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Tolerances for Cylindrical Gear Teeth

Tolerances for Pitch-span Deviations

DIN 3962 Part 3

Toleranzen für Stirnradverzahnungen; Toleranzen für Teilungs-Spannenabweichungen

1 Scope

The diagram applies to the stating of tolerances of the pitch-span deviation F_{pk} (amounts in µm) defined in DIN 3960.

2 Other relevant Standards

DIN 3960 Definitions and parameters for cylindrical gears and cylindrical gear pairs with involute teeth

DIN 3961 Tolerances for cylindrical gear teeth; bases

DIN 3962 Part 1 Tolerances for cylindrical gear teeth; tolerances for deviations of individual parameters

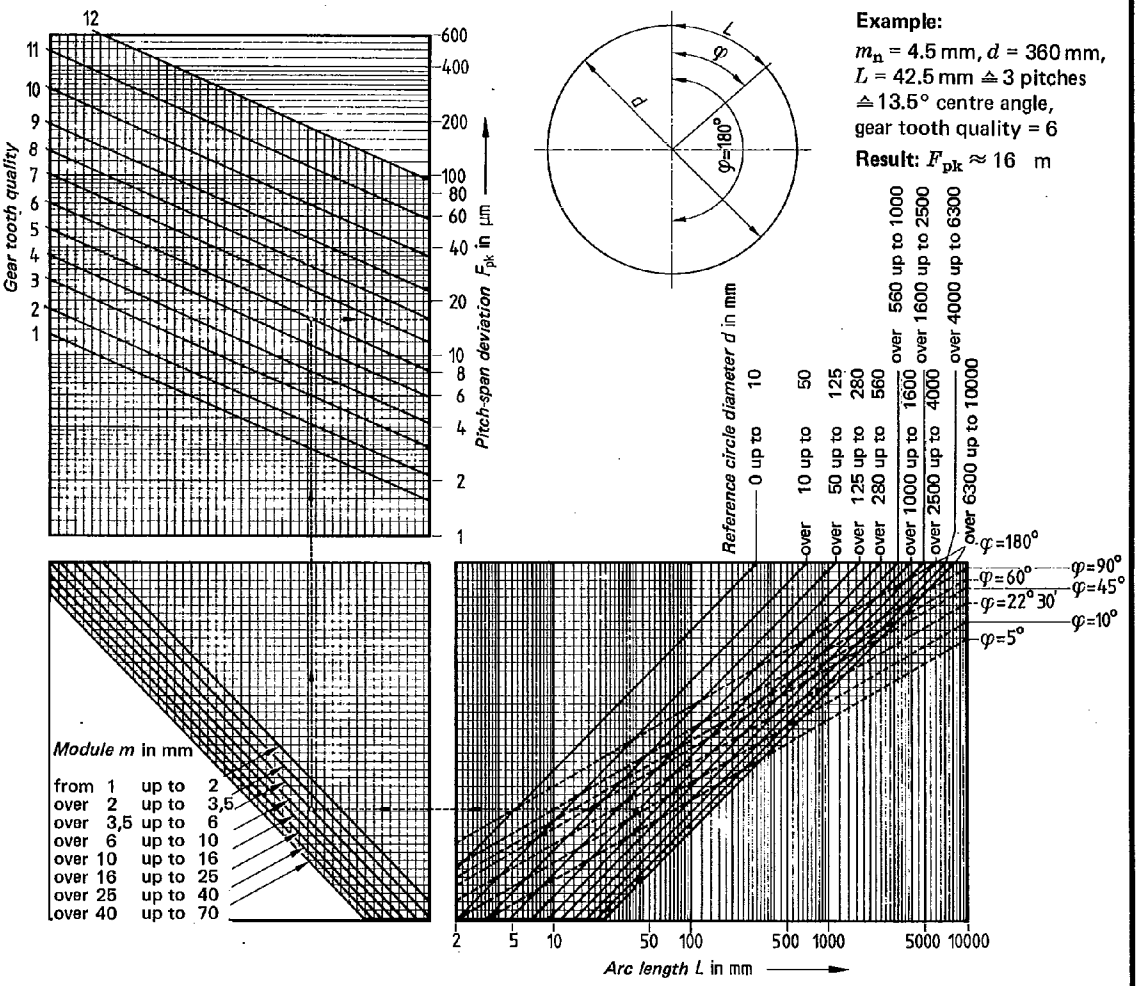
3 Determination of tolerances

m_n normal module in mm

d reference circle diameter in mm

φ centre angle in deg (°)

L arc length in mm



Example:

m_n = 4.5 mm, d = 360 mm, L = 42.5 mm ≙ 3 pitches ≙ 13.5° centre angle, gear tooth quality = 6

Result: $F_{pk} \approx 16$ m

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In general the tolerancing of the cumulative pitch over 45° and 180° of the gear periphery according to the values $F_{p\,z/8}$ and F_p in DIN 3962 Part 1 is fully adequate. However, where additional tolerances are necessary for any other arc lenghts or angle ranges, they should be selected according to the diagram in this Standard.

F_p is at least equal to f_p. Therefore if with small arc lengths L it should happen that $F_p < f_p$, then F_p should be made equal to f_p, see also DIN 3961, August 1978 edition, Section 6.4.

Further Standards and codes

DIN 3962 Part 2 Tolerances for cylindrical gear teeth; tolerances for tooth trace deviations

DIN 3963 Tolerances for cylindrical gear teeth; tolerances for working deviations

DIN 3964 Centre distance allowances and shaft position tolerances of housings for cylindrical gear transmissions

DIN 3967 System of gear fits; backlash, tooth thickness allowances and tooth thickness tolerances; bases, calculation of tooth thickness allowances, conversion of allowances for the different measuring methods

DIN 3999 Symbols for gear teeth

VDI/VDE 2605 Circular pitches and plane angles. Fundamental terms for angle dimensions, angle measurements, angle standards and their errors