PREVENTIVE MAINTENANCE PROCEDURE

ELECTROSURGICAL UNIT - Applies to units that perform surgical functions by using high-frequency electrical currents that pass through the body.

For details, refer to Health Devices Inspection and Preventive Maintenance (IPM) procedure and to the appropriate manufacturers specifications.

Electrosurgical Units
ECRI Procedure/Checklist 411-0595

Equipment Needed: electrical safety analyzer; electrosurgical unit analyzer; oscilloscope; connectors, adapters, active electrode and/or return electrode, as required

1. Qualitative Tests
   1.1 Chassis - verify physical integrity, cleanliness
   1.2 Mount/Fasteners - verify physical integrity of mounts (wall, equipment, cart, etc.)
   1.3 Casters/Brakes - if mounted on casters, verify physical integrity including brakes
   1.4 AC Plug - verify integrity
   1.5 Line Cord - verify proper insulation and integrity
   1.6 Strain Reliefs - verify physical integrity at both ends of line cord
   1.7 Circuit Breaker/Fuse - verify integrity of external circuit breaker and/or value of external fuse
   1.9 Cables - inspect cables (footswitch, etc.) as appropriate
   1.10 Connectors examine all cable connectors
   1.11 Dispersive Electrodes - verify supply and connection
   1.12 Filters - check condition of filters as appropriate
   1.13 Controls/Switches - verify proper operation
   1.18 Indicators/Displays - verify proper illumination and operation
   1.20 Dispersive Cable Continuity Monitor - verify proper operation
   1.21 Audible Signal - confirm appropriate volume and operation of volume controls
   1.22 Labeling - verify presence and placement of all labels, placards, instruction cards, etc.
   1.23 Accessories (footswitch) - verify physical integrity, connection, and proper operation
   1.24 Special Protective Features - verify proper operation as indicated by the manufacturer

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2. Quantitative Tests

2.1 Grounding Resistance [< 0.5 ohm chassis, footswitch]
    [>20 Megaohm return electrode (except grounded output units)]

2.2 Chassis Leakage [< 300 microamps]
    Electrode Leakage [< 10 microamps (G)]

2.3 Output Isolation [Manufacturer’s specifications or > 80%]

2.10 Output Power - verify that delivered energy is within specified range. Select the low, middle and maximum power settings, using the following test loads on the ESU analyzer

<table>
<thead>
<tr>
<th>TEST LOAD VALUES, IN OHMS</th>
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2.11 RF Leakage [< 200 milliamps]

4. Waveform Analysis
Verify and document the output waveform characteristics (frequency, duty cycle, crest factor, etc.). View waveform on an oscilloscope connected to the appropriate jack on the ESU analyzer.

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Electrosurgical Unit (ECRI)
esu.doc