

X-ray Repair, Second Edition—A Comprehensive Guide to the Installation and Servicing of Radiographic Equipment

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Just the thought of writing a book encompassing the installation and servicing of radiographic equipment is likely to strike fear in any biomed. It is like trying to write a one-size-fits-all automotive service manual, and Panichello falls short. In all fairness to the author, however, probably no one could meet this goal; it would take volumes, and given the pace of electronics technology advancements, would never be completed. That aside, Panichello provides an excellent starting point for understanding the basics of x-ray units, leading to understanding the underlying principles of modern units and specific designs.

Audience: This book is targeted at individuals with varying degrees of knowledge and experience. Novices will appreciate the historical and generic descriptions of the components of an x-ray system, as well as the general safety issues addressed. Experienced techs will appreciate the chapters on installation of x-ray rooms and image quality. Every step of the way, the author provides plenty of general information, as well as tips based upon his own experience. Even the most experienced serviceperson will smile and nod when reading the chapter entitled “Establishing and Maintaining Good Customer Relations”—we all have either been there ourselves or know someone who has.

Features: The first two chapters are targeted at the biomed who knows nothing about radiology, but has a lot of big, expensive equipment. The book begins with a description of Roentgen’s discovery and naming of x-rays, and the second chapter concludes with a brief history of the development of x-ray units. The basics of a generic x-ray machine are addressed throughout the remainder of the book.

However, the author shows his age and dates his knowledge base when he mentions “the analog mA meter on the front panel” and states that tube current (the mA during the exposure) “adjustment is accomplished by moving a sliding tap on a large wire-wound resistor...in order to increase or decrease resistance in the filament circuit.” Today’s biomed is likely to perform adjustments in this manner only on old equipment either in an equally old chiropractor’s office or while on a humanitarian mission to a developing nation.

On the positive side, the chapters dealing with x-ray safety, system installation, preventive maintenance, image quality, and troubleshooting are virtually timeless. No matter how old the unit or how recent its design, x-ray cables still short, tubes become gassy, and the film processor still is responsible for problems that mimic those found in the x-ray unit itself. These situations occur regularly; the serviceperson needs to determine where the real problem lies and deal with it accurately and expeditiously. The reader should be aware that each of these machines’ functions are still performed by the basic x-ray systems, but the “how” is more computerized, more device-initiated, and more automated than is described in the book.

Assessment: Although the book falls short of its overly ambitious title, it is an excellent read for the novice x-ray serviceperson, because of its synopsis history, lucid explanations, logical progression (of room installations, troubleshooting, etc.), and fatherly advice in the final two chapters. The beginning x-ray maintainer must keep in the back of his or her mind that, although x-ray units are much “smarter” than they were a decade ago and some of the circuits are much more complicated than described, the functions depicted—mA adjustment, kVp calibration, collimator light field verification, etc.—still must be (and are) performed, but in different ways than depicted in this book. Although this book cannot hope to replace the manufacturers’ literature supplied with x-ray equipment, it would make a good addition to the library of a teaching institution, a biomed shop, or a serious student of x-ray equipment maintenance. ■

Reviewed by

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