Machine Tool Practices

Ninth Edition

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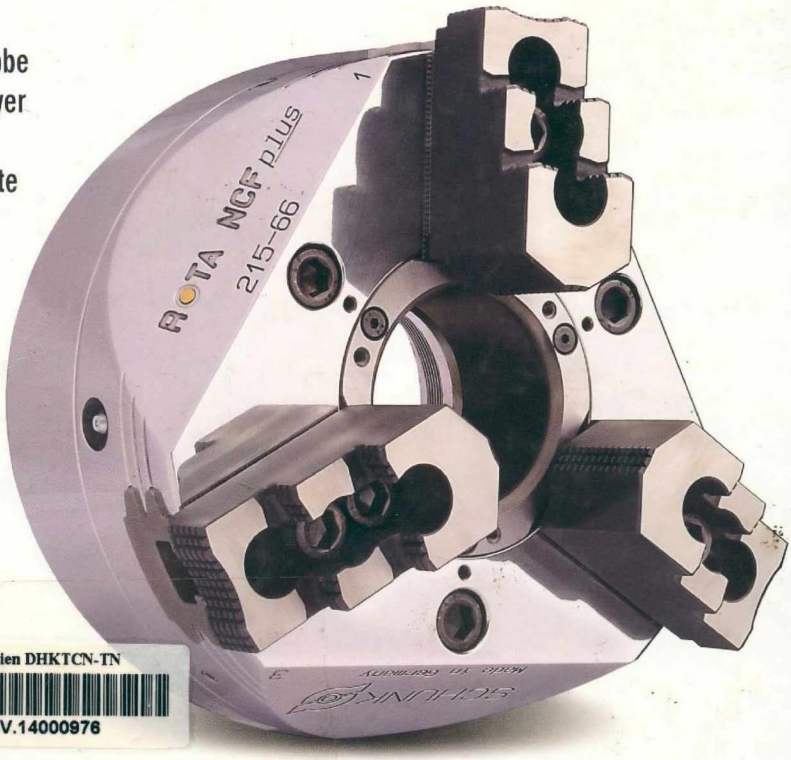

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Preface

As a definitive text in the field for more than 30 years, *Machine Tool Practices*, 9th edition, is geared toward successfully training computer numerical control (CNC) and conventional machine operators, general machinists, and tool and die makers. It is ideal for those enrolled in apprenticeship training, community college courses, or vocational programs. Presented in a student-friendly manner, the book lends itself well to classes that take a combined lecture/laboratory approach, as well as to a self-paced instructional environment.

THE STORY BEHIND THE BOOK

This text grew out of a desire on the part of the coauthors to develop a richly illustrated national publication that could fit into both a self-paced instructional environment and a traditional lecture laboratory system. In 1968 the state of Oregon established community colleges to provide training in the skills that local industries required, as well as to establish a lower-cost alternative to completing the first two years of a four-year college degree. The Oregon Department of Education financed and encouraged instructors to develop new teaching materials. As a result, John Neely and Roland Meyer at Lane Community College in Eugene, Oregon, created a ground-breaking methodology—a highly successful self-paced instructional program in machine shop technology. Warren White initiated a similar curriculum development project backed by the California Department of Education at DeAnza College, Cupertino, California, namely, the Individualized Machinist's Curriculum. Richard Kibbe and Roland Meyer were participating writers in this effort. Patterned after the self-paced curriculum in machine shop technology at Lane College and the California Community Colleges' Individualized Machinist's Curriculum project, the text has been successfully embraced nationally since 1979 and continues to be one of the leading books in the market today.

STRENGTHS AND UNIQUE SELLING POINTS

With more than 400 line drawings and 1,200 photographs, *Machine Tool Practices* is the best-illustrated book in this field. The text emphasizes practical knowledge shop and machine tool technology throughout and superbly illustrates the tools, equipment, and techniques that students are most likely to encounter in an actual industrial machine shop environment.

CLASSICAL PRACTICE/CURRENT TRENDS

Machine tools and machining practices have changed drastically over the past few years with advances in technology. No matter what directions the field of machine tools and machining practices take in the future, *Machine Tool Practices* offers classical practice that is timely and essential to the basic foundation a student requires to participate effectively in the machining area of manufacturing technology. With the solid background in standard practice this text provides, students will confidently understand, appreciate, and operate computer-controlled and computer-supported machining as well as other high-tech manufacturing processes.

ORGANIZATION OF THE BOOK: TOTAL FLEXIBILITY TO SUIT YOUR TEACHING STYLE

The book is divided into 13 major sections and provides total flexibility to suit your teaching style. Appendix 1 contains Answers to Self-Tests, Appendix 2 offers practical General Tables, and Appendix 3 showcases Precision Vise Project Drawings. For the student, this project embodies many setups and techniques used in general

precision machine shop work. The text also contains a Gloossary and an Index. Many units are designed aroound specific projects that provide performance expperience for students. The book structure makes it eassy for instructors to include additional projects moore applicable to specific individual programs.

NEEW TO THIS EDITION

Upodated to reflect the very latest trends and technollogy in the machine tool field, the art program in thee ninth edition has been modernized to reflect the reaal-world environment and includes:

- More than 600 new color photos that depict the finer aspects of machine tools practice, including CNC
- Approximately 400 revised line drawings that provide easy comprehension and visually reinforce learning

In addition, this edition has been accuracy checked and also features:

- Expanded CNC content
- Additional computer-aided manufacturing (CAM) coverage
- A new self-test question set in each chapter
- A list of useful websites at the end of appropriate units that refer the reader to state-of-the-art information on cutting tools and machine shop equipment

Guided Tour

Machine Tool Practices is divided into sections comprised of several units. To tool up, we invite you to take the Guided Tour.

HALLMARK FEATURES

Introductory Overview

Introductions summarize and provide an overview of the main themes in each major section and help reinforce topics.

Objectives

Clearly stated objectives enable you to focus on what you should achieve by the end of each unit.

OBJECTIVES

After completing this unit, you should be able to:

- Install and remove a bronze bushing using an arbor press.
- Press on and remove a ball bearing from a shaft on an arbor press using the correct tools.
- Press on and remove a ball bearing from a housing using an arbor press and correct tooling.
- Install and remove a mandrel using an arbor press.
- Install and remove a shaft with key in a hub using the arbor press.

Photographs

Extensive use of color photographs provides you with views of actual machining operations.

Figure B-19 Pressure being applied to straighten shaft.

Other straightening jobs on flat stock and other shape

Graphic Explanations

These detailed explanations highlight important concepts, common errors, and difficulties that machinists encounter.