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TROUBLESHOOTING with the OSCILLOSCOPE



By **ROBERT G. MIDDLETON**

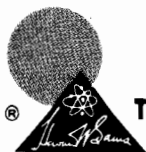
AN INDISPENSABLE "HOW-
TO" GUIDE ON USING AN
OSCILLOSCOPE IN SERVIC-
ING ELECTRONIC CIRCUITS.

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TROUBLESHOOTING with the OSCILLOSCOPE

By ROBERT G. MIDDLETON



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**TROUBLESHOOTING WITH THE
OSCILLOSCOPE**

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PREFACE

Troubleshooting modern electronic circuits literally demands the use of an oscilloscope, yet many service technicians experience difficulty in learning how to use this versatile instrument.

Of the numerous service technicians who have difficulty in employing an oscilloscope, many own or have used one, but really don't understand its functions well enough to set it up for proper waveform displays. On the other hand, technicians who fully understand the workings of a scope rate it among their most valuable instruments.

This book was planned and written with the full realization of the type of practical instructional help needed by service technicians. Its purpose is to help you obtain the maximum benefits from a scope, even if you have never used the instrument before.

Beginning with the first chapter, you'll learn the purpose and function of every oscilloscope operating control. Whether your unit is simple or elaborate, the mystery of how it operates is dispelled in this introductory chapter.

The next subject is the selection and application of probes, a very important consideration in obtaining proper waveform displays. Subsequent chapters are devoted to explaining how a scope is used in localizing TV troubles to specific receiver sections, and then to a particular stage. In several cases, you'll find it possible to use a scope to pinpoint the defective component itself.

Use of the scope is divided into two general categories—signal-tracing circuits supplied with external signals, and checking waveforms in signal-generating stages which operate independently of external signals. Since a scope can often give more information when particular types of external signals are utilized, material has been included to explain the advantages of using CW and modulated sine waves, video waves, FM sweep signals, and square waves.

While the major portion of this book concentrates on troubleshooting television circuits, chapters on servicing radio receivers and audio amplifiers have also been included to give you the thorough background needed to use the scope for checking practically any type of electronic circuit. To obtain the maximum value from the contents, I strongly suggest you actually work with your equipment as the various procedures are described. This "reinforced learning," gained at the workbench, will more than double the benefits you will derive from reading alone.

ROBERT G. MIDDLETON

January, 1962

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