December 2012

DIN 743 Supplement 1

DIN

ICS 21.120.10

Supersedes
DIN 743 Supplement 1:2000-10

This supplement provides information relating to DIN 743, but does not contain any additional specifications.

Calculation of load capacity of shafts and axles – Supplement 1: Examples to part 1 to 3, English translation of DIN 743 Beiblatt 1:2012-12

Tragfähigkeitsberechnung von Wellen und Achsen – Beiblatt 1: Anwendungsbeispiele zu Teil 1 bis 3, Englische Übersetzung von DIN 743 Beiblatt 1:2012-12

Calcul de la capacité des arbres et axes – Supplément 1: Exemples avec partie 1 à 3, Traduction anglaise de DIN 743 Beiblatt 1:2012-12

Document comprises 20 pages

Translation by DIN-Sprachendienst.
In case of doubt, the German-language original shall be considered authoritative.

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A comma is used as the decimal marker.

Contents

Foreword

This supplement has been prepared by Working Committee NA 060-34-32 AA *Wellen- und Well-Nabe-Verbindungen* of Section *Antriebstechnik* of the *Normenausschuss Maschinenbau* (Mechanical Engineering Standards Committee) in DIN.

DIN 743 *Calculation of load capacity of shafts and axles* comprises:

— *Part 1: General*

— *Part 2: Theoretical stress concentration factors and fatigue notch factors*

— *Part 3: Strength of materials*

— *Part 4: Fatigue limit, endurance limit – Equivalently damaging continuous stress*

— *Supplement 1: Examples to part 1 to 3*

— *Supplement 2: Examples to part 4*

Amendments

This document differs from DIN 743 Supplement 1:2000-10 as follows:

a) Subclause 4.3 “Calculation of the factor of safety against fatigue failure and permanent deformation for an axle with shoulder and undercut in bending (example)” has been replaced by Subclause 3.3 “Calculation of the factor of safety against fatigue failure and permanent deformation for an axle with groove for circlip in bending according to Figure 3”;

b) the document has been editorially revised.

1 Normative references

DIN 743-1, *Calculation of load capacity of shafts and axles — Part 1: General*

DIN 743-2, *Calculation of load capacity of shafts and axles — Part 2: Theoretical stress concentration factors and fatigue notch factors*

DIN 743-3, *Calculation of load capacity of shafts and axles — Part 3: Strength of materials*

2 Symbols, designations and units

Symbol	Designation	Unit
d	Component diameter at notch cross section; in ring cross section: wall thickness	mm
d_B	Material reference diameter	mm
d_{BK}	Notch reference diameter	mm
d_{eff}	Diameter relevant for heat treatment	mm
n	Sensitivity factor	
r	Notch radius	mm
G'	Relative stress gradient	mm^{-1}
R_z	Average peak-to-valley height	µm
S	Calculated factor of safety	
$K_{\sigma,\tau}$	Total influence factor	
$K_1(d_{eff})$	Technological size influence factor	
$K_2(d)$	Geometrical size influence factor (for the unnotched, polished round bar)	
$K_3(d)$	Geometrical size influence factor (for the fatigue notch factor)	
K_{2F}	Static support factor	
$K_{F\sigma}$, $K_{F\tau}$	Influence factor for surface roughness	
K_v	Influence factor for surface conditioning	
α_σ, α_τ	Stress concentration factor	
β_σ, β_τ	Fatigue notch factor	
γ_F	Increase factor for yield point	
$\sigma_{zd,bW}$, τ_{tW}	Material fatigue limit under reversed stress for reference diameter d_B	N/mm²
$\sigma_{zd,\,bWK}$, τ_{tWK}	Component fatigue limit under reversed stress	N/mm²
$\sigma_{zd,bADK}$, τ_{tADK}	Stress amplitude of component fatigue strength for defined mean stress	N/mm²
$\sigma_{zd,bODK}$, τ_{tODK}	Maximum stress for component fatigue strength for defined mean stress	N/mm²