Detailed Setup: Probe

The Probe setup panel shown in Figure 2-38 displays the steps required to properly connect the various vit probes to the system.

1. Select Probe - Provides a selection of probes and, when a probe is selected, shows where to connect to the front panel. When the system detects that the operator has plugged in the probe, the handpiece type is automatically selected, the "connected" icon appears next to the selection list, and the selection list is locked.

2. Select Guage - When a probe is selected, the Select Guage section offers three options: 20, 23, and 25 guage. Once selected, the selected guage size appears under the selected probe.

3. Connect Probe - This section shows an illustration of the connector panel and highlights the connections for the selected probe.

Skip Probe Prime/Test - Indicates whether the operator wants to skip priming the selected vitreous probe. When the checkbox is checked, the system will not prime or test the vitreous probe when the user requests Prime & Test.
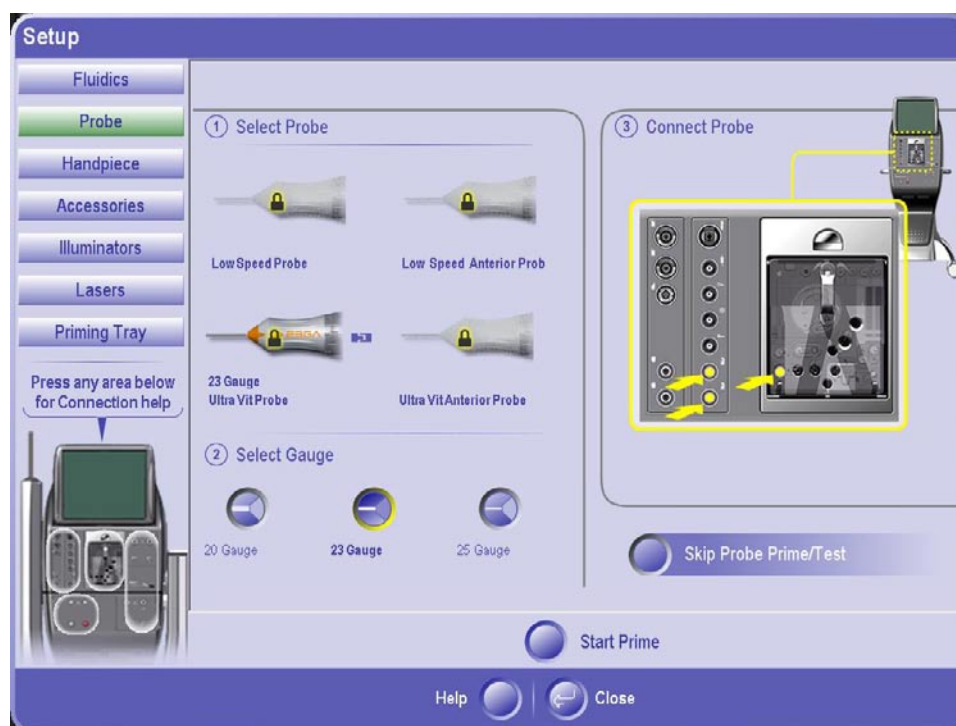

Figure 2-38   The Detailed Probe Setup Panel

Detailed Setup: Handpiece

The Handpiece setup panel shown in Figure 2-39 displays the steps required to properly connect the various handpieces to the system.

1. Select Handpiece - Provides a selection of handpieces and, when a handpiece is selected, shows where to connect the handpiece. When the system detects that the operator has plugged in the handpiece, the handpiece type is automatically selected and the "connected" icon appears next to the selection list.

2. Select Tip - When a handpiece is selected, the Select Tip button appears and pressing the button opens a popup that will show a variety of tips that can be selected. Once selected, the tip will appear under the selected handpiece.

3. Connect Handpiece - This section shows an illustration of the connector panel and highlights the connections for the selected handpiece.

Figure 2-39   The Detailed Handpiece Setup Panel

Detailed Setup: Accessories

The Accessories setup panel shown in Figure 2-40 displays the steps required to properly connect the following accessories:

- Scissors
- Viscous Fluid Controller
- Forceps
- Auto Gas Fill
- Diathermy

1. Select Optional Accessory - Provides a selection of accessories and, when an accessory is selected, shows where to connect the accessory. When the system detects that the operator has connected the accessory, that accessory type is automatically selected and the "connected" icon appears next to the selection list.

    Confirm Connection - This button is present when the user has selected an accessory that is not currently detected as connected by the system. When this button is pressed, the system assumes that the currently selected accessory has been connected (even though it was unable to detect it). However, since the system did not auto-detect the connection, it will not lock the user from selecting the type of the accessory (e.g., type of scissors).

2. Connect Accessory - This section shows an illustration of the connector panel and highlights the connections for the selected accessory.

Figure 2-40   The Detailed Accessory Setup Panel

Detailed Setup: Illuminators

The Illuminators setup panel shown in Figure 2-41 displays the steps required to properly setup and connect illuminator probes to the front panel.

1. Select Illuminator - Provides a selection of illuminator probes and shows where to connect the probe. When the system detects that the operator has connected the illuminator probe, that probe is automatically selected and the "connected" icon appears next to the selection list.
   Select Illuminator Type - Shows the Illuminator probe type the operator has chosen and/or inserted for the highlighted illuminator port.

2. The following illuminator probes are selectable:
   • Straight
   • Wide Angled

3. Select Gauge Size - This control is only available when the an illuminator type has been selected. When the guage size is selected, it is displayed under the selected probe. The following illuminator gauge sizes are selectable:
   • 20 Gauge
   • 23 Gauge
   • 25 Gauge

4. Connect Illuminator - This section shows an illustration of the connector panel and highlights the connections for the selected probe.

Figure 2-41   The Detailed Illuminator Setup Panel

Detailed Setup Screen: Lasers
The Lasers setup panel shown in Figure 2-41a displays the steps required to properly setup and connect endoprobes or an Laser Indirect Ophthalmoscope (LIO).

1. Select Laser - Provides a selection of laser options and shows where to connect the selected option.

2. Select Laser Type - Shows the Laser type the operator has chosen and/or inserted for the highlighted laser port. The following laser types are selectable:
   • Endo
   • Laser Indirect Ophthalmoscope (LIO)

3. Connect Laser - This section shows an illustration of the connector panel and highlights the connections for the selected laser option.

Figure 2-41a   The Detailed Laser Setup Panel

Detailed Setup: Video Help

When Video Help is selected, the popup shown in Figure 2-42 is displayed offering list of help topics. Once the topic is selected, the user can choose between Video Help and Wizard Help. Pressing the Video Help button launches a help video (see Figure 2-43) that plays completely through the help video for the selected topic. Wizard Help (see Figure 2-44) plays the same video but stops at various points to give the user a chance to perform the required actions before continuing.

The controls on the Video Help Display operate as follows:
• Start - Places the video at its beginning.
• Rewind - Rewinds the video one segment.
• Play/Pause - This button is labeled Pause when the video is playing and Play when the video is not playing.

- Forward - Forwards the video to be forwarded one segment.
- End - Forces the video to be forwarded to the end.
- Move Left - Moves the entire video popup to the left side of the surgical panels.
- Move Right - Moves the entire dialog to the right side of the surgical panels.
- Close - Closes the popup and does not launch the Video Help dialog.

The controls on the Wizard Help Display operate as follows:
- Previous - Rewinds the video one segment and play stops.
- Replay - Rewinds the video one segment and play continues.
- Continue - Resumes video play.
- Move Left - Moves the entire video popup to the left side of the surgical panels.
- Move Right - Moves the entire dialog to the right side of the surgical panels.
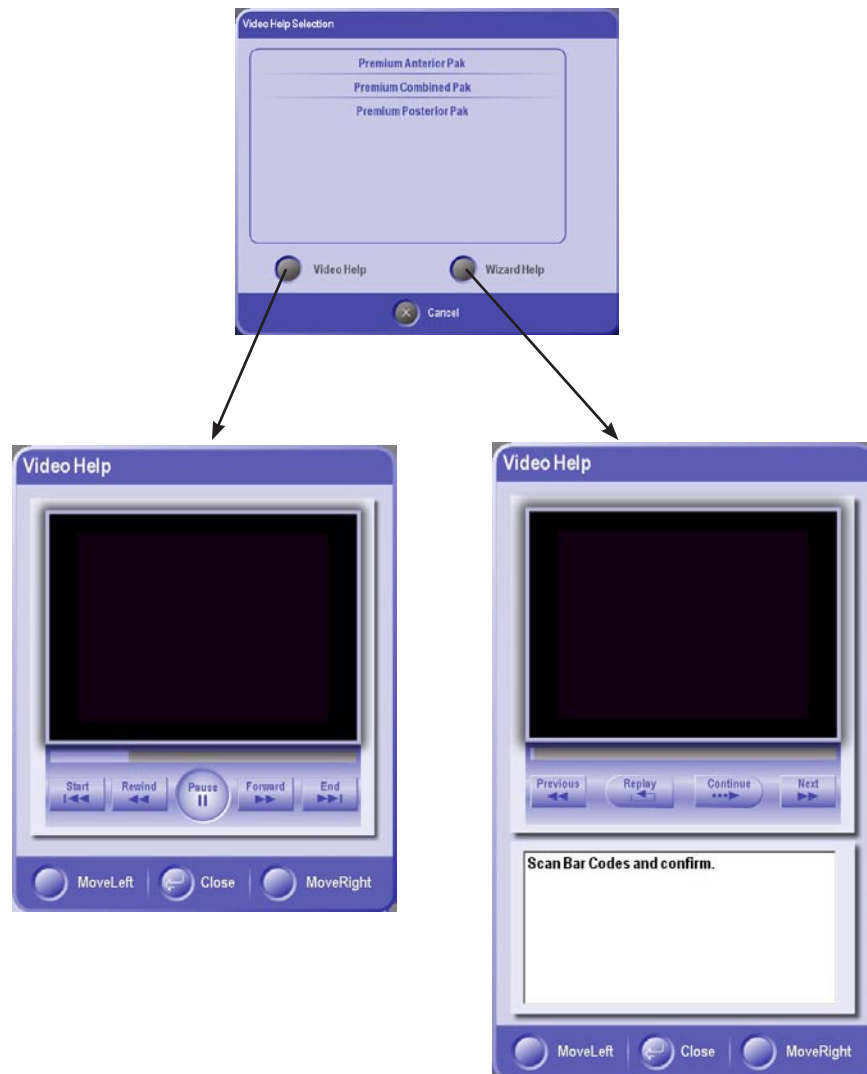- Close - Closes the popup and does not launch the Video Help dialog.

Figure 2-42   Video Help Popups

Start Prime Button And Popup

After the instrument connections are complete, pressing the Start Prime button displays the Prime & Test Status popup (see Figure 2-43) and begins the prime/test process for the current setup. The status bar uses different colors to indicate the progress and completion status of each segment of the prime/test process.

- *Partial green bar* - indicates that the current segment is in progress.
- *Complete green bar* - indicates that the process related to that segment has finished with no errors.
- *Yellow bar* - indicates that the user has cancelled the process by pressing the Stop button at the end of the bar.
- *Red bar* - indicates that the process related to that segment has failed with errors.
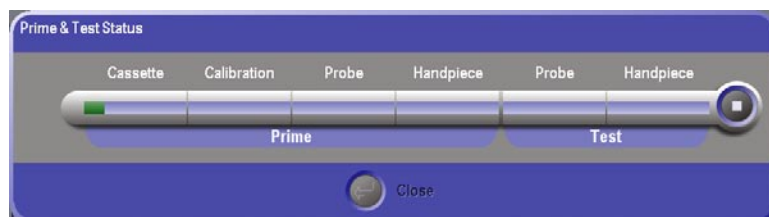

Figure 2-43   Prime & Test Status Bar

Consumables Button And Popup

Pressing the Consumable button displays the popup shown in Figure 2-44. In the Consumables popup the user can view, add, or remove the consumables used for the current surgical case. The top of the popup displays the items that have been added to the current case either through this popup or the bar code scanner. The bottom of the popup shows the list of consumbles that can be added to the case. Scrolling through the consumables list is accomplished using the scroll bar and arrows next to the list.

**Figure 2-44
Consumables Popup**

To add an item: Select the item from the consumables list in the bottom of the popup then press the Add button. The selection will be added to the top list as an item used for the current case.

To remove an item: Select the item from the list in the top of the popup then press the Remove button. The selection will be removed from the top list.

The General Purpose Timer

Pressing the Timer Tab (00:00:00) next to the Consumbles button displays the Timer Configuration popup shown in Figure 2-45. The timer provides for counting up and counting down from a pre-configured value. The timer features the following functionality:

- Pressing the timer tab when it is running will stop the timer.
- Pressing the timer tab when it is not running will launch the Timer Configuration popup.
- Pressing the Start button starts the timer and closes the popup.
- If the timer is started when the readout is 00:00:00, it will count up indefinitely.
- For countdown mode, enter at starting time using the keypad then press Start. The timer generates an audible tone when it reaches 00:00:00.

Figure 2-45   Timer Configuration Popup

SURGERY SCREEN

The Surgery Screen shown in Figure 2-46 is organized in the following way:

- *Menu Bar* - This menu bar is context aware and changes the options depending on the surgical mode.
- *Surgery Panels* - Each Surgery Panel corresponds to a "Surgical Function" and contains the various controls necessary to control each function.
- *Step Panel* - The Step Panel allows the user to select Surgical Modes and Submodes by pressing a Step Button and a Submode Button. The look of the Step Panel depends on which Surgical Procedure (discussed later) is selected.
- *Save Button* - The Save button opens the Quick Save dialog.
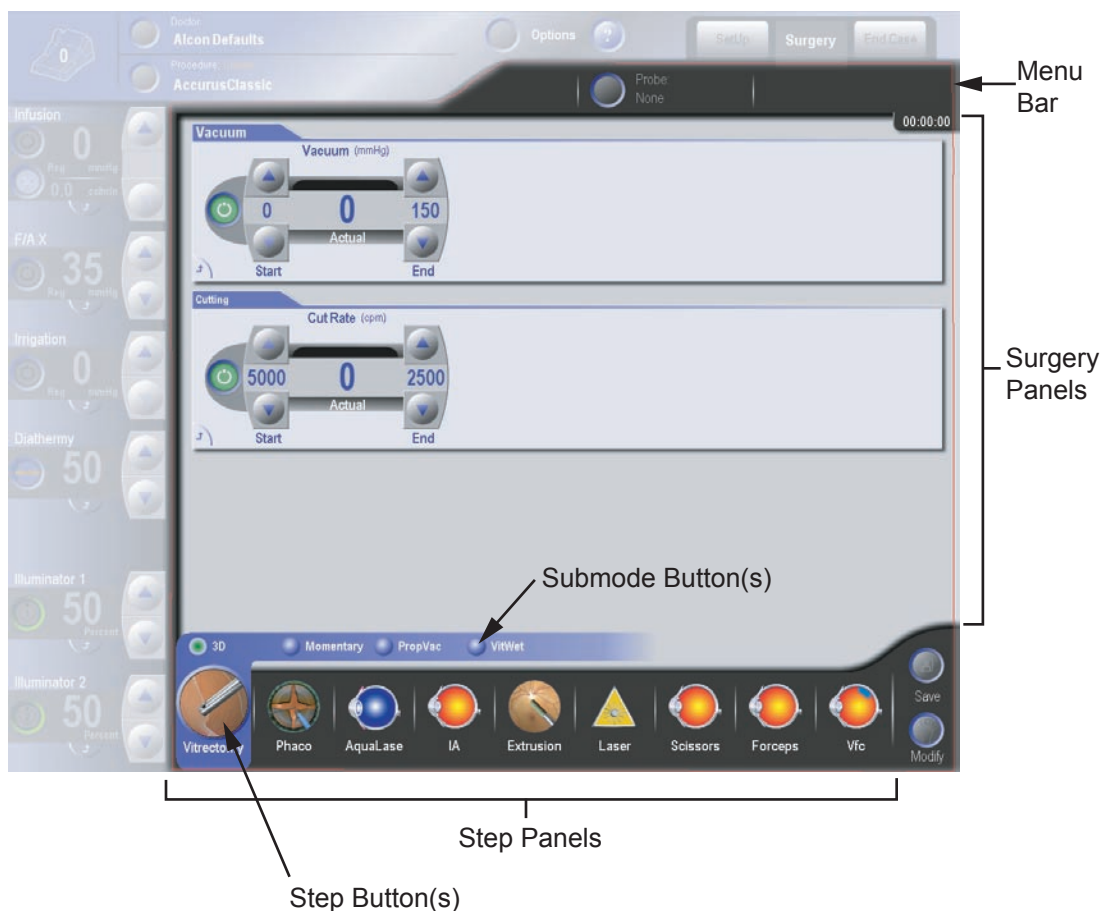- *Modify* - The Modify button opens the Modify Procedure dialog.

Figure 2-46   The Surgery Panel

Surgery Screen: Surgical Controls

The surgical panels make use of the surgical controls to change the values of the associated surgical functions. The controls provide a variety of information and capability to the user. As an example, the Vacuum control is shown in Figure 2-47.
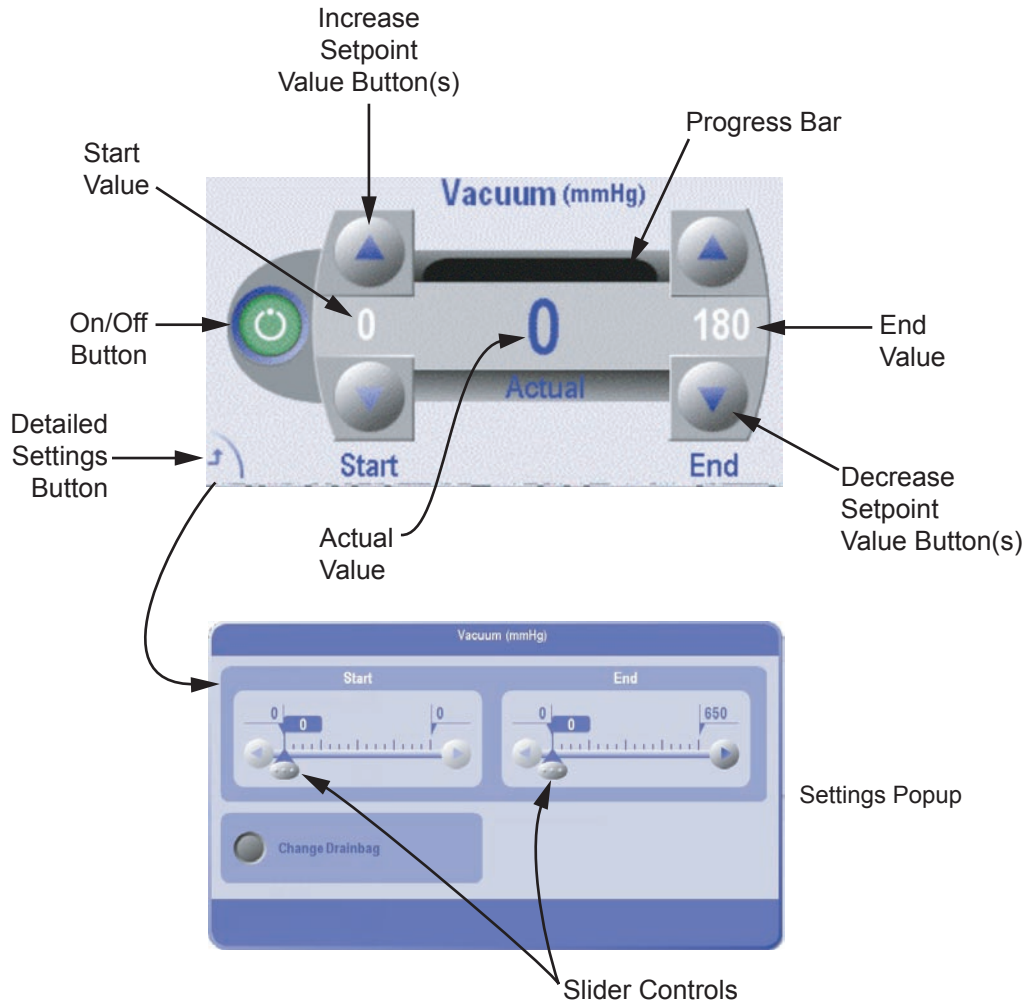
Figure 2-47   Vacuum Control and Settings Popup

The surgical controls contain some or all of the functionality described here:

- *On/Off Button*– Toggles the function on and off. A green button indicates that the function is on while a dark gray button indicates that the function is off.

- *Up/Down Arrow Buttons* – Increase/decreases the associated setpoint value. The button face indicates whether or not the associated setpoint can be increased or decreased. The button is disabled when increases/decreases are not allowed.

- *Start Value* – Shows the current setpoint at the treadle starting position.

- *End Value* - Shows the setpoint at full treadle. Note that the Start and End objects always control the same function and that their states (pressed or raised) always track.

- *Actual value* – Displays the current value of this parameter and depends on the position of the footswitch treadle. The actual value is shown as an absolute value and also as a relative percentage of the maximum via the progress bar.

- *Surgical function name* – The value displayed represents the surgical function being manipulated by the On/Off or Action buttons.

- *Settings Button* - Pressing the Settings button displays the Surgical Control Settings popup where the setpoint values can be changed greater detail.

- Slider Controls - On the Detailed Settings Popup, the slider controls adjust a value by pressing and dragging the slider to the desired value location.

The Start and End buttons have the following characteristics:
- In 3D submodes, both start and end values are independently adjustable.
- In Linear submodes, only the start value is locked at 0.
- In Fixed submodes, the start and end value are always the same, regardless of which of the values is modified.

Surgery Screen: Surgical Controls - Settings Popup

When the Settings button is pressed on a surgical control, a Surgical Control Settings Popup is displayed as shown in Figure 2-47 (Vacuum Setting shown in this example). Settings modified here take effect immediately (i.e. before the user exits the dialog.) Also, each control will have a slightly different popup given that some controls have more functionality than others.

Surgery Screen: Surgical Controls - Surgical Control Options

For some surgical configurations, such as calibrating scissors, it is necessary to provide additional options as shown in Figure 2-48.

Figure 2-48
Surgical Control Option

- *On/Off button* - Toggles the option On and Off. This control is disabled when the functionality is not available.

- *Left Option button* - Allows the user to initiate the function assigned to this button ("Start" in Figure 2-48).

- *Right Option button* - Allows the user to initiate the function assigned to this button ("Close" in Figure 2-48).

Surgery Screen: Surgical Controls - Surgical Control Drop Lists

For some controls in certain configurations it is necessary for the user to define additional parameters. Such parameters might include the Cutting Table, whether Linear or Fixed Flow is desired, or dynamic rise time among others. When such a choice is needed, a drop list appears near the surgical control as shown in Figure 2-49.

NOTE: The control is shown in the "Advanced Display Mode" which is a selection made in the Doctor Settings display. Go to Options/ Doctor Settings/General and the display modes are shown on the right of the display. For additional information see Menu Bar: Options in this section of the manual.
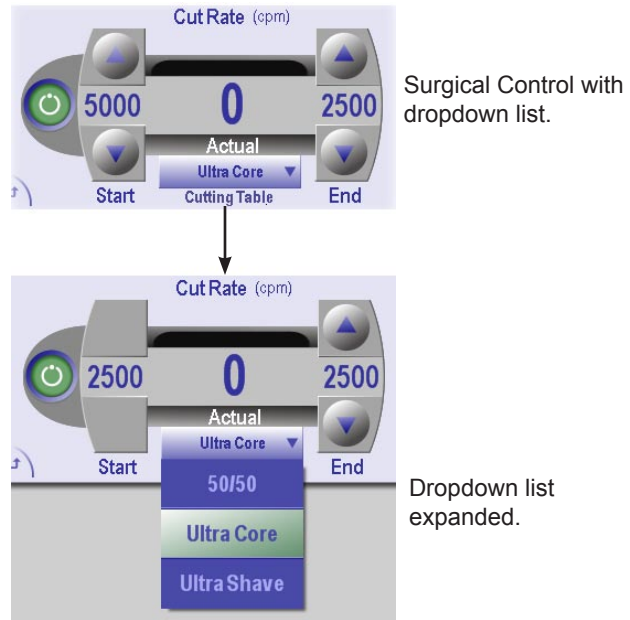
Surgical Control with dropdown list.

Dropdown list expanded.

Figure 2-49   Surgical Control with Dropdown List (Advanced Display Mode)

Surgery Screen: Surgical Steps

> A "Surgical Step" identifies a related set of activities performed during a surgical case. Examples are "Membrane Peeling" and "Core Vitrectomy." A Surgical Step is associated with a Surgery Mode and contains unique information relevant to that mode such as the sub mode, which functions are on, and various values of surgical parameters. Selecting a Surgical Step determines which surgical functions are available. Surgical Steps that are grouped together form a Surgical Procedure.

Surgery Screen: Surgical Procedures

> A Surgical Procedure describes which "Surgical Steps" are most likely to be performed during a surgery. The goal is to organize the screen in such a way that the surgeon can select steps "from left to right" as the surgery progresses. The user can create custom procedures or modify existing procedures. A procedure must contain at least one step and can contain as many steps as desired.
> **Note: See "Menu Bar: Procedure Selection" found ealier in this section for detail information on creating and editing procedures.**

Surgery Screen: Surgical Procedures - Accurus® Classic Procedure

> Accurus Classic procedure is a special procedure that is designed to mimic the look of the Accurus® instrument with the exception that the laser has been added. The Accurus® Classic procedure has several unique properties:
> - Steps cannot be added or removed.
> - Steps cannot be moved.
> - Steps cannot be renamed.
> - All Steps will always fit on the screen so there's no need for scrolling.
> - The sub mode buttons will always be visible if there is more than one sub mode for that step.
>
> The Accurus® Classic procedure contains one step for each surgery mode. However, at any point in time only a subset or a "View" of the steps is displayed. The Views differ depending on:
> - The Fluidics Operating Mode (Combined, Anterior or Posterior)
> - The connected U/S handpiece (defaults to Phaco if no U/S handpiece is connected)
>
> The screen shown in Figure 2-50a shows the Accurus® Classic procedure in combined mode.

Figure 2-50   Accurus® Classic Surgery Screen

Surgery Screen: Surgical Procedures - Custom Procedure

Custom Procedures can contain any combination of steps in any order and with user defined names as shown in Figure 2-51.

Custom Procedures are intended to contain all the steps that the user has included to perform a certain task. However, in some cases the user may need to do something that is not included in the current procedure. In addition to the manual method of adding surgical steps through the Modify Procedure screen as described previously in this section, the system automatically adds relevant step(s) when an instrument (such as a Vitreous probe) is connected. For example if the user suddenly requires the use of the laser, the system automatically adds a laser Step to the end of the procedure when it detects the connection of a laser probe. Also, if a laser probe is already connected when the procedure is selected, a laser step is added to the end of the procedure.
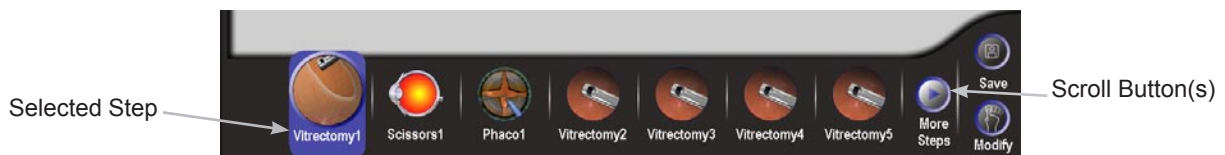

Figure 2-51   Surgical Step Panel - Custom Procedure

Surgery Screen: The Surgical Step Panel

The Surgical Step Panel organizes the set of activities (steps) to be performed during a surgical procedure in a left to right sequence. The procedure may be customized as desired to meet the needs of the surgeon and the case to be performed. The Step panel provides the following functionality:

- Shows which step is currently selected (note that a step is associated with only one surgical mode).
- Shows which sub mode is currently selected for that step.
- Allows the user to select a new step.
- Allows the user to select a new sub mode.
- Allows the user to select a "hidden" step (if applicable).

A selected step has the following properties:

- The area behind the icon is highlighted in blue.
- The icon is animated.
- Buttons for submodes are shown above the step button.

The Step buttons act as radio buttons in that only one step at a time can be selected and a step must always be selected at any point in time.

The Scroll Buttons allow the user to navigate to "hidden steps," i.e. steps that are either to the left or the right of the visible steps. The scroll buttons are only visible if the current procedure contains more steps than can fit on the Step Panel.

Figure 2-51a shows an example of a Step Panel with three hidden steps to the right. The Right Scroll button is enabled and pressing it displays a list of the hidden steps. Any of the steps can be selected from the list. The selected step will be highlighted as the selected step on the panel and placed in the rightmost position.

Figure 2-51a   Surgical Step Panel Scroll Buttons

Surgery Screen: Surgical Submode Buttons

For Accurus Classic procedures, the submode buttons are always displayed as shown in the Figure 2-49a. The submode buttons act like radio buttons (just like the step buttons) and the currently selected sub mode is highlighted.

For Custom procedures, the submode buttons are only displayed when the user presses the currently selected step. The submode buttons are then displayed for five seconds enabling the user to select the desired submode. After five seconds, the submode buttons will disappear.

SURGICAL MODES AND SUBMODES

The *Constellation®* Vision System offers nine surgical modes that can be customized to meet the needs of each surgeon. Table 2-1 lists each mode and its associated submodes.
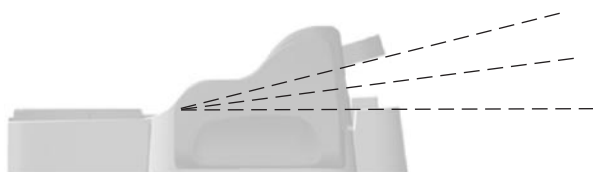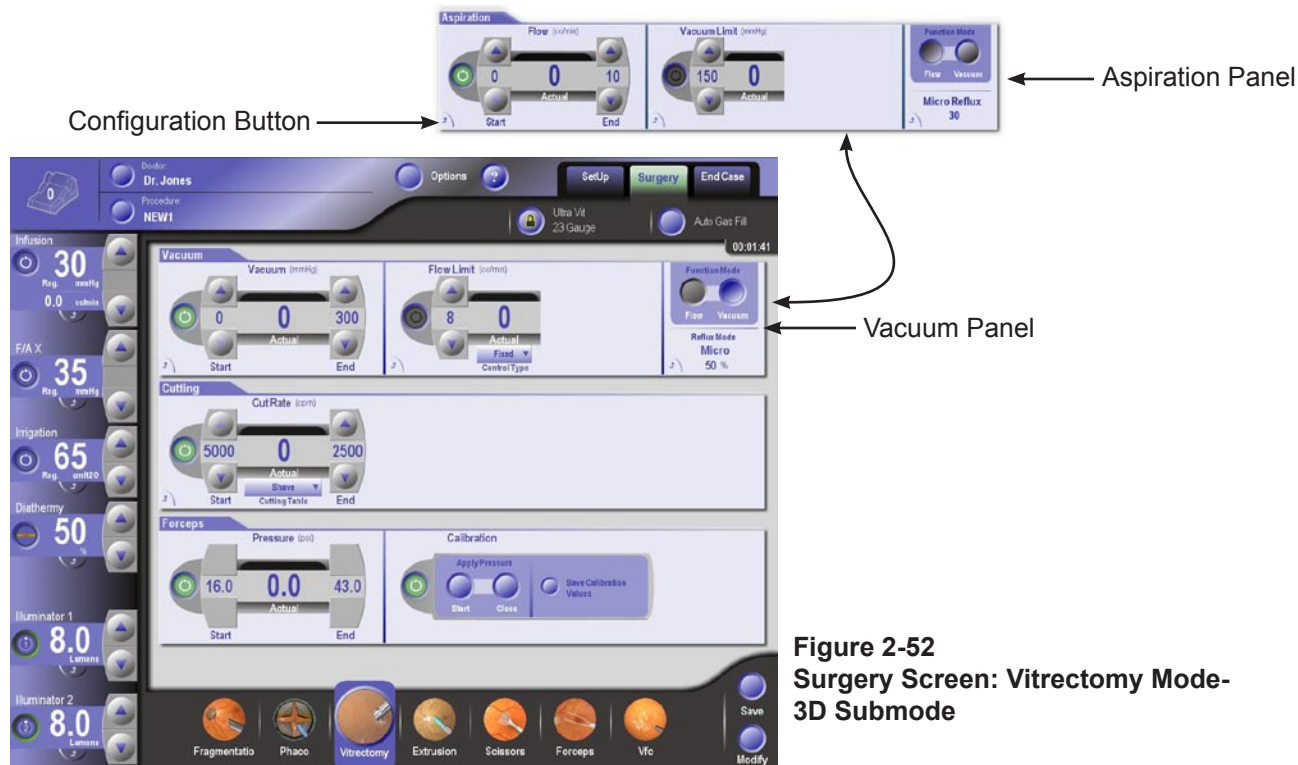
TABLE 2-1. SURGICAL MODES AND SUBMODES					
MODE	**SUBMODES**				**BIMANUAL (Advanced Mode)**
Vitrectomy (Vit)	3D	Momentary	Proportional Vacuum (PropVac)	Wet (VitWet)	Forceps
Phaco	Burst	Pulsed	Continuous		
Fragmentation (Frag)	Fixed	Linear	Momentary		
Irrigation/Aspiration (I/A)					
Extrusion					
Laser					
Scissors	Multicut	Proportional (Prop)			Forceps
Forceps					
Viscous Fluid Control (VFC)	Extract	Inject			Vacuum

Each surgical mode has as set of associated surgical panels. Some panels can have different displays in following cases:

- *Standard vs. Advanced mode* - In advanced display, these panels offer more optional controls for setting and configuring its functions. Selecting Standard or Advanced mode is done in Options\Doctor Settings\Miscellaneous. The default mode is Standard.
- *Vacuum mode vs. Flow mode* - By default, the posterior modes show the vacuum panel for vacuum mode and the anterior modes show the aspiration panel for flow mode (if available).
- *Bimanual mode* - Vit, scissors, and VFC modes offer the surgeon the option of controlling two instruments simultaneously such as a vitreous probe and a pair of forceps (in Vit mode). This is referred to as Bimanual mode and the additional instrument is activated by pressing the "Bimanual" button.

Vitrectomy Mode

Vitrectomy mode provides vitreous cutting and vacuum using a pneumatically powered vitrectomy probe connected by tubing to a pulsed air pressure source and a vacuum port. Four submodes are available, each with its own default cut rate and vacuum level. Values are adjusted using touch arrow keys, even when the footpedal is depressed. Cutting and/or vacuum begins when the footpedal is pressed.

Configuration Button

Aspiration Panel

Vacuum Panel

Figure 2-52
Surgery Screen: Vitrectomy Mode-
3D Submode

Vitrectomy: 3D SUBMODE

In the 3D submode, the user controls both the vitreous cut rate and the vacuum pressure linearly. This submode allows for setting the treadle start and end values for both the cut rate and the vacuum pressure. Additionally, in Advanced Display Mode that is shown in Figure 2-52, the Forceps End Pressure can be changed.

In 3D submode, vacuum delivered to the probe and the probe cutting rate are both regulated by the amount of footpedal depression. The display contains adjustable values for vacuum level at footpedal start, vacuum level at full depression; and cut rate at footpedal start, cut rate at full depression. A unique features of this mode are:
1. Vacuum can be set to start at 0 and rise to its maximum setting at full footpedal depression, while the cutting rate can be set to start at its maximum setting and decrease as the footpedal is depressed (or any combination thereof).
2. To ensure that not too much flow is generated when the footpedal is first depressed, the vacuum level is ramped up from 0 to the set starting level during the first part of the pedal travel.

The controls for each panel in 3D submode have the following functions:

Vacuum Panel:
- On/Off - Turns vacuum on or off.
- Vacuum Start Up/Down Buttons - Sets the vacuum level at treadle start (3D mode only).
- Vacuum End Up/Down Buttons - Sets the vacuum level at full treadle.
- Vacuum Configuration Button - Displays the configuration popup allowing the user to make changes using slider controls. Also provides panel specific configuration capabilities (such as drainbag change).

Cutting Panel:
- Cut Rate On/Off Button - Turns the cutter on or off.
- Cut Rate Start Up/Down Buttons - Sets the cut rate at treadle start.
- Cut Rate End Up/Down Buttons - Sets the cut rate at full treadle.
- Cutting Configuration Button - Displays the configuration dialog.
- Cutting Table Drop List (Advanced view only) - Allows selection of port open duty cycle that is appropriate for the procedure to be performed.
    Core - Provides the maximum port open duty cycle control suited for core vitrectomy where higher flow rates and efficiency are desirable.
    50/50 - Provides a 50% port open duty cycle control for those users who prefer a 50% duty cycle.
    Shave - Provides the minimum port open duty cycle suited for removing delicate tissue (such as vitreous shaving and membrane dissection) where lower flow rates are desirable.

The following controls are available only in the Advanced view:
- Flow Limit On/Off Button - Turns flow limit on or off. When the maximum rate is reached the vacuum level can no longer be increased. If the Flow Limit is turned off, the vacuum level is limited only by the Start and End values.
- Flow Limit Up/Down Buttons - Sets the maximum flow rate.
- Flow Limit Configuration Button - Displays the Flow Limit configuration popup.
- Flow/Vacuum Toggle - Switches between Flow Mode and Vacuum Mode.
    Reflux Label - Read Only display of the current reflux configuration together with its current value.
- Reflux Configuration Button - Displays the configuration popup that allows for changing the current mode and the setpoint associated with it.

Aspiration Panel (Flow mode-Advanced view only):
- Flow On/Off Button - Turns flow mode on or off.
    Flow Start Up/Down Buttons - Sets the flow level at treadle start.
- Flow End Up/Down Buttons - Sets the flow level at full treadle.
- Flow Configuration Button - Displays the configuration popup for a detailed view of the settings.
- Vacuum Limit On/Off Button - Turns vacuum limit on or off. When the maximum rate is reached, the flow can no longer be increased. If the Vacuum Limit is turned off, the flow is limited only by the Start and End values.
- Vacuum Limit Up/Down Buttons - Sets the maximum vacuum value.
    Vacuum Limit Configuration Button - Displays the configuration dialog.
    Flow/Vacuum Toggle - Switches between Flow Mode and Vacuum Mode.

Forceps Panel (Advanced view only):

- Pressure On/Off Button - Turns Bimanual mode on or off. When Bimanual mode is off the only option is to turn it on. When Bimanual mode is on, the Forceps pressure can be set.
- Pressure End Up/Down Buttons - Sets the pressure at full treadle.
- Forceps Configuration Button - Displays the configuration dialog.
- Calibration - When the calibration control is turned on, the control changes to one that allows a selection between Start and Close. When Start is selected the Start pressure is applied to the port and when Close is selected the Close pressure is applied to the port. If neither is selected then no pressure is applied to the port. Pressing the "Save Calibration Values" button saves the calibrated values.

Vitrectomy: MOMENTARY SUBMODE

The Momentary submode contains values for maximum vacuum limit and cut rate set point. As the footpedal is depressed the vacuum increases linearly up to the End limit with the actual vacuum displayed in the Actual Value box and its linear equivalent reflected in the progress bar. The End value can be adjusted using the Up/Down arrow buttons or selecting the Configuration button to display the Configuration popup that has a slidebar for large numeric adjustments in vacuum.
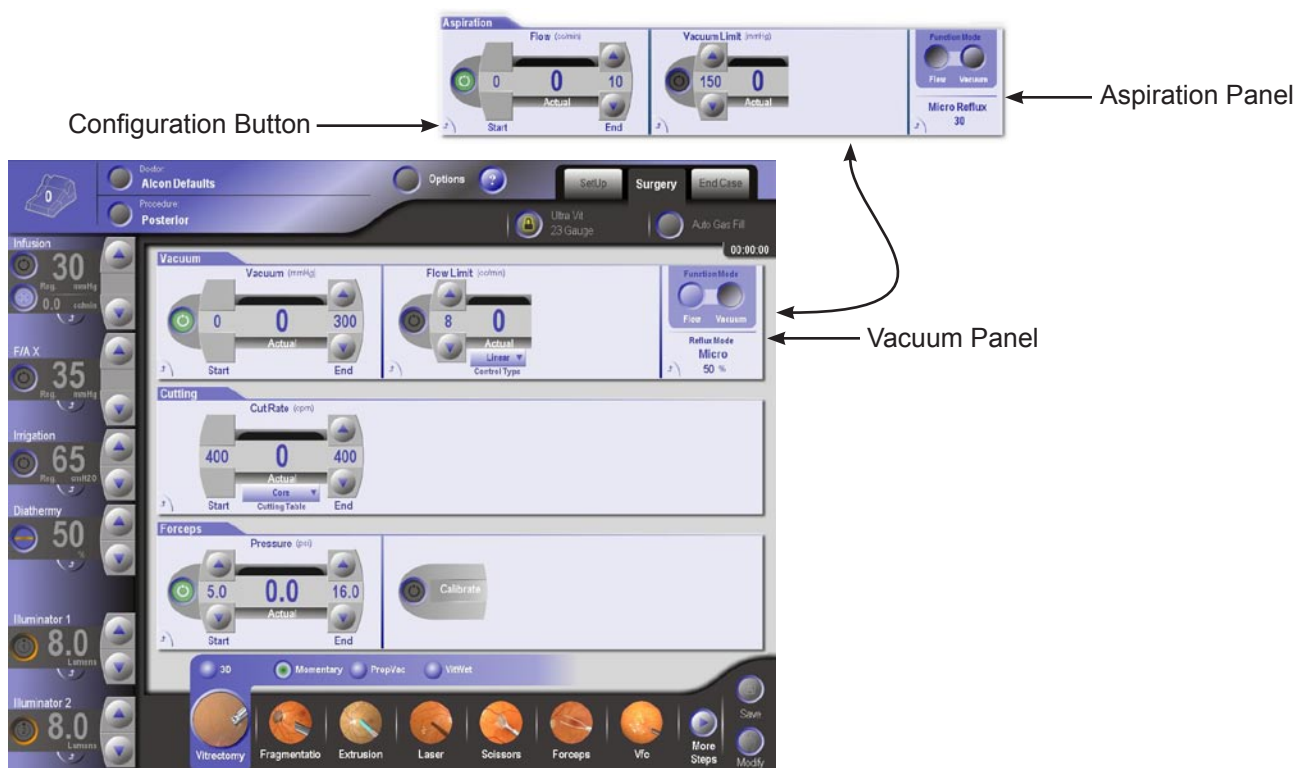

Figure 2-53   Surgery Screen: Vitrectomy Mode-Momentary Submode

Probe cutting at a preset rate is activated when the applicable footswitch switch is momentarily activated. The default activation switch is the right horizontal switch but may be configured differently for each doctor. To view the current configuration, press the footswitch icon in the upper left corner of the display.

The controls for each panel in Momentary submode are the same as in 3D submode with the following exceptions:
*   No Vacuum Start Up/Down buttons - Vacuum always begins at zero.
*   No Flow Start Up/Down buttons - Flow always begins at zero.
*   No Cut Rate Start Up/Down buttons - Cut rate is a constant rate set by the End buttons and activated by the programmed switch on the footswitch.

Vitrectomy: PROPVAC SUBMODE

The Proportional Vacuum (PropVac) submode contains values for maximum vacuum limit and cut-rate set point. As the footpedal is depressed the vacuum increases linearly up to the End limit with the actual vacuum displayed in the Actual Value box and its linear equivalent reflected in the progress bar. The End value can be adjusted using the Up/Down arrow buttons or selecting the Configuration button to display the Configuration popup that has a slidebar for large numeric adjustments in vacuum.
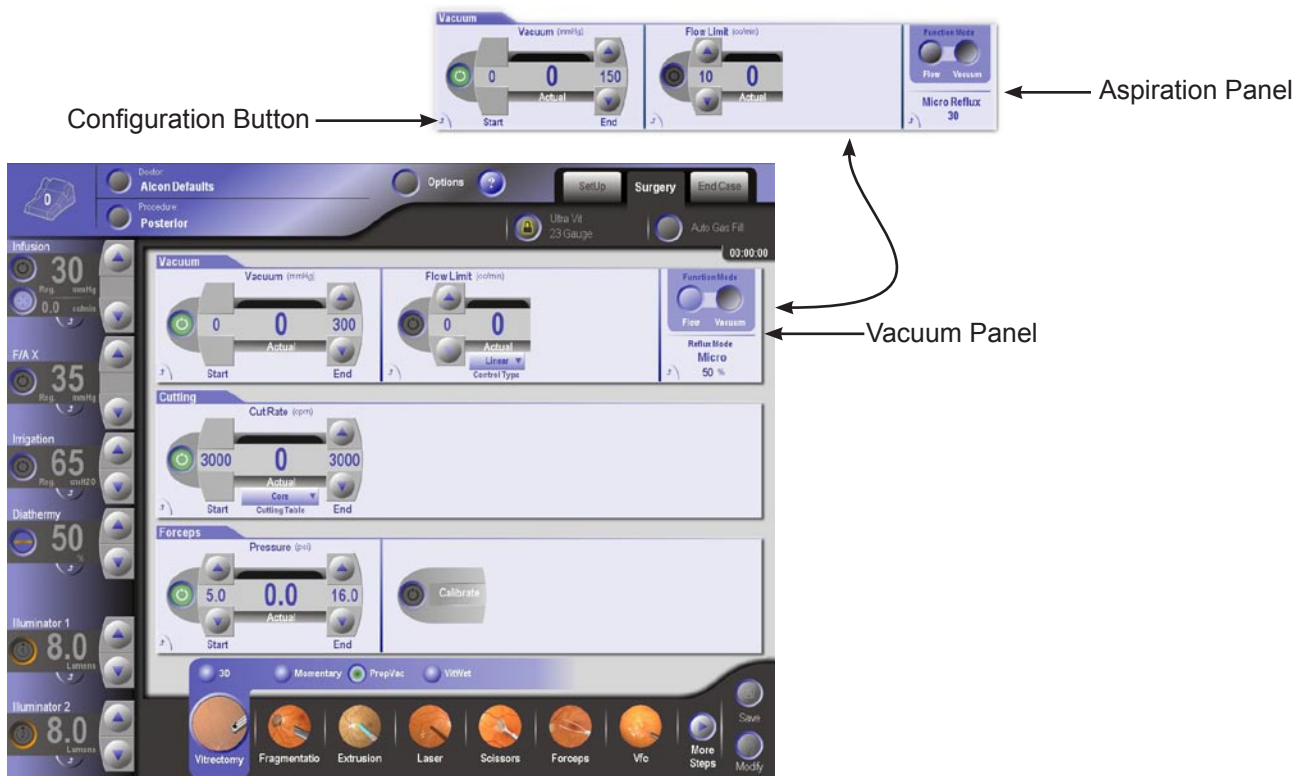

Configuration Button

Aspiration Panel

Vacuum Panel

Figure 2-54 **Surgery Screen: Vitrectomy Mode-PropVac Submode**

Probe cutting at a preset rate begins when the footpedal is pressed. The Cut Rate is adjusted by pressing Up/Down arrow buttons on the Cutting control or selecting the Configuration button to display the Configuration popup that has a slidebar for large numeric adjustments in cut rate.

The controls for each panel in PropVac submode are the same as in 3D submode with the following exceptions:
*   No Vacuum Start Up/Down buttons - Vacuum always begins at zero.
*   No Flow Start Up/Down buttons - Flow always begins at zero.
*   No Cut Rate Start Up/Down buttons - Cut rate is a constant rate set by the End buttons and activated when the footpedal is pressed.

Vitrectomy: VITWET SUBMODE

In the VitWet submode the user can control the vacuum pressure linearly. This sub mode allows for setting the treadle end value for the vacuum pressure and the cut rate. The start value for vacuum pressure is always zero. The start value for cut rate is always the same as the end value. In Advanced Display Mode, the Flow Limit Control Type can be changed.

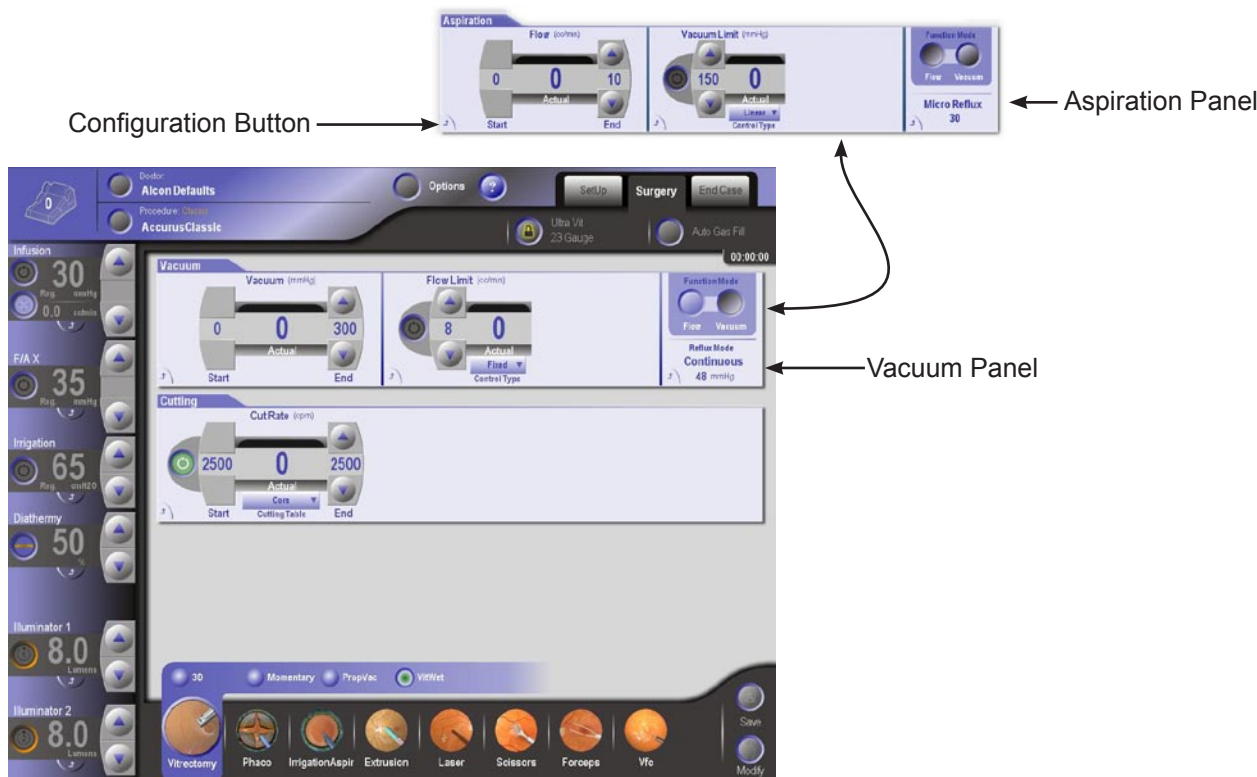**Probe cutting at a preset rate begins when the footpedal is pressed.** The Cut Rate

Figure 2-55   Surgery Screen: Vitrectomy Mode-VitWet Submode

is adjusted by pressing Up/Down arrow buttons on the Cutting control or selecting the Configuration button to display the Configuration popup that has a slidebar for large numeric adjustments in cut rate.

The controls for each panel in VitWet submode are the same as in 3D submode with the following exceptions:
- No Vacuum On/Off or Start Up/Down buttons - Vacuum always begins at zero.
- No Flow Start Up/Down buttons - Flow always begins at zero.
- No Cut Rate Start Up/Down buttons - Cut rate is a constant rate set by the End buttons and activated when the footpedal is pressed.
- No Forceps Panel.

Phaco Mode

Phaco mode provides phacoemulsification capabilities by using U/S powered handpieces controlled by the footswitch. U/S power may be linearly controlled from either zero to the operator specified value or pulsed.

When the U/S handpiece is selected, irrigation, aspiration, and phaco power are provided to the handpiece tip. Phaco power is defined as being proportional to ultrasound displacement of the phaco tip. Amplitude of the ultrasound displacement of the phaco tip is proportional to the ultrasound power displayed on the console front panel. The user has the ability to adjust the aspiration rate, vacuum levels, and phaco power at any time during the surgical procedure via their respective adjustment arrows or remote control.

The phaco Power Limit is increased or decreased via the front panel in increments of 5% from a minimum of 0% to a maximum of 100%. The amount of phaco power delivered to the handpiece is controlled by one of two methods: linear or fixed footpedal control.

In Flow Mode, the Aspiration panel is displayed while in Vacuum Mode, the Vacuum panel is displayed. In "Standard" display mode, only the Flow mode controls are available. When system detects an occlusion, an alarm sounds and the word "Occlusion" appears on the extraction panel (in either vacuum mode or flow mode) under the primary limit control's label.

There are four submodes available in Phaco mode
- Burst
- Custom
- Pulsed
- Continuous

Phaco Mode: BURST SUBMODE
In the Phaco Burst submode fixed U/S power (Power %) can be adjusted for duration (On Time) and time off between (Off Time) U/S power pulses. The frequency of bursts is controlled with the footpedal from detent two to full treadle depression, while the fixed burst length is set in milliseconds (ms). The actual percent of time U/S power is activated is reflected in the Actual window.
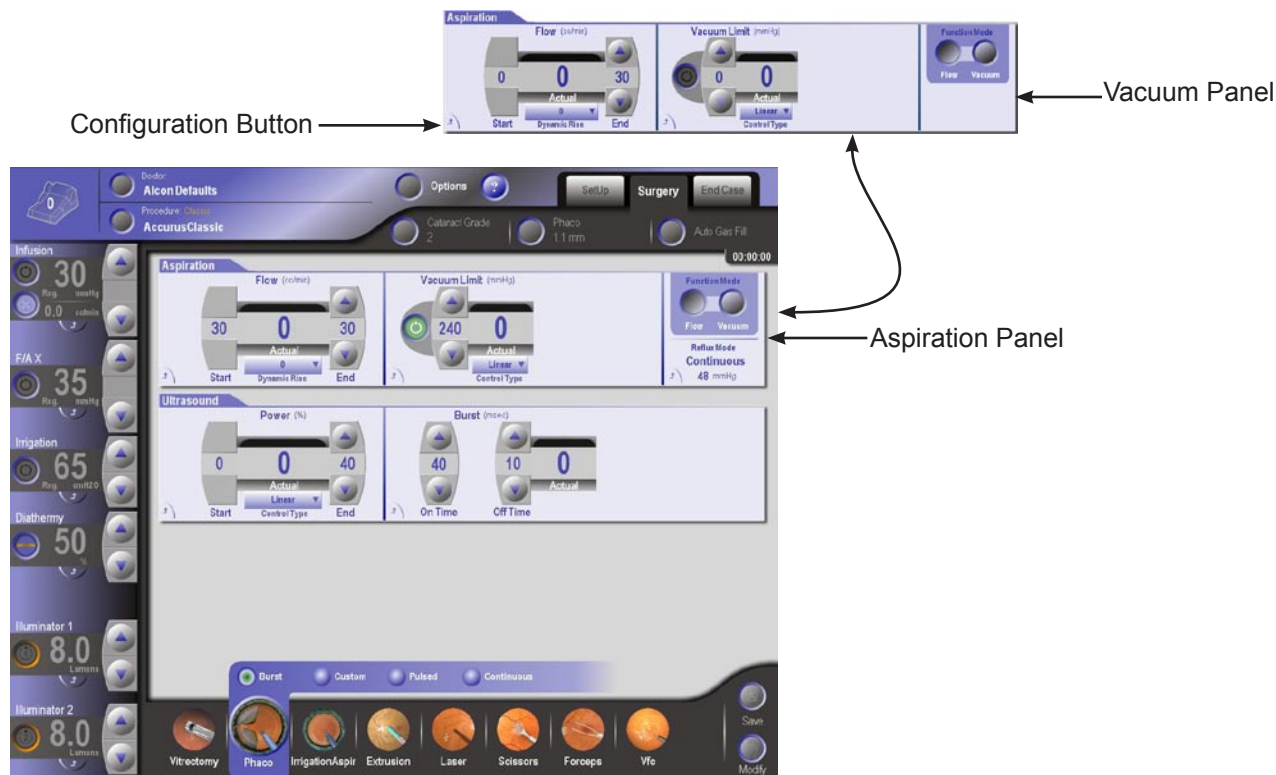
Figure 2-56   Surgery Screen: Phaco Mode - Burst Submode

The controls for each panel in Burst submode have the following functions:

Aspiration Panel:
- Flow End Up/Down Buttons - Sets the flow level at full treadle.
- Dynamic Rise Drop List - Select for the rise value.   The rise value determines the slope of the increase applied.
- Flow Configuration Button - Displays the configuration popup.Simplifies large value changes by providing slider controls. Also provides the capability to initiate a drainbag change.
- Vacuum Limit On/Off Button - Turns vacuum limit on or off. When the maximum rate is reached, the flow can no longer be increased. If the Vacuum Limit is turned off, the flow is limited only by the Start and End values.
- Vacuum Limit Up/Down Buttons - Sets the maximum vacuum value.
- Vacuum Limit Control Type Drop List - Determines whether the vacuum limit is fixed or linear.   In Fixed the limit is constant regardless of the vacuum level. In Linear the limit varies depending on the vacuum level.
- Vacuum Limit Configuration Button - Displays the configuration popup.
- Flow/Vacuum Toggle (*Advanced view only):* Switch between Flow Mode and Vacuum Mode.

Vacuum Panel:
The following controls are available only in the Advanced view only by switching the Function Mode from Flow to Vacuum:
- Vacuum End Up/Down Buttons - Sets the vacuum level at full treadle.
- Vacuum Configuration Button - Displays the configuration popup.   Simplifies large value changes by providing slider controls. Also provides the capability to

initiate a drainbag change.

- Flow Limit On/Off Button - Turns flow limit on or off. When the maximum rate is reached, the vacuum level can no longer be increased. If the Flow Limit is turned off, the vacuum level is limited only by the Start and End values.
- Flow Limit Up/Down Buttons - Sets the maximum flow rate.
- Flow Limit Progress Bar and Numerical Value - Shows the current flow level.
  Flow Limit Configuration Button - Displays the configuration popup.
  Flow Limit Control Type Drop List - Determines whether the flow limit is fixed or linear.   In Fixed the limit is constant regardless of the flow level. In Linear the limit varies depending on the flow level.
- Flow/Vacuum Toggle - Switches between Flow Mode and Vacuum Mode.

Ultrasound Panel:
- Power End Up/Down Buttons - Sets the power at full treadle.
- Power Progress Bar and Numerical Value - Displays the current power value.

Power Limit Control Type Drop List (*Advanced view only*) - Determines whether the power is fixed or linear. In Fixed, the power is constant. In Linear the power varies depending on the treadle position.

- Phaco Power Configuration Button - Displays the configuration Popup. Simplifies large value changes by providing slider controls.
- Phaco Burst On Time Up/Down Buttons - Sets the Phaco burst on time.
- Phaco Burst Off Time Up/Down Buttons - Sets the Phaco burst off time.
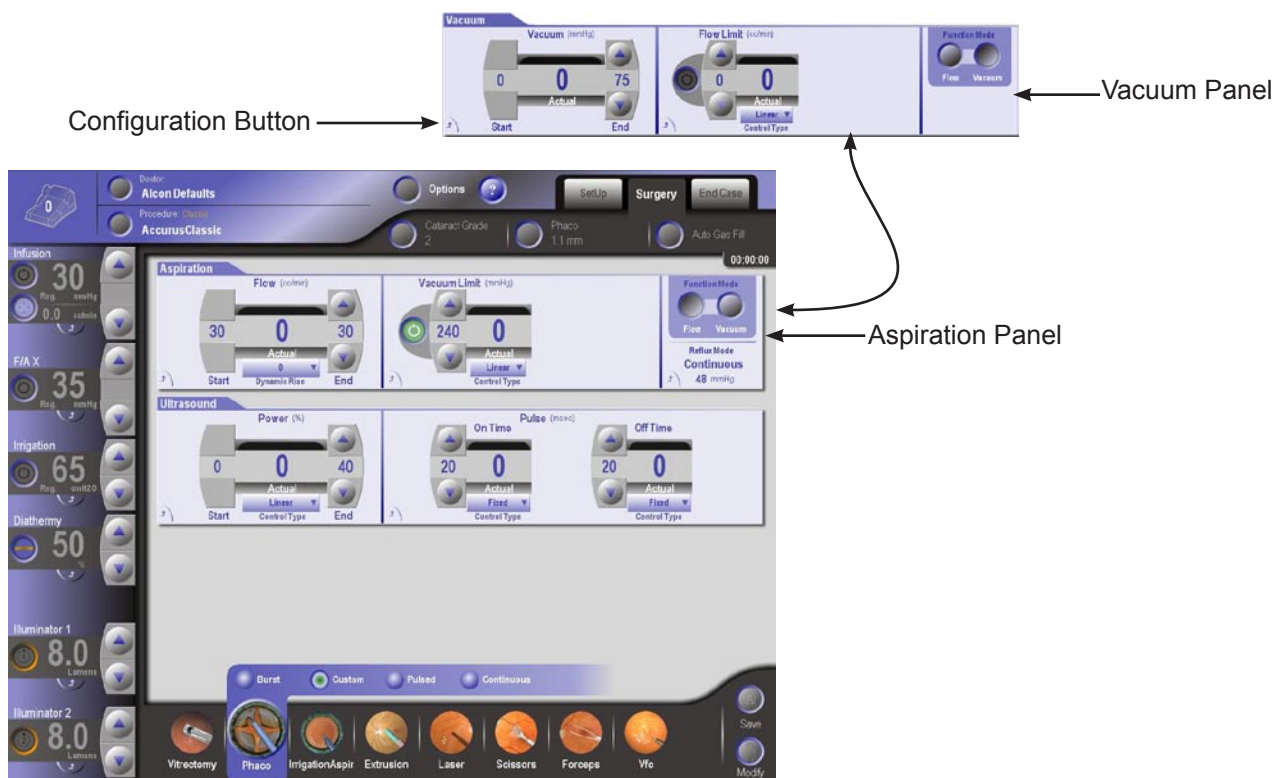- Phaco Burst Off Time Progress Bar and Numeric Value - Shows the current Phaco

Figure 2-57   Surgery Screen: Phaco Mode - Custom Submode

burst off time.
- Phaco Burst Configuration Button - Dislays the configuration popup.

Phaco Mode: CUSTOM SUBMODE

The Custom submode is only available in the Advanced view.
In the Phaco Custom submode fixed U/S power (Power %) can be adjusted for duration (On Time) and time off between (Off Time) U/S power pulses. The frequency of bursts is controlled with the footpedal from detent two to full treadle depression, while the fixed burst length is set in milliseconds (ms). The actual percent of time U/S power is activated is reflected in the Actual window.

The controls for each panel in Custom submode have the following functions:

Aspiration Panel:
Same as Burst submode.

Vacuum Panel:

Same as Burst submode.

Ultrasound Panel:
- Phaco Power End Up/Down Buttons - Sets the power at full treadle.
- Phaco Power Progress Bar and Numerical Value - Shows the current power value.
- Phaco Power Limit Control Drop Down List - Determines whether the power is fixed or linear. In Fixed the power is constant regardless. In Linear the power varies depending on the treadle position.
- Smart Pulse - Indicator for smart pulse becomes visible when power is greater than 0 and pulse on time is less than 20ms
- Phaco Power Configuration Button - Displays the configuration popup. Simplifies large value changes by providing slider controls.
- Phaco Pulse On Time Up/Down Buttons - Sets the Phaco pulse on time.
- Phaco Pulse On Time Progress Bar and Numeric Value - Shows the current Phaco pulse on time.
- Phaco Pulse On Time Limit Control Drop Down List - Determines whether the pulse on time pulse type limit is decreasing, fixed, or increasing. In Fixed the limit