WORKSTRINGS™

Drill Pipe Performance Sheet

Size and Weight: 5.875" 26.30 ppf 0.415" wall IEU
Grade: V-150
Range: 2
Tool Joint: 7.000" x 4.250" Delta 576

Pipe Body

	Nominal 100% RBW	95% RBW	Ultra Class 90% RBW	Premium 80% RBW
OD (in)	5.875	5.834	5.792	5.709
Wall Thickness (in)	0.415	0.394	0.374	0.332
Nominal ID (in)	5.045	5.045	5.045	5.045
Tensile Strength (lbs)	1,067,779	1,010,535	953,697	841,238
Torsional Strength (ft-lbs)	131,016	123,863	116,779	102,815
Burst Capacity (psi)	18,543	20,132	19,072	16,953
Collapse Capacity (psi)	15,976	14,447	12,897	9,728

Body properties are calculated based on uniform OD and wall thickness.
Burst capacity for Nominal (100% RBW) based on 87.5% RBW per API.

Tubular Assembly

Adjusted Weight (lbs/ft)	31.19	Fluid Displacement (gal/ft)	0.48
Approximate Length (ft)	31.5	Fluid Displacement (bbls/ft)	0.0113
Box TJ Length (in)	17	Fluid Capacity w/IPC (gal/ft)	0.98
Pin TJ Length (in)	14	Fluid Capacity w/IPC (bbls/ft)	0.0234
Upset Type	IEU		
Max Upset OD (in)	6.000		
Drift Size (in)	4.125		

These are OEM values that may vary with actual values due to mill tolerances, IPC tolerances, OEM rounding, and other factors. Pipe is purchased at a guaranteed 95% RBW. IPC is applied to a nominal thickness of 0.009 in. Pipe will have an ID of 4.981 in, which is smaller than pipe purchased at 87.5%.

Connection: Delta 576

TJ OD (in)	7.000
TJ ID (in)	4.250
MYS (ksi)	130

	1.0 FF	1.1 FF	1.15 FF
Extended MUT (ft-lbs)	69,000	75,900	79,400
Tension at Shoulder Separation @ Ext MUT (lbs)	Tensile Limited	Tensile Limited	Tensile Limited
Tension at Connection Yield @ Ext MUT (lbs)	812,886	812,886	812,886
Maximum MUT (ft-lbs)	59,200	65,100	68,100
Tension at Shoulder Separation @ Max MUT (lbs)	Tensile Limited	Tensile Limited	Tensile Limited
Tension at Connection Yield @ Max MUT (lbs)	1,083,848	1,083,848	1,083,848
Minimum MUT (ft-lbs)	49,300	54,200	56,700
Tension at Shoulder Separation @ Min MUT (lbs)	1,350,914	1,350,914	1,350,914
Tension at Connection Yield @ Min MUT (lbs)	1,352,859	1,352,859	1,352,859
Tool Joint Torsional Strength (ft-lbs)	98,638	108,502	113,434
Tool Joint Tensile Strength (lbs)	1,352,859	1,352,859	1,352,859

Maximum MUT is recommended based on thread compound friction factor (unless stated). Lower than maximum MUT should only be used when MUT is limited by rig equipment or connection tensile. Lower than minimum MUT should never be used

Delta 576 is a trademark of NOV Grant Prideco.
There is no published pressure rating for this connection.
ADJUST makeup torque according to thread compound friction factor (FF) greater than 1.0 up to 1.15 FF. Not to exceed 1.15 regardless of dope FF.

Elevator Shoulder

Smooth Edge Height (in)	3/32
Smooth Edge OD (in)	7.188
SE Elevator Shoulder Capacity (lbs)	1,223,100
Nominal TJ OD (in)	7.000
Nominal TJ OD Elevator Shoulder Capacity (lbs)	993,000
Assumed Elevator Bore (in)	6.125

Elevator capacity based on assumed elevator bore, no wear factor, and contact stress of 110,100 psi. An increased elevator shoulder OD increases elevator capacity without affecting make-up torque.

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Combined Loading for Drill Pipe

Connection: Delta™ 576 7.0" x 4.25" (130 KSI SMYS) Friction Factor: 1.0
Pipe: 5.875" OD 0.415" Wall Thickness V150™ (API PSL-3) 80% Inspection Class

At Max MUT (59200 ft-lbs)		At Min MUT (49300 ft-lbs)	
Operational Torque(ft-lbs)	Assembly Max Tension(lbs)	Operational Torque(ft-lbs)	Assembly Max Tension(lbs)
0	841200	0	841200
2700	840900	2100	841100
5400	840100	4300	840500
8000	838700	6400	839600
10700	836700	8500	838400
13400	834100	10700	836700
16100	830900	12800	834700
18700	827200	14900	832400
21400	822800	17100	829500
24100	817800	19200	826400
26800	812200	21300	823000
29400	806100	23500	819000
32100	799200	25600	814700
34800	791600	27700	810100
37500	783300	29900	804900
40100	774600	32000	799500
42800	764900	34100	793600
45500	754400	36200	787400
48200	743100	38400	780400
50900	730900	40500	773200

Connection Wear Table

Connection: Delta™ 576 7.0" x 4.25" (130 KSI SMYS) Friction Factor: 1.0

Tool Joint OD (in)	Max MUT(ft-lbs)	Min MUT(ft-lbs)
7.0	59200	49300
6.959	59200	49300
6.918	57800	48200
6.877	56100	46800
6.836	54500	45400
6.795	52800	44000
6.754	51200	42700
6.713	49600	41300
6.672	48000	40000
6.631	46400	38700
6.59	44900	37400
6.549	43300	36100

Elevator Capacity Table

Elevator Bore Diameter: 6.125" Elevator SMYS: 110,100 psi Box Taper Angle: 18 deg
Connection: Delta™ 576 5.875" 0.415" wall IEU V150™ (API PSL-3)

TJOD (in.)	Elevator Hoist Capacity (lbs) - Bore Wear					
	No Wear	Custom 0.03125 in.	1/16 in.	1/8 in.	3/16 in.	1/4 in.
7.1875	1223100	1189900	1156600	1089300	1021500	952900
7.129	1150700	1117500	1084100	1016900	949000	880500
7.071	1079500	1046300	1012900	945700	877800	809200
7.013	1008800	975600	942300	875100	807200	738600
6.955	938800	905600	872200	805000	737100	668600
6.897	869300	836100	802800	735500	667600	599100
6.839	800400	767200	733900	666700	598800	530200
6.781	732100	698900	665600	598300	530400	461900
6.723	664400	631200	597800	530600	462700	394100
6.665	597200	564000	530700	463500	395600	327000
6.607	530700	497500	464100	396900	329000	260400
6.549	464700	431500	398100	330900	263000	194500

Makeup Torque Guidelines

- Good copper-based thread compound is recommended for rotary-shouldered drill pipe connections by the OEM.
- Be liberal with the thread compound in the box, the base of the box, and on the pin using a copper-based or a compatible thread compound.
- Ensure 360 degrees of coverage of the threads and torque shoulders.
- Ensure 360 degrees of coverage on the seal surfaces on completion pipe.
- Always ensure proper pipe alignment.
- Adjust makeup torque according to thread compound friction factor (FF) greater than 1.0 FF up to 1.15 FF. Workstrings Engineering is available for more information.
- Minimize clamp pressure with the tongs or iron roughneck.
- Maximize the distance between the box shoulder and lower jaw die per OEM guidelines (1"-2" minimum for most tool joints).
- Use a slow rotation speed during spin-up and break-out of the first 5-6 threads - especially critical for premium and completion connections.

NOTE: More detailed running procedures for proprietary rotary-shouldered connections are available from the OEM's website (NOV Grant Prideco, Vallourec and Tenaris), Workstrings Engineering or Workstrings' website.

Global Headquarters
1150 Smede Hwy
Broussard, LA 70518 - USA
Phone: +1 337.989.9675
Email: info@workstrings.com

Engineering & Marketing
1001 Louisiana St., Suite 2900
Houston, TX 77002 - USA
Phone: +1 281.999.0047
Email: marketing@workstrings.com

EMEA Corporate
Kirkton Avenue, Dyce
Aberdeen, AB21 0BF - UK
Phone: +44 1224.724900
Email: sales.uk@workstrings.com