



Shigley's Mechanical Engineering Design, 11th edition

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NEW IN THE ELEVENTH EDITION

Enhancements and modifications to the eleventh edition are described in the following summaries:

- Chapter 6, Fatigue Failure Resulting from Variable Loading, has received a complete update of its presentation. The goals include clearer explanations of underlying mechanics, streamlined approach to the stress-life method, and updates consistent with recent research. The introductory material provides a greater appreciation of the processes involved in crack nucleation and propagation. This allows the strain-life method and the linear-elastic fracture mechanics method to be given proper context within the coverage, as well as to add to the understanding of the factors driving the data used in the stress-life method. The overall methodology of the stress-life approach remains the same, though with expanded explanations and improvements in the presentation.
- Chapter 2, Materials, includes expanded coverage of plastic deformation, strain-hardening, true stress and true strain, and cyclic stress-strain properties. This information provides a stronger background for the expanded discussion in Chapter 6 of the mechanism of crack nucleation and propagation.
- Chapter 12, Lubrication and Journal Bearings, is improved and updated. The chapter contains a new section on dynamically loaded journal bearings, including the mobility

method of solution for the journal dynamic orbit. This includes new examples and end-of-chapter problems. The design of big-end connecting rod bearings, used in automotive applications, is also introduced.

- Approximately 100 new end-of-chapter problems are implemented. These are focused on providing more variety in the fundamental problems for first-time exposure to the topics. In conjunction with the web-based parameterized problems available through McGraw-Hill Connect Engineering, the ability to assign new problems each semester is ever stronger.

The following sections received minor but notable improvements in presentation:

- Section 3–8 Elastic Strain
- Section 3–11 Shear Stresses for Beams in Bending Section 3–14 Stresses in Pressurized Cylinders Section 3–15 Stresses in Rotating Rings
- Section 4–12 Long Columns with Central Loading Section 4–13 Intermediate-Length Columns with Central Loading
- Section 4–14 Columns with Eccentric Loading
- Section 7–4 Shaft Design for Stress
- Section 8–2 The Mechanics of Power Screws Section 8–7 Tension Joints—The External Load Section 13–5 Fundamentals
- Section 16–4 Band-Type Clutches and Brakes Section 16–8 Energy Considerations
- Section 17–2 Flat- and Round-Belt Drives Section 17–3 V Belts

In keeping with the well-recognized accuracy and consistency within this text, minor improvements and corrections are made throughout with each new edition. Many of these are in response to the diligent feedback from the community of users.