

1. Record Nr.	UNINA9910969567103321
Autore	Stachowiak G. W (Gwidon W.)
Titolo	Engineering tribology // Gwidon W. Stachowiak, Andrew W. Batchelor
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier Butterworth-Heinemann, 2005
ISBN	1-281-07148-X 9786611071486 0-08-053103-2
Edizione	[3rd ed.]
Descrizione fisica	1 online resource (831 p.)
Altri autori (Persone)	BatchelorA. W (Andrew W.)
Disciplina	621.8/9
Soggetti	Tribology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Engineering Tribology; Copyright Page; Content; CHAPTER 1. INTRODUCTION; 1.1 Background; 1.2 Meaning of tribology; 1.3 Cost of friction and wear; 1.4 Summary; Revision questions; References; CHAPTER 2. PHYSICAL PROPERTIES OF LUBRICANTS; 2.1 Introduction; 2.2 Oil viscosity; 2.3 Viscosity temperature relationship; 2.4 Viscosity index; 2.5 Viscosity pressure relationship; 2.6 Viscosity-shear rate relationship; 2.7 Viscosity measurements; 2.8 Viscosity of mixtures; 2.9 Oil viscosity classification; 2.10 Lubricant density and specific gravity; 2.11 Thermal properties of lubricants 2.12 Temperature characteristics of lubricants2.13 Other lubricant characteristics; 2.14 Optical properties of lubricants; 2.15 Additive compatibility and solubility; 2.16 Lubricant impurities and contaminants; 2.17 Solubility of gases in oils; 2.18 Summary; Revision questions; References; CHAPTER 3. LUBRICANTS AND THEIR COMPOSITION; 3.1 Introduction; 3.2 Mineral oils; 3.3 Synthetic oils; 3.4 Emulsions and aqueous lubricants; 3.5 Greases; 3.6 Lubricant additives; 3.7 Summary; Revision questions; References; CHAPTER 4. HYDRODYNAMIC LUBRICATION; 4.1 Introduction; 4.2 Reynolds equation 4.3 Pad bearings4.4 Converging-diverging wedges; 4.5 Journal bearings; 4.6 Thermal effects in bearings; 4.7 Limits of hydrodynamic lubrication; 4.8 Hydrodynamic lubrication with non-Newtonian fluids; 4.9 Reynolds equation for squeeze films; 4.10 Porous bearings; 4.11 Summary; Revision questions; References; CHAPTER 5.

COMPUTATIONAL HYDRODYNAMICS; 5.1 Introduction; 5.2 Non-dimensionalization of the Reynolds equation; 5.3 The Vogelpohl parameter; 5.4 Finite difference equivalent of the Reynolds equation 5.5 Numerical analysis of hydrodynamic lubrication in idealized journal and partial arc bearings 5.6 Numerical analysis of hydrodynamic lubrication in a real bearing; 5.7 Summary; Revision questions; References; CHAPTER 6. HYDROSTATIC LUBRICATION; 6.1 Introduction; 6.2 Hydrostatic bearing analysis; 6.3 Generalized approach to hydrostatic bearing analysis; 6.4 Optimization of hydrostatic bearing design; 6.5 Aerostatic bearings; 6.6 Hybrid bearings; 6.7 Stability of hydrostatic and aerostatic bearings; 6.8 Summary; Revision questions; References; CHAPTER 7. ELASTOHYDRODYNAMIC LUBRICATION 7.1 Introduction 7.2 Contact stresses; 7.3 Contact between two elastic spherical or spheroidal bodies; 7.4 Elastohydrodynamic lubricating films; 7.5 Micro-elastohydrodynamic lubrication and mixed or partial EHL; 7.6 Surface temperature at the conjunction between contacting solids and its effect on EHL; 7.7 Traction and EHL; 7.8 Summary; Revision questions; References; CHAPTER 8. BOUNDARY AND EXTREME PRESSURE LUBRICATION; 8.1 Introduction; 8.2 Low temperature - low load lubrication mechanisms; 8.3 Low temperature - high load lubrication mechanisms 8.4 High temperature - medium load lubrication mechanisms

Sommario/riassunto

As with the previous edition, the third edition of Engineering Tribology provides a thorough understanding of friction and wear using technologies such as lubrication and special materials. Tribology is a complex topic with its own terminology and specialized concepts, yet is vitally important throughout all engineering disciplines, including mechanical design, aerodynamics, fluid dynamics and biomedical engineering. This edition includes updated material on the hydrodynamic aspects of tribology as well as new advances in the field of biotribology, with a focus throughout on the engineering ap
