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American National Standard

Assembling Bevel Gears

American National Standard

Assembling Bevel Gears

ANSI/AGMA 2008-D11

[Revision of ANSI/AGMA 2008-C01]

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ABSTRACT

This Standard was prepared for the assembly man in the factory and for the service man in the field. Each definition, explanation, and instruction is directed toward the physical appearance of the gears as they are inspected and assembled by these personnel. The definitions are simple. The explanations are thorough. An Annex provides detailed instructions on performing contact pattern checks.

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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 2008–D11, *Assembling Bevel Gears*.]

Information pertaining to recommended practice in the assembling of bevel gears is not new in the published literature of the American Gear Manufacturers Association. In 1927, the *Recommended Practice of the American Gear Manufacturers Association of Adjustment of Bevel Gears in Assembly* was adopted and published.

This practice was revised in 1940 by the Bevel Gear Committee, but no further revision was undertaken until 1967.

Since the satisfactory performance of bevel gears is closely related to proper installation, it was decided by the Bevel Gearing Committee that it was important to maintain information on this subject in the literature of the Association.

This manual brings up to date and reflects the present thinking on the information given in the original practice.

This manual was prepared for the assembly personnel in the factory and for the service personnel in the field. Each definition, explanation, and instruction is directed toward the physical appearance of the gears as they are inspected and assembled. The definitions are simple. The explanations are thorough.

Each section devoted to the tooth contact pattern of a particular type of gear is intended to be complete in itself for use as a separate shop manual if desired. For this reason, when the manual is read in its entirety, these sections seem repetitious.

In contrast, the sections devoted to angular gears are brief and general. The committee concluded that each angular configuration requires separate treatment, and that a complete coverage of all of the possible combinations would be impractical if at all possible.

The first draft of AGMA 331.01 was prepared by the Bevel Gearing Committee in October, 1967. It was approved by the AGMA membership and became an official AGMA manual as of August 2, 1969. The manual was reaffirmed in 1976.

ANSI/AGMA 2008–B90 is a revision of AGMA 331.01. It was approved by the AGMA membership on November 10, 1989, and as an American National Standard on May 4, 1990.

An errata was issued in June, 1995 that changed the denominator of the equation for “Transverse Backlash, B_t ” in figure 7–1, to reflect the product of the cosine terms, rather than their difference.

ANSI/AGMA 2008–C01 was a correction of ANSI/AGMA 2008–B90. In 2000 an errata revision of clauses 7.2, 8.3.1 and 8.3.2 was balloted. This was approved by the AGMA membership in June 2001 and as an American National Standard on November 20, 2001.

ANSI/AGMA 2008–D11 is an update to ANSI/AGMA 2008–C01, converting to metric. Backlash recommendations were revised to reflect current accuracy standards. An Annex was added to detail the procedures used in contact pattern checking.

The first draft of ANSI/AGMA 2008–D11 was made in April, 2008. It was approved by the AGMA membership in April, 2011. It was approved as an American National Standard on August 29, 2011.

Suggestions for improvement of this standard will be welcome. They should be sent to the American Gear Manufacturers Association, 1001 N. Fairfax Street, 5th Floor, Alexandria, Virginia 22314.

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American Gear Manufacturers Association - Assembling Bevel Gears

1 Scope

This standard applies to the assembly of all bevel gears.

The term *bevel* gears is used to mean straight, spiral, and hypoid gear designs. If data pertain to one or more but not all, the specific forms are identified.

The standard provides the following:

- A better understanding of the need for correct positioning of bevel gears.
- Information necessary for correct assembly and positioning of bevel gears in their respective housings.
- Information for methods personnel in establishing detailed assembly procedures for specific applications.
- Information for tooling personnel responsible for equipping an assembly department with the tools and gages necessary for proper assembly.
- Instruction to assembly personnel for obtaining tooth contact patterns, for interpreting the tooth contact patterns, and for adjusting the position of the members to change the tooth contact patterns.

This standard applies to the assembly of all bevel gears. While certain design considerations and development techniques are mentioned to clarify different aspects, this standard is not intended as a design guide. It is prepared on the assumption that gears and mountings are designed in accordance with ANSI/AGMA 2005-D03, *Design Manual for Bevel Gears*.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of the standard. At the time of publication, the editions were valid. All publications are subject to revision, and the users of this standard are encouraged to apply the most recent editions of the publications listed.

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

ANSI/AGMA 2005-D03, *Design Manual for Bevel Gears*

ANSI/AGMA ISO 17485-A08, *Bevel Gears - ISO System of Accuracy*

3 Terms and definitions

The terms defined in this clause are used in subsequent sections of this standard. The definitions are provided for the assembly or service personnel as an aid in the assembly and visual inspection of the parts. Therefore, they may differ somewhat from the gear engineering definitions which appear in Standard ANSI/AGMA 1012-G05, *Gear Nomenclature, Definition of Terms with Symbols*.