

Servicing the GE AMX4/4+ Portable X-Ray System



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 AMX 4. Each sub-system of the mechanical unit and the generator is thoroughly analyzed.

Prerequisites

To attend this course, the service professional must have a good understanding of the principles gained through attending Phase II, 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

Course Outline

Day 1

- Introduction
 - Basic operations
 - Knobology
 - Terminology
 - Specifications
- Basic system/unit differences
 - Mechanical
 - Electronic
 - Documentation
- AMX 4 block diagram
- Lab Activities
 - Basic operation
 - Circuit identification and location

Day 2

- Charging circuit
- 60Hz DC-AC inverter
 - Tube stator
 - Forced commutation circuits
 - Filament control circuits
 - Collimator lamp circuits
- Lab Activities
 - Charger calibration
 - Filament calibration

Day 3

- 500Hz DC-AC inverter
 - Inverter driver circuits
 - Inverter circuits
- Logic circuit
 - Safety circuits
 - Exposure start/stop circuits
- Lab Activities
 - kV calibration

- Timer calibration
- Timer waveform analysis

Day 4

- Drive circuits
 - Speed control
 - Braking system
- AMX 4 block diagram
 - Filament control circuits
 - kV control circuits
 - Charger control circuits
- Lab Activities
 - Drive control circuits
 - Major component disassembly
 - Tube replacement
 - Extension column
 - Vertical column
 - High voltage transformer

Day 5

- System troubleshooting
 - Mechanical
 - Electronic
- Overall system review
- Final exam
- Course evaluation