

Specification for

General purpose, metric module gear hobs

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Machine, Engineers and Hand Tools Standards Committee (MTE/-) to Technical Committee MTE/16 upon which the following bodies were represented:

- British Gear Manufacturers' Association
- Gauge and Tool Makers' Association
- Institution of Production Engineers
- Machine Tool Industry Research Association
- Milling Cutter Association

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Foreword

This British Standard has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Committee and supersedes BS 5221:1975 which is withdrawn. The accuracy requirements introduced in this revision are identical with those given in ISO 4468. In preparing this British Standard, account has been taken of ISO 2490. The module range has been extended to 1 to 40 metric module in conformity with the module range specified in ISO 4468 and proposed in the current revision of ISO 2490.

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 18, 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.

1 Scope

This British Standard specifies the dimensions and tolerances for the hob keyway, key and alternative tenon drive of non-topping, single-start, right-hand and left-hand hobs used for the manufacture of spur and helical gears in accordance with the requirements of BS 436-2.

The dimensions are given for the range 1 to 40 metric module and apply to monobloc hobs only and cover the normal manufacturing range.

The tolerances are given for the range 1 to 40 metric module and they apply to monobloc and inserted tooth hobs.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions and symbols

For the purposes of this British Standard the definitions and symbols given in BS 2519-1 and BS 2519-2 apply.

NOTE Figure 1 illustrates the principal terms used.

3 Grades

Hobs shall be graded according to accuracy as follows.

Grade AA	}	Ground profile hobs
Grade A		
Grade B	}	Unground profile hobs
Grade C		
Grade D		

4 Tooth form

The hob tooth form shall be such that it will generate gears corresponding to the basic rack tooth profile shown in Figure 2 (see also Figure 1 and Figure 2 of BS 436-2:1970).

NOTE In practice the basic rack is usually modified.

5 Dimensions

The dimensions of hobs shall be as given in Table 1.

6 Tolerances for grades of hobs

Elements of hobs, when tested in accordance with Table 2, shall comply with the tolerances specified therein for the grades and module range. In addition, for tests requiring measurement of the position of the cutting edges along a line of action, the tolerances given in Table 3, Table 4, Table 5 and Table 6 shall apply.

NOTE Such tests require additional specialized test equipment.

7 Bore and arbor

The bore shall be as shown in Figure 3 and Figure 4 and shall be finished straight and parallel within the tolerances specified in Table 5 for 75 % of each bearing length for grades AA, A and B hobs, and 50 % for grades C and D hobs (from Table 5). The drive shall be by either a keyway or a tenon.

Tolerances for arbor diameters shall be as given in Table 4.

8 Bosses

Bosses shall be either cylindrical or conical.

9 Gashes

Hobs shall be gashed.

NOTE Hobs should preferably be gashed so that the cutting faces are normal to the tooth helix angle. However, axial gashing is permitted up to 2° tooth lead angle on grade AA hobs and up to 6° tooth lead angle on grade A, B, C and D hobs.

10 Keys and keyways

Keyway dimensions for hobs shall be as given in Table 3 and key in arbor dimensions shall be as given in Table 4.

The keyway shall be aligned both radially and axially such that interference shall not occur between the key and keyway at any point throughout the hob length when the keyway width is within the tolerance given in Table 4 at all points.

11 Tenon drive

Where this form of drive is used the dimensions shall be as given in Table 6.

12 Marking

Hobs shall be marked with the following information, as applicable, using the symbols given:

- the number and date of this British Standard, i.e. BS 5221:1987¹⁾;
- normal module, $x m_n$;

¹⁾ Marking BS 5221:1987 on or in relation to a product is a claim by the manufacturer that the product has been manufactured to the requirements of the standard. The accuracy of such a claim is therefore solely the manufacturer's responsibility. Enquiries as to the availability of third party certification should be addressed to the appropriate certification body.

- c) normal pressure angle at reference cylinder, α_n ;
- d) tooth lead angle, γ ;
- e) cutting depth, x mm CD;
- f) grade of accuracy, AA, A, B, C or D;
- g) gash lead (if gash is helical), x mm GL;
- h) right-hand or left-hand, R or L;
- i) single-start, SS.

NOTE 1 The manufacturer's identification mark or number, and material designation, may also be added.

NOTE 2 Appendix A gives information to be supplied by the purchaser.

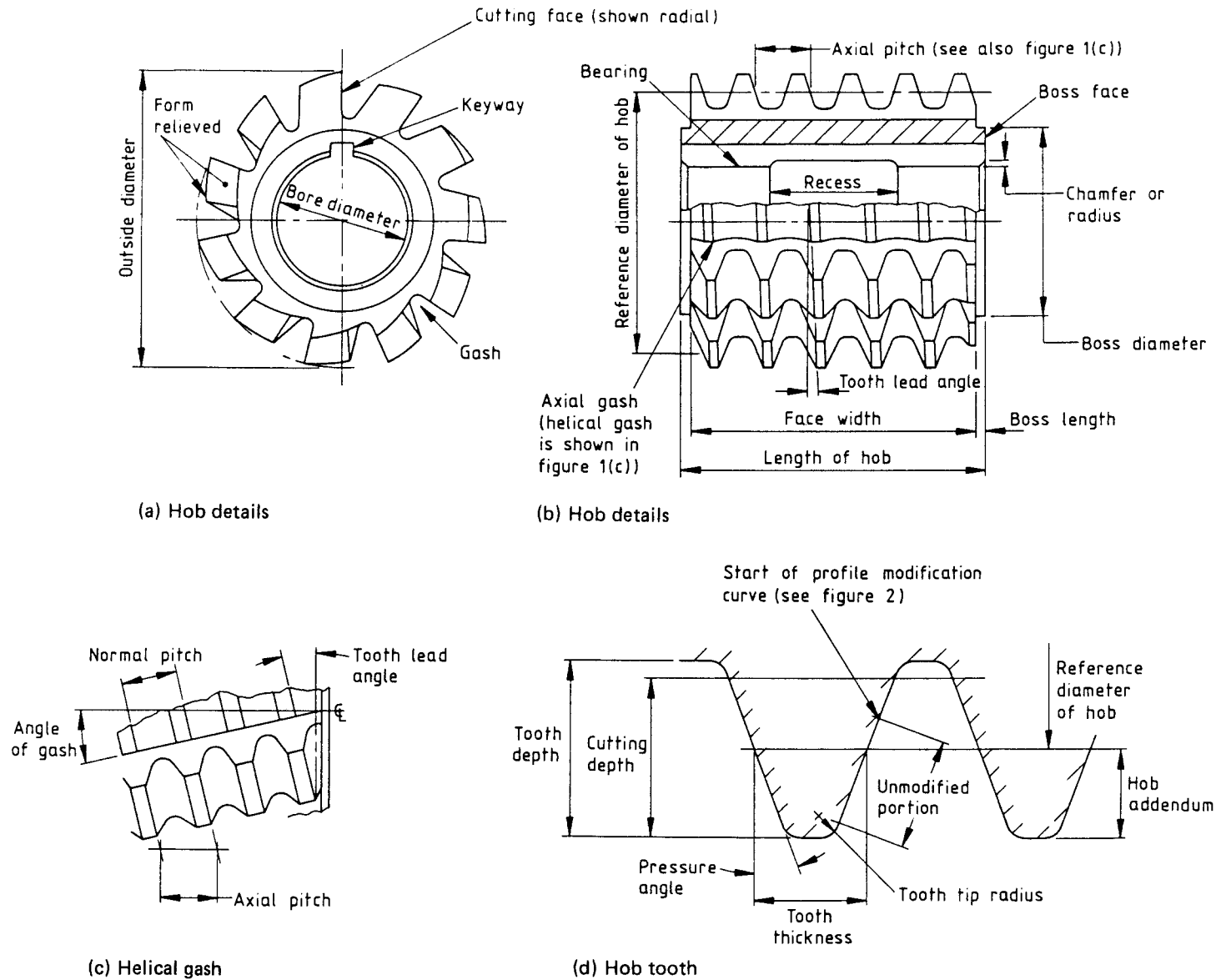


Figure 1 — Terminology

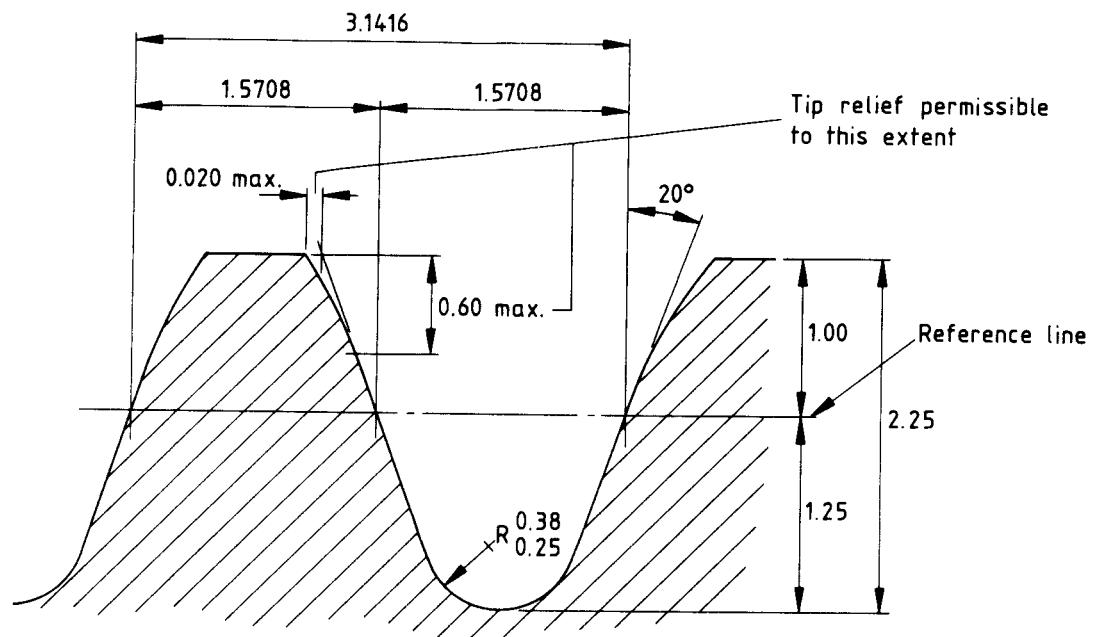


Figure 2 — Basic gear rack tooth profile for unit normal metric module with 20° pressure angle