

## Using Multiple Accessories with One Generator

A common question heard at the Valleylab Clinical HOTLINE is: **Can multiple active accessories be used safely with one electro-surgical generator (ESG)?**

Valleylab Force™ series ESGs have two monopolar receptacles and one bipolar receptacle. Instruments or accessories may be connected to all three ports at the same time. All active ports, whether monopolar or bipolar, function **independently** of one another in accordance with AAMI standard HF18: 2001 and IEC 60601-2-2: 1998.

Simply stated, if one monopolar device is activated by a user, the other accessories connected to the same ESG are not activated unless the second user purposely activates them. In most instances, the device that is activated first will receive all the power.

Multiple monopolar accessories connected to one ESG only require the use of one patient return electrode (PRE) under normal circumstances. In certain situations, when a REM™ alarm condition is encountered that “cannot be satisfied by using a new PRE at the original site, or by using a new PRE at a different site, two dispersive pads can be attached to the patient and connected to the ESU using a dual PRE adapter (E0507-B).”<sup>1</sup>

**Can two monopolar accessories connected to one generator be activated at the same time?**

Most Force™ series electro-surgical generators (except the Force™ 1 series that is discontinued, and the new ForceTriad™ energy platform) are capable of simultaneous COAG activation. However, it is recommended that you consult the specific ESG user’s guide for verification.

If using the simultaneous COAG feature keep in mind:

- When two monopolar accessories are activated simultaneously in the COAG mode, both devices receive a percentage of the total power (watts) digitally displayed in the COAG output window. The division of power is not necessarily equal. Power division is determined by the impedance of the tissue at each surgical site and the distance between the surgical site and the PRE. Generally, the surgical site with lower resistance receives proportionately more power. The combined total power delivered to each accessory does not exceed the overall power setting displayed in the COAG output window.
- When two monopolar devices are activated in CUT, the first device activated will receive all the power that is digitally displayed in the CUT output window. The CUT mode is unable to deliver simultaneous current to two monopolar accessories.
- If CUT and COAG are activated at the same time, there are two possible outcomes depending upon the ESG in use. On some model Force™ series ESGs, the COAG function will override CUT and deliver all the output power digitally displayed in the COAG output window. The CUT mode will be locked out. On other Force™ series ESGs, the power delivered is on a first-come-first-served basis. If either CUT or COAG is activated just slightly before the other, that mode receives all of the output power displayed in that particular output window, and the other mode is locked out.
- The monopolar and bipolar mode cannot be activated simultaneously. The first device activated will receive all power established for that mode in the power display window.



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### Clinical Information Hotline

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In certain situations, the simultaneous use of the coagulating current using two monopolar accessories functions well. Nevertheless, it is important to remember, if the power is increased in the COAG output display to accommodate for the power split and one surgeon stops activating their accessory while the other surgeon continues use, full power will be delivered to the single user. Unexpected power delivery spikes are a safety concern and the reason why the ForceTriad™ energy platform does not support this feature.

A more efficient alternative to simultaneous COAG is the use of two generators for the delivery of accurate output by each generator as well as the desired mode.

### Simultaneous Use of Multiple Generators on the Surgical Patient

The use of two Valleylab ESGs is not an uncommon practice when more than one surgeon is involved in a surgical procedure, such as coronary artery bypass graft (CABG), tram flaps, and others. Relatively new, however, is the introduction of a third ESG, frequently used during a CABG to take the radial artery graft. Whatever the application, the use of multiple generators is acceptable if diligence is used in following Valleylab instructions and safety guidelines.

- Always use isolated ESGs together **or** ground referenced/balanced output ESGs together. (Refer to Table 1) **Do not mix technologies.** The model of the ESG does not necessarily have to be the same. For example a Force EZ™-C generator can be used with a Force FX™-C generator because they are both isolated.

Table 1

Isolated	Ground Referenced
SurgiStat™/SurgiStat™ II ESGs	SSE3 series ESGs
SSE2 series ESGs	SSE4 ESGs
Force™ 1 series ESGs	Force™ 4 series ESGs
Force™ 2 series ESGs	
Force™ 30/40 ESGs	
Force™ EZ series ESGs	
Force™ FX series ESGs	
ForceTriad™ energy platform	

- Apply each PRE, one for each generator, as close as possible to its respective electrosurgical site. This is important because the ESGs are not synchronized; consequently one PRE frequently acquires a high positive voltage while the other acquires an opposite negative voltage. When this occurs, the potential voltage difference between them may cause the current to flow to one PRE instead of to both PREs, potentially causing a nuisance REM™ alarm or ESG error code.
- Never allow the PREs to touch one another or overlap.

Site selection for placement of a second or even a third PRE should always consider the basic guidelines for PRE application.

- When multiple accessories (PREs and active devices) are used, keep cords separated to reduce cross coupling. Avoid twisting, bundling, or clamping cords together.
- Use the lowest possible power setting that will deliver the desired surgical effect. The higher the power setting and the longer the activation time, the greater the risk for potential electrosurgical injury. Low power settings reduce the amount of current delivered to the patient, minimize the demand on the PRE, and help protect the patient and surgical team from accidental burns and shocks.
- Avoid stacking multiple generators directly on top of one another or placing them close together. Proper spacing assists in adequate cooling and reduces the chance of interference. For stacking purposes, use an approved cart system to safely house more than one generator and provide a stable configuration.

Many features are available on Valleylab ESGs as well as other manufacturers' ESGs, but these features are not always the same from one model to the next. The *2006 AORN Standards, Recommended Practices, and Guidelines* state that the manufacturer's written operating instructions be followed for safe operation of the electrosurgical unit. A brief set of clearly readable operating instructions should be readily accessible with each system. These instructions should be placed on or attached to each ESG for easy reference. The safe and effective use of electrosurgery depends to a large degree upon a properly trained and vigilant surgical team. Proper handling and use of electrosurgical equipment is essential to patient and personnel safety. Always refer to the appropriate user's guide for operating instructions, or contact the Valleylab Clinical Information HOTLINE at 800-255-8522 for additional support when using Valleylab electrosurgical generators and accessories.

1 Valleylab Clinical Information Hotline News, Vol. 10, Issue 2, July 2005: "When is it Necessary to Use Two Patient Return Electrodes?".