Picker MTX 340/360/380/3100 X-ray Controls Maintenance Course

Course length: 1 Week
CEU's Awarded: 4

COURSE INTRODUCTION
The Picker MTX course is designed to teach the service professional those skills necessary to fully service this x-ray control. This includes all calibration procedures, functional checks, and troubleshooting techniques. The course includes integrated lectures, labs, and documentation which complement each other ensuring the maximum learning environment.

COURSE OBJECTIVES
At the conclusion of this course, attendees will be able to:

- Troubleshoot to the component or board level.
- Calibrate all circuitry to the manufacturer's specification.
- Perform all related CDRH compliance testing.
- Verify the system performance.

PREREQUISITES FOR ADMISSION
Attendees must possess the knowledge acquired through attendance at our Advanced Concepts of Radiographic Imaging Maintenance-Level II or the equivalent electronics and service experience. A strong microprocessor background is recommended.

DAY 1

I. Introduction
II. Console operation
  A. Knobology
  B. Technique selection
  C. Dialogue display
  D. Exposure Data display
III. Block diagram electrical operation
IV. Cabinet layout

LAB ACTIVITIES

I. System operation
II. Physical layout
  A. Cabinet layout
  B. Component identification
III. Introduction to display messages
  A. Exposure data
  B. Dialogue data
IV. System configuration

DAY 2

I. Turn on circuitry
II. Primary switching circuitry
III. KV control logic diagram
  A. Line transformer
  B. Line rectifier
  C. Chopper control circuitry
  D. Inverter control circuitry
    1. Pulse width modulation
    2. Short circuit protection
    3. Voltage controlled oscillator
    4. Peak value acquisition
    5. Impulse processing

LAB ACTIVITIES

I. KV waveform analysis
II. KV calibration
  A. Baseline adjustment
  B. Maximum fluoro KV
  C. Remote KV meter accuracy
III. KV troubleshooting

DAY 3

I. Filament logic diagram
  A. High frequency oscillator
  B. CPU drive circuitry
  C. Pulse width modulation circuitry
  D. Filament feedback
  E. Real mA feedback
  F. Maximum filament limit
  G. Open filament detect
  H. Rad/fluoro switching
II. Filament calibration
III. HV transformer circuitry
  A. Tube selection
  B. HV rectification
IV. Electronics module CPU
  A. Interrupts
  B. Memory and addressing
  C. Input / output ports

LAB ACTIVITIES

I. mA waveform analysis
II. mA calibration
  A. Automatic calibration
  B. Filament data editing
III. Filament transformer ratio
IV. mA troubleshooting

DAY 4

I. Rotor controller logic diagram
  A. Low speed operation
  B. High speed operation
    1. Inverter circuit
    2. Start to run switching
  C. Control interface circuits
  D. Brake cycle
II. Automatic exposure control circuitry
  A. Density control
  B. KV compensation
  C. PMT power supply

LAB ACTIVITIES

I. Rotor waveform analysis
II Rotor calibration
III. AEC calibration
IV. AEC troubleshooting

DAY 5

I. Console CPU
  A. Serial communication
  B. RAM and ROM memory
  C. Interrupt circuitry
  D. Real time clock circuitry
  E. Keyboard and display control
  C. Anatomical programming
II. System review
III. Final exam and course critique
IV. Parts sourcing