



American  
Gear Manufacturers  
Association

**ANSI/AGMA 1102-C19**  
(Revision of ANSI/AGMA 1102-B13)

## **American National Standard**

# **Tolerance Specification for Gear Hobs**

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National  
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***Tolerance Specification for Gear Hobs***

ANSI/AGMA 1102-C19  
(Revision of ANSI/AGMA 1102-B13)

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**ABSTRACT**

The purpose of this standard is to provide specifications for nomenclature, dimensions, tolerances, and inspection of gear hobs, and thereby establish a basis for mutual understanding in this respect in the use and manufacture of these tools.

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## Foreword

[The foreword, footnotes and annexes, if any, in this document are provided for informational purposes only and are not to be construed as a part of ANSI/AGMA Standard 1102-CXX, *Tolerance Specification for Gear Hobs*.]

ANSI/AGMA 1102-A03 is a replacement of AGMA 120.01. The first draft of AGMA 120.01 was prepared by the Cutting Tools Committee in May 1972. Its purpose was to consolidate all AGMA standards relating to hobs; i.e., AGMA 121.02, 122.02, 123.01 and 124.01. The purpose of consolidating these standards was to provide the information as a handy updated reference on gear-cutting tools for efficient use by manufacturers and users of these tools.

The committee decided at the 1972 Semi-Annual Meeting to include Standard 124.01, *Wormgear Hobs*, as an Information Sheet. AGMA 120.01 was approved by the Cutting Tools Committee on November 6, 1973. It was approved by the AGMA Membership as of February 28, 1975.

ANSI/AGMA 1102-A03 is the result of a rewrite of AGMA 120.01, incorporation of the metric system, addition of inspection procedures, and development of equation-based tolerances. Other additions include increased tolerance grade levels, expansion of tolerances for multi-thread hobs, line of action testing, and expansion of the hob range of sizes. ANSI/AGMA 1102-A03 was approved by the AGMA Membership on December 3, 2003.

ANSI/AGMA 1102-B13 is a revision of ANSI/AGMA 1102-A03. The equations found in Clause 6 were updated and reformatted for clarity. In addition, tables were added to Clause 6 to assist in the use of these equations. The values in Table 8 were reviewed and updated accordingly. ANSI/AGMA 1102-A03, Annex D was removed.

The first draft of ANSI/AGMA 1102-B13 was made in March 2007. It was approved by the AGMA membership in April 25, 2013. It was approved as an American National Standard on April 8, 2013.

ANSI/AGMA 1102-C19, a revision of ANSI/AGMA 1102-B13, includes the following editorial changes;

1. Deleted "MIL-STD-105E" in Normative Ref and in Clause 7.1.1;
2. Table 8- changed the units in "Tolerance" column from "mm" to "µm";
3. Table B.2 – Corrected symbols.

The first draft of ANSI/AGMA 1102-C19 was made in September 2018. It was approved by the AGMA membership in July 12, 2019. It was approved as an American National Standard on December 5, 2019.

Suggestions for improvement of this standard will be welcome. They may be submitted to [tech@agma.org](mailto:tech@agma.org).

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# American National Standard – Tolerance Specification for Gear Hobs

## 1 Scope

This standard provides specifications for nomenclature, dimensions, tolerances, and inspection for gear hobs for modules 0.63 to 40 mm. It establishes a basis for understanding the use and manufacture of these tools.

### 1.1 Application

This standard applies to single and multiple-thread hobs for spur and helical gears.

### 1.2 Exceptions

This standard is not intended to completely define the hob tooth profile as it relates to the exact gear profile. It is advisable to check gear tooth profile specifications with the hob manufacturer involved. Examples include cutting depth and hob tooth profile modification as they affect gear tooth tip relief for fine-pitch and coarse-pitch hobs.

Where conditions require use of hobs of special design or specifications, such hobs shall be considered beyond the scope of this standard.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI/AGMA 1012-G05, *Gear Nomenclature, Definitions of Terms with Symbols*

AGMA 915-3-A99, *Inspection Practices – Gear Blanks, Shaft Center Distance and Parallelism*

## 3 Terminology and definitions

The terms and definitions used in this standard are, wherever possible, consistent with ANSI/AGMA 1012-G05 and other approved AGMA documents. However, some symbols and definitions used in this standard may differ from other AGMA Standards. Users should assure themselves that they fully understand the terms, definitions, and symbols as contained in this standard.

Nomenclature used in this standard and the hob elements referred to are illustrated in Figure 1 through Figure 10. Nomenclature of hob elements and other terms relating to hobbing are presented as follows:

**active hob length:** axial length of the toothed portion of the hob. See Figure 2.

**allowable deviation:** maximum deviation a hob can have without exceeding the tolerance.

**auxiliary leads:** feature employed in some hobs, especially worm gear hobs, wherein both sides of the hob thread have leads different from the nominal hob lead; one side longer, the other side shorter. This results in the tooth thickness being successively less toward the roughing end of the hob.

**axial plane:** plane containing the axis of rotation.