



PetroMaterials®

## PetroMaterials Corporation

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# PetroMaterials

Products Information



PetroMaterials®

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PetroMaterials Corporation ("PMC"), is a major oil tubular goods manufacturer and supplier for oil and gas drilling and exploration industry.

With over 25 years' industrial experience, PMC offers a wide range of tubular goods including Drill Pipe, Drill Collar, Heavy Weight Drill Pipe, Casing and Tubing. Our products are manufactured from finest quality steel from well-known mills in Japan and USA. By using specially designed machines and Japanese manufacturing technology, we process those materials into stable high quality products.

The key equipments being used in PMC facility were designed or developed by our experienced technicians. Those equipments were mainly made in Japan.

PMC products cover full API grade and size, and also provide sour service drill pipe or high torque tool joint.

From well design to pipe running stage, PMC's technical and sales team is always ready to give professional support to our customers.

## Best quality born of best techniques

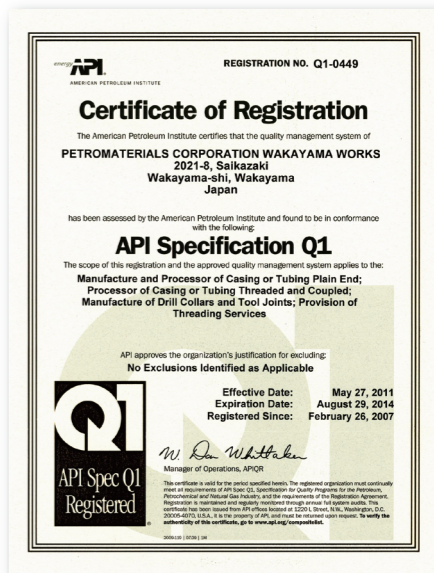
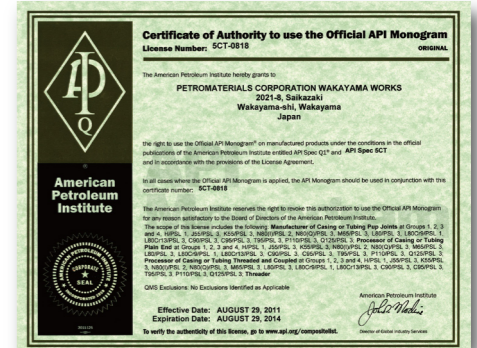
We believe technical ability is the core value of us, and a premium quality is the reflection of technical ability.

PMC is committed to total quality and customer satisfaction, and endeavors to continuously improve its technical skills and quality.

All mills of PMC have been assessed and certified by API (American Petroleum Institute) and being fully in compliance with ISO Quality System. We independently developed a tailored software called Enterprise Resource Planning (ERP) designed to provide the highest level of quality assurance program. Experienced Japanese engineers and experts perform their operations in mills on a long-team basis to improve and update our technical skills and quality assurance program. PMC endeavors to provide the best products and services to meet the exact needs of its customers in quality, cost, technical properties and delivery.

Our marketing and technical teams have successfully established interactive connections with customers to understand and meet their exacting needs.

PMC has successfully expanded its business from Japan to all over the world.



# Products



## API Drill Pipe

Size : 2-3/8" ~ 6-5/8"  
Grade : E75,X95,G105,S135

## Sour Service Drill Pipe

Size : 2-3/8" ~ 6-5/8"  
Grade : SS75,SS95,SS105

## API Tool Joint

Size : NC26 ~ NC50  
5-1/2FH,6-5/8FH  
Grade : API-120Ksi grade

## Double Shoulder Tool Joint

Size : NC26 ~ NC50  
5-1/2FH,6-5/8FH  
Grade : API-120Ksi grade

## Sour Service Tool Joint

Size : NC26 ~ NC50  
5-1/2FH,6-5/8FH  
Grade : SS-110Ksi grade

## Drill Collar

Size : 2-7/8 " ~ 11"  
Grade : AISI4145HM  
Non-Magnetic(DNM110)

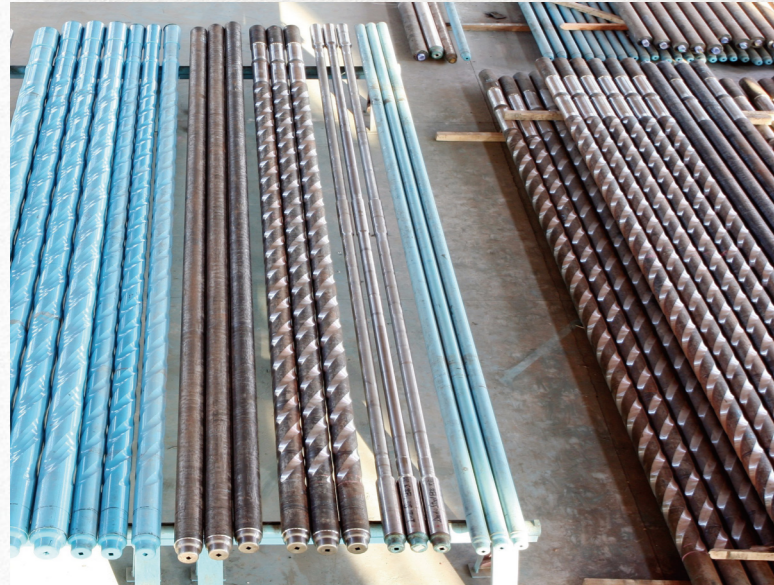
## Heavy Weight Drill Pipe

### Integral Type

Size : 2-7/8" ~ 6-5/8"  
Grade : AISI 4145HM

### Friction Weld Type

Size : 2-7/8" ~ 6-5/8"  
TJ Grade : AISI 4145HM  
Pipe Grade : AISI 1340 or Equivalent



## Casing

Size : 4-1/2" ~ 20"  
Grade : H40,J55,K55,N80,L80,T95,P110  
End Finish : STC,LTC,BTC

## Premium Connection

Size : 4-1/2" ~ 13-3/8"



## Tubing

Size : 2-3/8" ~ 4-1/2"  
Grade : H40,J55,N80,L80,T95,P110  
End Finish : NUE,EUE

### Drill Pipe Plant

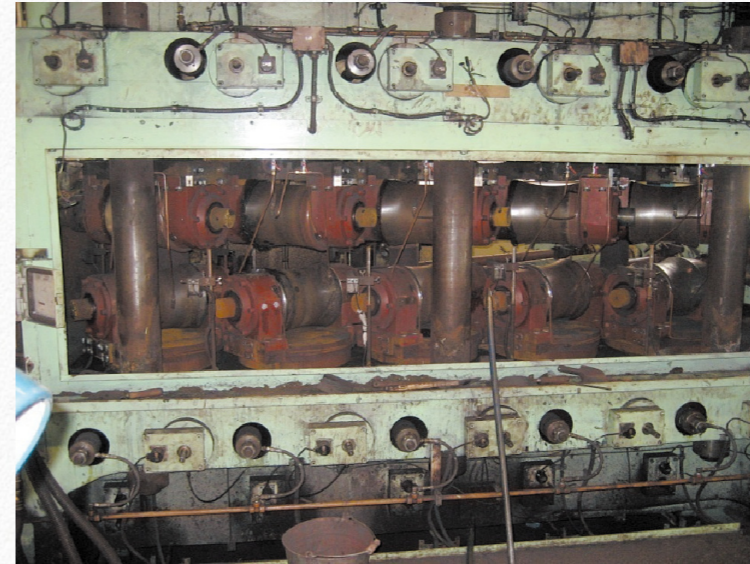


### Upsetter Machine

Size : 2-3/8" ~ 6-5/8"  
Upset Force : 500Ton

### Quench & Temper Furnace

Size : 2-3/8" ~ 6-5/8"  
Type : Walking Beam Type  
Capacity : 5Ton/Hour



### Rotary Straightener

Size : 2-3/8" ~ 6-5/8"  
Type : 10 Rolls Hot Straightener

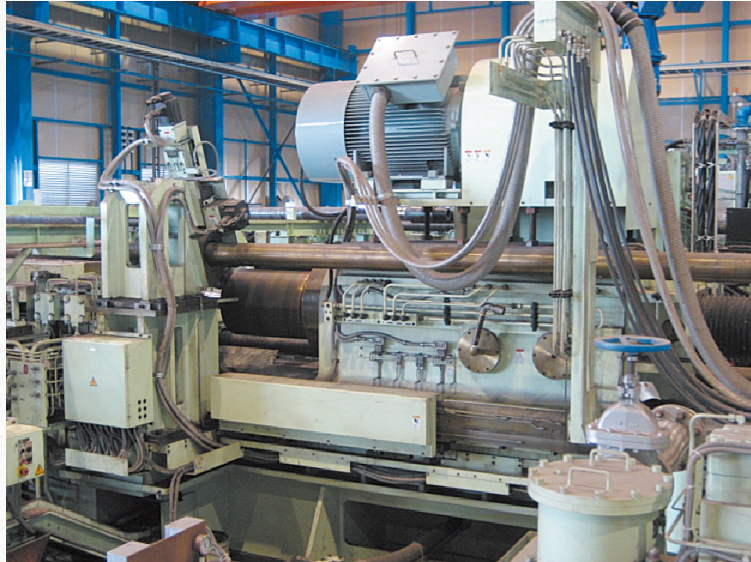
### Ultrasonic Inspection Machine

Size : 2-3/8" ~ 6-5/8"  
Inspection : Outer/Inner Surface  
Longitudinal/Circumferential  
Wall Thickness



### NC Lathe

OD Turning & ID Boring  
for Upset Area



### Rotary Friction Welder for Drill Pipe & Heavy Weight Drill Pipe

Size : 2-3/8" ~ 6-5/8"  
Motor : 132KW Inverter Motor  
Upset Force : Max 1,500KN



### Induction Heater

Water Quenching & Tempering for Weld Zone  
Capacity : 150KW for Quenching  
100KW for Tempering

### Ultrasonic Inspection for Weld Zone



## Casing & Tubing Plant



### 20" NC Lathe

Size : 7" ~ 20"

### Hydrostatic Pressure Test Machine

Size : 7" ~ 20"



### Coupling Make-up Machine

Size : 7" ~ 20"



**7" NC Lathe**  
Size : 2-3/8" ~ 7"



**Hydrostatic Pressure Test Machine**  
Size : 2-3/8" ~ 7"



**Coupling Make-up Machine**  
Size : 2-3/8" ~ 7"



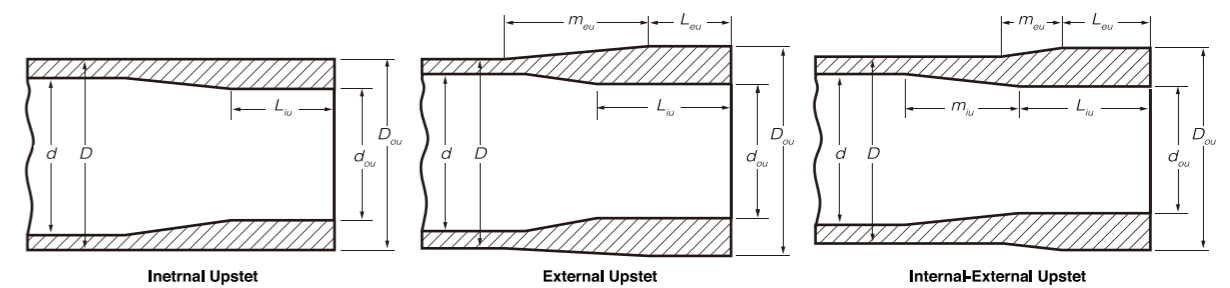
**Automatic Weighing & Coating Equipment**

# Upset Drill Pipe

## Sizes and Grades

Size	Weight Designation	Calculated Plain-End Weight, Wpe		Outside Diameter ( D )		Wall Thickness ( t )		Grade	Upset Ends, for Weld-on Tool Joints		
									Int.Upset	Ext.Upset	Int-Ext.Upset
									IU	EU	IEU
2 3/8	6.65	6.27	9.33	2.375	60.3	0.280	7.11	E, X, G, S	-	○	-
2 7/8	10.40	9.72	14.47	2.875	73.0	0.362	9.19	E, X, G, S	○	○	-
3 1/2	9.50	8.81	13.12	3.500	88.9	0.254	6.45	E	○	○	-
	13.30	12.32	18.34	3.500	88.9	0.368	9.35	E, X, G, S	○	○	-
	15.50	14.64	21.79	3.500	88.9	0.449	11.40	E	○	○	-
4	15.50	14.64	21.79	3.500	88.9	0.449	11.40	X, G, S	-	○	○
	14.00	12.95	19.27	4.000	101.6	0.330	8.38	E, X, G, S	○	○	-
4 1/2	13.75	12.25	18.23	4.500	114.3	0.271	6.88	E	○	○	-
	16.60	15.00	22.32	4.500	114.3	0.337	8.56	E, X, G, S	-	○	○
	20.00	18.71	27.84	4.500	114.3	0.430	10.92	E, X, G, S	-	○	○
5	16.25	14.88	22.16	5.000	127.0	0.296	7.52	X, G, S	○	-	-
	19.50	17.95	26.70	5.000	127.0	0.362	9.19	E	-	-	○
	19.50	17.95	26.70	5.000	127.0	0.362	9.19	X, G, S	-	○	○
	25.60	24.05	35.80	5.000	127.0	0.500	12.70	E	-	-	○
5 1/2	25.60	24.05	35.80	5.000	127.0	0.500	12.70	X, G, S	-	○	○
	21.90	19.83	29.52	5.500	139.7	0.361	9.17	E, X, G, S	-	-	○
6 5/8	24.70	22.56	33.57	5.500	139.7	0.415	10.54	E, X, G, S	-	-	○
	25.20	22.21	33.04	6.625	168.3	0.330	8.38	E, X, G, S	-	-	○
6 5/8	27.72	24.24	36.06	6.625	168.3	0.362	9.19	E, X, G, S	-	-	○

○: For All Grades ▲: For Grades X, G, S



# API Drill Pipe and Tool Joint Combinations

DRILL PIPE					TOOL JOINT									MECHANICAL PROPERTIES										
Outside Dia. Of Pipe (OD)	Wall Thickness of Pipe (WT)		Inside Dia. Of Pipe (ID)	UPSET END	Grade	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length Tool Joint Pin (Lp)	Pin Tong space (Lpb)	Box Tong Space (Lb)	Combined Length of Pin and Box (L)	Dia. Of Elevator Upset (DPE/DTE)	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommnd Make-up Torque		
	in	Weight Designation					in	in	in	mm													in	mm
2 3/8	6.65	0.280	1.815	EU	E75	NC26	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	138,000	15,470	15,600	6,250	6,875	1.10	4,130		
							X95	NC26	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	175,000	19,600	19,760	7,920	6,875	0.87	4,130
							G105	2-3/8IF	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	194,000	21,660	21,840	8,750	6,875	0.79	4,130
							S135	2-3/8IF	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	249,000	27,850	28,080	11,250	6,875	0.61	4,130
2 7/8	10.40	0.362	2.151	EU	E75	NC31	4 1/8	104.8	2 1/8	54.0	10 1/2	7	9	16	3 3/16	214,000	16,530	16,510	11,550	11,871	1.03	7,120		
							X95	NC31	4 1/8	104.8	2	50.8	10 1/2	7	9	16	3 3/16	272,000	20,930	20,910	14,640	13,196	0.90	7,920
							G105	2-7/8IF	4 1/8	104.8	2	50.8	10 1/2	7	9	16	3 3/16	300,000	23,140	23,110	16,180	13,196	0.82	7,920
							S135	2-7/8IF	4 3/8	111.1	1 5/8	41.3	10 1/2	7	9	16	3 3/16	386,000	29,750	29,720	20,800	16,946	0.81	10,170
3 1/2	9.50	0.254	2.992	EU	E75	NC38	4 3/4	120.7	2 11/16	68.3	11 1/2	8	10 1/2	18 1/2	3 7/8	194,000	9,530	10,000	14,150	18,107	0.91	10,860		
3 1/2	13.30	0.368	2.764	EU	E75	NC38	4 3/4	120.7	2 11/16	68.3	12	8	10 1/2	18 1/2	3 7/8	272,000	13,800	14,110	18,550	18,107	0.98	10,860		
							X95	NC38	5	127.0	2 9/16	65.1	12	8	10 1/2	18 1/2	3 7/8	344,000	17,480	17,880	23,500	20,327	0.86	12,200
							G105	3-1/2IF	5	127.0	2 7/16	61.9	12	8	10 1/2	18 1/2	3 7/8	380,000	19,320	19,760	25,970	22,213	0.86	13,330
							S135	3-1/2IF	5	127.0	2 1/8	54.0	12	8	10 1/2	18 1/2	3 7/8	489,000	24,840	25,400	33,390	26,516	0.79	15,910
3 1/2	15.50	0.449	2.602	EU	E75	NC38	5	127.0	2 9/16	65.1	12	8	10 1/2	18 1/2	3 7/8	323,000	16,840	16,770	21,090	20,327	0.96	12,200		
							X95	NC38	5	127.0	2 7/16	61.9	12	8	10 1/2	18 1/2	3 7/8	409,000	21,330	21,250	26,710	22,213	0.83	13,330
							G105	3-1/2IF	5	127.0	2 1/8	54.0	12	8	10 1/2	18 1/2	3 7/8	452,000	23,570	23,480	29,520	26,516	0.90	15,910
3 1/2	15.50	0.449	2.602	EU	S135	NC40	5 1/2	139.7	2 1/4	57.2	11 1/2	7	10	17	3 7/8	581,000	30,310	30,190	37,950	32,944	0.87	19,770		
4	14.00	0.330	3.340	IU	E75	NC40	5 1/4	133.4	2 13/16	71.4	11 1/2	7	10	17	4 3/16	285,000	10,830	11,350	23,290	23,487	1.01	14,090		
							X95	NC40	5 1/4	133.4	2 11/16	68.3	11 1/2	7	10	17	4 3/16	361,000	13,720	14,380	29,500	25,673	0.87	15,400
							G105	NC40	5 1/2	139.7	2 7/16	61.9	11 1/2	7	10	17	4 3/16	400,000	15,160	15,900	32,600	30,114	0.92	18,070
							S135	NC40	5 1/2	139.7	2	50.8	11 1/2	7	10	17	4 3/16	514,000	19,490	20,140	41,920	36,363	0.87	21,820
4	14.00	0.330	3.340	EU	E75	NC46	6	152.4	3 1/4	82.6	11 1/2	7	10	17	4 1/2	285,000	10,830	11,350	23,290	33,626	1.44	20,180		
							X95	NC46	6	152.4	3 1/4	82.6	11 1/2	7	10	17	4 1/2	361,000	13,720	14,380	29,500	33,626	1.14	20,180
							G105	NC46	6	152.4	3 1/4	82.6	11 1/2	7	10	17	4 1/2	400,000	15,160	15,900	32,600	33,626	1.03	20,180
							S135	NC46	6	152.4	3	76.2	11 1/2	7	10	17	4 1/2	514,000	19,490	20,140	41,920	39,230	0.94	23,540
4 1/2	13.75	0.271	3.958	IU	E75	NC46	6	152.4	3 3/8	85.7	11 1/2	7	10	17	4 11/16	270,000	7,900	7,170	25,910	30,656	1.18	18,390		
4 1/2	13.75	0.271	3.958	EU	E75	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2	7	10	17	5	270,000	7,900	7,170	25,910	38,060	1.47	22,840		
4 1/2	16.60	0.337	3.826	IEU	E75	NC46	6 1/4	158.8	3 1/4	82.6	11 1/2	7	10	17	4 11/16	331,000	9,830	10,390	30,810	33,994	1.10	20,400		
							X95	NC46	6 1/4	158.8	3	76.2	11 1/2	7	10	17	4 11/16	419,000	12,450	12,760	39,020	39,659	1.02	23,800
							G105	NC46	6 1/4	158.8	3	76.2	11 1/2	7	10	17	4 11/16	463,000	13,760	13,820	43,130	39,659	0.92	23,800
							S135	NC46	6 1/4	158.8	2 3/4	69.9	11 1/2	7	10	17	4 11/16	595,000	17,690	16,770	55,450	44,872	0.81	26,920
4 1/2	16.60	0.337	3.826	EU	E75	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2	7	10	17	5	331,000	9,830	10,390	30,810	38,060	1.24	22,840		
							X95	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2	7	10	17	5	419,000	12,450	12,760	39,020	38,060	0.98	22,840
							G105	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2	7	10	17	5	463,000	13,760	13,820	43,130	38,060	0.88	22,840
							S135	NC50	6 5/8	168.3	3 1/2	88.9	11 1/2	7	10	17	5	595,000	17,690	16,770	55,450	45,128	0.81	27,080
4 1/2	20.00	0.430	3.640	IEU	E75	NC46	6 1/4	158.8	3	76.2	11 1/2	7	10	17	4 11/16	412,000	12,540	12,960	36,900	39,659	1.07	23,800		
							X95	NC46	6 1/4	158.8	2 3/4	69.9	11 1/2	7	10	17	4 11/16	522,000	15,890	16,420	46,740	44,872	0.96	26,920
							G105	NC46	6 1/4	158.8	2 1/2	63.5	11 1/2	7	10	17	4 11/16	577,000	17,560	18,150	51,660	49,631	0.96	29,780
							S135	NC46	6 1/4	158.8	2 1/4	57.2	11 1/2	7	10	17	4 11/16	742,000	22,580	23,330	66,420	53,937	0.81	32,360
4 1/2	20.00	0.430	3.640	EU	E75	NC50	6 5/8	168.3	3 5/8	92.1	11 1/2	7	10	17	5	412,000	12,540	12,960	36,900	41,655	1.13	24,990		
							X95	NC50	6 5/8	168.3	3 1/2	88.9	11 1/2	7	10	17	5	522,000	15,890	16,420	46,740	45,128	0.97	27,080
							G105	NC50	6 5/8	168.3	3 1/2	88.9	11 1/2	7	10	17	5	577,000	17,560	18,150	51,660	45,128	0.87	27,080
							S135	NC50	6 5/8	168.3	3	76.2	11 1/2	7	10	17	5	742,000	22,580	23,330	66,420	57,801	0.87	34,680

# API Drill Pipe and Tool Joint Combinations

DRILL PIPE					TOOL JOINT									MECHANICAL PROPERTIES								
Outside Dia. Of Pipe (OD)	Wall Thickness of Pipe (WT)		Inside Dia. Of Pipe (ID)	UPSET END	Grade	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length ToolJoint Pin (Lp)	Pin Tong Spase (Lpb)	Box Tong Space (Lb)	Combined Length of Pin and Box (L)	Dia. Of Elevator Upset (DPE/DTE)	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommnd Make-up Torque
	in	Weight Designation					in	in	in	mm						in	mm	in	in	in	in	lbs
5	19.50	0.326	4.276	IEU	NC50	E75	6 5/8	168.3	3 3/4	95.3	11 1/2	7	10	17	5 1/8	396,000	9,500	10,070	41,170	38,060	0.92	22,840
						X95	6 5/8	168.3	3 1/2	88.9	11 1/2	7	10	17	5 1/8	501,000	12,040	12,020	52,140	45,128	0.87	27,080
						G105	6 5/8	168.3	3 1/4	82.6	11 1/2	7	10	17	5 1/8	554,000	13,300	13,000	57,630	51,708	0.90	31,020
						S135	6 5/8	168.3	2 3/4	69.9	11 1/2	7	10	17	5 1/8	712,000	17,100	15,670	74,100	63,407	0.86	38,040
5	25.60	0.500	4.000	IEU	NC50	E75	6 5/8	168.3	3 1/2	88.9	11 1/2	7	10	17	5 1/8	530,000	13,130	13,500	52,260	45,128	0.86	27,080
						X95	6 5/8	168.3	3	76.2	11 1/2	7	10	17	5 1/8	672,000	16,630	17,100	66,190	57,801	0.87	34,680
						G105	6 5/8	168.3	2 3/4	69.9	11 1/2	7	10	17	5 1/8	742,000	18,380	18,900	73,160	63,407	0.87	38,040
5	19.50	0.362	4.276	IEU	5 1/2FH	E75	7	177.8	3 3/4	95.3	13	8	10	18	5 1/8	396,000	9,500	10,070	41,170	62,903	1.53	37,740
						X95	7	177.8	3 3/4	95.3	13	8	10	18	5 1/8	501,000	12,040	12,020	52,140	62,903	1.21	37,740
						G105	7	177.8	3 3/4	95.3	13	8	10	18	5 1/8	554,000	13,300	13,000	57,630	62,903	1.09	37,740
						S135	7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 1/8	712,000	17,100	15,670	74,100	72,484	0.98	43,490
5	25.60	0.500	4.000	IEU	5 1/2FH	E75	7	177.8	3 1/2	88.9	13	8	10	18	5 1/8	530,000	13,130	13,500	52,260	62,903	1.20	37,740
						X95	7	177.8	3 1/2	88.9	13	8	10	18	5 1/8	672,000	16,630	17,100	66,190	62,903	0.95	37,740
						G105	7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 1/8	742,000	18,380	18,900	73,160	72,484	0.99	43,490
						S135	7 1/4	184.2	3 1/4	82.6	13	8	10	18	5 1/8	954,000	23,630	24,300	94,060	78,716	0.84	47,230
5 1/2	21.90	0.361	4.778	IEU	5 1/2FH	E75	7	177.8	4	101.6	13	8	10	18	5 11/16	437,000	8,610	5,440	50,710	55,934	1.10	33,560
						X95	7	177.8	3 3/4	95.3	13	8	10	18	5 11/16	554,000	10,910	7,850	64,230	62,903	0.98	37,740
						G105	7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 11/16	612,000	12,060	9,060	70,990	72,484	1.02	43,490
						S135	7 1/2	190.5	3	76.2	13	8	10	18	5 11/16	787,000	15,510	12,670	91,280	87,171	0.95	52,300
5 1/2	24.70	0.415	4.670	IEU	5 1/2FH	E75	7	177.8	4	101.6	13	8	10	18	5 11/16	497,000	9,900	10,460	56,570	55,934	0.99	33,560
						X95	7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 11/16	630,000	12,540	10,910	71,660	72,484	1.01	43,490
						G105	7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 11/16	696,000	13,860	12,440	79,200	72,484	0.92	43,490
						S135	7 1/2	190.5	3	76.2	13	8	10	18	5 11/16	895,000	17,830	17,020	101,830	87,171	0.86	52,300
6 5/8	25.20	0.330	5.965	IEU	6 5/8FH	E75	8	203.2	5	127.0	13	8	11	19	6 15/16	489,000	6,540	1,550	70,580	73,662	1.04	44,200
						X95	8	203.2	5	127.0	13	8	11	19	6 15/16	620,000	8,280	2,920	89,400	73,662	0.82	44,200
						G105	8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	685,000	9,150	3,610	98,810	86,238	0.87	51,740
						S135	8 1/2	215.9	4 1/4	108.0	13	8	11	19	6 15/16	881,000	11,770	6,040	127,050	109,227	0.86	65,540
6 5/8	27.70	0.362	5.901	IEU	6 5/8FH	E75	8	203.2	5	127.0	13	8	11	19	6 15/16	534,000	7,170	2,740	76,300	73,662	0.97	44,200
						X95	8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	677,000	9,080	4,430	96,640	86,238	0.89	51,740
						G105	8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	748,000	10,040	5,270	106,810	86,238	0.81	51,740
						S135	8 1/2	215.9	4 1/4	108.0	13	8	11	19	6 15/16	962,000	12,910	7,810	137,330	109,227	0.80	65,540



# Sour Service Drill Pipe

## Tensile Properties

Grade	Yield Strength (Mpa/Ksi)		Tensile Strength (Mpa/Ksi)	
	Min	Max	Min	Max
SS75	517 / 75	655 / 95	655 / 95	793 / 115
SS95	665 / 95	758 / 110	724 / 105	896 / 130
SS105	724 / 105	827 / 120	793 / 115	965 / 140

## Hardness (HRC)

Grade	Average	Individual	
	Max	Max	Min
SS75	22.0	24.0	-
SS95	25.0	27.0	18.0
SS105	28.0	29.0	21.0

## Impact (Charpy V-notch TypeA)

Grade	Min	
	Joules	Ft-Lbs
SS75	70	50
SS95	80	59
SS105	80	59

## Tool Joint Tensile Properties (Mpa/Ksi)

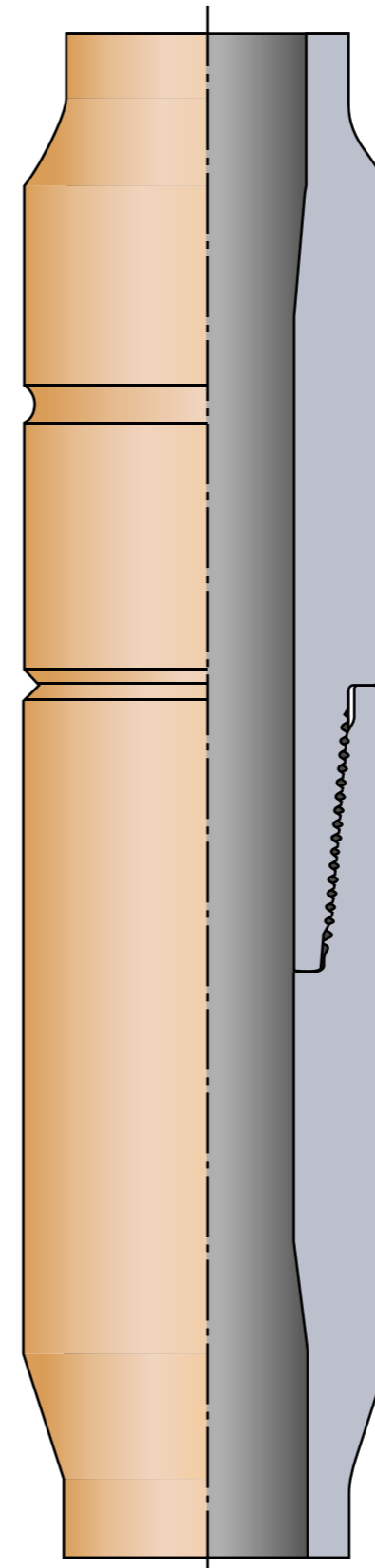
	Min	Max
Yield Strength	758 / 110	862 / 125
Tensile Strength	862 / 125	1000 / 145

## Tool Joint Weld Zone Impact

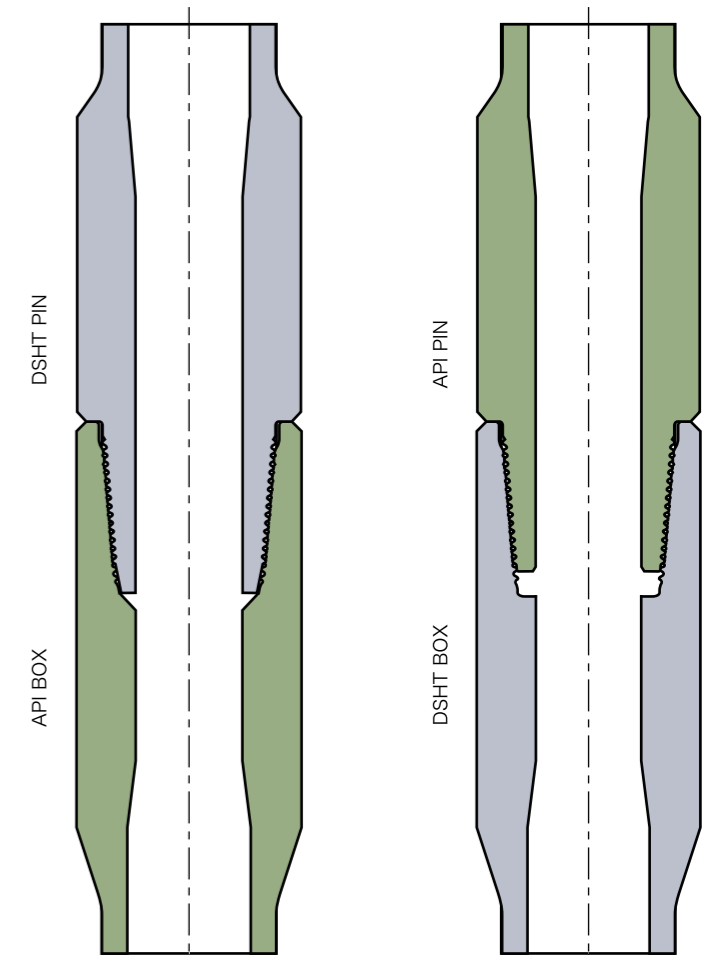
	Impact Min Ave(Jule)	Impact Min Av(Ft-lb)
Tool Joint	90	66
Weld Zone	27	20

# Double Shoulder

## Double Shoulder High Torque Tool Joint



- High torsional yield strength
- Internal/External double shoulder
- Minimum tensile stress on PIN thread reduce SSC failure
- Large Tool Joint ID increase mud flow
- Interchangeable with API products  
Drill collar/HW drill pipe/kelly etc,
- Easy repair in the world



# Double Shoulder Tool Joint / API Tool Joint Mechanical Properties

DRILL PIPE				TOOL JOINT											MECHANICAL PROPERTIES										
Outside Dia. Of Pipe (OD) in	Wall Thickness of Pipe (WT) in		Inside Dia. Of Pipe (ID) in	UPSET END	Grade	API or Double Shoulder	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length ToolJoint Pin (Lp) in	Pin Tong Space (Lpb) in	Box Tong Space (Lb) in	Combined Length of Pin and Box (L) in	Dia. Of Elevator Upset (DPE/DTE) in	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommnd Make-up Torque		
	Weight Designation							lbs	psi	psi	ft-lbs						ft-lbs	ft-lbs							
2 3/8	6.65	0.280	1.815	EU	X95	Double Shoulder	NC26 2-3/8IF	3 3/8	85.7	1 5/8	41.3	10	7	8	15	2 9/16	175,000	21,280	19,760	7,920	10,251	1.29	6,150		
								X95	API	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	175,000	21,280	19,760	7,920	6,875	0.87	4,130
								G105	Double Shoulder	3 3/8	85.7	1 5/8	41.3	10	7	8	15	2 9/16	194,000	23,520	21,840	8,750	10,251	1.17	6,150
								G105	API	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	194,000	23,520	21,840	8,750	6,875	0.79	4,130
								S135	Double Shoulder	3 3/8	85.7	1 5/8	41.3	10	7	8	15	2 9/16	249,000	30,240	28,080	11,250	10,251	0.91	6,150
								S135	API	3 3/8	85.7	1 3/4	44.5	10	7	8	15	2 9/16	249,000	30,240	28,080	11,250	6,875	0.61	4,130
2 7/8	10.40	0.362	2.151	EU	X95	Double Shoulder	NC31 2-7/8IF	4 1/8	104.8	1 49/65	44.6	10.5	7	9	16	3 3/16	272,000	22,730	20,910	14,640	21,773	1.49	13,060		
								X95	API	4 1/8	104.8	2	50.8	10.5	7	9	16	3 3/16	272,000	22,730	20,910	14,640	13,196	0.90	7,920
								G105	Double Shoulder	4 1/8	104.8	1 49/65	44.6	10.5	7	9	16	3 3/16	300,000	25,120	23,110	16,180	21,773	1.35	13,060
								G105	API	4 1/8	104.8	2	50.8	10.5	7	9	16	3 3/16	300,000	25,120	23,110	16,180	13,196	0.82	7,920
								S135	Double Shoulder	4 3/8	111.1	1 49/65	44.6	10.5	7	9	16	3 3/16	386,000	32,300	29,720	20,800	23,510	1.13	14,110
								S135	API	4 3/8	111.1	1 5/8	41.3	10.5	7	9	16	3 3/16	386,000	32,300	29,720	20,800	16,946	0.81	10,170
3 1/2	13.30	0.368	2.764	EU	X95	Double Shoulder	NC38 3-1/2IF	5	127	2 7/16	61.9	12	8	10.5	18.5	3 7/8	344,000	18,980	17,880	23,500	31,372	1.33	18,820		
								X95	API	5	127	2 9/16	65.1	12	8	10.5	18.5	3 7/8	344,000	18,980	17,880	23,500	20,327	0.86	12,200
								G105	Double Shoulder	5	127	2 7/16	61.9	12	8	10.5	18.5	3 7/8	380,000	20,980	19,760	25,970	31,372	1.21	18,820
								G105	API	5	127	2 7/16	61.9	12	8	10.5	18.5	3 7/8	380,000	20,980	19,760	25,970	22,213	0.86	13,330
								S135	Double Shoulder	5	127	2 17/60	58.0	12	8	10.5	18.5	3 7/8	489,000	26,970	25,400	33,390	35,761	1.07	21,460
								S135	Double Shoulder	5	127	2 17/83	56.0	12	8	10.5	18.5	3 7/8	489,000	26,970	25,400	33,390	37,894	1.13	22,740
								S135	API	5	127	2 1/8	54.0	12	8	10.5	18.5	3 7/8	489,000	26,970	25,400	33,390	26,516	0.79	15,910
								X95	Double Shoulder	5	127	2 7/16	61.9	12	8	10.5	18.5	3 7/8	409,000	23,160	21,250	26,710	31,372	1.17	18,820
3 1/2	15.50	0.449	2.602	EU	X95	API	NC38 3-1/2IF	5	127	2 7/16	61.9	12	8	10.5	18.5	3 7/8	409,000	23,160	21,250	26,710	22,213	0.83	13,330		
								G105	Double Shoulder	5	127	2 25/69	60.0	12	8	10.5	18.5	3 7/8	452,000	25,590	23,480	29,520	33,553	1.14	20,130
								G105	API	5	127	2 1/8	54.0	12	8	10.5	18.5	3 7/8	452,000	25,590	23,480	29,520	26,516	0.90	15,910
								S135	Double Shoulder	5 1/2	139.7	2 15/34	62.0	11.5	7	10	17	4 3/16	361,000	14,890	14,380	29,500	42,509	1.44	25,510
3 1/2	15.50	0.449	2.602	EU	S135	Double Shoulder	NC40	5 1/2	139.7	2 1/4	57.2	11.5	7	10	17	3 7/8	581,000	32,910	30,190	37,950	43,374	1.14	26,020		
								S135	API	5 1/2	139.7	2 1/4	57.2	11.5	7	10	17	3 7/8	581,000	32,910	30,190	37,950	32,944	0.87	19,770
4	14.00	0.330	3.340	IU	X95	Double Shoulder	NC40	5 1/4	133.4	2 15/34	62.0	11.5	7	10	17	4 3/16	361,000	14,890	14,380	29,500	42,509	1.44	25,510		
								X95	API	5 1/4	133.4	2 11/16	68.3	11.5	7	10	17	4 3/16	361,000	14,890	14,380	29,500	25,673	0.87	15,400
								G105	Double Shoulder	5 1/2	139.7	2 15/34	62.0	11.5	7	10	17	4 3/16	400,000	16,460	15,900	32,600	43,374	1.33	26,020
								G105	API	5 1/2	139.7	2 7/16	61.9	11.5	7	10	17	4 3/16	400,000	16,460	15,900	32,600	30,114	0.92	18,070
								S135	Double Shoulder	5 1/2	139.7	2 15/34	62.0	11.5	7	10	17	4 3/16	514,000	21,160	20,140	41,920	43,374	1.03	26,020
								S135	API	5 1/2	139.7	2	50.8	11.5	7	10	17	4 3/16	514,000	21,160	20,140	41,920	36,363	0.87	21,820
4	14.00	0.330	3.340	EU	S135	Double Shoulder	NC46	6	152.4	3	76.2	11.5	7	10	17	4 1/2	514,000	21,160	20,140	41,920	56,701	1.35	34,020		
								S135	API	6	152.4	3	76.2	11.5	7	10	17	4 1/2	514,000	21,160	20,140	41,920	39,230	0.94	23,540
4 1/2	16.60	0.337	3.826	EU	G105	Double Shoulder	NC46	6 1/4	158.8	3	76.2	11.5	7	10	17	4 11/16	463,000	14,940	13,820	43,130	57,322	1.33	34,390		
								G105	API	6 1/4	158.8	3	76.2	11.5	7	10	17	4 11/16	463,000	14,940	13,820	43,130	39,659	0.92	23,800
								S135	Double Shoulder	6 1/4	158.8	3	76.2	11.5	7	10	17	4 11/16	595,000	19,210	16,770	55,450	57,322	1.03	34,390
								S135	API	6 1/4	158.8	2 3/4	69.9	11.5	7	10	17	4 11/16	595,000	19,210	16,770	55,450	44,872	0.81	26,920
4 1/2	16.60	0.337	3.826	EU	S135	Double Shoulder	NC50	6 5/8	168.3	3 17/52	84.5	11.5	7	10	17	5	595,000	19,210	16,770	55,450	72,586	1.31	43,550		
								S135	API	6 5/8	168.3	3 1/2	88.9	11.5	7	10	17	5	595,000	19,210	16,770	55,450	45,128	0.81	27,080
4 1/2	20.00	0.430	3.640	EU	G105	Double Shoulder	NC50	6 5/8	168.3	3 17/52	84.5	11.5	7	10	17	5	577,000	19,060	18,150	51,660	72,586	1.41	43,550		
								G105	API	6 5/8	168.3	3 1/2	88.9	11.5	7	10	17	5	577,000	19,060	18,150	51,660	45,128	0.87	27,080
								S135	Double Shoulder	6 5/8	168.3	3 1/4	82.6	11.5	7	10	17	5	742,000	24,510	23,330	66,420	76,524	1.15	45,910
								S135	API	6 5/8	168.3	3	76.2	11.5	7	10	17	5	742,000	24,510	23,330	66,420	57,801	0.87	34,680

# Double Shoulder Tool Joint / API Tool Joint Mechanical Properties

DRILL PIPE				TOOL JOINT											MECHANICAL PROPERTIES								
Outside Dia. Of Pipe (OD) in	Wall Thickness of Pipe (WT) in		Inside Dia. Of Pipe (ID) in	UPSET END	Grade	API or Double Shoulder	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length Tool Joint Pin (Lp) in	Pin Tong Space (Lpb) in	Box Tong Space (Lb) in	Combined Length of Pin and Box (L) in	Dia. Of Elevator Upset (DPE/DTE) in	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommnd Make-up Torque
	lbs	psi						psi	ft-lbs	ft-lbs	ft-lbs												
5	19.50	0.362	4.276	IEU	Double Shoulder	NC50		6 5/8	168.3	3 17/52	84.5	11.5	7	10	17	5 1/8	501,000	13,070	12,020	52,140	72,586	1.39	43,550
								6 5/8	168.3	3 1/2	88.9	11.5	7	10	17	5 1/8	501,000	13,070	12,020	52,140	45,128	0.87	27,080
								6 5/8	168.3	3 17/52	84.5	11.5	7	10	17	5 1/8	554,000	14,440	13,000	57,630	72,586	1.26	43,550
								6 5/8	168.3	3 1/4	82.6	11.5	7	10	17	5 1/8	554,000	14,440	13,000	57,630	76,524	1.33	45,910
								6 5/8	168.3	3 1/4	82.6	11.5	7	10	17	5 1/8	554,000	14,440	13,000	57,630	51,708	0.90	31,020
								6 5/8	168.3	3 1/4	82.6	11.5	7	10	17	5 1/8	712,000	18,570	15,670	74,100	76,424	1.03	45,850
								6 5/8	168.3	3 3/20	80.0	11.5	7	10	17	5 1/8	712,000	18,570	15,670	74,100	81,535	1.10	48,920
5	25.60	0.500	4.000	IEU	API	NC50		6 5/8	168.3	3 1/4	82.6	11.5	7	10	17	5 1/8	672,000	18,050	17,100	66,190	76,424	1.15	45,850
								6 5/8	168.3	3	76.2	11.5	7	10	17	5 1/8	672,000	18,050	17,100	66,190	57,801	0.87	34,680
								6 5/8	168.3	3 1/4	82.6	11.5	7	10	17	5 1/8	742,000	19,950	18,900	73,160	76,424	1.04	45,850
								6 5/8	168.3	2 3/4	69.9	11.5	7	10	17	5 1/8	742,000	19,950	18,900	73,160	63,407	0.87	38,040
5	19.50	0.362	4.276	IEU	API	5 1/2FH		7	177.8	3 3/4	95.3	13	8	10	18	5 1/8	554,000	14,440	13,000	57,630	90,771	1.58	54,460
								7	177.8	3 3/4	95.3	13	8	10	18	5 1/8	554,000	14,440	13,000	57,630	62,903	1.09	37,740
								7 1/4	184.2	3 3/4	95.3	13	8	10	18	5 1/8	712,000	18,570	15,670	74,100	92,735	1.25	55,640
								7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 1/8	712,000	18,570	15,670	74,100	72,484	0.98	43,490
5	25.60	0.500	4.000	IEU	API	5 1/2FH		7 1/4	184.2	3 3/4	95.3	13	8	10	18	5 1/8	742,000	19,950	18,900	73,160	92,735	1.27	55,640
								7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 1/8	742,000	19,950	18,900	73,160	72,484	0.99	43,490
								7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 1/8	954,000	25,650	24,300	94,060	108,358	1.15	65,020
								7 1/4	184.2	3 1/4	82.6	13	8	10	18	5 1/8	954,000	25,650	24,300	94,060	78,716	0.84	47,230
5 1/2	21.90	0.361	4.778	IEU	API	5 1/2FH		7	177.8	3 3/4	95.3	13	8	10	18	5 11/16	554,000	11,850	10,020	64,230	90,771	1.41	54,460
								7	177.8	3 3/4	95.3	13	8	10	18	5 11/16	554,000	11,850	10,020	64,230	62,903	0.98	37,740
								7 1/4	184.2	3 3/4	95.3	13	8	10	18	5 11/16	612,000	13,090	10,500	70,990	92,735	1.31	55,640
								7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 11/16	612,000	13,090	10,500	70,990	72,484	1.02	43,490
								7 1/2	190.5	3 3/4	95.3	13	8	10	18	5 11/16	787,000	16,840	12,670	91,280	93,587	1.03	56,150
								7 1/2	190.5	3	76.2	13	8	10	18	5 11/16	787,000	16,840	12,670	91,280	87,171	0.95	52,300
5 1/2	24.70	0.415	4.670	IEU	API	5 1/2FH		7 1/4	184.2	3 3/4	95.3	13	8	10	18	5 11/16	696,000	15,050	14,010	79,200	92,735	1.17	55,640
								7 1/4	184.2	3 1/2	88.9	13	8	10	18	5 11/16	696,000	15,050	14,010	79,200	72,484	0.92	43,490
								7 1/2	190.5	3 1/2	88.9	13	8	10	18	5 11/16	895,000	19,350	17,020	101,830	109,354	1.07	65,610
								7 1/2	190.5	3	76.2	13	8	10	18	5 11/16	895,000	19,350	17,020	101,830	87,171	0.86	52,300
6 5/8	25.20	0.330	5.965	IEU	API	6 5/8FH		8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	685,000	9,940	5,500	98,810	124,672	1.26	74,800
								8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	685,000	9,940	5,500	98,810	86,238	0.87	51,740
								8 1/2	215.9	4 21/43	114.0	13	8	11	19	6 15/16	881,000	12,780	6,040	127,050	149,639	1.18	89,780
								8 1/2	215.9	4 1/4	108.0	13	8	11	19	6 15/16	881,000	12,780	6,040	127,050	109,227	0.86	65,540
6 5/8	27.70	0.362	5.901	IEU	API	6 5/8FH		8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	748,000	10,900	7,100	106,810	124,672	1.17	74,800
								8 1/4	209.6	4 3/4	120.7	13	8	11	19	6 15/16	748,000	10,900	7,100	106,810	86,238	0.81	51,740
								8 1/2	215.9	4 21/43	114.0	13	8	11	19	6 15/16	962,000	14,020	7,810	137,330	149,639	1.09	89,780
								8 1/2	215.9	4 1/4	108.0	13	8	11	19	6 15/16	962,000	14,020	7,810	137,330	109,227	0.80	65,540

## Drill Collar

Material AISI4145HM, Non Mag(DNM110)  
 Type Slick, Spiral

### Sizes and Mechanical Properties

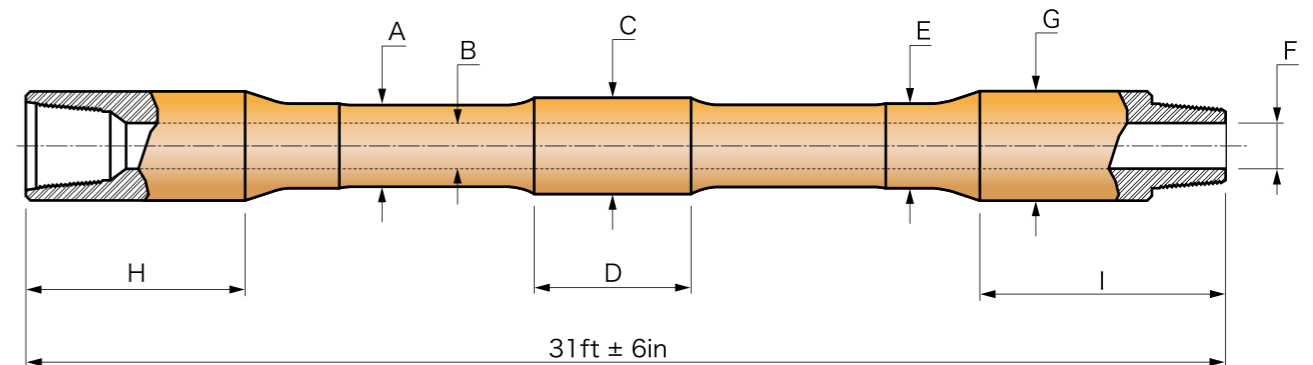
Drill Collar Number	Outside Diameter D inch (mm)	Bore Diameter d inch (mm)	B.S.R Round Number	Tensile Strength			Impact Value	Hardness	
				Length, ft ±6in	Yield Strength	Tensile Strength			Elongation
				ft	(0.25% offset)			Charpy V	Brinell
NC23-31	3 1/8 (79.4)	1 1/4 (31.8)	2.57 : 1	30	min. 110,000 psi (≥758N/mm <sup>2</sup> )	min. 140,000 psi (≥965N/mm <sup>2</sup> )	min. 13%	min. 59 ft-lbs (≥80J)	285~341
NC26-35 (2-3/8 IF)	3 1/2 (88.9)	1 1/2 (38.1)	2.42 : 1	30					
NC31-41 (2 7/8 IF)	4 1/4 (104.8)	2 (50.8)	2.43 : 1	30 or 31					
NC35-47	4 3/4 (120.7)	2 (50.8)	2.58 : 1	30 or 31					
NC38-50 (3 1/2 IF)	5 (127.0)	2 1/4 (57.2)	2.38 : 1	30 or 31					
NC44-60	6 (152.4)	2 1/4 (57.2)	2.49 : 1	30 or 31					
NC44-60	6 (152.4)	2 13/16 (71.4)	2.84 : 1	30 or 31					
NC44-62	6 1/4 (158.8)	2 1/4 (57.2)	2.91 : 1	30 or 31					
NC46-62 (4 IF)	6 1/4 (158.8)	2 13/16 (71.4)	2.63 : 1	30 or 31					
NC46-65 (4 IF)	6 1/2 (165.1)	2 1/4 (57.2)	2.76 : 1	30 or 31					
NC46-65 (4 IF)	6 1/2 (165.1)	2 13/16 (71.4)	3.05 : 1	30 or 31					
NC46-67 (4 IF)	6 3/4 (171.5)	2 1/4 (57.2)	3.18 : 1	30 or 31					
NC50-67 (4 1/2 IF)	6 3/4 (171.5)	2 13/16 (71.4)	2.37 : 1	30 or 31					
NC50-70 (4 1/2 IF)	7 (177.8)	2 1/4 (57.2)	2.54 : 1	30 or 31					
NC50-70 (4 1/2 IF)	7 (177.8)	2 13/16 (71.4)	2.27 : 1	30 or 31					
NC50-72 (4 1/2 IF)	7 1/4 (184.2)	2 13/16 (71.4)	3.12 : 1	30 or 31					
NC56-77	7 3/4 (196.9)	2 13/16 (71.4)	2.70 : 1	30 or 31					
NC56-80	8 (203.2)	2 13/16 (71.4)	3.02 : 1	30 or 31	min. 100,000 psi (≥689N/mm <sup>2</sup> )	min. 135,000 psi (≥931N/mm <sup>2</sup> )	min. 13%	min. 59 ft-lbs (≥80J)	285~341
6 5/8 REG	8 1/4 (209.6)	2 13/16 (71.4)	2.93 : 1	30 or 31					
NC61-90	9 (228.6)	2 13/16 (71.4)	3.17 : 1	30 or 31					
7 5/8 REG	9 1/2 (241.3)	3 (76.2)	2.81 : 1	30 or 31					
NC70-97	9 3/4 (247.7)	3 (76.2)	2.57 : 1	30 or 31					
NC70-100	10 (254.0)	3 (76.2)	2.81 : 1	30 or 31					
8 5/8 REG	11 (279.4)	3 (76.2)	2.84 : 1	30 or 31					

## Heavy Weight Drill Pipe

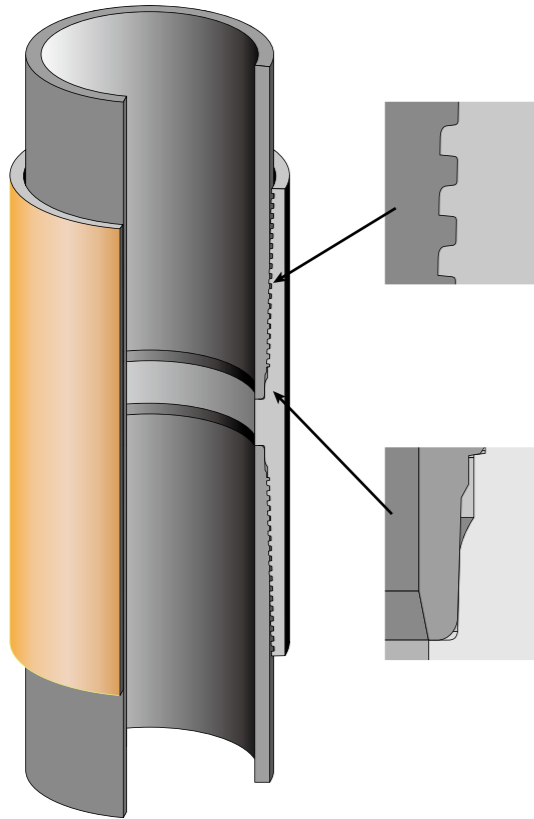
Type Integral Type and Friction Weld Type  
 Grade Integral Type AISI4145HM  
 Friction Weld Type Tool Joint : AISI 4145HM  
 Tube : AISI 1340 or Equivalent

### Sizes

Size	Tube					Tool Joint					Min Drift Dia.
	Tube ID	Center Upset Dia.	Upset Length	Max Elevator Upset	Connection Number	Tool Joint OD	Tool Joint ID	Pin Length	Box Length		
	A	B	C	D	E	G	F	I	H		
3 1/2	88.9	2 1/4 2 1/16	4	25	3 7/8	NC38	4 3/4 (4 7/8) (5)	2 1/4 2 1/16	27	21	2 1 13/16
4	101.6	2 1/2 2 9/16	4 1/2	25	4 3/16	NC40	5 1/4	2 1/2 2 9/16	27	21	2 1/4 2 5/16
4 1/2	114.3	2 11/16 2 3/4 2 13/16	5	25	4 11/16	NC46	6 1/4	2 11/16 2 3/4 2 13/16	27	21	2 7/16 2 1/2 2 9/16
5	127.0	3	5 1/2	25	5 1/8	NC50	6 5/8	3	27	21	2 3/4
5 1/2	139.7	3 1/4 3 3/8 3 7/8 4	6	25	5 11/16	5 1/2FH	7 (7 1/4) (7 1/2)	3 1/4 3 3/8 3 7/8 4	27	21	3 3 1/8 3 5/8 3 3/4
5 7/8	149.2	4	6 3/8	25	6	5 1/2FH	7	4	27	21	3 3/4
6 5/8	168.3	4 4 1/2 5	7 1/8	25	6 15/16	6 5/8FH	8 (8 1/4) (8 1/2)	4 4 1/2 5	27	21	3 3/4 4 1/4 4 3/4



# PMC Connection



## Design Concept

- Threaded and Coupled Connection applied  
Non-upset Pipe
- Two Metal to Metal Seals  
Main Seal with Sliding Type  
Internal torque stop seal
- Excellent sealing capability
- Fully Inter-Changeable to BTC(API Buttress Connection)  
Thread Form same as API-BTC
- Positive Torque Stop in Internal Shoulder
- Internal Flush Smooth
- Easy Repair Connection  
BTC Threading Insert can be used.
- Tapered and Run-out Type Thread  
Thread Taper 1/16 on Diameter

# PMC Casing Size

OD NOMINAL inch	OD		WEIGH lbs/ft	Wall		NOM. ID		DRIFT DIA		Coupling OD mm	Length mm	Make-up Pipe Section	
	inch	mm		inch	mm	inch	mm	inch	mm			mm	Sq.in
4 1/2	4.500	114.3	11.60	0.250	6.35	4.000	101.60	3.875	98.43	127.00	234.70	107.35	3.338
	4.500	114.3	13.50	0.291	7.39	3.918	99.52	3.795	96.39			3.848	
	4.500	114.3	15.10	0.337	8.56	3.826	97.18	3.701	94.01			4.407	
	4.500	114.3	16.90	0.380	9.65	3.740	95.00	3.615	91.82			4.918	
5	5.000	127.0	15.00	0.296	7.52	4.408	111.96	4.283	108.79	141.30	235.90	107.98	4.374
	5.000	127.0	18.00	0.362	9.19	4.276	108.61	4.151	105.44			5.275	
	5.000	127.0	20.30	0.408	10.36	4.184	106.27	4.059	103.10			5.886	
	5.000	127.0	23.20	0.478	12.14	4.044	102.72	3.919	99.54			6.791	
5 1/2	5.500	139.7	15.50	0.275	6.99	4.950	125.73	4.825	122.56	153.70	240.70	110.37	4.514
	5.500	139.7	17.00	0.304	7.72	4.892	124.26	4.767	121.08			4.962	
	5.500	139.7	20.00	0.361	9.17	4.778	121.36	4.653	118.19			5.828	
	5.500	139.7	23.00	0.415	10.54	4.670	118.62	4.545	115.44			6.630	
6 5/8	6.625	168.3	20.00	0.288	7.32	6.049	153.64	5.924	150.47	187.70	250.20	115.13	5.734
	6.625	168.3	24.00	0.352	8.94	5.921	150.39	5.796	147.22			6.937	
	6.625	168.3	28.00	0.417	10.59	5.791	147.09	5.666	143.92			8.133	
	6.625	168.3	32.00	0.475	12.07	5.675	144.15	5.550	140.97			9.177	
7	7.000	177.8	23.00	0.317	8.05	6.366	161.70	6.241	158.52	194.50	261.40	120.70	6.656
	7.000	177.8	26.00	0.362	9.19	6.276	159.41	6.151	156.24			7.549	
	7.000	177.8	29.00	0.408	10.36	6.184	157.07	6.059	153.90			8.449	
	7.000	177.8	32.00	0.453	11.51	6.094	154.79	5.969	151.61			9.317	
	7.000	177.8	35.00	0.498	12.65	6.004	152.50	5.879	149.33			10.172	
	7.000	177.8	38.00	0.540	13.72	5.920	150.37	5.795	147.19			10.959	
7 5/8	7.625	193.7	26.40	0.328	8.33	6.969	177.01	6.844	173.84	215.90	270.90	125.46	7.519
	7.625	193.7	29.70	0.375	9.53	6.875	174.63	6.750	171.45			8.541	
	7.625	193.7	33.70	0.430	10.92	6.765	171.83	6.640	168.66			9.720	
	7.625	193.7	39.00	0.500	12.70	6.625	168.28	6.500	165.10			11.192	
	7.625	193.7	42.80	0.562	14.27	6.501	165.13	6.376	161.95			12.470	
	7.625	193.7	45.30	0.595	15.11	6.435	163.45	6.310	160.27			13.141	
8 5/8	8.625	219.1	28.0	0.304	7.72	8.017	203.63	7.894	200.49	244.50	277.20	128.63	7.947
	8.625	219.1	32.0	0.352	8.94	7.921	201.19	7.798	198.06			9.149	
	8.625	219.1	36.0	0.400	10.16	7.825	198.76	7.702	195.62			10.336	
	8.625	219.1	40.0	0.450	11.43	7.725	196.22	7.602	193.08			11.557	
	8.625	219.1	44.0	0.500	12.70	7.625	193.68	7.502	190.54			12.763	
	8.625	219.1	49.0	0.557	14.15	7.511	190.78	7.388	187.64			14.118	
9 5/8	9.625	244.5	36.0	0.352	8.94	8.921	226.59	8.765	222.62	269.90	277.20	128.63	10.254
	9.625	244.5	40.0	0.395	10.03	8.835	224.41	8.679	220.44			11.454	
	9.625	244.5	43.5	0.435	11.05	8.755	222.38	8.599	218.41			12.559	
	9.625	244.5	47.0	0.472	11.99	8.681	220.50	8.525	216.53			13.572	
	9.625	244.5	53.5	0.545	13.84	8.535	216.79	8.379	212.82			15.547	
	9.625	244.5	58.4	0.595	15.11	8.435	214.25	8.279	210.28			16.879	
10 3/4	10.750	273.1	40.5	0.350	8.89	10.050	255.27	9.894	251.30	298.50	277.20	128.63	11.435
	10.750	273.1	45.5	0.400	10.16	9.950	252.73	9.794	248.76			13.006	
	10.750	273.1	51.0	0.450	11.43	9.850	250.19	9.694	246.22			14.561	
	10.750	273.1	55.5	0.495	12.57	9.760	247.90	9.604	243.94			15.947	
	10.750	273.1	60.7	0.545	13.84	9.660	245.36	9.504	241.40			17.473	
	10.750	273.1	65.7	0.595	15.11	9.560	242.82	9.404	238.86			18.982	
11 3/4	11.750	298.5	47.0	0.375	9.53	11.000	279.40	10.844	275.43	323.80	277.20	128.63	13.401
	11.750	298.5	54.0	0.435	11.05	10.880	276.35	10.724	272.38			15.463	
	11.750	298.5	60.0	0.489	12.42	10.772	273.61	10.616	269.64			17.300	
	11.750	298.5	65.0	0.534	13.56	10.682	271.32	10.526	267.35			18.816	
13 3/8	13.375	339.7	54.5	0.380	9.65	12.615	320.42	12.459	316.45	365.10	277.20	128.63	15.514
	13.375	339.7	61.0	0.430	10.92	12.515	317.88	12.359	313.91			17.487	
	13.375	339.7	68.0	0.480	12.19	12.415	315.34	12.259	311.37			19.445	
	13.375	339.7	72.0	0.514	13.06	12.347	313.61	12.191	309.65			20.768	

# Casing

## Sizes and Grades

Outside Diameter	Nominal Weight	Outside Diameter D	Wall Thickness T		Type of End Finish					
					Grade					
					H-40	J-55 K-55	L-80 C-95	N-80	C-90 T-95	P-110
in	lb/ft	mm	in	mm						
4 1/2	9.50	114.3	0.205	5.21	S	S	-	-	-	-
	10.50	114.3	0.224	5.69	-	SB	-	-	-	-
	11.60	114.3	0.250	6.35	-	SLB	LB	LB	LB	LB
	13.50	114.3	0.290	7.37	-	-	LB	LB	LB	LB
5	11.50	127.0	0.220	5.59	-	S	-	-	-	-
	13.00	127.0	0.253	6.43	-	SLB	-	-	-	-
	15.00	127.0	0.296	7.52	-	SLB	LB	LB	LB	LB
	18.00	127.0	0.362	9.19	-	-	LB	LB	LB	LB
	21.40	127.0	0.437	11.10	-	-	LB	LB	LB	LB
	23.20	127.0	0.478	12.14	-	-	LB	LB	LB	LB
5 1/2	14.00	139.7	0.244	6.20	S	S	-	-	-	-
	15.50	139.7	0.275	6.99	-	SLB	-	-	-	-
	17.00	139.7	0.304	7.72	-	SLB	LB	LB	LB	LB
	20.00	139.7	0.361	9.17	-	-	LB	LB	LB	LB
6 5/8	20.00	168.3	0.288	7.32	S	SLB	-	-	-	-
	24.00	168.3	0.352	8.94	-	SLB	LB	LB	LB	LB
	28.00	168.3	0.417	10.59	-	-	LB	LB	LB	LB
	32.00	168.3	0.475	12.07	-	-	LB	LB	LB	LB
7	17.00	177.8	0.231	5.87	S	-	-	-	-	-
	20.00	177.8	0.272	6.91	S	S	-	-	-	-
	23.00	177.8	0.317	8.05	-	SLB	LB	LB	LB	-
	26.00	177.8	0.362	9.19	-	SLB	LB	LB	LB	LB
	29.00	177.8	0.408	10.36	-	-	LB	LB	LB	LB
	32.00	177.8	0.453	11.51	-	-	LB	LB	LB	LB
	35.00	177.8	0.498	12.65	-	-	LB	LB	LB	LB
7 5/8	24.00	193.7	0.300	7.62	S	-	-	-	-	-
	26.40	193.7	0.328	8.33	-	SLB	LB	LB	LB	-
	29.70	193.7	0.375	9.53	-	-	LB	LB	LB	LB
	33.70	193.7	0.430	10.92	-	-	LB	LB	LB	LB
	39.00	193.7	0.500	12.70	-	-	LB	LB	LB	LB
	42.80	193.7	0.562	14.27	-	-	LB	LB	LB	LB
	45.30	193.7	0.595	15.11	-	-	LB	LB	LB	LB
47.10	193.7	0.625	15.88	-	-	LB	LB	LB	LB	

## Sizes and Grades

Outside Diameter	Nominal Weight	Outside Diameter D	Wall Thickness T		Type of End Finish					
					Grade					
					H-40	J-55 K-55	L-80 C-95	N-80	C-90 T-95	P-110
in	lb/ft	mm	in	mm						
8 5/8	24.00	219.1	0.264	6.71	-	S	-	-	-	-
	28.00	219.1	0.304	7.72	S	-	-	-	-	-
	32.00	219.1	0.352	8.94	S	SLB	-	-	-	-
	36.00	219.1	0.400	10.16	-	SLB	LB	LB	LB	LB
	40.00	219.1	0.450	11.43	-	-	LB	LB	LB	LB
	44.00	219.1	0.500	12.70	-	-	LB	LB	LB	LB
9 5/8	49.00	219.1	0.557	14.15	-	-	LB	LB	LB	LB
	32.30	244.5	0.312	7.92	S	-	-	-	-	-
	36.00	244.5	0.352	8.94	S	SLB	-	-	-	-
	40.00	244.5	0.395	10.03	-	SLB	LB	LB	LB	LB
	43.50	244.5	0.435	11.05	-	-	LB	LB	LB	LB
	47.00	244.5	0.472	11.99	-	-	LB	LB	LB	LB
10 3/4	53.50	244.5	0.545	13.84	-	-	LB	LB	LB	LB
	58.40	244.5	0.595	15.11	-	-	LB	LB	LB	LB
	32.75	273.1	0.279	7.09	S	-	-	-	-	-
	40.50	273.1	0.350	8.89	S	SB	-	-	-	-
	45.50	273.1	0.400	10.16	-	SB	-	-	-	-
	51.00	273.1	0.450	11.43	-	SB	SB	SB	SB	SB
11 3/4	55.50	273.1	0.495	12.57	-	-	SB	SB	SB	SB
	60.70	273.1	0.545	13.84	-	-	-	-	SB	SB
	65.70	273.1	0.595	15.11	-	-	-	-	SB	SB
	42.00	298.5	0.333	8.46	S	-	-	-	-	-
	47.00	298.5	0.375	9.53	-	SB	-	-	-	-
	54.00	298.5	0.435	11.05	-	SB	-	-	-	-
13 3/8	60.00	298.5	0.489	12.42	-	SB	SB	SB	SB	SB
	48.00	339.7	0.330	8.38	S	-	-	-	-	-
	54.50	339.7	0.380	9.65	-	SB	-	-	-	-
	61.00	339.7	0.430	10.92	-	SB	-	-	-	-
	68.00	339.7	0.480	12.19	-	SB	SB	SB	SB	SB
16	72.00	339.7	0.514	13.06	-	-	SB	SB	SB	SB
	65.00	406.4	0.375	9.53	S	-	-	-	-	-
	75.00	406.4	0.438	11.13	-	SB	-	-	-	-
18 5/8	84.00	406.4	0.495	12.57	-	SB	-	-	-	-
	87.50	473.1	0.435	11.05	S	SB	-	-	-	-
20	94.00	508.0	0.438	11.13	SL	SLB	-	-	-	-
	106.50	508.0	0.500	12.70	-	SLB	-	-	-	-
	133.00	508.0	0.635	16.13	-	SLB	-	-	-	-

S = Short Round Thread L = Long Round Thread B = Buttress Thread

# Tubing

## Sizes and Grades

Outside Diameter	lb/ft		Outside Diameter	Wall Thickness		Type of End-Finish						
	T&C			t		Grade						
	Non Upset	Upset		in	mm	H-40	J-55	L-80	N-80	C-90	T-95	P-110
in			mm	in	mm							
2 3/8	4.00	-	60.3	0.167	4.24	N	N	N	N	N	N	-
	4.60	4.70	60.3	0.190	4.83	NU	NU	NU	NU	NU	NU	NU
	5.80	5.95	60.3	0.254	6.45	-	-	NU	NU	NU	NU	NU
	7.35	7.45	60.3	0.336	8.53	-	-	U	-	U	U	-
2 7/8	6.40	6.50	73.0	0.217	5.51	NU	NU	NU	NU	NU	NU	NU
	7.80	7.90	73.0	0.276	7.01	-	-	NU	NU	NU	NU	NU
	8.60	8.70	73.0	0.308	7.82	-	-	NU	NU	NU	NU	NU
	9.35	9.45	73.0	0.340	8.64	-	-	U	-	U	U	-
3 1/2	7.70	-	88.9	0.216	5.49	N	N	N	N	N	N	-
	9.20	9.30	88.9	0.254	6.45	NU	NU	NU	NU	NU	NU	NU
	10.20	-	88.9	0.289	7.34	N	N	N	N	N	N	-
	12.70	12.95	88.9	0.375	9.52	-	-	NU	NU	NU	NU	NU
4	9.50	-	101.6	0.226	5.74	N	N	N	N	N	N	-
	10.70	11.00	101.6	0.262	6.65	U	U	U	U	U	U	-
4 1/2	12.60	12.75	114.3	0.271	6.88	NU	NU	NU	NU	NU	NU	-

N = Non-Upset Tubing U = External-Upset Tubing

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