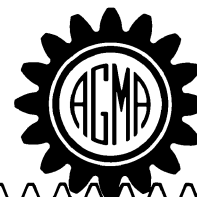


AGMA 917-B97
(Revision of
AGMA 370.01 (1973))

AMERICAN GEAR MANUFACTURERS ASSOCIATION

***Design Manual for Parallel Shaft
Fine-Pitch Gearing***

AGMA 917-B97



AGMA INFORMATION SHEET

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American
Gear
Manufacturers
Association

Design Manual for Parallel Shaft Fine-Pitch Gearing

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[Revision of AGMA 370.01 1973]

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Approved September 25, 1997

ABSTRACT

The rewritten *Design Manual for Fine-Pitch Parallel Shaft Gearing* is a *cookbook* style manual on how to design fine-pitch spur and helical gears.

All work has been done with an eye towards computerization of the equations and the graphs.

In addition, the manual contains such specialized subjects as inspection, lubrication, gear load calculation methods, materials, including a wide variety of plastics.

Published by

**American Gear Manufacturers Association
1500 King Street, Suite 201, Alexandria, Virginia 22314**

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Printed in the United States of America

ISBN: 1-55589-694-4

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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 Information Sheet 917-B97, *Design Manual for Parallel Shaft Fine-Pitch Gearing*.]

Although there is a great deal of information about parallel shaft fine-pitch gearing in the literature, it is widely scattered and a considerable number of areas are not well covered. As a result, this manual has been compiled to provide a central source of the best information available on the design, manufacture and inspection of fine-pitch gearing.

This manual is a revision of 370.01, *Design Manual for Fine Pitch Gearing*, 1973. Additions have been made to the design section to broaden the concepts of gear theory and the gear design process. Omitted from this Manual are wormgears, bevel gearing and face gearing which appeared in the original design manual. This information is available in other AGMA Standards.

An important feature of this manual is the bibliography to which the user is referred for additional data in each area.

Suggestions for improvement of this standard will be welcome. They should be sent to the American Gear Manufacturers Association, 1500 King Street, Suite 201, Alexandria, Virginia 22314.

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Design Manual for Parallel Shaft Fine-Pitch Gearing

1 Scope

This manual provides guidance for the design of fine-pitch gearing of the following types:

- Diametral pitch from 20 to 120;
- Spur and helical (parallel axis);
- External, internal and rack forms.

The guidance consists of the following:

- Description of a design procedure in a series of steps;
- Design information - data values, equations and recommended practices;
- Additional design related material.

The English system of units is used in this manual.

1.1 Design procedure

The description of the design procedure covers the following:

- Establishing proportions of the gears;
- Selecting detailed gear data;
- Confirming suitability of the tentative design;
- Controlling backlash;
- Meeting contact ratio and other gear mesh requirements;
- Specifying gear dimensions and tolerances.

1.2 Design information

Information of the following subjects is supplied as required by the design procedure:

- Analysis of tooth proportions and meshing conditions;
- Inspection;
- Gear tooth tolerances;
- Gear blank design.

1.3 Additional design related material

The following background and supplementary information is also supplied:

- Manufacturing methods;
- Gear material and heat treatment;
- Lubrication;
- Bearings.

1.4 Annexes

Annex A is a bibliography.

1.5 Limitations

The information in this manual is meant to serve only as a guide to the designer of fine-pitch gears. It is not intended that it be the procedure which must be followed in the design of such gears, nor is it implied that using the procedures and data will necessarily result in gears that will meet the requirements in every application. It remains the responsibility of the individual designer to properly evaluate the conditions in the particular application and to make use of prior experience or proper testing to confirm the suitability of the design.

1.6 Tooth form (spur and helical gearing, internal and external)

The tooth form of the spur and helical gearing considered in this manual is *involute*. Unless specifically noted, all external spur and helical designs resulting from the procedures discussed in this manual will be conjugate with standard basic racks. See ANSI/AGMA 1003-G93.