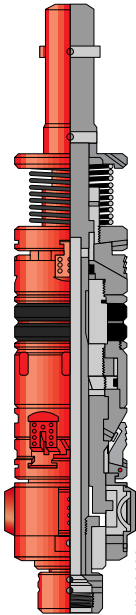
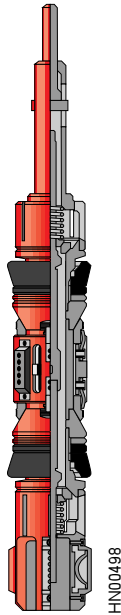


BRIDGE PLUGS



MODEL 3L RETRIEVABLE BRIDGE PLUG

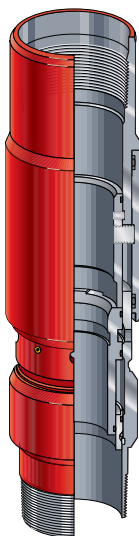
- Packer-type bridge plug highly adaptable to any zonal isolation procedure.
- Excellent for testing, fracturing, acidizing, or squeezing.
- Reduced tool body OD and a high-volume center-flow ID provides rapid run-in and retrieval, even through heavy wellbore fluids.
- Setting is simple, requiring only tubing manipulation and application of workstring weight.
- A Model 3L used with a Champ or RTTS packer provides reliable set/seal/release performance.



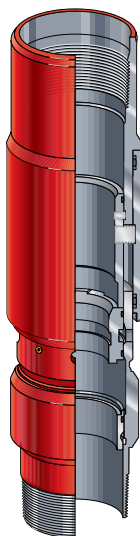
MODEL N QUICK RETRIEVABLE BRIDGE PLUG

- Utilizes differential pressure above or below to seal.
- Plug is easily released by opening concentric, integral bypass.
- Can be run with Champ or RTTS packers to treat, squeeze or test multiple zones.

ES™ MULTI-STAGE CEMENTERS



TYPE H



TYPE P

HN00480

MULTI-STAGE CEMENTERS

Halliburton's full range of innovation products and techniques offers greater flexibility when planning the cementing program. One important method is multiple stage cementing, perfected by Halliburton. During this process, the slurry is placed around a casing string in several stages at predetermined points. Multiple stage cementing can be used when:

- The hydrostatic pressure of the cement is too great for the formation or casing.
- It is necessary to separate different types or blends of cement.
- Limited pump time is available.
- It is necessary to cement only certain sections of the annulus.

ES™ CEMENTER TOOLS

- Two configurations
 - Type P, plug-operated stage cementer.
 - Type H, hydraulically-operated stage cementer.
- PDC drillable.
- Smooth-bore drillout.
- Short, single piece mandrel.
- Adjustable operating pressure.

AVAILABLE FOR TUBINGLESS COMPLETIONS

ENGLISH / METRIC UNITS

SECTION No. 210

CAPACITY

NOTE:

There are some differences in the values in these tables and those previously published. The differences are slight and the former values are sufficiently accurate for dependable results.

The Values in these tables have been calculated on the IBM Computer.



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ENGLISH UNITS							
							CAPACITY
Size O.D. In.	Wt. per Ft. With Couplings, Lb.			Inside Dia. Inch	Drift Dia. Inch	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
	Non- Upset	Upset	Integral Joint				
1050	1.14	1.20	1.20	.824	.730	.0007	1516.13
1315	—	—	*1.30	1.125	.955	.0012	813.36
	—	—	*1.43	1.097	.955	.0012	855.42
	—	—	*1.63	1.065	.955	.0011	907.59
	1.70	1.80	1.70	1.049	.955	.0011	935.49
	—	—	*2.25	.957	.848	.0009	1124.00
1660	—	—	2.10	1.410	1.286	.0019	517.79
	2.30	2.40	2.33	1.380	1.286	.0018	540.55
	—	—	*3.02	1.278	1.184	.0016	630.27
1900	—	—	2.40	1.650	1.516	.0026	378.11
	2.75	2.90	2.75	1.610	1.516	.0025	397.14
	—	—	*3.64	1.500	1.406	.0022	457.52
*2000	—	—	3.30	1.670	1.576	.0027	369.11
2063	—	—	*2.66	1.813	1.656	.0032	313.18
	3.20	—	3.25	1.751	1.656	.0030	335.75
2375	—	—	*3.10	2.125	1.901	.0044	227.97
	—	—	*3.32	2.107	1.901	.0043	231.88
	4.00	—	—	2.041	1.947	.0040	247.12
	4.60	4.70	4.70	1.995	1.901	.0039	258.65
	—	5.30	5.30	1.939	1.845	.0037	273.80
	5.80	5.95	5.95	1.867	1.773	.0034	295.33
	—	—	*6.20	1.853	1.759	.0033	299.81
	—	—	*7.70	1.703	1.609	.0028	354.94
2875	—	—	*4.36	2.579	2.485	.0065	154.77
	—	—	*4.64	2.563	2.347	.0064	156.71
	6.40	6.50	6.50	2.441	2.347	.0058	172.76
	—	7.90	7.90	2.323	2.229	.0052	190.76
	8.60	8.70	8.70	2.259	2.165	.0050	201.72
	—	—	*8.90	2.243	2.149	.0049	204.61
	—	*9.50	9.50	2.195	2.101	.0047	213.66
	—	—	*10.40	2.151	2.057	.0045	222.49
	—	—	*10.70	2.091	1.997	.0042	235.44
	—	*11.00	*11.00	2.065	1.971	.0041	241.41
	—	*11.65	—	1.995	1.901	.0039	258.65
3500	—	—	*5.63	3.188	3.063	.0099	101.29
	7.70	—	7.70	3.068	2.943	.0091	109.37
	9.20	9.30	9.30	2.992	2.867	.0087	114.99
	10.20	10.30	10.30	2.922	2.797	.0083	120.57
	—	—	*12.80	2.764	2.639	.0074	134.75
	12.70	12.95	12.95	2.750	2.625	.0073	136.12
	—	—	*13.30	2.764	2.639	.0074	134.75
	—	*15.80	*15.80	2.548	2.423	.0063	158.56
	—	*16.70	*16.70	2.480	2.355	.0060	167.37
	—	—	*17.05	2.440	2.315	.0058	172.91
4000	9.50	—	9.40	3.548	3.423	.0122	81.78
	—	*11.00	*11.00	3.476	3.351	.0117	85.20
	—	—	*11.60	3.428	3.303	.0114	87.60
	—	*13.40	*13.40	3.340	3.215	.0108	92.28
	—	*22.80	—	2.780	2.655	.0075	133.20
4500	12.60	12.75	12.75	3.958	3.833	.0152	65.71
	—	*13.50	*13.50	3.920	3.795	.0149	66.99
	—	*15.50	*15.50	3.826	3.701	.0142	70.32
	—	*16.90	—	3.754	3.629	.0137	73.05
	—	*19.20	*19.20	3.640	3.515	.0129	77.69
	—	*21.60	—	3.500	3.375	.0119	84.03

*NonAPI Standard. Shown for information only.

OF TUBING								
METRIC UNITS								
Size O.D. mm	Mass With Couplings kg/m			Inside Dia. mm	Drift Dia. mm	Barrels Per m ² /m	Lin. Ft. Per m ³	
	Non- Upset	Upset	Integral Joint					
26.67	1.70	1.79	1.79	20.93	18.54	.0003	2905.49	
33.40	—	—	*1.93	28.58	24.26	.0006	1558.72	
	—	—	*2.13	27.86	24.26	.0006	1639.31	
	—	—	*2.43	27.05	24.26	.0006	1739.30	
	2.53	2.68	2.53	26.64	24.26	.0006	1792.77	
	—	—	*3.35	24.31	21.54	.0005	2154.02	
42.16	—	—	3.13	35.81	32.66	.0010	992.28	
	3.42	3.57	3.47	35.05	32.66	.0010	1035.90	
	—	—	*4.49	32.46	30.07	.0008	1207.85	
48.26	—	—	3.57	41.91	38.51	.0014	724.61	
	4.09	4.32	4.09	40.89	38.51	.0013	761.07	
	—	—	*5.42	38.10	35.71	.0011	876.78	
*50.80	—	—	4.91	42.42	40.03	.0014	707.36	
52.40	—	—	*3.96	46.05	42.06	.0017	600.18	
	4.76	—	4.84	44.48	42.06	.0016	643.43	
60.33	—	—	*4.61	53.98	48.29	.0023	436.87	
	—	—	*4.94	53.52	48.29	.0023	444.37	
	5.95	—	—	51.84	49.45	.0021	473.57	
	6.85	6.99	6.99	50.67	48.29	.0020	495.67	
	—	7.89	7.89	49.25	46.86	.0019	524.71	
	8.63	8.86	8.86	47.42	45.03	.0018	565.96	
	—	—	*9.23	47.07	44.68	.0017	574.54	
	—	—	*11.46	43.26	40.87	.0015	680.21	
	73.03	—	—	*6.49	65.51	63.12	.0034	296.60
—		—	*6.91	65.10	59.61	.0033	300.32	
9.52		9.67	9.67	62.00	59.61	.0030	331.08	
—		11.76	11.76	59.00	56.62	.0027	365.57	
12.80		12.95	12.95	57.38	54.99	.0026	386.58	
—		—	*13.25	56.97	54.58	.0026	392.12	
—		*14.14	14.14	55.75	53.37	.0024	409.45	
—		—	*15.48	54.64	52.25	.0023	426.38	
—		—	*15.92	53.11	50.72	.0022	451.20	
—		*16.37	*16.37	52.45	50.06	.0022	462.63	
—		*17.34	—	50.67	48.29	.0020	495.67	
88.90		—	—	*8.38	80.98	77.80	.0052	194.11
		11.46	—	11.46	77.93	74.75	.0048	209.59
	13.69	13.84	13.84	76.00	72.82	.0045	220.37	
	15.18	15.33	15.33	74.22	71.04	.0043	231.05	
	—	—	*19.05	70.21	67.03	.0039	258.23	
	18.90	19.27	19.27	69.85	66.68	.0038	260.86	
	—	—	*19.79	70.21	67.03	.0039	258.23	
	—	*23.51	*23.51	64.72	61.54	.0033	303.86	
	—	*24.85	*24.85	62.99	59.82	.0031	320.75	
	—	—	*25.37	61.98	58.80	.0030	331.36	
	101.60	14.14	—	13.99	90.12	86.94	.0064	156.71
—		*16.37	*16.37	88.29	85.12	.0061	163.27	
—		—	*17.26	87.07	83.90	.0060	167.88	
—		*19.94	*19.94	84.84	81.66	.0057	176.84	
—		*33.93	—	70.61	67.44	.0039	255.26	
114.30	18.75	18.98	18.98	100.53	97.36	.0079	125.93	
	—	*20.09	*20.09	99.57	96.39	.0078	128.38	
	—	*23.07	*23.07	97.18	94.01	.0074	134.77	
	—	*25.15	—	95.35	92.18	.0071	139.99	
	—	*28.57	*28.57	92.46	89.28	.0067	148.89	
	—	*32.15	—	88.90	85.73	.0062	161.04	

*NonAPI Standard. Shown for information only.

ENGLISH UNITS
CAPACITY OF INTERNAL

Size O.D. Inch	Wt. With Cplgs. Lb./Ft.	Inside Dia. Inch	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
2375	4.85	1.995	.0039	258.65
	*6.65	1.815	.0032	312.49
2875	*6.45	2.469	.0059	168.87
	6.85	2.441	.0058	172.76
	*8.35	2.323	.0052	190.76
	10.40	2.151	.0045	222.49
3500	*8.50	3.063	.0091	109.72
	9.50	2.992	.0087	114.99
	*11.20	2.900	.0082	122.40
	13.30	2.764	.0074	134.75
	15.50	2.602	.0066	152.05
4000	11.85	3.476	.0117	85.20
	14.00	3.340	.0108	92.28
	*15.70	3.240	.0102	98.06
4500	*12.75	4.000	.0155	64.34
	13.75	3.958	.0152	65.71
	16.60	3.826	.0142	70.32
	20.00	3.640	.0129	77.69
5000	16.25	4.408	.0189	52.98
	*19.50	4.276	.0178	56.30
	*20.50	4.214	.0173	57.97
5500	21.90	4.778	.0222	45.09
	24.70	4.670	.0212	47.20
*5.563	19.00	4.975	.0240	41.59
	22.20	4.859	.0229	43.60
	25.25	4.733	.0218	45.95
*6.625	22.20	6.065	.0357	27.99
	25.20	5.964	.0346	28.94
	31.90	5.761	.0322	31.02
*7.625	29.25	6.969	.0472	21.20

* Not API Standard. Shown for information only.

METRIC UNITS
UPSET DRILL PIPE**

Size O.D. mm	Wt. With Cplgs. kg/m	Inside Dia. mm	Barrels Per m ³ /m	Lin. Meters Per m/m ³
60.33	7.22	50.67	.0020	495.67
	*9.90	46.10	.0017	598.85
73.03	*9.60	62.71	.0031	232.62
	10.19	62.00	.0030	331.08
	*12.43	59.00	.0027	365.57
	15.48	54.64	.0023	426.38
88.90	*12.65	77.80	.0048	210.27
	14.14	76.00	.0045	220.37
	*16.67	73.66	.0043	234.57
	19.79	70.21	.0039	258.23
	23.07	66.09	.0034	291.38
101.60	17.64	88.29	.0061	163.27
	20.84	84.84	.0057	176.84
	*23.37	82.30	.0053	187.92
114.30	*18.98	101.60	.0081	123.30
	20.46	100.53	.0079	125.93
	24.71	97.18	.0074	134.77
	29.77	92.46	.0067	148.89
127.00	24.18	111.96	.0098	101.53
	*29.02	108.61	.0093	107.89
	*30.51	107.04	.0090	111.09
*139.70	32.59	121.36	.0116	86.41
	36.76	118.62	.0111	90.46
*141.30	28.28	126.37	.0125	79.71
	33.04	123.42	.0120	83.56
	37.58	120.22	.0114	88.06
*168.28	33.04	154.05	.0186	53.63
	37.50	151.49	.0180	55.46
	47.48	146.33	.0168	59.44
*193.68	43.53	177.01	.0246	40.62

** No allowance made for internal restrictions of upsets and tool joints in this table. To allow for them, first find the capacity of the entire drill stem by using this table, then deduct the total amount of tool joints obtained by using pages 12-13 of Section 130.

ENGLISH UNITS
CAPACITY OF EXTERNAL

Size O.D. Inch	Wt. With Cplgs. Lb./Ft.	Inside Dia. Inch	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
2.375	*4.85	1.995	.0039	258.65
	6.65	1.815	.0032	312.49
2.875	*6.85	2.441	.0058	172.76
	10.40	2.151	.0045	222.49
3.500	*9.50	2.992	.0087	114.99
	.13.30	2.764	.0074	134.75
	15.50	2.602	.0066	152.05
4.000	*11.85	3.476	.0117	85.20
	14.00	3.340	.0108	92.28
4.500	*13.75	3.958	.0152	65.71
	16.60	3.826	.0142	70.32
	*18.15	3.754	.0137	73.05
	20.00	3.640	.0129	77.69
5.000	20.50	4.214	.0173	57.97

* Not API Standard. Shown for information only.

METRIC UNITS
UPSET DRILL PIPE**

Size O.D. mm	Wt. With Cplgs. kg/m	Inside Dia. mm	Barrels Per m ³ /m	Lin. Ft. Per m/m ³
60.33	*7.22	50.67	.0020	495.67
	9.90	46.10	.0017	598.85
73.03	*10.19	62.00	.0030	331.08
	15.48	54.64	.0023	426.38
88.90	*14.14	76.00	.0045	220.37
	19.79	70.21	.0039	258.23
	23.07	66.09	.0034	291.38
101.60	*17.64	88.29	.0061	163.27
	20.84	84.84	.0057	176.84
114.30	*20.46	100.53	.0079	125.93
	24.71	97.18	.0074	134.77
	*27.01	95.35	.0071	139.99
	29.77	92.46	.0067	148.89
127.00	30.51	107.04	.0090	111.09

** No allowance made for internal restrictions of upsets and tool joints in this table. To allow for them, first find the capacity of the entire drill stem by using this table, then deduct the total amount of tool joints obtained by using pages 12-13 of Section 130.

ENGLISH UNITS

CAPACITY OF EXTERNAL

Size O.D. Inch	Wt. With Cplgs. Lb./Ft.	Inside Dia. Inch	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
*2.875	10.40	2.151	.0045	222.49
*3.500	13.30	2.764	.0074	134.75
	15.50	2.602	.0066	152.05
*4.000	14.00	3.340	.0108	92.28
	15.30	3.244	.0102	97.82
4.500	*16.60	3.826	.0142	70.32
	*18.15	3.754	.0137	73.05
	20.00	3.640	.0129	77.69
5.000	*16.25	4.408	.0189	52.98
	19.50	4.276	.0178	56.30
5.500	21.90	4.778	.0222	45.09
	24.70	4.670	.0212	47.20
*5.563	22.20	4.859	.0229	43.60
6.625	25.20	5.965	.0346	28.93

* Not API Standard. Shown for information only.

METRIC UNITS
UPSET DRILL PIPE**

Size O.D. mm	Wt. With Cplgs. kg/m	Inside Dia. mm	Barrels Per m ³ /m	Lin. Ft. Per m/m ³
*73.03	15.48	54.64	.0023	426.38
*88.90	19.79 23.07	70.21 66.09	.0039 .0034	258.23 291.38
*101.60	20.84 22.77	84.84 82.40	.0057 .0053	176.84 187.46
114.30	*24.71 *27.01 29.77	97.18 95.35 92.46	.0074 .0071 .0067	134.77 139.99 148.89
127.00	*24.18 29.02	111.96 108.61	.0098 .0093	101.53 107.89
139.70	32.59 36.76	121.36 118.62	.0116 .0111	86.41 90.46
*141.30	33.04	123.42	.0120	83.56
168.28	37.50	151.51	.0180	55.44

** No allowance made for internal restrictions of upsets and tool joints in this table. To allow for them, first find the capacity of the entire drill stem by using this table, then deduct the total amount of tool joints obtained by using pages 12-13 of Section 130.

**TABLE
CAPACITY**

Diameter of Hole Inches	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
2.000	.0039	257.35
2.125	.0044	227.67
2.250	.0049	203.34
2.375	.0055	182.50
2.500	.0061	164.71
2.625	.0067	149.39
2.750	.0073	136.12
2.875	.0080	124.54
3.000	.0087	114.38
3.125	.0095	105.41
3.250	.0103	97.46
3.375	.0111	90.37
3.500	.0119	84.03
3.625	.0128	78.34
3.750	.0137	73.20
3.875	.0146	68.56
4.000	.0155	64.34
4.125	.0165	60.50
4.250	.0175	56.99
4.375	.0186	53.78
4.500	.0197	50.84
4.625	.0208	48.12
4.750	.0219	45.63
4.875	.0231	43.32
5.000	.0243	41.18
5.125	.0255	39.19
5.250	.0268	37.35
5.375	.0281	35.63
5.500	.0294	34.03
5.625	.0307	32.53
5.750	.0321	31.14
5.875	.0335	29.82
6.000	.0350	28.59
6.125	.0364	27.44
6.250	.0379	26.35
6.375	.0395	25.33
6.500	.0410	24.36
6.625	.0426	23.45
6.750	.0443	22.59
6.875	.0459	21.78
7.000	.0476	21.01
7.125	.0493	20.28
7.250	.0511	19.58
7.375	.0528	18.93
7.500	.0546	18.30
7.625	.0565	17.71
7.750	.0583	17.14
7.875	.0602	16.60

**NO. 213
OF HOLE**

Diameter of Hole mm	Barrels Per m ³ /m	Lin. Meters Per m/m ³
50.80	.0020	493.19
53.98	.0023	436.87
57.15	.0026	389.68
60.33	.0029	349.74
63.50	.0032	315.64
66.68	.0035	286.30
69.85	.0038	260.86
73.03	.0042	238.67
76.20	.0046	219.20
79.38	.0050	202.01
82.55	.0054	186.77
85.73	.0058	173.19
88.90	.0062	161.04
92.08	.0067	150.13
95.25	.0071	140.29
98.43	.0076	131.38
101.60	.0081	123.30
104.78	.0086	115.94
107.95	.0092	109.22
111.13	.0097	103.07
114.30	.0103	97.42
117.48	.0108	92.23
120.65	.0114	87.44
123.83	.0120	83.01
127.00	.0127	78.91
130.18	.0133	75.11
133.35	.0140	71.57
136.53	.0146	68.28
139.70	.0153	65.22
142.88	.0160	62.35
146.05	.0168	59.67
149.23	.0175	57.16
152.40	.0182	54.80
155.58	.0190	52.59
158.75	.0198	50.50
161.93	.0206	48.54
165.10	.0214	46.69
168.28	.0222	44.95
171.45	.0231	43.30
174.63	.0240	41.71
177.80	.0248	40.26
180.98	.0257	38.86
184.15	.0266	37.53
187.33	.0276	36.27
190.50	.0285	35.07
193.68	.0295	33.93
196.85	.0304	32.85
200.03	.0314	31.81

**TABLE
CAPACITY**

Diameter of Hole Inches	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
8.000	.0622	16.08
8.125	.0641	15.59
8.250	.0661	15.12
8.375	.0681	14.68
8.500	.0702	14.25
8.625	.0723	13.84
8.750	.0744	13.45
8.875	.0765	13.07
9.000	.0787	12.71
9.125	.0809	12.36
9.250	.0831	12.03
9.375	.0854	11.71
9.500	.0877	11.41
9.625	.0900	11.11
9.750	.0923	10.83
9.875	.0947	10.56
10.000	.0971	10.29
10.125	.0996	10.04
10.250	.1021	9.80
10.375	.1046	9.56
10.500	.1071	9.34
10.625	.1097	9.12
10.750	.1123	8.91
10.875	.1149	8.70
11.000	.1175	8.51
11.125	.1202	8.32
11.250	.1229	8.13
11.375	.1257	7.96
11.500	.1285	7.78
11.625	.1313	7.62
11.750	.1341	7.46
11.875	.1370	7.30
12.000	.1399	7.15
12.125	.1428	7.00
12.250	.1458	6.86
12.375	.1488	6.72
12.500	.1518	6.59
12.625	.1548	6.46
12.750	.1579	6.33
12.875	.1610	6.21
13.000	.1642	6.09
13.125	.1673	5.98
13.250	.1705	5.86
13.375	.1738	5.75
13.500	.1770	5.65
13.625	.1803	5.55
13.750	.1837	5.44
13.875	.1870	5.35

**NO. 213
OF HOLE**

Diameter of Hole mm	Barrels Per m ³ /m	Lin. Meters Per m/m ³
203.20	.0324	30.82
206.38	.0335	29.88
209.55	.0345	28.98
212.73	.0356	28.13
215.90	.0366	27.30
219.08	.0377	26.52
222.25	.0388	25.77
225.43	.0399	25.05
228.60	.0411	24.36
231.78	.0422	23.69
234.95	.0434	23.06
238.13	.0446	22.45
241.30	.0457	21.86
244.48	.0470	21.29
247.65	.0482	20.75
250.83	.0494	20.23
254.00	.0507	19.73
257.18	.0520	19.24
260.35	.0533	18.78
263.53	.0546	18.33
266.70	.0559	17.89
269.88	.0572	17.47
273.05	.0586	17.07
276.23	.0599	16.68
279.40	.0613	16.30
282.58	.0627	15.94
285.75	.0642	15.59
288.93	.0656	15.25
292.10	.0670	14.92
295.28	.0685	14.60
298.45	.0700	14.29
301.63	.0715	13.99
304.80	.0730	13.70
307.98	.0745	13.42
311.15	.0761	13.15
314.33	.0776	12.88
317.50	.0792	12.63
320.68	.0808	12.38
323.85	.0824	12.14
327.03	.0840	11.90
330.20	.0857	11.67
333.38	.0873	11.45
336.55	.0890	11.24
339.73	.0907	11.03
342.90	.0924	10.82
346.08	.0941	10.63
349.25	.0958	10.43
352.43	.0976	10.25

**TABLE
CAPACITY**

Diameter of Hole Inches	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
14.000	.1904	5.25
14.125	.1938	5.16
14.250	.1973	5.07
14.375	.2007	4.98
14.500	.2042	4.90
14.625	.2078	4.81
14.750	.2113	4.73
14.875	.2149	4.65
15.000	.2186	4.58
15.125	.2222	4.50
15.250	.2259	4.43
15.375	.2296	4.35
15.500	.2334	4.28
15.625	.2372	4.22
15.750	.2410	4.15
15.875	.2448	4.08
16.000	.2487	4.02
16.250	.2565	3.90
16.500	.2645	3.78
16.750	.2725	3.67
17.000	.2807	3.56
17.250	.2891	3.46
17.500	.2975	3.36
17.750	.3061	3.27
18.000	.3147	3.18
18.250	.3235	3.09
18.500	.3325	3.01
18.750	.3415	2.93
19.000	.3507	2.85
19.250	.3600	2.78
19.500	.3694	2.71
19.750	.3789	2.64
20.000	.3886	2.57
20.250	.3983	2.51
20.500	.4082	2.45
20.750	.4183	2.39
21.000	.4284	2.33
21.250	.4387	2.28
21.500	.4490	2.23
21.750	.4595	2.18
22.000	.4702	2.13
22.250	.4809	2.08
22.500	.4918	2.03
22.750	.5028	1.99
23.000	.5139	1.95
23.250	.5251	1.90
23.500	.5365	1.86
23.750	.5479	1.83

**NO. 213
OF HOLE**

Diameter of Hole mm	Barrels Per m ³ /m	Lin. Meters Per m/m ³
355.60	.0994	10.07
358.78	.1011	9.98
361.95	.1029	9.72
365.13	.1047	9.55
368.30	.1066	9.38
371.48	.1084	9.22
374.65	.1103	9.07
377.83	.1122	8.92
381.00	.1141	8.77
384.18	.1160	8.62
387.35	.1179	8.48
390.53	.1198	8.35
393.70	.1218	8.21
396.88	.1238	8.08
400.05	.1257	7.95
403.23	.1277	7.83
406.40	.1298	7.71
412.75	.1339	7.47
419.10	.1380	7.25
425.45	.1422	7.03
431.80	.1465	6.83
438.15	.1508	6.63
444.50	.1552	6.44
450.85	.1597	6.26
457.20	.1642	6.09
463.55	.1688	5.92
469.90	.1735	5.76
476.25	.1782	5.61
482.60	.1830	5.46
488.95	.1878	5.32
495.30	.1928	5.19
501.65	.1977	5.06
508.00	.2028	4.93
514.35	.2079	4.81
520.70	.2130	4.69
527.05	.2183	4.58
533.40	.2235	4.47
539.75	.2289	4.37
546.10	.2343	4.27
552.45	.2398	4.17
558.80	.2453	4.08
565.15	.2509	3.98
571.50	.2566	3.90
577.85	.2624	3.81
584.20	.2682	3.73
590.55	.2740	3.65
596.90	.2799	3.57
603.25	.2859	3.50

**TABLE
CAPACITY**

Diameter of Hole Inches	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
24.00	.5595	1.79
24.25	.5713	1.75
24.50	.5831	1.71
24.75	.5951	1.68
25.00	.6071	1.65
25.25	.6193	1.61
25.50	.6317	1.58
25.75	.6441	1.55
26.00	.6567	1.52
26.25	.6694	1.49
26.50	.6822	1.47
26.75	.6951	1.44
27.00	.7082	1.41
27.25	.7213	1.39
27.50	.7346	1.36
27.75	.7481	1.34
28.00	.7616	1.31
28.25	.7753	1.29
28.50	.7890	1.27
28.75	.8029	1.25
29.00	.8170	1.22
29.25	.8311	1.20
29.50	.8454	1.18
29.75	.8598	1.16
30.00	.8743	1.14
30.25	.8889	1.12
30.50	.9037	1.11
30.75	.9185	1.09
31.00	.9335	1.07
31.25	.9487	1.05
31.50	.9639	1.04
31.75	.9793	1.02
32.00	.9947	1.01
32.25	1.0103	.99
32.50	1.0261	.97
32.75	1.0419	.96
33.00	1.0579	.95
33.25	1.0740	.93
33.50	1.0902	.92
33.75	1.1065	.90
34.00	1.1230	.89
34.25	1.1395	.88
34.50	1.1562	.86
34.75	1.1731	.85
35.00	1.1900	.84
35.25	1.2071	.83
35.50	1.2242	.82
35.75	1.2415	.81

**NO. 213
OF HOLE**

Diameter of Hole mm	Barrels Per m ³ /m	Lin. Meters Per m/m ³
609.60	.2920	3.42
615.95	.2981	3.35
622.30	.3043	3.29
628.65	.3105	3.22
635.00	.3168	3.16
641.35	.3232	3.09
647.70	.3296	3.03
654.05	.3361	2.98
660.40	.3427	2.92
666.75	.3493	2.86
673.10	.3560	2.81
679.45	.3627	2.76
685.80	.3695	2.71
692.15	.3764	2.66
698.50	.3833	2.61
704.85	.3903	2.56
711.20	.3974	2.52
717.55	.4045	2.47
723.90	.4117	2.43
730.25	.4190	2.39
736.60	.4263	2.35
742.95	.4337	2.31
749.30	.4411	2.27
755.65	.4486	2.23
762.00	.4562	2.19
768.35	.4638	2.16
774.70	.4715	2.12
781.05	.4793	2.09
787.40	.4871	2.05
793.75	.4950	2.02
800.10	.5030	1.99
806.45	.5110	1.96
812.80	.5191	1.93
819.15	.5272	1.90
825.50	.5354	1.87
831.85	.5437	1.84
838.20	.5520	1.81
844.55	.5604	1.78
850.90	.5689	1.76
857.25	.5774	1.73
863.60	.5860	1.71
869.95	.5946	1.68
876.30	.6033	1.66
882.65	.6121	1.63
889.00	.6210	1.61
895.35	.6299	1.59
901.70	.6388	1.57
908.05	.6479	1.54

**TABLE
CAPACITY**

Diameter of Hole Inches	Barrels Per Lin. Ft.	Lin. Ft. Per Barrel
36.0	1.2590	.79
36.5	1.2942	.77
37.0	1.3299	.75
37.5	1.3661	.73
38.0	1.4027	.71
38.5	1.4399	.69
39.0	1.4775	.68
39.5	1.5157	.66
40.0	1.5543	.64
40.5	1.5934	.63
41.0	1.6330	.61
41.5	1.6730	.60
42.0	1.7136	.58
42.5	1.7546	.57
43.0	1.7962	.56
43.5	1.8382	.54
44.0	1.8807	.53
44.5	1.9237	.52
45.0	1.9671	.51
45.5	2.0111	.50
46.0	2.0555	.49
46.5	2.1005	.48
47.0	2.1459	.47
47.5	2.1918	.46
48.0	2.2382	.45
48.5	2.2850	.44
49.0	2.3324	.43
49.5	2.3802	.42
50.0	2.4286	.41
50.5	2.4774	.40
51.0	2.5267	.40
51.5	2.5765	.39
52.0	2.6267	.38
52.5	2.6775	.37
53.0	2.7287	.37
53.5	2.7805	.36
54.0	2.8327	.35
54.5	2.8854	.35
55.0	2.9386	.34
55.5	2.9922	.33
56.0	3.0464	.33
56.5	3.1010	.32
57.0	3.1562	.32
57.5	3.2118	.31
58.0	3.2679	.31
58.5	3.3245	.30
59.0	3.3815	.30
59.5	3.4391	.29
60.0	3.4971	.29

**NO. 213
OF HOLE**

Diameter of Hole mm	Barrels Per m ³ /m	Lin. Meters Per m/m ³
914.40	.6569	1.52
927.10	.6753	1.48
939.80	.6940	1.44
952.50	.7128	1.40
965.20	.7320	1.37
977.90	.7514	1.33
990.60	.7710	1.30
1003.30	.7909	1.26
1016.00	.8110	1.23
1028.70	.8314	1.20
1041.40	.8521	1.17
1054.10	.8730	1.15
1066.80	.8942	1.12
1079.50	.9156	1.09
1092.20	.9373	1.07
1104.90	.9592	1.04
1117.60	.9814	1.02
1130.30	1.0038	1.00
1143.00	1.0265	.97
1155.70	1.0494	.95
1168.40	1.0726	.93
1181.10	1.0961	.91
1193.80	1.1198	.89
1206.50	1.1437	.87
1219.20	1.1679	.86
1231.90	1.1924	.84
1244.60	1.2171	.82
1257.30	1.2420	.81
1270.00	1.2673	.79
1282.70	1.2927	.77
1295.40	1.3185	.76
1308.10	1.3444	.74
1320.80	1.3707	.73
1333.50	1.3972	.72
1346.20	1.4239	.70
1358.90	1.4509	.69
1371.60	1.4781	.68
1384.30	1.5056	.66
1397.00	1.5334	.65
1409.70	1.5614	.64
1422.40	1.5897	.63
1435.10	1.6182	.62
1447.80	1.6469	.61
1460.50	1.6760	.60
1473.20	1.7052	.59
1485.90	1.7348	.58
1498.60	1.7645	.57
1511.30	1.7946	.56
1524.00	1.8249	.55

ENGLISH UNITS					CAPACITY
Size O.D. In.	Wt. With Couplings Lbs./Ft.	Inside Diameter In.	Drift Diameter In.	Barrels Per Lin. Ft.	Lin. Ft. Per Gallon
4.500	9.50	4.090	3.965	.0163	61.54
	10.50	4.052	3.927	.0159	62.70
	11.60	4.000	3.875	.0155	64.34
	13.50	3.920	3.795	.0149	66.99
	*15.10	3.826	3.701	.0142	70.32
	*16.60	3.754	3.629	.0137	73.05
	*18.80	3.640	3.515	.0128	77.69
*4.750	16.00	4.082	3.957	.0162	61.78
5.000	11.50	4.560	4.435	.0202	49.51
	13.00	4.494	4.369	.0196	50.97
	15.00	4.408	4.283	.0189	52.98
	18.00	4.276	4.151	.0178	56.30
	*20.30	4.184	4.059	.0170	58.80
	*20.80	4.156	4.031	.0168	59.60
	*23.20	4.044	3.919	.0159	62.95
	*24.20	4.000	3.875	.0155	64.34
	5.500	*13.00	5.044	4.919	.0247
14.00		5.012	4.887	.0244	40.98
*15.00		4.974	4.849	.0240	41.61
15.50		4.950	4.825	.0238	42.01
17.00		4.892	4.767	.0232	43.01
20.00		4.778	4.653	.0222	45.09
23.00		4.670	4.545	.0212	47.20
*26.00		4.548	4.423	.0201	49.77
*5.750	14.00	5.290	5.165	.0272	36.79
	17.00	5.190	5.065	.0262	38.22
	19.50	5.090	4.965	.0252	39.73
	*22.50	4.990	4.865	.0242	41.34
*6.000	15.00	5.524	5.399	.0296	33.74
	16.00	5.500	5.375	.0294	34.03
	17.00	5.450	5.325	.0289	34.66
	18.00	5.424	5.299	.0286	34.99
	20.00	5.352	5.227	.0278	35.94
	23.00	5.240	5.115	.0267	37.49
	26.00	5.140	5.015	.0257	38.96
6.625	*17.00	6.135	6.010	.0366	27.35
	20.00	6.049	5.924	.0355	28.13
	*22.00	5.989	5.864	.0348	28.70
	24.00	5.921	5.796	.0341	29.36
	*26.00	5.855	5.730	.0333	30.03
	28.00	5.791	5.666	.0326	30.70
	*29.00	5.761	5.636	.0322	31.02
	32.00	5.675	5.550	.0313	31.96
7.000	17.00	6.538	6.413	.0415	24.08
	20.00	6.456	6.331	.0405	24.70
	*22.00	6.398	6.273	.0398	25.15
	23.00	6.366	6.241	.0394	25.40
	*24.00	6.336	6.211	.0390	25.64
	26.00	6.276	6.151	.0383	26.14
	*28.00	6.214	6.089	.0375	26.66
	29.00	6.184	6.059	.0371	26.92
	*30.00	6.154	6.029	.0368	27.18
	32.00	6.094	5.969	.0361	27.72
	*33.70	6.048	5.923	.0355	28.14
	35.00	6.004	5.879	.0350	28.56
	38.00	5.920	5.795	.0340	29.37
	*40.00	5.836	5.711	.0331	30.22

*Not API Standard. Shown for information only.

OF CASING**METRIC UNITS**

Size O.D. mm	Mass With Coupling kg/m	Inside Diameter mm	Drift Diameter mm	Cu. Meters Per Lin. Meter m ³ /m	Lin. Meters Per Cu. Meter m/m ³
114.30	14.14	103.89	100.71	.0085	117.93
	15.63	102.92	99.75	.0083	120.15
	17.26	101.60	98.43	.0081	123.30
	20.09	99.57	96.39	.0078	128.38
	*22.47	97.18	94.01	.0074	134.77
	*24.70	95.35	92.18	.0071	139.99
	*27.98	92.46	89.28	.0067	148.89
*120.65	23.81	103.68	100.51	.0084	118.39
127.00	17.11	115.82	112.65	.0105	94.87
	19.35	114.15	110.97	.0102	97.68
	22.32	111.96	108.79	.0098	101.53
	26.79	108.61	105.44	.0093	107.89
	*30.21	106.27	103.10	.0089	112.69
	*30.95	105.56	102.39	.0088	114.22
	*34.53	102.72	99.54	.0083	120.63
*36.01	101.60	98.43	.0081	123.30	
139.70	*19.35	128.12	124.94	.0129	77.54
	20.83	127.31	124.13	.0127	78.53
	*22.32	126.34	123.16	.0125	79.74
	23.07	125.73	122.56	.0124	80.51
	25.30	124.26	121.08	.0121	82.43
	29.76	121.36	118.19	.0116	86.41
	34.23	118.62	115.44	.0111	90.46
*38.69	115.52	112.34	.0105	95.37	
*146.05	20.83	134.37	131.19	.0142	70.50
	25.30	131.83	128.65	.0137	73.24
	29.02	129.29	126.11	.0131	76.14
	*33.48	126.75	123.57	.0126	79.23
*152.40	22.32	140.31	137.13	.0155	64.65
	23.81	139.70	136.53	.0153	65.22
	25.30	138.43	135.26	.0151	66.42
	26.79	137.77	134.59	.0149	67.06
	29.76	135.94	132.77	.0145	68.87
	34.23	133.10	129.92	.0139	71.85
38.69	130.56	127.38	.0134	74.67	
168.28	*25.30	155.83	152.65	.0191	52.41
	29.76	153.64	150.47	.0185	53.91
	*32.74	152.12	148.95	.0182	55.00
	35.72	150.39	147.22	.0178	56.27
	*38.69	148.72	145.54	.0174	57.55
	41.67	147.09	143.92	.0170	58.83
	*43.16	146.33	143.15	.0168	59.44
47.62	144.15	140.97	.0163	61.26	
177.80	25.30	166.07	162.89	.0217	46.15
	29.76	163.98	160.81	.0211	47.33
	*32.74	162.51	159.33	.0207	48.19
	34.23	161.70	158.52	.0205	48.68
	*35.72	160.93	157.76	.0203	49.14
	38.69	159.41	156.24	.0200	50.09
	*41.67	157.84	154.66	.0196	51.09
	43.16	157.07	153.90	.0194	51.59
	*44.64	156.31	153.14	.0192	52.09
	47.62	154.79	151.61	.0188	53.12
	*50.15	153.62	150.44	.0185	53.93
	52.09	152.50	149.33	.0183	54.73
	56.55	150.37	147.19	.0178	56.29
*59.53	148.23	145.06	.0173	57.92	

ENGLISH UNITS					
CAPACITY					
Size O.D. In.	Wt. With Couplings Lbs./Ft.	Inside Diameter In.	Drift Diameter In.	Barrels Per Lin. Ft.	Lin. Ft. Per Gallon
7.625	*20.00	7.125	7.000	.0493	20.28
	24.00	7.025	6.900	.0479	20.86
	26.40	6.969	6.844	.0472	21.20
	29.70	6.875	6.750	.0459	21.78
	33.70	6.765	6.640	.0445	22.49
	39.00	6.625	6.500	.0426	23.45
	*45.30	6.435	6.310	.0402	24.86
	*7.750	46.10	6.560	6.500	.0418
*8.000	26.00	7.386	7.261	.0530	18.87
*8.125	28.00	7.485	7.360	.0544	18.37
	32.00	7.385	7.260	.0530	18.88
	35.50	7.285	7.160	.0516	19.40
	39.50	7.185	7.060	.0501	19.94
8.625	*20.00	8.191	8.066	.0652	15.34
	24.00	8.097	7.972	.0637	15.70
	28.00	8.017	7.892	.0624	16.02
	32.00	7.921	7.796	.0609	16.41
	36.00	7.825	7.700	.0595	16.81
	*38.00	7.775	7.650	.0587	17.03
	40.00	7.725	7.600	.0580	17.25
	*43.00	7.651	7.526	.0569	17.59
	44.00	7.625	7.500	.0565	17.71
	49.00	7.511	7.386	.0548	18.25
*8.750	49.70	7.636	7.500	.0566	17.65
*9.000	34.00	8.290	8.134	.0668	14.98
	38.00	8.196	8.040	.0653	15.32
	40.00	8.150	7.994	.0645	15.50
	45.00	8.032	7.876	.0627	15.96
	55.00	7.812	7.656	.0593	16.87
9.625	*29.30	9.063	8.907	.0798	12.53
	32.30	9.001	8.845	.0787	12.71
	36.00	8.921	8.765	.0773	12.93
	*38.00	8.885	8.760	.0767	13.04
	40.00	8.835	8.679	.0758	13.19
	43.50	8.755	8.599	.0745	13.43
	47.00	8.681	8.525	.0732	13.66
	53.50	8.535	8.379	.0708	14.13
	*58.40	8.435	8.279	.0691	14.47
	*61.10	8.375	8.219	.0681	14.68
	*71.80	8.125	7.969	.0641	15.59
	*9.750	59.20	8.560	8.500	.0712
*9.875	62.80	8.625	8.500	.0723	13.48
*10.000	33.00	9.384	9.228	.0855	11.69
10.750	32.75	10.192	10.036	.1009	9.91
	*35.75	10.136	9.980	.0998	10.02
	40.50	10.050	9.894	.0981	10.19
	45.50	9.950	9.794	.0962	10.40
	51.00	9.850	9.694	.0943	10.61
	*54.00	9.784	9.628	.0930	10.75
	55.50	9.760	9.604	.0925	10.81
	*60.70	9.660	9.504	.0906	11.03
	*65.70	9.560	9.404	.0888	11.26
	*71.10	9.450	9.294	.0868	11.53

*Not API Standard. Shown for information only.

OF CASING

METRIC UNITS

Size O.D. mm	Mass With Coupling kg/m	Inside Diameter mm	Drift Diameter mm	Cu. Meters Per Lin. Meter m ³ /m	Lin. Meters Per Cu. Meter m/m ³
193.68	*29.76	180.98	177.80	.0257	38.86
	35.72	178.44	175.26	.0250	39.97
	39.29	177.01	173.84	.0246	40.62
	44.20	174.63	171.45	.0240	41.74
	50.15	171.83	168.66	.0232	43.11
	58.04	168.28	165.10	.0222	44.95
	*67.41	163.45	160.27	.0210	47.64
*196.85	68.60	166.62	165.10	.0218	45.84
*203.20	38.69	187.60	184.43	.0277	36.16
*206.38	41.67	190.12	186.94	.0284	35.21
	47.62	187.58	184.40	.0276	36.17
	52.83	185.04	181.86	.0269	37.17
	58.78	182.50	179.32	.0262	38.21
219.08	*29.76	208.05	204.88	.0340	29.40
	35.72	205.66	202.49	.0332	30.09
	41.67	203.63	200.46	.0326	30.69
	47.62	201.19	198.02	.0318	31.44
	53.57	198.76	195.58	.0310	32.22
	*56.55	197.49	194.31	.0306	32.63
	59.53	196.22	193.04	.0302	33.06
	*63.99	194.34	191.16	.0297	33.70
	65.48	193.68	190.50	.0295	33.93
	72.92	190.78	187.60	.0286	34.97
*222.25	73.96	193.95	190.50	.0296	33.83
*228.60	50.60	210.57	206.60	.0348	28.71
	56.55	208.18	204.22	.0341	29.37
	59.53	207.01	203.05	.0337	29.70
	66.97	204.01	200.05	.0327	30.58
	81.85	198.43	194.46	.0309	32.33
244.48	*43.60	230.20	226.24	.0416	24.02
	48.07	228.63	224.66	.0411	24.35
	53.57	226.59	222.63	.0403	24.79
	*56.55	225.68	222.50	.0400	24.99
	59.53	224.41	220.45	.0396	25.27
	64.74	222.38	218.42	.0389	25.74
	69.94	220.50	216.54	.0382	26.18
	79.62	216.79	212.83	.0369	27.08
	*86.91	214.25	210.29	.0361	27.73
	*90.93	212.73	208.76	.0356	28.13
	*106.85	206.38	202.41	.0335	29.88
	*247.65	88.10	217.42	215.90	.0371
*250.83	93.46	219.08	215.90	.0377	26.52
*254.00	49.11	238.25	234.39	.0446	22.40
273.05	48.74	258.88	254.91	.0527	18.99
	*53.20	257.45	253.49	.0521	19.20
	60.27	255.27	251.31	.0512	19.53
	67.71	252.73	248.77	.0502	19.93
	75.90	250.19	246.23	.0492	20.33
	*80.36	248.51	244.55	.0485	20.61
	82.59	247.90	243.94	.0483	20.71
	*90.33	245.36	241.40	.0473	21.14
	*97.77	242.82	238.86	.0463	21.59
	*105.81	240.03	236.07	.0453	22.09

ENGLISH UNITS					
CAPACITY					
Size O.D. In.	Wt. With Couplings Lbs./Ft.	Inside Diameter In.	Drift Diameter In.	Barrels Per Lin. Ft.	Lin. Ft. Per Gallon
11.750	*38.00	11.150	10.994	.1208	8.28
	42.00	11.084	10.928	.1193	8.38
	47.00	11.000	10.844	.1175	8.51
	54.00	10.880	10.724	.1150	8.70
	60.00	10.772	10.616	.1127	8.87
	*65.00	10.682	10.526	.1108	9.02
	*71.00	10.586	10.430	.1089	9.19
*11.875	71.80	10.711	10.625	.1114	8.97
*12.000	40.00	11.384	11.228	.1259	7.94
*13.000	40.00	12.438	12.282	.1503	6.65
	45.00	12.360	12.204	.1484	6.74
	50.00	12.282	12.126	.1465	6.82
	54.00	12.220	12.064	.1451	6.89
13.375	48.00	12.715	12.559	.1571	6.37
	54.50	12.615	12.459	.1546	6.47
	61.00	12.515	12.359	.1521	6.57
	68.00	12.415	12.259	.1497	6.68
	72.00	12.347	12.191	.1481	6.75
	*77.00	12.275	12.119	.1464	6.83
	*80.70	12.215	12.059	.1449	6.90
	*83.00	12.175	12.019	.1440	6.94
	*85.00	12.159	12.003	.1436	6.96
	*86.00	12.125	11.969	.1428	7.00
	*92.00	12.031	11.875	.1406	7.11
	*98.00	11.937	11.781	.1384	7.22
*13.500	81.40	12.340	12.250	.1479	6.76
*13.625	88.20	12.375	12.250	.1488	6.72
*14.000	50.00	13.344	13.156	.1730	5.78
16.000	*55.00	15.375	15.187	.2296	4.35
	65.00	15.250	15.062	.2259	4.43
	*70.00	15.198	15.010	.2244	4.46
	75.00	15.124	14.936	.2222	4.50
	84.00	15.010	14.822	.2189	4.57
	*109.00	14.688	14.500	.2096	4.77
18.625	*78.00	17.855	17.667	.3097	3.23
	87.50	17.755	17.567	.3062	3.27
	*96.50	17.655	17.467	.3028	3.30
20.000	94.00	19.124	18.936	.3553	2.81
	106.50	19.000	18.812	.3507	2.85
	133.00	18.730	18.542	.3408	2.93
*21.500	92.50	20.710	20.522	.4166	2.40
	103.00	20.610	20.422	.4126	2.42
	114.00	20.510	20.322	.4086	2.45
*24.000	94.62	23.250	—	.5251	1.90
	125.49	23.000	—	.5139	1.95
	156.03	22.750	—	.5028	1.99
	186.23	22.500	—	.4918	2.03
*24.500	100.50	23.750	23.562	.5479	1.83
	113.00	23.650	23.462	.5433	1.84
*30.000	118.65	29.250	—	.8311	1.20
	157.53	29.000	—	.8170	1.22
	196.08	28.750	—	.8029	1.25
	234.29	28.500	—	.7890	1.27

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METRIC UNITS					
OF CASING					
Size O.D. mm	Mass With Coupling kg/m	Inside Diameter mm	Drift Diameter mm	Cu. Meters Per Lin. Meter m ³ /m	Lin. Meters Per Cu. Meter m/m ³
298.45	*56.55	283.21	279.25	.0630	15.87
	62.50	281.53	277.57	.0623	16.06
	69.94	279.40	275.44	.0613	16.30
	80.36	276.35	272.39	.0600	16.67
	89.29	273.61	269.65	.0588	17.00
	*96.73	271.32	267.36	.0578	17.29
	*105.66	268.88	264.92	.0568	17.60
*301.63	106.85	272.06	269.88	.0582	17.20
*304.80	59.53	289.15	285.19	.0657	15.22
*330.20	59.53	315.93	311.96	.0784	12.75
	66.97	313.94	309.98	.0774	12.91
	74.41	311.96	308.00	.0765	13.08
	80.36	310.39	306.43	.0757	13.21
339.73	71.43	322.96	319.00	.0820	12.20
	81.10	320.42	316.46	.0807	12.40
	90.78	317.88	313.92	.0794	12.60
	101.20	315.34	311.38	.0781	12.80
	107.15	313.61	309.65	.0773	12.94
	*114.59	311.79	307.82	.0764	13.09
	*120.09	310.26	306.30	.0756	13.22
	*123.52	309.25	305.28	.0751	13.31
	*126.49	308.84	304.88	.0749	13.34
	*127.98	307.98	304.01	.0745	13.42
	*136.91	305.59	301.63	.0734	13.63
	*145.84	303.20	299.24	.0722	13.84
	*342.90	121.14	313.44	311.15	.0772
*346.08	131.26	314.33	311.15	.0776	12.88
*355.60	74.41	338.94	334.16	.0903	11.08
406.40	*81.85	390.53	385.75	.1198	8.35
	96.73	387.35	382.58	.1179	8.48
	*104.17	386.03	381.25	.1171	8.54
	111.61	384.15	379.38	.1159	8.62
	125.01	381.25	376.48	.1142	8.76
	*162.21	373.08	368.30	.1094	9.14
473.08	*116.08	453.52	448.74	.1616	6.19
	130.21	450.98	446.20	.1598	6.26
	*143.61	448.44	443.66	.1580	6.33
508.00	139.89	485.75	480.98	.1854	5.39
	158.49	482.60	477.83	.1830	5.46
	197.93	475.74	470.97	.1778	5.62
*546.10	137.66	526.04	521.26	.2174	4.60
	153.28	523.50	518.72	.2153	4.64
	169.65	520.96	516.18	.2132	4.69
*609.60	140.81	590.55	—	.2740	3.65
	186.75	584.20	—	.2682	3.73
	232.20	577.85	—	.2624	3.81
	277.14	571.50	—	.2566	3.90
*622.30	149.56	603.25	598.48	.2859	3.50
	168.16	600.71	595.94	.2835	3.53
*762.00	176.57	742.95	—	.4337	2.31
	234.43	736.60	—	.4263	2.35
	291.80	730.25	—	.4190	2.39
	348.66	723.90	—	.4117	2.43