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1 Bureau of Standards, Circular 31, Copper Wire Tables, 1914

1.1 Wire Gages, Short History of Wire Gages

The sizes of wires were for many years indicated in commercial practice almost entirely by gage numbers. This practice was accompanied by considerable confusion because numerous gages were in use. Wire gages are in use now less than formerly, the specification of diameter directly being, in many cases, preferred; and, furthermore, the confusion is diminishing because practice is eliminating most of the gages and is assigning well defined fields to the remaining ones. In an article[1] written in 1887, over 30 gages were described, 19 of which were wire gages. In addition to these there were a number of proposed gages. Among the wire gages that have survived, two are used extensively in this country, viz, the "American Wire Gage" (Brown & Sharpe) and the "Steel Wire Gage" (variously called the Washburn & Moen, Roebling, and American Steel & Wire Co.'s). Three other gages are still used to some extent, viz, the Birmingham Wire Gage (Stubs), the Old English Wire Gage (London), and the Stubs' Steel Wire Gage. There are in addition certain special gages, such as the Music Wire Gage, the drill and screw gages, and the United States Standard Sheet-Metal Gage. In England one wire gage has been made legal and is in use generally, viz, the "Standard Wire Gage." The diameters of the six general wire gages mentioned are given in mils in Table 2, page 13, and in millimeters in Table 1, page 10. In Germany, France, Austria, Italy, and other continental countries practically no wire gage is used; size of wires is specified directly by the diameter in millimeters. This system is sometimes called the "millimeter wire gage." In France the sizes in use are to a considerable extent based on the old Paris gage ("*jauge de Paris de 1857*").

The American Wire Gauge was devised by J. R. Brown, one of the founders of the Brown & Sharpe Manufacturing Co., in 1857. It speedily superseded the Birmingham Wire Gage in this country, which was then in general use. It is perhaps more generally known by the name "Brown & Sharpe Gage," but this name is not the one preferred by the Brown & Sharpe Co. In their catalogues they regularly refer to the gage as the "American Standard Wire Gage." The word "Standard" is probably not a good one to retain in the name of this gage, since it is not the standard gage for all metals in the United States; and, further, since it is not a legalized gage, as are the (British) Standard Wire Gage and the United States Standard Sheet-Metal Gage. The abbreviation for the name of this gage has usually been written "A. W. G." The American Wire Gage is now used for more metals than any other in this country, and is practically the only gage used for copper and aluminum wire, and in general for wire used in electrical work. It is the only wire gage now in use whose successive sizes are determined by a simple mathematical law. This gage is discussed in detail below.

The "Steel Wire Gage" is the same gage which has been known by the names of Washburn & Moen gage and American Steel & Wire Co.'s gage. This gage also, with a number of its sizes rounded off to thousandths of an inch, has been known as the Roebling gage. The gage was established by Ichabod Washburn about the year 1830, and was named after the Washburn & Moen Manufacturing Co. This company is no longer in existence, having been merged into the American Steel & Wire Co. The latter company continued the use of the Washburn & Moen Gage for steel wire, giving it the name "American Steel & Wire Co.'s gage." The company specifies all steel wire by this gage, and states that it is used for fully 85 per cent of the total production of steel wire. This gage was also formerly used by the John A. Roebling's Sons Co., who named it the Roebling gage, as mentioned above. However, the Roebling company, who are engaged in the production of wire for electrical purposes, now prefer to use the American Wire Gage.

It may be stated[2] that in so far as wire gages continue in use in the United States, the practice has

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[1]S.S. Wheeler: Elec. World, 10, 234; 1887.

[2]The information about wire gages was gathered from the writings on the subject in scientific literature and in the catalogues

been practically standardized to the use of two gages, the American Wire Gage for wire used in electrical work and for general use and the Steel Wire Gage for steel wire. This is perhaps as satisfactory a state of affairs as can be hoped for as long as wire gages continue in use, since the fields covered by the two gages are distinct and definite, and both gages are used for enormous quantities of material. Neither of these two gages (except for a small portion of the Steel Wire Gage) have the irregular gradations of sizes which make many of the gages objectionable. It is neither desirable nor probable that a single gage for wires will be prescribed by legislative enactment, as was done for sheet metal by the act of Congress approved March 3, 1893, establishing the "United States Standard Sheet-Metal Gage."

The trend of practice in the gaging of materials is increasingly toward the direct specification of the dimensions in decimal fractions of an inch fractions of an inch, without use of gage numbers. This has been, for a number of years, the practice of some of the large electrical and manufacturing companies of this country. The United States Navy Department, also, in June, 1911, ordered that all diameters and thicknesses of materials be specified directly in decimal fractions of an inch, omitting all reference to gage numbers. The War Department, in December, 1911, issued a similar order, for all wires. Numerous engineering societies have gone on record as in favor of the direct use of diameters. The 1914 Standardization Rules of the American Institute of Electrical Engineers state that the sizes of solid wires shall be specified by their diameters in mils (but permit the use of the gage numbers for brevity, where careful specification is not required). The American Society for Testing Materials, in their Specifications for Copper Wire, recommend that diameters instead of gage numbers be used. This is similar to the practice on the Continent of Europe, where sizes of wire are specified directly by the diameter in millimeters. The practice of specifying the diameters themselves and omitting gage numbers has the advantages that it avoids possible confusion with other gage systems and states an actual property of the wire directly. An article presenting the disadvantages of gage numbers for wires, sheets, and tubes, and the advantages of the exclusive use of the "decimal system," from the viewpoint of the manufacturer, was published by G. E. Goddard in the American Machinist, March 2, 1911, page 400. He states that this practice was recommended so long ago as 1895 by a joint committee of the American Society of Mechanical Engineers and the American Railway Master Mechanics' Association. This system is recommended by the Bureau of Standards as the most satisfactory method of specifying dimensions of materials. It should always be followed in careful work and in contracts and specifications, even when the gage numbers are used for rough work. The correspondence which the Bureau of Standards has had with manufacturers of wire has shown that there is a general willingness and desire to have most or all of the gages eliminated. It therefore depends largely on the consumers of wire to simplify wire gage practice, by ordering material according to dimension rather than gage numbers. The various national engineering societies, representing the users of wire, might succeed in educating consumers by taking up this matter actively.

When gage numbers are not used, it is necessary that a certain set of stock sizes be considered standard, so that the manufacturers would not be required to keep in stock an unduly large number of different sizes of wire. The large companies and societies which have adopted the direct use of diameters have recognized this, having taken as standard the American Wire Gage sizes, to the nearest mil for the larger diameters and to a tenth of a mil for the smaller. (See list of sizes, Table 1, page 10.) These sizes were adopted, in December, 1911, by the United States War Department for all wires. It seems likely that this system of

of manufacturers, and also from special correspondence with leading manufacturers in America and Europe, undertaken by the Bureau of Standards to find out the current practices.

The name "Steel Wire Gage" was suggested by the Bureau of Standards, in its correspondence with various companies, and it met with practically unanimous approval. It was necessary to decide upon a name for this gage, and the three names which have been used for it in the past were all open to the objection that they were the names of particular companies. These companies have accepted the new name. The abbreviation of the name of the gage should be "Stl. W. G.," to distinguish it from "S. W. G.," the abbreviation for the (British) Standard Wire Gage. When it is necessary to distinguish the name of this gage from others which may be used for steel wire, e. g., the (British) Standard Wire Gage, it may be called the United States Steel Wire Gage.

sizes, based on the American Wire Gage, will be perpetuated. This is fortunate, as the American Wire Gage has advantages over all other gages, which are described below; fortunately, also, practice is eliminating the many useless figures to which the theoretical diameters in the American Wire Gage may be carried.

The objection is often raised that the use of diameters requires the employment of a micrometer and that the wire gage as an instrument, marked in gage numbers, is a very rapid means of handling wires and is indispensable for use by unskilled workmen. However, the use of the wire gage as an instrument is consistent with the practice of specifying the diameters directly, provided the wire-gage is marked in mils. Wire-gages marked both in the A. W. G. numbers and in thousandths of an inch can be obtained from the manufacturers. One thus reads off directly from the wire-gage 81 mil, 64 mil, etc., just as he would No. 12, No. 14, etc. (Of course, the diameters in millimeters could be marked on the gage for those who prefer the metric system.) It should not be forgotten, however, that a wire-gage gradually wears with use, and that for accurate work a micrometer should always be used.

Of the three wire gages which have remained in use but are now nearly obsolete, the one most frequently mentioned is the Birmingham, sometimes called the Stubs' Wire Gage. It is said to have been introduced early in the eighteenth century, and a table of its diameters is given in Holtzapffel's "Turning" (London, 1846). Its numbers were based upon the reductions of size made in practice by drawing wire from rolled rod. Thus, rod was called No. 0, first drawing No. 1, and so on. Its gradations of size are very irregular, as shown in Figure 1, page 7. The V-shaped diagram is simply a picture of a wire-gage, marked with the Birmingham gage on the left and the American gage on the right. A similar diagram is given in the catalogue of the Brown & Sharpe Manufacturing Co. (1903, p. 422). The distance between the diverging lines at any point is the diameter of the wire whose gage number is given on the side. The Birmingham gage is typical of most wire gages, and the irregularity of its steps is shown in marked contrast to the regularity of the steps of the American Wire Gage. This contrast is also brought out in Figure 2, page 8 and Figure 3, page 9.

Some of the later gages were based on the Birmingham. It was used extensively both in Great Britain and in the United States for many years. It has been superseded, however, and is now nearly obsolete. By the repeated copying of old specifications its use has persisted to some extent, both in England and the United States, for galvanized iron telegraph wire. In this country such use has been limited largely to the large telegraph and telephone companies and certain departments of the Government. As stated above, the Government departments are now dropping the wire gages altogether. The telephone and telegraph companies are inclined to continue the use of the Birmingham gage, and seem to believe that the wire manufacturers prefer it. The manufacturers, however, would be glad to have wire gages eliminated, and, as stated before, it therefore depends largely on the consumers of wire to simplify wire gage practice.

The principal outstanding exception to the abandonment of the Birmingham gage heretofore has been that the Treasury Department, with certain legislative sanction, specified the Birmingham gage for use in the collection of duty on imports of wire. This gage was prescribed by the Treasury Department in 1875, after it had been ascertained that it was the standard gage "not only throughout the United States, but the world." This reason for the use of this gage does not now exist, inasmuch as the gage is now used very little in the United States, and even less in other countries. Up until 1914 the Treasury Department considered that it could not change its practice, since legislative approval had been given the Birmingham gage by the tariff acts with a provision for assessment of duty according to gage numbers, and further since a change would alter the rate of duty on certain sizes of wire. However, the 1913 Tariff Act specified the sizes of wires by the diameters in decimal parts of an inch instead of by gage numbers. This left the Treasury Department free to reject the Birmingham gage, which it did in August, 1914, adopting the American Wire Gage in its place.

The Old English or London gage, the sizes of which differ very little from those of the Birmingham gage, has had considerable use in the past for brass and copper wires, and is now used to some extent in the drawing of brass wire for weaving. It is nearly obsolete.

The Stubs' Steel Wire Gage has a somewhat limited use for tool steel wire and drill rods. This gage

should not be confused with the Birmingham, which is sometimes known as Stubs' Iron Wire Gage.

The "Standard Wire Gage" otherwise known as the New British Standard, the English Legal Standard, or the Imperial Wire Gage, is the legal standard of Great Britain for all wires, as fixed by order in Council, August 23, 1883. It was constructed by modifying the Birmingham Wire Gage, so that the differences between successive diameters were the same for short ranges, i. e., so that a graph representing the diameters consists of a series of a few straight lines. This is shown in the graphical comparison of wire gages, Figure 2, page 8 and Figure 3, page 9 (details are in Figure 4, page 15, Figure 6, page 19 and Figure 9, page 25). The curves show three typical wire gages, diameter being plotted against gage number. Attention is called to the regularity of the American Wire Gage curve, the utter irregularity of the Birmingham gage curve, and the succession of straight lines of which the Standard Wire Gage curve is composed. The lower ends of these curves are also shown, magnified 10 times.

While the Standard Wire Gage is the most used wire gage in Great Britain, we are informed by a large English electrical manufacturing company that the tendency is to adopt mils, or decimal fractions of an inch, rather than gage numbers, the same tendency as in the United States.

There was once a movement to bring the "Standard Wire Gage" into general use in the United States. It was adopted in 1885 by the National Telephone Exchange Association, and in 1886 by the National Electric Eight Association. The gage, however, never came into general use. In 1886, The Electrical World sent a letter to the principal makers and users of wire throughout the country inquiring about their practices in specifying wire and asking whether they would favor legislation enforcing the "Standard Wire Gage." The great majority of the replies showed that the "Standard Wire Gage" was not in use at all, and that the American Wire Gage was the most used, and also that there was a strong trend in favor of specifying sizes entirely by the diameter in mils.

Among the many wire gages that have been proposed but never came into much use may be mentioned especially Latimer Clark's Wire Gage, the Edison Standard Wire Gage, and the National Electric Eight Association's Metric Wire Gage. The first of these, Clark's, was proposed in 1867, and was based on the same principle as the American Wire Gage, viz, each successive diameter obtained by multiplying the preceding by a constant. As Wheeler[3] justly remarked, its one virtue was its imitation of its prototype, the American gage. The Edison Standard Wire Gage, proposed by the Edison Electric Eight Co. sometime before 1887, was based upon a different principle. The area of cross section increased proportionally with the gage numbers. No. 5 = 5000 circular mils, No. 10 = 10 000, and so on. The diameters, therefore, ncreased as the square root of the gage numbers. The circular mil classification is now actually used for the large sizes of copper wire and cables, but the ibfEdison gage numbers are not used. The National Electric Eight Association in 1887 dropped the (British) Standard Wire Gage, which it had adopted the year before, and adopted its Metric Wire Gage. This was nothing more than the German and French millimeter wire gage, giving numbers to the successive sizes, calling 0.1 mm diameter No. 1, 0.2 mm No. 2, and so on.

1.2 The American Wire Gage

1.2.1 Gereral Use of the American Wire Gage

As stated above, in the United States practically the only gage now used for copper wire is the American Wire Gage (B. & S.). In sizes larger than No. 0000 A. W. G. copper conductors are practically always stranded. Sizes of stranded conductors are specified by the total cross section in circular mils. It is becoming more and more the practice for the large electrical companies and others to omit gage numbers; and the stock sizes of copper wire used and specified by those who follow this practice are the American Wire Gage sizes, to the nearest mil for the larger diameters and to a tenth of a mil for the smaller. (See list of sizes in American Wire Gage, **??**, page **??**) Those who use the gage numbers do not draw or measure wires to a

[3]S.S. Wheeler: Elec. World, 10, 234; 1887.

greater accuracy than this; and we accordingly see that a single system of sizes of copper wire is in use in this country, both by those who use gage numbers and those who do not.

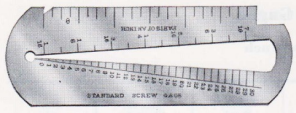
1.2.2 The Characteristics of the American Wire Gage

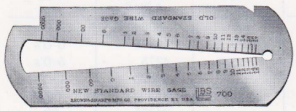
The American Wire Gage has the property, in common with a number of other gages, that its sizes represent approximately the successive steps in the process of wire drawing. Also, like many other gages, its numbers are retrogressive, a larger number denoting a smaller wire, corresponding to the operations of drawing.

Its sizes are not so utterly arbitrary and the differences between successive diameters are more regular than those of other gages, since it is based upon a simple mathematical law. The gage is formed by the specification of two diameters and the law that a given number of intermediate diameters are formed by geometrical progression. Thus, the diameter of No. 0000 is defined as 0.4600 inch and of No. 36 as 0.0050 inch. There are 38 sizes between these two, hence the ratio of any diameter to the diameter of the next great number $= 39\sqrt{\frac{.4600}{.0050}} = 39\sqrt{92} = 1.122{,}932{,}2$. The square of this ratio = 1.2610. The sixth power of the ratio, i. e., the ratio of any diameter to the diameter of the sixth greater number = 2.0050. The fact that this ratio is so nearly 2. is the basis of numerous useful relations which are given below in "Wire table short cuts."

The law of geometrical progression on which the gage is based may be expressed in either of the three following manners: (1) the ratio of any diameter to the next smaller is a constant number; (2) the difference between any two successive diameters is a constant per cent of the smaller of the two diameters; (3) the difference between any two successive diameters is a constant ratio times the next smaller difference between two successive diameters.

The regularity of the American Wire Gage is shown by the curve on Figure 2, page 8 and Figure 3, page 9, where it is graphically compared with two other wire gages. The gage is represented by an ordinary exponential curve. The curve would be a straight line if plotted to a logarithmic scale of diameters and a uniform scale of gage numbers.





No. 700 Pocket Screw and Wire Gage

Made of a good quality steel and carefully finished to size. Graduated on front and back.

Front side is graduated for all sizes of American Standard Screws, old style, from 0 to 30, and to measure diameters of wire or screws from 1/16″ to 7/16″.

Back side is graduated to measure the Birmingham, or Stubs' Iron Wire, or old English Wire Gage, from 17 to 0000, and to measure the Brown & Sharpe (American) Wire Gage from 15 to 0000.

This gage can be used, also, to show the numbered sizes of American National numbered screws from 0 to 30 as these sizes vary only slightly from the respective gage sizes of the American Standard screws, old style.

One edge is graduated in 1/8″ for measuring screws. Angular and 90° slots permit the heads of flat or round headed screws to be placed against positive stops when being measured for their lengths.

Gage is approximately 4″ long, 1 13/32″ wide and 3/64″ thick.

No. 701 American National Standard Screw Gage

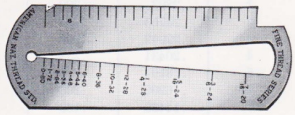
Made of a good quality steel and carefully finished to size. Graduated on front and back.

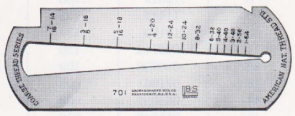
Front side graduated for fine thread series, and back side for coarse thread series, American National Standard.

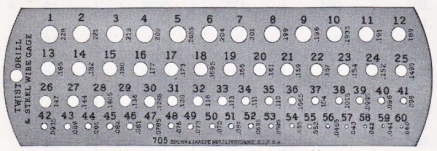
American National Standard Wood Screws are the same size as American National Machine Screws and so can be sized equally well on this gage.

One edge is graduated in 1/8″ for measuring screws. Angular and 90° slots permit the heads of flat or round headed screws to be placed against positive stops when being measured for their lengths.

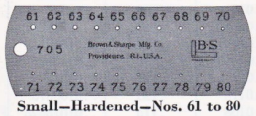
Gage is approximately 4″ long, 1 13/32″ wide and 3/64″ thick.







Large—Hardened—Nos. 1 to 60



Small—Hardened—Nos. 61 to 80

No. 705 Twist Drill Gage

For use in determining the correct size of Twist Drills. Can be used also for High Speed Steel drill rod. Great care is taken to insure the accuracy of the gage numbers. All sizes are tested carefully after hardening.

The larger Gage is about 1/16″ thick, 1 5/8″ wide, 5 1/4″ long and contains gage numbers from 1 to 60, inclusive, with decimal equivalents of the various sizes stamped conveniently on the front side. The smaller Gage is about 1/16″ thick, 3/4″ wide, 2″ long and contains gage numbers from 61 to 80, inclusive.

For Decimal Equivalents of the Numbers of Twist Drill Gage see below.

Each of the above packed six in a box.

Decimal Equivalents of the Numbers of Twist Drill Gage

For measuring the sizes of twist drills and High Speed Steel drill rod. Used almost universally in the United States for drill sizes. Rod sizes by this gage should not be confused with Stubs' Steel Wire Gage Sizes. There is a slight difference between the sizes of corresponding numbers in the two gages for most of the sizes.

No.	Size of No. in Decimals	No.	Size of No. in Decimals	No.	Size of No. in Decimals	No.	Size of No. in Decimals	No.	Size of No. in Decimals	No.	Size of No. in Decimals	No.	Size of No. in Decimals	No.	Size of No. in Decimals
1	.2280	11	.1910	21	.1590	31	.1200	41	.0960	51	.0670	61	.0390	71	.0260
2	.2210	12	.1890	22	.1570	32	.1160	42	.0935	52	.0635	62	.0380	72	.0250
3	.2130	13	.1850	23	.1540	33	.1130	43	.0890	53	.0595	63	.0370	73	.0240
4	.2090	14	.1820	24	.1520	34	.1110	44	.0860	54	.0550	64	.0360	74	.0225
5	.2055	15	.1800	25	.1495	35	.1100	45	.0820	55	.0520	65	.0350	75	.0210
6	.2040	16	.1770	26	.1470	36	.1065	46	.0810	56	.0465	66	.0330	76	.0200
7	.2010	17	.1730	27	.1440	37	.1040	47	.0785	57	.0430	67	.0320	77	.0180
8	.1990	18	.1695	28	.1405	38	.1015	48	.0760	58	.0420	68	.0310	78	.0160
9	.1960	19	.1660	29	.1360	39	.0995	49	.0730	59	.0410	69	.02925	79	.0145
10	.1935	20	.1610	30	.1285	40	.0980	50	.0700	60	.0400	70	.0280	80	.0135

For Prices and Ordering Numbers, See Colored Section

Figure 1: Brown and Sharpe gauge from 1952 `History 1.inc`

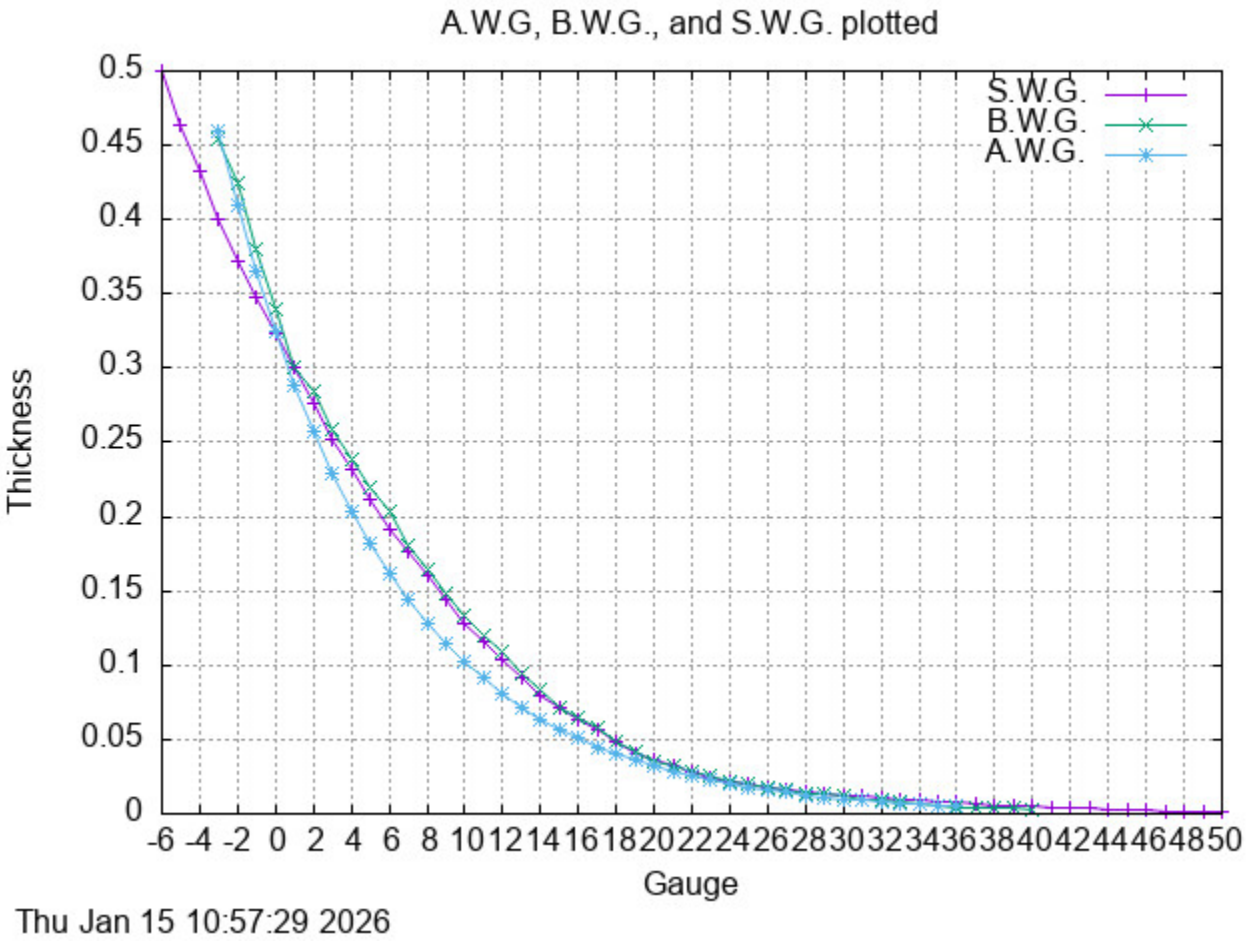


Figure 2: Full Plot of A.W.G., B.W.G. and S.W.G. `History 1.inc`

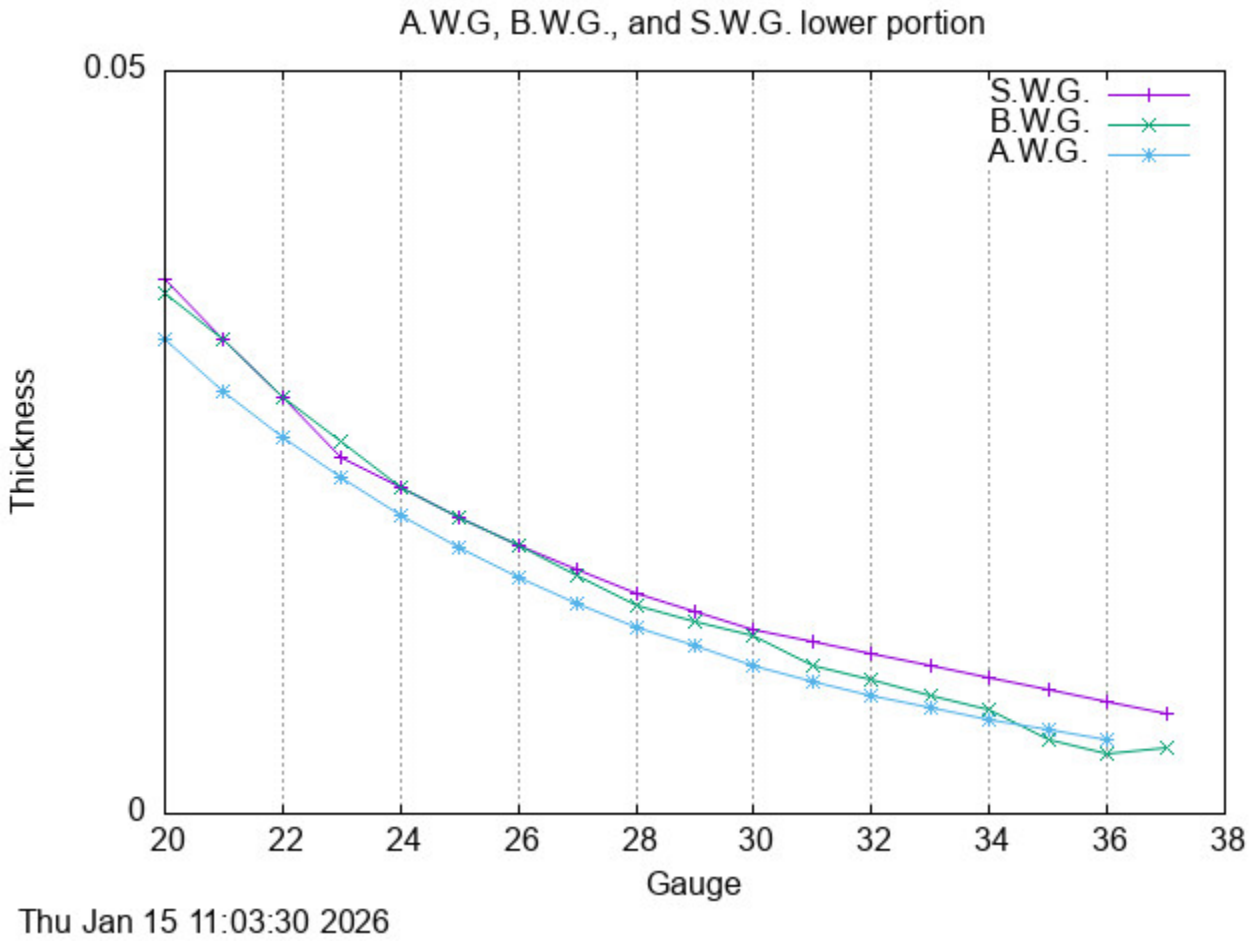


Figure 3: Plot of lower gauges for A.W.G., B.W.G. and S.W.G. `History 1.inc`

A Consolated Tabular Comparison of Wire Gages

Gage No.	American Wire Gage (B.& S.)	Steel Wire Gage	Birmingham Wire Gage (Stubs)	Old English Wire Gage (London)	Stubs Steel Wire Gage	(British) Standard Wire Gage	Gage No.
Bureau of Standards, Inch Wire Gauges, 1912							
0 000 000		0.4900				0.500	0 000 000
000 000		0.4615				0.464	000 000
00 000		0.4305				0.432	00 000
0 000	0.460	0.3938	0.454	0.454		0.400	0 000
000	0.410	0.3625	0.425	0.425		0.372	000
00	0.365	0.3310	0.380	0.380		0.348	00
0	0.325	0.3065	0.340	0.340		0.324	0
1	0.289	0.2830	0.300	0.300	0.227	0.300	1
2	0.258	0.2625	0.284	0.284	0.219	0.276	2
3	0.229	0.2437	0.259	0.259	0.212	0.252	3
4	0.204	0.2253	0.238	0.238	0.207	0.232	4
5	0.182	0.2070	0.220	0.220	0.204	0.212	5
6	0.162	0.1920	0.203	0.203	0.201	0.192	6
7	0.144	0.1770	0.180	0.180	0.199	0.176	7
8	0.128	0.1620	0.165	0.165	0.197	0.160	8
9	0.114	0.1483	0.148	0.148	0.194	0.144	9
10	0.102	0.1350	0.134	0.134	0.191	0.128	10
11	0.091	0.1205	0.120	0.120	0.188	0.116	11
12	0.081	0.1055	0.109	0.109	0.185	0.104	12
13	0.072	0.0915	0.095	0.095	0.182	0.092	13
14	0.064	0.0800	0.083	0.083	0.180	0.080	14
15	0.057	0.0720	0.072	0.072	0.178	0.072	15
16	0.051	0.0625	0.065	0.065	0.175	0.064	16
17	0.045	0.0540	0.058	0.058	0.172	0.056	17
18	0.040	0.0475	0.049	0.049	0.168	0.048	18
19	0.036	0.0410	0.042	0.040	0.164	0.040	19
20	0.032	0.0348	0.035	0.035	0.161	0.036	20
21	0.0285	0.0317	0.032	0.0315	0.157	0.032	21
22	0.0253	0.0286	0.028	0.0295	0.155	0.028	22
23	0.0226	0.0258	0.025	0.0270	0.153	0.024	23
24	0.0201	0.0230	0.022	0.0250	0.151	0.022	24
25	0.0179	0.0204	0.020	0.0230	0.148	0.020	25
26	0.0159	0.0181	0.018	0.0205	0.146	0.018	26
27	0.0142	0.0173	0.016	0.01875	0.143	0.0164	27
28	0.0126	0.0162	0.014	0.01650	0.139	0.0148	28
29	0.0113	0.0150	0.013	0.01550	0.134	0.0136	29

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[3]Gauge Tables.inc 31 January 2026 16:59

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Gage No.	American Wire Gage (B.& S.)	Steel Wire Gage	Birmingham Wire Gage (Stubs)	Old English Wire Gage (London)	Stubs Steel Wire Gage	(British) Standard Wire Gage	Gage No.
30	0.0100	0.0140	0.012	0.01375	0.127	0.0124	30
31	0.0089	0.0132	0.010	0.01225	0.120	0.0116	31
32	0.0080	0.0128	0.009	0.01125	0.115	0.0108	32
33	0.0071	0.0118	0.008	0.01025	0.112	0.0100	33
34	0.0063	0.0104	0.007	0.00950	0.110	0.0092	34
35	0.0056	0.0095	0.005	0.00900	0.108	0.0084	35
36	0.0050	0.0090	0.004	0.00750	0.106	0.0076	36
37	0.0045	0.0085		0.00650	0.103	0.0068	37
38	0.0040	0.0080		0.00575	0.101	0.0060	38
39	0.0035	0.0075		0.00500	0.099	0.0052	39
40	0.0031	0.0070		0.00450	0.097	0.0048	40
41		0.0066			0.095	0.0044	41
42		0.0062			0.092	0.0040	42
43		0.0060			0.088	0.0036	43
44		0.0058			0.085	0.0032	44
45		0.0055			0.081	0.0028	45
46		0.0052			0.079	0.0024	46
47		0.0050			0.077	0.0020	47
48		0.0048			0.075	0.0016	48
49		0.0046			0.072	0.0012	49
50		0.0044			0.069	0.0010	50

Table 1: Bureau of Standards, Inch Wire Gauges, 1914

- The **American Wire Gage** sizes have been here rounded off to about the usual limits of commercial accuracy. They can be calculated to any desired accuracy by use of the law given on subsubsection 1.2.2, page 6.
- The **Steel Wire Gage** is the same gage which has been known by various names: "**Washburn and Moen**," "**Roebling**," "**American Steel and Wire Co.**'s." Its abbreviation should be written "**Stl.W.G.**," to distinguish it from "**S.W.G.**," the usual abbreviation for the **(British) Standard Wire Gage**.

Gage No.	American Wire Gage (B.& S.)	Steel Wire Gage	Birmingham Wire Gage (Stubs)	Old English Wire Gage (London)	Stubs Steel Wire Gage	(British) Standard Wire Gage	Gage No.
Bureau of Standards, Metric Wire Gauges, 1912							
0 000 000		12.4				12.7	0 000 000
000 000		11.7				11.8	000 000
00 000		10.9				11.0	00 000
0 000	11.7	10.0	11.5	11.5		10.2	0 000
000	10.4	9.2	10.8	10.8		9.4	000
00	9.3	8.4	9.7	9.7		8.8	00
0	8.3	7.8	8.6	8.6		8.2	0
1	7.3	7.2	7.6	7.6	5.77	7.6	1
2	6.5	6.7	7.2	7.2	5.56	7.0	2
3	5.8	6.2	6.6	6.6	5.38	6.4	3
4	5.2	5.7	6.0	6.0	5.26	5.9	4
5	4.6	5.3	5.6	5.6	5.13	5.4	5
6	4.1	4.9	5.2	5.2	5.11	4.9	6
7	3.7	4.5	4.6	4.6	5.05	4.5	7
8	3.3	4.1	4.2	4.2	5.00	4.1	3
9	2.91	3.77	3.76	3.76	4.93	3.66	9
10	2.59	3.43	3.40	3.40	4.85	3.25	10
11	2.30	3.06	3.05	3.05	4.78	2.95	11
12	2.05	2.68	2.77	2.77	4.70	2.64	12
13	1.83	2.32	2.41	2.41	4.62	2.34	13
14	1.63	2.03	2.11	2.11	4.57	2.03	14
15	1.45	1.83	1.83	1.83	4.52	1.83	15
16	1.29	1.59	1.65	1.65	4.45	1.63	16
17	1.15	1.37	1.47	1.47	4.37	1.42	17
18	1.02	1.21	1.24	1.24	4.27	1.22	13
19	0.91	1.04	1.07	1.02	4.17	1.02	19
20	0.81	0.88	0.89	0.89	4.09	0.91	20
21	0.72	0.81	0.81	0.80	3.99	0.81	21
22	0.64	0.73	0.71	0.75	3.94	0.71	22
23	0.57	0.66	0.64	0.69	3.89	0.61	23
24	0.51	0.58	0.56	0.64	3.84	0.56	24
25	0.45	0.52	0.51	0.58	3.76	0.51	25
26	0.40	0.46	0.46	0.52	3.71	0.46	26
27	0.36	0.439	0.41	0.43	3.63	0.42	27
28	0.32	0.411	0.36	0.42	3.53	0.38	28
29	0.29	0.381	0.330	0.394	3.40	0.345	29
30	0.25	0.356	0.305	0.349	3.23	0.315	30
31	0.227	0.335	0.254	0.311	3.05	0.295	31

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Gage No.	American Wire Gage (B.& S.)	Steel Wire Gage	Birmingham Wire Gage (Stubs)	Old English Wire Gage (London)	Stubs Steel Wire Gage	(British) Standard Wire Gage	Gage No.
32	0.202	0.325	0.229	0.286	2.92	0.274	32
33	0.180	0.300	0.203	0.260	2.84	0.254	33
34	0.160	0.264	0.178	0.241	2.79	0.234	34
35	0.143	0.241	0.127	0.229	2.74	0.213	35
36	0.127	0.229	0.102	0.191	2.69	0.193	36
37	0.113	0.216		0.165	2.62	0.173	37
38	0.101	0.203		0.146	2.57	0.152	38
39	0.090	0.191		0.127	2.51	0.132	39
40	0.080	0.178		0.114	2.46	0.122	40
41		0.168			2.41	0.112	41
42		0.157			2.34	0.102	42
43		0.152			2.24	0.091	43
44		0.147			2.16	0.081	44
45		0.140			2.06	0.071	45
46		0.132			2.01	0.061	46
47		0.127			1.96	0.051	47
48		0.122			1.90	0.041	48
49		0.117			1.83	0.030	49
50		0.112			1.75	0.025	50

Table 2: Bureau of Standards, Metric Wire Gauges, 1914

B Individual wire gauge tables

B.1 American Wire Gage (B.& S.)

Gage	Size	Gage	Size	Gage	Size	Gage	Size
0 000	0.460	8	0.128	19	0.036	30	0.0100
000	0.410	9	0.114	20	0.032	31	0.0089
00	0.365	10	0.102	21	0.0285	32	0.0080
0	0.325	11	0.091	22	0.0253	33	0.0071
1	0.289	12	0.081	23	0.0226	34	0.0063
2	0.258	13	0.072	24	0.0201	35	0.0056
3	0.229	14	0.064	25	0.0179	36	0.0050
4	0.204	15	0.057	26	0.0159	37	0.0045
5	0.182	16	0.051	27	0.0142	38	0.0040
6	0.162	17	0.045	28	0.0126	39	0.0035
7	0.144	18	0.040	29	0.0113	40	0.0031

Table 3: American Wire Gage (B.& S.)

[3]BoSC31.inc 31 January 2026 16:59
[3]BoSC31AWGBS.inc 31 January 2026 16:59

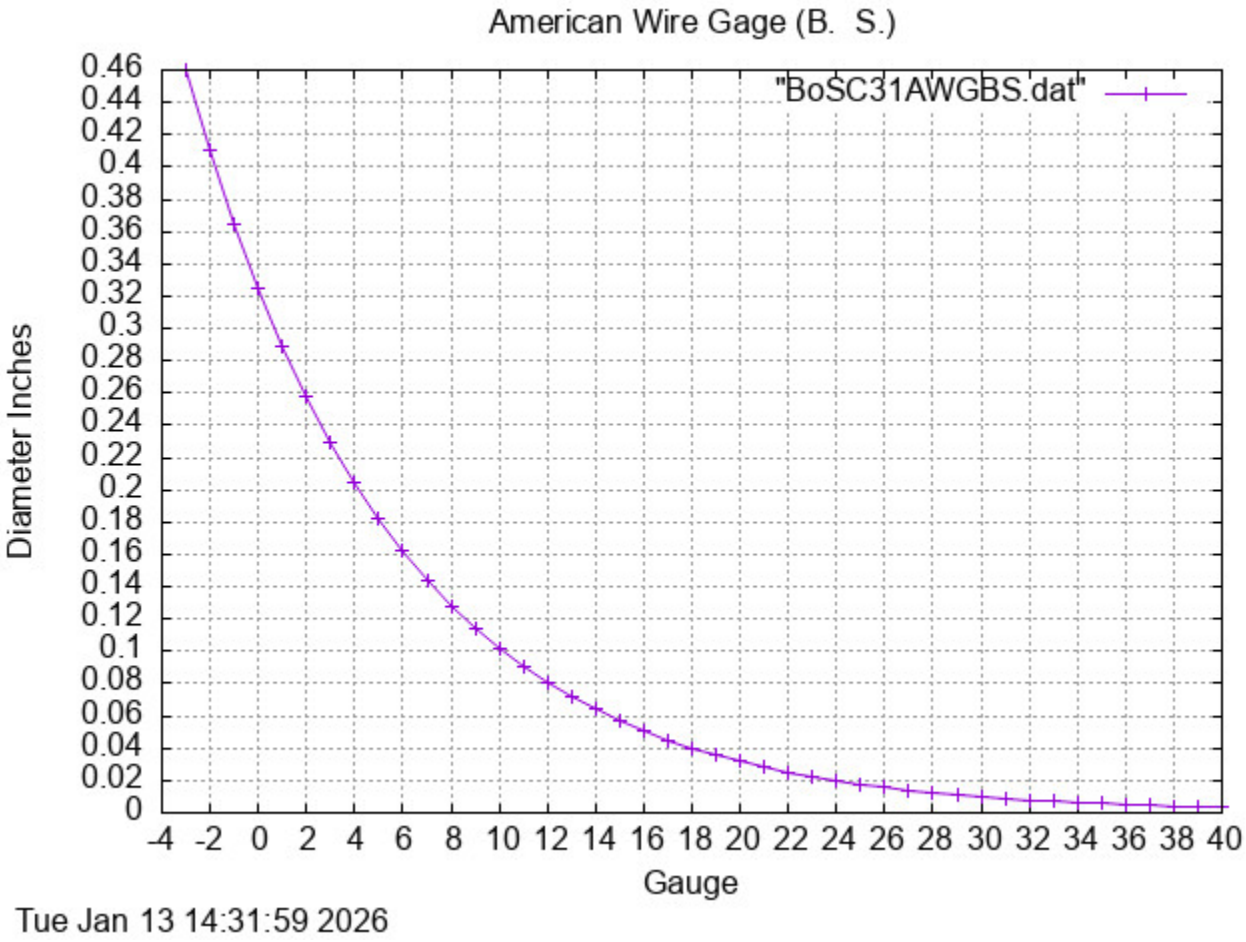

Figure 4: American Wire Gage (B.& S.) `BoSC31.inc`

B.2 (British) Standard Wire Gage

Gage	Size	Gage	Size	Gage	Size	Gage	Size
0 000 000	0.500	8	0.160	22	0.028	36	0.0076
000 000	0.464	9	0.144	23	0.024	37	0.0068
00 000	0.432	10	0.128	24	0.022	38	0.0060
0 000	0.400	11	0.116	25	0.020	39	0.0052
000	0.372	12	0.104	26	0.018	40	0.0048
00	0.348	13	0.092	27	0.0164	41	0.0044
0	0.324	14	0.080	28	0.0148	42	0.0040
1	0.300	15	0.072	29	0.0136	43	0.0036
2	0.276	16	0.064	30	0.0124	44	0.0032
3	0.252	17	0.056	31	0.0116	45	0.0028
4	0.232	18	0.048	32	0.0108	46	0.0024
5	0.212	19	0.040	33	0.0100	47	0.0020
6	0.192	20	0.036	34	0.0092	48	0.0016
7	0.176	21	0.032	35	0.0084	49	0.0012
						50	0.0010

Table 4: (British) Standard Wire Gage

[3]BoSC31BSWG.inc 31 January 2026 16:59

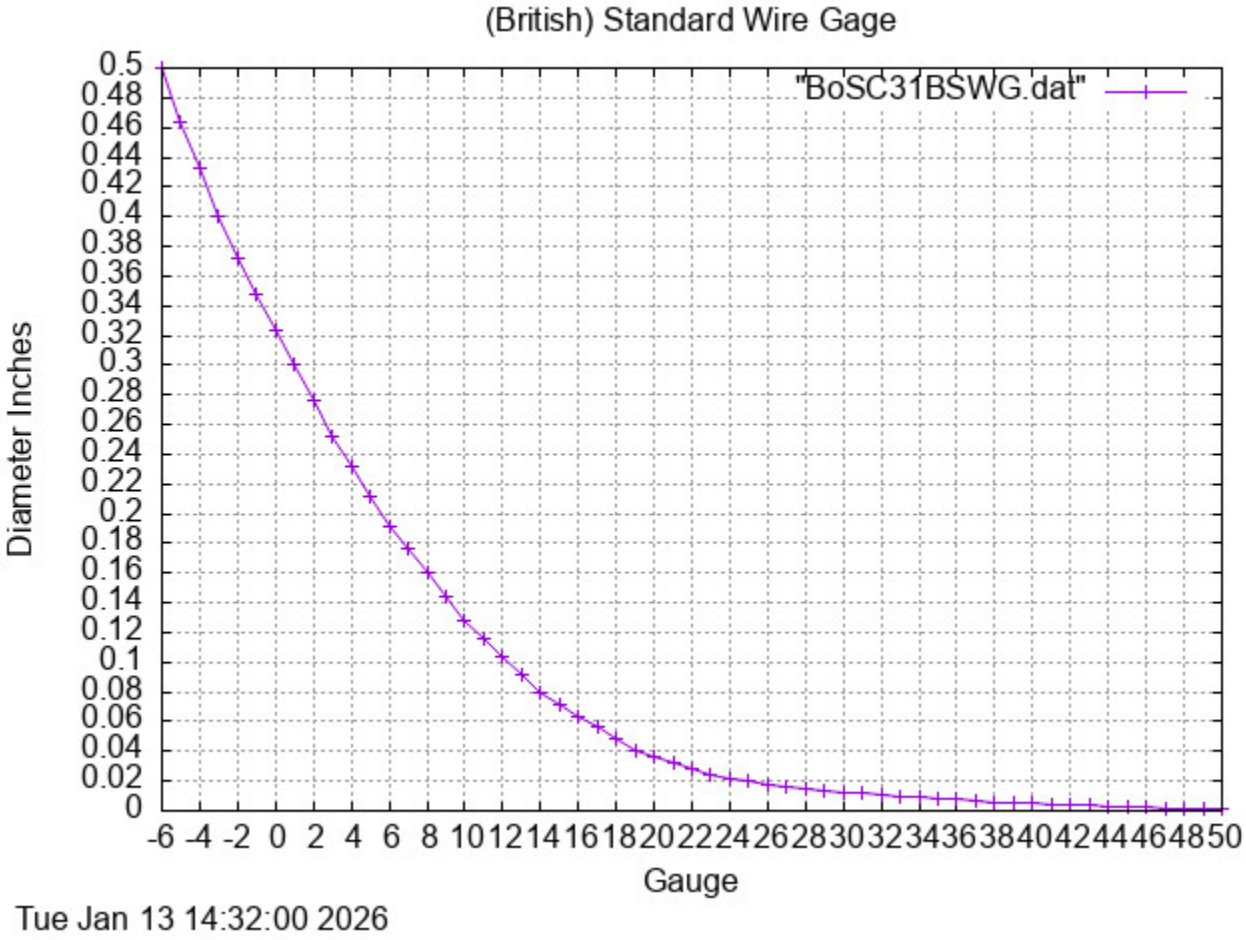

Figure 5: (British) Standard Wire Gage `BoSC31.inc`

B.3 Birmingham Wire Gage (Stubs)

Gage	Size	Gage	Size	Gage	Size	Gage	Size
0 000	0.454	7	0.180	17	0.058	27	0.016
000	0.425	8	0.165	18	0.049	28	0.014
00	0.380	9	0.148	19	0.042	29	0.013
0	0.340	10	0.134	20	0.035	30	0.012
1	0.300	11	0.120	21	0.032	31	0.010
2	0.284	12	0.109	22	0.028	32	0.009
3	0.259	13	0.095	23	0.025	33	0.008
4	0.238	14	0.083	24	0.022	34	0.007
5	0.220	15	0.072	25	0.020	35	0.005
6	0.203	16	0.065	26	0.018	36	0.004

Table 5: Birmingham Wire Gage (Stubs)

[3]BoSC31BWG.inc 31 January 2026 16:59

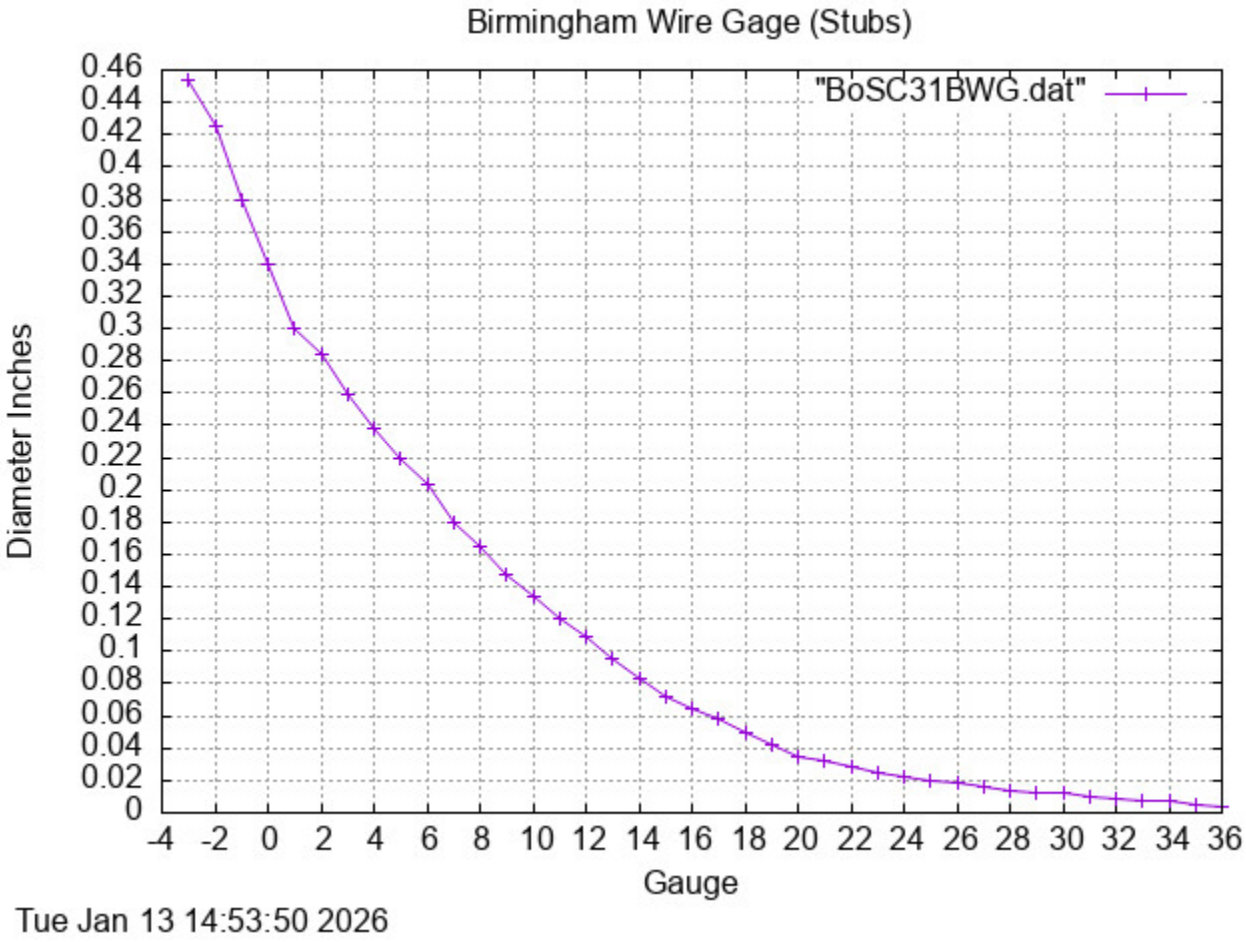

Figure 6: Birmingham Wire Gage (Stubs) `BoSC31.inc`

B.4 Old English Wire Gage (London)

Gage	Size	Gage	Size	Gage	Size	Gage	Size
0 000	0.454	8	0.165	19	0.040	30	0.01375
000	0.425	9	0.148	20	0.035	31	0.01225
00	0.380	10	0.134	21	0.0315	32	0.01125
0	0.340	11	0.120	22	0.0295	33	0.01025
1	0.300	12	0.109	23	0.0270	34	0.00950
2	0.284	13	0.095	24	0.0250	35	0.00900
3	0.259	14	0.083	25	0.0230	36	0.00750
4	0.238	15	0.072	26	0.0205	37	0.00650
5	0.220	16	0.065	27	0.01875	38	0.00575
6	0.203	17	0.058	28	0.01650	39	0.00500
7	0.180	18	0.049	29	0.01550	40	0.00450

Table 6: Old English Wire Gage (London)

[3]BoSC31OEWGL.inc 31 January 2026 16:59

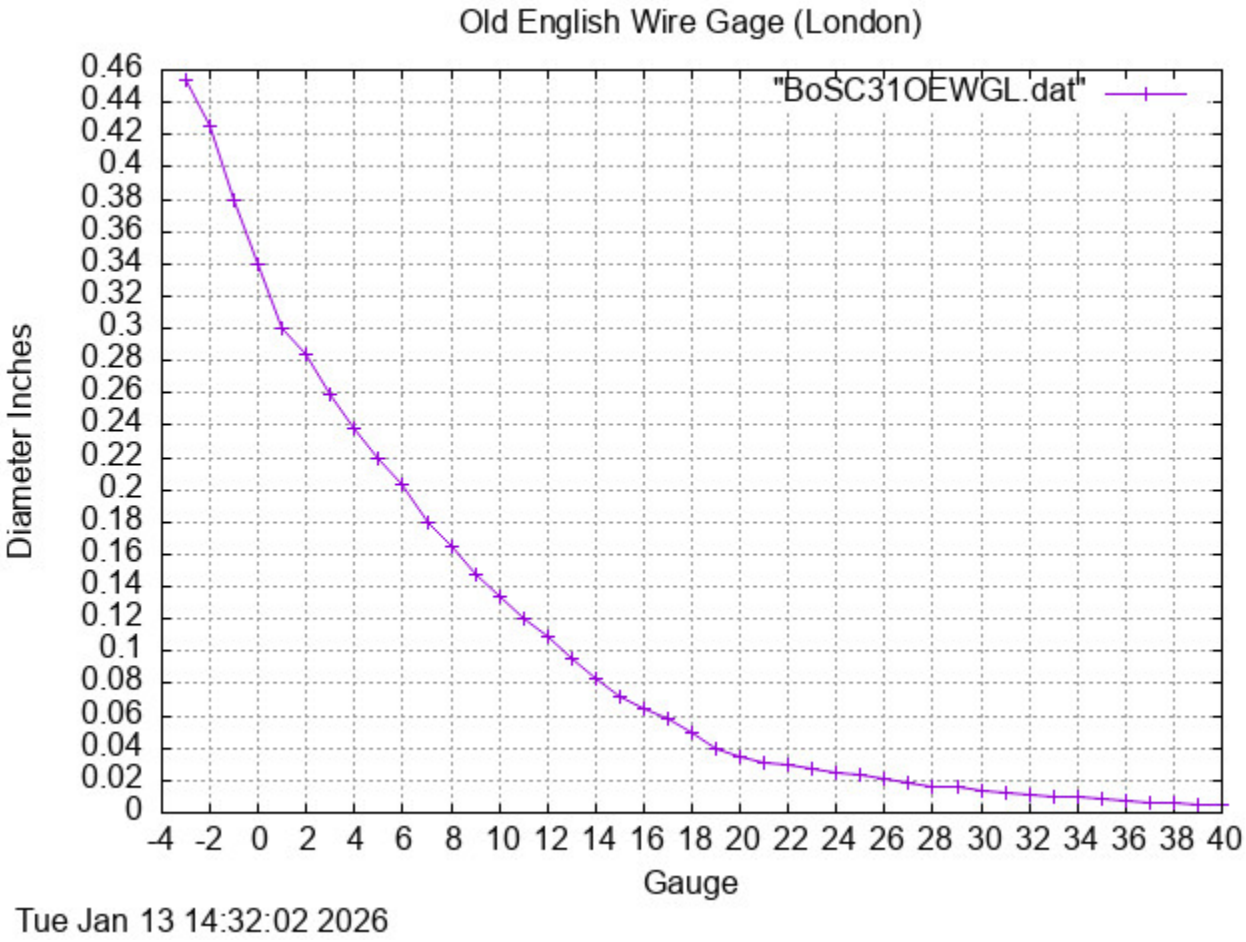

Figure 7: Old English Wire Gage (London) `BoSC31.inc`

B.5 Stubs Steel Wire Gage (British)

Gage	Size	Gage	Size	Gage	Size	Gage	Size
1	0.227	14	0.180	27	0.143	40	0.097
2	0.219	15	0.178	28	0.139	41	0.095
3	0.212	16	0.175	29	0.134	42	0.092
4	0.207	17	0.172	30	0.127	43	0.088
5	0.204	18	0.168	31	0.120	44	0.085
6	0.201	19	0.164	32	0.115	45	0.081
7	0.199	20	0.161	33	0.112	46	0.079
8	0.197	21	0.157	34	0.110	47	0.077
9	0.194	22	0.155	35	0.108	48	0.075
10	0.191	23	0.153	36	0.106	49	0.072
11	0.188	24	0.151	37	0.103	50	0.069
12	0.185	25	0.148	38	0.101		
13	0.182	26	0.146	39	0.099		

Table 7: Stubs Steel Wire Gage (British)

[3]BoSC31SSWGB.inc 31 January 2026 16:59

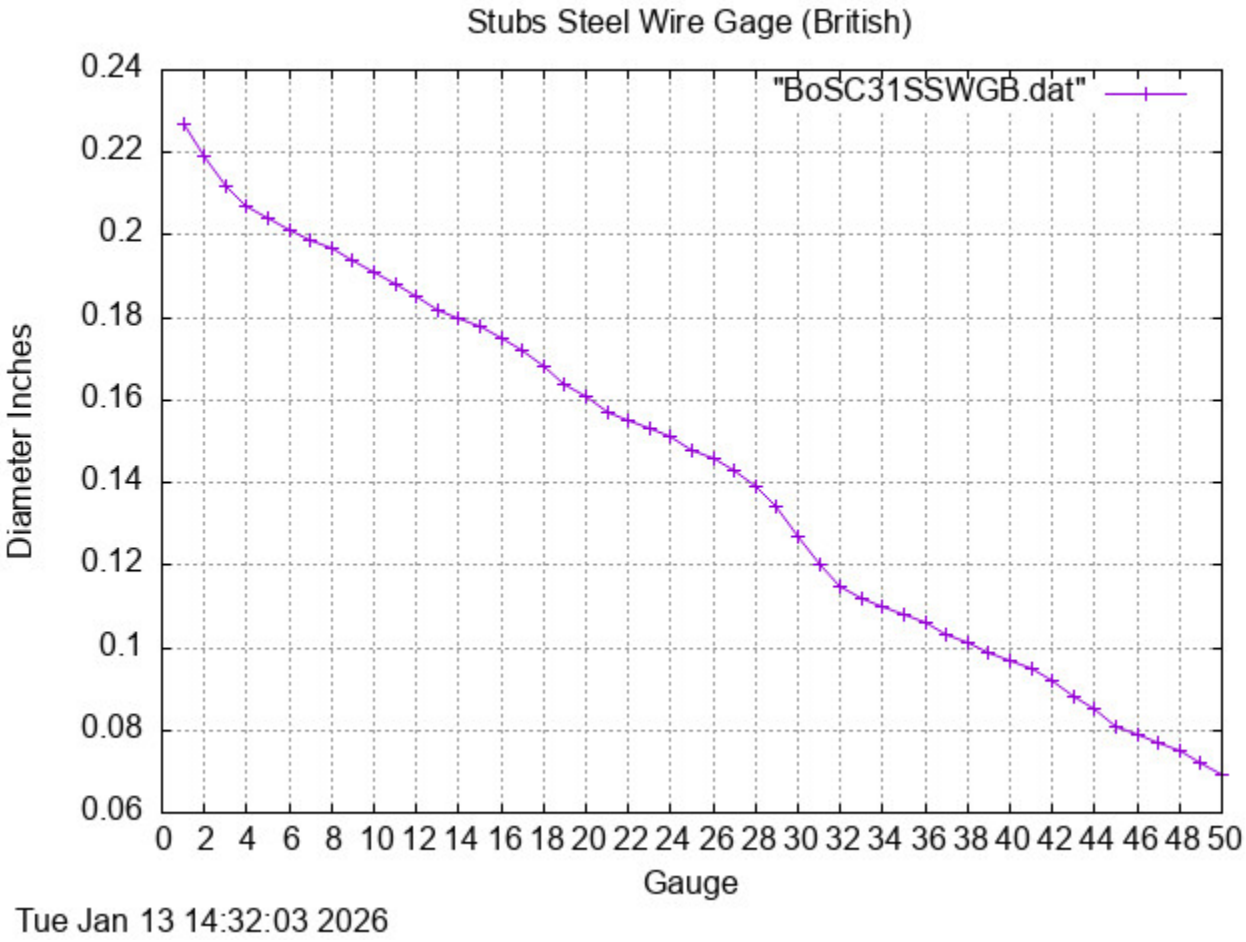

Figure 8: Stubs Steel Wire Gage (British) `BoSC31.inc`

B.6 Steel Wire Gage

Gage	Size	Gage	Size	Gage	Size	Gage	Size
0 000 000	0.4900	8	0.1620	22	0.0286	37	0.0085
000 000	0.4615	9	0.1483	23	0.0258	38	0.0080
00 000	0.4305	10	0.1350	24	0.0230	39	0.0075
0 000	0.3938	11	0.1205	25	0.0204	40	0.0070
000	0.3625	12	0.1055	26	0.0181	41	0.0066
00	0.3310	13	0.0915	27	0.0173	42	0.0062
0	0.3065	14	0.0800	28	0.0162	43	0.0060
1	0.2830	15	0.0720	29	0.0150	44	0.0058
2	0.2625	16	0.0625	30	0.0140	45	0.0055
3	0.2437	17	0.0540	31	0.0132	46	0.0052
4	0.2253	18	0.0475	32	0.0128	47	0.0050
5	0.2070	19	0.0410	33	0.0118	48	0.0048
6	0.1920	20	0.0348	34	0.0104	49	0.0046
7	0.1770	21	0.0317	35	0.0095	50	0.0044

Table 8: Steel Wire Gage

[3]BoSC31SWG.inc 31 January 2026 16:59

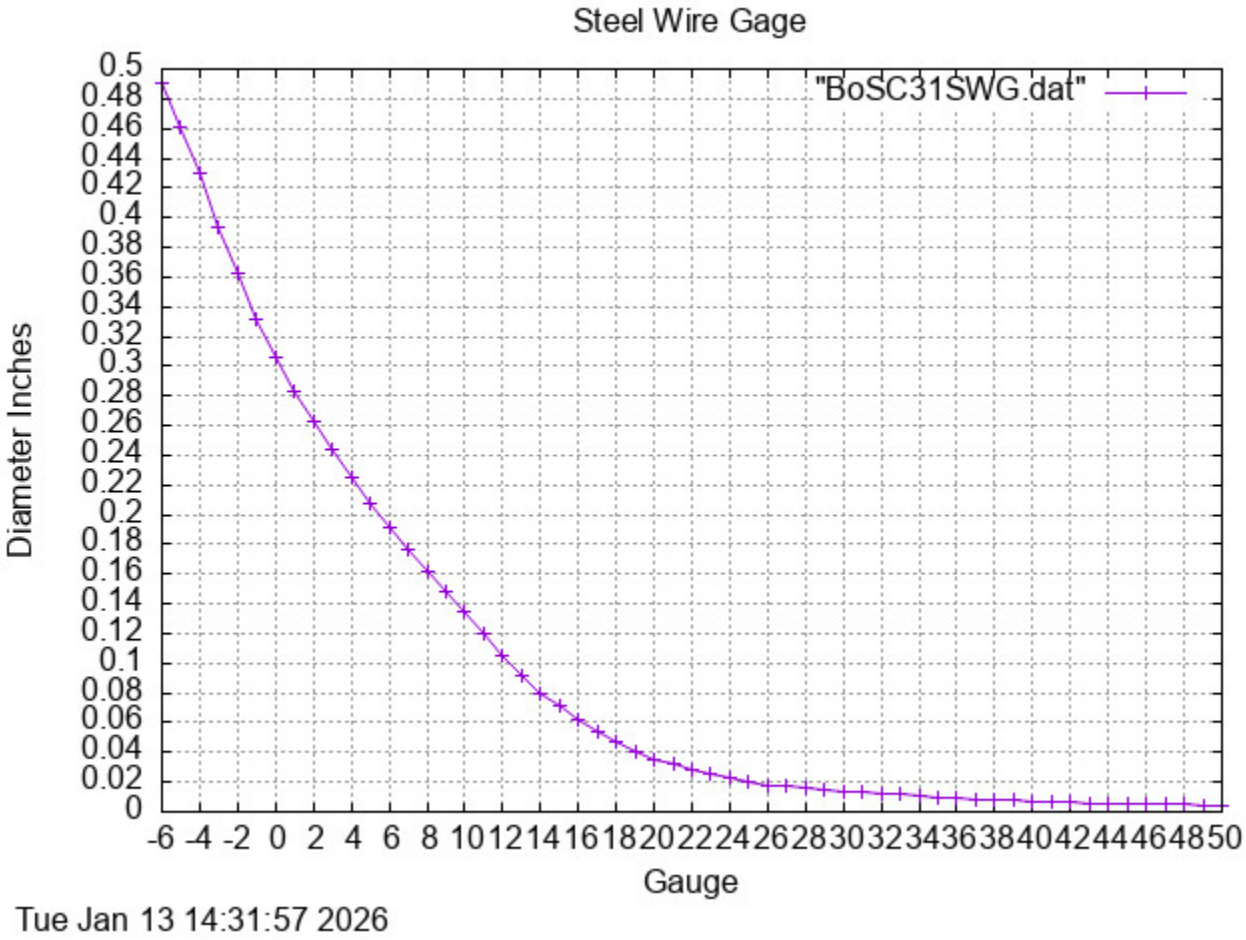

Figure 9: Steel Wire Gage `BoSC31.inc`

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