



**EPI AND PARTNERS
PIPE DRILLING PRODUCT SOLUTION**



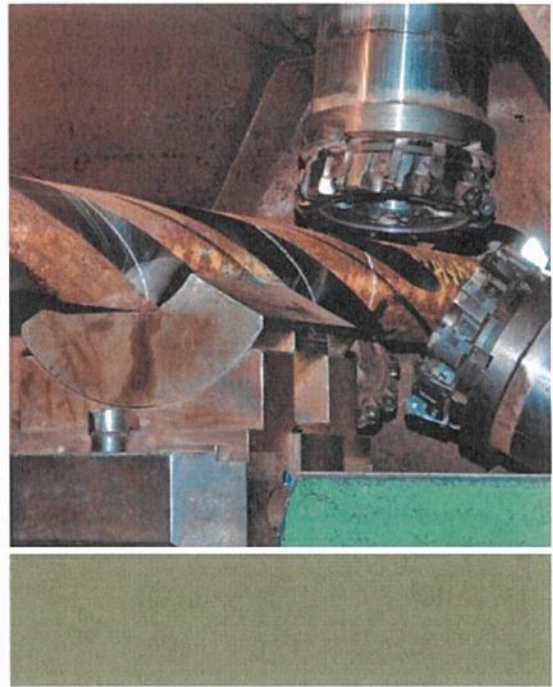
Drill Collars

The Solution: Transitional and Compressive Load Member

Drill collars are thick-walled tubulars machined from solid steel bars and manufactured to specifications to meet and/or exceed API or NS-1 requirements. The quality of the heat treatment is critical in the production of raw materials and must be uniform and deep enough through the thickness of the bar to ensure the mechanical properties.

Drill collars are used as a component of the bottom-hole assembly (BHA) and provide the following benefits:

- drilling weight-on-bit (WOB)
- BHA directional control
- hole size integrity
- stiffness to maintain hole straightness
- clearance for the drill string
- compressive and torsional loads
- mitigate differential sticking and stuck pipe thanks to spiraled grooves



Product Performance

Drill collars come in slick and spiral-grooved designs with additional features for safe surface-handling and trouble-free operations. We provide the full range of collars manufactured in AISI 4145H-modified steel with mechanical properties guaranteed 1 inch below steel surface at ambient temperature.

Product range and features

Standard

- ODs from 2-7/8" to 14"
- API Specification 7.1 & 7.1
- slick
- API connections
- enhanced fatigue resistance with thread cold rolling
- phosphate or zinc coated threads
- slip and elevator recess
- API stress-relief on pin and box bore back
- pressed steel thread protectors

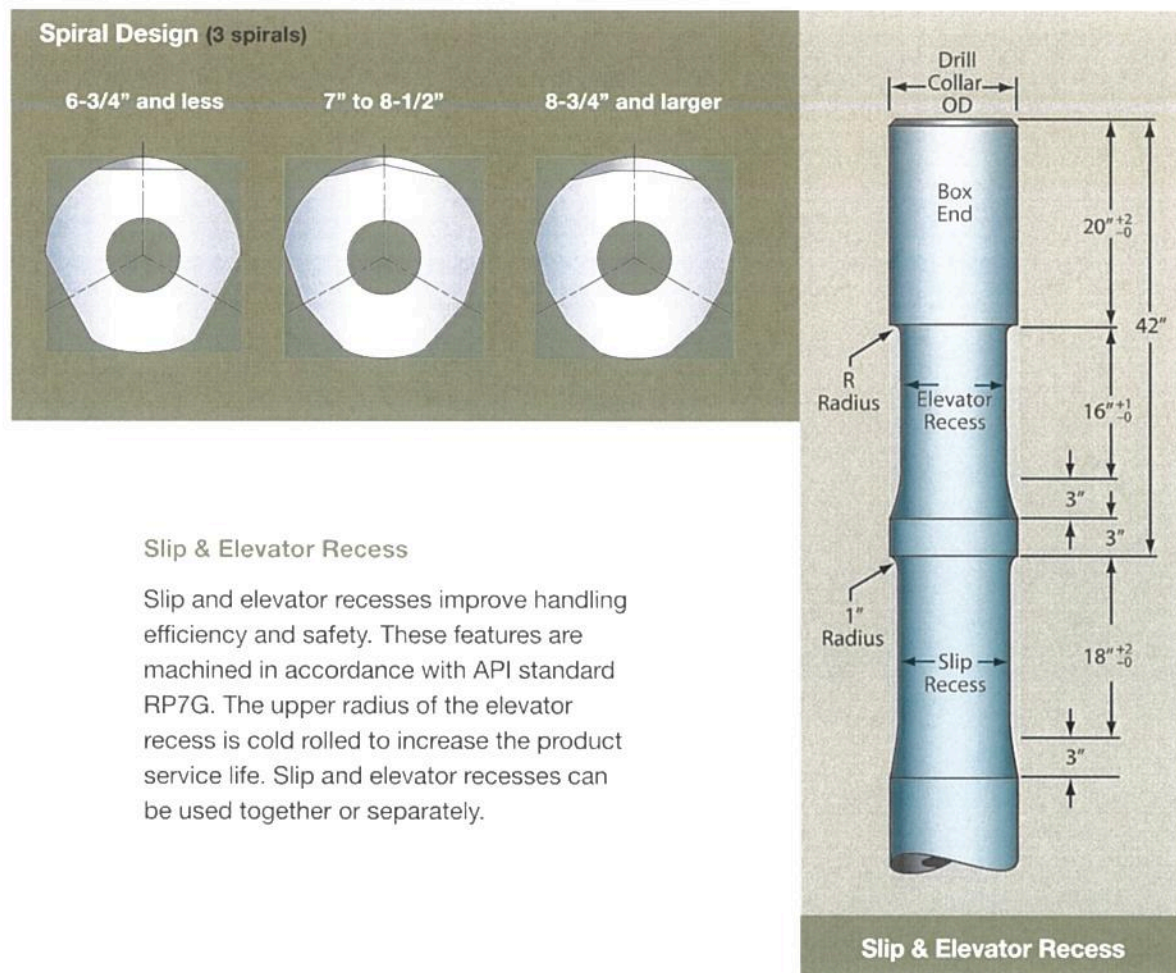
Options

- spiral
- hardbanding
- plastic coating with ODs <6 1/2"
- high-performance connections
- customized elevator and slip recess
- NS-1 or DS-1
- premium grades and materials: Sour Service, Arctic grades, and non-magnetic alloys
- Range 3



Spiral Design

In order to reduce differential pressure sticking and wellbore contact, the surface of drill collars can be spiral-grooved. Spiral drill collars are the perfect solution for deep, directional or deviated drilling. Cross sections of the drill collars reduce the contact area with the wall of the hole.



Slip & Elevator Recess

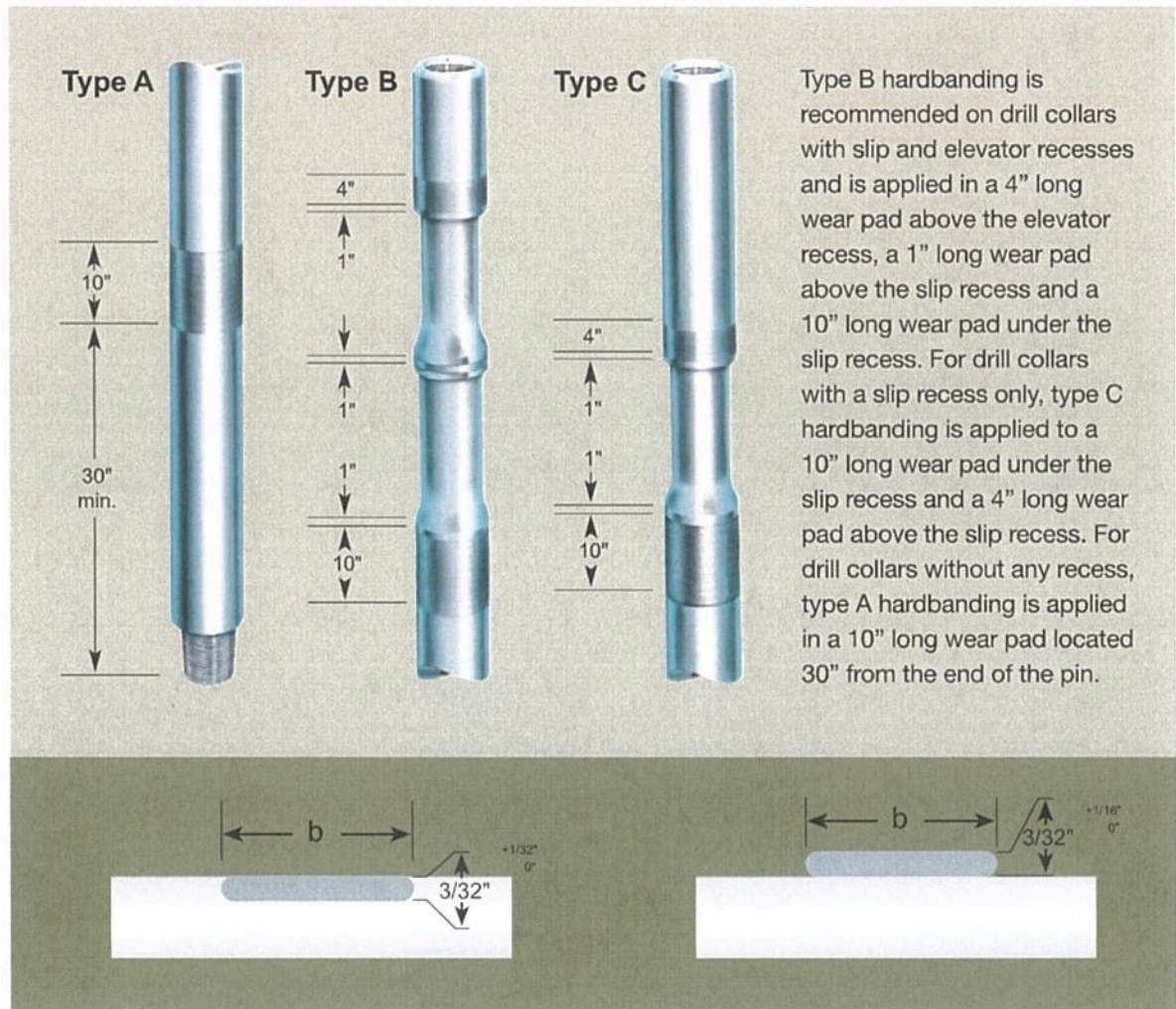
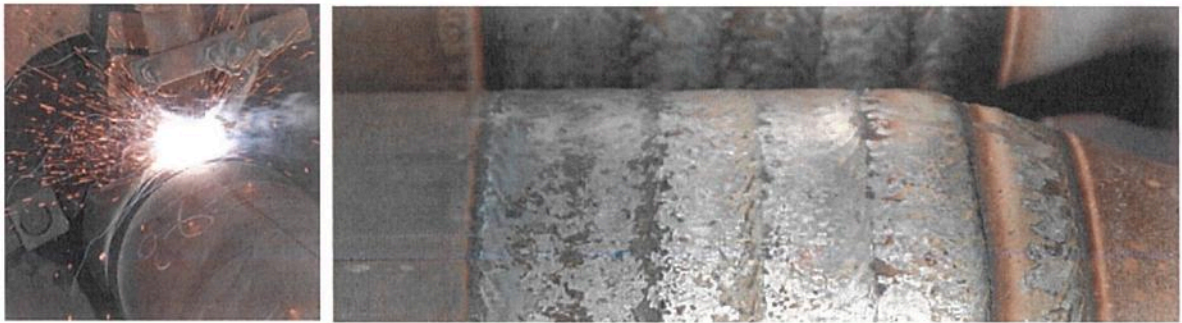
Slip and elevator recesses improve handling efficiency and safety. These features are machined in accordance with API standard RP7G. The upper radius of the elevator recess is cold rolled to increase the product service life. Slip and elevator recesses can be used together or separately.

Drill Collar Material Table

Application	Material	Size	Yield Strength	Ultimate Strength	Hardness (Brinell)	Elongation	Reduction of Area	Min Charpy
			Min (ksi)	Min (ksi)	(HB)	(%)	(%)	(ft-lbs @ +20°C)
Standard Service	AISI 4145H	Up to 6-7/8"	110	140	285 to 340	13	45	40
	Mod Bar	Above 6-7/8"	100	135				
Sour Service	ERS 425™	Up to 7"	110	135	285 to 341	13	45	48
		Above 7" (up to 8-1/2")	100	135				
Non-Magnetic	Amagnit™ 501	Up to 7"	116	135	275 min	25	50	74
		Above 7"	112	130				



Hardbanding (flush or raised)

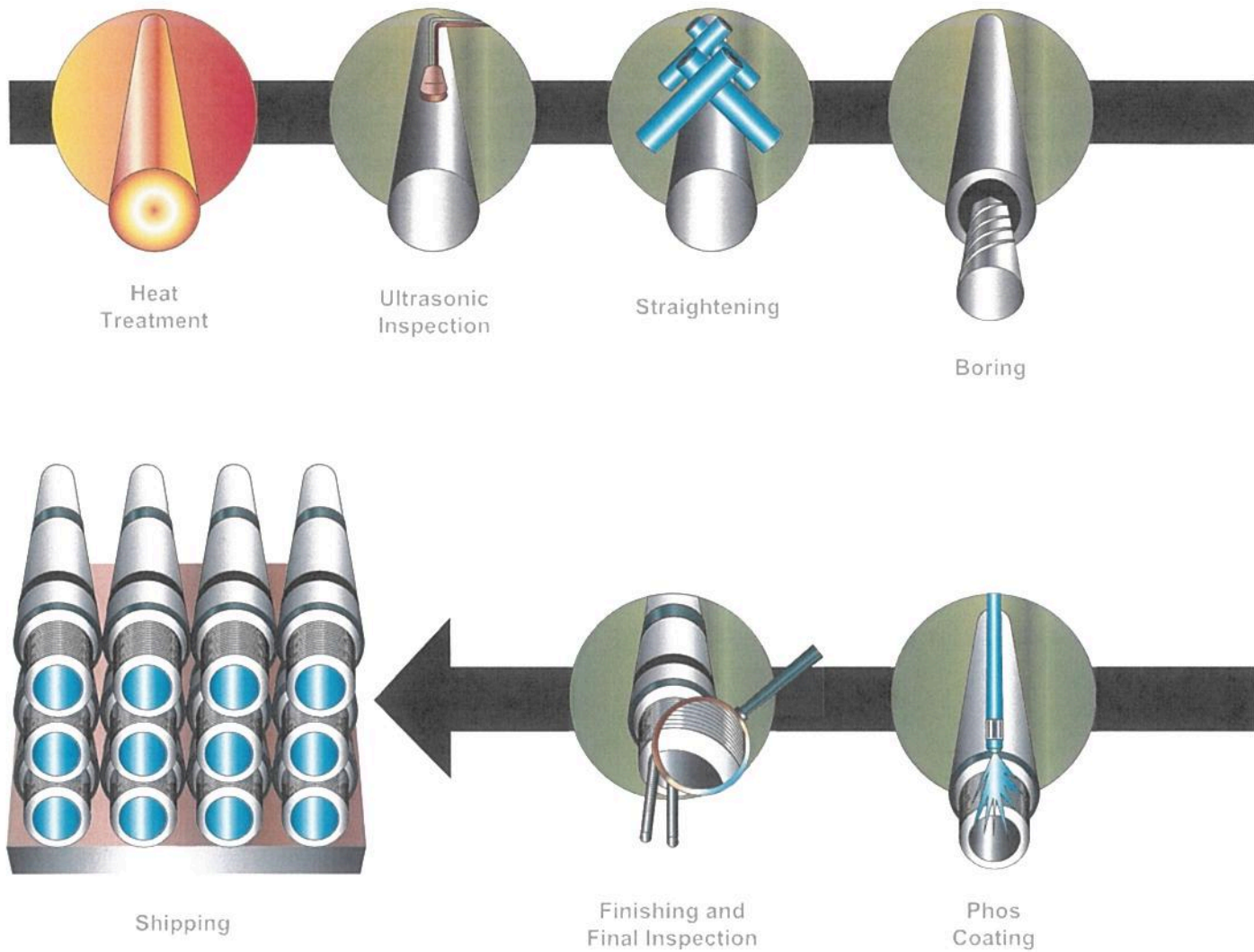


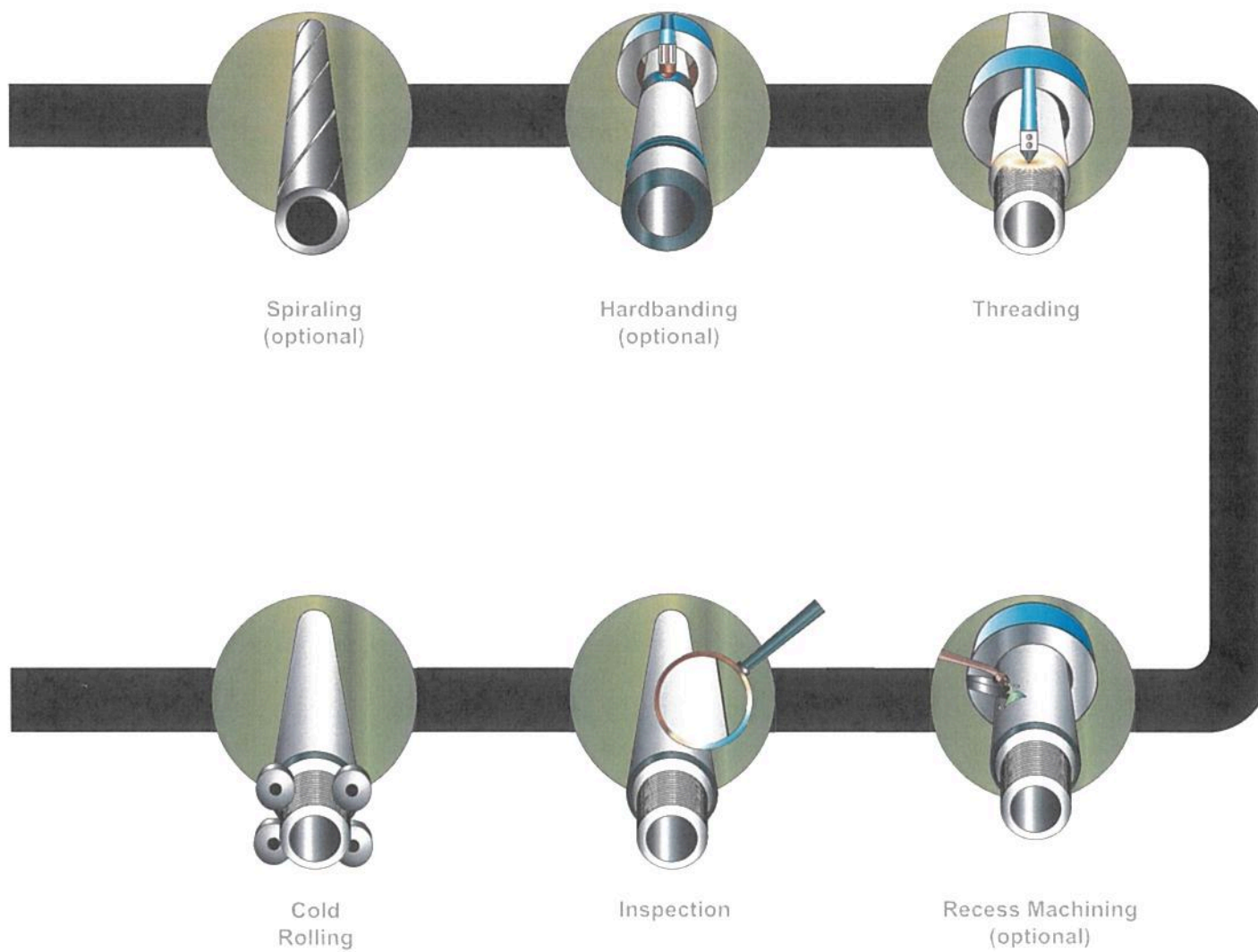
Operational Benefits

has been producing high quality drill collars for over 50 years and we were the first company to manufacture small diameter drill collars from solid bars. Bars are trepanned in-house using specialty equipment to guarantee product performance and reliability. Our experience in material specification, mechanical properties, heat treatment, machining connections, and inspection are reflected in our product performance.



Drill Collar Manufacturing Flow Chart





Drill collars are manufactured to customer requirements and, where applicable, to specifications such as API, ISO, NS1, DS1, etc. and are inspected 100% after completion.

Drill Collar Data

OD	ID	Connection	Pipe Body		Recommended Make-Up Torque*
			Bevel Diameter	Overall Length	
(in)	(in)		(in)	(ft)	(ft-lbs)
2-7/8	1-1/2	2 3/8 PAC	2-45/64	31	2,070
3-1/8	1	2 3/8 REG	3-1/64	31	3,030
3-1/8	1-1/8	2 3/8 REG	3-1/64	31	3,030
3-1/8	1-1/4	NC23	3	31	3,330
3-1/8	1-1/4	2 3/8 REG	3-1/64	31	3,030
3-1/8	1-1/4	NC26	3	31	1,690
3-3/8	1-1/2	NC26	3-21/64	31	3,580
3-1/2	1-1/2	NC26	3-21/64	31	4,610
3-3/4	1-1/2	NC26	3-29/64	31	4,670
4-1/8	2	NC31	3-61/64	31	6,850
4-1/4	1-3/4	NC31	3-61/64	31	8,160
4-1/4	2	NC31	3-61/64	31	6,850
4-3/4	1-3/4	NC38	4-41/64	31	9,990
4-3/4	2	NC35	4-33/64	31	10,800
4-3/4	2	NC38	4-41/64	31	9,990
4-3/4	2-1/4	NC38	4-41/64	31	9,990
4-3/4	2-1/4	NC35	4-33/64	31	9,200
4-3/4	2-1/2	NC38	4-41/64	31	9,990
4-7/8	2-1/4	NC38	4-41/64	31	11,900
5	2-1/4	NC38	4-49/64	31	12,900
5-1/4	2-1/4	NC38	4-61/64	31	12,900
5-3/4	2-1/4	NC46	5-5/8	31	17,700
5-3/4	2-1/4	NC40	5-25/64	31	17,000
6	2-1/4	NC46	5-23/32	31	23,400
6	2-13/16	NC46	5-23/32	31	22,400
6-1/4	2-1/4	4 1/2 H-90	6	31	28,700
6-1/4	2-1/4	NC46	5-29/32	31	28,000
6-1/4	2-1/2	NC46	5-29/32	31	25,700
6-1/4	2-3/4	NC46	5-29/32	31	23,100
6-1/4	2-13/16	NC46	5-29/32	31	22,400
6-1/4	2-13/16	NC50	6-1/16	31	23,000
6-1/4	3	NC46	5-29/32	31	20,300
6-1/2	2-1/4	NC46	6-3/32	31	28,000
6-1/2	2-1/4	4 1/2 H-90	6	31	28,700
6-1/2	2-1/4	NC50	6-11/32	31	29,700
6-1/2	2-1/2	NC46	6-3/32	31	25,700
6-1/2	2-13/16	NC46	6-3/32	31	22,400
6-1/2	2-13/16	NC50	6-11/32	31	29,700
6-1/2	2-7/8	NC50	6-11/32	31	29,700
6-1/2	3	4 1/2 H-90	6	31	21,100
6-3/4	2-1/4	NC50	6-11/32	31	36,700
6-3/4	2-1/2	NC50	6-11/32	31	35,800
6-3/4	2-1/2	NC46	6-11/32	31	25,700
6-3/4	2-13/16	NC50	6-11/32	31	32,300
6-3/4	2-7/8	NC50	6-11/32	31	31,500
6-3/4	3	NC50	6-11/32	31	30,000

*Performances calculated for products manufactured as per API.



2-7/8" – 6-3/4"

Pipe Body		Slick		Spiraled		OD
Torsional Strength*	Bending Strength Ratio	Total Weight Slick	Weight/Foot Slick	Total Weight Spiral	Weight/Foot Spiral	
(ft-lbs)		(lbs)	(lbs/ft)	(lbs)	(lbs/ft)	(in)
3,640	2.58	495	16	N/A	N/A	
5,330	2.57	720	23	681	22	
5,330	2.65	698	23	660	21	
5,860	2.57	674	22	635	21	
5,330	2.75	674	22	635	21	
2,970	1.33	674	22	635	21	
6,300	2.07	750	24	711	23	
8,110	2.42	821	27	780	25	
8,220	3.18	970	32	928	30	
12,100	2.44	1,070	35	1,010	33	
14,400	2.51	1,230	40	1,170	38	
12,100	2.75	1,150	38	1,090	36	
17,600	1.73	1,600	52	1,520	50	
19,100	2.58	1,520	50	1,440	47	
17,600	1.80	1,520	50	1,440	47	
17,600	1.92	1,430	47	1,360	44	
16,200	2.82	1,430	47	1,360	44	
17,600	2.10	1,340	44	1,260	41	
21,000	2.14	1,530	50	1,450	47	
22,700	2.38	1,630	53	1,550	51	
22,700	2.88	1,840	60	1,740	57	
31,200	1.68	2,290	75	2,190	71	
30,000	3.04	2,290	75	2,190	71	
41,200	2.02	2,530	83	2,410	79	
39,500	2.24	2,300	75	2,170	71	
56,200	2.31	2,780	91	2,650	87	
49,300	2.38	2,780	91	2,650	87	
45,200	2.47	2,680	88	2,560	83	
40,700	2.60	2,580	84	2,450	80	
39,500	2.64	2,550	83	2,420	79	
40,500	1.71	2,550	83	2,420	79	
35,700	2.79	2,460	80	2,330	76	
49,300	2.77	3,040	99	2,890	94	
56,200	2.69	3,040	99	2,890	94	
52,200	1.89	3,040	99	2,890	94	
45,200	2.87	2,940	96	2,790	91	
39,500	3.07	2,810	92	2,660	87	
52,200	2.03	2,810	92	2,660	87	
52,200	2.05	2,780	91	2,630	86	
41,200	3.14	2,720	89	2,570	84	
64,700	2.21	3,310	108	3,160	103	
63,000	2.26	3,210	105	3,060	100	
45,200	3.30	3,210	105	3,060	100	
56,800	2.37	3,080	101	2,920	95	
55,500	2.39	3,050	100	2,890	95	
52,700	2.46	2,990	98	2,830	93	



Drill Collar Data

OD	ID	Connection	Pipe Body		
			Bevel Diameter	Overall Length	Recommended Make-Up Torque*
(in)	(in)		(in)	(ft)	(ft-lbs)
7	2-1/4	NC50	6-31/64	31	38,400
7	2-1/2	NC50	6-31/64	31	35,800
7	2-13/16	NC50	6-31/64	31	32,300
7	2-13/16	5 1/2 H-90	6-5/8	31	36,500
7	2-13/16	5 1/2 H-90	6-5/8	31	36,500
7	2-13/16	5 1/2 FH	6-23/32	31	32,800
8	2-1/4	6 5/8 REG	7-33/64	31	60,300
8	2-1/2	6 5/8 REG	7-33/64	31	57,400
8	2-13/16	6 5/8 REG	7-33/64	31	53,300
8	2-13/16	NC56	7-31/64	31	48,200
8	3	6 5/8 REG	7-33/64	31	50,700
8	3	6 5/8 H-90	7-1/2	31	53,600
8	3-1/4	6 5/8 REG	7-33/64	31	46,900
8	3-3/8	6 5/8 REG	7-33/64	31	44,900
8-1/4	2-13/16	6 5/8 REG	7-45/64	31	53,300
8-1/4	3	6 5/8 REG	7-45/64	31	50,700
8-1/4	3-3/16	6 5/8 REG	7-45/64	31	47,900
8-1/4	3-1/4	6 5/8 REG	7-45/64	31	46,900
8-1/2	2-13/16	6 5/8 REG	7-45/64	31	53,300
8-1/2	2-13/16	NC61	8	31	68,400
8-1/2	3	6 5/8 REG	7-45/64	31	50,700
8-1/2	3-1/4	6 5/8 REG	7-45/64	31	46,900
9	2-13/16	7 5/8 REG	8-1/2	31	84,400
9	2-13/16	6 5/8 FH	8-29/64	31	84,000
9	3	7 5/8 REG	8-1/2	31	84,400
9	3	6 5/8 FH	8-29/64	31	81,000
9	3-1/2	6 5/8 FH	8-29/64	31	72,100
9-1/2	2-3/4	7 5/8 REG	8-13/16	31	92,600
9-1/2	2-13/16	7 5/8 REG	8-13/16	31	91,600
9-1/2	3	7 5/8 REG	8-13/16	31	88,600
9-1/2	3	NC70	8-31/32	31	102,000
9-1/2	3-1/16	7 5/8 REG	8-13/16	31	87,500
9-1/2	3-1/2	7 5/8 REG	8-13/16	31	79,500
9-3/4	3	7 5/8 REG LT	9-1/4	31	91,800
10	3	8 5/8 REG	9-23/32	31	109,000
10	3	7 5/8 REG LT	9-1/4	31	91,800
11	3	8 5/8 REG LT	10-1/2	31	131,000

*Performances calculated for products manufactured as per API.



7" – 11"

Pipe Body		Slick		Spiraled		OD
Torsional Strength*	Bending Strength Ratio	Total Weight Slick	Weight/Foot Slick	Total Weight Spiral	Weight/Foot Spiral	
(ft-lbs)		(lbs)	(lbs/ft)	(lbs)	(lbs/ft)	(in)
61,400	2.54	3,590	117	3,380	110	
57,300	2.61	3,500	114	3,290	107	
51,600	2.73	3,360	110	3,150	103	
64,900	2.40	3,360	110	3,150	103	
64,900	2.40	3,360	110	3,150	103	
52,400	1.72	3,360	110	3,150	103	
96,500	2.50	4,810	157	4,560	149	
91,800	2.54	4,720	154	4,460	146	
85,400	2.60	4,580	150	4,330	142	
77,200	3.02	4,580	150	4,330	142	
81,100	2.66	4,490	147	4,240	139	
95,400	2.50	4,490	147	4,240	139	
75,100	2.75	4,360	143	4,110	134	
71,900	2.81	4,300	140	4,040	132	
85,400	2.93	4,910	161	4,630	151	
81,100	2.99	4,820	158	4,540	148	
76,600	3.07	4,730	155	4,440	145	
75,100	3.10	4,700	154	4,410	144	
85,400	3.27	5,250	172	4,960	162	
109,000	2.59	5,250	172	4,960	162	
81,100	3.34	5,160	169	4,870	159	
75,100	3.46	5,040	165	4,750	155	
135,000	2.28	5,960	195	5,430	178	
134,000	2.41	5,970	195	5,440	178	
135,000	2.31	5,880	192	5,340	175	
130,000	2.44	5,880	192	5,350	175	
115,000	2.56	5,610	184	5,080	166	
148,000	2.78	6,750	221	6,200	203	
147,000	2.78	6,720	220	6,170	202	
142,000	2.81	6,630	217	6,080	199	
164,000	2.34	6,620	217	6,070	199	
140,000	2.83	6,600	216	6,050	198	
127,000	2.93	6,370	208	5,820	190	
147,000	3.09	7,020	230	6,470	212	
175,000	1.98	7,420	243	6,800	222	
147,000	3.38	7,430	243	6,800	222	
209,000	2.84	9,140	299	8,410	275	



Drill Collar Performance Datasheet

Overview

The Drill Collar Performance Datasheet is an easy-to-use document summarizing the performances and other technical characteristics of drill collars manufactured

This document provides key performance characteristics such as tensile strength, torsional strength, and make-up torque range, as well as other product specific performance data.

An overview of some additional information available in the Drill Collar Performance Datasheet is shown below.

Useful datasheet definition:

➤ **Bending Strength Ratio (BSR):** This bending criteria is defined in the API spec RP7G as an inertia ratio between pin and box connection. A rotary shouldered connection that has a BSR of 2.5 (or 2.5:1) is generally accepted as an average balanced connection.

Performance Datasheet
DRILL COLLAR

Size: 7 OD x 2-11/16 ID
Connection: NCS0

Dimensions and Material

DRILL COLLAR DIMENSIONS					
OD	7	in	Spiral type	Spiral	
ID	2-11/16	in	Connections	NCS0	
Section modulus	67.4	in ³	Material	AISI 4145 H Mod	
Overall	31.0	ft	Grade	110	
Elevator					
Elevator recess length	18	in			
Sip recess diameter	6.500	in			
Sip recess length	18.000	in			

Assembly Data

HANDLING		HYDRAULICS	
Weight / Length	0.015 lb/ft	Open end displacement	1.55 US gal/ft
Approx weight			1.87 US gal/ft
			0.01 US gal/ft

Performance Data

DRILL MECHANICAL PERFORMANCES	
Tensile strength	1,890,000 lbs
Torsional strength	96,800 ft-lbs
Make-up torque	20,500 ft-lbs
	22,500 ft-lbs
Bending strength ratio	2.50

* These values are only recommendations. Vallourec Drilling Products follows API specification for calculations. API only gives a single value for the proper makeup torque.

vallourec group

Drill Pipe

The Solution: Drill Pipe Designed to Go Deep

drill pipe is designed to provide superior technical performance and a service lifetime exceeding most current industry standards.

Our drill pipe is available with:

- proprietary oversized minimum internal upset (MIU), for better fatigue resistance (where applicable)
- longer tool joints than is required by API, providing a maximum re-cut capability for longer service life
- higher toughness specification on pipe body, weld and tool joint, providing greater safety margins in extreme drilling conditions

has its own tool joint manufacturing capabilities and our tool joints meet or exceed API specifications and tolerance requirements. Each joint is inspected to guarantee visual and dimensional properties, and tested to ensure proper mechanical characteristics.

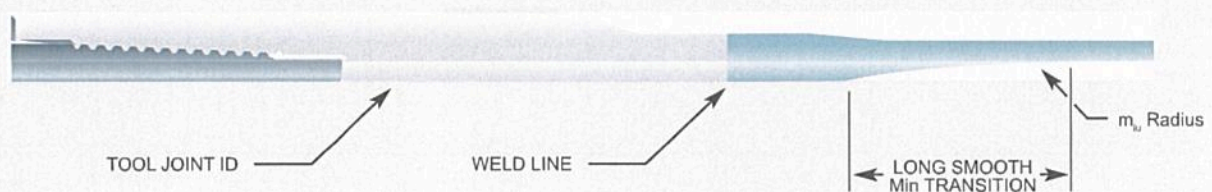
All of our tool joints are:

- 100% magnetic-particle inspected
- phos-coated (anti-galling treatment)
- hardness-tested

Do not hesitate to contact our sales representatives with special needs to evaluate feasibility.

Operational Benefits

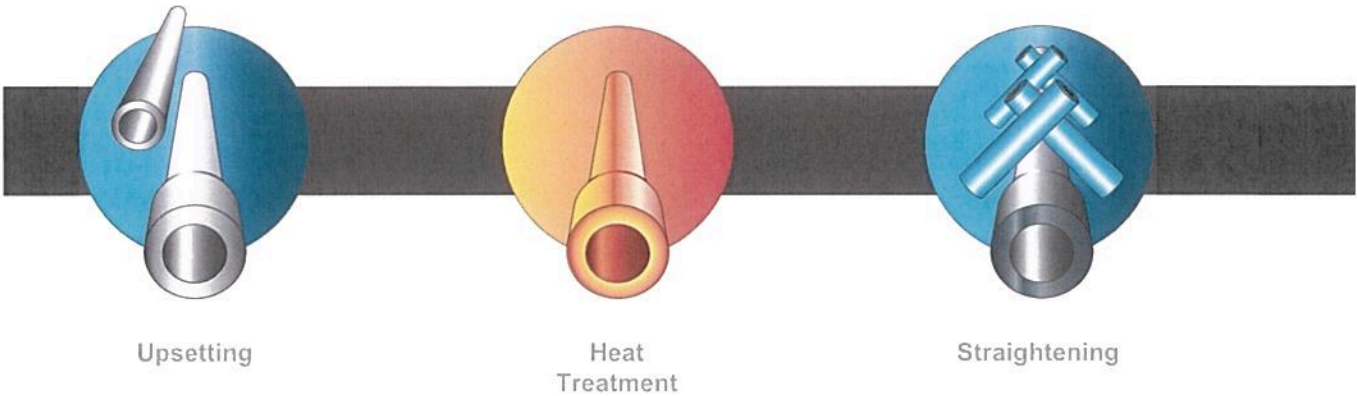
Drill Pipe Internal and External Upset Profile



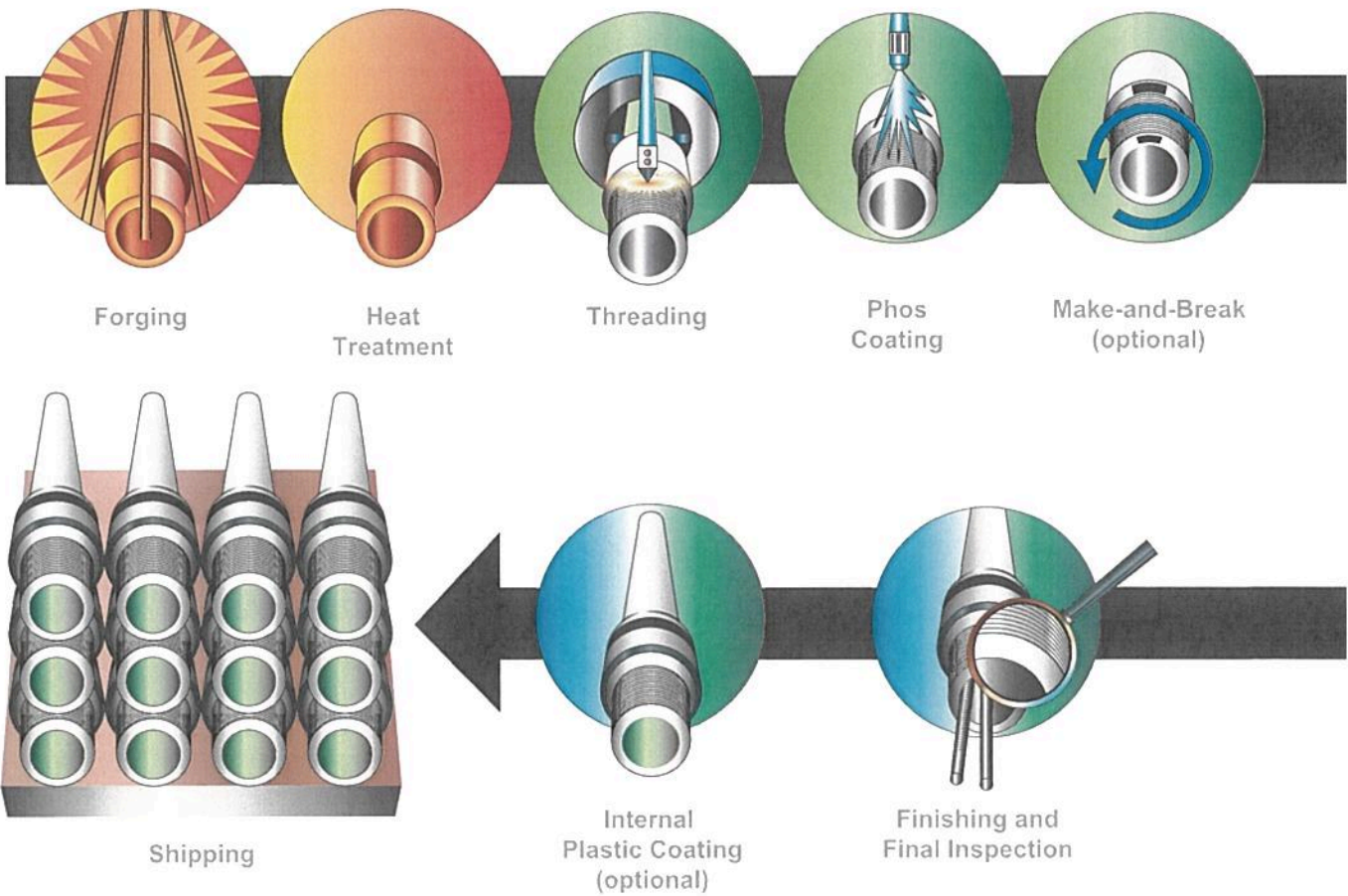
One of the most critical sections in welded drill pipe is the transition zone between the tool joint and the pipe body. A smooth, gradual transition linked to the superior nature of the purity of our steel ensures minimum stress concentration and greatly improves the fatigue life of the pipe.

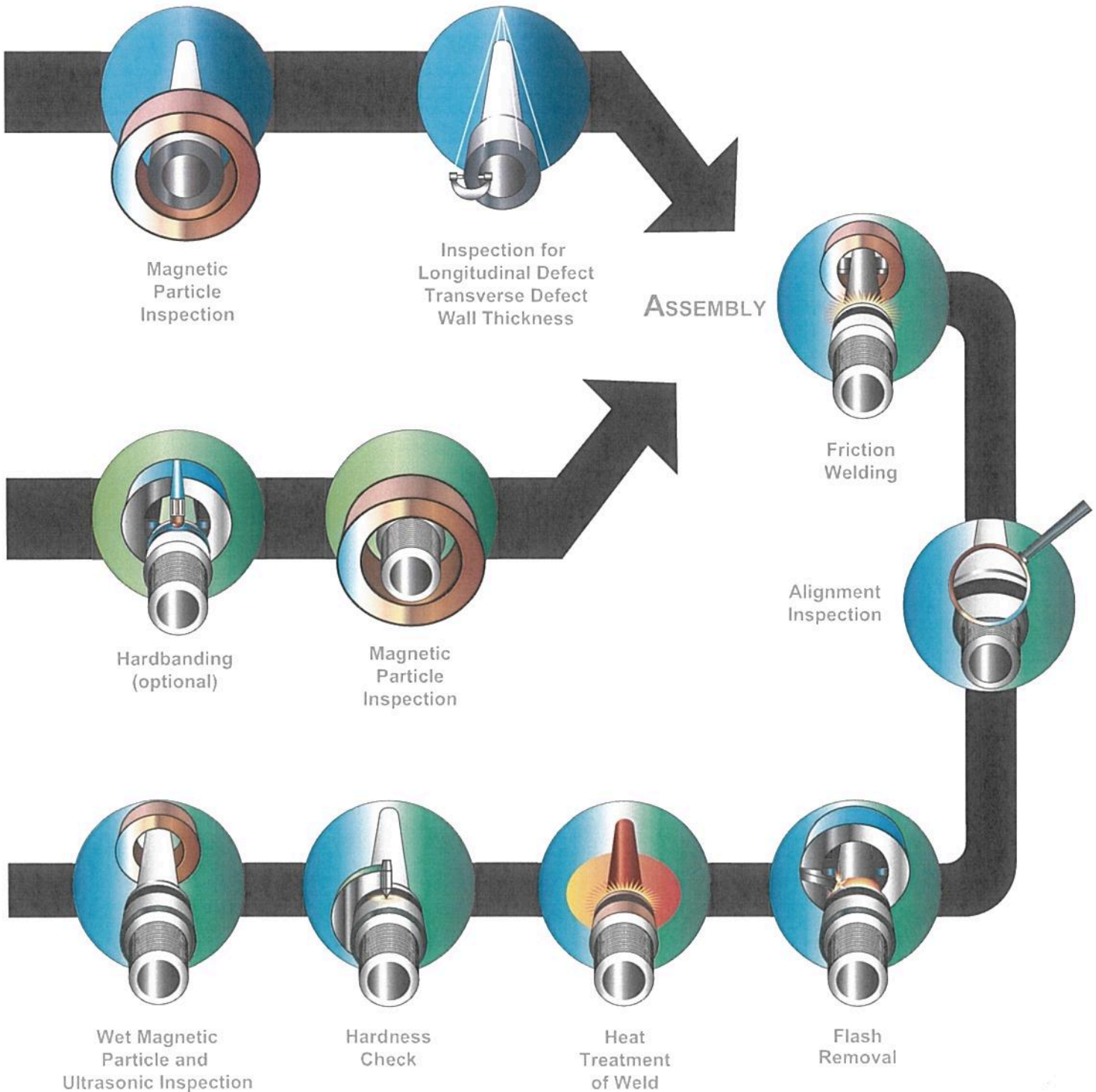
Drill Pipe Manufacturing Flow Chart

Pipe Body



Tool Joint





Drill pipe is manufactured to customer requirements and, where applicable, to specifications such as API, ISO, NS1, DS1, IRP 1.8, etc.

Drill Pipe and Tool Joint Data

Pipe Body										Tool Joint		
Nominal Size	Nominal Weight	Grade	Upset	Wall Thickness	ID	Torsional Strength	Tensile Strength	Collapse	Burst	Connection	OD	ID
in	ft-lbs			in	in	ft-lbs	lbs	PSI	PSI		in	in
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		4-3/4	2-11/16
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		4-5/8	2-9/16
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		4-5/8	2-7/16
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		5-1/4	2-9/16
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		5-1/4	2-9/16
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		4-5/8	2-11/16
3-1/2	13.30	E-75	EU	0.368	2.764	18,600	272,000	14,100	13,800		4-3/4	2-11/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		5	2-7/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		4-5/8	2-9/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		4-5/8	2-7/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		5-1/4	2-9/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		5-1/4	2-9/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		4-5/8	2-11/16
3-1/2	13.30	G-105	EU	0.368	2.764	26,000	380,000	19,800	19,300		4-3/4	2-11/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		5	2-1/8
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		4-3/4	2-7/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		4-3/4	2-9/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		5-1/4	2-9/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		5-1/4	2-9/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		5-1/4	2-9/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		5-1/4	2-9/16
3-1/2	13.30	S-135	EU	0.368	2.764	33,400	489,000	25,400	24,800		4-3/4	2-9/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		5	2-9/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		4-5/8	2-9/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		4-5/8	2-7/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		5-1/4	2-9/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		5-1/4	2-9/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		4-5/8	2-11/16
3-1/2	13.30	X-95	EU	0.368	2.764	23,500	344,000	17,900	17,500		4-3/4	2-11/16
3-1/2	15.50	E-75	EU	0.449	2.602	21,100	323,000	16,800	16,800		5	2-9/16
3-1/2	15.50	E-75	EU	0.449	2.602	21,100	323,000	16,800	16,800		4-5/8	2-7/16
3-1/2	15.50	E-75	EU	0.449	2.602	21,100	323,000	16,800	16,800		4-3/4	2-9/16
3-1/2	15.50	E-75	EU	0.449	2.602	21,100	323,000	16,800	16,800		5-1/4	2-9/16
3-1/2	15.50	E-75	EU	0.449	2.602	21,100	323,000	16,800	16,800		5-1/4	2-9/16
3-1/2	15.50	E-75	EU	0.449	2.602	21,100	323,000	16,800	16,800		4-3/4	2-7/16
3-1/2	15.50	G-105	EU	0.449	2.602	29,500	452,000	23,500	23,600		5	2-1/8
3-1/2	15.50	G-105	EU	0.449	2.602	29,500	452,000	23,500	23,600		4-3/4	2-7/16
3-1/2	15.50	G-105	EU	0.449	2.602	29,500	452,000	23,500	23,600		5	2-7/16
3-1/2	15.50	G-105	EU	0.449	2.602	29,500	452,000	23,500	23,600		5-1/4	2-9/16
3-1/2	15.50	G-105	EU	0.449	2.602	29,500	452,000	23,500	23,600		5-1/4	2-9/16
3-1/2	15.50	G-105	EU	0.449	2.602	29,500	452,000	23,500	23,600		4-3/4	2-7/16
3-1/2	15.50	S-135	EU	0.449	2.602	38,000	581,000	30,200	30,300		5	2-1/8
3-1/2	15.50	S-135	EU	0.449	2.602	38,000	581,000	30,200	30,300		5	2-7/16
3-1/2	15.50	S-135	EU	0.449	2.602	38,000	581,000	30,200	30,300		5	2-7/16
3-1/2	15.50	S-135	EU	0.449	2.602	38,000	581,000	30,200	30,300		5-1/2	2-1/4
3-1/2	15.50	X-95	EU	0.449	2.602	26,700	409,000	21,200	21,300		5	2-7/16
3-1/2	15.50	X-95	EU	0.449	2.602	26,700	409,000	21,200	21,300		4-5/8	2-7/16
3-1/2	15.50	X-95	EU	0.449	2.602	26,700	409,000	21,200	21,300		4-3/4	2-9/16
3-1/2	15.50	X-95	EU	0.449	2.602	26,700	409,000	21,200	21,300		5-1/4	2-9/16
3-1/2	15.50	X-95	EU	0.449	2.602	26,700	409,000	21,200	21,300		5-1/4	2-9/16
3-1/2	15.50	X-95	EU	0.449	2.602	26,700	409,000	21,200	21,300		4-3/4	2-7/16

Notes: Other sizes, grades and connections available upon request

All drill pipe listed is range 2 (31.5 ft shoulder to shoulder) unless otherwise specified.

API recommends a torsional ratio of 0.80 or greater.



3-1/2"

Tool Joint					Assembly									
Tong Length		Material Yield Strength KSI	Make-up Torque ft-lbs	Torsional Strength ft-lbs	Tensile Strength lbs	Torsional Ratio	Approx Wt/foot lbs/ft	Approx Weight lbs	Capacity gal/ft	Displacement		Premium		Nominal Size in
Pin in	Box in									Closed End gal/ft	Open End gal/ft	OD in	Make-up ft-lbs	
10	12-1/2	120	10,800	18,100	587,000	0.97	14.44	455	0.31	0.53	0.22	4-1/2	7,270	3-1/2
10	12-1/2	130	14,700	24,600	703,000	1.32	14.43	454	0.31	0.53	0.22	4-15/32	12,000	3-1/2
10	12-1/2	130	15,600	26,000	767,000	1.40	14.61	460	0.30	0.53	0.22	4-15/32	12,800	3-1/2
9	12	120	16,600	27,700	838,000	1.49	15.36	484	0.31	0.54	0.23	4-27/32	9,600	3-1/2
9	12	130	24,700	41,100	908,000	2.22	15.36	484	0.31	0.54	0.23	4-27/32	17,000	3-1/2
12	15	130	16,300	27,200	626,000	1.47	14.54	458	0.31	0.53	0.22	4-3/8	11,800	3-1/2
12	15	130	18,700	31,200	783,000	1.68	14.78	466	0.31	0.54	0.23	4-9/16	15,100	3-1/2
10	12-1/2	120	13,200	22,000	708,000	0.85	15.25	481	0.30	0.54	0.23	4-61/93	9,880	3-1/2
10	12-1/2	130	14,700	24,600	703,000	0.95	14.43	454	0.31	0.53	0.22	4-15/32	12,000	3-1/2
10	12-1/2	130	15,600	26,000	767,000	1.00	14.61	460	0.30	0.53	0.22	4-15/32	12,800	3-1/2
9	12	120	16,600	27,700	838,000	1.07	15.36	484	0.31	0.54	0.23	4-7/8	10,200	3-1/2
9	12	130	24,700	41,100	908,000	1.58	15.36	484	0.31	0.54	0.23	4-27/32	17,000	3-1/2
12	15	130	16,300	27,200	626,000	1.05	14.54	458	0.31	0.53	0.22	4-3/8	11,800	3-1/2
12	15	130	18,700	31,200	783,000	1.20	14.78	466	0.31	0.54	0.23	4-9/16	15,100	3-1/2
10	12-1/2	120	15,900	26,500	842,000	0.79	15.68	494	0.30	0.54	0.24	4-13/16	12,600	3-1/2
10	12-1/2	130	18,000	30,100	767,000	0.90	14.82	467	0.30	0.53	0.23	4-15/32	12,900	3-1/2
10	12-1/2	130	17,000	28,300	703,000	0.85	14.63	461	0.31	0.53	0.22	4-17/32	13,000	3-1/2
9	12	120	16,600	27,700	838,000	0.83	15.36	484	0.31	0.54	0.23	5	12,600	3-1/2
9	12	130	24,700	41,200	908,000	1.23	15.36	484	0.31	0.54	0.23	4-27/32	17,100	3-1/2
9	12	130	24,700	41,100	908,000	1.23	15.36	484	0.31	0.54	0.23	4-27/32	17,000	3-1/2
12	15	130	19,500	32,600	693,000	0.98	14.99	472	0.31	0.54	0.23	4-3/8	12,900	3-1/2
10	12-1/2	120	12,100	20,100	649,000	0.85	15.07	475	0.31	0.54	0.23	4-19/32	8,820	3-1/2
10	12-1/2	130	14,700	24,600	703,000	1.05	14.43	454	0.31	0.53	0.22	4-15/32	12,000	3-1/2
10	12-1/2	130	15,600	26,000	767,000	1.11	14.61	460	0.30	0.53	0.22	4-15/32	12,800	3-1/2
9	12	120	16,600	27,700	838,000	1.18	15.36	484	0.31	0.54	0.23	4-27/32	9,600	3-1/2
9	12	130	24,700	41,100	908,000	1.75	15.36	484	0.31	0.54	0.23	4-27/32	17,000	3-1/2
12	15	130	16,300	27,200	626,000	1.16	14.54	458	0.31	0.53	0.22	4-3/8	11,800	3-1/2
12	15	130	18,700	31,200	783,000	1.33	14.78	466	0.31	0.54	0.23	4-9/16	15,100	3-1/2
10	12-1/2	120	12,100	20,100	649,000	0.95	17.13	540	0.28	0.54	0.26	4-17/32	7,790	3-1/2
10	12-1/2	130	15,700	26,200	767,000	1.24	16.68	525	0.27	0.53	0.25	4-15/32	12,900	3-1/2
10	12-1/2	130	17,000	28,300	703,000	1.34	16.70	526	0.28	0.53	0.26	4-15/32	11,900	3-1/2
9	12	120	16,600	27,700	838,000	1.31	17.43	549	0.28	0.54	0.27	4-27/32	9,600	3-1/2
9	12	130	24,700	41,100	908,000	1.95	17.43	549	0.28	0.54	0.27	4-27/32	17,000	3-1/2
12	15	130	20,800	34,600	757,000	1.64	17.24	543	0.27	0.54	0.26	4-3/8	13,900	3-1/2
10	12-1/2	120	15,900	26,500	842,000	0.90	17.74	559	0.27	0.54	0.27	4-23/32	11,000	3-1/2
10	12-1/2	130	18,000	30,100	767,000	1.02	16.88	532	0.27	0.53	0.26	4-15/32	12,900	3-1/2
10	12-1/2	130	19,900	33,200	767,000	1.13	17.32	546	0.27	0.54	0.26	4-15/32	12,800	3-1/2
9	12	120	16,600	27,700	838,000	0.94	17.43	549	0.28	0.54	0.27	4-15/16	11,400	3-1/2
9	12	130	24,700	41,100	908,000	1.39	17.43	549	0.28	0.54	0.27	4-27/32	17,000	3-1/2
12	15	130	20,800	34,600	757,000	1.17	17.24	543	0.27	0.54	0.26	4-3/8	13,900	3-1/2
10	12-1/2	120	15,900	26,500	842,000	0.70	17.74	559	0.27	0.54	0.27	4-29/32	14,300	3-1/2
10	12-1/2	130	19,900	33,200	767,000	0.87	17.32	546	0.27	0.54	0.26	4-17/32	14,000	3-1/2
10	12-1/2	130	19,900	33,200	767,000	0.88	17.32	546	0.27	0.54	0.26	4-9/16	14,500	3-1/2
9	12	120	19,600	32,700	980,000	0.86	18.34	578	0.27	0.55	0.28	5-3/32	14,400	3-1/2
10	12-1/2	120	13,200	22,000	708,000	0.82	16.53	736	0.27	0.53	0.25	4-61/93	9,880	3-1/2
10	12-1/2	130	15,700	26,200	767,000	0.98	16.68	525	0.27	0.53	0.25	4-15/32	12,900	3-1/2
10	12-1/2	130	17,000	28,300	703,000	1.06	16.70	526	0.28	0.53	0.26	4-15/32	11,900	3-1/2
9	12	120	16,600	27,700	838,000	1.04	17.43	549	0.28	0.54	0.27	4-7/8	10,200	3-1/2
9	12	130	24,700	41,100	908,000	1.54	17.43	549	0.28	0.54	0.27	4-27/32	17,000	3-1/2
12	15	130	20,800	34,600	757,000	1.30	17.24	543	0.27	0.54	0.26	4-3/8	13,900	3-1/2



Drill Pipe and Tool Joint Data

Pipe Body										Tool Joint		
Nominal Size	Nominal Weight	Grade	Upset	Wall Thickness	ID	Torsional Strength	Tensile Strength	Collapse	Burst	Connection	OD	ID
in	ft-lbs			in	in	ft-lbs	lbs	PSI	PSI		in	in
5	19.50	E-75	IEU	0.362	4.276	41,200	396,000	9,960	9,500		7	3-3/4
5	19.50	E-75	IEU	0.362	4.276	41,200	396,000	9,960	9,500		6-5/8	3-3/4
5	19.50	E-75	IEU	0.362	4.276	41,200	396,000	9,960	9,500		6-3/8	3-1/2
5	19.50	E-75	IEU	0.362	4.276	41,200	396,000	9,960	9,500		6	3-1/2
5	19.50	E-75	IEU	0.362	4.276	41,200	396,000	9,960	9,500		6-1/2	3-1/2
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		7	4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		7	3-3/4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		7	3-3/4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		7	3-3/4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		6-5/8	3-1/4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		6-5/8	3-1/4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		6-5/8	3-1/4
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		6	3-1/2
5	19.50	G-105	IEU	0.362	4.276	57,600	554,000	13,000	13,300		6-1/2	3-1/2
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		7-1/4	3-1/2
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		7	3-3/4
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		7	3-3/4
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		6-5/8	2-3/4
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		6-5/8	3-1/2
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		6-5/8	3-1/4
5	19.50	S-135	IEU	0.362	4.276	74,100	712,000	15,700	17,100		6-1/2	3-1/2
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		7	3-1/2
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		7	3-3/4
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		7	3-3/4
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		6-5/8	3-1/2
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		6-3/8	3-1/2
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		6-3/8	3-1/2
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		6	3-1/2
5	19.50	X-95	IEU	0.362	4.276	52,100	501,000	12,000	12,000		6-1/2	3-1/2
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		7	3-1/2
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		7	3-3/4
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		6-5/8	3-1/2
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		6-3/8	3-1/2
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		6-3/8	3-1/2
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		6	3-1/2
5	25.60	E-75	IEU	0.500	4.000	52,300	530,000	13,500	13,100		6-1/2	3-1/2
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		7	3-1/2
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		7	3-3/4
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		7	3-3/4
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		6-5/8	2-3/4
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		6-1/2	3-1/4
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		6-1/2	3-1/4
5	25.60	G-105	IEU	0.500	4.000	73,200	742,000	18,900	18,400		6-1/2	3-1/2
5	25.60	S-135	IEU	0.500	4.000	94,100	954,000	24,300	23,600		7-1/4	3-1/4
5	25.60	S-135	IEU	0.500	4.000	94,100	954,000	24,300	23,600		6-5/8	2-3/4
5	25.60	S-135	IEU	0.500	4.000	94,100	954,000	24,300	23,600		6-1/2	3-1/4
5	25.60	S-135	IEU	0.500	4.000	94,100	954,000	24,300	23,600		6-1/2	3-1/4
5	25.60	S-135	IEU	0.500	4.000	94,100	954,000	24,300	23,600		6-5/8	3-1/2
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		7	3-1/2
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		7	3-3/4
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		6-5/8	3
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		6-3/8	3-1/2
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		6-3/8	3-1/2
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		6-1/4	3-1/2
5	25.60	X-95	IEU	0.500	4.000	66,200	672,000	17,100	16,600		6-1/2	3-1/2

Notes: Other sizes, grades and connections available upon request
 All drill pipe listed is range 2 (31.5 ft shoulder to shoulder) unless otherwise specified.



Tool Joint						Assembly								
Tong Length		Material	Make-up	Torsional	Tensile	Torsional	Approx	Approx	Capacity	Displacement		Premium		Nominal
Pin	Box	Yield	Torque	Strength	Strength	Ratio	WT/foot	Weight		Closed	Open	OD	Make-up	Size
in	in	Strength	ft-lbs	ft-lbs	lbs		lbs/ft	lbs	gal/ft	End	End	in	ft-lbs	in
		KSI								gal/ft	gal/ft			
10	12	120	37,700	62,900	1,450,000	1.53	23.43	738	0.73	1.08	0.36	6-13/32	17,100	5
9	12	120	22,400	37,300	939,000	0.91	22.32	703	0.73	1.07	0.34	5-7/8	15,800	5
9	12	130	40,600	67,700	1,200,000	1.64	22.28	702	0.72	1.06	0.34	5-13/16	26,800	5
11	14	130	37,600	60,200	1,110,000	1.46	21.96	692	0.72	1.05	0.34	5-5/8	26,600	5
11	14	130	53,200	85,200	1,510,000	2.07	23.22	731	0.72	1.07	0.35	6-3/97	37,200	5
10	12	120	33,400	55,700	1,270,000	0.97	22.84	720	0.74	1.08	0.35	6-9/16	22,300	5
10	12	120	37,700	62,900	1,450,000	1.09	23.43	738	0.73	1.08	0.36	6-9/16	22,300	5
10	12	130	58,400	97,300	1,570,000	1.69	23.43	738	0.73	1.08	0.36	6-13/32	36,100	5
10	12	130	58,300	97,200	1,570,000	1.69	23.43	738	0.73	1.08	0.36	6-13/32	35,900	5
9	12	120	30,700	51,200	1,270,000	0.89	23.35	735	0.71	1.07	0.36	6-3/32	21,900	5
9	12	130	48,300	80,600	1,380,000	1.40	23.35	735	0.71	1.07	0.36	5-13/16	30,300	5
9	12	130	48,500	80,900	1,370,000	1.40	23.35	735	0.71	1.07	0.36	5-13/16	30,200	5
11	14	130	37,600	60,200	1,110,000	1.05	21.96	692	0.72	1.05	0.34	5-5/8	26,600	5
11	14	130	53,200	85,200	1,510,000	1.48	23.22	731	0.72	1.07	0.35	6-3/97	37,200	5
10	12	120	43,300	72,200	1,620,000	0.97	24.67	777	0.72	1.09	0.38	6-3/4	28,700	5
10	12	130	58,400	97,300	1,570,000	1.31	23.43	738	0.73	1.08	0.36	6-13/32	36,100	5
10	12	130	58,300	97,200	1,570,000	1.31	23.43	738	0.73	1.08	0.36	6-13/32	35,900	5
9	12	120	38,000	63,400	1,550,000	0.86	24.23	763	0.70	1.07	0.37	6-5/16	28,400	5
9	12	130	40,600	67,700	1,200,000	0.91	22.85	720	0.72	1.07	0.35	5-7/8	28,800	5
9	12	130	48,500	80,900	1,370,000	1.09	23.35	735	0.71	1.07	0.36	5-13/16	30,200	5
11	14	130	53,200	85,200	1,510,000	1.15	23.22	731	0.72	1.07	0.35	6-3/97	37,200	5
10	12	120	37,700	62,900	1,620,000	1.21	23.99	756	0.72	1.08	0.37	6-1/2	20,200	5
10	12	130	58,400	97,300	1,570,000	1.87	23.43	738	0.73	1.08	0.36	6-13/32	36,100	5
10	12	130	58,300	97,200	1,570,000	1.86	23.43	738	0.73	1.08	0.36	6-13/32	35,900	5
9	12	120	26,700	44,500	1,110,000	0.85	22.85	720	0.72	1.07	0.35	6-3/97	20,100	5
9	12	130	40,600	67,700	1,200,000	1.30	22.28	702	0.72	1.06	0.34	5-13/16	26,900	5
9	12	130	40,600	67,700	1,200,000	1.30	22.28	702	0.72	1.06	0.34	5-13/16	26,800	5
11	14	130	37,600	60,200	1,110,000	1.16	21.96	692	0.72	1.05	0.34	5-5/8	26,600	5
11	14	130	53,200	85,200	1,510,000	1.63	23.22	731	0.72	1.07	0.35	6-3/97	37,200	5
10	12	120	37,700	62,900	1,620,000	1.20	29.39	926	0.64	1.08	0.45	6-1/2	20,200	5
10	12	130	58,300	97,200	1,570,000	1.86	28.84	908	0.64	1.08	0.44	6-13/32	35,900	5
9	12	120	26,700	44,500	1,110,000	0.85	28.28	891	0.64	1.07	0.43	6-3/97	20,100	5
9	12	130	40,600	67,700	1,200,000	1.29	27.72	873	0.64	1.06	0.42	5-13/16	26,900	5
9	12	130	40,600	67,700	1,200,000	1.30	27.72	873	0.64	1.06	0.42	5-13/16	26,800	5
11	14	130	37,600	60,200	1,110,000	1.15	27.35	861	0.64	1.05	0.42	5-5/8	26,600	5
11	14	130	53,200	85,200	1,510,000	1.63	28.59	901	0.63	1.07	0.44	6-3/97	37,200	5
10	12	120	37,700	62,900	1,620,000	0.86	29.39	926	0.64	1.08	0.45	6-23/32	27,600	5
10	12	130	58,400	97,300	1,570,000	1.33	28.84	908	0.64	1.08	0.44	6-13/32	36,100	5
10	12	130	58,300	97,200	1,570,000	1.33	28.84	908	0.64	1.08	0.44	6-13/32	35,900	5
9	12	120	38,000	63,400	1,550,000	0.87	29.66	934	0.62	1.07	0.45	6-9/32	27,400	5
9	12	130	48,300	80,600	1,380,000	1.10	28.49	897	0.63	1.06	0.44	5-13/16	30,300	5
9	12	130	48,400	80,600	1,370,000	1.10	28.49	897	0.63	1.06	0.44	5-13/16	30,200	5
11	14	130	53,200	85,200	1,510,000	1.16	28.59	901	0.63	1.07	0.44	6-3/97	37,200	5
10	12	120	47,200	78,700	1,780,000	0.84	30.58	963	0.63	1.09	0.47	6-15/16	35,400	5
9	12	120	38,000	63,400	1,550,000	0.67	29.66	934	0.62	1.07	0.45	6-17/32	35,200	5
9	12	130	48,300	80,600	1,380,000	0.86	28.49	897	0.63	1.06	0.44	6	35,900	5
9	12	130	48,400	80,600	1,370,000	0.86	28.49	897	0.63	1.06	0.44	6	35,800	5
11	14	130	57,700	92,400	1,510,000	0.98	28.92	911	0.63	1.08	0.44	6-3/97	37,200	5
10	12	120	37,700	62,900	1,620,000	0.95	29.39	926	0.64	1.08	0.45	6-61/93	25,500	5
10	12	130	58,400	97,300	1,570,000	1.47	28.84	908	0.64	1.08	0.44	6-13/32	36,100	5
9	12	120	34,500	57,500	1,420,000	0.87	29.24	921	0.62	1.07	0.45	6-7/32	25,600	5
9	12	130	40,600	67,700	1,200,000	1.02	27.72	873	0.64	1.06	0.42	5-13/16	26,900	5
9	12	130	40,600	67,700	1,200,000	1.02	27.72	873	0.64	1.06	0.42	5-13/16	26,800	5
11	14	130	40,000	64,200	1,110,000	0.97	27.95	880	0.63	1.06	0.43	5-5/8	26,600	5
11	14	130	53,200	85,200	1,510,000	1.29	28.59	901	0.63	1.07	0.44	6-3/97	37,200	5

Drill Pipe Performance Datasheet

Overview

The Drill Pipe Performance Datasheet is an easy-to-use document summarizing the performances and other technical characteristics of drill pipes manufactured | This document provides key characteristics such as tensile strength, torsional strength, and make-up torque range, as well as other product-specific performance data.

An overview of some additional information available in the Drill Pipe Performance Datasheet is shown here.

Useful datasheet definitions:

- **Premium Tool Joint OD:** The actual tool joint OD to meet 0.80 torsional ratio of a premium pipe, or the specific tool joint OD determined by the initial connection OD.
- **Torsional Ratio:** The ratio of the connection torsional strength divided by the pipe body torsional strength. API recommends a ratio of 0.80 or larger.
- **Balance OD:** The tool joint OD where the yield of the box is equal to the yield of the pin for a given tool joint ID.
- **Combined Load Chart:** Chart used to determine the operation zone for tool joint in tension and torque.
- **Elevator Capacity:** Chart used to determine the elevator capacity, assuming a 1.1 safety factor.
- **Wear Chart:** Chart used to determine the recommended make-up torque for worn products.

