Title: Erbe T175 ESU	Date: 12-25-2012
By: Erbe File = Erbe T175.doc	**DISCLAIMER: THIS PROCEDURE PROVIDED "AS IS" AND WITH POSSIBLE FAULTS. USER MUST VERIFY BEFORE USE. NEITHER PROVIDER NOR WEBSITE ASSUMES ANY RESPONSIBILITY FOR ITS USE.**

1. General
   Applies to model T175. Comment from a website: "exclusively designed for being used in the field of veterinary medicine or for export purposes".

2. Reference Documents
   Erbotom T175 Operating Instructions.
   Erbotom T175 Service Manual"

3. Tools / Fixtures / Accessories
   - Electrosurgical Analyzer: ex: Dempsey 443 or better.
   - Patient Plate Cable, Bipolar Cable/Forceps.
   - Hand Control Pencil/Cable, Footswitch.
   - Safety Tester

4. Performance Verifications

   4.1. Inspection
   Check unit for any damage; i.e. connectors, knobs, the power cord and the footswitch with its cable.

   4.2. With no accessories plugged in, turn on unit. Verify that the red pilot lamp illuminates.

   4.3. Setup
   Connect analyzer to ESU using a handcontrol pencil--wire the pencil chuck to the analyzer active (this will simultaneously check handcontrol sense circuits.) Connect a patient plate cable between the generator's patient plate jack over to the same on the analyzer. Set analyzer load to 300 ohms if available. Set the generator's hemostasis dial to minimum.

Note: This generator's output power maximizes for 300 ohm load resistance. The analyzer suggested has load settings of only 500 and 125 ohms. Refer to load curves in Appendix for corrections.

   4.4. Cut Mode
   With cut and coag intensity/power dials (*Pussance)* at zero, key the unit in Cut mode, using either the cut pedal (use the mono/bipolar selector buttons to direct the footswitch to activate monopolar) or the cut-rocker switch on the hand pencil. The Cut indicator lamp and a continuous (adjustable) tone occur. Gradually turn power to max dial and note power into analyzer. Do not let generator run continuously at this level. Refer to table in Appendix for acceptable results which depend on load..

T175 ESU

T175 FOOTSWITCH

MONOPOLAR PENCIL WITH CORD

PATIENT PLATE CABLE

DEMPSEY 443 ANALYZER

Note: If both pedals are depressed, no output should occur.

4.5. Coag Mode
With cut and coag power/intensity dials at zero, key the unit in Coag mode, using either the coag pedal or coag rocker switch on the hand pencil. The Coag indicator lamp and a distinct continuous (adjustable) tone occur. Gradually turn coag power to max dial and note power into analyzer. At max levels, run generator only long enough to get a reading. Refer to the table in Appendix for acceptable results which depend on load.

4.6. Patient Plate Monitor Circuit.
With generator at idle, remove the patient plate plug from its panel connector. A loud non-adjustable tone will activate, and the red patient plate lamp will light.

4.7. Blend Mode
Not addressed.

Note: Bipolar can be activated with either the footswitch or by the load sensing of the bipolar forceps.

4.8. Bipolar Mode
Using the bipolar forceps cable, connect the analyzer to the generator's bipolar output connector. Set analyzer load to 125 ohms or lower (75 ohms if possible). With the Bipolar dial at zero, use the footswitch to key the unit and note the distinct audible tone. Gradually turn power to max dial and note power into analyzer. Refer to charts in appendix for acceptable results, which depend on load.

Activate the bipolar mode by touching the bipolar output (via forceps for example) to a load. After a couple of seconds (internally adjustable) the unit will activate in bipolar. The activation can also be used to measure power as above.

4.9. Bipolar Mode (or other mode)
Verify volume adjust on front of unit.

4.10. Other Safety Checks
Using the safety tester, check that line leakage with ground open is less than 50 uA.
Using the safety tester, check that ground lead resistance is less than 0.15 ohms.
Resistance between active and patient plate > 2megohms (yearly)
Measure low frequency leakage currents yearly.

4.11. RF Leakage -- ESU analyzers read RMS current, and when appropriately connected, can display RF leakage. Limits are below. RF leakage is an infrequent field check but should not be overlooked for older equipment.

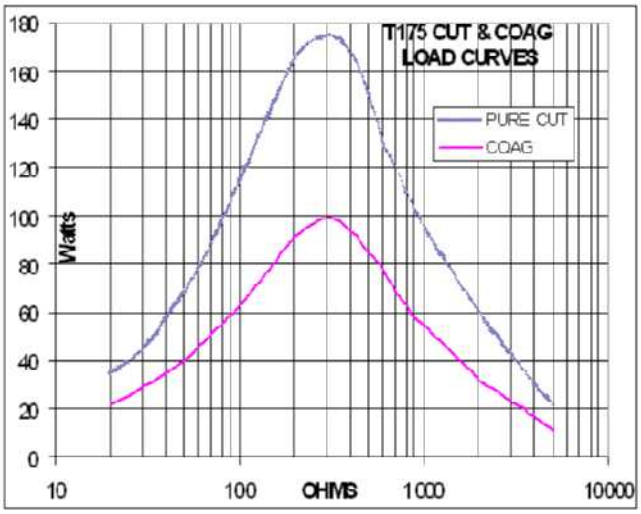
The standard IEC 60601-2-2, particular requirements for the safety of high frequency surgical equipment, limits this parameter to a maximum of 4.5 W measured on a 200 Ω non-inductive resistor for monopolar applications (150mA in this case).

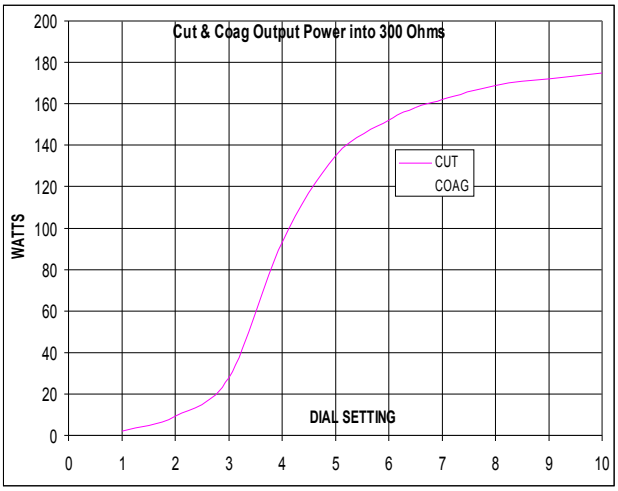
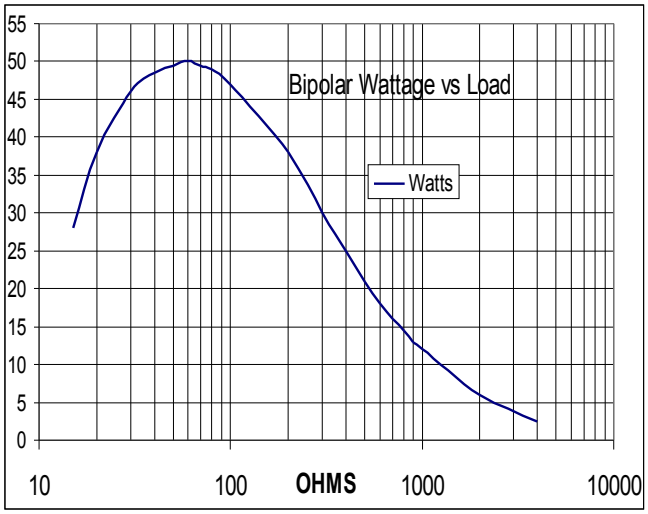
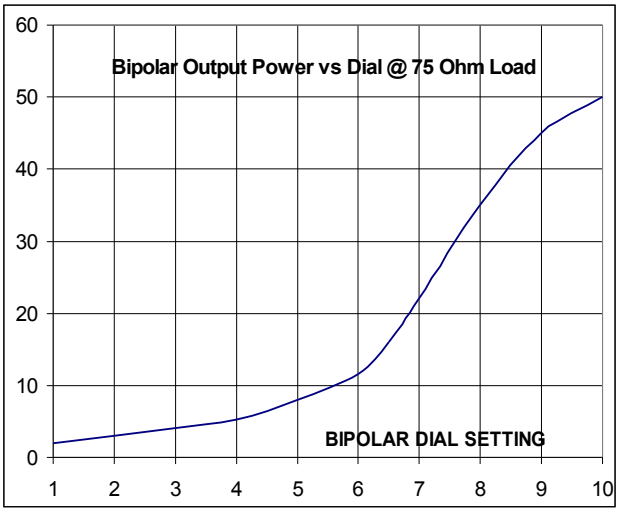
APPENDIX

Note: Pussance = power
Specifications:
Monopolar cutting 175 watt, Monopolar coagulation 100 watt, Bipolar 50 watt.
Monopolar Frequency 450 Khz

Fuse: 1.6 amp @ 240V; 3.2 amp @ 120 V
Line Leakage 2 uA
Adjustments: Caution - Refer to Service manual. (Pot TP1=bipolar power; TP2 = cut power)

MONOPOLAR POWER CHARTS





BIPOLAR POWER CHARTS