International

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Worm gears — Worm profiles and gear mesh geometry

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

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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 Annex H on interface for geometry for involute worms defined as cylindrical gear with ISO 21771-1.

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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 (B.12) $\frac{d}{dy_G}\alpha_G(y_G)$ is written $\mathrm{d}\alpha_G(y_G)$

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

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.

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.