Pipe Size 4.500 Fin Grade: \$135 Range: 2	COMPI		TE	DRILL PIPE PERFORMANCE DATA SHEET						
Pipe	COLLIE	GBOLIB -			Pipe Size: 4.500 in		S135	Range:	2	
NEW API PREMIUM API PREMIUM API PREMIUM API PREMIUM A	GRUUF			Pipe Weight: 20.00	lb/ft	Upset:	IEU	Connection:	400 DUO	
Pipe size	Pipe									
Pipe weight						NEW	Al	PI PREMIUM		
Upset Type	Pipe size	in	4.500	OD	in	4.500		4.328		
Tube grade Range 2 Polar Section Modulus in 3 5.116 3.9769 Range 2 Polar Section Modulus in 3 10.232 7.9538 Tube Yield ksi 135 Tensile Yield lbs 742,000 581,000 ID in 3.640 Torsional Yield ft-lbs 66,400 51,600 80% Torsional Yield ft-lbs 53,100 41,280 Internal Pressure Yield psi 22,600 20,600 Collapse Yield psi 23,300 18,800 D/t 10.47 12.58 Connection/Tube Torsional Ratio 0.732 Tool Joint Connection Type 400 DUO OD in 5.250 4.813 Material Yield Strength ksi 130 Tensile Yield Strength lbs 918,900 918,900 ID in 5.250 Torsional Yield Strength ft-lbs 48,600 32,700 ID in 2.688 Recommended Makeup Torque ft-lbs 29,200 19,600 Pin Shoulder Angle deg 18 Maximum Makeup Torque ft-lbs 29,200 19,600 Pin Tool Joint Length in 14.0 Box Tool Joint Length in 14.0 Drill Pipe Assembly Shoulder-Shoulder Length ft lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.851 bbl/ft 0.0080 Fluid Capacity gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0080	Pipe weight	lb/ft	20.00	Thickness	in	0.430		0.344		
Range	Upset Type		IEU	X-Sec Area	in ²	5.498		4.306		
Tube Yield	Tube grade		S135	Section Modulus	in ³	5.116		3.9769		
ID	Range		2	Polar Section Modulus	in ³	10.232		7.9538		
Some content of the	Tube Yield	ksi	135	Tensile Yield Ibs		742,000		581,000		
Internal Pressure Yield	ID	in	3.640	Torsional Yield	ft-lbs	66,400		51,600		
Collapse Yield				80% Torsional Yield	ft-lbs	53,100		41,280		
D/t 10.47 12.58 Connection/Tube Torsional Ratio 0.732				Internal Pressure Yield	psi	22,600		20,600		
Connection/Tube Torsional Ratio 0.732				Collapse Yield	psi	23,300		18,800		
NEW REC MIN OD				D/t		10.47		12.58		
Connection Type 400 DUO 00 in 5.250 4.81 3.250 3.270 0.00 in 5.250 3.270 0.00				Connection/Tube Torsional Ratio		0.732				
Connection Type 400 DUO 00 in 5.250 4.81 3.250 3.270 0.00 in 5.250 3.270 0.00										
Connection Type 400 DUO OD in 5.250 4.813 Material Yield Strength ksi 130 Tensile Yield Strength lbs 918,900 918,900 OD in 5.250 Torsional Yield Strength ft-lbs 48,600 32,700 ID in 2.688 Recommended Makeup Torque ft-lbs 29,200 19,600 Pin Shoulder Angle deg 18 Maximum Makeup Torque ft-lbs 31,600 21,300 Pin Tool Joint Length in 14.0<	Tool Joint									
Material Yield Strength ksi 130 Tensile Yield Strength lbs 918,900 918,900 OD in 5.250 Torsional Yield Strength ft-lbs 48,600 32,700 ID in 2.688 Recommended Makeup Torque ft-lbs 29,200 19,600 Pin Shoulder Angle deg 18 Maximum Makeup Torque ft-lbs 31,600 21,300 Pin Tool Joint Length in 14.0 <th></th> <th></th> <th></th> <th></th> <th></th> <th>NEW</th> <th>R</th> <th>REC MIN OD</th> <th></th>						NEW	R	REC MIN OD		
OD in 5.250 Torsional Yield Strength ft-lbs 48,600 32,700 ID in 2.688 Recommended Makeup Torque ft-lbs 29,200 19,600 Pin Shoulder Angle deg 18 Maximum Makeup Torque ft-lbs 31,600 21,300 Pin Tool Joint Length in 14.0 Box Tool Joint Length in 14.0 Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	Connection Type		400 DUO	OD	in	5.250		4.813		
Pin Shoulder Angle deg 18 Maximum Makeup Torque ft-lbs 31,600 21,300 Pin Tool Joint Length in 14.0 Box Tool Joint Length in 14.0 Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.00203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	Material Yield Strength	ksi	130	Tensile Yield Strength	lbs	918,900		918,900		
Pin Shoulder Angle deg 18 Maximum Makeup Torque ft-lbs 31,600 21,300 Pin Tool Joint Length in 14.0 Box Tool Joint Length in 14.0 Drill Pipe Assembly Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	OD	in	5.250	Torsional Yield Strength	ft-lbs	48,600		32,700		
Pin Tool Joint Length in 14.0 Box Tool Joint Length in 14.0 Drill Pipe Assembly Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	ID	in	2.688	Recommended Makeup Torque	ft-lbs	29,200		19,600		
Box Tool Joint Length in 14.0 Drill Pipe Assembly Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	Pin Shoulder Angle	deg	18	Maximum Makeup Torque	ft-lbs	31,600		21,300		
Drill Pipe Assembly Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	Pin Tool Joint Length	in	14.0							
Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	Box Tool Joint Length	in	14.0							
Shoulder-Shoulder Length ft 31.5 Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122										
Adjusted Weight lbs/ft 22.10 Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122	Drill Pipe Assembly									
Closed End Displacement gal/ft 0.851 bbl/ft 0.0203 Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122				-	-					
Open End Displacement gal/ft 0.338 bbl/ft 0.0080 Fluid Capacity gal/ft 0.513 bbl/ft 0.0122				,						
Fluid Capacity gal/ft 0.513 bbl/ft 0.0122				•						
								=		
Drift Size in 2.563				Fluid Capacity	gal/ft	0.513	bb	ol/ft 0.0122		
				Drift Size	in	2.563				

The information contained in this data sheet and other attached documentation is for reference use only. It is not intended to imply any explicit recommendation regarding processes, procedures, or performance of the end product. It is the responsibility of the end user to verify and determine the appropriate use of the technical information - no expressed or implied warranty by Complete Group is intended.

Calculations are based on uniform wall thickness and outside diameter – no safety factor has been applied. The information provided for inspection classes is based on uniform wear and is not intended to recommend or confirm operational limits of any used product. It is recommended that drilling torque not exceed 80% of the makeup torque, however it is the responsibility of the end user to determine the acceptable use of the end product including appropriate performance ratings and safety factors where applicable. All connection torque calculations have been performed using a thread compound friction factor of 1.0. Complete Group does not endorse any specific thread compound and waives all responsibility in determining appropriate makeup torque values for any specific drilling circumstance. Modifying makeup torque values for any reason shall be done at the end users discretion and risk.

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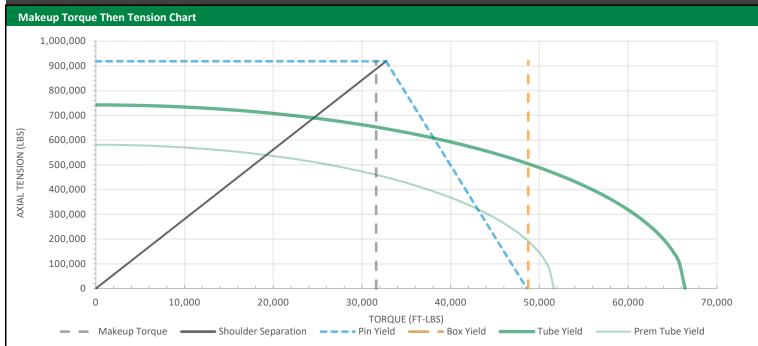
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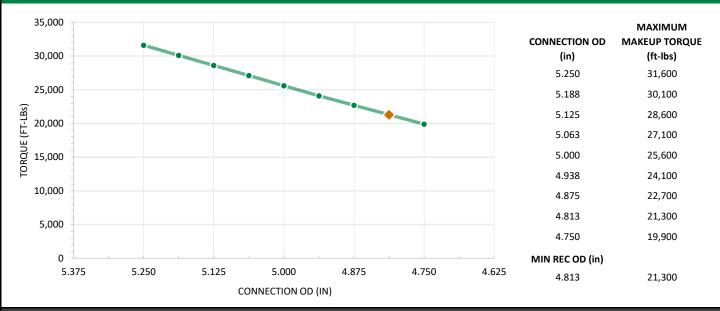
DRILL PIPE PERFORMANCE DATA SHEET

Pipe Size: 4.500 in Grade: S135 Range: 2

Pipe Weight: 20.00 lb/ft Upset: IEU Connection: 400 DUO



Connection Wear Chart



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