

ISO 10300-1:2023-08 (E)

Calculation of load capacity of bevel gears - Part 1: Introduction and general influence factors

Contents		Page
Foreword		v
Introduction		vii
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Symbols and general subscripts	2
5	Application	6
5.1	Calculation methods	6
5.1.1	General	6
5.1.2	Method A	6
5.1.3	Method B	6
5.1.4	Method C	6
5.2	Safety factors	7
5.3	Rating factors	7
5.3.1	Testing	7
5.3.2	Manufacturing tolerances	7
5.3.3	Implied accuracy	8
5.4	Further factors to be considered	8
5.4.1	General	8
5.4.2	Lubrication	8
5.4.3	Misalignment	8
5.4.4	Deflection	8
5.4.5	Materials and metallurgy	8
5.4.6	Residual stress	8
5.4.7	System dynamics	9
5.4.8	Contact pattern	9
5.4.9	Corrosion	9
5.5	Further influence factors in the basic formulae	9
6	External force and application factor, K_A	10
6.1	Nominal tangential force, torque, power	10
6.2	Variable load conditions	10
6.3	Application factor, K_A	10
6.3.1	Application factor – General	10
6.3.2	Influences affecting external dynamic loads	11
6.3.3	Establishment of application factors	11
7	Dynamic factor, K_v	11
7.1	General	11
7.2	Design	11
7.3	Manufacturing	12
7.4	Transmission error	12
7.5	Dynamic response	12
7.6	Resonance	13
7.6.1	General	13

7.6.2	Gear blank resonance	13
7.7	Calculation methods for Kv	13
7.7.1	General comments	13
7.7.2	Method A, Kv-A	14
7.7.3	Method B, Kv-B	14
7.7.4	Method C, Kv-C	18
8	Face load factors, KH, KF	20
8.1	General comments	20
8.2	Method A	20
8.3	Method B	21
8.4	Method C	21
8.4.1	Face load factor, KH-C	21
8.4.2	Local face load factor, KH,Y	21
8.4.3	Face load factor, KF-C	22
8.4.4	Lengthwise curvature factor for bending strength, KF0	22
9	Transverse load factors, KH, KF	23
9.1	General comments	23
9.2	Method A	24
9.3	Method B	24
9.3.1	Bevel gears having virtual cylindrical gears with contact ratio $v < 2$	24
9.3.2	Bevel gears having virtual cylindrical gears with contact ratio $v > 2$	24
9.4	Method C	25
9.4.1	General comments	25
9.4.2	Assumptions	25
9.4.3	Determination of the factors	25
9.5	Running-in allowance, y	25
Annex A (normative) Calculation of virtual cylindrical gears -- Method B1		27
Annex B (normative) Calculation of virtual cylindrical gears -- Method B2		43
Annex C (informative) Values for application factor, KA		49
Annex D (informative) Contact patterns		50
Bibliography		54