ratio, TJ/DPB	0.90		
Approximate Tension to Yield Pin at Recommended Make-Up Torque (lb)	1,069,000		
Approximate Tension to Yield Pin at Max Make-Up Torque (lb)	803,000		
Tool Joint Tensile Yield (lb)	1,400,100		
Balanced OD (in)	6.881		

(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)
849	26.94	0.8810	0.0210	0.4116	0.0098	3.875	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.

FOR REFERENCE ONLY

Tool Joint Make-Up Torque TSDS55 x 4.000'' ID (135 ksi SMYS) 1.0 Friction Factor Thread Compound			(1)
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)
7.000	49,500	57,700	82,500
6.875	49,200	57,400	82,100
6.750	44,200	51,600	73,700
6.625	39,400	45,900	65,600
6.594	38,200	44,500	63,600

Tool Joint Make-Up Torque TSDS55 x 4.000'' ID (135 ksi SMYS) 1.15 Friction Factor Thread Compound			(4)
Tool Joint OD (in)	Recommended Make-Up Torque (4) (2) (ft-lb)	Max Make-Up Torque (4) (3) (ft-lb)	
7.000	56,900	66,300	
6.875	56,600	66,000	
6.750	50,900	59,300	
6.625	45,300	52,800	
6.594	43,900	51,200	

	Estimated Elevator Hoist Capacity (lb)		(6)
Tool Joint OD (in)	5.813'' Dia. Assumed Elev. Bore	5.844'' Dia. Assumed Elev. Bore	
7.000	1,314,400	1,282,900	
6.594	837,300	805,800	

Combined Torque and Tension to Yield Drill Pipe Body Premium Class (80% RBW) 5 1/2'' IEU x 21.90 lb/ft x Grade S135		(5)
Operational Torque (ft-lb)	Drill Pipe Body Max Tension (lb)	
0	620,604	
1,500	620,400	
3,000	620,000	
4,500	619,300	
6,000	618,400	
7,500	617,200	
9,000	615,700	
10,500	613,900	
12,000	611,800	
13,500	609,500	
15,000	606,800	
16,500	603,900	
18,000	600,700	
19,500	597,200	
21,000	593,400	
22,500	589,300	
24,000	584,800	
25,500	580,000	
27,000	574,900	
28,500	569,500	
30,000	563,700	
31,500	557,600	
33,000	551,000	
34,500	544,100	
36,000	536,800	
37,500	529,100	
39,000	520,900	
40,500	512,200	
42,000	503,100	
43,500	493,500	
45,000	483,300	

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

Notes:

(1) Make-Up Torque values are based on 1.0 friction factor thread compound (0.08 coefficient of friction).

(2) Recommended Make-Up Torque is based on 60% of the connection torsional yield, ref. API RP 7G.

(3) 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.

(4) 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.

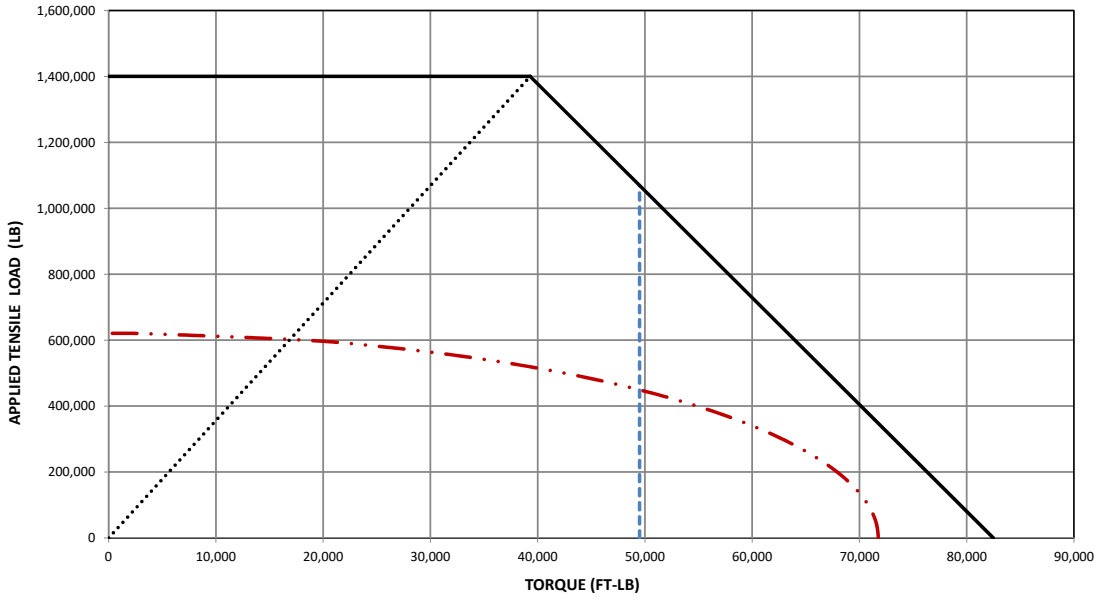
(5) Premium class drill pipe body based on 80% remaining pipe body wall and other requirements specified in API RP 7G-2. Drill pipe body combined torque and tension based on API RP 7G, no safety factor applied.

(6) 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.

FOR REFERENCE ONLY

TSC™ Drill Pipe
A Division of Texas Steel Conversion, Inc.

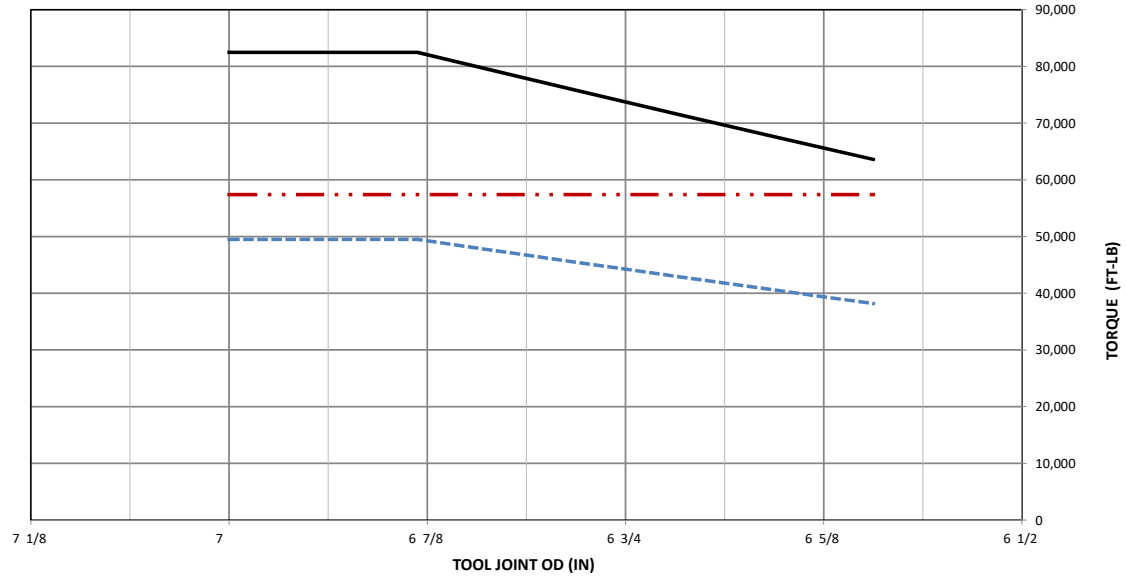
TORQUE-TENSION CURVE
Drill Pipe Body: 5 1/2'' IEU, 21.90 lb/ft, Grade S135, Premium Class (80% RBW)
Tool Joint (New): 7'' OD by 4'' ID by TSDS55 (135 ksi SMYS)
1.0 Friction Factor and 1.0 Safety Factor



- Shoulder Separation
- Pin Yield
- Recommended Make-Up Torque, New (1.0 FF) = 49,500 ft-lb
- Drill Pipe Body Yield: 5 1/2'' IEU, 21.90 lb/ft, Grade S135, Premium Class (80% RBW)

This chart is for reference purposes only. TSC Drill Pipe does not assume responsibility for results obtained through the use of this information, no warranty is expressed or implied. Chart based on Make-Up Torque Then Tension formulas in API RP 7G, 0.08 coefficient of friction (1.0 Friction Factor) and No Safety Factor.

TOOL JOINT WEAR CURVE
TSDS55 Connection, 4'' ID (135 ksi SMYS)
1.0 Friction Factor



- Recommended Make-Up Torque (1.0 FF and 60% TY)
- Tool Joint Torsional Yield, Ref. (1.0 FF)
- 80% of Premium Class Drill Pipe Body Torsional Yield = 57,403 ft-lb (5 1/2'' IEU, 21.90 lb/ft, Grade S135)

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