

Section: Division of Nursing
Approval: _____

PROCEDURE

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HACKETTSTOWN REGIONAL MEDICAL CENTER

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OR
(Scope)

TITLE: VULCAN EAS

PURPOSE: To outline the steps for proper use of the Vulcan Machine.

EQUIPMENT LIST:
1. Vulcan Machine
2. Foot Pedal – Dual

SUPPORTATIVE DATA: The Vulcan EAS Thermal Arthroscopy System is intended for arthroscopic uses in coagulation, ablation and hemostasis of soft tissue.

CONTENT:	<u>PROCEDURE STEPS:</u>	<u>KEY POINTS:</u>
	1. Plug the power cord into an appropriate electrical outlet.	
	2. Turn the Vulcan EAS generator on using on/off.	
	3. Connect foot switch cable to appropriate connector on rear of generator.	Inspect foot switch for any defects.
	4. Prepare the patient using standard technique for electro surgical procedures for monopolar probes -	Use a ground pad on patient and connect to appropriate connector on front left of machine. A ground pad is not required for bi-polar probes.
	5. Connect the desired Oratec probe to the extension cable.	Use instructions accompanying the probe. Check probe and extension cable for the presence of any liquids. Any liquids can cause the connections to short resulting in damage to probe, cable or generator.
	6. Check to Vulcan's LCD display to ensure that the proper probe identification and settings are displayed.	
	7. Adjust set temp, set power, preset settings, set cut; set coag or set blend as desired.	Keep the power setting as low as possible to achieve the desired tissue effect.
	8. To begin R7 energy delivery, depress and hold appropriate footswitch for the type of power to be delivered.	The green R7 power on and cut (yellow) or coag (blue) indicator lights will illuminate.

Using the Vulcan EAS Generator. . .

TEMPERATURE CONTROL MODE

If the **Mode** button is pressed once while the Vulcan EAS is in **Standby Mode** or if a temperature controlled probe is connected to the generator, the generator will enter the **Temperature Control Mode**. In **Temperature Control Mode**, the generator software automatically adjusts energy delivery to maintain the tissue temperature indicated in the **Set Temp** display. Only monopolar temperature controlled probes may be used in **Temperature Control Mode**.

All Vulcan EAS probes are equipped with a sensor that enables the generator to detect the type of probe connected. When a probe is connected, the generator's software will read the sensor and automatically adjust power output and temperature parameters to the pre-programmed **Preset** settings for the probe type. See Auto Probe Recognition, below.

If a probe is not detected, the generator will default to Preset "1", and the Set Power and Set Temp displays will show the power and temperature values corresponding to this setting. Either Set Power or Set Temp may be changed from their default values.

Set Temperature

Set Temperature may be changed by pressing the **Up** and **Down** arrows located next to the **Set Temp** display. Temperature may be set from 15° C to 99° C. Pressing the appropriate button repeatedly will adjust the temperature in increments of 1° C; holding the button down will scroll through the temperature settings automatically.

Set Power

Set Power may be changed by pressing the **Up** and **Down** arrows located next to the **Set Power** display. Power may be adjusted from 1 to 50 watts. Pressing the appropriate button repeatedly will adjust the power in increments of 1 watt; holding the button down will scroll through the power settings automatically.

Preset

Seven (7) temperature and power combinations are pre-programmed into the Vulcan EAS software to allow the operator to quickly configure the generator in **Temperature Control Mode**. Use the **Preset Up/Down** arrows on the front panel of the generator to select the desired setting. The selected setting will be displayed in the **Preset** display on the front panel of the generator and the corresponding temperature and power settings will be displayed in the **Set Temp** and **Set Power** displays on the front panel of the generator. See page 25 for a table showing temperature and power combinations available in **Temperature Control Mode**.

Auto Probe Recognition

The Vulcan EAS software recognizes which type of ORATEC probe is connected to the generator by reading a sensor in the probe handle. When a probe is connected to the RF cable, the software automatically switches to the appropriate power output mode and **Preset** setting for that specific probe. The **Set Temp** and **Set Power** settings may be changed from their **PreSet** values using the **UP/DOWN** arrows next to the **Set Temp** and **Set Power** displays.

The Vulcan EAS software also contains maximum temperature and power limits for each temperature-controlled probe type. The **Set Temp** and **Set Power** settings cannot be set to values higher than the maximum programmed in the software. This feature ensures that each probe type is used within its safe limits of operation.

To Deliver RF Energy in Temperature Mode

Start **RF** energy delivery by pressing and holding the **Coag** (blue/right) pedal. The blue **Coag** and the green **RF Power on** indicator lights on the front panel will be illuminated while **RF** is delivered in the **Temperature Control (Coag) Mode**.

To discontinue **RF** energy delivery, release the foot pedal control. The blue **Coag** and green **RF Power On** indicator lights

will go off.

Set Blend

Set Blend allows the user to select from four (4) different power combinations for use in the **Power Mode**. These combinations are created by changing the amplitude of the generator voltage at different time intervals. The amplitudes are derived from the **Set Cut** and **Set Coag** settings. For example, in **Blend 3**, the average power is [(0.75) **Set Cut** + (0.25) **Set Coag**].

	Blend 0	Blend 1	Blend 2	Blend 3
Cut	100%	25%	50%	75%
Coag	0%	75%	50%	25%

To deliver **RF** power, press and hold the **Cut** (yellow/left) pedal. The yellow **Cut** and green **RF Power On** indicators on the front panel will be illuminated while **RF** is delivered in the **Set Blend Mode**.

To discontinue **RF** power delivery, release the foot pedal control. The yellow **Cut** and green **RF Power On** indicators will go off.

Preset

Thirteen (13) **Set Cut** and **Set Coag** power combinations are pre-programmed into the Vulcan EAS software to allow the operator to quickly configure the generator in **Power Control Mode**. Use the **Preset Up/Down** arrows on the front panel of the generator to select the desired setting. The selected setting will be displayed in the **Preset** display on the front panel of the generator, and the corresponding power settings will be displayed in the **Set Cut** and **Set Coag** displays on the front panel of the generator. See page 25 for a table displaying the **Set Cut** and **Set Coag** combinations available in **Power Mode**.

Remote Control

The Remote Control accessory allows the user to change temperature and power settings from the sterile field. If the Remote Control is connected properly to the Vulcan generator, the Vulcan software will activate the appropriate functions. In **Power Control Mode**, the **Set Cut**, **Set Coag**, and **Set Blend** functions on the Remote Control will be active.

Use the **Select** button on the Remote Control to select the desired function (**Set Cut**, **Set Coag**, etc.)

Use the **Up/Down** arrows on the Remote Control to increase or decrease the set point from the selected function. Each button press will change the desired set point in 5W increments. A separate button press is required for each incremental change (holding an arrow button down continuously will not change the set point more than one increment).

POWER MODE (Cutting and Ablation)

If the **Mode** button is pressed once while the Vulcan EAS is in **Temperature Control Mode**, or is pressed twice while the Vulcan EAS is in **Standby Mode**, or if a cutting or ablation probe is connected to the generator, the generator will enter the **Power Mode**.

All Vulcan EAS probes are equipped with a sensor that enables the generator to detect the type of probe connected. When a probe is connected, the generator's software will read the sensor and automatically adjust power output and temperature parameters to the pre-programmed Preset settings for the probe type. See Auto Probe Recognition, below.

If a probe is not detected, the generator will default to **Set Cut** "65" and **Set Coag** "45". The **Set Blend** display will display "0", for **Set Blend** setting 0 (see **Set Blend**).

The user may change the type and amount of power delivered by adjusting **Set Cut**, **Set Coag**, or **Set Blend** levels.

The user may specify the type of probe (monopolar or bipolar) by pressing the **Electrode** button to select the desired probe type.

NOTE: If “Bipolar” is selected, the NEM is not operational.

Set Cut

Set Cut may be adjusted by pressing the **Up** and **Down** arrows located next to the **Set Cut** display. Power may be adjusted from 1 to 200 watts or up to the preprogrammed limit for the probe type used. Pressing the appropriate button repeatedly will adjust the power in increments of 5 watts; holding the button down will scroll through the power settings automatically.

To deliver **RF** power, press and hold the **Cut** (yellow/left) pedal. The yellow **Cut** and the green **RF Power On** indicators on the front panel will be illuminated while **RF** is delivered.

To discontinue **RF** power delivery, release the foot pedal control. The yellow **Cut** and green **RF Power On** indicator lights will go off.

Set Coag

Set Coag may be adjusted by pressing the **Up** and **Down** arrows located next to the **Set Coag** display. Power may be adjusted from 1 to 200 watts or up to the pre-programmed limit for the probe type used. Pressing the appropriate button repeatedly will adjust the power in increments of 5 watts; holding the button down will scroll through the power settings automatically.

To delivery **RF** power, press and hold the **Coag** (blue/right) pedal. The blue **Coag** and green **RF Power On** indicators on the front panel will be illuminated while **RF** is delivered.

To discontinue **RF** power delivery, release the foot pedal control. The blue **Coag** and green **RF Power On** indicator light will go off to the **RF** cable, the software automatically switches to the appropriate power output mode and **PreSet** setting for that specific probe. The **Set Temp** and **Set Power** settings may be changed from their **PreSet** values using the **UP/DOWN** arrows next to the **Set Cut** and **Set Coag** display.

The Vulcan EAS software also contains maximum power limits for each probe type. The **Set Cut** and **Set Coag** settings may not be set to values higher than the maximum programmed in the software. This feature ensures that each probe type is used within its safe limits of operation.