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ANSI/AGMA 6022-D19
(Revision of ANSI/AGMA 6022-C93)

American National Standard

Standard for Design Manual for Cylindrical Wormgearing

**American
National
Standard**

Design Manual for Cylindrical Wormgearing

ANSI/AGMA 6022-D19

[Revision of ANSI/AGMA 6022-C93]

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ABSTRACT

This Design Manual provides information pertaining to selection of geometric parameters which will constitute good design of fine and coarse pitch cylindrical wormgearing. The power rating for fine and coarse pitch wormgearing is not included in this design manual, but can be found in AGMA 6034, *Practice for Enclosed Cylindrical Wormgear Speed Reducers and Gearmotors*.

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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 AGMA Standard 6022-D19, *Design Manual for Cylindrical Wormgearing*.

The standard provides a broad range of design parameters for fine and coarse pitch cylindrical wormgearing which would constitute feasible design, within which the designer may search for a better design. The greatest possible latitude for design has been sought.

The earlier standard AGMA 341.01, was approved by the AGMA membership in June 1955, and AGMA 341.02 was approved by the membership in December 1964 and reaffirmed in May 1970.

Standard AGMA 374.01, Design for Fine-Pitch Wormgearing has been withdrawn.

Data contained herein represents a consensus from among engineering representatives of member companies of AGMA and other interested parties.

AGMA Standards are subject to constant improvement, revision, or withdrawal as dictated by experience. Any person who refers to AGMA technical publications should satisfy himself that he has the latest information available from the Association on the subject matter.

ANSI/AGMA 6022-D19 replaces ANSI/AGMA 6022-C93. It was created to change the formatting from dual to single column and to implement a few minor editorial changes.

The first draft of ANSI/AGMA 6022-D19 was created in January 2019. It was approved by the membership in July, 2019 and as an American National Standard on September 9, 2019.

Suggestions for improvement of this standard may be submitted to tech@agma.org.

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Design Manual for Cylindrical Wormgearing

1 Scope

This design manual covers the design of fine and coarse pitch cylindrical wormgearing operating at right angles and primarily made as gear sets to be incorporated into other machines and mechanisms. Many of the design procedures are also incorporated in enclosed drives.

1.1 Uses of wormgearing

Wormgearing is used on applications transmitting very small amounts of power up to 1000 HP (746KW) and 10 lb in (1.13 Nm) up to 3 000 000 lb in (339 000 Nm) output torques. Worm speeds can vary from 0 to 10 000 rpm, depending on size. Design of wormgearing varies with its specific uses and application requirements. Wormgearing used in an indexing mechanism of a machining center has different requirements from a conveyer drive in a steel mill.

1.2 Intended use

The equations and values presented provide a general approach to design. Deviations from the methods and values stated in this design manual may be made when justified by experience, testing, or more specific analysis. It is intended for use by experienced gear designers capable of selecting reasonable values based on their knowledge of the performance of similar designs and the effect of such items as lubrication, deflection, manufacturing tolerances, metallurgy, residual stresses, and system dynamics. It is not intended for use by the engineering public at large. Because of the wide variety of applications of wormgearing, this design manual is a practical overview of wormgearing design and is intended as a guideline for users and manufacturers in the general principles of operation, the basic design concepts and formulas, the common thread forms used, the use of modified designs, tooling and manufacturing considerations, and the proper mounting, assembly and run-in of wormgearing.

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 revisions, and the users of the manual are encouraged to investigate the possibility of applying the most recent editions of the publications listed.

ANSI/AGMA 6034-B92, *Practice for Enclosed Cylindrical Wormgear Speed Reducers and Gearmotors*

AGMA 6001-F19, *Design and Selection of Components for Enclosed Gear Drives*

3 Symbols and terminology

3.1 Symbols

The symbols, terms, and definitions, when applicable, conform to ANSI/AGMA Standard 1012--G05, *Gear Nomenclature, Definitions of Terms with Symbols* as shown in Table 1.