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# GUIDE TO SERIES OF BASIC SIZES FOR METAL SHEET, STRIP AND WIRE

B.S. 3737 : 1964

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BRITISH STANDARDS INSTITUTION



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**GUIDE TO  
SERIES OF BASIC SIZES  
FOR METAL SHEET,  
STRIP AND WIRE**

**B.S. 3737 : 1964**

Price 30/- net

**BRITISH STANDARDS INSTITUTION**

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THIS BRITISH STANDARD, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 30th May, 1964.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 4000, indexed and cross-indexed for reference, together with an abstract of each standard, will be found in the Institution's Yearbook, price 15s.

*British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.*

The following B.S.I. references relate to the work on this standard:  
Committee reference MEE/—/7      Draft for comment D 62/7993

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## CO-OPERATING ORGANIZATIONS

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Admiralty  
 Air Ministry  
 Associated Offices Technical Committee  
 Association of Consulting Engineers (Incorporated)  
 Association of Mining Electrical and Mechanical Engineers  
 British Chemical Plant Manufacturers' Association  
 British Compressed Air Society  
 \*British Electrical and Allied Manufacturers' Association  
 British Gear Manufacturers' Association  
 British Internal Combustion Engine Manufacturers' Association  
 \*British Iron and Steel Federation  
 British Mechanical Engineering Federation  
 British Railways Board  
 Crown Agents for Oversea Governments and Administrations  
 D.S.I.R.---National Engineering Laboratory  
 Electricity Council, the Generating Board and the Area Boards  
     in England and Wales  
 Engineering Equipment Users' Association  
 Gas Council  
 High Commission of India  
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 Institute of Petroleum  
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 Institution of Gas Engineers  
 Institution of Heating and Ventilating Engineers  
 Institution of Mechanical Engineers  
 Institution of Mechanical Engineers (Automobile Division)  
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 Machine Tool Trades Association  
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 Ministry of Power  
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 National Coal Board  
 National Physical Laboratory (D.S.I.R.)  
 Radio Industry Council  
 \*War Office

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this standard:

Board of Trade  
 British Non-Ferrous Metals Federation  
 Cold Rolled Steel Strip Association  
 Electronic Engineering Association  
 Institute of Iron and Steel Wire Manufacturers  
 Sheet Makers Conference  
 Telephone Manufacturers' Technical Development Committee  
 Woven Wire Association  
 Individual manufacturers of sheet metal and wire

BRITISH STANDARD

# GUIDE TO SERIES OF BASIC SIZES FOR METAL SHEET, STRIP AND WIRE

## FOREWORD

This guide has been prepared so that industry may have as clear a picture as possible of the standards adopted throughout the world for basic sizes for metal sheet, strip and wire.

An informatory document of this kind is thought to be desirable for several reasons. Many standard series have been used in the past in this country and elsewhere, and their use has become confused and obscure. During the time when this guide was being prepared, an ISO Recommendation was in preparation for a new series in millimetres for use throughout all metric system countries. The U.S.A. has adopted a new inch series for sheet and strip, which has also been adopted in Canada. It is important that the world situation should be understood by industry and that the use of the inch standards in this country should be clarified.

During investigations, which involved considerable research to discover even approximately what could be regarded as current practice in the different trades and countries, information was obtained from a variety of sources concerning past and present practice, and this is considered to be of sufficient interest to be included in this guide.

The main body of this guide summarizes theory and practice throughout the world and recommends series to be generally used in the United Kingdom. The summary is necessarily incomplete, but it may help to avoid confusion until such time as the less common sizes fade out of use. Some specialized series may continue to meet technical needs and some others may remain because it is not economic to change, but it is to be hoped that gradually a very large proportion of the series now in use will be abandoned as wasteful and unnecessary.

The history of the growth of these standards appears in Appendix C.

NOTE 1. The Imperial Standard Wire Gauge and certain Whitworth and Birmingham gauges had the status of Board of Trade standards under the Weights and Measures Act 1878, having been legalized respectively by Orders in Council dated 23rd August, 1883, 26th August, 1881 and 16th July, 1914. These Orders in Council lapsed on the coming into force of Parts I and II of the Weights and Measures Act 1963 on 31st January, 1964, and in consequence none of these gauges has had any legal status since that date.

NOTE 2. In this document the American spelling has been retained in references to U.S.A. Gage Series.

## GUIDE

### SCOPE

1. This guide contains information on theory and practice in the use of the basic sizes for metal sheet, strip and wire throughout the world. It includes the ISO metric preferred series for basic thicknesses of sheet and diameters of wire, together with the equivalent inch sizes. It also makes recommendations as to the series which should normally be used in the United Kingdom.

This guide is divided into four main sections:

*Section One.* General notes on theory and practice in the use of series of basic sizes for sheet, strip and wire.

*Section Two.* Recommended series for use in the United Kingdom.

*Section Three.* Summary of current series and their uses.

*Section Four.* Detailed notes relating to some of the more important series.

Three appendices have been included:

*Appendix A.* A note in explanation of the revised nomenclature for tinplate introduced on 30th December, 1963.

*Appendix B.* Information concerning nomenclature for tinplate.

*Appendix C.* Origin of gauges for wire, sheets and strip.

## SECTION ONE

### GENERAL NOTES ON THEORY AND PRACTICE IN THE USE OF SERIES OF BASIC SIZES FOR SHEET, STRIP AND WIRE

#### GAUGE SERIES

2. The standard series of basic sizes for sheet, strip and wire were originally 'gauge' series, e.g. the Standard Wire Gauge (SWG)\*. The sizes quoted were the sizes of a series of gap gauges, and these carried a distinguishing number, e.g. 20 SWG. A product fell within the size range described by 20 SWG if it would enter gauge Number 20 and would not enter the next smaller gauge, Number 21. The mean size of such products might therefore be expected to be somewhere near the mean of these two gauge sizes.

#### TOLERANCES

3. Tolerances have necessarily become smaller for many purposes, and the use of this elementary gauge system has lapsed. The series of sizes are now used as a series of basic sizes, analogous to the series of basic sizes recommended for design in B.S. 1916, 'Limits and fits for engineering', Part 2, 'Guide to the selection of fits'. (In the nature of the application, however, tolerances are applied directly to these sizes and they may be regarded as being also design sizes, in the sense of definition 0403, B.S. 2517, 'Definitions for use in mechanical engineering'.)

This guide is not directly concerned with tolerances; but only with the series of basic sizes, which, in conjunction with the standardized tolerances given in the relevant British Standards, can lead to an economical series of standardized products. It may be noted that tolerances are commonly applied bilaterally to the design sizes of these products, so that their mean size tends now to be near the basic size stated in the series.

#### DESIGN REQUIREMENTS

4. The needs of design vary greatly and no series of reasonable length can cover every possible case. The modern practice is to make series which contain more sizes than are needed for common uses and to arrange the series into two or more 'choices'.

For many purposes, a comparatively short first choice will meet most ordinary needs. Guidance on this is given, for each series, in Clause 10. It will be

\* The Order in Council of 23rd August, 1883, which legalized the Standard Wire Gauge (SWG) no longer has legal effect. (See Note 1 to the Foreword.)

found that the Renard series of preferred numbers, used for the ISO metric preferred series and the U.S. inch preferred series (ASA B32.1), is convenient in that the 10, 20 and 40 series form natural first, second and third choices.

#### WIRES

5. In view of the nature of tools used for wire production it is particularly desirable to establish a series of standard sizes as a matter of general economy.

A standard series may be inadequate to meet the whole of the wide range of possible applications of wire.

#### SHEET AND STRIP

6. Sheet and strip products are produced by adjustable rolls, so that the precise design size chosen for any large order may not have much effect on ease of production or time of delivery. A manufacturer who commonly orders material in large quantities will no doubt find it desirable to limit the range of sizes which he normally orders, but he will not be greatly affected by the series of sizes from which he selects. The situation may be different if small quantities of material are ordered. Restriction to the most commonly used sizes of the standard series is then desirable, if there is not to be undue risk of delay in obtaining material. It is likely to lead to the maximum economy if all users, large or small, use the standard series as far as possible.

#### IDENTIFICATION OF GAUGE SERIES

7. In the past, sizes of products made to a series have been identified by the numbers in that series, e.g. 20 SWG. To write simply '20 gauge' is clearly inadequate, when there may be several series which have identical number designations. The alternative is to identify the product by the basic size in inches or millimetres, as the case may be, and perhaps to add any existing number and letter designation to identify the series used. It is intended with the more modern series to use the basic size in this way as a nominal size. Provided this is a reasonably simple number, and it is clear whether inches or millimetres are implied, this is adequate. It must be realized, however, that the older series contain many sizes which are not simple numbers, and that many products are used outside ordinary engineering trades by persons who find the simple code numbers convenient.

#### INCH/MILLIMETRE CONVERSIONS

8. Table 1 includes the ISO metric preferred series and with it the equivalent inch sizes. Strictly, a basic size is a theoretical number which cannot properly be approximated when converting from one unit of size to another. The inch conversions of metric sizes given in the table are approximations so adjusted

that they would not seriously affect the permitted error of measurement with the smallest tolerance likely to be applied to any product. Much less accurate conversions might be justified with many common products. The proper method of converting the millimetre size of a product to inches is to compute the limits of size in millimetres and then to convert these to inches to an accuracy appropriate to the tolerance (see B.S. 2856, 'Precise conversion of inch and metric sizes on engineering drawings'). It may be noted that the practical tolerances are sometimes in units such as weight or resistance per stated area or length. The tolerances are small and, particularly with fine wires, all computations should be in the units appropriate to the series. The limits of size may then be converted as convenient.

## SECTION TWO

## RECOMMENDED SERIES FOR USE IN THE UNITED KINGDOM

## CHOICE OF SERIES

9. In view of the diversity of present usage throughout the world (see Section Three) there is a clear need to reduce to a minimum the number of series in use, and note should be taken of the increased attention now being given in this country to the possible adoption of metric units. In view of this, it is not appropriate at this time to make firm recommendations for future practice. However, the desire of many sections of industry to rationalize their present usage is acknowledged, although at the same time it is recognized that, for each section of industry, the circumstances to be taken into account in deciding what change to make will inevitably differ.

It is recommended that, in assessing the relative merits of alternative series, due regard should be paid to the following:

*a. Inch series.*

- (i) The Standard Wire Gauge (SWG)\* is the most commonly used series in the U.K.
- (ii) The Birmingham Gauge (BG)\* is used for carbon steel sheet.

NOTE. Attention is called to the fact that SWG and BG (and also BWG) are sometimes confused.

- (iii) The U.S. inch preferred series (ASA B32.1) is the recommended standard in the U.S.A. and in Canada for sheet and strip (see Table 2).

*b. ISO metric preferred series. ISO Recommendation R . . . †.*

NOTE. Series other than those referred to above should only be used to meet special requirements. A number of other series are in use in the U.K. and other countries. While some may meet special technical requirements, others are used only for various general purposes. In Section Three is a general review of current world practice for information.

## CHOICE OF SIZES

10. The SWG and BG series have more sizes than are needed for many general purposes. It has been customary in the past to regard the even numbered sizes, e.g. 20 SWG, as first choice and the odd numbered sizes, e.g. 19 SWG, as second choice. This practice is recommended.

For some purposes the number of sizes in the SWG series is inadequate, and it is sometimes necessary to select a third choice size. In such cases it is recommended for general purposes that a size equal to the arithmetic mean of two

\* The Orders in Council of 23rd August, 1883, and 16th July, 1914, legalizing the Standard Wire Gauge (SWG) and Birmingham Gauge (BG) respectively no longer have legal effect. (See Note 1 to the Foreword.)

† Not yet published. (Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.)

consecutive standard sizes should be used, e.g. 17 SWG is .056, 18 SWG is .048 and the arithmetic mean is .052. Such sizes should NOT be referred to as, say, 17½ SWG.

The ISO metric series contains the R10, R20 and R40 series of preferred numbers (see B.S. 1638\* and B.S. 2045†) and these are intended for use as first, second and third choices. It will be found that series for the coarser products can be selected from the R10 or R20 series. Finer products such as wire will require the R40 series. Need for finer steps of size than this is unlikely to arise, but if that should occur the use of the R80 series would be logical.

#### STATEMENT ON DRAWINGS, ETC.

11. It is recommended that as a matter of principle the basic size in decimals of an inch, or millimetres as the case may be, should be given on drawings, etc.

If there is any code letter or number, e.g. 20 SWG, this may also be stated, e.g.:

(i) .036

or (ii) .036 (20 SWG).

NOTE. It is recommended that in a written document, in order that no mistake may arise, the unit should be added thus: 0.036 in (20 SWG).

In the ISO metric preferred series, the code letter U (see ISO Recommendation R...‡) may be added to the decimal size in millimetres if desired, e.g.:

(i) 1.25 (on a drawing in millimetres)

or (ii) 1.25 U (on a drawing in millimetres)

or (iii) 1.25 mm (on a drawing otherwise in inches)

or (iv) 1.25 mm U (on a drawing otherwise in inches).

The method employed will depend upon the extent to which identification by the code number and letters is a convenience to those using the drawing or other document. The inclusion of the code number and letters has the advantage of making it clear that the size quoted is taken from a particular series. In some trades the code number and letters are used almost exclusively for identification of a particular size. Attention is called particularly to the fact that the code number, e.g. 20, should never be used without the appropriate letters, e.g. SWG. A statement such as '20 gauge' is meaningless.

\* B.S. 1638, 'Report on the selection of ranges of types and sizes (preferred numbers)'.

† B.S. 2045, 'Preferred numbers'.

‡ Not yet published. (Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.)

## SECTION THREE

## SUMMARY OF CURRENT SERIES AND THEIR USES

## GENERAL

12. This summary deals separately with current practice in the U.K., the Commonwealth countries, the U.S.A. and the countries which use the metric system. It is by no means exhaustive, but it should be helpful in giving a general idea of world practice and in identifying strange series. There is an index of the series mentioned in the summary (see pages 17, 18 and 19), with references to the countries in which they are used and to the appropriate clauses in the summary. This list of the series still in use may act as a useful indication of the extremely varied practice in the past, and as an encouragement to more co-ordinated practice in the future. It is true that some divergent practice may long remain in specialized fields, either because it is not economic to change or because there is a real need for a special series. At least it may be hoped that divergence will in future be as small as possible.

The principal series mentioned below are shown in full in the tables (see pages 16 to 50). The term 'non-ferrous' is used to cover the normal range of engineering metals such as aluminium, copper, brass, etc.

In addition to the practice shown below, there is in the inch using countries a widespread use of decimal inch sizes for sheet, strip and wire without necessarily any regard to series.

A detailed statement on the new nomenclature for tinplate, introduced on 30th December, 1963, is given in Appendix A. Information on the previous nomenclature for tinplate is given in Appendix B.

## PRACTICES IN THE UNITED KINGDOM

13. The main current practice is to use the following gauge series for the materials shown:

*a. Sheet.*

SWG\*: non-ferrous sheet and stainless steel sheet.

BG\*: mild steel sheet; flat galvanized sheet. (Corrugated galvanized sheet is specified on a weight basis in B.S. 3083, 'Hot-dipped galvanized corrugated steel sheets for general purposes'.)

NOTE. Attention is called to the fact that SWG and BG (and also BWG) are sometimes confused.

English Zinc Gauge: zinc sheet. (See B.S. 849, 'Plain sheet zinc roofing', Appendix A.) It is standard practice to quote also the nearest SWG number.

NOTE. For tinplate, see Appendices A and B.

\* The Orders in Council of 23rd August, 1883, and 16th July, 1914, legalizing the Standard Wire Gauge (SWG) and Birmingham Gauge (BG) respectively no longer have legal effect. (See Note 1 to the Foreword.)

*b. Strip.*

SWG: non-ferrous strip and steel strip.

BG: iron hoop and strip; saw-blade material.

*c. Wire.*

SWG: steel and non-ferrous wire.

The following series are among those used for special wires:

Card Wire Gauge\*

English Music Wire Gauge

Sewing and Darning Needle Series

Tapestry and Chenille Needle Series

Stitching Wire Gauge

Lancashire Pinion Wire Gauge

Birmingham Wire Gauge

Birmingham Wire Gauge for Silver and Gold

Stubs Steel Wire Gauge

Yorkshire Wire Gauge

Printers Wire Gauge

Manufacturing wires, e.g. for cold-heading and for rope-making, and wires for some special electrical uses, are commonly ordered to the decimal inch size required, without regard to series.

*d. Miscellaneous.*

SWG is used for the thickness of steel tubes and some non-ferrous tubes.

NOTE. Most non-metallic materials in the form of sheet, bar, etc., are standardized in their appropriate standards in size stated in fractional inches, decimal inches or millimetres as the case may be.

PRACTICES IN COMMONWEALTH COUNTRIES

14. The Commonwealth countries tend to follow U.K. practice, except that Canada follows the U.S.A., and that India is converting to metric measures.

*a. Australia.* SWG and BG are widely used as in the U.K.

The American Wire Gauge (AWG) is often used for electrical winding wires and sometimes for steel wires. The U.S. Steel Wire Gauge (USSWG†) is also used sometimes. The U.S. Manufacturers' Standard Gauge (MSG) has been adopted for sheet metal for containers. There is an intention to initiate work in Australia on the substitution of the decimal inch system based on preferred numbers in place of the gauge systems.

*b. Canada.* The U.S. inch preferred series (ASA B32.1) has been adopted for both ferrous and non-ferrous sheet and strip. The following gauge series are also used, for the materials shown:

U.S. Manufacturers' Standard Gauge (MSG): steel sheet.

\* See B.S. 3182, 'Healds, heald frames and reeds used in weaving natural and man-made fibre yarns'.

† Sometimes indicated as SWG.

U.S. Galvanized Sheet Gage (GSG): galvanized sheet.

American Wire Gage (AWG): wires; non-ferrous sheet.

c. *India.* SWG and BG are still largely used. India is preparing a metric series for all purposes, based on the ISO preferred number series. The use of inch series may continue for some time in parallel.

d. *New Zealand.* SWG and BG are mainly used.

#### PRACTICES IN U.S.A.

15. The U.S. inch preferred series (ASA B32.1) has for some years been the recommended series for general use for sheet and strip. It appears, however, that this has by no means supplanted the earlier practice, which was generally to use the following gauge series for the materials shown:

##### a. *Sheet and strip.*

U.S. Manufacturers' Standard Gage (MSG): iron and steel sheets and plates.

American Wire Gage (AWG), also known as Brown and Sharpe Wire Gage (B&S): non-ferrous sheet and strip.

U.S. Standard Gage (USG): stainless steel.

U.S. Galvanized Sheet Gage (GSG): galvanized sheet. (This gauge is on a weight per unit area basis.)

American Zinc Gage, also known as Mathieson and Hegeler Gage: zinc sheet.

Birmingham Wire Gauge (BWG): spring steel (narrow strip).

##### b. *Wire.*

AWG: non-ferrous wire; banding wire.

U.S. Steel Wire Gage (USSWG\*), also known as Steel Wire Gage, American Steel and Wire Co. Gage, National Wire Gage (NWG), Washburn and Moen Gage (WG) and Roebbing Wire Gage: steel wire.

American Steel and Wire Co. Music Wire Gage (MWG): music wire and steel spring wire 0.090 in and under.

NOTE. Three other music wire gauges are listed in a note under Table 6.

Twist Drill and Steel Wire Gage: twist drills.

Stubbs Steel Wire Gauge: steel drill rod.

BWG: iron and steel telephone wire.

##### c. *Miscellaneous.*

BWG: wall thickness of brass tubing.

AWG: wall thickness of brazed copper and brass tubes.

NOTE. Most non-metallic sheets, rods, etc., are quoted in fractions or decimals of an inch. Lead bar, sheet and wire are quoted in decimals of an inch.

\* Sometimes indicated as SWG.

PRACTICES IN COUNTRIES USING THE METRIC SYSTEM

16. In countries using the metric system it is the intention that the ISO metric preferred series (ISO Recommendation R...\*) should be used as the basis for all material sizes in this range (see Table 1).

A number of European specifications are now under revision, but the practice indicated below, mainly based on the German DIN series of sizes, is likely to be found for some time. These standards often contain 'gauge numbers', but identification is commonly by the size in millimetres quoted in a manner laid down in the particular standard. Reference to the appropriate DIN standard may therefore be necessary.

*a. Sheet and strip.* Sheet metal sizes are derived from the German Sheet Gauge (Deutsche Blechlehre). (See DIN 1541, DIN 1542 and DIN 1543.) Cold-rolled strip sizes are given in DIN 1544. BWG is often used for some types of steel strip and sheet and for copper sheet. It is also used for seamless tubes of steel, brass, copper and aluminium. In ISO Recommendation R221† the thicknesses for steel tubes are based on SWG.

The Continental Zinc Gauge (Deutsche Zinkblechlehre) is widely used.

*b. Wire.* Steel wire sizes were commonly based on the Metric Wire Gauge (also known as the Millimetre Wire Gauge—Millimeterdrahtlehre). DIN 177 now gives the diameters of steel wire (iron wire) in millimetres. (Diameters of bars in millimetres are given in DIN 59110.)

Copper wires are also made to a wide range of different series, including BWG, SWG, AWG and in some cases Jauge de Paris, although this French gauge is regarded as obsolete.

The New Westphalian Music Wire Gauge is used for music wire in Germany. There is also a French Music Wire Gauge.

PRACTICES IN SOUTH AFRICA

17. South Africa tends to follow U.K. practice, and SWG and BG are mainly used.

\* Not yet published. (Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.)

† ISO Recommendation R221, 'Steel tubes. Thicknesses'.

## INDEX OF GAUGE SERIES

| Name                                                                                | Abbreviation | Countries of principal use<br>References to Clause Nos.               |
|-------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------|
| ASA B32.1, 'Preferred thicknesses<br>for uncoated thin flat metals'<br>(Table 2)    |              | U.S.A. (15)<br>Canada (14b)                                           |
| American Steel and Wire Co. Gage                                                    |              | See USSWG (below)                                                     |
| American Steel and Wire Co.<br>Music Wire Gage (Table 6)                            | MWG          | U.S.A. (15b)                                                          |
| American Wire Gage (Table 2)<br>(Also known as Brown and Sharpe<br>Wire Gage (B&S)) | AWG          | U.S.A. (15a, b, c)<br>Canada (14b)<br>Australia (14a)<br>Europe (16b) |
| American Zinc Gage (Table 8)<br>(Also known as Mathieson and<br>Hegeler Gage)       |              | U.S.A. (15a)                                                          |
| Birmingham Gauge (Table 1)                                                          | BG           | U.K. (13a, b)<br>Commonwealth (14a, c, d)                             |
| Birmingham Wire Gauge (Table 3)                                                     | BWG          | U.K. (13c)<br>U.S.A. (15a, b, c)<br>Europe (16a, b)                   |
| Birmingham Wire Gauge for Silver<br>and Gold                                        |              | U.K. (13c)                                                            |
| Brown and Sharpe Wire Gage                                                          | B&S          | See AWG (above)                                                       |
| Card Wire Gauge                                                                     | CWG          | U.K. (13c)                                                            |
| Continental Zinc Gauge (Table 9)                                                    |              | Europe (16a)                                                          |
| Deutsche Blechlehre                                                                 |              | See German Sheet Gauge (below)                                        |
| Deutsche Zinkblechlehre                                                             |              | See Continental Zinc Gauge (above)                                    |
| English Music Wire Gauge<br>(Table 6)                                               |              | U.K. (13c)                                                            |
| English Zinc Gauge (Table 8)                                                        | ZG           | U.K. (13a)                                                            |

INDEX OF GAUGE SERIES (*continued*)

| Name                                                                       | Abbreviation | Countries of principal use<br>References to Clause Nos.         |
|----------------------------------------------------------------------------|--------------|-----------------------------------------------------------------|
| German Sheet Gauge (Table 4)                                               |              | Europe (16a)                                                    |
| ISO Metric Preferred Series<br>(Table 1)                                   |              | Europe (16)<br>India (14c)                                      |
| Jauge de Paris                                                             |              | Europe (16b)                                                    |
| Lancashire Pinion Wire Gauge<br>(Table 5)                                  | LPG          | U.K. (13c)                                                      |
| Mathieson and Hegeler Gage                                                 | M&H          | See American Zinc Gage (above)                                  |
| Millimetre Wire Gauge<br>(Millimeterdrahtlehre) (Table 4)                  |              | Europe (16b)                                                    |
| National Wire Gage                                                         | NWG          | See USSWG (below)                                               |
| New Westphalian Music Wire<br>Gauge (Table 7)                              |              | Europe (16b)                                                    |
| Printers Wire Gauge                                                        |              | U.K. (13c)                                                      |
| Roebing Wire Gage                                                          |              | See USSWG (below)                                               |
| Sewing and Darning Needle Series                                           |              | U.K. (13c)                                                      |
| Standard Wire Gauge (Table 1)                                              | SWG          | U.K. (13a, b, c, d)<br>Commonwealth (14a, c, d)<br>Europe (16b) |
| NOTE. On American drawings the USSWG<br>may sometimes be indicated as SWG. |              |                                                                 |
| Stitching Wire Gauge                                                       |              | U.K. (13c)                                                      |
| Stubs Iron Wire Gauge                                                      |              | Same as BWG                                                     |
| Stubs Steel Wire Gauge (Table 5)                                           |              | U.K. (13c)<br>U.S.A. (15b)                                      |
| Tapestry and Chenille Needle Series                                        |              | U.K. (13c)                                                      |
| Tinplate                                                                   |              | (See Appendices A and B)                                        |

INDEX OF GAUGE SERIES (*continued*)

| Name                                                                                                                                                                                                                                                                        | Abbreviation | Countries of principal use<br>References to Clause Nos.                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------|
| Twist Drill and Steel Wire Gage                                                                                                                                                                                                                                             |              | U.S.A. (15 <i>b</i> )                                                      |
| U.S. Galvanized Sheet Gage                                                                                                                                                                                                                                                  | GSG          | U.S.A. (15 <i>a</i> )<br>Canada (14 <i>b</i> )                             |
| U.S. Manufacturers' Standard<br>Gage (Table 3)                                                                                                                                                                                                                              | MSG          | U.S.A. (15 <i>a</i> )<br>Canada (14 <i>b</i> )<br>Australia (14 <i>a</i> ) |
| U.S. Standard Gage (Table 3)                                                                                                                                                                                                                                                | USG          | U.S.A. (15 <i>a</i> )                                                      |
| U.S. Steel Wire Gage (Table 2)<br>(Also known as Steel Wire Gage<br>(SWG), American Steel and Wire<br>Co. Gage, National Wire Gage<br>(NWG), Washburn and Moen<br>Gage (WG) and Roebling Wire<br>Gage)<br>NOTE. On American drawings this gauge<br>may be indicated as SWG. | USSWG        | U.S.A. (15 <i>b</i> )<br>Australia (14 <i>a</i> )                          |
| Washburn and Moen Gage                                                                                                                                                                                                                                                      | WG           | See USSWG (above)                                                          |
| Yorkshire Wire Gauge                                                                                                                                                                                                                                                        |              | U.K. (13 <i>c</i> )                                                        |

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TABLE 1 (see also Clauses 9 and 16)

| Standard Wire Gauge (SWG) |             | Birmingham Gauge (BG) |             | ISO Metric Preferred Series* |        |        |                           |
|---------------------------|-------------|-----------------------|-------------|------------------------------|--------|--------|---------------------------|
| in                        | Gauge No. † | in                    | Gauge No. † | R10 mm                       | R20 mm | R40 mm | Inch value of metric size |
| —                         | —           | —                     | —           | 0.020                        | 0.020  | 0.020  | 0.000 79                  |
| —                         | —           | —                     | —           | —                            | —      | 0.021  | 0.000 83                  |
| —                         | —           | —                     | —           | —                            | 0.022  | 0.022  | 0.000 87                  |
| —                         | —           | —                     | —           | —                            | —      | 0.024  | 0.000 94                  |
| —                         | —           | 0.000 95              | 52          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.025                        | 0.025  | 0.025  | 0.000 98                  |
| 0.001 0                   | 50          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.026  | 0.001 02                  |
| —                         | —           | 0.001 07              | 51          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.028  | 0.028  | 0.001 10                  |
| —                         | —           | —                     | —           | —                            | —      | 0.030  | 0.001 18                  |
| 0.001 2                   | 49          | 0.001 20              | 50          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.032                        | 0.032  | 0.032  | 0.001 26                  |
| —                         | —           | —                     | —           | —                            | —      | 0.034  | 0.001 34                  |
| —                         | —           | 0.001 35              | 49          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.036  | 0.036  | 0.001 42                  |
| —                         | —           | —                     | —           | —                            | —      | 0.038  | 0.001 50                  |
| —                         | —           | 0.001 52              | 48          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.040                        | 0.040  | 0.040  | 0.001 58                  |
| 0.001 6                   | 48          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.042  | 0.001 65                  |
| —                         | —           | 0.001 70              | 47          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.045  | 0.045  | 0.001 77                  |
| —                         | —           | —                     | —           | —                            | —      | 0.048  | 0.001 89                  |
| —                         | —           | 0.001 92              | 46          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.050                        | 0.050  | 0.050  | 0.001 97                  |
| 0.002 0                   | 47          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.053  | 0.002 09                  |
| —                         | —           | 0.002 15              | 45          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.056  | 0.056  | 0.002 20                  |
| —                         | —           | —                     | —           | —                            | —      | 0.060  | 0.002 36                  |
| 0.002 4                   | 46          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.002 42              | 44          | —                            | —      | —      | —                         |

\* Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.

† See the recommendation in Clause 11 regarding the method of statement on drawings, etc.

TABLE 1 *continued* (see also Clauses 9 and 16)

| Standard Wire Gauge (SWG) |             | Birmingham Gauge (BG) |             | ISO Metric Preferred Series* |        |        |                           |
|---------------------------|-------------|-----------------------|-------------|------------------------------|--------|--------|---------------------------|
| in                        | Gauge No. † | in                    | Gauge No. † | R10 mm                       | R20 mm | R40 mm | Inch value of metric size |
| —                         | —           | —                     | —           | 0.063                        | 0.063  | 0.063  | 0.002 48                  |
| —                         | —           | —                     | —           | —                            | —      | 0.067  | 0.002 64                  |
| —                         | —           | 0.002 72              | 43          | —                            | —      | —      | —                         |
| 0.002 8                   | 45          | —                     | —           | —                            | 0.071  | 0.071  | 0.002 80                  |
| —                         | —           | —                     | —           | —                            | —      | 0.075  | 0.002 95                  |
| —                         | —           | 0.003 06              | 42          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.080                        | 0.080  | 0.080  | 0.003 15                  |
| 0.003 2                   | 44          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.085  | 0.003 35                  |
| —                         | —           | 0.003 43              | 41          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.090  | 0.090  | 0.003 54                  |
| 0.003 6                   | 43          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.095  | 0.003 74                  |
| —                         | —           | 0.003 86              | 40          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.100                        | 0.100  | 0.100  | 0.003 94                  |
| 0.004 0                   | 42          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.106  | 0.004 17                  |
| —                         | —           | 0.004 3               | 39          | —                            | —      | —      | —                         |
| 0.004 4                   | 41          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.112  | 0.112  | 0.004 41                  |
| —                         | —           | —                     | —           | —                            | —      | 0.118  | 0.004 65                  |
| 0.004 8                   | 40          | 0.004 8               | 38          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.125                        | 0.125  | 0.125  | 0.004 92                  |
| 0.005 2                   | 39          | —                     | —           | —                            | —      | 0.132  | 0.005 20                  |
| —                         | —           | 0.005 4               | 37          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.140  | 0.140  | 0.005 52                  |
| —                         | —           | —                     | —           | —                            | —      | 0.150  | 0.005 91                  |
| 0.006 0                   | 38          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.006 1               | 36          | —                            | —      | —      | —                         |

\* Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.

† See the recommendation in Clause 11 regarding the method of statement on drawings, etc.

TABLE 1 *continued* (see also Clauses 9 and 16)

| Standard Wire Gauge (SWG) |             | Birmingham Gauge (BG) |             | ISO Metric Preferred Series* |        |        |                           |
|---------------------------|-------------|-----------------------|-------------|------------------------------|--------|--------|---------------------------|
| in                        | Gauge No. † | in                    | Gauge No. † | R10 mm                       | R20 mm | R40 mm | Inch value of metric size |
| —                         | —           | —                     | —           | 0.160                        | 0.160  | 0.160  | 0.006 30                  |
| —                         | —           | —                     | —           | —                            | —      | 0.170  | 0.006 69                  |
| 0.006 8                   | 37          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.006 9               | 35          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.180  | 0.180  | 0.007 09                  |
| —                         | —           | —                     | —           | —                            | —      | 0.190  | 0.007 48                  |
| 0.007 6                   | 36          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.007 7               | 34          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.200                        | 0.200  | 0.200  | 0.007 87                  |
| —                         | —           | —                     | —           | —                            | —      | 0.212  | 0.008 35                  |
| 0.008 4                   | 35          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.008 7               | 33          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.224  | 0.224  | 0.008 82                  |
| 0.009 2                   | 34          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.236  | 0.009 29                  |
| —                         | —           | 0.009 8               | 32          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.250                        | 0.250  | 0.250  | 0.009 84                  |
| 0.010 0                   | 33          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.265  | 0.010 43                  |
| 0.010 8                   | 32          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.011 0               | 31          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.280  | 0.280  | 0.011 02                  |
| 0.011 6                   | 31          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.300  | 0.011 81                  |
| —                         | —           | 0.012 3               | 30          | —                            | —      | —      | —                         |
| 0.012 4                   | 30          | —                     | —           | 0.315                        | 0.315  | 0.315  | 0.012 40                  |
| 0.013 6                   | 29          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.335  | 0.013 19                  |
| —                         | —           | 0.013 9               | 29          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.355  | 0.355  | 0.013 98                  |
| —                         | —           | —                     | —           | —                            | —      | 0.375  | 0.014 76                  |
| 0.014 8                   | 28          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.015 625             | 28          | —                            | —      | —      | —                         |

\* Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.

† See the recommendation in Clause 11 regarding the method of statement on drawings, etc.

TABLE 1 *continued* (see also Clauses 9 and 16)

| Standard Wire Gauge (SWG) |             | Birmingham Gauge (BG) |             | ISO Metric Preferred Series* |        |        |                           |
|---------------------------|-------------|-----------------------|-------------|------------------------------|--------|--------|---------------------------|
| in                        | Gauge No. † | in                    | Gauge No. † | R10 mm                       | R20 mm | R40 mm | Inch value of metric size |
| —                         | —           | —                     | —           | 0.400                        | 0.400  | 0.400  | 0.015 75                  |
| 0.016 4                   | 27          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.425  | 0.016 73                  |
| —                         | —           | 0.017 45              | 27          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.450  | 0.450  | 0.017 72                  |
| 0.018                     | 26          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.475  | 0.018 70                  |
| —                         | —           | 0.019 1               | 26          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.500                        | 0.500  | 0.500  | 0.019 69                  |
| 0.020                     | 25          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.530  | 0.020 87                  |
| 0.022                     | 24          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.022 04              | 25          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.560  | 0.560  | 0.022 05                  |
| —                         | —           | —                     | —           | —                            | —      | 0.600  | 0.023 62                  |
| 0.024                     | 23          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | 0.024 76              | 24          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.630                        | 0.630  | 0.630  | 0.024 80                  |
| —                         | —           | —                     | —           | —                            | —      | 0.670  | 0.026 38                  |
| —                         | —           | 0.027 82              | 23          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.710  | 0.710  | 0.027 95                  |
| 0.028                     | 22          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.750  | 0.029 53                  |
| —                         | —           | 0.031 25              | 22          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | 0.800                        | 0.800  | 0.800  | 0.031 50                  |
| 0.032                     | 21          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.850  | 0.033 46                  |
| —                         | —           | 0.034 9               | 21          | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | 0.900  | 0.900  | 0.035 43                  |
| 0.036                     | 20          | —                     | —           | —                            | —      | —      | —                         |
| —                         | —           | —                     | —           | —                            | —      | 0.950  | 0.037 40                  |
| —                         | —           | 0.039 2               | 20          | —                            | —      | —      | —                         |

\* Draft ISO Recommendation No. 324, 'International metric series for basic thicknesses of sheet and diameters of wire'.

† See the recommendation in Clause 11 regarding the method of statement on drawings, etc.