Dimensional Data Handbook



SMITH SERVICES

A Business Unit of Smith International, Inc.

DIMENSIONAL DATA HANDBOOK



SMITH SERVICES

A Business Unit of Smith International, Inc.

P.O. Box 60068
Houston, Texas 77205-0068
U.S. and Canada: 800/US SMITH
Tel: 281-443-3370
Fax: 281-233-5121
www.smith.com

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Preface

The 2nd edition of the Smith Services Dimensional Data Handbook contains practical information, useful when planning specialized operations for drilling, fishing and remedial work. The content of this handbook focuses on the dimensional specifications of products provided by the industry's tubular suppliers as well as coiled tubing and fishing tool manufacturers. This data will assist you in fishing, remedial milling, pipe cutting, pipe recovery, thru-tubing and coiled tubing operations.

Smith Services provides specialized drilling and remedial services in all major oil and gas fields worldwide. Our experienced personnel utilize the data contained in this handbook daily. We hope that the 2nd edition of the Dimensional Data Handbook will assist you in achieving your particular objectives.

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A Business Unit of Smith International, Inc.
P.O. Box 60068
Houston, Texas 77205-0068
U.S. and Canada: 800/US SMITH
Tel: 281-443-3370
Fax: 281-233-5121
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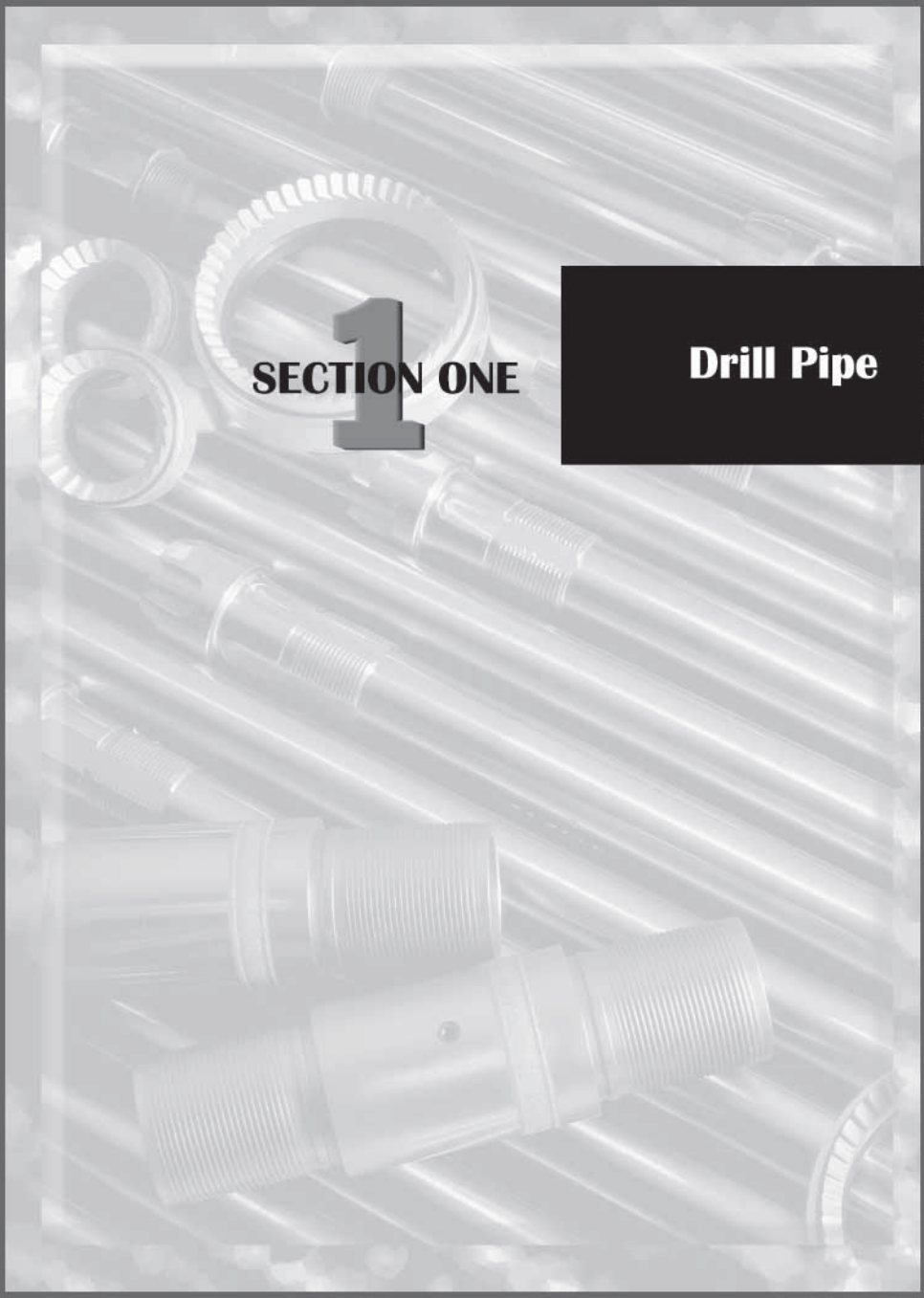
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SECTION ONE 1

Drill Pipe

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New Drill Pipe Specifications

OD (in.)	Weight (lb/ft)	ID (in.)	Wall Thickness (in.)	Section Area Body Of Pipe ($in.^2$)	Grade	Torsional Yield Strength (ft/lb)	Tensile Yield Strength (lb)	Collapse Pressure (psi)	Burst Pressure (psi)
2-3/8	4.85	1.995	0.190	1.304	E-75	4,763	97,817	11,040	10,500
					X-95	6,033	123,902	13,984	13,300
					G-105	6,668	136,944	15,456	14,700
					S-135	8,574	176,071	19,035	18,900
	6.65	1.815	0.280	1.843	E-75	6,250	138,214	15,599	15,474
					X-95	7,917	175,072	19,759	19,600
					G-105	8,751	193,500	21,839	21,663
					S-135	11,251	248,786	28,079	27,853
2-7/8	6.85	2.441	0.217	1.812	E-75	8,083	135,902	10,467	9,907
					X-95	10,238	172,143	12,940	12,548
					G-105	11,316	190,263	14,020	13,869
					S-135	14,549	244,624	17,034	17,832
	10.40	2.151	0.362	2.858	E-75	11,554	214,344	16,509	16,526
					X-95	14,635	271,503	20,911	20,933
					G-105	16,176	300,082	23,112	23,137
					S-135	20,798	385,820	29,716	29,747
3-1/2	9.50	2.992	0.254	2.590	E-75	14,146	194,264	10,001	9,525
					X-95	17,918	246,068	12,077	12,065
					G-105	19,805	271,970	13,055	13,335
					S-135	25,463	349,676	15,748	17,145
	13.30	2.764	0.368	3.621	E-75	18,551	271,569	14,113	13,800
					X-95	23,498	343,988	17,877	17,480
					G-105	25,972	380,197	19,758	19,320
					S-135	33,392	488,825	25,404	24,840
	15.50	2.602	0.449	4.304	E-75	21,086	322,775	16,774	16,838
					X-95	26,708	408,848	21,247	21,328
					G-105	29,520	451,885	23,484	23,573
					S-135	37,954	580,995	30,194	30,308
4	11.85	3.476	0.262	3.077	E-75	19,474	230,755	8,381	8,597
					X-95	24,668	292,290	9,978	10,889
					G-105	27,264	323,057	10,708	12,036
					S-135	35,054	415,360	12,618	15,474
	14.00	3.340	0.330	3.805	E-75	23,288	285,359	11,354	10,828
					X-95	29,498	361,454	14,382	13,716
					G-105	32,603	399,502	15,896	15,159
					S-135	41,918	513,646	20,141	19,491
	15.70	3.240	0.380	4.322	E-75	25,810	324,118	12,896	12,469
					X-95	32,692	410,550	16,335	15,794
					G-105	36,134	453,765	18,055	17,456
					S-135	46,458	583,413	23,213	22,444
4-1/2	13.75	3.958	0.271	3.600	E-75	25,907	270,034	7,173	7,904
					X-95	32,816	342,043	8,412	10,012
					G-105	36,270	378,047	8,956	11,066
					S-135	46,633	486,061	10,283	14,228

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New Drill Pipe Specifications (continued)

OD (in.)	Weight (lb/ft)	ID (in.)	Wall Thickness (in.)	Section Area Body Of Pipe ($in.^2$)	Grade	Torsional Yield Strength (ft/lb)	Tensile Yield Strength (lb)	Collapse Pressure (psi)	Burst Pressure (psi)
4-1/2	16.60	3.826	0.337	4.407	E-75	30,807	330,558	10,392	9,829
					X-95	39,022	418,707	12,765	12,450
					G-105	43,130	462,781	13,825	13,761
					S-135	55,453	595,004	16,773	17,693
	20.00	3.640	0.430	5.498	E-75	36,901	412,358	12,964	12,542
					X-95	46,741	522,320	16,421	15,886
					G-105	51,661	577,301	18,149	17,558
					S-135	66,421	742,244	23,335	22,575
	22.82	3.500	0.500	6.283	E-75	40,921	471,239	14,815	14,583
					X-95	51,821	596,903	18,765	18,472
					G-105	57,276	659,734	20,741	20,417
					S-135	73,641	848,230	26,667	26,250
5	16.25	4.408	0.296	4.374	E-75	35,044	328,073	6,938	7,770
					X-95	44,389	415,559	8,108	9,842
					G-105	49,062	459,302	8,616	10,878
					S-135	63,079	590,531	9,831	13,986
	19.50	4.276	0.362	5.275	E-75	41,167	395,595	9,962	9,503
					X-95	52,144	501,087	12,026	12,037
					G-105	57,633	553,833	12,999	13,304
					S-135	74,100	712,070	15,672	17,105
	25.60	4.000	0.500	7.069	E-75	52,257	530,144	13,500	13,125
					X-95	66,192	671,515	17,100	16,625
					G-105	73,159	742,201	18,900	18,375
					S-135	94,062	954,259	24,300	23,625
5-1/2	19.20	4.892	0.304	4.962	E-75	44,074	372,181	6,039	7,255
					X-95	55,826	471,429	6,942	9,189
					G-105	61,703	521,053	7,313	10,156
					S-135	79,332	669,925	8,093	13,058
	21.90	4.778	0.361	5.828	E-75	50,710	437,116	8,413	8,615
					X-95	64,233	553,681	10,019	10,912
					G-105	70,994	611,963	10,753	12,061
					S-135	91,278	786,809	12,679	15,507
	24.70	4.670	0.415	6.630	E-75	56,574	497,222	10,464	9,903
					X-95	71,660	629,814	12,933	12,544
					G-105	79,204	696,111	14,013	13,865
					S-135	101,833	894,999	17,023	17,826
6-5/8	25.20	5.965	0.330	6.526	E-75	70,580	489,464	4,788	6,538
					X-95	89,402	619,988	5,321	8,281
					G-105	98,812	685,250	5,500	9,153
					S-135	127,044	881,035	6,036	11,768
	27.70	5.901	0.362	7.123	E-75	76,295	534,199	5,894	7,172
					X-95	96,640	676,651	6,755	9,084
					G-105	106,813	747,877	7,103	10,040
					S-135	137,330	961,556	7,813	12,909

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Premium Class Drill Pipe Specifications

OD (in.)	Weight (lb/ft)	ID (in.)	Wall Thickness (in.)	Section Area Body Of Pipe ($in.^2$)	Grade	Torsional Yield Strength (ft/lb)	Tensile Yield Strength (lb)	Collapse Pressure (psi)	Burst Pressure (psi)
2-3/8	4.85	1.995	.152	1.025	E-75	3,725	76,893	8,522	9,600
					X-95	4,719	97,398	10,161	12,160
					G-105	5,215	107,650	10,912	13,440
					S-135	6,705	138,407	12,891	17,280
	6.65	1.815	.224	1.435	E-75	4,811	107,616	13,378	14,147
					X-95	6,093	136,313	16,945	17,920
					G-105	6,735	150,662	18,729	19,806
					S-135	8,659	193,709	24,080	25,465
2-7/8	6.85	2.441	.174	1.426	E-75	6,332	106,946	7,640	9,057
					X-95	8,020	135,465	9,017	11,473
					G-105	8,865	149,725	9,633	12,680
					S-135	11,397	192,503	11,186	16,303
	10.40	2.151	.290	2.221	E-75	8,858	166,535	14,223	15,110
					X-95	11,220	210,945	18,016	19,139
					G-105	12,401	233,149	19,912	21,153
					S-135	15,945	299,764	25,602	27,197
3-1/2	9.50	2.992	.203	2.040	E-75	11,094	152,979	7,074	8,709
					X-95	14,052	193,774	8,284	11,031
					G-105	15,531	214,171	8,813	12,192
					S-135	19,968	275,363	10,093	15,675
	13.30	2.764	.294	2.829	E-75	14,361	212,150	12,015	12,617
					X-95	18,191	268,723	15,218	15,982
					G-105	20,106	297,010	16,820	17,664
					S-135	25,850	381,870	21,626	22,711
	15.50	2.602	.359	3.342	E-75	16,146	250,620	14,472	15,394
					X-95	20,452	317,452	18,331	19,499
					G-105	22,605	350,868	20,260	21,552
					S-135	29,063	451,115	26,049	27,710
4	11.85	3.476	.210	2.427	E-75	15,310	182,016	5,704	7,860
					X-95	19,392	230,554	6,508	9,956
					G-105	21,433	254,823	6,827	11,004
					S-135	27,557	327,630	7,445	14,148
	14.00	3.340	.264	2.989	E-75	18,196	224,182	9,012	9,900
					X-95	23,048	283,963	10,795	12,540
					G-105	25,474	313,854	11,622	13,860
					S-135	32,752	403,527	13,836	17,820
	15.70	3.240	.304	3.385	E-75	20,067	253,851	10,914	11,400
					X-95	25,418	321,544	13,825	14,440
					G-105	28,094	355,391	15,190	15,960
					S-135	36,120	456,931	18,593	20,520
4-1/2	13.75	3.958	.217	2.843	E-75	20,403	213,258	4,686	7,227
					X-95	25,844	270,127	5,190	9,154
					G-105	28,564	298,561	5,352	10,117
					S-135	36,725	383,864	5,908	13,008

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Premium Class Drill Pipe Specifications (continued)

OD (in.)	Weight (lb/ft)	ID (in.)	Wall Thickness (in.)	Section Area Body Of Pipe ($in.^2$)	Grade	Torsional Yield Strength (ft/lb)	Tensile Yield Strength (lb)	Collapse Pressure (psi)	Burst Pressure (psi)
4-1/2	16.60	3.826	.270	3.469	E-75	24139	260165	7525	8987
					X-95	30576	329542	8868	11383
					G-105	33795	364231	9467	12581
					S-135	43450	468297	10964	16176
	20.00	3.640	.344	4.306	E-75	28683	322916	10975	11467
					X-95	36332	409026	13901	14524
					G-105	40157	452082	15350	16053
					S-135	51630	581248	18806	20640
	22.82	3.500	.400	4.901	E-75	31587	367566	12655	13333
					X-95	40010	465584	16030	16889
					G-105	44222	514593	17718	18667
					S-135	56856	661620	22780	24000
5	16.25	4.408	.237	3.455	E-75	27607	259155	4490	7104
					X-95	34969	328263	4935	8998
					G-105	38650	362817	5067	9946
					S-135	49693	466479	5661	12787
	19.50	4.276	.290	4.154	E-75	32285	311535	7041	8688
					X-95	40895	394612	8241	11005
					G-105	45199	436150	8765	12163
					S-135	58113	560764	10029	15638
	25.60	4.000	.400	5.529	E-75	40544	414690	11458	12000
					X-95	51356	525274	14514	15200
					G-105	56762	580566	16042	16800
					S-135	72979	746443	20510	21600
5-1/2	19.20	4.892	.243	3.924	E-75	34764	294260	3736	6633
					X-95	44035	372730	4130	8401
					G-105	48670	411965	4336	9286
					S-135	62575	529669	4714	11939
	21.90	4.778	.289	4.597	E-75	39863	344780	5730	7876
					X-95	50494	436721	6542	9977
					G-105	55809	482692	6865	11027
					S-135	71754	620604	7496	14177
	24.70	4.670	.332	5.217	E-75	44320	391285	7635	9055
					X-95	56139	495627	9011	11469
					G-105	62048	547799	9626	12676
					S-135	79776	704313	11177	16298
6-5/8	25.20	5.965	.264	5.166	E-75	55766	387466	2931	5977
					X-95	71522	490790	3252	7571
					G-105	79050	542452	3353	8368
					S-135	101635	697438	3429	10759
	27.70	5.901	.290	5.632	E-75	60192	422419	3615	6557
					X-95	77312	535064	4029	8306
					G-105	85450	591387	4222	9180
					S-135	109864	760354	4562	11803

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API Drill Pipe Requirements

Drift Test

Drill Pipe Size (in.)	Drift Mandrel Length (in.)	Drift Mandrel Diameter (in.)
All EU (Except 3-1/2 in., 13.3 lb)	4	ID minus 3.16

Tensile Requirements

Grade	Yield Strength		Tensile Strength Minimum psi
	Minimum psi	Maximum psi	
D	55,000	------	95,000
E	75,000	105,000	100,000
X-95	95,000	125,000	105,000
G-105	105,000	135,000	115,000
S-135	135,000	165,000	145,000

Range Lengths

	Range 1 (ft)	Range 2 (ft)	Range 3 (ft)
Total Range Length, Incl.	18 to 22	27 to 30	38 to 45
Permissible Variation, Maximum	2	--	--
Range Length For 95% Or More Of Carload:			
Permissible Length, Minimum	20	--	--
Permissible Variation, Maximum	--	2	3
Range Length For 90% Or More Of Carload:			
Permissible Length, Maximum	--	27	38

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Tolerances

Drill Pipe Size (in.)	Dimension	Tolerance (in.)
1.050 to 3.500	OD*	+ 3/32 - 1/32
4.000 to 5.000		+7/64 - 75% OD
5.500 to 8.625		+1/8 - .75% OD
All Sizes	Wall Thickness	-12.5%
	ID	Governed By OD Tolerances
	Eccentricity OD	.093 Max. (Total Indicator Reading)
	Eccentricity ID	1/16 (1/8 Total Indicator Reading)
	Ovality (On Upset)	.093 Maximum

* Measurements made immediately behind the upset for a distance of approximately 5 inches for sizes 5-1/2 in. and smaller, and a distance approximately equal to the OD for sizes larger than 5-1/2 in.

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Drill Pipe Torsion and Tensile Values

API – Class 2									
Size OD	Nominal Weight	Torsional Yield Strength[1.2] 30% Uniform Wear				Tensile Yield Strength[2] 30% Uniform Wear			
		E-75	X-95	G-105	S-135	E-75	X-95	G-105	S-135
(in.)	(lb/ft)	(ft-lb)	(ft-lb)	(ft-lb)	(ft-lb)	(lb)	(lb)	(lb)	(lb)
2-3/8	4.85	3,224	4,083	4,513	5,802	66,686	84,469	93,360	120,035
	6.65	4,130	5,232	5,782	7,434	92,871	117,636	130,019	167,167
2 -7/8	6.85	5,484	6,946	7,677	9,871	92,801	117,549	129,922	167,043
	10.40	7,591	9,615	10,627	13,663	143,557	181,839	200,980	258,403
3-1/2	9.50	9,612	12,176	13,457	17,302	132,793	168,204	185,910	239,027
	13.30	12,365	15,663	17,312	22,258	183,398	232,304	256,757	330,116
	15.50	13,828	17,515	19,359	24,890	215,967	273,558	302,354	388,741
4	11.85	13,281	16,823	18,594	23,907	158,132	200,301	221,385	284,638
	14.00	15,738	19,935	22,034	28,329	194,363	246,193	272,108	349,852
	15.70	17,315	21,932	24,241	31,166	219,738	278,335	307,633	395,528
4-1/2	13.75	17,715	22,439	24,801	31,887	185,389	234,827	259,545	333,701
	16.60	20,908	26,483	29,271	37,634	225,771	285,977	316,080	406,388
	20.00	24,747	31,346	34,645	44,544	279,502	354,035	391,302	503,103
	22.82	27,161	34,404	38,026	48,890	317,497	402,163	444,496	571,495
5	16.25	23,974	30,368	33,564	43,154	225,316	285,400	315,442	405,568
	19.50	27,976	35,436	39,166	50,356	270,432	342,548	378,605	486,778
	25.60	34,947	44,267	48,926	62,905	358,731	454,392	502,223	645,715
5-1/2	19.20	30,208	38,263	42,291	54,374	255,954	324,208	358,335	460,717
	21.90	34,582	43,804	48,414	62,247	299,533	379,409	419,346	539,160
	24.70	38,383	48,619	53,737	69,090	339,533	430,076	475,347	611,160
6-5/8	25.20	48,497	61,430	67,896	87,295	337,236	427,166	472,131	607,026
	27.70	52,308	66,257	73,231	94,155	367,455	465,443	514,437	661,419

[1.2] Based on the shear strength equal to 57.7% of minimum yield strength.
[2] Torsional and tensile data based on 30% uniform wear on OD.

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Drill Pipe Collapse and Yield Pressure Values

API – Class 2									
	Nominal Weight	API Collapse Pressure				API Minimum Internal Yield Pressure [2]			
		E-75	X-95	G-105		E-75	X-95		S-135
(in.)	(lb/ft)	(ft-lb)	(ft-lb)	(ft-lb)	(ft-lb)	(lb)	(lb)		(lb)
2-3/8	4.85	6,852	7,996	8,491	9,664	8,400	10,640	11,760	15,120
	6.65	12,138	15,375	16,993	21,849	12,379	15,680	17,331	22,282
2-7/8	6.85	6,055	6,963	7,335	8,123	7,925	10,039	11,095	14,265
	10.40	12,938	16,388	18,113		13,221	16,746	18,509	23,798
3-1/2	9.50	5,544	6,301	6,596	7,137	7,620	9,652	10,688	13,716
	13.30	10,858	13,753	15,042	18,396	11,040	13,984	15,456	19,872
	15.50	13,174	16,686	18,443	23,712	13,470	17,062	18,858	24,246
4	11.85	4,311	4,702	4,876	5,436	6,878	8,712	9,629	12,380
	14.00	7,295	8,570	9,134	10,520	8,663	10,973	12,128	15,593
	15.70	9,531	11,468	12,374	14,840	9,975	12,635	13,965	17,955
4-1/2	13.75	3,397	3,845	4,016	4,287	6,323	8,010	8,853	11,382
	16.60	5,951	6,828	7,185	7,923	7,863	9,960	11,009	14,154
	20.00	9,631	11,598	12,520	15,033	10,033	12,709	14,047	18,060
	22.82	11,458	14,514	16,042	20,510	11,667	14,779	16,333	21,000
5	16.25	3,275	3,696	3,850	4,065	6,216	7,874	8,702	11,189
	19.50	5,514	6,262	6,552	7,079	7,602	9,629	10,643	13,684
	25.60	10,338	12,640	13,685	16,587	10,500	13,300	14,700	18,900
5-1/2	19.20	2,835	3,128	3,215	3,265	5,804	7,351	8,125	10,447
	21.90	4,334	4,733	4,899	5,465	6,892	8,730	9,649	12,405
	24.70	6,050	6,957	7,329	8,115	7,923	10,035	11,092	14,261
6-5/8	25.20	2,227	2,343	2,346	2,346	5,230	6,625	7,322	9,414
	27.70	2,765	3,037	3,113	3,148	5,737	7,267	8,032	10,327

[1]Calculations for Class 2 are based on formulas in API Specification 5C3.
[2]Data are based on minimum mall of 70% nominal wall. Collapse pressures are based on uniform wear. Internal pressures are based on uniform wear and nominal OD.

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Drill Pipe Capacity and Displacement

Size OD (in.)	Size ID (in.)	Weight (lb/ft)	Capacity (bbl/ft)	Displacement (bbl/ft)
2-3/8	1.81	6.6	.0032	.0028
2-7/8	2.15	10.4	.0045	.0041
3-1/2	2.76	13.3	.0074	.0051
3-1/2	2.60	15.5	.0066	.0058
4	3.34	14.0	.0108	.0057
4-1/2	3.82	16.6	.0142	.0064
4-1/2	3.64	20.0	.0129	.0077
5	4.28	19.5	.0178	.0075
5-1/2	4.78	21.9	.0222	.0087
5-1/2	4.67	24.7	.0211	.0096
5-9/16	4.86	22.2	.0229	.0087
6-5/8	5.96	25.2	.0346	.0098
Hevi-Wate® Drill Pipe				
3-1/2	2.06	25.3	.00421	.00921
4	2.56	29.7	.00645	.01082
4-1/2	2.75	41.0	.00743	.01493
5	3.00	49.3	.00883	.01796

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Drill Pipe Stretch Table

OD (in.)	Nominal Weight (lb/ft)	ID (in.)	Stretch Constant (in/l000 lb/1000 ft)	Free Point Constant
2-3/8	4.85	1.995	0.30675	3260.0
2-3/8	6.65	1.815	0.21704	4607.5
2-7/8	6.85	2.441	0.22075	4530.0
2-7/8	10.40	2.151	0.13996	7145.0
3-1/2	9.50	2.992	0.15444	6475.0
3-1/2	13.30	2.764	0.11047	9052.5
3-1/2	15.50	2.602	0.09294	10760.0
4	11.85	3.476	0,13000	7692.5
4	14.00	3.340	0.10512	9512.5
4	13.75	3.958	0.11111	9000.0
4-1/2	16.60	3.826	0.09076	11017.5
4-1/2	18.10	3.754	0.08271	12090.0
4-1/2	20.00	3.640	0.07275	13745.0
5	16.25	4.408	0.09145	10935.0
5	19.50	4.276	0.07583	13187.5
5-1/2	21.90	4.778	0.06863	14570.0
5-1/2	24.70	4.670	0.06033	16575.0
6-5/8	25.20	5.965	0.06129	16315.0

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Interchangeability Chart for Tool Joints

Common Name		Pin Base	Threads (per in.)	Taper (in/ft)	Thread Form	Same As or Interchangeable With
Style Units	Size (in.)	Diameter – tapered (in.)				
Internal [1] Flush (IF)	2-3/8	2.876	4	2	V-0.065	2-7/8 Slim Hole
					(V-0.038 R)	NC 26
	2-7/8	3.391	4	2	V-0.065	3-1/2 Slim Hole
					(V-0.038 R)	NC 31
	3-1/2	4.016	4	2	V-0.065	4-1/2 Slim Hole
					(V-0.038 R)	NC 38
	4	4.834	4	2	V-0.065	4-1/2 Extra Hole
					(V-0.038 R)	NC 46
	4-1/2	5.250	4	2	V-0.065	5 Extra Hole
					(V-0.038 R)	NC 50
						5-1/2 Double Streamline
Full Hole (FH)	4	4.280	4	2	V-0.065	4-1/2 Double Streamline
					(V-0.038 R)	NC 40
Extra Hole [1] (XH) (EH)	2-7/8	3.327	4	2	V-0.065	3-1/2 Double Streamline
						(V-0.038 R)
	3-1/2	3.812	4	2	V-0.065	4 Slim Hole
					(V-0.038 R)	4-1/2 Slim Hole
	4-1/2	4.834	4	2	V-0.065	4 Slim Hole
					(V-0.038 R)	NC 46
	5	5.250	4		V-0.065	4-1/2 Slim Hole
					(V-0.038 R)	NC 50
						5-1/2 Double Streamline
Slim Hole [a] (SH)	2-7/8	2.876	4	2	V-0.065	2-3/8 Internal Flush
					(V-0.038 R)	NC 26
	3-1/2	3.391	4	2	V-0.065	2-7/8 Internal Flush
					(V-0.038 R)	NC 31
	4	3.812	4	2	V-0.065	3-1/2 Extra Hole
					(V-0.038 R)	4-1/2 External Flush
	4-1/2	4.016	4	2	V-0.065	3-1/2 Internal Flush
					(V-0.038 R)	NC 38

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Interchangeability Chart for Tool Joints (continued)

Common Name		Pin Base	Threads (per in.)	Taper (in/ft)	Thread Form	Same As or Interchangeable With
Style Units	Size (in.)	Diameter – tapered (in.)				
Double Streamline (DSL)	3-1/2	3.327	4	2	V-0.065	2-7/8 Extra Hole
					(V-0.038 R)	
	4-1/2	4.280	4	2	V-0.065	4 Full Hole
					(V-0.038 R)	NC 40
	5-1/2	5.250	4	2	V-0.065	4-1/2 Internal Flush
					(V-0.038 R)	5 Extra Hole
						NC 50
Numbered [2] Conn (NC)	26	2.876	4	2	V-0.038 R	2-3/8 Internal Flush
						2-7/8 Slim Hole
	31	3.391	4	2	V-0.038 R	2-7/8 Internal Flush
						3-1/2 Slim Hole
	38	4.016	4	2	V-0.038 R	3-1/2 Internal Flush
						4-1/2 Slim Hole
	40	4.280	4	2	V-0.038 R	4 Full Hole
						4-1/2 Double Streamline
	46	4.834	4	2	V-0.038 R	4 Internal Flush
						4-1/2 Extra Hole
	50	5.250	4	2	V-0.038 R	4-1/2 Internal Flush
						5 Extra Hole
						5-1/2 Double Streamline
External Flush (EF)	4-1/2	3.812	4	2	V-0.065	4 Slim Hole
					(V-0.038 R)	3-1/2 Extra Hole

1. Connections with two thread forms shown may be machined with either thread without affecting gauging or interchangeability.
2. Numbered connections (NC) may be machined only with V-0.038 radius thread form.

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Large Diameter Tool Joints

Dimension and Strength Data API and Non-API						
Size	Connection Type	Box OD (in.)	Pin ID (in.)	Tensile Yield Strength (lb)	Torsion Yield Strength (ft-lb)	Recommended Make-Up Torque (ft-lb)
2-3/8	API REG.	3.125	1.000	375,500	7,500	3,700
	API IF	3.375	1.750	313,680	6,800	3,400
	API REG.	3.750	1.250	493,600	13,000	6,500
	API IF	4.125	2-1/8	447,130	11,800	5,900
2-7/8	Hughes S.H.	3.375	1.750	313,680	6,800	3,400
	Hughes X-HOLE	4.250	1.875	505,080	13,400	6,700
	API REG.	4.250	1.500	727,400	15,100	7,500
	API FH	4.625	2.125	779,900	16,300	8,100
	API IF	4.750	2.688	587,310	18,100	9,100
3-1/2	Hughes D S.L.	3.875	1.813	561,120	14,000	7,000
	Hughes S.H.	4.125	2.125	447,130	11,800	6,000
	Hughes X-HOLE	4.750	2.438	570,940	17,100	8,550
	Hughes H-90	5.000	2.750	663,130	23,500	11,800
	Hughes H-90	5.250	2.750	663,130	23,500	11,800
	API FH	5.250	2.813	757,500	23,800	11,800
4	API IF	6.000	3.250	901,170	33,600	16,900
	Hughes S. H.	4.625	2.563	512,040	15,000	7,500
	Hughes H-90	5.500	2.813	913,470	35,400	17,700
	API REG.	5.500	2.250	1262,000	30,000	15,000
	API FH	5.750	3.000	1,017,000	35,400	17,700
	API IF	6.375	3.750	944,000	37,800	18,900
4-1/2	Hughes X-HOLE	6.250	3.250	901,150	34,000	17,000
	Hughes H-90	6.000	3.250	938,150	38,900	19,500
	Hughes H-90	6.000	3.000	1,085,410	45,200	22,600
5	Hughes X-HOLE	6.375	3.750	939,100	37,700	18,900
	API REG	6.750	2.750	1,779,000	61,000	30,000
5-1/2	API FH	7.000	4.000	1,265,760	56,300	28,000
	API IF	7.375	4.813	1,265,500	77,600	38,800
	API REG.	7.750	3.500	1,867000	86,000	43,000
6-5/8	API FH	8.000	5.000	1,448,800	74,200	37,100

Small Diameter Tool Joints

Dimension and Strength* Data						
Joint Size (in.)	Joint Connection	OD (in.)	ID (in.)	Tension Yield Strength (lb)	Torsion Yield Strength (ft-lb)	Recommended Make-up Torque (ft-lb)
1	AM. M.T.	1.563	0.750	68,100	765	500
1	AM. M.T.	1.563	0.813	58,080	650	450
1	AM. M.T.-DSI	1.563	0.750	68,100	1,300	500
1-1/4	AM. M.T.	1.750	1.000	69,698	865	500
1-1/4	AM. M.T.	1.750	0.875	93,984	1,265	650
1-1/4	AM. M.T.	1.750	0.813	104,808	1,265	650
1-1/4	AM. M.T.	1.750	0.750	115,000	1,265	650
1-1/4	F.J. (REG)	2.188	0.625	155,300	2,150	1,075
1-1/4	AM. M.T.-DSI	1.750	0.875	93,984	1,800	650
1-1/2	AM. M.T.	2.000	1.000	127,100	1,770	950
1-1/2	AM. M.T.	2.000	1.156	92,136	1,285	700
1-1/2	AM. M.T.	2.000	1.125	99,528	1,385	750
1-1/2	AM. M.T.	2.000	1.063	113,784	1,585	900
1-1/2	AM. M.T.-DSI	2.000	1.000	127,100	2,800	950
1-9/16	Homco Slimline	1.563	0.937	71,120	900	450
1-5/8	Baash Ross	1.660	0.750	89,375	1,050	525
1-13/16	Homco Slimline	1.813	1.000	111,000	900	450
1-13/16	Homco F.J.	1.813	0.750	113,000	1,600	800
1-13/16	PRT	1.813	0.750	110,700	1,595	800
1-13/16	Wilson F.J.	1.813	0.750	113,000	1,600	800
2-1/16	AM. M.T.-DSI	2.330	1.250	135,036	3,500	1,100
2-1/4	PRT	2.250	0.750	181,900	4,600	2,300
2-1/4	T.S.S.	2.250	1.000	142,500	2,100	500
2-3/8	AM. PAC	2.875	1.375	238,440	4,800	2,400
2-3/8	AM PAC DIS†	2.875	1.500	201,900	6,490	3,250
2-3/8	API REG. DSI†	3.125	1.000	375,500	8,045	4,020
2-3/8	Homco F.J.	2.500	1.000	203,100	3,350	1,670
2-3/8	Wilson F.J.	2.500	1.063	138,000	4,490	2,250

* Strength based on a material yield of 120,000 psi. Check applicable pipe for comparative value in tension and torsion.
† Double shoulder internal – special Tri-State modification

Small Diameter Tool Joints (continued)

Dimension and Strength* Data						
Joint Size (in.)	Joint Connection	OD (in.)	ID (in.)	Tension Yield Strength (lb)	Torsion Yield Strength (ft-lb)	Recommended Make-Up Torque (ft-lb)
2-7/8	AM O.H.	3.875	2.151	345,360	8,900	4,450
2-7/8	AM O.H.– Lightweight	3.750	2.441	223,680	5,700	2,850
2-7/8	AM PAC	3.125	1.500	269,470	5,800	2,900
2-7/8	AM PAC DISI†	3.125	1.500	269,470	7,290	3,650
3-1/8	PRT	3.125	1.000	323,000	12,285	6,140
3-1/2	AM PAC	3.750	2.000	252,800	8,800	4,400
4-1/4	PRT	4.250	2.000	507,600	26,500	13,250

* Strength based on a material yield of 120,000 psi. Check applicable pipe for comparative value in tension and torsion.
† Double shoulder internal – special Tri-State modification

Mechanical Properties of New Tool Joints and New Grade E Drill Pipe

Nom. Size (in.)	Drill Pipe Data		Tool Joint Data				Tensile Yield (lb)			Torsional Yield (ft-lb)	
	Nom Wt. (lb/ft)	Approx Wt.* (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe [1]	Tool Joint [2]	Pipe [3]	Tool Joint (f) [4]
2-3/8	4.85	5.26	EU	NC26 (IF)	3-3/8	1.750	1.625	97817	313681	4763	6875.b
		4.95	EU	OH	3-1/8	2.000	1.807	97817	206416	4763	4526.p
		5.05	EU	SLH-9O	3-1/4	2.000	1.850	97817	202670	4763	5075.p
		5.15	EU	WO	3-3/8	2.000	1.807	97817	195677	4763	4235.p
	6.65	6.99	EU	NC26 (IF)	3-3/8	1.750	1.625	138214	313681	6250	6875.b
		6.89	EU	OH	3-1/4	1.750	1.625	138214	294620	6250	6305.b
		6.71	IU	PAC	2-7/8	1.375	1.250	138214	238504	6250	4672.P
		6.78	EU	SLH-9O	3-1/4	2.000	1.670	138214	202850	6250	5075.p
2-7/8	6.85	7.50	EU	NC31 (IF)	4-1/8	2.125	2.000	135902	447l30	8083	11790.p
		6.93	EU	OH	3-3/4	2.438	2.253	135902	223937	8083	5464.P
		7.05	EU	SLH-9O	3-7/8	2.438	2.296	135902	260783	8083	7513.p
		7.31	EU	WO	4-1/8	2.438	2.253	135902	277553	8083	7015.p
	10.40	10.87	EU	NC31 (IF)	4-1/8	2.125	1.963	214344	447130	11554	11790.p
		10.59	EU	OH	3-7/8	2.157	1.963	214344	345566	11554	8659.P
		10.27	IU	PAC	3-1/8	1.500	1.375	214344	272938	11554	5706.P
		10.59	EU	SLH-9O	3-7/8	2.157	2.006	214344	382765	11554	11227.p
		11.19	IU	XH	4-1/4	1.875	1.750	214344	505054	11554	13088.p
		10.35	IU	NC26 (SH)	3-3/8	1.750	1.625	214344	313681	11554	6875.B
3-1/2	9.50	10.58	EU	NC38 (1F)	4-3/4	2.688	2.563	194264	587308	14146	18071.p
		9.84	EU	OH	4-1/2	3.000	2.804	194264	392071	14146	11803.p
		9.99	EU	SLH-9O	4-5/8	3.000	2.847	194264	366705	14146	12458.p
		10.14	EU	WO	4-3/4	3.000	2.804	194264	419797	14146	12723.p
	13.30	14.37	EU	H-90	5-1/4	2.750	2.619	271569	664050	18551	23443 p
		13.93	EU	NC38 (IF)	4-3/4	2.688	2.457	271569	587308	18551	18071.p
		13.75	EU	OH	4-3/4	2.688	2.414	271569	559582	18551	17167.p
		13.40	IU	NC31 (SH)	4-1/8	2.125	2.000	271569	447130	18551	11790.P
		13.91	EU	XH	4-3/4	2.438	2.313	271569	570939	18551	l6867.p
	15.50	16.54	EU	NC38 (IF)	5	2.563	2.414	322775	649158	21086	20095.p

*Tool joint plus drill pipe, for Range 2 steel pipe.

[1]The tensile yield strength of Grade E drill pipe is based on 75,000 psi minimum yield strength.

[2]The tensile strength of the tool joint pin is based on 120,000 psi minimum yield and the cross sectional area at the root of the thread 5/8 inch from the shoulder.

[3]The torsional yield strength is based on a shear strength of 57.7% of the minimum yield strength.

[4]f: p = pin limited yield. b = box limited yield. P or B indicates that tool joint could not meet 80% of tube torsion yield.

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Mechanical Properties of New Tool Joints and New Grade E Drill Pipe (continued)

Nom. Size (in.)	Drill Pipe Data		Tool Joint Data				Tensile Yield (lb)			Torsional Yield (ft-lb)	
	Nom Wt. (lb/ft)	Approx Wt.* (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe [1]	Tool Joint [2]	Pipe [3]	Tool Joint (f) [4]
4	11.85	13.00	IU	H-90	5 1/2	2.813	2.688	230755	913708	19474	35308.p
		13.52	EU	NC46 (IF)	6	3.250	3.125	230755	901164	19474	33228.p
		12.10	EU	OH	5-1/4	3.469	3.287	230755	621357	19474	21903.p
		12.91	EU	WO	5-3/4	3.438	3.313	230755	782987	19474	28643.p
	14.00	I5.04	IU	NC4O (FH)	5-1/4	2.813	2.688	285359	711611	23288	23279.p
		15.43	IU	H-90	5-1/2	2.813	2.688	285359	913708	23288	35308.p
		I5.85	EU	NC46 (IF)	6	3.250	3.125	285359	901164	23288	33228.p
		15.02	EU	OH	5-1/2	3.250	3.125	285359	759875	23288	27060.p
		14.35	IU	SH	4-5/8	2.563	2.438	285359	512035	23288	15026.P
	15.70	16.80	IU	NC4O (FH)	5-1/4	2.688	2.563	324118	776406	25810	25531.p
		17.09	IU	H-90	5-1/2	2.813	2.688	324118	913708	25810	35308.p
		17.54	EU	NC46 (IF)	6	3.250	3.095	324118	901164	25810	33228.p
4-1/2	13.75	15.23	IU	H-90	6	3.250	3.125	270034	938403	25907	38544.p
		15.36	EU	NC5O (IF)	6-5/8	3.750	3.625	270034	939096	25907	37269.p
		14.04	EU	OH	5-3/4	3.969	3.770	270034	554844	25907	20678.p
		14.77	EU	WO	6-1/8	3.875	3.750	270034	848619	25907	33492.p
	16.60	18.14	IEU	FH	6	3.000	2.875	330558	976156	30807	34367.p
		17.92	IEU	H-90	6	3.250	3.125	330558	938403	30807	38544.p
		17.95	EU	NC5O (IF)	6-5/8	3.750	3.625	330558	939096	30807	37269.p
		17.07	EU	OH	5-7/8	3.750	3.625	330558	713979	30807	26936.p
		16.79	IEU	NC38 (SH)	5	2.688	2.563	330558	587308	30807	18071.P
		18.37	IEU	NC46 (XH)	6-1/4	3.250	3.125	330558	901164	30807	33228.p
	20.00	21.64	IEU	FH	6	3.000	2.875	412358	976156	36901	34367.p
		21.64	IEU	H-90	6	3.000	2.875	412358	1085665	36901	44948.p
		21.59	EU	NC5O (IF)	6-5/8	3.625	3.452	412358	1025980	36901	40915.p
		22.09	IEU	NC46 (XH)	6-1/4	3.000	2.875	412358	1048426	36901	38998.p
	22.82	24.11	EU	NC5O (IF)	6-5/8	3.625	3.452	471239	1025980	40912	40915.p
		24.56	IEU	NC46 (XH)	6-1/4	3.000	2.875	471239	1048426	40912	38998.p

[1]The tensile yield strength of Grade E drill pipe is based on 75,000 psi minimum yield strength.

[2]The tensile strength of the tool joint pin is based on 120,000 psi minimum yield and the cross sectional area at the root of the thread 5/8 inch from the shoulder.

[3]The torsional yield strength is based on a shear strength of 57.7% of the minimum yield strength.

[4]f: p = pin limited yield. b = box limited yield. P or B indicates that tool joint could not meet 80% of tube torsion yield.

*Tool joint plus drill pipe, for Range 2 steel pipe.

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Mechanical Properties of New Tool Joints and New Grade E Drill Pipe (continued)

Nom. Size (in.)	Drill Pipe Data		Tool Joint Data				Tensile Yield (lb)			Torsional Yield (ft-lb)	
	Nom Wt. (lb/ft)	Approx Wt.* (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe [1]	Tool Joint [2]	Pipe [3]	Tool Joint (f) [4]
5	19.50	22.28	IEU	51/2 FH	7	3.750	3.625	395595	1448407	41167	62903.b
		20.85	IEU	NC5O (XH)	6-5/8	3.750	3.625	395595	939095	41167	37269.p
	25.60	28.27	IEU	5 1/2 FH	7	3.500	3.375	530144	1619231	52257	62903.b
		26.85	IEU	NC5O (XH)	6-5/8	3.500	3.375	530144	1109920	52257	44456.p
5-1/2	21.90	23.78	IEU	FH	7	4.000	3.875	437116	1265802	50710	55687.p
	24.70	26.30	IEU	FH	7	4.000	3.875	497222	1265802	56574	55687.p
6-5/8	25.20	27.28	IEU	FH	8	5.000	4.875	489464	1447697	70580	73224.p
	27.70	29.06	IEU	FH	8	5.000	4.875	534198	1447697	76295	73224.p

[1]The tensile yield strength of Grade E drill pipe is based on 75,000 psi minimum yield strength.

[2]The tensile strength of the tool joint pin is based on 120,000 psi minimum yield and the cross sectional area at the root of the thread 5/8 inch from the shoulder.

[3]The torsional yield strength is based on a shear strength of 57.7% of the minimum yield strength.

[4]f: p = pin limited yield. b = box limited yield. P or B indicates that tool joint could not meet 80% of tube torsion yield.

*Tool joint plus drill pipe, for Range 2 steel pipe.

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Mechanical Properties of New Tool Joints and New High-Strength Drill Pipe

Nom. Size (in.)	Drill Pipe Data		Tool Joint Data				Tensile Yield (lb)			Torsional Yield (ft-lb)	
	Nom Wt. (lb/ft)	Approx Wt.* (lb/ft)	Type Upset	Conn.	(in.)	ID (in.)	Drift Diameter (in.)	Pipe [1]	Tool Joint [2]	Pipe [1]	Tool Joint (f) [3]
2-3/8	6.65	7.11	EU-X	NC26 (IF)	3-3/8	1.750	1.625	175072	313681	7917	6875.b
		6.99	EU-X	SLH9O	3-1/4	1.813	1.670	175072	270223	7917	6862.p
		7.11	EU-G	NC26 (IF)	3-3/8	1.750	1.625	193500	313681	8751	6875.b
		6.99	EU-G	SLH9O	3-1/4	1.813	1.670	193500	270223	8751	6862.P
2-7/8	10.40	11.09	EU-X	NC31 (IF)	4-1/8	2.000	1.875	271503	495726	14635	13158.p
		10.95	EU-X	SLH-9O	4	2.000	1.875	271503	443971	14635	13119.p
		11.09	EU-G	NC31 (IF)	4-1/8	2.000	1.875	300082	495726	16176	13158.p
		10.95	EU-G	SLH-9O	4	2.000	1.875	300082	443971	16176	13119.p
		11.55	EU-S	NC31 (IF)	4-3/8	1.625	1.500	385820	623844	20798	16809.p
		11.26	EU-S	SLH-9O	4-1/8	1.625	1.500	385820	572089	20798	17130.p
3-1/2	13.30	14.60	EU-X	H-90	5-1/4	2.750	2.619	343988	664050	23498	23443.p
		14.62	EU-X	NC38 (IF)	5	2.563	2.438	343988	649158	23498	20095.p
		14.06	EU-X	SLH-9O	4-3/4	2.563	2.438	343988	596066	23498	20709.p
		14.71	EU-G	NC38 (IF)	5	2.438	2.313	380197	708063	25972	22035.p
		14.06	EU-G	SLH-9O	4-3/4	2.563	2.438	380197	596066	25972	20709.p
		14.92	EU-S	NC38 (IF)	5	2.125	2.000	488825	842440	33392	26503.P
		14.65	EU-S	SLH-9O	5	2.125	2.000	488825	789348	33392	27809.p
		15.13	EU-S	NC4O (FH)	5-3/8	2.438	2.313	488825	897161	33392	29764.p
	15.50	16.82	EU-X	NC38 (IF)	5	2.438	2.313	408848	708063	26708	22035.p
		17.03	EU-G	NC38 (IF)	5	2.125	2.000	451885	842440	29520	26503.p
		16.97	EU-G	NC4O (FH)	5-1/4	2.563	2.438	451885	838257	29520	27693.p
		17.57	EU-S	NC4O (FH)	5-1/2	2.250	2.125	580995	979996	37954	32693.p
4	14.00	15.34	IU-X	NC4O (FH)	5-1/4	2.688	2.563	361454	776406	29498	25531.p
		15.63	IU-X	H-90	5-1/2	2.813	2.688	361454	913708	29498	35308.p
		16.19	EU-X	NC46 (IF)	6	3.250	3.125	361454	901164	29498	33228.p
		15.91	IU-G	NC4O (FH)	5-1/2	2.438	2.313	399502	897161	32603	29764.p

[1]The torsional yield strength is based on a shear strength of 57.7% of the minimum yield strength.

[2]The tensile strength of the tool joint pin is based on 120,000 psi yield and the cross sectional area at the root of the thread 5/8 inch from the shoulder,

[3]f: p pin limited yield. b = box limited yield. P or B indicates that tool joint could not meet 80% of tube torsion yield.

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Mechanical Properties of New Tool Joints and New High-Strength Drill Pipe (continued)

Nom. Size (in.)	Drill Pipe Data		Tool Joint Data				Tensile Yield (lb)			Torsional Yield (ft-lb)	
	Nom Wt. (lb/ft)	Approx Wt.* (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe [1]	Tool Joint [2]	Pipe [1]	Tool Joint (f) [3]
4	14.00	15.63	IU-G	H-90	5-1/2	2 .813	2.688	399502	913708	32603	35308.p
		16.19	EU-G	NC46 (IF)	6	3.250	3.125	399502	901164	32603	33228.p
		16.19	IU-S	NC4O (FH)	5-1/2	2.000	1.875	513646	1080135	41918	36262.p
		15.63	IU-S	H-90	5-1/2	2.813	2.688	513646	913708	41918	35308.p
		16.42	EU-S	NC46 (IF)	6	3.000	2.875	513646	1048426	41918	38998.p
	15.70	17.52	IU-X	NC4O (FH)	5-1/2	2.438	2.313	410550	897161	32692	29764.p
		17.23	IU-X	H-90	5-1/2	2.813	2.688	410550	913708	32692	35308.p
		17.80	EU-X	NC46 (IF)	6	3.250	3.125	410550	901164	32692	33228.p
		17.52	IU-G	NC4O (FH)	5-1/2	2.438	2.313	453765	897161	36134	29764.p
		17.23	IU-G	H-90	5-1/2	2.813	2.688	453765	913708	36134	35308.p
		17.80	EU-G	NC46 (IF)	6	3.250	3.125	453765	901164	36134	33228.p
		18.02	EU-S	NC46 (IF)	6	3.000	2.875	583413	1048426	46458	38998.p
4-1/2	16.60	18.33	IEU-X	FH	6	3.000	2.875	418707	976156	39022	34367.p
		18.11	IEU-X	H-90	6	3.250	3.125	418707	938403	39022	38544.p
		18.36	EU-X	NC5O (IF)	6-5/8	3.750	3.625	418707	939095	39022	37269.p
		18.79	IEU-X	NC46 (XH)	6-1/4	3.000	2.875	418707	1048426	39022	38998.p
		18.33	IEU-G	FH	6	3.000	2.625	462781	976156	43130	34367.p
		18.33	IEU-G	H-90	6	3.000	3.125	462781	1085665	43130	44948.p
		18.36	EU-G	NC5O (IF)	6-5/8	3.750	3.625	462781	939095	43130	37269.p
		18.79	IEU-G	NC46 (XH)	6-1/4	3.000	2.875	462781	1048426	43130	38998.p
		19.19	IEU-S	FH	6-1/4	2.500	2.375	595004	1235337	55453	44214.p
		18.33	IEU-S	H-90	6	3.000	2.875	595004	1085665	55453	44948.p
		18.62	EU-S	NC5O (IF)	6-5/8	3.500	3.375	595004	1109920	55453	44456.p
		19.00	IEU-S	NC46 (XH)	6-1/4	2.750	2.625	595004	1183908	55453	44359.p
	20.00	22.39	IEU-X	FH	6	2.500	2.375	522320	1235337	46741	44214.p
		21.78	IEU-X	H-90	6	3.250	3.125	522320	938403	46741	38544.p
		22.08	EU-X	NC5O (IF)	6-5/8	3.500	3.375	522320	1109920	46741	44456.p
		22.67	IEU-X	NC46 (XH)	6-1/4	2.750	2.625	522320	1183908	46741	44359.p
		22.39	IEU-G	FH	6	2.500	2.375	577301	1235337	51661	44214.p
		22.00	IEU-G	H-90	6	3.000	2.875	577301	1085665	51661	44948.p
		22.08	EU-G	NC5O (IF)	6-5/8	3.500	3.375	577301	1109920	51661	44456.p
		22.86	IEU-G	NC46 (XH)	6-1/4	2.500	2.375	577301	1307608	51661	49297.p
		23.03	EU-S	NC5O (IF)	6-5/8	3.000	2.875	742244	1416225	66421	57534.p
		23.03	IEU-S	NC46 (XH)	6-1/4	2.250	2.125	742244	1419527	66421	53800.p

[1]The torsional yield strength is based on a shear strength of 57.7% of the minimum yield strength.

[2]The tensile strength of the tool joint pin is based on 120,000 psi yield and the cross sectional area at the root of the thread 5/8 inch from the shoulder,

[3]f: p pin limited yield. b = box limited yield. P or B indicates that tool joint could not meet 80% of tube torsion yield.

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Mechanical Properties of New Tool Joints and New High-Strength Drill Pipe (continued)

Nom. Size (in.)	Drill Pipe Data		Tool Joint Data				Tensile Yield (lb)			Torsional Yield (ft-lb)	
	Nom Wt. (lb/ft)	Approx Wt.* (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe [1]	Tool Joint [2]	Pipe [1]	Tool Joint (f) [3]
4-1/2	22.82	25.13	IEU-X	FH	6-1/4	2.250	2.125	596903	1347256	51821	48522.p
		24.24	EU-X	NC5O (IF)	6-5/8	3.500	3.375	596903	1109920	51821	44456.p
		24.77	IEU-X	NC46 (XH)	6-1/4	2.750	2.625	596903	1183908	51821	44359.p
		24.72	EU-G	NC5O (IF)	6-5/8	3.250	3.125	659735	1268963	57276	51217.p
		24.96	IEU-G	NC46 (XH)	6-1/4	2.500	2.375	659735	1307608	57276	49297.p
		25.41	EU-S	NC5O (IF)	6-5/8	2.750	2.625	848230	1551706	73641	63393.p
5	19.50	22.62	IEU-X	5-1/2 FH	7		3.625	501087	1448407	52144	62903.b
		21.93	IEU-X		6-1/2	3.250	3.125	501087	1176265	52144	51220.p
		21.45	IEU-X	NC5O (XH)	6-5/8	3.500	3.375	501087	1109920	52144	44456.p
		22.62	IEU-G	5-1/2 FH	7	3.750	3.625	553833		57633	62903.b
		22.15	IEU-G		6-1/2	3.000	2.875	553833	1323527	57633	58008.p
		21.93	IEU-G	NC5O (XH)	6-5/8	3.250	3.125	553833	1268963	57633	51217.p
		23.48	IEU-S	5-1/2 FH	7-1/4	3.500	3.375	712070	1619231	74100	72213.p
			IEU-S	NC5O (XH)	6-5/8	2.750	2.625	712070	1551706	74100	63393.p
			IEU-X	5-1/2 FH	7	3.500		671515	1619231	66192	62903.b
		27.87	IEU-X	NC5O (XH)	6-5/8	3.000	2.875	671515	1416225	66192	57534.b
		29.16	IEU-G	5-1/2 FH	7-1/4	3.500	3.375	742201	1619231	73159	72213.p
		28.32	IEU-G	NC5O (XH)	6-5/8	2.750	2.625	742201		73159	63393.b
		29.43		5-1/2 FH	7-1/4	3.250	3.125	954259	1778274	94062	78716.b
5-1/2	21.90	24.53	IEU-X	FH	7	3.750	3.625	553681	1448407	64233	62903.b
		24.80	IEU-X	H-90	7	3.500	3.125	553681	1268877	64233	58033.p
		25.38	IEU-G	FH	7-1/4	3.500	3.375	611963	1619231	70994	72213.p
		26.50	IEU-S	FH	7-1/2	3.000	2.875	786809	1925536	91278	86765.p
	24.70	27.85	IEU-X	FH	7-1/4	3.500	3.375	629814	1619231	71660	72213.p
		27.85	IEU-G	FH	7-1/4	3.500	3.375	696111	1619231	79204	72213.p
		27.77	IEU-S	FH	7-1/2	3.000	2.875	894999	1925536	101833	86765.p
6-5/8	25.20	27.15	IEU-X	FH	8	5.000	4.875	619988	1448416	89402	
		28.20	IEU-G	FH	8-1/4	4.750		685250	1678145		85467.p
		29.63	IEU-S	FH		4.250	4.125	881035	2102260	127044	108353.p
	27.70	30.11	IEU-X	FH	8-1/4	4.750	4.625	676651	1678145	96640	85467.p
		30.11		FH	8-1/4	4.750	4.625	747250	1678145	106813	85467.p
		31.54	IEU-S	FH	8-1/2	4.250	4.125	961556	2102260	137330	108353.p

[1]The torsional yield strength is based on a shear strength of 57.7% of the minimum yield strength.

[2]The tensile strength of the tool joint pin is based on 120,000 psi yield and the cross sectional area at the root of the thread 5/8 inch from the shoulder,

[3]f: p pin limited yield. b = box limited yield. P or B indicates that tool joint could not meet 80% of tube torsion yield.

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Hydril Wedge Thread Drill Pipe

Drill Pipe Data					Tool Joint Data			Tensile Yield (lb)		Torsional Yield (ft-lb)	
Nom. Size (in.)	Nom. Wt. (lb/ft)	Approx. Wt. (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe	Tool Joint	Pipe	Tool Joint
2-3/8	6.65	7.20	EU-l05	WT26	3-3/8	1.750	1.625	194000	416000	8750	12300
		7.10	EU-105	WT23	3-1/8	1.500	1.375	194000	387000	8750	10400
2-7/8	10.40	11.30	EU-105	WT31	4-1/8	2.000	1.875	300000	697000		28500
		11.30	EU-135	WT31	4-1/8	2.000	1.875	386000	697000	20800	28500
		10.60	EU-135	WT26	3-3/8	1.750	1.625		416000	20800	12300
		10.50	IU-135	WT23	3-1/8	1.500	1.375	386000	387000	20800	10400
3-1/2	13.30	14.50	EU-l05	WT38	4-3/4	2.563	2.438	380000	877000	25970	41000
		14.50	EU-135	WT38	4-3/4	2.563	2.438	489000	877000	33390	41000
		14.00	EU-135	WT31	4-1/8	2.000	1.875	489000	697000	33390	28500
		13.30	IU-135	WT26	3-9/16	1.750	1.625	489000	416000	33390	12300
	15.50	16.70	EU-105	WT38	4-3/4	2.500	2.375	452000	907000	29520	41000
		16.70	EU-135	WT38	4-3/4	2.500	2.375	581000	907000	37950	41000
		16.10	EU-135	WT31	4-1/8	2.000	1.875	581000	697000	37950	28500
4	14.00	16.00	EU-lO5	WT40	5-1/2	3.125	3.000	400000	998000		54000
		16.00	EU-135	WT40	5-1/2	3.125	3.000	514000	998000	41920	54000
		15.50	IU-105	WT39	5-1/8	2.813	2.688	400000	910000	32600	46000
		15.50	IU-135	WT39	5-1/8	2.813	2.688	514000	595000	41920	46000
		15.20	IU-135	WT38	4-3/4	2.563	2.438	514000	877000	41920	41000
			IU-135	WT31	4-1/8	2.000	1.875	514000	697000	41920	28500
	15.70	17.60	EU-105	WT40	5-1/2	3.125	3.000	454000	998000	36130	54000
		17.80	EU-135	WT40	5-1/2	3.125	3.000	583000	998000	46460	54000
		17.10	IU-105	WT39	5-1/8	2.813	2.688	454000	910000	36130	46000
		17.10	IU-135	WT39	5-1/8	2.813	2.688	583000	910000	46460	46000
		16.80	IU-135	WT38	4-3/4	2.563	2.438	583000	877000	46460	41000
		16.20	IU-135		4-1/8	2.000	1.875	583000	697000	46460	28500
4-1/2	16.60	19.10	EU-105	WT46	6-1/4	3.500	3.375	463000	1280000	43130	70000
		19.10	EU-135	WT46	6-1/4	3.500	3.375	595000	1280000	55450	70000
		17.80	EU-135	WT40	5-1/2	3.125	3.000	595000	1280000	55450	54000
		17.60	EU-135	WT39	5-1/8	2.813	2.688	595000	910000	55450	46000
		17.10	EU-135	WT38	4-5/8	2.563	2.438	595000	877000	55450	41000
	20.00	22.50	EU-105	WT46	6-1/4	3.500	3.375	577000	712000	51660	70000
		22.50	EU-135	WT46	6-1/4	3.500	3.375	742000	1280000	66420	70000
		21.50	IEU-135	WT40	5-1/2	3.125	3.000	742000	998000	66420	54000
		21.30	IEU-135	WT39	5-1/8	2.813	2.688	742000	910000	66420	46000

Hydril Wedge Thread Drill Pipe (continued)

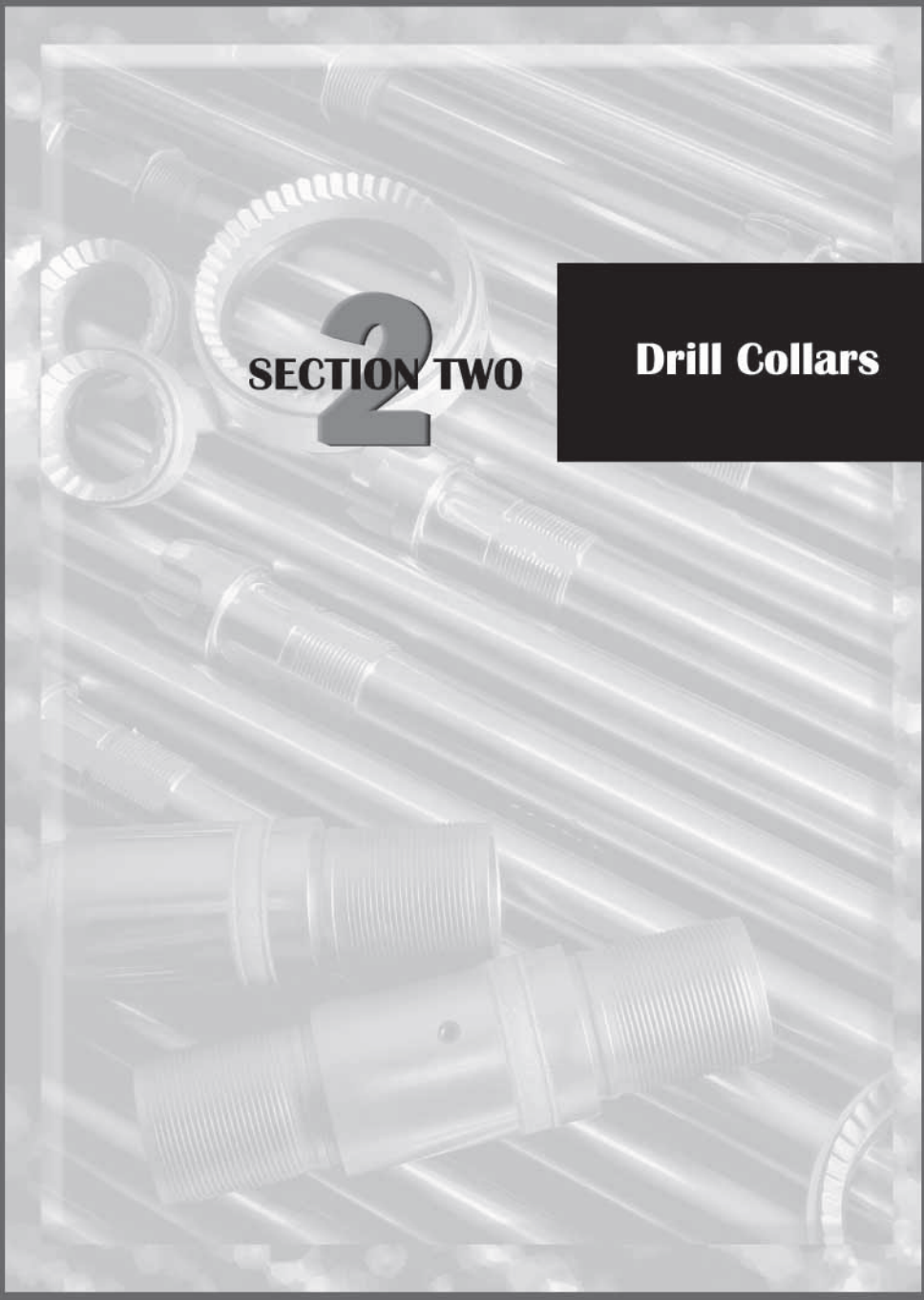
Drill Pipe Data					Tool Joint Data			(lb)		Torsional Yield (ft-lb)	
Nom. Size (in.)	Nom. Wt. (lb/ft)	Approx. Wt. (lb/ft)	Type Upset	Conn.	OD (in.)	ID (in.)	Drift Diameter (in.)	Pipe	Tool Joint		Tool Joint
2-3/8	6.65	7.20	EU-l05	WT26	3-3/8	1.750	1.625	194000	416000	8750	12300
		20.80	IEU-135	WT38	4-5/8	2.563	2.438	742000	877000	66420	41000
		23.30	EU-lO5	WT5O	7	4.000	3.875	554000	1440000	57630	109000
5	19.5O	23.30	EU-135	WT5O	7	4.000	3.875	712000	1440000	74100	109000
		22.60	EU-105	WT5O	6-5/8	3.625	3.500	554000		57630	109000
		22.60	IEU-135	WT5O	6-5/8	3.625	3.500	712000		74100	109000
		21.40	IEU-135	WT46	6	3.500	3.375	712000	1280000		70000
		21.00	IEU-135	WT40	5-1/2	3.125	3.000		1280000	74100	54000
	25.60	29.10	EU-105	WT5O	7	3.875	3.750	742000	1533000	73160	109000
		29.10	EU-135	WT50	7	3.875	3.750	954000	1533000		109000
		28.20	IEU-105	WT50	6-5/8	3.625	3.500	742000		73160	109000
		28.20	IEU-135	WT50	6-5/8	3.625	3.500	954000	1710000	94060	109000
		27.00	IEU-135	WT46	6		3.375	954000		94060	70000
		26.50	IEU-135		5-1/2	3.125	3.000	954000	998000	94060	54000
		24.70	EU-lO5	WT56	7-1/4	4.625	4.500	612000	1473000	70990	132000
5-1/2	21.90	24.70	EU-135	WT56	7-1/4	4.625	4.500	787000	1473000	91280	132000
		25.50	IEU-105	WT56	7-1/4	4.000	3.875	612000	1856000	70990	135000
		25.50	IEU-135	WT56	7-1/4	4.000	3.875	787000	1856000	91280	135000
		24.30	IEU-105	WT54	7	4.375	4.250	612000	1406000	70990	120000
		24.30	IEU-135	WT54	7	4.375	4.250	787000	1406000	91280	120000
		25.00	IEU-135	WT50	7	4.000	3.875	787000	1440000	91280	109000
		23.40	IEU-135	WT46	5-7/8	3.500	3.375	787000	1280000	91280	70000
	24.70	27.20	EU-105	WT56	7-1/4	4.625	4.500	696000	1473000	79200	132000
		27.20	EU-135	WT56	7-1/4	4.625	4.500	895000	1473000	101830	132000
		28.00	IEU-105	WT56	7-1/4	4.000	3.875	696000	1856000	79200	135000
		28.00	IEU-135	WT56	7-1/4	4.000	3.875	895000	1856000	101830	135000
		26.70	IEU-105	WT54	7	4.375	4.250	696000	1406000	79200	120000
		26.70	IEU-135	WT54	7	4.375	4.250	895000	1406000	101830	120000
		27.40	IEU-135	WT50	7	4.000	3.875	895000	1440000	101830	109000
		25.90	IEU-135	WT46	5-7/8	3.500	3.375	895000	1280000	101830	70000
6-5/8	25.20	28.30	IEU-105	WT66	8	5.375	5.250	685000	1654000		168000
		28.30	IEU-135	WT66	8	5.375	5.250	881000	1654000	127050	
		27.00	IEU-135	WT56	7	4.625	4.500	881000		127050	131000
	27.70	30.10	IEU-105	WT66	8	5.375	5.250	748000	1654000	106810	168000
		30.10	IEU-135	WT66	8	5.375	5.250	962000	1654000	137330	168000
		28.80	IEU-135	WT56	7	4.625	4.500	962000	1473000	137330	131000

Hydril make up torque range +/-50%

Cable Tool Joints

Size (in.)				A (in.)	B (in.)	C (in.)	D (in.)	H (in.)	(in.)	U (in.)	X (in.)
7/8	x	1-1/4	-10	2-1/4	1-7/8	1-5/16	15/16	10	2	3	1-15/16
	x	1-1/2	-10	2-5/8	2-1/4	1-19/32	27/32	10	3-7/16	3-3/8	2-3/8
1	x	1-1/2	-8	2	2	1-31/64	61/64	8	3	2-3/4	2-1/16
1-1/8	x	1-3/4	-8	2-1/2	2-1/2	1-47/64	1-7/64	8	2-5/8	3-1/4	2-5/8
	x	1-3/4	-8	2-1/2	2-1/2	1-49/64	1-7/32	8	3	3-1/4	2-5/8
1-1/2	x	2-1/4	-8	3	3	2-15/64	1-32/64		3	3-3/4	3-1/4
1-5/8	x	2-1/2	-8	3-1/2	3-1/2	2-1/2	1-5/8	8	3	4-1/4	3-5/8
	x	2-5/8	-7	3-1/2	3-1/2	2-43/64	1-51/64	7	3	4-1/4	3-3/4
1-3/4	x	2-3/4	-8	3-1/2	3-3/4	2-3/4	1-3/4	8	3-7/16	4-1/4	3-7/8
	x	3	-7	4	4-1/4	3-7/64	2-7/64	7	3	4-3/4	4-3/8
	x	3	-7	4	4-1/4	3-1/16	2	7	3-3/16		4-3/8
2-1/4	x	3-1/4	-7	4	4-1/2	3-5/16	2-17/64	7	3-1/8	4-3/4	4-3/4
	x	3-1/4	-7	4	4-1/2	3-9/32	2-9/32	7	3	4-3/4	4-3/4
2-1/2	x	3-1-2	-7	4-1/4	5	3-37/64	2-33/64	7	3	5	5-1/4
2-3/4	x	3-3/4	-7	4-1/2	5-1/4	3-13/16	2-11/16	7	3	5-1/4	5-1/2
3	x	44	-7	4-3/4	6	4	2-13/16	7	3	5-1/2	6-1/4
	x	4	-7	4-3/4	6	4	2-47/64	7	3-3/16	5-1/2	6-1/4
3-1/4	x	4-1/4		5	6-1/4	4-19/64	3-3/64	7	3	5-3/4	6-1/2
	x	4-1/2	-7	5-1/2	6-1/2	4-21/32	3-9/32	7	3	6-1/4	6-3/4
4	x	5	-7	5-1/2	7	5-1/16	3-11/16	7	3	6-1/4	7-3/8
	x	5	-7	5	7	5-1/16	3-13/16	7	3	5-3/4	7-3/8
	x	5-1/2	-7	6-1/2	7-1/2	5-1/2	3-7/8	7		7-1/4	7-7/8
4-1/4	x	6	-7	7	8-1/4	6	4-1/4	7	3	7-3/4	8-5/8

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SECTION TWO 2

Drill Collars

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Drill Collar Weights (lb/ft)

Drill Collar OD (in.)	Bore of Drill Collar (in.)										
	1	1-1/8	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-13/16	3	3-1/4
3	21	21									
3-1/8	23	23	22	21							
3-1/4	26	25	24	22							
3-3/8			26	24	22						
3-1/2			29	27	25						
3-3/4			33	32	29						
3-7/8			36	34	32	30	27				
4				37	35	32	29				
4-1/8				39	37	35	32				
4-1/4				42	40	38	35				
4-1/2				48	46	43	41				
4-3/4				54	52	50	47	44			
5				61	59	56	53	50			
5-1/4				68	65	63	60	57	53		
5-1/2				75	73	70	67	64	60	57	
5-3/4				83	80	78	75	72	67	64	
6				90	88	85	83	79	75	72	68
6-1/4				98	96	94	91	88	83	80	76
6-1/2				107	105	102	99	96	92	88	85
6-3/4				116	114	111	108	105	101	98	94
7				152	123	120	117	114	110	107	103
7-1/4				134	132	130	127	124	119	116	112
7-1/2				144	142	140	137	134	129	126	122
7-3/4				154	152	150	147	144	139	136	132
8				165	163	160	157	154	150	147	143
8-1/4				176	174	171	168	165	161	158	154
8-1/2				187	185	182	179	176	172	169	165
8-3/4				198	196	194	191	188	183	180	176
9					208	206	203	200	195	192	188
9-1/4					220	218	215	212	207	204	200
9-1/2					233	230	228	224	220	217	213
9-3/4					246	243	240	237	233	230	226
10						256	254	250	246	243	239
10-1/4						270	267	264	259	257	252
10-1/2						284	281	278	273	270	266
10-3/4						298	295	292	287	285	280
11								306	302	299	295
11-1/4								321	317	314	310
11-1/2								336	332	329	325
11-3/4								352	348	345	340
12								368	363	361	356

1,000 lb of steel will displace .364 bbl
65.5 lb of steel will displace 1 gal
7.84 kg of steel will displace 1 liter
490 lb of steel will displace 1 ft^3
2,747 lb of steel will displace 1 bbl

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Drill Collar Weights (kg/m)

Drill Collar OD in. (mm)	Bore of Drill Collar in. (mm)										
	1 (25.40)	1-1/8 (28.57)	1-1/4 (31.75)	1-1/2 (38.10)	1-3/4 (44.45)	2 (50.80)	2-1/4 (57.15)	2-1/2 (63.50)	2-13/16 (71.44)	3 (76.20)	3-1/4 (82.55)
3 (76.20)	32	31									
3-1/8 (79.37)	35	34	33	30							
3-1/4 (82.55)	38	37	36	33							
3-3/8 (85.72)			39	36	33						
3-1/2 (88.90)			43	40	37						
3-3/4 (95.25)			50	47	44						
3-7/8 (98,42)			54	51	48	44	40				
4 (101.60)				55	51	48	44				
4-1/8 (104.77)				59	55	52	48				
4-1/4 (107.95)				63	60	56	52				
4-1/2 (114.30)				72	68	65	60				
4-3/4 (120.65)				81	78	74	70	65			
5 (127.00)				90	87	83	79	75			
5-1/4 (133.35)				101	97	94	89	85	78		
5-1/2 (139.70)				111	108	104	100	95	89	84	
5-3/4 (146.05)				122	119	116	111	107	100	96	
6 (152.40)				134	131	127	123	118	112	107	101
6-1/4 (158.75)				146	143	139	135	130	124	120	113
6-1/2 (165.10)				159	156	152	148	143	136	132	126
6-3/4 (171.45)				172	169	165	161	156	150	145	139

1,000 lb of steel will displace .364 bbl
65.5 lb of steel will displace 1 gal
7.84 kg of steel will displace 1 liter
490 lb of steel will displace 1 ft^3
2,747 lb of steel will displace 1 bbl

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Drill Collar Weights (kg/m) (continued)

Drill Collar OD in. (mm)	Bore of Drill Collar in. (mm)										
	1 (25.40)	1-1/8 (28.57)	1-1/4 (31.75)	1-1/2 (38.10)	1-3/4 (44.45)	2 (50.80)	2-1/4 (57.15)	2-1/2 (63.50)	2-13/16 (71.44)	3 (76.20)	3-1/4 (82.55)
7 (177.80)				186	183	179	175	170	163	159	153
7-1/4 (184.15)				200	197	193	189	184	177	173	167
7-1/2 (190.50)				215	211	208	203	199	192	188	182
7-3/4 (196.85)				230	227	223	219	214	207	203	197
8 (203.20)				245	242	238	234	230	223	219	212
8-1/4 (209.55)				262	258	255	250	246	239	235	229
8-1/2 (215.90)				278	275	271	267	262	256	251	245
8-3/4 (222.25)				295	292	288	284	279	273	269	262
9 (228.60)					310	306	302	297	290	286	280
9-1/4 (234.95)					328	324	320	315	309	304	298
9-1/2 (241.30)					346	343	339	334	327	323	317
9-3/4 (247.65)					366	362	358	353	346	342	336
10 (254.00)						382	377	373	366	362	355
10-1/4 (260.35)						402	397	393	386	382	376
10-1/2 (266.70)						422	418	413	407	403	396
10-3/4 (273.05)						443	439	434	428	423	417
11 (279.40)								456	449	445	439
11-1/4 (285.75)								478	472	467	461
11-1/2 (292.10)								501	494	490	484
11-3/4 (298.45)								524	517	513	507
12 (304.80)								547	541	536	530

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Weight of 31 ft Drill Collar (lb)

Drill Collar OD (in.)	Bore of Drill Collar (in.)										
	1	1-1/8	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-13/16	3	3-1/4
3	662.2	640.2									
3-1/8	725.5	703.6	679.0	622.1							
3-1/4	791.5	769.5	744.9	688.0							
3-3/8			813.5	756.6	689.3						
3-1/2			884.6	827.7	760.5						
3-3/4			1,034.6	977.7	910.5						
3-7/8			1,113.5	1,056.6	989.4	911.8	823.8				
4				1,138.1	1,070.9	993.3	905.3				
4-1/8				1,222.2	1,154.9	1,077.3	989.4				
4-1/4				1,308.8	1,241.6	1,164.0	1,076.0				
4-1/2				1,489.9	1,422.6	1,345.0	1,257.1				
4-3/4				1,681.3	1,614.0	1,536.4	1,448.5	1,350.2			
5				1,883.0	1,815.8	1,738.2	1,650.3	1,552.0			
5-1/4				2,095.2	2,027.9	1,950.3	1,862.4	1,764.1	1,626.7		
5-1/2				2,317.6	2,250.3	2,172.7	2,084.8	1,986.5	1,849.1	1,758.9	
5-3/4				2,550.4	2,483.1	2,405.5	2,317.6	2,219.3	2,081.9	1,991.7	
6				2,793.5	2,726.3	2,648.7	2,560.7	2,462.4	2,325.0	2,234.8	2,105.5
6-1/4				3,047.0	2,979.8	2,902.2	2,814.2	2,715.9	2,578.5	2,488.3	2,359.0
6-1/2				3,310.9	3,243.6	3,166.0	3,078.1	2,979.8	2,842.4	2,752.1	2,622.8
6-3/4				3,585.0	3,517.8	3,440.2	3,352.2	3,253.9	3,116.5	3,026.3	2,897.0
7				3,869.6	3,802.3	3,724.7	3,636.8	3,538.5	3,401.1	3.310.9	3,181.5
7-1/4				4,164.4	4,097.2	4,019.6	3,931.6	3,833.3	3,695.9	3,605.7	3.476.4
7-1/2				4,469.7	4,402.4	4,324.8	4,236.9	4,138.6	4,001.2	3,910.9	3,781.6
7-3/4				4,785.2	4,718.0	4,640.4	4,552.4	4,454.1	4,316.7	4,226.5	4,097.2
8				5,111.1	5,043.9	4,966.3	4,878.3	4,780.0	4,642.6	4,552.4	4,423.1
8-1/4				5,447.4	5,380.1	5,302.5	5,214.6	5,116.3	4,978.9	4,888.7	4,759.4
8-1/2				5,794.0	5,726.7	5,649.1	5,561.2	5,462.9	5,325.5	5,235.3	5,106.0
8-3/4				6,150.9	6,083.7	6,006.1	5,918.2	5,819.9	5,682.4	5,592.2	5,462.9
9					6,451.0	6,373.4	6,285.4	6,187.2	6,049.7	5,959.5	5,830.2
9-1/4					6,628.6	6,751.0	6,663.1	6,564.8	6,427.4	6,337.2	6,207.9
9-1/2					7,216.6	7,139.0	7,051.1	6,952.8	6,815.4	6,725.2	6,595.8
9-3/4					7,615.0	7,537.4	7,449.4	7,351.1	7,213.7	7,123.5	6,994.2
10						7,946.1	7,858.1	7,759.8	7,622.4	7,532.2	7,402.9
10-1/4						8,365.1	8,277.1	8,178.8	8,041.4	7,951.2	7,821.9
10-1/2						8,794.5	8,706.5	8,608.2	8,470.8	8,380.6	8,251.3
10-3/4						9,234.2	9,146.2	9,047.9	8,910.5	8,820.3	8,691.0
11								9,498.0	9,360.6	9,270.4	9,141.1
11-1/4								9,958.4	9,821.0	9,730.8	9,601.5
11-1/2								10,429.2	10,291.8	10,201.6	10,072.2
11-3/4								10,910.3	10,772.9	10,682.7	10,553.3
12								11,401.8	11,264.3	11,174.1	11,044.8

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Weight of 9.4 m Drill Collar (kg)

Drill Collar OD in. (mm)	Bore of Drill Collar in. (mm)										
	1 (25.40)	1-1/8 (28.57)	1-1/4 (31.75)	1-1/2 (38.10)	1-3/4 (44.45)	2 (50.80)	2-1/4 (57.15)	2-1/2 (63.50)	2-13/16 (71.44)	3 (76.20)	3-1/4 (82.55)
3 (76.20)	298.8	288.9									
3-1/8 (79.37)	327.4	317.5	306.4	280.7							
3-1/4 (82.55)	357.2	347.2	336.2	310.5							
3-3/8 (85.72)			367.1	341.4	311.1						
3-1/2 (88.90)			399.2	373.5	343.2						
3-3/4 (95.25)			466.9	441.2	410.9						
3-7/8 (98,42)			502.5	476.8	446.5	411.4	371.8				
4 (101.60)				513.6	483.2	448.2	408.5				
4-1/8 (104.77)				551.5	521.2	486.1	446.5				
4-1/4 (107.95)				590.6	560.3	525.2	485.6				
4-1/2 (114.30)				672.3	642.0	606.9	567.3				
4-3/4 (120.65)				758.7	728.3	693.3	653.6	609.3			
5 (127.00)				849.7	819.4	784.4	744.7	700.3			
5-1/4 (133.35)				945.4	915.1	880.1	840.4	796.0	734.0		
5-1/2 (139.70)				1,045.8	1,015.5	980.4	940.8	896.4	834.4	793.7	
5-3/4 (146.05)				1,150.9	1,120.5	1,085.5	1,045.8	1,001.5	939.5	898.7	
6 (152.40)				1,260.6	1,230.2	1,195.2	1,155.5	1,111.2	1,049.2	1,008.5	950.1
6-1/4 (158.75)				1,375.0	1,344.6	1,309.6	1,269.9	1,225.6	1,163.6	1,122.8	1,064.5
6-1/2 (165.10)				1,494.0	1,463.7	1,428.7	1,389.0	1,344.6	1,282.6	1,241.9	1,183.5
6-3/4 (171.45)				1,617.7	1,587.4	1,552.4	1,512.7	1,468.3	1,406.3	1,365.6	1,307.3
7 (177.80)				1,746.1	1,715.8	1,680.8	1,641.1	1,596.7	1,534.7	1,494.0	1,435.7
7-1/4 (184.15)				1,879.2	1,848.8	1,813.8	1,774.1	1,729.8	1,667.8	1,627.1	1,568.7
7-1/2 (190.50)				2,016.9	1,986.6	1,951.6	1,911.9	1,867.5	1,805.5	1,764.8	1,706.4
7-3/4 (196.85)				2,159.3	2,129.0	2,094.0	2,054.3	2,009.9	1,947.9	1,907.2	1,848.8

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Weight of 9.4 m Drill Collar (kg) (continued)

Drill Collar OD in. (mm)	Bore of Drill Collar in. (mm)										
	1 (25.40)	1-1/8 (28.57)	1-1/4 (31.75)	1-1/2 (38.10)	1-3/4 (44.45)	2 (50.80)	2-1/4 (57.15)	2-1/2 (63.50)	2-13/16 (71.44)	3 (76.20)	3-1/4 (82.55)
8 (203.20)				2,306.4	2,276.0	2,241.0	2,201.3	2,157.0	2,095.0	2,054.3	1,995.9
8-1/4 (209.55)				2,458.1	2,427.8	2,392.8	2,353.1	2,308.7	2,246.7	2,206.0	2,147.7
8-1/2 (215.90)				2,614,5	2,584.2	2,549.2	2,509.5	2,465.1	2,403.1	2,362.4	2,304.1
8-3/4 (222.25)				2,775.6	2,745.3	2,710.2	2,670.6	2,626.2	2,564.2	2,523.5	2,465.1
9 (228.60)					2,911.0	2,876.0	2,836.3	2,791.9	2,729.9	2,689.2	2,630.9
9-1/4 (234.95)					3,081.4	3,046.4	3,006.7	2,962.4	2,900.3	2,859.6	2,801.3
9-1/2 (241.30)					3,256.5	3,221.5	3,181.8	3,137.4	3,075.4	3,034.7	2,976.4
9-3/4 (247.65)					3,436.2	3,401.2	3,361.5	3,317.2	3,255.2	3,214.5	3,156.1
10 (254.00)						3,585.6	3,546.0	3,501.6	3,439.6	3,398.9	3,340.5
10-1/4 (260.35)						3,774.7	3,735.0	3,690.7	3,628.7	3,588.0	3,529.6
10-1/2 (266.70)						3,968.5	3,928.8	3,884.4	3,822.4	3,781.7	3,723.4
10-3/4 (273.05)						4,166.9	4,127.2	4,082.9	4,020.9	3,980.2	3,921.8
11 (279.40)								4,286.0	4,223.9	4,183.2	4,124.9
11-1/4 (285.75)								4,493.7	4,431.7	4,391.0	4,332.6
11-1/2 (292.10)								4,706.2	4,644.1	4,603.4	4,545.1
11-3/4 (298.45)								4,923.2	4,861.2	4,820.5	4,762.2
12 (304.80)								5,145.0	5,083.0	5,042.3	4,983.9

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Recommended Minimum Makeup Torque (ft-lb)

(see note #2 below)

Size and Type of Connection (in.)	OD (in.)	Bore of Drill Collars (in.)											
		1	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-13/16	3	3-1/4	3-1/2	3-3/4
API NC 23	3	2,508†	2,508†	2,508†									
	3-1/8	3,330†	3,330†	2,647									
	3-1/4	4,000	3,387	2,647									
2-3/8 Reg.	3		2,241†	2,241†	1,749								
	3-1/8		3,028†	2,574	1,749								
	3-1/4		3,285	2,574	1,749								
2-7/8 PAC	3		3,797†	3,797†	2,926								
	3-1/8		4,966	4,151	2,926								
	3-1/4		5,206	4,151	2,926								
2-3/8 IF API NC 26 2-7/8 SH	3-1/2		4,606†	4,606†	3,697								
	3-3/4		5,501	4,668	3,697								
2-7/8 Reg.	3-1/2		3,838†	3,838†	3,838†								
	3-3/4		5,766	4,951	4,002								
	3-7/8		5,766	4,951	4,002								
2-7/8 XH 3-1/2 DSL 2-7/8 Mod. Open	3-3/4		4,089†	4,089†	4,089†								
	3-7/8		5,352†	5,352†	5,352†								
	4-1/8		8,059†	8,059†	7,433								
2-7/8 IF API NC 31 3-1/2 SH	3-7/8		4,640†	4,640†	4,640†	4,640†							
	4-1/8		7,390†	7,390†	7,390†	6,853							
	4-1/4		8,858†	8,858†	8,161	6,853							
	4-1/2		10,286	9,307	8,161	6,853							
3-1/2 Reg.	4-1/8		6,466†	6,466†	6,466†	6,466†	5,685						
	4-1/4		7,886†	7,886†	7,886†	7,115	5,685						
	4-1/2		10,471	9,514	8,394	7,115	5,685						
API NC 35	4-1/2				9,038†	9,038†	9,038†	7,411					
	4-3/4				12,273	10,825	9,202	7,411					
	5				12,273	10,825	9,202	7,411					
3-1/2 XH 4 SH 3-1/2 Mod. Open	4-1/4				5,161†	5,161†	5,161†	5,161†					
	4-1/2				8,479†	8,479†	8,479†	8,311					
	4-3/4				12,074†	11,803	10,144	8,311					
	5				13,282	11,803	10,144	8,311					
	5-1/4				13,282	11,803	10,144	8,311					
3-1/2 API IF API NC 38 4-1/2 SH	4-3/4				9,986†	9,986†	9,986†	9,986†	8,315				
	5				13,949†	13,949†	12,907	10,977	8,315				
	5-1/4				16,207	14,653	12,907	10,977	8,315				
	5-1/2				16,207	14,653	12,907	10,977	8,315				
3-1/2 H-90	4-3/4				8,786†	8,786†	8,786†	8,786†	8,786†				
	5				12,794†	12,794†	12,794†	12,794†	10,410				
	5-1/4				17,094†	16,931	15,139	13,154	10,410				
	5-1/2				18,524	16,931	15,139	13,154	10,410				
4 FH API NC 40 4 Mod. Open 4-1/2 DSL	5				10,910†	10,910†	10,910†	10,910†	10,910†				
	5-1/4				15,290†	15,290†	15,290†	14,969	12,125				
	5-1/2				19,985†	18,886	17,028	14,969	12,125				
	5-3/4				20,539	18,886	17,028	14,969	12,125				
	6				20,539	18,886	17,028	14,969	12,125				

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (ft-lb) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (in.)	Bore of Drill Collars (in.)											
		1	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-13/16	3	3-1/4	3-1/2	3-3/4
4 H-90	5-1/4					12,590†	12,590†	12,590†	12,590†				
	5-1/2					17,401†	17,401†	17,401†	16,539				
	5-3/4					22,531†	21,717	19,546	16,539				
	6					23,674	21,717	19,546	16,539				
	6-1/4					23,674	21,717	19,546	16,539				
4-1/2 Reg.	5-1/2					15,576†	15,576†	15,576†	15,576†				
	5-3/4					20,609†	20,609†	19,601	16,629				
	6					23,686	21,749	19,601	16,629				
	6-1/4					23,686	21,749	19,601	16,629				
API NC 44	5-3/4					20,895†	20,895†	20,895†	18,161				
	6					25,509	23,493	21,257	18,161				
	6-1/4					25,509	23,493	21,257	18,161				
	6-1/2					25,509	23,493	21,257	18,161				
4-1/2 API FH	5-1/2					12,973†	12,973†	12,973†	12,973†	12,973†			
	5-3/4					18,119†	18,119†	18,119†	18,119†	17,900			
	6					23,605†	23,605†	23,028	19,920	17,900			
	6-1/4					27,294	25,272	23,028	19,920	17,900			
	6-1/2					27,294	25,272	23,028	19,920	17,900			
4-1/2 XH API NC 46 4 API IF 5 DSL 4-1/2 Mod. Open	5-3/4						17,738†	17,738†	17,738†	17,738†			
	6						23,422†	23,422†	22,426	20,311			
	6-1/4						28,021	25,676	22,426	20,311			
	6-1/2						28,021	25,676	22,426	20,311			
	6-3/4						28,021	25,676	22,426	20,311			
4-1/2 H-90	5-3/4						18,019†	18,019†	18,019†	18,019†			
	6						23,681†	23,681†	23,159	21,051			
	6-1/4						28,731	26,397	23,159	21,051			
	6-1/2						28,731	26,397	23,159	21,051			
	6-3/4						28,731	26,397	23,159	21,051			
5 H-90	6-1/4						25,360†	25,360†	25,360†	25,360†			
	6-1/2						31,895†	31,895†	29,400	27,167			
	6-3/4						35,292	32,825	29,400	27,167			
	7						35,292	32,825	29,400	27,167			
5-1/2 H-90	6-3/4						34,508†	34,508†	34,508†	34,142			
	7						41,993†	40,117	36,501	34,142			
	7-1/4						42,719	40,117	36,501	34,142			
	7-1/2						42,719	40,117	36,501	34,142			
5-1/2 Reg.	6-3/4						31,941†	31,941†	31,941†	31,941†			
	7						39,419†	39,419†	36,235	33,868			
	7-1/4						42,481	39,866	36,235	33,868			
	7-1/2						42,481	39,866	36,235	33,868			
4-1/2 API IF API NC 50 5 XH 5 Mod. Open 5-1/2 DSL 5 Semi-IF	6-1/4						23,003†	23,003†	23,003†	23,003†	23,003†		
	6-1/2						29,679†	29,679†	29,679†	29,679†	26,675		
	6-3/4						38,379	35,824	32,277	29,965	26,675		
	7						38,379	35,824	32,277	29,965	26,675		
	7-1/4						38,379	35,824	32,277	29,965	26,675		
	7-1/2						38,379	35,824	32,277	29,965	26,675		

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (ft-lb) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (in.)	Bore of Drill Collars (in.)											
		1	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-13/16	3	3-1/4	3-1/2	3-3/4
5-1/2 API FH	7							32,762†	32,762†	32,762†	32,762†		
	7-1/4							40,998†	40,998†	40,998†	40,998†		
	7-1/2							49,661†	47,756	45,190	41,533		
	7-3/4							51,687	47,756	45,190	41,533		
API NC 56	7-1/4							40,498†	40,498†	40,498†	40,498†		
	7-1/2							49,060†	48,221	45,680	42,058		
	7-3/4							52,115	48,221	45,680	42,058		
	8							52,115	48,221	45,680	42,058		
6-5/8 Reg.	7-1/2							46,399†	46,399†	46,399†	46,399†		
	7-3/4							55,627†	53,346	50,704	46,935		
	8							57,393	53,346	50,704	46,935		
	8-1/4							57,393	53,346	50,704	46,935		
6-5/8 H-90	7-1/2							46,509†	46,509†	46,509†	46,509†		
	7-3/4							55,707†	55,707†	53,628	49,855		
	8							60,321	56,273	53,628	49,855		
	8-1/4							60,321	56,273	53,628	49,855		
API NC 61	8							55,131†	55,131†	55,131†	55,131†		
	8-1/4							65,438†	65,438†	65,438†	61,624		
	8-1/2							72,670	68,398	65,607	61,624		
	8-3/4							72,670	68,398	65,607	61,624		
	9							72,670	68,398	65,607	61,624		
5-1/2 IF	8							56,641†	56,641†	56,641†	56,641†	56,641†	
	8-1/4							67,133†	67,133†	67,133†	63,381	59,027	
	8-1/2							74,625	70,277	67,436	63,381	59,027	
	8-3/4							74,625	70,277	67,436	63,381	59,027	
	9							74,625	70,277	67,436	63,381	59,027	
	9-1/4							74,625	70,277	67,436	63,381	59,027	
6-5/8 API FH	8-1/2								67,789†	67,789†	67,789†	67,789†	67,184
	8-3/4								79,544†	79,544†	76,706	72,102	67,184
	9								83,992	80,991	76,706	72,102	67,184
	9-1/4								83,992	80,991	76,706	72,102	67,184
	9-1/2								83,992	80,991	76,706	72,102	67,184
API NC 70	9								75,781†	75,781†	75,781†	75,781†	75,781†
	9-1/4								88,802†	88,802†	88,802†	88,802†	88,802†
	9-1/2								102,354†	102,354†	101,107	96,214	90,984
	9-3/4								108,842	105,657	101,107	96,214	90,984
	10								108,842	105,657	101,107	96,214	90,984
	10-1/4								108,842	105,657	101,107	96,214	90,984
API NC77	10									108,194†	108,194†	108,194†	108,194†
	10-1/4									124,051†	124,051†	124,051†	124,051†
	10-1/2									140,491†	140,488	135,119	129,375
	10-3/4									145,476	140,488	135,119	129,375
	11									145,476	140,488	135,119	129,375

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (ft-lb) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (in.)	Bore of Drill Collars (in.)											
		1	1-1/4	1-1/2	1-3/4	2	2-1/4	2-1/2	2-13/16	3	3-1/4	3-1/2	3-3/4
Connections With Full Faces													
7 H-90	8*								53,454†	53,454†	53,454†	53,454†	
	8-1/4*								63,738†	63,738†	63,738†	60,970	
	8-1/2*								72,066	69,265	65,267	60,970	
7-5/8 API Reg.	8-1/2*									60,402†	60,402†	60,402†	60,402†
	8-3/4*									72,169†	72,169†	72,169†	72,169†
	9*									84,442†	84,442†	79,536	74,529
	9-1/4*									88,581	84,221	79,536	74,529
	9-1/2*									88,581	84,221	79,536	74,529
7-5/8 H-90	9*									73,017†	73,017†	73,017†	73,017†
	9-1/4*									86,006†	86,006†	86,006†	86,006†
	9-1/2*									99,508†	99,508†	99,508†	96,284
8-5/8 API Reg.	10*									109,345†	109,345†	109,345†	109,345†
	10-1/4*									125,263†	125,263†	125,263†	125,034
	10-1/2*									141,134	136,146	130,177	125,034
8-5/8 H-90	10-1/4*									113,482†	113,482†	113,482†	113,482†
	10-1/2*									130,063†	130,063†	130,063†	130,063†
Connections With Low Torque Faces													
7 H-90	8-3/4								68,061†	68,061†	67,257	62,845	
	9								74,235	71,361	67,257	62,845	
7-5/8 Reg.	9-1/4									73,099†	73,099†	73,099†	73,099†
	9-1/2									86,463†	86,463†	82,457	77,289
	9-3/4									91,789	87,292	82,457	77,289
	10									91,789	87,292	82,457	77,289
7-5/8 H-90	9-3/4									91,667†	91,667†	91,667†	91,667†
	10									106,260†	106,260†	104,166	98,799
	10-1/4									113,845	109,183	104,166	98,799
	10-1/2									113,845	109,183	104,166	98,799
8-5/8 Reg.	10-3/4									112,887†	112,887†	112,887†	112,887†
	11									130,676†	130,676†	130,676†	130,676†
	11-1/4									147,616	142,429	136,846	130,870
8-5/8 H-90	10-3/4									92,960†	92,960†	92,960†	92,960†
	11									110,782†	110,782†	110,782†	110,782†
	11-1/4									129,203†	129,203†	129,203†	129,203†

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (kg-m)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
API NC 23	76.2	347†	347†	347†									
	79.4	460†	460†	366									
	82.6	553	468	366									
2-3/8 Reg.	76.2		310†	310†	242								
	79.4		419†	356	242								
	82.6		454	356	242								
2-7/8 PAC	76.2		525†	525†	405								
	79.4		687†	574	405								
	82.6		720	574	405								
2-3/8 IF API NC 26 2-7/8 SH	88.9		637†	637†	511								
	95.2		761	645	511								
2-7/8 Reg.	88.9		531†	531†	531†								
	95.2		797	685	553								
	98.4		797	685	553								
2-7/8 XH 3-1/2 DSL 2-7/8 Mod. Open	95.2		565†	565†	565†								
	98.4		740†	740†	740†								
	104.8		1,114†	1,114†	1,028								
2-7/8 IF API NC 31 3-1/2 SH	98.4		641†	641†	641†	641†							
	104.8		1,022†	1,022†	1,022†	947							
	107.9		1,225†	1,225†	1,128	947							
	114.3		1,422	1,287	1,128	947							
3-1/2 Reg.	104.8		894†	894†	894†	894†	786						
	107.9		1,090†	1,090†	1,090†	984	786						
	114.3		1,448	1,315	1,160	984	786						
API NC 35	114.3				1,250†	1,250†	1,250†	1,025†					
	120.6				1,697	1,497	1,272	1,025					
	127.0				1,697	1,497	1,272	1,025					
3-1/2 XH 4 SH 3-1/2 Mod. Open	107.9				714†	714†	714†	714†					
	114.3				1,172†	1,172†	1,172†	1,149					
	120.6				1,669†	1,632	1,402	1,149					
	127.0				1,836	1,632	1,402	1,149					
	133.3				1,836	1,632	1,402	1,149					
3-1/2 API IF API NC 38 4-1/2 SH	120.6				1,381†	1,381†	1,381†	1,381†	1,150				
	127.0				1,929†	1,929†	1,785	1,518	1,150				
	133.3				2,241	2,026	1,785	1,518	1,150				
	139.7				2,241	2,026	1,785	1,518	1,150				
3-1/2 H-90	120.6				1,215†	1,215†	1,215†	1,215†	1,215†				
	127.0				1,769†	1,769†	1,769†	1,769†	1,439				
	133.3				2,363†	2,341	2,093	1,819	1,439				
	139.7				2,561	2,341	2,093	1,819	1,439				
4 FH API NC 40 4 Mod. Open 4-1/2 DSL	127.0				1,508†	1,508†	1,508†	1,508†	1,508†				
	133.3				2,114†	2,114†	2,114†	2,070	1,676				
	139.7				2,763†	2,611	2,354	2,070	1,676				
	146.0				2,840	2,611	2,354	2,070	1,676				
	152.4				2,840	2,611	2,354	2,070	1,676				

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (kg-m) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
4 H-90	133.3					1,741†	1,741†	1,741†	1,741†				
	139.7					2,406†	2,406†	2,406†	2,287				
	146.0					3,115†	3,003	2,702	2,287				
	152.4					3,273	3,003	2,702	2,287				
	158.7					3,273	3,003	2,702	2,287				
4-1/2 Reg.	139.7					2,153†	2,153†	2,153†	2,153†				
	146.0					2,849†	2,849†	2,710	2,299				
	152.4					3,275	3,007	2,710	2,299				
	158.7					3,275	3,007	2,710	2,299				
API NC 44	146.0					2,889†	2,889†	2,889†	2,511				
	152.4					3,527	3,248	2,939	2,511				
	158.7					3,527	3,248	2,939	2,511				
	165.1					3,527	3,248	2,939	2,511				
4-1/2 API FH	139.7					1,794†	1,794†	1,794†	1,794†	1,794†			
	146.0					2,505†	2,505†	2,505†	2,505†	2,475			
	152.4					3,264†	3,264†	3,184	2,754	2,475			
	158.7					3,774	3,494	3,184	2,754	2,475			
	165.1					3,774	3,494	3,184	2,754	2,475			
4-1/2 XH API NC 46 4 API IF 5 DSL 4-1/2 Mod. Open	146.0						2,452†	2,452†	2,452†	2,452†			
	152.4						3,238†	3,238†	3,100	2,808			
	158.7						3,874	3,550	3,100	2,808			
	165.1						3,874	3,550	3,100	2,808			
	171.4						3,874	3,550	3,100	2,808			
4-1/2 H-90	146.0						2,491†	2,491†	2,491†	2,491†			
	152.4						3,274†	3,274†	3,202	2,910			
	158.7						3,972	3,650	3,202	2,910			
	165.1						3,972	3,650	3,202	2,910			
	171.4						3,972	3,650	3,202	2,910			
5 H-90	158.7						3,506†	3,506†	3,506†	3,506†			
	165.1						4,410†	4,410†	4,065	3,756			
	171.4						4,879	4,538	4,065	3,756			
	177.8						4,879	4,538	4,065	3,756			
5-1/2 H-90	171.4						4,771†	4,771†	4,771†	4,720			
	177.8						5,086†	5,546	5,046	4,720			
	184.1						5,906	5,546	5,046	4,720			
	190.5						5,906	5,546	5,046	4,720			
5-1/2 Reg.	171.4						4,416†	4,416†	4,416†	4,416†			
	177.8						5,450†	5,450†	5,010	4,682			
	184.1						5,873	5,512	5,010	4,682			
	190.5						5,873	5,512	5,010	4,682			
4-1/2 API IF API NC 50 5 XH 5 Mod. Open 5-1/2 DSL 5 Semi-IF	158.7						3,180	3,180†	3,180†	3,180†	3,180†		
	165.1						4,103	4,103†	4,103†	4,103†	3,688		
	171.4						5,080	4,953	4,462	4,143	3,688		
	177.8						5,306	4,953	4,462	4,143	3,688		
	184.1						5,306	4,953	4,462	4,143	3,688		
	190.5						5,306	4,953	4,462	4,143	3,688		

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (kg-m) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
5-1/2 API FH	177.8							4,530†	4,530†	4,530†	4,530†		
	184.1							5,668†	5,668†	5,668†	5,668†		
	190.5							6,886†	6,603	6,248	5,742		
	196.8							7,146	6,603	6,248	5,742		
API NC 56	184.1							5,599†	5,599†	5,599†	5,599†		
	190.5							6,783†	6,667	6,316	5,815		
	196.8							7,205	6,667	6,316	5,815		
	203.2							7,205	6,667	6,316	5,815		
6-5/8 Reg.	190.5							6,415†	6,415†	6,415†	6,415†		
	196.8							7,691†	7,375	7,010	6,489		
	203.2							7,935	7,375	7,010	6,489		
	209.5							7,935	7,375	7,010	6,489		
6-5/8 H-90	190.5							6,430†	6,430†	6,430†	6,430†		
	196.8							7,702†	7,702†	7,414	6,893		
	203.2							8,340	7,780	7,414	6,893		
	209.5							8,340	7,780	7,414	6,893		
API NC 61	203.2							7,622†	7,622†	7,622†	7,622†		
	209.5							9,047†	9,047†	9,047†	8,520		
	215.9							10,047	9,456	9,070	8,520		
	222.2							10,047	9,456	9,070	8,520		
	228.6							10,047	9,456	9,070	8,520		
5-1/2 IF	203.2							7,831†	7,831†	7,831†	7,831†	7,831†	
	209.5							9,282†	9,282†	9,282†	8,763	8,161	
	215.9							10,317	9,716	9,323	8,763	8,161	
	222.2							10,317	9,716	9,323	8,763	8,161	
	228.6							10,317	9,716	9,323	8,763	8,161	
	234.9							10,317	9,716	9,323	8,763	8,161	
6-5/8 API FH	215.9								9,372†	9,372†	9,372†	9,372†	9,289
	222.2								10,997†	10,997†	10,605	9,968	9,289
	228.6								11,612	11,197	10,605	9,968	9,289
	234.9								11,612	11,197	10,605	9,968	9,289
	241.3								11,612	11,197	10,605	9,968	9,289
API NC 70	228.6								10,477†	10,477†	10,477†	10,477†	10,477†
	234.9								12,277†	12,277†	12,277†	12,277†	12,277†
	241.3								14,151†	14,151†	13,979	13,302	12,579
	247.6								15,048	14,608	13,979	13,302	12,579
	254.0								15,048	14,608	13,979	13,302	12,579
	260.3								15,048	14,608	13,979	13,302	12,579
API NC77	254.0									14,958†	14,958†	14,958†	14,958†
	260.3									17,151†	17,151†	17,151†	17,151†
	266.7									19,424†	19,424†	18,681	17,887
	273.0									20,113	19,423	18,681	17,887
	279.4									20,113	19,423	18,681	17,887

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (kg-m) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
Connections With Full Faces													
7 H-90	203.2*								7,390†	7,390†	7,390†	7,390†	
	209.5*								8,812†	8,812†	8,812†	8,429	
	215.9*								9,963	9,576	9,023	8,429	
7-5/8 API Reg.	215.9*									8,351†	8,351†	8,351†	8,351†
	222.2*									9,978†	9,978†	9,978†	9,978†
	228.6*									11,675†	11,644	10,996	10,304
	234.9*									12,247	11,644	10,996	10,304
	241.3*									12,247	11,644	10,996	10,304
7-5/8 H-90	228.6*									10,095†	10,095†	10,095†	10,095†
	234.9*									11,891†	11,891†	11,891†	11,891†
	241.3*									13,758†	13,758†	13,758†	13,312
8-5/8 API Reg.	254.0*									15,117†	15,117†	15,117†	15,117†
	260.3*									17,318†	17,318†	17,318†	17,287
	266.7*									19,512	18,823	18,081	17,287
8-5/8 H-90	260.3*									15,689†	15,689†	15,689†	15,689†
	266.7*									7,982†	17,982†	17,982†	17,982†
Connections With Low Torque Faces													
7 H-90	222.2								9,410†	9,410†	9,299	8,689	
	228.6								10,263	9,866	9,299	8,689	
7-5/8 Reg.	234.9									10,106†	10,106†	10,106†	10,106†
	241.3									11,954†	11,954†	11,400	10,686
	247.6									12,690	12,069	11,400	10,686
	254.0									12,690	12,069	11,400	10,686
7-5/8 H-90	247.6									12,673†	12,673†	12,673†	12,673†
	254.0									14,691†	14,691†	14,401	13,659
	260.3									15,740	15,095	14,401	13,659
	266.7									15,740	15,095	14,401	13,659
8-5/8 Reg.	273.0									15,607†	15,607†	15,607†	15,607†
	279.4									18,067†	18,067†	18,067†	18,067†
	285.7									20,409	19,692	18,920	18,093
8-5/8 H-90	273.0									12,852†	12,852†	12,852†	12,852†
	279.4									15,316†	15,316†	15,316†	15,316†
	285.7									17,863†	17,863†	17,863†	17,863†

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (N•m)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
API NC 23	76.2	3,400†	3,400†	3,400†									
	79.4	4,514†	4,514†	3,589									
	82.5	5,423	4,592	3,589									
2-3/8 Reg.	76.2		3,039†	3,039†	2,371								
	79.4		4,105†	3,490	2,371								
	82.5		4,454	3,490	2,371								
2-7/8 PAC	76.2		5,148†	5,148†	3,968								
	79.4		6,733†	5,629	3,968								
	82.5		7,058	5,629	3,968								
2-3/8 IF API NC 26 2-7/8 SH	88.9		6,245†	6,245†	5,013								
	95.2		7,458	6,329	5,013								
2-7/8 Reg.	88.9		5,204†	5,204†	5,204†								
	95.2		7,817	6,713	5,426								
	98.4		7,817	6,713	5,426								
2-7/8 XH 3-1/2 DSL 2-7/8 Mod. Open	95.2		5,544†	5,544†	5,544†								
	98.4		7,256†	7,256†	7,256†								
	104.8		10,927†	10,927†	10,077								
2-7/8 IF API NC 31 3-1/2 SH	98.4		6,291†	6,291†	6,291†	6,291†							
	104.8		10,019†	10,019†	10,019†	9,292							
	107.9		12,010†	12,010†	11,065	9,292							
	114.3		13,946	12,619	11,065	9,292							
3-1/2 Reg.	104.8		8,766†	8,766†	8,766†	8,766†	7,708						
	107.9		10,692†	10,692†	10,692†	9,646	7,708						
	114.3		14,197	12,900	11,380	9,646	7,708						
API NC 35	114.3				12,255†	12,255†	12,255†	10,048					
	120.6				16,640	14,677	12,477	10,048					
	127.0				16,640	14,677	12,477	10,048					
3-1/2 XH 4 SH 3-1/2 Mod. Open	107.9				6,997†	6,997†	6,997†	6,997†					
	114.3				11,495†	11,495†	11,495†	11,268					
	120.6				16,370†	16,003	13,753	11,268					
	127.0				18,009	16,003	13,753	11,268					
	133.3				18,009	16,003	13,753	11,268					
3-1/2 API IF API NC 38 4-1/2 SH	120.6				13,540†	13,540†	13,540†	13,540†	11,274				
	127.0				18,913†	18,913†	17,500	14,883	11,274				
	133.3				21,974	19,867	17,500	14,883	11,274				
	139.7				21,974	19,867	17,500	14,883	11,274				
3-1/2 H-90	120.6				11,912†	11,912†	11,912†	11,912†	11,912†				
	127.0				17,346†	17,346†	17,346†	17,346†	14,114				
	133.3				23,176†	22,956	20,526	17,834	14,114				
	139.7				25,115	22,956	20,526	17,834	14,114				
4 FH API NC 40 4 Mod. Open 4-1/2 DSL	127.0				14,793†	14,793†	14,793†	14,793†	14,793†				
	133.3				20,731†	20,731†	20,731†	20,295	16,439				
	139.7				27,096†	25,607	23,086	20,295	16,439				
	146.0				27,847	25,607	23,086	20,295	16,439				
	152.4				27,847	25,607	23,086	20,295	16,439				

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (N•m) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
4 H-90	133.3					17,070†	17,070†	17,070†	17,070†				
	139.7					23,593†	23,593†	23,593†	22,424				
	146.0					30,548†	29,445	26,501	22,424				
	152.4					32,097	29,445	26,501	22,424				
	158.7					32,097	29,445	26,501	22,424				
4-1/2 Reg.	139.7					21,118†	21,118†	21,118†	21,118†				
	146.0					27,943†	27,943†	26,575	22,546				
	152.4					32,113	29,487	26,575	22,546				
	158.7					32,113	29,487	26,575	22,546				
API NC 44	146.0					28,330†	28,330†	28,330†	24,623				
	152.4					34,586	31,853	28,820	24,623				
	158.7					34,586	31,853	28,820	24,623				
	165.1					34,586	31,853	28,820	24,623				
4-1/2 API FH	139.7					17,589†	17,589†	17,589†	17,589†	17,589†			
	146.0					24,566†	24,566†	24,566†	24,566†	24,269			
	152.4					32,004†	32,004†	31,222	27,008	24,269			
	158.7					37,006	34,264	31,222	27,008	24,269			
	165.1					37,006	34,264	31,222	27,008	24,269			
4-1/2 XH API NC 46 4 API IF 5 DSL 4-1/2 Mod. Open	146.0						24,049†	24,049†	24,049†	24,049†			
	152.4						31,755†	31,755†	30,405	27,538			
	158.7						37,991	34,811	30,405	27,538			
	165.1						37,991	34,811	30,405	27,538			
	171.4						37,991	34,811	30,405	27,538			
4-1/2 H-90	146.0						24,431†	24,431†	24,431†	24,431†			
	152.4						32,107†	32,107†	31,400	28,541			
	158.7						38,955	35,790	31,400	28,541			
	165.1						38,955	35,790	31,400	28,541			
	171.4						38,955	35,790	31,400	28,541			
5 H-90	158.7						34,383†	34,383†	34,383†	34,383†			
	165.1						43,244†	43,244†	39,861	36,833			
	171.4						47,849	44,504	39,861	36,833			
	177.8						47,849	44,504	39,861	36,833			
5-1/2 H-90	171.4						46,787†	46,787†	46,787†	46,291			
	177.8						56,935†	54,391	49,489	46,291			
	184.1						57,919	54,391	49,489	46,291			
	190.5						57,919	54,391	49,489	46,291			
5-1/2 Reg.	171.4						43,306†	43,306†	43,306†	43,306†			
	177.8						53,445†	53,445†	49,128	45,918			
	184.1						57,597	54,051	49,128	45,918			
	190.5						57,597	54,051	49,128	45,918			
4-1/2 API IF API NC 50 5 XH 5 Mod. Open 5-1/2 DSL 5 Semi-IF	158.7						31,188†	31,188†	31,188†	31,188†	31,188†		
	165.1						40,240†	40,240†	40,240†	40,240†	36,167		
	171.4						49,814†	48,570	43,762	40,628	36,167		
	177.8						52,035	48,570	43,762	40,628	36,167		
	184.1						52,035	48,570	43,762	40,628	36,167		
	190.5						52,035	48,570	43,762	40,628	36,167		

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (N•m) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
5-1/2 API FH	177.8							44,419†	44,419†	44,419†	44,419†		
	184.1							55,586†	55,586†	55,586†	55,586†		
	190.5							67,331†	64,748	61,270	56,311		
	196.8							70,078	64,748	61,270	56,311		
API NC 56	184.1							54,908†	54,908†	54,908†	54,908†		
	190.5							66,517†	65,379	61,934	57,024		
	196.8							70,658	65,379	61,934	57,024		
	203.2							70,658	65,379	61,934	57,024		
6-5/8 Reg.	190.5							62,909†	62,909†	62,909†	62,909†		
	196.8							75,420†	72,327	68,745	63,636		
	203.2							77,815	72,327	68,745	63,636		
	209.5							77,815	72,327	68,745	63,636		
6-5/8 H-90	190.5							63,057†	63,057†	63,057†	63,057†		
	196.8							75,529†	75,529†	72,710	67,594		
	203.2							81,785	76,296	72,710	67,594		
	209.5							81,785	76,296	72,710	67,594		
API NC 61	203.2							74,747†	74,747†	74,747†	74,747†		
	209.5							88,722†	88,722†	88,722†	83,551		
	215.9							98,527	92,735	88,951	83,551		
	222.2							98,527	92,735	88,951	83,551		
	228.6							98,527	92,735	88,951	83,551		
5-1/2 IF	203.2							76,795†	76,795†	76,795†	76,795†	76,795†	
	209.5							91,021†	91,021†	91,021†	85,933	80,029	
	215.9							101,178	95,283	91,431	85,933	80,029	
	222.2							101,178	95,283	91,431	85,933	80,029	
	228.6							101,178	95,283	91,431	85,933	80,029	
	234.9							101,178	95,283	91,431	85,933	80,029	
6-5/8 API FH	215.9								91,909†	91,909†	91,909†	91,909†	91,090
	222.2								107,848†	107,848†	104,000	97,757	91,090
	228.6								113,878	109,809	104,000	97,757	91,090
	234.9								113,878	109,809	104,000	97,757	91,090
	241.3								113,878	109,809	104,000	97,757	91,090
API NC 70	228.6								102,745†	102,745†	102,745†	102,745†	102,745†
	234.9								120,400†	120,400†	120,400†	120,400†	120,400†
	241.3								138,773†	138,773†	137,082	130,449	123,357
	247.6								147,569	143,251	137,082	130,449	123,357
	254.0								147,569	143,251	137,082	130,449	123,357
	260.3								147,569	143,251	137,082	130,449	123,357
API NC77	254.0									146,692†	146,692†	146,692†	146,692†
	260.3									168,191†	168,191†	168,191†	168,191†
	266.7									190,480†	190,476	183,197	175,409
	273.0									197,239	190,476	183,197	175,409
	279.4									197,239	190,476	183,197	175,409

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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Recommended Minimum Makeup Torque (N•m) (continued)

(see note #2 below)

Size and Type of Connection (in.)	OD (mm)	Bore of Drill Collars (mm)											
		25.4	31.7	38.1	44.4	50.8	57.1	63.5	71.4	76.2	82.5	88.9	95.2
Connections With Full Faces													
7 H-90	203.2*								72,474†	72,474†	72,474†	72,474†	
	209.5*								86,417†	86,417†	86,417†	82,665	
	215.9*								97,708	93,911	88,490	82,665	
7-5/8 API Reg.	215.9*									81,894†	81,894†	81,894†	81,894†
	222.2*									97,848†	97,848†	97,848†	97,848†
	228.6*									114,489†	114,189	107,836	101,048
	234.9*									120,099	114,189	107,836	101,048
	241.3*									120,099	114,189	107,836	101,048
7-5/8 H-90	228.6*									98,997†	98,997†	98,997†	98,997†
	234.9*									116,609†	116,609†	116,609†	116,609†
	241.3*									134,915†	134,915†	134,915†	130,544
8-5/8 API Reg.	254.0*									148,251†	148,251†	148,251†	148,251†
	260.3*									169,834†	169,834†	169,834†	169,523
	266.7*									191,352	184,589	177,310	169,523
8-5/8 H-90	260.3*									153,860†	153,860†	153,860†	153,860†
	266.7*									176,341†	176,341†	176,341†	176,341†
Connections With Low Torque Faces													
7 H-90	222.2								92,279†	92,279†	91,188	85,206	
	228.6								100,650	96,753	91,188	85,206	
7-5/8 Reg.	234.9									99,109†	99,109†	99,109†	99,109†
	241.3									117,228†	117,228†	111,796	104,789
	247.6									124,449	118,352	111,796	104,789
	254.0									124,449	118,352	111,796	104,789
7-5/8 H-90	247.6									124,284†	124,284†	124,284†	124,284†
	254.0									144,069†	144,069†	141,230	133,953
	260.3									154,354	148,033	141,230	133,953
	266.7									154,354	148,033	141,230	133,953
8-5/8 Reg.	273.0									153,054†	153,054†	153,054†	153,054†
	279.4									177,174†	177,174†	177,174†	177,174†
	285.7									200,140	193,108	185,538	177,437
8-5/8 H-90	273.0									126,037†	126,037†	126,037†	126,037†
	279.4									150,200†	150,200†	150,200†	150,200†
	285.7									175,176†	175,176†	175,176†	175,176†

1. Basis of calculations for recommended makeup torque assumes the use of a thread compound containing 40 to 60% by weight of finely powered metallic zinc with not more than 0.3% total active sulfur, applied thoroughly to all threads and shoulders. Also using the modified screw jack formula as shown in the IADC Drilling manual and the API Recommended Practice RP 7G. For API connections and their interchangeable connections, makeup torque is based on 62,500 psi stress in the pin or box, whichever is weaker.
2. Normal torque range – tabulated minimum value to 10% greater. Largest diameter shown for each connection is the maximum recommended for that connection. If the connections are used on drill collars larger than the maximum shown, increase the torque values shown by 10% for a minimum value. In addition to the increased minimum torque value, it is also recommended that a fishing neck be machined to the maximum diameter shown.
3. H-90 connections makeup torque is based on 56,200 psi stress and other factors as stated in Note 1.
4. The 2 7/8 in. PAC makeup torque is based on 87,500 psi stress and other factors as stated in Note 1.
5. Largest diameter shown is the maximum recommended for these full-faced connections. If larger diameters are used, machine connections with low torque faces and use the torque values shown under low torque face tables. If low torque faces are not used, see Note 2 for increased torque values.

† Torque figures succeeded by a cross (†) indicate that the weaker member for the corresponding OD and bore is the BOX. For all other torque values the weaker member is the PIN.

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*Dimensional Identification for Low Torque Modification**

Connection Size (in.)	Threads per in.	Taper per in.	Full Depth Thread (in.)	Diameter of the Counterbore (in.)
7 H-90	3-1/2	3	5.625	7.125 **
7-5/8 Reg.	4	3	5.375	7.750 **
8-5/8 Reg.	4	3	5.500	9.000 **
7-5/8 H-90	3-1/2	3	6.250	8.000 **
8-5/8 H-90	3-1/2	3	6.750	9.375 **

*Not for machining purposes.
**See list of low torque face details.

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Rotary Shouldered Connection Interchange List

Common Name		Pin Base Diameter (tapered)	Threads (per in.)	Taper (in/ft)	Thread Form*	Same as or Interchanges With (in.)
Style	Size (in.)					
Internal Flush (IF)	2-3/8	2.876	4	2	V-0.065 (V-0.038 rad)	2-7/8 SH NC 26**
	2-7/8	3.391	4	2	V-0.065 (V-0.038 rad)	3-1/2 SH NC 31**
	3-1/2	4.016	4	2	V-0.065 (V-0.038 rad)	4-1/2 SH NC 38**
	4	4.834	4	2	V-0.065 (V-0.038 rad)	4-1/2 XH NC 46**
	4-1/2	5.250	4	2	V-0.065 (V-0.038 rad)	5 XH NC 50** 5-1/2 DSL
Full Hole (FH)	4	4.280	4	2	V-0.065 (V-0.038 rad)	4-1/2 DSL NC 40**
Extra Hole (XH) (EH)	2-7/8	3.327	4	2	V-0.065 (V-0.038 rad)	3-1/2 DSL
	3-1/2	3.812	4	2	V-0.065 (V-0.038 rad)	4 SH 4-1/2 EF
	4-1/2	4.834	4	2	V-0.065 (V-0.038 rad)	4 IF NC 46**
	5	5.250	4	2	V-0.065 (V-0.038 rad)	4-1/2 IF NC 50** 5-1/2 DSL
Slim Hole (SH)	2-7/8	2.876	4	2	V-0.065 (V-0.038 rad)	2-3/8 IF NC 26**
	3-1/2	3.391	4	2	V-0.065 (V-0.038 rad)	2-7/8 IF NC 31**
	4	3.812	4	2	V-0.065 (V-0.038 rad)	3-1/2 XH 4-1/2 EF
	4-1/2	4.016	4	2	V-0.065 (V-0.038 rad)	3-1/2 IF NC 38**
Double Streamline (DSL)	3-1/2	3.327	4	2	V-0.065 (V-0.038 rad)	2-7/8 XH
	4-1/2	4.280	4	2	V-0.065 (V-0.038 rad)	4 FH NC 40**
	5-1/2	5.250	4	2	V-0.065 (V-0.038 rad)	4-1/2 IF 5 XH NC 50**
Num. Conn. (NC)	26	2.876	4	2	V-0.038 rad	2-3/8 IF 2-7/8 SH
	31	3.391	4	2	V-0.038 rad	2-7/8 IF 3-1/2 SH
	38	4.016	4	2	V-0.038 rad	3-1/2 IF 4-1/2 SH
	40	4.280	4	2	V-0.038 rad	4 FH 4-1/2 DSL
	46	4.834	4	2	V-0.038 rad	4 IF 4-1/2 XH
	50	5.250	4	2	V-0.038 rad	4-1/2 IF 5 XH 5-1/2 DSL
External Flush (EF)	4-1/2	3.812	4	2	V-0.065 (V-0.038 rad)	4 SH 3-1/2 XH

* Connections with two thread forms shown may be machined with either thread form without affecting gaging or interchangeability.
** Numbered Connections (NC) may be machined only with the V-0.038 radius thread form.

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*Dimensional Identification of Box Connections**

Connection Size (in.)	Threads (per in.)	Taper (per in.)	Full Depth Thread (in.)	Diameter of the Counterbore (in.)
2-3/8 PAC	4	1-1/2	2-1/2	2-13/32
2-7/8 PAC	4	1-1/2	2-1/2	2-19/32
NC 23	4	2	3-1/8	2-5/8
2-3/8 Reg.	5	3	3-1/8	2-11/16
2-3/8 IF†	4	2	3-1/8	2-15/16
2-7/8 Reg.	5	3	3-5/8	3-1/16
2-7/8 XH, EH	4	2	4-1/8	3-23/64
2-7/8 IF†	4	2	3-5/8	3-29/64
3-1/2 reg.	5	3	3-7/8	3-9/16
NC 35	4	2	3-7/8	3-13/16
3-1/2 XH, EH	4	2	3-5/8	3-7/8
3-1/2 FH	5	3	3-7/8	4-3/64
3-1/2 IF†	4	2	4-1/8	4-5/64
3-1/2 H-90	3-1/2	2	4-1/8	4-3/16
4 FH†	4	2	4-5/8	4-11/32
4 H-90	3-1/2	2	4-3/8	4-9/16
NC 44	4	2	4-5/8	4-11/16
4-1/2 Reg.	5	3	4-3/8	4-11/16
4-1/2 FH	5	3	4-1/8	4-7/8
4-1/2 H-90	3-1/2	2	4-5/8	4-57/64
4-1/2 XH, EH†	4	2	4-5/8	4-29/32
5 H-90	3-1/2	2	4-7/8	5-11/64
4-1/2 IF†	4	2	4-5/8	5-5/16
5-1/2 H-90	3-1/2	2	4-7/8	5-7/16
5-1/2 Reg.	4	3	4-7/8	5-37/64
5-1/2 FH	4	2	5-1/8	5-29/32
NC 56	4	3	5-1/8	5-15/16
6-5/8 Reg.	4	2	5-1/8	6-1/16
6-5/8 H-90	3-1/2	2	5-1/8	6-1/16
5-1/2 IF	4	2	5-1/8	6-29/64
NC 61	4	3	5-5/8	6-1/2
7 H-90	3-1/2	3	5-5/8	6-9/16
6-5/8 FH	4	2	5-1/8	6-27/32
7-5/8 Reg.	4	3	5-3/8	7-3/32
NC 70	4	3	6-1/8	7-3/8
7-5/8 H-90	3-1/2	3	6-1/4	7-29/64
6-5/8 IF	4	2	5-1/8	7-33/64
8-5/8 Reg.	4	3	5-1/2	8-3/64
NC77	4	3	6-5/8	8-1/16
8-5/8 H-90	3-1/2	3	6-3/4	8-21/64

* Not for machining purposes.
† See list of interchangeable connections.

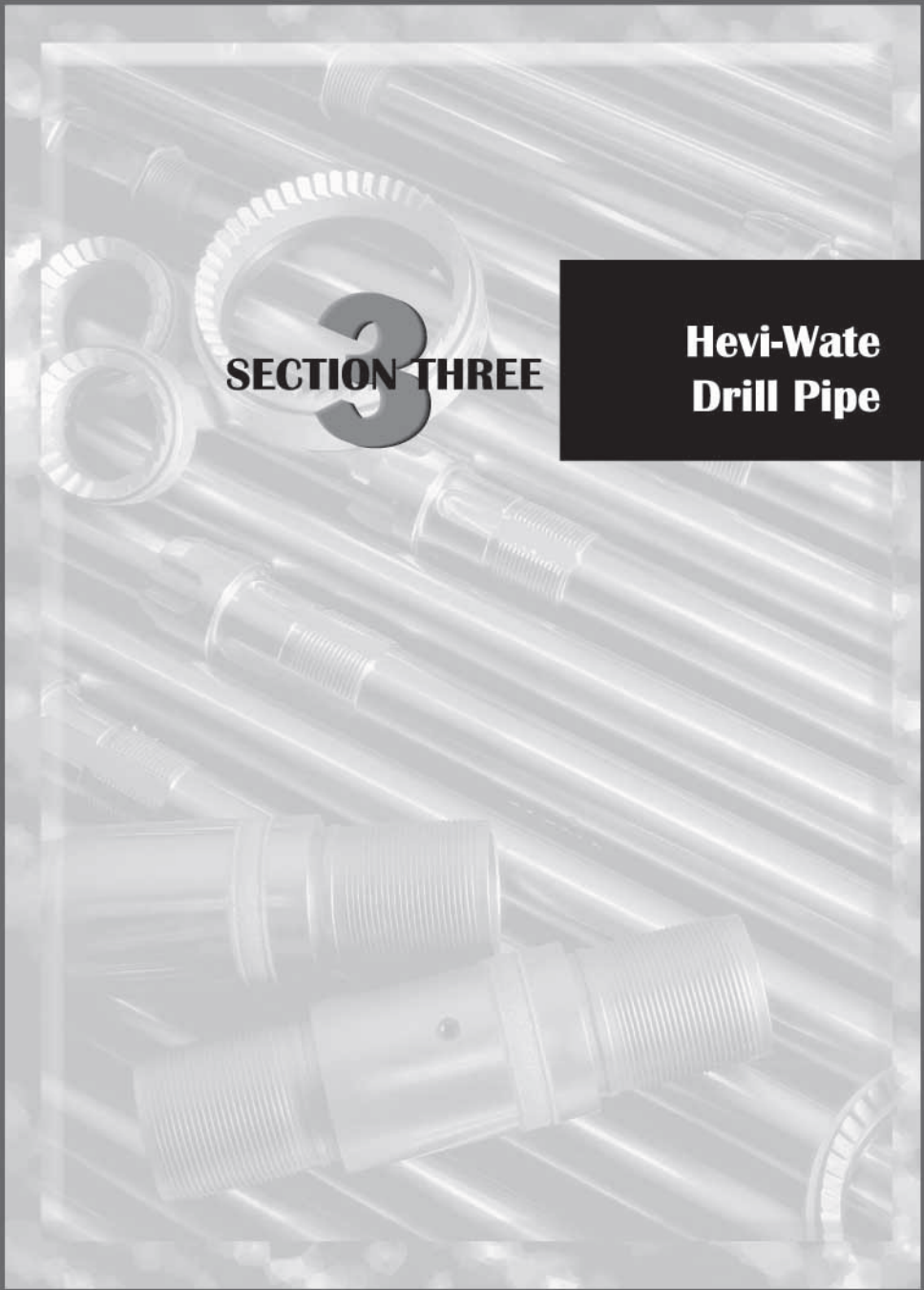
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Dimensional Identification of Box Connections (continued)*

Connection Size (in.)	Threads (per in.)	Taper per Foot (in.)	Pin Length (in.)	Pin End Diameter (in.)	Pin Cyl. Diameter (in.)	Pin Base Diameter (in.)
2-3/8 PAC	4	1-1/2	2-1/4	2-5/64	2-5/16	2-3/8
2-7/8 PAC	4	1-1/2	2-1/4	2-1/4	2-31/64	2-17/32
NC 23	4	2	2-7/8	2-5/64	2-29/64	2-9/16
2-3/8 Reg.	5	3	2-7/8	1-29/32	2-33/64	2-5/8
2-3/8 IF†	4	2	2-7/8	2-25/64	2-49/64	2-7/8
2-7/8 Reg.	5	3	3-3/8	2-5/32	2-57/64	3
2-7/8 XH, EH	4	2	3-7/8	2-11/16	3-7/32	3-21/64
2-7/8 IF†	4	2	3-3/8	2-53/64	3-9/32	3-25/64
3-1/2 reg.	5	3	3-5/8	2-19/32	3-25/64	3-1/2
NC 35	4	2	3-5/8	2-9/64	3-5/8	3-47/64
3-1/2 XH, EH	4	2	3-3/8	3-1/4	3-45/64	3-13/16
3-1/2 FH	5	3	3-5/8	3-3/32	3-57/64	4
3-1/2 IF†	4	2	3-7/8	3-3/8	3-29/32	4-1/64
3-1/2 H-90	3-1/2	2	3-7/8	3-31/64	3-15/16	4-1/8
4 FH†	4	2	4-3/8	3-9/16	4-11/64	4-9/32
4 H-90	3-1/2	2	4-1/8	3-13/16	4-5/16	4-1/2
NC 44	4	2	4-3/8	3-57/64	4-33/64	4-5/8
4-1/2 Reg.	5	3	4-1/8	3-19/32	4-33/64	4-5/8
4-1/2 FH	5	3	3-7/8	3-53/64	4-11/16	4-51/64
4-1/2 H-90	3-1/2	2	4-3/8	4-7/64	4-41/64	4-53/64
4-1/2 XH, EH†	4	2	4-3/8	4-7/64	4-23/32	4-53/64
5 H-90	3-1/2	2	4-5/8	4-21/64	4-59/64	5-7/64
4-1/2 IF†	4	2	4-3/8	4-33/64	5-9/64	5-1/4
5-1/2 H-90	3-1/2	2	4-5/8	4-39/64	5-3/16	5-3/8
5-1/2 Reg.	4	3	4-5/8	4-23/64	5-13/32	5-33/64
5-1/2 FH	4	2	4-7/8	5-1/64	5-23/32	5-53/64
NC 56	4	3	4-7/8	4-21/64	5-23/32	5-7/8
6-5/8 Reg.	4	2	4-7/8	5-11/64	5-7/8	6
6-5/8 H-90	3-1/2	2	4-7/8	5-3/16	5-13/16	6
5-1/2 IF	4	2	4-7/8	5-37/64	6-9/32	6-25/64
NC 61	4	3	5-3/8	5-3/32	6-9/32	6-7/16
7 H-90	3-1/2	3	5-3/8	5-5/32	6-5/16	6-1/2
6-5/8 FH	4	2	4-7/8	5-15/16	6-41/64	6-3/4
7-5/8 Reg.	4	3	5-1/8	5-23/32	6-57/64	7
NC 70	4	3	5-7/8	5-27/32	7-5/32	7-5/16
7-5/8 H-90	3-1/2	3	6	5-57/64	7-13/64	7-25/64
6-5/8 IF	4	2	4-7/8	6-41/64	7-11/32	7-29/64
8-5/8 Reg.	4	3	5-1/4	6-41/64	7-27/32	7-61/64
NC77	4	3	6-3/8	6-13/32	7-27/32	8
8-5/8 H-90	3-1/2	3	6-1/2	6-41/64	8-5/64	8-17/64

* Not for machining purposes.
† See list of interchangeable connections.

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SECTION THREE

3

Hevi-Wate Drill Pipe

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Capacity and Displacement Table – Drilco Hevi-Wate® Drill Pipe

			Capacity			Displacement		
Nominal Size (in.)	Gal per Joint*	BBL per Joint*	Gal per 100 ft	BBL per 100 ft	Gal per Joint*	BBL per Joint*	Gal per 100 ft	BBL per 100 ft
3-1/2**	5.30	.126	17.70	.421	11.61	.276	38.7	.921
3-1/2***	6.36	.151	21.20	.505	10.44	.248	34.78	.828
4	8.21	.195	27.36	.652	13.40	.319	44.66	1.063
4-1/2	9.48	.226	31.61	.753	18.34	.437	61.12	1.455
5	11.23	.267	37.45	.892	22.26	.530	74.18	1.766
5-1/2	14.26	.340	47.53	1.132	25.92	.617	86.41	2.057
6-5/8	25.01	.596	83.38	1.985	32.17	.766	107.24	2.553

* Capacity and displacement per joint numbers are based on 30-ft joints.
** With 2-1/16 in. ID.
*** With 2-1/4 in. ID.

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Dimensional Data Range II

Nom. Size (in.)	Tube					Mechanical Properties Tube Section	
	Nominal Tube Dimension			Center Upset (in.)	Elevator Upset (in.)		
	ID (in.)	Wall Thickness (in.)	Area ($in.^2$)			Tensile Yield (lb)	Torsional Yield (ft-lb)
3-1/2	2.063	.719	6.280	4.000	3.625	345,400	19,575
	2.250	.625	5.645	4.000	3.625	310,475	18,460
4	2.563	.719	7.410	4.500	4.125	407,550	27,635
4-1/2	2.750	.875	9.965	5.000	4.625	548,075	40,715
5	3.000	1.000	12.566	5.500	5.125	691,185	56,495
5-1/2	3.375	1.063	14.812	6.000	5.688	814,660	74,140
6-5/8	4.500	1.063	18.567	7.125	6.750	1,021,185	118,845

Nom. Size (in.)	Tool Joint					Approx. Weight [Including Tube & Joints (lb)]		Makeup Torque (ft-lb)
	Connection Size (in.)	OD (in.)	ID (in.)	Mechanical Properties				
				Tensile Yield (lb)	Torsional Yield (ft-lb)	Wt/ft	Wt/Jt. 31-ft	
3-1/2	NC 38 (3-1/2 IF)	4.750	2.188	748,950	17,575	25.3	760	10,000
	NC 38 (3-1/2 IF)	4.750	2.375	675,045	17,575	23.4	721	10,000
4	NC 40 (4 FH)	5.250	2.688	711,700	23,400	29.9	920	13,300
4-1/2	NC 46 (4 IF)	6.250	2.875	1,024,500	38,250	41.1	1,265	21,800
5	NC 50 (4-1/2 IF)	6.625	3.063	1,265,500	51,330	50.1	1,543	29,200
5-1/2	5-1/2 FH	7.000	3.500	1,349,365	52,419	57.6	1,770	32,800
6-5/8	6-5/8 FH	8.000	4.625	1,490,495	73,215	71.3	2,193	45,800

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Dimensional Data Range III

Nom. Size (in.)	Tube					Mechanical Properties Tube Section	
	Nominal Tube Dimension			Center Upset (in.)	Elevator Upset (in.)		
	ID (in.)	Wall Thickness (in.)	Area ($in.^2$)			Tensile Yield (lb)	Torsional Yield (ft-lb)
4-1/2	2.750	.875	9.965	5.000	4.625	548,075	40,715
5	3.000	1.000	12.566	5.500	5.188	691,185	56,495

Nom. Size (in.)	Tool Joint					Approx. Weight [Including Tube & Joints (lb)]		Makeup Torque (ft-lb)
	Connection Size (in.)	OD (in.)	ID (in.)	Mechanical Properties				
				Tensile Yield (lb)	Torsional Yield (ft-lb)	Wt/ft	Wt/Jt. 44-ft	
4-1/2	NC 46 (4 IF)	6.250	2.875	1,024,500	38,800	39.9	1,750	21,800
5	NC 50 (4-1/2 IF)	6.635	3.063	1,266,000	51,375	48.5	2,130	29,200

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SECTION FOUR 4

Tubing

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Tubing Reference Tables

The following tubing reference tables provide information on premium tubing connection dimensions, available steel grades, and minimum joint tension strengths. These tables are organized alphabetically by connection manufacturer. Following the manufacturer name are the coupling type and sealing mechanism name or designation. Critical tubular and connection areas can be used with minimum yield or ultimate strengths in designs and to calculate tubing coupling tensile capacity. These tables are intended as a guide for planning tubing programs; however, individual manufacturers should be consulted for the most recent data.

Dimension Nomenclature	
D	Casing nominal tube OD, in.
w	Casing weight, lb/ft
d	ID (drift), in.
t	Casing wall thickness, in.
D_c	Connection OD, in.
D_{sc}	Connection OD (special clearance or turned down), in.
A_t	Casing wall critical cross-sectional area, sq. in.
A_c	Connection critical cross-sectional area, sq. in.
L_m	Make-up loss, in.

Atlas Bradford — FL-4S

Type: Integral flush joint Seal: Metal-to-metal, threaded, resilient																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	2.375	….	1.304	0.531	1.52	21	29	29	42	42	48	50	58	66
	5.95	1.773	0.254	2.375	….	1.692	0.877	2.05	35	48	48	70	70	79	83	96	110
2.875	6.50	2.347	0.217	2.875	….	1.812	0.751	1.47	30	41	41	60	60	68	71	83	94
	7.90	2.229	0.276	2.875	….	2.254	1.175	2.10	47	65	65	94	94	106	112	129	147
3.500	7.70	2.943	0.216	3.500	….	2.228	0.927	1.64	37	51	51	74	74	83	88	102	116
	9.30	2.867	0.254	3.500	….	2.590	1.343	2.05	54	74	74	107	107	121	128	148	168
	10.30	2.797	0.289	3.500	….	2.915	1.458	2.13	58	80	80	117	117	131	139	160	182
	12.95	2.625	0.375	3.500	….	3.682	2.312	3.85	92	127	127	185	185	208	220	254	289
4.000	9.50	3.423	0.226	4.000	….	2.680	1.111	1.68	44	61	61	89	89	100	106	122	139
	11.00	3.351	0.262	4.000	….	3.077	1.615	2.07	65	89	89	129	129	145	153	178	202
	11.60	3.303	0.286	4.000	….	3.337	1.746	2.12	70	96	96	140	140	157	166	192	218
4.500	9.50	3.965	0.205	4.500	….	2.766	1.136	1.59	45	62	62	91	91	102	108	125	142
	10.50	3.927	0.224	4.500	….	3.009	1.253	1.67	50	69	69	100	100	113	119	138	157
	11.00	3.901	0.237	4.500	….	3.174	1.327	1.73	53	73	73	106	106	119	126	146	166
	11.60	3.875	0.250	4.500	….	3.338	1.728	2.11	69	95	95	138	138	156	164	190	216
	12.75	3.833	0.271	4.500	….	3.600	1.879	2.05	75	103	103	150	150	169	179	207	235
	13.50	3.795	0.290	4.500	….	3.836	2.012	2.13	80	111	111	161	161	181	191	221	252
5.000	11.50	4.435	0.220	5.000	….	3.304	1.370	1.65	55	75	75	110	110	123	130	151	171
	13.00	4.369	0.253	5.000	….	3.773	1.958	2.06	78	108	108	157	157	176	186	215	245
	15.00	4.283	0.296	5.000	….	4.374	2.298	2.14	92	126	126	184	184	207	218	253	287
	18.00	4.151	0.362	5.000	….	5.275	3.310	3.82	132	182	182	265	265	298	314	364	414

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — HD-L

Type: Integral flush joint

Seal: Metal-to-metal

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	5.30	1.845	0.218	2.375	....	1.477	0.710	2.53	28	39	39	57	57	64	67	78	89
	5.95	1.773	0.254	2.375	....	1.692	0.885	3.12	35	49	49	71	71	80	84	97	111
	6.20	1.759	0.261	2.375	....	1.733	0.913	3.21	37	50	50	73	73	82	87	100	114
	7.70	1.609	0.336	2.375	....	2.152	1.139	4.66	46	63	63	91	91	103	108	125	142
2.875	6.50	2.347	0.217	2.875	....	1.812	0.885	2.55	35	49	49	71	71	80	84	97	111
	7.90	2.229	0.276	2.875	....	2.254	1.194	3.62	48	66	66	96	96	107	113	131	149
	8.70	2.165	0.308	2.875	....	2.484	1.349	4.38	54	74	74	108	108	121	128	148	169
	9.50	2.101	0.340	2.875	....	2.708	1.467	3.70	59	81	81	117	117	132	139	161	183
	10.70	1.997	0.392	2.875	....	3.058	1.727	3.90	69	95	95	138	138	155	164	190	216
3.500	9.30	2.867	0.254	3.500	....	2.590	1.392	3.45	56	77	77	111	111	125	132	153	174
	10.30	2.797	0.289	3.500	....	2.915	1.717	4.25	69	94	94	137	137	155	163	189	215
	12.95	2.625	0.375	3.500	....	3.682	1.970	3.72	79	108	108	158	158	177	187	217	246
	15.80	2.423	0.476	3.500	....	4.522	2.790	4.88	112	153	153	223	223	251	265	307	349
4.000	11.00	3.351	0.262	4.000	....	3.077	1.695	3.39	68	93	93	136	136	153	161	186	212
	11.60	3.303	0.286	4.000	....	3.337	1.861	3.76	74	102	102	149	149	167	177	205	233
	13.40	3.215	0.330	4.000	....	3.805	2.046	3.62	82	113	113	164	164	184	194	225	256
4.500	11.60	3.875	0.250	4.500	....	3.338	1.773	3.34	71	98	98	142	142	160	168	195	222
	12.75	3.833	0.271	4.500	....	3.600	1.901	3.51	76	105	105	152	152	171	181	209	238
	13.50	3.795	0.290	4.500	....	3.836	2.023	3.68	81	111	111	162	162	182	192	223	253
	15.10	3.701	0.337	4.500	....	4.407	2.316	4.26	93	127	127	185	185	208	220	255	289
	16.90	3.615	0.380	4.500	....	4.918	2.641	3.61	106	145	145	211	211	238	251	291	330
	19.20	3.515	0.430	4.500	....	5.498	3.194	3.98	128	176	176	256	256	287	303	351	399
	21.60	3.375	0.500	4.500	....	6.283	3.979	5.09	159	219	219	318	318	358	378	438	497

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — HD-L (continued)

Type: Integral flush joint Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.00	4.283	0.296	5.000	….	4.374	2.013	3.19	81	111	111	161	161	181	191	221	252
	18.00	4.151	0.362	5.000	….	5.275	2.736	3.68	109	150	150	219	219	246	260	301	342
	20.30	4.059	0.408	5.000	….	5.886	3.317	4.03	133	182	182	265	265	299	315	365	415
	20.80	4.031	0.422	5.000	….	6.069	3.500	4.29	140	193	193	280	280	315	333	385	438
	21.40	4.001	0.437	5.000	….	6.264	3.695	4.58	148	203	203	296	296	333	351	406	462
	22.40	3.951	0.462	5.000	….	6.587	3.987	4.39	159	219	219	319	319	359	379	439	498
	23.20	3.919	0.478	5.000	….	6.791	4.191	4.65	168	231	231	335	335	377	398	461	524
	24.10	3.875	0.500	5.000	….	7.069	4.469	4.99	179	246	246	358	358	402	425	492	559

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — RTS-6

Type: Upset integral joint Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	5.95	1.773	0.254	2.906	2.782	1.692	1.692	3.05	68	93	93	135	135	152	161	186	212
	6.20	1.759	0.261	2.938	2.794	1.733	1.733	3.05	69	95	95	139	139	156	165	191	217
	7.70	1.609	0.336	3.125	2.924	2.152	2.152	3.05	86	118	118	172	172	194	204	237	269
2.875	7.90	2.229	0.276	3.438	3.312	2.254	2.254	3.04	90	124	124	180	180	203	214	248	282
	8.70	2.165	0.308	3.500	3.365	2.484	2.484	3.04	99	137	137	199	199	224	236	273	310
	9.50	2.101	0.340	3.625	3.419	2.708	2.708	3.04	108	149	149	217	217	244	257	298	338
	10.70	1.997	0.392	3.688	3.509	3.058	3.058	3.04	122	168	168	245	245	275	290	336	382
3.500	12.95	2.625	0.375	4.313	4.189	3.682	3.682	3.35	147	202	202	295	295	331	350	405	460
	14.30	2.515	0.430	4.410	….	4.147	4.147	3.35	166	228	228	332	332	373	394	456	518
	15.80	2.423	0.476	4.500	4.367	4.522	4.522	3.35	181	249	249	362	362	407	430	497	565
4.000	13.40	3.215	0.330	4.625	4.514	3.805	3.805	3.32	152	209	209	304	304	342	361	419	476
4.500	15.50	3.701	0.337	5.125	5.021	4.407	4.407	3.34	176	242	242	353	353	397	419	485	551
	17.00	3.615	0.380	5.210	….	4.918	4.918	3.34	197	271	271	393	393	443	467	541	615
	19.20	3.515	0.430	5.313	5.170	5.498	5.498	3.34	220	302	302	440	440	495	522	605	687

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — RTS-8

Type: Upset integral joint Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.050	1.20	0.730	0.113	1.327	1.300	0.333	0.333	2.22	13	18	18	27	27	30	32	37	42
	1.50	0.648	0.154	1.327	….	0.433	0.433	2.22	17	24	24	35	35	39	41	48	54
1.315	1.80	0.955	0.133	1.552	1.525	0.494	0.494	2.23	20	27	27	40	40	44	47	54	62
	2.25	0.863	0.179	1.600	….	0.639	0.639	2.23	26	35	35	51	51	57	61	70	80
1.660	2.40	1.286	0.140	1.883	1.858	0.669	0.669	2.23	27	37	37	53	53	60	64	74	84
	3.02	1.184	0.191	1.927	….	0.881	0.881	2.23	35	48	48	71	71	79	84	97	110
	3.24	1.170	0.198	1.927	….	0.909	0.909	2.23	36	50	50	73	73	82	86	100	114
1.900	2.90	1.516	0.145	2.113	2.094	0.799	0.799	2.23	32	44	44	64	64	72	76	88	100
	3.64	1.406	0.200	2.162	….	1.068	1.068	2.23	43	59	59	85	85	96	101	117	134
	4.19	1.368	0.219	2.179	….	1.157	1.157	2.23	46	64	64	93	93	104	110	127	145
2.063	3.25	1.657	0.156	2.330	2.295	0.935	0.935	2.23	37	51	51	75	75	84	89	103	117
	4.50	1.519	0.225	2.460	2.407	1.299	1.299	2.23	52	71	71	104	104	117	123	143	162
2.375	4.70	1.901	0.190	2.700	2.655	1.304	1.304	2.31	52	72	72	104	104	117	124	143	163
	5.30	1.845	0.218	2.750	2.700	1.477	1.477	2.31	59	81	81	118	118	133	140	162	185
2.875	6.50	2.347	0.217	3.210	3.166	1.812	1.812	2.39	72	100	100	145	145	163	172	199	227
3.500	9.30	2.867	0.254	3.915	3.859	2.590	2.590	2.84	104	142	142	207	207	233	246	285	324
	10.30	2.797	0.289	3.915	….	2.915	2.915	2.84	117	160	160	233	233	262	277	321	364
4.000	11.00	3.351	0.262	4.417	4.359	3.077	3.077	2.84	123	169	169	246	246	277	292	338	385
4.500	12.75	3.833	0.271	4.920	4.861	3.600	3.600	2.89	144	198	198	288	288	324	342	396	450
	13.50	3.795	0.290	4.955	4.890	3.836	3.836	2.89	153	211	211	307	307	345	364	422	479

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — SB-6

Type: Upset integral joint Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	5.95	1.773	0.254	2.906	….	1.692	1.692	3.05	68	93	93	135	135	152	161	186	212
	6.20	1.759	0.261	2.938	….	1.733	1.733	3.05	69	95	95	139	139	156	165	191	217
	7.70	1.609	0.336	3.125	….	2.152	2.152	3.05	86	118	118	172	172	194	204	237	269
2.875	7.90	2.229	0.276	3.438	….	2.254	2.254	3.03	90	124	124	180	180	203	214	248	282
	8.70	2.165	0.308	3.500	….	2.484	2.484	3.03	99	137	137	199	199	224	236	273	310
	9.50	2.101	0.340	3.625	….	2.708	2.708	3.03	108	149	149	217	217	244	257	298	338
	10.70	1.997	0.392	3.688	….	3.058	3.058	3.03	122	168	168	245	245	275	290	336	382
3.500	12.95	2.625	0.375	4.313	….	3.682	3.682	3.35	147	202	202	295	295	331	350	405	460
	15.80	2.423	0.476	4.500	….	4.522	4.522	3.35	181	249	249	362	362	407	430	497	565
4.000	13.40	3.215	0.330	4.625	….	3.805	3.805	3.35	152	209	209	304	304	342	361	419	476
	14.80	3.115	0.380	4.725	….	4.322	4.322	3.35	173	238	238	346	346	389	411	475	540
4.500	15.50	3.701	0.337	5.125	….	4.407	4.407	3.39	176	242	242	353	353	397	419	485	551
	19.20	3.515	0.430	5.313	….	5.498	5.498	3.39	220	302	302	440	440	495	522	605	687
5.000	15.00	4.283	0.296	5.370	….	4.374	3.999	3.14	160	220	220	320	320	360	380	440	500
	18.00	4.151	0.362	5.455	….	5.275	4.902	3.14	196	270	270	392	392	441	466	539	613

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — ST-L

Type: Integral flush joint

Seal: Metal-to-metal, threaded, optional resilient

Minimum joint tension strength, kips

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	2.375	....	1.304	0.575	2.02	23	32	32	46	46	52	55	63	72
	5.95	1.773	0.254	2.375	....	1.692	0.903	3.10	36	50	50	72	72	81	86	99	113
2.875	6.50	2.347	0.217	2.875	....	1.812	0.892	2.54	36	49	49	71	71	80	85	98	112
	7.90	2.229	0.276	2.875	....	2.254	1.243	3.47	50	68	68	99	99	112	118	137	155
	8.70	2.165	0.308	2.875	....	2.484	1.408	3.87	56	77	77	113	113	127	134	155	176
3.500	7.70	2.943	0.216	3.500	....	2.228	1.144	2.75	46	63	63	92	92	103	109	126	143
	9.30	2.867	0.254	3.500	....	2.590	1.295	3.00	52	71	71	104	104	117	123	142	162
	10.30	2.797	0.289	3.500	....	2.915	1.643	3.73	66	90	90	131	131	148	156	181	205
	12.95	2.625	0.375	3.500	....	3.682	2.380	4.31	95	131	131	190	190	214	226	262	298
	15.80	2.423	0.476	3.500	....	4.522	3.015	5.34	121	166	166	241	241	271	286	332	377
4.000	9.50	3.423	0.226	4.000	....	2.680	1.259	2.50	50	69	69	101	101	113	120	138	157
	11.00	3.351	0.262	4.000	....	3.077	1.696	3.42	68	93	93	136	136	153	161	187	212
	11.60	3.303	0.286	4.000	....	3.337	1.885	3.75	75	104	104	151	151	170	179	207	236
	13.40	3.215	0.330	4.000	....	3.805	2.223	4.34	89	122	122	178	178	200	211	245	278
4.500	9.50	3.965	0.205	4.500	....	2.766	1.345	2.45	54	74	74	108	108	121	128	148	168
	10.50	3.927	0.224	4.500	....	3.009	1.460	2.63	58	80	80	117	117	131	139	161	183
	11.00	3.901	0.237	4.500	....	3.174	1.698	3.09	68	93	93	136	136	153	161	187	212
	11.60	3.875	0.250	4.500	....	3.338	1.762	2.87	70	97	97	141	141	159	167	194	220
	12.75	3.833	0.271	4.500	....	3.600	2.011	3.57	80	111	111	161	161	181	191	221	251
	13.50	3.795	0.290	4.500	....	3.836	2.181	3.83	87	120	120	174	174	196	207	240	273
	15.10	3.701	0.337	4.500	....	4.407	2.597	4.47	104	143	143	208	208	234	247	286	325
5.000	13.00	4.369	0.253	5.000	....	3.773	2.054	3.25	82	113	113	164	164	185	195	226	257
	15.00	4.283	0.296	5.000	....	4.374	2.494	3.86	100	137	137	200	200	224	237	274	312
	18.00	4.151	0.362	5.000	....	5.275	3.103	3.16	124	171	171	248	248	279	295	341	388
	20.30	4.059	0.408	5.000	....	5.886	3.892	4.75	156	214	214	311	311	350	370	428	486
	20.80	4.031	0.422	5.000	....	6.069	3.729	4.00	149	205	205	298	298	336	354	410	466
	21.40	4.001	0.437	5.000	....	6.264	4.184	5.07	167	230	230	335	335	377	397	460	523
	23.20	3.919	0.478	5.000	....	6.791	4.588	5.52	184	252	252	367	367	413	436	505	573
	24.20	3.875	0.500	5.000	....	7.069	4.071	3.57	163	224	224	326	326	366	387	448	509

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford —TC-4S

Type: Coupled Seal: Metal-to-metal, threaded, resilient																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.700	1.90	0.190	2.750	….	1.304	1.304	3.08	52	72	72	104	104	117	124	143	163
	5.300	1.85	0.218	2.750	….	1.477	1.477	3.08	59	81	81	118	118	133	140	162	185
	5.950	1.77	0.254	2.800	….	1.692	1.692	3.08	68	93	93	135	135	152	161	186	212
	6.200	1.76	0.261	2.800	….	1.733	1.733	3.08	69	95	95	139	139	156	165	191	217
	7.700	1.61	0.336	2.900	….	2.152	2.152	3.08	86	118	118	172	172	194	204	237	269
2.875	6.500	2.35	0.217	3.250	….	1.812	1.812	3.33	72	100	100	145	145	163	172	199	227
	7.900	2.23	0.276	3.375	….	2.254	2.254	3.33	90	124	124	180	180	203	214	248	282
	8.700	2.17	0.308	3.375	….	2.484	2.484	3.33	99	137	137	199	199	224	236	273	310
	9.500	2.10	0.340	3.450	….	2.708	2.708	3.33	108	149	149	217	217	244	257	298	338
	11.000	1.97	0.405	3.500	….	3.143	3.143	3.33	126	173	173	251	251	283	299	346	393
	11.650	1.90	0.440	3.550	….	3.366	3.366	3.33	135	185	185	269	269	303	320	370	421
3.500	9.300	2.87	0.254	3.950	….	2.590	2.590	3.71	104	142	142	207	207	233	246	285	324
	10.300	2.80	0.289	3.950	….	2.915	2.915	3.71	117	160	160	233	233	262	277	321	364
	12.950	2.63	0.375	4.100	….	3.682	3.682	3.71	147	203	203	295	295	331	350	405	460
	15.800	2.42	0.476	4.200	….	4.522	4.522	3.71	181	249	249	362	362	407	430	497	565
	16.700	2.36	0.510	4.250	….	4.791	4.791	3.71	192	264	264	383	383	431	455	527	599
	17.050	2.32	0.530	4.300	….	4.945	4.945	3.71	198	272	272	396	396	445	470	544	618
4.000	9.500	3.42	0.226	4.400	….	2.680	2.680	3.71	107	147	147	214	214	241	255	295	335
	11.000	3.35	0.262	4.450	….	3.077	3.077	3.88	123	169	169	246	246	277	292	338	385
	11.600	3.30	0.286	4.450	….	3.337	3.337	3.88	133	184	184	267	267	300	317	367	417
	13.400	3.21	0.330	4.525	….	3.805	3.805	3.88	152	209	209	304	304	342	361	419	476
	19.000	2.88	0.500	4.800	….	5.498	5.498	3.88	220	302	302	440	440	495	522	605	687
4.500	12.750	3.83	0.271	4.950	….	3.600	3.600	4.00	144	198	198	288	288	324	342	396	450
	13.500	3.80	0.290	4.950	….	3.836	3.836	4.00	153	211	211	307	307	345	364	422	479
	15.500	3.70	0.337	5.100	….	4.407	4.407	4.00	176	242	242	353	353	397	419	485	551
	16.900	3.63	0.373	5.100	….	4.836	4.836	4.00	193	266	266	387	387	435	459	532	604
	19.200	3.51	0.430	5.200	….	5.498	5.498	4.00	220	302	302	440	440	495	522	605	687
	21.600	3.38	0.500	5.300	….	6.283	6.283	4.00	251	346	346	503	503	565	597	691	785

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

Atlas Bradford —TC-4S (continued)

Type: Coupled Seal: Metal-to-metal, threaded, resilient																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
	13.000	4.37	0.253	5.375	….	3.773	3.447	4.38	138	190	190	276	276	310	327	379	431
	15.000	4.28	0.296	5.450	….	4.374	4.048	4.38	162	223	223	324	324	364	385	445	506
	18.000	4.15	0.362	5.550	….	5.275	4.949	4.38	198	272	272	396	396	445	470	544	619
5.000	20.800	4.03	0.422	5.650	….	6.069	5.743	4.38	230	316	316	459	459	517	546	632	718
	21.400	4.00	0.437	5.750	….	6.264	5.938	4.38	238	327	327	475	475	534	564	653	742
	23.200	3.92	0.478	5.750	….	6.791	6.465	4.38	259	356	356	517	517	582	614	711	808
	24.200	3.88	0.500	5.750	….	7.069	6.743	4.38	270	371	371	539	539	607	641	742	843

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford — TC-II

Type: Coupled Seal: Metal-to-metal, threaded, optional resilient									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.60	1.901	0.190	2.675	....	1.304	1.304	2.30	52	72	72	104	104	117	124	143	163
	5.10	1.845	0.218	2.716	....	1.477	1.477	2.30	59	81	81	118	118	133	140	162	185
	5.95	1.773	0.254	2.766	....	1.692	1.692	2.30	68	93	93	135	135	152	161	186	212
2.875	6.40	2.347	0.217	3.211	....	1.812	1.812	2.54	72	100	100	145	145	163	172	199	227
	7.70	2.229	0.276	3.297	....	2.254	2.254	2.54	90	124	124	180	180	203	214	248	282
	8.60	2.165	0.308	3.342	....	2.484	2.484	2.54	99	137	137	199	199	224	236	273	310
3.500	7.70	2.943	0.216	3.827	....	2.228	2.228	3.16	89	123	123	178	178	201	212	245	279
	9.20	2.867	0.254	3.887	....	2.590	2.590	3.16	104	142	142	207	207	233	246	285	324
	10.20	2.797	0.289	3.940	....	2.915	2.915	3.16	117	160	160	233	233	262	277	321	364
	12.70	2.625	0.375	4.062	....	3.682	3.682	3.16	147	202	202	295	295	331	350	405	460
4.000	9.50	3.423	0.226	4.356	....	2.680	2.680	3.03	107	147	147	214	214	241	255	295	335
	10.90	3.351	0.262	4.414	....	3.077	3.077	3.03	123	169	169	246	246	277	292	338	385
	13.00	3.215	0.330	4.518	....	3.805	3.805	3.03	152	209	209	304	304	342	361	419	476
	14.80	3.115	0.380	4.581	....	4.322	4.322	3.73	173	238	238	346	346	389	411	475	540
4.500	10.50	3.927	0.224	4.855	....	3.009	3.009	3.10	120	166	166	241	241	271	286	331	376
	11.60	3.875	0.250	4.898	....	3.338	3.338	3.10	134	184	184	267	267	300	317	367	417
	12.75	3.833	0.271	4.932	....	3.600	3.600	3.10	144	198	198	288	288	324	342	396	450
	13.50	3.795	0.290	4.962	....	3.836	3.836	3.10	153	211	211	307	307	345	364	422	479
	15.10	3.701	0.337	5.035	....	4.407	4.407	3.10	176	242	242	353	353	397	419	485	551
	16.90	3.629	0.373	5.089	....	4.836	4.836	3.10	193	266	266	387	387	435	459	532	605
5.000	15.00	4.283	0.296	5.428	....	4.374	4.374	4.35	175	241	241	350	350	394	416	481	547
	18.00	4.151	0.362	5.533	....	5.275	5.275	4.35	211	290	290	422	422	475	501	580	659
	20.30	4.059	0.408	5.603	....	5.886	5.886	4.35	235	324	324	471	471	530	559	647	736
	20.80	4.031	0.422	5.624	....	6.069	6.069	4.35	243	334	334	486	486	546	577	668	759
	21.40	4.001	0.437	5.646	....	6.264	6.264	4.35	251	345	345	501	501	564	595	689	783
	23.20	3.919	0.478	5.705	....	6.791	6.791	4.35	272	373	373	543	543	611	645	747	849
	24.10	3.875	0.500	5.736	....	7.069	7.069	4.35	283	389	389	565	565	636	672	778	884

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Benoit Machine, Inc. — BTS-6

Type: Integral, upset Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	13CR-85	13CR-95	P-110	13CR-110
2.375	5.95	1.867	0.254	2.906	2.782	1.692	1.856	3.05	....	....	....	135	135	144	161	186	186
	6.20	1.853	0.261	2.938	2.794	1.733	1.885	3.05	....	....	....	139	139	147	165	191	191
	7.70	1.703	0.336	3.125	3.002	2.152	2.290	3.05	....	....	....	172	172	183	204	237	237
2.875	7.90	2.323	0.276	3.438	3.312	2.254	2.444	3.03	....	....	....	180	180	192	214	248	248
	8.70	2.259	0.308	3.500	3.365	2.484	2.672	3.03	....	....	....	199	199	211	236	273	273
	9.50	2.195	0.340	3.625	3.419	2.708	2.910	3.03	....	....	....	217	217	230	257	298	298
	10.70	2.091	0.392	3.688	3.595	3.058	3.237	3.03	....	....	....	245	245	260	290	336	336
3.500	12.95	2.750	0.375	4.313	4.189	3.682	4.395	3.35	....	....	....	294	294	313	350	405	405
	15.80	2.548	0.476	4.500	4.474	4.522	5.216	3.35	....	....	....	362	362	384	430	497	497
4.000	13.40	3.340	0.330	4.625	4.514	3.805	4.117	3.32	....	....	....	304	304	323	362	418	418
4.500	15.50	3.826	0.337	5.125	5.021	4.407	4.743	3.34	....	....	....	353	353	375	419	485	485
	19.20	3.640	0.430	5.313	5.170	5.498	5.922	3.34	....	....	....	440	440	467	522	605	605

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Benoit Machine, Inc. — ECHO/C4

Type: Coupled Seal: Metal-to-metal, seal ring																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	13CR-85	13CR-95	P-110	13CR-110
2.375	4.70	1.995	0.190	2.750	....	1.304	1.188	....	....	....	....	95	95	101	113	131	131
	5.30	1.939	0.218	2.750	....	1.477	1.361	....	....	....	....	109	109	116	129	150	150
	5.95	1.867	0.254	2.800	....	1.692	1.577	....	....	....	....	126	126	134	150	174	174
	6.20	1.853	0.261	2.800	....	1.733	1.618	....	....	....	....	129	129	138	154	178	178
	7.70	1.703	0.336	2.900	....	2.152	2.037	....	....	....	....	163	163	173	194	224	224
2.875	6.50	2.441	0.217	3.250	....	1.812	1.672	....	....	....	....	134	134	142	159	184	184
	7.90	2.323	0.276	3.375	....	2.254	2.113	....	....	....	....	169	169	180	201	232	232
	8.70	2.259	0.308	3.375	....	2.484	2.344	....	....	....	....	188	188	199	221	258	258
3.500	9.30	2.992	0.254	3.950	....	2.590	2.419	....	....	....	....	194	194	206	230	266	266
	10.30	2.922	0.289	3.950	....	2.915	2.744	....	....	....	....	220	220	233	261	302	302
	12.95	2.750	0.375	4.100	....	3.682	3.511	....	....	....	....	281	281	298	334	386	386
	15.80	2.548	0.476	4.200	....	4.522	4.351	....	....	....	....	348	348	370	413	479	479
4.000	11.00	3.476	0.262	4.450	....	3.077	2.816	....	....	....	....	225	225	239	268	310	310
4.500	12.75	3.958	0.271	4.950	....	3.600	3.307	....	....	....	....	265	265	281	314	364	364
	13.50	3.920	0.290	4.950	....	3.836	3.542	....	....	....	....	283	283	301	337	390	390
	15.50	3.826	0.337	5.100	....	4.407	4.114	....	....	....	....	329	329	350	391	452	452
5.000	15.00	4.408	0.296	5.450	....	4.374	4.048	....	....	....	....	324	324	344	385	445	445
	18.00	4.276	0.362	5.550	....	5.275	4.948	....	....	....	....	396	396	421	470	544	544

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Benoit Machine, Inc. — ECHO/F4

Type: Flush Seal: Metal-to-metal, seal ring																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	13CR-85	13CR-95	P-110	13CR-110
2.375	4.43	1.995	0.190	2.375	....	1.304	0.531	....	....	....	....	42	42	45	50	58	58
	5.75	1.867	0.254	2.375	....	1.692	0.877	....	....	....	....	70	70	75	83	96	96
	6.26	1.815	0.280	2.375	....	1.843	0.960	....	....	....	....	77	77	82	91	106	106
2.875	6.16	2.441	0.217	2.875	....	1.812	0.751	....	....	....	....	60	60	64	71	83	83
	7.66	2.323	0.276	2.875	....	2.254	1.175	....	....	....	....	94	94	100	112	129	129
	8.44	2.259	0.308	2.875	....	2.484	1.307	....	....	....	....	105	104	111	124	144	144
	9.72	2.151	0.362	2.875	....	2.858	1.805	....	....	....	....	144	144	153	172	199	199
3.500	8.81	2.992	0.254	3.500	....	2.590	1.343	....	....	....	....	107	107	114	127	148	148
	9.91	2.922	0.289	3.500	....	2.915	1.458	....	....	....	....	117	117	124	139	160	160
	12.52	2.750	0.375	3.500	....	3.682	2.312	....	....	....	....	185	185	197	220	254	254
	15.37	2.548	0.476	3.500	....	4.522	2.800	....	....	....	....	224	224	238	266	308	308
4.000	9.11	3.548	0.226	4.000	....	2.680	1.111	....	....	....	....	89	89	94	106	122	122
	10.46	3.476	0.262	4.000	....	3.077	1.615	....	....	....	....	129	129	137	153	178	178
	11.34	3.428	0.286	4.000	....	3.337	1.746	....	....	....	....	140	140	148	166	192	192
	12.93	3.340	0.330	4.000	....	3.805	2.004	....	....	....	....	160	160	170	190	220	220
4.500	9.40	4.090	0.205	4.500	....	2.766	1.136	....	....	....	....	91	91	97	108	125	125
	10.23	4.052	0.224	4.500	....	3.009	1.253	....	....	....	....	100	100	106	119	138	138
	10.79	4.026	0.237	4.500	....	3.174	1.327	....	....	....	....	106	106	113	126	146	146
	11.35	4.000	0.250	4.500	....	3.338	1.728	....	....	....	....	138	138	147	164	190	190
	12.24	3.958	0.271	4.500	....	3.600	1.879	....	....	....	....	150	150	160	179	207	207
	13.04	3.920	0.290	4.500	....	3.836	2.012	....	....	....	....	191	191	171	191	221	221
	14.98	3.826	0.337	4.500	....	4.407	2.320	....	....	....	....	185	185	197	220	255	255
	16.44	3.754	0.373	4.500	....	4.836	3.046	....	....	....	....	244	244	259	289	335	335
	18.69	3.640	0.430	4.500	....	5.498	3.470	....	....	....	....	278	278	295	330	382	382
5.000	14.87	4.408	0.296	5.000	....	4.374	2.298	....	....	....	....	184	184	195	218	253	253
	17.93	4.276	0.362	5.000	....	5.275	3.310	....	....	....	....	265	265	281	314	364	364

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Benoit Machine, Inc. — ECHO/SS

Type: Integral, upset Seal: Threaded, seal ring																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	13CR-85	13CR-95	P-110	13CR-110
1.050	1.20	0.824	0.113	1.325	….	0.333	0.415	….	….	….	….	27	27	28	32	37	37
	1.50	0.742	0.154	1.350	….	0.433	0.470	….	….	….	….	35	35	37	41	48	48
1.315	1.80	1.049	0.133	1.562	….	0.494	0.558	….	….	….	….	40	40	42	47	54	54
1.660	2.40	1.380	0.140	1.893	….	0.669	0.726	….	….	….	….	54	54	57	64	74	74
	3.02	1.278	0.191	1.960	….	0.881	0.928	….	….	….	….	70	70	75	84	97	97
	3.24	1.264	0.198	1.960	….	0.909	0.928	….	….	….	….	73	73	77	86	100	100
1.900	2.90	1.610	0.145	2.123	….	0.799	0.848	….	….	….	….	64	64	68	76	88	88
2.063	3.25	1.750	0.156	2.340	….	0.937	1.076	….	….	….	….	75	75	80	89	103	103
	4.50	1.613	0.225	2.460	….	1.299	1.411	….	….	….	….	104	104	110	123	143	143
2.375	4.70	1.995	0.190	2.710	….	1.304	1.487	….	….	….	….	104	104	111	124	143	143
	5.30	1.939	0.218	2.710	….	1.477	1.640	….	….	….	….	118	118	125	140	162	162
	5.95	1.867	0.254	2.910	….	1.692	1.896	….	….	….	….	135	135	144	161	186	186
	6.20	1.853	0.261	2.910	….	1.733	1.907	….	….	….	….	139	139	147	165	191	191
	7.70	1.703	0.336	3.135	….	2.152	2.346	….	….	….	….	172	172	183	204	237	237
2.875	6.50	2.441	0.217	3.230	….	1.812	2.084	….	….	….	….	145	145	154	172	199	199
	7.90	2.323	0.276	3.385	….	2.254	2.479	….	….	….	….	180	180	192	214	248	248
	8.70	2.259	0.308	3.510	….	2.484	2.708	….	….	….	….	199	199	211	236	273	273
	9.50	2.195	0.340	3.635	….	2.708	2.951	….	….	….	….	218	218	230	257	298	298
	11.00	2.065	0.405	3.760	….	3.143	3.363	….	….	….	….	251	251	267	299	346	346
	11.65	1.995	0.440	3.760	….	3.366	3.534	….	….	….	….	269	269	286	320	370	370
3.500	9.30	2.992	0.254	3.875	….	2.590	2.953	….	….	….	….	207	207	220	246	285	285
	10.30	2.922	0.289	3.947	….	2.915	3.178	….	….	….	….	233	233	248	277	321	321
	12.80	2.764	0.368	4.260	….	3.621	3.832	….	….	….	….	290	290	308	344	398	398
	12.95	2.750	0.375	4.260	….	3.682	4.197	….	….	….	….	295	295	313	350	405	405
	15.50	2.602	0.449	4.385	….	4.304	4.546	….	….	….	….	344	344	366	409	473	473
	15.80	2.548	0.476	4.385	….	4.522	4.974	….	….	….	….	362	362	384	430	497	497

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Benoit Machine, Inc. – BTS-8

Type: Integral, upset Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	13CR-85	13CR-95	P-110	13CR-110
1.050	1.20	0.824	0.113	1.327	1.300	0.333	0.527	2.22	....	....	....	27	27	28	32	37	37
	1.50	0.742	0.154	1.327	....	0.433	0.527	2.22	....	....	....	35	35	37	41	48	48
1.315	1.80	1.049	0.133	1.552	1.525	0.494	0.576	2.22	....	....	....	40	40	42	47	54	54
	2.25	0.957	0.179	1.600	....	0.639	0.729	2.22	....	....	....	51	51	54	61	70	70
1.660	2.40	1.380	0.140	1.883	1.858	0.669	0.747	2.22	....	....	....	54	54	57	64	74	74
	3.02	1.278	0.191	1.927	....	0.881	0.909	2.22	....	....	....	70	70	75	84	97	97
	3.24	1.264	0.198	1.927	....	0.909	0.943	2.22	....	....	....	73	73	77	86	100	100
1.900	2.90	1.610	0.145	2.113	2.094	0.799	0.864	2.22	....	....	....	64	64	68	76	88	88
	3.64	1.500	0.200	2.162	....	1.068	1.074	2.22	....	....	....	86	86	91	102	118	118
	4.19	1.462	0.219	2.179	....	1.157	1.185	2.22	....	....	....	92	92	98	110	127	127
2.063	3.25	1.751	0.156	2.335	2.295	0.935	1.024	2.23	....	....	....	75	75	79	89	103	103
	4.50	1.613	0.225	2.460	2.407	1.299	1.407	2.23	....	....	....	104	104	110	123	143	143
2.375	4.70	1.995	0.190	2.705	2.655	1.304	1.392	2.31	....	....	....	104	104	111	124	144	144
	5.30	1.939	0.218	2.750	2.700	1.477	1.558	2.31	....	....	....	118	118	126	140	162	162
2.875	6.50	2.441	0.217	3.220	3.166	1.812	1.847	2.39	....	....	....	145	145	154	172	199	199
3.500	9.30	2.992	0.254	3.915	3.859	2.590	2.755	2.84	....	....	....	207	207	220	246	285	285
	10.30	2.922	0.289	3.915	3.914	2.915	2.982	2.84	....	....	....	233	233	248	277	321	321
4.000	11.00	3.476	0.262	4.405	4.359	3.077	3.264	2.84	....	....	....	246	246	262	292	338	338
4.500	12.75	3.958	0.271	4.920	4.861	3.600	3.827	2.89	....	....	....	288	288	306	342	396	396
	13.50	3.920	0.290	4.955	4.890	3.836	3.979	2.89	....	....	....	307	307	326	364	422	422

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Centron International, Inc. — DH Tubing

Type: Upset, integral Seal: Resilient										
									Minimum tube tension strength, kips	
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Rating	Ultimate
1.500	0.93	1.60	0.175	2.95	….	….	….	4.50	7	29
	1.15	1.60	0.210	3.05	….	….	….	4.50	9	36
	1.30	1.60	0.230	3.15	….	….	….	4.50	10	44
	1.63	1.60	0.275	3.25	….	….	….	4.50	12	52
2.375	1.75	1.60	0.290	3.40	….	….	….	4.50	14	60
	1.15	1.95	0.180	3.35	….	….	….	4.50	10	36
	1.45	1.95	0.220	3.45	….	….	….	4.50	12	45
	1.72	1.95	0.275	3.55	….	….	….	4.50	14	57
	2.04	1.95	0.310	3.65	….	….	….	4.50	16	66
2.875	2.18	1.95	0.330	3.70	….	….	….	4.50	17	70
	1.55	2.48	0.190	4.00	….	….	….	4.50	12	55
	1.85	2.48	0.230	4.20	….	….	….	4.50	15	71
	2.40	2.48	0.300	4.40	….	….	….	4.50	20	85
3.500	2.80	2.48	0.350	4.50	….	….	….	4.50	22	96
	1.75	2.98	0.190	4.50	….	….	….	4.50	14	60
	1.90	2.98	0.230	4.70	….	….	….	4.50	17	76
	2.65	2.98	0.280	4.85	….	….	….	4.50	21	92
4.500	2.90	2.98	0.310	4.90	….	….	….	4.50	26	109
	2.50	3.98	0.200	5.55	….	….	….	4.50	20	80
	2.70	3.98	0.230	5.60	….	….	….	4.50	22	99
	3.50	3.98	0.290	5.75	….	….	….	4.50	28	120
	4.50	3.98	0.370	5.85	….	….	….	4.50	36	136
	5.40	3.98	0.430	6.00	….	….	….	4.50	42	150

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Centron International Inc. — DH8 Tubing

Type: Upset, integral Seal: Threaded										
									Minimum tube tension strength, kips	
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Rating	Ultimate
2.375	1.15	1.95	0.180	3.27	….			3.120	10	36
	1.45	1.95	0.220	3.37	….	….	….	3.120	12	45
	1.72	1.95	0.275	3.47	….	….	….	3.120	14	57
	2.04	1.95	0.310	3.57	….	….	….	3.120	16	66
2.875	1.55	2.48	0.190	3.92	….	….	….	3.375	12	55
	1.85	2.48	0.230	4.12	….	….	….	3.375	15	71
3.500	1.75	2.98	0.190	4.42	….	….	….	3.625	14	60
	1.90	2.98	0.230	4.62	….	….	….	3.625	17	76
	2.65	2.98	0.280	4.77	….	….	….	3.625	21	92
	2.90	2.98	0.310	4.82	….	….	….	3.625	26	109
4.500	2.50	3.98	0.200	5.47	….	….	….	4.000	20	80
	2.70	3.98	0.230	5.52	….	….	….	4.000	22	99
	3.50	3.98	0.290	5.67	….	….	….	4.000	28	120

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_s Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — Antares MS

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.995	0.190	2.776	....	1.304	1.734	2.520	....	72	72	104	104	117	124	143	163
	5.1	1.939	0.218	2.776	....	1.477	1.734	2.520	....	81	81	118	118	133	140	162	185
	5.8	1.867	0.254	2.815	....	1.692	1.903	2.520	....	93	93	135	135	152	161	186	212
2.875	6.4	2.441	0.217	3.337	....	1.812	2.503	2.835	....	100	100	145	145	163	172	199	227
	7.8	2.323	0.276	3.406	....	2.254	2.868	2.835	....	124	124	180	180	203	214	248	282
	8.6	2.259	0.308	3.406	....	2.484	2.868	2.835	....	137	137	199	199	224	236	273	311
3.500	7.7	3.068	0.216	3.917	....	2.228	2.891	3.386	....	123	123	178	178	201	212	245	279
	9.2	2.992	0.254	3.917	....	2.590	2.891	3.386	....	142	142	207	207	233	246	285	324
	10.2	2.922	0.289	3.996	....	2.915	3.382	3.386	....	160	160	233	233	262	277	321	364
	12.7	2.750	0.375	4.134	....	3.682	4.261	3.386	....	203	203	295	295	331	350	405	460
4.000	10.9	3.476	0.262	4.421	....	3.077	3.463	3.701	....	169	169	246	246	277	292	338	385
	13.2	3.340	0.330	4.551	....	3.805	4.349	3.701	....	209	209	304	304	342	361	419	476
	14.9	3.240	0.380	4.646	....	4.322	5.033	3.701	....	238	238	346	346	389	411	475	540
4.500	10.5	4.052	0.224	4.921	....	3.009	3.984	4.016	....	165	165	241	241	271	286	331	376
	11.6	4.000	0.250	4.921	....	3.338	3.984	4.016	....	184	184	267	267	300	317	367	417
	12.6	3.958	0.271	4.921	....	3.600	3.984	4.016	....	198	198	288	288	324	342	396	450
	13.5	3.920	0.290	4.961	....	3.836	4.289	4.016	....	211	211	307	307	345	364	422	480
	15.2	3.826	0.337	5.079	....	4.407	5.220	4.016	....	242	242	353	353	397	419	485	551
	13.0	4.494	0.253	5.563	....	3.773	5.513	4.252	....	208	208	302	302	340	358	415	472
	15.0	4.408	0.296	5.563	....	4.374	5.513	4.252	....	241	241	350	350	394	416	481	547
	18.0	4.276	0.362	5.563	....	5.275	5.513	4.252	....	290	290	422	422	475	501	580	659
	21.4	4.126	0.437	5.563	....	6.264	5.513	4.252	....	303	303	441	441	496	524	606	689
	23.2	4.044	0.478	5.563	....	6.791	5.513	4.252	....	303	303	441	441	496	524	606	689
5.000	24.1	4.000	0.500	5.563	....	7.069	5.513	4.252	....	303	303	441	441	496	524	606	689

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — Antares MS 28

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	L/N-80	C-90	C/T-95	P-110	Q-125
2.375	4.60	1.995	0.190	2.703	….	1.304	1.507	3.307	….	72	72	104	104	117	124	143	163
	5.10	1.939	0.218	2.756	….	1.477	1.734	3.307	….	81	81	118	118	133	140	162	185
	5.80	1.867	0.254	2.827	….	1.692	2.046	3.307	….	93	93	135	135	152	161	186	212
2.875	6.40	2.441	0.217	3.244	….	1.812	2.072	3.543	….	100	100	145	145	163	172	199	227
	7.80	2.323	0.276	3.354	….	2.254	2.644	3.543	….	124	124	180	180	203	214	248	282
	8.60	2.259	0.308	3.406	….	2.484	2.916	3.543	….	137	137	199	199	224	236	273	311
3.500	7.70	3.068	0.216	3.937	….	2.228	2.954	3.858	….	123	123	178	178	201	212	245	279
	9.20	2.992	0.254	3.937	….	2.590	2.954	3.858	….	142	142	207	207	233	246	285	324
	10.20	2.922	0.289	4.000	….	2.915	3.346	3.858	….	160	160	233	233	262	277	321	364
	12.70	2.750	0.375	4.142	….	3.682	4.253	3.858	….	203	203	295	295	331	350	405	460
4.000	10.90	3.476	0.262	4.441	….	3.077	3.455	4.252	….	169	169	246	246	277	292	338	385
	13.20	3.340	0.330	4.567	….	3.805	4.346	4.252	….	209	209	304	304	342	361	419	476
	14.85	3.240	0.380	4.665	….	4.322	5.061	4.252	….	238	238	346	346	389	411	475	540
4.500	10.50	4.052	0.224	4.921	….	3.009	3.853	4.646	….	165	165	241	241	271	286	331	376
	11.60	4.000	0.250	4.921	….	3.338	3.853	4.646	….	184	184	267	267	300	317	367	417
	12.60	3.958	0.271	4.961	….	3.600	4.159	4.646	….	198	198	288	288	324	342	396	450
	13.50	3.920	0.290	5.000	….	3.836	4.467	4.646	….	211	211	307	307	345	364	422	480
	15.20	3.826	0.337	5.079	….	4.407	5.090	4.646	….	242	242	353	353	397	419	485	551
5.000	13.00	4.494	0.253	5.512	….	3.773	5.014	4.882	….	208	208	302	302	340	358	415	472
	15.00	4.408	0.296	5.512	….	4.374	5.014	4.882	….	241	241	350	350	394	416	481	547
	18.00	4.276	0.362	5.630	….	5.275	6.047	4.882	….	290	290	422	422	475	501	580	659
	21.40	4.126	0.437	5.756	….	6.264	7.173	4.882	….	345	345	501	501	564	595	689	783
	23.20	4.044	0.478	5.756	….	6.791	7.173	4.882	….	374	374	543	543	611	645	747	849
	24.10	4.000	0.500	5.756	….	7.069	7.173	4.882	….	389	389	566	566	636	672	778	884

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — PJD

Type: Upset integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.995	0.190	….	….	1.304	1.325	2.362	….	72	72	104	104	117	124	143	163
	5.30	1.939	0.218	….	….	1.477	1.494	2.362	….	81	81	118	118	133	140	162	185
	5.95	1.867	0.254	….	….	1.692	1.714	2.362	….	93	93	135	135	152	161	186	212
2.875	6.50	2.441	0.217	….	….	1.812	1.838	2.756	….	100	100	145	145	163	172	199	227
	7.90	2.323	0.276	….	….	2.254	2.275	2.756	….	124	124	180	180	203	214	248	282
	8.70	2.259	0.308	….	….	2.484	2.499	2.756	….	137	137	199	199	224	236	273	311
	9.60	2.195	0.340	….	….	2.708	2.717	2.756	….	149	149	217	217	244	257	298	339
3.500	9.30	2.992	0.254	….	….	2.590	2.688	3.228	….	142	142	207	207	233	246	285	324
	10.30	2.922	0.289	….	….	2.915	3.013	3.228	….	160	160	233	233	262	277	321	364
	12.95	2.750	0.375	….	….	3.682	3.757	3.228	….	203	203	295	295	331	350	405	460
4.000	11.00	3.476	0.262	….	….	3.077	3.278	3.543	….	169	169	246	246	277	292	338	385
	13.40	3.340	0.330	….	….	3.805	3.984	3.543	….	209	209	304	304	342	361	419	476
4.500	12.75	3.958	0.271	….	….	3.600	3.918	3.937	….	198	198	288	288	324	342	396	450
	13.50	3.920	0.290	….	….	3.836	4.125	3.937	….	211	211	307	307	345	364	422	480
	15.50	3.826	0.337	….	….	4.407	4.690	3.937	….	242	242	353	353	397	419	485	551

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

GB Tubulars, Inc. — TCC Acme IS

Type: Coupled, non-upset Seal: Thread interference																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.96	1.995	0.217	2.875	2.7	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	5.8	1.867	0.217	2.875	2.7	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
2.875	6.4	2.441	0.217	3.5	3.22	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	7.9	2.323	0.217	3.5	3.22	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	8.6	2.259	0.217	3.5	3.22	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
3.500	9.2	2.992	0.217	4.25	3.865	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	10.2	2.922	0.217	4.25	3.865	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	12.7	2.75	0.217	4.25	3.865	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
4.500	12.6	3.958	0.217	5.2	4.92	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	15.2	3.826	0.217	5.2	4.92	1.812031	9.62115	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

GB Tubulars, Inc. — TCC Acme

Type: Coupled, non-upset Seal: Thread interference																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.96	1.995	0.289	2.875	2.7	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	5.8	1.867	0.289	2.875	2.7	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
2.875	6.4	2.441	0.289	3.5	3.22	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	7.9	2.323	0.289	3.5	3.22	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	8.6	2.259	0.289	3.5	3.22	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
3.500	9.2	2.992	0.289	4.25	3.865	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	10.2	2.922	0.289	4.25	3.865	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	12.7	2.75	0.289	4.25	3.865	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
4.500	12.6	3.958	0.289	5.2	4.92	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....
	15.2	3.826	0.289	5.2	4.92	2.915339	14.18629	3.3125	....	71.7	....	104.3	104.3	....	....	143.5	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Halliburton Energy Services — Oeco A & B

Type: Upset Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.315	1.80	0.955	0.133	1.552	1.525	0.494	0.574	2.23	20	27	27	40	40	44	47	54	62
	2.25	0.848	0.179	1.600	….	0.639	0.727	2.23	26	35	35	51	51	57	61	70	80
1.660	2.40	1.286	0.140	1.883	1.858	0.669	0.717	2.23	27	37	37	53	53	60	64	74	84
	3.02	1.184	0.198	1.927	….	0.909	0.938	2.23	36	50	50	73	73	82	86	100	114
	3.24	1.184	0.191	1.927	….	0.881	0.904	2.23	35	48	48	71	71	79	84	97	110
1.900	2.90	1.516	0.145	2.113	2.094	0.799	0.861	2.23	32	44	44	64	64	72	76	88	100
	3.64	1.406	0.200	2.162	….	1.068	1.071	2.23	43	59	59	85	85	96	101	118	134
	4.19	1.368	0.219	2.179	….	1.157	1.182	2.23	46	64	64	93	93	104	110	127	145
2.063	3.25	1.657	0.156	2.330	2.295	0.935	1.012	2.23	37	51	51	75	75	84	89	103	117
	4.50	1.519	0.225	2.460	2.407	1.299	1.394	2.23	52	71	71	104	104	117	123	143	162
2.375	4.70	1.901	0.190	2.700	2.655	1.304	1.377	2.31	52	72	72	104	104	117	124	143	163
	5.30	1.845	0.218	2.750	2.700	1.477	1.543	2.31	59	81	81	118	118	133	140	162	185
2.875	6.50	2.347	0.217	3.210	3.166	1.812	1.848	2.39	72	100	100	145	145	163	172	199	227
3.500	9.30	2.867	0.254	3.915	3.859	2.590	2.744	2.84	104	142	142	207	207	233	246	285	324
	10.30	2.797	0.289	3.980	3.914	2.915	2.971	2.84	117	160	160	233	233	262	277	321	364
4.500	12.75	3.833	0.271	4.920	4.861	3.600	3.792	2.89	144	198	198	288	288	324	342	396	450
	13.50	3.795	0.290	4.955	4.890	3.836	3.944	2.89	153	211	211	307	307	345	364	422	479

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Halliburton Energy Services — Oeco C & D

Type: Upset Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	5.95	1.773	0.254	2.906	2.782	1.692	1.868	3.064	68	93	93	135	135	152	161	186	212
	6.20	1.759	0.261	2.938	2.794	1.733	1.896	3.064	69	95	95	139	139	156	165	191	217
	7.70	1.609	0.336	3.125	3.002	2.152	2.301	3.064	86	118	118	172	172	194	204	237	269
2.875	7.90	2.229	0.276	3.438	3.312	2.254	2.458	3.043	90	124	124	180	180	203	214	248	282
	8.70	2.165	0.308	3.500	3.365	2.484	2.686	3.043	99	137	137	199	199	224	236	273	310
	9.50	2.101	0.340	3.625	3.419	2.708	2.924	3.043	108	149	149	217	217	244	257	298	338
	10.70	1.997	0.392	3.688	3.595	3.058	3.251	3.043	122	168	168	245	245	275	290	336	382
3.500	12.95	2.625	0.375	4.313	4.189	3.682	4.401	3.376	147	202	202	295	295	331	350	405	460
	15.80	2.423	0.476	4.500	4.367	4.522	5.222	3.376	181	249	249	362	362	407	430	497	565
4.000	13.40	3.215	0.330	4.625	4.514	3.805	4.111	3.342	152	209	209	304	304	342	361	419	476
4.500	15.50	3.701	0.337	5.125	5.021	4.407	4.722	3.356	176	242	242	353	353	397	419	485	551
	19.20	3.515	0.430	5.313	5.170	5.498	5.901	3.356	220	302	302	440	440	495	522	605	687

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

HSC Corp. — HSC Tubing

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade 140	V-150
2.375	4.6	1.901	0.19	2.707	2.628	1.304	1.394	2.514	72	104	....	117	124	143	163	183	196
	5.8	1.773	0.254	2.785	2.707	1.692	1.733	2.514	93	135	....	152	161	186	211	237	254
2.875	6.4	2.347	0.217	3.24	3.159	1.812	1.925	2.829	100	145	....	163	172	199	226	254	272
	7.7	2.229	0.276	3.33	3.274	2.254	2.424	2.829	124	180	....	203	214	248	282	316	338
	8.6	2.165	0.308	3.364	3.274	2.484	2.568	2.829	137	199	....	223	236	273	310	348	372
3.500	7.7	2.943	0.216	3.84	....	2.228	2.319	3.274	123	178	....	201	212	245	278	312	334
	9.2	2.867	0.254	3.9	3.803	2.59	2.677	3.274	142	207	....	233	246	285	324	363	389
	10.2	2.797	0.289	3.96	3.862	2.915	3.054	3.274	160	233	....	262	277	321	365	408	437
	12.7	2.625	0.375	4.079	3.961	3.682	3.799	3.274	202	294	....	331	350	405	460	515	552
4.000	9.5	3.423	0.226	4.35	....	2.68	2.782	3.528	147	214	....	241	255	295	335	375	402
	10.9	3.351	0.262	4.41	4.327	3.077	3.195	3.528	169	246	....	277	292	338	384	431	462
	13	3.215	0.334	4.52	4.366	3.803	3.954	3.528	209	304	....	342	361	419	476	533	571
	16.5	3.015	0.43	4.66	....	4.823	4.96	3.528	265	386	....	434	458	530	602	675	723
4.500	10.5	3.927	0.224	4.862	4.813	3.009	3.422	3.969	165	241	....	271	286	331	376	421	451
	11.6	3.875	0.25	4.862	4.813	3.338	3.422	3.969	184	267	....	301	317	367	417	467	501
	12.6	3.833	0.271	4.892	4.813	3.601	3.649	3.969	198	288	....	324	342	396	450	540	540
	13.5	3.826	0.29	4.961	4.813	3.836	4.182	3.969	211	307	....	345	364	422	480	537	575
	15.1	3.701	0.337	5.01	4.892	4.407	4.566	3.969	242	353	....	397	419	485	551	617	661

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — Convertible 4040

Type: NUE, T&C Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.901	0.190	2.875	2.725	1.304	1.230	2.500	52160	71720	71720	104320	104320	117360	123880	143440	1630000
	5.8	1.773	0.254	2.875	2.725	1.692	1.618	2.500	67680	93060	93060	135360	135360	152280	160740	186120	2115000
2.875	6.4	2.347	0.217	3.500	3.275	1.812	1.722	2.500	72480	99660	99660	144960	144960	163080	172140	199320	2265000
	7.8	2.229	0.276	3.500	3.275	2.254	2.164	2.500	90160	123970	123970	180320	180320	202860	214130	247940	2817500
	8.6	2.165	0.308	3.500	3.275	2.484	2.394	2.500	99360	136620	136620	198720	198720	223560	235980	273240	3105000
3.500	9.2	2.867	0.254	4.250	4.000	2.590	2.481	2.500	103600	142450	142450	207200	207200	233100	246050	284900	3237500
	10.2	2.797	0.289	4.250	4.000	2.915	2.806	2.500	116600	160330	160330	233200	233200	262350	276930	320650	3643750
	12.7	2.625	0.375	4.250	4.000	3.682	3.572	2.500	147280	202510	202510	294560	294560	331380	349790	405020	4602500
4.500	9.5	3.423	0.226	4.750	4.485	2.680	2.554	2.500	107200	147400	147400	214400	214400	241200	254600	294800	3350000
	12.6	3.833	0.271	5.200	5.000	3.600	3.459	2.500	144000	198000	198000	288000	288000	324000	342000	396000	4500000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — Convertible 8-RND

Type: EUE, T&C Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	3.063	2.910	1.304	1.594	1.998	52160	71720	71720	104320	104320	117360	123880	143440	1630000
	5.95	1.773	0.254	3.063	2.910	1.692	1.982	1.998	67680	93060	93060	135360	135360	152280	160740	186120	2115000
2.875	6.50	2.347	0.217	3.668	3.460	1.812	2.162	2.185	72480	99660	99660	144960	144960	163080	172140	199320	2265000
	7.90	2.229	0.276	3.668	3.460	2.254	2.604	2.185	90160	123970	123970	180320	180320	202860	214130	247940	2817500
	8.70	2.165	0.308	3.668	3.460	2.484	2.834	2.185	99360	136620	136620	198720	198720	223560	235980	273240	3105000
3.500	9.30	2.867	0.254	4.500	4.180	2.590	3.190	2.435	103600	142450	142450	207200	207200	233100	246050	284900	3237500
	10.30	2.797	0.289	4.500	4.180	2.915	3.515	2.435	116600	160330	160330	233200	233200	262350	276930	320650	3643750
	12.95	2.625	0.375	4.500	4.180	3.682	4.282	2.435	147280	202510	202510	294560	294560	331380	349790	405020	4602500
4.000	11.00	3.351	0.262	5.000	4.625	3.077	3.761	2.560	123080	169240	169240	246160	246160	276930	292320	338470	3846250
4.500	12.75	3.833	0.271	5.563	5.125	3.600	4.369	2.685	144000	198000	198000	288000	288000	324000	342000	396000	4500000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — HD LOCK-IT

Type: T&C Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.7	1.901	0.190	2.875	2.690	1.304	1.304	3.032	....	72	....	104	104	117	123	143	....
	5.3	1.845	0.218	2.875	2.731	1.477	1.477	3.032	....	81	....	118	118	133	140	162	....
	5.8	1.773	0.254	2.875	2.781	1.693	1.693	3.032	....	93	....	135	135	152	161	186	....
	6.2	1.759	0.261	2.875	2.791	1.733	1.733	3.032	....	95	....	138	138	156	164	190	....
2.875	6.4	2.347	0.217	3.500	3.225	1.812	1.812	3.216	....	100	....	145	145	163	172	199	....
	7.7	2.229	0.276	3.500	3.312	2.254	2.254	3.216	....	124	....	180	180	203	214	248	....
	8.6	2.165	0.308	3.500	3.356	2.484	2.484	3.216	....	136	....	199	199	223	236	273	....
3.500	9.2	2.867	0.254	4.250	3.896	2.590	2.590	3.475	....	142	....	207	207	233	246	285	....
	10.2	2.797	0.289	4.250	3.949	2.915	2.915	3.475	....	160	....	233	233	262	277	320	....
	12.7	2.625	0.375	4.250	4.071	3.682	3.682	3.475	....	202	....	294	294	331	350	405	....
4.000	9.5	3.423	0.226	4.750	4.320	2.680	2.680	3.926	....	147	....	214	214	241	254	295	....
	11.0	3.351	0.262	4.750	4.378	3.077	3.077	3.926	....	169	....	246	246	277	292	338	....
	11.6	3.303	0.286	4.750	4.416	3.337	3.337	3.926	....	183	....	267	267	300	317	367	....
	13.4	3.215	0.330	4.750	4.483	3.805	3.805	3.926	....	209	....	304	304	342	361	418	....
	19.0	2.875	0.500	4.750	4.718	5.498	5.498	3.926	....	302	....	440	440	495	522	605	....
4.500	11.0	3.901	0.237	5.000	4.858	3.174	3.174	3.705	....	174	....	254	254	285	301	349	....
	11.6	3.875	0.250	5.000	4.879	3.338	3.338	3.705	....	183	....	267	267	300	317	367	....
	12.6	3.833	0.271	5.000	4.914	3.600	3.600	3.705	....	198	....	288	288	324	342	396	....
	13.5	3.795	0.290	5.000	4.944	3.836	3.836	3.705	....	211	....	307	307	345	364	422	....
	15.1	3.701	0.337	5.000	5.000	4.389	4.389	3.705	....	241	....	351	351	395	417	483	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — LOCK-IT-EIGHT

Type: T&C Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.500	2.9	1.516	0.145	2.250	….	0.799	1.230	2.308	….	44	….	64	64	72	76	88	….
2.062	3.3	1.657	0.156	2.450	….	0.935	1.442	1.443	….	51	….	75	75	84	89	103	….
2.375	4.6	1.901	0.190	2.720	….	1.304	1.481	2.830	….	72	….	104	104	117	124	143	….
2.875	6.4	2.347	0.217	3.260	….	1.812	2.057	3.002	….	100	….	145	145	163	172	199	….
3.500	9.2	2.867	0.254	3.935	….	2.590	2.932	3.594	….	142	….	207	207	233	246	285	….
4.000	11.0	3.351	0.262	4.625	….	3.077	4.793	3.933	….	169	….	246	246	277	292	330	….
4.500	12.6	3.833	0.271	4.950	….	3.600	4.053	4.205	….	198	….	288	288	324	342	396	….

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — SEAL-LOCK FGL

Type: T&C Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.740	0.190	2.875	….	1.304	2.281	2.758	….	72	72	104	104	117	124	143	….
2.875	6.4	2.140	0.271	3.500	….	1.812	3.487	3.133	….	100	100	145	145	163	172	199	….
3.500	9.2	2.670	0.254	4.250	….	2.590	5.118	3.383	….	142	142	207	207	233	246	285	….
4.500	12.6	3.560	0.271	5.000	….	3.600	4.896	3.394	….	198	198	288	288	324	342	396	….

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — SEAL-LOCK HT

Type: T&C Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.062	3.25	1.657	0.156	2.450	....	0.935	1.315	2.074	....	51	51	75	75	....	89	103	117
2.375	4.60	1.901	0.190	2.875	....	1.304	1.996	2.221	....	72	72	104	104	....	124	143	163
	5.20	1.845	0.218	2.875	....	1.477	1.996	2.221	....	81	81	118	118	....	140	162	185
	5.80	1.773	0.254	2.875	....	1.692	1.996	2.221	....	93	93	135	135	....	161	161	186
	6.00	1.759	0.261	2.875	....	1.733	1.996	2.221	....	95	95	139	139	....	165	165	191
2.875	6.40	2.347	0.217	3.500	....	1.812	3.071	2.477	....	100	100	145	145	....	172	199	226
	7.80	2.229	0.276	3.500	....	2.254	3.071	2.477	....	124	124	180	180	....	214	248	282
	8.60	2.134	0.308	3.500	....	2.484	3.071	2.477	....	136	136	199	199	....	236	273	310
	10.50	1.966	0.392	3.500	....	3.058	3.071	2.477	....	168	168	244	244	....	290	336	382
3.500	9.20	2.867	0.254	4.250	....	2.590	4.595	2.992	....	142	142	207	207	....	246	285	324
	10.20	2.797	0.289	4.250	....	2.915	4.595	2.992	....	160	160	233	233	....	277	321	364
	12.70	2.625	0.375	4.250	....	3.682	4.595	2.992	....	202	202	294	294	....	350	405	460
4.000	9.50	3.423	0.226	4.500	....	2.680	3.362	3.088	....	147	147	214	214	....	254	295	335
	11.00	3.351	0.262	4.500	....	3.077	3.362	3.088	....	169	169	246	246	....	292	338	384
	11.60	3.303	0.286	4.500	....	3.337	3.362	3.088	....	183	183	267	267	....	317	367	417
4.500	11.60	3.875	0.250	5.000	....	3.338	3.800	3.344	....	183	183	267	267	....	317	367	417
	12.60	3.833	0.271	5.000	....	3.600	3.800	3.344	....	270	270	360	360	....	378	450	486

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — TKC 8-RD EUE

Type: EUE, T&C Seal: Metal-to-metal, threaded, elastomeric																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	3.063	2.910	1.304	1.594	1.998	52160	71720	71720	104320	104320	117360	123880	143440	1630000
	5.95	1.773	0.254	3.063	2.910	1.692	1.982	1.998	67680	93060	93060	135360	135360	152280	160740	186120	2115000
2.875	6.50	2.347	0.217	3.668	3.460	1.812	2.162	2.185	72480	99660	99660	144960	144960	163080	172140	199320	2265000
	7.90	2.229	0.276	3.668	3.460	2.254	2.604	2.185	90160	123970	123970	180320	180320	202860	214130	247940	2817500
	8.70	2.165	0.308	3.668	3.460	2.484	2.834	2.185	99360	136620	136620	198720	198720	223560	235980	273240	3105000
3.500	9.30	2.867	0.254	4.500	4.180	2.590	3.190	2.435	103600	142450	142450	207200	207200	233100	246050	284900	3237500
	10.30	2.797	0.289	4.500	4.180	2.915	3.515	2.435	116600	160330	160330	233200	233200	262350	276930	320650	3643750
	12.95	2.625	0.375	4.500	4.180	3.682	4.282	2.435	147280	202510	202510	294560	294560	331380	349790	405020	4602500
4.000	11.00	3.351	0.262	5.000	4.594	3.077	3.761	2.560	123080	169240	169240	246160	246160	276930	292320	338470	3846250
4.500	12.75	3.833	0.271	5.563	5.094	3.600	4.369	2.685	144000	198000	198000	288000	288000	324000	342000	396000	4500000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — TKC MMS 8-RD

Type: EUE, T&C Seal: Threaded, elastomeric																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	3.063	2.910	1.304	1.594	2.338	52160	71720	71720	104320	104320	117360	123880	143440	1630000
	5.95	1.773	0.254	3.063	2.910	1.692	1.982	2.338	67680	93060	93060	135360	135360	152280	160740	186120	2115000
2.875	6.50	2.347	0.217	3.668	3.460	1.812	2.162	2.525	72480	99660	99660	144960	144960	163080	172140	199320	2265000
	7.90	2.229	0.276	3.668	3.460	2.254	2.604	2.525	90160	123970	123970	180320	180320	202860	214130	247940	2817500
	8.70	2.165	0.308	3.668	3.460	2.484	2.834	2.525	99360	136620	136620	198720	198720	223560	235980	273240	3105000
3.500	9.30	2.867	0.254	4.500	4.180	2.590	3.190	2.775	103600	142450	142450	207200	207200	233100	246050	284900	3237500
	10.30	2.797	0.289	4.500	4.180	2.915	3.515	2.775	116600	160330	160330	233200	233200	262350	276930	320650	3643750
	12.95	2.625	0.375	4.500	4.180	3.682	4.282	2.775	147280	202510	202510	294560	294560	331380	349790	405020	4602500
4.000	11.00	3.351	0.262	5.000	4.625	3.077	3.761	2.900	123080	169240	169240	246160	246160	276930	292320	338470	3846250
4.500	12.75	3.833	0.271	5.563	5.125	3.600	4.369	3.025	144000	198000	198000	288000	288000	324000	342000	396000	4500000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — TKC TS-8

Type: EUE, T&C Seal: Threaded, elastomeric																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	3.063	2.910	1.304	1.594	2.188	52160	71720	71720	104320	104320	117360	123880	143440	1630000
	5.95	1.773	0.254	3.063	2.910	1.692	1.982	2.188	67680	93060	93060	135360	135360	152280	160740	186120	2115000
2.875	6.50	2.347	0.217	3.668	3.460	1.812	2.162	2.375	72480	99660	99660	144960	144960	163080	172140	199320	2265000
	7.90	2.229	0.276	3.668	3.460	2.254	2.604	2.375	90160	123970	123970	180320	180320	202860	214130	247940	2817500
	8.70	2.165	0.308	3.668	3.460	2.484	2.834	2.375	99360	136620	136620	198720	198720	223560	235980	273240	3105000
3.500	9.30	2.867	0.254	4.500	4.180	2.590	3.190	2.650	103600	142450	142450	207200	207200	233100	246050	284900	3237500
	10.30	2.797	0.289	4.500	4.180	2.915	3.515	2.650	116600	160330	160330	233200	233200	262350	276930	320650	3643750
	12.95	2.625	0.375	4.500	4.180	3.682	4.282	2.650	147280	202510	202510	294560	294560	331380	349790	405020	4602500
4.000	11.00	3.351	0.262	5.000	4.625	3.077	3.761	2.775	123080	169240	169240	246160	246160	276930	292320	338470	3846250
4.500	12.75	3.833	0.271	5.563	5.125	3.600	4.369	2.900	144000	198000	198000	288000	288000	324000	342000	396000	4500000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — TS-HD

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	6.0	1.773	0.254	2.906	....	....	....	....	....	93.10	....	135.40	135.40	....	....	186.20	....
	6.2	1.759	0.261	2.938	....	....	....	....	....	95.30	....	138.70	138.70	....	....	190.70	....
	7.7	1.600	0.336	3.125	....	....	....	....	....	118.40	....	172.20	172.20	....	....	236.80	....
2.875	7.9	2.229	0.276	3.438	....	....	....	....	....	123.90	....	180.30	180.30	....	....	247.90	....
	8.7	2.165	0.308	3.500	....	....	....	....	....	136.60	....	198.70	198.70	....	....	273.20	....
	9.5	2.101	0.340	3.625	....	....	....	....	....	148.09	....	216.60	216.60	....	....	297.90	....
	10.7	1.997	0.392	3.688	....	....	....	....	....	168.20	....	244.60	244.60	....	....	336.40	....
3.500	13.0	2.625	0.375	4.313	....	....	....	....	....	202.50	....	294.50	294.50	....	....	405.00	....
	15.8	2.423	0.476	4.500	....	....	....	....	....	248.70	....	361.80	361.80	....	....	497.40	....
4.000	13.4	3.215	0.330	4.625	....	....	....	....	....	209.30	....	304.40	304.40	....	....	418.50	....
4.500	15.5	3.701	0.337	5.125	....	....	....	....	....	242.40	....	352.60	352.60	....	....	484.80	....
	19.2	3.515	0.430	5.313	....	....	....	....	....	302.40	....	439.80	439.80	....	....	604.80	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hunting Interlock, Inc. — TS-HP

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.050	1.200	0.627	0.113	1.327	1.3	....	....	....	....	18.30	....	26600.00	26600.00	....	....	36600.00	....
	1.500	0.648	0.154	1.327	....	....	....	....	....	23.80	....	34.70	34.70	....	....	47.70	....
1.315	1.800	0.955	0.133	1.552	....	....	....	....	....	27.20	....	39.50	39.50	....	....	54.30	....
	2.250	0.848	0.179	1.600	....	....	....	....	....	35.10	....	51.10	51.10	....	....	70.30	....
1.250	2.400	1.286	0.140	1.883	....	....	....	....	....	36.80	....	53.50	53.50	....	....	73.50	....
	3.020	1.184	0.191	1.927	....	....	....	....	....	48.50	....	70.50	70.50	....	....	97.00	....
	3.240	1.170	0.198	1.927	....	....	....	....	....	50.00	....	72.80	72.80	....	....	100.00	....
1.500	2.900	1.516	0.145	2.113	....	....	....	....	....	44.00	....	64.00	64.00	....	....	87.90	....
	3.640	1.406	0.200	2.162	....	....	....	....	....	58.70	....	85.40	85.40	....	....	117.50	....
	4.190	1.368	0.219	2.179	....	....	....	....	....	63.60	....	92.50	92.50	....	....	127.20	....
2.063	3.250	1.657	0.156	2.335	....	....	....	....	....	51.40	....	74.80	74.80	....	....	102.80	....
	4.500	1.519	0.225	2.460	....	....	....	....	....	71.50	....	103.90	103.90	....	....	142.90	....
2.375	4.700	1.901	0.190	2.705	....	....	....	....	....	71.10	....	104.30	104.30	....	....	143.50	....
	5.300	1.845	0.218	2.750	....	....	....	....	....	81.20	....	118.20	118.20	....	....	162.50	....
2.875	6.500	2.347	0.217	3.220	....	....	....	....	....	99.70	....	145.00	145.00	....	....	199.30	....
3.500	9.300	2.867	0.254	3.915	....	....	....	....	....	142.50	....	207.20	207.20	....	....	284.90	....
	10.300	2.797	0.289	3.980	....	....	....	....	....	160.30	....	233.20	233.20	....	....	320.70	....
4.000	11.000	3.351	0.262	4.417	....	....	....	....	....	169.20	....	246.11	246.10	....	....	338.40	....
4.500	12.750	3.833	0.271	4.920	....	....	....	....	....	169.20	....	288.00	288.00	....	....	396.10	....
	13.500	3.795	0.290	4.955	....	....	....	....	....	211.00	....	306.80	306.80	....	....	421.90	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 501 Tubing

Type: API upset, integral Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L/N-80	C-90	C/T-95	P-110	Q-125	M-65
2.375	4.7	1.901	0.190	2.657	....	1.304	1.304	3.24	....	72	....	104	....	....	....	....	85
2.875	6.5	2.347	0.217	3.192	....	1.812	1.812	3.24	....	100	....	145	....	....	....	....	118
3.500	9.3	2.867	0.254	3.886	....	2.590	2.590	3.24	....	142	....	207	....	....	....	....	168
4.000	11.0	3.351	0.262	4.406	....	3.077	3.077	3.24	....	169	....	246	....	....	....	....	200
4.500	11.6	3.875	0.250	4.891	....	3.338	3.338	3.24	....	184	....	267	....	....	....	....	217
	12.8	3.833	0.271	4.926	....	3.600	3.600	3.24	....	198	....	288	....	....	....		234

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 503 Tubing

Type: API upset, integral Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.7	1.901	0.190	2.657	….	1.304	1.304	3.64	….	72	….	104	104	….	….	….	….
2.875	6.5	2.347	0.217	3.192	….	1.812	1.812	3.64	….	100	….	145	145	….	….	….	….
3.500	9.3	2.867	0.254	3.886	….	2.590	2.590	3.64	….	142	….	207	207	….	….	….	….
4.000	11.0	3.351	0.262	4.406	….	3.077	3.077	3.64	….	169	….	246	246	….	….	….	….
4.500	11.6	3.875	0.250	4.891	….	3.338	3.338	3.64	….	184	….	267	267	….	….	….	….
	12.8	3.833	0.271	4.926	….	3.600	3.600	3.64	….	198	….	288	288	….	….	….	….

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 511 Tubing

Type: Non-upset, integral flush Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.063	3.3	1.657	0.156	2.125	....	0.935	0.564	2.27	....	42	54	54	56	....	....	71	....
	4.5	1.519	0.225	2.125	....	1.299	0.788	2.27	....	....	75	75	79	....	....	99	....
2.375	4.6	1.901	0.190	2.406	....	1.304	0.781	2.27	....	59	74	74	78	....	....	98	....
	5.1	1.845	0.218	2.406	....	1.477	0.899	2.27	....	67	85	85	90	....	....	112	....
2.875	6.4	2.347	0.217	2.875	....	1.812	0.996	2.27	....	75	95	95	100	....	....	125	....
3.500	7.7	2.943	0.216	3.500	....	2.228	1.227	2.74	....	92	117	117	123	....	....	....	....
	9.2	2.867	0.254	3.500	....	2.590	1.578	2.74	....	118	150	150	158	....	....	197	....
	10.2	2.797	0.289	3.500	....	2.915	1.760	2.74	....	132	167	167	176	....	....	220	....
4.000	9.5	3.423	0.226	4.000	....	2.680	1.657	2.74	....	124	157	157	166	....	....	....	....
	11.0	3.351	0.262	4.000	....	3.077	1.902	2.74	....	143	181	181	190	....	....	238	....
	11.6	3.303	0.286	4.031	....	3.337	2.035	2.74	....	153	193	193	204	....	....	254	....
4.500	10.5	3.927	0.224	4.500	....	3.009	1.902	2.74	....	143	181	181	....	....	....	....	....
	11.0	3.901	0.237	4.500	....	3.174	2.058	2.74	....	154	196	196	206	....	....	257	....
	11.6	3.875	0.250	4.500	....	3.338	2.111	2.74	....	158	201	201	211	....	....	264	....
	12.6	3.833	0.271	4.500	....	3.600	2.096	2.67	....	157	199	199	210	....	....	262	....
	13.5	3.795	0.290	4.500	....	3.836	2.326	2.67	....	174	221	221	233	....	....	291	....
	15.1	3.701	0.337	4.500	....	4.407	2.696	3.04	....	....	256	256	270	....	....	337	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 533 Tubing

Type: Upset, integral Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.7	1.901	0.190	2.657	....	1.304	1.304	3.64	....	72	....	104	104	117	124	143	163
	5.3	1.845	0.218	2.685	....	1.477	1.477	3.64	....	....	....	118	118	133	140	162	185
	6.0	1.773	0.254	2.737	....	1.692	1.692	3.64	....	....	....	135	135	152	161	186	212
	6.6	1.691	0.295	2.793	....	1.928	1.928	3.64	....	....	....	154	154	173	183	212	241
	7.5	1.609	0.336	2.845	....	2.152	2.152	3.64	....	....	....	172	172	194	204	237	269
2.875	6.5	2.347	0.217	3.192	....	1.812	1.812	3.64	....	100	....	145	145	163	172	199	227
	7.9	2.229	0.276	3.282	....	2.254	2.254	3.64	....	....	....	180	180	203	214	248	282
	8.7	2.165	0.308	3.328	....	2.484	2.484	3.64	....	....	....	199	199	224	236	273	310
	9.5	2.101	0.340	3.337	....	2.708	2.708	4.09	....	....	....	217	217	244	257	298	338
	10.7	1.997	0.392	3.405	....	3.058	3.058	4.09	....	....	....	245	245	275	290	336	382
	11.7	1.901	0.440	3.464	....	3.366	3.366	4.09	....	....	....	269	269	303	320	370	421
3.500	9.3	2.867	0.254	3.886	....	2.590	2.590	3.64	....	142	....	207	207	233	246	285	324
	10.3	2.797	0.289	3.941	....	2.915	2.915	3.64	....	....	....	233	233	262	277	321	364
	13.0	2.625	0.375	4.067	....	3.682	3.682	3.64	....	....	....	295	295	331	350	405	460
	14.3	2.515	0.430	4.100	....	4.147	4.147	4.49	....	....	....	332	332	373	394	456	518
	15.8	2.423	0.476	4.160	....	4.522	4.522	4.49	....	....	....	362	362	407	430	497	565
	16.7	2.355	0.510	4.202	....	4.791	4.791	4.49	....	....	....	383	383	431	455	527	599
	17.1	2.315	0.530	4.226	....	4.945	4.945	4.49	....	....	....	396	396	445	470	544	618
4.000	11.0	3.351	0.262	4.406	....	3.077	3.077	3.64	....	169	....	246	246	277	292	338	385
	11.6	3.303	0.286	4.444	....	3.337	3.337	3.64	....	184	....	267	267	300	317	367	417
	13.4	3.215	0.330	4.513	....	3.805	3.805	3.64	....	....	....	304	304	342	361	419	476
	14.8	3.115	0.380	4.549	....	4.322	4.322	4.09	....	....	....	346	346	389	411	475	540
	16.1	3.045	0.415	4.599	....	4.674	4.674	4.09	....	....	....	374	374	421	444	514	584
	19.0	2.875	0.500	4.598	....	5.498	5.498	5.28	....	....	....	440	440	495	522	605	687
	21.1	2.751	0.562	4.679	....	6.070	6.070	5.28	....	....	....	486	486	546	577	668	759
	22.5	2.655	0.610	4.739	....	6.496	6.496	5.28	....	....	....	520	520	585	617	715	812

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 533 Tubing (continued)

Type: Upset, integral Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	12.8	3.833	0.271	4.926	….	3.600	3.600	3.64	….	198	….	288	288	324	342	396	450
	13.5	3.795	0.290	4.958	….	3.836	3.836	3.64	….	….	….	307	307	345	364	422	479
	15.5	3.701	0.337	4.992	….	4.407	4.407	4.09	….	….	….	353	353	397	419	485	551
	17.0	3.615	0.380	5.058	….	4.918	4.918	4.09	….	….	….	393	393	443	467	541	615
	19.2	3.515	0.430	5.133	….	5.498	5.498	4.09	….	….	….	440	440	495	522	605	687
	21.6	3.375	0.500	5.114	….	6.283	6.283	5.28	….	….	….	503	503	565	597	691	785
	24.0	3.255	0.560	5.196	….	6.932	6.932	5.28	….	….	….	555	555	624	659	762	866
	26.5	3.115	0.630	5.288	….	7.660	7.660	5.28	….	198	….	613	613	689	728	843	957

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 561 Tubing

Type: API upset, coupled Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.901	0.190	2.875	2.657	1.304	1.150	3.24	....	72	....	104	104	....	....	....	....
2.875	6.4	2.347	0.217	3.500	3.192	1.812	1.625	3.24	....	100	....	145	145	....	....	....	....
3.500	9.2	2.867	0.254	4.250	3.886	2.590	2.362	3.24	....	142	....	207	207	....	....	....	....
4.000	9.5	3.423	0.226	4.750	4.346	2.680	2.419	3.24	....	147	....	214	214	....	....	....	....
	11.0	3.351	0.262	4.750	4.406	3.077	2.816	3.24	....	169	....	246	246	....	....	....	....
4.500	11.6	3.875	0.250	5.200	4.891	3.338	3.044	3.24	....	184	....	267	267	....	....	....	....
	12.6	3.833	0.271	5.200	4.926	3.600	3.307	3.24	....	198	....	288	288	....	....	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500, Type 563 Tubing

Type: Non-upset, coupled Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.901	0.190	2.875	2.657	1.304	1.150	3.64	....	72	72	104	104	117	124	143	....
	5.1	1.845	0.218	2.875	2.685	1.477	1.323	3.64	....	....	....	118	118	133	140	162	....
	5.8	1.773	0.254	2.875	2.737	1.692	1.538	3.64	....	....	....	135	135	152	161	186	....
	6.6	1.691	0.295	2.875	2.793	1.928	1.773	3.64	....	....	....	154	154	173	183	212	....
	7.4	1.609	0.336	2.875	....	2.152	1.998	3.64	....	....	....	172	172	194	204	237	....
2.875	6.4	2.347	0.217	3.500	3.192	1.812	1.625	3.64	....	100	100	145	145	163	172	199	....
	7.8	2.229	0.276	3.500	3.282	2.254	2.067	3.64	....	....	....	180	180	203	214	248	....
	8.6	2.165	0.308	3.500	3.328	2.484	2.297	3.64	....	....	....	199	199	224	236	273	....
	9.4	2.101	0.340	3.500	3.337	2.708	2.521	4.09	....	....	....	217	217	244	257	298	....
	10.5	1.997	0.392	3.500	3.405	3.058	2.871	4.09	....	....	....	245	245	275	290	336	....
	11.5	1.901	0.440	3.500	3.464	3.366	3.179	4.09	....	....	....	269	269	303	320	370	....
3.500	9.2	2.867	0.254	4.250	3.886	2.590	2.362	3.64	....	142	142	207	207	233	246	285	....
	10.2	2.797	0.289	4.250	3.941	2.915	2.687	3.64	....	....	....	233	233	262	277	321	....
	12.7	2.625	0.375	4.250	4.067	3.682	3.454	3.64	....	....	....	295	295	331	350	405	....
	14.3	2.515	0.430	4.250	4.100	4.147	3.878	4.49	....	....	....	332	332	373	394	456	....
	15.5	2.423	0.476	4.250	4.160	4.522	4.253	4.49	....	....	....	362	362	407	430	497	....
	16.7	2.355	0.510	4.250	4.202	4.791	4.521	4.49	....	....	....	383	383	431	455	527	....
	17.0	2.315	0.530	4.250	....	4.945	4.676	4.49	....	....	....	396	396	445	470	544	....
4.000	11.0	3.351	0.262	4.750	4.406	3.077	2.816	3.64	....	169	169	246	246	277	292	338	....
	11.6	3.303	0.286	4.750	4.444	3.337	3.076	3.64	....	184	184	267	267	300	317	367	....
	13.2	3.215	0.330	4.750	4.513	3.805	3.544	3.64	....	....	....	304	304	342	361	419	....
	14.8	3.115	0.380	4.750	4.549	4.322	4.061	4.09	....	....	....	346	346	389	411	475	....
	16.1	3.045	0.415	4.750	4.599	4.674	4.413	4.09	....	....	....	374	374	421	444	514	....
	18.9	2.875	0.500	4.750	4.598	5.498	5.064	5.28	....	....	....	440	440	495	522	605	....
	21.1	2.751	0.562	4.750	4.679	6.070	5.636	5.28	....	....	....	486	486	546	577	668	....
	22.2	2.655	0.610	4.750	....	6.496	6.062	5.28	....	....	....	520	520	585	617	715	....

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

Hydril — Series 500, Type 563 Tubing (continued)

Type: Non-upset, coupled Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	11.6	3.875	0.250	5.200	4.891	3.338	3.044	3.64	….	184	184	267	267	300	317	367	….
	12.6	3.833	0.271	5.200	4.926	3.600	3.307	3.64	….	198	198	288	288	324	342	396	….
	13.5	3.795	0.290	5.200	4.958	3.836	3.542	3.64	….	….	….	307	307	345	364	422	….
	15.2	3.701	0.337	5.200	4.992	4.407	4.114	4.09	….	….	….	353	353	397	419	485	….
	17.0	3.615	0.380	5.200	5.058	4.918	4.625	4.09	….	….	….	393	393	443	467	541	….
	18.9	3.515	0.430	5.200	5.133	5.498	5.205	4.09	….	….	….	440	440	495	522	605	….
	21.5	3.375	0.500	5.200	5.114	6.283	5.794	5.28	….	….	….	503	503	565	597	691	….
	23.7	3.255	0.560	5.200	….	6.932	6.443	5.28	….	….	….	555	555	624	659	762	….
	26.1	3.115	0.630	5.300	….	7.660	7.171	5.28	….	….	….	613	613	689	728	843	….

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Kawasaki Steel/Hunting Oilfield Services — Fox Premium Connection

Type: Coupled (100% tensile efficient) Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.901	0.190	2.723	....	1.304	1.482	2.313	52	72	72	104	104	117	124	143	163
	5.1	1.845	0.218	2.723	....	1.477	1.482	2.313	59	81	81	118	118	133	140	162	185
	5.8	1.773	0.254	2.782	....	1.692	1.738	2.313	68	93	93	135	135	152	161	186	212
	6.2	1.759	0.261	2.782	....	1.733	1.738	2.313	69	95	95	139	139	156	165	191	217
	6.3	1.721	0.280	2.876	....	1.843	2.155	2.313	74	101	101	147	147	166	175	203	230
	7.3	1.609	0.336	2.876	....	2.152	2.155	2.313	86	118	118	172	172	194	204	237	269
2.875	6.4	2.347	0.217	3.297	....	1.812	2.256	2.688	72	100	100	145	145	163	172	199	227
	7.7	2.229	0.276	3.297	....	2.254	2.256	2.688	90	124	124	180	180	203	214	248	282
	8.6	2.165	0.308	3.412	....	2.484	2.862	2.688	99	137	137	199	199	224	236	273	310
	9.8	2.057	0.362	3.412	....	2.858	2.862	2.688	114	157	157	229	229	257	272	314	357
	10.7	1.971	0.405	3.465	....	3.143	3.148	2.688	126	173	173	251	251	283	299	346	393
3.500	7.7	2.943	0.216	3.878	....	2.228	2.598	3.145	89	123	123	178	178	201	212	245	279
	9.2	2.867	0.254	3.878	....	2.590	2.598	3.145	104	142	142	207	207	233	246	285	324
	10.2	2.797	0.289	4.053	....	2.915	3.688	3.145	117	160	160	233	233	262	277	321	364
	12.7	2.625	0.375	4.053	....	3.682	3.688	3.145	147	202	202	295	295	331	350	405	460
	13.7	2.549	0.413	4.150	....	4.005	4.313	3.145	160	220	220	320	320	360	381	441	501
	15.5	2.477	0.449	4.150	....	4.304	4.313	3.145	172	237	237	344	344	387	409	473	538
	15.8	2.423	0.476	4.297	....	4.522	5.289	3.145	181	249	249	362	362	407	430	497	565
4.000	9.5	3.423	0.226	4.378	....	2.680	3.083	3.478	107	147	147	214	214	241	255	295	335
	10.9	3.351	0.262	4.378	....	3.077	3.083	3.478	123	169	169	246	246	277	292	338	385
	13.0	3.215	0.330	4.556	....	3.805	4.332	3.478	152	209	209	304	304	342	361	419	476
	14.8	3.115	0.380	4.556	....	4.322	4.332	3.478	173	238	238	346	346	389	411	475	540
	16.5	3.015	0.430	4.625	....	4.823	4.830	3.478	193	265	265	386	386	434	458	530	603

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Kawasaki Steel/Hunting Oilfield Services — Fox Premium Connection (continued)

Type: Coupled (100% tensile efficient) Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	10.5	3.927	0.224	5.000	4.875	3.009	4.374	4.440	120	166	166	241	241	271	286	331	376
	11.6	3.875	0.250	5.000	4.875	3.338	4.374	4.440	134	184	184	267	267	300	317	367	417
	12.6	3.833	0.271	5.000	4.875	3.600	4.374	4.440	144	198	198	288	288	324	342	396	450
	13.5	3.795	0.290	5.000	4.875	3.836	4.374	4.440	153	211	211	307	307	345	364	422	479
	15.1	3.701	0.337	5.000	4.875	4.407	4.374	4.440	175	241	241	350	350	394	416	481	547
	16.9	3.629	0.373	5.000	4.875	4.836	4.374	4.440	175	241	241	350	350	394	416	481	547
	18.8	3.515	0.430	5.000	4.875	5.498	4.374	4.440	175	241	241	350	350	394	416	481	547
	21.6	3.375	0.500	5.000	4.875	6.283	4.374	4.440	175	241	241	350	350	394	416	481	547
	24.6	3.255	0.560	5.000	4.875	6.932	4.374	4.440	175	241	241	350	350	394	416	481	547
5.000	13.0	4.369	0.253	5.563	5.375	3.773	5.487	4.640	151	208	208	302	302	340	358	415	472
	15.0	4.283	0.296	5.563	5.375	4.374	5.487	4.640	175	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.563	5.375	5.275	5.487	4.640	211	290	290	422	422	475	501	580	659
	20.3	4.059	0.408	5.563	5.375	5.886	5.487	4.640	219	302	302	439	439	494	521	604	686
	20.8	4.031	0.422	5.563	5.375	6.069	5.487	4.640	219	302	302	439	439	494	521	604	686
	21.4	4.001	0.437	5.563	5.375	6.264	5.487	4.640	219	302	302	439	439	494	521	604	686
	23.2	3.919	0.478	5.563	5.375	6.791	5.487	4.640	219	302	302	439	439	494	521	604	686
	24.1	3.875	0.500	5.563	5.375	7.069	5.487	4.640	219	302	302	439	439	494	521	604	686

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Nippon Steel Corp. — NS-CT

Type: Coupled
Seal: Metal-to-metal

									Minimum joint tension strength, kips																									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT-95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
2.375	4.60	1.995	0.190	2.776	....	1.304	....	2.68	52	72	72	104	104	117	124	143	163	163	183	196	124	143	104	117	124	130	137	143	104	117	124	124	143
	5.10	1.939	0.218	2.815	....	1.477	....	2.68	59	81	81	118	118	133	140	162	185	185	207	222	140	162	118	133	140	148	155	162	118	133	140	140	162
	5.80	1.867	0.254	2.858	....	1.692	....	2.68	68	93	93	135	135	152	161	186	212	212	237	254	161	186	135	152	161	169	178	186	135	152	161	161	186
	6.20	1.853	0.261	2.866	....	1.733	....	2.68	69	95	95	139	139	156	165	191	217	217	243	260	165	191	139	156	165	173	182	191	139	156	165	165	191
	7.70	1.703	0.336	2.953	....	2.152	....	2.68	86	118	118	172	172	194	204	237	269	269	301	323	204	237	172	194	204	215	226	237	172	194	204	204	237
2.875	6.40	2.441	0.217	3.272	....	1.812	....	3.04	72	100	100	145	145	163	172	199	227	227	254	272	172	199	145	163	172	181	190	199	145	163	172	172	199
	7.90	2.323	0.276	3.370	....	2.254	....	3.04	90	124	124	180	180	203	214	248	282	282	315	338	214	248	180	203	214	225	237	248	180	203	214	214	248
	8.60	2.259	0.308	3.421	....	2.484	....	3.04	99	137	137	199	199	224	236	273	310	310	348	373	236	273	199	224	236	248	261	273	199	224	236	236	273
	9.50	2.195	0.340	3.469	....	2.708	....	3.04	108	149	149	217	217	244	257	298	338	338	379	406	257	298	217	244	257	271	284	298	217	244	257	257	298
	9.80	2.152	0.362	3.500	....	2.858	....	3.04	114	157	157	229	229	257	272	314	357	357	400	429	272	314	229	257	272	286	300	314	229	257	272	272	314
	10.70	2.091	0.392	3.539	....	3.058	....	3.04	122	168	168	245	245	275	290	336	382	382	428	459	290	336	245	275	290	306	321	336	245	275	290	290	336
	11.00	2.065	0.405	3.559	....	3.143	....	3.04	126	173	173	251	251	283	299	346	393	393	440	471	299	346	251	283	299	314	330	346	251	283	299	299	346
	11.65	1.995	0.440	3.602	....	3.366	....	3.04	135	185	185	269	269	303	320	370	421	421	471	505	320	370	269	303	320	337	353	370	269	303	320	320	370
3.500	9.20	2.992	0.254	3.941	....	2.590	....	3.66	104	142	142	207	207	233	246	285	324	324	363	389	246	285	207	233	246	259	272	285	207	233	246	246	285
	10.20	2.922	0.289	4.000	....	2.915	....	3.66	117	160	160	233	233	262	277	321	364	364	408	437	277	321	233	262	277	292	306	321	233	262	277	277	321
	12.70	2.750	0.375	4.138	....	3.682	....	3.66	147	202	202	295	295	331	350	405	460	460	515	552	350	405	295	331	350	368	387	405	295	331	350	350	405
	13.70	2.674	0.413	4.197	....	4.005	....	3.66	160	220	220	320	320	360	381	441	501	501	561	601	381	441	320	360	381	401	421	441	320	360	381	381	441
	14.70	2.600	0.450	4.248	....	4.312	....	3.66	172	237	237	345	345	388	410	474	539	539	604	647	410	474	345	388	410	431	453	474	345	388	410	410	474
	15.80	2.548	0.476	4.283	....	4.522	....	3.66	181	249	249	362	362	407	430	497	565	565	633	678	430	497	362	407	430	452	475	497	362	407	430	430	497
	16.70	2.480	0.510	4.331	....	4.791	....	3.66	192	263	263	383	383	431	455	527	599	599	671	719	455	527	383	431	455	479	503	527	383	431	455	455	527
4.000	10.90	3.476	0.262	4.449	....	3.077	....	3.91	123	169	169	246	246	277	292	338	385	385	431	462	292	338	246	277	292	308	323	338	246	277	292	292	338
	13.00	3.340	0.330	4.567	....	3.805	....	3.91	152	209	209	304	304	342	361	419	476	476	533	571	361	419	304	342	361	380	400	419	304	342	361	361	419
	14.80	3.240	0.380	4.650	....	4.322	....	3.91	173	238	238	346	346	389	411	475	540	540	605	648	411	475	346	389	411	432	454	475	346	389	411	411	475
	16.50	3.140	0.430	4.728	....	4.823	....	3.91	193	265	265	386	386	434	458	530	603	603	675	723	458	530	386	434	458	482	506	530	386	434	458	458	530
4.500	12.60	3.958	0.271	4.957	....	3.600	....	4.20	144	198	198	288	288	324	342	396	450	450	504	540	342	396	288	324	342	360	378	396	288	324	342	342	396
	13.50	3.920	0.290	4.992	....	3.836	....	4.20	153	211	211	307	307	345	364	422	479	479	537	575	364	422	307	345	364	384	403	422	307	345	364	364	422
	15.10	3.826	0.337	5.075	....	4.407	....	4.20	176	242	242	353	353	397	419	485	551	551	617	661	419	485	353	397	419	441	463	485	353	397	419	419	485
	16.90	3.740	0.380	5.134	....	4.918	....	4.20	197	271	271	393	393	443	467	541	615	615	689	738	467	541	393	443	467	492	516	541	393	443	467	467	541
	18.80	3.640	0.430	5.228	....	5.498	....	4.20	220	302	302	440	440	495	522	605	687	687	770	825	522	605	440	495	522	550	577	605	440	495	522	522	605
	21.60	3.500	0.500	5.339	....	6.283	....	4.20	251	346	346	503	503	565	597	691	785	785	880	942	597	691	503	565	597	628	660	691	503	565	597	597	691
	24.00	3.380	0.560	5.425	....	6.932	....	4.20	277	381	381	555	555	624	659	762	866	866	970	1040	659	762	555	624	659	693	728	762	555	624	659	659	762

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — NK3SB Tubing

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.7	1.901	0.190	2.875	2.700	1.304	2.370	3.743	....	72	72	104	104	117	124	143	....
	5.3	1.845	0.218	2.875	2.700	1.477	2.370	3.743	....	81	81	118	118	133	140	162	....
	6.0	1.773	0.254	2.875	2.732	1.692	2.370	3.743	....	93	93	135	135	152	161	186	....
	6.2	1.759	0.261	2.875	2.744	1.733	2.370	3.743	....	95	95	139	139	156	165	191	....
	7.7	1.609	0.336	2.875	....	2.152	2.370	3.743	....	118	118	172	172	194	204	237	....
2.875	6.5	2.347	0.217	3.500	3.220	1.812	3.503	3.743	....	100	100	145	145	163	172	199	....
	7.9	2.229	0.276	3.500	3.280	2.254	3.503	3.743	....	124	124	180	180	203	214	248	....
	8.7	2.165	0.308	3.500	3.323	2.484	3.503	3.743	....	137	137	199	199	224	236	273	....
	9.5	2.101	0.340	3.500	3.366	2.708	3.503	3.743	....	149	149	217	217	244	257	298	....
	10.7	1.997	0.392	3.500	....	3.058	3.503	3.743	....	168	168	245	245	275	291	336	....
	11.0	1.971	0.405	3.500	....	3.143	3.503	3.743	....	173	173	251	251	283	299	346	....
	11.7	1.901	0.440	3.500	....	3.366	3.503	3.743	....	185	185	269	269	303	320	370	....
3.500	9.3	2.867	0.254	4.250	3.882	2.590	5.032	3.775	....	142	142	207	207	233	246	285	....
	10.3	2.797	0.289	4.250	3.933	2.915	5.032	3.775	....	160	160	233	233	262	277	321	....
	12.8	2.639	0.368	4.250	4.051	3.621	5.032	3.775	....	199	199	290	290	326	344	398	....
	13.0	2.625	0.375	4.250	4.059	3.682	5.032	3.775	....	203	203	295	295	331	350	405	....
4.000	11.0	3.351	0.262	4.750	4.402	3.077	5.793	4.056	....	....	....	....	....	....	....	....	....
	13.4	3.215	0.330	4.750	4.492	3.805	5.793	4.056	....	....	....	....	....	....	....	....	....
	19.0	2.875	0.500	4.750	....	5.498	5.793	4.056	....	....	....	....	....	....	....	....	....
4.500	12.8	3.833	0.271	5.200	4.921	3.600	6.163	4.306	....	198	198	288	288	324	342	396	....
	13.5	3.795	0.290	5.200	4.921	3.836	6.163	4.306	....	211	211	307	307	345	364	422	....
	15.5	3.701	0.337	5.200	4.996	4.407	6.163	4.306	....	242	242	353	353	397	419	485	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — New NK3SB

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.7	1.995	0.190	2.875	2.700	1.304	2.180	2.798	....	72	72	104	104	117	124	143	....
	5.3	1.939	0.218	2.875	2.721	1.477	2.180	2.798	....	81	81	118	118	133	140	162	....
	6.0	1.867	0.254	2.875	2.722	1.692	2.180	2.798	....	93	93	135	135	152	161	186	....
2.875	6.5	2.441	0.217	3.500	3.240	1.812	3.278	2.798	....	100	100	145	145	163	172	199	....
	7.9	2.323	0.276	3.500	3.317	2.254	3.278	2.798	....	124	124	180	180	203	214	248	....
	8.7	2.259	0.308	3.500	3.362	2.484	3.278	2.798	....	137	137	199	199	224	236	273	....
3.500	7.7	3.068	0.216	4.250	3.882	2.228	4.757	2.830	....	123	123	178	178	201	212	245	....
	9.3	2.992	0.254	4.250	3.920	2.590	4.757	2.830	....	142	142	207	207	233	246	285	....
	10.3	2.992	0.289	4.250	3.974	2.915	4.757	2.830	....	160	160	233	233	262	277	321	....
4.000	11.0	3.476	0.262	4.750	4.429	3.077	5.485	3.111	....	169	169	246	246	277	292	338	....
	13.4	3.340	0.330	4.750	4.530	3.805	5.485	3.111	....	209	209	304	304	342	361	419	....
4.500	12.8	3.958	0.271	5.200	4.936	3.600	5.810	3.361	....	198	198	288	288	324	342	396	....
	13.5	3.920	0.290	5.200	4.962	3.836	5.810	3.361	....	211	211	307	307	345	364	422	....
	15.5	3.826	0.337	5.200	5.036	4.407	5.810	3.361	....	242	242	353	353	397	419	485	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Siderca S.A.I.C. — SEC-ST, FR & GR

Type: Coupled, non-upset
Seal: Metal-to-metal

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c*	L_m	H-40*	J-55*	K-55*	L-80*	N-80*	C-90*	C/T-95*	P-110*	Q-125*
2.374	4.6	1.995	0.190	2.705	2.626	1.305	1.409	2.52	52	72	72	104	104	117	124	144	163
	5.1	1.939	0.218	2.705	2.626	1.471	1.409	2.52	59	81	81	118	118	132	140	162	184
	5.8	1.867	0.254	2.787	2.709	1.683	1.765	2.52	67	93	93	135	135	151	160	185	210
	6.3	1.814	0.280	2.854	0.000	1.845	2.062	2.52	74	101	101	148	148	166	175	203	231
	7.3	1.703	0.336	2.933	0.000	2.151	2.420	2.52	86	118	118	172	172	194	204	237	269
2.875	6.4	2.441	0.217	3.213	3.157	1.812	1.815	2.83	72	100	100	145	145	163	172	199	226
	7.8	2.323	0.276	3.343	3.213	2.252	2.483	2.83	90	124	124	180	180	203	214	248	282
	8.6	2.259	0.308	3.343	3.213	2.483	2.483	2.83	99	137	137	199	199	223	236	273	310
	9.8	2.151	0.362	3.461	3.343	2.857	3.114	2.83	114	157	157	229	229	257	271	314	357
	10.7	2.065	0.405	3.461	3.343	3.140	3.114	2.83	126	173	173	251	251	283	298	345	393
3.500	7.7	3.068	0.216	3.929	3.780	2.230	2.903	3.31	89	123	123	178	178	201	212	245	279
	9.2	2.992	0.254	3.929	3.780	2.590	2.903	3.31	104	142	142	207	207	233	246	285	324
	10.2	2.922	0.289	3.929	3.780	2.916	2.903	3.31	117	160	160	233	233	262	277	321	364
	12.7	2.750	0.375	4.193	3.929	3.680	4.585	3.31	147	202	202	294	294	331	350	405	460
	13.7	2.673	0.413	4.193	3.929	4.007	4.585	3.31	160	220	220	321	321	361	381	441	501
	14.7	2.600	0.450	4.193	3.929	4.307	4.585	3.31	172	237	237	345	345	388	409	474	538
	15.8	2.548	0.476	4.193	3.929	4.521	4.585	3.31	181	249	249	362	362	407	430	497	565
4.000	9.5	3.548	0.226	4.409	4.331	2.680	3.266	3.58	107	147	147	214	214	241	255	295	335
	10.9	3.476	0.262	4.409	4.331	3.075	3.266	3.58	123	169	169	246	246	277	292	338	384
	13.0	3.340	0.330	4.508	4.409	3.805	3.956	3.58	152	209	209	304	304	342	361	419	476
	14.8	3.240	0.380	4.567	4.409	4.321	4.377	3.58	173	238	238	346	346	389	411	475	540
	16.5	3.140	0.430	4.656	4.409	4.822	5.017	3.58	193	265	265	386	386	434	458	530	603
4.500	10.5	4.052	0.224	4.862	4.803	3.009	3.450	3.98	120	165	165	241	241	271	286	331	376
	11.6	4.000	0.250	4.862	4.803	3.337	3.450	3.98	133	184	184	267	267	300	317	367	417
	12.6	3.958	0.271	4.980	4.803	3.601	4.363	3.98	144	198	198	288	288	324	342	396	450
	13.5	3.920	0.290	4.980	4.882	3.838	4.363	3.98	154	211	211	307	307	345	365	422	480
	15.1	3.826	0.337	4.980	4.882	4.407	4.363	3.98	176	242	242	353	353	397	419	485	551

* Values for regular couplings. Please contact Siderca S.A.I.C for special clearance couplings.

D	Casing nominal tube OD, in.
w	Casing weight, lb/ft
d	ID (drift), in.
t	Casing wall thickness, in.
D_c	Connection OD, in.
D_{sc}	Connection OD (special clearance or turned down), in.
A_t	Casing wall critical cross-sectional area, sq. in.
A_c	Connection critical cross-sectional area, sq. in.
L_m	Make-up loss, in.

Smith Fiberglass Products Co. — OPTIJOINT SDT 1010

Type: Threaded & coupled or integral Seal: Threaded									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Pressure rating, psi
1.72	0.60	1.50	0.11	2.50	….	….	….	….	1000
2.48	1.06	2.16	0.16	3.00	….	….	….	….	1000
2.79	1.45	2.43	0.18	3.50	….	….	….	….	1000
3.64	2.20	3.19	0.23	4.30	….	….	….	….	1000
4.54	3.39	4.00	0.27	5.30	….	….	….	….	1000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A Connection critical cross-sectional area, sq. in.
L Make-up loss, in.

Smith Fiberglass Products Co. — OPTIJOINT SDT 1510

Type: Threaded & coupled or integral Seal: Threaded									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Pressure rating, psi
1.77	0.71	1.50	0.14	2.70	….	….	….	….	1500
2.38	1.22	2.00	0.19	3.30	….	….	….	….	1500
2.89	1.77	2.43	0.23	3.90	….	….	….	….	1500
3.51	2.45	3.00	0.26	4.60	….	….	….	….	1500
4.64	3.92	4.00	0.32	5.80	….	….	….	….	1500

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Smith Fiberglass Products Co. — OPTIJOINT SDT 2010

Type: Threaded & coupled or integral Seal: Threaded									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Pressure rating, psi
1.87	0.92	1.50	0.19	2.70	….	….	….	….	2000
2.50	1.57	2.00	0.25	3.30	….	….	….	….	2000
2.98	2.14	2.43	0.28	3.90	….	….	….	….	2000
3.64	3.00	3.00	0.32	4.60	….	….	….	….	2000
4.55	4.75	3.75	0.40	5.80	….	….	….	….	2000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Smith Fiberglass Products Co. — OPTIJOINT SDT 2510

Type: Threaded & coupled or integral Seal: Threaded									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Pressure rating, psi
1.98	1.17	1.5	0.24	2.7	….	….	….	….	2500
2.42	1.66	1.88	0.27	3.3	….	….	….	….	2500
2.85	2.27	2.23	0.31	3.9	….	….	….	….	2500
3.51	3.50	2.73	0.39	4.6	….	….	….	….	2500
4.31	5.42	3.35	0.48	5.8	….	….	….	….	2500

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Smith Fiberglass Products Co. — OPTIJOINT SDT 3010

Type: Threaded & coupled or integral Seal: Threaded									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Pressure rating, psi
2.04	1.32	1.50	0.27	2.70	….	….	….	….	3000
2.50	1.91	1.88	0.31	3.50	….	….	….	….	3000
2.98	2.75	2.23	0.38	4.00	….	….	….	….	3000
3.64	4.09	2.73	0.46	4.90	….	….	….	….	3000
4.65	5.60	3.35	0.65	6.30	….	….	….	….	3000

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Star Fiber Glass Systems

Type: Threaded, coupled Seal: Threaded, 8-round Advanced composite thread				
D	w	d	t	D_c
1.71	0.7	1.38	0.13	2.80
1.74	0.8	1.38	0.15	2.80
1.85	1.0	1.38	0.20	2.90
1.87	1.1	1.38	0.22	3.05
1.94	1.3	1.38	0.25	3.15
2.01	1.5	1.38	0.29	3.30
2.22	1.0	1.88	0.14	3.25
2.31	1.2	1.88	0.19	3.25
2.32	1.2	1.88	0.19	3.40
2.37	1.4	1.88	0.21	3.40
2.47	1.7	1.88	0.27	3.60
2.51	1.8	1.88	0.29	3.70
2.57	2.0	1.88	0.31	3.90
2.60	2.2	1.88	0.33	4.10
2.66	1.2	2.30	0.15	3.80
2.73	1.4	2.30	0.18	3.80
2.78	1.6	2.30	0.21	4.00
2.79	1.7	2.30	0.21	4.00
2.92	2.2	2.30	0.28	4.20
2.99	2.4	2.30	0.31	4.40
3.07	2.8	2.30	0.35	4.60
3.19	3.6	2.30	0.41	5.75

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

Star Fiber Glass Systems (continued)

Type: Threaded, coupled Seal: Threaded, 8-round Advanced composite thread				
D	w	d	t	D_c
3.28	1.7	2.88	0.17	4.60
3.35	2.0	2.88	0.21	4.60
3.38	2.2	2.88	0.22	4.80
3.47	2.6	2.88	0.26	4.80
3.58	3.0	2.88	0.32	5.10
3.71	3.6	2.88	0.38	5.25
3.78	2.5	3.27	0.22	5.00
3.80	2.6	3.27	0.23	5.00
3.84	5.0	2.88	0.45	7.00
3.90	3.1	3.27	0.29	5.25
3.94	3.3	3.27	0.30	5.25
3.98	5.7	2.88	0.52	7.20
4.07	4.0	3.27	0.37	5.55
4.15	4.4	3.27	0.41	5.85
4.29	5.7	3.27	0.48	7.00
4.42	6.4	3.27	0.54	7.20
4.36	2.9	3.86	0.22	5.80
4.48	3.5	3.86	0.28	5.80
4.50	3.7	3.86	0.29	6.10
4.64	4.5	3.86	0.36	6.10
4.78	5.3	3.86	0.43	6.40
4.90	6.8	3.86	0.49	7.60
5.11	8.1	3.86	0.59	7.90
5.26	9.2	3.86	0.67	8.20

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

Star Fiber Glass Systems

Type: Integral Seal: Threaded, 8-round Advanced composite thread				
D	w	d	t	D_c
1.71	0.7	1.38	0.13	2.60
1.74	0.8	1.38	0.15	2.70
1.85	1.0	1.38	0.20	2.80
1.87	1.1	1.38	0.22	3.00
1.94	1.3	1.38	0.25	3.20
2.01	1.5	1.38	0.29	3.30
2.22	1.0	1.88	0.14	3.10
2.31	1.2	1.88	0.19	3.20
2.32	1.2	1.88	0.19	3.30
2.37	1.4	1.88	0.21	3.40
2.47	1.7	1.88	0.27	3.50
2.51	1.8	1.88	0.29	3.70
2.57	2.0	1.88	0.31	3.85
2.60	2.2	1.88	0.33	4.00
2.66	1.2	2.30	0.15	3.60
2.73	1.4	2.30	0.18	3.80
2.78	1.6	2.30	0.21	3.90
2.79	1.7	2.30	0.21	4.00
2.92	2.2	2.30	0.28	4.20
2.99	2.4	2.30	0.31	4.40
3.07	2.8	2.30	0.35	4.60
3.28	1.7	2.88	0.17	4.30

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

Star Fiber Glass Systems (continued)

Type: Integral Seal: Threaded, 8-round Advanced composite thread				
D	w	d	t	D_c
3.35	2.0	2.88	0.21	4.45
3.38	2.2	2.88	0.22	4.50
3.47	2.6	2.88	0.26	4.70
3.58	3.0	2.88	0.32	4.90
3.71	3.6	2.88	0.38	5.10
4.36	2.9	3.86	0.22	5.60
4.48	3.5	3.86	0.28	5.80
4.50	3.7	3.86	0.29	6.00
4.64	4.5	3.86	0.36	6.20
4.78	5.3	3.86	0.43	6.50
5.26	9.2	3.86	0.67	8.00

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

TPS-Technitube Röhrenwerke — Techniseal

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.995	0.190	2.707	2.628	1.304	1.393	2.205	....	72	....	104	104	117	124	144	....
	5.1	1.939	0.218	2.736	2.628	1.477	1.520	2.205	....	81	....	118	118	133	140	163	....
	5.8	1.867	0.254	2.785	2.707	1.692	1.733	2.205	....	93	....	135	135	152	161	186	....
2.875	6.4	2.441	0.217	3.240	3.159	1.812	1.925	2.520	....	100	....	145	145	163	172	199	....
	7.7	2.323	0.276	3.337	3.274	2.254	2.424	2.520	....	124	....	180	180	203	214	248	....
	8.6	2.259	0.308	3.364	3.274	2.484	2.568	2.520	....	137	....	199	199	223	236	273	....
	9.8	2.151	0.362	3.435	3.337	2.858	2.946	2.520	....	157	....	229	229	257	271	314	....
3.500	7.7	3.068	0.216	3.841	....	2.228	2.319	2.992	....	123	....	178	178	201	212	245	....
	9.2	2.992	0.254	3.900	3.803	2.590	2.677	2.992	....	142	....	207	207	233	246	285	....
	10.2	2.992	0.289	3.961	3.862	2.915	3.053	2.992	....	160	....	233	233	262	277	321	....
	12.7	2.750	0.375	4.079	3.961	3.682	3.799	2.992	....	202	....	294	294	331	350	405	....
	13.7	2.674	0.413	4.138	4.045	4.005	4.180	2.992	....	220	....	321	321	361	381	441	....
	14.7	2.600	0.450	4.193	4.045	4.312	4.541	2.992	....	237	....	345	345	388	409	474	....
	15.8	2.548	0.476	4.211	4.138	4.522	4.659	2.992	....	249	....	362	362	407	430	497	....
4.000	9.5	3.548	0.226	4.348	....	2.680	2.788	3.268	....	147	....	214	214	241	255	295	....
	10.9	3.476	0.262	4.407	4.327	3.077	3.194	3.268	....	169	....	246	246	277	292	338	....
	13.0	3.340	0.330	4.516	4.366	3.805	3.954	3.268	....	209	....	304	304	342	361	418	....
	14.8	3.240	0.380	4.606	4.469	4.322	4.602	3.268	....	238	....	346	346	389	410	475	....
	16.5	3.140	0.430	4.656	....	4.823	4.960	3.268	....	265	....	386	386	434	458	530	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS-Technitube Röhrenwerke — Techniseal (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	10.5	4.052	0.224	4.862	4.813	3.009	3.422	3.661	....	166	....	241	241	271	286	331	....
	11.6	4.000	0.250	4.862	4.813	3.338	3.422	3.661	....	184	....	267	267	300	317	367	....
	12.6	3.958	0.271	4.892	4.813	3.600	3.649	3.661	....	198	....	288	288	324	342	396	....
	13.5	3.920	0.290	4.961	4.813	3.836	4.182	3.661	....	211	....	307	307	345	365	422	....
	15.1	3.826	0.337	5.010	4.892	4.407	4.566	3.661	....	242	....	353	353	397	419	485	....
	16.9	3.740	0.380	5.106	....	4.918	5.333	3.661	....	270	....	393	393	443	467	541	....
	18.8	3.640	0.430	5.146	....	5.498	5.650	3.661	....	302	....	440	440	495	522	605	....
	21.6	3.500	0.500	5.280	....	6.283	6.746	3.661	....	346	....	503	503	565	597	691	....
	24.6	3.380	0.560	5.333	....	6.932	7.189	3.661	....	381	....	554	554	624	658	762	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS-Technitube MJTS1

Minimum joint tension strength, kips																	
D	w	d	I	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.050	1.20	0.824	0.113	1.327	1.300	0.333	>At	2.220	....	18	....	27	27	....	32	37	....
	1.50	0.742	0.154	1.327	….	0.433	>At	2.220	....	24	....	35	35	....	41	47	....
1.315	1.80	1.049	0.133	1.552	1.525	0.494	>At	2.220	....	27	....	40	40	....	47	54	....
	2.25	0.957	0.179	1.600	….	0.639	>At	2.220	....	35	....	51	51	....	61	70	....
1.660	2.40	1.380	0.140	1.883	1.858	0.668	>At	2.220	....	37	....	53	53	....	64	73	....
	3.02	1.278	0.191	1.927	….	0.881	>At	2.220	....	48	....	71	71	....	84	97	....
	3.24	1.264	0.198	1.927	….	1.157	>At	2.220	....	50	....	73	73	....	86	100	....
1.900	2.90	1.610	0.145	2.113	2.094	0.799	>At	2.220	....	44	....	64	64	....	76	88	....
	3.64	1.500	0.200	2.162	….	1.068	>At	2.220	....	59	....	85	85	....	101	117	....
	4.19	1.462	0.219	2.179	….	1.157	>At	2.220	....	64	....	93	93	....	110	127	....
2.063	3.25	1.751	0.156	2.330	2.298	0.935	>At	2.230	....	51	....	75	75	....	89	103	....
	4.50	1.613	0.225	2.460	2.407	1.299	>At	2.230	....	71	....	104	104	....	123	142	....
2.375	4.70	1.995	0.190	2.700	2.656	1.304	>At	2.310	....	72	....	104	104	....	124	144	....
	5.30	1.939	0.218	2.750	2.700	1.477	>At	2.310	....	81	....	118	118	....	140	162	....
2.975	6.50	2.441	0.217	3.210	3.166	1.812	>At	2.390	....	100	....	145	145	....	172	199	....
3.500	9.30	2.992	0.254	3.915	3.859	2.590	>At	2.840	....	142	....	207	207	....	246	285	....
	10.30	2.992	0.289	3.980	3.914	2.590	>At	2.840	....	160	....	233	233	....	277	321	....
4.000	11.00	3.476	0.262	4.417	4.359	3.077	>At	2.840	....	169	....	246	246	....	292	338	....
4.500	12.75	3.958	0.271	4.920	4.955	4.861	>At	2.890	....	198	....	288	288	....	342	396	....
	13.50	3.920	0.290	4.955	4.890	3.836	>At	2.890	....	211	....	307	307	....	364	422	....

D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS-Technitube MJTS2

Minimum joint tension strength, kips																
D	w	d	l	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.900	2.75	1.610	0.145	2.200	....	0.799	>At	1.375	....	26	....	38	38	....	45	52	....
2.375	4.60	1.995	0.190	2.875	....	1.304	>At	1.625	....	50	....	72	72	....	85	99	....
	5.80	1.867	0.254	2.875	....	1.692	>At	1.625	....	71	....	103	103	....	122	142	....
2.875	6.40	2.447	0.217	3.500	....	1.912	>At	2.063	....	73	....	106	106	....	125	145	....
	7.80	2.323	0.276	3.500	....	2.254	>At	2.063	....	97	....	141	141	....	167	194	....
	8.60	2.259	0.308	3.500	....	2.484	>At	2.063	....	110	....	159	159	....	189	219	....
3.500	9.20	2.992	0.254	4.250	....	2.590	>At	2.313	....	109	....	159	159	....	189	219	....
	12.70	2.750	0.375	4.250	....	2.915	>At	2.313	....	127	....	185	185	....	220	254	....
	10.20	2.922	0.289	4.250	....	3.682	>At	2.313	....	169	....	246	246	....	293	339	....
4.500	9.50	3.548	0.226	4.750	....	2.880	>At	2.563	....	99	....	246	246	....	171	198	....
	13.20	3.340	0.330	4.750	....	3.805	>At	2.563	....	161	....	234	234	....	278	322	....
	12.60	3.958	0.271	5.200	....	3.600	>At	2.563	....	144	....	209	209	....	248	287	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS-Technitube MJTS3

Minimum joint tension strength, kips																	
D	w	d	l	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
6.000	18.0	4.276	0.362	5.515	….	5.275	>Al	5.270	....	290	290	422	422	....	501	580	....
5.000	20.3	41.84	0.408	5.585	….	5.888	>Al	5.270	....	324	324	471	471	....	559	647	....
	23.2	4.044	0.478	5.700	….	6.791	>Al	5.270	....	373	373	543	543	....	645	747	....
	27.0	3.880	0.660	6.836	….	7.611	>Al	5.270	....	430	430	625	625	....	742	859	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS-Technitube MJTS4

Minimum joint tension strength, kips																	
D	W	d	I	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	5.95	1.887	0.254	2.908	2.782	1.692	>At	3.050	....	....	....	135	135	....	161	186	....
	6.20	1.853	0.261	2.838	2.794	1.733	>At	3.050	....	....	....	139	139	....	165	191	....
	7.70	1.703	0.336	3.125	2.824	2.152	>At	3.050	....	....	....	172	172	....	204	237	....
2.875	7.90	2.323	0.276	3.438	3.312	2.254	>At	3.040	....	....	....	180	180	....	214	248	....
	8.70	2.259	0.308	3.500	3.365	2.484	>At	3.040	....	....	....	199	199	....	236	273	....
	9.50	2.195	0.340	3.625	3.419	2.708	>At	3.040	....	....	....	217	217	....	257	298	....
2.875	10.70	2.091	0.392	3.688	3.508	3.058	>At	3.040	....	....	....	245	245	....	290	336	....
3.500	12.95	2.750	0.375	4.313	4.168	4.189	>At	3.350	....	....	....	295	295	....	350	405	....
	15.80	2.548	0.478	4.500	4.367	4.367	>At	3.340	....	....	....	362	362	....	430	498	....
4.000	13.40	3.340	0.330	4.625	4.514	4.514	>At	3.320	....	....	....	285	285	....	361	419	....
4.500	15.50	3.828	0.337	5.125	5.021	5.021	>At	3.340	....	....	....	353	353	....	419	485	....
	19.20	3.640	0.430	5.313	6.170	6.170	>At	3.340	....	....	....	440	440	....	522	604	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS-Technitube MJTS5

Minimum joint tension strength, kips																	
D	W	d	I	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
1.900	2.90	1.810	0.145	2.500	….	0.799	>At	1.438	....	44	....	64	64	....	76	88	....
2.375	4.70	1.995	0.190	3.063	2.9000	1.304	>At	1.938	....	72	....	104	104	....	124	144	....
	5.95	1.867	0.254	3.063	….	1.692	>At	1.938	....	93	....	135	135	....	161	186	....
2.875	6.50	2.441	0.217	3.668	3.4600	1.812	>At	2.125	....	100	....	145	145	....	172	199	....
	7.90	2.323	0.276	3.668	….	2.254	>At	2.125	....	124	....	180	180	....	214	248	....
	8.70	2.259	0.308	3.668	….	2.484	>At	2.125	....	137	....	199	199	....	236	273	....
3.500	9.30	2.992	0.254	4.500	4.1600	2.590	>At	2.375	....	142	....	207	207	....	246	285	....
	12.95	2.750	0.375	4.500	….	3.662	>At	2.375	....	202	....	294	294	....	350	405	....
4.000	11.00	9.476	0.262	5.00	….	3.077	>At	2.500	....	169	....	246	246	....	292	338	....
	12.75	3.958	0.271	5.583	….	3.600	>At	2.625	....	198	....	288	288	....	342	396	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Tubular Fiberglass Corp. — RED BOX Tubing

Tensile Strength Type: 8-round external-upset, integral Seal: Threaded 1,000 lbs Rating, psi										
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	All grades	All grades
2.375	0.6	1.99	0.09	3.35	3.00	....	....	2.563	16.0	1000
	0.7	1.99	0.10	3.35	3.00	....	....	2.563	20.2	1250
	0.8	1.99	0.12	3.35	3.00	....	....	2.563	22.6	1500
	0.9	1.99	0.15	3.35	3.00	....	....	2.563	28.4	1750
	1.0	1.99	0.16	3.35	3.00	....	....	2.563	31.0	2000
	1.2	1.99	0.19	3.35	3.00	....	....	2.563	37.0	2250
	1.3	1.99	0.22	3.35	3.00	....	....	2.563	40.4	2500
	1.4	1.99	0.23	3.35	3.00	....	....	2.563	40.4	2750
	1.6	1.99	0.26	3.35	3.00	....	....	2.563	40.4	3000
	1.7	1.99	0.28	3.35	3.00	....	....	2.563	40.4	3250
	1.9	1.99	0.31	3.35	3.00	....	....	2.563	40.4	3500
2.875	0.8	2.47	0.10	3.88	3.50	....	....	2.875	24.2	1000
	1.0	2.47	0.12	3.88	3.50	....	....	2.875	27.6	1250
	1.2	2.47	0.15	3.88	3.50	....	....	2.875	35.2	1500
	1.4	2.47	0.18	3.88	3.50	....	....	2.875	43.0	1750
	1.5	2.47	0.20	3.88	3.50	....	....	2.875	47.0	2000
	1.7	2.47	0.23	3.88	3.50	....	....	2.875	54.2	2250
	1.9	2.47	0.26	3.88	3.50	....	....	2.875	54.2	2500
	2.1	2.47	0.28	3.88	3.50	....	....	2.875	54.2	2750
	2.3	2.47	0.32	3.88	3.50	....	....	2.875	54.2	3000
	2.6	2.47	0.35	3.88	3.50	....	....	2.875	54.2	3250
	2.8	2.47	0.38	3.88	3.50	....	....	2.875	54.2	3500

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Tubular Fiberglass Corp. — RED BOX Tubing (continued)

Tensile Strength										
Type: 8-round external-upset, integral										
Seal: Threaded										
1,000 lbs										
Rating, psi										
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	All grades	All grades
3.500	1.2	2.99	0.12	4.66	4.25	....	....	3.125	32.8	1000
	1.5	2.99	0.15	4.66	4.25	....	....	3.125	42.8	1250
	1.7	2.99	0.19	4.66	4.25	....	....	3.125	52.8	1500
	2.0	2.99	0.22	4.66	4.25	....	....	3.125	63.4	1750
	2.3	2.99	0.25	4.66	4.25	....	....	3.125	71.8	2000
	2.5	2.99	0.28	4.66	4.25	....	....	3.125	71.8	2250
	2.9	2.99	0.31	4.66	4.25	....	....	3.125	71.8	2500
	3.2	2.99	0.35	4.66	4.25	....	....	3.125	71.8	2750
	3.5	2.99	0.39	4.66	4.25	....	....	3.125	71.8	3000
	3.8	2.99	0.42	4.66	4.25	....	....	3.125	71.8	3250
	4.2	2.99	0.46	4.66	4.25	....	....	3.125	71.8	3500
4.500	2.0	3.98	0.16	5.67	5.25	....	....	3.500	58.0	1000
	2.5	3.98	0.20	5.67	5.25	....	....	3.500	73.2	1250
	2.9	3.98	0.24	5.67	5.25	....	....	3.500	88.8	1500
	3.4	3.98	0.28	5.67	5.25	....	....	3.500	102.0	1750
	3.9	3.98	0.33	5.67	5.25	....	....	3.500	102.0	2000
	4.4	3.98	0.38	5.67	5.25	....	....	3.500	102.0	2250
	4.9	3.98	0.42	5.67	5.25	....	....	3.500	102.0	2500
	5.5	3.98	0.46	5.67	5.25	....	....	3.500	102.0	2750

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM ACE

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.901	0.190	2.697	2.618	1.304	1.420	2.630	....	72	72	104	104	117	124	143	163
	5.1	1.845	0.218	2.776	2.657	1.477	1.761	2.630	....	81	81	118	118	133	140	162	185
	5.8	1.773	0.254	2.776	2.697	1.692	1.761	2.630	....	93	93	135	135	152	161	186	212
	6.3	1.721	0.280	2.804	2.726	1.843	1.883	2.630	....	101	101	147	147	166	175	203	230
	6.6	1.691	0.295	2.823	2.726	1.928	1.967	2.630	....	106	106	154	154	173	183	212	241
	7.4	1.609	0.336	2.874	2.776	2.152	2.195	2.630	....	118	118	172	172	194	204	237	269
2.875	6.4	2.347	0.217	3.230	3.142	1.812	1.891	2.709	....	100	100	145	145	163	172	199	227
	7.8	2.229	0.276	3.327	3.230	2.254	2.392	2.709	....	124	124	180	180	203	214	248	282
	8.6	2.165	0.308	3.355	3.264	2.484	2.539	2.709	....	137	137	199	199	224	236	273	311
	9.4	2.101	0.340	3.397	3.295	2.708	2.762	2.709	....	149	149	217	217	244	257	298	339
	9.8	2.057	0.362	3.426	3.327	2.858	2.916	2.709	....	157	157	229	229	257	272	314	357
	10.5	1.997	0.392	3.463	3.354	3.058	3.119	2.709	....	168	168	245	245	275	291	336	382
	10.7	1.971	0.405	3.480	3.354	3.143	3.209	2.709	....	173	173	251	251	283	299	346	393
	11.5	1.901	0.440	3.528	3.405	3.366	3.474	2.709	....	185	185	269	269	303	320	370	421
3.500	6.5	3.035	0.170	3.830	3.736	1.778	2.266	3.091	....	98	98	142	142	160	169	196	222
	7.7	2.943	0.216	3.830	3.748	2.228	2.266	3.091	....	123	123	178	178	201	212	245	279
	9.2	2.867	0.254	3.890	3.799	2.590	2.629	3.091	....	142	142	207	207	233	246	285	324
	10.2	2.797	0.289	3.950	3.852	2.915	2.999	3.091	....	160	160	233	233	262	277	321	364
	12.7	2.625	0.375	4.069	3.951	3.682	3.748	3.091	....	203	203	295	295	331	350	405	460
	13.7	2.549	0.413	4.138	4.000	4.005	4.193	3.091	....	220	220	320	320	360	380	441	501
	14.3	2.515	0.430	4.204	4.012	4.147	4.628	3.091	....	228	228	332	332	373	394	456	518
	14.7	2.477	0.449	4.200	4.035	4.304	4.600	3.091	....	237	237	344	344	387	409	473	538
	15.5	2.423	0.476	4.200	4.069	4.522	4.600	3.091	....	249	249	362	362	407	430	497	565
	16.7	2.355	0.510	4.250	4.094	4.791	4.932	3.091	....	264	264	383	383	431	455	527	599

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

VAM Family — VAM ACE (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.000	8.2	3.495	0.190	4.339	4.240	2.274	2.730	3.336	....	125	125	182	182	205	216	250	284
	9.5	3.423	0.226	4.339	4.257	2.680	2.730	3.336	....	147	147	214	214	241	255	295	335
	10.9	3.351	0.262	4.398	4.317	3.077	3.134	3.336	....	169	169	246	246	277	292	338	385
	11.6	3.303	0.286	4.505	4.339	3.337	3.883	3.336	....	184	184	267	267	300	317	367	417
	13.2	3.215	0.330	4.505	4.398	3.805	3.883	3.336	....	209	209	304	304	342	361	419	476
	14.8	3.115	0.380	4.606	4.459	4.322	4.605	3.336	....	238	238	346	346	389	411	475	540
	16.1	3.045	0.415	4.628	4.506	4.674	4.768	3.336	....	257	257	374	374	421	444	514	584
	16.5	3.015	0.430	4.646	4.506	4.823	4.896	3.336	....	265	265	386	386	434	458	531	603
	18.9	2.875	0.500	4.744	4.596	5.498	5.619	3.336	....	302	302	440	440	495	522	605	687
	22.2	2.655	0.610	4.857	4.691	6.496	6.474	3.336	....	356	356	518	518	582	615	712	809
4.500	10.5	3.927	0.224	4.862	4.734	3.009	3.382	3.662	....	165	165	241	241	271	286	331	376
	11.6	3.875	0.250	4.874	4.793	3.338	3.475	3.662	....	184	184	267	267	300	317	367	417
	12.6	3.833	0.271	4.961	4.803	3.600	4.146	3.662	....	198	198	288	288	324	342	396	450
	13.5	3.795	0.290	4.961	4.821	3.836	4.146	3.662	....	211	211	307	307	345	364	422	480
	14.5	3.735	0.320	5.000	4.862	4.202	4.452	3.662	....	231	231	336	336	378	399	462	525
	15.1	3.701	0.337	5.005	4.882	4.407	4.492	3.662	....	242	242	353	353	397	419	485	551
	17.0	3.615	0.380	5.106	4.951	4.918	5.292	3.662	....	270	270	393	393	443	467	541	615
	17.7	3.571	0.402	5.106	4.961	5.175	5.292	3.662	....	285	285	414	414	466	492	569	647
	18.9	3.515	0.430	5.201	5.000	5.498	6.064	3.662	....	302	302	440	440	495	522	605	687
	21.5	3.375	0.500	5.280	5.073	6.283	6.712	3.662	....	346	346	503	503	565	597	691	785
	23.7	3.255	0.560	5.322	5.152	6.932	7.062	3.662	....	381	381	555	555	624	659	763	867

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

VAM Family — VAM ACE Modified

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
3.500	9.2	2.867	0.254	3.890	....	2.590	2.629	3.091	....	142	142	207	207	233	246	285	324
	10.2	2.797	0.289	3.950	....	2.915	2.999	3.091	....	160	160	233	233	262	277	321	364
	12.7	2.625	0.375	4.069	....	3.682	3.748	3.091	....	203	203	295	295	331	350	405	460
	13.7	2.549	0.413	4.138	....	4.005	4.193	3.091	....	220	220	320	320	360	380	441	501
	14.3	2.515	0.430	4.204	....	4.147	4.628	3.091	....	228	228	332	332	373	394	456	518
	14.7	2.477	0.449	4.200	....	4.304	4.600	3.091	....	237	237	344	344	387	409	473	538
	15.5	2.423	0.476	4.200	....	4.522	4.600	3.091	....	249	249	362	362	407	430	497	565
	16.7	2.355	0.510	4.250	....	4.791	4.932	3.091	....	264	264	383	383	431	455	527	599
4.000	9.5	3.423	0.226	4.339	....	2.680	2.730	3.336	....	147	147	214	214	241	255	295	335
	10.9	3.351	0.262	4.398	....	3.077	3.134	3.336	....	169	169	246	246	277	292	338	385
	11.6	3.303	0.286	4.505	....	3.337	3.883	3.336	....	184	184	267	267	300	317	367	417
	13.2	3.215	0.330	4.505	....	3.805	3.883	3.336	....	209	209	304	304	342	361	419	476
	14.8	3.115	0.380	4.606	....	4.322	4.605	3.336	....	238	238	346	346	389	411	475	540
	16.1	3.045	0.415	4.628	....	4.674	4.768	3.336	....	257	257	374	374	421	444	514	584
	16.5	3.015	0.430	4.646	....	4.823	4.896	3.336	....	265	265	386	386	434	458	531	603
	18.9	2.875	0.500	4.744	....	5.498	5.619	3.336	....	302	302	440	440	495	522	605	687
	22.2	2.655	0.610	4.857	....	6.496	6.474	3.336	....	356	356	518	518	583	615	712	809
4.500	11.6	3.875	0.250	4.874	....	3.338	3.475	3.662	....	184	184	267	267	300	317	367	417
	12.6	3.833	0.271	4.961	....	3.600	4.146	3.662	....	198	198	288	288	324	342	396	450
	13.5	3.795	0.290	4.961	....	3.836	4.146	3.662	....	211	211	307	307	345	364	422	480
	14.5	3.735	0.320	5.000	....	4.202	4.452	3.662	....	231	231	336	336	378	399	462	525
	15.1	3.701	0.337	5.005	....	4.407	4.492	3.662	....	242	242	353	353	397	419	485	551
	17.0	3.615	0.380	5.106	....	4.918	5.292	3.662	....	270	270	393	393	443	467	541	615
	17.7	3.571	0.402	5.106	....	5.175	5.292	3.662	....	285	285	414	414	466	492	569	647
	18.9	3.515	0.430	5.201	....	5.498	6.064	3.662	....	302	302	440	440	495	522	605	687
	21.5	3.375	0.500	5.280	....	6.283	6.712	3.662	....	346	346	503	503	565	597	691	785
	23.7	3.255	0.560	5.322	....	6.932	7.062	3.662	....	381	381	555	555	624	659	763	867

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM ACE XS & XS-C

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.70	1.901	0.190	2.697	....	1.304	1.420	2.833	....	72	72	104	104	117	124	143	163
	5.30	1.845	0.218	2.776	....	1.477	1.614	2.833	....	81	81	118	118	133	140	162	185
	5.95	1.773	0.254	2.776	....	1.692	1.759	2.833	....	93	93	135	135	152	161	186	212
	6.40	1.721	0.280	2.804	....	1.843	1.882	2.833	....	101	101	147	147	166	175	203	230
	7.45	1.609	0.336	2.874	....	2.152	2.195	2.833	....	118	118	172	172	194	204	237	269
2.875	6.50	2.347	0.217	3.230	....	1.812	1.891	2.912	....	100	100	145	145	163	172	199	227
	7.90	2.229	0.276	3.327	....	2.254	2.392	2.912	....	124	124	180	180	203	214	248	282
	8.70	2.165	0.308	3.355	....	2.484	2.539	2.912	....	137	137	199	199	224	236	273	311
	9.45	2.101	0.340	3.397	....	2.708	2.762	2.912	....	149	149	217	217	244	257	298	339
	10.40	2.057	0.362	3.426	....	2.858	2.917	2.912	....	157	157	229	229	257	272	314	357
	11.00	1.971	0.405	3.480	....	3.143	3.209	2.912	....	173	173	251	251	283	299	346	393
3.500	7.70	2.943	0.216	3.830	....	2.228	2.271	3.294	....	123	123	178	178	201	212	245	279
	9.30	2.867	0.254	3.890	....	2.590	2.633	3.294	....	142	142	207	207	233	246	285	324
	10.30	2.797	0.289	3.950	....	2.915	3.004	3.294	....	160	160	233	233	262	277	321	364
	12.95	2.625	0.375	4.069	....	3.682	3.753	3.294	....	203	203	295	295	331	350	405	460
	14.50	2.549	0.413	4.138	....	4.005	4.197	3.294	....	220	220	320	320	360	380	441	501
	14.70	2.477	0.449	4.200	....	4.304	4.604	3.294	....	237	237	344	344	387	409	473	538
	15.50	2.423	0.476	4.200	....	4.522	4.604	3.294	....	249	249	362	362	407	430	497	565
4.000	9.50	3.423	0.226	4.339	....	2.680	2.730	3.539	....	147	147	214	214	241	255	295	335
	11.00	3.351	0.262	4.398	....	3.077	3.134	3.539	....	169	169	246	246	277	292	338	385
	13.40	3.215	0.330	4.505	....	3.805	3.883	3.539	....	209	209	304	304	342	361	419	476
	15.50	3.115	0.380	4.606	....	4.322	4.605	3.539	....	238	238	346	346	389	411	475	540
	17.50	3.015	0.430	4.646	....	4.823	4.897	3.539	....	265	265	386	386	434	458	531	603

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM ACE XS & XS-C (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	10.50	3.927	0.224	4.862	....	3.009	3.381	3.865	....	165	165	241	241	271	286	331	376
	11.60	3.875	0.250	4.874	....	3.338	3.475	3.865	....	184	184	267	267	300	317	367	417
	12.75	3.833	0.271	4.961	....	3.600	4.070	3.865	....	198	198	288	288	324	342	396	450
	13.50	3.795	0.290	4.961	....	3.836	4.146	3.865	....	211	211	307	307	345	364	422	480
	15.50	3.701	0.337	5.005	....	4.407	4.492	3.865	....	242	242	353	353	397	419	485	551
	17.50	3.615	0.380	5.106	....	4.918	5.292	3.865	....	270	270	393	393	443	467	541	615
	18.50	3.571	0.402	5.106	....	5.175	5.292	3.865	....	285	285	414	414	466	492	569	647
	19.20	3.515	0.430	5.201	....	5.498	5.937	3.865	....	302	302	440	440	495	522	605	687
	21.50	3.375	0.500	5.280	....	6.283	6.705	3.865	....	346	346	503	503	565	597	691	785
	23.70	3.255	0.560	5.322	....	6.932	7.062	3.865	....	381	381	555	555	624	659	763	867

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM FJL

Type: Flush Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.60	1.901	0.190	2.375	....	1.304	0.586	1.890	....	....	....	47.00	47.00	52.00	56.00	64.00	73.00
	5.10	1.845	0.218	2.375	....	1.477	0.760	2.283	....	....	....	61.00	61.00	68.00	72.00	84.00	95.00
	5.80	1.773	0.254	2.375	....	1.692	0.936	2.992	....	....	....	75.00	75.00	84.00	89.00	103.00	117.00
	6.30	1.721	0.280	2.375	....	1.843	1.015	2.874	....	....	....	81.00	81.00	91.00	96.00	112.00	127.00
	7.35	1.609	0.336	2.375	....	2.152	1.183	3.701	....	....	....	95.00	95.00	106.00	112.00	130.00	148.00
2.875	6.40	2.347	0.217	2.875	....	1.812	0.887	2.244	....	....	....	71.00	71.00	79.00	84.00	98.00	111.00
	7.80	2.229	0.276	2.875	....	2.254	1.172	2.913	....	....	....	94.00	94.00	105.00	111.00	129.00	147.00
	8.60	2.165	0.308	2.875	....	2.484	1.378	3.071	....	....	....	110.00	110.00	124.00	131.00	152.00	172.00
	9.80	2.057	0.362	2.875	....	2.858	1.573	3.819	....	....	....	126.00	126.00	141.00	149.00	173.00	197.00
	10.70	1.971	0.405	2.875	....	3.143	2.038	5.787	....	....	....	163.00	163.00	183.00	194.00	224.00	255.00
3.500	7.70	2.943	0.216	3.500	....	2.228	1.059	2.126	....	....	....	85.00	85.00	95.00	101.00	116.00	132.00
	9.20	2.867	0.254	3.500	....	2.590	1.420	2.756	....	....	....	114.00	114.00	127.00	135.00	156.00	178.00
	10.20	2.797	0.289	3.500	....	2.915	1.598	3.307	....	....	....	128.00	128.00	143.00	152.00	176.00	200.00
	12.70	2.625	0.375	3.500	....	3.682	2.390	3.976	....	....	....	191.00	191.00	215.00	227.00	263.00	299.00
	13.70	2.549	0.413	3.500	....	4.005	2.713	4.449	....	....	....	217.00	217.00	244.00	258.00	298.00	339.00
	14.70	2.477	0.449	3.500	....	4.304	2.931	4.921	....	....	....	234.00	234.00	263.00	278.00	322.00	366.00
	15.50	2.423	0.476	3.500	....	4.522	3.075	5.236	....	....	....	246.00	246.00	276.00	292.00	338.00	384.00
4.000	9.50	3.423	0.226	4.000	....	2.680	1.288	2.205	....	....	....	103.00	103.00	115.00	122.00	142.00	161.00
	10.90	3.351	0.262	4.000	....	3.077	1.685	2.795	....	....	....	135.00	135.00	151.00	160.00	185.00	211.00
	11.30	3.303	0.286	4.000	....	3.337	1.837	3.180	....	....	....	147.00	147.00	165.00	175.00	202.00	230.00
	13.20	3.215	0.330	4.000	....	3.805	2.093	2.992	....	....	....	167.00	167.00	188.00	199.00	230.00	262.00
	14.80	3.115	0.380	4.000	....	4.322	2.610	3.780	....	....	....	209.00	209.00	234.00	248.00	287.00	326.00
	16.50	3.015	0.430	4.000	....	4.823	3.111	4.409	....	....	....	249.00	249.00	279.00	296.00	342.00	389.00

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM FJL (continued)

Type: Flush Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	11.60	3.875	0.250	4.500	....	3.338	1.533	2.559	....	....	....	123.00	123.00	137.00	146.00	169.00	192.00
	12.60	3.833	0.271	4.500	....	3.600	1.796	2.559	....	....	....	144.00	144.00	161.00	171.00	198.00	225.00
	13.50	3.795	0.290	4.500	....	3.836	2.031	2.559	....	....	....	162.00	162.00	182.00	193.00	223.00	254.00
	15.10	3.701	0.337	4.500	....	4.407	2.602	3.189	....	....	....	208.00	208.00	234.00	247.00	286.00	325.00
	17.00	3.615	0.380	4.500	....	4.918	3.112	3.701	....	....	....	249.00	249.00	280.00	296.00	342.00	389.00
	18.90	3.515	0.430	4.500	....	5.498	3.577	4.291	....	....	....	286.00	286.00	321.00	340.00	393.00	447.00
	21.50	3.375	0.500	4.500	....	6.283	4.086	5.118	....	....	....	327.00	327.00	367.00	388.00	449.00	511.00
	23.70	3.255	0.560	4.500	....	6.932	4.514	5.827	....	....	....	361.00	361.00	406.00	429.00	497.00	564.00

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — New VAM

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.6	1.901	0.190	2.707	2.628	1.304	1.393	2.514	....	72	72	104	104	117	124	143	163
	5.1	1.845	0.218	2.736	2.628	1.477	1.519	2.514	....	81	81	118	118	133	140	162	185
	5.8	1.773	0.254	2.785	2.707	1.692	1.733	2.514	....	93	93	135	135	152	161	186	212
2.875	6.4	2.347	0.217	3.240	3.159	1.812	1.927	2.829	....	100	100	145	145	163	172	199	227
	7.8	2.229	0.276	3.337	3.274	2.254	2.424	2.829	....	124	124	180	180	203	214	248	282
	8.6	2.165	0.308	3.364	3.274	2.484	2.570	2.829	....	137	137	199	199	224	236	273	311
	9.4	2.101	0.340	3.415	3.337	2.708	2.841	2.829	....	149	149	217	217	244	257	298	339
	9.8	2.057	0.362	3.435	3.337	2.858	2.948	2.829	....	157	157	229	229	257	272	314	357
3.500	7.7	2.943	0.216	3.841	....	2.228	2.319	3.274	....	123	123	178	178	201	212	245	279
	9.2	2.867	0.254	3.900	3.803	2.590	2.678	3.274	....	142	142	207	207	233	246	285	324
	10.2	2.797	0.289	3.961	3.862	2.915	3.055	3.274	....	160	160	233	233	262	277	321	364
	12.7	2.625	0.375	4.079	3.961	3.682	3.801	3.274	....	203	203	295	295	331	350	405	460
	13.7	2.549	0.413	4.138	4.045	4.005	4.182	3.274	....	220	220	320	320	360	380	441	501
	14.7	2.477	0.449	4.193	4.045	4.304	4.543	3.274	....	237	237	344	344	387	409	473	538
	15.5	2.423	0.476	4.211	4.138	4.522	4.659	3.274	....	249	249	362	362	407	430	497	565
4.000	9.5	3.423	0.226	4.348	4.232	2.680	2.788	3.528	....	147	147	214	214	241	255	295	335
	10.9	3.351	0.262	4.407	4.327	3.077	3.195	3.528	....	169	169	246	246	277	292	338	385
	13.2	3.215	0.330	4.516	4.366	3.805	3.954	3.528	....	209	209	304	304	342	361	419	476
	14.8	3.115	0.380	4.606	4.469	4.322	4.602	3.528	....	238	238	346	346	389	411	475	540
	16.5	3.015	0.430	4.656	....	4.823	4.960	3.528	....	265	265	386	386	434	458	531	603

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — New VAM (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	10.5	3.927	0.224	4.862	4.813	3.009	3.422	3.969	....	165	165	241	241	271	286	331	376
	11.6	3.875	0.250	4.862	4.813	3.338	3.422	3.969	....	184	184	267	267	300	317	367	417
	12.6	3.833	0.271	4.892	4.813	3.600	3.649	3.969	....	198	198	288	288	324	342	396	450
	13.5	3.795	0.290	4.961	4.813	3.836	4.182	3.969	....	211	211	307	307	345	364	422	480
	15.1	3.701	0.337	5.010	4.892	4.407	4.566	3.969	....	242	242	353	353	397	419	485	551
	17.0	3.615	0.380	5.106	....	4.918	5.334	3.969	....	270	270	393	393	443	467	541	615
	18.9	3.515	0.430	5.146	....	5.498	5.650	3.969	....	302	302	440	440	495	522	605	687
	21.5	3.375	0.500	5.280	....	6.283	6.747	3.969	....	346	346	503	503	565	597	691	785
	23.7	3.255	0.560	5.333	....	6.932	7.189	3.969	....	381	381	555	555	624	659	763	867

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM Pro

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
2.375	4.60	1.901	0.190	2.657	....	1.304	1.313	2.740	....	....	....	....	104	118	125	144	....
	5.10	1.845	0.218	2.697	....	1.477	1.477	2.740	....	....	....	....	118	133	140	162	....
	5.80	1.773	0.254	2.748	....	1.692	1.697	2.740	....	....	....	....	135	153	161	187	....
	6.30	1.721	0.280	2.756	....	1.843	1.851	2.709	....	....	....	....	147	167	176	204	....
	6.60	1.691	0.295	2.776	....	1.928	1.936	2.709	....	....	....	....	154	174	184	213	....
	7.35	1.609	0.336	2.827	....	2.152	2.161	2.709	....	....	....	....	172	194	205	238	....
2.875	6.40	2.347	0.217	3.189	....	1.812	1.804	2.999	....	....	....	....	145	162	171	198	....
	7.80	2.229	0.276	3.280	....	2.254	2.265	2.999	....	....	....	....	180	204	215	249	....
	8.60	2.165	0.308	3.323	....	2.484	2.489	2.999	....	....	....	....	199	224	236	274	....
	9.35	2.101	0.340	3.366	....	2.708	2.716	2.999	....	....	....	....	217	244	258	299	....
	9.80	2.057	0.362	3.358	....	2.858	2.858	3.022	....	....	....	....	229	257	272	314	....
	10.50	1.997	0.392	3.398	....	3.058	3.067	3.022	....	....	....	....	245	276	291	337	....
	10.70	1.971	0.405	3.413	....	3.143	3.151	3.022	....	....	....	....	251	284	299	347	....
	11.50	1.901	0.440	3.453	....	3.366	3.364	3.022	....	....	....	....	269	303	320	370	....
3.500	7.70	2.943	0.216	3.799	....	2.228	2.234	2.878	....	....	....	....	178	201	212	246	....
	9.20	2.867	0.254	3.858	....	2.590	2.589	2.878	....	....	....	....	207	233	246	285	....
	10.20	2.797	0.289	3.913	....	2.915	2.925	2.878	....	....	....	....	233	263	278	322	....
	12.70	2.625	0.375	4.035	....	3.682	3.687	2.878	....	....	....	....	295	332	350	406	....
	13.70	2.549	0.413	4.035	....	4.005	4.021	3.084	....	....	....	....	320	362	382	442	....
	14.30	2.515	0.430	4.055	....	4.147	4.146	3.084	....	....	....	....	332	373	394	456	....
	14.70	2.477	0.449	4.083	....	4.304	4.323	3.084	....	....	....	....	344	389	411	476	....
	15.50	2.423	0.476	4.114	....	4.522	4.526	3.084	....	....	....	....	362	407	430	498	....
	16.70	2.355	0.510	4.157	....	4.791	4.807	3.084	....	....	....	....	383	433	457	529	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM Pro (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.000	9.50	3.423	0.226	4.331	....	2.680	2.691	2.742	....	....	....	....	214	242	256	296	....
	10.90	3.351	0.262	4.386	....	3.077	3.067	2.742	....	....	....	....	246	276	291	337	....
	13.20	3.215	0.330	4.492	....	3.805	3.808	2.742	....	....	....	....	304	343	362	419	....
	14.80	3.115	0.380	4.504	....	4.322	4.325	3.054	....	....	....	....	346	389	411	476	....
	16.10	3.045	0.415	4.555	....	4.674	4.689	3.054	....	....	....	....	374	422	445	516	....
	16.50	3.015	0.430	4.575	....	4.823	4.830	3.054	....	....	....	....	386	435	459	531	....
	18.90	2.875	0.500	4.669	....	5.498	5.516	3.054	....	....	....	....	440	496	524	607	....
4.500	10.50	3.927	0.224	4.839	....	3.009	3.010	2.622	....	....	....	....	241	271	286	331	....
	11.60	3.875	0.250	4.882	....	3.338	3.342	2.622	....	....	....	....	267	301	317	368	....
	12.60	3.833	0.271	4.917	....	3.600	3.613	2.622	....	....	....	....	288	325	343	397	....
	13.50	3.795	0.290	4.945	....	3.836	3.827	2.622	....	....	....	....	307	344	364	421	....
	15.10	3.701	0.337	4.933	....	4.407	4.413	3.234	....	....	....	....	353	397	419	485	....
	17.00	3.615	0.380	5.000	....	4.918	4.935	3.234	....	....	....	....	393	444	469	543	....
	17.70	3.571	0.402	5.031	....	5.175	5.183	3.234	....	....	....	....	414	466	492	570	....
	18.90	3.515	0.430	5.071	....	5.498	5.495	3.234	....	....	....	....	440	495	522	604	....
	21.50	3.375	0.500	5.169	....	6.283	6.287	3.234	....	....	....	....	503	566	597	692	....
	23.70	3.255	0.560	5.252	....	6.932	6.963	3.234	....	....	....	....	555	627	661	766	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Family — VAM Top

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
4.500	10.50	3.927	0.224	4.827	....	3.009	3.077	3.662	....	165	165	241	241	271	286	331	376
	11.60	3.875	0.250	4.870	....	3.338	3.407	3.662	....	184	184	267	267	300	317	367	417
	12.60	3.833	0.271	4.906	....	3.600	3.678	3.662	....	198	198	288	288	324	342	396	450
	13.50	3.795	0.290	4.937	....	3.836	3.922	3.662	....	211	211	307	307	345	364	422	480
	15.10	3.701	0.337	5.012	....	4.407	4.507	3.662	....	242	242	353	353	397	419	485	551
	17.00	3.615	0.380	5.077	....	4.918	5.022	3.662	....	270	270	393	393	443	467	541	615
	17.70	3.571	0.402	5.110	....	5.175	5.289	3.662	....	285	285	414	414	466	492	569	647
	18.90	3.515	0.430	5.152	....	5.498	5.622	3.662	....	302	302	440	440	495	522	605	687
	21.50	3.375	0.500	5.248	....	6.283	6.411	3.662	....	346	346	503	503	565	597	691	785
	23.70	3.255	0.560	5.329	....	6.932	7.080	3.662	....	381	381	555	555	624	659	763	867

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.



SECTION FIVE

Casing

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Casing Reference Tables

The following casing reference tables provide information on premium casing connection dimensions, available steel grades, and minimum joint tension strengths. These tables are organized alphabetically by connection manufacturer name. Following the manufacturer name are the coupling type and sealing mechanism name or designation. Critical tubular and connection areas can be used with minimum yield or ultimate strengths in designs and to calculate casing coupling tensile capacity. These tables are intended as a guide for planning casing programs; however, individual manufacturers should be consulted for the most recent data.

Dimension Nomenclature	
D	Casing nominal tube OD, in.
w	Casing weight, lb/ft
d	ID (drift), in.
t	Casing wall thickness, in.
D_c	Connection OD, in.
D_{sc}	Connection OD (special clearance or turned down), in.
A_t	Casing wall critical cross-sectional area, sq. in.
A_c	Connection critical cross-sectional area, sq. in.
L_m	Make-up loss, in.

Casing Chart

O.D. Size		Weight	Wall@ Nom ID	Nom I.D.	Drift I.D.	Prem I.D	Csng Max API I.D	Cplg O.D
Nom	Max	LBS/Ft						
4 1/2"	4.545	9.50	0.205	4.090	3.965	3.990	4.155	5.000
		10.50	0.224	4.052	3.927	3.952	4.118	
		11.00	0.237	4.026	3.901	3.926	4.094	
		11.60	0.250	4.000	3.875	3.908	4.069	
		12.60	0.271	3.958	3.833	3.865	4.029	
		12.75						
		13.50	0.290	3.920	3.795	3.827	3.993	
		15.10	0.337	3.826	3.701	3.733	3.904	
		16.90	0.373	3.754	3.629	3.662	3.836	
		18.80	0.430	3.640	3.515	3.550	3.728	
		19.20						
		19.30	0.441	3.618	3.493	3.528		
		21.60	0.500	3.500	3.375	3.410	3.597	
5"	5.050	11.50	0.220	4.560	4.435	4.460	4.631	5.563
		13.00	0.253	4.494	4.369	4.404	4.568	
		15.00	0.296	4.408	4.283	4.318	4.486	
		18.00	0.362	4.276	4.151	4.185	4.361	
		20.30	0.408	4.184	4.059	4.094	4.274	
		20.80	0.422	4.156	4.031	4.066	4.248	
		21.40	0.437	4.126	4.001	4.036	4.219	
		23.20	0.478	4.044	3.919	3.954	4.142	
		24.10	0.500	4.000	3.875	3.910	4.101	
		24.20						
		26.70	0.562	3.876	3.751	3.786		
		29.20	0.625	3.750	3.625	3.660		

Casing Chart (continued)

O.D. Size		Weight	Wall@ Nom ID	Nom I.D.	Drift I.D.	Prem I.D	Csng Max API I.D	Cplg O.D
Nom	Max	LBS/Ft						
5 1/2"	5.555	14.00	0.244	5.012	4.887	4.912	5.090	6.050
		15.50	0.275	4.950	4.825	4.860	5.031	
		17.00	0.304	4.892	4.767	4.800	4.976	
		20.00	0.361	4.778	4.653	4.688	4.868	
		23.00	0.415	4.670	4.545	4.580	4.766	
		26.00	0.476	4.548	4.423	4.458	4.650	
		26.80	0.500	4.500	4.375	4.410	4.605	
		28.40	0.530	4.440	4.315	4.350	4.549	
		29.70	0.562	4.376	4.251	4.286	4.490	
		32.00	0.612	4.276	4.151	4.186	4.394	
		32.60	0.625	4.250	4.125	4.155	4.370	
		35.30	0.687	4.126	4.001	4.031	4.254	
		36.40	0.705	4.090	3.965	4.000	4.220	
		38.00	0.750	4.000	3.875		4.136	
		40.50	0.812	3.876	3.751		4.020	
		43.10	0.875	3.750	3.625		3.903	
6"	6.060	18.00	0.288	5.424	5.299		5.511	
		20.00	0.324	5.352	5.227		5.443	
		23.00	0.380	5.240	5.115		5.337	
		26.00	0.434	5.132	5.007		5.234	
6 5/8"	6.691	20.00	0.288	6.049	5.924	5.959	6.125	7.390
		23.20	0.330	5.965	5.840	5.875	6.062	
		24.00	0.352	5.921	5.796	5.831	6.003	
		28.00	0.417	5.791	5.666	5.701	5.879	
		32.00	0.475	5.675	5.550	5.585	5.769	
		40.08	0.625	5.375	5.250	5.285	5.504	
		43.70	0.687	5.251	5.126	5.161	5.170	
		47.10	0.750	5.125	5.000	5.035	5.045	
		50.40	0.812	5.001	4.876	4.911	4.920	
		53.70	0.875	4.875	4.750	4.785	4.795	
		56.80	0.937	4.751	4.626	4.661		
		59.90	1.000	4.625	4.500	4.535		
		62.90	1.062	4.501	4.376	4.411		
		65.80	1.125	4.375	4.250	4.285		
		66.08	1.125	4.375	4.250	4.285		
		68.60			4.126	4.161		

Casing Chart (continued)

O.D. Size		Weight	Wall@ Nom ID	Nom I.D.	Drift I.D.	Prem I.D	Csng Max API I.D	Cplg O.D
Nom	Max	LBS/Ft						
7"	7.070	17.00	0.231	6.538	6.413	6.438	6.629	7.656
		20.00	0.272	6.456	6.331	6.366	6.551	
		23.00	0.317	6.366	6.241	6.276	6.466	
		26.00	0.362	6.276	6.151	6.186	6.380	
		29.00	0.408	6.184	6.059	6.094	6.293	
		30.00		6.154	6.029			
		32.00	0.453	6.094	5.969	6.004	6.208	
		35.00	0.498	6.004	5.879	5.914	6.123	
		38.00	0.540	5.920	5.795	5.830	6.043	
		41.00	0.590	5.820	5.695	5.730	5.949	
		42.70	0.626	5.750	5.625	5.660	5.883	
		44.00	0.640	5.720	5.595	5.630	5.854	
		46.00	0.670	5.660	5.535	5.570	5.798	
		46.40	0.687	5.625	5.500		5.766	
		49.50	0.730	5.540	5.415	5.450	5.685	
		50.10	0.750	5.500	5.375		5.647	
		53.60	0.812	5.376	5.251		5.531	
		57.10	0.875	5.250	5.125		5.413	
7 5/8"	7.701	24.00	0.300	7.025	6.900	6.930	7.129	8.500
		26.40	0.328	6.969	6.844	6.879	7.076	
		29.70	0.375	6.875	6.750	6.782	6.987	
		33.70	0.430	6.765	6.640	6.675	6.882	
		39.00	0.500	6.625	6.500	6.535	6.750	
		42.80	0.562	6.501	6.376	6.411	6.632	
		45.30	0.595	6.435	6.310	6.345	6.570	
		47.10	0.625	6.375	6.250	6.285	6.513	
		51.20	0.687	6.251	6.126	6.161	6.396	
		52.80	0.712	6.201	6.076	6.111	6.349	
		53.06						
		53.20						
		55.07	0.750	6.125	6.000	6.035	6.277	
		55.30						
		59.20	0.812	6.001	5.876	5.911	6.161	
		63.20	0.815	5.875	5.750	5.785		

Casing Chart (continued)

O.D. Size		Weight	Wall@ Nom ID	Nom I.D.	Drift I.D.	Prem I.D	Csng Max API I.D	Cplg O.D
Nom	Max	LBS/Ft						
7 3/4	7.828	SD 46.00	0.595	6.560	6.500	6.535	6.696	
		46.10	0.595	6.560	6.435		6.696	
		48.60	0.640	6.470	6.345	6.380	6.611	
		54.20	0.722	6.306	6.181		6.456	
8"	8.000	70.00	0.900	6.200	6.075		6.373	
		75.00	0.980	6.040	5.915		6.223	
8 1/2"	8.585	75.72						
8 5/8"	8.711	24.00	0.264	8.097	7.972	8.007	8.208	9.625
		28.00	0.304	8.017	7.892	7.927	8.131	
		29.35	0.322	7.981	7.856	7.891	8.097	
		32.00	0.352	7.921	7.875	7.910	8.040	
		32.00	0.352	7.921	7.796	7.831	8.040	
		36.00	0.400	7.825	7.700	7.735	7.949	
		40.00	0.450	7.725	7.600	7.635	7.854	
		44.00	0.500	7.625	7.500	7.535	7.759	
		49.00	0.557	7.511	7.386	7.421	7.651	
		52.00	0.595	7.435	7.310		7.579	
9 5/8"	9.721	32.30	0.312	9.001	8.845	8.882	9.126	10.625
		36.00	0.352	8.921	8.765	8.800	9.050	
		40.00	0.395	8.835	8.679	8.714	8.968	
		43.50	0.435	8.755	8.599	8.634	8.892	
		47.00	0.472	8.681	8.525	8.560	8.822	
		SD 53.50	0.545	8.535	8.500	8.525		
		53.50	0.545	8.535	8.379	8.414	8.683	
		SD 58.00	0.595	8.435	8.375	8.410		
		58.40	0.595	8.435	8.279	8.314	8.589	
		59.40	0.609	8.407	8.251		8.562	
		61.10	0.625	8.375	8.219	8.254	8.532	
		64.90	0.672	8.281	8.125		8.443	
		70.30	0.734	8.157	8.001		8.325	
		71.80	0.750	8.125	7.969	8.004	8.295	
		75.60	0.797	8.031	7.875		8.206	

Casing Chart (continued)

O.D. Size		Weight	Wall@ Nom ID	Nom I.D.	Drift I.D.	Prem I.D	Csng Max API I.D	Cplg O.D
Nom	Max	LBS/Ft						
9 3/4"	9.848	SD 59.00	0.595	8.560	8.510		8.715	
		59.20	0.595	8.560	8.404			
9 7/8"	9.974	62.80	0.625	8.625	8.469	8.504	8.784	
10 3/4"	10.858	32.75	0.279	10.192	10.036		10.325	11.750
		40.50	0.350	10.050	9.894	9.910	10.190	
		45.00	0.400	9.950	9.875			
		45.50	0.400	9.950	9.794	9.829	10.095	
		51.00	0.450	9.850	9.694	9.729	10.000	
		55.50	0.495	9.760	9.604	9.639	9.914	
		60.70	0.545	9.660	9.504	9.539	9.819	
		65.70	0.595	9.560	9.404	9.439	9.724	
		71.10	0.650	9.450	9.294	9.329	9.620	
		73.20	0.672	9.406	9.250	9.285	9.578	
		79.20	0.734	9.282	9.126	9.161	9.461	
		85.30	0.797	9.156	9.000	9.035	9.342	
		105.00	1.000	8.750	8.594		8.958	11.50
10.925	11.034	74.00	0.670	9.585	9.500		9.759	
11.338	11.451	88.00	0.788	9.763	9.500		9.952	
11 3/4"	11.868	42.00	0.333	11.084	10.928		11.232	12.750
		47.00	0.375	11.000	10.844	10.860	11.152	
		54.00	0.435	10.880	10.724	10.759	11.038	
		60.00	0.489	10.772	10.616	10.651	10.935	
		65.00	0.534	10.682	10.625	10.650		
		65.00	0.534	10.682	10.526	10.561	10.850	
		71.00	0.582	10.586	10.430	10.465	10.759	
		73.60	0.609	10.532	10.376	10.411	10.707	
		75.00	0.618	10.514	10.358	10.393	10.690	
		79.00	0.656	10.438	10.282	10.317	10.618	
		83.00	0.691	10.368	10.212	10.247	10.552	
11 7/8"	11.994	71.80	0.582	10.711	10.625	10.660	10.885	

Casing Chart (continued)

O.D. Size		Weight	Wall@ Nom ID	Nom I.D.	Drift I.D.	Prem I.D	Csng Max API I.D	Cplg O.D
Nom	Max	LBS/Ft						
13 3/8	13.509	48.00	0.330	12.715	12.559		12.879	14.375
		54.50	0.380	12.615	12.459		12.784	
		61.00	0.430	12.515	12.359		12.688	
		68.00	0.480	12.415	12.259	12.294	12.593	
		72.00	0.514	12.347	12.250			
		72.00	0.514	12.347	12.191	12.226	12.529	
		77.00	0.550	12.275	12.119	12.154	12.460	
		85.00	0.608	12.159	12.003	12.038	12.350	
		92.00	0.672	12.031	11.875	11.910	12.228	
		98.00	0.719	11.937	11.781	11.816	12.139	
13 5/8"	13.761	88.20	0.625	12.375	12.250	12.285	12.570	
14"		99.00	0.697	12.606	0.000	0.000		This Section Under Constructio
		SD 103.5		12.560	12.500		12.749	
		114.00						
		117.00						
16"	16.160	65.00	0.375	15.250	15.062		15.444	17.000
		75.00	0.438	15.124	14.936		15.324	
		84.00	0.495	15.010	14.822	14.857	15.216	
		94.00	0.570	14.860	14.672		15.073	
		109.00	0.656	14.688	14.500		14.909	
18 5/8"	18.811	87.50	0.435	17.755	17.567		17.981	20.000
20"	20.200	94.00	0.438	19.124	18.936		19.364	21.000
		106.50	0.500	19.000	18.812		19.246	
		133.00	0.635	18.730	18.542		18.989	

Atlas Bradford BIG NJO

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
14.000	89.28	12.562	0.625	14.228	....	26.262	18.060	5.86	722	993	993	1445	1445	1625	1716	1987	2258
	94.80	12.500	0.656	14.256	....	27.500	19.298	5.86	772	1061	1061	1544	1544	1737	1833	2123	2412
	99.30	12.436	0.688	14.313	....	28.773	20.571	5.86	823	1131	1131	1646	1646	1851	1954	2263	2571
	111.00	12.254	0.779	14.338	....	32.356	24.273	6.86	971	1335	1335	1942	1942	2185	2306	2670	3034
	113.00	12.212	0.800	14.356	....	33.175	25.093	6.86	1004	1380	1380	2007	2007	2258	2384	2760	3137
	123.00	12.068	0.872	14.477	....	35.964	27.881	6.86	1115	1533	1533	2230	2230	2509	2649	3067	3485
16.000	109.00	14.500	0.656	16.254	....	31.622	21.957	5.86	878	1208	1208	1757	1757	1976	2086	2415	2745
	118.00	14.382	0.715	16.326	....	34.334	24.668	5.86	987	1357	1357	1973	1973	2220	2343	2713	3084
	128.00	14.250	0.781	16.339	....	37.341	27.760	6.86	1110	1527	1527	2221	2221	2498	2637	3054	3470
	131.71	14.188	0.812	16.391	....	38.744	29.163	6.86	1167	1604	1604	2333	2333	2625	2770	3208	3645
	146.00	14.000	0.906	16.328	....	42.962	33.770	7.36	1351	1857	1857	2702	2702	3039	3208	3715	4221
18.625	125.89	17.125	0.656	18.874	....	37.032	25.205	5.86	1008	1386	1386	2016	2016	2268	2394	2773	3151
	136.00	17.051	0.693	18.939	....	39.040	27.213	5.86	1089	1497	1497	2177	2177	2449	2585	2993	3402
	137.32	17.001	0.718	18.917	....	40.392	28.644	6.36	1146	1575	1575	2292	2292	2578	2721	3151	3581
	148.84	16.875	0.781	19.002	....	43.782	32.034	6.36	1281	1762	1762	2563	2563	2883	3043	3524	4004
20.000	133.00	18.542	0.635	20.221	....	38.631	25.306	5.86	1012	1392	1392	2024	2024	2278	2404	2784	3163
	141.90	18.436	0.688	20.270	....	41.741	28.415	5.86	1137	1563	1563	2273	2273	2557	2699	3126	3552
	147.00	18.394	0.709	20.263	....	42.969	29.877	6.86	1195	1643	1643	2390	2390	2689	2838	3286	3735
	154.19	18.312	0.750	20.335	....	45.357	32.265	6.86	1291	1775	1775	2581	2581	2904	3065	3549	4033
	169.00	18.188	0.812	20.448	....	48.948	35.857	6.86	1434	1972	1972	2869	2869	3227	3406	3944	4482
	184.76	18.000	0.906	20.417	....	54.347	41.558	7.86	1662	2286	2286	3325	3325	3740	3948	4571	5195
	202.92	17.812	1.000	20.501	....	59.690	46.902	7.86	1876	2580	2580	3752	3752	4221	4456	5159	5863

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford BTB

Type: Threaded & coupled Seal: Resilient																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	23.00	6.241	0.317	7.656	7.231	6.655	6.199	4.420	248	341	341	496	496	558	589	682	775
	26.00	6.151	0.362	7.656	7.310	7.549	7.092	4.420	284	390	390	567	567	638	674	780	887
	29.00	6.059	0.408	7.656	7.388	8.449	7.993	4.420	320	440	440	639	639	719	759	879	999
	32.00	5.969	0.453	7.656	7.463	9.317	8.861	4.420	354	487	487	709	709	797	842	975	1108
7.625	26.40	6.844	0.328	8.500	7.866	7.519	7.022	4.564	281	386	386	562	562	632	667	772	878
	29.70	6.750	0.375	8.500	7.949	8.541	8.044	4.564	322	442	442	643	643	724	764	885	1005
	33.70	6.640	0.430	8.500	8.043	9.720	9.222	4.564	369	507	507	738	738	830	876	1014	1153
	47.10	6.570	0.465	8.500	8.102	10.460	9.962	4.564	398	548	548	797	797	897	946	1096	1245
	39.00	6.500	0.500	8.500	8.159	11.192	10.694	4.564	428	588	588	856	856	962	1016	1176	1337
7.750	46.10	6.435	0.595	8.500	8.159	13.374	11.584	6.064	463	637	637	927	927	1043	1100	1274	1448
8.625	28.00	7.892	0.304	9.625	8.816	7.947	7.384	4.660	295	406	406	591	591	665	701	812	923
	32.00	7.796	0.352	9.625	8.903	9.149	8.586	4.660	343	472	472	687	687	773	816	944	1073
	36.00	7.700	0.400	9.625	8.988	10.336	9.773	4.660	391	538	538	782	782	880	928	1075	1222
	40.00	7.600	0.450	9.625	9.074	11.557	10.994	4.660	440	605	605	880	880	989	1044	1209	1374
	44.00	7.500	0.500	9.625	9.159	12.763	12.200	4.660	488	671	671	976	976	1098	1159	1342	1525
9.625	43.50	8.599	0.435	10.625	10.051	12.559	11.931	4.672	477	656	656	954	954	1074	1133	1312	1491
	47.00	8.525	0.472	10.625	10.115	13.572	12.944	4.672	518	712	712	1036	1036	1165	1230	1424	1618
	53.50	8.379	0.545	10.625	10.209	15.546	14.918	4.672	597	820	820	1193	1193	1343	1417	1641	1865
9.875	62.80	8.469	0.625	10.625	10.321	18.162	15.322	7.661	613	843	843	1226	1226	1379	1456	1685	1915

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford BTB (continued)

Type: Threaded & coupled Seal: Resilient																	
									Minimum joint tension strength, kips								
D	w	d	t	Dc	Dsc	At	Ac	Lm	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	40.50	9.894	0.350	11.750	11.026	11.435	10.733	4.648	429	590	590	859	859	966	1020	1181	1342
	45.50	9.794	0.400	11.750	11.117	13.006	12.304	4.648	492	677	677	984	984	1107	1169	1353	1538
	51.00	9.694	0.450	11.750	11.206	14.561	13.859	4.648	554	762	762	1109	1109	1247	1317	1525	1732
	55.50	9.604	0.495	11.750	11.284	15.947	15.245	4.648	610	839	839	1220	1220	1372	1448	1677	1906
	60.70	9.504	0.545	11.750	11.370	17.473	16.771	4.648	671	922	922	1342	1342	1509	1593	1845	2096
11.750	60.00	10.616	0.489	12.750	12.272	17.300	16.532	4.732	661	909	909	1323	1323	1488	1571	1819	2067
	65.00	10.526	0.534	12.750	12.350	18.816	18.049	4.732	722	993	993	1444	1444	1624	1715	1985	2256
	66.70	10.500	0.547	12.750	12.433	19.252	18.484	4.732	739	1017	1017	1479	1479	1664	1756	2033	2311
	71.00	10.430	0.582	12.750	12.373	20.420	19.652	4.732	786	1081	1081	1572	1572	1769	1867	2162	2457
11.875	71.80	10.555	0.582	12.750	12.445	20.648	19.873	6.232	795	1093	1093	1590	1590	1789	1888	2186	2484
13.375	68.00	12.259	0.480	14.375	13.889	19.445	18.572	4.672	743	1021	1021	1486	1486	1671	1764	2043	2321
	72.00	12.191	0.514	14.375	13.950	20.768	19.894	4.672	796	1094	1094	1592	1592	1790	1890	2188	2487
	77.00	12.119	0.550	14.375	14.015	22.160	21.286	4.672	851	1171	1171	1703	1703	1916	2022	2341	2661
13.625	88.20	12.219	0.625	14.375	14.167	25.525	24.635	4.672	985	1355	1355	1971	1971	2217	2340	2710	3079
14.000	82.50	12.688	0.562	15.000	14.525	23.726	22.811	6.412	912	1255	1255	1825	1825	2053	2167	2509	2851
	94.80	12.500	0.656	15.000	14.690	27.500	26.586	6.412	1063	1462	1462	2127	2127	2393	2526	2924	3323
	99.30	12.436	0.688	15.000	14.745	28.773	27.858	6.412	1114	1532	1532	2229	2229	2507	2647	3064	3482
	111.00	12.254	0.779	15.000	14.899	32.356	31.441	6.412	1258	1729	1729	2515	2515	2830	2987	3459	3930
	123.00	12.068	0.872	15.000	15.053	35.964	32.493	6.412	1300	1787	1787	2599	2599	2924	3087	3574	4062

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford BTB (continued)

Type: Threaded & coupled Seal: Resilient																	
									Minimum joint tension strength, kips								
D	w	d	t	Dc	Dsc	At	Ac	Lm	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
16.000	75.00	14.936	0.438	17.000	16.300	21.414	20.368	6.436	815	1120	1120	1629	1629	1833	1935	2240	2546
	84.00	14.822	0.495	17.000	16.405	24.112	23.066	6.436	923	1269	1269	1845	1845	2076	2191	2537	2883
	94.50	14.688	0.562	17.000	16.527	27.257	26.212	6.436	1048	1442	1442	2097	2097	2359	2490	2883	3276
	109.00	14.500	0.656	17.000	16.695	31.622	30.577	6.436	1223	1682	1682	2446	2446	2752	2905	3363	3822
	118.00	14.382	0.715	17.000	16.798	34.334	33.288	6.436	1332	1831	1831	2663	2663	2996	3162	3662	4161
	128.00	14.250	0.781	17.000	16.912	37.341	36.296	6.436	1452	1996	1996	2904	2904	3267	3448	3993	4537
18.625	87.50	17.567	0.435	20.000	18.922	24.858	23.641	6.436	946	1300	1300	1891	1891	2128	2246	2601	2955
	93.74	17.501	0.468	20.000	18.983	26.696	25.478	6.436	1019	1401	1401	2038	2038	2293	2420	2803	3185
	96.50	17.467	0.485	20.000	19.015	27.639	26.422	6.436	1057	1453	1453	2114	2114	2378	2510	2906	3303
	109.35	17.311	0.563	20.000	19.159	31.947	30.729	6.436	1229	1690	1690	2458	2458	2766	2919	3380	3841
	112.00	17.279	0.579	20.000	19.188	32.825	31.608	6.436	1264	1738	1738	2529	2529	2845	3003	3477	3951
	136.00	17.051	0.693	20.000	19.394	39.040	37.823	6.436	1513	2080	2080	3026	3026	3404	3593	4161	4728
20.000	94.00	18.936	0.438	21.000	20.297	26.918	25.611	6.460	1024	1409	1409	2049	2049	2305	2433	2817	3201
	106.50	18.812	0.500	21.000	20.414	30.631	29.323	6.460	1173	1613	1613	2346	2346	2639	2786	3226	3665
	117.00	18.686	0.563	21.000	20.530	34.379	33.071	6.460	1323	1819	1819	2646	2646	2976	3142	3638	4134
	133.00	18.542	0.635	21.000	20.662	38.631	37.324	6.460	1493	2053	2053	2986	2986	3359	3546	4106	4666
	147.00	18.394	0.709	21.000	20.795	42.969	41.661	6.460	1666	2291	2291	3333	3333	3750	3958	4583	5208
	169.00	18.188	0.812	21.000	20.978	48.948	46.551	6.460	1862	2560	2560	3724	3724	4190	4422	5121	5819

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford FL-4S

Type: Integral flush joint

Seal: Metal-to-metal, threaded, resilient

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
	11.50	4.435	0.220	5.000	....	3.304	1.370	1.652	55	75	75	110	110	123	130	151	171
	13.00	4.369	0.253	5.000	....	3.773	1.958	2.059	78	108	108	157	157	176	186	215	245
	15.00	4.283	0.296	5.000	....	4.374	2.298	2.139	92	126	126	184	184	207	218	253	287
	18.00	4.151	0.362	5.000	....	5.275	3.310	3.815	132	182	182	265	265	298	314	364	414
5.500	14.00	4.887	0.244	5.500	....	4.029	1.676	1.757	67	92	92	134	134	151	159	184	210
	15.50	4.825	0.275	5.500	....	4.514	2.356	2.098	94	130	130	188	188	212	224	259	295
	17.00	4.767	0.304	5.500	....	4.962	2.607	2.148	104	143	143	209	209	235	248	287	326
	20.00	4.653	0.361	5.500	....	5.828	3.669	3.825	147	202	202	294	294	330	349	404	459
	23.00	4.545	0.415	5.500	....	6.630	4.193	4.164	168	231	231	335	335	377	398	461	524

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford HD-L

Type: Integral flush joint Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.500	15.00	4.283	0.296	5.000	....	4.374	2.013	3.19	81	111	111	161	161	181	191	221	252
	18.00	4.151	0.362	5.000	....	5.275	2.736	3.68	109	150	150	219	219	246	260	301	342
	20.30	4.059	0.408	5.000	....	5.886	3.317	4.03	133	182	182	265	265	299	315	365	415
	20.80	4.031	0.422	5.000	....	6.069	3.500	4.29	140	193	193	280	280	315	333	385	438
	21.40	4.001	0.437	5.000	....	6.264	3.695	4.58	148	203	203	296	296	333	351	406	462
	23.20	3.919	0.478	5.000	....	6.791	4.191	4.65	168	231	231	335	335	377	398	461	524
	24.10	3.875	0.500	5.000	....	7.069	4.469	4.99	179	246	246	358	358	402	425	492	559
	17.00	4.767	0.304	5.500	....	4.962	2.325	3.30	93	128	128	186	186	209	221	256	291
	20.00	4.653	0.361	5.500	....	5.828	2.995	3.52	120	165	165	240	240	270	285	329	374
	23.00	4.545	0.415	5.500	....	6.630	3.762	4.05	150	207	207	301	301	339	357	414	470
	26.00	4.423	0.476	5.500	....	7.513	4.612	4.52	184	254	254	369	369	415	438	507	577
	28.40	4.315	0.530	5.500	....	8.275	5.374	5.38	215	296	296	430	430	484	511	591	672
6.625	24.00	5.796	0.352	6.625	....	6.937	3.655	4.24	146	201	201	292	292	329	347	402	457
	28.00	5.666	0.417	6.625	....	8.133	4.571	3.84	183	251	251	366	366	411	434	503	571
	32.00	5.550	0.475	6.625	....	9.177	5.616	4.95	225	309	309	449	449	505	534	618	702
	35.00	5.450	0.525	6.625	....	10.061	6.458	5.09	258	355	355	517	517	581	614	710	807
7.000	23.00	6.241	0.317	7.000	....	6.655	3.152	3.36	126	173	173	252	252	284	299	347	394
	26.00	6.151	0.362	7.000	....	7.549	3.793	3.34	152	209	209	303	303	341	360	417	474
	29.00	6.059	0.408	7.000	....	8.449	4.693	4.22	188	258	258	375	375	422	446	516	587
	32.00	5.969	0.453	7.000	....	9.317	5.517	4.45	221	303	303	441	441	497	524	607	690
	35.00	5.879	0.498	7.000	....	10.172	6.329	4.60	253	348	348	506	506	570	601	696	791
	38.00	5.795	0.540	7.000	....	10.959	7.116	5.26	285	391	391	569	569	640	676	783	890

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford HD-L (continued)

Type: Integral flush joint

Seal: Metal-to-metal

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.625	26.40	6.844	0.328	7.625	....	7.519	3.638	3.51	146	200	200	291	291	327	346	400	455
	29.70	6.750	0.375	7.625	....	8.541	4.384	3.49	175	241	241	351	351	395	416	482	548
	33.70	6.640	0.430	7.625	....	9.720	5.562	4.58	222	306	306	445	445	501	528	612	695
	39.00	6.500	0.500	7.625	....	11.192	6.939	4.51	278	382	382	555	555	625	659	763	867
	42.80	6.376	0.562	7.625	....	12.470	8.217	5.50	329	452	452	657	657	740	781	904	1027
	45.30	6.310	0.595	7.625	....	13.141	8.888	6.02	356	489	489	711	711	800	844	978	1111
7.750	46.10	6.435	0.595	7.750	....	13.374	9.039	5.99	362	497	497	723	723	814	859	994	1130
	48.60	6.345	0.640	7.750	....	14.296	9.911	5.90	396	545	545	793	793	892	942	1090	1239
8.625	32.00	7.796	0.352	8.625	....	9.149	4.643	3.90	186	255	255	371	371	418	441	511	580
	36.00	7.700	0.400	8.625	....	10.336	5.516	3.81	221	303	303	441	441	496	524	607	690
	40.00	7.600	0.450	8.625	....	11.557	6.737	4.78	269	371	371	539	539	606	640	741	842
	44.00	7.500	0.500	8.625	....	12.763	7.889	4.98	316	434	434	631	631	710	749	868	986
	49.00	7.386	0.557	8.625	....	14.118	9.190	5.23	368	505	505	735	735	827	873	1011	1149
9.625	40.00	8.679	0.395	9.625	....	11.454	5.947	3.64	238	327	327	476	476	535	565	654	743
	43.50	8.599	0.435	9.625	....	12.559	7.052	4.35	282	388	388	564	564	635	670	776	882
	47.00	8.525	0.472	9.625	....	13.572	8.005	4.28	320	440	440	640	640	720	760	881	1001
	53.50	8.379	0.545	9.625	....	15.546	9.918	4.91	397	545	545	793	793	893	942	1091	1240
	58.40	8.279	0.595	9.625	....	16.879	11.251	5.70	450	619	619	900	900	1013	1069	1238	1406
9.875	62.80	8.469	0.625	9.875	....	18.162	12.355	6.14	494	680	680	988	988	1112	1174	1359	1544
10.750	45.50	9.794	0.400	10.750	....	13.006	7.090	4.77	284	390	390	567	567	638	674	780	886
	51.00	9.694	0.450	10.750	....	14.561	8.251	4.53	330	454	454	660	660	743	784	908	1031
	55.50	9.604	0.495	10.750	....	15.947	9.569	4.53	383	526	526	766	766	861	909	1053	1196
	60.70	9.504	0.545	10.750	....	17.473	11.095	5.48	444	610	610	888	888	999	1054	1220	1387
	65.70	9.404	0.595	10.750	....	18.982	12.537	5.56	501	690	690	1003	1003	1128	1191	1379	1567
11.750	54.00	10.724	0.435	11.750	....	15.463	8.413	4.18	337	463	463	673	673	757	799	925	1052
	60.00	10.616	0.489	11.750	....	17.300	10.249	5.15	410	564	564	820	820	922	974	1127	1281
	65.00	10.526	0.534	11.750	....	18.816	11.613	5.11	465	639	639	929	929	1045	1103	1277	1452
	71.00	10.430	0.582	11.750	....	20.420	13.265	6.02	531	730	730	1061	1061	1194	1260	1459	1658
	75.00	10.358	0.618	11.750	....	21.613	14.414	5.80	577	793	793	1153	1153	1297	1369	1586	1802

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford HD-L (continued)

Type: Integral flush joint Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
11.875	71.80	10.555	0.582	11.875	....	20.648	13.378	6.00	535	736	736	1070	1070	1204	1271	1472	1672
13.375	68.00	12.259	0.480	13.375	....	19.445	11.139	4.86	446	613	613	891	891	1003	1058	1225	1392
	72.00	12.191	0.514	13.375	....	20.768	12.427	5.47	497	683	683	994	994	1118	1181	1367	1553
	77.00	12.119	0.550	13.375	....	22.160	13.417	5.15	537	738	738	1073	1073	1208	1275	1476	1677
	80.70	12.059	0.580	13.375	....	23.314	14.598	5.72	584	803	803	1168	1168	1314	1387	1606	1825
	85.00	12.003	0.608	13.375	....	24.386	15.699	6.25	628	863	863	1256	1256	1413	1491	1727	1962
	86.00	11.969	0.625	13.375	....	25.035	16.283	5.70	651	896	896	1303	1303	1465	1547	1791	2035
13.625	88.20	12.219	0.625	13.625	....	25.525	16.522	5.67	661	909	909	1322	1322	1487	1570	1817	2065

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford NJO

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	18.00	4.151	0.362	5.178	....	5.275	3.745	3.18	150	206	206	300	300	337	356	412	468
	20.30	4.059	0.408	5.194	....	5.886	4.356	3.18	174	240	240	348	348	392	414	479	545
	20.80	4.031	0.422	5.206	....	6.069	4.540	3.18	182	250	250	363	363	409	431	499	568
	21.40	4.001	0.437	5.218	....	6.264	4.735	3.18	189	260	260	379	379	426	450	521	592
	23.20	3.919	0.478	5.206	....	6.791	5.163	3.64	207	284	284	413	413	465	490	568	645
	24.10	3.875	0.500	5.223	....	7.069	5.441	3.64	218	299	299	435	435	490	517	599	680
5.500	17.00	4.767	0.304	5.702	....	4.962	3.304	2.82	132	182	182	264	264	297	314	363	413
	20.00	4.653	0.361	5.672	....	5.828	4.060	3.21	162	223	223	325	325	365	386	447	508
	23.00	4.545	0.415	5.698	....	6.630	4.862	3.21	194	267	267	389	389	438	462	535	608
	26.00	4.423	0.476	5.726	....	7.513	5.691	3.61	228	313	313	455	455	512	541	626	711
	28.40	4.315	0.530	5.748	....	8.275	6.431	3.64	257	354	354	514	514	579	611	707	804
	29.70	4.251	0.562	5.777	....	8.718	6.874	3.64	275	378	378	550	550	619	653	756	859
6.625	28.00	5.666	0.417	6.815	....	8.133	5.685	3.36	227	313	313	455	455	512	540	625	711
	32.00	5.550	0.475	6.849	....	9.177	6.757	3.70	270	372	372	541	541	608	642	743	845
	35.00	5.450	0.525	6.890	....	10.061	7.640	3.70	306	420	420	611	611	688	726	840	955
7.000	26.00	6.151	0.362	7.231	....	7.549	5.142	2.85	206	283	283	411	411	463	488	566	643
	29.00	6.059	0.408	7.177	....	8.449	5.887	3.35	235	324	324	471	471	530	559	648	736
	32.00	5.969	0.453	7.197	....	9.317	6.755	3.35	270	372	372	540	540	608	642	743	844
	35.00	5.879	0.498	7.235	....	10.172	7.610	3.35	304	419	419	609	609	685	723	837	951
	38.00	5.795	0.540	7.243	....	10.959	8.268	4.15	331	455	455	661	661	744	785	909	1034
	41.00	5.695	0.590	7.279	....	11.881	9.080	4.15	363	499	499	726	726	817	863	999	1135
	44.00	5.595	0.640	7.319	....	12.788	9.987	4.15	399	549	549	799	799	899	949	1099	1248
	46.00	5.535	0.670	7.344	....	13.324	10.523	4.15	421	579	579	842	842	947	1000	1158	1315
7.625	39.00	6.500	0.500	7.831	....	11.192	7.835	3.64	313	431	431	627	627	705	744	862	979
	42.80	6.376	0.562	7.879	....	12.470	9.114	3.64	365	501	501	729	729	820	866	1003	1139
	45.30	6.310	0.595	7.906	....	13.141	9.784	3.64	391	538	538	783	783	881	929	1076	1223
	47.10	6.250	0.625	7.931	....	13.744	10.388	3.64	416	571	571	831	831	935	987	1143	1299
	52.80	6.076	0.712	8.017	....	15.463	12.632	4.38	505	695	695	1011	1011	1137	1200	1390	1579
7.750	46.10	6.435	0.595	8.050	....	13.374	10.405	4.10	416	572	572	832	832	936	988	1145	1301

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford NJO (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
	36.00	7.700	0.400	8.844	....	10.336	6.990	3.37	280	384	384	559	559	629	664	769	874
	40.00	7.600	0.450	8.839	....	11.557	8.077	3.78	323	444	444	646	646	727	767	888	1010
	44.00	7.500	0.500	8.852	....	12.763	9.209	3.83	368	506	506	737	737	829	875	1013	1151
8.625	49.00	7.386	0.557	8.901	....	14.118	10.564	3.83	423	581	581	845	845	951	1004	1162	1321
	43.50	8.599	0.435	9.844	....	12.559	8.353	3.42	334	459	459	668	668	752	794	919	1044
9.625	47.00	8.525	0.472	9.844	....	13.572	9.367	3.42	375	515	515	749	749	843	890	1030	1171
	53.50	8.379	0.545	9.848	....	15.546	11.003	4.14	440	605	605	880	880	990	1045	1210	1375
	58.40	8.279	0.595	9.892	....	16.879	12.336	4.14	493	678	678	987	987	1110	1172	1357	1542
9.875	62.80	8.469	0.625	10.162	....	18.162	13.543	4.64	542	745	745	1083	1083	1219	1287	1490	1693
	51.00	9.694	0.450	10.995	....	14.561	9.727	3.42	389	535	535	778	778	875	924	1070	1216
10.750	55.50	9.604	0.495	10.975	....	15.947	10.951	4.09	438	602	602	876	876	986	1040	1205	1369
	60.70	9.504	0.545	10.978	....	17.473	12.477	4.09	499	686	686	998	998	1123	1185	1372	1560
	65.70	9.404	0.595	11.027	....	18.982	13.986	4.09	559	769	769	1119	1119	1259	1329	1538	1748
	54.00	10.724	0.435	11.987	....	15.463	10.035	3.56	401	552	552	803	803	903	953	1104	1254
	60.00	10.616	0.489	12.002	....	17.300	11.756	3.98	470	647	647	940	940	1058	1117	1293	1470
	65.00	10.526	0.534	12.002	....	18.816	13.272	3.98	531	730	730	1062	1062	1194	1261	1460	1659
11.750	71.00	10.430	0.582	12.032	....	20.420	14.876	3.98	595	818	818	1190	1190	1339	1413	1636	1860
	75.00	10.358	0.618	12.022	....	21.613	15.630	5.34	625	860	860	1250	1250	1407	1485	1719	1954
	79.00	10.282	0.656	12.055	....	22.863	16.881	5.34	675	928	928	1350	1350	1519	1604	1857	2110
	83.00	10.212	0.691	12.086	....	24.007	18.025	5.34	721	991	991	1442	1442	1622	1712	1983	2253
11.875	71.80	10.555	0.582	12.134	....	20.648	15.073	4.38	603	829	829	1206	1206	1357	1432	1658	1884
	72.00	12.191	0.514	13.680	....	20.768	14.059	4.18	562	773	773	1125	1125	1265	1336	1546	1757
	77.00	12.119	0.550	13.665	....	22.160	15.071	4.80	603	829	829	1206	1206	1356	1432	1658	1884
	80.70	12.059	0.580	13.665	....	23.314	16.225	4.80	649	892	892	1298	1298	1460	1541	1785	2028
13.375	85.00	12.003	0.608	13.665	....	24.386	17.298	4.80	692	951	951	1384	1384	1557	1643	1903	2162
	86.00	11.969	0.625	13.665	....	25.035	17.946	4.80	718	987	987	1436	1436	1615	1705	1974	2243
	92.00	11.875	0.672	13.687	....	26.818	19.781	5.30	791	1088	1088	1582	1582	1780	1879	2176	2473
	98.00	11.781	0.719	13.728	....	28.587	21.551	5.30	862	1185	1185	1724	1724	1940	2047	2371	2694
13.625	88.20	12.219	0.625	13.915	....	25.525	18.224	4.88	729	1002	1002	1458	1458	1640	1731	2005	2278

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford SB (Special Bore)

Type: Upset Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.00	4.283	0.296	5.370	....	4.374	3.999	3.14	160	220	220	320	320	360	380	440	500
	18.00	4.151	0.362	5.455	....	5.275	4.902	3.14	196	270	270	392	392	441	466	539	613
5.500	17.00	4.767	0.304	5.900	....	4.962	4.532	3.47	181	249	249	363	363	408	431	499	567
	20.00	4.653	0.361	6.000	....	5.828	5.400	3.47	216	297	297	432	432	486	513	594	675
	23.00	4.545	0.415	6.035	....	6.630	6.203	3.47	248	341	341	496	496	558	589	682	775
7.000	23.00	6.241	0.317	7.444	....	6.655	6.029	3.82	241	332	332	482	482	543	573	663	754
	26.00	6.151	0.362	7.444	....	7.549	6.924	3.82	277	381	381	554	554	623	658	762	866
	29.00	6.059	0.408	7.572	....	8.449	7.826	3.82	313	430	430	626	626	704	743	861	978
	32.00	5.969	0.453	7.580	....	9.317	8.695	3.82	348	478	478	696	696	783	826	956	1087

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford ST-L

Type: Integral flush joint

Seal: Metal-to-metal, threaded, resilient optional

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.00	4.369	0.253	5.000	....	3.773	2.054	3.25	82	113	113	164	164	185	195	226	257
	15.00	4.283	0.296	5.000	....	4.374	2.494	3.86	100	137	137	200	200	224	237	274	312
	18.00	4.151	0.362	5.000	....	5.275	3.072	3.16	123	169	169	246	246	276	292	338	384
	20.30	4.059	0.408	5.000	....	5.886	3.892	4.75	156	214	214	311	311	350	370	428	487
	20.80	4.031	0.422	5.000	....	6.069	3.729	4.00	149	205	205	298	298	336	354	410	466
	21.40	4.001	0.437	5.000	....	6.264	4.184	5.07	167	230	230	335	335	377	397	460	523
	23.60	3.919	0.478	5.000	....	6.791	4.589	5.52	184	252	252	367	367	413	436	505	574
	24.20	3.875	0.500	5.000	....	7.069	4.071	3.57	163	224	224	326	326	366	387	448	509
5.500	14.00	4.887	0.244	5.500	....	4.029	2.154	3.05	86	118	118	172	172	194	205	237	269
	15.50	4.825	0.275	5.500	....	4.514	2.226	3.00	89	122	122	178	178	200	211	245	278
	17.00	4.767	0.304	5.500	....	4.962	2.627	3.62	105	144	144	210	210	236	250	289	328
	20.00	4.653	0.361	5.500	....	5.828	3.428	4.64	137	189	189	274	274	309	326	377	429
	23.00	4.545	0.415	5.500	....	6.630	4.170	4.19	167	229	229	334	334	375	396	459	521
	26.00	4.423	0.476	5.500	....	7.513	5.037	5.44	201	277	277	403	403	453	479	554	630
	26.70	4.375	0.500	5.500	....	7.854	4.979	5.44	199	274	274	398	398	448	473	548	622
	28.40	4.315	0.530	5.500	....	8.275	4.805	3.76	192	264	264	384	384	432	456	529	601
	29.70	4.251	0.562	5.500	....	8.718	5.095	3.95	204	280	280	408	408	459	484	560	637
	32.30	4.151	0.612	5.500	....	9.398	5.397	4.16	216	297	297	432	432	486	513	594	675
6.625	20.00	5.924	0.288	6.625	....	5.734	3.267	3.82	131	180	180	261	261	294	310	359	408
	24.00	5.796	0.352	6.625	....	6.937	4.150	4.74	166	228	228	332	332	374	394	457	519
	28.00	5.666	0.417	6.625	....	8.133	5.437	4.95	217	299	299	435	435	489	517	598	680
	32.00	5.550	0.475	6.625	....	9.177	6.250	5.61	250	344	344	500	500	563	594	688	781

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford ST-L (continued)

Type: Integral flush joint

Seal: Metal-to-metal, threaded, resilient optional

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	17.00	6.413	0.231	7.000	....	4.912	2.585	2.89	103	142	142	207	207	233	246	284	323
	20.00	6.331	0.272	7.000	....	5.749	3.203	3.50	128	176	176	256	256	288	304	352	400
	23.00	6.241	0.317	7.000	....	6.655	3.871	4.16	155	213	213	310	310	348	368	426	484
	26.00	6.151	0.362	7.000	....	7.549	4.472	3.62	179	246	246	358	358	402	425	492	559
	29.00	6.059	0.408	7.000	....	8.449	5.403	4.09	216	297	297	432	432	486	513	594	675
	32.00	5.969	0.453	7.000	....	9.317	6.245	5.28	250	343	343	500	500	562	593	687	781
	35.00	5.879	0.498	7.000	....	10.172	6.911	5.79	276	380	380	553	553	622	657	760	864
	38.00	5.795	0.540	7.000	....	10.959	7.520	6.17	301	414	414	602	602	677	714	827	940
	41.00	5.695	0.590	7.000	....	11.881	8.090	6.68	324	445	445	647	647	728	769	890	1011
	44.00	5.595	0.640	7.000	....	12.788	8.312	4.47	332	457	457	665	665	748	790	914	1039
	46.00	5.535	0.670	7.000	....	13.324	8.609	6.35	344	473	473	689	689	775	818	947	1076
	49.50	5.415	0.730	7.000	....	14.379	9.810	7.25	392	540	540	785	785	883	932	1079	1226
7.625	24.00	6.900	0.300	7.625	....	6.904	3.964	2.89	159	218	218	317	317	357	377	436	496
	26.40	6.844	0.328	7.625	....	7.519	4.373	4.28	175	241	241	350	350	394	415	481	547
	29.70	6.750	0.375	7.625	....	8.541	5.550	4.39	222	305	305	444	444	500	527	611	694
	33.70	6.640	0.430	7.625	....	9.720	6.493	5.03	260	357	357	519	519	584	617	714	812
	39.00	6.500	0.500	7.625	....	11.192	7.135	4.83	285	392	392	571	571	642	678	785	892
	42.80	6.376	0.562	7.625	....	12.470	8.668	6.60	347	477	477	693	693	780	823	953	1084
	45.30	6.310	0.595	7.625	....	13.141	9.191	6.97	368	506	506	735	735	827	873	1011	1149
	47.10	6.250	0.625	7.625	....	13.744	9.653	7.31	386	531	531	772	772	869	917	1062	1207
	51.20	6.126	0.687	7.625	....	14.974	9.050	4.98	362	498	498	724	724	815	860	996	1131

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford ST-L (continued)

Type: Integral flush joint

Seal: Metal-to-metal, threaded, resilient optional

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.625	53.06	6.076	0.712	7.625	....	15.463	9.218	5.07	369	507	507	737	737	830	876	1014	1152
	55.30	6.000	0.750	7.625	....	16.199	11.447	5.18	458	630	630	916	916	1030	1087	1259	1431
7.750	46.10	6.435	0.595	7.750	....	13.374	9.303	6.92	372	512	512	744	744	837	884	1023	1163
8.625	24.00	7.972	0.264	8.625	....	6.934	3.788	3.23	152	208	208	303	303	341	360	417	474
	28.00	7.892	0.304	8.625	....	7.947	4.536	3.83	181	249	249	363	363	408	431	499	567
	32.00	7.796	0.352	8.625	....	9.149	5.423	4.53	217	298	298	434	434	488	515	597	678
	36.00	7.700	0.400	8.625	....	10.336	6.819	4.63	273	375	375	546	546	614	648	750	852
	40.00	7.600	0.450	8.625	....	11.557	7.778	5.22	311	428	428	622	622	700	739	856	972
	44.00	7.500	0.500	8.625	....	12.763	7.423	3.65	297	408	408	594	594	668	705	817	928
	49.00	7.386	0.557	8.625	....	14.118	8.338	4.05	334	459	459	667	667	750	792	917	1042
9.625	36.00	8.765	0.352	9.625	....	10.254	6.147	4.71	246	338	338	492	492	553	584	676	768
	40.00	8.679	0.395	9.625	....	11.454	6.867	3.60	275	378	378	549	549	618	652	755	858
	43.50	8.599	0.435	9.625	....	12.559	8.418	5.09	337	463	463	673	673	758	800	926	1052
	47.00	8.525	0.472	9.625	....	13.572	8.961	5.50	358	493	493	717	717	806	851	986	1120
	53.50	8.379	0.545	9.625	....	15.546	9.780	5.50	391	538	538	782	782	880	929	1076	1223
	58.40	8.279	0.595	9.625	....	16.879	10.970	5.72	439	603	603	878	878	987	1042	1207	1371
9.875	62.80	8.469	0.625	9.875	....	18.162	12.769	7.33	511	702	702	1022	1022	1149	1213	1405	1596
10.750	40.50	9.894	0.350	10.750	....	11.435	6.855	4.67	274	377	377	548	548	617	651	754	857
	45.50	9.794	0.400	10.750	....	13.006	7.796	4.99	312	429	429	624	624	702	741	858	975
	51.00	9.694	0.450	10.750	....	14.561	9.831	5.27	393	541	541	786	786	885	934	1081	1229
	55.50	9.604	0.495	10.750	....	15.947	9.559	5.59	382	526	526	765	765	860	908	1051	1195
	60.70	9.504	0.545	10.750	....	17.473	12.175	6.39	487	670	670	974	974	1096	1157	1339	1522
	65.70	9.404	0.595	10.750	....	18.982	11.378	6.22	455	626	626	910	910	1024	1081	1252	1422

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford ST-L (continued)

Type: Integral flush joint

Seal: Metal-to-metal, threaded, resilient optional

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
11.750	60.00	10.616	0.489	11.750	....	17.300	10.369	5.52	415	570	570	830	830	933	985	1141	1296
	65.00	10.526	0.534	11.750	....	18.816	11.067	5.61	443	609	609	885	885	996	1051	1217	1383
	71.00	10.430	0.582	11.750	....	20.420	12.240	6.11	490	673	673	979	979	1102	1163	1346	1530
	74.60	10.358	0.618	11.750	....	21.613	12.954	6.34	518	712	712	1036	1036	1166	1231	1425	1619
11.875	71.80	10.555	0.582	11.875	....	20.648	12.376	6.12	495	681	681	990	990	1114	1176	1361	1547
13.375	61.00	12.359	0.430	13.375	....	17.487	10.481	5.09	419	576	576	838	838	943	996	1153	1310
	68.00	12.259	0.480	13.375	....	19.445	11.655	5.44	466	641	641	932	932	1049	1107	1282	1457
	72.00	12.191	0.514	13.375	....	20.768	14.339	6.02	574	789	789	1147	1147	1291	1362	1577	1792
	77.00	12.119	0.550	13.375	....	22.160	13.281	5.85	531	730	730	1062	1062	1195	1262	1461	1660
	85.00	12.003	0.608	13.375	....	24.386	14.616	6.22	585	804	804	1169	1169	1315	1389	1608	1827
13.625	88.20	12.219	0.625	13.625	....	25.525	18.048	7.34	722	993	993	1444	1444	1624	1715	1985	2256

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford TC-II

Type: Threaded & coupled

Seal: Metal-to-metal, threaded, resilient optional

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.00	4.283	0.296	5.428	....	4.374	4.374	4.35	175	241	241	350	350	394	416	481	547
	18.00	4.151	0.362	5.533	....	5.275	5.275	4.35	211	290	290	422	422	475	501	580	659
	20.30	4.059	0.408	5.603	....	5.886	5.886	4.35	235	324	324	471	471	530	559	647	736
	20.80	4.031	0.422	5.624	....	6.069	6.069	4.35	243	334	334	486	486	546	577	668	759
	21.40	4.001	0.437	5.646	....	6.264	6.264	4.35	251	345	345	501	501	564	595	689	783
	23.60	3.919	0.478	5.705	....	6.791	6.791	4.35	272	373	373	543	543	611	645	747	849
	24.10	3.875	0.500	5.736	....	7.069	7.069	4.35	283	389	389	565	565	636	672	778	884
5.500	15.50	4.825	0.275	5.896	....	4.514	4.514	4.38	181	248	248	361	361	406	429	497	564
	17.00	4.767	0.304	5.944	....	4.962	4.962	4.38	198	273	273	397	397	447	471	546	620
	20.00	4.653	0.361	6.036	....	5.828	5.828	4.38	233	321	321	466	466	525	554	641	729
	23.00	4.545	0.415	6.120	....	6.630	6.630	4.38	265	365	365	530	530	597	630	729	829
	26.00	4.423	0.476	6.212	....	7.513	7.513	4.38	301	413	413	601	601	676	714	826	939
	26.80	4.375	0.500	6.247	....	7.854	7.854	4.38	314	432	432	628	628	707	746	864	982
6.625	20.00	5.924	0.288	7.039	....	5.734	5.734	4.54	229	315	315	459	459	516	545	631	717
	23.20	5.840	0.330	7.111	....	6.526	6.526	4.54	261	359	359	522	522	587	620	718	816
	24.00	5.796	0.352	7.148	....	6.937	6.937	4.54	277	382	382	555	555	624	659	763	867
	28.00	5.666	0.417	7.254	....	8.133	8.133	4.54	325	447	447	651	651	732	773	895	1017
	29.00	5.636	0.432	7.278	....	8.405	8.405	4.54	336	462	462	672	672	756	798	925	1051
	32.00	5.550	0.475	7.345	....	9.177	9.177	4.54	367	505	505	734	734	826	872	1010	1147
	35.00	5.450	0.525	7.421	....	10.061	10.061	4.54	402	553	553	805	805	905	956	1107	1258

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Atlas Bradford TC-II (continued)

Type: Threaded & coupled Seal: Metal-to-metal, threaded, resilient optional																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	23.00	6.241	0.317	7.448	....	6.655	6.655	4.86	266	366	366	532	532	599	632	732	832
	26.00	6.151	0.362	7.542	....	7.549	7.549	4.86	302	415	415	604	604	679	717	830	944
	29.00	6.059	0.408	7.600	....	8.449	8.449	4.86	338	465	465	676	676	760	803	929	1056
	32.00	5.969	0.453	7.672	....	9.317	9.317	4.86	373	512	512	745	745	839	885	1025	1165
	35.00	5.879	0.498	7.743	....	10.172	10.172	4.86	407	559	559	814	814	916	966	1119	1272
	38.00	5.795	0.540	7.808	....	10.959	10.959	4.86	438	603	603	877	877	986	1041	1206	1370
	41.00	5.695	0.590	7.883	....	11.881	11.881	4.86	475	653	653	950	950	1069	1129	1307	1485
7.625	26.40	6.844	0.328	8.106	....	7.519	7.519	5.3	301	414	414	602	602	677	714	827	940
	29.70	6.750	0.375	8.186	....	8.541	8.541	5.3	342	470	470	683	683	769	811	940	1068
	33.70	6.640	0.430	8.277	....	9.720	9.720	5.3	389	535	535	778	778	875	923	1069	1215
	35.80	6.570	0.465	8.334	....	10.460	10.460	5.3	418	575	575	837	837	941	994	1151	1307
	39.00	6.500	0.500	8.390	....	11.192	11.192	5.3	448	616	616	895	895	1007	1063	1231	1399
	42.80	6.376	0.562	8.487	....	12.470	12.470	5.3	499	686	686	998	998	1122	1185	1372	1559
	47.10	6.250	0.625	8.582	....	13.744	13.744	5.3	550	756	756	1100	1100	1237	1306	1512	1718

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford TC-II (continued)

Type: Threaded & coupled Seal: Metal-to-metal, threaded, resilient optional																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.750	46.10	6.435	0.595	8.660	....	13.374	13.374	5.37	535	736	736	1070	1070	1204	1271	1471	1672
	48.00	6.375	0.625	8.705	....	13.990	13.990	5.37	560	769	769	1119	1119	1259	1329	1539	1749
	49.00	6.345	0.640	8.728	....	14.296	14.296	5.37	572	786	786	1144	1144	1287	1358	1573	1787
8.625	28.00	7.892	0.304	9.083	....	7.947	7.947	5.04	318	437	437	636	636	715	755	874	993
	32.00	7.796	0.352	9.167	....	9.149	9.149	5.04	366	503	503	732	732	823	869	1006	1144
	36.00	7.700	0.400	9.250	....	10.336	10.336	5.04	413	568	568	827	827	930	982	1137	1292
	40.00	7.600	0.450	9.333	....	11.557	11.557	5.04	462	636	636	925	925	1040	1098	1271	1445
	44.00	7.500	0.500	9.415	....	12.763	12.763	5.04	511	702	702	1021	1021	1149	1212	1404	1595
	49.00	7.346	0.577	9.507	....	14.589	14.589	5.04	584	802	802	1167	1167	1313	1386	1605	1824
9.625	36.00	8.765	0.352	10.160	....	10.254	10.254	5.23	410	564	564	820	820	923	974	1128	1282
	40.00	8.679	0.395	10.235	....	11.454	11.454	5.23	458	630	630	916	916	1031	1088	1260	1432
	43.50	8.599	0.435	10.303	....	12.559	12.559	5.23	502	691	691	1005	1005	1130	1193	1381	1570
	47.00	8.525	0.472	10.366	....	13.572	13.572	5.23	543	746	746	1086	1086	1222	1289	1493	1697
	53.50	8.379	0.545	10.487	....	15.546	15.546	5.23	622	855	855	1244	1244	1399	1477	1710	1943
	58.40	8.279	0.595	10.567	....	16.879	16.879	5.23	675	928	928	1350	1350	1519	1604	1857	2110
9.875	62.80	8.469	0.625	10.860	....	18.162	18.162	5.37	726	999	999	1453	1453	1635	1725	1998	2270
10.750	40.50	9.894	0.350	11.283	....	11.435	11.435	5.26	457	629	629	915	915	1029	1086	1258	1429
	45.50	9.794	0.400	11.372	....	13.006	13.006	5.26	520	715	715	1040	1040	1171	1236	1431	1626
	51.00	9.694	0.450	11.458	....	14.561	14.561	5.26	582	801	801	1165	1165	1311	1383	1602	1820
	55.50	9.604	0.495	11.535	....	15.947	15.947	5.26	638	877	877	1276	1276	1435	1515	1754	1993
	60.70	9.504	0.545	11.619	....	17.473	17.473	5.26	699	961	961	1398	1398	1573	1660	1922	2184
	65.70	9.404	0.595	11.702	....	18.982	18.982	5.26	759	1044	1044	1519	1519	1708	1803	2088	2373

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Atlas Bradford TC-II (continued)

Type: Threaded & coupled Seal: Metal-to-metal, threaded, resilient optional																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
11.750	47.00	10.844	0.375	12.323	....	13.401	13.401	5.38	536	737	737	1072	1072	1206	1273	1474	1675
	54.00	10.724	0.435	12.429	....	15.463	15.463	5.38	619	850	850	1237	1237	1392	1469	1701	1933
	60.00	10.616	0.489	12.523	....	17.300	17.300	5.38	692	951	951	1384	1384	1557	1643	1903	2162
	65.00	10.526	0.534	12.600	....	18.816	18.816	5.38	753	1035	1035	1505	1505	1693	1788	2070	2352
	71.00	10.430	0.582	12.681	....	20.420	20.420	5.38	817	1123	1123	1634	1634	1838	1940	2246	2552
	74.60	10.358	0.618	12.741	....	21.613	21.613	5.38	865	1189	1189	1729	1729	1945	2053	2377	2702
11.875	71.80	10.555	0.582	12.816	....	20.648	20.648	5.22	826	1136	1136	1652	1652	1858	1962	2271	2581
13.375	54.50	12.459	0.380	13.947	....	15.513	15.513	5.61	621	853	853	1241	1241	1396	1474	1706	1939
	61.00	12.359	0.430	14.037	....	17.487	17.487	5.61	699	962	962	1399	1399	1574	1661	1924	2186
	68.00	12.259	0.480	14.126	....	19.445	19.445	5.61	778	1069	1069	1556	1556	1750	1847	2139	2431
	72.00	12.191	0.514	14.185	....	20.768	20.768	5.61	831	1142	1142	1661	1661	1869	1973	2284	2596
	77.00	12.119	0.550	12.248	....	22.160	22.160	5.61	886	1219	1219	1773	1773	1994	2105	2438	2770
	80.70	12.203	0.508	14.299	....	20.535	20.535	5.61	821	1129	1129	1643	1643	1848	1951	2259	2567
	91.00	11.899	0.660	14.435	....	26.364	26.364	5.61	1055	1450	1450	2109	2109	2373	2505	2900	3295
13.625	88.20	12.219	0.625	14.636	....	25.525	25.525	5.45	1021	1404	1404	2042	2042	2297	2425	2808	3191

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

CENTRON International Inc. — DH8C Casing

Type: Upset, integral Seal: Threaded										
									Minimum joint tension strength, kips	
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Rating	Ultimate
6.50	3.52	6.10	0.200	8.10	....	....	....	4.50	18.0	47.0
6.60	4.50	6.10	0.250	8.20	....	....	....	4.50	22.0	59.0
6.70	5.40	6.10	0.300	8.35	....	....	....	4.50	27.0	72.0
6.80	6.50	6.10	0.350	8.50	....	....	....	4.50	32.0	85.0
6.90	7.35	6.10	0.400	8.65	....	....	....	4.50	37.0	95.0
7.00	8.40	6.10	0.450	8.80	....	....	....	4.50	42.0	111.0
7.10	9.30	6.10	0.500	8.95	....	....	....	4.50	48.0	120.0
8.92	6.10	8.42	0.250	10.10	....	....	....	5.25	30.0	78.0
9.02	7.45	8.42	0.300	10.25	....	....	....	5.25	37.0	95.0
9.12	8.70	8.42	0.350	10.40	....	....	....	5.25	44.0	114.0
9.22	9.95	8.42	0.400	10.55	....	....	....	5.25	50.0	130.0
9.32	11.25	8.42	0.450	10.70	....	....	....	5.25	57.0	148.0
9.42	12.60	8.42	0.500	10.90	....	....	....	5.25	64.0	165.0

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

CENTRON International Inc. — DHC Casing

Type: Upset, integral Seal: Resilient										
									Minimum joint tension strength, kips	
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Rating	Ultimate
5.15	2.10	4.85	0.150	6.30	....	....	....	4.50	10.0	28.0
5.20	2.45	4.85	0.175	6.35	....	....	....	4.50	13.0	32.0
5.25	2.85	4.85	0.200	6.40	....	....	....	4.50	14.0	38.0
5.35	3.60	4.85	0.250	6.50	....	....	....	4.50	18.0	48.0
5.45	4.40	4.85	0.300	6.60	....	....	....	4.50	22.0	58.0
5.55	5.15	4.85	0.350	6.70	....	....	....	4.50	26.0	68.0
5.65	5.90	4.85	0.400	6.80	....	....	....	4.50	30.0	78.0
6.80	3.75	6.40	0.200	8.10	....	....	....	4.50	19.0	49.0
6.90	4.75	6.40	0.250	8.20	....	....	....	4.50	24.0	60.0
7.00	5.70	6.40	0.300	8.35	....	....	....	4.50	29.0	74.0
7.10	7.60	6.40	0.350	8.40	....	....	....	4.50	34.0	86.0
7.20	7.70	6.40	0.400	8.45	....	....	....	4.50	39.0	100.0
7.30	8.65	6.40	0.450	8.55	....	....	....	4.50	44.0	115.0
7.40	9.65	6.40	0.500	8.65	....	....	....	4.50	50.0	128.0

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

CENTRON International Inc. — DHCC Casing

Type: Upset, integral Seal: Resilient										
									Minimum joint tension strength, kips	
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Rating	Ultimate
4.63	1.90	4.33	0.150	5.25	....	....	....	4.50	9.5	25.0
4.68	2.20	4.33	0.175	5.40	....	....	....	4.50	11.0	29.0
4.73	2.53	4.33	0.200	5.50	....	....	....	4.50	13.0	34.0
4.83	3.20	4.33	0.250	5.60	....	....	....	4.50	16.0	43.0
4.93	3.61	4.33	0.280	5.75	....	....	....	4.50	18.0	48.0

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES (UPDATE)

Type: Coupled Seal: Threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
	20.0	6.331	0.272	7.657	7.375	5.749	9.517	4.409	373	451	488	508	523	550	650	711
	23.0	6.241	0.317	7.657	7.375	6.655	9.517	4.409	432	522	565	588	605	636	752	823
	26.0	6.151	0.362	7.657	7.375	7.549	9.517	4.409	490	592	641	667	687	722	853	934
	29.0	6.059	0.408	7.657	7.375	8.449	9.517	4.409	548	662	718	746	768	808	955	1045
	32.0	5.969	0.453	7.657	7.375	9.317	9.517	4.409	605	730	791	823	847	891	1053	1152
7.000	35.0	5.879	0.498	7.657	7.375	10.172	9.517	4.409	660	797	859	898	904	949	1130	1221
	36.0	5.835	0.520	7.657	7.375	10.586	9.517	4.409	678	830	859	904	904	949	1130	1221
	38.0	5.795	0.540	7.657	7.375	10.959	9.517	4.409	678	859	859	904	904	949	1130	1221
	41.0	5.695	0.590	7.657	7.375	11.881	9.517	4.409	678	859	859	904	904	949	1130	1221
	44.0	5.595	0.640	7.657	7.375	12.788	9.517	4.409	678	859	859	904	904	949	1130	1221
	46.0	5.535	0.670	7.657	7.375	13.324	9.517	4.409	678	859	859	904	904	949	1130	1221
	26.4	6.844	0.328	8.500	8.125	7.519	13.409	4.606	483	581	635	659	681	716	845	926
	29.7	6.750	0.375	8.500	8.125	8.541	13.409	4.606	549	660	721	749	773	813	960	1052
	33.7	6.640	0.430	8.500	8.125	9.720	13.409	4.606	625	751	820	852	880	925	1093	1197
	35.8	6.570	0.465	8.500	8.125	10.460	13.409	4.606	673	808	883	917	947	996	1176	1289
7.625	39.0	6.500	0.500	8.500	8.125	11.192	13.409	4.606	720	864	945	981	1013	1065	1258	1379
	42.8	6.376	0.562	8.500	8.125	12.470	13.409	4.606	802	963	1053	1093	1129	1187	1402	1536
	45.3	6.310	0.595	8.500	8.125	13.141	13.409	4.606	845	1015	1109	1152	1189	1251	1477	1619
	47.1	6.250	0.625	8.500	8.125	13.744	13.409	4.606	884	1062	1160	1205	1244	1308	1545	1693
	51.2	6.126	0.687	8.500	8.125	14.974	13.409	4.606	955	1157	1210	1274	1274	1338	1592	1720
7.750	46.1	6.435	0.595	8.626	(1)	13.374	13.638	4.606	858	1030	1127	1170	1209	1272	1502	1646

(1) Special clearance available.

- D — Casing nominal tube OD, in.
- w — Casing weight, lb/ft
- d — ID (drift), in.
- t — Casing wall thickness, in.
- D_c — Connection OD, in.
- D_{sc} — Connection OD (special clearance or turned down), in.
- A_t — Casing wall critical cross-sectional area, sq. in.
- A_c — Connection critical cross-sectional area, sq. in.
- L_m — Make-up loss, in.

Dalmine S.p.A. — ANTARES (UPDATE) (continued)

Type: Coupled Seal: Threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	28.0	7.892	0.304	9.626	9.125	7.947	17.118	4.724	503	599	664	688	714	751	886	973
	32.0	7.796	0.352	9.626	9.125	9.149	17.118	4.724	579	690	764	792	822	864	1020	1120
	36.0	7.700	0.400	9.626	9.125	10.336	17.118	4.724	654	780	864	895	928	976	1152	1265
	40.0	7.600	0.450	9.626	9.125	11.557	17.118	4.724	732	872	966	1001	1038	1092	1288	1415
	44.0	7.500	0.500	9.626	9.125	12.763	17.118	4.724	808	963	1066	1105	1146	1206	1423	1562
	49.0	7.386	0.557	9.626	9.125	14.118	17.118	4.724	894	1065	1180	1222	1268	1334	1574	1728
	52.0	7.310	0.595	9.626	9.125	15.010	17.118	4.724	950	1132	1254	1300	1348	1418	1673	1837
	54.0	7.250	0.625	9.626	9.125	15.708	17.118	4.724	994	1185	1312	1360	1411	1484	1751	1923
	58.7	7.126	0.687	9.626	9.125	17.132	17.118	4.724	1085	1292	1431	1483	1539	1619	1910	2097
9.625	36.0	8.765	0.352	10.626	10.125	10.254	19.015	4.724	639	755	848	877	914	962	1133	1247
	40.0	8.679	0.395	10.626	10.125	11.454	19.015	4.724	714	843	947	979	1021	1074	1266	1393
	43.5	8.599	0.435	10.626	10.125	12.559	19.015	4.724	783	925	1038	1074	1119	1178	1388	1527
	47.0	8.525	0.472	10.626	10.125	13.572	19.015	4.724	846	999	1122	1161	1210	1273	1500	1650
	53.5	8.379	0.545	10.626	10.125	15.546	19.015	4.724	969	1145	1285	1329	1386	1458	1718	1890
	58.4	8.279	0.595	10.626	10.125	16.879	19.015	4.724	1052	1243	1396	1443	1505	1583	1865	2052
	59.4	8.251	0.609	10.626	10.125	17.250	19.015	4.724	1075	1270	1426	1475	1538	1618	1906	2098
	61.1	8.219	0.625	10.626	10.125	17.671	19.015	4.724	1101	1301	1461	1511	1575	1657	1953	2149
	64.9	8.125	0.672	10.626	10.125	18.901	19.015	4.724	1178	1392	1563	1616	1685	1772	2089	2298
	70.3	8.001	0.734	10.626	10.125	20.502	19.015	4.724	1278	1510	1695	1753	1806	1897	2258	2439
9.875	62.8	8.469	0.625	10.827	(1)	18.162	18.581	4.724	1127	1329	1498	1548	1616	1700	2003	2205
	67.3	8.383	0.668	10.827	(1)	19.322	18.581	4.724	1199	1414	1593	1647	1719	1808	2131	2346
	68.8	8.319	0.700	10.827	(1)	20.177	18.581	4.724	1253	1477	1664	1720	1765	1853	2206	2383
	70.4	8.305	0.707	10.827	(1)	20.363	18.581	4.724	1264	1490	1677	1736	1765	1853	2206	2383
	72.1	8.269	0.725	10.827	(1)	20.841	18.581	4.724	1294	1525	1677	1765	1765	1853	2206	2383

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES (UPDATE) (continued)

Type: Coupled Seal: Threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	40.5	9.894	0.350	11.748	11.250	11.435	21.051	4.724	700	819	934	964	1010	1063	1251	1380
	45.5	9.794	0.400	11.748	11.250	13.006	21.051	4.724	796	931	1063	1097	1149	1209	1423	1570
	51.0	9.694	0.450	11.748	11.250	14.561	21.051	4.724	891	1043	1190	1228	1287	1354	1594	1758
	55.5	9.604	0.495	11.748	11.250	15.947	21.051	4.724	976	1142	1303	1345	1409	1483	1745	1925
	60.7	9.504	0.545	11.748	11.250	17.473	21.051	4.724	1070	1251	1428	1473	1544	1625	1912	2109
	65.7	9.404	0.595	11.748	11.250	18.982	21.051	4.724	1162	1359	1551	1600	1677	1765	2077	2291
	68.8	9.322	0.636	11.748	11.250	20.208	21.051	4.724	1237	1447	1651	1704	1786	1879	2212	2439
	73.2	9.250	0.672	11.748	11.250	21.276	21.051	4.724	1302	1524	1739	1794	1880	1978	2328	2568
	76.6	9.194	0.700	11.748	11.250	22.101	21.051	4.724	1353	1583	1806	1863	1953	2055	2419	2668
	79.2	9.126	0.734	11.748	11.250	23.096	21.051	4.724	1414	1654	1887	1947	2000	2100	2500	2700
	85.3	9.000	0.797	11.748	11.250	24.921	21.051	4.724	1500	1784	1900	2000	2000	2100	2500	2700
11.750	47.0	10.844	0.375	12.752	(1)	13.401	22.969	4.724	807	935	1084	1116	1175	1237	1454	1607
	54.0	10.724	0.435	12.752	(1)	15.463	22.969	4.724	931	1079	1250	1287	1356	1427	1677	1854
	60.0	10.616	0.489	12.752	(1)	17.300	22.969	4.724	1042	1208	1399	1440	1517	1596	1877	2074
	65.0	10.526	0.534	12.752	(1)	18.816	22.969	4.724	1133	1313	1521	1566	1650	1736	2041	2256
	71.0	10.430	0.582	12.752	(1)	20.420	22.969	4.724	1230	1425	1651	1700	1790	1884	2215	2448
	75.0	10.358	0.618	12.752	(1)	21.613	22.969	4.724	1302	1509	1748	1799	1895	1994	2345	2591
12.750	57.6	11.728	0.433	13.750	(1)	16.755	24.516	4.724	993	1139	1340	1377	1457	1534	1802	1996
	65.1	11.610	0.492	13.750	(1)	18.947	24.516	4.724	1122	1288	1516	1557	1648	1735	2037	2257
	70.1	11.532	0.531	13.750	(1)	20.384	24.516	4.724	1208	1386	1631	1675	1773	1867	2192	2428
13.375	54.5	12.459	0.380	14.374	(1)	15.513	26.091	4.724	909	1038	1233	1265	1343	1414	1659	1840
	61.0	12.359	0.430	14.374	(1)	17.487	26.091	4.724	1025	1170	1389	1426	1514	1594	1870	2074
	68.0	12.259	0.480	14.374	(1)	19.445	26.091	4.724	1140	1300	1545	1585	1683	1772	2079	2306
	72.0	12.191	0.514	14.374	(1)	20.768	26.091	4.724	1217	1389	1650	1693	1797	1893	2221	2463
	77.0	12.119	0.550	14.374	(1)	22.160	26.091	4.724	1299	1482	1761	1806	1918	2019	2370	2628

(1) Special clearance available.

- D Casing nominal tube OD, in.
- w Casing weight, lb/ft
- d ID (drift), in.
- t Casing wall thickness, in.
- D_c Connection OD, in.
- D_{sc} Connection OD (special clearance or turned down), in.
- A_t Casing wall critical cross-sectional area, sq. in.
- A_c Connection critical cross-sectional area, sq. in.
- L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES (UPDATE) (continued)

Type: Coupled Seal: Threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	80.7	12.059	0.580	14.374	(1)	23.314	26.091	4.724	1367	1559	1852	1901	2018	2125	2493	2765
	85.0	12.003	0.608	14.374	(1)	24.386	26.091	4.724	1430	1631	1938	1988	2111	2222	2608	2892
	86.0	11.969	0.625	14.374	(1)	25.035	26.091	4.724	1468	1674	1989	2041	2167	2281	2677	2969
13.500	80.4	12.192	0.576	14.500	(1)	23.387	26.330	4.724	1368	1559	1856	1903	2022	2129	2498	2771
	81.4	12.184	0.580	14.500	(1)	23.542	26.330	4.724	1377	1569	1868	1916	2036	2143	2515	2790
13.625	88.2	12.219	0.625	14.626	(1)	25.525	26.145	4.724	1490	1696	2023	2074	2205	2322	2723	3022
	105.0	11.949	0.760	14.626	(1)	30.717	26.145	4.724	1793	2040	2360	2484	2484	2608	3105	3353
14.000	82.5	12.689	0.562	15.000	(1)	23.726	30.597	4.724	1376	1560	1872	1918	2043	2152	2523	2802
	94.8	12.501	0.656	15.000	(1)	27.500	30.597	4.724	1595	1808	2170	2224	2368	2494	2924	3248
	99.3	12.437	0.688	15.000	(1)	28.773	30.597	4.724	1669	1892	2271	2326	2478	2609	3060	3398
	110.0	12.269	0.772	15.000	(1)	32.082	30.597	4.724	1861	2109	2532	2594	2763	2910	3411	3789
	111.0	12.255	0.779	15.000	(1)	32.356	30.597	4.724	1877	2127	2553	2616	2787	2934	3441	3821
16.000	75.0	14.937	0.438	17.000	(1)	21.414	33.356	4.232	1200	1331	....	1686	....	....	....	....
	84.0	14.823	0.495	17.000	(1)	24.112	34.870	4.724	1351	1499	....	1898	....	....	....	....
	94.5	14.689	0.562	17.000	(1)	27.257	34.870	4.724	1527	1694	....	2146	....	....	....	....
	109.0	14.501	0.656	17.000	(1)	31.622	34.870	4.724	1772	1965	....	2489	....	....	....	....
	118.0	14.383	0.715	17.000	(1)	34.334	34.870	4.724	1924	2134	....	2703	....	....	....	....
	128.0	14.251	0.781	17.000	(1)	37.341	34.870	4.724	2092	2321	....	2940	....	....	....	....

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES (UPDATE) (continued)

Type: Coupled Seal: Threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
	87.5	17.568	0.435	20.000	(1)	24.858	50.353	4.232	1329	1427	....	1888	....	....	....	....
	94.5	17.502	0.468	20.000	(1)	26.696	50.353	4.232	1427	1533	....	2027	....	....	....	....
	96.5	17.468	0.485	20.000	(1)	27.639	50.353	4.232	1477	1587	....	2099	....	....	....	....
	99.0	17.438	0.500	20.000	(1)	28.471	52.120	4.724	1522	1635	....	2162	....	....	....	....
18.625	114.0	17.280	0.579	20.000	(1)	32.825	52.120	4.724	1754	1885	....	2492	....	....	....	....
	115.0	17.250	0.594	20.000	(1)	33.648	52.120	4.724	1798	1932	....	2555	....	....	....	....
	126.0	17.166	0.636	20.000	(1)	35.943	52.120	4.724	1921	2064	....	2729	....	....	....	....
	136.0	17.052	0.693	20.000	(1)	39.040	52.120	4.724	2086	2242	....	2964	....	....	....	....
	139.0	16.998	0.720	20.000	(1)	40.500	52.120	4.724	2165	2326	....	3075	....	....	....	....
20.000	94.0	18.937	0.438	21.000	(1)	26.918	41.515	4.232	1402	1479	....	2004	....	....	....	....

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES (UPDATE) (continued)

Type: Coupled Seal: Threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
20.000	106.5	18.813	0.500	21.000	(1)	30.631	43.416	4.724	1595	1683	....	2281	....	....	....	....
	118.5	18.687	0.563	21.000	(1)	34.379	43.416	4.724	1791	1889	....	2560	....	....	....	....
	131.5	18.563	0.625	21.000	(1)	38.043	43.416	4.724	1982	2090	....	2833	....	....	....	....
	133.0	18.543	0.635	21.000	(1)	38.631	43.416	4.724	2012	2123	....	2877	....	....	....	....
	147.0	18.395	0.709	21.000	(1)	42.969	43.416	4.724	2238	2361	....	3200	....	....	....	....
	169.0	18.189	0.812	21.000	(1)	48.948	43.416	4.724	2550	2689	....	3645	....	....	....	....
24.500	133.0	23.250	0.500	25.591	(1)	37.699	54.329	4.232	1796	1766	....	....	....	....	....	....
	140.0	23.188	0.531	25.591	(1)	39.985	56.665	4.724	1905	1873	....	....	....	....	....	....
	162.0	23.000	0.625	25.591	(1)	46.878	56.665	4.724	2234	2196	....	....	....	....	....	....
	165.0	22.980	0.635	25.591	(1)	47.609	56.665	4.724	2268	2230	....	....	....	....	....	....
	182.0	22.832	0.709	25.591	(1)	52.992	56.665	4.724	2525	2482	....	....	....	....	....	....
	207.0	22.626	0.812	25.591	(1)	60.427	56.665	4.724	2879	2830	....	....	....	....	....	....

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES MS (UPDATE)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.563	5.375	3.773	5.513	4.252	269	341	341	358	358	376	448	484
	15.0	4.283	0.296	5.563	5.375	4.374	5.513	4.252	312	395	395	416	416	436	519	561
	18.0	4.151	0.362	5.563	5.375	5.275	5.513	4.252	376	476	476	501	501	526	626	676
	20.3	4.059	0.408	5.563	5.375	5.886	5.513	4.252	393	498	498	524	524	550	655	707
	20.8	4.031	0.422	5.563	5.375	6.069	5.513	4.252	393	498	498	524	524	550	655	707
	21.4	4.001	0.437	5.563	5.375	6.264	5.513	4.252	393	498	498	524	524	550	655	707
	23.2	3.919	0.478	5.563	5.375	6.791	5.513	4.252	393	498	498	524	524	550	655	707
	24.1	3.875	0.500	5.563	5.375	7.069	5.513	4.252	393	498	498	524	524	550	655	707
5.500	14.0	4.887	0.244	6.051	5.875	4.029	5.929	4.252	287	364	364	383	383	402	478	517
	15.5	4.825	0.275	6.051	5.875	4.514	5.929	4.252	322	407	407	429	429	450	536	579
	17.0	4.767	0.304	6.051	5.875	4.962	5.929	4.252	354	448	448	471	471	495	589	636
	20.0	4.653	0.361	6.051	5.875	5.828	5.929	4.252	415	526	526	554	554	581	692	747
	23.0	4.545	0.415	6.051	5.875	6.630	5.929	4.252	422	535	535	563	563	591	704	760
	26.8	4.375	0.500	6.051	5.875	7.854	5.929	4.252	422	535	535	563	563	591	704	760
6.625	20.0	5.924	0.288	7.390	7.000	5.734	9.911	4.252	409	517	517	545	545	572	681	735
	23.2	5.840	0.330	7.390	7.000	6.526	9.911	4.252	465	589	589	620	620	651	775	837
	24.0	5.796	0.352	7.390	7.000	6.937	9.911	4.252	494	626	626	659	659	692	824	890
	28.0	5.666	0.417	7.390	7.000	8.133	9.911	4.252	579	734	734	773	773	811	966	1043
	32.0	5.550	0.475	7.390	7.000	9.177	9.911	4.252	654	828	828	872	872	915	1090	1177
	35.0	5.450	0.525	7.390	7.000	10.061	9.911	4.252	706	894	894	942	942	989	1177	1271

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES MS (UPDATE) (continued)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.625	45.3	6.310	0.595	8.500	8.125	13.141	13.158	4.606	936	1186	1186	1248	1248	1311	1560	1685
	47.1	6.250	0.625	8.500	8.125	13.744	13.158	4.606	938	1188	1188	1250	1250	1313	1563	1688
	51.2	6.126	0.687	8.500	8.125	14.974	13.158	4.606	938	1188	1188	1250	1250	1313	1563	1688
7.750	46.1	6.435	0.595	8.626	(1)	13.374	13.386	4.606	953	1207	1207	1271	1271	1334	1588	1715
7.000	20.0	6.331	0.272	7.657	7.375	5.749	9.302	4.409	410	519	519	546	546	573	683	737
	23.0	6.241	0.317	7.657	7.375	6.655	9.302	4.409	474	601	601	632	632	664	790	854
	26.0	6.151	0.362	7.657	7.375	7.549	9.302	4.409	538	681	681	717	717	753	896	968
	29.0	6.059	0.408	7.657	7.375	8.449	9.302	4.409	602	763	763	803	803	843	1003	1084
	32.0	5.969	0.453	7.657	7.375	9.317	9.302	4.409	663	840	840	884	884	928	1105	1193
	35.0	5.879	0.498	7.657	7.375	10.172	9.302	4.409	663	840	840	884	884	928	1105	1193
	38.0	5.795	0.540	7.657	7.375	10.959	9.302	4.409	663	840	840	884	884	928	1105	1193
	41.0	5.695	0.590	7.657	7.375	11.881	9.302	4.409	663	840	840	884	884	928	1105	1193
	44.0	5.595	0.640	7.657	7.375	12.788	9.302	4.409	663	840	840	884	884	928	1105	1193
	46.0	5.535	0.670	7.657	7.375	13.324	9.302	4.409	663	840	840	884	884	928	1105	1193
7.625	26.4	6.844	0.328	8.500	8.125	7.519	13.158	4.606	536	679	679	714	714	750	893	964
	29.7	6.750	0.375	8.500	8.125	8.541	13.158	4.606	609	771	771	811	811	852	1014	1095
	33.7	6.640	0.430	8.500	8.125	9.720	13.158	4.606	693	877	877	923	923	970	1154	1247
	35.8	6.570	0.465	8.500	8.125	10.460	13.158	4.606	745	944	944	994	994	1043	1242	1341
	39.0	6.500	0.500	8.500	8.125	11.192	13.158	4.606	797	1010	1010	1063	1063	1116	1329	1435
	42.8	6.376	0.562	8.500	8.125	12.470	13.158	4.606	889	1125	1125	1185	1185	1244	1481	1599

(1) Special clearance available.

- D — Casing nominal tube OD, in.
- w — Casing weight, lb/ft
- d — ID (drift), in.
- t — Casing wall thickness, in.
- D_c — Connection OD, in.
- D_{sc} — Connection OD (special clearance or turned down), in.
- A_t — Casing wall critical cross-sectional area, sq. in.
- A_c — Connection critical cross-sectional area, sq. in.
- L_m — Make-up loss, in.

Dalmine S.p.A. — ANTARES MS (UPDATE) (continued)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	28.0	7.892	0.304	9.626	9.125	7.947	16.830	4.724	566	717	717	755	755	793	944	1019
	32.0	7.796	0.352	9.626	9.125	9.149	16.830	4.724	652	826	826	869	869	913	1086	1173
	36.0	7.700	0.400	9.626	9.125	10.336	16.830	4.724	736	933	933	982	982	1031	1227	1326
	40.0	7.600	0.450	9.626	9.125	11.557	16.830	4.724	823	1043	1043	1098	1098	1153	1372	1482
	44.0	7.500	0.500	9.626	9.125	12.763	16.830	4.724	909	1152	1152	1212	1212	1273	1516	1637
	49.0	7.386	0.557	9.626	9.125	14.118	16.830	4.724	1006	1274	1274	1341	1341	1408	1677	1811
	52.0	7.310	0.595	9.626	9.125	15.010	16.830	4.724	1069	1355	1355	1426	1426	1497	1782	1925
9.625	36.0	8.765	0.352	10.626	10.125	10.254	18.693	4.724	731	925	925	974	974	1023	1218	1315
	40.0	8.679	0.395	10.626	10.125	11.454	18.693	4.724	816	1034	1034	1088	1088	1143	1360	1469
	43.5	8.599	0.435	10.626	10.125	12.559	18.693	4.724	895	1133	1133	1193	1193	1253	1491	1611
	47.0	8.525	0.472	10.626	10.125	13.572	18.693	4.724	967	1225	1225	1289	1289	1354	1612	1741
	53.5	8.379	0.545	10.626	10.125	15.546	18.693	4.724	1108	1403	1403	1477	1477	1551	1846	1994
	58.4	8.279	0.595	10.626	10.125	16.879	18.693	4.724	1203	1523	1523	1604	1604	1684	2004	2165
	59.4	8.251	0.609	10.626	10.125	17.250	18.693	4.724	1229	1557	1557	1639	1639	1721	2048	2212
	61.1	8.219	0.625	10.626	10.125	17.671	18.693	4.724	1259	1595	1595	1679	1679	1763	2098	2266
	64.9	8.125	0.672	10.626	10.125	18.901	18.693	4.724	1332	1687	1687	1776	1776	1865	2220	2397
9.875	62.8	8.469	0.625	10.827	(1)	18.162	18.350	4.724	1294	1639	1639	1725	1725	1812	2157	2329
	67.3	8.383	0.668	10.984	(1)	19.322	21.047	4.724	1377	1744	1744	1836	1836	1927	2294	2478
	68.8	8.319	0.700	10.984	(1)	20.177	21.047	4.724	1438	1821	1821	1917	1917	2013	2396	2588
	70.4	8.305	0.707	10.984	(1)	20.363	21.047	4.724	1451	1838	1838	1934	1934	2031	2418	2612
	72.1	8.269	0.725	10.984	(1)	20.841	21.047	4.724	1485	1881	1881	1980	1980	2079	2475	2673

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES MS (UPDATE) (continued)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	40.5	9.894	0.350	11.748	11.250	11.435	20.719	4.724	815	1032	1032	1086	1086	1141	1358	1467
	45.5	9.794	0.400	11.748	11.250	13.006	20.719	4.724	927	1174	1174	1236	1236	1297	1544	1668
	51.0	9.694	0.450	11.748	11.250	14.561	20.719	4.724	1037	1314	1314	1383	1383	1452	1729	1867
	55.5	9.604	0.495	11.748	11.250	15.947	20.719	4.724	1136	1439	1439	1515	1515	1591	1894	2045
	60.7	9.504	0.545	11.748	11.250	17.473	20.719	4.724	1245	1577	1577	1660	1660	1743	2075	2241
	65.7	9.404	0.595	11.748	11.250	18.982	20.719	4.724	1352	1713	1713	1803	1803	1893	2254	2434
	73.2	9.250	0.672	11.778	11.250	21.276	21.276	4.724	1516	1920	1920	2021	2021	2122	2527	2729
	76.6	9.194	0.700	11.748	11.250	22.101	20.719	4.724	1476	1870	1870	1968	1968	2067	2460	2657
	79.2	9.126	0.734	11.748	11.250	23.096	20.719	4.724	1476	1870	1870	1968	1968	2067	2460	2657
	85.3	9.000	0.797	11.748	11.250	24.921	20.719	4.724	1476	1870	1870	1968	1968	2067	2460	2657
11.750	47.0	10.844	0.375	12.752	(1)	13.401	22.576	4.724	955	1209	1209	1273	1273	1337	1591	1719
	47.0	10.844	0.375	12.752	(1)	13.401	22.576	4.724	955	1209	1209	1273	1273	1337	1591	1719
	54.0	10.724	0.435	12.752	(1)	15.463	22.576	4.724	1102	1396	1396	1469	1469	1542	1836	1983
	60.0	10.616	0.489	12.752	(1)	17.300	22.576	4.724	1233	1561	1561	1643	1643	1726	2054	2219
	65.0	10.526	0.534	12.752	(1)	18.816	22.576	4.724	1341	1698	1698	1788	1788	1877	2234	2413
12.750	57.6	11.728	0.433	13.750	(1)	16.755	24.516	4.724	1194	1512	1512	1592	1592	1671	1990	2149
	65.1	11.610	0.492	13.750	(1)	18.947	24.516	4.724	1350	1710	1710	1800	1800	1890	2250	2430
	70.1	11.532	0.531	13.750	(1)	20.384	24.516	4.724	1452	1840	1840	1936	1936	2033	2421	2614

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES MS (UPDATE) (continued)

Type: Coupled Seal: Metal-to-metal Minimum joint tension strength, kips																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	54.5	12.459	0.380	14.374	(1)	15.513	25.676	4.724	1105	1400	1400	1474	1474	1547	1842	1990
	61.0	12.359	0.430	14.374	(1)	17.487	25.676	4.724	1246	1578	1578	1661	1661	1744	2077	2243
	68.0	12.259	0.480	14.374	(1)	19.445	25.676	4.724	1385	1755	1755	1847	1847	1940	2309	2494
	72.0	12.191	0.514	14.374	(1)	20.768	25.676	4.724	1480	1874	1874	1973	1973	2072	2466	2663
	77.0	12.119	0.550	14.374	(1)	22.160	25.676	4.724	1579	2000	2000	2105	2105	2210	2632	2842
	80.7	12.059	0.580	14.374	(1)	23.314	25.676	4.724	1661	2104	2104	2215	2215	2326	2769	2990
	85.0	12.003	0.608	14.374	(1)	24.386	25.676	4.724	1738	2201	2201	2317	2317	2433	2896	3128
	86.0	11.969	0.625	14.374	(1)	25.035	25.676	4.724	1784	2259	2259	2378	2378	2497	2973	3211
13.500	80.4	12.192	0.576	14.500	(1)	23.387	25.911	4.724	1666	2111	2111	2222	2222	2333	2777	2999
13.625	88.2	12.219	0.625	14.626	(1)	25.525	26.145	4.724	1819	2304	2304	2425	2425	2546	3031	....
14.000	94.8	12.501	0.656	15.000	(1)	27.500	32.226	5.512	1959	2482	2482	2613	2613	2743	3266	....
	99.3	12.437	0.688	15.000	(1)	28.773	32.226	5.512	2050	2597	2597	2733	2733	2870	3417	....
	110.0	12.269	0.772	15.000	(1)	32.082	32.226	5.512	2286	2895	2895	3048	3048	3200	3810	....
	111.0	12.255	0.779	15.000	(1)	32.356	32.226	5.512	2296	2908	2908	3061	3061	3215	3827	....

(1) Special clearance available.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES MS 28 (UPDATE)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.512	5.375	3.773	5.014	4.882	269	341	341	358	358	376	448	484
	15.0	4.283	0.296	5.512	5.375	4.374	5.014	4.882	312	395	395	416	416	436	519	561
	18.0	4.151	0.362	5.630	5.375	5.275	6.047	4.882	376	476	476	501	501	526	626	676
	20.3	4.059	0.408	5.630	5.375	5.886	6.047	4.882	419	531	531	559	559	587	699	755
	20.8	4.031	0.422	5.630	5.375	6.069	6.047	4.882	431	546	546	574	574	603	718	776
	21.4	4.001	0.437	5.756	5.375	6.264	7.173	4.882	446	565	565	595	595	625	744	803
	23.2	3.919	0.478	5.756	5.375	6.791	7.173	4.882	484	613	613	645	645	677	806	871
	24.1	3.875	0.500	5.756	5.375	7.069	7.173	4.882	504	638	638	672	672	705	839	907
5.500	15.5	4.825	0.275	6.043	5.875	4.514	5.794	4.882	322	407	407	429	429	450	536	579
	17.0	4.767	0.304	6.043	5.875	4.962	5.794	4.882	354	448	448	471	471	495	589	636
	20.0	4.653	0.361	6.146	5.875	5.828	6.774	4.882	415	526	526	554	554	581	692	747
	23.0	4.545	0.415	6.146	5.875	6.630	6.774	4.882	472	598	598	630	630	661	787	850
	26.0	4.423	0.476	6.260	5.875	7.513	7.885	4.882	535	678	678	714	714	749	892	964
	26.8	4.375	0.500	6.260	5.875	7.854	7.885	4.882	560	709	709	746	746	783	933	1007
	28.4	4.315	0.530	6.260	5.875	8.275	7.885	4.882	562	712	712	749	749	787	936	1011
	29.7	4.251	0.562	6.260	5.875	8.718	7.885	4.882	562	712	712	749	749	787	936	1011
6.625	20.0	5.924	0.288	7.390	7.000	5.734	10.142	4.409	409	517	517	545	545	572	681	735
	24.0	5.796	0.352	7.390	7.000	6.937	10.142	4.409	494	626	626	659	659	692	824	890
	28.0	5.666	0.417	7.390	7.000	8.133	10.142	4.409	579	734	734	773	773	811	966	1043
	32.0	5.550	0.475	7.390	7.000	9.177	10.142	4.409	654	828	828	872	872	915	1090	1177
	35.0	5.450	0.525	7.390	7.000	10.061	10.142	4.409	717	908	908	956	956	1004	1195	1290

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Dalmine S.p.A. — ANTARES MS 28 (UPDATE) (continued)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.750	46.1	6.435	0.595	8.626	(1)	13.374	13.594	4.724	953	1207	1207	1271	1271	1334	1588	1715
	47.6	6.375	0.625	8.626	(1)	13.990	13.594	4.724	969	1227	1227	1291	1291	1356	1614	1743
	48.6	6.345	0.640	8.626	(1)	14.296	13.594	4.724	969	1227	1227	1291	1291	1356	1614	1743
7.000	20.0	6.331	0.272	7.657	7.375	5.749	9.509	4.528	410	519	519	546	546	573	683	737
	23.0	6.241	0.317	7.657	7.375	6.655	9.509	4.528	474	601	601	632	632	664	790	854
	24.8	6.189	0.343	7.657	7.375	7.173	9.509	4.528	511	647	647	681	681	716	852	920
	26.0	6.151	0.362	7.657	7.375	7.549	9.509	4.528	538	681	681	717	717	753	896	968
	29.0	6.059	0.408	7.657	7.375	8.449	9.509	4.528	602	763	763	803	803	843	1003	1084
	32.0	5.969	0.453	7.657	7.375	9.317	9.509	4.528	664	841	841	885	885	929	1106	1195
	35.0	5.879	0.498	7.795	7.375	10.172	11.183	4.528	725	918	918	966	966	1015	1208	1305
	38.0	5.795	0.540	7.795	7.375	10.959	11.183	4.528	781	989	989	1041	1041	1093	1301	1406
	41.0	5.695	0.590	7.795	7.375	11.881	11.183	4.528	797	1009	1009	1062	1062	1116	1328	1434
7.625	26.4	6.844	0.328	8.500	8.125	7.519	13.428	4.724	536	679	679	714	714	750	893	964
	29.7	6.750	0.375	8.500	8.125	8.541	13.428	4.724	609	771	771	811	811	852	1014	1095
	33.7	6.640	0.430	8.500	8.125	9.720	13.428	4.724	693	877	877	923	923	970	1154	1247
	35.8	6.570	0.465	8.500	8.125	10.460	13.428	4.724	745	944	944	994	994	1043	1242	1341
	39.0	6.500	0.500	8.500	8.125	11.192	13.428	4.724	797	1010	1010	1063	1063	1116	1329	1435
	42.8	6.376	0.562	8.500	8.125	12.470	13.428	4.724	889	1125	1125	1185	1185	1244	1481	1599
	45.3	6.310	0.595	8.500	8.125	13.141	13.428	4.724	936	1186	1186	1248	1248	1311	1560	1685
	47.1	6.250	0.625	8.543	8.125	13.744	14.007	4.724	979	1240	1240	1306	1306	1371	1632	1763

(1) Special clearance available.

- D — Casing nominal tube OD, in.
- w — Casing weight, lb/ft
- d — ID (drift), in.
- t — Casing wall thickness, in.
- D_c — Connection OD, in.
- D_{sc} — Connection OD (special clearance or turned down), in.
- A_t — Casing wall critical cross-sectional area, sq. in.
- A_c — Connection critical cross-sectional area, sq. in.
- L_m — Make-up loss, in.

Dalmine S.p.A. — ANTARES MS 28 (UPDATE) (continued)

Type: Coupled Seal: Metal-to-metal																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.750	46.1	6.435	0.595	8.626	(1)	13.374	13.594	4.724	953	1207	1207	1271	1271	1334	1588	1715
	47.6	6.375	0.625	8.626	(1)	13.990	13.594	4.724	969	1227	1227	1291	1291	1356	1614	1743
	48.6	6.345	0.640	8.626	(1)	14.296	13.594	4.724	969	1227	1227	1291	1291	1356	1614	1743
8.625	28.0	7.892	0.304	9.626	9.125	7.947	17.087	4.843	566	717	717	755	755	793	944	1019
	32.0	7.796	0.352	9.626	9.125	9.149	17.087	4.843	652	826	826	869	869	913	1086	1173
	36.0	7.700	0.400	9.626	9.125	10.336	17.087	4.843	736	933	933	982	982	1031	1227	1326
	40.0	7.600	0.450	9.626	9.125	11.557	17.087	4.843	823	1043	1043	1098	1098	1153	1372	1482
	44.0	7.500	0.500	9.626	9.125	12.763	17.087	4.843	909	1152	1152	1212	1212	1273	1516	1637
	49.0	7.386	0.557	9.626	9.125	14.118	17.087	4.843	1006	1274	1274	1341	1341	1408	1677	1811
	52.0	7.310	0.595	9.626	9.125	15.010	17.087	4.843	1069	1355	1355	1426	1426	1497	1782	1925
9.625	36.0	8.765	0.352	10.626	10.125	10.254	18.981	4.843	731	925	925	974	974	1023	1218	1315
	40.0	8.679	0.395	10.626	10.125	11.454	18.981	4.843	816	1034	1034	1088	1088	1143	1360	1469
	43.5	8.599	0.435	10.626	10.125	12.559	18.981	4.843	895	1133	1133	1193	1193	1253	1491	1611
	47.0	8.525	0.472	10.626	10.125	13.572	18.981	4.843	967	1225	1225	1289	1289	1354	1612	1741
	53.5	8.379	0.545	10.626	10.125	15.546	18.981	4.843	1108	1403	1403	1477	1477	1551	1846	1994
	58.4	8.279	0.595	10.626	10.125	16.879	18.981	4.843	1203	1523	1523	1604	1604	1684	2004	2165
	59.4	8.251	0.609	10.626	10.125	17.250	18.981	4.843	1229	1557	1557	1639	1639	1721	2048	2212
	61.1	8.219	0.625	10.626	10.125	17.671	18.981	4.843	1259	1595	1595	1679	1679	1763	2098	2266
	64.9	8.125	0.672	10.650	10.125	18.901	19.377	4.843	1347	1706	1706	1796	1796	1885	2245	2424

(1) Special clearance available.

- D — Casing nominal tube OD, in.
- w — Casing weight, lb/ft
- d — ID (drift), in.
- t — Casing wall thickness, in.
- D_c — Connection OD, in.
- D_{sc} — Connection OD (special clearance or turned down), in.
- A_t — Casing wall critical cross-sectional area, sq. in.
- A_c — Connection critical cross-sectional area, sq. in.
- L_m — Make-up loss, in.

Equivalent S.A. — ATS-I

Type: Coupled Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	61.0	12.359	0.430	14.375	14.375	17.487	14.995	5.9	....	1125	1425	1425	1499	1499	1574	1874	2024
	68.0	12.259	0.480	14.375	14.375	19.445	16.965	5.9	....	1272	1612	1612	1696	1696	1781	2121	2290
	72.0	12.250	0.514	14.375	14.375	20.768	18.295	5.9	....	1372	1738	1738	1830	1830	1921	2287	2470
13.625	88.2	12.250	0.625	14.600	14.540	25.526	23.048	5.9	....	1729	2190	2190	2305	2305	2420	2881	3112
14.000	82.5	12.720	0.562	15.100	14.781	23.726	21.151	5.9	....	1586	2009	2009	2115	2115	2221	2644	2855
	94.8	12.532	0.656	15.100	14.970	27.501	24.950	5.9	....	1871	2370	2370	2495	2495	2620	3119	3368
	99.3	12.468	0.688	15.100	15.035	28.773	26.230	5.9	....	1967	2492	2492	2623	2623	2754	3279	3541
	110.0	12.300	0.772	15.100	15.100	32.082	29.560	5.9	....	2217	2808	2808	2956	2956	3104	3695	3991
16.000	65.0	15.062	0.375	17.000	16.440	18.408	15.399	5.9	....	1155	1463	1463	1540	1540	1617	1925	2079
	75.0	14.937	0.438	17.000	16.535	21.414	18.421	5.9	....	1382	1750	1750	1842	1842	1934	2303	2487
	84.0	14.822	0.495	17.000	16.644	24.112	21.133	5.9	....	1585	2008	2008	2113	2113	2219	2642	2853
	84.8	14.812	0.500	17.000	16.654	24.347	21.370	5.9	....	1603	2030	2030	2137	2137	2244	2671	2885
	94.5	14.688	0.562	17.000	16.774	27.257	24.295	5.9	....	1822	2308	2308	2430	2430	2551	3037	3280
	104.0	14.562	0.625	17.000	16.898	30.189	27.243	5.9	....	2043	2588	2588	2724	2724	2860	3405	3678
	109.0	14.501	0.656	17.000	16.959	31.622	28.684	5.9	....	2151	2725	2725	2868	2868	3012	3586	3872
	118.0	14.383	0.715	17.000	17.000	34.334	31.410	5.9	....	2356	2984	2984	3141	3141	3298	3926	4240
	128.0	14.251	0.781	17.000	17.000	37.341	32.795	5.9	....	2460	3116	3116	3280	3280	3443	4099	4427
18.625	87.5	17.567	0.435	20.000	19.156	24.858	21.362	5.9	....	1602	2029	2029	2136	2136	2243	2670	2884
	96.5	17.500	0.485	20.000	19.250	27.639	24.156	5.9	....	1812	2295	2295	2416	2416	2536	3020	3261
	106.0	17.375	0.531	20.000	19.338	30.184	26.713	5.9	....	2004	2538	2538	2671	2671	2805	3339	3606
	109.4	17.311	0.563	20.000	19.399	31.947	28.484	5.9	....	2136	2706	2706	2848	2848	2991	3561	3845
	112.0	17.279	0.579	20.000	19.430	32.825	29.368	5.9	....	2203	2790	2790	2937	2937	3084	3671	3965
	117.5	17.252	0.593	20.000	19.457	33.593	30.139	5.9	....	2260	2863	2863	3014	3014	3165	3767	4069
	126.0	17.166	0.636	20.000	19.541	35.943	32.500	5.9	....	2438	3088	3088	3250	3250	3413	4063	4388
	136.0	17.052	0.693	20.000	19.652	39.040	35.613	5.9	....	2671	3383	3383	3561	3561	3739	4452	4808

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Equivalent S.A. — ATS-I (continued)

Type: Coupled Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
20.000	94.0	18.936	0.438	21.000	20.540	26.918	23.162	5.9	....	1737	2200	2200	2316	2316	2432	2895	3127
	106.5	18.812	0.500	21.000	20.657	30.631	26.892	5.9	....	2017	2555	2555	2689	2689	2824	3362	3630
	131.0	18.562	0.625	21.000	20.896	38.043	34.340	5.9	....	2575	3262	3262	3434	3434	3606	4292	4636
	133.0	18.543	0.635	21.000	20.915	38.632	34.931	5.9	....	2620	3318	3318	3493	3493	3668	4366	4716
	147.0	18.395	0.709	21.000	21.000	42.969	39.289	5.9	....	2947	3732	3732	3929	3929	4125	4911	5304
	156.0	18.312	0.750	21.200	21.140	45.357	41.689	5.9	....	3127	3960	3960	4169	4169	4377	5211	5628
	169.0	18.189	0.812	21.200	21.200	48.948	45.298	5.9	....	3397	4303	4303	4530	4530	4756	5662	6115
24.000	128.0	22.812	0.500	25.100	24.662	36.914	32.414	5.9	....	2431	3079	3079	3241	3241	3403	4052	4376
	162.0	22.543	0.635	25.100	24.917	46.611	42.154	5.9	....	3162	4005	4005	4215	4215	4426	5269	5691
	165.0	22.512	0.650	25.100	24.945	47.682	43.229	5.9	....	3242	4107	4107	4323	4323	4539	5404	5836
	174.0	22.436	0.688	25.100	25.018	50.387	45.947	5.9	....	3446	4365	4365	4595	4595	4824	5743	6203
	189.0	22.312	0.750	25.100	25.100	54.782	50.361	5.9	....	3777	4784	4784	5036	5036	5288	6295	6799
	203.0	22.189	0.812	25.100	25.100	59.152	52.019	5.9	....	3901	4942	4942	5202	5202	5462	6502	7023

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

GB Tubulars, Inc. — TCC 3P

Type: Coupled Seal: Thread interference Minimum joint tension strength, kips																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
16.000	84.0	15.010	0.495	17.000	16.500	24.112	32.968	4.813	....	1351	1499	....	1898	....	....	2518	....
	97.0	14.850	0.575	17.000	16.500	27.864	32.968	4.813	....	....	....	....	2194	....	....	2910	....
	109.0	14.688	0.656	17.000	16.500	31.622	32.968	4.813	....	....	1965	....	2489	....	....	....	....
18.625	87.5	17.755	0.435	19.625	19.125	24.858	38.258	4.813	....	1329	1427	....	....	....	....	....	....
	99.5	17.625	0.500	19.625	19.125	28.471	38.258	4.813	....	1522	1635	....	....	....	....	....	....
	101.0	17.605	0.510	19.625	19.125	29.024	38.258	4.813	....	....	....	....	2204	....	....	....	....
20.000	94.0	19.124	0.438	21.000	20.500	26.918	41.029	4.813	....	1402	1479	....	....	....	....	....	....
	106.5	19.000	0.500	21.000	20.500	30.631	41.029	4.813	....	1595	1683	....	....	....	....	....	....
	133.0	18.730	0.635	21.000	20.500	38.632	41.029	4.813	....	....	2123	....	2877	....	....	....	....
	169.0	18.376	0.812	21.000	20.500	48.948	41.029	4.813	....	....	2689	....	3645	....	....	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

GB Tubulars, Inc. — TCC Buttress

Type: Coupled Seal: Thread interference																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.0	4.408	0.296	5.563	5.375	4.374	5.648	4.063	….	293	359	379	396	….	….	503	548
	18.0	4.276	0.362	5.563	5.375	5.275	5.648	4.063	….	….	….	457	477	….	….	606	661
	21.4	4.126	0.437	5.563	5.375	6.264	5.648	4.063	….	….	….	510	537	….	….	671	724
5.500	17.0	4.892	0.304	6.050	5.875	4.962	6.108	4.125	….	329	402	428	446	….	….	568	620
	20.0	4.778	0.361	6.050	5.875	5.828	6.108	4.125	….	….	….	503	524	….	….	667	728
	23.0	4.670	0.415	6.050	5.875	6.630	6.108	4.125	….	….	….	551	580	….	….	725	783
7.000	29.0	6.184	0.408	7.656	7.375	8.449	9.226	4.500	….	548	622	718	746	….	….	955	1045
	32.0	6.094	0.453	7.656	7.375	9.317	9.226	4.500	….	….	….	791	823	….	….	1053	1152
	35.0	6.004	0.498	7.656	7.375	10.172	9.226	4.500	….	….	….	833	876	….	….	1096	1183
	38.0	5.920	0.540	7.656	7.375	10.959	9.226	4.500	….	….	….	833	876	….	….	1096	1183
7.625	29.7	6.875	0.375	8.500	8.125	8.541	13.036	4.688	….	….	….	721	749	….	….	960	1052
	33.7	6.765	0.430	8.500	8.125	9.720	13.036	4.688	….	….	….	820	852	….	….	1093	1197
	39.0	6.625	0.500	8.500	8.125	11.192	13.036	4.688	….	….	….	945	981	….	….	1258	1379
9.625	43.5	8.755	0.435	10.625	10.125	12.559	18.496	4.813	….	….	….	….	1074	….	….		….
	47.0	8.681	0.472	10.625	10.125	13.572	18.496	4.813	….	….	….	1122	1161	….	….	1500	….
	53.5	8.535	0.545	10.625	10.125	15.547	18.496	4.813	….	….	….	1285	1329	….	….	1718	1890
9.875	62.8	8.625	0.625	10.625	N/A	14.334	18.496	4.813	….	….	….	….	….	….	….	1584	1743
10.750	45.5	9.950	0.400	11.750	11.250	13.006	20.569	4.813	….	796	931	1063	1097	….	1243	1423	….
	51.0	9.850	0.450	11.750	11.250	14.561	20.569	4.813	….	….	….	1190	1228	….	….	1594	….
	55.5	9.670	0.540	11.750	11.250	17.321	20.569	4.813	….	….	….	1415	1460	….	….	1896	….
	60.7	9.660	0.545	11.750	11.250	17.473	20.569	4.813	….	….	….	1428	1473	….	….	1912	….
11.750	65.0	10.682	0.534	12.750	N/A	18.816	22.412	4.813	….	….	….	….	….	….	….	2041	2256
11.875	71.8	10.711	0.582	12.750	N/A	18.329	22.412	4.813	….	….	….	….	….	….	….	1988	2198

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

GB Tubulars, Inc. — TCC Buttress (continued)

Type: Coupled Seal: Thread interference																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	68.0	12.415	0.480	14.375	13.875	19.445	25.406	4.813	....	1140	1300	1545	1585	....	....	2079	....
	72.0	12.347	0.514	14.375	13.875	20.768	25.406	4.813	....	....	....	1650	1693	....	....	2221	2463
13.625	88.2	12.375	0.625	14.625	14.125	25.526	25.867	4.813	....	....	....	....	....	....	....	2723	3022
	88.2	12.375	0.625	14.375	14.000	20.224	25.406	4.813	....	....	....	....	....	....	....	2163	2399
16.000	84.0	15.010	0.495	17.000	16.500	24.112	33.190	4.813	....	1351	1499	....	1898	....	....	2518	....
	97.0	14.850	0.575	17.000	16.500	27.864	33.190	4.813	....	....	....	....	2194	....	....	2910	....
	109.0	14.688	0.656	17.000	16.500	31.622	33.190	4.813	....	....	1965	....	2489	....	....	....	....
18.625	87.5	17.755	0.435	19.625	19.125	24.858	38.488	4.813	....	1329	1427	....	....	....	....	....	....
	99.5	17.625	0.500	19.625	19.125	28.471	38.488	4.813	....	1522	1635	....	....	....	....	....	....
	101.0	17.605	0.510	19.625	19.125	29.024	38.488	4.813	....	....	....	....	2204	....	....	....	....
20.000	94.0	19.124	0.438	21.000	20.500	26.918	41.308	4.813	....	1402	1479	....	....	....	....	....	....
	106.5	19.000	0.500	21.000	20.500	30.631	41.308	4.813	....	1595	1683	....	....	....	....	....	....
	133.0	18.730	0.635	21.000	20.500	38.632	41.308	4.813	....	....	2123	....	2877	....	....	....	....
	169.0	18.376	0.812	21.000	20.500	48.948	41.308	4.813	....	....	2689	....	3645	....	....	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

HSC Corp. — HSC Casing

Type: Coupled Seal: Metal-to-metal															
									Minimum joint tension strength, kips						
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	K-55	L-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.383	0.253	5.586	5.39	3.773	5.498	4.724	….	208	302	340	358	415	472
	15.0	4.283	0.296	5.586	5.39	4.374	5.498	4.724	….	241	350	394	416	481	547
	18.0	4.151	0.362	5.586	5.39	5.275	5.498	4.724	….	290	422	475	501	580	659
	21.4	4.001	0.437	5.586	5.39	6.265	5.498	4.724	….	345	501	564	595	658	783
	23.2	3.919	0.478	5.586	5.39	6.790	5.498	4.724	….	373	543	611	645	747	849
5.500	15.5	4.825	0.275	6.075	5.89	4.514	5.975	4.850	….	248	361	406	429	497	564
	17.0	4.767	0.304	6.075	5.89	4.963	5.975	4.850	….	273	397	447	471	546	620
	20.0	4.653	0.361	6.075	5.89	5.828	5.975	4.850	….	321	466	525	554	641	729
	23.0	4.545	0.415	6.075	5.89	6.629	5.975	4.850	….	365	530	597	630	729	829
	26.0	4.423	0.476	6.075	5.89	7.513	5.975	4.850	….	413	601	676	714	826	939
6.625	20.0	5.924	0.288	7.413	7.02	5.733	9.667	4.965	….	315	459	516	545	631	717
	24.0	5.796	0.352	7.413	7.02	6.939	9.667	4.965	….	381	555	624	659	763	867
	28.0	5.666	0.417	7.413	7.02	8.133	9.667	4.965	….	447	651	732	773	895	1017
	32.0	5.550	0.475	7.413	7.02	9.177	9.667	4.965	….	505	734	826	872	1009	1147
7.000	23.0	6.241	0.317	7.681	7.37	6.656	9.066	5.228	….	366	532	599	632	732	832
	26.0	6.151	0.362	7.681	7.37	7.548	9.066	5.228	….	415	604	679	717	830	944
	29.0	6.059	0.408	7.681	7.37	8.451	9.066	5.228	….	465	676	761	803	930	1056
	32.0	5.969	0.453	7.681	7.37	9.317	9.066	5.228	….	512	745	839	885	1025	1165
	35.0	5.879	0.498	7.681	7.37	10.173	9.066	5.228	….	560	814	916	966	1119	1272
	38.0	5.795	0.540	7.681	7.37	10.958	9.066	5.228	….	603	877	986	1041	1205	1370
7.625	26.4	6.844	0.328	8.528	8.14	7.519	12.899	5.406	….	414	602	677	714	827	940
	29.7	6.750	0.375	8.528	8.14	8.540	12.899	5.406	….	470	683	769	811	939	1068
	33.7	6.640	0.430	8.528	8.14	9.720	12.899	5.406	….	535	778	875	923	1069	1215
	39.0	6.500	0.500	8.528	8.14	11.192	12.899	5.406	….	616	895	1007	1063	1231	1399
	42.8	6.376	0.562	8.528	8.14	12.470	12.899	5.406	….	686	998	1122	1185	1372	1559

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

HSC Corp. — HSC Casing (continued)

Type: Coupled Seal: Metal-to-metal															
									Minimum joint tension strength, kips						
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	K-55	L-80	C-90	C/T-95	P-110	Q-125
8.625	28.0	7.892	0.304	9.650	9.14	7.942	16.399	5.545	….	437	635	715	754	874	993
	32.0	7.796	0.352	9.650	9.14	9.148	16.399	5.545	….	503	732	823	869	1006	1144
	36.0	7.700	0.400	9.650	9.14	10.338	16.399	5.545	….	569	827	930	982	1137	1292
	40.0	7.600	0.450	9.650	9.14	11.555	16.399	5.545	….	636	924	1040	1098	1271	1444
	44.0	7.500	0.500	9.650	9.14	12.760	16.399	5.545	….	702	1021	1148	1212	1404	1595
	49.0	7.386	0.557	9.650	9.14	14.117	16.399	5.545	….	776	1129	1271	1341	1553	1765
9.625	36.0	8.765	0.352	10.650	10.14	10.255	18.206	5.545	….	564	820	923	974	1128	1282
	40.0	8.679	0.395	10.650	10.14	11.454	18.206	5.545	….	630	916	1031	1088	1260	1432
	43.5	8.599	0.435	10.650	10.14	12.560	18.206	5.545	….	691	1005	1130	1193	1382	1570
	47.0	8.525	0.472	10.650	10.14	13.572	18.206	5.545	….	746	1086	1221	1289	1493	1697
	53.5	8.379	0.545	10.650	10.14	15.546	18.206	5.545	….	855	1244	1399	1477	1710	1943
	58.4	8.278	0.595	10.650	10.14	16.879	18.206	5.545	….	928	1350	1519	1604	1857	2110
	59.4	8.251	0.609	10.650	10.14	17.250	18.206	5.545	….	949	1380	1553	1639	1898	2156
10.750	40.5	9.893	0.350	11.772	11.27	11.436	20.186	5.589	….	629	915	1029	1086	1258	1430
	45.5	9.793	0.400	11.772	11.27	13.006	20.186	5.589	….	715	1040	1171	1236	1431	1626
	51.0	9.693	0.450	11.772	11.27	14.561	20.186	5.589	….	801	1165	1310	1383	1602	1820
	55.5	9.603	0.495	11.772	11.27	15.948	20.186	5.589	….	877	1276	1435	1515	1754	1994
	60.7	9.503	0.545	11.772	11.27	17.473	20.186	5.589	….	961	1398	1573	1660	1922	2184
	65.7	9.403	0.595	11.772	11.27	18.983	20.186	5.589	….	1044	1519	1708	1803	2088	2373
11.750	47.0	10.844	0.375	12.772	12.27	13.401	21.988	5.589	….	737	1072	1206	1273	1474	1675
	54.0	10.723	0.435	12.772	12.27	15.463	21.988	5.589	….	850	1237	1392	1469	1701	1933
	60.0	10.615	0.489	12.772	12.27	17.299	21.988	5.589	….	951	1384	1557	1643	1903	2162
	65.0	10.525	0.534	12.772	12.27	18.815	21.988	5.589	….	1035	1505	1693	1787	2070	2352

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

HSC Corp. — HSC Casing (continued)

Type: Coupled Seal: Metal-to-metal															
									Minimum joint tension strength, kips						
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	K-55	L-80	C-90	C/T-95	P-110	Q-125
13.375	54.5	12.458	0.380	14.298	14.13	15.514	24.879	5.642	….	853	1241	1396	1474	1707	1939
	61.0	12.358	0.430	14.298	14.13	17.487	24.879	5.642	….	962	1399	1574	1661	1924	2186
	68.0	12.258	0.480	14.298	14.13	19.445	24.879	5.642	….	1069	1556	1750	1847	2139	2431
	72.0	12.190	0.514	14.298	14.13	20.767	24.879	5.642	….	1142	1661	1869	1973	2284	2596
	77.0	12.118	0.550	14.298	14.13	22.160	24.879	5.642	….	1219	1773	1994	2105	2438	2770
	80.7	12.058	0.580	14.298	14.13	23.313	24.879	5.642	….	1282	1865	2098	2215	2565	2914
	85.0	12.002	0.608	14.298	14.13	24.386	24.879	5.642	….	1341	1951	2195	2317	2682	3048
	86.0	11.968	0.625	14.298	14.13	25.034	24.879	5.642	….	1377	2003	2253	2378	2754	3129

Hydril Type 511 Performance Data

Size (OD) & Weight (Nom.)		Pipe				Connection				Type 563 Tensile Capacity Minimum Parting Load				
		Plain End Weight	Wall Thickness	ID (Nom.)	Drift	Pin ID Bored	Make-Up Loss	Threads (per in.)	Critical Section area	J-55	K-55/L-80	N-80	HC-95	P-110
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb.	1000 lb.	1000 lb.	11000 lb.	1000 lb.
2.063	3.25[1]	3.18	0.156	1.751	1.657	1.686	2.27	4.09	0.564	42	54	56	62	71
	4.50[1]	4.42	0.225	1.613	1.519	1.548	2.27	4.09	0.788	....	75	79	87	99
2.375	4.60[2]	4.44	0.190	1.995	1.901	1.930	2.27	4.09	0.781	59	74	78	86	98
	5.10[2]	5.03	0.218	1.939	1.845	1.887	2.27	4.09	0.899	67	85	90	99	112
2.875	6.40	6.17	0.217	2.441	2.347	2.377	2.27	4.09	0.996	75	95	100	110	125
3.500	7.70	7.58	0.216	3.068	2.943	2.973	2.74	4.09	1.227	92	117	123	135	....
	9.20	8.81	0.254	2.992	2.867	2.897	2.74	4.09	1.578	118	150	158	174	197
	10.20	9.92	0.289	2.922	2.797	2.827	2.74	4.09	1.760	132	167	176	194	220
4.000	9.50	9.12	0.226	3.548	3.423	3.454	2.74	4.09	1.657	124	157	166	182	....
	11.00	10.47	0.262	3.476	3.351	3.382	2.74	4.09	1.902	143	181	190	209	238
	11.60[2]	11.35	0.286	3.428	3.303	3.334	2.74	4.09	2.035	153	193	204	224	254
4.500	10.50	10.24	0.224	4.052	3.927	3.959	2.74	4.09	1.902	143	181	....	....	....
	11.00	10.80	0.237	4.026	3.901	3.934	2.74	4.09	2.058	154	196	206	226	257
	11.60	11.36	0.250	4.000	3.875	3.908	2.74	4.09	2.111	158	201	211	232	264
	12.60	12.25	0.271	3.958	3.833	3.865	2.67	3.45	2.096	157	199	210	231	262
	13.50	13.05	0.290	3.920	3.795	3.827	2.67	3.45	2.326	174	221	233	256	291
	15.10	15.00	0.337	3.826	3.701	3.733	3.04	3.36	2.696	....	256	270	297	337
5.000	15.00	14.88	0.296	4.408	4.283	4.317	2.67	3.45	2.654	199	252	265	292	332
	18.00	17.95	0.362	4.276	4.151	4.185	3.62	3.38	3.311	....	315	331	364	414
5.500	15.50	15.36	0.275	4.950	4.825	4.860	2.67	3.45	2.727	205	259	273	....	....
	17.00	16.89	0.304	4.892	4.767	4.802	2.67	3.45	3.021	227	287	302	332	378
	20.00	19.83	0.361	4.778	4.653	4.688	3.24	3.45	3.636	....	345	364	400	455
5.750	18.00	18.14	0.312	5.126	5.001	5.038	2.67	3.45	3.196	240	304	320	352	400
	21.80	21.55	0.375	5.000	4.875	4.910	3.70	3.28	3.885	291	369	389	427	486
	24.20	23.93	0.420	4.910	4.785	4.820	3.70	3.28	4.202	315	399	420	462	525

Tensile capacity calculated on J-55 = 75 ksi, K-55/L-80=95 ksi, N-80=100 ksi, HC-95=110 ksi, P-110=125 ksi ultimate.

* For this item, bore will pass popular oversize drift.

} Interchangeable where bracketed

[1] This weight has a box OD 0.063" larger than nominal pipe OD.

[2] This weight has a box OD 0.031" larger than nominal pipe OD.

Hydril Type 511 Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection				Type 563 Tensile Capacity Minimum Parting Load				
		Plain End Weight	Wall Thickness	ID (Nom.)	Drift	Pin ID Bored	Make-Up Loss	Threads (per in.)	Critical Section area	J-55	K-55/L-80	N-80	HC-95	P-110
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb.	1000 lb.	1000 lb.	11000 lb.	1000 lb.
6.000	20.00	19.66	0.324	5.352	5.227	5.263	3.04	3.36	3.515	264	334	352	387	439
	23.00	22.83	0.380	5.240	5.115	5.151	3.10	3.29	4.026	302	382	403	443	503
6.625	24.00	23.60	0.352	5.921	5.796	5.832	3.62	3.36	4.393	329	417	439	483	549
	28.00	27.67	0.417	5.791	5.666	5.702	3.70	3.28	4.871	….	463	487	536	609
7.000	23.00	22.65	0.317	6.366	6.250	6.286*	3.04	3.36	4.045	303	384	405	445	506
	26.00	25.69	0.362	6.276	6.151	6.187	3.70	3.28	4.595	345	437	460	505	574
	29.00	28.75	0.408	6.184	6.059	6.095	3.69	3.29	5.124	384	487	512	564	641
7.625	26.40	25.59	0.328	6.969	6.844	6.881	3.04	3.36	4.633	347	440	463	510	….
	29.70	29.06	0.375	6.875	6.750	6.787	3.70	3.28	5.218	391	496	522	574	652
	33.70	33.07	0.430	6.765	6.640	6.677	4.14	2.94	5.841	….	555	584	643	730
8.000	31.00	30.57	0.375	7.250	7.125	7.168	3.70	3.28	5.525	414	525	553	608	691
8.125	32.50	31.07	0.375	7.375	7.250	7.293	3.70	3.28	5.581	419	530	558	614	698
	35.50	34.59	0.420	7.285	7.160	7.203	3.69	3.29	6.199	465	589	620	682	775
	39.50	38.46	0.470	7.185	7.060	7.103	4.14	2.94	6.741	506	640	674	742	843
8.625	32.00	31.13	0.352	7.921	7.875	7.918*	3.24	3.45	5.242	393	498	524	….	….
	36.00	35.17	0.400	7.825	7.700	7.743	3.69	3.29	6.348	476	603	635	698	794
	40.00	39.33	0.450	7.725	7.625	7.668*	4.14	2.94	6.777	….	644	678	745	847
9.000	40.00	38.96	0.425	8.150	8.025	8.069	3.69	3.29	7.120	534	676	712	783	j 890
9.625	40.00	38.97	0.395	8.835	8.750	8.794 *	3.70	3.28	6.824	512	648	682	751	853
	43.50	42.73	0.435	8.755	8.625	8.669 *	3.69	3.29	7.849	589	746	785	863	981
	47.00	46.18	0.472	8.681	8.525	8.569	4.14	2.94	8.306	….	789	831	914	1038

Tensile capacity calculated on J-55 = 75 ksi, K-55/L-80=95 ksi, N-80=100 ksi, HC-95=110 ksi, P-110=125 ksi ultimate.

* For this item, bore will pass popular oversize drift.

} Interchangeable where bracketed

(1) This weight has a box OD 0.063" larger than nominal pipe OD.

(2) This weight has a box OD 0.031" larger than nominal pipe OD.

Hydril Type 511 Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection				Type 563 Tensile Capacity Minimum Parting Load				
		Plain End Weight	Wall Thickness	ID (Nom.)	Drift	Pin ID Bored	Make-Up Loss	Threads (per in.)	Critical Section area	J-55	K-55/L-80	N-80	HC-95	P-110
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb.	1000 lb.	1000 lb.	11000 lb.	1000 lb.
10.750	45.50	44.26	0.400	9.950	9.875	9.922	3.70	3.28	7.671	575	729	767	844	959
	51.00	49.55	0.450	9.850	9.694	9.741	4.14	2.94	9.159	687	870	916	1007	1145
	55.50	54.26	0.495	9.760	9.625	9.672*	4.14	2.94	9.629		915	963	1059	1204
	60.70	59.45	0.545	9.660	9.504	9.551	4.97	2.65	11.258		1070	1126	1238	1407
	65.70	64.59	0.595	9.560	9.500	9.547*	4.97	2.65	11.318		1075	1132	1245	1415
11.750	60.00	58.87	0.489	10.772	10.625	10.674*	4.65	2.61	10.499		997	1050	1155	1312
	65.00	64.03	0.534	10.682	10.625	10.674*	4.65	2.61	10.499		997	1050	1155	1312
11.875	71.80	70.26	0.582	10.711	10.625	10.675*	4.97	2.65	12.658		1203	12661	1392	1582

Tensile capacity calculated on J-55 = 75 ksi, K-55/L-80=95 ksi, N-80=100 ksi, HC-95=110 ksi, P-110=125 ksi ultimate.

* For this item, bore will pass popular oversize drift.

} Interchangeable where bracketed

(1) This weight has a box OD 0.063" larger than nominal pipe OD.

(2) This weight has a box OD 0.031" larger than nominal pipe OD.

Hydril — Series 500 Type 511

Type: Non-upset, integral flush Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.0	4.283	0.296	5.000	....	4.374	2.654	2.67	....	199	252	252	265	....	....	332	....
	18.0	4.151	0.362	5.000	....	5.275	3.311	3.62	....	....	315	315	331	....	....	414	....
5.500	15.5	4.825	0.275	5.500	....	4.514	2.727	2.67	....	205	259	259	273	....	....	....	....
	17.0	4.767	0.304	5.500	....	4.962	3.021	2.67	....	227	287	287	302	....	....	378	....
	20.0	4.653	0.361	5.500	....	5.828	3.636	3.24	....	....	345	345	364	....	....	455	....
5.750	18.0	5.001	0.312	5.750	....	5.330	3.196	2.67	....	240	304	304	320	....	....	400	....
	21.8	4.875	0.375	5.750	....	6.332	3.885	3.70	....	291	369	369	389	....	....	486	....
	24.2	4.785	0.420	5.750	....	7.033	4.202	3.70	....	315	399	399	420	....	....	525	....
6.000	20.0	5.227	0.324	6.000	....	5.777	3.515	3.04	....	264	334	334	352	....	....	439	....
	23.0	5.115	0.380	6.000	....	6.709	4.026	3.10	....	302	382	382	403	....	....	503	....
6.625	24.0	5.796	0.352	6.625	....	6.937	4.393	3.62	....	329	417	417	439	....	....	549	....
	28.0	5.666	0.417	6.625	....	8.133	4.871	3.70	....	....	463	463	487	....	....	609	....
7.000	23.0	6.250	0.317	7.000	....	6.655	4.045	3.04	....	303	384	384	405	....	....	506	....
	26.0	6.151	0.362	7.000	....	7.549	4.595	3.70	....	345	437	437	460	....	....	574	....
	29.0	6.059	0.408	7.000	....	8.449	5.124	3.69	....	384	487	487	512	....	....	641	....
7.625	26.4	6.844	0.328	7.625	....	7.519	4.633	3.04	....	347	440	440	463	....	....	....	....
	29.7	6.750	0.375	7.625	....	8.541	5.218	3.70	....	391	496	496	522	....	....	652	....
	33.7	6.640	0.430	7.625	....	9.720	5.841	4.14	....	....	555	555	584	....	....	730	....
8.000	31.0	7.125	0.375	8.000	....	8.983	5.525	3.70	....	414	525	525	553	....	....	691	....
8.125	32.5	7.250	0.375	8.125	....	9.130	5.581	3.70	....	419	530	530	558	....	....	698	....
	35.5	7.160	0.420	8.125	....	10.167	6.199	3.69	....	465	589	589	620	....	....	775	....
	39.5	7.060	0.470	8.125	....	11.303	6.741	4.14	....	506	640	640	674	....	....	843	....
8.625	32.0	7.875	0.352	8.625	....	9.149	5.242	3.24	....	393	498	498	524	....	....	....	....
	36.0	7.700	0.400	8.625	....	10.336	6.348	3.69	....	476	603	603	635	....	....	794	....
	40.0	7.625	0.450	8.625	....	11.557	6.777	4.14	....	....	644	644	678	....	....	847	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 511 (continued)

Type: Non-upset, integral flush Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.000	40.0	8.025	0.425	9.000	....	11.449	7.120	3.69	....	534	676	676	712	....	....	890	....
9.625	40.0	8.750	0.395	9.625	....	11.454	6.824	3.70	....	512	648	648	682	....	....	853	....
	43.5	8.625	0.435	9.625	....	12.559	7.849	3.69	....	589	746	746	785	....	....	981	....
	47.0	8.525	0.472	9.625	....	13.572	8.306	4.14	....	....	789	789	831	....	....	1038	....
10.750	45.5	9.875	0.400	10.750	....	13.006	7.671	3.70	....	575	729	729	767	....	....	959	....
	51.0	9.694	0.450	10.750	....	14.561	9.159	4.14	....	687	870	870	916	....	....	1145	....
	55.5	9.625	0.495	10.750	....	15.947	9.629	4.14	....	....	915	915	963	....	....	1204	....
	60.7	9.504	0.545	10.750	....	17.473	11.258	4.97	....	....	1070	1070	1126	....	....	1407	....
	65.7	9.500	0.595	10.750	....	18.982	11.318	4.97	....	....	1075	1075	1132	....	....	1415	....
11.750	60.0	10.625	0.489	11.750	....	17.300	10.499	4.65	....	....	997	997	1050	....	....	1312	....
	65.0	10.625	0.534	11.750	....	18.816	10.499	4.65	....	....	997	997	1050	....	....	1312	....
11.875	71.8	10.625	0.582	11.875	....	20.648	12.658	4.97	....	....	1203	1203	1266	....	....	1582	....
16.000	95.0	14.750	0.566	16.000	....	27.444	17.416	4.97	....	....	1655	1655	1742	....	....	2177	....
	96.0	14.750	0.575	16.000	....	27.864	17.416	4.97	....	....	1655	1655	1742	....	....	2177	....
	102.9	14.562	0.625	16.000	....	30.189	19.186	5.60	....	....	1823	1823	1919	....	....	2398	....
	109.0	14.500	0.656	16.000	....	31.622	20.608	5.60	....	....	1958	1958	2061	....	....	2576	....
18.625	123.4	17.187	0.625	18.625	....	35.343	22.801	5.60	....	....	2166	2166	2280	....	....	2850	....
	136.0	17.051	0.693	18.625	....	39.040	25.283	5.60	....	....	2402	2402	2528	....	....	3160	....
	139.0	16.997	0.720	18.625	....	40.500	25.563	5.60	....	....	2428	2428	2556	....	....	3195	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 513 (new)

Type: Flush, integral Seal: Metal-to-metal, thread														
								Minimum joint tension strength, kips						
D	w	d	t	D_c	A_t	A_c	L_m	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	18.0	4.151	0.362	5.000	5.275	3.376	4.32	321	321	338	338	354	422	456
	23.2	3.919	0.478	5.000	6.791	4.251	4.02	404	404	425	425	446	531	574
	24.1	3.875	0.500	5.000	7.069	4.376	4.02	416	416	438	438	459	547	591
5.500	17.0	4.767	0.304	5.500	4.962	3.210	3.76	305	305	321	321	337	401	433
	20.0	4.653	0.361	5.500	5.828	3.747	4.33	356	356	375	375	393	468	506
	23.0	4.545	0.415	5.500	6.630	4.230	4.40	402	402	423	423	444	529	571
7.000	26.0	6.151	0.362	7.000	7.549	4.877	4.39	463	462	488	486	512	610	658
	29.0	6.059	0.408	7.000	8.449	5.196	4.40	494	494	520	520	546	650	701
	32.0	6.000	0.453	7.000	9.317	5.926	5.04	563	561	593	591	622	741	800
	35.0	5.879	0.498	7.000	10.712	6.296	5.04	598	629	630	662	661	787	850
7.625	29.7	6.750	0.375	7.625	8.541	5.142	4.78	488	501	514	528	540	643	694
	33.7	6.640	0.430	7.625	9.720	5.842	4.43	555	553	584	582	613	730	789
	39.0	6.500	0.500	7.625	11.192	6.939	5.07	659	656	694	691	729	867	937
7.750	46.1	6.500	0.595	7.750	13.374	8.145	5.91	774	747	815	786	855	1018	1100
9.625	47.0	8.525	0.472	9.625	13.572	9.012	5.15	856	855	901	900	946	1127	1217
	53.5	8.500	0.545	9.625	15.546	9.405	5.99	893	888	941	934	988	1176	1270
	58.4	8.375	0.595	9.625	16.879	10.634	5.99	1010	1007	1063	1060	1117	1329	1436
9.875	62.8	8.500	0.625	9.875	18.162	11.388	6.00	1082	1078	1139	1135	1196	1424	1537

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 521

Type: Non-upset, integral swaged Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.185	....	3.773	2.431	3.62	....	182	231	231	243	....	....	304	....
	15.0	4.283	0.296	5.255	....	4.374	3.014	3.62	....	226	286	286	301	....	....	377	....
	18.0	4.151	0.362	5.359	....	5.275	3.891	3.62	....	292	370	370	389	....	....	486	....
5.500	14.0	4.887	0.244	5.660	....	4.029	2.552	3.62	....	191	242	242	255	....	....	319	....
	15.5	4.825	0.275	5.713	....	4.514	3.022	3.62	....	227	287	287	302	....	....	378	....
	17.0	4.767	0.304	5.761	....	4.962	3.453	3.62	....	259	328	328	345	....	....	432	....
	20.0	4.653	0.361	5.852	....	5.828	4.300	3.62	....	323	409	409	430	....	....	538	....
	23.0	4.545	0.415	5.936	....	6.630	5.069	3.62	....	380	482	482	507	....	....	634	....
6.625	20.0	5.924	0.288	6.818	....	5.734	3.755	3.70	....	282	357	357	376	....	....	469	....
	24.0	5.796	0.352	6.925	....	6.937	4.924	3.70	....	369	468	468	492	....	....	616	....
	28.0	5.666	0.417	7.029	....	8.133	6.079	3.70	....	456	578	578	608	....	....	760	....
	32.0	5.550	0.475	7.120	....	9.177	7.097	3.70	....	532	674	674	710	....	....	887	....
7.000	20.0	6.331	0.272	7.148	....	5.749	3.629	3.70	....	272	345	345	363	....	....	454	....
	23.0	6.250	0.317	7.225	....	6.655	4.507	3.70	....	338	428	428	451	....	....	563	....
	26.0	6.151	0.362	7.300	....	7.549	5.373	3.70	....	403	510	510	537	....	....	672	....
	29.0	6.059	0.408	7.375	....	8.449	6.248	3.70	....	469	594	594	625	....	....	781	....
	32.0	6.000	0.453	7.447	....	9.317	7.086	3.70	....	531	673	673	709	....	....	886	....
7.625	26.4	6.844	0.328	7.868	....	7.519	5.088	3.70	....	382	483	483	509	....	....	636	....
	29.7	6.750	0.375	7.947	....	8.541	6.080	3.70	....	456	578	578	608	....	....	760	....
	33.7	6.640	0.430	8.037	....	9.720	7.220	3.70	....	542	686	686	722	....	....	903	....
	39.0	6.500	0.500	8.148	....	11.192	8.650	3.70	....	649	822	822	865	....	....	1081	....
8.625	32.0	7.875	0.352	8.889	....	9.149	6.234	3.70	....	468	592	592	623	....	....	779	....
	36.0	7.700	0.400	8.970	....	10.336	7.384	3.70	....	554	701	701	738	....	....	923	....
	40.0	7.625	0.450	9.053	....	11.557	8.572	3.70	....	643	814	814	857	....	....	1072	....
	44.0	7.500	0.500	9.134	....	12.763	9.744	3.70	....	731	926	926	974	....	....	1218	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 521 (continued)

Type: Non-upset, integral swaged Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.765	0.352	9.883	....	10.254	6.841	3.70	....	513	650	650	684	....	....	855	....
	40.0	8.750	0.395	9.957	....	11.454	8.012	3.70	....	601	761	761	801	....	....	1002	....
	43.5	8.599	0.435	10.025	....	12.559	9.083	3.70	....	681	863	863	908	....	....	1135	....
	47.0	8.525	0.472	10.087	....	13.572	10.052	3.70	....	754	955	955	1005	....	....	1257	....
	53.5	8.500	0.545	10.206	....	15.546	11.976	3.70	....	898	1138	1138	1198	....	....	1497	....
10.750	40.5	9.894	0.350	10.863	....	11.435	7.231	4.14	....	542	687	687	723	....	....	904	....
	45.5	9.875	0.400	10.950	....	13.006	8.651	4.14	....	649	822	822	865	....	....	1081	....
	51.0	9.694	0.450	11.037	....	14.561	10.247	4.14	....	769	973	973	1025	....	....	1281	....
	55.5	9.625	0.495	11.010	....	15.947	11.463	4.97	....	860	1089	1089	1146	....	....	1433	....
	60.7	9.504	0.545	11.094	....	17.473	12.937	4.97	....	970	1229	1229	1294	....	....	1617	....
	65.7	9.500	0.595	11.177	....	18.982	14.370	4.97	....	1078	1365	1365	1437	....	....	1796	....
11.750	47.0	10.844	0.375	11.892	....	13.401	8.577	4.14	....	643	815	815	858	....	....	1072	....
	54.0	10.724	0.435	11.998	....	15.463	10.586	4.14	....	794	1006	1006	1059	....	....	1323	....
	60.0	10.625	0.489	11.928	....	17.300	12.205	4.97	....	915	1159	1159	1221	....	....	1526	....
	65.0	10.625	0.534	11.965	....	18.816	13.198	4.97	....	990	1254	1254	1320	....	....	1650	....
	71.0	10.430	0.582	12.125	....	20.420	15.235	4.97	....	1143	1447	1447	1524	....	....	1904	....
	73.6	10.376	0.609	12.170	....	21.315	16.103	4.97	....	1208	1530	1530	1610	....	....	2013	....
	80.5	10.250	0.672	12.274	....	23.387	18.097	4.97	....	1357	1719	1719	1810	....	....	2262	....
11.875	71.8	10.625	0.582	12.269	....	20.648	15.353	4.97	....	1151	1459	1459	1535	....	....	1919	....
13.375	80.7	12.059	0.580	13.738	....	23.314	16.693	5.60	....	1252	1586	1586	1669	....	....	2087	....
	54.5	12.459	0.380	13.531	....	15.513	9.461	4.65	....	710	899	899	946	....	....	1183	....
	61.0	12.359	0.430	13.620	....	17.487	11.362	4.65	....	852	1079	1079	1136	....	....	1420	....
	68.0	12.259	0.480	13.707	....	19.445	13.254	4.65	....	994	1259	1259	1325	....	....	1657	....
	72.0	12.250	0.514	13.766	....	20.768	14.537	4.65	....	1090	1381	1381	1454	....	....	1817	....
	77.0	12.119	0.550	13.686	....	22.160	15.587	5.60	....	1169	1481	1481	1559	....	....	1948	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 521 (continued)

Type: Non-upset, integral swaged Seal: Threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	85.0	12.003	0.608	13.785	....	24.386	17.740	5.60	....	1331	1685	1685	1774	....	....	2218	....
	86.0	12.000	0.625	13.814	....	25.035	18.361	5.60	....	1377	1744	1744	1836	....	....	2295	....
13.500	81.4	12.250	0.580	13.954	....	23.542	16.793	5.60	....	1259	1595	1595	1679	....	....	2099	....
13.625	88.2	12.250	0.625	14.040	....	25.525	18.708	5.60	....	1403	1777	1777	1871	....	....	2339	....
15.000	77.5	13.812	0.500	15.149	....	22.777	15.041	4.65	....	1128	1429	1429	1504	....	....	1880	....
16.000	75.0	14.936	0.438	16.155	....	21.414	14.058	4.65	....	1054	1336	1336	1406	....	....	1757	....
	84.0	14.822	0.495	16.257	....	24.112	16.644	4.65	....	1248	1581	1581	1664	....	....	2081	....
	95.0	14.750	0.566	16.397	....	27.444	19.876	4.65	....	1491	1888	1888	1988	....	....	2485	....
	96.0	14.750	0.575	16.397	....	27.864	20.296	4.65	....	1522	1928	1928	2030	....	....	2537	....
	109.0	14.500	0.656	16.465	....	31.622	23.487	5.60	....	1762	2231	2231	2349	....	....	2936	....
	118.0	14.382	0.715	16.566	....	34.334	26.116	5.60	....	1959	2481	2481	2612	....	....	3265	....
16.125	95.6	14.805	0.566	16.427	....	27.666	19.645	4.65	....	1473	1866	1866	1965	....	....	2456	....
17.000	77.5	16.000	0.438	17.197	....	22.790	14.950	4.65	....	1121	1420	1420	1495	....	....	1869	....
	88.1	15.812	0.500	17.308	....	25.918	17.967	4.65	....	1348	1707	1707	1797	....	....	2246	....
18.000	94.0	16.812	0.500	18.100	....	27.489	18.085	4.65	....	1356	1718	1718	1809	....	....	2261	....
	105.0	16.688	0.562	18.100	....	30.788	19.705	4.65	....	1478	1872	1872	1971	....	....	2463	....
18.625	87.5	17.567	0.435	18.854	....	24.858	16.223	4.65	....	1217	1541	1541	1622	....	....	2028	....
	94.5	17.517	0.460	18.899	....	26.251	17.580	4.65	....	1319	1670	1670	1758	....	....	2198	....
	97.7	17.500	0.486	18.946	....	27.695	18.969	4.65	....	1423	1802	1802	1897	....	....	2371	....
	109.4	17.311	0.563	18.948	....	31.947	22.588	5.60	....	1694	2146	2146	2259	....	....	2824	....
	112.0	17.279	0.579	18.976	....	32.825	23.445	5.60	....	1758	2227	2227	2345	....	....	2931	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 533

Type: One-end upset (OUE), integral box with non-upset pin Seal: Metal-to-metal, thread														
								Minimum joint tension strength, kips						
D	w	d	t	D_c	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110
5.000	15.00	4.283	0.296	5.430	4.374	3.952	3.990	241	241	350	350	394	416	481
	18.00	4.151	0.362	5.350	5.275	4.853	3.990			422	422	475	501	580
	21.40	4.001	0.437	5.526	6.264	5.566	5.360			501	501	564	595	689
	23.20	3.919	0.478	5.586	6.791	6.092	5.360			543	543	611	645	747
	24.10	3.875	0.500	5.618	7.069	6.370	5.360			565	565	636	672	778
5.500	15.50	4.825	0.275	5.899	4.514	4.050	3.990	248	248	….	….	….	….	….
	17.00	4.767	0.304	5.948	4.962	4.498	3.990	273	273	397	397	447	471	546
	20.00	4.653	0.361	6.040	5.828	5.364	3.990			466	466	525	554	641
	23.00	4.545	0.415	6.124	6.630	6.165	3.990			530	530	597	630	729
	26.00	4.423	0.476	6.084	7.513	6.742	4.300			601	601	676	714	826
	26.80	4.375	0.500	6.119	7.854	7.083	4.300			628	628	707	746	864
	28.40	4.315	0.530	6.163	8.275	7.504	4.300			662	662	745	786	910
6.625	24.00	5.796	0.352	7.147	6.937	6.284	4.050	382	382	555	555	624	659	763
	28.00	5.666	0.417	7.254	8.133	7.480	4.050			651	651	732	773	895
	32.00	5.550	0.475	7.345	9.177	8.525	4.050			734	734	826	872	1010
7.000	23.00	6.250	0.317	7.476	6.655	5.966	4.050	366	366	532	532	599	632	
	26.00	6.151	0.362	7.552	7.549	6.860	4.050	415	415	604	604	679	717	830
	29.00	6.059	0.408	7.628	8.449	7.760	4.050			676	676	760	803	929
	32.00	6.000	0.453	7.700	9.317	8.628	4.050			745	745	839	885	1025
	35.00	5.879	0.498	7.584	10.172	9.092	5.060			814	814	916	966	1119
	38.00	5.795	0.540	7.649	10.959	9.878	5.060			877	877	986	1041	1206
7.6250	26.40	6.844	0.328	8.123	7.519	6.768	4.050	414	414	602	602	677	714	827
	29.70	6.750	0.375	8.203	8.541	7.790	4.050			683	683	769	811	940
	33.70	6.640	0.430	8.294	9.720	8.968	4.050			778	778	875	923	1069
	39.00	6.500	0.500	8.243	11.192	10.014	5.060			895	895	1007	1063	1231

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 533 (continued)

Type: Upset, integral Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.0	4.283	0.296	5.430	....	4.374	....	3.99	....	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.535	....	5.275	....	3.99	....			422	422	475	501	580	659
	21.4	4.001	0.437	5.526	....	6.264	....	5.36	....			501	501	564	595	689	783
	23.2	3.919	0.478	5.586	....	6.791	....	5.36	....			543	543	611	645	747	849
	24.1	3.875	0.500	5.618	....	7.069	....	5.36	....			565	565	636	672	778	884
5.500	15.5	4.825	0.275	5.899	....	4.514	....	3.99	....	248	248	....	....	....	....	....	564
	17.0	4.767	0.304	5.948	....	4.962	....	3.99	....	273	273	397	397	447	471	546	620
	20.0	4.653	0.361	6.040	....	5.828	....	3.99	....			466	466	525	554	641	729
	23.0	4.545	0.415	6.124	....	6.630	....	3.99	....			530	530	597	630	729	829
	26.0	4.423	0.476	6.084	....	7.513	....	4.30	....			601	601	676	714	826	939
	26.8	4.375	0.500	6.119	....	7.854	....	4.30	....			628	628	707	746	864	982
	28.4	4.315	0.530	6.163	....	8.275	....	4.30	....			662	662	745	786	910	1034
6.625	24.0	5.796	0.352	7.147	....	6.937	....	4.05	....	382	382	555	555	624	659	763	867
	28.0	5.666	0.417	7.254	....	8.133	....	4.05	....			651	651	732	773	895	1017
	32.0	5.550	0.475	7.345	....	9.177	....	4.05	....			734	734	826	872	1010	1147
7.000	23.0	6.250	0.317	7.476	....	6.655	....	4.05	....	366	366	532	532	599	632	....	832
	26.0	6.151	0.362	7.552	....	7.549	....	4.05	....	415	415	604	604	679	717	830	944
	29.0	6.059	0.408	7.628	....	8.449	....	4.05	....			676	676	760	803	929	1056
	32.0	6.000	0.453	7.700	....	9.317	....	4.05	....			745	745	839	885	1025	1165
	35.0	5.879	0.498	7.584	....	10.172	....	5.06	....			814	814	916	966	1119	1272
	38.0	5.795	0.540	7.649	....	10.959	....	5.06	....			877	877	986	1041	1206	1370
7.625	26.4	6.844	0.326	8.123	....	7.475	....	4.05	....	411	411	598	598	673	710	822	934
	29.7	6.750	0.375	8.203	....	8.541	....	4.05	....			683	683	769	811	940	1068
	33.7	6.640	0.430	8.294	....	9.720	....	4.05	....			778	778	875	923	1069	1215
	39.0	6.500	0.500	8.243	....	11.192	....	5.06	....			895	895	1007	1063	1231	1399

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 553

Type: One-end upset (OUE), integral box with non-upset pin Seal: Metal-to-metal, thread														
								Minimum joint tension strength, kips						
D	w	d	t	D_c	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110
5.000	15.00	4.283	0.296	5.430	4.374	3.952	3.990	241	241	350	350	394	416	481
	18.00	4.151	0.362	5.350	5.275	4.853	3.990			422	422	475	501	580
	21.40	4.001	0.437	5.526	6.264	5.566	5.360			501	501	564	595	689
	23.20	3.919	0.478	5.586	6.791	6.092	5.360			543	543	611	645	747
	24.10	3.875	0.500	5.618	7.069	6.370	5.360			565	565	636	672	778
5.500	15.50	4.825	0.275	5.899	4.514	4.050	3.990	248	248	….	….	….	….	….
	17.00	4.767	0.304	5.948	4.962	4.498	3.990	273	273	397	397	447	471	546
	20.00	4.653	0.361	6.040	5.828	5.364	3.990			466	466	525	554	641
	23.00	4.545	0.415	6.124	6.630	6.165	3.990			530	530	597	630	729
	26.00	4.423	0.476	6.084	7.513	6.742	4.300			601	601	676	714	826
	26.80	4.375	0.500	6.119	7.854	7.083	4.300			628	628	707	746	864
	28.40	4.315	0.530	6.163	8.275	7.504	4.300			662	662	745	786	910
6.625	24.00	5.796	0.352	7.147	6.937	6.284	4.050	382	382	555	555	624	659	763
	28.00	5.666	0.417	7.254	8.133	7.480	4.050			651	651	732	773	895
	32.00	5.550	0.475	7.345	9.177	8.525	4.050			734	734	826	872	1010
7.000	23.00	6.250	0.317	7.476	6.655	5.966	4.050	366	366	532	532	599	632	….
	26.00	6.151	0.362	7.552	7.549	6.860	4.050			604	604	679	717	830
	29.00	6.059	0.408	7.628	8.449	7.760	4.050			676	676	760	803	929
	32.00	6.000	0.453	7.700	9.317	8.628	4.050	415	415	745	745	839	885	1025
	35.00	5.879	0.498	7.584	10.172	9.092	5.060			814	814	916	966	1119
	38.00	5.795	0.540	7.649	10.959	9.878	5.060			877	877	986	1041	1206
7.6250	26.40	6.844	0.328	8.123	7.519	6.768	4.050	414	414	602	602	677	714	827
	29.70	6.750	0.375	8.203	8.541	7.790	4.050			683	683	769	811	940
	33.70	6.640	0.430	8.294	9.720	8.968	4.050			778	778	875	923	1069
	39.00	6.500	0.500	8.243	11.192	10.014	5.060			895	895	1007	1063	1231

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril Type 563 Performance Data

Size (OD) & Weight (Nom.)		Pipe			Connection							Type 563 Tensile Capacity Minimum Parting Load					
		Wall Thickness	ID (Nom.)	Drift	Coupling			Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	P-110	Q-125
					Standard OD	Special Clearance OD	Length										
(in.)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
5.000	13.00	0.253	4.494	4.369	5.563	5.332	9.00	4.444	3.99	3.36	3.351	318	335	352	369	419	452
	15.00	0.296	4.408	4.283	5.563	5.404	9.00	4.358	3.99	3.36	3.952	375	395	415	435	494	534
	18.00	0.362	4.276	4.151	5.563	5.404	9.00		3.99	3.36	4.853	461	485	510	534	607	655
	21.40	0.437	4.126	4.001	5.750	5.511	12.00	4.076	5.36	2.65	5.566	529	557	584	612	696	751
	23.20	0.478	4.044	3.919	5.750	5.571	12.00		5.36	2.65	6.092	579	609	640	670	762	822
	24.10	0.500	4.000	3.875	5.750	5.603	12.00		5.36	2.65	6.370	605	637	669	701	796	860
5.500	14.00	0.244	5.012	4.887	8.050	5.820	9.00	4.962	3.99	3.36	3.565	339	357	374	392	446	481
	15.50	0.275	4.950	4.825	6.050	5.073	9.00	4.900	3.99	3.36	4.050	385	405	425	446	506	547
	17.00	0.304	4.892	4.767	8.050	5.921	9.00	4.842	3.99	3.36	4.498	427	450	472	495	562	807
	20.00	0.361	4.778	4.853	8.050		9.00		3.99	3.36	5.364	510	536	563	590	671	724
	23.00	0.415	4.670	4.545	6.050		9.00		3.99	3.36	6.165	586	617	847	678	771	832
	26.00	0.476	4.548	4.423	6.125	6.057	9.75	4.498	4.30	3.06	6.742	640	674	706	742	843	910
	26.00	0.500	4.500	4.375	6.125		9.75	4.450	4.30	3.06	7.083	673	708	744	779	885	956
	28.40	0.530	4.440	4.315	6.125		9.75	4.390	4.30	3.06	7.504	713	750	788	825	938	1013
	29.70	0.562	4.378	4.251	6.250	6.085	11.25	4.326	5.06	2.75	7.871	746	787	826	868	984	1063
	32.60	0.825	4.250	4.125	6.250	6.174	11.25		5.06	2.75	8.724	829	872	916	960	1091	1178
6.625	20.00	0.288	6.049	5.924	7.390	7.012	9.25	5.999	4.05	3.29	5.081	483	508	534	559	635	686
	24.00	0.352	5.921	5.796	7.390	7.121	9.25	5.871	4.05	3.29	6.284	597	628	660	691	786	848
	28.00	0.417	5.791	5.666	7.390	7.227	9.25		4.05	3.29	7.480	711	748	785	823	935	1010
	32.00	0.475	5.675	5.550	7.390		9.25		4.05	3.29	8.525	810	853	895	938	1066	1151

Notes:
13,500 inch, 81.4 lb/ft is interchangeable with the 13.375 inch, 54.50 – 72.00 lb/ft profile
Tensile strength calculated on L-80 = 90 ksi ultimate N-80/C-90 = 100 ksi ultimate, T-95 = 104 ksi ultimate, HC-95 = 110 ksi ultimate, P-110 = 125 ksi ultimate, Q-125 = 135 ksi ultimate.
For this item bore will pass popular oversize drift
] Interchangeable where bracketed.

Hydril Type 563 Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe			Connection							Type 563 Tensile Capacity Minimum Parting Load					
		Wall Thickness	ID (Nom.)	Drift	Coupling			Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	P-110	Q-125
					Standard OD	Special Clearance OD	Length										
(in.)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
7.000	20.00	0.272	6.456	6.331	7.656	7.371	9.25	6.405	4.05	3.29	5.060	461	505	531	557	633	683
	23.00	0.317	6.368	6.250	7.656	7.449	9.25	8.316	4.05	3.29	5.966	567	597	828	656	746	805
	26.00	0.362	6.276	6.151	7.656	7.525	9.25	6.226	4.05	3.29	6.860	652	686	720	755	858	926
	29.00	0.408	6.184	6.059	7.656		9.25		4.05	3.29	7.760	737	776	815	854	970	1048
	32.00	0.453	6.094	8.000	7.856		9.25		4.05	3.29	8.628	820	863	906	949	1079	1165
	35.00	0.498	6.004	5.879	7.750	7.557	11.25	5.954	5.06	2.75	9.092	864	909	955	1000	1137	1227
	38.00	0.540	5.920	5.795	7.750	7.623	11.25	5.870	5.06	2.75	9.878	938	988	1037	1087	1235	1334
	41.00	0.590	5.820	5.695	7.750		11.25		5.06	2.75	10.800	1026	1080	1134	1188	1350	1458
	42.70	0.625	5.750	5.625	7.750		11.25		5.06	2.75	11.436	1086	1144	1201	1258	1430	1544
7.625	26.40	0.328	6.969	6.844	8.500	8.097	9.25	6.919	4.05	3.29	6.785	643	677	711	744	846	914
	29.70	0.375	6.875	6.750	8.500	8.177	9.25		4.05	3.29	7.790	740	779	818	857	974	1052
	33.70	0.430	6.765	6.640	8.500	8.268	9.25		4.05	3.29	8.968	852	897	942	986	1121	1211
	39.00	0.500	6.625	6.500	8.500	8.216	11.25	6.575	5.06	2.75	10.014	951	1001	1051	1102	1252	1352
	42.80	0.562	6.501	6.376	8.500	8.315	11.25		5.06	2.75	11.292	1073	1129	1186	1242	1412	1524
	45.30	0.595	6.435	6.375	8.500	8.366	11.25		5.06	2.75	11.963	1136	1196	1256	1316	1495	1615
7.750	46.10	0.595	6.560	6.500	8.500	8.413	11.50		5.19	2.75	12.093	1149	1209	1270	1330	1512	1633
	46.60	0.640	6.470	6.345	8.500		11.50		5.19	2.75	13.014	1236	1331	1366	1432	1627	1757
8.625	32.00	0.352	7.921	7.875	9.625	9.143	9.25	7.938 =	4.05	3.29	8.298	788	830	871	913	1037	1120
	36.00	0.400	7.825	7.700	9.625	9.225	9.25		4.05	3.29	9.485	901	949	996	1043	1186	1280
	40.00	0.450	7.725	7.625	9.625	9.309	9.25		4.05	3.29	10.707	1017	1071	1124	1178	1338	1445
	44.00	0.500	7.625	7.500	9.825	9.226	11.25	7.575	5.06	2.75	11.429	1086	1143	1200	1257	1429	1543
	49.00	0.557	7.511	7.386	9.825	9.319	11.25		5.00	2.75	12.784	1214	1278	1342	1406	1598	1726
	52.00l	0.595	7.435	7.310	9.825	9.379	11.25		5.06	2.75	13.676	1299	1368	1436	1504	1710	1846
	54.00	0.625	7.375	7.250	9.625	9.427	11.25		5.05	2.75	14.374	1366	1437	1509	1561	1797	1940

Notes:
13,500 inch, 81.4 lb/ft is interchangeable with the 13.375 inch, 54.50 – 72.00 lb/ft profile
Tensile strength calculated on L-80 = 90 ksi ultimate N-80/C-90 = 100 ksi ultimate, T-95 = 104 ksi ultimate, HC-95 = 110 ksi ultimate, P-110 = 125 ksi ultimate, Q-125 = 135 ksi ultimate.
For this item bore will pass popular oversize drift
] Interchangeable where bracketed.

Hydril Type 563 Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe			Connection							Type 563 Tensile Capacity Minimum Parting Load					
		Wall Thickness	ID (Nom.)	Drift	Coupling			Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	P-110	Q-125
					Standard OD	Special Clearance OD	Length										
(in.)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
9.625	36.00	0.352	8.921	8.765	10.625	10.147	9.25	8.871	4.05	3.29	9.305	884	931	977	1024	1163	1256
	40.00	0.395	8.835	8.750	10.625	10.222	9.25		4.05	3.29	10.504	998	1050	1103	1155	1313	1418
	43.50	0.435	8.755	8.599	10.625	10.291	9.25		4.05	3.29	11.610	1103	1161	1219	1277	1451	1567
	47.00	0.472	8.681	8.525	10.625	10.353	9.25		4.05	3.29	12.623	1199	1262	1325	1389	1578	1704
	53.50	0.545	8.535	8.500	10.625	10.474	9.25		4.05	3.29	14.597	1387	1460	1533	1606	1825	1971
	56.40	0.596	8.435	8.375	10.625	10.380	11.25		5.06	2.75	15.390	1462	1539	1616	1633	1924	2078
	59.40l	0.609	8.407	8.251	10.825	10.403	11.25		5.06	2.75	15.761	1497	1576	1655	1734	1970	2128
	61.10j	0.625	8.375	8.219	10.825		11.25		5.06	2.75	16.182	1537	1618	1699	1780	2023	2185
9.875	62.80	0.625	8.625	8.500	10.625		11.25		5.06	2.75	16.634	1580	1663	1747	1830	2079	2246
10.750	40.50	0.350	10.050	9.894	11.750	11.252	10.00	10.000	4.45	2.94	10.375	985	1038	1089	1141	1297	1401
	46.50	0.400	9.950	9.875	11.750	11.340	10.00		4.45	2.94	11.945	1135	1195	1254	1314	1493	1613
	51.00	0.450	9.850	9.694	11.750	11.427	10.00		4.45	2.94	13.501	1253	1350	1418	1485	1668	1823
	55.50	0.495	9.760	9.625	11.750	11.334	11.50	9.710~	5.22	2.65	14.434	1371	1443	1516	1588	1804	1949
	60.70	0.545	9.660	9.504	11.750	11.420	11.50		5.22	2.65	15.959	1516	1596	1676	1755	1995	2154
	65.70	0.595	9.560	9.500	11.750	11.503	11.50		5.22	2.65	17.469	1660	1747	1834	1922	2184	2358
	73.20.	0.672	9.406	9.250	11.750	11.630	11.50		5.22	2.65	19.763	1877	1976	2075	2174	2470	2668
	79.20	0.734	9.282	9.126	11.750		13.00		6.06	2.35	21.432	2036	2143	2250	2357	2879	2893
11.750	47.00	0.375	11.000	10.844	12.750	12.299	10.00		4.45	2.94	12.241	1163	1224	1285	1347	1530	1653
	54.00	0.435	10.880	10.724	12.750	12.406	10.00		4.45	2.94	14.303	1359	1430	1502	1573	1788	1931
	60.00	0.489	10.772	10.625	12.750	12.363	11.50	10.722~	5.22	2.65	15.645	1466	1565	1643	1721	1956	2112
	65.00	0.534	10.682	10.825	12.750	12.441	11.50		5.22	2.65	17.161	1630	1716	1802	1888	2145	2317
	71.00	0.582	10.586	10.430	12.750	12.523	11.50		5.22	2.65	18.765	1783	1877	1970	2064	2346	2533
	75.00	0.618	10.514	10.358	12.750	12.584	11.50		5.22	2.65	19.956	1896	1998	2096	2195	2495	2694
	79.00	0.656	10.438	10.282	12.750		11.50		5.22	2.65	21.209	2015	2121	2227	2333	2651	2853
11.875	71.80	0.582	10.711	10.625	12.750		11.50		5.22	2.65	18.976	1803	1898	1992	2087	2372	2562

Notes:
13,500 inch, 81.4 lb/ft is interchangeable with the 13.375 inch, 54.50 – 72.00 lb/ft profile
Tensile strength calculated on L-80 = 90 ksi ultimate N-80/C-90 = 100 ksi ultimate, T-95 = 104 ksi ultimate, HC-95 = 110 ksi ultimate, P-110 = 125 ksi ultimate, Q-125 = 135 ksi ultimate.
For this item bore will pass popular oversize drift
] Interchangeable where bracketed.

Hydril Type 563 Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe			Connection							Type 563 Tensile Capacity Minimum Parting Load					
		Wall Thickness	ID (Nom.)	Drift	Coupling			Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	P-110	Q-125
					Standard OD	Special Clearance OD	Length										
(in.)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
13.375	54.50	0.380	12.615	12.459	14.375	13.923	11.50	12.540	5.17	2.61	14.005	1330	1401	1471	1541	1751	1891
	61.00	0.430	12.515	12.359	14.375	14.013	11.50	12.440	5.17	2.61	15.979	1518	1595	1678	1758	1997	2157
	68.00	0.480	12.415	12.259	14.375	14.102	11.50		5.17	2.61	17.937	1704	1794	1883	1973	2242	2421
	72.00	0.514	12.347	12.250	14.375	14.162	11.50		5.17	2.61	19.259	1330	1926	2022	2118	2407	2600
	77.00	0.550	12.275	12.119	14.375	14.090	13.25	12.200	6.06	2.35	20.088	1908	2009	2109	2210	2511	2712
	80.70	0.580	12.215	12.059	14.375	14.142	13.25	12.140	6.06	2.35	21.242	2018	2124	2230	2337	2655	2868
	85.00	0.608	12.159	12.003	14.375	14.190	13.25		6.06	2.35	22.314	2120	2231	2343	2455	2789	3012
	86.00	0.625	12.125	11.969	14.375	14.219	13.25		6.06	2.35	22.962	2181	2296	2411	2526	2870	3100
13.500	81.40	0.580	12.340	12.250	14.375		11.50		5.17	2.61	20.735	1973	2074	2177	2281	2592	2799
13.625	88.20	0.625	12.375	12.250	14.625	14.470	13.25		6.06	2.35	23.414	2224	2341	2458	2576	2927	3161
14.000	99.43	0.700	12.600	12.444	15.000		13.25		6.06	2.35	27.079	2573	2706	2843	2979	3385	3656
	92.68	0.650	12.700	12.544	15.000	14.830	13.25		6.05	2.38	25.092	2384	2509	2635	2760	3137	3387
	106.13	0.750	12.500	12.344	15.000		13.25		6.06	2.35	29.050	2760	2905	3050	3196	3631	3922
	112.78	0.800	12.400	12.244	15.000		13.25		6.06	2.38	31.006	2946	3101	3256	3411	3676	4186
16.000	75.00	0.438	15.124	14.936	17.000	16.656	11.50	15.049	5.17	2.61	19.608	1863	1961	2059	2157	2451	2647
	84.00	0.495	15.010	14.822	17.000	16.758	11.50		5.17	2.61	22.306	2119	2231	2342	2454	2788	3011
	109.00	0.656	14.685	14.500	17.000		13.25		6.06	2.35	29.142	2765	2914	3060	3206	3643	3934
	118.00	0.715	14.570	14.382	17.006		13.25		6.06	2.35	31.853	3026	3185	3348	3504	3982	4300
18.625	87.50	0.435	17.755	17.567	20.000	19.274	11.50	17.680	5.17	2.61	22.756	2162	2276	2389	2503	2845	3072
	94.50	0.460	17.705	17.517	20.000	19.320	11.50	17.630	5.17	2.61	24.148	2294	2415	2536	2656	3019	3260
	97.70	0.486	17.653	17.465	20.000	19.368	11.50		5.17	2.61	25.593	2431	2559	2687	2815	3199	3455
	109.35	0.563	17.499	17.311	20.000	19.370	13.25	17.424	6.05	2.35	29.058	2761	2906	3051	3196	3632	3923
	112.00	0.579	17.467	17.279	20.000	19.399	13.25	17.392	6.06	2.36	29.937	2844	2994	3143	3293	3742	4041
	138.00	0.693	17.239	17.051	20.000	19.602	13.25		6.06	2.35	36.152	3434	3615	3796	3977	4519	4381

Notes:
13,500 inch, 81.4 lb/ft is interchangeable with the 13.375 inch, 54.50 – 72.00 lb/ft profile
Tensile strength calculated on L-80 = 90 ksi ultimate N-80/C-90 = 100 ksi ultimate, T-95 = 104 ksi ultimate, HC-95 = 110 ksi ultimate, P-110 = 125 ksi ultimate, Q-125 = 135 ksi ultimate.
For this item bore will pass popular oversize drift
] Interchangeable where bracketed.

Hydril — Series 500 Type 563

Type: Non-upset, coupled Seal: Metal-to-metal, threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.563	5.332	3.773	3.351	3.99	....	....	....	318	335	335	352	419	452
	15.0	4.283	0.296	5.563	5.404	4.374	3.952	3.99	....	....	....	375	395	395	415	494	534
	18.0	4.151	0.362	5.563	....	5.275	4.853	3.99	....	....	....	461	485	485	510	607	655
	21.4	4.001	0.437	5.750	5.511	6.264	5.566	5.36	....	....	....	529	557	557	584	696	751
	23.2	3.919	0.478	5.750	5.571	6.791	6.092	5.36	....	....	....	579	609	609	640	762	822
	24.1	3.875	0.500	5.750	5.603	7.069	6.370	5.36	....	....	....	605	637	637	669	796	860
5.500	14.0	4.887	0.244	6.050	5.820	4.029	3.565	3.99	....	....	....	339	357	357	374	446	481
	15.5	4.825	0.275	6.050	5.873	4.514	4.050	3.99	....	....	....	385	405	405	425	506	547
	17.0	4.767	0.304	6.050	5.921	4.962	4.498	3.99	....	....	....	427	450	450	472	562	607
	20.0	4.653	0.361	6.050	....	5.828	5.364	3.99	....	....	....	510	536	536	563	671	724
	23.0	4.545	0.415	6.050	....	6.630	6.165	3.99	....	....	....	586	617	617	647	771	832
	26.0	4.423	0.476	6.125	6.057	7.513	6.742	4.30	....	....	....	640	674	674	708	843	910
	26.8	4.375	0.500	6.125	....	7.854	7.083	4.30	....	....	....	673	708	708	744	885	956
	28.4	4.315	0.530	6.125	....	8.275	7.504	4.30	....	....	....	713	750	750	788	938	1013
	29.7	4.251	0.562	6.250	6.085	8.718	7.871	5.06	....	....	....	748	787	787	826	984	1063
	32.6	4.125	0.625	6.250	6.174	9.572	8.724	5.06	....	....	....	829	872	872	916	1091	1178
6.625	20.0	5.924	0.288	7.390	7.012	5.734	5.081	4.05	....	....	....	483	508	508	534	635	686
	24.0	5.796	0.352	7.390	7.121	6.937	6.284	4.05	....	....	....	597	628	628	660	786	848
	28.0	5.666	0.417	7.390	7.227	8.133	7.480	4.05	....	....	....	711	748	748	785	935	1010
	32.0	5.550	0.475	7.390	....	9.177	8.525	4.05	....	....	....	810	853	853	895	1066	1151

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 563 (continued)

Type: Non-upset, coupled Seal: Metal-to-metal, threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	20.0	6.331	0.272	7.656	7.371	5.749	5.060	4.05	....	....	....	481	506	506	531	633	683
	23.0	6.250	0.317	7.656	7.449	6.655	5.966	4.05	....	....	....	567	597	597	626	746	805
	26.0	6.151	0.362	7.656	7.525	7.549	6.860	4.05	....	....	....	652	686	686	720	858	926
	29.0	6.059	0.408	7.656	....	8.449	7.760	4.05	....	....	....	737	776	776	815	970	1048
	32.0	6.000	0.453	7.656	....	9.317	8.628	4.05	....	....	....	820	863	863	906	1079	1165
	35.0	5.879	0.498	7.750	7.557	10.172	9.092	5.06	....	....	....	864	909	909	955	1137	1227
	38.0	5.795	0.540	7.750	7.623	10.959	9.878	5.06	....	....	....	938	988	988	1037	1235	1334
	41.0	5.695	0.590	7.750	....	11.881	10.800	5.06	....	....	....	1026	1080	1080	1134	1350	1458
	42.7	5.625	0.625	7.750	....	12.517	11.436	5.06	....	....	....	1086	1144	1144	1201	1430	1544
7.625	26.4	6.844	0.328	8.500	8.097	7.519	6.768	4.05	....	....	....	643	677	677	711	846	914
	29.7	6.750	0.375	8.500	8.177	8.541	7.790	4.05	....	....	....	740	779	779	818	974	1052
	33.7	6.640	0.430	8.500	8.268	9.720	8.968	4.05	....	....	....	852	897	897	942	1121	1211
	39.0	6.500	0.500	8.500	8.216	11.192	10.014	5.06	....	....	....	951	1001	1001	1051	1252	1352
	42.8	6.376	0.562	8.500	8.315	12.470	11.292	5.06	....	....	....	1073	1129	1129	1186	1412	1524
	45.3	6.310	0.595	8.500	8.366	13.141	11.963	5.06	....	....	....	1136	1196	1196	1256	1495	1615
7.750	46.1	6.500	0.595	8.500	8.413	13.374	12.093	5.19	....	....	....	1149	1209	1209	1270	1512	1633
	48.6	6.375	0.640	8.500	....	14.296	13.014	5.19	....	....	....	1236	1301	1301	1366	1627	1757
8.625	32.0	7.875	0.352	9.625	9.143	9.149	8.298	4.05	....	....	....	788	830	830	871	1037	1120
	36.0	7.700	0.400	9.625	9.225	10.336	9.485	4.05	....	....	....	901	949	949	996	1186	1280
	40.0	7.625	0.450	9.625	9.309	11.557	10.707	4.05	....	....	....	1017	1071	1071	1124	1338	1445
	44.0	7.500	0.500	9.625	9.226	12.763	11.429	5.06	....	....	....	1086	1143	1143	1200	1429	1543
	49.0	7.386	0.557	9.625	9.319	14.118	12.784	5.06	....	....	....	1214	1278	1278	1342	1598	1726
	52.0	7.310	0.595	9.625	9.379	15.010	13.676	5.06	....	....	....	1299	1368	1368	1436	1710	1846
	54.0	7.250	0.625	9.625	9.427	15.708	14.374	5.06	....	....	....	1366	1437	1437	1509	1797	1940

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 563 (continued)

Type: Non-upset, coupled Seal: Metal-to-metal, threaded																
									Minimum joint tension strength, kips							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.765	0.352	10.625	10.147	10.254	9.305	4.05	....	....	....	884	931	931	977	1163	1256
	40.0	8.750	0.395	10.625	10.222	11.454	10.504	4.05	....	....	....	998	1050	1050	1103	1313	1418
	43.5	8.599	0.435	10.625	10.291	12.559	11.610	4.05	....	....	....	1103	1161	1161	1219	1451	1567
	47.0	8.525	0.472	10.625	10.353	13.572	12.623	4.05	....	....	....	1199	1262	1262	1325	1578	1704
	53.5	8.500	0.545	10.625	10.474	15.546	14.597	4.05	....	....	....	1387	1460	1460	1533	1825	1971
	58.4	8.279	0.595	10.625	10.380	16.879	15.390	5.06	....	....	....	1462	1539	1539	1616	1924	2078
	59.4	8.251	0.609	10.625	10.403	17.250	15.761	5.06	....	....	....	1497	1576	1576	1655	1970	2128
	61.1	8.219	0.625	10.625	....	17.671	16.182	5.06	....	....	....	1537	1618	1618	1699	2023	2185
9.875	62.8	8.500	0.625	10.625	....	18.162	16.634	5.06	....	....	....	1580	1663	1663	1747	2079	2246
10.750	40.5	9.894	0.350	11.750	11.252	11.435	10.375	4.45	....	....	....	986	1038	1038	1089	1297	1401
	45.5	9.875	0.400	11.750	11.340	13.006	11.945	4.45	....	....	....	1135	1195	1195	1254	1493	1613
	51.0	9.694	0.450	11.750	11.427	14.561	13.501	4.45	....	....	....	1283	1350	1350	1418	1688	1823
	55.5	9.625	0.495	11.750	11.334	15.947	14.434	5.22	....	....	....	1371	1443	1443	1516	1804	1949
	60.7	9.504	0.545	11.750	11.420	17.473	15.959	5.22	....	....	....	1516	1596	1596	1676	1995	2154
	65.7	9.500	0.595	11.750	11.503	18.982	17.469	5.22	....	....	....	1660	1747	1747	1834	2184	2358
	73.2	9.250	0.672	11.750	11.630	21.276	19.763	5.22	....	....	....	1877	1976	1976	2075	2470	2668
	79.2	9.126	0.734	11.750	....	23.096	21.432	6.06	....	....	....	2036	2143	2143	2250	2679	2893
11.750	47.0	10.844	0.375	12.750	12.299	13.401	12.241	4.45	....	....	....	1163	1224	1224	1285	1530	1653
	54.0	10.724	0.435	12.750	12.406	15.463	14.303	4.45	....	....	....	1359	1430	1430	1502	1788	1931
	60.0	10.625	0.489	12.750	12.363	17.300	15.645	5.22	....	....	....	1486	1565	1565	1643	1956	2112
	65.0	10.625	0.534	12.750	12.441	18.816	17.161	5.22	....	....	....	1630	1716	1716	1802	2145	2317
	71.0	10.430	0.582	12.750	12.523	20.420	18.765	5.22	....	....	....	1783	1877	1877	1970	2346	2533
	75.0	10.358	0.618	12.750	12.584	21.613	19.958	5.22	....	....	....	1896	1996	1996	2096	2495	2694
	79.0	10.282	0.656	12.750	....	22.863	21.209	5.22	....	....	....	2015	2121	2121	2227	2651	2863
11.875	71.8	10.625	0.582	12.750	....	20.648	18.976	5.22	....	....	....	1803	1898	1898	1992	2372	2562

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — Series 500 Type 563 (continued)

Type: Non-upset, coupled Seal: Metal-to-metal, threaded																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	54.5	12.459	0.380	14.375	13.923	15.513	14.005	5.17	....	....	....	1330	1401	1401	1471	1751	1891
	61.0	12.359	0.430	14.375	14.013	17.487	15.979	5.17	....	....	....	1518	1598	1598	1678	1997	2157
	68.0	12.259	0.480	14.375	14.102	19.445	17.937	5.17	....	....	....	1704	1794	1794	1883	2242	2421
	72.0	12.250	0.514	14.375	14.162	20.768	19.259	5.17	....	....	....	1830	1926	1926	2022	2407	2600
	77.0	12.119	0.550	14.375	14.090	22.160	20.088	6.06	....	....	....	1908	2009	2009	2109	2511	2712
	80.7	12.059	0.580	14.375	14.142	23.314	21.242	6.06	....	....	....	2018	2124	2124	2230	2655	2868
	85.0	12.003	0.608	14.375	14.190	24.386	22.314	6.06	....	....	....	2120	2231	2231	2343	2789	3012
	86.0	11.969	0.625	14.375	14.219	25.035	22.962	6.06	....	....	....	2181	2296	2296	2411	2870	3100
13.500	81.4	12.250	0.580	14.375	....	23.542	20.735	5.17	....	....	....	1970	2074	2074	2177	2592	2799
13.625	88.2	12.250	0.625	14.625	14.470	25.525	23.414	6.06	....	....	....	2224	2341	2341	2458	2927	3161
14.000	92.7	12.544	0.650	15.000	14.830	27.261	25.092	6.06	....	....	....	2384	2509	2509	2635	3137	3387
	99.4	12.444	0.700	15.000	....	29.248	27.079	6.06	....	....	....	2573	2708	2708	2843	3385	3656
	106.1	12.344	0.750	15.000	....	31.220	29.050	6.06	....	....	....	2760	2905	2905	3050	3631	3922
	112.8	12.244	0.800	15.000	....	33.175	31.006	6.06	....	....	....	2946	3101	3101	3256	3876	4186
16.000	75.0	14.936	0.438	17.000	16.656	21.414	19.608	5.17	....	....	....	1863	1961	1961	2059	2451	2647
	84.0	14.822	0.495	17.000	16.758	24.112	22.306	5.17	....	....	....	2119	2231	2231	2342	2788	3011
	109.0	14.500	0.656	17.000	....	31.622	29.142	6.06	....	....	....	2768	2914	2914	3060	3643	3934
	118.0	14.382	0.715	17.000	....	34.334	31.853	6.06	....	....	....	3026	3185	3185	3345	3982	4300
18.625	109.4	17.311	0.563	20.000	19.370	31.947	29.058	6.06	....	....	....	2761	2906	2906	3051	3632	3923
	112.0	17.279	0.579	20.000	19.399	32.825	29.937	6.06	....	....	....	2844	2994	2994	3143	3742	4041
	136.0	17.051	0.693	20.000	19.602	39.040	36.152	6.06	....	....	....	3434	3615	3615	3796	4519	4881

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — SuPreme LX

Type: Non-upset, integral flush Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
	15.0	4.283	0.296	5.092	....	4.374	3.147	4.49	....	....	299	299	315	315	330	393	425
	18.0	4.151	0.362	5.105	....	5.275	3.697	4.49	....	....	351	351	370	370	388	462	499
	20.3	4.059	0.408	5.114	....	5.886	4.599	4.92	....	....	437	437	460	460	483	575	621
5.000	20.8	4.031	0.422	5.117	....	6.069	4.775	4.92	....	....	454	454	478	478	501	597	645
	21.4	4.001	0.437	5.119	....	6.264	4.963	4.92	....	....	471	471	496	496	521	620	670
	23.2	3.919	0.478	5.128	....	6.791	5.364	5.29	....	....	510	510	536	536	563	671	724
	24.1	3.875	0.500	5.132	....	7.069	5.632	5.29	....	....	535	535	563	563	591	704	760
	17.0	4.767	0.304	5.598	....	4.962	3.568	4.40	....	....	339	339	357	357	375	446	482
	20.0	4.653	0.361	5.608	....	5.828	4.136	4.40	....	....	393	393	414	414	434	517	558
5.500	23.0	4.545	0.415	5.619	....	6.630	5.151	5.02	....	....	489	489	515	515	541	644	695
	26.0	4.423	0.476	5.631	....	7.513	5.733	5.17	....	....	545	545	573	573	602	717	774
	26.8	4.375	0.500	5.635	....	7.854	6.181	5.17	....	....	587	587	618	618	649	773	834
	22.6	5.840	0.330	6.736	....	6.526	4.149	4.41	....	....	394	394	415	415	436	519	560
	24.0	5.796	0.352	6.740	....	6.937	4.622	4.41	....	....	439	439	462	462	485	578	624
	24.6	5.776	0.362	6.742	....	7.123	4.803	4.41	....	....	456	456	480	480	504	600	648
6.625	28.0	5.666	0.417	6.752	....	8.133	6.333	5.18	....	....	602	602	633	633	665	792	855
	32.0	5.550	0.475	6.763	....	9.177	7.280	5.18	....	....	692	692	728	728	764	910	983
	33.0	5.500	0.500	6.768	....	9.621	7.686	5.47	....	....	730	730	769	769	807	961	1038
	34.5	5.450	0.525	6.773	....	10.061	8.109	5.47	....	....	770	770	811	811	851	1014	1095

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — SuPreme LX (continued)

Type: Non-upset, integral flush Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	23.0	6.241	0.317	7.111	....	6.655	4.879	4.41	....	....	464	464	488	488	512	610	659
	26.0	6.151	0.362	7.120	....	7.549	5.603	4.41	....	....	532	532	560	560	588	700	756
	29.0	6.059	0.408	7.128	....	8.449	6.463	4.93	....	....	614	614	646	646	679	808	873
	32.0	6.000	0.453	7.153	....	9.317	7.409	4.93	....	....	704	704	741	741	778	926	1000
	35.0	5.879	0.498	7.145	....	10.172	8.205	5.80	....	....	779	779	821	821	862	1026	1108
	38.0	5.795	0.540	7.169	....	10.959	8.961	5.80	....	....	851	851	896	896	941	1120	1210
	41.0	5.695	0.590	7.163	....	11.881	9.770	5.97	....	....	928	928	977	977	1026	1221	1319
	42.7	5.625	0.625	7.200	....	12.517	10.279	5.97	....	....	977	977	1028	1028	1079	1285	1388
7.625	26.4	6.844	0.328	7.743	....	7.519	5.570	4.72	....	....	529	529	557	557	585	696	752
	29.7	6.750	0.375	7.752	....	8.541	6.358	4.72	....	....	604	604	636	636	668	795	858
	33.7	6.640	0.430	7.762	....	9.720	7.624	5.49	....	....	724	724	762	762	801	953	1029
	39.0	6.500	0.500	7.775	....	11.192	8.861	5.49	....	....	842	842	886	886	930	1108	1196
	42.8	6.376	0.562	7.787	....	12.470	10.174	5.97	....	....	967	967	1017	1017	1068	1272	1373
	45.3	6.310	0.595	7.793	....	13.141	10.819	5.97	....	....	1028	1028	1082	1082	1136	1352	1461
	47.1	6.250	0.625	7.799	....	13.744	11.310	6.16	....	....	1074	1074	1131	1131	1188	1414	1527
7.750	46.1	6.500	0.595	7.937	....	13.374	10.917	6.16	....	....	1037	1037	1092	1092	1146	1365	1474
	48.6	6.375	0.640	7.945	....	14.296	11.421	6.16	....	....	1085	1085	1142	1142	1199	1428	1542
	54.2	6.250	0.712	7.995	....	15.743	11.805	6.16	....	....	1121	1121	1181	1181	1240	1476	1594
8.625	36.0	7.700	0.400	8.764	....	10.336	7.575	5.19	....	....	720	720	758	758	795	947	1023
	40.0	7.600	0.450	8.773	....	11.557	8.745	5.19	....	....	831	831	875	875	918	1093	1181
	44.0	7.500	0.500	8.782	....	12.763	9.803	5.80	....	....	931	931	980	980	1029	1225	1323
	49.0	7.386	0.557	8.793	....	14.118	11.204	5.80	....	....	1064	1064	1120	1120	1176	1401	1513
	52.0	7.310	0.595	8.801	....	15.010	11.852	6.17	....	....	1126	1126	1185	1185	1244	1482	1600
	54.0	7.250	0.625	8.806	....	15.708	12.523	6.17	....	....	1190	1190	1252	1252	1315	1565	1691

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — SuPreme LX (continued)

Type: Non-upset, integral flush Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	43.5	8.625	0.435	9.778	....	12.559	9.310	5.32	....	....	884	884	931	931	978	1164	1257
	47.0	8.525	0.472	9.784	....	13.572	10.281	5.32	....	....	977	977	1028	1028	1080	1285	1388
	53.5	8.500	0.545	9.821	....	15.546	12.062	5.45	....	....	1146	1146	1206	1206	1267	1508	1628
	58.4	8.375	0.595	9.830	....	16.879	12.974	5.45	....	....	1233	1233	1297	1297	1362	1622	1751
9.750	59.2	8.500	0.595	9.956	....	17.113	12.953	6.22	....	....	1231	1231	1295	1295	1360	1619	1749
9.875	62.8	8.500	0.625	10.065	....	18.162	14.358	6.22	....	....	1364	1364	1436	1436	1508	1795	1938
10.000	67.0	8.500	0.672	10.100	....	19.693	15.091	6.22	....	....	1434	1434	1509	1509	1585	1886	2037
	68.4	8.500	0.688	10.150	....	20.127	15.091	6.22	....	....	1434	1434	1509	1509	1585	1886	2037
10.750	51.0	9.694	0.450	10.914	....	14.561	10.765	5.46	....	....	1023	1023	1077	1077	1130	1346	1453
	55.5	9.604	0.495	10.922	....	15.947	12.092	5.46	....	....	1149	1149	1209	1209	1270	1512	1632
	60.7	9.504	0.545	10.931	....	17.473	13.397	5.83	....	....	1273	1273	1340	1340	1407	1675	1809
	65.7	9.500	0.595	10.966	....	18.982	14.844	5.83	....	....	1410	1410	1484	1484	1559	1856	2004
11.750	60.0	10.625	0.489	11.928	....	17.300	12.548	5.63	....	....	1192	1192	1255	1255	1318	1569	1694
	65.0	10.625	0.534	11.965	....	18.816	14.000	5.63	....	....	1330	1330	1400	1400	1470	1750	1890
	71.0	10.430	0.582	11.975	....	20.420	15.656	5.63	....	....	1487	1487	1566	1566	1644	1957	2114
11.875	71.8	10.625	0.582	12.072	....	20.648	15.710	5.83	....	....	1492	1492	1571	1571	1650	1964	2121
12.000	74.8	10.625	0.615	12.204	....	21.997	17.165	5.83	....	....	1631	1631	1717	1717	1802	2146	2317
12.063	78.1	10.625	0.640	12.272	....	22.967	17.365	5.83	....	....	1650	1650	1737	1737	1823	2171	2344
13.375	68.0	12.259	0.480	13.564	....	19.445	14.024	5.64	....	....	1332	1332	1402	1402	1473	1753	1893
	72.0	12.250	0.514	13.602	....	20.768	15.289	5.64	....	....	1452	1452	1529	1529	1605	1911	2064
	77.0	12.119	0.550	13.609	....	22.160	16.774	5.64	....	....	1594	1594	1677	1677	1761	2097	2264
	80.7	12.059	0.580	13.614	....	23.314	17.687	6.30	....	....	1680	1680	1769	1769	1857	2211	2388
	85.0	12.003	0.608	13.619	....	24.386	18.698	6.30	....	....	1776	1776	1870	1870	1963	2337	2524
	86.0	11.969	0.625	13.622	....	25.035	19.333	6.30	....	....	1837	1837	1933	1933	2030	2417	2610
13.500	81.4	12.250	0.580	13.740	....	23.542	18.039	5.64	....	....	1714	1714	1804	1804	1894	2255	2435
13.625	88.2	12.250	0.625	13.875	....	25.525	19.506	6.30	....	....	1853	1853	1951	1951	2048	2438	2633

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydrill MAC-II Performance Data

Size (OD) & Weight (Nom.)		Pipe				Connection					MAC-II Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thickness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	C-110	P-110	Q-125
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
5.000	26.70	26.66	0.562	3.876	3.751	5.247	3.796	4.94	5.00	6.106	580	611	641	672	733	763	824
	29.20	29.23	0.625	3.750	3.625	5.244	3.670	4.94	5.00	6.588	626	569	692	725	971	824	889
	31.60	31.67	0.687	3.626	3.501	5.241	3.546	5.75	4.00	7.000	665	700	735	770	840	875	945
	34.00	34.07	0.750	3.500	3.375	5.238	3.420	5.81	4.00	7.401	703	740	777	814	888	925	999
5.500	28.40	28.16	0.530	4.440	4.315	5.716	4.360	4.94	5.00	6.205	589	621	652	683	745	776	838
	29.70	29.67	0.562	4.376	4.251	5.743	4.296	4.94	5.00	6.781	644	678	712	746	814	848	915
	32.60	32.57	0.625	4.250	4.125	5.770	4.170	4.94	5.00	7.490	712	749	786	824	899	936	1011
	35.30	35.35	0.687	4.126	4.001	5.767	4.046	5.75	4.00	7.951	755	795	835	875	954	994	1073
	36.40	36.14	0.705	4.090	3.965	5.766	4.010	5.75	4.00	7.958	756	796	836	875	955	995	1074
	38.00	38.08	0.750	4.000	3.875	5.764	3.920	5.81	4.00	8.418	800	842	884	926	1010	1052	1136
	40.50	40.69	0.812	3.876	3.751	5.761	3.796	6.44	3.50	8.851	841	885	929	974	1062	1106	1195
6.625	36.70	36.43	0.562	5.501	5.376	6.921	5.421	5.00	5.00	8.250	784	825	866	909	990	1031	1114
	40.20	40.09	0.625	53.75	5.250	6.887	5.295	5.75	4.00	9.020	857	902	947	992	1082	1126	1218
	43.70	43.61	0.687	5.251	5.126	6.951	5.171	5.75	4.00	9.860	937	986	1035	1065	1183	1233	1331
	47.10	47.10	0.750	5.125	5.000	6.948	5.045	5.81	4.00	10.807	1027	1081	1135	1169	1297	1351	1459
	50.40	50.46	0.812	5.001	4.876	6.945	4.921	6.44	3.50	11.367	1080	1137	1194	1250	1364	1421	1535
	53.70	53.78	0.875	4.875	4.750	6.942	4.795	6.44	3.50	11.931	1133	1193	1253	1312	1432	1491	1611
	65.80	66.14	1.125	4.375	4.250	6.933	4.295	7.38	3.00	14.078	1337	1408	1478	1549	1689	1760	1901
7.000	41.00	40.43	0.590	5.820	5.695	7.259	5.740	5.00	5.00	9.195	874	920	965	1011	1103	1149	1241
	42.70	42.59	0.625	5.750	5.625	7.300	5.670	5.00	5.00	9.807	832	981	1030	1079	1177	1226	1324
	44.00	43.51	0.640	5.720	5.595	7.270	5.640	5.75	4.00	9.679	920	968	1016	1065	1161	1210	1307
	45.40	45.34	0.670	5.660	5.535	7.298	5.580	5.75	4.00	10.368	985	1037	1089	1140	1244	1296	1400
	46.40	46.36	0.687	5.626	5.501	7.311	5.546	5.75	4.00	10.664	1013	1066	1120	1173	1280	1333	1440
	49.50	48.93	0.730	5.540	5.415	7.344	5.460	5.81	4.00	11.349	1078	1135	1192	1248	1362	1419	1532
	50.10	50.11	0.750	5.500	5.375	7.343	5.420	5.81	4.00	11.349	1078	1135	1162	1248	1362	1419	1532
	53.60	53.71	0.812	5.376	5.251	7.340	5.296	6.44	3.50	12.235	1162	1224	1285	1346	1468	1529	1652
	57.10	57.29	0.875	5.250	5.125	7.337	5.170	6.44	3.50	12.838	1220	1284	1348	1412	1541	1605	1733
	60.50	60.73	0.937	5.126	5.001	7.334	5.046	7.38	3.00	13.423	1275	1342	1409	1477	1611	1678	1812
	63.90	64.14	1.000	5.000	4.875	7.331	4.920	7.38	3.00	14.063	1336	1406	1477	1547	1666	1758	1899

"Tensile calculated on: L-80=95 ksi, N-/C-90=100 ksi, T-95=105 ksi, HC-95=110 ksi, C-110=120 ksi, P-110=125 ksi, Q-125=135 ksi."
For this item bore will pass popular oversize drift.
] Interchangeable where bracketed.

Hydril MAC-II Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection					MAC-II Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thickness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	C-110	P-110	Q-125
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
7.625	45.30	44.71	0.595	6.435	6.375	7.885	6.400*	5.00	5.00	9.710	922	971	1020	1068	1165	1214	1311
	47310	46.77	0.6205	6.375	6.250	7.921	6.295	5.00	5.00	10.743	1021	1074	1128	1182	1289	1343	1450
	51.20	50.95	0.687	6.251	6.126	8.004	6.171	5.81	4.00	11.650	1107	1165	1223	1282	1398	1456	1573
	52.80	52.62	0.712	6.201	6.076	8.003	6.121	5.81	4.00	11.796	1121	1180	1239	1298	1416	1475	1592
	55.30	55.12	0.750	6.125	6.000	8.001	6.045	5.81	4.00	12.847	1220	1285	1347	1413	1542	1606	1734
	59.20	59.14	0.812	6.001	5.876	7.998	5.921	6.44	3.50	13.723	1304	1372	1441	1510	1647	1715	1853
	63.20	63.14	0.875	5.875	5.750	7.994	5.795	6.44	3.50	14.407	1369	1441	1613	1585	1729	1801	1945
	66.90	66.99	0.937	5.751	5.626	7.991	5.671	7.38	3.00	15.051	1430	1506	1590	1656	1806	1881	2032
	70.70	70.82	1.000	5.625	5.500	7.989	5.545	7.38	3.00	15.736	1495	1574	1652	1731	1888	1967	2124
7.750	46.10	45.51	0.595	6.560	6.500	8.025	6.530*	5.75	4.00	10.046	954	1005	1055	1105	1206	1256	1356
	48.60	48.64	0.640	6.470	6.375	8.084	6.405*	5.75	4.00	10.934	1039	1093	1148	1203	1312	1367	1476
8.000	70.80	70.75	0.937	6.126	6.001	8.386	6.046	7.38	3.00	15.804	1501	1580	1659	1738	1896	1976	2134
8.063	74.20	74.20	0.980	6.103	6.000	8.450	6.045*	7.38	3.00	16.570	1574	1657	1740	1823	1988	2071	2237
8.625	54.00	53.45	0.625	7.375	7.250	8.884	7.295	5.81	4.00	11.869	1128	1187	1246	1306	1424	1484	1602
	58.70	58.30	0.687	7.251	7.126	8.970	7.171	5.81	4.00	13.249	1259	1325	1391	1457	1590	1656	1789
	63.50	63.14	0.750	7.125	7.000	9.054	7.045	5.81	4.00	14.439	1372	1444	1516	1588	1733	1805	1949
	68.10	67.82	0.812	7.001	6.876	9.051	6.921	6.50	3.50	15.784	1499	1578	1657	1736	1894	1973	2131
	72.70	72.49	0.875	6.875	6.750	9.047	6.795	7.38	3.00	16.905	1606	1681	1775	1860	2029	2113	2282
	77.10	77.01	0.937	6.751	6.626	9.044	6.671	7.38	3.00	17.766	1688	1777	1865	1954	2132	2221	2398
	81.50	81.51	1.000	6.625	6.500	9.041	6.545	7.38	3.00	18.562	1763	1856	1949	2042	2227	2320	2506
	83.20	83.28	1.025	6.575	6.500	9.075	6.525	7.38	3.00	18.767	1783	1877	1971	2064	2252	2346	2534

"Tensile calculated on: L-80=95 ksi, N-/C-90=100 ksi, T-95=105 ksi, HC-95=110 ksi, C-110=120 ksi, P-110=125 ksi, Q-125=135 ksi."
For this item bore will pass popular oversize drift.
] Interchangeable where bracketed.

Hydril MAC-II Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection					MAC-II Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thickness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	C-110	P-110	Q-125
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
9.625	58.40	57.44	0.595	8.435	8.375	9.843	8.400*	5.81	4.00	11.793	1120	1179	1238	1297	1415	1474	1592
	59.40	58.70	0.609	8.407	8.251	9.873	8.327	5.81	4.00	13.033	1238	1303	1368	1434	1664	1629	1759
	61.10	60.13	0.625	8.375	8.219	9.889	8.295	5.81	4.00	13.440	1277	1344	1411	1476	1813	1680	1814
	64.90	64.32	0.672	8.281	8.125	9.965	8.201	5.81	4.00	14.620	1359	1462	1535	1608	1754	1628	1974
	70.30	69.76	0.734	8.157	8.001	10.047	8.077	6.50	3.50	16.017	1522	1602	1682	1762	1922	2002	2162
	71.60	71.16	0.750	8.125	7.969	10.060	8.045	6.50	3.50	16.410	1559	1641	1723	1805	1959	2051	2215
	75.60	75.21	0.797	8.031	7.875	10.009	7.951	6.50	3.50	17.558	1668	1756	1844	1931	2107	2195	2370
	80.80	80.50	0.859	7.907	7.751	10.102	7.827	7.38	3.00	18.779	1794	1878	1972	2066	2253	2347	2535
	86.00	85.78	0.922	7.781	7.625	10.098	7.701	7.38	3.00	20.213	1920	2021	2122	2223	2426	2527	2729
	91.00	90.89	0.984	7.657	7.501	10.095	7.577	7.44	3.00	21.093	2004	2109	2215	2320	2531	2637	2848
9.875	62.80	61.80	0.625	8.625	8.500	10.147	8.565*	5.81	4.00	13.655	1297	1366	1434	1502	1639	1707	1643
10.750	73.20	72.40	0.672	9.406	9.250	11.041	9.326	5.81	4.00	16.264	1545	1626	1708	1789	1952	2033	2196
	75.90	75.20	0.700	9.350	9.194	11.076	9.270	5.81	4.00	17.066	1621	1707	1792	1877	2048	2133	2304
	79.20	78.59	0.734	9.282	9.126	11.131	9.202	5.81	4.00	18.021	1712	1602	1892	1962	2162	2253	2433
	80.80	80.18	0.750	9.250	9.125	11.157	9.170*	5.81	4.00	18.366	1745	1837	1928	2020	2204	2296	2479
	85.30	84.80	0.797	9.156	9.000	11.139	9.076	7.44	3.00	19.474	1850	1947	2045	2142	2337	2434	2629
	91.20	90.83	0.859	9.032	8.876	11.223	8.952	7.44	3.00	21.184	2012	2118	2224	2330	2642	2648	2860
	97.10	96.87	0.922	8.906	8.750	11.283	8.826	7.44	3.00	22.257	2114	2226	2337	2448	2671	2762	3005
	102.90	102.73	0.984	8.782	8.626	11.280	8.702	7.50	3.00	24.257	2304	2426	2547	2668	2911	3032	3275
	104.30	104.23	1.000	8.750	8.594	11.232	8.670	7.44	3.00	23.140	2198	2314	2430	2545	2777	2553	3124
	108.70	108.60	1.047	8.656	8.500	11.276	8.576	7.44	3.00	25.602	2432	2560	2668	2516	3072	3200	3456
11.750	87.50	86.44	0.734	10.282	10.126	12.097	10.202	6.56	3.50	19.647	1866	1965	2063	2161	2358	2456	2652
	94.00	93.32	0.797	10.156	10.000	12.185	10.076	6.56	3.50	21.580	2050	2158	2266	2374	2590	2698	2913
	100.50	100.01	0.859	10.032	9.876	12.267	9.952	7.44	3.00	23.313	2215	2331	2448	2564	2798	2914	3147
	107.10	106.72	0.922	9.906	9.750	12.320	9.826	7.44	3.00	25.209	2395	2521	2647	2773	3025	3151	3403
	113.50	113.25	0.984	9.782	9.626	12.332	9.702	7.44	3.00	26.713	2538	2671	2805	2938	3206	3339	3606
	119.90	119.79	1.047	9.656	9.500	12.330	9.576	7.44	3.00	28.590	2716	2859	3002	3145	3431	3574	3860

"Tensile calculated on: L-80=95 ksi, N-/C-90=100 ksi, T-95=105 ksi, HC-95=110 ksi, C-110=120 ksi, P-110=125 ksi, Q-125=135 ksi."
For this item bore will pass popular oversize drift.
] Interchangeable where bracketed.

Hydril MAC-II Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection					MAC-II Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thickness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	L-80	N-80/ C-90	T-95	HC-95	C-110	P-110	Q-125
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
12.750	94.20	94.28	0.734	11.282	11.126	13.091	11.202	6.56	3.50	21.370	2030	2137	2244	2351	2584	2671	2855
	101.70	101.84	0.797	11.156	11.000	13.185	11.076	6.56	3.50	23.510	2233	2351	2468	2586	2821	2939	3174
	109.10	109.19	0.859	11.032	10.876	13.285	10.952	6.56	3.50	25.584	2430	2956	2686	2814	3070	3198	3464
	116.50	116.58	0.922	10.906	10.750	13.311	10.826	7.50	3.00	27.153	2580	2715	2881	2987	3256	3394	3866
	123.70	123.77	0.984	10.782	10.626	13.387	10.702	7.50	3.00	29.182	2772	2918	3064	3210	3502	3845	3540
	130.90	130.99	1.047	10.656	10.500	13.384	10.576	7.50	3.00	29.689	2820	2969	3117	3266	3563	3711	4008
	137.90	138.01	1.109	10.532	10.376	13.379	10.452	7.44	3.00	33.085	3143	3309	3474	3639	3970	4136	4468
13.375	92.50	91.25	0.672	12.031	11.875	13.680	11.951	6.56	3.50	20.267	1925	2027	2128	2229	2432	2533	2736
	100.30	99.19	0.734	11.907	11.751	13.759	11.827	6.56	3.50	22.510	2138	2251	2364	2476	2701	2614	3039
	108.10	107.16	0.797	11.781	11.625	13.756	11.701	7.44	3.00	24.425	2320	2443	2565	2687	2931	3053	3297
	115.70	114.93	0.859	11.657	11.501	13.848	11.577	7.44	3.00	26.622	2529	2662	2795	2928	3195	3328	3594
	123.40	122.74	0.922	11.531	11.375	13.936	11.451	7.50	3.00	28.522	2710	2652	2995	3137	3423	3565	3850
	130.80	130.34	0.984	11.407	11.251	13.991	11.327	7.50	3.00	30.668	2913	3067	3220	3373	3680	3634	4140
	138.30	137.98	1.047	11.281	11.125	14.033	11.201	7.50	3.00	32.662	3103	3266	3430	3593	3919	4063	4409
	145.60	145.42	1.109	11.157	11.001	14.037	11.077	7.50	3.00	33.936	3224	3394	3563	3733	4072	4242	4581
14.000	99.60	99.52	0.700	12.600	12.444	14.306	12.520	6.56	3.50	22.109	2100	2211	2321	2432	2653	2764	2965
	104.20	104.09	0.734	12.532	12.376	14.354	12.452	6.56	3.50	23.397	2223	2340	2457	2574	2808	2925	3169
	112.60	112.49	0.797	12.406	12.250	14.458	12.326	6.56	3.50	25.750	2446	2575	2704	2833	3090	3219	3476
16.000	109.00	107.60	0.656	14.688	14.500	16.706	14.608	7.56	3.00	20.891	1985	2089	2194	2298	2507	2611	2820
	118.00	116.83	0.715	14.570	14.382	16.706	14.490	7.56	3.00	25.312	2405	2531	2658	2784	3037	3164	3417
	128.60	127.06	0.781	14.438	14.250	16.706	14.358	7.56	3.00	28.192	2678	2819	2960	3101	3383	3524	3806
	137.90	136.59	0.843	14.314	14.126	16.706	14.234	7.56	3.00	30.876	2933	3088	3242	3396	3705	3860	4168
	147.30	146.19	0.906	14.188	14.000	16.706	14.108	7.56	3.00	33.579	3190	3358	3526	3694	4029	4197	4533

"Tensile calculated on: L-80=95 ksi, N-/C-90=100 ksi, T-95=105 ksi, HC-95=110 ksi, C-110=120 ksi, P-110=125 ksi, Q-125=135 ksi."
For this item bore will pass popular oversize drift.
] Interchangeable where bracketed.

Hydril — MAC-II

Type: Non-upset, integral swaged

Seal: Metal-to-metal (2)

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	26.7	3.751	0.562	5.247	....	7.836	6.106	4.94	....	....	....	580	611	611	641	763	824
	29.2	3.625	0.625	5.244	....	8.590	6.588	4.94	....	....	....	626	659	659	692	824	889
	31.6	3.501	0.687	5.241	....	9.309	7.000	5.75	....	....	....	665	700	700	735	875	945
	34.0	3.375	0.750	5.238	....	10.014	7.401	5.81	....	....	....	703	740	740	777	925	999
5.500	28.4	4.315	0.530	5.716	....	8.275	6.205	4.94	....	....	....	589	621	621	652	776	838
	29.7	4.251	0.562	5.743	....	8.718	6.781	4.94	....	....	....	644	678	678	712	848	915
	32.6	4.125	0.625	5.770	....	9.572	7.490	4.94	....	....	....	712	749	749	786	936	1011
	35.3	4.001	0.687	5.767	....	10.388	7.951	5.75	....	....	....	755	795	795	835	994	1073
	36.4	3.965	0.705	5.766	....	10.620	7.958	5.75	....	....	....	756	796	796	836	995	1074
	38.0	3.875	0.750	5.764	....	11.192	8.418	5.81	....	....	....	800	842	842	884	1052	1136
	40.5	3.751	0.812	5.761	....	11.959	8.851	6.44	....	....	....	841	885	885	929	1106	1195
6.625	36.7	5.376	0.562	6.921	....	10.705	8.250	5.00	....	....	....	784	825	825	866	1031	1114
	40.2	5.250	0.625	6.887	....	11.781	9.020	5.75	....	....	....	857	902	902	947	1128	1218
	43.7	5.126	0.687	6.951	....	12.816	9.860	5.75	....	....	....	937	986	986	1035	1233	1331
	47.1	5.000	0.750	6.948	....	13.843	10.807	5.81	....	....	....	1027	1081	1081	1135	1351	1459
	50.4	4.876	0.812	6.945	....	14.829	11.367	6.44	....	....	....	1080	1137	1137	1194	1421	1535
	53.7	4.750	0.875	6.942	....	15.806	11.931	6.44	....	....	....	1133	1193	1193	1253	1491	1611
	65.8	4.250	1.125	6.933	....	19.439	14.078	7.38	....	....	....	1337	1408	1408	1478	1760	1901

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Hydril — MAC-II (continued)

Type: Non-upset, integral swaged

Seal: Metal-to-metal (2)

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	41.0	5.695	0.590	7.259	....	11.881	9.195	5.00	....	....	....	874	920	920	965	1149	1241
	42.7	5.625	0.625	7.300	....	12.517	9.807	5.00	....	....	....	932	981	981	1030	1226	1324
	44.0	5.595	0.640	7.270	....	12.788	9.679	5.75	....	....	....	920	968	968	1016	1210	1307
	45.4	5.535	0.670	7.298	....	13.324	10.368	5.75	....	....	....	985	1037	1037	1089	1296	1400
	46.4	5.501	0.687	7.311	....	13.625	10.664	5.75	....	....	....	1013	1066	1066	1120	1333	1440
	49.5	5.415	0.730	7.344	....	14.379	11.349	5.81	....	....	....	1078	1135	1135	1192	1419	1532
	50.1	5.375	0.750	7.343	....	14.726	11.349	5.81	....	....	....	1078	1135	1135	1192	1419	1532
	53.6	5.251	0.812	7.340	....	15.785	12.235	6.44	....	....	....	1162	1224	1224	1285	1529	1652
	57.1	5.125	0.875	7.337	....	16.837	12.838	6.44	....	....	....	1220	1284	1284	1348	1605	1733
	60.5	5.001	0.937	7.334	....	17.847	13.423	7.38	....	....	....	1275	1342	1342	1409	1678	1812
	63.9	4.875	1.000	7.331	....	18.850	14.063	7.38	....	....	....	1336	1406	1406	1477	1758	1899
7.625	45.3	6.375	0.595	7.885	....	13.141	9.710	5.00	....	....	....	922	971	971	1020	1214	1311
	47.1	6.250	0.625	7.921	....	13.744	10.743	5.00	....	....	....	1021	1074	1074	1128	1343	1450
	51.2	6.126	0.687	8.004	....	14.974	11.650	5.81	....	....	....	1107	1165	1165	1223	1456	1573
	52.8	6.076	0.712	8.003	....	15.463	11.796	5.81	....	....	....	1121	1180	1180	1239	1475	1592
	55.3	6.000	0.750	8.001	....	16.199	12.847	5.81	....	....	....	1220	1285	1285	1349	1606	1734
	59.2	5.876	0.812	7.998	....	17.380	13.723	6.44	....	....	....	1304	1372	1372	1441	1715	1853
	63.2	5.750	0.875	7.994	....	18.555	14.407	6.44	....	....	....	1369	1441	1441	1513	1801	1945
	66.9	5.626	0.937	7.991	....	19.687	15.051	7.38	....	....	....	1430	1505	1505	1580	1881	2032
	70.7	5.500	1.000	7.989	....	20.813	15.736	7.38	....	....	....	1495	1574	1574	1652	1967	2124
7.750	46.1	6.500	0.595	8.025	....	13.374	10.046	5.75	....	....	....	954	1005	1005	1055	1256	1356
	48.6	6.375	0.640	8.084	....	14.296	10.934	5.75	....	....	....	1039	1093	1093	1148	1367	1476
8.000	70.8	6.001	0.937	8.386	....	20.791	15.804	7.38	....	....	....	1501	1580	1580	1659	1976	2134
8.063	74.2	6.000	0.980	8.450	....	21.807	16.570	7.38	....	....	....	1574	1657	1657	1740	2071	2237

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Hydril — MAC-II (continued)

Type: Non-upset, integral swaged Seal: Metal-to-metal (2)																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	54.0	7.250	0.625	8.884	....	15.708	11.869	5.81	....	....	....	1128	1187	1187	1246	1484	1602
	58.7	7.126	0.687	8.970	....	17.132	13.249	5.81	....	....	....	1259	1325	1325	1391	1656	1789
	63.5	7.000	0.750	9.054	....	18.555	14.439	5.81	....	....	....	1372	1444	1444	1516	1805	1949
	68.1	6.876	0.812	9.051	....	19.931	15.784	6.50	....	....	....	1499	1578	1578	1657	1973	2131
	72.7	6.750	0.875	9.047	....	21.304	16.905	7.38	....	....	....	1606	1691	1691	1775	2113	2282
	77.1	6.626	0.937	9.044	....	22.631	17.766	7.38	....	....	....	1688	1777	1777	1865	2221	2398
	81.5	6.500	1.000	9.041	....	23.955	18.562	7.38	....	....	....	1763	1856	1856	1949	2320	2506
	83.2	6.500	1.025	9.075	....	24.473	18.767	7.38	....	....	....	1783	1877	1877	1971	2346	2534
9.625	58.4	8.375	0.595	9.843	....	16.879	11.793	5.81	....	....	....	1120	1179	1179	1238	1474	1592
	59.4	8.251	0.609	9.873	....	17.250	13.033	5.81	....	....	....	1238	1303	1303	1368	1629	1759
	61.1	8.219	0.625	9.889	....	17.671	13.440	5.81	....	....	....	1277	1344	1344	1411	1680	1814
	64.9	8.125	0.672	9.965	....	18.901	14.620	5.81	....	....	....	1389	1462	1462	1535	1828	1974
	70.3	8.001	0.734	10.047	....	20.502	16.017	6.50	....	....	....	1522	1602	1602	1682	2002	2162
	71.6	7.969	0.750	10.060	....	20.911	16.410	6.50	....	....	....	1559	1641	1641	1723	2051	2215
	75.6	7.875	0.797	10.099	....	22.104	17.558	6.50	....	....	....	1668	1756	1756	1844	2195	2370
	80.8	7.751	0.859	10.102	....	23.656	18.779	7.38	....	....	....	1784	1878	1878	1972	2347	2535
	86.0	7.625	0.922	10.098	....	25.209	20.213	7.38	....	....	....	1920	2021	2021	2122	2527	2729
	91.0	7.501	0.984	10.095	....	26.712	21.093	7.44	....	....	....	2004	2109	2109	2215	2637	2848
9.875	62.8	8.500	0.625	10.147	....	18.162	13.655	5.81	....	....	....	1297	1366	1366	1434	1707	1843

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — MAC-II (continued)

Type: Non-upset, integral swaged Seal: Metal-to-metal (2)																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	73.2	9.250	0.672	11.041	....	21.276	16.264	5.81	....	....	....	1545	1626	1626	1708	2033	2196
	75.9	9.194	0.700	11.076	....	22.101	17.066	5.81	....	....	....	1621	1707	1707	1792	2133	2304
	79.2	9.126	0.734	11.131	....	23.096	18.021	5.81	....	....	....	1712	1802	1802	1892	2253	2433
	80.8	9.125	0.750	11.157	....	23.562	18.366	5.81	....	....	....	1745	1837	1837	1928	2296	2479
	85.3	9.000	0.797	11.139	....	24.921	19.474	7.44	....	....	....	1850	1947	1947	2045	2434	2629
	91.2	8.876	0.859	11.223	....	26.692	21.184	7.44	....	....	....	2012	2118	2118	2224	2648	2860
	97.1	8.750	0.922	11.283	....	28.467	22.257	7.44	....	....	....	2114	2226	2226	2337	2782	3005
	102.9	8.626	0.984	11.280	....	30.190	24.257	7.50	....	....	....	2304	2426	2426	2547	3032	3275
	104.3	8.594	1.000	11.232	....	30.631	23.140	7.44	....	....	....	2198	2314	2314	2430	2893	3124
	108.7	8.500	1.047	11.276	....	31.916	25.602	7.44	....	....	....	2432	2560	2560	2688	3200	3456
11.750	87.5	10.126	0.734	12.097	....	25.402	19.647	6.56	....	....	....	1866	1965	1965	2063	2456	2652
	94.0	10.000	0.797	12.185	....	27.425	21.580	6.56	....	....	....	2050	2158	2158	2266	2698	2913
	100.5	9.876	0.859	12.267	....	29.391	23.313	7.44	....	....	....	2215	2331	2331	2448	2914	3147
	107.1	9.750	0.922	12.320	....	31.364	25.209	7.44	....	....	....	2395	2521	2521	2647	3151	3403
	113.5	9.626	0.984	12.332	....	33.281	26.713	7.44	....	....	....	2538	2671	2671	2805	3339	3606
	119.9	9.500	1.047	12.330	....	35.205	28.590	7.44	....	....	....	2716	2859	2859	3002	3574	3860
12.750	94.2	11.126	0.734	13.091	....	27.708	21.370	6.56	....	....	....	2030	2137	2137	2244	2671	2885
	101.7	11.000	0.797	13.185	....	29.929	23.510	6.56	....	....	....	2233	2351	2351	2469	2939	3174
	109.1	10.876	0.859	13.285	....	32.089	25.584	6.56	....	....	....	2430	2558	2558	2686	3198	3454
	116.5	10.750	0.922	13.311	....	34.260	27.153	7.50	....	....	....	2580	2715	2715	2851	3394	3666
	123.7	10.626	0.984	13.387	....	36.373	29.182	7.50	....	....	....	2772	2918	2918	3064	3648	3940
	130.9	10.500	1.047	13.384	....	38.494	29.689	7.50	....	....	....	2820	2969	2969	3117	3711	4008
	137.9	10.376	1.109	13.379	....	40.558	33.085	7.44	....	....	....	3143	3309	3309	3474	4136	4466

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril — MAC-II (continued)

Type: Non-upset, integral swaged Seal: Metal-to-metal (2)																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	92.5	11.875	0.672	13.680	....	26.818	20.267	6.56	....	....	....	1925	2027	2027	2128	2533	2736
	100.3	11.751	0.734	13.759	....	29.149	22.510	6.56	....	....	....	2138	2251	2251	2364	2814	3039
	108.1	11.625	0.797	13.756	....	31.493	24.425	7.44	....	....	....	2320	2443	2443	2565	3053	3297
	115.7	11.501	0.859	13.848	....	33.776	26.622	7.44	....	....	....	2529	2662	2662	2795	3328	3594
	123.4	11.375	0.922	13.936	....	36.071	28.522	7.50	....	....	....	2710	2852	2852	2995	3565	3850
	130.8	11.251	0.984	13.991	....	38.305	30.668	7.50	....	....	....	2913	3067	3067	3220	3834	4140
	138.3	11.125	1.047	14.033	....	40.550	32.662	7.50	....	....	....	3103	3266	3266	3430	4083	4409
	145.6	11.001	1.109	14.037	....	42.735	33.936	7.50	....	....	....	3224	3394	3394	3563	4242	4581
14.000	99.6	12.444	0.700	14.306	....	29.248	22.109	6.56	....	....	....	2100	2211	2211	2321	2764	2985
	104.2	12.376	0.734	14.354	....	30.590	23.397	6.56	....	....	....	2223	2340	2340	2457	2925	3159
	112.6	12.250	0.797	14.458	....	33.058	25.750	6.56	....	....	....	2446	2575	2575	2704	3219	3476
16.000	109.0	14.500	0.656	16.706	....	31.622	20.891	7.56	....	....	....	1985	2089	2089	2194	2611	2820
	118.0	14.382	0.715	16.706	....	34.334	25.312	7.56	....	....	....	2405	2531	2531	2658	3164	3417
	128.6	14.250	0.781	16.706	....	37.341	28.192	7.56	....	....	....	2678	2819	2819	2960	3524	3806
	137.9	14.126	0.843	16.706	....	40.141	30.876	7.56	....	....	....	2933	3088	3088	3242	3860	4168
	147.3	14.000	0.906	16.706	....	42.962	33.579	7.56	....	....	....	3190	3358	3358	3526	4197	4533

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Hydril SuPreme™ LX Performance Data

Size (OD) & Weight (Nom.)		Pipe				Connection					Supreme LX Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thick-ness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	K-55/ L-80	N-80/ C-90	T-95 HC-95 P-I10			Q-125	X-140
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
4.500	13.50	13.04	0.290	3.920	3.795	4.588	3.840	4.15	8-00	2.832	269	283	297	312	354	382	425
	12.60	12.24	0.271	3.958	3.833	4.584	3.880	4.15	8.00	2.802	247	280	273	288	325	351	390
	15.10	14.98	0.337	3.826	3.701	4.597	3.746	4.49	7.00	3.207	305	321	337	353	401	433	481
	17.00	18.72	0.380	3.740	3.615	4.805	3.881	4.92	7.00	3.612	343	361	379	397	452	488	542
	18.80	18.72	.430	3.840	3.515	4.815	3.880	4.92	7.00	4.330	411	433	455	476	541	585	650
	21.60	21.36	0.500	3.500	3.375	4.629	3.420	5.48	6.50	5.054	480	505	531	556	632	682	758
5.000	15.00	14.87	0.296	4.406	4.283	5.092	4.328	4.49	7.00	3.147	299	315	330	346	393	425	472
	18.00	17.93	0.382	4.406	4.283	5.092	4.198	4.49	7.00	3.897	381	370	388	407	462	499	555
	20.30	20.01	0.408	4.184	4.059	5.114	4.104	4.92	7.00	4.599	437	460	483	506	575	621	690
	20.80	20.63	0.422	4.156	4.031	5.117	4.076	4.92	7.00	4.775	454	478	501	525	597	645	716
	21.40	21.30	0.437	4.126	4.001	5.119	4.046	4.92	7.00	4.963	471	496	521	546	620	670	744
	23.20	23.08	0.478	4.044	3.919	5.128	3.964	5.29	8.00	5.384	510	538	563	590	671	724	805
	24.10	24.03	0.500	4.000	3.875	5.132	3.920	5.29	6.00	5.832	535	583	591	820	704	780	845
5.500	17.00	16.87	0.304	4.892	4.767	5.598	4.812	4.40	6.50	3.568	339	357	375	392	446	482	535
	20.00	19.81	0.361	4.778	4.653	5.608	4.698	4.40	6.50	4.136	393	414	434	455	517	558	620
	23.00	22.54	0.415	4.670	4.545	5.619	4.590	5.02	6.50	5.151	489	515	541	567	644	895	773
	26.00	25.54	0.476	4.548	4.423	4.631	4.534	5.17	6.50	5.733	545	573	602	631	717	774	860
	26.80	26.70	0.500	4.500	4.375	5.635	4.420	5.17	6.50	5.733	587	618	649	680	773	834	927
6.625	22.60	22.19	0.330	6.965	5.840	6.736	5.890	4.41	8.50	4.149	394	415	436	456	519	560	622
	24.00	23.58	0.352	5.921	5.796	6.740	5.841	4.41	6.50	4.822	439	462	465	508	578	624	693
	24.60	24.21	0.362	5.901	5.776	6.742	5.828	4.41	6.50	4.803	456	480	504	528	600	548	720
	28.00	27.65	0.417	5.791	5.666	6.752	5.711	5.18	6.50	6.333	602	633	665	697	792	855	950
	32.00	31.20	0.475	5.675	5.551	6.763	5.595	5.18	6.50	7.280	692	728	764	801	910	983	1092
	33.00	32.71	0.500	5.625	5.500	8.758	5.545	5.47	6.00	7.686	730	769	807	845	961	1038	1153
	64.50	34.20	0.525	5.575	5.450	6.773	5.495	5.47	6.00	8.109	770	769	851	692	1014	1095	1216
7.000	23.00	22.63	0.317	6.366	6.241	7.111	6.286	4.41	6.50	4.879	464	488	512	537	610	659	732
	26.00	25.66	0.362	6.276	6.151	7.120	6.196	4.41	6.50	5.603	532	560	588	616	700	756	840
	29.00	28.72	0.408	8.184	6.059	7.128	6.180	4.93	7.00	8.463	614	645	879	711	808	873	969
	32.00	31.67	0.453	6.094	6.000	7.153	6.035	4.93	7.00	7.409	704	741	778	815	926	1000	1111
	35.00	34.58	0.498	6.004	5.879	7.145	5.924	5.80	6.50	8.205	779	821	862	903	1026	1108	1231

Hydril SuPreme™ LX Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection					Supreme LX Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thick-ness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	K-55/ L-80	N-80/ C-90	T-95 HC-95 P-I10			Q-125	X-140
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		($in.^2$)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
7.000	38.00	37.26	0.540	5.920	5.795	7.169	5.910	5.80	6.50	8.961	851	896	941	986	1120	1210	1344
	41.00	40.39	0.590	5.820	5.695	7.153	5.740	5.97	6.00	9.770	928	977	1026	1075	1221	1319	1466
	42.70	42.55	0.625	5.750	5.625	7.200	5.675	5.97	6.00	10.279	977	1028	1079	1131	1285	1388	1542
7.625	26.40	25.56	0.328	6.969	6.844	7.743	6.889	4.72	6.50	5.570	529	557	585	613	696	752	836
	29.70	29.04	0.375	6.875	6.750	7.752	6.795	4.72	6.50	6.358	604	636	668	699	795	858	954
	33.70	33.04	0.430	6.765	6.840	7.762	6.685	5.49	6.80	7.624	724	762	801	839	953	1029	1144
	39.00	38.05	0.500	8.625	6.500	7.773	8.545	5.49	6.50	8.881	842	886	930	975	1108	1196	1329
	42.80	42.39	0.562	6.501	6.376	7.787	6.421	5.97	6.00	10.174	967	1017	1068	1119	1272	1373	1526
	45.30	44.67	0.595	6.435	6310	7.793	6.355	5.97	6.00	10.819	1028	1082	1136	1190	1352	1461	1623
	47.10	46.73	0.625	6.375	6.250	7.799	6.295	6.16	5.50	11.310	1074	1131	1158	1244	1414	1627	1697
7.750	46.10	45.47	0.595	6.562	6.500	7.937	6.535	6.16	5.50	10.917	1037	1092	1146	1201	1365	1474	1638
	48.60	48.60	0.640	6.470	6.375	7.945	6.410	6.16	5.50	11.421	1085	1142	1199	1256	1428	1542	1713
	54.20	53.52	0.712	6.326	6.250	7.995	6.295	6.16	5.50	11.805	1121	1181	1240	1299	1476	1594	1771

Tensile Strength calculated on, K-55/L-80 = 90 ksi ultimate, N-80/C-90 = 100 ksi ultimate, T-95 = 105 ksi ultimate, HC-95 = 110 ksi ultimate, P-110 = 125 ksi ultimate, Q-125 = 135 ksi ultimate, X-140 = 150 ksi ultimate.
* For this time bore will pass popular oversize drift.
[ ] Interchangeable where bracketed.

Hydril SuPreme™ LX Performance Data (continued)

Size (OD) & Weight (Nom.)		Pipe				Connection					Supreme LX Tensile Capacity Minimum Parting Load						
		Plain-End Weight	Wall Thick-ness	ID (Nom.)	Drift	Box OD (Turned)	Pin ID (Bored)	Make-Up Loss	Threads (per in.)	Critical Section Area	K-55/ L-80	N-80/ C-90	T-95 HC-95 P-I10			Q-125	X-140
(in.)	(lb/ft)	(lb/ft)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)		(in.²)	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb
8.625	36.00	38.14	0.400	7.625	7.700	8.784	7.745	5.19	6.60	7.575	720	758	795	633	947	1023	1138
	40.00	39.29	0.450	7.725	7.600	8.773	7.645	5.19	8.50	8.746	831	874	918	962	1093	1181	1312
	44.00	4393	0.500	7.625	7.500	8.782	7.545	5.80	6.00	9.803	931	980	1028	1078	1225	1323	1470
	49.00	47.99	0.557	7.511	7.386	8.793	7.450	5.80	6.00	11.204	1064	1120	1176	1232	1401	1513	1681
	52.00	51.03	0.596	7.435	7.310	8.801	7.355	8.17	5.60	11.852	1126	1185	1244	1304	1462	1600	1776
	54.00	53.46	0.625	7.375	7.250	8.806	7.295	6.17	5.50	12.523	1190	1252	1315	1378	1565	1691	1878
9.625	43.50	42.69	0.435	8.755	8.625	9.778	8.675"	5.32	6.00	9.310	884	931	978	1024	1164	1257	1397
	47.00	46.14	0.472	8.681	8.525	9.784	8.601"	5.32	6.00	10.281	977	1028	1080	1131	1285	1388	1542
	53.50	52.85	0.545	8.535	8.500	9.821	8.535	5.45	5.50	12.082	1146	1208	1287	1327	1508	1628	1509
	58.40	57.38	0.595	8.435	8.375	9.830	8.445	5.45	5.50	12.974	1233	1297	1362	427	1622	1751	1946
9.750	59.20	58.18	0.5950	8.560	8.500	9.956	8.570	6.22	5.00	12.953	1231	1295	1360	1425	1619	1749	1943
9.875	62.80	61.74	0.625	8.625	8.500	10.065	8.535	6.22	5.00	14.358	1364	1436	1508	1579	1795	1938	2154
10.000	66.95	66.95	0.672	8.656	8.500	10.100	8.541	6.22	5.00	15.091	1434	1509	1565	1660	1886	2037	2264
	68.42	68.42	0.688	8.624	8.500	10.150	8.541	6.22	5.00	15.091	1434	1509	1565	1660	1886	2037	2264
10.750	51.00	49.50	0.450	9.850	9.894	10.914	9.770	5.46	5.50	10.785	1023	1077	1130	1154	1346	1453	1815
	55.50	54.21	0.495	9.780	9.604	10.922	9.680	5.46	5.50	12.092	1149	1209	1270	1330	1512	1632	1814
	60.70	59.40	0.545	9.660	9.504	10.931	9.580	5.83	5.00	13.397	1273	1340	1407	1474	1675	1809	2010
	65.70	64.53	0.595	9.560	9.500	10.966	9.545	5.83	5.00	14.844	1410	1484	1559	1633	1856	004	2227
11.750	80.00	58.81	0.469	10.772	10.625	11.928	10.692	5.63	5.00	12.546	1192	1255	1318	1380	1589	1694	1852
	85.00	63.97	0.534	10.682	10.625	11.965	10.670	5.83	5.00	14.000	1330	1400	1470	1540	1750	1890	2100
	71.00	69.42	0.582	10.586	10.430	11.975	10.504	5.63	5.00	15.656	1487	1S66	1644	1722	1957	2114	2348
11.875	71.80	70.19	0.582	10.711	10.625	12.072	10.670	5.83	5.00	15.710	1492	1571	1650	1728	1964	2121	2357
12.063	78.10	78.08	0.640	10.783	10.625	12.272	10.666	5.83	5.00	17.365	1650	1736	1823	1910	2171	2344	2605
13.375	68.00	86.10	0.480	12A15	12.259	13.584	12.305	5.84	5.00	14.024	1332	1402	1473	1543	1753	1893	2104
	72.00	70.80	0.514	13.347	12.250	13.802	12.295	5.64	5.00	15.289	452	1529	1605	1682	1911	2064	2293
	77.00	75.33	0.550	12.275	12.117	13.609	12.196	5.84	5.00	16.774	1594	1677	1761	1845	2097	2254	2518
	80.70	79.26	0.580	12.215	12.059	13.614	12.136	6.30	4.50	17.687	1680	1769	1857	1946	2211	2388	2653
	85.00	82.90	0.608	12.159	12.003	13.619	12.080	6.30	4.50	18.698	1776	1870	1963	2057	2337	2524	2805
	86.00	85.11	0.625	12.125	11.969	13.622	12.046	6.30	4.50	19.333	1837	1933	2030	2127	2417	2610	2900
13.500	81.40	80.03	0.580	12.340	12.250	13.740	12.291	5.64	5.00	18.039	1714	1804	1894	1954	2255	2435	2708
13.625	88.20	86.78	0.625	12.375	12.250	13.875	12.290	6.30	4.50	19.506	1853	1951	2048	2146	2438	2633	2926

Tensile Strength calculated on, K-55/L-80 = 90 ksi ultimate, N-80/C-90 = 100 ksi ultimate, T-95 = 105 ksi ultimate, HC-95 = 110 ksi ultimate, P-110 = 125 ksi ultimate, Q-125 = 135 ksi ultimate, X-140 = 150 ksi ultimate.
* For this time bore will pass popular oversize drift.
[ ] Interchangeable where bracketed.

Kawasaki Steel/Hunting Oilfield Services — Fox

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.563	5.375	3.773	5.487	4.640	151	208	208	302	302	340	358	415	472
	15.0	4.283	0.296	5.563	5.375	4.374	5.487	4.640	175	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.563	5.375	5.275	5.487	4.640	211	290	290	422	422	475	501	580	659
	20.3	4.059	0.408	5.563	5.375	5.886	5.487	4.640	219	302	302	439	439	494	521	604	686
	20.8	4.031	0.422	5.563	5.375	6.069	5.487	4.640	219	302	302	439	439	494	521	604	686
	21.4	4.001	0.437	5.563	5.375	6.264	5.487	4.640	219	302	302	439	439	494	521	604	686
	23.2	3.919	0.478	5.563	5.375	6.791	5.487	4.640	219	302	302	439	439	494	521	604	686
	24.1	3.875	0.500	5.563	5.375	7.069	5.487	4.640	219	302	302	439	439	494	521	604	686
5.500	15.5	4.825	0.275	6.050	5.875	4.514	5.888	4.640	181	248	248	361	361	406	429	497	564
	17.0	4.767	0.304	6.050	5.875	4.962	5.888	4.640	198	273	273	397	397	447	471	546	620
	20.0	4.653	0.361	6.050	5.875	5.828	5.888	4.640	233	321	321	466	466	525	554	641	729
	23.0	4.545	0.415	6.050	5.875	6.630	5.888	4.640	236	324	324	471	471	530	559	648	736
	26.0	4.423	0.476	6.050	5.875	7.513	5.888	4.640	236	324	324	471	471	530	559	648	736
	26.8	4.375	0.500	6.050	5.875	7.854	5.888	4.640	236	324	324	471	471	530	559	648	736
6.625	20.0	5.924	0.288	7.390	7.000	5.734	9.627	4.840	229	315	315	459	459	516	545	631	717
	23.2	5.840	0.330	7.390	7.000	6.526	9.627	4.840	261	359	359	522	522	587	620	718	816
	24.0	5.796	0.352	7.390	7.000	6.937	9.627	4.840	277	382	382	555	555	624	659	763	867
	28.0	5.666	0.417	7.390	7.000	8.133	9.627	4.840	325	447	447	651	651	732	773	895	1017
	32.0	5.550	0.475	7.390	7.000	9.177	9.627	4.840	367	505	505	734	734	826	872	1010	1147
	35.0	5.450	0.525	7.390	7.000	10.061	9.627	4.840	385	530	530	770	770	866	915	1059	1203

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Kawasaki Steel/Hunting Oilfield Services — Fox (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	20.0	6.331	0.272	7.656	7.375	5.749	8.967	5.040	230	316	316	460	460	517	546	632	719
	23.0	6.241	0.317	7.656	7.375	6.655	8.967	5.040	266	366	366	532	532	599	632	732	832
	26.0	6.151	0.362	7.656	7.375	7.549	8.967	5.040	302	415	415	604	604	679	717	830	944
	29.0	6.059	0.408	7.656	7.375	8.449	8.967	5.040	338	465	465	676	676	760	803	929	1056
	32.0	5.969	0.453	7.656	7.375	9.317	8.967	5.040	359	493	493	717	717	807	852	986	1121
	35.0	5.879	0.498	7.656	7.375	10.172	8.967	5.040	359	493	493	717	717	807	852	986	1121
	38.0	5.795	0.540	7.656	7.375	10.959	8.967	5.040	359	493	493	717	717	807	852	986	1121
	41.0	5.695	0.590	7.656	7.375	11.881	8.967	5.040	359	493	493	717	717	807	852	986	1121
	44.0	5.595	0.640	7.656	7.375	12.788	8.967	5.040	359	493	493	717	717	807	852	986	1121
	46.0	5.535	0.670	7.656	7.375	13.324	8.967	5.040	359	493	493	717	717	807	852	986	1121
	49.5	5.415	0.730	7.656	7.375	14.379	8.967	5.040	359	493	493	717	717	807	852	986	1121
7.625	26.4	6.844	0.328	8.500	8.125	7.519	12.766	5.240	301	414	414	602	602	677	714	827	940
	29.7	6.750	0.375	8.500	8.125	8.541	12.766	5.240	342	470	470	683	683	769	811	940	1068
	33.7	6.640	0.430	8.500	8.125	9.720	12.766	5.240	389	535	535	778	778	875	923	1069	1215
	35.8	6.570	0.465	8.500	8.125	10.460	12.766	5.240	418	575	575	837	837	941	994	1151	1307
	39.0	6.500	0.500	8.500	8.125	11.192	12.766	5.240	448	616	616	895	895	1007	1063	1231	1399
	42.8	6.376	0.562	8.500	8.125	12.470	12.766	5.240	499	686	686	998	998	1122	1185	1372	1559
	45.3	6.310	0.595	8.500	8.125	13.141	12.766	5.240	511	702	702	1021	1021	1149	1213	1404	1596
	51.2	6.126	0.687	8.500	8.125	14.974	12.766	5.240	511	702	702	1021	1021	1149	1213	1404	1596
8.625	32.0	7.796	0.352	9.625	9.125	9.149	16.242	5.240	366	503	503	732	732	823	869	1006	1144
	36.0	7.700	0.400	9.625	9.125	10.336	16.242	5.240	413	568	568	827	827	930	982	1137	1292
	40.0	7.600	0.450	9.625	9.125	11.557	16.242	5.240	462	636	636	925	925	1040	1098	1271	1445
	44.0	7.500	0.500	9.625	9.125	12.763	16.242	5.240	511	702	702	1021	1021	1149	1212	1404	1595
	49.0	7.386	0.557	9.625	9.125	14.118	16.242	5.240	565	776	776	1129	1129	1271	1341	1553	1765
	52.0	7.310	0.595	9.625	9.125	15.010	16.242	5.240	600	826	826	1201	1201	1351	1426	1651	1876

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Kawasaki Steel/Hunting Oilfield Services — Fox (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.765	0.352	10.625	10.125	10.254	18.035	5.240	410	564	564	820	820	923	974	1128	1282
	40.0	8.679	0.395	10.625	10.125	11.454	18.035	5.240	458	630	630	916	916	1031	1088	1260	1432
	43.5	8.599	0.435	10.625	10.125	12.559	18.035	5.240	502	691	691	1005	1005	1130	1193	1381	1570
	47.0	8.525	0.472	10.625	10.125	13.572	18.035	5.240	543	746	746	1086	1086	1222	1289	1493	1697
	53.5	8.379	0.545	10.625	10.125	15.546	18.035	5.240	622	855	855	1244	1244	1399	1477	1710	1943
	58.4	8.279	0.595	10.625	10.125	16.879	18.035	5.240	675	928	928	1350	1350	1519	1604	1857	2110
	59.4	8.251	0.609	10.625	10.125	17.250	18.035	5.240	690	949	949	1380	1380	1552	1639	1897	2156
	61.1	8.219	0.625	10.625	10.125	17.671	18.035	5.240	707	972	972	1414	1414	1590	1679	1944	2209
10.750	40.5	9.894	0.350	11.750	11.250	11.435	20.053	5.240	457	629	629	915	915	1029	1086	1258	1429
	45.5	9.794	0.400	11.750	11.250	13.006	20.053	5.240	520	715	715	1040	1040	1171	1236	1431	1626
	51.0	9.694	0.450	11.750	11.250	14.561	20.053	5.240	582	801	801	1165	1165	1311	1383	1602	1820
	55.5	9.604	0.495	11.750	11.250	15.947	20.053	5.240	638	877	877	1276	1276	1435	1515	1754	1993
	60.7	9.504	0.545	11.750	11.250	17.473	20.053	5.240	699	961	961	1398	1398	1573	1660	1922	2184
	65.7	9.404	0.595	11.750	11.250	18.982	20.053	5.240	759	1044	1044	1519	1519	1708	1803	2088	2373
	73.2	9.250	0.672	11.750	11.250	21.276	20.053	5.240	802	1103	1103	1604	1604	1805	1905	2206	2507
11.750	47.0	10.844	0.375	12.750	….	13.401	21.847	5.240	536	737	737	1072	1072	1206	1273	1474	1675
	54.0	10.724	0.435	12.750	….	15.463	21.847	5.240	619	850	850	1237	1237	1392	1469	1701	1933
	60.0	10.616	0.489	12.750	….	17.300	21.847	5.240	692	951	951	1384	1384	1557	1643	1903	2162
	65.0	10.526	0.534	12.750	….	18.816	21.847	5.240	753	1035	1035	1505	1505	1693	1788	2070	2352

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Kawasaki Steel/Hunting Oilfield Services — Fox (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	54.5	12.459	0.380	14.375	….	15.513	24.762	5.240	621	853	853	1241	1241	1396	1474	1706	1939
	61.0	12.359	0.430	14.375	….	17.487	24.762	5.240	699	962	962	1399	1399	1574	1661	1924	2186
	68.0	12.259	0.480	14.375	….	19.445	24.762	5.240	778	1069	1069	1556	1556	1750	1847	2139	2431
	72.0	12.191	0.514	14.375	….	20.768	24.762	5.240	831	1142	1142	1661	1661	1869	1973	2284	2596
	77.0	12.119	0.550	14.375	….	22.160	24.762	5.240	886	1219	1219	1773	1773	1994	2105	2438	2770
	80.7	12.059	0.580	14.375	….	23.314	24.762	5.240	933	1282	1282	1865	1865	2098	2215	2565	2914
	85.0	12.003	0.608	14.375	….	24.386	24.762	5.240	975	1341	1341	1951	1951	2195	2317	2682	3048
	86.0	11.969	0.625	14.375	….	25.035	24.762	5.240	990	1362	1362	1981	1981	2229	2352	2724	3095

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Nippon Steel Corp. — NS-CC

Type: Coupled

Seal: Metal-to-metal

									Minimum joint tension strength, kips																								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
5.000	15.0	4.408	0.296	5.563	....	4.374	....	4.69	231	293	359	379	396	404	424	503	548	565	610	651	441	503	379	404	424	445	466	486	379	404	424	424	486
	18.0	4.276	0.362	5.563	....	5.275	....	4.69	278	353	432	457	477	487	512	606	661	681	735	785	532	606	457	487	512	537	561	586	457	487	512	512	586
	21.4	4.126	0.437	5.563	....	6.264	....	4.69	319	399	506	506	532	532	559	665	719	745	798	852	586	665	506	532	559	586	612	639	506	532	559	559	639
	23.2	4.044	0.478	5.563	....	6.791	....	4.69	319	399	506	506	532	532	559	665	719	745	798	852	586	665	506	532	559	586	612	639	506	532	559	559	639
	24.1	4.000	0.500	5.563	....	7.069	....	4.69	319	399	506	506	532	532	559	665	719	745	798	852	586	665	506	532	559	586	612	639	506	532	559	559	639
5.500	17.0	4.892	0.304	6.050	5.907	4.962	....	4.75	259	329	402	428	446	456	480	568	620	638	690	736	498	568	428	456	480	503	526	550	428	456	480	480	550
	20.0	4.778	0.361	6.050	5.907	5.828	....	4.75	305	387	472	503	524	536	563	667	728	749	810	865	585	667	503	536	563	591	618	646	503	536	563	563	646
	23.0	4.670	0.415	6.050	5.907	6.630	....	4.75	345	431	537	546	575	575	603	718	776	805	862	919	632	718	546	575	603	632	661	690	546	575	603	603	690
	26.0	4.548	0.476	6.050	....	7.513	....	4.75	345	431	546	546	575	575	603	718	776	805	862	919	632	718	546	575	603	632	661	690	546	575	603	603	690
	28.4	4.440	0.530	6.050	....	8.275	....	4.75	345	431	546	546	575	575	603	718	776	805	862	919	632	718	546	575	603	632	661	690	546	575	603	603	690
6.626	24.0	5.921	0.352	7.390	7.028	6.938	....	4.94	355	453	548	592	615	633	665	787	860	884	958	1023	689	787	592	633	665	698	730	763	592	633	665	665	763
	28.0	5.791	0.417	7.390	7.028	8.134	....	4.94	417	531	643	694	722	742	780	922	1009	1037	1123	1199	808	922	694	742	780	818	856	894	694	742	780	780	894
	32.0	5.676	0.475	7.390	7.028	9.179	....	4.94	470	599	725	783	814	837	880	1041	1138	1170	1267	1353	912	1041	783	837	880	923	966	1009	783	837	880	880	1009

D — Casing nominal tube OD, in.

w — Casing weight, lb/ft

d — ID (drift), in.

t — Casing wall thickness, in.

D_c — Connection OD, in.

D_{sc} — Connection OD (special clearance or turned down), in.

A_t — Casing wall critical cross-sectional area, sq. in.

A_c — Connection critical cross-sectional area, sq. in.

L_m — Make-up loss, in.

Nippon Steel Corp. — NS-CC (continued)

Type: Coupled

Seal: Metal-to-metal

									Minimum joint tension strength, kips																								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
7.000	23.0	6.366	0.317	7.656	7.407	6.655	....	5.13	339	432	522	565	588	605	636	752	823	846	917	979	659	752	565	605	636	668	699	730	565	605	636	636	730
	26.0	6.276	0.362	7.656	7.407	7.549	....	5.13	384	490	592	641	667	687	722	853	934	959	1040	1110	747	853	641	687	722	757	792	828	641	687	722	722	828
	29.0	6.184	0.408	7.656	7.407	8.449	....	5.13	430	548	662	718	746	768	808	955	1045	1074	1164	1243	836	955	718	768	808	847	887	927	718	768	808	808	927
	32.0	6.094	0.453	7.656	7.407	9.317	....	5.13	474	605	730	791	823	847	891	1053	1152	1184	1283	1370	922	1053	791	847	891	935	978	1022	791	847	891	891	1022
	35.0	6.004	0.498	7.656	7.407	10.172	....	5.13	518	652	797	826	870	870	913	1087	1174	1218	1305	1392	957	1087	826	870	913	957	1000	1044	826	870	913	913	1044
	38.0	5.920	0.540	7.656	7.407	10.959	....	5.13	522	652	826	826	870	870	913	1087	1174	1218	1305	1392	957	1087	826	870	913	957	1000	1044	826	870	913	913	1044
	41.0	5.820	0.590	7.656	....	11.881	....	5.13	522	652	826	826	870	870	913	1087	1174	1218	1305	1392	957	1087	826	870	913	957	1000	1044	826	870	913	913	1044
	42.7	5.750	0.625	7.656	....	12.517	....	5.13	522	652	826	826	870	870	913	1087	1174	1218	1305	1392	957	1087	826	870	913	957	1000	1044	826	870	913	913	1044
	44.0	5.720	0.640	7.656	....	12.788	....	5.13	522	652	826	826	870	870	913	1087	1174	1218	1305	1392	957	1087	826	870	913	957	1000	1044	826	870	913	913	1044

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Nippon Steel Corp. — NS-CC (continued)

Type: Coupled

Seal: Metal-to-metal

									Minimum joint tension strength, kips																								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
7.625	26.4	6.969	0.328	8.500	8.157	7.519	....	5.32	378	483	581	635	659	681	716	845	926	951	1032	1102	740	845	635	681	716	751	786	821	635	681	716	716	821
	29.7	6.875	0.375	8.500	8.157	8.541	....	5.32	430	549	660	721	749	773	813	960	1052	1080	1172	1252	841	960	721	773	813	853	893	933	721	773	813	813	933
	33.7	6.765	0.430	8.500	8.157	9.720	....	5.32	489	625	751	820	852	880	925	1093	1197	1229	1334	1424	957	1093	820	880	925	970	1016	1061	820	880	925	925	1061
	39.0	6.625	0.500	8.500	8.157	11.192	....	5.32	563	720	864	945	981	1013	1065	1258	1379	1415	1536	1640	1101	1258	945	1013	1065	1117	1170	1222	945	1013	1065	1065	1222
	42.8	6.501	0.562	8.500	....	12.470	....	5.32	627	802	963	1053	1093	1129	1187	1402	1536	1577	1711	1827	1227	1402	1053	1129	1187	1245	1303	1362	1053	1129	1187	1187	1362
	45.3	6.435	0.595	8.500	....	13.141	....	5.32	661	845	1015	1109	1152	1189	1251	1477	1619	1661	1803	1926	1293	1477	1109	1189	1251	1312	1373	1435	1109	1189	1251	1251	1435
	47.1	6.375	0.625	8.500	....	13.744	....	5.32	691	884	1062	1160	1205	1232	1294	1540	1663	1725	1848	1971	1353	1540	1160	1232	1294	1355	1417	1478	1160	1232	1294	1294	1478
8.625	36.0	7.825	0.400	9.625	9.157	10.336	....	5.64	510	654	780	864	895	928	976	1152	1265	1296	1409	1506	1008	1152	864	928	976	1025	1073	1121	864	928	976	976	1121
	40.0	7.725	0.450	9.625	9.157	11.557	....	5.64	570	732	872	966	1001	1038	1092	1288	1415	1450	1576	1683	1127	1288	966	1038	1092	1146	1199	1253	966	1038	1092	1092	1253
	44.0	7.625	0.500	9.625	9.157	12.763	....	5.64	630	808	963	1066	1105	1146	1206	1423	1562	1601	1740	1859	1244	1423	1066	1146	1206	1265	1325	1384	1066	1146	1206	1206	1384
	49.0	7.511	0.557	9.625	9.157	14.118	....	5.64	697	894	1065	1180	1222	1268	1334	1574	1728	1771	1925	2056	1377	1574	1180	1268	1334	1399	1465	1531	1180	1268	1334	1334	1531
	52.0	7.435	0.595	9.625	....	15.010	....	5.64	741	950	1132	1254	1300	1348	1418	1673	1837	1883	2047	2186	1464	1673	1254	1348	1418	1488	1558	1628	1254	1348	1418	1418	1628

D — Casing nominal tube OD, in.

w — Casing weight, lb/ft

d — ID (drift), in.

t — Casing wall thickness, in.

D_c — Connection OD, in.

D_{sc} — Connection OD (special clearance or turned down), in.

A_t — Casing wall critical cross-sectional area, sq. in.

A_c — Connection critical cross-sectional area, sq. in.

L_m — Make-up loss, in.

Nippon Steel Corp. — NS-CC (continued)

Type: Coupled

Seal: Metal-to-metal

									Minimum joint tension strength, kips																						
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
9.875	40.0	8.835	0.395	10.625	10.157	11.454	....	5.64	554	714	843	947	979	1021	1074	1266	1393	1425	1552	1658	1106	1266	947	1021	1074	1127	1180	1233	947	1021	1074	1074	1233
	43.5	8.755	0.435	10.625	10.157	12.559	....	5.64	608	783	925	1038	1074	1119	1178	1388	1527	1563	1702	1818	1213	1388	1038	1119	1178	1236	1294	1352	1038	1119	1178	1178	1352
	47.0	8.681	0.472	10.625	10.157	13.572	....	5.64	657	846	999	1122	1161	1210	1273	1500	1650	1689	1839	1965	1311	1500	1122	1210	1273	1336	1399	1462	1122	1210	1273	1273	1462
	53.5	8.535	0.545	10.625	10.157	15.546	....	5.64	753	969	1145	1285	1329	1386	1458	1718	1890	1934	2107	2251	1502	1718	1285	1386	1458	1530	1602	1674	1285	1386	1458	1458	1674
	58.4	8.435	0.595	10.625	....	16.879	....	5.64	817	1052	1243	1396	1443	1505	1583	1865	2052	2100	2287	2444	1631	1865	1396	1505	1583	1661	1739	1818	1396	1505	1583	1583	1818
	59.4	8.407	0.609	10.625	....	17.250	....	5.64	835	1075	1270	1426	1475	1538	1618	1906	2098	2146	2338	2498	1666	1906	1426	1538	1618	1698	1778	1858	1426	1538	1618	1618	1858
	62.8	8.625	0.625	10.875	....	18.162	....	5.64	875	1127	1329	1498	1548	1616	1700	2003	2205	2255	2457	2626	1750	2003	1498	1616	1700	1784	1868	1952	1498	1616	1700	1700	1952
	66.8	8.519	0.678	10.875	....	19.590	....	5.64	944	1216	1434	1616	1670	1743	1833	2160	2378	2433	2650	2832	1888	2160	1616	1743	1833	1924	2015	2106	1616	1743	1833	1833	2106
	68.8	8.475	0.700	10.875	....	20.177	....	5.64	972	1253	1477	1664	1720	1792	1882	2225	2420	2505	2688	2868	1944	2225	1664	1792	1882	1971	2061	2151	1664	1792	1882	1882	2151
10.750	45.5	9.950	0.400	11.750	11.281	13.006	....	5.64	616	796	931	1063	1097	1149	1209	1423	1570	1604	1750	1870	1243	1423	1063	1149	1209	1269	1329	1390	1063	1149	1209	1209	1390
	51.0	9.850	0.450	11.750	11.281	14.561	....	5.64	690	891	1043	1190	1228	1287	1354	1594	1758	1795	1959	2094	1392	1594	1190	1287	1354	1421	1488	1556	1190	1287	1354	1354	1556
	55.5	9.760	0.495	11.750	11.281	15.947	....	5.64	755	976	1142	1303	1345	1409	1483	1745	1925	1966	2146	2293	1524	1745	1303	1409	1483	1556	1630	1704	1303	1409	1483	1483	1704

D — Casing nominal tube OD, in.

w — Casing weight, lb/ft

d — ID (drift), in.

t — Casing wall thickness, in.

D_c — Connection OD, in.

D_{sc} — Connection OD (special clearance or turned down), in.

A_t — Casing wall critical cross-sectional area, sq. in.

A_c — Connection critical cross-sectional area, sq. in.

L_m — Make-up loss, in.

Nippon Steel Corp. — NS-CC (continued)

Type: Coupled

Seal: Metal-to-metal

									Minimum joint tension strength, kips																							
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
10.750	60.7	9.660	0.545	11.750	11.281	17.473	....	5.64	827	1070	1251	1428	1473	1544	1625	1912	2109	2154	2351	2513	1670	1912	1428	1544	1625	1705	1786	1867	1428	1544	1625	1625	1867
	65.7	9.560	0.595	11.750	11.281	18.982	....	5.64	899	1162	1359	1551	1600	1677	1765	2077	2291	2340	2554	2730	1814	2077	1551	1677	1765	1853	1940	2028	1551	1677	1765	1765	2028
	75.9	9.350	0.700	11.750	11.281	22.101	....	5.64	1047	1353	1583	1806	1863	1945	2042	2419	2625	2723	2917	3111	2112	2419	1806	1945	2042	2139	2236	2334	1806	1945	2042	2042	2334
11.750	47.0	11.000	0.375	12.750	....	13.401	....	5.64	622	807	935	1084	1116	1175	1237	1454	1607	1639	1792	1915	1269	1454	1084	1175	1237	1298	1360	1422	1084	1175	1237	1237	1422
	54.0	10.880	0.435	12.750	....	15.463	....	5.64	718	931	1079	1250	1287	1356	1427	1677	1854	1891	2068	2210	1464	1677	1250	1356	1427	1498	1569	1640	1250	1356	1427	1427	1640
	60.0	10.772	0.489	12.750	....	17.300	....	5.64	803	1042	1208	1399	1440	1517	1596	1877	2074	2116	2313	2473	1638	1877	1399	1517	1596	1676	1756	1835	1399	1517	1596	1596	1835
	65.0	10.682	0.534	12.750	....	18.816	....	5.64	873	1133	1313	1521	1566	1650	1736	2041	2256	2301	2516	2689	1781	2041	1521	1650	1736	1823	1910	1996	1521	1650	1736	1736	1996
12.063	78.1	10.781	0.641	13.092	....	23.001	....	5.64	1061	1378	1593	1854	1907	2012	2117	2488	2752	2806	3070	3281	2171	2488	1854	2012	2117	2223	2329	2435	1854	2012	2117	2117	2435
13.375	54.5	12.615	0.380	14.375	....	15.513	....	5.64	696	909	1038	1233	1265	1343	1414	1659	1840	1872	2053	2195	1446	1659	1233	1343	1414	1485	1556	1627	1233	1343	1414	1414	1627
	61.0	12.515	0.430	14.375	....	17.487	....	5.64	785	1025	1170	1389	1426	1514	1594	1870	2074	2110	2314	2474	1630	1870	1389	1514	1594	1674	1754	1834	1389	1514	1594	1594	1834
	68.0	12.415	0.480	14.375	....	19.445	....	5.64	873	1140	1300	1545	1585	1683	1772	2079	2306	2346	2573	2752	1812	2079	1545	1683	1772	1861	1950	2039	1545	1683	1772	1772	2039
	72.0	12.347	0.514	14.375	....	20.768	....	5.64	932	1217	1389	1650	1693	1797	1893	2221	2463	2506	2748	2939	1935	2221	1650	1797	1893	1988	2083	2178	1650	1797	1893	1893	2178
14.000	82.5	12.876	0.562	15.000	....	23.726	....	5.64	1051	1376	1560	1872	1918	2043	2152	2523	2802	2848	3127	3344	2198	2523	1872	2043	2152	2260	2369	2477	1872	2043	2152	2152	2477

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

Nippon Steel Corp. — NS-HC

Type: Coupled Seal: Metal-to-metal																																	
									Minimum joint tension strength, kips																									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT-95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
5.500	30.9	4.330	0.585	6.054	....	9.033	....	5.30	515	644	815	815	858	858	901	1073	1159	1201	1287	1373	944	1073	815	858	901	944	987	1030	815	858	901	901	1030
	31.4	4.308	0.596	6.054	....	9.182	....	5.30	524	655	829	829	873	873	917	1091	1179	1222	1310	1397	960	1091	829	873	917	960	1004	1048	829	873	917	917	1048
	32.0	4.276	0.612	6.054	....	9.398	....	5.30	537	671	850	850	895	895	939	1118	1208	1253	1342	1431	984	1118	850	895	939	984	1029	1074	850	895	939	939	1074
6.625	41.4	5.346	0.640	7.390	....	12.034	....	5.59	689	862	1092	1092	1149	1149	1206	1436	1551	1609	1723	1838	1264	1436	1092	1149	1206	1264	1321	1379	1092	1149	1206	1206	1379
	43.7	5.251	0.687	7.390	....	12.816	....	5.59	736	920	1166	1166	1227	1227	1289	1534	1657	1718	1841	1964	1350	1534	1166	1227	1289	1350	1411	1473	1166	1227	1289	1289	1473
	46.7	5.154	0.736	7.390	....	13.617	....	5.59	784	980	1242	1242	1307	1307	1373	1634	1765	1830	1961	2092	1438	1634	1242	1307	1373	1438	1503	1569	1242	1307	1373	1373	1569
7.000	44.9	5.685	0.657	7.700	....	13.092	....	5.80	751	939	1189	1189	1252	1252	1314	1565	1690	1752	1878	2003	1377	1565	1189	1252	1314	1377	1439	1502	1189	1252	1314	1314	1502
	45.4	5.660	0.670	7.700	....	13.324	....	5.80	765	956	1211	1211	1275	1275	1339	1594	1721	1785	1912	2040	1402	1594	1211	1275	1339	1402	1466	1530	1211	1275	1339	1339	1530
	46.4	5.626	0.687	7.700	....	13.625	....	5.80	783	979	1240	1240	1305	1305	1370	1631	1762	1827	1958	2088	1436	1631	1240	1305	1370	1436	1501	1566	1240	1305	1370	1370	1566
	49.5	5.540	0.730	7.700	....	14.379	....	5.80	828	1035	1311	1311	1380	1380	1449	1726	1864	1933	2071	2209	1519	1726	1311	1380	1449	1519	1588	1657	1311	1380	1449	1449	1657
	50.1	5.500	0.750	7.700	....	14.726	....	5.80	849	1061	1344	1344	1415	1415	1486	1769	1910	1981	2123	2264	1557	1769	1344	1415	1486	1557	1627	1698	1344	1415	1486	1486	1698
	51.8	5.447	0.776	7.700	....	15.173	....	5.80	873	1092	1383	1383	1456	1456	1528	1820	1965	2038	2183	2329	1601	1820	1383	1456	1528	1601	1674	1747	1383	1456	1528	1528	1747

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Nippon Steel Corp. — NS-HC (continued)

Type: Coupled Seal: Metal-to-metal																																	
									Minimum joint tension strength, kips																									
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT-95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
7.625	51.2	6.251	0.687	8.500	....	14.974	....	6.05	861	1076	1363	1363	1435	1435	1507	1793	1937	2009	2152	2296	1578	1793	1363	1435	1507	1578	1650	1722	1363	1435	1507	1507	1722
	52.8	6.201	0.712	8.500	....	15.463	....	6.05	890	1113	1410	1410	1484	1484	1558	1855	2003	2077	2226	2374	1632	1855	1410	1484	1558	1632	1706	1780	1410	1484	1558	1558	1780
	55.3	6.125	0.750	8.500	....	16.199	....	6.05	934	1168	1479	1479	1557	1557	1635	1947	2102	2180	2336	2492	1713	1947	1479	1557	1635	1713	1791	1869	1479	1557	1635	1635	1869
	59.2	6.001	0.812	8.500	....	17.380	....	6.05	1005	1257	1592	1592	1675	1675	1759	2094	2262	2345	2513	2681	1843	2094	1592	1675	1759	1843	1927	2010	1592	1675	1759	1759	2010
	63.2	5.875	0.875	8.500	....	18.555	....	6.05	1076	1345	1703	1703	1793	1793	1883	2241	2420	2510	2689	2869	1972	2241	1703	1793	1883	1972	2062	2151	1703	1793	1883	1883	2151
	64.2	5.856	0.885	8.500	....	18.739	....	6.05	1087	1358	1721	1721	1811	1811	1902	2264	2445	2536	2717	2898	1992	2264	1721	1811	1902	1992	2083	2174	1721	1811	1902	1902	2174
8.625	58.7	7.251	0.687	9.625	....	17.132	....	6.07	985	1232	1560	1560	1642	1642	1724	2053	2217	2299	2464	2628	1807	2053	1560	1642	1724	1807	1889	1971	1560	1642	1724	1724	1971
	63.5	7.125	0.750	9.625	....	18.555	....	6.07	1071	1338	1695	1695	1785	1785	1874	2231	2409	2498	2677	2855	1963	2231	1695	1785	1874	1963	2052	2142	1695	1785	1874	1874	2142
	68.1	7.001	0.812	9.625	....	19.931	....	6.07	1153	1442	1826	1826	1922	1922	2018	2403	2595	2691	2883	3076	2114	2403	1826	1922	2018	2114	2211	2307	1826	1922	2018	2018	2307
	72.7	6.875	0.875	9.625	....	21.304	....	6.07	1236	1545	1957	1957	2060	2060	2163	2574	2780	2883	3089	3295	2265	2574	1957	2060	2163	2265	2368	2471	1957	2060	2163	2163	2471
	77.1	6.751	0.937	9.625	....	22.631	....	6.07	1315	1644	2083	2083	2192	2192	2302	2740	2960	3069	3288	3508	2411	2740	2083	2192	2302	2411	2521	2631	2083	2192	2302	2302	2631

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Nippon Steel Corp. — NS-HC (continued)

Type: Coupled Seal: Metal-to-metal																																		
									Minimum joint tension strength, kips																											
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	NT-125DS	NT-140DS	NT-150DS	NT-95HS	NT-110HS	NT-80SS	NT-90SS	NT-95SS	NT-100SS	NT-105SS	NT-110SS	NT-13CR-80	NT-13CR-90	NT-13CR-95	NT-CRS-95	NT-CRSS-110
9.625	66.1	8.269	0.678	10.625	....	19.057	....	6.08	1096	1370	1735	1735	1827	1827	1918	2283	2466	2557	2740	2923	2009	2283	1735	1827	1918	2009	2101	2192	1735	1827	1918	1918	2192
	70.3	8.157	0.734	10.625	....	20.502	....	6.08	1183	1478	1873	1873	1971	1971	2070	2464	2661	2760	2957	3154	2168	2464	1873	1971	2070	2168	2267	2365	1873	1971	2070	2070	2365
	71.8	8.125	0.750	10.625	....	20.911	....	6.08	1207	1509	1911	1911	2012	2012	2113	2515	2716	2817	3018	3219	2213	2515	1911	2012	2113	2213	2314	2414	1911	2012	2113	2113	2414
	75.6	8.031	0.797	10.625	....	22.104	....	6.08	1279	1598	2025	2025	2131	2131	2238	2664	2877	2984	3197	3410	2344	2664	2025	2131	2238	2344	2451	2558	2025	2131	2238	2238	2558
	80.8	7.907	0.859	10.625	....	23.656	....	6.08	1372	1715	2172	2172	2287	2287	2401	2858	3087	3201	3430	3658	2515	2858	2172	2287	2401	2515	2629	2744	2172	2287	2401	2401	2744
	84.0	7.844	0.891	10.625	....	24.448	....	6.08	1419	1774	2247	2247	2366	2366	2484	2957	3194	3312	3549	3785	2602	2957	2247	2366	2484	2602	2721	2839	2247	2366	2484	2484	2839
10.750	79.2	9.282	0.734	11.825	....	23.096	....	6.08	1333	1666	2110	2110	2221	2221	2332	2777	2999	3110	3332	3554	2443	2777	2110	2221	2332	2443	2554	2665	2110	2221	2332	2332	2665
	80.8	9.250	0.750	11.825	....	23.562	....	6.08	1361	1701	2154	2154	2268	2268	2381	2835	3062	3175	3402	3629	2495	2835	2154	2268	2381	2495	2608	2721	2154	2268	2381	2381	2721
	85.3	9.156	0.797	11.825	....	24.921	....	6.08	1442	1803	2284	2284	2404	2404	2524	3005	3245	3365	3606	3846	2644	3005	2284	2404	2524	2644	2764	2884	2284	2404	2524	2524	2884
	91.2	9.032	0.859	11.825	....	26.692	....	6.08	1549	1936	2452	2452	2581	2581	2710	3226	3484	3613	3871	4129	2839	3226	2452	2581	2710	2839	2968	3097	2452	2581	2710	2710	3097
	97.1	8.906	0.922	11.825	....	28.467	....	6.08	1655	2069	2620	2620	2758	2758	2896	3448	3724	3862	4138	4413	3034	3448	2620	2758	2896	3034	3172	3310	2620	2758	2896	2896	3310
	102.9	8.782	0.984	11.825	....	30.190	....	6.08	1758	2198	2784	2784	2931	2931	3077	3663	3956	4103	4396	4689	3224	3663	2784	2931	3077	3224	3370	3517	2784	2931	3077	3077	3517
	108.7	8.656	1.047	11.825	....	31.916	....	6.08	1795	2243	2842	2842	2991	2991	3141	3739	4038	4188	4487	4786	3290	3739	2842	2991	3141	3290	3440	3590	2842	2991	3141	3141	3590

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — NK 3SB

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
6.625	24.0	5.921	0.352	7.390	7.169	6.937	9.607	5.020	....	477	577	623	648	666	700	828	905
	28.0	5.791	0.417	7.390	7.276	8.133	9.607	5.020	....	559	677	730	759	781	821	971	1061
	32.0	5.675	0.475	7.390	7.276	9.177	9.607	5.020	....	631	764	824	857	881	826	1095	1198
7.000	23.0	6.366	0.317	7.656	7.469	6.656	9.010	5.295	....	455	549	595	619	637	670	792	867
	26.0	6.276	0.362	7.656	7.547	7.549	9.010	5.295	....	516	623	675	702	723	760	898	983
	29.0	6.184	0.408	7.656	7.547	8.449	9.010	5.295	....	577	697	755	785	809	850	1005	1100
	32.0	6.094	0.453	7.772	7.656	9.317	10.416	5.295	....	637	769	833	866	892	938	1108	1213
	35.0	6.004	0.498	7.772	7.656	10.172	10.416	5.295	....	695	839	910	946	974	1024	1210	1324
	38.0	5.920	0.540	7.886	7.656	10.959	11.818	5.295	....	749	904	980	1019	1049	1103	1304	1427
	41.0	5.820	0.590	7.886	7.656	11.881	11.818	5.295	....	812	980	1062	1104	1137	1196	1413	1547
7.625	26.4	6.969	0.328	8.500	8.125	7.519	12.661	5.295	....	509	611	668	694	716	753	890	975
	29.7	6.875	0.375	8.500	8.201	8.541	12.661	5.295	....	578	694	759	788	814	856	1011	1108
	33.7	6.765	0.430	8.500	8.291	9.720	12.661	5.295	....	658	790	864	897	926	974	1150	1260
	39.0	6.625	0.500	8.500	8.409	11.192	12.661	5.295	....	757	910	994	1033	1066	1121	1324	1451
	42.8	6.501	0.562	8.500	8.409	12.470	12.661	5.295	....	844	1014	1108	1150	1188	1249	1476	1617
	47.1	6.375	0.625	8.626	8.500	13.745	14.355	5.295	....	930	1117	1221	1268	1310	1377	1627	1782
8.625	32.0	7.921	0.352	9.625	9.165	9.149	16.135	5.311	....	610	726	805	934	865	910	1073	1179
	36.0	7.825	0.400	9.625	9.248	10.336	16.135	5.311	....	689	821	909	942	977	1028	1213	1332
	40.0	7.725	0.450	9.625	9.335	11.557	16.135	5.311	....	770	918	1016	1053	1093	1149	1356	1489
	44.0	7.625	0.500	9.625	9.417	12.763	16.135	5.311	....	851	1013	1122	1163	1207	1269	1498	1644
	49.0	7.511	0.557	9.625	9.512	14.118	16.135	5.311	....	941	1121	1242	1287	1335	1404	1657	1819
	52.0	7.435	0.595	9.625	9.512	15.010	16.135	5.311	....	1000	1192	1320	1368	1419	1493	1761	1934

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — NK 3SB (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.921	0.352	10.625	10.157	10.254	18.095	5.508	....	673	795	892	923	962	1012	1193	1312
	40.0	8.835	0.395	10.625	10.232	11.454	18.095	5.508	....	751	888	997	1031	1075	1131	1332	1466
	43.5	8.755	0.435	10.625	10.303	12.559	18.095	5.508	....	824	973	1093	1130	1178	1240	1461	1608
	47.0	8.681	0.472	10.625	10.370	13.572	18.095	5.508	....	890	1052	1181	1222	1273	1340	1579	1737
	53.5	8.535	0.545	10.625	10.370	15.547	18.095	5.508	....	1020	1205	1353	1399	1459	1535	1809	1990
	58.4	8.435	0.595	10.625	10.370	16.879	18.095	5.508	....	1107	1308	1469	1519	1584	1666	1964	2160
	61.1	8.375	0.625	10.625	10.370	17.672	18.095	5.508	....	1159	1370	1538	1591	1658	1744	2056	2262
10.750	40.5	10.050	0.350	11.750	11.283	11.435	20.103	5.508	....	737	862	984	1015	1064	1119	1317	1453
	15.5	9.950	0.400	11.750	11.374	13.006	20.103	5.508	....	838	980	1119	1154	1210	1273	1498	1652
	51.0	9.850	0.454	11.750	11.465	14.561	20.103	5.508	....	938	1098	1253	1292	1354	1425	1677	1850
	55.5	9.760	0.495	11.750	11.543	15.947	20.103	5.508	....	1028	1202	1372	1415	1483	1561	1837	2026
	60.7	9.660	0.545	11.750	11.630	17.473	20.103	5.508	....	1126	1317	1503	1551	1625	1710	2013	2220
	65.7	9.560	0.595	11.750	11.630	18.982	20.103	5.508	....	1223	1431	1633	1685	1766	1858	2187	2412
	71.1	9.450	0.650	11.750	11.630	20.625	20.103	5.508	....	1329	1555	1774	1831	1918	2019	2376	2620
	73.2	9.400	0.672	11.750	11.630	21.276	20.103	5.508	....	1371	1604	1830	1888	1979	2082	2451	2703
11.750	47.0	11.000	0.375	12.750	12.331	13.401	21.902	5.508	....	850	985	1141	1174	1237	1302	1530	1691
	54.0	10.880	0.435	12.750	12.441	15.463	21.902	5.508	....	980	1136	1316	1355	1427	1502	1766	1952
	60.0	10.772	0.489	12.750	12.539	17.300	21.902	5.508	....	1097	1271	1472	1516	1597	1680	1976	2183
13.375	54.5	12.615	0.380	14.375	13.969	15.514	24.887	5.508	....	957	1092	1298	1331	1413	1488	1746	1937
	61.0	12.515	0.430	14.375	14.059	17.487	24.887	5.508	....	1079	1231	1463	1501	1593	1677	1968	2183
	68.0	12.415	0.480	14.375	14.150	19.445	24.887	5.508	....	1200	1369	1626	1669	1772	1865	2189	2428
	72.0	12.347	0.514	14.375	14.213	20.768	24.887	5.508	....	1282	1462	1737	1782	1892	1992	2338	2593

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — NK FJ2 Liner

Type: Flush Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
6.625	28.0	5.791	0.417	6.625	....	8.133	3.939	3.457	....	295	374	394	394	406	414	492	532
	32.0	5.675	0.475	6.625	....	9.177	3.939	3.457	....	295	374	394	394	406	414	492	532
	26.0	6.276	0.362	7.000	....	7.549	4.408	3.457	....	310	385	405	405	417	425	506	546
	29.0	6.184	0.408	7.000	....	8.449	4.138	3.457	....	310	393	414	414	426	434	517	559
	32.0	6.094	0.453	7.000	....	9.317	4.138	3.457	....	368	393	414	414	426	434	517	559
	35.0	6.004	0.498	7.000	....	10.172	4.912	3.457	....	368	467	491	491	506	516	614	663
	38.0	5.920	0.540	7.000	....	10.959	4.912	3.457	....	368	467	491	491	506	516	614	663
7.000	41.0	5.820	0.590	7.000	....	11.881	4.912	3.457	....	368	467	491	491	506	516	614	663
7.625	29.7	6.875	0.375	7.625	....	8.541	4.571	3.457	....	343	434	457	457	471	480	571	617
	33.7	6.765	0.430	7.625	....	9.720	4.665	3.457	....	350	443	467	467	480	490	583	630
	35.8	6.695	0.465	7.625	....	10.460	4.665	3.457	....	350	443	467	467	480	490	583	630
	39.0	6.625	0.500	7.625	....	11.192	5.118	3.457	....	384	486	512	512	527	537	640	691
	42.8	6.501	0.562	7.625	....	12.470	5.118	3.457	....	384	486	512	512	527	537	640	691
7.750	46.1	6.560	0.595	7.750	....	13.374	6.627	3.457	....	497	630	663	663	683	696	828	895
	48.6	6.470	0.640	7.750	....	14.296	6.627	3.457	....	497	630	663	663	683	696	828	895

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — NK HW

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
6.625	34.5	5.450	0.525	7.232	6.988	10.061	10.780	5.684	....	....	....	903	939	988	1015	1201	1313
	36.7	5.376	0.562	7.291	7.035	10.705	11.453	5.684	....	....	....	961	1000	1051	1080	1278	1397
	40.2	5.250	0.625	7.394	7.110	11.781	12.641	5.684	....	....	....	1057	1100	1157	1189	1406	1538
	43.7	5.126	0.687	7.504	7.185	12.816	13.928	5.684	....	....	....	1150	1197	1258	1294	1529	1673
	46.0	5.040	0.730	7.579	7.236	13.519	14.816	5.684	....	....	....	1213	1262	1327	1364	1613	1764
	47.1	5.000	0.750	7.614	7.256	13.843	15.234	5.684	....	....	....	1242	1293	1359	1397	1652	1807
	50.4	4.876	0.812	7.720	7.327	14.829	16.511	5.684	....	....	....	1331	1385	1456	1497	1770	1935
7.000	38.0	5.920	0.540	7.634	7.382	10.959	11.735	5.702	....	....	....	980	1019	1072	1103	1304	1427
	41.0	5.820	0.590	7.717	7.445	11.881	12.736	5.702	....	....	....	1062	1104	1163	1196	1413	1547
	42.7	5.750	0.625	7.772	7.488	12.517	13.405	5.702	....	....	....	1119	1164	1225	1260	1489	1630
	44.0	5.720	0.640	7.799	7.508	12.788	13.735	5.702	....	....	....	1143	1189	1251	1287	1251	1665
	46.0	5.660	0.670	7.850	7.543	13.324	14.362	5.702	....	....	....	1191	1239	1304	1341	1585	1735
	46.4	5.626	0.687	7.878	7.563	13.625	14.708	5.702	....	....	....	1218	1267	1333	1371	1621	1774
	49.5	5.540	0.730	7.957	7.614	14.379	15.691	5.702	....	....	....	1286	1337	1407	1447	1711	1872
	50.1	5.500	0.750	7.992	7.638	14.726	16.129	5.702	....	....	....	1317	1369	1441	1482	1752	1917
	53.6	5.376	0.812	8.098	7.709	15.785	17.469	5.702	....	....	....	1411	1467	1545	1589	1878	2055
	57.1	5.250	0.875	8.213	7.780	16.837	18.942	5.702	....	....	....	1506	1565	1348	1695	2003	2192
7.625	42.8	6.501	0.562	8.303	8.043	12.470	13.328	5.732	....	....	....	1108	1150	1214	1249	1476	1617
	45.3	6.435	0.595	8.358	8.083	13.141	14.048	5.732	....	....	....	1168	1212	1279	1317	1555	1704
	47.1	6.735	0.625	8.409	8.122	13.745	14.720	5.732	....	....	....	1221	1268	1338	1377	1627	1782
	51.2	6.251	0.687	8.512	8.197	14.974	16.088	5.732	....	....	....	1330	1381	1457	1500	1772	1942
	52.8	6.201	0.712	8.559	8.228	15.463	16.719	5.732	....	....	....	1374	1427	1505	1549	1830	2005
	55.3	6.125	0.750	8.625	8.276	16.199	17.609	5.732	....	....	....	1439	1494	1576	1623	1917	2101
	59.2	6.001	0.812	8.736	8.346	17.380	19.123	5.732	....	....	....	1544	1603	1691	1741	2057	2254

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

NKK Corp. — NK HW (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	49.0	7.511	0.557	9.307	9.043	14.118	15.131	5.780	....	....	....	1242	1287	1362	1404	1657	1819
	49.1	7.501	0.562	9.315	9.047	14.236	15.248	5.780	....	....	....	1252	1297	1373	1416	1670	1834
	52.0	7.435	0.595	9.370	9.091	15.010	16.055	5.780	....	....	....	1320	1368	1448	1493	1761	1934
	54.0	7.375	0.625	9.421	9.130	15.708	16.808	5.780	....	....	....	1381	1432	1515	1562	1843	2024
	58.7	7.251	0.687	9.524	9.209	17.132	18.340	5.780	....	....	....	1507	1561	1653	1704	2010	2207
	63.5	7.125	0.750	9.634	9.287	18.555	19.996	5.780	....	....	....	1632	1691	1790	1845	2177	2391
	68.1	7.001	0.812	9.744	9.362	19.931	21.670	5.780	....	....	....	1753	1816	1923	1982	2339	2568
9.625	58.4	8.435	0.595	10.358	10.075	16.879	18.048	6.028	....	....	....	1469	1519	1614	1666	1964	2160
	59.4	8.407	0.609	10.382	10.094	17.250	18.439	6.028	....	....	....	1501	1553	1649	1703	2007	2208
	61.1	8.375	0.625	10.413	10.114	17.672	18.945	6.028	....	....	....	1538	1591	1690	1744	2056	2262
	54.9	8.281	0.672	10.492	10.177	18.901	20.242	6.028	....	....	....	1645	1701	1807	1866	2199	2419
	70.3	8.157	0.734	10.594	10.256	20.502	21.931	6.028	....	....	....	1784	1845	1960	2024	2385	2624
	75.6	8.031	0.797	10.705	10.335	22.104	23.788	6.028	....	....	....	1924	1990	2113	2182	2571	2829
	80.8	7.907	0.859	10.815	10.413	23.656	25.647	6.028	....	....	....	2059	2129	2262	2335	2752	3028
10.750	65.7	9.560	0.595	11.492	11.205	18.982	20.337	6.082	....	....	....	1633	1685	1797	1858	2187	2412
	73.2	9.406	0.672	11.626	11.307	21.276	22.770	6.082	....	....	....	1830	1888	2014	2082	2451	2703
	79.2	9.282	0.734	11.732	11.390	23.096	24.715	6.082	....	....	....	1987	2050	2186	2260	2661	2934
	85.3	9.156	0.797	11.839	11.469	24.921	26.695	6.082	....	....	....	2144	2212	2359	2439	2871	3166
	91.2	9.032	0.859	11.949	11.547	26.692	28.750	6.082	....	....	....	2296	2369	2526	2612	3075	3391
14.000	86.0	12.800	0.600	14.771	14.472	25.258	27.031	6.238	....	....	....	2098	2150	2321	2411	2827	3140
	93.0	12.700	0.650	16.863	14.543	27.261	29.173	6.238	....	....	....	2265	2320	2505	2602	3051	3389
	100.0	12.600	0.700	14.953	14.614	29.248	31.280	6.238	....	....	....	2430	2489	2687	2792	3274	3636
	107.0	12.500	0.750	15.043	14.681	31.220	33.400	6.238	....	....	....	2594	2657	2868	2980	3495	3881
	113.0	12.400	0.800	15.130	14.752	33.175	35.462	6.238	....	....	....	2756	2824	3048	3167	3713	4124
	120.0	12.300	0.850	15.220	14.819	35.115	37.608	6.238	....	....	....	2917	2989	3226	3352	3930	4366

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Siderca S.A.I.C. — SEC-ST, FR & GR

Type: Coupled, non-upset Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c *	L_m	H-40 *	J-55 *	K-55 *	L-80 *	N-80 *	C-90 *	C/T-95 *	P-110 *	Q-125 *
5.000	13.0	4.369	0.253	5.437	0.000	3.771	4.245	4.76	151	207	207	302	302	339	358	415	471
	15.0	4.283	0.296	5.563	5.390	4.374	5.343	4.76	175	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.563	5.390	5.275	5.343	4.76	211	290	290	422	422	475	501	580	659
	20.8	4.031	0.422	5.768	5.390	6.070	7.166	4.76	243	334	334	486	486	546	577	668	759
	21.4	4.001	0.437	5.768	5.390	6.265	7.166	4.76	251	345	345	501	501	564	595	689	783
	24.1	3.875	0.500	5.768	5.563	7.068	7.166	4.76	283	389	389	565	565	636	671	777	884
5.500	15.5	4.825	0.275	6.051	5.890	4.511	5.968	4.84	180	248	248	361	361	406	428	496	564
	17.0	4.767	0.304	6.051	5.890	4.960	5.968	4.84	198	273	273	397	397	446	471	546	620
	20.0	4.653	0.361	6.051	5.890	5.828	5.968	4.84	233	321	321	466	466	525	554	641	729
	23.0	4.545	0.415	6.220	5.890	6.626	7.595	4.84	265	364	364	530	530	596	629	729	828
	26.8	4.423	0.476	6.220	5.890	7.510	7.595	4.84	300	413	413	601	601	676	713	826	939
6.625	20.0	5.924	0.288	7.264	7.016	5.733	8.151	5.04	229	315	315	459	459	516	545	631	717
	24.0	5.796	0.352	7.264	7.016	6.936	8.151	5.04	277	381	381	555	555	624	659	763	867
	28.0	5.666	0.417	7.264	7.016	8.133	8.151	5.04	325	447	447	651	651	732	773	895	1017
	32.0	5.550	0.475	7.461	7.165	9.178	10.428	5.04	367	505	505	734	734	826	872	1010	1147
	35.8	5.450	0.525	7.461	7.165	10.063	10.428	5.04	403	553	553	805	805	906	956	1107	1258
	23.0	6.241	0.317	7.657	7.390	6.656	8.833	5.24	266	366	366	532	532	599	632	732	832
	26.0	6.151	0.362	7.657	7.390	7.549	8.833	5.24	302	415	415	604	604	679	717	830	944
	29.0	6.059	0.408	7.657	7.390	8.449	8.833	5.24	338	465	465	676	676	760	803	929	1056
	32.0	5.969	0.453	7.776	7.390	9.317	10.264	5.24	373	512	512	745	745	839	885	1025	1165
	35.0	5.879	0.498	7.776	7.657	10.173	10.264	5.24	407	559	559	814	814	916	966	1119	1272
	38.0	5.795	0.540	7.933	7.657	10.959	12.208	5.24	438	603	603	877	877	986	1041	1205	1370
	41.0	5.695	0.590	7.933	7.657	11.881	12.208	5.24	475	653	653	950	950	1069	1129	1307	1485
7.000	44.0	5.595	0.640	7.992	7.657	12.788	12.946	5.24	512	703	703	1023	1023	1151	1215	1407	1598

* Values for regular couplings. Please contact Siderca S.A.I.C for special clearance couplings.

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

Siderca S.A.I.C. — SEC-ST, FR & GR (continued)

Type: Coupled, non-upset
Seal: Metal-to-metal

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c *	L_m	H-40 *	J-55 *	K-55 *	L-80 *	N-80 *	C-90 *	C/T-95 *	P-110 *	Q-125 *
7.625	26.4	6.844	0.328	8.346	8.110	7.519	10.571	5.43	301	414	414	602	602	677	714	827	940
	29.7	6.750	0.375	8.346	8.110	8.541	10.571	5.43	342	470	470	683	683	769	811	939	1068
	33.7	6.640	0.430	8.346	8.110	9.720	10.571	5.43	389	535	535	778	778	875	923	1069	1215
	35.8	6.570	0.465	8.346	8.110	10.459	10.571	5.43	418	575	575	837	837	941	994	1151	1307
	39.0	6.500	0.500	8.543	8.110	11.193	13.181	5.43	448	616	616	895	895	1007	1063	1231	1399
	42.8	6.376	0.562	8.543	8.346	12.470	13.181	5.43	499	686	686	998	998	1122	1185	1372	1559
	45.3	6.310	0.595	8.543	8.346	13.141	13.181	5.43	526	723	723	1051	1051	1183	1248	1446	1643
8.625	28.0	7.892	0.304	9.252	9.024	7.947	10.622	5.55	318	437	437	636	636	715	755	874	993
	32.0	7.796	0.352	9.252	9.024	9.148	10.622	5.55	366	503	503	732	732	823	869	1006	1144
	36.0	7.700	0.400	9.252	9.024	10.335	10.622	5.55	413	568	568	827	827	930	982	1137	1292
	40.0	7.600	0.450	9.551	9.252	11.557	15.041	5.55	462	636	636	925	925	1040	1098	1271	1445
	44.0	7.500	0.500	9.551	9.252	12.763	15.041	5.55	511	702	702	1021	1021	1149	1212	1404	1595
	49.0	7.386	0.557	9.551	9.252	14.117	15.041	5.55	565	776	776	1129	1129	1271	1341	1553	1765
	52.0	7.310	0.595	9.551	9.252	15.010	15.041	5.55	600	826	826	1201	1201	1351	1426	1651	1876
	54.0	7.265	0.618	9.606	9.252	15.550	15.872	5.55	622	855	855	1244	1244	1399	1477	1710	1944
9.625	36.0	8.765	0.352	10.299	10.079	10.255	12.220	5.55	410	564	564	820	820	923	974	1128	1282
	40.0	8.679	0.395	10.299	10.079	11.455	12.220	5.55	458	630	630	916	916	1031	1088	1260	1432
	43.5	8.599	0.435	10.492	10.079	12.560	15.733	5.55	502	691	691	1005	1005	1130	1193	1382	1570
	47.0	8.525	0.472	10.492	10.079	13.572	15.733	5.55	543	746	746	1086	1086	1221	1289	1493	1696
	53.5	8.379	0.545	10.492	10.236	15.547	15.733	5.55	622	855	855	1244	1244	1399	1477	1710	1943
	58.4	8.279	0.595	10.626	10.236	16.880	17.954	5.55	675	928	928	1350	1350	1519	1604	1857	2110
	59.4	8.251	0.609	10.626	10.236	17.250	17.954	5.55	690	949	949	1380	1380	1552	1639	1897	2156
	64.9	8.125	0.672	10.689	10.236	18.901	17.954	5.55	756	1040	1040	1512	1512	1701	1796	2079	2363

* Values for regular couplings. Please contact Siderca S.A.I.C for special clearance couplings.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Siderca S.A.I.C. — SEC-ST, FR & GR (continued)

Type: Coupled, non-upset
Seal: Metal-to-metal

									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c *	L_m	H-40 *	J-55 *	K-55 *	L-80 *	N-80 *	C-90 *	C/T-95 *	P-110 *	Q-125 *
10.750	40.5	9.894	0.350	11.472	11.268	11.468	15.020	5.55	459	631	631	917	917	1032	1090	1262	1434
	45.5	9.794	0.400	11.472	11.268	13.039	15.020	5.55	522	717	717	1043	1043	1173	1239	1434	1630
	51.0	9.694	0.450	11.472	11.268	14.595	15.020	5.55	584	803	803	1168	1168	1314	1387	1605	1824
	55.5	9.604	0.495	11.748	11.268	15.982	20.045	5.55	639	879	879	1279	1279	1438	1518	1758	1998
	60.7	9.504	0.545	11.748	11.268	17.507	20.045	5.55	700	963	963	1401	1401	1576	1663	1926	2188
	65.7	9.404	0.595	11.748	11.268	19.017	20.045	5.55	761	1046	1046	1521	1521	1712	1807	2092	2377
	73.2	9.252	0.672	11.748	11.472	21.282	20.045	5.55	851	1170	1170	1703	1703	1915	2022	2341	2660
	85.3	9.002	0.797	12.008	11.472	24.921	24.893	5.55	997	1371	1371	1994	1994	2243	2367	2741	3115
11.750	42.0	10.928	0.333	12.433	12.185	11.946	15.681	5.55	478	657	657	956	956	1075	1135	1314	1493
	47.0	10.844	0.375	12.433	12.185	13.394	15.681	5.55	536	737	737	1071	1071	1205	1272	1473	1674
	54.0	10.724	0.435	12.433	12.185	15.464	15.681	5.55	619	851	851	1237	1237	1392	1469	1701	1933
	60.0	10.616	0.489	12.756	12.433	17.298	22.067	5.55	692	951	951	1384	1384	1557	1643	1903	2162
	65.0	10.526	0.534	12.756	12.433	18.817	22.067	5.55	753	1035	1035	1505	1505	1694	1788	2070	2352
	71.0	10.430	0.582	12.756	12.433	20.417	22.067	5.55	817	1123	1123	1633	1633	1837	1940	2246	2552
13.375	54.5	12.459	0.380	14.374	0.000	15.511	24.103	5.55	620	853	853	1241	1241	1396	1474	1706	1939
	61.0	12.359	0.430	14.374	0.000	17.484	24.103	5.55	699	962	962	1399	1399	1574	1661	1923	2186
	68.0	12.259	0.480	14.374	0.000	19.442	24.103	5.55	778	1069	1069	1555	1555	1750	1847	2139	2430
	72.0	12.191	0.514	14.374	0.000	20.775	24.103	5.55	831	1143	1143	1662	1662	1870	1974	2285	2597
	77.0	12.274	0.550	14.374	0.000	22.160	24.103	5.55	886	1219	1219	1773	1773	1994	2105	2438	2770
	80.7	12.214	0.580	14.374	0.000	23.310	24.103	5.55	932	1282	1282	1865	1865	2098	2214	2564	2914
	85.0	12.003	0.608	14.374	0.000	24.382	24.103	5.55	975	1341	1341	1951	1951	2194	2316	2682	3048

* Values for regular couplings. Please contact Siderca S.A.I.C for special clearance couplings.

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Smith Fiberglass Products Inc. — SDT 1010

Type: Threaded & coupled or integral Seal: Threaded								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m
6.9	7.6	6.06	0.42	7.8	....	....	....	3.1

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Smith Fiberglass Products Inc. — SDT 1510

Type: Threaded & coupled or integral Seal: Threaded								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m
6.9	9.4	5.84	0.53	8.2	...	....	....	3.1

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Star Fiber Glass Systems, Inc.

Type: OD 8-Round, Threaded & coupled Seal: Threaded lubricant compression ratings Advanced Composite Thread											
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	Pressure (psi)	Tensile (lb)	Collapse (psi)
5.39	4.76	4.69	0.33	6.60	....	....	....	4.50	1500	48000	1800
5.55	5.85	4.69	0.40	7.00	....	....	....	4.50	2000	58000	2100
6.73	7.45	5.89	0.40	8.40	....	....	....	4.63	1500	75000	1800
6.95	9.31	5.89	0.51	8.75	....	....	....	4.63	2000	90000	2200
8.80	13.56	7.69	0.53	11.50	....	....	....	4.88	1500	125000	1800
9.09	16.37	7.69	0.68	11.90	....	....	....	4.88	2000	160000	2200

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS Technitube Röhrenwerke — TPS-Multiseal-TS 4

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	18.0	4.276	0.362	5.515	...	5.275	> At	5.27	...	290	290	422	422	...	501	580	...
	20.3	4.184	0.408	5.585	...	5.886	> At	5.27	...	324	324	471	471	...	559	647	...
	23.2	4.044	0.478	5.700	...	6.791	> At	5.27	...	373	373	543	543	...	645	747	...
	27.0	3.880	0.560	5.835	...	7.811	> At	5.27	...	430	430	625	625	...	742	859	...
5.500	17.0	4.892	0.304	5.920	...	4.962	> At	5.27	...	273	273	397	397	...	471	546	...
	20.0	4.778	0.361	6.005	...	5.828	> At	5.27	...	320	320	466	466	...	554	641	...
	23.0	4.670	0.415	6.090	...	6.630	> At	5.27	...	365	365	530	530	...	630	729	...
	26.0	4.548	0.476	6.185	...	7.513	> At	5.27	...	413	413	601	601	...	714	826	...
	28.4	4.440	0.530	6.275	...	8.275	> At	5.27	...	455	455	662	662	...	786	910	...
6.625	28.0	5.791	0.417	7.210	...	8.133	> At	5.26	...	447	447	651	651	...	773	895	...
	32.0	5.675	0.475	7.300	...	9.177	> At	5.26	...	505	505	688	734	...	872	1009	...
6.625	35.0	5.575	0.525	7.380	...	10.061	> At	5.26	...	553	553	805	805	...	956	1107	...
7.000	29.0	6.184	0.408	7.570	...	8.449	> At	5.28	...	465	465	676	676	...	803	929	...
	32.0	6.094	0.453	7.640	...	9.317	> At	5.28	...	512	512	745	745	...	885	1025	...
	35.0	6.004	0.498	7.710	...	10.172	> At	5.28	...	559	559	814	814	...	966	1119	...
	38.0	5.920	0.540	7.775	...	10.959	> At	5.28	...	603	603	877	877	...	1041	1205	...

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS Technitube Röhrenwerke — Techniseal

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.494	0.253	5.587	5.390	3.773	5.498	4.252	...	208	208	302	302	340	359	415	...
	15.0	4.408	0.296	5.587	5.390	4.374	5.498	4.252	...	241	241	350	350	394	416	481	...
	18.0	4.276	0.362	5.587	5.390	5.275	5.498	4.252	...	290	290	422	422	474	501	580	...
	20.3	4.184	0.408	5.587	5.390	5.886	5.498	4.252	...	302	302	440	440	495	522	605	...
	20.8	4.156	0.422	5.587	5.390	6.069	5.498	4.252	...	302	302	440	440	495	522	605	...
	21.4	4.125	0.437	5.587	5.390	6.264	5.498	4.252	...	302	302	440	440	495	522	605	...
	24.1	4.000	0.500	5.587	5.390	7.069	5.498	4.252	...	302	302	440	440	495	522	605	...
5.500	15.5	4.950	0.275	6.075	5.890	4.514	5.975	4.331	...	248	248	361	361	406	429	564	...
	17.0	4.892	0.304	6.075	5.890	4.962	5.975	4.331	...	273	273	397	397	447	471	546	...
	20.0	4.778	0.361	6.075	5.890	5.828	5.975	4.331	...	321	321	466	466	525	554	641	...
	23.0	4.670	0.415	6.075	5.890	6.630	5.975	4.331	...	329	329	478	478	538	568	657	...
	26.0	4.548	0.476	6.075	5.890	7.513	5.975	4.331	...	329	329	478	478	538	568	657	...
6.625	20.0	6.049	0.288	7.413	7.016	5.734	9.667	4.528	...	316	316	459	459	516	545	631	...
	23.2	5.965	0.330	7.413	7.016	6.526	9.667	4.528	...	359	359	522	522	587	620	718	...
	24.0	5.921	0.352	7.413	7.016	6.937	9.667	4.528	...	381	381	555	555	624	659	763	...
	28.0	5.791	0.417	7.413	7.016	8.133	9.667	4.528	...	447	447	651	651	732	772	894	...
	32.0	5.675	0.475	7.413	7.016	9.177	9.667	4.528	...	505	505	734	734	826	872	1009	...
	35.0	5.575	0.525	7.413	7.016	10.061	9.667	4.528	...	532	532	774	774	870	919	1064	...

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

TPS Technitube Röhrenwerke — Techniseal (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	23.0	6.366	0.317	7.681	7.390	6.655	9.066	4.724	...	366	366	532	532	599	632	732	...
	26.0	6.276	0.362	7.681	7.390	7.549	9.066	4.724	...	415	415	604	604	679	717	830	...
	29.0	6.184	0.408	7.681	7.390	8.449	9.066	4.724	...	465	465	676	676	760	802	929	…
	32.0	6.094	0.453	7.681	7.390	9.317	9.066	4.724	...	499	499	725	725	816	861	997	...
	35.0	6.004	0.498	7.681	7.390	10.172	9.066	4.724	...	499	499	725	725	816	861	997	...
	38.0	5.920	0.540	7.681	7.390	10.959	9.066	4.724	...	499	499	725	725	816	861	997	...
	41.0	5.820	0.590	7.681	7.390	11.881	9.066	4.724	...	499	499	725	725	816	861	997	...
	44.0	5.720	0.640	7.681	...	12.788	14.792	4.724	...	499	499	725	725	816	861	997	...
	46.0	5.660	0.670	7.683	...	13.324	14.792	4.724	...	500	500	727	727	818	864	1000	...
7.625	26.4	6.969	0.328	8.528	8.142	7.519	12.899	4.921	...	413	413	601	601	677	714	827	...
	29.7	6.875	0.375	8.528	8.142	8.541	12.899	4.921	...	470	470	683	683	768	811	939	...
	33.7	6.765	0.430	8.528	8.142	9.720	12.899	4.921	...	534	534	777	777	875	923	1069	...
	35.8	6.693	0.466	8.528	8.142	10.481	12.899	4.921	...	575	575	836	836	941	993	1150	...
	39.0	6.625	0.500	8.528	8.142	11.192	12.899	4.921	...	616	616	895	895	1007	1063	1231	...
	42.8	6.501	0.562	8.528	8.142	12.470	12.899	4.921	...	686	686	997	997	1122	1184	1371	...
	45.3	6.435	0.595	8.528	8.142	13.141	12.899	4.921	...	710	710	1032	1032	1161	1226	1419	...
8.625	28.0	8.017	0.304	9.650	9.142	7.947	16.399	5.039	...	437	437	636	636	715	755	874	...
	32.0	7.921	0.352	9.650	9.142	9.149	16.399	5.039	...	503	503	732	732	823	869	1006	...
	36.0	7.825	0.400	9.650	9.142	10.336	16.399	5.039	...	568	568	827	827	930	982	1137	...
	40.0	7.725	0.450	9.650	9.142	11.557	16.399	5.039	...	636	636	925	925	1040	1098	1271	...
	44.0	7.625	0.500	9.650	9.142	12.763	16.399	5.039	...	702	702	1021	1021	1149	1212	1404	...
	49.0	7.511	0.557	9.650	9.142	14.118	16.399	5.039	...	777	777	1130	1130	1271	1341	1553	...
	52.0	7.435	0.595	9.650	9.142	15.010	16.399	5.039	...	825	825	1201	1201	1351	1426	1651	...

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Tubular Fiberglass Corp. — RED BOX

Type: 8-round, integral Seal: Threaded									
									Minimum joint tension strength, kips
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	All grades
5.500	2.8	4.330	0.19	6.78	6.125	1.349	….	3.500	69
	3.3	4.330	0.23	6.78	6.125	1.640	….	3.500	86
	3.9	4.330	0.28	6.78	6.125	2.007	….	3.500	103
	4.6	4.330	0.34	6.78	6.125	2.453	….	3.500	107
	5.2	4.330	0.38	6.78	6.125	2.754	….	3.500	107
	5.9	4.330	0.44	6.78	6.125	3.210	….	3.500	107
	6.6	4.330	0.49	6.78	6.125	3.593	….	3.500	107
	7.3	4.330	0.55	6.78	6.125	4.059	….	3.500	107
	8.0	4.330	0.60	6.78	6.125	4.452	….	3.500	107
6.675	4.1	5.340	0.23	8.00	7.375	2.005	….	3.875	103
	4.9	5.340	0.28	8.00	7.375	2.451	….	3.875	126
	5.9	5.340	0.35	8.00	7.375	3.084	….	3.875	143
	6.8	5.340	0.41	8.00	7.375	3.632	….	3.875	143
	7.7	5.340	0.47	8.00	7.375	4.185	….	3.875	143
	8.7	5.340	0.53	8.00	7.375	4.744	….	3.875	143
	9.7	5.340	0.59	8.00	7.375	5.309	….	3.875	143
	10.8	5.340	0.66	8.00	7.375	5.975	….	3.875	143
7.000	4.9	6.120	0.26	8.50	7.625	2.591	….	4.000	134
	6.1	6.120	0.33	8.50	7.625	3.307	….	4.000	156
	7.2	6.120	0.40	8.50	7.625	4.030	….	4.000	156
	8.3	6.120	0.46	8.50	7.625	4.656	….	4.000	156

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

Tubular Fiberglass Corp. — RED BOX (continued)

Type: 8-round, integral Seal: Threaded									
									Minimum joint tension strength, kips
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	All grades
7.625	5.5	6.120	0.26	9.23	8.500	2.591	....	4.000	136
	6.7	6.120	0.33	9.23	8.500	3.307	....	4.000	170
	7.7	6.120	0.39	9.23	8.500	3.926	....	4.000	170
	8.9	6.120	0.46	9.23	8.500	4.656	....	4.000	170
	10.1	6.120	0.53	9.23	8.500	5.394	....	4.000	170
	11.4	6.120	0.61	9.23	8.500	6.246	....	4.000	170
	12.8	6.120	0.68	9.23	8.500	7.000	....	4.000	170
	14.2	6.120	0.76	9.23	8.500	7.872	....	4.000	170
9.625	8.9	7.750	0.33	11.60	10.625	4.151	....	4.000	215
	10.7	7.750	0.41	11.60	10.625	5.184	....	4.000	215
	12.4	7.750	0.50	11.60	10.625	6.357	....	4.000	215
	14.4	7.750	0.59	11.60	10.625	7.543	....	4.000	215
	16.3	7.750	0.68	11.60	10.625	8.741	....	4.000	215
	18.3	7.750	0.77	11.60	10.625	9.953	....	4.000	215
	20.4	7.750	0.86	11.60	10.625	11.177	....	4.000	215
	22.5	7.750	0.95	11.60	10.625	12.414	....	4.000	215
10.750	11.4	8.760	0.37	13.00	11.875	5.253	....	4.000	240
	13.6	8.760	0.46	13.00	11.875	6.564	....	4.000	240
	15.9	8.760	0.56	13.00	11.875	8.034	....	4.000	240
	18.3	8.760	0.66	13.00	11.875	9.521	....	4.000	240
	20.7	8.760	0.76	13.00	11.875	11.023	....	4.000	240
	23.2	8.760	0.87	13.00	11.875	12.694	....	4.000	240
	25.7	8.760	0.97	13.00	11.875	14.229	....	4.000	240
	28.4	8.760	1.07	13.00	11.875	15.780	....	4.000	240

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM ACE

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.563	5.323	3.773	5.299	4.191	....	208	208	302	302	340	358	415	472
	15.0	4.283	0.296	5.563	5.354	4.374	5.299	4.191	....	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.572	5.439	5.275	5.379	4.191	....	290	290	422	422	475	501	580	659
	20.3	4.059	0.408	5.650	5.500	5.886	6.065	4.191	....	324	324	471	471	530	559	647	736
	20.8	4.031	0.422	5.750	5.531	6.069	6.961	4.191	....	334	334	486	486	546	577	668	759
	21.4	4.001	0.437	5.750	5.531	6.264	6.961	4.191	....	345	345	501	501	564	595	689	783
	23.2	3.919	0.478	5.750	5.583	6.791	6.961	4.191	....	374	374	543	543	611	645	747	849
	24.1	3.875	0.500	5.806	5.604	7.069	7.468	4.191	....	389	389	566	566	636	672	778	884
5.500	15.5	4.825	0.275	6.051	5.840	4.514	5.800	4.382	....	248	248	361	361	406	429	497	564
	17.0	4.767	0.304	6.051	5.866	4.962	5.800	4.382	....	273	273	397	397	447	471	546	620
	20.0	4.653	0.361	6.150	5.931	5.828	6.744	4.382	....	321	321	466	466	525	554	641	729
	23.0	4.545	0.415	6.150	6.000	6.630	6.744	4.382	....	365	365	530	530	597	630	729	829
	26.0	4.423	0.476	6.244	6.075	7.513	7.663	4.382	....	413	413	601	601	676	714	826	939
	26.8	4.375	0.500	6.280	6.118	7.854	8.012	4.382	....	432	432	628	628	707	746	864	982
	28.4	4.315	0.530	6.325	6.150	8.275	8.460	4.382	....	455	455	662	662	745	786	910	1034
	29.7	4.251	0.562	6.385	6.193	8.718	9.061	4.382	....	479	479	697	697	785	828	959	1090
6.625	20.0	5.924	0.288	7.390	6.963	5.734	9.409	4.427	....	315	315	459	459	516	545	631	717
	24.0	5.796	0.352	7.390	7.051	6.937	9.409	4.427	....	382	382	555	555	624	659	763	867
	28.0	5.666	0.417	7.390	7.136	8.133	9.409	4.427	....	447	447	651	651	732	773	895	1017
	32.0	5.550	0.475	7.390	7.211	9.177	9.409	4.427	....	505	505	734	734	826	872	1009	1147
	35.0	5.450	0.525	7.463	7.291	10.061	10.258	4.427	....	553	553	805	805	905	956	1107	1258

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM ACE (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	23.0	6.241	0.317	7.657	7.390	6.655	8.857	4.476	....	366	366	532	532	599	632	732	832
	24.8	6.189	0.343	7.657	7.421	7.173	8.857	4.476	....	395	395	574	574	646	681	789	897
	26.0	6.151	0.362	7.657	7.421	7.549	8.857	4.476	....	415	415	604	604	676	717	830	944
	29.0	6.059	0.408	7.657	7.484	8.449	8.857	4.476	....	465	465	676	676	760	803	929	1056
	32.0	5.969	0.453	7.909	7.555	9.317	11.937	4.476	....	512	512	745	745	839	885	1025	1165
	35.0	5.879	0.498	7.909	7.618	10.172	11.937	4.476	....	559	559	814	814	915	966	1119	1272
	38.0	5.795	0.540	7.909	7.657	10.959	11.937	4.476	....	603	603	877	877	986	1041	1205	1370
	41.0	5.695	0.590	7.940	7.713	11.881	12.319	4.476	....	653	653	950	950	1069	1129	1307	1485
7.625	26.4	6.844	0.328	8.500	8.000	7.519	12.543	4.868	....	414	414	602	602	677	714	827	940
	29.7	6.750	0.375	8.500	8.061	8.541	12.543	4.868	....	470	470	683	683	769	811	940	1068
	33.7	6.640	0.430	8.500	8.136	9.720	12.543	4.868	....	535	535	778	778	875	923	1069	1215
	35.8	6.570	0.465	8.500	8.181	10.460	12.543	4.868	....	575	575	837	837	941	994	1151	1308
	39.0	6.500	0.500	8.500	8.228	11.192	12.543	4.868	....	616	616	895	895	1007	1063	1231	1399
	42.8	6.376	0.562	8.513	8.313	12.470	12.716	4.868	....	686	686	998	998	1122	1185	1372	1559
	45.3	6.310	0.595	8.564	8.346	13.141	13.403	4.868	....	723	723	1051	1051	1183	1248	1446	1643
7.750	46.1	6.435	0.595	8.691	8.494	13.374	13.638	4.868	....	736	736	1070	1070	1204	1271	1471	1672
	47.6	6.375	0.625	8.737	8.531	13.990	14.274	4.868	....	769	769	1119	1119	1259	1329	1539	1749
	48.6	6.345	0.640	8.760	8.551	14.296	14.582	4.868	....	786	786	1144	1144	1287	1358	1573	1787
8.625	28.0	7.892	0.304	9.626	8.957	7.947	16.120	5.604	....	437	437	636	636	715	755	874	993
	32.0	7.796	0.352	9.626	9.026	9.149	16.120	5.604	....	503	503	732	732	823	869	1006	1144
	36.0	7.700	0.400	9.626	9.094	10.336	16.120	5.604	....	568	568	827	827	930	982	1137	1292
	40.0	7.600	0.450	9.626	9.165	11.557	16.120	5.604	....	636	636	925	925	1040	1098	1271	1445
	44.0	7.500	0.500	9.626	9.240	12.763	16.120	5.604	....	702	702	1021	1021	1149	1212	1404	1595
	49.0	7.386	0.557	9.626	9.315	14.118	16.120	5.604	....	776	776	1129	1129	1271	1341	1553	1765
	52.0	7.310	0.595	9.626	9.350	15.010	16.120	5.604	....	826	826	1201	1201	1351	1426	1651	1876

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM ACE (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.765	0.352	10.625	10.031	10.254	17.827	5.589	....	564	564	820	820	923	974	1128	1282
	40.0	8.679	0.395	10.625	10.098	11.454	17.827	5.589	....	630	630	916	916	1031	1088	1260	1432
	43.5	8.599	0.435	10.625	10.165	12.559	17.827	5.589	....	691	691	1005	1005	1130	1193	1381	1570
	47.0	8.525	0.472	10.625	10.228	13.572	17.827	5.589	....	746	746	1086	1086	1221	1289	1493	1697
	53.5	8.379	0.545	10.625	10.297	15.546	17.827	5.589	....	855	855	1244	1244	1399	1477	1710	1943
	58.4	8.279	0.595	10.650	10.382	16.879	17.827	5.589	....	928	928	1350	1350	1519	1604	1857	2110
	59.4	8.251	0.609	10.625	10.382	17.250	17.827	5.589	....	949	949	1380	1380	1553	1639	1898	2156
	61.1	8.219	0.625	10.637	10.402	17.671	18.023	5.589	....	972	972	1414	1414	1590	1679	1944	2209
9.875	62.8	8.469	0.625	10.898	10.661	18.162	18.550	5.484	....	999	999	1453	1453	1635	1725	1998	2270
	66.4	8.397	0.661	10.954	10.709	19.134	19.516	5.484	....	1052	1052	1531	1531	1722	1818	2105	2392
9.875	70.5	8.279	0.720	11.047	10.780	20.708	21.130	5.484	....	1139	1139	1657	1657	1864	1967	2278	2589
10.750	40.5	9.894	0.350	11.750	11.156	11.435	19.863	5.634	....	629	629	915	915	1029	1086	1258	1429
	45.5	9.794	0.400	11.750	11.226	13.006	19.863	5.634	....	715	715	1040	1040	1171	1236	1431	1626
	51.0	9.694	0.450	11.750	11.299	14.561	19.863	5.634	....	801	801	1165	1165	1310	1383	1602	1820
	55.5	9.604	0.495	11.750	11.378	15.947	19.863	5.634	....	877	877	1276	1276	1435	1515	1754	1993
	60.7	9.504	0.545	11.750	11.449	17.473	19.863	5.634	....	961	961	1398	1398	1573	1660	1922	2184
	65.7	9.404	0.595	11.750	11.524	18.982	19.863	5.634	....	1044	1044	1519	1519	1708	1803	2088	2373
11.750	47.0	10.844	0.375	12.750	12.193	13.401	21.638	5.713	....	737	737	1072	1072	1206	1273	1474	1675
	54.0	10.724	0.435	12.750	12.280	15.463	21.638	5.713	....	850	850	1237	1237	1392	1469	1701	1933
	60.0	10.616	0.489	12.750	12.358	17.300	21.638	5.713	....	952	952	1384	1384	1557	1644	1903	2163
	65.0	10.526	0.534	12.750	12.441	18.816	21.638	5.713	....	1035	1035	1505	1505	1693	1788	2070	2352
11.875	71.8	10.555	0.582	12.835	12.608	20.648	21.061	5.713	....	1136	1136	1652	1652	1858	1962	2271	2581

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM ACE (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	54.5	12.459	0.380	14.375	13.829	15.513	24.510	5.698	....	853	853	1241	1241	1396	1474	1706	1939
	61.0	12.359	0.430	14.375	13.902	17.487	24.510	5.698	....	962	962	1399	1399	1574	1661	1924	2186
	68.0	12.259	0.480	14.375	13.982	19.445	24.510	5.698	....	1069	1069	1556	1556	1750	1847	2139	2431
	72.0	12.191	0.514	14.375	14.022	20.768	24.510	5.698	....	1142	1142	1661	1661	1869	1973	2284	2596
	77.0	12.119	0.550	14.375	14.073	22.160	24.510	5.698	....	1219	1219	1773	1773	1994	2105	2438	2770
	80.7	12.059	0.580	14.375	14.116	23.314	24.510	5.698	....	1282	1282	1865	1865	2098	2215	2565	2914
	85.0	12.003	0.608	14.420	14.173	24.386	25.524	5.698	....	1341	1341	1951	1951	2195	2317	2682	3048
	86.0	11.969	0.625	14.420	14.173	25.035	25.524	5.698	....	1377	1377	2003	2003	2253	2378	2754	3129

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — DINO VAM

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.765	0.352	10.625	....	10.254	18.451	4.747	....	564	564	820	820	923	974	1128	....
	40.0	8.679	0.395	10.625	....	11.454	18.451	4.747	....	630	630	916	916	1031	1088	1260	....
	43.5	8.599	0.435	10.625	....	12.559	18.451	4.747	....	691	691	1005	1005	1130	1193	1381	....
	47.0	8.525	0.472	10.625	....	13.572	18.451	4.747	....	746	746	1086	1086	1221	1289	1493	....
	53.5	8.379	0.545	10.625	....	15.546	18.451	4.747	....	855	855	1244	1244	1399	1477	1710	....
	58.4	8.279	0.595	10.625	....	16.879	18.451	4.747	....	928	928	1350	1350	1519	1604	1857	....
	59.4	8.251	0.609	10.625	....	17.250	20.401	4.578	....	949	949	1380	1380	1553	1639	1898	....
	61.1	8.219	0.625	10.625	....	17.671	20.401	4.578	....	972	972	1414	1414	1590	1679	1944	....
	64.9	8.125	0.672	10.625	....	18.901	20.401	4.578	....	1040	1040	1512	1512	1701	1796	2079	....
	70.3	8.001	0.734	10.625	....	20.502	20.401	4.578	....	1122	1122	1632	1632	1836	1938	2244	....
	71.8	7.969	0.750	10.625	....	20.911	20.401	4.578	....	1122	1122	1632	1632	1836	1938	2244	....
9.750	59.2	8.404	0.595	10.625	....	17.113	17.785	4.155	....	941	941	1369	1369	1540	1626	1882	....
	60.2	8.376	0.609	10.625	....	17.489	17.785	4.155	....	962	962	1399	1399	1574	1661	1924	....
9.875	62.8	8.469	0.625	10.870	....	18.162	20.655	4.488	....	999	999	1453	1453	1635	1725	1998	....
	66.4	8.397	0.661	10.870	....	19.134	20.655	4.488	....	1052	1052	1531	1531	1722	1818	2105	....
	67.5	8.363	0.678	10.870	....	19.590	20.655	4.488	....	1077	1077	1567	1567	1763	1861	2155	....
	68.9	8.319	0.700	10.870	....	20.177	20.655	4.488	....	1110	1110	1614	1614	1816	1917	2219	....
	70.5	8.279	0.720	10.870	....	20.708	20.655	4.488	....	1136	1136	1652	1652	1859	1962	2272	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — DINO VAM (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	40.5	9.894	0.350	11.750	....	11.435	20.993	5.044	....	629	629	915	915	1029	1086	1258	....
	45.5	9.794	0.400	11.750	....	13.006	20.993	5.044	....	715	715	1040	1040	1171	1236	1431	....
	51.0	9.694	0.450	11.750	....	14.561	20.993	5.044	....	801	801	1165	1165	1310	1383	1602	....
	55.5	9.604	0.495	11.750	....	15.947	20.993	5.044	....	877	877	1276	1276	1435	1515	1754	....
	60.7	9.504	0.545	11.750	....	17.473	20.993	5.044	....	961	961	1398	1398	1573	1660	1922	....
	65.7	9.404	0.595	11.750	....	18.982	20.993	5.044	....	1044	1044	1519	1519	1708	1803	2088	....
	66.1	9.372	0.611	11.750	....	19.462	23.417	4.896	....	1070	1070	1557	1557	1752	1849	2141	....
	73.2	9.250	0.672	11.750	....	21.276	23.417	4.896	....	1170	1170	1702	1702	1915	2021	2340	....
	76.1	9.176	0.709	11.750	....	22.365	23.417	4.896	....	1230	1230	1789	1789	2013	2125	2460	....
	79.2	9.126	0.734	11.750	....	23.096	23.417	4.896	....	1270	1270	1848	1848	2079	2194	2541	....
11.750	47.0	10.844	0.375	12.750	....	13.401	22.078	4.485	....	737	737	1072	1072	1206	1273	1474	....
	54.0	10.724	0.435	12.750	....	15.463	22.078	4.485	....	850	850	1237	1237	1392	1469	1701	....
	60.0	10.616	0.489	12.750	....	17.300	24.388	4.365	....	952	952	1384	1384	1557	1644	1903	....
	65.0	10.526	0.534	12.750	....	18.816	24.388	4.365	....	1035	1035	1505	1505	1693	1788	2070	....
	71.0	10.430	0.582	12.750	....	20.420	24.388	4.365	....	1123	1123	1634	1634	1838	1940	2246	....
11.875	71.8	10.555	0.582	12.677	....	20.648	20.629	4.365	....	1135	1135	1650	1650	1857	1960	2269	....
13.375	54.5	12.459	0.380	14.375	....	15.513	25.502	4.762	....	853	853	1241	1241	1396	1474	1706	....
	61.0	12.359	0.430	14.375	....	17.487	25.502	4.762	....	962	962	1399	1399	1574	1661	1924	....
	68.0	12.259	0.480	14.375	....	19.445	25.502	4.762	....	1069	1069	1556	1556	1750	1847	2139	....
	72.0	12.191	0.514	14.375	....	20.768	25.502	4.762	....	1142	1142	1661	1661	1869	1973	2284	....
	77.0	12.119	0.550	14.375	....	22.160	28.047	4.516	....	1219	1219	1773	1773	1994	2105	2438	....
	80.7	12.059	0.580	14.375	....	23.314	28.047	4.516	....	1282	1282	1865	1865	2098	2215	2565	....
	85.0	12.003	0.608	14.375	....	24.386	28.047	4.516	....	1341	1341	1951	1951	2195	2317	2682	....
	86.0	11.969	0.625	14.375	....	25.035	28.047	4.516	....	1377	1377	2003	2003	2253	2378	2754	....
13.625	88.2	12.188	0.625	14.488	....	25.525	25.453	4.516	....	1400	1400	2036	2036	2291	2418	2800	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — DINO VAM (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
14.000	82.5	12.689	0.562	15.043	....	23.726	33.094	5.528	....	1305	1305	1898	1898	2135	2254	2610	....
	86.0	12.613	0.600	15.043	....	25.258	33.094	5.528	....	1389	1389	2021	2021	2273	2400	2778	....
	93.0	12.513	0.650	15.043	....	27.261	33.094	5.528	....	1499	1499	2181	2181	2453	2590	2999	....
	94.8	12.501	0.656	15.043	....	27.500	33.094	5.528	....	1513	1513	2200	2200	2475	2613	3025	....
	99.0	12.437	0.688	15.043	....	28.773	33.094	5.528	....	1583	1583	2302	2302	2590	2733	3165	....
	100.0	12.413	0.700	15.043	....	29.248	33.094	5.528	....	1609	1609	2340	2340	2632	2779	3217	....
	106.0	12.313	0.750	15.043	....	31.220	33.094	5.528	....	1820	1820	2648	2648	2978	3144	3640	....
	114.0	12.213	0.800	15.043	....	33.175	33.094	5.528	....	1820	1820	2648	2648	2978	3144	3640	....
16.000	65.0	15.063	0.375	17.000	....	18.408	31.414	5.212	....	1012	1012	1473	1473	1657	1749	2025	....
	75.0	14.937	0.438	17.000	....	21.414	31.414	5.212	....	1178	1178	1713	1713	1927	2034	2356	....
	84.0	14.823	0.495	17.000	....	24.112	31.414	5.212	....	1326	1326	1929	1929	2170	2291	2652	....
	84.8	14.813	0.500	17.000	....	24.347	31.414	5.212	....	1339	1339	1948	1948	2191	2313	2678	....
	94.5	14.689	0.562	17.000	....	27.257	37.602	5.843	....	1499	1499	2181	2181	2453	2589	2998	....
	104.0	14.563	0.625	17.000	....	30.189	37.602	5.843	....	1660	1660	2415	2415	2717	2868	3321	....
	109.0	14.501	0.656	17.000	....	31.622	37.602	5.843	....	1739	1739	2530	2530	2846	3004	3478	....
	128.0	14.251	0.781	17.000	....	37.341	37.602	5.843	....	2054	2054	2987	2987	3361	3547	4108	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM FJL

Type: Integral Seal: Metal-to-metal									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J/K-55	L-80	N-80	C-90	C/T-95	C-110 VHS	P-110	Q-125
5.000	13.0	4.369	0.253	....	....	3.773	2.079	2.795	....	....	198	208	....	218	249	260	281
	15.0	4.283	0.296	....	....	4.374	2.407	3.504	....	....	229	241	....	253	289	301	325
	18.0	4.151	0.362	....	....	5.275	3.205	3.425	....	....	304	321	....	337	385	401	433
	20.3	4.059	0.408	....	....	5.886	3.818	4.213	....	....	393	382	....	401	458	477	515
	20.8	4.031	0.422	....	....	6.069	3.999	4.213	....	....	380	400	....	420	480	500	540
	21.4	4.001	0.437	....	....	6.264	4.083	4.331	....	....	388	408	....	429	490	510	551
	23.2	3.919	0.478	....	....	6.791	4.574	5.039	....	....	435	457	....	480	549	572	617
	24.1	3.875	0.500	....	....	7.069	4.574	5.039	....	....	435	457	....	480	549	572	617
5.500	15.5	4.825	0.275	....	....	4.514	2.488	2.874	....	....	236	249	....	261	299	311	336
	17.0	4.767	0.304	....	....	4.962	2.736	3.346	....	....	260	274	....	287	328	342	369
	20.0	4.653	0.361	....	....	5.828	3.421	3.386	....	....	325	342	....	359	411	428	462
	23.0	4.545	0.415	....	....	6.630	4.221	4.252	....	....	401	422	....	443	507	528	570
	26.0	4.423	0.476	....	....	7.513	5.031	4.843	....	....	478	503	....	528	604	629	679
	28.4	4.315	0.530	....	....	8.275	5.391	5.315	....	....	512	539	....	566	647	674	728
6.625	23.2	5.840	0.330	....	....	6.526	3.584	2.953	....	....	340	358	....	376	430	448	484
	24.0	5.796	0.352	....	....	6.937	3.994	2.953	....	....	379	399	....	419	479	499	539
	28.0	5.666	0.417	....	....	8.133	5.189	3.976	....	....	493	519	....	545	623	649	701
	32.0	5.550	0.475	....	....	9.177	6.040	4.724	....	....	574	604	....	634	725	755	815
	35.0	5.450	0.525	....	....	10.061	6.780	5.512	....	....	644	678	....	712	814	848	915

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM FJL (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J/K-55	L-80	N-80	C-90	C/T-95	C-110 VHS	P-110	Q-125
7.000	23.0	6.241	0.317	....	....	6.655	3.401	2.638	....	....	323	340	....	357	408	425	459
	26.0	6.151	0.362	....	....	7.549	4.297	3.150	....	....	408	430	....	451	516	537	580
	29.0	6.059	0.408	....	....	8.449	5.199	3.701	....	....	494	520	....	546	624	650	702
	32.0	5.969	0.453	....	....	9.317	6.064	4.291	....	....	576	606	....	637	728	758	819
	35.0	5.879	0.498	....	....	10.172	6.642	4.843	....	....	631	664	....	697	797	830	897
	38.0	5.795	0.540	....	....	10.959	7.152	5.354	....	....	679	715	....	751	858	894	966
	41.0	5.695	0.590	....	....	11.881	7.736	5.945	....	....	735	774	....	812	928	967	1044
7.625	26.4	6.844	0.328	....	....	7.519	3.897	2.638	....	....	370	390	....	409	468	487	526
	29.7	6.750	0.375	....	....	8.541	4.915	3.228	....	....	467	492	....	516	590	614	664
	33.7	6.640	0.430	....	....	9.720	6.096	3.937	....	....	579	610	....	640	732	762	823
	35.8	6.570	0.465	....	....	10.460	6.822	4.370	....	....	648	682	....	716	819	853	921
	39.0	6.500	0.500	....	....	11.192	7.299	4.803	....	....	693	730	....	766	876	912	985
	42.8	6.376	0.562	....	....	12.470	8.116	5.551	....	....	771	812	....	852	974	1015	1096
	45.3	6.310	0.595	....	....	13.141	8.669	6.063	....	....	824	867	....	910	1040	1084	1170
8.625	32.0	7.796	0.352	....	....	9.149	4.985	2.874	....	....	474	499	....	523	598	623	673
	36.0	7.700	0.400	....	....	10.336	6.167	3.583	....	....	586	617	....	648	740	771	833
	40.0	7.600	0.450	....	....	11.557	7.389	4.370	....	....	702	739	....	776	887	924	998
	44.0	7.500	0.500	....	....	12.763	8.347	4.803	....	....	793	835	....	876	1002	1043	1127
	49.0	7.386	0.557	....	....	14.118	9.768	5.945	....	....	928	977	....	1026	1172	1221	1319
	52.0	7.310	0.595	....	....	15.010	9.768	5.945	....	....	928	977	....	1026	1172	1221	1319

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM FJL (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J/K-55	L-80	N-80	C-90	C/T-95	C-110 VHS	P-110	Q-125
9.625	36.0	8.765	0.352	....	....	10.254	5.489	2.992	....	....	521	549	....	576	659	686	741
	40.0	8.679	0.395	....	....	11.454	6.685	3.780	....	....	635	669	....	702	802	836	902
	43.5	8.599	0.435	....	....	12.559	7.790	4.370	....	....	740	779	....	818	935	974	1052
	47.0	8.525	0.472	....	....	13.572	8.804	4.370	....	....	836	880	....	924	1056	1101	1189
	53.5	8.379	0.545	....	....	15.546	10.126	5.276	....	....	962	1013	....	1063	1215	1266	1367
	58.4	8.279	0.595	....	....	16.879	11.499	6.260	....	....	1092	1150	....	1207	1380	1437	1552
	59.4	8.251	0.609	....	....	17.250	11.499	6.260	....	....	1092	1150	....	1207	1380	1437	1552
	61.1	8.219	0.625	....	....	17.671	11.499	6.260	....	....	1092	1150	....	1207	1380	1437	1552
9.875	62.8	8.469	0.625	....	....	18.162	12.372	6.260	....	....	1175	1237	....	1299	1485	1547	1670
	66.4	8.397	0.661	....	....	19.134	12.372	6.260	....	....	1175	1237	....	1299	1485	1547	1670
	67.5	8.363	0.678	....	....	19.590	13.042	6.732	....	....	1239	1304	....	1369	1565	1630	1761
10.750	40.5	9.894	0.350	....	....	11.435	5.989	2.874	....	....	569	599	....	629	719	749	809
	45.5	9.794	0.400	....	....	13.006	7.559	3.858	....	....	718	756	....	794	907	945	1020
	51.0	9.694	0.450	....	....	14.561	9.114	4.606	....	....	866	911	....	957	1094	1139	1230
	55.5	9.604	0.495	....	....	15.947	10.401	4.606	....	....	988	1040	....	1092	1248	1300	1404
	60.7	9.504	0.545	....	....	17.473	11.461	5.276	....	....	1089	1146	....	1203	1375	1433	1547
	65.7	9.404	0.595	....	....	18.982	12.451	5.906	....	....	1183	1245	....	1307	1494	1556	1681
11.750	47.0	10.844	0.375	....	....	13.401	7.488	3.386	....	....	711	749	....	786	899	936	1011
	54.0	10.724	0.435	....	....	15.463	9.233	4.961	....	....	877	923	....	969	1108	1154	1246
	60.0	10.616	0.489	....	....	17.300	10.985	4.252	....	....	1044	1099	....	1153	1318	1373	1483
	65.0	10.526	0.534	....	....	18.816	12.152	4.921	....	....	1154	1215	....	1276	1458	1519	1641
11.875	71.8	10.555	0.582	....	....	20.648	13.514	5.630	....	....	1284	1351	....	1419	1622	1689	1824

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM HW

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	30.6	3.575	0.650	5.713	....	8.883	9.060	6.081	....	....	....	711	711	799	844	977	1110
	34.6	3.375	0.750	5.840	....	10.014	10.215	6.081	....	....	....	801	801	901	951	1102	1252
	41.9	2.975	0.950	6.066	....	12.087	12.327	6.081	....	....	....	967	967	1088	1148	1330	1511
5.500	33.0	4.125	0.625	6.195	....	9.572	9.767	6.081	....	....	....	766	766	861	909	1053	1197
	35.8	4.001	0.687	6.280	....	10.388	10.596	6.081	....	....	....	831	831	935	987	1143	1299
	38.7	3.875	0.750	6.363	....	11.192	11.417	6.081	....	....	....	895	895	1007	1063	1231	1399
	41.4	3.751	0.812	6.440	....	11.959	12.197	6.081	....	....	....	957	957	1076	1136	1315	1495
	44.1	3.625	0.875	6.516	....	12.714	12.970	6.081	....	....	....	1017	1017	1144	1208	1399	1589
6.625	48.0	5.000	0.750	7.525	....	13.843	14.121	6.089	....	....	....	1107	1107	1246	1315	1523	1730
	53.6	4.800	0.850	7.660	....	15.421	15.731	6.089	....	....	....	1234	1234	1388	1465	1696	1928
	66.9	4.400	1.050	7.613	....	18.390	18.760	6.089	....	....	....	1471	1471	1655	1747	2023	2299
7.000	47.1	5.501	0.687	7.820	....	13.625	13.899	6.089	....	....	....	1090	1090	1226	1294	1499	1703
	49.7	5.415	0.730	7.882	....	14.379	14.666	6.089	....	....	....	1150	1150	1294	1366	1582	1797
	54.7	5.251	0.812	7.997	....	15.785	16.100	6.089	....	....	....	1263	1263	1421	1500	1736	1973
	62.0	5.001	0.937	8.163	....	17.847	18.203	6.089	....	....	....	1428	1428	1606	1695	1963	2231
	68.2	4.751	1.062	8.019	....	19.811	20.206	6.956	....	....	....	1585	1585	1783	1882	2179	2476
7.625	51.8	6.126	0.687	8.458	....	14.974	15.227	6.089	....	....	....	1198	1198	1348	1423	1647	1872
	60.3	5.876	0.812	8.640	....	17.380	17.726	6.089	....	....	....	1390	1390	1564	1651	1912	2173
	66.4	5.690	0.905	8.769	....	19.106	19.485	6.089	....	....	....	1528	1528	1720	1815	2102	2388
8.625	64.3	7.000	0.750	9.570	....	18.555	18.929	6.422	....	....	....	1484	1484	1670	1763	2041	2319
	76.0	6.700	0.900	9.791	....	21.842	22.281	6.422	....	....	....	1747	1747	1966	2075	2403	2730
	86.0	6.400	1.050	9.688	....	24.987	25.485	6.956	....	....	....	1999	1999	2249	2374	2749	3123

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM HW (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	65.5	8.125	0.672	10.463	....	18.901	19.282	6.422	....	....	....	1512	1512	1701	1796	2079	2363
	71.1	8.001	0.734	10.561	....	20.502	20.914	6.422	....	....	....	1640	1640	1845	1948	2255	2563
	76.6	7.875	0.797	10.659	....	22.104	22.548	6.422	....	....	....	1768	1768	1989	2100	2431	2763
	81.3	7.769	0.850	10.740	....	23.432	23.904	6.422	....	....	....	1875	1875	2109	2226	2578	2929
	97.4	7.369	1.050	10.715	....	28.286	28.850	6.956	....	....	....	2263	2263	2546	2687	3111	3536
10.000	69.8	8.468	0.688	10.869	....	20.127	20.530	6.407	....	....	....	1610	1610	1811	1912	2214	2516
	73.9	8.380	0.732	10.940	....	21.313	21.745	6.407	....	....	....	1705	1705	1918	2025	2344	2664
10.750	73.7	9.250	0.672	11.601	....	21.276	21.705	6.407	....	....	....	1702	1702	1915	2021	2340	2660
	80.1	9.126	0.734	11.702	....	23.096	23.557	6.407	....	....	....	1848	1848	2079	2194	2541	2887
	86.5	9.000	0.797	11.803	....	24.921	25.419	6.407	....	....	....	1994	1994	2243	2367	2741	3115
	92.6	8.876	0.859	11.900	....	26.692	27.229	6.407	....	....	....	2135	2135	2402	2536	2936	3337
	104.0	8.674	0.960	11.732	....	29.526	30.116	6.940	....	....	....	2362	2362	2657	2805	3248	3691
	105.0	8.626	0.984	12.090	....	30.190	30.795	6.407	....	....	....	2415	2415	2717	2868	3321	3774
	110.2	8.494	1.050	11.868	....	31.997	32.640	6.940	....	....	....	2560	2560	2880	3040	3520	4000
11.750	84.2	10.194	0.700	12.657	....	24.300	24.785	6.407	....	....	....	1944	1944	2187	2309	2673	3038
	101.0	9.894	0.850	12.901	....	29.107	29.692	6.407	....	....	....	2329	2329	2620	2765	3202	3638
14.000	87.3	12.613	0.600	14.749	....	25.258	25.764	6.407	....	....	....	2021	2021	2273	2400	2778	3157
	94.4	12.513	0.650	14.837	....	27.261	27.804	6.407	....	....	....	2181	2181	2453	2590	2999	3408
	101.4	12.413	0.700	14.924	....	29.248	29.828	6.407	....	....	....	2340	2340	2632	2779	3217	3656
	108.2	12.313	0.750	15.009	....	31.220	31.846	6.407	....	....	....	2498	2498	2810	2966	3434	3903
	115.1	12.213	0.800	15.094	....	33.175	33.838	6.407	....	....	....	2654	2654	2986	3152	3649	4147
	121.8	12.113	0.850	15.177	....	35.115	35.813	6.407	....	....	....	2809	2809	3160	3336	3863	4389

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM MUST

Type: Integral Seal: Metal-to-metal																	
								Minimum joint tension strength, kips									
D	w	d	t	D_c	A_t	A_c	L_m	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	C/T-95	P-110	Q-125
7.625	59.2	5.876	0.812	7.625	17.380	10.029	5.853	552	802	802	903	953	1103	1254	953	1103	1254
10.750	109.0	8.528	1.033	10.750	31.534	17.723	6.285	975	1418	1418	1595	1684	1950	2215	1684	1950	2215

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — NEW VAM

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.0	4.369	0.253	5.587	5.390	3.773	5.499	4.724	....	208	208	302	302	340	358	415	472
	15.0	4.283	0.296	5.587	5.390	4.374	5.499	4.724	....	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.587	5.390	5.275	5.499	4.724	....	290	290	422	422	475	501	580	659
	20.3	4.059	0.408	5.587	5.390	5.886	5.499	4.724	....	302	302	440	440	495	522	605	687
	20.8	4.031	0.422	5.587	5.390	6.069	5.499	4.724	....	302	302	440	440	495	522	605	687
	21.4	4.001	0.437	5.587	5.390	6.264	5.499	4.724	....	302	302	440	440	495	522	605	687
	23.2	3.919	0.478	5.587	5.390	6.791	5.499	4.724	....	302	302	440	440	495	522	605	687
	24.1	3.875	0.500	5.587	5.390	7.069	5.499	4.724	....	302	302	440	440	495	522	605	687
5.500	14.0	4.887	0.244	6.075	5.890	4.029	5.977	4.850	....	222	222	322	322	363	383	443	504
	15.5	4.825	0.275	6.075	5.890	4.514	5.977	4.850	....	248	248	361	361	406	429	497	564
	17.0	4.767	0.304	6.075	5.890	4.962	5.977	4.850	....	273	273	397	397	447	471	546	620
	20.0	4.653	0.361	6.075	5.890	5.828	5.977	4.850	....	321	321	466	466	525	554	641	729
	23.0	4.545	0.415	6.075	5.890	6.630	5.977	4.850	....	329	329	478	478	538	568	657	747
	26.0	4.423	0.476	6.075	5.890	7.513	5.977	4.850	....	329	329	478	478	538	568	657	747
6.625	20.0	5.924	0.288	7.413	7.016	5.734	9.669	4.965	....	315	315	459	459	516	545	631	717
	23.2	5.840	0.330	7.413	7.016	6.526	9.669	4.965	....	359	359	522	522	587	620	718	816
	24.0	5.796	0.352	7.413	7.016	6.937	9.669	4.965	....	382	382	555	555	624	659	763	867
	28.0	5.666	0.417	7.413	7.016	8.133	9.669	4.965	....	447	447	651	651	732	773	895	1017
	32.0	5.550	0.475	7.413	7.016	9.177	9.669	4.965	....	505	505	734	734	826	872	1009	1147
	35.0	5.450	0.525	7.413	7.016	10.061	9.669	4.965	....	532	532	774	774	870	919	1064	1209

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — NEW VAM (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	23.0	6.241	0.317	7.681	7.390	6.655	9.066	5.228	....	366	366	532	532	599	632	732	832
	26.0	6.151	0.362	7.681	7.390	7.549	9.066	5.228	....	415	415	604	604	676	717	830	944
	29.0	6.059	0.408	7.681	7.390	8.449	9.066	5.228	....	465	465	676	676	760	803	929	1056
	32.0	5.969	0.453	7.681	7.390	9.317	9.066	5.228	....	499	499	725	725	816	861	997	1133
	35.0	5.879	0.498	7.681	7.390	10.172	9.066	5.228	....	499	499	725	725	816	861	997	1133
	38.0	5.795	0.540	7.681	7.390	10.959	9.066	5.228	....	499	499	725	725	816	861	997	1133
	41.0	5.695	0.590	7.681	7.390	11.881	9.066	5.228	....	499	499	725	725	816	861	997	1133
	44.0	5.595	0.640	7.681	....	12.788	9.066	5.228	....	499	499	725	725	816	861	997	1133
	46.0	5.535	0.670	7.681	....	13.324	9.066	5.228	....	499	499	725	725	816	861	997	1133
7.625	26.4	6.844	0.328	8.528	8.142	7.519	12.901	5.406	....	414	414	602	602	677	714	827	940
	29.7	6.750	0.375	8.528	8.142	8.541	12.901	5.406	....	470	470	683	683	769	811	940	1068
	33.7	6.640	0.430	8.528	8.142	9.720	12.901	5.406	....	535	535	778	778	875	923	1069	1215
	35.8	6.570	0.465	8.528	8.142	10.460	12.901	5.406	....	575	575	837	837	941	994	1151	1308
	39.0	6.500	0.500	8.528	8.142	11.192	12.901	5.406	....	616	616	895	895	1007	1063	1231	1399
	42.8	6.376	0.562	8.528	8.142	12.470	12.901	5.406	....	686	686	998	998	1122	1185	1372	1559
	45.3	6.310	0.595	8.528	8.142	13.141	12.901	5.406	....	710	710	1032	1032	1161	1226	1419	1613
	47.1	6.250	0.625	8.528	8.142	13.744	12.901	5.406	....	710	710	1032	1032	1161	1226	1419	1613
7.750	46.1	6.435	0.595	8.693	8.622	13.374	13.651	5.406	....	736	736	1070	1070	1204	1271	1471	1672
8.625	28.0	7.892	0.304	9.650	9.142	7.947	16.401	5.545	....	437	437	636	636	715	755	874	993
	32.0	7.796	0.352	9.650	9.142	9.149	16.401	5.545	....	503	503	732	732	823	869	1006	1144
	36.0	7.700	0.400	9.650	9.142	10.336	16.401	5.545	....	568	568	827	827	930	982	1137	1292
	40.0	7.600	0.450	9.650	9.142	11.557	16.401	5.545	....	636	636	925	925	1040	1098	1271	1445
	44.0	7.500	0.500	9.650	9.142	12.763	16.401	5.545	....	702	702	1021	1021	1149	1212	1404	1595
	49.0	7.386	0.557	9.650	9.142	14.118	16.401	5.545	....	776	776	1129	1129	1271	1341	1553	1765
	52.0	7.310	0.595	9.650	9.142	15.010	16.401	5.545	....	826	826	1201	1201	1351	1426	1651	1876

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — NEW VAM (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
9.625	36.0	8.765	0.352	10.650	10.142	10.254	18.208	5.545	....	564	564	820	820	923	974	1128	1282
	40.0	8.679	0.395	10.650	10.142	11.454	18.208	5.545	....	630	630	916	916	1031	1088	1260	1432
	43.5	8.599	0.435	10.650	10.142	12.559	18.208	5.545	....	691	691	1005	1005	1130	1193	1381	1570
	47.0	8.525	0.472	10.650	10.142	13.572	18.208	5.545	....	746	746	1086	1086	1221	1289	1493	1697
	53.5	8.379	0.545	10.650	10.142	15.546	18.208	5.545	....	855	855	1244	1244	1399	1477	1710	1943
	58.4	8.279	0.595	10.650	10.142	16.879	18.208	5.545	....	928	928	1350	1350	1519	1604	1857	2110
	59.4	8.251	0.609	10.650	10.142	17.250	18.208	5.545	....	949	949	1380	1380	1553	1639	1898	2156
	61.1	8.219	0.625	10.650	10.142	17.671	18.208	5.545	....	972	972	1414	1414	1590	1679	1944	2209
9.875	62.8	8.469	0.625	10.891	....	18.162	18.490	5.545	....	999	999	1453	1453	1635	1725	1998	2270
10.750	40.5	9.894	0.350	11.772	11.268	11.435	20.186	5.589	....	629	629	915	915	1029	1086	1258	1429
	45.5	9.794	0.400	11.772	11.268	13.006	20.186	5.589	....	715	715	1040	1040	1171	1236	1431	1626
	51.0	9.694	0.450	11.772	11.268	14.561	20.186	5.589	....	801	801	1165	1165	1310	1383	1602	1820
	55.5	9.604	0.495	11.772	11.268	15.947	20.186	5.589	....	877	877	1276	1276	1435	1515	1754	1993
	60.7	9.504	0.545	11.772	11.268	17.473	20.186	5.589	....	961	961	1398	1398	1573	1660	1922	2184
	65.7	9.404	0.595	11.772	11.268	18.982	20.186	5.589	....	1044	1044	1519	1519	1708	1803	2088	2373
11.750	47.0	10.844	0.375	12.772	12.268	13.401	21.988	5.589	....	737	737	1072	1072	1206	1273	1474	1675
	54.0	10.724	0.435	12.772	12.268	15.463	21.988	5.589	....	850	850	1237	1237	1392	1469	1701	1933
	60.0	10.616	0.489	12.772	12.268	17.300	21.988	5.589	....	952	952	1384	1384	1557	1644	1903	2163
	65.0	10.526	0.534	12.772	12.268	18.816	21.988	5.589	....	1035	1035	1505	1505	1693	1788	2070	2352
11.875	71.8	10.555	0.582	12.850	....	20.648	21.268	5.589	....	1136	1136	1652	1652	1858	1962	2271	2581

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — NEW VAM (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	54.5	12.459	0.380	14.398	14.126	15.513	24.879	5.642	….	853	853	1241	1241	1396	1474	1706	1939
	61.0	12.359	0.430	14.398	14.126	17.487	24.879	5.642	….	962	962	1399	1399	1574	1661	1924	2186
	68.0	12.259	0.480	14.398	14.126	19.445	24.879	5.642	….	1069	1069	1556	1556	1750	1847	2139	2431
	72.0	12.191	0.514	14.398	14.126	20.768	24.879	5.642	….	1142	1142	1661	1661	1869	1973	2284	2596
	77.0	12.119	0.550	14.398	14.126	22.160	24.879	5.642	….	1219	1219	1773	1773	1994	2105	2438	2770
	80.7	12.059	0.580	14.398	14.126	23.314	24.879	5.642	….	1282	1282	1865	1865	2098	2215	2565	2914
	85.0	12.003	0.608	14.398	14.126	24.386	24.879	5.642	….	1341	1341	1951	1951	2195	2317	2682	3048
	86.0	11.969	0.625	14.398	14.126	25.035	24.879	5.642	….	1368	1368	1990	1990	2239	2364	2737	3110
13.625	88.2	12.219	0.625	14.678	….	25.525	26.026	5.642	….	1404	1404	2042	2042	2297	2425	2808	3191

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM PRC

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	46.4	7.500	0.500	9.655	….	12.763	16.516	5.598	….	909	1152	1152	1212	1212	1273	1516	1637
9.750	61.2	8.413	0.606	10.625	….	17.408	19.163	6.024	….	1240	1571	1571	1654	1654	1736	2067	2233
11.000	67.3	9.733	0.571	12.031	….	18.708	23.212	6.024	….	1333	1688	1688	1777	1777	1866	2222	2399
	69.7	9.660	0.595	12.031	….	19.450	23.212	6.024	….	1386	1755	1755	1848	1848	1940	2310	2494
13.375	75.0	12.250	0.514	14.400	….	20.768	26.431	5.787	….	1480	1874	1874	1973	1973	2072	2466	2663

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM PRO

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	13.00	4.369	0.253	5.583	....	3.773	5.698	3.800	....	208	208	302	302	340	358	415	....
	15.00	4.283	0.296	5.583	....	4.374	5.698	3.800	....	241	241	350	350	394	416	481	....
	18.00	4.151	0.362	5.583	....	5.275	5.698	3.800	....	290	290	422	422	475	501	580	....
	20.30	4.059	0.408	5.583	....	5.886	5.698	3.800	....	313	313	456	456	513	541	627	....
	20.80	4.031	0.422	5.583	....	6.069	5.698	3.800	....	313	313	456	456	513	541	627	....
	21.40	4.001	0.437	5.583	....	6.264	5.698	3.800	....	313	313	456	456	513	541	627	....
	23.20	3.919	0.478	5.583	....	6.791	6.043	3.672	....	332	332	483	483	544	574	665	....
	24.10	3.875	0.500	5.583	....	7.069	6.043	3.672	....	332	332	483	483	544	574	665	....
5.500	14.00	4.887	0.244	6.070	....	4.029	6.073	3.734	....	222	222	322	322	363	383	443	....
	15.50	4.825	0.275	6.070	....	4.514	6.073	3.734	....	248	248	361	361	406	429	497	....
	17.00	4.767	0.304	6.070	....	4.962	6.073	3.734	....	273	273	397	397	447	471	546	....
	20.00	4.653	0.361	6.070	....	5.828	6.073	3.734	....	321	321	466	466	525	554	641	....
	23.00	4.545	0.415	6.070	....	6.630	6.073	3.734	....	334	334	486	486	547	577	668	....
	26.00	4.423	0.476	6.070	....	7.513	6.656	3.858	....	366	366	532	532	599	632	732	....
	28.40	4.315	0.530	6.070	....	8.275	6.656	3.858	....	366	366	532	532	599	632	732	....
	29.70	4.251	0.562	6.070	....	8.718	6.656	3.858	....	366	366	532	532	599	632	732	....
6.625	20.00	5.924	0.288	7.410	....	5.734	9.881	3.914	....	315	315	459	459	516	545	631	....
	23.20	5.840	0.330	7.410	....	6.526	9.881	3.914	....	359	359	522	522	587	620	718	....
	24.00	5.796	0.352	7.410	....	6.937	9.881	3.914	....	382	382	555	555	624	659	763	....
	28.00	5.666	0.417	7.410	....	8.133	9.881	3.914	....	447	447	651	651	732	773	895	....
	32.00	5.550	0.475	7.410	....	9.177	9.881	3.914	....	505	505	734	734	826	872	1009	....
	35.00	5.450	0.525	7.410	....	10.061	10.732	4.152	....	553	553	805	805	905	956	1107	....
	41.00	5.250	0.625	7.410	....	11.781	10.732	4.152	....	590	590	859	859	966	1020	1181	....
	43.00	5.180	0.660	7.410	....	12.368	10.732	4.152	....	590	590	859	859	966	1020	1181	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM PRO (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	20.00	6.331	0.272	7.677	....	5.749	9.274	4.109	....	316	316	460	460	517	546	632	....
	23.00	6.241	0.317	7.677	....	6.655	9.274	4.109	....	366	366	532	532	599	632	732	....
	24.75	6.189	0.343	7.677	....	7.173	9.274	4.109	....	395	395	574	574	646	681	789	....
	26.00	6.151	0.362	7.677	....	7.549	9.274	4.109	....	415	415	604	604	679	717	830	....
	29.00	6.059	0.408	7.677	....	8.449	9.274	4.109	....	465	465	676	676	760	803	929	....
	32.00	5.969	0.453	7.677	....	9.317	9.274	4.109	....	510	510	742	742	835	881	1020	....
	35.00	5.879	0.498	7.677	....	10.172	9.274	4.109	....	510	510	742	742	835	881	1020	....
	38.00	5.795	0.540	7.677	....	10.959	9.274	4.109	....	510	510	742	742	835	881	1020	....
	41.00	5.695	0.590	7.677	....	11.881	10.039	4.182	....	552	552	803	803	904	954	1104	....
	44.00	5.595	0.640	7.677	....	12.788	10.039	4.182	....	552	552	803	803	904	954	1104	....
	46.00	5.535	0.670	7.677	....	13.324	10.039	4.182	....	552	552	803	803	904	954	1104	....
7.625	26.40	6.844	0.328	8.520	....	7.519	13.006	4.174	....	414	414	602	602	677	714	827	....
	29.70	6.750	0.375	8.520	....	8.541	13.006	4.174	....	470	470	683	683	769	811	940	....
	33.70	6.640	0.430	8.520	....	9.720	13.006	4.174	....	535	535	778	778	875	923	1069	....
	35.80	6.570	0.465	8.520	....	10.460	13.006	4.174	....	575	575	837	837	941	994	1151	....
	39.00	6.500	0.500	8.520	....	11.192	13.006	4.174	....	616	616	895	895	1007	1063	1231	....
	42.80	6.376	0.562	8.520	....	12.470	13.006	4.174	....	686	686	998	998	1122	1185	1372	....
	45.30	6.310	0.595	8.520	....	13.141	14.147	4.498	....	723	723	1051	1051	1183	1248	1446	....
	47.10	6.250	0.625	8.520	....	13.744	14.147	4.498	....	756	756	1100	1100	1237	1306	1512	....
	52.80	6.076	0.712	8.520	....	15.463	14.147	4.498	....	778	778	1132	1132	1273	1344	1556	....
	57.30	5.950	0.775	8.520	....	16.678	14.147	4.498	....	778	778	1132	1132	1273	1344	1556	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM PRO (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	28.00	7.892	0.304	9.626	....	7.947	16.439	3.853	....	437	437	636	636	715	755	874	....
	32.00	7.796	0.352	9.626	....	9.149	16.439	3.853	....	503	503	732	732	823	869	1006	....
	36.00	7.700	0.400	9.626	....	10.336	16.439	3.853	....	568	568	827	827	930	982	1137	....
	40.00	7.600	0.450	9.626	....	11.557	16.439	3.853	....	636	636	925	925	1040	1098	1271	....
	44.00	7.500	0.500	9.626	....	12.763	16.439	3.853	....	702	702	1021	1021	1149	1212	1404	....
	49.00	7.386	0.557	9.626	....	14.118	17.407	3.852	....	776	776	1129	1129	1271	1341	1553	....
	52.00	7.310	0.595	9.626	....	15.010	17.407	3.852	....	826	826	1201	1201	1351	1426	1651	....
9.625	36.00	8.765	0.352	10.626	....	10.254	18.679	4.138	....	564	564	820	820	923	974	1128	....
	40.00	8.679	0.395	10.626	....	11.454	18.679	4.138	....	630	630	916	916	1031	1088	1260	....
	43.50	8.599	0.435	10.626	....	12.559	18.679	4.138	....	691	691	1005	1005	1130	1193	1381	....
	47.00	8.525	0.472	10.626	....	13.572	18.679	4.138	....	746	746	1086	1086	1221	1289	1493	....
	53.50	8.379	0.545	10.626	....	15.546	18.679	4.138	....	855	855	1244	1244	1399	1477	1710	....
	58.40	8.279	0.595	10.626	....	16.879	18.679	4.138	....	928	928	1350	1350	1519	1604	1857	....
	59.40	8.251	0.609	10.626	....	17.250	20.193	4.318	....	949	949	1380	1380	1553	1639	1898	....
	61.10	8.219	0.625	10.626	....	17.671	20.193	4.318	....	972	972	1414	1414	1590	1679	1944	....
	64.90	8.125	0.672	10.626	....	18.901	20.193	4.318	....	1040	1040	1512	1512	1701	1796	2079	....
	70.30	8.001	0.734	10.626	....	20.502	20.193	4.318	....	1111	1111	1615	1615	1817	1918	2221	....
	71.80	7.969	0.750	10.626	....	20.911	20.193	4.318	....	1111	1111	1615	1615	1817	1918	2221	....
9.875	62.80	8.469	0.625	10.626	....	18.162	16.308	4.228	....	897	897	1305	1305	1468	1549	1794	....
	66.40	8.397	0.661	10.626	....	19.134	16.308	4.228	....	897	897	1305	1305	1468	1549	1794	....
	67.50	8.363	0.678	10.626	....	19.590	16.308	4.228	....	897	897	1305	1305	1468	1549	1794	....
	68.90	8.319	0.700	10.626	....	20.177	16.308	4.228	....	897	897	1305	1305	1468	1549	1794	....
	70.50	8.279	0.720	10.626	....	20.708	16.308	4.228	....	897	897	1305	1305	1468	1549	1794	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SL

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	23.2	3.919	0.478	5.256	….	6.791	5.454	4.835	….	300	300	436	436	491	518	600	682
	24.1	3.875	0.500	5.295	….	7.069	5.782	4.835	….	318	318	463	463	520	549	636	723
	26.7	3.751	0.562	5.315	….	7.836	5.946	4.835	….	327	327	476	476	535	565	654	743
	29.2	3.625	0.625	5.236	….	8.590	6.845	5.864	….	376	376	548	548	616	650	753	856
	31.6	3.501	0.687	5.315	….	9.309	7.497	5.864	….	412	412	600	600	675	712	825	937
	34.0	3.375	0.750	5.354	….	10.014	7.828	5.864	….	431	431	626	626	705	744	861	979
5.500	26.0	4.423	0.476	5.787	….	7.513	6.245	4.882	….	343	343	500	500	562	593	687	781
	26.8	4.375	0.500	5.787	….	7.854	6.245	4.882	….	343	343	500	500	562	593	687	781
	29.7	4.251	0.562	5.846	….	8.718	6.784	4.882	….	373	373	543	543	611	644	746	848
	32.6	4.125	0.625	5.787	….	9.572	8.153	6.358	….	448	448	652	652	734	775	897	1019
	35.3	4.001	0.687	5.827	….	10.388	8.513	6.358	….	468	468	681	681	766	809	936	1064
	38.0	3.875	0.750	5.866	….	11.192	8.874	6.358	….	488	488	710	710	799	843	976	1109
	40.5	3.751	0.812	5.866	….	11.959	8.874	6.358	….	488	488	710	710	799	843	976	1109
6.625	32.0	5.550	0.475	6.949	….	9.177	7.443	4.772	….	409	409	595	595	670	707	819	930
	33.0	5.500	0.500	6.988	….	9.621	7.874	4.772	….	433	433	630	630	709	748	866	984
	34.5	5.450	0.525	7.008	….	10.061	8.091	4.772	….	445	445	647	647	728	769	890	1011
	36.7	5.376	0.562	7.047	….	10.705	8.525	4.772	….	469	469	682	682	767	810	938	1066
	40.2	5.250	0.625	6.909	….	11.781	9.492	5.768	….	522	522	759	759	854	902	1044	1187
	43.7	5.126	0.687	7.008	….	12.816	10.568	5.768	….	581	581	845	845	951	1004	1162	1321
	47.1	5.000	0.750	7.067	….	13.843	11.220	5.768	….	617	617	898	898	1010	1066	1234	1403
	50.4	4.876	0.812	7.087	….	14.829	11.439	5.768	….	629	629	915	915	1030	1087	1258	1430

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SL (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	35.0	5.879	0.498	7.323	....	10.172	8.475	5.362	....	466	466	678	678	763	805	932	1059
	38.0	5.795	0.540	7.362	....	10.959	8.930	5.362	....	491	491	714	714	804	848	982	1116
	41.0	5.695	0.590	7.441	....	11.881	9.846	5.362	....	542	542	788	788	886	935	1083	1231
	42.7	5.625	0.625	7.480	....	12.517	10.306	5.362	....	567	567	824	824	928	979	1134	1288
	45.4	5.535	0.670	7.323	....	13.324	10.985	6.163	....	604	604	879	879	989	1044	1208	1373
	46.4	5.501	0.687	7.362	....	13.625	11.439	6.163	....	629	629	915	915	1030	1087	1258	1430
	49.5	5.415	0.730	7.402	....	14.379	11.896	6.163	....	654	654	952	952	1071	1130	1309	1487
	50.1	5.375	0.750	7.402	....	14.726	11.896	6.163	....	654	654	952	952	1071	1130	1309	1487
	53.6	5.251	0.812	7.480	....	15.785	12.817	6.163	....	705	705	1025	1025	1154	1218	1410	1602
7.625	33.7	6.640	0.430	8.031	....	9.720	7.939	4.652	....	437	437	635	635	715	754	873	992
	39.0	6.500	0.500	7.992	....	11.192	9.728	5.827	....	535	535	778	778	876	924	1070	1216
	42.8	6.376	0.562	8.031	....	12.470	10.224	5.827	....	562	562	818	818	920	971	1125	1278
	45.3	6.310	0.595	8.071	....	13.141	10.721	5.827	....	590	590	858	858	965	1018	1179	1340
	47.1	6.250	0.625	8.091	....	13.744	10.972	5.827	....	603	603	878	878	987	1042	1207	1372
	51.2	6.126	0.687	7.953	....	14.974	13.321	6.732	....	733	733	1066	1066	1199	1265	1465	1665
	52.8	6.076	0.712	7.953	....	15.463	13.321	6.732	....	733	733	1066	1066	1199	1265	1465	1665
	55.3	6.000	0.750	7.992	....	16.199	13.815	6.732	....	760	760	1105	1105	1243	1312	1520	1727
	59.2	5.876	0.812	8.031	....	17.380	14.310	6.732	....	787	787	1145	1145	1288	1359	1574	1789
	63.2	5.750	0.875	8.071	....	18.555	14.807	6.732	....	814	814	1185	1185	1333	1407	1629	1851
7.750	46.1	6.435	0.595	8.091	....	13.374	10.898	6.079	....	599	599	872	872	981	1035	1199	1362
	48.6	6.345	0.640	8.150	....	14.296	11.651	6.079	....	641	641	932	932	1049	1107	1282	1456
	51.8	6.251	0.687	8.189	....	15.244	12.157	6.079	....	669	669	973	973	1094	1155	1337	1520
	56.1	6.125	0.750	8.228	....	16.493	12.664	6.079	....	697	697	1013	1013	1140	1203	1393	1583

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SL (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	44.0	7.500	0.500	8.976	....	12.763	10.573	5.248	....	582	582	846	846	952	1004	1163	1322
	49.0	7.386	0.557	9.055	....	14.118	11.687	5.248	....	643	643	935	935	1052	1110	1286	1461
	49.1	7.376	0.562	9.055	....	14.236	11.687	5.248	....	643	643	935	935	1052	1110	1286	1461
	54.0	7.250	0.625	9.134	....	15.708	12.812	5.248	....	705	705	1025	1025	1153	1217	1409	1602
	58.7	7.126	0.687	9.213	....	17.132	13.947	5.248	....	767	767	1116	1116	1255	1325	1534	1743
	63.5	7.000	0.750	9.114	....	18.555	15.131	6.705	....	832	832	1210	1210	1362	1437	1664	1891
	68.1	6.876	0.812	9.173	....	19.931	15.981	6.705	....	879	879	1278	1278	1438	1518	1758	1998
	72.7	6.750	0.875	9.213	....	21.304	16.548	6.705	....	910	910	1324	1324	1489	1572	1820	2069
9.625	47.0	8.525	0.472	10.020	....	13.572	10.955	5.315	....	603	603	876	876	986	1041	1205	1369
	53.5	8.379	0.545	10.118	....	15.546	12.512	5.315	....	688	688	1001	1001	1126	1189	1376	1564
	59.4	8.251	0.609	10.236	....	17.250	14.400	5.315	....	792	792	1152	1152	1296	1368	1584	1800
	64.9	8.125	0.672	10.295	....	18.901	15.353	5.315	....	844	844	1228	1228	1382	1459	1689	1919
	70.3	8.001	0.734	10.079	....	20.502	16.521	6.522	....	909	909	1322	1322	1487	1569	1817	2065
	75.6	7.875	0.797	10.157	....	22.104	17.772	6.522	....	977	977	1422	1422	1599	1688	1955	2222
	80.8	7.751	0.859	10.236	....	23.656	19.034	6.522	....	1047	1047	1523	1523	1713	1808	2094	2379
	86.0	7.625	0.922	10.295	....	25.209	19.986	6.522	....	1099	1099	1599	1599	1799	1899	2198	2498
9.875	62.8	8.469	0.625	10.315	....	18.162	14.637	5.736	....	805	805	1171	1171	1317	1391	1610	1830
	68.9	8.319	0.700	10.469	....	20.127	17.143	5.736	....	943	943	1371	1371	1543	1629	1886	2143
10.000	68.7	8.468	0.688	10.413	....	20.127	16.238	6.720	....	893	893	1299	1299	1461	1543	1786	2030
	69.2	8.444	0.700	10.453	....	20.452	16.884	6.720	....	929	929	1351	1351	1520	1604	1857	2111

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SL (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	60.7	9.504	0.545	11.260	....	17.473	15.057	6.732	....	828	828	1205	1205	1355	1430	1656	1882
	65.7	9.404	0.595	11.299	....	18.982	15.754	6.732	....	866	866	1260	1260	1418	1497	1733	1969
	73.2	9.250	0.672	11.378	....	21.276	17.157	6.732	....	944	944	1373	1373	1544	1630	1887	2145
	79.2	9.126	0.734	11.299	....	23.096	19.389	6.732	....	1066	1066	1551	1551	1745	1842	2133	2424
	85.3	9.000	0.797	11.339	....	24.921	20.090	6.732	....	1105	1105	1607	1607	1808	1909	2210	2511
	85.3	8.894	0.850	11.417	....	26.437	21.497	6.732	....	1182	1182	1720	1720	1935	2042	2365	2687
	91.2	8.876	0.859	11.417	....	26.692	21.497	6.732	....	1182	1182	1720	1720	1935	2042	2365	2687
	97.1	8.750	0.922	11.417	....	28.467	21.497	6.732	....	1182	1182	1720	1720	1935	2042	2365	2687
	99.7	8.694	0.950	11.614	....	29.248	25.057	6.732	....	1378	1378	2005	2005	2255	2380	2756	3132
	100.4	8.674	0.960	11.693	....	29.526	26.499	6.732	....	1457	1457	2120	2120	2385	2517	2915	3312
11.750	65.0	10.526	0.534	12.283	....	18.816	15.466	5.811	....	851	851	1237	1237	1392	1469	1701	1933
	71.0	10.430	0.582	12.362	....	20.420	16.990	5.811	....	934	934	1359	1359	1529	1614	1869	2124
	75.0	10.374	0.610	12.382	....	21.348	17.372	5.811	....	955	955	1390	1390	1563	1650	1911	2172
	79.0	10.322	0.636	12.402	....	22.206	17.755	5.811	....	977	977	1420	1420	1598	1687	1953	2219

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SLIJ

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	18.0	4.151	0.362	5.113	....	5.275	3.824	4.447	....	....	....	306	306	344	363	421	478
	20.3	4.059	0.408	5.113	....	5.886	4.422	4.537	....	....	....	354	354	398	420	486	553
	20.8	4.031	0.422	5.113	....	6.069	4.602	4.557	....	....	....	368	368	414	437	506	575
	21.4	4.001	0.437	5.113	....	6.264	4.791	4.578	....	....	....	383	383	431	455	527	599
	23.2	3.919	0.478	5.113	....	6.791	5.307	4.897	....	....	....	425	425	478	504	584	663
	24.1	3.875	0.500	5.113	....	7.069	5.552	5.325	....	....	....	444	444	500	527	611	694
	26.7	3.751	0.562	5.127	....	7.836	6.256	5.647	....	....	....	500	500	563	594	688	782
	29.2	3.625	0.625	5.146	....	8.590	6.859	6.061	....	....	....	549	549	617	652	754	857
5.500	20.0	4.653	0.361	5.618	....	5.828	4.177	4.240	....	....	....	334	334	376	397	459	522
	23.0	4.545	0.415	5.624	....	6.630	4.954	4.533	....	....	....	396	396	446	471	545	619
	23.8	4.501	0.437	5.624	....	6.951	5.267	4.564	....	....	....	421	421	474	500	579	658
	26.0	4.423	0.476	5.624	....	7.513	5.577	4.842	....	....	....	446	446	502	530	613	697
	26.8	4.375	0.500	5.624	....	7.854	6.118	5.313	....	....	....	489	489	551	581	673	765
	28.4	4.315	0.530	5.624	....	8.275	6.527	5.354	....	....	....	522	522	587	620	718	816
	29.7	4.251	0.562	5.626	....	8.718	6.932	5.618	....	....	....	555	555	624	659	763	867
	32.0	4.151	0.612	5.641	....	9.398	7.488	5.997	....	....	....	599	599	674	711	824	936
	32.6	4.125	0.625	5.645	....	9.572	7.581	6.002	....	....	....	606	606	682	720	834	948
6.625	28.0	5.666	0.417	6.747	....	8.133	5.954	4.523	....	....	....	476	476	536	566	655	744
	32.0	5.550	0.475	6.770	....	9.177	7.012	4.771	....	....	....	561	561	631	666	771	877
	33.0	5.500	0.500	6.774	....	9.621	7.440	4.912	....	....	....	595	595	670	707	818	930
	34.5	5.450	0.525	6.774	....	10.061	7.871	5.247	....	....	....	630	630	708	748	866	984
	36.7	5.376	0.562	6.774	....	10.705	8.455	5.587	....	....	....	676	676	761	803	930	1057
	40.2	5.250	0.625	6.774	....	11.781	9.409	6.056	....	....	....	753	753	847	894	1035	1176
	43.7	5.126	0.687	6.786	....	12.816	10.283	6.498	....	....	....	823	823	925	977	1131	1285

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SLIJ (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.000	26.0	6.151	0.362	7.157	....	7.549	5.273	4.214	....	....	....	422	422	475	501	580	659
	29.0	6.059	0.408	7.157	....	8.449	6.121	4.507	....	....	....	490	490	551	581	673	765
	32.0	5.969	0.453	7.157	....	9.317	6.969	4.570	....	....	....	558	558	627	662	767	871
	35.0	5.879	0.498	7.157	....	10.172	7.815	4.867	....	....	....	625	625	703	742	860	977
	38.0	5.795	0.540	7.157	....	10.959	8.314	5.337	....	....	....	665	665	748	790	915	1039
	41.0	5.695	0.590	7.157	....	11.881	9.441	5.709	....	....	....	755	755	850	897	1039	1180
	42.7	5.625	0.625	7.157	....	12.517	10.064	6.101	....	....	....	805	805	906	956	1107	1258
	44.0	5.595	0.640	7.157	....	12.788	10.292	6.157	....	....	....	823	823	926	978	1132	1287
	45.4	5.535	0.670	7.157	....	13.324	10.740	6.472	....	....	....	859	859	967	1020	1181	1343
	46.4	5.501	0.687	7.160	....	13.625	10.960	6.517	....	....	....	877	877	986	1041	1206	1370
	49.5	5.415	0.730	7.173	....	14.379	11.484	6.362	....	....	....	919	919	1034	1091	1263	1436
7.625	29.7	6.750	0.375	7.789	....	8.541	5.971	4.252	....	....	....	478	478	537	567	657	746
	33.7	6.640	0.430	7.793	....	9.720	7.043	4.533	....	....	....	563	563	634	669	775	880
	39.0	6.500	0.500	7.797	....	11.192	8.520	4.822	....	....	....	682	682	767	809	937	1065
	42.8	6.376	0.562	7.797	....	12.470	9.722	5.578	....	....	....	778	778	875	924	1069	1215
	45.3	6.310	0.595	7.797	....	13.141	10.374	5.686	....	....	....	830	830	934	986	1141	1297
	47.1	6.250	0.625	7.797	....	13.744	10.966	6.053	....	....	....	877	877	987	1042	1206	1371
	51.2	6.126	0.687	7.797	....	14.974	12.039	6.514	....	....	....	963	963	1084	1144	1324	1505
	52.1	6.100	0.700	7.797	....	15.229	12.245	6.561	....	....	....	980	980	1102	1163	1347	1531
	52.8	6.076	0.712	7.797	....	15.463	12.431	6.800	....	....	....	994	994	1119	1181	1367	1554
	55.3	6.000	0.750	7.803	....	16.199	13.022	6.391	....	....	....	1042	1042	1172	1237	1432	1628
7.750	46.1	6.435	0.595	7.924	....	13.374	10.335	5.691	....	....	....	827	827	930	982	1137	1292
	47.6	6.375	0.625	7.924	....	13.990	11.151	6.046	....	....	....	892	892	1004	1059	1227	1394
	48.6	6.345	0.640	7.924	....	14.296	11.448	6.126	....	....	....	916	916	1030	1088	1259	1431

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SLIJ (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
8.625	36.0	7.700	0.400	8.799	....	10.336	7.339	4.485	....	....	....	587	587	661	697	807	917
	40.0	7.600	0.450	8.819	....	11.557	8.364	4.869	....	....	....	669	669	753	795	920	1046
	44.0	7.500	0.500	8.819	....	12.763	9.526	5.228	....	....	....	762	762	857	905	1048	1191
	49.0	7.386	0.557	8.819	....	14.118	10.839	5.363	....	....	....	867	867	976	1030	1192	1355
	49.1	7.376	0.562	8.819	....	14.236	10.945	5.569	....	....	....	876	876	985	1040	1204	1368
	52.0	7.310	0.595	8.819	....	15.010	11.695	5.615	....	....	....	936	936	1053	1111	1286	1462
	54.0	7.250	0.625	8.819	....	15.708	12.381	5.981	....	....	....	990	990	1114	1176	1362	1548
	58.7	7.126	0.687	8.819	....	17.132	13.711	6.487	....	....	....	1097	1097	1234	1303	1508	1714
	63.5	7.000	0.750	8.819	....	18.555	14.767	6.383	....	....	....	1181	1181	1329	1403	1624	1846
9.625	43.5	8.599	0.435	9.814	....	12.559	8.837	4.772	....	....	....	707	707	795	840	972	1105
	47.0	8.525	0.472	9.813	....	13.572	9.767	4.884	....	....	....	781	781	879	928	1074	1221
	53.5	8.379	0.545	9.842	....	15.546	11.599	5.332	....	....	....	928	928	1044	1102	1276	1450
	58.4	8.279	0.595	9.842	....	16.879	12.992	5.607	....	....	....	1039	1039	1169	1234	1429	1624
	59.4	8.251	0.609	9.842	....	17.250	13.353	5.627	....	....	....	1068	1068	1202	1269	1469	1669
	61.1	8.219	0.625	9.842	....	17.671	13.764	5.709	....	....	....	1101	1101	1239	1308	1514	1721
	64.9	8.125	0.672	9.842	....	18.901	14.951	6.160	....	....	....	1196	1196	1346	1420	1645	1869
	70.3	8.001	0.734	9.842	....	20.502	16.284	6.362	....	....	....	1303	1303	1466	1547	1791	2036
	71.8	7.969	0.750	9.842	....	20.911	16.579	6.379	....	....	....	1326	1326	1492	1575	1824	2072
	75.6	7.875	0.797	9.842	....	22.104	17.681	6.473	....	....	....	1414	1414	1591	1680	1945	2210
	75.9	7.869	0.800	9.842	....	22.180	17.758	6.853	....	....	....	1421	1421	1598	1687	1953	2220
9.750	59.2	8.404	0.595	9.969	....	17.113	13.155	5.606	....	....	....	1052	1052	1184	1250	1447	1644
9.875	62.8	8.469	0.625	10.097	....	18.162	14.110	5.692	....	....	....	1129	1129	1270	1340	1552	1764
10.000	67.2	8.500	0.672	10.225	....	19.693	15.522	6.135	....	....	....	1242	1242	1397	1475	1707	1940
	68.7	8.468	0.688	10.225	....	20.127	15.943	6.424	....	....	....	1275	1275	1435	1515	1754	1993

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SLIJ (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
10.750	51.0	9.694	0.450	10.944	....	14.561	10.177	4.794	....	....	....	814	814	916	967	1119	1272
	55.5	9.604	0.495	10.947	....	15.947	11.433	4.935	....	....	....	915	915	1029	1086	1258	1429
	60.7	9.504	0.545	10.972	....	17.473	12.967	5.329	....	....	....	1037	1037	1167	1232	1426	1621
	65.7	9.404	0.595	10.992	....	18.982	14.418	5.672	....	....	....	1153	1153	1298	1370	1586	1802
	71.1	9.294	0.650	10.992	....	20.625	16.005	5.765	....	....	....	1280	1280	1440	1520	1761	2002
	73.2	9.250	0.672	10.992	....	21.276	16.633	6.082	....	....	....	1331	1331	1497	1580	1830	2079
	75.9	9.194	0.700	10.992	....	22.101	17.427	6.432	....	....	....	1394	1394	1568	1656	1917	2178
	79.2	9.126	0.734	10.992	....	23.096	18.264	6.358	....	....	....	1461	1461	1644	1735	2009	2283
	80.8	9.094	0.750	10.992	....	23.562	18.716	6.380	....	....	....	1497	1497	1684	1778	2059	2340
	85.3	9.000	0.797	10.992	....	24.921	20.029	6.507	....	....	....	1602	1602	1803	1903	2203	2504
11.750	54.0	10.724	0.435	11.933	....	15.463	10.478	4.476	....	....	....	838	838	943	995	1153	1310
	60.0	10.616	0.489	11.941	....	17.300	12.070	4.872	....	....	....	966	966	1086	1147	1328	1509
	65.0	10.526	0.534	11.963	....	18.816	13.625	5.209	....	....	....	1090	1090	1226	1294	1499	1703
	71.0	10.430	0.582	11.983	....	20.420	15.196	5.572	....	....	....	1216	1216	1368	1444	1672	1900
	74.6	10.358	0.618	12.001	....	21.613	16.377	5.622	....	....	....	1310	1310	1474	1556	1801	2047
	75.4	10.344	0.625	12.005	....	21.844	16.599	5.631	....	....	....	1328	1328	1494	1577	1826	2075
	78.8	10.282	0.656	12.015	....	22.863	17.568	5.728	....	....	....	1405	1405	1581	1669	1932	2196
	80.5	10.250	0.672	12.015	....	23.387	18.081	6.013	....	....	....	1446	1446	1627	1718	1989	2260
	82.6	10.212	0.691	12.015	....	24.007	18.673	6.113	....	....	....	1494	1494	1681	1774	2054	2334
	87.4	10.126	0.734	12.015	....	25.402	20.014	6.540	....	....	....	1601	1601	1801	1901	2202	2502
11.875	71.8	10.555	0.582	12.108	....	20.648	15.337	5.571	....	....	....	1227	1227	1380	1457	1687	1917

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM SLIJ (continued)

Type: Integral Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
13.375	68.0	12.259	0.480	13.555	....	19.445	12.919	4.520	....	....	....	1034	1034	1163	1227	1421	1615
	72.0	12.191	0.514	13.572	....	20.768	14.274	4.861	....	....	....	1142	1142	1285	1356	1570	1784
	77.0	12.119	0.550	13.590	....	22.160	15.702	5.230	....	....	....	1256	1256	1413	1492	1727	1963
	80.7	12.059	0.580	13.605	....	23.314	16.880	5.352	....	....	....	1350	1350	1519	1604	1857	2110
	85.0	12.003	0.608	13.619	....	24.386	17.982	5.593	....	....	....	1439	1439	1618	1708	1978	2248
	86.0	11.969	0.625	13.627	....	25.035	18.617	5.617	....	....	....	1489	1489	1676	1769	2048	2327
	92.0	11.875	0.672	13.651	....	26.818	20.395	5.716	....	....	....	1632	1632	1836	1938	2243	2549
	98.0	11.781	0.719	13.674	....	28.587	22.092	6.160	....	....	....	1767	1767	1988	2099	2430	2762
13.625	88.2	12.188	0.625	13.877	....	25.525	18.943	5.616	....	....	....	1515	1515	1705	1800	2084	2368

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM TOP HT

Type: Coupled Seal: Metal-to-metal																	
								Minimum joint tension strength, kips									
D	w	d	t	D_c	A_t	A_c	L_m	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	P-110	Q-125
5.000	15.0	4.408	0.296	5.470	4.374	4.462	4.191	241	241	350	350	394	416	481	547	481	547
	18.0	4.276	0.362	5.577	5.275	5.385	4.191	290	290	422	422	475	501	580	659	580	659
	20.3	4.184	0.408	5.648	5.886	6.009	4.191	324	324	471	471	530	559	647	736	647	736
	20.8	4.156	0.422	5.669	6.069	6.202	4.191	334	334	486	486	546	577	668	759	668	759
	21.4	4.126	0.437	5.691	6.264	6.395	4.191	345	345	501	501	564	595	689	783	689	783
	23.2	4.044	0.478	5.750	6.791	6.925	4.191	374	374	543	543	611	645	747	849	747	849
5.500	17.0	4.892	0.304	5.978	4.962	5.069	4.382	273	273	397	397	447	471	546	620	546	620
	20.0	4.778	0.361	6.071	5.828	5.944	4.382	321	321	466	466	525	554	641	729	641	729
	23.0	4.670	0.415	6.156	6.630	6.756	4.382	365	365	530	530	597	630	729	829	729	829
	26.0	4.548	0.476	6.248	7.513	7.659	4.382	413	413	601	601	676	714	826	939	826	939
6.625	23.2	5.965	0.330	7.154	6.526	6.659	4.427	359	359	522	522	587	620	718	816	718	816
	24.0	5.921	0.352	7.191	6.937	7.080	4.427	382	382	555	555	624	659	763	867	763	867
	28.0	5.791	0.417	7.297	8.133	8.289	4.427	447	447	651	651	732	773	895	1017	895	1017
	32.0	5.675	0.475	7.390	9.177	9.357	4.427	505	505	734	734	826	872	1009	1147	830	944
7.000	26.0	6.276	0.362	7.565	7.549	7.693	4.476	415	415	604	604	676	717	830	944	929	1056
	29.0	6.184	0.408	7.644	8.449	8.634	4.476	465	465	676	676	760	803	929	1056	1025	1165
	32.0	6.094	0.453	7.717	9.317	9.512	4.476	512	512	745	745	839	885	1025	1165	1119	1272
	35.0	6.004	0.498	7.787	10.172	10.376	4.476	559	559	814	814	915	966	1119	1272	1205	1370
	38.0	5.920	0.540	7.852	10.959	11.172	4.476	603	603	877	877	986	1041	1205	1370	1307	1485
	41.0	5.820	0.590	7.929	11.881	12.124	4.476	653	653	950	950	1069	1129	1307	1485		

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM TOP

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
5.000	15.0	4.283	0.296	5.470	5.358	4.374	4.462	4.191	....	241	241	350	350	394	416	481	547
	18.0	4.151	0.362	5.577	5.443	5.275	5.385	4.191	....	290	290	422	422	475	501	580	659
	20.3	4.059	0.408	5.648	5.500	5.886	6.009	4.191	....	324	324	471	471	530	559	647	736
	20.8	4.031	0.422	5.669	5.518	6.069	6.202	4.191	....	334	334	486	486	546	577	668	759
	21.4	4.001	0.437	5.691	5.535	6.264	6.395	4.191	....	345	345	501	501	564	595	689	783
	23.2	3.919	0.478	5.750	5.583	6.791	6.925	4.191	....	374	374	543	543	611	645	747	849
5.500	15.5	4.825	0.275	5.929	5.821	4.514	4.608	4.382	....	248	248	361	361	406	429	497	564
	17.0	4.767	0.304	5.978	5.860	4.962	5.069	4.382	....	273	273	397	397	447	471	546	620
	20.0	4.653	0.361	6.071	5.935	5.828	5.944	4.382	....	321	321	466	466	525	554	641	729
	23.0	4.545	0.415	6.156	6.004	6.630	6.756	4.382	....	365	365	530	530	597	630	729	829
	26.0	4.423	0.476	6.248	6.079	7.513	7.659	4.382	....	413	413	601	601	676	714	826	939
6.625	20.0	5.924	0.288	7.081	6.967	5.734	5.845	4.427	....	315	315	459	459	516	545	631	717
	23.2	5.840	0.330	7.154	7.026	6.526	6.659	4.427	....	359	359	522	522	587	620	718	816
	24.0	5.796	0.352	7.191	7.055	6.937	7.080	4.427	....	382	382	555	555	624	659	763	867
	28.0	5.666	0.417	7.297	7.140	8.133	8.289	4.427	....	447	447	651	651	732	773	895	1017
	32.0	5.550	0.475	7.390	7.215	9.177	9.357	4.427	....	505	505	734	734	826	872	1009	1147
7.000	23.0	6.241	0.317	7.488	7.364	6.655	6.786	4.476	....	366	366	532	532	599	632	732	832
	26.0	6.151	0.362	7.565	7.425	7.549	7.693	4.476	....	415	415	604	604	676	717	830	944
	29.0	6.059	0.408	7.644	7.486	8.449	8.634	4.476	....	465	465	676	676	760	803	929	1056
	32.0	5.969	0.453	7.717	7.545	9.317	9.512	4.476	....	512	512	745	745	839	885	1025	1165
	35.0	5.879	0.498	7.787	7.602	10.172	10.376	4.476	....	559	559	814	814	915	966	1119	1272
	38.0	5.795	0.540	7.852	7.656	10.959	11.172	4.476	....	603	603	877	877	986	1041	1205	1370
	41.0	5.695	0.590	7.929	7.717	11.881	12.124	4.476	....	653	653	950	950	1069	1129	1307	1485

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM TOP (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
7.625	29.7	6.750	0.375	8.213	8.067	8.541	8.716	4.868	....	470	470	683	683	769	811	940	1068
	33.7	6.640	0.430	8.305	8.140	9.720	9.917	4.868	....	535	535	778	778	875	923	1069	1215
	35.8	6.570	0.465	8.362	8.187	10.460	10.664	4.868	....	575	575	837	837	941	994	1151	1308
	39.0	6.500	0.500	8.419	8.232	11.192	11.416	4.868	....	616	616	895	895	1007	1063	1231	1399
7.750	46.1	6.435	0.595	8.693	8.476	13.374	13.642	4.915	....	736	736	1070	1070	1204	1271	1471	1672
8.625	36.0	7.700	0.400	9.266	9.108	10.336	10.560	5.604	....	568	568	827	827	930	982	1137	1292
	40.0	7.600	0.450	9.350	9.175	11.557	11.797	5.604	....	636	636	925	925	1040	1098	1271	1445
	44.0	7.500	0.500	9.433	9.242	12.763	13.017	5.604	....	702	702	1021	1021	1149	1212	1404	1595
	49.0	7.386	0.557	9.526	9.317	14.118	14.395	5.604	....	776	776	1129	1129	1271	1341	1553	1765
	52.0	7.310	0.595	9.587	9.366	15.010	15.311	5.604	....	826	826	1201	1201	1351	1426	1651	1876
9.625	40.0	8.679	0.395	10.264	10.106	11.454	11.699	5.589	....	630	630	916	916	1031	1088	1260	1432
	43.5	8.599	0.435	10.333	10.161	12.559	12.814	5.589	....	691	691	1005	1005	1130	1193	1381	1570
	47.0	8.525	0.472	10.396	10.213	13.572	13.838	5.589	....	746	746	1086	1086	1221	1289	1493	1697
	53.5	8.379	0.545	10.520	10.311	15.546	15.877	5.589	....	855	855	1244	1244	1399	1477	1710	1943
	58.4	8.279	0.595	10.600	10.376	16.879	17.214	5.589	....	928	928	1350	1350	1519	1604	1857	2110
9.875	62.8	8.469	0.625	10.907	10.673	18.162	18.518	5.484	....	999	999	1453	1453	1635	1725	1998	2270
	66.9	8.383	0.668	10.978	10.728	19.322	19.736	5.484	....	1063	1063	1546	1546	1739	1836	2125	2415
10.750	45.5	9.794	0.400	11.400	11.238	13.006	13.273	5.634	....	715	715	1040	1040	1171	1236	1431	1626
	51.0	9.694	0.450	11.488	11.309	14.561	14.865	5.634	....	801	801	1165	1165	1310	1383	1602	1820
	55.5	9.604	0.495	11.565	11.372	15.947	16.255	5.634	....	877	877	1276	1276	1435	1515	1754	1993
	60.7	9.504	0.545	11.652	11.439	17.473	17.834	5.634	....	961	961	1398	1398	1573	1660	1922	2184
	65.7	9.404	0.595	11.734	11.506	18.982	19.353	5.634	....	1044	1044	1519	1519	1708	1803	2088	2373

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

VAM Group — VAM TOP (continued)

Type: Coupled Seal: Metal-to-metal																	
									Minimum joint tension strength, kips								
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125
11.750	54.0	10.724	0.435	12.463	12.287	15.463	15.796	5.713	....	850	850	1237	1237	1392	1469	1701	1933
	60.0	10.616	0.489	12.557	12.362	17.300	17.653	5.713	....	952	952	1384	1384	1557	1644	1903	2163
	65.0	10.526	0.534	12.636	12.425	18.816	19.211	5.713	....	1035	1035	1505	1505	1693	1788	2070	2352
	71.0	10.430	0.582	12.719	12.490	20.420	20.857	5.713	....	1123	1123	1634	1634	1838	1940	2246	2553
11.875	71.8	10.555	0.582	12.844	12.616	20.648	21.089	5.713	....	1136	1136	1652	1652	1858	1962	2271	2581
13.375	61.0	12.359	0.430	14.085	13.909	17.487	17.842	5.698	....	962	962	1399	1399	1574	1661	1924	2186
	68.0	12.259	0.480	14.175	13.982	19.445	19.851	5.698	....	1069	1069	1556	1556	1750	1847	2139	2431
	72.0	12.191	0.514	14.236	14.030	20.768	21.213	5.698	....	1142	1142	1661	1661	1869	1973	2284	2596
	77.0	12.119	0.550	14.299	14.081	22.160	22.625	5.698	....	1219	1219	1773	1773	1994	2105	2438	2770
	80.7	12.059	0.580	14.350	14.122	23.314	23.777	5.698	....	1282	1282	1865	1865	2098	2215	2565	2914
	85.0	12.003	0.608	14.400	14.161	24.386	24.888	5.698	....	1341	1341	1951	1951	2195	2317	2682	3048
	86.0	11.969	0.625	14.429	14.183	25.035	25.556	5.698	....	1377	1377	2003	2003	2253	2378	2754	3129
13.625	88.2	12.188	0.625	14.681	....	25.525	26.063	5.698	....	1404	1404	2042	2042	2297	2425	2808	3191
14.000	86.0	12.613	0.600	14.943	14.705	25.258	25.653	6.946	....	1389	1389	2021	2021	2273	2400	2778	3157
	93.0	12.513	0.650	15.030	14.774	27.261	27.691	6.946	....	1499	1499	2181	2181	2453	2590	2999	3408
	100.0	12.413	0.700	15.114	14.843	29.248	29.695	6.946	....	1609	1609	2340	2340	2632	2779	3217	3656
	106.0	12.313	0.750	15.199	14.909	31.220	31.710	6.946	....	1717	1717	2498	2498	2810	2966	3434	3903
	114.0	12.213	0.800	15.281	14.976	33.175	33.689	6.946	....	1825	1825	2654	2654	2986	3152	3649	4147
	120.0	12.113	0.850	15.364	15.041	35.115	35.680	6.946	....	1931	1931	2809	2809	3160	3336	3863	4389

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

XL Systems, Inc. — XLC

Type: Integral, flush Seal: Threaded																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
30.0	234.3	28.5	0.75	30.0	30.0	68.919	45.610	5.956	1824	2509	2509	3649	3649	4105	4333	5017	5701	1596	1916	2098	2372	2554
	309.7	28.0	1.00	30.0	30.0	91.106	63.805	7.735	2552	3509	3509	5104	5104	5742	6061	7019	7976	2233	2680	2935	3318	3573
	383.8	27.5	1.25	30.0	30.0	112.901	87.583	9.792	3503	4817	4817	7007	7007	7882	8320	9634	....	3065	3678	4029	4554	4905
	456.6	27.0	1.50	30.0	30.0	134.303	105.796	10.178	4232	5819	5819	8464	8464	9522	....	....	....	3703	4443	4867	5501	5925
	528.0	26.5	1.75	30.0	30.0	155.312	124.079	11.853	4963	6824	6824	9926	9926	....	....	....	....	4343	5211	5708	6452	6948
	598.1	26.0	2.00	30.0	30.0	175.929	141.912	11.618	5676	7805	7805	....	....	....	....	....	....	4967	5960	6528	7379	7947
32.0	250.3	30.5	0.75	32.0	32.0	73.631	48.701	5.956	1948	2679	2679	3896	3896	4383	4627	5357	6088	1705	2045	2240	2532	2727
	331.1	30.0	1.00	32.0	32.0	97.389	68.159	7.735	2726	3749	3749	5453	5453	6134	6475	7497	8520	2386	2863	3135	3544	3817
	410.5	29.5	1.25	32.0	32.0	120.755	93.615	9.792	3745	5149	5149	7489	7489	8425	8893	....	....	3277	3932	4306	4868	5242
	488.6	29.0	1.50	32.0	32.0	143.728	113.135	10.178	4525	6222	6222	9051	9051	....	....	....	....	3960	4752	5204	5883	6336
	565.4	28.5	1.75	32.0	32.0	166.308	132.750	11.853	5310	7301	7301	....	....	....	....	....	....	4646	5576	6107	6903	7434
	640.8	28.0	2.00	32.0	32.0	188.496	151.902	11.618	6076	8355	8355	....	....	....	....	....	....	5317	6380	6987	7899	8507

D — Casing nominal tube OD, in.
w — Casing weight, lb/ft
d — ID (drift), in.
t — Casing wall thickness, in.
D_c — Connection OD, in.
D_{sc} — Connection OD (special clearance or turned down), in.
A_t — Casing wall critical cross-sectional area, sq. in.
A_c — Connection critical cross-sectional area, sq. in.
L_m — Make-up loss, in.

XL Systems, Inc. — XLC (continued)

Type: Integral, flush Seal: Threaded																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
34.0	266.3	32.5	0.75	34.0	34.0	78.343	51.792	5.956	2072	2849	2849	4143	4143	4661	4920	5697	6474	1813	2175	2382	2693	2900
	352.4	32.0	1.00	34.0	34.0	103.673	72.514	7.735	2901	3988	3988	5801	5801	6526	6889	7977	9064	2538	3046	3336	3771	4061
	437.2	31.5	1.25	34.0	34.0	128.609	99.646	9.792	3986	5481	5481	7972	7972	8968	9466	....	....	3488	4185	4584	5182	5580
	520.7	31.0	1.50	34.0	34.0	153.153	120.473	10.178	4819	6626	6626	9638	9638	....	....	....	....	4217	5060	5542	6265	6746
	602.8	30.5	1.75	34.0	34.0	177.304	141.421	11.853	5657	7778	7778	....	....	....	....	....	....	4950	5940	6505	7354	7920
	683.5	30.0	2.00	34.0	34.0	201.062	161.893	11.618	6476	8904	8904	....	....	....	....	....	....	5666	6800	7447	8418	9066
36.0	282.4	34.5	0.75	36.0	36.0	83.056	54.884	5.956	2195	3019	3019	4391	4391	4940	5214	6037	6861	1921	2305	2525	2854	3074
	373.8	34.0	1.00	36.0	36.0	109.956	76.868	7.735	3075	4228	4228	6149	6149	6918	7302	8455	9609	2690	3228	3536	3997	4305
	463.9	33.5	1.25	36.0	36.0	136.463	105.678	9.792	4227	5812	5812	8454	8454	9511	....	....	....	3699	4438	4861	5495	5918
	552.7	33.0	1.50	36.0	36.0	162.577	127.812	10.178	5112	7030	7030	....	....	....	....	....	....	4473	5368	5879	6646	7157
	640.1	32.5	1.75	36.0	36.0	188.299	150.092	11.853	6004	8255	8255	....	....	....	....	....	....	5253	6304	6904	7805	8405
	726.2	32.0	2.00	36.0	36.0	213.628	171.883	11.618	6875	9454	9454	....	....	....	....	....	....	6016	7219	7907	8938	9625

D	Casing nominal tube OD, in.	D_{sc}	Connection OD (special clearance or turned down), in.
w	Casing weight, lb/ft	A_t	Casing wall critical cross-sectional area, sq. in.
d	ID (drift), in.	A_c	Connection critical cross-sectional area, sq. in.
t	Casing wall thickness, in.	L_m	Make-up loss, in.
D_c	Connection OD, in.		

XL Systems, Inc. — XLC (continued)

Type: Integral, flush Seal: Threaded																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
38.0	298.4	36.5	0.75	38.0	38.0	87.768	57.975	5.956	2319	3189	3189	4638	4638	5218	5508	6377	7247	2029	2435	2667	3015	3247
	395.2	36.0	1.00	38.0	38.0	116.239	81.222	7.735	3249	4467	4467	6498	6498	7310	7716	8934	....	2843	3411	3736	4224	4548
	490.6	35.5	1.25	38.0	38.0	144.317	111.710	9.792	4468	6144	6144	8937	8937	....	....	....	....	3910	4692	5139	5809	6256
	584.7	35.0	1.50	38.0	38.0	172.002	135.151	10.178	5406	7433	7433	....	....	....	....	....	....	4730	5676	6217	7028	7568
	677.5	34.5	1.75	38.0	38.0	199.295	158.763	11.853	6351	8732	8732	....	....	....	....	....	....	5557	6668	7303	8256	8891
	769.0	34.0	2.00	38.0	38.0	226.195	181.873	11.618	7275	....	....	....	....	....	....	....	....	6366	7639	8366	9457	....
40.0	314.4	38.5	0.75	40.0	40.0	92.481	61.066	5.956	2443	3359	3359	4885	4885	5496	5801	6717	7633	2137	2565	2809	3175	3420
	416.5	38.0	1.00	40.0	40.0	122.522	85.576	7.735	3423	4707	4707	6846	6846	7702	8130	9413	....	2995	3594	3936	4450	4792
	517.3	37.5	1.25	40.0	40.0	152.171	117.742	9.792	4710	6476	6476	9419	9419	....	....	....	....	4121	4945	5416	6123	6594
	616.8	37.0	1.50	40.0	40.0	181.427	142.490	10.178	5700	7837	7837	....	....	....	....	....	....	4987	5985	6555	7409	7979
	714.9	36.5	1.75	40.0	40.0	210.290	167.433	11.853	6697	9209	9209	....	....	....	....	....	....	5860	7032	7702	8707	9376
	811.7	36.0	2.00	40.0	40.0	238.761	191.863	11.618	7675	....	....	....	....	....	....	....	....	6715	8058	8826	9977	....
	907.1	35.5	2.25	40.0	40.0	266.839	221.510	13.586	8860	....	....	....	....	....	....	....	....	7753	9303	10189	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

XL Systems, Inc. — XLC (continued)

Type: Integral, flush Seal: Threaded																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
	330.4	40.5	0.75	42.0	42.0	97.193	64.158	5.956	2566	3529	3529	5133	5133	5774	6095	7057	8020	2246	2695	2951	3336	3593
	437.9	40.0	1.00	42.0	42.0	128.805	89.931	7.735	3597	4946	4946	7194	7194	8094	8543	9892	....	3148	3777	4137	4676	5036
	544.0	39.5	1.25	42.0	42.0	160.025	123.774	9.792	4951	6808	6808	9902	9902	....	....	....	....	4332	5199	5694	6436	6931
42.0	648.8	39.0	1.50	42.0	42.0	190.852	149.828	10.178	5993	8241	8241	....	....	....	....	....	....	5244	6293	6892	7791	8390
	752.3	38.5	1.75	42.0	42.0	221.286	176.104	11.853	7044	9686	9686	....	....	....	....	....	....	6164	7396	8101	9157	9862
	854.4	38.0	2.00	42.0	42.0	251.327	201.854	11.618	8074	....	....	....	....	....	....	....	....	7065	8478	9285	....	....
	955.2	37.5	2.25	42.0	42.0	280.976	223.360	13.586	8934	....	....	....	....	....	....	....	....	7818	9381	10275	....	....
	346.4	42.5	0.75	44.0	44.0	101.905	67.249	5.956	2690	3699	3699	5380	5380	6052	6389	7397	8406	2354	2824	3093	3497	3766
	459.2	42.0	1.00	44.0	44.0	135.088	94.285	7.735	3771	5186	5186	7543	7543	8486	8957	....	....	3300	3960	4337	4903	5280
	570.7	41.5	1.25	44.0	44.0	167.879	129.806	9.792	5192	7139	7139	....	....	....	....	....	....	4543	5452	5971	6750	7269
44.0	680.9	41.0	1.50	44.0	44.0	200.277	157.167	10.178	6287	8644	8644	....	....	....	....	....	....	5501	6601	7230	8173	8801
	789.7	40.5	1.75	44.0	44.0	232.282	184.775	11.853	7391	....	....	....	....	....	....	....	....	6467	7761	8500	9608	....
	897.1	40.0	2.00	44.0	44.0	263.894	211.844	11.618	8474	....	....	....	....	....	....	....	....	7415	8897	9745	....	....
	1003.3	39.5	2.25	44.0	44.0	295.113	245.210	13.586	9808	....	....	....	....	....	....	....	....	8582	....	11280	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

XL Systems, Inc. — XLC (continued)

Type: Integral, flush Seal: Threaded																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
46.0	362.5	44.5	0.75	46.0	46.0	106.618	70.340	5.956	2814	3869	3869	5627	5627	6331	6682	7737	8793	2462	2954	3236	3658	3939
	480.6	44.0	1.00	46.0	46.0	141.372	98.639	7.735	3946	5425	5425	7891	7891	8878	9371	....	....	3452	4143	4537	5129	5524
	597.4	43.5	1.25	46.0	46.0	175.733	135.838	9.792	5434	7471	7471	....	....	....	....	....	....	4754	5705	6249	7064	7607
	712.9	43.0	1.50	46.0	46.0	209.701	164.506	10.178	6580	9048	9048	....	....	....	....	....	....	5758	6909	7567	8554	9212
	827.0	42.5	1.75	46.0	46.0	243.277	193.446	11.853	7738	....	....	....	....	....	....	....	....	6771	8125	8899	....	....
	939.8	42.0	2.00	46.0	46.0	276.460	221.834	11.618	8873	....	....	....	....	....	....	....	....	7764	9317	10204	....	....
	1051.3	41.5	2.25	46.0	46.0	309.251	257.130	13.586	....	....	....	....	....	....	....	....	....	9000	....	11828	....	....
	1161.5	41.0	2.50	46.0	46.0	341.648	291.593	16.643	....	....	....	....	....	....	....	....	....	....	....	13413	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

XL Systems, Inc. — XLC (continued)

Type: Integral, flush Seal: Threaded																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
48.0	378.5	46.5	0.75	48.0	48.0	111.330	73.432	5.956	2937	4039	4039	5875	5875	6609	6976	8078	9179	2570	3084	3378	3818	4112
	502.0	46.0	1.00	48.0	48.0	147.655	102.994	7.735	4120	5665	5665	8240	8240	9269	9784	....	....	3605	4326	4738	5356	5768
	624.1	45.5	1.25	48.0	48.0	183.587	141.870	9.792	5675	7803	7803	....	....	....	....	....	....	4965	5959	6526	7377	7945
	744.9	45.0	1.50	48.0	48.0	219.126	171.845	10.178	6874	9451	9451	....	....	....	....	....	....	6015	7217	7905	8936	9623
	864.4	44.5	1.75	48.0	48.0	254.273	202.117	11.853	8085	....	....	....	....	....	....	....	....	7074	8489	9297	....	....
	982.6	44.0	2.00	48.0	48.0	289.027	231.825	11.618	9273	....	....	....	....	....	....	....	....	8114	9737	10664	....	....
	1099.4	43.5	2.25	48.0	48.0	323.388	268.779	13.586	....	....	....	....	....	....	....	....	....	9407	....	12364	....	....
	1214.9	43.0	2.50	48.0	48.0	357.356	304.882	16.643	....	....	....	....	....	....	....	....	....	....	....	14025	....	....

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

XL Systems, Inc. — XLF

Type: Integral, flush

Seal: Metal-to-metal

									Minimum joint tension strength, kips													
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
20.0	91.5	19.124	0.438	20.0	20.0	26.918	15.021	3.414	601	826	826	1202	1202	1352	1427	1652	1878	526	631	691	781	841
	104.1	19.000	0.500	20.0	20.0	30.631	15.879	4.766	635	873	873	1270	1270	1429	1509	1747	1985	556	667	730	826	889
	129.3	18.750	0.625	20.0	20.0	38.043	20.082	4.747	803	1105	1105	1607	1607	1807	1908	2209	2510	703	843	924	1044	1125
	131.3	18.730	0.635	20.0	20.0	38.631	20.082	4.747	803	1105	1105	1607	1607	1807	1908	2209	2510	703	843	924	1044	1125
	154.2	18.500	0.750	20.0	20.0	45.357	25.076	6.016	1003	1379	1379	2006	2006	2257	2382	2758	3135	878	1053	1153	1304	1404
	166.4	18.376	0.812	20.0	20.0	48.948	25.076	6.016	1003	1379	1379	2006	2006	2257	2382	2758	3135	878	1053	1153	1304	1404
	202.9	18.000	1.000	20.0	20.0	59.690	33.455	10.077	1338	1840	1840	2676	2676	3011	3178	3680	4182	1171	1405	1539	1740	1873
	250.3	17.500	1.250	20.0	20.0	73.631	50.994	10.800	2040	2805	2805	4080	4080	4589	4844	5609	6374	1785	2142	2346	2652	2856
22.0	114.8	21.000	0.500	22.0	22.0	33.772	17.488	4.766	700	962	962	1399	1399	1574	1661	1924	2186	612	734	804	909	979
	142.7	20.750	0.625	22.0	22.0	41.970	22.124	4.747	885	1217	1217	1770	1770	1991	2102	2434	2766	774	929	1018	1150	1239
	170.2	20.500	0.750	22.0	22.0	50.069	27.636	6.016	1105	1520	1520	2211	2211	2487	2625	3040	3455	967	1161	1271	1437	1548
	224.3	20.000	1.000	22.0	22.0	65.973	42.426	10.077	1697	2333	2333	3394	3394	3818	4030	4667	5303	1485	1782	1952	2206	2376
	277.0	19.500	1.250	22.0	22.0	81.485	56.319	10.800	2253	3098	3098	4506	4506	5069	5350	6195	7040	1971	2365	2591	2929	3154
24.0	125.5	23.000	0.500	24.0	24.0	36.914	19.096	4.766	764	1050	1050	1528	1528	1719	1814	2101	2387	668	802	878	993	1069
	156.0	22.750	0.625	24.0	24.0	45.897	24.165	4.747	967	1329	1329	1933	1933	2175	2296	2658	3021	846	1015	1112	1257	1353
	186.2	22.500	0.750	24.0	24.0	54.782	30.196	6.016	1208	1661	1661	2416	2416	2718	2869	3322	3775	1057	1268	1389	1570	1691
	245.6	22.000	1.000	24.0	24.0	72.257	46.397	10.077	1856	2552	2552	3712	3712	4176	4408	5104	5800	1624	1949	2134	2413	2598
	303.7	21.500	1.250	24.0	24.0	89.339	61.644	10.800	2466	3390	3390	4932	4932	5548	5856	6781	7706	2158	2589	2836	3205	3452
	360.5	21.000	1.500	24.0	24.0	106.029	70.174	11.016	2807	3860	3860	5614	5614	6316	6667	7719	8772	2456	2947	3228	3649	3930
26.0	136.2	25.000	0.500	26.0	26.0	40.055	20.705	4.766	828	1139	1139	1656	1656	1863	1967	2278	2588	725	870	952	1077	1159
	169.4	24.750	0.625	26.0	26.0	49.824	26.207	4.747	1048	1441	1441	2097	2097	2359	2490	2883	3276	917	1101	1206	1363	1468
	202.3	24.500	0.750	26.0	26.0	59.494	32.756	6.016	1310	1802	1802	2620	2620	2948	3112	3603	4095	1146	1376	1507	1703	1834
	267.0	24.000	1.000	26.0	26.0	78.540	50.368	10.077	2015	2770	2770	4029	4029	4533	4785	5540	6296	1763	2115	2317	2619	2821
	330.4	23.500	1.250	26.0	26.0	97.193	66.969	10.800	2679	3683	3683	5358	5358	6027	6362	7367	8371	2344	2813	3081	3482	3750
	392.5	23.000	1.500	26.0	26.0	115.454	76.268	11.016	3051	4195	4195	6101	6101	6864	7245	8389	9534	2669	3203	3508	3966	4271

D Casing nominal tube OD, in.

w Casing weight, lb/ft

d ID (drift), in.

t Casing wall thickness, in.

D_c Connection OD, in.

D_{sc} Connection OD (special clearance or turned down), in.

A_t Casing wall critical cross-sectional area, sq. in.

A_c Connection critical cross-sectional area, sq. in.

L_m Make-up loss, in.

XL Systems, Inc. — XLF (continued)

Type: Integral, flush Seal: Metal-to-metal																					
									Minimum joint tension strength, kips												
D	w	d	t	D_c	D_{sc}	A_t	A_c	L_m	H-40	J-55	K-55	L-80	N-80	C-90	C/T-95	P-110	Q-125	Grade B	X-42	X-46	X-52	X-56
28.0	146.9	27.000	0.500	28.0	28.0	43.197	22.313	4.766	893	1227	1227	1785	1785	2008	2120	2454	2789	781	937	1026	1160	1250
	182.7	26.750	0.625	28.0	28.0	53.751	28.248	4.747	1130	1554	1554	2260	2260	2542	2684	3107	3531	989	1186	1299	1469	1582
	218.3	26.500	0.750	28.0	28.0	64.206	35.315	6.016	1413	1942	1942	2825	2825	3178	3355	3885	4414	1236	1483	1624	1836	1978
	288.4	26.000	1.000	28.0	28.0	84.823	54.339	10.077	2174	2989	2989	4347	4347	4891	5162	5977	6792	1902	2282	2500	2826	3043
	357.1	25.500	1.250	28.0	28.0	105.047	72.294	10.800	2892	3976	3976	5784	5784	6506	6868	7952	9037	2530	3036	3326	3759	4048
	424.5	25.000	1.500	28.0	28.0	124.878	82.362	11.016	3294	4530	4530	6589	6589	7413	7824	9060	....	2883	3459	3789	4283	4612
30.0	196.1	28.750	0.625	30.0	30.0	57.678	30.290	4.747	1212	1666	1666	2423	2423	2726	2878	3332	3786	1060	1272	1393	1575	1696
	234.3	28.500	0.750	30.0	30.0	68.919	37.875	6.016	1515	2083	2083	3030	3030	3409	3598	4166	4734	1326	1591	1742	1970	2121
	309.7	28.000	1.000	30.0	30.0	91.106	58.310	10.077	2332	3207	3207	4665	4665	5248	5539	6414	7289	2041	2449	2682	3032	3265
	383.8	27.500	1.250	30.0	30.0	112.901	77.619	10.800	3105	4269	4269	6210	6210	6986	7374	8538	9702	2717	3260	3570	4036	4347
	456.6	27.000	1.500	30.0	30.0	134.303	88.456	11.016	3538	4865	4865	7076	7076	7961	8403	9730	....	3096	3715	4069	4600	4954
	528.0	26.500	1.750	30.0	30.0	155.312	110.584	14.050	4423	6082	6082	8847	8847	9953	....	....	....	3870	4645	5087	5750	6193
	598.1	26.000	2.000	30.0	30.0	175.929	130.267	15.419	5211	7165	7165	.....	....	....	....	....	....	4559	5471	5992	6774	7295

D Casing nominal tube OD, in.
w Casing weight, lb/ft
d ID (drift), in.
t Casing wall thickness, in.
D_c Connection OD, in.
D_{sc} Connection OD (special clearance or turned down), in.
A_t Casing wall critical cross-sectional area, sq. in.
A_c Connection critical cross-sectional area, sq. in.
L_m Make-up loss, in.

SECTION SIX

6

Washpipe

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Washpipe Strength Specifications

Washpipe					Tool Joint Specifications (Estimated for **Hydril FJ-WP** connection and N80 material)				Washover Specifications	
OD (in)	Weight Plain end (lb/ft)	Wall Thickness (in)	I.D. Nominal (in)	I.D. Drift (in)	Max Calculated Working Torque (ft-lb)	Recommended Make-up Torque	Tensile Yield (N80)	Connection Tensile Efficiency (N80)	Recommended Washover Diameter	Maximum Washover Diameter
3.375	10.02	.305	2.765	2.639	4000	1000	111,500	46.9	2-1/2	2-5/8
3.500	8.81	.254	2.922	2.867	3400	850	108,000	51.2	2-11/16	2-7/8
3.750	9.56	.250	3.250	3.125	3200	800	115,500	52.2	3	3-1/8
4.000	11.34	.286	3.428	3.303	4500	1125	139,000	52.1	3-1/8	3-5/16
	12.93	.330	3.340	3.215	4600	1150	131,000	47.1	3-1/16	3-1/4
	14.69	.380	3.240	3.115	6000	1500	175,000	50.8	2-31/32	3-1/16
4.375	12.02	.275	3.826	3.701	4900	1225	145,000	51.1	3-1/2	3-3/4
	13.58	.313	3.749	3.624	5500	1375	158,700	50.2	3-1/2	3-5/8
4.500	13.04	.290	3.920	3.795	5000	1250	155,000	52.0	3-5/8	3-3/4
	14.98	.337	3.826	3.701	6700	1675	182,000	51.6	3-1/2	3-11/16
4.750	15.75	.334	4.082	3.957	7000	1750	193,000	52.0	3-13/16	3-15/16
5.000	14.87	.296	4.408	4.283	7000	1750	180,000	51.4	4	4-1/8
	17.93	.362	4.276	4.151	9400	2350	219,000	51.8	4	4-1/8
5.375	20.03	.375	4.625	4.500	9500	2375	222,800	47.0	4-1/4	4-1/2
5.500	16.87	.304	4.892	4.676	9000	2250	204,000	51.3	4-5/8	4-3/4
	24.54	.476	4.548	4.423	16,000	4000	305,000	50.7	4-1/4	4-3/8
5.750	18.18	.313	5.125	5.000	10,300	2575	222,000	52.0	4-7/8	5
	21.53	.375	5.000	4.875	13,580	3395	246,000	49.0	4-3/4	4-7/8
6.000	19.64	.324	5.350	5.227	12,200	3050	232,000	50.2	5-1/8	5-1/4
	22.81	.380	5.240	5.115	14,000	3500	276,000	49.0	5	5-1/8
6.375	24.03	.375	5.625	5.500	16,800	4200	286,000	50.5	5-3/8	5-1/2
	27.77	.438	5.499	5.374	20,000	5000	330,000	51.8	5-1/4	5-3/8
6.625	24.00	.352	5.921	5.796	16,900	4225	280,000	50.4	5-5/8	5-3/4
7.000	25.66	.362	6.276	6.151	18,000	4500	301,000	49.8	6	6-1/8
7.375	28.04	.375	6.625	6.500	21,200	5300	329,000	49.9	6-3/8	6-1/2
7.500	28.54	.368	6.765	6.640	21,300	5325	334,000	50.7	6-1/2	6-5/8
7.625	29.04	.375	6.875	6.750	22,700	5675	340,000	49.8	6-5/8	6-3/4
	33.70	.430	6.765	6.640	24,500	6125	355,000	52.0	6-1/2	6-5/8
8.000	30.54	.375	7.250	7.125	26,400	6600	362,900	51.0	7	7-1/8
8.125	31.04	.375	7.375	7.250	25,000	6250	374,000	51.0	7-1/8	7-1/4
	35.96	.438	7.250	7.125	33,500	8375	398,000	47.0	7	7-1/8
	38.43	.470	7.185	7.060	35,200	8800	455,000	50.4	6-15/16	7-1/16
8.375	32.04	.375	7.625	7.500	27,700	6925	376,000	49.8	7-3/8	7-1/2
8.625	36.00	.400	7.825	7.700	33,000	8250	418,000	50.6	7-1/2	7-5/8
	39.30	.450	7.725	7.600	35,000	8750	475,200	51.0	7-1/2	7-5/8
	43.39	.500	7.625	7.500	40,000	10,000	500,000	50.2	7-1/4	7-1/2
9.000	40.05	.425	8.150	8.025	38,400	9600	463,000	50.5	7-7/8	8
9.625	39.01	.395	8.835	8.679	40,000	10,000	463,400	51.0	8-1/2	8-3/4
	42.70	.435	8.755	8.599	46,100	11,525	502,000	49.9	8-1/4	8-1/2
10.750	45.51	.400	9.950	9.794	50,000	12,500	531,000	51.0	9-1/2	9-3/4
	49.50	.450	9.850	9.694	60,300	15,075	578,000	49.6	9-3/8	9-5/8
	54.25	.495	9.760	9.604	65,000	16,250	641,000	49.9	9-1/4	9-1/2
11.750	52.57	.435	10.880	10.724	65,000	16,250	620,000	49.8	10-1/8	10-5/8
	60.00	.489	10.772	10.616	81,000	20,250	687,000	49.7	10	10-1/8
13.375	72.00	.514	12.347	12.191	90,400	22,600	833,000	50.1	11-3/8	12
16.000	84.00	.495	15.010	14.823	123,000	30,750	970,000	50.3	14-1/4	14-3/4

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Washpipe Strength Specifications (continued)

Washpipe					Tool Joint Specifications (Estimated for **API X-Line** connection and N80 material)				Washover Specifications	
OD (in)	Weight Plain end (lb/ft)	Wall Thickness (in)	I.D. Nominal (in)	I.D. Drift (in)	Max Calculated Working Torque (ft-lb)	Recommended Make-up Torque	Tensile Yield (N80)	Connection Tensile Efficiency (N80)	Recommended Washover Diameter	Maximum Washover Diameter
5.000	15.00	.296	4.375	4.283	9,550	2,700	282,640	80.0	4	4-1/4
	18.00	.362	4.250	4.151	9,550	2,700	350,000	83.0	4	4-1/8
5.500	17.00	.304	4.875	4.767	11,800	2,700	316,640	80.0	4-5/8	4-3/4
6.625	24.00	.352	5.921	5.796	15,700	3,900	420,720	76.0	5-5/8	5-3/4
7.000	26.00	.362	6.276	6.151	20,900	4,500	482,640	80.0	6	6-1/8
7.625	29.70	.375	6.843	8.750	25,300	5,000	531,200	78.0	6-9/16	6-11/16
8.625	36.00	.400	7.813	7.700	37,100	5,500	562,000	79.0	7-1/2	7-5/8
9.625	43.50	.435	8.665	8.599	48,500	6,000	836,960	83.0	8-3/8	8-1/2

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Cased Hole Specifications for Washpipe

Casing				Washpipe	Washover Size			Overshots	
Diameter (in)	Wt. (lb)	ID (in.)	Bit Size (in.)	OD (in.)	Weight (lb/ft)	Rec (in.)	Max (in.)	OD (in.)	Max Catch (in.)
4.500	18.80	3.640	3-1/2	3-1/2	8.81	2-11/16	2-7/8	3-3/8	2.5000
	15.10	3.826	3-5/8	3-1/2	8.81	2-11/16	2-7/8	3-5/8	2.8750
	13.50	3.920	3-3/4	3-1/2	8.81	2-11/16	2-7/8	3-5/8	2.8750
	11.60	4.000	3-7/8	3-3/4	10.46	3	3-1/8	3-3/4	3.0625
	9.50	4.090	3-7/8	3-3/4	10.46	3	3-1/8	3-3/4	3.0625
5.000	23.00	4.044	3-7/8	3-3/4	9.56	3	3-1/8	3-7/8	3.1250
	20.00	4.184	4	3-3/4	9.56	3	3-1/8	3-7/8	3.1250
	18.00	4.276	4-1/8	3-3/4	9.56	3	3-1/8	3-7/8	3.1250
	15.00	4.408	4-1/4	4	12.93	3-1/16	3-1/4	4-1/8	3.1250
	13.00	4.494	4-1/4	4	12.93	3-1/16	3-1/4	4-1/8	3.1250
	11.50	4.560	4-1/4	4	12.93	3-1/16	3-1/4	4-1/8	3.1250
5.500	26.00	4.548	4-3/8	4	12.93	3-1/16	3-1/4	4-1/8	3.1250
	23.00	4.670	4-1/2	4-3/8	13.58	3-1/2	3-5/8	4-3/8	3.5000
	20.00	4.778	4-5/8	4-3/8	13.58	3-1/2	3-5/8	4-3/8	3.5000
	17.00	4.892	4-3/4	4-1/2	14.98	3-1/2	3-11/16	4-11/16	3.7500
	15.50	4.950	4-3/4	4-1/2	14.98	3-1/2	3-11/16	4-11/16	3.7500
	14.00	5.012	4-3/4	4-1/2	14.98	3-1/2	3-11/16	4-11/16	3.7500
7.000	38.00	5.920	5-3/4	5-1/2	17.00	4-5/8	4-3/4	5-9/16	4.6250
	35.00	6.004	5-7/8	5-1/2	17.00	4-5/8	4-3/4	5-3/4	4.7500
	32.00	6.094	6	5-1/2	17.00	4-5/8	4-3/4	5-3/4	4.7500
	29.00	6.184	6	5-3/4	18.00	4-7/8	5	5-3/4	4.7500
	26.00	6.276	6-1/8	5-3/4	18.00	4-7/8	5	5-3/4	4.7500
	23.00	6.366	6-1/4	5-3/4	18.00	4-7/8	5	5-3/4	4.7500
	20.00	6.456	6-1/4	5-3/4	18.00	4-7/8	5	5-3/4	4.7500
	17.00	6.538	6-1/4	5-3/4	18.00	4-7/8	5	5-3/4	4.7500
7.625	45.30	6.453	6-1/4	6	19.64	5-1/8	5-1/4	5-3/4	4.7500
	39.00	6.625	6-1/4	6	19.64	5-1/8	5-1/4	6-1/8	5.0000
	33.70	6.765	6-5/8	6	19.64	5-1/8	5-1/4	6-1/8	5.0000
	29.70	6.875	6-3/4	6-3/8	24.03	5-3/8	5-1/2	6-3/8	5.2500
	26.40	6.969	6-3/4	6-3/8	24.03	5-3/8	5-1/2	6-3/8	5.2500
	24.00	7.025	6-3/4	6-3/8	24.03	5-3/8	5-1/2	6-3/8	5.2500
8.625	49.00	7.511	7-3/8	7	25.66	6	6-1/8	6-3/8	5.2500
	44.00	7.625	7-3/8	7	25.66	6	6-1/8	6-3/8	5.2500
	40.00	7.725	7-5/8	7	25.66	6	6-1/8	6-3/8	5.2500
	36.00	7.825	7-5/8	7-3/8	28.00	6-3/8	6-1/2	7-3/8	6.2500
	32.00	7.825	7-5/8	7-3/8	28.00	6-3/8	6-1/2	7-3/8	6.2500
	28.00	8.017	7-5/8	7-3/8	28.00	6-3/8	6-1/2	7-3/8	6.2500
	24.00	8.097	7-5/8	7-3/8	28.00	6-3/8	6-1/2	7-3/8	6.2500
9.625	53.50	8.535	8-3/8	7-5/8	29.70	6-5/8	6-3/4	7-5/8	6.5000
	47.00	8.681	8-1/2	8-1/8	38.42	6-5/8	6-3/4	8-1/8	7.0000
	43.50	8.755	8-5/8	8-1/8	38.42	6-5/8	6-3/4	8-1/8	7.0000
	40.00	8.832	8-5/8	8-1/8	38.42	6-5/8	6-3/4	8-1/8	7.0000
	36.00	8.921	8-3/4	8-1/8	38.42	6-15/16	7-1/16	8-1/8	7.0000
	32.30	9.001	8-3/4	8-1/8	38.42	6-15/16	7-1/16	8-1/8	7.0000

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Cased Hole Specifications for Washpipe (continued)

Casing				Washpipe	Washover Size			Overshots	
Diameter (in)	Wt. (lb)	ID (in.)	Bit Size (in.)	OD (in.)	Weight (lb/ft)	Rec (in.)	Max (in.)	OD (in.)	Max Catch (in.)
10.750	55.50	9.760	9-1/2	9	38.92	7-7/8	8	9-1/2	8.375
	51.00	9.850	9-5/8	9	38.92	7-7/8	8	9-1/2	8.375
	45.50	9.950	9-5/8	9	38.92	7-7/8	8	9-1/2	8.375
	40.50	10.050	9-7/8	9	38.92	7-7/8	8	9-1/2	8.375
	32.75	10.192	9-7/8	9	38.92	7-7/8	8	9-1/2	8.375
11.750	60.00	10.772	10-5/8	9-5/8	43.50	8-1/4	8-1/2	10-5/8	9.000
	54.00	10.880	10-5/8	9-5/8	43.50	8-1/4	8-1/2	10-5/8	9.000
	47.00	11.000	10-5/8	9-5/8	43.50	8-1/4	8-1/2	10-5/8	9.000
	42.00	11.084	10-5/8	9-5/8	43.50	8-1/4	8-1/2	10-5/8	9.000
11.875	72.00	10.711	10-5/8	9-5/8	42.70	8-1/4	8-1/2	10-1/8	8.500
13.375	72.00	12.347	12	11-3/4	58.81	10-1/2	10-1/2	11-3/4	10.125
	68.00	12.415	12-1/4	11-3/4	58.81	10-1/2	10-1/2	11-3/4	10.125
	61.00	12.515	12-1/4	11-3/4	58.81	10-1/2	10-1/2	11-3/4	10.125
	54.50	12.615	12-1/4	11-3/4	58.81	10-1/2	10-1/2	11-3/4	10.125
	48.00	12.715	12-1/4	11-3/4	58.81	10-1/2	10-1/2	11-3/4	10.125

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SECTION SEVEN 7

Coiled Tubing

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HS-70™ Grade Coiled Tubing Data*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
1.000	0.080	0.076	0.840	0.788	16,200	18,500	8,400	10,500	0.221	0.565	319	344	28.79	0.69	40.80	0.97
	0.087	0.083	0.826	0.850	17,500	20,000	9,100	11,400	0.239	0.546	341	370	27.84	0.66	40.80	0.97
	0.095	0.090	0.810	0.920	18,900	21,600	9,900	12,300	0.257	0.528	362	395	26.77	0.64	40.80	0.97
	0.102	0.097	0.796	0.981	20,100	23,000	10,600	13,300	0.275	0.510	382	420	25.85	0.62	40.80	0.97
	0.109	0.104	0.782	1.040	21,400	24,400	11,300	14,200	0.293	0.493	401	443	24.95	0.59	40.80	0.97
1.250	0.080	0.076	1.090	1.002	20,600	23,500	6,700	8,400	0.280	0.947	522	555	48.47	1.15	63.75	1.52
	0.087	0.083	1.076	1.083	22,300	25,400	7,400	9,200	0.304	0.923	561	599	47.24	1.12	63.75	1.52
	0.095	0.090	1.060	1.175	24,100	27,600	8,000	9,900	0.328	0.899	598	642	45.84	1.09	63.75	1.52
	0.102	0.097	1.046	1.254	25,800	29,400	8,600	10,700	0.351	0.876	633	683	44.64	1.06	63.75	1.52
	0.109	0.104	1.032	1.332	27,400	31,300	9,200	11,400	0.374	0.853	668	724	43.45	1.03	63.75	1.52
	0.116	0.111	1.018	1.408	28,900	33,100	9,700	12,200	0.397	0.830	700	764	42.28	1.01	63.75	1.52
	0.125	0.118	1.000	1.506	30,900	35,300	10,300	12,900	0.420	0.808	732	802	40.80	0.97	63.75	1.52
	0.134	0.128	0.982	1.601	32,900	37,600	11,200	14,000	0.451	0.776	775	856	39.34	0.94	63.75	1.52
	0.145	0.138	0.960	1.715	35,200	40,300	12,000	15,000	0.482	0.745	815	907	37.60	0.90	63.75	1.52
	0.156	0.148	0.938	1.827	37,500	42,900	12,800	16,000	0.512	0.715	853	956	35.90	0.85	63.75	1.52
	0.175	0.167	0.900	2.014	41,400	47,300	14,300	17,900	0.568	0.659	919	1,044	33.05	0.79	63.75	1.52
1.500	0.095	0.090	1.310	1.429	29,400	33,500	6,700	8,300	0.399	1.368	893	947	70.02	1.67	91.80	2.19
	0.102	0.097	1.296	1.527	31,400	35,800	7,200	9,000	0.428	1.340	949	1,011	68.53	1.63	91.80	2.19
	0.109	0.104	1.282	1.623	33,300	38,100	7,700	9,600	0.456	1.311	1,003	1,074	67.06	1.60	91.80	2.19
	0.116	0.111	1.268	1.719	35,300	40,300	8,200	10,200	0.484	1.283	1,055	1,135	65.60	1.56	91.80	2.19
	0.125	0.118	1.250	1.840	37,800	43,200	8,700	10,800	0.512	1.255	1,106	1,194	63.75	1.52	91.80	2.19

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-70™ Grade Coiled Tubing Data (continued)*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
1.500	0.134	0.128	1.232	1.960	40,300	46,000	9,400	11,700	0.552	1.215	1,175	1,278	61.93	1.47	91.80	2.19
	0.145	0.138	1.210	2.104	43,200	49,400	10,100	12,600	0.590	1.177	1,242	1,358	59.74	1.42	91.80	2.19
	0.156	0.148	1.188	2.245	46,100	52,700	10,800	13,500	0.629	1.139	1,305	1,436	57.58	1.37	91.80	2.19
	0.175	0.167	1.150	2.483	51,000	58,300	12,100	15,100	0.699	1.068	1,416	1,577	53.96	1.28	91.80	2.19
	0.190	0.180	1.120	2.665	54,700	62,600	13,000	16,200	0.746	1.021	1,486	1,668	51.18	1.22	91.80	2.19
1.750	0.109	0.104	1.532	1.915	39,300	45,000	6,600	8,200	0.538	1.867	1,407	1,492	95.76	2.28	124.95	2.97
	0.116	0.111	1.518	2.029	41,700	47,600	7,000	8,800	0.572	1.834	1,483	1,579	94.02	2.24	124.95	2.97
	0.125	0.118	1.500	2.175	44,700	51,100	7,500	9,300	0.605	1.800	1,558	1,665	91.80	2.19	124.95	2.97
	0.134	0.128	1.482	2.318	47,600	54,400	8,100	10,100	0.652	1.753	1,660	1,784	89.61	2.13	124.95	2.97
	0.145	0.138	1.460	2.492	51,200	58,500	8,700	10,900	0.699	1.706	1,759	1,901	86.97	2.07	124.95	2.97
	0.156	0.148	1.438	2.662	54,700	62,500	9,300	11,600	0.745	1.660	1,854	2,014	84.37	2.01	124.95	2.97
	0.175	0.167	1.400	2.951	60,600	69,300	10,400	13,100	0.831	1.575	2,024	2,221	79.97	1.90	124.95	2.97
	0.190	0.180	1.370	3.173	65,200	74,500	11,200	14,000	0.888	1.517	2,132	2,356	76.58	1.82	124.95	2.97
2.000	0.109	0.104	1.782	2.207	45,300	51,800	5,800	7,200	0.619	2.522	1,879	1,979	129.56	3.08	163.20	3.89
	0.116	0.111	1.768	2.340	48,100	54,900	6,200	7,700	0.659	2.483	1,985	2,097	127.53	3.04	163.20	3.89
	0.125	0.118	1.750	2.509	51,500	58,900	6,500	8,200	0.698	2.444	2,088	2,213	124.95	2.97	163.20	3.89
	0.134	0.128	1.732	2.677	55,000	62,800	7,100	8,900	0.753	2.389	2,230	2,375	122.39	2.91	163.20	3.89
	0.145	0.138	1.710	2.880	59,200	67,600	7,600	9,500	0.807	2.334	2,368	2,534	119.30	2.84	163.20	3.89
	0.156	0.148	1.688	3.080	63,300	72,300	8,200	10,200	0.861	2.280	2,501	2,690	116.25	2.77	163.20	3.89
	0.175	0.167	1.650	3.419	70,200	80,300	9,200	11,500	0.962	2.180	2,741	2,975	111.08	2.64	163.20	3.89
	0.190	0.180	1.620	3.682	75,600	86,400	9,900	12,300	1.029	2.112	2,897	3,163	107.08	2.55	163.20	3.89
	0.204	0.195	1.592	3.923	80,600	92,100	10,700	13,300	1.106	2.036	3,067	3,372	103.41	2.46	163.20	3.89

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-70™ Grade Coiled Tubing Data (continued)*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
2.375	0.125	0.118	2.125	3.011	61,900	70,700	5,500	6,900	0.837	3.593	3,028	3,181	184.24	4.39	230.14	5.48
	0.134	0.128	2.107	3.215	66,000	75,500	6,000	7,500	0.904	3.527	3,243	3,421	181.13	4.31	230.14	5.48
	0.145	0.138	2.085	3.462	71,100	81,300	6,500	8,100	0.970	3.460	3,452	3,656	177.37	4.22	230.14	5.48
	0.156	0.148	2.063	3.706	76,100	87,000	6,900	8,600	1.035	3.395	3,655	3,886	173.64	4.13	230.14	5.48
	0.175	0.167	2.025	4.122	84,700	96,800	7,800	9,700	1.158	3.272	4,025	4,313	167.31	3.98	230.14	5.48
	0.190	0.180	1.995	4.445	91,300	----	8,400	10,500	1.241	3.189	4,266	4,595	162.38	3.87	230.14	5.48
	0.204	0.195	1.967	4.742	97,400	----	9,000	11,300	1.335	3.095	4,533	4,913	157.86	3.76	230.14	5.48
2.875	0.156	0.148	2.563	4.541	93,300	----	5,700	7,200	1.268	5.224	5,536	5,825	268.01	6.38	337.24	8.03
	0.175	0.167	2.525	5.059	----	----	6,500	8,100	1.421	5.071	6,122	6,483	260.12	6.19	337.24	8.03
	0.190	0.180	2.495	5.462	----	----	6,900	8,700	1.524	4.968	6,508	6,922	253.98	6.05	337.24	8.03
	0.204	0.195	2.467	5.834	----	----	7,500	9,400	1.642	4.850	6,939	7,418	248.31	5.91	337.24	8.03
3.500	0.175	0.167	3.150	6.230	----	----	5,300	6,600	1.749	7.872	9,364	9,817	404.84	9.64	499.80	11.90
	0.190	0.180	3.120	6.733	----	----	5,700	7,200	1.877	7.744	9,979	10,500	397.16	9.46	499.80	11.90
	0.204	0.195	3.092	7.199	----	----	6,200	7,700	2.025	7.596	10,671	11,274	390.07	9.29	499.80	11.90
	0.224	0.214	3.052	7.857	----	----	6,800	8,500	2.209	7.412	11,519	12,234	380.04	9.05	499.80	11.90
	0.250	0.240	3.000	8.699	----	----	7,600	9,500	2.458	7.163	12,629	13,510	367.20	8.74	499.80	11.90
4.500	0.204	0.195	4.092	9.383	----	----	4,800	6,000	2.637	13.267	18,317	19,120	683.17	16.27	826.20	19.67
	0.224	0.214	4.052	10.255	----	----	5,300	6,600	2.881	13.023	19,845	20,801	669.88	15.95	826.20	19.67
	0.250	0.240	4.000	11.376	----	----	5,900	7,400	3.212	12.692	21,868	23,052	652.80	15.54	826.20	19.67

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-80™ Grade Coiled Tubing Data*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
1.000	0.080	0.076	0.840	0.788	18,000	19,700	10,500	11,700	0.221	0.565	356	383	28.79	0.69	40.80	0.97
	0.087	0.083	0.826	0.850	19,500	21,200	11,500	12,700	0.239	0.546	380	412	27.84	0.66	40.80	0.97
	0.095	0.090	0.810	0.920	21,100	23,000	12,400	13,800	0.257	0.528	403	441	26.77	0.64	40.80	0.97
	0.102	0.097	0.796	0.981	22,400	24,500	13,300	14,800	0.275	0.510	426	468	25.85	0.62	40.80	0.97
	0.109	0.104	0.782	1.040	23,800	25,900	14,200	15,800	0.293	0.493	447	494	24.95	0.59	40.80	0.97
1.250	0.080	0.076	1.090	1.002	22,900	25,000	8,500	9,400	0.280	0.947	582	618	48.47	1.15	63.75	1.52
	0.087	0.083	1.076	1.083	24,800	27,000	9,200	10,200	0.304	0.923	625	667	47.24	1.12	63.75	1.52
	0.095	0.090	1.060	1.175	26,900	29,300	10,000	11,100	0.328	0.899	666	715	45.84	1.09	63.75	1.52
	0.102	0.097	1.046	1.254	28,700	31,300	10,700	11,900	0.351	0.876	706	761	44.64	1.06	63.75	1.52
	0.109	0.104	1.032	1.332	30,500	33,200	11,500	12,800	0.374	0.853	744	807	43.45	1.03	63.75	1.52
	0.116	0.111	1.018	1.408	32,200	35,100	10,900	13,600	0.397	0.830	780	851	42.28	1.01	63.75	1.52
	0.125	0.118	1.000	1.506	34,500	37,600	13,000	14,400	0.420	0.808	815	894	40.80	0.97	63.75	1.52
	0.134	0.128	0.982	1.601	36,600	39,900	14,000	15,600	0.451	0.776	863	953	39.34	0.94	63.75	1.52
	0.145	0.138	0.960	1.715	39,300	42,800	13,400	16,700	0.482	0.745	908	1,010	37.60	0.90	63.75	1.52
	0.156	0.148	0.938	1.827	41,800	45,600	16,000	17,800	0.512	0.715	950	1,065	35.90	0.85	63.75	1.52
	0.175	0.167	0.900	2.014	46,100	50,200	17,900	19,900	0.568	0.659	1,024	1,163	33.05	0.79	63.75	1.52
1.500	0.095	0.090	1.310	1.429	32,700	35,600	8,300	9,300	0.399	1.368	995	1,056	70.02	1.67	91.80	2.19
	0.102	0.097	1.296	1.527	34,900	38,100	9,000	10,000	0.428	1.340	1,057	1,127	68.53	1.63	91.80	2.19
	0.109	0.104	1.282	1.623	37,200	40,500	9,600	10,700	0.456	1.311	1,117	1,196	67.06	1.60	91.80	2.19
	0.116	0.111	1.268	1.719	39,300	42,900	9,100	11,400	0.484	1.283	1,176	1,264	65.60	1.56	91.80	2.19
	0.125	0.118	1.250	1.840	42,100	45,900	10,900	12,100	0.512	1.255	1,232	1,331	63.75	1.52	91.80	2.19
	0.134	0.128	1.232	1.960	44,900	48,900	11,800	13,100	0.552	1.215	1,310	1,424	61.93	1.47	91.80	2.19
	0.145	0.138	1.210	2.104	48,100	52,500	11,200	14,000	0.590	1.177	1,383	1,513	59.74	1.42	91.80	2.19
	0.156	0.148	1.188	2.245	51,400	56,000	13,500	15,000	0.629	1.139	1,454	1,600	57.58	1.37	91.80	2.19
	0.175	0.167	1.150	2.483	56,800	61,900	15,100	16,800	0.699	1.068	1,578	1,757	53.96	1.28	91.80	2.19
	0.190	0.180	1.120	2.665	61,000	66,500	16,200	18,000	0.746	1.021	1,656	1,859	51.18	1.22	91.80	2.19

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-80™ Grade Coiled Tubing Data (continued)*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
1.750	0.109	0.104	1.532	1.915	43,800	47,800	8,300	9,200	0.538	1.867	1,568	1,662	95.76	2.28	124.95	2.97
	0.116	0.111	1.518	2.029	46,400	50,600	7,800	9,800	0.572	1.834	1,653	1,759	94.02	2.24	124.95	2.97
	0.125	0.118	1.500	2.175	49,800	54,200	9,400	10,400	0.605	1.800	1,736	1,855	91.80	2.19	124.95	2.97
	0.134	0.128	1.482	2.318	53,100	57,800	10,100	11,300	0.652	1.753	1,850	1,988	89.61	2.13	124.95	2.97
	0.145	0.138	1.460	2.492	57,000	62,100	9,700	12,100	0.699	1.706	1,960	2,118	86.97	2.07	124.95	2.97
	0.156	0.148	1.438	2.662	60,900	66,400	11,700	13,000	0.745	1.660	2,066	2,244	84.37	2.01	124.95	2.97
	0.175	0.167	1.400	2.951	67,500	73,600	13,100	14,500	0.831	1.575	2,255	2,475	79.97	1.90	124.95	2.97
	0.190	0.180	1.370	3.173	72,600	79,100	14,100	15,600	0.888	1.517	2,376	2,625	76.58	1.82	124.95	2.97
2.000	0.109	0.104	1.782	2.207	50,500	55,000	7,300	8,100	0.619	2.522	2,094	2,205	129.56	3.08	163.20	3.89
	0.116	0.111	1.768	2.340	53,600	58,400	6,900	8,600	0.659	2.483	2,212	2,336	127.53	3.04	163.20	3.89
	0.125	0.118	1.750	2.509	57,400	62,600	8,200	9,100	0.698	2.444	2,326	2,465	124.95	2.97	163.20	3.89
	0.134	0.128	1.732	2.677	61,300	66,800	8,900	9,900	0.753	2.389	2,485	2,647	122.39	2.91	163.20	3.89
	0.145	0.138	1.710	2.880	65,900	71,800	8,500	10,600	0.807	2.334	2,639	2,824	119.30	2.84	163.20	3.89
	0.156	0.148	1.688	3.080	70,500	76,800	10,200	11,400	0.861	2.280	2,787	2,997	116.25	2.77	163.20	3.89
	0.175	0.167	1.650	3.419	78,300	85,300	11,500	12,800	0.962	2.180	3,055	3,315	111.08	2.64	163.20	3.89
	0.190	0.180	1.620	3.682	84,300	91,800	12400	13800	1.029	2.112	3,228	3,524	107.08	2.55	163.20	3.89
2.375	0.125	0.118	2.125	3.011	68,900	75,100	6,900	7,700	0.837	3.593	3,374	3,544	184.24	4.39	230.14	5.48
	0.134	0.128	2.107	3.215	73,600	80,200	7,500	8,300	0.904	3.527	3,614	3,811	181.13	4.31	230.14	5.48
	0.145	0.138	2.085	3.462	79,200	86,300	7,200	9,000	0.970	3.460	3,847	4,074	177.37	4.22	230.14	5.48
	0.156	0.148	2.063	3.706	84,800	92,400	8,700	9,600	1.035	3.395	4,073	4,331	173.64	4.13	230.14	5.48
	0.175	0.167	2.025	4.122	94,300	----	9,700	10,800	1.158	3.272	4,485	4,806	167.31	3.98	230.14	5.48
	0.190	0.180	1.995	4.445	----	----	10,500	11,700	1.241	3.189	4,754	5,121	162.38	3.87	230.14	5.48
	0.204	0.195	1.967	4.742	----	----	11,300	12,600	1.335	3.095	5,051	5,474	157.86	3.76	230.14	5.48

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-80™ Grade Coiled Tubing Data (continued)*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
2.875	0.156	0.148	2.563	4.541	----	----	7,200	8,000	1.268	5.224	6,168	6,490	268.01	6.38	337.24	8.03
	0.175	0.167	2.525	5.059	----	----	8,100	9,000	1.421	5.071	6,822	7,224	260.12	6.19	337.24	8.03
	0.190	0.180	2.495	5.462	----	----	8,700	9,700	1.524	4.968	7,252	7,713	253.98	6.05	337.24	8.03
	0.204	0.195	2.467	5.834	----	----	9,400	10,500	1.642	4.850	7,732	8,266	248.31	5.91	337.24	8.03
3.500	0.175	0.167	3.150	6.230	----	----	6,700	7,400	1.749	7.872	10,434	10,939	404.84	9.64	499.80	11.90
	0.190	0.180	3.120	6.733	----	----	7,200	8,000	1.877	7.744	11,120	11,700	397.16	9.46	499.80	11.90
	0.204	0.195	3.092	7.199	----	----	7,800	8,600	2.025	7.596	11,890	12,563	390.07	9.29	499.80	11.90
	0.224	0.214	3.052	7.857	----	----	8,500	9,400	2.209	7.412	12,835	13,632	380.04	9.05	499.80	11.90
	0.250	0.240	3.000	8.699	----	----	9,500	10,600	2.458	7.163	14,072	15,054	367.20	8.74	499.80	11.90
4.500	0.204	0.195	4.092	9.383	----	----	6,100	6,700	2.637	13.267	20,410	21,305	683.17	16.27	826.20	19.67
	0.224	0.214	4.052	10.255	----	----	6,600	7,400	2.881	13.023	22,113	23,179	669.88	15.95	826.20	19.67
	0.250	0.240	4.000	11.376	----	----	7,400	8,300	3.212	12.692	24,368	25,686	652.80	15.54	826.20	19.67

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-90™ Grade Coiled Tubing Data*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
1.000	0.087	0.083	0.826	0.850	22,500	24,200	13,200	14,700	0.239	0.546	439	476	27.84	0.66	40.80	0.97
	0.095	0.090	0.810	0.920	24,300	26,200	14,300	15,900	0.257	0.528	466	508	26.77	0.64	40.80	0.97
	0.102	0.097	0.796	0.981	25,900	27,900	15,300	17,000	0.275	0.510	491	540	25.85	0.62	40.80	0.97
	0.109	0.104	0.782	1.040	27,500	29,600	16,400	18,200	0.293	0.493	515	570	24.95	0.59	40.80	0.97
1.250	0.087	0.083	1.076	1.083	28,600	30,800	10,600	11,800	0.304	0.923	721	770	47.24	1.12	63.75	1.52
	0.095	0.090	1.060	1.175	31,000	33,400	11,500	12,800	0.328	0.899	769	825	45.84	1.09	63.75	1.52
	0.102	0.097	1.046	1.254	33,100	35,700	12,400	13,800	0.351	0.876	814	879	44.64	1.06	63.75	1.52
	0.109	0.104	1.032	1.332	35,200	37,900	13,200	14,700	0.374	0.853	858	931	43.45	1.03	63.75	1.52
	0.116	0.111	1.018	1.408	37,200	40,100	14,100	15,700	0.397	0.830	900	982	42.28	1.01	63.75	1.52
	0.125	0.118	1.000	1.506	39,800	42,900	14,900	16,600	0.420	0.808	941	1,032	40.80	0.97	63.75	1.52
	0.134	0.128	0.982	1.601	42,300	45,600	16,200	17,900	0.451	0.776	996	1,100	39.34	0.94	63.75	1.52
	0.145	0.138	0.960	1.715	45,300	48,800	17,300	19,300	0.482	0.745	1,048	1,166	37.60	0.90	63.75	1.52
	0.156	0.148	0.938	1.827	48,300	52,000	18,500	20,600	0.512	0.715	1,097	1,229	35.90	0.85	63.75	1.52
	0.175	0.167	0.900	2.014	53,200	57,300	20,700	23,000	0.568	0.659	1,181	1,342	33.05	0.79	63.75	1.52
1.500	0.095	0.090	1.310	1.429	37,700	40,700	9,600	10,700	0.399	1.368	1,148	1,218	70.02	1.67	91.80	2.19
	0.102	0.097	1.296	1.527	40,300	43,500	10,400	11,500	0.428	1.340	1,220	1,300	68.53	1.63	91.80	2.19
	0.109	0.104	1.282	1.623	42,900	46,200	11,100	12,300	0.456	1.311	1,289	1,380	67.06	1.60	91.80	2.19
	0.116	0.111	1.268	1.719	45,400	48,900	11,800	13,100	0.484	1.283	1,357	1,459	65.60	1.56	91.80	2.19
	0.125	0.118	1.250	1.840	48,600	52,400	12,500	13,900	0.512	1.255	1,422	1,536	63.75	1.52	91.80	2.19
	0.134	0.128	1.232	1.960	51,800	55,800	13,600	15,100	0.552	1.215	1,511	1,643	61.93	1.47	91.80	2.19
	0.145	0.138	1.210	2.104	55,600	59,900	14,600	16,200	0.590	1.177	1,596	1,746	59.74	1.42	91.80	2.19
	0.156	0.148	1.188	2.245	59,300	63,900	15,600	17,300	0.629	1.139	1,677	1,846	57.58	1.37	91.80	2.19
	0.175	0.167	1.150	2.483	65,600	70,700	17,500	19,400	0.699	1.068	1,821	2,028	53.96	1.28	91.80	2.19
	0.190	0.180	1.120	2.665	70,400	75,800	18,700	20,800	0.746	1.021	1,911	2,145	51.18	1.22	91.80	2.19

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

HS-90™ Grade Coiled Tubing Data (continued)*

Dimensions (in.)				Weight (lb/ft)	Pipe Body Load (lb)		Internal Pressure (psi)		Tubing Area (in^2)		Torsional Yield (ft-lb)		Internal Capacity per 1,000 ft		External Displacement per 1,000 ft	
OD spec	Wall spec	Wall min	ID cal	nom	Yield min	Tensile min	Test 90%	Yield min	Wall min	ID min	Yield nom	Ultimate nom	Gals	Bbls	Gal	Bbls
1.750	0.109	0.104	1.532	1.915	50,600	54,500	9,500	10,600	0.538	1.867	1,809	1,918	95.76	2.28	124.95	2.97
	0.116	0.111	1.518	2.029	53,600	57,800	10,200	11,300	0.572	1.834	1,907	2,030	94.02	2.24	124.95	2.97
	0.125	0.118	1.500	2.175	57,400	61,900	10,800	12,000	0.605	1.800	2,003	2,140	91.80	2.19	124.95	2.97
	0.134	0.128	1.482	2.318	61,200	66,000	11,700	13,000	0.652	1.753	2,135	2,294	89.61	2.13	124.95	2.97
	0.145	0.138	1.460	2.492	65,800	70,900	12,600	14,000	0.699	1.706	2,262	2,444	86.97	2.07	124.95	2.97
	0.156	0.148	1.438	2.662	70,300	75,800	13,500	14,900	0.745	1.660	2,384	2,589	84.37	2.01	124.95	2.97
	0.175	0.167	1.400	2.951	77,900	84,000	15,100	16,800	0.831	1.575	2,602	2,855	79.97	1.90	124.95	2.97
	0.190	0.180	1.370	3.173	83,800	90,300	16,200	18,000	0.888	1.517	2,741	3,029	76.58	1.82	124.95	2.97
2.000	0.109	0.104	1.782	2.207	58,300	62,800	8,400	9,300	0.619	2.522	2,416	2,544	129.56	3.08	163.20	3.89
	0.116	0.111	1.768	2.340	61,800	66,600	8,900	9,900	0.659	2.483	2,552	2,696	127.53	3.04	163.20	3.89
	0.125	0.118	1.750	2.509	66,300	71,400	9,500	10,500	0.698	2.444	2,684	2,845	124.95	2.97	163.20	3.89
	0.134	0.128	1.732	2.677	70,700	76,200	10,300	11,400	0.753	2.389	2,867	3,054	122.39	2.91	163.20	3.89
	0.145	0.138	1.710	2.880	76,100	82,000	11,000	12,300	0.807	2.334	3,045	3,258	119.30	2.84	163.20	3.89
	0.156	0.148	1.688	3.080	81,300	87,700	11,800	13,100	0.861	2.280	3,216	3,458	116.25	2.77	163.20	3.89
	0.175	0.167	1.650	3.419	90,300	97,300	13,300	14,800	0.962	2.180	3,525	3,825	111.08	2.64	163.20	3.89
	0.190	0.180	1.620	3.682	97,200	----	14300	15900	1.029	2.112	3,724	4,066	107.08	2.55	163.20	3.89
2.375	0.125	0.118	2.125	3.011	79,500	85,700	8,000	8,900	0.837	3.593	3,894	4,090	184.24	4.39	230.14	5.48
	0.134	0.128	2.107	3.215	84,900	91,500	8,700	9,600	0.904	3.527	4,170	4,398	181.13	4.31	230.14	5.48
	0.145	0.138	2.085	3.462	91,400	98,500	9,300	10,400	0.970	3.460	4,438	4,700	177.37	4.22	230.14	5.48
	0.156	0.148	2.063	3.706	97,900	----	10,000	11,100	1.035	3.395	4,699	4,997	173.64	4.13	230.14	5.48
	0.175	0.167	2.025	4.122	----	----	11,200	12,500	1.158	3.272	5,175	5,545	167.31	3.98	230.14	5.48
	0.190	0.180	1.995	4.445	----	----	12,100	13,400	1.241	3.189	5,485	5,908	162.38	3.87	230.14	5.48

* Available as continuously milled tubing (CM™) or conventional butt-welded (W™)

QTI Coiled Tubing Dimensions, Areas & Volumes — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Flow Area	Internal Capacity (per 1,000 ft.)		External Displacement (per 1,000 ft)		Displacement Ext-Int (per 1,000 ft)	
Outside Diameter	Wall Thickness										
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	(in^2)	(gals)	(bbl)	(gals)	(bbl)	(gal)	(bbl)
1.000	0.087	0.826	0.849	0.250	0.536	27.837	0.6628	40.800	0.9714	12.963	0.3086
	0.095	0.810	0.919	0.270	0.515	26.769	0.6374	40.800	0.9714	14.031	0.3341
	0.102	0.796	0.979	0.288	0.498	25.852	0.6155	40.800	0.9714	14.948	0.3559
	0.109	0.782	1.038	0.305	0.480	24.950	0.5941	40.800	0.9714	15.850	0.3774
1.250	0.087	1.076	1.082	0.318	0.909	47.237	1.1247	63.750	1.5179	16.513	0.3932
	0.095	1.060	1.173	0.345	0.882	45.843	1.0915	63.750	1.5179	17.907	0.4264
	0.102	1.046	1.252	0.368	0.859	44.640	1.0629	63.750	1.5179	19.110	0.4550
	0.109	1.032	1.330	0.391	0.836	43.453	1.0346	63.750	1.5179	20.297	0.4833
	0.118	1.014	1.428	0.420	0.808	41.950	0.9988	63.750	1.5179	21.800	0.5190
	0.125	1.000	1.503	0.442	0.785	40.800	0.9714	63.750	1.5179	22.950	0.5464
	0.134	0.982	1.599	0.470	0.757	39.344	0.9368	63.750	1.5179	24.406	0.5811
	0.145	0.960	1.713	0.503	0.724	37.601	0.8953	63.750	1.5179	26.149	0.6226
	0.156	0.938	1.824	0.536	0.691	35.898	0.8547	63.750	1.5179	27.852	0.6632
	0.175	0.900	2.011	0.591	0.636	33.048	0.7869	63.750	1.5179	30.702	0.7310
1.500	0.095	1.310	1.427	0.419	1.348	70.017	1.6671	91.800	2.1857	21.783	0.5186
	0.102	1.296	1.524	0.448	1.319	68.528	1.6316	91.800	2.1857	23.272	0.5541
	0.109	1.282	1.621	0.476	1.291	67.056	1.5966	91.800	2.1857	24.744	0.5891
	0.118	1.264	1.743	0.512	1.255	65.186	1.5520	91.800	2.1857	26.614	0.6337
	0.125	1.250	1.837	0.540	1.227	63.750	1.5179	91.800	2.1857	28.050	0.6679
	0.134	1.232	1.957	0.575	1.192	61.927	1.4745	91.800	2.1857	29.873	0.7113
	0.145	1.210	2.100	0.617	1.150	59.735	1.4223	91.800	2.1857	32.065	0.7634
	0.156	1.188	2.241	0.659	1.108	57.583	1.3710	91.800	2.1857	34.217	0.8147
	0.175	1.150	2.479	0.728	1.039	53.958	1.2847	91.800	2.1857	37.842	0.9010
	0.188	1.124	2.637	0.775	0.992	51.546	1.2273	91.800	2.1857	40.254	0.9584
	0.203	1.094	2.815	0.827	0.940	48.831	1.1626	91.800	2.1857	42.969	1.0231
1.750	0.109	1.532	1.912	0.562	1.843	95.759	2.2800	124.950	2.9750	29.191	0.6950
	0.118	1.514	2.059	0.605	1.800	93.522	2.2267	124.950	2.9750	31.428	0.7483
	0.125	1.500	2.171	0.638	1.767	91.800	2.1857	124.950	2.9750	33.150	0.7893
	0.134	1.482	2.315	0.680	1.725	89.610	2.1336	124.950	2.9750	35.340	0.8414
	0.145	1.460	2.488	0.731	1.674	86.969	2.0707	124.950	2.9750	37.981	0.9043
	0.156	1.438	2.658	0.781	1.624	84.368	2.0088	124.950	2.9750	40.582	0.9662
	0.175	1.400	2.946	0.866	1.539	79.968	1.9040	124.950	2.9750	44.982	1.0710
	0.188	1.374	3.139	0.923	1.483	77.025	1.8339	124.950	2.9750	47.925	1.1411
	0.203	1.344	3.357	0.987	1.419	73.699	1.7547	124.950	2.9750	51.251	1.2203

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Coiled Tubing Dimensions, Areas & Volumes — U.S. Units (continued)

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Flow Area	Internal Capacity (per 1,000 ft.)		External Displacement (per 1,000 ft)		Displacement Ext-Int (per 1,000 ft)	
Outside Diameter	Wall Thickness										
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	(in^2)	(gals)	(bbl)	(gals)	(bbl)	(gal)	(bbl)
2.000	0.109	1.782	2.203	0.648	2.494	129.561	3.0848	163.200	3.8857	33.639	0.8009
	0.118	1.764	2.374	0.698	2.444	126.957	3.0228	163.200	3.8857	36.243	0.8629
	0.125	1.750	2.505	0.736	2.405	124.950	2.9750	163.200	3.8857	38.250	0.9107
	0.134	1.732	2.673	0.786	2.356	122.393	2.9141	163.200	3.8857	40.807	0.9716
	0.145	1.710	2.875	0.845	2.297	119.303	2.8406	163.200	3.8857	43.897	1.0452
	0.156	1.688	3.075	0.904	2.238	116.253	2.7679	163.200	3.8857	46.947	1.1178
	0.175	1.650	3.414	1.003	2.138	111.078	2.6447	163.200	3.8857	52.122	1.2410
	0.188	1.624	3.642	1.070	2.071	107.605	2.5620	163.200	3.8857	55.595	1.3237
	0.203	1.594	3.900	1.146	1.996	103.666	2.4682	163.200	3.8857	59.534	1.4175
2.375	0.109	2.157	2.640	0.776	3.654	189.828	4.5197	230.138	5.4795	40.309	0.9597
	0.118	2.139	2.847	0.837	3.593	186.673	4.4446	230.138	5.4795	43.464	1.0349
	0.125	2.125	3.007	0.884	3.547	184.238	4.3866	230.138	5.4795	45.900	1.0929
	0.134	2.107	3.210	0.943	3.487	181.130	4.3126	230.138	5.4795	49.008	1.1669
	0.145	2.085	3.457	1.016	3.414	177.367	4.2230	230.138	5.4795	52.771	1.2564
	0.156	2.063	3.700	1.088	3.343	173.644	4.1344	230.138	5.4795	56.494	1.3451
	0.175	2.025	4.116	1.210	3.221	167.306	3.9835	230.138	5.4795	62.832	1.4960
	0.188	1.999	4.395	1.292	3.138	163.037	3.8818	230.138	5.4795	67.101	1.5976
	0.203	1.969	4.713	1.385	3.045	158.180	3.7662	230.138	5.4795	71.957	1.7133
2.875	0.125	2.625	3.675	1.080	5.412	281.138	6.6938	337.238	8.0295	56.100	1.3357
	0.134	2.607	3.926	1.154	5.338	277.295	6.6023	337.238	8.0295	59.942	1.4272
	0.145	2.585	4.232	1.244	5.248	272.635	6.4913	337.238	8.0295	64.603	1.5382
	0.156	2.563	4.534	1.333	5.159	268.014	6.3813	337.238	8.0295	69.224	1.6482
	0.175	2.525	5.051	1.484	5.007	260.126	6.1935	337.238	8.0295	77.112	1.8360
	0.188	2.499	5.400	1.587	4.905	254.796	6.0666	337.238	8.0295	82.441	1.9629
	0.203	2.469	5.798	1.704	4.788	248.715	5.9218	337.238	8.0295	88.522	2.1077
3.500	0.134	3.232	4.822	1.417	8.204	426.190	10.1474	499.800	11.9000	73.610	1.7526
	0.145	3.210	5.200	1.528	8.093	420.407	10.0097	499.800	11.9000	79.393	1.8903
	0.156	3.188	5.577	1.639	7.982	414.664	9.8730	499.800	11.9000	85.136	2.0270
	0.175	3.150	6.220	1.828	7.793	404.838	9.6390	499.800	11.9000	94.962	2.2610
	0.188	3.124	6.656	1.956	7.665	398.183	9.4805	499.800	11.9000	101.617	2.4195
	0.203	3.094	7.155	2.103	7.519	390.572	9.2993	499.800	11.9000	109.228	2.6007

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Coiled Tubing Areas & Dimensions — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Flow Area A_r	Internal Capacity	External Cross Section	External Displace-ment	Displace-ment Ext-Int
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	(mm^2)	(liters/ 100m)	(mm^2)	(liters/ 100m)	(liters/ 100m)
25.4	1.000	2.2	0.087	21.0	0.826	1.264	161.0	345.7	34.57	506.71	50.67	16.10
	1.000	2.4	0.095	20.6	0.810	1.368	174.3	332.5	33.25	506.71	50.67	17.43
	1.000	2.6	0.102	20.2	0.796	1.457	185.6	321.1	32.11	506.71	50.67	18.56
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	309.9	30.99	506.71	50.67	19.68
31.8	1.250	2.2	0.087	27.3	1.076	1.610	205.1	586.7	58.67	791.73	79.17	20.51
	1.250	2.4	0.095	26.9	1.060	1.746	222.4	569.3	56.93	791.73	79.17	22.24
	1.250	2.6	0.102	26.6	1.046	1.863	237.3	554.4	55.44	791.73	79.17	23.73
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	539.7	53.97	791.73	79.17	25.21
	1.250	3.0	0.118	25.8	1.014	2.125	270.7	521.0	52.10	791.73	79.17	27.07
	1.250	3.2	0.125	25.4	1.000	2.237	285.0	506.7	50.67	791.73	79.17	28.50
	1.250	3.4	0.134	24.9	0.982	2.379	303.1	488.6	48.86	791.73	79.17	30.31
	1.250	3.7	0.145	24.4	0.960	2.549	324.7	467.0	46.70	791.73	79.17	32.47
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	445.8	44.58	791.73	79.17	34.59
	1.250	4.4	0.175	22.9	0.900	2.993	381.3	410.4	41.04	791.73	79.17	38.13
38.1	1.500	2.4	0.095	33.3	1.310	2.124	270.5	869.6	86.96	1140.09	114.01	27.05
	1.500	2.6	0.102	32.9	1.296	2.269	289.0	851.1	85.11	1140.09	114.01	28.90
	1.500	2.8	0.109	32.6	1.282	2.412	307.3	832.8	83.28	1140.09	114.01	30.73
	1.500	3.0	0.118	32.1	1.264	2.595	330.5	809.6	80.96	1140.09	114.01	33.05
	1.500	3.2	0.125	31.8	1.250	2.735	348.4	791.7	79.17	1140.09	114.01	34.84
	1.500	3.4	0.134	31.3	1.232	2.912	371.0	769.1	76.91	1140.09	114.01	37.10
	1.500	3.7	0.145	30.7	1.210	3.126	398.2	741.9	74.19	1140.09	114.01	39.82
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	715.1	71.51	1140.09	114.01	42.50
	1.500	4.4	0.175	29.2	1.150	3.689	470.0	670.1	67.01	1140.09	114.01	47.00
	1.500	4.8	0.188	28.5	1.124	3.924	499.9	640.2	64.02	1140.09	114.01	49.99
	1.500	5.2	0.203	27.8	1.094	4.189	533.6	606.4	60.64	1140.09	114.01	53.36
44.5	1.750	2.8	0.109	38.9	1.532	2.846	362.5	1189.3	118.93	1551.80	155.18	36.25
	1.750	3.0	0.118	38.5	1.514	3.064	390.3	1161.5	116.15	1551.80	155.18	39.03
	1.750	3.2	0.125	38.1	1.500	3.232	411.7	1140.1	114.01	1551.80	155.18	41.17
	1.750	3.4	0.134	37.6	1.482	3.445	438.9	1112.9	111.29	1551.80	155.18	43.89
	1.750	3.7	0.145	37.1	1.460	3.703	471.7	1080.1	108.01	1551.80	155.18	47.17
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	1047.8	104.78	1551.80	155.18	50.40
	1.750	4.4	0.175	35.6	1.400	4.385	558.6	993.1	99.31	1551.80	155.18	55.86
	1.750	4.8	0.188	34.9	1.374	4.672	595.2	956.6	95.66	1551.80	155.18	59.52
	1.750	5.2	0.203	34.1	1.344	4.997	636.5	915.3	91.53	1551.80	155.18	63.65

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Coiled Tubing Areas & Dimensions — SI Units (continued)

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Flow Area A_r	Internal Capacity	External Cross Section	External Displace-ment	Displace-ment Ext-Int
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	(mm^2)	(liters/ 100m)	(mm^2)	(liters/ 100m)	(liters/ 100m)
	2.000	2.8	0.109	45.3	1.782	3.279	417.8	1609.1	160.91	2026.83	202.68	41.78
	2.000	3.0	0.118	44.8	1.764	3.533	450.1	1576.7	157.67	2026.83	202.68	45.01
	2.000	3.2	0.125	44.5	1.750	3.729	475.0	1551.8	155.18	2026.83	202.68	47.50
	2.000	3.4	0.134	44.0	1.732	3.978	506.8	1520.0	152.00	2026.83	202.68	50.68
50.8	2.000	3.7	0.145	43.4	1.710	4.280	545.2	1481.7	148.17	2026.83	202.68	54.52
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	1443.8	144.38	2026.83	202.68	58.30
	2.000	4.4	0.175	41.9	1.650	5.081	647.3	1379.5	137.95	2026.83	202.68	64.73
	2.000	4.8	0.188	41.2	1.624	5.420	690.5	1336.4	133.64	2026.83	202.68	69.05
	2.000	5.2	0.203	40.5	1.594	5.804	739.4	1287.5	128.75	2026.83	202.68	73.94
	2.375	2.8	0.109	54.8	2.157	3.930	500.6	2357.5	235.75	2858.15	285.82	50.06
	2.375	3.0	0.118	54.3	2.139	4.237	539.8	2318.4	231.84	2858.15	285.82	53.98
	2.375	3.2	0.125	54.0	2.125	4.475	570.0	2288.1	228.81	2858.15	285.82	57.00
	2.375	3.4	0.134	53.5	2.107	4.778	608.6	2249.5	224.95	2858.15	285.82	60.86
60.3	2.375	3.7	0.145	53.0	2.085	5.145	655.4	2202.8	220.28	2858.15	285.82	65.54
	2.375	4.0	0.156	52.4	2.063	5.508	701.6	2156.5	215.65	2858.15	285.82	70.16
	2.375	4.4	0.175	51.4	2.025	6.126	780.3	2077.8	207.78	2858.15	285.82	78.03
	2.375	4.8	0.188	50.8	1.999	6.542	833.3	2024.8	202.48	2858.15	285.82	83.33
	2.375	5.2	0.203	50.0	1.969	7.015	893.7	1964.5	196.45	2858.15	285.82	89.37
	2.875	3.2	0.125	66.7	2.625	5.469	696.7	3491.5	349.15	4188.26	418.83	69.67
	2.875	3.4	0.134	66.2	2.607	5.844	744.4	3443.8	344.38	4188.26	418.83	74.44
	2.875	3.7	0.145	65.7	2.585	6.298	802.3	3385.9	338.59	4188.26	418.83	80.23
73.0	2.875	4.0	0.156	65.1	2.563	6.749	859.7	3328.6	332.86	4188.26	418.83	85.97
	2.875	4.4	0.175	64.1	2.525	7.518	957.7	3230.6	323.06	4188.26	418.83	95.77
	2.875	4.8	0.188	63.5	2.499	8.037	1023.9	3164.4	316.44	4188.26	418.83	102.39
	2.875	5.2	0.203	62.7	2.469	8.630	1099.4	3088.9	308.89	4188.26	418.83	109.94
	3.500	3.4	0.134	82.1	3.232	7.176	914.2	5293.0	529.30	6207.18	620.72	91.42
	3.500	3.7	0.145	81.5	3.210	7.740	986.0	5221.2	522.12	6207.18	620.72	98.60
88.9	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	5149.9	514.99	6207.18	620.72	105.73
	3.500	4.4	0.175	80.0	3.150	9.258	1179.4	5027.8	502.78	6207.18	620.72	117.94
	3.500	4.8	0.188	79.3	3.124	9.907	1262.0	4945.2	494.52	6207.18	620.72	126.20
	3.500	5.2	0.203	78.6	3.094	10.649	1356.5	4850.6	485.06	6207.18	620.72	135.65

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

HO-60™ Coiled Tubing Technical Data — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^2)	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.000	0.087	0.826	0.849	0.250	14970	9840	7900	9,030	300
	0.095	0.810	0.919	0.270	16210	10800	8600	9,830	320
	0.109	0.782	1.038	0.305	18310	12480	10000	11,180	350
1.250	0.087	1.076	1.082	0.318	19070	7870	6300	7,080	500
	0.095	1.060	1.173	0.345	20680	8640	6900	8,020	530
	0.109	1.032	1.330	0.391	23440	9980	8000	9,150	590
	0.156	0.938	1.824	0.536	32170	14500	11600	12,740	760
1.500	0.095	1.310	1.427	0.419	25160	7200	5800	6,360	800
	0.109	1.282	1.621	0.476	28580	8320	6700	8,050	890
	0.156	1.188	2.241	0.659	39520	12080	9700	10,870	1160
	0.203	1.094	2.815	0.827	49630	15840	12700	13,740	1370
1.750	0.095	1.560	1.681	0.494	29640	6170	4900	4,820	1120
	0.109	1.532	1.912	0.562	33720	7130	5700	6,260	1250
	0.156	1.438	2.658	0.781	46870	10350	8300	9,460	1650
	0.203	1.344	3.357	0.987	59200	13580	10900	12,040	1980
2.000	0.109	1.782	2.203	0.648	38850	6240	5000	4,920	1680
	0.156	1.688	3.075	0.904	54220	9060	7200	8,370	2230
	0.203	1.594	3.900	1.146	68760	11880	9500	10,700	2700
2.375	0.156	2.063	3.700	1.088	65250	7630	6100	7,010	3270
	0.203	1.969	4.713	1.385	83110	10000	8000	9,170	4010
2.875	0.156	2.563	4.534	1.333	79950	6300	5000	5,020	4960
	0.203	2.469	5.798	1.704	102240	8260	6600	7,970	6140
3.500	0.156	3.188	5.577	1.639	98330	5180	4100	3,330	7570
	0.203	3.094	7.155	2.103	126160	6790	5400	5,750	9460

Notes:

1. Minimum wall thickness is 87.5% of specified wall thickness
2. Pressures based on (t - 0.005) in.
3. Material may have tube-to-tube welds

HO-60™ Coiled Tubing Technical Data — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
25.4	1.000	2.2	0.087	21.0	0.826	1.264	161.0	66.6	67.8	54.3	62.3	410
	1.000	2.4	0.095	20.6	0.810	1.368	174.3	72.1	74.5	59.6	67.8	440
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	81.4	86	68.8	77.1	480
31.8	1.250	2.2	0.087	27.3	1.076	1.610	205.1	84.8	54.3	43.4	48.8	680
	1.250	2.4	0.095	26.9	1.060	1.746	222.4	92.0	59.6	47.7	55.3	720
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	104.3	68.8	55.1	63.1	800
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	143.1	99.9	80.0	87.8	1020
38.1	1.500	2.4	0.095	33.3	1.310	2.124	270.5	111.9	49.6	39.7	43.9	1080
	1.500	2.8	0.109	32.6	1.282	2.412	307.3	127.1	57.4	45.9	55.5	1210
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	175.8	83.3	66.6	74.9	1570
	1.500	5.2	0.203	27.8	1.094	4.189	533.6	220.8	109.2	87.4	94.7	1860
44.5	1.750	2.4	0.095	39.6	1.560	2.502	318.7	131.8	42.6	34.0	33.2	1520
	1.750	2.8	0.109	38.9	1.532	2.846	362.5	150.0	49.2	39.3	43.2	1700
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	208.5	71.4	57.1	65.2	2240
	1.750	5.2	0.203	34.1	1.344	4.997	636.5	263.3	93.6	74.9	83.0	2690
50.8	2.000	2.8	0.109	45.3	1.782	3.279	417.8	172.8	43	34.4	33.9	2270
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	241.2	62.5	50.0	57.7	3030
	2.000	5.2	0.203	40.5	1.594	5.804	739.4	305.9	81.9	65.5	73.8	3670
60.3	2.375	4.0	0.156	52.4	2.063	5.508	701.6	290.2	52.6	42.1	48.3	4430
	2.375	5.2	0.203	50.0	1.969	7.015	893.7	369.7	69	55.2	63.2	5430
73.0	2.875	4.0	0.156	65.1	2.563	6.749	859.7	355.6	43.5	34.8	34.6	6730
	2.875	5.2	0.203	62.7	2.469	8.630	1099.4	454.8	57	45.6	55.0	8330
88.9	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	437.4	35.7	28.6	23.0	10270
	3.500	5.2	0.203	78.6	3.094	10.649	1356.5	561.2	46.8	37.4	39.6	12830

Notes:

1. Minimum wall thickness is 87.5% of specified wall thickness
2. Pressures based on (t_m - 0.013) mm
3. Material may have tube-to-tube welds

HO-70™ Coiled Tubing Technical Data — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^2)	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.000	0.087	0.826	0.849	0.250	17470	11480	9200	10,530	350
	0.095	0.810	0.919	0.270	18910	12600	10100	11,470	380
	0.109	0.782	1.038	0.305	21360	14560	11600	13,040	410
1.250	0.087	1.076	1.082	0.318	22250	9180	7300	7,970	580
	0.095	1.060	1.173	0.345	24130	10080	8100	9,350	620
	0.109	1.032	1.330	0.391	27350	11650	9300	10,680	690
	0.156	0.938	1.824	0.536	37530	16910	13500	14,870	880
1.500	0.095	1.310	1.427	0.419	29350	8400	6700	6,780	930
	0.109	1.282	1.621	0.476	33340	9710	7800	8,770	1040
	0.156	1.188	2.241	0.659	46110	14090	11300	12,680	1350
	0.203	1.094	2.815	0.827	57900	18480	14800	16,030	1600
1.750	0.095	1.560	1.681	0.494	34580	7200	5800	4,960	1310
	0.109	1.532	1.912	0.562	39340	8320	6700	6,660	1460
	0.156	1.438	2.658	0.781	54680	12080	9700	11,040	1930
	0.203	1.344	3.357	0.987	69060	15840	12700	14,050	2310
2.000	0.109	1.782	2.203	0.648	45330	7280	5800	5,080	1960
	0.156	1.688	3.075	0.904	63260	10570	8500	9,770	2610
	0.203	1.594	3.900	1.146	80220	13860	11100	12,490	3160
2.375	0.156	2.063	3.700	1.088	76130	8900	7100	7,540	3820
	0.203	1.969	4.713	1.385	96960	11670	9300	10,700	4670
2.875	0.156	2.563	4.534	1.333	93280	7350	5900	5,190	5790
	0.203	2.469	5.798	1.704	119280	9640	7700	8,670	7170
3.500	0.156	3.188	5.577	1.639	114720	6040	4800	3,200	8840
	0.203	3.094	7.155	2.103	147190	7920	6300	6,050	11040

Notes:

1. Minimum wall thickness is 87.5% of specified wall thickness
2. Pressures based on (t - 0.005) in.
3. Material may have tube-to-tube welds

HO-70™ Coiled Tubing Technical Data — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
25.4	1.000	2.2	0.087	21.0	0.826	1.264	161.0	77.7	79.2	63.3	72.6	480
	1.000	2.4	0.095	20.6	0.810	1.368	174.3	84.1	86.9	69.5	79.1	510
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	95.0	100.4	80.3	89.9	560
31.8	1.250	2.2	0.087	27.3	1.076	1.610	205.1	99.0	63.3	50.7	55.0	790
	1.250	2.4	0.095	26.9	1.060	1.746	222.4	107.3	69.5	55.6	64.5	850
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	121.7	80.3	64.2	73.6	940
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	166.9	116.6	93.3	102.5	1200
38.1	1.500	2.4	0.095	33.3	1.310	2.124	270.5	130.6	57.9	46.3	46.7	1270
	1.500	2.8	0.109	32.6	1.282	2.412	307.3	148.3	66.9	53.5	60.5	1410
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	205.1	97.2	77.7	87.4	1840
	1.500	5.2	0.203	27.8	1.094	4.189	533.6	257.6	127.4	101.9	110.5	2170
44.5	1.750	2.4	0.095	39.6	1.560	2.502	318.7	153.8	49.6	39.7	34.2	1770
	1.750	2.8	0.109	38.9	1.532	2.846	362.5	175.0	57.4	45.9	45.9	1980
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	243.2	83.3	66.6	76.1	2610
	1.750	4.8	0.188	34.9	1.374	4.672	595.2	307.2	100.9	80.8	96.9	2980
50.8	2.000	2.8	0.109	45.3	1.782	3.279	417.8	201.6	50.2	40.2	35.0	2650
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	281.4	72.9	58.3	67.4	3530
	2.000	5.2	0.203	40.5	1.594	5.804	739.4	356.8	95.6	76.4	86.1	4280
60.3	2.375	4.0	0.156	52.4	2.063	5.508	701.6	338.6	61.4	49.1	52.0	5170
	2.375	5.2	0.203	50.0	1.969	7.015	893.7	431.3	80.5	64.4	73.8	6340
73.0	2.875	4.0	0.156	65.1	2.563	6.749	859.7	414.9	50.7	40.6	35.8	7850
	2.875	5.2	0.203	62.7	2.469	8.630	1099.4	530.6	66.5	53.2	59.8	9720
88.9	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	510.3	41.6	33.3	22.1	11980
	3.500	5.2	0.203	78.6	3.094	10.649	1356.5	654.7	54.6	43.7	41.7	14970

Notes:

1. Minimum wall thickness is 87.5% of specified wall thickness
2. Pressures based on (t_m - 0.013) mm
3. Material may have tube-to-tube welds

QT-700® Coiled Tubing Technical Data — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Hydro	Yield Pressure Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.000	0.087	0.826	0.849	0.250	17470	11480	9200	10,540	350
	0.095	0.810	0.919	0.270	18910	12600	10100	11,470	380
	0.102	0.796	0.979	0.288	20140	13580	10900	12,260	400
	0.109	0.782	1.038	0.305	21360	14560	11600	13,050	410
	0.118	0.764	1.113	0.327	22890	15820	12700	14,030	440
1.250	0.087	1.076	1.082	0.318	22250	9180	7300	7,970	580
	0.095	1.060	1.173	0.345	24130	10080	8100	9,330	620
	0.102	1.046	1.252	0.368	25750	10860	8700	10,020	660
	0.109	1.032	1.330	0.391	27350	11650	9300	10,680	690
	0.118	1.014	1.428	0.420	29370	12660	10100	11,510	730
	0.125	1.000	1.503	0.442	30930	13440	10800	12,150	760
	0.134	0.982	1.599	0.470	32890	14450	11600	12,960	800
	0.156	0.938	1.824	0.536	37530	16910	13500	14,870	880
	0.175	0.900	2.011	0.591	41370	19040	15000	16,450	940
1.500	0.095	1.310	1.427	0.419	29350	8400	6700	6,780	930
	0.102	1.296	1.524	0.448	31360	9050	7200	7,770	990
	0.109	1.282	1.621	0.476	33340	9710	7800	8,760	1040
	0.118	1.264	1.743	0.512	35860	10550	8400	9,750	1110
	0.125	1.250	1.837	0.540	37800	11200	9000	10,300	1160
	0.134	1.232	1.957	0.575	40250	12040	9600	11,000	1220
	0.156	1.188	2.241	0.659	46110	14090	11300	12,670	1350
	0.175	1.150	2.479	0.728	50990	15870	12700	14,070	1460
	0.188	1.124	2.637	0.775	54240	17080	13700	15,000	1530
1.750	0.102	1.546	1.797	0.528	36970	7760	6200	5,810	1390
	0.109	1.532	1.912	0.562	39340	8320	6700	6,660	1460
	0.118	1.514	2.059	0.605	42350	9040	7200	7,750	1560
	0.125	1.500	2.171	0.638	44670	9600	7700	8,600	1630
	0.134	1.482	2.315	0.680	47620	10320	8300	9,560	1720
	0.156	1.438	2.658	0.781	54680	12080	9700	11,040	1930
	0.175	1.400	2.946	0.866	60610	13600	10900	12,280	2090
	0.188	1.374	3.139	0.923	64580	14640	11700	13,110	2200

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-700® Coiled Tubing Technical Data — U.S. Units (continued)

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Hydro	Yield Pressure Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
2.000	0.109	1.782	2.203	0.648	45330	7280	5800	5,080	1960
	0.118	1.764	2.374	0.698	48840	7910	6300	6,040	2090
	0.125	1.750	2.505	0.736	51540	8400	6700	6,780	2190
	0.134	1.732	2.673	0.786	54990	9030	7200	7,740	2310
	0.156	1.688	3.075	0.904	63260	10570	8500	9,770	2610
	0.175	1.650	3.414	1.003	70230	11900	9500	10,890	2840
	0.188	1.624	3.642	1.070	74910	12810	10200	11,640	2990
2.375	0.125	2.125	3.007	0.884	61850	7070	5700	4,770	3180
	0.134	2.107	3.210	0.943	66040	7600	6100	5,570	3370
	0.156	2.063	3.700	1.088	76130	8900	7100	7,540	3820
	0.175	2.025	4.116	1.210	84670	10020	8000	9,240	4180
	0.188	1.999	4.395	1.292	90420	10790	8600	9,960	4410
2.875	0.156	2.563	4.534	1.333	93280	7350	5900	5,190	5790
	0.175	2.525	5.051	1.484	103910	8280	6600	6,600	6360
	0.188	2.499	5.400	1.587	111090	8910	7100	7,560	6740
3.500	0.156	3.188	5.577	1.639	114720	6040	4800	3,200	8840
	0.175	3.150	6.220	1.828	127960	6800	5400	4,350	9750
	0.188	3.124	6.656	1.956	136930	7320	5900	5,140	10360
	0.203	3.094	7.155	2.103	147190	7920	6300	6,050	11040

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-700® Coiled Tubing Technical Data — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
	1.000	2.2	0.087	21.0	0.826	1.264	161.0	77.7	79.2	63.3	72.7	480
	1.000	2.4	0.095	20.6	0.810	1.368	174.3	84.1	86.9	69.5	79.1	510
25.4	1.000	2.6	0.102	20.2	0.796	1.457	185.6	89.6	93.6	74.9	84.5	540
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	95.0	100.4	80.3	90.0	560
	1.000	3.0	0.118	19.4	0.764	1.656	210.9	101.8	109.1	87.3	96.7	590
	1.250	2.2	0.087	27.3	1.076	1.610	205.1	99.0	63.3	50.7	55.0	790
	1.250	2.4	0.095	26.9	1.060	1.746	222.4	107.3	69.5	55.6	64.3	850
	1.250	2.6	0.102	26.6	1.046	1.863	237.3	114.5	74.9	59.9	69.1	890
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	121.7	80.3	64.2	73.6	940
31.8	1.250	3.0	0.118	25.8	1.014	2.125	270.7	130.6	87.3	69.8	79.4	990
	1.250	3.2	0.125	25.4	1.000	2.237	285.0	137.6	92.7	74.1	83.8	1030
	1.250	3.4	0.134	24.9	0.982	2.379	303.1	146.3	99.6	79.7	89.4	1080
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	166.9	116.6	93.3	102.5	1200
	1.250	4.4	0.175	22.9	0.900	2.993	381.3	184.0	131.3	103.4	113.4	1280
	1.500	2.4	0.095	33.3	1.310	2.124	270.5	130.6	57.9	46.3	46.7	1270
	1.500	2.6	0.102	32.9	1.296	2.269	289.0	139.5	62.4	49.9	53.6	1340
	1.500	2.8	0.109	32.6	1.282	2.412	307.3	148.3	66.9	53.5	60.4	1410
	1.500	3.0	0.118	32.1	1.264	2.595	330.5	159.5	72.7	58.2	67.2	1500
38.1	1.500	3.2	0.125	31.8	1.250	2.735	348.4	168.1	77.2	61.8	71.0	1570
	1.500	3.4	0.134	31.3	1.232	2.912	371.0	179.0	83.0	66.4	75.8	1650
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	205.1	97.2	77.7	87.4	1840
	1.500	4.4	0.175	29.2	1.150	3.689	470.0	226.8	109.4	87.5	97.0	1980
	1.500	4.8	0.188	28.5	1.124	3.924	499.9	241.3	117.8	94.2	103.4	2070
	1.750	2.6	0.102	39.3	1.546	2.675	340.7	164.5	53.5	42.8	40.1	1880
	1.750	2.8	0.109	38.9	1.532	2.846	362.5	175.0	57.4	45.9	45.9	1980
	1.750	3.0	0.118	38.5	1.514	3.064	390.3	188.4	62.3	49.9	53.4	2110
44.5	1.750	3.2	0.125	38.1	1.500	3.232	411.7	198.7	66.2	53.0	59.3	2210
	1.750	3.4	0.134	37.6	1.482	3.445	438.9	211.8	71.2	56.9	65.9	2330
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	243.2	83.3	66.6	76.1	2610
	1.750	4.4	0.175	35.6	1.400	4.385	558.6	269.6	93.8	75.0	84.7	2840
	1.750	4.8	0.188	34.9	1.374	4.672	595.2	287.3	100.9	80.8	90.4	2980

Notes:

1. Minimum wall thickness is 0.013 mm. less than specified wall thickness
2. Pressures based on (t_m - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-700® Coiled Tubing Technical Data — SI Units (continued)

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
50.8	2.000	2.8	0.109	45.3	1.782	3.279	417.8	201.6	50.2	40.2	35.0	2650
	2.000	3.0	0.118	44.8	1.764	3.533	450.1	217.3	54.5	43.6	41.6	2830
	2.000	3.2	0.125	44.5	1.750	3.729	475.0	229.3	57.9	46.3	46.7	2970
	2.000	3.4	0.134	44.0	1.732	3.978	506.8	244.6	62.3	49.8	53.4	3140
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	281.4	72.9	58.3	67.4	3530
	2.000	4.4	0.175	41.9	1.650	5.081	647.3	312.4	82.0	65.6	75.1	3850
	2.000	4.8	0.188	41.2	1.624	5.420	690.5	333.2	88.3	70.7	80.3	4050
60.3	2.375	3.2	0.125	54.0	2.125	4.475	570.0	275.1	48.8	39.0	32.9	4310
	2.375	3.4	0.134	53.5	2.107	4.778	608.6	293.8	52.4	41.9	38.4	4570
	2.375	4.0	0.156	52.4	2.063	5.508	701.6	338.6	61.4	49.1	52.0	5170
	2.375	4.4	0.175	51.4	2.025	6.126	780.3	376.6	69.1	55.3	63.7	5660
	2.375	4.8	0.188	50.8	1.999	6.542	833.3	402.2	74.4	59.5	68.7	5980
73.0	2.875	4.0	0.156	65.1	2.563	6.749	859.7	414.9	50.7	40.6	35.8	7850
	2.875	4.4	0.175	64.1	2.525	7.518	957.7	462.2	57.1	45.7	45.5	8630
	2.875	4.8	0.188	63.5	2.499	8.037	1023.9	494.2	61.4	49.2	52.1	9140
88.9	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	510.3	41.6	33.3	22.1	11980
	3.500	4.4	0.175	80.0	3.150	9.258	1179.4	569.2	46.9	37.5	30.0	13220
	3.500	4.8	0.188	79.3	3.124	9.907	1262.0	609.1	50.5	40.4	35.4	14040
	3.500	5.2	0.203	78.6	3.094	10.649	1356.5	654.7	54.6	43.7	41.7	14970

Notes:

1. Minimum wall thickness is 0.013 mm. less than specified wall thickness
2. Pressures based on (t_m - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-800® Coiled Tubing Technical Data — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.000	0.087	0.826	0.849	0.250	19960	13120	10500	12,040	400
	0.095	0.810	0.919	0.270	21610	14400	11500	13,100	430
	0.102	0.796	0.979	0.288	23020	15520	12400	14,010	450
	0.109	0.782	1.038	0.305	24410	16640	13300	14,910	470
	0.118	0.764	1.113	0.327	26160	18080	14500	16,040	500
	0.125	0.750	1.169	0.344	27490	19200	15000	16,900	520
1.250	0.087	1.076	1.082	0.318	25430	10500	8400	8,830	670
	0.095	1.060	1.173	0.345	27580	11520	9200	10,400	710
	0.102	1.046	1.252	0.368	29430	12420	9900	11,450	750
	0.109	1.032	1.330	0.391	31260	13310	10600	12,200	790
	0.118	1.014	1.428	0.420	33570	14460	11600	13,160	840
	0.125	1.000	1.503	0.442	35340	15360	12300	13,890	870
	0.134	0.982	1.599	0.470	37580	16510	13200	14,810	910
	0.145	0.960	1.713	0.503	40270	17920	14300	15,910	960
	0.156	0.938	1.824	0.536	42890	19330	15000	16,990	1010
	0.175	0.900	2.011	0.591	47280	21760	15000	18,800	1080
1.500	0.095	1.310	1.427	0.419	33550	9600	7700	7,450	1070
	0.102	1.296	1.524	0.448	35840	10350	8300	8,600	1130
	0.109	1.282	1.621	0.476	38110	11090	8900	9,740	1190
	0.118	1.264	1.743	0.512	40990	12050	9600	11,150	1260
	0.125	1.250	1.837	0.540	43200	12800	10200	11,780	1320
	0.134	1.232	1.957	0.575	46000	13760	11000	12,580	1390
	0.145	1.210	2.100	0.617	49380	14930	11900	13,540	1470
	0.156	1.188	2.241	0.659	52690	16110	12900	14,490	1550
	0.175	1.150	2.479	0.728	58280	18130	14500	16,080	1670
	0.188	1.124	2.637	0.775	61990	19520	15000	17,140	1750

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-800® Coiled Tubing Technical Data — U.S. Units (continued)

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.750	0.109	1.532	1.912	0.562	44950	9510	7600	7,310	1670
	0.118	1.514	2.059	0.605	48400	10330	8300	8,570	1780
	0.125	1.500	2.171	0.638	51050	10970	8800	9,560	1860
	0.134	1.482	2.315	0.680	54420	11790	9400	10,820	1970
	0.145	1.460	2.488	0.731	58490	12800	10200	11,780	2090
	0.156	1.438	2.658	0.781	62500	13810	11000	12,610	2200
	0.175	1.400	2.946	0.866	69270	15540	12400	14,030	2390
	0.188	1.374	3.139	0.923	73800	16730	13400	14,980	2510
	0.203	1.344	3.357	0.987	78930	18100	14500	16,050	2640
2.000	0.109	1.782	2.203	0.648	51800	8320	6700	5,480	2240
	0.118	1.764	2.374	0.698	55810	9040	7200	6,590	2390
	0.125	1.750	2.505	0.736	58910	9600	7700	7,450	2500
	0.134	1.732	2.673	0.786	62840	10320	8300	8,560	2650
	0.145	1.710	2.875	0.845	67600	11200	9000	9,910	2810
	0.156	1.688	3.075	0.904	72300	12080	9700	11,170	2980
	0.175	1.650	3.414	1.003	80270	13600	10900	12,440	3250
	0.188	1.624	3.642	1.070	85620	14640	11700	13,300	3420
	0.203	1.594	3.900	1.146	91680	15840	12700	14,270	3610
2.375	0.125	2.125	3.007	0.884	70690	8080	6500	5,120	3640
	0.134	2.107	3.210	0.943	75470	8690	7000	6,050	3850
	0.145	2.085	3.457	1.016	81270	9430	7500	7,190	4110
	0.156	2.063	3.700	1.088	87000	10170	8100	8,330	4360
	0.175	2.025	4.116	1.210	96760	11450	9200	10,290	4770
	0.188	1.999	4.395	1.292	103340	12330	9900	11,380	5040
	0.203	1.969	4.713	1.385	110810	13340	10700	12,230	5340
2.875	0.145	2.585	4.232	1.244	99490	7790	6200	4,670	6220
	0.156	2.563	4.534	1.333	106600	8400	6700	5,610	6620
	0.175	2.525	5.051	1.484	118750	9460	7600	7,240	7270
	0.188	2.499	5.400	1.587	126960	10180	8100	8,350	7710
	0.203	2.469	5.798	1.704	136320	11020	8800	9,630	8190
3.500	0.145	3.210	5.200	1.528	122260	6400	5100	2,920	9480
	0.156	3.188	5.577	1.639	131110	6900	5500	3,420	10100
	0.175	3.150	6.220	1.828	146240	7770	6200	4,640	11140
	0.188	3.124	6.656	1.956	156490	8370	6700	5,550	11840

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

QT-800® Coiled Tubing Technical Data — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
25.4	1.000	2.2	0.087	21.0	0.826	1.264	161.0	88.8	90.5	72.4	83.0	550
	1.000	2.4	0.095	20.6	0.810	1.368	174.3	96.1	99.3	79.4	90.3	580
	1.000	2.6	0.102	20.2	0.796	1.457	185.6	102.4	107	85.6	96.6	610
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	108.6	114.7	91.8	102.8	640
	1.000	3.0	0.118	19.4	0.764	1.656	210.9	116.4	124.7	99.7	110.6	680
	1.000	3.2	0.125	19.1	0.750	1.740	221.7	122.3	132.4	103.4	116.5	700
31.8	1.250	2.2	0.087	27.3	1.076	1.610	205.1	113.1	72.4	57.9	60.9	900
	1.250	2.4	0.095	26.9	1.060	1.746	222.4	122.7	79.4	63.5	71.7	970
	1.250	2.6	0.102	26.6	1.046	1.863	237.3	130.9	85.6	68.5	78.9	1020
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	139.1	91.8	73.4	84.1	1070
	1.250	3.0	0.118	25.8	1.014	2.125	270.7	149.3	99.7	79.8	90.7	1130
	1.250	3.2	0.125	25.4	1.000	2.237	285.0	157.2	105.9	84.7	95.8	1180
	1.250	3.4	0.134	24.9	0.982	2.379	303.1	167.2	113.8	91.1	102.1	1240
	1.250	3.7	0.145	24.4	0.960	2.549	324.7	179.1	123.6	98.8	109.7	1300
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	190.8	133.3	103.4	117.1	1370
	1.250	4.4	0.175	22.9	0.900	2.993	381.3	210.3	150	103.4	129.6	1460
38.1	1.500	2.4	0.095	33.3	1.310	2.124	270.5	149.2	66.2	53.0	51.4	1450
	1.500	2.6	0.102	32.9	1.296	2.269	289.0	159.4	71.3	57.1	59.3	1530
	1.500	2.8	0.109	32.6	1.282	2.412	307.3	169.5	76.5	61.2	67.2	1610
	1.500	3.0	0.118	32.1	1.264	2.595	330.5	182.3	83.1	66.5	76.9	1710
	1.500	3.2	0.125	31.8	1.250	2.735	348.4	192.2	88.3	70.6	81.2	1790
	1.500	3.4	0.134	31.3	1.232	2.912	371.0	204.6	94.9	75.9	86.7	1880
	1.500	3.7	0.145	30.7	1.210	3.126	398.2	219.7	103	82.4	93.4	1990
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	234.4	111.1	88.8	99.9	2100
	1.500	4.4	0.175	29.2	1.150	3.689	470.0	259.2	125	100.0	110.9	2260
	1.500	4.8	0.188	28.5	1.124	3.924	499.9	275.7	134.6	103.4	118.2	2370
44.5	1.750	2.8	0.109	38.9	1.532	2.846	362.5	199.9	65.6	52.4	50.4	2270
	1.750	3.0	0.118	38.5	1.514	3.064	390.3	215.3	71.2	57.0	59.1	2420
	1.750	3.2	0.125	38.1	1.500	3.232	411.7	227.1	75.6	60.5	65.9	2530
	1.750	3.4	0.134	37.6	1.482	3.445	438.9	242.1	81.3	65.1	74.6	2670
	1.750	3.7	0.145	37.1	1.460	3.703	471.7	260.2	88.3	70.6	81.2	2830
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	278.0	95.2	76.1	86.9	2990
	1.750	4.4	0.175	35.6	1.400	4.385	558.6	308.1	107.2	85.7	96.7	3240
	1.750	4.8	0.188	34.9	1.374	4.672	595.2	328.3	115.4	92.3	103.3	3400
	1.750	5.2	0.203	34.1	1.344	4.997	636.5	351.1	124.8	99.9	110.7	3580

Notes:
Minimum wall thickness is 0.013 mm. less than specified wall thickness
Pressures based on (t_m - 0.013) mm

QT-800® Coiled Tubing Technical Data — SI Units (continued)

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
	2.000	2.8	0.109	45.3	1.782	3.279	417.8	230.4	57.4	45.9	37.8	3030
	2.000	3.0	0.118	44.8	1.764	3.533	450.1	248.3	62.3	49.9	45.4	3240
	2.000	3.2	0.125	44.5	1.750	3.729	475.0	262.0	66.2	53.0	51.4	3390
	2.000	3.4	0.134	44.0	1.732	3.978	506.8	279.5	71.2	56.9	59.0	3590
50.8	2.000	3.7	0.145	43.4	1.710	4.280	545.2	300.7	77.2	61.8	68.3	3820
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	321.6	83.3	66.6	77.0	4040
	2.000	4.4	0.175	41.9	1.650	5.081	647.3	357.1	93.8	75.0	85.8	4400
	2.000	4.8	0.188	41.2	1.624	5.420	690.5	380.9	100.9	80.8	91.7	4630
	2.000	5.2	0.203	40.5	1.594	5.804	739.4	407.8	109.2	87.4	98.4	4890
	2.375	3.2	0.125	54.0	2.125	4.475	570.0	314.4	55.7	44.6	35.3	4930
	2.375	3.4	0.134	53.5	2.107	4.778	608.6	335.7	59.9	47.9	41.7	5220
	2.375	3.7	0.145	53.0	2.085	5.145	655.4	361.5	65.0	52.0	49.6	5570
60.3	2.375	4.0	0.156	52.4	2.063	5.508	701.6	387.0	70.1	56.1	57.4	5910
	2.375	4.4	0.175	51.4	2.025	6.126	780.3	430.4	79.0	63.2	70.9	6470
	2.375	4.8	0.188	50.8	1.999	6.542	833.3	459.7	85.0	68.0	78.5	6840
	2.375	5.2	0.203	50.0	1.969	7.015	893.7	492.9	92.0	73.6	84.3	7240
	2.875	3.7	0.145	65.7	2.585	6.298	802.3	442.6	53.7	43.0	32.2	8440
	2.875	4.0	0.156	65.1	2.563	6.749	859.7	474.2	57.9	46.4	38.7	8970
73.0	2.875	4.4	0.175	64.1	2.525	7.518	957.7	528.2	65.2	52.2	49.9	9860
	2.875	4.8	0.188	63.5	2.499	8.037	1023.9	564.7	70.2	56.2	57.6	10450
	2.875	5.2	0.203	62.7	2.469	8.630	1099.4	606.4	76.0	60.8	66.4	11100
	3.500	3.7	0.145	81.5	3.210	7.740	986.0	543.8	44.1	35.3	20.1	12850
88.9	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	583.2	47.6	38.1	23.6	13690
	3.500	4.4	0.175	80.0	3.150	9.258	1179.4	650.5	53.6	42.9	32.0	15110
	3.500	4.8	0.188	79.3	3.124	9.907	1262.0	696.1	57.7	46.1	38.3	16050

Notes:

1. Minimum wall thickness is 0.013 mm. less than specified wall thickness
2. Pressures based on (t_m - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-900® Coiled Tubing Technical Data — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.000	0.087	0.826	0.849	0.250	22460	14760	11800	15,060	450
	0.095	0.810	0.919	0.270	24310	16200	13000	14,740	480
	0.102	0.796	0.979	0.288	25900	17460	14000	15,770	510
	0.109	0.782	1.038	0.305	27460	18720	15000	16,770	530
1.250	0.087	1.076	1.082	0.318	28610	11810	9400	9,260	750
	0.095	1.060	1.173	0.345	31020	12960	10400	11,410	800
	0.102	1.046	1.252	0.368	33110	13970	11200	12,880	850
	0.109	1.032	1.330	0.391	35160	14980	12000	13,730	890
	0.118	1.014	1.428	0.420	37770	16270	13000	14,800	940
	0.125	1.000	1.503	0.442	39760	17280	13800	15,620	980
	0.134	0.982	1.599	0.470	42280	18580	14900	16,660	1030
	0.145	0.960	1.713	0.503	45300	20160	15000	17,900	1080
	0.156	0.938	1.824	0.536	48250	21740	15000	19,120	1130
	0.175	0.900	2.011	0.591	53190	24480	15000	21,150	1210
1.500	0.095	1.310	1.427	0.419	37740	10800	8600	8,060	1200
	0.102	1.296	1.524	0.448	40320	11640	9300	9,360	1270
	0.109	1.282	1.621	0.476	42870	12480	10000	10,670	1340
	0.118	1.264	1.743	0.512	46110	13560	10800	12,340	1420
	0.125	1.250	1.837	0.540	48600	14400	11500	13,250	1490
	0.134	1.232	1.957	0.575	51750	15480	12400	14,150	1560
	0.145	1.210	2.100	0.617	55550	16800	13400	15,230	1650
	0.156	1.188	2.241	0.659	59280	18120	14500	16,300	1740
	0.175	1.150	2.479	0.728	65560	20400	15000	18,090	1880
	0.188	1.124	2.637	0.775	69740	21960	15000	19,280	1960
1.750	0.109	1.532	1.912	0.562	50570	10700	8600	7,900	1880
	0.118	1.514	2.059	0.605	54450	11620	9300	9,330	2000
	0.125	1.500	2.171	0.638	57430	12340	9900	10,450	2100
	0.134	1.482	2.315	0.680	61230	13270	10600	11,890	2210
	0.145	1.460	2.488	0.731	65800	14400	11500	13,250	2350
	0.156	1.438	2.658	0.781	70310	15530	12400	14,190	2480
	0.175	1.400	2.946	0.866	77930	17490	14000	15,790	2690
	0.188	1.374	3.139	0.923	83030	18820	15000	16,850	2820

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-900® Coiled Tubing Technical Data — U.S. Units (continued)

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
2.000	0.109	1.782	2.203	0.648	58280	9360	7500	5,820	2510
	0.118	1.764	2.374	0.698	62790	10170	8100	7,080	2690
	0.125	1.750	2.505	0.736	66270	10800	8600	8,060	2810
	0.134	1.732	2.673	0.786	70700	11610	9300	9,310	2980
	0.145	1.710	2.875	0.845	76050	12600	10100	10850	3170
	0.156	1.688	3.075	0.904	81340	13590	10900	12,390	3350
	0.175	1.650	3.414	1.003	90300	15300	12200	14,000	3650
	0.188	1.624	3.642	1.070	96320	16470	13200	14,960	3840
	0.203	1.594	3.900	1.146	103140	17820	14300	16,130	4060
2.375	0.109	2.157	2.640	0.776	69840	7880	6300	3,760	3640
	0.118	2.139	2.847	0.837	75300	8560	6900	4,580	3900
	0.125	2.125	3.007	0.884	79520	9090	7300	5,410	4090
	0.134	2.107	3.210	0.943	84910	9780	7800	6,470	4330
	0.145	2.085	3.457	1.016	91430	10610	8500	7,760	4620
	0.156	2.063	3.700	1.088	97880	11440	9200	9,060	4910
	0.175	2.025	4.116	1.210	108860	12880	10300	11,290	5370
	0.188	1.999	4.395	1.292	116250	13870	11100	12,820	5670
	0.203	1.969	4.713	1.385	124670	15010	12000	13,820	6010
2.875	0.125	2.625	3.675	1.080	97190	7510	6000	3,380	6160
	0.134	2.607	3.926	1.154	103850	8080	6500	3,950	6540
	0.145	2.585	4.232	1.244	111920	8770	7000	4,900	7000
	0.156	2.563	4.534	1.333	119930	9450	7600	5,970	7440
	0.175	2.525	5.051	1.484	133600	10640	8500	7,810	8180
	0.188	2.499	5.400	1.587	142830	11460	9200	9,080	8670
	0.203	2.469	5.798	1.704	153360	12400	9900	10,630	9210
3.500	0.134	3.232	4.822	1.417	127530	6630	5300	2,530	9950
	0.145	3.210	5.200	1.528	137550	7200	5800	3,070	10660
	0.156	3.188	5.577	1.639	147500	7770	6200	3,640	11360
	0.175	3.150	6.220	1.828	164520	8740	7000	4,860	12540
	0.188	3.124	6.656	1.956	176050	9410	7500	5,900	13320
	0.204	3.092	7.188	2.112	190110	10230	8200	7,180	14250

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-900® Coiled Tubing Technical Data — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
25.4	1.000	2.2	0.087	21.0	0.826	1.264	161.0	99.9	101.8	81.4	103.8	620
	1.000	2.4	0.095	20.6	0.810	1.368	174.3	108.1	111.7	89.4	101.6	660
	1.000	2.6	0.102	20.2	0.796	1.457	185.6	115.2	120.4	96.3	108.7	690
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	122.1	129.1	103.3	115.6	720
31.8	1.250	2.2	0.087	27.3	1.076	1.610	205.1	127.3	81.4	65.1	63.8	1020
	1.250	2.4	0.095	26.9	1.060	1.746	222.4	138.0	89.4	71.5	78.7	1090
	1.250	2.6	0.102	26.6	1.046	1.863	237.3	147.3	96.3	77.0	88.8	1150
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	156.4	103.3	82.6	94.7	1210
	1.250	3.0	0.118	25.8	1.014	2.125	270.7	168.0	112.2	89.8	102.0	1280
	1.250	3.2	0.125	25.4	1.000	2.237	285.0	176.9	119.1	95.3	107.7	1330
	1.250	3.4	0.134	24.9	0.982	2.379	303.1	188.1	128.1	102.5	114.9	1390
	1.250	3.7	0.145	24.4	0.960	2.549	324.7	201.5	139.0	103.4	123.4	1470
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	214.6	149.9	103.4	131.8	1540
	1.250	4.4	0.175	22.9	0.900	2.993	381.3	236.6	168.8	103.4	145.8	1650
38.1	1.500	2.4	0.095	33.3	1.310	2.124	270.5	167.9	74.5	59.6	55.6	1630
	1.500	2.6	0.102	32.9	1.296	2.269	289.0	179.4	80.3	64.2	64.5	1720
	1.500	2.8	0.109	32.6	1.282	2.412	307.3	190.7	86.0	68.8	73.6	1810
	1.500	3.0	0.118	32.1	1.264	2.595	330.5	205.1	93.5	74.8	85.1	1930
	1.500	3.2	0.125	31.8	1.250	2.735	348.4	216.2	99.3	79.4	91.4	2010
	1.500	3.4	0.134	31.3	1.232	2.912	371.0	230.2	106.7	85.4	97.6	2120
	1.500	3.7	0.145	30.7	1.210	3.126	398.2	247.1	115.8	92.7	105.0	2240
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	263.7	124.9	99.9	112.4	2360
	1.500	4.4	0.175	29.2	1.150	3.689	470.0	291.6	140.7	103.4	124.7	2550
	1.500	4.8	0.188	28.5	1.124	3.924	499.9	310.2	151.4	103.4	132.9	2660
44.5	1.750	2.8	0.109	38.9	1.532	2.846	362.5	224.9	73.8	59.0	54.5	2550
	1.750	3.0	0.118	38.5	1.514	3.064	390.3	242.2	80.1	64.1	64.3	2720
	1.750	3.2	0.125	38.1	1.500	3.232	411.7	255.5	85.1	68.1	72.1	2840
	1.750	3.4	0.134	37.6	1.482	3.445	438.9	272.4	91.5	73.2	82.0	3000
	1.750	3.7	0.145	37.1	1.460	3.703	471.7	292.7	99.3	79.4	91.4	3180
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	312.8	107.1	85.7	97.8	3360
	1.750	4.4	0.175	35.6	1.400	4.385	558.6	346.6	120.6	96.4	108.9	3650
	1.750	4.8	0.188	34.9	1.374	4.672	595.2	369.3	129.8	103.4	116.2	3830

Notes:

1. Minimum wall thickness is 0.013" less than specified wall thickness
2. Pressures based on (t - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-900® Coiled Tubing Technical Data — SI Units (continued)

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (MPa)	P_t (MPa)	(MPa)	(Nm)
	2.000	2.8	0.109	45.3	1.782	3.279	417.8	259.2	64.5	51.6	40.1	3410
	2.000	3.0	0.118	44.8	1.764	3.533	450.1	279.3	70.1	56.1	48.8	3640
	2.000	3.2	0.125	44.5	1.750	3.729	475.0	294.8	74.5	59.6	55.6	3820
	2.000	3.4	0.134	44.0	1.732	3.978	506.8	314.5	80.0	64.0	64.2	4040
50.8	2.000	3.7	0.145	43.4	1.710	4.280	545.2	338.3	86.9	69.5	74.8	4290
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	361.8	93.7	75.0	85.4	4540
	2.000	4.4	0.175	41.9	1.650	5.081	647.3	401.7	105.5	84.4	96.5	4950
	2.000	4.8	0.188	41.2	1.624	5.420	690.5	428.5	113.6	90.8	103.1	5210
	2.000	5.2	0.203	40.5	1.594	5.804	739.4	458.8	122.9	98.3	111.2	5500
	2.375	2.8	0.109	54.8	2.157	3.930	500.6	310.7	54.3	43.5	25.9	4940
	2.375	3.0	0.118	54.3	2.139	4.237	539.8	335.0	59.0	47.2	31.6	5280
	2.375	3.2	0.125	54.0	2.125	4.475	570.0	353.7	62.7	50.2	37.3	5550
	2.375	3.4	0.134	53.5	2.107	4.778	608.6	377.7	67.4	53.9	44.6	5880
60.3	2.375	3.7	0.145	53.0	2.085	5.145	655.4	406.7	73.2	58.5	53.5	6270
	2.375	4.0	0.156	52.4	2.063	5.508	701.6	435.4	78.9	63.1	62.5	6650
	2.375	4.4	0.175	51.4	2.025	6.126	780.3	484.2	88.8	71.1	77.8	7280
	2.375	4.8	0.188	50.8	1.999	6.542	833.3	517.1	95.6	76.5	88.4	7690
	2.375	5.2	0.203	50.0	1.969	7.015	893.7	554.6	103.5	82.8	95.3	8150
	2.875	3.2	0.125	66.7	2.625	5.469	696.7	432.3	51.8	41.4	23.3	8360
	2.875	3.4	0.134	66.2	2.607	5.844	744.4	461.9	55.7	44.5	27.2	8870
	2.875	3.7	0.145	65.7	2.585	6.298	802.3	497.8	60.4	48.3	33.8	9490
73.0	2.875	4.0	0.156	65.1	2.563	6.749	859.7	533.5	65.2	52.1	41.2	10090
	2.875	4.4	0.175	64.1	2.525	7.518	957.7	594.3	73.4	58.7	53.8	11090
	2.875	4.8	0.188	63.5	2.499	8.037	1023.9	635.3	79.0	63.2	62.6	11760
	2.875	5.2	0.203	62.7	2.469	8.630	1099.4	682.2	85.5	68.4	73.3	12490
	3.500	3.4	0.134	82.1	3.232	7.176	914.2	567.3	45.7	36.6	17.4	13490
	3.500	3.7	0.145	81.5	3.210	7.740	986.0	611.9	49.6	39.7	21.2	14450
88.9	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	656.1	53.5	42.8	25.1	15400
	3.500	4.4	0.175	80.0	3.150	9.258	1179.4	731.8	60.3	48.2	33.5	17000
	3.500	4.8	0.188	79.3	3.124	9.907	1262.0	783.1	64.9	51.9	40.7	18050
	3.500	5.2	0.203	78.6	3.094	10.649	1356.5	845.7	70.2	56.2	49.5	19240

Notes:

1. Minimum wall thickness is 0.013" less than specified wall thickness
2. Pressures based on (t - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-1000® Coiled Tubing Technical Data — U.S. Units

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
1.000	0.102	0.796	0.979	0.288	28780	19400	15000	17,520	570
	0.109	0.782	1.038	0.305	30510	20800	15000	18,640	590
1.250	0.102	1.046	1.252	0.368	36790	15520	12400	14,160	940
	0.109	1.032	1.330	0.391	39070	16640	13300	15,260	990
	0.118	1.014	1.428	0.420	41960	18080	14500	16,450	1050
	0.125	1.000	1.503	0.442	44180	19200	15000	17,360	1090
	0.134	0.982	1.599	0.470	46980	20640	15000	18,510	1140
	0.156	0.938	1.824	0.536	53620	24160	15000	21,240	1260
1.500	0.109	1.282	1.621	0.476	47630	13870	11100	11,560	1490
	0.118	1.264	1.743	0.512	51230	15070	12100	13,440	1580
	0.125	1.250	1.837	0.540	54000	16000	12800	14,720	1650
	0.134	1.232	1.957	0.575	57510	17200	13800	15,720	1740
	0.156	1.188	2.241	0.659	65870	20130	15000	18,110	1930
	0.175	1.150	2.479	0.728	72850	22670	15000	20,100	2090
	0.188	1.124	2.637	0.775	77490	24400	15000	21,420	2180
1.750	0.109	1.532	1.912	0.562	56190	11890	9500	8,450	2090
	0.118	1.514	2.059	0.605	60500	12910	10300	10,060	2230
	0.125	1.500	2.171	0.638	63810	13710	11000	11,320	2330
	0.134	1.482	2.315	0.680	68030	14740	11800	12,940	2460
	0.156	1.438	2.658	0.781	78120	17260	13800	15,770	2750
	0.175	1.400	2.946	0.866	86590	19430	15000	17,540	2990
	0.188	1.374	3.139	0.923	92250	20910	15000	18,730	3140
2.000	0.109	1.782	2.203	0.648	64750	10400	8300	6,110	2790
	0.118	1.764	2.374	0.698	69770	11300	9000	7,520	2980
	0.125	1.750	2.505	0.736	73630	12000	9600	8,630	3130
	0.134	1.732	2.673	0.786	78550	12900	10300	10,040	3310
	0.156	1.688	3.075	0.904	90370	15100	12100	13,500	3720
	0.175	1.650	3.414	1.003	100330	17000	13600	15,560	4060
	0.188	1.624	3.642	1.070	107020	18300	14600	16,630	4270
	0.203	1.594	3.900	1.146	114600	19800	15000	17,840	4510

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-1000® Coiled Tubing Technical Data — U.S. Units (continued)

Specified		Calculated Inside Diameter	Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter	Wall Thickness								
D (in)	t (in)	d (in)	w (lb/ft)	A (in^{-2})	L_y (lb)	(psi)	P_t (psi)	(psi)	(lb/ft)
2.375	0.109	2.157	2.640	0.776	77600	8760	7000	3,940	4040
	0.118	2.139	2.847	0.837	83670	9520	7600	4,720	4330
	0.125	2.125	3.007	0.884	88360	10110	8100	5,650	4540
	0.134	2.107	3.210	0.943	94340	10860	8700	6,840	4820
	0.156	2.063	3.700	1.088	108750	12720	10200	9,750	5450
	0.175	2.025	4.116	1.210	120950	14320	11500	12,260	5970
	0.188	1.999	4.395	1.292	129170	15410	12300	13,980	6300
	0.203	1.969	4.713	1.385	138520	16670	13300	13,980	6680
2.875	0.125	2.625	3.675	1.080	107990	8350	6700	3,520	6850
	0.134	2.607	3.926	1.154	115390	8970	7200	4,160	7270
	0.145	2.585	4.232	1.244	124360	9740	7800	5,070	7780
	0.156	2.563	4.534	1.333	133260	10500	8400	6,270	8270
	0.175	2.525	5.051	1.484	148440	11830	9500	8,350	9090
	0.188	2.499	5.400	1.587	158700	12730	10200	9,770	9630
	0.203	2.469	5.798	1.704	170410	13770	11000	9,770	10240
3.500	0.134	3.232	4.822	1.417	141700	7370	5900	2,530	11050
	0.145	3.210	5.200	1.528	152830	8000	6400	3,170	11850
	0.156	3.188	5.577	1.639	163890	8630	6900	3,810	12620
	0.175	3.150	6.22	1.828	182800	9710	7800	5,030	13930
	0.188	3.124	6.656	1.956	195610	10460	8400	6,200	14800
	0.203	3.094	7.155	2.103	210260	11310	9100	7,550	15770

Notes:

1. Minimum wall thickness is 0.005" less than specified wall thickness
2. Pressures based on (t - 0.005) in.

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-1000® Coiled Tubing Technical Data — SI Units

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (Mpa)	P_t (Mpa)	(Mpa)	(Nm)
25.4	1.000	2.6	0.102	20.2	0.796	1.457	185.6	128.0	133.8	103.4	120.8	770
	1.000	2.8	0.109	19.9	0.782	1.545	196.8	135.7	143.4	103.4	128.5	800
31.8	1.250	2.6	0.102	26.6	1.046	1.863	237.3	163.7	107.0	85.6	97.6	1270
	1.250	2.8	0.109	26.2	1.032	1.979	252.1	173.8	114.7	91.8	105.2	1340
	1.250	3.0	0.118	25.8	1.014	2.125	270.7	186.6	124.7	99.7	113.4	1420
	1.250	3.2	0.125	25.4	1.000	2.237	285.0	196.5	132.4	103.4	119.7	1480
	1.250	3.4	0.134	24.9	0.982	2.379	303.1	209.0	142.3	103.4	127.6	1550
	1.250	4.0	0.156	23.8	0.938	2.715	345.9	238.5	166.6	103.4	146.4	1710
38.1	1.500	2.8	0.109	32.6	1.282	2.412	307.3	211.9	95.6	76.5	79.7	2020
	1.500	3.0	0.118	32.1	1.264	2.595	330.5	227.9	103.9	83.1	92.7	2140
	1.500	3.2	0.125	31.8	1.250	2.735	348.4	240.2	110.3	88.3	101.5	2240
	1.500	3.4	0.134	31.3	1.232	2.912	371.0	255.8	118.6	94.9	108.4	2360
	1.500	4.0	0.156	30.2	1.188	3.336	425.0	293.0	138.8	103.4	124.9	2620
	1.500	4.4	0.175	29.2	1.150	3.689	470.0	324.1	156.3	103.4	138.6	2830
	1.500	4.8	0.188	28.5	1.124	3.924	499.9	344.7	168.2	103.4	147.7	2960
44.5	1.750	2.8	0.109	38.9	1.532	2.846	362.5	249.9	81.9	65.6	58.3	2830
	1.750	3.0	0.118	38.5	1.514	3.064	390.3	269.1	89.0	71.2	69.4	3020
	1.750	3.2	0.125	38.1	1.500	3.232	411.7	283.8	94.6	75.6	78.0	3160
	1.750	3.4	0.134	37.6	1.482	3.445	438.9	302.6	101.6	81.3	89.2	3330
	1.750	4.0	0.156	36.5	1.438	3.956	504.0	347.5	119.0	95.2	108.7	3730
	1.750	4.4	0.175	35.6	1.400	4.385	558.6	385.2	134.0	103.4	120.9	4050
	1.750	4.8	0.188	34.9	1.374	4.672	595.2	410.3	144.2	103.4	129.1	4260
50.8	2.000	2.8	0.109	45.3	1.782	3.279	417.8	288.0	71.7	57.4	42.1	3790
	2.000	3.0	0.118	44.8	1.764	3.533	450.1	310.4	77.9	62.3	51.8	4050
	2.000	3.2	0.125	44.5	1.750	3.729	475.0	327.5	82.7	66.2	59.5	4240
	2.000	3.4	0.134	44.0	1.732	3.978	506.8	349.4	88.9	71.2	69.2	4480
	2.000	4.0	0.156	42.9	1.688	4.577	583.0	402.0	104.1	83.3	93.1	5050
	2.000	4.4	0.175	41.9	1.650	5.081	647.3	446.3	117.2	93.8	107.3	5500
	2.000	4.8	0.188	41.2	1.624	5.420	690.5	476.0	126.2	100.9	114.7	5790
	2.000	5.2	0.203	40.5	1.594	5.804	739.4	509.8	136.5	103.4	123.0	6110

Notes:

1. Minimum wall thickness is 0.013 mm. less than specified wall thickness
2. Pressures based on (tm - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QT-1000® Coiled Tubing Technical Data — SI Units (continued)

Specified				Calculated Inside Diameter		Plain End Weight	Pipe Metal Cross-Sectional Area	Pipe Body Yield Load	Internal Yield Pressure	Hydro Test Pressure	Collapse Pressure P_c	Torsional Yield Strength
Outside Diameter		Wall Thickness										
D_m (mm)	D (in)	t_m (mm)	t (in)	d_m (mm,)	d (in)	w_m (kg./m)	A_m (mm^2)	L_{ym} (kg)	P_{rm} (Mpa)	P_t (Mpa)	(Mpa)	(Nm)
60.3	2.375	2.8	0.109	54.8	2.157	3.930	500.6	345.2	60.4	48.3	27.2	5480
	2.375	3.0	0.118	54.3	2.139	4.237	539.8	372.2	65.6	52.5	32.5	5870
	2.375	3.2	0.125	54.0	2.125	4.475	570.0	393.0	69.7	55.7	39.0	6160
	2.375	3.4	0.134	53.5	2.107	4.778	608.6	419.6	74.9	59.9	47.2	6530
	2.375	4.0	0.156	52.4	2.063	5.508	701.6	483.7	87.7	70.1	67.2	7390
	2.375	4.4	0.175	51.4	2.025	6.126	780.3	538.0	98.7	79.0	84.5	8090
	2.375	4.8	0.188	50.8	1.999	6.542	833.3	574.6	106.3	85.0	96.4	8550
	2.375	5.2	0.203	50.0	1.969	7.015	893.7	616.2	115.0	92.0	96.4	9050
73.0	2.875	3.2	0.125	66.7	2.625	5.469	696.7	480.4	57.6	46.0	24.3	9280
	2.875	3.4	0.134	66.2	2.607	5.844	744.4	513.3	61.9	49.5	28.7	9860
	2.875	3.7	0.145	65.7	2.585	6.298	802.3	553.2	67.1	53.7	35.0	10540
	2.875	4.0	0.156	65.1	2.563	6.749	859.7	592.8	72.4	57.9	43.2	11210
	2.875	4.4	0.175	64.1	2.525	7.518	957.7	660.3	81.5	65.2	57.6	12330
	2.875	4.8	0.188	63.5	2.499	8.037	1023.9	705.9	87.8	70.2	67.4	13060
	2.875	5.2	0.203	62.7	2.469	8.630	1099.4	758.0	95.0	76.0	67.4	13880
88.9	3.500	3.4	0.134	82.1	3.232	7.176	914.2	630.3	50.8	40.7	17.4	14980
	3.500	3.7	0.145	81.5	3.210	7.740	986.0	679.8	55.2	44.1	21.9	16060
	3.500	4.0	0.156	81.0	3.188	8.300	1057.3	729.0	59.5	47.6	26.3	17110
	3.500	4.4	0.175	80.0	3.150	9.258	1179.4	813.1	67.0	53.6	34.7	18880
	3.500	4.8	0.188	79.3	3.124	9.907	1262.0	870.1	72.1	57.7	42.7	20060
	3.500	5.2	0.203	78.6	3.094	10.649	1356.5	935.3	78.0	62.4	52.1	21380

Notes:

1. Minimum wall thickness is 0.013 mm. less than specified wall thickness
2. Pressures based on (tm - 0.013) mm

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 60,000 to 80,000 psi (New Coiled Tubing)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength															
				60,000 psi					70,000 psi					80,000 psi					
				Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					
Outside Diameter D (in)	Wall Thickness t (in)			0	0.02		0.05		0	0.02		0.05		0	0.02		0.05	
				Tensile Load					Tensile Load					Tensile Load				
				L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$
				Collapse Pressure, *psi*					Collapse Pressure, *psi*					Collapse Pressure, *psi*				
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
1.000	0.087	0.082	12.195	9030	5520	3780	4040	2770	10540	6440	4410	4710	3220	12040	7360	5040	5380	3680
	0.095	0.090	11.111	9830	6220	4260	4620	3160	11470	7260	4970	5390	3690	13100	8290	5670	6150	4210
	0.102	0.097	10.309	10510	6840	4680	5130	3510	12260	7980	5460	5990	4100	14010	9120	6240	6840	4680
	0.109	0.104	9.615	11180	7460	5110	5660	3870	13050	8710	5960	6610	4520	14910	9950	6810	7550	5170
	0.118	0.113	8.850	12030	8270	5660	6350	4350	14030	9640	6600	7410	5070	16040	11020	7540	8470	5800
	0.125	0.120	8.333	12670	8900	6090	6900	4720	14780	10380	7100	8050	5510	16900	11860	8120	9200	6300
1.250	0.087	0.082	15.244	7080	4060	2780	2880	1970	7970	4670	3200	3320	2270	8830	5270	3610	3760	2570
	0.095	0.090	13.889	8020	4660	3190	3340	2290	9330	5440	3720	3900	2670	10400	6150	4210	4420	3030
	0.102	0.097	12.887	8590	5140	3520	3730	2550	10020	6000	4110	4350	2980	11450	6860	4700	4970	3400
	0.109	0.104	12.019	9150	5630	3850	4120	2820	10680	6560	4490	4810	3290	12200	7500	5130	5500	3760
	0.118	0.113	11.062	9870	6260	4280	4650	3180	11510	7300	5000	5420	3710	13160	8340	5710	6190	4240
	0.125	0.120	10.417	10410	6750	4620	5060	3460	12150	7870	5390	5900	4040	13890	9000	6160	6750	4620
	0.134	0.129	9.690	11110	7390	5060	5600	3830	12960	8620	5900	6530	4470	14810	9850	6740	7470	5110
	0.145	0.140	8.929	11930	8180	5600	6270	4290	13920	9540	6530	7320	5010	15910	10900	7460	8370	5730
	0.156	0.151	8.278	12740	8970	6140	6960	4760	14870	10460	7160	8120	5560	16990	11960	8190	9280	6350
	0.175	0.170	7.353	14100	10340	7080	8170	5590	16450	12060	8250	9530	6520	18800	13790	9440	10900	7460

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 60,000 to 80,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength															
				60,000 psi					70,000 psi					80,000 psi					
				Ovality (D_{max} - D_{min})/D					Ovality (D_{max} - D_{min})/D					Ovality (D_{max} - D_{min})/D					
Outside Diameter D (in)	Wall Thickness t (in)			0	0.02		0.05		0	0.02		0.05		0	0.02		0.05	
				Tensile Load					Tensile Load					Tensile Load					
				L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$
				Collapse Pressure, *psi*					Collapse Pressure, *psi*					Collapse Pressure, *psi*					
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
1.500	0.095	0.090	16.667	6070	3510	2400	2470	1690	6780	4010	2740	2840	1940	7450	4510	3090	3200	2190
	0.102	0.097	15.464	6910	3970	2720	2810	1920	7770	4560	3120	3240	2220	8600	5140	3520	3660	2500
	0.109	0.104	14.423	7740	4440	3040	3160	2160	8760	5110	3500	3650	2500	9740	5780	3960	4140	2830
	0.118	0.113	13.274	8360	4950	3390	3570	2440	9750	5770	3950	4170	2850	11150	6600	4520	4760	3260
	0.125	0.120	12.500	8830	5350	3660	3900	2670	10300	6240	4270	4550	3110	11780	7130	4880	5200	3560
	0.134	0.129	11.628	9430	5870	4020	4320	2960	11000	6850	4690	5050	3460	12580	7830	5360	5770	3950
	0.145	0.140	10.714	10150	6510	4460	4860	3330	11850	7600	5200	5670	3880	13540	8690	5950	6480	4440
	0.156	0.151	9.934	10860	7160	4900	5410	3700	12670	8360	5720	6310	4320	14490	9550	6540	7210	4930
	0.175	0.170	8.824	12060	8300	5680	6380	4370	14070	9680	6630	7440	5090	16080	11060	7570	8500	5820
	0.188	0.183	8.197	12850	9080	6210	7060	4830	15000	10590	7250	8230	5630	17140	12100	8280	9410	6440
	0.204	0.199	7.538	13810	10040	6870	7900	5410	16110	11710	8010	9220	6310	18410	13380	9160	10540	7210
1.750	0.095	0.090	19.444	4520	2680	1830	1870	1280	4960	3030	2070	2130	1460	5340	3370	2310	2390	1640
	0.102	0.097	18.041	5240	3060	2090	2140	1460	5810	3490	2390	2460	1680	6330	3900	2670	2760	1890
	0.109	0.104	16.827	5960	3450	2360	2420	1660	6660	3950	2700	2790	1910	7310	4430	3030	3140	2150
	0.118	0.113	15.487	6890	3960	2710	2800	1920	7750	4550	3110	3230	2210	8570	5120	3500	3650	2500
	0.125	0.120	14.583	7610	4360	2980	3100	2120	8600	5020	3440	3580	2450	9560	5670	3880	4060	2780

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 60,000 to 80,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength															
				60,000 psi					70,000 psi					80,000 psi					
Outside Diameter D (in)	Wall Thickness t (in)			Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					
				0	0.02		0.05		0	0.02		0.05		0	0.02		0.05	
				Tensile Load					Tensile Load					Tensile Load					
				L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$
				Collapse Pressure, *psi*					Collapse Pressure, *psi*					Collapse Pressure, *psi*					
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
1.750	0.134	0.129	13.566	8190	4810	3290	3460	2370	9700	5650	3870	4050	2770	10820	6390	4370	4600	3150
	0.145	0.140	12.500	8830	5350	3660	3900	2670	10300	6240	4270	4550	3110	11780	7130	4880	5200	3560
	0.156	0.151	11.589	9460	5890	4030	4350	2980	11040	6880	4710	5070	3470	12610	7860	5380	5790	3960
	0.175	0.170	10.294	10520	6850	4690	5140	3520	12280	7990	5470	6000	4110	14030	9130	6250	6860	4700
	0.188	0.183	9.563	11240	7510	5140	5700	3900	13110	8760	6000	6660	4560	14980	10020	6860	7610	5210
	0.204	0.199	8.794	12090	8330	5700	6410	4390	14110	9720	6650	7480	5120	16130	11110	7600	8540	5840
2.000	0.109	0.104	19.231	4620	2730	1870	1910	1310	5080	3100	2120	2180	1490	5480	3440	2350	2440	1670
	0.118	0.113	17.699	5430	3160	2160	2220	1520	6040	3610	2470	2550	1750	6590	4040	2770	2860	1960
	0.125	0.120	16.667	6070	3510	2400	2470	1690	6780	4010	2740	2840	1940	7450	4510	3090	3200	2190
	0.134	0.129	15.504	6880	3950	2700	2800	1920	7740	4540	3110	3220	2200	8560	5120	3500	3650	2500
	0.145	0.140	14.286	7870	4510	3090	3210	2200	8910	5200	3560	3710	2540	9910	5870	4020	4210	2880
	0.156	0.151	13.245	8380	4960	3390	3580	2450	9770	5790	3960	4180	2860	11260	6640	4540	4790	3280
	0.175	0.170	11.765	9330	5780	3960	4250	2910	10890	6750	4620	4960	3390	12440	7710	5280	5670	3880
	0.188	0.183	10.929	9980	6350	4350	4730	3240	11640	7410	5070	5510	3770	13300	8470	5800	6300	4310
	0.204	0.199	10.050	10750	7060	4830	5320	3640	12540	8240	5640	6210	4250	14340	9410	6440	7090	4850

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 60,000 to 80,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength															
				60,000 psi					70,000 psi					80,000 psi					
Outside Diameter D (in)	Wall Thickness t (in)			Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					
				0	0.02		0.05		0	0.02		0.05		0	0.02		0.05	
				Tensile Load					Tensile Load					Tensile Load					
				L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$
				Collapse Pressure, *psi*					Collapse Pressure, *psi*					Collapse Pressure, *psi*					
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
2.375	0.109	0.104	22.837	3140	1950	1330	1360	930	3330	2170	1490	1530	1050	3470	2350	1610	1690	1160
	0.118	0.113	21.018	3830	2310	1580	1610	1100	4140	2600	1780	1830	1250	4400	2860	1960	2030	1390
	0.125	0.120	19.792	4360	2590	1770	1810	1240	4770	2930	2010	2060	1410	5120	3250	2220	2300	1570
	0.134	0.129	18.411	5040	2950	2020	2060	1410	5570	3360	2300	2370	1620	6050	3750	2570	2660	1820
	0.145	0.140	16.964	5880	3400	2330	2390	1640	6560	3890	2660	2750	1880	7190	4370	2990	3100	2120
	0.156	0.151	15.728	6710	3860	2640	2730	1870	7540	4430	3030	3140	2150	8330	4990	3420	3550	2430
	0.175	0.170	13.971	7970	4630	3170	3310	2270	9240	5380	3680	3860	2640	10290	6090	4170	4370	2990
	0.188	0.183	12.978	8530	5090	3480	3690	2530	9960	5950	4070	4310	2950	11380	6790	4650	4920	3370
	0.204	0.199	11.935	9210	5680	3890	4170	2850	10750	6620	4530	4860	3330	12280	7570	5180	5550	3800
2.875	0.125	0.120	23.958	2770	1760	1200	1230	840	2980	1960	1340	1390	950	2800	1990	1360	1460	1000
	0.134	0.129	22.287	3340	2060	1410	1430	980	3560	2290	1570	1620	1110	3730	2490	1700	1790	1230
	0.145	0.140	20.536	4030	2420	1660	1680	1150	4380	2720	1860	1920	1310	4670	3000	2050	2130	1460
	0.156	0.151	19.040	4720	2780	1900	1940	1330	5190	3160	2160	2220	1520	5610	3510	2400	2490	1700
	0.175	0.170	16.912	5910	3420	2340	2400	1640	6600	3920	2680	2760	1890	7240	4390	3000	3120	2140
	0.188	0.183	15.710	6720	3870	2650	2730	1870	7560	4440	3040	3150	2160	8350	5000	3420	3560	2440
	0.204	0.199	14.447	7730	4430	3030	3150	2160	8740	5100	3490	3640	2490	9710	5760	3940	4130	2830

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 60,000 to 80,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength															
				60,000 psi					70,000 psi					80,000 psi					
Outside Diameter D (in)	Wall Thickness t (in)			Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$					
				0	0.02		0.05		0	0.02		0.05		0	0.02		0.05	
				Tensile Load					Tensile Load					Tensile Load					
				L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$	L=0	L=0	$L=L_y/2$	L=0	$L=L_y/2$
				Collapse Pressure, *psi*					Collapse Pressure, *psi*					Collapse Pressure, *psi*					
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
3.500	0.156	0.151	23.179	3030	1890	1290	1320	900	3170	2080	1420	1480	1010	3000	2130	1460	1560	1070
	0.175	0.170	20.588	4010	2410	1650	1680	1150	4350	2710	1850	1910	1310	4640	2990	2050	2120	1450
	0.188	0.183	19.126	4680	2760	1890	1930	1320	5140	3130	2140	2200	1510	5550	3480	2380	2470	1690
	0.204	0.199	17.588	5500	3200	2190	2240	1530	6110	3650	2500	2570	1760	6680	4090	2800	2900	1980

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 90,000 to 100,000 psi (New Coiled Tubing)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength									
				90,000 psi					100,000 psi				
				Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$				
				0	0.02		0.05		0	0.02		0.05	
Outside Diameter D (in)	Wall Thickness t (in)			Tensile Load					Tensile Load				
				L=0	L=0	L=L_y/2	L=0	L=Ly/2	L=0	L=0	L=Ly/2	L=0	L=Ly/2
				Collapse Pressure, *psi*					Collapse Pressure, *psi*				
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
1.000	0.087	0.082	12.195	13550	8280	5670	6060	4150	15060	9200	6300	6730	4610
	0.095	0.090	11.111	14740	9330	6390	6920	4740	16380	10370	7100	7690	5260
	0.102	0.097	10.309	15770	10260	7020	7700	5270	17520	11400	7800	8560	5860
	0.109	0.104	9.615	16770	11190	7660	8490	5810	18640	12440	8510	9430	6450
	0.118	0.113	8.850	18040	12400	8490	9530	6520	20050	13780	9430	10590	7250
1.250	0.087	0.082	15.244	9620	5840	4000	4180	2860	10390	6400	4380	4600	3150
	0.095	0.090	13.889	11410	6840	4680	4930	3370	12400	7530	5150	5440	3720
	0.102	0.097	12.887	12880	7710	5280	5590	3830	14160	8530	5840	6190	4240
	0.109	0.104	12.019	13730	8440	5780	6190	4240	15260	9380	6420	6870	4700
	0.118	0.113	11.062	14800	9380	6420	6970	4770	16450	10430	7140	7740	5300
	0.125	0.120	10.417	15620	10120	6930	7590	5190	17360	11250	7700	8430	5770
	0.134	0.129	9.690	16660	11080	7580	8400	5750	18510	12320	8430	9330	6390
	0.145	0.140	8.929	17900	12270	8400	9410	6440	19890	13630	9330	10460	7160
	0.156	0.151	8.278	19120	13450	9210	10440	7150	21240	14950	10230	11600	7940
	0.175	0.170	7.353	21150	15510	10620	12260	8390	23500	17230	11790	13620	9320

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 90,000 to 100,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength									
				90,000 psi					100,000 psi				
				Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$				
				0	0.02		0.05		0	0.02		0.05	
Outside Diameter D (in)	Wall Thickness t (in)			Tensile Load					Tensile Load				
				L=0	L=0	L=L_y/2	L=0	L=Ly/2	L=0	L=0	L=Ly/2	L=0	L=Ly/2
				Collapse Pressure, *psi*					Collapse Pressure, *psi*				
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
1.500	0.095	0.090	16.667	8060	4980	3410	3550	2430	8630	5430	3720	3890	2660
	0.102	0.097	15.464	9360	5700	3900	4070	2790	10090	6240	4270	4480	3070
	0.109	0.104	14.423	10670	6420	4390	4610	3160	11560	7060	4830	5080	3480
	0.118	0.113	13.274	12340	7370	5040	5330	3650	13440	8120	5560	5880	4020
	0.125	0.120	12.500	13250	8020	5490	5850	4000	14720	8910	6100	6490	4440
	0.134	0.129	11.628	14150	8810	6030	6490	4440	15720	9780	6690	7210	4930
	0.145	0.140	10.714	15230	9770	6690	7290	4990	16920	10860	7430	8100	5540
	0.156	0.151	9.934	16300	10750	7360	8110	5550	18110	11940	8170	9010	6170
	0.175	0.170	8.824	18090	12450	8520	9570	6550	20100	13830	9470	10630	7280
	0.188	0.183	8.197	19280	13620	9320	10580	7240	21420	15130	10360	11760	8050
1.750	0.102	0.097	18.041	6780	4280	2930	3050	2090	7190	4640	3180	3330	2280
	0.109	0.104	16.827	7900	4890	3350	3490	2390	8450	5330	3650	3820	2610
	0.118	0.113	15.487	9330	5680	3890	4060	2780	10060	6220	4260	4470	3060
	0.125	0.120	14.583	10450	6300	4310	4520	3090	11320	6920	4740	4980	3410
	0.134	0.129	13.566	11890	7110	4870	5130	3510	12940	7830	5360	5660	3870

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 90,000 to 100,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength									
				90,000 psi					100,000 psi				
				Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$				
				0	0.02		0.05		0	0.02		0.05	
Outside Diameter D (in)	Wall Thickness t (in)			Tensile Load					Tensile Load				
				L=0	L=0	L=L_y/2	L=0	L=Ly/2	L=0	L=0	L=Ly/2	L=0	L=Ly/2
				Collapse Pressure, *psi*					Collapse Pressure, *psi*				
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
1.750	0.145	0.140	12.500	13250	8020	5490	5850	4000	14910	8960	6130	6520	4460
	0.156	0.151	11.589	14190	8840	6050	6520	4460	15770	9820	6720	7240	4960
	0.175	0.170	10.294	15790	10280	7040	7720	5280	17540	11420	7820	8570	5870
	0.188	0.183	9.563	16850	11270	7710	8560	5860	18730	12520	8570	9510	6510
2.000	0.109	0.104	19.231	5820	3760	2570	2680	1830	6110	4050	2770	2920	2000
	0.118	0.113	17.699	7080	4440	3040	3170	2170	7520	4830	3310	3460	2370
	0.125	0.120	16.667	8060	4980	3410	3550	2430	8630	5430	3720	3890	2660
	0.134	0.129	15.504	9310	5670	3880	4060	2780	10040	6210	4250	4460	3050
	0.145	0.140	14.286	10850	6530	4470	4690	3210	11770	7180	4910	5170	3540
	0.156	0.151	13.245	12390	7400	5060	5350	3660	13500	8150	5580	5900	4040
	0.175	0.170	11.765	14000	8670	5930	6380	4370	15560	9640	6600	7090	4850
	0.188	0.183	10.929	14960	9530	6520	7090	4850	16630	10590	7250	7880	5390
	0.203	0.199	10.050	16130	10590	7250	7980	5460	17920	11770	8060	8870	6070

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 90,000 to 100,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength									
				90,000 psi					100,000 psi				
				Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$				
				0	0.02		0.05		0	0.02		0.05	
Outside Diameter D (in)	Wall Thickness t (in)			Tensile Load					Tensile Load				
				L=0	L=0	L=L_y/2	L=0	L=Ly/2	L=0	L=0	L=Ly/2	L=0	L=Ly/2
				Collapse Pressure, *psi*					Collapse Pressure, *psi*				
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
2.375	0.109	0.104	22.837	3760	2580	1770	1870	1280	3940	2770	1900	2030	1390
	0.118	0.113	21.018	4580	3080	2110	2220	1520	4720	3270	2240	2390	1640
	0.125	0.120	19.792	5410	3530	2420	2530	1730	5650	3790	2590	2740	1880
	0.134	0.129	18.411	6470	4110	2810	2930	2010	6840	4450	3050	3200	2190
	0.145	0.140	16.964	7760	4820	3300	3430	2350	8290	5250	3590	3760	2570
	0.156	0.151	15.728	9060	5530	3780	3950	2700	9750	6050	4140	4340	2970
	0.175	0.170	13.971	11290	6780	4640	4880	3340	12260	7450	5100	5380	3680
	0.188	0.183	12.978	12820	7650	5240	5540	3790	13980	8430	5770	6120	4190
2.875	0.125	0.120	23.958	3380	2340	1600	1700	1160	3520	2500	1710	1830	1250
	0.134	0.129	22.287	3950	2710	1850	1960	1340	4160	2910	1990	2130	1460
	0.145	0.140	20.536	4900	3250	2220	2340	1600	5070	3470	2370	2520	1720
	0.156	0.151	19.040	5970	3840	2630	2740	1880	6270	4140	2830	2980	2040
	0.175	0.170	16.912	7810	4840	3310	3450	2360	8350	5280	3610	3790	2590
	0.188	0.183	15.710	9080	5540	3790	3960	2710	9770	6060	4150	4350	2980

For an explanation of the symbols, see "Explanation of Symbols Used in the QTI Tables."

QTI Collapse Tables — 90,000 to 100,000 psi (New Coiled Tubing – continued)

Specified		Min. Wall t_{min} (in)	Ratio D/t_{min}	Specified Minimum Yield Strength									
				90,000 psi					100,000 psi				
				Ovality $(D_{max} - D_{min})/D$					Ovality $(D_{max} - D_{min})/D$				
				0	0.02		0.05		0	0.02		0.05	
Outside Diameter D (in)	Wall Thickness t (in)			Tensile Load					Tensile Load				
				L=0	L=0	L=Ly/2	L=0	L=Ly/2	L=0	L=0	L=Ly/2	L=0	L=Ly/2
				Collapse Pressure, *psi*					Collapse Pressure, *psi*				
				P_c	P_{co}	P	P_{co}	P_c	P_c	P_{co}	P	P_{co}	P_c
3.500	0.156	0.151	23.179	3640	2510	1720	1820	1250	3810	2690	1840	1970	1350
	0.175	0.170	20.588	4860	3230	2210	2320	1590	5030	3450	2360	2510	1720
	0.188	0.183	19.126	5900	3800	2600	2720	1860	6200	4100	2810	2950	2020

Explanation of Symbols Used in the QTI Tables

D, t — Outside diameter (D) and wall thickness (t) are manufacturer-specified values. The inside diameter (d) is calculated, and does not allow for either internal flash or tube-to-tube welds. Users may wish to drift the tubing.

t_{min} — A minimum wall thickness (t_{min}) is defined for coiled tubing; for the following Quality Tubing product, the minimum wall is 0.005 in. less than the specified wall - QT-700, QT-800, QT-900 and QT-1000. For Quality Tubing's hang off (and line pipe) products HO-60 and HO-70, the minimum wall thickness is 0.875t.

L_y — The Pipe Body Yield Load (L_y) is defined as the axial tension load (in the absence of pressures or torque) which produced a stress in the tube equal to the specified minimum yield strength (SMYS) in tension:

P_r — Internal Yield Pressure (P_r) is defined as the internal pressure required to produce a stress on the ID of a tube with a minimum wall thickness equal to the specified minimum yield strength (SMYS). This calculation is based on the method detailed in API Bul. 5C3, and is rounded to the nearest 10 lb: $P_r = 2 \times (SMYS) \times t_{min}/D$
Where t_{min} = Specified Minimum Wall Thickness (in.)

P_t — The Hydrostatic Test Pressure (P_t) is the maximum internal fluid pressure recommended to test the tube integrity, based on 80% of the internal yield pressure, and is rounded to the nearest 100 psi: $P_t = 0.8 \times P_r$ or $1.6\,(P_t)\,t_{min}/D$ Where: P_r = Internal Yield Pressure (psi).

T_f — Torsional Yield Strength (T_f) is defined as the torque (in the absence of axial stress or pressure) that will stress the OD of the tube to the Specified Minimum Yield Strength (SMYS).
Torsional Yield Strength is calculated from: $T_f = \frac{(SMYS)\,(D^4 - d^4)}{105.86 \times D}$ Where: d = Calculated Inside diameter.

V_i — Internal capacity (V_i) is the volume within the tube, expressed as Gallons per 1000 ft. It is calculated from: $V_i = 40.8 \times d^2$

V_D — External Tube body displacement (V_D) is defined as the equivalent unit volume of fluid that will be displaced by the cross-sectional area of a tube body upon insertion into a larger, filled tube, and is measured in gallons per 1000 ft. It is calculated from: $V_D = 40.8 \times D^2$

The collapse pressure (in the absence of axial stress and torque) for as-manufactured coiled tubing is calculated using the appropriate formula of the *API Bulletin on Formulas and Calculations for Casing, Tubing, Drill Pipe and Line Pipe Properties (API Bul. 5C3)* for (a) Yield Strength collapse, (b) Plastic collapse, (c) Transition collapse and (d) Elastic collapse pressure. Consult this document for the appropriate equations, which are based upon d/t_{min}.

In the Collapse tables, the collapse pressures are calculated for 0, 2% and 5% ovality (columns headed 0, 0.02, 0.05 respectively). Values are calculated at zero load (L = 0) and at half the yield load ($L = L_y/2$). Equations developed by Timoshenko are used to convert the values at zero ovality to those at 2% and 5% ovality.

Caution: The user should monitor the degradation of in-service coiled tubing, since the collapse pressure rating may be lowered by the presence of erosion and corrosion of the wall.

The following conversions of US customary units to metric (SI) units are given in accordance with Guidelines given in API Specification for Casing and Tubing, (API 5CT) fifth Ed. 1995.

Outside Diameter
D_M = 25.4 D where D_M = the SI Outside Diameter in *mm,* rounded to the nearest 0.1 mm

Wall Thickness
t_m = 25.4 t where t_m = SI wall thickness, in *mm,* rounded to the nearest 0.1 mm.

Inside Diameter
d_m = 25.4 x d where d_m = SI inside diameter, in *mm,* rounded to the nearest 0.1 mm

Plain End Weight
$P_I = 0.0246615(D_m - t_m)t_m$ where
P_I = SI Plain End Mass/Metre (*kg/m*), rounded to the nearest 0.001 kg/m.
D_M = SI Outside Diameter in *mm*
t_m = SI wall thickness, in *mm.*

Specified Minimum Yield Strength
$SMYS_m$ = 0.00689476 x SMYS where $SMYS_m$ = Specified Minimum Yield Strength in N/mm^2 rounded to the nearest 1 N/mm^2

Torsional Strength
1 lb-ft = 1.35582 Newton-meter (N-m). Values in tables rounded to the nearest 10 N-m.

Pipe Body Yield Load
L_{ym} = 4.448222 x L_y where L_{ym} = Pipe Body Yield Load, in Newtons, rounded to the nearest 100 N (0.1 kN).

Internal Yield Pressure
P_{rm} = 0.00689476 x P_r where P_{rm} = Metric (SI) Internal Yield Pressure in MegaPascals (MPa) rounded to the nearest 0.1 MPa.

Test Pressure
P_{tm} = 0.00689476 x P_t where P_{rm} = Metric (SI) Test Pressure in MegaPascals (MPa), rounded to the nearest 0.1 MPa.

Collapse Pressure
P_{cm} = 0.00689476 x P_c where P_{cm} = Metric (SI) Collapse Pressure in MegaPascals (MPa) rounded to the nearest 0.1 Mpa.

SECTION EIGHT

Fishing Tools

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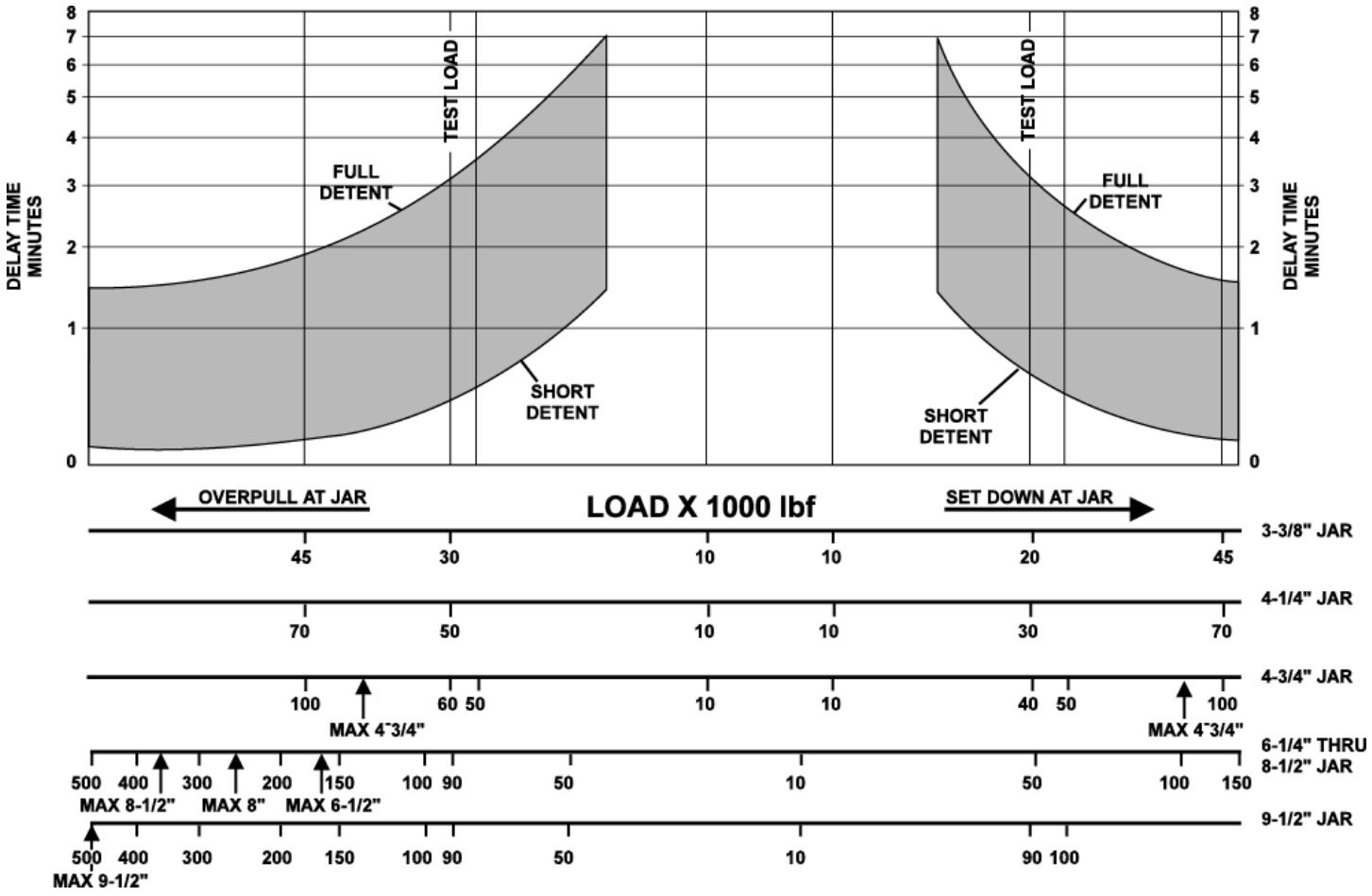
Hydra-Jar® Specifications

Tool O.D. inches (mm)	3-3/8 (86)	4-1/4 (108)	4-3/4 (121)	4-3/4 (121)	6-1/4 (159)	6-1/2 (165)	7 (178)	7-1/4 (184)	7-3/4 (197)	8 (203)	8-1/4 (210)	8-1/2 (216)	9-1/2 (241)
Tool I.D. inches (mm)	1-1/2 (38)	2 (51)	2-1/4 (57)	2-1/4 (57)	2-3/4 (70)	2-3/4 (70)	2-3/4 (70)	2-3/4 (70)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)
Tool Joint Connections	2-3/8 API IF	2-7/8 API IF	3-1/2 API IF	3-1/2 API IF	4-1/2 XH	4-1/2 API IF	5 H90	5-1/2 H90	6-5/8 API REG	6-5/8 API REG	6-5/8 API REG	6-5/8 API REG	7-5/8 API REG
Overall Length "Extended" ft-in (mm)	24' 5" (7,442)	29' 10" (9,093)	29' 10" (9,093)	29' 10" (9,093)	31' 2" (9,499)	31' 2" (9,499)	31' 6" (9,601)	31' 6" (9,601)	32' (9,754)	32' (9,754)	32' (9,754)	32' (9,754)	32' 6" (9,906)
Max. Detent Working Load lbf (N)	44,000 (195,712)	70,000 (311,360)	80,000 (355,840)	95,000 (422,560)	150,000 (667,200)	175,000 (778,400)	230,000 (1,023,040)	240,000 (1,067,520)	260,000 (1,156,480)	300,000 (1,334,400)	350,000 (1,556,800)	350,000 (1,556,800)	500,000 (2,224,000)
Tensile Yield Strength lbf (N)	232,580 (1,034,516)	310,000 (1,378,880)	460,000 (2,046,080)	460,000 (2,046,080)	730,000 (3,247,040)	900,000 (4,003,200)	1,100,000 (4,892,800)	1,200,000 (5,337,600)	1,300,000 (5,782,400)	1,600,000 (7,116,800)	1,700,000 (7,561,600)	1,700,000 (7,561,600)	2,000,000 (8,896,000)
Torsion Yield Strength lbf•ft (N•m)	6,100 (8,270)	16,000 (21,692)	21,000 (28,470)	21,000 (28,470)	50,000 (67,787)	61,000 (82,700)	65,000 (88,123)	77,000 (104,392)	118,000 (159,978)	118,000 (159,978)	118,000 (159,978)	118,000 (159,978)	200,000 (271,150)
Up Stroke inches (millimeters)	7 (178)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)
Down Stroke inches (millimeters)	7 (178)	7 (178)	7 (178)	7 (178)	7 (178)	7 (178)	8 (203)	8 (203)	7 (178)	7 (178)	8 (203)	8 (203.20)	8 (203.20)
Total Stroke inches (millimeters)	21 (533)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)	25 (635)
Tool Weight lb (kg)	500 (227)	800 (362)	1,050 (476)	1,050 (476)	1,600 (725)	1,850 (839)	2,600 (1,179)	3,000 (1,360)	3,200 (1,451)	3,550 (1,610)	4,000 (1,814)	4,500 (2,041)	5,600 (2,540)

Torsional yield strength is based on the tool joint connection. Tensile yield, torsional yield and maximum overpull values above are calculated per API RP7G utilizing the published yield strength of the material. Further information on these and other specifications is available upon request.

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Delay Times vs. Load



Full Detent
Drilling Jar in the fully opened (or closed) position, prior to striking.

Short Detent
Drilling Jar in a partially opened (or closed) position, prior to striking.

Delay Time
The time elapsed between cocking and firing the Drilling Jar. Hole drag not accounted for in above chart.

Test Load
Functional test performed at service centers.

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DACCH Accelerator Specifications

Tool Size		Tool Joint Connection	Max. Detent Working Load lbf (N)	Tensile Yield Strength lbf (N)	Torsional Yield Strength lbf·ft (N·m)	Tool Weight lb (kg)
OD inches (mm)	ID inches (mm)					
3-3/8 (86)	1-1/2 (38)	2-3/8 API REG	44,000 (195,722)	232,580 (1,034,567)	6,100 (8,270)	450 (204)
4-1/4 (108)	2 (25)	2-7/8 API IF	70,000 (311,360)	310,000 (1,378,880)	16,000 (21,692)	—
4-3/4 (121)	2-1/4 (57)	3-1/2 API IF	80,000 (355,840)	460,000 (2,046,080)	21,000 (28,471)	1,050 (476)
4-3/4 (121)			95,000 (422,560)	460,000 (2,046,080)	21,000 (28,471)	1,050 (476)
6-1/4 (159)	2-3/4 (70)	4-1/2 XH	150,000 (667,200)	730,000 (3,247,040)	50,000 (67,787)	1,600 (725)
6-1/2 (165)		4-1/2 API IF	175,000 (778,400)	900,000 (4,003,200)	61,000 (82,700)	1,850 (839)
7 (178)		5 H-90	230,000 (1,023,040)	1,100,000 (4,892,800)	80,000 (108,460)	2,600 (1,179)
7-1/4 (184)		5-1/2 H-90	240,000 (1,067,520)	1,200,000 (5,337,600)	97,000 (131,507)	3,000 (1,360)
7-3/4 (197)	3 (76)	6-5/8 API REG.	260,000 (1,156,480)	1,300,000 (5,782,400)	118,000 (159,978)	3,200 (1,451)
8 (203)			300,000 (1,334,400)	1,600,000 (7,116,800)	118,000 (159,978)	3,550 (1,610)
8-1/4 (210)			350,000 (1,556,800)	1,700,000 (7,561,600)	118,000 (159,978)	4,000 (1,814)
8-1/2 (216)			350,000 (1,556,800)	1,700,000 (7,561,600)	118,000 (159,978)	4,500 (2,041)
9-1/2 (214)		7-5/8 API REG.	500,000 (2,224,000)	2,000,000 (8,896,000)	200,000 (271,150)	5,600 (2,540)

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Drilling Jar and Accelerator® Tool Weight Tables

Tool OD Inches (mm) Tool Joint Connection	3-3/8 OD (86) 2-3/8 API IF	4-1/4 OD (108) 2-7/8 API IF MOD	4-3/4 OD (121) 3-1/2 API FH-IF	6-1/4 OD (159) 4-1/2 API IF MOD	6-1/2 OD (165) 4-1/2 API IF MOD	7 OD (178) 5 H90	7-1/4 OD (184) 5 H90	7-3/4 OD (197) 6-5/8 API REG	8 OD (203) 6-5/8 API REG	8-1/4 OD (210) 6-5/8 API REG	8-1/2 OD (216) 6-5/8 API REG	9-1/2 OD (241) 7-5/8 API REG
Jar and Accel. Load lbf (N)	Weight of Collars and Quantity of Collars - lb. (kg)											
20,000 (88,960)	4,000 5 (1,814 5)	4,000 4 (1,814 4)										
25,000 (111,200)	5,000 6 (2,267 6)	5,000 5 (2,267 5)										
30,000 (133,440)	6,000 8 (2,721 8)	6,000 6 (2,721 6)										
40,000 (177,920)	8,000 10 (3,628 10)	8,000 8 (3,628 8)	8,000 5 (3,628 5)									
50,000 (222,400)		10,000 10 (4,535 10)	10,000 7 (4,535 7)	10,000 4 (4,535 4)	10,000 4 (4,535 4)	10,000 3 (4,535 3)	10,000 3 (4,535 3)					
75,000 (333,600)		15,000 14 (6,803 14)	15,000 10 (6,803 10)	15,000 6 (6,803 6)	15,000 5 (6,803 5)	15,000 5 (6,803 5)	15,000 4 (6,803 4)					
100,000 (444,800)			20,000 13 (9,071 13)	20,000 8 (9,071 8)	20,000 7 (9,071 7)	20,000 6 (9,071 6)	20,000 6 (9,071 6)					
125,000 (556,000)				25,000 10 (11,339 10)	25,000 9 (11,339 9)	25,000 8 (11,339 8)	25,000 7 (11,339 7)	25,000 6 (11,339 6)	25,000 6 (11,339 6)	25,000 5 (11,339 5)	25,000 5 (11,339 5)	
150,000 (667,200)				30,000 12 (13,607 12)	30,000 11 (13,607 11)	30,000 9 (13,607 9)	30,000 8 (13,607 8)	30,000 7 (13,607 7)	30,000 7 (13,607 7)	30,000 6 (13,607 6)	30,000 6 (13,607 6)	30,000 5 (13,607 5)
175,000 (778,400)				35,000 14 (15,875 14)	35,000 13 (15,875 13)	35,000 10 (15,875 10)	35,000 10 (15,875 10)	35,000 9 (15,875 9)	35,000 8 (15,875 8)	35,000 7 (15,875 7)	35,000 7 (15,875 7)	35,000 5 (15,875 5)
200,000 (889,600)						40,000 12 (18,143 12)	40,000 11 (18,143 11)	40,000 10 (18,143 10)	40,000 9 (18,143 9)	40,000 8 (18,143 8)	40,000 8 (18,143 8)	40,000 6 (18,143 6)
250,000 (1,112,000)								50,000 12 (22,679 12)	50,000 11 (22,679 11)	50,000 11 (22,679 11)	50,000 10 (22,679 10)	50,000 8 (22,679 8)
300,000 (1,334,400)								60,000 15 (27,215 15)	60,000 14 (27,215 14)	60,000 13 (27,215 13)	60,000 12 (27,215 12)	60,000 9 (27,215 9)
350,000 (1,556,800)												70,000 11 (31,751 11)
Drill Collar Size Inches (mm)	3-3/8 OD (86) 1-1/2 ID (38)	4-1/4 OD (108) 2-1/4 ID (57)	4-3/4 OD (120) 2 ID (51)	6-1/4 OD (159) 2-13/16 ID (71)	6-1/2 OD (165) 2-13/16 ID (71)	7 OD (178) 2-13/16 ID (71)	7-1/4 OD (184) 2-13/16 ID (71)	7-3/4 OD (197) 3 ID (76)	8 OD (203) 3 ID (76)	8-1/4 OD (210) 3 ID (76)	8-1/2 OD (216) 3 ID (76)	9-1/2 OD (241) 3 ID (76)
WT/30'	732 lb (332 kg)	1,041 lb (472 kg)	1,488 lb (674 kg)	2,519 lb (1142 kg)	2,774 lb (1258 kg)	3,313 lb (1502 kg)	3,598 lb (1632 kg)	4,080 lb (1850 kg)	4,398 lb (1995 kg)	4,723 lb (2142 kg)	5,173 lb (2346 kg)	6,618 lb (3001 kg)
Impact Blow x1000 lbf (N)	Min 90 (400) Max 200 (890)	150 (667) 250 (1112)	180 (800) 300 (1334)	400 (1779) 650 (2981)	400 (1779) 700 (3113)	450 (2002) 750 (3336)	450 (2002) 750 (3336)	500 (2224) 800 (3558)	500 (2224) 800 (3558)	600 (2668) 900 (4003)	600 (2668) 900 (4003)	1,000 (4448) 2,000 (8896)

This area represents insufficient drill collar weights that cause excessively high impact loads on jar and fishing tools.

This area represents excessive drill collar weights that diminish the efficiency of the jar acceleration effort.

* The Jar Impact Blow is a product of the Energy Equation: $E = \frac{1}{2}\frac{W}{g}V^2$ where E is the energy available to perform the impact work and accelerates the Jar Weight (W) to the Velocity (V) which is exponential in value.

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Amplification Factor

Jar Size (inches) OD x ID	Drill Pipe DIA	Drill Pipe LB/FT	Heavy WT Drill Pipe DIA	Heavy WT Drill Pipe LB/FT	Drill Collars DIA	Drill Collars LB/FT	Amplification Factor (M)	'L' Jar Load (LB)	'F' Jar Blow (LB)
3-3/8 x 1-1/2	2-3/8	6.65	—	—	3-3/8	24.4	2.93	40,000	117,200
4-1/4 x 2	2-7/8	6.87	—	—	4-1/4	37.5	4.36	50,000	218,000
		10.40					2.89	50,000	144,000
4-3/4 x 2-1/4	3-1/2	13.30	3-1/2	26	—	—	1.56	75,000	117,000
		15.50	3-1/2	26	—	—	1.34	75,000	101,000
		13.30	—	—	4-3/4	49.5	2.99	75,000	225,000
		15.50	—	—	4-3/4	49.5	2.56	75,000	193,000
6-1/4 x 2-3/4	4-1/2	16.60	4-1/2	42	—	—	2.02	100,000	202,000
		20.00	4-1/2	42	—	—	1.68	100,000	168,000
		16.60	5	50	—	—	2.41	100,000	241,000
		20.00	5	50	—	—	2.00	100,000	200,000
6-1/2 x 2-3/4		16.60	—	—	6-1/4	83.9	4.04	100,000	404,000
		20.00	—	—	6-1/4	83.9	3.35	100,000	335,000
		16.60	—	—	6-1/2	92.5	4.52	100,000	452,000
		20.00	—	—	6-1/2	92.5	3.71	100,000	371,000
	5	19.50	5	50	—	—	2.05	100,000	205,000
		19.50	—	—	6-1/2	92.5	3.80	100,000	380,000
7 x 2-3/4	4-1/2	16.60	5-1/2	57	—	—	2.74	100,000	274,000
		20.00	5-1/2	57	—	—	2.28	100,000	238,000
		16.60	—	—	7	110.5	5.31	100,000	531,000
		20.00	—	—	7-1/4	119.5	4.77	100,000	477,000
7-1/4 x 2-3/4		19.50	5-1/2	57	—	—	2.33	100,000	233,000
	5	19.50	—	—	7	110.5	4.53	100,000	453,000
		19.50	—	—	7-1/4	119.5	4.89	100,000	489,000
7-3/4 x 3	4-1/2	16.60	—	—	7-3/4	136.1	6.56	150,000	987,000
		20.00	—	—	7-3/4	136.1	5.45	150,000	818,000
8 x 3	5	19.50	6-5/8	70	—	—	2.87	150,000	430,500
		19.50	—	—	7-3/4	136.1	5.60	150,000	840,000
		19.50	—	—	8	150.5	6.36	150,000	956,000
8-1/4 x 3	5	19.50	6-5/8	70	—	—	2.87	150,000	430,500
		19.50	—	—	8-1/4	157.5	6.45	150,000	967,500
		19.50	—	—	8-1/2	172.5	7.07	150,000	1,060,500
8-1/2 x 3	5-1/2	21.90	6-5/8	70	—	—	2.55	150,000	382,500
		21.90	—	—	8-1/4	157.5	5.75	150,000	835,500
		21.90	—	—	8-1/2	172.5	6.29	150,000	943,500
9-1/2 x 3	5-1/2	21.90	6-5/8	70	—	—	2.55	150,000	382,500
		21.90	—	—	9	191.9	7.00	150,000	1,050,000
		21.90	—	—	9-1/2	216.6	7.90	150,000	1,185,000
	6-5/8	25.20	6-5/8	70	—	—	2.23	150,000	334,500
		25.20	—	—	9-1/2	216.6	6.86	150,000	1,029,000

Amplification Factor (M) = WT/FT HWDP *or* DC ÷ WT/FT *or* drill pipe x [0.799].
[0.799] = Empirical Factor obtained by comparing theoretical impact calculations to measured impact data.
Example: *Impact Jar Blow (F) in lb. = Amplification Factor (M) X Jar Load (L).*

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TM MAGNA Jar Specifications and Strength Data

Tool Sizes		Tool Joint Connection	Recommended Maximum Working Load During Restricted Travel lbf (N)	Total Travel inches (mm)	Maximum Strength After Restricted Travel	
OD inches (mm)	ID inches (mm)				Maximum Pull Yield lbf (N)	Maximum Torque Yield lb·ft (N·m)
1-13/16 (46)	3/8 (10)	1-13/16 WFJ	19,000 (84,512)	10 (254)	56,000 (249,088)	800 (1,085)
2-1/4 (57)	1/2 (13)	1-1/4 REG.	22,000 (97,856)	12 (305)	130,000 (578,240)	1900 (2,576)
3-1/8 (79)	1 (25)	2-3/8 API REG.	55,000 (244,640)	16 (406)	192,000 (854,016)	4,100 (5,559)
3-3/4 (95)	1-1/2 (38)	2-3/8 APE IF	59,000 (262,432)	16 (406)	257,000 (1,143,136)	6,600 (8,948)
3-3/4 (95)	2 (51)	2-3/8 EUE	38,000 (169,024)	16 (406)	233,000 (1,036,384)	7,400 (10,033)
4-1/4 (108)	2 (51)	2-7/8 API IF	73,000 (324,704)	16 (406)	348,000 (1,547,904)	11,000 (14,913)
4-1/4 (108)	2-7/16 (62)	2-7/8 EUE	39,000 (173,472)	16 (406)	320,000 (1,423,360)	10,000 (13,558)
4-3/4 (121)	2 (51)	3-1/2 API FH	90,000 (400,320)	16 (406)	422,000 (1,877,056)	23,800 (32,267)
5-3/4 (147)	2 (51)	4-1/2 API FH	180,000 (800,640)	18 (457)	809,000 (3,598,432)	42,000 (56,942)
6-1-/4 (159)	2 (51)	4-1/2 API IF	230,000 (1,023,040)	18 (457)	949,000 (4,221,152)	50,000 (67,788)
6-1/2 (165)	2 (51)	4-1/2 API IF	230,000 (1,023,040)	18 (457)	949,000 (4,221,152)	50,000 (67,788)
7-3/4 (197)	3-1/2 (72)	6-5/8 API REG.	300,000 (1,334,400)	18 (457)	1,304,000 (5,800,192)	118,000 (159,979)

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TMC Jar Specifications and Strength Data

Tool Sizes		Tool Joint Connection	Recommended Max. Overpull Wkg. Load During Restricted Travel lbf (N)	Total Travel Inches (mm)	Max. Strength After Restricted Travel	
OD inches (mm)	ID inches (mm)				Max. Pull Tensile Yield lbf (N)	*Max. Torque Yield lbf·ft (N·m)
1-13/16 (46)	3/8 (10)	1-13/16 WFJ	19,000 (84,512)	9-3/4 (248)	56,000 (249,088)	800 (1,085)
1-13/16 (46)	9/16 (14)	1 AMMT	17,000 (75,616)	7-1/4 (184)	69,000 (306,912)	750 (1,017)
2-1/4 (57)	1/2 (13)	1-1/4 REG.	20,000 (88,960)	12 (305)	95,800 (426,118)	1,900 (2,576)
3-1/8 (79)	1 (25)	2-3/8 API REG.	51,000 (226,848)	16 (406)	192,000 (854,016)	4,100 (5,559)
3-1/8 (79)	1-1/2 (38)	2-3/8 EUE	32,400 (144,115)	14 (356)	185,000 (822,880)	4,200 (5,694)
3-3/4 (95)	1-1/2 (38)	2-3/8 API IF	59,000 (262,432)	16 (406)	257,000 (1,143,136)	6,600 (8,948)
3-3/4 (95)	2 (51)	2-3/8 EUE	38,000 (169,024)	16 (406)	233,000 (1,036,384)	7,400 (10,033)
4-1/4 (108)	2 (51)	2-7/8 API IF	73,000 (324,704)	16 (406)	348,000 (1,547,904)	11,000 (14,913)
4-1/4 (108)	2-7/16 (62)	2-7/8 EUE	39,000 (173,472)	16 (406)	320,000 (1,423,360)	10,000 (13,558)
4-3/4 (121)	2 (51)	3-1/2 API FH	90,000 (400,320)	16 (406)	422,000 (1,877,056)	14,000 (18,981)
4-3/4 (121)	2-1/4 (57)	3-1/2 API IF	95,000 (422,560)	16 (406)	422,000 (1,877,056)	14,000 (18,981)
6-1/4 (159)	2-1/4 (57)	4-1/2 API IF	180,000 (800,640)	18 (457)	900,000 (4,003,200)	50,000 (67,788)
6-1/2 (165)	2-1/4 (57)	4-1/2 API IF	195,000 (867,360)	18 (457)	928,000 (4,127,744)	50,000 (67,788)
7-3/4 (197)	3-1/2 (89)	6-5/8 API REG.	300,000 (1,334,400)	18 (457)	1,304,000 (5,800,192)	118,000 (159,979)
8 (203)	3-1/2 (89)	6-5/8 API REG.	300,000 (1,334,400)	18 (457)	1,304,000 (5,800,192)	118,000 (159,979)

*Torsional yield strength is based on the tool joint connection.

The tensile yield, torsional yield, and maximum overpull values set forth above are calculated per API RP7G using the published yield strength of the material.

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ACCM Accelerators Specifications and Strength Data

Tool Sizes		Total Inches (mm) Traveled with Stop Sleeve [1]	Rack Test in shop at 70° for a nominal BHT of 240° Inches at lbf Pull (mm at N Pull)	Oil Ounces (cm^3)	Downhole at 240ºF (115ºC) Jar and Accelerator Combination Loads		Maximum Strength After Restricted Travel	
OD Inches (mm)	ID Inches (mm)				Minimum Overpull [2] lbf (N)	Maximum Overpull [3] lbf (N)	Maximum Pull Yield lbf (N)	Maximum Torque Yield lb·ft (N·m)
1-13/16 (46)	3/8 (10)	8 (203)	6-3/4 at 6,000 (171 at 26,688)	2 (6 cm^3)	7,500 (33,360)	19,000 (84,512)	56,000 (249,088)	800 (1,085)
2-1/4 (57)	1/2 (13)	10 (254)	8 at 6,000 (203 at 26,688)	2 (6 cm^3)	5,200 (23,130)	20,000 (88,960)	130,000 (578,240)	1,900 (2,576)
3-1/8 (79)	1 (25)	12 (305)	11 at 29,000 (279 at 128,992)	3 (9 cm^3)	19,000 (84,512)	50,000 (222,400)	192,000 (854,016)	4,100 (5,559)
3-3/4 (95)	1-1/2 (38)	11-3/8 (289)	10 at 31,000 (254 at 137,888)	3 (9 cm^3)	22,000 (97,856)	59,000 (262,432)	257,000 (1,143,136)	6,600 (8,948)
3-3/4 (95)	2 (51)	12 (305)	10-1/8 at 16,000 (257 at 71,168)	3 (9 cm^3)	15,000 (66,720)	38,000 (169,024)	233,000 (1,036,384)	7,400 (10,033)
4-1/4 (108)	2 (51)	11-1/4 (286)	9-5/8 at 32,000 (244 at 142,336)	4 (12 cm^3)	32,000 (142,336)	73,000 (324,704)	348,000 (1,547,904)	11,000 (14,913)
4-1/4 (108)	2-7/16 (62)	12 (305)	10-7/8 at 19,000 (276 at 84,512)	3 (9 cm^3)	15,000 (66,720)	39,000 (173,472)	320,000 (1,423,360)	10,000 (13,558)
4-3/4 (121)	2 (51)	10-3/8 (264)	8 at 35,000 (203 at 155,680)	8 (24 cm^3)	54,000 (240,192)	85,000 (378,080	422,000 (1,877,056)	14,000 (18,981)
5-3/4 (146)	2 (51)	11-3/4 (298)	7-3/8 at 47,000 (187 at 209,056)	10 (30 cm^3)	64,000 (284,672)	100,000 [3] (444,800)	809,000 (3,598,432)	42,000 (56,944)
6-1/4 (159)	2 (51)	12 (305)	8-3/4 at 54,000 (222 at 240,192)	12 (36 cm^3)	77,000 (342,496)	124,000 [3] (551,552)	949,000 (4,221,152)	50,000 (67,788)
7-3/4 (197)	3-1/2 (89)	12 (305)	10 at 72,000 (254 at 320,256)	12 (36 cm^3)	84,000 (373,632)	150,000 [3] (667,200)	1,304,000 (5,800,192)	118,000 (159,979)

[1] Check stroke before loading the Accelerator tool. If strokes vary, Stop Sleeves must be modified to obtain stroke as listed.
[2] Minimum overpull requirement for Jar/Accelerator combination to obtain efficient Accelerator use.
[3] Maximum overpull can be increased in shop - as maximum increases, minimum increases.

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ACCMCM Accelerators Specifications and Strength Data

Tool Sizes		Total Inches (mm) Traveled with Stop Sleeve [4]	Rack Test in shop at 70°for a nominal BHT of 240° Inches at lbf Pull [3] (mm at N Pull)	Oil Ounces (cm^3)	Downhole at 240ºF (115ºC) Jar and Accelerator Combination Loads	
OD Inches (mm)	ID Inches (mm)				Minimum Overpull [1] lbf (N)	Maximum Overpull lbf (N)
1-13/16 (46)	3/8 (10)	8 (203)	6-3/4 at 6,000 (171 at 26,688)	2 (6 cm^3)	7,500 (33,360)	19,000 (84,512)
1-13/16 (46)	9/16 (14)	7-1/4 (184)	4-1/4 at 5,000 (108 at 22,241)	2 (6 cm^3)	6,000 (26,689)	17,000 (75,620)
2-1/4 (57)	1/2 (13)	10 (254)	7-1/2 at 6,000 (191 at 26,688)	2 (6 cm^3)	5,200 (23,130)	20,000 (88,960)
3-1/8 (79)	1 (25)	12 (305)	11 at 29,000 (279 at 128,992)	3 (9 cm^3)	19,000 (84,512)	50,000 (222,400)
3-1/8 (79)	1-1/2 (38)	10-1/2 (267)	10 at 13,200 (254 at 58,717)	2 (6 cm^3)	8,400 (37363)	32,400 (144,115)
3-3/4 (95)	1-1/2 (38)	11-3/8 (289)	10 at 31,000 (254 at 137,888)	3 (9 cm^3)	22,000 (97,856)	59,000 (262,432)
3-3/4 (95)	2 (51)	12 (305)	10-1/8 at 16,000 (257 at 71,168)	3 (9 cm^3)	16,000 (71,168)	38,000 (169,024)
4-1/4 (108)	2 (51)	11-1/4 (286)	9-5/8 at 32,000 (275 at 142,336)	4 (12 cm^3)	32,000 (142,336)	73,000 (324,704)
4-1/4 (108)	2-7/16 (62)	12 (305)	10-7/8 at 19,000 (276 at 84,512)	3 (9 cm^3)	15,000 (66,720)	39,000 (173,472)
4-3/4 (121)	2 (51)	10-3/8 (264)	8 at 36,000 (203 at 160,136)	8 (24 cm^3)	54,000 (240,192)	90,000 (400,320)
4-3/4 (121)	2-1/4 (57)	10-3/8 (264)	8 at 37,800 (203 at 168,143)	8 (24 cm^3)	47,400 (210,835)	95,000 (422,560)
6-114 (159)	2-1/4 (57)	12 (305)	8-3/4 at 46,700 (222 at 207,732)	12 (36 cm^3)	66,600 (296,237)	[2] 107,000 (475,936)
6-1/2 (165)	2-1/4 (57)	12 (305)	8-3/4 at 46,700 (222 at 207,732)	12 (36 cm^3)	66,600 (296,237)	[2] 107,000 (475,936)
7-3/4 (197)	3-1/2 (89)	12 (305)	10 at 72,000 (254 at 320,256)	12 (36 cm^3)	84,000 (373,632)	[2] 150,000 (667,200)
8 (203)	3-1/2 (89)	12 (305)	10 at 72,000 (254 at 320,256)	12 (36 cm^3)	84,000 (373,632)	[2] 150,000 (667,200)

[1] Minimum overpull requirement for Jar-Accelerator combination to obtain an efficient Accelerator tool.
[2] Maximum overpull can be increased in shop, see optional graphs-as maximum increases, minimum increases.
[3] Setting for other expected bottom hole temperatures are available in graphs, found in manual 2-35.
[4] Check stroke before loading the Accelerator tool. If strokes vary, Stop Sleeves must be modified to obtain stroke as listed.

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EBD Bumper Jar Specifications and Strength Data

Assembly Number	O.D. inches (mm)	I.D. inches (mm)	Tool Joint Connection	Total Travel inches (mm)	Maximum Strength After Restricted Travel	
					Maximum Pull Yield lbf (N)	Maximum Torque Yield lbf·ft (N·m)
15122	1-13/16 (46)	1/4 (6)	1-13/16 WFJ	10 (254)	56,000 (249100)	800 (1,085)
15129	3-1/8 (79)	5/8 (16)	2-3/8 API REG	16 (406)	192,000 (854,059)	4,100 (5,559)
15130	3-3/4 (95)	1-1/2 (38)	2-3/8 API IF		233,000 (1,036,436)	7,400 (10,033)
15121	3-3/4 (95)	1-1/16 (27)	2-7/8 API REG		257,000 (1,143,193)	6,600 (8,948)
14027	4-1/4 (108)	2 (51)	2-7/8 API IF		348,000 (1,547,981)	11,000 (14,913)
15123	4-3/4 (121)		3-1/2 API FH		422,000 (1,877,150)	14,000 (18,981)
15117	5-3/4 (146)		4-1/2 API FH	18 (457)	809,000 (3,598,432)	42,000 (56,944)
15124	6-1/4 (159)		4-1/2 API IF		949,000 (4,221,152)	50,000 (67,788)
14031	7-3/4 (197)	3-1/2 (89)	6-5/8 API REG		1,304,000 (5,800,192)	118,000 (159,979)

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TMC Bumper Sub Specification and Strength Data

Tool Sizes		Tool Joint Connection	Total Travel Inches (mm)	Maximum Strength After Restricted Travel	
O.D. Inches (mm)	I.D. Inches (mm)			Pull Tensile Yield lbf (N)	* Torque Yield lbf·Ft (N·M)
1-13/16 (46)	3/8 (10)	1-13/16 WFJ	9-3/4 (248)	56,000 (249,088)	800 (1,085)
2-1/4 (57)	1/2 (13)	1-1/4 REG	12 (305)	95,800 (426,118)	1,900 (2,576)
3-1/8 (79)	1 (25)	2-3/8 API REG	16 (406)	192,000 (854,016)	4,100 (5,559)
3-1/8 (79)	1-1/2 (38)	2-3/8 EUE	14 (356)	185,000 (822,880)	4,200 (5,694)
3- 3/4 (95)	1-1/2 (38)	2-3/8 API IF	16 (406)	257,000 (1,143,136)	6,600 (8,948)
3- 3/4 (95)	2 (51)	2-3/8 EUE	16 (406)	233,000 (1,036,384)	7,400 (10,033)
4-1/4 (108)	2 (51)	2-7/8 API IF	16 (406)	348,000 (1,547,904)	11,000 (14,913)
4-1/4 (108)	2-7/16 (62)	2-7/8 EUE	16 (406)	320,000 (1,423,360)	10,000 (13,558)
4-3/4 (121)	2 (51)	3-1/2 API FH	16 (406)	422,000 (1,877,056)	14,000 (18,981)
4-3/4 (121)	2-1/4 (57)	3-1/2 API IF	16 (406)	510,000 (2,268,480)	14,000 (18,981)
6-1/4 (159)	2-1/4 (57)	4-1/2 API IF	18 (457)	900,000 (4,003,200)	50,000 (67,788)
6-1/2 (165)	2-1/4 (57)	4-1/2 API IF	18 (457)	928,000 (4,127,744)	50,000 (67,788)
7-3/4 (197)	3-1/2 (89)	6-5/8 API REG	18 (457)	1,304,000 (5,800,192)	118,000 (159,979)
8 (203)	3-1/2 (89)	6-5/8 API REG	18 (457)	1,304,000 (5,800,192)	118,000 (159,979)

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Hydra-Stroke® (Long Stroke Bumper Subs)

Type	AEBLP		AEBB	AEBLP	AEBB	AEBLP	AEBB	AEBLP	AEBB	AEBLP	AEBB
Description	Partial Balance	Partial Balance	Fully Balance	Partial Balance	Fully Balance	Partial Balance	Fully Balance	Partial Balance	Fully Balance	Partial Balance	Fully Balance
Std. OD, Inches	4-1/2	4-3/4	5-1/4	6-1/2	6-1/2	8	8	8-1/4	8-1/4	8-1/2	8-1/2
Std. ID, Inches	2	2	2-1/4	2-3/4	2-3/4	3	3	3-1/2	3-1/2	4-1/8	4-1/8
Stroke, Inches	48	72	72	72	72	72	72	72	72	60	60
Closed Length, ft-in	18'-0"	22'-0"	35'-3"	24'-2"	32'-8"	26'-8"	36'-2"	26'-8"	36'-2"	35'-0"	35'-0"
Approx. Weight, lbs	650	850	1500	2300	3200	2910	3340	3510	3760	3460	4360
Tensile Yield, lbf	375,000	636.000	503,000	800,000	800,000	1,900,000	1,600,000	1,580,000	1,500,000	1,350,000	1,350,000
Torsion Yield, lbf·ft	15,000	14,000	21,000	61,000	61,000	118,000	118,000	118,000	118,000	92,800	92,800
Complete Assembly Part No. OD, inches	14058 4-1/2	14059 4-3/4	17073 5-1/4	14065 6-1/4	14069 6-1/4	14073 7-3/4	14075 7-3/4	14077 8-1/4	14078 8-1/4	17082 8-1/2	17081 8-1/2
Complete Assembly Part No. OD, inches	14486 4-1/2			14066 6-3/8	14070 6-3/8	14074 8	14076 8				
Complete Assembly Part No. OD, inches				14067 6-1/2	14071 6-1/2						
Complete Assembly Part No. OD, inches				14068 6-3/4	14072 6-3/4						

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TT® Jar Specifications

Tool OD inches (mm)	1-11/16 (43)	2-1/16 (52)	2-7/8 (73)
Tool ID inches (mm)	9/16 (14)	11/16 (17)	31/32 (25)
Overall length “extended” feet–inches (mm)	7'-10" (2,387)	7'-9" (2,362)	8'-3-1/2" (9,900)
Maximum detent working load lbf (N)	8,000 (35,584)	11,000 (48,928)	20,000 (88,960)
Tensile Yield lbf (N)	56,000 (249,088)	86,000 (382,528)	200,000 (8,889,600)
Torsional Yield Strength lbf·ft (N·m)	850 (1152)	1,600 (2,169)	5,300 (7,185)
Free Stroke–Up inches (mm)	4 (102)	4 (102)	4 (102)
Free Stroke–Down inches (mm)	4 (102)	4 (102)	4 (102)
Total Stroke inches (mm)	12 (305)	12 (305)	12 (305)
Tool Weight lbs (kg)	38 (17)	56 (25)	140 (64)

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TT® Accelerator® Tool

Tool OD inches (mm)	1-11/16 (43)	2-1/16 (52)	2-7/8 (73)
Tool ID inches (mm)	9/16 (14)	11/16 (17)	31/32 (25)
Overall length “extended” feet–inches (mm)	8' - 6" (2,591)	8' - 9" (2,667)	9' - 1-1/2" (2,781)
Maximum detent working load lbf (N)	8,000 (35,584)	11,000 (48,928)	20,000 (88,960)
Tensile Yield lbf (N)	56,000 (249,088)	86,000 (382,528)	200,000 (8,889,600)
Torsional Yield Strength lbf·ft (N·m)	850 (1152)	1,600 (2,169)	5,300 (7,185)
Free Stroke–Up inches (mm)	6 (152)	6 (152)	6 (152)
Free Stroke–Down inches (mm)	6 (152)	6 (152)	6 (152)
Total Stroke inches (mm)	12 (305)	12 (305)	12 (305)
Tool Weight lbs kg	43 (20)	66 (30)	156 (71)

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Schlumberger Anadrill TR, DC, and FB Jar Specifications and Strength Data

Size (in.)		Type	Assembly No.	Std. Connection	Max Recommended Jarring Pull (lb)	Jarring Pull at Yield (lb)	Strength After Lifting	
OD	ID						Max. Pull (lb)	Max. Torque (ft-lbs)
1-13/16	0.3750	---	41,831	1-13/16 WFJ	20,000	30,000	100,000	1,200
2-1/4	0.5000	---	49,140	1-1/4 REG	33,500	50,000	135,000	2,200
	0.5000	LH	49,198	1-1/4 REG	33,500	50,000	135,000	2,200
3-1/16	1.0000	FB	45,577	2-3/8 REG	40,000	50,000	160,000	7,600
	1.5000	FB	41,906	2-3/8 EUE	30,000	39,000	106,000	7,600
3-5/8	1.9375	FB	36,189	2-3/8 EUE	33,000	52,000	232,000	8,350
4-1/2	2.3750	FB	37,473	2-7/8 EUE	54,000	83,800	318,000	17,750
3-3/4	1.5000	TR	37,180	2-3/8 IF	65,000	88,400	248,000	12,580
4-1/8	1.5000	TR	39,860	2-7/8 IF	70,000	107,000	331,000	15,900
	1.5000	DC	46,834	2-7/8 IF	70,000	107,000	331,000	15,900
	2.0000	TR	44,230	2-7/8 IF	45,500	70,000	320,000	14,000
4-3/4	1.8750	TR	37,266	3-1/2 FR	80,000	125,000	379,000	29,200
	1.8750	DC	43,858	3-1/2 FR	80,000	125,000	379,000	29,200
	2.0000	DC	47,057	3-1/2 IF	67,000	103,000	364,000	20,000
5-3/4	2.0000	TR	36,307	4-1/2 FH	131,000	219,000	651,000	34,200
	2.0000	DC	47,016	4-1/2 FH	131,000	219,000	651,000	34,200
6-1/4	2.0000	TR	39,882	4-1/2 IF	190,000	292,000	726,000	57,300
	2.0000	DC	43,866	4-1/2 IF	190,000	292,000	726,000	57,300
6-3/8	2.0000	TR	52,200	4 IF	197,000	311,000	726,000	57,300
6-1/2	2.5000	TR	51,610	4-1/2 IF	160,000	250,000	975,000	89,500
6-3/4	2.5000	TR	41,398	5-1/2 REG	190,000	292,000	975,000	89,500
	2.5000	DC	46,344	5-1/2 REG	190,000	292,000	975,000	89,500
7	2.5000	TR	43,750	4-1/2 IF	210,000	332,000	975,000	89,500
7-1/4	2.5000	DC	47,478	4-1/2 IF	235,000	372,000	975,000	89,500
7-3/4	3.0000	TR	41,459	6-5/8 REG	208,000	317,000	1,390,000	136,000
	3.0000	DC	43,844	6-5/8 REG	208,000	317,000	1,390,000	136,000
8-1/4	3.0000	DC	46,466	API-61	244,000	386,000	1,390,000	136,000
9	3.0000	DC	50,600	6-5/8 H90	300,000	474,000	1,390,000	136,000

LH= Left Hand FB = Fullbore TR = Time Regulated DC = Drilling & Coring

Schlumberger Anadrill N_2 Jar Boosters

Size		Assembly No.	Tool Joint	Precharge Pressure (psi)	Max. Load Full Stroke (lb)	Stroke (in.)	Tool Length (lb)	Tensile Strength (lb)	Torsional Strength (lb)
OD (in.)	ID (in.)								
2-1/4	0.5000	49232	1-1/14 REG.	2000	26,000	11-1/2	9-1/2	135,000	2,200
3-1/16	1.0000	48712	2-3/8 REG.	1,800	40,000	11	9-1/2	190,000	7,600
3-5/8	1.9375	48764	2-3/6 EUE	1,800	35,000	11-1/2	9-1/2	238,000	8,750
3-3/4	1.5000	47948	2-3/8 IF	2,000	45,000	13-1/2	9	268,000	12,600
4-1/8	2.0000	47750	2-7/8 IF	2,000	11-1/2	11-1/2	9	342,000	16,000
4-3/4	1.8750	47802	3-1/2 IF	2,000	60,000	11-1/2	10	475,000	29,000
4-3/4	2.0000	----	3-1/2 IF	1,600	50,000	11-1/2	10	475,000	29,000
5-3/4	2.0000	4808	4-1/12 FH	2,000	100,000	9-1/2	9-1/2	650,000	36,000
6-1/4	2.0000	48278	4-1/2 FH 4-1/12 IF	2,000	140,000	9-1/2	12	1,160,000	62,500
6-3/4	2.5000	485W	5-1/2 REG.	2,000	170,600	9-1/2	11	1,270,000	97,400
7-3/4	3.0000	48920	6-5/8 REG.	2,000	145,000	9-1/2	12	1,390,00	136,000

Bowen Fishing Bumper Subs

Part No.	OD (in.)	ID (in.)	Connection	Tensile Strength – Yield (lb)	Torque (ft-lbs)
10090	3-3/4	1.250	2-3/8'' API REG (20'' Stroke)	409,200	12,400
10105	3-5/32	1.000	2-3/8" API REG (20" Stroke)	282,000	12,900
10120	1-13/16	0.375	1-1/4" Wilson External Flush (20" Stroke)	80,250	1,580
10135	5-3/4	2.000	4-1/2" API FH (20" Stroke)	800,700	57,300
10147	5-3/4	2.000	4-1/2" API FH	800,700	57,300
10155	4-1/4	1.500	3-l/2" API REG (20" Stroke)	470,400	27,157
10170	4-5/8	1.500	3-1/2" API FH (Obs. Use #10155)	512,000	21,250
10175	2-1/2	0.500	2-3/8" Wilson External Flush (20" Stroke)	173,500	4,700
10190	3-3/8	1.000	2-3/8" API IF (20" Stroke)	300,000	11,250
10210	4-1/8	1.500	2-7/8" API IF (20" Stroke)	399,450	22,300
10225	4-3/4	1.500	3-1/2" API. IF (20" Stroke)	647,000	32,500
10235	5-1/2	2.000	4.1/2 API REG (20" Stroke)	691,650	64,600
10245	6-1/8	2.250	4-1/2" API IF (Obs. Use .410257)	1,030,000	76,700
10257	6-1/4	2.250	4-1/2" API IF (20" Stroke)	1,030,000	76,700
10690	6-3/4	2.750	5-9/16" API REG (20" Stroke)	882,000	82,800
13475	6	2.000	4-1/2" Hughes X-Hole (Obs. Use 10135)	800,700	57,300
13590	6-3/4	2.750	5-9/16" API REG	882,000	82,800
14520	6-3/4	2.750	5-9/16" API REG	882,000	82,800
14848	6-3/4	2.750	5-9/16" API REG	900,000	87,125
15180	6-1/4	2.250	4-1/2" API FH (Obs. Use #10257)	1,030,000	76,700
15295	6-1/8	2.250	4-1/2" X-Hole (Obs. Use #10257)	1,030,000	76,700
15915	7	2.750	5-1/2" API FH (Obs. Use #14520)	882,000	82,800
15975	6-1/4	2.250	4-1/2" API FM	1,015,000	61,700
16125	6-1/4	2.250	4" API IF (Obs. Use #10257)	900,000	65,300
16150	5-3/4	2.000	4-1/2" API FH	800,700	57,300
16480	4-1/4	1.500	2-7/8" API IE	513,000	27,0I.~
16553	3-3/8	1.000	2-3/8" REED W.O. (Obs. Use #10190)	300,000	11,250
16930	6	2.000	4-1/2" API FH	834,000	1,370
16933	3-5/32	1.000	2-3/8" API REG (Same as #10105 Except Stroke)	282,000	12,900
16936	3-5/32	1.000	2-3/8" API REG (Same as #10105)	282,000	12,900
17560	4-3/4	1.500	3-1/2" API REG (Same as #10225 Except Conn.)	647,000	32,500
17863	6-1/4	2.250	4-1/2" X-Hole (Obs. Use #10257)	1,030,000	76,700
17870	5-1/4	1.500	4" API FH (Obs. Use #10225)	629,000	32,500
17965	3-7/8	1.250	2-7/8" Hydril IE (Obs. Use #10090)	409,200	12,440
18005	5-1/2	2.000	4" API FH (Obs. Use #10235)	935,000	64,300
18220	4-5/8	1.500	3-1/2 Hydril IF (Obs. Use #10155)	470,400	27,157
18430	7	2.750	5-1/2" API IE (Obs. Use #14520)	1,035,000	14,000
18435	6-1/4	2.250	5" X-Hole (Obs. Use #10257)	1,030,000	76,700
18545	5	1.500	3-1/2" API IF	647,000	34,750
18785	2-1/4	7.500	1-1/4" API REG (20" Stroke)	126,150	15,120
18810	6-3/4	2.250	5-9/16" API REG (48" Stroke)	1,240,000	95,000

Bowen Fishing Bumper Subs (continued)

Part No.	OD (in.)	ID (in.)	Connection	Tensile Strength – Yield (lb)	Torque (ft-lbs)
18845	3-3/4	1.2500	2-3/8" API IE (Obs. Use #10090)	421,000	12,700
19880	5-3/4	2.0000	4-1/2" API FH	800,700	57,300
20005	6-1/4	2.2500	4-1/2' API FH	1,015,000	61,700
21230	1-29/32	0.3750	1" EUE Tubing (Obs. Use #10120 - 20' Stroke)	80,250	1,580
25055	4-1/8	2.0000	2-7/8" API IF(20" Stroke)	296,000	21,000
25180	3-3/4	1.2500	2-7/8" API REG	409,200	12,440
25185	4-1/4	1.5000	3-1/2" API REG	470,400	27,157
25210	6-1/4	2.2500	4-1/2" API IF(Obs. Use #15975)	1,015,000	61,700
25270	4-5/8	1.8750	3-1/2" API FH	476,700	24,300
25385	6-1/4	2.2500	4-1/2" API IF	1,015,000	61,700
26100	3-7/8	2.0000	2" EUE Tubing 8 Rd. Thd.	158,700	16,500
26200	4	1.5000	3-1/2" API REG	340,000	24,160
26595	7-3/4	3.5000	6-5/8" API REG	1,060,000	137,500
27550	6-1/4	2.2500	4-1/2" API FH	950,000	70,300
29523	1-13/16	0.3750	1-1/4" Ext. Flush (30" Stroke)	80,250	1,580
29526	1-29/32	0.3750	1" EUE Tubing (30" Stroke)	80,250	1,580
29529	2-1/4	0.4375	1-1/4" API REG (30" Stroke)	146,000	16,700
29532	2-1/2	0.5000	2-3/8" Ext. Flush (30" Stroke)	173,500	4,700
29535	3-5/32	1.0000	2-3/8" API REG (30" Stroke)	282,000	12,900
29538	3-3/8	1.0000	2-3/8" API IF (30" Stroke)	300,000	11,250
29541	3-3/4	1.2500	2-7/8" API REG (30" Stroke)	409,200	12,440
29544	3-7/8	2.0000	2-3/8" EUE Tubing (30" Stroke)	158,700	16,500
29547	4-1/8	1.5000	2-7/8" API IF	399,450	22,300
29550	4-1/8	2.0000	24/8" API IF (30" Stroke)	296,000	21,000
29553	4-1/4	1.5000	3-1/3" API REG (30" Stroke)	470,400	27,157
29556	4-5/8	1.8750	3-1/2" API FH (20" Stroke)	476,700	24,300
29559	4-5/8	1.8750	3-1/2" API REG (30" Stroke)	476,700	24,300
29562	4-3/4	1.5000	3-1/2' API IF (30" Stroke)	647,000	32,500
29565	6-3/4	2.2500	5-1/2" API REG (30" Stroke)	1,240,000	95,000
29568	7-3/4	3.5000	6-5/8" API REG (30" Stroke)	1,060,000	137,500
29571	5-1/2	2.0000	4-1/2" API REG (30" Stroke)	691,650	64,600
29574	1-13/16	0.3750	1-1/4" Ext. Flush (36" Stroke)	80,250	1,580
29577	1-29/32	0.3750	1" EUE Tubing (36" Stroke)	80,250	1,580
29580	2-1/4	0.43750	1-1/4" API REG (36" Stroke)	146,000	16,700
29583	2-1/2	0.5000	2-3/8" Ext. Flush (36" Stroke)	173,500	4,700
29586	3-5/32	1.0000	2-3/8" API REG (36" Stroke)	282,000	12,900
29589	3-3/8	1.0000	2-3/8" API IF (36" Stroke)	300,000	11,250
29592	3-7/8	2.0000	2-3/8" EUE Tubing (36" Stroke)	158,700	16,500
29595	4-1/8	1.5000	2-7/8" API IF (36" Stroke)	399,450	22,300
29598	4-1/8	2.0000	2-7/8" API IF (36" Stroke)	296,000	21,000
29601	4-5/8	1.8750	3-1/2" API IF (36" Stroke)	476,700	24,300

Bowen Fishing Bumper Subs (continued)

Part No.	OD (in.)	ID (in.)	Connection	Tensile Strength – Yield (lb)	Torque (ft-lbs)
29604	4-3/4	1.5000	3-1/2" API IF (36" Stroke)	647,000	32,500
29607	5-1/2	2.0000	4-1/2" API REG (36" Stroke)	691,650	64,600
29610	6-1/8	2.2500	4-1/2" API IF (36" Stroke)	933,000	69,600
29613	6-3/4	2.2500	5-1/2" API REG (36" Stroke)	1,100,000	95,700
29616	7-3/4	3.5000	6-5/8" API REG (36" Stroke)	1,008,000	134,700
29619	1-13/16	0.3750	1-1/4" Ext. Flush (42" Stroke)	80,250	1,440
29622	1-29/32	0.3750	1" EUE Tubing (42" Stroke)	80,250	1,450
29625	2-1/4	0.4375	1-1/4" API REG (42" Stroke)	132,000	2,760
29628	2-1/2	0.5000	2-3/8" Ext. Flush (42" Stroke)	171,800	4,220
29643	3-3/8	1.0000	2-3/8" API IF (42" Stroke)	283,500	10,880
29646	3-3/4	1.2500	2-7/8" API REG (42" Stroke)	288,000	12,470
29649	3-7/8	2.0000	2-3/8" EUE Tubing (42" Stroke)	158,700	16,500
29652	4-1/8	1.5000	2-7/8" API IF (42" Stroke - 1-1/2" I.D.)	397,000	20,500
29655	4-1/8	2.0000	2-7/8" API IF (42" Stroke - 2" I.D.)	296,000	21,000
29658	4-1/4	1.5000	3-1/2" API FH (42" Stroke)	470,400	27,157
29661	4-3/4	1.5000	3-1/2" API IF (42" Stroke)	647,000	32,500
29664	5-1/2	2.0000	4-1/2" API REG (42" Stroke)	657,300	57,400
29667	5-3/4	2.0000	4-1/2" API FH (42" Stroke)	764,000	57,303
29670	6-1/4	2.2500	4-1/2" API IF (42" Stroke)	933,000	69,900
29673	6-3/4	2.2500	5-1/2" API REG (42" Stroke)	1,100,000	95,700
29676	6-3/4	2.7500	5-1/2" API REG (42" Stroke)	745,000	69,600
29679	7-3/4	3.5000	6-5/8" API REG (42" Stroke)	1,008,000	134,700
29682	1-13/16	0.3750	1-1/4" Ext. Flush (48" Stroke)	80,250	1,440
29685	1-29/32	0.3750	1" EUE Tubing (48" Stroke)	80,250	1,450
29688	2-1/4	0.4375	1-1/4" API REG (48" Stroke)	132,000	2,760
29691	2-1/2	0.5000	2-3/8" Ext. Flush (48" Stroke)	171,800	4,220
29694	3-3/8	1.0000	2-3/8" API IF (48" Stroke)	283,500	10,880
29697	3-3/4	1.2500	2-7/8" API REG (48" Stroke)	288,000	12,470
29700	3-7/8	2.0000	2-3/8" EUE Tubing (48" Stroke)	158,700	16,500
29703	4-1/8	1.5000	2-7/8" API IF (48" Stroke)	397,000	20,500
29706	4-1/8	2.0000	2-7/8" API IF (48" Stroke)	296,000	21,000
29709	4-1/4	1.5000	3-1/2" API IF REG (48" Stroke)	470,400	27,157
29712	4-5/8	1.8750	3-1/2" API FH (48" Stroke)	476,700	30,000
29715	4-3/4	1.5000	3-1/2" API IF (48" Stroke)	647,000	32,500
29718	5-1/2	2.0000	4-1/2" API REG (48" Stroke)	657,300	57,400
29736	6-1/8	2.2500	4-1/2" API IF (48" Stroke)	933,000	69,900
29739	6-3/4	2.2500	5-1/2" API REG (20" Stroke)	1,100,000	95,700
29742	6-3/4	2.7500	5-1/2" API REG (48" Stroke)	745,000	69,600
29745	7-3/4	3.5000	6-5/8" API REG (48" Stroke)	1,008,000	134,700
29748	1-13/16	0.3750	1-1/4" Ext. Flush (60" Stroke)	80,250	1,440
29751	1-29/32	0.3750	1" EUE Tubing (60" Stroke)	80,250	1,450

Bowen Fishing Bumper Subs (continued)

Part No.	OD (in.)	ID (in.)	Connection	Tensile Strength – Yield (lb)	Torque (ft-lbs)
29754	2-1/4	0.4375	1-1/4" API REG (60" Stroke)	132,000	2,760
29757	2-1/2	0.5000	2-3/8" Ext. Flush (60" Stroke)	171,800	4,220
29760	3-5/32	1.0000	2-3/8" API REG (60" Stroke)	240,750	9,000
29763	3-3/8	1.0000	2-3/8" API IF (60" Stroke)	283,500	10,880
29766	3-3/4	1.2500	2-7/8" API REG (60" Stroke)	288,000	12,470
29769	3-7/8	2.0000	2-3/8" EUE Tubing (60" Stroke)	158,700	16,500
29772	4-1/8	1.5000	2-7/8" API IF (60" Stroke)	397,000	20,500
29775	4-1/8	2.0000	2-7/8" API IF (60" Stroke)	296,000	21,000
29778	4-1/4	1.5000	3-1/2" API REG	470,400	27,157
29781	4-5/8	1.8750	3-1/2" API FM (60" Stroke)	476,700	30,000
29784	4-3/4	1.5000	3-1/2" API IF (60" Stroke)	647,000	32,500
29787	5-1/2	2.0000	4-1/2" API REG (60" Stroke)	657,300	57,400
29790	5-3/4	2.0000	4-1/2" API FH (60" Stroke)	764,000	57,303
29796	6-3/4	2.7500	5-1/2" API REG (60" Stroke)	745,000	69,600
29799	7-3/4	3.5000	6-5/8" API REG (60" Stroke)	1,008,000	134,700
30555	4-3/4	2.3750	2-1/3" API IF (20" Stroke)	305,250	31,860
31175	5	1.5000	4" API FH (72" Stroke)	500,000	26,400
31180	4	1.5000	3-1/2" API REG (72" Stroke)	340,000	22,000
32675	6-3/4	2.2500	5-9/16" API REG (48" Stroke)	1,100,000	95,700
35145	7-1/2	3.2500	6-5/8" H-90 (20" Stroke)	1,311,750	151,200
36399	4-3/4	1.5000	3-1/2" API IF (20" Stroke)	647,000	32,500
36404	6	2.0000	4-1/2" API FH (20" Stroke)	800,700	57,300
36409	7	2.7500	5-1/2" API FH (20" Stroke)	882,000	82,800
36794	4-1/2	2.3750	2-7/8" EUE (20" Stroke)	378,000	32,750
37170	15-3/4	11.0000	13-3/8" H-490 (18" Stroke)	3,520,000	984,000
37384	4-5/8	2.4375	3-1/2" API FH (20" Stroke)	360,000	33,200
37952	3-5/8	1.9375	2-3/8" EUE (20" Stroke)	284,300	16,600
38589	8	5.0000	6-5/8" API FH (48" Stroke)	1,045,000	160,000
39887	3-3/4	1.5000	2-3/8" API IF (20" Stroke)	316,200	17,872
39893	3-3/4	1.8750	2-3/8" EUE (20" Stroke)	292,000	19,200
39899	4-1/4	2.0000	2-7/8" EUE (20" Stroke)	378,000	26,600
39905	4-5/8	2.0000	3-1/2" API FH (20" Stroke)	473,850	34,000
41824	4-1/4	1.9375	2-7/8" API IF (20" Stroke)	327,000	22,900
42592	3-1/8	1.5312	2-3/8" EUE (20" Stroke)	166,500	8,600
45180LH	1-13/16	0.3750	1-1/4" Wilson External Flush (20" Stroke)	80,250	1,580
50950	6-1/4	2.2500	4-1/2" X-Hole 7 Ft.	888,300	69,215

Bowen Surface Bumper Jars

Assembly No. 74520 & No. 14770	
Maximum Torque At Yield (ft-lbs)	52,400
Maximum Tensile Load At Yield (lb)	845,000
Maximum Allowable Pump Pressure (psi)	8,000
Setting Load (Tripping Tonnage)	0 to 100 tons

Bowen Balanced Bumper Sub

Symbol No.	OD (in.)	ID (in.)	Connection	Tensile Strength – Yield (lb)	Torque (ft-lbs)	
					Bumper Sub	Drill Pipe
36741	1-13/16	0.3750	1-13/16 Wilson FJ.	75,400	791	
39975	6-3/4	2.7500	5-1/2 REG	1,130,400	91,096	68,630
41228	4-5/8	2.0000	3-1/2 FH	484,650	25,495	25,580
42034	4-1/4	1.5000	2-7/8 IF	393,240	17,642	14,020
42042	6-1/4	3.1250	4-1/2 IF	777,150	74,994	44,770
42091	2-1/4	0.3750	1-1/4 REG	116,415	1,846	
42118	7	3.2500	5-1/2 FH	1,146,750	97,040	68,630
42126	7-3/4	3.5000	6-5/8 REG	1,276,950	149,303	85,630
42175	3-3/8	0.8750	2-3/8 IF	323,835	9,458	7,580
43363	6-1/4	3.1250	4-1/2 IF	777,150	74,994	44,770
43370	7-3/4	3.5000	6-5/8 REG	1,276,950	149,303	85,630
43478	6-1/4	3.1250	4 IF	777,150	74,994	44,770
44202	3-1/8	1.0000	2-3/8 REG	239,070	6,910	7,580
44212	3-3/4	1.2500	2-7/8 REG	363,780	12,646	14,020
44222	3-3/4	1.5000	2-3/8 IF	300,750	12,720	7,580
44232	3-3/4	1.8750	2-3/8 EUE	291,735	14,342	4,440
44242	4-1/4	2.0000	2-7/8 EUE	358,000	22,300	14,020
44252	4-1/4	1.9375	2-7/8 IF	397,650	22,984	14,020
44262	4-1/2	2.3750	2-7/8 EUE	388,650	30,000	7,450
44293	4-5/8	2.0000	3-1/2 FH	484,650	25,495	25,580
46252	4-5/8	2.0000	3-1/2 FH	484,650	25,495	25,580
46259	4-5/8	2.0000	3-1/2 FH	484,650	25,495	25,580
46268	7-3/4	3.5000	6-5/8 REG	1,276,950	149,303	85,630
46608	4-5/8	2.0000	3-1/2 FH	484,650	25,495	25,580
47673	4-1/4	2.0000	2-7/8 IF	358,000	22,300	14,020
49327	6-3/4	2.7500	4-1/2 REG	1,130,400	91,096	44,770
51596	7-1/2	3.7500	6-5/8 REG	1,290,300	124,797	85,630
51597	6	3.0000	4-1/2 IF	711,150	70,116	44,770
52237	6-1/4	3.1250	4-1/2 IF	777,150	74,994	44,770
52245	7	3.2500	5-1/2 FH	1,146,750	97,040	68,630
52252	7	3.2500	5-1/2 FH	1,146,750	97,000	68,630
52260	7-3/4	3.5000	6-5/8 REG	1,276,950	149,303	85,630
52448	5-3/4	2.8125	4-1/2 FH	622,295	57,533	44,770

Bowen Hydraulic Up Jar Strength Data

Sizes 4-3/4 x 2-1/4 and 4-1/8									
Assembly Part Number	Threaded Connection	Diameter (in.)		Lift Load After Jarring (tons)	Maximum Recommended Jar Load (tons*)	Low Pull Load (tons*)	Standard Test Load (tons*)	Lowest Allowable Test Load (tons*)	Full Stroke Length (in.)
		Outside (Nom)	Inside						
102072	7-5/8 REG	9	3.0625	955	250	20	50	50	14
71920	6-5/8 REG	7-3/4 & 8	3.0625	663	150	15	50	40	14-1/2
78654	5-1/2 REG	6-3/4	2.5000	468	110	12	50	40	13-1/2
71528	4-1/2 IE	6-1/4 & 6-1/2	2.7500	400	85	10	50	35	13-1/2
72143	4-1/2 FH	6	2.2500	400	85	8	45	30	13-1/2
71903	3-1/2 IE	4-3/4	2.0000	273	50	5	25	20	12
152336	3-1/2 IE	4-3/4	2.2500	242	50	5	25	20	12
102513	2-7/8 IE	4-1/8	1.8750	192	37	5	19	15	12

Bowen Hydraulic Up Jar Torque

Maximum Recommended Tightening Torque For Body Joints (ft-lbs)								
Tool Sizes (in.)		Body Joints						
Nominal Size	Measured Tool OD	Mandrel Pkg. Ret. To Mandrel Body (Left Hand Joint)	Mandrel Body To Spline Body (Left Hand Joint)	Spline Body To Connector Body	Connector Body To Connector Body Adapter	Connector Body Adapter To Pressure Body	Connector Body To Pressure Body	Pressure Body To Washpipe Body
4-1/8		4500	4500	6200	6200	6200	6200	6200
4-3/4 x 2-1/4		5300	5300	7100	7900	7900	...	6700
4-3/4 x 2		5300	5300	7200	7900	7900	...	...
6		10000	10000	19300	19300	19300	...	19300
6-1/4	6-1/4	13600	13100	18600	...	...	18600	16600
6-1/4	6-1/2	13600	13600	24300	...	...	24300	24300
6-3/4	6-3/4	18600	16600	28600	...	...	28600	28600
6-3/4	7	20700	27100	35700	...	...	35700	35700
7-3/4	7-3/4	19300	29300	44300	...	...	44300	45000
7-3/4	8	31400	39300	44300	...	...	44300	45000
	9	41400	50000	77100	...	...	77100	62100
9	9-1/2	41400	80700	85700	...	...	85700	82100

Bowen Hydraulic Rod Jars

Jar Part Number	Jar OD (in.)	Calculated Jarring Load @ Yield Point (lb)	Calculated Yield Load After Jarring (lb)	Calculated Torque at Yield Point (ft-lbs)	Recommended Maximum Working Load (lb) *
12760	1-3/4	23,500	62,400	421	18,800
13570	2-1/8	33,900	110,000	1,000	27,120
18860	2-1/8	28,600	102,500	1,100	22,880
28591	1-1/2	15,000	39,500	600	12,000

*Based on 80% of calculated load at yield point.

Bowen Jar Intensifiers — Recommended Tightening Torque

Jar Assembly No.	Jar OD (in.)	Jar ID (in.)	Top Sub To Mandrel (ft-lb)	Knocker To Mandrel (ft-lbs)	Mandrel To Washpipe (ft-lbs)	Mandrel Body Insert To Mandrel Body (ft-lbs)	Mandrel Body To Middle Body (ft-lbs)	Middle Body To Washpipe Body (ft-lbs)	All Other OD Body Connections (ft-lbs)
70957	1-5/8	0.2500	130		80	320	150	270	
64460	1-13/16	0.3125	170		100		350	520	
50640	2-1/4	0.3750		30	150		900	1,050	
68262	2-29/32	1.0000	1130		800		1,950	2,070	
55687	3-1/8	1.0000		200	690		2,030	2,030	
55895	3-3/4	1.2500		300	1,140		3,820	3,820	
55747	3-3/4	1.5000	2670		890		3,570	3,570	
50660	3-3/4	1.8750	1490		410		3,570	3,570	
55664	4-1/4	1.9375		500	1,880		4,960	4,960	
50708	4-1/2	2.3750		500	1,930		5,580	5,580	
50700	4-3/4	1.5000		700	2,130		9,770	9,210	
55812	4-3/4	2.0000		500	2,010		9,750	8,600	
55860	6	2.0000		2,200	4,990		17,530	17,160	
55905	6-1/4	2.2500		2,000	5,460		20,340	20,340	
50720	6-3/4	2.3750		1,900	7,260		24,330	24,330	
55910	7-3/4	3.0625		3,200	11,680		32,020	32,010	
78964	7-3/4	3.0625	45,200		2,300				45,200
66372	9	3.7500		6,200	21,540		57,760	46,130	

Multiply chart values by .1382 to obtain Kg-m

Bowen Jar Intensifiers — Strength Data [1]

Intensifier Assy.	OD (in.)	ID (in.)	Connection	Stroke	Reccom. Drill Collar Weight Range (lb)	Pull Load To Open Fully	Minimum Pull Req'd.[2]	Calculated Strength Data			Fluid Capacity (gal)	Used With Jar No.	Used With Super Fishing Jar No.
								Tensile at Yield (lb)[3]	Torque (ft-lbs)				
									Recommended	Yield			
70957	1-5/8	0.2500	Per Order	6.000	1,100-1,400	14,000	8,400	43,200 46,300	200	420	.13	70822	….
64460	1-13/16	0.3125	1-13/16 Wilson FJ	6.000	1,360-1,800	18,100	10,800	59,400	370	640	.195	74223 21150 78074	….
50640	2-1/4	0.3750	1-1/4 API REG	8.000	1,560-2,100	20,700	13,800	118,500	1,700	2,200	.211	18775 54020	….
68262	2-29/32	1.0000	2-3/8 PH-6	12.750	2,200-3,000	37,000	24,600	194,800	1,600	5,200	.692	68010	….
55867	3-1/8	1.0000	2-3/8 API REG	8.750	2,400-3,300	30,000	21,000	229,200	3,500	7,600	.375	42736 52504	72888
55895	3-3/4	1.2500	2-7/8 API REG	8.250	4,200-5,700	52,000	36,000	345,000	3,800	13,500	.820	38040 13255 52506	145737
55747	3-3/4	1.5000	2-3/8 API IF	7.875	3,400-4,600	43,500	30,000	299,700	3,800	13,000	.630	37406 52528	….
50660	3-3/4	1.8750	2-3/8 EUE	7.625	3,500-4,700	43,000	30,000	179,500	2,500	8,200	.613	41355 20150 52497	….
3	4-1/4	1.9375	2-7/8 API IF	8.625	3,500-4,700	43,000	30,000	430,300	6,600	24,500	.920	44483 13640 52502	80468
50708	4-1/2	2.3750	2-7/8 EUE	10.375	3,600-4,900	49,000	32,000	375,000	4,000	25,900	1.150	35849 52653	….
50700	4-3/4	1.5000	3-1/2 API FH	8.875	6,300-8,500	78,000	54,000	591,900	9,500	27,600	1.000	25960 52530	….
55812	4-3/4	2.0000	3-1/2 API FH IF	10.125	5,600-7,500	63,000	43,000	468,800	9,500	27,100	1.350	38110 52500	79789
55860	6	2.0000	4-1/2 API FH	8.625	10,200-13,800	128,500	77,000	937,000	17,000	52,600	1.570	14710 52498	145484
55905	6-1/4	2.2500	4-1/2 API IF	13.000	11,800-16,000	147,000	102,000	917,400	21,000	56,900	4.240	12370 52544	79691
50720	6-3/4	2.3750	5-1/2 API REG	13.000	13,000-17,500	172,900	102,000	1,013,800	24,000	74,200	3.450	11130 52680	145440
55910	7-3/4	3.0625	6-5/8 API REG	13.000	11,000-15,000	126,000	88,000	1,587,900	45,000	145,300	4.650	15160 52711	….
78964	7-3/4	3.0625	6-5/8 API REG	12.000	12,100-20,500	220,000	123,000	1,600,000	45,500	130,000	….	….	72978
66372	9	3.7504	7-5/8 API REG	13.000	12,000-16,000	200,000	100,000	1,621,000	70,000	224,700	3.200	66346	….

1) All jarring and pulling loads shown in this manual assume that the force is acting alone and is essentially along the major axis of the tool. If torque and tension or bending and tension are used together, the resulting combined stresses may lead to failure at substantially less than rated loads. Rotation and bending together can lead to fatigue.
2) Minimum pull required (above weight of string and collars) to obtain effective blow (lb).
3) The strengths shown are theoretical calculations based on yield strength of the material used in each case. The strengths shown are therefore accurate, plus or minus 20%.

Bowen Mechanical Down Jars — Strength Data

Assembly Part Number	Diameter (in.)		Threaded Connection	Lift Load (Tons*)	**Final Setting For Field Use (Tons)	Standard Load For Testing (Tons*)- Shop Only	Full Stroke Length (in.)
	Outside (Nominal)	Inside					
102073	9	3.0625	7-5/8 REG	871	25	30	12.000
71925	7-3/4 & 8	3.0625	6-5/8 REG	437	20	20	7.000
79122	6-3/4	2.5000	5-1/2 REG	410	20	20	7.000
71983	6-1/4 & 6-1/2	2.7500	4-1/2 IF	338	15	20	7.000
72292	6	2.2500	4-1/2 FH 4-1/2" X-Hole	332	6	20	7.500
71916	4-3/4	2.0000	3-1/2 IF	280	10	15	7.000
152440	4-3/4	2.2500	3-1/2 IF	242	10	15	12.000
102514	4-1/8	1.8750	2-7/8 IF	192	8	10	12.000

* 2000 lb/ton

** These field use setting loads chosen to provide a good trip load over a wide range of hole conditions. There is a tendency, however, for the BHA required to trip to increase with depth and mud weight. It may be necessary in deeper holes to increase the trip load or lower the load at a faster rate.

Bowen Mechanical Down Jars — Maximum Recommended Tightening Torque

Tool Sizes (in.)		Body Joints (ft-lbs)						
Nominal Size	Measured Tool OD	Mandrel Pkg. Retainer To Mandrel Body	Mandrel Body To Spline Body	Spline Body To Connector Body	Connector Body To Bowl	Bowl To Connector Body	Connector Body To Sub	Connector Body To Bottom Sub
4-1/8	4-1/8	4500 Left Hand	4500 Left Hand	6200	6200	Bowl to Washpipe Body	6200	
4-3/4 x 2-1/4	4-3/4 x 2-1/4	5300 Left Hand	5300 Left Hand	7100	7600	Bowl to Washpipe Body	7600	
4 3/4 x 2	4 3/4 x 2	5300	5300	7100	7100	7100	7100	
6	6	11000	11000	19300	19300	19300	19300	
6-1/4	6-1/4	12100	12100	18600	16600	18600	18600	
6-1/4	6-1/2	13600	20000	23600	23600	23600	23600	
6-3/4	6-3/4	18600	18600	28600	28600	28600	28600	
6-3/4	7	20700	27100	32900	32900	32900	32900	
7-3/4	7-3/4	19300	29300	45000	45000	45000	45000	
7-3/4	8	31400	39300	45000	45000	45000	45000	
9	9	41400 Left Hand	50000 Left Hand	72100	72100			77100
9	9-1/2	41400 Left Hand	60700 Left Hand	74300	74300			88600

Bowen Super Fishing Jar — Recommended Tightening Torque

Assembly Part Number	Jar Size			Top Sub To Mandrel (ft-lbs)	Mandrel Body To Spline Body (ft-lbs)	Spline Body To Connector Body (ft-lbs)	Connector Body To Pressure Body (ft-lbs)	Pressure Body To Washpipe Body (ft-lbs)	Internal Joint
	Connection	OD (in.)	ID (in.)						Washpipe To Mandrel (ft-lbs)
72888	2-3/8 REG.	3-1/8	1.0000	1,640	--	2,650	3,520	3,330	750
145737	2-7/8 REG.	3-3/4	1.2500	2,500	--	3,360	4,060	4,060	750
146544	2-3/8 IF	3-3/4	1.5000	2,400	--	3,160	4,170	4,170	800
147902	2-3/8 EUE	3-3/4	1.8750	2,260	---	3,050	3,690	3,690	1,100
80468	2-7/8 IF	4-1/4	2.0000	3,400	---	4,230	5,100	5,100	1,000
79789	3-1/2 FH 3-1/2 IF	4-3/4	2.0000	5,730	6.710	6,710	8,100	8,100	1,500
145484	4-1/2 FH	6	2.0000	10,450	14,390	14,390	17,400	17,400	1,500
79691	4-1/2 IF	6-1/4	2.2500	13,600	17,630	17,630	21,310	21,310	1.500
145440	5-1/2 REG.	6-3/4	2.3750	15,980	21,160	21,160	25,560	25,560	2,700
72978	6-5/8 REG.	7-3/4	3.0625	28,300	35,000	35,000	42,300	42,300	3,000

The tightening torque values were calculated assuming zinc-based grease on all threads and shoulders.
Multiply chart values by .1382 to obtain Kg-m

Bowen Super Fishing Jar — Strength and Test Data

Assembly Part Number	Jar Size			Maximum Recommended Jarring Load In Hole (lb)	Tensile @ Yield After Jarring (lb)	Torque At Yield (ft-lbs)	Jar Tester Pull Load	
	Connection	OD (in.)	ID (in.)				Low (lb) Min-Max	Standard (lb)
72888	2-3/8 REG.	3-1/8	1.0000	59,000	257,000	7,000	9,000 to 12,000	30,000
145737	2-7/8 REG.	3-3/4	1.2500	78,000	324,000	11,000	12,000 to 16,000	39,000
146544	2-3/8 IF	3-3/4	1.5000	66,000	333,000	12,000	11,000 to 15,000	33,000
147902	2-3/8 EUE	3-3/4	1.8750	48,000	258.000	9,600	10,000 to 15,000	24,000
80468	2-7/8 IF	4-1/4	2.0000	62,000	374,000	18,000	12,000 to 18,000	31,000
79789	3-1/2 FH 3-1/2 IF	4-3/4	2.0000	98,000	575,000	28,000	14,000 to 20,000	49,000
145484	4-1/2 FH	6	2.0000	196,000	913,000	46,000	14,000 to 20,000	98,000
79691	4-1/2 IF	6-1/4	2.2500	200,000	1,100,000	66,000	16,000 to 25,000	100,000
145440	5-1/2 REG.	6-3/4	2.3750	250,000	1, 200,000	78,000	16,000 to 25,000	110,000
72978	6-5/8 REG.	7-3/4	3.0625	265,000	1, 700,000	130,000	16,000 to 25,000	110,000

Bowen Super Fishing Jar — Weight Chart

Assembly Part No.	Connection	OD (in.)	ID (in.)	Weight Range (lb)
72888	2-3/8 REG.	3 1/8	1.0000	2,100 to 3,600
145737	2-7/8 REG.	3-3/4	1.2500	3,000 to 5,000
147902	2-3/8 EUE	3-3/4	1.8750	
80468	2-7/8 IF	4-1/2	2.0000	3,300 to 5,700
79789	3-1/2 IF	4-1/4	2.0000	4,400 to 7,500
145484	4-1/2 FH	6	2.0000	7,600 to 12,900
79691	4-1/2 IF	6-1/4	2.2500	8,100 to 13,600
145440	5-1/2 REG.	6-3/4	2.3750	9,400 to 16,200
72978	6-5/8 REG.	7-3/4	3.0625	12,100 to 20,500

Bowen Super Fishing Jar — Floater Positioning

Assembly Part Number	Connection	OD (in.)	ID (in.)	Steel Floater Number	Floater Position Normal Service (in.)	Floater Position High Temp (in.)
72888	2-3/8 REG.	3-1/8	1.0000	151580/005	7-3/8	9-1/16
145737	2-7/8 REG.	3-3/4	1.2500	151584/005	8-9/16	10-3/16
146544	2-3/8 IF	3-3/4	1.5000	151583/005	8	9-11/16
147902	2-3/8 EUE	3-3/4	1.8750	151577/005	8-1/4	10-1/8
80468	2-7/8 IF	4-1/4	2.0000	151576/005	8-11/16	10-1/2
79789	3-1/2 FH 3-1/2 IF	4-3/4	2.0000	151578/005	10-9/16	12-13/16
145484	4-1/2 FH	6	2.0000	151579/005	10-5/8	12-5/8
79691	4-1/2 IF	6-1/4	2.2500	151S82/005	10-11/16	12-1/2
145440	5-1/2 REG.	6-3/4	2.3750	151S81/005	10-15/16	13
72978	6-5/8 REG.	7-3/4	3.0625	102516/005	12-1/4	12-1/4

Measure distance from floater face to pressure body end.

Bowen Type Z™ Fishing Jar, Fishing Bumper Sub, and Jar Intensifier Torques

Joint (in.)	OD (in.)	Torque (lb/ft)	Torque (KgM)
	1-5/8	550	75
1-13/16 WFJ	1-13/16	700	96
1-1/4 REG.	2-1/4	1,700	235
2-3/8 REG.	3-1/8	3,500	484
2-3/8 EUE	3-11/16	2,500	340
2-3/8 EUE	3-3/4	2,500	340
2-3/8 IF	3-3/4	3,800	520
2-7/8 IF	4-1/4	6,600	900
2-7/8 EUE	4-1/2	4,000	550
2-7/8 REG.	3-3/4	3,800	520
3-1/2 FH	4-3/4	8,000	1,100
4-1/2 FH	6	14,000	1,925
4-1/2 IF	6-1/4	16,000	2,200
5-1/2 REG.	6-3/4	20,000	2,550
6-5/8 REG.	7-3/4	40,000	5,500
7-5/8 REG.	9	60,000	8,550

Bowen Type Z™ Hydraulic Jars — Recommended Test Loads

Assembly No.	Jar Size (in.)	OD (in.)	ID (in.)	*Testing Pull Load (lb)	Maximum Allowable Load Jarring In Hole (lb)	Low Pull (lb)
70822	1 M.T.	1-5/8	0.2500	5,000 to 8,500	15,400	4,000
21150	1-13/16 WFJ	1-13/16	0.3125	6,000 to10,000	18,000	4,000
54020	1-1/4 REG	2-1/4	0.3750	7,200 to 12,000	21,000	4,000
68010	2-3/8 PH-6	2-29/32	1.0000	12,600 to 19,000	33,400	6,000
55670	2-3/8 EUE	3-1/16	1.5000	12,000 to 16,000	31,900	6,000
52504	2-3/8 REG.	3-1/8	1.0000	15,000 to 23,000	32,400	7,000
52528	2-3/8 IF	3-3/4	1.5000	15,000 to 26,000	46,000	8,000
52497	2-3/8 EUE	3-3/4	1.8750	15,000 to 26,000	46,500	8,000
52506	2-7/8 REG.	3-3/4	1.2500	18,000 to 26,000	56,500	8,000
52502	2-7/8 IF	4-1/4	1.9375	18,000 to 28,000	46,700	8,000
52653	2-7/8 EUE	4-1/2	2.8750	18,000 to 28,000	49,000	8,000
52530	3-1/2 FH	4-3/4	1.5000	28,000 to 45,000	85,000	10,000
52500	3-1/2 FH	4-3/4	2.0000	28,000 to 45,000	74,500	10,000
52498	4-1/2 FH	6	2.0000	41,000 to 62,000	136,400	10,000
52544	4-1/2 IF	6-1/4	2.2500	55,000 to 80,000	159,000	12,000
52680	5-1/2 REG.	6-3/4	2.3750	62,000 to 110,000	172,800	12,000
52711	6-5/8 REG.	7-3/4	3.0625	63,000 to 100,000	149,000	12,000
66346	7-5/8 REG.	9	3.0754	80,000 to 120,000	195,000	14,000

* These figures are based on a Tester speed of 2.50 ft/min.
Full speed to reach maximum allowable load, approximately 6-1/2 ft/min.

Bowen Type Z™ Oil Jar Torques

Jar Assembly No.	Jar OD (in.)	Jar ID (in.)	Top Sub To Mandrel (ft-lb)	Knocker To Mandrel (ft-lb)	Mandrel To Washpipe (ft-lb)	Mandrel Body Insert To Mandrel Body (ft-lb)	Mandrel Body To Middle Body (ft-lb)	Middle Body To Washpipe Body (ft-lbs)
70822	1-5/8	0.2500	130		80	320	150	270
74723	1-13/16	0.3125	170		100		350	520
54020	2-1/4	0.3750		30	150		900	1,050
68010	2-29/32	1.0000	1130		800		1,950	2,070
55670	3-1/16	1.5000	1100		690		2,100	2,100
52504	3-1/8	1.0000		200	690		2,030	2,030
52506	3-3/4	1.2500		300	1140		3,820	3,820
52528	3-3/4	1.5000	2,670		890		3,570	3,570
52497	3-3/4	1.8750	1,490		410		3,570	3,570
52502	4-1/4	1.9375		500	1,880		4,960	4,960
52653	4-1/2	2.3750		500	1,930		5,580	5,580
52530	4-3/4	1.5000		700	2,130		9,770	9,210
52500	4-3/4	2.0000		500	2,010		9,750	8,600
52498	6	2.0000		2,200	4,990		17,530	17,160
52544	6-1/4	2.2500		2,000	5,460		20,340	20,340
52680	6-3/4	2.3750		1,900	7,260		24,330	24,330
52711	7-3/4	3.0625		3,200	11,680		32,020	32,010
66346	9	3.7500		6,200	21,540		57,760	46,130

Multiply chart values by .1382 to obtain Kg-m

Bowen Type Z™ Oil Jar Calculated Strengths

Jar Assembly No.	Jar Type	Jar OD (in.)	Jar ID (in.)	Recommended Maximum Jarring Load (lb)*	Lift Load After Jarring At Yield (lb)	Torque To Failure (ft-lbs)	Recommended Weight Of Collars Above Jar (lb)
70822	Subtype	1-5/8	0.2500	15,400	46,300	420	1,100 to 1,450
74723	Subtype	1-13/16	0.3125	18,000	59,400	640	1,360 to 1,800
54020	Integral Mandrel	2-1/4	0.3750	21,000	118,500	2,200	1,560 to 2,100
68010	Sub Type	2-29/32	1.0000	35,400	194,800	5,200	2,200 to 3,000
55670	Subtype	3-1/16	1.5000	31,300	160,200	5,900	2,300 to 3,100
52504	Integral Mandrel	3-1/8	1.0000	32,400	229,200	7,600	2,400 to 3,300
52506	Integral Mandrel	3-3/4	1.2500	56,500	345,000	13,500	4,200 to 5,700
52528	Sub Type	3-3/4	1.5000	46,000	299,700	13,000	3,400 to 4,600
52497	Sub Type	3-3/4	1.8750	46,500	179,500	8,200	3,500 to 4,700
52502	Integral Mandrel	4-1/4	1.9375	46,700	430,300	24,500	3,500 to 4,700
52653	Integral Mandrel	4-1/2	2.3750	49,000	375,000	25,900	3,600 to 4,900
52530	Integral Mandrel	4-3/4	1.5000	85,000	591,900	27,600	6,300 to 8,500
52500	Integral Mandrel	4-3/4	2.0000	74,500	468,800	27,100	5,600 to 7,500
52498	Integral Mandrel	6	2.0000	136,400	937,000	52,600	10,200 to 13,800
52544	Integral Mandrel	6-1/4	2.2500	159,000	917,400	56,900	11,800 to 16,000
52680	Integral Mandrel	6-3/4	2.3750	172,800	1,013,800	74,200	13,000 to 17,500
52711	Integral Mandrel	7-3/4	3.0625	149,000	1,587,900	145,300	11,000 to 15,000
66346	Integral Mandrel	9	3.7500	215,000	1,621,000	224,700	14,300 to 19,600

*Based on 800% of calculated load at yield point.
Optimum weights can be determined only by calculation and only if sufficient well data is available.

Style "G" Overshot Assembly Numbers

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
2-5/16	225000	B-8919	L-9403	B-8921	SH	2	1-3/4	OS-20
2-5/8	225050	C-10199	B-10204	B-10201	SH	2-1/8	1-3/4	OS-22
2-7/8	225100	16395	16392	16397	SH	2-1/8	1-3/4	OS-25
3-1/8	225150	9305	9307	9306	XSH	2-3/8	2	OS-23
3-1/8	225200	M-9305	M-9307	M-9306	XSH	2-3/8	2	
3-1/4	225250	C-5072	B-5077	B-5074	SH	2-3/8	1-7/8	
3-3/8	225300	C-4623	B-5091	B-5088	SH	2-1/2	2	OS-30
3-1/2	225350	C-4741	B-782	B-4743	FS	2-3/8	1-7/8	OS-24
3-5/8	225400	C-5080	B-5085	B-5082	FS	2-1/2	2	OS-21
3-5/8	225450	9270	9272	9271	XSH	2-7/8	2-1/2	OS-02X
3-5/8	225500	9270	9272	9271	XSH	2-7/8	2-1/2	OS-02
3-3/4	225550	C-1827	A-1829	B-1828	SH	2-7/8	2-3/8	OS-27
3-3/4	225600	37585	37590	37587	SH	3-1/16	2-11/16	OS-01
3-7/8	225650	C-1835	B1837	B-1836	SH	3-1/8	2-5/8	OS-13
3-7/8	225700	21300	21305	21302	XSH	3-3/8	2-7/8	OS-17
3-15/16	225750	C-5101	B-3596	B-5103	SH	3-1/16	2-9/16	OS-07
4	225800	C-4736	M-805	B-4738	FS	2-7/8	2-3/8	OS-43
4	225850	C-5104	B-5109	B-5106	SH	3-1/8	2-5/8	OS-47
4-1/8	225900	1443	1448	1446	FS	2-3/8	1-7/8	OS-40
4-1/8	225950	4390	805	4392	FS	2-7/8	2-3/8	OS-45
4-1/8	226000	9105	1741	9107	SFS	3-1/8	2-5/8	OS-31X
4-1/8	226050	8220	1741	8223	FS	3-1/8	2-5/8	OS-39
4-1/8	226100	N-9105	M-1741	M-9107	FS	3-1/8	2-5/8	OS-31
4-1/8	226150	C-5115	B-5120	B-5117	SH	3-1/4	2-3/4	OS-15
4-3/16	226200	C-5098	B-4403	B-5100	FS	3-1/16	2-19/32	OS-34
4-1/4	226250	C-4822	B-791	B-4824	FS	3-1/8	2-5/8	OS-14
4-1/4	226300	C-5126	B-4627	B-5128	SH	3-3/8	2-7/8	OS-18
4-3/8	226350	9630	1518	9632	FS	3-1/4	2-3/4	

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
4-3/8	226400	C-5112	B-3205	B-5114	FS	3-1/4	2-3/4	OS-16
4-3/8	226450	9635	4195	9637	FS	3-3/8	2-7/8	OS-37
4-3/8	226500	N-9635	M-4195	M-9637	FS	3-3/8	2-7/8	OS-37X
4-3/8	226550	C-4619	B-3607	B-4621	SH	3-1/2	2-7/8	OS-33
4-7/16	226600	C-9773	B-9777	B-9775	SH	3-13/16	3-5/16	
4-1/2	226650	C-5123	B-3359	B-5125	FS	3-3/8	2-7/8	OS-32
4-1/2	226700	C-3793	B-3607	A-3795	SH	3-1/2	2-7/8	OS-19
4-1/2	226750	17420	17425	17422	SH	3-21/32	3-1/8	
4-1/2	226800	17201	B-4339	17203	SH	3-21/32	3-1/8	OS-28
4-9/16	226850	C-5151	B-4339	B-5153	SH	3-21/32	3-1/8	OS-35
4-5/8	226900	1255	1249	1248	FS	3-1/2	3	OS-26
4-5/8	226950	C-5129	B-5133	B-5131	SH	3-3/4	3-7/32	OS-29
4-5/8	227000	C-6230	B-6234	B-6232	SH	3-7/8	3-3/8	OS-64
4-11/16	227050	N-9109	L-6662	M-9111	FS	3-21/32	3-1/8	OS-03
4-11/16	227100	12275	6662	12277	FS	3-21/32	3-1/8	
4-11/16	227150	9109	6662	9111	SFS	3-21/32	3.220	OS-3
4-11/16	227200	9120	9123	9121	SFS	3-3/4	3-1/4	OS-36
4-11/16	227250	N-9120	L-9123	M-9121	SFS	3-3/4	3-1/4	OS-36X
4-11/16	227300	C-9296	B-9301	B-9298	SH	3-13/16	3-7/32	OS-60
4-3/4	227350	C-5139	B-1709	B-5141	SH	3-7/8	3-3/8	OS-65
4-13/16	227400	C-4732	164	B-4734	FS	3-1/2	2-7/8	OS-38
4-7/8	227450	5168	5159	5156	SH	4	3-1/2	OS-67
4-7/8	227500	C-5154	B-5159	B-5156	SH	4	3-1/2	OS-67X
5	227550	C-5148	B-4410	B-5150	FS	3-21/32	3-1/8	OS-51
5	227600	9725	814	9727	FS	3-3/4	3-1/8	OS-52
5	227650	C-5428	B-4897	B-5430	SH	4-1/8	3-5/8	OS-57
5-1/8	227700	C-4561	164	B-4563	FS	3-1/2	2-7/8	OS-50
5-1/8	227750	C-4686	B-814	B-4688	FS	3-3/4	3-1/8	OS-41
5-1/8	227800	C-7497	B-2192	B-7499	FS	3-13/16	3-3/16	OS-54

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
5-1/8	227850	C-5162	B-4674	B-5164	SH	4-1/4	3-3/4	OS-59
5-1/8	227900	4716	4674	4717	SH	4-1/4	3-3/4	OS-69
5-3/16	227950	C-5136	M-859	B-5138	FS	3-7/8	3-1/4	OS-55
5-1/4	228000	9515	859	9517	FS	3-7/8	3-1/4	OS-05
5-5/16	228050	C-5142	B-1505	B-5144	FS	4	3-3/8	OS-56
5-3/8	228100	C-5165	B-2489	B-5167	SH	4-1/2	3-7/8	OS-53
5-7/16	228150	C-5425	B-1997	B-5427	FS	4-1/8	3-1/2	OS-44
5-1/2	228200	C-4969	M-1135	B-4971	SH	4-5/8	4-1/8	OS-72
5-9/16	228250	5896	165	5898	FS	4-1/4	3-11/16	OS-42
5-9/16	228300	C-4819	M-165	B-4821	FS	4-1/4	3-11/16	OS-70
5-5/8	228350	C-3796	B-2489	B-3798	FS	4-1/2	3-7/8	
5-5/8	228400	5698	1135	5700	FS	4-5/8	4-1/8	OS-74
5-5/8	228450	M-5698	M-1135	M-5700	FS	4-5/8	4-1/8	OS-74X
5-5/8	228500	C-5168	B-2201	B-5170	SH	4-3/4	4-1/4	OS-46
5-3/4	228550	8975	6112	8977	FS	4-3/4	4-1/4	OS-04
5-3/4	228600	N-8975	M-6112	M-8977	FS	4-3/4	4-1/4	OS-90
5-3/4	228650	C-7096	B-6389	B-7098	SH	4-7/8	4-1/4	OS-96
5-3/4	228700	C-11823	B-11828	B-11825	SH	5-1/8	4-5/8	OS-99
5-13/16	228750	C-4814	B-1987	B-4816	FS	4-1/2	3-7/8	OS-48
5-7/8	228800	C-5171	B-4369	B-5173	SH	5	4-1/2	OS-58
5-15/16	228850	5737	196	5735	FS	4-5/8	4	OS-80
5-15/16	228900	C-4844	M-196	B-4846	FS	4-5/8	4	OS-82
6	228950	9026	9022	9028	FS	4-7/8	4-1/4	
6-1/16	229000	8940	2364	8942	FS	4-3/4	4-1/8	OS-94
6-1/16	229050	C-4829	B-2364	B-4831	FS	4-3/4	4-1/8	OS-95
6-1/8	229100	912	1182	905	FS	4-7/8	4-1/4	OS-62
6-1/8	229150	D-912	M-1182	M-905	FS	4-7/8	4-1/4	OS-62
6-1/8	229200	7787	5942	7788	SFS	5	4-3/8	OS-61
6-3/16	229250	C-7093	B-2457	B-7095	FS	4-7/8	4-1/4	OS-97

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
6-1/4	229300	3061	3075	1182	FS	4-7/8	4-1/4	
6-3/8	229350	4770	9201	9199	SH	5-1/4	4-5/8	
6-3/8	229400	6655	4498	4503	SH	5-1/4	4-5/8	OS-63
6-3/8	229450	N-6655	M-4498	M-4503	SH	5-1/4	4-5/8	
6-1/2	229500	4773	9207	9205	SH	5-3/8	4-3/4	OS-102
6-5/8	229550	C-4825	M-1071	B-4827	FS	5	4-1/4	OS-98
6-5/8	229600	C-5178	B-5182	B-5179	SH	5-1/2	4-3/4	OS-103
6-5/8	229650	8625	8619	8617	SH	5-1/2	4-7/8	OS-66
6-5/8	229700	4776	9213	9211	SH	5-1/2	4-7/8	
6-11/16	229750	C-5185	B-5190	B-5187	SH	5-9/16	4-13/16	
6-3/4	229800	9038	9305	9040	XSH	5-5/8	5	OS-108
6-7/8	229850	C-5174	B-4472	B-4519	FS	5-1/4	4-1/2	OS-100
6-7/8	229900	C-5193	B-3481	B-5195	SH	5-3/4	5	OS-109
6-7/8	229950	8978	6699	8980	SH	5-3/4	5-1/8	OS-68
6-15/16	230000	8943	103	8945	FS	5-9/16	4-13/16	OS-105
7-1/8	230050	C-5176	B-759	B-2791	FS	5-1/2	4-3/4	OS-104
7-1/8	230100	C-5196	B-5201	B-5198	SH	6	5-3/8	OS-111
7-1/4	230150	C-3810	M-103	B-3812	FS	5-9/16	4-13/16	OS-106
7-1/4	230200	C-5206	B-5211	B-5208	SH	6-1/8	5-1/2	OS-117
7-3/8	230250	6150	104	6152	FS	5-3/4	5	OS-110
7-3/8	230300	D-6150	L-130	M-6152	FS	5-3/4	5	OS-110X
7-3/8	230350	C-4689	M-104	B-3522	FS	5-3/4	5	OS-71
7-3/8	230400	C-4691	B-4694	B-4693	SH	6-1/4	5-1/2	OS-731
7-3/8	230450	12567	9687	12568	SH	6-1/4	5-5/8	OS-118
7-3/8	230500	9692	9687	9694	SH	6-1/4	5-5/8	OS-73
7-3/8	230550	12565	9687	12566	SH	6-1/4	5-5/8	OS-119
7-3/8	230600	N-9692	M-9687	M-9694	SH	6-1/4	5-5/8	
7-1/2	230650	9996	220	9998	FS	6	5-1/4	OS-114
7-1/2	230700	9009	9003	9011	SH	6-3/8	5-3/4	OS-125

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
7-1/2	230750	M-9009	M-9003	M-9011	SH	6-3/8	5-3/4	
7-1/2	230800	9746	9003	9747	SH	6-3/8	5-3/4	
7-5/8	230850	247	220	249	FS	6	5-1/4	OS-115
7-5/8	230900	C-3364	M-220	B-3366	FS	6	5-1/4	OS-116
7-5/8	230950	7572	220	7574	FS	6	5-1/4	OS-75
7-5/8	231000	8741	1644	1641	SFS	6-1/4	5-9/16	OS-06
7-5/8	231050	1873	1644	1875	SFS	6-1/4	5-9/16	OS-120
7-5/8	231100	19090	1644	19092	SFS	6-1/4	5-9/16	OS-121
7-5/8	231150	N-8741	M-1644	M-1641	SFS	6-1/4	5-9/16	OS-06X
7-5/8	231200	C-5344	B-5349	B-5346	SH	6-1/2	5-3/4	OS-761
7-5/8	231250	M-9860	M-9863	M-9862	SH	6-1/2	5-7/8	OS-76
7-5/8	231300	9860	9863	9862	SH	6-1/2	5-7/8	
8-1/8	231350	9677	9863	9748	FS	6-1/2	5-7/8	
7-3/4	231400	C-5204	B-2063	B-4218	FS	6-1/8	5-3/8	OS-77
7-3/4	231450	9163	5503	9164	SFS	6-3/8	5-5/8	OS-775
7-3/4	231500	C-5214	B-5219	B-5216	SH	6-5/8	5-7/8	
7-3/4	231550	4785	9137	9134	SH	6-5/8	6	OS-126
7-3/4	231600	N-4785	M-9137	M-9134	SH	6-5/8	6	OS-127
7-3/4	231650	B-11322	M-9137	B-11323	SH	6-5/8	6	
7-7/8	231700	C-2108	B-2073	B-2109	FS	6-1/4	5-1/2	OS-78
7-7/8	231750	C-8841	B-2073	C-2205	FS	6-1/4	5-1/2	
7-7/8	231800	7791	1659	1657	FS	6-1/4	5-9/16	OS-122
7-7/8	231850	9678	1659	9749	FS	6-1/4	5-9/16	OS-123
7-7/8	231900	9983	1659	9984	FS	6-1/4	5-9/16	
7-7/8	231950	D-7791	M-1659	M-1657	FS	6-1/4	5-9/16	OS-124
7-7/8	232000	16500	B-5227	16502	SH	6-3/4	6-1/8	OS-130
7-7/8	232050	C-5222	B-5227	B-5224	SH	6-3/4	6-1/8	OS-79
8	232100	8995	8987	8997	SH	6-7/8	6-1/4	OS-81
8	232150	N-8995	M-8987	M-8997	SH	6-7/8	6-1/4	OS-81X

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
8-1/8	232200	C-5342	B-2374	B-3711	FS	6-1/2	5-3/4	OS-85
8-1/8	232250	9339	84	9337	SFS	6-5/8	5-7/8	OS-128
8-1/8	232300	8949	84	1619	SFS	6-5/8	5-7/8	
8-1/8	232350	M-9339	M-84	M-9337	SFS	6-5/8	5-7/8	
8-1/8	232400	C-3263	B-3267	B-3264	SH	7	6-1/4	OS-133
8-1/8	232450	9815	9222	9817	SH	7	6-3/8	OS-132
8-1/8	232500	9217	9222	9219	SH	7	6-3/8	OS-08
8-1/4	232550	2380	5652	2382	FS	6-1/2	5-3/4	
8-1/4	232600	7796	5652	7797	FS	6-1/2	5-3/4	
8-1/4	232650	C-3032	N-84	B-3034	FS	6-5/8	5-7/8	OS-129
8-1/4	232700	9570	9229	9571	SH	7-1/8	6-1/2	OS-135
8-3/8	232750	275	209	277	FS	6-3/4	6	OS-83
8-3/8	232800	C-3833	M-209	B-3816	FS	6-3/4	6	OS-131
8-3/8	232850	17208	9222	17209	SH	7	6-3/8	OS-84
8-3/8	232900	C-5354	B-5359	B-5356	SH	7-1/4	6-5/8	OS-136
8-1/2	232950	C-5233	B-5238	B-5235	SH	7-3/8	6-5/8	OS-139
8-1/2	233000	4793	9235	9233	SH	7-3/8	6-3/4	OS-138
8-5/8	233050	6140	105	6142	FS	7	6-1/4	
8-5/8	233100	7800	105	7801	FS	7	6-1/4	OS-134
8-5/8	233150	C-4817	N-105	B-3819	FS	7	6-1/4	OS-86
8-5/8	233200	12692	12697	12694	SH	7-1/2	6-7/8	OS-141
8-5/8	233250	C-7101	B-7106	B-7103	SH	7-1/2	6-7/8	OS-142
8-3/4	233300	C-5249	B-5254	B-5251	SH	7-5/8	6-7/8	
8-3/4	233350	4796	9241	9239	SH	7-5/8	7	OS-87
8-3/4	233400	9290	9292	9291	SFS	7-1/2	6-3/4	OS-143
8-7/8	233450	7805	1027	7806	FS	7-1/4	6-1/2	OS-137
8-7/8	233500	C-5352	M-1027	M-1026	FS	7-1/4	6-1/2	OS-88
8-7/8	233550	C-5257	B-5262	B-5259	SH	7-3/4	7	OS-89X
8-7/8	233600	9850	9853	9852	SH	7-3/4	7-1/8	OS-145

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
8-7/8	233650	5257	5262	5259	SH	7-3/4	7-1/8	OS-89
9	233700	C-5230	C-4156	B-5232	FS	7-3/8	6-5/8	OS-140
9	233750	4816	9248	9245	SH	7-7/8	7-1/4	OS-147
9-1/8	233800	C-7099	B-3454	B-4516	FS	7-1/2	6-3/4	OS-91
9-1/8	233850	C-5265	B-5270	B-5267	SH	8	7-1/4	OS-92
9-1/4	233900	C-5241	B-5246	B-5243	FS	7-5/8	6-7/8	OS-144
9-3/8	233950	1665	85	1283	FS	7-3/4	7	OS-93
9-3/8	234000	7810	85	7811	FS	7-3/4	7	
9-3/8	234050	C-1500	N-85	B-1501	FS	7-3/4	7	OS-146
9-1/2	234100	4834	9057	9062	SH	8-3/8	7-3/4	OS-149
9-5/8	234150	264	238	266	FS	8	7-1/4	OS-09
9-5/8	234200	N-264	M-238	M-266	FS	8	7-1/4	OS-09X
9-5/8	234250	C-4179	M-238	B-2716	FS	8	7-1/4	OS-148
9-5/8	234300	C-5284	B-5289	B-5286	SH	8-1/2	7-7/8	OS-151
9-3/4	234350	4837	9101	9098	XSH	8-5/8	8	OS-153
10-1/16	234400	C-1230	C-1232	B-1231	FS	8-3/8	7-5/8	OS-150
10-1/8	234450	8960	8957	8962	FS	8-1/2	7-3/4	OS-101
10-1/8	234500	M-8960	M-8957	M-8962	FS	8-1/2	7-3/4	OS-101X
10-1/8	234550	C-5281	B-4430	B-5283	FS	8-1/2	7-3/4	OS-152
10-1/4	234600	C-5297	B-5302	B-5299	SH	8-5/8	7-7/8	OS-154
10-1/2	234650	8963	8966	8965	FS	8-3/4	8	OS-107
10-1/2	234700	C-5305	B-5310	B-5307	FS	8-7/8	8-1/8	OS-156
10-5/8	234750	5321	5326	5323	FS	9	8-1/4	OS-10
10-5/8	234800	C-5321	B-5326	B-5323	FS	9	8-1/4	OS-10X
11	234850	C-5292	B-1962	B-5294	FS	8-5/8	7-5/8	OS-155
11-1/4	234900	C-1870	B-1874	B-1871	FS	8-7/8	8-1/8	
11-1/4	234950	C-12822	B-12827	B-12824	FS	9-5/8	8-7/8	OS-112
11-3/8	235000	C-5313	B-5318	B-5315	FS	9	8	OS-157
11-3/8	235050	26255	26258	26257	FS	9-3/4	9	OS-113

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Style "G" Overshot Assembly Numbers (continued)

(Replaces Bowen Series 150)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)	Replaces Gotco Assy. #
11-3/4	235100	15250	15253	15252	FS	9-1/2	8-3/4	OS-158
11-3/4	235150	5329	5334	5331	FS	10-1/8	9-3/8	OS-11
11-3/4	235200	C-5329	B-5334	B-5331	FS	10-1/8	9-3/8	OS-11X
11-7/8	235250	8969	8972	8971	FS	10	9-1/4	OS-159
12-1/2	235300	C-1880	B-1971	B-1881	XFS	10-1/8	9-1/8	OS-160
12-3/4	235350	15800	15803	15802	FS	11-1/4	10-1/2	OS-12
13-3/4	235400	33006	33009	33008	FS	12	11-1/4	0S-161
16	235450	68028	68033	68030	FS	14	13-1/4	OS-162
16-3/4	235500	64553	64558	64555	FS	14-3/4	14	OS-164
20-3/4	235550	31653	31658	31655	FS	16-3/4	16	OS-165

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Style "J" Overshot Assembly Numbers

(Replaces Bowen Series 70)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Basket Max. Catch (in.)	Replaces Gotco Assy. #
2-5/16	240000	38506	38509	38508	SH	1-5/8	SC-1
3-5/8	240010	17615	17618	17617	SH	2-1/2	SC-2
3-3/4	240020	13535	13538	13537	SH	2-5/8	SC-3
4-1/8	240030	10434	10437	10436	SH	3-1/16	SC-5
4-3/8	240040	C11023	B11026	A11025	SH	3-3/8	SC-6
4-5/8	240050	11290	11292	11291	FS	3-1/16	SC-4
4-11/16	240060	10543	10546	10545	SH	3-21/32	SC-7
4-3/4	240070	12645	12647	12646	SH	3-3/4	SC-9
4-3/4	240080	48881		48883		3-3/4	
5-1/2	240090	12785	12788	12787	FS	3-3/4	SC-10
5-5/8	240100	11297	11300	11299	FS	3-21/32	SC-8
5-3/4	240110	13065	13068	13067	FS	4-1/4	SC-11
5-7/8	240120	10560	10563	10562	SH	4-3/4	SC-12
6-1/4	240130	14805	14808	14807	SH	5-1/4	
6-5/8	240140	11303	11306	11305	FS	4-3/4	SC-13
7-5/8	240160	11630	11633	11632	FS	6	SC-14
7-7/8	240170	16975	16978	16977	FS	6-1/4	SC-15
8-1/4	240180	38939	38942	38941	FS	6-1/2	SC-16
8-1/2	240190	20050	20053	20052	FS	7	SC-17
9	240200	39425	39428	39427	FS	7-1/4	
9-1/4	240210	25030	25033	25032	FS	7-3/4	SC-18
9-3/8	240220	38945	38948	38947	FS	7-5/8	
9-3/4	240230	20060	20063	20062	FS	8	SC-19
9-7/8	240240	38951	38954	38953	FS	8-1/8	
10	240250	46679		46680		8-1/4	
11-1/4	240260	33878	33881	33880	FS	9	SC-20
15	240270	36239	36242	36241	FS	12-1/4	

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Style "A" Overshot Assembly Numbers

(Replaces Bowen Series 10)

Overshot O.D. (in.)	H.E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Spiral Max Catch (in.)	Basket Max Catch (in.)
1-9/16	238300	9790	9793	9792	FS	1-1/16	7/8
1.43	238320	17985	17988	17987	SH	1-1/4	1-1/16
1-21/32	238340	16490	16493	16492	SH	1-3/8	1-3/16
1-21/32	238360	26495	26498	26497	SH	1-3/8	1-3/16
1-25/32	238380	13940	13943	13942	SH	1-1/2	1-5/16
1-29/32	238400	9990	9992	9991	SH	1-1/2	1-5/16
1-29/32	238420	9340	9343	9342	SH	1-5/8	1-7/16
1-29/32	238440	17040	9343	17042	SH	1-5/8	1-7/16
1-29/32	238460	19265	9343	19266	SH	1-5/8	1-7/16
1-29/32	238480	21625	21627	21626	SH	1-5/8	1-7/16
2-1/8	238500	27765	27768	27767	SH	1-13/16	1-5/8
2-1/4	238520	16070	16073	16072	SH	1-15/16	1-3/4
2-5/16	238540	9880	9343	9881	FS	1-5/8	1-7/16
2-5/16	238560	17045	9343	17047	FS	1-5/8	1-7/16
2-5/16	238580	19270	9343	19271	FS	1-5/8	1-7/16
2-5/16	238600	11480	11483	11482	SFS	1-13/16	1-5/8
2-5/16	238620	30308	11483	30310	FS	1-13/16	1-5/8
2-5/16	238640	21630	21633	21632	SH	1-15/16	1-3/4
2-5/16	238660	9400	9403	9402	SH	2	1-13/16
2-5/16	238680	16985	9403	16987	SH	2	1-13/16
2-5/16	238700	19280	9403	19281	SH	2	1-13/16
2-5/16	238720	34492	34494	34493	SH	2	1-13/16
2-27/32	238740	15860	9872	15861	SH	2-3/8	2-3/16
2-7/8	238760	17130	9403	17132	FS	2	1-13/16
2-7/8	238780	9530	9403	9532	FS	2	1-13/16
1-27/32	238800	36423	36436	36425	SH	1-9/16	1-3/8

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Style "B" Overshot Assembly Numbers

(Replaces Bowen Series 20)

Overshot O.D. (in.)	H. E. Assy. #	Replaces Bowen Assy. #	Replaces Bowen Grapple #	Replaces Bowen Bowl #	Strength	Basket Max Catch (in.)
1-1/4	240400	17315	17318	17317	SH	7/8
1-3/8	240420	25780	25783	25782	SH	1
1-1/2	240440	28774	28777	28776	SH	1-1/8
1-5/8	240460	28760	28763	28762	SH	1-1/4
1-3/4	240480	18355	18358	18357	SH	1-3/8
1-3/4	240500	34601	34604	34603	SH	1-3/8
1-29/32	240520	11555	11557	11556	SH	1-1/2
2-5/16	240540	17438	17440	17439	SH	1-13/16
2-5/16	240560	30421	17440	30422	SH	1-13/16
2-25/32	240580	18305	18308	18307	SH	2-1/8
2-7/8	240600	20170	18308	20171	FS	2-1/8
3-1/8	240620	20645	20648	20647	SH	2-3/8
3-1/4	240640	22270	22273	22272	FS	2-1/2

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Releasing Spear

Nom. Catch (in.)	Spear O.D. (in.)	Spear I.D. (in.)	Replaces Bowen Assy. #	H.E. Assy. #	Class	Replaces Bowen Grapple #	H.E. * Grapple #
1.050	11/16	-	16455	236500	STD.	16457	236504
1.313	7/8	-	19350	236550	STD.	19352	236554
1.660	1-1/8	-	11195	236600	STD.	11197	236604
1-1/4	1-1/8	-	35841	236650	STD.	35843	236654
1.900	1-3/8	-	9915	236700	STD.	9917	236704
2-3/8	1-11/16	-	9645	236750	STD.	9647	236754
2-3/8	1-7/8	-	17470	236800	H. DUTY	17472	236804
2-3/8	1-7/8	3/8	1344	236850	STD.	1348	236854
2-3/8	1-7/8	3/8	17228	236900	H.DUTY	17230	236904
2-7/8	2-5/16	3/8	1227	236950	STD.	1230	236954
2-7/8	2-5/16	3/8	17231	237000	H.DUTY	17233	237004
2-7/8	2-5/16	3/8	18820	237050	H.DUTY	18822	237054
3-1/2	2-13/16	1/2	9410	237100	STD.	9412	237104
3-1/2	2-1/2	1/2	9945	237150	H.DUTY	9947	237154
4	3-1/4	3/4	530	237200	L.DUTY	532	237204
4	3-1/4	3/4	9485	237250	STD.	9487	237254
4-1/2	3-5/8	3/4	13200	237300	L.DUTY	13202	237304
4-1/2	3-5/8	3/4	17475	237350	STD.	17477	237354
5	4-1/32	7/8	1332	237400	L.DUTY	1334	237404
5	4-1/32	7/8	9680	237450	STD.	9682	237454
5	4-1/32	1	18270	237500	STD.	18272	237504
5	4-1/32	7/8	20115	237550	L.DUTY	20117	237554
6	5	1	9715	237600	L.DUTY	9717	237604
6	5	1	17234	237650	STD.	17236	237654
7	5-3/4	2	9266	237700	STD.	9268	237704
7	5-11/16	2	20890	237750	STD.	20892	237754
7	5-11/16	2	17237	237800	H.DUTY	17239	237804
8	6-15/16	2	9572	237850	L.DUTY	9574	237854
8	7-1/4	2-3/4	17240	237900	H.DUTY	17242	237904
8-5/8	7-1/4	2-3/4	9380	237950	STD.	9382B	237954
8-5/8	7-1/4	2-3/4	17243	238000	H.DUTY	17245B	238004
8-5/8	7-1/4	2-3/4	20895	238050	STD.	20897	238054
9-5/8	8-1/4	2-3/4	9281	238100	STD.	9283	238104
9-5/8	8-1/8	2-3/4	20120	238150	STD.	20122	238154
9-5/8	8-1/4	2-3/4	17246	238200	H.DUTY	17248	238204
13-3/8	11-3/4	3-1/2	27780	238250	H.DUTY	27782	238254

* See Range Chart

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Spear Grapple Range Chart

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
236504	16457	0.725	0.742	0.750	3/4" ID & 3/4" Extra Strong Pipe
236504	16457	0.799	0.813	0.824	3/4" Std. Pipe .824" ID
236504	16457	0.850	0.864	0.875	7/8 - .664" ID, 1" - 2.25 # C.S. Hydril
236504	16457	0.912	0.924	0.937	.937" ID
236504	16457	0.932	0.944	0.957	1" Extra Strong Pipe .957" ID
236504	16457	0.955	0.967	0.982	.982" ID
236504	16457	0.975	0.987	1.000	1" ID
236504	16457	1.033	1.049	1.058	1" Std. Pipe, 1.049"
236504	16457	1.100	1.112	1.125	1-1/8" ID
236554	19352	0.913	0.937	0.957	.957" ID - 1" Extra Strong Pipe
236554	19352	0.956	0.978	1.000	1.000" ID
236554	19352	1.005	1.027	1.049	1.045" - 1" Std. Pipe
236554	19352	1.050	1.072	1.093	1.093" ID
236554	19352	1.081	1.103	1.125	1.125" ID
236604	11197	1.137	1.170	1.207	1.187" ID
236604	11197	1.180	1.215	1.250	1.250" - 1.219" ID
236604	11197	1.211	1.246	1.281	1.281" - 1.250" ID
236604	11197	1.242	1.277	1.312	1.312" - 1.281" ID
236604	11197	1.273	1.308	1.342	1.343" - 1.312" ID
236604	11197	1.332	1.367	1.402	1-3/8" ID - 1-1/4" Tubing
236604	11197	1.394	1.429	1.464	1.438" ID
236604	11197	1.430	1.465	1.500	1.500" - 1.469" ID
236604	11197	1.580	1.615	1.652	1-1/2" Std. Pipe & 1-5/8" ID
236604	11197	1.481	1.516	1.551	1.531" ID
236604	11197	1.519	1.554	1.589	1-9/16" ID
236604	11197	1.650	1.687	1.720	1.687" - 1.700" ID
236604	11197	1.722	1.757	1.792	1-3/4" - 1-25/32" ID
236604	11197	1.771	1.806	1.841	1.815" ID
236604	11197	1.836	1.875	1.906	1-7/8" - 1-29/32" ID
236604	11197	1.895	1.930	1.965	1-15/16" ID
236604	11197	1.957	1.992	2.027	2" ID
236604	11197	2.024	2.061	2.094	2.067" ID

* Grapples are marked with this size
** Mandrel is 3-1/4” OD
*** Mandrel, Release Ring, Nut must be turned down 1/32” below min ID
**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
236704	9917	1.441	1.470	1.500	1-1/2" Extra Strong Pipe (1.500" ID)
236704	9917	1.553	1.583	1.610	1-1/2" Std. Pipe (1.610" ID)
236704	9917	1.566	1.596	1.625	1-5/8" ID
236704	9917	1.598	1.628	1.657	1.657" ID
236704	9917	1.612	1.642	1.670	1.670" ID
236704	9917	1.673	1.700	1.750	1.700" ID
236704	9917	1.707	1.737	1.781	----
236704	9917	1.742	1.772	1.800	1.800" ID
236704	9917	1.817	1.847	1.875	1-7/8" ID
236704	9917	1.881	1.911	1.939	1.939" ID
236704	9917	1.942	1.972	2.000	2" ID
236754	9647	1.677	1.719	1.750	1.719" - 1.750" ID
236754	9647	1.742	1.778	1.815	2-3/8" D.P., 6.65#
236754	9647	1.802	1.838	1.875	1-7/8" ID & 1-27/32" ID
236754	9647	1.864	1.900	1.937	1.875" - 1.937" ID
236754	9647	1.968	2.004	2.041	2-3/8" Tubing, 4.0# - 4.7#
236904	17230	1.788	1.828	1.867	1.867" ID (Turn Body Down)***
236904	17230	1.796	1.836	1.876	1.875" ID (Turn Body Down)***
236904	17230	1.889	1.929	1.968	1.937" - 1.968" ID
236904	17230	1.952	1.992	2.041	2-3/8" Tubing - 4# - 4.70#
236904	17230	1.983	2.023	2.062	2.000" - 2.062" ID
236904	17230	2.045	2.085	2.125	2-1/8" ID (Turn Body Down)***
236904	17230	2.091	2.131	2.172	2-7/8" D.P., 9.75 - 10.4#
236904	17230	2.170	2.211	2.250	2-1/4" - 2-3/16" ID
236904	17230	2.186	2.226	2.266	2-17/64" ID
236904	17230	2.233	2.273	2.312	2-5/16" ID
236904	17230	2.249	2.289	2.329	2-7/8" OD D.P., 7.80# - 8.35#
236904	17230	2.295	2.335	2.375	2-3/8" ID NX 1/2 Drill Rod
236904	17230	2.358	2.398	2.438	2-3/8" ID & 2-7/16" ID
236904	17230	2.390	2.430	2.469	2-7/8" Tubing, 6.25 to 6.5, 2-7/8" OD 6.45# BX
236904	17230	2.420	2.460	2.500	2-7/16" ID & 2-1/2" ID
236904	17230	2.556	2.596	2.625	2-5/8" ID & 2-9/16" ID
236904	17230	2.608	2.648	2.688	2-5/8" ID & 2-11/16" ID

* Grapples are marked with this size
** Mandrel is 3-1/4" OD
*** Mandrel, Release Ring, Nut must be turned down 1/32" below min ID
**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
236904	17230	2.670	2.710	2.750	2-3/4" ID
236904	17230	2.921	2.961	3.000	3" ID & 2-15/16" ID NX Drive Csg.
236904	17230	3.046	3.086	3.126	3-1/16" ID & 3-1/8" ID
236904	17230	3.170	3.210	3.250	3-1/4" ID & 3-3/16" ID
236904	17230	3.264	3.304	3.344	3-11/32" ID & 3-9/32" ID
236854	1348	1.788	1.828	1.867	1.867" ID (Turn Body Down)***
236854	1348	1.796	1.836	1.876	1.875" ID (Turn Body Down)***
236854	1348	1.889	1.929	1.968	1.937" - 1.968" ID
236854	1348	1.952	1.992	2.041	2-3/8" Tubing - 4# - 4.70#
236854	1348	1.983	2.023	2.062	2.000" - 2.062" ID
236854	1348	2.045	2.085	2.125	2-1/8" ID (Turn Body Down)***
236854	1348	2.091	2.131	2.172	2-7/8" D.P., 9.75 - 10.4#
236854	1348	2.170	2.211	2.250	2-1/4" - 2-3/16" ID
236854	1348	2.186	2.226	2.266	2-17/64" ID
236854	1348	2.233	2.273	2.312	2-5/16" ID
236854	1348	2.249	2.289	2.329	2-7/8" OD D.P., 7.80# - 8.35#
236854	1348	2.295	2.335	2.375	2-3/8" ID NX 1/2 Drill Rod
236854	1348	2.358	2.398	2.438	2-3/8" ID & 2-7/16" ID
236854	1348	2.390	2.430	2.469	2-7/8" Tubing, 6.25 to 6.5, 2-7/8" OD 6.45# BX
236854	1348	2.420	2.460	2.500	2-7/16" ID & 2-1/2" ID
236854	1348	2.556	2.596	2.625	2-5/8" ID & 2-9/16" ID
236854	1348	2.608	2.648	2.688	2-5/8" ID & 2-11/16" ID
236854	1348	2.670	2.710	2.750	2-3/4" ID
236854	1348	2.921	2.961	3.000	3" ID & 2-15/16" ID NX Drive Csg.
236854	1348	3.046	3.086	3.126	3-1/16" ID & 3-1/8" ID
236854	1348	3.170	3.210	3.250	3-1/4" ID & 3-3/16" ID
236854	1348	3.264	3.304	3.344	3-11/32" ID & 3-9/32" ID
237004	17233	2.280	2.328	2.375	2-3/8" ID (Turn Body Down)***
237004	17233	2.351	2.399	2.446	2-3/8" - 2-7/16" ID (Turn Body Down)***
237004	17233	2.390	2.438	2.487	2-7/8" Tubing, 6.25 - 6.5# 2-7/8" D.P. 6.45#
237004	17233	2.468	2.516	2.563	2.562" - 2-15/32" ID
237004	17233	2.515	2.562	2.610	3-1/2" OD, 15.5# D.P.
237004	17233	2.593	2.641	2.688	2-11/16" - 2-5/8" ID

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** Mandrel is 3-1/4" OD
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**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237004	17233	2.671	2.718	2.766	3-1/2" OD, 13.3 - 12.4# D.P.
237004	17233	2.700	2.748	2.813	2-13/16" ID & 2-3/4" ID
237004	17233	2.827	2.875	2.922	3-1/2" OD, 10.2 - 11.2# D.P.
237004	17233	2.843	2.891	2.938	2-7/8" - 2-15/16" ID
237004	17233	2.890	2.938	2.992	3-1/2" OD, 9.20# - 10.20# D.P.
237004	17233	2.984	3.032	3.079	3-1/2" OD, 7.70# Tubing to 8.5# D.P.
237004	17233	3.030	3.078	3.125	3-1/8" - 3-1/16" ID
237004	17233	3.155	3.203	3.250	3-1/4" - 3-3/16" ID
237004	17233	3.297	3.345	3.392	3.340" - 3.382" ID, 4" OD, 12.50 -15# DP
237004	17233	3.437	3.485	3.532	3-1/2" ID
236954	1230	2.280	2.328	2.375	2-3/8" ID (Turn Body Down)***
236954	1230	2.351	2.399	2.446	2-3/8" - 2-7/16" ID (Turn Body Down)***
236954	1230	2.390	2.438	2.487	2-7/8" Tubing, 6.25 - 6.5# 2-7/8" DP 6.45#
236954	1230	2.468	2.516	2.563	2.562" - 2-15/32" ID
236954	1230	2.515	2.562	2.610	3-1/2" OD., 15.5# DP
236954	1230	2.593	2.641	2.688	2-11/16" - 2-5/8" ID
236954	1230	2.671	2.718	2.766	3-1/2" OD., 13.3 - 12.4# D.P
236954	1230	2.700	2.748	2.813	2-13/16" ID & 2-3/4" ID
236954	1230	2.827	2.875	2.922	3-1/2" OD, 10.2 - 11.2# DP
236954	1230	2.843	2.891	2.938	2-7/8" - 2-15/16" ID
236954	1230	2.890	2.938	2.992	3-1/2" OD, 9.20# - 10.20# DP
236954	1230	2.984	3.032	3.079	3-1/2" OD, 7.70# Tubing to 8.5# DP
236954	1230	3.030	3.078	3.125	3-1/8" - 3-1/16" ID
236954	1230	3.155	3.203	3.250	3-1/4" - 3-3/16" ID
236954	1230	3.297	3.345	3.392	3.340" - 3.382" ID, 4" OD, 12.50 - 15# DP
236954	1230	3.437	3.485	3.532	3-1/2" ID
237104	9412	2.881	2.933	2.992	3-1/2" OD, 9.20 - 10.20#
237104	9412	2.949	3.001	3.068	3-1/2" OD, 7.70 - 9.20#
237104	9412	3.021	3.073	3.125	3-1/8" ID
237104	9412	3.146	3.198	3.250	3-1/4" - 3-3/16" ID
237104	9412	3.256	3.308	3.364	4" OD, 12.50 - 14.00# DP
237104	9412	3.365	3.417	3.476	4" OD, 11.00 - 11.60#
237104	9412	3.444	3.496	3.548	4" OD, 9.50 - 11.00#

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**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237104	9412	3.522	3.574	3.625	3.500" - 3.625" ID
237104	9412	3.584	3.636	3.687	3-11/16" ID
237104	9412	3.646	3.698	3.750	3-3/4" ID
237154	9947	2.532	2.579	2.625	3-1/2" OD DP, 15.50#
237154	9947	2.671	2.718	2.764	3-1/2" OD DP, 13.30 - 12.40#
237154	9947	2.829	2.875	2.922	3-1/2" OD DP, 11.20 - 10.20#
237154	9947	2.985	3.032	3.078	2-1/2" OD DP, 8.50#
237254	**9487	3.218	3.291	3.364	4" OD, 12.50 - 14.00# Tubing (Turn Body Down)***
237254	9487	3.327	3.400	3.476	4" OD, 11.00 - 11.60# Tubing
237254	9487	3.406	3.479	3.548	4" OD, 9.50 - 11.00# Tubing
237254	9487	3.484	3.557	3.625	3-5/8" ID, & 3-9/16" ID
237254	9487	3.608	3.681	3.754	4-1/2" OD, 18.10 - 22# Tubing
237254	9487	3.671	3.744	3.826	4-1/2" OD, 15.35 - 18.10# Tubing
237254	9487	3.812	3.885	3.958	4-1/2" OD, 13.75 - 15.35# Tubing
237254	9487	3.874	3.947	4.026	4-1/2" OD, 11.00 - 13.75# Tubing
237254	9487	3.937	4.010	4.090	4-1/2" OD, 9.50 - 11.60# Tubing
237254	9487	4.134	4.207	4.276	5" OD, 18 - 21# Tubing
237254	9487	4.155	4.228	4.300	5" OD, 17.70 - 18.00# Tubing
237254	9487	4.358	4.431	4.506	5" Tubing, 12.04 - 15# (4.408) ID
237254	9487	4.406	4.479	4.560	5" OD, 11.5# Tubing
237254	9487	4.874	4.947	5.012	5-1/2", 14 - 17# Tubing
237204	**532	3.218	3.291	3.364	4" OD, 12.50 - 14.00# Tubing (Turn Body Down)***
237204	532	3.327	3.400	3.476	4" OD, 11.00 - 11.60# Tubing
237204	532	3.406	3.479	3.548	4" OD, 9.50 - 11.00# Tubing
237204	532	3.484	3.557	3.625	3-5/8" ID & 3-9/16" ID
237204	532	3.608	3.681	3.754	4-1/2" OD, 18.10 - 22# Tubing
237204	532	3.671	3.744	3.826	4-1/2" OD, 15.35 - 18.10# Tubing
237204	532	3.812	3.885	3.958	4-1/2" OD, 13.75 - 15.35# Tubing
237204	532	3.874	3.947	4.026	4-1/2" OD, 11.00 - 13.75# Tubing
237204	532	3.937	4.010	4.090	4-1/2" OD, 9.50 - 11.60# Tubing
237204	532	4.134	4.207	4.276	5" OD, 18 - 21# Tubing
237204	532	4.155	4.228	4.300	5" OD, 17.70 - 18.00# Tubing

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** Mandrel is 3-1/4" OD
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**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237204	532	4.358	4.431	4.506	5" Tubing, 12.04 - 15# (4.408) ID
237204	532	4.406	4.479	4.560	5" OD, 11.5# Tubing
237204	532	4.874	4.947	5.012	5-1/2", 14 - 17# Tubing
237354	17477	3.682	3.782	3.881	4-1/2" OD Tubing, 15.35 - 18.10#
237354	17477	3.761	3.861	3.958	4-1/2" OD Tubing, 13.75 - 15.35#
237354	17477	3.823	3.923	4.026	4-1/2" OD Tubing, 11.00 - 13.75#
237354	17477	3.886	3.986	4.090	4-1/2" OD, 9.50 - 11.60# Csg.
237354	17477	4.073	4.173	4.276	5" OD, 18.00 - 21.00# Csg.
237354	17477	4.214	4.314	4.408	5" OD, 15.00 - 18.00# Csg.
237354	17477	4.307	4.407	4.506	5" OD, 12.64 - 15.00# Csg.
237304	13202	3.682	3.782	3.881	4-1/2" OD Tubing. 15.35 - 18.10#
237304	13202	3.761	3.861	3.958	4-1/2" OD Tubing. 13.75 - 15.35#
237304	13202	3.823	3.923	4.026	4-1/2" OD Tubing. 11.00 - 13.75#
237304	13202	3.886	3.986	4.090	4-1/2" OD, 9.50 - 11.60# Csg.
237304	13202	4.073	4.173	4.276	5" OD, 18.00 - 21.00# Csg.
237304	13202	4.214	4.314	4.408	5" OD, 15.00 - 18.00# Csg.
237304	13202	4.307	4.407	4.506	5" OD, 12.64 - 15.00# Csg.
237454	9682	4.093	4.179	4.276	5" OD, 18 - 21# Csg.
237454	9682	4.234	4.320	4.408	5" OD, 15 - 18# Csg.
237454	9682	4.390	4.476	4.562	5" OD, 11.5 - 15# Csg.
237454	9682	4.469	4.555	4.642	5" OD, 9 - 13# Csg.
237454	9682	4.515	4.601	4.696	5" OD, 8#, 5-1/2" OD, 23 - 25# Csg.
237454	9682	4.609	4.695	4.782	5-1/2" OD, 20 - 23# Csg.
237454	9682	4.719	4.805	4.892	5-1/2" OD, 17 - 20# Csg.
237454	9682	4.875	4.961	5.048	5-1/2" OD, 14 - 17# Csg.
237454	9682	4.922	5.008	5.095	5-3/4" OD, 19.5 - 22.5# Csg.
237454	9682	5.015	5.101	5.192	5-3/4" OD, 17 - 19.5# Csg., 5-1/2" 9 - 13# Csg.
237454	9682	5.124	5.210	5.297	5-3/4" OD, 14 - 17# Csg.
237454	9682	5.218	5.304	5.390	6" OD, 20 - 23# Csg.
237454	9682	5.281	5.367	5.454	6" OD, 17 - 20# Csg.
237454	9682	5.375	5.461	5.552	6" OD, 14 - 17# Csg.
237454	9682	5.500	5.586	5.675	6-5/8" OD, 32 - 34# Csg.

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**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237404	1334	4.093	4.179	4.276	5" OD, 18 - 21# Csg.
237404	1334	4.234	4.320	4.408	5" OD, 15 - 18# Csg.
237404	1334	4.390	4.476	4.562	5" OD, 11.5 - 15# Csg.
237404	1334	4.469	4.555	4.642	5" OD, 9 - 13# Csg.
237404	1334	4.515	4.601	4.696	5" OD, 8#. 5-1/2" OD, 23 - 25# Csg.
237404	1334	4.609	4.695	4.782	5-1/2" OD, 20 - 23# Csg.
237404	1334	4.719	4.805	4.892	5-1/2" OD, 17 - 20# Csg.
237404	1334	4.875	4.961	5.048	5-1/2" OD, 14 - 17# Csg.
237404	1334	4.922	5.008	5.095	5-3/4" OD, 19.5 - 22.5# Csg.
237404	1334	5.015	5.101	5.192	5-3/4" OD, 17 - 19.5# Csg., 5-1/2" 9 - 13# Csg.
237404	1334	5.124	5.210	5.297	5-3/4" OD, 14 - 17# Csg.
237404	1334	5.218	5.304	5.390	6" OD, 20 - 23# Csg.
237404	1334	5.281	5.367	5.454	6" OD, 17 - 20# Csg.
237404	1334	5.375	5.461	5.552	6" OD, 14 - 17# Csg.
237404	1334	5.500	5.586	5.675	6-5/8" OD, 32 - 34# Csg.
237654	17236	5.000	5.134	5.266	6" OD, 23 - 26# Csg.
237654	17236	5.093	5.227	5.360	6" OD, 20 - 23# Csg.
237654	17236	5.187	5.321	5.454	6" OD, 17 - 20# Csg.
237654	17236	5.280	5.414	5.547	6" OD, 14 - 17# Csg.
237654	17236	5.406	5.540	5.675	6" OD, 10.5 - 14# Csg.
237654	17236	5.530	5.664	5.797	6-5/8" OD, 28 - 32# Csg.
237654	17236	5.593	5.727	5.860	6-5/8" OD, 26 - 29# Csg.
237654	17236	5.656	5.790	5.923	6-5/8" OD, 24 - 28# Csg.
237654	17236	5.671	5.805	5.938	7" OD, 38 - 40# Csg.
237654	17236	5.781	5.915	6.049	6-5/8" OD, 20 - 24# Csg.
237654	17236	5.796	5.930	6.063	7" OD, 33.7 - 38# Csg.
237654	17236	5.875	6.009	6.142	6-5/8" OD, 17 - 22# Csg.
237654	17236	5.937	6.071	6.204	7" OD, 29 - 33.7# Csg.
237654	17236	6.015	6.149	6.282	7" OD, 26 - 29# Csg.
237654	17236	6.140	6.274	6.407	7" OD, 22 - 26# Csg.
237654	17236	6.202	6.335	6.469	7" OD, 20 - 23# Csg.
237654	17236	6.281	6.415	6.548	7" OD, 17 - 20# Csg.

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**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237604	9717	5.000	5.134	5.266	6" OD, 23 - 26# Csg.
237604	9717	5.093	5.227	5.360	6" OD, 20 - 23# Csg.
237604	9717	5.187	5.321	5.454	6" OD, 17 - 20# Csg.
237604	9717	5.280	5.414	5.547	6" OD, 14 - 17# Csg.
237604	9717	5.406	5.540	5.675	6" OD, 10.5 - 14# Csg.
237604	9717	5.530	5.664	5.797	6-5/8" OD, 28 - 32# Csg.
237604	9717	5.593	5.727	5.860	6-5/8" OD, 26 - 29# Csg.
237604	9717	5.656	5.790	5.923	6-5/8" OD, 24 - 28# Csg.
237604	9717	5.671	5.805	5.938	7" OD, 38 - 40# Csg.
237604	9717	5.781	5.915	6.049	6-5/8" OD, 20 - 24# Csg.
237604	9717	5.796	5.930	6.063	7" OD, 33.7 - 38# Csg.
237604	9717	5.875	6.009	6.142	6-5/8" OD, 17 - 22# Csg.
237604	9717	5.937	6.071	6.204	7" OD, 29 - 33.7# Csg.
237604	9717	6.015	6.149	6.282	7" OD, 26 - 29# Csg.
237604	9717	6.140	6.274	6.407	7" OD, 22 - 26# Csg.
237604	9717	6.202	6.335	6.469	7" OD, 20 - 23# Csg.
237604	9717	6.281	6.415	6.548	7" OD, 17 - 20# Csg.
237804	17239	5.770	5.970	6.173	7" OD, 30 - 40# & 6-5/8" OD, 24# Csg.
237804	17239	5.895	6.095	6.297	7" OD, 26 - 35# Csg.
237804	17239	6.020	6.220	6.423	7" OD, 22 - 33.7# Csg.
237804	17239	6.270	6.470	6.673	7" OD, 13 - 24# Csg.
237804	17239	6.364	6.564	6.765	7-5/8" OD, 33.7 - 45# Csg.
237804	17239	6.567	6.767	6.969	7-5/8" OD, 26.4 - 39# Csg.
237804	17239	6.864	7.064	7.263	7-5/8" OD, 14.75 - 26.4# Csg.
237804	17239	6.987	7.187	7.391	8-1/8" OD, 32 - 42# Csg.
237804	17239	7.225	7.425	7.628	8" OD, 16 - 26# Csg.
237804	17239	7.239	7.439	7.642	7-9/16" ID Csg.
237804	17239	7.489	7.689	7.892	8-5/8" OD, 36 - 48# Csg.
237804	17239	7.755	7.955	8.157	8-5/8" OD, 24 - 38# Csg. 9" OD, 40 - 55# Csg.
237804	17239	7.911	8.111	8.313	8-5/8" OD, 17.6 - 29.35# Csg.
237804	17239	7.958	8.158	8.360	9" OD, 34 - 45# Csg.

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**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237704	9268	5.770	5.970	6.173	7" OD, 30 - 40# & 6-5/8" OD, 24# Csg.
237704	9268	5.895	6.095	6.297	7" OD, 26 - 35# Csg.
237704	9268	6.020	6.220	6.423	7" OD, 22 - 33.7# Csg.
237704	9268	6.270	6.470	6.673	7" OD, 13 - 24# Csg.
237704	9268	6.364	6.564	6.765	7-5/8" OD, 33.7 - 45# Csg.
237704	9268	6.567	6.767	6.969	7-5/8" OD, 26.4 - 39# Csg.
237704	9268	6.864	7.064	7.263	7-5/8" OD, 14.75 - 26.4# Csg.
237704	9268	6.987	7.187	7.391	8-1/8" OD, 32 - 42# Csg.
237704	9268	7.225	7.425	7.628	8" OD, 16 - 26# Csg.
237704	9268	7.239	7.439	7.642	7-9/16" ID Csg.
237704	9268	7.489	7.689	7.892	8-5/8" OD, 36 - 48# Csg.
237704	9268	7.755	7.955	8.157	8-5/8" OD, 24 - 38# Csg., 9" OD, 40 - 55# Csg.
237704	9268	7.911	8.111	8.313	8-5/8" OD, 17.6 - 29.35# Csg.
237704	9268	7.958	8.158	8.360	9" OD, 34 - 45# Csg.
237854	9574	7.102	7.245	7.385	8" OD, 26# & 8-1/8" OD, 32 - 42# Csg.
237854	9574	6.352	7.495	7.635	8" OD, 16 - 26# & 8-1/8" OD, 28 - 32.20# Csg.
237854	9574	7.537	7.686	7.825	8-5/8" OD, 36 - 48# Csg.
237854	9574	7.759	7.902	8.042	8-5/8" OD, 28 - 38# & 9" OD, 45 - 55# Csg.
237854	9574	7.981	8.125	8.290	8-5/8" OD, 17.5 - 29.35# & 9" OD, 34 - 45# Csg.
237854	9574	8.435	8.578	8.760	9" OD, 19# & 9-5/8" OD, 43.5 - 58# Csg.
237854	9574	8.790	8.833	9.073	9-5/8" OD, 29.3 - 42# Csg.
238004	17245	7.537	7.690	7.846	8-5/8" OD, 36 - 48# Csg.
238004	17245	7.729	7.882	8.034	8-5/8" OD, 28 - 38# & 9" OD, 45-55# Csg.
238004	17245	7.981	8.134	8.315	8-5/8" OD, 17.5 - 29.35# & 9" OD, 34 - 45# Csg.
238004	17245	8.435	8.588	8.755	9" OD, 19# & 9-5/8" OD, 43.5 - 58# Csg.
238004	17245	8.535	8.688	8.846	9-5/8" OD, 40 - 53.5# Csg.
238004	17245	8.760	8.913	9.065	9-5/8" OD, 29.3 - 42# Csg.
238004	17245	9.479	9.632	9.784	10-3/4" OD, 55.5 - 65.7# Csg. ****
238004	17245	9.760	9.913	10.065	10-3/4" OD, 40 - 55.5# Csg. ****
238004	17245	9.885	10.038	10.192	10-3/4" OD, 32.75 - 48.0# Csg. ****
238004	17245	10.729	10.882	11.034	11-3/4" OD, 47 - 60# Csg. ****
238004	17245	10.854	11.007	11.159	11-3/4" OD, 38 - 54# Csg. ****
238004	17245	12.228	12.381	12.534	13-3/8" OD, 61 - 85# Csg. ****
238004	17245	12.415	12.568	12.721	13-3/8" OD, 48 - 68# Csg. ****

* Grapples are marked with this size
** Mandrel is 3-1/4" OD
*** Mandrel, Release Ring, Nut must be turned down 1/32" below min ID
**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
237954	9382	7.537	7.690	7.846	8-5/8" OD, 36 - 48# Csg.
237954	9382	7.729	7.882	8.034	8-5/8" OD, 28 - 38# & 9" OD, 45 - 55# Csg.
237954	9382	7.981	8.134	8.315	8-5/8" OD, 17.5 - 29.35# & 9" OD, 34 - 45# Csg.
237954	9382	8.435	8.588	8.755	9" OD, 19# & 9-5/8" OD, 43.5 - 58# Csg.
237954	9382	8.535	8.688	8.846	9-5/8" OD, 40 - 53.5# Csg.
237954	9382	8.760	8.913	9.065	9-5/8" OD, 29.3 - 42# Csg.
237954	9382	9.479	9.632	9.784	10-3/4"OD,55.5 - 65.7#Csg.
237954	9382	9.760	9.913	10.065	10-3/4" OD, 40 - 55.5# Csg. ****
237954	9382	9.885	10.038	10.192	10-3/4" OD, 32.75 - 48.0# Csg. ****
237954	9382	10.729	10.882	11.034	11-3/4" OD, 47 - 60# Csg. ****
237954	9382	10.854	11.007	11.159	11-3/4" OD, 38 - 54# Csg. ****
237954	9382	12.228	12.381	12.534	13-3/8" OD, 61 - 85# Csg. ****
237954	9382	12.415	12.568	12.721	13-3/8" OD, 48 - 68# Csg. ****
238204	17248	8.435	8.597	8.755	9-5/8" OD, 47 - 58# Csg.
238204	17248	8.519	8.681	8.844	9-5/8" OD, 40 - 53.5# Csg.
238204	17248	8.596	8.758	8.921	9-5/8" OD, 36 - 43.5# Csg.
238204	17248	8.738	8.900	9.063	9-5/8" OD, 29.3 - 42# Csg.
238204	17248	9.738	9.900	10.063	10-3/4" OD, 40 - 55.5# Csg.
238204	17248	9.867	10.029	10.192	10-3/4" OD, 32.75 - 48# Csg.
238204	17248	9.225	9.387	9.550	10-3/4" OD, 71 - 76# Csg.
238204	17248	11.206	11.369	11.531	11.500" ID Csg. ****
238204	17248	10.581	10.743	10.906	11-3/4" OD, 54 - 65# Csg.
238204	17248	10.832	10.994	11.157	11-3/4" OD, 38 - 54# Csg.
238204	17248	10.612	10.774	10.937	11-3/4" OD, 60# Csg.
238204	17248	10.675	10.837	11.000	11-3/4" OD, 47 - 60# Csg.
238204	17248	11.643	11.805	11.968	13-3/8" OD, 11.937" ID Csg. ****
238204	17248	11.674	11.837	12.000	13-3/8" OD, 96# & 11.975" ID Csg. ****
238204	17248	12.022	12.184	12.347	13-3/8" OD, 72 - 92# Csg. ****
238204	17248	12.393	12.555	12.718	13-3/8" OD, 48 - 68# Csg. ****
238204	17248	12.455	12.617	12.780	12-3/4" ID Csg. ****
238204	17248	13.143	13.305	13.468	14" OD, 42 - 57# Csg. ****
238204	17248	13.312	13.474	13.637	13.599" ID & 13.609" ID Csg. ****
238204	17248	13.330	13.492	13.655	13-5/8" ID Csg. ****
238204	17248	15.112	15.274	15.437	16" OD, 55 - 75# Csg. ****
238204	17248	14.925	15.087	15.250	16" OD, 65 - 84# Csg. ****

* Grapples are marked with this size
** Mandrel is 3-1/4” OD
*** Mandrel, Release Ring, Nut must be turned down 1/32” below min ID
**** Segmented

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Spear Grapple Range Chart (continued)

H.E. Grapple #	Replaces Bowen Grapple #	Min. I.D. (in.)	Nominal I.D. * (in.)	Max. I.D. (in.)	Description
238204	17248	17.331	17.493	17.656	17-1/2" ID Csg. ****
238204	17248	18.862	19.024	19.187	20" OD, 90 - 106.5# Csg. ****
238204	17248	17.487	17.650	17.812	****
238104	9283	8.435	8.597	8.755	9-5/8" OD, 47 - 58# Csg.
238104	9283	8.519	8.681	8.844	9-5/8" OD, 40 - 53.5# Csg.
238104	9283	8.596	8.758	8.921	9-5/8" OD, 36 - 43.5# Csg.
238104	9283	8.738	8.900	9.063	9-5/8" OD, 29.3 - 42# Csg.
238104	9283	9.738	9.900	10.063	10-3/4" OD, 40 - 55.5# Csg.
238104	9283	9.867	10.029	10.192	10-3/4" OD, 32.75 - 48# Csg.
238104	9283	9.225	9.387	9.550	10-3/4" OD, 71 - 76# Csg.
238104	9283	11.206	11.369	11.531	11.500" ID Csg. ****
238104	9283	10.581	10.743	10.906	11-3/4" OD, 54 - 65# Csg.
238104	9283	10.832	10.994	11.157	11-3/4" OD, 38 - 54# Csg.
238104	9283	10.612	10.774	10.937	11-3/4" OD, 60# Csg.
238104	9283	10.675	10.837	11.000	11-3/4" OD, 47 - 60# Csg.
238104	9283	11.643	11.805	11.968	13-3/8" OD & 11.937" ID Csg. ****
238104	9283	11.674	11.837	12.000	13-3/8" OD, 96# & 11.975" ID Csg. ****
238104	9283	12.022	12.184	12.347	13-3/8" OD, 72 - 92# Csg. ****
238104	9283	12.393	12.555	12.718	13-3/8" OD, 48 - 68# Csg. ****
238104	9283	12.455	12.617	12.780	12-3/4" ID Csg. ****
238104	9283	13.143	13.305	13.468	14" OD, 42 - 57# Csg. ****
238104	9283	13.312	13.474	13.637	13.599" ID & 13.609" ID Csg. ****
238104	9283	13.330	13.492	13.655	13-5/8" ID Csg. ****
238104	9283	15.112	15.274	15.437	16" OD, 55 - 75# Csg. ****
238104	9283	14.925	15.087	15.250	16" OD, 65 - 84# Csg. ****
238104	9283	17.331	17.493	17.656	17-1/2" ID Csg. ****
238104	9283	18.862	19.024	19.187	20" OD, 90 - 106.5# Csg. ****
238104	9283	17.487	17.650	17.812	****
238254	27782	12.097	12.259	12.422	13-3/8" OD, 68 - 85# Csg.
238254	27782	12.390	12.552	12.715	13-3/8" OD, 48 - 61# Csg.

* Grapples are marked with this size
** Mandrel is 3-1/4” OD
*** Mandrel, Release Ring, Nut must be turned down 1/32” below min ID
**** Segmented

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Spear Pack-off Part Numbers

O.D. (in.)	Weight (Lb/Ft)	Assembly No.	Mandrel	Adapter Sub	Packing Cup	Thimble
2 3/8	4.6	HPO9590/XX/01	HPM9591/01	HAS9592/XX	HPC10716	HTH6435
2 7/8	6.4	HPO9595/XX/02	HPM9596/02	HAS9597/XX	HPC10047	HTH6436
3 1/2	8.5-10.2	HPO9595/XX/03	HPM9596/03	HAS9597/XX	HPC14960	HTH6437
4	10.8-11.9	HPO9600/XX/04	HPM9601/04	HAS9602/XX	HPC14036	HTH6696
4	10.8-11.9	HPO9605/XX/04	HPM9606/04	HAS9607/XX	HPC14036	HTH6696
4 1/2	9.5-12.6	HPO9604/XX/05	HPM9608/05	HAS9609/XX	HPC30509	HTH18319
4 3/4	16	HPO9604/XX/05	HPM9608/05	HAS9609/XX	HPC30509	HTH18319
5	13-15	HPO9610/XX/06	HPM9611/06	HAS9612/XX	HPC25389	HTH6448
5	18-21	HPO9610/XX/07	HPM9611/07	HAS9612/XX	HPC17831	HTH6754
5 1/2	13-15	HPO9760/XX/08	HPM9761/08	HAS9612/XX	HPC22624	HTH18320
5 1/2	15.5-17	HPO9760/XX/09	HPM9761/09	HAS9612/XX	HPC22626	HTH18320
5 1/2	17-20	HPO9760/XX/10	HPM9761/10	HAS9612/XX	HPC19710	HTH23230
5 1/2	23	HPO9760/XX/10	HPM9761/10	HAS9612/XX	HPC19710	HTH23230
6	14-18	HPO9775/XX/11	HPM9776/11	HAS9777/XX	HPC14721	HTH8160
6	20	HPO9775/XX/12	HPM9776/12	HAS9777/XX	HPC14714	HTH18321
6 5/8	20-22	HPO9780/XX/13	HPM9781/13	HAS9777/XX	HPC19389	HTH18322
6 5/8	24-28	HPO9780/XX/14	HPM9781/14	HAS9777/XX	HPC19277	HTH18322
6 5/8	32	HPO9780/XX/15	HPM9781/15	HAS9777/XX	HPC30880	HTH15532
7	17-20	HPO9615/XX/16	HPM9616/16	HAS9617/XX	HPC17819	HTH17542
7	22-24	HPO9615/XX/17	HPM9616/17	HAS9617/XX	HPC17461	HTH17542
7	26-30	HPO9615/XX/18	HPM9616/18	HAS9617/XX	HPC17356	HTH17543
7	32-35.3	HPO9615/XX/13	HPM9616/13	HAS9617/XX	HPC19389	HTH18322
7	38	HPO9615/XX/14	HPM9616/14	HAS9617/XX	HPC19277	HTH18322
7 5/8	26.4-29.7	HPO9770/XX/19	HPM9771/19	HAS9617/XX	HPC19391	HTH6366
7 5/8	29.7-33.7	HPO9770/XX/20	HPM9771/20	HAS9617/XX	HPC21293	HTH6366
7 5/8	39	HPO9770/XX/21	HPM9771/21	HAS9617/XX	HPC23051	HTH6366
8	26	HPO9620/XX/22	HPM9621/22	HAS9622/XX	HPC93421	HTH93176
8 5/8	28-36	HPO9620/XX/23	HPM9621/23	HAS9622/XX	HPC16110	HTH17546
8 5/8	36-40	HPO9620/XX/24	HPM9621/24	HAS9622/XX	HPC16113	HTH17545
8 5/8	40-49	HPO9620/XX/25	HPM9621/25	HAS9622/XX	HPC16115	HTH17545
9	40-45	HPO9620/XX/26	HPM9621/26	HAS9622/XX	HPC15941	HTH17545
8 5/8	28-36	HPO9625/XX/31	HPM9626/31	HAS9627/XX	HPC16111	HTH17545
9 5/8	36-43.5	HPO9625/XX/27	HPM9626/27	HAS9627/XX	HPC10354	HTH17575
9 5/8	47-53.5	HPO9625/XX/28	HPM9626/28	HAS9627/XX	HPC33850	HTH34702
10 3/4	32.8-55.5	HPO9765/XX/29	HPM9766/29	HAS9627/XX	HPC13197	HTH1478
13 3/8	48-72	HPO55999/XX/30	HPM56000/30	HAS9627/XX	HPC16298	HTH16312

XX – Connection Required

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Spear Pack-off Component Part Numbers

Adapter Sub	
Houston Engineers #	Replaces Bowen #
HAS9592/XX	9592
HAS9597/XX	9597
HAS9602/XX	9602
HAS9607/XX	9607
HAS9609/XX	9609
HAS9612/XX	9612
HAS9777/XX	9777
HAS9617/XX	9617
HAS9622/XX	9622
HAS9627/XX	9627

Mandrel	
Houston Engineers #	Replaces Bowen #
HPM9591	9591
HPM9596	9596
HPM9601	9601
HPM9606	9606
HPM9608	9608
HPM9611	9611
HPM9761	9761
HPM9776	9776
HPM9781	9781
HPM9616	9616
HPM9771	9771
HPM9621	9621
HPM9626	9626
HPM9766	9766
HPM56000	56000

Packing Cup		Thimble		
Houston Engineers #	Replaces Guiberson #	Houston Engineers #	Replaces Guiberson #	Assy. Ref. #
HPC10716	10716	HTH6435	6435	01
HPC10047	10047	HTH6436	6436	02
HPC14960	14960	HTH6437	6437	03
HPC14036	14036	HTH6696	6696	04
HPC30509	30509	HTH18319	18319	05
HPC25389	25389	HTH6448	6448	06
HPC17831	17831	HTH6754	6754	07
HPC22624	22624	HTH18320	18320	08
HPC22626	22626	HTH18320	18320	09
HPC19710	19710	HTH23230	23230	10
HPC14721	14721	HTH8160	8160	11
HPC14714	14714	HTH18321	18321	12
HPC19389	19389	HTH18322	18322	13
HPC19277	19277	HTH18322	18322	14
HPC30880	30880	HTH15532	15532	15
HPC17819	17819	HTH17542	17542	16
HPC17461	17461	HTH17542	17542	17
HPC17356	17356	HTH17543	17543	18
HPC19391	19391	HTH6366	6366	19
HPC21293	21293	HTH6366	6366	20
HPC23051	23051	HTH6366	6366	21
HPC93421	93421	HTH93176	93176	22
HPC16111	16111	HTH17545	17545	23
HPC16113	16113	HTH17545	17545	24
HPC16115	16115	HTH17545	17545	25
HPC15941	15941	HTH17545	17545	26
HPC10354	10354	HTH17575	17575	27
HPC33850	33850	HTH34702	34702	28
HPC13197	13197	HTH1478	1478	29
HPC16298	16298	HTH16312	16312	30
HPC16111	16111	HTH17545	17545	31

XX – Connection Required

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Catch Size Slash Numbers Style "G", "J", "A", "B" Overshots

Catch Size (in.)	Slash #
1/2	16
5/8	20
3/4	24
7/8	28
1	32
1 1/8	36
1 1/4	40
1 3/8	44
1 1/2	48
1 5/8	52
1 3/4	56
1 7/8	60
2	64
2 1/16	66
2 1/8	68
2 1/4	72
2 3/8	76
2 1/2	80
2 9/16	82
2 5/8	84
2 3/4	88
2 7/8	92
3	96
3 1/8	100
3 1/4	104
3 3/8	108
3 1/2	112
3 5/8	116
3 3/4	120
3 7/8	124
4	128
4 1/8	132
4 1/4	136

Catch Size (in.)	Slash #
4 3/8	140
4 1/2	144
4 5/8	148
4 3/4	152
4 7/8	156
5	160
5 1/8	164
5 1/4	168
5 3/8	172
5 1/2	176
5 5/8	180
5 3/4	184
5 7/8	188
6	192
6 1/8	196
6 1/4	200
6 3/8	204
6 1/2	208
6 5/8	212
6 3/4	216
6 7/8	220
7	224
7 1/8	228
7 1/4	232
7 3/8	236
7 1/2	240
7 5/8	244
7 3/4	248
7 7/8	252
8	256
8 1/8	260
8 1/4	264
8 3/8	268

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Catch Size Slash Numbers Style "G", "J", "A", "B" Overshots (continued)

Catch Size (in.)	Slash #
8 1/2	272
8 5/8	276
8 3/4	280
8 7/8	284
9	288
9 1/8	292
9 1/4	296
9 3/8	300
9 1/2	304
9 5/8	308
9 3/4	312
9 7/8	316
10	320
10 1/8	324
10 1/4	328
10 3/8	332
10 1/2	336
10 5/8	340
10 3/4	344
10 7/8	348
11	352
11 1/8	356
11 1/4	360
11 3/8	364
11 1/2	368
11 5/8	372
11 3/4	376
11 7/8	380
12	384
12 1/8	388
12 1/4	392
12 3/8	396

Catch Size (in.)	Slash #
12 1/2	400
12 5/8	404
12 3/4	408
12 7/8	412
13	416
13 1/8	420
13 1/4	424
13 3/8	428
13 1/2	432
13 5/8	436
13 3/4	440
13 7/8	444
14	448
14 1/8	452
14 1/4	456
14 3/8	460
14 1/2	464
14 5/8	468
14 3/4	472
14 7/8	476
15	480
15 1/8	484
15 1/4	488
15 3/8	492
15 1/2	496
15 5/8	500
15 3/4	504
15 7/8	508
16	512
16 1/8	516
16 1/4	520

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Catch Size Slash Numbers Style "G", "J", "A", "B" Overshots (continued)

Catch Size (in.)	Slash #
5/16	10
11/32	11
3/8	12
7/16	14
9/16	18
11/16	22
13/16	26
15/16	30
1 1/16	34
1 3/16	38
1 5/16	42
1.315	1.315
1 7/16	46
1 9/16	50
1.660	1.660
1 11/16	54
1 13/16	58
1.900	1.900
1 15/16	62
2 1/16	66
2 3/32	67
2 3/16	70
2.200	2.200
2 5/16	74
2.330	2.330
2 7/16	78
2 9/16	82
2 19/32	83
2 21/32	85
2 11/16	86
2.702	2.702
2 13/16	90
2.900	2.900
2 15/16	94

Catch Size (in.)	Slash #
3 1/16	98
3 3/32	99
3 3/16	102
3.220	3.220
3 5/16	106
3 7/16	110
3 9/16	114
3 19/32	115
3 21/32	117
3 11/16	118
3 13/16	122
3 15/16	126
4 1/16	130
4 3/16	134
4 5/16	138
4 9/16	146
4 11/16	150
4 13/16	154
4 15/16	158

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Outer Seals

H.E. Assy. #	Bowen Assy. #	H.E. Outer Seal #	Bowen Outer Seal #
225000	B-8919	H118187	568-232
225050	C-10199	H118177	568-227
225100	16395	H118175	568-226
225150	9305	H118179	568-228
225200	M-9305	H118179	568-228
225250	C-5072	H118179	568-228
225300	C-4623	H118181	568-229
225350	C-4741	H118179	568-228
225400	C-5080	H118183	568-230
225450	9270	H118189	568-233
225500	9270	H118189	568-233
225550	C-1827	H118189	568-233
225600	37585	H118191	568-234
225650	C-1835	H118191	568-234
225700	21300	H118197	568-237
225750	C-5101	H118191	568-234
225800	C-4736	H118189	568-233
225850	C-5104	H118191	568-234
225900	1443	H118179	568-228
225950	4390	H118189	568-233
226000	9105	H118189	568-233
226050	8220	H118189	568-233
226100	N-9105	H118189	568-233
226150	C-5115	H118195	568-236
226200	C-5098	H118193	568-235
226250	C-4822	H118193	568-235
226300	C-5126	H118197	568-237
226350	9630	H118207	568-242
226400	C-5112	H118195	568-236
226450	9635	H118205	568-241
226500	N-9635	H118205	568-241
226550	C-4619	H118199	568-238
226600	C-9773	H118203	568-240
226650	C-5123	H118197	568-237
226700	C-3793	H118197	568-237
226750	17420	H118201	568-239
226800	17201	H118201	568-239

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Outer Seals (continued)

H.E. Assy. #	Bowen Assy. #	H.E. Outer Seal #	Bowen Outer Seal #
226850	C-5151	H118201	568-239
226900	1255	H118201	568-239
226950	C-5129	H118203	568-240
227000	A1707	H118205	568-241
227050	N-9109	H118201	568-239
227100	12275	H118201	568-239
227150	9109	H118201	568-239
227200	9120	H118201	568-239
227250	N-9120	H118201	568-239
227300	C-9296	H118205	568-241
227350	C-5139	H118205	568-241
227400	C-4732	H118203	568-240
227450	5168	H118207	568-242
227500	C-5154	H118207	568-242
227550	C-5148	H118201	568-239
227600	9725	H118203	568-240
227650	C-5428	H118207	568-242
227700	C-4561	H118203	568-240
227750	C-4686	H118203	568-240
227800	C-7497	H118205	568-241
227850	C-5162	H118211	568-244
227900	4716	H118211	568-244
227950	C-5136	H118205	568-241
228000	9515	H118205	568-241
228050	C-5142	H118215	568-246
228100	C-5165	H118215	568-246
228150	C-5425	H118209	568-243
228200	C-4969	H118217	568-247
228250	5896	H118211	568-244
228300	C-4819	H118211	568-244
228350	C-3796	H118215	568-246
228400	5698	H118217	568-247
228450	M-5698	H118217	568-247
228500	C-5168	H118219	568-248
228550	8975	H118217	568-247
228600	N-8975	H118217	568-247
228650	C-7096	H118221	568-249

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Outer Seals (continued)

H.E. Assy. #	Bowen Assy. #	H.E. Outer Seal #	Bowen Outer Seal #
228700	C-11823	H118225	568-251
228750	C-4814	H118215	568-246
228800	C-5171	H118223	568-250
228850	5737	H118221	568-249
228900	C-4844	H118221	568-249
228950	9026	H118221	568-249
229000	8940	H118219	568-248
229050	C-4829	H118219	568-248
229100	912	H118223	568-250
229150	D-912	H118223	568-250
229200	7787	H118223	568-250
229250	C-7093	H118221	568-249
229300	3061	H118223	568-250
229350	4770	H118231	568-254
229400	6655	H118227	568-252
229450	N-6655	H118227	568-252
229500	4773	H118227	568-252
229550	C-4825	H118223	568-250
229600	C-5178	H118231	568-254
229650	8625	H118229	568-253
229700	4776	H118231	568-254
229750	C-5185	H118233	568-255
229800	9038	H118233	568-255
229850	C-5174	H118227	568-252
229900	C-5193	H118235	568-256
229950	8978	H118233	568-255
230000	8943	H118227	568-252
230050	C-5176	H118231	568-254
230100	C-5196	H118239	568-258
230150	C-3810	H118233	568-255
230200	C-5206	H118241	568-259
230250	6150	H118395	568-435
230300	D-6150	H118395	568-435
230350	C-4689	H118395	568-435
230400	C-4691	H118241	568-259
230450	12567	H118239	568-258
230500	9692	H118239	568-258

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Outer Seals (continued)

H.E. Assy. #	Bowen Assy. #	H.E. Outer Seal #	Bowen Outer Seal #
230550	12565	H118239	568-258
230600	N-9692	H118239	568-258
230650	9996	H118239	568-258
230750	M-9009	H118241	568-259
230800	9746	H118241	568-259
230850	247	H118399	568-437
230900	C-3364	H118399	568-437
230950	7572	H118399	568-437
231000	8741	H118241	568-259
231050	1873	H118241	568-259
231100	19090	H118241	568-259
231150	N-8741	H118241	568-259
231200	C-5344	H118243	568-260
231250	M-9860	H118241	568-259
231300	9860	H118241	568-259
231350	9677	H118241	568-259
231400	C-5204	H118241	568-259
231450	9163	H118243	568-260
231500	C-5214	H118245	568-261
231550	4785	H118243	568-260
231600	N-4785	H118243	568-260
231650	B-11322	H118243	568-260
231700	C2108	H118401	568-438
231750	C-8841	H118401	568-438
231800	7791	H118401	568-438
231850	9678	H118401	568-438
231900	9983	H118401	568-438
231950	D-7791	H118401	568-438
232000	16500	H118245	568-261
232050	C-5222	H118245	568-261
232100	8995	H118245	568-261
232150	N-8995	H118245	568-261
232200	C-5342	H118403	568-439
232250	9939	H118243	568-260
232300	8949	H118243	568-260
232350	M-9339	H118243	568-260
232400	C-3263	H118247	568-262

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Outer Seals (continued)

H.E. Assy. #	Bowen Assy. #	H.E. Outer Seal #	Bowen Outer Seal #
232450	9815	H118245	568-261
232500	9217	H118245	568-261
232550	2380	H118243	568-260
232600	7796	H118243	568-260
232650	C-3032	H118243	568-260
232700	9570	H118247	568-262
232750	275	H118245	568-261
232800	C-3833	H118245	568-261
232850	17208	H118245	568-261
232900	C-5354	H118250	568-263
232950	C-5233	H118251	568-264
233000	4793	H118250	568-263
233050	6140	H118407	568-441
233100	7800	H118407	568-441
233150	C-4817	H118407	568-441
233200	12692	H118251	568-264
233250	C-7101	H118251	568-264
233300	C-5249	H118253	568-265
233350	4796	H118250	568-263
233400	9290	H118251	568-264
233450	7805	H118250	568-263
233500	C-5352	H118250	568-263
233550	C-5257	H118253	568-265
233600	9850	H118251	568-264
233650	5257	H118253	568-265
233700	C-5230	H118250	568-263
233750	4816	H118253	568-265
233800	C-7099	H118251	568-264
233850	C-5265	H118253	568-265
233900	C-5241	H118251	568-264
233950	1665	H118253	568-265
234000	7810	H118253	568-265
234050	C-1500	H118253	568-265
234100	4834	H118257	568-267
234150	264	H118415	568-445
234200	N-264	H118415	568-445
234250	C-4179	H118415	568-445

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Outer Seals (continued)

H.E. Assy. #	Bowen Assy. #	H.E. Outer Seal #	Bowen Outer Seal #
234300	C-5284	H118255	568-266
234350	4837	H118259	568-268
234400	C-1230	H118259	568-268
234450	8960	H118259	568-268
234500	M-8960	H118259	568-268
234550	C-5281	H118259	568-268
234600	C-5297	H118261	568-269
234650	8963	H118419	568-447
234700	C-5305	H118263	568-270
234750	5321	H118263	568-270
234800	C-5321	H118263	568-270
234850	C-5292	H118419	568-447
234900	C-1870	H118419	568-447
234950	C-12822	H118265	568-271
235000	C-5313	H118399	568-437
235050	26255	H118269	568-273
235100	15250	H118267	568-272
235150	5329	H118271	568-274
235200	C-5329	H118271	568-274
235250	8969	H118419	568-447
235300	C-1880	H118423	568-449
235350	15800	H118427	568-451
235400	33006		
235450	68028		
235500	64553		
235550	31653		

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Inner Seals

Catch Size	For Bowen #	H.E. #
1	A-12470	218114/32
1-1/8	A-12471	218114/36
1-1/4	A-12472	218114/40
1-3/8	A-12280	218114/44
1-7/16	NONE	218114/46
1-1/2	A-12281	218114/48
1-5/8	A-11568	218114/52
1.660	NONE	218114/1.660
1-3/4	A-12177	218114/56
1-13/16	NONE	218114/58
1-7/8	A-10803	218114/60
1.900	NONE	218114/1.900
2	A-10804	218114/64
2-1/16	NONE	218114/66
2-1/8	A-10805	218114/68
2.200	NONE	218114/2.200
2-1/4	A-10806	218114/72
2-5/16	NONE	218114/74
2.330	NONE	218114/2.330
2-3/8	A-10807	218114/76
2-1/2	A-10808	218114/80
2-9/16	NONE	218114/82
2-19/32	NONE	218114/83
2-5/8	A-10809	218114/84
2-11/16	NONE	218114/86
2.702	NONE	218114/2.702
2-3/4	A-10810	218114/88
2-13/16	NONE	218114/90
2-7/8	A-10811	218114/92
2.900	NONE	218114/2.900
2-15/16	NONE	218114/94
3	A-10812	218114/96
3-1/16	NONE	218114/98
3-3/32	NONE	218114/99
3-1/8	A-10813	218114/100
3-3/16	NONE	218114/102
3.220	NONR	218114/3.220
3-1/4	A-10814	218114/104
3-5/16	NONE	218114/106
3-3/8	A-10815	218114/108
3-7/16	NONE	218114/110
3-1/2	A-10816	218114/112

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Inner Seals (continued)

Catch Size	For Bowen #	H.E. #
3-5/8	A-10817	218114/116
3-21/32	NONE	218114/117
3-11/16	NONE	218114/118
3-3/4	A-10819	218114/120
3-13/16	NONE	218114/122
3-7/8	A-10820	218114/124
3-15/16	NONE	218114/126
4	A-10821	218114/128
4-1/8	A-10822	218114/132
4-1/4	A-10823	218114/136
4-3/8	A-10824	218114/140
4-1/2	A-10825	218114/144
4-5/8	A-10826	218114/148
4-3/4	A-10827	218114/152
4-7/8	A-10828	218114/156
5	A-10829	218114/160
5-1/8	A-10830	218114/164
5-1/4	A-10831	218114/168
5-3/8	A-10832	218114/172
5-1/2	A-10833	218114/176
5-5/8	A-10834	218114/180
5-3/4	A-10835	218114/184
5-7/8	A-10836	218114/188
6	A-10837	218114/192
6-1/8	A-10838	218114/196
6-1/4	A-10839	218114/200
6-3/8	A-10840	218114/204
6-1/2	A-10841	218114/208
6-5/8	A-10842	218114/212
6-3/4	A-10843	218114/216
6-7/8	A-10844	218114/220
7	A-10845	218114/224
7-1/8	A-10846	218114/228
7-1/4	A-10847	218114/232
7-3/8	A-10848	218114/236
7-1/2	A-10849	218114/240
7-5/8	A-10850	218114/244
7-3/4	A-10851	218114/248
7-7/8	A-10852	218114/252
8	A-10853	218114/256
8-1/8	A-10854	218114/260
8-1/4	A-10855	218114/264
8-3/8	A-10856	218114/268

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Inner Seals (continued)

Catch Size	For Bowen #	H.E. #
8-1/2	A-10857	218114/272
8-5/8	A-10858	218114/276
8-3/4	A-10859	218114/280
8-7/8	A-10860	218114/284
9	A-10861	218114/288
9-1/8	A-10862	218114/292
9-1/4	A-10863	218114/296
9-3/8	A-10864	218114/300
9-1/2	A-12099	218114/304
9-5/8	A-12100	218114/308
9-3/4	A-12101	218114/312
9-7/8	A-12102	218114/316
10	A-12103	218114/320
10-1/8	A-12104	218114/324
10-1/4	A-12105	218114/328
10-3/8	A-12106	218114/332
10-1/2	A-12107	218114/336
11	60794	218114/352
11-1/8	81397	218114/356
11-1/4	63841	218114/360

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H.E. Modified Inner Seals

CATCH SIZE	FOR BOWEN #	H.E. #
3-1/4	A-10814-SH	218115/104
3-3/8	A-10815-SH	218115/108
3-1/2	A-10816-SH	218115/112
3-3/4	A-10819-SH	218115/120
4	A-10821-SH	218115/128
4-1/8	A-10822-SH	218115/132
4-1/4	A-10823-SH	218115/136
4-1/2	A-10825-SH	218115/144
4-5/8	A-10826-SH	218115/148
6-1/4	A-10839-SH	218115/200
7	A-10845-SH	218115/224
7-1/8	A-10846-SH	218115/228

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Slash Numbers for Connections

Connection	Right Hand			Left Hand		
	Slash Number			Slash Number		
	Pin and Box	Pin	Box	Pin and Box	Pin	Box
1-13/16 WFJ OS	1	30	31	100	130	131
1-13/16 WFJ NS	2	32	33	102	132	133
2-3/8 WFJ	3	34	35	103	134	135
1-1/4 REG	4	36	37	104	136	137
8-5/8 REG	185	186	187	—	—	—
2-3/8 API REG	5	38	39	105	138	139
2-7/8 API REG	6	40	41	106	140	141
3-1/2 API REG	7	42	43	107	142	143
4-1/2 API REG	8	44	45	108	144	145
5-1/2 API REG	9	46	47	109	146	147
6-5/8 API REG	10	48	49	110	148	149
7-5/8 API REG	244	245	246	—	—	—
8-5/8 API REG W/ Low Torque Shoulder and Make up	213	214	215	—	—	—
3-1/2 API FH	11	50	51	111	150	151
4 API FH	—					
4-1/2 API FH	12	52	53	112	152	153
5-1/2 API FH	265	266	267	—	—	—
6-5/8 API FH	277	278	279	—	—	—
2-3/8 API IF	—					
2-7/8 API IF	—					
3-1/2 API IF	—					
4 API IF	—					
4-1/2 API IF	—					
5-1/2 API IF	335	336	337			
2-3/8 ACME REG	17	62	63	117	162	163
2-7/8 AMCE REG	18	64	65	118	164	165
3-1/2 ACME REG	19	66	67	119	166	167
4-1/2 ACME REG	20	68	69	120	168	169
NC26	13	54	55	113	154	155
NC31	14	56	57	114	156	157
NC35	21	70	71	121	170	171
NC38	15	58	59	115	158	159
NC40	217	218	219	317	318	319
NC44	22	72	73	122	172	173
NC46	23	74	75	123	174	175
NC50	16	60	61	116	160	161
NC56	241	242	243	—	—	—
NC70	314	315	316	—	—	—
3-1/2 X-HOLE	209	210	211	309	310	311
4-1/2 X-HOLE	—					
5 X-HOLE	—					
2-3/8 EUE	24	76	77	124	176	177
2-7/8 EUE	25	78	79	125	178	179
3-1/2 H-90	90	94	95	193	194	195
4 H-90	268	269	270	—	—	—
4-1/2 H-90	26	80	81	126	180	181
5 H-90	97	98	99	197	198	199
5-1/2 H-90	201	202	203	301	302	303
6-5/8 H90	205	206	207	305	306	307
7 H-90	89	90	91	189	190	191
1/2 SUCKER ROD	27	82	83	—	—	—

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Slash Numbers for Connections (con't)

Connection	Right Hand Slash Number			Left Hand Slash Number		
	Pin and Box	Pin	Box	Pin and Box	Pin	Box
5/8 SUCKER ROD	28	84	85	—	—	—
3/4 SUCKER ROD	262	86	87	—	—	—
7/8 SUCKER ROD	238	263	264	—	—	—
1 SUCKER ROD	329	330	331	—	—	—
4 HYDRIL FJWP 14#	220	239	240	—	—	—
4-1/2 HYDRIL FJWP 16.6#	223	221	222	—	—	—
5-1/2 HYDRIL FJWP 17#	223	224	225	—	—	—
5-1/2 HYDRIL FJWP 20#	235	236	237	—	—	—
11-75 HYDRIL FJWP	292	293	294	—	—	—
WT38 HYDRIL	341	342	343	—	—	—
WT56 HYDRIL	280	281	282	—	—	—
5 X-LINE	283	284	285	—	—	—
5-1/2 X-LINE	226	227	228	—	—	—
1-1/2 10 ROUND	229	230	231	—	—	—
1-13/16 HOMCO FJ	232	233	234	—	—	—
1 AM MT	256	257	258	—	—	—
1-1/4 AM MT	249	250	251	—	—	—
1-1/2 AM MT	253	254	255	—	—	—
HT 38	259	260	261	—	—	—
HT 40	286	288	287	—	—	—
HT 55	289	290	291	—	—	—
50 HT	298	299	300	—	—	—
2-7/8 PAC	271	272	273	—	—	—
2-3/8 PAC	274	275	276	—	—	—
5-1/2 FHNKK-DSTJ	295	296	297	—	—	—
NC50 NKK-DSTJ	332	333	334	—	—	—
3/4 POLISHED ROD	323	324	325	—	—	—
1-1/8 POLISHED ROD	320	321	322	—	—	—
57 XT	338	339	340	—	—	—

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Bowen Full Circle Type Releasing Spears

Complete Assembly Number	Slip Number	Yield Strength of Body (lb)
6067	6069	3,300,000
6073	6075	4,300,000
6081	6083	5,961,000
6175	6178	56,400
6246	6249	110,400
6318	6320	1,761,000
6684	6686	134,000
6693	6695	71,500
6701	6704	224,000
6710	6712	275,000
6715	6717	318,000

Complete Assembly Number	Slip Number	Yield Strength of Body (lb)
6723	6725	628,000
7640	7642	172,000
7648	7650	296,000
9337	9339	454,000
9342	9344	628,000
9347	9349	945,000
9352	9354	1,228,000
9796	9798	1,060,000
10473	10475	2,324,000
10536	10538	376,000
10608	10610	1,414,000

Note: Listed spear strengths are the loads required to yield the body at its smallest diameter

Bowen ITCO Type Releasing Spears

Complete Assembly Number	Slip Number	Yield Strength of Body (lb)
16455	16457	19,500
19350	19352	27,500
11195	11197	40,800
35841	35843	40,800
9915	9917	58,100
9645	9647	108,700
17470	17472	108,700
1344	1348	123,700
17228	17230	123,700
1227	1230	253,000
17231	17233	253,000
18820	18822	253,000
1585	1582	357,600
9410	9412	333,700
9945	9947	333,700
530	532	494,800
9485	9487	494,800
13200	13202	677,900
17475	17477	677,900
1332	1334	884,900

Complete Assembly Number	Slip Number	Yield Strength of Body (lb)
9680	9682	859,100
18270	18272	859,100
20115	20117	884,900
9715	9717	1,096,600
17234	17236	1,096,600
58292	58294	1,096,600
9266	9268	907,100
20890	20892	907,100
17237	17239	907,100
9572	9574	1,445,700
17219	17221	1,775,000
17240	17242	1,445,700
9380	9382	1,947,200
17222	17224	1,980,000
17243	17245	1,947,200
20895	20897	1,947,200
9281	9283	2,718,500
20120	20122	2,751,200
17246	17248	2,718,500
27780	27782	7,463,000

Note: Listed spear strengths are the loads required to yield the body at its smallest diameter.
They do not indicate loads at which casing may swell and allow grapple to “lump” over the mandrel spirals.

Bowen L & L Releasing Spears

Spear Assembly Number	Tensile Strength (lb)	Torque Strength (ft-lbs)	Nominal Size (in.)
270	178,000	2,396	2-1/2 Tubing
275	331,000	6,532	3 Tubing
280	467,000	12,520	4-3/4 Casing
285	507,000	14,750	5 Casing
295	726,000	24,200	5-3/4 Casing
300	1,100,000	43,750	6-5/8 Casing
315	4,575,000	386,752	11-3/4 Casing
320	6,668,000	706,408	13-3/8 Casing
325	236,000	4,140	3-1/2 Drill Pipe
330	331,000	9,680	4-1/2 Drill Pipe
335	96,000	1,004	2 Tubing
1004	1,950,000	100,500	8-5/8 Casing
1580	1,412,000	65,192	7-5/8 Casing
1600	1,060,000	43,554	7 Casing
1736	1,457,000	71,000	8-1/8 Casing
1800	596,000	18,380	5-1/2 Casing
2066	368,000	7,990	4 Tubing
2538	2,324,000	142,000	9-5/8 Casing
4725	595,000	18,360	5-9/16 Drill Pipe
4728	59,000	502	2-3/8 Drill Pipe
4730	110,400	1,220	2-7/8 Drill Pipe
4795	3,700,000	271,865	10-3/4 Casing
4834	398,000	10,600	4-1/2 Casing
7198	265,000	5,450	4 Drill Pipe
11833	3,750,000	1,170,870	20 Casing
13465	37,200	218	1-1/2 Tubing

Note: Listed spear strengths are the loads required to yield the body at its smallest diameter.

Specifications and Replacements Parts Reverse Circulation Junk Baskets

Hole Size (inches)		3-3/4 - 4	4-1/8 - 4-1/2	4-5/8 - 5	5-1/8 - 5-1/2	5-5/8 - 6
OD of Barrel (inches)		3 5/8	4"	4 1/2	4 7/8	5 1/8
Max. Dia. of Fish (inches)		2 1/4	2 1/2	3 1/16	3 9/16	3 3/4
Top Connection (inches)		2 3/8	2 3/8	2 7/8	2 7/8	3 1/2
Number of Teeth on Mill		6	6	8	8	8
Complete Assembly	Part No.	H240700 (6635)	H240750 (7295)	H240800 (4448)	H240850 (4572)	H240900 (2618)
REPLACEMENT PARTS						
Top Sub	Part No.	H240701/XX (6636)	H240751/XX (7296)	H240801/XX (4449)	H240851/XX (4573)	H240901/XX (2619)
Barrel Assembly	Part No.	H240702 (6637)	H240752 (7297)	H240802 (4450)	H240852 (4574)	H240902 (2620)
Outer Barrel	Part No.	H240703	H240753	H240803	H240853	H240903
Inner Barrel Ass'y	Part No.	H240704A	H240754A	H240804A	H240854A	H240904A
Inner Barrel	Part No.	H240704	H240754	H240804	H240854	H240904
Pads	Part No.	H240705	H240755	H240805	H240855	H240905
End Caps	Part No.	H240706	H240756	H240806	H240856	H240906
Mill Shoes Type "A"	Part No.	H240707/XXX (6642A)	H240757/XXX (7299A)	H240807/XXX (4455A)	H240857/XXX (4576A)	H240907/XXX (2625A)
Mill Shoes Type "B"	Part No.	H240708/XXX (6642B)	H240758/XXX (7299B)	H240808/XXX (4455B)	H240858/XXX (4576B)	H240908/XXX (2625B)
Mill Shoes Type "C"	Part No.	H240709/XXX (6642C)	H240759/XXX (7299C)	H240809/XXX (4455C)	H240859/XXX (4576C)	H240909/XXX (2625C)
FINGER SHOES						
Max. Dia. Of Fish (inches)		3 1/4	3 3/4	4 1/16	4 1/2	4 3/4
Finger Shoe *	Part No.	H240710 (6643)	H240760 (7300)	H240810 (4456)	H240860 (4577)	H240910 (22208)
SHARED AND/OR PRE-EXISTING COMPONENTS						
Lift Subs	Part No.	H242006/XX (4568)	H242006/XX (4568)	H242007/XX (424)	.....	H242008/XX (425)
Valve Cups	Part No.	H242012 (6638)	H242012 (6638)	H242013 (4451)	H242013 (4451)	H242014 (2621)
Steel Ball	Part No.	H121124(6640) (15/16)	H121124(6640) (15/16)	H114209(4453) (1-1/8)	H114209(4453) (1-1/8)	H121080(2623) (1-3/8)
Seat Rings	Part No.	H242017 (6639)	H242017 (6639)	H242018 (4452)	H242018 (4452)	H242019 (2622)
Junk Catcher Assembly	Part No.	H242022 (21795W)	H242023 (21855W)	H121535 (21780W)	H118873 (18940W)	H121083 (21735W)
Magnet Insert Assembly	Part No.	H121126 (61836)	H242034 (61848)	H122152 (61840)	H122191 (61850)	H121084 (61852)
PIPE PLUGS STAND ALONE/THEY ARE NOT TIED TO A SPECIFIC TOOL						
Pipe Plugs	Part No.	H242000 (1")	H242002 (1 1/4)	H242002 (1 1/2)	H242003 (2")	H242004 (2 1/2)

* NOTE: Unless otherwise specified, Finger Shoe diameter will be minimum Hole Size minus 1/8”

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Specifications and Replacements Parts Reverse Circulation Junk Baskets (continued)

Hole Size (inches)		6-1/8 – 6-1/2	6-5/8 - 7-3/8	7-1/2 - 8-1/4	8-3/8 - 9-1/2	9-5/8 - 10-5/8
OD of Barrel (inches)		5 3/4	6 1/4	7"	7 7/8	9 1/8
Max. Dia. of Fish (inches)		4 3/8	4 3/4	5 1/8	6 1/16	7 1/16
Top Connection (inches)		3 1/2	4 1/2	4 1/2	5 1/2	6 5/8
Number of Teeth on Mill		8	8	8	8	10
Complete Assembly	Part No.	H240950 (2670)	H241000 (2677)	H241050 (2554)	H241100 (2567)	H241150 (2659)
REPLACEMENT PARTS						
Top Sub	Part No.	H240951/XX (2671)	H241001/XX (2678)	H241051/XX (2493)	H241101/XX (2568)	H241151/XX (2660)
Barrel Assembly	Part No.	H240952 (2672)	H241002 (2679)	H241052 (2555)	H241102 (2569)	H241152 (2661)
Outer Barrel	Part No.	H240953	H241003	H241053	H241103	H241153
Inner Barrel Ass'y	Part No.	H240954A	H241004A	H241054A	H241104A	H241154A
Inner Barrel	Part No.	H240954	H241004	H241054	H241104	H241154
Pads	Part No.	H240955	H241005	H241055	H241105	H241155
End Caps	Part No.	H240956	H241006	H241056	H241106	H241156
Mill Shoes Type "A"	Part No.	H240957/XXX (2676A)	H241007/XXX (2683A)	H241057/XXX (2556A)	H241107/XXX (2574A)	H241157/XXX (2668A)
Mill Shoes Type "B"	Part No.	H240958/XXX (2676B)	H241008/XXX (2683B)	H241058/XXX (2556B)	H241108/XXX (2574B)	H241158/XXX (2668B)
Mill Shoes Type "C"	Part No.	H240959/XXX (2676C)	H241009/XXX (2683C)	H241059/XXX (2556C)	H241109/XXX (2574C)	H241159/XXX (2668C)
FINGER SHOES						
Max. Dia. Of Fish (inches)		5 17/32	5 29/32	6 3/4	7 23/32	9"
Finger Shoe	Part No.	H240960 (22218)	H241010 (2739)	H241060 (2740)	H241110 (2741)	H241160 (2742)
SHARED AND/OR PRE-EXISTING COMPONENTS						
Lift Subs	Part No.	H242008/XX (425)	H242009/XX (1849)	H242009/XX (1849)	H242010/XX (426)	H242011/XX (427)
Valve Cups	Part No.	H242014 (2621)	H242014 (2621)	H242015 (2570)	H242015 (2570)	H242016 (2662)
Steel Ball	Part No.	H121080(2623) (1-3/8)	H121080(2623) (1-3/8)	H121049(2572) (1-11/16)	H121049(2572) (1-11/16)	H121052(2665) (2-1/4)
Seat Rings	Part No.	H242019 (2622)	H242019 (2622)	H242020 (2571)	H242020 (2571)	H242021 (2663)
Junk Catcher Assembly	Part No.	H242024 (28349W)	H122252 (21750W)	H121501 (21725W)	H242025 (18725W)	H118889 (14633W)
Magnet Insert Assembly	Part No.	H122189 (61866)	H242035 (61872)	H242036 (61876)	H121053 (61953)	H242037 (61961)

* NOTE: Unless otherwise specified, Finger Shoe diameter will be minimum Hole Size minus 1/8”

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Specifications and Replacements Parts Reverse Circulation Junk Baskets (continued)

Hole Size (inches)		10-3/4 - 11-5/8	11-3/4 - 12-1/2	12-5/8 - 13-5/8	13-3/4 - 16	16 - 17-1/2
OD of Barrel (inches)		10 1/8	11"	11 7/8	13"	15"
Max. Dia. of Fish (inches)		7 5/8	8 5/16	8 1/2	9 13/16	11"
Top Connection (inches)		6 5/8	6 5/8	6 5/8	6 5/8	6 5/8
Number oz Teeth on Mill		10	12	12	14	16
Complete Assembly	Part No.	H241200 (2684)	H241250 (2690)	H241300 (2696)	H241350 (2702)	H241400 (2708)
REPLACEMENT PARTS						
Top Sub	Part No.	H241201/XX (2685)	H241251/XX (2691)	H241301/XX (2697)	H241351/XX (2703)	H241401/XX (2709)
Barrel Assembly	Part No.	H241202 (2686)	H241252 (2692)	H241302 (2698)	H241352 (2704)	H241402 (2710)
Outer Barrel	Part No.	H241203	H241253	H241303	H241353	H241403
Inner Barrel Ass'y	Part No.	H241204A	H241254A	H241304A	H241354A	H241404A
Inner Barrel	Part No.	H241204	H241254	H241304	H241354	H241404
Pads	Part No.	H241205	H241255	H241305	H241355	H241405
End Caps	Part No.	H241206	H241256	H241306	H241356	H241406
Mill Shoes Type "A"	Part No.	H241207/XXX (2689A)	H241257/XXX (2695A)	H241307/XXX (2701A)	H241357/XXX (2707A)	H241407/XXX (2713A)
Mill Shoes Type "B"	Part No.	H241208/XXX (2689B)	H241258/XXX (2695B)	H241308/XXX (2701B)	H241358/XXX (2707B)	H241408/XXX (2713B)
Mill Shoes Type "C"	Part No.	H241209/XXX (2689C)	H241259/XXX (2695C)	H241309/XXX (2701C)	H241359/XXX (2707C)	H241409/XXX (2713C)
FINGER SHOES						
Max. Dia. Of Fish (inches)		9 15/16	11"	11 7/8	13"	15 1/4
Finger Shoe	Part No.	H241210 (2743)	H241260 (2744)	H241310 (2745)	H241360 (2746)	H241410 (2747)
SHARED AND/OR PRE-EXISTING COMPONENTS						
Lift Subs	Part No.	H242011/XX (427)	H242011/XX (427)	H242011/XX (427)	H242011/XX (427)	H242011/XX (427)
Valve Cups	Part No.	H242016 (2662)	H242016 (2662)	H242016 (2662)	H242016 (2662)	H242016 (2662)
Steel Ball	Part No.	H121052 (2665) (2-1/4)	H121052(2665) (2-1/4)	H121052(2665) (2-1/4)	H121052(2665 (2-1/4)	H121052(2665 (2-1/4)
Seat Rings	Part No.	H242021 (2663)	H242021 (2663)	H242021 (2663)	H242021 (2663)	H242021 (2663)
Junk Catcher Assembly	Part No.	H242026 (21755W)	H121807 (21760W)	H122224 (21840W)	H242027 (21770W)	H121986 (21775W)
Magnet Insert Assembly	Part No.	H242038 (61963)	H122118 (61973)	H242039 (61975)	H242040 (61981)	H122119 (61985)

- NOTE: Unless otherwise specified, Finger Shoe diameter will be minimum Hole Size minus 1/8”

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Jet Junk Basket General Specifications

Tool Size Inches (mm)	3-5/8 (92.07)	4-1/2 (114.30)	5-3/4 (146.05)	6-3/4 (171.45)	7-7/8 (200.03)	8-3/4 (222.25)	10-1/8 (257.18)
Tool Joint Connection (Pin)	2-3/8 API REG	2-7/8 API REG	3-1/2 API REG	4-1/2 API REG	4-1/2 API REG	6-5/8 API REG	6-5/8 API REG
Jet Nozzles Required (mm)	4 (101.6)		4 (101.6)		4 (101.6)	5 (127)	7 (177.8)
Drop Ball Dia. Inches (mm)	7/16 (11.11)		3/4 (19.05)		1-1/8 (28.58)		
Approximate Piston Shear Pressure PSI (MPa)	–		700 PSI (4.8258)		1000 PSI (6.894)		

Bit and Cone Dimensions

(Maximum Cone Dimensions are Approximate in Inches, for "BIT SIZE" shown)

Bit Size (mm)	Max. Dia. (2 Cone Bit) (mm)	Max. Dia. (3 Cone Bit) (mm)	Bit Size (mm)	Max. Dia. (2 Cone Bit) (mm)	Max. Dia. (3 Cone Bit) (mm)
3-3/4 – 4-1/8 (95.25 – 104.78)	–	2-45/64 (68.66)	8-1/8 – 8-5/8 (206.38 – 219.08)	6-5/32 (156.28)	5-55/64 (148.83)
4-1/4 – 4-1/2 (107.95 – 144.3)	–	2-59/64 (74.22)	8-3/4 – 9 (222.25 – 228.6)	6-5/16 (160.34)	6-1/16 (153.99)
4-5/8 – 5 (117.48 – 127)	–	3-13/64 (81.36)	9-5/8 – 9-7/8 (244.48 – 250.83)	7-1/8 (180.98)	6-43/64 (169.47)
5-1/8 – 5-1/2 (130.18 – 139.7)	–	3-43/64 (93.27)	10-1/2 – 11-1/2 (266.7 – 292.1)	7-19/32 (192.88)	7-5/32 (130.97)
5-5/8 – 6 (142.88 – 152.4)	–	4-1/64 (102)	11-3/4 – 12-1/2 (298.45 – 317.5)	8-1/2 (215.9)	8-3/64 (204.39)
6-1/8 – 6-1/2 (155.58 – 165.1)	–	4-3/16 (106.36)	13-1/4 – 14-1/4 (336.55 – 361.95)	–	8-57/64 (225.82)
6-5/8 – 7 (168.28 – 177.8)	–	4-9/16 (115.89)	14-1/2 – 15 (368.3 – 381)	–	9-19/32 (243.68)
7-1/8 – 7-1/2 (180.98 – 190.5)	–	4-29/32 (124.62)	16 (406.4)	–	10-5/32 (257.97)
7-5/8 –8 (193.68 – 203.2)	5-17/32 (140.49)	5-5/16 (134.94)	17 – 17-1/2 (431.8 – 444.5)	–	11-23/64 (288.53)

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AJ Model Reversing Tool General Specifications

Tool Model		AJ*	AJ	AJ	AJ
Tool No.		3	4	6	8
Actual Tool O.D. Inches (mm)		3-3/4 (95.3)	4-1/16 (103.2)	5-13/16 (147.6)	7-3/4 (196.9)
Actual Tool I.D. Inches (mm)		5/8 (17.5)	1-1/8 (28.6)	1-1/4 (31.8)	1-1/4 (31.8)
Maximum Yield Tensile Strength (Static)		90,000 lbs 40,823 kg	150,000 lbs 68,039 kg	200,000 lbs 90,718 kg	400,000 lbs 181,437 kg
Pull Up Tensile Load For Rotary Righthand Release & Rpm	lbs kg	20,000 - 50,000 9,072 – 22,680	50,000 22,680	60,000 - 80,000 27,216-36,287	Up To 100,000 45,359
	RPM	90 – 100	100	120	120
Maximum Yield Torque Load (See Manual 2-45, Table 2) Torque Vs. Rounds/Thousands For Various Pipe Sizes	Input	4,000 ft-lbs 553 kg-m	10,000 ft-lbs 1,382 kg-m	14,000 ft-lbs 1,935 kg-m	22,000 ft-lbs 3,041 kg-m
	Ratio	1 - 1.78			
	Output	7,120 ft-lbs 984 kg-m	17,800 ft-lbs 2060 kg-m	24,920 ft-lbs 3445 kg-m	39,160 ft-lbs 5414 kg-m
Maximum Pump Pressure (Internal)		5,000 psi 352 kg-cm^2	5,000 psi 352 kg-cm^2	5,000 psi 352 kg-cm^2	5,000 psi 52 kg-cm^2
Minimum Pump Pressure (To Lock Tool Static)		200 psi 14 kg-cm^2	150 psi 11 kg-cm^2	150 psi 11 kg-cm^2	150 psi 11 kg-cm^2
Minimum Pump Pressure (To Lock Tool In Hole)		600 psi 42 kg-cm^2	500 psi 35 kg-cm^2	500 psi 35 kg-cm^2	500 psi 35 kg-cm^2
Hole Size For Top & Bottom Circulating Plugs Inches (mm)		1/4 (6.4)	3/8 (9.5)	1/2 (12.7)	5/8 (15.9)
*Drop Ball O.D. Inches (mm)		*9/16 (14.3)	NA	NA	NA

* Oldstyle Model

AJ Model Reversing Tool Friction Spring Torque

Tool No.	3	4	6	8
**Wing Activating Torque (Wings Not Engaged)	30 - 40 ft-lbs 4 - 5 kg-m	30 - 50 ft-lbs 4 - 7 kg-m	50 - 75 ft-lbs 7 - 10 kg-m	100 - 150 ft-lbs 14 - 20 kg-m
Torque After Wings Have Opened Completely	60 - 200 ft-lbs 8 - 27 kg-m	100 - 250 ft-lbs 13 - 34 kg-m	100 - 250 ft-lbs 13 - 34 kg-m	150 - 600 ft-lbs 20 - 82 kg-m

** FRICTION SPRING TORQUE is within the range of one man using a standard assembly chain tong. In any case, the Friction Spring Torque must be sufficient to open and close the wings without any hesitation.

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AJ Model Reversing Tool Wing Catch Diameters inches (mm)

Tool Model		AJ	AJ	AJ	AJ
Nominal Tool Size		No. 3	No. 4	No. 6	No. *8
Actual Tool O.D. Inches (mm)		3-3/4 (95.3)	4-1/16 (103.2)	5-13/16 (147.6)	7-3/4 196.9)
Actual Tool I.D. Inches (mm)		5/8 (15.9)	1-1/8 (28.6)	1-1/4 (31.75)	1-1/4 (31.75)
Tool Length Inches (mm)		106 (2,692.4)	116 (2,946.4)	147 (3,733.8)	157 (3,987.8)
To Operate In Casing Size (Standard Wings)		4-1/2"–11.60# thru 5-1/2–13#	5"–18# thru 7"–40#	7"–35# thru 8-5/8 All Weights (A.W.)	9" A.W. thru 10-3/4 A.W.
To Operate In Casing Size (Wing Extensions**)		NA	NA	9-5/8" A.W.	11-3/4"–13-3/8" A.W.
					15"–16" A.W
Wing Catch Dia. (Std)	Min. I.D. Inches (mm)	4 (101.6)	4-1/4 (107.95)	6 (152.4)	8 (203.2)
	Max. I.D. Inches (mm)	5-1/4 (133.35)	5-15/16 (150.8)	8-1/8 (206.38)	10-1/4 (260.35)
Wing Catch Dia. With Wing Extensions		NA	NA	Min. 8" (203.2 mm)	Min. 10-1/2" (266.7 mm)
				Max 9-1/16" (230.19 mm)	Max. 13-3/4" (349.25 mm)

* Has two sets of Wing Extensions: 13-3/8” (339.73) Csg. Max. and 16” (406.4) Csg. Max.

** New model tool Wing Extensions are integral. Old models are bolt-on.

*** Backoff of these listed tubes and connections is NOT GUARANTEED. Frequently work makeup torque of tool joint is beyond the capacity of the Reversing Tool. In all cases, a safe working capacity of the Reversing Tool must not be exceeded.

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AJ Model Reversing Tool Input to Output Torque Capacity Ratio at Various Tension Loads and Static Load Capacity

Tool No.	Mechanical Ratio 0 lbs (kg)Tension	*Torque Multiplication Ratio With Tension At:			** Input Torque	Static Tensile Load Capacity (90% Yield)
		5,000 lbs 2,268 kg	10,000 lbs 4,536 kg	20,000 lbs 9,072 kg		
3	1-1.78	1-16.0	1-1.40	1-1	4,000 ft-lbs 553 kg-m	90,000 lbs 40,823 kg
4	1-1.78	1-16.0	1-1.40	1-1	10,000 ft-lbs 1,383 kg-m	150,000 lbs 68,039 kg
6	1-1.78	1-16.0	1-1.40	1-1	14,000 ft-lbs 1,936 kg-m	200,000 lbs 90,718 kg
8	1-1.78	1-16.0	1-1.40	1-1	22,000 ft-lbs 3,042 kg-m	400,000 lbs 181,437 kg

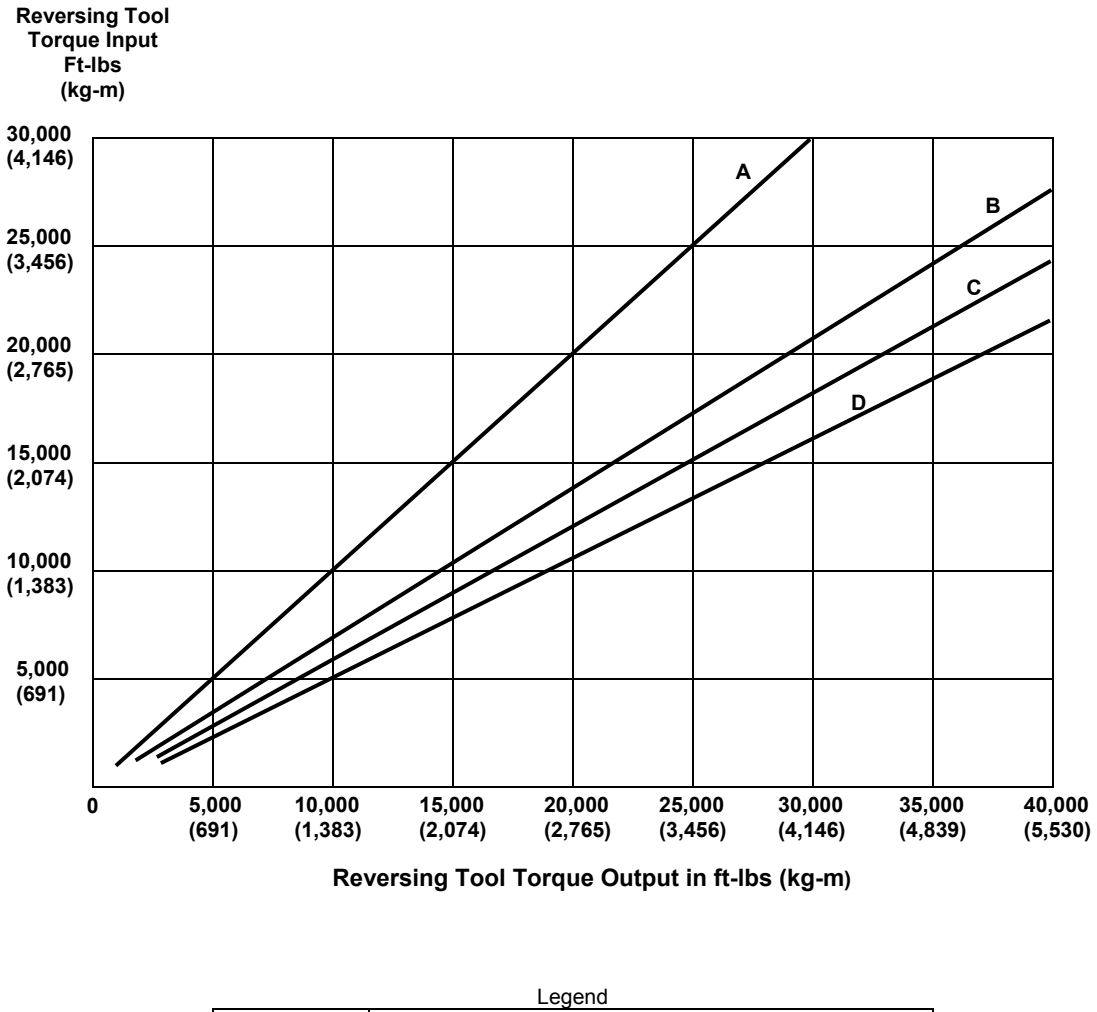
* Torque Multiplication Ratio is gear teeth ration. Actual Torque Ratio of input to output in ft-lbs (kg-m) will depend on the well and operation conditions. Also, the torque ratio will always be less than theoretical ratio shown.

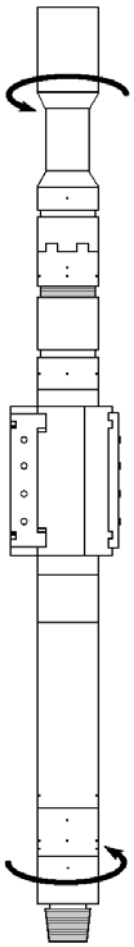
** This is Input Torque Yield Load. Always allow as much safety margin as possible. Input Torque is multiplied by the Reversing Tool according to the above table depending on tension taken on the Reversing Tool.

EXAMPLE: Output Torque of No. 3 Reversing Tool with 4,000 ft-lbs (553 kg-m) Input Torque and under 5,000 lbs (2,268 kg) Tension will be 1.60 x 4,000 ft-lbs (553 kg-m) = 6,400 ft-lbs (885 kg-m) Output Torque. The same size tool with 0 lbs (kg) Tension and 4,000 ft-lbs (553 kg-m) Input Torque will be 1.78 x 4,000 ft-lbs (553 kg-m) = 7,120 ft-lbs (984 kg-m).

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AJ Model Reversing Tool Torque Ratio
Input Torque vs. Output Torque – All Sizes





Legend

A	20,000 lbs (9,072 kg) Tension
B	10,000 lbs (4,536 kg) Tension
C	5,000 lbs (2,268 kg) Tension
D	0 lbs (0 kg) Tension

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Rotating & Releasing Spear Specifications and Strength Data

Assembly Number	Tubing or Casing Size Inches (mm)	Tool OD Inches (mm)	Tool ID Inches (mm)	Spear Length Inches (mm)	Catch Range Inches (mm)	*Maximum Strengths	
						Max. Pull Yield lbf (N)	Max. Torque Yield lbf·ft (N·m)
14272	2-3/8 & 2-7/8 (60 & 73)	1-29/32 (48)	3/8 (10)	30 (762)	1.862 - 2.546 (47 - 65)	98,200 (436,815)	2,030 (2752)
14273	2-7/8 (73)	2-5/16 (59)			2.409 - 3.062 (61 - 78)	145,000 (644,992)	3,630 (4925)
14274	3-1/2 (89)	2-11/16 (68)	1/2 (13)	38 (965)	2.733 - 3.549 (69 - 90)	224,000 (996,402)	6,530 (8853)
14275	4 - 4-1/2 (102 - 114)	3-1/8 (79)	1 (25)	40 (1016)	3.157 - 4.106 (80 - 104)	187,444 (833,793)	7,430 (10,074)
14726	5 - 5-1/2 (127 - 140)	4-1/16 (103)	1-1/4 (32)	47 (1194)	4.150 - 5.691 (105 - 145)	360,000 (1,601,360)	17,900 (27,269)
14277	6-5/8 - 7-5/8 (168 - 194)	5-11/16 (144)	2-1/4 (57)	50 (1270)	5.703 - 7.251 (145 - 184)	934,000 (4,154,639)	70,600 (95,721)
14278	8-5/8 - 11-3/4 (219 - 298)	7-1/4 (184)	3 (76)	55 (1397)	7.432 - 11.115 (198 - 282)	1,400,000 (6,227,511)	133,000 (180,324)
14279	13-3/8 - 20 (340 - 508)	11-3/4 (298)	3-1/2 (89)	60 (1524)	11.655 - 19.127 (296 - 486)	4,800,000 (21,351,465)	600,000 (813,491)

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Rotating & Releasing Overshot Specifications

OD Tool Size Inches (mm)	Catch Range Inches (mm) Minimum	Catch Range Inches (mm) Maximum	Length Inches (mm) Long Catch	*Tensile Strength at Min. Yield lbf (N)	Torque Strength at Min. Yield lbf·ft (N·m)
3-3/4 (95)	5/8 (16)	2-3/4 (70)	32 (813)	30,560 (135,931)	23,000 (31,182)
4-5/32 (106)		3-1/16 (78)	39 (991)	34,539 (153,630)	32,000 (43,384)
4-11/16 (120)	1.660 (42)	3-3/4 (95)	41 (1041)	47,250 (210,168)	38,000 (51,519)
5-3/8 (137)	1.315 (33)	4 (102)	43 (1092)	135,500 (602,704)	60,000 (81,345)
5-1/2 (140)	1.668 (42)	4-1/8 (105)		369,700 (1,644,426)	62,000 (84,057)
5-3/4 (146)	2 (51)	4-5/8 (117)	44 (1118)	107,400 (477,715)	55,000 (74,566)
5-15/16 (151)	1.135 (29)	4-7/8 (124)		40,100 (178,365)	61,000 (82,701)
6-3/4 (171)	2-1/2 (64)	5-1/2 (140)	47 (1194)	124,700 (554,666)	94,000 (127,441)
7-1/4 (184)		5-3/4 (146)	51 (1295)	161,700 (719,242)	119,000 (161,334)
7-1/2 (191)	2-7/8 (73)	6 (152)	50 (1270)	176,800 (786,406)	132,000 (178,959)
7-3/4 (197)	3-1/2 (89)	6-1/4 (159)	54 (1372)	234,000 (1,040,832)	128,000 (173,536)
8-1/2 (216)		7 (178)		191,000 (849,568)	149,000 (202,007)
9-1/2 (241)	4 (102)	8 (203)	62 (1575)	219,800 (977,670)	205,000 (277,929)

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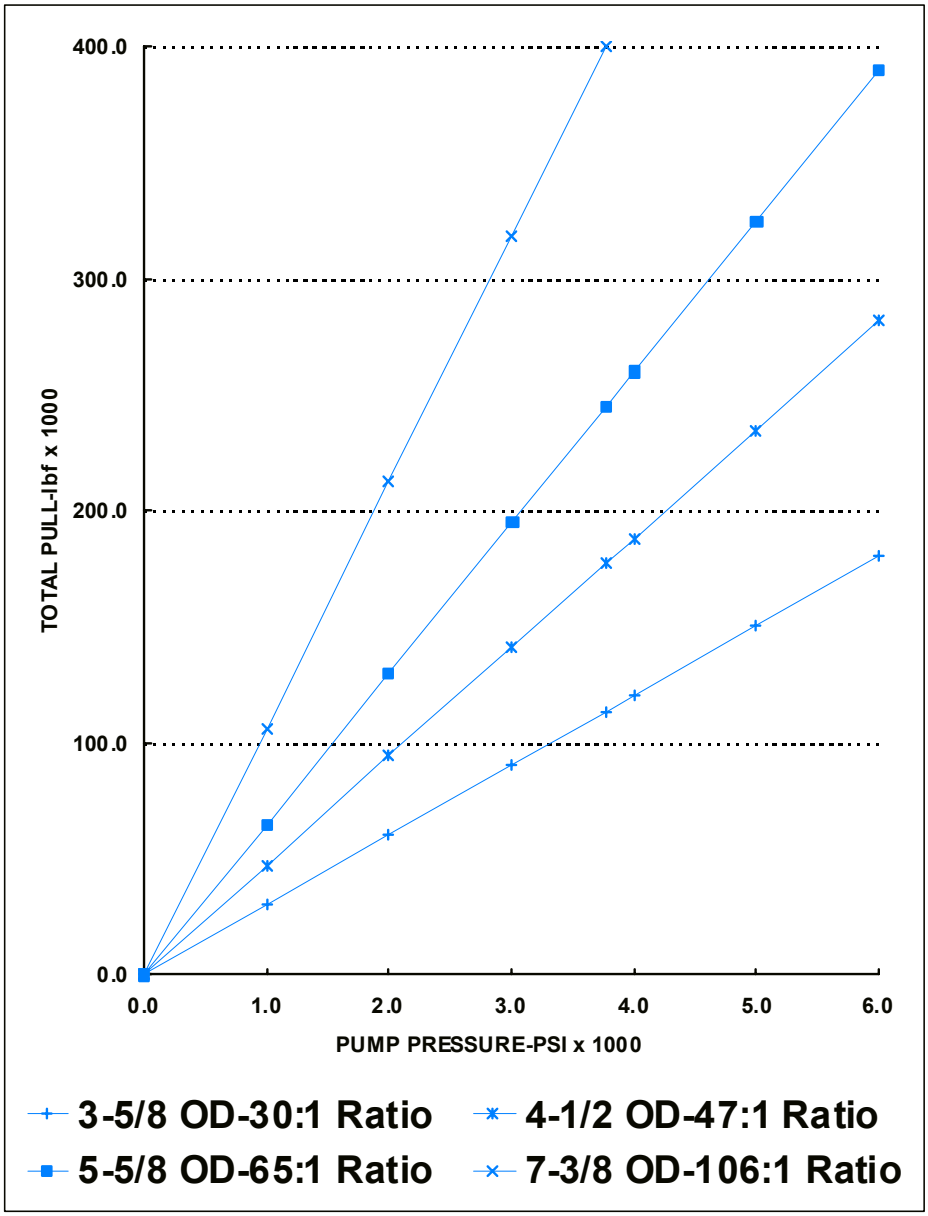
Pump Master Pull Tool "PMPT" Engineering Specifications

Assembly No. (standard)	14830	14824	14833	14835
Assembly (automatic)	18431	14832	14834	14936
Tool O. D. - Inches (mm)	3-5/8 (92)	4-1/2 (114)	5-5/8 (143)	7-3/8 (187)
Pull Ratio	30:1	47:1	65:1	106:1
Casing Range- Inches (mm)	4-1/2 – 5 (114 - 127)	5-1/2 - 6-5/8 (140 -168)	6-5/8 - 8-5/8 (168 - 219)	8-5/8 – 10-3/4 (219 - 273)
*Max. Pressure—PSI	5000 PSI (34 MPa)	5000 PSI (34 MPa)	5000PSI (34 MPa)	5000 PSI (34 MPa)
Max. Pull	150,000 lbf (66,720 N)	225,000 lbf (1,000,800 N)	350,000 lbf (1,556,800 N)	625,000 lbf (2,891,200 N)
Upper Tool Joint	2" EUE	2-3/8" API REG	2-7/8" API REG	4-1/2" API REG
Lower Tool Joint	2-3/8" API REG	3-1/2" API REG	3-1/2" API REG	5-1/2" API REG
No. Pull Cylinders	6	6	5	5
Stroke - Inches (mm)	30 (762)	30 (762)	30 (762)	30 (762)
I.D. - Inches (mm)	5/8 (16)	3/4 (19)	1 (25)	1 (25)
Drop Ball Size OD Inches (mm)	1/2 (13)	5/8 (16)	3/4 (19)	3/4 (19)

Pull Position Turn Valve (left-hand direction)
Dump Position Turn Valve (right-hand direction)

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Pump Pressure Pull Table



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Miscellaneous Fishing Tools Specifications and Strength Data

Taper Taps

Wicker Size	Top Connection (box)	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3/4 - 3-1/6	2-3/8 Reg	3-1/8	1-1/2	5,800	244,500
1 - 3-1/2	2-7/8 Reg	3-3/4	1-1/2	11,100	413,550
1-1/2 - 4-1/2	3-1/2 IF	4-3/4	2-1/4	19,000	777,000
2 - 6-1/4	4-1/2 IF	6-1/2	2-13/16	56,650	1,499,900
2-1/4 - 7-3/4	6-5/8 Reg	8	3	96,000	2,077,200
2-1/2 - 9-1/4	7-5/8 Reg	9-1/2	3-1/4	159,400	3,008,200

Yield Strength: 120,000 psi

Die Collars (Box Taps)

Wicker Size	Top Connection (box)	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
1-1/4 - 2-5/8	2-3/8 Reg	3-1/8	1-1/2	5,800	244,500
1-1/2 - 3-1/4	2-7/8 Reg	3-3/4	1-1/2	11,100	413,550
2-1/2 - 4-1/8	3-1/2 IF	4-3/4	2-1/4	19,000	777,000
3-1/4 - 5-1/2	4-1/2 IF	6-1/2	2-13/16	56,650	1,499,900
4-1/2 – 7	6-5/8 Reg	8	3	96,000	2,077,200
5-3/4 – 8-1/4	7-5/8 Reg	9-1/2	3-1/4	159,400	3,008,200
7 - 9-3/4	7-5/8 Reg	11	3-1/4	159,400	3,008,200

Yield Strength: 120,000 psi

Impression Blocks

Tool OD	Top Connection (box)	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
4	2-3/8 Reg	3-1/8	1-1/2	5,800	244,500
5	2-7/8 Reg	3-3/4	1-1/2	11,100	413,550
6	3-1/2 Reg	4-3/4	1-3/4	15,750	603,450
8-1/2	4-1/2 Reg	6-1/4	2-1/4	41,500	1,186,600
12-1/4	6-5/8 Reg	8	3	96,000	2,077,200
17-1/2, 22, 26	7-5/8 Reg	9-1/2	3-1/4	159,400	3,008,200

Yield Strength: 120,000 psi

Fishing Magnets

Hole Size	Top Connection (box)	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
4	2-3/8 Reg	3-1/8	1-1/2	5,800	244,500
5	2-7/8 Reg	3-3/4	1-1/2	11,100	413,550
6	3-1/2 Reg	4-3/4	1-3/4	15,750	603,450
8-1/2	4-1/2 Reg	6-1/4	2-1/4	41,500	1,186,600
12-1/4	6-5/8 Reg	8	3	96,000	2,077,200
17-1/2, 22, 26	7-5/8 Reg	9-1/2	3-1/4	159,400	3,008,200

Yield Strength: 120,000 psi

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Miscellaneous Fishing Tools Specifications and Strength Data (con't)

Washover Shoes & Equipment

Washpipe Size	Max OD	Dmft ID	Yield Torque ft-lbs	Tensile Yield lbs
3-3/4	3-3/4	3.125	3,000	100,000
5	5	4.283	7,000	178,900
5-1/2	5-1/2	4.767	9,480	209,700
5-3/4	5-3/4	5.001	10,800	222,800
6-5/8	6-5/8	5.796	17,590	251,600
7-5/8	8-1/8	6.640	23,000	531,200
7-5/8	8-1/8	6.750	23,000	531,200
7-5/8	7-5/8	6.750	23,000	340,000
8-1/8	8-1/8	7.125	30,000	455,000
9-5/8	9-5/8	8.679	40,000	502,000
10-3/4	10-3/4	9.604	70,000	578,000
10-3/4	10-3/4	9.694	57,000	578,000
11-3/4	11-3/4	10.724	65,000	687,000
13-3/8	13-3/8	12.259	110,000	833,000
16	16	14.683	188,000	1,090,000

Yield Strength: 80,000 psi

Junk Subs (Boot Baskets)

Tool Series	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
35	2-3/8 Reg	3-1/8	1-1/2	5,800	244,500
35	2-3/8 PAC	2-7/8	1-3/8	4,800	238,400
40	2-7/8 Reg	3-3/4	1-1/2	11,100	413,550
46	2-7/8 PACDS	3-1/8	1-1/2	7,300	269,500
50, 52	3-1/2 Reg	4-3/8	1-3/4	15,750	603,450
70	4-1/2 Reg	6-1/4	2-1/4	41,500	1,186,600
96	6-5/8 Reg	8	3	96,000	2,077,200
133, 160	7-5/8 Reg	9-1/2	3-1/4	159,400	3,008,200

Yield Strength: 120,000 psi

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Miscellaneous Fishing Tools Specifications and Strength Data (con't)

Soft Blade Stabilizers

Tool Series	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
31	2-3/8 PAC	3-1/8	1-3/8	3,200	158,900
31	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
37	2-7/8 PACDS	3-3/4	1-1/2	4,850	179,650
37	2-7/8 Reg	3-3/4	1-1/2	7,400	257,700
47	3-1/2 IF	4-3/4	2-1/4	12,650	518,000
65	4-1/2 IF	6-1/2	2-13/16	37,750	999,900
80	6-5/8 Reg	8	3	64,000	1,384,800
95	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

Circulating Subs

Tool Series	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
31	2-7/8 PACDS	3-1/8	1-1/2	7,300	265,500
42	2-7/8 IF	4-1/4	1-1/2	15,900	648,700
47	3-1/2 IF	4-3/4	2-1/4	19,000	777,000
62	4 IF	6-1/4	2-13/16	43,800	1,499,900
65	4-1/2 IF	6-1/2	2-13/16	56,650	1,499,900
77	6-5/8 Reg	7-3/4	3	96,000	2,077,200
80	6-5/8 Reg	8	3	96,000	2,077,200

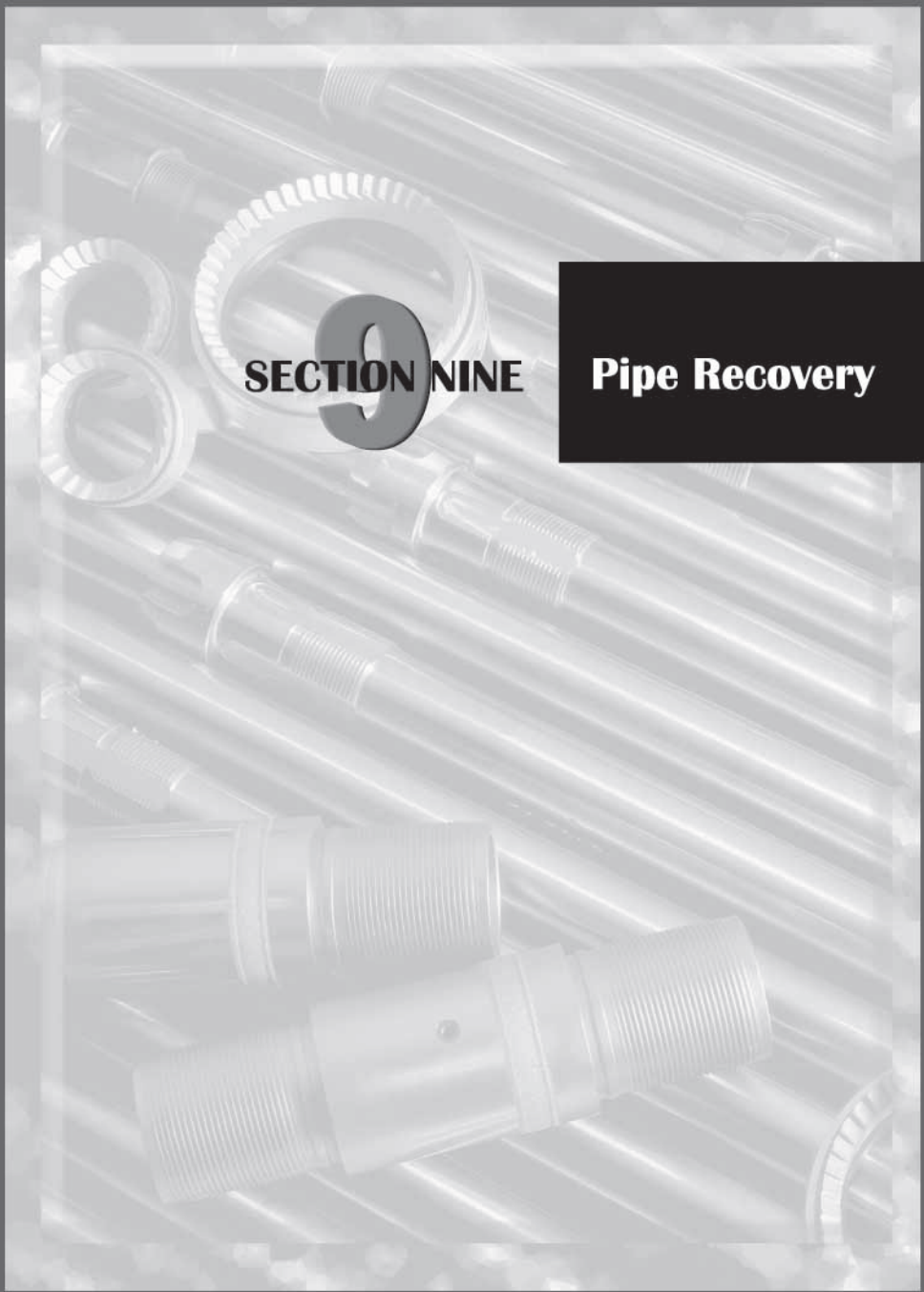
Yield Strength: 120,000 psi

Rope Spear

Tool Series	Connection (box)	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
50	2-3/8 IF	3-3/8	1-1/2	6,200	380,400
70	3-1/2 IF	4-3/4	2-1/4	19,000	777,000
96	4-1/2 IF	6-1/2	2-13/16	43,800	1,499,900

Yield Strength: 120,000 psi

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SECTION 9 NINE

Pipe Recovery

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Buoyancy Factor

Mud Weight (lb/gal)	Factor
8.4	0.872
8.6	0.869
8.8	0.866
9.0	0.862
9.2	0.859
9.4	0.856
9.6	0.853
9.8	0.850
10.0	0.847
10.2	0.844
10.4	0.841
10.6	0.838
10.8	0.835
11.0	0.832
11.2	0.829
11.4	0.826
11.6	0.823
11.8	0.820
12.0	0.817
12.2	0.814
12.4	0.811

Mud Weight (lb/gal)	Factor
12.6	0.807
12.8	0.804
13.0	0.801
13.2	0.798
13.4	0.795
13.6	0.792
13.8	0.789
14.0	0.786
14.5	0.778
15.0	0.771
15.5	0.763
16.0	0.756
16.5	0.748
17.0	0.740
17.5	0.733
18.0	0.725
18.5	0.717
19.0	0.710
19.5	0.702
20.0	0.694

$$\text{Buoyancy Factor} = \frac{\text{Mud Weight}}{65.63} - 1$$

Hydrostatic Pressure = (Depth x Fluid Weight x .0520)

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Freepoint Indicators

Manufacture	OD Size (in.)	Pressure Rating (psi)	Temp Rating (° F)
Applied	11/16	21,000	475
Applied	1	21,000	475
Applied	1-3/8	21,000	475

Freepoint Indicators					
	Tool Specifications		Coiled TBG/Tubing Specifications		
	Tool OD (in.)	Tool Max Opening (in.)	Pipe OD (in.)	Pipe ID (in.)	Weight (lb/ft)
Coiled Tubing	11/16	0.92	1.000	0.782 to 0.810	9.18 to 1.037
	3/4	1.05	1.000	0.826 to 0.866	0.688 to 0.848
	13/16	1.09	1.250	1.032 to 1.076	1.081 to 1.328
	7/8	1.09	1.250	1.032 to 1.076	1.081 to 1.328
	15/16	1.15	1.250	1.100 to 1.116	0.840 to 0.941
	1	1.33	1.500	1.232 to 1.282	1.619 to 1.955
	1-1/16	1.33	1.500	1.232 to 1.282	1.619 to 1.955
	1-1/8	1.42	1.500	1.282 to 1.334	1.256 to 1.619
	1-1/4	1.61	1.750	1.532	1.910
Tubing	3/4	1.05	1.315	0.957 to 1.049	1.800 to 2.250
	1-1/8	1.42	1.660	1.278 to 1.410	2.100 to 3.020
	1-3/8	1.75	1.900	1.500 to 1.650	2.400 to 3.640
	1-1/2	1.90	2.060	1.613 to 1.751	3.250 to 4.500
	1-5/8	2.00	2.375	1.853 to 1.995	4.700 to 6.650
	1-11/16	2.10	2.375	1.939 to 1.995	4.700 to 5.300
	2	2.50	2.875	2.195 to 2.441	6.500 to 9.500
	2-1/8	2.50	2.875	2.229 to 2.441	6.500 to 7.900

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Pipe Recovery Formula

For any weight of pipe not shown, use the following formula to get number of pounds to pull over the weight of the string to get 3-1/2 in. of stretch per 1,000 ft of free pipe.

2208.5 x weight of pipe per foot = number of pounds to pull

In order to figure pipe weight accurately the buoyancy factor must be included.

Buoyancy: The tendency of a body to float or to rise when submerged in a fluid.

Example: 11,624 ft of 2-3/8 in., 4.7 lb/ft tubing
Fluid weight = 11.2 lb/gal of mud
Block weight = 12,000 lb

Pipe weight in air: 11,624 ft x 4.7 lb = 54,632 lb
Buoyancy factor for 11.2 lb mud = 0.829
Pipe weight in fluid: 54.632 lb x .829 = 45,290 lb
Pipe weight including block: 45,290 lb + 12,000 lb = 57,290 lb or 57,000 lb

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Jet Cutters

Tubing Jet Cutter Size (in.)	Running Tool Size (in.)	M.F.	Recommended Pipe Size (in.)	Explosive Weight
23/32 OD	0.625	J	1.000 Coiled Tubing	1 gm
61/64 OD	0.625	J	1.250 Coiled Tubing	2.9 gm
1-3/16 OD	0.625	J	1.500 Coiled Tubing	5.1gm
1-15/64 OD	1.000	G	1.66 Tubing	4 gm
1-1/4 OD(SC)	1.000	O		16 gm
1-25/64 OD	1.000	G	1.9 Tubing	
1-1/2 D(SC)	1.500	O		18 gm
1-9/16 OD	1.500	G	2.0625 Tubing	8 gm
1-37/64 OD (SC)	1.500	O	Heavy Wall 2.375 of Thru Restriction	36 gm
1-11/16 OD	1.500	G	2.375 Thru Restriction	11 gm
1-11/16 OD (SC)	1.500	O	Heavy Wall 2.375 of Thru Restriction	56 gm
1-13/16 OD	1.500	G	2.375 Tubing	11 gm
2 OD (SC)	1.500	O	Heavy Wall 2.875 Tubing or Thru Restriction	50 gm
2-1/16 OD (SC)	1.500	O	2.875 Tubing Thru Restriction	50 gm
2-1/16 OD	1.500	G	2.875 Tubing Thru Restriction	16 gm
2-1/8 OD	1.500	G	2.875 Tubing Thru Restriction	16 gm
2-1/8 OD	1.500	O	2.875 Tubing Thru Restriction	50 gm
2-1/4 OD	1.500	G	2.875 Tubing	18 gm
2-1/4 OD (SC)	1.500	GX	2.875 Tubing – 3.500 Tubing or 3.500 Drill Pipe	66 gm
2-1/4 OD (SC)	1.500	O	3.500 – 12.9 Tubing	76 gm
2-5/16 OD	1.500	G	3.500 Drill Pipe	26 gm
2-1/2 OD	1.500	G	3.500 Drill Pipe	26 gm
2-1/2 OD (SC)	1.500	GX	3.500 Tubing or 3.500 Drill Pipe	45 gm
2-1/2 OD (SC)	1.500	O	3.500 Tubing or 3.500 Drill Pipe	76 gm
2-5/8 OD	1.500	G	3.500 Tubing Thru Restriction	22 gm
2-5/8 OD (SC)	1.500	GX	3.500 Tubing	45 gm
2-3/4 OD	1.500	G	3.500 Tubing	22 gm
2-3/4 OD	1.500	GX	3.500 Tubing	27 gm
3	1.500	G	4.000 Drill Pipe	46 gm
3-1/4 OD	1.500	G	4.000 Casing	46 gm
3-7/16	1.500	G	4.500 Drill Pipe	64 gm
3-7/16	1.500	GX	4.500 Drill Pipe	78 gm
3-7/16 Segment	1.500	O	4.500 Drill Pipe	100 gm
3-5/8 Segment	1.500	O	5.000 X-Hole Drill Pipe	100 gm
3-5/8	1.500	G	4.500 Casing	54 gm
3-5/8	1.500	GX	4.500 Casing	66 gm
3-13/16	1.500	G	4-3/4.000 and 5.000 Casing	90 gm
3-13/16	1.500	GX	4-3/4.000 and 5.000 Casing	80 gm
3-13/16 Segment	1.500	O	4-3/4.000 and 5.000 Casing	100 gm
4	1.500	G	5.000 Casing	110 gm
4 Segment	1.500	O	5.000 Casing	100 gm

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Jet Cutters (continued)

Tubing Jet Cutter Size (in.)	Running Tool Size (in.)	M.F.	Recommended Pipe Size (in.)	Explosive Weight
4-1/4	1.500	GX	5.000 Casing	134 gm
4-1/4 Segment	1.500	O	5.000 Casing	100 gm
4-1/2	1.500	GX	5.500 Casing & 5.5625 Drill Pipe	134 gm
4-1/2 C-4	1.500	O	5.500 Casing & 5.5625 Drill Pipe	139 gm
4-3/4	1.500	GX	5.500 Casing	134 gm
4-3/4	1.500	G	5.500 Casing	100 gm
5-3/8	1.500	G	6.000 Casing	240 gm
5-3/8	1.500	GX	6.000 Casing	266 gm
5-3/8 Segment	1.500	O	6.000 Casing	320 gm
5-1/2	1.500	G	6.625 and 7.000 Casing	240 gm
5-1/2	1.500	GX	6.625 and 7.000 Casing	266 gm
2-1/2 Segment	1.500	O	6.625 and 7.000 Casing	320 gm
5-1/2 C-4	1.500	O	6.625 and 7.000 Casing	229 gm
5-3/4	1.500	GX	6.625 Casing and Drill Pipe and 7.000 Casing	266 gm
5-3/4	1.500	G	6.625 Casing and Drill Pipe and 7.000 Casing	240 gm
5-3/4 Segment	1.500	O	6.625 Casing and Drill Pipe and 7.000 Casing	320 gm
6	1.500	G	7.000 Casing	280 gm
6	1.500	GX	7.000 Casing	
6-1/2	1.500	G	7.625 Casing	284 gm
6-1/2 Segment	1.500	O	7.625 Casing	400 gm
7-1/4 C-4	1.500	O	8.625 and 9.000 Casing	400 gm
7-1/2	1.500	G	8.625 and 9.000 Casing	330 gm
7-3/4	1.500	G	8.625 and 9.000 Casing	340 gm
8-1/4 C-4	1.500	O	9.625 Casing	
8-9/32	1.500	G	9.625 Casing	500 gm
8-9/32 Segment	1.500	O	9.625 Casing	400 gm
8-7/16	1.500	G	9.625 and 10.000 Casing	500 gm
8-7/16 Segment	1.500	G	9.625 and 10.000 Casing	400 gm
9-1/4 C-4	1.500	O	10.750 Casing	364 gm
9-5/8 Segment	1.500	O	10.750 Casing	400 gm
9-5/8	1.500	G	10.750 Casing	565 gm
10-1/2 C-4	1.500	O		441 gm
12 C-4	1.500	O		614 gm

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Direct Action Chemical Cutter with Tubing

Tool Specifications		Tubing Specifications		
Tool Size (in.)	Tool Max Opening (in.)	OD (in.)	ID (in.)	(lb/ft)
1-3/8	1.90	1.900	1.500 to 1.650	2.400 to 3.640
1-7/16	1.92	2.062	1.670 to 1.751	3.250 to 3.400
1-1/2	2.04	2.062	1.670 to 1.751	3.250 to 3.400
		2.375	1.703 to 1.995	4.700 to 7.700
1-9/16	2.10	2.375	1.853 to 1.995	4.700 to 6.200
1-11/16	2.20	2.375	1.939 to 1.995	4.700 to 5.300
1-3/4	2.50	2.875	2.059 to 2.441	6.500 to 10.700
1-7/8	2.55	2.875	2.059 to 2.441	6.500 to 10.700
2	2.58	2.875	2.159 to 2.441	6.500 to 9.500
2-1/8	2.60	2.875	2.229 to 2.441	6.500 to 7.900
2-1/4	3.15	3.500	2.602 to 2.922	10.300 to 15.500
2-3/8	3.25	3.500	2.602 to 3.068	7.700 to 15.500
2-5/8	3.15	3.500	2.922 to 2.992	9.300 to 10.300
3-1/8	3.66	4.000	3.340 to 3.548	9.500 to 14.000
3-5/8	4.37	4.500	3.826 to 4.050	10.500 to 15.500
4	4.75	5.000	4.180 to 4.560	11.500 to 19.500
4-7/16	5.05	5.500	4.670 to 5.040	13.000 to 23.000
4-9/16	5.15	5.500	4.670 to 5.040	13.000 to 23.000
5-1/2	6.50	7.000	6.184 to 6.456	20.000 to 29.000
7-3/8	8.37	8.620	7.651 to 8.097	24.000 to 43.000

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Direct Action Chemical Cutter with Drill Pipe

Cutter OD (in.)	Drill Pipe (lb/ft)	Drill Pipe OD (in.)	Drill Pipe ID (in.)
2	10.40	2.875	2.151
2-3/8	15.50	3.500	2.602
2-1/2	13.30	3.500	2.764
3-1/8	14.00	4.000	3.340
3-1/8	11.85	4.000	3.476
3-5/8	16.60	4.500	3.826

Chemical Cutter Available Sizes

OD Sizes (in.)	
7/8	2-1/8
1-1/8	2-3/8
1-1/4	2-3/4
1-7/16	3-1/8
1-11/16	3-5/8
2	

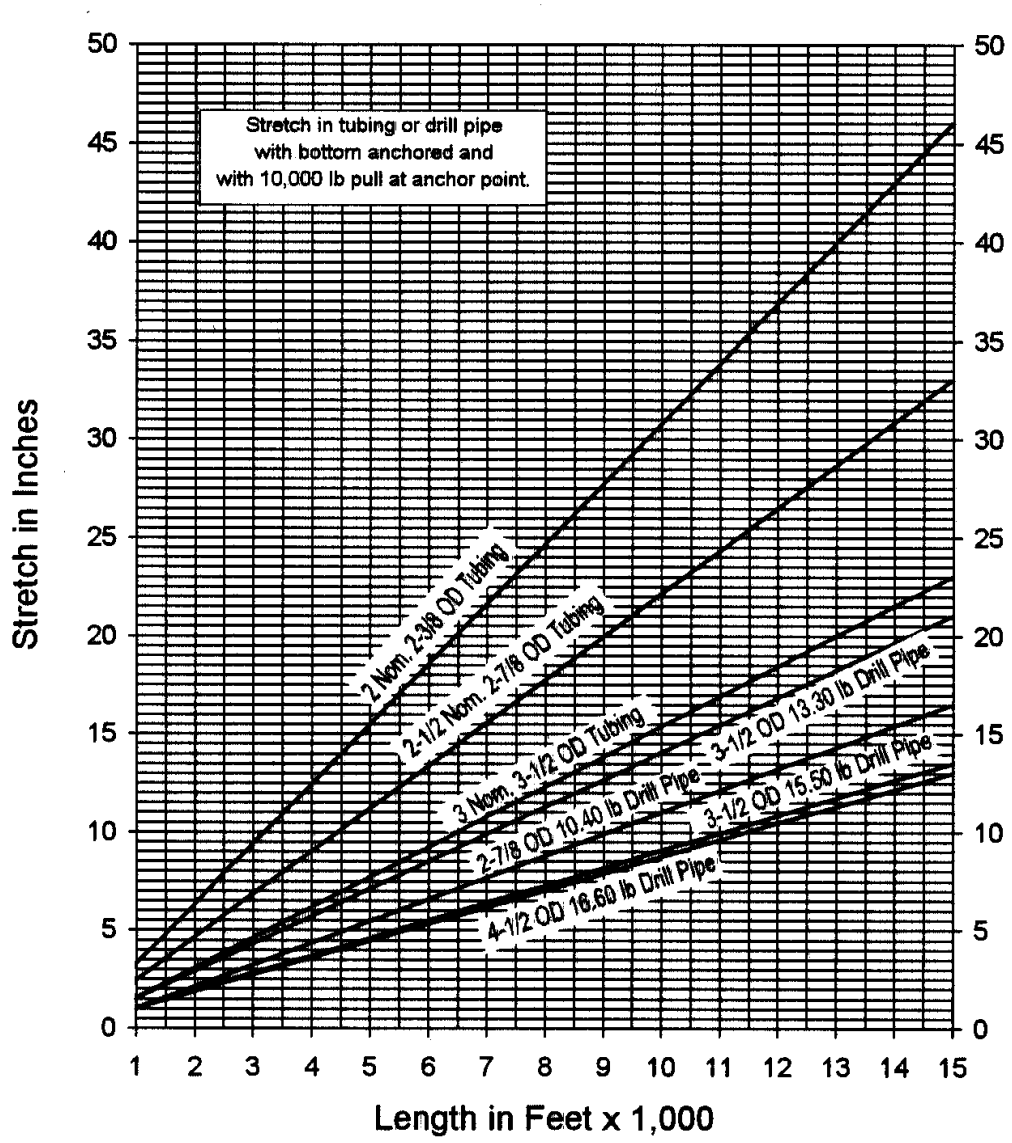
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Chemical Cutter Temperature and Pressure Ratings

Tool Size (in.)	Temperature Rating For One Hour (°F)	Pressure Rating For One Hour	Max. Safe Working Pressure & Temperature for One Hour
0.6875 Thru 0.9375	350	7,500 psi	6,500 psi @ 300°
1.000 Thru 1.125	350	9,000 psi	8,000 psi @ 300°
1.375 Thru 1.625	350	12,000 psi	10,500 psi @ 300°
1.6875 Thru 2.125	350	15,000 psi	13,500 psi @ 300°
2.375 Thru 7.375	350	15,000 psi	15,000 psi @ 300°

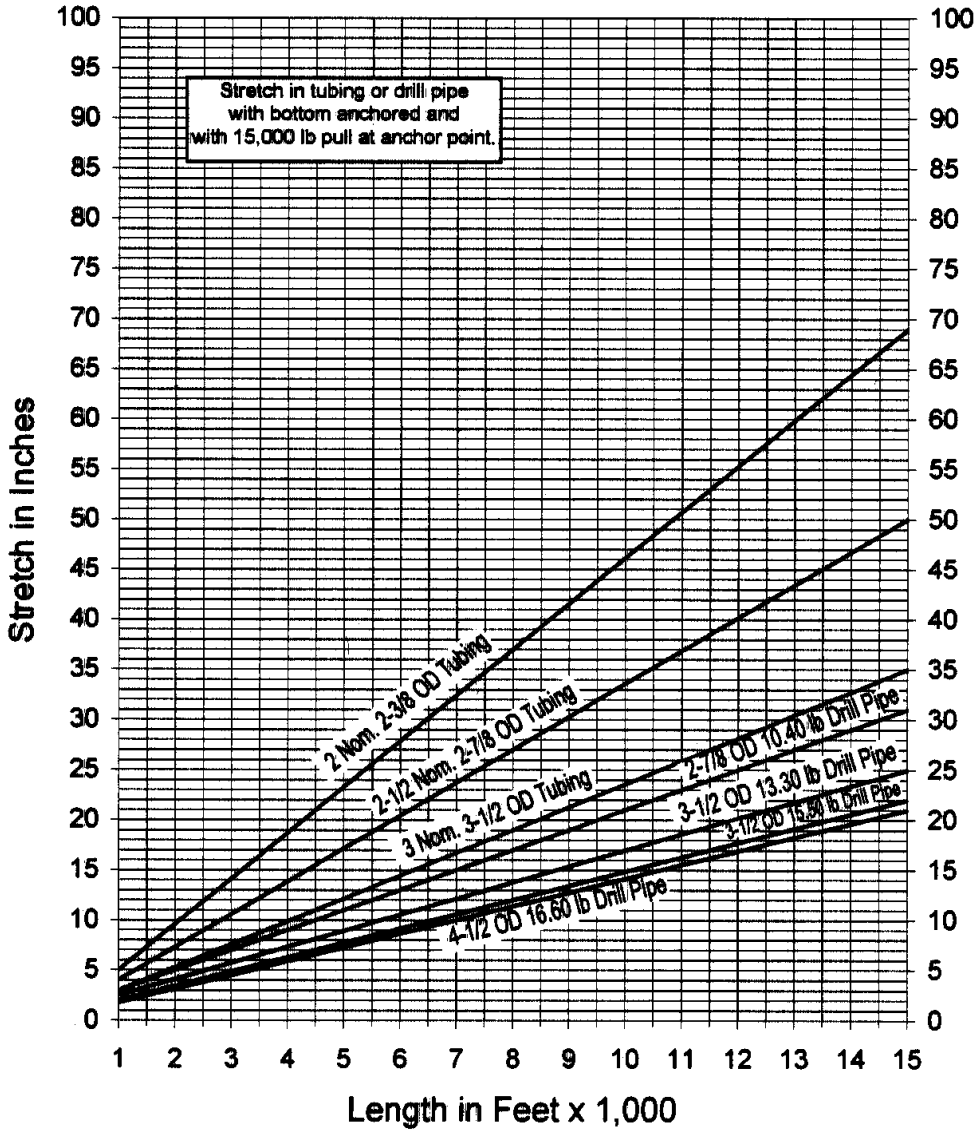
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10,000 lb Stretch Chart



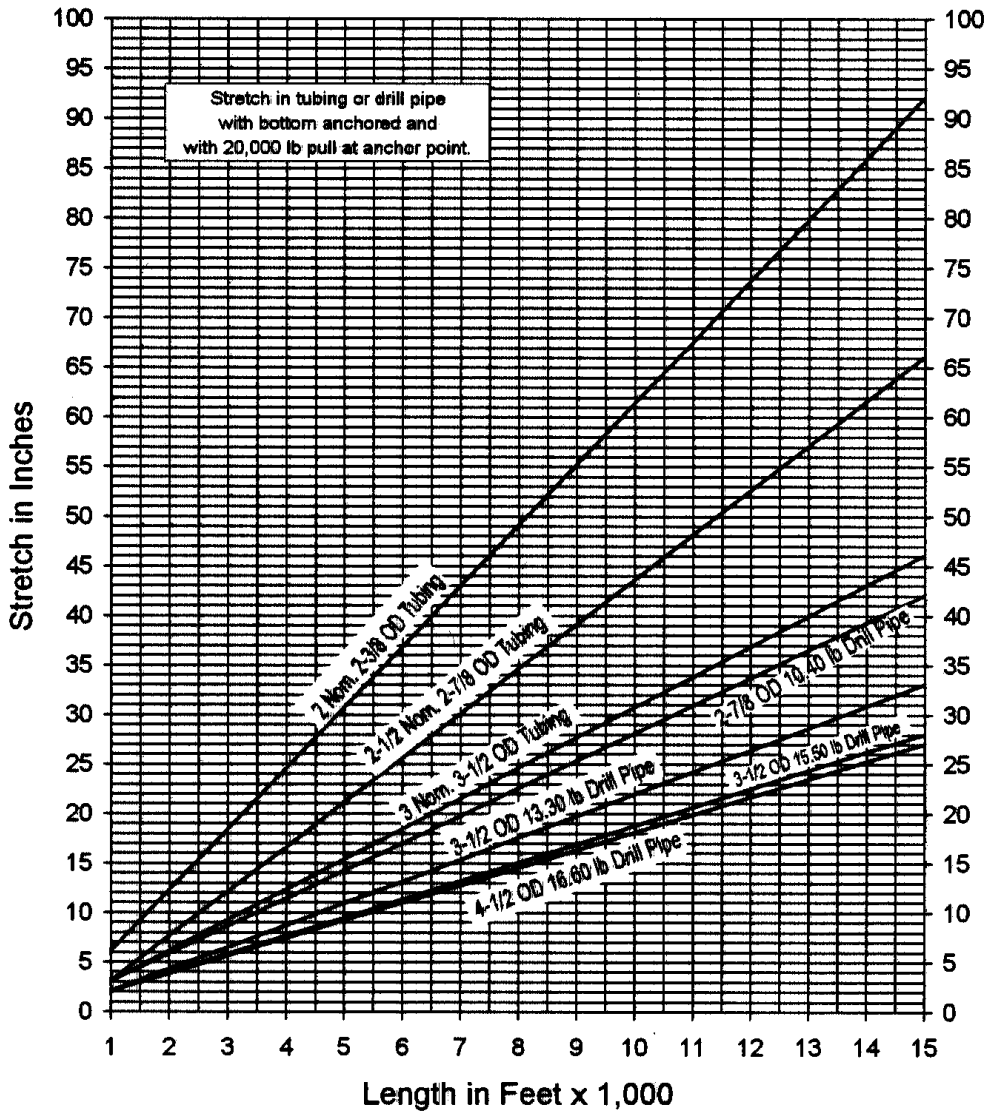
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15,000 lb Stretch Chart



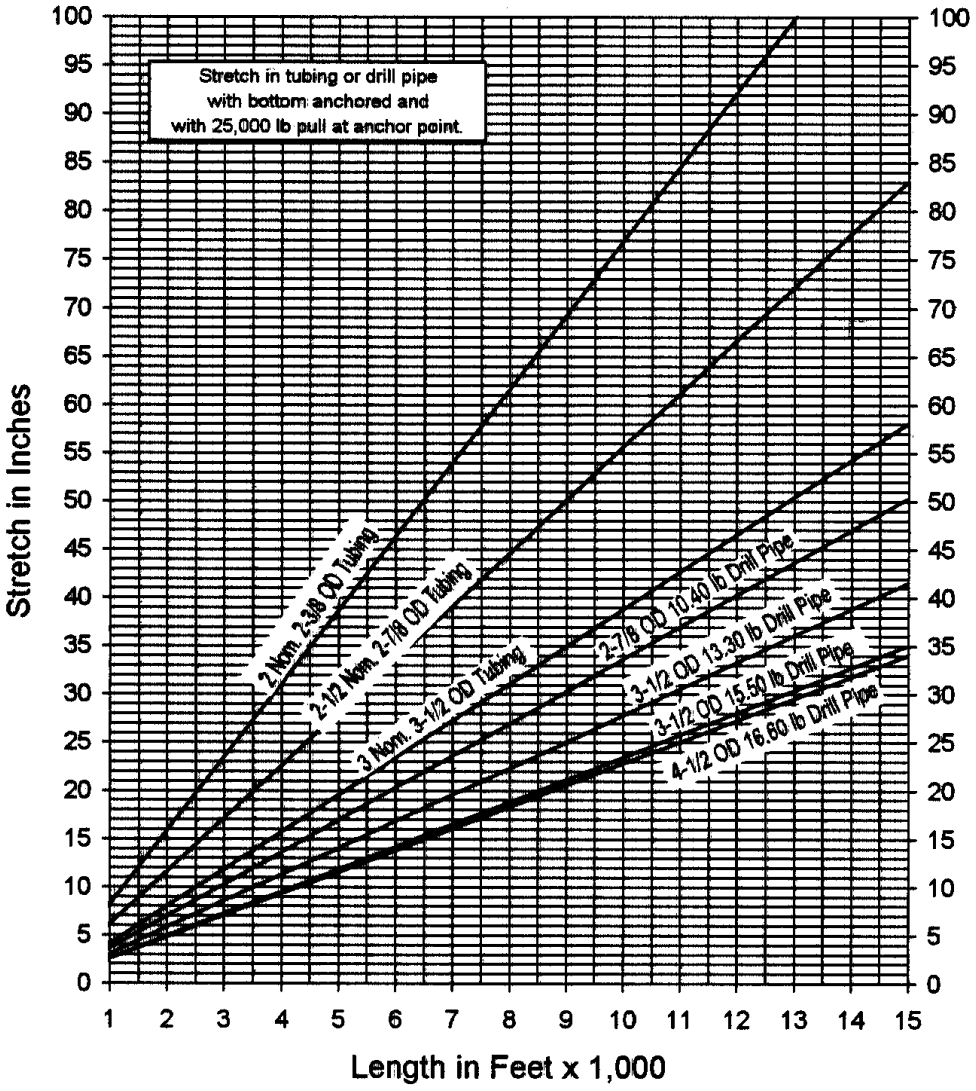
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20,000 lb Stretch Chart



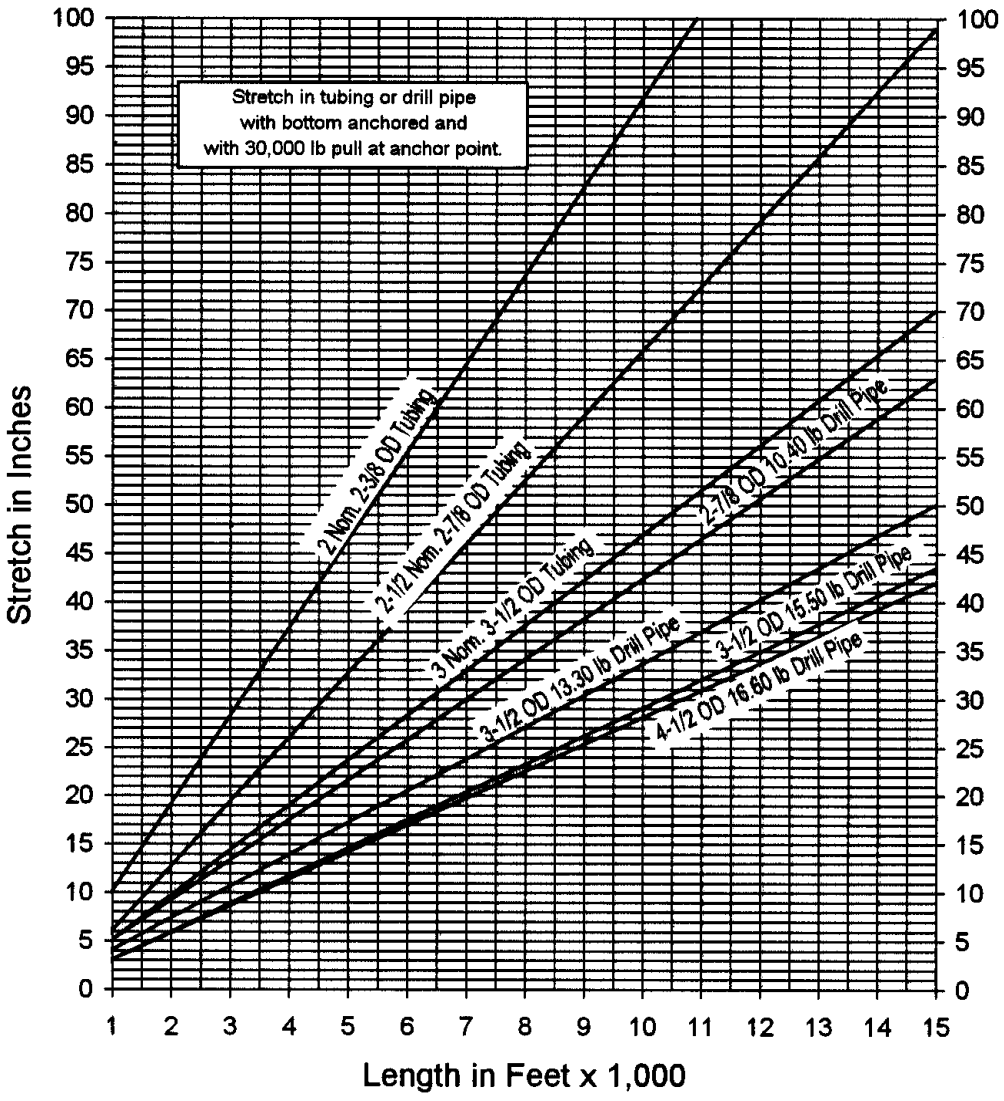
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25,000 lb Stretch Chart



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30,000 lb Stretch Chart



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SECTION TEN 10

Milling Tools

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Packer Milling Tool Specifications and Strength Data

Casing Size	13-3/8	9-5/8	7-5/8	7	5-1/2	5	4-1/2	4
Top Connection	6-5/8 Reg	4-1/2 Reg	3-1/2 Reg	3-1/2 Reg	23/8 Reg (2-7/8 PACDS)	23/8 Reg (2-7/8 PACDS)	23/8 Reg (2-7/8 PACDS)	23/8 Reg (2-7/8 PACDS)
Fish Neck OD	8	6-1/2	4-3/4	4-3/4	3-1/8	3-1/8	3-1/8	3-1/8
ID	3	1-1/2	1-1/2	1-1/2	3/4	3/4	3/4	3/4
Yield Torque (ft-lbs)	96,000	63,100	17,800	17,800	5,760 (7300)	5,760 (7300)	5,760 (7300)	5,760 (7300)
Mid Conn	2-7/8 Reg	2-7/8 Reg	2-3/8 Reg	2-3/8 Reg	1-1/8 RB	1-1/8 RB	1-1/8 RB	1-1/8 RB
OD	3-3/4	3-37/64	3-1/8	3-1/8	1.8	1.8	1.8	1.8
ID	1	1	1	1	1/2	1/2	1/2	1/2
Tensile Yield (lbs)	531,000	531,000	362,300	362,300	92,400	92,400	92,400	92,400

Yield Strength: 120,000 psi

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Flat Bottom Mills Specifications and Strength Data

Junk Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 PAC	2-7/8	1-3/8	3,200	158,950
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
4-1/2 – 5-1/2	2-7/8 PACDS	3-1/8	1-1/2	4,850	179,650
4-1/2 - 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-1/2	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7-5/8 - 9-1/2	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
9-1/2 - 12-1/4	6-5/8 Reg	8	3	64,000	1,384,800
15 - 17-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500
18-5/8 - 28	8-5/8 Reg	11-1/4	3-1/4	184,550	2,840,000

Yield Strength: 80,000 psi

Conebuster Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
4-1/2 – 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-1/2	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7-5/8 - 9-1/2	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
9-1/2 - 12-1/4	6-5/8 Reg	8	3	64,000	1,384,800
15 - 17-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

Cement Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 PAC	2-7/8	1-3/8	3,200	158,950
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
4-1/2 – 5-1/2	2-7/8 PACDS	3-1/8	1-1/2	4,850	179,650
4-1/2 - 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-1/2	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7-5/8 - 9-1/2	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
9-1/2 - 12-1/4	6-5/8 Reg	8	3	64,000	1,384,800
15 - 17-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

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Tapered Mills Specifications and Strength Data

Taper Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
4-1/2 - 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-1/2	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7-5/8 - 9-1/2	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
12-1/4 - 15	6-5/8 Reg	8	3	64,000	1,384,800
15 - 17-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

Conductor Taper Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
15 - 28	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

String Taper Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
4-1/2 - 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-1/2	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7-5/8 - 9-1/2	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
9-1/2 - 12-1/4	6-5/8 Reg	8	3	64,000	1,384,800
14-3/4 - 17-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

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Barracuda Mills Specifications and Strength Data

7" and Smaller

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
3-1/2 - 4-1/2	2-7/8 PACDS	3-1/8	1-1/2	4,850	179,650
4-1/2 - 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 8-3/8	3-1/2 IF	4-3/4	2-1/4	12,650	518,000
5-1/2 - 8-3/8	4-1/2 IF	6-1/2	2-13/16	37,750	999,900

Yield Strength: 80,000 psi

9-5/8" and Larger

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
10-3/4	6-5/8 Reg	8	3	64,000	1,384,800
14-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

Flat Bottom

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/2 - 4-1/2	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
3-1/2 - 4-1/2	2-7/8 PACDS	3-1/8	1-1/2	4,850	179,650
4-1/2 - 5-1/2	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-1/2	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7-5/8 - 9-1/2	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
9-1/2 - 12-1/4	6-5/8 Reg	8	3	64,000	1,384,800
15 - 17-1/2	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

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Other Tubular Mills Specifications and Strength Data

Pilot Mills

Dressed Diameter	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
3-1/4 - 4-1/4	2-3/8 Reg	3-1/8	1-1/2	3,850	163,000
4 - 5-3/8	2-7/8 Reg	3-3/4	1-1/2	7,400	275,700
5-1/2 - 7-7/8	3-1/2 Reg	4-3/4	1-3/4	10,500	402,300
7 - 10-3/4	4-1/2 Reg	6-1/4	2-1/4	27,650	791,050
9-1/2 - 17	6-5/8 Reg	8	3	64,000	1,384,800
9-1/2 - 17	7-5/8 Reg	9-1/2	3-1/4	106,250	2,005,500

Yield Strength: 80,000 psi

Skirted Junk Mills

Tool Series	Top Connection	Fishing Neck Diameter	Pin ID	Yield Torque ft-lbs	Tensile Yield lbs
55, 57	3-1/2 Reg	4-3/4	1-3/4	15,750	603,500
81, 96	4-1/2 Reg	6-1/4	2-1/4	41,480	1,186,600
107, 117	6-5/8 Reg	8	3	96,000	2,077,200

Yield Strength: 120,000 psi

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SECTION ELEVEN 11 Technical Info

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General Formulas

Circumference	Circumference = 3.14 x Diameter
Diameter	Diameter = $\frac{\text{Circumference}}{3.1416}$
Area of a Cirlce	Area = Diameter^2 x .7854
Pressure Drop Across Nozzle Area	G = Gallons per minute D = Mud weight per gallon A = Nozzle area C = Orifice coefficient (.95 for a bit orifice) Pressure Drop = $\frac{G^2 \text{ x } D}{12031 \text{ x } A^2 \text{ x } C^2)}$
Bottom Hole Pressure of Fluid Column (Bhp)	W = Mud weight pounds per gallon TVD = True Vertical Depth of hole in feet BHP = .052 x W x TVD
Fluid Capacity of Annulus Area	D = ID of casing or hole in inches d = OD of drill pipe in inches Gallons per lineal feet = $(D^2 - d^2) \times 0.0408$ Lineal feet per gallon = $\frac{24.51}{D^2 - d^2}$
Volume of Pipe Lines	D = ID in inches Barrels per lineal foot = $0.0009714 \times D^2$ Lineal feet per barrel = $\frac{1029.4}{D^2}$ Gallons per lineal feet = $0.0408 \times D^2$ Lineal feet per gallon = $\frac{24.51}{D^2}$
Volume of a Sphere	R = Radius Volume = $\frac{4 \times 3.1416 \times R^3}{3}$
Surface Area of a Sphere	R = Radius Surface area = $4 \times 3.1416 \times R^2$
Volume of a Pyramid or Cone	Volume = $\frac{\text{Area of base}}{3}$ x Height
Area of Triangle	Area = Base x ½ x height
Length of the Hypotenuse of a Triangle	$\sqrt[2]{\text{base}^2 + \text{height}^2}$

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Buoyancy Factor

Mud Weight (lb/gal)	Factor
8.4	0.872
8.6	0.869
8.8	0.866
9.0	0.862
9.2	0.859
9.4	0.856
9.6	0.853
9.8	0.850
10.0	0.847
10.2	0.844
10.4	0.841
10.6	0.838
10.8	0.835
11.0	0.832
11.2	0.829
11.4	0.826
11.6	0.823
11.8	0.820
12.0	0.817
12.2	0.814
12.4	0.811

Mud Weight (lb/gal)	Factor
12.6	0.807
12.8	0.804
13.0	0.801
13.2	0.798
13.4	0.795
13.6	0.792
13.8	0.789
14.0	0.786
14.5	0.778
15.0	0.771
15.5	0.763
16.0	0.756
16.5	0.748
17.0	0.740
17.5	0.733
18.0	0.725
18.5	0.717
19.0	0.710
19.5	0.702
20.0	0.694

$$\text{Buoyancy Factor} = \frac{\text{Mud Weight}}{65.63} - 1$$

Hydrostatic Pressure = (Depth x Fluid Weight x .0520)

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Pipe Recovery Formula

For any weight of pipe not shown, use the following formula to get number of pounds to pull over the weight of the string to get 3-1/2 in. of stretch per 1,000 ft of free pipe.

2208.5 x weight of pipe per foot = number of pounds to pull

In order to figure pipe weight accurately the buoyancy factor must be included.

Buoyancy: The tendency of a body to float or to rise when submerged in a fluid.

Example: 11,624 ft of 2-3/8 in., 4.7 lb/ft tubing
Fluid weight = 11.2 lb/gal of mud
Block weight = 12,000 lb

Pipe weight in air: 11,624 ft x 4.7 lb = 54,632 lb
Buoyancy factor for 11.2 lb mud = .829
Pipe weight in fluid: 54.632 lb x .829 = 45,290 lb
Pipe weight including block: 45,290 lb + 12,000 lb = 57,290 lb or 57,000 lb

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Annular Velocity

$$V = \frac{24.5 \times Q_{gpm}}{(\text{Csg ID})^2 - (\text{Pipe OD})^2}$$

OR

$$V = \frac{1029.42 \times Q_{bbl/min}}{(\text{Csg ID})^2 - (\text{Pipe OD})^2}$$

where:

V = annular velocity in ft/min
Q_{gpm} = flow rate in gallons per minute
$Q_{bbl/min}$ = flow rate in barrels per minute
Csg ID = casing ID in inches
Pipe OD = pipe or tubing OD in inches

String Weight Suspended in Fluid

$$W_{strg} = B \times L \times W_{pipe}$$

where:

W_{strg} =weight of String in lbs.
B = buoyancy factor = $1 - (M_w/65.5)$
M_w = mud weight in lb/gal
L = length in ft
W_{pipe} = pipe or tubing weight in lb/ft

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Annular Capacity of One String Inside of Pipe

$CAP_{ann}\ (ft^3) = 0.005454 \times L \times \{(Csg\ ID)^2 - (Pipe\ OD)^2\}$

$CAP_{ann\ (gal)} = 0.0408 \times L \times \{(Csg\ ID)^2 - (Pipe\ OD)^2\}$

$CAP_{ann}\ (bbl) = 0.0009714 \times L \times \{(Csg\ ID)^2 - (Pipe\ OD)^2\}$

where:

CAP_{ann} = annular capacity; use appropriate formula for desired units
L = length of string in feet
Csg ID = hole ID or casing ID in inches
Pipe OD = tubing OD or pipe OD in inches

Capacity of Pipe

$CAP_{pipe}\ (ft^3) = 0.005454 \times L \times (Pipe\ ID)^2$

$CAP_{pipe}\ (gal) = 0.0408 \times L \times (Pipe\ ID)^2$

$CAP_{pipe}\ (bbl) = 0.0009714 \times L \times (Pipe\ ID)^2$

where:

CAP_{ann} = annular capacity; use appropriate formula for desired units
L = length of string in feet
Pipe ID = tubing ID or pipe ID in inches

Converting Pressure Drop (psi) to Q (gpm)

$$Q = \sqrt{\frac{P_{drop} \times (A \times N)^2}{M_W \times 0.00009209}}$$

where:

Q = flow rate in gpm
P_{drop} = pressure drop in psi
A = nozzle area in $in^2 = 0.7854 \times d^2$
d = nozzle diameter in inches
N = number of nozzles
M_w = mud weight in lb/gal

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Double Acting Duplex Pump Data

$$Q_{pump} = 0.0001619 \times S \times \{(2 \times D^2) - d^2\} \times \frac{eff}{100}$$

where:

Q_{pump} = pump output in barrels per stroke
S = pump stroke in inches
D = pump liner diameter in inches
d = pump rod diameter in inches
eff = pump efficiency in %

Single Acting Triplex Pump Data

$$Q_{pump} = 0.0002429 \times D^2 \times S \times \frac{eff}{100}$$

where:

Q_{pump} = pump output in barrels per stroke
D = pump liner diameter in inches
S = pump stroke in inches
eff = pump efficiency in %

Free Point or Stretch Formula

The following formulas express the relationship between differential stretch and free length of a stuck string when an overpull is applied:

$$L = \frac{735294 \times e \times W_{pipe}}{F}$$

or

$$e = \frac{L \times F}{735294 \times W_{pipe}}$$

where:

L = minimum length of free pipe in feet or length being stretched in feet
e = stretch in inches
W_{pipe} = pipe weight in lb/ft
F = Overpull in lbs.

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Hydraulic Pressure to Pounds Of Force

$$F = P \times A$$

where:

F = Force in lbs.
P = pressure in psi
A = hydraulic pressure area in square inches

Pressure Drop on a Single Nozzle (Orifice)

$$P = \frac{0.0001493 \times Q^2 \times M_w}{d^4}$$

$$P = \frac{0.0000921 \times Q^2 \times M_w}{A^2}$$

where:

P = pressure drop in psi
Q = flow rate in gpm
MW = mud weight in lb/gal
d = nozzle or orifice diameter in inches
A = area of one nozzle or total area of multiple

Pressure Losses for Oil-Base Mud

$$P_{loss} = \frac{C \times L}{\text{Pipe ID}^{4.82}}$$

$$C = 0.0000765 \times (Vis_{pl})^{0.275} \times M_w^{0.82} \times Q^{1.82}$$

where:

P_{loss} = pressure loss in psi
Vis_{pl} = plastic viscosity
M_W = mud weight in lb/gal
Q = flow rate in gpm
L = length of string in feet
Pipe ID = string ID

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Pressure Losses for Water-Base Mud

$$P_{loss} = \frac{C \times L}{\text{Pipe ID}^{4.82}}$$

$$C = 0.0000765 \times (Vis_{pl})^{0.18} \times M_w^{0.82} \times Q^{1.82}$$

where:

P_{loss} = pressure loss in psi
Vis_{pl} = plastic viscosity
M_W = mud weight in lb/gal
Q = flow rate in gpm
L = length of string in feet
Pipe ID = string ID

Strength of Drill Pipe Under Tension Conversion to Rounds of Torque

$$T_{min} = \frac{0.096167 \times J}{\text{Pipe OD}} \times \sqrt{Y_m^2 - \frac{F^2}{A^2}}$$

$$RD_{max} = \frac{0.0020104 \times T_{min}}{J}$$

$$RD = \frac{2.0103E-06 \times T \times L}{J}$$

where:

T_{min} = minimum torsional yield strength (ft/b) under tension
J = polar moment of inertia in in^4
$= 0.0982 \times \{(\text{Pipe OD})^4 - (\text{Pipe ID})^4\}$
Pipe ID = ID of pipe or tubing in inches
Pipe OD = OD of pipe or tubing in inches
Y_m minimum yield strength of pipe in psi
F = tension load in lbs.
A = pipe cross-sectional area in square inches
$= 0.7854 \times \{(\text{Pipe OD})^2 - \text{Pipe ID})^2\}$
RD_{max} = maximum rounds of torque per 1000 feet of pipe
RD = rounds of torque
T = torque required in ft/lbs
L = length of string in feet

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English to SI Conversion Chart

Values may be converted from English units to SI units, and vice versa, using the table below. To convert a value from English units to SI units, locate the appropriate English unit in column 2 of the table, and multiply the value by the factor in column 3 to obtain the equivalent desired SI units listed in column 4. Similarly, to convert a value from SI units to English units, locate the appropriate SI unit in column 4, and multiply the value by the factor in column 5 to obtain the equivalent desired English unit listed in column

Quantity	English Unit	Factor English to SI	SI Unit	Factor SI to English	English Unit
Length	yards	9.144 E-01	meters	1.093613 E+00	yards
	feet	3.048 E-01	meters	3.280840 E+00	feet
	feet	3.048 E+01	centimeters	3.280840 E-02	feet
	inches	2.54 E+01	millimeters	3.937008 E-02	inches
	inches	2.54 E +00	centimeters	3.937008 E-01	inches
Area	sq. feet	9.290304 E-02	sq. meters	1.076391 E+01	sq. feet
	sq. feet	9.290304 E+02	sq. centimeters	1.076391 E-03	sq. feet
	sq. inches	6.4516 E+02	sq. millimeters	1.550003 E-03	sq. inches
	sq. inches	6.4516 E+00	sq. centimeters	1.550003 E-01	sq. inches
Volume	barrels	1.589873 E-01	cu meters	6.289811 E+00	barrels
	cu feet	2.831685 E-02	cu meters	3.531466 E+01	cu feet
	cu feet	2.831685 E+01	liters	3.531466 E+01	cu feet
	UK gallons	4.546092 E-03	cu meters	2.199692 E+02	UK gallons
	UK gallons	4.546092 E+00	liters	2.199692 E-01	UK gallons
	US gallons	3.785412 E-03	cu meters	2.641720 E+02	US gallons
	US gallons	3.785412 E+00	liters	2.641720 E-01	US gallons
	cu inches	1.638706 E+01	cu centimeters	6.102376 E-02	cu inches
Volume/length	US gal/ft	1.241 933 E-02	cu meters/meter	8.051 964 E+01	US gal/ft
Mass	UK ton(lg.)	1.016047 E+00	megagrams	9.842064 E-01	UK ton (lg)
	UK ton (sht)	9.071847 E-01	megagrams	1.102311 E+00	US ton (sht)
	UK ton	5.080235 E+01	kilograms	1.968413 E-02	UK ton
	lbm	4.535924 E-01	kilograms	2.204622 E+00	lbm
Temperature	Fahrenheit	(^{0}F-32)/1 .8	Celsius	(^{0}C/1 .8) +32	fahrenheit
Pressure	lbf/sq inch	6.894757 E-03	megapascals	1.450377 E+02	lbf/sq inch
	lbf/sq inch	6.894757 E+00	kilopascals	1.450377 E-01	lbf/sq inch
	lbf/sq inch	6.894757 E-02	bar	1.450377 E+01	lbf/sq inch
	lbf/sq foot	4.788025 E-02	kilopascals	2.088543 E+01	lbf/sq foot
Pressure Drop	lbf/sq in/ft	2.262059 E+01	kilopascals/meter	4.420751 E-02	lbf/sq in/ft
	lbf/sq in/100 ft	2.262059 E-01	kilopascals/meter	4.420751 E+00	lbf/sq in/100 ft
Density	lbm/US gallon	1.198264 E+02	kilograms/cu meter	8.345406 E-03	lbm US gallon
	lbm/UK gallon	9.977633 E+01	kilograms/cu meter	1.002242 E-02	lbm UK gallon
	lbm/cu ft	1.601846 E+01	kilograms/cu meter	6.242797 E-02	lbm/cu ft
Energy	foot-pounds	1.355818 E+00	joules	7.375621 E-01	foot-pounds
Angular velocity	rev/min	1.047198 E-01	radians/second	9.549292 E+00	rev/min
Force	pounds force	4.448222 E+00	newtons	2.248089 E-01	pounds force
Torque	foot-pounds	1.355818 E+00	newton-meters	7.3756 E-01	foot-pounds
Moment section	Inches	4.162314 E+01	centimeters	2.402510 E-02	inches
Section modulus	Cu inches	1.628706 E+01	cu centimeters	6.1 39844 E-02	cu inches
Stress	lbf/sq inch	6.894757 E-03	megapascals	1.450377 E±02	lbf/sq inch
Mass/length	lbm/foot	1.488164 E±00	kilograms/meter	6.719689 E-01	lbm/foot

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Casing Chart (Imperial/Metric)

OD Size in. (mm)		Weight		Wall at Nom ID		Nom ID		Drift ID		Cas. Max. API ID		Coupling OD
Nom	Max	(lb/ft)	(kg/m)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	
		9.50	14.136	0.205	5.207	4.090	103.890	3.965	100.71	4.155	105.54	
.	.	10.50	15.624	0.224	5.690	4.052	102.920	3.927	99.75	4.118	104.60	
		11.00	16.368	0.237	6.020	4.026	102.260	3.901	99.085	4.094	103.988	
		11.60	17.261	0.250	6.350	4.000	101.600	3.875	98.425	4.069	103.353	
4.500	4.545	12.60	18.749	0.271	6.883	3.958	100.533	3.833	97.358	4.029	102.337	5.000
(114.3)	(115.44)	13.50	20.088	0.290	7.366	3.920	99.568	3.795	96.393	3.993	101.422	(127.00)
		15.10	22.469	0.337	8.560	3.826	97.180	3.701	94.005	3.904	99.162	
		16.90	25.147	0.373	9.474	3.754	95.352	3.629	92.177	3.836	97.434	
		18.80	27.974	0.430	10.922	3.640	92.456	3.515	89.281	3.728	94.691	
		21.60	32.141	0.500	12.700	3.500	88.900	3.375	85.725	3.597	91.364	
		11.50	17.112	0.220	5.588	4.560	115.824	4.435	112.649	4.631	117.627	
		13.00	19.344	0.253	6.426	4.494	114.148	4.369	110.973	4.568	116.027	
		15.00	22.320	0.296	7.518	4.408	111.963	4.283	108.788	4.486	113.944	
		18.00	26.784	0.362	9.195	4.276	108.610	4.151	105.435	4.361	110.769	
		20.30	30.206	0.408	10.363	4.184	106.274	4.059	103.099	4.274	108.560	5.563
5.000	5.050	20.80	30.950	0.422	10.719	4.156	105.562	4.031	102.387	4.248	107.899	(141.300)
(127.00)	(128.27)	21.40	31.843	0.437	11.100	4.126	104.800	4.001	101.625	4.219	107.163	
		23.20	34.522	0.478	12.141	4.044	102.718	3.919	99.543	4.142	105.207	
		24.10	35.861	0.500	12.700	4.000	101.600	3.875	98.425	4.101	104.165	
		26.70	39.730	0.562	14.275	3.876	98.450	3.751	95.275	0.000	0.000	
		14.00	20.832	0.244	6.198	5.012	127.305	4.887	124.130	5.090	129.286	
.	.	15.50	23.064	0.275	6.985	4.950	125.730	4.825	122.555	5.031	127.787	
		17.00	25.296	0.304	7.722	4.892	124.257	4.767	121.082	4.976	126.390	
		20.00	29.760	0.361	9.169	4.778	121.361	4.653	118.186	4.868	123.647	
		23.00	34.224	0.415	10.541	4.670	118.618	4.545	115.443	4.766	121.056	
.	.	26.00	38.688	0.476	12.090	4.548	115.519	4.423	112.344	4.650	118.110	
		26.80	39.878	0.500	12.700	4.500	114.300	4.375	111.125	4.605	116.967	
5.500	5.555	28.40	42.259	0.530	13.462	4.440	112.776	4.315	109.601	4.549	115.545	6.050
(139.7)	(141.01)	29.70	44.194	0.562	14.275	4.376	111.150	4.251	107.975	4.490	114.046	(153.670)
		32.30	48.062	0.612	15.545	4.276	108.610	4.151	105.435	4.394	111.608	
		32.60	48.509	0.625	15.875	4.250	107.950	4.125	104.775	4.370	110.998	
		35.30	52.526	0.687	17.450	4.126	104.800	4.001	101.625	4.254	108.052	
		36.40	54.163	0.705	17.907	4.090	103.886	3.965	100.711	4.220	107.188	
		38.00	56.544	0.750	19.050	4.000	101.600	3.875	98.425	4.136	105.054	
		40.50	60.264	0.812	20.625	3.876	98.450	3.751	95.275	4.020	102.108	
		43.10	64.133	0.875	22.225	3.750	95.250	3.625	92.075	3.903	99.136	
		18.00	26.784	0.288	7.315	5.424	137.770	5.299	134.595	5.511	139.979	
6.000	6.060	20.00	29.760	0.324	8.230	5.352	135.941	5.227	132.766	5.443	138.252	
(152.4)	(153.92)	23.00	34.224	0.380	9.652	5.240	133.096	5.115	129.921	5.337	135.560	
		26.00	38.688	0.434	11.024	5.132	130.353	5.007	127.178	5.234	132.944	
		20.00	29.760	0.288	7.315	6.049	153.645	5.924	150.470	6.125	155.575	
.	.	23.20	34.522	0.330	8.382	5.965	151.511	5.840	148.336	6.062	153.975	

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Casing Chart (Imperial/Metric) (continued)

OD Size in. (mm)		Weight		Wall at Nom ID		Nom ID		Drift ID		Cas. Max. API ID		Coupling OD
Nom	Max	(lb/ft)	(kg/m)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	
6.625	6.691	24.00	35.712	0.352	8.941	5.921	150.393	5.796	147.218	6.003	152.476	7.390
(168.3)	(169.95)	28.00	41.664	0.417	10.592	5.791	147.091	5.666	143.916	5.879	149.327	(187.71)
		32.00	47.616	0.475	12.065	5.675	144.145	5.550	140.970	5.769	146.533	
		40.80	60.710	0.625	15.875	5.375	136.525	5.250	133.350	5.504	139.802	
		17.00	25.296	0.231	5.867	6.538	166.065	6.413	162.890	6.629	168.377	
.	.	20.00	29.760	0.272	6.909	6.456	163.982	6.331	160.807	6.551	166.395	
		23.00	34.224	0.317	8.052	6.366	161.696	6.241	158.521	6.466	164.236	
		26.00	38.688	0.362	9.195	6.276	159.410	6.151	156.235	6.380	162.052	
		29.00	43.152	0.408	10.363	6.184	157.074	6.059	153.899	6.293	159.842	
		32.00	47.616	0.453	11.506	6.094	154.788	5.969	151.613	6.208	157.683	
		35.00	52.080	0.498	12.649	6.004	152.502	5.879	149.327	6.123	155.524	
		38.00	56.544	0.540	13.716	5.920	150.368	5.795	147.193	6.043	153.492	7.656
7.000	7.070	41.00	61.008	0.590	14.986	5.820	147.828	5.695	144.653	5.949	151.105	(194.46)
(177.8)	(179.58)	42.70	63.538	0.626	15.900	5.750	146.050	5.625	142.875	5.883	149.428	
		44.00	65.472	0.640	16.256	5.720	145.288	5.595	142.113	5.854	148.692	
		46.00	68.448	0.670	17.018	5.660	143.764	5.535	140.589	5.798	147.269	
		46.40	69.043	0.687	17.450	5.625	142.875	5.500	139.700	5.766	146.456	
		49.50	73.656	0.730	18.542	5.540	140.716	5.415	137.541	5.685	144.399	
		50.10	74.549	0.750	19.050	5.500	139.700	5.375	136.525	5.647	143.434	
		53.60	79.757	0.812	20.625	5.376	136.550	5.251	133.375	5.531	140.487	
		57.10	84.965	0.875	22.225	5.250	133.350	5.125	130.175	5.413	137.490	
		24.00	35.712	0.300	7.620	7.025	178.435	6.900	175.260	7.129	181.077	
.	.	26.40	39.283	0.328	8.331	6.969	177.013	6.844	173.838	7.076	179.730	
		29.70	44.194	0.375	9.525	6.875	174.625	6.750	171.450	6.987	177.470	
		33.70	50.146	0.430	10.922	6.765	171.831	6.640	168.656	6.882	174.803	
		39.00	58.032	0.500	12.700	6.625	168.275	6.500	165.100	6.750	171.450	
		42.80	63.686	0.562	14.275	6.501	165.125	6.376	161.950	6.632	168.453	8.500
7.625	7.701	45.30	67.406	0.595	15.113	6.435	163.449	6.310	160.274	6.570	166.878	(215.9)
(193.6)	(195.61)	47.10	70.085	0.625	15.875	6.375	161.925	6.250	158.750	6.513	165.430	
		51.20	76.186	0.687	17.450	6.251	158.775	6.126	155.600	6.396	162.458	
		53.06	78.953	0.712	18.085	6.201	157.505	6.076	154.330	6.349	161.265	
		55.30	82.286	0.750	19.050	6.125	155.575	6.000	152.400	6.277	159.436	
		46.00	68.448	0.595	15.113	6.560	166.624	6.500	165.100	6.696	170.078	
7.750	7.828	46.10	68.597	0.595	15.113	6.560	166.624	6.435	163.449	6.696	170.078	
(196.8)	(198.83)	48.60	72.317	0.640	16.256	6.470	164.338	6.345	161.163	6.611	167.919	
		54.20	80.650	0.722	18.339	6.306	160.172	6.181	156.997	6.456	163.982	
8	8.000	70.00	104.160	0.900	22.860	6.200	157.480	6.075	154.305	6.373	161.874	
(203.2)	(203.2)	75.00	111.600	0.980	24.892	6.040	153.416	5.915	150.241	6.223	158.064	

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Casing Chart (Imperial/Metric) (continued)

OD Size in. (mm)		Weight		Wall at Nom ID		Nom ID		Drift ID		Cas. Max. API ID		Coupling OD
Nom	Max	(lb/ft)	(kg/m)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	
8.500	8.585	75.72	112.671									
(215.9)	(218.06)											
		24.00	35.712	0.264	6.706	8.097	205.66	7.972	202.49	8.208	208.48	
		28.00	41.664	0.304	7.722	8.017	203.63	7.892	200.46	8.131	206.53	
		29.35	43.673	0.322	8.179	7.981	202.717	7.856	199.542	8.097	205.664	
		32.00	47.616	0.352	8.941	7.921	201.193	7.875	200.025	8.040	204.216	
8.625	8.711	32.00	47.616	0.352	8.941	7.921	201.193	7.796	198.018	8.040	204.216	
(219.1)	(221.26)	36.00	53.568	0.400	10.160	7.825	198.755	7.700	195.580	7.949	201.905	9.625
		40.00	59.520	0.450	11.430	7.725	196.215	7.600	193.040	7.854	199.492	(244.47)
		44.00	65.472	0.500	12.700	7.625	193.675	7.500	190.500	7.759	197.079	
		49.00	72.912	0.557	14.148	7.511	190.779	7.386	187.604	7.651	194.335	
		52.00	77.376	0.595	15.113	7.435	188.849	7.310	185.674	7.579	192.507	
		32.30	48.062	0.312	7.925	9.001	228.625	8.847	224.714	9.126	231.800	
.	.	36.00	53.568	0.352	8.941	8.921	226.593	8.765	222.631	9.050	229.870	
		40.00	59.520	0.395	10.033	8.835	224.409	8.679	220.447	8.968	227.787	
		43.50	64.728	0.435	11.049	8.755	222.377	8.599	218.415	8.892	225.857	
		47.00	69.936	0.472	11.989	8.681	220.497	8.525	216.535	8.822	224.079	
		53.00	78.864	0.545	13.843	8.535	216.789	8.500	215.900		0.000	
		53.50	79.608	0.545	13.843	8.535	216.789	8.379	212.827	8.683	220.548	
9.625	9.721	58.00	86.304	0.595	15.113	8.435	214.249	8.375	212.725		0.000	10.625
(244.5)	(246.91)	58.40	86.899	0.595	15.113	8.435	214.249	8.279	210.287	8.589	218.161	(269.87)
		59.40	88.387	0.609	15.469	8.407	213.538	8.251	209.575	8.562	217.475	
		61.00	90.768	0.625	15.875	8.375	212.725	8.219	208.763	8.532	216.713	
		64.90	96.571	0.672	17.069	8.281	210.337	8.125	206.375	8.443	214.452	
		70.30	104.606	0.734	18.644	8.157	207.188	8.001	203.225	8.325	211.455	
		71.80	106.838	0.750	19.050	8.125	206.375	7.969	202.413	8.295	210.693	
		75.60	112.493	0.797	20.244	8.031	203.987	7.875	200.025	8.206	208.432	
9.750	9.848 sd	59.00	87.792	0.595	15.113	8.560	217.424	8.510	216.154	8.715	221.361	
(247.65)	(250.139)	59.20	88.090	0.595	15.113	8.560	217.424	8.404	213.462			
9.875	9.974	62.80	93.446	0.625	15.875	8.625	219.075	8.469	215.113	8.784	223.114	
(250.825)	(253.34)											
		32.75	48.732	0.279	7.087	10.192	258.877	10.036	254.914	10.325	262.255	
		40.50	60.264	0.350	8.890	10.050	255.270	9.894	251.308	10.190	258.826	
		45.00	66.960	0.400	10.160	9.950	252.730	9.875	250.825		0.000	
		45.50	67.704	0.400	10.160	9.950	252.730	9.794	248.768	10.095	256.413	
		51.00	75.888	0.450	11.430	9.850	250.190	9.694	246.228	10.000	254.000	11.750

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Casing Chart (Imperial/Metric) (continued)

OD Size in. (mm)		Weight		Wall at Nom ID		Nom ID		Drift ID		Cas. Max. API ID		Coupling OD
Nom	Max	(lb/ft)	(kg/m)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	
10.750	10.858	55.50	82.584	0.495	12.573	9.760	247.904	9.604	243.942	9.914	251.816	(298.45)
(273.05)	(275.79)	60.70	90.322	0.545	13.843	9.660	245.364	9.504	241.402	9.819	249.403	
		65.70	97.762	0.595	15.113	9.560	242.824	9.404	238.862	9.724	246.990	
		71.10	105.797	0.650	16.510	9.450	240.030	9.294	236.068	9.620	244.348	
		73.20	108.922	0.672	17.069	9.406	238.912	9.250	234.950	9.578	243.281	
		79.20	117.850	0.734	18.644	9.282	235.763	9.126	231.800	9.461	240.309	
		85.30	126.926	0.797	20.244	9.156	232.562	9.000	228.600	9.342	237.287	
		105.00	156.240	1.000	25.400	8.750	222.250	8.594	218.288	8.958	227.533	11.5
10.925	11.034	74.00	110.112	0.670	17.018	9.585	243.459	9.500	241.300	9.759	247.879	(292.10)
277.50	(280.26)											
11.338	11.451	88.00	130.944	0.788	20.015	9.763	247.980	9.500	241.300	9.952	252.781	
(288.00)	(290.86)											
		42.00	62.496	0.333	8.458	11.084	281.534	10.928	277.571	11.232	285.293	
.	.	47.00	69.936	0.375	9.525	11.000	279.400	10.844	275.438	11.152	283.261	
		54.00	80.352	0.435	11.049	10.880	276.352	10.724	272.390	11.038	280.365	
		60.00	89.280	0.489	12.421	10.772	273.609	10.616	269.646	10.935	277.749	
		65.00	96.720	0.534	13.564	10.682	271.323	10.625	269.875			12.750
11.750	11.868	65.00	96.720	0.534	13.564	10.682	271.323	10.526	267.360	10.850	275.590	(323.85)
(298.45)	(301.44)	71.00	105.648	0.582	14.783	10.586	268.884	10.430	264.922	10.759	273.279	
		73.60	109.517	0.609	15.469	10.532	267.513	10.376	263.550	10.707	271.958	
		75.00	111.600	0.618	15.697	10.514	267.056	10.358	263.093	10.690	271.526	
		79.00	117.552	0.656	16.662	10.438	265.125	10.282	261.163	10.618	269.697	
		83.00	123.504	0.691	17.551	10.368	263.347	10.212	259.385	10.552	268.021	
11.875	11.994	71.80	106.838	0.582	14.783	10.711	272.059	10.625	269.875	10.885	276.479	
(301.63)	(304.65)											
		48.00	71.424	0.330	8.382	12.715	322.961	12.559	318.999	12.879	327.127	
.	.	54.50	81.096	0.380	9.652	12.615	320.421	12.459	316.459	12.784	324.714	
		61.00	90.768	0.430	10.922	12.515	317.881	12.359	313.919	12.688	322.275	
		68.00	101.184	0.480	12.192	12.415	315.341	12.259	311.379	12.593	319.862	
13.375	13.509	72.00	107.136	0.514	13.056	12.347	313.614	12.250	311.150		0.000	
(339.73)	(343.13)	72.00	107.136	0.514	13.056	12.347	313.614	12.191	309.651	12.529	318.237	
		77.00	114.576	0.550	13.970	12.275	311.785	12.119	307.823	12.460	316.484	14.375
		85.00	126.480	0.608	15.443	12.159	308.839	12.003	304.876	12.350	313.690	(365.125)
		92.00	136.896	0.672	17.069	12.031	305.587	11.875	301.625	12.228	310.591	
		98.00	145.824	0.719	18.263	11.937	303.200	11.781	299.237	12.139	308.331	

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Casing Chart (Imperial/Metric) (continued)

OD Size in. (mm)		Weight		Wall at Nom ID		Nom ID		Drift ID		Cas. Max. API ID		Coupling OD
Nom	Max	(lb/ft)	(kg/m)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	
13.625	13.761	88.20	131.242	0.625	15.875	12.375	314.325	12.250	311.150	12.570	319.278	
(346.08)	(349.53)											
		65.00	96.720	0.375	9.525	15.250	387.350	15.062	382.575	15.444	392.278	
16.000	16.16	75.00	111.600	0.438	11.125	15.124	384.150	14.936	379.374	15.324	389.230	
(406.4)	(410.464)	84.00	124.992	0.495	12.573	15.010	381.254	14.822	376.479	15.216	386.486	17.000
		94.00	139.872	0.570	14.478	14.860	377.444	14.672	372.669	15.073	382.854	(431.800)
		109.00	162.192	0.656	16.662	14.688	373.075	14.500	368.300	14.909	378.689	
18.625	18.811	87.50	130.200	0.435	11.049	17.755	450.977	17.567	446.202	17.981	456.717	19.625
(473.075)	(477.8)											(498.475)
20.000	20.200	94.00	139.872	0.438	11.125	19.124	485.750	18.936	480.974	19.364	491.846	
(508.00)	(513.08)	106.50	158.472	0.500	12.700	19.000	482.600	18.812	477.825	19.246	488.848	21.000
		133.00	197.904	0.635	16.129	18.730	475.742	18.542	470.967	18.989	482.321	(533.400)

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Tubing Chart (Imperial/Metric)

OD Size in. (mm)		Weight		Wall at Nom ID		Nom ID		Drift ID		Prem ID		Cas. Max. ID		Coupling
Nom	Max	Lb/ft	kg/m	in	mm	in	mm	in	mm	in	mm	in	mm	OD
2.735	2.406	4.70	6.994	0.190	4.826	1.995	50.67	1.901	48.29	1.926	48.92	2.046	51.97	2.875
(60.325)	(61.112)	5.95	8.854	0.254	6.452	1.867	47.42	1.773	45.03	1.823	46.30	1.926	48.92	73.03
		6.65	9.895	0.280	7.112	1.815	46.10	1.721	43.71	1.771	44.98	1.877	47.68	
		6.50	9.672	0.217	5.512	2.441	62.00	2.347	59.61	2.372	60.25	2.494	63.35	
2.875	2.906	7.90	11.755	0.276	7.010	2.323	59.00	2.229	56.62	2.279	57.89	2.382	60.50	3.50
(73.025)	(73.812)	8.70	12.946	0.308	7.823	2.259	57.38	2.165	54.99	2.215	56.26	2.322	58.98	88.90
		10.40	15.475	0.362	9.195	2.151	54.64	2.057	52.25	2.107	53.52	2.221	56.41	
		7.70	11.458	0.216	5.486	3.068	77.93	2.943	74.75	2.968	75.39	3.119	79.22	
		9.30	13.838	0.254	6.452	2.992	76.00	2.867	72.82	2.917	74.09	3.047	77.39	
3.500	3.531	10.30	15.326	0.289	7.341	2.922	74.22	2.797	71.04	2.847	72.31	2.981	75.72	
(88.900)	(89.690)	12.80	19.046	0.368	9.347	2.764	70.21	2.639	67.03	2.689	68.30	2.832	71.93	4.25
		12.95	19.270	0.375	9.525	2.750	69.85	2.625	66.68	2.675	67.95	2.819	71.60	107.95
		15.50	23.064	0.449	11.405	2.602	66.09	2.477	62.92	2.527	64.19	2.680	68.07	
		15.80	23.510	0.476	12.090	2.548	64.72	2.423	61.54	2.488	63.20	2.629	66.78	
		9.50	14.136	0.226	5.740	3.548	90.12	3.423	86.94	3.448	87.58	3.599	91.41	
4.000	4.031	11.00	16.368	0.262	6.655	3.476	88.29	3.351	85.12	3.387	86.03	3.531	89.69	4.75
(101.60)	(102.39)	11.60	17.261	0.286	7.264	3.428	87.07	3.303	83.90	3.347	85.01	3.487	88.57	102.65
4.500														
(114.30)														

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Tubing Stretch Table

OD (in.)	Weight (lb/ft)	ID (in.)	Stretch Constant (in./1,000lb/1,000ft)	Free Point Constant
1.050	1.14	1.0824	1.20120	832.5
	1.20	1.0824	1.20120	832.5
	1.30	1.1250	1.09890	910.0
	1.43	1.0970	0.96852	1032.5
1.315	1.63	1.0650	0.85653	1167.5
	1,70	1.0490	0.80972	1235.0
	1.72	1.0490	0.80972	1235.0
	1.80	1.0490	0.80972	1235.0
	2.10	1.4100	0.66335	1507.5
1.660	2.30	1.3800	0.59791	1672.5
	2.33	1.3800	0.59791	1672.5
	2.40	1.3800	0.59791	1672.5
	2.40	1.6500	0.57389	1742.5
	2.60	1.6100	0.50063	1997.5
1.900	2.72	1.6100	0.50063	1997.5
	2.75	1.6100	0.50063	1997.5
	2.76	1.6100	0.50063	1997.5
	2.90	1.6100	0.50063	1997.5
2.00	3.30	1.6700	0.42061	2377.5
	3.40	1.6700	0.42061	2377.5
	2.66	1.8130	0.52562	1902.5
2.063	3.25	1.7510	0.42781	2337.5
	3.30	1.7510	0.42781	2337.5
	3.40	1.7510	0.42781	2337.5
	3.10	2.1250	0.45249	2210.0
	3.32	2.1070	0.42418	2357.5
	4.00	2.0410	0.34542	2895.0
	4.60	1.9950	0.30675	3260.0
2.375	4.70	1.9950	0.30675	3260.0
	5.30	1.9390	0.27082	3692.5
	5.80	1.8670	0.23641	4230.0
	5.95	1.8670	0.23641	4230.0
	6.20	1.8530	0.23081	4332.0
	7.70	1.7030	0.18587	5380.0
	4.36	2.5790	0.31546	3170.0
	4.64	2.5630	0.30008	3332.5
	6.40	2.4410	0.22075	4530.0
	6.50	2,4410	0.22075	4530.0
	7.90	2.3230	0.17746	5635.0

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Tubing Stretch Table (continued)

OD (in.)	Weight (lb/ft)	ID (in.)	Stretch Constant (in./1,000lb/1,000ft)	Free Point Constant
2.875	8.60	2.259	0.16103	6210.0
	8.70	2.259	0.16103	6210.0
	8.90	2.243	0.15748	6350.0
	9.50	2.195	0.14771	6770.0
	10.40	2.151	0.13996	7145.0
	11.00	2.065	0.12727	7857.5
	11.65	1.995	0.11884	8415.0
	5.63	3.188	0.24405	4097.5
	5.75	3.188	0.24405	4097.5
	7.70	3.068	0.17953	5570.0
	9.20	2.992	0.15444	6475.0
	9.30	2.992	0.15444	6475.0
	10.20	2.922	0.13722	7287.5
3.500	10.30	2.922	0.13722	7287.5
	12.80	2.764	0.11047	9052.5
	12.95	2.750	0.10864	9205.0
	13.70	2.673	0.09975	10025.0
	14.70	2.601	0.09285	10770.0
	15.10	2.602	0.09294	10760.0
	15.80	2.524	0.08662	11545.0
	17.05	2.440	0.08089	12362.
	9.40	3.548	0.14925	6700.0
	9.50	3.548	0.14925	6700.0
4.000	10.80	3.476	0.13000	7692.5
	10.90	3.476	0.13000	7692.5
	11.00	3.476	0.13000	7692.5
	11.60	3.428	0.11987	8342.5
	13.40	3.340	0.10512	9512.5
	12.60	3.958	0.11111	9000.0
	12.75	3.958	0.11111	9000.0
4.500	15.10	3.826	0.09076	11017.5
	15.50	3.826	0.09076	11017.5
	16.90	3.754	0.08271	12090.0
	19.20	3.640	0.07275	13745.0

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Manual Stretch Calculations Based on Young's Modulus

Pull Force		
Pipe Size (in.)	(lb/ft)	Required Pull (lb)
1 Tubing	1.80	4,000
	2.25	5,000
I-1/4 Tubing	2.40	5,500
I-1/2 Tubing	2.90	6,500
2-I/I6 Tubing	3.40	7,500
2-3/8 Tubing	4.70	10,000
	5.30	12,000
	5.95	13,000
2-7/8 Tubing	6.50	14,000
	7.90	17,000
	8.70	19,000
3-1/2 Tubing	9.30	20,000
	10.30	23,000
	12.95	28,000
4 Tubing	11.00	24,000
	13.40	29,000
4-1/2 Tubing	12.75	28,000
	15.50	34,000
	19.20	42,000
2-3/8 Drill Pipe	6.65	15,000
2-7/8 Drill Pipe	10.40	23,000
3-1/2 Drill Pipe	13.30	30,000
4-1/2 Drill Pipe	16.60	36,000
5 Drill Pipe	19.50	43,000
5 Casing	15.00	33,000
5-1/2 Casing	17.00	36,000
6-5/8 Casing	24.00	53,000
7 Casing	35.00	77,000
7-5/8 Casing	29.70	66,000
8-5/8 Casing	40.00	88,000
9-5/8 Casing	43.50	96,000
10-3/4 Casing	45.50	100,000

Note: Pull Weight (above string weight) to obtain 3-1/2 inches of stretch per 1,000 ft of free pipe

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