

Figure 4.23 – Advanced Linear Pedal Switch Assignment Dialog Box

5. Press the button that represents your choice of switch setting.

Table 4.7 – Advanced Linear Pedal Switch Assignments

| Switch Setting | Description |
|-----------------------------|--|
| Off | This switch has no switch assignment. |
| Surgeon Program Up | Selects the surgeon program above the current program in the list. |
| Surgeon Program Down | Selects the surgeon program below the current program in the list. |
| Previous Major Mode | Changes to the previous surgical mode. |
| Next Major Mode | Changes to the next surgical mode. |
| Previous Active Mode | Changes to the previous active mode. |
| Next Active Mode | Changes to the next active mode. |
| Previous Sub Mode | Changes to the previous submode. |
| Next Sub Mode | Changes to the next submode. |
| Toggle SMC Record | Activates or deactivates the surgical media center (SMC) recording function. |

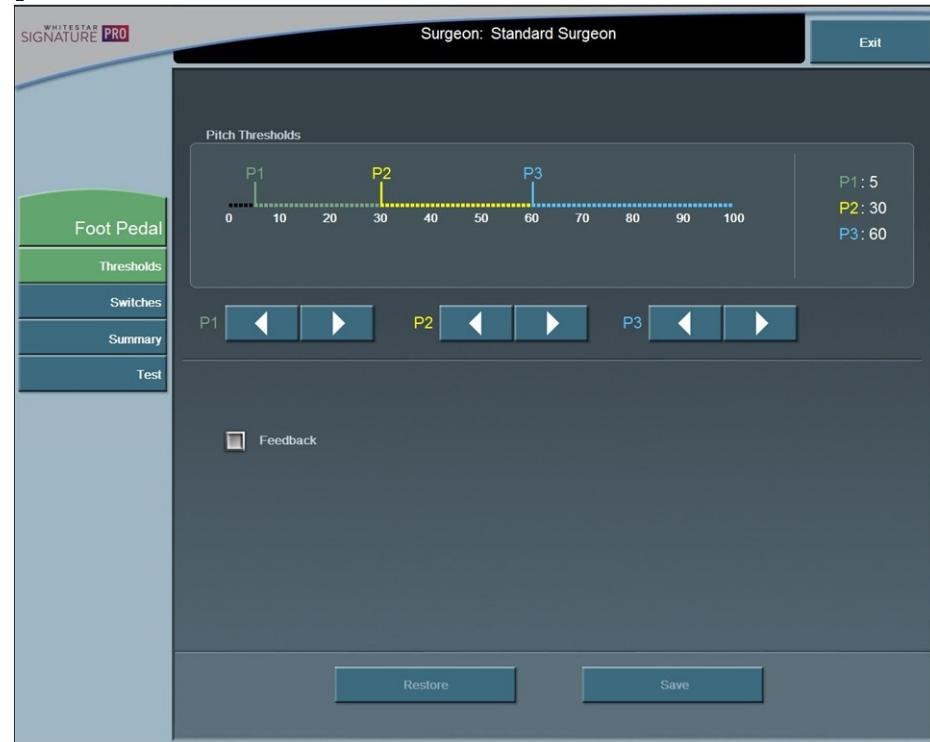
| Switch Setting | Description |
|------------------------------|---|
| Bottle Up | Raises the IV pole while the switch is held down. |
| Bottle Down | Lowers the IV pole while the switch is held down. |
| Reflux | Activates or deactivates reflux. |
| Continuous Irrigation | Activates or deactivates continuous irrigation. |
| 1-Touch Up | Increments CASE mode 1-Touch (phaco only). |
| 1-Touch Down | Decrements CASE mode 1-Touch (phaco only). |
| Toggle CASE | Activates or deactivates CASE mode, (phaco only) |

6. Press the **Finished** button to:
 - accept your choice of switch assignment
 - close the Switch Assignment dialog box
 - return to the edit screen

Repeat the process for all switches.
7. Press the **Save** button to retain the switch settings.
8. Press **Exit** to close the Foot Pedal Set Up screen.

Advanced Linear Threshold Configuration

Figure 4.24 – Advanced Linear Pedal Threshold Screen



Follow these steps to set the foot pedal thresholds.

Note: In addition to the procedure below, you can access the Advanced Linear Pedal Summary screen by pressing the foot pedal symbol near the top of the screen.



1. On the Surgeons and Programs screen, press .
2. Press the **Thresholds** button under Foot Pedal. The system displays the foot pedal thresholds screen.
3. Use the up and down arrows to change the threshold for each of the foot pedal pitch zones. P1 is the first zone, P2 is the second, and P3 is the final zone.
4. Select **Feedback** to enable foot pedal feedback. Feedback is a physical and audible click as you move the foot pedal to the next or previous position. The foot pedal is now ready for calibration.
5. Press **Save** to retain the settings.
6. Press **Exit** to close the Foot Pedal Set Up screen.

Advanced Linear Pedal Test

Figure 4.25 – Advanced Linear Pedal Test Screen



Note: In addition to the procedure below, you can access the Advanced Linear Pedal Summary screen by pressing the foot pedal symbol near the top of the screen.



1. On the Surgeons and Programs screen, press .
2. Press the **Test** button.
3. Press the foot pedal down fully to position 3. As the foot pedal travels through positions 1 and 2 to position 3, the progress bar shows its current state. When the pedal reaches position 3, the progress bar should be solid green.
4. Press each of the four switches. When a switch is pressed, the **On** button for that switch turns green and its **Off** button turns white. When you release the switch, the **On** button for that switch turns white and its **Off** button turns green.
5. Press the **Finished** button when you complete the testing of your foot switch.
6. Press **Exit** to close the Foot Pedal Set Up screen.

Set Sound Levels**Default Settings****Table 4.8 – WHITESTAR SIGNATURE PRO System Default Sound Settings**

| Global Parameters | | |
|--|--------------------|------------------|
| Sounds | Available Settings | Default Settings |
| Phaco Tone Volume | 5-10 | Off |
| Tone Volume Level (All Other Functions) | 5-10 | 6 |
| Voice Volume Level (For All Functions) | 5-10 | 6 |
| Irrigation Tone | On, Off | On |
| High Vacuum | On, Off | On |
| Mode Change | Off, Tone, Voice | Voice On |
| Submode Change | Off, Tone, Voice | Voice On |
| Value Change | On, Off | Voice On |
| Activity Confirmation | On, Off | Voice On |
| Continuous Irrigation (When no modes selected) | On, Off | Off |
| Vacuum Tone | Off-10 | 6 |
| Diathermy Tone | 5-10 | 6 |
| Error Tone | 5-10 | 6 |
| Irrigation Tone | Off-10 | 3 |
| Key Press Tone | Off-10 | 6 |
| Speech Tone | Off-10 | 6 |
| CASE Activation Tone | 0-10 | 5 |
| Master Volume | 0-10 | 5 |
| High Vacuum Sound | On, Off | On |
| Mode change | | Voice |
| Submode Change | | Voice |
| Change Value | | Voice |
| Activity Confirmation | On, Off | On |
| CASE Activation Volume | 0-10 | 5 |

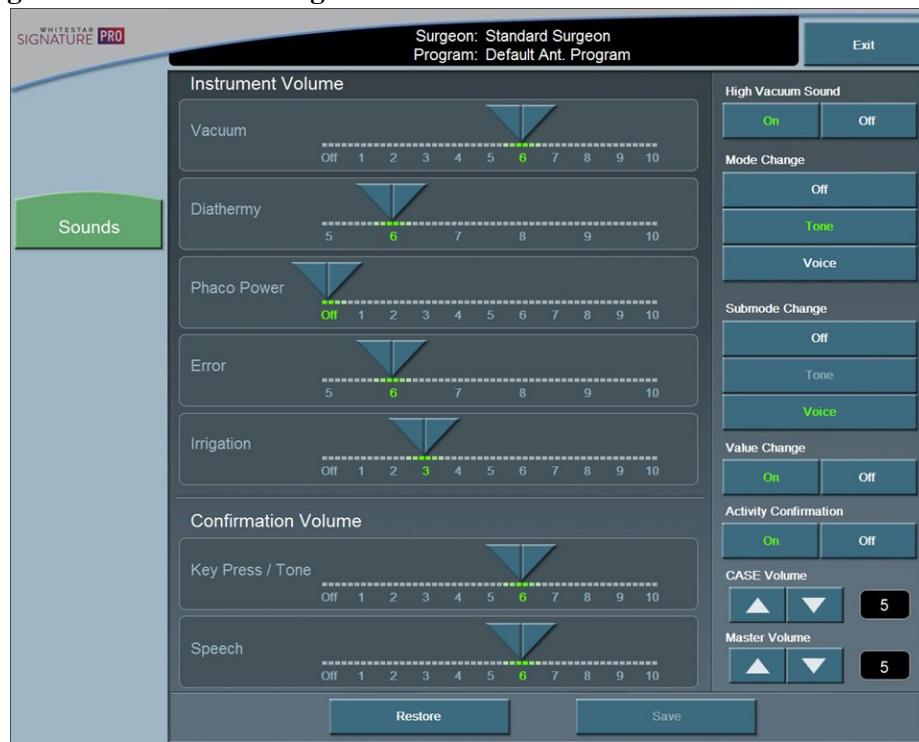
Follow these steps to set the system sound levels.

1. On the Surgeons and Programs screen, select the surgeon.



2. Press .

Figure 4.26 – Sound Settings Screen



3. Use the sliders to adjust the volume for:
 - Instrument
 - Confirmation
4. Use the buttons on the right side to turn sounds on or off for the different system functions.
5. Use the **up** and **down** arrows to set the volume for:
 - CASE Activation
 - Master Volume

Note: You can also change the volume from the main surgical screen with the

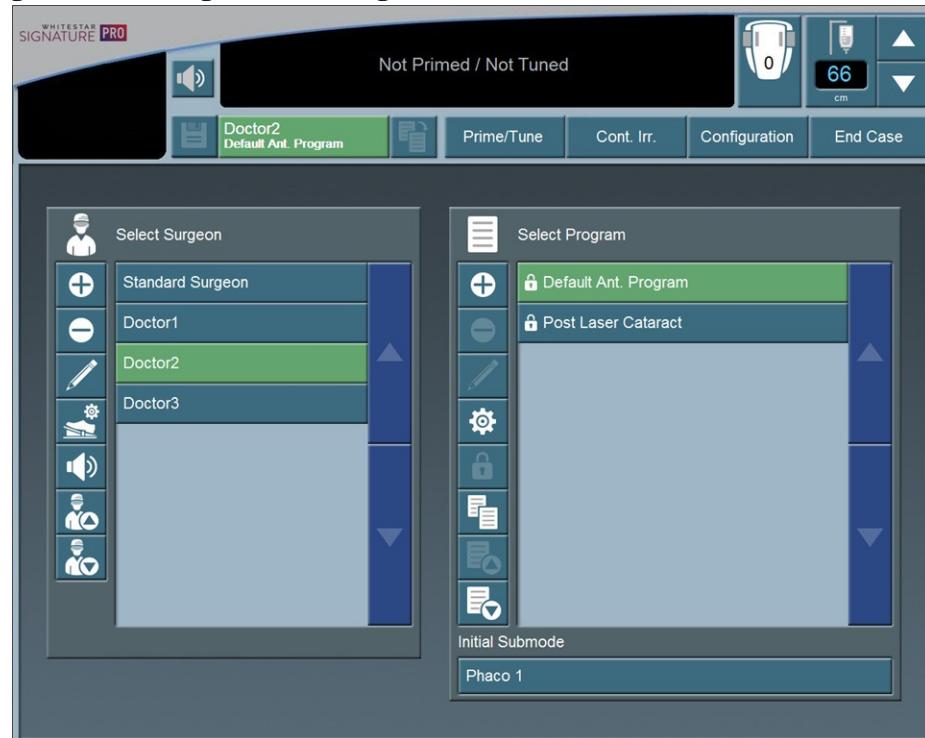


button at the top of the screen.

6. Press **Save** to retain any changes you made.
7. Press **Exit**.

Surgeon – Assign Order

1. Select a surgeon.
 
2. Use  or  to move the surgeon names up or down on the Surgeons and Programs screen.

Figure 4.27 – Surgeons and Programs Screen

3. Repeat steps until the order is to your satisfaction.

5

PROGRAM SETTINGS

Create a New Program

Delete a Program

Edit a Program Name

Program Settings

Phaco

Irrigation and Aspiration

Vitrectomy

Diathermy

Default Settings

Phaco Power Settings

WHITESTAR Technology

FUSION Fluidics Phaco

Occlusion Mode Settings

CASE Mode

Passive Reflux

Lock a Program

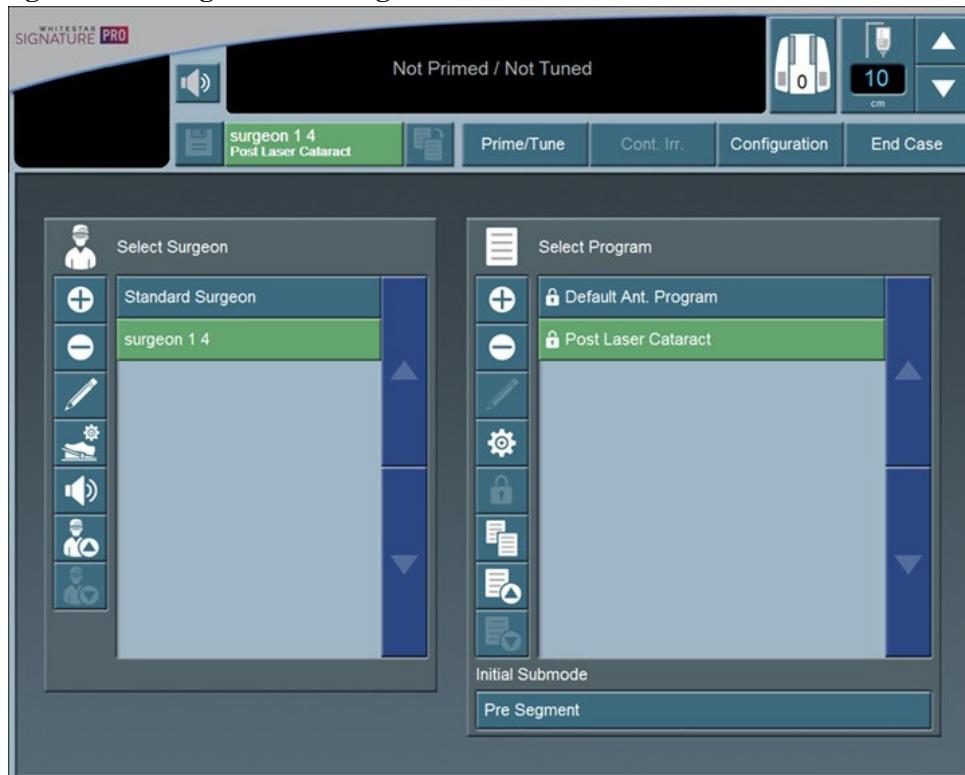
Copy a Surgeon Program

Program – Assign Order

Create a New Program

When you create a new surgeon, the system automatically assigns the **Default Anterior Program** and the **Post Laser Cataract** to that surgeon. You can customize a program for that surgeon name with your preferred settings. You can also create new programs for existing surgeons.

Figure 5.1 – Surgeons and Programs Screen

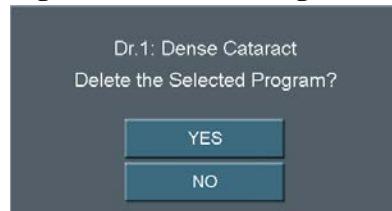


1. On Select Program, press .
2. Enter a program name or select a name from the **Standard Names** list.
3. Press **Standard Names**.
4. Select a program name from the list.
5. Press **Enter**.

Delete a Program

Use Delete Program to remove a surgeon program from the Select Program screen. You cannot delete the current program or a program selected on the Settings screen. You cannot delete the **Default Anterior Program** or the **Post Laser Cataract** program.

1. Select a program name on the list.
2. Press .

Figure 5.2 – Delete Program Confirmation Dialog Box

3. Press **Yes**.

Edit a Program Name

1. Select a program name on the list.



2. Press **Edit**.
3. Enter a different program name or select a new name from the **Standard Names** list.
4. Press **Standard Names**.
5. Select a program from the list.
6. Press **Enter**.

Program Settings

Program settings are used to define your specific settings on the **WHITESTAR SIGNATURE PRO** system. There are four major surgical modes (Phaco, I/A, Vitrectomy (VIT), and Diathermy (DIA)).

For each major mode there are multiple submodes available that you can customize for each step in your procedure. You can program all or some of the submodes within each of the major modes. You can use the submode names that come with the system (**Standard Names**) or create a specific name.

The primary settings in the submodes are:

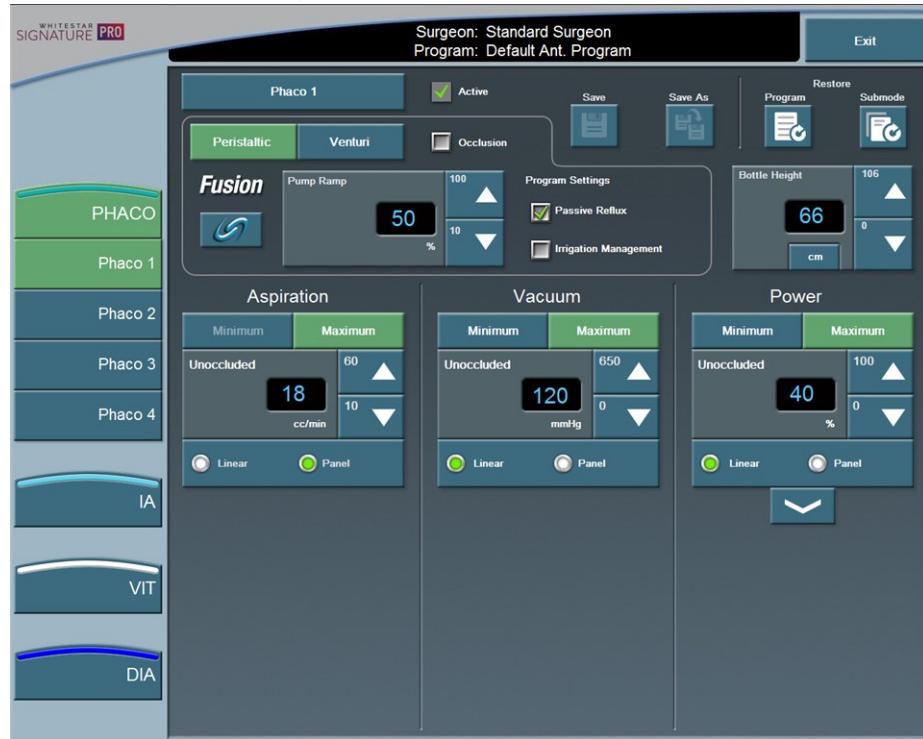
- Aspiration
- Vacuum
- Power
- Cut Rate (Vitrectomy)
- Bottle Height
- Pump Type (Peristaltic or Venturi)
- Delivery Mode (Panel or Linear)
 - Linear - Provides a gradual increase based on the foot pedal position.
 - Panel - Provides a full and immediate increase when the is pressed.

Phaco



1. Press **Settings gear** to open the Settings screen.

Figure 5.3 – Phaco Settings Screen



2. Select a submode or customize the submode name.
3. Select the pump type (peristaltic or Venturi).
4. Use the **up** and **down** arrows to set the Aspiration Rate (10 to 60).
5. Use the **up** and **down** arrows to set the Vacuum. (0 to 650) If you are using Venturi, the range is 0 to 600.
6. Use the **up** and **down** arrows to set the Power (0% to 100%).
7. Select the delivery mode (Linear or Panel).
8. Set the bottle height



9. Press **Save**.

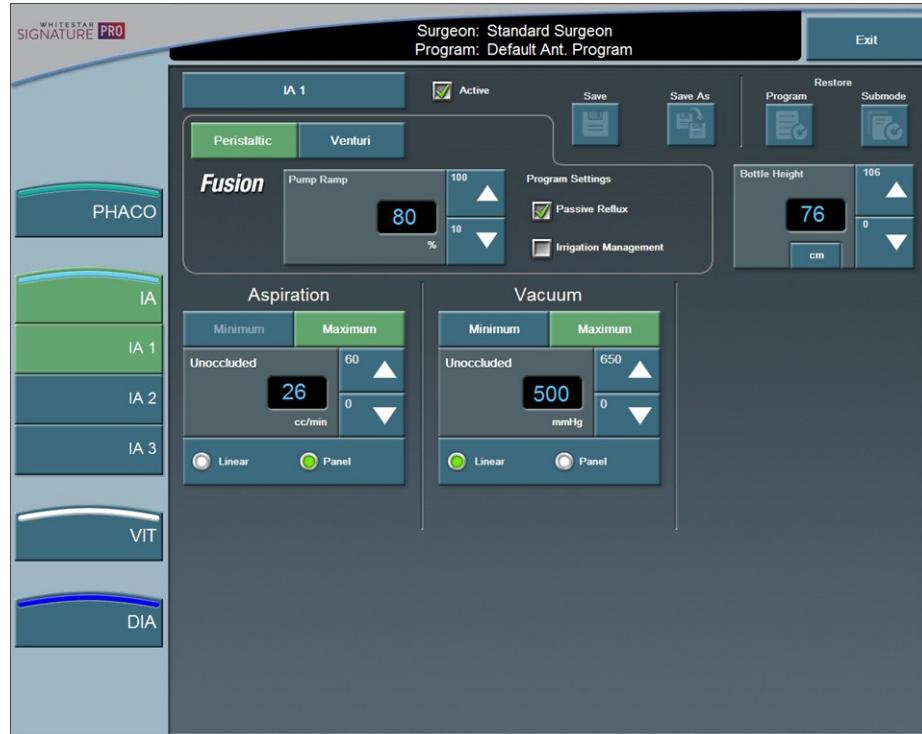
For additional information:

See “FUSION Fluidics Phaco” on page 5-20.

See “Occlusion Mode Settings” on page 5-21.

Irrigation and Aspiration

Figure 5.4 – Irrigation/Aspiration Settings



1. Select a submode or customize the submode name.
2. Select the pump type (peristaltic or Venturi).
3. Use the **up** and **down** arrows to set the Aspiration Rate (0 to 60).
4. Use the **up** and **down** arrows to set the Vacuum. (0 to 650) If you are using Venturi, the range is 0 to 600.
5. Select the delivery mode (Linear or Panel).
6. Set the bottle height

7. Press **Save** .

Vitrectomy

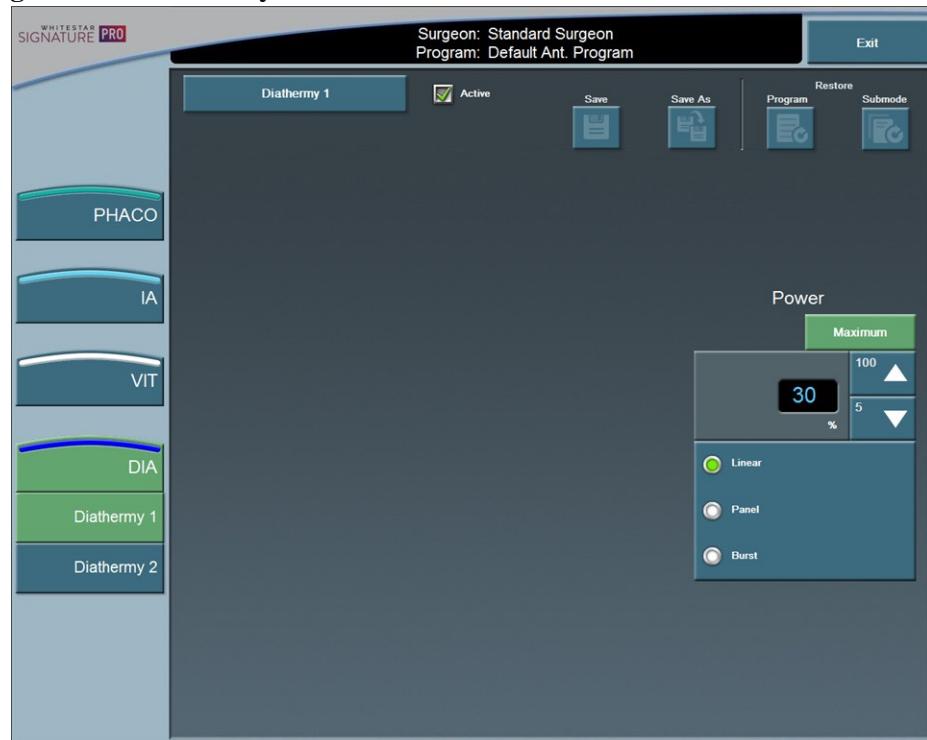
Figure 5.5 – Vitrectomy Settings Screen



1. Select a submode or customize the submode name.
2. Select the pump type (peristaltic or Venturi).
3. Use the **up** and **down** arrows to set the Aspiration Rate (0 to 60).
4. Use the **up** and **down** arrows to set the Vacuum. (0 to 650) If you are using Venturi, the range is 0 to 600.
5. Use the **up** and **down** arrows to set the Cut Rate (50 to 2500).
Note: You must make a foot pedal selection for ICA, IAC, or Side Vitrectomy (VIT), which determines how the vitrectomy cutter activates as you press the foot pedal from Positions 1 through 3. only. See “Vitrectomy Foot Pedal Modes” on page 4-7.
6. Select the delivery mode (Linear or Panel).
7. Set the bottle height
8. Press **Save**.

Diathermy

Figure 5.6 – Diathermy Power Submode



1. Select a submode or customize the submode name.
2. Use the **up** and **down** arrows to set the Power (5% to 100%).
3. Select the delivery mode (Linear, Panel, or Burst).

4. Press **Save**.

Default Settings

Table 5.1 – Phaco – Anterior Default Settings

| Parameter | Available Settings | Default Settings | | | |
|---|------------------------|--|--|--|--|
| Function | | Phaco 1 | Phaco 2 | Phaco 3 | Phaco 4 |
| Submode name | | Phaco 1 | Phaco 2 | Phaco 3 | Phaco 4 |
| Pump selection | Venturi Peristaltic | Peristaltic | Peristaltic | Peristaltic | Peristaltic |
| IV Pole Height | 0–106cm 0–42 inches | 66 cm 26 inches | 76 cm 30 inches | 76 cm 30 inches | 76 cm 30 inches |
| Vacuum control (Occlusion Mode/CASE) | On, Off | Occlusion Mode off CASE off | Occlusion Mode on CASE off | Occlusion Mode on CASE on | Occlusion Mode off CASE on |
| Min vacuum (Peristaltic and Venturi pump) | | | | | |
| Unoccluded (mmHg) | | 0 | 0 | 0 | 0 |
| Occluded | | 0 or 5 less than occlusion threshold setting |
| Max vacuum (peristaltic and Venturi) | | | | | |
| Unoccluded (mmHg) | | 75 mmHg (120 when CASE on) | 300 mmHg | 400 mmHg | 350 mmHg |
| Occlusion threshold | | 25 mmHg | 140 mmHg | 60 mmHg | 80 mmHg |
| CASE Parameters | | | | | |
| CASE Upper threshold (mmHg) | | 100 | 250 | 325 | 300 |
| CASE up time (ms) | | 300 | 300 | 300 | 300 |
| CASE vacuum (mmHg) | | 85 | 225 | 250 | 250 |
| CASE lower threshold (mmHg) | | 70 | 175 | 200 | 200 |
| CASE one-touch | | STD | STD | STD | STD |
| Peristaltic pump ramp threshold (%) | | 50 | 60 | 50 | 70 |
| Venturi pump | On, Off | Off | Off | Off | Off |
| Min flow/aspiration rate (peristaltic and Venturi) | | | | | |
| Unoccluded (cc/min) | | 10 | 10 | 10 | 10 |
| Occluded | | 10 | 10 | 10 | 10 |
| Max flow/aspiration rate (peristaltic | | | | | |
| Unoccluded (cc/mm) | | 18 | 24 | 18 | 24 |
| Occluded | | 18 | 28 | 14 | 24 |
| Fluidics mode type, aspiration | Panel, Linear | Panel | Panel | Panel | Panel |
| Fluidics mode type, vacuum | Panel, Linear | Linear | Panel | Linear | Linear |
| Min power | | | | | |
| Unoccluded (%) | | 0 | 0 | 0 | 0 |
| Occluded | | N/A | N/A | N/A | N/A |

| Parameter | Available Settings | Default Settings | | | |
|--|--------------------|-------------------------------|---------------|---------------|---------------|
| Max power | | | | | |
| Unoccluded (%) | | 40 | 20 | 5 | 30 |
| Power delivery | | Continuous | Continuous | Continuous | Continuous |
| WHITESTAR setting (duty cycle) | | On 6/12 (33%) | On 6/12 (33%) | On 6/12 (33%) | On 6/12 (33%) |
| Occluded mode (%) | | 40 | 30 | 10 | 40 |
| Power delivery | | Continuous | Continuous | Continuous | Continuous |
| WHITESTAR setting (duty cycle) | | On 6/12 (33%) | On 6/12 (33%) | On 6/12 (33%) | On 6/12 (33%) |
| Power type, occluded and unoccluded | | Linear | Linear | Linear | Linear |
| Short pulse rate, occluded and unoccluded | 1–14 pps | 6 pps | 6 pps | 6 pps | 6 pps |
| Long pulse rate, occluded and unoccluded | 1–6 pps | 4 pps | 4 pps | 4 pps | 4 pps |
| Pulse Shape Setting (WHITESTAR ICE) | On, Off | Off | Off | Off | Off |
| Pulse Shape Parameters | | | | | |
| % Kick Low | | 5 | 5 | 5 | 5 |
| % Kick High | | 5 | 5 | 5 | 5 |
| Low Power Limit | | 0 | 0 | 0 | 0 |
| High Power Limit | | 80 | 80 | 80 | 80 |
| Foot Pedal Feedback | On, Off | Off | Off | Off | Off |
| Initial Mode | On, Off | Phaco (first enabled submode) | | | |
| Passive Reflux | On, Off | On | On | On | On |
| Cup Fill | 30, 60, 90 cc | 30 cc | | | |

Table 5.2 – Post CATALYS Precision Laser System Default Settings

| Surgical Mode/ Submode | Aspiration Rate cc/mm (Min/Max) | Vacuum mmHg (Min/Max) | Power % (Min/Max) | WHITESTAR (ICE) Pulse Setting | Pump/Vac Ramp | IV Pole Height (cm) |
|-----------------------------------|--|--------------------------------------|-------------------------------------|--|--------------------------|------------------------------------|
| Phaco 1 Pre Segment | 10 / 28 Linear | 50 / 150 Panel | 0 / 25 Linear Continuous | 20/20 | 75 | 85 |
| Phaco 2 Normal Segment | N/A (Venturi Mode) | 0 / 275 Linear | 0 / 20 Continuous Variable WS | 6/30, 10/30, 14/24, 18/18 | 3 | 102 |
| Phaco 3 Dense Segment | N/A (Venturi Mode) | 0 / 300 Linear | 0 / 30 Linear Continuous | 20/20 | 3 | 105 |
| Phaco 4 Last Segment | 25 / 40 Linear | 200 / 400 Linear | 0 / 25 Linear Continuous | 20/20 | 50 | 95 |
| I/A 1 Cortex | N/A (Venturi Mode) | 0 / 450 Linear | NA | NA | 5 | 80 |
| I/A 2 Polish | 0 / 8 Linear | 0 / 20 Linear | NA | NA | 90 | 65 |
| I/A 3 Visco | 0 / 50 Linear | 0 / 550 Panel | NA | NA | 90 | 80 |
| DIA 1 | NA | NA | 5 / 30 Linear | NA | NA | NA |
| DIA 2 | NA | NA | 5 / 50 Linear | NA | NA | NA |
| VIT 1 ICA | 0 / 18 Panel | 0 / 250 Linear | 50 / 1500 cpm ICA Panel | NA | 75 | 45 |
| VIT 2 IAC | 10 / 18 Linear | 0 / 300 Panel | 50 / 1500 cpm IAC Linear | NA | 75 | 45 |

Table 5.3 – I/A – Anterior Default Settings

| Parameter | Available Settings | Default Settings | | |
|---|---------------------------|-------------------------|--------------------|--------------------|
| | | I/A1 | I/A2 | I/A3 |
| Submode Active | On, Off | On | On | On |
| IV Pole Height | 0–104 cm 0–42 inches | 76 cm 30 inches | 50 cm 20 inches | 50 cm 20 inches |
| Max Vacuum (Peristaltic and Venturi pump) | 0–650 mmHg | 500 mmHg | 500 mmHg | 15 mmHg |
| Min Vacuum (Peristaltic and Venturi pump) | 0 mmHg | 0 mmHg | 0 mmHg | 0 mmHg |
| Max Aspiration/ (cc/min) (Peristaltic Pump) | 0–60 cc/min | 26 cc/min | 26 cc/min | 6 cc/min |
| Fluidic Mode Type, Aspiration | Panel, Linear | Panel | Linear | Panel |
| Fluidic Mode Type, Vacuum | Panel, Linear | Linear | Panel | Linear |
| Venturi Pump | On, Off | Off | Off | Off |
| Peristaltic Pump Threshold % | 10–100% | 80% | 80% | 80% |

Table 5.4 – Vitrectomy – Anterior Default Settings

| Customized to Each Surgeon Program/Setup Default Settings | | | |
|---|--------------------|-----------|-----------|
| Parameter | Available Settings | IAC | ICA |
| IV Pole Height (cm) | 0–104 cm | 30 cm | 30 cm |
| Minimum Cut Rate (Cuts per minute) | | 50 cpm | 50 cpm |
| Maximum Cut Rate (Cuts per minute) | | 2500 cpm | 2500 cpm |
| Min vacuum (mmHg) (Peristaltic and Venturi) | 0–650 mmHg | 0 | 0 |
| Max vacuum (mmHg) (Peristaltic and Venturi) | 0–650 mmHg | 225 mmHg | 225 mmHg |
| Min aspiration (cc/min) (peristaltic pump) | 0–60 cc/min | 0 | 0 |
| Max aspiration (cc/min) (Peristaltic pump) | 0–60 cc/min | 18 cc/min | 12 cc/min |
| Fluidic mode type, Aspiration | Panel, Linear | Panel | Panel |
| Fluidic mode type, Vacuum | Panel, Linear | Panel | Panel |
| Venturi pump | On, Off | Off | Off |
| Cut Rate (Cuts per Minute) | | 250 | 450 |
| Cut Mode | ICA, IAC | ICA | IAC |
| Pump Ramp Threshold (%) | 10 - 100 | 100 | 100 |

Table 5.5 – Diathermy – Anterior Default Settings

| Parameter | Available Settings | Default Settings | |
|---------------------|----------------------|------------------|-------|
| | | DIA 1 | DIA 2 |
| Max Power | 5–100% | 30% | 30% |
| Power Delivery Type | Linear, Burst, Panel | Linear | Burst |

**Phaco Power
Settings**

- **Continuous**
- **Pulse Mode**
- **Short Pulse**
- **Long Pulse**
- **Low Power Pulse**
- **High Power Pulse**
- **Single Burst** (panel only)
- **Multiple Burst** (panel only)
- **Continuous Burst**

From the **Phaco Settings** screen press  to show the **Phaco Power** selection.

Figure 5.7 – Phaco Power Settings



In addition to the nine phaco power modes, you can also select the **WHITESTAR** mode. Additional **WHITESTAR** Technology information is later in this section.

Continuous Phaco Power

Continuous phaco power delivers continuous, uninterrupted phaco power to the handpiece and requires no pulse rate setting.

Pulse Mode

Pulse Mode delivers phaco in pulses of 1 to 100 ms when the foot pedal is in position 3. You can set this in a range of 1 to 100 pulses per second (pps). The default setting is 20 pps.

To set the **Pulse Mode** range:

1. Press the **Pulse Mode** button.
2. Press on the pulse setting number. A **Settings** dialog box opens.
3. Press the **up** or **down** arrows to increase or decrease the pps from 1 to 100.
4. Press **Finished** to close the screen.

Short Pulse Phaco Power

Short pulse delivers phaco in pulses of 50 ms when the foot pedal is in position 3. You can set this in a range of 1 to 14 pulses per second (pps). The actual number of pps is on the button to the right of the **Short Pulse** button.

To set the **Short Pulse** range:

1. Press the **Short Pulse** button.
2. Press on the pulse setting number. A **Settings** dialog box opens.
3. Press the **up** or **down** arrows to increase or decrease the pps from 1 to 14.
4. Press **Finished** to close the screen.

Long Pulse Phaco Power

Long Pulse delivers Phaco in pulses of 150 ms when the foot pedal is in position 3. You can set this in a range of 1 to 6 pulses per second (pps). The actual number of pps is on the button to the right of the **Long Pulse** button.

To set the **Long Pulse** range:

1. Press the **Long Pulse** button.
2. Press on the pulse setting number. A **Settings** dialog box opens.
3. Press the **up** or **down** arrows to increase or decrease the pps from 1 to 6.
4. Press **Finished** to close the screen.

Low Power Pulse Phaco Power

Low Power Pulse generates short pulses of ultrasonic power in foot pedal position 3. When you press the foot pedal, the pulses become longer and eventually blend together to become continuous phaco power.

High Power Pulse Phaco Power

High Power Pulse generates continuous Phaco Power in foot pedal position 3. When you press the foot pedal, the continuous pulse changes into long pulses and then gradually changes to short pulses.

Single Burst Phaco Power (Panel Only)

Single Burst delivers a single burst of ultrasonic power of 110 ms duration when you press the foot pedal to position 3. You must return to foot pedal position 2, pause for approximately one-half (0.5) second, and then press the foot pedal to position 3 to obtain an additional burst of energy.

Multiple Burst Phaco Power (Panel Only)

Multiple Burst generates a burst of ultrasonic power of 110 ms duration, with additional bursts deployed beginning at approximately 1 burst per second when you press the foot pedal to position 3.

The frequency of burst increases as you press the foot pedal. At the maximum level of foot pedal position 3, the delivered rate of the bursts are 4 bursts per second.

Continuous Burst Phaco Power

Continuous Burst can deliver an ultrasonic burst duration from 50 to 150 ms. As you press the foot pedal through position 3, the bursts get closer together. At the maximum level of foot pedal position 3, the bursts blend together, and the power becomes continuous (at the preset power level). The default setting is 100 ms.

To set the Continuous Burst range:

1. Press the **Continuous Burst** button.
2. Press on the **On Time** number. An **On Time** dialog box opens.
3. Press the **up** or **down** arrows to increase or decrease the burst rate from 50 to 150.
4. Press **Finished** to close the screen.

WHITESTAR Technology

WHITESTAR Technology can be applied in any phaco power delivery mode. This advanced phacoemulsification power technology delivers finely modulated pulses of energy interrupted by extremely brief cooling periods. This technology is available in linear or panel mode. When the **WHITESTAR** delivery mode is

turned on, either  or  appears on the touch screen.

WHITESTAR duty cycles are expressed as pulse time on/pulse time off, to achieve a desired duty cycle. For example, the duty cycle setting 6/12 means that the pulse time on is 6 ms, and the pulse time off is 12 ms, that results in a 33% duty cycle.

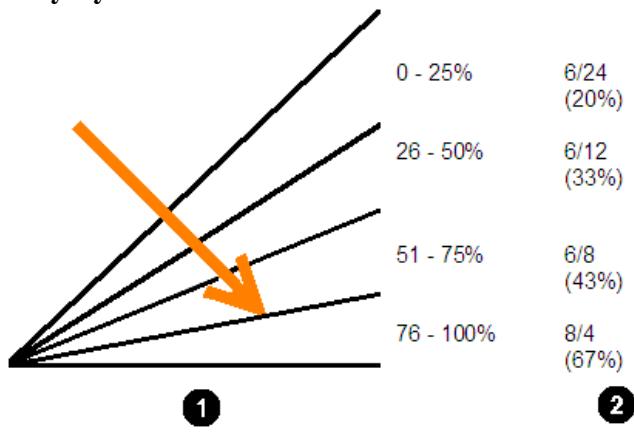
Table 5.6 – WHITESTAR Technology Parameter Settings

| Setting | Pulse On Time (ms) | Pulse Off Time (ms) | Duty Cycle | Pulse Rate (pps) |
|---------|--------------------|---------------------|------------|------------------|
| 6/12 | 6 | 12 | 33% | 55 |
| 4/8 | 4 | 8 | 33% | 83 |
| 6/4 | 6 | 4 | 60% | 100 |
| 6/8 | 6 | 8 | 43% | 71 |
| 8/4 | 8 | 4 | 67% | 83 |
| 4/24 | 4 | 24 | 14% | 35 |
| 6/28 | 6 | 28 | 18% | 29 |
| 6/24 | 6 | 24 | 20% | 33 |
| 8/24 | 8 | 24 | 25% | 31 |
| 6/18 | 6 | 18 | 25% | 41 |

Figure 5.8 – Duty Cycle

When the variable **WHITESTAR** Technology is used, different duty cycles are applied as the foot pedal moves through the power delivery zone. The zone is divided into four equal size quadrants, and a different duty cycle can be applied in each quadrant (Variable WS). You can also use the sliding adjustments to create custom duty cycles for Variable WS.

Figure 5.9 – Variable WHITESTAR Technology Foot Pedal Positions and Duty Cycles



1. Foot pedal position 3
2. WHITESTAR duty cycle

Figure 5.10 – Duty Cycles for Variable WS

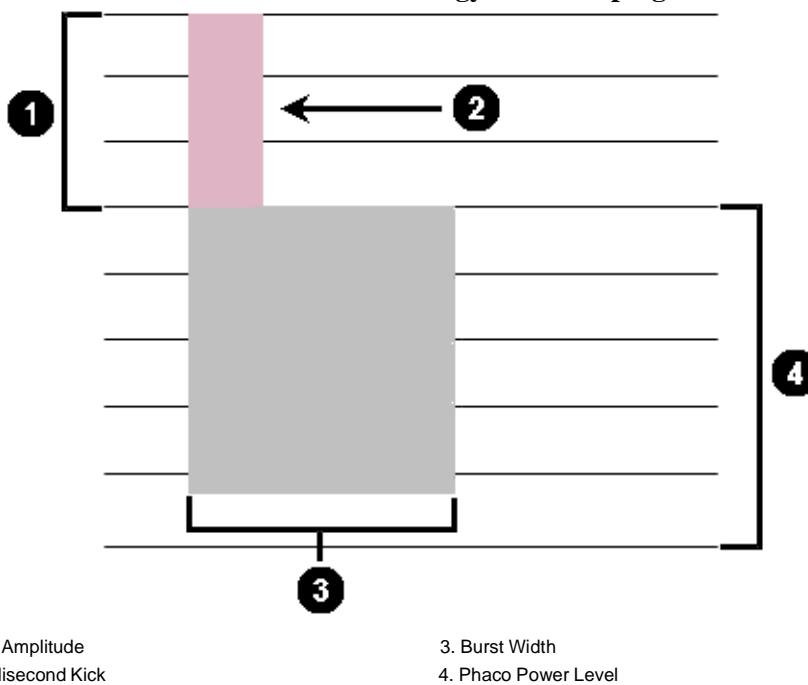


WHITESTAR ICE Technology (Pulse Shaping)

The **WHITESTAR ICE** Technology was the next micro-pulse advance in phacoemulsification technology, which combined modulated ultrasonic power (pulse shaping) with vacuum control through the application of the Chamber Stabilization Environment (CASE).

This pulse shaping technology modifies the standard square wave pulse, by increasing the amplitude of the first millisecond of the on time “kick”, and then setting the remaining part of the on time to the standard power setting. This is repeated for each on time period, resulting in increased control and efficiency in phacoemulsification.

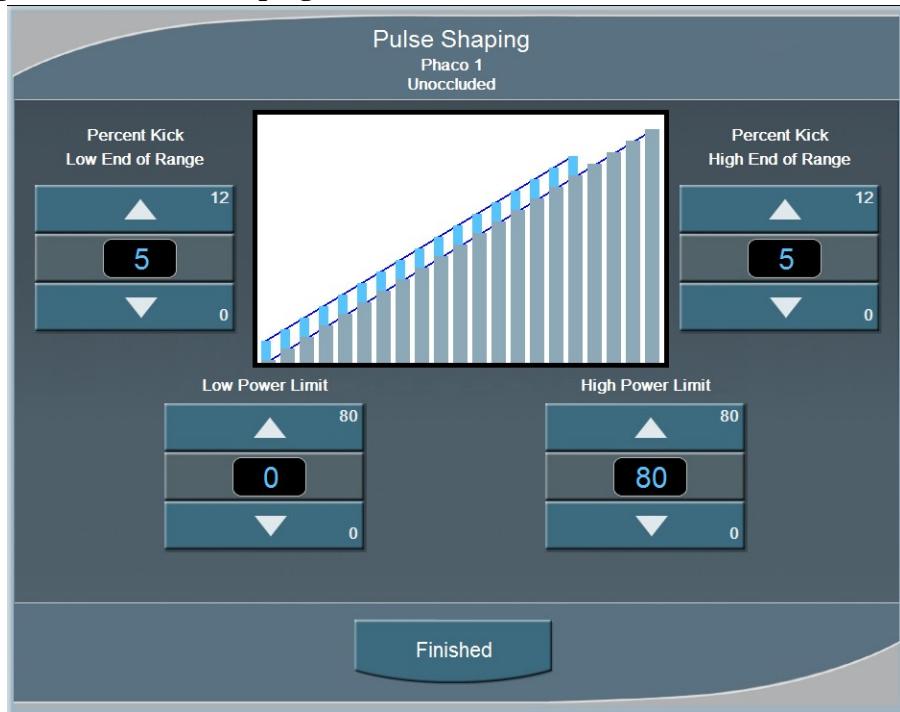
Figure 5.11 – WHITESTAR ICE Technology Pulse Shaping



To access the **WHITESTAR ICE** Technology settings:

1. Press on the **Settings** screen.
2. Press the **WHITESTAR** mode button.
3. Press **On** for pulse shaping.
4. Press **Edit** to access the pulse shaping parameter settings.
5. Press **Finished** to close the screen. Continue to press **Finished** to return to the main screen.

Figure 5.12 – Pulse Shaping Screen



There are four settings for **WHITESTAR** ICE Pulse Shaping:

- Low Power Limit
- High Power Limit
- Percent Kick Low End of Range
- Percent Kick High End of Range

The **Low Power Limit** and **High Power Limit** settings define the range of the applied pulse shaping. When the applied phaco power is outside these limits, there is no pulse shaping.

The **Percent Kick** settings determine the amplitude, or amount of the applied phaco power “kick” in the first millisecond of phaco power, either in the low end or the high end of the power range. As the phaco power increases from the **Low Power Limit** to the **High Power Limit**, the percentage of kick interpolates for the power ranges in between the two limits.

As an example, if you establish small a kick setting for the low end of the range and establish a large kick setting for the high end of the range, the kick percentage gradually increases as the phaco power increases. When the percent kick at the low end is the same as the high end, then the kick remains constant throughout the low to high range.

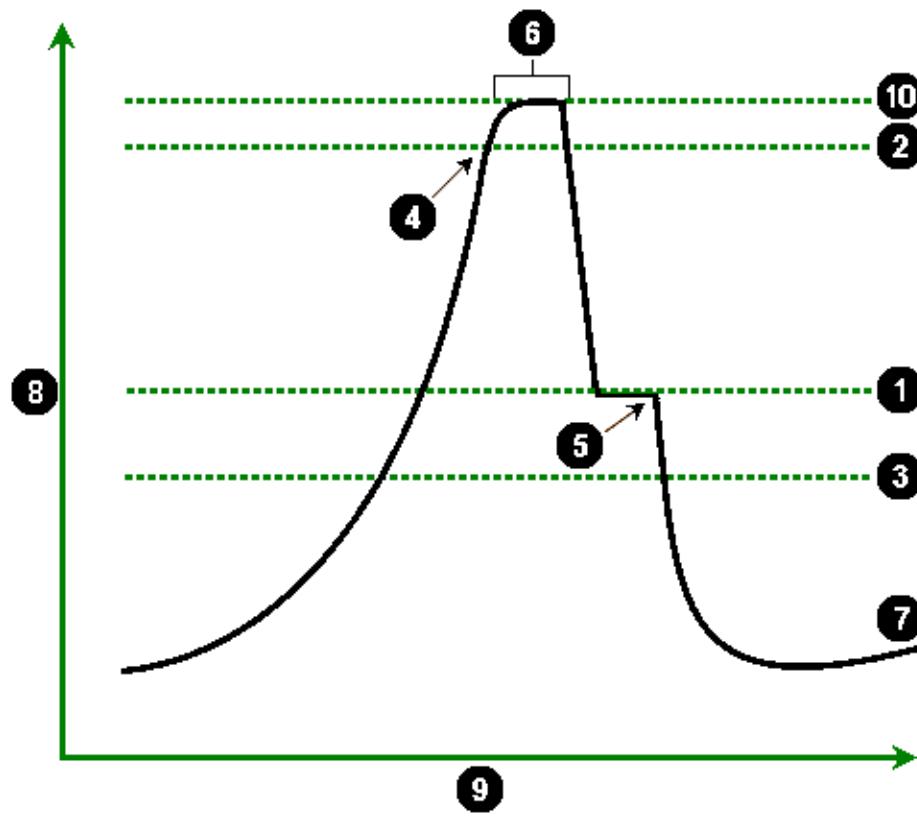
FUSION Fluidics Phaco

FUSION Fluidics Phaco  is an intelligent vacuum monitoring system that regulates the maximum allowable vacuum that follows an occlusion of the phaco tip. When the phaco tip becomes occluded, the vacuum rises. Clearing of the occlusion while the vacuum is at a high-level can cause a post-occlusion surge. With CASE enabled, the system monitors the actual vacuum levels and when the vacuum exceeds a specific threshold for a specified duration, the system automatically adjusts the maximum allowable vacuum setting to a lower predefined CASE vacuum level. When the occlusion clears, the system automatically restores to the original programmed maximum vacuum setting. It is possible to have a different maximum vacuum setting when the needle occludes than when the needle is unoccluded.

You can program the power modulation of the phaco handpiece to automatically change when the phaco tip changes from an unoccluded condition to an occluded condition.

Use the **FUSION** Fluidics screen to adjust the settings. When Occlusion mode is **on**, the main Phaco operating screen provides alternative aspiration, vacuum, and power settings used when the system detects an occlusion.

Figure 5.13 – FUSION Fluidics Phaco



1. CASE Vacuum
2. Upper Threshold
3. Lower Threshold
4. Vacuum Level crosses Upper Threshold
5. Phaco activated

6. Up Time
7. Vacuum Level
8. Vacuum.
9. Time
10. Max Vac

Figure 5.14 – Phaco Surgical Screen with Occlusion and CASE On



Occlusion Mode Settings

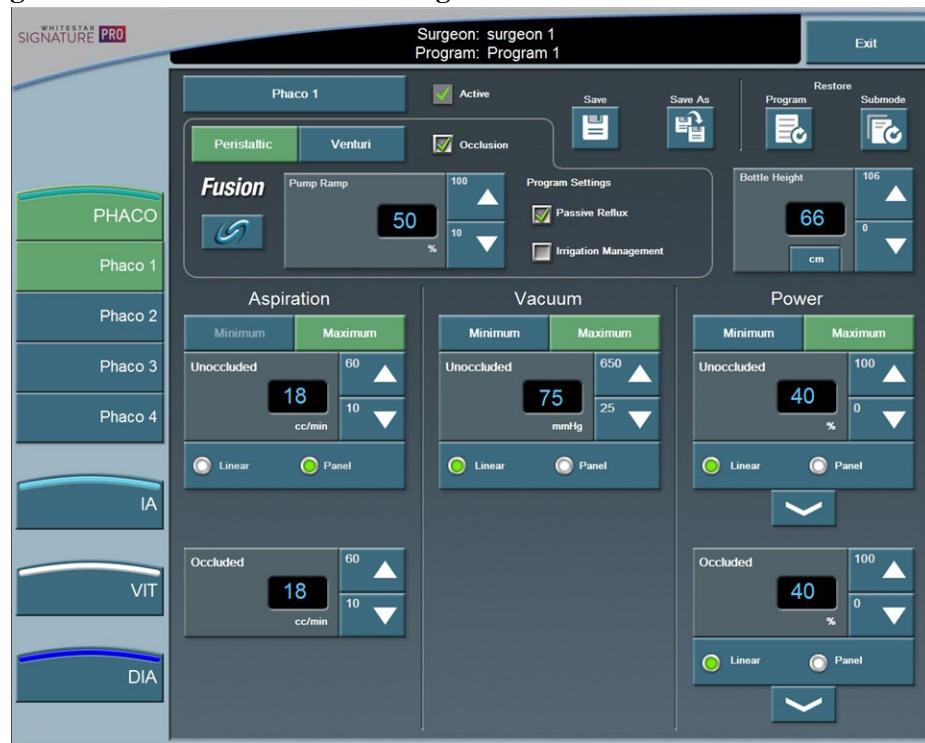
With Occlusion Mode, you can set different aspiration rates for occluded aspiration as opposed to unoccluded aspiration.

You can set a different vacuum rise time for when the phaco tip occludes without changing the aspiration rate through an unoccluded needle.

To set the occluded aspiration rate thresholds:

1. Press **Phaco**.
2. Press **Settings**.
3. Select the **Occlusion** box to enable Occlusion Mode.

Figure 5.15 – Occlusion Mode Settings Screen



4. Use the **up** and **down** arrows to adjust the pump ramp
5. Press the **FUSION** button ().
6. On the **FUSION** screen, Use the **up** and **down** arrows to adjust the threshold and the Actual Max Vac.

Figure 5.16 – FUSION Settings Screen



7. Press **Finished** to close the screen.
8. Press **Save** to retain the settings.
9. Press **Exit** to close the screen.

Occlusion Vacuum Threshold

In Occlusion mode phaco, you can set an occlusion threshold value for vacuum.

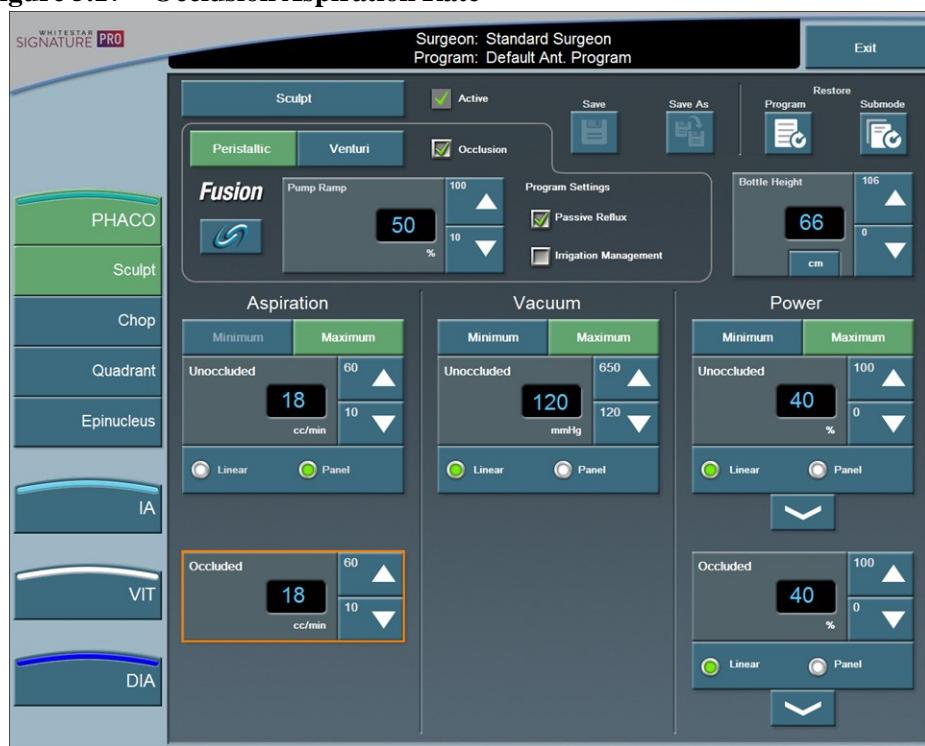
When in Occlusion mode phaco, there is an additional control panel for vacuum. The vacuum threshold setting lets you choose the vacuum level at which occluded settings take effect.

To adjust the occluded vacuum threshold, press the **up** or **down** arrows. When you decrease the threshold, the occlusion settings take effect sooner.

Occlusion Aspiration Rate

In Occlusion mode phaco, you can set a different maximum flow value for aspiration. There is an additional control panel for aspiration below the standard aspiration control panel.

Figure 5.17 – Occlusion Aspiration Rate



To adjust the occluded aspiration rate in occlusion mode phaco, press the **up** or **down** arrows to increase or decrease the occluded aspiration rate.

Or

1. Press . The **Settings** screen opens.
2. Press the **up** or **down** arrows to increase or decrease the occluded aspiration rate.
3. Press **Exit** to close the screen.