BRITISH STANDARD

BS 4882 : 1990

Specification for

Bolting for flanges and pressure containing purposes

BSi British Standards

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the General Mechanical Engineering Standards Policy Committee (GME/-) to Technical Committee GME/9, upon which the following bodies were represented:

BEAMA Ltd
British Constructional Steelwork Association Ltd
British Industrial Fasteners Federation
British Railways Board
British Steel Industry
British Steel Industry (Wire Section)
Gauge and Tool Makers' Association
Ministry of Defence
Society of Motor Manufacturers and Traders Limited
Washer Manufacturers' Association of Great Britain

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

British Gas
British Valve and Actuator Manufacturers Association
Department of the Environment
Energy Industries Council
Engineering Equipment and Materials Users Association
Electricity Supply Industry in England and Wales
Process Plant Association

This British Standard, having been prepared under the direction of the General Mechanical Engineering Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 30 November 1990
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The following BSI references relate to the work on this standard:
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Amendments issued since publication

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Contents

Foreword

This British Standard has been prepared under the direction of the General Mechanical Engineering Standards Policy Committee. It is a revision of BS 4882 : 1973 which is withdrawn. It differs from the 1973 edition in the following respects.

(a) The recommended bolting temperature limits have been deleted from tables 1 and 2 for the following reasons.

(1) This standard, in keeping with other standards for components and materials, does not state limiting or recommended maximum service temperatures for alloys other than plain carbon steel (see **1.3.1**). It was decided to adopt this policy on revision of BS 4882 : 1973, and to refer purchasers and users to the design and construction specifications where limiting temperatures are related to design stresses and other conditions of service. The specifications also indicate the relation between initial stress to be applied and the other components comprising an assembly for given service conditions, and in some cases indicate what is acceptable practice in stressing bolts. It is considered that bolting will be used correctly only after examination of the whole joint in relation to an appropriate code (see appendix A).

(2) Service at low temperature entails considering the notch toughness (notch ductility) of steels in order to avoid risk of failure by brittle fracture. The design and construction codes differ somewhat in their application of steels on which notch toughness has been determined by the Charpy impact test.
Bolting materials (L grades) are available with given Charpy impact energy values at specific temperatures and such properties should be compared with the requirements of the design code in order to ensure correct application of the bolting (see appendix B).

(b) All material specifications and material analysis for bolts and nuts, with the exception of those quoted in table 5, have been derived from BS 1506. Appendix B of BS 4882 : 1973 has been deleted as reference will be direct to BS 1506.

(c) Materials suitable for bolts and nuts for use in sour gas applications have been included and are designated by the suffix M.

(d) The metric series of studbolts has been extended to include sizes up to M100 and the inch series by the addition of sizes 3¾ in and 4 in, this will align this standard with the proposed revision of USA standards.

Metric sizes M14, M22, M42 and M70 have also been included to conform to established usage and for the same reason the pitch for M72 has been changed from 6 mm to 4 mm.

(e) Studs, one end of which screws into the parent metal, have been included in both the metric and inch series. This has been done because, although BS 4439 and BS 2693 : Part 1 relate to 'studs for general purposes', the designs of studs within those standards are not suitable for use at high temperatures, these latter conditions necessitating designs similar to those for the studbolts.

(f) Table 5 of the 1973 edition detailing the properties of cold-worked bars has been deleted and its contents now form part of tables 1 and 2.

(g) Note that the bearing surfaces of BS 4190 bolts and nuts now have to be full-faced if intended for use with BS 4504 flanges.

(h) The marking requirements for bolting have been extended to include the manufacturer's identification for sizes M16 and larger and ⅝ in and larger.

(i) For heavy series nuts, inch series, the minimum width across flats and the washer face diameter (maximum and minimum) have been altered to agree with USA standards and will therefore allow nuts produced by non-UK sources to the USA standards, to conform to this standard.

For bolts grade B7A, there have been significant changes in properties and limiting ruling sections resulting from the publication of BS 1506 in 1986.

For bolts grade B6K, the designation K has been added to indicate that all sizes are now subject to the Izod impact test.

Production certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of association members.

Obsolescent British Standards. Although new design work should preferably incorporate 'metric bolting' references are made within the text of this standard to obsolescent British Standards since there is still a heavy demand for 'imperial bolting' from industry.

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