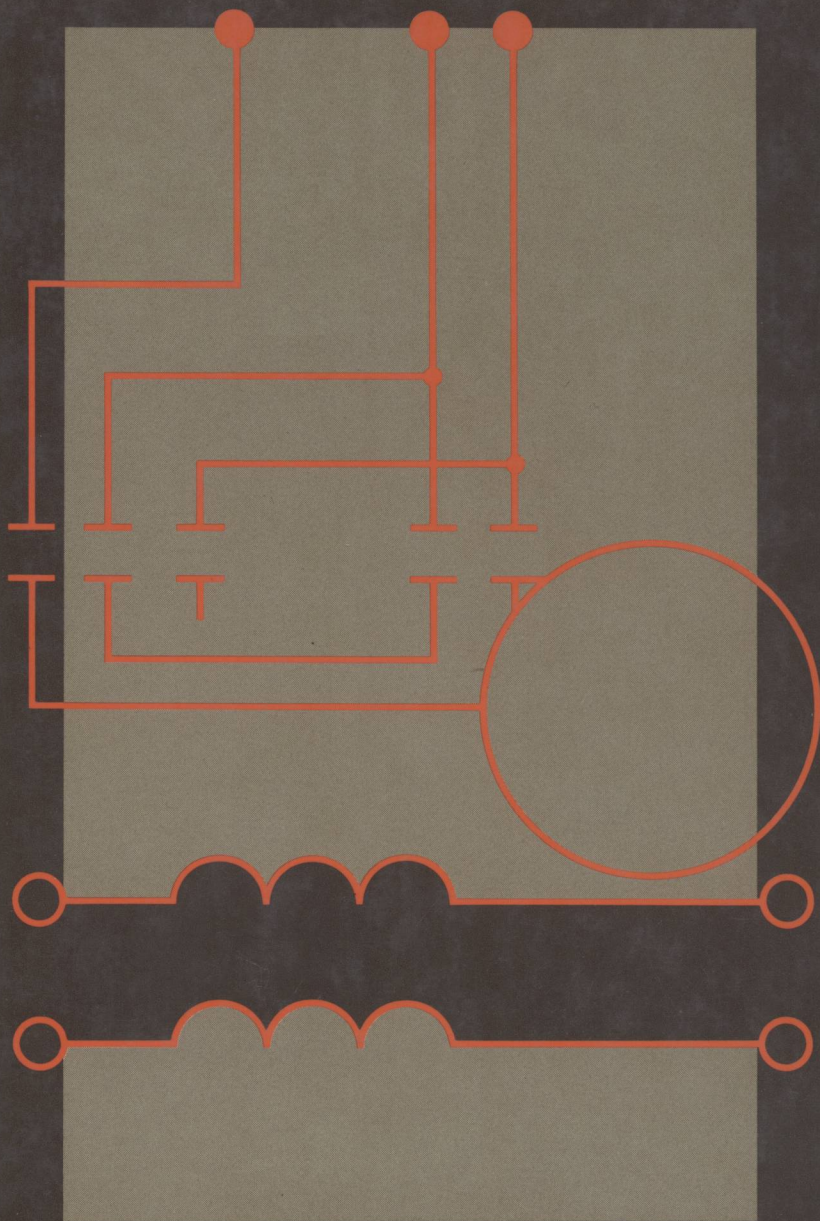


AC AND DC MOTOR CONTROL



GERALD A. MOBERG

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AC AND DC MOTOR CONTROL



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*To my dear wife Vera Evelyn,
whose inspiration and encouragement
made this textbook possible*



PREFACE

The amount of information a tradesperson in the electrical industry is exposed to, can be monumental. With this in mind, AC and DC motor control, relay logic, and the related electrical code are presented in a manner easy to understand, and applicable to on-the-job situations.

The theory of control, operation, and design is presented clearly and concisely, and a logical approach is taken to instruct the reader “how-to” and “why.”

The threads that tie the various sections of the textbook together are the hands-on approach and the requirements of the electrical code. Although the reader needs a working knowledge of basic electrical theory and terminology before making use of this textbook, the mathematical requirements are minimal.

Section 1 provides an introduction to motor control, and Section 2 sets the stage for the application of the electrical code requirements. Section 3 provides a detailed study of full voltage motor starting. Section 4 entitled “Specialty Circuits” discusses circuits and equipment that are of utmost importance. The material discussed in Section 5 is common to Sections 6 to 11, introducing time-delay and transition.

Sections 6 to 10 deal with the design, installation, and troubleshooting of power and control circuits for the various starting methods used to start large AC motors. Section 11 covers design, installation, and troubleshooting of power and control circuits for DC motors.

Summary questions have been included for all sections, with electrical code, troubleshooting, and multiple-choice problems provided for Sections 6 to 11.

Lab Sections A and B comprise the Student's Lab Manual and have been carefully designed to coincide with the lessons presented. The manual provides the opportunity to apply the concepts of the text discussion in a meaningful way.

The solutions to the lab assignments are included in an Instructor's Manual. It is the instructor's prerogative to accept, add to, or delete any particular assignment shown in the student's manual. The text and lab manual may be used at various levels of instruction.

A discussion of solid state control and programmable controllers is purposefully omitted as these topics require in-depth coverage and should not be considered lightly. The subject of relay logic must be fully understood before moving on to programmable control.

In addition to being used in the classroom, this textbook will be useful as a reference by electricians, refrigeration technicians, maintenance personnel, electrical inspectors, electrical designers, and anyone involved with the design, installation, or maintenance of motor control and related equipment.

GERALD A. MOBERG

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I also express my gratitude to the editor, Hank Stewart and to the many hard working members of the staff at John Wiley & Sons who helped to make this book a reality: Elizabeth Doble, Frank Grazioli, Deborah Herbert, Lilly Kaufman, Joe Keenan, Ishaya Monokoff, Kevin Murphy, and Kieran Murphy.

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G. A. M.

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