

AMERICAN GEAR MANUFACTURERS ASSOCIATION

*Method for Specifying the Geometry of
Spur and Helical Gears*

AGMA 913-A98



AGMA INFORMATION SHEET

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American
Gear

Manufacturers
Association

Method for Specifying the Geometry of Spur and Helical Gears

AGMA 913-A98

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ABSTRACT

This information sheet provides information to translate tooth thickness specifications which are expressed in terms of tooth thickness, center distance or diameter into profile shift coefficients, as that term is used in international standards.

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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 913-A98, *Method for Specifying the Geometry of Spur and Helical Gears.*]

This information sheet is intended to provide sufficient information to allow its users to be able to translate tooth thickness specifications which are expressed in terms of tooth thickness, center distance or diameter into profile shift coefficients, as that term is used in international standards.

This AGMA information sheet and related publications are based on typical or average data, conditions or application.

AGMA 913-A98 was approved by the AGMA membership on March 13, 1998.

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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Method for Specifying the Geometry of Spur and Helical Gears

1 Scope

This information sheet provides a general method for specifying profile shift and rack shift, with gear nomenclature and definitions. This document describes the effect that profile shift has on the geometry and performance of gears, but does not make specific design recommendations.

The equations in the first part of this document (clauses 3 and 4) apply to external gear pairs only. The corresponding equations for internal gear pairs are contained in clause 5.

Annexes A and B provide practical examples on the calculation of tool proportions and profile shift.

2 Terms and symbols

2.1 Terms

The terms used, wherever applicable conform to the following standards.

ISO 701:1998, *International gear notation -- Symbols for geometrical data*

ANSI/AGMA 1012-F90, *Gear Nomenclature, Definitions of Terms with Symbols*

2.2 Symbols

This information sheet uses the ISO symbols in table 1. In cases where there are no ISO symbols, or the definitions are different, other symbols are used.

NOTE: The symbols, definitions and terminology used in this information sheet may differ from other AGMA publications. The user should not assume that familiar symbols can be used without a careful study of these definitions.

Table 1 - Symbols used in equations

ISO Symbols	Other Symbols	Terms	Units	Where first used
	C_1	Distance to SAP	mm	Eq 23
	C_2, C_3, C_4	Distances along line of action	mm	Eq 27
	C_5	Distance to EAP	mm	Eq 23
	C_6	Distance between interference points	mm	Eq 23
	Y_{J1}, Y_{J2}	Bending strength geometry factor, pinion and gear	--	Eq 30
	a_{ref}	Reference center distance	mm	Eq 5
a_w		Operating center distance	mm	Eq 16
c		Root clearance	mm	Eq 42
c_{i2}		Required clearance at the tooth root of the internal gear	mm	Eq 70
d		Diameter	mm	Eq 4
h_{a0}		Addendum of the tool	mm	Eq 22
h_{a1}, h_{a2}		Addendum, pinion and gear	mm	Eq 34
h_{aP0}		Distance on the cutting tool from the reference line to the point near the tooth tip where the straight part of the profile ends and the circular tip begins	mm	Eq 21

(continued)