

Specification

Cycle threads

Confirmed
May 2009

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)
- British Chemical Plant Manufacturers' Association
- British Compressed Air Society
- British Electrical and Allied Manufacturers' Association
- British Engineers' Association
- British Internal Combustion Engine Manufacturers' Association
- British Iron and Steel Federation
- British Railways
- Crown Agents for the Colonies
- Department of Scientific and Industrial Research
- Engineering Equipment Users' Association
- Institute of Marine Engineers
- Institute of Petroleum
- Institution of Civil Engineers
- Institution of Gas Engineers
- Institution of Heating and Ventilating Engineers
- Institution of Mechanical Engineers
- Institution of Mechanical Engineers (Automobile Division)
- Institution of Production Engineers
- Locomotive Manufacturers' Association
- Machine Tool Trades Association
- Ministry of Labour and National Service
- Ministry of Supply
- Ministry of Transport
- Ministry of Works
- Office of the High Commissioner for India
- War Office

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 24th May 1950

The Technical Committee on Screw Threads, which was entrusted with the preparation of this Standard, has worked in close co-operation with the British Cycle and Motor Cycle Manufacturers' and Traders' Union.

Amendments issued since publication

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Foreword

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 4 000, indexed and cross-indexed for reference, together with an abstract of each standard, will be found in the Institution's Yearbook.

NOTE Recommendation on the application of the B.S.C. thread:

In view of the fact that there is a close resemblance between the form of the B.S.C. thread and the form of Whitworth and B.A. threads, and that in certain sizes there is also a similarity between the pitches and diameters of the cycle thread and those of the Whitworth and B.A. series, *the Institution most strongly recommends that the use of the B.S.C. thread be restricted to bolts and nuts and screwed parts to be used in cycle and motor cycle manufacture.* Any introduction of the B.S.C. thread into general engineering would inevitably result in confusion due to the visual resemblance to, *but lack of interchangeability with,* threads of Whitworth or B.A. form.

This British Standard for cycle threads has been prepared under the authority of the Mechanical Engineering Industry Standards Committee and in close collaboration with the British Cycle and Motor Cycle Manufacturers' and Traders' Union.

The standard was first issued in 1938, and in that edition was limited to the standardization of the thread form and the basic dimensions. This present edition reproduces the former thread form and basic dimensions unaltered, and has been prepared to include tables of limits and tolerances.

The form of thread was first formulated by the Cycle Engineers' Institute in 1902 to provide a thread of suitable design and mechanical strength for the bolts, nuts, nipples, spokes, and other threaded parts of cycles and motor cycles.

In 1933 the British Cycle and Motor Cycle Manufacturers' and Traders' Union approached the British Standards Institution for the recognition of this thread as a British Standard.

The first edition of the British Standard did not, however, attempt to include all the many pitches and diameters which had been or were then in use. The C.E.I. thread system would appear to have been peculiar in that, as originally developed, it included a series of threads applicable to any size of stock, rather than organized and progressive sizes, and in practice this had resulted in a considerable diversity of diameters and associated pitches. Since there appeared to be no justification for this complexity, the British Standard, in its first edition, standardized only a selection of the more commonly used sizes.

These sizes have since become established as the threads in regular use in the cycle and motor cycle industries, and they are perpetuated in this second edition.

The tolerances, other than those for the threads on spokes and nipples, have been derived from similar formulae to those adopted for the tolerances in the 1940 edition of BS 84, "Screw threads of Whitworth form," the appropriate correction being made for the difference between the angles of the Whitworth thread and the cycle thread. The bases for calculating the tolerances are given for reference in Appendix B.

The first edition of this standard included, in deference to usage at that time, a 20 t.p.i. series as an alternative to the normal series for bolts and nuts and similar applications, but the continuance of that series was not recommended. In the present edition this 20 t.p.i. series is omitted from the tables of threads having the form of the cycle thread, but in view of the use in the cycle industry of this pitch series with a Whitworth form thread the appropriate dimensions are given in Appendix A.

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 to iv, pages 1 to 17 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.

1 Form of cycle thread

The basic form of the British Standard cycle thread shall be as shown in Figure 1.

2 Dimensions

The basic dimensions and limits and tolerances for British Standard cycle threads shall be as given in Table 1 to Table 13.

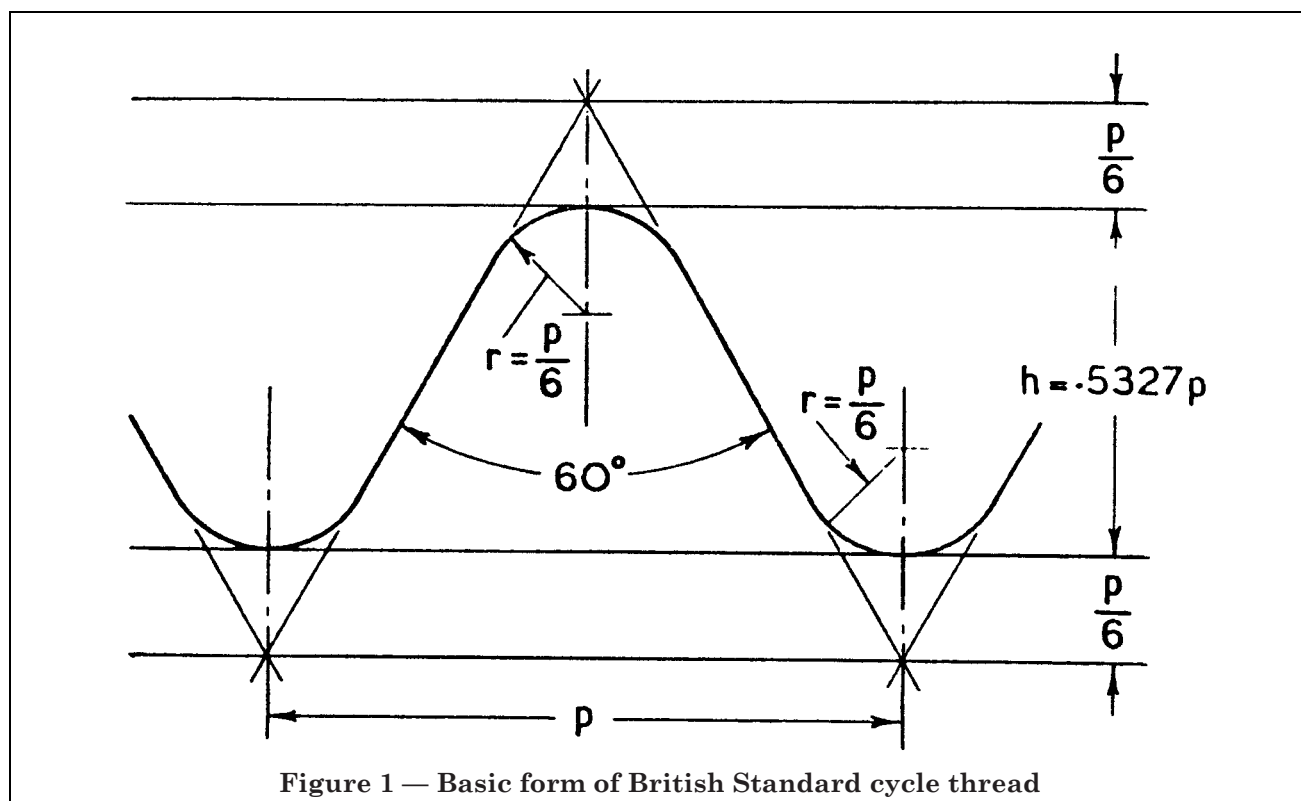
Table 1 to Table 7 provide for the threads for bolts and nuts and similar applications.

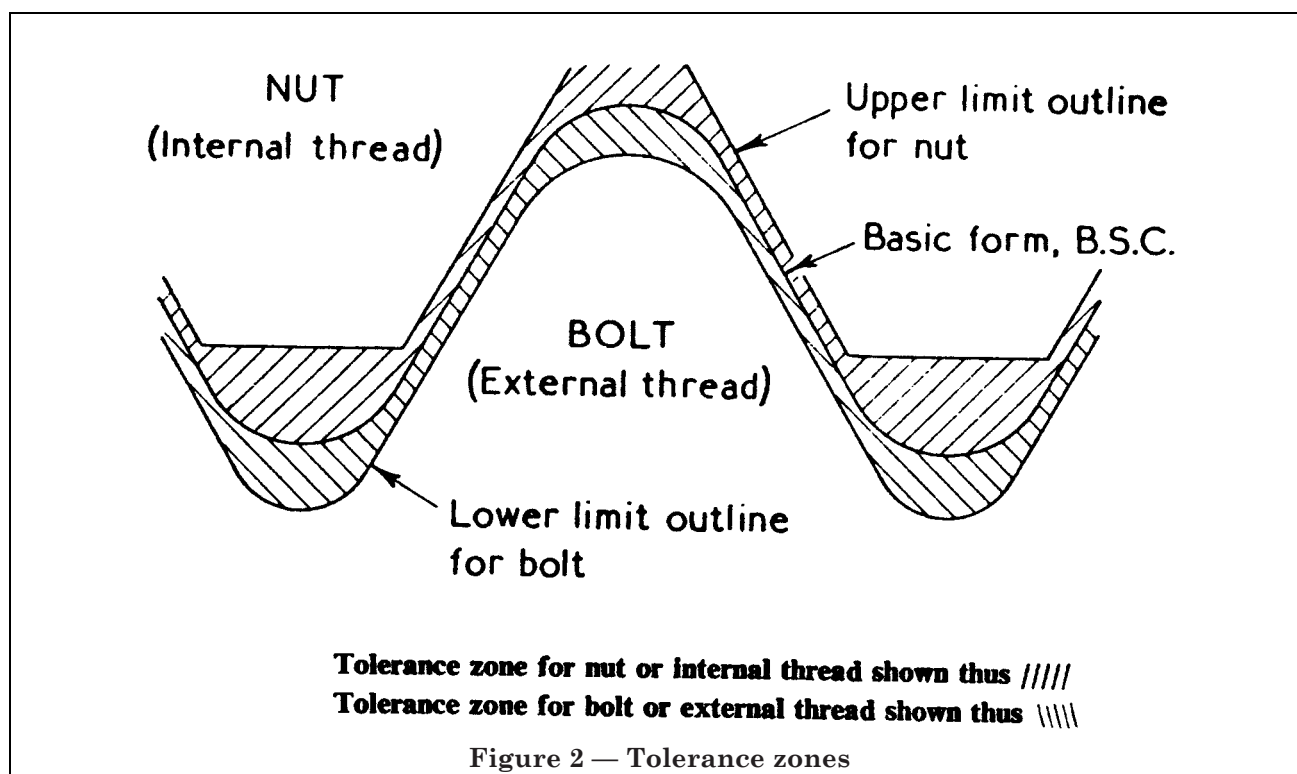
NOTE It is a customary practice in the cycle industry to use a 20 t.p.i. series of Whitworth form threads as an alternative to the cycle form thread series given in Table 1 to Table 7. Full details of Whitworth form threads are given in BS 84:1940, "Screw threads of Whitworth form," but for convenience the relevant dimensions are reproduced in Appendix A, Table 14 to Table 16.

Table 8 to Table 10 provide for threads for spokes and nipples. They are right hand. The spoke threads are normally rolled, and the basic *effective* diameter has been taken as the nominal size of the end portion of the spoke on which the thread is rolled: it is to be noted that this diameter is not necessarily that of the body of the spoke.

Table 11 to Table 13 provide for a number of threads used in current practice for the particular applications stated.

The bases of the tolerances are explained in Appendix B. Figure 2 illustrates the tolerance zones on the threads.





The limits given in the tables represent the acceptance limits for the finished components.

It is to be appreciated that if the components are to be plated or hardened after machining it may be necessary for them to be machined to modified limits so that the components, as finally finished, may be within the limits given in the tables, but see exception stated in Clause 4.

3 Classes of fit

The following classes of accuracy, or fit, are provided:—

B.S.C. bolts and nuts, Close, Medium and Free classes.

B.S.C. spokes and nipples, Medium class.

B.S.C. threads for special applications, Medium class.

B.S.W. bolts and nuts (20 t.p.i. series), Medium class.

These classes of accuracy may be described as follows:—

Close class. The close class applies to screw threads requiring a fine, snag fit.

This grade of fit is obtainable consistently only by the use of the highest quality screwing tools supported by a very efficient system of gauging and inspection. It is recommended only for special work where refined accuracy of pitch and thread form are particularly required.

Medium class. The medium class applies to the better class of ordinary interchangeable screw threads.

Free class. The free class applies to the great bulk of screw threads of ordinary commercial quality.

The choice between the three classes for a particular purpose rests with the designer. The two threads of any mating pair need not necessarily be made to the same class, and in some circumstances it may be desirable to specify their manufacture to different classes. For example, for the special bolts and nuts and threaded parts used on motor cycle power units the close class for bolts (external threads) and the medium class for nuts (internal threads) would be appropriate; for ordinary bolts and nuts and threaded parts on power units and the bolts and nuts for motor cycle and cycle frame construction, medium class for bolts (external threads) and free class for nuts (internal threads) would be adequate.

NOTE None of the classes in this specification apply to screw threads which have to mate with an interference fit.