

DRILL PIPE SPECIFICATION SHEET

4" – DELTA™391 – 4.875" OD X 2.688" ID – DRILL PIPE

TUBE / PIPE BODY	NOMINAL	
PIPE BODY OD	4.000	in
PIPE BODY ID	3.340	in
WEIGHT	14.00	lbs/ft
WALL THICKNESS	0.330	in
GRADE	S-135	
TYPE OF UPSET	IU	
MAXIMUM UPSET OD	4.100	in
RANGE	2	

TOOL JOINT SPECIFICATIONS	NOMINAL	
TOOL JOINT DESCRIPTION	DELTA™391	
TOOL JOINT OD	4.875	in
TOOL JOINT ID	2.688	in
PIN TONG LENGTH	12	in
BOX TONG LENGTH	17	in
TOOL JOINT SMYS	130,000	psi
DRIFT	2.563	in
TOOL JOINT TORSIONAL	35,302	ft-lbs

PIPE BODY PERFORMANCE	INSPECTION CLASS	
	NOMINAL	API PREMIUM 80%
REMAINING BODY WALL (RBW)	0.330	0.264 in
BURST PRESSURE*	19,490	17,800 psi
COLLAPSE PRESSURE*	20,140	13,830 psi
SLIP CRUSHING CAPACITY*	431,900	341,900 lbs
- ASSUMED SLIP LENGTH		16.5 in
- ASSUMED TRANSVERSE LOAD FACTOR (K)		2.6
ADJUSTED WEIGHT**		16.52 lbs/ft
FLUID DISPLACEMENT**		0.0061 bbls/ft
FLUID CAPACITY**		0.0100 bbls/ft
TUBE TENSILE		403,530 lbs
TUBE TORSIONAL		32,750 ft-lbs



NOMINAL BURST CALCULATED AT 87.5% RBW PER API
 *WITH NO AXIAL LOAD OR BENDING IN STRING
 **BEST ESTIMATE

MAKEUP TORQUE SPECIFICATIONS	THREAD COMPOUND FRICTION FACTOR	
	1.00 FF	1.15 FF*
MAXIMUM MAKEUP TORQUE	21,400 ft-lbs	24,610* ft-lbs
MINIMUM MAKEUP TORQUE	17,800 ft-lbs	20,470* ft-lbs
TOOL JOINT TORSIONAL	35,600 ft-lbs	40,490* ft-lbs
CONNECTION TENSILE (AT MIN MAKEUP TORQUE)	696,000 lbs	
CONNECTION TENSILE (AT MAX MAKEUP TORQUE)	556,800 lbs	

*FRICTION FACTOR ADJUSTMENT BASED ON USING COPPER BASED THREAD COMPOUND WITH A FRICTION FACTOR OF 1.15.
 **WHEN APPLYING A 1.15 FF THREAD COMPOUND THE TOOL JOINT TORSIONAL STRENGTH WILL INCREASE BY AN ADDITIONAL 15%.

- MAXIMUM MAKEUP TORQUE SHOULD BE USED WHEN POSSIBLE.
- IT IS RECOMMENDED THAT DRILLING TORQUE SHOULD NOT EXCEED 80% OF MAKEUP TORQUE.

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Start saving time and money today!

To order your 4", DELTA™391 Drill Pipe for your offshore & land needs, or for further information, please contact:

Toll Free T: 888-922-3449
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Drill Pipe Performance Sheet (1.0 FF)

4/26/2022

Pipe Body Specification		
Pipe Body OD	in	4.0
Pipe Body Wall Thickness - Nominal Weight		0.330 in - 14 lb/ft
Pipe Body Grade		S135
Drill Pipe Length		Range 2
- Max	ft	32.0
- Min	ft	30.0
Type of Upset		IU
Max Upset OD	in	4.188
Tong Length includes hardbanding if applicable		

Pipe Body Performance			
		Nominal	API Premium 80% Inspection Class
Burst Pressure *	psi	19,490	17,800
Collapse Pressure *	psi	20,140	13,830
Slip Crushing Capacity *	lbs	431,900	341,300
- Assumed Slip Length	in		16.5
- Assumed Transverse Load Factor (K)			2.6
Adjusted Weight **	lbs/ft		16.24
Fluid Displacement **	US gal/ft		0.25
	Bbls/ft		0.0059
Fluid Capacity **	US gal/ft		0.42
	Bbls/ft		0.0101
* With no axial load or bending in string		** Best estimate with coating	
Note: Oil field barrel equivalent to 42 US gal		Note: Nominal burst calculated at 87.5% RBW per API	

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Tool Joint Specification		
Connection Type and Size		Delta™ 391
Benchmark		Xmark™ +
SmoothEdge™ Height per side	in	0.09375
Tool Joint SMYS	psi	130,000
Connection OD	in	4.875
Connection ID	in	2.688
Pin Tong Length	in	10.0
Box Tong Length	in	15.0
Thread Compound Friction Factor (FF)		1.0

Tool Joint Performance		
Max Make-Up Torque (Recommended)	ft-lbs	21,400
Min Make-Up Torque	ft-lbs	17,800
Min TJ OD (API Premium)	in	4.575
Min TJ OD for Counterbore	in	4.575
Drift Size	in	2.563
The maximum make-up torque should be applied when possible. To maximize connection operational tensile, a MUT (T4) = 17,800 should be applied.		

Advisories and Warnings for Drill Pipe	
Advisories:	
Warnings:	

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Drill Pipe Performance Sheet (1.0 FF)

4/26/2022

Combined Loading for Drill Pipe			
Connection: Delta™ 391 4.875" x 2.688" (130 KSI SMYS) Friction Factor: 1.0			
Pipe: 4.0" OD 0.330" Wall Thickness S135 80% Inspection Class			
At Max MUT (21400 ft-lbs)		At Min MUT (17800 ft-lbs)	
Operational Torque(ft-lbs)	Assembly Max Tension(lbs)	Operational Torque(ft-lbs)	Assembly Max Tension(lbs)
0	403500	0	403500
1000	403300	800	403400
2000	402800	1600	403000
3000	401800	2400	402400
4000	400500	3200	401600
5000	398800	4000	400500
6000	396700	4800	399200
7000	394200	5600	397600
8000	391300	6400	395700
9000	388000	7200	393700
10000	384300	8000	391300
11000	380100	8800	388700
12000	375500	9600	385800
13000	370400	10400	382600
13900	365400	11200	379200
14900	359400	12000	375500
15900	352800	12800	371400
16900	345700	13600	367100
17900	337900	14400	362400
18900	329600	15200	357400

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Connection Wear Table		
Connection: Delta™ 391 4.875" x 2.688" (130 KSI SMYS) Friction Factor: 1.0		
Tool Joint OD (in)	Max MUT(ft-lbs)	Min MUT(ft-lbs)
4.875	21400	17800
4.848	21400	17800
4.82	20900	17500
4.793	20400	17000
4.766	19900	16600
4.739	19300	16100
4.711	18800	15700
4.684	18300	15200
4.657	17700	14800
4.63	17200	14400
4.602	16700	13900
4.575	16200	13500

Elevator Capacity		
Elevator Bore Diameter: 4.28175" Elevator SMYS: 110,100 psi Box Taper Angle: 18 deg		
Connection: Delta™ 391 4.0" 0.330" wall IU S135		
Tool Joint OD (in.)	Elevator Hoist Capacity (lbs)	
	No Wear	1/32" Wear Factor
5.0625	630900	607600
5.018	592100	568800
4.974	554100	530800
4.93	516400	493100
4.885	478200	455000
4.841	441200	417900
4.797	404500	381300
4.752	367300	344100
4.708	331400	308100
4.664	295700	272500
4.619	259600	236300
4.575	224600	201400

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4/26/2022

Slip Crush Capacity Table at 80% Inspection Class					
		Slip Length			
		13.75 in.	16 in.	16.5 in.	22 in.
K Factor	2.1	343200.0 lbs	351500.0 lbs	353000.0 lbs	365500.0 lbs
	2.6	329500.0 lbs	339500.0 lbs	341300.0 lbs	356600.0 lbs
	4.0	294400.0 lbs	307900.0 lbs	310500.0 lbs	332200.0 lbs
	4.2	289700.0 lbs	303700.0 lbs	306400.0 lbs	328900.0 lbs

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Drill Pipe Performance Sheet (1.15 FF)

9/21/2023

Pipe Body Specification		
Pipe Body OD	in	4.0
Pipe Body Wall Thickness - Nominal Weight		0.330 in - 14 lb/ft
Pipe Body Grade		S135
Drill Pipe Length		Range 2
- Max	ft	32.0
- Min	ft	30.0
Type of Upset		IU
Max Upset OD	in	4.188
Tong Length includes hardbanding if applicable		

Pipe Body Performance			
		Nominal	API Premium 80% Inspection Class
Burst Pressure *	psi	19,490	17,800
Collapse Pressure *	psi	20,140	13,830
Slip Crushing Capacity *	lbs	431,900	341,300
- Assumed Slip Length	in		16.5
- Assumed Transverse Load Factor (K)			2.6
Adjusted Weight **	lbs/ft		16.24
Fluid Displacement **	US gal/ft		0.25
	Bbls/ft		0.0059
Fluid Capacity **	US gal/ft		0.42
	Bbls/ft		0.0101
* With no bending or axial load in the string as applicable ** Best estimate with coating			
Note: Oil field barrel equivalent to 42 US gal		Note: Nominal burst calculated at 87.5% RBW per API	

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Tool Joint Specification		
Connection Type and Size		Delta™ 391
Benchmark		Xmark™ +
SmoothEdge™ Height per side	in	N/A
Tool Joint SMYS	psi	130,000
Connection OD	in	4.875
Connection ID	in	2.688
Pin Tong Length	in	10.0
Box Tong Length	in	15.0
Thread Compound Friction Factor (FF)		1.15

Tool Joint Performance		
Max Make-Up Torque with applied FF (Recommended)	ft-lbs	24,600
Min Make-Up Torque with applied FF	ft-lbs	20,500
Min TJ OD (API Premium)	in	4.575
Min TJ OD for Counterbore	in	4.575
Drift Size	in	2.563
The maximum make-up torque should be applied when possible. To maximize connection operational tensile, a MUT (T4) = 20,500 should be applied.		

Advisories and Warnings for Drill Pipe	
Advisories:	- Elevator capacity is less than new tube tensile. Consider increasing tool joint OD or adding SmoothEdge Option. - The provided Make-Up Torques already include FF - No further adjustment is permitted.
Warnings:	

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Combined Loading for Drill Pipe			
Connection: Delta™ 391 4.875" x 2.688" (130 KSI SMYS) Friction Factor: 1.15			
Pipe: 4.0" OD 0.330" Wall Thickness S135 80% Inspection Class			
At Max MUT (24600 ft-lbs)		At Min MUT (20500 ft-lbs)	
Operational Torque(ft-lbs)	Assembly Max Tension(lbs)	Operational Torque(ft-lbs)	Assembly Max Tension(lbs)
0	403500	0	403500
1200	403300	900	403400
2300	402500	1900	402800
3500	401200	2800	402000
4600	399500	3700	400900
5800	397100	4600	399500
7000	394200	5600	397600
8100	391000	6500	395500
9300	386900	7400	393100
10400	382600	8300	390400
11600	377400	9300	386900
12800	371400	10200	383500
13900	365400	11100	379600
15100	358100	12000	375500
16200	350700	13000	370400
17400	341900	13900	365400
18500	333000	14800	360000
19700	322400	15700	354100
20900	310700	16700	347100
22000	298900	17600	340300

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Connection Wear Table		
Connection: Delta™ 391 4.875" x 2.688" (130 KSI SMYS) Friction Factor: 1.15		
Tool Joint OD (in)	Max MUT(ft-lbs)	Min MUT(ft-lbs)
4.875	24600	20500
4.848	24600	20500
4.82	24100	20100
4.793	23500	19600
4.766	22800	19000
4.739	22200	18500
4.711	21600	18000
4.684	21000	17500
4.657	20400	17000
4.63	19800	16500
4.602	19200	16000
4.575	18600	15500

Elevator Capacity		
Elevator Bore Diameter: 4.28175" Elevator SMYS: 110,100 psi Box Taper Angle: 18 deg		
Connection: Delta™ 391 4.0" 0.330" wall IU S135		
Tool Joint OD (in.)	Elevator Hoist Capacity (lbs)	
	No Wear	1/32" Wear Factor
4.875	469700	446500
4.848	447000	423800
4.82	423600	400400
4.793	401200	378000
4.766	378900	355600
4.739	356700	333500
4.711	333800	310600
4.684	311900	288600
4.657	290100	266800
4.63	268400	245100
4.602	246000	222800
4.575	224600	201400

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9/21/2023

Slip Crush Capacity Table at 80% Inspection Class					
		Slip Length			
		13.75 in.	16 in.	16.5 in.	22 in.
K Factor	2.1	343200.0 lbs	351500.0 lbs	353000.0 lbs	365500.0 lbs
	2.6	329500.0 lbs	339500.0 lbs	341300.0 lbs	356600.0 lbs
	4.0	294400.0 lbs	307900.0 lbs	310500.0 lbs	332200.0 lbs
	4.2	289700.0 lbs	303700.0 lbs	306400.0 lbs	328900.0 lbs

Improved Elevator Capacity Table						
Elevator Bore Diameter: 4.28175" Elevator SMYS: 110,100 psi Box Taper Angle: 18 deg Connection: Delta™ 391 4.0" 0.330" wall IU S135						
Tool Joint OD (in.)	Elevator Hoist Capacity (lbs)					
	No Wear	Custom 0.03125 in.	1/16 in.	1/8 in.	3/16 in.	1/4 in.
4.575	224600	201400	178000	130700	82700	34100
4.602	246000	222800	199400	152100	104100	55500
4.63	268400	245100	221700	174500	126500	77800
4.657	290100	266800	243400	196100	148200	99500
4.684	311900	288600	265200	217900	170000	121300
4.711	333800	310600	287200	239900	191900	143300
4.739	356700	333500	310100	262800	214800	166100
4.766	378900	355600	332200	285000	237000	188300
4.793	401200	378000	354600	307300	259300	210700
4.82	423600	400400	377000	329700	281700	233100
4.848	447000	423800	400400	353100	305200	256500
4.875	469700	446500	423100	375800	327900	279200

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