BRITISH STANDARD

BS 2856:1973

Precise conversion of inch and metric sizes on engineering drawings

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Contents

Foreword

In the conversion of inch and metric sizes on engineering drawings, it is necessary to employ a standard procedure which will give the essential accuracy required for precise dimensional interchangeability. This standard, which was first published in 1957, gives the conversion procedure recommended for this purpose; it is based on a paper prepared by Mr L. W. Nickols, of the Department of Trade and Industry: National Physical Laboratory, who had been associated with the late Mr J. E. Sears, CBE, in this work.

Due to the widespread use of this standard since its first publication it has been decided that the revision should be kept to a minimum. The changes which have been made are, first to correct certain inaccuracies which occurred in the text and secondly to align the document with the revision of BS 308, *"Engineering drawing practice",* published in 1972. The conversion of sizes in work of a very high accuracy has been simplified by the adoption of 1 inch = 25.4 millimetres as an exact conversion factor by the USA and the UK.

This standard, which is in agreement with ISO Recommendation R 370, *"Conversion of toleranced dimensions from inches into millimetres and vice versa",* has been prepared under the authority of the Mechanical Engineering Industry Standards Committee.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Scope

This British Standard provides a procedure for conversion which will give the essential accuracy required for precise dimensional interchangeability.

The standard lays down an optimum fineness of rounding the converted size so that the conversion is made with the required precision and, at the same time, an excessive number of decimal places in the converted size is avoided. The procedure adopted is designed to ensure correct acceptance or rejection of a component, with respect to sizes, whether manufactured in one system of units or the other, provided that the methods of measurement used in the two systems are of comparable accuracy.

The conversion factor used
is: 1 inch = 25.4 millimetres.

This conversion factor is exact. It results from the legal definition of the yard in terms of the metre adopted by the USA in 1959 and by the UK in the Weights and Measures Act 1963. The values given in the tables in Appendix A are taken to a sufficient number of decimal places to cover the finest rounding required by the rules for conversion of inch and millimetre sizes.

Introduction

The inter-conversion of inch and metric sizes is of great importance to trade. Such conversions may be intended 1) to provide equivalent nominal designations or 2) to achieve functional interchangeability.

1) **Equivalent nominal designations.** Approximate corresponding values are usually sufficient. The degree of approximation depends on the purpose of the conversion. Thus, bar stock for machining may be defined as "1 in (25 mm) round bar"; and a watering can may be specified as having a "2 gallon (9 litre) capacity". No rule can be given for this type of conversion.

2) **Functional interchangeability.** The requirement of functional interchangeability necessitates more accurate conversion than in 1), the degree of accuracy again depending on the type of function which the article is called upon to perform. There are two categories to be considered:

a) *Where sufficient latitude is given to enable existing near sizes or combinations of sizes in either system of measurement to be used without affecting functioning.* Thus, a shackle pin 10 mm in diameter may generally be used instead of a ⅜ in diameter shackle pin without affecting functioning; and a sheet metal cover of nominal thickness 0.036 in, formerly known as 20 SWG, can be specified as 1 mm.

In an example taken from BS 1916-1, a hole and shaft combination selected from the inch tables to give a certain "fit" (e.g. H7 – g6) is functionally interchangeable, as far as "fit" is concerned, with the corresponding combination selected from the metric tables of BS 4500, even where the sizes are not exactly equivalent in both systems of measurement.

No definite rules can be laid down for this category.

b) *Where components manufactured to the two systems of units are required to be within certain precise limits of size in order to be dimensionally as well as functionally interchangeable.* Such components are mainly met with in general engineering drawings when firms which have established manufacturing or assembly plants in other countries find it necessary to re-dimension their engineering drawings in the system of units used in those countries.

The difficulty encountered for such conversions of sizes arises when it is necessary to ensure that component parts acceptable when inspected to a drawing dimensioned in one system of units are not rejected when inspected to the corresponding drawing dimensioned in the other system of units. Such dimensional interchangeability can, of course, be maintained by making the conversion to a very high degree of accuracy, i.e. by calculating the converted size to a large number of decimal places; but there is little justification in the use of a number of decimal places not warranted by the available data, and too many decimal places in the converted size become an embarrassment in practical use.

Basis of conversion procedure

The converted sizes are rounded to an accuracy better than that to which it is possible or necessary to measure the original sizes in practice. Effective dimensional interchangeability of components made respectively to the original and to the converted sizes is thereby secured, and no inspection discrepancies or functional troubles are likely to arise if due account is taken of the accuracy of the method of measurement used, which is assumed to be the same for the inch and metric measurements. The accuracy of inspection of a dimension, whether by gauging or measurement, is not entirely dependent on the basic accuracy of the means of inspection employed but is affected to a considerable extent by such factors as the nominal size, the quality of surface finish and the errors of geometric form of the feature being measured.

The conversion procedure is based on the assumption that the highest practicable accuracy of measurement of a dimension is closely related to the stated or implied tolerance on the dimension, as this tolerance is related to the surface finish and to errors of geometric form, and is itself dependent on the nominal size of the dimension.

The required dimensional interchangeability can be obtained by rounding the converted size to the nearest 5 % of the tolerance on the component. The maximum difference in size between the original and the converted limits will then be not more than 2.5 % of the tolerance.

Recommended conversion procedure

The recommended procedure is to follow in turn a short sequence of rules covering successive steps in the conversion. These rules are set out on later pages. By following them no difficulty should arise in converting sizes expressed in inch units into their metric equivalents, or vice versa, to the required accuracy.

Associated with these rules are Table 1 and Table 2 showing the recommended fineness of rounding the converted sizes corresponding to a particular tolerance. The tolerances considered have been grouped into different ranges as shown in the tables. In doing so, it has been necessary to depart from the strict basis given above in order to obtain a reasonably simplified procedure; but the grouping has been so arranged that no additional loss of accuracy is introduced.

The case of a simple feature is dealt with first, and the recommended procedure is then applied to the more difficult case of a group of simple features which have to conform to a definite positional relationship with one another, e.g. the bolt holes in a flange are simple features having sizes which must lie between specified limits, and, in addition, the position of each hole in relation to the others in the group is specified. A recommended procedure for the conversion of datum dimensions is also given. Dimensions of this type, though not carrying tolerances, are often related to some requirements involving tolerances.

Procedure for the conversion of untoleranced dimensions, including dimensions not covered by a general tolerance note on the drawing and dimensions given as maximum or minimum values, is also given.

Tables of conversion from inches to millimetres, and vice versa, are included to facilitate the work (see Appendix A).

Table 1 — Conversion of inch sizes to millimetre sizes

1	2	3
Original tolerance in inches		**Fineness of rounding. Derived millimetre sizes to be rounded to the nearest:**
From	**Up to but not including**	
in	in	mm
0.000 01	0.000 1	0.000 01
0.000 1	0.001	0.000 1
0.001	0.01	0.001
0.01	0.1	0.01
0.1	1	0.1

Table 2 — Conversion of millimetre sizes to inch sizes

1	2	3
Original tolerance in millimetres		**Fineness of rounding. Derived inch sizes to be rounded to the nearest:**
From	**Up to but not including**	
mm	mm	in
0.000 5	0.005	0.000 001
0.005	0.05	0.000 01
0.05	0.5	0.000 1
0.5	5	0.001
5	50	0.01

In Table 1 and Table 2, the maximum error in conversion, expressed as a percentage of the values in Columns 1 and 2, lies within 2.5 % and 0.25 %.

Rules for the conversion of inch and millimetre sizes

Case 1. Simple features having two limits of size

RULE 1. From the tolerance on the feature, by means of Table 1 or Table 2, determine the fineness of rounding the converted value and accordingly the number of decimal places to be retained therein.

When the tolerance is not given directly on the drawing it should be derived by subtracting the minimum limit of size from the maximum limit of size.

RULE 2. Convert the two limits of size in one system of units into the equivalent limits of size in the other system of units, using the conversion factor 1 in = 25.4 mm and retaining temporarily two more decimal places than the final number of places determined by Rule 1. (See Appendix A).

If the two limits of size are not directly stated on the drawing they should be derived. Thus, for a dimension stated as $1.600\ ^{-0.001}_{-0.002}$ in the limits of size are 1.599 in and 1.598 in.

Conversion to the required accuracy can be carried out, with the help of the tables in Appendix A, by simple addition and subtraction of the component parts of a size. Thus, for a size of 15.344 mm converted accurately to seven decimal places:

15 mm	=	0.590 551 2 in
0.34	=	0.013 385 8
0.004	=	0.000 157 5
		0.604 094 5 in

For a size 15.996 mm:

16 mm	=	0.629 921 3 in
– 0.004	=	– 0.000 157 5
		0.629 763 8 in

From these converted values the requirements of Rules 1 and 2 can be met.

RULE 3. Round the converted limits of size obtained by Rule 2 to the fineness determined from Rule 1, choosing the rounded value that is nearest the unrounded value. (See BS 1957).

It is unimportant whether the rounded value falls inside or outside the unrounded converted limits.

If the unrounded value determined from Rule 2 falls exactly midway between two adjacent rounded values, choose the even rounded value. For example, if the unrounded value is 12.012 50 and the fineness of rounding is 0.001, then the rounded value is 12.012. If the unrounded value is 12.013 50, then the rounded value is 12.014.

Example 1. Conversion into millimetres of a toleranced dimension

$1\ ^{+0.0008}_{0}$ in

The limits of size in inches are 1.0000 in and 1.0008 in.

By Rule 1, the recommended fineness of rounding obtained from Column 3 of Table 1 for a tolerance of 0.0008 in is 0.0001 mm.

By Rule 2, the limits of size in millimetres to six decimal places, i.e. two more places than the final number of places determined by Rule 1, are:

1.0000 × 25.4 = 25.400 000 mm

1.0008 × 25.4 = 25.420 320 mm

By Rule 3, the millimetre limits of size are rounded to the nearest 0.0001 mm, giving the values of 25.4000 mm and 25.4203 mm,

i.e. $25.4\ ^{+0.0203}_{0}$ mm

Example 2. Conversion into inches of a toleranced dimension

15.994 mm

15.983

By Rule 1, the recommended fineness of rounding obtained from Column 3 of Table 2 for a tolerance of 0.011 mm is 0.000 01 in.

By Rule 2, the limits of size in inches to seven decimal places, i.e. two more places than the final number of places determined by Rule 1, are:

15.994 ÷ 25.4 = 0.629 685 0 in

15.983 ÷ 25.4 = 0.629 252 0 in

By Rule 3, the inch limits of size are rounded to the nearest 0.000 01 in giving the values 0.629 68 in and 0.629 25 in.

Case 2. Groups of simple positional features

Each group consists of a number of simple features, such as holes or pins, the sizes of which are toleranced in the normal way. These sizes are converted as described in Case 1. In addition, the relative positions of the simple features with respect to each other are toleranced. When only two features have to be related to each other, a tolerance is usually applied to the centre distance defining the true positions of the features. When more than two features are concerned, a geometrical positional tolerance is applied to the true positions of the features. A "geometrical" tolerance is defined as "the maximum permissible overall variation of form or position of a feature about the theoretical true form or position of the feature as shown on the drawing". In other words, it is the width or diameter of a tolerance zone within which the surface, or the middle plane or axis of the feature, is to lie. These principles of tolerancing are described in BS 308-3.

For positional features having toleranced centre distances, the toleranced centre distance is converted in the same way as the limits of size of a feature, using Rules 1, 2 and 3 and Table 1 and Table 2.

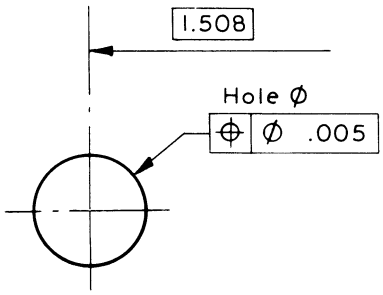
For positional features having geometrical positional tolerances, Rules 4, 5 and 6 apply.

RULE 4. From the geometrical tolerance on the positional feature, by means of Table 1 or Table 2, determine the fineness of rounding the converted positional dimension and the tolerance, and accordingly the number of decimal places to be retained therein.

RULE 5. Convert the geometrical tolerance and the positional dimensions defining the true positions of the features to two more decimal places than the final number of places determined by Rule 4, using the conversion factor 1 in = 25.4 mm. (See Appendix A.)

RULE 6. Round the converted geometrical tolerances and positional dimensions obtained by Rule 5 to the fineness determined from Rule 4, choosing the rounded value that is nearest the unrounded value. (See under Rule 3.)

Example 3. Conversion into millimetres of a positional tolerance and dimension



The above method of dimensioning, recommended in BS 308-3, means that the true position of a certain feature (the hole) is located by a dimension 1.508 inches (True Position) and the axis of the feature is allowed to depart from that true position providing it lies within a 0.005 inch diameter cylindrical tolerance zone, centred on the true position.

By Rule 4, the recommended fineness of rounding obtained from Column 3 of Table 1 for a tolerance of 0.005 in is 0.001 mm.

By Rule 5, the converted sizes of the 1.508 in dimension and the 0.005 in tolerance, expressed in millimetres to five decimal places, i.e. two more places than the final number determined by Rule 4, are:

$1.508 \times 25.4 = 38.303\ 20$ mm

$0.005 \times 25.4 = \ \ 0.127\ 00$ mm

By Rule 6, the converted sizes are rounded to the nearest 0.001 mm, giving the values 38.303 mm for the 1.508 in dimension and 0.127 mm for the 0.005 in geometrical tolerance.

Case 3. Datum dimensions

The use of these dimensions on drawings of tapered features is described in BS 308-2. A datum dimension is a theoretically exact dimension here used to define the diameter or width of a tapered feature in a plane which is located by a toleranced dimension; it is itself without tolerance and to indicate this the dimension is enclosed in a box (see Figure 1a). Alternatively the datum plane may be located by a datum dimension, and the diameter or width of the tapered feature in the datum plane is toleranced (see Figure 1b).

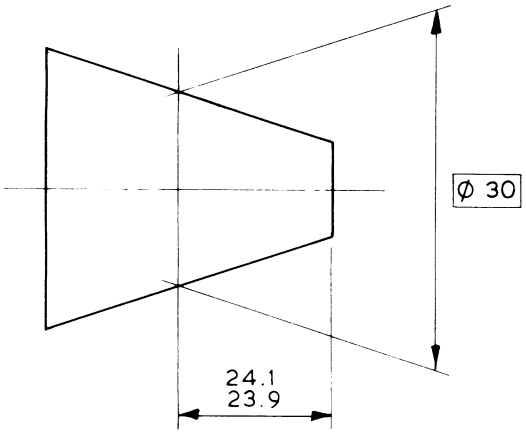


Figure 1a

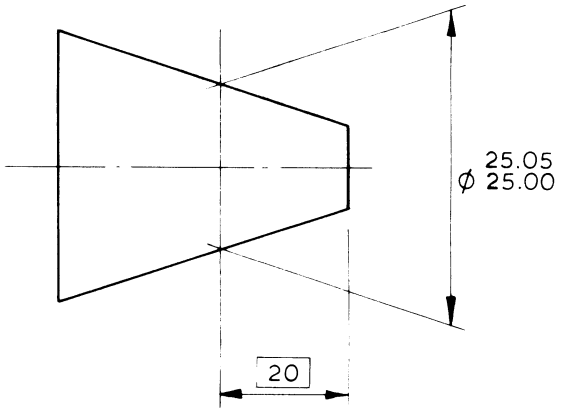


Figure 1b

Figure 1 — Examples of datum dimensions

When converting datum dimensions from one system of units to the other, care should be taken to ensure that the errors of this conversion do not add to those arising from the conversion of the associated toleranced dimensions. Rules 7 to 11 help to avoid such accumulation of errors.

RULE 7. Convert the datum dimension to six decimal places in inches or five decimal places in millimetres.

RULE 8. Round this converted dimension to four decimal places in inches or three decimal places in millimetres.

RULE 9. Write down the difference between the unrounded and rounded values.

RULE 10. Calculate the variation in the associated toleranced dimension caused by the difference between the unrounded and rounded values of the converted datum dimension.

If the datum dimension is a diameter or width, the equivalent length variation is found by dividing the difference by the rate of taper. If the datum dimension is a length, the equivalent diameter or width variation is found by multiplying the difference by the rate of taper. (See Example 4.)

RULE 11. Convert the associated toleranced dimension, using the procedure outlined in Case 1 and making an adjustment to allow for the variation found by Rule 10 before rounding.

Example 4. Conversion into inches of a datum diameter. Conversion of a datum diameter of 4.5 mm in a plane at a toleranced distance 25.0/24.8 mm from the small diameter end of a tapered feature. The rate of taper is 1 : 50 on diameter.

By Rule 7, the size of the datum diameter in inches to six decimal places is:

$4.4 \div 25.4 = 0.177\ 165$ in

By Rule 8, the size in inches is rounded to four decimal places, giving the value 0.1772 in.

By Rule 9, the difference between the unrounded and rounded values is 0.000 035 in.

By Rule 10, a difference of 0.000 035 inch in diameter is equivalent to a change of $0.000\ 035 \times 50 = 0.001\ 750$ inch in the distance from the small end.

By Rule 11, convert the toleranced distance 25.0/24.8 mm in accordance with the procedure given in Case 1.

Using the data obtained by applying Rules 7 to 11:

a) For a tolerance of 0.2 mm, the fineness of rounding given in Table 2 is 0.0001 in.

b) The converted unrounded values are:

$25.0\ \text{mm} \div 25.4 = 0.984\ 252$ in

$24.8\ \text{mm} \div 25.4 = 0.976\ 378$ in

c) The converted rounded datum diameter 0.1772 in is larger than its unrounded value. As the distance of the datum plane is given from the small diameter end of the tapered feature, this distance must be *increased* to correspond to the *increase* of datum diameter on being rounded. The converted unrounded values in *b* above should be adjusted, therefore, by *adding* the value obtained by Rule 10, and should then be rounded. The corrected unrounded limits are:

$0.984\ 252 + 0.001\ 750 = 0.986\ 002$ in

$0.976\ 378 + 0.001\ 750 = 0.978\ 128$ in

d) The corrected unrounded limits are rounded to the nearest 0.0001 in, giving:

0.9860 in

0.9781

The 4.5 mm datum diameter at a toleranced distance 25.0/24.8 mm from the small diameter end of the tapered feature is therefore converted into a 0.1772 in datum diameter at a toleranced distance 0.9860/0.9871 in from the small diameter end.

Case 4. Untoleranced dimensions (excluding positional and datum dimensions)

These dimensions include dimensions not covered by a general tolerance note on the drawing and dimensions given as maximum or minimum values. They are generally of secondary importance and discretion may be used in rounding the converted values. A procedure for converting these dimensions that may be found suitable in most cases is first to express the original size in decimals to a number of places consistent with the expected degree of accuracy on the assumption that the size is required to be accurate to within ± 0.5 of the unit in the last decimal place, i.e. the assumed tolerance is the unit in the last decimal place. For example, it may be assumed that a 0.38 untoleranced dimension is required to be accurate to 0.38 ± 0.005, the tolerance being 0.01. The sizes are then converted and rounded as before. The correct number of decimal places to which the original size should be expressed is determined from the functioning and manufacturing requirements, and it may be necessary to refer to the drawing of the mating component before deciding the number of decimal places. Great care should be exercised when converting untoleranced decimal sizes which themselves are decimal conversions of fractional dimensions. In certain cases these sizes may have been given on the drawing to an unnecessarily large number of decimal places.

Example 5. Conversion into millimetres of an untoleranced dimension 0.06 in chamfer at 45°. The chamfer has to clear a 0.04 in radius on the mating component. If it is assumed that the chamfer and radius are required to be accurate to within ± 0.5 of the unit in the last decimal place, then the assumed accuracy is ± 0.005 inch in each case. A 0.06 ± 0.005 in chamfer and a 0.04 ± 0.005 in radius will not interfere when the mating components are assembled, so functioning will not be affected.

By Rule 1, the recommended fineness of rounding obtained from Column 3 of Table 1 for a tolerance of 0.01 in is 0.01 mm.

By Rule 2, the size in millimetres to four decimal places, i.e. two decimal places beyond the two decimal places determined by Rule 1, is:

$0.06 \times 25.4 = 1.5240$ mm

By Rule 3, the millimetre size is rounded to the nearest 0.01 mm, giving the value 1.52 mm.

Appendix A Conversion tables

Inches to millimetres

Basis: 1 in = 25.4 mm (exactly). All values in this table are exact.

	inch	millimetre		inch	millimetre
1/64	0.015 625	0.396 875	33/64	0.515 625	13.096 875
1/32	0.031 250	0.793 750	17/32	0.531 250	13.493 750
3/64	0.046 875	1.190 625	35/64	0.546 875	13.890 625
1/16	0.062 500	1.587 500	9/16	0.562 500	14.287 500
5/64	0.078 125	1.984 375	37/64	0.578 125	14.684 375
3/32	0.093 750	2.381 250	19/32	0.593 750	15.081 250
7/64	0.109 375	2.778 125	39/64	0.609 375	15.478 125
1/8	0.125 000	3.175 000	5/8	0.625 000	15.875 000
9/64	0.140 625	3.571 875	41/64	0.640 625	16.271 875
5/32	0.156 250	3.968 750	21/32	0.656 250	16.668 750
11/64	0.171 875	4.365 625	43/64	0.671 875	17.065 625
3/16	0.187 500	4.762 500	11/16	0.687 500	17.462 500
13/64	0.203 125	5.159 375	45/64	0.703 125	17.859 375
7/32	0.218 750	5.556 250	23/32	0.718 750	18.256 250
15/64	0.234 375	5.953 125	47/64	0.734 375	18.653 125
1/4	0.250 000	6.350 000	3/4	0.750 000	19.050 000
17/64	0.265 625	6.746 875	49/64	0.765 625	19.446 875
9/32	0.281 250	7.143 750	25/32	0.781 250	19.843 750
19/64	0.296 875	7.540 625	51/64	0.796 875	20.240 625
5/16	0.312 500	7.937 500	13/16	0.812 500	20.637 500
21/64	0.328 125	8.334 375	53/64	0.828 125	21.034 375
11/32	0.343 750	8.731 250	27/32	0.843 750	21.431 250
23/64	0.359 375	9.128 125	55/64	0.859 375	21.828 125
3/8	0.375 000	9.525 000	7/8	0.875 000	22.225 000
25/64	0.390 625	9.921 875	57/64	0.890 625	22.621 875
13/32	0.406 250	10.318 750	29/32	0.906 250	23.018 750
27/64	0.421 875	10.715 625	59/64	0.921 875	23.415 625
7/16	0.437 500	11.112 500	15/16	0.937 500	23.812 500
29/64	0.453 125	11.509 375	61/64	0.953 125	24.209 375
15/32	0.468 750	11.906 250	31/32	0.968 750	24.606 250
31/64	0.484 375	12.303 125	63/64	0.984 375	25.003 125
1/2	0.500 000	12.700 000	1	1.000 000	25.400 000

Basis: 1 in = 25.4 mm (exactly). All values in this table are exact.

inch	millimetre	inch	millimetre	inch	millimetre
0.001	0.025 4	0.01	0.254	0.1	2.54
0.002	0.050 8	0.02	0.508	0.2	5.08
0.003	0.076 2	0.03	0.762	0.3	7.62
0.004	0.101 6	0.04	1.016	0.4	10.16
0.005	0.127 0	0.05	1.270	0.5	12.70
0.006	0.152 4	0.06	1.524	0.6	15.24
0.007	0.177 8	0.07	1.778	0.7	17.78
0.008	0.203 2	0.08	2.032	0.8	20.32
0.009	0.228 6	0.09	2.286	0.9	22.86

inch	millimetre	inch	millimetre	inch	millimetre	inch	millimetre
1	25.4	26	660.4	51	1 295.4	76	1 930.4
2	50.8	27	685.8	52	1 320.8	77	1 955.8
3	76.2	28	711.2	53	1 346.2	78	1 981.2
4	101.6	29	736.6	54	1 371.6	79	2 006.6
5	127.0	30	762.0	55	1 397.0	80	2 032.0
6	152.4	31	787.4	56	1 422.4	81	2 057.4
7	177.8	32	812.8	57	1 447.8	82	2 082.8
8	203.2	33	838.2	58	1 473.2	83	2 108.2
9	228.6	34	863.6	59	1 498.6	84	2 133.6
10	254.0	35	889.0	60	1 524.0	85	2 159.0
11	279.4	36	914.4	61	1 549.4	86	2 184.4
12	304.8	37	939.8	62	1 574.8	87	2 209.8
13	330.2	38	965.2	63	1 600.2	88	2 235.2
14	355.6	39	990.6	64	1 625.6	89	2 260.6
15	381.0	40	1 016.0	65	1 651.0	90	2 286.0
16	406.4	41	1 041.4	66	1 676.4	91	2 311.4
17	431.8	42	1 066.8	67	1 701.8	92	2 336.8
18	457.2	43	1 092.2	68	1 727.2	93	2 362.2
19	482.6	44	1 117.6	69	1 752.6	94	2 387.6
20	508.0	45	1 143.0	70	1 778.0	95	2 413.0
21	533.4	46	1 168.4	71	1 803.4	96	2 438.4
22	558.8	47	1 193.8	72	1 828.8	97	2 463.8
23	584.2	48	1 219.2	73	1 854.2	98	2 489.2
24	609.6	49	1 244.6	74	1 879.6	99	2 514.6
25	635.0	50	1 270.0	75	1 905.0	100	2 540.0

Millimetres to inches

Basis: 1 mm = 1/25.4 in (exactly). The inch values in this table are rounded to the seventh decimal place.

millimetre	inch	millimetre	inch	millimetre	inch
0.001	0.000 039 4	0.01	0.000 393 7	0.1	0.003 937 0
0.002	0.000 078 7	0.02	0.000 787 4	0.2	0.007 874 0
0.003	0.000 118 1	0.03	0.001 181 1	0.3	0.011 811 0
0.004	0.000 157 5	0.04	0.001 574 8	0.4	0.015 748 0
0.005	0.000 196 9	0.05	0.001 968 5	0.5	0.019 685 0
0.006	0.000 236 2	0.06	0.002 362 2	0.6	0.023 622 0
0.007	0.000 275 6	0.07	0.002 755 9	0.7	0.027 559 1
0.008	0.000 315 0	0.08	0.003 149 6	0.8	0.031 496 1
0.009	0.000 354 3	0.09	0.003 543 3	0.9	0.035 433 1

millimetre	inch	millimetre	inch	millimetre	inch	millimetre	inch
1	0.039 370 1	26	1.023 622 0	51	2.007 874 0	76	2.992 126 0
2	0.078 740 2	27	1.062 992 1	52	2.047 244 1	77	3.031 496 1
3	0.118 110 2	28	1.102 362 2	53	2.086 614 2	78	3.070 866 1
4	0.157 480 3	29	1.141 732 3	54	2.125 984 2	79	3.110 236 2
5	0.196 850 4	30	1.181 102 4	55	2.165 354 3	80	3.149 606 3
6	0.236 220 5	31	1.220 472 4	56	2.204 724 4	81	3.188 976 4
7	0.275 590 6	32	1.259 842 5	57	2.244 094 5	82	3.228 346 5
8	0.314 960 6	33	1.299 212 6	58	2.283 464 6	83	3.267 716 5
9	0.354 330 7	34	1.338 582 7	59	2.322 834 6	84	3.307 086 6
10	0.393 700 8	35	1.377 952 8	60	2.362 204 7	85	3.346 456 7
11	0.433 070 9	36	1.417 322 8	61	2.401 574 8	86	3.385 826 8
12	0.472 440 9	37	1.456 692 9	62	2.440 944 9	87	3.425 196 8
13	0.511 811 0	38	1.496 063 0	63	2.480 315 0	88	3.464 566 9
14	0.551 181 1	39	1.535 433 1	64	2.519 685 0	89	3.503 937 0
15	0.590 551 2	40	1.574 803 1	65	2.559 055 1	90	3.543 307 1
16	0.629 921 3	41	1.614 173 2	66	2.598 425 2	91	3.582 677 2
17	0.669 291 3	42	1.653 543 3	67	2.637 795 3	92	3.622 047 2
18	0.708 661 4	43	1.692 913 4	68	2.677 165 4	93	3.661 417 3
19	0.748 031 5	44	1.732 283 5	69	2.716 535 4	94	3.700 787 4
20	0.787 401 6	45	1.771 653 5	70	2.755 905 5	95	3.740 157 5
21	0.826 771 7	46	1.811 023 6	71	2.795 275 6	96	3.779 527 6
22	0.866 141 7	47	1.850 393 7	72	2.834 645 7	97	3.818 897 6
23	0.905 511 8	48	1.889 763 8	73	2.874 015 7	98	3.858 267 7
24	0.944 881 9	49	1.929 133 9	74	2.913 385 8	99	3.897 637 8
25	0.984 252 0	50	1.968 503 9	75	2.952 755 9	100	3.937 007 9

Publications referred to

This standard makes reference to the following British Standards:
BS 308, *Engineering drawing practice.*
BS 308-2, *Dimensioning and tolerancing of size.*
BS 308-3, *Geometrical tolerancing.*
BS 1916, *Limits and fits for engineering.*
BS 1916-1, *Limits and tolerances.*
BS 1957, *Presentation of numerical values (fineness of expression; rounding of numbers).*
BS 4500, *ISO limits and fits.*

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