

UNITY™ VCS AND CS USER MANUAL



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System Information

This section includes basic information about this manual and the *UNITY™* Vitreoretinal Cataract System (VCS) and Cataract System (CS). This includes details important to understanding this guide and general safety information.

User Manual Overview

This user manual contains safety, setup, operation, and maintenance information about the *UNITY* VCS and CS. It is for licensed ophthalmologists and nurses trained for ophthalmic surgery. To maintain the performance and durability of the system, carry out all adjustment, cleaning, and disinfection procedures specified in this manual.

Terms

The following terms are used in this guide:

- **Console** – Refers to any configuration or model of the *UNITY* CS or the *UNITY* VCS.
- **Foot controller** – Refers to any compatible foot controller, footswitch, or foot pedal.
- **FMS** – Refers to the Fluidics Management System cassette or cartridge.
- **Image-guided system** – Refers to the *Verion™* Image-Guided System.
- **Irrigating solution** – Refers to compatible *BSS™* irrigating solution.
- **Microscope** – Refers to *LuxOR™* microscopes or microscopes compatible with pairing with the console.
- **System** – Refers to the console, accessories, consumables, and other related devices used to perform functions of the system as intended.
- **Video overlay** – Refers to the *UNITY* Video Overlay.
- **Visualization system** – Refers to the *NGENUITY™* 3D visualization system or a visualization system compatible with connecting with the console.

Abbreviations and Acronyms

The following abbreviations and acronyms appear in this guide or on the console:

Abbreviation or Acronym	Definition
ABS™	Microtip
Ant	Anterior
Ant Vit	Anterior vitrectomy
ASK	Amplitude-shift keying
Asp	Aspiration
BF	Body floating
BLE	Bluetooth Low Energy
BPSK	Binary phase-shift keying
BSS™	Sterile irrigating solution
cc	Cubic centimeters
CCK	Complementary code keying
cc/min	Cubic centimeters per minute. A unit of flow.
CDE	Cumulative dissipated energy
CE	A mandatory conformity mark on many products placed on the single market in the European Economic Area (EEA)
CME	Continuing medical education
Coag	Coagulation
cpm	Cuts per minute
DBPSK	Differential phase shift keying
DFU	Directions for use
DQPSK	Differential quadrature phase shift keying
DSP	Disposable
EPI	Epinucleus
ERP	Effective radiated power
ESD	Electrostatic discharge

Abbreviation or Acronym	Definition
FAX	Fluid-air exchange
FLACS	Femtosecond laser-assisted cataract surgery
FMS	Fluidics management system
FP	Foot controller position
Frag	Fragmentation
F/S	Foot controller (as in footswitch)
FSK	Frequency shift keying
Ga	Gauge
GFSK	Gaussian frequency shift keying
HF	High frequency
I/A or IA	Irrigation, aspiration
IEC	International Electromechanical Commission
IOL	Intraocular lens
IOP	Intraocular pressure
iP	Intelligent phaco
Irid	Iridectomy
Irr	Irrigation
ISO	International Standards Organization
k	thousand (for example, 10k cuts per minute = 10,000 cuts per minute)
LIO	Laser indirect ophthalmoscope
LPAS	Low pressure air source
ME	Medical equipment
mmHg	Millimeter of Mercury. A unit of vacuum and pressure.
N/A	Not Applicable
NOHD	Nominal ocular hazard distance
OFDM	Orthogonal frequency-division multiplexing
PEL	Patient eye level
Phaco	Phacoemulsification

Abbreviation or Acronym	Definition
psi	Pounds per square inch. A unit of pressure.
QAM	Quadrature modulation
QPSK	Quadrature phase shift keying
Quad	Quadrant
RF	Radio frequency
RFID	Radio frequency identification device
sec	Seconds
SI	International System of Units
slpm	Standard Liters per Minute
TS	Thermal Sentry
USB	Universal serial bus
UHDVO	UNITY High-Definition Video Overlay
V+V	Verion (steps)
VFC	Viscous fluid control
Visco	Viscoelastic
Vit or VIT	Vitrectomy. Extraction of the vitreous from the vitreous cavity.

Symbols

Conformity and Compliance Symbols

Symbol	Description
	Medical device
	European Conformity mark
	Authorized representative in the European Community / European Union
	Caution: US federal law restricts this device to sale by or on the order of a physician
	WEEE indicates the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.

Safety Symbols

Description	Description
	Consult instructions for use or consult electronic instructions for use.
	Refer to instruction manual or booklet
	General warning
	Dangerous voltage
	Hot surface
	Trip hazard or floor-level obstacle
	Do not push when casters are locked
	Type BF applied part
	Protective earth (ground)
	Stacking limit by mass
	Laser beam
	Avoid eye and skin exposure to direct or scattered radiation.
	Magnetic resonance unsafe
	Ultrasonic handheld instrument non-continuous use
	Equipotentiality terminal
	Magnetic field

Product Information Symbols

Symbol	Description
 YYYY-MM-DD	Country of manufacture with a date of manufacture
	Manufacturer
	Mass
	Catalog number
	Global trade item number
	Serial number
	Revision

Front Panel Indicators

Symbol	Description
	Diathermy accessory
	Ultrasonic accessory
	Light probe
	Viscous fluid control
	Forceps
	Scissors
	FAX
	Vitrectomy cutter
	Multi-spot laser accessory port
	Single-spot laser accessory port (also compatible with <i>PurePoint</i> TM accessories)

Symbol	Description
	Optical fiber applicator
	6-button, 4-button, or <i>Centurion</i> TM foot controller
	<i>Constellation</i> TM foot controller
	Console power on or off

Rear Panel Indicators

Symbol	Description
	Active laser room indicator
	External air or nitrogen inlet
	<i>PurePoint</i> TM laser foot controller
	Emergency stop for the laser
	Ethernet
	Power on (laser)
	Power off (laser)
	SuperSpeed USB
	3D visualization system
	Protective laser filter
	Remote interlock
	Future accessory connection

System Overview

System Description

UNITY VCS and CS

The *UNITY* VCS is a multifunctional surgical instrument for use in anterior and posterior segment ophthalmic surgeries. The product's capabilities include driving a variety of handpieces that provide the ability to cut vitreous and tissues, emulsify the crystalline lens, illuminate the posterior segment of the eye, and apply diathermy to stop bleeding. Flow-controlled or vacuum-controlled aspiration is used to remove ocular matter from the eye. Pressure-controlled irrigation/infusion capability is provided to replace fluid in the eye, and enters the eye directly through either an infusion cannula or a handpiece. The graphical operator interface is menu-driven. The operator provides inputs using the touchscreen panel, the remote control, and the foot controllers.

The *UNITY* VCS and CS system comes in two configurations: anterior only or *UNITY* CS and combined or *UNITY* VCS.

An optional, fully integrated laser module is available that can be installed in the base of the combined configuration for vitreoretinal surgery. The laser delivers a visible 532-nm green treatment beam designed for ophthalmic use.

Foot Controllers

The *UNITY* 4-button and 6-button foot controllers are components that control functional operations of the *UNITY* system console during crystalline lens removal and/or vitreoretinal surgery. The 6-button foot controller has the added capability of controlling the system console during procedures that require the laser console. A laser foot controller also functions to control the *UNITY* system console solely during procedures that require the laser module.

The 4-button and 6-button foot controllers consist of a treadle and left and right horizontal / vertical switches. In addition, left and right heel switches and a tension adjustment knob are present on the 6-button foot controller.

The laser foot controller has left and right horizontal switches, and a single vertical switch.

Remote Control

The *UNITY* remote control is a battery-operated component that uses Bluetooth radio frequency (RF) to communicate with the *UNITY* system console.

Intended Use

- The *UNITY VCS* (Vitreoretinal Cataract System), consisting of the console and compatible devices, is intended to facilitate management of fluid and gases, as well as removal, grasping, cutting, illumination, and coagulation of ocular materials.
- The *UNITY CS* (Cataract System), consisting of the console and compatible devices, is intended to facilitate management of fluid as well as removal, cutting, and coagulation of ocular materials.

Indications for Use

- The *UNITY VCS* console, when used with compatible devices, is indicated for use during anterior segment (i.e. phacoemulsification and removal of cataracts) and posterior segment (i.e. vitreoretinal) ophthalmic surgery.
In addition, with the optional laser this system is indicated for photocoagulation (i.e. vitreoretinal and macular pathologies), iridotomy, and trabeculoplasty procedures.
- The *UNITY CS* console, when used with compatible devices, is indicated for use during anterior segment (i.e. phacoemulsification and removal of cataracts) ophthalmic surgery.

Target Population

- The *UNITY VCS* is indicated for patients undergoing ophthalmic surgery consistent with the indications for use.
- The *UNITY CS* is indicated for patients undergoing ophthalmic surgery consistent with the indications for use.

Intended User

The intended users are ophthalmic surgeons and their operating room staff.

Contraindications

For console configurations that include a laser module, patients with a condition that prevents visualization of target tissue (cloudy cornea, or extreme haze of the aqueous humor of the anterior chamber or vitreous humor) are poor candidates for LIO delivered laser treatment.

Clinical Benefits

- The intended clinical benefit of the *UNITY* VCS console, when used with compatible devices, is to contribute to ophthalmic surgical interventions that improve or stabilize vision and/or disease progression.
- The intended clinical benefit of the *UNITY* CS console, when used with compatible devices, is to contribute to ophthalmic surgical interventions that improve or stabilize vision and/or disease progression.

Residual Risks and Undesirable Side Effects

After implementing risk mitigation measures and applying a state-of-the-art process, all residual risks are at an acceptable level. The residual risks are listed below for transparency and to meet Alcon obligations per Medical Device Regulation (MDR) (EU) 2017/245.

Possible complications related to the use of the medical device include but are not limited to the following: abnormal intraocular pressure, burns, edema, electric shock, hemorrhage, ocular inflammation, ischemia, cataract formation (not applicable for cataract removal procedures), microbial ocular infection, accidental exposure/adverse systemic response, device malfunction due to operation of other equipment could lead to patient injury, physical trauma, systemic cross infection, tissue damage, and visual dysfunction.

Serious Incident Reporting

Any serious incident related to the use of the *UNITY* VCS/CS or their accompanying accessories and consumables should be reported to Alcon Laboratories, Inc.:

By phone: In USA – (800) 757-9780
In EU/International – Contact the local country office or your Alcon distributor.

Website: <https://www.alcon.com/contact-us/>

Email: qa.complaints@alcon.com

These serious incidents should also be reported to the competent authority for medical devices of your State.

Safety Information

For both VCS and CS models, accessories connected to the console must be certified according to respective IEC standards (for example, IEC 60950-1 or IEC 62368-1 for data processing equipment and IEC 60601-1 for medical equipment). All configurations shall comply with EN 60601-1 (equivalent to IEC 60601-1, as amended), clause 16. Anyone connecting additional equipment or otherwise changing the system configuration other than provided by Alcon is responsible for continued compliance with IEC 60601-1 (as amended), clause 16. If in doubt, contact Alcon Technical Services or a local Alcon representative.

General Warnings and Precautions

The following are general system warnings and precautions applicable to VCS and CS models. This manual includes additional warnings and precautions specific to certain instructions or situations and are stated in relevant sections. If additional information is required, please contact a local Alcon service representative or the Technical Services department.

- **Warning** – A statement written to protect individuals from bodily harm (red border)
- **Precaution** – Action taken in advance to protect against possible danger, failure, or injury: a safeguard
- **Caution** – A statement written to protect the instrument from damage (black border)
- **Note** – A statement written to bring attention to highlighted information (blue border)

WARNING:

- Do not stand on the base of the console.
- Do not use sterile products if the sterile field is compromised.
- This product can expose you to chemicals including Antimony oxide (Antimony trioxide); Bisphenol A (BPA); 4-vinylcyclohexene; Acrylonitrile; 1,3-butadiene; Styrene; Cumene; Silica, crystalline (airborne particles of respirable size); Beryllium; Carbon black (airborne, unbound particles of respirable size); Gallium arsenide; Glass wool fibers (inhalable and biopersistent); Cobalt metal powder; Arsenic; Tetrabromobisphenol; A C.I. Solvent Yellow 14; Titanium dioxide (airborne, unbound particles of respirable size); Mercury and mercury compounds; α-Methyl styrene (alpha-Methylstyrene); Benzo[a]pyrene; Toluene diisocyanate; 2-Mercaptobenzothiazole; Lithium carbonate; n-Hexane; lead and lead compounds; nickel and nickel compounds; Di-isodecyl phthalate (DIDP); Antimony Oxide; Glycidyl Methacrylate which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

**WARNING:**

- Modification of the equipment is not allowed without prior authorization from the manufacturer. If this equipment is modified, appropriate inspection and testing must be conducted to ensure continued safe use of the equipment.
- Do not simultaneously touch any non-medical equipment enclosure (for example, a video overlay) and the patient.
- To avoid the risk of burns or fire, do not use the system near conductive materials. Review electrical cables upon evidence of deterioration.
- When connecting another electrical equipment to the *UNITY VCS* or *UNITY CS* equipotentiality terminal, ensure that the configuration complies with clause 16 of IEC 60601-1 (ME systems).
- A qualified technician must check ground continuity and leakage current every 12 months to ensure they are within the limits of the applicable standards (for example, EN 60601-1 or IEC 60601-1). Values must be recorded and, if they are above the limits of the applicable standards or 50% above the initial measurement, do not use the system and call Alcon Technical Services.
- For continued protection against risk of fire, replace only with same type and rating of fuse.
- To avoid risk of electric shock, this equipment must be connected only to a supply mains with protective earth (ground).
- Inadvertent activation of functions that are intended for priming or tuning accessories while the accessory is in the eye can create a hazardous situation that could result in patient injury.
- Never intentionally modify accessories or tips (for example, do not bend, cut, or engrave them) as they could break or malfunction.
- Do not use any of the contents if the sterile package is damaged or the seal is broken in any way.

General Laser Safety Precautions (VCS Models with Optional Laser Only)

This system complies with EN 60825-1 (equivalent to IEC 60825-1) and ANSI Z136.1 standards for laser safety. Corneal burns, inflammation, loss of best-corrected visual acuity, loss of visual field, and transient elevations in intraocular pressure can occur as a result of ophthalmic laser treatment. Unintentional retinal burns can occur if excessive treatment beam power or duration is used.

! **WARNING:** To avoid the risk of fire or explosion, avoid the use of the laser in the presence of flammable anesthetics, oxidizing (such as nitrous oxide, N₂O), or endogenous gases. Also, avoid the use of material that may also be ignited by the high temperatures produced in normal use of the laser equipment (for example, cotton or wool).

The following precautions relate to safe laser setup and use. Refer to IEC 60825-1, ANSI Z136.1, or EN 207 for more information.

- Appoint a laser safety officer to supervise the installation and use of the system.
- Install an indicator light outside the laser room to signify instrument operation.
- Do not direct laser beams toward a door, window, or reflective surface.
- Use non-reflective matte finish wall paint.
- Avoid using carpet or material that generates dust on the floor or walls to minimize grime or dust on the optics or cooling system.
- Ensure there is a minimum of 0.5 m of open space on all sides of the laser.
- To prevent unauthorized use of the laser, remove the key when not in use.
- Post appropriate warning signs at entrances to areas or protective enclosures containing Class 4 lasers.
- Use eye protection with OD 4 or above at 532 nm in all hazard areas. However, for locations complying with EN 207, use eye protection with class D LB6 or above. Eye protection must be resistant to physical damage and photo-bleaching.
- Never look directly into the aiming or treatment beam with or without laser eye protection.
- A qualified technician must verify the power plug used is properly grounded.
- Potential hazards may occur when inserting, sharply bending or improperly securing the fiber optics. Not following the recommendations of the manufacturer may lead to damage to the fiber or beam delivery system and/or harm to the patient or laser operator.

- Connect the remote interlock connector to an emergency master disconnect interlock or to a room, door, or fixture interlock (see [Prepare for Laser Use \(VCS Models with Optional Laser Only\)](#) on page 58).
- Connect the active laser room indicator connector to a door lamp or laser status indicator (see [Prepare for Laser Use \(VCS Models with Optional Laser Only\)](#) on page 58).
- Place the laser foot controller, endoprobe, multi-spot, or LIO within 2 m of the console.

Accessory	Beam Divergence (NOHD)
LIO	0.024 radians (20 m)
Endoprobe	0.23 radians (3 m)
Multi-spot	0.19 radians (4 m)

Electromagnetic Compatibility (EMC) Compliance

The system is designed for operation within stationary professional healthcare facilities, explicitly excluding usage in moving vehicles such as airborne environments. It is important to note that employing the system in non-stationary environments may result in system failure or patient harm.

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 representative.

Users should be aware of known RF sources, such as radio or TV stations and hand-held or mobile two-way radios, and consider them when installing a medical device or system. Portable and mobile RF communications equipment such as cellular telephones can affect medical electrical equipment.

Be aware that adding accessories or components, or modifying the medical device or system may degrade the EMI performance. Consult with qualified personnel regarding changes to the system configuration.

**WARNING:**

- The use of accessories, transducers, and cables other than those specified, with the exception of transducers and cables sold by Alcon as replacement parts for internal components, may result in increased emissions, decreased immunity of the system, or improper operation.
- To minimize potential electromagnetic or other interference with other devices, do not use the system adjacent to, or stacked with, other equipment. However, if adjacent to or stacked use is necessary, observe the system to verify normal operation in the configuration in which it will be used.
- Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the system including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.
- MAGNETIC AND ELECTRICAL INTERFERENCE** - Magnetic and electrical fields are capable of interfering with the proper performance of the device. For this reason make sure that all external devices operated in the vicinity of the device comply with the relevant EMC requirements. X-ray equipment, magnetic resonance tomography (MRT), nuclear magnetic resonance (NMR), or magnetic resonance imaging (MRI) devices are possible sources of interference as they may emit higher levels of electromagnetic radiation.

Cables Used to Connect System Components

Item	Cable Type	Shield	Length	Ferrite	Connection 1	Connection 2
1	AC cable	No	5 m	No	Console	AC mains
2	<i>UNITY</i> 6-button foot controller cable	Yes	3.7 m	No	Console	<i>UNITY</i> 6-button foot controller
3	Diathermy cable	No	3.6 m	No	Console	Diathermy port
4	<i>UNITY</i> ultrasonic handpiece cable	No	2 m	No	Console	Ultrasonic port
5	Fragmentation handpiece cable	No	2 m	No	Console	Ultrasonic port

Guidance and Manufacturer's Declaration – Electromagnetic Emissions

The system is intended for use in the electromagnetic environments specified below. The customer or the user of the system should assure it is used in such an environment.

Emissions Test	Compliance	Emissions Test Compliance Electromagnetic Environment – Guidance
Conducted and radiated RF emissions CISPR 11	Group 1	When coagulation mode is energized, the system will fall into category of Group 2 equipment per CISPR 11 classification. Compliance with Group 2 emission limits are not required. According to IEC 60601-2-2 standard, HF surgical equipment shall comply with the requirements of CISPR 11 Group 1, when it is switched on and in an idle state with the HF output not energized.
Conducted and radiated RF emissions CISPR 11	Class A	The emissions characteristics of the system make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required), the system might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or reorienting the equipment.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and Manufacturer's Declaration – Electromagnetic Immunity

The system is intended for use in the electromagnetic environments specified below. The customer or the user of the system should assure it is used in such an environment.

Immunity Test	IEC 60601 Test and Compliance Level	Electromagnetic Environment – Guidance
Electrostatic discharge IEC 61000-4-2	±8 kV contact ±15 kV air	None
Electrical fast transient/burst IEC 61000-4-4	±2 kV on power supply lines ±1 kV on input/output lines	Mains power quality should be that of a typical hospital (including ambulatory surgery centers) environment. To avoid premature shutdown due to fast transients, avoid powering the system on the same branch circuit with sources that can generate fast transients (inductive switching; for example, high current motors).
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical hospital (including ambulatory surgery centers) environment.
Voltage dips, short interrupts, and variations on power supply lines IEC 61000-4-11	0% U_T for 0.5 cycle at 8 Φ angles 0% 1 cycle 70% U_T for 25/30 cycles 0% for 250/300 cycles	Mains power quality should be that of a typical hospital (including ambulatory surgery centers) environment. If the use of the system requires continued operation during power mains interruptions, it is recommended that the system be powered from an uninterruptible power supply with a minimum rating of 1200 VA.
Power frequency (50/60 Hz) magnetic fields IEC 61000-4-8	30 A/m 50 or 60 Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical hospital (including ambulatory surgery centers) environment.
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz 6 Vrms at ISM Frequencies	The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.

Immunity Test	IEC 60601 Test and Compliance Level	Electromagnetic Environment - Guidance																
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz	The dwell time should be at least 1 s and should be no less than the response time of the slowest responding function plus the settling time of the immunity test system.																
Proximity fields from RF wireless communication equipment IEC 61000-4-3	<table border="1" data-bbox="474 523 850 952"> <thead> <tr> <th data-bbox="474 523 682 601">Frequency (MHz)</th><th data-bbox="682 523 850 601">Level (V/M)</th></tr> </thead> <tbody> <tr><td data-bbox="474 601 682 639">385</td><td data-bbox="682 601 850 639">27</td></tr> <tr><td data-bbox="474 639 682 677">450</td><td data-bbox="682 639 850 677">28</td></tr> <tr><td data-bbox="474 677 682 715">710, 745, 780</td><td data-bbox="682 677 850 715">9</td></tr> <tr><td data-bbox="474 715 682 753">810, 870, 930</td><td data-bbox="682 715 850 753">28</td></tr> <tr><td data-bbox="474 753 682 792">1720, 1845, 1970</td><td data-bbox="682 753 850 792">28</td></tr> <tr><td data-bbox="474 792 682 830">2450</td><td data-bbox="682 792 850 830">28</td></tr> <tr><td data-bbox="474 830 682 868">5240, 5500, 5785</td><td data-bbox="682 830 850 868">9</td></tr> </tbody> </table>	Frequency (MHz)	Level (V/M)	385	27	450	28	710, 745, 780	9	810, 870, 930	28	1720, 1845, 1970	28	2450	28	5240, 5500, 5785	9	<p>The immunity test levels specified in the table were calculated using the following equation:</p> $E = (6\sqrt{P}) / d$ <p>Where P is the maximum power in W, d is the minimum separation distance in m, and E is the Immunity Test Level in V/m. The factor of 6 is a compromise for a range of antenna factors to simplify the test.</p>
Frequency (MHz)	Level (V/M)																	
385	27																	
450	28																	
710, 745, 780	9																	
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2450	28																	
5240, 5500, 5785	9																	
Immunity to proximity magnetic fields in the frequency range 9 kHz to 13.56 MHz IEC 61000-4-39	<table border="1" data-bbox="474 973 850 1227"> <thead> <tr> <th data-bbox="474 973 682 1072">Frequency</th><th data-bbox="682 973 850 1072">Level (A/M)</th></tr> </thead> <tbody> <tr><td data-bbox="474 1072 682 1110">30 kHz</td><td data-bbox="682 1072 850 1110">8</td></tr> <tr><td data-bbox="474 1110 682 1148">134. kHz</td><td data-bbox="682 1110 850 1148">65</td></tr> <tr><td data-bbox="474 1148 682 1186">13.56 MHz</td><td data-bbox="682 1148 850 1186">7.5</td></tr> </tbody> </table>	Frequency	Level (A/M)	30 kHz	8	134. kHz	65	13.56 MHz	7.5	<p>30 kHz is applicable only to medical equipment and medical systems intended for use in the home healthcare environment.</p>								
Frequency	Level (A/M)																	
30 kHz	8																	
134. kHz	65																	
13.56 MHz	7.5																	

NOTE: U_T is the AC mains voltage prior to application of the test level.

Wireless Certification and Compliance Information

Radio Transmitters

The console is a medical device designed for indoor use only. It incorporates short-range frequency radio transmitters for use by the console for communication with system components and the hospital network. These short-range frequency radio transmitters meet EU and AFTA countries requirements. They are also FCC, IC, RED, and Japanese Radio Law compliant.

Transmitter	Frequency or Frequency Band of Transmission and Reception	Type and Frequency Characteristics of the Modulation	Output Power
802.15.4/BLE 5.0 radio module (in console, foot controller, remote)			
802.15.4 Communication link with foot controller and telemetry network	2402 MHz to 2480 MHz	DBPSK, DQPSK, CCK	8 dBm 6.3 mW (ERP)
BLE 5.0 Communication link with remote	2402 MHz to 2480 MHz	GFSK, $\pi/4$ -DQPSK, 8-DPSK	8 dBm 6.3 mW (ERP)
Wi-Fi 802.11ac/BLE 5.0 radio module (in console)			
Wi-Fi 802.11ac Communication link with hospital network or <i>UNITY</i> Video Overlay	802.11 b/g/n: 2400 MHz to 2483 MHz	DSS: DBPSK, DQPSK, CCK OFDM: BPSK, 16-QAM, 64-QAM	17 dBm 50.1 mW (ERP)
	802.11 a/n/ac: 5180 MHz to 5420 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz	OFDM: BPSK, QPSK, 16-QAM, 256-QAM	17 dBm 50.1 mW (ERP)
BLE 5.0 Communication link with remote	2402 MHz to 2480 MHz	GFSK	10.4 dBm 11 mW (ERP)
(in console)			
Wireless foot controller battery charger	50 kHz (charging)	N/A	10 W (max)
RFID device	13.56 MHz	ASK	-25.4 dBm 0.003 mW

USA – Federal Communications Commission (FCC)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

 **CAUTION:** Change or modifications made to this equipment (including antenna) not expressly approved by Alcon may void the FCC authorization to operate this equipment.

FCC Radiation Exposure Statement

 **WARNING:** To ensure that the radio transmitter complies with current FCC regulations limiting both maximum output RF power and human exposure to radio frequency radiation, a separate distance of at least 20 cm must be maintained between the unit's antenna and the body of the user and any nearby persons at all times, and unit's antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

Europe – RED Directive 2014/53/EU

This device complies with the essential requirements of the Radio Equipment Directive 2014/53/ EU.

 **CAUTION:** The radio equipment is intended to be used in all EU and AFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. Contact local Authority for procedure to follow.

Canada – Industry of Canada (IC)

This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Transmitter Antenna:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Exposure of Humans to RF Fields:

This device complies with RF exposure limits for humans as called out in RSS-102.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be located or operating in conjunction with any other antenna or transmitter.

Canada - Industrie du Canada (IC)

Cet appareil est conforme aux normes d'Industrie Canada RSS exemptes de licence. Son fonctionnement est soumis aux deux conditions suivantes: (1) Cet appareil ne doit pas provoquer d'interférences nuisibles, et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

Antenne d'émetteur:

En vertu de la réglementation de l'industrie du Canada, cet émetteur de radio ne peut être utilisé qu'avec un type d'antenne approuvé pour l'émetteur par Industrie Canada et seulement avec une valeur de gain inférieur ou égale au gain maximum approuvé par Industrie Canada. Pour réduire les risques potentiels d'interférence à autrui, le type d'antenne et son gain doivent être choisis de sorte que la puissance isotrope rayonnée équivalente (PIRE) ne dépasse pas la valeur qui est nécessaire pour une communication réussie.

Exposition des personnes aux champs radioélectriques:

Cet appareil est conforme aux limites d'exposition RF pour les êtres humains comme elles le sont notifiées dans la norme RSS-102.

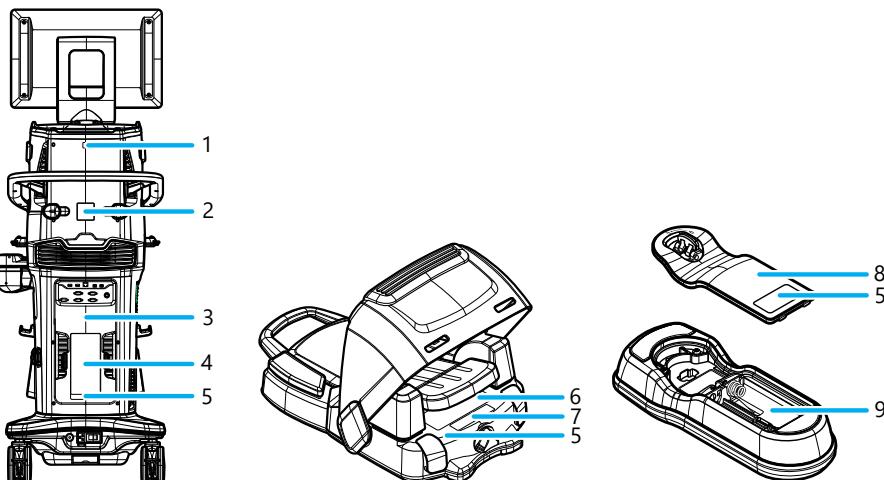
Les antennes utilisées pour ce transmetteur doivent être installées en considérant une distance de séparation de toute personnes d'au moins 20 cm et ne doivent pas être localisées ou utilisées en conflit avec tout autre antenne ou transmetteur.

Wireless Certification

Region	Certification and Compliance (and Label Locations)
United States	FCC ID: VMC-NGPVID (RFID in console) Contains FCC ID: VMCL654 (BLE/802.15.4 in console and foot controller) Contains FCC ID: SQGBL654 (BLE in remote) Contains FCC ID: SQG-SU60SOMC (Wi-Fi/BLE in console)
Australia	
Canada	IC: 7345A-NGPVID (RFID in console) Contains IC: 7345A-BL654 (BLE/802.15.4 in console and foot controller) Contains IC: 3147A-BL654 (BLE in remote) Contains IC: 3147A-SU60SOMC (Wi-Fi/BLE in console)
Japan	 003-180100  201-180112
Korea	 R-R-Alc-UVCS

Label Locations

Note the following safety and system label locations. The console labels apply to any console unless stated otherwise. Refer to the system for specific information.



VCS Console (Left), Foot Controller (Middle), and Remote (Right) Labels

- Do not push label** – Warns of a potential tip or overbalance hazard if the console is pushed when the casters are locked or the wheels are immobilized.
- Console identification label** – Includes product identification and manufacturing information.
- Laser label** (VCS models with an optional laser only) – Includes laser class and safety information.

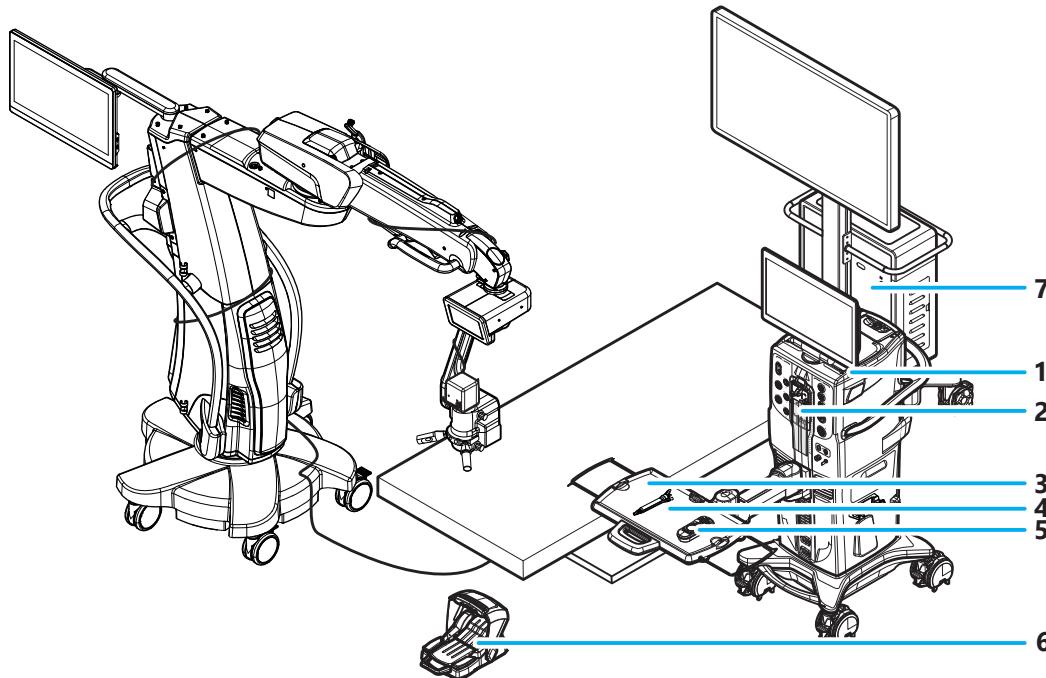


- Product label** – Includes basic product details, safety information, and wireless certifications.

- 5 Investigational device and clinical trial use labels** – Includes statements about limited use.
- 6 Foot controller compliance label** – Includes wireless certification and manufacturing information.
- 7 Foot controller product label** – Includes product identification information.
- 8 Remote product label** – Includes manufacturing, wireless certification, and product identification information.
- 9 Abbreviated remote product label** – Includes product identification information.

System Features and Compatible Devices

Basic System Example



An Example of a System, including a UNITY VCS and 3D Visualization System

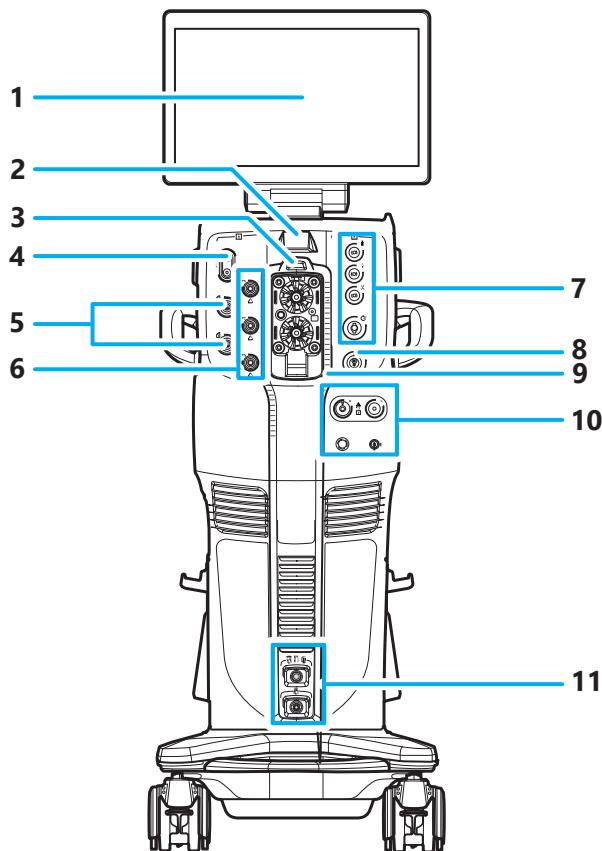
- 1 **Console** – Performs general surgical functions and communicates with connected UNITY devices (see [Console Features](#) on page 26).
- 2 **FMS** – Manages the flow between a fluid or air source, the console, and accessories (see [FMS Features](#) on page 37).
- 3 **Tray** – Provides a convenient surface to present tools to the user (see [Tray Features](#) on page 31).
- 4 **Accessory** – Interacts with the eye (see [Accessories](#) on page 39).
- 5 **Remote** – Provides basic console interface navigation and selections (see [Remote Features](#) on page 33).
- 6 **Foot controller** – Controls console functions (see [Foot Controller Features](#) on page 32).
- 7 **3D visualization system** - Displays 3D video on a 3D display and can overlay surgical details from other sources.

Console Features

The console comes in 2 different models:

- **VCS model** – Supports posterior segment or anterior segment surgery. This model also supports an optional laser module (VCS models with optional laser).
- **CS model** – Supports anterior segment surgery only.

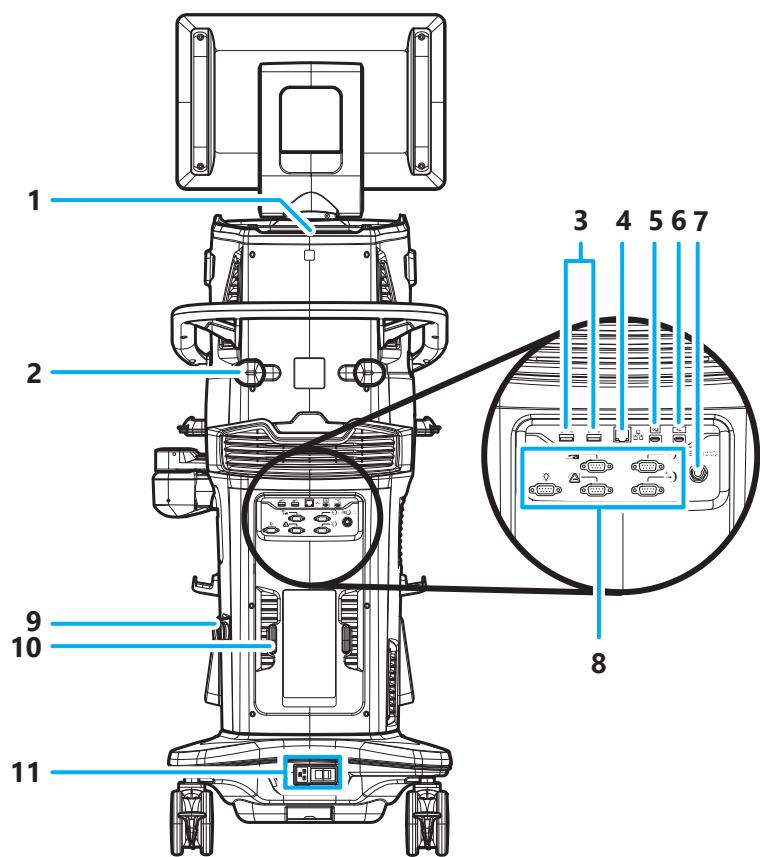
Console Front Panel Features



VCS Console Front Panel Features

- 1 **Display** – Shows console functions and status in a graphical interface.
- 2 **Task light** – Illuminates the console tray.
- 3 **FMS Eject button** – Disengages the FMS from the console.
- 4 **Diathermy port** – Powers a diathermy probe.
- 5 **Ultrasonic ports** – Powers up to 2 independent ultrasonic handpieces.
- 6 **Light probe ports (VCS models only)** – Powers up to 3 independent light probes.
- 7 **Pneumatic ports (VCS models only)** – Powers various pneumatic accessories.
- 8 **Vitrectomy port** – Powers a vitrectomy accessory.
- 9 **PEL indicators** – Provides visual feedback for the current PEL setting.
- 10 **Laser panel (VCS models with optional laser only)** – Powers lasers and provides emergency controls.
- 11 **Foot controller ports** – Connects foot controllers to the console.

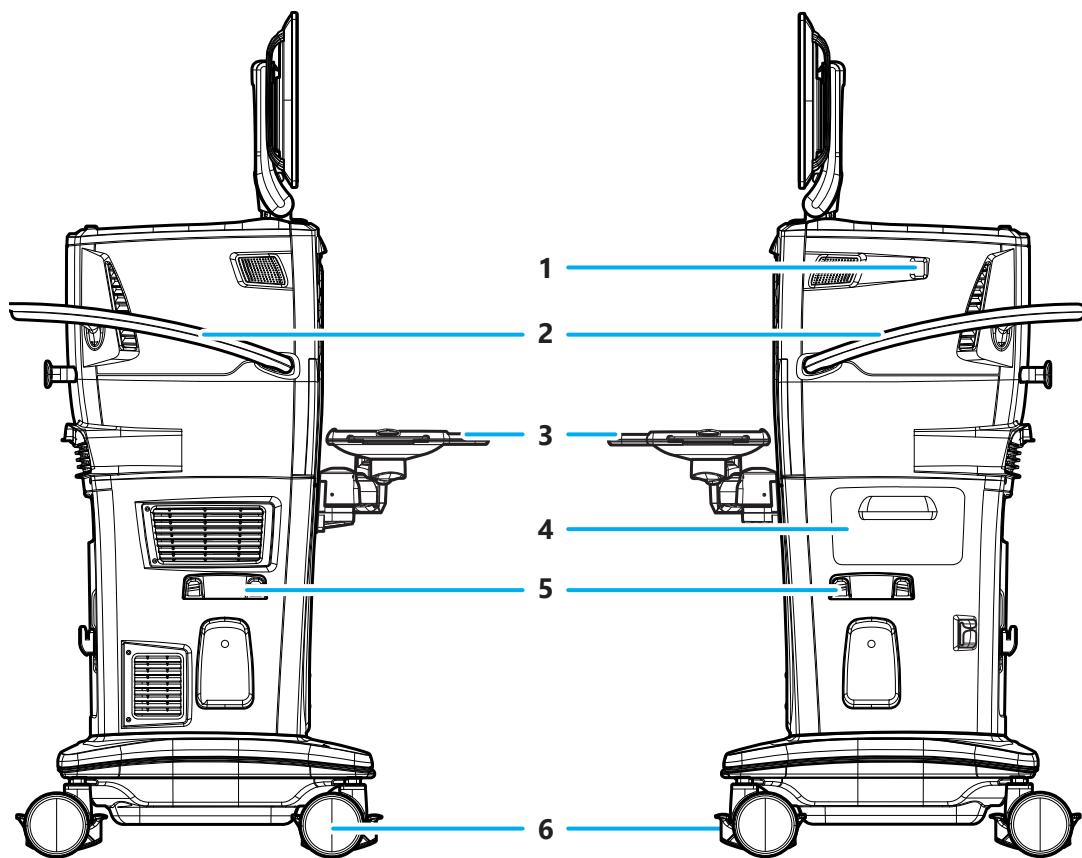
Console Rear Panel Features



VCS Console Rear Panel Features

- 1 **Bag chamber** – Secures the irrigating solution bag.
- 2 **Power cable hooks** – Stores the power cable.
- 3 **USB ports** – Connect USB drives for backup and restore functions (see [Backup and Restore Data](#) on page 181).
- 4 **Ethernet port** – Connects the console to a network.
- 5 **3D port** – Connects the console to a compatible 3D visualization system.
- 6 **Disabled port** – Reserves use for future considerations.
- 7 **Air hookup (VCS models only)** – Connects the console to facility air pressure.
- 8 **Laser ports** – See [Laser Features \(VCS Models with Optional Laser Only\)](#) on page 35.
- 9 **Cable hook** – Stores a foot controller cable.
- 10 **Laser foot controller hooks** – Stores a laser foot controller.
- 11 **Power switch and cable port** – Powers the console.

Console Side Panel Features

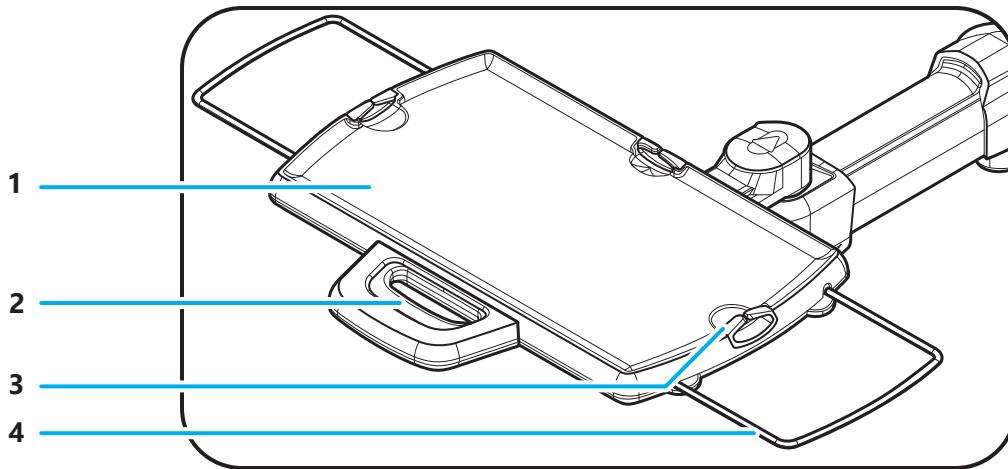


VCS Console Side Panel Features

- 1 Standby button** – Powers the console on or off.
- 2 Handle** – Provides an area to grip the console and move it.
- 3 Tray** – Holds tools for users during setup and operation.
- 4 Storage drawer** – Provides local storage for small items or consumables.
- 5 Foot controller hooks** – Supports 6-button or 4-button foot controller storage and charging.
- 6 Wheels and casters** – Includes rotating wheels for console transportation and locking casters for secure placement or storage.

Tray Features

The console supports either a small or large tray.

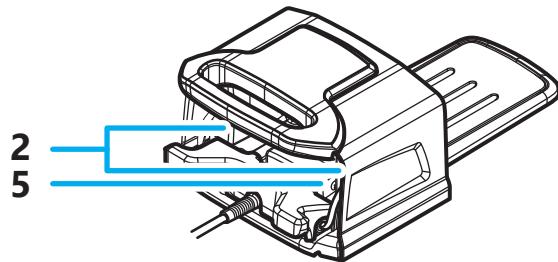
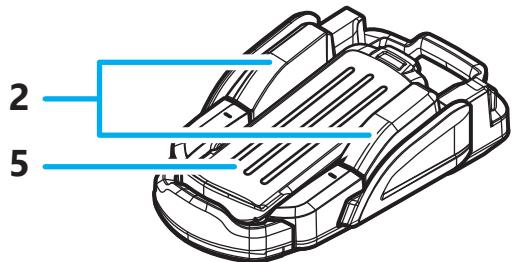
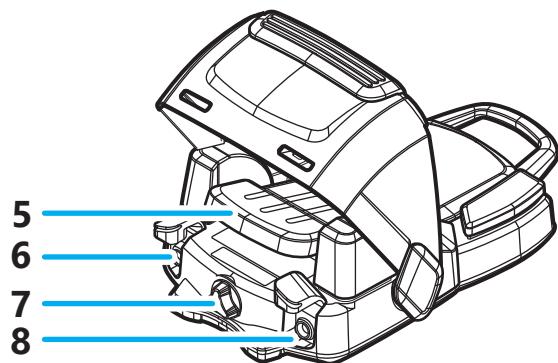
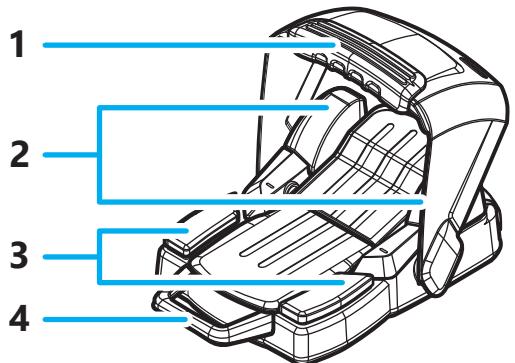


Tray Features

- 1 Surgical tray** – Provides a surface to place instruments.
- 2 Handle** – Positions the tray when gripped.
- 3 Cable holders (3)** – Secure cables and tubes.
- 4 Bail liners (2)** – Create pockets with a drape to hold instruments or other tools.

Foot Controller Features

The system includes a 6-button, 4-button, and laser foot controller. However, the system also supports wired *Centurion*, *Constellation*, and *PurePoint* foot controllers.



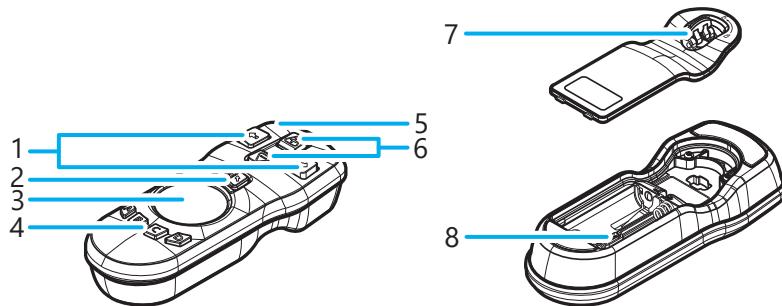
UNITY Foot Controller Features (6-button, 4-button, and Laser)

- 1 Shroud and handle** – Secures the foot controller to the console and provides a hand grip to move the foot controller.
- 2 Toe buttons (2)** – Activate configured functions based on horizontal or vertical taps (6-button and 4-button models only).
- 3 Heel buttons (2)** – Activate configured functions based on vertical taps.
- 4 Toe bar** – Helps reposition the foot controller with a foot.
- 5 Treadle** – Activates surgical functions based on the surgical step.
- 6 Console port (1 notch)** – Connects the foot controller to the console through a cable (optional).
- 7 Treadle tension adjustment knob** – Changes the treadle sensitivity.
- 8 Laser foot controller port (2 notches)** – Connects a laser foot controller (optional).

Remote Features

The remote controls the display interface without physical contact with the console. It can pair with one console at a time. To create a sterile barrier around the remote, Alcon recommends a *UNITY Remote Control Aseptic Transfer sleeve* (see [Create a Sterile Barrier around the Remote \(Optional\)](#) on page 75).

! WARNING: To avoid a magnetic interference risk, do not place the remote on patients with implanted medical devices that are sensitive to magnet fields.

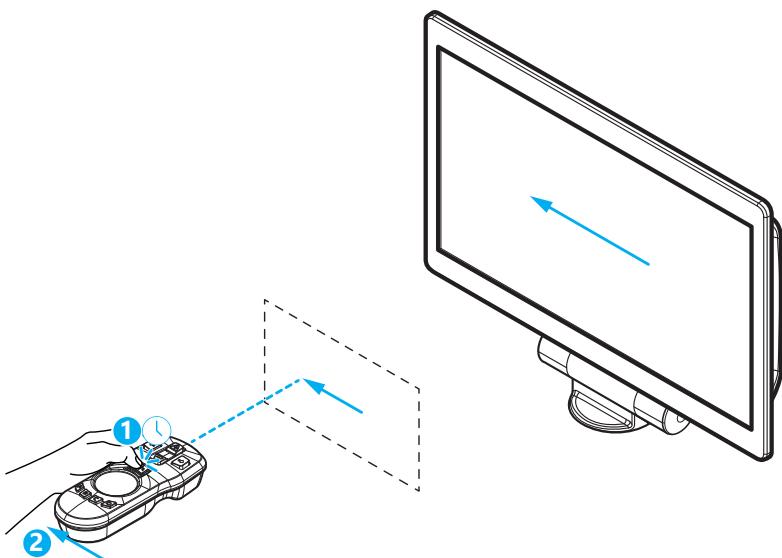


Remote Top and Inside Features

- 1 **Previous and Next buttons** – Navigates between surgical steps.
- 2 **Motion cursor button** – Controls the display cursor through remote movement in the air. To select items, press the button momentarily.
- 3 **Trackpad** – Controls the display cursor.
- 4 **Programmable buttons (4)** – Perform actions as configured by the console. To assign functions to the programmable buttons, select the **Remote** icon on the display.
- 5 **Battery life indicator** – Blinks when low batteries need to be replaced.
- 6 **IOP buttons** – Adjusts IOP settings or active IOP surgical parameters.
- 7 **Bottom cover lock** – Secures the bottom cover to the remote body.
- 8 **USB-C connector** – Connects the remote to the console rear panel USB-A connector for software updates.

Motion Tracking

The motion method controls the display cursor by moving the remote in the air. The cursor moves relative to the motion of the remote.



Motion Tracking Example

- To use the motion method, press and hold the **Motion Cursor** button.
- To select an item on the display, release the **Motion Cursor** button when the cursor is on the intended target, and then perform a quick press-and-release of the same button.
- To stop using the motion method, release the **Motion Cursor** button.

Trackpad

The trackpad controls the display cursor relative to the position of a finger on the trackpad surface. To use the trackpad, slide a finger over the trackpad surface. To make a selection, press the **Motion Cursor** button.

Remote Audio Indicators

The remote features audio indicators to identify various states. The following beeps may occur unsolicited (see also [Wireless Communication](#) on page 210 and [Remote Dialog Box](#) on page 68).

Length	Frequency	Description
1 s	2 times	Communication with the console has been either lost for more than 15 minutes or restored.
250 ms	4 times	Communication with the console has been lost.
100 ms	3 times	A fault is detected.

Laser Features (VCS Models with Optional Laser Only)

VCS models with an optional laser include a fully integrated laser module. A protective housing covers the laser source so that no harmful laser radiation will be emitted. Do not remove any part of this protective housing. The laser system must not be used if the protective housing has been damaged or removed.

 **WARNING:** Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser Effects

The laser beam is primarily absorbed by pigmented tissues within the eye. These pigments are hemoglobin/oxy-hemoglobin and melanin. In the case of macular treatment, xanthophyll pigment is involved. The surgeon controls the power, spot size, and exposure time of the delivered laser beam to the targeted tissue. It is the combination of these effects that results in the thermal action of the laser beam upon tissue. One or all of the adjustable parameters can be changed. However, in normal clinical practice, power is usually varied, and spot size and exposure time are preset as a function of the application.

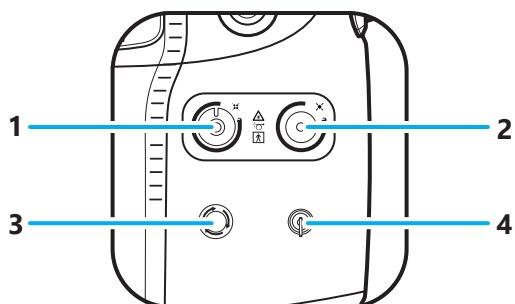
The 532 nm green laser beam has similar absorption effects as the 577 nm dye yellow laser beam. This means that the absorption effects of the 532 nm wavelength are considerably higher in hemoglobin and melanin, and less in xanthophyll. In all cases, it is necessary to perform titrations until the desired treatment results are obtained. The 532 nm wavelength also requires less power than that required with the argon laser to obtain similar results. Therefore, you should begin your titration levels with lower power than required for similar procedures with the argon laser.

 **WARNING:** To avoid patient injury, titrate delivered energy.

Use of this medical laser requires training and experience to obtain maximum clinical performance. Titrating the dosage is recommended by initiating a lesion formation in an area of normal retina with intact pigment epithelium. Power and exposure duration should be varied incrementally until the desired lesion is produced.

 **WARNING:** To avoid potential patient injury, select lower power, short duration, and large spot size if unsure which settings are required.

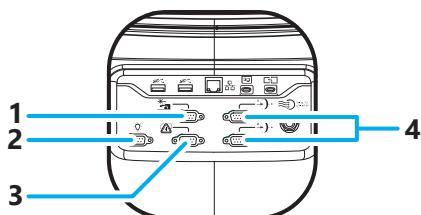
Laser Front Panel Features



Front Panel Laser Features

- 1 **Multi-spot laser port** – Connects an Alcon *TetraSpot™* laser.
- 2 **Single spot laser port** – Connects an Alcon single spot laser.
- 3 **Emergency stop button** – Stops all laser emissions (treatment and aiming beams) immediately if pushed. The switch must be reset to the initial position to restore power.
- 4 **Key** – Laser operation is not possible without the key. Alcon recommends limiting access to the key to authorized and knowledgeable personnel. Do not leave the key on or near the console when not in use.

Laser Rear Panel Features



Rear Panel Laser Connectors

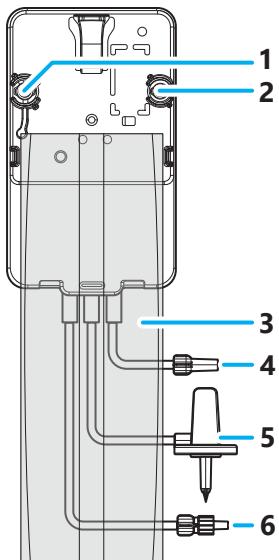
- 1 **PurePoint laser foot controller port** – Connects a *PurePoint* laser foot controller to the console.
- 2 **Active laser room indicator port** – Connects a light switch (24 VDC, 1A max rating) to the console to notify people outside the laser room that the laser is active.
- 3 **Remote interlock port** – Connects the laser to an external switch (for example, to the laser room door to stop all laser emissions if the door is opened during operation) or interlock plug.
- 4 **Protective filter ports** – Connects up to 2 tethered filters.

FMS Features

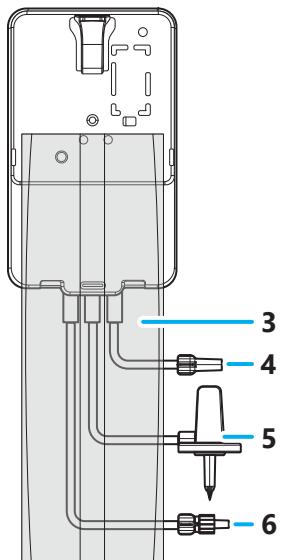
A *UNITY VCS/CS* procedure pack includes an FMS with tubing sets, tray cover, small parts kits, and other accessories that are necessary to perform a particular ophthalmic procedure. Consumable items are designed to be used once and then discarded. The console supports packs for posterior segment, anterior segment, and combined procedures. Refer to the FMS DFU for more details on a specific FMS.

 **WARNING:**

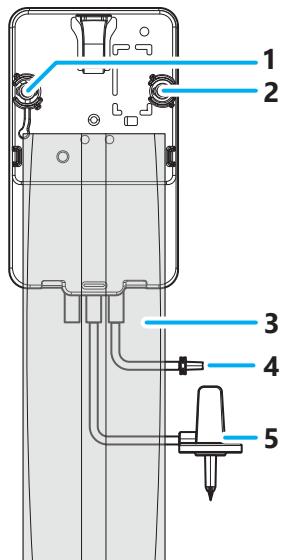
- Do not reuse sterile consumable medical devices or accessories designated for single use only.
- To avoid the risk of leaks or obstruction along the fluid path, resulting in reduced fluidic performance, or foreign particle introduction into the eye, do not reuse or reprocess single use FMS consumables.



Combined FMS Features



Anterior FMS Features



Posterior FMS Features

- 1 Infusion port** – Supports fluid-air exchange for posterior or combined procedures.
- 2 Vitrectomy suction port** – Supports suction for posterior vitrectomy procedures.
- 3 Drain bag** – Holds used irrigating fluid and other material aspirated from the eye.
- 4 Aspiration line (Anterior or Combined FMS only) or auxiliary aspiration line (Posterior FMS only)** – Transfers fluid and material aspirated from the eye to the FMS.
- 5 Administration line** – Transfers irrigating fluid from a connected irrigating solution bag to the FMS.
- 6 Irrigation line** – Transfers irrigating fluid from the FMS to a connected accessory.

Accessories

The console supports various accessories to perform various surgical procedures. Accessories include handpieces and probes, as well as tips and sleeves when necessary. Different accessories are required for different procedures and operating modes. Read all packaging and DFUs supplied with consumable packs prior to use.

The subsequent sections describe accessory types and identify compatible models. For ordering information, contact an Alcon sales representative.

WARNING:

- Never intentionally modify accessories or tips (for example, do not bend, cut, or engrave them) as they could break or malfunction.
- Modification of the equipment is not allowed without prior authorization from the manufacturer. If this equipment is modified, appropriate inspection and testing must be conducted to ensure continued safe use of the equipment.
- To avoid the risk of a patient hazard, do not mismatch consumable components or use settings not specifically adjusted for particular consumable component combinations.

NOTE: The console supports approved accessories and components only. Do not modify surgical equipment, accessories, or components.

Anterior Segment Accessories

Anterior segment accessories include phacoemulsification and IA handpieces (including tips and Irrigation sleeves), anterior vitrectomy probes, and diathermy probes. The following descriptions provide general information about various accessories used for lens removal procedures.

WARNING:

- To avoid potential injury, including shock hazards to the patient and user, do not use ultrasonic handpieces not compatible with the console or handpieces repaired without Alcon authorization.
- The user should not touch an activated ultrasonic handpiece tip, as injuries could occur.

Phacoemulsification Handpieces

Alcon phacoemulsification handpieces integrate irrigation, aspiration, and emulsification to simultaneously maintain or inflate the anterior chamber, emulsify the lens, and aspirate the lens material from the eye. Together, with compatible tips and sleeves, they are used for ultrasonic applications.

Ultrasonic tips are attached to the phacoemulsification handpieces to deliver mechanical energy to the lens, assisting in its removal through aspiration. Depending on the needs and technique preferred by the user, various styles of tips and tip bevels are available.

 **WARNING:**

- To avoid the risk of reduced tip cutting performance, the presence of tip burrs, fluidic path obstruction, and foreign particle introduction into the eye, do not reuse or reprocess single use phacoemulsification tips.
- Do not use IA tips with phaco handpieces.

Irrigation sleeves cover the accessory tips to provide irrigating fluid to the eye anterior chamber during surgery. They are used with phacoemulsification accessories, as well as IA accessories and must match the specific tip size.

 **WARNING:**

To avoid a potential patient hazard, do not mismatch consumable components or use settings not specifically adjusted for a particular combination of consumable components.

IA Handpieces

Alcon IA handpieces maintain chamber pressure with irrigation while removing ocular material through aspiration. For IA procedures, the system requires the handpiece, tip, and irrigation sleeve.

 **WARNING:**

To avoid potential shallowing or collapsing of the anterior chamber due to fluidic imbalance, use only Alcon reusable or disposable IA handpieces.

Anterior Vitrectomy Probes

Alcon vitrectomy probes are vitreous cutters that provide both aspiration and cutting. They also provide an irrigating cannula for bi-manual irrigation.

WARNING:

- To avoid the risk of reduced vitreous cutting performance, fluidic path obstruction, and foreign particle introduction into the eye, do not reuse or process single use vitreous cutting probes.
- Alcon vitrectomy probes are guillotine vitreous cutters. They are intended for single use only.

Diathermy Probes

Alcon diathermy (coagulation) probes apply electrical energy either in the anterior or posterior (see [Posterior Segment Accessories \(VCS Models Only\)](#) on page 42) eye segment to treat retinal tears, stop surface bleeding, and selectively coagulate tissue. The console is compatible with the following diathermy accessories.

WARNING: To avoid thermal injury or electric shock caused by a damaged bipolar accessory or foreign particle introduction into the eye, do not reuse or reprocess single use diathermy probes.

Posterior Segment Accessories (VCS Models Only)

Posterior segment accessories include pneumatic handpieces, posterior vitrectomy probes, FAX, VFC syringes, and diathermy probes. The following sections contain information about these accessories.

Posterior Vitrectomy Probes

Alcon posterior vitrectomy probes cut, aspirate, and dissect tissue as well as remove the lens. The system supports the following *Hypervit™* (dual cut) and *Ultravit* probes. Use only compatible Alcon vitrectomy probes. The probes are available in *TOTAL PLUS* procedure packs.

WARNING:

- To avoid the risk of reduced vitreous cutting performance, fluidic path obstruction, and foreign particle introduction into the eye, do not reuse or process single use vitreous cutting probes.
- Alcon vitrectomy probes are guillotine vitreous cutters. They are intended for single use.

Infusion Cannula and Entry Systems

After a trocar creates an incision and the entry system provides a port, an Alcon infusion cannula infuses liquid or gas into the posterior eye segment to maintain intraocular pressure. Infusion cannulae and entry systems are available in *TOTAL PLUS* procedure packs.

Light Probes

Alcon light probes provide intraocular illumination.

Extrusion Handpieces

The console is compatible with Advanced DSP Backflush handpieces.

Fragmentation Handpieces

Alcon fragmentation handpieces provide simultaneous aspiration and fragmentation, or vacuum only depending on the console configuration. The system supports the *OZi™* fragmentation handpiece.

Pneumatic Handpieces

Alcon pneumatic probes include a handle and either forcep or scissor tips. The console supports two handles at a time: one with a forcep tip and one with a scissors tip.

VFC Syringes

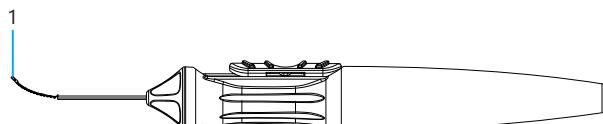
The system supports the High Performance VFC Pack which includes a syringe, stopper, adapter, and tip. If needed, Alcon also has 8.5 ml Silikon 1000 oil vials.

Laser Probes (VCS VCS Models with Optional Lasers Only)

Alcon laser probes emit laser for laser photocoagulation in either the anterior or posterior eye segments. The console (VCS models with optional laser only) supports illuminated *TetraSpot* laser probes. However, it also supports legacy laser probes.



WARNING: To avoid the risk of phototoxicity from inconsistent laser or illumination exposure caused by a damaged fiber or connector, reduced laser or illumination output, and foreign particle introduction into the eye, do not reuse or reprocess single use laser or light probes.



Laser Probe Example

- 1 **Laser aperture** - Emits laser from the end of the tip.

Irrigating Solution

Irrigating solution contacts the patient or fluid path during surgery. The console uses irrigating solution bags placed in the bag chamber to control flow (see [Irrigating Solution Bags](#) on page 225 for compatible bags). For international customers, contact a local distributor for more specific ordering information.



WARNING: To avoid possible patient injury or system damage, use only irrigating solution bags approved by Alcon for use in *Active Fluidics™*. Other irrigating solution or infusion bags or containers may rupture or disrupt surgical procedures under certain conditions (for example, when the console is in a pressurized infusion or irrigation mode or with IOP control enabled).

Specifications

The following specifications refer to any console model unless otherwise stated.

Console Specifications

Category	Specification
Maximum dimensions (L x W x H) in stowed position	76 cm x 66 cm x 165 cm (30" x 26" x 65")
Maximum weight (CS only, includes 4-button foot controller and small tray)	
Packaged	177 kg (390 lb)
Unpacked	141 kg (310 lb)
Maximum weight (VCS only, includes 6-button foot controller, large tray, and laser module)	
Packaged	182 kg (401 lb)
Unpacked	155 kg (341 lb)
Operating conditions	
Temperature	10 °C to 35 °C (50 °F to 95 °F)
Relative humidity	10% to 90% without condensation
Altitude	0 m to 3000 m (0' to 9843') above sea level
Non-operating conditions (storage)	
Temperature	-10 °C to 35 °C (14 °F to 95 °F)
Relative humidity	10% to 95% without condensation
Maximum altitude	0 m to 3000 m (0' to 9843') above sea level
Non-operation conditions (transport)	
Temperature	-20 °C to 50 °C (-4 °F to 122 °F)
Relative humidity	10% to 95% without condensation
Maximum altitude	0 m to 5600 m (0' to 18,372') above sea level
Electrical	
Input voltage	100 V to 240 V
Input current	12 A to 6 A
Input frequency	50 Hz or 60 Hz
Applied parts	Type BF
Electric shock protection	Class I

Category	Specification
Tray size	
Small model	516 cm ² (80 in ²)
Large model	1290 cm ² (200 in ²)
Working loads	
Tray	9 kg (20 lb)
Foot controller hangers	5 kg (11 lb) for 6-button and 4-button foot controllers 3 kg (6.6 lb) for the laser foot controller
Audio output	
Speakers	Muted to 65 dBA (minimum)
Background, passive	Muted to 65 dBA
Connectivity	
Ethernet (RJ-45)	1 Gbps
IX60G type A	Future use
IX60G type B	NGENUITY connection (NGENUITY connection adapter cable required)
USB 3.0 (2 x type A)	5 Gbps
Wi-Fi (802.11ac, 2.4 GHz or 5 GHz)	433 Mbps
Surgical connectors	
All models	1 diathermy, 2 phacoemulsification (not simultaneous), 1 vitrectomy
VCS models only	3 illumination, 1 forcep, 1 FAX, 1 scissor, 1 VFC
VCS models with optional laser only	1 single spot, 1 TetraSpot

UNITY Foot Controller Specifications

Category	Specification
6-button foot controller	
Weight	5.0 kg (11 lb)
Water ingress protection	IPX8
4-button foot controller	
Weight	5.0 kg (11 lb)
Water ingress protection	IPX8
Laser foot controller	
Weight	2.3 kg (5 lb)
Water ingress protection	IPX8

Remote Specifications

Category	Specification
Water ingress protection	IPX4
Power source	2 AA batteries
Wireless communication	
Type	<i>Bluetooth</i> ¹ wireless technology
Range	4.6 m (15')

Performance Specifications

Fluidics Performance

Category	Specification
Irrigation	
IOP control set point (at sea level)	20 mmHg to 120 mmHg
IOP set point response time (10% to 90% step change)	1 s
IOP set point accuracy (at 0 flow)	±(5% of set point + 5 mmHg)
Flow rate	0 cc/min to 60 cc/min
Usable bag volume	450 cc
Bag usage accuracy	±35 cc
Infusion	
IOP control set point (at sea level)	16 mmHg to 120 mmHg
IOP set point response time (10% to 90% step change)	1 s
IOP set point accuracy (at 0 flow)	±(2% of set point + 5 mmHg)
Flow rate	0 cc/min to 20 cc/min
Usable bag volume	450 cc
Bag usage accuracy	±35 cc
LPAS	
Pressure range (at sea level)	0 mmHg to 120 mmHg
Pressure accuracy	±(2% of set point + 5 mmHg)
Flow rate	1.2 SLPM (minimum)

¹ Trademarks are property of their respective owners.

Category	Specification
Automatic stopcock	
Response time	500 ms
Pressure range (at sea level)	0 mmHg to 120 mmHg
Flow rate (liquid)	0 cc/min to 20 cc/min
Flow rate (air)	1.2 SLPM (minimum)
Aspiration	
Vacuum (at sea level)	650 mmHg
Vacuum rise time (at sea level, 10% to 90%, flow of 25 cc/min)	1.5 s
Flow rate	0 cc/min to 60 cc/min
Flow rate accuracy	±20% or ±3 cc/min (whichever is greater)
Suction	
Vacuum (at sea level)	650 mmHg
Vacuum accuracy (at sea level)	±(2% of set point + 5 mmHg)
Flow rate (infusion)	0 cc/min to 20 cc/min
Flow rate (irrigation)	0 cc/min to 60 cc/min
Vacuum rise time (from 0 mmHg to -650 mmHg, 10% to 90%, flow of 0 cc/min)	1.1 s
Vacuum fall time (from -650 mmHg to 0 mmHg, 90% to 10%, flow of 0 cc/min)	600 ms
Reflux (proportional and continuous)	
Pressure range (at sea level)	0 mmHg to 120 mmHg
Pressure accuracy (at sea level)	±(5% of set point + 5 mmHg)
Reflux (micro)	
Pressure range (at sea level)	70 mmHg ±30 mmHg
Volume accuracy	15 µl ±10 µl

Surgical Performances

Category	Specification
Phacoemulsification	
Modes	Continuous, burst, pulse
Longitudinal tip stroke at 100%	0.0084 cm ±0.0018 cm (0.0033" ±0.0007")
Torsional tip stroke at 100%	0.0058 cm ±0.0023 cm (0.0023" ±0.0009")
Resonant frequency range	30 kHz to 60 kHz
Pulse rate range	1 to 250 pulses per second

Category	Specification	
On-time range	0% to 100%	
Burst on time range	0 ms to 500 ms	
Burst off time range	2500 ms to 0 ms	
Fragmentation		
Modes	Continuous, burst, pulse	
Longitudinal tip stroke at 100%	0.0050 cm ±0.0018 cm (0.0020" ±0.0007")	
Torsional tip stroke at 100%	0.0069 cm ±0.0023 cm (0.0027" ±0.0009")	
Pulse rate range	1 to 250 pulses per second	
Vitrectomy		
Anterior modes	Fixed, linear	
Posterior modes (VCS only)	Continuous, momentary	
Probe drive speed	<p>NOTE: For dual port vitrectomy probes, 1 full actuation equals 2 full cuts.</p>	
Without external pressure source	1 to 10,000 actuations per min	
With external pressure source	1 to 15,000 actuations per min	
Forceps (VCS only)		
Modes	Proportional	
Pressure range	0 psig to 50 psig	
Scissors (VCS only)		
Modes	Proportional, multi-cut	
Pressure range	0 psig to 50 psig	
Supported cut rates	1 to 450 cuts per minute	
Viscous fluid control (VCS only)		
Modes	Inject, extract, dual	
Injection pressure	0 psig to 80 psig	
Injection pressure accuracy	±(2% of set point + 1 psi)	
Extraction vacuum (with external pressure source)	0 mmHg to 650 mmHg	
Extraction vacuum (without external pressure source)	0 mmHg to 600 mmHg	
Extraction vacuum accuracy	±(2% of set point + 5 mmHg)	
Diathermy		
Frequency	1.5 MHz	
Frequency accuracy	±10%	
Waveshape	Sinusoidal	
Output power range	1 W to 10 W	

Category	Specification
Output power accuracy	±20%
Rated load (non-inductive)	75 Ω
Maximum output current	1.0 Arms
Maximum open circuit voltage	175 V peak to peak
Illumination, RGB	
Output color	Adjustable
Output intensity through a 25+ reference fiber (per port)	24 lumens
Output accuracy	±20%
Illumination, Multi-spot laser	
Output color	Fixed (non-adjustable)
Output intensity at probe tip	0.9 lumens
Output accuracy	±20%
Inlet air supply	
Standard pressure	90 psig to 120 psig (6.1 bar to 8.3 bar)
Reduced pressure	72.5 psig to 89 psig (5.0 bar to 6.1 bar)
Minimal pressure	58 psig to 72.5 psig (4.0 bar to 5.0 bar)

Laser Performance (VCS Models with Optional Laser Only)

Category	Specification
Treatment beam	
Wavelength	532 nm ±1 nm
Output power (single spot)	30 mW to 2 W
Output power per spot (multi-spot)	30 mW to 300 mW (4 spots) 30 mW to 500 mW (1 or 2 spots)
Output power accuracy	±20%
Class	4
Aiming beam	
Wavelength	639 nm (633 nm to 643 nm)
Output power	< 1 mW (adjustable)
Class	2

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System Setup

This section includes instructions and guidelines to prepare the console for use. The console, compatible consumables, and accessories constitute a complete surgical system. However, some accessories include a dedicated DFU. In the event of a conflict or inconsistency between this user manual and an accessory DFU, follow the DFU.

If the console is stored in a humid area that is warmer than the operating room (or location where it is used), allow the console to acclimate to the operating room for at least 1 hour before activating it.

! **WARNING:** For all people in contact with the console and accessories, practice universal precautions to help prevent exposure to blood-borne pathogens and other potentially infectious materials. If the status of encountered blood or body fluids or tissue is unknown, handle the material in accordance with OSHA or other applicable guidelines as if it is infectious.

The following setup instructions describe actions to take involving hardware and software. However, pay attention to messages and auditory alerts from the console. If a system message (see [System Messages](#) on page 177) cannot be resolved by following directions from the message itself or the troubleshooting section in this manual (see [Troubleshooting](#) on page 178), do not proceed and contact Alcon Technical Services.

Start of the Day Setup

This section includes instructions to prepare the system for use at the beginning of a series of surgical cases (for example, at the beginning of a work day). It assumes initial system integration and calibration are already established. In general, prepare the room and system for surgery first. The surgical system (except for the *Unity* video overlay) is suitable for use within the patient environment. For the purpose of this manual, consider the patient environment to be a volume of space at least 1.5 m around the operating table supporting the patient.

VCS models with optional laser require a room free from dust and positioned so the laser beam is not directed towards a door, window, mirror, or reflective area. To reduce dust, avoid installing the system in a carpeted room.

Move the Console

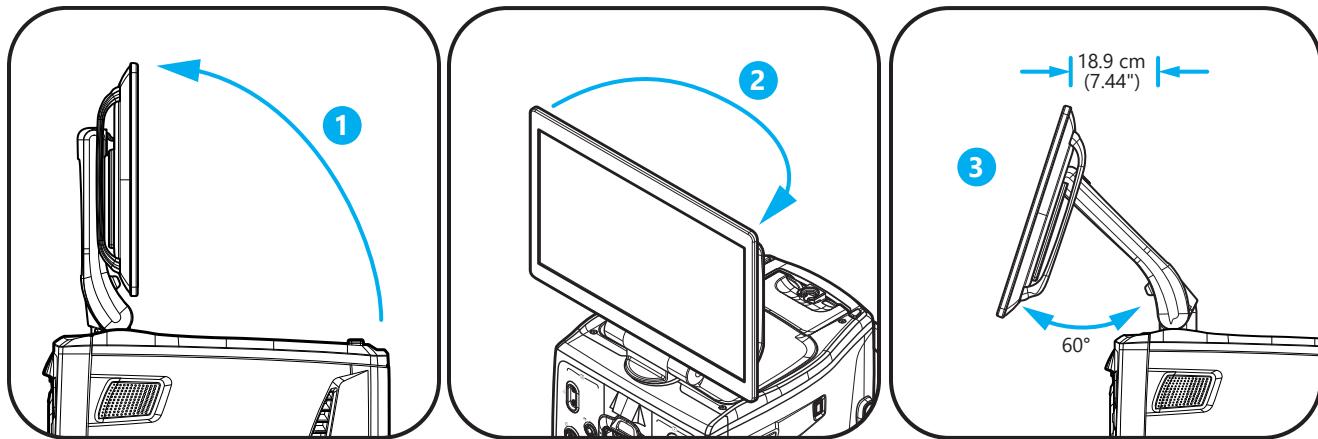
If the console is stored in an area outside the operating room, move the console with the tray stowed to the operating room and position it in a spot that is accessible during operation (see [Electromagnetic Compatibility \(EMC\) Compliance](#) on page 14 for potential environmental factors to consider). When the console is in the desired location, lock the casters.

 **WARNING:** To avoid the risk of falling equipment or overbalancing the console, do not push the console when the wheels are immobilized or blocked (see [Label Locations](#) on page 23 for the location of the label warning). Move the console only with the tray in a stowed position.

 **CAUTION:** To move the console, unlock the casters and pull the console by the handle (especially over elevator and door thresholds). Do not use the display or tray to move the console.

Position the Display

Once the console is stationary and locked, position the display so it is visible to the user.



Adjusting the Display from the Stored Position

1. Lift the display upright.
2. Rotate the display to face the surgeon or user.
3. If necessary, adjust the display to optimize visibility.



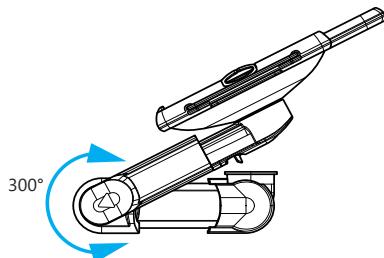
WARNING: To avoid skin, hair, or clothing from being pinched or trapped, keep clear of moving parts.

Position the Tray

The optional tray presents instruments and the remote in a convenient location. The tray articulation includes several joints along the arm to rotate the tray to either side of the console, raise or lower it, tilt it to either side, or swivel it around the end. All joints are locked unless unlocked by the handle or lever.

WARNING:

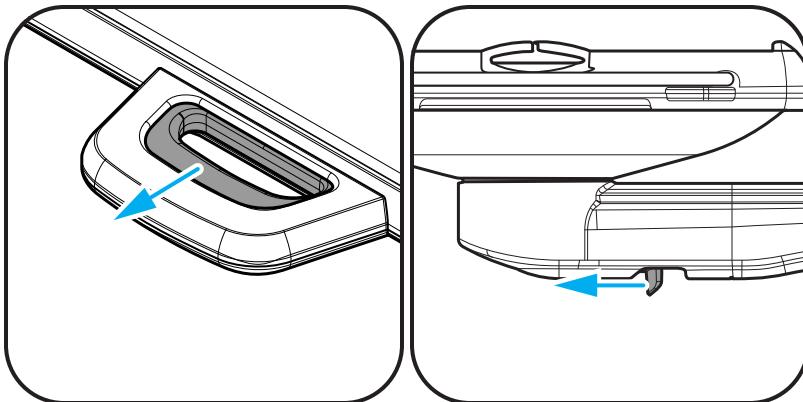
- To avoid skin, hair, or clothing from being pinched or trapped, keep clear of moving parts.



Tray Arm Articulation and Pinch Hazards

- The tray supports a maximum weight of 9 kg (20 lb).

To position the tray, perform the following steps:



Handle (Left) for Moving the Tray and Lever (Right) for Tilting the Tray

1. To move the tray, grip the handle and extend the tray away from the console.
2. To tilt the tray to either side, release the handle beneath the tray.

WARNING: The tray supports a maximum weight of 9 kg (20 lb).

Pair or Connect a Foot Controller

UNITY foot controllers automatically pair with the console when hung on the foot controller hooks. However, the console also supports wired connection to other foot controllers like the *Centurion*, *Constellation*, and *PurePoint*.

Place Foot Controllers on the Ground

If the desired foot controller is stored on the console, remove it from the hangers. Place the foot controllers level on the ground within operating distance of the surgeon.

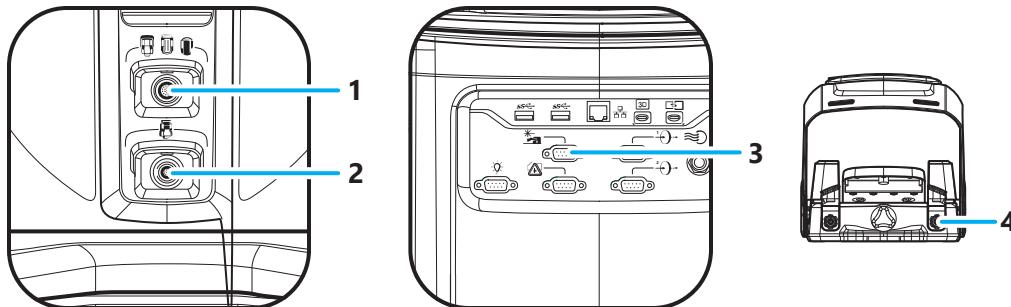
NOTE: For VCS models with an optional laser, place the laser foot controller, endoprobe, or LIO within 2 m of the console.

! CAUTION: To avoid causing irreparable damage to the foot controller, do not pick up or move the foot controller by the cable. Also, do not drop or kick it.

Connect Wired Foot Controllers (Optional)

To connect a foot controller through a wired connection, connect the cable to the applicable port.

NOTE: The console only supports one of each UNITY foot controller type at a time.

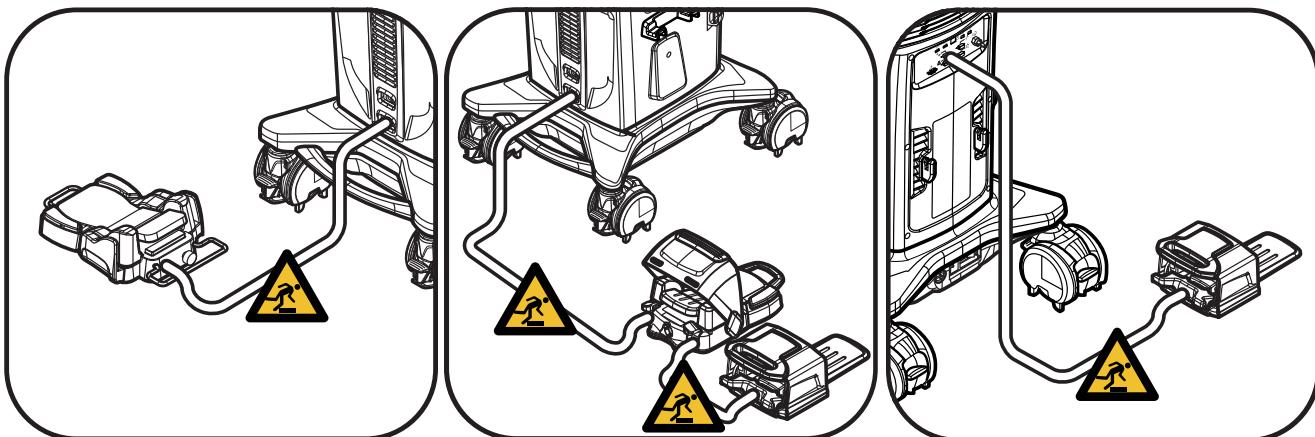


Console Front Panel (Left), VCS Console Rear Panel (Middle), 6-button Foot Controller (Right)

- 1 **UNITY or Centurion foot controller port** – Connects a *UNITY* 6-button or 4-button foot controller or a *Centurion* foot controller.
- 2 **Constellation foot controller port** – Connects a *Constellation* foot controller.
- 3 **PurePoint laser foot controller port** – Connects a *PurePoint* laser foot controller.
- 4 **UNITY laser foot controller port** – Connects a *UNITY* laser foot controller to a *UNITY* 6-button foot controller.



WARNING: To avoid trip hazards, route the cables properly.



Wired Foot Controller Configuration and Trip Hazards

Select a Foot Controller

If the console has multiple foot controllers connected to it, perform the following steps to select the one to use:

1. Select the foot controller icon on the display.
2. Select **Change Foot Controller**.
3. Select the foot controller to use from the list of available foot controllers.
4. Select **Close**.

Connect Inlet Pressure (VCS models only)

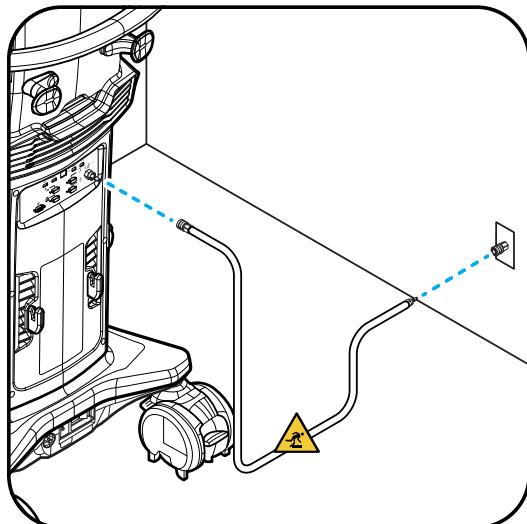
Surgical functionality without an external air source is possible but with certain limitations: for example, vitrectomy cut rate is limited to 10K actuations per minute, vacuum control without flow limit is disabled, and VFC extraction vacuum does not exceed 600 mmHg). To ensure the proper function of the system with facility air pressure, make sure the following conditions are met:

- All pressure source fittings and hoses have a minimum of 1/4 inch insider diameter.
- Use thread sealant when connecting fittings.
- The pressure source and regulators support a maximum flow of 100 slpm.



WARNING: To avoid trip hazards, route the hose properly.

NOTE: Some Alcon hoses include a right angle fitting. If desired, replace the quick disconnect fitting on the hose with the right angle fitting.



Inlet Pressure Hose and Trip Hazard

1. Ensure the inlet pressure source is compatible with the provided hose configuration. If smaller ID fittings are used in conjunction with the inlet hose fittings, the system performance may be affected at "minimal inlet pressure" (58.0 psig to 72.5 psig).
2. Connect the hose to the inlet pressure source.
3. Connect the quick disconnect fitting to the console.
4. Verify inlet pressure.

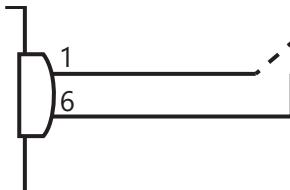
Prepare for Laser Use (VCS Models with Optional Laser Only)

! **WARNING:**

- Do not use unapproved laser delivery instruments.
- Potential hazards may occur when inserting, sharply bending or improperly securing the fiber optics. Not following the recommendations of the manufacturer may lead to damage to the fiber or beam delivery system and/or harm to the patient or laser operator.

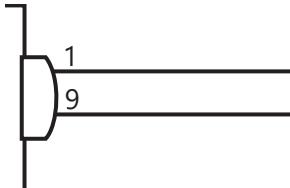
To set up lasers, perform the following steps:

1. Connect compatible protective filters. If the filter is tethered, connect it to the console rear panel.
2. Connect an optional emergency master disconnect interlock device to the console rear panel.



Pins for a Customer-Supplied Door Switch

3. Connect an optional door lamp to the console rear panel.



Pins for a Door Lamp

4. Insert the key.
5. If the emergency stop button is recessed, rotate the button until it dislodges.

Startup Procedure

After the console is set and physically stable, prepare and start the console.

Apply Power to the Console

Grounding reliability can only be achieved when equipment is connected to an equivalent receptacle marked hospital grade. Use only Alcon-supplied AC power cords.

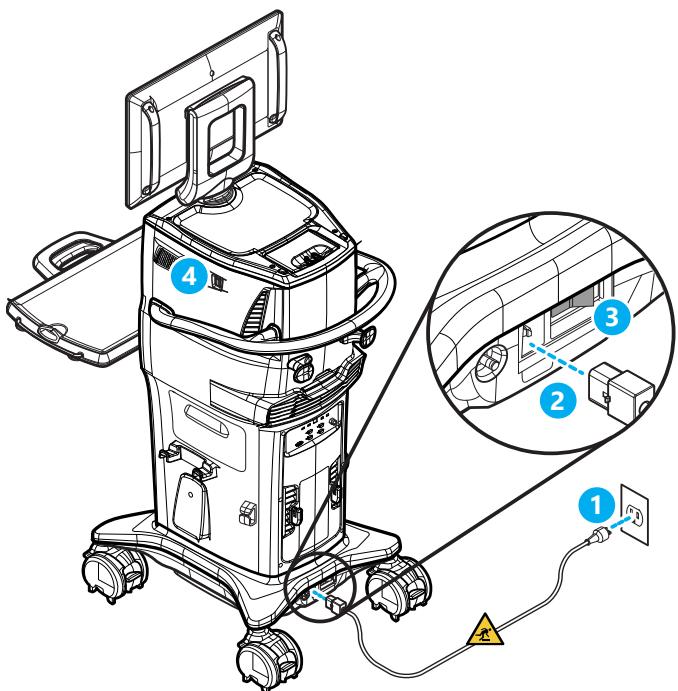
The equipotential ground connector may be used to provide a direct connection between the console and the potential equalization bus-bar of the electrical installation. This connector complies to the requirements of IEC/EN 60601-1.

WARNING:

- To avoid risk of electric shock, this equipment must be connected only to a supply mains with protective earth (ground). Do not use multiple socket outlets (power strip) or damaged mains socket outlets with this system.
- To avoid loss of power, connect the console to an appropriate power source (also see [Electromagnetic Compatibility \(EMC\) Compliance](#) on page 14).
- If the console is used in the 220 V to 240 V range in the United States or Canada, use it on a center-tapped, 240 V, single phase circuit.

NOTE:

- Console isolation from mains is achieved through a 2-pole power switch. Turn off the power switch or unplug the power cord from the wall outlet to achieve isolation from mains.
- Position the console in a place allowing ample room around the system to operate the main on and off power switch located on the lower rear panel. Allow access to the plug and power cord.



Powering the Console

To turn on the console, supply power and initiate the startup process.

1. Connect the power cable to a power supply.
2. Connect the power cable to the console rear panel.

! WARNING: To avoid trip hazards, route the cable properly.

3. Press in the | side of the **Power** switch.
4. Press the **Standby** button.

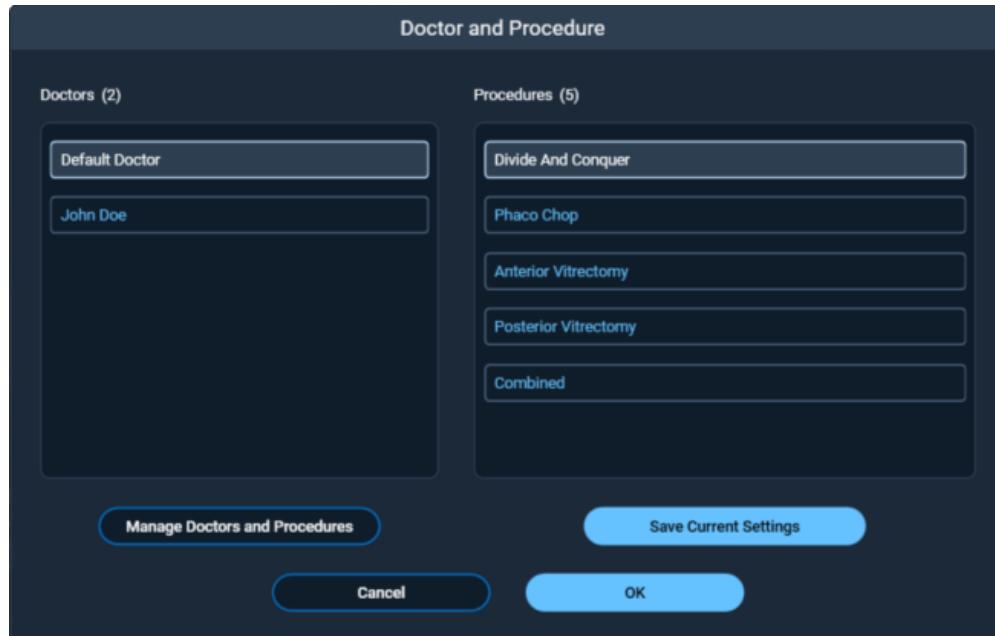
When the console turns on, it performs a diagnostics test on itself. The console is capable of detecting and reporting a wide range of advisories, errors, and faults (see [System Messages](#) on page 177). If one is detected during startup, the console informs the user and functions become non-operational until the message is resolved. Upon successful completion of the self-tests, the console proceeds to the profile and procedure selection screen.

NOTE: Always perform functional checks of the system before first use of the day.

Select a Doctor Profile and Procedure

When the console powers on, select a doctor profile and procedure. Doctor profiles save preferences and frequent actions taken by users. Procedures include preset steps for common system uses. For more information about doctor profiles and procedures, see [Additional Information](#) on page 183.

Initial Selection



Profile and Procedure Selection

To select a profile and a procedure, perform the following steps:

1. Select a doctor profile.
2. Select a procedure.
3. Select **OK**.

NOTE: To make changes to either list, select **Manage Doctors and Procedures** (see [Doctor Profile and Procedure Management](#) on page 188).

Review the Setup Interface

With a profile and procedure selected, the console proceeds to the setup screen. The setup screen provides instructions for connecting and preparing instruments before surgery. When accessories are connected to the console, select the corresponding boxes that appear on the screen and follow the instructions on the screen. The boxes and the port illumination light solid green when setup is successful.



Setup Screen

- 1 Status panel** – Provides quick access to high-level functions and system options (see [Status Panel Overview](#) on page 63). This panel is available for all screen types.
- 2 Setup panel** – Displays the console with buttons to aid in irrigating solution, FMS, and accessory setup (see [Setup Panel](#) on page 71).
- 3 Setup Menu panel** – Provides buttons to prepare connected accessories and proceed to the surgery screen (see [Setup Menu Panel](#) on page 72). The options available depend on the FMS type and setup type.

Status Panel Overview

The Status panel provides quick access to high-level functions and some system options. It is available for both the Setup interface and Surgery interface.



Status Panel with Various Indicators

- 1 **Doctor and Procedure button** – Displays the name of the selected user profile and procedure. Select the button to open the Doctor and Procedure dialog box (see [Select a Doctor Profile and Procedure](#) on page 61).

NOTE: An asterisk indicates there are unsaved changes to surgical parameters.

- 2 **Metric button** – Displays the current CDE value for anterior steps, laser shots for laser steps, or cutting time for posterior steps. Select the button for more detailed information on the current case and system performance (see [Metrics Dialog Box](#) on page 64).
- 3 **Inlet Pressure button** – Displays the incoming pressure from the facility source. Select the button for recommended pressure values (see [Inlet Pressure Dialog Box](#) on page 65).

NOTE:

- The console highlights the value in amber if it is below 58 psi or above 120 psi.
- The button is unavailable if the pressure value is 0 or there is either no FMS or an anterior FMS inserted.

- 4 **Foot Controller button** – Displays an icon depicting the foot controller model, the current treadle position, any activity on the foot controller buttons, the connection type, and battery information. Select the button to select or configure the current foot controller (see [Foot Controller Dialog Box](#) on page 66).
- 5 **Remote button** – Displays the connection strength and battery status of a paired and connected remote. Select the button to configure the remote (see [Remote Dialog Box](#) on page 68).
- 6 **NGENUITY button** – Displays the connection status of a 3D visualization system. Select the button to open available parameters for the connected 3D visualization system (see [Operate a Connected 3D Visualization System](#) on page 187). This button is available only if **NGENUITY** is enabled in System Settings (see [Alcon Vision Suite Communication](#) on page 212).

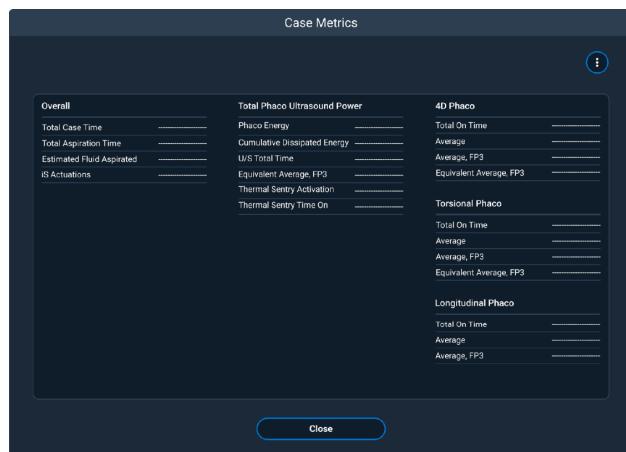
- 7 Connection button** – Opens the Connection status dialog box. Select the button to view connected optional parts (see [Connection Status Dialog Box](#) on page 69).

NOTE: The console displays an alert icon when the connection to a video overlay fails.

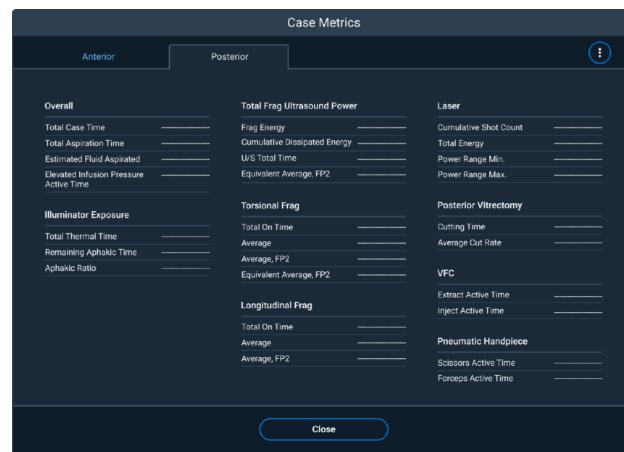
- 8 Task Light button** – Indicates whether the task light is on or off. Either select the button to toggle the light on or off or select and hold the button to configure the light behavior (see [Task Light Dialog Box](#) on page 70).
- 9 Options button** – Opens a menu for various system-level settings and functions.

Metrics Dialog Box

The Metrics dialog box displays information relevant to the procedure and inserted FMS. For example, it displays metrics for anterior procedures only if an anterior FMS is inserted.



Anterior Metrics with an Anterior FMS

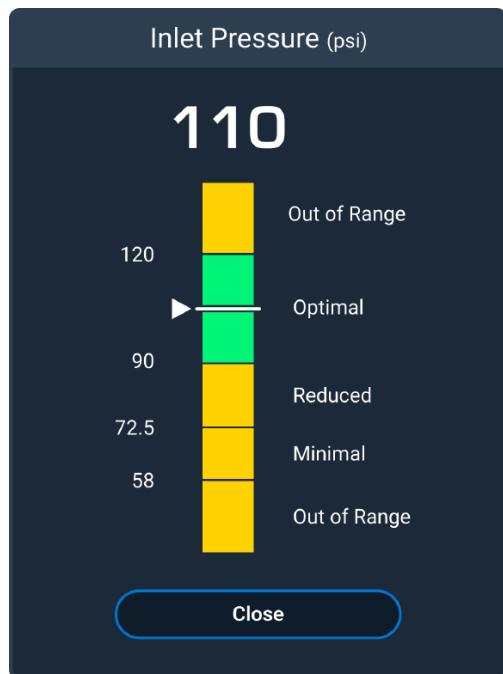


Posterior Metrics with a Combined FMS

Metrics are tracked when a the first surgical function is initiated (for example, when the foot controller treadle is pressed during a surgical step). The Options menu in the top right corner provides options to stop or reset the metrics.

Inlet Pressure Dialog Box

The Inlet Pressure dialog box contextualizes the current pressure. The gauge indicates a recommended range for optimal performance along with ranges that may reduce performance.



Inlet Pressure Dialog Box with Optimal Pressure

Foot Controller Dialog Box

The Foot Controller dialog box displays how the current foot controller is configured, the battery status, and connection status. It also includes buttons for changing the selected foot controller and configuring buttons and treadle positions.



Foot Controller Dialog Box

- Change Controller button** – Opens the Foot Controller Selection dialog box (see [Select the Active Foot Controller](#) on page 73).
- Battery indicator** – Indicates whether the battery status either while it is charging or the foot controller is in use.

Charging Status	Not Low	Low	Very Low
Not charging			
Charging			

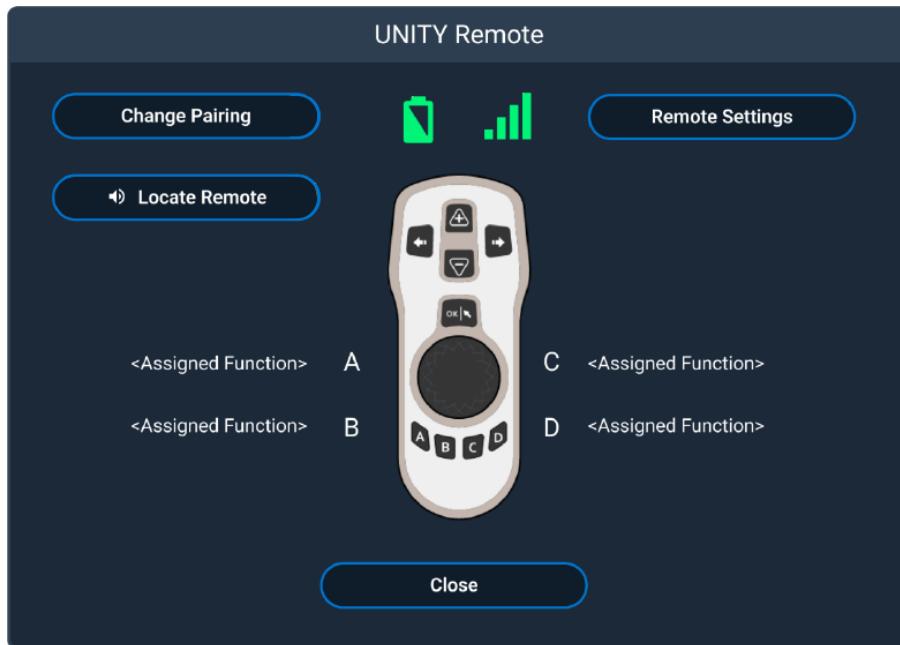
- **Connection indicator** – Displays the connection type and, if applicable, status.

Connection Type	Icon
Wireless	Strong to weak
Wired or tethered	
Cradled	Cradled left Cradled right
Foot controller not found	Not Found

- **Edit Settings button** – Opens the Foot Controller tab under Doctor Settings (see [Profile Foot Controller Preferences](#) on page 194).
- **Button Map display** – Displays the foot controller model with the functions assigned to each button. If no foot controller is selected, the image appears faded.
- **Treadle Range display** – Displays the percentage of the total treadle range each position takes up. If no foot controller is selected, the image appears faded.

Remote Dialog Box

The Remote dialog box indicates the battery status, connection status, and button configuration of the paired and connected remote. It also includes options to pair a different remote, configure the buttons, and have the remote make a sound to help locate it.

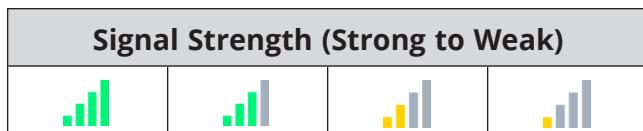


Remote Dialog box with No Assigned Functions to the Buttons

- **Change Pairing button** – Opens Connections tab of System Settings (see [Wireless Communication](#) on page 210).
- **Battery indicator** – Indicates the battery charge status.

Not Low	Low	Very Low

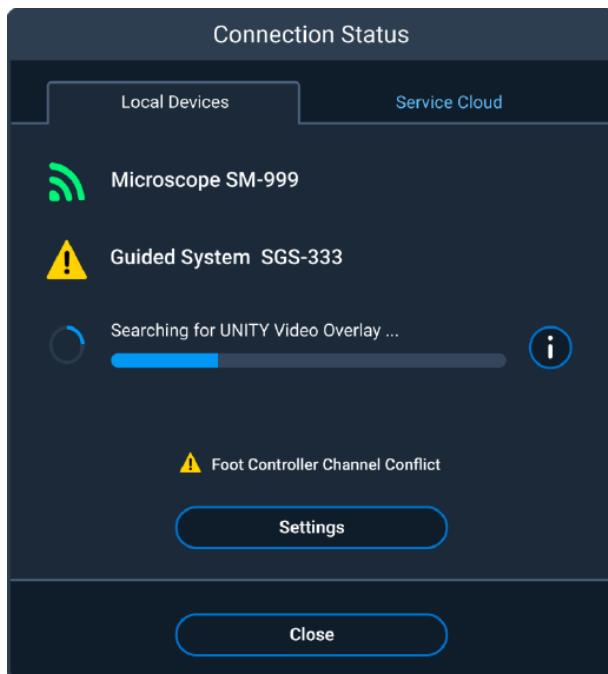
- **Connection indicator** – Displays the signal strength of the remote.



- **Remote Settings button** – Opens the Remote tab under Doctor Settings (see [Remote Configuration](#) on page 200).
- **Button Map display** – Displays the functions assigned to each button.
- **Locate Remote button** – Generates ten slow beeps from the remote to help find it. Press any button on the remote to stop the beeping.

Connection Status Dialog Box

The Connection Status dialog box summarizes the connection status of optional devices. It also includes a button to connect devices. The Service Cloud tab is not available.



Connections Status Dialog Box

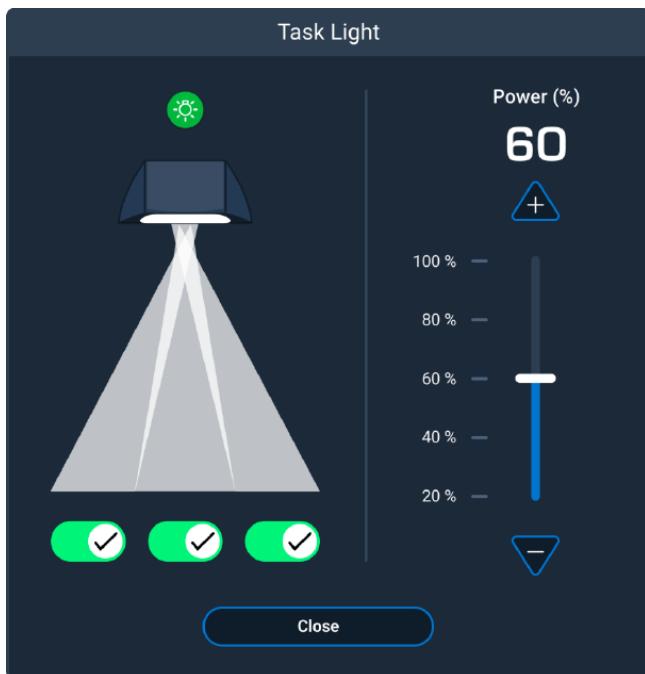
Each connected device is named with a status icon to the left. The console uses the following icons:

Icon	Description
	The device is connected.
	The device is not found.
	The console is attempting to connect to a <i>UNITY</i> Video Overlay. The icon also indicates the elapsed time (up to 5 minutes) for the attempt. If connection is unsuccessful, the Unable to Find dialog box opens. NOTE: During the attempt, the Information button is available. Select the button to open the Devices tab in System Settings (see Connect a Video Overlay on page 183).

NOTE: The dialog box displays a notice if the foot controller channel conflicts with something else.

Task Light Dialog Box

The Task Light dialog box manages which bulbs the task light button toggles on or off and at how much intensity.



Task Light Dialog Box

- **On and Off toggle** – Enables or disables the task light. When enabled, the image below the toggle depicts light emitting from enabled bulbs with a white fill. When disabled, the image shows an outlined area instead.
- **Left, Center, and Right Bulb toggles** – Enables or disables specific bulbs in the task light. The image above the toggles reserves an area of light (filled or outlined) for enabled bulbs.
- **Power slider** – Sets the brightness of the task light.

Setup Panel

The Setup panel includes accessory setup buttons that coincide with graphics of the corresponding ports on the console. The border color and style of the buttons and ports indicate the readiness of the console and accessories.

Indicator	Description
Solid blue	No accessory is connected but one is expected.
Dotted green	A valid accessory is connected but requires further setup.
Solid green	A valid accessory is connected and ready for use.
Dotted amber	An accessory is connected but something is not correct.
Solid amber	An accessory is connected but it cannot be used.



Setup Panel with the Irrigating Solution Bag Needed

For each accessories needed for the intended procedure, select the corresponding button to see setup instructions.

Setup Menu Panel

The Setup Menu panel includes a row of buttons required to prepare connected accessories for use. The options available depend on the FMS type and setup type. Certain UNITY FMS models support two setup methods: one-step (see [Prime and Test Accessories with One-Step Prime](#) on page 86) or two-step (see [Prime the FMS with Two-Step Prime \(Optional\)](#) on page 78).

FMS Type	Setup Type	Available Options
Any	One-step	Prime and Test
Anterior	Manual	Prime FMS, Fill, and Test Handpiece
Combined	Manual	Prime and Test, Fill, and Test Handpiece

When all accessories are ready, select **Surgery** to proceed to operation.

Select the Active Foot Controller

If the console has multiple foot controllers connected to it, perform the following steps to select the one to use:

1. Select the foot controller icon on the display.



2. Select **Change Controller**.



3. Select the foot controller to use from the list of available foot controllers.
4. Select **Close**.

General Case Setup

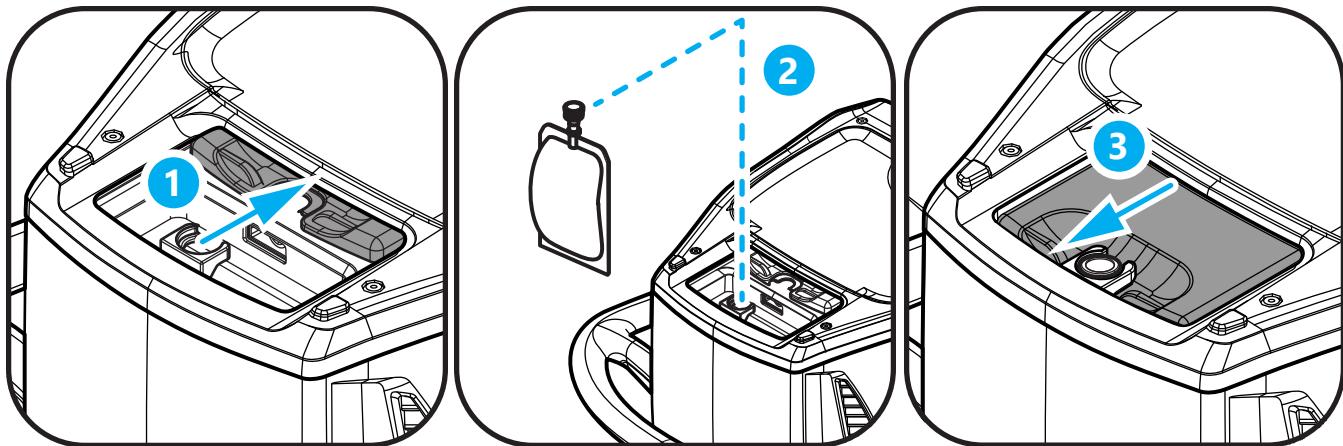
For each case, create a sterile workspace and prepare the fluidics system before connecting other accessories. The fluidics system involves the flow of irrigating solution between a bag, the FMS, and accessories.

WARNING: Notify Alcon immediately if any item in a procedure pack is received in a defective condition. Do not use any of the items if the sterile package is damaged or the seal is broken. In these cases, contact Alcon Technical Services (see [Alcon Service](#) on page 169).

NOTE: In the event of a conflict or inconsistency between this user manual and an accessory DFU, follow the DFU.

Install the Irrigating Solution Bag

The console supports *Intelligent Fluidics™* to maintain flow.



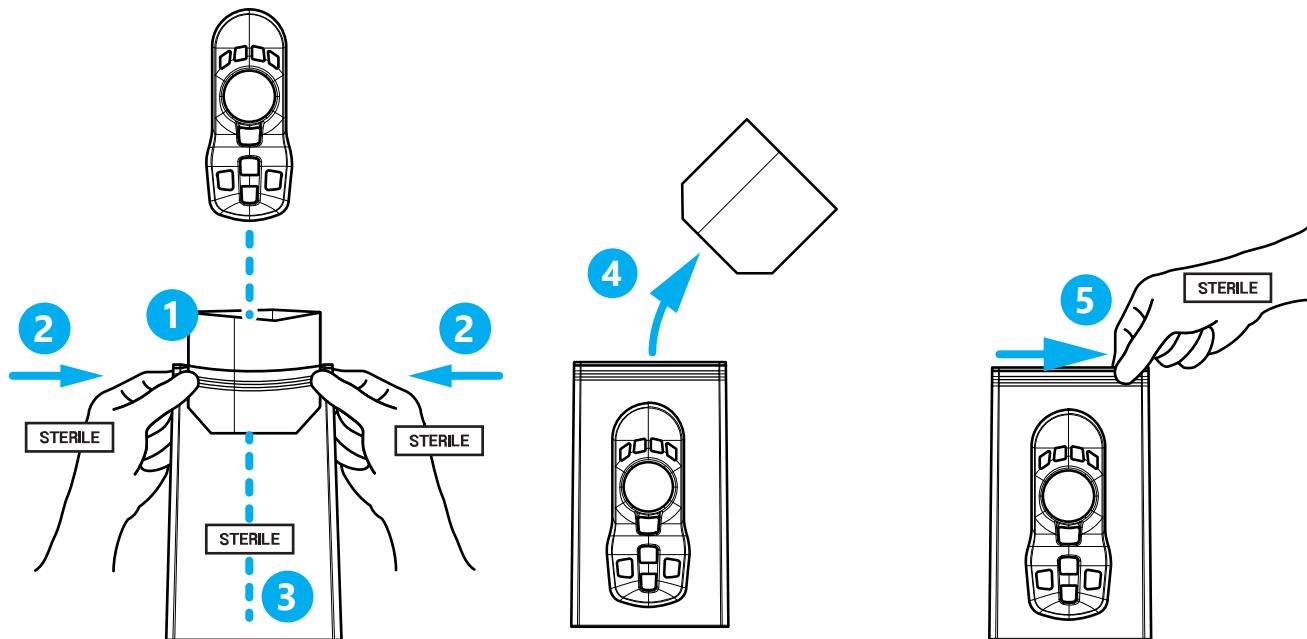
Placing an Irrigating Solution Bag in the Bag Chamber

To prepare an irrigating solution bag for connection to the FMS, perform the following steps:

1. Open the bay door.
2. Attach the bag stopper to the bay handle.
3. Close the bay door.

Create a Sterile Barrier around the Remote (Optional)

The following instructions describe the utilization of the Alcon Remote Control Aseptic Transfer pouch. The pouch is for hand-held use of the remote rather than under a tray cover.



RCAT Setup

1. Open the sterile bag and slide the sleeve partway through the mouth of the bag.
2. Push the sides of the bag and sleeve to create a tunnel into the bag.
3. Slide the remote into the bag.
4. Remove the sleeve.
5. Seal the bag.

Create a Sterile Barrier around the Display and Tray

Create a sterile barrier around the display (optional) and tray.

1. If needed, retrieve the sterile drapes from the Alcon procedure pack.
2. If intending to use the display touchscreen, cover the display with the display drape.
3. Extend either or both metal rims from the tray.
4. Cover the tray to the base with the tray drape.
5. Lightly push the drape through extended metal rims to create a pocket.

Set Up the FMS

The following instructions involve connecting the FMS to the console and the FMS to a source of irrigating solution. Connection to specific accessories are discussed later in the manual.

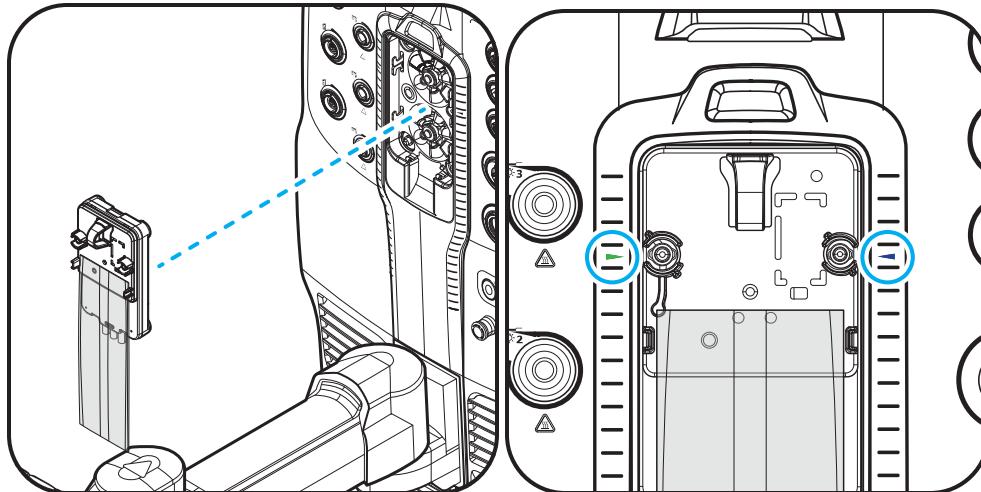
WARNING:

- Use recommended tubing sets only.
- Do not remove tubing sets.
- Treat all fluids aspirated during surgery as biohazards. Take appropriate precautions when handling FMS and tubing lines in contact with aspirated fluids.
- Refer to the procedure pack DFU for more details on a specific FMS. Read all packaging and DFUs supplied with consumable packs prior to use.
- Do not use expired packs.

Connect the FMS

To connect an FMS, perform the following steps:

1. Insert the FMS into the FMS receptacle. The blue and green arrows to the side of the FMS illuminate to indicate further action required. The blue arrow indicates where to connect a vitrectomy suction connector. The green arrow indicates where to connect an infusion line.



FMS Installation and Indicators (Combined FMS Shown)

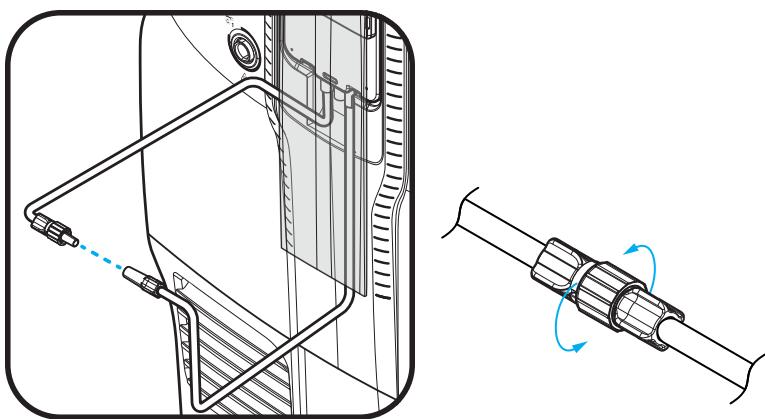
2. Spike the irrigating solution bag with the administration line.

Prime the FMS with Two-Step Prime (Optional)

With an anterior or combined FMS, the console supports the manual, two-step prime process (similar to the Alcon *Centurion*) as an alternative to the one-step prime and test process. This first step of the process primes only the FMS. Accessories require priming and testing as part of the second step of the process (see [Prime and Test Handpieces with Two-Step Prime \(Optional\) on page 84](#)).

To prime the FMS with this process, perform the following steps:

1. Disable one-step prime (see [Profile Surgical Preferences](#) on page 191).
2. Connect the aspiration and irrigation lines together.

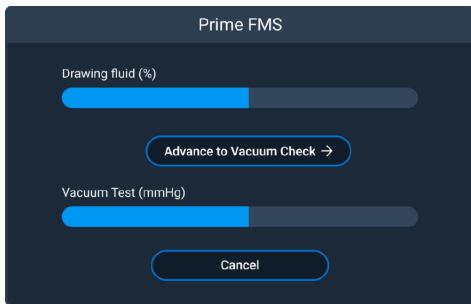


3. Select **Prime FMS**.



Setup Menu Configured for Two-Step Prime (Prime FMS Option with an Anterior FMS)

The Prime FMS dialog box opens. The console starts priming the FMS (if desired, select **Advance to Vacuum Check** to skip this). Afterward, the console tests the vacuum.



Prime FMS Dialog Box

Accessory Setup

This section describes how to connect the compatible Alcon accessories to the console front panel (depending on console model). Refer to the DFU accompanying the accessories for more information. For all accessories, clean inspect, and sterilize all relevant parts according to the DFU and hospital procedures.

WARNING:

- To avoid the risk of a patient hazard, do not mismatch consumable components or use settings not specifically adjusted for particular consumable component combinations.
- Attach only compatible Alcon consumables to the console or FMS. Do not connect consumables to patient intravenous connections.
- Inspect all handpiece cables and any cords on a regular basis and replace immediately if damage (for example, exposed wire, nicks in the insulation, deformation, etc.) is observed.

NOTE:

- Inspect accessories and any cords regularly. If damage is observed (for example, damage to insulation), do not use the device and contact Alcon Technical Services.
- In the event of a conflict or inconsistency between this user manual and an accessory DFU, follow the DFU.

Ports illuminate to indicate the status of the connected accessory. The following table describes the different colors and illumination behavior of the ports.

Color and Behavior	Description
Solid blue	Port available
Solid green	Connection made and ready for use
Pulsing green	Connection made but setup needed
Solid amber	Connected instrument not recognized or port is unavailable
Pulsing amber	Connected instrument recognized but needs attention (see Troubleshooting on page 178)

Setup for Anterior Procedures (Anterior Procedure Packs Only)

When assembling accessories with detachable tips, ensure the tip is fully tightened to the ultrasonic handpiece. If it is not secure, the console may generate a message or the tuning may be inadequate. However, do not tighten the tip so that it cannot be removed after use.

WARNING:

- To avoid poor clinical performance, do not use tips not secured to accessories.
- To avoid a potential patient hazard, do not mismatch consumable components or use settings not specifically adjusted for a particular combination of consumable components.
- To avoid potentially hazardous fluidic imbalances, do not mismatch ultrasonic tips and irrigation sleeves.
- The ultrasonic tips supplied in *UNITY VCS/CS* procedure packs are to be used only on compatible ultrasonic handpieces. Each ultrasonic tip is intended to be used only once per case, and then disposed of according to local governing ordinances.
- Do not over-tighten the ultrasonic tip to the handpiece using the integrated plastic tip wrench to the point of wrench slippage. This can damage the wrench and generate plastic particles which may cause tissue damage if introduced to the eye.

CAUTION: To avoid damage to the ultrasonic handpiece or tip, use a compatible Alcon tip wrench.

Prepare Phacoemulsification Handpieces

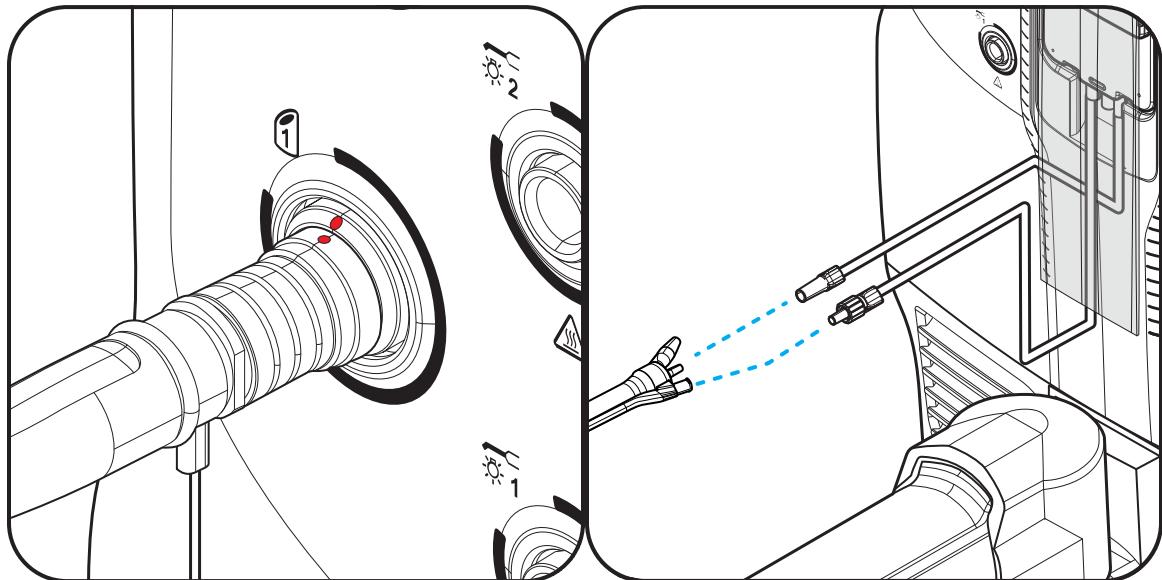
Alcon phacoemulsification handpieces include the handheld device, disposable tubing, an ultrasonic tip, and an irrigation sleeve. To support different needs and techniques, Alcon phacoemulsification accessories support different styles and combinations of tips and sleeves.

CAUTION: To prevent damage to the connectors and handpiece, secure the connector end cap when not in use.

WARNING: To avoid damage to the handpiece or voiding the warranty, do not quench a hot handpiece in water.

Connect the Phaco Handpiece to the Console and FMS

To connect phaco handpieces to the console, perform the following steps:

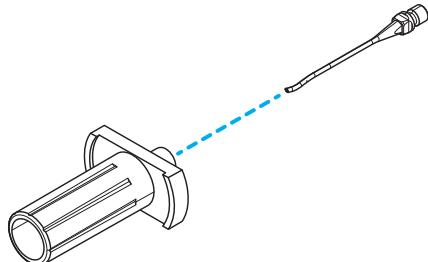
***Phaco Handpiece Connected to the Console***

1. Connect the handpiece to either ultrasonic port on the console and ensure the connector is fully inserted.
! CAUTION: To prevent damage to the handpiece and console, ensure the handpiece is completely dry before connecting it to the console.
2. Connect the handpiece to the FMS aspiration and irrigation lines.

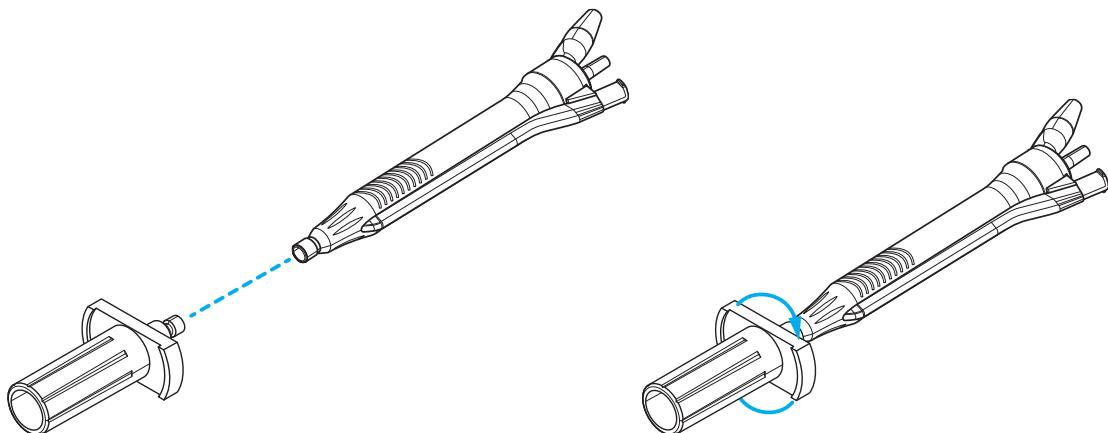
Attach the Ultrasonic Tip to the Phaco Handpiece

! **WARNING:** The ultrasonic tips supplied in *UNITY* procedure packs are to be used only on a *UNITY*, *ActiveSentry*, or *OZil* fragmentation handpiece. Each ultrasonic tip is intended to be used only once per case, and then disposed of according to local governing ordinances.

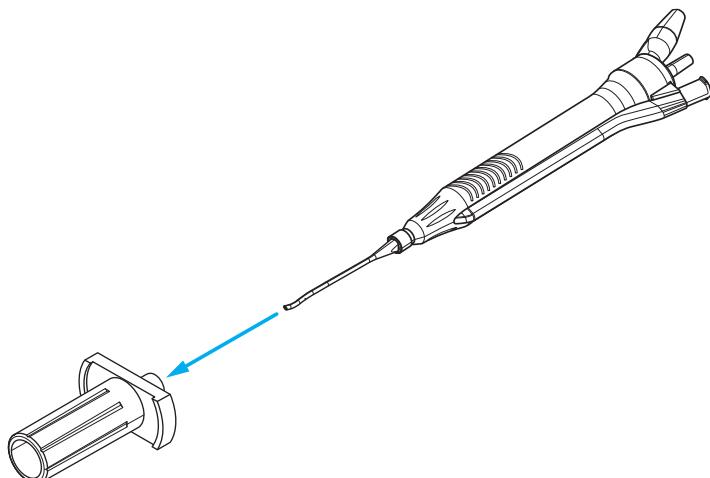
1. If necessary, press the tip through the tip wrench opening.



2. Attach the tip to the handpiece. Tighten firmly using the tip wrench. Do not overtighten as it may damage the wrench and generate plastic particulates.

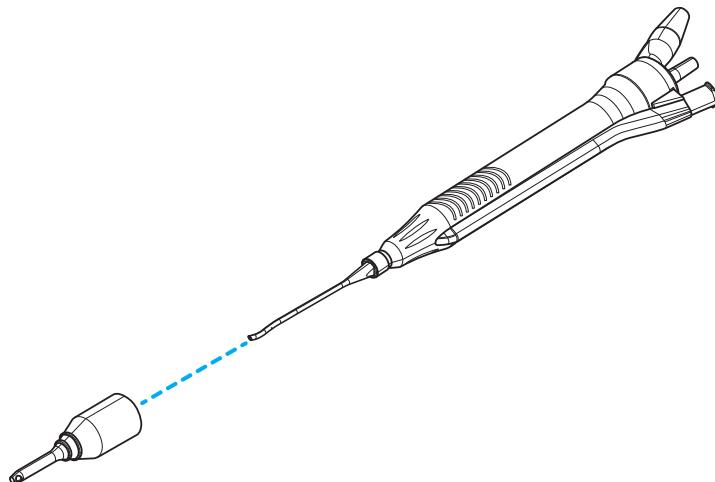


3. Remove the tip wrench and retain it for future tip removal.

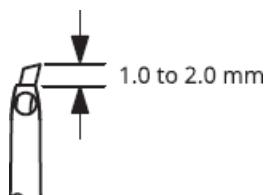


Attach the Irrigation Sleeve to the Tip

1. Slide the sleeve onto the tip. The sleeve should clear the tip bevel by 1.0 mm to 2.0 mm.



2. Align the infusion holes in the sleeve and tip.



WARNING: To avoid potentially hazardous fluidic imbalances, do not mismatch ultrasonic tips and irrigation sleeves.

Prime and Test Handpieces with Two-Step Prime (Optional)

If one-step prime is disabled, complete the two-step prime process by priming and testing handpieces. Each process must be manually initiated from the Setup Menu panel.

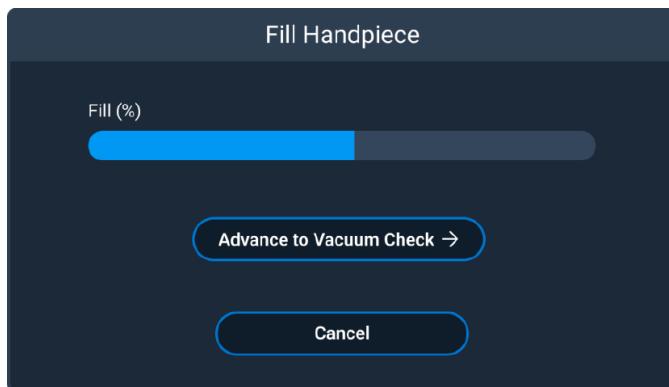
NOTE: This process is only applicable if one-step prime is disabled (enabled by default). Regardless, review the warnings listed with the one-step process (see [Prime and Test Accessories with One-Step Prime](#) on page 86).

To prime and test handpieces with the two-step prime method, perform the following steps:

1. Hold the handpiece tip over the opening of a test chamber.
2. Select **Fill** and fill the test chamber with fluid from the handpiece.

***Setup Menu Configured for Two-Step Prime (Fill Option)***

The Fill dialog box opens. The console starts irrigating fluid through the handpiece (if desired, select **Advance to Vacuum Check** to skip this).

***Fill Handpiece Dialog Box***

3. Ensure bubbles are absent from the test chamber and attach it to the handpiece.



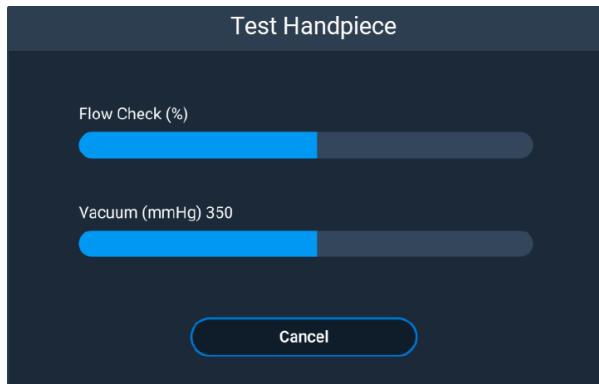
CAUTION: To avoid a risk of premature tip failure or breakage, ensure the test chamber is filled with irrigating solution before tuning the ultrasonic handpiece.

4. Select **Test Handpiece**. Ensure the handpiece is stationary during priming.



Setup Menu Configured for Two-Step Prime (Test Handpiece Option)

The Test Handpiece dialog box opens. The console starts testing the handpiece. Afterward, the console tests the vacuum.



Test Handpiece Dialog Box

5. For Active Sentry handpieces, place the device in a horizontal position.

Prime and Test Accessories with One-Step Prime

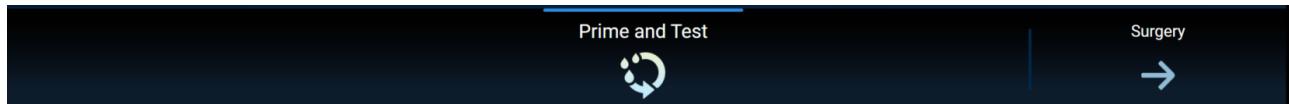
The one-step prime process primes and tests the FMS and handpieces in one step. It is enabled by default but, if it is disabled, see [Prime the FMS with Two-Step Prime \(Optional\)](#) on page 78 and [Prime and Test Handpieces with Two-Step Prime \(Optional\)](#) on page 84.

WARNING:

- To avoid a potential patient hazard or equipment damage, do not touch the accessory tip with any solid object while active. However, during any ultrasonic procedure, metal particles may result from inadvertent touching of the tip with a second accessory or ultrasonic energy causing micro abrasion of the tip.
- The user should not touch an activated ultrasonic handpiece tip, as injuries could occur.
- Inadvertent activation of functions that are intended for priming or tuning accessories while the accessory is in the eye can create a hazardous situation that could result in patient injury.
- To avoid the risk of shallowing or collapsing of the anterior chamber due to fluidic imbalance or poor fluidic response, perform the following checks:
 - Ensure there are no leaks in the irrigation or infusion line.
 - Ensure the stream of fluid is present and strong.
 - Ensure tubing is not occluded or kinked.
 - Ensure the test chamber does not collapse after tuning.

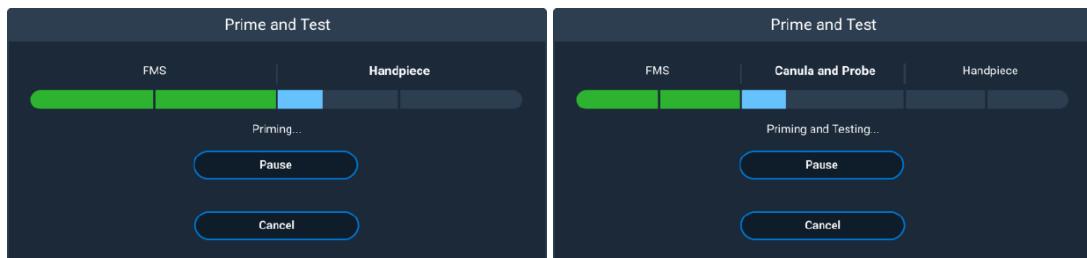
To prepare accessories with the one-step prime process, perform the following steps:

1. Attach the test chamber to the handpiece.
2. Assemble and connect all other accessories.
3. Select **Prime and Test**.



Setup Menu Configured for One-Step Prime

The Prime and Test dialog box opens. The console starts the process (if desired, select **Pause** to pause the process and then **Resume** to continue).

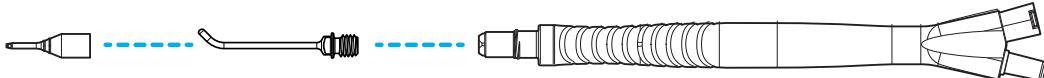


Prime and Test Dialog Box Examples

Prepare IA Handpieces

Alcon IA handpieces include the handheld device, disposable tubing, IA tip, and irrigation sleeve. If they are damaged or missing, replace them. If in doubt, contact Alcon Technical services.

NOTE: IA handpieces require PEL setup.



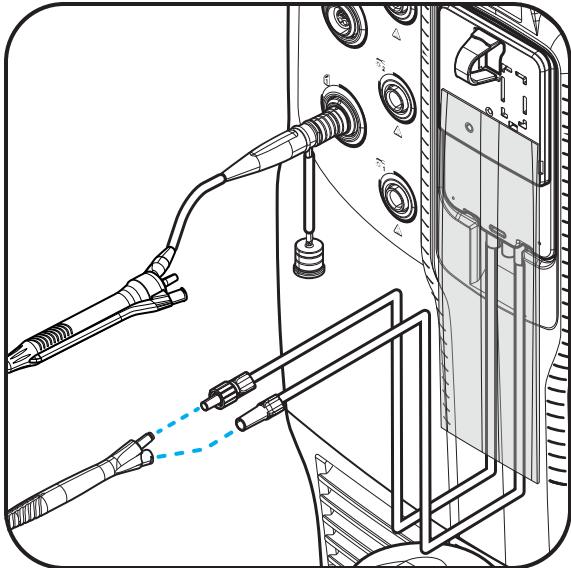
Parts of IA Handpieces (Irrigation Sleeve, Tip, and Handpiece)

Connect the IA Handpiece to the FMS

1. If necessary, remove the aspiration and irrigation lines from a connected phaco handpiece.

NOTE: For IA handpieces with a locking irrigation luer, turn the white luer clockwise to lock the irrigation line.

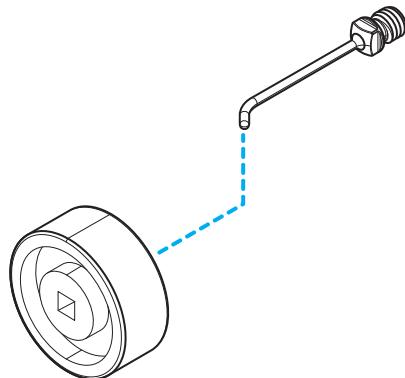
2. Connect the FMS aspiration and irrigation lines to the IA handpiece.



3. Place the handpiece on the tray or hold it level with the tray.

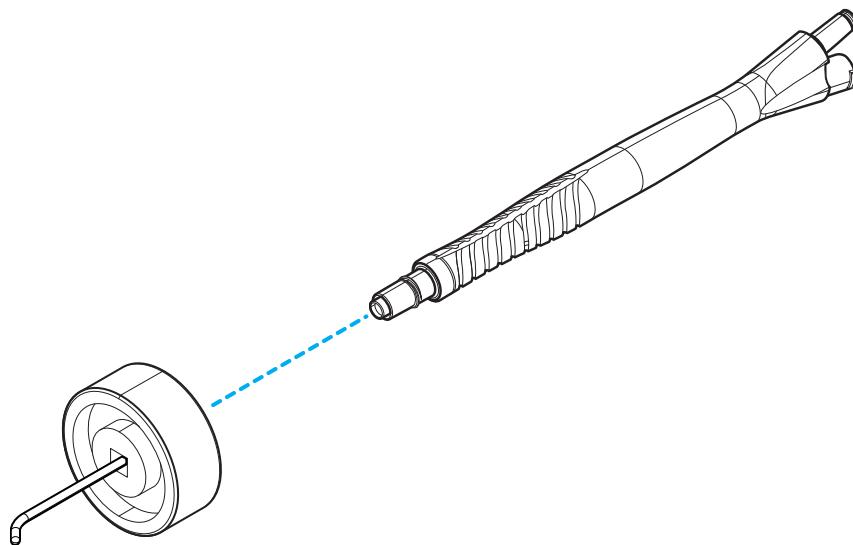
Attach the IA Tip to the IA Handpiece

1. If necessary, thread the tip through the tip wrench opening.

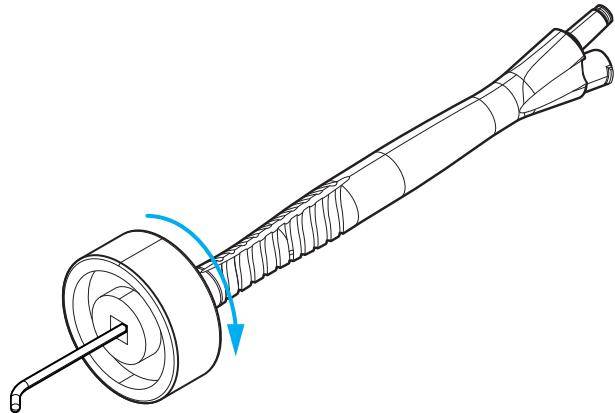


⚠ CAUTION: Use of a tool other than Alcon tip wrench may cause damage to the IA tip and handpiece.

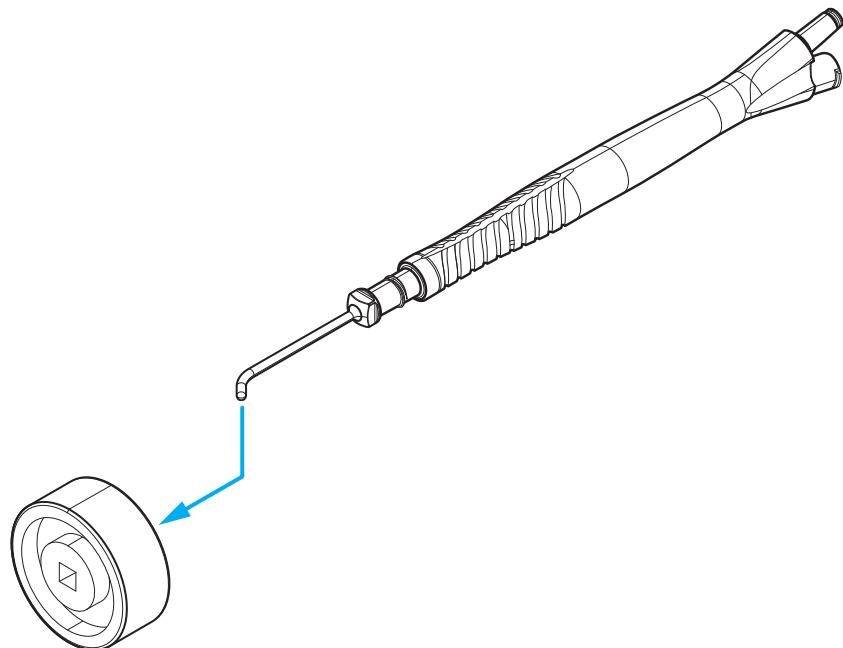
2. Attach the tip base to the handpiece.



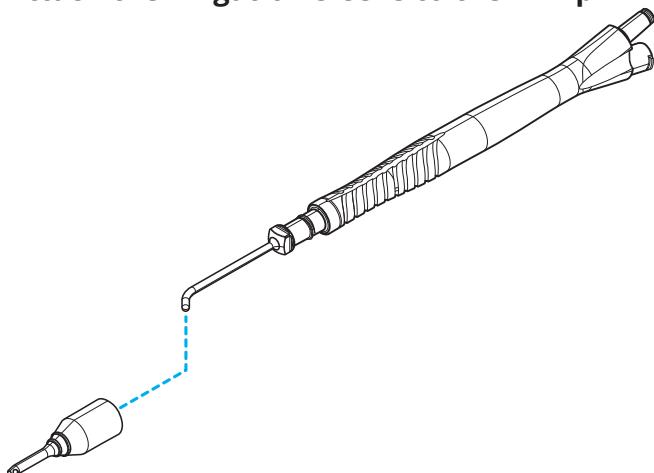
3. Secure the tip to the handpiece. Tighten firmly using the tip wrench. Do not overtighten as it may damage the wrench and generate plastic particulates.



4. Remove the tip wrench and retain it for future tip removal.



Attach the Irrigation Sleeve to the IA Tip



Attach the sleeve to the tip. Thread the sleeve so the tip extends as specified by the applicable DFU (around 1 mm to 2 mm). Avoid twisting the sleeve and ensure port holes are not obstructed.

NOTE:

- For polymer IA tips, ensure the entire sleeve slips over the polymer edges at the distal end of the tip.
- Thread the sleeve so the tip extends as specified by the applicable DFU (around 1 mm to 2 mm).
- Avoid twisting the sleeve as it restricts flow.

Prime and Test IA Handpieces

1. On the display, navigate to an IA surgery step and press the treadle into range 1 to stream fluid from the irrigation port.

NOTE: Alcon recommends adding the Fill step before the first IA step to facilitate removal of air from the IA handpiece. Alcon also recommends adding the Fill step after the last IA step to clean the IA tip and handpiece.

When transitioning into the Fill step, irrigation and reflux are enabled simultaneously for up to 10 seconds. If the Irrigation Fill feature is enabled, irrigation is enabled without reflux.

2. Activate the reflux function to stream fluid from the aspiration port.
3. Observe the stream of fluid from the irrigation and aspiration ports. Ensure no air bubbles remain in the irrigation or aspiration lines.



WARNING: When using a bimanual procedure, ensure the irrigation handpiece and settings have sufficient flow characteristics. Use of irrigation handpieces or settings with insufficient flow characteristics may result in a fluidic imbalance and may cause a shallowing or collapsing of the anterior chamber.

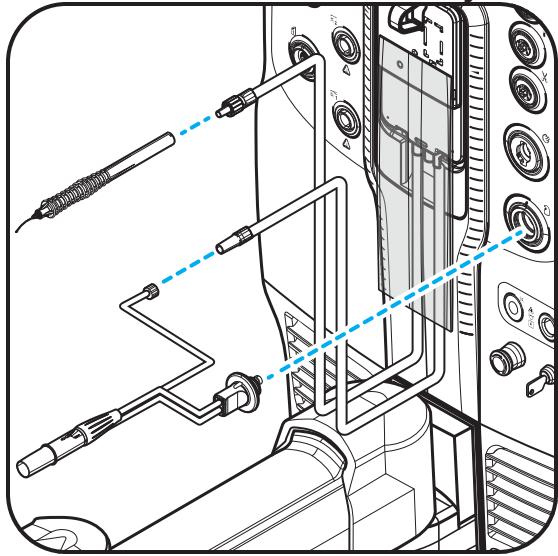
Prepare Anterior Vitrectomy Probes

Each Alcon vitrectomy probe comes assembled. An irrigating cannula is provided in each pack to allow for bimanual irrigation.



WARNING: Do not use unapproved vitrectomy probes with the system.

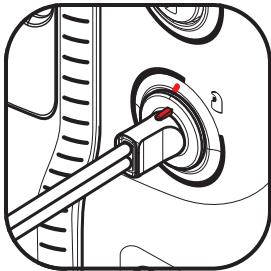
Connect the Anterior Vitrectomy Probe and Irrigating Cannula to the Console and FMS



Anterior Vitrectomy Probe Connections

To connect a vitrectomy probe to the console, perform the following steps.

1. Align the indicators on the probe drive line and console vitrectomy port and push the probe connector into the port.



2. Connect the FMS aspiration line to the aspiration line of the probe.
3. Connect the irrigating cannula to the FMS irrigation line.

Prime and Test the Vitrectomy Probe and Irrigating Cannula

Before priming vitrectomy probes or using the vitrectomy function with the system, ensure all pneumatic tubing is connected. If any are disconnected, non-sterile air may flow over the sterile field for a brief moment.

 **CAUTION:** To avoid the risk of performance degradation or a potential hazard, review the following instructions:

- Use compatible Alcon probes only.
- Do not test vitrectomy probes unless the tip is immersed in sterile irrigation solution or in distilled water. Do not operate vitrectomy probes unless the tip is immersed in sterile irrigation solution, in distilled water, or in surgical use.
- Vitrectomy cutting performance may vary at high altitudes. Contact Alcon Technical Services for additional information.

1. Navigate to the Ant Vit Quick Setup in the Surgery screen. The Quick Setup dialog box opens automatically if the other accessories are primed and tested. The Quick Setup dialog box can also be accessed by selecting **Quick Setup** from the Ant Vit surgery step.
2. Place the irrigating cannula in a cup of sterile fluid and select **Fill**.
3. Place the probe in the same cup of sterile fluid and select **Test**.
4. Ensure all air bubbles are removed from the connected tubes and there are no leaks.
5. Verify the accessory properly actuates and aspirates. If necessary, lower the cut rate until the actions are visible. The port should remain open in treadle position 1.

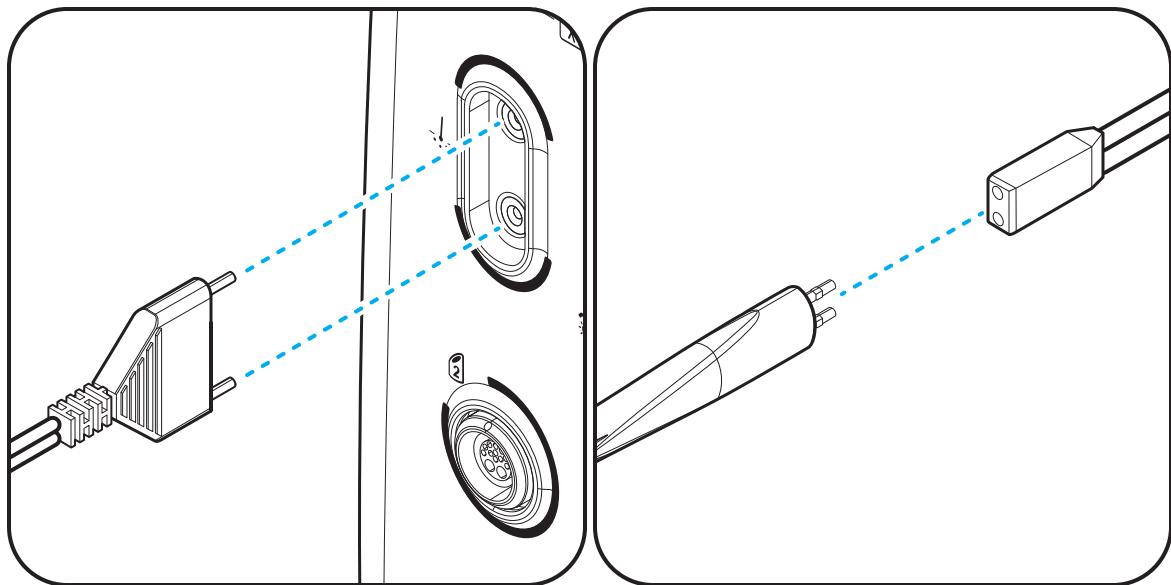


WARNING: If the following behaviors are observed, replace the vitrectomy probe:

- The cutting port is partially closed while idle or the treadle is in range 1.
- The cutter does not fully close or does not move when the probe is actuated.
- The aspiration line contains excessive bubbles or bubbles exit the cutter port.
- A reduction in cutting capability or vacuum during the surgical procedure. Stop immediately and replace the probe.

Prepare Diathermy Probes

To ensure safe operation of the diathermy function, use only approved cables and accessories. Performance expectations mentioned in this manual assume the system uses compatible accessories and components.



Diathermy Probe Connection to the Console

To set up a diathermy probe, perform the following steps:

1. Line up the diathermy connector with the diathermy port.
2. Push the connector into the port.
3. On the display, select the diathermy box and follow the on-screen instructions.

Setup for Posterior and Combined Procedures (VCS Models Only)

When assembling accessories with detachable tips, ensure the tip is fully tightened to the handpiece or probe. If it is not secure, the console may generate a message or the tuning may be inadequate. However, do not tighten the tip so that it cannot be removed after use. Also, visually inspect all accessories for burrs or bent tips prior to use.

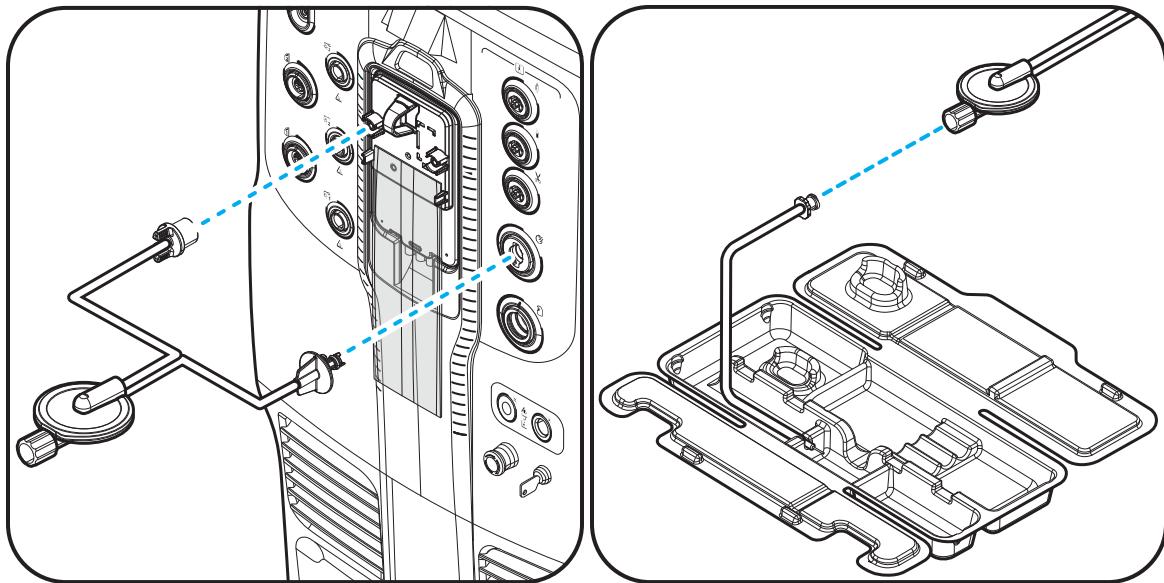
 **WARNING:** To avoid the risk of a patient hazard, do not mismatch consumable components or use settings not specifically adjusted for particular consumable component combinations.

NOTE: For the combined procedure FMS, connect the male luer adapter to the aspiration line to facilitate connection to aspiration accessories.

Prepare Anterior accessories (Combined Procedure Packs Only)

See [Setup for Anterior Procedures \(Anterior Procedure Packs Only\)](#) on page 80.

Prepare FAX (Posterior or Combined Procedure Packs Only)



To set up infusion FAX with posterior or combined procedure packs, perform the following steps:

1. Connect the fitting to the console port. Twist the fitting clockwise until it locks.
2. Connect the infusion fitting to the FMS infusion port (see the console left, green arrow). Twist the fitting clockwise until snug.
3. With the infusion cannula tip secured in the priming tray, connect the infusion cannula fitting to the filter.
4. If necessary, connect a vitrectomy probe to the console (see [Prepare Posterior Vitrectomy Probes](#) on page 97)
5. Select **Prime and Test**.



WARNING: Visually confirm there is adequate infusion flow prior to attachment of the infusion cannula to the eye.

Prepare Posterior Vitrectomy Probes

Connect the Vitrectomy Probe to the Console and FMS for Posterior Procedures

1. Align the indicators on the probe connector and console vitrectomy port and push the probe connector into the port.
2. Connect the probe aspiration line to the FMS suction port.

Bypass Priming of the Posterior Vitrectomy Probe for Vitreous Sample Collection

The Vit Sample feature allows the extraction of undiluted vitreous at the start of a case. When enabled, the system allows cutting and suction without infusion.

To collect an undiluted sample of vitreous, turn on the toggle next to **Vit Sample**. The Vit Sample step is added between the Trocar (if applicable) and Posterior Vitrectomy steps in surgery mode. The system disables priming of the posterior vitrectomy probe until the Vit Sample step is complete (skip [Prime the Posterior Vitrectomy Probe for Posterior Vitrectomy](#) on page 97).

Prime the Posterior Vitrectomy Probe for Posterior Vitrectomy

Before priming vitrectomy probes or using the vitrectomy function with the system, ensure all pneumatic tubing is connected. If any are disconnected, non-sterile air may flow over the sterile field for a brief moment.

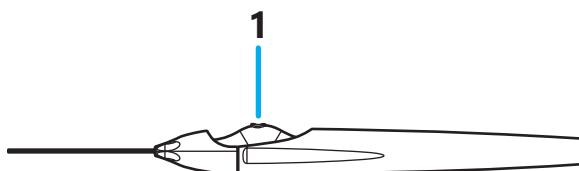
1. Place the probe on the tray or in a sterile cup.

NOTE: Filling a sterile cup used for priming is not required unless the push prime function is disabled. Push priming is disabled after an aspiration attempt is made to prevent contamination of accessories. When push prime is disabled, place the probe in the sterile cup.

2. For mid case setup (once procedure starts), submerge the tip in a cup of irrigating solution.
3. If necessary, connect any other accessories to the console.
4. Select **Prime and Test**.

Prepare Extrusion Handpieces or Tips

Extrusion handpieces and tips connect to the FMS aspiration line. This can be done while the console is in either Setup or Surgery mode. However, exact setup steps depend on the mode, FMS model, and extrusion accessory.



Extrusion Handpiece

1 Flute Valve

Connect the Handpiece or Tip to the FMS

1. If using a combined FMS, connect the male-to-male adapter to the FMS aspiration line.
2. Connect the handpiece to the FMS aspiration line.

Prime and Test the Extrusion Handpiece prior to Surgery

For priming and testing while the console is in Setup mode, perform the following steps:

1. Place the extrusion handpiece needle in a cup or other container to collect fluid.
2. For Advanced Backflush handpieces, close the flute valve with a finger.
3. Select **Prime and Test**.

Prime the Extrusion Handpiece during Surgery

For priming while the console is in Surgery mode, perform the following steps:

1. Select **Quick Setup**.
2. Submerge the extrusion handpiece needle in fluid.
3. For Advanced Backflush handpieces, close the flute valve with a finger.
4. Select **Prime**.

Prepare Fragmentation Handpieces

Connect the Fragmentation Handpiece to the Console and FMS

1. For a posterior FMS, connect the female-to-female adapter to the FMS aspiration line and fragmentation handpiece.
2. Connect the handpiece to either ultrasonic port on the console.

Attach the Tip to the Fragmentation Handpiece

 **WARNING:** The ultrasonic tips supplied in *UNITY* procedure packs are to be used only on an *UNITY* or *OZil* fragmentation handpiece. Each ultrasonic tip is intended to be used only once per case, and then disposed of according to local governing ordinances.

1. If necessary, press the tip through the tip wrench opening.
2. Attach the tip base to the handpiece.
3. Remove the tip wrench and retain it for future tip removal.

Prime the Fragmentation Handpiece prior to Surgery (Push Prime)

Push prime is only available during initial set up of the posterior surgical case. Once the console enters Surgery mode, the handpiece needs to be primed by aspiration of fluid from the tip.

1. Attach the priming cover. The cover is secure if you feel or hear a snap. Ensure the tip does not touch the cover.
2. If necessary, connect any other accessories to the console.
3. Select **Prime and Test**.

Prime the Fragmentation Handpiece during Surgery (Aspiration Prime)

Aspiration prime is only available during a procedure. This procedure applies when a fragmentation handpiece is added to the console after surgery has begun.

1. Fill a container with enough sterile fluid large to submerge the entire priming cover.
2. Select the **Frag** surgical step.
3. Select **Quick Setup**.
4. Submerge the front end of the handpiece slowly in the fluid container. Verify the priming cover is filled with fluid without any air bubbles and the tip is not in contact with any surfaces.
5. Select **Prime and Test**.

Prepare VFC Syringes

Always use compatible Alcon VFC kits and follow all DFU instructions.



WARNING: Do not use without a syringe stopper installed in the syringe barrel or when a stream of air bubbles is observed in the silicone oil. Actuation pressure will be delivered to the eye without the syringe stopper properly positioned and may cause ischemia and tissue damage.

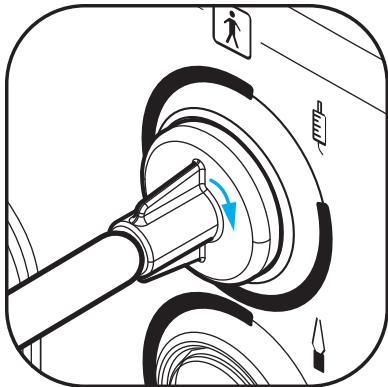


CAUTION: To avoid the risk of electrical shock, damaging the console, or voided warranties, do not aspirate fluids directly into the console.

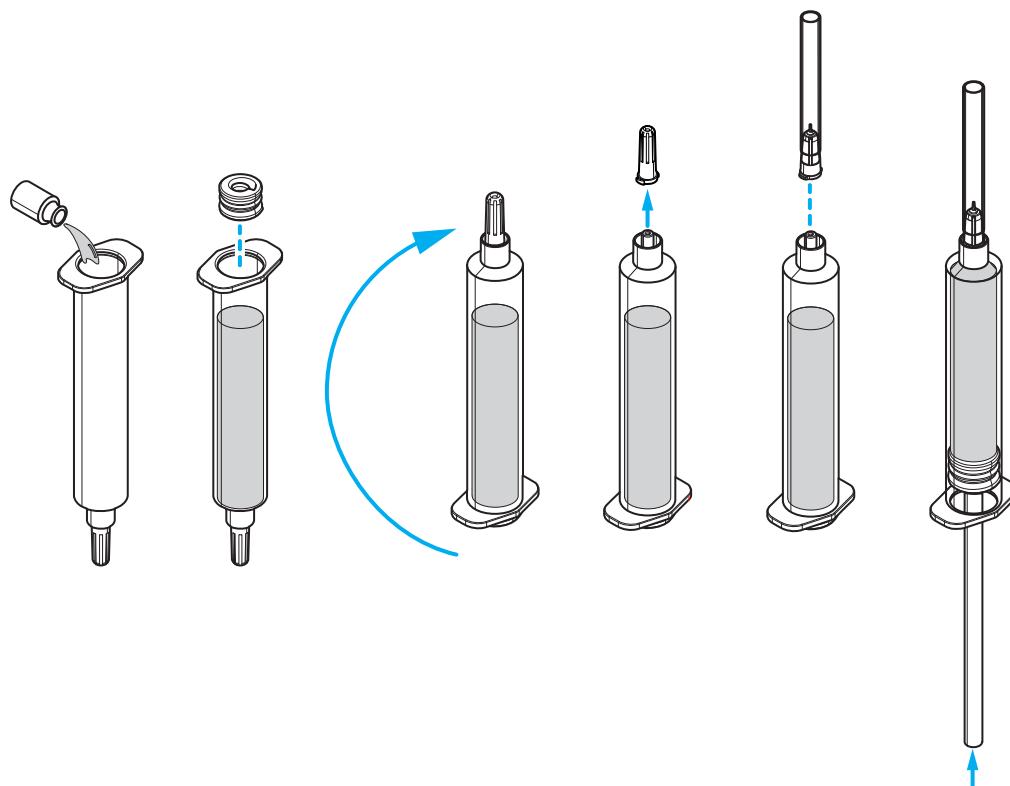
Prepare VFC Syringes for Injection

To set up a VFC syringe for injection, perform the following steps:

1. Connect the connector to console and rotate it clockwise until secured.

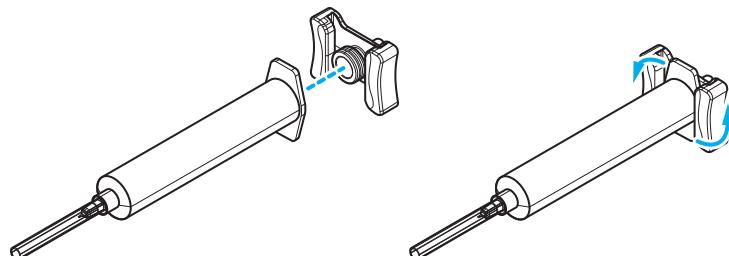


2. Add the fluid to the syringe and attach the tip.



3. Attach the adapter and rotate the syringe to lock.

NOTE: Double-check the cannula connected to the syringe for a tight connection. It must not be allowed to come loose.

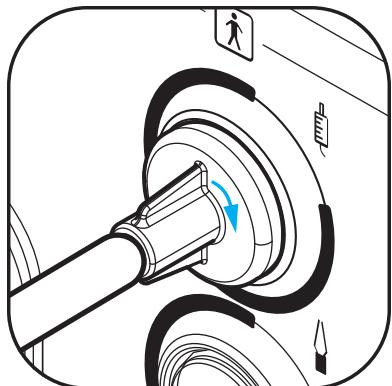


4. If no other connected accessories require priming or testing, select **Surgery** and adjust the injection pressure in accordance with the fluid viscosity (see [Viscous Fluid Control](#) on page 154).

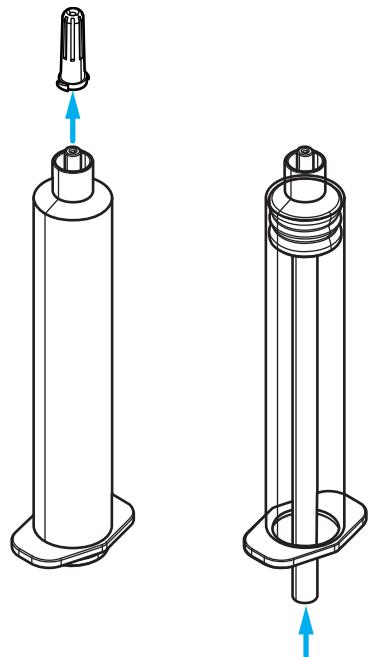
Prepare VFC syringes for Extraction

To set up a VFC syringe for extraction, perform the following steps:

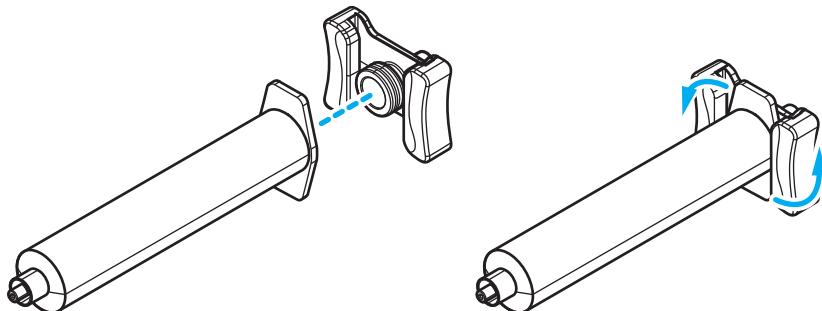
1. Connect the connector to console and rotate it clockwise until secured.



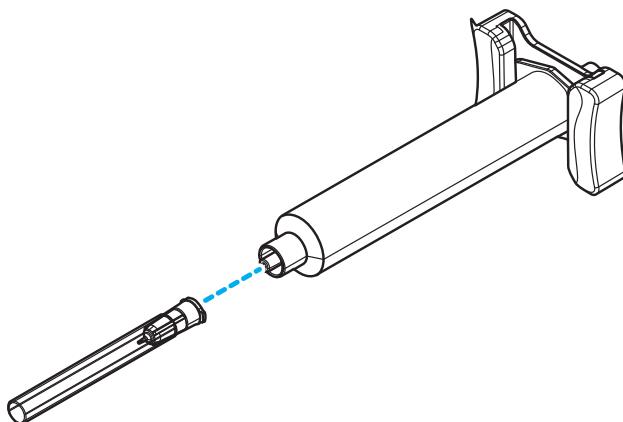
2. Remove air from the syringe.



3. Attach the adapter and rotate the syringe to lock.

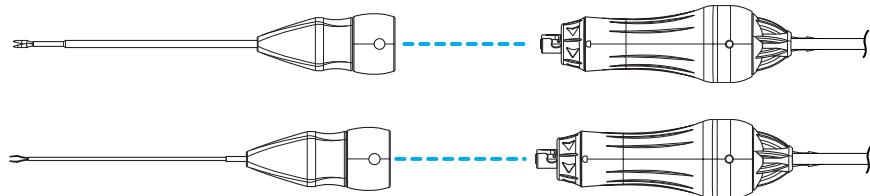


4. Add the tip to the syringe.



5. If no other accessories are connected, select **Surgery** and adjust the extraction vacuum (see **Viscous Fluid Control** on page 154).

Prepare Pneumatic Handpieces



Connect the Handpiece to the Console

1. Push the handpiece connector into the console scissors or forceps port (according to the tip).
2. Rotate the connector clockwise until secure.

Attach the Appropriate Tip to the Handpiece

1. Align pin in tip with groove in HP (indicator dot) and connect tip to HP.
2. Twist counter-clockwise until dot on tip aligns with marking on HP.

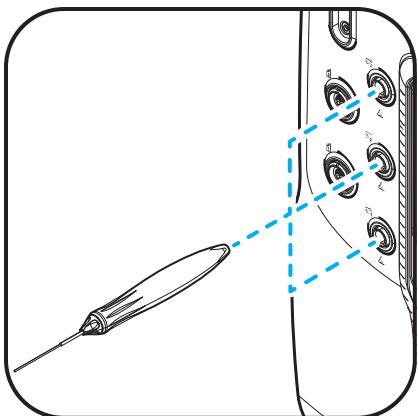
Verify and Calibrate Scissor Tips

1. If no other accessory requires priming or testing, select **Surgery**.
2. Navigate to the **Scissors** step.
3. Read the instructions from the Scissors Tip Verification dialog box and select **Acknowledge**.
4. For Multi-cut mode, press the foot controller treadle or configured button to ensure proper scissors tip functionality.
5. For Proportional Cut mode, perform the following steps:
 - a. Select **Calibrate** next to Cut Pressure.
 - b. Turn on the toggle under **Start Pressure**.
 - c. Evaluate the appropriateness of the tip action as the lowest possible value. Adjust the highlighted slider to change the pressure value if necessary.
 - d. Turn on the toggle under **End Pressure**.
 - e. Evaluate the appropriateness of the tip action as the highest possible value. Adjust the highlighted slider to change the pressure value if necessary.
 - f. To save the settings as the default settings, select **Save as Default**.
 - g. Select **Close**.

Verify and Calibrate Forcep Tips

1. If no other accessory requires priming or testing, select **Surgery**.
2. Navigate to the **Forcep** step.
3. Read the instructions from the Forceps Tip Verification dialog box and select **Acknowledge**.
4. Press the foot controller treadle and ensure the tip functions properly.
5. Select **Calibrate** next to Forceps Pressure.
6. Turn on the toggle under **Start Pressure**.
7. Evaluate the appropriateness of the tip action as the lowest possible value. Adjust the highlighted slider to change the pressure value if necessary.
8. Turn on the toggle under **End Pressure**.
9. Evaluate the appropriateness of the tip action as the highest possible value. Adjust the highlighted slider to change the pressure value if necessary.
10. To save the settings as the default settings, select **Save as Default**.
11. Select **Close**.

Prepare Light Probes



1. Connect to console.
2. If necessary (for example, if a light probe does not have a valid RFID), select the accessory model.

NOTE:

- Incorrectly identifying the light probe can result in erroneous illumination levels and light hazard toxicity calculations
- Alcon recommends using only Alcon-validated light probes with the system, and is not responsible for the performance of light probes not identified by the system.

3. Verify light output.
4. For specialty light guides, perform the following additional checks:
 - a. For dynamic stiffness (DS) devices, ensure the stiffener retracts when pressure is applied to the stiffener.
 - b. For light guides with a pick, bend the pick as desired.
 - c. For light guides with a fluid pathway, connect the fluid line to the irrigation source and remove air bubbles.
 - d. For bare-end light guides, bend the pick.



WARNING: To avoid potential patient injury, visually inspect the outer surface of the light probe tip before each use. Ensure there are no unintended foreign materials, rough surfaces, sharp edges, or protrusions.

Prepare Laser Probes

To set up laser probes, perform the following steps:

1. Remove the dust cap from the connector and connect the laser probe to the appropriate port.
2. For single spot laser probes that do not include a valid RFID, select the probe type on the display.
3. Remove needle protector.
4. For illuminated laser probes, verify light output.
5. Test probe with aiming beam.



WARNING: After the receipt of the system and before turning the laser module on for the first time, wait an hour for the components and optics to normalize to avoid possible condensation that may have occurred during shipping.

Prepare LIOs

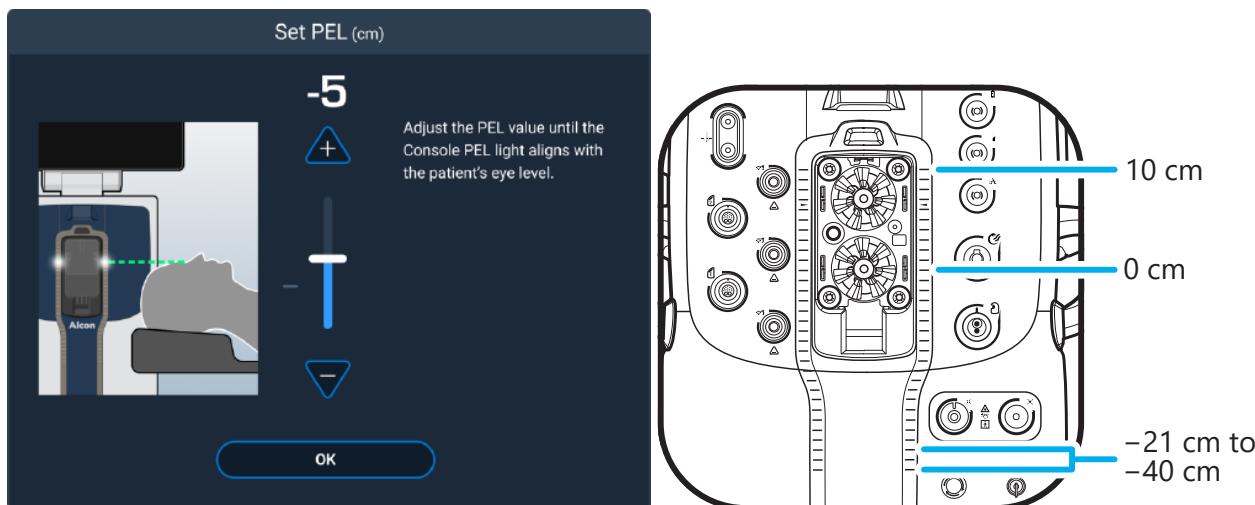
Before connecting an LIO, refer to the LIO instructions for use. To connect an LIO to a VCS console with an optional laser, connect the LIO laser connector to the single spot laser port on the front panel.

Adjust PEL

Patient eye level influences IOP compensation based on the height of the patient relative to the console fluidics sensor. Horizontal bars along the side of the fluidics module on the console front panel illuminate to estimate the location of the eye. However, values below -20 cm are not highlighted. Instead, the console lights the bottom 3 pairs simultaneously to indicate the PEL value is below the lowest available panel light.

WARNING: To avoid a lower irrigation pressure than indicated on the display or possible underventing, avoid setting the patient above the center of the FMS without PEL compensation.

NOTE: PEL relative to the FMS can affect infusion pressure delivered to the eye. Be sure to enter a PEL offset value to ensure the console readings reflects a more accurate pressure value.



Default PEL Adjustment

To adjust the PEL, perform the following steps when prompted:

1. Increase or decrease the PEL value until the PEL indicators on the console front panel align with the eyes of the patient. The horizontal line on the slider represents the lowest available indicator bar on the console front panel.
2. Select **OK**.

Operation

This section describes how to use and control the behavior of the system. Prior to starting the procedure, ensure the appropriate profile (see [User Preferences](#) on page 191) and system settings (see [System Settings](#) on page 209) are acceptable. This may include surgical parameters like flow rates or limits, foot controller button configuration, sound volume, or language or default units of measure preferences.

Procedures include individual surgical steps that change the behavior of the system. This includes different functions, foot controller behavior, and accessory limits. To activate a step, select the step icon with the foot controller (if configured to do so), remote, or display touchscreen. The console allows customization of procedures as well (see [Procedure Customization](#) on page 206).

WARNING:

- For all people in contact with the console and accessories, practice universal precautions to help prevent exposure to blood-borne pathogens and other potentially infectious materials. If the status of encountered blood or body fluids or tissue is unknown, handle the material in accordance with OSHA or other applicable guidelines as if it is infectious.
- To ensure sufficient volume of irrigating solution for the procedure, monitor the level before and during the procedure.
- For VCS models with optional laser, visually inspect the aiming beam prior to use. As the aiming beam passes down the same delivery system as the treatment beam, it provides a good means of checking the integrity of the delivery system. If the aiming beam is not present at the distal end of the beam delivery system, its intensity is reduced, or it looks diffused, this is a possible indication of a damaged or malfunctioning beam delivery system. If there is any doubt, contact Alcon Technical Services.

NOTE:

- Inspect the console and accessories before use.
- For VCS models with an optional laser, place the laser foot controller, endoprobe, or LIO within 2 m of the console.
- Before entering the eye, test the irrigation flow.

Surgical Step Interface

In surgery mode, the screen presents controls, limits, and settings available for selected surgical step. When not operating, the values displayed represent selections or defined limits of a feature.

Layout Overview for Surgical Steps



Surgery Screen Example

- Illumination panel** – Displays connected light probes along with information and controls to turn them on or off, adjust intensity, and change their color.
- Diathermy panel** – Provides information and controls for the diathermy function. This panel remains accessible even if other dialog boxes are open.
- Power panel** – Contains information and controls related to powered handpieces. The available controls are dependent on the handpiece, connected FMS, and active surgical step.
- Fluidics panel** – Contains information and controls related to the flow of air and liquids through the console and accessories. The available controls are dependent on the connected FMS and active surgical step.
- Surgical step panel** – Contains a shortcut to quick setup help for the active surgical step and the order of steps for the selected procedure (ordered left to right).

NOTE: For an anterior FMS, the rightmost step is reserved for the anterior vitrectomy procedure.

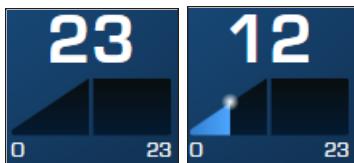
Interface Control Types

The console uses several different types of graphical interfaces to solicit user feedback. These control interfaces are used to make selections or set values to various parameters. In general, the console uses the following types of controls.

Buttons

Buttons trigger some action after selection. For example, the parameter value next to a surgical control may open a dialog box, or the **Save** button may save the current selection and exit the dialog box. To use buttons, select them with a brief tap on the touchscreen or press on the remote.

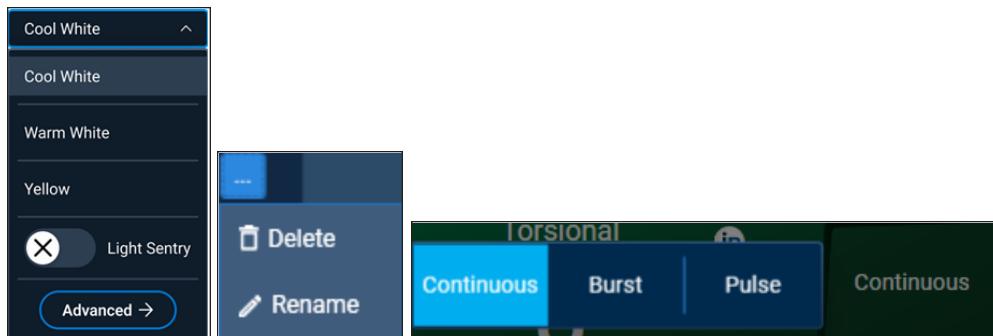
NOTE: The buttons associated with foot controller behavior display a value along with a graphical representation of the parameters set for each treadle range (see [Treadle Settings](#) on page 113). While the treadle is not pressed, the button displays the maximum value. However, while the treadle is pressed, the button displays the current value along with the relative path of the treadle within the defined ranges.



Parameters Set for 2 Treadle Ranges (Treadle Inactive on the Left and Treadle Active on the Right)

Drop-Down Menus or Lists

Drop-down menus allow users to select an item from a compacted list. The console often uses these control types when space is limited. Many display the current selection, but others abbreviate additional options with meatball or kebab icons. To make a selection from a drop-down menu, select the menu button and then select the desired item similar to selecting multiple buttons.



Examples of Drop-Down Menus

Sliders

Sliders set a value based on the relative location of the handle between 2 endpoints. Many sliders on the console include the numerical value of the handle position. To set the value with a slider, either select the increase or decrease buttons associated with it or select and hold the handle while moving it along the track bar and release it at the desired value.



Example of a Slider

Toggles or Switches

Toggles are buttons that change a setting between 2 states (often on or off). The console uses several different styles of toggles (see the following table for some examples). To use the toggles, select them to change the state to the opposite one.

	Disabled or Inactive	Enabled or Active
Toggle-switch style	A blue square button with a white 'X' symbol inside.	A green square button with a white checkmark symbol inside.
Button style	A blue square button with a white power symbol inside.	A green square button with a white power symbol inside.

Treadle Settings

Some steps include controls for functions controlled by the treadle. For these controls, the performance is relative to the start and end values for the specified treadle range. If needed, select the control and define start and end values for when the treadle enters and exits a range.



Treadle Ranges

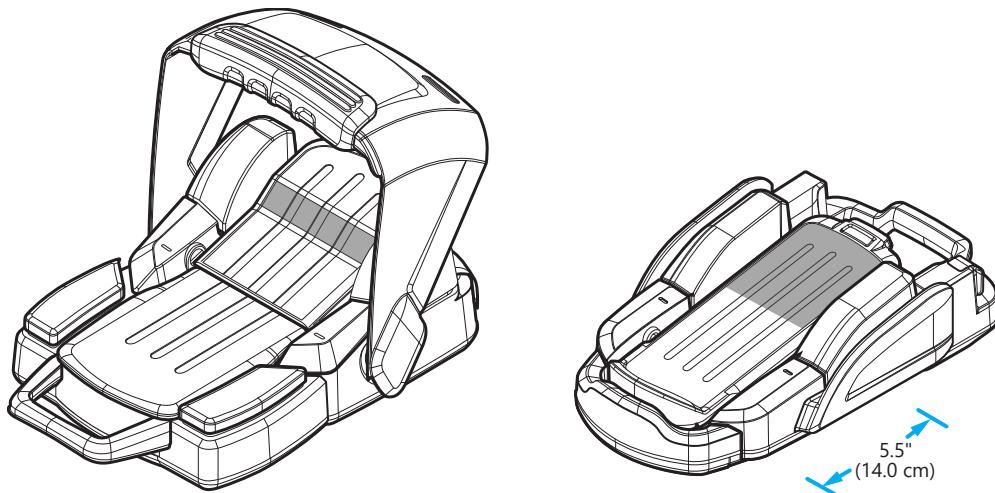
1. Select the control.



Treadle Control Example (Vacuum Activated in Range 2 and 3)

2. For each treadle range, select a behavior.
 - **Fixed behavior** – Maintains the same value throughout the zone.
 - **Linear or proportional behavior** – Steadily increases or decreases the value as pressure is applied to the treadle.
3. Set the slider or sliders to the desired start and end values. The left slider represents when the treadle enters the start of the zone and the right slider represents when it reaches the end of the zone.
4. Select **Close**.

The foot controller activates system surgical operation based on the current surgical step parameters and provides limited hands-free control of console navigation. The treadle controls the surgical functions while the toe switches and buttons are configured to switch between steps or modes (see [Button Preferences](#) on page 197). When pressing the treadle, focus pressure on the operating surface:



Treadle Operating Surface in Gray (6-button and 4-button Models)

NOTE: If the system behaves unexpectedly during operation, release the treadle.

Illumination (VCS Models Only)

The Illumination panel displays and controls the settings of connected light probes (maximum 3 light probes and 1 illuminated *TetraSpot* laser probe). If 4 light probes are connected, the interface uses a compact view. However, the same controls are still available.

WARNING:

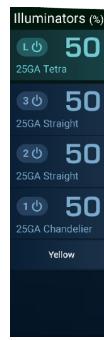
- To avoid the risk of ocular damage, avoid concentrating light on a small area of the retina for unnecessarily prolonged periods of time.
- To avoid the risk of burns, do not touch the light probe connectors or the area around the light probe ports during operation.
- Do not use this light source in the presence of flammable substances.
- To avoid light probe deformation and high surface temperatures that may cause patient injury, heed system messages related to high illumination levels.

CAUTION:

- To avoid potential tip deformation of plastic fiber optic light probes, avoid prolonged use of light probes in the air.
- Avoid placing illuminated light probes in contact with materials such as sterile drapes.



Illumination Panel with Expanded View



Illumination Panel with Compact View

NOTE: The *TetraSpot* Laser illumination always appears in the top position.

Exposure Time

Prolonged exposure to the light emitted from this accessory increases the risk of ocular damage. However, insufficient light intensity may result in inadequate visualization and adverse effects more serious than retinal photic damage or photoretinitis.

Young children and persons with diseased eyes may be at a higher risk. The risk may also increase if the person being examined was exposed to another ophthalmic accessory with an intense visible light source during the previous 24 hours (especially retinal photography).

 **CAUTION:** The light emitted from this instrument is potentially hazardous. The longer the duration of exposure, the greater the risk of ocular damage.

- Exposure to light from this instrument when operated at maximum output will exceed the safety guideline.
- Exposure to light from this instrument when operated at maximum intensity will exceed the recommended maximum exposure (RME) of 2.2 J/cm^2 , unless additional action is taken by the user to minimize exposure. The risk of retinal injury at an exposure of 2.2 J/cm^2 is not high, but because some patients may be more susceptible than others, caution is advised if this radiant exposure value is exceeded. However, because of a significant risk of injury at exposures exceeding 10 J/cm^2 , the user should avoid exposures longer than the provided Remaining Aphakic Time.

To verify the remaining aphakic time, perform the following steps:

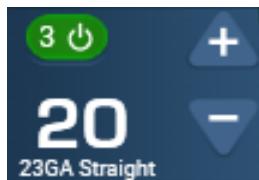
1. Select **CDE**.
2. Select **Posterior**.
3. Review the Illuminator Exposure section.

NOTE:

- The Total Thermal Time metric indicates the total exposure time (in hours and minutes) to reach the ANSI Z80.36-2021 Group 2 thermal weighted exposure safety limit for time-limited instruments. This is a recommendation of the maximum dwell time of light probe illumination of a given location of the retina.
- The Remaining Aphakic Time metric indicates the time (in hours and minutes) remaining to reach ISO 15004-2:2007 Group 2 aphakic weighted exposure safety guideline for continuous wave instruments. The RME will be exceeded unless additional action is taken by the user before this time reaches zero.
- The Aphakic Ratio metric indicates the ratio of the maximum aphakic retinal exposure accumulated during the current case and the RME. A value of 1.0 indicates the RME has been reached.

Light Projection and Intensity

Each light probe port can be set to a different level of brightness or intensity. However, Alcon recommends lowering the intensity settings of disabled probes to avoid sudden changes in light output (for instance, going from low output to high output) when switching between probes.

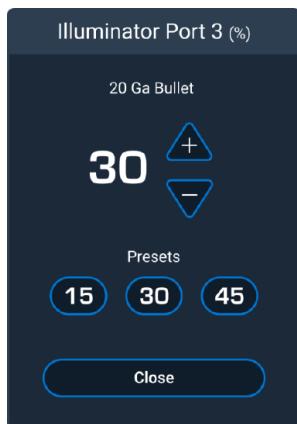


Light Probe Panel with the Third Port Active

To enable or disable light through a particular illumination port, select the **Power** button for the corresponding light probe. Light probes are identified by the port number within the Power button and, if applicable, described below the intensity value.

To quickly set the intensity value to a preset value, perform the following steps:

1. Select the current intensity value in the Illumination panel for the desired light probe. The Illuminator dialog box opens.



Illuminator Dialog Box

2. Select one of the available presets.
3. Select **Close**.

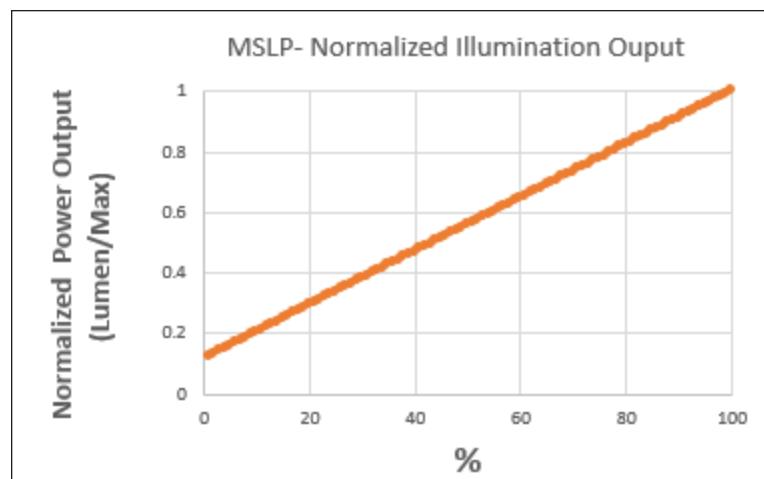
To manually set the intensity value, perform the following steps:

1. For compact view or optionally for expanded view, select the intensity value for the desired light probe. The Illuminator dialog box opens.
2. Select + to increase the value or – to decrease the value. For expanded view, these buttons are available directly on the Illumination panel.

! **WARNING:** To avoid retinal risks from potentially hazardous radiated light transmitted from the fiber optic light probe, refer to the following advice on how to minimize the effects of the light intensity used.

To predict the lumens at a particular percentage, use the following formula (applies only to multi-spot lasers) or see the following chart. For the formula, first measure the lumen at the maximum percentage and at 10%.

Predicted lumen @ XY% = $(XY - 10) / (\text{max} - 10) \times \text{lumen} @ \text{max \%} + (\text{max} - XY) / (\text{max} - 10) \times \text{lumen at 10\%}$



Retina Risk Factors to Consider During Operation

The console (VCS models only) comes equipped with internal, non-selectable, UV or IR filtration. There are no removable filters. Retinal hazard is maintained at levels specified by ISO 15752, Ophthalmic Instruments - Endoilluminators - Fundamental Requirements and Test Methods for Optical Radiation Safety. Potentially hazardous radiated light is transmitted from the fiber optic light probe.

! **WARNING:** Care should be taken to avoid concentrating the output of an illumination module on a small area of the retina for unnecessarily prolonged periods of time due to the potential for photoretinitis and serious permanent patient injury.

Spectral Output

The console (VCS models only) output spectrum complies with ISO 15752. It does not rely on fiber optic light probe absorption to comply with ISO 15752 spectral output requirements. It delivers light at the fiber optic illuminator port.

Spectrally-Weighted Aphakic Irradiance

Aphakic irradiance was determined using fiber optic light probes approved for use with the console. The value for spectrally-weighted aphakic irradiance (SWAI) in saline was determined with an effective 0.18 mm diameter aperture at a distance specified by ISO 15752:2010 in a plane perpendicular to the radiating light probe tip:

- Endoilluminators – 15 mm
- Wide angle endoilluminators and chandeliers – 18 mm
- Illuminated pics – 1 mm (from the pic tip to the retina)
- Illuminated laser probes – 2 mm (Alcon-specified minimum distance)

These distances apply to all of the aphakic irradiance limits described below.

Output Limits

To avoid potentially unsafe operation of the system, the console warns users or prevents operation when certain thresholds are exceeded. For example, the console limits output and aphakic weighted irradiance to stay within safe limits based on the type of fiber used. The type of illumination probe is detected with RFID within the light probe. Using the fiber type information, the console sets a series of limits on output. The console uses the following independent thresholds:

- **Damage limit** – Corresponds to the maximum output with which the light probe can be safely operated without risking damage to the probe while in operation in air. If the intensity is set beyond the damage limit, the console prompts the user for confirmation. No adjustments to light intensities are made until the user selects one of the following:
 - **Accept** – The user accepts the risks and the system applies the desired settings.
 - **Auto-Adjust** – The system adjusts the setpoints for all illuminators that are turned on such that the damage limits are not exceeded.
- **Soft limit** (see Note below) – If the soft limit is exceeded, the console notifies the user of the potential impact on exposure time and prompts the user for confirmation. No adjustments to light intensities are made until the user selects one of the following:
 - **Accept** – The user accepts the risks and the system applies the desired settings.
 - **Auto-Adjust** – The system adjusts the setpoints for all illuminators that are turned on such that the soft limits are not exceeded.
- **Hard limit** (see Note below) – Corresponds to the maximum intensity allowed. If a change is made such that the hard limit would be exceeded, the intensities for all illuminators that are turned on are adjusted so that the limit is not exceeded. In this situation, the user does not have any options for resolving the issue.
- **ISO 15752:2010-compliance limit** – Corresponds to a peak aphakic weighted irradiance of 5.556 mW/cm² (10 J/cm² accumulated aphakic exposure in 30 minutes exposure time or longer) that is the sum of the individual peak aphakic irradiances of all currently illuminated probes (up to four probes). This limit is engaged when the user selects the **Light Sentry** option from the Color Profile drop-down menu. The system responds to this selection and complies with this limit by removing the blue component and some of the green component of each illuminator, resulting in yellowish or orangish illumination emitted from each probe. Users are not able to exceed this limit without deselecting the **Light Sentry** option explicitly.

NOTE:

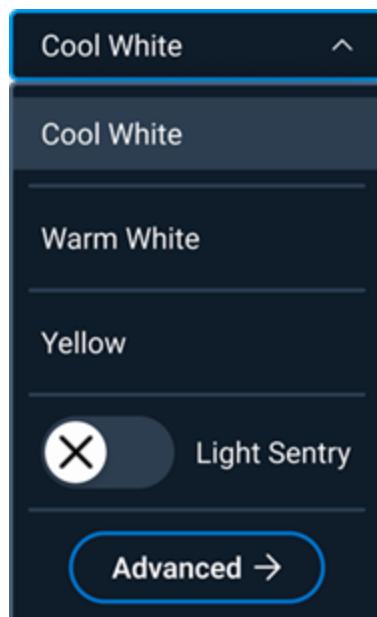
- The soft and hard limits will never be reached for most probe types (the limits are beyond 100% intensity and the user can never reach these limits).
- The limits can be exceeded in many different situations, such as increasing the intensity, turning on an illuminator, changing Procedures or Doctors, changing color profiles, or exiting from Light Sentry.

Color Mode

Light Sentry

To facilitate compliance with relevant standards governing aphakic hazard risks under posterior segment illumination and to enhance patient safety, the console (VCS models only) offers Light Sentry. This feature ensures that the irradiance is less than 5.556 mW/cm² by adjusting the current output color to reduce the amount of blue light present. Light Sentry is beneficial when it is important to limit phototoxicity effects. To enable it, select the color drop-down menu and turn on **Light Sentry**.

Color Presets



Color Mode Presets (3 Shown, Cool White Selected)

The console provides preset output colors to apply to all light probes. To select a preset, perform the following steps:

1. Select the color drop-down menu.

NOTE: The drop-down menu displays the current selection.

2. Select a preset name.

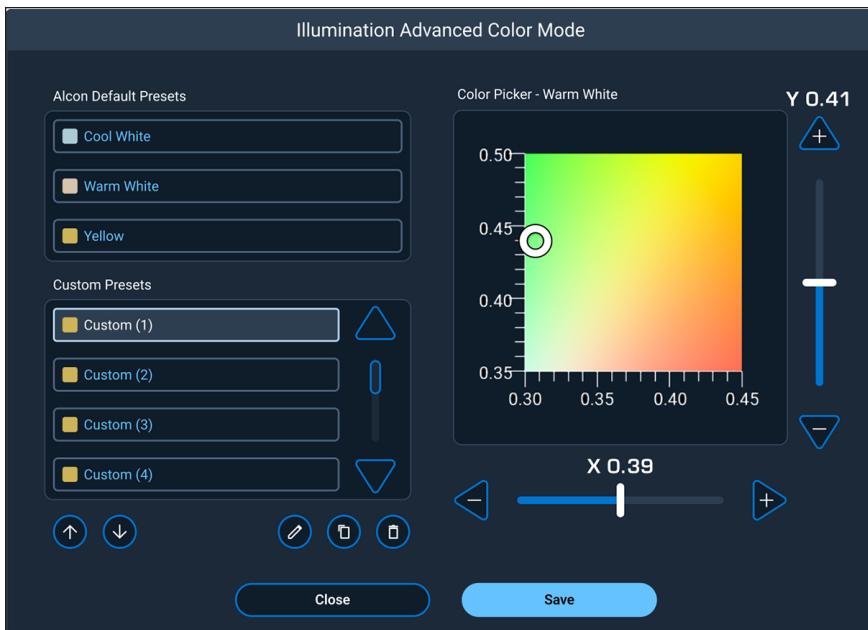
Custom Color Presets

In addition to the provided color presets, the console also supports custom presets. To create or edit custom color presets, open the Advanced Color Mode dialog box.

NOTE: Changing the color of the light source may alter visualization of targeted tissue and its rendering. When using this feature, use the Metrics Window to monitor the exposure time. For more information, see [Exposure Time](#) on page 116.

To access the Advanced Color mode dialog box, perform the following steps:

1. Select the Color menu in the Illumination panel.
2. Select **Advanced**. The Advanced Color Mode dialog box opens.



Advanced Color Mode Dialog Box with 2 Custom Presets

Create a New Custom Preset

To create a new preset, perform the following steps:

1. Select a preset.
2. Select **Copy**.

Change the Color of a Custom Preset

To set or change the color of a custom preset, perform the following steps:

1. Select a preset.
2. Select a color either on the Color Picker or adjust the sliders.

Rename a Custom Preset

To set the name of a preset, perform the following:

1. Select a preset.
2. Select **Edit**.
3. Enter a descriptive name.
4. Select **OK**.

Reorder Custom Presets

To change the order in which presets appear in the Menu in the Illumination panel, perform the following steps:

1. Select a preset.
2. Select the **Down** button to move the preset one spot lower or the **Up** button to move the preset one spot higher.

Delete Custom Presets

To delete a custom preset, perform the following steps:

1. Select a preset.
2. Select **Delete**. The confirmation dialog box opens.
3. Select **Delete**.

Save Changes to Presets

Custom presets with unsaved changes include an asterisks next to their name. To save changes to custom presets, select **Save**.

Irrigating Solution Bag Panel

The Irrigating Solution Bag panel provides information related to the estimated volume of the irrigating solution bag, the selected PEL, and current in-flow rate. While the panel serves primarily as an indicator, it also provides options to replace the irrigating solution bag and change the PEL.

Irrigating Solution Bag Volume

The console uses the following icons:

Icon	Description
	Not primed
	Full
	Good with an estimated remaining volume
	Low with an estimated remaining volume
	Empty
	Not inserted

NOTE: The console identifies the bag as *BSS* or *BSS PLUS* if either is detected.

Replacing the Irrigating Solution Bag

To replace the irrigating solution bag during surgery, perform the following steps:

1. Select the bag icon.
2. Select **Replace**.
3. Replace the bag per the on-screen instructions.
4. Select **Prime Bag**.

Filling a Handpiece

If needed, the Fill button fills the connected handpiece. The button is available only for an anterior or combined FMS. It is applicable only in the following conditions:

- The FMS is primed.
- The irrigating solution bag is primed and not empty.
- For a combined FMS, infusion and air are off.
- Continuous irrigation is off.

Adjusting the PEL

If needed, the PEL button opens the PEL dialog box. From the dialog box, change the PEL the same way as during the setup procedure (see [Adjust PEL](#) on page 108).

IOP Settings

The IOP panel includes different controls depending on the procedure type or surgical step. For example, the console provides IOP irrigation for anterior procedures or either IOP infusion or IOP air for posterior procedures.



All IOP Controls in One Panel (Combined FMS)

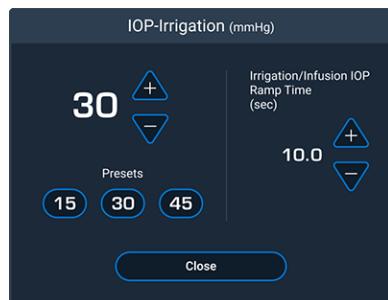
WARNING:

- To avoid a risk of the chamber shallowing or collapsing, which may result in patient injury, avoid adjusting IOP below the preset value.
- IOP settings compensate for potential drops in pressure due to fluid or material naturally traveling through tubes or connectors. However, Alcon recommends the surgeon continuously monitor IOP throughout the procedure. For example, common informal practices may include the following tactics:
 - Finger palpation on the globe
 - Tactile feedback (such as eye wall deformation) from accessories
 - Retinal vessel perfusion or pulsations
 - The presence of corneal edema
- To avoid a risk of sudden hypotony, do one or more of the following options if the IOP is suspected of not responding to the system settings and is dangerously high:
 - Close the infusion stopcock.
 - Pinch the infusion line.
 - Remove the infusion line from the sclerotomy.
- To avoid a risk of the chamber shallowing or collapsing, which may result in patient injury, avoid lowering the IOP or raising aspiration rates or vacuum limits above the preset value.

Irrigation IOP Setting (Anterior Procedures Only)

For anterior procedures, the console provides IOP irrigation only. It is enabled by either treadle control or turning on continuous irrigation.

NOTE: For phaco steps with a handpiece connected, the IOP panel includes the Intelligent Sentry icon. When active, the occlusion surge mitigation is active.



Irrigation IOP Dialog Box

Continuous Irrigation

Continuous irrigation provides fluid to the eye regardless of foot controller treadle range. It also eliminates the need for range 1, providing a wider available range for others. To turn off continuous irrigation during surgery, transition to another surgical step with the feature disabled.

To enable or disable continuous irrigation, select the **Cont. Power** switch from the IOP panel within the surgical step. To set a default setting for new procedures, see [Fluidics tab](#) on page 191.

Irrigation IOP Target

To set the pressure based on Alcon preset values, perform the following steps:

1. Select the current pressure value.
2. Select a pressure value button from the Preset panel.
3. Select **Close**.

To set the pressure manually, select + to increase the pressure or - to decrease the pressure.

Ramp Time

The ramp time adjusts how quickly pressure builds when it is first initiated. To slow the rate it takes to reach the target, select +. To hasten the rate it takes to reach the target, select -.

Infusion IOP Setting (Posterior Procedures Only)

Infusion pressure refers to the desired IOP with fluid during posterior segment procedures. The console supports a primary (regular) and secondary (alternate) setting.

NOTE: If the infusion pressure becomes equal to or greater than the elevated infusion threshold (see [Profile Surgical Preferences](#) on page 191), the panel displays the length of time the pressure has been continuously elevated. When the timer is on, the panel also specifies if the mode is set Alternate.



Infusion IOP Dialog Box

Infusion Activation Switch

To enable or disable infusion, select the **Power** toggle in the Infusion panel. If air pressure is active, enabling infusion disables air pressure.

Infusion Mode Selection

The console includes Regular and Alternate mode. To select a mode, select the current pressure value and select the active setting: **Regular** or **Alternate**.

Infusion IOP Target

To set the pressure based on Alcon preset values, perform the following steps:

1. Select the current pressure value.
2. Select a pressure value button from the Preset panel.
3. Select **Close**.

To set the pressure manually, select + to increase the pressure or - to decrease the pressure.

IOP Control

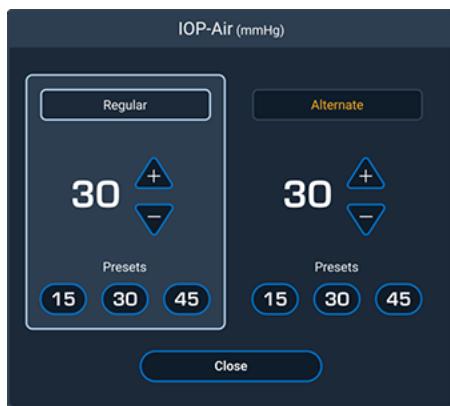
The IOP Control toggle determines where the system controls pressure. When the toggle is on, the system controls pressure in the eye. When the toggle is off, the system controls pressure at the FMS.

Ramp Time

The ramp time adjusts how quickly pressure builds when it is first initiated. To slow the rate it takes to reach the target, select +. To hasten the rate it takes to reach the target, select -.

Air IOP Setting (Posterior Procedures Only)

Air pressure refers to the desired IOP with air during posterior segment procedures. The console supports a primary (regular) and secondary (alternate) setting.



Air IOP Dialog Box

Air Activation Switch

To enable or disable air pressure, select the **Power** toggle in the Air panel. If infusion pressure is active, enabling air disables infusion pressure.

Air Mode Selection

The console includes Regular and Alternate mode. To select a mode, select the current pressure value and select the active setting: **Regular** or **Alternate**.

Air IOP Target

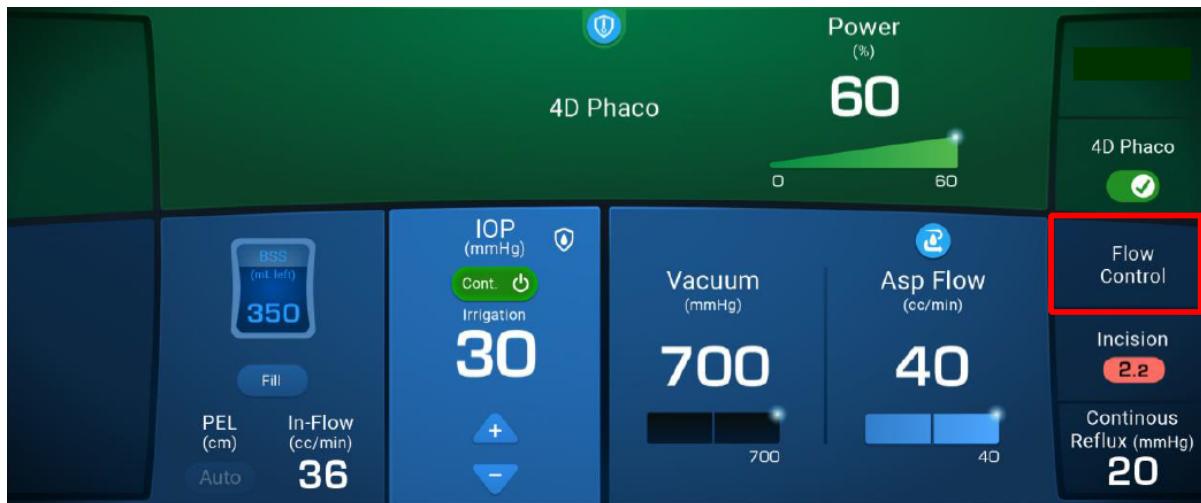
To set the pressure based on Alcon preset values, perform the following steps:

1. Select the current pressure value.
2. Select a pressure value button from the Preset panel.
3. Select **Close**.

To set the pressure manually, select + to increase the pressure or - to decrease the pressure.

Suction Settings

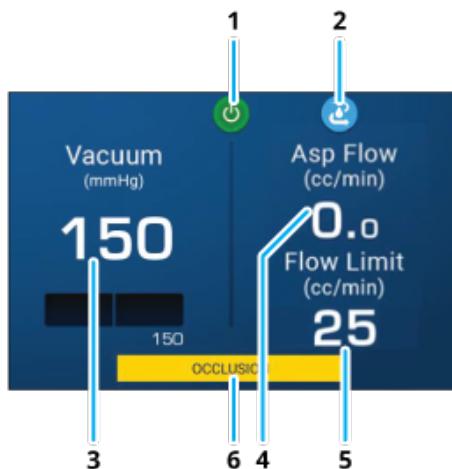
The Vacuum panel includes controls to adjust either vacuum or aspiration flow. The available controls depend on the selected mode: Vacuum Control or Flow Control. To change the mode, select the **Suction Mode** button and select **Vacuum Control** (see [Vacuum Mode](#) on page 131) or **Flow Control** (see [Flow Mode](#) on page 133).



Suction Mode Button

Vacuum Mode

In Vacuum mode, the system uses either the Peristaltic or Venturi pump.



Suction Panel in Vacuum Mode

- 1 Vacuum Power toggle** – Enables or disables the suction function.
- 2 Intelligent Aspiration icon** – Indicates whether Intelligent Aspiration is on or off.
- 3 Vacuum parameter** – Opens the Vacuum dialog box when selected.

NOTE: The Vacuum dialog box includes additional settings for aspiration flow.

- Turn on **Flow Limit** to use the Peristaltic pump or turn off **Flow Limit** to use the Venturi pump. For most anterior steps, during low inlet pressure, or the Venturi test was not completed in setup, Flow Limit is turned on by default.
- When Flow Limit is on, set the aspiration flow limit with either the preset buttons or the increment buttons. When Flow Limit is off, the buttons are still available, but the effects are not applied.
- The 700+ mmHg (933+ hPa) setting indicates the system no longer controls the limit.

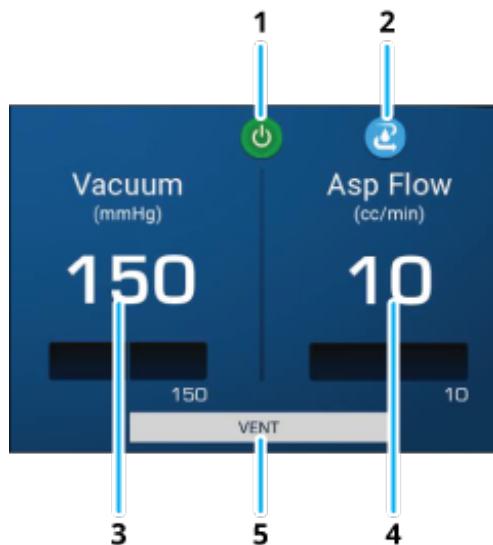
- 4 Asp Flow indicator** – Displays the current aspiration flow value. When IOP Air is on, this value is replaced with **- -**.
- 5 Flow Limit parameter** – Opens the Vacuum dialog box when selected.
- 6 Message** – Indicates if there is an occlusion (Flow Limit must be on), reflux, or vent issue.

 **WARNING:**

- Test for adequate irrigation and aspiration flow, reflux, and operation of each accessory prior to entering the eye.
- To avoid a risk of the chamber shallowing or collapsing, which may result in patient injury, avoid lowering the IOP or raising aspiration rates or vacuum limits above the preset value.

Flow Mode

In Aspiration Flow mode, the console uses the Peristaltic pump.



Suction Panel in Flow Mode

- 1 Vacuum Power toggle** – Enables or disables the suction function.
- 2 Intelligent Aspiration icon** – Indicates whether Intelligent Aspiration is on or off.
- 3 Vacuum parameter** – Opens the Vacuum dialog box.
- 4 Aspiration Flow parameter** – Opens the Aspiration Flow dialog box when selected.

NOTE: The Aspiration Flow dialog box includes an additional toggle for Intelligent Aspiration. Turn on **Intelligent Aspiration** to display aspiration flow as zero or near zero when the vacuum limit is set to 700+ and full occlusion is detected.

- 5 Message** – Indicates if there is an occlusion, reflux, or vent issue.

NOTE:

- Always monitor the fill state of the FMS drain bag during operation.
- During aspiration, ensure the FMS aspiration line does not have bubbles.
- If the system has low flow, release the treadle.
- When the vacuum feature is enabled, the tone generated by the console varies in pitch relative to vacuum strength. For instance, a higher pitch may indicate a flow restriction.

Incision Size

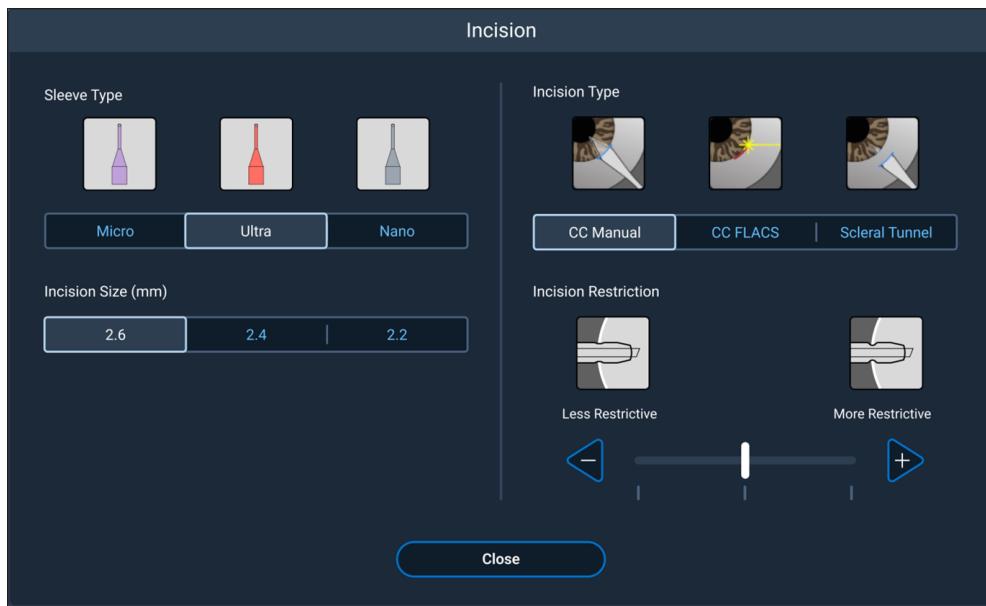
The Incision Size setting helps the console compensate for potential pressure losses along the irrigation path depending on the intended length of the cut made during phacoemulsification. See the following table for recommended incision sizes for certain tip and irrigation sleeve combinations.

WARNING: To avoid severe thermal eye tissue damage during lens removal, do not use a smaller incision than recommended.

NOTE: Use an incision size appropriate for individual technique, experience level, and tip and sleeve type.

To adjust incision settings, set the size and type:

1. Select **Incision Size**. The Incision dialog box opens.



2. Select the **Sleeve Type** being used.
3. Select the intended **Incision Size**.
4. Select the intended **Incision Type**.
5. Select the **Incision Restriction**.
6. Select **Close**.

Bimanual Irrigation

Bimanual irrigation replaces the incision size control on the bottom right sidebar with bimanual steps. Like the incision size setting, it helps the console compensate for potential pressure losses along the irrigation path. To access bimanual irrigation, ensure a bimanual step is included in the procedure and select the step.



WARNING: When using a bimanual procedure, ensure the irrigation handpiece and settings have sufficient flow characteristics. Use of irrigation handpieces or settings with insufficient flow characteristics may result in a fluidic imbalance and may cause a shallowing or collapsing of the anterior chamber.

To adjust the bimanual irrigation setting, perform the following steps:

1. Select **Bimanual Irr.**
2. Select the applicable gauge size of the bimanual irrigating cannula.
3. Select **Close.**

Reflux

Reflux reverses the direction of aspiration flow such that effluent material is pushed back out of the handpiece tip (for example, to clear a clogged tip or move blood or other obstructive material from a particular area of interest). To adjust reflux settings, set the mode and value:

1. Select **Reflux.**
2. Select a mode:
 - **Micro** – Provides a short duration of pressure through the suction port to expel material from the handpiece tip.
 - **Proportional** – Provides relative pressure to the treadle position.
 - **Continuous** – Provides constant pressure at the specified value.
3. Set the slider to the desired value.
4. Select **Close.**

NOTE: The unit of measure may be different depending on the selected mode.

Anterior Segment Procedures

The console includes surgical steps for anterior vitrectomy, phacoemulsification, irrigation and aspiration, and other anterior segment procedures. Only use settings appropriate for the intended techniques used to achieve the desired surgical effect. Also, consider individual technique and experience level.

 **WARNING:**

- To avoid potentially causing draining of the fluidics system, use proper handling and removal of dual irrigation handpiece tips from the eye.
- Do not remove the FMS during surgical procedures.

Phacoemulsification

For phacoemulsification, the console provides different steps to facilitate emulsification and aspiration (see [Procedure Customization](#) on page 206). Each step provides irrigation, aspiration, longitudinal power, and torsional amplitude control. Together, with a phaco handpiece, longitudinal power and torsional amplitude alternate on and off. Ultimately, ultrasonic power and torsional displacement of the tip is proportional to the longitudinal and torsional settings defined in the steps.

Handle phaco handpieces with care. They must be at room temperature and dry just before use. Immediately following surgery, thoroughly clean the handpiece (see the handpiece DFU for cleaning information).

NOTE: Use viscoelastics (OVD) as appropriate for individual technique and experience level. When finished with the OVD, ensure it is sufficiently removed.

 **WARNING:**

- To prevent infection, destroy the accessory if used on a patient with prion-related or other infectious disease.
- To avoid excessive heating and potential thermal injury to adjacent eye tissues, ensure the irrigation sleeve is properly seated on the tip.
- To ensure sufficient volume of irrigating solution for the procedure, monitor the level before and during the procedure.
- To avoid spillage of irrigating solution, ensure that the maximum capacity of the drain container is not exceeded as this could cause a hazardous situation to the patient.

⚠ CAUTION: To avoid stripping the disposable tip wrenches, do not use disposable tip wrenches for subsequent cases.



Phacoemulsification Settings (PrePhaco Step Example)

Occlusion and Vacuum Tones

The console emits different tones or sounds to indicate an occlusion or vacuum activity during operation. To control the volume or preview the sounds, see [Audio Indicator Preferences](#) on page 202.

NOTE: Occlusion tones can be turned off, but the vacuum tone cannot be turned off.

- **Occlusion tones** – Indicate the vacuum is near or at the preset limit and aspiration flow is reduced or stopped. There are 2 types of occlusion tones:
 - **IA occlusion tone** – Indicates an occlusion during aspiration only (no ultrasonic power). The tone is a lower, intermittent single beep.
 - **Phaco occlusion tone** – Indicates an occlusion during the application of ultrasonic power. The tone is a higher, intermittent double beep.
 - **Phaco occlusion bell** – Indicates there is no aspiration flow.

⚠ WARNING: To avoid the risk of significant temperature increases at the incision site and inside the eye, potentially leading to severe thermal eye tissue damage, avoid the following actions:

- High power settings
- Prolonged use

- **Vacuum tone** – Indicates the amount of vacuum being used relative to the pitch frequency.

 **WARNING:**

- In the event of persistent loss of aspiration during operation, remove phaco power via the foot controller.
- To avoid a risk of excessive heating and potential thermal injury to adjacent eye tissues, do not use the phaco handpiece in the absence of irrigation flow or with reduced or lost aspiration flow.

Phacoemulsification Step Controls

The following controls are for surgical functions. However, the phacoemulsification steps also include fluidic controls (see [Suction Settings](#) on page 131).

 **WARNING:**

- To avoid the risk of thermal eye tissue damage, ensure the appropriate profile (see [User Preferences](#) on page 191) and system settings (see [System Settings](#) on page 209) are acceptable prior to starting the procedure. This may include surgical parameters like flow rates or limits, foot controller button configuration, sound volume, or language or default units of measure preferences.
- To avoid the risk of significant temperature increases at the incision site and inside the eye during phacoemulsification, potentially leading to severe thermal eye tissue damage, avoid the following:
 - Low vacuum limits
 - Low flow rates
 - High power settings
 - Extended power usage
 - Power usage during occlusion conditions (beeping tones)
 - Insufficient aspiration of viscoelastics prior to using power
 - Excessively tight incisions
 - Prolonged use
- To minimize fragments and turbulence, use appropriate technique and settings.
- To avoid the risk of excessive heating, operate the accessory (at 70% duty cycle) for a maximum of 10 seconds (for example, 10 seconds on and 4 seconds off).

Power and Amplitude

Longitudinal power controls the tip extension during forward and backward movement. Torsional amplitude controls the rotational movement. The console uses percentages of the maximum power generated by the accessory tip (see [Specifications](#) on page 44) in 5% increments.

Timing Patterns

The console provides 3 different patterns for how and when the handpiece delivers power or energy to the eye while the treadle is in range 3. To set the timing pattern, select one of the following options:

NOTE: Both burst and pulse cycles perform torsional movement before longitudinal movement.

- **Continuous mode (default)** – Delivers power 100% of the time when activated. If either longitudinal power or torsional amplitude is set to 0%, the console delivers power of the remaining function 100% of the time. However, if neither are set to 0%, the console dedicates 20% of the duty cycle for longitudinal power and 80% for torsional amplitude before repeating the duty cycle.
- **Burst mode** – Delivers the same amount of power in repeated bursts. A burst includes a defined period of torsional amplitude (torsional **On Time**), followed by a defined period of longitudinal power (longitudinal **On Time**), and then followed by a defined period of inactivity (**Off Time**). If either longitudinal power or torsional amplitude are set to 0%, it is not included in the burst and the associated on time is disregarded.

NOTE: As the treadle is pressed, the off time always decreases (frequency of bursts increases).

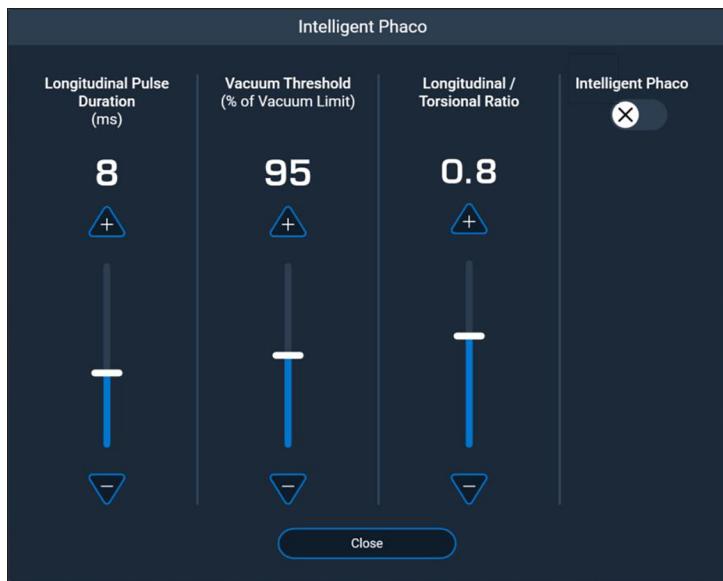
- **Pulse mode** – Delivers varying degrees of power depending on the pulse rate. A pulse includes torsional amplitude (torsional **Time On**), followed by longitudinal power (longitudinal **Time On**), and then followed by a period of inactivity (the remainder if torsional and longitudinal time on does not equal 100%) as determined by the percentage of the total time of a single pulse. The total time of a single pulse is determined by the **Pulse Rate**. For example, a pulse rate of 1 pulse per second and a torsional time on of 50% and a longitudinal time on of 10% would equate to 500 ms of torsional activity, 100 ms of longitudinal activity, and 400 ms of inactivity in a single pulse. However, a pulse rate of 10 pulses per second and the same torsional and longitudinal values would equate to 50 ms of torsional activity, 10 ms of longitudinal activity, and 40 ms of inactivity in a single pulse.

4D Phaco

The 4D Phaco feature simultaneously activates torsional and longitudinal phaco power. When enabled, the console replaces separate controls for longitudinal power and torsional amplitude with the Power control.

Intelligent Phaco

The Intelligent Phaco feature temporarily delivers pulses of longitudinal power in proportion to torsional power for a defined pulse duration once a vacuum threshold has been surpassed. Once the vacuum drops below the threshold the longitudinal pulses cease. The feature settings apply to all phacoemulsification steps, but can be enabled or disabled for individual steps.



To set Intelligent Phaco, perform the following steps:

1. Select **iP**.
2. Turn on the toggle under **Intelligent Phaco**.
3. Set the following sliders:
 - **Longitudinal Pulse Duration** – Specifies the on-time of an applied longitudinal pulse during activation.
 - **Vacuum Threshold** – Determines when the Intelligent Phaco feature activates. The threshold is a percentage of the vacuum limit.
 - **Longitudinal / Torsional Ratio** – Establishes the applied phaco power level relative to the applied torsional amplitude.

Thermal Sentry

The thermal Sentry feature helps to decrease wound heating effects by temporarily decreasing ultrasonic power level by monitoring power level and flow conditions. The sensitivity of this feature is adjustable to tailor the feature to individual technique and conditions.



To activate and set this feature, perform the following steps:

1. Select **TS**.
2. Turn on the toggle.
3. Either increase the sensitivity when Thermal Sentry is not engaging enough under lower heating conditions (such as a loose wound) or decrease the sensitivity when Thermal Sentry is engaging too often under higher heating conditions (such as a tighter wound).
4. Select **Close**.

Phacoemulsification Operation

All phacoemulsification steps use the same foot controller treadle behavior. Press the treadle to activate the following functions in the specified ranges.

 **WARNING:**

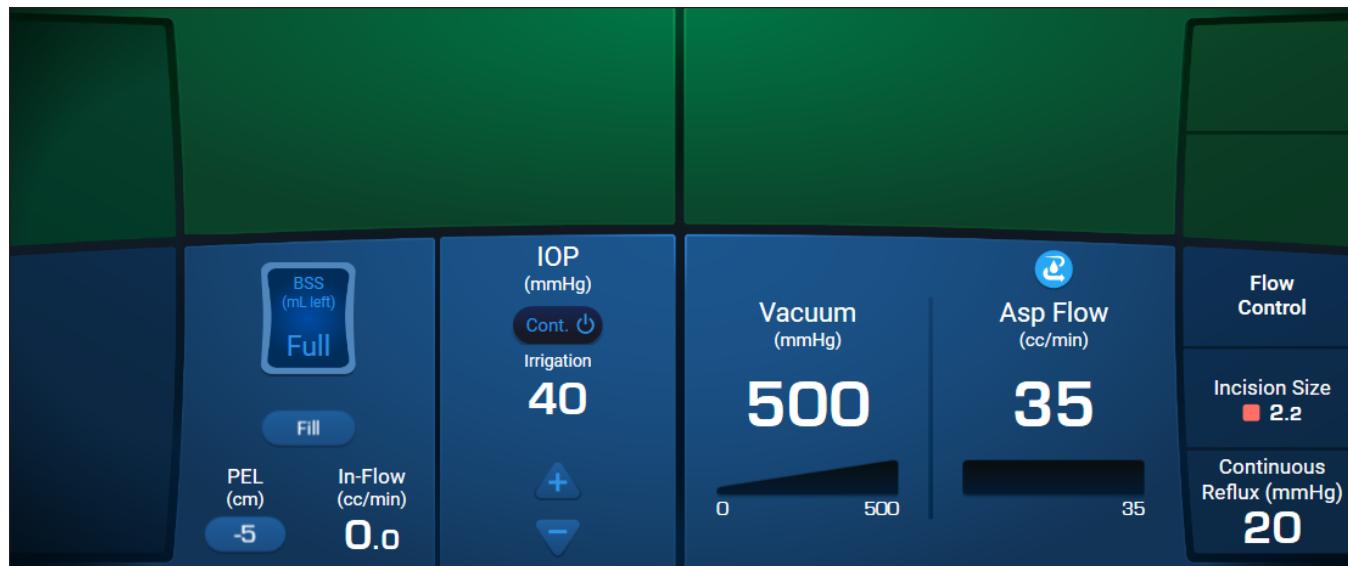
- To avoid a risk of patient injury, do not inadvertently activate prime or tune accessories while the device is in the eye.
- Do not use phacoemulsification with occluded tubes.
- In the event of persistent loss of aspiration during operation, remove phaco power via the foot controller.
- To avoid mechanical and thermal tissue damage, do not direct ultrasonic energy toward non-lens material, such as the iris or capsule.
- Do not use a phaco accessory with a loose tip.
- To avoid a potential patient hazard or equipment damage, do not touch the accessory tip with any solid object while active. However, during any ultrasonic procedure, metal particles may result from inadvertent touching of the tip with a second accessory or ultrasonic energy causing micro abrasion of the tip.
- To avoid the risk of excessive heating or potential thermal injury to adjacent eye tissues, do not use phaco handpieces in the absence of irrigation flow or the absence or reduced aspiration flow.

 **CAUTION:**

- To avoid irreparable damage to the handpiece and tip, do not operate the handpiece with a dry tip. For example, operate the handpiece with the tip immersed in irrigating solution, distilled water, or in the eye.
- Use phaco handpieces only at room temperature and dry. For example, allow handpieces to air-cool after a steam autoclave (at least 15 minutes). Never immerse it in liquid to cool.

Dedicated Irrigation and Aspiration

For dedicated irrigation and aspiration, the console provides different steps for irrigation and simultaneous peristaltic aspiration for use with independent I/A handpieces. However, half of the steps are bimanual versions of other steps. See [Procedure Customization](#) on page 206 for more details on including IA steps in procedures.



IA Step Controls

IA steps do not include any ultrasonic surgical controls. However, they include fluidic controls, including vacuum, aspiration flow, incision size or bimanual irrigation, and reflux (see [Suction Settings](#) on page 131).

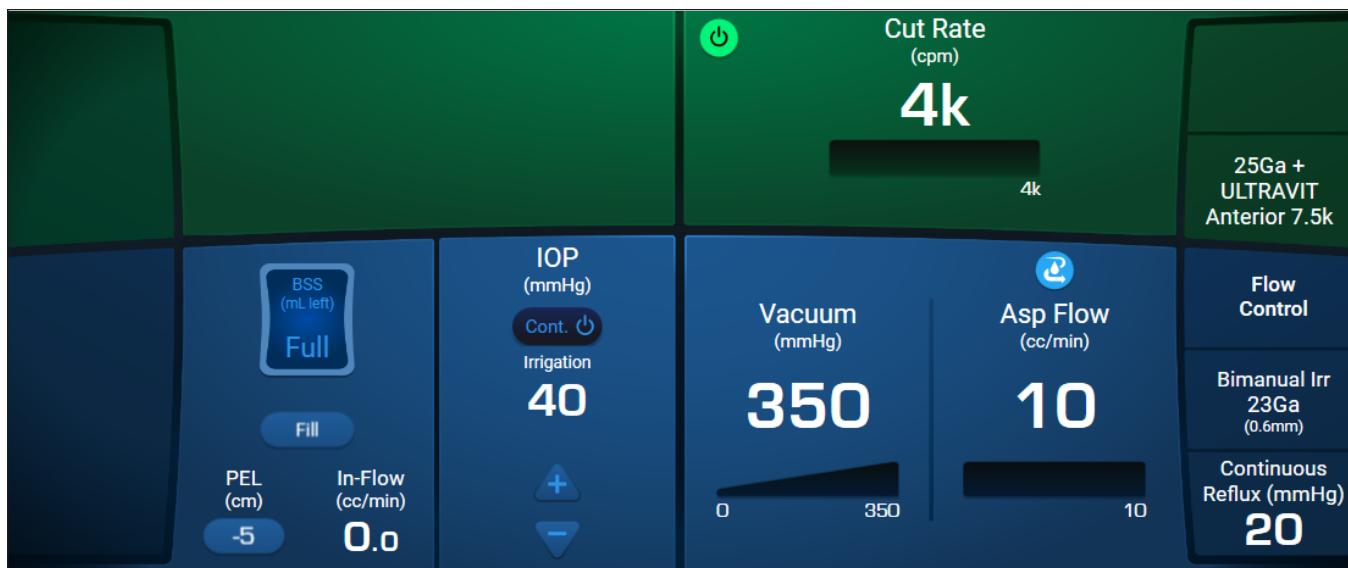
IA Operation

With these steps, there are only 2 applicable treadle ranges. The treadle activates irrigation in ranges 1 and 2 and aspiration in range 2.

Anterior Vitrectomy

For anterior vitrectomy, the console provides different steps to facilitate vitreous removal (see [Procedure Customization](#) on page 206). Each step includes a control to set the cut rate of the vitrectomy probe as well as aspiration flow, bimanual irrigation, reflux, and vacuum controls.

! **WARNING:** To avoid potential performance degradation or hazard, do not operate vitreous probes in air.



Anterior Vitrectomy (Anterior Vit Step Shown)

Anterior Vitrectomy Step Controls

Cut Rate

The cut rate determines speed of the cutter when activated.

Fluidic Controls

The anterior vitrectomy steps also include fluidic controls such as aspiration flow, bimanual irrigation, reflux, and suction (see [Suction Settings](#) on page 131).

Anterior Vitrectomy Operation

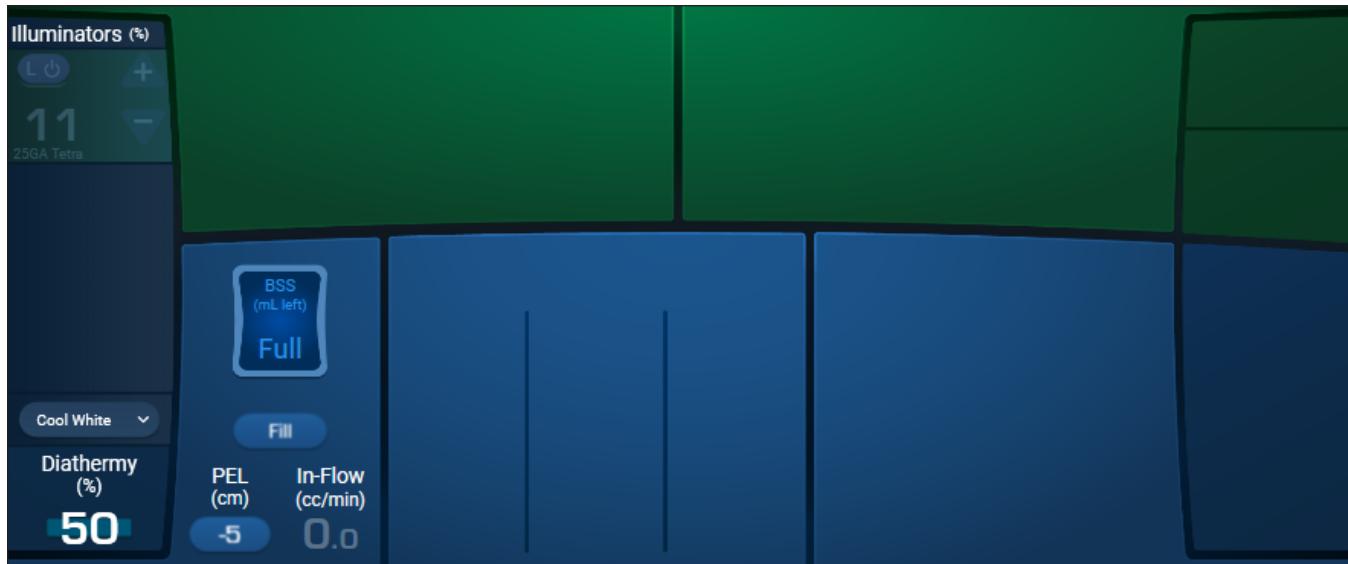
Not all anterior vitrectomy steps use the same treadle behavior. See the following table for when the treadle activates certain functions.

Treadle Range	Anterior Vit	Cut I/A	I/A Cut	Peripheral Irid	Epi Removal	Visco Asp
Range 1	Irrigation					
Range 2	Irrigation Cut Rate Vacuum Asp Flow	Irrigation Cut Rate	Irrigation Vacuum Asp Flow	Irrigation Cut Rate Vacuum Asp Flow	Irrigation Cut Rate Vacuum Asp Flow	Irrigation Cut Rate Vacuum Asp Flow
Range 3	Unused	Irrigation Cut Rate Vacuum Asp Flow	Irrigation Cut Rate Vacuum Asp Flow	Unused	Unused	Unused

Cut rate must be activated manually. To do so, turn on the toggle next to **Cut Rate**. When it is activated while the treadle is in the expected range for cut rate, the function takes effect immediately. When it is deactivated, fluidic functions behave as normal.

Image Guidance

For image guidance, the console provides different steps to align with the Alcon Verion Image-Guided System (see [Procedure Customization](#) on page 206). They include steps for positioning, registration, incision guidance, Capsulorhexis, Aphakic, and axis markers. The steps do not include any surgical or fluidic controls.



V+V (Position Step Example)

Posterior Segment Procedures (VCS Models Only)

The console includes surgical steps for posterior vitrectomy, fragmentation, laser photocoagulation, and control of other accessories (such as forceps and scissors). Only use settings appropriate for the intended techniques used to achieve the desired surgical effect. Also, consider individual technique and experience level.



WARNING: Do not remove the FMS during surgical procedures.

Posterior Vitrectomy and Vitreous Sampling

For posterior vitrectomy, the console provides a dedicated step to control vitreous cutting with a vitrectomy probe. The step also provides aspiration flow, reflux, and vacuum control.



Posterior Vitrectomy Step Example

Posterior Vitrectomy and Vit Sample Step Controls

Submodes

The console provides 3 different submodes to determine the timing pattern of the cutter. To set the timing pattern, select the mode name and select one of the following options:

- **Continuous** – Activates the cutter relative to the treadle.
- **Momentary** – Toggles the cutter at a fixed rate on and off through a foot controller button rather than the treadle. The fluidic functions operate relative to the treadle and independently from the cutter.
- **Single cut** – Activates the cutter once per full treadle press.

Cut Rate

The cut rate determines speed of the cutter when activated.

Bimanual Forceps

The forceps button determines the pressure used to drive the forceps.

Fluidics Controls

The fluidics controls behave the same way as with other procedures (see [Suction Settings](#) on page 131). However, aspiration and vacuum must be enabled. To enable or disable them, select the toggle between the **Vacuum** and **Aspiration Flow** panels.

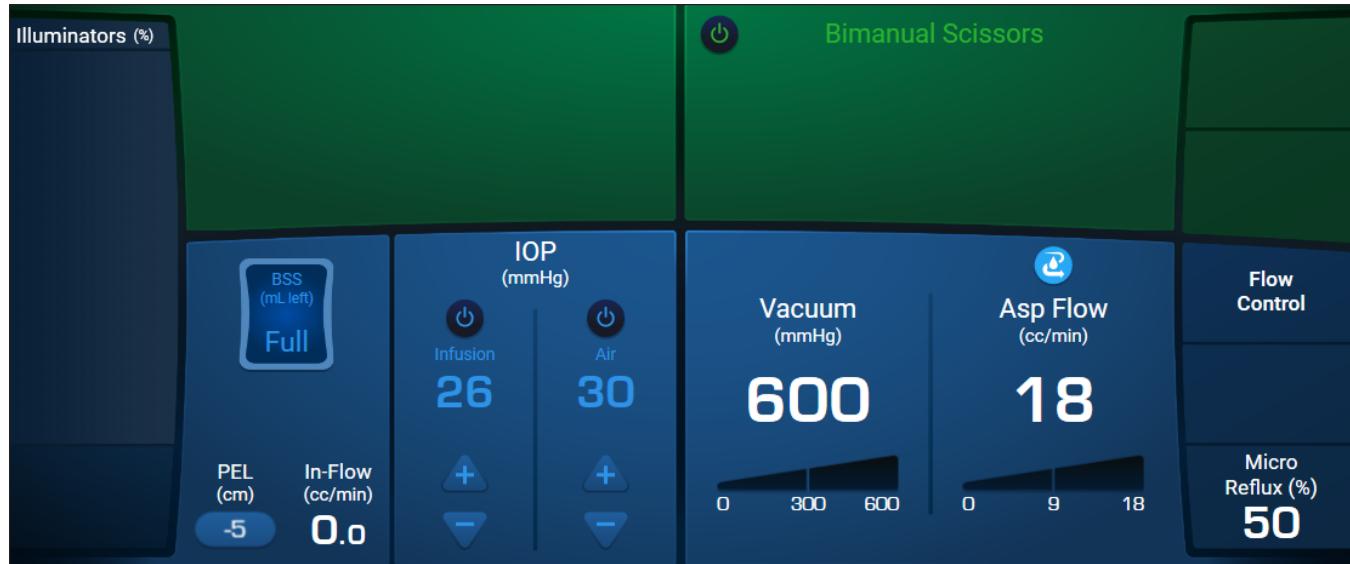
Posterior Vitrectomy and Vit Sample Operation

Cut rate must be activated manually. To do so, turn on the toggle next to **Cut Rate**. When it is activated while the treadle is in the expected range for cut rate, the function takes effect immediately. When it is deactivated, fluidic functions behave as normal.

NOTE: If Infusion or air is turned on during the Vit Sample step, the sample may become diluted.

Extrusion

For extrusion, the console provides a dedicated step for vacuum during posterior segment procedures. The step provides aspiration flow, bimanual scissors, reflux, and vacuum controls.



Extrusion Step

Extrusion Step Controls

Scissors cut rate is available only when a connected pneumatic handpiece with a scissors tip is connected to the console and activated with the toggle in the Bimanual scissors panel. To adjust the setting, see [Scissors](#) on page 153.

Extrusion Operation

The Extrusion step activates vacuum in treadle ranges 1 and 2. Press the treadle to start the extrusion process.

Fragmentation

For ultrasonic fragmentation, the console provides a dedicated step to fragment and aspirate tissue. The step provides infusion through the infusion cannula, aspiration, longitudinal power, and torsional amplitude control. Together, with a fragmentation handpiece, longitudinal power and torsional amplitude alternate on and off. Ultimately, longitudinal and torsional displacement of the tip is proportional to the longitudinal and torsional settings defined in the steps.

Handle fragmentation handpieces with care. They must be at room temperature and dry just before use. Immediately following surgery, thoroughly clean the handpiece (see the handpiece DFU for cleaning information).

⚠ CAUTION: To avoid damage to the handpiece or voiding the warranty, do not quench a hot handpiece in water.

❗ WARNING: To avoid excessive heating and potential scleral burns, do not use fragmentation handpieces without aspiration flow.



Fragmentation Step

Fragmentation Step Controls

The following controls are for surgical functions. However, the fragmentation step also includes fluidic controls such as aspiration flow, reflux, and vacuum (see [Suction Settings](#) on page 131).

Power and Amplitude

Longitudinal power controls the tip extension during forward and backward movement. Torsional amplitude controls the rotational movement. The console uses percentages of the maximum power generated by the accessory tip (see [Specifications](#) on page 44) in 5% increments.

Timing Patterns

The console provides 3 different patterns for how and when the handpiece delivers power or energy to the eye while the treadle is in range 2. To set this, select the mode name and select one of the following options:

NOTE: Both burst and pulse cycles perform torsional movement before longitudinal movement.

- **Continuous mode (default)** – Delivers power 100% of the time when activated. If either longitudinal power or torsional amplitude is set to 0%, the console delivers power of the remaining function 100% of the time. However, if neither are set to 0%, the console dedicates 20% of the duty cycle for longitudinal power and 80% for torsional amplitude before repeating the duty cycle.
- **Burst mode** – Delivers the same amount of power in repeated bursts. A burst includes a defined period of torsional amplitude (torsional **On Time**), followed by a defined period of longitudinal power (longitudinal **On Time**), and then followed by a defined period of inactivity (**Off Time**). If either longitudinal power or torsional amplitude are set to 0%, it is not included in the burst and the associated on time is disregarded.

NOTE: As the treadle is pressed, off time always decreases (frequency of bursts increases).

- **Pulse mode** – Delivers varying degrees of power depending on the pulse rate. A pulse includes torsional amplitude (torsional **Time On**), followed by longitudinal power (longitudinal **Time On**), and then followed by a period of inactivity (the remainder if torsional and longitudinal time on does not equal 100%) as determined by the percentage of the total time of a single pulse. The total time of a single pulse is determined by the **Pulse Rate**. For example, a pulse rate of 1 pulse per second and a torsional time on of 50% and a longitudinal time on of 10% would equate to 500 ms of torsional activity, 100 ms of longitudinal activity, and 400 ms of inactivity in a single pulse. However, a pulse rate of 10 pulses per second and the same torsional and longitudinal values would equate to 50 ms of torsional activity, 10 ms of longitudinal activity, and 40 ms of inactivity in a single pulse.
- **Momentary Continuous mode** – Toggles continuous mode at fixed values on or off through an independent foot controller button.
- **Momentary Pulse mode** – Toggles pulse mode at fixed values on or off through an independent foot controller button.

Intelligent Phaco

See [Intelligent Phaco](#) on page 140.

Fragmentation Operation

The fragmentation step activates aspiration and vacuum in treadle ranges 1 and 2 while activating longitudinal and torsional energy either in treadle range 2 or foot controller buttons. To enable longitudinal power and torsional amplitude, turn on the toggle in between Longitudinal and Torsional.

Forceps

The console provides a dedicated step for grasping material with a pneumatically powered forceps tip. The step includes grasping pressure.



Forceps Step Example

Forceps Step Controls

The Forceps step provides a single control over forceps pressure. Select **Forceps** to open the control dialog box and adjust the start and end values accordingly. The start value represents forceps while they are fully open and the end value represents the forceps when they are fully closed (see [Verify and Calibrate Forceps Tips](#) on page 105).

Forceps Operation

Press the treadle to activate the forceps. As the treadle traverses range 1, the forceps close or open depending on where the treadle is within the range.

Scissors

The console provides a dedicated step for cutting with a pneumatically powered scissor tip. The step includes cut behavior and rate, and forcep pressure control (for bimanual forceps).



Scissors Step

Scissors Step Controls

The Scissors step includes a single surgical control (cut rate or cut pressure), depending on the selected mode. It also supports control over bimanual forceps if it is connected and enabled.

Cut Rate

Cut rate is the speed or frequency of the scissors opening and closing. It is available only in **Multi-Cut** mode. The starting cut rate is not adjustable, but the ending cut rate is. Select **Cut Rate** to adjust the maximum cut rate at the end of the treadle range.

Cut Pressure

Cut pressure is the force exerted when the scissors are open to when they are closed. It is available only in **Proportional** mode (see [Verify and Calibrate Scissor Tips](#) on page 104). The starting value is the pressure when the scissors are fully open. The ending value is the pressure when the scissors are fully closed. Select **Pressure (scissors)** to adjust the starting and ending values.

NOTE: To perform a single cut, adjust the cut rate to 1 cpm and momentarily press the treadle.

Forceps Pressure

Forceps pressure is available only when a connected pneumatic handpiece with a forceps tip is connected to the console and activated with the toggle in the Bimanual Forceps panel. To adjust the setting or calibrate it, see [Forceps](#) on page 152.

Scissors Operation

Press the treadle to activate the scissors. The scissors activate in range 1 or, if bimanual forceps are enabled, range 2 (forceps remain closed). In Proportional mode, the scissors go from open at the start to closed at the end.

Viscous Fluid Control

For VFC, the console provides a dedicated step to control pressure for fluid injection (for example, silicone oil) or vacuum extraction. The vacuum also provides a means of extruding fluid through the VFC syringe.



VFC Step Example

VFC Step Controls

The VFC step provides different controls depending on the selected mode: Inject or Extract. Inject mode includes injection pressure and bimanual vacuum. Extract mode includes extraction vacuum. The only control both modes share is gauge size.

Gauge Size

Gauge size refers to the tip size used with the VFC syringe. To select the gauge size, select the size from the list on the right sidebar.

Injection Pressure

Injection pressure controls the pressure applied to the syringe relative to how far the treadle is pressed. The starting value is always set to no pressure, but the ending value is adjustable. To adjust injection pressure, select **Inject** from the right sidebar and then select **Injection Pressure**.

Bimanual Vacuum with Injection

Bimanual vacuum controls the vacuum or aspiration levels of a second device to manage IOP. To access the controls, select the toggle above **Bimanual Vacuum** (see [Suction Settings](#) on page 131).

Extraction Vacuum

Extraction vacuum controls the strength of suction relative to how far the treadle is pressed. The starting value is always set to no vacuum, but the ending value is adjustable. To adjust the ending vacuum level, select **Extract** from the right sidebar and then select **Extraction Vacuum**.

VFC Operation

VFC Operation for Injection

Press the treadle to activate injection. If bimanual vacuum is disabled, the treadle range spans its full range of motion. However, if bimanual vacuum is enabled, range 1 activates injection while range 2 maintains injection at the ending value and activates vacuum.

VFC Operation for Extraction

Press the treadle to activate extraction. The treadle range spans its full range of motion.

Laser Photocoagulation

For laser photocoagulation, the console provides a dedicated step to control the behavior and limits of a laser and an aspirating accessory. The step includes controls for laser selection, number of spots, power for each spot, duration, interval, and aiming beam intensity.

! WARNING:

- Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Inspect all doctor filters prior to laser use.
- Ensure doctor filters are in place and engaged before laser use.
- Everyone present in the treatment room must wear protective eye wear OD4 or above at 532 nm.



Laser Step Example

Laser Step Controls

Laser Selection

If multiple probes are connected to the console, ensure the desired probe is selected. To change the probe, select the desired laser from the drop-down menu in the Laser panel.

Treatment Modes

Treatment modes determine how the console delivers laser shots. The console performs the following behaviors when the foot controller is pressed:

- **Continuous** – Fires the laser as long as the laser foot controller treadle is pressed. Duration and interval settings are not applicable.
- **Single shot** – Generates one shot per laser foot controller treadle press. The shot terminates either after the set duration or upon release of the foot controller treadle release (whichever comes first). The interval setting is not applicable.
- **Repeat** – Generates shots while the laser foot controller treadle is pressed.

Spots

With multispot laser probes, the console provides controls to generate multiple spots at once at different power ratings.

- **Spots** – Sets the number of spots (1, 2, or 4) emitted from the laser. The 4-spot option emits the spots in a square pattern.
- **Power per spot** – Sets the power of each spot. The available power per spot and the total power depend on the number of spots selected.

Spots	Maximum Available Power per Spot (mW)	Total Available Power (mW)
1	500	500
2	500	1000
4	300	1200

Duration (Repeat or Single Shot Mode Only)

Duration sets the exposure time of a treatment shot. To adjust the duration, select + to increase the time or - to decrease the time.

Spots	Duration Options (ms)
1	10, 20, 50, 100, 150, 200, 250, 300, 400, 500, 700, 1000, 1500, 2000
2	10, 20, 50, 100, 150, 200, 250, 300
4	10, 20, 50, 100, 150, 200, 250, 300

Interval (Repeat mode only)

Interval sets the duration between treatment shots. To adjust the interval, select + to increase the time or - to decrease the time.

Spots	Interval Options (ms)
1	30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1000
2	30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1000
4	30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1000

Aiming Beam

The Aiming Beam control refers to the visual intensity of the aiming beam (see [Laser Performance \(VCS Models with Optional Laser Only\)](#) on page 49 for aiming beam details). To adjust the intensity, select + to increase the value or – to decrease the value.

Laser Operation

To operate the laser, perform the following steps:

1. To record a new set of case metrics, select **Reset**.
2. While in Standby mode, select **Go to Ready** or, if configured, set the laser foot controller button to switch laser modes. The laser mode enters Ready mode and the panel highlights yellow. If the console does not transition to Ready mode, see [Troubleshooting Laser Functions](#) on page 180.

NOTE: The console returns to Standby mode after a period of inactivity in Ready mode.

3. Press the treadle to fire the laser according to the settings.

NOTE: If the 6-button foot controller is used to control the laser, the treadle controls vacuum in Standby mode and fires the laser in Firing mode. Otherwise, if a dedicated laser foot controller controls the laser, use the treadle on the laser foot controller to fire the laser and use the treadle on another foot controller to control vacuum.

Diathermy

For diathermy, the console provides a dedicated step for either anterior or posterior segment procedures.

WARNING:

- To avoid the risk of ventricular fibrillation or irreparable damage to pacemakers or defibrillatory devices, do not use the diathermy function on patients with implanted cardiac pacemakers, pacemaker electrodes, or implanted defibrillatory devices. Please check with the pacemaker or defibrillatory device manufacturer for additional recommendations. For patients with other active implanted devices, consult the device labeling or manufacturer for potential patient risks and subsequent damage to the device in order to determine the appropriate course of action.
- Failure of high frequency surgical equipment (diathermy circuitry) could result in an unintended increase of output power.
- To minimize the risks resulting from neuromuscular stimulation, avoid arching between the electrodes and tissues.
- Avoid the use of flammable anesthetics or oxidizing gases such as nitrous oxide (N_2O) and oxygen if a surgical procedure is carried out in the region of the thorax or the head, unless these agents are sucked away.



CAUTION: To reduce the risk of accidental burns and to ensure safe operation of the diathermy function, practice the following general precautions:

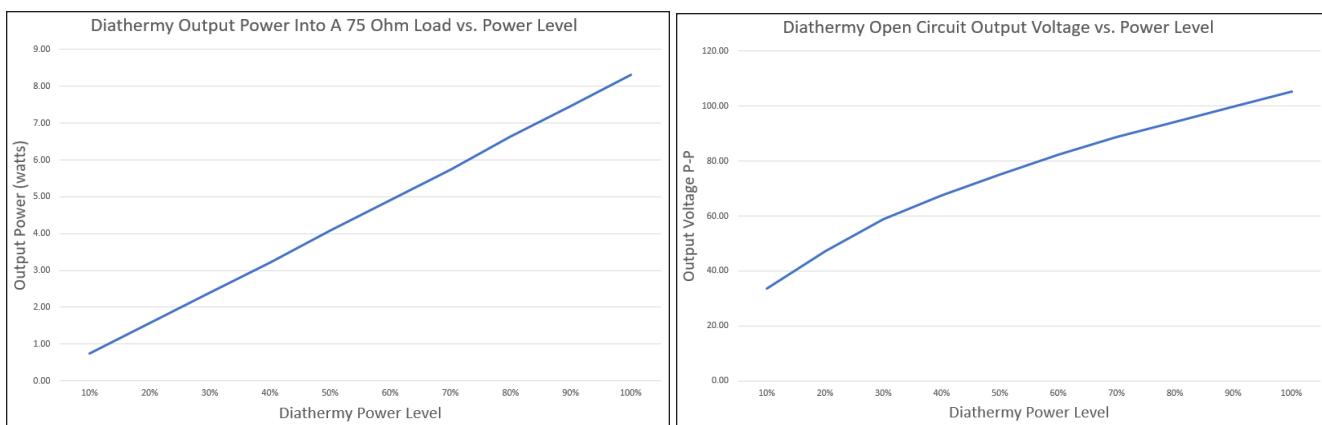
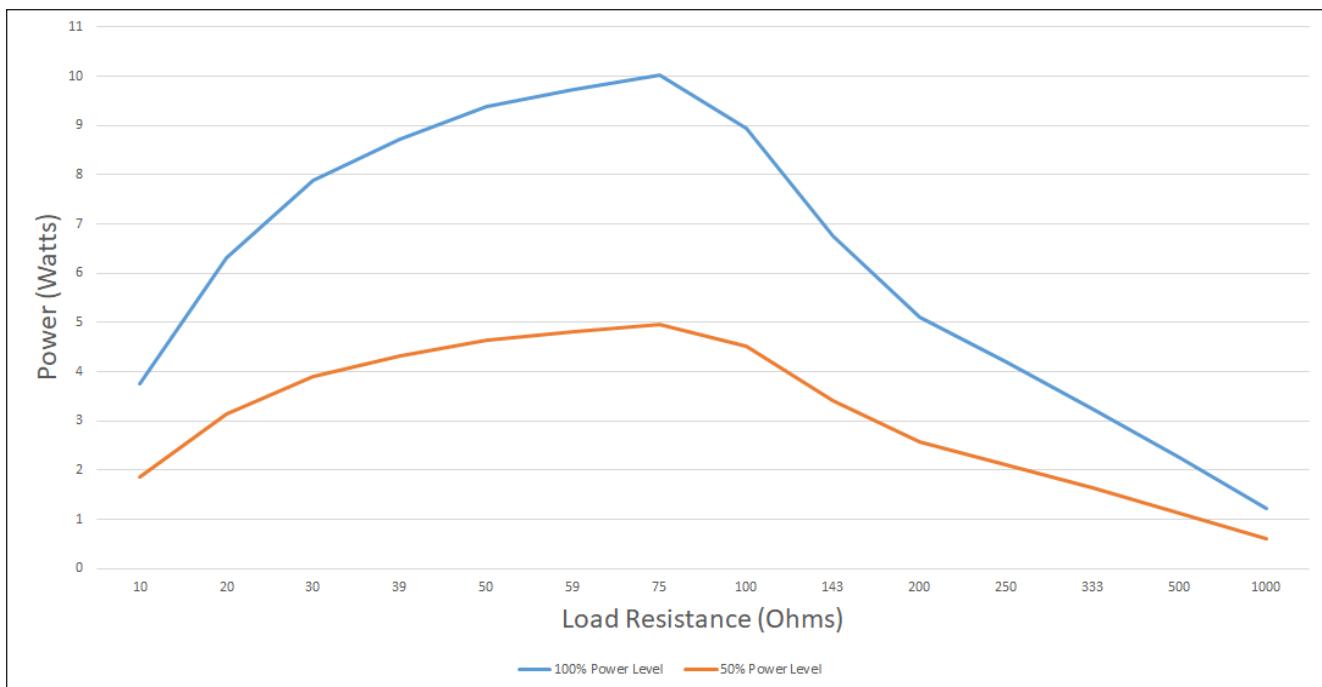
- If there is doubt that a patient with electrically conductive implants is at risk of a possible hazard due to concentration or re-direction of high-frequency currents, obtain qualified advice.
- To reduce the risk of accidental burns, caution should always be taken when operating high-frequency surgical equipment.

To ensure safe operation of the diathermy function, note the following general precautions:

- Only approved cables and accessories must be used (see Alcon representative). Diathermy performance can be guaranteed only when using Alcon components or Alcon-endorsed components.
- Interference produced by the operation of high-frequency surgical equipment may adversely influence the operation of other electronic equipment.
- Regularly inspect accessories. In particular, inspect (for example, under magnification) electrode cables and high-frequency energized endotherapy devices for possible damage to the insulation.
- Select the lowest power level in diathermy step for the intended purpose.
- Do not allow the patient to come into contact with metal parts which are earthed or which have an appreciable capacitance to earth (for example, operating table supports).
- Avoid skin-to-skin contact (for example, between the arms and body of the patient).
- When high-frequency surgical equipment and physiological monitoring equipment are used simultaneously on the same patient, place any monitoring electrodes 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.

- Position patient leads so they avoid contact with the patient or other leads. Store temporarily unused active electrodes so they are isolated from the patient.
- Allow solvents of adhesives and flammable solutions used for cleaning and disinfecting to evaporate before the application of high-frequency surgery. Some materials (for example, cotton, wool and gauze) may be ignited by sparks produced in normal use of the high-frequency surgical equipment when saturated with oxygen.
- Accessories should have a rated voltage equal to or greater than the maximum diathermy output voltage.



Diathermy Step Control

The step provides control over diathermy power through a percentage of approximately 1.5 MHz of bipolar coagulation. Select the toggle in the treadle diagram to set either fixed or linear behavior. To adjust either the start value or the end value, select + to increase the value or - to decrease the value.

Diathermy Operation

Press the treadle to activate the diathermy probe.

End Case

When a procedure is complete for a patient, close the case and prepare the system for the next procedure. This process involves resetting case metrics and handling used accessories.

Stop the Case Metrics

Once a procedure begins, the console collects performance data until told to stop. To contain this data to individual cases, end the case through the Case Metrics dialog box.

1. Select **CDE**. The Case Metrics dialog box opens.
2. Select the **Actions** menu > **End Case**. A confirmation dialog box opens.
3. Select **End Case**.

Handle Used Accessories

Clean any reusable accessories as instructed by the corresponding DFU. However, remove the FMS from the console with the following steps:

1. Disconnect the FMS from other accessories.
2. Eject the FMS and discard.

Reset the Case Metrics

Before proceeding to the next case, reset the metrics with the following steps:

1. If the Case Metrics dialog box is closed, select **CDE**.
2. Select the **Actions** menu > **Reset Case**. A confirmation dialog box opens.
3. Select **Reset**.
4. Select **Close**.

Service and Maintenance

This section contains basic preventive maintenance information and troubleshooting ideas. There are no user serviceable components inside the console or foot controller. See [Alcon Service](#) on page 169 for service information.

 **WARNING:** For all people in contact with the console and accessories, practice universal precautions to help prevent exposure to blood-borne pathogens and other potentially infectious materials. If the status of encountered blood or body fluids or tissue is unknown, handle the material in accordance with OSHA or other applicable guidelines as if it is infectious.

Shutdown Procedure

To power down the console, perform the following steps:

1. On the display, select **Menu > Shutdown**. Alternatively, press and hold the **Standby** button until the console shuts down.
2. If prompted, select **Confirm**.
3. Press in the **O** side of the **Power** switch.

Cleaning

Wherever possible, use non-flammable agents for cleaning and disinfection. Alcon recommends the following cleaning methods and tools for the console, foot controller, and remote:

Compatible	Incompatible
<ul style="list-style-type: none"> Ethyl alcohol: 70% maximum concentration Isopropyl alcohol: 70% maximum concentration (for example, CaviCide 1, Sani-Cloth Plus, Super Sani-Cloth, Incides N, Incidin Pro) Sodium hypochlorite (household bleach): 8.5% diluted 1:10 to 0.85% maximum concentration (for example, Sani-Cloth Bleach, or T-Spray II) Quaternary ammonium germicidal detergent solution: follow product label for use-dilution (for example, Sani-Cloth Active, 3M Neutural Quat, or CaviCide1) Hydrogen peroxide: 7.5% maximum concentration Glutaraldehyde: 2% maximum concentration (for example, Cidex Plus - glutaraldehyde base) 	<ul style="list-style-type: none"> Ultraviolet Radiation (UV) Phenolic germicidal detergent solution: follow product label for use-dilution (for example, Phenol or Carbolic acid - Vesphene II, Birex) Iodophor germicidal detergent solution: follow product label for use-dilution, will stain plastics (for example, Iodine, Betadine) Ortho-phthalaldehyde (OPA): 0.55% maximum concentration (for example, Cidex OPA or MetriCide OPA Plus) General chemicals: MEK, Acetone, Ether, Diethyl Ether, Benzene, Formaldehyde, Ammonium Hydroxide, Sodium Hydroxide, Carbon Tetrachloride, Xylene Products: Virex TB, Sani-Cloth AF3, Incidin Plus

 **WARNING:**

- To avoid a risk of fire, allow solvents of adhesives and flammable solutions used for cleaning and disinfecting to evaporate before using the laser or high frequency surgical equipment (also see [Diathermy](#) on page 159).

Clean the Console and Remote

Alcon recommends the following cleaning tips:

- Wipe the console panels with compatible solutions.
- Clean the display with a soft, non-abrasive cloth towel and a mild commercially-available window cleaner. Apply the cleaner to the towel rather than the display.

 **CAUTION:**

- Do not spray liquid (for example, cleaning solution or water) into console vents.
- Avoid spilling irrigating solution or moisture of any kind around the electrical ports.
- To avoid damage to the remote, do not sterilize it.

Clean the Foot Controller

 **CAUTION:** Debris, including fluid residue, stuck on the foot controller bottom or under the treadle may cause temporary malfunction of the foot controller.

To clean the foot controller, perform the following steps:

1. Remove any debris stuck under the foot controller or under either end of the treadle.
2. Clean the bottom of the foot controller and under the treadle with water or water with mild soap.

Storage and Transportation

If the system will not be used for an extended period, Alcon recommends the following practices to preserve the backup battery life:

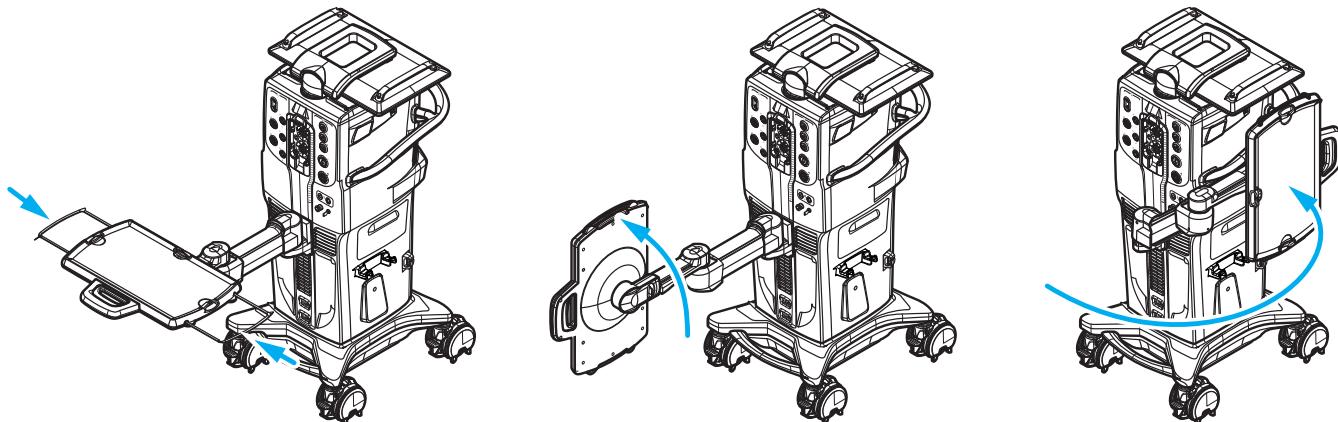
- Leave the console connected to facility power with the main power switch on.
- Turn on the console once week and leave it on at least 7 hours each time.

Display Protection

1. Rotate the display to face the rear.
2. Push the display down until it is level with the top of the console.

Tray Storage

! **WARNING:** Move the console only with the tray in a stowed position.



Steps to Stow the Tray

To stow either tray size, perform the following steps:

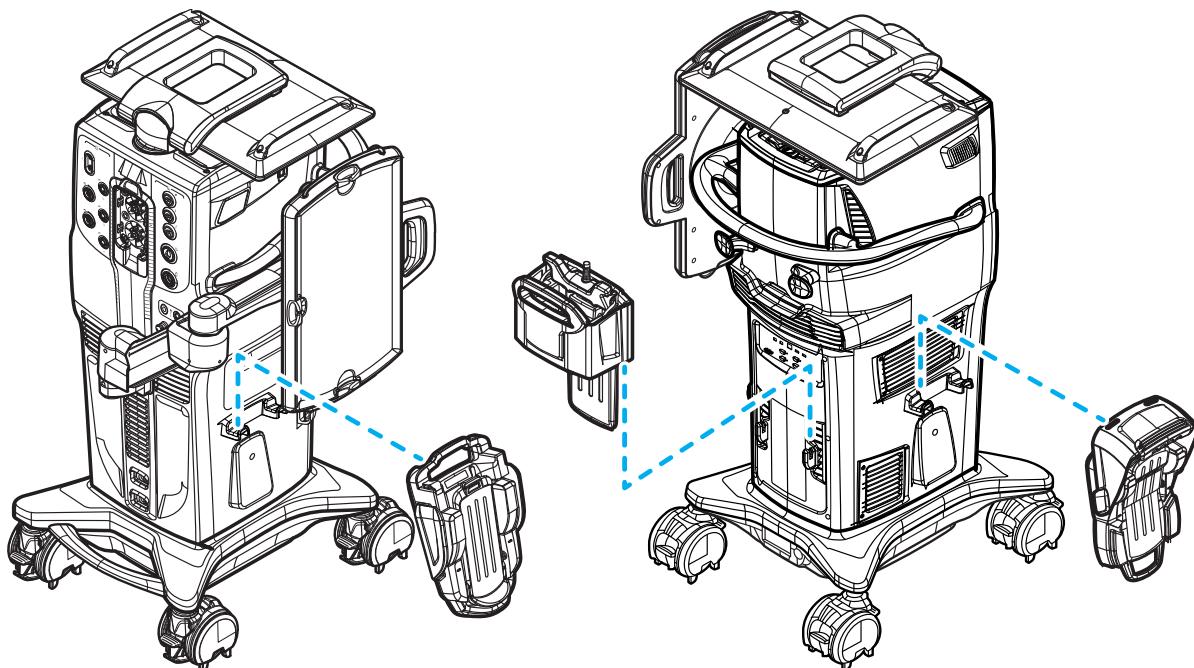
1. If necessary, push the metal rims into the tray.
2. Pull the tray lever to tilt the tray to a vertical position.
3. Hold the tray handle to move the tray to either side of the console.



CAUTION: To avoid damaging the tray, do not push or pull the tray without holding the tray handle in.

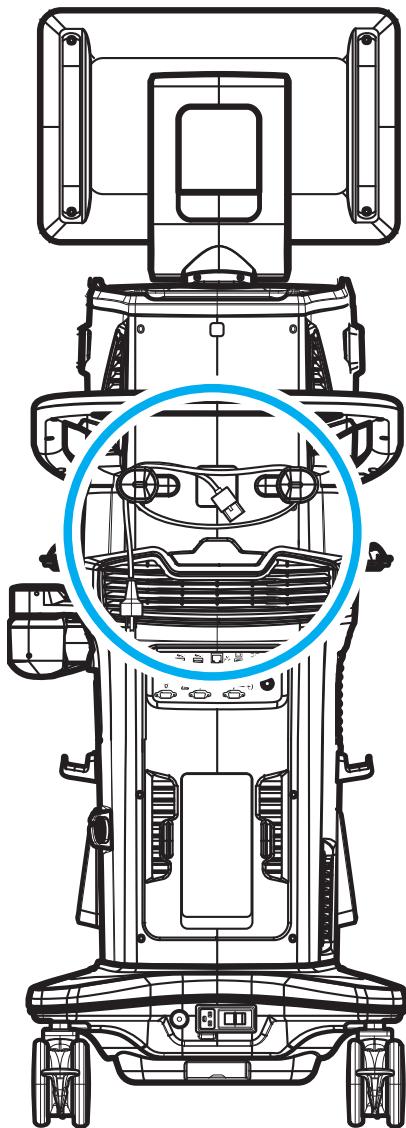
Foot Controller Hangers

CAUTION: To minimize battery degradation during long-term storage, keep *UNITY* foot controllers at room temperature with low humidity.



3 Stored Foot Controllers

Cable Wraps



Power Cable Storage

Wrap the power cord around the hooks as shown above. The label between the hooks should be visible.

Alcon Service



For product service, contact Alcon Technical Services or an authorized local service representative. For optimal performance, schedule preventive maintenance for the system and relevant accessories at least once a year. However, systems may require additional service depending on use or other circumstances. Also, verify safety performance at least once a year and ensure ground resistance, leakage current, and dielectric withstand voltage meet appropriate international, national, and local standards.

Before returning systems or accessories, contact Alcon Technical Services or an authorized local service representative. If necessary, follow any provided shipping instructions.

Alcon Technical Services and Clinical Support (US)

Phone: +1 (949) 238-8254

US toll free: +1 (800) 832-7827

Canada phone: +1 (800) 268-4574

Expected Service Life

The expected service life is the time period during which the device is expected to work safely for its intended use. The expected service life for each of the system console, components, accessories, and consumables are defined by the following list:

- **Console, foot controller, and remote** – The expected service life is limited by the ability for the device to be serviced (for example, the availability of parts). Safety of the device is supported by successful completion of the self-test diagnostics during the power-up process, real-time monitoring, and service by Alcon personnel or an approved service center in accordance with published preventive maintenance schedules. For these products, the expected service life is defined by the end of service life: a minimum of 10 years after the date of manufacture as labeled on the device.
- **Ultrasonic handpieces** – The expected service life is defined as the service period up to when the handpiece successfully passes functional tuning prior to use.

Product	Expected Service Life
Active Sentry handpieces	
UNITY ultrasonic handpieces	1000 sterilization cycles or 400 sterilization and chemical cleaning cycles
UNITY fragmentation handpieces	
Metal IA tip	500 sterilization cycles
Silicone IA	10 uses
UltraFlow II IA handpieces	1000 sterilization cycles

- **Limited reusable accessories** – The expected service life is defined on the product labeling (also, see the preceding table).
- **Consumables** – The expected service life is defined by the expiration date.

Preventive Maintenance for Users or Responsible Organizations

There are no user-serviceable components inside the console or foot controllers. If desired, contact Alcon for a technical description of the system. Upon request, this may include a service manual with additional information to assist service personnel.

WARNING:

- If a deficiency persists, do not use the system and call Alcon Technical Services.
- In addition to the Alcon service recommendations (see [Alcon Service](#) on page 169), Alcon also recommends a qualified technician perform a safety inspection at least twice a year to help ensure system performance. As part of the inspection, ensure the technician inspects the console skin for cracks, labeling integrity, ground resistance, leakage current, and dielectric withstand voltage.
- A qualified technician must check ground continuity and leakage current every 12 months to ensure they are within the limits of the applicable standards (for example, EN 60601-1 or IEC 60601-1). Values must be recorded and, if they are above the limits of the applicable standards or 50% above the initial measurement, do not use the system and call Alcon Technical Services.
- Inspect all handpiece cables and any cords on a regular basis and replace immediately if damage (for example, exposed wire, nicks in the insulation, deformation, etc.) is observed.
- The VCS console has system back-up battery and foot controller battery. These batteries are not user-replaceable and can only be serviced by a factory-trained service engineer. Access by untrained personnel can lead to injury.

Remote Battery Replacement

The remote requires 2 AA batteries. To replace the batteries, perform the following steps:

1. Lift the bottom panel latch.
2. Rotate the latch counterclockwise until the panel unlocks.
3. Remove the bottom panel.
4. Replace the batteries.
5. Place the bottom panel back on the remote.
6. Rotate the latch clockwise until it locks.

NOTE: Dispose of batteries following local governing ordinances and recycling plans (see [Disposal](#) on page 220).

Laser Calibration Verification (VCS Models with Optional Laser Only)

Verify the treatment laser is calibrated per the following guidance at least every 12 months. For treatment laser calibration, contact Alcon Technical Services.

WARNING:

- Laser light emitted from the fiber and laser head is powerful enough to cause serious eye or skin damage. Maintenance should be performed only by properly trained personnel, following established guidelines for laser safety. The use of protective eye wear is mandatory.
- Do not use the laser if the yearly verification shows the output being outside of the designated range.

CAUTION: Serious damage to the device may occur if these procedures are not performed by qualified personnel.

Tools for Laser Calibration Verification

- Photodetector (*ThorLabs*¹ DET100A2 or equivalent)
- Energy meter for direct energy measurements (*Ophir*¹ Nova meter with 3A-P head or equivalent)
- Oscilloscope or voltmeter (*Fluke ScopeMeter*¹ or equivalent)
- Protective eye wear OD4 or above at 532 nm

Accessories for Laser Calibration Verification

Accessories	Description	Part Number
Single-spot accessories	25 Ga IFC Laser Probe	8065751593
	25 Ga Straight Laser Probe	8065750978
	PurePoint LIO Headset	8065752987
Multi-spot accessory	25 Ga MultiSpot Laser Probe	8065000236

¹ Trademarks are property of their respective owners.

Methods for Laser Calibration Verification

Calibrated power/exposure time can be verified by two different test methods: the Energy method (recommended) and the Power x Time method.

Follow the steps below for the selected method, while using the corresponding matrix at the end of this section.

Energy Method (recommended)

1. Connect an accessory (see list above) to the laser port and direct the distal output into the energy meter.
2. Set the exposure time to 10 ms in single shot mode at the set power level.
3. Fire the laser and record the measured energy in the Energy matrix.
4. Ensure the energy is within the listed target values (see [Energy Matrix](#) on page 176).

NOTE:

- If all energy values are within the specified limits, the system calibration is OK.
- If any of the energy results are not within the specified limits, contact Alcon Technical Services.

Power x Time Method

The Power x Time method consists of two steps: verifying the exposure time, and verifying the power.

1. Exposure Time Verification:
 - a. Connect an accessory (see [Accessories for Laser Calibration Verification](#) on page 173) to the laser port and direct the distal output into the photodetector.
 - b. Set the exposure time to 10 ms and the laser power to minimum.
 - c. Fire the laser, record the exposure time in the Power x Time matrix, and ensure the exposure time is $10 \pm 0.5\text{ms}$.

2. Power Verification:

For 1 spot:

- a. Switch the laser to Continuous mode.
- b. Fire the laser by directing the distal output of the accessory into the power meter at the set power level.
- c. Record the power in the Power x Time matrix and ensure it is within the listed target values.
- d. Calculate the total energy by multiplying the measured power by the measured exposure time.
- e. Record the calculated energy in the Power x Time matrix and ensure it is within the listed target values.

For 2 spots or 4 spots:

- a. Switch the laser to Repeat mode.
- b. Set both Duration and Interval to 100 ms (50% duty cycle).
- c. Fire the laser by directing the distal output of the accessory into the power meter at the set power level.
- d. Record the power in the Power x Time matrix, multiply the value by 2 as shown in the table and ensure it is within the listed target values.
- e. Calculate the total energy by multiplying the measured power by the measured exposure time.
- f. Record the calculated energy in the Power x Time matrix and ensure it is within the listed target values.

NOTE:

- If all energy values are within the specified limits, the system calibration is OK.
- If any of the energy results are not within the specified limits, contact Alcon Technical Services.

Energy Matrix

Laser Port	Spots	Set Power/Spot (mW)	Total Energy (mJ)	
			Target ¹	Measured
Single spot ²	1	200	1.64 to 2.36	
		1000	8.20 to 11.80	
Multi-spot ²	1	200	1.64 to 2.36	
		500	4.10 to 5.90	
	2	200	3.28 to 4.72	
		500	8.20 to 11.80	
	4	100	3.28 to 4.72	
		300	9.84 to 14.16	

Power x Time Matrix

Laser Port	Spots	Set Power/Spot (mW)	Total Power (mW)		Total Exposure Time (ms)	Total Energy (mJ)	
			Target ³	Measured		Target ¹	Calculated ⁴
Single spot ²	1	200	174 to 226		(measured) 10 ± 0.5 (target)	1.64 to 2.36	
		1000	870 to 1130			8.20 to 11.80	
Multi-spot ²	1	200	174 to 226			1.64 to 2.36	
		500	435 to 565			4.10 to 5.90	
	2	200	348 to 452	_____ x 2		3.28 to 4.72	
		500	870 to 1130	_____ x 2		8.20 to 11.80	
	4	100	348 to 452	_____ x 2		3.28 to 4.72	
		300	1044 to 1356	_____ x 2		9.84 to 14.16	

¹ Energy range is ±18% of intended total energy.

² For list of compatible probes, see [Compatible Laser Accessories](#) on page 235.

³ Power range is ±13% of intended total power.

⁴ Calculated Energy = Measured Power x Measured Exposure Time.

Software Updates

For software updates, contact Alcon Technical Services.

System Messages

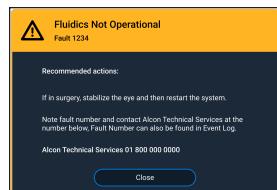
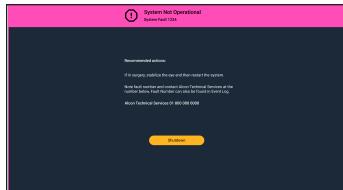
The console may display messages when a process is interrupted or cannot be completed. When a system message is encountered, follow the provided instructions. If the instructions do not resolve the issue, do not proceed and contact Alcon Technical Services with the message identification number.

⚠️ WARNING: If the console displays a system error during operation, release the treadle to the up position.

NOTE:

- If a fault is detected during operation, see [Troubleshooting](#) on page 178.
- To view messages generated by the console, see [Event Logs](#) on page 178.

There are 3 types of system messages with different levels of potential severity.

Type	Description	Example	Console Response
Advisory	Conveys messages to help users operate the console.		<ul style="list-style-type: none"> • Generates a tone • Displays an ID number, a brief message, and actions to take.
Subsystem fault	Indicates an isolated incident.		<ul style="list-style-type: none"> • Generates a tone • Displays an ID number, a brief message, and actions to take. • Places affected mechanisms in a safe state. The functions of these mechanisms are unavailable during this time. If desired, continue operating the console with limited functionality.
System fault	Indicates an exceptional hardware or software condition that renders the console unable to perform a requested function as intended.		<ul style="list-style-type: none"> • Generates a distinct tone. • Disables all mechanisms. • Displays a message on the touchscreen. • Ignores all requests, including key activations.

Event Logs

The console records past system messages encountered. To view them, select **Menu > View Events**.

Troubleshooting

If the system exhibits any of the following symptoms, attempt the corresponding troubleshooting practices. However, if the mentioned troubleshooting does not resolve the issue, note the message number and contact Alcon Technical Services (see [Alcon Service](#) on page 169).



WARNING: If the console displays a system error during operation, release the treadle to the up position.

Symptom	Troubleshooting
A system fault is encountered during a surgical procedure.	<ol style="list-style-type: none">1. Stabilize the eye.2. Remove the accessory from the eye.3. Turn off the console and restart.4. Reprime and continue.
The console does not turn on after pressing the Standby button.	Ensure the Power switch is turned on.
Unresponsive display	Reboot the console.
Remote control is inoperable.	Change the batteries (see Remote Battery Replacement on page 172).
Remote control is unresponsive after being dropped.	<ol style="list-style-type: none">1. Remove a battery for at least 10 seconds. Afterward, place it back in the remote. If the remote is paired with the console, the remote attempts to reconnect.2. If reconnection fails or the remote is not paired with the console, pair the remote with the console manually (see Pair a Remote on page 186).
Foot controller treadle not responding properly	<ol style="list-style-type: none">1. Release treadle.2. Restart the console.3. Clean and remove debris under and around the treadle.4. For wired foot controllers, reconnect the foot controller. For wireless foot controllers, connect to the console through a cable.5. Replace the foot controller.
Console does not detect the foot controller	<ol style="list-style-type: none">1. For wired foot controllers, reconnect the foot controller.2. For wireless foot controllers, hang the foot controller on the hanger for more than 5 seconds.3. Replace the foot controller.
Inlet pressure is insufficient or needs replacement	<ol style="list-style-type: none">1. Remove accessories from the eye.2. Plug cannulae as necessary.3. Replace or fix inlet pressure source.

Troubleshooting Fluidic Functions

Symptom	Troubleshooting
Insufficient irrigation	<ol style="list-style-type: none"> 1. Remove kinks or occlusions from the irrigation line. 2. Inspect the instrument and tip for damage. 3. Ensure the irrigation sleeve hole aligns with the tip flare. 4. Replace the FMS cassette.
Irrigation does not stop	Turn off continuous irrigation.
Vacuum check fails	<ol style="list-style-type: none"> 1. Re-insert the FMS cassette. 2. Tighten all connections along the aspiration line. 3. Secure the test chamber to the instrument. 4. Remove the instrument and connect the blue and white luer fittings together. 5. Check the fittings. 6. Replace the FMS cassette.
Vent test fails or vacuum and vent check fails	<ol style="list-style-type: none"> 1. Remove kinks or occlusions from the irrigation line, aspiration line, or twisted tip cap sleeve. 2. Re-insert the FMS cassette. 3. Replace the FMS cassette.
Instrument test fails	<ol style="list-style-type: none"> 1. Reconnect the tip. 2. Reconnect the test chamber. 3. Connect the instrument to a redundant port. 4. Replace the instrument.
Test chamber collapses	<ol style="list-style-type: none"> 1. Remove kinks or occlusions from the irrigation line or irrigation sleeve. 2. Verify the sleeve and tip size are appropriate.
Irrigation line has bubbles	<ol style="list-style-type: none"> 1. Tap the instrument 2 to 3 times during the flow test. 2. Secure the connector and port contact. 3. Prime again. 4. Replace the instrument.
Backflow regurgitation	Reprime
Insufficient aspiration	<ol style="list-style-type: none"> 1. Secure the connections. 2. Inspect O-ring and replace as necessary. 3. Flush and retest. 4. Check tubing. 5. Check fitting. 6. Replace FMS cassette.

Troubleshooting Surgical Functions

Symptom	Troubleshooting
Leaking between tip and instrument	<ol style="list-style-type: none"> 1. Retighten tip. 2. Inspect O-rings 3. Replace tubing.
Ineffective vitrectomy cutting	<ol style="list-style-type: none"> 1. Reduce cutting speed until port closes completely. 2. Check for damaged or kinked tubing. 3. Tighten loose luer fittings. 4. Replace probe.
Anterior vitrectomy probe does not move	<ol style="list-style-type: none"> 1. Check for correct tubing connections. 2. Replace probe.
Scissor or forcep tip is stuck in the open position (VCS models only)	<ol style="list-style-type: none"> 1. If the accessory is already in the eye, keep it in the eye. 2. Hold the accessory body. 3. Rotate the manual override (blue fin on the proximal end with tubing attached) clockwise until the tip closes. 4. If applicable, remove the accessory from the eye. <p>To reset the tip, rotate the manual override counter-clockwise.</p>

Troubleshooting Laser Functions

Symptom	Troubleshooting
Laser mode does not transition to Ready mode	<ol style="list-style-type: none"> 1. Connect the laser foot controller. 2. Connect an identifiable probe. 3. Close the remote interlock. 4. Engage the tethered doctor filter.

Backup and Restore Data

The console stores profile settings and system logs locally, but this data can be uploaded to an external storage device. From the storage device, the data can be used to transfer settings to another console or recover lost settings on the same console.

 **CAUTION:** To avoid potentially interfering with system software, do not connect unapproved USB devices to the console.

NOTE: The console imports and exports data to the USB drive with the earliest alphabetical drive letter assignment.

Backup or Export Data

To backup data, perform the following steps:

1. Connect a USB drive to a rear panel USB port.
2. Navigate to **System Options > Import/Export**.
3. Select **Export**.
4. Select the profile check boxes to export those profiles or **Select All** to select all profiles.
5. If necessary, select **System Log** to export notes from the console.
6. Select **Export**.
7. When complete, select **Close**.

Restore or Import Data

To restore or add profiles from an external storage device, perform the following steps:

1. Connect a USB drive to a rear panel USB port.
2. Navigate to **System Options > Import/Export**.
3. Select **Import**.
4. Select the profile check boxes to export those profiles or **Select All** to select all profiles.
5. Select **Import**.
6. If the profile name already exists on the console, select **Overwrite** to replace the existing profile or select **Skip** to cancel importing the specified profile.

NOTE: To avoid repeating this selection for similar circumstances, select **Repeat for any additional duplicate file names**.
7. When complete, select **Close**.

Additional Information

Optional Part Setup

The console also supports additional Alcon devices or products through wired or wireless connectivity (for example, the video overlay, 3D visualization system, or image-guided system). To connect these devices, enable the feature on the console and refer to the device DFU or user manual.

Connect a Video Overlay

The video overlay combines data from the console with video output from a microscope to display elsewhere. The console connects to the video overlay over wireless communication. To connect to a video overlay, perform the following steps:

1. Navigate to **Menu > System Settings > Alcon Vision Suite**.
2. Turn on **UNITY Video Overlay**.
3. If the video overlay does not appear in the drop-down menu, select **Add**.
 - a. Follow the on-screen instructions.
 - b. If desired, select the **Edit** icon and enter a name to identify the new video overlay.
 - c. Select **Add**.
4. Select the video overlay from the drop-down menu.
5. Select **Save**.

Connect a Visualization System

The Alcon visualization system displays microscope views on a large 3D display. When connected, the visualization device can consolidate surgical and plan details from the console and image-guided system. The console can also control select features on the 3D visualization system (see [Operate a Connected 3D Visualization System](#) on page 187).



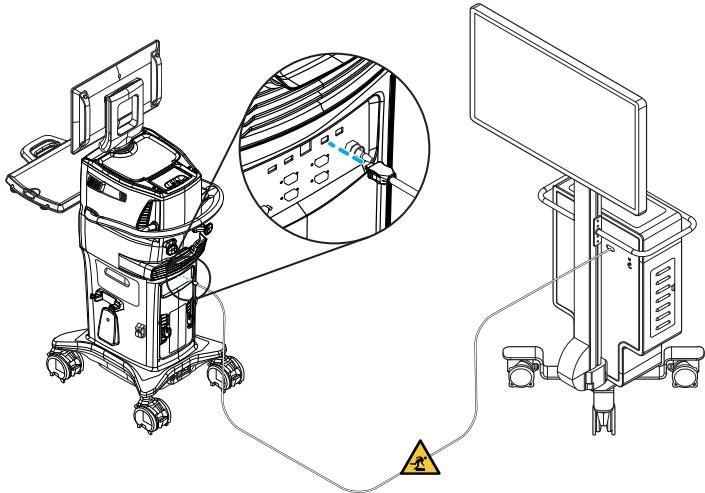
WARNING: Connect only compatible 3D visualization systems to the console.

To connect to a visualization device, perform the following steps:

1. Connect an **NGENUITY** connection adapter cable (IX60G type B to RJ-45) from the console 3D port to the visualization device.



WARNING: To avoid trip hazards, route the cable properly.



2. Navigate to **Menu > System Settings > Alcon Vision Suite**.
3. Turn on **NGENUITY**.
4. Select **Save**.

Pair an Image-Guided System

The image-guided system is a suite of integrated surgical planning and digital guidance technologies. When connected, the system displays details from plans or guidance. To pair an image-guided system to the console, perform the following steps:

1. Navigate to **Menu > System Settings > Alcon Vision Suite**.
2. In **Guidance System Pairing**, select **Change Pairing**.
3. Select **Find**.
4. On the image-guided system, enter Pairing Mode (refer to the image-guided system manual).
5. If needed, select the image-guided system to pair.
6. Select **Pair**.
7. Select **Close**.
8. Select **Save**.

Pair a Microscope

To pair a microscope to the console, perform the following steps:

1. Navigate to **Menu > System Settings > Alcon Vision Suite**.
2. In **Microscope Pairing**, select **Change Pairing**.
3. Select **Find**.
4. On the microscope, enter Pairing Mode (refer to the microscope manual).
5. If needed, select the microscope to pair.
6. Select **Pair**.
7. Select **Close**.
8. Select **Save**.

Pair a Remote

The console supports 1 remote at a time. To pair a remote to the console, initiate the pairing feature on both devices to have the console and remote search for each other:

1. Select **Menu > System Settings > Connections**.
2. Turn on **Bluetooth**.
3. Select **Change Pairing**. The remote generates a quick beep every 5 seconds and the backlighting blinks to indicate it is in pairing mode.
4. On the remote, hold both the **<Previous>** and **<Next>** buttons for at least two seconds.
5. Select **Pair**.

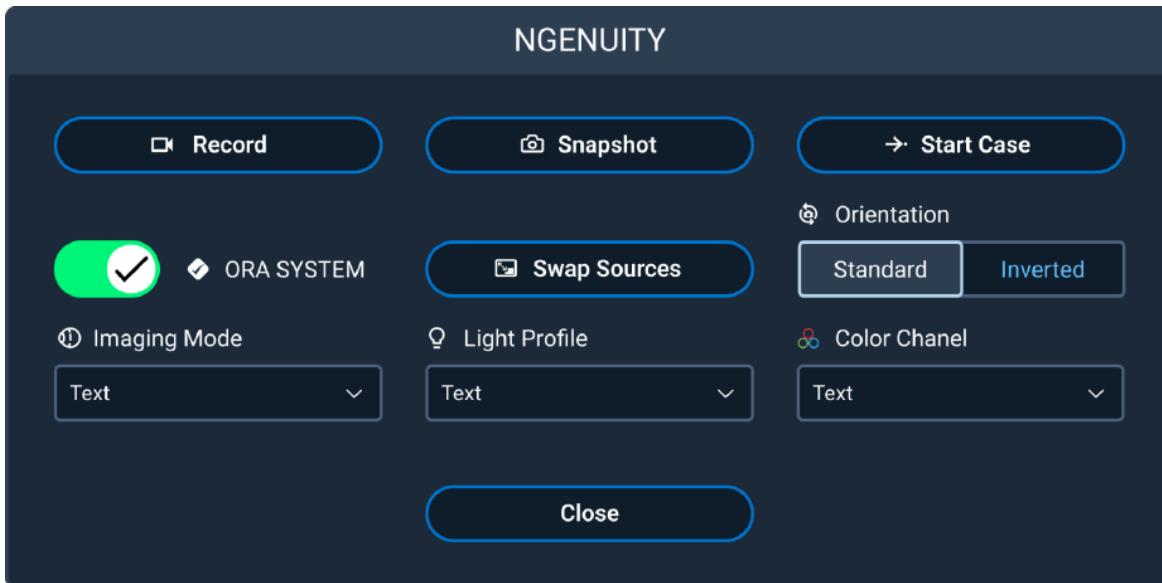
NOTE: If a remote is already paired, this button changes to Unpair. Select it to unpair that remote with the console. The remote quickly beeps three times.

6. If the console detects multiple remotes, select the appropriate one. When the pairing is successful, the remote slowly beeps two times.
7. Select **Save**.

Operate a Connected 3D Visualization System

The console can perform select functions and display information from a connected 3D visualization system (see [Connect a Visualization System](#) on page 184).

1. Select the 3D visualization button to open the NGENUITY dialog box.



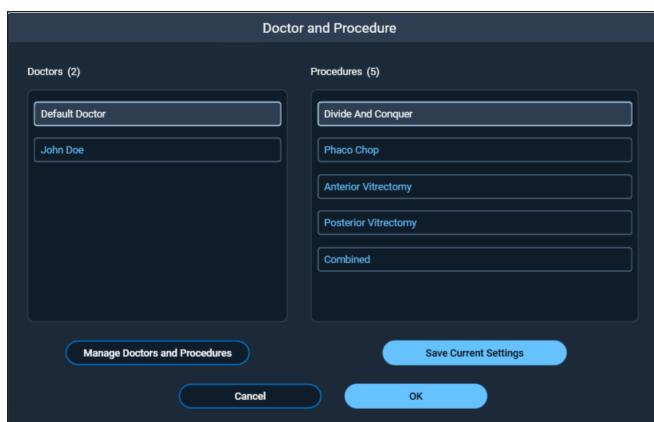
NGENUITY Dialog Box

2. Configure the display settings of the 3D visualization system by adjusting the following features:
 - ORA SYSTEM™ toggle** – Adds video from a connected image-guided system when enabled. The video appears in a PiP (picture-in-picture) or split screen view. Which screen it appears in depends on the 3D visualization system settings.
 - Swap Source button** – Switches the primary and secondary videos displayed on a split screen.
 - Camera Orientation buttons** – Rotates the camera video 180°.
 - Imaging Mode drop-down menu** – Changes the current imaging mode (consists of preset settings for camera orientation, light profile, and color channel).
 - Light Profile drop-down menu** – Changes color correction settings for different illumination sources.
 - Color Channel drop-down menu** – Changes the current color channel to enhance specific details within an image as needed.

3. Operate the 3D visualization system with the following controls:
 - a. If desired, select **Record** to record video of the visualization screen. The button label changes to Stop Recording.
 - b. Select **Start Case** to start the case on the 3D visualization system. The button label changes to End Case.
 - c. If desired during the case, select **Snapshot** to capture a static image of the 3D visualization screen.
 - d. When finished with the case, select **End Case**.
 - e. If the 3D visualization system is recording, select **Stop Recording** to stop recording.

Doctor Profile and Procedure Management

To manage doctor profiles and procedures stored on the console, select the active account and then select **Manage Doctors and Procedures**.



Manage Doctors and Procedures Button

Profile Management



List of Available Users and Management Options

- 1 Profile List** – Displays the list of available doctor profiles on the console.
- 2 Add Profile button** – Adds a new profile based on default values.
- 3 Rename Profile button** – Edits the name of the selected profile.
- 4 Copy Profile button** – Duplicates the selected profile, including user preferences.
- 5 Delete Profile button** – Removes the selected profile from the console.

Create New Profiles with Default Settings

1. Select + under Doctors:
2. Enter a profile name.
3. Select **OK**.

Duplicate Profiles

1. Select a profile to copy.
2. Select the **Copy** icon.
3. Enter a new profile name.
4. Select **OK**.

Delete a Profile

1. Select a profile to delete.
2. Select **Delete**.
3. Select **OK**.

Rename Profiles

1. Select a profile to rename.
2. Select the **Rename** icon.
3. Enter a new name.
4. Select **OK**.

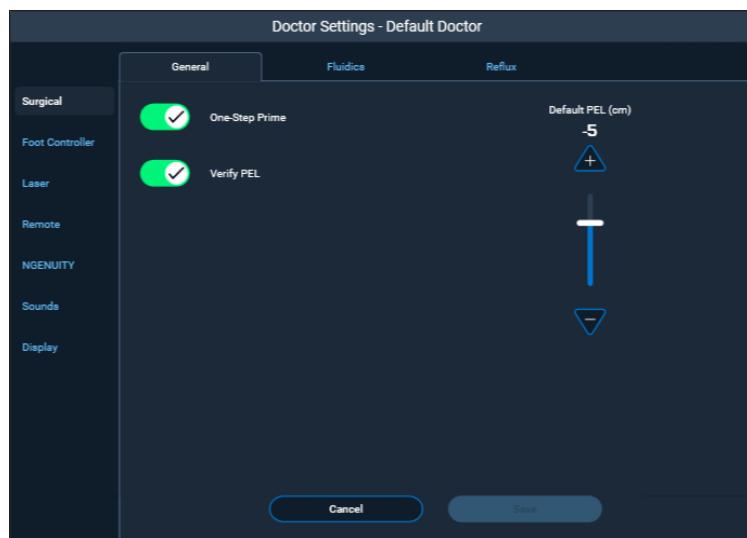
User Preferences

User preferences are set through the profile doctor settings. The settings include display brightness, foot controller behavior, laser preferences (laser model only), and audio volume. To change these settings, select the current profile > **Manage Doctors and Preferences** > **Doctor Settings**. When all changes are made, select **Save**.

Profile Surgical Preferences

General tab

The General tab includes controls to set the default value of certain console features. This includes various fluidics features and PEL behavior.

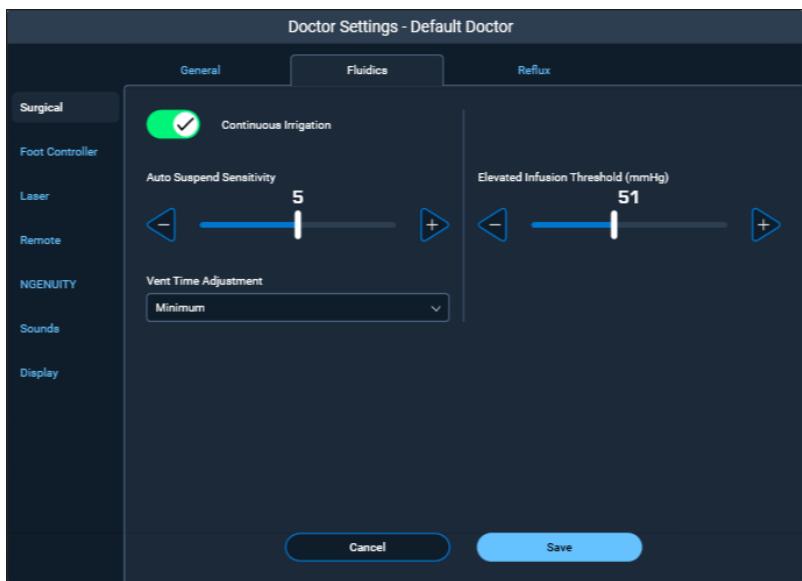


The General tab includes the following controls:

- **One Step Prime toggle** – Automatically combines FMS priming with handpiece priming and testing.
- **Verify PEL toggle** – Determines whether the console automatically displays the Verify PEL dialog box after priming and testing.
- **Default PEL slider** – Starts the PEL offset at the specified value.

Fluidics tab

The Fluidics tab in the Surgical category includes default settings for various fluidics behavior.

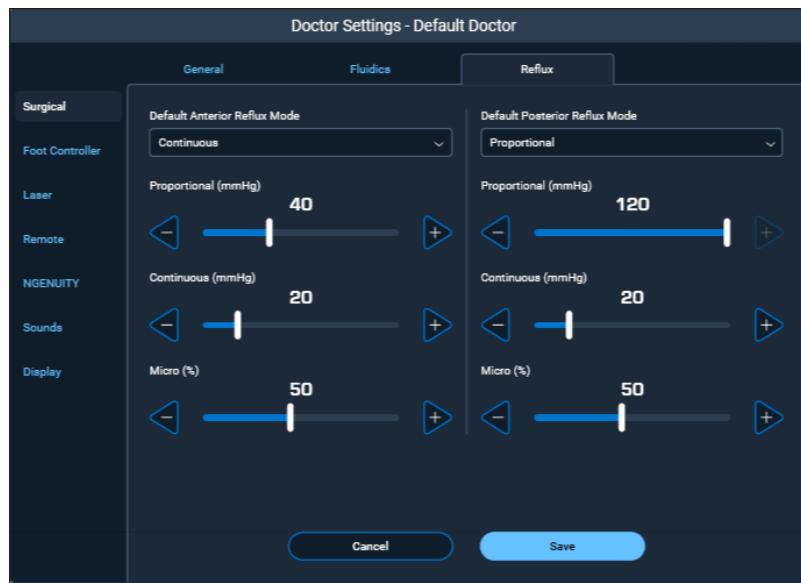


The Fluidics tab includes the following controls:

- **Elevated Infusion Threshold slider** – Allows the user to specify the value at which the infusion is considered elevated. When the current infusion setting equals or exceeds the specified value, the elevated infusion timer starts (liquid and air).
- **Continuous Irrigation toggle** – Determines if the console automatically enables or disables the continuous irrigation feature (see [Continuous Irrigation](#) on page 127).
- **Vent Time Adjustment drop-down menu** – Adjusts the degree of venting pressure at the handpiece tip that is adjusted in response to a vent (during transition from treadle range 2 to 1). Minimum (default) provides unmodified venting performance. Medium and Max increase the net pressure experienced at the handpiece tip after a vent.
- **Auto Suspend Sensitivity slider** – Determines when to automatically turn off continuous irrigation when the handpiece is removed from the eye.

Reflux tab

The Reflux tab in the Surgical category allows the user to change certain preferences related to the reflux during surgery.



The Reflux tab includes the following controls:

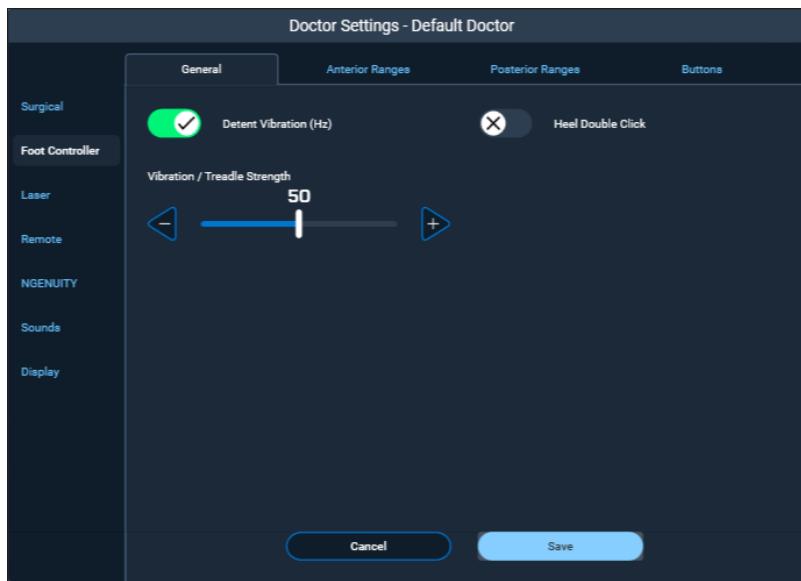
- **Default Anterior Reflux Mode drop-down menu** – Determines which reflux mode is default for anterior steps.
- **Default Posterior Reflux Mode drop-down menu** – Determines which reflux mode is default for posterior steps.
- **Pressure sliders**
 - **Proportional** – Determines the set point for proportional reflux.
 - **Continuous** – Determines the set point for continuous reflux.
 - **Micro** – Determines the set point for micro reflux for each probe specified in this field.

Profile Foot Controller Preferences

The foot controller preferences include options to define foot controller behavior and treadle ranges for different surgery types. To change the settings, select the applicable tab.

General Preferences

The General tab defines treadle detents and heel click numbers.

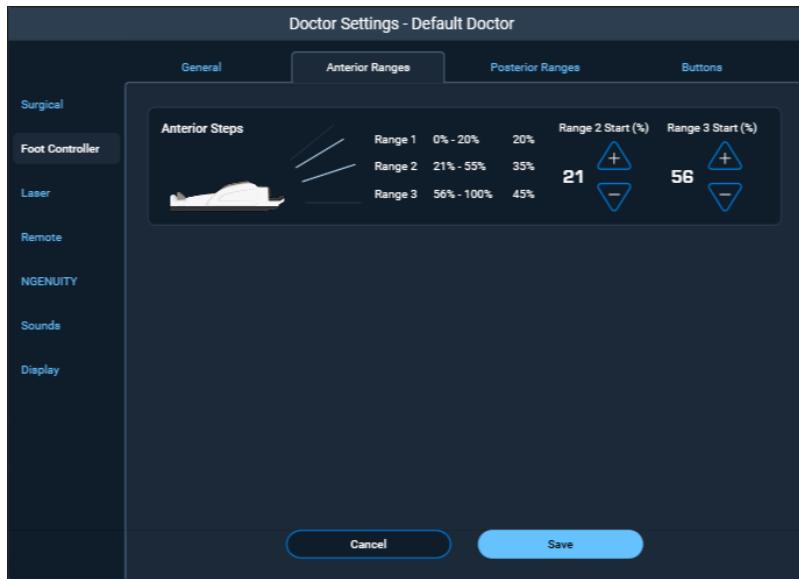


The General tab includes the following controls:

- **Detent Vibration Strength slider** – Sets the strength of vibration between treadle ranges.
- **Detent Vibration toggle** – Turns on or off vibration between treadle ranges.
- **Heel Double Click toggle** – Allows the user to enable or disable heel double-click functionality.

Anterior Range Preferences

The Anterior Range tab determines how far users have to push the treadle to enter ranges 2 and 3 during anterior procedures. The ranges are represented as a percentage of the total range of motion of the treadle. For example, 0% is the treadle at rest and 100% is the treadle fully depressed.

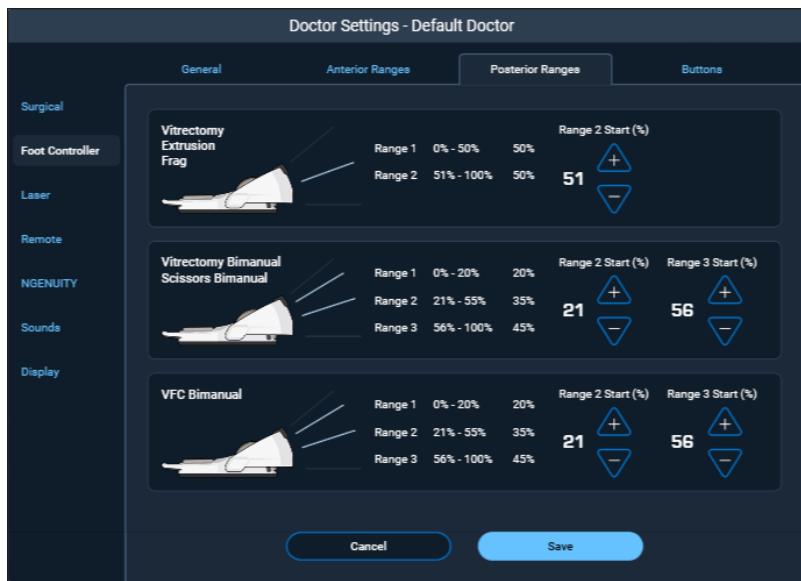


The Anterior Ranges tab in the Foot Controller category includes the following controls:

- **Range 2 Start** – Defines the ending point of treadle range 1 and the starting point of treadle range 2.
- **Range 3 Start** – Defines the ending point of treadle range 2 and the starting point of treadle range 3.

Posterior Range Preferences (VCS Models Only)

The Posterior Range tab determines how far users have to push the treadle to enter certain ranges during posterior procedures. The ranges are represented as a percentage of the total range of motion of the treadle. For example, 0% is the treadle at rest and 100% is the treadle fully depressed.

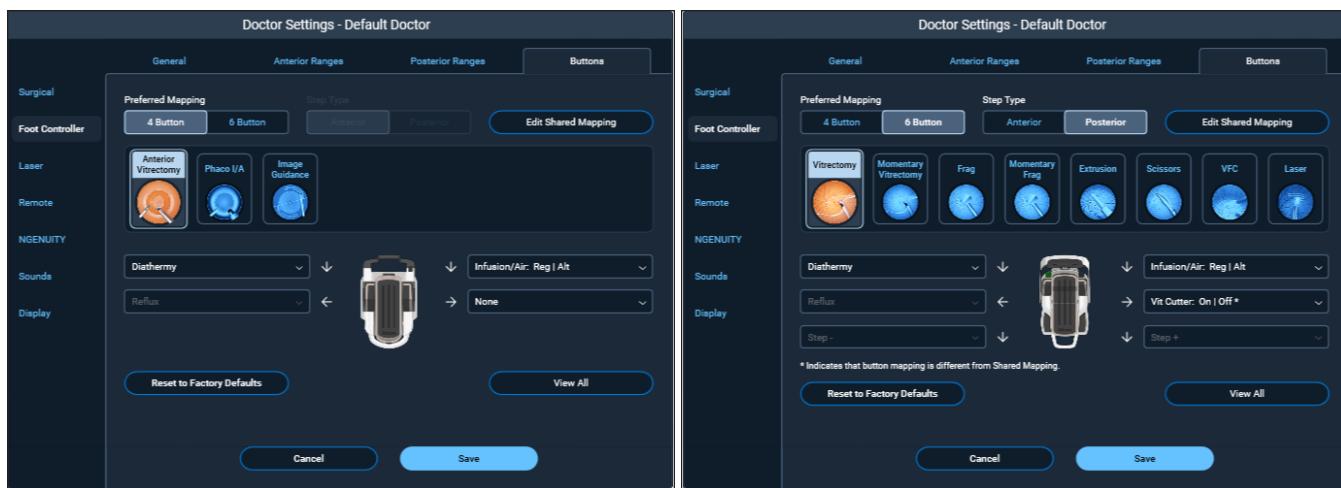


For each function, set the percent the treadle must be pressed to enter the applicable ranges. This may include the following controls:

- **Range 2 Start** – Defines the ending point of treadle range 1 and the starting point of treadle range 2.
- **Range 3 Start** – Defines the ending point of treadle range 2 and the starting point of treadle range 3.

Button Preferences

The Buttons tab determines the actions the foot controllers or buttons take when activated. Actions are assigned to the foot controller switches according to procedure step.



The Buttons tab in the Footswitch category includes the following controls:

- Preferred Mapping toggle** – Personalizes available controls for the applicable foot controller model. Select the model with the corresponding number of buttons on it.
- Step Type toggle** – Associates the selected button actions to the selected step.
- Step list buttons** – Select the step for button mapping.
- Edit Shared Mapping button** – Opens a dialog box to configure button actions across all steps. This overrides the function of buttons set to **None** with a more useful one for a specific step. For example, the primary function of the left vertical button is diathermy. For phaco, which does not use diathermy, the button can instead be set to a phaco function such as Irrigation Pressure +.
- Action drop-down menus** – Assigns the selected action to the corresponding button.

NOTE: The available actions may be different for certain steps. In general, note the following symbol definitions in action names:

- **+** = next or increase
- **-** = previous or decrease
- **+/-** = next or increase on press and release, or previous or decrease on press and hold

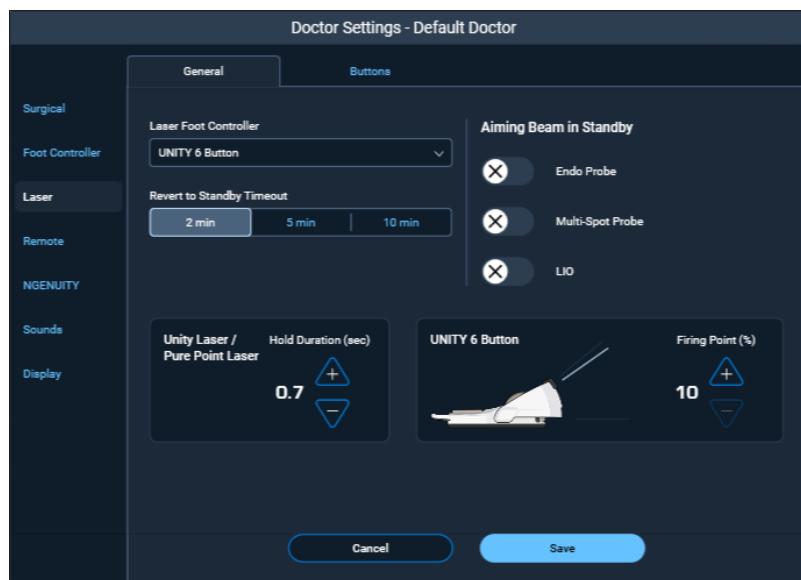
- Reset to Factory Defaults button** – Reverts all button associations to the factory default settings.
- View All button** – Displays button and action associations for all steps.

Laser Preferences (VCS Models with Optional Laser Only)

The Laser preferences determine laser foot controller settings and behavior. To make changes, select the appropriate tab.

General Laser Preferences

The General tab sets laser foot controller timing settings and treadle ranges.

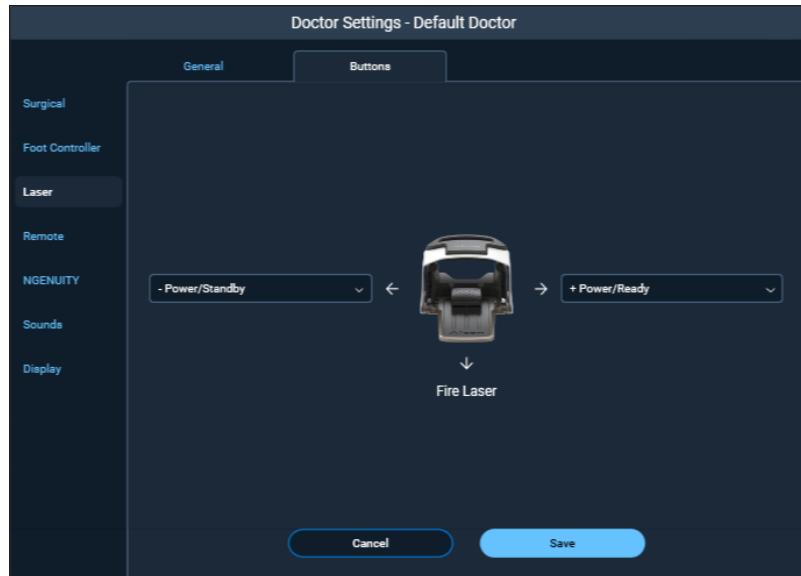


The General tab includes the following controls:

- Laser Foot Controller drop-down menu** – Selects the active laser foot controller.
- Revert to Standby Time buttons** – Sets duration of inactivity the console waits before switching to Standby mode.
- Laser Foot Controller Aiming Beam in Standby toggles** – Turns on the aiming beam in Standby mode for specified devices. Otherwise, the aiming beam turns on only in Ready mode.
- Hold Duration** – Sets the time required to hold a button before the laser transitions between Standby and Ready mode (0.7 s = default).
- Firing Point** – Sets the treadle position for firing the laser.

Laser Foot Controller Button Preferences

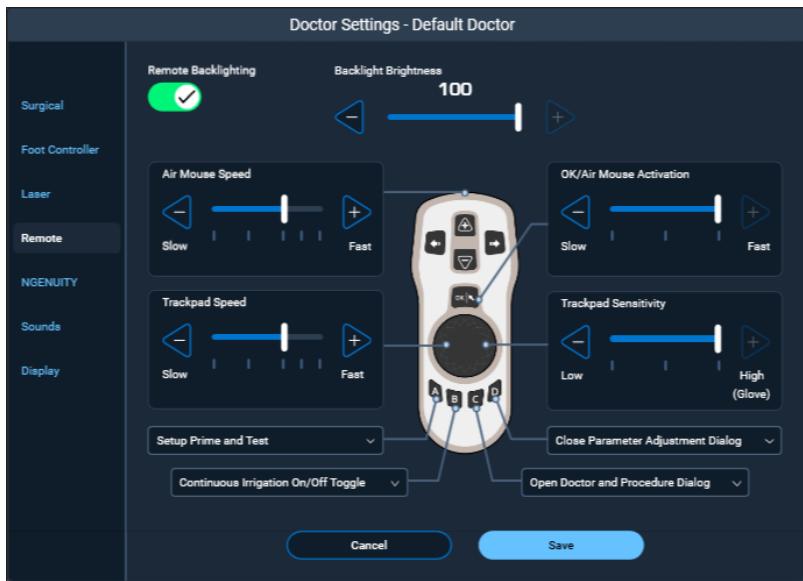
The Buttons tab determines the actions taken when the foot controller buttons are pressed.



The Buttons tab includes the **Button drop-down menus** which set the side button actions.

Remote Configuration

The Remote option configures the remote backlighting and programmable buttons.

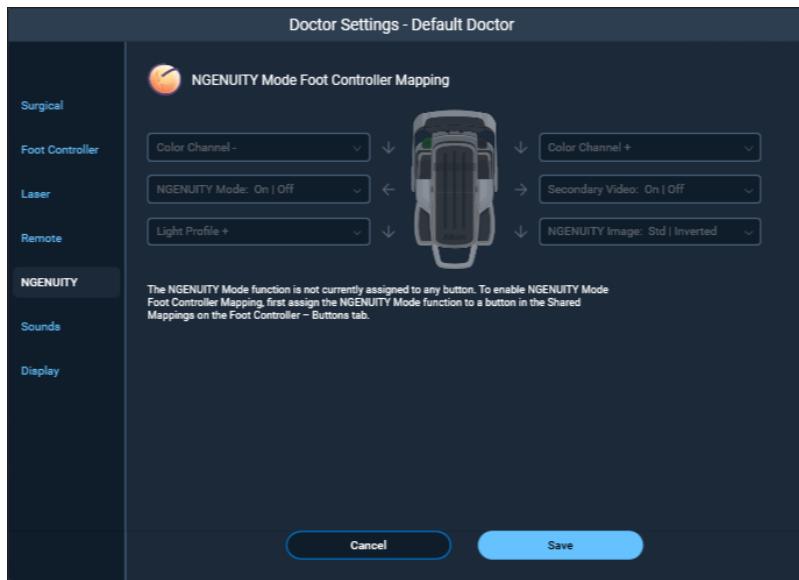


The Remote option includes the following controls:

- **Remote Backlighting toggle** – Illuminates the remote buttons.
- **Backlight Brightness** – Makes illuminated remote buttons dimmer (decrease) or brighter (increase).
- **Air Mouse Speed slider** – Adjusts the speed of the cursor when using the air mouse function.
- **OK/Air Mouse Activation slider** – Adjusts how quickly the OK button activates the air mouse function.
- **Trackpad Speed slider** – Adjusts the speed of the cursor when using the trackpad.
- **Trackpad Sensitivity slider** – Adjusts how sensitive the trackpad is when determining it is in use.
- **Programmable Button drop-down menus** – Assigns the remote button with the corresponding letter the selected action.

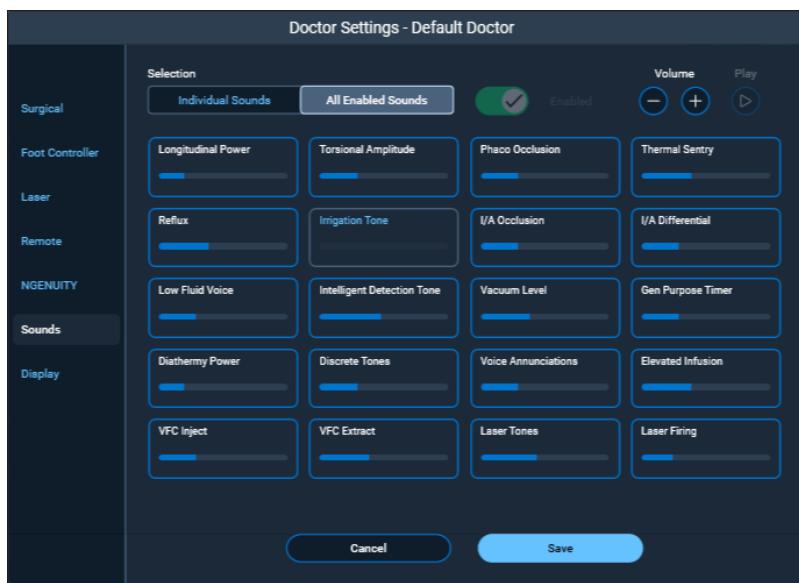
NGENUITY Foot Controller Mapping

The *NGENUITY* settings assign an action from a connected 3D visualization system to the foot controller buttons. To enable button assignment in this dialog box, navigate to **Foot Controller > Buttons** and assign **NGenuity Toggle** to a button.



Audio Indicator Preferences

The Sounds tab sets the volume level for tones and voice confirmations. To adjust the volume, first select **All Enabled Sounds** to adjust all indicators uniformly or **Individual Sounds** to adjust them independently.



Sounds Dialog Box

To adjust the volume for all audio indicators uniformly, perform the following steps:

1. Select **All Enabled Sounds**.
2. Either drag a slider handle or press + to increase or - to decrease the volume.

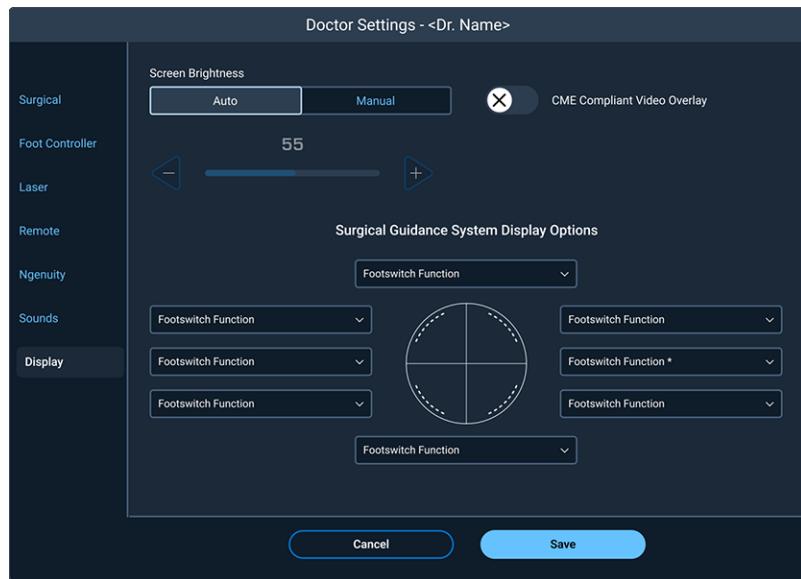
To adjust the volume for individual audio indicators, perform the following steps:

1. Select **Individual Sounds**.
2. Select a trigger.
3. Turn on **Enabled**.
4. Either drag a slider handle or press + to increase or - to decrease the volume.

To test the volume, perform the following steps:

1. Select **Individual Sounds**.
2. Select **Play**.

Display Settings



The Display settings include the following controls:

- **Screen Brightness slider** – Increase the handle to make the screen brighter or decrease the handle to make the screen dimmer.
- **CME Compliant Video Overlay toggle** – Displays the Alcon logo on the connected video overlay.
- **Surgical Guidance System Display Options drop-down menus** – Determines what information is displayed around the image with an image-guided system.

Procedure Management



List of Available Procedures and Management Options

- 1 Procedure List** – Displays the list of available doctor profiles on the console.
- 2 Add Procedure button** – Adds a new profile based on default values.
- 3 Rename Procedure button** – Edits the name of the selected profile.
- 4 Copy Procedure button** – Duplicates the selected profile, including user preferences.
- 5 Delete Procedure button** – Removes the selected profile from the console.

Create New Procedures from Default Procedures

1. Select + under Procedures:
 2. In the drop-down menu, select how the console audibly announces the procedure.
 3. To enter a different name, turn on the toggle under **Enter new name**.
- NOTE:** Entering a new name changes the audio announcement to Custom.
4. Select **Save**.

Copy Procedures to Other Profiles

1. Select procedures to copy.
 2. Select the **Copy** icon.
- NOTE:** If multiple procedures are selected, they can be copied only to different profiles.
3. Select a destination profile.
 4. Select **OK**.

Delete Procedures

1. Select the procedures to delete from the profile.
2. Select the **Delete** icon.
3. Select **Delete**.

Rename a Procedure

1. Select a procedure to rename.
2. If the current name is a default name, turn on the toggle under **Enter new name**.
3. Enter a new name.
4. Select **Save**.

Procedure Customization

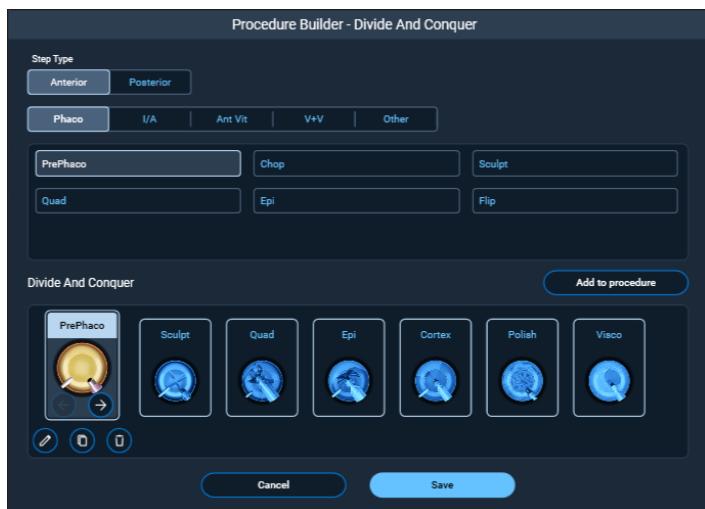
To customize or create unique sequences of surgical steps, use the Procedure Builder feature. It is available only from the Setup screen.

To access the feature, perform the following steps:

1. Select the current profile or procedures.
2. Select **Manage Doctors and Procedures**.
3. If needed, create a new procedure (see [Create New Procedures from Default Procedures](#) on page 205).
4. Select a procedure to customize.

NOTE: Procedure Builder is available only when one procedure selected.

5. Select **Procedure Builder**.



Add Steps to the Procedure

Available steps are organized by anterior or posterior target segments and function. To populate the procedure with steps, find applicable steps from the list and add them to the sequence.

NOTE: Available steps depend on the console model.

1. Select the step.
2. Select **Add to Procedure**.

Copy or Repeat Steps

Procedure Builder provides 2 ways to copy or repeat steps within a procedure: add the step again or copy the step. To add the step again, see [Add Steps to the Procedure](#) on page 206. However, the following steps describe how to copy steps already in the procedure.

1. Select a step.
2. Select the **Copy** icon. The step is duplicated and placed following the selected step.

Order the Steps

The console organizes steps from left to right. When steps are added to the sequence in Procedure Builder, they are added to the end of the order. To move steps earlier or later in the sequence, perform the following steps:

1. In the list of steps in the procedure, select the step to move.
2. Select the **left arrow** to move the step earlier in the sequence or the **right arrow** to move it later in the sequence.

Rename Steps

Procedure Builder supports renaming steps, but the audio announcement of the step changes to "custom." To rename a step, perform the following steps:

1. Select a step.
2. Select the **Edit** icon.
3. Turn on the toggle under **Enter new name**.
4. Enter a new name.
5. Select **Save**.

Remove Steps

To remove steps from the procedure, perform the following steps:

1. Select a step.
2. Select the **Delete** icon.
3. Select **Delete**.

Save Current Settings

The console does not automatically save changes made to surgery step controls or parameters. If changes are made and they are intended to be retained for future use, save the settings before changing them again or shutting down the console. The console adds an asterisk to the end of the profile name if it has unsaved changes. To save the changes, perform the following steps:

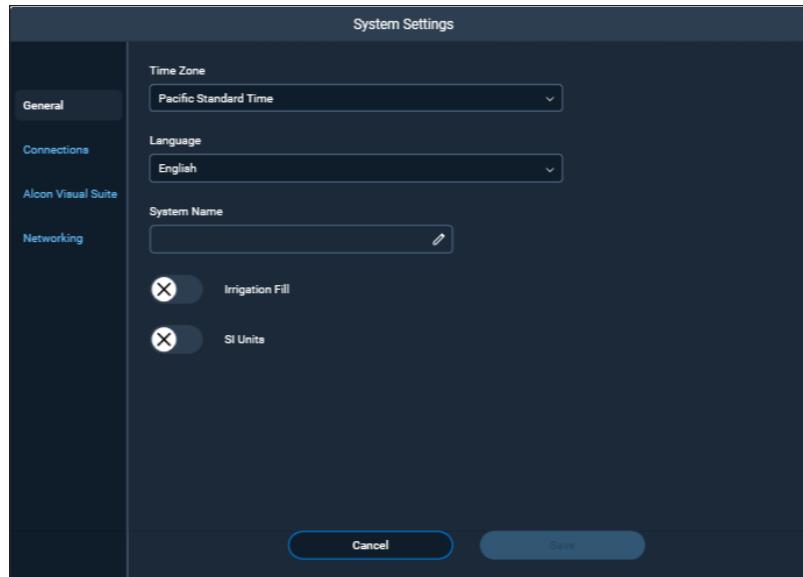
1. Select **Options**.
2. Select **Save Current Settings**.
3. Select **Save**.

System Settings

System settings apply to the entire console. They are not specific to the current profile or procedure. To apply changes to the system settings, select **Save** when finished with all settings.

General System Settings

The General System Settings tab adjusts the way things are displayed. To make changes, adjust the following controls.



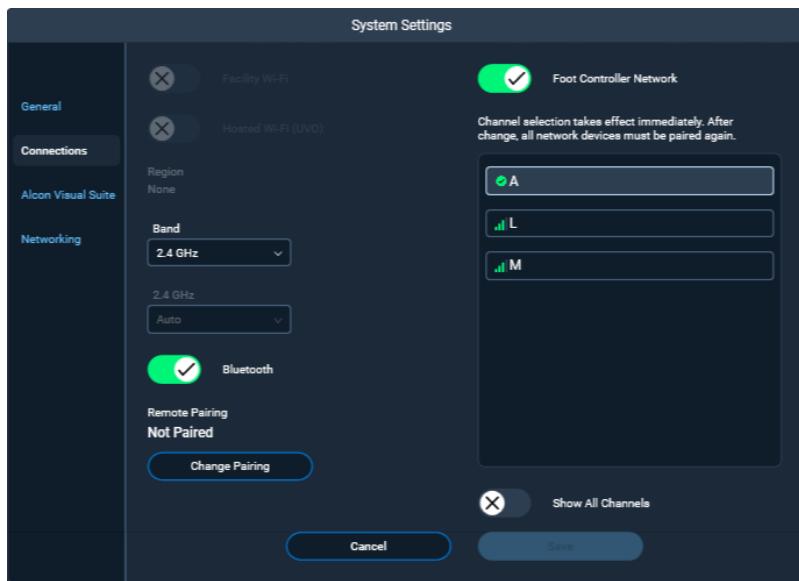
General Tab

- **Time Zone drop-down menu** – Adjusts the console clock to a specific time zone.
- **Language drop-down menu** – Changes the text language.
- **System Name** – Sets the console name to display over a network. To edit the name, select the **Edit** button.
- **Irrigation Fill toggle** – Activates irrigation without reflux to the hand instrument (fluid streams only from the irrigation port).
- **SI Units toggle** – Displays SI units of measurement.

Wireless Communication

The Connections tab defines how the console communicates wirelessly. To enable various wireless communication methods or sync foot controllers or the remote, change the following controls.

NOTE: To avoid conflicts with internal addressing, do not use addresses 172.16.54.0 through 172.16.54.255 on the external wired Ethernet or wireless connection.



Connections Dialog Box

- **Facility Wi-Fi toggle** – Allows connection to the facility wireless network.
- **Hosted Wi-Fi (UVO) toggle** – Allows wireless connection to other compatible Alcon devices (such as the *UNITY* Video Overlay).
- **Band buttons** – Define the hosted Wi-Fi frequency to use: 2.4 GHz or 5 GHz. If only Hosted Wi-Fi is enabled (and not Facility Wi-Fi), 5 GHz is preferred for Hosted Wi-Fi. If both Hosted and Facility Wi-Fi are enabled, Hosted Wi-Fi follows the Facility Wi-Fi band.
- **Channel drop-down menu** – Automatically finds a network channel for a 2.4 GHz band for Hosted Wi-Fi only. Facility Wi-Fi follows settings of connected facility network.
- **Bluetooth toggle** – Activates *Bluetooth* wireless technology (required for remote pairing).
- **Remote Pairing button** – Facilitates pairing with the remote (see [Pair a Remote](#) on page 186).
- **Footswitch Network toggle** – Allows the console to communicate with *UNITY* foot controllers.

- **Foot Controller Channel list** – Dedicates a wireless channel for a wireless foot controller. To sync a *UNITY* foot controller with the console, cradle the foot controller to the console.

NOTE: If the console channel changes, all foot controllers must be paired again.

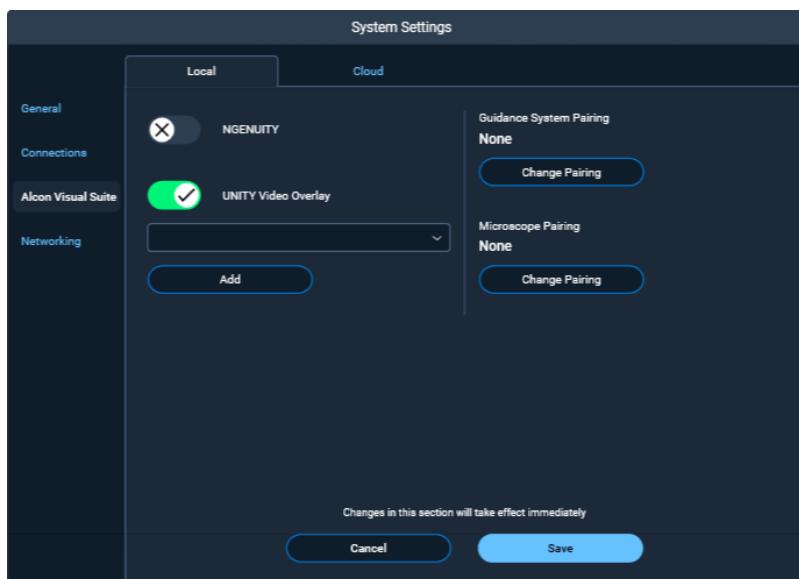
Signal Icon	Description
	Selected
	Good
	Okay
	Poor
	Conflict

- **Show All Channels toggle** – Shows or hides conflicted or poor channels.

Alcon Vision Suite Communication

Connection with Local Alcon Devices

The Local tab helps establish communication with other compatible Alcon devices located locally.

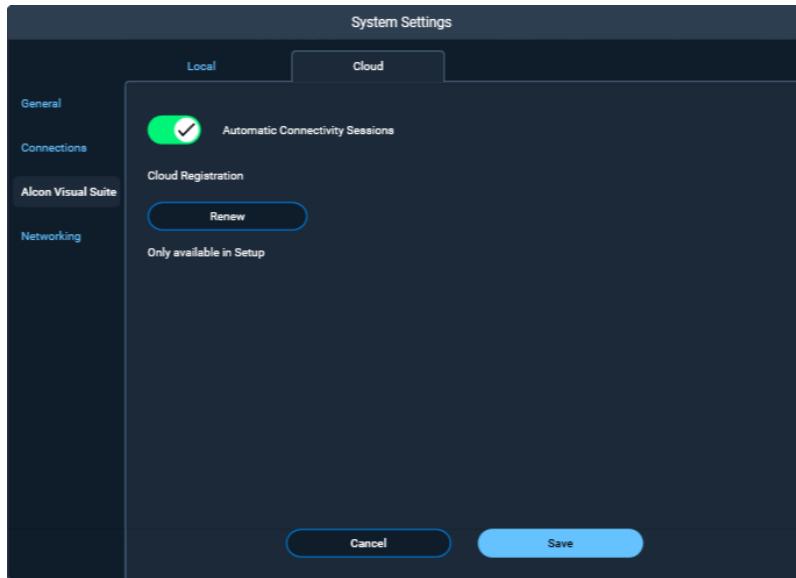


The Local tab includes the following controls:

- **NGENIUTY toggle** – Allows an Alcon 3D visualization system to connect to the console with a wired connection (see [Connect a Visualization System](#) on page 184).
- **UNITY Video Overlay toggle** – Allows a *UNITY* video overlay device to connect wirelessly to the console (see [Connect a Video Overlay](#) on page 183).
- **Guidance System Pairing button** – Pairs the console with a local image guidance system (see [Pair an Image-Guided System](#) on page 185).
- **Microscope Pairing button** – Pairs the console with a local microscope (see [Pair a Microscope](#) on page 185).

Connection with the Alcon Service Cloud

The Cloud tab establishes connection to the Alcon Service Cloud (see [Security Information](#) on page 215 for more details). Contact Alcon Technical Services for more information.

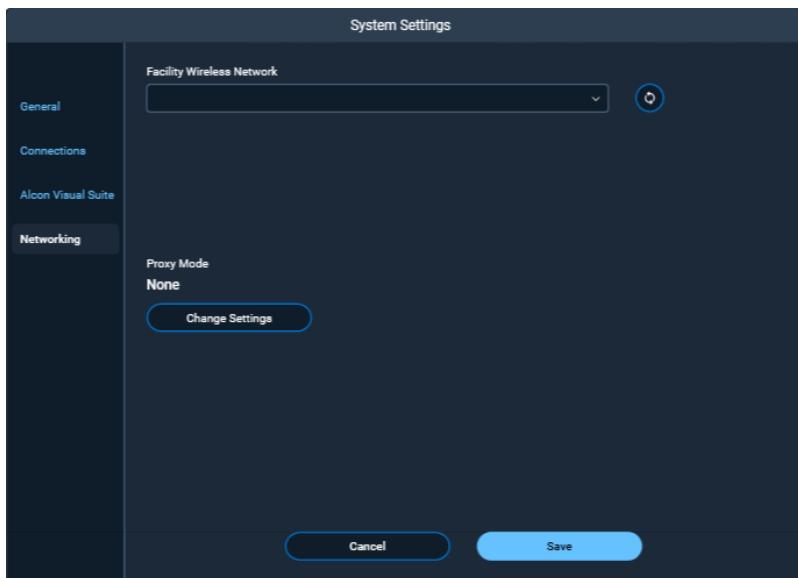


The Cloud tab includes the following controls:

- **Automatic Connectivity Sessions** – Allows for the Connectivity Session during setup.
- **Renew button** – Opens the Cloud Registration dialog box for registration during setup.

Network Settings

The Networking settings establish connection to the facility wireless network.



The Networking settings include the following controls:

- **Facility Wireless Network drop-down menu** – Displays found wireless networks. Select one to attempt to connect to it.
- **Refresh button** – Looks for wireless networks again. The new list of found networks populates in the Facility Wireless Network drop-down menu.
- **Password field** – Submits the network password if requested by the selected network.
- **Change Settings button** – Opens the Proxy Settings dialog box to set proxy details.

Hardware and Software Versions

To view current hardware or software versions of console modules, select **Menu > About**. To return to the previous screen, select **Close**.

Security Information

This section highlights the various cybersecurity risk management, controls, and lifecycle items for UNITY VCS/CS systems. For any questions or inquiries, contact product.security@alcon.com.

Terms and Definitions

Term	Definition
Control	Any safeguard or countermeasure deployed within a medical device to reduce the risk arising from a cybersecurity threat.
Cybersecurity bill of material (CBOM)	A list that includes but is not limited to commercial, open source, and off-the-shelf software and hardware components that are or could become susceptible to vulnerabilities (FDA-2018-D-3443 - Content of Premarket Submissions for Management of Cybersecurity in Medical Devices). Often, the term CBOM is used interchangeably with SBOM (software bill of materials)
Cybersecurity	Prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and nonrepudiation (CNSSI 4009-2015 NSPD-54/HSPD-23 NIST SP 800-37 Rev. 2).
CVE	Common vulnerabilities and exposures (CVE) - A list of records each containing an identification number, a description, and at least one public reference—for publicly known cybersecurity vulnerabilities. CVE Records are used in numerous cybersecurity products and services from around the world, including National Vulnerability Database (NVD).
Encryption	The process of converting the message from its plaintext to ciphertext.
FIPS 140-2	Federal Information Processing Standards-A US and Canadian government standard that specifies the security requirements for cryptographic modules that protect sensitive information.
Risk	Combination of the probability of occurrence of harm and the severity of that harm by a cybersecurity threat (EN ISO 14971).
RFID	Radio frequency identification (RFID) technology uses radio waves to identify objects.
Security controls	The set of product security controls that address security concerns.

Term	Definition
Security updates and patches	Minor system update intended to fix known bugs or security issues with minimal impact or change to system functionality, workflows, or user interface.
Vulnerability	A vulnerability is a weakness in an information system, system security procedures, internal controls, human behavior, or implementation that could be exploited by a threat (FDA-2015-D-5105 - Postmarket Management of Cybersecurity in Medical Devices).

Network Configurations and Wireless Security

The VCS console supports the following wireless security protocols:

- WPA3
- WPA3-Enterprise (recommended)
- WPA3-Enterprise with 192-bit mode
- WPA2-PSK (pre-shared key)
- WPA2-Enterprise (recommended)

These protocols are based on wireless protected access, but they may vary in encryption, protections, and authentication. Alcon recommends WPA2-Enterprise or WPA3-Enterprise for enhanced encryption, stronger protections, and secure handshakes used for authentication. In particular, the WPA3 variant offers the strongest security. For example, WPA3 requires the use of protected management frames (PMF) to protect against client and AP spoofing and some denial of service (DOS) attacks.

NOTE: Wired equivalent privacy (WEP) and Wi-Fi protected setup (WPS) are not supported.

For general cybersecurity practices, carefully consider proper network system segregation (such as firewall, network segmentation, partitioning mechanisms, and traffic segmentation). For firewall packet filter rules, Alcon recommends implementing a deny by default policy (deny any/any). This policy denies all traffic unless explicitly allowed. It can extend for both ingress (inbound) or egress (outbound) traffic. In addition, review and monitor all firewall logs.

Secure by Design Defaults

The system makes use of secure by default design principles for the various security controls implemented on the medical device. Secure by design default means that the system ships with the necessary security controls already implemented and activated. There is no need to enable security as it is built into the system as a default and cannot be deactivated. For example, out of the box the necessary inbound and outbound firewall policies, system hardening, selected encryption settings and recommended ciphers are used by default without the user having to manually configure anything.

NOTE: There may be some special cases where it may require some additional customization, but such settings will be mentioned directly within the user manual. An example of customization is importing and selected the security settings around a X.509 certificate. Generally, there is no need to enable security as it is built into as defaults.

Some examples of the types of security defaults are listed below.

- FIPS 140-2 Level 1 certification across the system-on-module (SOM) hardware throughout the product lifecycle and major board support package releases
- Wireless foot controller security mitigations to protect against spoofing, tampering, replay, man in the middle and other types of malicious attacks
- RFID security mitigations
- Interface security including USB, Ethernet, and other physical I/O ports
- Wi-Fi Security supporting WPA2-Personal, WPA2-Enterprise, WPA3-Enterprise and WPA3 Enterprise Suite B 192-bit
- Bluetooth pairing and communication security
- Operating System protections against malware and corruption
- Mitigation for network-based denial of service attacks
- Disabling of all unused networking ports, protocols, and services
- Inbound/outbound packet filtering on network connections
- Dedicated kiosk mode for the console host surgical applications
- Custom digital communication integrity checks between circuit boards
- Digitally signed software/firmware
- Secure communications based on transport layer security (TLS)
- Protection for doctor preferences and settings
- Basic input/output system (BIOS)/bootloader protections

Network Communications

The system is designed to communicate and establish network connections only to predefined known hosts. The system drops any incoming network traffic packets without a valid source address, expected destination port or incoming network traffic data received at an unexpected time.

If WPA2-Enterprise, WPA3-Enterprise or WPA3 Enterprise Suite B 192-bit is selected as the Wi-Fi security option, the hospital or HDO must have the infrastructure that supports this selection. This means the hospital or HDO must support the use of X.509 certificates and there needs to be an authentication server already set up. WPA2/WPA3 Enterprise requires an authentication server, often based on the remote authentication dial-in user service (RADIUS) protocol. RADIUS is an authentication, authorization, and accounting (AAA) protocol that uses UDP Port 1812 to establish connections and is a primary requirement for most managed networks in enterprise settings.

Software Bill of Materials

For each release, a software bill of materials (SBOM) is generated for the system and reviewed by the Alcon Product Security team. In addition to the SBOM, a vulnerability matrix has been created to identify and perform an additional risk assessment on any known common vulnerabilities and exposures (CVE).

NOTE: The terms SBOM and CBOM are used interchangeably.

Software Updates

The system performs patches and software updates through a central mechanism which validates the certificate-based digital signature of the software before installation to the target device. This mechanism allows Alcon to verify the authenticity and integrity of the software patch prior to any application. The system includes a software updater component that will handle the deployment of fully or semi-automated software updates but can also accommodate manual updates. Manual updates can also be performed by a qualified Alcon field service engineer on-site.

NOTE: Due to the surgical nature of the device a user will always need to choose when to install specific updates.

Security Logging and Audit Trail

For audit trail purposes, the system retains a security log of events for at least 90 days. The security log captures all relevant system usage associated with the active user, doctor file and service user activity and is protected from unauthorized modifications.

Decommissioning and End of Service Life

The system is securely decommissioned in accordance with NIST SP 800-88 "Guidelines for Media Sanitization." NIST SP 800-88 has minimum sanitization recommendations for clearing, purging and destruction of media.

Equipment platforms such as the UNITYVCS/CS are maintained and supported by Alcon through their technology life (see [Expected Service Life](#) on page 170) as defined by the agreed upon service agreement. During this period, security patches and software updates are provided by Alcon.

Beyond this period, procurement of system components and spare parts often become limited or unavailable due to technological advancements, supplier-initiated changes, and obsolescence. This also includes the consumables associated with this platform.

In Global Alcon markets, normally a twelve-to-eighteen-month period of "Limited Service" is provided immediately prior to the planned end of service life date of any product model. This is to assure an adequate time frame within which to notify users of the system that the product support period is expiring and to clear any pending service contracts.

Disposal

The system uses natural resources for its production and operation. It may also contain hazardous substances which could have potential effect on the environment and human health if disposed of improperly. To avoid such substances affecting the environment or people and to promote natural resource conservation, please act in accordance with these instructions.

- Contact Alcon for available return or collection options through Alcon or other providers. Many materials can be reused or recycled, even on end-of-life systems.
- Collect waste equipment separately. Do not discard it as unsorted municipal waste. For information on local collection, reuse, or recycle programs, please contact your local or waste administration. Additionally, please ensure disposal practices comply with all local, regional, and national waste regulations.

NOTE: The WEEE symbol indicates waste electric and electronic equipment require separate collection.

The console, 6-button foot controller, and 4-button foot controller contain Lithium-ion (Li-ion) batteries. Contact Alcon Technical Services to service these batteries. To dispose of them, follow all local, regional, and national waste regulations. To remove the batteries from the remote, see [Remote Battery Replacement](#) on page 172.

! **WARNING:** For all people in contact with the console and accessories, practice universal precautions to help prevent exposure to blood-borne pathogens and other potentially infectious materials. If the status of encountered blood or body fluids or tissue is unknown, handle the material in accordance with OSHA or other applicable guidelines as if it is infectious.

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.

This warranty does not cover damage resulting from service repair or other alteration by any person other than an Alcon-authorized service person, and any warranties provided by Alcon with respect to this equipment shall become void and of no further force and effect if this equipment is serviced by anyone other than Alcon-authorized service personnel. In particular, Alcon shall have no obligation to replace, repair or credit customer's account for the cost of the equipment, which has been subject to service or other alteration by persons other than Alcon-authorized service personnel.

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.

Accessories and Parts

This section includes a list of Alcon-approved accessories and replacement items. Use of non-approved accessories is not permitted.

 **WARNING:** The console, accessories, and corresponding Alcon consumables constitute a complete surgical 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 system under a service contract, could result in the voidance of the contract and invoicing at prevailing hourly rates.

Contact the Alcon Sales department for in-service information prior to initial use of accessories or packs. Also, contact the Sales department for additional information regarding parts and approved equipment.

Method	USA Sales Department Contact	International Sales Department Contact
Phone	(800) 862-5266 or (817) 293-0450 Ask for customer service	
Write	Alcon Laboratories, Inc. 6201 South Freeway Fort Worth, TX 76134-2099	Please contact a local Alcon Sales office.

System Accessories and Parts

Consoles

Part Description	Part Number
UNITY VCS console	8065000296
UNITY CS console	8065000297
Laser kit	8065000243
Reconstitution rack	8065000400
UNITY VCS/CS dust cover	8065000405
UNITY VCS/CS display cover	8065000404
UNITY monitor cover	8065000390
Large tray cover	8065000450
Small tray cover	8065000451
USB flash drive	8065000401
Air hose hook	8065000403

Trays

Part Description	Part Number
Large tray with cover	8065000115
Large tray cover	8065000391
Small tray with cover	8065000114
Small tray cover	8065000418

Foot Controllers

Part Description	Part Number
UNITY 6-button foot controller	8065000298
UNITY 4-button foot controller	8065000299
UNITY laser foot controller	8065000440
Wired <i>Centurion</i> foot controller	8065751762
<i>Constellation</i> foot controller	8065750977
PurePoint foot controller	8065000301
UNITY, Centurion, Constellation foot controller adapter cable	8065752948

Remotes

Part Description	Part Number
UNITY Remote	8065000246
Remote control aseptic transfer pouch	8065000388

Irrigating Solution Bags

BSS™ Irrigating Solution Bags, 500 ml

Local Number	Global Number
100070168	0007950176
100010849	0007950179
100102252	0007950183
100070169	0007950184
100102253	0007950185
100081285	0007950186
100102254	0007950187
100064617	0007950188
100070170	0007950192
100070171	0007950200
100131416	0007950203
100176241	0007950206
100220805	0007950208
100231936	0017950061
100237828	0017950063
100237829	0017950064
100268862	0017950068

BSS PLUS Irrigating Solution Bags, 500 ml

Local Number	Global Number
100070180	0008000086
100010906	0008000095
100102289	0008000096
100081307	0008000103
100294836	0008020015
100233165	0008200001
100233594	0008200002
100237976	0008200007

Procedure Packs

Combined Procedure Packs

The *UNITY* VCS model supports combined packs with accessories for both anterior and posterior procedures.

Vitrectomy Probe (Beveled)	Entry System (4 mm)	Infusion Cannula	Light Probe	Sleeve Size	Tip Type (0.9 mm)	Catalog Number
23 Ga, 10K	23 Ga, <i>Constellation</i>	23 Ga	23 Ga standard	Ultra	None	8065000361
23 Ga, 10K	23 Ga, <i>Constellation</i>	23 Ga	23 Ga standard	Ultra	30° balanced	8065000362
23 Ga, 10K	23 Ga, <i>Constellation</i>	23 Ga	23 Ga standard	Ultra	45° balanced	8065000363
25+, 10K	25 Ga, <i>Constellation</i>	25 Ga	25+ standard	Ultra	None	8065000366
25+, 10K	25 Ga, <i>Constellation</i>	25 Ga	25+ standard	Ultra	30° balanced	8065000367
25+, 10K	25 Ga, <i>Constellation</i>	25 Ga	25+ standard	Ultra	45° balanced	8065000368
25+™, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, standard	Ultra	None	8065000376
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, standard	Ultra	30° balanced	8065000377
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, standard	Ultra	45° balanced	8065000378
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, standard	Ultra	30° hybrid	8065000379
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, standard	Ultra	45° hybrid	8065000380
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, wide	Ultra	None	8065000381
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, wide	Ultra	30° balanced	8065000382
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, wide	Ultra	45° balanced	8065000383
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, wide	Ultra	30° hybrid	8065000384
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, wide	Ultra	45° hybrid	8065000385
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, wide	Ultra	30° balanced	8065000484
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, wide	Ultra	45° balanced	8065000485

Vitrectomy Probe (Beveled)	Entry System (4 mm)	Infusion Cannula	Light Probe	Sleeve Size	Tip Type (0.9 mm)	Catalog Number
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, wide	Ultra	30° hybrid	8065000486
25+, 30K	25 Ga, <i>UNITY</i>	25 Ga	25+, wide	Ultra	45° hybrid	8065000487
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, standard	Ultra	30° balanced	8065000516
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, standard	Ultra	45° balanced	8065000517
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, standard	Ultra	30° hybrid	8065000518
27+DS, 30K	27 Ga, <i>UNITY</i>	27 Ga	27+DS, standard	Ultra	45° hybrid	8065000519
25+, 30K	25 Ga, <i>Constellation</i>	25 Ga	25+, standard	Nano	None	8065000805
25+, 30K	25 Ga, <i>Constellation</i>	25 Ga	25+, standard	Ultra	30° balanced	8065000806
25+, 30K	25 Ga, <i>Constellation</i>	25 Ga	25+, standard	Ultra	45° balanced	8065000807
25+, 30K	25 Ga, <i>Constellation</i>	25 Ga	25+, standard	Ultra	None	8065000808
25+, 30K	25 Ga, <i>Constellation</i>	25 Ga	25+, wide	Ultra	30° balanced	8065000812
25+, 30K	25 Ga, <i>Constellation</i>	25 Ga	25+, wide	Ultra	45° balanced	8065000813
27+DS, 30K	27 Ga, <i>Constellation</i>	27 Ga	27+DS, standard	Ultra	30° balanced	8065000818
27+DS, 30K	27 Ga, <i>Constellation</i>	27 Ga	27+DS, standard	Ultra	45° balanced	8065000819
27+DS, 30K	27 Ga, <i>Constellation</i>	27 Ga	27+DS, standard	Ultra	None	8065000820
27+DS, 30K	27 Ga, <i>Constellation</i>	27 Ga	27+DS, wide	Ultra	30° balanced	8065000821
27+DS, 30K	27 Ga, <i>Constellation</i>	27 Ga	27+DS, wide	Ultra	45° balanced	8065000822

Anterior Procedure Packs

The UNITY VCS and CS models support anterior packs with different sleeve sizes, tip angles, and tip types.

Description	Catalog Number
UNITY anterior pack basic	8065000320
UNITY anterior pack micro tipless	8065000321
UNITY anterior pack ultra tipless	8065000322
UNITY anterior pack nano tipless	8065000323
UNITY anterior pack micro 30 balanced	8065000335
UNITY anterior pack micro 45 balanced	8065000336
UNITY anterior pack micro 30 hybrid	8065000337
UNITY anterior pack micro 45 hybrid	8065000338
UNITY anterior pack ultra 30 balanced	8065000339
UNITY anterior pack ultra 45 balanced	8065000340
UNITY anterior pack ultra 30 hybrid	8065000341
UNITY anterior pack ultra 45 hybrid	8065000342
UNITY anterior pack nano 30 balanced	8065000343
UNITY anterior pack nano 45 balanced	8065000344
UNITY anterior pack nano 30 hybrid	8065000345
UNITY anterior pack nano 45 hybrid	8065000346

Posterior Procedure Packs

The *UNITY* VCS supports the following vitrectomy packs with different gauges and cut speeds.

Description	Catalog Number
<i>UNITY TOTALPLUS</i> posterior pack 23G 10K	8065000329
<i>UNITY</i> posterior pack 25 short 10K	8065000332
<i>UNITY</i> posterior pack 25+ 10K	8065000330
<i>UNITY</i> posterior pack 25+ 30K	8065000331
<i>UNITY</i> posterior pack 25 Short 10K	8065000332
<i>UNITY</i> posterior pack 27+ 10K wide angle	8065000333
<i>UNITY</i> posterior pack 27+ 30K wide angle	8065000334
<i>UNITY</i> posterior pack 25+ 10K wide angle	8065000477
<i>UNITY</i> posterior pack 25+ 30K wide angle	8065000478
<i>UNITY</i> posterior pack 25+DS 30K	8065000480
<i>UNITY</i> posterior pack 27+DS 30K	8065000792
<i>UNITY</i> posterior pack 25+DS 30K wide angle	8065000794

Anterior Segment Accessories

Standalone Ultrasonic Accessories

Part Description	Part Number
UNITY 4D Phaco handpiece	8065000315
Centurion System Active Sentry handpiece	8065752914
TurboHex wrench	8065740749

IA Accessories

Disposable IA Handpiece Sets

Part Description	Part Number
Polymer <i>Intrepid</i> TM bimanual IA set	8065751922
Polymer <i>Intrepid</i> coax IA conical straight handpiece	8065752144
Polymer <i>Intrepid</i> coax IA conical angled handpiece	8065752145
Polymer <i>Intrepid</i> coax IA conical curved handpiece	8065752146
Polymer <i>Intrepid</i> transformer IA handpiece	8065752885
<i>Ultraflow</i> TM bimanual IA disposable set - textured	170.71
<i>Ultraflow</i> bimanual IA disposable set - polished	170.72

Reusable IA Handpieces

Part Description	Part Number
<i>Ultraflow</i> II IA handpiece	8065751795

IA Tips

Tip	Straight	Bent	45° Angled	Curved
Polymer IA tip, disposable	8065751510		8065751511	8065751512
<i>Intrepid</i> metal IA tip, 0.3 mm (reusable)	8065751012	8065751013		

IA Kits

Infusion Sleeve Small Parts Kits	Part Number
0.9 mm micro small parts kit	8065750159
Ultra small parts kit	8065752900
Nano small parts kit	8065000470

Anterior Vitrectomy Kit

Pack	23 Ga	25+
Anterior vitrectomy pack	8065753167	8065753168

Posterior Segment Accessories**Posterior Vitrectomy Standalone Probes**

Probes	23 Ga	25 Ga	27 Ga
<i>Hypervit</i> 30K		8065753179 (25+)	8065000250 (27+DS)
<i>Ultravit</i> 10K	8065753174	8065753175 8065000018 (25+ short) 8065753176 (25+)	8065753177

Infusion Cannulae

Infusion Cannula	25 Ga	27 Ga
Alcon infusion cannula (for 4 mm and 6 mm entry systems)	8065751459	8065752173 (27+)
<i>UNITY</i> infusion cannula (for 3 mm entry systems)	8065000395 (short)	8065000396 (short)
Sclerotomy or infusion 3.2 mm set	8065751706 (short)	

Entry Systems

Entry System	23 Ga	25 Ga	27 Ga
UNITY entry systems, 3 mm (short)		8065000349 (3 count)	8065000350 (3 count)
UNITY entry systems, 4 mm		8065000355 (1 count) 8065000352 (3 count)	8065000356 (1 count) 8065000353 (3 count)
UNITY entry systems, 6 mm		8065000358 (1 count)	8065000359 (1 count)
EDGEPLUS™ valved entry system, 4 mm	8065751585 (1 count) 8065751657 (3 count)	8065751586 (1 count) 8065751658 (3 count)	806575169 (27+, 3 count)
EDGEPLUS valved entry system, 6 mm	8065751800 (1 count) 8065751801 (3 count)	8065751782 (1 count) 8065751778 (3 count)	

Light Probes

Light Probes	23 Ga	25 Ga	27 Ga
Straight endoilluminator	8065750972	8065751441	8065751701 8065000256 (27+)
Straight endoilluminator (short)		8065751705	
Sapphire wide angle illuminator	8065751184	8065751185 8065751486	8065000253 (27+DS)
Illuminated membrane pik	8065751576	8065751572	
Chandelier lighting system		8065751577	8065000252

Extrusion Accessories

Extrusion Handpieces

Handpieces	23 Ga	25 Ga	27 Ga
Advanced Backflush blunt tip, DSP	337.85	337.83	337.87 (27+)
Advanced Backflush soft tip, DSP	337.86	337.84	337.88 (27+)

Extrusion Tip Cannulae

Tips	23 Ga	25 Ga	27 Ga
Soft tip cannula	8065149527	8065149530	8065149529 (27+)
Soft tip cannula (green)	8065149523	8065149525	

Fragmentation Accessories

Fragmentation Handpiece

Handpiece	Part Number
OZil fragmentation handpiece	8065000215

Fragmentation Packs

Pack	20 Ga	22 Ga
Fragmentation pack	8065000429	8065000125
Constellation fragmentation pack	8065750958	

Pneumatic Handpieces

Handles

Handle	Part Number
<i>Constellation</i> pneumatic handpiece, DSP	725.03

Forcesps

GRIESHABER™ Advanced DSP Tip	23 Ga	25 Ga	25+	27+
<i>MAXGrip1</i> forceps	723.13	725.13	725.13P	727.13
End grasping forceps	723.43	725.43	725.43P	727.43
ILM forceps	723.44	725.44	725.44P	727.44
Asymmetrical forceps	723.45	725.45	725.45P	
Serrated forceps	723.47	725.47	725.47P	
<i>Finesse™ Sharkskin™</i> ILM forceps	723.88		725.88P	727.88

Scissors

GRIESHABER Advanced DSP Tip	23 Ga	25 Ga	25+	27+
Curved scissors	723.52	725.52	725.52P	
Straight scissors				727.53
Vertical scissors	723.26			

VFC Syringes and Accessories

Pack or Vial	Part Number
High performance VFC pack	8065000393
<i>Constellation</i> VFC Pak	8065750957
8.5 ml <i>Silikon1</i> 1000 oil vial	8065601187

Other Vitrectomy Consumables

Product	Part Number
<i>UNITY</i> infusion (FA/X) manifold	8065000389

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Compatible Laser Accessories



WARNING: Use only laser delivery accessories approved by Alcon.

Laser Probes

The VCS console model with the optional laser module is compatible with *TETRASpot*, *Constellation*, and *PurePoint* laser probes.

Laser Probe	23 Ga	25 Ga	27 Ga
Straight tip	8065750991	8065750978	
Flexible tip	8065751113	8065751114	8065751709
<i>TETRASpot</i> illuminated MultiSpot		8065000236	8065000237
Illuminated flex curved	8065751592	8065751593	8065000251
<i>VEKTOR</i> TM articulating Illuminated	8065752554	8065752555	8065752556

LIO Accessories

Part Description	Part Number
<i>PurePoint</i> LIO	8065752987
<i>PurePoint</i> LIO LED	8065753009
<i>PurePoint</i> LIO battery	8065753010
<i>PurePoint</i> LIO battery charger	8065753011

Protective Laser Filters

Part Description	Part Number
<i>Wild Heerbrugg</i> ¹ / <i>Leica</i> ¹ tethered safety filter	8065-5002-01
<i>LuxOR</i> with <i>QVUE</i> TM / <i>ZEISS</i> ¹ / <i>Moeller</i> ¹ tethered filter	8065750448
<i>Wild Heerbrugg</i> / <i>Leica</i> passive fixed filter	8065751502
<i>LuxOR</i> with <i>QVUE</i> / <i>ZEISS</i> / <i>Moeller</i> passive fixed filter	8065751051

Other laser Accessories

Accessory	Part Number
532 nm laser safety glasses (with case)	8065750107

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Diathermy Accessories

Probes and Accessories	Part Number
Straight iris forcep (without cable)	8065129501
Coaptation forceps (without cable)	8065129301
Curved iris bipolar forceps	8065129101
<i>Grieshaber</i> diathermy probe, 25 Ga	339.21
<i>Grieshaber</i> diathermy probe, 27+	339.31
<i>Kirwan</i> 1 12' (3.6 m) silicone (reusable)	10-6000V
<i>Kirwan</i> 28.6 mm disposable bipolar cable, 12' (3.6 m)	10-4000V
<i>Kirwan</i> Jewelers bipolar forceps, straight, insulated, 102 mm length, 0.4 mm tip	10-3002
<i>Kirwan</i> Iris bipolar forceps, curved, insulated, 86 mm length, 0.5 mm tip	12-1085
<i>Kirwan</i> bipolar pencil 4 and three-eighths" (11.1 cm), 18 Ga, straight tip	14-5000
<i>Kirwan</i> bipolar pencil 4 and one-fourth" (10.8 cm), 18 Ga, curved tip	14-5002
<i>Kirwan</i> bipolar pencil 5" (12.7 cm), 20 Ga, straight tip	14-5004
<i>Kirwan</i> bipolar pencil 5" (12.7 cm), 20/23 Ga, tapered tip	14-5006

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