



Designation: A589/A589M – 06

Standard Specification for Seamless and Welded Carbon Steel Water-Well Pipe¹

This standard is issued under the fixed designation A589/A589M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers four specific types of plain end or threaded and coupled carbon steel pipe for use in water wells.

1.2 Each type of water well pipe shall conform to the following methods of manufacture and grade as specified on the purchase order:

1.2.1 *Type I, Drive Pipe*—Seamless or electric-resistance-welded, Grades A and B.

1.2.2 *Type II, Water-Well Reamed and Drifted Pipe*—Seamless or electric-resistance-welded, Grades A and B, or furnace-butt welded.

1.2.3 *Type III, Driven Well Pipe*—Seamless or electric-resistance-welded, Grades A and B, or furnace-butt welded.

1.2.4 *Type IV, Water-Well Casing Pipe*—Seamless or electric-resistance-welded, Grades A and B, or furnace-butt welded.

1.3 The values stated in either inch-pound units or in SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values in each system are not exact equivalents; therefore, each system is to be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

NOTE 1—The dimensionless designator NPS (nominal pipe size) and DN (Nominal Diameter) have been substituted in this standard for such traditional terms as “nominal diameter,” “size,” and “nominal size.”

2. Referenced Documents

2.1 *ASTM Standards:*²

A53/A53M Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.09 on Carbon Steel Tubular Products.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

A865 Specification for Threaded Couplings, Steel, Black or Zinc-Coated (Galvanized) Welded or Seamless, for Use in Steel Pipe Joints

2.2 *API Standard:*

5L Specification for Line Pipe³

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *defect*—an imperfection of sufficient size or magnitude to be cause for rejection.

3.1.2 *imperfection*—any discontinuity or irregularity found in the pipe.

4. Ordering Information

4.1 Orders for material to this specification should include the following, as required to describe the desired material adequately:

4.1.1 Quantity (feet or number of lengths),

4.1.2 Name of material or type number (see 1.2),

4.1.3 Method of manufacture (furnace-butt welded, seamless, or electric-resistance-welded),

4.1.4 Grade (A or B for seamless or electric-resistance welded),

4.1.5 Finish (black or galvanized),

4.1.6 Dimensions (NPS or outside diameter and wall thickness, or both, for Types I, II, and III. Outside diameter and wall thickness for Type IV),

4.1.7 End finish (plain end or threaded and coupled),

4.1.8 Coupling class for Type III (standard pipe, line pipe, or reamed and drifted pipe coupling),

4.1.9 Coupling make-up (hand tight or power tight),

4.1.10 Length (required random range length or special lengths),

4.1.11 Specification designation, and

4.1.12 Special requirements.

³ Available from American Petroleum Institute (API), 1220 L. St., NW, Washington, DC 20005.

*A Summary of Changes section appears at the end of this standard

5. Materials and Manufacture

5.1 The steel for both seamless and welded pipe shall be made by one of the following processes: open-hearth, electric-furnace, or basic-oxygen.

5.2 Steel may be cast in ingots or may be strand cast. When steels of different grades are sequentially strand cast, identification of the resultant transition material is required. The producer shall remove the transition material by any established procedure that positively separates the grades.

6. Chemical Composition

6.1 The steel shall conform to the following requirements as to chemical composition:

Phosphorus, max, %	0.050
Sulfur, max, %	0.060

7. Heat Analysis

7.1 An analysis of each heat of steel shall be made by the manufacturer to determine the percentage of the elements specified in 6.1. When requested by the purchaser, the chemical composition thus determined shall be reported to the purchaser, and shall conform to the requirements specified in 6.1.

8. Product Analysis

8.1 An analysis may be made by the purchaser on two lengths of pipe from each lot of 500 lengths, or fraction thereof. Samples for chemical analysis and the methods of analysis shall conform to the requirements of Test Methods, Practices, and Terminology A751. The chemical composition thus determined shall conform to the requirements specified in 6.1.

8.2 If the analysis of either pipe does not conform to the requirements of 6.1, analysis shall be made on additional lengths of pipe of double the original number from the same lot, each of which shall conform to the requirements specified.

9. Tensile Requirements

9.1 The material shall conform to the requirements as to tensile properties specified in Table 1.

TABLE 1 Tensile Requirements

	Butt Welded	Grade A	Grade B
Tensile strength, min, psi (MPa)	48 000 (330)	48 000 (330)	60 000 (415)
Yield strength, min, psi (MPa)	30 000 (205)	30 000 (205)	35 000 (240)
Elongation in 2 in.	A	A	A

^A The minimum elongation in 2 in. (50.8 mm) shall be that determined by the following equation:

$$e = 625\,000 A^{0.2}/U^{0.9}$$

where:

- e = minimum elongation in 2 in. (50.8 mm) in percent rounded to the nearest 0.5 %.
- A = cross-sectional area of the tension test specimen in square inches, based on specified outside diameter or nominal specimen width and specified wall thickness rounded to the nearest 0.01 in.² If the area thus calculated is greater than 0.75 in.², then the value 0.75 shall be used.
- U = specified tensile strength, psi.

9.2 The test specimen taken across the weld shall show a tensile strength not less than the minimum tensile strength specified for the grade of pipe ordered. This test is not required for pipe under 8 in. [DN 200] in outside diameter.

10. Dimensions, Weights, and Permissible Variations

10.1 The dimensions and weights of all types of pipe included in this specification are listed in Tables 2-17:

Type	Tables
I, Drive Pipe	Table 2, Table 3, Table 4, Table 5
II, Reamed and Drifted Pipe	Table 6, Table 7, Table 8, Table 9
III, Driven Well Pipe	Table 10, Table 11, Table 12, Table 13
IV, Water-Well Casing Pipe	Table 14, Table 15, Table 16, Table 17

10.2 Permissible Variations in Weight and Dimensions:

10.2.1 *Weight*—The weight of all types of pipe included in this specification shall vary not more than $\pm 5\%$ from that prescribed. The weight tolerance for pipe NPS 4 [DN 100] and under may be determined from the weight of the customary lifts of pipe as produced for shipment, divided by the number of feet of pipe in the lift. For pipe over NPS 4 [DN 100], where individual lengths may be weighed, the weight is applicable to the individual length.

10.2.2 *Outside Diameter*—For pipe NPS 1½ [DN 40] and under, the outside diameters shall vary not more than ¼ in. [0.4 mm] from the outside diameter specified. For pipe NPS 2 [DN 50] and over, the outside diameter shall vary not more than $\pm 1\%$ from the size specified.

10.2.3 *Inside Diameter*—For Type II pipe, the inside diameter at any point, shall permit passage of a drift pin having a length and diameter as indicated in Table 6, Table 7, and Table 18.

10.2.4 *Thickness*—The minimum wall thickness shall be not more than 12.5 % under the nominal wall thickness specified.

10.3 Lengths:

10.3.1 Unless otherwise specified on the purchase order, pipe lengths shall be in accordance with the following regular practice:

10.3.1.1 Types I, II, and IV pipe may be furnished in single random lengths of 16 to 22 ft [4.9 to 6.7 m].

10.3.1.2 Type III pipe may be furnished in a random range from 3 to 6 ft [0.9 to 1.8 m] or 6 to 10 ft [1.8 to 3.0 m] as specified.

10.3.2 Random lengths other than indicated in 10.3.1 and cut lengths, shall be subject to negotiation and shall be indicated on the purchase order.

11. Ends

11.1 When ordered with plain ends, the pipe shall be furnished to the following practice unless otherwise specified.

11.1.1 *NPS 1½ [DN 40] and smaller*—Unless otherwise specified on the purchase order, end finish shall be at the option of the manufacturer.

TABLE 2 Dimensions, Weights, and Test Pressures for Drive Pipe (Inch-Pound Units)

NPS Designator	Weight per Foot, lb/ft		Wall Thickness, in.	Diameters, in.		No. of Threads per Inch	Couplings			Test Pressures, psi	
	Nominal Threads and Couplings	Calculated Plain Ends		Outside	Inside		Length, in.	Outside Diameter, in.	Calculated Weight, lb	Grade A	Grade B
6	19.45	18.97	0.280	6.625	6.065	8	5 $\frac{1}{8}$	7.290	13.35	1200	1300
8	25.55	24.70	0.277	8.625	8.071	8	6 $\frac{1}{8}$	9.625	26.89	1200	1300
8	29.35	28.55	0.322	8.625	7.981	8	6 $\frac{1}{8}$	9.625	26.89	1300	1600
8	32.40	31.27	0.354	8.625	7.917	8	6 $\frac{1}{8}$	9.625	26.89	1300	1600
10	32.75	31.20	0.279	10.750	10.192	8	6 $\frac{5}{8}$	11.750	36.05	940	1100
10	35.75	34.24	0.307	10.750	10.136	8	6 $\frac{5}{8}$	11.750	36.05	1000	1200
10	41.85	40.48	0.365	10.750	10.020	8	6 $\frac{5}{8}$	11.750	36.05	1200	1400
12	45.45	43.77	0.330	12.750	12.090	8	6 $\frac{5}{8}$	14.000	52.72	950	1100
12	51.15	49.56	0.375	12.750	12.000	8	6 $\frac{5}{8}$	14.000	52.72	1100	1200
14 D	57.00	54.57	0.375	14.000	13.250	8	7 $\frac{1}{8}$	15.000	50.22	950	1100
16 D	65.30	62.58	0.375	16.000	15.250	8	7 $\frac{1}{8}$	17.000	57.17	850	1000

TABLE 3 Dimensions, Weights, and Test Pressures for Drive Pipe (SI Units)

DN Designator	Weight per Foot, kg/m		Wall Thickness, mm	Diameters, mm		No. of Threads per 25.4 mm	Couplings			Test Pressures, kPa	
	Nominal Threads and Couplings	Calculated Plain Ends		Outside	Inside		Length, mm	Outside Diameter, mm	Calculated Weight, kg/m	Grade A	Grade B
150	28.94	28.23	7.11	168.3	154.1	8	130.18	185.17	19.86	8300	9 000
200	38.02	36.75	7.04	219.1	205.0	8	155.58	244.48	40.01	8300	9 000
200	43.67	42.48	8.18	219.1	202.7	8	155.58	244.48	40.01	9000	11 000
200	48.21	46.53	8.99	219.1	201.1	8	155.58	244.48	40.01	9000	11 000
250	48.73	46.43	7.09	273.1	258.9	8	168.28	298.45	53.64	6500	7 600
250	53.20	50.95	7.80	273.1	257.5	8	168.28	298.45	53.64	6900	8 300
250	62.27	60.23	9.27	273.1	254.5	8	168.28	298.45	53.64	8300	9 700
300	67.63	65.13	8.38	323.9	307.1	8	168.28	355.60	78.45	6600	7 600
300	76.11	73.75	9.53	323.9	304.8	8	168.28	355.60	78.45	7600	8 300
350	84.82	81.20	9.53	355.6	336.6	8	180.98	381.00	74.73	6600	7 600
400	97.17	93.12	9.53	406.4	387.4	8	180.98	431.80	85.07	5900	6 900

TABLE 4 Basic Threading Data for Drive Pipe (Inch-Pound Units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pipe				Threads ^A			Coupling						
NPS Designator	Outside Diameter, in.	Number per in.	Length, End of Pipe to Hand-tight Plane, in.	Effective Length, in.	Total Length, End of Pipe to Vanish Point, in.	Pitch Diameter at Hand-tight Plane, in.	Outside Diameter, in.	Length, in.	Diameter of Recess, in.	Depth of Recess, in.	Length, Face of Coupling to Hand-tight Plane, in.	Width of Bearing Face, in.	Hand-tight Standoff, Threads
	D ^B		L ₁ ^B	L ₂ ^B	L ₄ ^B	E ₁ ^B	W ^B	N _L ^B	Q ^B	q ^B	M ^B	b ^B	A ^B
6	6.625	8	1.093	1.973	2.438	6.51375	7.390	5 $\frac{1}{8}$	6.719	$\frac{3}{8}$	0.595	$\frac{1}{4}$	6
8	8.625	8	1.593	2.473	2.938	8.51375	9.625	6 $\frac{1}{8}$	8.719	$\frac{3}{8}$	0.595	$\frac{1}{4}$	6
10	10.750	8	1.843	2.723	3.188	10.63875	11.750	6 $\frac{5}{8}$	10.844	$\frac{3}{8}$	0.595	$\frac{3}{8}$	6
12	12.750	8	1.843	2.723	3.188	12.63875	14.000	6 $\frac{5}{8}$	12.844	$\frac{3}{8}$	0.595	$\frac{3}{8}$	6
14 D	14.000	8	2.093	2.973	3.438	13.88875	15.000	7 $\frac{1}{8}$	14.094	$\frac{3}{8}$	0.595	$\frac{3}{8}$	6
16 D	16.000	8	2.093	2.973	3.438	15.88875	17.000	7 $\frac{1}{8}$	16.094	$\frac{3}{8}$	0.595	$\frac{3}{8}$	6

^A Taper of threads is $\frac{3}{16}$ in./ft on diameter for all sizes.

^B See Fig. 1.

11.1.2 *NPS 2 [DN 50] and larger*—Unless otherwise specified on the purchase order, end finish shall be plain end beveled to an angle of $30^\circ + 5^\circ$ and -0° , as measured from a line drawn perpendicular to the axis of the pipe, with a root face of $\frac{1}{16}$ in. [1.6 mm] \pm $\frac{1}{32}$ in. [0.8 mm].

11.2 When ordered threaded and coupled, each length of water well pipe shall be furnished with threaded ends and provided with a suitable coupling applied handling-tight. If couplings are required to be made up power tight, this shall be indicated on the purchase order.

TABLE 5 Basic Threading Data for Drive Pipe (SI Units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pipe		Threads ^A					Coupling						
DN Designator	Outside Diameter, mm	Number per 25.4 mm	Length, End of Pipe to Hand-tight Plane, mm	Effective Length, mm	Total Length, End of Pipe to Vanish Point, mm	Pitch Diameter at Hand-tight Plane, mm	Outside Diameter, mm	Length, mm	Diameter of Recess, mm	Depth of Recess, mm	Length, Face of Coupling to Hand-tight Plane, mm	Width of Bearing Face, mm	Hand-tight Standoff, Threads, mm
	D ^B		L ₁ ^B	L ₂ ^B	L ₄ ^B	E ₁ ^B	W ^B	N _L ^B	Q ^B	q ^B	M ^B	b ^B	A ^B
150	168.28	8	27.76	50.11	61.93	165.45	187.71	130.18	170.66	9.53	15.11	6.35	6
200	219.08	8	40.46	62.81	74.63	216.25	244.48	155.58	221.46	9.53	15.11	6.35	6
250	273.05	8	46.81	69.16	80.98	270.22	298.45	168.28	275.44	9.53	15.11	9.53	6
300	323.85	8	46.81	69.16	80.98	321.02	355.60	168.28	326.24	9.53	15.11	9.53	6
350	355.60	8	53.16	75.51	87.33	352.77	381.00	180.98	357.99	9.53	15.11	9.53	6
400	406.40	8	53.16	75.51	87.33	403.57	431.80	180.98	408.79	9.53	15.11	9.53	6

^A Taper of threads is 4.8 mm/305 mm on diameter for all sizes.

^B See Fig. 1.

TABLE 6 Dimensions, Weights, and Test Pressures for Water-Well Reamed and Drifted Pipe (Inch-Pound Units)

NPS Designator	Weight per Foot, lb/ft		Wall Thickness, in.	Diameters, in.		No. of Threads per Inch	Couplings			Test Pressures, psi		
	Nominal Threads and Couplings	Calculated Plain Ends		Out-side	In-side ^A		Length, in.	Outside Diameter, in.	Calculated Weight, lb	Butt Welded	Grade A	Grade B
1	1.70	1.68	0.133	1.315	1.049	11½	2¾	1.576	0.52	700	700	700
1¼	2.30	2.27	0.140	1.660	1.380	11½	2¾	1.900	0.60	1000	1000	1100
1½	2.75	2.72	0.145	1.900	1.610	11½	2¾	2.200	0.84	1000	1000	1100
2	3.75	3.65	0.154	2.375	2.067	11½	3⅞	2.750	1.58	1000	2300	2500
2	4.00	3.94	0.167	2.375	2.041	11½	3⅞	2.750	1.58	1000	2500	2500
2½	5.90	5.79	0.203	2.875	2.469	8	3½⅞	3.250	2.32	1000	2500	2500
3	7.70	7.58	0.216	3.500	3.068	8	4⅞	4.000	3.80	1000	2200	2500
3½	9.25	9.11	0.226	4.000	3.548	8	4⅞	4.625	5.53	1200	2000	2400
4	11.00	10.79	0.237	4.500	4.026	8	4⅞	5.200	7.14	1200	1900	2200
5	15.00	14.62	0.258	5.563	5.047	8	4½	6.296	9.57	1200	1700	1900
6	19.45	18.97	0.280	6.625	6.065	8	4⅞	7.390	12.32	...	1500	1800
8	29.35	28.55	0.322	8.625	7.981	8	5⅞	9.625	22.35	...	1300	1600
10	41.85	40.48	0.365	10.750	10.020	8	5⅞	11.750	30.61	...	1200	1400
12	51.15	49.56	0.375	12.750	12.000	8	5⅞	14.000	47.96	...	1100	1200

^A Drift pin dimensions (see Table 18)

11.3 The basic thread dimensions for each type of water well pipe are shown in Table 4, Table 5, Table 8, Table 9, Table 12, Table 13, Table 16, and Table 17. An illustration of the joint of each type of water well pipe is shown in Figs. 1-4.

11.4 For Type III pipe, the threads on the pipe ends are interchangeable with either the standard pipe coupling, the reamed and drifted pipe coupling, or the API line pipe coupling. Orders for this class material shall indicate the coupling class desired.

11.4.1 Standard pipe couplings shall be manufactured in accordance with Specification A865.

11.4.2 Line pipe couplings shall be manufactured in accordance with API 5L Specification for Line Pipe.

11.5 The threads on the pipe ends not protected by a coupling shall be suitably protected against damage in normal handling and transit conditions.

11.6 The length of the pipe shall be measured to the outer face of the coupling.

12. Finish

12.1 The finished pipe shall be reasonably straight and free of defects. Any imperfection that exceeds 12½ % of the nominal wall thickness, or violates minimum wall shall be considered a defect.

12.2 The pipe ends shall be free of burrs. The zinc coating on galvanized pipe shall be free of voids or excessive roughness.

13. Galvanized Pipe

13.1 For the types of water well pipe required with galvanized coating, such coating shall comply with the requirements of the latest revision of Specification A53/A53M.

TABLE 7 Dimensions, Weights, and Test Pressures for Water-Well Reamed and Drifted Pipe (SI Units)

DN Designator	Weight per Foot, kg/m		Wall Thickness, mm	Diameters, mm		No. of Threads per 25.4 mm	Couplings			Test Pressures, kPa		
	Nominal Threads and Couplings	Calculated Plain Ends		Out-side	In-side ^A		Length, mm	Outside Diameter, mm	Calculated Weight, Kg	Butt Welded	Grade A	Grade B
25	2.53	2.50	3.38	33.4	26.6	11½	69.85	40.03	0.77	4900	4 800	4 800
32	3.42	3.38	3.56	42.2	35.1	11½	69.85	48.26	0.89	6900	6 900	7 600
40	4.09	4.05	3.68	48.3	40.9	11½	69.85	55.88	1.25	6900	6 900	7 600
50	5.58	5.43	3.91	60.3	52.5	11½	85.73	69.85	2.35	6900	15 900	17 200
50	5.95	5.86	4.24	60.3	51.8	11½	85.73	69.85	2.35	6900	17 200	17 200
65	8.78	8.62	5.16	73.0	62.7	8	100.01	82.55	3.45	6900	17 200	17 200
80	11.46	11.28	5.49	88.9	77.9	8	103.19	101.60	5.65	6900	15 200	17 200
90	13.76	13.56	5.74	101.6	90.1	8	106.36	117.48	8.23	8300	13 800	16 500
100	16.37	16.06	6.02	114.3	102.3	8	109.54	132.08	10.62	8300	13 100	15 200
125	22.32	21.75	6.55	141.3	128.2	8	114.30	159.92	14.24	8300	11 700	13 100
150	28.94	28.23	7.11	168.3	154.1	8	119.06	187.71	18.33	...	10 300	12 400
200	43.67	42.48	8.18	219.1	202.7	8	128.59	244.48	33.26	...	8 900	11 000
250	62.27	60.23	9.271	273.1	254.5	8	141.29	298.45	45.55	...	8 300	9 700
300	76.11	73.75	9.525	323.9	304.8	8	150.81	355.60	71.36	...	7 600	8 300

^A Drift pin dimensions (see Table 18)

TABLE 8 Basic Threading Data for Water-Well Reamed and Drifted Pipe (Inch-Pound Units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pipe	Threads ^A						Coupling						
NPS Designator	Outside Diameter, in.	Number per Inch	Length, End of Pipe to Hand-tight Plane, in.	Effective Length, in.	Total Length, End of Pipe to Vanish Point, in.	Pitch Diameter at Hand-tight Plane, in.	Outside Diameter, in.	Length, in.	Diameter of Recess, in.	Depth of Recess, in.	Length, Face of Coupling to Hand-tight Plane, in.	Width of Bearing Face, in.	Hand-tight Standoff, Threads, in.
	D ^B		L ₁ ^B	L ₂ ^B	L ₄ ^B	E ₁ ^B	W ^B	NL ^B	Q ^B	q ^B	M ^B	b ^B	A ^B
1	1.315	11½	0.4811	0.6828	0.9845	1.24369	1.576	2¾	1.378	0.1875	0.5034	¼	0
1¼	1.660	11½	0.5051	0.7068	1.0085	1.58869	1.900	2¾	1.723	0.1875	0.5034	¼	0
1½	1.900	11½	0.5218	0.7235	1.0252	1.82869	2.200	2¾	1.963	0.1875	0.5034	¾	0
2	2.375	11½	0.7012	0.9884	1.2901	2.29835	2.750	3¾	2.469	0.1875	0.5889	¾	0
2½	2.875	8	0.9342	1.1375	1.5712	2.77792	3.250	3½	2.969	0.1875	0.6370	¾	0
3	3.500	8	0.9967	1.2000	1.6337	3.40292	4.000	4¼	3.594	0.1875	0.6370	½	0
3½	4.000	8	1.0467	1.2500	1.6837	3.90292	4.625	4¾	4.094	0.1875	0.6370	¾	0
4	4.500	8	1.0967	1.3000	1.7337	4.40292	5.200	4½	4.594	0.1875	0.6370	¼	0
5	5.563	8	1.2030	1.4063	1.8400	5.46592	6.296	4½	5.657	0.1875	0.6370	¼	0
6	6.625	8	1.3092	1.5125	1.9462	6.52792	7.390	4½	6.719	0.1875	0.6370	¼	0
8	8.625	8	1.5092	1.7125	2.1462	8.52792	9.625	4½	8.719	0.1875	0.6370	¼	0
10	10.750	8	1.7217	1.9250	2.3587	10.65292	11.750	5½	10.844	0.1875	0.6370	¾	0
12	12.750	8	1.9217	2.1250	2.5587	12.65292	14.000	5½	12.844	0.1875	0.6370	¾	0

^A Taper of threads is ¼ in./ft on diameter for all sizes.

^B See Fig. 2

14. Number of Tests

14.1 One longitudinal or transverse tension test of seamless and welded pipe, and in addition, one transverse weld test for electric-welded pipe NPS 8 [DN 200] and larger, shall be made on one length of pipe from each lot of 500 lengths, or fraction thereof, of each size. A length is defined as the length as ordered, except that in the case of orders for lengths shorter than single random, the term lot shall apply to the lengths as rolled, prior to cutting to the required short lengths.

14.2 Each length of pipe shall be subjected to the hydrostatic test as indicated for the type, size, and grade as shown in Tables 4-15. The hydrostatic pressure shall be maintained for not less than 5 s for all sizes of seamless and electric-resistance-welded pipe.

15. Retests

15.1 If the results of the tension tests of any lot do not conform to the requirements of Table 1, the lot shall be

TABLE 9 Basic Threading Data for Water-Well Reamed and Drifted Pipe (SI Units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pipe		Threads ^A				Coupling							
DN Designator	Outside Diameter, mm	Number per 25.4 mm	Length, End of Pipe to Hand-tight Plane, mm	Effective Length, mm	Total Length, End of Pipe to Vanish Point, mm	Pitch Diameter at Hand-tight Plane, mm	Outside Diameter, mm	Length, mm	Diameter of Recess, mm	Depth of Recess, mm	Length, Face of Coupling to Hand-tight Plane, mm	Width of Bearing Face, mm	Hand-tight Standoff, Threads, mm
	D ^B		L ₁ ^B	L ₂ ^B	L ₄ ^B	E ₁ ^B	W ^B	NL ^B	Q ^B	q ^B	M ^B	b ^B	A ^B
25	33.4	11 ½	12.22	17.34	25.01	31.59	40.03	69.85	35.00	4.76	12.79	1.59	0
32	42.2	11 ½	12.83	17.95	25.62	40.35	48.26	69.85	43.76	4.76	12.79	1.59	0
40	48.3	11 ½	13.25	18.38	26.04	46.45	55.88	69.85	49.86	4.76	12.79	2.38	0
50	60.3	11 ½	17.81	25.11	32.77	58.38	69.85	85.73	62.71	4.76	14.96	2.38	0
65	73.0	8	23.73	28.89	39.91	70.56	82.55	100.01	75.41	4.76	16.18	2.38	0
80	88.9	8	25.32	30.48	41.50	86.43	101.60	103.19	91.29	4.76	16.18	3.18	0
90	101.6	8	26.59	31.75	42.77	99.13	117.48	106.36	103.99	4.76	16.18	4.76	0
100	114.3	8	27.86	33.02	44.04	111.83	132.08	109.54	116.69	4.76	16.18	6.35	0
125	141.3	8	30.56	35.72	46.74	138.83	159.92	114.30	143.69	4.76	16.18	6.35	0
150	168.3	8	33.25	38.42	49.43	165.81	187.71	119.06	170.66	4.76	16.18	6.35	0
200	219.1	8	38.33	43.50	54.51	216.61	244.48	119.06	221.46	4.76	16.18	6.35	0
250	273.1	8	43.73	48.90	59.91	270.58	298.45	141.29	275.44	4.76	16.18	9.53	0
300	323.9	8	48.81	53.98	64.99	321.38	355.60	150.81	326.24	4.76	16.18	9.53	0

^A Taper of threads is 19 mm/305 mm on diameter for all sizes.

^B See Fig. 2

TABLE 10 Dimensions,^A Weights,^A and Test Pressures for Driven Well Pipe (Inch-Pound Units)

NPS Designator	Weight per Foot, lb/ft		Wall Thickness, in.	Diameters, in.		No. of Threads per Inch	Coupling		Test Pressures, psi	
	Nominal Threads and Couplings	Calculated Plain Ends		Outside	Inside ^A		Calculated Weight, lb	Butt Welded	Grade A	Grade B
1	1.68	1.68	0.133	1.315	1.049	11½	0.40	700	700	700
1¼	2.28	2.27	0.140	1.660	1.380	11½	0.48	1000	1000	1100
1½	2.73	2.72	0.145	1.900	1.610	11½	0.67	1000	1000	1100
2	3.68	3.65	0.154	2.375	2.067	11½	1.05	1000	2300	2500

^A Nominal T & C weights shown are based on the standard pipe coupling. For pipe weights with reamed and drifted coupling applied, see Table 8 of this specification. For weights with the line pipe coupling applied refer to API Standard 5L.

TABLE 11 Dimensions,^A Weights,^A and Test Pressures for Driven Well Pipe (SI Units)

DN Designator	Weight per Foot, kg/m		Wall Thickness, mm	Diameters, mm		No. of Threads per 25.4 mm	Coupling		Test Pressures, kPa	
	Nominal Threads and Couplings	Calculated Plain Ends		Outside	Inside ^A		Calculated Weight, kg	Butt Welded	Grade A	Grade B
25	2.50	2.50	3.38	33.40	26.64	11 ½	0.60	4800	4 800	4 800
32	3.39	3.38	3.56	42.16	35.05	11 ½	0.71	6900	6 900	7 600
40	4.06	4.05	3.68	48.26	40.89	11 ½	1.00	6900	6 900	7 600
50	5.48	5.43	3.91	60.33	52.50	11 ½	1.56	6900	15 900	17 200

^A Nominal T & C weights shown are based on the standard pipe coupling. For pipe weights with reamed and drifted coupling applied, see Table 9 of this specification. For weights with the line pipe coupling applied refer to API Standard 5L.

rejected, or retests shall be made on additional pipe of double the original number from the same lot, each of which shall conform to the requirements specified.

16. Test Methods

16.1 The tension tests required shall conform to those described in the latest issue of Test Methods and Definitions **A370**.

16.1.1 The longitudinal tension test specimen shall be taken from the end of the pipe and for welded pipe the specimen may be taken from the skelp or strip, at a point approximately 90° from the weld and shall not be flattened between gage marks. The sides of each specimen shall be parallel between gage marks.