ESU Testing - Connections Quick Guide

Contact Quality Monitor Testing

- IEC Term is “CQM” Contact Quality Monitor. Other terms “REM” Return Electrode Monitor, “ARM”
- Enter CQM function. Typical range is 7 Ohms to 135 Ohms
- Utilize Blue two connector dual foil wire
- Connect Red lead to CQM port
- Connect Black to Black Variable low port
- Single Ohms increments 1 to 475 ohms

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CQM Testing Continued

- **Force Triad/FT10, Please refer to service manual**
  - Connect CQM set QA-ES III at 100 Ohms, enter service mode on DUT, Read REM Z Mag, Passing 93-107 Ohms
  - Set QA-ES at 50 Ohms; Read Z Mag Passing = 43 to 57 Ohms
  - Set QA-ES III at 0 Ohms; Read Z Mag Passing 0 to 4 Ohms
- **Force Series, Please refer to model specific service manual**
  - Set CQM to 120 Ohms. Slowly increase resistance; Verify REM alarm sounds at 135 +/- 5 Ohms
  - Decrease resistance to 60 Ohms; Verify REM alarm indicator turns green
  - Increase resistance to 100 Ohms; Verify alarm sounds
  - Decrease resistance to 30 Ohms; Verify REM alarm indicator turns green
  - Decrease resistance to 10 Ohms; Verify REM alarm indicator stays green
  - Decrease to 3 Ohms; Verify REM Alarm sounds

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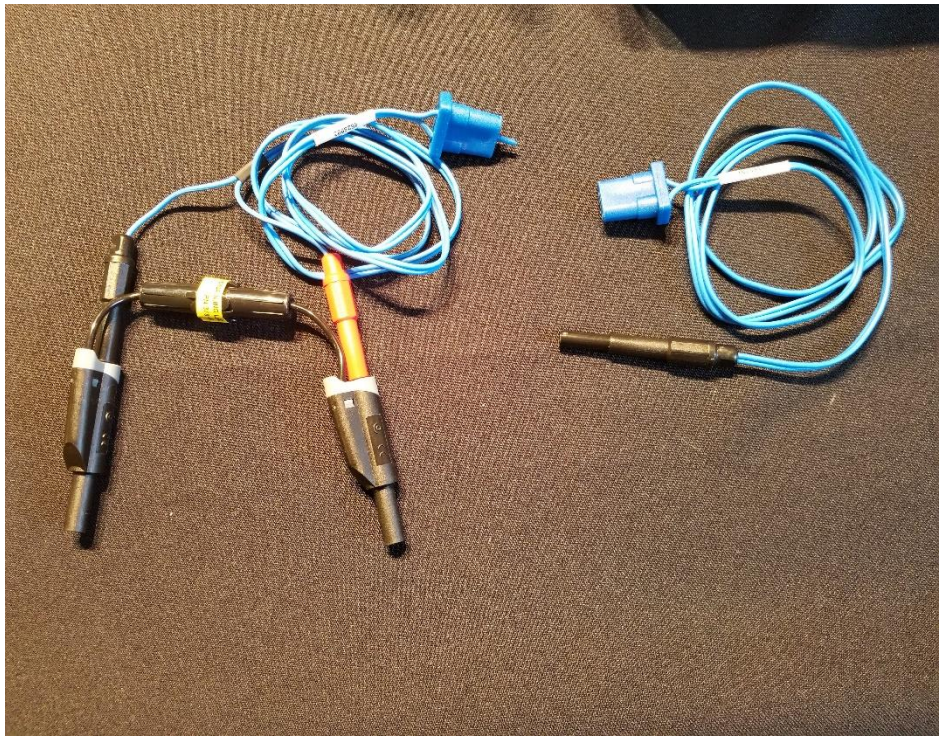
CQM Cable Configuration for Energy Output Testing

- **Single Foil Configuration**
  Used by older ESUs. The return electrode only has one conductor, or foil to contact the patient. No center pin on ESU side of connector.
  - With more modern ESU Models, can only be used for testing in service mode.
- **Dual Foil configuration**
  Standard in most modern ESUs. Has two conductors/foils that contact the patient. The ESU monitors the resistance between the conductors to ensure patient safety. Notice this cable has two conductors and a center identifying pin on the ESU side connector. In order to satisfy CQM requirements must utilize with the REM Disabling cable as shown on left.
  - Must use to test FT10 or Triad without entering service mode.
  - ***Connect only one side of the REM Disabling connector to the Variable Low port on the QA-ES III. Recommend utilizing the black connector.***



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Monopolar Energy Output Testing

- Connect Red cable to **Variable High** on QA-ES III. Of the three larger Monopolar output ports, connect the other cable to the one by itself. Usually on far left as you look at it.
- Connect one side of the Dual Foil Configuration to the **Black Variable Low** Port of the QA-ES III. The other side connects to the CQM/REM port of the ESU
- Typical Monopolar test resistance settings (Please refer to DUT service manual for exacts)
  - Cut 300 Ohms
  - Coag 500 Ohms
- Press “Start Continuous” on QA-ES III. Activate ESU with Monopolar Foot Switch. Press “Stop” on QA-ES III to end test.

FT10 Output Testing

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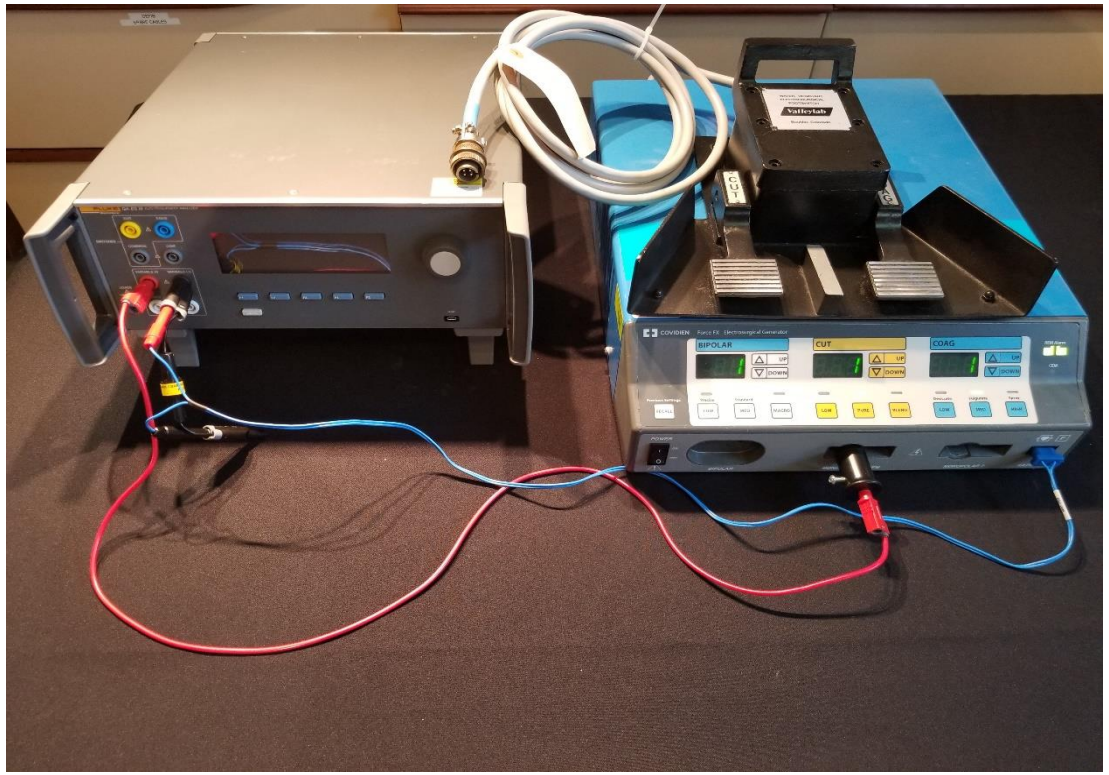
Alternative Monopolar connection

- Must use foot pedal to activate
- Must have handpiece adapter that comes standard with most ESU's
- **Red** cable from Variable High to Monopolar Handpiece adapter; Plug into port on DUT, may be a separate port
- Variable low on QA-ES III use either **single foil or dual foil** configuration and connect to REM port
- Can do Monopolar Cut or Coag
- Alternative: Connect **RED** cable to the Monopolar output that is by itself



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Monopolar Auto-save Connection

- **Red** wire from Variable High port to **left** port on DUT
- **Blue** from **Coag** port to **center** port on DUT
- **Yellow** from **Cut** port to **right** port on DUT
- **Black jumper** from **Common** port to **back of Red lead** on QA-ES III
- Either use Single foil REM cord or Dual Foil with CQM bypass (connect one side only) to Variable low

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Bi-Polar Not Auto-save

- **Red wire** from **variable high** to either port on DUT Bi-polar
- **Black wire** from **Variable low** to other Bi-Polar port
- If testing a Force Triad or FT 10, make sure wire is pushed ***completely*** into port on DUT (there is a safety switch that must be completely depressed)
- Utilize foot switch or service command to activate DUT. Press “Start Continues” on QA-ES III. Press “Stop” at completion.
- Typical Load is 100 Ohms

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Auto-save Bi-Polar

- **Red** from **Variable High** to either Bi-polar port on DUT
- Black long from **Variable Low** to other Bi-polar port on DUT
- Smaller Bi-polar activation cable from Cut port to *center* smaller Bi-Polar port of DUT
- Jumper from **Common** to back of **Red** cable
- Utilize cut function single test, approx. 100 Ohms setting
- If you do not get a proper reading, swap the **Red** and **Black** wires

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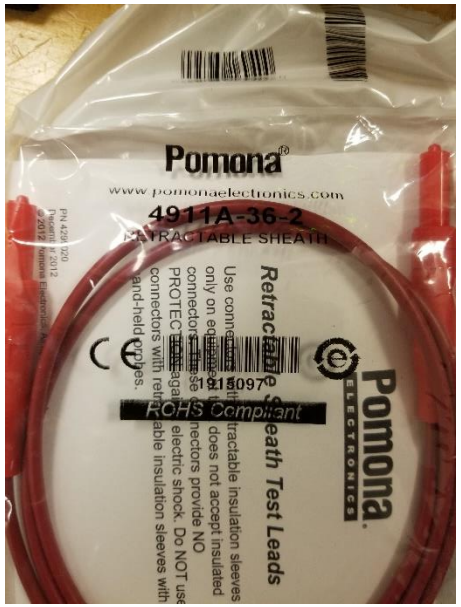
Ligasure Connection

- Utilize new upgraded cable sets
- PN 4911A-36-0 and 4911-36-2
- Connect **Red** to **Variable high port**, far **right** on DUT Ligasure
- Connect Black to **Variable low port**, far **left** port on DUT Ligasure
- Must use foot pedal or Service Mode to activate



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Cross Coupling and High Frequency Leakage

- Connect **Variable Low** to **Green** cable and then to a known ground, or the ground stud on back of DUT
- Connect **Red** cable from specified output port to **Variable High**
- **For Cross Coupling**, **Green** cable will stay on the ground pin. Refer to manual for **Red** output cable location. Utilize Blue CQM cable for REM port testing. **Connect one side at a time to Variable High**
- Utilize HF Leakage from home screen; It will automatically apply a 200 Ohms load
- Ensure both devices are placed on non-conductive surfaces and leads not crossed, if possible
- Follow OEM specifications, as set ups can very

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