~~ISO/TC 60/SC 1~~

~~Date: 2023-07-25~~

ISO/FDIS 10828

~~ISO/TC 60/SC 1/WG 7~~

ISO/TC 60/SC 1

Secretariat: ~~BSI~~BSI

~~Worm gears — Worm profiles and gear mesh geometry~~

~~*Engrenage*~~Date: 2023-11-13

Worm gears — Worm profiles and gear mesh geometry

Engrenages à vis cylindriques — Géométrie des profils de vis et de l'engrènement

Document type:

Document subtype:

Document stage:

Document language:

FDIS stage

Document type:

Document subtype:

Document stage:

Document language:

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: + 41 22 749 01 11
E-mail: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents—Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO ~~documents~~document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see ~~www.iso.org/directives~~www.iso.org/directives).

~~Attention is drawn~~ISO draws attention to the possibility that ~~some of~~ the ~~elements~~implementation of this document may ~~be~~involve the ~~subject~~use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights~~.~~ in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights. ~~Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).~~

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see ~~www.iso.org/iso/foreword.html~~www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 60, *Gears,* Subcommittee SC 1, *Nomenclature and wormgearing*.

This first edition of ISO 10828 cancels and replaces the second edition of ISO/TR 10828:2015.

The main changes are as follows:

— conversion from a Technical Report to an International Standard and implementation of necessary editorial changes;

— incorporation of a new ~~informative Annex H~~Annex H on interface for geometry for involute worms defined as cylindrical gear with ISO 21771-1.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at ~~www.iso.org/members.html~~www.iso.org/members.html

Introduction

This document includes the formulation for the geometrical dimensions of the worm and worm wheel, and that for the determination of gear mesh geometry (path of contact, zone and lines of contact) with the details to determine the non-dimensional parameters used to apply load capacity calculations (radius of curvature, sliding velocities). Thread forms of the worms of worm gear pairs are commonly related to the following machining processes:

— the type of machining process (turning, milling, grinding, metal forming);

— the shapes of edges or surfaces of the cutting tools used;

— the tool position relative to an axial plane of the worm;

— where relevant, the diameters of disc type tools (grinding wheel diameter).

The calculations developed in this document are relatively complex as they involved primary and secondary derivatives of mathematical expression. In order to facilitate the writing of equations, the numerators in the left part of formulae are often omitted; this is why several formulae have special symbols and are not written in a mathematical way:

Example in ~~Formula B12~~ ~~$\frac{d}{dy_G}\alpha_G(y_G)$~~ Formula (B.12) $\frac{d}{dy_G}\alpha_G(y_G)$ is written ~~$\mathrm{d}\alpha_G(y_G)$~~ $d\alpha_G(y_G)$

Example in ~~Formula B14~~ ~~$\frac{d^2}{dy_G{}^2}\alpha_G(y_G)$~~ Formula (B.14) $\frac{d^2}{dy_G{}^2}\alpha_G(y_G)$ is written ~~$\mathrm{d}2\alpha_G(y_G)$~~ $d2\alpha_G(y_G)$

In this document, the figures show a generic representation of worm profile types A, I, N, K, C. For the influence of different worm profile types, see ~~Annex E.~~Annex E.

This document introduces all the aspects concerning the gear mesh geometry to define conjugate worm wheel, path of contact, lines of contact and other associated geometrical characteristics.

~~Worm gears — Worm profiles and gear mesh geometry~~