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ACCURUS®

OPHTHALMIC SURGICAL SYSTEM
OPERATOR'S MANUAL

(for software versions 4.51 and above)

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8065750203

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TABLE OF CONTENTS

SECTION ONE - GENERAL INFORMATION **PAGE #**

Introduction 1.1
About this Operator's Manual 1.3
System Installation 1.4
Source Air Pressure Requirements 1.4
Accessory Equipment 1.4
Settings Restoration 1.4
Environmental Issues 1.5
NRTL Mark 1.5
LED Statement 1.5
Universal Precautions 1.5
EMC Statement 1.6
Cautions and Warnings 1.9
Diathermy, Cautery, Coagulation 1.14
Product Service 1.14
Limited Warranty 1.15

SECTION TWO - GENERAL DESCRIPTION **PAGE #**

The *Accurus*® Ophthalmic Surgery System 2.1
Front Panel Components 2.2
Rear Panel Components 2.6
Footswitch 2.8
Remote Control 2.9
Front Panel Display Screens 2.10
- Power Up Screen 2.10
- Procedure Selection Screen (600DS and 800CS only) 2.10
- Display Windows and their Functions 2.12

Options Functions 2.19
- Quick Save 2.20
- Memory 2.21
- Volume 2.37
- Timer 2.38
- Metrics 2.39
- Vitrectomy Probes 2.40
- System 2.41
- Standby 2.42
- About 2.42

Status Screens and Popups 2.43

* FOR REFERENCE ONLY *

SECTION THREE - POSTERIOR DESCRIPTION **PAGE #**
Posterior Setup Screens . . . 3.1
Vitreoretinal Surgery Setup Screen . . . 3.1
Selections in Primary Functions Window . . . 3.2
Keys in Posterior Modes Window . . . 3.2
Infusion Settings Screen . . . 3.3
Posterior Global Functions Keys . . . 3.5
Posterior Surgery Modes . . . 3.7
Vit Mode Surgery Screen . . . 3.12
Frag Mode Surgery Screen . . . 3.15
Scissors Mode Surgery Screen . . . 3.17
Extrude Mode Surgery Screen . . . 3.19
VFC Mode Surgery Screen . . . 3.20
Probes and Handpieces . . . 3.22
Vitrectomy Probes . . . 3.22
Fragmatome™ * Handpiece . . . 3.22
Scissors Handpiece . . . 3.23
MPC Scissors Handpiece . . . 3.23
Diathermy/Coagulation Handpieces . . . 3.24

SECTION FOUR - POSTERIOR OPERATING INSTRUCTIONS **PAGE #**
Introduction . . . 4.1
Power Up Sequence . . . 4.1
Select a Mode of Operation (600DS and 800CS) . . . 4.2
Navigating Through the *Accurus*® Posterior Mode Screens . . . 4.2
Factory Default Settings and Adjustments . . . 4.4
Using the Global Functions . . . 4.7
Presurgical Setup Instructions . . . 4.8
Total Plus® Vitrectomy Pak Setup . . . 4.8
Initial Preparation . . . 4.8
Infusion Setup . . . 4.9
Vitrectomy Probe Setup . . . 4.10
Using the 20 cc Syringe . . . 4.11
Extrusion Handpiece Setup . . . 4.11
Fiber Optic Illuminator Setup . . . 4.11
Fragmatome™ * Accessory Pak Setup . . . 4.13
Priming and Testing/Tuning . . . 4.14
Fluid/Air Exchange (F/AX) Setup . . . 4.15
Vented Gas Forced Infusion Setup . . . 4.16
Intraocular Scissors (IOS) Setup . . . 4.18
MPC Scissors Setup . . . 4.19
Diathermy Setup . . . 4.20
Viscous Fluid Control (VFC) Setup . . . 4.21

SECTION FIVE - POSTERIOR DISASSEMBLY AND CLEANING **PAGE #**
Disassembly and Cleaning . . . 5.1
Immediately After Each Surgical Procedure . . . 5.1
Upon Completion of Surgery Schedule . . . 5.4
Sterilization . . . 5.5

* FOR REFERENCE ONLY *

SECTION SIX - POSTERIOR ACCESSORIES AND PARTS **PAGE #**
List of Accessories and Replacement Parts 6.1

SECTION SEVEN - ANTERIOR DESCRIPTION **PAGE #**
Anterior Setup Screens 7.1
Cataract Surgery Setup Screen 7.1
Selections in Primary Display Window 7.2
Keys in Anterior Modes Window 7.2
Irrigation Settings Screen 7.3
Anterior Global Functions Keys 7.5
Anterior Surgery Modes 7.7
Phaco Mode Surgery Screen 7.10
I/A Mode Surgery Screen 7.12
Vit Mode Surgery Screen 7.13
Handpieces and Probes 7.14
375/40 U/S and *Mackool*** Handpiece 7.14
Irrigation/Aspiration Handpiece 7.14
Vitrectomy Probes 7.15
Diathermy/Coagulation Handpieces 7.15

SECTION EIGHT - ANTERIOR OPERATING INSTRUCTIONS **PAGE #**
Introduction 8.1
Power Up Sequence 8.1
Select a Mode of Operation (600DS and 800CS) 8.2
Navigating Through the *Accurus*® Anterior Mode Screens 8.2
Factory Default Settings and Adjustments 8.4
Using the Global Functions 8.6
Presurgical Setup Instructions 8.6
Accurus® *Turbosonics*® *MicroTip*™ Pak Setup 8.7
Initial Preparation 8.7
Phaco Setup 8.8
I/A Handpiece Setup 8.10
Phaco and I/A Safety Test 8.10
Anterior *VGFI*™ * Tubing Set Setup 8.12
Anterior *VGFI*™ * Cassette Pak Setup 8.14
Anterior Vitrectomy Setup 8.16

SECTION NINE - ANTERIOR DISASSEMBLY AND CLEANING **PAGE #**
Disassembly and Cleaning 9.1
Immediately After Each Surgical Procedure 9.1
Upon Completion of Surgery Schedule 9.3
Sterilization 9.4

SECTION TEN - ANTERIOR ACCESSORIES AND PARTS **PAGE #**
List of Accessories and Replacement Parts 10.1

SECTION ELEVEN - COMBINED DESCRIPTION **PAGE #**
Combined Setup Screens 11.1
Combined Surgery Setup Screen 11.1
Selections in Primary Functions Window 11.2
Keys in Posterior Modes Window 11.2
Irrigation/Infusion Settings Screen 11.3
Posterior and Anterior Global Functions Keys 11.6
Combined Surgery Modes 11.8
Phaco Mode Surgery Screen 11.15
Frag Mode Surgery Screen 11.17
I/A Mode Surgery Screen 11.18
Vit Mode Surgery Screen 11.19
Scissors Mode Surgery Screen 11.22
Extrude Mode Surgery Screen 11.24
VFC Mode Surgery Screen 11.25
Probes and Handpieces 11.27
375/40 U/S and *Mackool*** Handpiece 11.27
Irrigation/Aspiration Handpiece 11.27
Fragmatome™ * Handpiece 11.28
Vitrectomy Probes 11.28
Scissors Handpiece 11.29
MPC Scissors Handpiece 11.29
Diathermy/Coagulation Handpieces 11.30

SECTION TWELVE - COMBINED OPERATING INSTRUCTIONS **PAGE #**
Introduction 12.1
Power Up Sequence 12.1
Select a Mode of Operation 12.2
Navigating Through the *Accurus*® Combined Mode Screens 12.2
Factory Default Settings and Adjustments 12.4
Using the Global Functions 12.7
Presurgical Setup Instructions 12.8
Total Plus® Combined Procedure Pak Setup 12.8
Initial Preparation 12.8
Infusion Setup 12.9
Vitrectomy Probe Setup 12.11
Phaco Setup 12.12
Priming and Testing/Tuning 12.12
I/A Handpiece Setup 12.14
I/A and Phaco Fluidics Balance Test 12.16
Extrusion Handpiece Setup 12.17
Fiber Optic Illuminator Setup 12.18
Using the 20 cc Syringe 12.19
Combined Vented Gas Forced Infusion (CVGFI) Setup 12.20
Fragmatome™ * Accessory Pak Setup 12.22
Priming and Testing/Tuning 12.22
Intraocular Scissors (IOS) Setup 12.24
MPC Scissors Setup 12.25
Diathermy Setup 12.26
Viscous Fluid Control (VFC) Setup 12.27
Anterior Vitrectomy Setup 12.31
Fluid/Air Exchange (F/AX) Setup 12.33

* FOR REFERENCE ONLY *

SECTION THIRTEEN - COMBINED DISASSEMBLY AND CLEANING PAGE #
Disassembly and Cleaning 13.1
Immediately After Each Surgical Procedure 13.1
Upon Completion of Surgery Schedule 13.4
Sterilization 13.5

SECTION FOURTEEN - COMBINED ACCESSORIES AND PARTS PAGE #
List of Accessories and Replacement Parts 14.1

SECTION FIFTEEN - CARE AND MAINTENANCE PAGE #
Voltage and Fuse Selection 15.1
Fuse Selection for Auto Ranging Power Supply 15.1
Illuminator Bulb Replacement 15.2
Remote Control Battery Replacement 15.3
Remote Control Channel Selection 15.3
Crating Instructions 15.4
Air Filter Cleaning 15.5

SECTION SIXTEEN - TROUBLESHOOTING PAGE #
Accurus® Ophthalmic Surgical System Troubleshooting Instructions 16.1

SECTION SEVENTEEN - OPTIONAL ACCESSORIES PAGE #
Cart with IV Pole 17.1
General Information 17.1
Accurus® Console and *EyeLite*® Laser Mounting 17.2
Cabling and Interconnections 17.2
Cart Features 17.3
Writing Tablet 17.3
Mayo Tray 17.3
Storage Shelves and Drawers 17.3
Power IV Pole 17.3
Manual IV Pole 17.4
VGFI™ */ AVGFI/ CVGFI Bottle Hanger 17.4
Cleaning 17.4
VideOverlay Parameters System 17.6
Overview 17.6
Standard Setup (for USA/Japan [NTSC] and Europe [PAL]) 17.7
Super VHS High Resolution Setup 17.10
VideOverlay Operation 17.12
Additional Information 17.13

SECTION EIGHTEEN - INDEX PAGE #
Alphabetical Listing of Topics 18.1

LIST OF FIGURES

FIGURE #	TITLE	PAGE #
Figure 1-1	The *Accurus*® Ophthalmic Surgical System	1.1
Figure 1-2	Icons Used With the *Accurus*® Ophthalmic Surgical System	1.18
Figure 1-3	Labeling Used on the *Accurus*® Ophthalmic Surgical System	1.19
Figure 1-4	Diathermy Power Through 75 Ohm Load	1.20
Figure 1-5	Diathermy Power vs. Load Impedance	1.20
Figure 1-6	Diathermy Output Voltage vs. Output Control Setting	1.20
Figure 1-7	Footpedal Operation when Controlling More Than One Proportional Function	1.21
Figure 2-1	The *Accurus*® Console	2.1
Figure 2-2	The *Accurus*® Front Panel	2.3
Figure 2-3	Front Panel Pneumatic and Electrical Connectors, with Connector LED's	2.4
Figure 2-4	The *Accurus*® Rear Panel	2.6
Figure 2-5	Footswitch	2.8
Figure 2-6	Wireless Remote Control	2.9
Figure 2-7	Power Up Screen	2.11
Figure 2-8	Procedure Selection Screen	2.11
Figure 2-9	LCD Display and Touch Screen	2.12
Figure 2-10	Setup Function Selections in Modes Window	2.13
Figure 2-11	Surgical Mode Selections in Modes Window	2.13
Figure 2-12	Global Functions Window	2.14
Figure 2-13	Title Window	2.15
Figure 2-14	Doctor Name Window	2.15
Figure 2-15	Doctor Memory Window	2.16
Figure 2-16	Miscellaneous Window	2.17
Figure 2-17	Primary Display Window	2.18
Figure 2-18	Popup Window	2.18
Figure 2-19	Options Drop Down Menu	2.19
Figure 2-20	Quick Save Popup Window	2.20
Figure 2-21	Doctor Memory Surgical Parameters	2.22
Figure 2-22	Anterior Phaco Tab Data	2.23
Figure 2-23	Anterior I/A Tab Data	2.23
Figure 2-24	Anterior Vit Tab Data	2.24
Figure 2-25	Anterior Irrigation Tab Data	2.24
Figure 2-26	Anterior Other Tab Data	2.25
Figure 2-27	Posterior Vit Tab Data	2.26
Figure 2-28	Posterior Frag Tab Data	2.27
Figure 2-29	Posterior Scissors Tab Data	2.27
Figure 2-30	Posterior Extrude Tab Data	2.28
Figure 2-31	Posterior VFC Tab Data	2.28
Figure 2-32	Posterior Infusion Tab Data	2.28
Figure 2-33	Posterior Other Tab Data	2.29
Figure 2-34	Common Sound Tab Data	2.29
Figure 2-35	Common Footswitch Tab Data	2.30
Figure 2-36	Swap Feature Activated	2.31
Figure 2-37	Swap Drop-Down List	2.31
Figure 2-38	Swap Completed and Swap Feature Deactivated	2.31
Figure 2-39	Common Labels Tab Data with Anterior Drop-Down List Shown	2.32
Figure 2-40	Common Submodes Tab Data with Anterior Phaco Drop-Down List Shown	2.32

* FOR REFERENCE ONLY *

FIGURE #	TITLE	PAGE #
Figure 2-41	Common Irr/Inf Tab Data	2.33
Figure 2-42	Common Other Tab Data	2.33
Figure 2-43	Doctors Names Tab Data	2.34
Figure 2-44	Keyboard Window	2.34
Figure 2-45	PIN Window	2.35
Figure 2-46	Import Tab Window	2.35
Figure 2-47	Export Tab Window	2.36
Figure 2-48	Erase Tab Window	2.36
Figure 2-49	Sound Volumes Popup	2.37
Figure 2-50	Timer Popup	2.38
Figure 2-51	Anterior Domain Metrics	2.39
Figure 2-52	Posterior Domain Metrics	2.39
Figure 2-53	Vitrectomy Probes Selection	2.40
Figure 2-54	System Parameters	2.41
Figure 2-55	About *Accurus*®	2.42
Figure 2-56	System Fault Screen	2.43
Figure 2-57	System Error Popup Messages	2.44
Figure 2-58	System Advisory Popup Messages	2.45
Figure 2-59	System Information Popup Messages	2.45
Figure 3-1	Vitreoretinal Surgery Setup Screen	3.1
Figure 3-2	Infusion Settings Screen	3.3
Figure 3-3	Infusion Settings Screen - Infusion Tab	3.4
Figure 3-4	Vit Mode Screen	3.12
Figure 3-5	Vit 3D Mode Screen	3.14
Figure 3-6	Linear Fragmentation Screen	3.15
Figure 3-7	Proportional Scissors Screen	3.17
Figure 3-8	Multiple Cut Scissors Screen	3.18
Figure 3-9	Scissors Calibration Screen	3.18
Figure 3-10	Medium Extrusion Screen	3.19
Figure 3-11	VFC Injection Screen	3.20
Figure 3-12	Dual VFC Injection/Extrusion Screen	3.21
Figure 3-13	VFC Extraction Screen	3.21
Figure 3-14	*Innovit*® Probe	3.22
Figure 3-15	*Accurus*® Probe	3.22
Figure 3-16	*Fragmatome*™ * Handpiece	3.22
Figure 3-17	Intraocular Scissors (IOS) Handpiece	3.23
Figure 3-18	MPC Scissors Handpiece	3.23
Figure 3-19	Single Use Bipolar Brush	3.24
Figure 3-20	4 Inch Nadler Coaptation Forceps	3.24
Figure 4-1	Posterior Modes Flow Chart	4.3
Figure 4-2	Posterior Fluid Cassette Insertion	4.8
Figure 4-3	Stopcock	4.9
Figure 4-4	Vitrectomy Probe Connections	4.10
Figure 4-5	20 cc Syringe Connection	4.11
Figure 4-6	Extrusion Line Connection	4.12
Figure 4-7	Illuminator Probe Connector	4.12

List of Figures continued on next page

LIST OF FIGURES (continued from prior page)

FIGURE #	TITLE	PAGE #
Figure 4-8	*Fragmatome*™ * Handpiece Tubing Connections	4.13
Figure 4-9	F/AX Infusion Line Connection	4.15
Figure 4-10	Vented Gas Forced Infusion Connection	4.17
Figure 4-11	Scissors Line Connection	4.18
Figure 4-12	MPC Scissors Cable Connection	4.19
Figure 4-13	Diathermy Probe Connection	4.20
Figure 4-14	Viscous Fluid Injector Connection	4.22
Figure 5-1	Cassette Removal	5.1
Figure 5-2	Plug the Vacuum Port	5.2
Figure 7-1	Cataract Surgery Setup Screen	7.1
Figure 7-2	Irrigation Settings Screen - Type Tab	7.3
Figure 7-3	Irrigation Settings Screen - Irrigation Tab	7.4
Figure 7-4	Phaco Linear Mode Screen	7.10
Figure 7-5	Phaco Burst Mode Screen	7.11
Figure 7-6	Phaco 3D Mode Screen	7.12
Figure 7-7	I/A Max Mode Screen	7.12
Figure 7-8	Vit Mode Screen	7.13
Figure 7-9	375/40 U/S Handpiece	7.14
Figure 7-10	Irrigation/Aspiration (I/A) Handpiece	7.14
Figure 7-11	*Accurus*® Probe	7.15
Figure 7-12	Single Use Bipolar Brush	7.15
Figure 7-13	4 Inch Nadler Coaptation Forceps	7.15
Figure 8-1	Anterior Modes Flow Chart	8.3
Figure 8-2	Anterior Fluid Cassette Insertion	8.7
Figure 8-3	Phaco Setup	8.9
Figure 8-4	I/A Setup	8.11
Figure 8-5	Anterior *VGFI*™ * Tubing Set Setup	8.13
Figure 8-6	Anterior *VGFI*™ * Cassette Pak Setup	8.15
Figure 8-7	Anterior Vitrectomy Setup	8.17
Figure 9-1	Cassette Removal	9.1
Figure 9-2	Plug the Vacuum Port	9.2
Figure 11-1	Combined Surgery Setup Screen	11.1
Figure 11-2	Irrigation/Infusion Settings Screen - Type Tab	11.3
Figure 11-3	Irrigation/Infusion Settings Screen - Irrigation Tab	11.4
Figure 11-4	Irrigation/Infusion Settings Screen - Infusion Tab	11.5
Figure 11-5	Phaco Linear Mode Screen	11.15
Figure 11-6	Phaco Burst Mode Screen	11.16
Figure 11-7	Linear Fragmentation Screen	11.17
Figure 11-8	I/A Max Mode Screen	11.18
Figure 11-9	Wet Ant Mode Screen	11.19
Figure 11-10	Vit Prop Vac Mode Screen	11.20

* FOR REFERENCE ONLY *

FIGURE #	TITLE	PAGE #
Figure 11-11	Vit 3D Mode Screen	11.21
Figure 11-12	Proportional Scissors Screen	11.22
Figure 11-13	Multiple Cut Scissors Screen	11.23
Figure 11-14	Scissors Calibration Screen	11.23
Figure 11-15	Medium Extrusion Screen	11.24
Figure 11-16	VFC Injection Screen	11.25
Figure 11-17	Dual VFC Injection/Extrusion Screen	11.26
Figure 11-18	VFC Extraction Screen	11.26
Figure 11-19	375/40 U/S Handpiece	11.27
Figure 11-20	Irrigation/Aspiration (I/A) Handpiece	11.27
Figure 11-21	*Fragmatome*™ * Handpiece	11.28
Figure 11-22	*InnoVit*® Probe	11.28
Figure 11-23	*Accurus*® Probe, *Accurus*® 1500 Probe, *Accurus*® 2500 Probe	11.28
Figure 11-24	Intraocular Scissors (IOS) Handpiece	11.29
Figure 11-25	MPC Scissors Handpiece	11.29
Figure 11-26	Single Use Bipolar Brush	11.30
Figure 11-27	4 Inch Nadler Coaptation Forceps	11.30
Figure 12-1	Combined Modes Flow Chart	12.3
Figure 12-2	Combined Fluid Cassette Insertion	12.9
Figure 12-3	Infusion Line Stopcock	12.10
Figure 12-4	Vitrectomy Probe Connections	12.11
Figure 12-5	Phaco Setup	12.13
Figure 12-6	I/A Setup	12.15
Figure 12-7	Extrusion Line Connection	12.17
Figure 12-8	Illuminator Probe Connector	12.18
Figure 12-9	20 cc Syringe Connection	12.19
Figure 12-10	Combined Vented Gas Forced Infusion Connections	12.21
Figure 12-11	*Fragmatome*™ * Handpiece Tubing Connections	12.23
Figure 12-12	Scissors Line Connection	12.24
Figure 12-13	MPC Scissors Cable Connection	12.25
Figure 12-14	Diathermy Probe Connection	12.26
Figure 12-15	Viscous Fluid Injector Connection	12.28
Figure 12-16	Anterior Vitrectomy Setup	12.32
Figure 12-17	Air Infusion Line Connection	12.33
Figure 13-1	Cassette Removal	13.1
Figure 13-2	Plug the Vacuum Port	13.2
Figure 15-1	Fuse Carriers and Fuses	15.1
Figure 15-2	Bulb Alignment	15.2
Figure 15-3	Remote Control Channel Selection Switches	15.3
Figure 15-4	Crating of the *Accurus*® Ophthalmic Surgical System	15.4
Figure 15-5	Sponge Air Filter on Rear Panel of the *Accurus*® Ophthalmic Surgical System	15.5
Figure 17-1	The Mobile Cart	17.1
Figure 17-2	Mobile Cart Components	17.2
Figure 17-3	Icons Used on the *Accurus*® Cart with IV Pole	17.4
Figure 17-4	Labeling Used on the *Accurus*® Cart with IV Pole	17.5

LIST OF FIGURES (continued from prior page)

FIGURE #	TITLE	PAGE #
Figure 17-5	VideOverlay Front Panel	17.6
Figure 17-6	VideOverlay Rear Panel	17.7
Figure 17-7	VideOverlay Standard Interconnect Diagram	17.8
Figure 17-8	Typical Video Display on Monitor	17.9
Figure 17-9	VideOverlay SVHS Interconnect Diagram	17.11

LIST OF TABLES

TABLE #	TITLE	PAGE #
Table 1-1	System Identification	1.3
Table 1-2	Guidance and Manufacturer's Declaration - Electromagnetic Emissions	1.6
Table 1-3	Guidance and Manufacturer's Declaration - Electromagnetic Immunity	1.7
Table 1-4	Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the *Infiniti*™ * Vision System	1.8
Table 1-5	*Accurus*® Ophthalmic Surgical System Specifications	1.16
Table 1-6	Terms and Abbreviations	1.17
Table 2-1	Voices/Tones and Their Descriptions	2.5
Table 2-2	Global Functions Keys	2.14
Table 2-3	Doctor Memory and Data Tabs	2.22
Table 3-1	Posterior Domain Surgery Modes	3.7
Table 3-2	Posterior Footswitch Functions for Default Map A	3.8
Table 3-3	Posterior Footswitch Functions for Default Map B	3.9
Table 3-4	Posterior Footswitch Functions for Default Map C	3.10
Table 3-5	Posterior Footswitch Functions for Default Map D	3.11
Table 4-1	Vitrectomy Default Settings and Adjustable Ranges	4.5
Table 4-2	Other Default Settings and Adjustable Ranges	4.6
Table 5-1	Sterilization Temperature and Time Settings	5.5
Table 7-1	Anterior Domain Surgery Modes	7.7
Table 7-2	Anterior Footswitch Functions for Default Map A	7.8
Table 7-3	Anterior Footswitch Functions for Default Map B	7.8
Table 7-4	Anterior Footswitch Functions for Default Map C	7.9
Table 7-5	Anterior Footswitch Functions for Default Map D	7.9
Table 8-1	Factory Default Settings and Adjustments	8.5
Table 9-1	Sterilization Temperature and Time Settings	9.4

* FOR REFERENCE ONLY *

TABLE #	TITLE	PAGE #
Table 11-1	Combined Domain Surgery Modes	11.8
Table 11-2	Combined Footswitch Functions for Combined Posterior Default Map A	11.9
Table 11-3	Combined Footswitch Functions for Combined Posterior Default Map B	11.10
Table 11-4	Combined Footswitch Functions for Combined Posterior Default Map C	11.11
Table 11-5	Combined Footswitch Functions for Combined Posterior Default Map D	11.12
Table 11-6	Combined Footswitch Functions for Combined Anterior Default Map A	11.13
Table 11-7	Combined Footswitch Functions for Combined Anterior Default Map B	11.13
Table 11-8	Combined Footswitch Functions for Combined Anterior Default Map C	11.14
Table 11-9	Combined Footswitch Functions for Combined Anterior Default Map D	11.14
Table 12-1	Combined Default Settings and Adjustable Ranges (part 1)	12.1
Table 12-2	Combined Default Settings and Adjustable Ranges (part 2)	12.6
Table 13-1	Sterilization Temperature and Time Settings	13.5
Table 15-1	Fuse Selection	15.1
Table 16-1	*Accurus*® Ophthalmic Surgical System Problem Conditions	16.2
Table 16-2	Advisories	16.6
Table 16-3	Errors	16.9
Table 16-4	Faults	16.12
Table 17-1	VideOverlay Display Information	17.12
Table 17-2	VideOverlay Specifications	17.13

PREFACE

This Operator's Manual is your written guide to the *Accurus*® Ophthalmic Surgical System and considers all options available to the customer; therefore, when reading this manual disregard options that do not apply to your specific unit. This operator's manual covers the CE certified *Accurus*® Ophthalmic Surgical System.

Please read the entire manual carefully before operating the instrument. Recommended settings are given only as guidelines, and are not meant to restrict the surgeon; however, before trying other settings, the surgeon and support personnel should be experienced with the system and familiar with the new settings.

Equipment improvement is an on-going process and, as such, changes may be made to the equipment after this manual is printed.

Pay close attention to Warnings, Cautions, and Notes in this manual. A *WARNING!* statement is written to protect individuals from bodily harm. A Caution statement, with the CAUTION heading centered above the text, is written to protect the instrument from damage. A NOTE: is written to bring attention to highlighted information.

If you have questions, or want additional information, please contact your local Alcon representative or the Alcon Technical Services Department at:

ALCON
15800 Alton Parkway
Irvine, California 92618
(949) 753-1393
FAX (949) 753-6614

CAUTION: U.S. Federal Law restricts this device to sale by or on the order of a physician.

END USER LICENSE AGREEMENT:
This product contains software licensed from Microsoft Corporation.

* FOR REFERENCE ONLY *

SECTION ONE
GENERAL INFORMATION

Introduction

The Alcon *Accurus*® Ophthalmic Surgical System is a sophisticated instrument designed to be durable, reliable, safe, and easy to operate. This state-of-the-art instrument has been developed to be user friendly, combining hardware with computer software that increases the effectivity of the user.



Figure 1-1 THE *ACCURUS*® OPHTHALMIC SURGICAL SYSTEM - The *Accurus*® Ophthalmic Surgical System is a multifunctional surgical tool which, depending on its configuration, can be used in anterior and posterior segment ophthalmic surgeries.

Introduction (from prior page)

Interaction is through the *Accurus®* console's hard keys, touch screen, remote control, and footswitch. Information is provided via digital Light Emitting Diode (LED) displays, a color Liquid Crystal Display (LCD), lighted indicators, sound, and tactile feel. All of this, in combination with a variety of probes, handpieces, and accessories provides the ophthalmic surgeon with up to the following features:

- Graphic user interface (GUI) for ease of operation
- Dual aspiration fluid cassette with sealed, detachable drain bag
- Pulsed air pressure to drive vitreous cutter probes and scissors
- Proportional air pressure to drive scissors and Viscous Fluid Control (VFC) syringe
- Low pressure air pressure for:
  - Fluid/Air Exchange (F/AX)
  - Vented Gas Forced Infusion
  - Anterior Vented Gas Forced Irrigation (Anterior *VGFI™* *)
  - Combined Vented Gas Forced Irrigation (Combined *VGFI™* *)
- Venturi vacuum to aspirate ocular matter from the eye
- Halogen illuminators for fiber optic illumination
- Posterior vitrectomy utilizing four handpieces
- Fragmentation
- Diathermy
- Membrane Peeler Cutter (MPC) scissors
- Phacoemulsification
- Irrigation/Aspiration
- Anterior Vitrectomy
- Mobile Cart with IV Pole
- VideOverlay

* FOR REFERENCE ONLY *

About this Operator's Manual

The *Accurus*® system is designed with a flexibility that allows for a variety of system configurations; this operator's manual is written to cover all of the configurations. The *Accurus*® system is capable of operating as either an anterior segment only, posterior segment only, or multifunctional surgical tool for use in both anterior and posterior segment ophthalmic surgeries. The *Accurus*® 800CS system is the premium combined posterior/anterior system, designed with full-time cross-platform functionality. The 600DS is a premium dual function posterior/anterior system. The 400VS is a dedicated posterior system; and the 300VS is an entry level, fully upgradeable posterior machine. The 200PS is a high performance venturi anterior system. While reading this manual you should simply pay attention to the features included in your *Accurus*® system.

	200PS	300VS	400VS	600DS	800CS
POSTERIOR					
Vitrectomy-*Accurus*®	-	x	x	x	x
Vitrectomy-*InnoVit*®	-	-	x	x	x
Fragmentation	-	x	x	x	x
Pneumatic Scissors	-	x	x	x	x
Extrusion	-	x	x	x	x
Illumination	-	x	x	x	x
VGFI™ *	-	x	x	x	x
MPC Scissors	-	-	x	x	x
Viscous Fluid Control	-	x	x	x	x
ANTERIOR					
Phacoemulsification	x	-	-	x	x
Irrigation/Aspiration	x	-	-	x	x
Anterior Vitrectomy	x	-	-	x	x
AVGFI	x	-	-	x	x
COMBINED					
Integrated Posterior & Anterior Functionality	-	-	-	-	x

Table 1-1 **SYSTEM IDENTIFICATION - This table is a quick reference point to identify the surgical features included in all of the *Accurus*® system models.**

System Installation

Upon arrival of your new *Accurus®* system, DO NOT OPEN CARTON. In the USA contact the Alcon Technical Services Department for uncrating and installation at 800/832-7827. Outside the USA contact your local Alcon affiliate.

Source Air Pressure Requirements

The *Accurus®* system is designed to operate using different levels of source air pressure. Options/System has a Source Pressure parameter, with choices of *Select*, *Reduced* (5 bar), and *Standard*. *Select* is the default setting. If the user selects the Source Pressure parameter to be *Reduced* or *Standard*, then that will be the new default setting. The pressure specifications for each setting are listed below.

Source Pressure Parameter is *Select* - When the source air pressure drops below a minimum level a popup window will appear stating that the operator must select either the *Reduced* or the *Standard* pressure parameter.

Source Pressure Parameter is *Reduced* - When the source air pressure drops below a minimum level a popup window will appear stating that the operator must adjust supply source pressure to between 5 bar and 8 bar. (1 bar = 14.5 psi.) **Note: System will not reach full vacuum or pressure levels if reduced is selected.**

Source Pressure parameter is *Standard* - When the source air pressure drops below a minimum level a popup window will appear stating that the operator must adjust supply source pressure to between 90 psi and 120 psi.

Accessory Equipment

Accessory equipment connected to or used with this equipment must be certified according to the respective IEC Standard (e.g., IEC 60950 for data processing equipment, and IEC 60601-1 for medical equipment). Additionally, all configurations shall comply with System Standard IEC 60601-1-1. Anyone connecting additional equipment or otherwise causing a different system configuration than provided by Alcon is responsible for continued compliance to the requirements of System Standard IEC 60601-1-1. If in doubt, consult the Technical Services department or your local Alcon representative.

Settings Restoration

When a loss of power occurs, the *Accurus®* system retains its current settings and mode in memory. When power is reestablished a System Information popup window appears asking: "Do you want to restore the system's previous settings and mode?" The user can press **Yes** to restore the previous settings, or **No** to enter the original settings. Disconnecting the power cord, or turning the system off using the rear panel power switch, is considered a loss of power; using the front panel standby switch is not.

Environmental Issues

Follow local governing ordinances and recycling plans regarding disposal or recycling of device components and packaging.

User Information – Environmental Considerations

The equipment that you have purchased requires the use of natural resources for its production. This equipment may also contain hazardous substances which could have potential effect on the environment and human health if disposed of improperly.

In order to avoid the entry of any such substances into our environment and to promote natural resource conservation, we encourage you to use the appropriate take-back systems. Such take-back systems reuse or recycle many of the materials in your end-of-life equipment in a beneficial way. Please contact your local Alcon office for assistance in take-back options through Alcon or other providers.



The crossed-bin symbol located on this equipment reminds you to use take-back systems, while also emphasizing the requirement to collect waste equipment separately, and not dispose of it as unsorted municipal waste.

If you need more information on the collection, reuse or recycle systems available to you, please contact your local or regional waste administration, or contact your local Alcon office for more information.

NRTL Mark

The *Accurus*® system is classified by TUV America with respect to Electric Shock, Fire, Mechanical and other specified hazards only in accordance with UL 60601-1, CAN/CSA 22.2 601.1, IEC 60601-2-2, and IEC 60601-2-18.

LED Statement

LED's used in this equipment are Class 1 LED products according to EN60825-1 amendment 11. Oct. 1996.

Universal Precautions

Universal precautions shall be observed by all people who come in contact with the instrument and/or accessories to help prevent their exposure to blood-borne pathogens and/or other potentially infectious materials. In any circumstance, wherein the exact status of blood or body fluids/tissues encountered are unknown, it shall be uniformly considered potentially infectious and handled in accordance with OSHA guidelines.

EMC Statement

It is important to install and use the equipment in accordance with the instructions in order to prevent harmful interference with other devices in the vicinity. If this equipment causes harmful interference to other devices (determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the other device(s).
- Increase the distance between the equipment.
- Connect this equipment into an outlet on a circuit different from that to which the other device(s) is connected.
- Consult the manufacturer or your Alcon field service engineer for help.

Table 1-2 Guidance and Manufacturer's Declaration - Electromagnetic Emissions - The *Accurus*® Ophthalmic Surgical System is intended for use in the electromagnetic environment specified below. The customer or the user of the *Accurus*® System should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment-Guidance
RF emissions CISPR 11	Group 1	The *Accurus*® Ophthalmic Surgical System uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	Based on extensive field experience the *Accurus*® System is suitable for use in all establishments including domestic and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes. The EMC Statement provides guidance on steps to take in case of electromagnetic interference.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ Flicker emissions IEC 61000-3-3	Complies	

Table 1-3 Guidance and Manufacturer's Declaration - Electromagnetic Immunity - The *Accurus*® Ophthalmic Surgical System is intended for use in the electromagnetic environment specified below. The customer or the user of the Accurus® System should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment-Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	• ±6 kV contact • ±8 kV air	• ±2 kV contact • ±8 kV air	Floors should be wood, concrete, or ceramic tile. Do not use around floors that are covered with synthetic material to avoid a System Fault due to ESD.
Electrical fast transient/burst IEC 61000-4-4	• ±2 kV for power supply lines • ±1 kV for input/ output lines	• ±2 kV for power supply lines • ±1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	• ±1 kV differential mode • ±2 kV common mode	• ±1 kV differential mode • ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	• <5% U_T (>95% dip in U_T) for 0.5 cycle • 40% U_T (60% dip in U_T) for 5 cycles • 70% (30% dip in U_T) for 25 cycles • <5% (>95% dip in U_T) for 5 sec	• <5% U_T (>95% dip in U_T) for 0.5 cycle • 40% U_T (60% dip in U_T) for 5 cycles • 70% (30% dip in U_T) for 25 cycles • <5% (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the uses of the *Accurus*® System requires continued operation during power mains interruptions, it is recommended that the *Accurus*® System be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3 Vrms 3V/m	Portable and mobile RF communications equipment should be used no closer to any part of the *Accurus*® System, including cables, than the recommended separation distance calculated from the equation applicable to the frequency to the transmitter. Recommended separation distance: $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating to the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strength from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with following symbol. 

Note: U_T is the a.c. mains voltage prior to application of the test level.
Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To access the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the *Accurus*® System is used exceeds the applicable RF compliance level above, the *Accurus*® System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the *Accurus*® System.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 1-4 Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the *Accurus*® Ophthalmic Surgical System - The *Accurus*® System is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the *Accurus*® System can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the *Accurus*® System as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rates at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1 - At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2 - These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

Cautions and Warnings

Please contact Alcon for instrument setup and in-service training.

CAUTION

A qualified technician must perform a visual inspection of the following components every twelve months: warning labels, power cord, and fuses. In case of deficiency, do not use the system; call Alcon Technical Services.

CAUTION

A qualified technician must check ground continuity and both polarities for leakage currents every twelve months to ensure they are within the applicable standards (for example: EN 60601-1 / IEC 60601-1). Values must be recorded and if they are above the applicable standards, do not use the system; call Alcon Technical Services.

WARNING!

Use of accessories and cables other than those provided may result in increased emissions or decreased immunity of the system. Portable and mobile RF communications equipment can affect this medical electrical equipment.

If you have any questions or require additional information, please contact your local Alcon representative or the Technical Services Department. For locations outside the USA, please contact your local authorized Alcon Service/Sales office.

- Good clinical practice dictates the testing for adequate irrigation, aspiration flow, and operation as applicable for each handpiece prior to entering the eye.
- Do not use the *Accurus*® system near flammable anesthetics.
- Use only Alcon-supplied A.C. power cords. Prior to plugging the power cord into its power source, ensure that the proper voltage selection has been made. See section fifteen of this manual for instructions.
- Provide at least two feet of clearance at the rear of the unit for fan intakes and exhausts. This ensures unrestricted air flow for adequate console cooling.
- A handle on the instrument cart is used for moving the instrument. The cart should be pulled, not pushed, over elevator and door thresholds.

WARNING!

The Accurus® power cord is a medical grade power cord with the least leakage current per foot rating available. Extension of the power cord by hospital staff is not recommended. Unauthorized extension of the power cord could result in injury.

Cautions and Warnings

Presurgical Setup Instructions

Presurgical setup instructions must be performed as outlined in sections four, eight, and twelve of this manual. If an error message is displayed on the front panel, refer to troubleshooting instructions in section sixteen of this Manual. If a problem persists, DO NOT PROCEED. Contact your local Alcon Surgical Service Representative.

NOTE: If an inconsistency exists between the setup instructions in this manual and the Directions For Use (DFU) supplied with a consumable pak, follow the DFU.

Vitreous Probes

Do not operate vitreous probes in air. This could result in performance degradation and/or potential hazard.

MPC Scissors

WARNINGS!

Use of a MPC scissors handpiece at high cut rates continuously for over 2.5 minutes can result in excessive handpiece heating. Allow the scissors to cool for approximately 30 minutes between heavy usage of this type.

The MPC scissors output is floating with respect to grounded metal front panel surfaces. Water, *BSS PLUS*®, or any other conductive liquid on, or in the vicinity of, the MPC socket can short out the floating output. Ensure that the MPC front panel socket is dry and clean prior to using the MPC scissors.

Ultrasonic Handpieces

Power loss may occur if handpiece tip is not securely tightened into *Fragmatome*™ * and Phaco handpieces.

WARNING!

Use of a Phaco handpiece at power settings greater than 80% continuously for over 4 minutes can result in ultrasonic system failure. Allow the system to cool for 8 minutes between heavy usage of this type.

If proper cleaning procedures are not performed immediately after each surgical procedure, tissue debris and salts from irrigating solution may collect. This could permanently damage the handpiece and could jeopardize cleanliness and/or create biohazard conditions for the patient. Remove all debris prior to autoclaving handpiece.

CAUTION

Never ultrasonically clean the *Fragmatome*™* and Phaco handpieces; irreparable damage will result.

WARNINGS!

Use of the phaco handpiece in the absence of irrigation flow and/or in the presence of reduced or lost aspiration flow can cause excessive heating and potential corneal and/or scleral burns.

Use of the *Fragmatome*™* handpiece in the absence of aspiration flow can cause excessive heating and potential scleral burns.

Cautions and Warnings

Handpiece Tips

Scissors, frag, and phaco handpiece tips must be fully tightened to their handpieces. If not secured properly, the handpieces may not operate correctly. Ensure, however, that tips are not so tight that they cannot be removed after use. Use only Alcon supplied fragmentation tip wrenches; otherwise, damage to tips and/or handpiece may occur.

WARNINGS!

For phaco surgery use only Alcon-certified *Mackool* or *Turbosonics*® *MicroTip*™* configurations (.9 mm). Alcon does not recommend the use of standard *Turbosonics*® tips (1.0 mm or 1.1 mm) with the *Accurus*® system.**

During any ultrasonic procedure, metal particles may result from inadvertent touching of the ultrasonic tip with a second instrument. Another potential source of metal particles resulting from any ultrasonic handpiece may be the result of ultrasonic energy causing micro abrasion of the ultrasonic tip.

Diathermy Function

To ensure safe operation of the Diathermy function, use only Alcon cables and accessories. Diathermy performance can be guaranteed only when using Alcon Surgical components or Alcon-endorsed components. Cables should always be positioned in such a way that contact with the patient is prevented.

Interference produced by the operation of high-frequency surgical equipment may adversely influence the operation of other electronic equipment.

Accessories should be checked regularly. Electrode cables, particularly, should be checked for possible damage to the insulation.

See Figures 1-4 and 1-5 for diathermy power specifications.

WARNING!

- **Do not use the diathermy function on patients with pacemakers or implanted defibrillatory devices. If electrosurgery is used on patients with implanted cardiac pacemakers or defibrillatory devices or pacemaker electrodes, be aware that irreparable damage to the pacemaker or defibrillatory device and its function may occur and lead to ventricular fibrillation. Please check with the pacemaker or defibrillatory device manufacturers for their recommendations.**
- **Failure of the HF surgical equipment (diathermy circuitry) could result in an unintended increase of output power.**

Listed below are general precautions to be followed when using the Diathermy function:

- To ensure safe operation of the Diathermy function, only approved cables and accessories must be used (See your Alcon representative). Diathermy performance can be guaranteed only when using Alcon components or Alcon-endorsed components.
- To reduce the risk of accidental burns, caution should always be taken when operating high-frequency surgical equipment.
- Interference produced by the operation of high-frequency surgical equipment may adversely influence the operation of other electronic equipment.
- Accessories should be checked regularly; electrode cables should particularly be checked for possible damage to the insulation.
- The lowest power level in Diathermy step should always be selected for the intended purpose.
- Skin-to-skin contact (for example between the arms and body of the patient) should be avoided, for example by insertion of dry gauze.
- When HF (high frequency) surgical equipment and physiological monitoring equipment are used simultaneously on the same patient, any monitoring electrodes should be placed as far as possible from the surgical electrodes. Needle monitoring electrodes are not recommended.
- In all cases, monitoring systems incorporating high frequency current-limiting devices are recommended.
- The cables to the surgical electrodes should be positioned in such a way that contact with the patient or other leads is avoided.
- Temporarily unused active electrodes should be stored so that they are isolated from the patient.
- The use of flammable anaesthetics or oxidizing gases such as nitrous oxide (N_2O) and oxygen should be avoided if a surgical procedure is carried out in the region of the thorax or the head, unless these agents are sucked away.
- Non-flammable agents should be used for cleaning and disinfection wherever possible.
- Flammable agents used for cleaning or disinfecting, or as solvents of adhesives, should be allowed to evaporate before the application of HF surgery. Some materials, for example cotton, wool and gauze, when saturated with oxygen may be ignited by sparks produced in normal use of the HF surgical equipment.

Illuminator Function

Housed inside the illuminator drawer are two bulbs that provide two channels of illumination. Two front panel sockets accept fiber optic light guides to provide intraocular illumination. To gain access for bulb replacement or servicing, follow directions in section eleven of this manual. Be aware that using the illuminator at high settings (HI 1, HI 2, or HI 3) will reduce the life of the bulbs.

WARNING!

The illuminator bulbs become extremely hot. Never handle a bulb until it has cooled considerably from its operating temperature. Do not touch bulb directly with fingers at any time.

Cautions and Warnings

Footswitch
Never pick up or move the footswitch by holding the cable. Damage may result.

Cassette
During initialization the drain pump is rotated to the home position; therefore, keep hands and fingers clear of cassette well during power-on initialization. Manually rotating the hub roller in the cassette well when power is on and a cassette is not installed can cause incorrect cassette loading and/or can cause injury to fingers.

WARNINGS!

All fluids aspirated during surgery should be treated as biohazards. Take appropriate precautions when handling instruments and lines in contact with aspirated fluids.

Drain bag volume should not exceed 500cc "Max. Capacity." Exceeding this volume may result in a biohazardous condition.

Consumables
Do not use consumable paks beyond the expiration date stamped on the outer packaging. Sterile consumable medical devices should not be reused (Accreditation Manual for Hospitals, 1982); they are intended for single use only. Improper usage or assembly could result in a potential hazardous condition for the patient. Alcon assumes no responsibility for complications that may arise as a result of the reuse or improper usage of consumables.

The equipment used in conjunction with Alcon *Accurus*® consumables constitutes a complete system. Use of consumables other than Alcon consumables may affect system performance and create potential hazards, and if it is determined to have contributed to the malfunction of the equipment under service contract, could result in the voidance of the contract and/or invoicing at prevailing hourly rates.

WARNING!

Attach only Alcon supplied consumables to console and cassette luer fittings. Do not connect consumables to the patient's intravenous connections.

In all cases, the instrument setup instructions contained in this manual, and all label instructions in the package, should be thoroughly understood prior to using any of the *Accurus*® Pak configurations.

Ensure that tubing is not occluded during any phase of operation.

Cautions and Warnings

Consumable Paks

If any item in a consumable pak is received in a defective condition, Alcon is to be notified immediately. Do not use any of the contents if the sterile package is damaged or the seal is broken in any way. Paks are identified by lot number that provides traceability and should be given to the Customer Service Department.

Phone Alcon Customer Service At:
(800) 862-5266 or
(817) 293-0450

Please Write To Alcon At:
Alcon
Attn: Product Complaints
6201 South Freeway
Fort Worth, TX 76134-2099

Diathermy, Cautery, Coagulation

In the past, some of Alcon's products have referred to the feature "Cautery" or "Coagulation." The *Accurus*® system and this operator's manual use the word "Diathermy" based on the following definitions:

- Diathermy - introducing an electric field into a body part to produce heat.
- Cautery - cutting and burning method associated with two hot wires passing a current between them; cutting away skin; halting bleeding.
- Coagulation - an isolated bipolar current supplied to conductors (e.g. forceps). Current passes between these electrodes, halting bleeding.

Product Service

For product service, please contact Alcon's Technical Services Department at the number provided below.

Operators experiencing problems with the system should refer to the Operating Instructions and Troubleshooting sections of this manual. A problem which persists should be referred to the Alcon Technical Services Department or your local authorized service representative.

For optimum performance, it is the user's responsibility to schedule preventive maintenance service on the system and its accessories: two times each year for anterior systems, and one time each year for posterior systems. Alcon's Field Service Engineers are trained and equipped to provide the highest quality of workmanship.

Safety performance should be verified by the user (e.g., qualified service personnel) at least twice a year. Ground resistance must be under 0.1 ohms. Leakage current must be under 75 μA (for 90 to 132 VAC, 60 Hz operation) and under 390 μA (for 198 to 264 VAC, 50/60 Hz operation).

To avoid unnecessary shipping, please contact your Alcon Technical Services Department prior to return of any system or accessories. If return of the equipment is

deemed necessary, a Return Material Authorization will be issued with appropriate shipping instructions.

Alcon Laboratories, Inc.
Technical Services Department
15800 Alton Parkway
Irvine, California 92618-3818
(949) 753-1393
(800) 832-7827

Limited Warranty

Alcon Laboratories, Inc., will repair or replace at its option, any system or accompanying accessories found to be defective in material and/or workmanship for a period of one (1) year from the date of initial installation. This warranty applies to the original purchaser of the system, when said system is properly installed, maintained, and operated in accordance with published instructions.

Alcon Laboratories shall not be obligated to provide services under this warranty for damage to or destruction of systems covered where such damage or destruction is (i) a result of or caused by fire or explosion of any origin, riot, civil commotion, aircraft, war, or any Act of God including, but not limited to lightning, windstorm, hail, flood, earthquake, or (ii) caused by customer's misuse or improper servicing of said systems.

The express warranty above is the sole warranty obligation of Alcon, and the remedy provided above is in lieu of any and all other remedies. There are no other agreements, guarantees, or warranties — oral or written, express or implied — including without limitation warranty of merchantability or fitness for a particular purpose. Alcon shall have no liability whatsoever for any incidental or consequential damages arising out of any defect, improper use, or unauthorized service or repair.

WARNING!

The disposables used in conjunction with Alcon instrument products constitute a complete surgical system. Use of disposables and handpieces other than those manufactured by Alcon may affect system performance and create potential hazards. If it is determined that disposables or handpieces not manufactured by Alcon have contributed to the malfunction of the equipment during warranty period, service will be provided at prevailing hourly rates.

CONSOLE

DIMENSIONS:

Height:	50.8 cm (20.0 inches)
Width:	48.3 cm (19.0 inches)
Depth:	52.1 cm (20.5 inches)

WEIGHT:

Unpacked:	40.8 kg (90 pounds)
Packed:	61.4 kg (135 pounds)

ENVIRONMENTAL LIMITATIONS:

	Operating	Non-Operating
Altitude:	3,048 m (10,000 feet)	12,191 m (40,000 feet)
Temperature:	10° C to 35° C (50° F to 95° F)	-40° C to 75° C (-40° F to 167° F)
Relative Humidity:	10% to 95% without condensation	10% to 95% without condensation

ELECTRICAL REQUIREMENTS: The console accepts the following ranges or input commercial power voltages and frequencies and meets the leakage currents specified in IEC 60601-1. Protection against electrical shock is Class I.

100-120 Vac	50/60 Hz	10 A max.	Fuse: T 10 A / 250 V slow blow
220-240 Vac	50/60 Hz	6 A max.	Fuse: T 5 A / 250 V slow blow

FOOTSWITCH

DIMENSIONS:

Height:	14.0 cm (5.50 inches)
Width:	22.9 cm (9.00 inches)
Depth:	43.2 cm (17.0 inches)

WEIGHT: 4.5 kg (10 pounds)

ENVIRONMENTAL: The footswitch construction is water tight in compliance with IEC 60601-1 and IEC 60601-2-2, subclause 44.6 aa.

ELECTRICAL: The footswitch is connected to the console via electrical cable. All power and communications enter/exit the footswitch from this cable.

CART & IV POLE

DIMENSIONS:

Cart Height:	102 cm (40 inches)
Cart Width:	72 cm (28.5 inches)
Cart Depth:	76 cm (30 inches)

	POWER	MANUAL
Minimum Pole Height:	152 cm (60 inches)	157 cm (62 in)
Maximum Pole Height:	259 cm (102 inches)	264 cm (104 in)
Maximum Unloaded Weight:	68 kg (185 pounds)	same

ENVIRONMENTAL LIMITATIONS:

Operating Temperature:	10° C – 40° C (50° F – 104° F)
Relative Humidity:	30% – 75%, non-condensing

ELECTRICAL REQUIREMENT: 24 VDC, 0.6 A nominal/2.0 A maximum

PERFORMANCE SPECIFICATIONS

AIR PRESSURE @ SEA LEVEL:

VGFI™* system, AVGFI, CVGFI, F/AX:	0 to 120 mmHg
Flow Rate:	1.2 slpm min. @ 120 mmHg

AIR CONSUMPTION:

@ 105 psi	70 slpm max.
@ 5-bar	70 slpm max.

DIATHERMY:

25 Watts max., 75 Ohm load
110 Vpp @ 340 ±17 Khz, 75 Ohm load
129 Vpp @ 340 ±17 Khz, no load

ILLUMINATION:

Intensity:	6.0 lumens min. @100% 10.5 lumens min. @ highest setting (HI3)
Bulb Life:	50 hours min. @100% 11 hours min. @ highest setting (HI3)

VACUUM @ SEA LEVEL:

	(105 psi)	(5-BAR)
Vitrectomy:	0 to 600 mmHg	0-400 mmHg
Fragmentation:	0 to 600 mmHg	0-450 mmHg
Extrusion:	0 to 600 mmHg	0-450 mmHg
Extraction:	0 to 600 mmHg	0-450 mmHg
Irrigation/Aspiration:	0 to 600 mmHg	0-450 mmHg
Phacoemulsification:	0 to 400 mmHg	
Prime:	450 mmHg	

VITRECTOMY:

Submodes:	Proportional Vacuum, Momentary Cut†, 3D Proportional
Accurus® Probe:	100 to 800 cpm
Accurus® 1500 Probe:	100 to 1500 cpm
Accurus® 2500 Probe:	100 to 2500 cpm
InnoVit® Probe:	100 to 1800 cpm

† 1 cpm is available in Momentary Cut submode

FRAGMENTATION:

Submodes:	Linear, Momentary, Fixed, 3D
Tip Stroke @ 100%:	78.7 ±10.2 µm (.0031 ±.0005 in.)
Resonant Frequency:	39.0 ± 1.9 KHz
Pulse Rate Range:	0-15 pps

SCISSORS:

Submodes:	Proportional, Multiple Cut, MPC
Proportional Pressure:	3.5 to 275.8 KPascal (0.5 to 40 psi)
Multi Cut Rate:	single cut to 300 cpm
MPC Cut Rate:	single cut to 450 cpm

REFLUX:

Pulsed Micro Reflux:	20 - 50 µL per cycle
Continuous:	Flow rate depends on irrigation pressure (with supported cassette)

VISCOUS FLUID CONTROL:

Submodes:	Inject, Dual, Extract
Injection Pressure:	0 to 551.6 KPascal (0 to 80 psi) 0 to 482.7 KPascal @ Reduced (0 to 70 psi)
Extract Vacuum at Sea Level:	0 to 600 mmHg (0-450 mmHg @ Reduced)

PHACOEMULSIFICATION:

Submodes:	Linear, Burst, Fixed, 3D
Tip Stroke @ 100%:	88.9 ±27.0 µm (.0035 ±.0005 in.)
Resonant Frequency:	38.0 ± 1.9 KHz
Pulse Rate Range:	0-15 pps (Linear and Fixed submodes only)
Burst Length:	30 to 500 mS

ANTERIOR VITRECTOMY:

Submodes:	Wet, Dry
Accurus® Probe:	100 to 800 cpm
Accurus® 2500 Probe:	100 to 2500 cpm

DOCTOR MEMORIES:

Storage Capacity:	40 Doctors
Memory Cells per Dr:	11 (5 anterior, 5 posterior, 1 common)

TIMER:

Range:	0 to 99 h
Resolution:	1 s

TONE VOLUMES @ 1 Meter:

Errors/Faults/Invalid Key:	40 to 65 dB, short tones
Diathermy:	40 to 65 dB, continuous tone
Advisory/Timer Expire/Elev Infusion:	0 to 65 dB, short tones
Frag/Phaco/Vacuum:	0 to 65 dB, continuous tone
Valid Key:	Factory set and not adjustable
Volume Accuracy:	6 dB

VOICE CONFIRMATION: 0 to 65 dB

REMOTE CONTROL:

Method:	Infrared
Channels:	4

POWER IV POLE:

Pressure Ranges:	5 - 85 ±3 mmHg
Pole Speed:	8.0 cm/s (3.1 inches/second)

Table 1-5 ***ACCURUS*® OPHTHALMIC SURGICAL SYSTEM SPECIFICATIONS - This table is a quick reference point to identify system specifications, system requirements, and performance figures.**

Term or Abbreviation	Description
Anterior *VGFI*™*	Anterior Vented Gas Forced Infusion.
BSS PLUS®	Balanced Salt Solution enriched with bicarbonate, dextrose, and glutathione.
cmH_2O	Centimeters of water.
Combined *VGFI*™*	Combined Vented Gas Forced Infusion.
cpm	Cuts Per Minute.
Detent	A discrete footpedal position at which more force is required to depress the footpedal to the next position.
Diathermy	The production of heat in body tissues by electric current for therapeutic purposes.
Extrusion	A mode where vacuum is available to remove fluid/matter.
F/AX	Fluid Air Exchange.
Frag	Fragmentation.
Global Function	A function whose status and controls are independent of the current footpedal position and surgery mode.
Highlighted	To center attention by video reversing the function key and changing the key color from gray to blue.
I/A	Irrigation/Aspiration.
IEC	International Electromechanical Commission.
ISO	International Standards Organization.
IV	Intravenous.
LCD	Liquid Crystal Display.
LED	Light Emitting Diode.
mmHg	Millimeter of Mercury. A unit of vacuum.
MPC	Membrane Peeler Cutter. Electrically activated scissors.
N/A	Not Applicable.
PEL	Patient Eye Level. A difference in height between the cassette and the patient eye level.
PIN	Personal Identification Number.
psi	Pressure per Square Inch. A unit of pressure.
pps	Pulses Per Second.
slpm	Standard Liters Per Minute.
U/S	Ultrasound.
VFC	Viscous Fluid Control.
Vit	Vitrectomy. Extraction of the vitreous from the vitreous cavity.

Table 1-6 TERMS AND ABBREVIATIONS - Terms and abbreviations used with the *Accurus*® system are defined in this table.



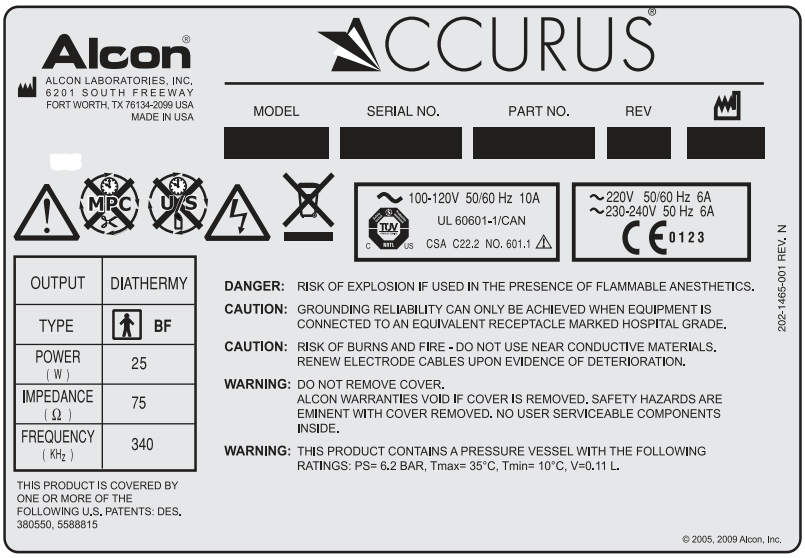
Figure 1-2 ICONS USED WITH THE *ACCURUS*® OPHTHALMIC SURGICAL SYSTEM - Icons identifying modes, functions, etc., that are used with the *Accurus*® system are identified in this chart.



UPGRADE CONNECTORS LABEL



FLASH CARD INSERTION SLOT LABEL



ACCURUS® NAMEPLATE LABEL (1/2 SCALE)

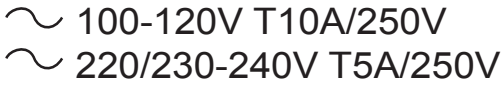
AIR PRESSURE INPUT LABEL



FOOTSWITCH CONNECTOR LABEL



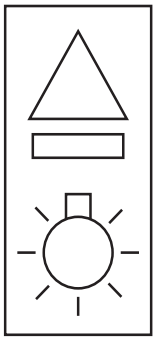
I/V POLE CONNECTOR LABEL



ELECTRICAL INPUT LABEL



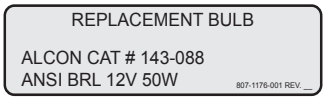
ACCURUS® FOOTSWITCH ID LABEL



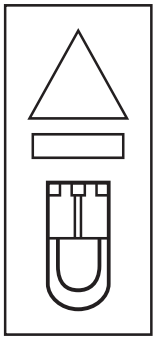
ILLUMINATOR EJECTOR LABEL



EQUAL POTENTIALITY LABEL



BULB SPECIFICATION LABEL



CASSETTE EJECTOR LABEL

Figure 1-3 **LABELING USED ON THE *ACCURUS*® OPHTHALMIC SURGICAL SYSTEM - Labels used on the *Accurus*® console are identified and illustrated here.**

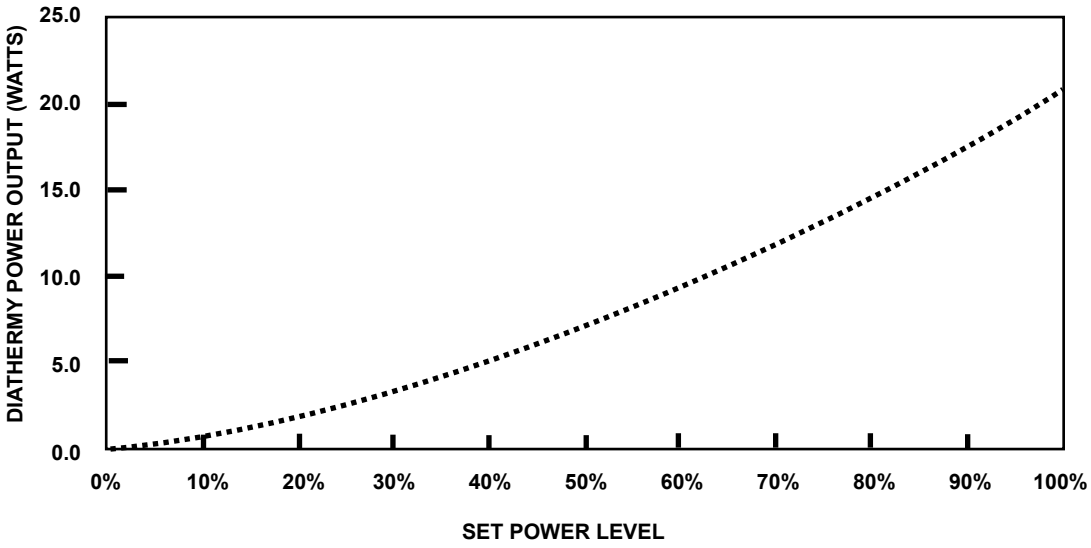


Figure 1-4 DIATHERMY POWER THROUGH 75 OHM LOAD

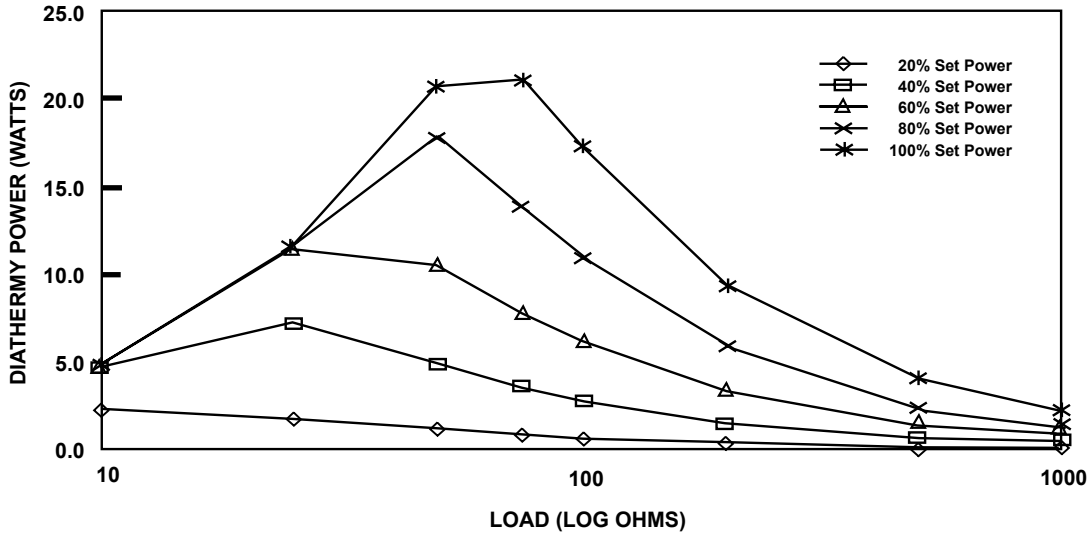


Figure 1-5 DIATHERMY POWER VS. LOAD IMPEDANCE

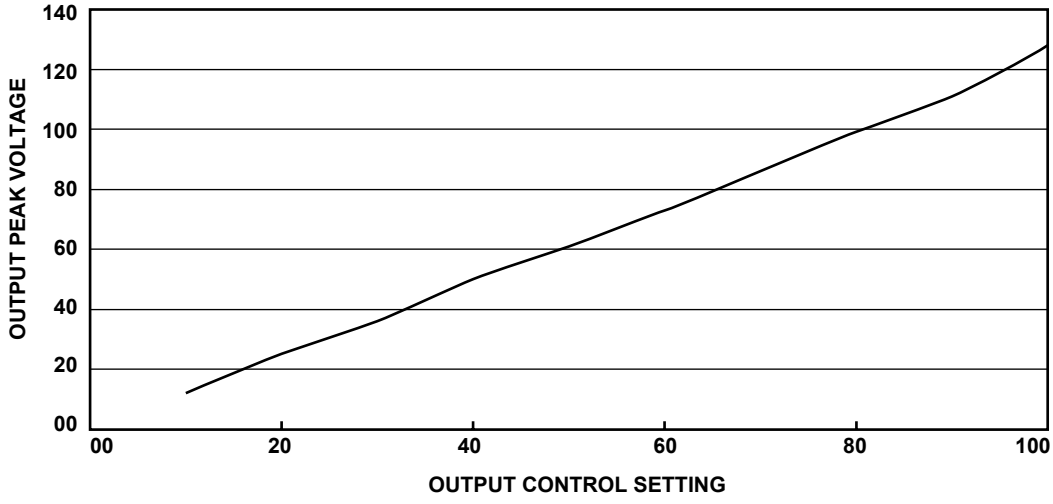


Figure 1-6 DIATHERMY OUTPUT VOLTAGE VS. OUTPUT CONTROL SETTING
Note: Maximum output peak-to-peak voltage is about 140V without resistive load.

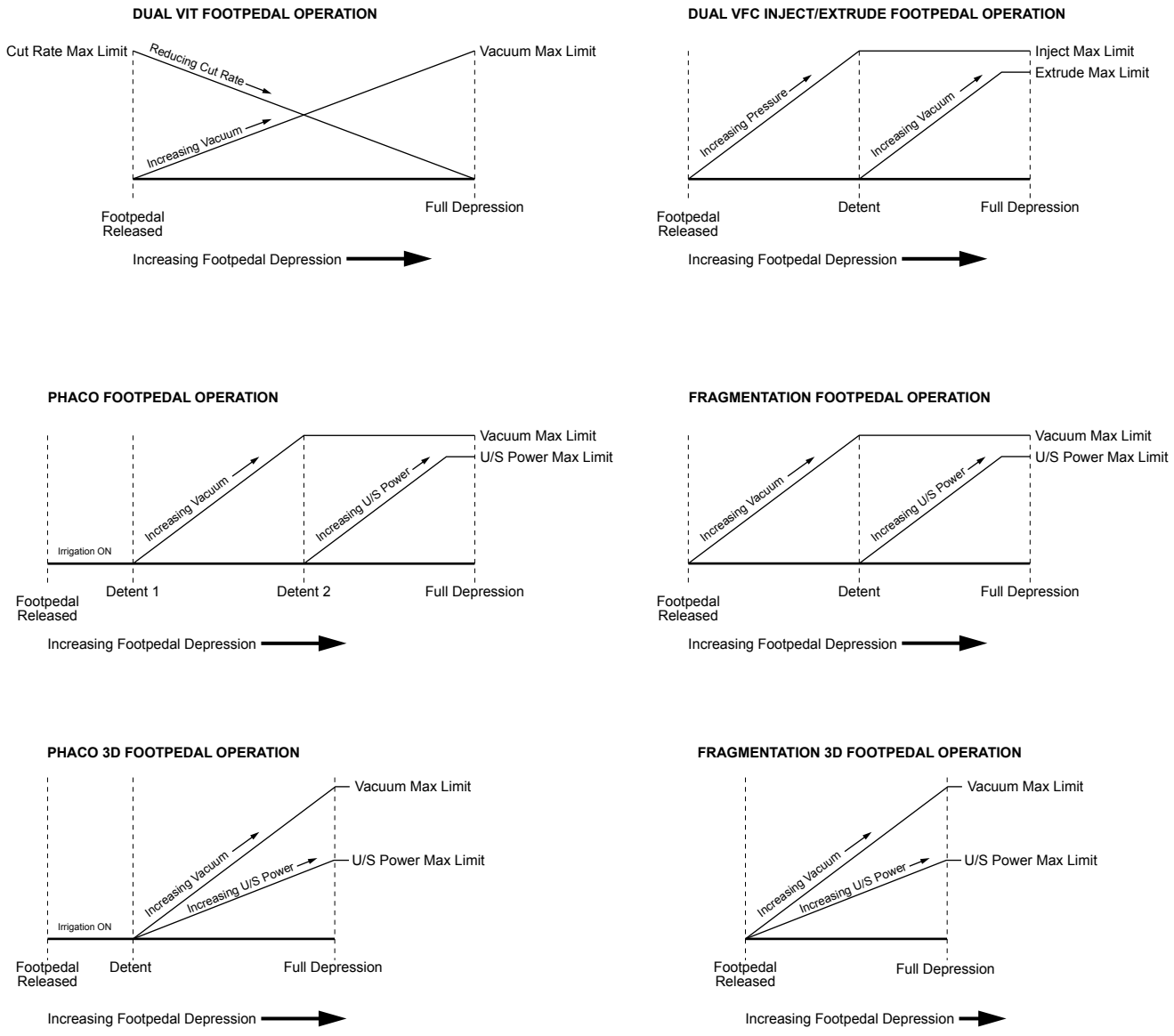


Figure 1-7 **FOOTPEDAL OPERATION WHEN CONTROLLING MORE THAN ONE PROPORTIONAL FUNCTION - The footpedal controls different system functions as it is depressed in proportional modes of operation.**

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SECTION TWO
GENERAL DESCRIPTION

THE *ACCURUS*® OPHTHALMIC SURGERY SYSTEM

The *Accurus*® Ophthalmic Surgical System is a multifunctional surgical tool for use in anterior and posterior segment ophthalmic surgeries. Its capabilities include driving a variety of probes and handpieces which provide the ability to cut vitreous and tissues, emulsify the lens, illuminate the posterior segment of the eye, and apply diathermy to stop bleeding. Vacuum is used to remove ocular matter from the eye, and is provided by connecting tubing from the handpiece to a port on the fluidics cassette. Infusion or irrigation capability is provided to replace fluid in the eye, and enters the eye either directly via an infusion cannula or flows through a handpiece. The operator controls console functions using the graphical user interface screen, front panel keys, wireless remote, and footswitch. The *Accurus*® console is shown in Figure 2-1.

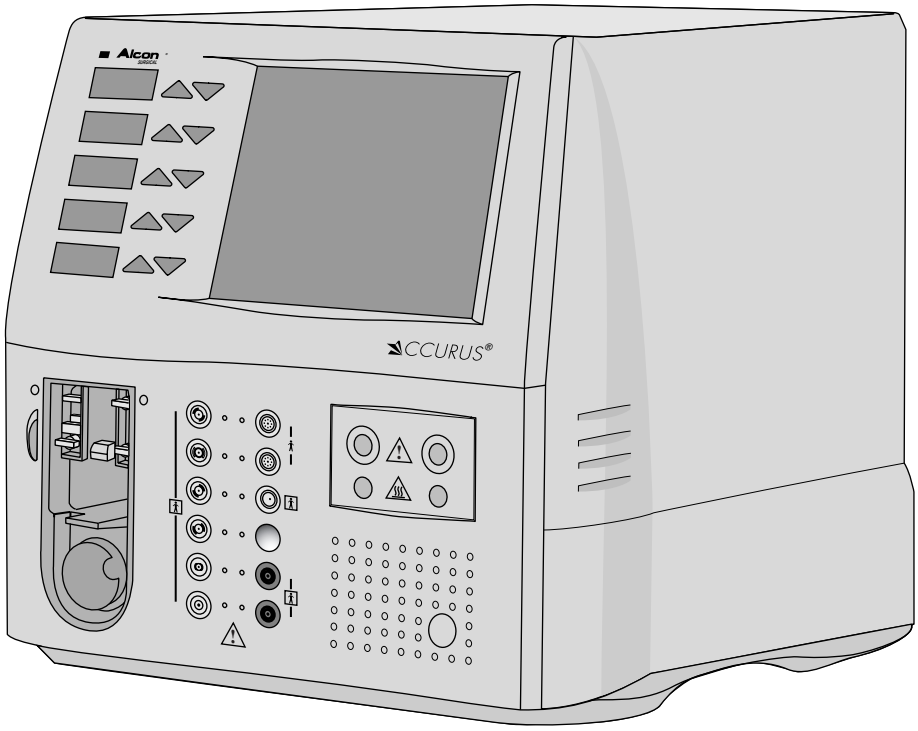


Figure 2-1. THE *ACCURUS*® CONSOLE - The *Accurus*® console, shown here without accessories attached, houses the mechanical, electrical, and pneumatic drive functions which power the connected accessories for ophthalmic surgery. The controlling software and firmware reside inside the console, and overall system coordination and hazard mitigation is centralized to the console. This illustration is representative of the 800CS, 600DS, 400VS, and 300VS models. The 200PS model is identical except the illuminator drawer is removed.

FRONT PANEL COMPONENTS

The front panel of the *Accurus*® system is a multifunctional user interface that allows user control of most system functions. The descriptions of the front panel components are coded to match the illustration in Figure 2-2, which is a helpful reference while learning the system's functions.

1. Global Functions
   The global functions area of the system is located at the top-left portion of the front panel. Global functions can be used any time and in any mode. Its three major components are described below.

   1A. Global Function Selection Keys
   These five keys, located within the color LCD display, are used to select the following functions (from top to bottom):
   - Infusion/Irrigation pressure
   - Fluid/Air Exchange pressure
   - Diathermy power
   - Two light sources for fiber optic illumination

   1B. Global Function Up/Down Adjustment Buttons
   The up/down adjustment buttons are located to the left of the global function selection keys, and are used to adjust their associated global function values. These buttons can be pressed quickly to change values one digit at a time, or pressed and held to rapidly change the values.

   1C. Global Function LED Displays
   The five LED displays, located to the left of the adjustment buttons, display current global function settings when a global function is on, or while a setting is being adjusted.

   The Diathermy global function is always enabled for footswitch activation, and its LED readout is always lit; its icon key illuminates bright blue when activated.

2. Color LCD Display and Touch Screen
   The color LCD display and touch screen is located in the upper-right section of the front control panel. This graphic user interface displays icons, keys, and readouts appropriate to the mode of operation and system status. The operator presses the icons and keys on the screen to interact with the system.

3. Fluid Cassette with Aspiration and Irrigation Ports
   Three types of cassettes are used with the *Accurus*® system, each with its own assortment of male/female ports designed for connection of irrigation/infusion and aspiration/extrusion tubing. For posterior there are two aspiration ports, for anterior there are two irrigation ports and one aspiration port, and for combined anterior/posterior there are three irrigation/infusion ports and two aspiration/extrusion ports.

   Cassettes used with the *Accurus*® system convert vacuum generated by the console into aspiration/extrusion, and collect the aspirated fluid into a small, rigid, collection chamber. The collection chamber is continuously drained into a sealed drain bag, hanging from the front of the cassette. The cassette's design allows it to be removed from the console without spilling the collected fluids.

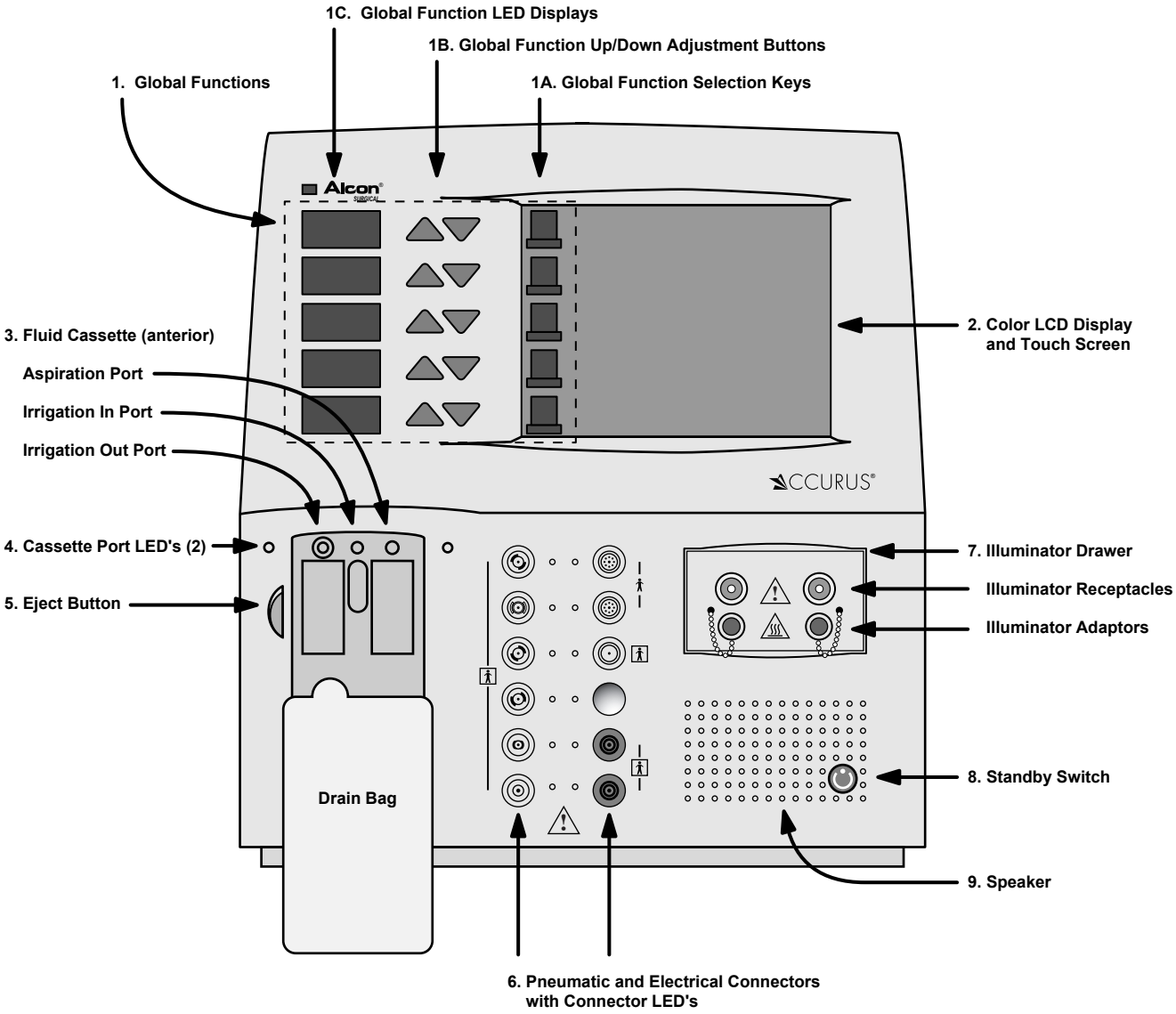


Figure 2-2. THE *ACCURUS*® FRONT PANEL (Depicted: 300VS, 400VS, 600DS, 800CS) - The front panel consists of five three-character, seven-segment LED displays; five sets of membrane up/down arrow keys; a color LCD with touchscreen; a cassette eject button; two cassette port LED's; up to twelve handpiece/probe connectors; an illuminator drawer with two illuminator ports; and a power On/ Off standby switch. Three cassettes are available for use with the *Accurus*® system; the anterior cassette is shown in this illustration. NOTE: Item 7 (Illuminator Drawer) is removed in the 200PS model.

4. Cassette Port LEDs
One LED is located on each side of the cassette. During surgery, and while priming, the LEDs illuminate to indicate which cassette port is active.

5. Eject Button
Pressing the Eject button, located to the left of the cassette, releases the latch that secures the cassette within its receptacle, allowing removal of the cassette. This button is active when the system is supplied with air pressure, but is invalid when vacuum is activated or system power is turned OFF. The cassette will not load or unload if MPC scissors are activated.

6. Pneumatic and Electrical Connectors
The *Accurus*® console contains two vertical columns of connectors, with six connectors in each, for surgical probes and handpieces. The left column is for pneumatic probes, and the right column is for electrical handpieces. Figure 2-3 identifies each connector.

WARNING!

Connect only Alcon supplied consumables to console/cassette connectors. Do not connect consumables to patient intravenous connections.

Connector LED's
There are twelve LED's located next to their respective connectors on the front of the console. These LED's have dual functions:
• During surgery setup, when the operator selects a probe, handpiece or accessory, the corresponding LED illuminates to guide the operator to the correct connector.
• During surgery these LED's are used to indicate which connectors are active.

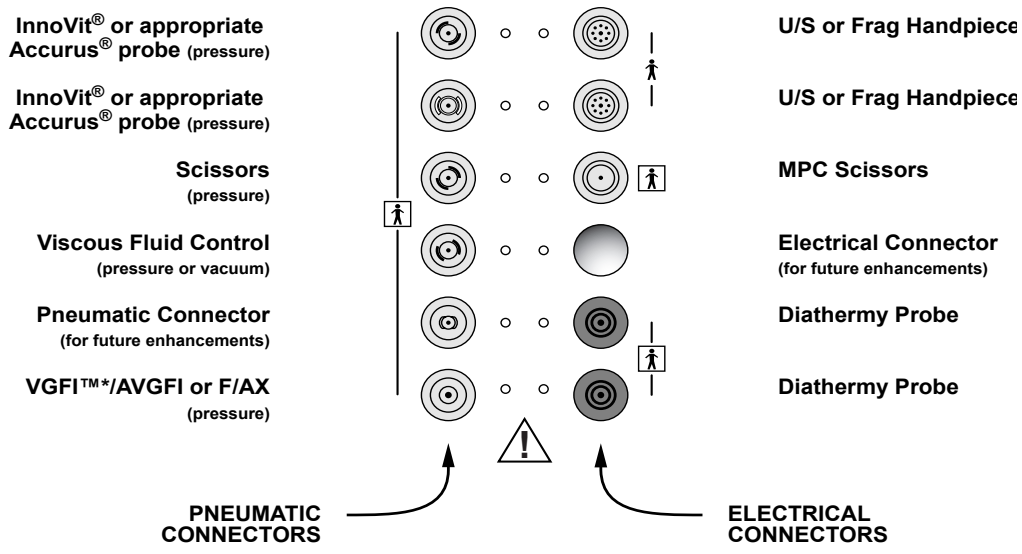


Figure 2-3. FRONT PANEL PNEUMATIC AND ELECTRICAL CONNECTORS, WITH CONNECTOR LED'S (Depicted: 300VS, 400VS, 600DS, 800CS)

7. Illuminator Drawer
The illuminator drawer contains bulbs, mirrors, and lenses to direct high intensity light to fiber optic illumination probes. Pushing the illuminator release button on the rear panel ejects the drawer from its slot (see Figure 2-4). When the illuminator drawer is ejected, both illuminators turn off, allowing the user to replace burnt bulbs. The bulbs only illuminate when the drawer is fully inserted into its slot.
• Illuminator Receptacles - Illuminator receptacles accept Intralux connectors.
• Illuminator Adaptors - Tethered ACMI adaptors are used to adapt Alcon illumination probes to the illuminator receptacles.

8. Standby Switch
This switch is used to turn internal DC power ON and OFF, usually between surgeries. Use the Main Power Switch (see Figure 2-4) to fully shut down the system for extended periods of time (overnight) to reduce power consumption and/or eliminate unnecessary operation of the *Accurus*® Power Supply.

9. Speaker
Voice confirmations and tones are emitted from the speaker, hidden behind the front panel grill, to audibly alert operator to system operating status (see Table 2-1).

TONE	DESCRIPTION
Voice	Voice confirmation provided when switching surgical modes/submodes, when doctor memory selected from drop down memory, when changing nominal/alternate/nominal infusion, when turning vit/frag ON/OFF, and every minute when infusion ≥51 mmHg (with tone every 15 sec.). If Voice set to zero, then tones are used for infusion changes and when vit/frag turned ON/OFF.
Alternate infusion/irrigation pressure enable/disable; Alternate infusion alarm	Single or double periodic tone, used when alternate irrigation/infusion pressure is enabled or disabled, and in the posterior domain when the infusion pressure is greater than or equal to 51 mmHg.
Diathermy	Continuous tone when Diathermy voltage is ON.
Fault, Error, Advisory	Single tone when system fault, error, or advisory is first displayed. The advisory tone is unique from the error/fault tone.
Invalid key	Single tone for an invalid touchscreen key or membrane button press, including attempts to go beyond parameter limits.
Valid key	Single tone for a valid touchscreen key or membrane button press.
Vacuum	Continuous tone when Vacuum is ON.
U/S	Continuous tone when U/S power is ON.
Timer expire	Single tone when count down timer has expired.
Treadle Up	Single tone when treadle returns to position 0.

Table 2-1. VOICES/TONES AND THEIR DESCRIPTIONS - Voice and tone volumes, set at the factory, can be adjusted in any screen where the Options key is available (in the Options/Volume screen, or Options/Memory/Common/Sound screen). The Fault, Error, Diathermy, and Invalid Key tones can not be lowered below a minimum value; all other adjustable tones can be turned completely off. If the Voice volume level is set to zero, then tones are used for infusion changes and when turning the vitreous cutter and fragmentation power on/off.

REAR PANEL COMPONENTS

The rear panel of the *Accurus*® system contains a variety of components. The descriptions of the rear panel components are coded to match the illustration in Figure 2-4, which is a helpful reference while learning the system's functions.

1. PC Card Slot
   The PC Card Slot is used to export and import doctors memories via a Doctor Memory Card, or to install system software upgrades (if required). The memory cards used for these functions are inserted into the slot and pushed in until it is firmly in place and the eject button is pushed out. Pushing the eject button will eject the card out of the slot.

2. Illuminator Exhaust Grate (not included with 200PS system)
   Warm air is expelled from the *Accurus*® console through this grate. An internal fan draws air past the illuminator components, keeping them cool for longer life. For proper cooling at least two feet of clearance must be provided at the rear of the unit to ensure unrestricted air flow.

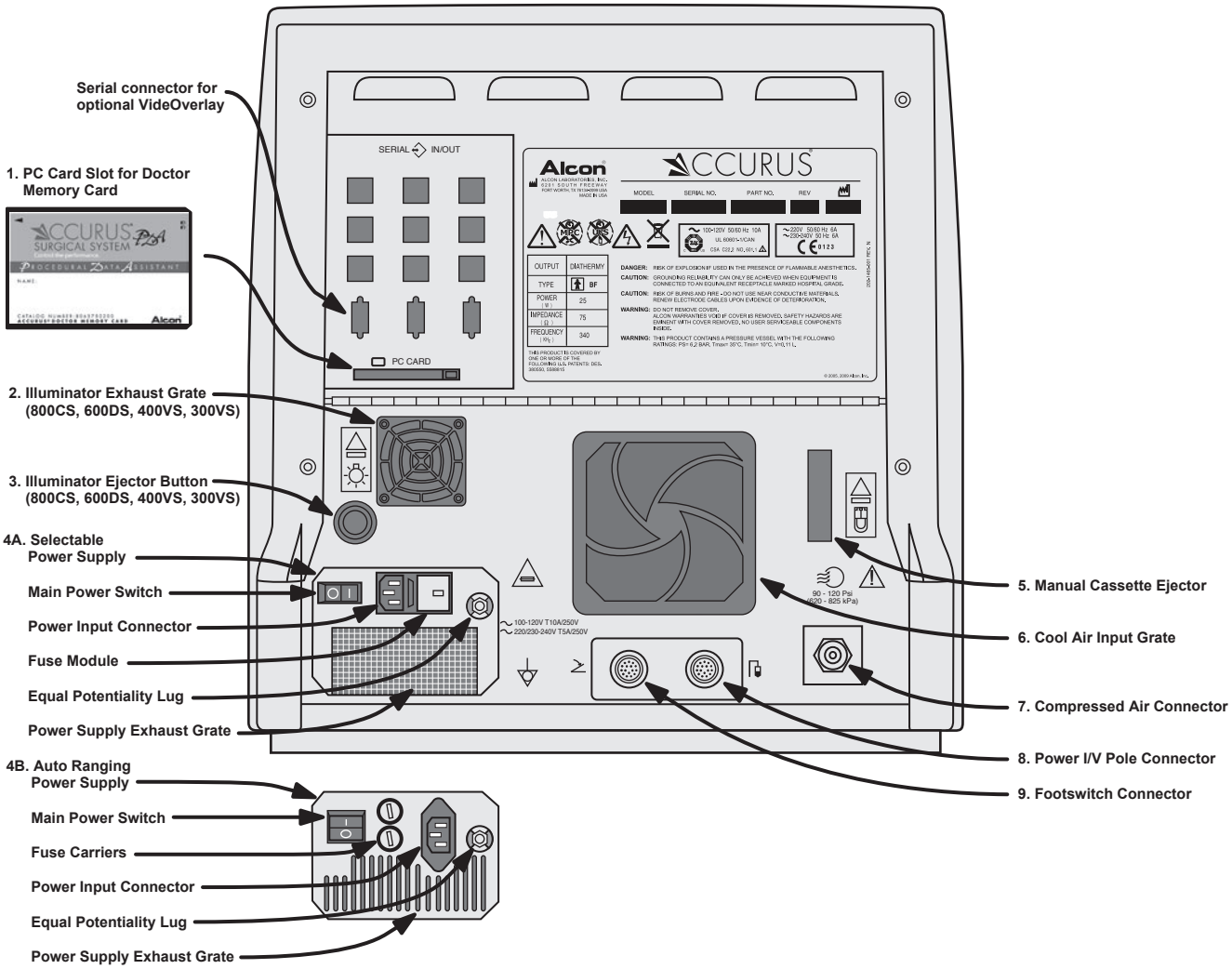


Figure 2-4. THE *ACCURUS*® REAR PANEL - The rear panel consists of a variety of components for functional use and connection of accessories. Included are a PC slot, air input and exhaust grates, an illuminator ejector button (800CS, 600DS, 400VS, 300VS only), a cassette ejector, a compressed air connector, a footswitch connector, and a power supply.

3. Illuminator Ejector Button (not included with 200PS system)
Pressing this button ejects the Illuminator drawer from the front of the console, allowing the user to change burnt illuminator bulbs. Two bulbs are provided, allowing a backup source should a bulb burn out during surgery. Upon completion of surgery, the burnt bulb should be replaced. (See section fifteen of this manual for instructions to replace bulbs.)

NOTE: It is recommended that two good bulbs are always installed.

4A. Selectable Power Supply with Main Power Switch, Power Input Connector, Fuse Module, Equal Potentiality Lug, and Power Supply Exhaust Grate

The Main Power Switch is used to fully shut down the system for extended periods of time (overnight) to reduce power consumption and/or eliminate unnecessary operation of the *Accurus*® Power Supply. The Power Input Connector accepts main power input from external electrical power source. The Fuse Module contains the fuse drawer and fuses, as well as the voltage selector box. (See section fifteen of this manual for fuse replacement and voltage selection.) The Equal Potentiality Lug is for Service personnel use, and also for equipotential equipment connection. Warm air is expelled from the Power Supply Exhaust Grate.

4B. Auto Ranging Power Supply with Main Power Switch, Power Input Connector, two Fuse Holders, Equal Potentiality Lug, and Power Supply Exhaust Vent.

The Main Power Switch is used to fully shut down the system for extended periods of time (overnight) to reduce power consumption and/or eliminate unnecessary operation of the *Accurus*® Power Supply. The Power Input Connector accepts main power input from external electrical power source. (The power supply selects correct voltage automatically.) The Fuse Holders contain two fuses. (See section fifteen of this manual for fuse replacement.) The Equal Potentiality Lug is for Service personnel use, and also for equipotential equipment connection. Warm air is expelled from the Power Supply Exhaust Vent.

5. Manual Cassette Ejector
Lifting this latch releases the fluid cassette when air pressure is not available or in the event of power outage. (See sections five, nine, and thirteen of this manual for instructions to use this cassette ejector.)

6. Cool Air Input Grate
Cool, filtered air enters the *Accurus*® console through this grate. The main system cooling fan is located directly behind the input filter. For proper cooling at least two feet of clearance must be provided at the rear of the unit to ensure unrestricted air flow.

7. Compressed Air Connector
An air pressure hose from a pressure source is connected here via a Schraeder connector for input of compressed air or compressed nitrogen.

8. Power I/V Pole Connector
For connecting the power I/V pole cable from its cart to the *Accurus*® console.

9. Footswitch Connector
For connecting the footswitch cable to the *Accurus*® console.

FOOTSWITCH

Functional operations to the *Accurus*® console are accepted from a footswitch. The footswitch consists of a footpedal, left and right horizontal/vertical switches, and left and right heel switches (see Figure 2-5). Functions controlled by the footswitch are listed in tables located in sections three, seven, and eleven of this manual. Some footswitch functions are programmable in the *Options/Memory/Common/Footswitch* screen.

Generally, the footpedal is used to provide control of a parameter, such as vacuum, with the footpedal's angle of depression proportional to the parameter output. In some modes of operation the footpedal is used to provide on/off control of a function, with any depression resulting in a fixed output of its parameter.

Right and left switches are used to enable and disable system functions. The switches are nudged sideways (horizontal) for some functions, and pressed down (vertical) for others.

A tension adjustment knob, located on the front of the footswitch, is used to regulate the pressure needed to depress the footpedal. Additionally, the footpedal must be pressed through detents to enter into new anterior and posterior mode positions. The detent force levels are programmable in the *Options/Memory/Common/Other* screen for phaco.

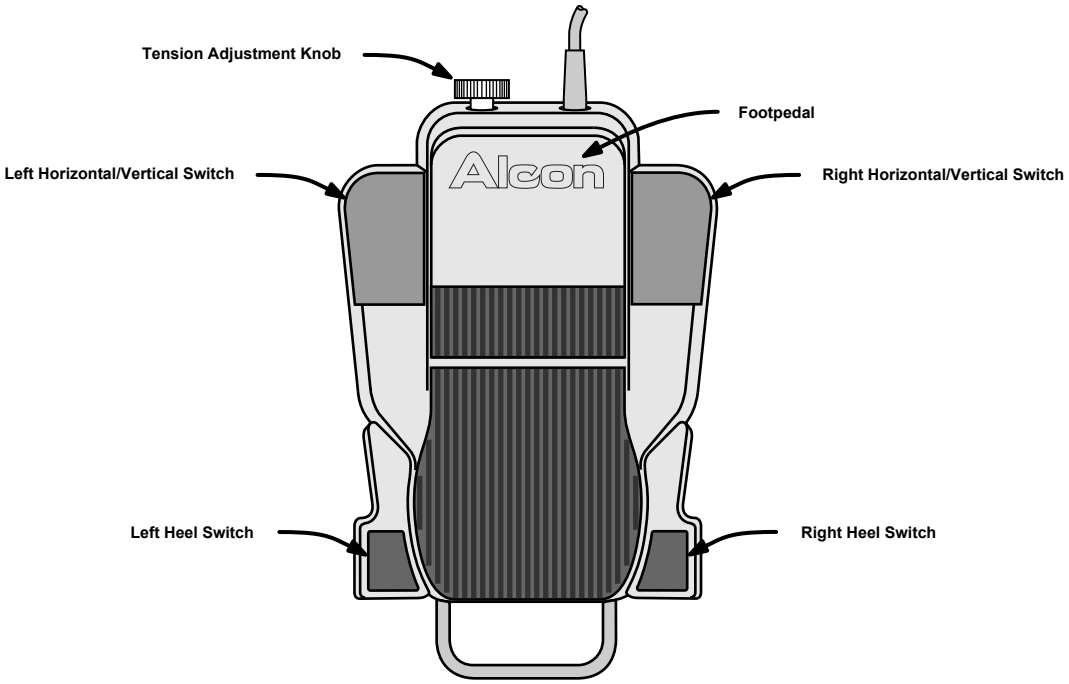


Figure 2-5. FOOTSWITCH - The footswitch is used to operate functions on the *Accurus*® system.

* FOR REFERENCE ONLY *

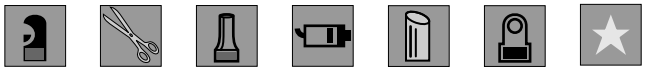
REMOTE CONTROL

A wireless remote control is provided for operator input (see Figure 2-6). The buttons on the remote control are arranged to approximate the respective controls on the console. All controls are backlit by heat actuation; i.e., illumination in low ambient light is activated when the sensor detects heat from the hand.

The remote control is wireless and can be used in one of two ways: it can be held by hand, or it can be set in the sterile tray and operated through a Remote Control Aseptic Transfer Package, allowing the scrub nurse to use it in the sterile field. The circulating nurse could also operate the remote in a non-sterile manner.



The arrow buttons are used to adjust mode parameters, except for the Messages arrow buttons. The Messages arrow buttons are used to toggle between various user responses that appear in popup messages.



The round buttons in the middle of the remote control are used exclusively to access primary surgical functions.

The Star (or AUX) button can be used instead of the touch screen Test key to activate testing of a U/S handpiece. In addition, pressing the Star button in the Surgery screen results in the confirmation popup being displayed. The arrow buttons are used to select the Yes/No options, and the Activate button is used to apply the selection.



The round buttons at the bottom of the remote control are used to access memory and global functions, and to activate the selection.



The Activate button is used to actuate the selection of a global function and/or a highlighted selection on a popup message. The Activate button has a raised area around it to make it stand out from the other buttons; this helps ensure that a selection is not accidentally pressed.

The remote control operates on one-of-four channels (A, B, C, or D), and is similar for both the *Accurus*® and *Legacy*® systems. This feature allows four remote controls to be used on four systems operating in the same area. To ensure proper remote control operation when two or more systems are used in the same area, set each to a separate channel. (Instructions to set the remote control and *Accurus*® system to another channel are provided in section fifteen of this manual.)

The *Accurus*® system and its remote control are factory preset to channel D. The *Accurus*® remote control is intended for use only with the *Accurus*® system.

NOTES: In rooms with two or more remote controls, it may be necessary for identification to place labels on the remote controls and units to distinguish one from the other.

If battery voltage becomes too low for the remote to function properly, a pop up message will appear on the console display. In that case, replace with new batteries by following instructions in section fifteen of this manual.

CAUTION

Do not sterilize the remote control as it will damage the unit.

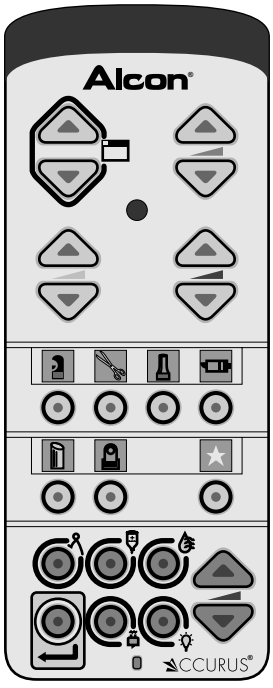


Figure 2-6. WIRELESS REMOTE CONTROL - Most of the functions of the wireless remote control are the same as those on the console.

FRONT PANEL DISPLAY SCREENS

The operating screens described in this section are displayed on the front panel color LCD display. The colors and their intensities are designed for easy viewing in both light and dark environments.

Power Up Screen

The power-up initialization cycle lasts approximately two minutes. After the first ten seconds of this cycle, the *Power Up Screen* is displayed while the system completes initialization and self-test diagnostics (see Figure 2-7). All operator inputs are locked out at this time. After self-test diagnostics the 200PS, 300VS, and 400VS systems enter either the Posterior or Anterior domain of operation.

> ***WARNING!***
> **During initialization the drain pump is rotated to its home position. Therefore, keep hands and fingers clear of cassette well during power-on initialization. After initialization, do not manually turn hub roller. Finger pinch and/or improper cassette installation can occur.**

If a fault is detected during self-test diagnostics, a *System Fault Screen* is displayed and the system becomes non-operational (see Figure 3-20).

Procedure Selection Screen

The 800CS and 600DS systems contain both Posterior and Anterior functionality, so after the power-up initialization cycle one of the following can occur:

- The *Procedure Selection* Screen appears, allowing entry into either the **Anterior**, **Posterior**, or the 800CS **Combined** domain (see Figure 2-8). The *Procedure Selection* Screen also appears when the Exit key is pressed from a *Surgery Setup Screen*.

- If startup preferences are programmed into doctor memory (Options/System), the *Procedure Selection* Screen is bypassed and the system advances to the domain/screen selected by the programmer.

When a new domain is entered, all settings are reset to their default values.

* FOR REFERENCE ONLY *

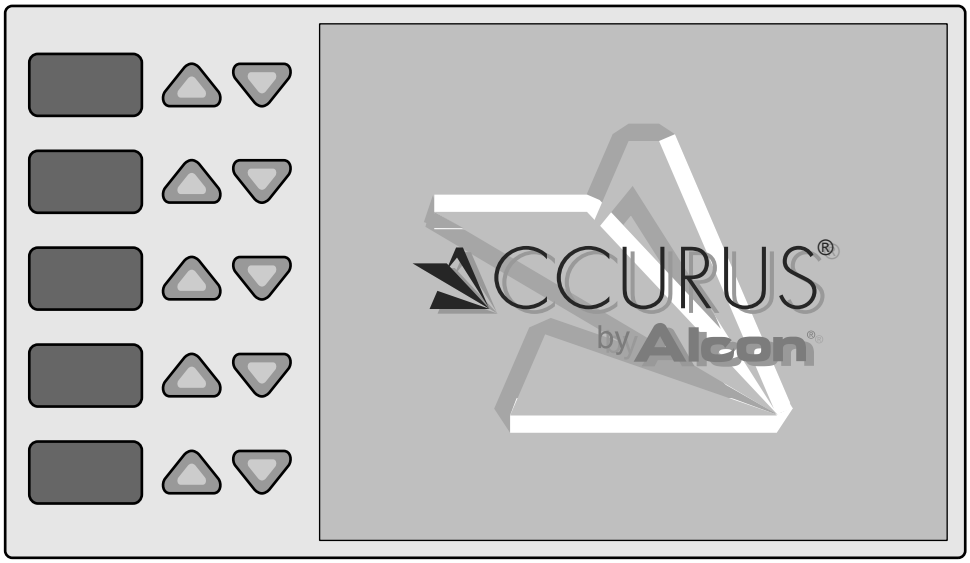


Figure 2-7. POWER UP SCREEN - After the first 10 seconds of the Power-Up Initialization cycle the *Power Up Screen* is displayed while the system completes initialization and self-test diagnostics. No operator inputs are allowed at this time.

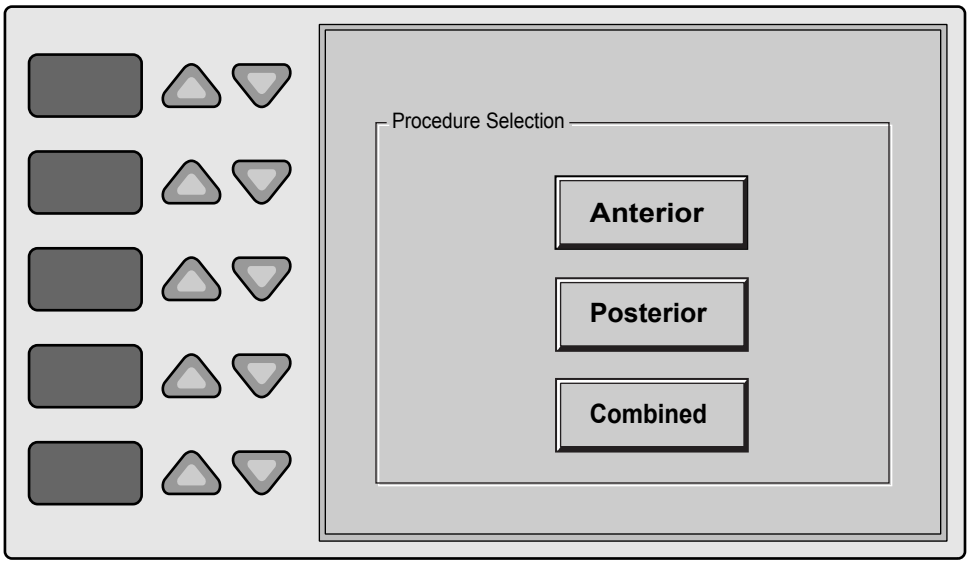


Figure 2-8. PROCEDURE SELECTION SCREEN (600DS and 800CS only. 800CS screen shown) - The *Procedure Selection* Screen is displayed after system initialization or when the Exit key is pressed from either the Posterior, Anterior, or Combined *Surgery Setup Screen*. Pressing the Anterior, Posterior, or Combined key on the touch screen quits this screen and brings up either the anterior, posterior, or combined *Surgery Setup Screen*.

Display Windows and their Functions

The LCD display and touch screen is divided into eight windows, shown below in Figure 2-9. Descriptions of the windows and their functions are written on the following pages.

1. Modes Window
2. Global Functions Window
3. Title
4. Doctor Name
5. Memory Name
6. Miscellaneous Window
7. Primary Functions Window
8. Popup window

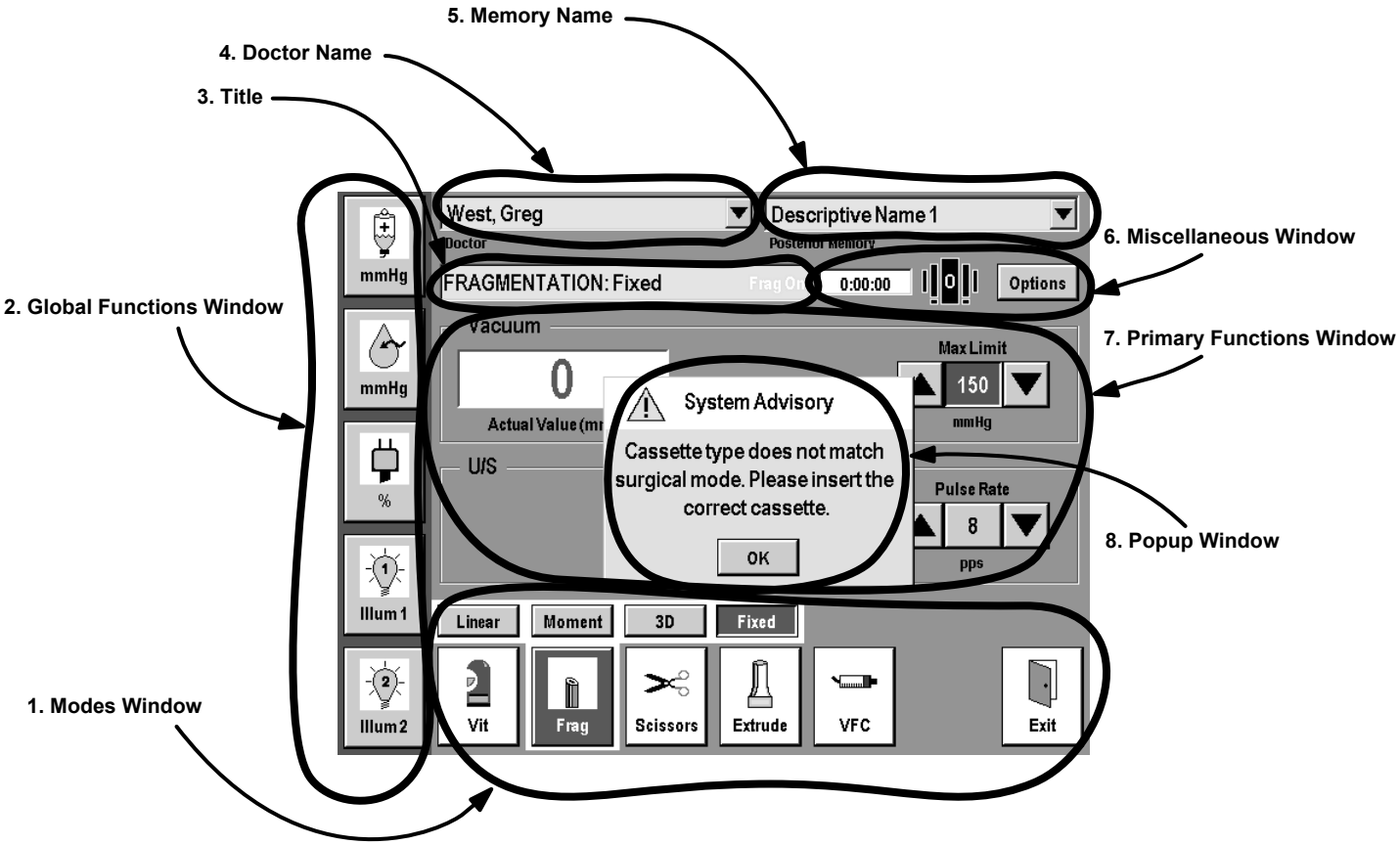


Figure 2-9. LCD DISPLAY AND TOUCH SCREEN - The color display screen for the *Accurus*® system displays modes of operation and operating parameters, and also is used for operator input by pressing the touch keys on the screen. This screen is the operator's main tool to input system commands. Operator input is also received from the remote control and the footswitch.

* FOR REFERENCE ONLY *

1. Modes Window

This window displays touch keys and their corresponding icons. There are two kinds of keys displayed in this window: Setup Function keys and Mode keys, depending on whether the screen is displaying its *Setup Screen* or its *Surgery Screen*. The Mode keys are animated when selected. Figures 2-10 and 2-11 show the two screens.

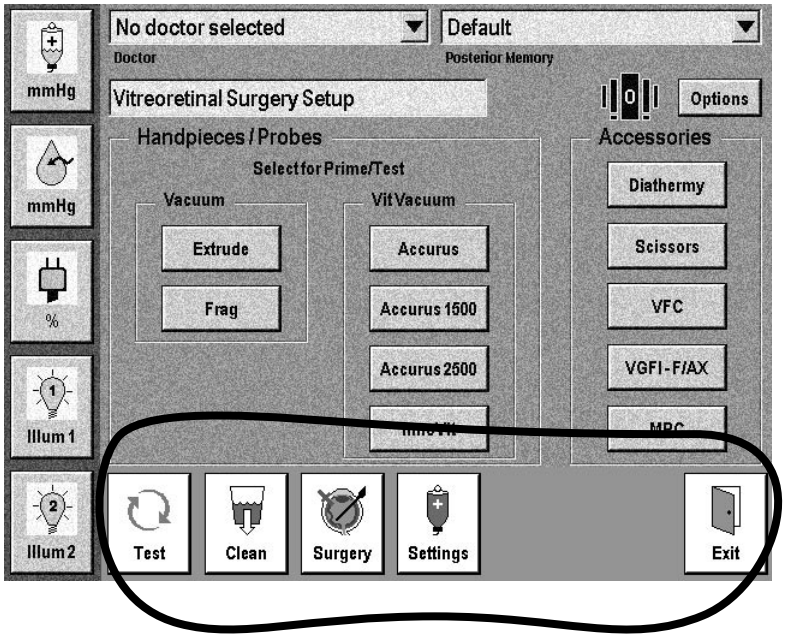


Figure 2-10. SETUP FUNCTION SELECTIONS IN MODES WINDOW - This section of the display screen offers either setup function selections or surgical mode selections in the modes window. This illustration shows posterior setup function selections; the anterior setup function selections are similar.

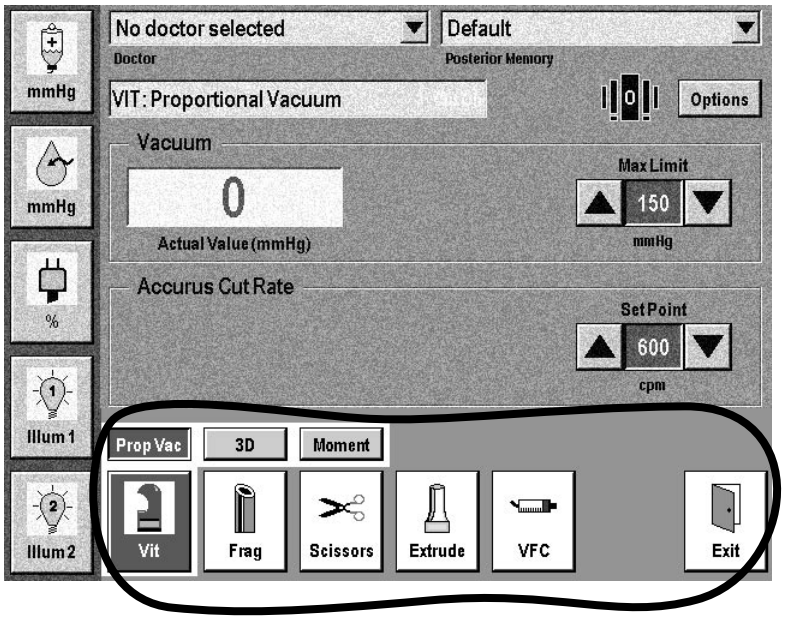


Figure 2-11. SURGICAL MODE SELECTIONS IN MODES WINDOW - This illustration shows posterior surgical mode selections in the modes window; the anterior mode selections are similar. The mode keys are animated when selected—in this case the system is set in Vit mode for use with proportional vacuum.

2. Global Functions Window

Global functions are available in all setup and surgery screens, regardless of system status or footpedal position (see Figure 2-12). Functions are turned ON and OFF via their icon keys, and their parameter values are adjusted by pressing the global function up/down adjustment buttons. When turned ON, some global functions can be affected from the footswitch.

The Diathermy global function icon key is always enabled for footswitch activation, and its LED readout is always lit; its icon key illuminates bright blue when diathermy is activated.

Global functions may be used in combination with other global functions. Selecting or deselecting one function does not affect the others, with one exception: when *VGFI*™ * infusion is used, selecting Fluid/Air Exchange deselects Infusion; the reverse is also true.

Listed in the table below are the distinctions between global function icons when they are turned ON and OFF, and what the ON/OFF conditions mean. Descriptions of the global functions are located in sections three, seven, and eleven of this manual.

ICON KEY TURNED ON	ICON KEY TURNED OFF
Icon is bright blue	Icon is gray
LED readouts display values	LED readouts off (except diathermy)
Up/Down keys adjust bright LED values	Up/Down keys adjust dim LED values, then extinguish

Table 2-2. GLOBAL FUNCTIONS KEYS - Icon/base keys in the Global Functions window are pressed to turn global functions ON and OFF. The ON/OFF status is listed in this table. (The diathermy global function icon key is always enabled for footswitch activation, and does not adhere to these on/off conditions.)

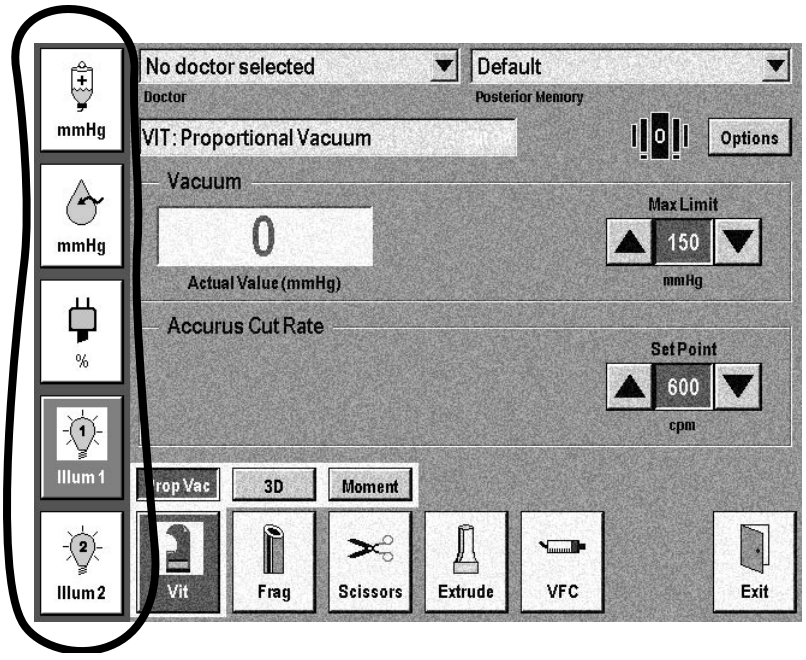


Figure 2-12. GLOBAL FUNCTIONS WINDOW - Global functions are available in setup and surgery screens. In this illustration illuminator 1 is turned on, indicated by the illuminated icon and bright blue base.

* FOR REFERENCE ONLY *

3. Title

This window displays the current setup, surgery modes, and submodes.

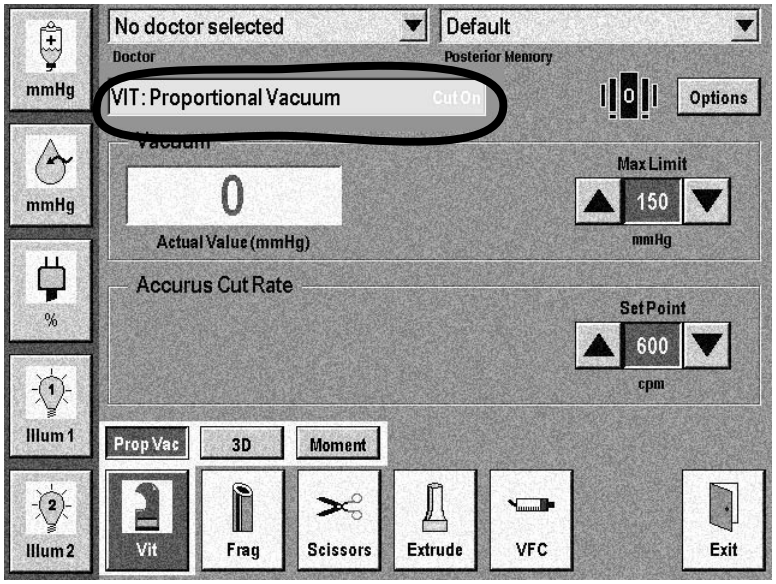


Figure 2-13. TITLE WINDOW - This window shows the current mode of operation.

4. Doctor Name

This window is used to display the current selected doctor name.

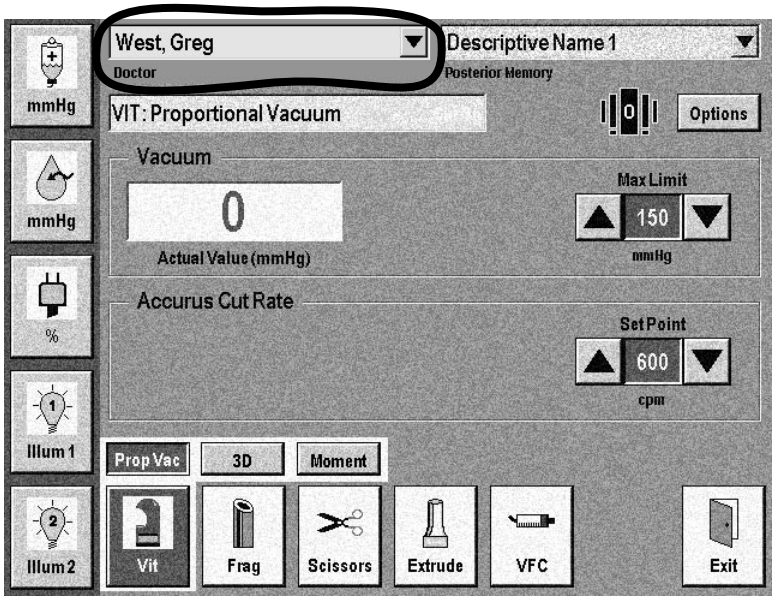


Figure 2-14. DOCTOR NAME WINDOW - This window shows the current doctor name and the doctor names drop down arrow key.

5. Memory Name

This window is used to display the current selected memory name. If the current settings have been modified from the saved settings, the name text will be colored blue.

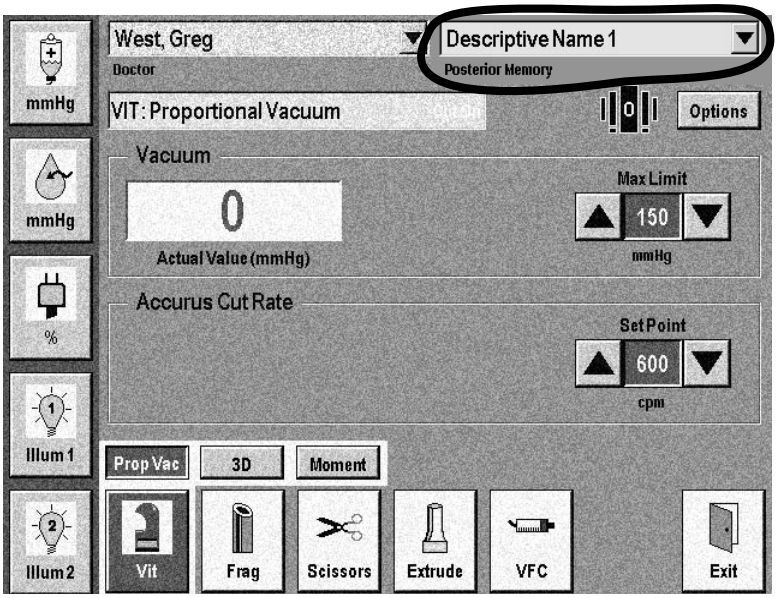


Figure 2-15. DOCTOR MEMORY WINDOW - This window shows the current doctor memory in use and the doctor memory drop down arrow key.

6. Miscellaneous Window

The Timer Display, Footswitch icon, and Options key are all located in this window (see Figure 2-16). These three features are described below.

• Timer Display

Two Timer Displays can appear in the upper right hand corner of the *Surgery Screens* and *Setup Screens* whenever a timer is activated:

General Purpose Timer - This timer appears after being activated in the Options selections. This timer has a blue background, and is activated manually to count either up from zero, or down from a pre-selected value (see the Timer in the Options Functions on pages 2.19 and 2.38).

Elevated Infusion Timer - This timer with the yellow background appears in place of the footswitch icon, and it automatically begins counting up from zero when posterior infusion pressure is greater than or equal to 51 mmHg. It stops counting when pressure goes below 51 mmHg, then begins from zero again each time pressure is 51 mmHg or greater. Pressing the timer display when pressure is less than 51 mmHg removes it from the screen, but it reappears and begins counting from zero again when the pressure returns to 51 mmHg or greater.

• Footswitch Icon

When the footswitch is activated this icon changes color. For footpedal activation it progressively displays 1, 2, and 3 in its center to represent the amount of footpedal depression through its detents; when released it displays 0. When the left and right footswitches are pressed the icons at each side change color to indicate activation. A small letter A, B, C, or D at the bottom of the icon indicates which footswitch map is used. If the map has been modified from the default settings, the map letter will be followed by the prime symbol i.e., A'. Pressing the icon displays a window that shows the current footswitch mapping.

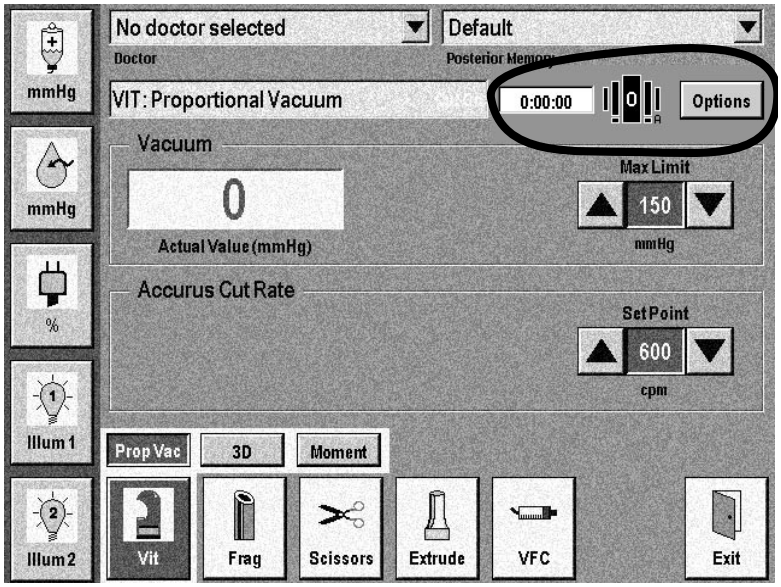


Figure 2-16. MISCELLANEOUS WINDOW - This window contains three items: the Timer Display (when activated), Footswitch icon, and Options key.

• Options Key

Pressing the Options key presents a drop down menu of selections that offer the user a variety of helpful tools (the selections are described beginning on page 2-19).

7. Primary Display Window

The Primary Display window is used to select setup options in the *Setup Screens*, and to adjust/view operating parameters in the *Surgery Screens*. The operating parameters in the *Vitrectomy Proportional Vacuum Surgery Screen* are shown below.

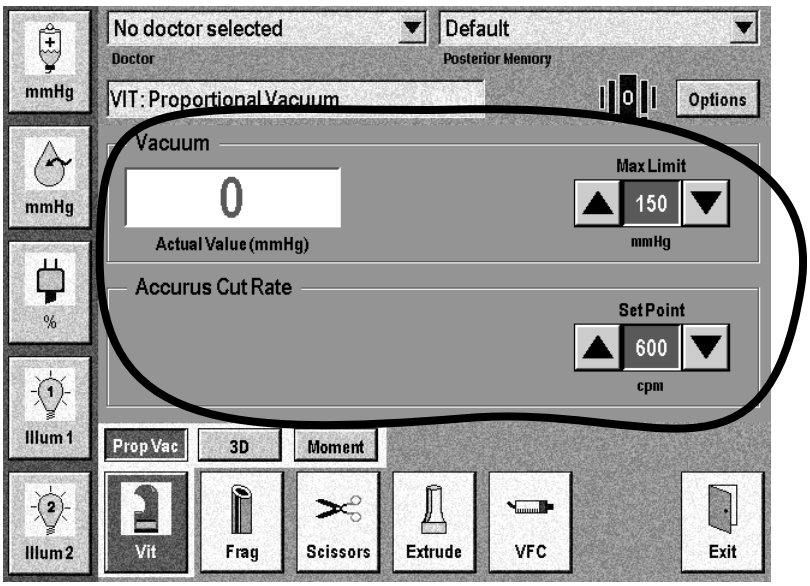


Figure 2-17. PRIMARY DISPLAY WINDOW - This window is used to set up and adjust operating parameters, and to view actuals.

8. Popup Window

This window is used to indicate system errors, advisories, and other messages to the user. When a popup window appears, only the keys inside the popup window and the Global Function keys not related to the popup window are available. For a list of system messages turn to section sixteen of this manual.

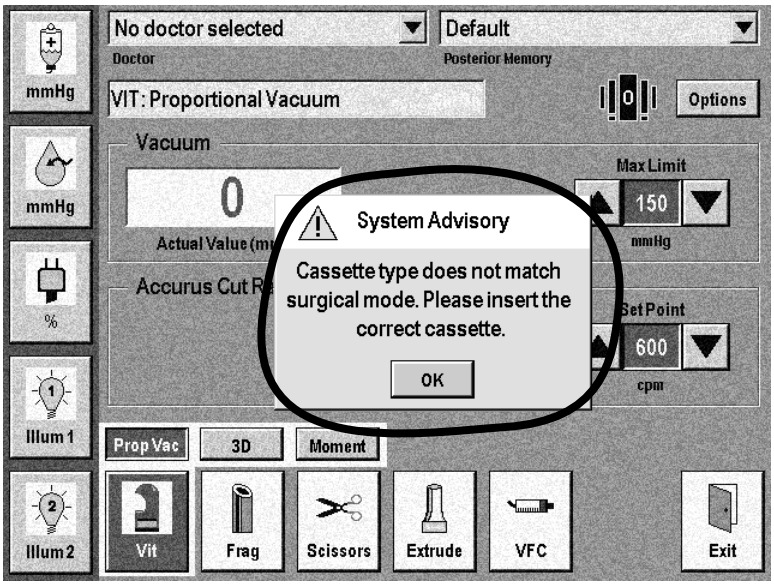


Figure 2-18. POPUP WINDOW - Information popups communicate with the user, typically to confirm a critical operator request or to provide status. The popup window disappears when the action is completed, or when the operator presses a popup key to acknowledge the message.

OPTIONS FUNCTIONS

The Options key and its functions are accessible in all screens except the Doctor Memory screens and Irrigation/Infusion Settings screens. A drop down menu is displayed when the ***Options*** key is pressed (see Figure below). The functions in this drop-down menu consist of Quick Save, Memory, Volume, Timer, Metrics, Vit Probe, Test, System, Standby, and About. Pressing any of the buttons in the drop-down menu displays its associated pop-up window or display screen.

Descriptions of each drop-down menu selection begin on the next page.

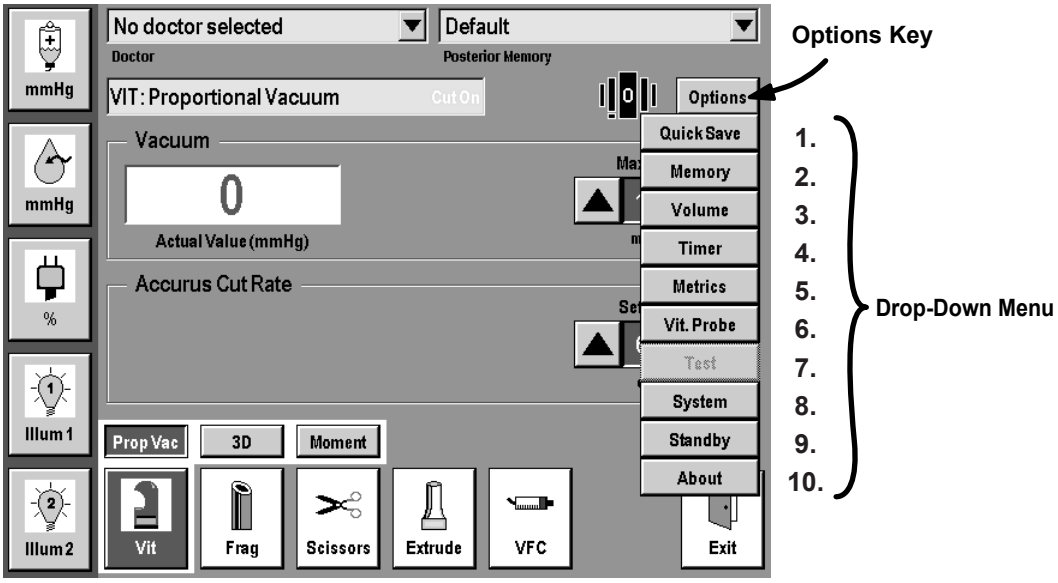


Figure 2-19. OPTIONS DROP DOWN MENU - Pressing the Options key, located in the upper right corner of the screen, activates a drop down menu offering ten choices. Pressing one of the choices activates a screen or window for the choice selected.

1. Quick Save

The Quick Save pop-up window allows the current mode settings or all mode settings to be saved into a doctor memory. For anterior or posterior domains, the pop-up window contains two drop downs for Dr. Name and Memory; for the combined domain the pop-up window includes Memory drop downs for anterior and posterior.

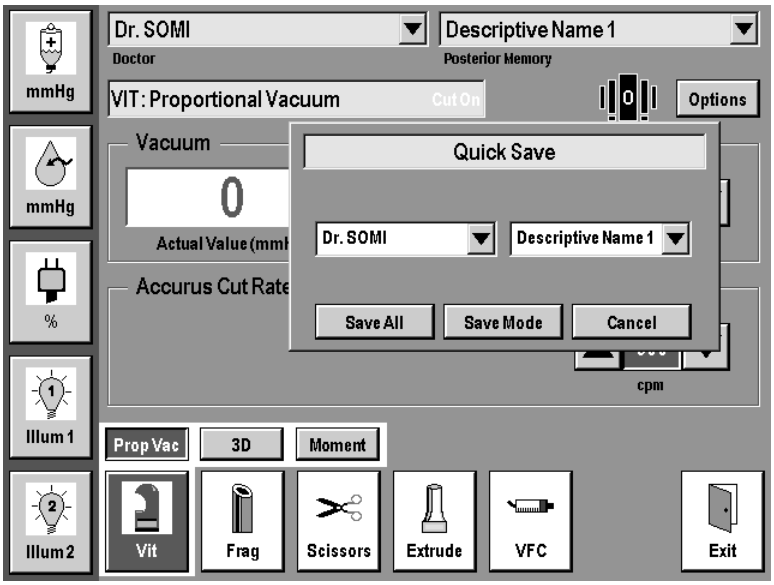


Figure 2-20. QUICK SAVE POPUP WINDOW - Pressing the Quick Save key activates a small popup window. Doctor and memory number to be written to are chosen on this window before saving.

The doctor name drop down in the **Quick Save** pop-up selects the doctor name the settings will be saved to. Pressing the ***Doctor Name*** displays a drop-down list of other current doctor names. Pressing the up/down arrows to the right of the drop-down list allows scrolling through the list of names. Pressing a doctor name causes it to be selected, the drop-down list to disappear, and the selected doctor name to be displayed as the "save-to" doctor name.

The memory drop down is used to select a doctor's memory location to save the settings to. Pressing the down arrow to the right of the setting displays a drop-down list of the five memory locations. Pressing the up/down arrows to the right of the drop-down list allows scrolling through the list of memory locations. Pressing a memory location causes it to be selected, the drop-down to disappear, and the selected memory location to be displayed as the "save-to" memory location. (For the combined domain there are two memory location settings to select from, anterior memory or posterior memory).

Pressing the ***Save All*** key saves all the selected doctor's parameters (the one-per-memory-location parameters) for the current domain. Pressing the ***Save Mode*** key saves the settings in the active screen to the selected doctor memory location. Pressing ***Cancel*** returns to the previous screen without saving anything to memory.

2. Memory (programmable doctor memories)

Pressing the ***Options/Memory*** key in the Options drop-down menu allows the user to enter the Doctor Memory screen. The Options/Memory function is available from all surgery and setup screens with the exception of the Irrigation/Infusion Settings screens. The doctor memory function allows a doctor's preferential surgical parameter values to be programmed, stored, and retrieved under a doctor name. Storage is provided for up to 40 doctor names, each with five storage locations for Anterior parameters, five for Posterior parameters, and one for Common parameters. The doctor memory function has the following characteristics:

- The listing of available doctor names and memories is displayed by pressing their associated drop-down keys. A doctor memory is retrieved when a new doctor name or memory cell is selected in the “Retrieve From” box. The parameters of the retrieved memory are displayed on the doctor memory screens. When a new doctor name is selected, memory location one is retrieved.
- The name of the currently selected doctor and memory number or name are displayed in all surgery and setup screens except the Irrigation/Infusion Settings screens. The memory number or name is displayed in a different color when a value has been changed from what is stored in that memory.
- A Personal Identification Number (PIN) can be added, which will then be required when saving, editing, or deleting that doctor memory.
- The user is allowed to modify, remove, and add a PIN. The entry of the current PIN is required for a modification or removal operation.
- The user is allowed to copy from one doctor memory (retrieve from) to another doctor memory (save to).
- When the ***Exit*** key is pressed after a setting is changed, a popup is displayed to allow the user to apply the settings in the memory screen to the system. This only happens when changes are made to the memory screen.
- When leaving the Anterior, Posterior, or Common memory screen to go to another memory screen after a parameter is changed, a popup is displayed to allow saving the new settings.
- A different surgical state or domain cannot be entered from doctor memory screens. Settings for both domains can be viewed, and memories can be altered, but the mode from which doctor memory is entered is always the mode returned to when ***Exit*** is pressed.
- Parameter settings changed from what is currently stored in memory are displayed in a different color.
- Pressing the ***Defaults*** key on a doctor memory screen resets all displayed settings back to the factory default values. Pressing the ***Current*** key replaces all displayed values with the current system values.
- Pressing the ***Save*** key in the Anterior or Posterior tab saves the domain's parameter values to the doctor and memory number identified in the “Save To” box. Pressing the ***Save*** key in the Common tab saves the doctor common parameters (the one per doctor memory set) to the doctor identified in the "Save To" box. If this doctor memory is protected by a PIN, a popup appears and the PIN must be entered before the save operation is completed; otherwise, if the doctor memory is not protected by a PIN, a confirmation popup appears to confirm the save operation.
- If a setting is changed, pressing the ***Exit*** key displays a popup asking the operator if the new settings should be applied to the system. After answering, the system returns to the mode from which doctor memory was entered.
- Settings may be Exported/Imported via a PCMCIA memory card.

Memory (continued from prior page)

The doctor memory surgical parameter values are separated into four memory domains: Anterior, Posterior, Common, and Doctors. One memory is selected and displayed at a time, with its corresponding data values broken into smaller data groups, accessible by pressing their respective tabs:

	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
Anterior	Phaco	I/A	Vit	Irrigation	Other	--	--
Posterior	Vit	Frag	Scissors	Extrude	VFC	Infusion	Other
Common	Sound	Footswitch	Labels	Submodes	Irr/Inf	Other	--
Doctors	Names	Import	Export	Erase	--	--	--

Table 2-3. DOCTOR MEMORY AND DATA TABS - Data groups are accessed by pressing tabs under the Anterior, Posterior, Common, or Doctors memory domains.

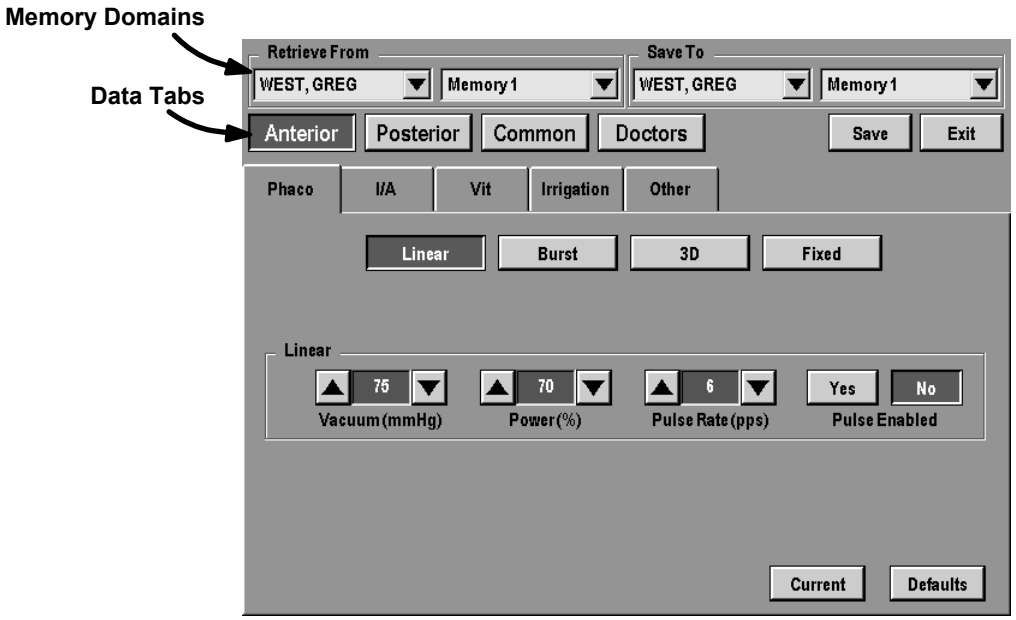


Figure 2-21. DOCTOR MEMORY SURGICAL PARAMETERS - This display screen is typical of the doctor memory tabs. In this case the Greg West doctor memory is being set in the Anterior memory domain, under the Phaco data tab. If the *Save* key is pressed now, the new data will replace the old Greg West data. If the Save To name or memory number is changed, the new data will be saved to the newly-selected location.

The top section of the screen displays a set of tabs that are used to move between these data groups. For example, in Anterior, to see parameters corresponding to the Phaco function, the user simply presses the *Phaco* tab. Similarly, to see the other parameters, press the *I/A*, *Vit*, *Irrigation*, or *Other* tab. The subsequent sections define the contents of each tab group.

Anterior Tab Set

The Anterior tab set contains parameters that are one per memory location. With five Anterior memory locations, there are five distinct sets of parameters per doctor. Up and down arrows on the left and right of the value settings are used to set parameter values.

Phaco Tab: Linear - The Linear group contains values for maximum Vacuum level, U/S Power, and Pulse Rate; and also contains a keys to set the on/off Pulse Enabled status.
Phaco Tab: Burst - This group contains values for maximum Vacuum level, U/S Power, and pulse duration Length.
Phaco Tab: 3D- This group contains two sub-groups. The Treadle Start group contains starting values for vacuum level and U/S power when the footpedal is initially depressed. The Treadle Full group contains values for maximum vacuum level and U/S power when the footpedal is completely depressed.
Phaco Tab: Fixed - The Fixed group contains values for maximum Vacuum level, U/S Power, and Pulse Rate; and also contains keys to set the Yes/No Pulse Enabled status.

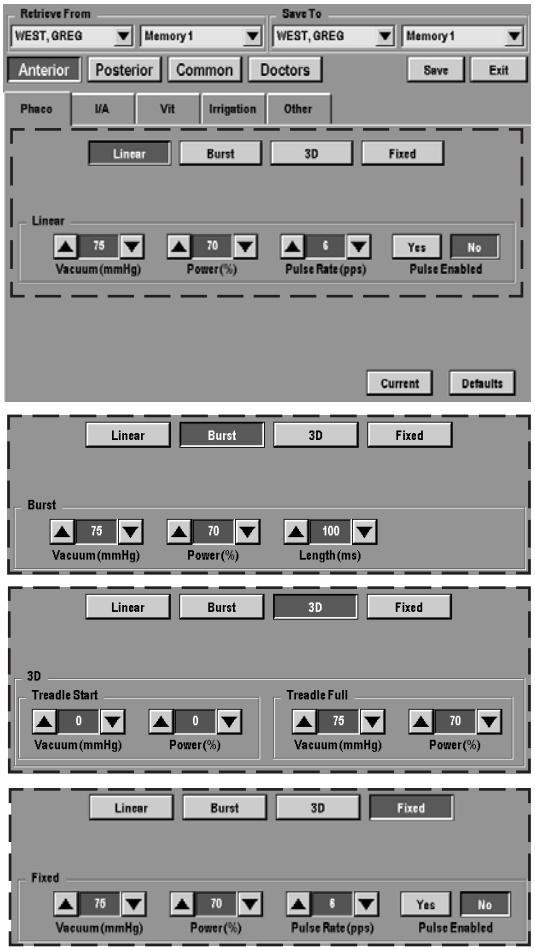


Figure 2-22. ANTERIOR PHACO TAB DATA - Each group is shown with its adjustable values.

I/A Tab: Cap Vac - This group contains a value for the Vacuum setting.
I/A Tab: Maximum - This group contains a maximum value for the Vacuum setting.

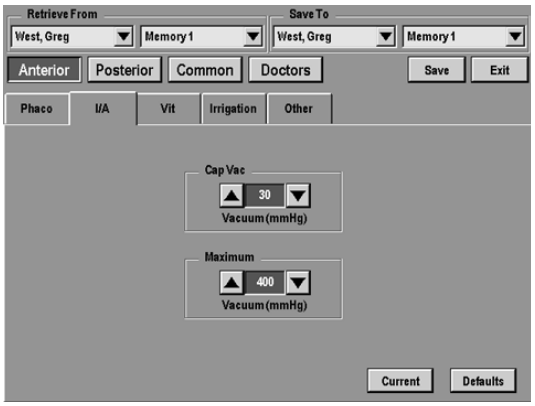


Figure 2-23. ANTERIOR I/A TAB DATA

Memory (continued from prior page)

Anterior Tab Set (from prior page)

Vit Tab

Selecting the Vit tab presents four selectable probe types. The four probe type buttons are mutually exclusive, with only one being active at a time. Pressing a probe button causes it to become the active setting. When a probe is active, the values displayed below it are for that probe type only. If *Accurus®* or *Accurus®* 2500 is the selected probe, both the Wet and Dry settings are displayed. If *Accurus®* 1500 or *InnoVit®* is the selected probe, only the Wet group is displayed.

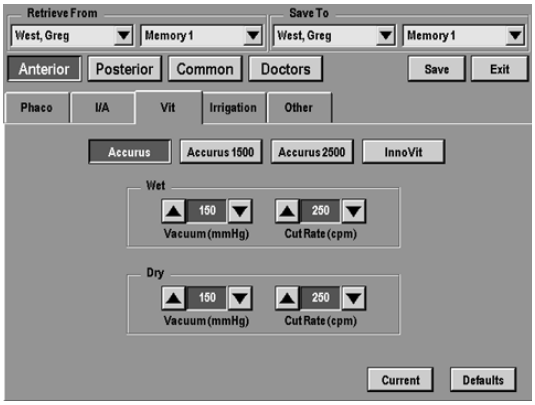


Figure 2-24. ANTERIOR VIT TAB DATA

Vit Tab: Wet - The Wet group contains values for maximum Vacuum level and preset Cut Rate.

Vit Tab: Dry - This group contains values for maximum Vacuum level and preset Cut Rate.

Irrigation Tab: Phaco - This group contains values for Regular irrigation pressure and Alternate irrigation pressure.

Irrigation Tab: I/A - This group contains values for Regular irrigation pressure and Alternate irrigation pressure.

Irrigation Tab: Vit - This group contains values for Regular irrigation pressure and Alternate irrigation pressure.

Irrigation Tab: Alternate - This group contains buttons to determine if alternate irrigation is Available Yes/No.

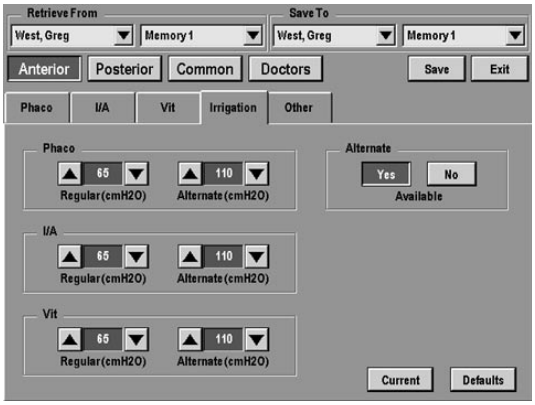


Figure 2-25. ANTERIOR IRRIGATION TAB DATA

* FOR REFERENCE ONLY *

Other Tab: Diathermy - The Diathermy group contains a value for diathermy % voltage.

Other Tab: Default Mode - This group contains a setting for the mode to jump to when this doctor memory location is selected. Pressing the down arrow to the right of the setting causes a drop-down list of applicable modes to be displayed. Pressing up/down arrows to the right of the drop-down list allows scrolling through the list of modes. Pressing a mode causes it to be selected, the drop-down list to disappear, and the selected mode to be displayed as the default mode.
Other Tab: Illumination - Here are values for Lamp 1 and Lamp 2 % intensity levels.
Other Tab: Vacuum Rise Time - The Vacuum Rise Time setting determines the length of time required for the vacuum to build from 0 to the current setting. For example: at 200 mmHg, buttons in this group allow selection of one of the following vacuum rise time settings: Default (150 ms), Fast (1.0 s), Medium (2.0 s), Slow (3.3 s).

Other Tab: Treadle Detent - The Treadle Detent setting allows adjustment of the footpedal travel between detents for phaco modes only. The default setting is Normal. The Phaco setting provides longer footpedal travel in position 3, allowing greater proportional control of phaco power. The I/A setting provides longer footpedal travel in position 2, allowing greater proportional control of vacuum.

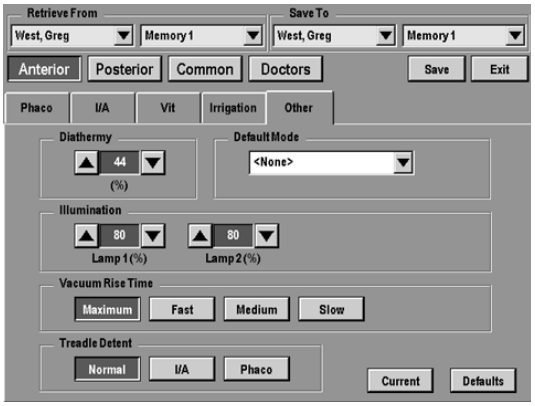


Figure 2-26. ANTERIOR OTHER TAB DATA

Memory (continued from prior page)

Posterior Tab Set

The Posterior tab set contains parameters that are one per memory location. With five Anterior memory locations, there are five distinct sets of parameters per doctor. Up and down arrows on the left and right of the value settings are used to set parameter values.

Vit Tab

Selecting the Vit tab presents four selectable probe types. The four probe type buttons are mutually exclusive, with only one being active at a time. Pressing a probe button causes it to become the active setting. When a probe is active, the values displayed below it are for that probe type only.

Vit Tab: Proportional Vacuum - This group contains values for maximum Vacuum level and Cut Rate.

Vit Tab: 3D - The 3D group contains two sub-groups. The *Treadle Start* sub-group contains values for maximum Vacuum level and Cut Rate when the footpedal is completely released. The *Treadle Full* sub-group contains values for maximum Vacuum level and Cut Rate when the footpedal is completely depressed.

Vit Tab: Momentary Cut - This group also contains values for maximum Vacuum level and Cut Rate.

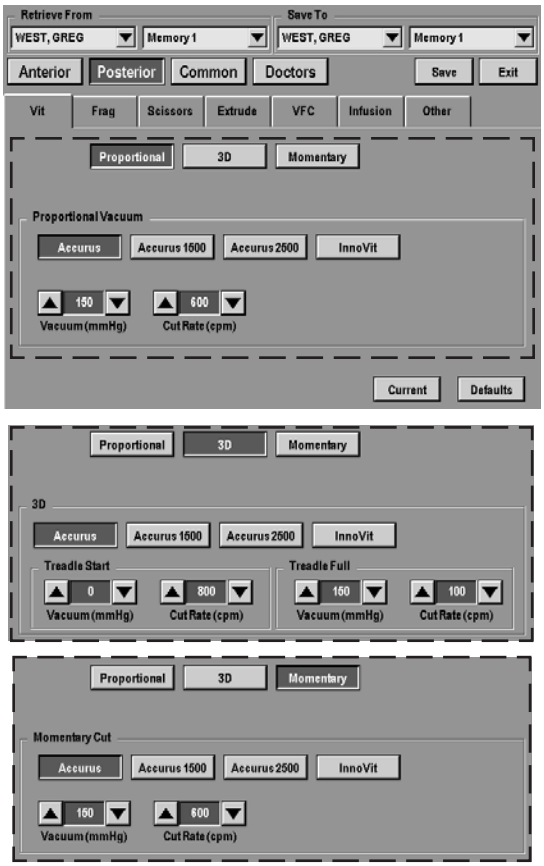


Figure 2-27. POSTERIOR VIT TAB DATA - Each group is shown with its adjustable values.

* FOR REFERENCE ONLY *

Frag Tab: Linear - This group contains values for maximum Vacuum, U/S Power, and Pulse Rate; and also contains keys to select the Yes/No Pulse Enabled status.

Frag Tab: Momentary - This group contains values for maximum Vacuum, U/S Power, and Pulse Rate; and also contains keys to select the Yes/No Pulse Enabled status.

Frag Tab: 3D- This group contains two sub-groups. The Treadle Start group contains starting values for vacuum level and U/S power when the footpedal is initially depressed. The Treadle Full group contains values for maximum vacuum level and U/S power when the footpedal is completely depressed.

Frag Tab: Fixed - This group contains values for maximum Vacuum, U/S Power, and Pulse Rate; and also contains keys to select the Yes/No Pulse Enabled status.

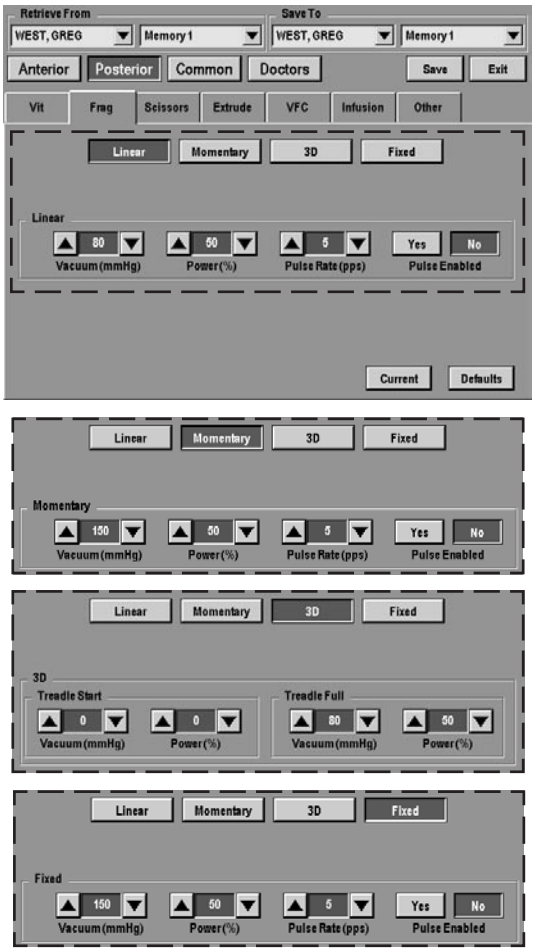


Figure 2-28. POSTERIOR FRAG TAB DATA

Scissors Tab: Proportional - Values for pneumatic Start Pressure and Close Pressure are in this group.

Scissors Tab: Multiple Cut - This group contains Vacuum level and Cut Rate values.

Scissors Tab: MPC - This group contains Vacuum level and Cut Rate values.

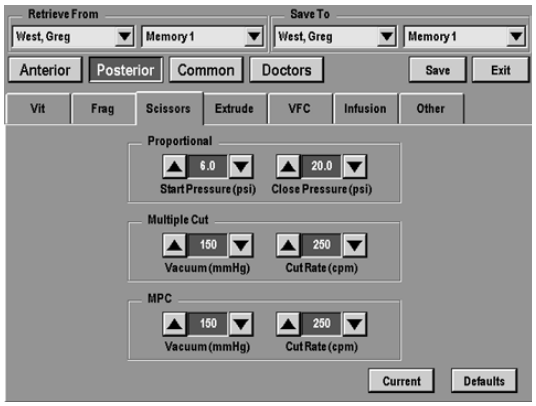


Figure 2-29. POSTERIOR SCISSORS TAB DATA

Memory (continued from prior page)

Posterior Tab Set (from prior page)

Extrude Tab: Low - This is a value for the default maximum Low Vacuum level.
Extrude Tab: Medium - This is a value for the default maximum Medium Vacuum level.
Extrude Tab: High - This is a value for the default maximum High Vacuum level.

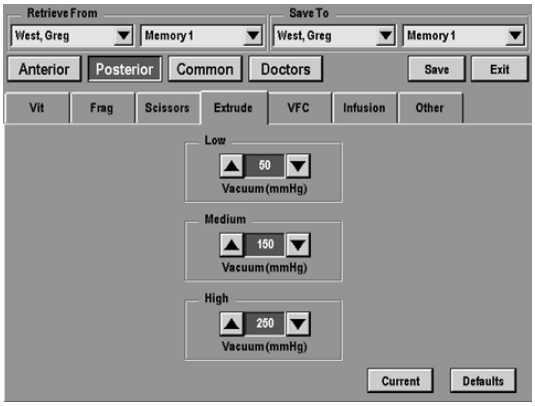


Figure 2-30. POSTERIOR EXTRUDE TAB DATA

VFC Tab: Inject - A value for maximum Pressure is here.
VFC Tab: Dual - Maximum Pressure and maximum Vacuum are in this group.
VFC Tab: Extract - A value for maximum Vacuum is here.

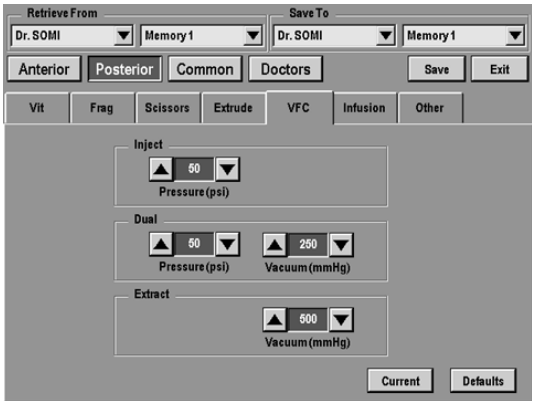


Figure 2-31. POSTERIOR VFC TAB DATA

Infusion Tab: Regular Infusion - A value for the Regular Infusion Pressure is here.
Infusion Tab: Alternate Infusion - This group contains a value for the Alternate Infusion Pressure, and an Available Yes/No setting for Alternate Infusion availability.
Infusion Tab: Regular F/AX - A value for F/AX Pressure is here.
Infusion Tab: Alternate F/AX - This group contains a value for the Alternate F/AX Pressure, and an Available Yes/No setting for Alternate F/AX availability.

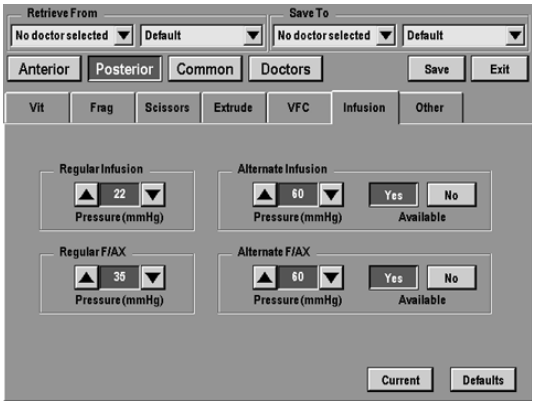


Figure 2-32. POSTERIOR INFUSION TAB DATA

* FOR REFERENCE ONLY *

Other Tab: Default Mode - The operator can select a mode to enter when this doctor memory location is selected from a surgery or setup screen. If a default mode is selected for memory 1 (or its equivalent name), that mode will be entered when the doctor is selected. Pressing its down arrow presents a drop-down list of applicable modes, then pressing its up/down arrows allows scrolling through the list of available modes.
Other Tab: Diathermy - A value for diathermy % voltage is here.
Other Tab: Illumination - This contains values for Lamp 1 % and Lamp 2 % intensities.

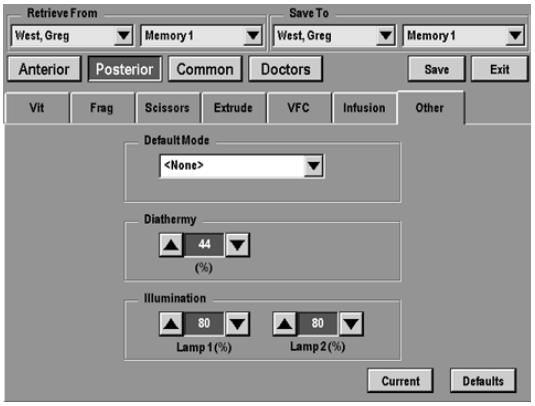


Figure 2-33. POSTERIOR OTHER TAB DATA

Common Tab Set

The Common tab set contains parameters that are one per doctor; there is one distinct set of parameters per doctor.

Sound Tab - Allows adjustments to be made to various tone and voice volumes. Volume values may be adjusted for the following: elevated Infusion Alarm, Invalid Key presses, U/S is active, Diathermy is active, Voice confirmation, Vacuum is active, Error messages,Treadle Up and Auxiliary.

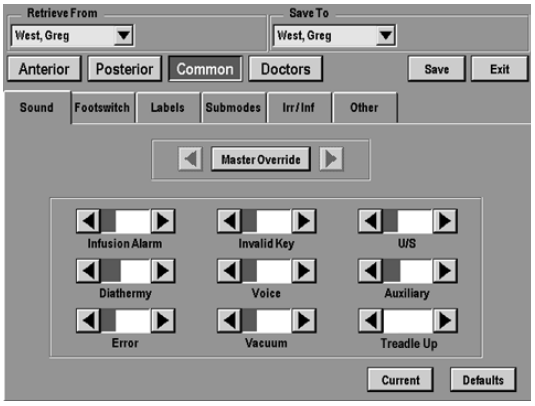


Figure 2-34. COMMON SOUND TAB DATA

The tone and voice volume for high infusion are both controlled by the Infusion Alarm volume setting. For all other parameters, voice volume is controlled by the Voice volume setting while tone volumes are set individually by each associated setting.

Most volume levels may be set to one of twenty levels. These are 0% of maximum volume (muted), 5% of maximum, 10% of maximum, and on up to 100% of maximum. (Note: Invalid key, Diathermy, and Error can only be adjusted between 20% and 100% of maximum volume.)

Adjustments can be made to all values simultaneously by pressing the Master Override button. Pressing this button causes the master override function to become active, and all values may then be increased or decreased by pressing its volume arrow keys.

Memory (continued from prior page)
Common Tab Set (from prior page)

Footswitch Tab
The Footswitch tab is divided into four groups/functions: *Map, Domain, Swap* button, and *Footswitch Map*. This tab allows the operator to custom program the footswitch functions to conform to his own preferences. Factory default settings are listed in tables in sections seven, eleven, and fifteen of this manual.

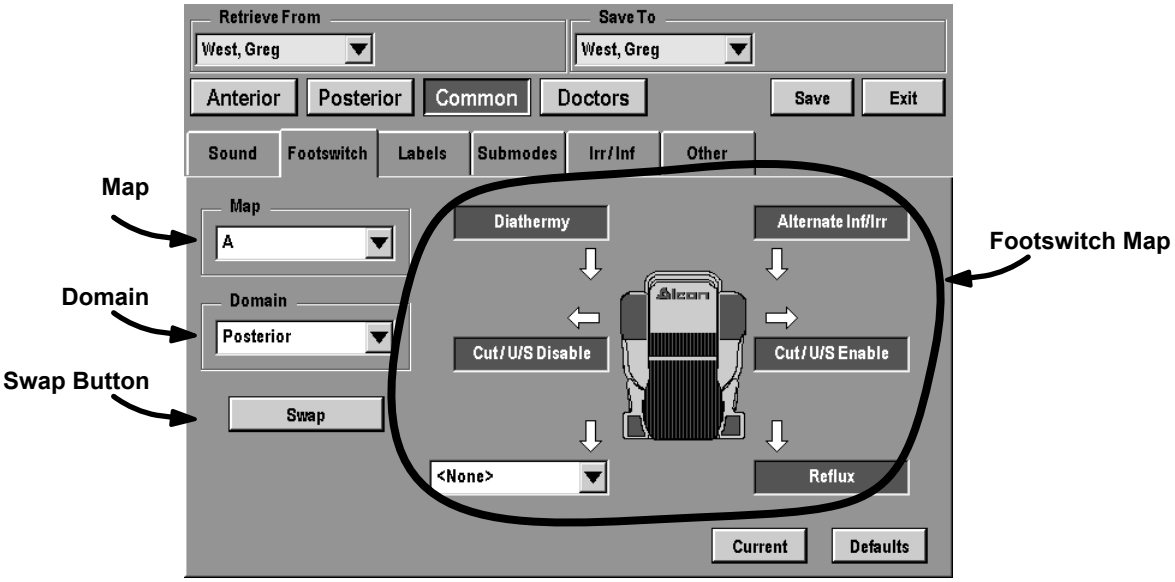


Figure 2-35. COMMON FOOTSWITCH TAB DATA

Footswitch Tab: Map - This selection allows the operator to select footswitch map A, B, C, or D. Each map name corresponds to a different footswitch setup. In maps A and C, five of the switches have preset functions, while the function of the left heel switch is programmable and can be selected from a drop-down list. In map B, four of the switch functions have preset functions, while the two heel switch functions are programmable. In map D, five of the switches have preset functions, while the right vertical switch is programmable.

Pressing the down arrow to the right of the map name presents a drop-down list with map names A, B, C, and D. Selecting one of the map names causes it to be displayed, and its corresponding functions to be displayed on the footswitch map.

Footswitch Tab: Domain - Here the operator can select either the anterior or posterior domain's footswitch settings. Selecting one of the domains allows selection of the programmable functions (functions nominally assigned to the heel switches) for that domain.

Common Tab Set (from prior page)

Footswitch Tab: Swap button - Pressing this button activates the swap feature (see Figure 2-36). The six switches are displayed with the same functions as in the previous screen. Pressing the down arrow to the right of one of the function names presents a drop-down list of the six functions. Selecting a new function for that switch swaps it with the switch that previously had that function.

For example, in Figure 2-36 “None” is the function associated with the left heel switch and “Alternate Inf/Irr” is the function associated with the right vertical switch. Pressing the down arrow to the right of “None” results in the drop-down list being displayed (see Figure 2-37). Pressing the “Alternate Inf/Irr” name in the drop-down list results in the “Alternate Inf/Irr” function being associated with the left heel switch, and “None” being associated with the right vertical switch (see Figure 2-38). Pressing the Swap button deactivates the swap function.

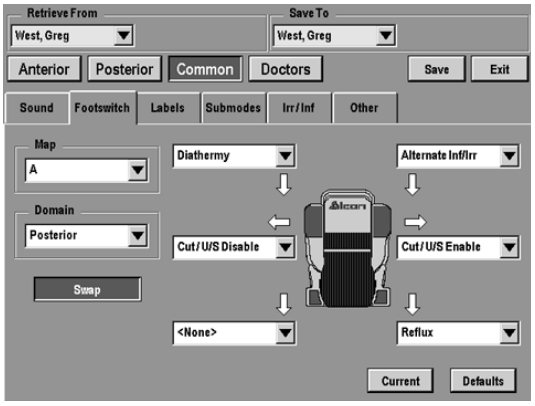


Figure 2-36. SWAP FEATURE ACTIVATED

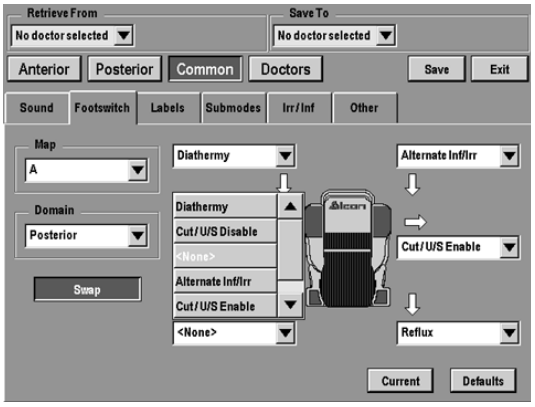


Figure 2-37. SWAP DROP-DOWN LIST

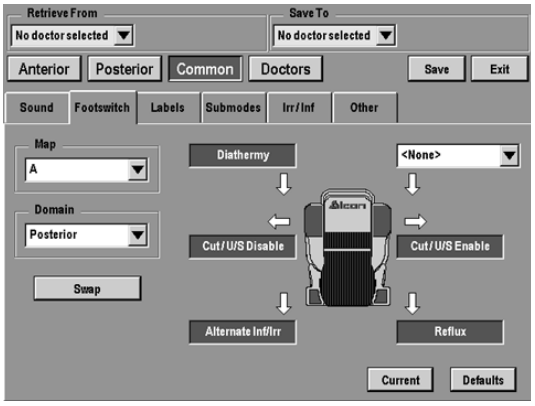


Figure 2-38. SWAP COMPLETED AND SWAP FEATURE DEACTIVATED

Program Functions - Programmable switches can be programmed with the following functions by pressing its drop down menu and selecting the function:

Next Mode, Previous Mode - Enters the next or previous mode in a circular manner. If a mode is disabled, the functional mode following that will be entered. In the Combined domain, it circulates among the modes belonging to the current "subdomain."

Next Submode, Previous Submode - Enters the next or previous submode within the current functional mode in a circular manner.

Next Memory, Previous Memory - Retrieves the next or previous memory in a circular manner. Only memories that have changed or have descriptive names will be retrieved.

Toggle Infusion (available in Posterior mode only) - When this function is activated, infusion will toggle to the opposite state with voice confirmation.

Memory (continued from prior page)
Common Tab Set (from prior page)

Labels Tab: Anterior Labels - This group consists of buttons containing descriptive memory names for the five anterior memory locations. Pressing the down arrow to the right of a button presents a drop-down list of applicable descriptive memory names to be displayed, and pressing the up/down arrows scrolls through the list of names. After selecting a name, the scrollable list disappears and the name is displayed on the selected memory button. If <Custom> is selected, the Keyboard appears, allowing the user to create his own descriptive memory name.
Labels Tab: Posterior Labels - The Posterior Labels group is the same as the Anterior Labels group with the exception that it contains memory names for the five posterior memory locations.

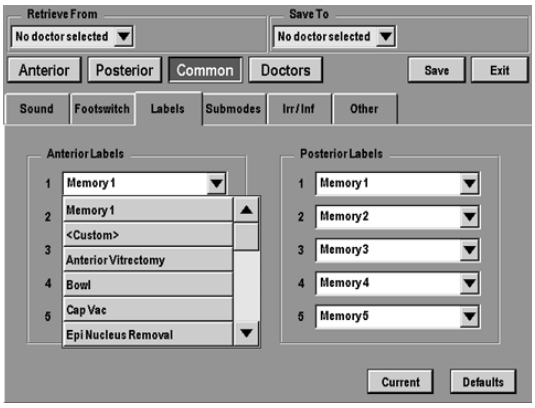


Figure 2-39. COMMON LABELS TAB DATA WITH ANTERIOR DROP-DOWN LIST SHOWN.

Submodes Tab: Anterior - This group consists of buttons containing selectable default submodes for each of the Anterior functional modes. Pressing the down arrow to the right of a button presents a drop-down list of applicable submodes to be displayed, allowing the user to select a default submode.
Submodes Tab: Posterior - The Posterior Submodes group is the same as the Anterior Submodes group with the exception that it contains default submodes for the five posterior functional modes.

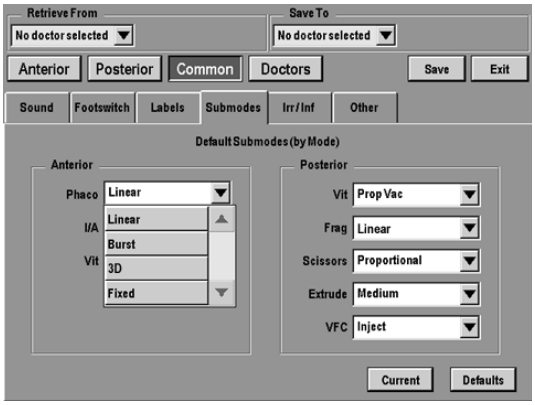


Figure 2-40. COMMON SUBMODES TAB DATA WITH ANTERIOR PHACO DROP-DOWN LIST SHOWN.

When a functional mode is entered for the first time, the selected submode will be the one entered. Thereafter, when a functional mode is entered, the most recent submode will be entered.

* FOR REFERENCE ONLY *

Common Tab Set (from prior page)

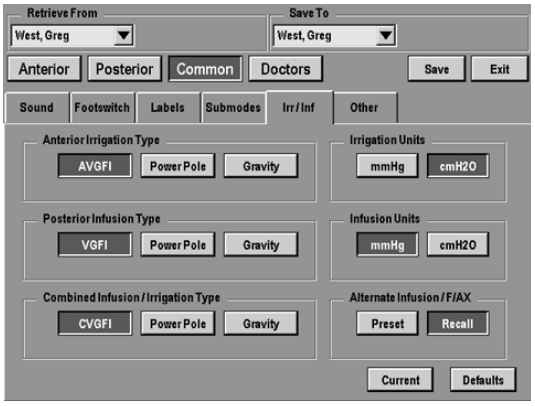


Figure 2-41. COMMON IRR/INF TAB DATA.

Irr/Inf Tab: Anterior Irrigation Type - Buttons for one of the following irrigation methods are available: AVGFI, Power Pole, and Gravity.

Irr/Inf Tab: Posterior Infusion Type - The user can select one of the following infusion methods: *VGFI™ **, Power Pole, and Gravity.

Irr/Inf Tab: Combined Infusion/Irrigation Type - One of the following infusion methods can be selected: CVGFI, Power Pole, and Gravity.

Irr/Inf Tab: Irrigation Units - The user can select either millimeters of mercury (mmHg) or centimeters of water (cmH_20) as the unit of irrigation measurement.

Irr/Inf Tab: Infusion Units - The user can select either millimeters of mercury (mmHg) or centimeters of water (cmH_20) as the unit of infusion measurement.

Irr/Inf Tab: Alternate Infusion / F/AX - This group contains buttons to select how alternate infusion and alternate F/AX set points will be recalled. The choices are *Preset* and *Recall*. If the user changes the alternate pressure via the membrane arrow keys while in alternate pressure (alternate infusion or alternate F/AX), then toggles to normal pressure, then again toggles to alternate pressure, the alternate pressure will be set as follows. If Recall is selected, the alternate pressure is set to the new value. If Preset is selected, the alternate pressure is set to the value stored in doctor memory. The doctor memory value can be changed in the Irrigation/Infusion Setting screen or in the memory screens.

Other Tab: Default Vit Handpiece - This group allows the user to select one-of-four default vit handpieces.

Other Tab: Display Brightness - The user can adjust the brightness of the LCD display.

Other Tab: Treadle Firmness - The user can adjust the firmness of the footpedal to either Hard, Medium, or Soft.

Other Tab: Heelswitch Activation - Provides the user with the option of selecting single-click or double-click activation of all heelswitch functions. Single-click is the default setting.

Other Tab: Vit Cut-off Vacuum - Allows the user to enable or disable the cut-off max vacuum parameter. When enabled, an additional parameter adjustment is visible on the surgery screen that allows for a max vacuum setting when the cutter is turned off.

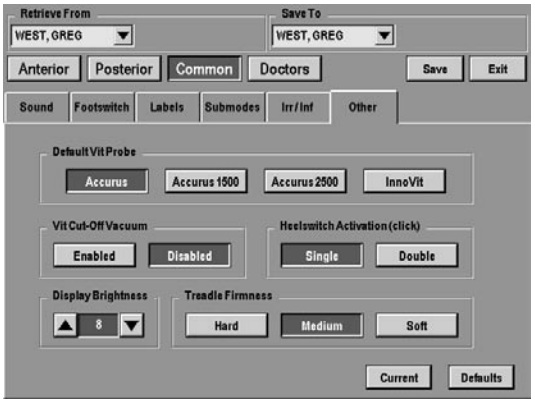


Figure 2-42. COMMON OTHER TAB DATA.

Memory (continued from prior page)
Doctors Tab Set

The functions in the Doctors tab set allow the user to add or delete doctors in the system memory, and save any or all doctor memories to a PCMCIA memory card. Doctor memory data on the card can be loaded to another (or the same) *Accurus®* system with software version 4.51 or above. The memory card is inserted into the PC Card slot located on the rear panel (see Figure 2-4).

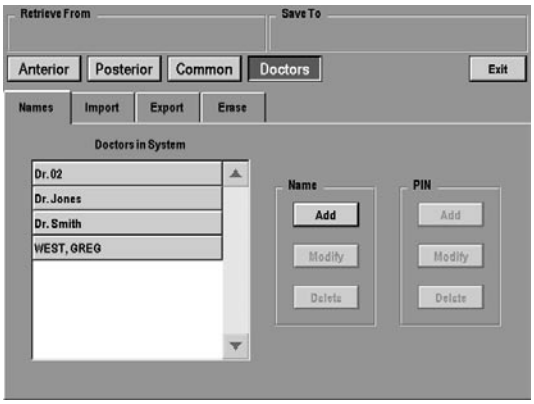


Figure 2-43. DOCTORS NAMES TAB DATA.

Names Tab: List of Names - This group contains a scrollable list of all the current doctors in the system.
Names Tab: Name - Buttons to Add a new doctor's name, to Modify an existing doctor's name, and to Delete a doctor's name are included here.
Names Tab: PIN - This group contains buttons to Add a doctor's new PIN (Personal Identification Number), to Modify a doctor's existing PIN, and to Delete a doctor's PIN.

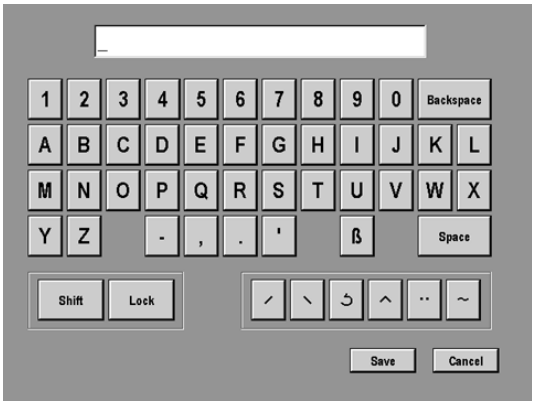


Figure 2-44. KEYBOARD WINDOW.

To Add, Modify, or Delete a Doctor's Name:
Pressing the Add or Modify button presents the keyboard window. If the Add button is pressed, the display line at the top of the keyboard window will be blank. If the Modify button is pressed, the display line will contain the selected doctor's name.

To add a character, press the applicable key. Capital letters may be entered by first pressing the Lock key or Shift key (single capital letter). Special characters may be entered by first pressing the letter, then pressing the special character key (for example: ñ may be entered by pressing the n key and then pressing the ˜ key). Pressing the Save button saves the inputted doctor name to memory. Pressing the Cancel button results in no changes to memory.

If the selected doctor's name is not PIN protected, pressing the Delete button will result in a confirmation popup being displayed before the doctor name can be deleted from the list. If the selected doctor's name is PIN protected, pressing the Delete button will result in a PIN popup window being displayed. The PIN popup window functions are described on the next page.

Doctors Tab Set (from prior page)

When the PIN window appears, the display line at the top of the window is blank. To input a number press the applicable keys, then press the Enter button to save the PIN to memory. Pressing the Cancel button results in no changes to memory. Pressing the Override button allows the user to bypass the doctor's PIN, but he must then input a special PIN.

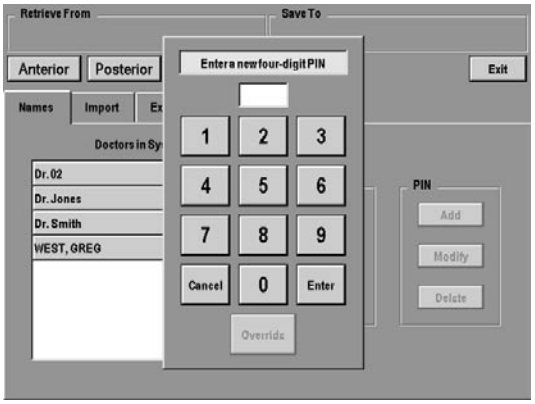


Figure 2-45. PIN WINDOW.

To Add, Modify, or Delete a PIN:
Pressing the Add button presents the PIN window. The display line contains “Enter a new four digit PIN.” Input your secret numbers and press the Enter button; the display line will change to “Enter new PIN again.” Input the numbers again and press the Enter button.

Pressing the Modify button presents the PIN window. The display line contains “Enter current PIN.” Input the numbers and press the Enter button; the display line will change to “Enter a new four digit PIN.” Input your secret numbers, and press the Enter button; the display line will change to “Enter new PIN again.” Input the numbers again and press the Enter button.

Pressing the Delete button presents the PIN window. The display line contains “Enter current PIN.” Input the numbers, and press the Enter button to delete the PIN.

Import Tab: Copy to System - This group displays a scrollable list of all doctors contained on the PCMCIA memory card that may be imported to the system memory. Doctors may be selected by pressing on the name on the list. If a selected doctor is already saved to the system memory, a dialog box will appear that asks whether or not the doctor should be overwritten with the doctor contained on the memory card.

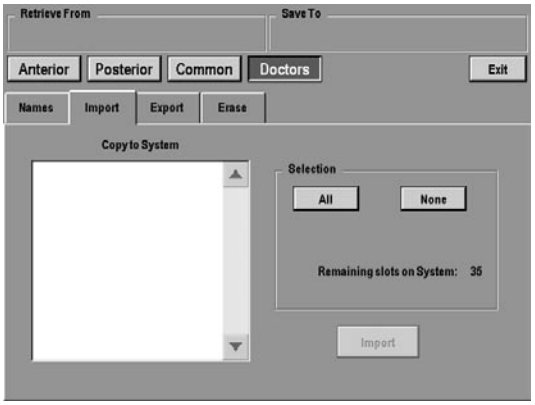


Figure 2-46. IMPORT TAB WINDOW.

PIN protected doctors can be copied to and from the system with no PIN entry required. The system will not allow a doctor in the system memory to be overwritten by the same doctor on the memory card if it has a different PIN.

Memory (continued from prior page)

Doctors Tab Set (from prior page)

Import Tab: Selection - Pressing the *All* button selects all names on the list while pressing the *None* button deselects all names. Within the selection box, the system also indicates the number of available memory slots on the system.

Import Tab: Import Button - Pressing the Import button imports the selected doctors from the memory card to the system memory.

Export Tab: Copy to Card - This group displays a scrollable list of all doctors contained in the system memory that may be exported to the PCMCIA memory card. Doctors may be selected by pressing on the name on the list. If a selected doctor is already saved to the memory card, a dialog box will appear asking whether or not the doctor should be overwritten with the doctor contained in the system memory. Doctor's with the same names but different PIN's will be overwritten. The Write Protection tab on the memory card must be in the unlocked position in order for the system to save to it.

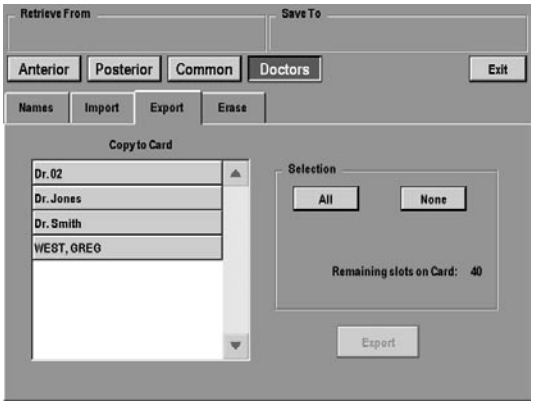


Figure 2-47. EXPORT TAB WINDOW.

Export Tab: Selection - Pressing the *All* button selects all names on the list while pressing the *None* button deselects all names. Within the selection box, the system also indicates the number of available memory slots on the memory card.

Export Tab: Export Button - Pressing the Export button exports the selected doctors from the system memory to the memory card.

Erase Tab: Erase from Card - This group displays a scrollable list of all doctors contained in the system memory that may be erased from the memory card.

Erase Tab: Erase Button - Pressing the Erase button erases the selected doctors from the memory card.

Erase Tab: Selection - Pressing the *All* button selects all names on the list while pressing the *None* button deselects all names. Within the selection box, the system also indicates the number of available memory slots on the memory card.

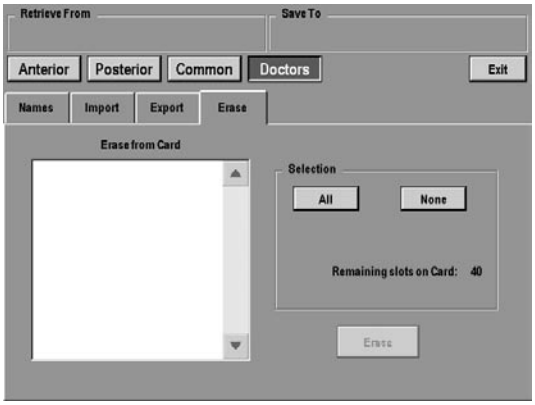


Figure 2-48. ERASE TAB WINDOW.

* FOR REFERENCE ONLY *

3. Volume

The *Options/Volume* key allows adjustments to be made to various tone and voice volumes. Volume values may be adjusted for the following: elevated Infusion Alarm, Diathermy is active, Error messages, Invalid Key presses, Voice confirmation, Vacuum is active, U/S is active, and Auxiliary.

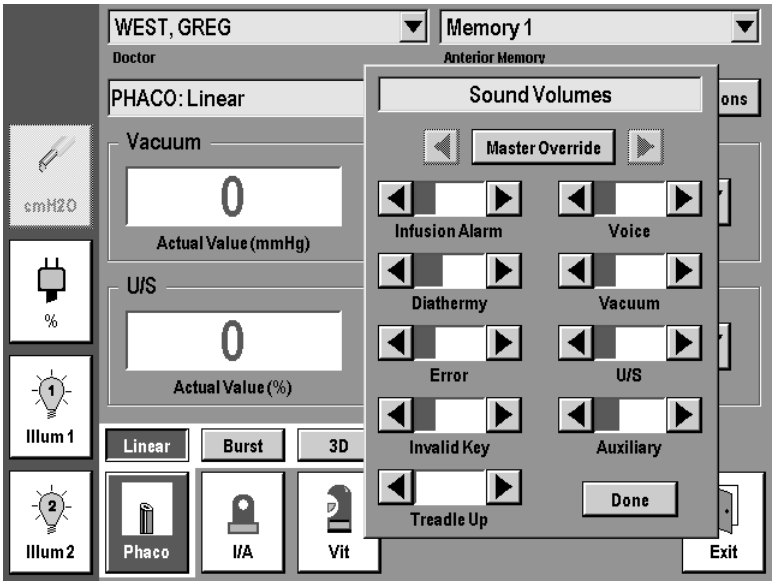


Figure 2-49. SOUND VOLUMES POPUP - This popup window allows the user to set tone and voice volume preferences. The settings take effect after pressing the *Done* key.

Most volume levels may be set to one of twenty levels. These are 0% of maximum volume (muted), 5% of maximum, 10% of maximum, and on up to 100% of maximum. (Note: Invalid key, Diathermy, and Error can only be adjusted between 20% and 100% of maximum volume.)

Adjustments can be made to all values simultaneously by pressing the Master Override button. Pressing this button causes the master override function to become active, and all values may then be increased or decreased by pressing its volume arrow keys.

Pressing the *Done* button results in the Sound Volumes pop-up window being removed and the previous screen being displayed, with any volume adjustments being in effect.

4. Timer

The *Options/Timer* key allows the user to program a general purpose timer. When activated, the timer display appears in the upper-right corner of the surgery and surgery setup screens, next to the footswitch icon (see Figure 2-9).

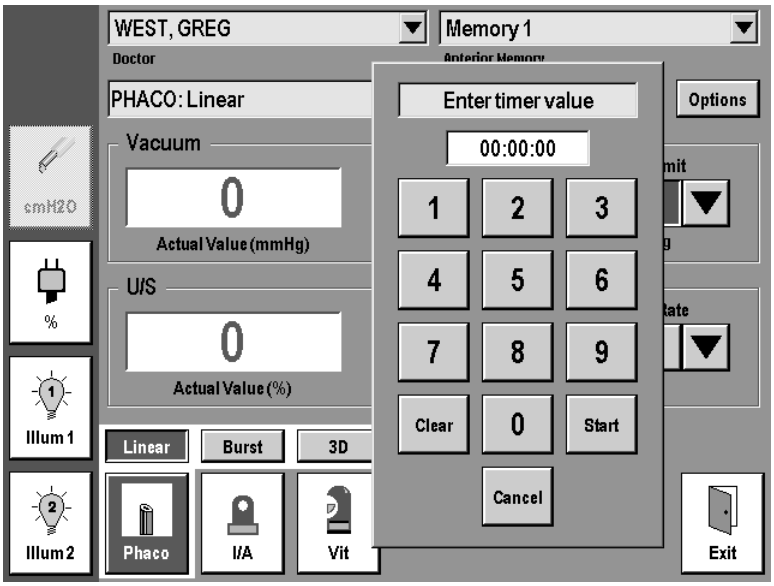


Figure 2-50. TIMER POPUP - This timer popup window allows the user to program a count up or count down timer, displayed next to the footswitch icon in the upper-right corner of the screen.

When the *Timer* key is pressed, a popup window appears for entering the timer value in hh:mm:ss format. Pressing the *Start* key without entering a timer value removes the popup and the timer display begins counting up from zero. If the *Start* key is pressed after a value is entered, the popup disappears and the timer display begins counting down, emitting an audible beep when it reaches zero.

The timer popup is removed when the *Cancel* key is pressed. The timer value is cleared when the *Clear* key is pressed. If a new timer is started when another one is counting, the new timer value replaces the existing one. The timer is stopped and removed from the screen when the *Timer Display* is pressed.

5. Metrics

Pressing the *Options/Metrics* key allows the user to view applicable data, by domain, in a pop-up window. Pressing the *Reset* button resets the currently displayed values. Pressing the *Done* button removes the Metrics pop-up window and returns to the previous screen.

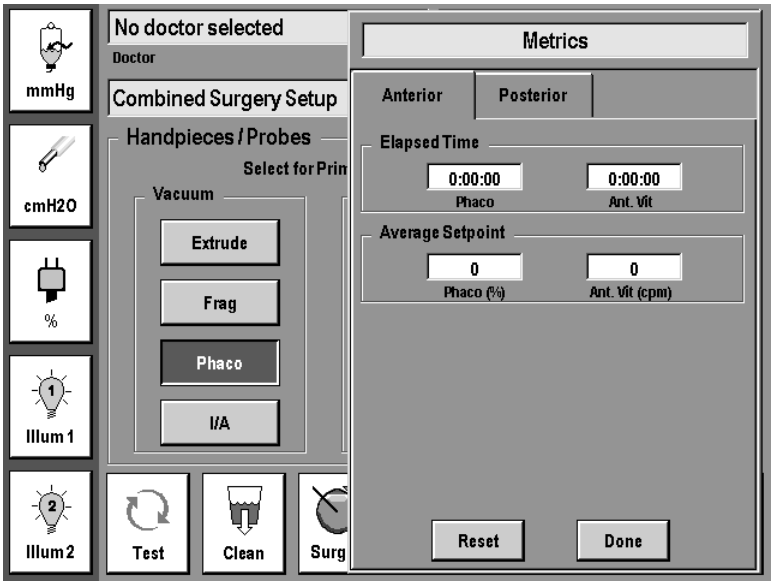


Figure 2-51. ANTERIOR DOMAIN METRICS - The metrics system automatically tracks Phaco time and its average setpoint, and anterior vitrectomy (Ant. Vit) time and its average cuts per minute.

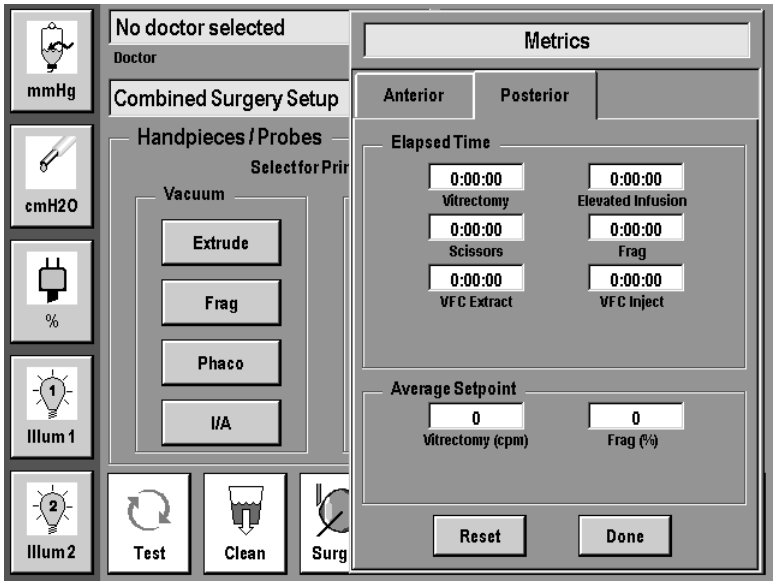


Figure 2-52. POSTERIOR DOMAIN METRICS - The metrics system automatically tracks Vitrectomy cutting time and its average cuts per minute, Frag time and its average power, Elevated Infusion time, Scissors time, VFC Inject time, and VFC Extract time.

6. Vitrectomy Probes

The *Options/Vit. Probe* key allows the user to select a preferred Vitrectomy Probes type: *Accurus®*, *Accurus®* 1500, *Accurus®* 2500, and *InnoVit®*. Only one can be active at a time, so selecting a probe causes it to become the active setting.

Pressing the *Done* button removes the Vitrectomy Probes pop-up window, returning the system to the previous screen with any probe selection modifications taking effect. Pressing the *Cancel* button removes the pop-up window and returns the system to the previous screen with no modifications.

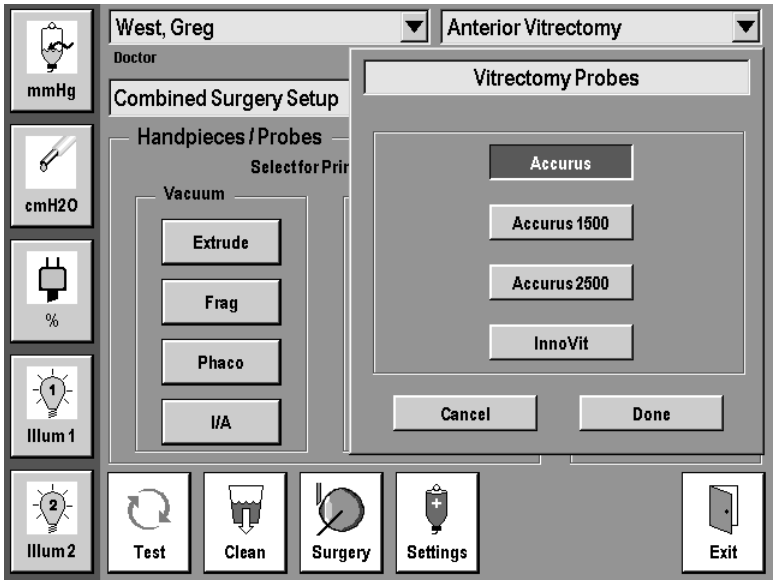


Figure 2-53. VITRECTOMY PROBES SELECTION - This popup allows the user to select a preferred vitrectomy probe type.

7. Test

This *Options/Test* key is used to prime, test, and tune probes/handpieces from the surgery screen. Its functionality is the same as the *Test* key in the surgical setup screens.

8. System

The *Options/System* key allows the user to instantly view, and change, current system parameters. These parameters are applicable to the entire system, independent of which doctor or doctor memory is currently selected.

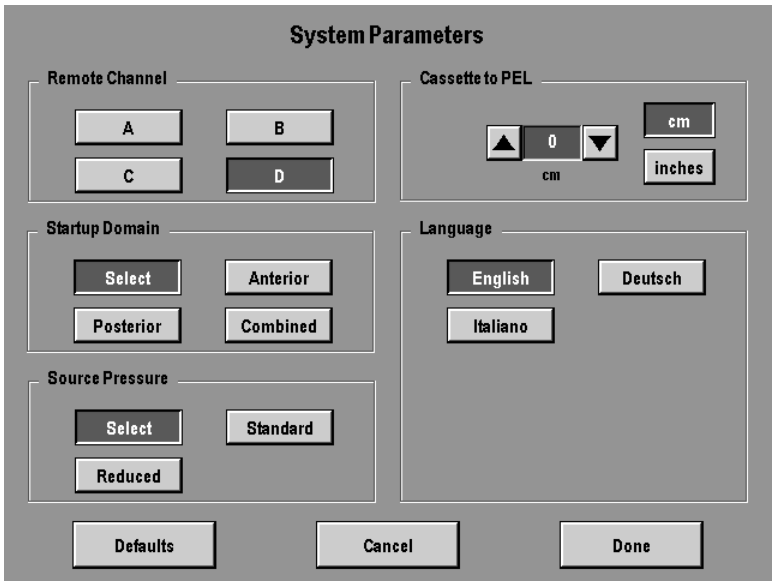


Figure 2-54. SYSTEM PARAMETERS - This screen allows the user to instantly view, and change, current system parameters.

The Remote Channel group is used to set the remote control channel. Pressing A, B, C, or D causes it to become the active setting, and its background color changes to blue. See Section Fifteen of this manual for instructions to set the remote control selector to match the selection made here.

The Startup Domain group allows the user to select the system's default domain upon system startup: Anterior, Posterior, Combined, or Select. This setting is only applicable for *Accurus*® 600DS and 800CS models.

The Source Pressure group contains a setting for the type of air pressure plugged into the rear panel: Standard, Reduced, or Select. Pressing a button causes it to become the active setting. See Section One of this manual for an explanation of source air pressure.

The Cassette to PEL group allows the user to set the vertical distance from the top of the cassette fluid chamber to the patient's eye level, and also offers a setting for units of measurement: *cm* or *inches*. The vertical distance can be adjusted by pressing the up/down arrows next to the distance readout.

The Language group contains languages the user can load into the system. The selections offered are populated based on the resource file loaded into the system, and therefore any subset of the number of available languages may be displayed at any time.

9. **Standby**

The *Options/Standby* key allows the user to blank the screen and the global LED's. Pressing anywhere on the touch screen, pressing a remote control button, or activating the footswitch causes to system to re-display the screen.

10. **About**

The *Options/About* key allows the user to view the current system configuration, a popup titled About *Accurus®*.

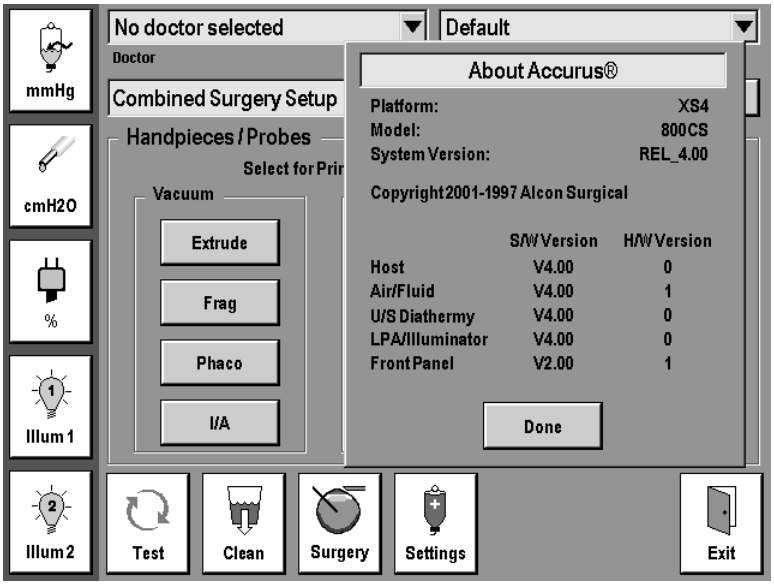


Figure 2-55. ABOUT *ACCURUS®* - This screen allows the user to view the current system configuration.

STATUS SCREENS AND POPUPS

There are four categories of system status conditions, each communicated to the user with fault message screens or popup windows. Each status condition is described on the display screen, and a dedicated color is assigned to each. The colors are shown below in ranking of severity:

SYSTEM STATUS	COLOR
FAULTS	RED
ERRORS	YELLOW
ADVISORIES	GREEN
SYSTEM INFORMATION	BLUE

A system *Fault* condition is displayed across the whole screen. *Error*, *Advisory*, and *System Information* conditions are displayed in popup windows.

Faults

System faults are the most severe system status conditions. Each fault is assigned a priority; i.e., if more than one fault exists, the fault with the highest priority is displayed first. The *Accurus®* system must be shut down completely when a system fault is detected, then turned ON.

NOTE: For troubleshooting purposes, record all information displayed on the fault screen before recycling power. For a listing of fault conditions, see the Troubleshooting section of this manual.



Figure 2-56 SYSTEM FAULT SCREEN - System faults require that system power be recycled. To help troubleshooting, record information displayed on the fault screen before recycling power.

Errors, Advisories, and System Information

A popup window appears over the current display screen to indicate system Error, Advisory, or System Information messages. The popup remains on the screen until the operator presses OK to acknowledge the condition, or until the condition no longer exists.

NOTE: For listings of popup messages, see the Troubleshooting section of this manual.

When a popup window is active, only the popup window keys, the illuminator global function keys, and the cassette Eject button are available. In the anterior domain, Irrigation ON/OFF is also available.

• Errors
When an Error is detected an error tone is heard and, simultaneously, a System Error popup window is displayed. The popup window remains displayed until the operator acknowledges the Error condition (the Error status remains until the system power is turned OFF/ON).

Global functions and mode functions related to the Error are put in a safe state; keys and icons are faded to indicate unavailability. If the Error does not affect the current active functions, they will remain active.

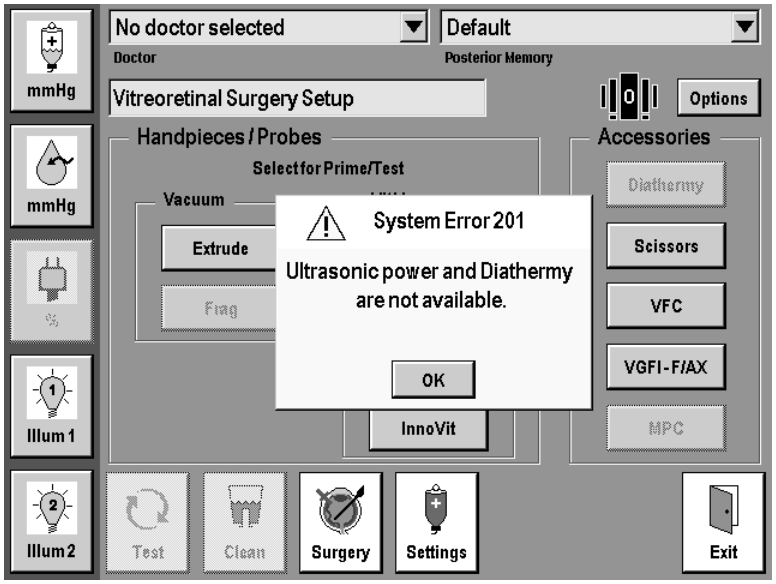


Figure 2-57 SYSTEM ERROR POPUP MESSAGES - System Errors require user intervention to address popup messages. Affected system functions remain unavailable until the popup message is resolved.

* FOR REFERENCE ONLY *

• Advisories

Advisories relay a message to the user, who can usually correct the condition by following the instructions printed in the System Advisory popup window.

When the *Accurus*® system detects an Advisory, an advisory tone is sounded and its popup window is displayed. Functions related to the Advisory are not available. The popup is removed when the condition is corrected or when the user presses OK.

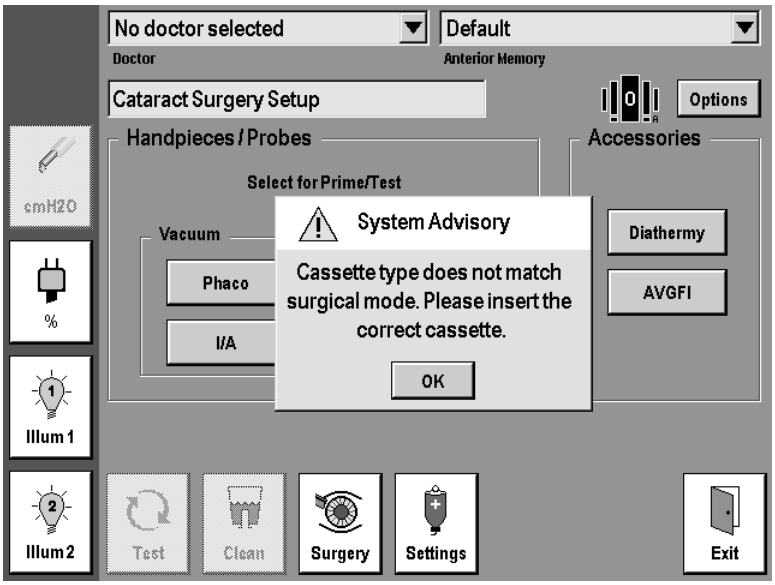


Figure 2-58 SYSTEM ADVISORY POPUP MESSAGES - System Advisories can usually be corrected by following the instructions printed in this popup window.

• System Information

When a condition corresponding to System Information is displayed, an associated message is printed in the popup window. System Information messages usually confirm a critical operator request or provide system status. The popup window is removed when the requested action is completed, or when the operator presses a touch key to acknowledge the message.

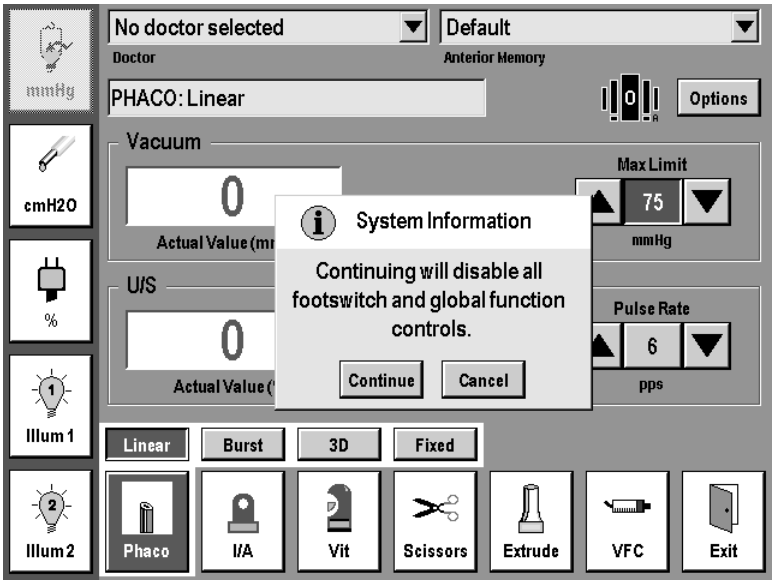


Figure 2-59 SYSTEM INFORMATION POPUP MESSAGES - System Information messages usually confirm a critical operator request or provides system status.

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* FOR REFERENCE ONLY *

SECTION THREE
POSTERIOR DESCRIPTION

POSTERIOR SETUP SCREENS

Upon entering the Posterior domain, the system displays the *Vitreoretinal Surgery Setup* screen, shown below in Figure 3-1. On this screen the user can prepare the *Accurus*® system for surgery, then enter another screen by pressing one of the following keys on the touch screen:

- Press **Settings** to enter *Infusion Settings* screen
- Press **Surgery** to enter *Posterior Surgery* screen
- Press **Exit** to return to *Procedure Selection* screen

The *Vitreoretinal Surgery Setup* screen can also be entered by pressing the **Exit** key from the *Infusion Settings* screen or a *Posterior Surgery* screen.

Popup windows can appear over these screens to advise the user of certain conditions. See Figure 2-18 for an example of a popup window.

Vitreoretinal Surgery Setup Screen

There are six *Vitreoretinal Surgery Setup* screen components offered to prepare for surgery. Two components—the Handpieces/Probes and Accessories components—are in the Primary Functions Window; and four components—Test, Clean, Surgery, and Settings—are in the Modes Window (see Figure 2-9).

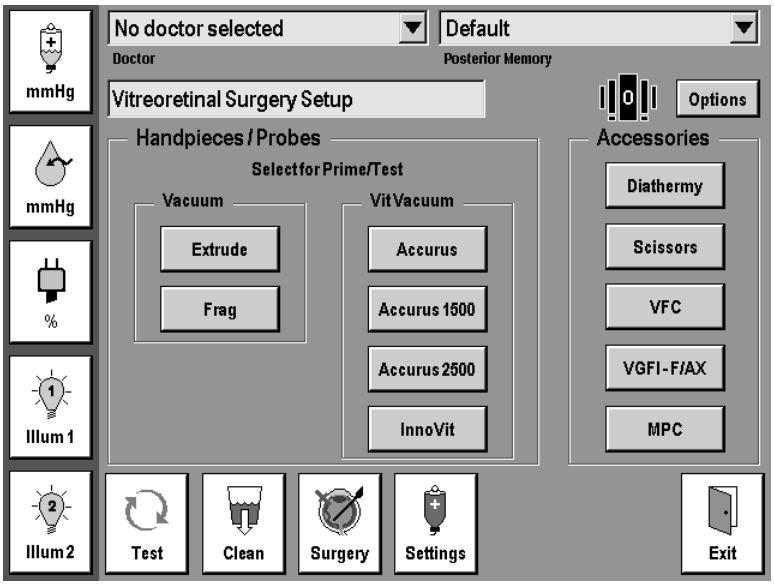


Figure 3-1 VITREORETINAL SURGERY SETUP SCREEN - Entering the *VitreoRetinal Surgery Setup* screen allows the user to prepare the *Accurus*® system for surgery.

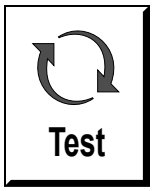
Selections in Primary Functions Window

• Handpieces / Probes - Select for Prime / Test
Probes and handpieces are selected for priming or testing/tuning by pressing their corresponding touch keys (see Figure 3-1). When a probe or handpiece is selected, an LED illuminates next to its associated front panel connector. Selecting a probe or handpiece with a common connector deselects the other.

When entering a surgery screen from the *Vitreoretinal Surgery Setup* screen, or upon successful prime/tune/test, the mode of the currently tested handpiece is automatically selected. If more than one probe or handpiece was tested, priority is given to Vit mode.

• Accessories
Pressing Diathermy, Scissors, VFC, VGFI-F/AX, or MPC illuminates an LED at its corresponding front panel connector to identify where to plug in the handpiece or accessory. Making one selection automatically deselects any other selection. Only the last-selected accessory or handpiece LED illuminates.

Keys in Posterior Modes Window



• Test
When the **Test** key is pressed, the selected vitrectomy probe, *Fragmatome*™ * handpiece, and extrusion handpiece are primed sequentially, and a popup window appears indicating that priming, testing, and tuning are active. Only the popup window keys (Stop and Skip), global function Illuminator keys, and diathermy are operable while the Test function is active. The surgery screen is entered automatically upon a successful prime, test, and tune sequence.

If the **Stop** key is pressed during priming, the test function is aborted. If **Skip** is pressed during priming, priming is skipped and handpiece testing/tuning begins.

An invalid error tone sounds when pressing the **Test** key with no probe or handpiece selected. An advisory popup window appears when the Frag handpiece is selected but not connected, when no cassette is inserted, or when priming/tuning has failed.

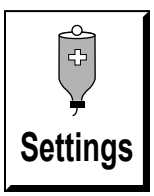


• Clean
Pressing the **Clean** key transfers fluid from the cassette into the drain bag. When **Clean** is pressed, a popup window indicates cleaning is in progress. Only the **Stop** key in the popup window, and global function Illuminator keys, are operable while the clean function is active. Pressing the **Stop** key during cleaning aborts the function.

If fluid is not fully transferred to the drain bag, press the **Clean** key a second time. (There will always be some residual fluid left in the cassette due to surface tension.)



• Surgery
When the **Surgery** key is pressed, the system exits the *Vitreoretinal Surgery Setup* screen and enters the selected surgery screen. If prime/tune is not finished, a popup reminder appears.



•Settings
When the **Settings** key is pressed, the system exits the *Vitreoretinal Surgery Setup* screen and enters the *Infusion Settings* screen (see Figure 3-2).

* FOR REFERENCE ONLY *

Infusion Settings Screen

The *Infusion Settings* screen (see Figure 3-2) is entered by pressing the **Settings** key on the *Vitreoretinal Surgery Setup* screen. In this posterior domain there are two data tabs available on the screen: the **Type** tab and the **Infusion** tab. (The **Irrigation** tab is not available and is grayed-out.) Pressing the **Exit** key closes this screen and returns to the *Vitreoretinal Surgery Setup* screen.

• Type Tab
The infusion **Type** tab determines how infusion pressure is provided for surgery, and is divided into three groups: Anterior Irrigation, Posterior Infusion, and Combined Infusion/Irrigation. In this domain, only the Posterior Infusion group is available.

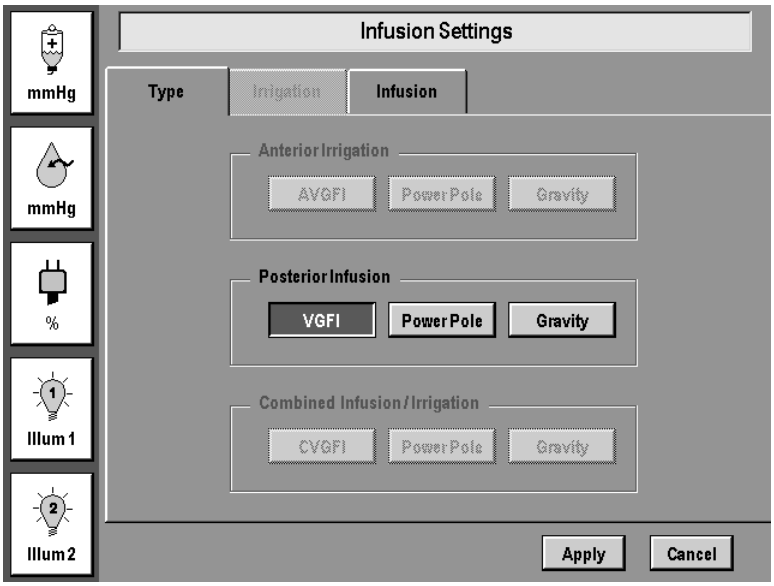


Figure 3-2 INFUSION SETTINGS SCREEN: TYPE TAB - The Type tab allows the user to select the type of Posterior Infusion desired. Selecting the Infusion tab offers alternate infusion and F/AX choices, shown in Figure 3-3.

The **Type** tab contains keys for the following irrigation methods: **VGFI**, **Power Pole**, and **Gravity**. Pressing the **Cancel** key exits the *Infusion Settings* screen and returns to the previous screen without any modifications taking effect. Pressing the **Apply** key accepts the settings, exits the *Infusion Settings* screen, and returns to the previous screen.

When **VGFI** is selected, infusion pressure is provided by applying air pressure into the fluid bottle. An internal air pump creates pressurized air, and *VGFI*™ * tubing delivers it to the bottle from a front panel connector. The air pressure setting is adjusted with the infusion up/down buttons on the front panel; the corresponding LED readout is immediately to the left of the buttons and indicates air pressure at the console. **Note: Fluid bottle should be positioned at patient eye level.**

The **Power Pole** selection requires that the optional cart with power IV pole be connected to the *Accurus*® system. With the fluid bottle hanging from the cart's power IV pole, infusion pressure is set by pressing the global up/down keys to the desired pressure, and the power pole automatically moves up or down to the required height.

When **Gravity** infusion is selected, infusion pressure is dependent on the fluid bottle height, set manually by the operator.

• Infusion Tab

The Alternate Infusion group contains a value for the alternate Pressure and a setting for alternate pressure Available **Yes/No**. Alternate pressure works with *VGFI*™ * infusion and power pole infusion; therefore, when gravity infusion is selected, these selections are grayed out and not functional. The Pressure value can be adjusted by pressing the up/down arrows next to the value. The nominal and alternate pressures are toggled by pressing the footswitch's right vertical switch.

The Alternate F/AX group contains a value for the alternate Pressure and a setting for alternate pressure Available **Yes/No**. The Pressure value is adjusted by pressing the up/down arrows next to the value. Selecting Yes or No determines whether alternate pressure will be available with the footswitch.

The Alternate Infusion / F/AX group allows the user to select either **Recall** or **Preset** alternate pressure values, giving the ability to select whether the alternate infusion level will always go to the preset value, or recall the last-used alternate infusion level.

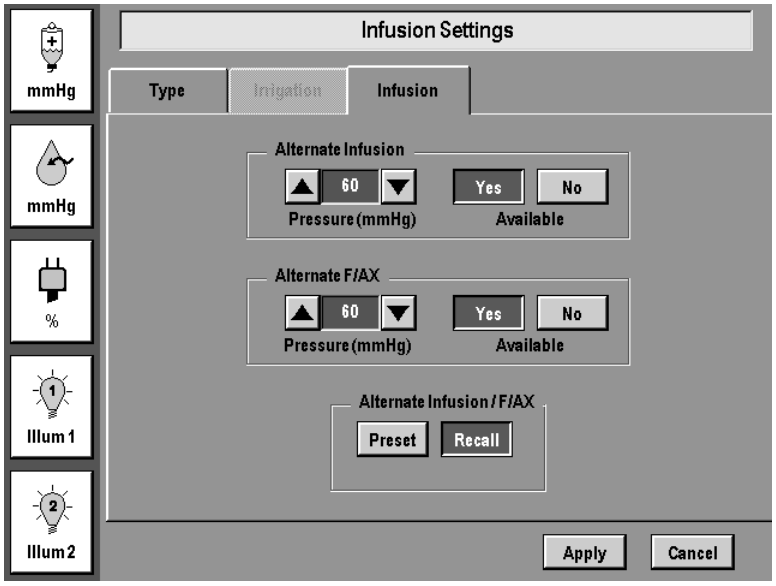
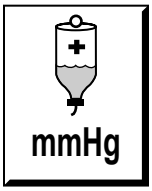


Figure 3-3 INFUSION SETTINGS SCREEN: INFUSION TAB - The Infusion tab allows the user to select the type of Alternate Infusion and Alternate F/AX desired.

POSTERIOR GLOBAL FUNCTIONS KEYS

Global functions are available in all surgery and setup screens. There are five global functions which, generally, can be selected, adjusted, and displayed at any time. When a global function is selected its color icon and LED readout illuminate brightly. (An exception is diathermy. Its LED readout is always lit, and its color icon illuminates brightly when activated with the footswitch.)

A global function setting can be adjusted, even when the function is OFF, by pressing its corresponding Up/Down arrow buttons. If the function is OFF, the LED readout becomes dimly lit while making adjustments, then becomes blank after a few seconds (except for diathermy as mentioned above).

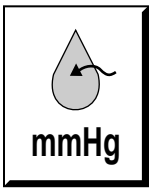


• Infusion
Infusion pressure is delivered through one of three types: *VGFI™* * infusion, Power Pole, or Gravity. Selection of infusion type is made in the *Infusion Settings* screen (see Figures 3-2 and 3-3).

When **VGFI** is selected in the *Infusion Settings* screen and activated by pressing its global icon, the *Accurus®* system delivers filtered, pressurized air through a tubing set into the infusion bottle, which in turn pressurizes fluid through tubing to the eye (F/AX, if in use, is deselected). Up/Down arrow buttons are used to adjust fluid pressure, displayed in mmHg or cmH_2O.

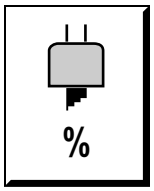
The **Power Pole** selection uses gravity to pressurize fluid when the bottle is hanging from the optional power IV pole. Infusion pressure can be set by pressing the global function up/down adjustment buttons until the desired LED pressure readout is displayed. The power IV pole automatically raises or lowers to the correct height, and the LED pressure readout blinks as the pole is moving. Activation of MPC scissors, or loading/unloading a cassette, will momentarily interrupt power IV pole movement.

When **Gravity** is selected in the *Infusion Settings* screen, the infusion icon fades, and the *Accurus®* system does not provide infusion pressure; pressure is adjusted by manually raising or lowering the infusion bottle.



• Fluid Air Exchange (F/AX)
F/AX provides filtered room air for fluid/air exchanges. The air is supplied through tubing to the eye from a front panel pneumatic connector.

When the **F/AX** function is selected, *VGFI™* * infusion, if in use, is deselected. The Up/Down arrow buttons are used to adjust the pump pressure, displayed in mmHg or cmH_2O.

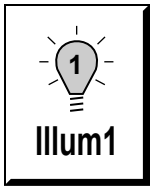


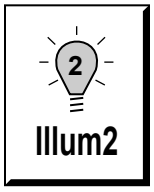
• Diathermy
The Diathermy global function provides fixed diathermy capability through the use of diathermy probes and handpieces. Diathermy output is available at all times, controlled by the footswitch, and is based on the percent of maximum voltage output.

When the **Diathermy** icon is pressed a popup window is displayed to remind the operator to use the footswitch to control this function. This popup window can be removed by pressing the screen's **Continue** key or activating the diathermy function.

The diathermy function can be activated in all modes by pressing the footswitch's left vertical switch. In Frag, VFC, and Scissors modes the footpedal must be released before you can activate diathermy; in Extrude mode the footpedal is inconsequential.

Diathermy power is adjusted with the up/down arrow buttons on the front panel, with the percentage of maximum diathermy voltage output displayed.





• Illuminators (Illum1 & Illum2)
Two halogen bulbs in the front panel illuminator drawer provide light to two illuminator receptacles (not available in 200PS system). Fiber optic light pipes can be plugged into the receptacles. Illuminators can be used individually or concurrently because each illuminator has its own On/Off and intensity controls. Light intensity for each illuminator is shown in its LED display, and each is adjustable using the up/down arrow buttons.



In the event of a burnt bulb a System Advisory appears on the screen, and the illuminator's icon dims and is covered with a strike. The user should then remove and plug the light pipe into the other illuminator receptacle, press OK, and proceed.

NOTE: Upon completion of the procedure it is recommended that the burnt bulb be replaced. Two illuminator sources should always be available. (See Care and Maintenance, Section Fifteen of this manual, for instructions to replace bulb.)

POSTERIOR SURGERY MODES

The *Accurus*® system offers five surgery modes in the posterior domain—depicted as icons in the Modes Window at the bottom of the touch screen—and each surgery mode has submodes (see Table 3-1). The active mode and submode keys are highlighted, and their names are displayed in the Title Window.

To enter a surgery mode, press its associated icon key on the touch screen. The previous surgery mode or submode is deactivated when a new mode or submode is selected, and front panel LED's illuminate to indicate which connectors are active. To enter a surgery submode, press the key above its associated mode key. Pressing a mode key successively causes the system to cycle through the available submodes.

NOTE: The footpedal must be released, and none of the footswitches depressed, to enter or change a surgery mode.

When a surgery mode is first entered after power up, the system enters its factory default settings, or if a doctor memory has been selected, the doctor's programmed values are used. If the defaults are then adjusted, re-entry to that mode will display the new values. Turning system power OFF resets all values back to the factory default settings, as does exiting the posterior domain.

Functional operations to the *Accurus*® console are accepted from a footswitch. The footswitch consists of a footpedal, right and left horizontal/vertical switches, and right and left vertical heel switches. Functions controlled by the footswitch are listed in Tables 3-2, 3-3, 3-4, and 3-5.

MODE	SUBMODES			
Vit Vitrectomy	**Prop Vac** **proportional vacuum vitrectomy**	Moment momentary vitrectomy	3D dual proportional vitrectomy	
Frag fragmentation	**Linear** **linear fragmentation**	Moment momentary fragmentation	Fixed fixed fragmentation	3D dual dynamic drive vacuum & U/S
Scissors scissors	**Prop** **proportional scissors**	Multi multiple cut scissors	MPC mpc scissors	
Extrude extrusion	Low low extrusion	**Medium** **medium extrusion**	High high extrusion	
VFC viscous fluid control	**Inject** **viscous fluid injection**	Dual dual viscous fluid injection	Extract viscous fluid extraction	

Table 3-1 POSTERIOR DOMAIN SURGERY MODES - Five surgery modes are available in the posterior domain. Each mode has submodes, as shown in this table, with the default submode shown in bold type.

Default Map A, Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Cut Disable	Programmable	Alt. Inf.	Cut Enable	Reflux
	Momentary	Diathermy	N/A	Programmable	Alt. Inf.	Momentary Cut	Reflux
	3D	Diathermy	Cut Disable	Programmable	Alt. Inf.	Cut Enable	Reflux
Frag	Linear	Diathermy	U/S Disable	Programmable	Alt. Inf.	U/S Enable	Reflux
	Fixed	Diathermy	U/S Disable	Programmable	Alt. Inf.	U/S Enable	Reflux
	Momentary	Diathermy	N/A	Programmable	Alt. Inf.	Moment. U/S	Reflux
	3D	Diathermy	U/S Disable	Programmable	Alt. Inf.	U/S Enable	Reflux
Scissors	Prop.	Diathermy	Multi-Cut	Programmable	Alt. Inf.	N/A	N/A
	Calibrate	Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A
	Multi-Cut	Diathermy	Prop Submode	Programmable	Alt. Inf.	N/A	N/A
	Vacuum/Multi-Cut	Diathermy	Prop Submode	Programmable	Alt. Inf.	Momentary Cut	Reflux
	MPC	Diathermy	Close Blade	Programmable	Alt. Inf.	N/A	N/A
	Vacuum/MPC	Diathermy	Close Blade	Programmable	Alt. Inf.	Momentary Cut	Reflux
Extrusion	Low	Diathermy	N/A	Programmable	Alt. Inf.	Diathermy	Reflux
	Medium	Diathermy	N/A	Programmable	Alt. Inf.	Diathermy	Reflux
	High	Diathermy	N/A	Programmable	Alt. Inf.	Diathermy	Reflux
VFC	Inject.	Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A
	Dual	Diathermy	Pressure Toggle	Programmable	Alt. Inf.	Vacuum Toggle	Reflux (vac on)
	Extract	Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A
Setup		Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A

• The reflux controlled by the Right Heel switch is pulsed.
• The default for the Left Heel is No Function.
• The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 3-2 **POSTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP A - The footswitch contains a footpedal, left and right switches which are either actuated horizontally or depressed vertically with the user's toe, and left and right vertical heel switches. These four tables represent the factory default settings for Map A, Map B, Map C and Map D, but can be programmed otherwise as instructed in section two of this manual (Options/Memory/Common/Footswitch).**

Default Map B, Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Reflux	Programmable	Alt. Inf.	Cut Toggle	Programmable
	Momentary	Diathermy	Reflux	Programmable	Alt. Inf.	Momentary Cut	Programmable
	3D	Diathermy	Reflux	Programmable	Alt. Inf.	Cut Toggle	Programmable
Frag	Linear	Diathermy	Reflux	Programmable	Alt. Inf.	U/S Toggle	Programmable
	Fixed	Diathermy	Reflux	Programmable	Alt. Inf.	U/S Toggle	Programmable
	Momentary	Diathermy	Reflux	Programmable	Alt. Inf.	Momentary U/S	Programmable
	3D	Diathermy	Reflux	Programmable	Alt. Inf.	U/S Toggle	Programmable
Scissors	Prop.	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
	Calibrate	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
	Multi-Cut	Diathermy	N/A	Programmable	Alt. Inf.	Close Blade	Programmable
	Vacuum/Multi-Cut	Diathermy	Reflux	Programmable	Alt. Inf.	Close Blade (treadle up) Momentary Cut (treadle down)	Programmable
	MPC	Diathermy	N/A	Programmable	Alt. Inf.	Close Blade	Programmable
	Vacuum/MPC	Diathermy	Reflux	Programmable	Alt. Inf.	Close Blade (treadle up) Momentary Cut (treadle down)	Programmable
Extrusion	Low	Diathermy	Reflux	Programmable	Alt. Inf.	Diathermy	Programmable
	Medium	Diathermy	Reflux	Programmable	Alt. Inf.	Diathermy	Programmable
	High	Diathermy	Reflux	Programmable	Alt. Inf.	Diathermy	Programmable
VFC	Inject.	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
	Dual	Diathermy	Reflux (vac on)	Programmable	Alt. Inf.	Vac/Press Cycle	Programmable
	Extract	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
Setup		Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable

- The reflux controlled by the Left Horizontal switch is pulsed.
- In Dual VFC the Right Horizontal switch shall cycle from Vacuum only to Vacuum, and Pressure to Pressure only, and then back to Vacuum only.
- The default for the Left Heel is Next Mode and the default for the Right Heel is Next Submode.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 3-3 POSTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP B

Default Map C, Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Reflux	Programmable	Inf. Pres. +	Cut Toggle	Inf. Pres. –
	Momentary	Diathermy	Reflux	Programmable	Inf. Pres. +	Momentary Cut	Inf. Pres. –
	3D	Diathermy	Reflux	Programmable	Inf. Pres. +	Cut Toggle	Inf. Pres. –
Frag	Linear	Diathermy	Reflux	Programmable	Inf. Pres. +	U/S Toggle	Inf. Pres. –
	Fixed	Diathermy	Reflux	Programmable	Inf. Pres. +	U/S Toggle	Inf. Pres. –
	Momentary	Diathermy	Reflux	Programmable	Inf. Pres. +	Momentary U/S	Inf. Pres. –
	3D	Diathermy	Reflux	Programmable	Inf. Pres. +	U/S Toggle	Inf. Pres. –
Scissors	Prop.	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
	Calibrate	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
	Multi-Cut	Diathermy	N/A	Programmable	Inf. Pres. +	Close Blade	Inf. Pres. –
	Vacuum/Multi-Cut	Diathermy	Reflux	Programmable	Inf. Pres. +	Close Blade (treadle up) Momentary Cut (treadle down)	Inf. Pres. –
	MPC	Diathermy	N/A	Programmable	Inf. Pres. +	Close Blade	Inf. Pres. –
	Vacuum/MPC	Diathermy	Reflux	Programmable	Inf. Pres. +	Close Blade (treadle up) Momentary Cut (treadle down)	Inf. Pres. –
Extrusion	Low	Diathermy	Reflux	Programmable	Inf. Pres. +	Diathermy	Inf. Pres. –
	Medium	Diathermy	Reflux	Programmable	Inf. Pres. +	Diathermy	Inf. Pres. –
	High	Diathermy	Reflux	Programmable	Inf. Pres. +	Diathermy	Inf. Pres. –
VFC	Inject.	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
	Dual	Diathermy	Reflux (vac on)	Programmable	Inf. Pres. +	Vac/Press Cycle	Inf. Pres. –
	Extract	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
Setup		Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –

- The reflux controlled by the Left Horizontal switch is pulsed.
- In Dual VFC the Right Horizontal switch shall cycle from Vacuum only to Vacuum, and Pressure to Pressure only, and then back to Vacuum only.
- The default for the Left Heel is Next Mode.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 3-4 POSTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP C

* FOR REFERENCE ONLY *

Default Map D, Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Reflux	*Inf. Pres. -	Programmable	Cut Toggle	**Inf. Pres. +
	Momentary	Diathermy	Reflux	*Inf. Pres. -	Programmable	Momentary Cut	**Inf. Pres. +
	3D	Diathermy	Reflux	*Inf. Pres. -	Programmable	Cut Toggle	**Inf. Pres. +
Frag	Linear	Diathermy	Reflux	*Inf. Pres. -	Programmable	U/S Toggle	**Inf. Pres. +
	Fixed	Diathermy	Reflux	*Inf. Pres. -	Programmable	U/S Toggle	**Inf. Pres. +
	Momentary	Diathermy	Reflux	*Inf. Pres. -	Programmable	Momentary U/S	**Inf. Pres. +
	3D	Diathermy	Reflux	*Inf. Pres. -	Programmable	U/S Toggle	**Inf. Pres. +
Scissors	Prop.	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
	Calibrate	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
	Multi-Cut	Diathermy	N/A	*Inf. Pres. -	Programmable	Close Blade	**Inf. Pres. +
	Multi-Cut w/Vac	Diathermy	Reflux	*Inf. Pres. -	Programmable	Close Blade (treadle up) Momentary Cut (treadle down)	**Inf. Pres. +
	MPC	Diathermy	N/A	*Inf. Pres. -	Programmable	Close Blade	**Inf. Pres. +
	MPC w/Vac	Diathermy	Reflux	*Inf. Pres. -	Programmable	Close Blade (treadle up) Momentary Cut (treadle down)	**Inf. Pres. +
Extrusion	Low	Diathermy	Reflux	*Inf. Pres. -	Programmable	Diathermy	**Inf. Pres. +
	Medium	Diathermy	Reflux	*Inf. Pres. -	Programmable	Diathermy	**Inf. Pres. +
	High	Diathermy	Reflux	*Inf. Pres. -	Programmable	Diathermy	**Inf. Pres. +
VFC	Inject	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
	Dual	Diathermy	Reflux (vac on)	*Inf. Pres. -	Programmable	Vac/Press Cycle	**Inf. Pres. +
	Extract	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
Setup		Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +

* Pressing the Left Heel switch decreases pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Normal Pressure preset value if currently above the preset value; otherwise, pressure remains at the current setting.

** Pressing the Right Heel switch increases the pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Alternate Pressure preset value if currently below the preset value; otherwise, pressure remains at current the setting.

- The reflux controlled by the Left Horizontal switch is pulsed.
- In Dual VFC, the Right Horizontal switch shall cycle from Vacuum only to Vacuum and Pressure to Pressure only and then back to Vacuum only.
- The default for the Right Vertical is Next Mode.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 3-5 POSTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP D

Vit Mode Surgery Screen



The Vit (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. The available probes, selected in the *Vitreoretinal Surgery Setup* screen, are *Accurus*®, *Accurus*® 1500, *Accurus*® 2500, and *InnoVit*®.

The Vit mode is entered when the **Surgery** key is pressed in the *Vitreoretinal Surgery Setup* screen. Three 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. When a function is disabled, its setting turns from blue to gray.

Cutting and/or vacuum is begun when the footpedal is pressed. Cutting can be disabled/enabled using the footswitch or by pressing the **Set Point** key, and can be changed regardless of footpedal position. If cutting is enabled, "Cut On" is displayed in the title window; if cutting is disabled, "Cut Off" is displayed. Vacuum can be disabled/enabled by pressing the vacuum Max Limit display. Cutting and vacuum cannot both be disabled at the same time (one must always be enabled).

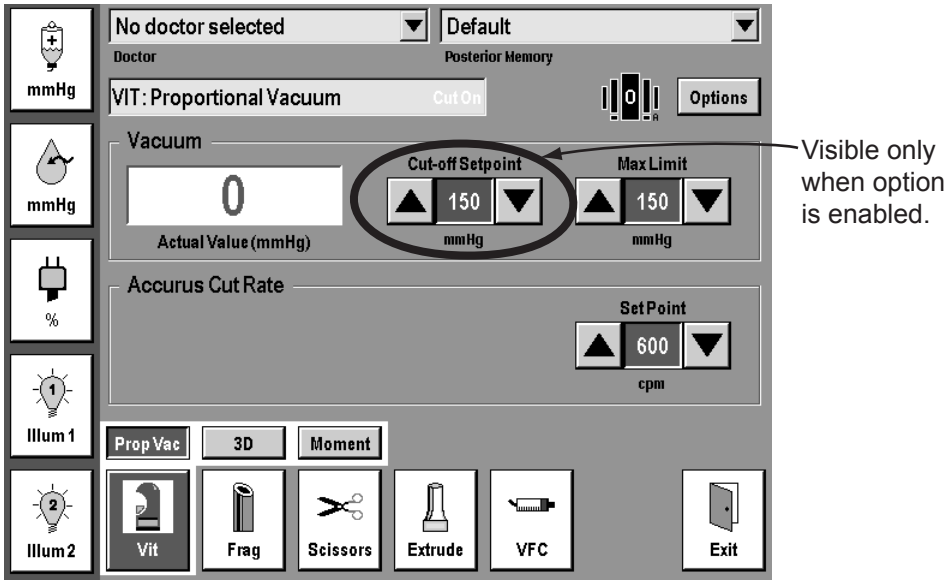


Figure 3-4 VIT MODE SCREEN - This screen shows the proportional vacuum submode, set up to operate with the *Accurus*® probe. This screen is similar for the other vitrectomy probes using proportional vacuum or momentary cut. 3D vitrectomy has its own unique screen that includes Treadle Start and Full Treadle settings for both vacuum and cut rate (see Figure 3-5).

Submode selection represents vacuum and cutting characteristics:

Prop Vac

The Vitrectomy Proportional Vacuum submode contains values for maximum vacuum level and cut-rate set point. As the footpedal is depressed the vacuum increases, with the actual vacuum displayed in the Actual Value box and its linear equivalent reflected in the bar.

The amount of vacuum delivered to the probe is regulated by the amount of footpedal depression up to the max limit. The Vacuum Max Limit is numeric, and can be adjusted by pressing the up/down arrows to the right of the value. The Actual Value is a progression bar for display only, and can not be modified by the user. The vacuum on/off status is signified by the background color of the **Max Limit** key; pressing the key toggles the status between on (blue) and off (light gray).

Probe cutting at a preset rate begins when the footpedal is pressed. The Cut Rate Set Point value is numeric, and can be adjusted by pressing the up/down arrows to the right of the value. The cutting on/off status is signified by the background color of the **Set Point** key; pressing the key toggles the status between on (blue) and off (light gray).

A cut-off max vacuum adjustment is provided for each Vit probe when the **Vit Cut-off Setpoint** is enabled (see Figure 3-4). This option is enabled in the doctor memory area (Options -> Memory -> Common -> Other) and the controls function as follows:

When cutting is enabled: The Vacuum Max Limit display background is blue and the displayed value is used as the maximum when applying vacuum. The Cut-off Setpoint display is gray to indicate that it is not the value currently in force, however the setting can still be adjusted.

When cutting is disabled: The Cut-off Setpoint display background is blue and the displayed value is used as the maximum when applying vacuum. The Vacuum Max Limit display is gray to indicate that it is not the value currently in force, however the setting can still be adjusted.

If this option is disabled, the Cut-off Setpoint parameter is not displayed.

Moment

The Vitrectomy Momentary Cut submode has the same characteristics as the Prop Vac submode, except that the cutter is activated when the applicable footpedal switch is momentarily activated (the default activation switch is the right horizontal switch).

3D

The Vitrectomy 3D (Dual Dynamic Drive) mode has similar characteristics as the Prop Vac submode, except that 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 feature of this mode is that 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) and that 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.

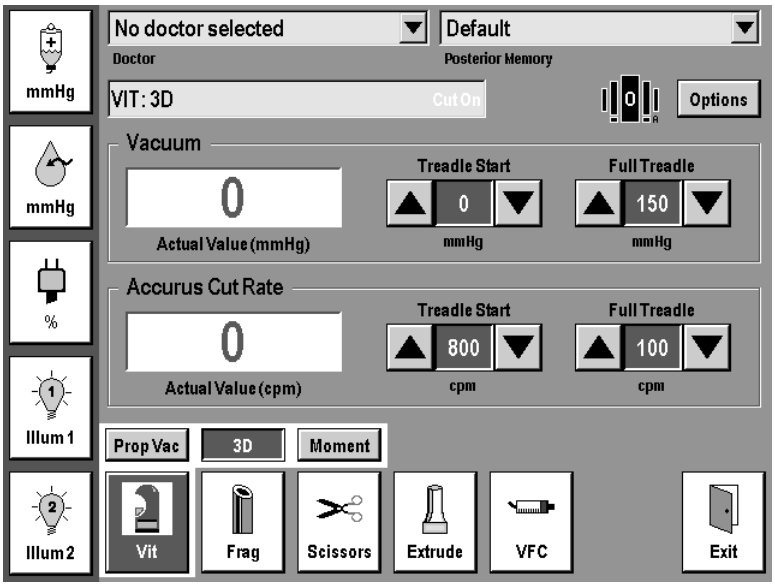


Figure 3-5 **VIT 3D (Dual Dynamic Drive) MODE SCREEN - This screen shows the 3D submode. The footpedal controls both proportional vacuum and proportional cut rate. Treadle Start and Full Treadle settings for vacuum and cut rate are fully adjustable to start high and finish low, or to start low and finish high according to preference.**

Frag Mode Surgery Screen



The Fragmentation mode provides ultrasonic fragmentation and vacuum using Alcon's *Fragmatome™* * handpiece. The handpiece is connected to the *Accurus®* console with an electric cable and vacuum tubing.

Four submodes are available, each with its own default U/S power and vacuum limits. Values are adjustable using touch arrow keys, regardless of footpedal position. U/S power is enabled and disabled by pressing foot switches or by pressing the power setting on the touch screen (except in momentary mode). Micro reflux is available via the footswitch.

U/S Pulse controls are available in all four submodes, and can be turned on/off by pressing the **Pulse Rate** touch key. The pulse rate can be adjusted using the up/down arrow keys, even with the footpedal depressed.

Linear - Depressing the footpedal in Linear Fragmentation submode increases vacuum up to its maximum limit, which is reached at half of full footpedal depression. From this detent point maximum vacuum is maintained while proportional U/S power begins and increases up to the U/S power maximum limit, reached at full footpedal depression.

Moment - The Momentary Fragmentation submode allows momentary activation of U/S power while using vacuum. Depressing the footpedal provides vacuum proportional to pedal position, up to the maximum limit. Fixed U/S power is provided while the footpedal is depressed and the applicable footswitch switch is momentarily activated (the default activation switch is the right horizontal switch).

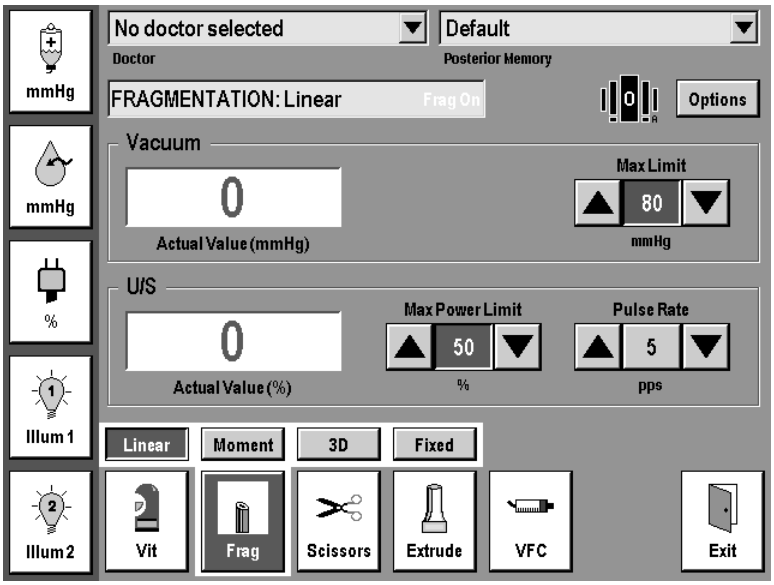
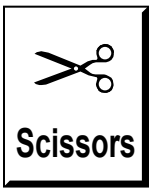


Figure 3-6 LINEAR FRAGMENTATION SCREEN - In Linear Fragmentation mode vacuum builds up to its maximum value at the footpedal's halfway point, then U/S power begins and rises to its maximum value at full footpedal depression.

3D (Dual Dynamic Drive) - In the Frag 3D submode, vacuum delivered to the probe and the U/S power are simultaneously regulated by the amount of footpedal depression. The display contains adjustable values for vacuum level at footpedal start and at full depression; and U/S power at footpedal start and at full depression. To ensure that not too much flow is generated when the footpedal is first depressed, the vacuum level is ramped up from zero to the set starting level during the first part of the pedal travel.

Fixed - When the Fixed Fragmentation submode is enabled, depressing the footpedal activates the preset U/S power and provides vacuum proportional to footpedal depression, up to the maximum limit.

Scissors Mode Surgery Screen



The Scissors mode provides cutting capability using pneumatically or electrically powered scissors controlled by the footswitch. The pneumatically powered scissors uses a microscissors screwed onto the Alcon IOS handpiece, which is connected via tubing to a front panel pneumatic port. The electrically powered MPC scissors handpiece plugs into a front panel electrical connector. Three submodes are available: Prop (Proportional), Multi (Multiple Cut), and MPC (Membrane Peeler/Cutter).

Prop - The Proportional submode (see Figure 3-7) provides proportional control of the opening and closing of the scissor blades, dependent upon the amount of footpedal depression. The amount of scissors closure is indicated in the Pressure window. When the footpedal is fully depressed, the Max Limit is reached, and scissors should be fully closed. Max Limit pressure is adjustable with the **Up/Down** triangle keys.

Pressing **Calibrate** in the *SCISSORS: Proportional* screen activates the *SCISSORS: Calibration* screen (see Figure 3-9), allowing the user to adjust the scissors Start and Close Pressure with the **Up/Down** triangle keys, whether or not scissors are enabled (footpedal is not required for calibration). The **Start Pressure** or **Close Pressure** keys must be pressed to activate pressure through the tubing to the handpiece. If one pressure is adjusted to equal the other, the pressures will automatically be adjusted so the closed pressure is greater than the open pressure. Pressing the **Default** key sets the pressures back to the factory defaults. Pressing the **Surgery** key closes this screen and returns the operator to the *SCISSORS: Proportional* screen.

Multi and MPC - In the Multiple Cut or MPC submode pressing the footpedal activates the scissors at a Cut Rate proportional to the footpedal position up to the preset Max Limit, set by pressing the **Up/Down** triangle keys next to the Max Limit readout. Single cuts are possible by adjusting the cut rate to a low Max Limit and momentarily pressing the footpedal.

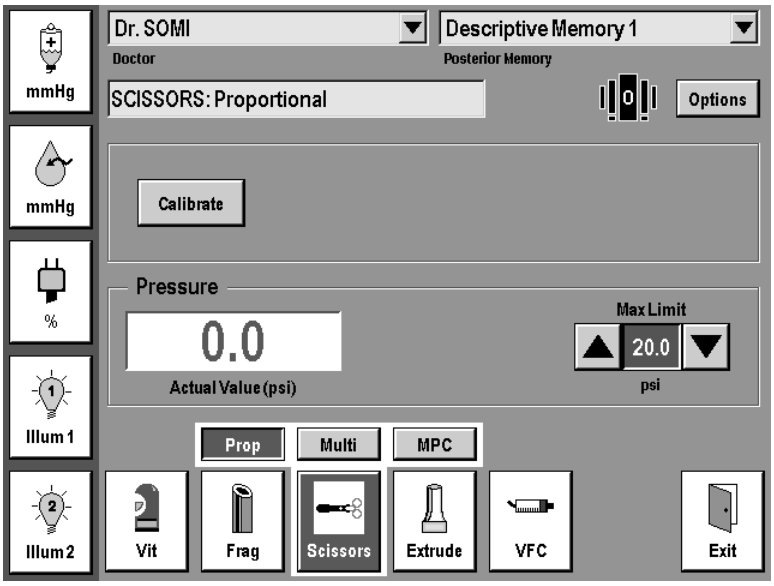


Figure 3-7 PROPORTIONAL SCISSORS SCREEN - Pressing down on the footpedal in this mode provides proportional control of the closing of the scissor blades.

Pressing the Vacuum **Max Limit** key turns scissors off and activates proportional vacuum for aspiration. When vacuum is activated the scissors can be momentarily activated at the preset value when the right horizontal switch is pressed, and vacuum is controlled proportional to the amount of footpedal depression up to its Max Limit.

WARNING!

Use of a MPC scissors handpiece at high cut rates continuously for over 2 1/2 minutes can result in excessive handpiece heating. Allow the scissors to cool for approximately 30 minutes between heavy usage of this type.

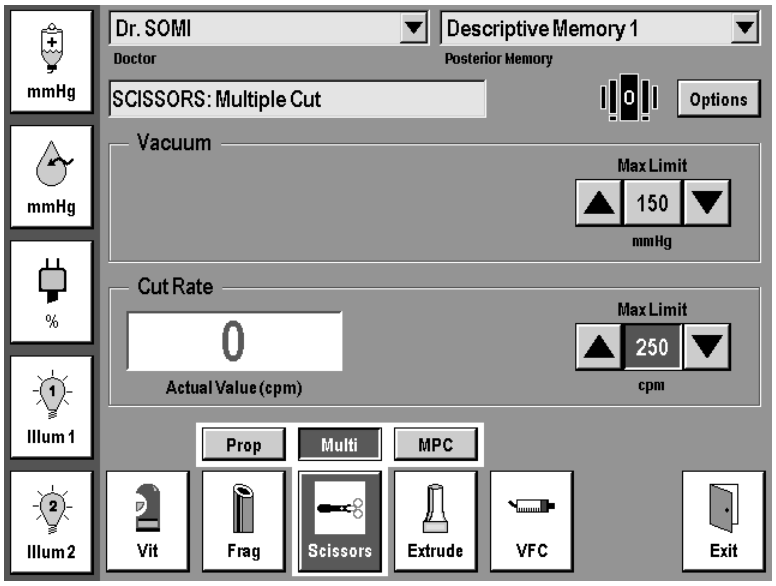


Figure 3-8 MULTIPLE CUT SCISSORS SCREEN - Depressing the footpedal in Multiple Cut mode activates scissors (shown in this figure) or vacuum progressively up to its preset Max Limit. When the Cut Rate key is activated, proportional scissors are controlled with the footpedal. When the Vacuum key is activated, aspiration is controlled with the footpedal, and momentary cutting is enabled by pressing the right horizontal switch.

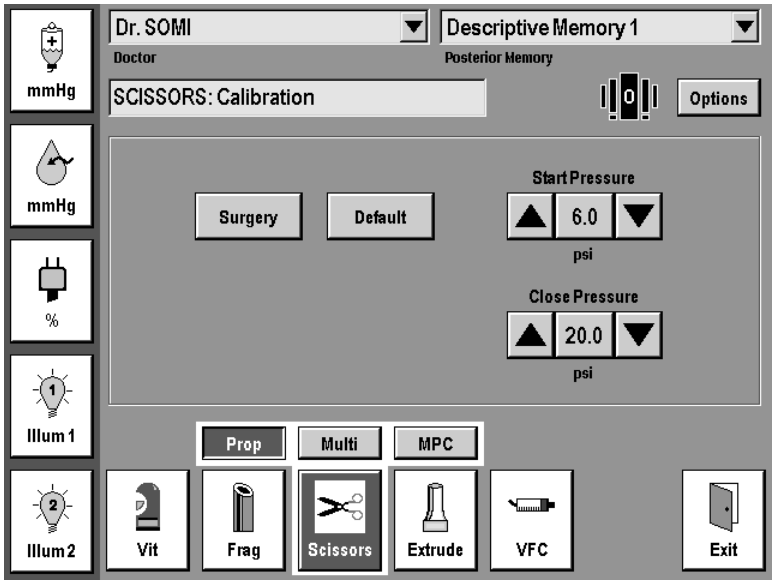


Figure 3-9 SCISSORS CALIBRATION SCREEN - To enter the calibration screen the Calibrate key must be pressed on the SCISSORS: Proportional screen. This screen shows the start and close pressures for scissors activation; pressing the arrow keys adjusts the pressures. Pressing the Default key sets the pressures back to the factory defaults.

Extrude Mode Surgery Screen



This mode provides vacuum from the cassette's left port through tubing to an extrusion handpiece. Three submode vacuum levels are available: Low, Medium, and High; with Medium as the default setting.

Depressing the footpedal activates vacuum proportional to pedal position. The preset maximum vacuum level, adjustable using the arrow keys, is reached at full treadle depression, and pressing the heel switch activates pulsed reflux. The preset maximum vacuum level can be adjusted with the footpedal in any position.

NOTE: Whenever a vacuum surge is detected, or the cassette is being drained, or the system runs a VAC check, the operator must remove his foot from the footswitch treadle for vacuum to be re-activated.

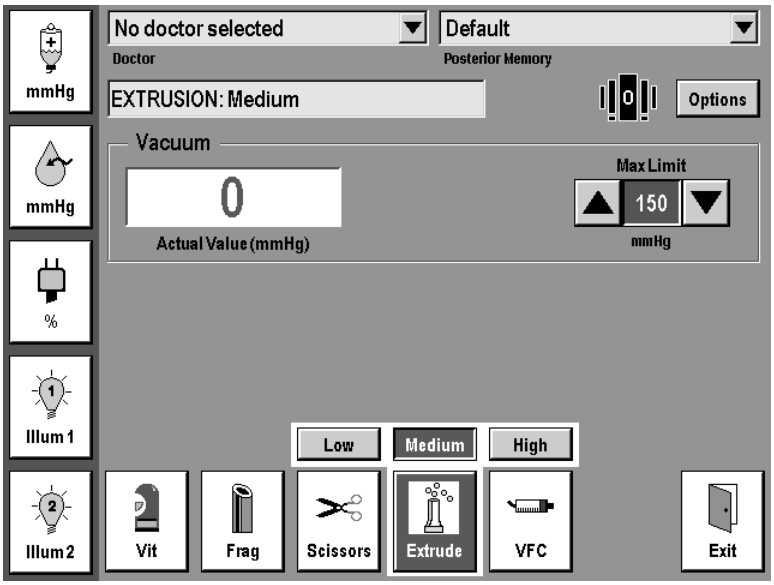
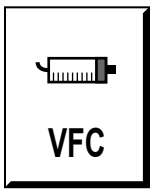


Figure 3-10 MEDIUM EXTRUSION SCREEN - Three extrusion submodes are offered: Low, Medium, and High. Full depression of the footpedal is required to reach the preset maximum vacuum.

VFC Mode Surgery Screen



The VFC (Viscous Fluid Control) mode provides pressure at the front panel VFC connector for fluid injection (i.e., silicone oil), or vacuum for extraction, through tubing to a syringe. Using vacuum the VFC mode also provides a means of extruding fluid through an extrusion handpiece (in Dual submode injection and extrusion are done simultaneously). Pressure and vacuum levels are adjustable via the arrow keys next to the Max Limit display boxes.

CAUTION

Always use Alcon-supplied Viscous Fluid Control Paks and follow all Directions for Use. Do not aspirate fluids directly into the console; this will cause damage to the console, increase risk of electrical shock, and void all warranties.

Inject - In this submode injection pressure to the syringe is provided proportional to the footpedal position up to the Max Limit setting.

WARNINGS!

- **Double check the cannula connected to the syringe for a tight connection. It must not be allowed to come loose.**
- **Adjust the Max Limit air pressure in accordance with the viscosity of fluids to be injected. Excessively high settings may endanger the patient.**

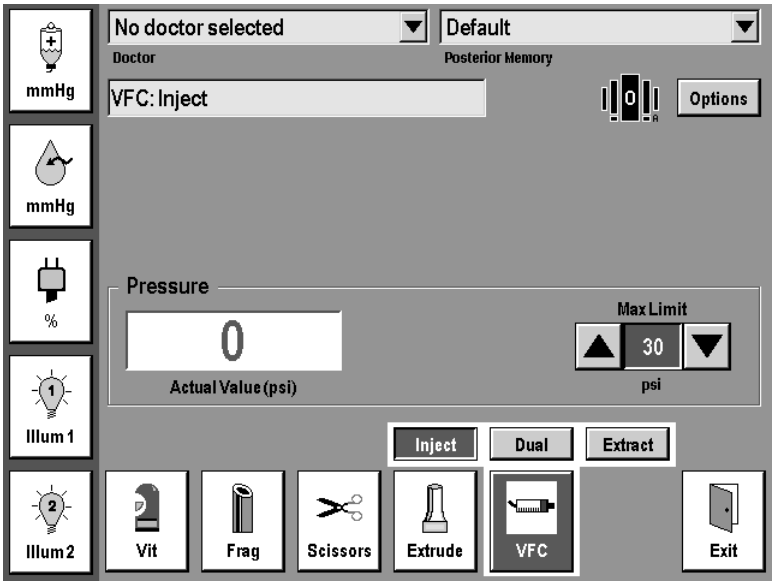


Figure 3-11 VFC INJECTION SCREEN - This Inject screen indicates the system is prepared to deliver a maximum of 50 psi to the syringe with the footpedal fully depressed.

Dual - In the Dual submode injection and extrusion are performed simultaneously using the syringe and extrusion handpiece. Pressing sideways on the footswitch's left and right horizontal switches, or pressing the **Max Limit** keys, turns the two individual functions on and off. In this submode, with both functions enabled, injection pressure to the syringe in detent 1, then vacuum to the extrusion handpiece in detent 2 (with sustained pressure to the syringe) is provided proportional to the footpedal position (see Figure 1-7).

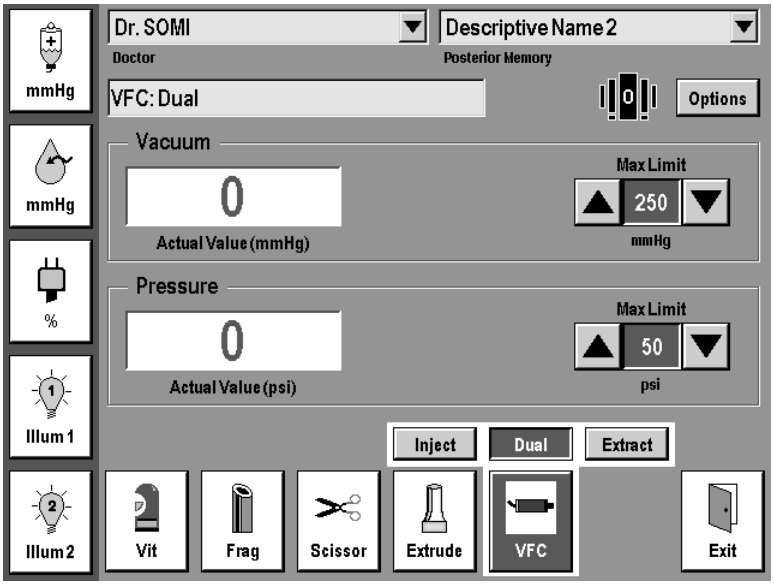


Figure 3-12 DUAL VFC INJECTION/EXTRUSION SCREEN - This screen indicates the system is prepared to deliver a maximum of 50 psi to the injection syringe in footpedal detent 1, then sustained injection and a maximum of 250 mmHg extrusion.

Extract - Vacuum for fluid extraction is provided to the syringe proportional to footpedal depression. Max Limit vacuum is reached at full depression.

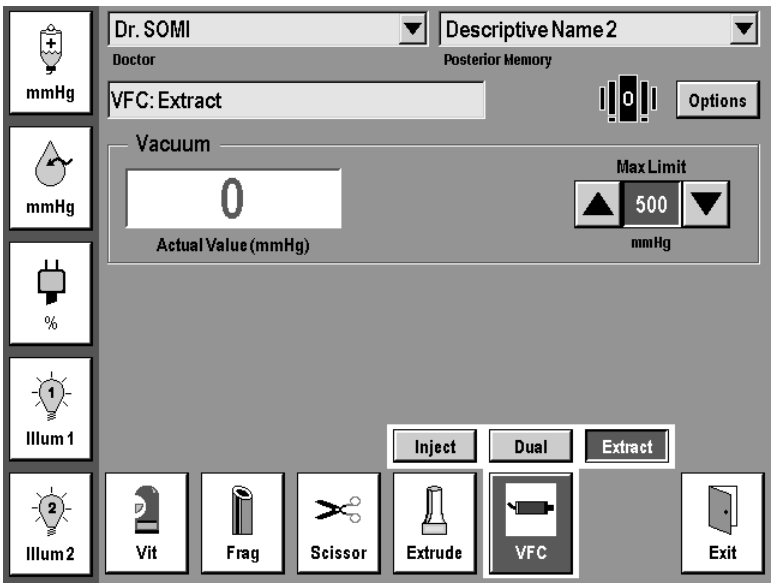


Figure 3-13 VFC EXTRACTION SCREEN - This screen indicates the system is prepared to extract fluid through a syringe at up to a maximum of 500 mmHg.

PROBES AND HANDPIECES

Different probes and handpieces are required for each operating mode of the *Accurus®* system. Following is a representative selection of probes and handpieces with a general description of each. See the Accessories and Parts section of this manual, or consult your Alcon representative, for a complete selection of all probes, handpieces, and handpiece tips available.

Vitrectomy Probes

The *InnoVit®* probe is a high-speed, cross-action (or radial) guillotine vitreous cutter with an ergonomically designed probe handle. The *Accurus®*, *Accurus®* 1500, and *Accurus®* 2500 probes are axial oscillating guillotine vitreous cutters. Both probes are are designed for a single use and must be properly disposed of when the surgery is completed.

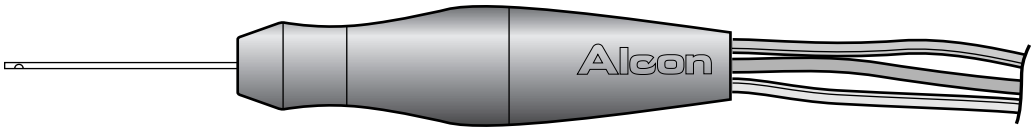


FIGURE 3-14 *INNOVIT®* PROBE



FIGURE 3-15 *ACCURUS®* PROBE

*Fragmatome™** Handpiece

The *Fragmatome™* * handpiece is configured to provide simultaneous vacuum and fragmentation, or vacuum only, depending upon the console setup. The handpiece has a stainless steel shell for improved reliability and durability. Other than attaching and removing the needle and aspiration line, no assembly or disassembly is required.

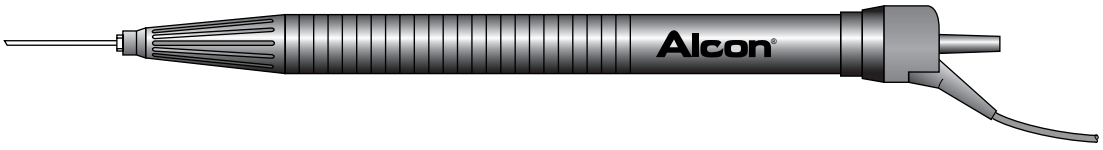


FIGURE 3-16 *FRAGMATOME™ HANDPIECE**

Scissors Handpiece

The Intraocular Scissors (IOS) Handpiece is used for membrane dissection. Pneumatic power to drive the scissors is provided through tubing which is attached to the barbed shaft. Scissors tips come in single use and reusable configurations, and are screwed into the IOS handpiece. The scissors adjustment is used to increase or decrease the opening of the scissors blades. Additionally, it can be used to manually close the scissors in the event of air pressure and/or electrical power failure.

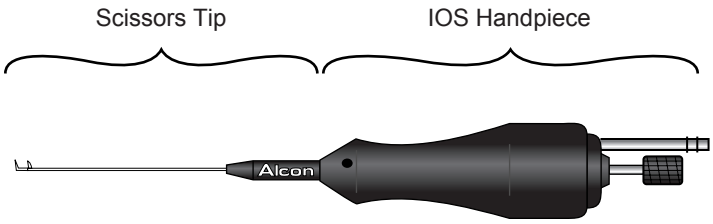


FIGURE 3-17 INTRAOCULAR SCISSORS (IOS) HANDPIECE

MPC Scissors Handpiece

The MPC (Membrane Peeler Cutter) handpiece is an electrically activated snap action scissors manufactured by *Grieshaber®*, used for membrane dissection. Electric power to drive the scissors is provided through a cable which is connected to the front panel of the *Accurus®* system. The scissors tip is built into the MPC handpiece, and is not removable. A small port is provided to flush the shaft when cleaning the MPC scissors handpiece.

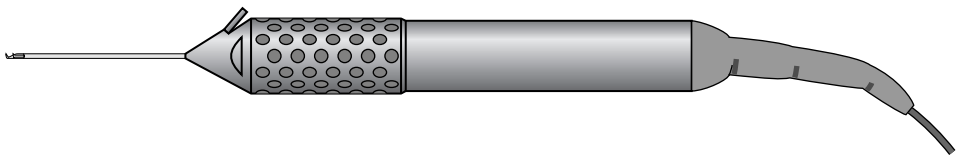


FIGURE 3-18 MPC SCISSORS HANDPIECE

Diathermy/Coagulation Handpieces

Single use Bipolar Coagulation Brushes are available in a wide variety of configurations: straight, curved, 20-gauge, 23-gauge, tapered, and widestroke. All single use bipolar accessories are available with and without cables. Also available are reusable and single-use bipolar cables.

Bipolar Coagulation Forceps are lightweight and ergonomically designed to reduce hand fatigue, as well as to provide precise control and safety. They are available in high-conductive non-stick alloy, titanium, or single-use configurations. They are also available with a wide variety of tip styles.

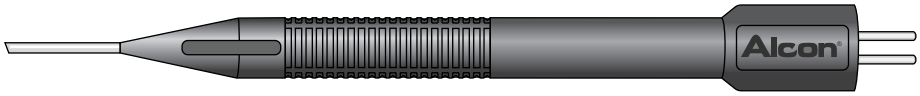


FIGURE 3-19 SINGLE USE BIPOLAR BRUSH

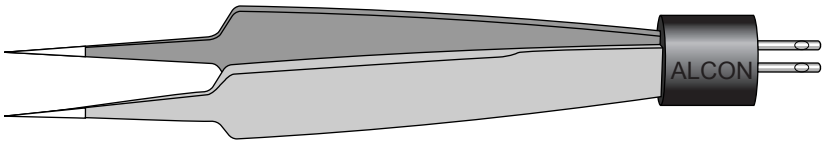


FIGURE 3-20 4 INCH NADLER COAPTATION FORCEPS

* FOR REFERENCE ONLY *

SECTION FOUR
POSTERIOR OPERATING INSTRUCTIONS

Introduction

This section of the manual contains typical setup procedures using posterior *Accurus*® paks, then guidelines to navigate through the posterior domain.

The *Accurus*® pak setup procedures are written for a surgical team of three people: Surgeon and Scrub Nurse in the sterile field, and Circulating Nurse in the non-sterile field. The instuctions are divided into two columns. In the left column a directive is given, and in the right column a team member is identified to perform the task. These procedures assume that a sterile drape is not being utilized; if it is applied to the front of the console, the roles of the Circulating Nurse and the Scrub Nurse change.

If you have problems with the system when performing the setup instructions, you should first refer to the Troubleshooting section of this manual. If questions still exist, contact the Alcon Technical Services Department or your local Alcon representative.

Power Up Sequence

Follow these steps each time you turn system power ON. This helps ensure that the *Accurus*® system is set up correctly and is ready for surgery.

1. Plug the power cord into its power source.

2. Connect the air hose between the *Accurus*® system and the pressure supply (compressed air or nitrogen). Verify that pressure is between 90 to 120 psi (500 kpa minimum for reduced operation).

3. Connect the footswitch cable to the *Accurus*® system.

4. Connect the optional Power IV Pole cable to the *Accurus*® system.

5. First turn system power ON using the rear panel ON/OFF switch and then the front panel Standby switch. Alcon's *Accurus*® logo is displayed on the viewing screen while the system completes its initialization and self-test diagnostics (approximately 2 minutes). While completing diagnostics, confirm that the five Global Function LED displays on the front panel flash 888 before the system enters either the *Procedure Selection* screen or a *Surgery Setup* screen.

   If a fault is detected during diagnostics, a *System Fault* screen is displayed and operator inputs are locked out until the failure/problem is corrected.

Select a Mode of Operation (600DS and 800CS)

An *Accurus*® 600DS or 800CS system enters the *Procedure Selection* screen upon successful completion of self-test diagnostics. At this point you must select the posterior domain of operation on the touch screen, then a variety of operating selections are available to you. Navigating through domains and their modes of operation is flexible, controlled by system software, and is generally structured as diagrammed in Figure 4-1.

If your system only offers posterior functions, or if the system has been programmed in the *System Parameters* screen (***Options/System***) to automatically enter the posterior domain, the *Procedure Selection* screen is bypassed. For systems that offer it, the operator can return to the *Procedure Selection* screen by pressing the ***Exit*** key.

Navigating Through the *Accurus*® Posterior Mode Screens

After entering a mode of operation, most surgical operations are controlled through the doctor's footswitch, but before any surgery can be performed there are system modes and parameters that must be selected. Most presurgical system preparation is performed by inserting a cassette, connecting handpieces and accessories to the *Accurus*® system, then pressing buttons to navigate through the system touch screens to make operating selections. A brief outline of screens and their functions is presented below.

- *Accurus*® Opening Screen - When system power is turned ON the *Accurus*® banner is displayed while the system completes initialization and self-test diagnostics. All operator input is blocked out during this procedure (use rear panel Power switch to power down during initialization). After successfully completing self-test diagnostics the system enters either the *Procedure Selection* screen or the *Vitreoretinal Surgery Setup* screen.

- Procedure Selection Screen - On systems that offer the *Procedure Selection* screen, the operator can select Posterior to enter the setup screen for that domain.

- Vitreoretinal Surgery Setup Screen - This screen is designed to help the operating room staff prepare the system for vitreoretinal surgery.

  You first insert a cassette, then in the *Handpieces/Probes* section of the screen you select handpieces and probes you want to use. Plug handpieces and probes into the illuminated front panel connectors, then press the **Test** key to test and prime/tune the selections. The system automatically advances to the appropriate surgery mode after testing is done.

  One accessory can be selected at a time by pressing the desired item from the *Accessories* choices. The associated front panel connectors illuminate to help you plug the accessory into the correct connectors.

Continued on page 4.4

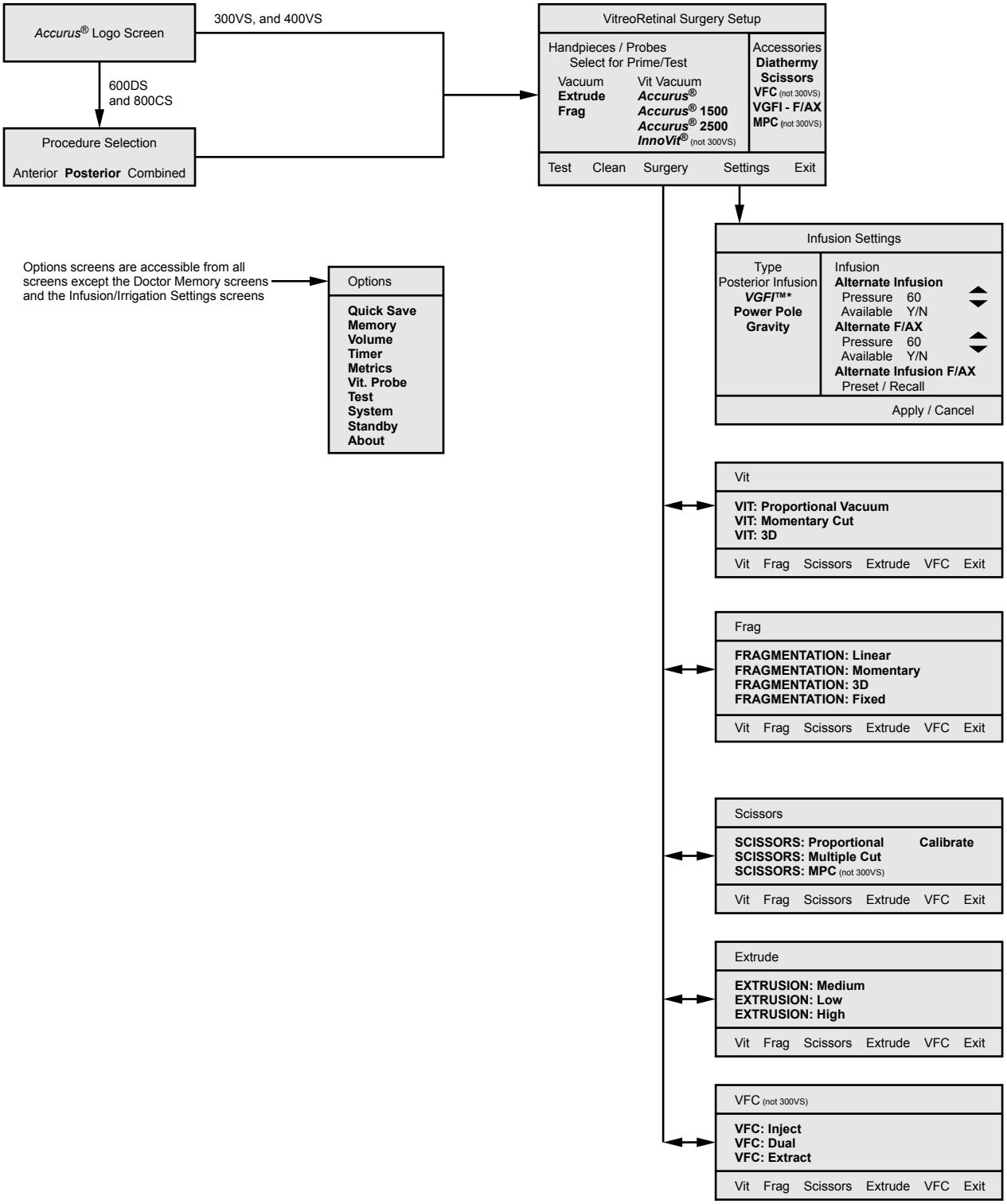


Figure 4-1 POSTERIOR MODES FLOW CHART - This flow chart highlights the system's posterior operating domain with a general map to help you navigate through its modes of operation.

- Vitreoretinal Surgery Setup Screen - (continued from prior page)

  The **Settings** key is pressed to open the *Infusion Settings* screen. In the **Type** tab you can select either *VGFI™* * infusion, Power Pole, or Gravity infusion. In the **Infusion** tab, depending on your infusion type, you can set an Alternate Infusion pressure, an Alternate F/AX pressure, and select whether you want the alternate pressure to be the preset value or recalled from the last alternate pressure used. Pressing the **Apply** key returns you to the setup screen.

  The **Clean** key is pressed to drain fluid from the cassette chamber into the drain bag. During normal operation this function is performed automatically, but prior to removing the cassette you may want to drain the remainder of fluid from the chamber into the drain bag.

  Depending on the last handpiece tuned, pressing the **Surgery** key opens the associated surgery screen for that mode of operation.

- Surgery Screens - Entering a surgery screen gives the doctor a variety of operating parameters and adjustments unique to that mode of operation. Pressing a key at the bottom of the screen for another mode of operation automatically opens the surgery screen for that mode. If your system also contains anterior domain functions, you can enter that domain by pressing **Exit** until the *Procedure Selection* screen again appears.

Factory Default Settings and Adjustments

The settings can be adjusted by pressing touch screen arrow keys, increasing or decreasing the values. If the settings are adjusted, re-entry to that mode will display the new values. Tables 4-1 and 4-2 show the factory default settings for each mode, and the adjustment ranges of each.

Mode or Function	Submode	Function	Default Value	Adjustable Range
Vit: Proportional Vacuum	*InnoVit*®	Vacuum Max Limit Cut Rate	100 mmHg 800 cpm	0-600 mmHg (0-400) 100-1800 cpm
	Accurus®	Vacuum Max Limit Cut Rate	150 mmHg 600 cpm	0-600 mmHg (0-400) 100-800 cpm
	Accurus® 1500	Vacuum Max Limit Cut Rate	150 mmHg 1000 cpm	0-600 mmHg (0-400) 100-1500 cpm
	Accurus® 2500	Vacuum Max Limit Cut Rate	150 mmHg 1500 cpm	0-600 mmHg (0-400) 100-2500 cpm
Vit: Momentary Cut	*InnoVit*®	Vacuum Max Limit Cut Rate	100 mmHg 800 cpm	0-600 mmHg (0-400) 1-1800 cpm
	Accurus®	Vacuum Max Limit Cut Rate	150 mmHg 600 cpm	0-600 mmHg (0-400) 1-800 cpm
	Accurus® 1500	Vacuum Max Limit Cut Rate	150 mmHg 1000 cpm	0-600 mmHg (0-400) 1-1500 cpm
	Accurus® 2500	Vacuum Max Limit Cut Rate	150 mmHg 1500 cpm	0-600 mmHg (0-400) 1-2500 cpm
Vit: 3D	*InnoVit*®	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 100 mmHg 1800 cpm 100 cpm	0-600 mmHg (0-400) 100-1800 cpm
	Accurus®	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 150 mmHg 800 cpm 100 cpm	0-600 mmHg (0-400) 100-800 cpm
	Accurus® 1500	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 150 mmHg 1500 cpm 100 cpm	0-600 mmHg (0-400) 100-1500 cpm
	Accurus® 2500	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 150 mmHg 2500 cpm 100 cpm	0-600 mmHg (0-400) 100-2500 cpm

Table 4-1 VITRECTOMY DEFAULT SETTINGS AND ADJUSTABLE RANGES - Listed here are the *Accurus*® factory default settings for the posterior vitrectomy modes of operation. The factory settings can be changed during surgery, but turning system power OFF resets all values back to the factory default settings. Figures in this table inside parenthesis are for reduced settings systems.

Mode or Function	Submode	Function	Default Value	Adjustable Range
Frag	Fixed	Vacuum Max Limit U/S Power Pulse Rate	150 mmHg 50% 5 pps (off)	0-600 mmHg (0-450) 0-100% 0-15 pps
	Linear	Vacuum Max Limit U/S Power Pulse Rate	80 mmHg 50% 5 pps (off)	0-600 mmHg (0-450) 0-100% 0-15 pps
	Momentary	Vacuum Max Limit U/S Power Pulse Rate	150 mmHg 50% 5 pps (off)	0-600 mmHg (0-450) 0-100% 0-15 pps
	3D	Vac Max Limit *Treadle Start* *Treadle Full* U/S Power *Treadle Start* *Treadle Full*	 0mmHg 80 mmHg 0% 50%	 0-600 mmHg (0-450) 0-600 mmHg (0-450) 0-100% 0-100%
Scissors	Proportional Cut Calibrate	Pressure Max Limit Start Pressure Close Pressure	21.5 psi 10.5 psi 21.5 psi	0.5-40 psi 0.0-30 psi 0.5-40 psi
	Multiple Cut	Cut Rate Max Limit	300 cpm	1-300 cpm
	Multiple Cut - Vacuum	Vacuum Max Limit Cut Rate Set Point	400 mmHg 250 cpm	0-600 mmHg (0-450) 1-300 cpm
	MPC	Cut Rate Max Limit	300 cpm	1-450 cpm
	MPC - Vacuum	Vacuum Max Limit Cut Rate Set Point	400 mmHg 300 cpm	0-600 mmHg (0-450) 1-450 cpm
Extrude	High	Vacuum Max Limit	250 mmHg	0-600 mmHg (0-450)
	Medium	Vacuum Max Limit	150 mmHg	0-600 mmHg (0-450)
	Low	Vacuum Max Limit	50 mmHg	0-600 mmHg (0-450)
VFC	Injection	Pressure Max Limit	30 psi	0-80 psi (0-70)
	Dual	Pressure Max Limit Vacuum Max Limit	30 psi 100 mmHg	0-80 psi (0-70) 0-600 mmHg (0-450)
	Extraction	Vacuum Max Limit	500 mmHg	0-600 mmHg (0-450)
Infusion	*VGFI*™*	Pressure Alt Pressure	30 mmHg 60 mmHg	0-120 mmHg 0-120 mmHg
	Power Pole	Pressure Alt Pressure	30 mmHg 60 mmHg	5-85 mmHg 5-85 mmHg
F/AX		Pressure Alt Pressure	35 mmHg 60 mmHg	0-120 mmHg 0-120 mmHg
Diathermy		Voltage	50%	0-100%
Illumination		Intensity	80%	0-HI3

Table 4-2 OTHER DEFAULT SETTINGS AND ADJUSTABLE RANGES - Listed here are the *Accurus*® factory default settings for modes of operation other than vitrectomy. The factory settings can be changed during surgery, but turning system power OFF resets all values back to the factory default settings. Figures in this table inside parenthesis are for reduced settings systems.

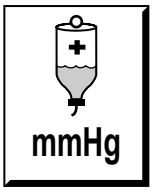
* FOR REFERENCE ONLY *

Using the Global Functions

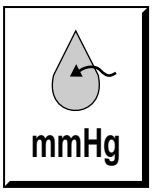
The global keys are used to select global functions (except for the Diathermy key which is always enabled for footswitch control). When selected, the global function key is highlighted, the corresponding global parameter value in the LED display is illuminated, and the console connector is illuminated to help connect the accessory. The corresponding rubber arrow buttons are used to adjust the global function parameter values, which change at a faster update rate when the key is held down. The preset parameter values are displayed on the LED displays.

Five global functions, accessed by pressing their icon keys on the left side of the touch screen, are unique to the system's posterior domain.

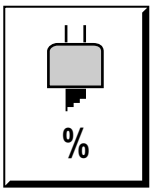
- Infusion: *VGFI*™ * or Power IV Pole (mmHg or cmH_2O)
- F/AX Infusion (mmHg)
- Diathermy (%)
- Illuminator #1 (Illum1)
- Illuminator #2 (Illum2)



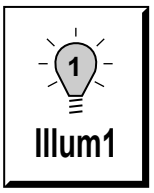
Infusion - The top global selection on the touch screen is enabled in the posterior domain when **VGFI** or **Power Pole** is selected in the *Infusion Settings* screen. *VGFI*™ * infusion utilizes the *Accurus*® low pressure air supply to provide regulated pressure into the infusion bottle. Alternate infusion pressure, set and enabled in the *Infusion Settings* screen, is activated by pressing a switch on the footswitch. If **Power Pole** is the selected infusion method, this control is used to set the desired infusion pressure which automatically sets the power IV pole height. If **Gravity** is selected in the *Infusion Settings* screen, this choice is blanked out (manually adjusted gravity fed infusion is independent of the *Accurus*® system).



F/AX Infusion - While in the posterior domain, selecting F/AX (Fluid/Air Exchange) cancels *VGFI*™ * infusion. F/AX utilizes the *Accurus*® low pressure air supply to provide regulated pressure into the eye. Using a *VGFI*™ * tubing set you can provide air to the eye through its stopcock valve. Alternate F/AX pressure, chosen in the *Infusion Settings* screen, is activated by pressing a footswitch switch.



Diathermy - The diathermy global selection is activated through the footswitch, and not through the global selection touch screen. Diathermy power is only provided to the handpiece when the switch is depressed, and turns OFF when released.



Illuminators - Pressing the **Illum 1** or **Illum 2** global key turns the lamp in the selected illuminator port ON or OFF.

Presurgical Setup Instructions

Sterile materials packaged inside Alcon Paks must be set up to protect the sterile surgical environment. These instructions are written to help you protect that environment.

NOTE: If inconsistencies exist between these instructions and Directions For Use (DFU) supplied with a consumable pak, follow the DFU.

> ***WARNING!***
> **Follow local governing ordinances and recycling plans regarding disposal or recycling of device components and packaging.**

Directive	Team Member

TOTAL PLUS® VITRECTOMY PAK SETUP

Initial Preparation

1. Peel lid from pak and aseptically transfer inner pouch to Scrub Nurse. — Circulating Nurse

2. Accept inner pouch from Circulating Nurse. Tear open pouch and remove components. — Scrub Nurse

3. Turn system power ON, and if required after initial self tests are completed, select Posterior mode of operation. Remove cassette with attached drain bag from pak. Unfold drain bag, allowing it to hang freely, and insert cassette into console cassette well (see Figure 4-2). Ensure that latch engages. — Circulating Nurse

   NOTE: After *Accurus*® system accepts the cassette and performs a vacuum test, the Test and Clean icons return to normal colors.

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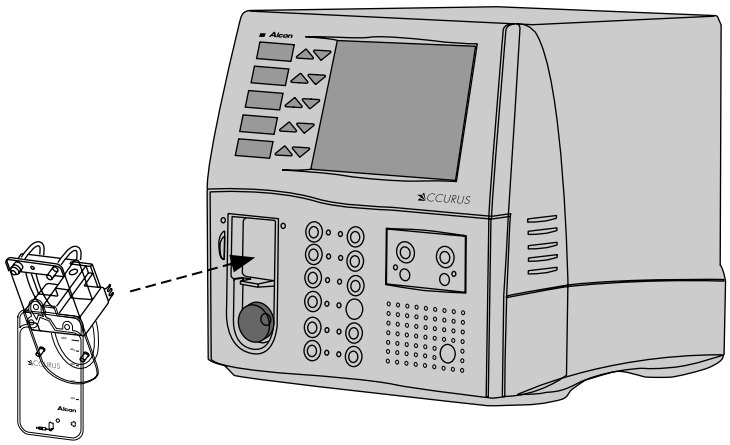


Figure 4-2. POSTERIOR FLUID CASSETTE INSERTION - With power turned ON, and initial self tests completed, the fluid cassette with drain bag is inserted into the front of the *Accurus*® cassette housing.

Directive	Team Member

Infusion Setup

4. After cassette has successfully loaded, do the following:
   - Gravity and Power Pole Infusion - Proceed to step 5.
   - *VGFI*™* Infusion - Proceed to the Vented Gas Forced Infusion "*VGFI*™*" Setup procedure later in this section of the manual, then continue at step 12.

5. Pass Infusion spike to Circulating Nurse. — Scrub Nurse

6. Accept infusion spike from Scrub Nurse, spike infusion bottle, close the infusion line roller clamp (green striped tubing), and hang bottle from IV pole. Squeeze drip chamber until it is a little more than half full of fluid. — Circulating Nurse

7. Press the **Settings** key on the *Vitreoretinal Surgery Setup* screen, then in the *Infusion Settings* **Type** tab select **Gravity** or **Power Pole**. Press the **Infusion** tab and select options. Press ***Apply***. — Scrub Nurse

8. Connect the green male luer fitting to the stopcock (see Figure 4-3). — Scrub Nurse

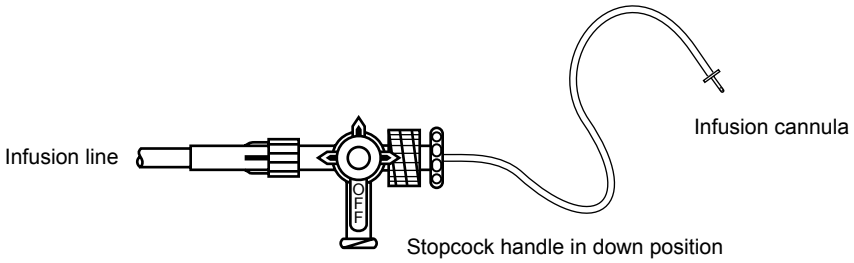


Figure 4-3. STOPCOCK - The stopcock is prepared with the infusion cannula.

9. Connect the infusion cannula to the stopcock. Ensure the stopcock handle is positioned as illustrated in Figure 4-3. If desired, alternate stand alone cannulas can be used in place of the standard cannula. — Scrub Nurse
   - If oil is to be injected later in the procedure, you can connect the alternate silicon oil infusion cannula.
   - An end irrigating fiber optic probe may be used. The lumen of this probe is more restrictive to flow than a standard infusion cannula, so it requires higher infusion pressure and lower vacuum.

WARNING!

Addition of extension tubing to infusion and/or vacuum lines will change fluidic characteristics of the *Accurus*® system, and is NOT recommended.

10. Set the stopcock/cannula in the sterile field. Prepare a cup to accept fluid from the infusion line. — Scrub Nurse

Directive	Team Member
11. Open the roller clamp to prime the infusion line, and after Scrub Nurse partially fills a cup, close roller clamp. The cup of fluid will be used to prime the aspiration lines.	Circulating Nurse

> ***WARNING!***
> **Visually confirm adequate infusion flow from the infusion cannula prior to attachment to the eye.**

Vitrectomy Probe Setup

12. Select the appropriate vitrectomy probe in the *Vitreoretinal Surgery Setup* screen.	Scrub Nurse
13. Remove the protective cover from the vitrectomy probe and place the probe tip into the fluid-filled cup for aspiration line priming and testing. Present the tubing connectors to Circulating Nurse.	Scrub Nurse
14. Accept tubing connectors from Scrub Nurse and connect them to the console's illuminated connectors as instructed below (see Figure 4-4): • Connect aspiration line (blue striped tubing with blue connector) to the cassette's upper-right connector. • Connect pressure line (clear tubing/clear connector) as follows: - For *Accurus*®, *Accurus*® 1500, or *InnoVit*® probe, connect pressure line to the console's top connector. - For *Accurus*® 2500 probe, connect pressure line to the console's second connector from the top. - For *InnoVit*® probe, connect its other pressure line (white striped tubing with white connector) to the second connector from the top.	Circulating Nurse

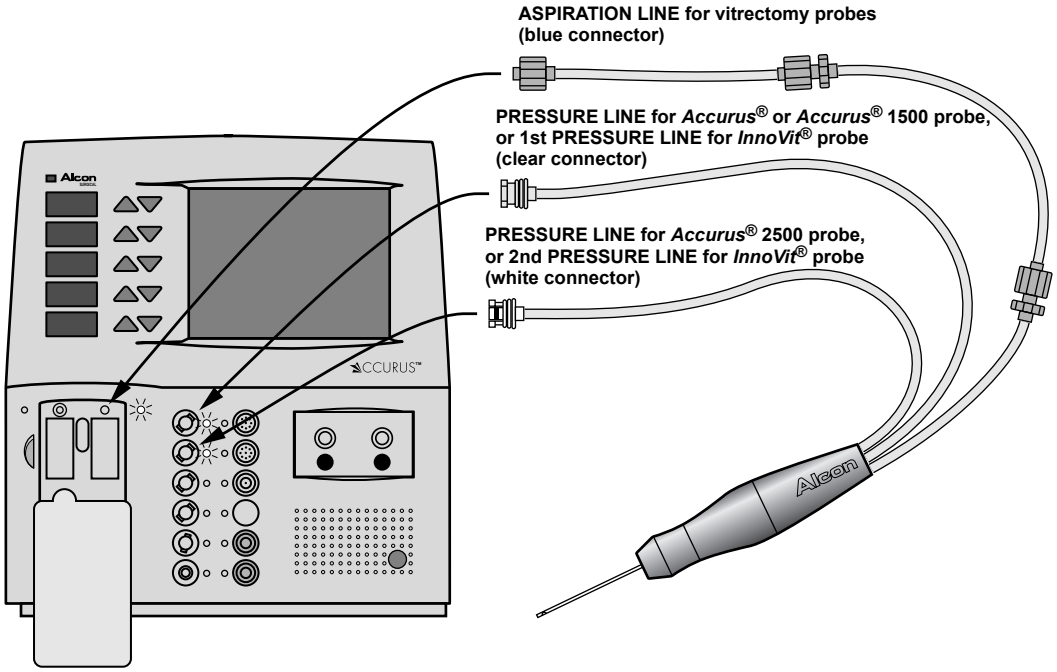


Figure 4-4 **VITRECTOMY PROBE CONNECTIONS - You can connect an *Accurus*® probe or *InnoVit*® probe to the *Accurus*® system as diagrammed above.**

Directive	Team Member

Using the 20 cc Syringe

The 20 cc syringe may be temporarily connected to the vitrectomy handpiece aspiration line when manual suction or backflushing is desired.

15. Disconnect tubing in center of aspiration line (see Figure 4-5). — Scrub Nurse

16. Remove syringe from the pak and plug into female connector on aspiration line. — Scrub Nurse

17. Upon completion of suction or backflushing procedure, remove syringe from aspiration line and plug aspiration line connectors back together. — Scrub Nurse

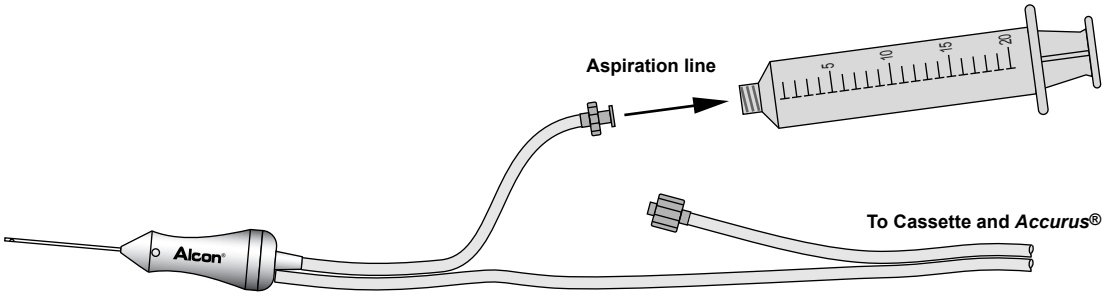


Figure 4-5 20 CC SYRINGE CONNECTION - The syringe is connected to the aspiration line between the vitrectomy probe and *Accurus*® system.

Extrusion Handpiece Setup

18. Press the **Extrude** key in the *Vitreoretinal Surgery Setup* screen. — Scrub Nurse

19. Present a sterilized extrusion handpiece to Scrub Nurse. — Circulating Nurse

20. Accept the handpiece from Circulating Nurse. Open the extrusion line tubing and connect the male luer connector to the handpiece. Place handpiece in the fluid filled cup for aspiration line priming. Present the female luer connector to Circulating Nurse. — Scrub Nurse

21. Accept the connector from Scrub Nurse and connect it to the left illuminated cassette connector (see Figure 4-6). — Circulating Nurse

Fiber Optic Illuminator Setup

22. Remove the fiber optic illuminator probe/fiber from the pak, carefully uncoil the fiber, and present the metal connector to Circulating Nurse. — Scrub Nurse

23. Accept the metal connector from Scrub Nurse and, using the adaptor chained to the illuminator drawer, plug it into the desired illuminator connector (see Figure 4-7). Verify it is fully seated in the adaptor. — Circulating Nurse

Directive	Team Member
24. Slide the protective sheath from the tip of the illuminator probe.	Scrub Nurse
25. Press the appropriate ***Illuminator*** icon on the *Global Function* screen to turn the illuminator ON. Adjust the intensity as needed. Turn illuminator OFF when not in use.	Scrub Nurse

Optional fiber optic illuminator probes can be connected to the second illuminator connector, supplementing the standard probe. Optional probes include the following: bare-end, straight pick, pre-bent pick, wide angle, shielded bullet, illuminated laser, and end irrigating. Some of these probes deliver substantially less light output than the standard probe, necessitating higher brightness levels.

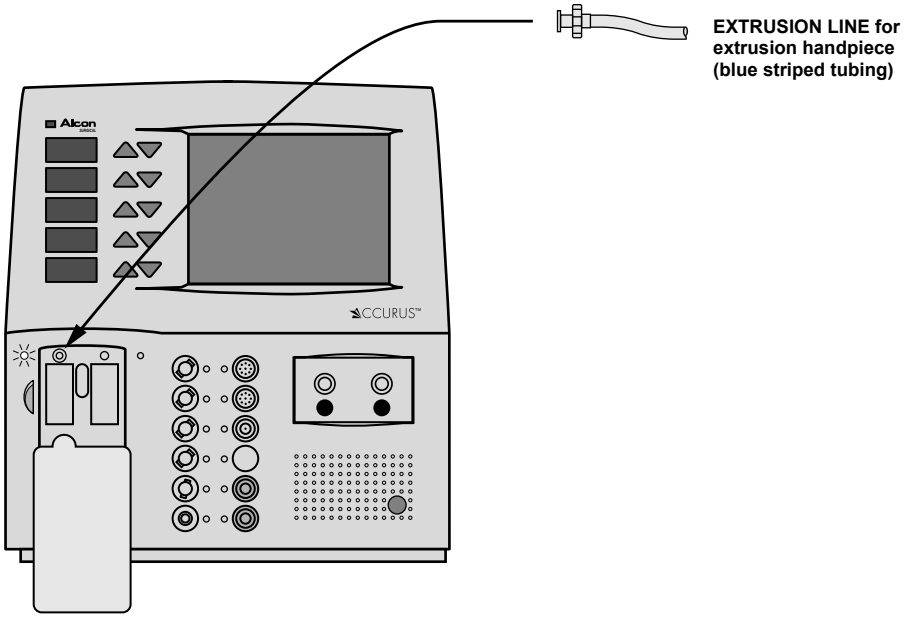


Figure 4-6 EXTRUSION LINE CONNECTION - The extrusion line is connected between the extrusion handpiece and *Accurus*® system as diagrammed above.

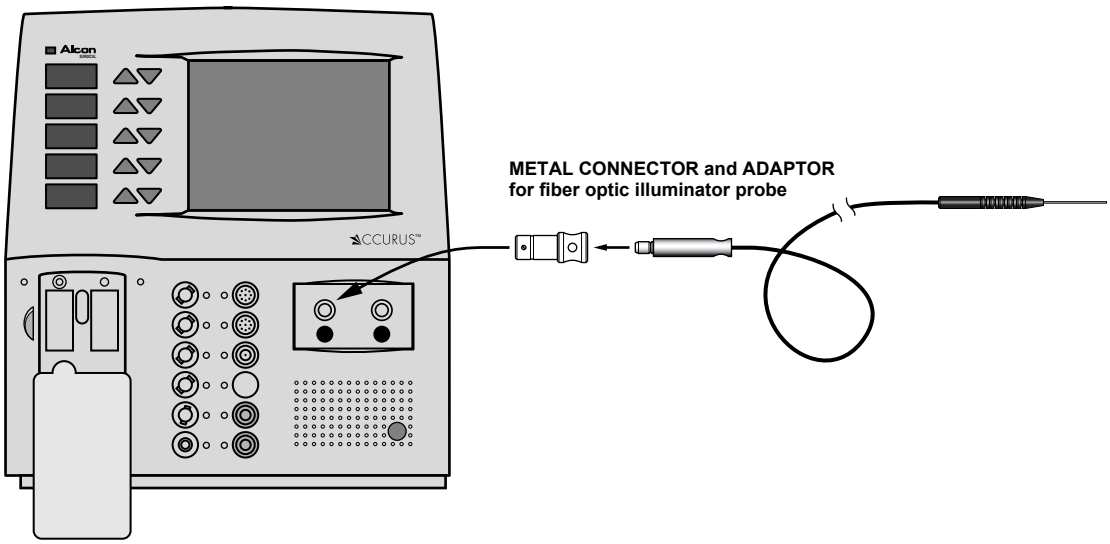


Figure 4-7 ILLUMINATOR PROBE CONNECTOR - The fiber optic illuminator plugs into an adaptor and then into the illuminator drawer.

* FOR REFERENCE ONLY *

Directive	Team Member
FRAGMATOME™* ACCESSORY PAK SETUP	
1. Open *Fragmatome™ ** accessory pak and present contents to Scrub Nurse.	Circulating Nurse
2. Accept contents of accessory pak from Circulating Nurse.	Scrub Nurse
3. Present a sterilized *Fragmatome™ ** handpiece to Scrub Nurse.	Circulating Nurse
4. Accept the handpiece from Circulating Nurse and present the handpiece connector to Circulating Nurse.	Scrub Nurse
5. Accept the connector from Scrub Nurse. Select **Frag** on the *Vitreoretinal Surgery Setup Vacuum* screen and plug the connector into the illuminated receptacle (see Figure 4-8); the red dot on the handpiece connector must align with the red dot on the console receptacle.	Circulating Nurse
6. Thread *Fragmatome™ ** tip into handpiece and tighten with tip wrench. Use only the tip and wrench from the accessory pak. Open extrusion line tubing and present the female connector to Circulating Nurse.	Scrub Nurse
7. Accept the connector from Scrub Nurse and connect it to the left illuminated cassette connector (see Figure 4-8).	Circulating Nurse
8. Using a female-to-female luer adapter, supplied in the *Total Plus®* Pak, attach the extrusion line tubing male luer connector to the *Fragmatome™ ** male luer connector. Place *Fragmatome™ ** tip into the fluid-filled cup for aspiration line priming and handpiece tuning.	Scrub Nurse

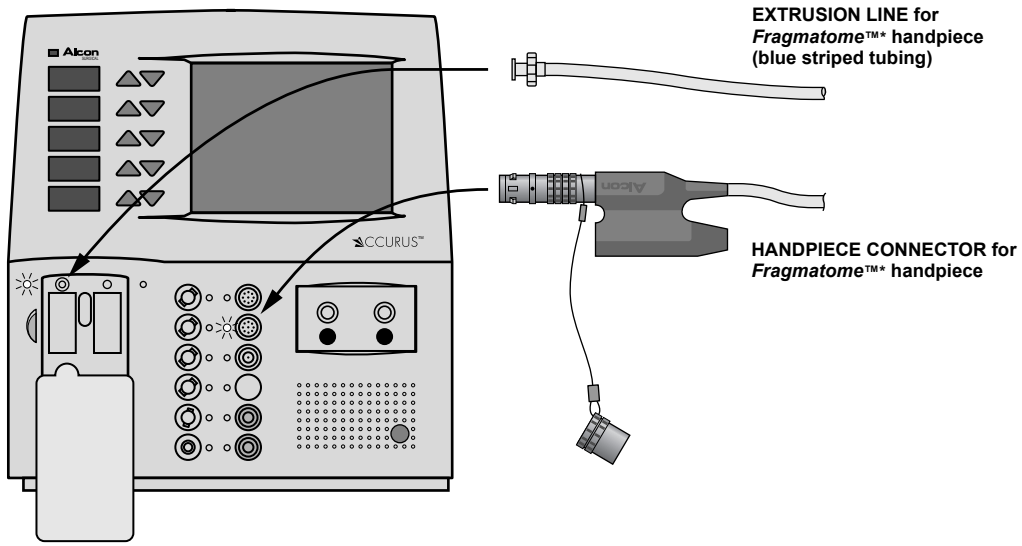


Figure 4-8. ***FRAGMATOME™* HANDPIECE TUBING CONNECTIONS*** **- Handpiece tubing and electrical connections are plugged in as diagrammed above.**

Directive	Team Member
PRIMING AND TESTING/TUNING	
1. Before priming and testing/tuning, verify the tips of aspirating probes and handpieces are immersed in the fluid-filled cup. The *Fragmatome*™ * tip must be freely suspended in the fluid, not touching the walls or the bottom of the cup, to successfully tune.	Scrub Nurse
2. Before priming and testing/tuning, verify the correct modes of operation are selected on the *Vitreoretinal Surgery Setup* screen.	Scrub Nurse
3. Press **Test** on the *Vitreoretinal Surgery Setup* screen. The popup screen disappears upon completion of the prime and test/tune sequences, and the appropriate submode is automatically entered.	Scrub Nurse

Directive	Team Member

FLUID/AIR EXCHANGE (F/AX) SETUP
(F/AX can be used with gravity or power pole infusion)

1. Open a sterile Fluid/Gas Exchange Tubing Set and present contents to Scrub Nurse. — Circulating Nurse

2. Accept contents of Fluid/Gas Exchange Tubing Set. Remove tubing from package and attach its male luer connector to the female connector on the infusion stopcock (see Figure 4-9). Present the filter end of the tubing to Circulating Nurse. Select **CVGFI-F/AX** on the *Vitreoretinal Surgery Setup* screen. — Scrub Nurse

3. Accept the filter end of the tubing from Circulating Nurse and plug it into the console's illuminated connector. — Circulating Nurse

> ***WARNING!***
> **Ensure filter is in place and is used in conjunction with the consumable. Removal of filter can expose patient to contamination.**

4. Turn on the air pump by pressing the ***F/AX*** global function key and adjust the pressure level as required. — Scrub Nurse

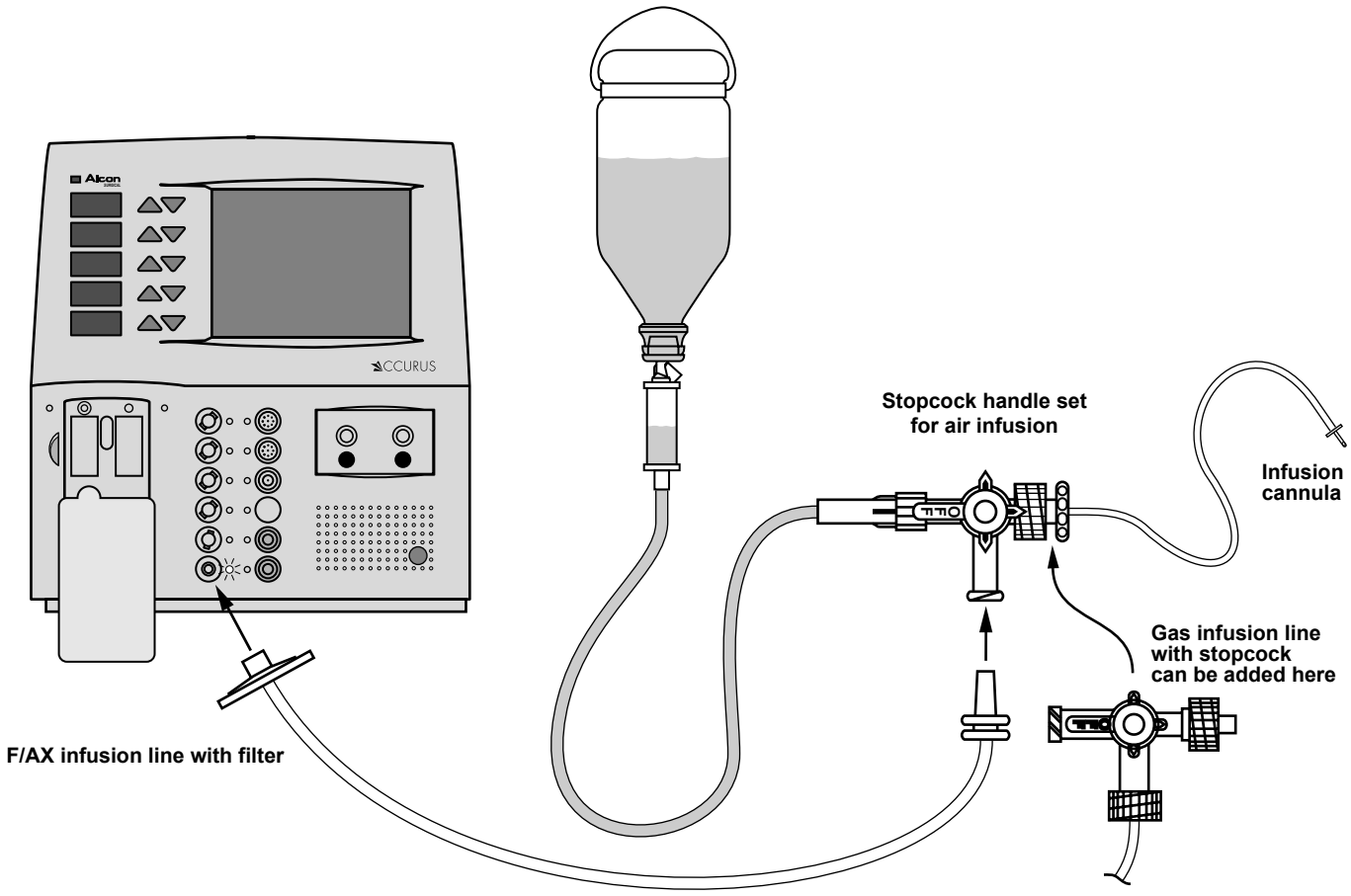


Figure 4-9 F/AX INFUSION LINE CONNECTION - The filter end of the F/AX infusion line connects to the *Accurus*® system as diagrammed above. The male luer connector plugs into the infusion line stopcock.

Directive	Team Member

VENTED GAS FORCED INFUSION SETUP

1.	Press **Settings** on the *Vitreoretinal Surgery Setup* screen. In the *Infusion Settings* **Type** tab select **VGFI**, and in the **Infusion** tab select your desired options. Press **Apply**.	Scrub Nurse
2.	Open *VGFI*™ * Tubing Set package and present contents to Scrub Nurse.	Circulating Nurse
3.	Remove top coil from the *VGFI*™ * Tubing Set package. Position snap clamp along tubing to preferred location and snap closed. Remove infusion cannula from *Total Plus*® Vitrectomy Pak and attach it to *VGFI*™ * stopcock (see Figure 4-10). If desired, the extra stopcock included in the tubing set can be inserted between the cannula and the first stopcock, allowing gas infusion capability.	Scrub Nurse
4.	Press **VGFI-FAX** in the *Vitreoretinal Surgery Setup* screen	Scrub Nurse
5.	Connect the air line filter to the illuminated *VGFI*™ * connector.	Circulating Nurse

WARNING!

Ensure filter is in place and is used in conjunction with the consumable. Removal of filter can expose patient to contamination.

6.	Turn the air pump ON by pressing the **Infusion** global function key (the top key labeled either **mmHg** or **cmH20**) and adjust the pressure level set point as required.	Scrub Nurse
7.	Pre-spike the infusion bottle using the spiking tool, wait three seconds, then remove. Carefully insert drip chamber/vent tube into bottle. Hang the bottle so its drip chamber is at patient eye level. Squeeze drip chamber until it is a little more than half full of fluid.	Circulating Nurse
8.	Prepare a cup to accept fluid from the infusion line.	Scrub Nurse
9.	Open the snap clamp to prime the infusion line, and after scrub nurse partially fills a cup with approximately 50 ml of fluid, close the snap clamp. The cup of fluid will be used to prime the aspiration lines.	Circulating Nurse

WARNING!

Visually confirm adequate infusion flow from the infusion cannula prior to attachment to the eye.

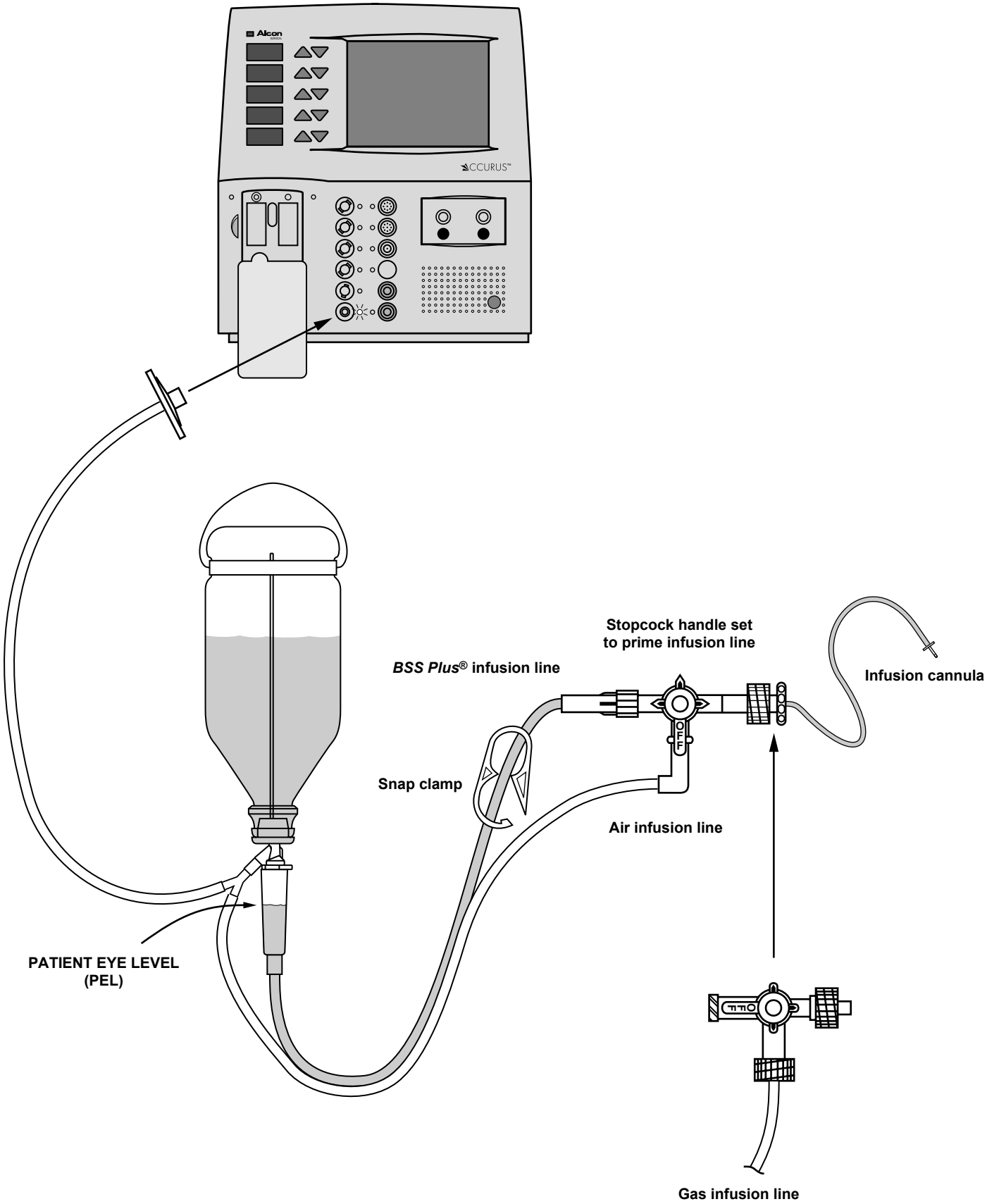


Figure 4-10 **VENTED GAS FORCED INFUSION CONNECTION - *VGFI*™* tubing is connected to the *Accurus*® console, the bottle of *BSS Plus*® intraocular irrigating solution, and the infusion cannula as diagrammed above. A second stopcock can be added to include gas infusion as well.**

Directive	Team Member

INTRAOCULAR SCISSORS (IOS) SETUP

Intraocular Scissors (IOS) tubing is used in conjunction with the Alcon IOS handpiece. Limited reuse IOS tubing is shipped non-sterile, and the IOS handpiece is reusable, therefore they both must be steam sterilized prior to use. Sterilization instructions for the IOS tubing and handpiece are included in Section Five of this operator's manual.

1.	Open a Vertical Microscissors package (containing a sterile, single use, 1 mm MicroScissors tip) and present contents to Scrub Nurse.	Circulating Nurse
2.	Accept contents of package from Circulating Nurse.	Scrub Nurse
3.	Present a sterile IOS handpiece to Scrub Nurse.	Circulating Nurse
4.	Accept IOS handpiece from Circulating Nurse and screw MicroScissors tip onto handpiece; tighten finger tight.	Scrub Nurse
5.	Present sterile IOS tubing to Scrub Nurse.	Circulating Nurse
6.	Accept IOS tubing from Circulating Nurse and press its bare end over the handpiece's shaft. Pass IOS tubing connector to Circulating Nurse.	Scrub Nurse
7.	Accept IOS tubing connector from Scrub Nurse. Select **Scissors** on the *Vitreoretinal Surgery Setup* screen and connect tubing to the illuminated scissors connector (see Figure 4-11). Calibrate scissors tip as required (see Scissors Mode in Section Three of this manual).	Circulating Nurse

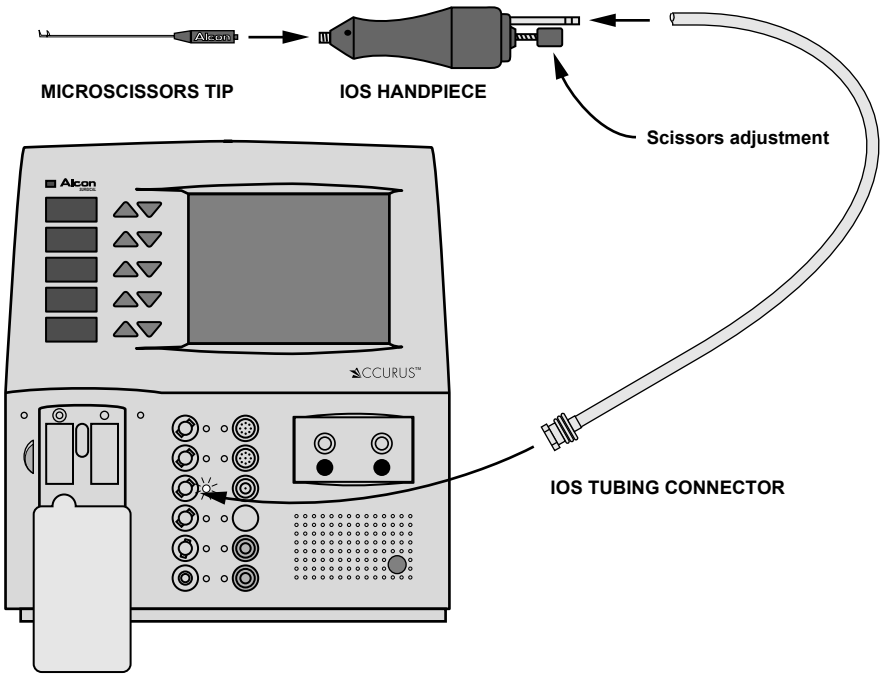


Figure 4-11 SCISSORS LINE CONNECTION - The scissors line is connected between the scissors handpiece and *Accurus*® console as diagrammed above.

* FOR REFERENCE ONLY *

Directive	Team Member

MPC SCISSORS SETUP

The MPC scissors handpiece is reusable, therefore it must be steam sterilized prior to use. Sterilization instructions are included in Section Five of this operator's manual.

1.	Press **MPC** in the *Accessories* section of the *Vitreoretinal Surgery Setup* screen.	Circulating Nurse
2.	Present a sterile MPC scissors handpiece to Scrub Nurse.	Circulating Nurse
3.	Accept MPC scissors from Circulating Nurse.	Scrub Nurse
4.	Present electrical cable connector to Circulating Nurse.	Scrub Nurse
5.	Accept connector from Scrub Nurse and plug into illuminated MPC scissors connector on front of *Accurus*® console (see Figure 4-12).	Circulating Nurse
6.	Select **Surgery** on the *Vitreoretinal Surgery Setup* screen, then press **Scissors/MPC**.	Circulating Nurse

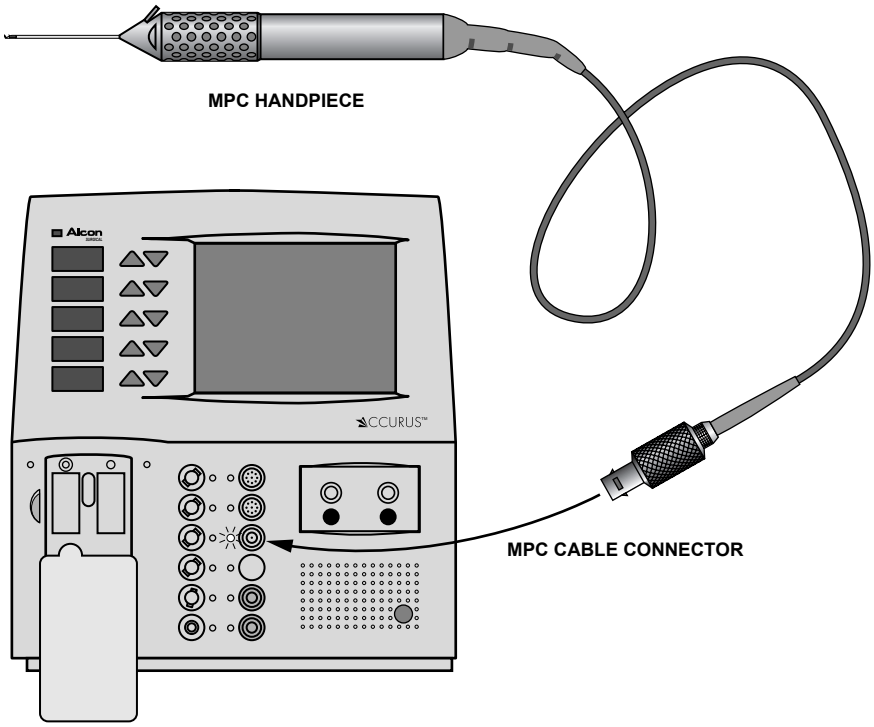


Figure 4-12 MPC SCISSORS CABLE CONNECTION - The MPC scissors cable is connected to the *Accurus*® console as diagrammed above.

Directive	Team Member

DIATHERMY SETUP

There are two types of diathermy probes and cables: reusable and single use. Reusable probes and cables must be steam sterilized prior to use. Sterilization instructions are included in Section Five of this operator's manual.

1. Press **Diathermy** in the *Accessories* section of the *Combined Surgery Setup* screen. — Circulating Nurse

2. REUSABLE PROBE: Sterilize a reusable diathermy probe/cable and present to Scrub Nurse. — Circulating Nurse

   - or -

   CONSUMABLE PROBE: Open a single use diathermy probe/cable package and present contents to Scrub Nurse.

3. Accept diathermy probe/cable from Circulating Nurse. Connect cable to diathermy probe (see Figure 4-13), ensuring that instrument pins are fully seated in cable receptacle. Present banana plug connectors to Circulating Nurse. — Scrub Nurse

4. Accept banana plug connectors from Scrub Nurse. Select ***Diathermy*** on the *Vitreoretinal Surgery Setup* screen and connect the banana plugs into the illuminated Diathermy receptacles. Adjust the Diathermy power level as required. — Circulating Nurse

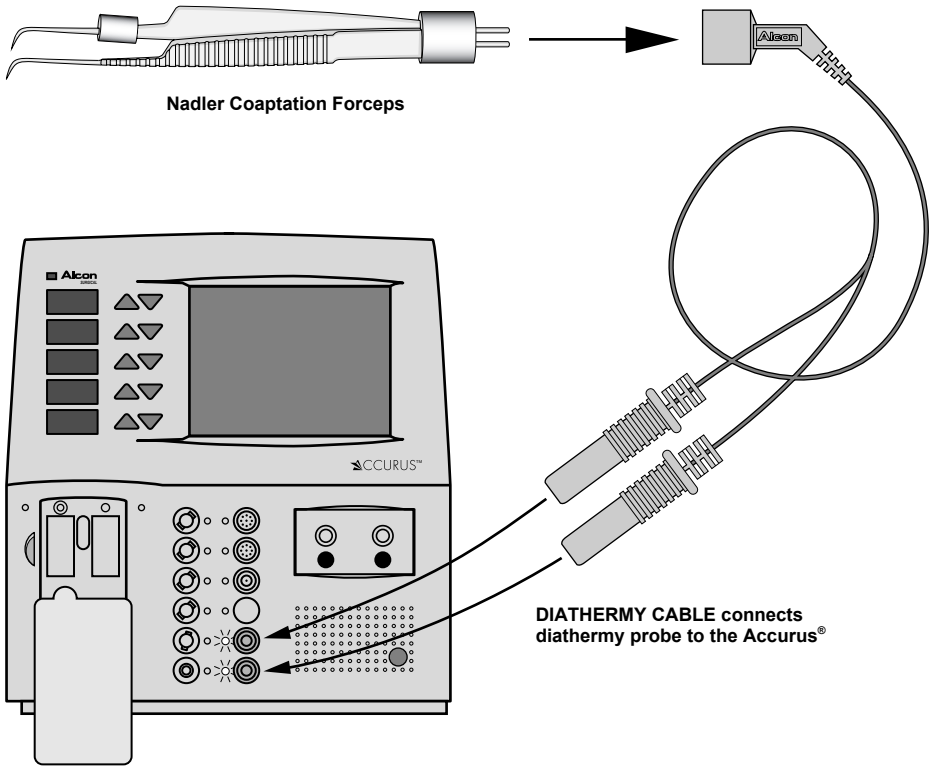


Figure 4-13 DIATHERMY PROBE CONNECTION - The diathermy probe is connected to the two plugs on the *Accurus*® console as diagrammed above.

* FOR REFERENCE ONLY *

Directive	Team Member
VISCOUS FLUID CONTROL (VFC) SETUP	
1. Open a sterile Viscous Fluid Control (VFC) Pak and present contents to Scrub Nurse.	Circulating Nurse
2. Accept contents of pak from Circulating Nurse. Pass connector end of VFC tubing to Circulating Nurse.	Scrub Nurse
3. Accept tubing connector from Scrub Nurse. Press the **VFC** key on the *Vitreoretinal Surgery Setup* screen and connect tubing to the illuminated VFC connector (see Figure 4-14).	Circulating Nurse
4. Press the **Surgery** mode key, then press the **VFC** mode key—the *VFC: Inject* screen appears. For injection proceed to step 5. For extraction proceed to step 7.	Circulating Nurse
5 VISCOUS FLUID INJECTION WITH SILICONE OIL FILLING PROCEDURE (see Figure 4-14)	
5.1 Ensure syringe tip cap is properly engaged. Following the directions for use supplied with the sterile viscous fluid, aseptically transfer viscous fluid to the syringe barrel. Care should be taken to prevent air bubbles from entering the fluid. Take special care if transferring 5000 centistoke fluid.	Scrub Nurse
5.2 Initiate syringe stopper insertion (found in small parts tray).	Scrub Nurse
5.3 Orient barrel as shown, with tip cap up. Remove the syringe tip cap to allow air to escape, and complete syringe stopper insertion.	Scrub Nurse
5.4 Keeping the cannula cover on, attach the desired surgical cannula to the syringe (0.9mm [20 gauge] diameter, 8mm long blunt cannula provided).	Scrub Nurse
5.5 Using the plastic push rod (found in the small parts tray), advance the syringe stopper to position the viscous fluid level at the cannula. Remove push rod.	Scrub Nurse
5.6 Connect the syringe barrel to the white syringe adapter by pushing down and rotating the barrel 90°. Ensure barrel flanges are totally engaged within the adapter.	Scrub Nurse

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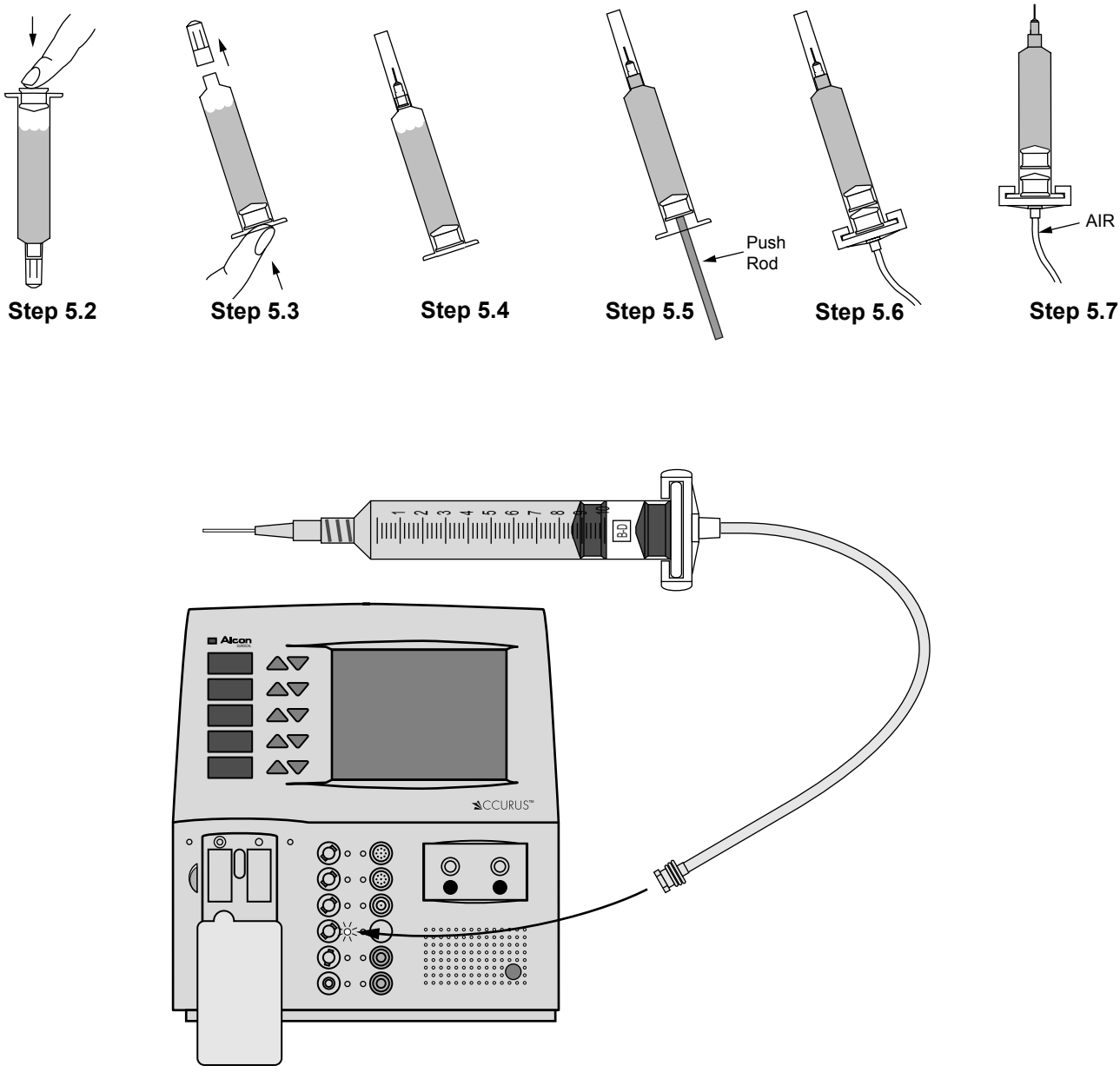


Figure 4-14 VISCOUS FLUID INJECTOR CONNECTION - For viscous fluid injection the barrel of the syringe is filled with sterile fluid and connected to the *Accurus*® console as diagrammed above. Do not use this diagram for fluid extraction, although extraction uses this same port on the connector panel.

Directive	Team Member
5.7 Remove the cannula cover. Tilt the cannula tip up and carefully pressurize the syringe to expel any remaining air. Wrap the cannula tip in sterile gauze, lint free cloth, or sponge to capture any expelled fluid. The VFC system is now ready to use.	Scrub Nurse

WARNINGS!

Do not use if air bubbles are observed passing through the fluid.

5.8 Press the arrow keys to adjust the Max Limit Pressure.	Circulating Nurse

WARNINGS!

Adjust Max Limit Pressure in accordance with the viscosity of fluids to be injected. Excessively high settings may endanger the patient.

6. DUAL VISCOUS FLUID INJECTION

6.1 Perform Viscous Fluid Control Setup procedure, then select the **Dual** submode.	Staff Circulating Nurse
6.2 Perform Extrusion Handpiece Setup procedure described earlier in this section of the operator's manual.	Staff

7. VISCOUS FLUID EXTRACTION

7.1 Perform Viscous Fluid Control Setup procedure steps 1-4.	Staff
7.2 Insert syringe stopper into syringe barrel.	Scrub Nurse

CAUTION

Failure to insert syringe stopper can allow fluids to enter the console, resulting in damage to its internal parts.

7.3 Connect cannula to tip of syringe.	Scrub Nurse
7.4 Press white syringe adapter into syringe barrel. When fully inserted, turn 90˚to secure adapter to barrel.	Scrub Nurse

Continued on next page...

7.5	Carefully depress the footpedal to pressurize the injector, pushing the syringe stopper to the bottom of the barrel. Release footpedal. Alternately, the plastic push rod may be used to push the syringe stopper to the bottom of the barrel.	Scrub Nurse
7.6	Select the **Extract** submode, then press the arrow keys to adjust the Max Limit vacuum setting.	Circulating Nurse

* FOR REFERENCE ONLY *

SECTION FIVE
POSTERIOR DISASSEMBLY AND CLEANING

NOTES: If an inconsistency ever exists between the procedures in this section and the DFU, follow the instructions in the DFU. During these procedures discard all consumables per specific hospital/clinic requirements.

DISASSEMBLY AND CLEANING

Immediately After Each Surgical Procedure:

Tear Down the System:

1. Remove bottle from hanger and disconnect drip chamber from bottle.

2. Remove the vacuum lines from the cassette. Remove all consumable/accessory pneumatic and/or electric connections from the lower front panel of the console. Remove drape (if used).

3. Use the female and male twistlock port plugs from the parts kit to seal the two vacuum ports on the cassette. Press **Exit** to go to the *Vitreoretinal Surgery Setup* screen, then push the **Clean** key to transfer fluid collected in the cassette to its drain bag.

4. Press the **Eject** button. This initiates a two to three second sequence that releases the drain pump tubing and unlatches the cassette. After visually confirming that the cassette is unlatched, grasp the cassette handle and remove cassette from cassette well in an outward motion (see Figure 5-1).

   NOTE: If pressure or electrical power are not available, unlatch the cassette by lifting the Manual Cassette Release lever located on the rear panel. While holding the lever up, pull the cassette in a downward motion, manually disengaging the cassette tubing from the hub roller, then wiggle the cassette down and out.

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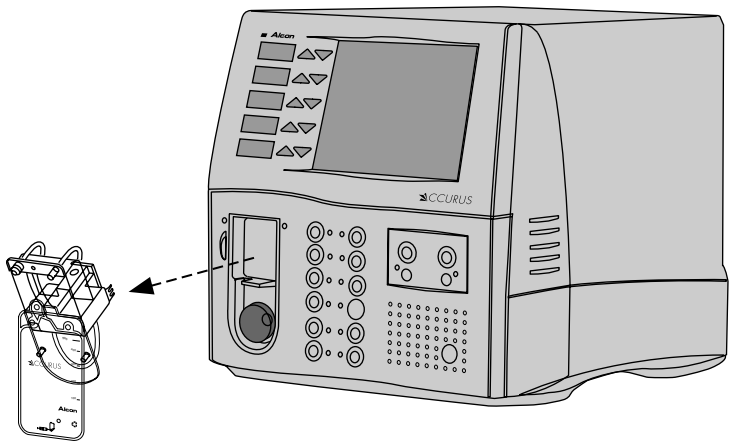


FIGURE 5-1 CASSETTE REMOVAL - With power turned ON, the fluid cassette with drain bag is ejected from the *Accurus*® cassette well by pressing the Eject button on the front panel. If no pressure or electrical power are available, lift the rear panel lever and wiggle the cassette out.

5. Use the small rubber stopper from the parts kit to plug the cassette's vacuum port (see Figure 5-2).

   If a fluid sample is being sent to the lab for testing, the drain bag can be detached from cassette. Wipe the drain bag's injection site with alcohol to ensure that the exposed rubber is clean. Use a non-coring needle less than 1” long to draw a lab sample. Discard consumbles.

CAUTION

If 1" needles are used, take care to push the needle hub into the injection site’s rubber plug. Otherwise, the needle tip could extend beyond the length of the injection site’s protective body.

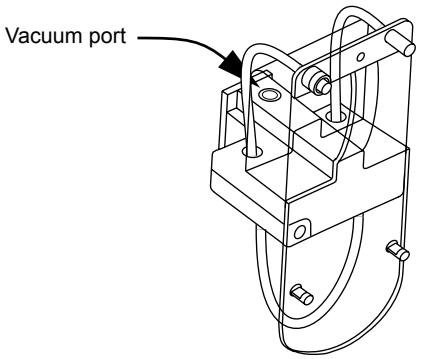


FIGURE 5-2 PLUG THE VACUUM PORT - The vacuum port must be plugged with a rubber stopper immediately after each surgery to prevent fluid leakage.

6. Disconnect and clean all reusable handpieces.

Clean the *Fragmatome*™ * Handpiece:

7. Remove the tubing from the handpiece and unplug the handpiece connector from the console.

8. Remove all consumables from the handpiece and discard according to hospital guidelines.

9. Submerge the nosecone (front part) of the handpiece in a container of distilled water.

10. Using a clean syringe, draw a minimum of 120 cc of distilled water through the aspiration path.

11. Using the same syringe, flush the aspiration port with air.

WARNINGS!

If these cleaning procedures are not performed immediately after each surgical procedure, tissue debris and salts from irrigating solution may collect. This could permanently damage the handpiece and could jeopardize cleanliness and/or create biohazard conditions for the patient. Do not autoclave the handpiece until all debris has been removed.

If in the medical opinion of the physician a patient with a prion related disease undergoes a high risk procedure, the instrument should be destroyed or be processed according to local requirements.

Never ultrasonically clean the handpiece; irreparable damage will result.

Never immerse the handpiece in liquid after autoclaving; allow it to air cool for at least 15 minutes. Be sure the handpiece connector is completely dry before connecting it to the console.

Prior to sterilization, the *Fragmatome*™* handpiece should always have the connector end cap secured and placed in the sterilization tray. This will prevent damage to connectors and handpieces during handling, and especially during autoclaving.

Handle the handpiece carefully. Dropping or otherwise striking the handpiece may fracture piezoelectric elements contained within and degrade performance or render the handpiece inoperable.

Clean the Intraocular Scissors (IOS) Handpiece:

12. Disconnect the IOS handpiece from the console.

13. Remove the scissors tip and properly discard it.

14. Disconnect the reusable IOS tubing from handpiece.

15. Wipe down the IOS handpiece with a damp cloth and flush the tubing at least once with a syringe filled with 30 cc of warm distilled water. Flush immediately with air to clear any water from the handpiece and tubing.

Clean Membrane Peeler Cutter (MPC) Scissors Handpiece:

16. Please refer to *Grieshaber®* literature that came with your MPC scissors for cleaning and sterilization instructions.

Clean the Extrusion Handpiece:

17. Disconnect the extrusion handpiece from the console.

18. Remove the extrusion needle. If it is a single use needle, properly discard it.

19. Flush extrusion handpiece and reusable extrusion needle at least two times with a syringe filled with 30 cc of warm distilled water. Flush immediately with air to clear any water from the handpiece and needle.

Clean the Diathermy Handpiece:

20. Disconnect diathermy handpiece and cable from the console.

21. Discard consumable handpiece and cable.

22. Clean reusable handpiece by wiping off residual tissue with a soft, non-abrasive cloth. Rinse the handpiece and cable with distilled water to remove any remaining debris.

23. Hand wash the reusable handpiece and cable using a soft bristled cleaning brush. The use of abrasive cleaners or solvents is not recommended.

24. Thoroughly flush all handpiece and cable surfaces with distilled water until no visible debris remains. Dry the handpiece and cable with a sterile wipe.

Upon Completion of Surgery Schedule:

1. Disconnect pneumatic hose from pressure source and unplug console.

   NOTE: If the *Accurus*® system remains plugged in, always ensure that the rear panel On/Off switch is in the OFF position.

2. If required, the console and remote control may be cleaned with non-corrosive germicidal solution, alcohol, or mild soap and water.

CAUTIONS

- **Do not clean console or accessories using solvents or abrasives.**
- **Avoid spilling *BSS*® solution, or moisture of any kind, around the electrical handpiece connectors.**

STERILIZATION

The following accessories for the *Accurus*® Ophthalmic Surgical System may be flash or steam autoclaved. Additionally, per the Sterilizer Equipment Manual, the sterilizer reservoir is to be filled with distilled or deionized water.

- *Fragmatome*™ * Handpiece
- Intraocular Scissors (IOS) Handpiece and IOS Tubing
- Extrusion Handpiece
- Reusable Diathermy Handpiece and Cable
- Reusable Infusion Accessories

NOTE: The list of reusable accessories above will withstand steam autoclave cycles at 134º C (273º F). Due to the variation found in steam autoclaves and the variable bioburden on instruments in clinical use, it is not possible for Alcon to provide specific parameters to ensure an adequate sterility assurance level. Validation of the individual autoclave, and verification of the sterility assurance level achieved with a given steam sterilization cycle, must be performed by each hospital.

The specifications in Table 5-1 represent industry standard guidelines for steam sterilization cycles. **The sterility assurance level achieved with these parameters must be validated by each hospital.** Please refer to current ANSI/AAMI Standards or your hospital's standard procedures for the most current specifications.

STERILIZER TYPE	SAMPLE CONFIGURATION	TEMPERATURE	MINIMUM EXPOSURE TIME
Gravity Displacement	wrapped	132˚ C (270˚ F)	15.0 minutes[1]
Gravity Displacement	unwrapped	132˚ C (270˚ F)	10.0 minutes
Prevacuum	unwrapped	132˚ C (270˚ F)	4.0 minutes

[1] For *Fragmatome*™* handpiece the recommended exposure time is 20 minutes minimum.

Table 5-1. STERILIZATION TEMPERATURE AND TIME SETTINGS

NOTE: For maximum life and optimum performance, allow handpieces to air cool after steam or flash autoclaving. Cooling for *Fragmatome*™* handpieces should be a minimum of 15 minutes.

NOTE: For instructions to sterilize the Membrane Peeler Cutter (MPC) scissors handpiece, please refer to the *Grieshaber*® literature that came with your MPC scissors.

REFERENCE: AAMI Standards and Recommended Practices Volume 1: Sterilization, Designation ST37-1996 for flash sterilization and ST46-1993 for steam sterilization or your local standards and recommended practices.

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* FOR REFERENCE ONLY *

SECTION SIX
POSTERIOR ACCESSORIES AND PARTS

Following is a list of Alcon-approved accessories and replacement parts for the *Accurus*® Ophthalmic Surgical System. To order parts, please refer to your Alcon price list and/or contact Alcon Customer Service at:

Phone:
(800) 862-5266 or
(817) 293-0450
Ask for Customer Service

Write:
Alcon
6201 South Freeway
Fort Worth, TX. 76134-2099

Outside the U.S.A. please contact your local Alcon representative.

Important Note: Use of accessories and parts not approved by Alcon is not recommended.

ITEM	CATALOG NUMBER
Paks	
AccuPak® with *Accurus*® Probe	8065400045
AccuPak® with *Accurus*® 1500 Probe	8065741013
AccuPak® with *Accurus*® 2500 Probe	8065741012
AccuPak® with *Accurus*® 23 Ga Probe	8065750827
AccuPak® with *Accurus*® 25 Ga Probe	8065750930
AccuPak® Vitrectomy Set with *Accurus*® 25+ Probe	8065751490
AccuPak® with *InnoVit*® Probe	8065400145
Total Plus® Pak with *Accurus*® Probe	8065740252
Total Plus® Pak with *Accurus*® 1500 Probe	8065741015
Total Plus® Pak with *Accurus*® 2500 Probe	8065741017
Total Plus® Pak with *Accurus*® 23 Ga Probe	8065750828
Total Plus® Pak with *Accurus*® 25 Ga Probe	8065750220
Total Plus® Pak with *Accurus*® 25+ Probe	8065751493
Total Plus® Pak with *InnoVit*® Probe	8065740253
Fragmatome™* Accessory Pak	1021HP
VGFI™* Tubing Set	8065808002
Fluid/Gas Exchange Tubing Set	8065807001
Viscous Fluid Control Pak	8065750118
Scleral Plugs, 19 and 20 gauge (6)	8065807550
Consumable Accessories	
2.5 mm Infusion Cannula	8065820001
4.0 mm Infusion Cannula	8065820101
6.0 mm Infusion Cannula	8065820201
Silicone Oil Infusion Cannula	8065740262
Remote Control Aseptic Transfer	20000TP
Accurus® Replacement Drain Bags	8065740743
Trocar Blade, 23 Ga, 3 Ct	8065750882
Trocar Cannula Set, 23 Ga, 1 Ct	8065750839

ITEM	CATALOG NUMBER
Trocar Cannula Set, 23 Ga, 2 Ct	8065750838
Trocar Cannula Set, 23 Ga, 3 Ct	8065750823
Trocar Cannula Set, 25 Ga, 1 Ct	8065750236
Trocar Cannula Set, 25 Ga, 2 Ct	8065750405
Trocar Cannula Set, 25 Ga, 3 Ct	8065750406
Trocar Plug Set, 23 Ga	8065750837
Trocar Plug Set, 25 Ga	8065750189
Infusion Cannula, 23 Ga	8065750841
Infusion Cannula, 25 Ga	8065750188
Small Parts Kit, 23 Ga	8065750842
Small Parts Kit, 25 Ga	8065750404
23 Ga Enhanced Entry System 1 ea	8065751446
23 Ga Enhanced Entry System 3 ea	8065751447
23 Ga 6 mm Entry System 1 ea	8065751444
23 Ga 6 mm Entry System 3 ea	8065751445
25 Ga Enhanced Entry System 1 ea	8065751448
25 Ga Enhanced Entry System 3 ea	8065751449
25 Ga Enhanced Small Parts Kit	8065751442
25 Ga Enhanced Trocar Plugs	8065751443
25 Ga Enhanced Infusion Cannula	8065751459
Console Accessories	
Cart w/IV Pole	8065740943
Cart w/Power IV Pole	8065740825
Remote Control	8065740942
Remote Control, English Text	8065750105
Footswitch (5 switch)	8065740240
Pneumatic Pressure Hose	804-1193-501SVC
Illuminator Bulb	8065740243
Operator's Manual	8065750203
Accurus® Doctor Memory Card	8065750200
Footpedal (6 switch)	8065740997
Bipolar Coagulation/Diathermy Accessories	
Bipolar Coagulation Cable, Single Use	8065129002
Forceps, Curved Iris, Single Use	8065129101
Forceps, Coaptation, Single Use	8065129301
Forceps, Jewelers/Straight Iris, Single Use	8065129501
Forceps, Non-stick, 4" Nadler Coaptation .4mm	8065127401
Forceps, Non-stick, 4" Jeweler Straight .4mm	8065127501
Forceps, Non-stick, 4"Jeweler Curved.4mm	8065127601
Forceps, Non-stick, 4" Tenzel .4mm	8065127701
Forceps, Non-stick, 4 3/4" Adson 1.0mm	8065127801
Forceps, Non-stick, 3 1/2 " Straight Iris .5mm	8065127901

ITEM	CATALOG NUMBER
Forceps, Non-stick, 3 1/2 “ Curved Iris .5mm	8065128001
Forceps, Non-stick, 4 1/4" Coaptation Fine, .5mm	8065128101
Forceps, Non-stick, 4 1/4" Coaptation Extra Fine, .5mm	8065128201
Forceps, Titanium, 3 1/2" Jeweler Curved .4mm	8065128501
Forceps, Titanium, 4" Coaptation .5mm	8065128601
Forceps, Titanium, 4 1/4" Jeweler Straight .4mm	8065128701
Forceps, Titanium, 4 3/4" Straight w/Fine Serrations	8065128801
Forceps, Titanium, 4 1/2" Reverse Angle .4mm	8065128901
Bipolar Brush, Straight, 18 ga., Single Use	8065804001
Bipolar Brush, Curved, Single Use	8065804601
Bipolar Brush, Wide Stroke, Single Use	8065806701
Bipolar Brush, 20 ga., Single Use	8065804201
Bipolar Brush, 20 ga., With Cord (non CE), Single Use	8065804301
Bipolar Coagulation Cable, Silicone	8065128402
Vit Accessories	
2.5 mm Infusion Cannula	800-2A
4.0 mm Infusion Cannula	800-2B
6.0 mm Infusion Cannula	800-2D
Silicone Oil Infusion Cannula	8065740262
Blunt Tip Needle, Straight, 20 ga.	800-26A
Blunt Tip Needle, Tapered, 20 ga.	800-26B
Blunt Tip Needle, Tapered, 19 ga.	800-26D
Infusion Needle Tubing	800-7
Intraocular Scissors Tubing	8065740265
Cross Action Plug Forceps	830-20A
Scleral Plugs, 20 ga. (4/tablet)	830-18
Scleral Plugs, 19 ga. (4/tablet)	830-24
Vit Handpieces	
375/40 Fragmentation Handpiece	8065740242
Extrusion Handpiece (set of 4)	8065808601
19 ga. Straight Extrusion Handpiece	8065808701
19 ga. Tapered Extrusion Handpiece	8065808801
20 ga. Straight Extrusion Handpiece	8065808901
20 ga. Tapered Extrusion Handpiece	8065809001
Charles O’Malley Extrusion Kit	800-26
Extrusion Kit Handpiece	800-26E
Intraocular Scissors Handpiece	8065808101
MPC Scissors, Lightweight 0.9 mm	625.13
MPC Scissors, Fine Tip Handle 0.7 mm	625.12

ITEM	CATALOG NUMBER
Probes	
InnoVit®	8065740244
Accurus®	8065740241
Accurus® 1500	8065741016
Accurus® 2500	8065741018
Accurus® 23 Ga Probe	8065750821
Accurus® 25 Ga Probe	8065750226
Accurus® 25+ Probe	8065751122
Fiber Optic Assy, 23 Ga	8065750802
Fiber Optic Assy, 25 Ga	8065750190
Illuminator (DFOI)	8065812001
Fiber Optic Assy, Bare End	8065740257
Fiber Optic Assy, 25+	8065751165
Fiber Optic Assy, Wide Angle	8065740264
Fiber Optic Assy, End Irrigating	8065740259
Fiber Optic Assy, Straight Pick	8065740260
Fiber Optic Assy, Pre-Bent	8065740258
Vertical Micro Scissors (1mm)	8065813701
Vertical Micro Scissors (1.5mm)	8065803701
Laser Probe, Straight Needle, 23 Ga	8065750803
Laser Probe, Straight Needle, 25 Ga	8065750133
Illuminated Laser Probe, *HGM** Connector, Curved Needle, ACMI	8065103040
Illuminated Laser Probe, *HGM** Connector, Straight Needle, ACMI	8065010320
Illuminated Laser Probe, *Alcon*®/*Coherent** Connector, Curved Needle, ACMI	8065010404
Illuminated Laser Probe, *Alcon*®/*Coherent** Connector, Straight Needle, ACMI	8065010420
Shielded Bullet Endo Illuminator, 20 GA, ACMI	8065109203
Shielded Bullet Endo Illuminator, with Pick, 20 GA, ACMI	8065109219
Sapphire Wide Angle Probe	8065750425
Laser Probe, Aspirating, Curved, 20 Ga	8065010703
Laser Probe, Aspirating, Straight, 20 Ga	8065010719
Laser Probe, Aspirating, Soft Tip, Straight, 20 Ga	8065010739
Laser Probe w/RFID, Aspirating, Curved, 20 Ga	8065750979
Laser Probe w/RFID, Aspirating, Straight, 20 Ga	8065750980
Laser Probe w/RFID, Aspirating, Soft Tip, Straight, 20 Ga	8065750981
Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, Curved, 20 Ga, ACMI	8065750982
Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, Straight, 20 Ga, ACMI	8065750983
Articulating Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, 20 Ga, ACMI	8065751105
Articulating Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, 23 Ga, ACMI	8065751106
Articulating Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, 25 Ga, ACMI	8065751107

* FOR REFERENCE ONLY *

SECTION SEVEN
ANTERIOR DESCRIPTION

ANTERIOR SETUP SCREENS

Upon entering the Anterior domain, the system displays the *Cataract Surgery Setup Screen*, shown below in Figure 7-1. On this screen the user can prepare the *Accurus*® Ophthalmic Surgical System for surgery, then exit to another screen by pressing one of the following keys on the touch screen:

- Press **Settings** to enter *Cataract Irrigation Settings* screen
- Press **Surgery** to enter *Anterior Surgery* screens
- Press **Exit** to return to *Procedure Selection* screen

The *Cataract Surgery Setup* screen can also be entered by pressing the **Apply** or **Cancel** keys from the *Cataract Irrigation Settings* screen or the **Exit** key from an *Anterior Surgery* screen.

Popup windows can appear over these screens to advise the user of certain conditions. See Figure 2-55 for an example of a popup window.

Cataract Surgery Setup Screen

There are six *Cataract Surgery Setup* screen components offered to prepare for surgery. Two components—the handpiece and accessory selections—are in the Primary Functions Window; and four components—Test, Clean, Surgery, and Settings—are in the Modes Window (see Figure 2-9).

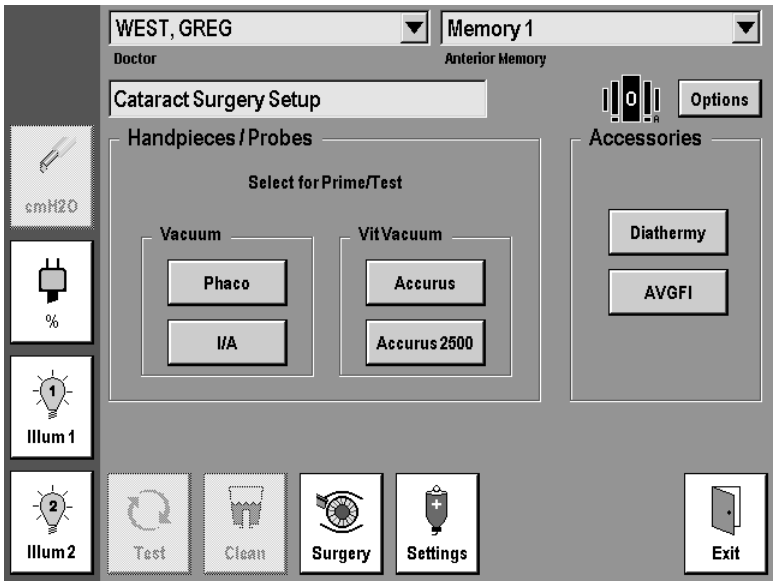


Figure 7-1 CATARACT SURGERY SETUP SCREEN - Entering the *Cataract Surgery Setup* screen allows the user to prepare the *Accurus*® system for surgery.

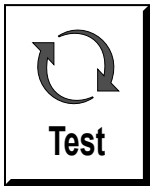
Selections in Primary Display Window

• Handpieces / Probes - Select for Prime / Test
Probes and handpieces are selected for priming or testing/tuning by pressing their corresponding touch keys (see Figure 7-1). When a probe or handpiece is selected, an LED illuminates next to its associated front panel connector. Selecting a probe or handpiece deselects the other, i.e., only one probe can be selected at a time.

When entering a surgery screen from the *Cataract Surgery Setup* screen, or upon successful prime/tune/test, the surgery mode corresponding to the currently tested handpiece is selected automatically.

• Accessories
Pressing Diathermy or AVGFI illuminates an LED at its corresponding front panel connector to identify where to plug in the handpiece or accessory. Making one selection automatically deselects any other selection. Only the last-selected accessory or handpiece LED illuminates.

Keys in Anterior Modes Window



• Test
When the **Test** key is pressed, the selected probe or handpiece is primed, and a popup window indicates that priming and testing are active. Only the popup window keys (**Stop** and **Skip**), global function **Illuminator** keys, and diathermy are operable while the Test function is active. The surgery screen is entered automatically upon a successful prime, test, and tune sequence.

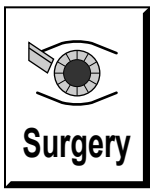
If the **Stop** key is pressed during priming, the test function is aborted. If **Skip** is pressed during priming, priming is skipped and handpiece testing/tuning begins.

An invalid error tone sounds when pressing the **Test** key with no probe or handpiece selected. An advisory popup window appears when the U/S handpiece is selected but not connected, when no cassette is inserted, or when priming/tuning has failed.

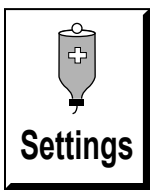


• Clean
Pressing the **Clean** key transfers fluid from the cassette into the drain bag. When the **Clean** key is pressed, a popup window indicates cleaning is in progress. Only the **Stop** key in the popup window, Continuous Irrigation **On/Off** keys, and global function **Illuminator** keys are operable while the clean function is active.

Pressing the **Stop** key during cleaning aborts the clean function. If fluid is not fully transferred to the drain bag, press the **Clean** key a second time.



• Surgery
When the **Surgery** key is pressed, the system exits the *Cataract Surgery Setup* screen and enters the selected surgery screen.



•Settings
When the **Settings** key is pressed, the system exits the *Cataract Surgery Setup* screen and enters the *Irrigation Settings* Screen.

* FOR REFERENCE ONLY *

Irrigation Settings Screen

The *Irrigation Settings* screen (see Figures 7-2 and 7-3) is entered by pressing the **Settings** key on the *Cataract Surgery Setup* screen. In this anterior domain there are two data tabs available on the screen: the **Type** tab and the **Irrigation** tab. (The **Infusion** tab is not available and is grayed-out.) Pressing the **Apply/Cancel** key closes this screen and returns to the *Cataract Surgery Setup* screen. **Cancel** returns with no changes made; **Apply** returns and applies Type and Irrigation settings to the system.

• Type Tab
The irrigation **Type** tab determines how irrigation pressure is provided for surgery, and is divided into three groups: Anterior Irrigation, Posterior Infusion, and Combined Infusion/Irrigation. In this domain, only the Anterior Irrigation group is available.

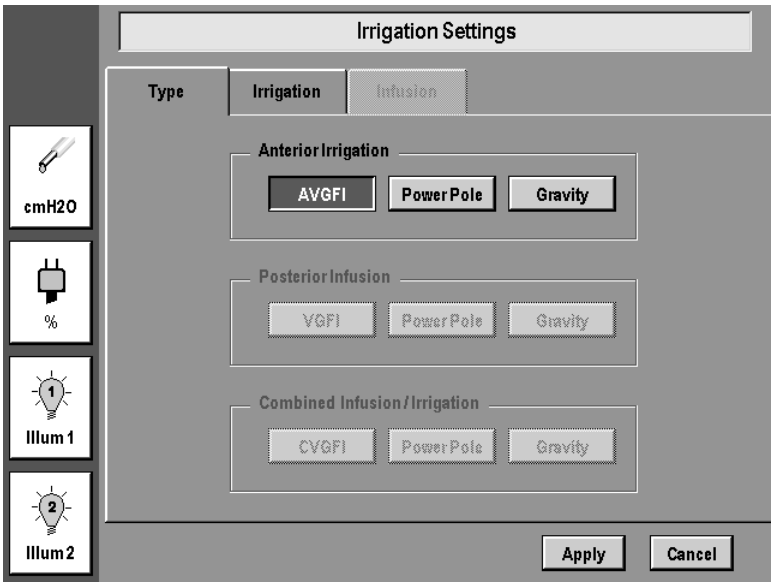


Figure 7-2 IRRIGATION SETTINGS SCREEN: TYPE TAB - The Type tab allows the user to select the type of Anterior Irrigation desired. Selecting the Irrigation tab offers alternate irrigation choices, shown in Figure 7-3.

The **Type** tab contains keys for the following irrigation methods: **AVGFI** (Anterior Vented Gas Forced Infusion), **Power Pole**, and **Gravity**. Pressing the **Cancel** key exits the *Irrigation Settings* screen and returns to the previous screen without any modifications taking effect. Pressing the **Apply** key accepts settings for both this tab and the Irrigation tab, exits the *Irrigation Settings* screen, and returns to the *Cataract Surgery Setup* screen.

When **AVGFI** is selected, infusion pressure is provided by applying air pressure into the fluid bottle. An internal air pump creates pressurized air, and Anterior *VGFI*™ * tubing delivers it to the bottle from a front panel connector. The air pressure setting is adjusted with the global irrigation up/down buttons; the corresponding LED readout is immediately to the left of the buttons and indicates air pressure at the console. **Note: Fluid bottle should be positioned at patient eye level.**

The **Power Pole** selection requires that the optional cart with power IV pole be connected to the *Accurus*® system. With the fluid bottle hanging from the cart's power IV pole, irrigation pressure is set by pressing the global **up/down** keys to the desired pressure, and the power pole automatically moves up or down to the required height.

When **Gravity** irrigation is selected, irrigation pressure is dependent on the fluid bottle height, set manually by the operator.

• Irrigation Tab

The **Irrigation** tab allows the user to set Regular and Alternate irrigation pressures, and the ability to select whether Alternate pressure is Available **Yes/No**. Alternate pressure works with AVGFI and power pole irrigation; therefore, when gravity irrigation is selected, these selections are grayed out and not functional. The pressure values for Phaco, I/A, and Vit can be adjusted by pressing the up/down arrows next to the value. The regular and alternate pressures are toggled by pressing the footswitch's right vertical switch. Selecting Alternate Yes or No determines whether alternate pressure will be available with the footswitch.

Pressing the **Cancel** key exits the *Irrigation Settings* screen and returns to the previous screen without any modifications taking effect. Pressing the **Apply** key accepts the settings, exits the *Irrigation Settings* screen, and returns to the *Cataract Surgery Setup* screen.

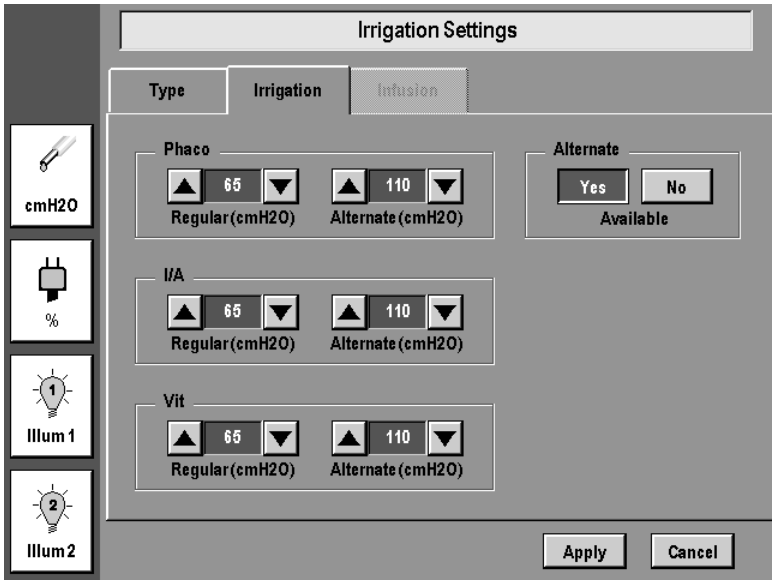


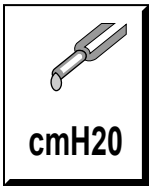
Figure 7-3 IRRIGATION SETTINGS SCREEN: IRRIGATION TAB - The Irrigation tab allows the user to adjust the Regular and Alternate Irrigation pressures, and the ability to select whether alternate pressure is available.

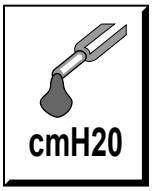
* FOR REFERENCE ONLY *

ANTERIOR GLOBAL FUNCTIONS KEYS

Global functions are available in all surgery and setup screens. There are four global functions which, generally, can be selected, adjusted, and displayed at any time. When a global function is selected its color icon turns blue and its LED readout illuminates brightly. (There are two exceptions. One exception is diathermy. Its LED readout is always lit, and its color icon turns blue when activated with the footswitch. The second exception is AVGFI. After activation the air pump remains ON and the LED readout remains dimly lit, unless continuous irrigation is turned ON, when its color icon and LED readout remain illuminated.)

A global function setting can be adjusted, even when the function is OFF, by pressing its corresponding Up/Down arrow buttons. If the function is OFF, the LED readout becomes dimly lit while making adjustments, then becomes blank after a few seconds (except for diathermy as mentioned above).





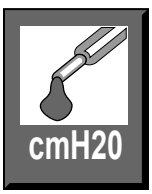
• Irrigation
Irrigation pressure is delivered through one of three types: Anterior *VGFI*™ *, Power IV Pole, or Gravity. Selection of irrigation method is provided in the *Irrigation Settings* screen (see Figure 7-2).

In anterior surgeries the fluid is delivered to the eye via a handpiece connected by tubing to the cassette. Irrigation ON/OFF control is maintained by the footpedal; depressing the footpedal starts irrigation, and releasing the pedal stops it. (Continuous irrigation is also available.) When footpedal activates irrigation the LED readout illuminates brightly, and the icon's water drop enlarges and turns blue. For Continuous Reflux the icon background also turns bright blue.

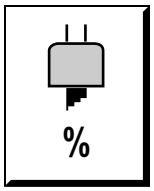
When **AVGFI** (Anterior Vented Gas Forced Irrigation) is selected in the *Irrigation Settings* screen and activated by pressing its global icon, the *Accurus*® system delivers filtered, pressurized air through a tubing set into the infusion bottle, which in turn pressurizes fluid through the cassette and handpiece to the eye. The global up/down arrow buttons are used to adjust the fluid pressure, displayed as cmH2O or mmHg. Pressing down on the footswitch's right vertical switch during surgery toggles between regular and alternate irrigation pressure, when available.

The **Power Pole** selection uses gravity to pressurize fluid when the bottle is hanging from the optional power IV pole. Irrigation pressure can be set by pressing the global up/down buttons until the desired LED pressure readout is displayed. The power IV pole automatically raises or lowers to the correct height, and the LED pressure readout blinks as the pole is moving. Pressing down on the footswitch's right vertical switch toggles between regular and alternate irrigation pressure, when available.

When **Gravity** irrigation is selected, pressure is adjusted by manually raising or lowering irrigation bottle (the *Accurus*® system does not provide irrigation pressure).



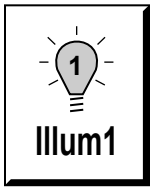
• Continuous Irrigation
Continuous irrigation, independent of the footpedal, is turned ON/OFF by pressing either the global irrigation icon or pressing sideways on the footswitch's right horizontal switch. Continuous irrigation is available in Gravity, Power Pole, and AVGFI.

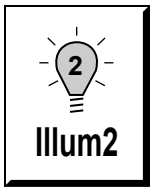


• Diathermy
The diathermy global function provides fixed diathermy capability through the use of diathermy probes and handpieces. Diathermy output is available at all times, controlled by the footswitch, and is based on the percent of maximum voltage output. Diathermy power is adjusted with the up/down arrow buttons on the front panel, with the percentage of maximum diathermy voltage output displayed.

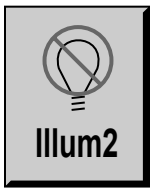
When the diathermy **%** icon is pressed, a popup window is displayed to remind the operator to use the footswitch to control this function. This popup window can be removed by pressing the screen's **Continue** key or activating the diathermy function.

The diathermy function can be activated in all modes by pressing the footswitch's left vertical switch. In Phaco mode the footpedal must be released before you can activate diathermy; in I/A and Vit modes the footpedal is inconsequential.





• Illuminators (Illum1 & Illum2)
Two halogen bulbs in the front panel illuminator drawer provide light to two illuminator receptacles (not available in 200PS system). Fiber optic light pipes can be plugged into the receptacles. Illuminators can be used individually or concurrently because each illuminator has its own On/Off and intensity controls. Light intensity for each illuminator is shown in its LED display, and each is adjustable using the up/down arrow buttons.



In the event of a burnt bulb a System Advisory appears on the screen, and the illuminator's icon dims and is covered with a strike. The user should then remove and plug the light pipe into the other illuminator receptacle, press OK, and proceed.

NOTE: Upon completion of the procedure it is recommended that the burnt bulb be replaced. Two illuminator sources should always be available. (See Care and Maintenance, Section Fifteen of this manual, for instructions to replace bulb.)

ANTERIOR SURGERY MODES

The *Accurus*® system offers three surgery modes in the anterior domain—depicted as icons in the Modes Window at the bottom of the touch screen—and each surgery mode has submodes (see Table 7-1). The active mode and submode keys are highlighted, and their names are displayed in the Title Window.

To enter a surgery mode, press its associated icon key on the touch screen. The previous surgery mode or submode is deactivated when a new mode or submode is selected, and front panel LED's illuminate to indicate which connectors are active. To enter a surgery submode, press the key above its associated mode key. Pressing a mode key successively causes the system to cycle through the available submodes.

NOTE: The footpedal must be released, and none of the footswitches depressed, to enter or change a surgery mode. However, for Phaco and I/A modes, submodes may be changed while footpedal is in first detent position.

When a surgery mode is first entered after power up, the system enters its factory default settings, or if a doctor memory has been selected, the doctor's programmed values are used. If the defaults are then adjusted, re-entry to that mode will display the new values. Turning system power OFF resets all values back to the factory default settings, as does switching to another domain.

Functional operations to the *Accurus*® console are accepted from a footswitch. The footswitch consists of a footpedal, right and left horizontal/vertical switches, and right and left vertical heel switches. Functions controlled by the footswitch are listed in Tables 7-2, 7-3, 7-4, and 7-5.

MODE	SUBMODES			
Phaco U/S phacoemulsification	**Linear** **linear vacuum & linear U/S**	Burst llinear vacuum & U/S Burst	Fixed linear vacuum & fixed U/S	3D dual dynamic drive vacuum & U/S
I/A irrigation/aspiration	**Max** **irrigation & linear high vacuum**	CapVac irrigation & linear low vacuum	--	--
Vit anterior vitrectomy	**Wet** **wet anterior vitrectomy**	Dry dry anterior vitrectomy	--	

Table 7-1 ANTERIOR DOMAIN SURGERY MODES - Three surgery modes are available in the anterior domain. Each mode has submodes, as shown in this table, with the default submode shown in bold type.

Default Map A, Anterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	Burst	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	3D	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	Fixed	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
I/A	CapVac	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	Max	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
Vit	Wet	Diathermy	Cut Disable	Programmable	Alternate Irr.	Cut Enable	Reflux
	Dry	Diathermy	Cut Disable	Programmable	Alternate Irr.	Cut Enable	Reflux
Setup	N/A	Diathermy	N/A	Programmable	Alternate Irr.	Continuous Irr.	N/A

• The reflux controlled by the Right Heel switch is pulsed.
• Continuous Reflux is available only with a single-use AVGFI cassette.
• The default for the Left Heel is No Function.
• The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 7-2 ANTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP A - The footswitch contains a footpedal, left and right switches which are either actuated horizontally or depressed vertically with the user's toe, and left and right vertical heel switches. These three tables represent the factory default settings for Map A, Map B, and Map C, but can be programmed otherwise as instructed in section two of this manual (Options/Memory/Common/Footswitch).

Default Map B, Anterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	Burst	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	3D	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	Fixed	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
I/A	CapVac	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	Max	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
Vit	Wet	Diathermy	Reflux	Programmable	Alternate Irr.	Cut Toggle	Programmable
	Dry	Diathermy	Reflux	Programmable	Alternate Irr.	Cut Toggle	Programmable
Setup	N/A	Diathermy	N/A	Programmable	Alternate Irr.	Continuous Irr.	Programmable

• The reflux controlled by the Left Heel switch is pulsed.
• The default for the Left Heel is Next Memory, and the default for the Right Heel is Previous Memory.
• The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 7-3 ANTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP B

Default Map C, Anterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	Burst	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	3D	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	Fixed	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
I/A	CapVac	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	Max	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
Vit	Wet	Diathermy	Reflux	Programmable	Irr. Pressure +	Cut Toggle	Irr. Pressure –
	Dry	Diathermy	Reflux	Programmable	Irr. Pressure +	Cut Toggle	Irr. Pressure –
Setup	N/A	Diathermy	N/A	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –

- In all modes except Vit, reflux will be continuous if supported by the anterior single use cassette, or pulsed if not.
- The default for the Left Heel is Next Memory.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 7-4 ANTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP C

Default Map D, Anterior Domain

Mode	Left Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Reflux	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +
	Burst	Diathermy	Reflux	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +
	3D	Diathermy	Reflux	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +
	Fixed	Diathermy	Reflux	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +
I/A	Cap Vac	Diathermy	Reflux	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +
	Max	Diathermy	Reflux	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +
Vit	Wet	Diathermy	Reflux	*Irr. Pressure -	Programmable	Cut Toggle	**Irr. Pressure +
	Dry	Diathermy	Reflux	*Irr. Pressure -	Programmable	Cut Toggle	**Irr. Pressure +
Setup	N/A	Diathermy	N/A	*Irr. Pressure -	Programmable	Continuous Irr.	**Irr. Pressure +

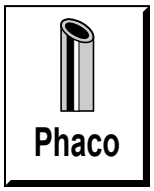
* Pressing the Left Heel switch decreases pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Normal Pressure preset value if currently above the preset value; otherwise, pressure remains at the current setting.

** Pressing the Right Heel switch increases the pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Alternate Pressure preset value if currently below the preset value; otherwise, pressure remains at current the setting.

- The reflux controlled by the Left Heel switch is pulsed.
- The default for the Right Vertical is Next Memory.
- Adjustments made with the Left and Right Heel switches are considered "temporary," as they will not change either the preset value or preset alternate value. These preset values can be changed from the Irrigation settings screen or the Doctor Memory screens.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 7-5 ANTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP D

Phaco Mode Surgery Screen



The Phaco function provides vacuum and U/S power to the ultrasonic handpiece. Irrigation and aspiration lines must be plugged into the handpiece, and its electric cable plugged into the illuminated front panel connector.

The Phaco mode is entered when the **Phaco** handpiece is selected in the *Cataract Surgery Setup* screen and the **Surgery** key is pressed, or when the **Phaco** key is available from another mode. The Phaco mode consists of four submodes: Linear, Burst, 3D, and Fixed, with Linear being the factory default. Each submode has its own default values which are adjustable by pressing **Up/Down** triangle keys.

U/S Pulse controls are available in Linear and Fixed submodes, and can be turned on/off by pressing the **Pulse Rate** touch key. The pulse rate can be adjusted using its **Up/Down** triangle keys.

WARNINGS!

Use of a Phaco handpiece at power settings greater than 80% continuously for over 4 minutes can result in ultrasonic system failure. Allow the system to cool for 8 minutes between heavy usage of this type.

During any ultrasonic procedure, metal particles may result from inadvertent touching of the ultrasonic tip with a second instrument. Another potential source of metal particles resulting from any ultrasonic handpiece may be the result of ultrasonic energy causing micro abrasion of the ultrasonic tip.

Linear - In Phaco Linear submode (see Figure 7-4) irrigation is provided when the footpedal is depressed. Linear vacuum, up to the Max Limit, is provided from detent one through detent two, and sustained from detent two to full footpedal depression. Linear U/S power is provided from detent two to full footpedal depression, with the

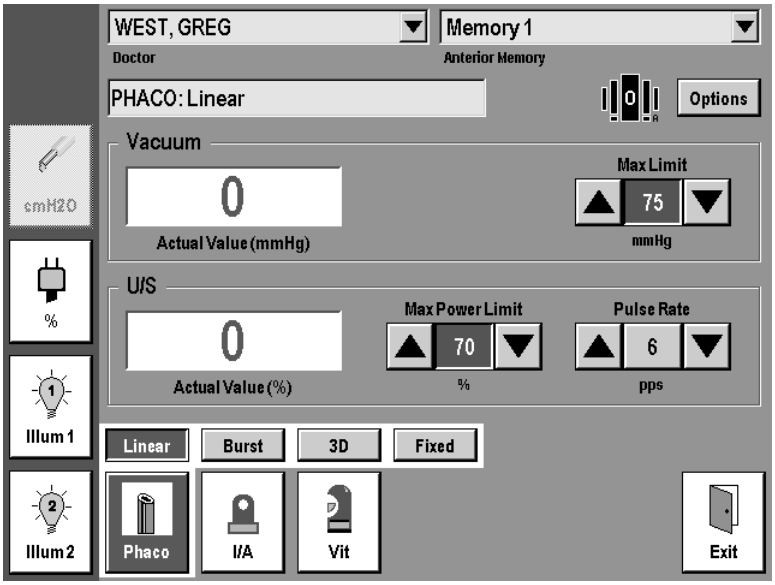


Figure 7-4 PHACO LINEAR MODE SCREEN - The Phaco Linear screen has an Actual Value % in the U/S box which represents the amount of Max Power Limit delivered to the handpiece, controlled with the footpedal. The U/S Fixed mode does not contain a U/S power Actual Value box; it is not needed because U/S power turns ON at its Power Setpoint when the pedal enters detent 2.

preset Power Max Limit reached at full depression. Pulse On/Off control is available by pressing the **Pulse Rate** touch key, and pulses per second (pps) is adjusted with its **up/down** keys.

Burst - In Phaco Burst submode, irrigation is provided when the footpedal is depressed. Linear vacuum, up to the preset maximum, is provided from detent one through detent two, and sustained from detent two to full footpedal depression.

In the Phaco Burst submode fixed U/S power (Power %) can be adjusted for frequency (Duty Cycle) and duration (Burst Length) of 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 Duty Cycle window.

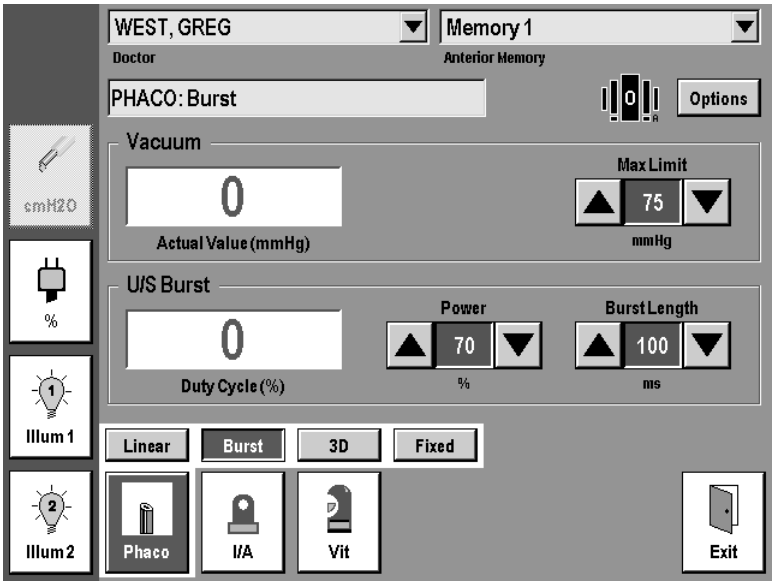


Figure 7-5 PHACO BURST MODE SCREEN - In the Phaco Burst submode fixed U/S power can be adjusted for frequency and duration of U/S power pulses.

3D (Dual Dynamic Drive)

In the Phaco 3D submode (see Figure 7-6), irrigation is provided when the footpedal is depressed. Vacuum and U/S power delivered to the probe are simultaneously regulated by the amount of footpedal depression. The display contains adjustable values for vacuum level at footpedal start and at full depression; and U/S power at footpedal start and at full depression. To ensure that not too much flow is generated when the footpedal is first depressed, the vacuum level is ramped up from zero to the set starting level during the first part of the pedal travel.

Fixed - In Phaco Fixed submode, irrigation is provided when the footpedal is depressed. Linear vacuum, up to the preset maximum, is provided from detent one through detent two, and sustained from detent two to full footpedal depression. The preset U/S Power Setpoint is reached immediately upon entry into footpedal detent two, and is sustained to full depression. Pulse On/Off control is available by pressing the **Pulse Rate** touch key, and pulses per second (pps) is adjusted with its **up/down** keys.

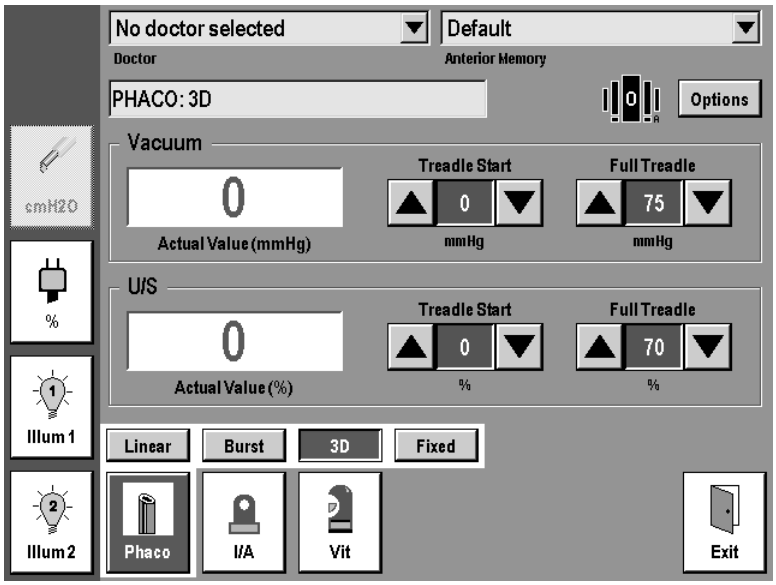
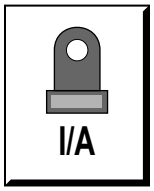


Figure 7-6 **PHACO 3D MODE SCREEN - In the Phaco 3D submode vacuum and U/S power delivered to the probe are simultaneously regulated by the amount of footpedal depression.**

I/A Mode Surgery Screen



The I/A mode provides irrigation and vacuum for aspiration to the I/A handpiece. This function consists of two vacuum submodes: I/A **Max** (Maximum, the factory default) and I/A **CapVac** (reduced vacuum). Each submode has its own default Max Limit vacuum level, adjustable using **up/down** keys, even when the footpedal is depressed.

Irrigation begins when the footpedal is depressed, and linear vacuum is provided from detent two to full footpedal depression, with the preset Max Limit reached at full depression.

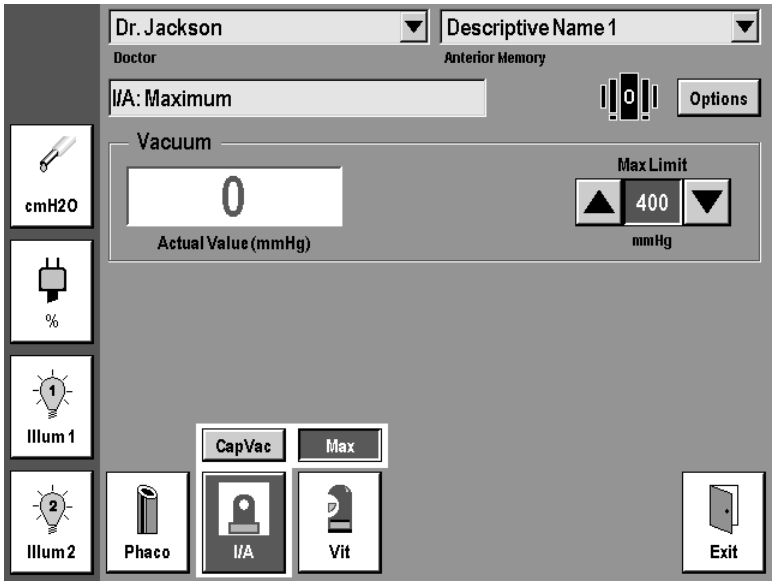


Figure 7-7 **I/A MAX MODE SCREEN - Shown here is the I/A Max display screen. The I/A CapVac screen looks similar, but the Max Limit default setting is 30 mmHg. These modes provide irrigation and vacuum to the I/A handpiece.**

* FOR REFERENCE ONLY *

Vit Mode Surgery Screen



The Anterior Vitrectomy function provides vacuum and cutting capabilities using a pneumatically powered vitreous probe connected to a pulsed pressure source. The preset vacuum and cut rate values are adjustable using the **up/down** keys, even when the footpedal is depressed. Wet Vit is the default mode, and is entered when the **Vit** key is first pressed.

Cutting can be enabled/disabled using the footswitch right/left horizontal switches, respectively, or by pressing the **Set Point** key. The footpedal does not have to be released to change the enabled/disabled cutting status.

Wet - Pressing the footpedal into detent 1 initiates bimanual or coaxial irrigation. Linear vacuum and cutting, when enabled, is provided from detent two to full footpedal depression, reaching the preset maximum vacuum at full depression.

Dry - When cutting is enabled, pressing the footpedal into detent 1 initiates cutting and linear vacuum, reaching the preset maximum vacuum at full depression. In this mode irrigation flow is inhibited.

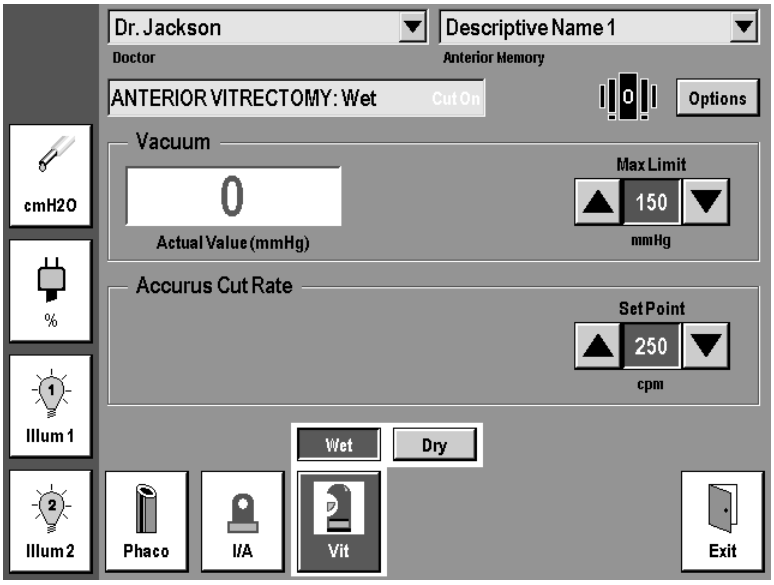


Figure 7-8 VIT MODE SCREEN - Shown here is the Wet Anterior Vitrectomy submode screen. Anterior vitrectomy has two submodes, Wet and Dry, which are selected above the Vit key. The Dry screen also looks like this screen, but the Dry mode doesn't have irrigation control.

HANDPIECES AND PROBES

Different handpieces and probes are required for each operating mode of the *Accurus*® system. Following is a representative selection of handpieces and probes with a general description of each. See the Accessories and Parts section of this manual, or consult your Alcon representative, for a complete selection of all handpieces, handpiece tips, and probes available.

375/40 U/S and *Mackool*** Handpiece

The ultrasonic (U/S) handpieces integrate irrigation, aspiration, and ultrasonics. The three functions of the U/S mode enable the surgeon to simultaneously maintain or inflate the anterior chamber, emulsify the cataractous lens, and aspirate the lens material from the eye. The handpiece is used in conjunction with tubing, an infusion sleeve, a bubble suppression insert (BSI), and ultrasonic tip.

CAUTION

Following autoclaving, ensure handpiece is at room temperature. Never immerse handpiece in water or other fluid to cool it as it will cause serious damage to the handpiece. Allow it to air cool for at least 15 minutes.

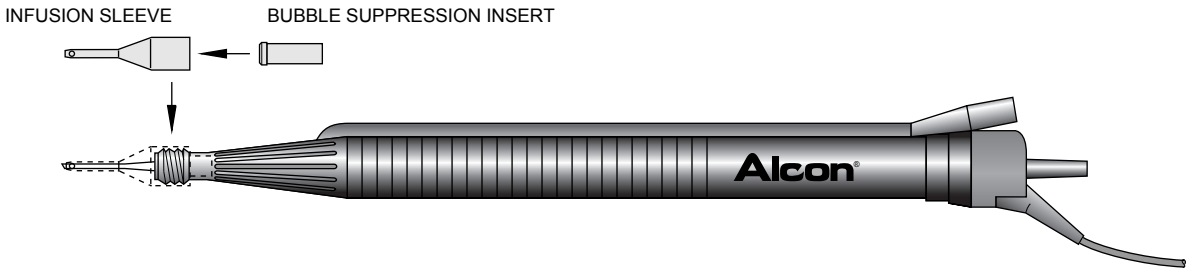


FIGURE 7-9 375/40 U/S HANDPIECE

Irrigation/Aspiration Handpiece

The Irrigation/Aspiration (I/A) handpiece, connected to the *Accurus*® system with I/A tubing, is used to remove cortical material via aspiration while maintaining chamber pressure with irrigation.

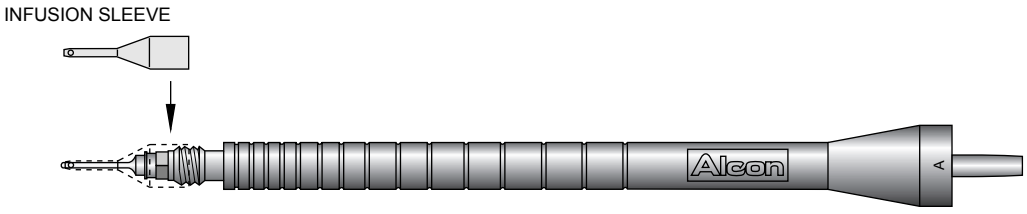


FIGURE 7-10 IRRIGATION/ASPIRATION (I/A) HANDPIECE

* FOR REFERENCE ONLY *

Vitrectomy Probes

The *Accurus*® and *Accurus*® 2500 probes are axial oscillating guillotine vitreous cutters. These probes are designed for a single use and must be properly disposed of when surgery is completed.



FIGURE 7-11 *ACCURUS*® PROBE

Diathermy/Coagulation Handpieces

Single use Bipolar Coagulation Brushes are available in a wide variety of configurations: straight, curved, 20-gauge, 23-gauge, tapered, and widestroke. All single use bipolar accessories are available with and without cables. Also available are reusable and single-use bipolar cables.

Bipolar Coagulation Forceps are lightweight and ergonomically designed to reduce hand fatigue, as well as to provide precise control and safety. They are available in high-conductive non-stick alloy, titanium, or single-use configurations. They are also available with a wide variety of tip styles.

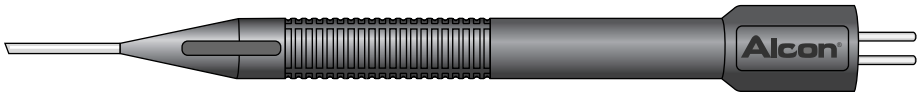


FIGURE 7-12 SINGLE USE BIPOLAR BRUSH

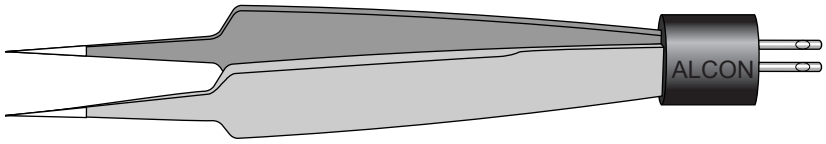


FIGURE 7-13 4 INCH NADLER COAPTATION FORCEPS

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* FOR REFERENCE ONLY *

SECTION EIGHT
ANTERIOR OPERATING INSTRUCTIONS

Introduction

This section of the manual contains typical setup procedures using anterior *Accurus*® paks, then guidelines to navigate through the anterior domain.

The *Accurus*® pak setup procedures are written for a surgical team of three people: Surgeon and Scrub Nurse in the sterile field, and Circulating Nurse in the non-sterile field. The instuctions are divided into two columns. In the left column a directive is given, and in the right column a team member is identified to perform the task. These procedures assume that a sterile drape is not being utilized; if it is applied to the front of the console, the roles of the Circulating Nurse and the Scrub Nurse change.

If the system has problems when you perform the setup instructions, you should first refer to the Troubleshooting section of this manual. If questions still exist, contact the Alcon Technical Services Department or your local Alcon representative.

Power Up Sequence

Follow these steps each time you turn system power ON. This helps ensure that the *Accurus*® Ophthalmic Surgical System is set up correctly and is ready for surgery.

1. Plug the power cord into its power source.

2. Connect the air hose between the *Accurus*® console and the pressure supply (compressed air or nitrogen). Verify that pressure is between 90 to 120 psi (500 kpa minimum for reduced operation).

3. Connect the footswitch cable to the *Accurus*® console.

4. Connect the optional Power IV Pole cable to the *Accurus*® console.

5. First turn system power ON using the rear panel ON/OFF switch and then the front panel Standby switch. Alcon's *Accurus*® logo is displayed on the viewing screen while the system completes its initialization and self-test diagnostics (approximately 3 minutes). While completing diagnostics, confirm that the five Global Function LED displays on the front panel flash 888 before the system enters either the *Procedure Selection* screen or a *Surgery Setup* screen.

   If a fault is detected during diagnostics, a *System Fault* screen is displayed and operator inputs are locked out until the failure/problem is corrected.

Select a Mode of Operation (600DS and 800CS)

An *Accurus*® 600DS or 800CS system enters the *Procedure Selection* screen upon successful completion of self-test diagnostics. At this point you must select the anterior domain of operation on the touch screen, then a variety of operating selections are available to you. Navigating through domains and their modes of operation is flexible, controlled by system software, and is generally structured as diagrammed in Figure 8-1.

If your system only offers anterior functions, or if the system has been programmed in the *System Parameters* screen (***Options/System***) to automatically enter the anterior domain, the *Procedure Selection* screen is bypassed. For systems that offer it, the operator can return to the *Procedure Selection* screen by pressing the ***Exit*** key.

Navigating Through the *Accurus*® Anterior Mode Screens

After entering a mode of operation, most surgical operations are controlled through the doctor's footswitch, but before any surgery can be performed there are system modes and parameters that must be selected. Most presurgical system preparation is performed by inserting a cassette, connecting handpieces and accessories to the *Accurus*® system, then pressing buttons to navigate through the system touch screens to make operating selections. A brief outline of screens and their functions is presented below.

- *Accurus*® Opening Screen - When system power is turned ON the *Accurus*® banner is displayed while the system completes initialization and self-test diagnostics. All operator input is blocked out during this procedure (use rear panel Power switch to power down during initialization). After successfully completing self-test diagnostics the system enters either the *Procedure Selection* screen or the *Cataract Surgery Setup* screen.

- Procedure Selection Screen - On systems that offer the *Procedure Selection* screen, the operator can select Anterior to enter the setup screen for that domain.

- Cataract Surgery Setup Screen - This screen is designed to help the operating room staff prepare the system for anterior surgery.

  You first insert a cassette, then in the *Handpieces/Probes* section of the screen you select handpieces and probes you want to use. Plug handpieces and probes into the illuminated front panel connectors, then press the **Test** key to test and prime/tune the selections. The system automatically advances to the appropriate surgery mode after testing is done.

  One accessory can be selected at a time by pressing the desired item from the *Accessories* choices. The associated front panel connectors illuminate to help you plug the accessory into the correct connectors.

Continued on page 8.4

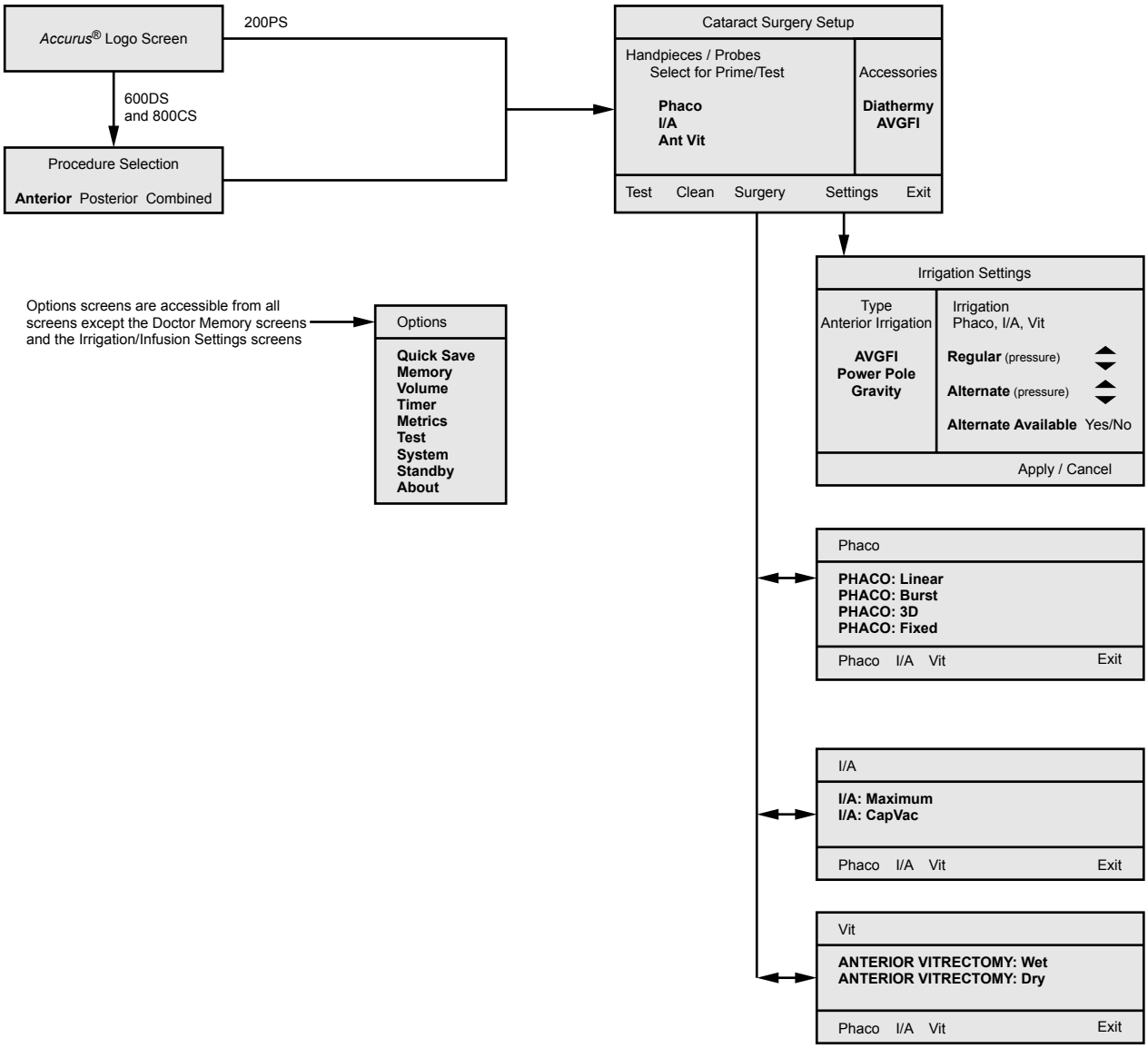


Figure 8-1 ANTERIOR MODES FLOW CHART - This flow chart highlights the system's anterior operating domain with a general map to help you navigate through its modes of operation.

- Cataract Surgery Setup Screen - (continued from prior page)

  The **Settings** key is pressed to open the *Irrigation Settings* screen. In the **Type** tab you can select either AVGFI, Power Pole, or Gravity irrigation. In the **Irrigation** tab, depending on your irrigation type, you can set a Regular and Alternate Irrigation pressure, and select whether you want the alternate pressure to be Available Yes/No. Pressing the **Apply** key returns you to the setup screen.

  The **Clean** key is pressed to drain fluid from the cassette chamber into the drain bag. During normal operation this function is performed automatically, but prior to removing the cassette you may want to drain the remainder of fluid from the chamber into the drain bag.

  Depending on the last handpiece tuned, pressing the **Surgery** key opens the associated surgery screen for that mode of operation.

- Surgery Screens - Entering a surgery screen gives the doctor a variety of operating parameters and adjustments unique to that mode of operation. Pressing a key at the bottom of the screen for another mode of operation automatically opens the surgery screen for that mode. If your system also contains posterior domain functions, you can enter that domain by pressing **Exit** until the *Procedure Selection* screen again appears.

Factory Default Settings and Adjustments

The settings can be adjusted by pressing touch screen up/down arrow keys, increasing or decreasing the values. If the settings are adjusted, re-entry to that mode will display the new values. Table 8-1 shows the factory default settings for each mode, and the adjustment ranges of each.

Mode or Function	Submode	Function	Default Value	Adjustable Range
Phaco	Linear	Vacuum Max Limit U/S Max Power Limit U/S Pulse Rate	75 mmHg 70 % 6 pps	0-400 mmHg 0-100 % 0-15 pps
	Fixed	Vacuum Max Limit U/S Power Setpoint U/S Pulse Rate	75 mmHg 70 % 6 pps	0-400 mmHg 0-100 % 0-15 pps
	3D	Vacuum Max Limit *Treadle Start* *Treadle Full* U/S Max Power Limit Treadle Start Treadle Full	 0 mmHg 75 mmHg 0% 70%	 0-400 mmHg 0-400 mmHg 0-100 % 0-100 %
	Burst	Vacuum Max Limit U/S Burst Power U/S Burst Length	75 mmHg 70 % 100 ms	0-400 mmHg 0-100 % 30-500 ms
I/A	Maximum	Vacuum	400 mmHg	0-600 mmHg
	CapVac	Vacuum	30 mmHg	0-600 mmHg
Vit	Wet	Vacuum Max Limit Cut Rate Set Point	150 mmHg 250 cpm	0-600 mmHg 100-800 cpm
	Dry	Vacuum Max Limit Cut Rate Set Point	150 mmHg 250 cpm	0-600 mmHg 100-800 cpm
Diathermy		Voltage	50%	0-100%
Illumination*		Intensity	80%	0-HI3

* Illumination not available on 200PS system.

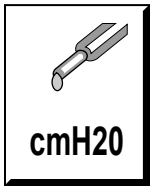
Table 8-1. FACTORY DEFAULT SETTINGS AND ADJUSTMENTS - Listed here are the *Accurus*® system factory default settings for the anterior modes of operation. The factory settings can be changed during surgery, but turning system power OFF resets all values back to the factory default settings.

Using the Global Functions

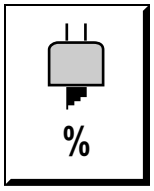
The global keys are used to select global functions (except for the **Diathermy** key which is always enabled for footswitch control). When selected, the global function key is highlighted, the corresponding global parameter value in the LED display is illuminated, and the console connector is illuminated to help connect the accessory. The corresponding rubberized arrow buttons are used to adjust the global function parameter values, which change repeatedly when the key is held down. The preset parameter values are displayed on the LED displays.

Four global functions, accessed by pressing their icon keys on the left side of the touch screen, are unique to the system's anterior domain.

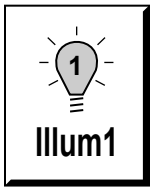
- Irrigation: AVGFI or Power IV Pole (cmH2O or mmHg)
- Diathermy (% volt)
- Illuminator #1 (Illum1, not available on 200PS)
- Illuminator #2 (Illum2, not available on 200PS)



Irrigation - The top global selection on the touch screen turns continuous irrigation ON in the anterior domain when **AVGFI** irrigation or **Power Pole** is selected in the *Irrigation Settings* screen. Pressing it again turns continuous irrigation OFF. Anterior *VGFI*™ * irrigation utilizes the *Accurus*® low pressure air supply to provide regulated pressure into the irrigation bottle. Alternate irrigation pressure, set and enabled in the *Irrigation Settings* screen, is activated by pressing the footswitch's right vertical switch. If **Power Pole** is the selected irrigation method, this control is used to set the desired irrigation pressure which automatically sets the cart's power pole height. If **Gravity** is selected, this global key can be used to turn continuous irrigation on and off (manually adjusted gravity fed irrigation is independent of the *Accurus*® system).



Diathermy - The diathermy global selection is activated through the footswitch's left vertical switch, and not through the global selection touch screen. Diathermy power is only provided to the handpiece when the vertical switch is depressed, and turns OFF when released.



Illuminators - Pressing an Illuminator 1 or 2 global key turns the lamp in the selected illuminator port ON or OFF (not available on 200PS).

Presurgical Setup Instructions

Sterile materials packaged inside Alcon Paks must be set up to protect the sterile surgical environment; these instructions are written to help you protect that environment.

NOTE: If inconsistencies exist between these instructions and Directions For Use (DFU) supplied with a consumable pak, follow the DFU.

WARNING!

Follow local governing ordinances and recycling plans regarding disposal or recycling of device components and packaging.

* FOR REFERENCE ONLY *

Directive	Team Member

ACCURUS® TURBOSONICS® MICROTIP™ PAK SETUP

These instructions are a recommended setup procedure using the *Accurus® TurboSonics® MicroTip™* Pak when preparing for anterior surgery. This procedure is written for both *Turbosonics®* and *Mackool*** handpieces/tips.

Initial Preparation

1. Peel lid from pak and aseptically present contents to Scrub Nurse. — Circulating Nurse

2. Accept inner pouch from Circulating Nurse and place contents in sterile field. Present cassette and drip chamber to Circulating Nurse. — Scrub Nurse

3. Turn system power ON, and if required after initial self tests are completed, select Anterior mode of operation. Unfold drain bag, allowing it to hang freely, and insert cassette into console cassette well (see Figure 8-2). Ensure that latch engages. — Circulating Nurse
   NOTE: After *Accurus®* system accepts the cassette and performs a vacuum test, the Test and Clean icons return to normal colors.

4. After cassette has successfully loaded, do the following:
   - Gravity and Power Pole Irrigation - Proceed to step 5.
   - *AVGFI* Irrigation - Proceed to the Anterior Vented Gas Forced Infusion Setup procedure later in this section of the manual, then continue at step 6.

5. Press **Settings** to enter *Irrigation Settings* screen. In the **Type** tab select **Power Pole** or **Gravity**. If using power pole, press the **Irrigation** tab and adjust Regular and Alternate fluidic pressures. Press **Apply**. If using gravity, circulating nurse manually adjusts bottle height. — Scrub Nurse

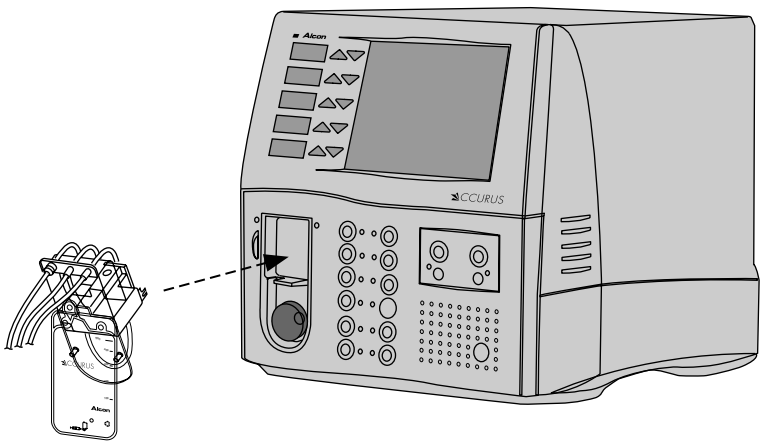


Figure 8-2. ANTERIOR FLUID CASSETTE INSERTION - With power turned ON, the fluid cassette with drain bag is inserted into the front of the *Accurus®* cassette housing.

Directive	Team Member
Phaco Setup (for I/A Setup proceed to next page)	
6. Select **Phaco** on *Cataract Surgery Setup* screen.	Scrub Nurse
7. Plug handpiece cable into illuminated connector on console (see Figure 8-3). Present sterile phaco handpiece to Scrub Nurse.	Circulating Nurse
8. Accept handpiece from Circulating Nurse and connect it to the blue luer aspiration line and the white luer irrigation line. Screw a 0.9 mm tip onto handpiece and tighten with tip wrench supplied in Pak. Install irrigation sleeve with bubble suppression insert. **CAUTIONS** **• Use of a tool other than the tip wrench supplied in the Pak may cause damage to the phaco tip and handpiece.** **• The *Mackool*** handpiece utilizes a reverse thread on its tip. To tighten the tip turn it counterclockwise, to loosen the tip turn it clockwise.**	Scrub Nurse
9. Enable Continuous Irrigation by pressing the Irrigation key (top key in the Global Function screen, labeled either **mmHg** or **cmH20**), or by pressing and releasing the right horizontal switch on the footswitch.	Scrub Nurse
10. Fill the test chamber with fluid as it streams out of the handpiece irrigation ports, then slide the test chamber over the sleeve/tip.	Scrub Nurse
11. Press **Test**; the system primes, tests, and tunes the tubing/handpiece. The popup screen will disappear, Continuous Irrigation will turn OFF, and the system will enter the *Phaco: Linear* screen upon completion of the prime and test/tune sequence.	Scrub Nurse
12. Select either **Phaco Linear, Burst,** or **Fixed** and proceed to step 20.	Scrub Nurse

WARNINGS!

- **The ultrasonic (U/S) handpiece must be at room temperature before use. Allow handpiece to AIR COOL for at least 15 minutes after steam autoclave. Never immerse in liquid to cool.**
- **Use of the phaco handpiece in the absence of irrigation flow and/or in the presence of reduced or lost aspiration flow can cause excessive heating and potential corneal and/or tissue burns.**
- **Use only Alcon-certified *Mackool*** or *Turbosonics*® *MicroTip*™ configurations (0.9 mm). Alcon does not recommend the use of standard *Turbosonics*® tips (1.1 mm) with the *Accurus*® drive system.**
- **It is important that irrigation and aspiration parameters are set at safe levels when using the 0.9 mm tip on a phaco handpiece.**

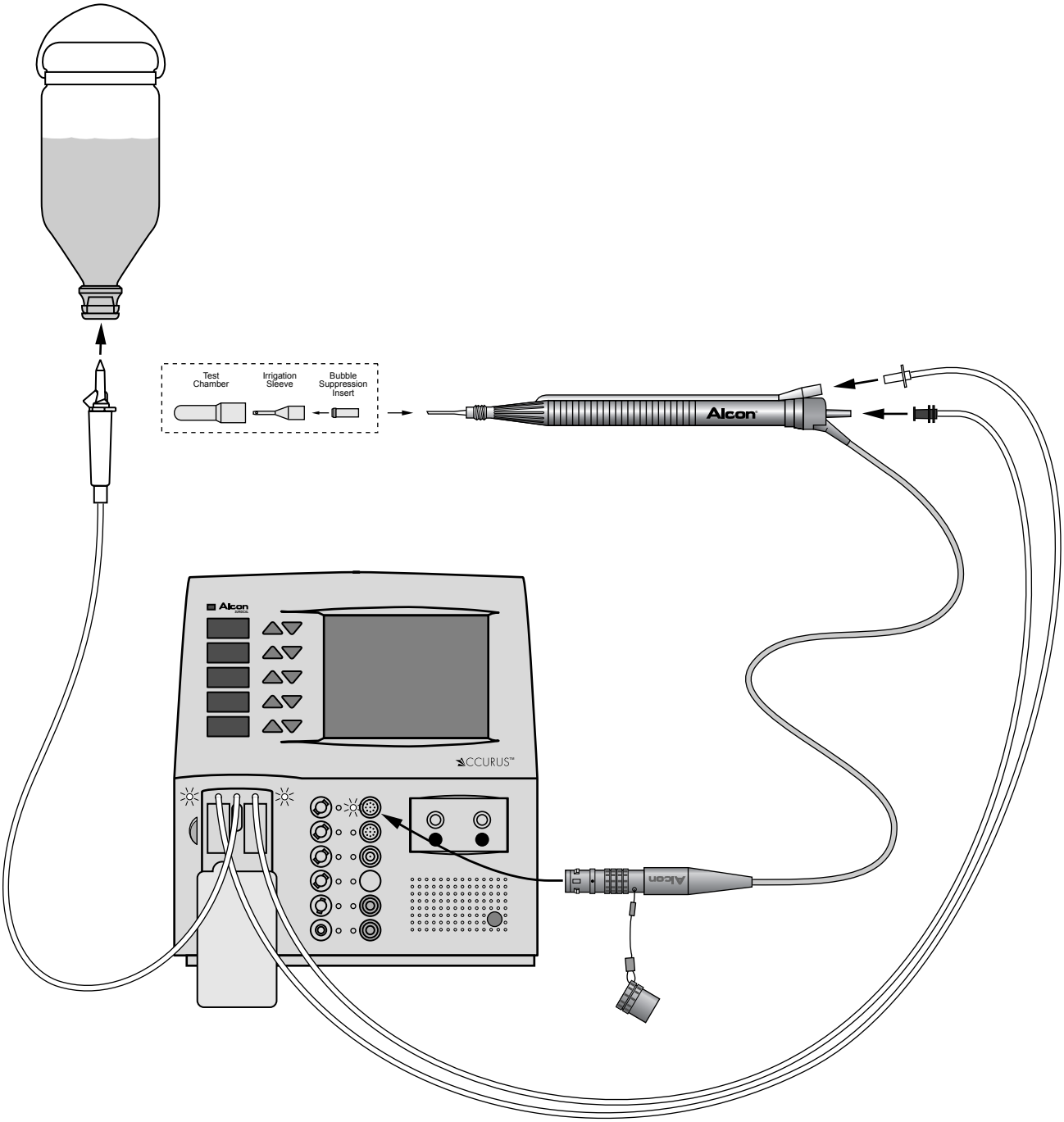


Figure 8-3 **PHACO SETUP - For phacoemulsification procedures the anterior pak requires connection of the irrigation spike into the irrigation bottle, the irrigation and aspiration lines into the handpiece, and the cable into the front panel connector. For the Anterior *VGFI*™* irrigation method refer to its setup procedure later in this section of the manual.**

Directive	Team Member
I/A Handpiece Setup	
13. Select **I/A** on *Cataract Surgery Setup* screen.	Scrub Nurse
14. Present sterile I/A handpiece to Scrub Nurse.	Circulating Nurse
15. Accept handpiece from Circulating Nurse and connect it to the blue luer aspiration line and the white luer irrigation line (see Figure 8-4). Screw an I/A tip onto handpiece and tighten with wrench supplied in Pak. Install irrigation sleeve. **CAUTION** **Use of a tool other than the tip wrench supplied in the Pak may cause damage to the I/A tip and handpiece.**	Scrub Nurse
16. Enable Continuous Irrigation by pressing the Irrigation key (top key in the Global Function screen, labeled either **mmHg** or **cmH20**), or by pressing and releasing the right horizontal switch on the footswitch.	Scrub Nurse
17. Fill the test chamber with fluid as it streams out of the handpiece irrigation ports, then slide the test chamber over the sleeve/tip.	Scrub Nurse
18. Press **Test**; the system primes the tubing/handpiece. The popup screen will disappear, Continuous Irrigation will turn OFF, and the system will enter the Surgery screen upon completion of the prime sequence.	Scrub Nurse
19. Select either **I/A Max** or **I/A Cap Vac** and proceed to step 18.	Scrub Nurse
Phaco and I/A Safety Test	
20. To test tip and handpiece integrity, perform a fluidics balance test:	Scrub Nurse
20.1 Remove test chamber from tip, then depress footpedal to position 1 and observe the fluid streaming from the handpiece irrigation ports. If the fluid stream is absent or weak, good fluidics response will be jeopardized. Replace test chamber.	
20.2 Pinch aspiration line close to the handpiece to simulate an occlusion. Fully depress footpedal to start fluid flow.	
20.3 Release aspiration line and observe test chamber. The chamber should maintain its shape or dimple slightly and recover its shape. After observing chamber, release footpedal to stop fluid flow.	
20.4 If results are not as described, adjust irrigation pressure and/or vacuum and repeat test.	

* FOR REFERENCE ONLY *

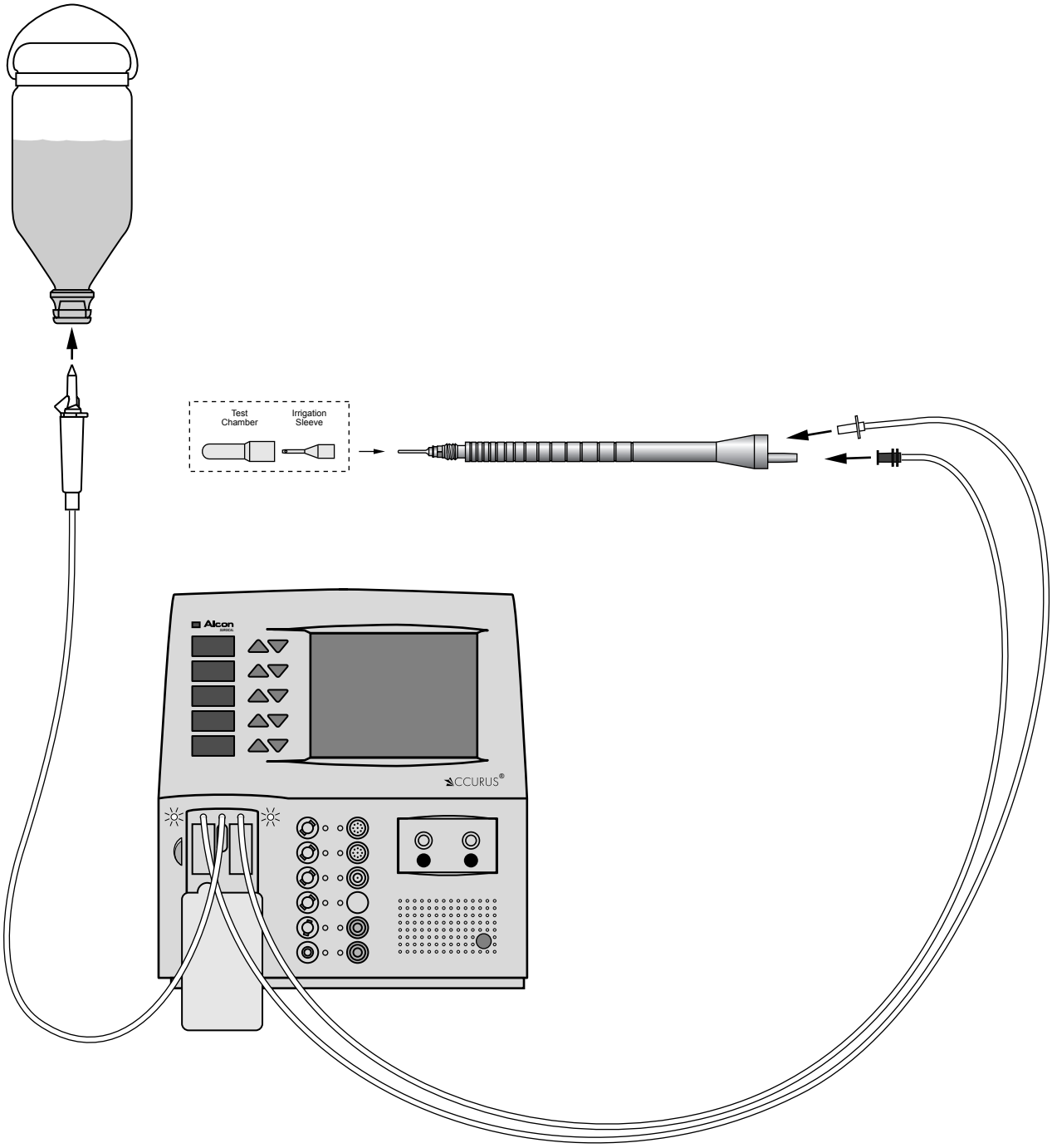


Figure 8-4. **I/A SETUP - For irrigation/aspiration procedures the anterior pak requires connection of the irrigation spike into the irrigation bottle, and the irrigation and aspiration lines into the handpiece. For the Anterior *VGFI*™* irrigation method refer to its setup procedure later in this section of the manual.**

Directive	Team Member

ANTERIOR *VGFI™** TUBING SET SETUP

AVGFI is offered as an alternative to gravity or power pole irrigation in phaco and I/A surgeries. First perform the first four Initial Preparation steps in the *Accurus® TurboSonics® MicroTip™* Pak Setup procedure (see page 8.7), then continue as instructed below.

NOTE: This procedure is not written for the AVGFI Cassette Pak; it is written for the AVGFI Tubing Set.

1. Press **Settings** to enter *Irrigation Settings* screen. In the **Type** tab select **AVGFI**. Press the **Irrigation** tab and adjust Regular and Alternate fluidic pressures. Press **Apply**. — Scrub Nurse

2. Press **AVGFI** on the *Cataract Surgery Setup* screen. — Scrub Nurse

3. Using aseptic procedures, peel lid from Anterior *VGFI™* * Tubing Set. Aseptically remove the irrigation tubing from center connector on cassette. Discard gravity irrigation line (see Figure 8-5). Plug irrigation line into center connector on cassette, then plug pressure line with filter into illuminated connector on front panel (see Figure 8-5). — Circulating Nurse

> ***WARNING!***
> **Ensure filter is in place and is used in conjunction with the consumable. Removal of filter can expose patient to contamination.**

4. Press the **Irrigation** key twice (the top key in the *Global Function* screen, labeled either ***cmH20*** or ***mmHg***). The irrigation pump turns ON and irrigation turns OFF. — Scrub Nurse

5. Pre-spike the irrigation bottle using the spiking tool, wait three seconds, then remove. Carefully spike with drip chamber and hang the bottle so its liquid level is at patient eye level (PEL). Squeeze drip chamber until it is a little more than half full of fluid. — Circulating Nurse

6. Continue to Phaco Setup procedure on page 8.8, or to I/A Handpiece Setup procedure on page 8.10.

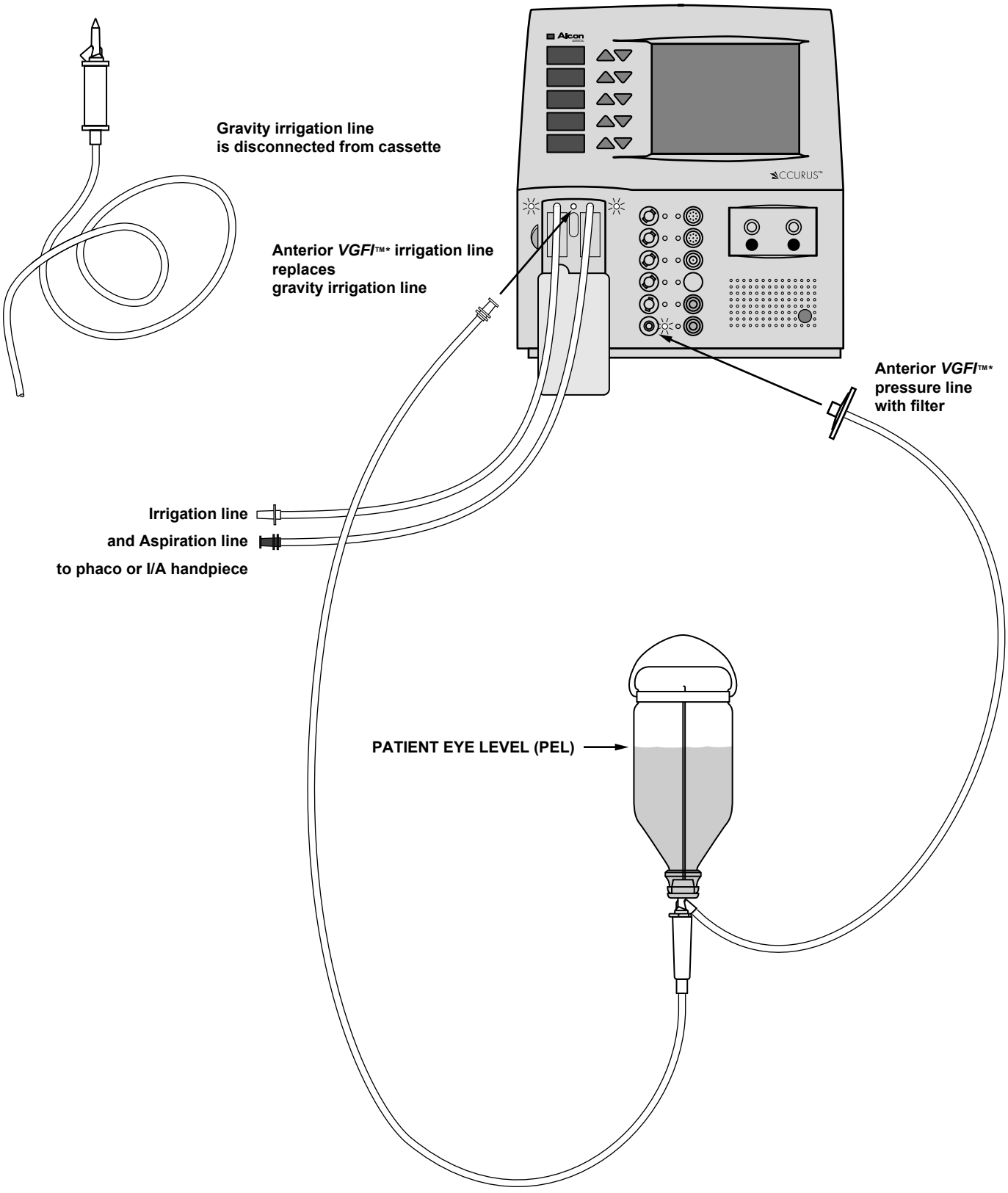


Figure 8-5 **ANTERIOR *VGFI*™* TUBING SET SETUP - The Anterior *VGFI*™* Tubing Set contains the materials to replace the gravity irrigation drip chamber and tubing. This setup can be used with the phaco or I/A handpieces, but continuous reflux cannot be accessed using this pak. Note that continuous reflux is not available using this pak.**

Directive	Team Member

ANTERIOR *VGFI*™* CASSETTE PAK SETUP

These instructions are written as a recommended setup procedure using the Anterior *VGFI*™* Cassette Pak when preparing for anterior surgery. This procedure is written for both the *Turbosonics*® and *Mackool*** handpieces/tips.

1.	Peel lid from pak and aseptically present inner pouch to Scrub Nurse.	Circulating Nurse
2.	Accept inner pouch from Circulating Nurse and place contents in sterile field. Present cassette, drip chamber, and pressure line with filter to Circulating Nurse.	Scrub Nurse
3.	Turn system power ON, and if required after initial self tests are completed, select Anterior mode of operation. Unfold drain bag, allowing it to hang freely, and insert cassette into console cassette well (see Figure 8-2). Ensure that latch engages. **NOTE: After *Accurus*® system accepts the cassette and performs a vacuum test, the Test and Clean icons return to normal colors.**	Circulating Nurse
4.	Press **AVGFI** on the *Accessories* screen.	Scrub Nurse
5.	Plug pressure line with filter into illuminated connector on front panel (see Figure 8-6).	Circulating Nurse
6.	Press **Settings** to enter *Irrigation Settings* screen. In the **Type** tab select **AVGFI**. Press the **Irrigation** tab and adjust Regular and Alternate fluidic pressures. Press **Apply**.	Scrub Nurse
7.	Press the **Irrigation** key twice (the top key in the *Global Function* screen, labeled either ***cmH20*** or ***mmHg***). The irrigation pump turns ON and irrigation turns OFF.	Scrub Nurse
8.	Pre-spike the irrigation bottle using the spiking tool, wait three seconds, then remove. Carefully spike with drip chamber and hang the bottle so its liquid level is at patient eye level (PEL). Squeeze drip chamber until it is a little more than half full of fluid.	Circulating Nurse
9.	Continue to Phaco Setup procedure on page 8.8, or to I/A Handpiece Setup procedure on page 8.10.	

* FOR REFERENCE ONLY *

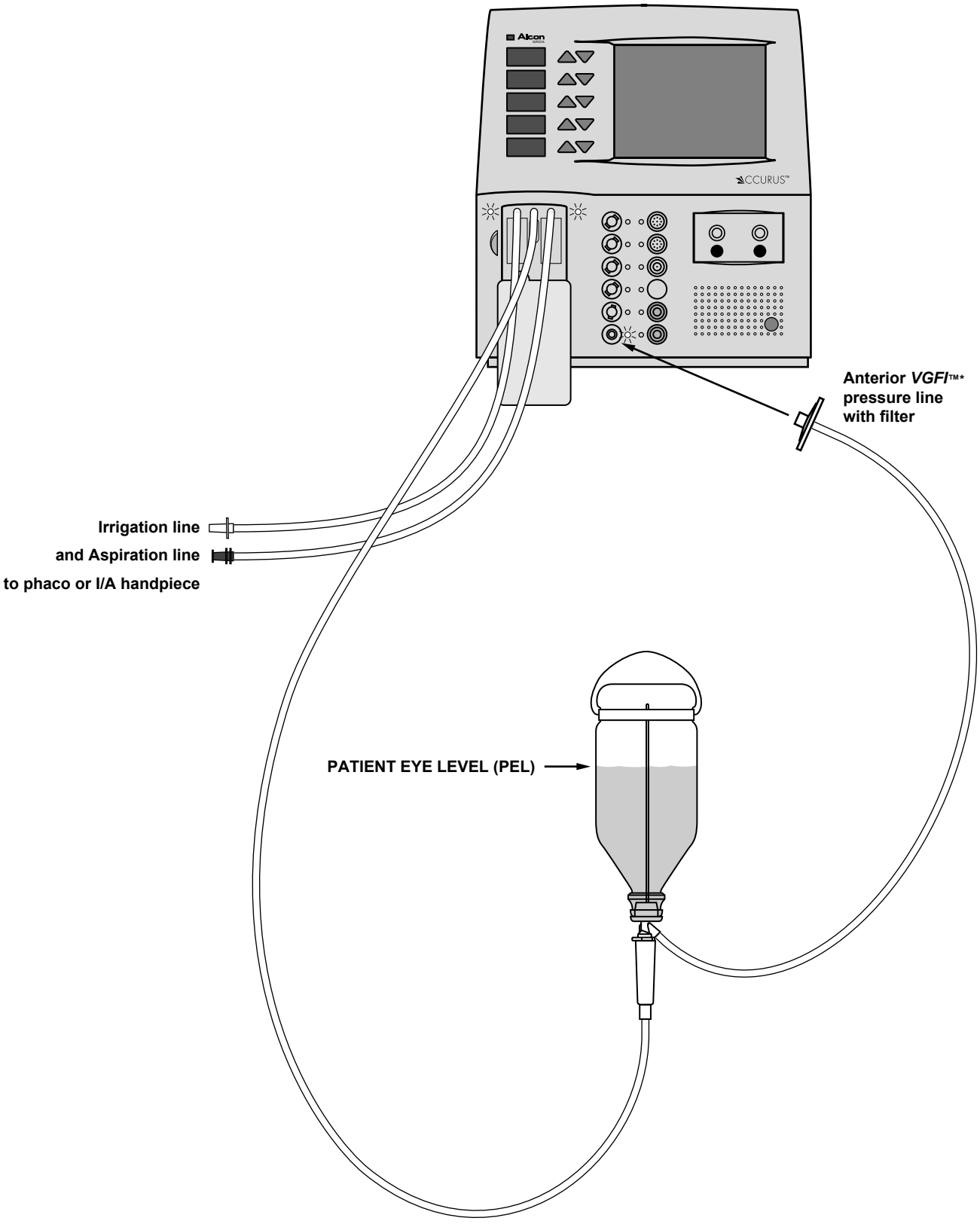


Figure 8-6 **ANTERIOR *VGFI*™* CASSETTE PAK SETUP - The Anterior Vented Gas Forced Irrigation Pak contains materials to perform anterior surgeries using pressurized irrigation control. This setup can be used with the phaco and I/A handpieces. Note that continuous reflux is available using this pak.**

Directive	Team Member
ANTERIOR VITRECTOMY SETUP (optional upgrade) The *AccuPak*® Stand Alone Vitreous Probe is required to remove vitreous from the anterior chamber. The probe can be used wet or dry. A wet anterior vitrectomy is performed bimanually with the Vit probe and an irrigation handpiece, or coaxially with an irrigation sleeve over the tip of the Vit probe.	
1. Aseptically peel apart pouch and present contents to Scrub Nurse.	Circulating Nurse
2. Remove Vit handpiece with tubing from pouch. Disconnect aspiration line from U/S or I/A handpiece and connect to short aspiration line from Vit handpiece (see Figure 8-7). Remove protective cover from Vit probe.	Scrub Nurse
3. Press **Exit** to enter the *Cataract Surgery Setup* screen, then press the **AntVit** mode key. Pass pressure line to Circulating Nurse.	Scrub Nurse
4. Accept the pressure line from Scrub Nurse and plug it into the upper illuminated connector on the front panel. For Dry Vit procedure proceed to step 10.	Circulating Nurse
<u>For Wet Bimanual Anterior Vitrectomy</u> 5. Present irrigation handpiece to Scrub Nurse.	Circulating Nurse
6. Accept irrigation handpiece from Circulating Nurse, then disconnect irrigation line from U/S or I/A handpiece and connect to irrigation handpiece. Proceed to step 10.	Scrub Nurse
<u>For Wet Coaxial Anterior Vitrectomy</u> 7. Remove Anterior Vitrectomy Irrigation Sleeve from pak and sterilize per instructions in Section Nine of this manual.	Staff
8. Present sterilized irrigation sleeve to Scrub Nurse.	Circulating Nurse
9. Accept irrigation sleeve from Circulating Nurse, then disconnect irrigation line from U/S or I/A handpiece and connect to irrigation sleeve tubing. Slide irrigation sleeve over tip of Vit handpiece.	Scrub Nurse
<u>Prime</u> 10. Place tip of Vit probe into a cup of sterile fluid for aspiration line priming and testing. (For wet bimanual procedure, place tip of irrigation handpiece in cup, also.)	Scrub Nurse
11. Press **Test** to prime the tubing and test the probe. After a successful test, the system will enter the Surgery screen. Press either the **Wet** or **Dry** submode key.	Scrub Nurse

* FOR REFERENCE ONLY *

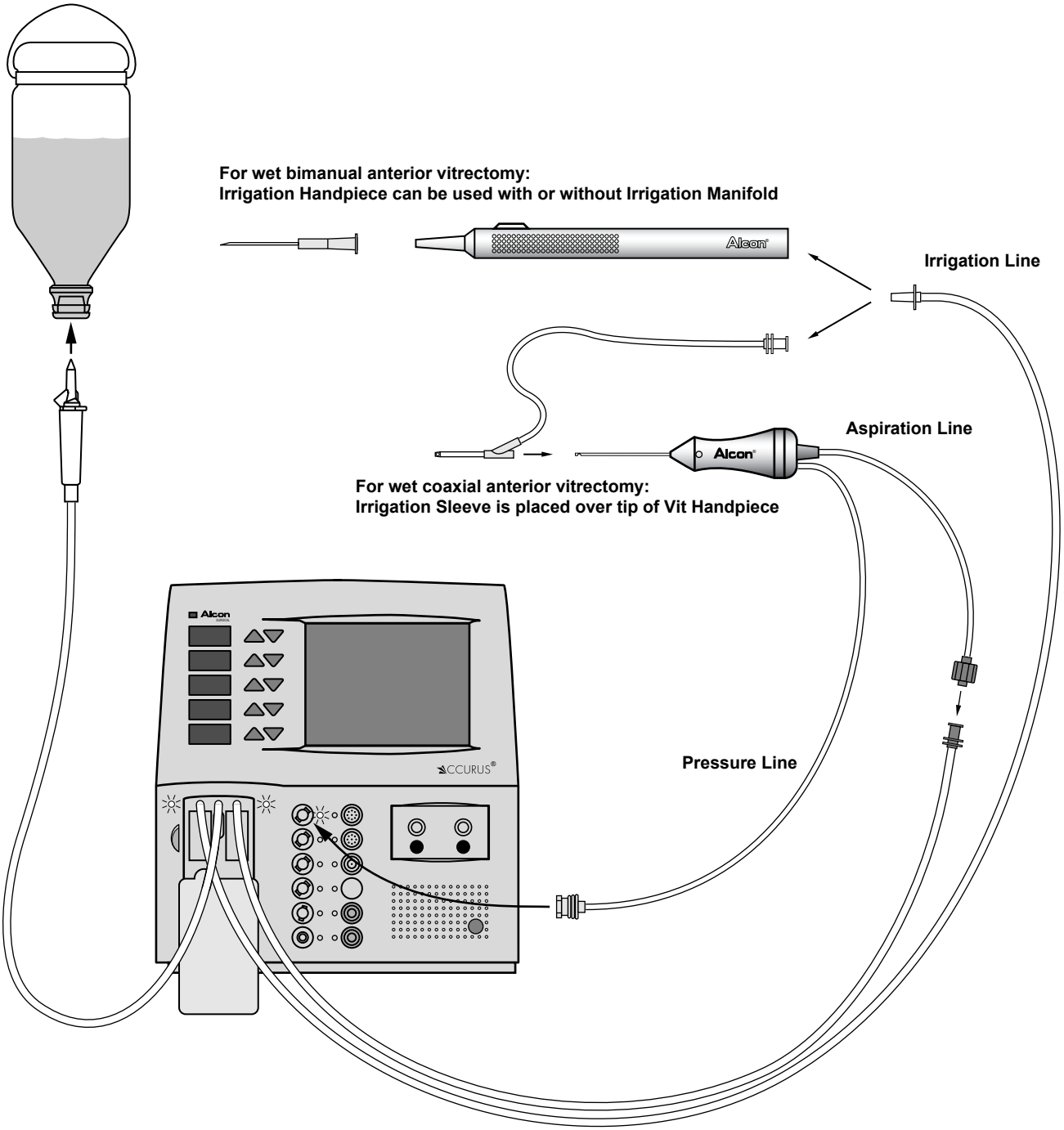


Figure 8-7. **ANTERIOR VITRECTOMY SETUP - For anterior Vit procedures the handpiece's air pressure tubing and aspiration tubing must be plugged into their illuminated connectors. For Wet procedures the irrigation tubing must be connected between a fluid bottle and either a cannula or irrigating Vit handpiece.**

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* FOR REFERENCE ONLY *

SECTION NINE
ANTERIOR DISASSEMBLY AND CLEANING

NOTES: If an inconsistency ever exists between the procedures in this section and the DFU, follow the instructions in the DFU. During these procedures discard all consumables per specific hospital/clinic requirements.

DISASSEMBLY AND CLEANING

Immediately After Each Surgical Procedure:

Tear Down the System:

1. Remove bottle from hanger and disconnect drip chamber from bottle.

2. Remove all consumable/accessory pneumatic and/or electric connections from the lower front panel of the console. Remove drape (if used).

3. Press the **Exit** icon to go to the *Cataract Surgery Setup* screen, then push the **Clean** key to transfer fluid collected in the cassette to its drain bag.

4. Press the **Eject** button. This initiates a two to three second sequence that releases the drain pump tubing and unlatches the cassette. After visually confirming that the cassette is unlatched, grasp the cassette handle and remove cassette from cassette well in an outward motion.

   NOTE: If pressure or electrical power are not available, unlatch the cassette by lifting the Manual Cassette Release lever located on the rear panel. While holding the lever up, pull the cassette in a downward motion, manually disengaging the cassette tubing from the hub roller, then wiggle the cassette down and out.

Continued on next page

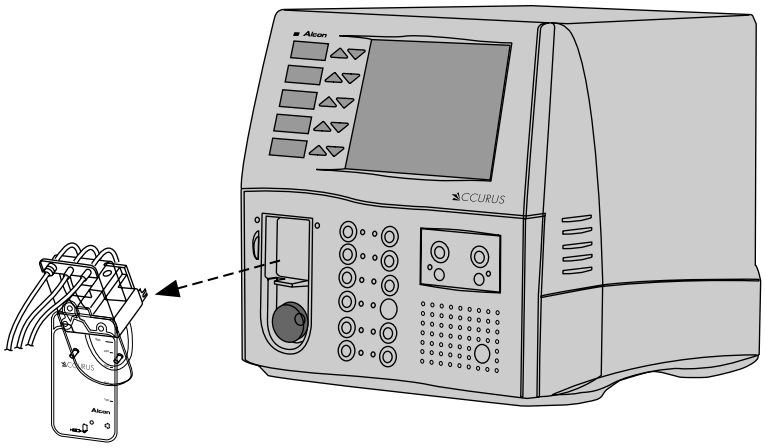


FIGURE 9-1 CASSETTE REMOVAL - With power turned ON, the fluid cassette with drain bag is ejected from the *Accurus*® cassette well by pressing the Eject button on the front panel. If no pressure or electrical power are available, lift the rear panel lever and wiggle the cassette out.

5. Use the small rubber stopper from the parts kit to plug the cassette's vacuum port (see Figure 9-2).

6. Disconnect and clean all reusable handpieces.

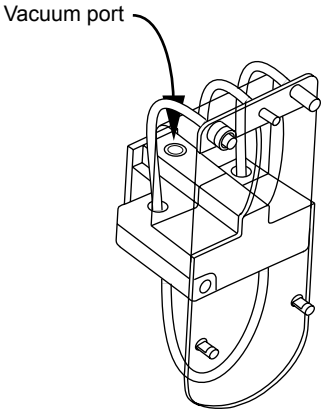


FIGURE 9-2 PLUG THE VACUUM PORT - The vacuum port must be plugged with a rubber stopper immediately after each surgery to prevent fluid leakage.

Clean the Phaco Handpiece:

7. Remove the irrigation and aspiration tubing from the handpiece and unplug the handpiece connector from the console.

8. Remove the infusion sleeve and tip from the handpiece and discard according to hospital guidelines.

9. Submerge the nosecone (front part) of the handpiece in a container of distilled water.

10. Using a clean syringe, draw a minimum of 120 cc of distilled water through both the irrigation and aspiration paths.

11. Using the same syringe, flush both ports with air.

WARNINGS!

If these cleaning procedures are not performed immediately after each surgical procedure, tissue debris and salts from irrigating solution may collect. This could permanently damage the handpiece and could jeopardize cleanliness and/or create biohazard conditions for the patient. Do not autoclave the handpiece until all debris has been removed.

If in the medical opinion of the physician a patient with a prion related disease undergoes a high risk procedure, the instrument should be destroyed or be processed according to local requirements.

Never ultrasonically clean the handpiece; irreparable damage will result.

WARNINGS!

Never immerse the handpiece in liquid after autoclaving; allow it to air cool for at least 15 minutes. Be sure the handpiece connector is completely dry before connecting it to the console.

Prior to sterilization, the ultrasonic handpiece should always have the connector end cap secured and placed in the sterilization tray. This will prevent damage to connectors and handpieces during handling, and especially during autoclaving.

Handle the handpiece carefully. Dropping or otherwise striking the handpiece may fracture piezoelectric elements contained within and degrade performance or render the handpiece inoperable.

Clean the I/A Handpiece:

12. Disconnect the I/A handpiece from the console.

13. Remove the handpiece tip. If it is a single use tip, properly discard it.

14. Flush I/A handpiece and reusable tip at least two times with a syringe filled with 30 cc of warm distilled water. Flush immediately with air to clear any water from the handpiece and needle.

Clean the Diathermy Handpiece:

15. Disconnect diathermy handpiece and cable from the console.

16. Discard consumable handpiece and cable.

17. Clean reusable handpiece by wiping off residual tissue with a soft, non-abrasive cloth. Rinse the handpiece and cable with distilled water to remove any remaining debris.

18. Hand wash the reusable handpiece and cable using a soft bristled cleaning brush. The use of abrasive cleaners or solvents is not recommended.

19. Thoroughly flush all handpiece and cable surfaces with distilled water until no visible debris remains. Dry the handpiece and cable with a sterile wipe.

Upon Completion of Surgery Schedule:

1. Disconnect pneumatic hose from pressure source and unplug console.

   NOTE: If the *Accurus*® system remains plugged in, always ensure that the rear panel On/Off switch is in the OFF position.

2. If required, the console and remote control may be cleaned with mild soap and water. DO NOT USE SOLVENTS OR ABRASIVES.

STERILIZATION

The following accessories for the *Accurus*® Ophthalmic Surgical System may be flash or steam autoclaved. Additionally, per the Sterilizer Equipment Manual, the sterilizer reservoir is to be filled with distilled or deionized water.

- U/S Phaco Handpiece
- Irrigation/Aspiration (I/A) Handpiece
- Reusable Diathermy Handpiece and Cable
- Anterior Vitrectomy Irrigation Sleeve

NOTE: The list of reusable accessories above will withstand steam autoclave cycles at 134º C (273º F). Due to the variation found in steam autoclaves and the variable bioburden on instruments in clinical use, it is not possible for Alcon to provide specific parameters to ensure an adequate sterility assurance level. Validation of the individual autoclave, and verification of the sterility assurance level achieved with a given steam sterilization cycle, must be performed by each hospital.

The specifications in Table 9-1 represent industry standard guidelines for steam sterilization cycles. **The sterility assurance level achieved with these parameters must be validated by each hospital.** Please refer to current ANSI/AAMI Standards or your hospital's standard procedures for the most current specifications.

NOTE: For maximum life and optimum performance, allow handpieces to air cool after steam or flash autoclaving. Cooling for U/S phaco handpieces should be a minimum of 15 minutes.

STERILIZER TYPE	SAMPLE CONFIGURATION	TEMPERATURE	MINIMUM EXPOSURE TIME
Gravity Displacement	wrapped	132˚ C (270˚ F)	15.0 minutes*
Gravity Displacement	unwrapped	132˚ C (270˚ F)	10.0 minutes
Prevacuum	unwrapped	132˚ C (270˚ F)	4.0 minutes

* For 375/40 U/S & Mackool** handpieces the recommended exposure time is 20 minutes minimum.

Table 9-1. STERILIZATION TEMPERATURE AND TIME SETTINGS

REFERENCE: AAMI Standards and Recommended Practices Volume 1: Sterilization, Designation ST37-1996 for flash sterilization and ST46-1993 for steam sterilization or your local standards and recommended practices.

* FOR REFERENCE ONLY *

SECTION TEN
ANTERIOR ACCESSORIES AND PARTS

Following is a list of Alcon-approved accessories and replacement parts for the *Accurus*® Ophthalmic Surgical System. To order parts, please refer to your Alcon price list and/or contact Alcon Customer Service at:

Phone:
(800) 862-5266 or
(817) 293-0450
Ask for Customer Service

Write:
Alcon
6201 South Freeway
Fort Worth, TX. 76134-2099

Outside the U.S.A. please contact your local Alcon representative.

Important Note: Use of accessories and parts not approved by Alcon is not recommended.

ITEM	CATALOG NUMBER
Paks	
Accurus® *Turbosonics*® *Microtip*™ PEA Basic Pak	8065740884
Accurus® *Turbosonics*® *Microtip*™ PEA Tipless Pak	8065740885
Accurus® *Turbosonics*® *Microtip*™ PEA Round 0° Pak	8065740886
Accurus® *Turbosonics*® *Microtip*™ PEA Round 30° Pak	8065740887
Accurus® *Turbosonics*® *Microtip*™ PEA Round 45° Pak	8065740888
Accurus® *Turbosonics*® *Microtip*™ PEA *Kelman*® 30° Pak	8065740889
Accurus® *Turbosonics*® *Microtip*™ PEA *Kelman*® 45° Pak	8065740890
Accurus® *Turbosonics*® *Microtip*™ *Mackool*** Round 0° Pak	8065740891
Accurus® *Turbosonics*® *Microtip*™ *Mackool*** Round 30° Pak	8065740892
Accurus® *Turbosonics*® *Microtip*™ *Mackool*** Round 45° Pak	8065740893
Accurus® *Turbosonics*® *Microtip*™ *Mackool*** *Kelman*® 30° Pak	8065740894
Accurus® *Turbosonics*® *Microtip*™ *Mackool*** *Kelman*® 45° Pak	8065740883
Accurus® *Microtip*™ PEA Flared Round 0° Pak	8065740921
Accurus® *Microtip*™ PEA Flared Round 30° Pak	8065740922
Accurus® *Microtip*™ PEA Flared Round 45° Pak	8065740923
Accurus® *Microtip*™ PEA Flared *Kelman*® 30° Pak	8065740924
Accurus® *Microtip*™ PEA Flared *Kelman*® 45° Pak	8065740925
Accurus® *Microtip*™ Flared *Mackool*** Round 0° Pak	8065740926
Accurus® *Microtip*™ Flared *Mackool*** Round 30° Pak	8065740927
Accurus® *Microtip*™ Flared *Mackool*** Round 45° Pak	8065740928
Accurus® *Microtip*™ Flared *Mackool*** *Kelman*® 30° Pak	8065740929
Accurus® *Microtip*™ Flared *Mackool*** *Kelman*® 45° Pak	8065740930
Accurus® 1.1 mm PEA Flared Round 0° Pak	8065740931
Accurus® 1.1 mm PEA Flared Round 30° Pak	8065740914
Accurus® 1.1 mm PEA Flared Round 45° Pak	8065740915
Accurus® 1.1 mm PEA Flared *Kelman*® 30° Pak	8065740937
Accurus® 1.1 mm PEA Flared *Kelman*® 45° Pak	8065740936
Accurus® 1.1 mm Flared *Mackool*** Round 0° Pak	8065740934

ITEM	CATALOG NUMBER
Accurus® 1.1 mm Flared *Mackool*** Round 30° Pak	8065740920
Accurus® 1.1 mm Flared *Mackool*** Round 45° Pak	8065740903
Accurus® 1.1 mm Flared *Mackool*** *Kelman*® 30° Pak	8065740933
Accurus® 1.1 mm Flared *Mackool*** *Kelman*® 45° Pak	8065740932
Accurus® 1.1 mm Flared Tipless Pak	8065740272
Accurus® Anterior Pak w/AVGFI, Basic	8065740844
Accurus® Anterior Pak w/AVGFI, Tipless	8065740845
Accurus® Anterior Pak w/AVGFI, PEA 0°	8065740846
Accurus® Anterior Pak w/AVGFI, PEA 30°	8065740847
Accurus® Anterior Pak w/AVGFI, PEA 45°	8065740848
Accurus® Anterior Pak w/AVGFI, PEA 30° *Kelman*®	8065740849
Accurus® Anterior Pak w/AVGFI, PEA 45° *Kelman*®	8065740850
Accurus® Anterior Pak w/AVGFI, *Mackool*** 0°	8065740851
Accurus® Anterior Pak w/AVGFI, *Mackool*** 30°	8065740852
Accurus® Anterior Pak w/AVGFI, *Mackool*** 45°	8065740853
Accurus® Anterior Pak w/AVGFI, *Mackool*** 30° *Kelman*®	8065740854
Accurus® Anterior Pak w/AVGFI, *Mackool*** 45° *Kelman*®	8065740855
Accurus® Anterior Pak w/AVGFI, 0.9 mm Flared *ABS*® 0°	8065740939
Accurus® Anterior Pak w/AVGFI, 0.9 mm Flared *ABS*® 30°	8065740905
Accurus® Anterior Pak w/AVGFI, 0.9 mm Flared *ABS*® 45°	8065740906
Accurus® Anterior Pak w/AVGFI, 0.9 mm Flared *ABS*® 30° *Kelman*®	8065740907
Accurus® Anterior Pak w/AVGFI, 0.9 mm Flared *ABS*® 45° *Kelman*®	8065740908
Accurus® Anterior Pak w/AVGFI, 0.9 mm *Mackool*** Flared *ABS*® 0°	8065740909
Accurus® Anterior Pak w/AVGFI, 0.9 mm *Mackool*** Flared *ABS*® 30°	8065740910
Accurus® Anterior Pak w/AVGFI, 0.9 mm *Mackool*** Flared *ABS*® 45°	8065740911
Accurus® Anterior Pak w/AVGFI, 0.9 mm *Mackool*** Flared *ABS*® 30° *Kelman*®	8065740912
Accurus® Anterior Pak w/AVGFI, 0.9 mm *Mackool*** Flared *ABS*® 45° *Kelman*®	8065740913
Accurus® Anterior Pak w/AVGFI, 1.1 mm Flared *ABS*® 0°	8065740941
Accurus® Anterior Pak w/AVGFI, 1.1 mm Flared *ABS*® 30°	8065740935
Accurus® Anterior Pak w/AVGFI, 1.1 mm Flared *ABS*® 45°	8065740916
Accurus® Anterior Pak w/AVGFI, 1.1 mm Flared *ABS*® 30° *Kelman*®	8065740917
Accurus® Anterior Pak w/AVGFI, 1.1 mm Flared *ABS*® 45° *Kelman*®	8065740918
Accurus® Anterior Pak w/AVGFI, 1.1 mm *Mackool*** Flared *ABS*® 0°	8065740919
Accurus® Anterior Pak w/AVGFI, 1.1 mm *Mackool*** Flared *ABS*® 30°	8065740938
Accurus® Anterior Pak w/AVGFI, 1.1 mm *Mackool*** Flared *ABS*® 45°	8065740940
Accurus® Anterior Pak w/AVGFI, 1.1 mm *Mackool*** Flared *ABS*® 30° *Kelman*®	8065740904
Accurus® Anterior Pak w/AVGFI, 1.1 mm *Mackool*** Flared *ABS*® 45° *Kelman*®	8065740902
Accurus® Anterior Pak w/AVGFI, Tipless 1.1 mm	8065741068
AVGFI Set	8065740701
Small Parts Kit	201SPS

* FOR REFERENCE ONLY *

ITEM	CATALOG NUMBER
Console Accessories	
Cart w/Tray and IV Pole	8065740943
Cart w/Power IV pole	8065740825
Remote Control	8065740942
Remote Control, English Text	8065750105
Footswitch	8065740240
Pneumatic Pressure Hose	8041193501SV
Illuminator Bulb	8065740243
Operator's Manual	8065750203
Accurus® Doctor Memory Card	8065750200
Bipolar Coagulation/Diathermy Accessories	
Bipolar Coagulation Cable, Single Use	8065129002
Forceps, Curved Iris, Single Use	8065129101
Forceps, Coaptation, Single Use	8065129301
Forceps, Jewelers/Straight Iris, Single Use	8065129501
Forceps, Non-stick, 4" Nadler Coaptation .4mm	8065127401
Forceps, Non-stick, 4" Jeweler Straight .4mm	8065127501
Forceps, Non-stick, 4"Jeweler Curved.4mm	8065127601
Forceps, Non-stick, 4" Tenzel .4mm	8065127701
Forceps, Non-stick, 4 3/4" Adson 1.0mm	8065127801
Forceps, Non-stick, 3 1/2 " Straight Iris .5mm	8065127901
Forceps, Non-stick, 3 1/2 " Curved Iris .5mm	8065128001
Forceps, Non-stick, 4 1/4" Coaptation Fine, .5mm	8065128101
Forceps, Non-stick, 4 1/4" Coaptation Extra Fine, .5mm	8065128201
Forceps, Titanium, 3 1/2" Jeweler Curved .4mm	8065128501
Forceps, Titanium, 4" Coaptation .5mm	8065128601
Forceps, Titanium, 4 1/4" Jeweler Straight .4mm	8065128701
Forceps, Titanium, 4 3/4" Straight w/Fine Serrations	8065128801
Forceps, Titanium, 4 1/2" Reverse Angle .4mm	8065128901
Bipolar Brush, Straight, 18 ga., Single Use	8065804001
Bipolar Brush, Curved, Single Use	8065804601
Bipolar Brush, Wide Stroke, Single Use	8065806701
Bipolar Brush, 20 ga., Single Use	8065804201
Bipolar Brush, 20 ga., With Cord (non CE), Single Use	8065804301
Bipolar Coagulation Cable, Silicone	8065128402
Phaco Accessories	
.9mm *TurboSonics*® *Microtip*™ 0° Round Tip	8065740478
.9mm *TurboSonics*® *Microtip*™ 30° Round Tip	30RTS
.9mm *TurboSonics*® *Microtip*™ 45° Round Tip	45RTS
.9mm *TurboSonics*® *Microtip*™ 30° *Kelman*® Tip	30KTS
.9mm *TurboSonics*® *Microtip*™ 45° *Kelman*® Tip	45KTS
.9mm *ABS*® *Microtip*™ 0˚ Round Tip	8065790019
.9mm *ABS*® *Microtip*™ 30˚ Round Tip	8065790020
.9mm *ABS*® *Microtip*™ 45˚ Round Tip	8065790021
.9mm *ABS*® *Microtip*™ 30˚ *Kelman*® Tip	8065790022
.9mm *ABS*® *Microtip*™ 45˚ *Kelman*® Tip	8065790023
Sterilization Tray	8065803602

ITEM	CATALOG NUMBER
Phaco Handpieces	
375/40 Ultrasonic Handpiece	TURBOSONIC-375
*Mackool*** Ultrasonic Handpiece	8065-M002-01
I/A Handpieces, Tips, and Accessories	
Ultraflow™* SP Handpiece w/.3mm Straight Tip	8065817001
Ultraflow™* SP Handpiece w/.3mm 45° Bent Tip	8065817201
Ultraflow™* SP Handpiece w/.3mm 90° Bent Tip	8065817301
Ultraflow™* SP Handpiece w/.3mm Curved Tip	8065817601
Ultraflow™* SP Handpiece w/Threaded Tip	8065817801
Ultraflow™* SP Handpiece w/Irrigation Only	8065817501
Ultraflow™* IT Handpiece Set	8065814101
Ultraflow™* IT Handpiece Body	8065814201
Ultraflow™* IT .3mm Straight Tip	8065814301
Ultraflow™* IT .3mm Curved Tip	8065814401
Ultraflow™* IT .3mm 45° Tip	8065814501
Ultraflow™* IT .3mm 90° Tip	8065814601
Ultraflow™* IT .3mm 120° Tip	8065814701
Ultraflow™* IT Threaded Adapter Tip	8065814801
Ultraflow™* IT Irrigation Only Tip Adapter	8065814901
Ultraflow™* Sterilization Tray	8065-A001-01
Ultraflow™* IT O-Ring Tool	405-184
Ultraflow™* IT O-Ring Replacements	ULTRA O-RING RPL
0.3 mm I/A Tip	356-1007
0.5 mm I/A Tip	355-1009
0.3 mm Sandblasted 45˚ Bent I/A Tip	356-1020
0.3 mm Sandblasted Nevyas I/A Tip	356-1009
0.3 mm Tillet 45˚ I/A Tip	356-1010
Probes	
Accurus® Anterior Vitrectomy w/Irrigation Needle	8065803650
Anterior Vitrectomy Irrigation Sleeve	8065801351
Illuminator (DFOI)	8065812001
Fiber Optic Assy, Wide Angle	8065740264
Fiber Optic Assy, End Irrigating	8065740259

* FOR REFERENCE ONLY *

SECTION ELEVEN
COMBINED DESCRIPTION

COMBINED SETUP SCREENS

Upon entering the Combined domain, the system displays the *Combined Surgery Setup* screen, shown below in Figure 11-1. On this screen the user can prepare the *Accurus*® Ophthalmic Surgical System for anterior and posterior surgery, then enter another screen by pressing one of the following keys on the touch screen:

- Press **Settings** to enter *Irrigation / Infusion Settings* screen
- Press **Surgery** to enter chosen *Surgery* screen
- Press **Exit** to return to *Procedure Selection* screen

The *Combined Surgery Setup* screen can also be entered by pressing the **Exit** key from the *Irrigation / Infusion Settings* screen or a *Surgery* screen.

Popup windows can appear over these screens to advise the user of certain conditions. See Figure 2-18 for an example of a popup window.

Combined Surgery Setup Screen

There are six *Combined Surgery Setup* screen components offered to prepare for surgery. Two components—the Handpieces/Probes and Accessories components—are in the Primary Functions Window; and four components—Test, Clean, Surgery, and Settings—are in the Modes Window (see Figure 2-9).

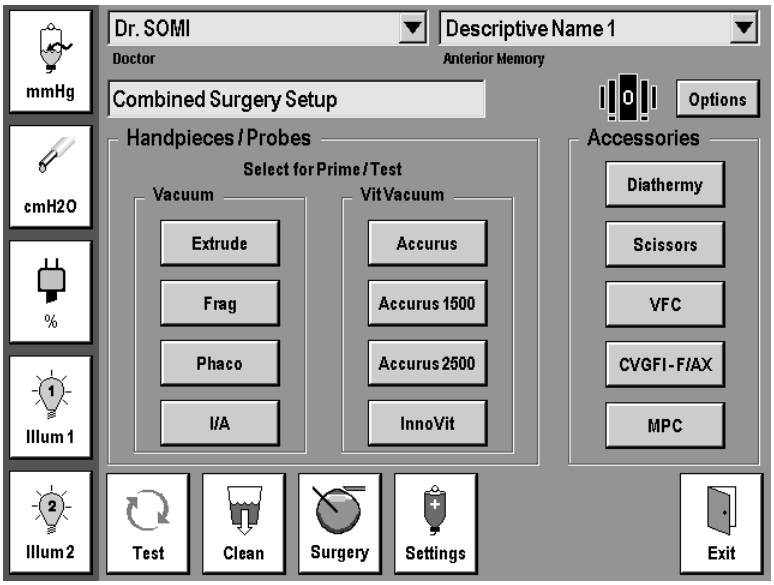


Figure 11-1 COMBINED SURGERY SETUP SCREEN - Entering the *Combined Surgery Setup* screen allows the user to prepare the *Accurus*® system for surgery. In this image there is no cassette installed, nor any accessories connected to the system.

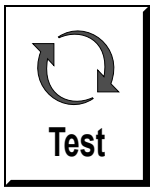
Selections in Primary Functions Window

• Handpieces / Probes - Select for Prime / Test
Probes and handpieces are selected for priming or testing/tuning by pressing their corresponding touch keys (see Figure 11-1). When a probe or handpiece is selected, an LED illuminates next to its associated front panel connector. Selecting a probe or handpiece with a common connector deselects the other.

When entering a surgery screen from the *Combined Surgery Setup* screen, or upon successful prime/tune/test, the mode of the currently tested handpiece is automatically selected. If more than one probe or handpiece was tested, priority is given to the modes in the following order: Linear Phaco or I/A Max, PropVac Vit, Prop Frag or Medium Extrude.

• Accessories
Pressing Diathermy, Scissors, VFC, VGFI-F/AX, or MPC illuminates an LED at its corresponding front panel connector to identify where to plug in the handpiece or accessory. Making one selection automatically deselects any other selection. Only the last-selected accessory or handpiece LED illuminates.

Keys in Posterior Modes Window



• Test
When the **Test** key is pressed, the selected handpieces and probes are primed sequentially, and a popup window appears indicating that priming, testing, and tuning are active. Only the popup window keys (Stop and Skip), global function Illuminator keys, and diathermy are operable while the Test function is active. A surgery screen is entered automatically upon a successful prime, test, and tune sequence.

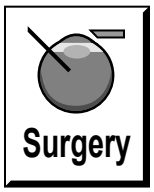
If the **Stop** key is pressed during priming, the test function is aborted. If **Skip** is pressed during priming, priming is skipped and handpiece testing/tuning begins.

An invalid error tone sounds when pressing the **Test** key with no probe or handpiece selected. An advisory popup window appears when a handpiece is selected but not connected, or when priming/tuning has failed.



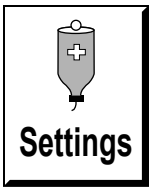
• Clean
Pressing the **Clean** key transfers fluid from the cassette into the drain bag. When **Clean** is pressed, a popup window indicates cleaning is in progress. Only the **Stop** key in the popup window, Continuous Irrigation On/Off key, and global function Illuminator keys are operable while the clean function is active. Pressing the **Stop** key during cleaning aborts the function.

If fluid is not fully transferred to the drain bag, press the **Clean** key a second time. (There will always be some residual fluid left in the cassette due to surface tension.)

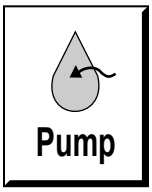


• Surgery
When the **Surgery** key is pressed, the system exits the *Combined Surgery Setup* screen and enters the selected surgery screen. If prime/tune has not been performed, a popup reminder appears.

* FOR REFERENCE ONLY *



•Settings
When the **Settings** key is pressed, the system exits the *Combined Surgery Setup* screen and enters the *Irrigation/Infusion Settings* screen (see Figure 11-2).



• Pump
During setup in the combined domain, if power pole or gravity is the selected infusion method, the **Pump** key appears in the Modes window. Pressing this key turns the air pump ON, allowing the user to test the Fluid/Air Exchange (F/AX) tubing by noting air flow at the infusion cannula. Pressing the key again turns the pump OFF. After entering a posterior mode of operation the F/AX key appears in place of the global irrigation key, allowing ON/OFF and pressure control of the F/AX function.

Irrigation/Infusion Settings Screen

The *Irrigation/Infusion Settings* screen (see Figure 11-2) is entered by pressing the **Settings** key on the *Combined Surgery Setup* screen. In the Combined domain there are three data tabs available on the screen: the **Type** tab, **Irrigation** tab, and **Infusion** tab. Pressing **Exit** closes this screen and returns to the *Combined Surgery Setup* screen.

• Type Tab
The **Type** tab is selected to determine how sterile irrigating/infusing solution is provided for surgery, and is divided into three groups: Anterior Irrigation, Posterior Infusion, and Combined Infusion/Irrigation. In this domain, only the Combined Infusion/Irrigation group is available.

The **Type** tab contains keys for the following fluid delivery methods: **CVGFI** (Combined Vented Gas Forced Irrigation/Infusion), **Power Pole**, and **Gravity**. Pressing **Cancel** exits the *Irrigation/Infusion Settings* screen and returns to the previous screen without any modifications taking effect. Pressing **Apply** accepts the settings, exits the *Irrigation/Infusion Settings* screen, and returns to the previous screen.

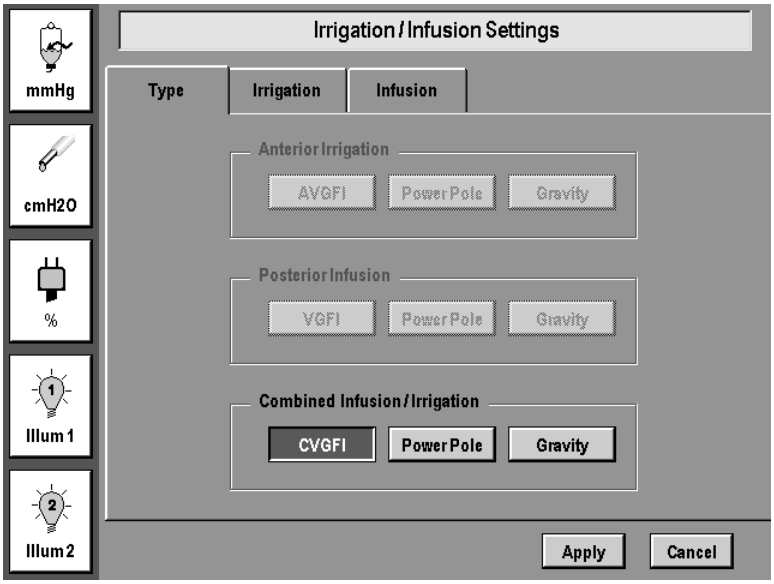


Figure 11-2 IRRIGATION/INFUSION SETTINGS SCREEN: TYPE TAB - The Type tab allows the user to select the type of fluid delivery desired. Selecting the Irrigation and Infusion tabs offers more choices, shown in Figures 11-3 and 11-4.

When **CVGFI** is selected, an internal air pump creates pressurized air, and Combined *VGFI*™ * tubing delivers it to the fluid bottle from a front panel connector. The air pressure setting, which affects the rate of fluid delivery to the eye, is adjusted with the global function **Up/Down** arrow buttons; the corresponding LED readout is immediately to the left of the buttons. **Note: Fluid bottle should be positioned at patient eye level.**

The **Power Pole** selection requires that the optional cart with power IV pole be connected to the *Accurus*® system. With the fluid bottle hanging from the cart's power IV pole, fluid pressure is set by pressing the global function **Up/Down** arrow buttons to the desired pressure, and the power pole automatically moves up or down to the required height.

When **Gravity** pressure is selected, fluid pressure is dependent on the fluid bottle height, independent of *Accurus*® system controls, and is set manually by the operator.

• Irrigation Tab

The **Irrigation** tab allows the user to set Regular and Alternate irrigation pressures, and the ability to select whether Alternate pressure is Available **Yes/No**. The pressure values for Phaco, I/A, and anterior Vit can be adjusted by pressing the **Up/Down** triangle keys next to the value. Alternate pressure works with CVGFI and power pole delivery; therefore, when gravity pressure is selected, the Irrigation tab pressures are grayed out and not functional. The regular and alternate pressures are toggled by pressing the footswitch's right vertical switch. Selecting Alternate Yes or No determines whether alternate pressure will be available with the footswitch.

Pressing the **Cancel** key exits the *Irrigation/Infusion Settings* screen and returns to the previous screen without any modifications taking effect. Pressing the **Apply** key accepts the settings, exits the *Irrigation/Infusion Settings* screen, and returns to the previous screen. **Note: Infusion/irrigation type cannot be changed with infusion or irrigation active.**

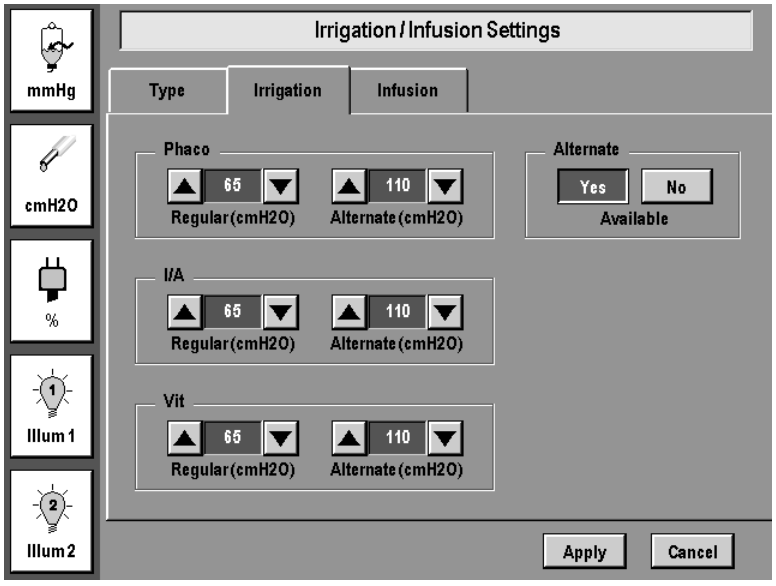


Figure 11-3 IRRIGATION/INFUSION SETTINGS SCREEN: IRRIGATION TAB - The Irrigation tab allows the user to adjust the Regular and Alternate Irrigation pressures, and the ability to select whether alternate pressure is available.

* FOR REFERENCE ONLY *

• Infusion Tab

The Alternate Infusion group contains a value for the alternate Pressure and a setting for alternate pressure Available **Yes/No**. Alternate pressure works with CVGFI and power pole infusion; therefore, when gravity infusion is selected, these selections are grayed out and not functional. The Pressure value can be adjusted by pressing the **Up/Down** triangle keys next to the value. The nominal and alternate pressures are toggled by pressing the footswitch's right vertical switch.

The Alternate F/AX group contains a value for the alternate Pressure and a setting for alternate pressure Available **Yes/No**. The Pressure value is adjusted by pressing the **Up/Down** triangle keys next to the value. Selecting Alternate Yes or No determines whether alternate pressure will be available with the footswitch.

The Alternate Infusion / F/AX group allows the user to select either **Recall** or **Preset** alternate pressure values, giving the ability to select whether the alternate infusion level will always go to the preset value, or recall the last-used alternate infusion level.

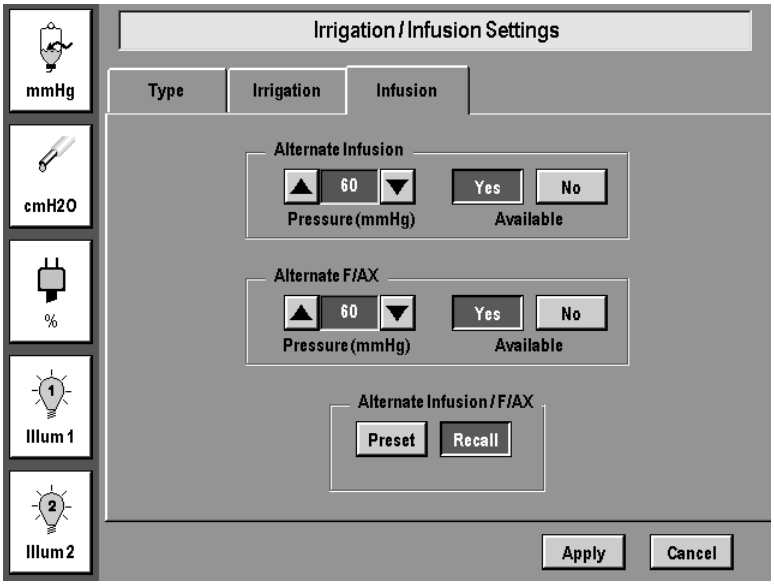
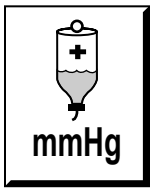


Figure 11-4 IRRIGATION/INFUSION SETTINGS SCREEN: INFUSION TAB - The Infusion tab allows the user to select the type of Alternate Infusion and Alternate F/AX desired.

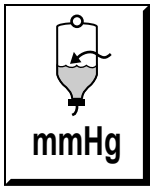
POSTERIOR AND ANTERIOR GLOBAL FUNCTIONS KEYS

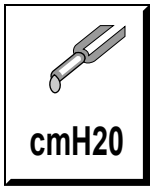
Global functions are available in all surgery and setup screens. There are five global functions which, generally, can be selected, adjusted, and displayed at any time. When a global function is selected its color icon and LED readout illuminate brightly. (An exception is diathermy. Its LED readout is always lit, and its color icon illuminates brightly when activated with the footswitch.)

A global function setting can be adjusted, even when the function is OFF, by pressing its corresponding **Up/Down** arrow buttons. If the function is OFF, the LED readout becomes dimly lit while making adjustments, then becomes blank after a few seconds (except for diathermy as mentioned above). The LED's are dimly lit if the proper cassette is inserted and the LPA pump is on or the I/V pole is at position.

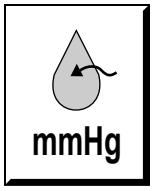


OR





OR



• Irrigation/Infusion
Fluid pressure is delivered through one of three methods: CVGFI, Power Pole, or Gravity. The type of fluid delivery method is selected in the *Irrigation/Infusion Settings* screen (see Figures 11-2, 11-3, and 11-4).

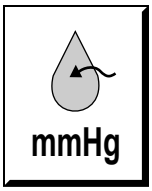
In posterior surgeries the fluid is delivered to the eye via an infusion cannula or infusion handpiece. Infusion ON/OFF control is maintained by the footpedal; depressing the footpedal starts irrigation, and releasing the pedal stops it. (Continuous irrigation is also available.)

In anterior surgeries the fluid is delivered to the eye via a handpiece connected by tubing to the cassette. Irrigation ON/OFF control is maintained by the footpedal; depressing the footpedal starts irrigation, and releasing the pedal stops it. (Continuous irrigation is also available.)

When **CVGFI** (Combined Vented Gas Forced Infusion) is selected in the *Irrigation/ Infusion Settings* screen and activated by pressing this global icon, the *Accurus*® system delivers filtered, pressurized air through a tubing set into the fluid bottle, which in turn pressurizes fluid through tubing to the eye. **Up/Down** arrow buttons are used to adjust fluid pressure, displayed in mmHg or cmH2O. **NOTE: F/AX is controlled by the Infusion/ F/AX global.**

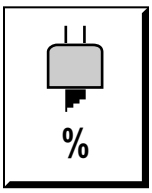
The **Power Pole** Irrigation/Infusion selection uses gravity to pressurize fluid when the bottle is hanging from the optional power IV pole. Fluid pressure can be set by pressing the global function **Up/Down** arrow buttons until the desired LED pressure readout is displayed. The power IV pole automatically raises or lowers to the correct height, and the LED pressure readout blinks as the pole is moving. Activation of MPC scissors, or loading/unloading a cassette, will momentarily interrupt power IV pole movement.

When **Gravity** pressure is selected in the *Irrigation/Infusion Settings* screen, the infusion icon fades, and the *Accurus*® system does not provide control of fluid pressure; pressure is adjusted by manually raising or lowering the fluid bottle.



• F/AX

This **F/AX** key is only available in the Combined Posterior domain when power pole or gravity infusion is the selected fluid delivery method. The F/AX key replaces the global function Irrigation key when a posterior surgery screen is entered. The F/AX function provides pressurized, filtered room air for Fluid Air Exchange (F/AX). The air is supplied through tubing to the eye from a front panel pneumatic connector. When activated, the global function **Up/Down** arrow buttons are used to adjust the air pressure, displayed in mmHg or cmH2O.



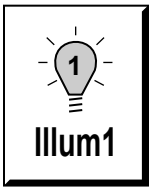
• Diathermy

The Diathermy global function provides fixed diathermy capability through the use of diathermy probes and handpieces. Diathermy output is available at all times, controlled by the footswitch, and is based on the percent of maximum voltage output.

When the **Diathermy** icon is pressed a popup window is displayed to remind the operator to use the footswitch to control this function. This popup window can be removed by pressing the screen's **Continue** key or activating the diathermy function.

The diathermy function can be activated in all modes by pressing a footswitch switch. In Frag, VFC, and Scissors modes the footpedal must be released before you can activate diathermy; in Extrude mode the footpedal is inconsequential.

Diathermy power is adjusted with the global function **Up/Down** arrow buttons, with the percentage of maximum diathermy voltage output displayed.





• Illuminators (Illum1 & Illum2)

Two halogen bulbs in the front panel illuminator drawer provide light to two illuminator receptacles (not available in 200PS system). Fiber optic light pipes can be plugged into the receptacles. Illuminators can be used individually or concurrently because each illuminator has its own On/Off and intensity controls. Light intensity for each illuminator is shown in its LED display, and each is adjustable using the global function **Up/Down** arrow buttons.



In the event of a burnt bulb, a System Advisory appears on the screen, and the illuminator's icon dims and is covered with a strike. The user should then remove and plug the light pipe into the other illuminator receptacle, press OK, and proceed.

NOTE: Upon completion of the procedure it is recommended that the burnt bulb be replaced. Two illuminator sources should always be available. (See Care and Maintenance, Section Fifteen of this manual, for instructions to replace bulb.)

COMBINED SURGERY MODES

The *Accurus*® system offers seven surgery modes in the combined domains—depicted as icons in the Modes Window at the bottom of the touch screen—and each surgery mode has submodes (see Table 11-1). The active mode and submode keys are highlighted, and their names are displayed in the Title Window.

To enter a surgery mode, press its associated icon key on the touch screen. The previous surgery mode or submode is deactivated when a new mode or submode is selected, and front panel LED's illuminate to indicate which connectors are active. To enter a surgery submode press the key above its associated mode key, or press the mode key successively to cycle through the available submodes.

NOTE: In posterior surgical modes the footpedal must be released, and none of the footswitches depressed, to enter or change a surgery mode or submode. In anterior surgical modes the footpedal must be in position 1 or lower to change surgical submodes. Major mode changes are not allowed in anterior surgical modes.

When a surgery mode is first entered after power up, the system uses its factory default settings, or if a doctor memory has been selected, the doctor's programmed settings are used. If the settings are then adjusted, re-entry to that mode will display the new values. Turning system power OFF resets all values back to the factory default settings, as does exiting and reentering the active domain.

Functional operations to the *Accurus*® console are accepted from a footswitch. The footswitch consists of a footpedal, right and left horizontal/vertical switches, and right and left vertical heel switches. Functions controlled by the footswitch are listed in Tables 11-2 through 11-7.

MODE	SUBMODES			
Phaco U/S phacoemulsification	**Linear** **linear vacuum & linear U/S**	Burst llinear vacuum & U/S Burst	Fixed linear vacuum & fixed U/S	3D dual dynamic drive-vacuum & U/S
Frag U/S fragmentation	**Linear** **linear fragmentation**	Moment momentary fragmentation	Fixed fixed fragmentation	3D dual dynamic drive-vacuum & U/S
I/A irrigation/aspiration	CapVac irrigation & linear low vacuum	**Max** **irrigation & linear high vacuum**	--	--
Vit Vitrectomy	Wet Ant wet anterior vitrectomy	**Prop Vac** **proportional vacuum vitrectomy**	Moment momentary vitrectomy	3D dual proportional vitrectomy
Scissors scissors	**Prop** **proportional scissors**	Multi multiple cut scissors	MPC mpc scissors	--
Extrude extrusion	Low low extrusion	**Medium** **medium extrusion**	High high extrusion	--
VFC viscous fluid control	**Inject** **viscous fluid injection**	Dual dual viscous fluid injection	Extract viscous fluid extraction	--

Table 11-1 COMBINED DOMAIN SURGERY MODES - Seven surgery modes are available in the combined domain. Each mode has submodes, as shown in this table, with the default submode shown in bold type.

* FOR REFERENCE ONLY *

Default Map A, Combined Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Cut Disable	Programmable	Alt. Inf.	Cut Enable	Reflux
	Momentary	Diathermy	N/A	Programmable	Alt. Inf.	Momentary Cut	Reflux
	3D	Diathermy	Cut Disable	Programmable	Alt. Inf.	Cut Enable	Reflux
Frag	Linear	Diathermy	U/S Disable	Programmable	Alt. Inf.	U/S Enable	Reflux
	Fixed	Diathermy	U/S Disable	Programmable	Alt. Inf.	U/S Enable	Reflux
	Momentary	Diathermy	N/A	Programmable	Alt. Inf.	Moment. U/S	Reflux
	3D	Diathermy	U/S Disable	Programmable	Alt. Inf.	U/S Enable	Reflux
Scissors	Prop.	Diathermy	Multi-Cut	Programmable	Alt. Inf.	N/A	N/A
	Calibrate	Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A
	Multi-Cut	Diathermy	Prop Submode	Programmable	Alt. Inf.	N/A	N/A
	Vacuum/Multi-Cut	Diathermy	Prop Submode	Programmable	Alt. Inf.	Momentary Cut	Reflux
	MPC	Diathermy	Close Blade	Programmable	Alt. Inf.	N/A	N/A
	Vacuum/MPC	Diathermy	Close Blade	Programmable	Alt. Inf.	Momentary Cut	Reflux
Extrusion	Low	Diathermy	N/A	Programmable	Alt. Inf.	Diathermy	Reflux
	Medium	Diathermy	N/A	Programmable	Alt. Inf.	Diathermy	Reflux
	High	Diathermy	N/A	Programmable	Alt. Inf.	Diathermy	Reflux
VFC	Inject.	Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A
	Dual	Diathermy	Pressure Toggle	Programmable	Alt. Inf.	Vacuum Toggle	Reflux (vac on)
	Extract	Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A
Setup		Diathermy	N/A	Programmable	Alt. Inf.	N/A	N/A

- The reflux controlled by the Right Heel switch is pulsed.
- The default for the Left Heel is No Function.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-2 FOOTSWITCH FUNCTIONS FOR COMBINED POSTERIOR DEFAULT MAP A - The footswitch contains a footpedal, left and right switches which are either actuated horizontally or depressed vertically with the user's toe, and left and right vertical heel switches.

These eight footswitch tables (Tables 11-2 through 11-9) represent the factory default settings for Map A, Map B, Map C, and Map D the in posterior and anterior domains, but can be programmed otherwise as instructed in section two of this manual (Options/Memory/Common/Footswitch).

Default Map B, Combined Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Reflux	Programmable	Alt. Inf.	Cut Toggle	Programmable
	Momentary	Diathermy	Reflux	Programmable	Alt. Inf.	Momentary Cut	Programmable
	3D	Diathermy	Reflux	Programmable	Alt. Inf.	Cut Toggle	Programmable
Frag	Linear	Diathermy	Reflux	Programmable	Alt. Inf.	U/S Toggle	Programmable
	Fixed	Diathermy	Reflux	Programmable	Alt. Inf.	U/S Toggle	Programmable
	Momentary	Diathermy	Reflux	Programmable	Alt. Inf.	Momentary U/S	Programmable
	3D	Diathermy	Reflux	Programmable	Alt. Inf.	U/S Toggle	Programmable
Scissors	Prop.	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
	Calibrate	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
	Multi-Cut	Diathermy	N/A	Programmable	Alt. Inf.	Close Blade	Programmable
	Vacuum/Multi-Cut	Diathermy	Reflux	Programmable	Alt. Inf.	Close Blade (treadle up) Momentary Cut (treadle down)	Programmable
	MPC	Diathermy	N/A	Programmable	Alt. Inf.	Close Blade	Programmable
	Vacuum/MPC	Diathermy	Reflux	Programmable	Alt. Inf.	Close Blade (treadle up) Momentary Cut (treadle down)	Programmable
Extrusion	Low	Diathermy	Reflux	Programmable	Alt. Inf.	Diathermy	Programmable
	Medium	Diathermy	Reflux	Programmable	Alt. Inf.	Diathermy	Programmable
	High	Diathermy	Reflux	Programmable	Alt. Inf.	Diathermy	Programmable
VFC	Inject.	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
	Dual	Diathermy	Reflux (vac on)	Programmable	Alt. Inf.	Vac/Press Cycle	Programmable
	Extract	Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable
Setup		Diathermy	N/A	Programmable	Alt. Inf.	N/A	Programmable

- The reflux controlled by the Left Horizontal switch is pulsed.
- In Dual VFC the Right Horizontal switch shall cycle from Vacuum only to Vacuum, and Pressure to Pressure only, and then back to Vacuum only.
- The default for the Left Heel is Next Mode and the default for the Right Heel is Next Submode.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-3 FOOTSWITCH FUNCTIONS FOR COMBINED POSTERIOR DEFAULT MAP B

* FOR REFERENCE ONLY *

Default Map C, Combined Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Reflux	Programmable	Inf. Pres. +	Cut Toggle	Inf. Pres. –
	Momentary	Diathermy	Reflux	Programmable	Inf. Pres. +	Momentary Cut	Inf. Pres. –
	3D	Diathermy	Reflux	Programmable	Inf. Pres. +	Cut Toggle	Inf. Pres. –
Frag	Linear	Diathermy	Reflux	Programmable	Inf. Pres. +	U/S Toggle	Inf. Pres. –
	Fixed	Diathermy	Reflux	Programmable	Inf. Pres. +	U/S Toggle	Inf. Pres. –
	Momentary	Diathermy	Reflux	Programmable	Inf. Pres. +	Momentary U/S	Inf. Pres. –
	3D	Diathermy	Reflux	Programmable	Inf. Pres. +	U/S Toggle	Inf. Pres. –
Scissors	Prop.	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
	Calibrate	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
	Multi-Cut	Diathermy	N/A	Programmable	Inf. Pres. +	Close Blade	Inf. Pres. –
	Vacuum/Multi-Cut	Diathermy	Reflux	Programmable	Inf. Pres. +	Close Blade (treadle up) Momentary Cut (treadle down)	Inf. Pres. –
	MPC	Diathermy	N/A	Programmable	Inf. Pres. +	Close Blade	Inf. Pres. –
	Vacuum/MPC	Diathermy	Reflux	Programmable	Inf. Pres. +	Close Blade (treadle up) Momentary Cut (treadle down)	Inf. Pres. –
Extrusion	Low	Diathermy	Reflux	Programmable	Inf. Pres. +	Diathermy	Inf. Pres. –
	Medium	Diathermy	Reflux	Programmable	Inf. Pres. +	Diathermy	Inf. Pres. –
	High	Diathermy	Reflux	Programmable	Inf. Pres. +	Diathermy	Inf. Pres. –
VFC	Inject.	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
	Dual	Diathermy	Reflux (vac on)	Programmable	Inf. Pres. +	Vac/Press Cycle	Inf. Pres. –
	Extract	Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –
Setup		Diathermy	N/A	Programmable	Inf. Pres. +	N/A	Inf. Pres. –

•The reflux controlled by the Left Horizontal switch is pulsed.
•In Dual VFC the Right Horizontal switch shall cycle from Vacuum only to Vacuum, and Pressure to Pressure only, and then back to Vacuum only.
•The default for the Left Heel is Next Mode.
•The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-4 FOOTSWITCH FUNCTIONS FOR COMBINED POSTERIOR DEFAULT MAP C

Default Map D, Combined Posterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Vit	Prop.	Diathermy	Reflux	*Inf. Pres. -	Programmable	Cut Toggle	**Inf. Pres. +
	Momentary	Diathermy	Reflux	*Inf. Pres. -	Programmable	Momentary Cut	**Inf. Pres. +
	3D	Diathermy	Reflux	*Inf. Pres. -	Programmable	Cut Toggle	**Inf. Pres. +
Frag	Linear	Diathermy	Reflux	*Inf. Pres. -	Programmable	U/S Toggle	**Inf. Pres. +
	Fixed	Diathermy	Reflux	*Inf. Pres. -	Programmable	U/S Toggle	**Inf. Pres. +
	Momentary	Diathermy	Reflux	*Inf. Pres. -	Programmable	Momentary U/S	**Inf. Pres. +
	3D	Diathermy	Reflux	*Inf. Pres. -	Programmable	U/S Toggle	**Inf. Pres. +
Scissors	Prop.	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
	Calibrate	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
	Multi-Cut	Diathermy	N/A	*Inf. Pres. -	Programmable	Close Blade	**Inf. Pres. +
	Multi-Cut w/Vac	Diathermy	Reflux	*Inf. Pres. -	Programmable	Close Blade (treadle up) Momentary Cut (treadle down)	**Inf. Pres. +
	MPC	Diathermy	N/A	*Inf. Pres. -	Programmable	Close Blade	**Inf. Pres. +
	MPC w/Vac	Diathermy	Reflux	*Inf. Pres. -	Programmable	Close Blade (treadle up) Momentary Cut (treadle down)	**Inf. Pres. +
Extrusion	Low	Diathermy	Reflux	*Inf. Pres. -	Programmable	Diathermy	**Inf. Pres. +
	Medium	Diathermy	Reflux	*Inf. Pres. -	Programmable	Diathermy	**Inf. Pres. +
	High	Diathermy	Reflux	*Inf. Pres. -	Programmable	Diathermy	**Inf. Pres. +
VFC	Inject	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
	Dual	Diathermy	Reflux (vac on)	*Inf. Pres. -	Programmable	Vac/Press Cycle	**Inf. Pres. +
	Extract	Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +
Setup		Diathermy	N/A	*Inf. Pres. -	Programmable	N/A	**Inf. Pres. +

* Pressing the Left Heel switch decreases pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Normal Pressure preset value if currently above the preset value; otherwise, pressure remains at the current setting.

** Pressing the Right Heel switch increases the pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Alternate Pressure preset value if currently below the preset value; otherwise, pressure remains at current the setting.

- The reflux controlled by the Left Horizontal switch is pulsed.
- In Dual VFC, the Right Horizontal switch shall cycle from Vacuum only to Vacuum and Pressure to Pressure only and then back to Vacuum only.
- The default for the Right Vertical is Next Mode.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.
- Adjustments made with the Left and Right Heel switches are considered "temporary," as they will not change either the preset value or preset alternate value. These preset values can be changed from the Infusion settings screen or the Doctor Memory screens.

Table 11-5 COMBINED POSTERIOR FOOTSWITCH FUNCTIONS FOR DEFAULT MAP D

Default Map A, Combined Anterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	Burst	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	3D	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	Fixed	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
I/A	CapVac	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
	Max	Diathermy	Cont. Reflux	Programmable	Alternate Irr.	Continuous Irr.	Reflux
Vit	Wet	Diathermy	Cut Disable	Programmable	Alternate Irr.	Cut Enable	Reflux
	Dry	Diathermy	Cut Disable	Programmable	Alternate Irr.	Cut Enable	Reflux
Setup	N/A	Diathermy	N/A	Programmable	Alternate Irr.	Continuous Irr.	N/A

- The reflux controlled by the Right Heel switch is pulsed.
- Continuous Reflux is available only with a single-use AVGFI cassette.
- The default for the Left Heel is No Function.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-6 FOOTSWITCH FUNCTIONS FOR COMBINED ANTERIOR DEFAULT MAP A

Default Map B, Combined Anterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	Burst	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	3D	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	Fixed	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
I/A	CapVac	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
	Max	Diathermy	Reflux	Programmable	Alternate Irr.	Continuous Irr.	Programmable
Vit	Wet	Diathermy	Reflux	Programmable	Alternate Irr.	Cut Toggle	Programmable
	Dry	Diathermy	Reflux	Programmable	Alternate Irr.	Cut Toggle	Programmable
Setup	N/A	Diathermy	N/A	Programmable	Alternate Irr.	Continuous Irr.	Programmable

- The Reflux controlled by the Left Horizontal switch is pulsed.
- In all modes except Vit, reflux will be continuous if supported by the anterior single use cassette, or pulsed if not.
- The default for the Left Heel is Next Memory, and the default for the Right Heel is Previous Memory.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-7 FOOTSWITCH FUNCTIONS FOR COMBINED ANTERIOR DEFAULT MAP B

Default Map C, Combined Anterior Domain

Mode	Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	Burst	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	3D	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	Fixed	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
I/A	CapVac	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
	Max	Diathermy	Reflux	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –
Vit	Wet	Diathermy	Reflux	Programmable	Irr. Pressure +	Cut Toggle	Irr. Pressure –
	Dry	Diathermy	Reflux	Programmable	Irr. Pressure +	Cut Toggle	Irr. Pressure –
Setup	N/A	Diathermy	N/A	Programmable	Irr. Pressure +	Continuous Irr.	Irr. Pressure –

• The Reflux controlled by the Left Horizontal switch is pulsed.
• The default for the Left Heel is Next Memory.
• The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-8 FOOTSWITCH FUNCTIONS FOR COMBINED ANTERIOR DEFAULT MAP C

Default Map D, Combined Anterior Domain

Mode	Left Submode	Left Vertical	Left Horizontal	Left Heel	Right Vertical	Right Horizontal	Right Heel
Phaco	Linear	Diathermy	Reflux	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +
	Burst	Diathermy	Reflux	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +
	3D	Diathermy	Reflux	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +
	Fixed	Diathermy	Reflux	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +
I/A	Cap Vac	Diathermy	Reflux	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +
	Max	Diathermy	Reflux	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +
Vit	Wet	Diathermy	Reflux	Irr. Pressure -	Programmable	Cut Toggle	Irr. Pressure +
	Dry	Diathermy	Reflux	Irr. Pressure -	Programmable	Cut Toggle	Irr. Pressure +
Setup	N/A	Diathermy	N/A	Irr. Pressure -	Programmable	Continuous Irr.	Irr. Pressure +

* Pressing the Left Heel switch decreases pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Normal Pressure preset value if currently above the preset value; otherwise, pressure remains at the current setting.

** Pressing the Right Heel switch increases the pressure by 5 (mmHg or cmH_20) when pressure is equal to 30 or higher, or by 2 if below 30. If the switch is held down for 1 second, pressure changes to Alternate Pressure preset value if currently below the preset value; otherwise, pressure remains at current the setting.

- In all modes except Vit, reflux will be continuous if supported by the anterior single use cassette, or pulsed if not.
- The default for the Right Vertical is Next Memory.• Adjustments made with the Left and Right Heel switches are considered "temporary," as they will not change either the preset value or preset alternate value. These preset values can be changed from the Irrigation settings screen or the Doctor Memory screens.
- The Left and Right Heel switches may be programmed to have single-click or double-click activation of all heel switch functions.

Table 11-9 FOOTSWITCH FUNCTIONS FOR COMBINED ANTERIOR DEFAULT MAP D

* FOR REFERENCE ONLY *

Phaco Mode Surgery Screen



The Phaco function provides vacuum and U/S power to the ultrasonic handpiece. Irrigation and aspiration lines must be plugged into the handpiece, and its electric cable plugged into the illuminated front panel connector.

The Phaco mode is entered when the **Phaco** handpiece is selected in the *Combined Surgery Setup* screen and the **Surgery** key is pressed, or after a tune of a phaco handpiece, or when the **Phaco** key is available from another mode. The Phaco mode consists of four submodes: Linear, Burst, 3D, and Fixed, with Linear being the factory default. Each submode has its own default values which are adjustable by pressing **Up/Down** triangle keys.

U/S Pulse controls are available in two submodes (linear and fixed), and can be turned on/off by pressing the **Pulse Rate** touch key. The pulse rate can be adjusted using its **Up/Down** triangle keys.

WARNING!

Use of a Phaco handpiece at power settings greater than 80% continuously for over 4 minutes can result in ultrasonic system failure. Allow the system to cool for 8 minutes between heavy usage of this type.

During any ultrasonic procedure, metal particles may result from inadvertent touching of the ultrasonic tip with a second instrument. Another potential source of metal particles resulting from any ultrasonic handpiece may be the result of ultrasonic energy causing micro abrasion of the ultrasonic tip.

Linear - In Phaco Linear submode irrigation is provided when the footpedal is depressed. Linear vacuum, up to the Max Limit, is provided from detent one through detent two, and sustained from detent two to full footpedal depression. Linear U/S

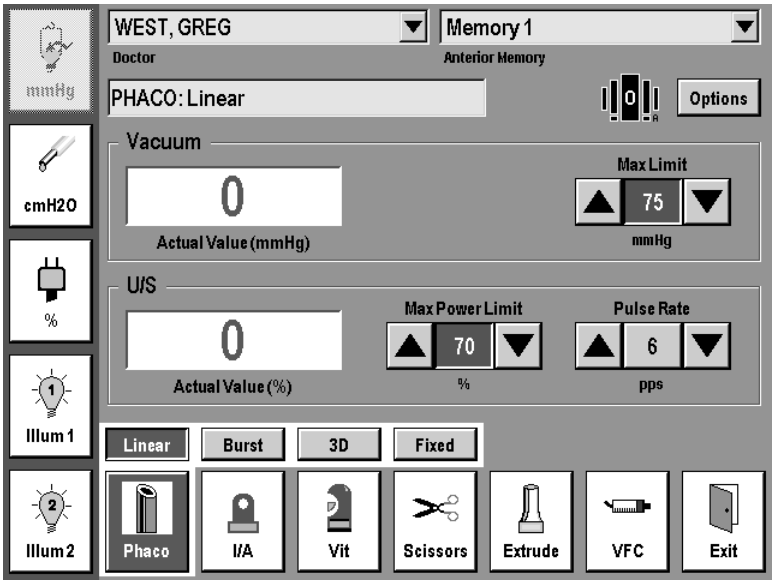


Figure 11-5 PHACO LINEAR MODE SCREEN - The Phaco Linear screen has an Actual Value % in the U/S box which represents the amount of Max Power Limit delivered to the handpiece, controlled with the footpedal. The U/S Fixed mode does not contain a U/S power Actual Value box; it is not needed because U/S power turns ON at its Power Setpoint when the pedal enters detent 2.

power is provided from detent two to full footpedal depression, with the preset Power Max Limit reached at full depression. Pulse On/Off control is available by pressing the **Pulse Rate** touch key, and pulses per second (pps) is adjusted with its **Up/Down** triangle keys.

Burst - In Phaco Burst submode, irrigation is provided when the footpedal is depressed. Linear vacuum, up to the preset maximum, is provided from detent one through detent two, and sustained from detent two to full footpedal depression.

In the Phaco Burst submode fixed U/S power (Power %) can be adjusted for frequency (Duty Cycle) and duration (Burst Length) of 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 Duty Cycle window.

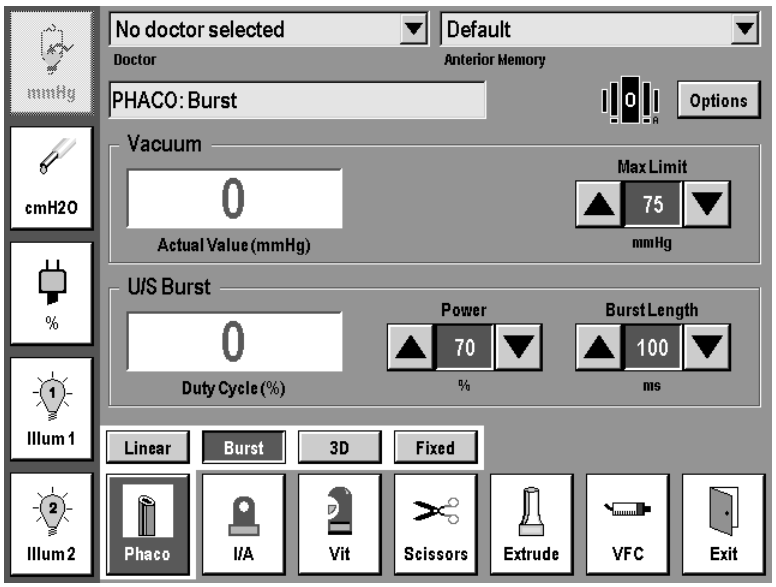


Figure 11-6 PHACO BURST MODE SCREEN - In the Phaco Burst submode fixed U/S power can be adjusted for frequency and duration of U/S power pulses.

3D (Dual Dynamic Drive)

In the Phaco 3D submode, irrigation is provided when the footpedal is depressed. Vacuum delivered to the probe and the U/S power are simultaneously regulated by the amount of footpedal depression. The display contains adjustable values for vacuum level at footpedal start and at full depression; and U/S power at footpedal start and at full depression. To ensure that not too much flow is generated when the footpedal is first depressed, the vacuum level is ramped up from zero to the set starting level during the first part of the pedal travel.

Fixed - In Phaco Fixed submode, irrigation is provided when the footpedal is depressed. Linear vacuum, up to the preset maximum, is provided from detent one through detent two, and sustained from detent two to full footpedal depression. The preset U/S Power Setpoint is reached immediately upon entry into footpedal detent two, and is sustained to full depression. Pulse On/Off control is available by pressing the **Pulse Rate** touch key, and pulses per second (pps) is adjusted with its **Up/Down** triangle keys.

Frag Mode Surgery Screen



The Fragmentation mode provides ultrasonic fragmentation and vacuum using Alcon's *Fragmatome*™ * handpiece. The handpiece is connected to the *Accurus*® console with an electric cable and vacuum tubing.

The Fragmentation mode is entered when the **Frag** handpiece is selected in the *Combined Surgery Setup* screen and the **Surgery** key is pressed, or when a Frag handpiece is tuned, or when the **Frag** key is available from another mode. Four submodes are available, each with its own default U/S power and vacuum limits. U/S power is enabled and disabled by pressing foot switches or by pressing the power setting on the touch screen (except in momentary mode). Micro reflux is available via the footswitch.

U/S Pulse controls are available in all submodes, and can be turned on/off by pressing the **Pulse Rate** touch key. The pulse rate can be adjusted using its **Up/Down** triangle keys.

Linear - Depressing the footpedal in Linear Fragmentation submode increases vacuum up to its maximum limit, which is reached at half of full footpedal depression. From this detent point maximum vacuum is maintained while proportional U/S power begins and increases up to the U/S power maximum limit, reached at full footpedal depression.

Moment - The Momentary Fragmentation submode allows momentary activation of U/S power while using vacuum. Depressing the footpedal provides vacuum proportional to pedal position, up to the maximum limit. Fixed U/S power is provided while the footpedal is depressed and the applicable footswitch switch is momentarily activated (the default activation switch is the right horizontal switch).

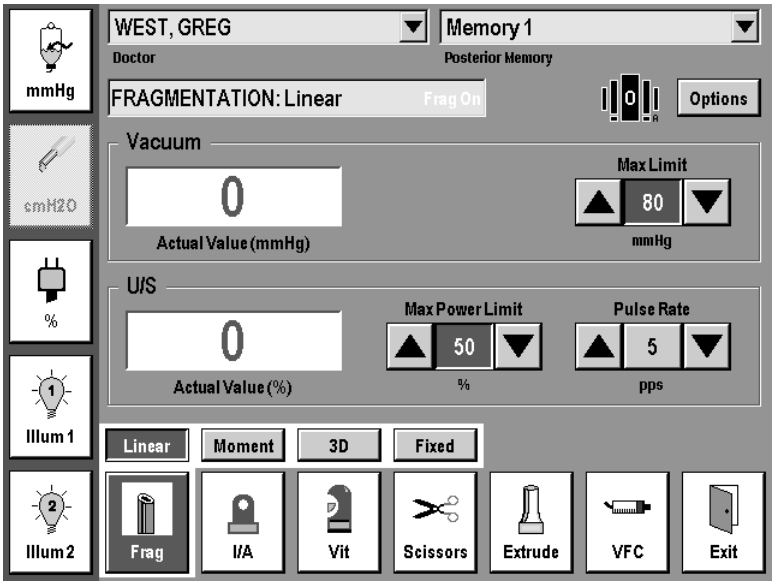
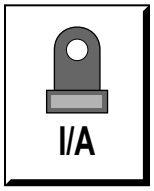


Figure 11-7 LINEAR FRAGMENTATION SCREEN - In Linear Fragmentation mode vacuum builds up to its maximum value at the footpedal's halfway point, then U/S power begins and rises to its maximum value at full footpedal depression. The F/AX global key is available because Power Pole or Gravity is the selected irrigation method.

3D (Dual Dynamic Drive)
In the Frag 3D submode, vacuum delivered to the probe and the U/S power are simultaneously regulated by the amount of footpedal depression. The display contains adjustable values for vacuum level at footpedal start and at full depression; and U/S power at footpedal start and at full depression. To ensure that not too much flow is generated when the footpedal is first depressed, the vacuum level is ramped up from zero to the set starting level during the first part of the pedal travel.

Fixed - When the Fixed Fragmentation submode is enabled, depressing the footpedal activates the preset U/S power and provides vacuum proportional to footpedal depression, up to the maximum limit.

I/A Mode Surgery Screen



The I/A mode provides irrigation and vacuum for aspiration to the I/A handpiece. This function consists of two vacuum submodes: I/A **Max** (Maximum, the factory default) and I/A **CapVac** (reduced vacuum). Each submode has its own default Max Limit vacuum level, adjustable using **Up/Down** triangle keys, even when the footpedal is depressed.

Irrigation begins when the footpedal is depressed, and linear vacuum is provided from detent one to full footpedal depression, with the preset Max Limit reached at full depression.

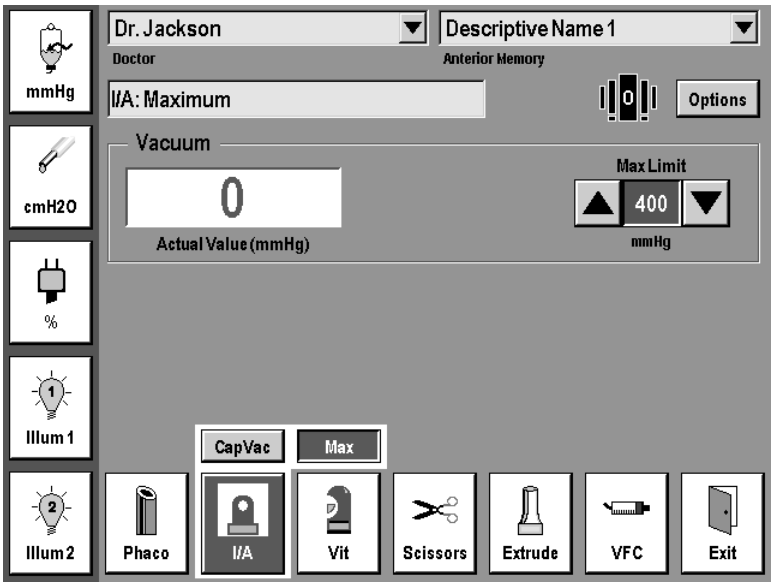


Figure 11-8 I/A MAX MODE SCREEN - Shown here is the I/A Max display screen. The I/A CapVac screen looks similar, but the Max Limit default setting is 30 mmHg. These modes provide irrigation and vacuum to the I/A handpiece.

Vit Mode Surgery Screen



The Vit (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. The available probes, selected in the *Combined Surgery Setup* screen, are *Accurus®*, *Accurus®* 1500, *Accurus®* 2500, and *InnoVit®*. Probe availability depends up on system model number.

After selecting a vitrectomy probe, the Vit mode is entered when the **Surgery** key is pressed in the *Combined Surgery Setup* screen. Four submodes are available, each with its own default cut rate and vacuum level. Values are adjusted using **Up/Down** triangle keys, even when the footpedal is depressed. The vacuum and cutting on/off status is shown in the background color of their display keys; pressing a key toggles the status between ON (blue) and OFF (light gray).

Cutting and/or vacuum is begun when the footpedal is pressed (cutting is enabled in Momentary Vit mode via a footswitch switch). Cutting can be disabled/enabled using the footswitch or by pressing its display key, and can be changed regardless of footpedal position. If cutting is enabled, "Cut On" is displayed in the title window; if cutting is disabled, "Cut Off" is displayed. Vacuum can be disabled/enabled by pressing its display key. Cutting and vacuum cannot both be disabled at the same time (one must always be enabled).

Wet Ant - For wet anterior vitrectomy, pressing the footpedal into detent 1 initiates bimanual or coaxial irrigation. Linear vacuum and cutting, when enabled, is provided from detent two to full footpedal depression, reaching the preset maximum vacuum at full depression.

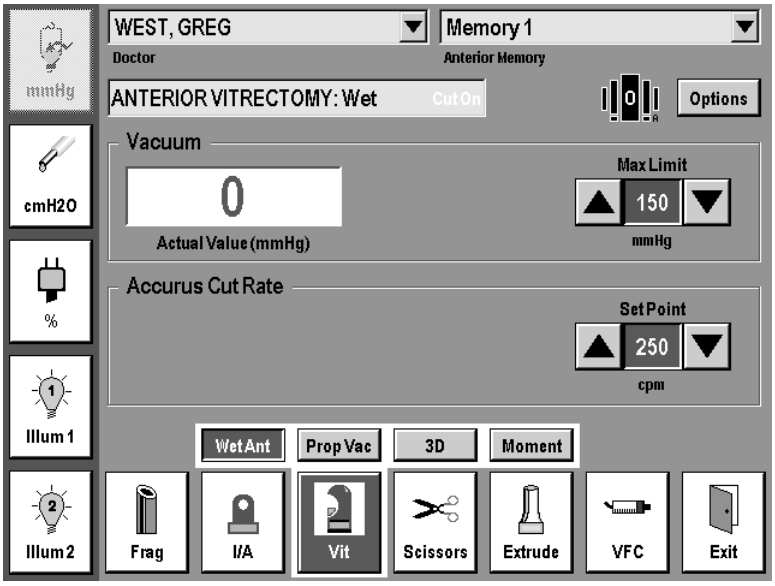


Figure 11-9 WET ANT MODE SCREEN - Shown here is the Wet Anterior Vitrectomy submode screen. This is the default mode when entering from an anterior mode or the Combined Surgery Setting screen after selecting an anterior handpiece/probe.

Prop Vac

The VIT: Proportional Vacuum submode contains values for maximum vacuum limit and cut-rate set point. As the footpedal is depressed the vacuum increases, with the actual vacuum displayed in the Actual Value box and its linear equivalent reflected in the bar. The Actual Value is a progression bar for display only, and can not be modified by the user.

The amount of vacuum delivered to the probe is regulated by the amount of footpedal depression up to the Max Limit. The Vacuum Max Limit is numeric, and can be adjusted by pressing its **Up/Down** triangle keys.

Probe cutting at a preset rate begins when the footpedal is pressed. The Cut Rate Set Point value is numeric, and can be adjusted by pressing its **Up/Down** triangle keys.

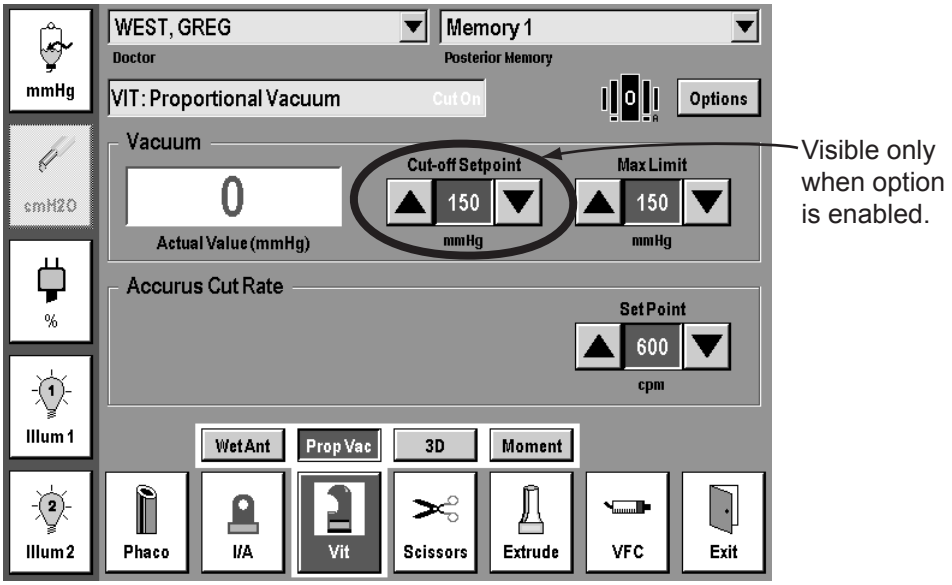


Figure 11-10 VIT PROP VAC MODE SCREEN - This screen shows the Proportional Vacuum submode, set up to operate with the *Accurus*® probe. This is the default mode when entering from a posterior mode or the Combined Surgery Setting screen after selecting a posterior handpiece/probe. This screen is similar for the other vitrectomy probes, and similar to the Momentary cut submode screen. The 3D submode has its own unique screen that includes Treadle Start and Full Treadle settings for both vacuum and cut rate (see Figure 11-11).

A cut-off max vacuum adjustment is provided for each Vit probe when the **Vit Cut-off Setpoint** is enabled (see Figure 11-10). This option is enabled in the doctor memory area (Options -> Memory -> Common -> Other) and the controls function as follows:

When cutting is enabled: The Vacuum Max Limit display background is blue and the displayed value is used as the maximum when applying vacuum. The Cut-off Setpoint display is gray to indicate that it is not the value currently in force, however the setting can still be adjusted.

When cutting is disabled: The Cut-off Setpoint display background is blue and the displayed value is used as the maximum when applying vacuum. The Vacuum Max Limit display is gray to indicate that it is not the value currently in force, however the setting can still be adjusted.

If this option is disabled, the Cut-off Setpoint parameter is not displayed.

Moment

The VIT: Momentary Cut submode has the same characteristics as the Prop Vac submode, except that the cutter is activated when the applicable footpedal switch is momentarily activated (the default activation switch is the footpedal's right horizontal switch).

3D (Dual Dynamic Drive)

The Vitrectomy 3D submode has similar characteristics as the Prop Vac submode, except that 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.

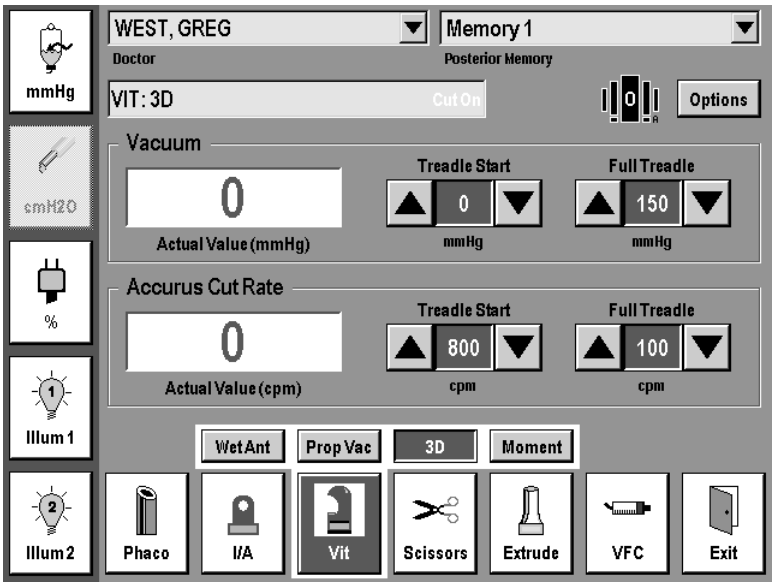
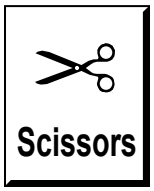


Figure 11-11 **VIT 3D MODE SCREEN - This screen shows the 3D submode. The footpedal controls both proportional vacuum and proportional cut rate. Notice that vacuum begins at 0 mmHg and increases to 150 mmHg at full footpedal depression; while cut rate begins at 800 cpm and decreases to 100 cpm at full footpedal depression. The vacuum and cut rate settings are fully adjustable.**

Scissors Mode Surgery Screen



The Scissors mode provides cutting capability using pneumatically or electrically powered scissors controlled by the footswitch. The pneumatically powered scissors uses a microscissors screwed onto the Alcon IOS handpiece, which is connected via tubing to a front panel pneumatic port. The electrically powered MPC scissors handpiece plugs into a front panel electrical connector. Three submodes are available: **Prop** (Proportional), **Multi** (Multiple Cut), and **MPC** (Membrane Peeler/Cutter).

Prop - The Proportional submode (see Figure 11-12) provides proportional control of the opening and closing of the scissor blades, dependent upon the amount of footpedal depression. The amount of scissors closure is indicated in the Pressure window. When the footpedal is fully depressed, the Max Limit is reached, and scissors should be fully closed. Max Limit pressure is adjustable with the **Up/Down** triangle keys.

Pressing **Calibrate** in the *SCISSORS: Proportional* screen activates the *SCISSORS: Calibration* screen (see Figure 11-14), allowing the user to adjust the scissors Start and Close Pressures with the **Up/Down** triangle keys, whether or not scissors are enabled (footpedal is not required for calibration). The **Start Pressure** or **Close Pressure** keys must be pressed to activate pressure through the tubing to the handpiece. If one pressure is adjusted to equal the other, the pressures will automatically be adjusted so the closed pressure is greater than the open pressure. Pressing the **Default** key sets the pressures back to the factory defaults. Pressing the **Surgery** key closes this screen and returns the operator to the *SCISSORS: Proportional* screen.

Multi and MPC - In the Multiple Cut or MPC submode pressing the footpedal activates the scissors at a Cut Rate proportional to the footpedal position up to the preset Max Limit, set by pressing the **Up/Down** triangle keys next to the Max Limit readout. Single cuts are possible by adjusting the cut rate to a low Max Limit and momentarily pressing the footpedal.

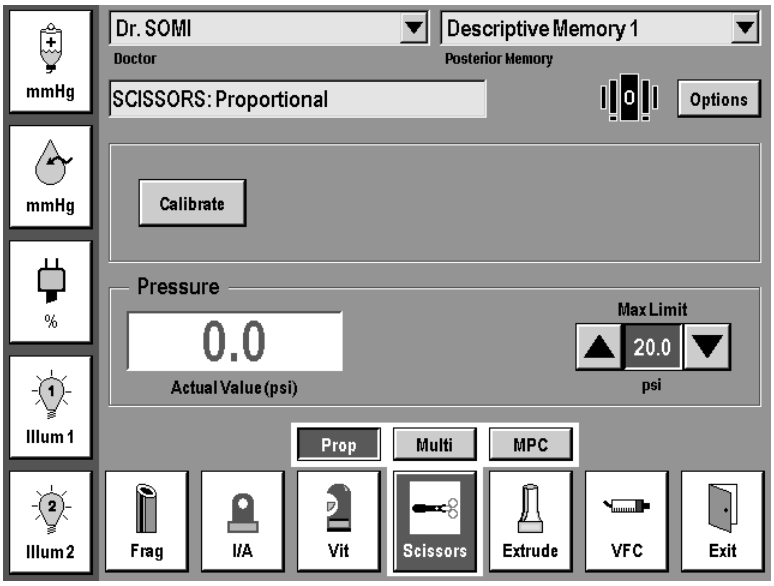


Figure 11-12 PROPORTIONAL SCISSORS SCREEN - Pressing down on the footpedal in this mode provides proportional control of the closing of the scissor blades.

* FOR REFERENCE ONLY *

Pressing the Vacuum **Max Limit** key turns scissors OFF and activates proportional vacuum for aspiration. When vacuum is operating the scissors can be momentarily activated at the preset value when a footswitch switch is pressed (default is right horizontal switch), and vacuum is controlled proportional to the amount of footpedal depression up to its Max Limit.

WARNING!

Use of a MPC scissors handpiece at high cut rates continuously for over 2 1/2 minutes can result in excessive handpiece heating. Allow the scissors to cool for approximately 30 minutes between heavy usage of this type.

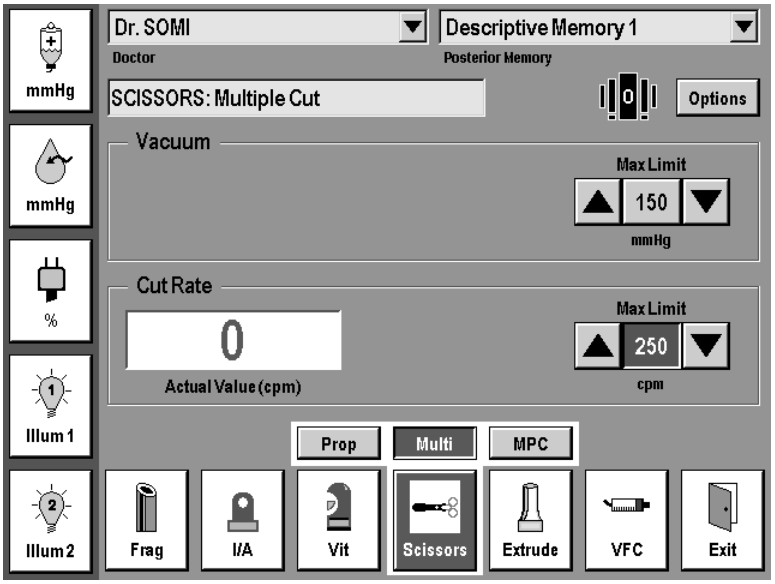


Figure 11-13 MULTIPLE CUT SCISSORS SCREEN - Depressing the footpedal in Multiple Cut mode activates scissors (shown in this figure) or vacuum progressively up to its preset Max Limit. When the Vacuum key is activated, aspiration is controlled with the footpedal, and momentary cutting is enabled by pressing a footswitch switch.

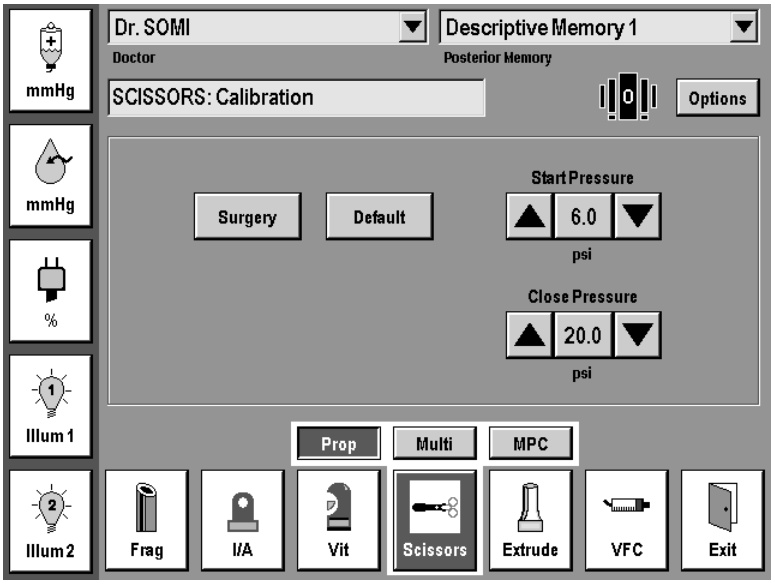


Figure 11-14 SCISSORS CALIBRATION SCREEN - To enter the calibration screen the Calibrate key must be pressed on the SCISSORS: Proportional screen. This screen shows the start and close pressures for scissors activation; pressing the arrow keys adjusts the pressures. Pressing the Default key sets the pressures back to the factory defaults.

Extrude Mode Surgery Screen



This mode provides vacuum from the cassette's red port through tubing to an extrusion handpiece. Three submode vacuum levels are available: **Low**, **Medium**, and **High**, with Medium as the default setting.

Depressing the footpedal activates vacuum proportional to pedal position. The preset **Max Limit**, adjustable using the **Up/Down** triangle keys, is reached at full footpedal depression. The preset maximum vacuum level can be adjusted with the footpedal in any position.

NOTE: Whenever a vacuum surge is detected, or the cassette is being drained, or the system runs a VAC check, the operator must remove his foot from the footswitch treadle for vacuum to be re-activated.

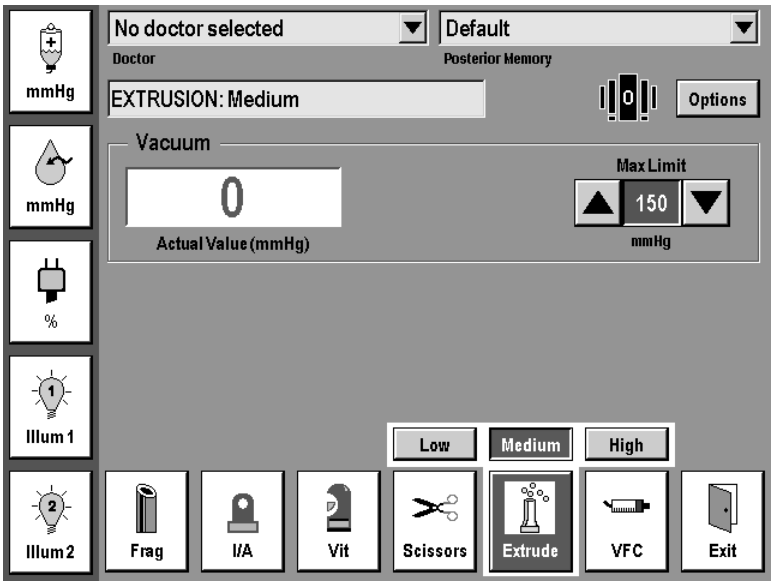
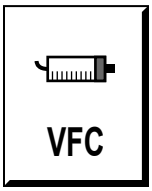


Figure 11-15 **MEDIUM EXTRUSION SCREEN - Three extrusion submodes are offered: Low, Medium, and High. Full depression of the footpedal is required to reach the preset Vacuum Max Limit.**

VFC Mode Surgery Screen



The VFC (Viscous Fluid Control) mode provides pressure at the front panel VFC connector for fluid injection (i.e., silicone oil), or vacuum for extraction, through tubing to a syringe. Using vacuum the VFC mode also provides a means of extruding fluid through an extrusion handpiece (in Dual submode injection and extrusion are performed simultaneously). Pressure and vacuum levels are adjustable via the **Up/Down** triangle keys next to their **Max Limit** displays.

CAUTION

Always use Alcon-supplied Viscous Fluid Injector Paks and follow all Directions for Use. Do not aspirate fluids directly into the console; this will cause damage to the console, increase risk of electrical shock, and void all warranties.

Inject - In this submode injection pressure to the syringe is provided proportional to the footpedal position up to the Max Limit setting.

WARNINGS!

- **Double check the cannula connected to the syringe for a tight connection. It must not be allowed to come loose.**
- **Adjust the Max Limit air pressure in accordance with the viscosity of fluids to be injected. Excessively high settings may endanger the patient.**

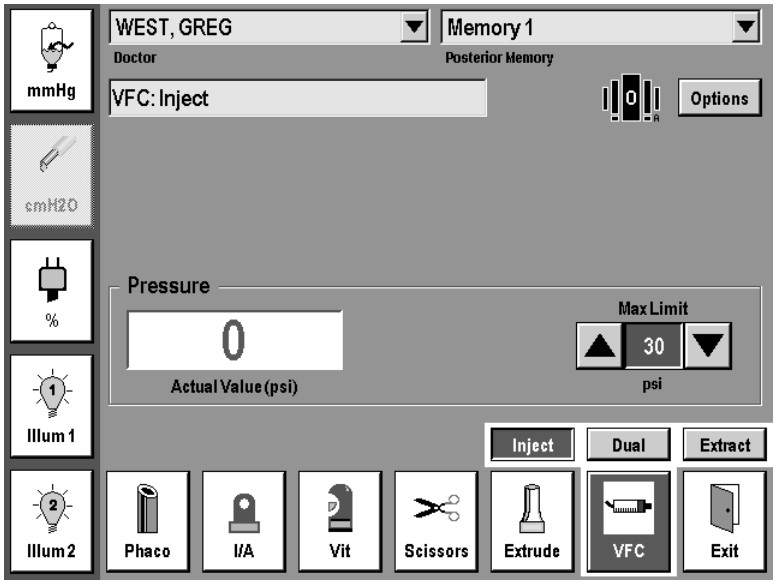


Figure 11-16 VFC INJECTION SCREEN - This Inject screen indicates the system is prepared to deliver a maximum of 50 psi to the syringe with the footpedal fully depressed.

Dual - In the Dual submode injection and extrusion are performed simultaneously using the syringe and extrusion handpiece. Pressing sideways on the footswitch switches (default is left and right horizontal switches), or pressing the **Max Limit** keys, turns the two individual functions on and off. In this submode, with both functions enabled, injection pressure to the syringe in detent 1, then vacuum to the extrusion handpiece in detent 2 (with sustained pressure to the syringe) is provided proportional to the footpedal position (see Figure 1-7).

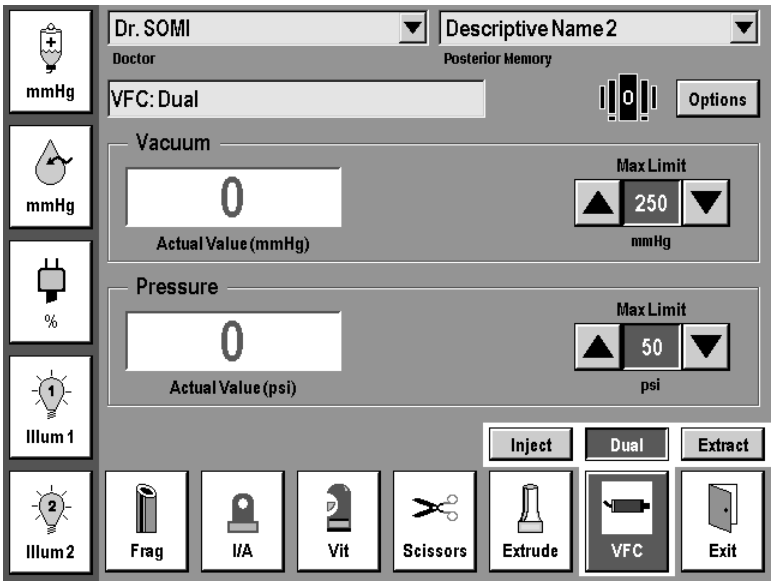


Figure 11-17 DUAL VFC INJECTION/EXTRUSION SCREEN - This screen indicates the system is prepared to deliver a maximum of 50 psi to the injection syringe in footpedal detent 1, then sustained injection and a maximum of 250 mmHg extrusion.

Extract - Vacuum for fluid extraction is provided to the syringe proportional to footpedal depression. Max Limit vacuum is reached at full depression.

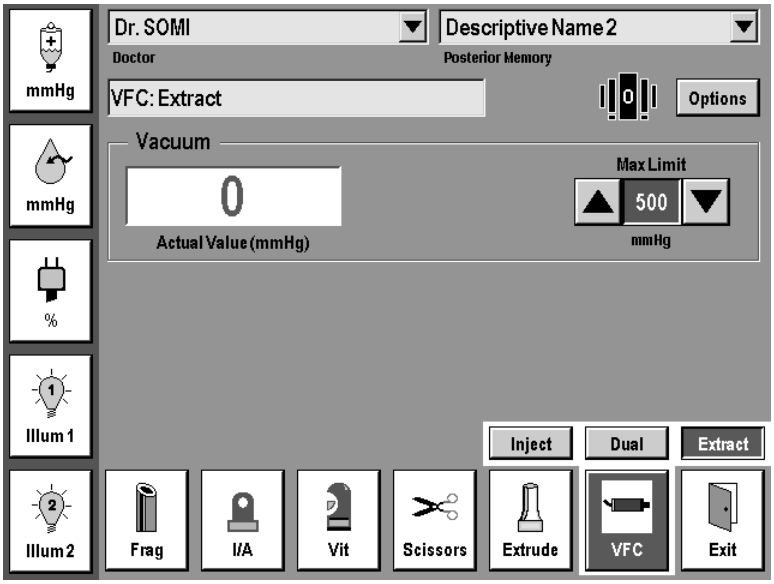


Figure 11-18 VFC EXTRACTION SCREEN - This screen indicates the system is prepared to extract fluid through a syringe at up to a maximum of 500 mmHg.

* FOR REFERENCE ONLY *

PROBES AND HANDPIECES

Different probes and handpieces are required for each operating mode of the *Accurus*® system. Following is a representative selection of probes and handpieces with a general description of each. See the Accessories and Parts section of this manual, or consult your Alcon representative, for a complete selection of all probes, handpieces, and handpiece tips available.

375/40 U/S and *Mackool*** Handpiece

Phaco (U/S) handpieces integrate irrigation, aspiration, and ultrasonics. The three functions of the Phaco mode enable the surgeon to simultaneously maintain or inflate the anterior chamber, emulsify the cataractous lens, and aspirate the lens material from the eye. The handpiece is used in conjunction with tubing, an infusion sleeve, a bubble suppression insert (BSI), and ultrasonic tip.

CAUTION

Following autoclaving, ensure handpiece is at room temperature. Never immerse handpiece in water or other fluid to cool it as it will cause serious damage to the handpiece. Allow it to air cool for at least 15 minutes.

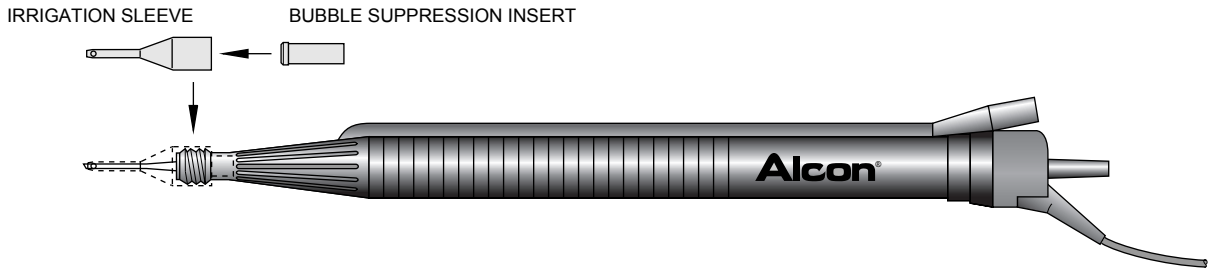


Figure 11-19 375/40 U/S HANDPIECE

Irrigation/Aspiration Handpiece

The Irrigation/Aspiration (I/A) handpiece, connected to the *Accurus*® system with I/A tubing, is used to remove cortical material via aspiration while maintaining chamber pressure with irrigation.

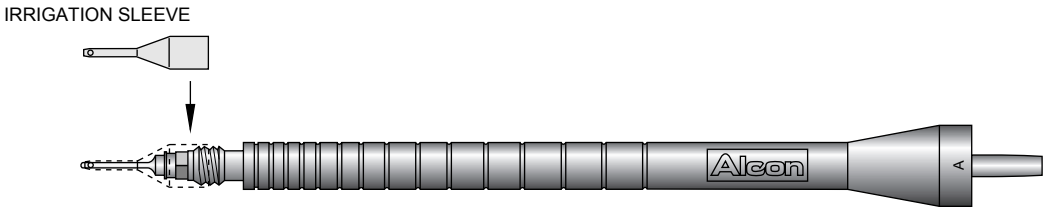


Figure 11-20 IRRIGATION/ASPIRATION (I/A) HANDPIECE

*Fragmatome™** Handpiece

The *Fragmatome™* * handpiece is configured to provide simultaneous vacuum and fragmentation, or vacuum only, depending upon the console setup. The handpiece has a stainless steel shell for improved reliability and durability. Other than attaching and removing the needle and aspiration line, no assembly or disassembly is required.

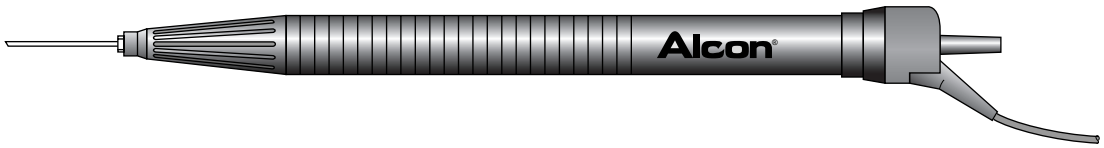


Figure 11-21 *FRAGMATOME™ HANDPIECE**

Vitrectomy Probes

The *InnoVit®* probe is a high-speed, cross-action (or radial) guillotine vitreous cutter with an ergonomically designed probe handle. The *Accurus®*, *Accurus®* 1500, and *Accurus®* 2500 probes are axial oscillating guillotine vitreous cutters. All probes are designed for a single use and must be properly disposed of when surgery is completed.

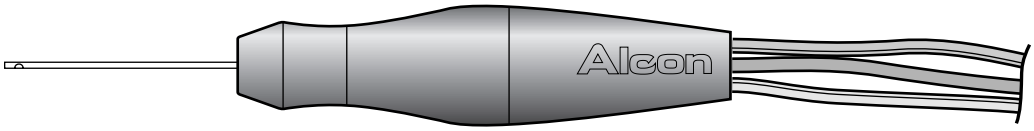


Figure 11-22 *INNOVIT®* PROBE



Figure 11-23 *ACCURUS®* PROBE, *ACCURUS®* 1500 PROBE, and *ACCURUS®* 2500 PROBE

Scissors Handpiece

The Intraocular Scissors (IOS) Handpiece is used for membrane dissection. Pneumatic power to drive the scissors is provided through tubing which is attached to the barbed shaft. Scissors tips come in single use and reusable configurations, and are screwed into the IOS handpiece. The scissors adjustment is used to increase or decrease the opening of the scissors blades. Additionally, it can be used to manually close the scissors in the event of air pressure and/or electrical power failure.

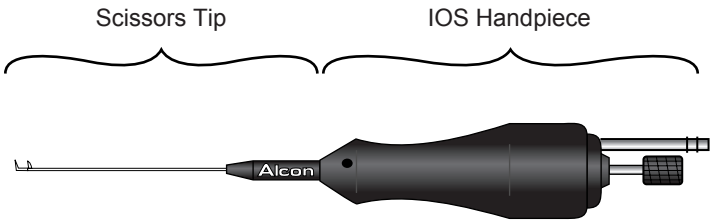


Figure 11-24 INTRAOCULAR SCISSORS (IOS) HANDPIECE

MPC Scissors Handpiece

The MPC (Membrane Peeler Cutter) handpiece is an electrically activated snap action scissors manufactured by *Grieshaber®*, used for membrane dissection. Electric power to drive the scissors is provided through a cable which is connected to the front panel of the *Accurus®* console. The scissors tip is built into the MPC handpiece, and is not removable. A small port is provided to flush the shaft when cleaning the MPC scissors handpiece.

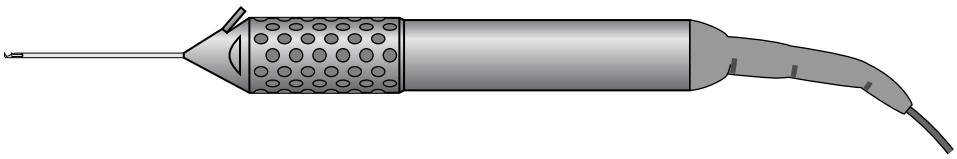


Figure 11-25 MPC SCISSORS HANDPIECE

Diathermy/Coagulation Handpieces

Single use Bipolar Coagulation Brushes are available in a wide variety of configurations: straight, curved, 20-gauge, 23-gauge, tapered, and widestroke. All single use bipolar accessories are available with and without cables. Also available are reusable and single-use bipolar cables.

Bipolar Coagulation Forceps are lightweight and ergonomically designed to reduce hand fatigue, as well as to provide precise control and safety. They are available in high-conductive non-stick alloy, titanium, or single-use configurations. They are also available with a wide variety of tip styles.

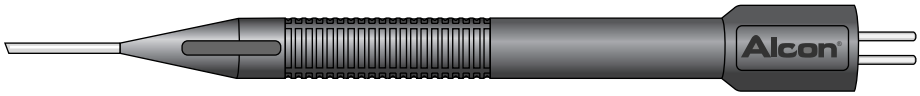


Figure 11-26 SINGLE USE BIPOLAR BRUSH

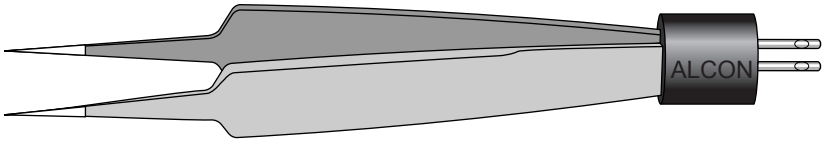


Figure 11-27 4 INCH NADLER COAPTATION FORCEPS

* FOR REFERENCE ONLY *

SECTION TWELVE
COMBINED OPERATING INSTRUCTIONS

Introduction

This section of the manual contains typical setup procedures using *Accurus*® *TotalPlus*® Combined Procedure Paks, then guidelines to navigate through the combined posterior and anterior domains.

The *Accurus*® pak setup procedures are written for a surgical team of three people: Surgeon and Scrub Nurse in the sterile field, and Circulating Nurse in the non-sterile field. The instuctions are divided into two columns. In the left column a directive is given, and in the right column a team member is identified to perform the task. These procedures assume that a sterile drape is not being utilized; if it is applied to the front of the console, the roles of the Circulating Nurse and the Scrub Nurse change.

If you have problems with the system when performing the setup instructions, you should first refer to the Troubleshooting section of this manual. If questions still exist, contact the Alcon Technical Services Department or your local Alcon representative.

Power Up Sequence

Follow these steps each time you turn system power ON. This helps ensure that the *Accurus*® Ophthalmic Surgical System is set up correctly and is ready for surgery.

1. Plug the power cord into its power source.

2. Connect the air hose between the *Accurus*® console and the pressure supply (compressed air or nitrogen). Verify that pressure is between 90 to 120 psi (500 kpa minimum for reduced operation).

3. Connect the footswitch cable to the *Accurus*® console.

4. Connect the optional Power IV Pole cable to the *Accurus*® console.

5. First turn system power ON using the rear panel ON/OFF switch and then the front panel Standby switch. Alcon's *Accurus*® logo is displayed on the viewing screen while the system completes its initialization and self-test diagnostics (approximately 2 minutes). While completing diagnostics, confirm that the five Global Function LED displays on the front panel flash 888 before the system enters either the *Procedure Selection* screen or a *Surgery Setup* screen.

   If a fault is detected during diagnostics, a *System Fault* screen is displayed and operator inputs are locked out until the failure/problem is corrected.

Select a Mode of Operation

The *Accurus*® 800CS system enters the *Procedure Selection* screen upon successful completion of self-test diagnostics (if not programmed otherwise; see next paragraph). At this point you can select the **Combined** domain of operation on the touch screen, upon which a variety of operating selections are available to you in its *Combined Surgery Setup* screen.

If your system has been programmed to automatically enter a domain of operation upon startup (**Options/System/Startup Domain**), the *Procedure Selection* screen is bypassed and the selected domain's *Surgery Setup* screen is entered. The operator can return to the *Procedure Selection* screen by pressing the **Exit** key.

Navigating through domains and their modes of operation is flexible, controlled by system software, and is generally structured as diagrammed in Figure 12-1.

Navigating Through the *Accurus*® Combined Mode Screens

After entering a mode of operation, most surgical functions are controlled through the doctor's footswitch, but before any surgery can be performed there are system modes and parameters that must be selected. Most presurgical system preparation is performed by inserting a cassette, connecting handpieces and accessories to the *Accurus*® console, then pressing buttons to navigate through the system touch screens to make operating selections. A brief outline of the Combined screens and their functions is presented below.

- *Combined Surgery Setup* Screen - This screen assists the operating room staff to prepare the system for simultaneous vitreoretinal and cataract surgeries using materials from an *Accurus*® *TotalPlus*® Combined Procedure Pak.

  You first insert a cassette, then in the *Handpieces/Probes* section of the screen you select handpieces and probes you want to use. After making selections, plug handpieces and probes into the illuminated front panel connectors, then press the **Test** key to test and prime/tune the selections. The system automatically advances to the appropriate surgery mode after testing is done.

  One accessory can be selected by pressing the desired item from the *Accessories* choices. Its associated front panel connector illuminates to help you plug the accessory into the correct connector.

  The **Settings** key is pressed to open the *Irrigation/Infusion Settings* screen. In the **Type** tab you can select either **CVGFI**, **Power Pole**, or **Gravity** irrigation/infusion method.

  In the **Settings/Irrigation** tab, unless Gravity is selected, you can set Regular and Alternate Irrigation pressures, and select whether you want the alternate pressure to be Available **Yes/No**. Pressing the **Apply** key returns you to the setup screen with your new settings. Pressing **Cancel** returns you to the setup screen without modifying the current system settings.

Continued on page 12.4

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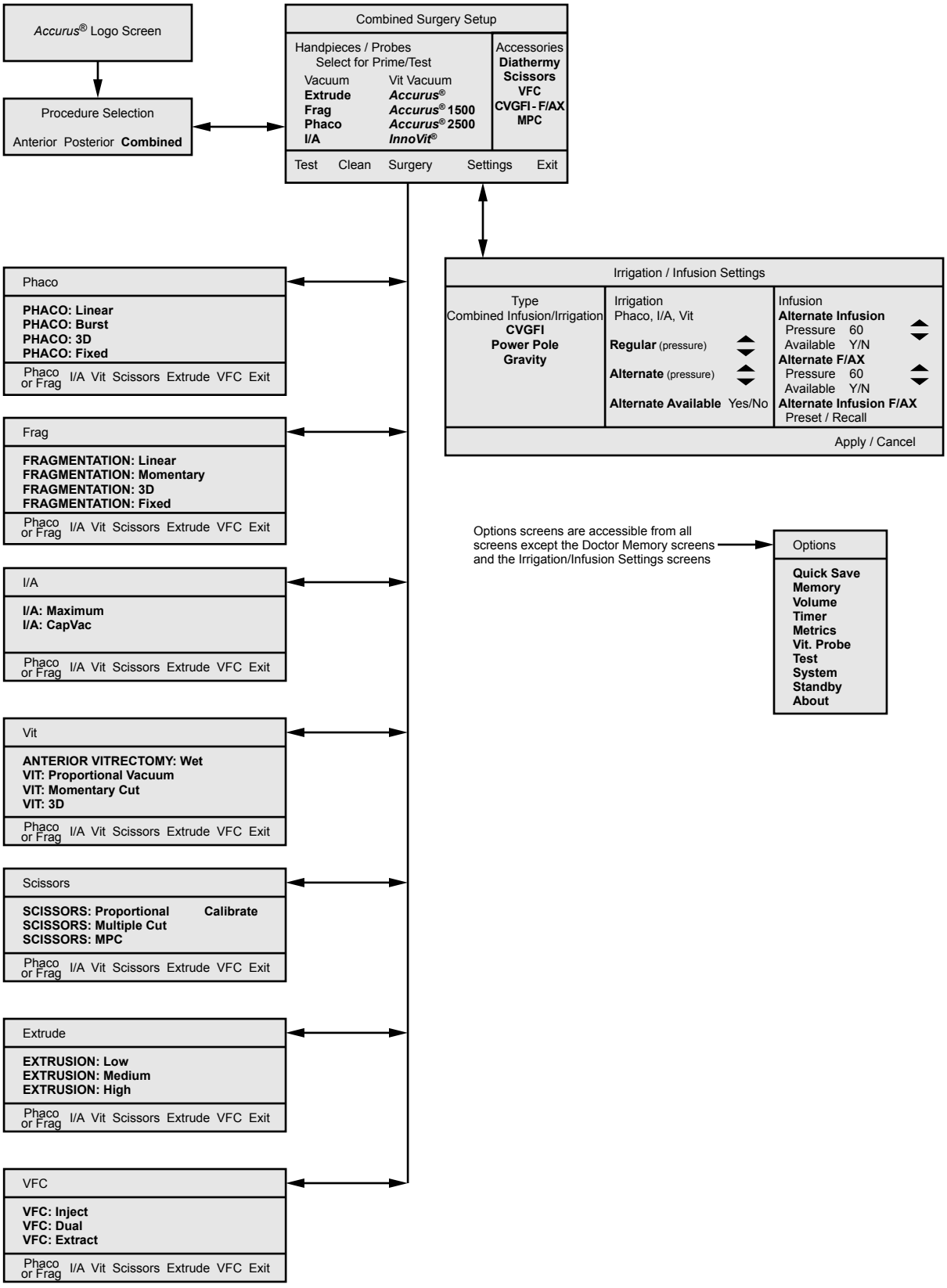


Figure 12-1 COMBINED MODES FLOW CHART - This flow chart highlights the system's combined operating domains with a general map to help you navigate through its modes of operation.

In the **Settings/Infusion** tab, depending on your infusion type, you can set an Alternate Infusion pressure, an Alternate F/AX pressure, and select whether you want the alternate pressure to be Available **Yes/No**. You can also select whether you want the alternate pressure to be the preset value or recalled from the last alternate pressure used. Pressing the **Apply** key returns you to the setup screen with your new settings. Pressing **Cancel** returns you to the setup screen without modifying the current system settings.

The **Clean** key is pressed to drain fluid from the cassette chamber into the drain bag. During normal operation this function is performed automatically, but prior to removing the cassette you may want to drain the remainder of fluid from the chamber into the drain bag.

Depending on the last handpiece tuned, pressing the **Surgery** key opens the associated surgery screen for that mode of operation.

- Surgery Screens - Entering a surgery screen gives the doctor a variety of operating parameters and adjustments unique to that mode of operation. Pressing a key at the bottom of the screen for another mode of operation automatically opens the surgery screen for that mode.

Factory Default Settings and Adjustments

The settings can be adjusted by pressing **Up/Down** triangle keys, increasing or decreasing the values. If the settings are adjusted, re-entry to that mode will display the new values. Tables 12-1 and 12-2 show the factory default settings for each mode, and the adjustment ranges of each.

Mode or Function	Submode	Function	Default Value	Adjustable Range
Phaco	Linear	Vacuum Max Limit U/S Max Power Limit U/S Pulse Rate	75 mmHg 70 % 6 pps	0-400 mmHg 0-100 % 0-15 pps
	Fixed	Vacuum Max Limit U/S Power Setpoint U/S Pulse Rate	75 mmHg 70 % 6 pps	0-400 mmHg 0-100 % 0-15 pps
	3D	Vacuum Max Limit *Treadle Start* *Treadle Full* U/S Max Power Limit Treadle Start Treadle Full	 0 mmHg 75 mmHg 0% 70%	 0-400 mmHg 0-400 mmHg 0-100 % 0-100 %
	Burst	Vacuum Max Limit U/S Burst Power U/S Burst Length	75 mmHg 70 % 100 ms	0-400 mmHg 0-100 % 30-500 ms

Table 12-1 COMBINED DEFAULT SETTINGS AND ADJUSTABLE RANGES (part 1) - Listed here are the *Accurus*® factory default settings for the combined modes of operation. The factory settings can be changed during surgery, but turning system power OFF resets all values back to the factory default settings. Figures in this table inside parenthesis are for reduced settings systems.

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Mode or Function	Submode	Function	Default Value	Adjustable Range
I/A	Maximum	Vacuum	400 mmHg	0-600 mmHg (0-450)
	CapVac	Vacuum	30 mmHg	0-600 mmHg (0-450)
Anterior Vitrectomy: Wet	*Accurus*®	Vacuum Max Limit Cut Rate	150 mmHg 250 cpm	0-600 mmHg (0-450) 100-800 cpm
Vit: Proportional Vacuum	*InnoVit*®	Vacuum Max Limit Cut Rate	100 mmHg 800 cpm	0-600 mmHg (0-450) 100-1800 cpm
	Accurus®	Vacuum Max Limit Cut Rate	150 mmHg 600 cpm	0-600 mmHg (0-450) 100-800 cpm
	Accurus® 1500	Vacuum Max Limit Cut Rate	150 mmHg 1000 cpm	0-600 mmHg (0-450) 100-1500 cpm
	Accurus® 2500	Vacuum Max Limit Cut Rate	150 mmHg 1500 cpm	0-600 mmHg (0-450) 100-2500 cpm
Vit: Momentary Cut	*InnoVit*®	Vacuum Max Limit Cut Rate	100 mmHg 800 cpm	0-600 mmHg (0-450) 1-1800 cpm
	Accurus®	Vacuum Max Limit Cut Rate	150 mmHg 600 cpm	0-600 mmHg (0-450) 1-800 cpm
	Accurus® 1500	Vacuum Max Limit Cut Rate	150 mmHg 1000 cpm	0-600 mmHg (0-450) 1-1500 cpm
	Accurus® 2500	Vacuum Max Limit Cut Rate	150 mmHg 1500 cpm	0-600 mmHg (0-450) 1-2500 cpm
Vit: 3D	*InnoVit*®	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 100 mmHg 1800 cpm 100 cpm	0-600 mmHg (0-450) 100-1800 cpm
	Accurus®	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 150 mmHg 800 cpm 100 cpm	0-600 mmHg (0-450) 100-800 cpm
	Accurus® 1500	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 150 mmHg 1500 cpm 100 cpm	0-600 mmHg (0-450) 100-1500 cpm
	Accurus® 2500	Pedal Start Vacuum Full Pedal Vacuum Pedal Start Cut Rate Full Pedal Cut Rate	0 mmHg 150 mmHg 2500 cpm 100 cpm	0-600 mmHg (0-450) 100-2500 cpm

Table 12-1 COMBINED DEFAULT SETTINGS AND ADJUSTABLE RANGES (part 1 continued)

Mode or Function	Submode	Function	Default Value	Adjustable Range
Frag	Fixed	Vacuum Max Limit U/S Power Pulse Rate	150 mmHg 50% 5 pps (off)	0-600 mmHg (0-450) 0-100% 0-15 pps
	Linear	Vacuum Max Limit U/S Power Pulse Rate	80 mmHg 50% 5 pps (off)	0-600 mmHg (0-450) 0-100% 0-15 pps
	Momentary	Vacuum Max Limit U/S Power Pulse Rate	150 mmHg 50% 5 pps (off)	0-600 mmHg (0-450) 0-100% 0-15 pps
	3D	Vac Max Limit *Treadle Start* *Treadle Full* U/S Power *Treadle Start* *Treadle Full*	 0mmHg 80 mmHg 0% 50%	 0-600 mmHg (0-450) 0-600 mmHg (0-450) 0-100% 0-100%
Scissors	Proportional Cut Calibrate	Pressure Max Limit Start Pressure Close Pressure	21.5 psi 10.5 psi 21.5 psi	0.5-40 psi 0.0-30 psi 0.5-40 psi
	Multiple Cut	Cut Rate Max Limit	300 cpm	1-300 cpm
	Multiple Cut - Vacuum	Vacuum Max Limit Cut Rate Set Point	400 mmHg 250 cpm	0-600 mmHg (0-450) 1-300 cpm
	MPC	Cut Rate Max Limit	300 cpm	1-450 cpm
	MPC - Vacuum	Vacuum Max Limit Cut Rate Set Point	400 mmHg 300 cpm	0-600 mmHg (0-450) 1-450 cpm
Extrude	High	Vacuum Max Limit	250 mmHg	0-600 mmHg (0-450)
	Medium	Vacuum Max Limit	150 mmHg	0-600 mmHg (0-450)
	Low	Vacuum Max Limit	50 mmHg	0-600 mmHg (0-450)
VFC	Injection	Pressure Max Limit Vacuum Max Limit	30 psi 250 mmHg	0-80 psi (0-70) 0-600 mmHg (0-450)
	Dual	Pressure Max Limit Vacuum Max Limit	30 psi 100 mmHg	0-80 psi (0-70) 0-600 mmHg (0-450)
	Extraction	Vacuum Max Limit	500 mmHg	0-600 mmHg (0-450)
Infusion	VGFI™*	Pressure Alt Pressure	30 mmHg 60 mmHg	0-120 mmHg 0-120 mmHg
	Power Pole	Pressure Alt Pressure	30 mmHg 60 mmHg	5-85 mmHg 5-85 mmHg
F/AX		Pressure Alt Pressure	35 mmHg 60 mmHg	0-120 mmHg 0-120 mmHg
Diathermy		Voltage	50%	0-100%
Illumination		Intensity	80%	0-HI3

Table 12-2 COMBINED DEFAULT SETTINGS AND ADJUSTABLE RANGES (part 2)

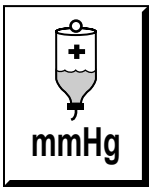
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Using the Global Functions

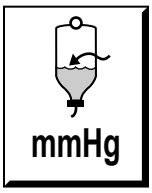
The global keys, shown in Figure 2-9, are used to select global functions (except for the Diathermy key which is always enabled for footswitch control). When selected, the global function key is highlighted, the corresponding global parameter value in the LED display is illuminated, and the console connector is illuminated to help connect the accessory. The corresponding rubber arrow buttons are used to adjust the global function parameter values, which change at a faster rate when the key is held down. The preset parameter values are displayed on the LED displays.

Five global functions, accessed by pressing their icon keys on the left side of the touch screen, are unique to the system's posterior domain.

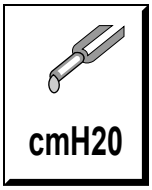
- Infusion: CVGFI or Power IV Pole (mmHg or cmH2O)
- F/AX Infusion (mmHg)
- Diathermy (%)
- Illuminator #1 (Illum1)
- Illuminator #2 (Illum2)



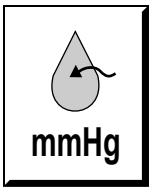
OR



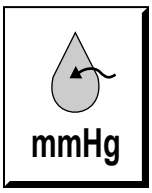
Infusion - The top global selection on the touch screen is enabled in the posterior domain. When **CVGFI** is selected in the *Irrigation/Infusion Settings* screen, the *Accurus*® low pressure air supply provides regulated pressure into the infusion bottle and to the F/AX stopcock. Alternate infusion pressure, set and enabled in the *Irrigation/Infusion Settings* screen, is activated by pressing a switch on the footswitch. If **Power Pole** is the selected infusion method, this control is used to set the desired infusion pressure which automatically sets the power IV pole height. If **Gravity** is selected, infusion value is non-adjustable (manually adjusted gravity fed infusion is independent of the *Accurus*® system).



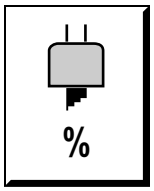
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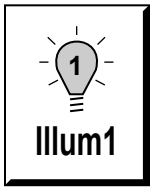
Irrigation - The second global selection from the top turns continuous irrigation ON in the anterior submode domain (Phaco, I/A, Wet Ant). Pressing it again turns continuous irrigation OFF. CVGFI utilizes the *Accurus*® low pressure air supply to provide regulated pressure into the irrigation bottle. Alternate irrigation pressure, set and enabled in the *Irrigation Settings* screen, is activated by pressing the footswitch's right vertical switch. If **Power Pole** is the selected irrigation method, this control is used to set the desired irrigation pressure which automatically sets the cart's power pole height. If **Gravity** is selected in phaco and I/A modes, this global key can be used to turn continuous irrigation on and off (manually adjusted gravity fed irrigation is independent of the *Accurus*® system).



F/AX Infusion - While in a posterior submode domain (Frag, Scissors, Extrude, VFC, non-anterior Vit modes) and using either Power Pole or Gravity infusion, selecting F/AX (Fluid/Air Exchange) cancels infusion and places the global F/AX key in the second position from the top. F/AX utilizes the *Accurus*® low pressure air supply to provide regulated pressure into the eye. Using a CVGFI tubing set you can provide air to the eye through its stopcock valve. Alternate F/AX pressure, chosen in the *Irrigation/Infusion Settings* screen, is activated by pressing a footswitch switch.



Diathermy - The diathermy global selection is activated through a footswitch switch, and not through the global selection touch screen. Diathermy power is only provided to the handpiece when the switch is pressed, and turns OFF when it is released.



Illuminators - Pressing the **Illum 1** or **Illum 2** global key turns the lamp in the selected illuminator port ON or OFF.

Presurgical Setup Instructions

The following setup instructions include one column for user's directions, and a second column that lists the responsible team member. Generally, the Circulating Nurse is in the non-sterile field, and the Scrub Nurse is in the sterile field.

Sterile materials packaged inside Alcon Paks must be set up to protect the sterile surgical environment. These instructions are written to help you protect that environment.

NOTE: If inconsistencies exist between these instructions and Directions For Use (DFU) supplied with a consumable pak, follow the DFU.

WARNING!

Follow local governing ordinances and recycling plans regarding disposal or recycling of device components and packaging.

Directive	Team Member
***TOTAL PLUS*® COMBINED PROCEDURE PAK SETUP**	
Initial Preparation	
1. Peel lid from *Total Plus*® Combined Procedure Pak and aseptically transfer inner pouch to Scrub Nurse.	Circulating Nurse
2. Accept inner pouch from Circulating Nurse. Tear open pouch and remove its contents. Unfold the tray cover and aseptically wrap it over the tray. Unfold the instrument drape and attach it over the *Accurus*® control panel.	Scrub Nurse
3. Turn system power ON, and after initial self tests are completed, select **Combined** mode of operation.	Circulating Nurse or Scrub Nurse

Directive	Team Member
4. Remove cassette with attached drain bag from pak. Unfold drain bag, allowing it to hang freely, and insert cassette into console cassette well (see Figure 12-2). Ensure that latch engages. **NOTE: After *Accurus*® system accepts the cassette and performs a vacuum test, the Test and Clean icons return to normal colors.**	Circulating Nurse

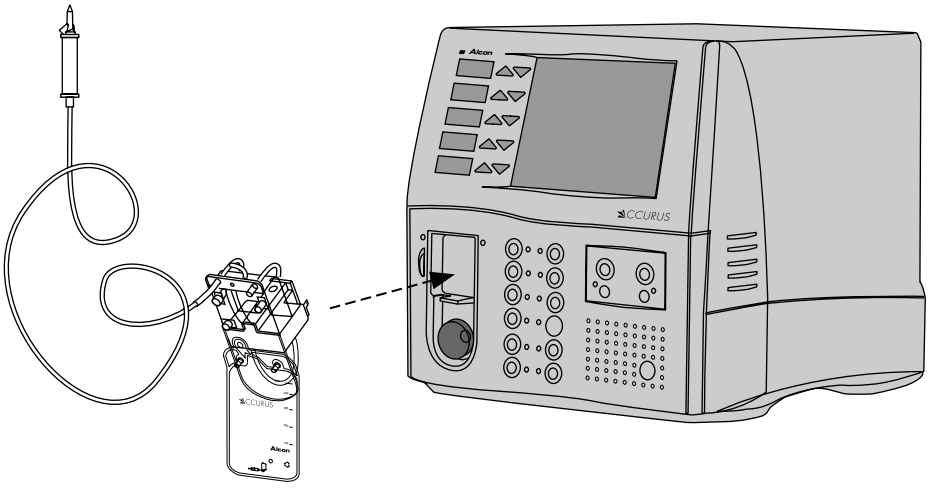


Figure 12-2. COMBINED FLUID CASSETTE INSERTION - With power turned ON, and initial self tests completed, the fluid cassette with drain bag is inserted into the front of the *Accurus*® cassette housing.

Infusion Setup

5. Remove green striped tubing from *Total Plus*® Combined Procedure Pak and pass yellow connector to Circulating Nurse. Remove infusion cannula from pak and connect to stopcock (see Figure 12-3). Ensure the stopcock handle is positioned as illustrated. Set the stopcock/ cannula in the sterile field. If desired, alternate stand alone cannulas can be used in place of the standard cannula. • If oil is to be injected later in the procedure, you can connect the alternate silicon oil infusion cannula. • An end irrigating fiber optic probe may be used. The lumen of this probe is more restrictive to flow than a standard infusion cannula, so it requires higher infusion pressure and lower vacuum.	Scrub Nurse

WARNING!

Addition of extension tubing to infusion and/or vacuum lines will change fluidic characteristics of the *Accurus*® system, and is NOT recommended.

Directive	Team Member
6. Connect yellow connector on green striped tubing to yellow connector on cassette.	Circulating Nurse
7. After cassette has successfully loaded, do the following: • Gravity and Power Pole - Proceed to step 8. • CVGFI - Proceed to the Combined Vented Gas Forced Irrigation Setup procedure later in this section of the manual, then continue at step 12.	
8. Aseptically spike irrigation bottle with the drip chamber and hang it from IV pole. Squeeze drip chamber until it is a little more than half full of fluid.	Circulating Nurse
9. Press the **Settings** key on the *Combined Surgery Setup* screen, then in the *Irrigation/Infusion Settings* **Type** tab select **Gravity** or **Power Pole**. Select options in the **Infusion** and **Irrigation** tabs. Press **Apply**.	Scrub Nurse
10. Set the correct irrigation bottle height.	Circulating Nurse or Scrub Nurse
11. Prepare a cup to accept fluid from the infusion line cannula (the cup of fluid will be used to prime the vitrectomy probe's aspiration line). With the snap clamp on the infusion line open, press the top infusion global key to prime the infusion line. After partially filling a cup, press the infusion global key to turn the fluid flow off.	Scrub Nurse

WARNING!

Visually confirm adequate infusion flow from the infusion cannula prior to attachment to the eye.

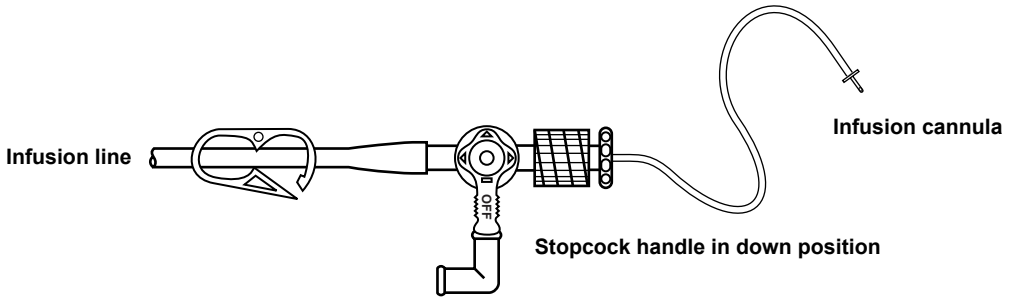


Figure 12-3. INFUSION LINE STOPCOCK - The stopcock is prepared with the infusion cannula.

* FOR REFERENCE ONLY *

Directive	Team Member
Vitrectomy Probe Setup	
12. Select the appropriate vitrectomy probe in the *Combined Surgery Setup* screen.	Scrub Nurse
13. Remove the protective cover from the vitrectomy probe and place the probe tip into the fluid-filled cup for aspiration line priming and testing. Present the tubing connectors to Circulating Nurse.	Scrub Nurse
14. Accept tubing connectors from Scrub Nurse and connect them to the console's illuminated connectors as instructed below (see Figure 12-4): • Connect aspiration line (blue striped tubing with blue connector) to the cassette's upper-right connector. • Connect pressure line (clear tubing/clear connector) as follows: - For *Accurus*®, *Accurus*® 1500, or *InnoVit*® probe, connect pressure line to the console's top connector. - For *Accurus*® 2500 probe, connect pressure line to the console's second connector from the top. - For *InnoVit*® probe, connect its other pressure line (white striped tubing with white connector) to the second connector from the top.	Circulating Nurse
15. Test probe as instructed in step 23.	Scrub Nurse

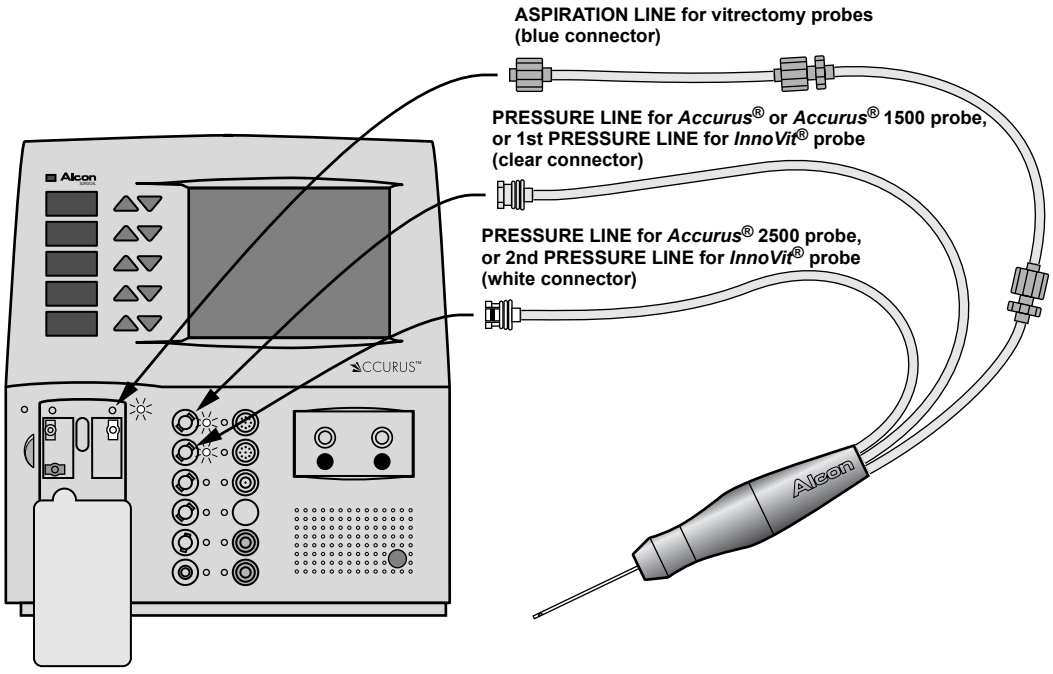


Figure 12-4 VITRECTOMY PROBE CONNECTIONS - You can connect an *Accurus*® probe or *InnoVit*® probe (shown) to the *Accurus*® console as shown above.

Directive	Team Member
Phaco Setup	
For Frag setup go to *Fragmatome™* * Accessory Pak Setup on page 12.22	
16. Press **Phaco.** Plug phaco handpiece cable into illuminated connector on console (see Figure 12-5). Present sterile handpiece to Scrub Nurse.	Circulating Nurse
17. Accept handpiece from Circulating Nurse. Remove clear (irrigation) and red-striped (aspiration) tubing from pak. Plug blue and white connectors into phaco handpiece. Pass other end of tubing to Circulating Nurse.	Scrub Nurse
18. Accept tubing from Scrub Nurse. Plug red and white tubing connectors into the cassette's red and white connectors.	Circulating Nurse
19. Screw a 0.9 mm tip onto handpiece and tighten with tip wrench. Install irrigation sleeve with bubble suppression insert.	Scrub Nurse
CAUTIONS **• Use of a tool other than the tip wrench supplied in the Pak may cause damage to the phaco tip and handpiece.** **• *Mackool*** handpiece utilizes a reverse thread on its tip; to tighten the tip turn it counterclockwise, to loosen the tip turn it clockwise.**	
20. Enable Continuous Irrigation by pressing the Irrigation key (second global key from the top, labeled either **mmHg** or **cmH20**), or by pressing and releasing the correct switch on the footswitch.	Scrub Nurse
21. Fill the test chamber with fluid as it streams out of the handpiece irrigation ports, then slide the test chamber over the sleeve/tip. Turn Continuous Irrigation OFF by pressing the Irrigation key.	Scrub Nurse
22. Test handpiece as instructed below and at step 33, then select either **Linear**, **Burst,** or **Fixed** submode.	Scrub Nurse
Priming and Testing/Tuning	
23. Before priming and testing/tuning, verify the tips of aspirating probes and handpieces are immersed in the fluid-filled cup or test chamber. U/S tips must be freely suspended in fluid to successfully tune.	Scrub Nurse
24. Before priming and testing/tuning, verify the correct modes of operation are selected on the *Combined Surgery Setup* screen.	Scrub Nurse
25. Press **Test** on the *Combined Surgery Setup* screen. Upon completion of the prime and test/tune sequences the popup screen disappears, continuous irrigation turns OFF, and the system enters the *Surgery* screen.	Scrub Nurse

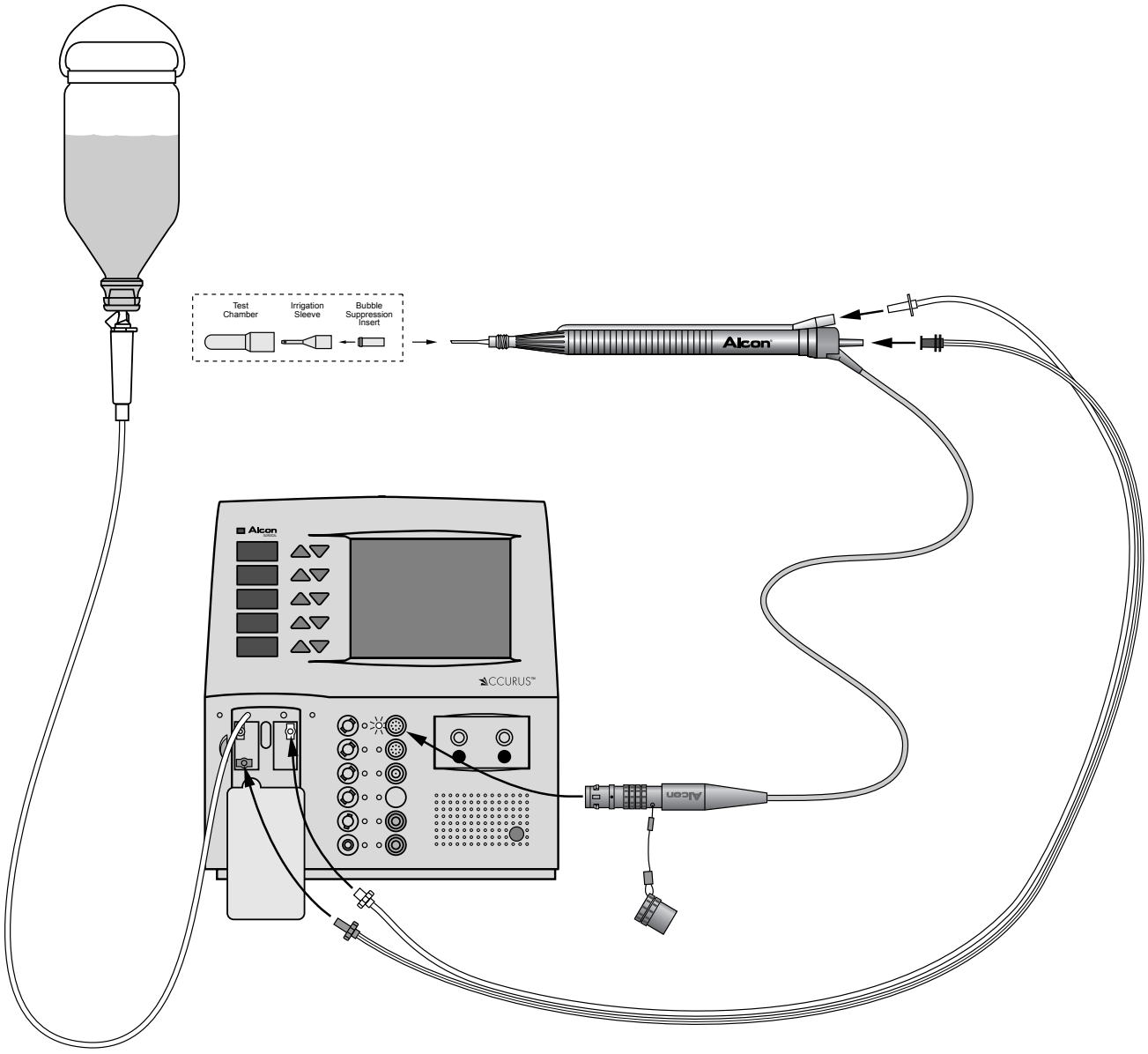


Figure 12-5 **PHACO SETUP - For phacoemulsification procedures the combined pak requires connection of the irrigation and aspiration lines between the cassette and handpiece, and the cable into the front panel connector. For the CVGFI method of irrigation, refer to its setup procedure later in this section of the manual.**

Directive	Team Member
I/A Handpiece Setup	
The I/A handpiece uses the same tubing as the phaco handpiece. If the phaco handpiece was set up in the prior procedure, the tubing must be disconnected from that handpiece and used with this I/A handpiece.	
26. Aseptically present sterile I/A handpiece to Scrub Nurse.	Circulating Nurse
27. Accept handpiece from Circulating Nurse. Remove clear (irrigation) and red-striped (aspiration) tubing from pak and plug blue and white connectors into I/A handpiece (see Figure 12-6). Pass other end of tubing to Circulating Nurse.	Scrub Nurse
28. Accept tubing from Scrub Nurse. Plug red and white tubing connectors into the cassette's red and white connectors.	Circulating Nurse
29. Screw an I/A tip onto handpiece and tighten with wrench supplied in pak. Install irrigation sleeve.	Scrub Nurse
CAUTION **Use of a tool other than the tip wrench supplied in the pak may cause damage to the I/A tip and handpiece.**	
30. Enable Continuous Irrigation by pressing the **Irrigation** key (second global key from the top, labeled either **mmHg** or **cmH20**), or by pressing and releasing the correct switch on the footswitch.	Scrub Nurse
31. Fill the test chamber with fluid as it streams out of the handpiece irrigation ports, then slide the test chamber over the sleeve/tip. Turn Continuous Irrigation OFF by pressing the **Irrigation** key.	Scrub Nurse
32. Test handpiece as instructed on next page, then select either **I/A Max** or **I/A Cap Vac** submode.	Scrub Nurse

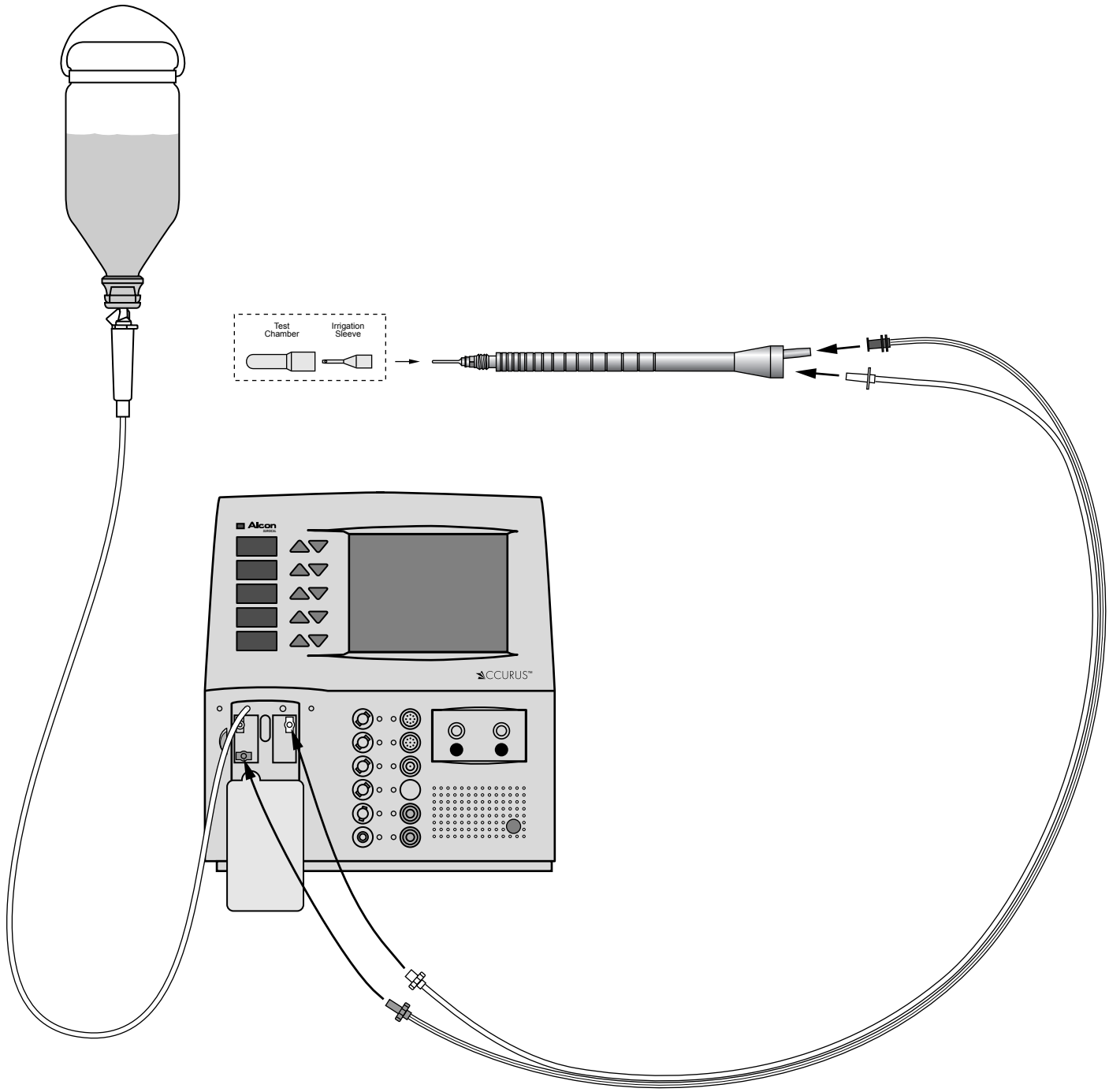


Figure 12-6 **I/A SETUP - For irrigation/aspiration procedures the combined pak requires connection of the irrigation and aspiration lines between the cassette and handpiece. For the CVGFI method of irrigation, refer to its setup procedure later in this section of the manual.**

Directive	Team Member

I/A and Phaco Fluidics Balance Test

WARNINGS!

- **The ultrasonic (U/S) handpiece must be at room temperature before use. Allow handpiece to AIR COOL for at least 15 minutes after steam autoclave. Never immerse in liquid to cool.**
- **Use of the phaco handpiece in the absence of irrigation flow and/or in the presence of reduced or lost aspiration flow can cause excessive heating and potential corneal and/or tissue burns.**
- **Use only Alcon-certified *Mackool*** or *Turbosonics*® *MicroTip*™ configurations (0.9 mm). Alcon does not recommend the use of standard *Turbosonics*® tips (1.1 mm) with the *Accurus*® drive system.**
- **It is important that irrigation and aspiration parameters are set at safe levels when using the 0.9 mm tip on a phaco handpiece.**

33. Remove test chamber from tip, then depress footpedal to position 1 and observe the fluid streaming from the handpiece irrigation ports. If the fluid stream is absent or weak, good fluidics response will be jeopardized. Replace test chamber.	Scrub Nurse
34. Pinch aspiration line close to the handpiece to simulate an occlusion. Fully depress footpedal to start fluid flow.	Scrub Nurse
35. Release aspiration line and observe test chamber. The chamber should maintain its shape or dimple slightly and recover its shape. After observing chamber, release footpedal to stop fluid flow.	Scrub Nurse
36. If results are not as described, adjust irrigation pressure and/or vacuum and repeat test.	Scrub Nurse

Directive	Team Member
Extrusion Handpiece Setup	
The extrusion handpiece uses the same tubing (aspiration only) as the phaco handpiece and I/A handpiece. If one of these handpieces was set up in a prior procedure, the tubing must be disconnected from that handpiece and used with this extrusion handpiece.	
37. Present a sterilized white extrusion handpiece to Scrub Nurse.	Circulating Nurse
38. Accept handpiece from Circulating Nurse. Remove clear (not used) and red-striped (extrusion) tubing from pak and, using the white male/male adapter in the accessories kit, plug the blue connector into handpiece (see Figure 12-7). Place handpiece in fluid filled cup for aspiration line priming. Present red connector to Circulating Nurse.	Scrub Nurse
39. Accept the red tubing connector from Scrub Nurse and connect it to the red cassette connector.	Circulating Nurse
40. Press **Extrude** key. Press **Options/Test** to prime extrusion handpiece.	Scrub Nurse

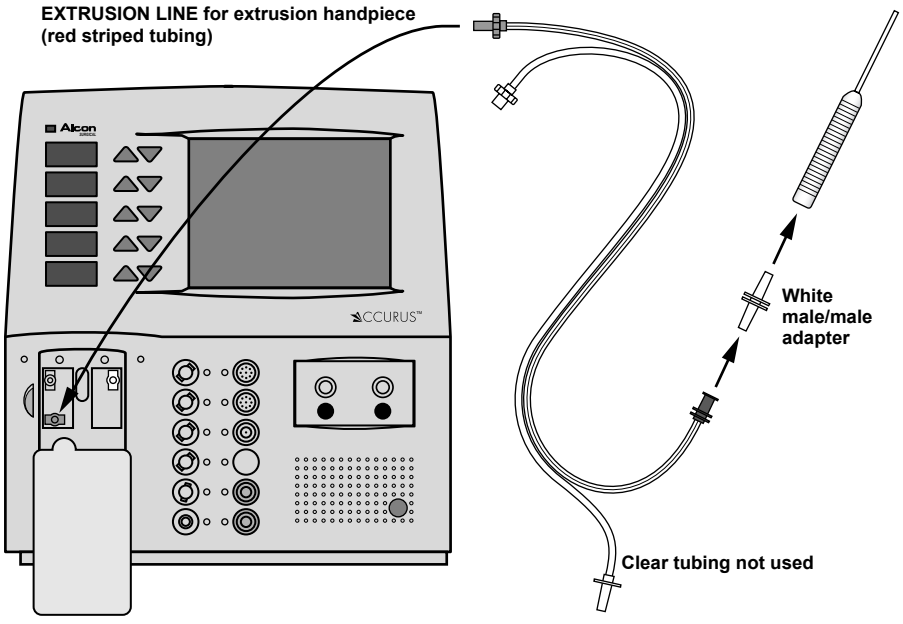


Figure 12-7 EXTRUSION LINE CONNECTION - The red striped tubing is connected between the extrusion handpiece and *Accurus*® system as diagrammed above.

Directive	Team Member

Fiber Optic Illuminator Setup

41. Remove the fiber optic illuminator probe/fiber from the pak, carefully uncoil the fiber, and present the metal connector to Circulating Nurse. — Scrub Nurse

42. Accept the metal connector from Scrub Nurse and, using the adaptor chained to the illuminator drawer, plug it into the desired illuminator connector (see Figure 12-8). Verify it is fully seated in the adaptor. — Circulating Nurse

43. Slide the protective sheath from the tip of the illuminator probe. Press the appropriate global **Illuminator** key to turn the illuminator ON. Adjust the intensity as needed. Turn illuminator OFF when not in use. — Scrub Nurse

Optional fiber optic illuminator probes can be connected to the second illuminator connector, supplementing the standard probe. Optional probes include the following: bare-end, straight pick, pre-bent pick, wide angle, shielded bullet, illuminated laser, and end irrigating. Some of these probes deliver substantially less light output than the standard probe, necessitating higher brightness levels.

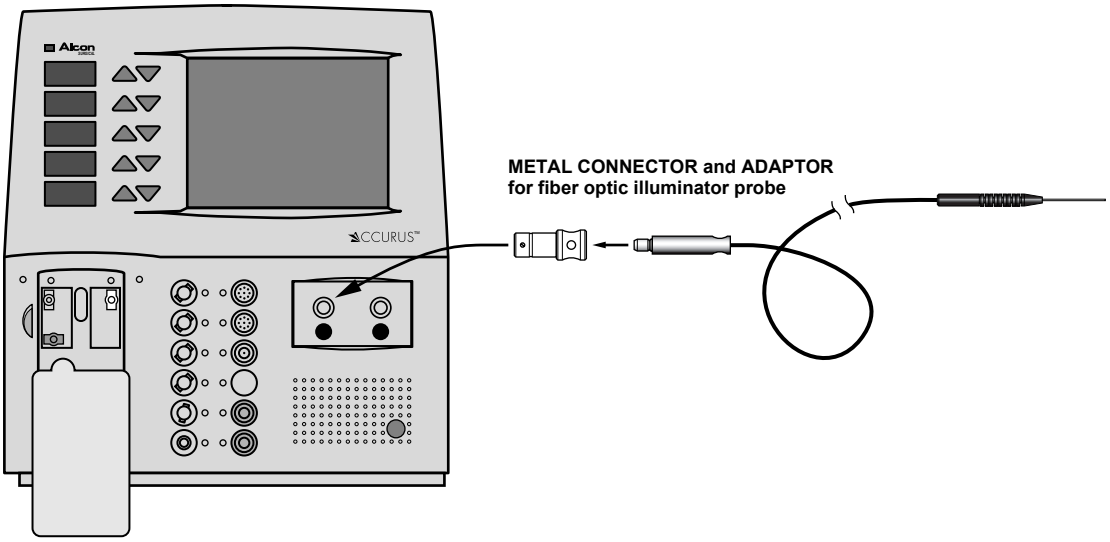


Figure 12-8 ILLUMINATOR PROBE CONNECTOR - The fiber optic illuminator plugs into an adaptor and then into the illuminator drawer.

Directive	Team Member

Using the 20 cc Syringe

The 20 cc syringe may be temporarily connected to the vitrectomy handpiece aspiration line when manual suction or backflushing is desired.

44. Disconnect tubing in center of aspiration line (see Figure 12-9). — Scrub Nurse

45. Remove syringe from the pak and plug into female connector on aspiration line. — Scrub Nurse

46. Upon completion of suction or backflushing procedure, remove syringe from aspiration line and plug aspiration line connectors back together. — Scrub Nurse

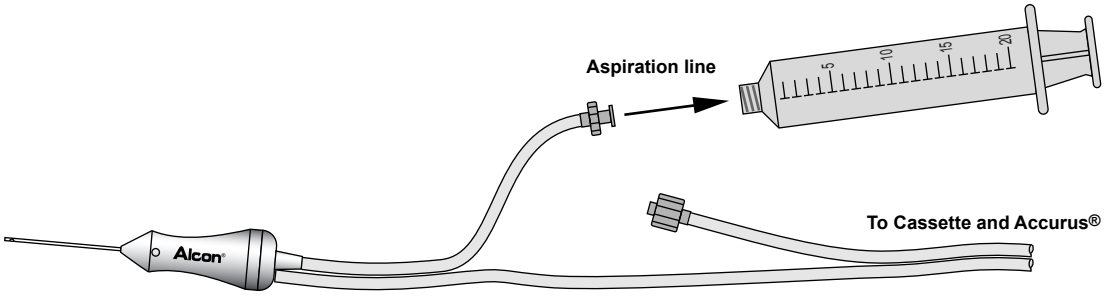


Figure 12-9 20 CC SYRINGE CONNECTION - The syringe is connected to the aspiration line between the *Accurus*® vitrectomy probe and *Accurus*® console.

Directive	Team Member

COMBINED VENTED GAS FORCED INFUSION (CVGFI) SETUP

1. Press **Settings** on the *Combined Surgery Setup* screen. In the *Irrigation/Infusion Settings* **Type** tab select **CVGFI**, and in the **Irrigation/Infusion** tabs select your desired options. Press **Apply**. — Scrub Nurse

2. Open Combined Procedure *VGFI*™ * Tubing Set package and present contents to Scrub Nurse. — Circulating Nurse

3. Remove the top clear tubing coil and attach clear tubing connector to side port of infusion line stopcock. Press **CVGFI-F/AX** in the *Accessories* section of the *Combined Surgery Setup* screen. — Scrub Nurse

4. Remove remaining contents from package and connect lines as follows (see Figure 12-10): — Circulating Nurse
   - Attach air line filter to illuminated front panel connector.
   - Disconnect irrigation tubing/drip chamber from cassette and discard.
   - Connect green irrigation line to illuminated connector on cassette.

> ***WARNING!***
> **Ensure filter is in place and is used in conjunction with the consumable. Removal of filter can expose patient to contamination.**

5. Press the **Irrigation** key two times (second global function key from the top, labeled either mmHg or cmH20) to turn the air pump ON and irrigation OFF. Press its up/down buttons to adjust the pressure level set point. — Scrub Nurse

6. Pre-spike the infusion bottle using the spiking tool, wait three seconds, then remove. Carefully insert drip chamber/vent tube into bottle. Hang the bottle so its liquid level is at patient eye level. Squeeze drip chamber until it is a little more than half full of fluid. — Circulating Nurse

7. Prepare a cup to accept fluid from the infusion line. With the infusion line snap clamp open, press the **Infusion** key (top global function key, labeled either mmHg or cmH20)to prime the infusion line, and after partially filling a cup with approximately 50 ml of fluid, press the **Infusion** key again to stop. The cup of fluid will be used to prime the aspiration line of the vitrectomy probe. — Scrub Nurse

> ***WARNING!***
> **Visually confirm adequate infusion flow from the infusion cannula prior to attachment to the eye.**

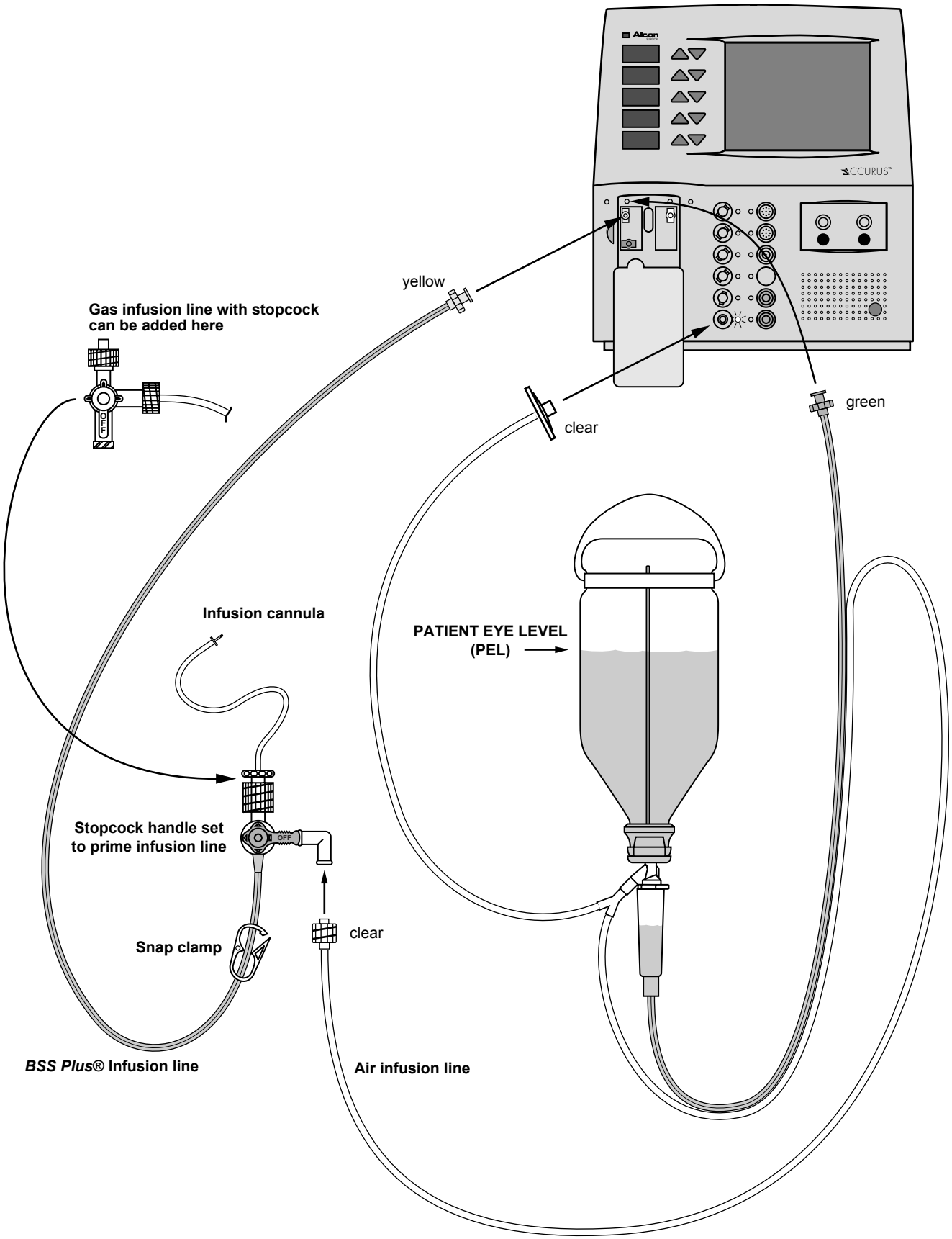


Figure 12-10 COMBINED VENTED GAS FORCED INFUSION CONNECTIONS - CVGFI tubing is connected to the *Accurus*® system, the bottle of *BSS Plus*® intraocular irrigating solution, and the infusion cannula as diagrammed above. A second stopcock can be added to include gas infusion as well.

Directive	Team Member
FRAGMATOME™* ACCESSORY PAK SETUP	
1. Open *Fragmatome™ ** accessory pak and present contents to Scrub Nurse.	Circulating Nurse
2. Accept contents of accessory pak from Circulating Nurse.	Scrub Nurse
3. Present a sterilized *Fragmatome™ ** handpiece to Scrub Nurse.	Circulating Nurse
4. Accept the handpiece from Circulating Nurse and present the handpiece cable connector to Circulating Nurse.	Scrub Nurse
5. Accept cable connector from Scrub Nurse. Select **Frag** on the *Combined Surgery Setup* screen and plug the cable connector into the illuminated receptacle (see Figure 12-11); the red dot on the cable connector must align with the red dot on the console receptacle.	Circulating Nurse
6. Thread *Fragmatome™ ** tip into handpiece and tighten with tip wrench. Use only the tip and wrench from the accessory pak.	Scrub Nurse
7. Remove clear (irrigation) and red-striped (aspiration) tubing from Combined pak. Plug blue connector into handpiece (let white connector hang freely). Pass other end of tubing to Circulating Nurse.	Scrub Nurse
8. Accept tubing from Scrub Nurse and plug red tubing connector into the red cassette connector (let white connector hang freely).	Circulating Nurse
9. Place *Fragmatome™ ** tip into the fluid-filled cup for aspiration line priming and handpiece tuning.	Scrub Nurse
<u>Priming and Testing/Tuning</u>	
10. Before priming and testing/tuning, verify the tips of aspirating probes and handpieces are immersed in the fluid-filled cup or test chamber. U/S tips must be freely suspended in fluid to successfully tune.	Scrub Nurse
11. Before priming and testing/tuning, verify the correct modes of operation are selected on the *Combined Surgery Setup* screen.	Scrub Nurse
12. Press **Test** on the *Combined Surgery Setup* screen. Upon completion of the prime and test/tune sequences the popup screen disappears, continuous irrigation turns OFF, and the system enters the *Surgery* screen.	Scrub Nurse

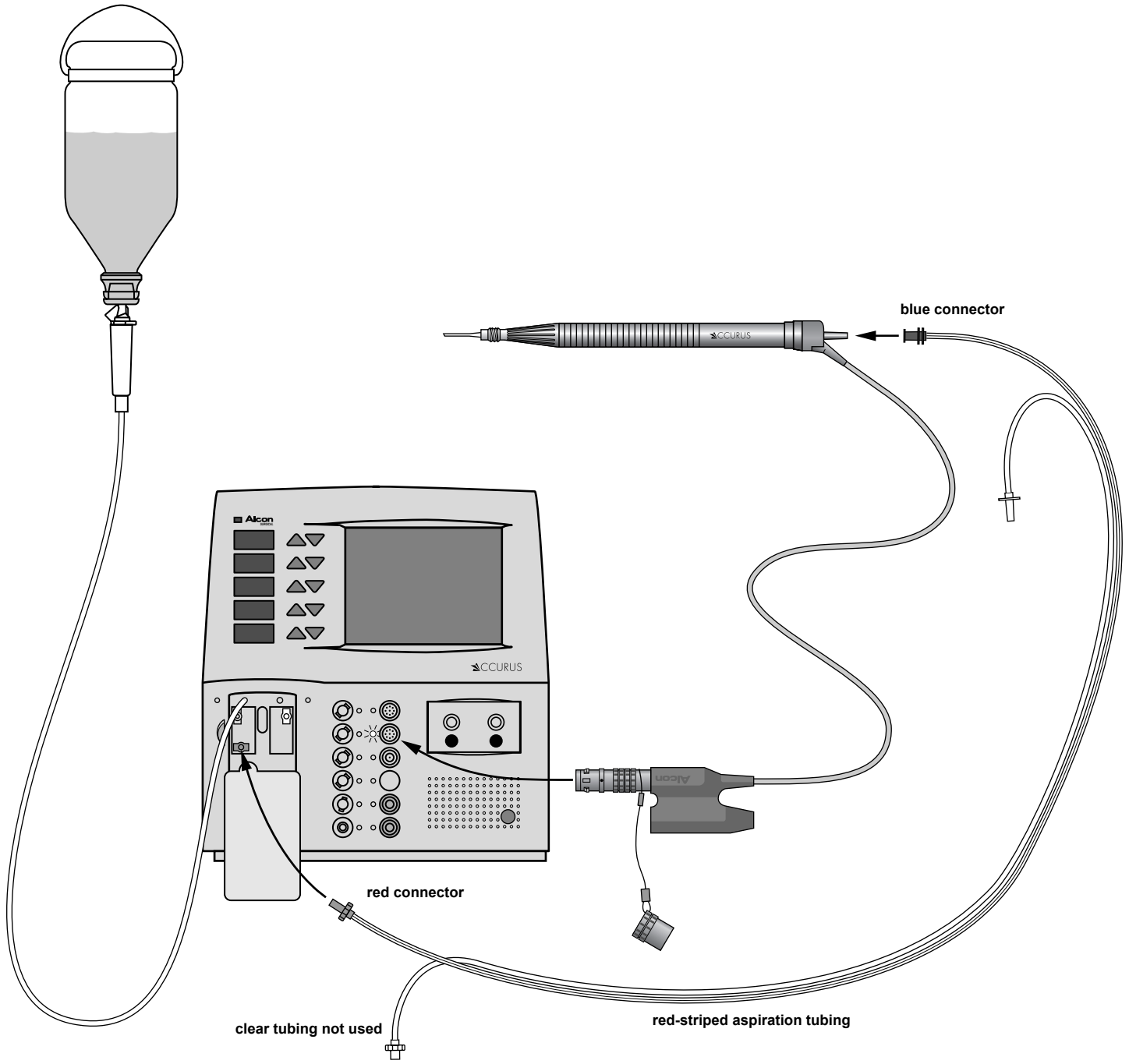


Figure 12-11 ***FRAGMATOME***™* **HANDPIECE TUBING CONNECTIONS - Handpiece tubing and electrical connections are plugged in as diagrammed above.**

Directive	Team Member

INTRAOCULAR SCISSORS (IOS) SETUP

Intraocular Scissors (IOS) tubing is used in conjunction with the Alcon IOS handpiece. Limited reuse IOS tubing is shipped non-sterile, and the IOS handpiece is reusable, therefore they both must be steam sterilized prior to use. Sterilization instructions for the IOS tubing and handpiece are included in Section Five of this operator's manual.

1. Open a Vertical Microscissors package (containing a sterile, single use, 1 mm MicroScissors tip) and present contents to Scrub Nurse.	Circulating Nurse
2. Accept contents of package from Circulating Nurse.	Scrub Nurse
3. Present a sterile IOS handpiece to Scrub Nurse.	Circulating Nurse
4. Accept IOS handpiece from Circulating Nurse and screw MicroScissors tip onto handpiece; tighten finger tight (see Figure 12-12).	Scrub Nurse
5. Present sterile IOS tubing to Scrub Nurse.	Circulating Nurse
6. Accept IOS tubing from Circulating Nurse and press its bare end over the handpiece's shaft. Pass IOS tubing connector to Circulating Nurse.	Scrub Nurse
7. Accept IOS tubing connector from Scrub Nurse. Select **Scissors** on the *Combined Surgery Setup* screen and connect tubing to the illuminated scissors connector. Calibrate scissors tip as required (see Scissors Mode in Section Eleven of this manual).	Circulating Nurse

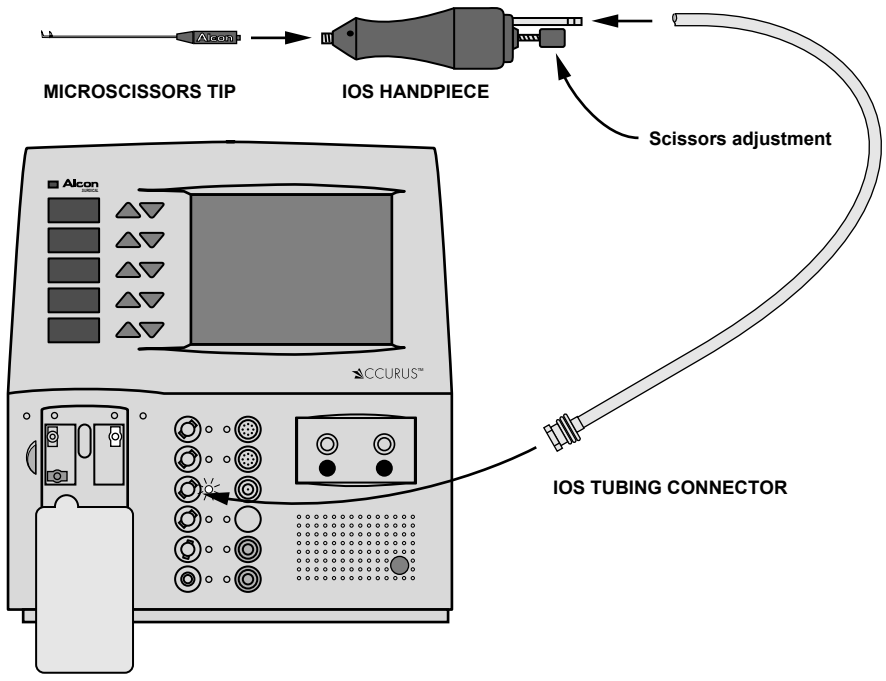


Figure 12-12 SCISSORS LINE CONNECTION - The scissors line is connected between the scissors handpiece and *Accurus*® console as diagrammed above.

* FOR REFERENCE ONLY *

Directive	Team Member

MPC SCISSORS SETUP

The MPC scissors handpiece is reusable, therefore it must be steam sterilized prior to use. Sterilization instructions are included in Section Thirteen of this operator's manual.

1. Press **MPC** in the *Accessories* section of the *Combined Surgery Setup* screen.	Scrub Nurse
2. Present a sterile MPC scissors handpiece to Scrub Nurse.	Circulating Nurse
3. Accept MPC scissors from Circulating Nurse.	Scrub Nurse
4. Present electrical cable connector to Circulating Nurse.	Scrub Nurse
5. Accept connector from Scrub Nurse and plug into illuminated MPC scissors connector on front of *Accurus*® console (see Figure 12-13).	Circulating Nurse
6. Select **Surgery** on the *Combined Surgery Setup* screen, then press **Scissors/MPC**.	Circulating Nurse

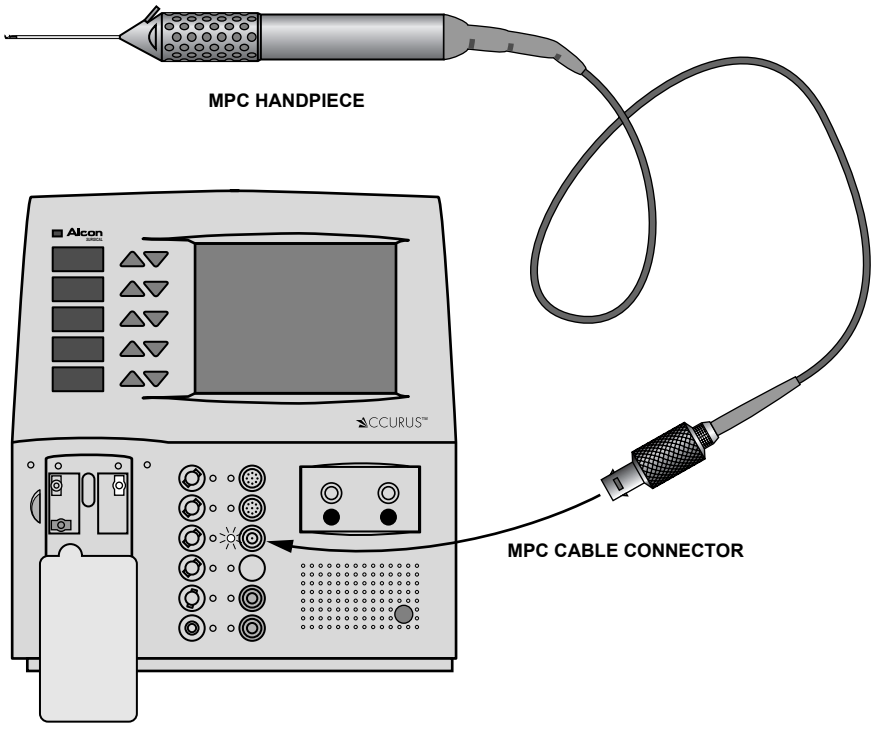


Figure 12-13 MPC SCISSORS CABLE CONNECTION - The MPC scissors cable is connected to the *Accurus*® console as diagrammed above.

Directive	Team Member

DIATHERMY SETUP

There are two types of diathermy probes and cables: reusable and single use. Reusable probes and cables must be steam sterilized prior to use. Sterilization instructions are included in Section Thirteen of this operator's manual.

1. Press **Diathermy** in the *Accessories* section of the *Combined Surgery Setup* screen. — Scrub Nurse

2. REUSABLE PROBE: Sterilize a reusable diathermy probe/cable and aseptically present to Scrub Nurse. — Circulating Nurse

   - or -

   CONSUMABLE PROBE: Open a single use diathermy probe/cable package and aseptically present contents to Scrub Nurse.

3. Accept diathermy probe/cable from Circulating Nurse. Connect cable to diathermy probe (see Figure 12-14), ensuring that instrument pins are fully seated in cable receptacle. Present banana plug connectors to Circulating Nurse. — Scrub Nurse

4. Accept banana plug connectors from Scrub Nurse. Select ***Diathermy*** on the *Vitreoretinal Surgery Setup* screen and connect the banana plugs into the illuminated Diathermy receptacles. Adjust the Diathermy power level as required. — Circulating Nurse

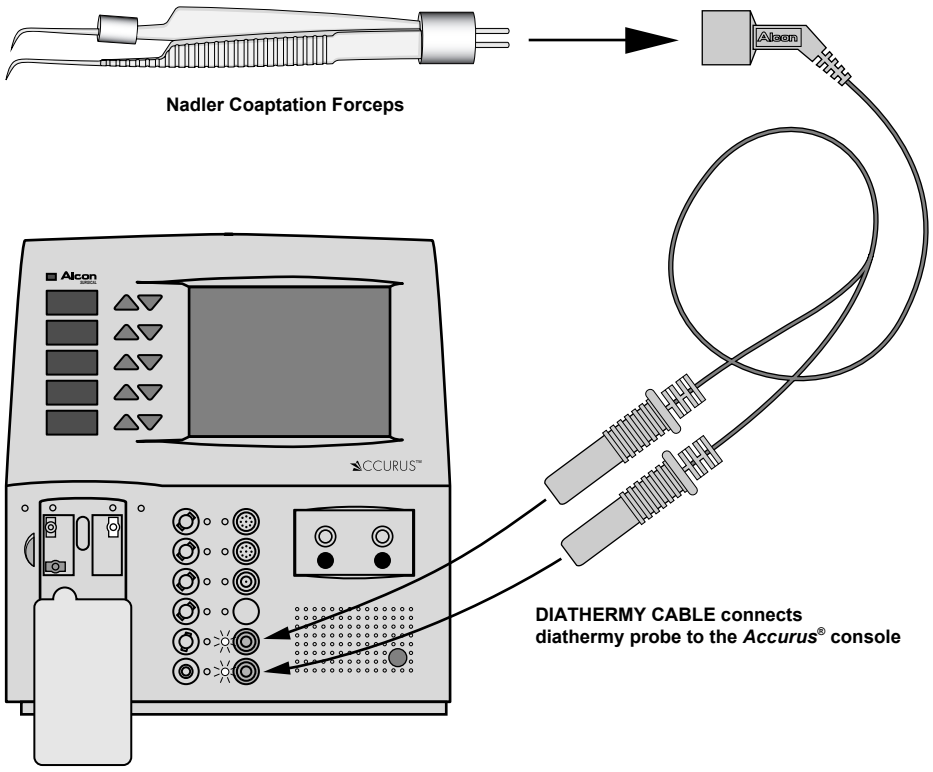


Figure 12-14 DIATHERMY PROBE CONNECTION - The diathermy probe is connected to the two plugs on the *Accurus*® console as diagrammed above.

* FOR REFERENCE ONLY *

Directive	Team Member
VISCOUS FLUID CONTROL (VFC) SETUP	
1. Open a sterile Viscous Fluid Injector (VFI) pak and present contents to Scrub Nurse.	Circulating Nurse
2. Accept contents of pak from Circulating Nurse. Pass connector end of VFI tubing to Circulating Nurse. Press the **VFC** key on the *Combined Surgery Setup* screen.	Scrub Nurse
3. Accept tubing connector from Scrub Nurse and plug it into the illuminated VFC connector (see Figure 12-15).	Circulating Nurse
4. Press the **Surgery** mode key, then press the **VFC** mode key—the *VFC: Inject* screen appears. For injection proceed to step 5. For extraction proceed to step 6.	Scrub Nurse
5 VISCOUS FLUID INJECTION WITH SILICONE OIL FILLING PROCEDURE (see Figure 12-15)	
5.1 Ensure syringe tip cap is properly engaged. Following the directions for use supplied with the sterile viscous fluid, aseptically transfer viscous fluid to the syringe barrel. Care should be taken to prevent air bubbles from entering the fluid. Take special care if transferring 5000 centistoke fluid.	Scrub Nurse
5.2 Initiate syringe stopper insertion (found in small parts tray).	Scrub Nurse
5.3 Orient barrel as shown, with tip cap up. Remove the syringe tip cap to allow air to escape, and complete syringe stopper insertion.	Scrub Nurse
5.4 Keeping the cannula cover on, attach the desired surgical cannula to the syringe (0.9mm [20 gauge] diameter, 8mm long blunt cannula provided).	Scrub Nurse
5.5 Using the plastic push rod (found in the small parts tray), advance the syringe stopper to position the viscous fluid level at the cannula. Remove push rod.	Scrub Nurse
5.6 Connect the syringe barrel to the white syringe adapter by pushing down and rotating the barrel 90°. Ensure barrel flanges are totally engaged within the adapter.	Scrub Nurse

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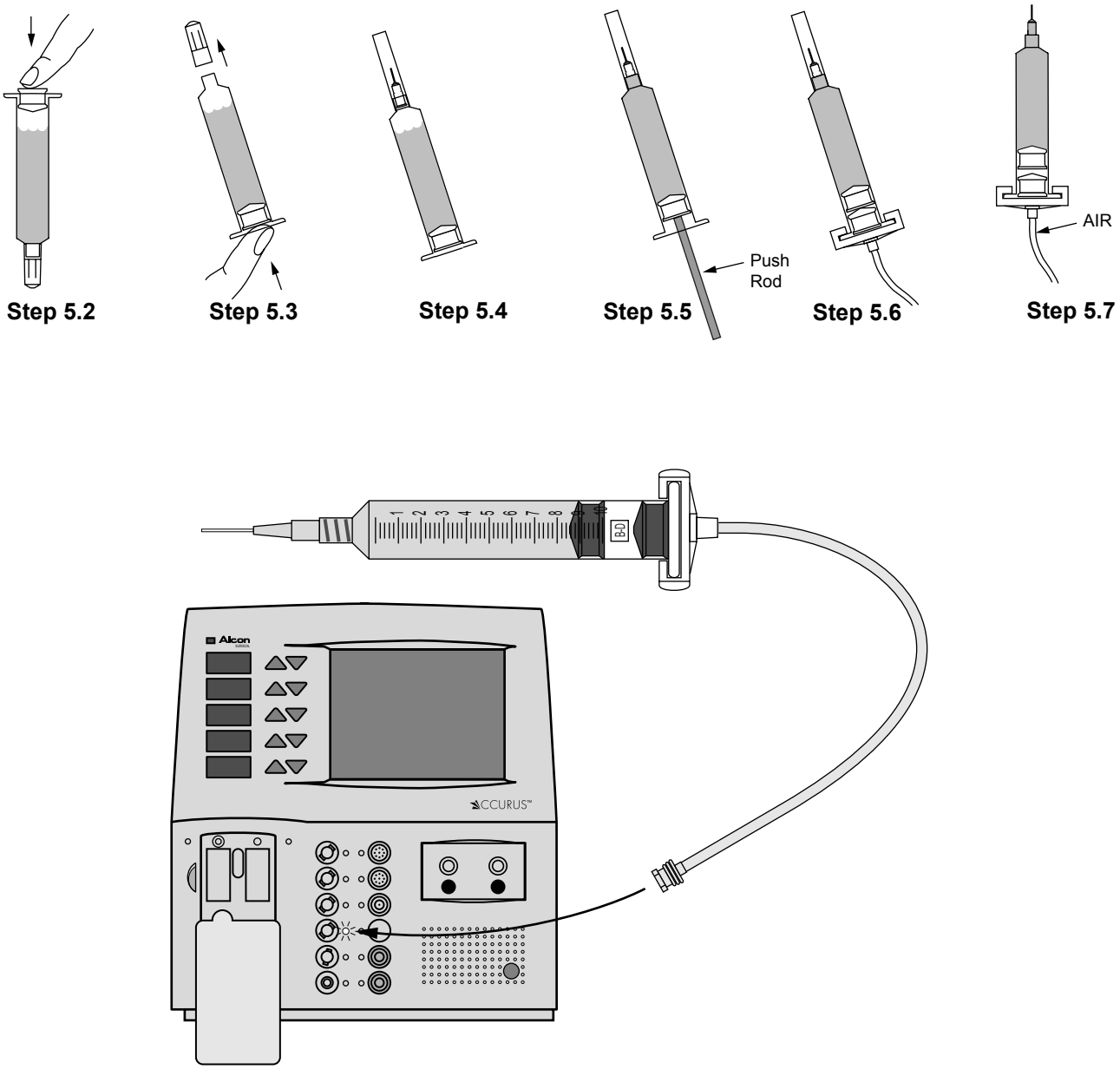


Figure 12-15 VISCOUS FLUID INJECTOR CONNECTION - For viscous fluid injection the barrel of the syringe is filled with sterile fluid and connected to the *Accurus*® console as diagrammed above. Do not use this diagram for fluid extraction, although extraction uses this same port on the connector panel.

Directive	Team Member
5.7 Remove the cannula cover. Tilt the cannula tip up and carefully pressurize the syringe to expel any remaining air. Wrap the cannula tip in sterile gauze, lint free cloth, or sponge to capture any expelled fluid. The VFC system is now ready to use.	Scrub Nurse

WARNINGS!
Do not use if air bubbles are observed passing through the fluid.

5.8 Press the arrow keys to adjust the Max Limit Pressure.	Circulating Nurse

WARNINGS!
Adjust Max Limit Pressure in accordance with the viscosity of fluids to be injected. Excessively high settings may endanger the patient.

6. DUAL VISCOUS FLUID INJECTION

6.1 Perform Viscous Fluid Control Setup procedure, then select the **Dual** submode.	Staff Circulating Nurse
6.2 Perform Extrusion Handpiece Setup procedure described earlier in this section of the operator's manual.	Staff

7. VISCOUS FLUID EXTRACTION

7.1 Perform Viscous Fluid Control Setup procedure steps 1-4.	Staff
7.2 Insert syringe stopper into syringe barrel.	Scrub Nurse

CAUTION
Failure to insert syringe stopper can allow fluids to enter the console, resulting in damage to its internal parts.

7.3 Connect cannula to tip of syringe.	Scrub Nurse
7.4 Press white syringe adapter into syringe barrel. When fully inserted, turn 90˚to secure adapter to barrel.	Scrub Nurse
7.5 Carefully depress the footpedal to pressurize the injector, pushing the syringe stopper to the bottom of the barrel. Release footpedal. Alternately, the plastic push rod may be used to push the syringe stopper to the bottom of the barrel.	Scrub Nurse
7.6 Select the **Extract** submode, then press the arrow keys to adjust the Max Limit vacuum setting.	Circulating Nurse

Directive	Team Member

ANTERIOR VITRECTOMY SETUP

A stand alone vitreous probe is required to remove vitreous from the anterior chamber; it can be used wet or dry. A wet anterior vitrectomy is performed bimanually with the Vit probe and an irrigation handpiece, or coaxially with an irrigation sleeve over the tip of the Vit probe.

1. Remove Vit handpiece with tubing from *Total Plus*® Combined Procedure Pak and present tubing connectors to Circulating Nurse. Select probe type in *Combined Surgery Setup* screen, then press **Surgery** key to enter surgery screen. Select **WetAnt** mode.	Scrub Nurse
2. Accept tubing connectors from Scrub Nurse and plug them to console's illuminated connectors as instructed below (see example for *Accurus*® and *Accurus*® 1500 probes in Figure 12-16): • Connect aspiration line (blue striped tubing with blue connector) to the cassette's upper-right connector. • Connect pressure line (clear tubing/clear connector) as follows: - For *Accurus*®, *Accurus*® 1500, or *InnoVit*® probe, connect pressure line to the console's top connector. - For *Accurus*® 2500 probe, connect pressure line to the console's second connector from the top. - For *InnoVit*® probe, connect its other pressure line (white striped tubing with white connector) to the second connector from the top. For Dry Vit procedure proceed to step 8 (irrigation tubing is not used).	Circulating Nurse
<u>For Wet Bimanual Anterior Vitrectomy</u> 3. Present irrigation handpiece, with or without irrigation manifold, to Scrub Nurse.	Circulating Nurse
4. Disconnect irrigation line from U/S, or I/A handpiece and connect to irrigation handpiece/manifold. Proceed to step 9.	Scrub Nurse
<u>For Wet Coaxial Anterior Vitrectomy</u> 5. Remove Anterior Vitrectomy Irrigation Sleeve from pak and sterilize per instructions in Section Thirteen of this manual.	Staff
6. Present sterilized irrigation sleeve to Scrub Nurse.	Circulating Nurse
7. Disconnect irrigation line from U/S or I/A handpiece and connect to irrigation sleeve tubing. Press irrigation sleeve over tip of Vit handpiece.	Scrub Nurse
<u>Prime</u> 8. Place tip of Vit probe into a cup of sterile fluid for aspiration line priming and testing. (For wet bimanual procedure, place tip of irrigation handpiece in cup, also.)	Scrub Nurse
9. Press **Test** to prime the tubing and test the probe. After a successful test, the system will enter the Surgery screen. Press either the **Wet** or **Dry** submode key.	Scrub Nurse

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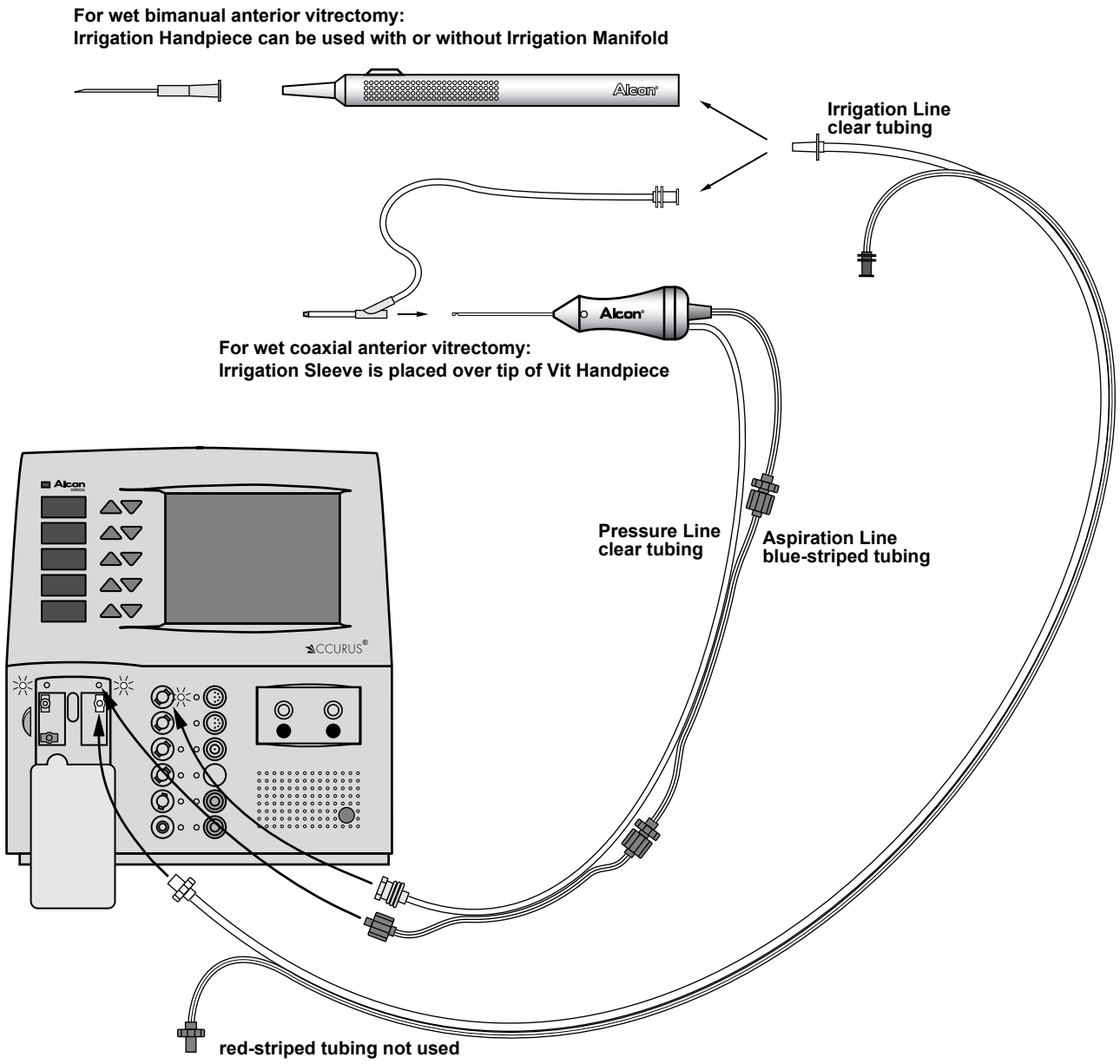


Figure 12-16 ANTERIOR VITRECTOMY SETUP - For Anterior Vitrectomy procedures in the Combined domain the handpiece's air pressure tubing and aspiration tubing must be plugged into their illuminated connectors. For Wet procedures the irrigation tubing must be connected between the cassette and either an irrigation sleeve or irrigating Vit handpiece.

Directive	Team Member

FLUID/AIR EXCHANGE (F/AX) SETUP
(F/AX can be used with gravity or power pole infusion)

1. Open a sterile Fluid/Air Exchange Tubing Set and present contents to Scrub Nurse. — Circulating Nurse

2. Accept contents of Fluid/Air Exchange Tubing Set. Remove tubing from package and attach its male luer connector to the female connector on the infusion stopcock (see Figure 12-17). Present the filter end of the tubing to Circulating Nurse. Select **CVGFI-F/AX** on the *Combined Surgery Setup* screen. — Scrub Nurse

3. Accept the filter end of the tubing from Circulating Nurse and plug it into the console's illuminated connector. — Circulating Nurse

> ***WARNING!***
> **Ensure filter is in place and is used in conjunction with the consumable. Removal of filter can expose patient to contamination.**

4. Turn the air pump ON by pressing the ***F/AX*** global function key and adjust the pressure level as required. — Scrub Nurse

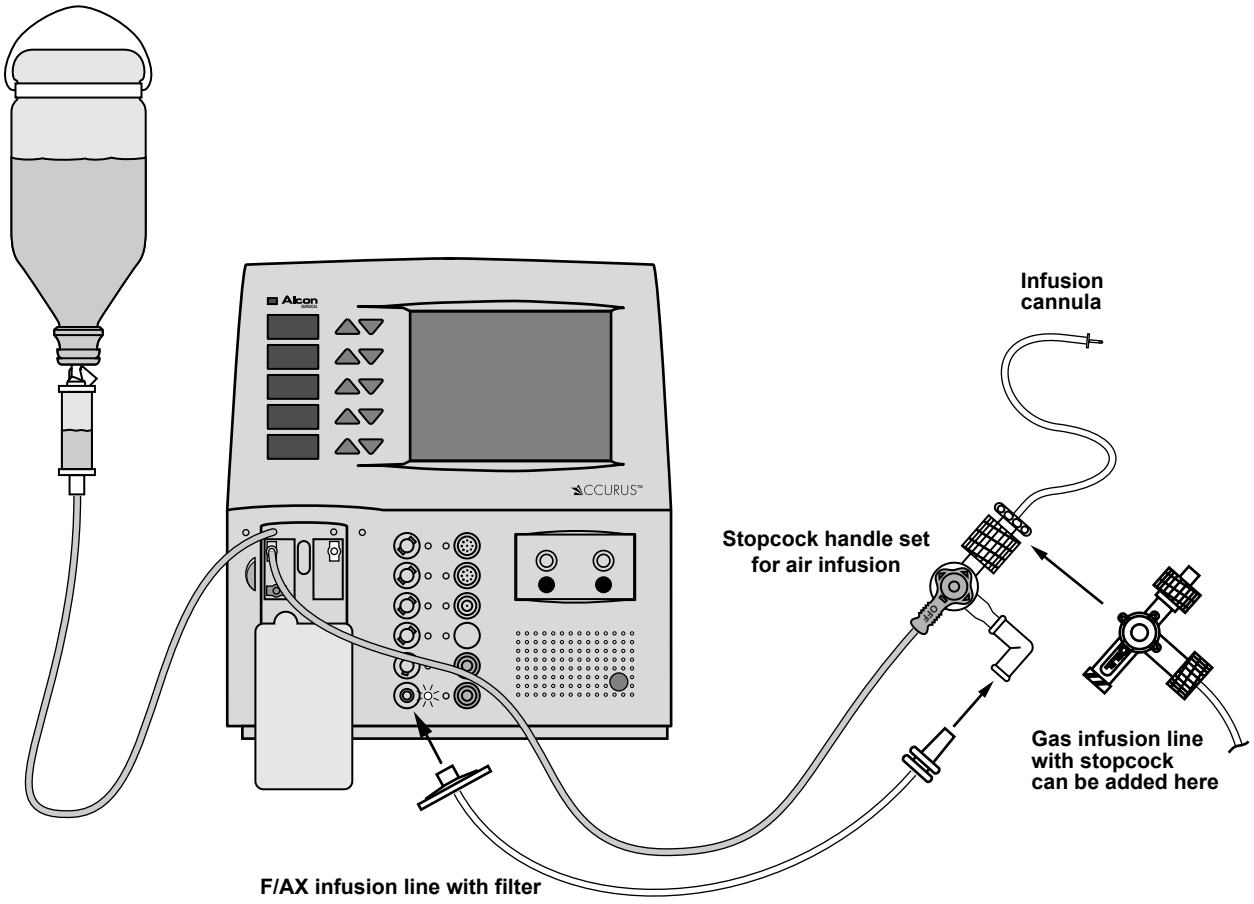


Figure 12-17 AIR INFUSION LINE CONNECTION - The filter end of the Fluid/Air Exchange Tubing Set connects to the *Accurus*® console as diagrammed above. The male luer connector plugs into the infusion line stopcock.

* FOR REFERENCE ONLY *

SECTION THIRTEEN
COMBINED DISASSEMBLY AND CLEANING

NOTES: If an inconsistency ever exists between the procedures in this section and the DFU, follow the instructions in the DFU. During these procedures discard all consumables per specific hospital/clinic requirements.

DISASSEMBLY AND CLEANING

Immediately After Each Surgical Procedure:

Tear Down the System:

1. Remove bottle from hanger and disconnect drip chamber from bottle.

2. Remove the vacuum lines from the cassette. Remove all consumable/accessory pneumatic and/or electric connections from the lower front panel of the console. Remove drape (if used).

3. Press **Exit** to go to the *Combined Surgery Setup* screen, then push the **Clean** key to transfer fluid collected in the cassette to its drain bag.

4. Press the **Eject** button. This initiates a two to three second sequence that releases the drain pump tubing and unlatches the cassette. After visually confirming that the cassette is unlatched, grasp the cassette handle and remove cassette from cassette well in an outward motion (see Figure 13-1).

   NOTE: If pressure or electrical power are not available, unlatch the cassette by lifting the Manual Cassette Release lever located on the rear panel. While holding the lever up, pull the cassette in a downward motion, manually disengaging the cassette tubing from the hub roller, then wiggle the cassette down and out.

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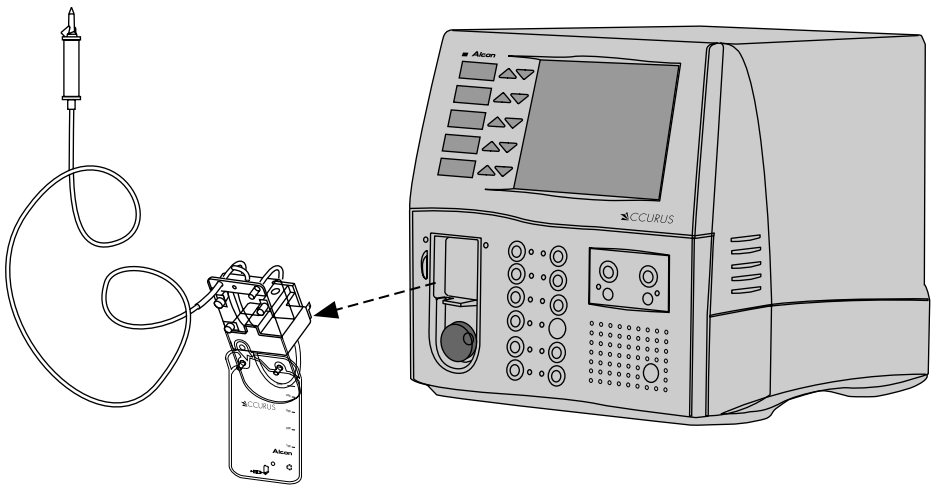


FIGURE 13-1 CASSETTE REMOVAL - With power turned ON, the fluid cassette with drain bag is ejected from the *Accurus*® cassette well by pressing the Eject button on the front panel. If no pressure or electrical power are available, lift the rear panel lever and wiggle the cassette out.

5. Use the small rubber stopper from the parts kit to plug the cassette's vacuum port (see Figure 13-2).

   If a fluid sample is being sent to the lab for testing, the drain bag can be detached from cassette. Wipe the drain bag's injection site with alcohol to ensure that the exposed rubber is clean. Use a non-coring needle less than 1” long to draw a lab sample. Discard consumbles.

CAUTION

If 1" needles are used, take care to push the needle hub into the injection site’s rubber plug. Otherwise, the needle tip could extend beyond the length of the injection site’s protective body.

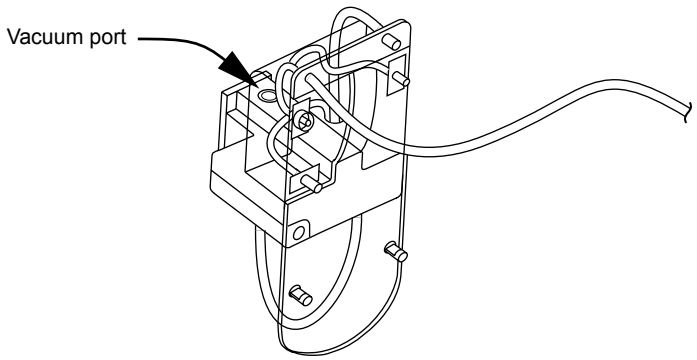


FIGURE 13-2 PLUG THE VACUUM PORT - The vacuum port must be plugged with a rubber stopper immediately after each surgery to prevent fluid leakage.

6. Disconnect and clean all reusable handpieces.

Clean the Phaco or *Fragmatome*™ * Ultrasonic Handpiece:

7. Remove the tubing from the handpiece and unplug the handpiece connector from the console.

8. Remove all consumables from the handpiece and discard according to hospital guidelines.

9. Submerge the nosecone (front part) of the handpiece in a container of distilled water.

10. Using a clean syringe, draw a minimum of 120 cc of distilled water through the aspiration path.

11. Using the same syringe, flush the aspiration port with air.

WARNINGS!

If these cleaning procedures are not performed immediately after each surgical procedure, tissue debris and salts from irrigating solution may collect. This could permanently damage the handpiece and could jeopardize cleanliness and/or create biohazard conditions for the patient. Do not autoclave the handpiece until all debris has been removed.

If in the medical opinion of the physician a patient with a prion related disease undergoes a high risk procedure, the instrument should be destroyed or be processed according to local requirements.

Never ultrasonically clean the handpiece; irreparable damage will result.

Never immerse the handpiece in liquid after autoclaving; allow it to air cool for at least 15 minutes. Be sure the handpiece connector is completely dry before connecting it to the console.

Prior to sterilization, the ultrasonic handpiece should always have the connector end cap secured and placed in the sterilization tray. This will prevent damage to connectors and handpieces during handling, and especially during autoclaving.

Handle the handpiece carefully. Dropping or otherwise striking the handpiece may fracture piezoelectric elements contained within and degrade performance or render the handpiece inoperable.

Clean the I/A Handpiece:

12. Disconnect the I/A handpiece from the console.

13. Remove the handpiece tip. If it is a single use tip, properly discard it.

14. Flush I/A handpiece and reusable tip at least two times with a syringe filled with 30 cc of warm distilled water. Flush immediately with air to clear any water from the handpiece and needle.

Clean the Intraocular Scissors (IOS) Handpiece:

15. Disconnect the IOS handpiece from the console.

16. Remove the scissors tip and properly discard it.

17. Disconnect the reusable IOS tubing from handpiece.

18. Wipe down the IOS handpiece with a damp cloth and flush the tubing at least once with a syringe filled with 30 cc of warm distilled water. Flush immediately with air to clear any water from the handpiece and tubing.

Clean Membrane Peeler Cutter (MPC) Scissors Handpiece:

19. Please refer to *Grieshaber®* literature that came with your MPC scissors for cleaning and sterilization instructions.

Clean the Extrusion Handpiece:

20. Disconnect the extrusion handpiece from the console.

21. Remove the extrusion needle. If it is a single use needle, properly discard it.

22. Flush extrusion handpiece and reusable extrusion needle at least two times with a syringe filled with 30 cc of warm distilled water. Flush immediately with air to clear any water from the handpiece and needle.

Clean the Diathermy Handpiece:

23. Disconnect diathermy handpiece and cable from the console.

24. Discard consumable handpiece and cable.

25. Clean reusable handpiece by wiping off residual tissue with a soft, non-abrasive cloth. Rinse the handpiece and cable with distilled water to remove any remaining debris.

26. Hand wash the reusable handpiece and cable using a soft bristled cleaning brush. The use of abrasive cleaners or solvents is not recommended.

27. Thoroughly flush all handpiece and cable surfaces with distilled water until no visible debris remains. Dry the handpiece and cable with a sterile wipe.

Upon Completion of Surgery Schedule:

1. Disconnect pneumatic hose from pressure source and unplug console.

   NOTE: If the *Accurus*® system remains plugged in, always ensure that the rear panel On/Off switch is in the OFF position.

2. If required, the console and remote control may be cleaned with mild soap and water. DO NOT USE SOLVENTS OR ABRASIVES.

STERILIZATION

The following accessories for the *Accurus*® Ophthalmic Surgical System may be flash or steam autoclaved. Additionally, per the Sterilizer Equipment Manual, the sterilizer reservoir is to be filled with distilled or deionized water.

- Phaco and *Fragmatome*™ * Ultrasonic Handpiece
- Irrigation/Aspiration (I/A) Handpiece
- Anterior Vitrectomy Irrigation Sleeve
- Intraocular Scissors (IOS) Handpiece and IOS Tubing
- Extrusion Handpiece
- Reusable Diathermy Handpiece and Cable
- Reusable Infusion Accessories

NOTE: The list of reusable accessories above will withstand steam autoclave cycles at 134º C (273º F). Due to the variation found in steam autoclaves and the variable bioburden on instruments in clinical use, it is not possible for Alcon to provide specific parameters to ensure an adequate sterility assurance level. Validation of the individual autoclave, and verification of the sterility assurance level achieved with a given steam sterilization cycle, must be performed by each hospital.

The specifications in Table 13-1 represent industry standard guidelines for steam sterilization cycles. **The sterility assurance level achieved with these parameters must be validated by each hospital.** Please refer to current ANSI/AAMI Standards or your hospital's standard procedures for the most current specifications.

STERILIZER TYPE	SAMPLE CONFIGURATION	TEMPERATURE	MINIMUM EXPOSURE TIME
Gravity Displacement	wrapped	132˚ C (270˚ F)	15.0 minutes[1]
Gravity Displacement	unwrapped	132˚ C (270˚ F)	10.0 minutes
Prevacuum	unwrapped	132˚ C (270˚ F)	4.0 minutes

[1] For 375/40 U/S & *Mackool*** and *Fragmatome*™* handpieces the recommended exposure time is 20 minutes minimum.

Table 13-1 STERILIZATION TEMPERATURE AND TIME SETTINGS

NOTE: For maximum life and optimum performance, allow handpieces to air cool after steam or flash autoclaving. Cooling for *Fragmatome*™* handpieces should be a minimum of 15 minutes.

NOTE: For instructions to sterilize the Membrane Peeler Cutter (MPC) scissors handpiece, please refer to the *Grieshaber*® literature that came with your MPC scissors.

REFERENCE: AAMI Standards and Recommended Practices Volume 1: Sterilization, Designation ST37-1996 for flash sterilization and ST46-1993 for steam sterilization or your local standards and recommended practices.

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SECTION FOURTEEN
COMBINED ACCESSORIES AND PARTS

Following is a list of Alcon-approved accessories and replacement parts for the *Accurus*® Ophthalmic Surgical System. To order parts, please refer to your Alcon price list and/or contact Alcon Customer Service at:

Phone:
(800) 862-5266 or
(817) 293-0450
Ask for Customer Service

Write:
Alcon
6201 South Freeway
Fort Worth, TX. 76134-2099

Outside the U.S.A. please contact your local Alcon representative.

Important Note: Use of accessories and parts not approved by Alcon is not recommended.

ITEM	CATALOG NUMBER
Combined Paks	
Total Plus® Combined Procedure Paks	
Tipless w/*Accurus*® probe (for use with all 0.9mm tips)	8065740960
Tipless w/*InnoVit*® probe (for use with all 0.9mm tips)	8065740959
0° *TurboSonics*® *Mackool*** *MicroTip*™	8065740958
30° *TurboSonics*® *Mackool*** *MicroTip*™	8065740957
45° *TurboSonics*® *Mackool*** *MicroTip*™	8065740956
30° *TurboSonics*® *Mackool*** *Kelman*® *MicroTip*™	8065740955
45° *TurboSonics*® *Mackool*** *Kelman*® *MicroTip*™	8065740954
0° *TurboSonics*® Flared *ABS*® *Mackool*** *MicroTip*™	8065740953
30° *TurboSonics*® Flared *ABS*® *Mackool*** *MicroTip*™	8065740952
45° *TurboSonics*® Flared *ABS*® *Mackool*** *MicroTip*™	8065740951
30° *TurboSonics*® Flared *ABS*® *Mackool*** *Kelman*® *MicroTip*™	8065740950
45° *TurboSonics*® Flared *ABS*® *Mackool*** *Kelman*® *MicroTip*™	8065740949
0° *TurboSonics*® Flared *ABS*® *Mackool***	8065740948
30° *TurboSonics*® Flared *ABS*® *Mackool***	8065740947
45° *TurboSonics*® Flared *ABS*® *Mackool***	8065740946
30° *TurboSonics*® Flared *ABS*® *Mackool*** *Kelman*®	8065740945
45° *TurboSonics*® Flared *ABS*® *Mackool*** *Kelman*®	8065740944
Tipless w/*Accurus*® probe (for use with flared 1.1mm tips)	8065750169
Tipless w/*InnoVit*® probe (for use with flared 1.1mm tips)	8065750170
Tipless w/*Accurus*® 1500 probe (for use with all 0.9mm tips)	8065750114
Tipless w/*Accurus*® 1500 probe (for use with all 1.1mm tips)	8065750116
Tipless w/*Accurus*® 2500 probe (for use with flared 0.9mm tips)	8065750115
Tipless w/*Accurus*® probe 2500 (for use with flared 1.1mm tips)	8065750117
Tipless w/*Accurus*® 23 Ga probe (for use with 0.9mm tips)	8065750814
Tipless w/*Accurus*® 23 Ga probe (for use with 1.1mm tips)	8065750816
Tipless w/*Accurus*® 25 Ga probe (for use with 0.9mm tips)	8065750817
Tipless w/*Accurus*® 25 Ga probe (for use with 1.1mm tips)	8065750819
Tipless w/*Accurus*® 25+ probe (for use with 0.9mm tips)	8065751491
Tipless w/*Accurus*® 25+ probe (for use with 1.1mm tips)	8065751494

ITEM	CATALOG NUMBER
AccuPak® Combined Procedure Paks	
Tipless w/*Accurus*® probe (for use with all 0.9mm tips)	8065750172
Tipless w/*Accurus*® 1500 probe (for use with all 0.9mm tips)	8065750173
Tipless w/*Accurus*® 2500 probe (for use with all 0.9mm tips)	8065750174
Tipless w/*Accurus*® 23 Ga probe (for use with 0.9mm tips)	8065750932
Tipless w/*Accurus*® 25 Ga probe (for use with 0.9mm tips)	8065750937
Tipless w/*Accurus*® 25+ probe (for use with 0.9mm tips)	8065751492
Tipless w/*InnoVit*® probe (for use with all 0.9mm tips)	8065750175
Tipless w/*Accurus*® probe (for use with flared 1.1mm tips)	8065750176
Tipless w/*Accurus*® 1500 probe (for use with flared 1.1mm tips)	8065750177
Tipless w/*Accurus*® probe 2500 (for use with flared 1.1mm tips)	8065750178
Tipless w/*Accurus*® 23 Ga probe (for use with 1.1mm tips)	8065750934
Tipless w/*Accurus*® 25 Ga probe (for use with 1.1mm tips)	8065750939
Tipless w/*Accurus*® 25+ probe (for use with 1.1mm tips)	8065751489
Tipless w/*InnoVit*® probe (for use with flared 1.1mm tips)	8065750179
Convertible Vitrectomy Pak w/*InnoVit*® Probe	8065750250
Convertible Vitrectomy Pak w/*Accurus*® 2500 Probe	8065750248
Convertible Irrigation/Aspiration Tubing Set	8065750247
Combined Procedure For Use w/.9mm U/S tips w/TVGFI, 2500 *Accurus*® probe	8065750792
Consumable Accessories	
CVGFI Tubing Set	8065740962
2.5 mm Infusion Cannula	8065820001
4.0 mm Infusion Cannula	8065820101
6.0 mm Infusion Cannula	8065820201
Silicone Oil Infusion Cannula	8065740262
Remote Control Aseptic Transfer	20000TP
Accurus® Replacement Drain Bags	8065740743
Fragmatome™* Accessory Pak	1021HP
Fluid/Gas Exchange Tubing Set	8065807001
Scleral Plugs, 19 and 20 gauge (6)	8065807550
Anterior Small Parts Kit	201SPS
Viscous Fluid Control Pak	8065750118
Trocar Blade, 23 Ga, 3 Ct	8065750882
Trocar Cannula Set, 23 Ga, 1 Ct	8065750839
Trocar Cannula Set, 23 Ga, 2 Ct	8065750838
Trocar Cannula Set, 23 Ga, 3 Ct	8065750823
Trocar Cannula Set, 25 Ga, 1 Ct	8065750236
Trocar Cannula Set, 25 Ga, 2 Ct	8065750405
Trocar Cannula Set, 25 Ga, 3 Ct	8065750406
Trocar Plug Set, 23 Ga	8065750837
Trocar Plug Set, 25 Ga	8065750189
Infusion Cannula, 23 Ga	8065750841
Infusion Cannula, 25 Ga	8065750188
Small Parts Kit, 23 Ga	8065750842
Small Parts Kit, 25 Ga	8065750404

ITEM	CATALOG NUMBER
Console Accessories	
Cart w/IV Pole	8065740943
Cart w/Power IV Pole	8065740825
Remote Control	8065740942
Remote Control, English Text	8065750105
Footswitch	8065740240
Pneumatic Pressure Hose	8041193501SV
Illuminator Bulb	8065740243
Operator's Manual	8065750203
Accurus® Doctor Memory Card	8065750200
Bipolar Coagulation/Diathermy Accessories	
Bipolar Coagulation Cable, Single Use	8065129002
Forceps, Curved Iris, Single Use	8065129101
Forceps, Coaptation, Single Use	8065129301
Forceps, Jewelers/Straight Iris, Single Use	8065129501
Forceps, Non-stick, 4" Nadler Coaptation .4mm	8065127401
Forceps, Non-stick, 4" Jeweler Straight .4mm	8065127501
Forceps, Non-stick, 4"Jeweler Curved.4mm	8065127601
Forceps, Non-stick, 4" Tenzel .4mm	8065127701
Forceps, Non-stick, 4 3/4" Adson 1.0mm	8065127801
Forceps, Non-stick, 3 1/2 " Straight Iris .5mm	8065127901
Forceps, Non-stick, 3 1/2 " Curved Iris .5mm	8065128001
Forceps, Non-stick, 4 1/4" Coaptation Fine, .5mm	8065128101
Forceps, Non-stick, 4 1/4" Coaptation Extra Fine, .5mm	8065128201
Forceps, Titanium, 3 1/2" Jeweler Curved .4mm	8065128501
Forceps, Titanium, 4" Coaptation .5mm	8065128601
Forceps, Titanium, 4 1/4" Jeweler Straight .4mm	8065128701
Forceps, Titanium, 4 3/4" Straight w/Fine Serrations	8065128801
Forceps, Titanium, 4 1/2" Reverse Angle .4mm	8065128901
Bipolar Brush, Straight, 18 ga., Single Use	8065804001
Bipolar Brush, Curved, Single Use	8065804601
Bipolar Brush, Wide Stroke, Single Use	8065806701
Bipolar Brush, 20 ga., Single Use	8065804201
Bipolar Brush, 20 ga., With Cord (non CE), Single Use	8065804301
Bipolar Coagulation Cable, Silicone	8065128402
Vit Accessories	
2.5 mm Infusion Cannula	800-2A
4.0 mm Infusion Cannula	800-2B
6.0 mm Infusion Cannula	800-2D
Silicone Oil Infusion Cannula	8065740262
Blunt Tip Needle, Straight, 20 ga.	800-26A
Blunt Tip Needle, Tapered, 20 ga.	800-26B
Blunt Tip Needle, Tapered, 19 ga.	800-26D
Infusion Needle Tubing	800-7
Intraocular Scissors Tubing	8065740265
Cross Action Plug Forceps	830-20A
Scleral Plugs, 20 ga. (4/tablet)	830-18
Scleral Plugs, 19 ga. (4/tablet)	830-24

ITEM	CATALOG NUMBER
Vit Handpieces	
375/40 Fragmentation Handpiece	8065740242
Extrusion Handpiece (set of 4)	8065808601
19 ga. Straight Extrusion Handpiece	8065808701
19 ga. Tapered Extrusion Handpiece	8065808801
20 ga. Straight Extrusion Handpiece	8065808901
20 ga. Tapered Extrusion Handpiece	8065809001
Charles O'Malley Extrusion Kit	800-26
Extrusion Kit Handpiece	800-26E
Intraocular Scissors Handpiece	8065808101
MPC Scissors, Lightweight 0.9 mm	625.13
MPC Scissors, Fine Tip Handle 0.7 mm	625.12
MPC Scissors, Traditional Handle 1.3 mm	625.01
Probes	
InnoVit®	8065740244
Accurus® 1500	8065741016
Accurus® 2500	8065741018
Accurus®	8065740241
Accurus® 23 Ga Probe	8065750821
Accurus® 25 Ga Probe	8065750226
Accurus® 25+ Probe	8065751122
Accurus® Anterior Vitrectomy w/Irrigation Needle	8065803650
Anterior Vitrectomy Irrigation Sleeve	8065801351
Illuminator (DFOI)	8065812001
Fiber Optic Assy, 23 Ga	8065750802
Fiber Optic Assy, 25 Ga	8065750190
Fiber Optic Assy, Bare End	8065740257
Fiber Optic Assy, 25+	8065751165
Fiber Optic Assy, Wide Angle	8065740264
Fiber Optic Assy, End Irrigating	8065740259
Fiber Optic Assy, Straight Pick	8065740260
Fiber Optic Assy, Pre-Bent	8065740258
Vertical Micro Scissors (1mm)	8065813701
Vertical Micro Scissors (1.5mm)	8065803701
Laser Probe, Straight Needle, 23 Ga	8065750803
Laser Probe, Straight Needle, 25 Ga	8065750133
Illuminated Laser Probe, HGM Connector, Curved Needle, ACMI	8065103040
Illuminated Laser Probe, HGM Connector, Straight Needle, ACMI	8065010320
Illuminated Laser Probe, *Alcon*®/*Coherent*® Connector, Curved Needle, ACMI	8065010404
Illuminated Laser Probe, *Alcon*®/*Coherent*® Connector, Straight Needle, ACMI	8065010420
Shielded Bullet Endo Illuminator, 20 GA, ACMI	8065109203
Shielded Bullet Endo Illuminator, with Pick, 20 GA, ACMI	8065109219
Sapphire Wide Angle Probe	8065750425
Laser Probe, Aspirating, Curved, 20 Ga	8065010703
Laser Probe, Aspirating, Straight, 20 Ga	8065010719
Laser Probe, Aspirating, Soft Tip, Straight, 20 Ga	8065010739
Laser Probe w/RFID, Aspirating, Curved, 20 Ga	8065750979
Laser Probe w/RFID, Aspirating, Straight, 20 Ga	8065750980
Laser Probe w/RFID, Aspirating, Soft Tip, Straight, 20 Ga	8065750981

ITEM	CATALOG NUMBER
Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, Curved, 20 Ga, ACMI	8065750982
Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, Straight, 20 Ga, ACMI	8065750983
Articulating Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, 20 Ga, ACMI	8065751105
Articulating Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, 23 Ga, ACMI	8065751106
Articulating Illuminated Laser Probe w/RFID, *Alcon*®/*Coherent*® Connector, 25 Ga, ACMI	8065751107
Phaco Handpieces, Tips, and Accessories	
375/40 Ultrasonic Handpiece	TURBOSONIC-375
*Mackool*** Ultrasonic Handpiece	8065-M002-01
.9mm *TurboSonics*® *Microtip*™* 0° Round Tip	8065740478
.9mm *TurboSonics*® *Microtip*™* 30° Round Tip	30RTS
.9mm *TurboSonics*® *Microtip*™* 45° Round Tip	45RTS
.9mm *TurboSonics*® *Microtip*™* 30° *Kelman*® Tip	30KTS
.9mm *TurboSonics*® *Microtip*™* 45° *Kelman*® Tip	45KTS
.9mm *ABS*® *Microtip*™* 0˚ Round Tip	8065790019
.9mm *ABS*® *Microtip*™* 30˚ Round Tip	8065790020
.9mm *ABS*® *Microtip*™* 45˚ Round Tip	8065790021
.9mm *ABS*® *Microtip*™* 30˚ *Kelman*® Tip	8065790022
.9mm *ABS*® *Microtip*™* 45˚ *Kelman*® Tip	8065790023
Sterilization Tray	8065803602
I/A Handpieces, Tips, and Accessories	
Ultraflow™* SP Handpiece w/.3mm Straight Tip	8065817001
Ultraflow™* SP Handpiece w/.3mm 45° Bent Tip	8065817201
Ultraflow™* SP Handpiece w/.3mm 90° Bent Tip	8065817301
Ultraflow™* SP Handpiece w/.3mm Curved Tip	8065817601
Ultraflow™* SP Handpiece w/Threaded Tip	8065817801
Ultraflow™* SP Handpiece w/Irrigation Only	8065817501
Ultraflow™* IT Handpiece Set	8065814101
Ultraflow™* IT Handpiece Body	8065814201
Ultraflow™* IT .3mm Straight Tip	8065814301
Ultraflow™* IT .3mm Curved Tip	8065814401
Ultraflow™* IT .3mm 45° Tip	8065814501
Ultraflow™* IT .3mm 90° Tip	8065814601
Ultraflow™* IT .3mm 120° Tip	8065814701
Ultraflow™* IT Threaded Adapter Tip	8065814801
Ultraflow™* IT Irrigation Only Tip Adapter	8065814901
Ultraflow™* Sterilization Tray	8065-A001-01
Ultraflow™* IT O-Ring Tool	405-184
Ultraflow™* IT O-Ring Replacements	ULTRA O-RING RPL
0.2 mm I/A Tip	355-1010
0.3 mm I/A Tip	355-1007
0.5 mm I/A Tip	355-1009
0.7 mm I/A Tip	355-1003
0.3 mm Sandblasted 45˚ Bent I/A Tip	356-1020
0.3 mm Sandblasted Nevyas I/A Tip	356-1009
0.3 mm Tillet 45˚ I/A Tip	356-1010

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SECTION FIFTEEN
CARE AND MAINTENANCE

VOLTAGE AND FUSE SELECTION

Fuse Selection for Auto Ranging Power Supply

The auto ranging power supply automatically selects the correct operating voltage when power is applied. When shipped to the customer the *Accurus*® Ophthalmic Surgical System is configured for 100 to 120 VAC operation with 10 amp fuses. Systems using 220 VAC to 240 VAC must have the fuses and fuse carriers replaced. Read the instructions below to change fuses.

CAUTION

The *Accurus*® system is shipped with a kit containing the fuses and fuse carriers used for 220-230-240 VAC. Prior to applying power levels of 220-230-240 VAC the fuses must be changed or DAMAGE MAY RESULT.

Replace Fuses

1. Unplug power cord from main power connector on rear panel.
2. Using a flat tip screwdriver, turn 2 fuse carriers 1/4 turn CCW and remove from power supply (see Figure 15-1).
3. Insert fuse carriers with fuses of the correct rating and size (see Table 15-1).
4. Plug power cord into main power connector.

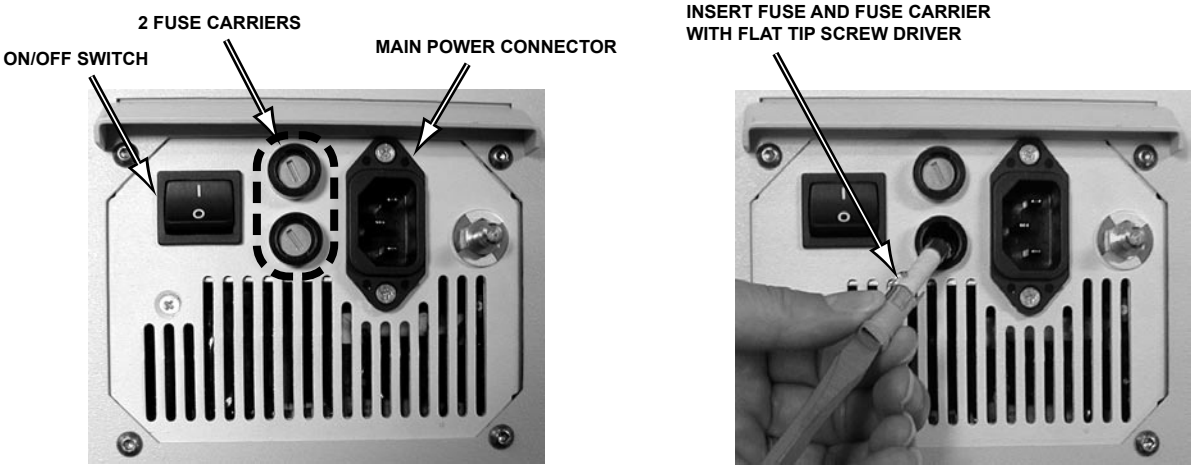


FIGURE 15-1 FUSE CARRIERS AND FUSES - When shipped, the *Accurus*® system is configured for 100 to 120 VAC operation. 220 to 240 VAC systems must have their fuse carriers and fuses changed for the supplied voltage.

LINE VOLTAGE	FUSE RATING AND SIZE	ALCON P/N
100 - 120 VAC	10A / 250V SLOW BLOW, 1/4" x 1-1/4"	130-023
220 - 240 VAC	5A / 250V SLOW BLOW, 5mm x 20mm	130-054

TABLE 15-1 FUSE SELECTION - Use appropriate fuses for the supplied line voltage.

ILLUMINATOR BULB REPLACEMENT

To ensure secondary illuminator source availability at all times, replace a burned out bulb immediately upon completion of surgery (not included in 200PS system).

WARNING!

The illuminator bulbs become extremely hot. Never handle a bulb until it has cooled considerably from its operating temperature. Do not touch bulb directly with fingers at any time!

1. Push the Illuminator release button on the rear panel to eject illuminator drawer.

2. Pull the illuminator drawer out to full extension. Do not attempt to remove the burnt bulb until it is cool to the touch.

3. Using a soft cloth or protective glove, grip the bulb at its base and pull out of socket. Discard bulb.

4. Using a soft cloth or glove, insert the new bulb's two leads into the two holes of the socket. Press the bulb down until it is fully inserted into the socket. Gently clean any smudges or dirt from the bulb with a soft cloth.

CAUTION

Handling bulb with bare hands can reduce brightness and life of the bulb.

5. Ensure bulb is straight (see Figure 15-2). To do this, look into the fiber optic illuminator probe receptacle; the bulb filament should be centered within the receptacle.

6. Gently push illuminator drawer back into its receptacle. The illuminator is now ready for use.

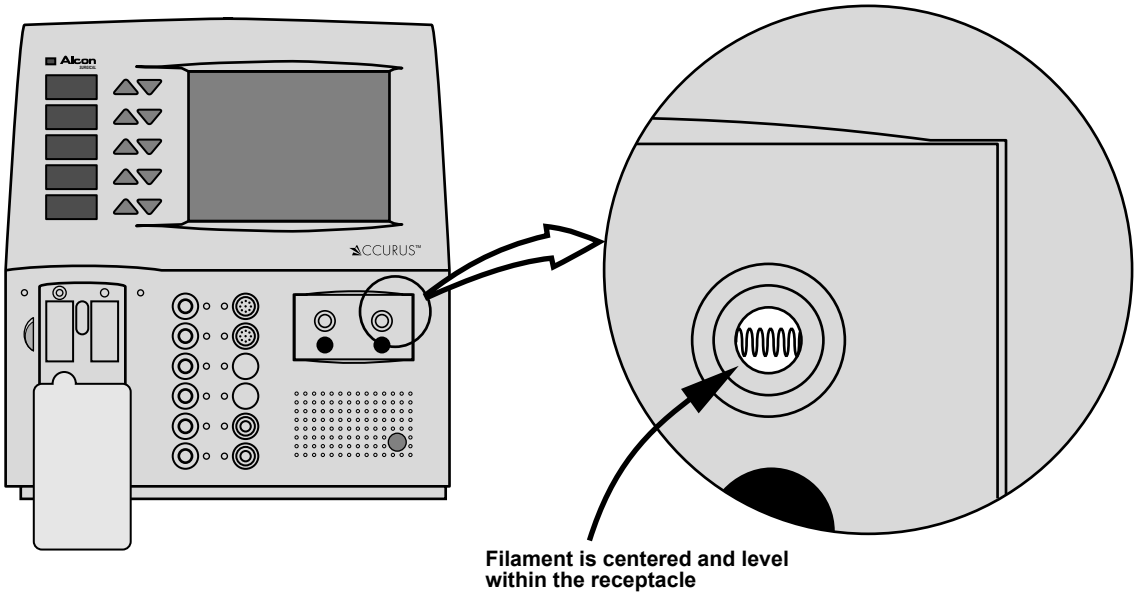


FIGURE 15-2 BULB ALIGNMENT - For proper illumination, ensure that bulb is inserted correctly into its socket as diagrammed above.

REMOTE CONTROL BATTERY REPLACEMENT

The hand-held remote control contains four batteries (size AA, 1.5 volts). It is recommended that the *Eveready® Energizer®* Industrial Alkaline batteries, No. EN91, be used with this remote control.

1. Place the remote control face down on a flat, protective surface.

2. Locate the battery cover panel, and using a standard screwdriver remove the panel by turning the captive screw counterclockwise. Set the panel aside.

3. Remove the old batteries from the remote control. Install the new batteries taking care to observe the polarity indicated on the battery housing.

4. Replace the battery cover panel on the remote control, and using a standard screwdriver tighten the captive screw by turning clockwise.

REMOTE CONTROL CHANNEL SELECTION

The remote control operates on one-of-four channels (A, B, C, or D), and is similar for both the *Accurus®* and *Legacy®* Ophthalmic Surgical Systems. The *Accurus®* system and its remote control are factory preset to channel D. To ensure proper remote control operation when two or more systems are used in the same area, set each to a separate channel as instructed below.

Note: If necessary for identification, place labels on the remote controls to distinguish one from the other.

1. Place the remote control face down on a flat, protective surface.

2. Locate the battery cover panel, and using a standard screwdriver remove the panel by turning the captive screw counterclockwise. Set the panel aside.

3. Set the S1 switches to the desired channel as diagrammed in Figure 15-3.

4. Replace the battery cover panel on the remote control, and using a standard screwdriver tighten the captive screw by turning clockwise.

5. After selecting a channel in the remote, the same channel must be selected in the *Options/System* screen in the *Accurus®* system (see Figure 2-51).

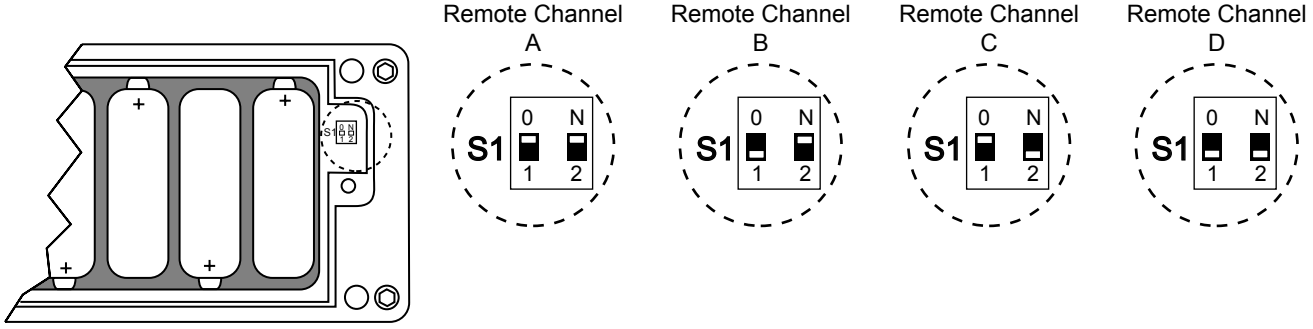


FIGURE 15-3 REMOTE CONTROL CHANNEL SELECTION SWITCHES - Four different channels are offered for remote control operation. After selecting a channel in the remote, the same Remote Channel must be selected in the *Options/System* screen in the *Accurus®* system.

CRATING INSTRUCTIONS

The *Accurus®* system is a delicate instrument and must be handled carefully to avoid damage. Prior to transport the *Accurus®* system must be properly crated to protect it from shipping damage. Using its original shipping crate, insert the contents as instructed below, and as illustrated in Figure 15-4.

1. Place air hose and any other accessories into bottom of carton.
2. Place console on base of crate, setting securely on top of shipping pallet.
3. Place foam inserts on top, and in front of console.
4. Slide outer carton over console and down onto base of crate.
5. Place accessory tray on top of console.
6. Place operator's manual and footswitch in accessory tray.
7. Place foam insert on top of accessory tray.
8. Seal carton flaps with 2" tape.
9. Secure carton to pallet by wrapping with two lengths of 1/2" strapping.
10. If shipping to Alcon, label the carton and ship as instructed in Section One of this manual.

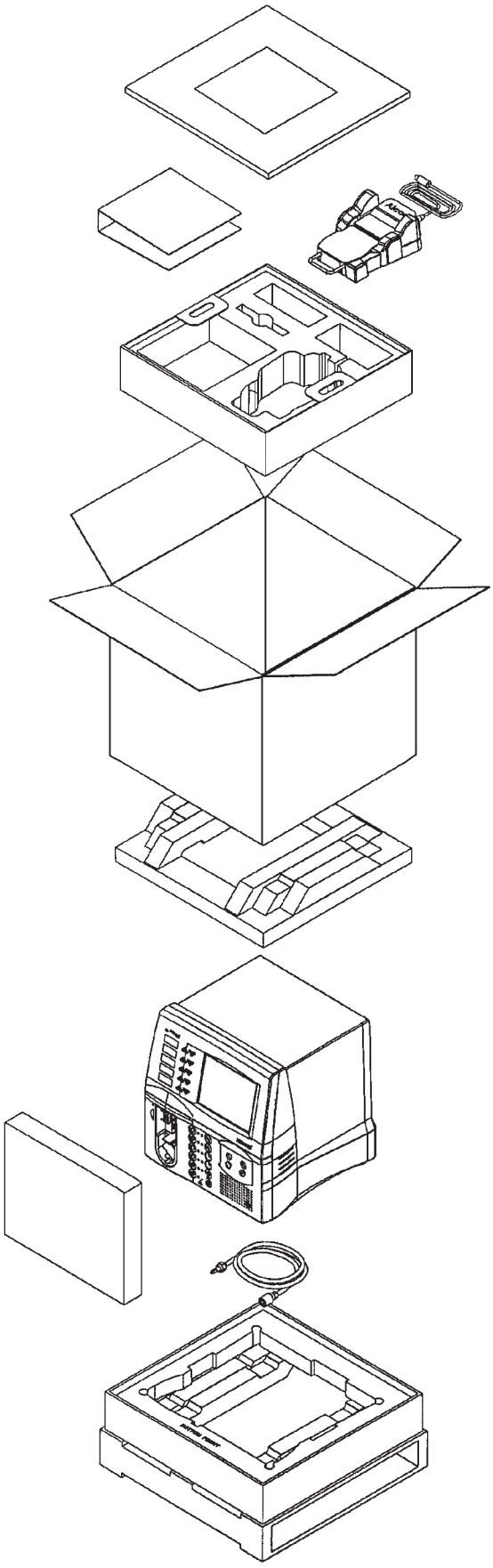


FIGURE 15-4 CRATING OF THE *ACCURUS®* OPHTHALMIC SURGICAL SYSTEM - This diagram shows the proper way to crate the *Accurus®* system prior to transport.

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AIR FILTER CLEANING

Occassionally the sponge air filter on the back panel of the *Accurus®* console must be cleaned. Follow the instructions below when cleaning the filter.

1. Facing the rear of the *Accurus®* console, grasp the air input grate and wiggle it away from the rear panel (see Figure 15-5).

2. Remove sponge filter from grate and rinse in clear water. Dry thoroughly.

3. Replace filter in grate and snap grate onto back panel of *Accurus®* console.

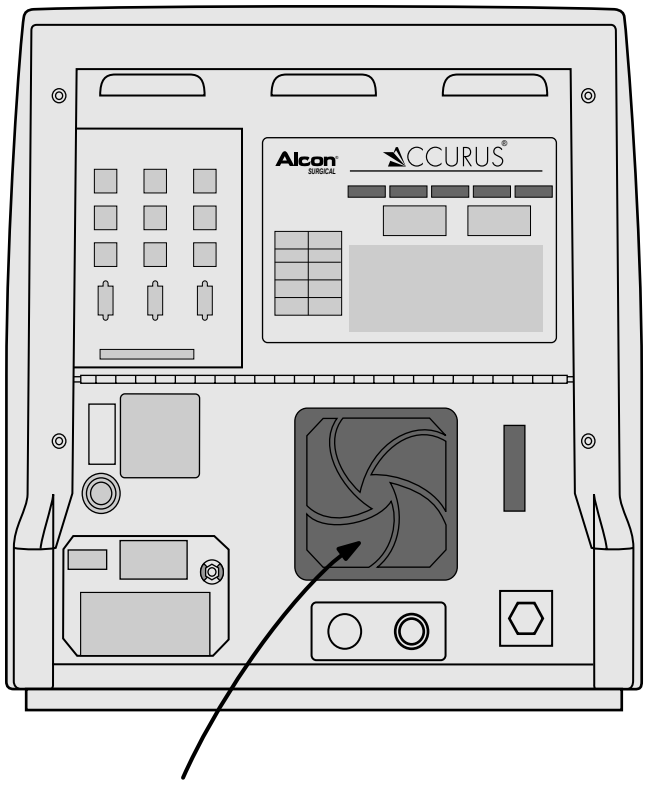


FIGURE 15-5 SPONGE AIR FILTER ON REAR PANEL OF THE *ACCURUS®* CONSOLE - To clean air filter remove from rear panel and rinse in clear water.

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SECTION SIXTEEN
TROUBLESHOOTING

Accurus® Ophthalmic Surgical System Troubleshooting Instructions

This section of the manual is designed to help you identify problems that you may encounter with your *Accurus*® system, then how to correct the problems. The following tables contain information about possible problems observed, the possible reasons for the observed problem, and suggestions about what you can do to correct the problem.

These charts are presented as an aid to rapid location of failed or malfunctioning parts or components. They are not meant to replace standard troubleshooting methods. Care should be used during the troubleshooting process to prevent the introduction of additional problems.

If, after performing the recommended corrective action, the system continues to malfunction, call your local Alcon service representative.

NOTE: For troubleshooting purposes, record all information displayed on the Fault screen and popups before recycling power.

CONDITION	POSSIBLE CAUSE	CORRECTION
GENERAL CONDITIONS		
System won't turn ON.	No electrical power supplied to system.	Check electrical plug connection. Check fuses on rear panel. Check power source and fuses.
	Bad power supply.	Call Alcon.
Blank or logo screen only.	System has detected a power on self test error due to corrupted data or bad hardware.	Cycle power. Call Alcon Field Service.
Vacuum Leak.	Cassette improperly seated.	Eject and reinsert cassette.
	Bad cassette.	Eject and insert a new cassette.
Tubing not loaded or noise from cassette area.	Cassette tubing not loaded properly.	Eject and reinsert cassette.
	Defective or damaged cassette.	Eject and insert a new cassette.
Press Clean to drain cassette leaves fluid in cassette.	Drain Bag is full.	Eject cassette without full transfer of fluid.
	Drain Bag is clogged.	Eject cassette without full transfer of fluid.
	Cassette was very full prior to cleaning.	Press Clean again.
Footswitch not operational.	Footswitch not connected properly.	Connect footswitch. Check that the footwitch cable is firmly seated.
	Footswitch cable is damaged.	Call Alcon Technical Services.
Displays not illuminated.	Instrument not connected to AC power.	Connect power cord from AC receptacle to Main Power Connector on rear panel.
	Blown fuse.	Replace fuse. Refer to section 15, Care and Maintenance, for Fuse Replacement procedure.
	System malfunction.	Call Alcon Technical Services.

Table 16-1 ***ACCURUS®* OPHTHALMIC SURGICAL SYSTEM PROBLEM CONDITIONS - Listed in this table are problem conditions that may be observed. These conditions do not include information popups, but are simply observations.**

* FOR REFERENCE ONLY *

CONDITION	POSSIBLE CAUSE	CORRECTION
POSTERIOR CONDITIONS		
Low Inlet Pressure.	Air pressure supply less than 62 psi when not cutting, or less than 49 psi when cutting.	Check air supply. Set regulator between 90-120 psi (5-BAR 72-120 psi). Check air supply hose and connections.
Unable to achieve high VFC injection pressure	Low air pressure.	Check air supply. Set regulator between 90-120 psi (5-BAR 72-120 psi). Check air supply hose and connectors.
Insufficient aspiration.	Loose fittings.	Reconnect fittings securely.
	Kinked or damaged tubing.	Check tubing and, if necessary, replace.
	Cassette leaking.	Eject and insert the cassette. If problem persists, replace cassette.
No or insufficient suction at probe/handpiece tip.	MAX vacuum setting too low.	Check and, if necessary, increase vacuum setting.
	Power cord or footswitch cable stuck in pedal.	Remove cord/cable from footpedal.
	Air not purged from tubing.	Prime aspiration lines.
	Faulty luer connections.	Check and, if necessary, tighten luer connections.
	Tubing occluded.	Check and clear occlusion, or replace tubing.
	Cassette seated improperly.	Eject and reinsert cassette, or replace cassette.
	Handpiece occluded.	Check and clear occlusion, or replace handpiece.
	Clogged probe tip.	If applicable, apply reflux.
Unable to achieve low vacuum.	Patient eye level setting incorrect.	Adjust patient eye level setting.
	Vacuum setting too high.	Decrease the MAX vacuum setting.
Unable to achieve high vacuum.	High altitude.	600 mmHg at sea level—reduce by -25 mmHg per 1000 feet altitude.
	Low air pressure.	Check air supply hose, connections, and regulator. (600 mmHg at 90 psi minimum, 400 mmHg with cutting at 72 psi minimum)
Regurgitation.	Vacuum too low.	Check and, if necessary, increase vacuum level.
	Cassette is above the patient eye level.	Check and, if necessary, adjust the patient eye level in the Options/System Screen.
Cannot activate/deactivate cutting and/or scissors closure from footswitch side switches.	Footswitch too close to another object to allow for full range of movement of side switches.	Remove obstruction.
	Broken or faulty side switch.	Call Alcon Technical Services.

POSTERIOR CONDITIONS continued on next page

CONDITION	POSSIBLE CAUSE	CORRECTION
POSTERIOR CONDITIONS (continued from prior page)		
Illuminator not lit.	Intensity turned OFF or too low.	Press illuminator ON key or, if necessary, increase illuminator intensity.
	Light source drawer not securely shut.	Push drawer firmly into its receptacle.
	Bulb not correctly installed.	Properly reinstall and align bulb.
	Bulb burned out.	Activate second illuminator. Replace bulb soon.
Illuminator dim.	Illuminator intensity setting too low.	Increase illuminator intensity.
	Bulb not installed correctly (not straight).	Properly reinstall and align bulb.
	Fiber optic light guide defective.	Replace fiber optic light guide.
	Bulb is old.	Replace bulb.
	Light guide not fully seated in connector.	Firmly push in connector.
Diathermy does not work.	Power level is set too low.	Check and, if necessary, increase power.
	Handpiece connections not secured.	Check handpiece connections.
	Footswitch not connected.	Connect footswitch cable.
Scissors do not cut or open or close completely.	Scissors not connected properly.	Check all tubing connections to scissors.
	Scissors bent or damaged.	Replace scissors tip.
***FRAGMATOME*™* HANDPIECE**		
Fragmatome™ * handpiece does not tune.	Handpiece may not be plugged in.	Plug handpiece cable into illuminated connector on console.
	Loose *Fragmatome*™ * tip.	Loosen tip, re-tighten, and tune.
	Handpiece tuned while hot.	Allow handpiece to cool for at least 15 minutes before tuning.
	Faulty handpiece.	Replace *Fragmatome*™ * handpiece.
Intraoperative loss of U/S power. Low power or intermittent power.	Worn *Fragmatome*™ * tip.	Install new *Fragmatome*™ * tip.
	Loose *Fragmatome*™ * tip.	Loosen tip, re-tighten, and tune.
	Handpiece tuned while hot.	Allow handpiece to cool for at least 15 minutes before tuning.
	Faulty handpiece.	Replace *Fragmatome*™ * handpiece.
	Internal hardware problem.	Call Alcon.

CONDITION	POSSIBLE CAUSE	CORRECTION
ANTERIOR CONDITIONS		
Insufficient aspiration.	Loose fittings.	Reconnect fittings securely.
	Kinked or damaged tubing.	Check tubing and, if necessary, replace.
	Cassette leaking.	Eject and insert the cassette. If problem persists, replace cassette.
No or insufficient suction at probe/handpiece tip.	MAX vacuum setting too low.	Check and, if necessary, increase vacuum setting.
	Power cord or footswitch cable stuck in pedal.	Remove cord/cable from footpedal.
	Air not purged from tubing.	Prime aspiration lines.
	Faulty luer connections.	Check and, if necessary, tighten luer connections.
	Tubing occluded.	Check and clear occlusion, or replace tubing.
	Cassette seated improperly.	Eject and reinsert cassette, or replace cassette.
	Handpiece occluded.	Check and clear occlusion, or replace handpiece.
	Clogged probe tip.	If applicable, apply reflux.
Unable to achieve low vacuum.	Patient eye level setting incorrect.	Adjust patient eye level setting.
	Vacuum setting too high.	Decrease the MAX vacuum setting.
Unable to achieve high vacuum.	High altitude.	600 mmHg at sea level—reduce by -25 mmHg per 1000 feet altitude.
	Low air pressure.	Check air supply hose, connections, and regulator. (600 mmHg at 90 psi minimum, 400 mmHg with cutting at 72 psi minimum)
Regurgitation.	Vacuum too low.	Check and, if necessary, increase vacuum level.
	Cassette is above the patient eye level.	Check and, if necessary, adjust the patient eye level in the Options/System Screen.
Diathermy does not work.	Power level is set too low.	Check and, if necessary, increase power.
	Handpiece connections not secured.	Check handpiece connections.
	Footswitch not connected.	Connect footswitch cable.
U/S HANDPIECE		
U/S handpiece does not tune.	Handpiece may not be plugged in.	Plug handpiece into U/S connector on console.
	Loose U/S tip.	Loosen tip, re-tighten, and tune.
	Handpiece tuned while hot.	Allow handpiece to cool for at least 15 minutes before tuning.
	Faulty handpiece.	Replace U/S handpiece.
Intraoperative loss of U/S power. Low power or intermittent power.	Worn U/S tip.	Install new U/S tip.
	Loose U/S tip.	Loosen tip, re-tighten, and tune.
	Handpiece tuned while hot.	Allow handpiece to cool for at least 15 minutes before tuning.
	Faulty handpiece.	Replace U/S handpiece.
	Internal hardware problem.	Call Alcon.

ADVISORY	POPUP TEXT	CONDITION	CORRECTION
1	"Footswitch not detected. Please check for proper connection."	The footswitch is incorrect or not connected.	Connect an *Accurus*® footswitch.
2	"Alcon Ultrasonic h/p not detected. Check for proper installation."	The installed U/S handpiece ID is not valid.	Connect an *Accurus*® U/S handpiece.
3	"Please install an Alcon Ultrasonic handpiece for the current mode."	The Test key was pressed or a U/S mode was entered with no U/S handpiece connected The U/S handpiece was removed while in U/S mode. The treadle was depressed while in a U/S mode with no U/S handpiece connected.	Connect, and prime/test the correct U/S handpiece.
4	"Ultrasonic handpiece is not tuned. Press Test to prime/tune."	The system is in a U/S mode, and the U/S handpiece is installed but not tuned.	With the tip of the U/S handpiece suspended in fluid, press the Test key to prime/tune the handpiece.
5	"Ultrasonic handpiece tune failure. Check tip for proper installation."	Loose handpiece tip. Tip touching side of bottle while tuning was in progress.	Check to see if the U/S handpiece tip is loose or otherwise improperly installed. Verify handpiece tip is suspended in fluid and retune.
6	"Priming unsuccessful. Fluid not detected in cassette. Please attempt re-prime."	Fluid not detected in cassette during priming sequence.	Ensure handpiece/probe tip is in fluid and reprime.
7	"Bulb failure detected. Please replace bulb."	An illuminator bulb burned out, or an Illuminator key was pressed for a burned out illuminator.	Replace bulb or use other illuminator.
8	"Cassette is not ready. Please check cassette for proper installation."	Cassette is not installed or did not pass the vacuum test.	Eject the cassette and check for damage. Check the cassette tubing for leaks. Replace with a new cassette if damaged.
9	"Drainbag may be full. Replace Drainbag?"	System detects that approximately 500cc of fluid has been transfered to the drain bag.	If full, press Yes and wait for "Replace drainbag now. Press OK when done" popup and replace drainbag.
10	"Cassette failed vacuum test. Please eject and reinsert, or replace cassette."	The cassette failed the vacuum test.	Eject the cassette and check the O-Ring and cassette tubing. Replace with a new cassette if damaged.

Table 16-2. ADVISORIES - Advisories appear in popups on the display screen. An advisory is usually corrected by following the instruction in the popup.

* FOR REFERENCE ONLY *

ADVISORY	POPUP TEXT	CONDITION	CORRECTION
11	"Please adjust supply source pressure for standard pressure operation."	Source pressure is too low	Adjust source pressure to between 90 and 120 psi.
12	“Press Reduced for low pressure operation or press Standard and increase air pressure.”	Source pressure is not appropriate for pressure selection.	Select a source pressure and adjust source pressure setting.
13	“Please adjust supply source air pressure for reduced pressure operation.”	Source pressure is too low.	Increase source air pressure.
14	“Vacuum surges detected. Check aspiration lines and connections for leaks.”	The vacuum level exceeds its upper tolerance.	Check the tubing and connections for leaks. Reconnect or replace if necessary.
15	“Pressure surges detected. Check VFC/Scissors lines and connections for leaks.”	Proportional pressure exceeds its upper tolerance.	Check that VFC or Scissors (whichever is applicable) is properly connected. Check tubing and connections for leaks.
18	“Cassette detected full. PLEASE REPLACE CASSETTE.” "Please check cassette receiver mechanism for possible blockage."	Cassette pump failure.	If cassette is loaded, eject, discard, and replace cassette with a new one. If cassette is not loaded, inspect cassette receiver mechanism for blockage.
19	“Please check cassette.”	Cassette loading problem. Cannot rotate pump when loading cassette.	Load cassette.
20	"Please check cassette."	Cassette unloading problem.	Manually eject cassette and inspect receiver mechanism for blockage.
21	“Apply vacuum to enable additional Reflux pulses."	Operator requests more than 10 consecutive reflux pulses in the posterior domain, or 20 consecutive reflux pulses in the anterior domain without requesting vacuum.	Apply vacuum to enable additional refluxes and remove the popup.
22	"Cassette type does not match surgical mode. Please insert the correct cassette."	Cassette is the wrong type for the current surgical domain.	Eject cassette and replace with cassette for current domain.
23	"Memory error, capabilities may be limited."	System version number and model is invalid.	Press OK. System provides 400VS capabilities.
24	"Low battery condition. Please replace the battery on the remote control."	A low battery condition exists.	Replace remote control batteries.

ADVISORY	POPUP TEXT	CONDITION	CORRECTION
25	"Doctor memories do not match backup copy. Which copy do you want to overwrite?"	SRAM doctor memories CRC does not match Sound board doctor memories CRC.	Press CPU Bd key to overwrite SRAM doctor memories, or press Snd Bd key to overwrite Sound board doctor memories, or press Ignore key to use SRAM doctor memories and skip all writes to sound board memory.
26	"Light sensor triggered. Remove flashlight and release treadle if vacuum was on."	Top fluid level sensor triggered when the transmitting LED is turned off.	Redirect ambient light source away from cassette receiver mechanism.
27	Posterior Domain - "Check *VGFI*™ * F/AX setup. Select 30 mmHg backup pressure, or Ignore low pressure condition."	LPA Output out of lower tolerance for more than 5 seconds.	Press the Ignore key to remove the popup message and ignore the condition until it is corrected, or press the 30 mmHg key to evoke the non-adjustable backup pressure (*VGFI*™ *, and F/AX are unavailable).
	Anterior Domain - "Check *VGFI*™ * setup. Select Gravity irrigation, or Ignore low pressure condition."		Press the Gravity key to switch to gravity irrigation. "Disconnect *VGFI*™ * lines and raise the bottle." appears, and will disappear when OK key is pressed (Anterior *VGFI*™ * irrigation is unavailable).
28	"Doctor memories backup copy must be replaced. Please call Field Service."	Sound board flash memory has a problem during a flash write.	Press the OK key and call your Alcon field service representative.
29	"The CPU board battery must be replaced. Please call Field Service."	CPU SRAM battery is getting low or is dead.	Press the OK key and call your Alcon field service representative.
	"Please install an MPC scissors handpiece."	MPC mode was entered with no MPC probe connected. The MPC probe was removed while in MPC mode. The treadle was depressed while in an MPC mode with no MPC probe connected.	Connect an MPC probe.
	"Please turn on infusion before aspirating."	The treadle was depressed in a posterior mode where the treadle controls aspiration, but infusion is not currently turned on.	Turn infusion on.
	"Diathermy output exceeded upper tolerance. Press OK to continue."	Diathermy voltage exceeds upper tolerance.	If this mode is needed, cycle system power.

* FOR REFERENCE ONLY *

ERROR	POPUP TEXT	CONDITION	CORRECTION
101-110	“All surgical modes are not available.”	An error in the Air/Fluid module has caused the module and all its functions to shut down.	If any of these modes are needed, cycle system power.
111-115	“Modes using Vacuum are not available."	An error in vacuum function of Air/Fluid module has caused shutdown of all modes that use vacuum.	If any of these modes are needed, cycle system power.
116-117	“VFC (Inject) and Prop Scissors are not available.”	An error in proportional pressure function of Air/Fluid module has caused shutdown of all submodes that use proportional pressure.	If any of these modes are needed, cycle system power.
118	“Vit and Multi-Cut Scissors are not available.”	An error in pulsed pressure function of Air/Fluid module has caused shutdown of all submodes that use pulsed pressure.	If any of these modes are needed, cycle system power.
119	"Anterior surgical modes are not available."	Continuous reflux valve error. Anterior functions using vacuum are disabled.	If any of these modes are needed, cycle system power.
120	"Some surgical modes are not available."	Irrigation valve error. Anterior functions using vacuum are disabled, plus frag and extrude.	If any of these modes are needed, cycle system power.
121	"Continuous reflux is not available."	Continuous reflux valve error. Continuous reflux not available in anterior modes.	If continuous reflux is needed, cycle system power.
122	"Irrigation must be turned off manually."	Irrigation valve error. On/off control of irrigation is not available in anterior modes, though irrigation pressure can still be adjusted.	Pinch irrigation tubing to control irrigation on/off. Reduce pressure to zero if no longer required.
123	"MPC scissors modes are not available."	MPC drive voltage error. MPC scissors functions are disabled.	If MPC modes are needed, cycle system power.
124	"Pincher error. All surgical functions are disabled."	Irrigation/infusion valve error in Combined domain has caused the Air/Fluid module to shut down. All related surgical functions are not available.	If any of these modes are needed, cycle system power.
201-207	“Ultrasonic power and Diathermy are not available.”	An error in the US/Diathermy module has caused that module and all its functions to shut down.	If either of these modes is needed, cycle system power.

Table 16-3. ERRORS - Errors appear in popups on the display screen. The popup remains displayed until the operator acknowledges the error condition. The error status remains until system power is turned OFF/ON. If the error does not affect current active functions, they will remain active.

ERROR	POPUP TEXT	CONDITION	CORRECTION
211	"Ultrasonic power is not available."	U/S diathermy out of tolerance.	If U/S is needed, cycle system power.
212	"Ultrasonic h/p ground fault. Please replace handpiece."	U/S h/p ground fault.	Replace handpiece with new one.
301, 302, 304	Posterior - "Illuminator and Air Pump settings are fixed." Anterior - "Illuminators and *VGFI*™ * are not available. Disconnect *VGFI*™ *."	LPA/Illum communication line failure or volts out of tolerance.	If this mode is needed, cycle system power.
303, 306, 309-313	Posterior - "Air pressure in non-adjustable backup mode set at 30 mmHg." Anterior - "Illuminators and *VGFI*™ * are not available. Disconnect *VGFI*™ *."	An error in the LPA/Illuminator module has caused the module and all its functions to shut down.	Press OK and recycle power.
307	Posterior - "Possible Air Pump error. Press 30 mmHg backup or ignore." Anterior - "Possible Air Pump error. Press Gravity irrigation, or Ignore."	An error detected in the low pressure air source.	Press gravity, 30 mmHg backup, or ignore.
314	"Air pressure is not available."	LPA directional solenoid valve status feedback error.	Press OK and recycle power.
315	"Illuminator is not available." "Overtemp detected. Illuminator will turn off in 3 minutes."	Bulb temperature fault detected at system initialization. The function is disabled. Bulb temperature fault detected during run time. The function is disabled after a 3 minute delay.	If the illuminator function is needed, cycle system power. If the illuminator function is needed, cycle system power.
316	"Illuminator power fault. Illumination may be dim."	An error occurred with the LPA/Illuminator module's 17 volt supply.	If illuminator is dim, increase intensity. If results not acceptable, cycle system power.
317	"Auto stopcock failure. Switch stopcock manually."	LPA auto stopcock solenoid valve status feedback error.	No action taken until auto stopcock function implemented.
319	Posterior - "Air Pressure is not available." Anterior - "Disconnect *VGFI*™ * and use gravity irrigation."	An error was detected in the LPA/Illuminator module causing the low pressure air source to be turned off.	If the low pressure air source is needed, cycle system power.

* FOR REFERENCE ONLY *

ERROR	POPUP TEXT	CONDITION	CORRECTION
501	"Power Pole is not available."	Power pole was not connected. There was a communication error between the host and the power pole.	Connect the power pole and switch to Power Pole mode again.
502	"Power pole position is not valid."	Likely cause is system was turned off with rear switch while pole was moving. Power pole does not know its current position.	Select Calibrate to home the pole and reset its position, or select Gravity to switch to Gravity mode.
503	"Power pole did not reach commanded position."	Time out expired for pole to reach its destination.	Select Ignore to leave pole where it is. Retry to command it to its setpoint, or Calibrate to home it, then go to its set point.
906	“Footswitch detents may be irregular.”	A 24 volt error was detected in the host module. This may cause the footswitch detents to seem irregular.	Depress the treadle to test the detents (only if in U/S mode). If unacceptable, cycle system power.

FAULT	CONDITION	CORRECTION
401, 402, 405	Front Panel fault detected. System is put into a safe state.	The operator must cycle power. Call Alcon Field Service.
903 - 905 907 - 930	Host fault detected. System is put into a safe state.	Call Alcon Field Service.
N/A	Host POST failure. System will not complete initialization.	Call Alcon Field Service.

Table 16-4. FAULTS - Faults appear across the display screen. Faults are the most severe system status conditions, and require that system power be recycled. To help troubleshooting, record information displayed on the fault screen before recycling power.

* FOR REFERENCE ONLY *

SECTION SEVENTEEN
OPTIONAL ACCESSORIES

CART WITH IV POLE

General Information

The *Accurus*® Cart with IV Pole is used to support and transport all models of the *Accurus*® console, and in addition it is designed to carry the *Eyelite*® laser console. The IV Pole is available in either manual or power adjustment models. Throughout the section of the manual, all information pertains to both models except when noted otherwise.

The cart incorporates several features to accommodate accessories and ancillary products. Accessories, the various devices that attach to the *Accurus*® console, include the following:

- *EyeLite*® Laser
- Footswitches for the *Accurus*® and *EyeLite*® systems
- Remote Control
- Ultrasonic handpieces
- Scissors handpiece and tubing

The cart's four, double wheel caster wheels roll silently and never require lubrication. All four wheels swivel, and the two rear wheels are the locking type.

The *Accurus*® cart accommodates infusion/irrigation by both the I/V Pole gravity method and the gas forced infusion/irrigation method (*VGFI*™*, AVGFI, or CVGFI).

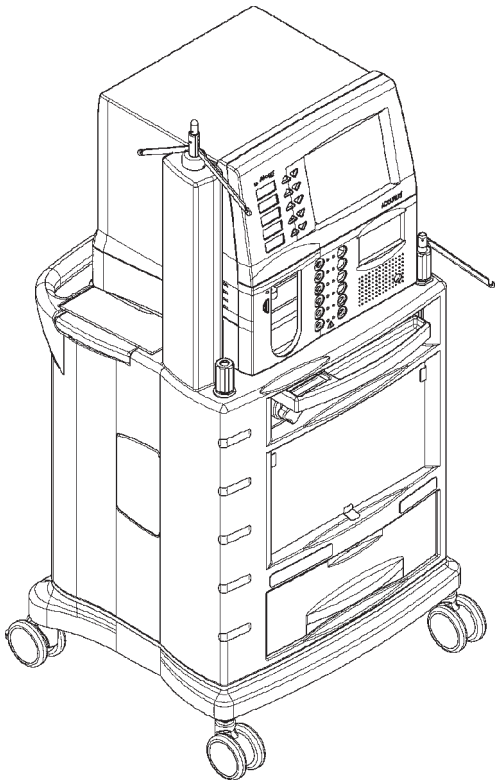


Figure 17-1 THE MOBILE CART (Power IV Pole model shown) - The mobile cart, shown here with the *Accurus*® system mounted in position on the top, offers system mobility for the surgical staff. The retractable drop panel on the front of the cart is shut in this illustration, hiding and protecting the *EyeLite*® laser.

Accurus® Console and *EyeLite*® Laser Mounting

The *Accurus*® console is secured to the top of the cart with threaded knobs screwed up from under the top cover of the cart and into the bottom of the *Accurus*® console.

The *Eyelite*® laser sits on a flat, enclosed shelf under the Mayo tray. The shelf can serve as a storage area in case no *EyeLite*® is used.

Cabling and Interconnections

On Power IV Pole models a cable from the power IV pole exits the rear of the cart and must be routed through a cable raceway. The connector is plugged into the Power IV Pole connector on the *Accurus*® rear panel.

The *Accurus*® power cord, compressed air hose, and footswitch cable are secured to the back of the cart with cable raceways. When moving the cart from room to room there are cable cleats to wind the *Accurus*® and *EyeLite*® power cords, and the *Accurus*® air hose.

The *Accurus*® and *EyeLite*® footswitch cables exit the systems and enter the bottom drawer at the rear of the cart. The front of the drawer is notched for the cables so the drawer can be shut when the footswitches are removed for use; when not in use the footswitches and cables are stored in the drawer.

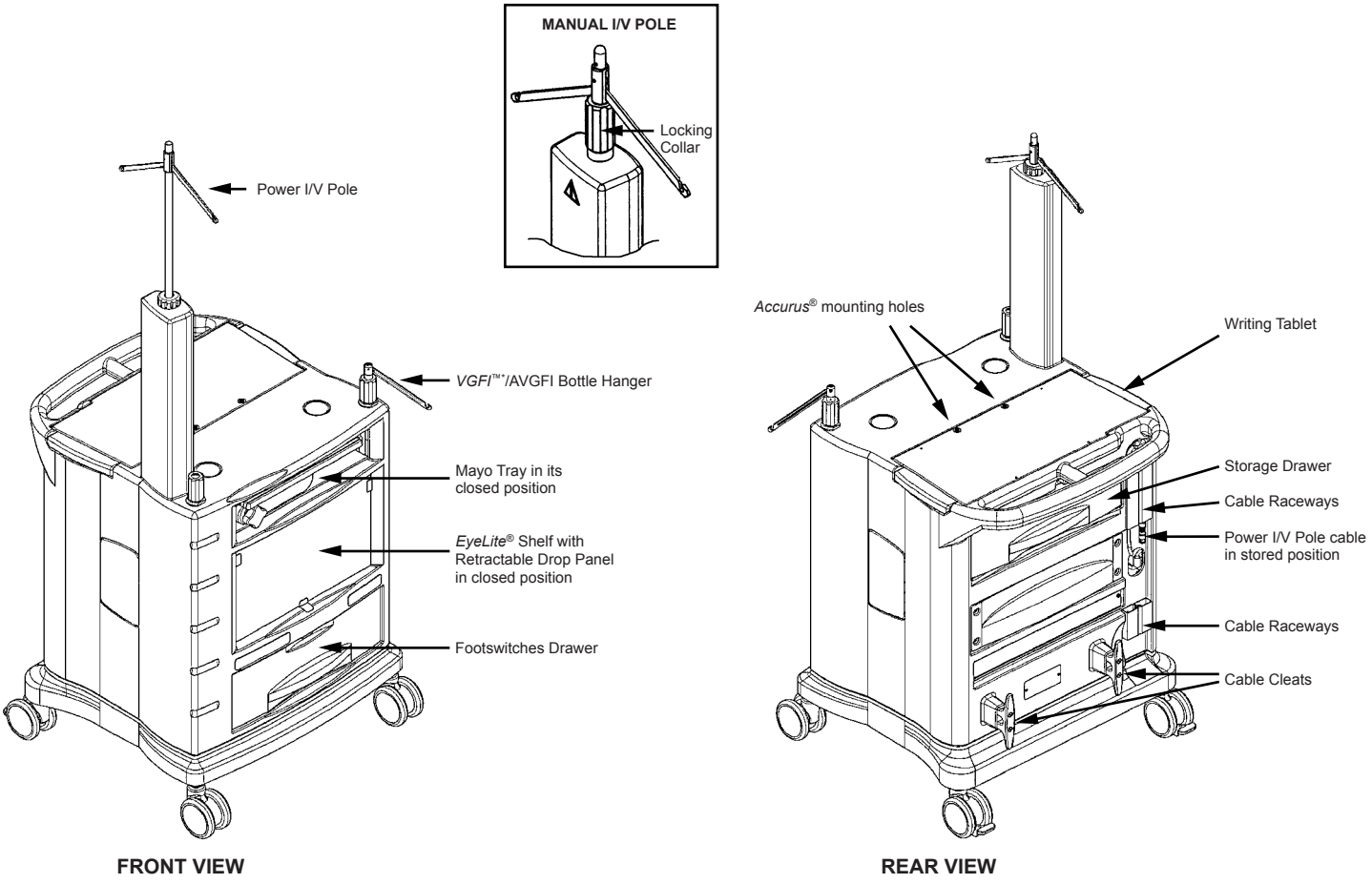


Figure 17-2. MOBILE CART COMPONENTS - The mobile cart has several features to facilitate the OR staff during ophthalmic surgery. The front and rear views show the cart with the Power IV Pole while the inset view shows the Manual IV Pole.

* FOR REFERENCE ONLY *

Cart Features

Writing Tablet

A retractable tablet on top of the cart slides left or right for a nurse to use as a writing station. When not in use the tablet can be secured in the closed position so it does not protrude in either direction. The tablet cannot be completely pulled out and removed.

Mayo Tray

To accommodate surgical procedures the cart contains a reusable and autoclavable Mayo instrumentation tray. When extended from the front of the cart, the Mayo tray is adjustable from 32 to 38 inches above the floor.

Storage Shelves and Drawers

The cart contains a shelf below the Mayo tray to accommodate the *EyeLite*® laser. A panel at the rear of this shelf is removable to allow access to the rear connector panel of the *EyeLite*® laser. If an *EyeLite*® laser is not used, the panel remains installed, making the space more useable for storage. A retractable drop panel covers the shelf opening in the front of the cart.

There is a drawer on the front of the cart to store the *Accurus*® and *EyeLite*® footswitches/cables. The front of the drawer is notched so the cables can exit the cart when removing a footswitch for use, and the drawer can be shut. There is another drawer located at the back of the cart for storing handpieces and the remote control.

Power IV Pole

The power IV pole, equipped with two hooks to accommodate infusion/irrigation fluid, rises and descends at the push of the *Accurus*® system's infusion/irrigation global function buttons. Setting a desired fluid pressure automatically establishes power IV pole bottle heights that produce specific fluid pressures (5 mmHg to 85 mmHg).

The pole is connected to the *Accurus*® console via a cable from the cart's rear panel. The global function LED readout on the *Accurus*® console provides a readout of the selected hydrostatic pressure, and the readout blinks while the pole is moving.

NOTES: In the event that the power IV pole hits an obstruction, such as another piece of equipment or the ceiling, the motor will stall in a safe manner. If there is a power outage the IV pole will remain extended and will not lose its original location when power is restored.

The power IV pole will halt movement in the event the user activates MPC scissors cutting and/or attempts to load/eject the cassette. The IV pole will resume movement when scissors cutting is stopped or the cassette is loaded/ejected.

See sections three, seven, and eleven in this manual for details of power pole operation using the *Accurus*® front panel up/down arrow buttons and graphical user interface.

WARNING!

Keep hands away from IV pole during movement to prevent inadvertent pinching.

Cart Features continued on next page

Manual IV Pole

The Manual IV pole, equipped with two hooks to accommodate infusion/irrigation fluid, can be manually adjusted to accommodate specific fluid pressures (5 mmHg to 85 mmHg). It can reach various heights by loosening the locking collar around the pole, adjusting the bottle hanger to the desired height, then tightening the locking collar.

VGFI™*/AVGFI/CVGFI Bottle Hanger

For very low gravity infusion/irrigation pressures, or when using Vented Gas Forced Infusion, the bottle may be suspended from the manually-adjusted bottle hanger. Various heights are reached by twisting a locking collar around the pole, adjusting the bottle hanger to the desired height, then tightening the locking collar. For Vented Gas Forced Infusion the center of the drip chamber should be placed at patient eye level.

The bottle hanger can be located on either side of the cart. To remove the bottle hanger, loosen the collar and lift the bottle hanger to the maximum height until a stop is felt. Loosen the collar several more turns. Using a little force, pull the bottle hanger straight out. To reinstall it on the opposite side of the cart, loosen the collar several turns. Using a little force, push the bottle hanger into the opening until the knurled end of the bottle hanger is well advanced inside the collar. Adjust it to the correct height and tighten the collar.

Cleaning

All external console, cart, and pole surfaces are wipeable with a cloth containing a mild detergent solution, isopropyl alcohol, or a germicidal solution such as Cidex.



Consult Operator's Manual, or
Caution, or
System Error (yellow), or
System Advisory (green)

Figure 17-3. ICONS USED ON THE *ACCURUS*® CART WITH IV POLE

* FOR REFERENCE ONLY *

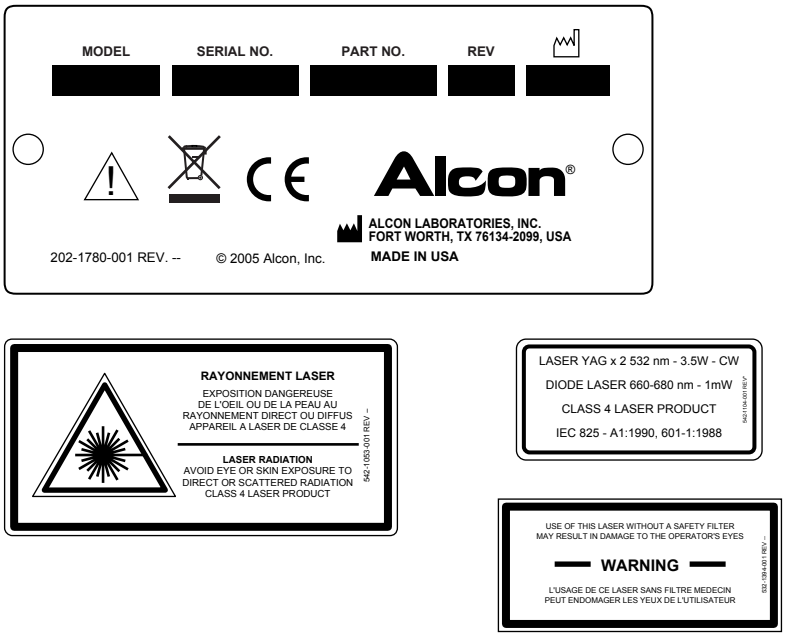


Figure 17-4 LABELING USED ON THE *ACCURUS*® CART WITH IV POLE

VIDEOVERLAY PARAMETERS SYSTEM

Overview

The VideOverlay Parameters System (VOPS) accepts operating parameters from the *Accurus*® system and overlays that information onto video accepted from the microscope camera. The VOPS system then outputs a video signal to a monitor and/or VCR for retrospective viewing.

There are two possibilities for VOPS setup: Standard and Super VHS. The two possibilities are described in this section of the manual.

WARNINGS!

To prevent electrical shock, do not remove cover. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

The VideOverlay must be plugged into an appropriate wall outlet and be positioned at least 5 feet (1.5 meters) away from the patient.

The VOPS display is for information purposes only, and is not intended to substitute for the *Accurus*® display.

CAUTION

Use only Alcon-supplied cable to connect the VideOverlay to the *Accurus*® system. *Accurus*® and *Legacy*® cables are not interchangeable.

NOTE: This unit is not a medical device and should be located/stored with other video equipment (i.e., VCR, monitor, etc.). When connected to the *Accurus*® system, the VideOverlay unit does not increase the leakage current of the *Accurus*® system.

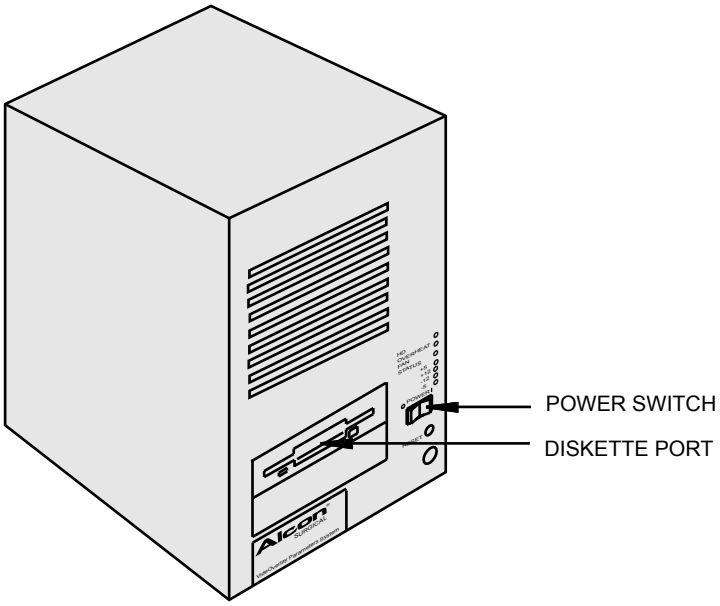


Figure 17-5 VIDEOVERLAY FRONT PANEL

* FOR REFERENCE ONLY *

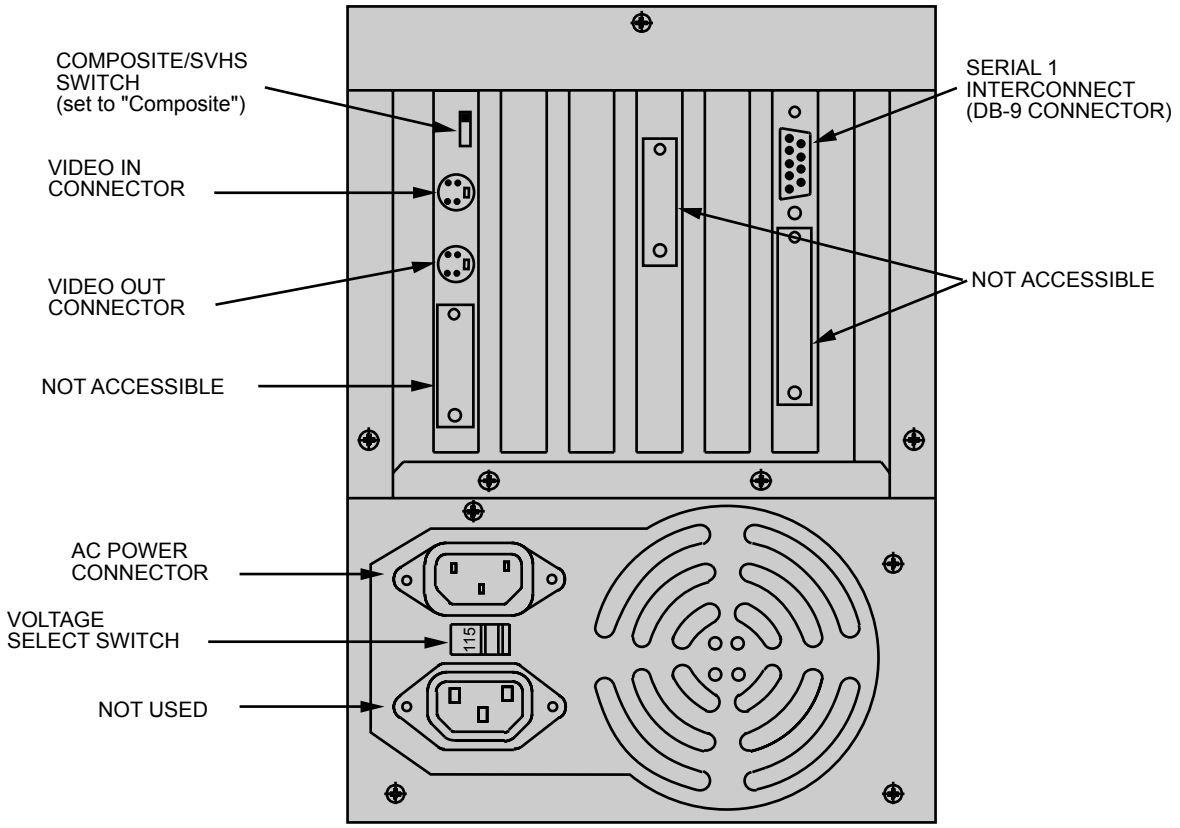


Figure 17-6 VIDEOVERLAY REAR PANEL

Standard Setup (for USA/Japan [NTSC] and Europe [PAL])

1. Ensure power to all systems is off, then attach the AC power cord firmly to the AC power connector located on the rear panel of the VideOverlay (see Figure 17-6).

2. Plug the other end of the AC power cord into an appropriate wall outlet.

3. Verify the red voltage select switch (i.e., 115 VAC or 230 VAC) located under the AC power connector is set to the proper line voltage. **Note: In Japan set the switch to 115 VAC; the system will operate properly when set as low as 90 VAC.**

4. Set the VideOverlay's Composite/SVHS switch to the "Composite" (up) position.

5. The VideOverlay is configured for SVHS cables, so Standard setups require RCA adaptor cables (included with all units). Connect the adaptor cables as follows (see Figure 17-7):
   • Plug an RCA-to-SVHS adaptor cable into the “Video In” connector on the VideOverlay rear panel.
   • Plug the other RCA-to-SVHS adaptor cable into the “Video Out” connector on the VideOverlay rear panel.

6. Connect an RCA video cable from the microscope camera to the "Video In" RCA-to-SVHS adaptor cable. **NOTE: Older cameras may require an additional adaptor.**

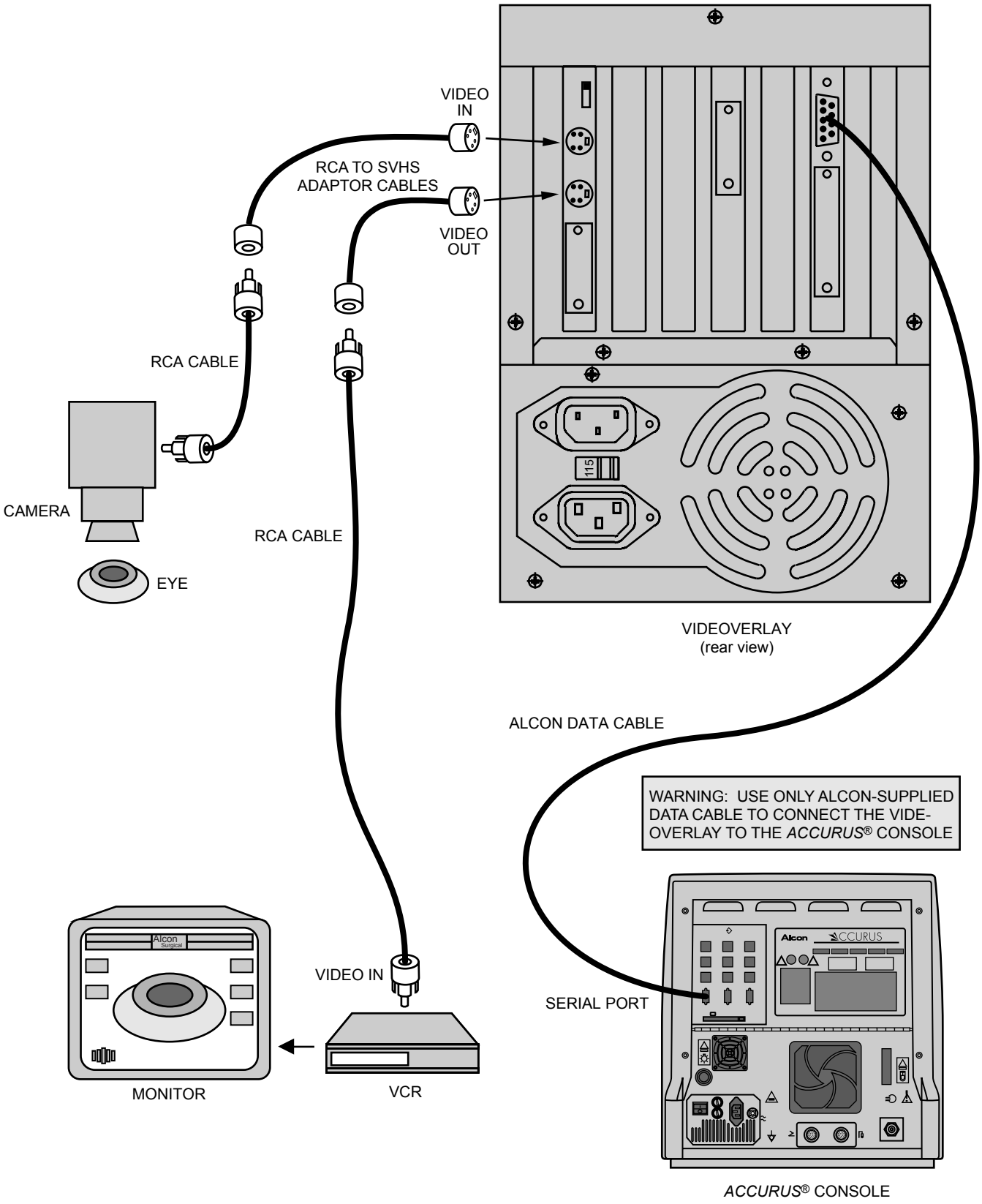


Figure 17-7 VIDEOVERLAY STANDARD INTERCONNECT DIAGRAM - This diagram shows the cabling used when connecting to a standard video monitor. This cabling requires the use of RCA-to-SVHS adaptor cables.

7. Connect an RCA cable from the VCR "Video In" connector to the "Video Out" RCA-to-SVHS adaptor cable.

8. Verify the VCR video output is connected to the Monitor video input.

9. Connect the Alcon Data Cable from the connector marked “Accurus” on the VideOverlay to the “Serial” port on the back of the *Accurus*® console. Tighten connector screws securely.

10. Ensure that the monitor and VCR are both on the "video" setting.

11. Turn the VideOverlay power switch to the ON position (see Figure 17-5).

12. Turn *Accurus*® system power ON.

13. Observe the video display on the monitor (see Figure 17-8). If an overlay video picture does not appear, check the video cable connections. If there seems to be no communication to the *Accurus*® system, check the Alcon Data Cable connections. If the system still does not operate correctly, contact an Alcon Technical Service Representative.

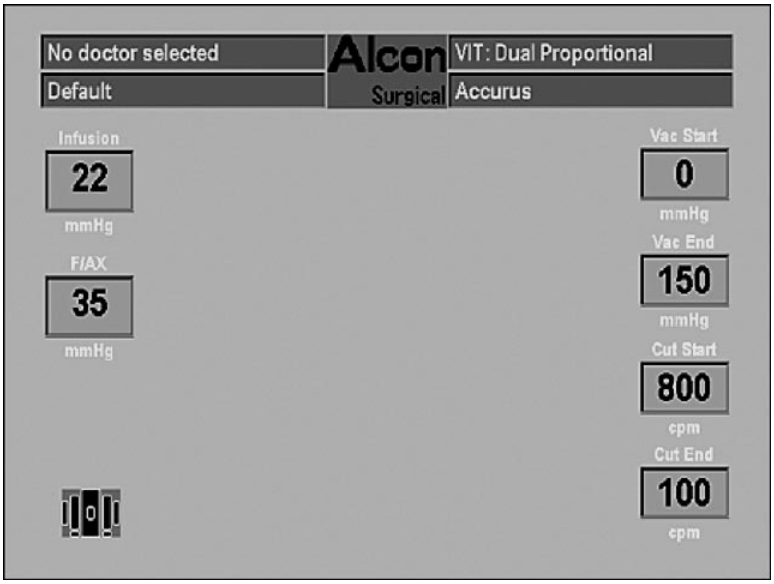


Figure 17-8 TYPICAL VIDEO DISPLAY ON MONITOR

Super VHS High Resolution Setup (requires special camera and cables)

1. Ensure power to all systems is off, then attach the AC power cord firmly to the AC power connector located on the rear panel of the VideOverlay (see Figure 17-6).

2. Plug the other end of the AC power cord into an appropriate wall outlet.

3. Verify the red voltage select switch (i.e., 115 VAC or 230 VAC) located under the AC power connector is set to the proper line voltage. **Note: In Japan set the switch to 115 VAC; the system will operate properly when set as low as 90 VAC.**

4. Set the VideOverlay's Composite/SVHS switch to the "SVHS" (down) position.

5. Connect a SVHS video cable between the microscope camera and the “Video In” connector on the rear panel of the VideOverlay (see Figure 17-8). **NOTE: Do not use RCA cable.**

6. Plug the other SVHS video cable between the “Video Out” connector on the rear panel of the VideOverlay and the “Video In” connector on the VCR.

7. Verify the VCR video output is connected to the Monitor video input.

8. Connect the Alcon Data Cable from the connector marked “Accurus” on the VideOverlay to the “Serial” port on the back of the *Accurus*® console. Tighten connector screws securely.

9. Ensure that the monitor and VCR are both on the "video" setting.

10. Turn the VideOverlay power switch to the ON position (see Figure 17-5).

11. Turn *Accurus*® system power ON.

12. Observe the video display on the monitor (see Figure 17-8). If an overlay video picture does not appear on the monitor, check the video connections. If there seems to be no communication to the *Accurus*® system, check the Alcon Data Cable connections. If the system still does not operate, contact an Alcon Technical Service Representative.

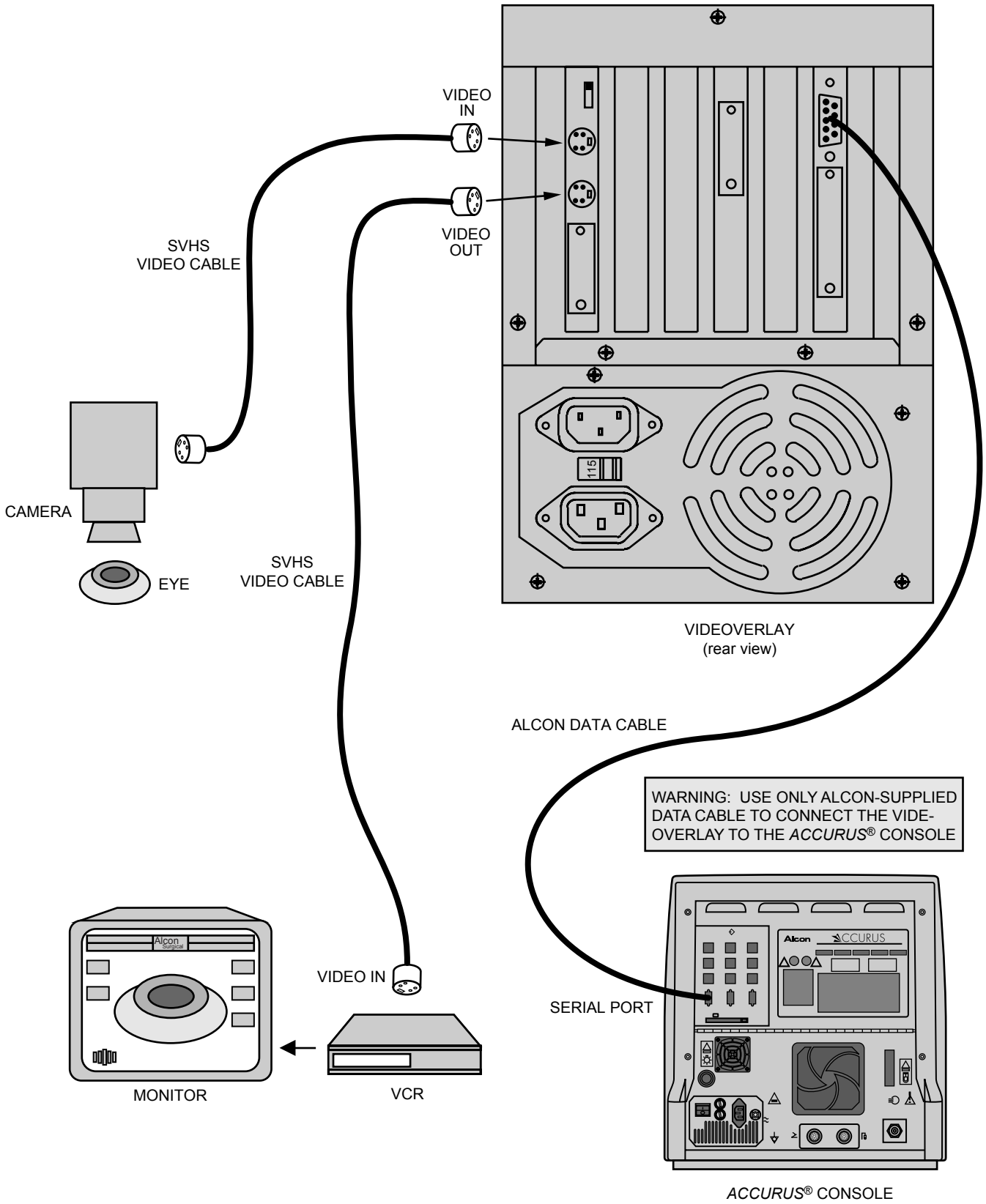


Figure 17-9 VIDEOVERLAY SVHS INTERCONNECT DIAGRAM - This diagram shows the cabling used when connecting to a Super VHS video monitor. This cabling requires the use of SVHS video cables.

VideOverlay Operation

After the system is connected, operation is straight forward. Nothing else is required. The system will automatically display the appropriate information onto the video screen. Table 17-1 shows the possible displayed information.

FEATURE	WHEN DISPLAYED
Doctor Name	All surgical and setup modes
Memory Name	All surgical and setup modes
Mode	All modes
Handpiece Type	Vit, Phaco, Frag modes
Footswitch	All except doctor memory modes
Reflux	Anytime active
Diathermy	Anytime active
Irrigation Pressure	Anterior modes
Infusion Pressure	Posterior modes
F/AX Pressure	Posterior modes
Elevated Infusion Timer	Anytime active
U/S Power Average	Anterior suragical modes
Vacuum	All surgical modes with controllable aspiration
Cut Rate	Vit, Scissors modes
Pressure	Proportional scissors, VFC modes
U/S Power	Frag, Phaco modes
U/S Pulse	Frag, Phaco modes
U/S Duty Cycle	Burst Phaco mode
U/S Burst Rate	Burst Phaco mode
System Status	While disconnected from the console

Table 17-1 VIDEOVERLAY DISPLAY INFORMATION

* FOR REFERENCE ONLY *

Additional Information

- When the VideOverlay Parameters System (VOPS) is either disconnected or not communicating with the *Accurus*® console, only the Alcon logo and the system status bar are displayed.

- The *Accurus*® VOPS is hot-pluggable, meaning it can be connected to, or disconnected from, the *Accurus*® console at any time. When powered up and connected, the VOPS will establish communication with the *Accurus*® console and begin displaying data.

- Due to the nature of the interface between the *Accurus*® console and the VOPS, information transfer delays up to 1-2 seconds may occur when the *Accurus*® console is heavily utilized.

- When the VOPS is powered up, the System Status bar displays the version number of the software for approximately 5 seconds.

Dimensions	
Size:	168mm x 240mm x 399mm (6.6" x 9.5" x 15.7")
Weight:	15.9 kilo (35 lb.)
Environmental	
Altitude:	3050 meter (10,000 ft.)
Temperature:	0° C to 55° C
Relative Humidity:	10% to 90% Without Condensation
Electrical Requirements	
115/230 VAC, 50-60 Hz, 6/3 A	
Certifications	
IEC-950, UL1950, CSA C22.2 No. 950, EN60950, EN55022 Class B, EN50082-1, FCC Class B.	
I/O	
Video In:	NTSC or PAL, depending on system purchased
Video Out:	NTSC or PAL, depending on system purchased
Data In:	RS232C data cable from the *Accurus*® console

Table 17-2 VIDEOVERLAY SPECIFICATIONS

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* FOR REFERENCE ONLY *

SECTION EIGHTEEN
INDEX

Symbols

20 cc syringe 4.11, 12.19
375/40 U/S and *Mackool*** handpiece. 7.14, 11.27
5 bar 1.4, 4.1, 12.1

A

AAMI standards and recommended practices. 5.5, 9.4, 13.5
About this operator's manual. 1.3
AC power. 16.2
Accessories 3.2, 6.1, 7.2, 10.1, 11.2, 14.1
Accessory equipment 1.4
AccuPak® Stand Alone Vitreous Probe 8.16
Accurus® probes. 3.22, 11.28
Accurus® anterior pak setup 8.7
Accurus® console 2.1, 17.1, 17.2
Accurus® console and EyeLite® laser mounting 17.2
Accurus® models 1.3
Accurus® opening screen 4.2, 8.2
Accurus® ophthalmic surgery system 1.1, 2.1
Accurus® probe. 4.10, 12.11
Accurus® system specifications 1.16
Activate button. 2.9
Advisories 2.45, 16.6
Air connector 2.7
Air filter cleaning 15.5
Air input grate 2.7
Air pressure. 1.4
Air pump 3.3, 7.3, 11.4
Air supply. 4.7, 8.6, 12.7
Alcon customer service 6.1, 10.1, 14.1
Alcon Laboratories. . . . . i, 1.15
Alcon paks. 4.8, 8.6, 12.8
Alcon Surgical . . . . . i, xiii
Alternate fluid pressure 7.5
Alternate infusion. 3.4
Alternate infusion pressure 3.4, 7.4, 11.4, 11.5
Anterior accessories and parts 10.1
Anterior domain key. 7.1
Anterior domain surgery modes 7.7
Anterior fluid cassette insertion 8.7
Anterior pak setup 8.7, 8.12
Anterior setup and surgery screens. 7.1
Anterior surgery screens 7.7
Anterior tab set 2.23
Anterior vented gas forced irrigation (AVGFI) 8.12
Anterior *VGFI*™* cassette pak 8.14
Anterior vitrectomy. 8.16, 7.13, 12.31
Auto ranging power supply 2.7, 15.1
Available Yes/No 3.4
AVGFI 8.12
AVGFI irrigation 7.5

B

Battery replacement 15.3
Biohazards. 1.13
Bottle hanger 17.4
Bottle height. 17.3
Bulb 2.7, 3.6, 7.6, 11.7
Bulb replacement. 1.12, 15.2
Bulbs 2.5
Burnt bulb 3.6, 7.6, 11.7

C

Cable from the power IV pole 17.2
Cannula 4.9, 12.10
Care and maintenance 15.1
Cart features 17.3
Cart with IV pole 17.1
Cart with power I/V pole 3.3, 7.3, 11.4
Cassette 2.2, 2.4, 4.8, 12.9, 16.2, 16.6
Cassette ejector. 2.7
Cassette port LEDs 2.4
Cassette release level 5.1, 9.1, 13.1
Cassette removal. 5.1, 9.1, 13.1
Cassette design. 2.2
Cataract surgery setup screen 7.1
Cautions . . . . . xiii, 1.9
Channel selection 15.3
Circulating nurse 4.1, 4.8, 8.1, 12.1, 12.8
Clean key. 3.2, 4.4, 7.2, 8.4, 11.2, 12.4
Clean membrane peeler cutter (MPC) Scissors 5.3, 13.3
Clean the diathermy handpiece. 5.4, 9.3, 13.4
Clean the extrusion handpiece 5.3, 13.4
Clean the *Fragmatome*™* handpiece 5.2, 13.2
Clean the I/A handpiece 9.3, 13.3
Clean the intraocular scissors (IOS) handpiece 5.3, 13.3
Clean the phaco handpiece. 9.2
Cleaning 5.1, 9.1, 13.1, 17.4
Coagulation handpieces 3.21, 11.30
Color LCD display and touch screen. 2.2
Combined mode screens. 12.2
Combined surgery modes 11.8
Combined surgery setup screen 11.1, 12.2
Combined VFC injection/extrusion screen 3.17, 3.18, 11.25, 11.26
Combined viscous fluid injection with extrusion 4.23, 12.29
Common tab set 2.28
Compressed air connector 2.7
Connector LED's 2.4
Connectors 2.4
Consumable paks 1.13, 1.14
Consumables. 1.13
Continuous Irrigation 7.5
Corrective action 16.1
Crating instructions 15.4
Current key 2.21
Customer service. 1.14
CVGFI 12.2
CVGFI-F/AX 4.15

D

Default settings 3.7, 4.4, 11.8
Defaults key. 2.21
Description. 2.1
DFU 1.9, 4.8, 5.1, 8.6, 9.1, 12.8, 13.1
Diathermy 3.2, 3.6, 4.7, 7.2, 7.6, 8.6, 11.2, 11.7, 12.8, 16.4, 16.5
Diathermy function. 1.11
Diathermy power 1.20
Diathermy probe connection 4.20, 12.26
Diathermy setup 4.20, 12.26
Diathermy/Coagulation handpieces. 3.24, 7.15, 11.30
Directions for use. 1.9, 4.8, 8.6, 12.8
Disassembly and cleaning. 5.1, 9.1, 13.1
Display windows 2.12
Disposables. 1.15

D - *continued*

Doctor memories window 2.15, 2.16
Doctor memory 2.21
Doctor's name 2.33
Doctors tab set 2.33
Drain bag 2.2, 3.2, 4.8, 8.7, 8.14, 11.2, 12.9, 16.2

E

Eject Button 2.4
Electrical Connectors 2.4
Electrical Requirements 1.16
Electromagnetic emissions 1.6
Electromagnetic immunity 1.7
Electromagnetic environment 1.8
Elevated Infusion Timer 2.17
EMC Statement 1.6
Environmental Considerations 1.5
Environmental Issues 1.5
Environmental Limitations 1.16
Equal Potentiality Lug 2.7
Erase Tab 2.36
Error Condition 16.9
Error Message 1.9
Errors 2.43
Export Tab 2.36
Extract 3.18, 11.26
Extrude Mode Surgery Screen 3.19, 11.24
Extrusion Handpiece Setup 4.11, 12.17
Extrusion Line 4.12, 12.17
Extrusion Screen 3.19, 11.24
Eyelite® Laser 17.1

F

F/AX 3.5, 4.15, 11.7, 12.32
F/AX global function key 4.15
F/AX Infusion 4.7, 12.7
Factory default settings 3.7, 4.4, 4.5, 4.6, 8.4, 8.5, 11.8, 12.4, 12.5
Faults 2.43, 16.12
Features 1.2, 1.3
Fiber Optic Illuminator 4.12, 12.18
Fiber Optic Illuminator Setup 4.11, 12.18
Fixed Fragmentation Submode 3.13, 11.18
Fluid Air Exchange (F/AX) 3.5, 11.7
Fluid Cassette 2.2
Fluid Delivery Methods 11.3
Fluid/Air Exchange 4.7, 12.7
Fluid/Air Exchange (F/AX) Setup 4.15, 12.33
Fluid/Gas Exchange Tubing Set 4.15, 12.33
Footpedal Operation 1.21
Footswitch 2.8, 3.7, 7.7, 11.8, 16.2, 16.11
Footswitch Cables 17.2
Footswitch Connector 2.7
Footswitch Functions 2.29, 3.8, 3.9, 3.10
Footswitch Icon 2.17
Footswitch Tab 2.29
Frag 3D Submode 3.16, 11.18
Frag Mode Surgery Screen 3.15, 11.17
Fragmatome™* Accessory pak 4.13
Fragmatome™* Handpiece 3.22, 4.13, 11.28
Fragmatome™* Handpiece Tubing Connections 4.13, 12.23
Fragmatome™* Accessory Pak Setup 12.22
Fragmatome™* Handpiece 3.19, 11.28
Fragmentation 3.15, 11.17
Front panel 2.3
Front panel components 2.2
Front panel Display Screens 2.10
Fuse Holders 2.7
Fuse Module 2.7
Fuse Replacement 16.2
Fuse Selection 15.1

G

General Information 1.1
General Purpose Timer 2.17
GFX Infusion Line Connection 12.32
Global Function LED Displays 2.2
Global Function Up/Down Adjustment Buttons 2.2
Global Functions 2.2, 4.7, 8.6, 12.7
Global Functions 3.5, 7.5, 11.6
Global Functions Keys 7.5, 11.6
Global Functions Window 2.14
Global Keys 4.7, 8.6, 12.7
Gravity 4.7
Gravity fed infusion 4.7, 8.6, 12.7
Gravity infusion 3.3, 3.5, 7.3, 11.4, 11.6
Ground continuity 1.9

H

Handpieces 6.3, 10.4, 14.3, 14.4
Handpieces and probes 3.19, 7.14, 11.26
Hazardous Substances 1.5
Heel switch 2.33, 3.7, 7.7, 11.8
Help 16.1
Horizontal/vertical switches 2.8, 3.7, 7.7, 11.8

I

I/A and Phaco Fluidics Balance Test 12.16
I/A Handpiece Setup 8.10, 12.14
I/A Handpieces 6.4, 10.4, 14.3
I/A Mode Surgery Screen 7.12, 11.18
I/A Safety Test 8.10
Icons Used with the *Accurus*® Ophthalmic Surgical System . 1.18
IEC 60601-1 . . . . . 1.9
IEC Standard 1.4
Illuminator 4.11, 12.18, 16.4, 16.10
Illuminator Adaptors 2.5
Illuminator Alignment 15.2
Illuminator Bulb Replacement 15.2
Illuminator Drawer 2.5, 15.2
Illuminator Ejector Button 2.7
Illuminator Exhaust Grate 2.6
Illuminator Function 1.12
Illuminator Receptacles 2.5
Illuminators 4.7, 8.6, 12.8
Illuminators (Illum1 & Illum2) 3.6, 7.6, 11.7
Import Tab 2.35
Infusion 3.3, 3.5, 4.7, 8.6, 12.7
Infusion cannula 4.9, 12.10
Infusion Setup 4.9, 12.9
Infusion tab 4.4
Infusion Type 3.3, 7.3, 11.3
Inject 3.20, 11.25
InnoVit® probe 3.22, 4.10, 12.11
Installation 1.4
Interference with other devices 1.6
Intraocular Scissors (IOS) Handpiece 3.20, 11.29
Intraocular Scissors (IOS) Setup 4.18, 12.24
IOS 4.18, 12.24
Irrigation 7.5
Irrigation methods 3.3, 7.3
Irrigation ON/OFF control 7.5, 11.6
Irrigation/Aspiration Handpiece 7.14, 11.27
IV Pole 17.1, 17.3

* FOR REFERENCE ONLY *

L

Labeling used on the *Accurus*® Ophthalmic Surgical System 1.19
Language. 2.41
LCD display and touch screen. 2.12
Leakage Currents 1.9
LED Displays. 2.2
LED Statement 1.5
Limited Warranty 1.15
Linear Frag Screen 11.17
Loss of power 1.4

M

Main Power Connector 16.2
Main Power Switch 2.7
Malfunctioning parts 16.1
Manual IV Pole 17.4
Mayo Tray 17.3
Medical Device Directive 1.5
Memory (programmable doctor memories) 2.21
Metrics. 2.39
Miscellaneous Window 2.17
Mode Flow Chart 8.3
Mode of Operation. 8.2
Modes Window 2.13
Momentary Fragmentation submode. 3.13, 11.17
MPC Scissors Handpiece 1.10, 3.23, 4.19, 11.29
MPC Scissors Setup 12.25
MPC Submode 3.17, 11.22
Multiple Cut and MPC 3.17, 11.22
Multiple Cut Scissors Screen. 3.18, 11.23

N

Notes xiii
NRTL Mark 1.5

O

Occlusion. 16.3, 16.5
ON/OFF switch 4.1, 8.1, 12.1
Opening Screen. 4.2, 8.2
Operating Instructions 4.1, 8.1
operating screens 2.10
operator controls 2.1
Options Drop Down Menu 2.19
Options Key. 2.17
Options key 2.19
Options/Memory key 2.21
OSHA guidelines 1.5

P

Pacemakers. 1.11
Pak setup procedures 4.1, 8.1, 12.1
Paks. 1.13, 4.8, 8.6, 12.8
Parts 6.1, 10.1, 14.1
Patient Eye Level. 16.3, 16.5
PC Card Slot 2.6
Performance figures 1.16
Personal Identification Number (PIN) 2.21
Phaco and I/A Safety Test 8.10
Phaco 3D submode. 7.11, 11.16
Phaco Burst submode 7.11, 11.16
Phaco Fixed submode. 7.11, 11.16
Phaco Handpieces 6.4, 10.4, 14.3
Phaco Linear submode 7.10, 11.15
Phaco Mode Surgery Screen 7.10, 11.15
Phaco Setup 8.8, 12.12
PIN. 2.33
Pneumatic and Electrical Connectors 2.4
Popup Window 2.18
Popups 2.41
Posterior Accessories and Parts 6.1
Posterior Domain Key 3.1
Posterior Domain Surgery Modes 3.7
Posterior Fluid Cassette Insertion 4.8, 12.9
Posterior Mode Screens 4.2, 8.2
Posterior Modes Flow Chart 4.3
Posterior Modes Window. 3.2, 11.2
Posterior Setup and Surgery Screens. 3.1
Posterior Surgery Screens 3.7
Posterior Tab Set. 2.25
Power Cord 1.9
Power I/V Pole. 3.3, 7.3, 11.4, 17.3
Power Input Connector 2.7
Power IV pole bottle heights 17.3
Power Pole 4.7
Power Supply 2.7, 15.1
Power Switch. 2.7
Power Up Screen 2.10
Power Up Sequence 4.1, 8.1, 12.1
Power-up initialization cycle 2.10
Preface xiii
Pressure Specifications. 1.4
Presurgical Setup Instructions. 4.8, 8.6, 12.8
Presurgical setup instructions 1.9
Preventive maintenance 1.14
Primary Display Window 2.18, 3.2, 11.2
Priming 16.6
Priming and Testing/Tuning 12.12, 12.22
Priming and testing/tuning. 4.14, 12.12, 12.22
Probes 6.4,7.14, 10.4, 14.3
Problem conditions 16.2
Problems 16.1
Problems with the system 1.14
Procedure Selection Screen 2.10, 4.2, 8.2
Product Service. 1.14
Program the Footswitch Functions 2.29
Proportional Scissors Screen 3.14, 11.22
Proportional Submode. 3.14
Pulse Rate. 3.15, 7.10, 11.15, 11.16, 11.17
Pump Key 11.3
Pwr Pole 3.3, 3.5, 7.3, 11.4, 11.6

Q

Quick Save 2.20

R

Rear Panel. 2.6
Rear Panel Components 2.6
Recycle 1.5
Reduced (5 bar). 1.4
Reflux 16.7
Regurgitation 16.3, 16.5
Remote control 2.9
Remote Control Battery Replacement. 15.3
Remote Control Channel Selection 15.3
Replace Fuses. 15.1
Return of the equipment 1.14

S

Safety Performance 1.14
Save All key 2.20
Save Mode key 2.20
Scissors 3.2, 4.18, 11.2, 12.24, 16.4
Scissors (IOS) Handpiece 3.23, 11.29
Scissors Calibration Screen 3.18, 11.22
Scissors Line Connection 4.18, 4.19, 12.24, 12.25
Scissors mode 3.17, 11.23
Scissors Mode Surgery Screen 3.17, 11.23
Scissors: Calibration Screen 3.17, 11.23
Scrub Nurse 4.1, 4.8, 8.1, 12.1, 12.8
Select 1.4
Select a Mode of Operation 4.2, 12.2
Select Handpiece for Prime / Test 3.2, 7.2, 11.2
Selectable Power Supply 2.7
Self-test diagnostics 2.10, 4.2, 8.2, 12.2
Separaration distances 1.8
Service 1.14
Settings Restoration 1.4
Setup Instructions 4.8, 8.6, 12.8
Setup key 3.2, 4.4, 7.2, 8.4, 11.3, 12.2
Setup procedures 4.1, 8.1, 12.1
Silicone oil 3.17, 11.25
Software 2.6
Source air pressure 1.4
Speaker 2.5
Specifications 1.16
Standard 1.4
Standby 2.39
Standby switch 2.5, 4.1, 8.1, 12.1
Sterilization 5.5, 9.4, 13.5
Sterilization Temperature and Time Settings 5.5, 9.4, 13.5
Stopcock 4.9, 12.10
Surgeon 4.1, 8.1, 12.1
Surgery key 3.2, 4.4, 7.2, 8.4, 11.2, 12.4
Surgery modes 3.7, 11.8, 18.3
Surgery Screens 3.7, 4.4, 7.7, 8.4, 11.8, 12.4
Surgery Setup Screens 4.2, 8.2
Surgical team 4.1, 8.1, 12.1
Syringe 4.11, 12.19
System 2.42
System Configurations 1.3
System Error Popup Message 2.44
System Fault Screen 2.10
System Faults 2.43
System Identification 1.3
System Information 2.45
System Information Popup Windows 2.45
System Power 4.1, 8.1, 12.1
System Specifications 1.16

T

Take-Back Systems 1.5
Tear Down the System 5.1, 9.1, 13.1
Technical Services xiii
Technical Services Department 1.15
Telephone i
Tension adjustment knob 2.8
Terms and abbreviations 1.17
Test key 2.40, 3.2, 7.2, 11.2
Testing/tuning 4.14, 12.12, 12.22
Timer 2.38
Timer Display Keys 2.17
Tip Wrench 4.13, 8.8, 12.12, 12.22
Title Window 2.15
Tones 2.5
Tones and their Descriptions 2.5
Total Plus® Vitrectomy Pak Setup 4.8, 12.8
Touch Screen 2.2, 2.12
Troubleshooting Instructions 16.1

U

U/S Pulse 3.13, 7.10, 11.14, 11.16
Uncrating 1.4
Universal precautions 1.5
Up/down adjustment buttons 2.2
Up/Down arrow buttons 3.5, 7.5

V

Vacuum Rise Time 2.25
Vented Gas Forced Infusion Setup 4.16, 12.20
Vented Gas Forced Infusion Connection 4.17, 12.21
Vertical Microscissors 4.18, 12.24
VFC 3.2, 4.21, 11.2, 12.27, 16.7
VFC mode 3.20, 11.25
VFC Mode Surgery Screen 3.20, 11.25
VGFI™* infusion 3.3, 3.5, 4.7, 4.16, 11.3, 11.5, 11.6, 12.20
VGFI™* irrigation . . 7.3, 7.4, 8.6, 11.6, 7.3, 11.3, 11.4, 11.6, 12.20
VGFI™* Tubing Set 4.16, 12.20
VGFI™*/AVGFI/CVGFI Bottle Hanger 17.4
VideOverlay Operation 17.12
VideOverlay Parameters System (VOPS) 17.6
Viscous Fluid Control (VFC) Setup 4.21, 12.27
Viscous Fluid Extraction 4.23, 12.29
Viscous Fluid Injection 4.21, 12.27
Viscous Fluid Injection with Extrusion 4.23, 12.29
Viscous Fluid Injector (VFI) Pak 4.21, 12.27
Viscous Fluid Injector Connection 4.22, 12.28
Vit Cut-off Vacuum 2.33
Vit Cut-off Setpoint 3.13
Vit Handpieces 10.4
Vit Mode Surgery Screen 3.11, 7.13, 11.19
Vit Tab 2.24, 2.26
VIT: Momentary Cut submode 11.19
VIT: Proportional Vacuum submode 11.20
Vitrectomy Dual Proportional submode 3.13, 11.21
Vitrectomy mode 3.12, 11.19
Vitrectomy Momentary Cut submode 3.13
Vitrectomy Probe Connections 4.10, 12.11
Vitrectomy Probe Setup 4.10, 12.11
Vitrectomy Probes 2.40, 3.19, 7.15, 11.28
Vitrectomy Proportional Vacuum submode 3.11
Vitreoretinal Infusion Settings Screen 3.3, 11.3
Vitreoretinal Surgery Setup Screen 3.1
Voice confirmation 2.5
Voltage and Fuse Selection 15.1
Volume 2.37

W

Warnings . . . . . xiii, 1.9
Warranty 1.15
Weight 1.16
Wet anterior vitrectomy 11.19
Writing tablet 17.3

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