Servicing the Shimadzu MobileDart Evolution MX8 Portable (DOM 2018+)

RADIOLOGICAL SERVICE TRAINING INSTITUTE

Introduction

Portable X-ray units are found in most radiological/diagnostic imaging departments. They are typically exposed to a higher abuse level due to elevator openings, tight room entrances, limited patient access, and lack of space for maneuverability. This constant abuse will cause premature mechanical failure if not properly identified and corrected early. The trained service professional will be taught the skills necessary for mechanical, electromechanical, and electronic maintenance of the Shimadzu MobileDart Evolution MX8. Each sub-system of the mechanical unit, X-Ray generator, and digital detector system are thoroughly analyzed.

Models Covered

This course will cover the MobileDart Evolution MX8C (Canon) & MX8K (Konica)

Prerequisites

To attend this course, the service professional must have a good understanding of the principles gained through attending Phase I of the RSTI X-Ray Certificate Series, or four years equivalent experience. The service professional must also possess a good mechanical aptitude.

Objectives

At the conclusion of this course participants will be able to:

- Evaluate overall system performance
- Troubleshoot mechanical and electronic problems on all components of the unit
- Perform a complete and thorough preventive maintenance inspection on each portable unit
- Follow circuit operations of system detail block diagrams
- Install/pair and calibrate the Canon digital detector
- Install/pair and calibrate the Konica digital detector
- Troubleshoot Canon detector pairing
- Troubleshoot Konica detector pairing

Course Outline

Day 1

- Introduction
- Overview
- Model Comparison
- Terms & Acronyms
- Basic operations
  - Knobology
  - Terminology
- Specifications
- Component ID
  - Battery Change
  - Motor Swap
- Models & unit comparison
  - Mechanical
    - Collapsible Column
  - Electronic
  - Documentation
- Lab Activities
  - Basic operation
  - Component identification and location

Day 2

- Component identification and location
  - Battery change
  - Drive motor change
  - Collapsible Column
- Calibrations
  - Charging
  - Inverter
    - kV Feedback
    - Max Inverter Frequency
    - Pulse Width Adjust
  - Filaments
    - mA (2)
    - mAs
- MUX-Charge Unit
  - Batteries
- MUX-Inverter Unit
  - Tube stator
  - Filament control circuits
  - Collimator lamp circuits
- Lab Activities
  - Charger calibration
  - Filament calibration
  - Battery maintenance
  - Battery change

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Hands-On Training Course
Course Length: 1 Weeks
CEU's Awarded: 4 CEU's
State of Ohio Registration No. 93-09-1377T

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Day 3

- Calibrations
  - Rotor
    - Rotor Inverter Frequency
    - Rotor Inverter Pulse Width
  - Lock Adjustments
  - Drive Circuits
    - Drive Handle Adjustment
    - Speed
- MUX-Power
  - Inverter driver circuits
  - Inverter circuits
- Logic circuit
  - Safety circuits
  - Exposure start/stop circuits
- Lab Activities
  - kV calibration
  - Timer calibration
  - Timer waveform analysis

Day4

- FPD
  - Canon
    - Overview
    - Install & Pairing
    - Calibration
    - Troubleshooting
  - Konica
    - Overview
    - Install & Pairing
    - Calibration
    - Troubleshooting
- Digital detector
  - Detector firmware flashing
  - Detector pairing
  - Detector calibration
  - Digital Image Quality Checks
- Lab Activities
  - Flash digital detector
  - Pair digital detector
  - Calibrate digital detector
  - Perform Image Quality checks on digital detector
- Lab Activities
  - Major component disassembly
    - Tube replacement
    - Extension column
    - Vertical column
    - High voltage transformer

Day 5

- Computer & PC Maintenance
  - Backup
  - Factory Recovery
  - Ghost Creation
  - Restore
- PM
- System troubleshooting
  - Mechanical
    - Collapsible Column
      - ☐ Cabling review
      - ☐ Cable replacement recommendations
  - Electronic
- Overall system review
- Final exam
- Course evaluation

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