

Title: Valleylab Force 2 ESU	Date: 12-18-2012
By: Valleylab, Boulder, CO, USA	<b>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.</b>
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1. General
  - Applies to Valleylab Model Force 2. (approx yr 2004).
2. Reference Documents
  - Valleylab Force 2 User Guide
  - Valleylab Service Manual.
3. Tools / Fixtures / Labels
  - Electrosurgical Analyzer: Dempsey 443 or better.
  - Return electrode cord terminated for connection to ESU analyzer.
  - Hand Control Pencil, Bi-polar cord set, footswitch.
  - Safety Testor (line leakage)
4. Basic Verification Checks (a more detailed procedure can be found in the service manual).
  - 4.1. Inspection
    - Check unit for any damage, especially the front connectors, the power cord and the footswitch with its cable. If necessary, top cover easily removes.
  - 4.2. Initial Turn On
    - With no accessories plugged in, note that all indicators and display segments briefly illuminate simultaneously. After auto self-check, the unit enters standby mode, and all displays will show dashes.
  - 4.3. Setup
    - Press the "Ready Button" to proceed. If the Monopolar indicator is not lit, enter Monopolar mode by pressing the Monopolar button. Connect the patient plate jack (aka "dispersive") of the analyzer to the generator's passive receptacle using both leads of the pad connector twisted together. The REM alarm indicator should extinguish. (If necessary, cut off the plastic pin to negate the REM sensing circuit.)

*Note: This Valleylab generator's output power will closely track the indicator settings when the load resistance is 300 ohms. The common analyzer suggested has load settings of only 500 and 125 ohms. Refer to load curves in Appendix.*

4.4. Button / Low Power Check

Verify that all up/down buttons function (Cut, Coag, Bipolar, Blend 1, 2, 3). Set power to a low level (10 watts). Connect a handcontrol pencil to the left-side-cut-connector and verify that output power is close to the dial setting. Move the pencil connection to the right side output connector. Check that unit delivers power per pencil activations at this location.



Valleylab Force 2

T175 FOOTSWITCH

Handcontrol Pencils

DEMPSEY 443 ANALYZER

#### 4.5. Remaining Power Checks

Increase all power settings to an intermediate level 70 watts. Verify that output power reasonably tracks the dial setting for all modes (Cut, Blends, Coag).

Repeat for max dial settings (Cut, Coag). Refer to load curves in Appendix for load vs dial vs output.

#### 4.6. Full Power and Arc Stress Test.

To prevent analyzer connector damage, insert a small chuck-like rod into the analyzer's active jack. With Cut and Coag set to max, briefly arc into this. Note that maximum power for a given load corresponds to load curves in Appendix.

*Note: The cut blend modes have reduced maximum power output: Blend 1=250, Blend 2=200; Blend 3=150.*

#### 4.7. Coag Peak Voltage Check

When it is not possible to verify open circuit peak voltage, use the sacrifice chuck setup above to access the analyzer load. Key unit at full coag power into a load. When tip is slowly removed, it should be possible to create at least a 0.2 inch arc.

#### 4.8. Footswitch Verification

Repeat the Coag Peak Voltage Check above, but using the footswitch and a “no-button” active cord/electrode.

#### 4.9. Bipolar Test

Press the Bipolar button. (The dual footswitch will now key the bipolar mode, and either pedal will produce the same result.) Confirm the Bipolar indicator has come on. Set the load to 100 ohms if available, or “heavy load” and “high sense” on Dempsey products. Output power at 100 ohms will approximate the bipolar power display.

#### 4.10. Audible Tone

There is a distinct adjustable tone for the activation modes.

#### 4.11. REM Pad Sense - Acceptable Resistance Ranges

If the the patient cable is removed, the REM audible warning will briefly sound.

Single area pad - nominally < 24 ohms; Dual area REM - nominal range 5 - 135 ohms

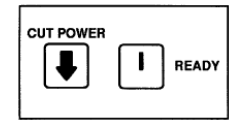
Refer to Service Manual for checking and adjustment.

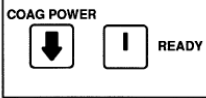
4.12. Using the safety tester, check that line leakage with ground open is less than 100 uA.

4.13. Using the safety tester, check that ground line cord resistance is less than .15 ohms.

4.14. Re-label per policy of institution.

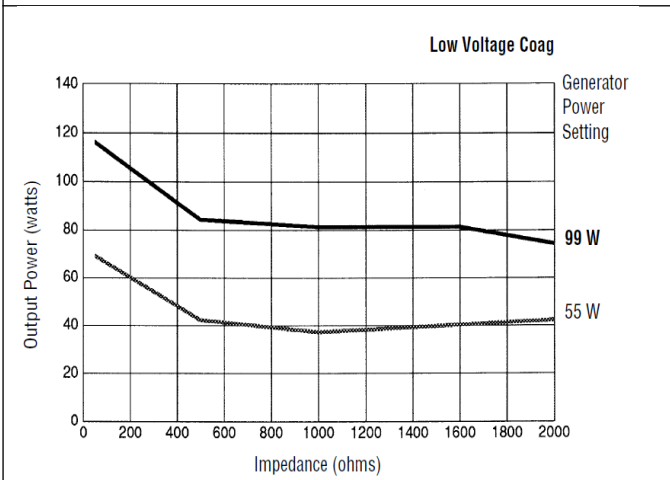
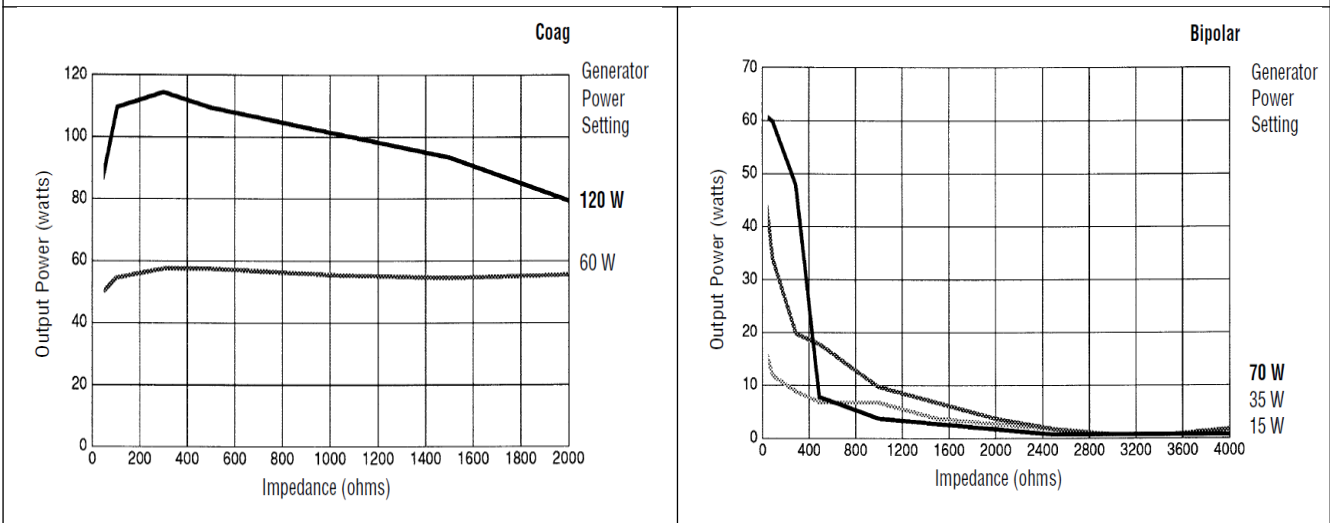
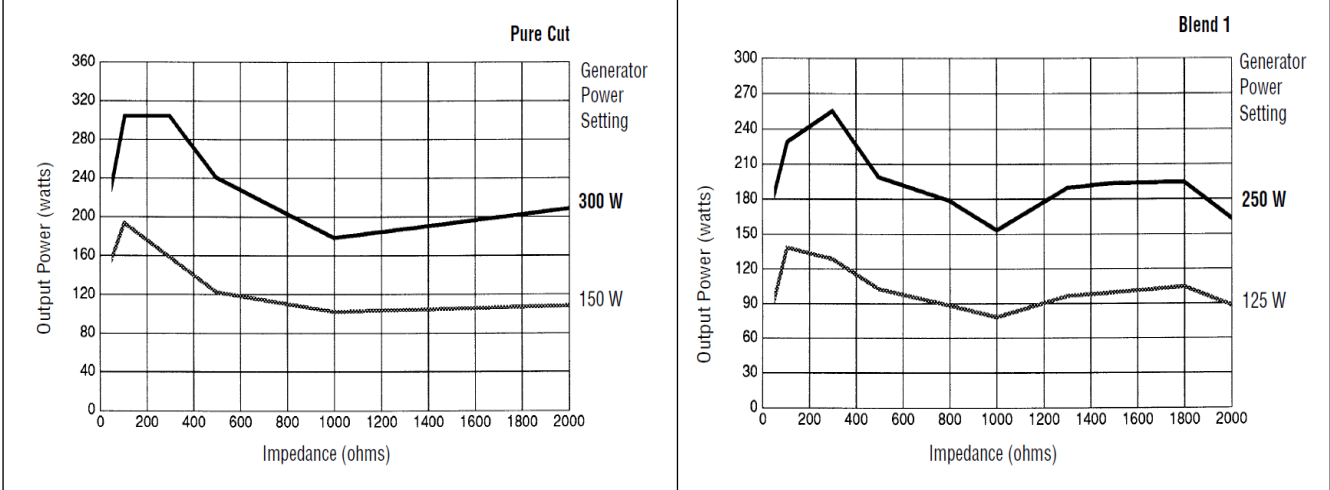
## APPENDIX

	Power Control Pencil Mode – The power control pencil feature does not have a dedicated button to access this mode. Press the Ready button and while holding it, press the Cut Power Down button. The generator sounds a single tone and the RMOTE lamp illuminates.
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Low Voltage Coag – Low voltage coag does not have a dedicated button to access this mode. Press the Ready button and while holding it, press the Coag Power Down button. The generator displays an L in the hundreds digit of the coag power setting display

### POWER LOAD CHARTS



	Maximum (open circuit) P-P voltage	Rated Load (ohms)	Nominal Power at rated load (watts)
Cut	3500	300	300
Blend 1	3800	300	250
Blend 2	4000	300	200
Blend 3	4000	300	150
Coag	7000	300	120
Low Voltage Coag	4000	300	99
Bipolar	1200	100	70