

FLUKE®

Biomedical

QA-ES Automation Bundle

ESU Automation Kit

Users Manual

PN 3672225

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Follow standard receiving practices upon receipt of the instrument. Check the shipping carton for damage. If damage is found, stop unpacking the instrument. Notify the carrier and ask for an agent to be present while the instrument is unpacked. There are no special unpacking instructions, but be careful not to damage the instrument when unpacking it. Inspect the instrument for physical damage such as bent or broken parts, dents, or scratches.

Technical Support

For application support or answers to technical questions, either email techservices@flukebiomedical.com or call 1-800- 648-7952 or 1-425-446-6945.

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Our routine method of shipment is via common carrier, FOB origin. Upon delivery, if physical damage is found, retain all packing materials in their original condition and contact the carrier immediately to file a claim. If the instrument is delivered in good physical condition but does not operate within specifications, or if there are any other problems not caused by shipping damage, please contact Fluke Biomedical or your local sales representative.

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Please note that only serialized products and their accessory items (i.e., products and items bearing a distinct serial number tag) are eligible for partial refund and/or credit. Nonserialized parts and accessory items (e.g., cables, carrying cases, auxiliary modules, etc.) are not eligible for return or refund. Only products returned within 90 days from the date of original purchase are eligible for refund/credit. In order to receive a partial refund/credit of a product purchase price on a serialized product, the product must not have been damaged by the customer or by the carrier chosen by the customer to return the goods, and the product must be returned complete (meaning with all manuals, cables, accessories, etc.) and in “as new” and resalable condition. Products not returned within 90 days of purchase, or products which are not in “as new” and resalable condition, are not eligible for credit return and will be returned to the customer. The Return Procedure (see below) must be followed to assure prompt refund/credit.

Restocking Charges

Products returned within 30 days of original purchase are subject to a minimum restocking fee of 15 %. Products returned in excess of 30 days after purchase, but prior to 90 days, are subject to a minimum restocking fee of 20 %. Additional charges for damage and/or missing parts and accessories will be applied to all returns.

Return Procedure

All items being returned (including all warranty-claim shipments) must be sent freight-prepaid to our factory location. When you return an instrument to Fluke Biomedical, we recommend using United Parcel Service, Federal Express, or Air Parcel Post. We also recommend that you insure your shipment for its actual replacement cost. Fluke Biomedical will not be responsible for lost shipments or instruments that are received in damaged condition due to improper packaging or handling.

Use the original carton and packaging material for shipment. If they are not available, we recommend the following guide for repackaging:

- Use a double-walled carton of sufficient strength for the weight being shipped.
- Use heavy paper or cardboard to protect all instrument surfaces. Use nonabrasive material around all projecting parts.
- Use at least four inches of tightly packed, industry-approved, shock-absorbent material around the instrument.

Returns for partial refund/credit:

Every product returned for refund/credit must be accompanied by a Return Material Authorization (RMA) number, obtained from our Order Entry Group at 1-800-648-7952 or 1-425-446-6945.

Repair and calibration:

To find the nearest service center, go to www.flukebiomedical.com/service or

In the U.S.A.:

Cleveland Calibration Lab

Tel: 1-800-850-4606

Email: globalcal@flukebiomedical.com

Everett Calibration Lab

Tel: 1-888-99 FLUKE (1-888-993-5853)

Email: service.status@fluke.com

In Europe, Middle East, and Africa:

Eindhoven Calibration Lab

Tel: +31-402-675300

Email: ServiceDesk@fluke.com

In Asia:

Everett Calibration Lab

Tel: +425-446-6945

Email: service.international@fluke.com

Certification

This instrument was thoroughly tested and inspected. It was found to meet Fluke Biomedical's manufacturing specifications when it was shipped from the factory. Calibration measurements are traceable to the National Institute of Standards and Technology (NIST). Devices for which there are no NIST calibration standards are measured against in-house performance standards using accepted test procedures.

WARNING

Unauthorized user modifications or application beyond the published specifications may result in electrical shock hazards or improper operation. Fluke Biomedical will not be responsible for any injuries sustained due to unauthorized equipment modifications.

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Manufacturing Location

The QA-ES Automation Bundle is manufactured at Fluke Biomedical, 6920 Seaway Blvd., Everett, WA, U.S.A.

Table of Contents

Title	Page
Introduction	1
Safety	1
Symbols	2
Unpack the Product.....	3
Lead Identification	4
How to Connect the Switch Box	6
How to Connect Bundle Components	7
Power Distribution/Output Tests	7
HF Leakage Current Tests	10
How to Test the Return Electrode Current Monitoring (RECM) Circuit.....	16
How to Clean Bundle Components	17

Introduction

The QA-ES Automation Bundle is a kit of components and cables or leads used with the Fluke Biomedical QA-ES II Electrosurgical Analyzer to automate Electrical Surgical Units (ESU) tests. The Remote Electrode Control Monitoring (RECM) test of an ESU is enhanced with this bundle.

Safety

When you use the bundle of components on an electrosurgical analyzer test, follow all warnings and cautions of the QA-ES II Electrosurgical Analyzer as well as those for the electrosurgical unit under test.

In this manual, a **Warning** identifies hazardous conditions and actions that could cause bodily harm or death. A **Caution** identifies conditions and actions that could damage the Analyzer, the equipment under test, or cause permanent loss of data.

⚠️⚠️ Warnings

To avoid possible electrical burn or personal injury, follow these guidelines:






- **Read this Users Manual and the QA-ES Operators Manual before operating the Analyzer with QA-ES Automation Bundle.**
- **Do not exceed the maximum rating of 5 kV peak on the switch box.**
- **Follow all warnings and cautions in the QA-ES Operators Manual as well as those found in this manual.**
- **Be sure the switch on the switchbox is off “O” before turning on the QA-ES Analyzer.**
- **Examine all accessories for cracks or damage before use. Do not use and replace any damaged parts.**

- Follow all Bundle setup instructions and stand clear when you activate the QA-ES Analyzer with the switch box.
- Do not use probes or accessories supplied for use with the QA-ES for handheld use.
- Use Bundle accessories only in the manner specified in this manual.
- Use only Fluke Biomedical supplied accessories. Do not substitute off-the-shelf cables for those supplied in the Bundle.

Symbols

Table 1 is a list of symbols found in this manual or on this Product.

Table 1. Symbols

Symbol	Description
	Risk of danger. Important information. See manual.
	Conforms to European Union directives.
	Hazardous voltage. Risk of electric shock.
	Conforms to relevant North American Safety Standards.
	Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.

Unpack the Product

The content of the Bundle depends on the Bundle version. Table 2 shows the possible items that are contained in a Bundle.

Table 2. QA-ES Bundle Contents

Description		Fluke PN	Lead No
QA-ES Electrosurgical Analyzer	US	2649769	NA
	SHK	2651725	
	UK	2770445	
	JPN	3096390	
	AUS	2770450	
	Brazil 115 V	3951426	
	Brazil 230 V	3968660	
Ansur QA-ES Plug-In		2461802	NA
Switch Box		3781222	NA
RECM Test Box		3782183	NA
International Dispersive Lead		3781268	4
Valleylab Dispersive Lead		3781279	3
RECM Alarm Disabling Lead		3781287	5
Monopolar Activation Lead		3781293	1
Bipolar Activation Lead		3781302	2

Table 2. QA-ES Bundle Contents (cont.)

Description	Fluke PN	Lead No
QA-ES Automation Kit Users Manual	3672225	NA
20 Inch Black Safety Lead	3782216	6
20 Inch Red Safety Lead	3782233	
40 Inch Black Safety Lead	3837016	7
40 Inch Red Safety Lead	3837025	
Test Probe Set, 0.080 Brass Tip	1909216	8
RS232 Cable with Ferrites	3788956	NA
Carrying Case	3766325	NA

Lead Identification

To help identify which lead is used in each of the test configurations shown in this manual, use Figure 1 and Table 2.

In the configuration figures to follow, some lead connections are identified with a call out. Use the lead number in a configuration graphic to find the correct lead in Figure 1. To help with identification, the same lead number is used in Table 2.

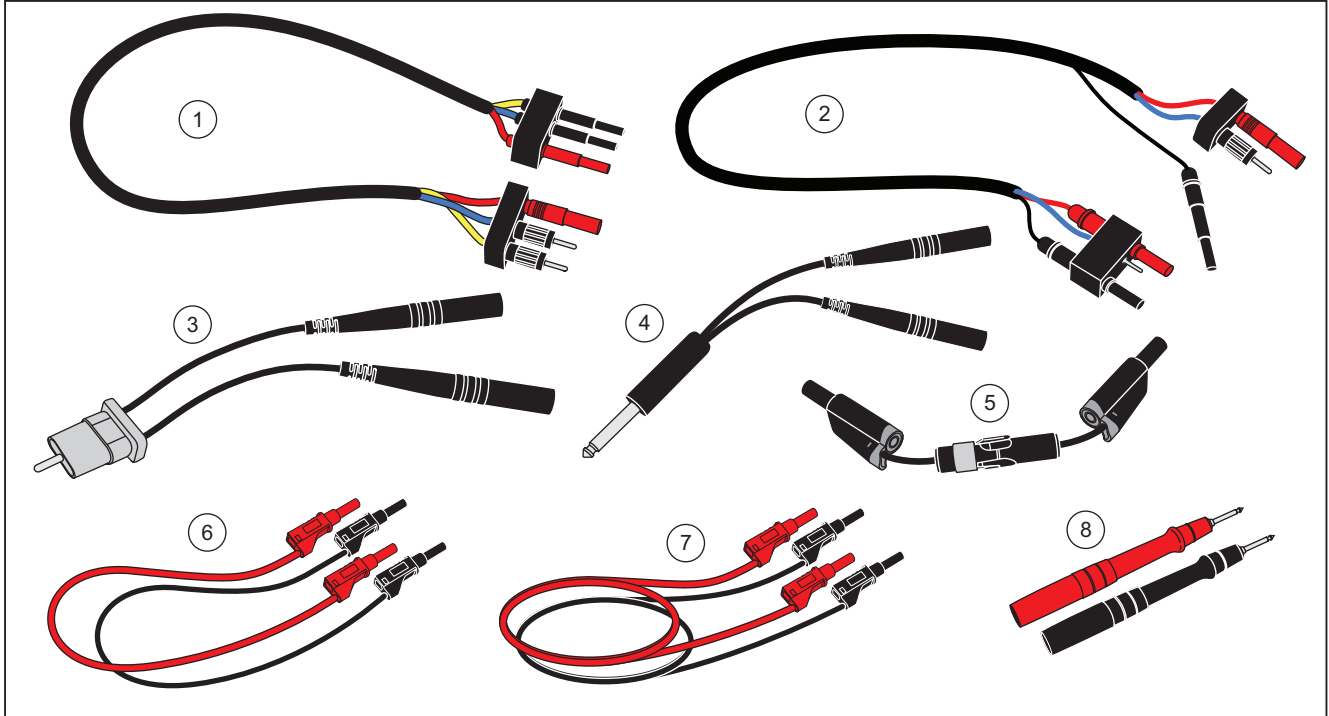


Figure 1. Automation Bundle Leads

giw12.eps

How to Connect the Switch Box

Before you do an ESU test with the ESU Analyzer, the switch box must be connected to the foot switch output jacks on the right side of the ESU Analyzer. See Figure 2.

Note

The three-position switch has a center off position.

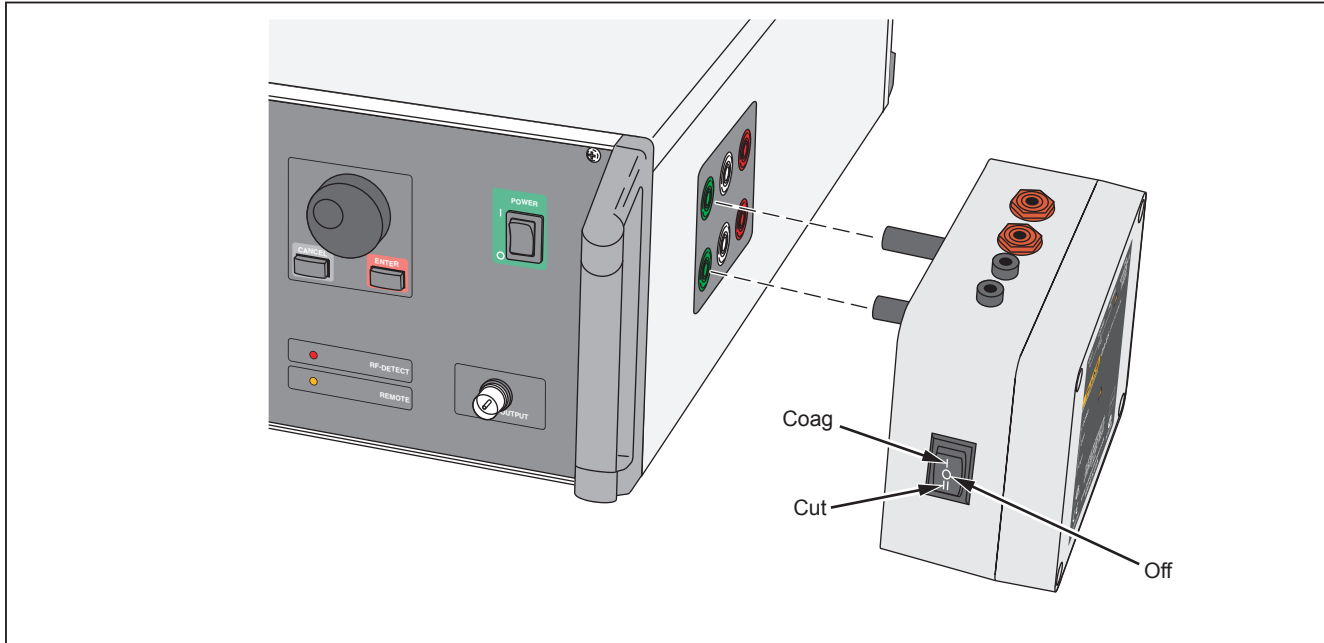


Figure 2. Switchbox Connections to QA-ES II

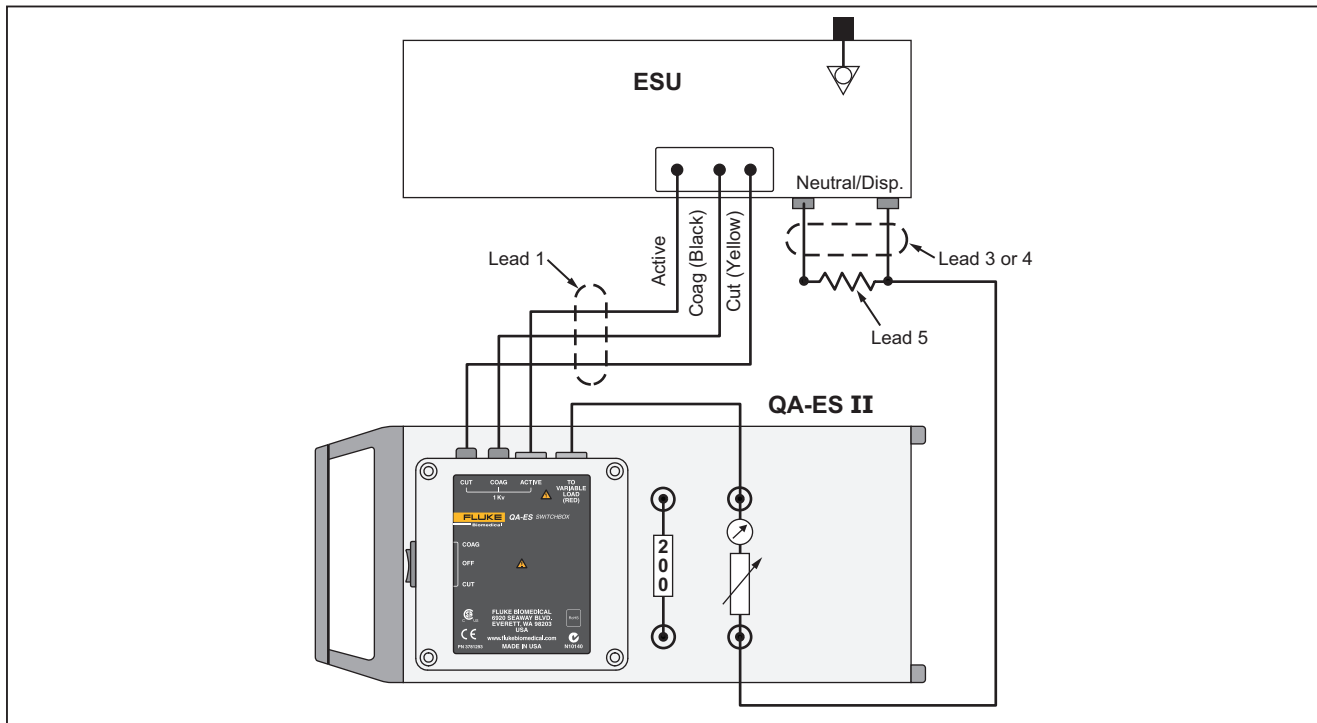
giw13.eps

How to Connect Bundle Components

Figures 3 through 11 shows the connections made between the ESU Analyzer and the Unit Under Test (UUT) for different ESU tests. These connections, although equivalent to those in the QA-ES II Operators Manual, show how the components of this Bundle must be connected.

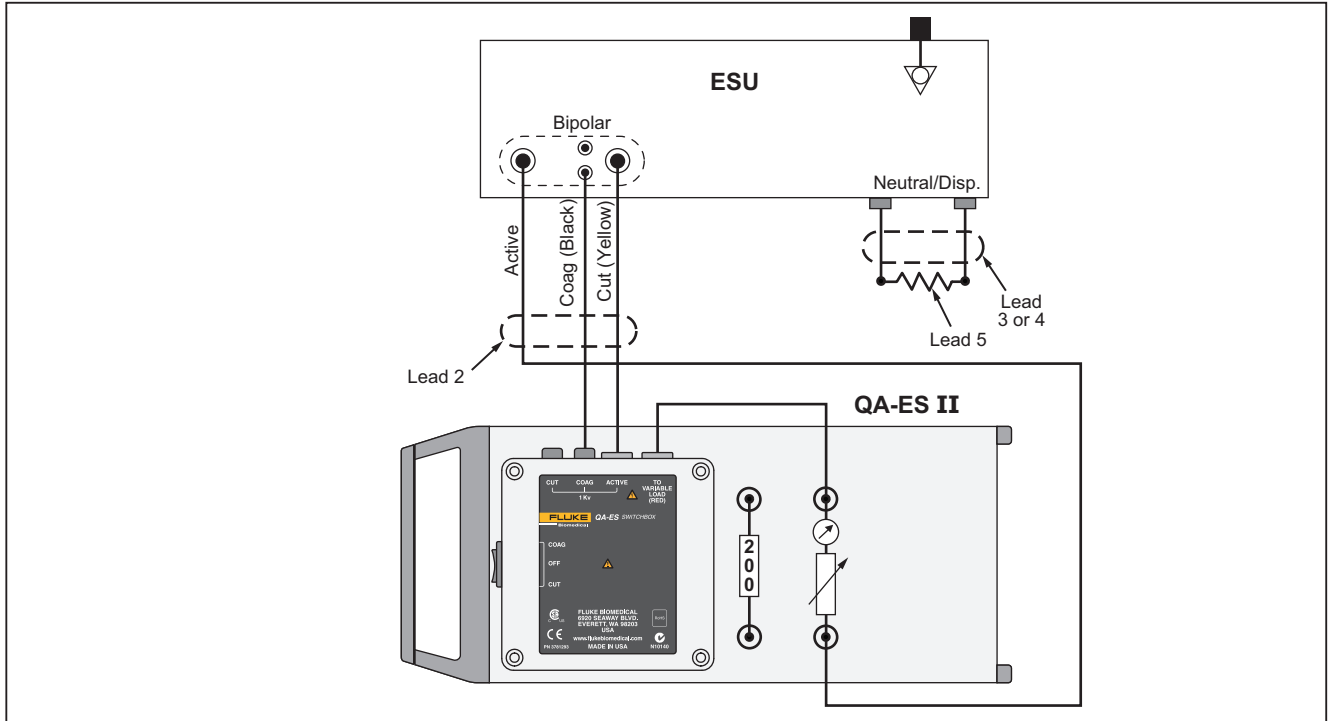
Power Distribution/Output Tests

Power Distribution/Output tests measure the power output properties of the ESU and supply output current (A), power (W), peak-to-peak voltage (V), and crest factor values. Figure 3 shows how to connect the Bundle for Monopolar mode and Figure 4 shows the connections for Bipolar mode.



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Figure 3. Power Distribution/Output Test Connections - Monopolar

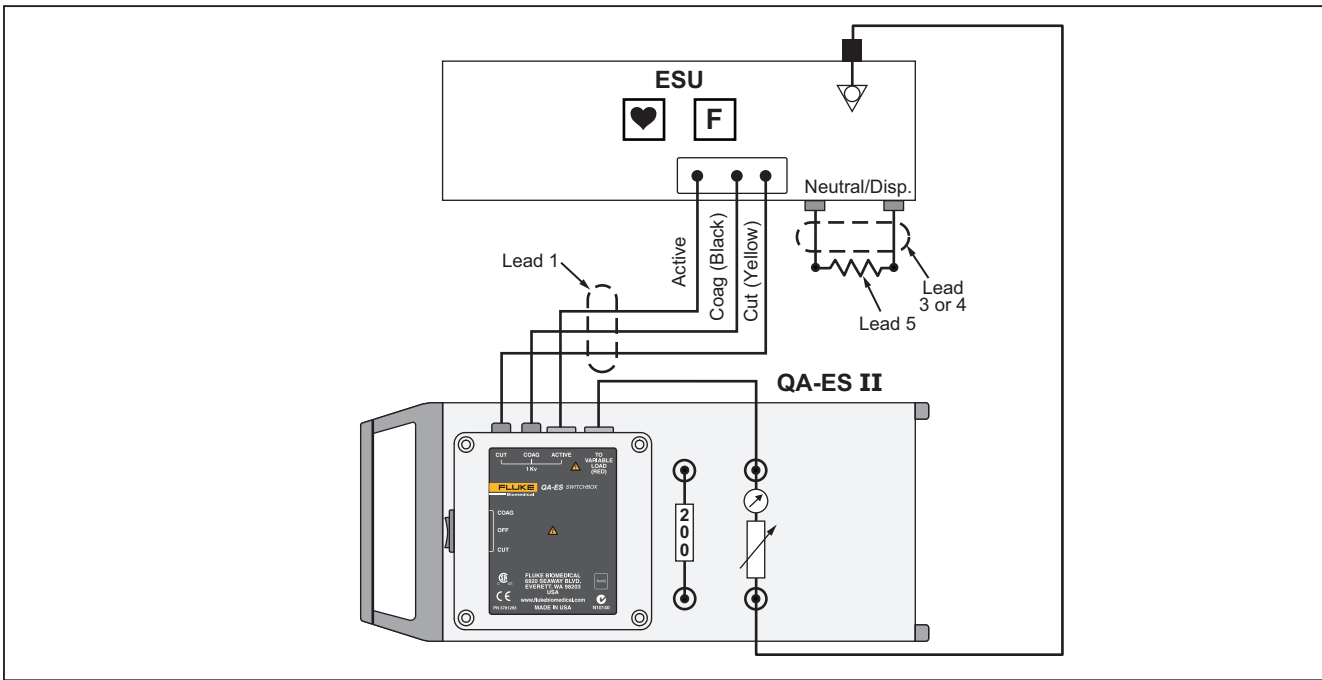


giw11.eps

Figure 4. Power Distribution/Output Test Connections - Bipolar

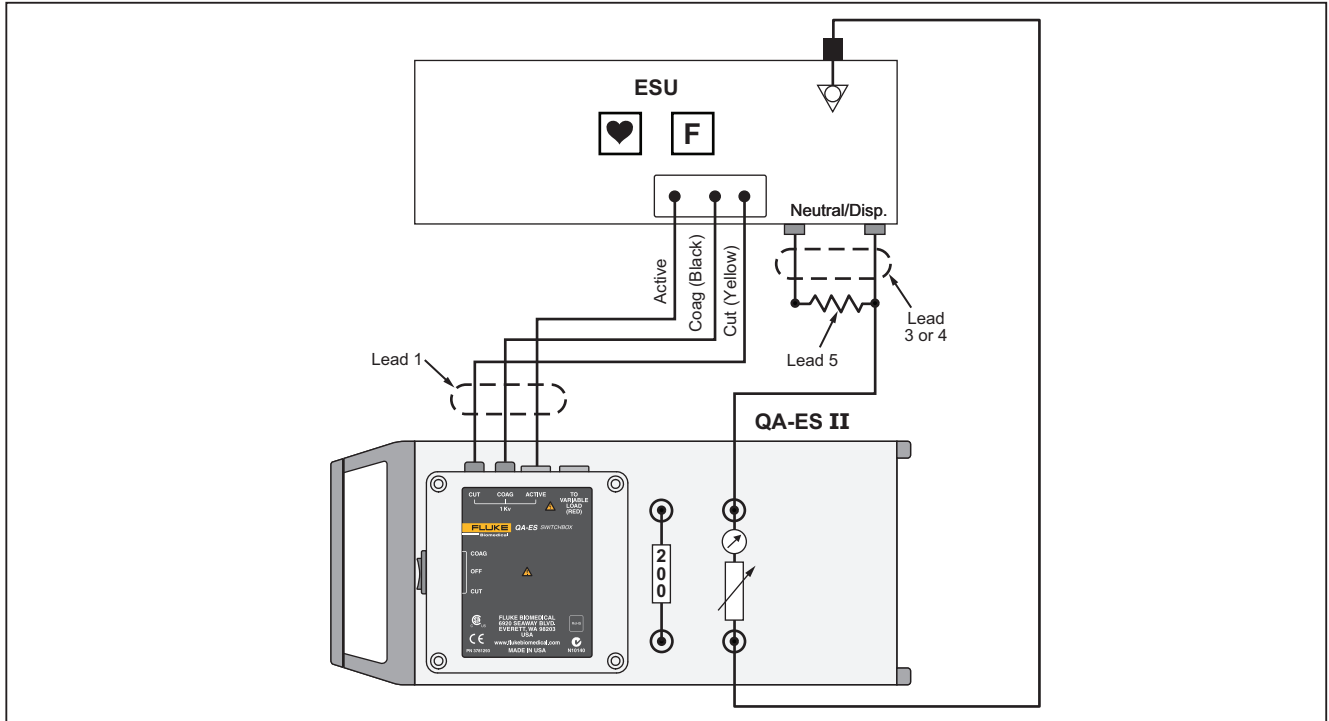
HF Leakage Current Tests

These tests measure the leakage current from the ESU under test. Figures 5 through 10 show the connections used to make the different HF leakage current measurements on the unit under test.



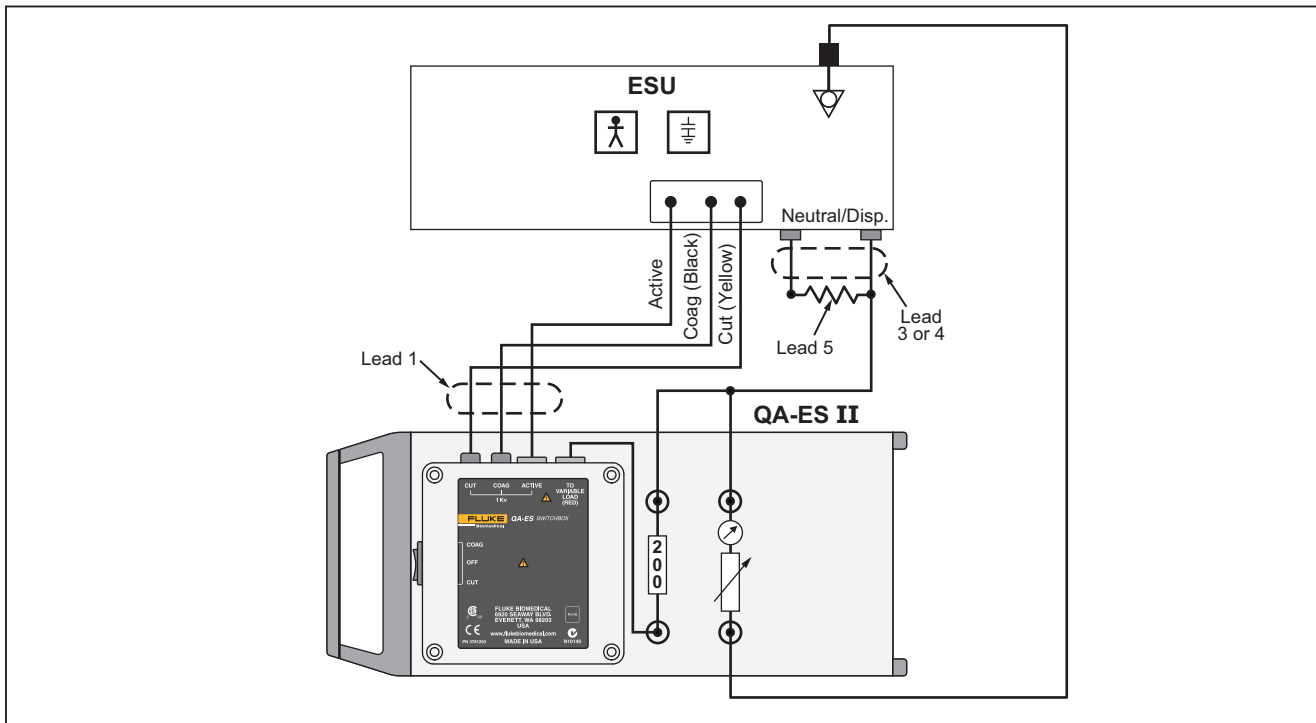
giw02.eps

Figure 5. HF Leakage Current on Active Electrode for HF Insulated ESUs (CF Type) Connection - Monopolar



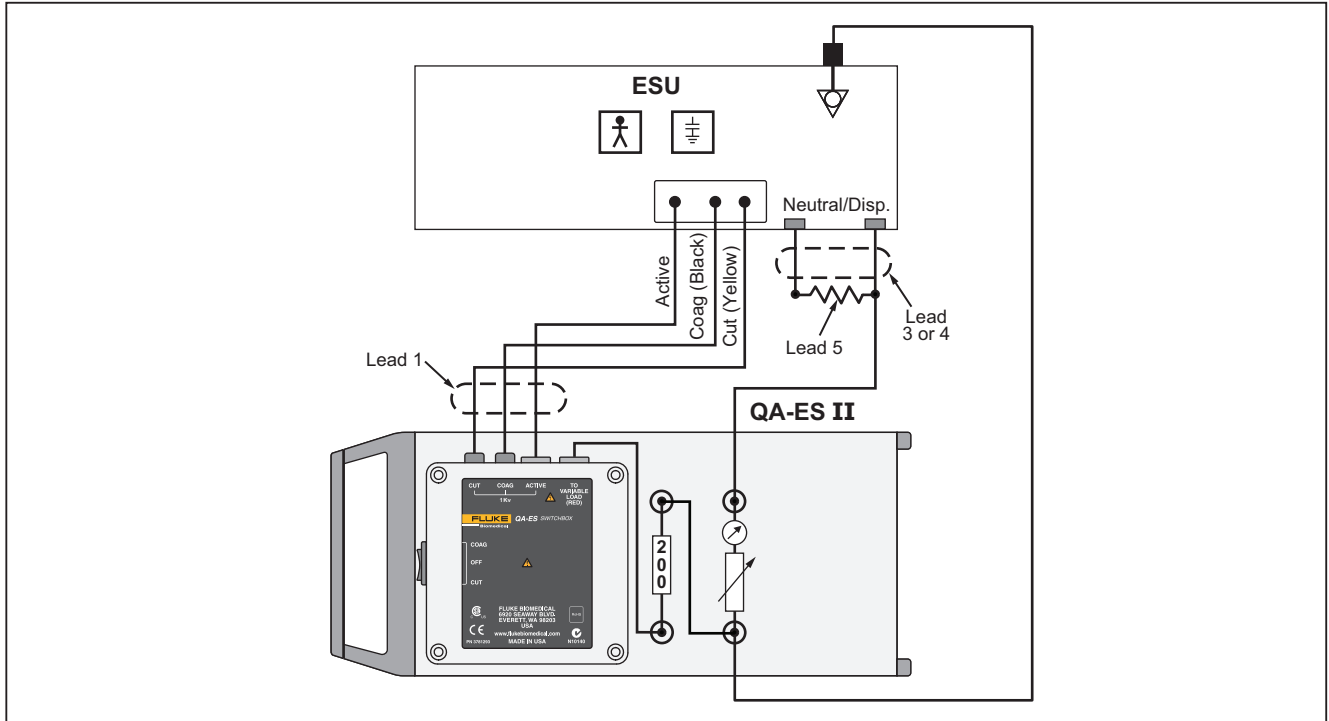
giw03.eps

Figure 6. HF Leakage Current from Neutral Electrode for HF Insulated ESUs (CF Type) Connections - Monopolar



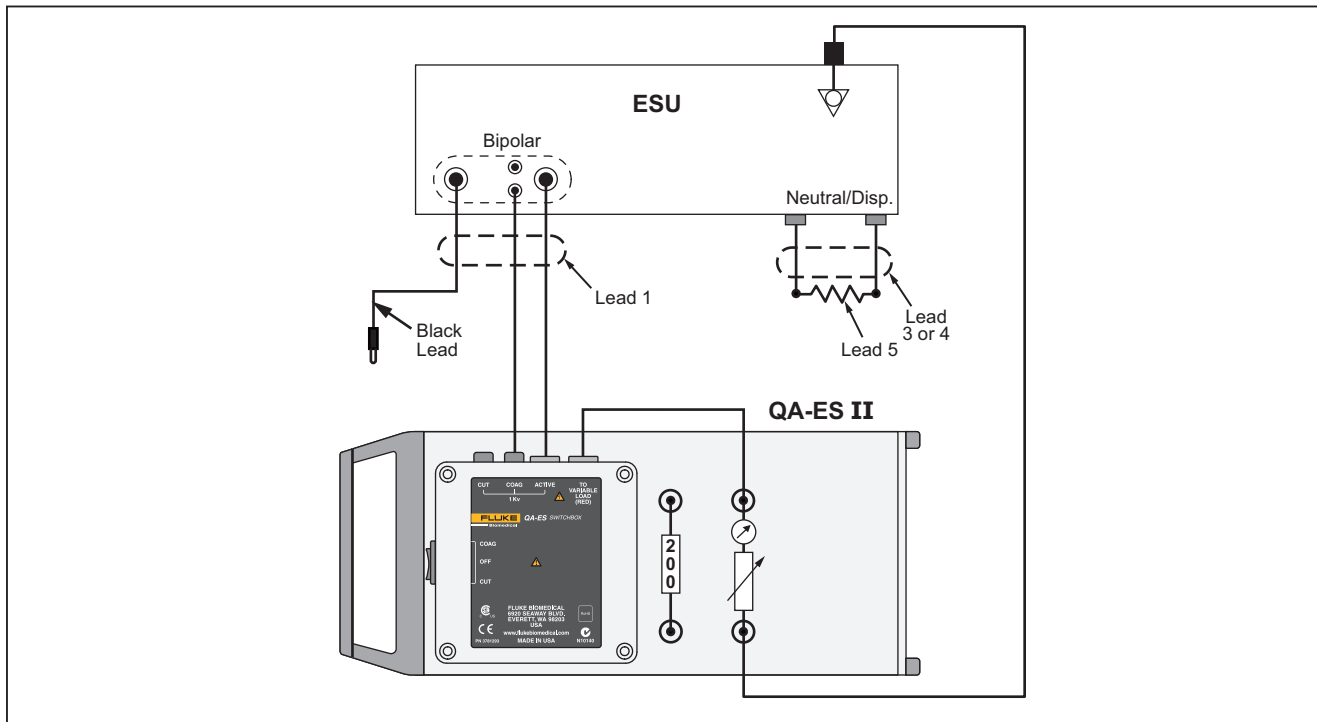
g1w04.eps

Figure 7. HF Leakage Current (Fig 101) for HF Grounded ESUs (BF Type) Connections - Monopolar



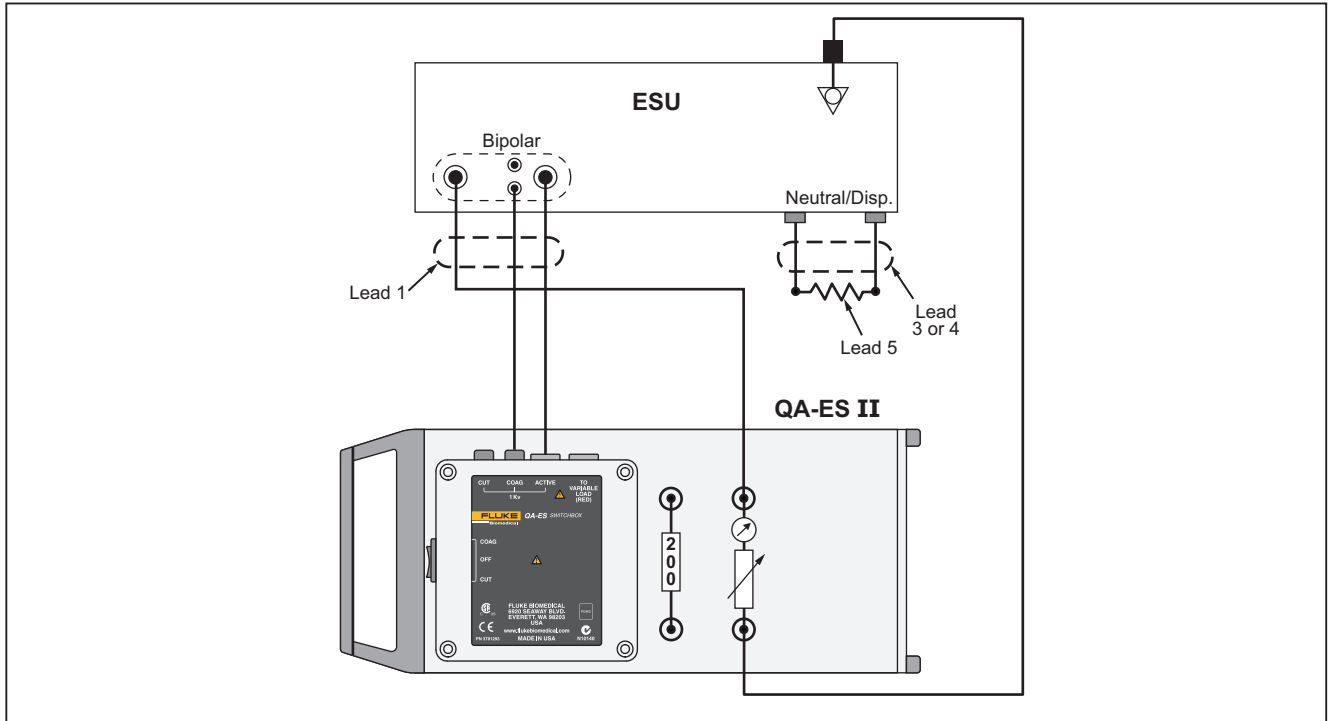
giw05.eps

Figure 8. HF Leakage Current (Fig 102) for HF Grounded ESUs (BF Type) Connections - Monopolar



giw08.eps

Figure 9. HF Leakage Current for Bipolar Modes (BF & CF type ESUs) – First Wiring



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Figure 10. HF Leakage Current for Bipolar Modes (BF & CF type ESUs) – Second Wiring.

How to Test the Return Electrode Current Monitoring (RECM) Circuit

To do an RECM circuit test, connect the RECM Test Box to the return connection on the UUT as shown in Figure 11. Adjust the resistance on the test box to the value specified in the UUTs specifications

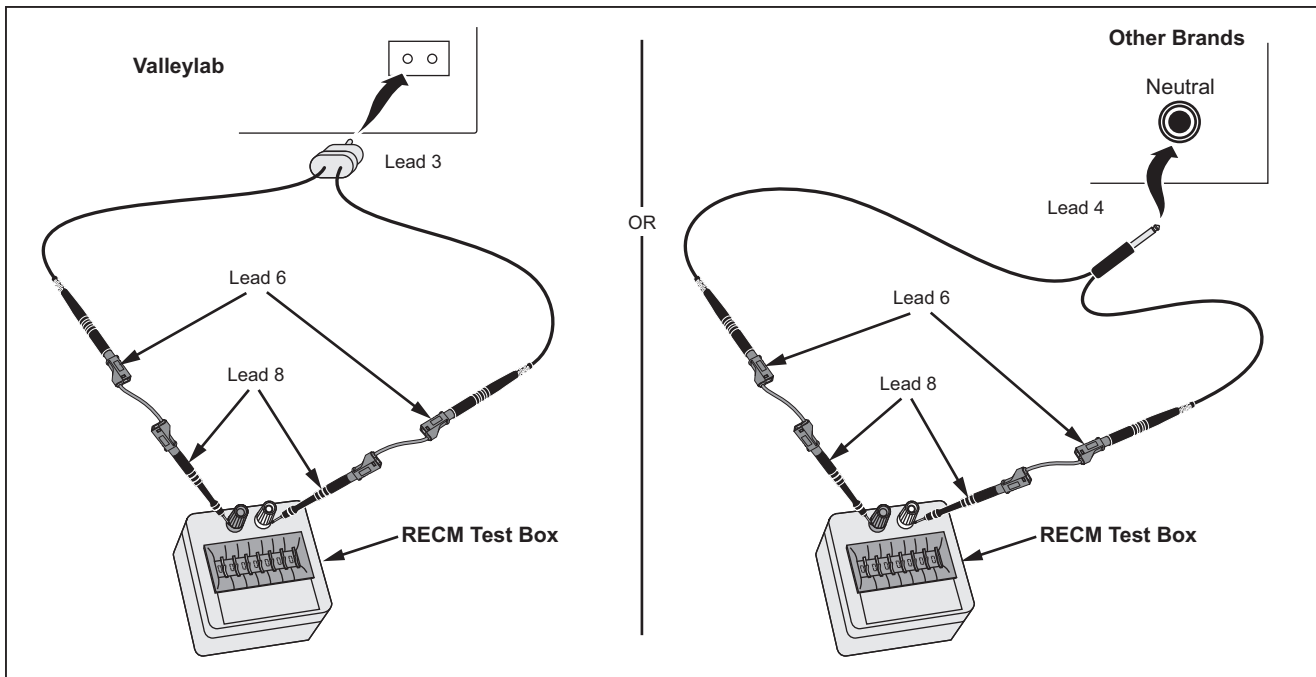


Figure 11. RECM Testing Connections

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How to Clean Bundle Components

⚠⚠ Warning

To avoid electric shock, do not clean the bundle components while connected to the Analyzer or UUT.

⚠ Caution

Do not pour fluid onto the bundle component surfaces; fluid seepage into the electrical circuitry may cause the component to fail.

Do not use spray cleaners on the components; such action may force cleaning fluid into the components and damage electronic components.

Clean the bundle components utilizing a damp cloth and mild detergent. Take care to prevent the entrance of fluids.

Wipe down the adapter cables with the same care. Inspect them for damage to and deterioration of the insulation. Check the connections for integrity before each use.

