GLIDESCOPE TITANIUM
REUSABLE & SPECTRUM SINGLE-USE

Operations & Maintenance Manual

VERATHON®

GLIDESCOPE TITANIUM

REUSABLE & SPECTRUM SINGLE-USE

Operations & Maintenance Manual

Effective: June 20, 2016

Caution: Federal (United States) law restricts this device to sale by or on the order of a physician.

CONTACT INFORMATION

To obtain additional information regarding your GlideScope system, please contact Verathon® Customer Care or visit verathon.com/support.

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Information in this manual may change at any time without notice. For the most up-to-date information, see the documentation available at verathon.com/product-documentation.

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IMPORTANT INFORMATION

PRODUCT INFORMATION

GlideScope® Titanium video laryngoscopes combine innovative blade options, angles, and construction in order to enable rapid intubations for more patients in more settings. The GlideScope Titanium system is designed with low profile blades, and the slimmer design allows for more working space in the airway and accommodates smaller mouth openings.

PRODUCT DESCRIPTION

The GlideScope Titanium reusable and Spectrum single-use video laryngoscopes are designed to deliver clear airway views and enable rapid intubation. Low-profile designs and innovative construction make these blades streamlined and lightweight, offering improved maneuverability and working space for routine and difficult airways. With more video laryngoscope options, including Mac-style, clinicians can choose their preferred airway tool for a wide range of patients and clinical settings. And whether it's reusable or single-use, the GlideScope Titanium system features a high-resolution, full-color digital camera and monitor for real-time viewing and recording.

GlideScope Titanium video laryngoscopes are designed to work with the GlideScope Video Monitor version 0570-0338.

STATEMENT OF INTENDED USE

The GlideScope Titanium system is intended for use by qualified professionals to obtain a clear, unobstructed view of the airway and vocal cords for medical procedures.

ESSENTIAL PERFORMANCE

Essential performance is the system performance necessary to achieve freedom from unacceptable risk. The essential performance of the GlideScope Titanium system is to provide a clear view of the vocal cords.

STATEMENT OF PRESCRIPTION

Caution: Federal (United States) law restricts this device to sale by or on the order of a physician.

GlideScope Titanium video laryngoscopes should be used only by individuals who have been trained and authorized by a physician or used by healthcare providers who have been trained and authorized by the institution providing patient care.

NOTICE TO ALL USERS

Verathon® recommends that all users read this manual before using the GlideScope Titanium system. Failure to do so may result in injury to the patient, may compromise the performance of the system, and may void the system warranty. Verathon recommends that new users:

- Obtain instruction from a qualified individual
- Practice using the video laryngoscope on a mannequin before clinical use
- Acquire clinical training experience on patients without airway abnormalities

CAUTIONS & WARNINGS

Warnings indicate that injury, death, or other serious adverse reactions may result from use or misuse of the device. *Cautions* indicate that use or misuse of the device may cause a problem, such as a malfunction, failure, or damage to the product. Throughout the manual, pay attention to sections labeled *Important*, as these contain reminders or summaries of the following cautions as they apply to a specific component or use situation. Please heed the following warnings and cautions.

PRECAUTIONS

CAUTION

Medical electrical equipment requires special precautions regarding electromagnetic compatibility (EMC) and must be installed and operated according to the instructions in this manual. For more information, see the Electromagnetic Compatibility section on page 59.

To maintain electromagnetic interference (EMI) within certified limits, the GlideScope system must be used with the cables, components, and accessories specified or supplied by Verathon®. For additional information, see the System Parts & Accessories and Product Specifications sections. The use of accessories or cables other than those specified or supplied may result in increased emissions or decreased immunity of the system.

The GlideScope system should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the system should be observed to verify normal operation in the configuration in which it will be used.

This device can radiate radio frequency energy and is very unlikely to cause harmful interference with other devices in the vicinity. There is no guarantee that interference will not occur in a particular installation. Evidence of interference may include degradation of performance in this device or other devices when operated simultaneously. If this occurs, try to correct the interference by using the following measures:

- Turn devices on and off in the vicinity to determine the source of interference
- Reorient or relocate this device or other devices
- Increase the separation between devices
- Connect the device to an outlet on a circuit different than the other device(s)
- Eliminate or reduce EMI with technical solutions (such as shielding)
- Purchase medical devices that comply with IEC 60601-1-2 EMC standards

Be aware that portable and mobile radio frequency communications equipment (cellular phones, etc.) may affect medical electrical equipment; take appropriate precautions during operation.

CAUTION

The system contains electronics that could be damaged by ultrasonic and automated washing equipment. Do not use an ultrasonic device or automated washing equipment to clean this product.

CAUTION

When cleaning video laryngoscopes, do not use metal brushes, abrasive brushes, scrub pads, or rigid tools. They will scratch the surface of the unit or the window protecting the camera and light, which may permanently damage the device.

CAUTION

Risk of permanent equipment damage. This product is sensitive to heat, which will cause damage to the electronics. Do not expose the system to temperatures above 60°C (140°F), and do not use autoclaves or pasteurizers. Use of such methods to clean, disinfect, or sterilize the system will cause permanent device damage and void the warranty. For a list of approved cleaning procedures and products, see the Cleaning & Disinfecting chapter.

CAUTION

Ensure that you do not use any abrasive substances, brushes, pads, or tools when cleaning the video monitor screen. The screen can be scratched, permanently damaging the device.

WARNINGS

WARNING

Before every use, ensure the instrument is operating correctly and has no sign of damage. Do not use this product if the device appears damaged. Refer servicing to qualified personnel.

To ensure patient safety, routinely inspect the reusable video laryngoscope before and after every use in order to ensure the blade is free of rough surfaces, sharp edges, cracks, protrusions, or any other indication of wear. If found, do not use the damaged or worn blade.

Always ensure that alternative airway management methods and equipment are readily available.

Report any suspected defects to Verathon® Customer Care. For contact information, visit verathon.com/support.

WARNING

Reusable video laryngoscopes and video cables are delivered nonsterile and require cleaning and disinfection prior to initial use.

WARNING

Because the product may be contaminated with human blood or body fluids capable of transmitting pathogens, all cleaning facilities must be in compliance with (U.S.) OSHA Standard 29 CFR 1910.1030 "Bloodborne Pathogens" or an equivalent standard. For more information, visit www.osha.gov.

WARNING

Cleaning is critical to ensuring a component is ready for disinfection or sterilization. Failure to properly clean the device could result in a contaminated instrument after completing the disinfection or sterilization procedure.

When cleaning, ensure all foreign matter is removed from the surface of the device. This allows the active ingredients of the chosen disinfection method to reach all the surfaces.

WARNING

This product may only be cleaned, disinfected, or sterilized by using the approved low-temperature processes provided in this manual. Cleaning, disinfection, and sterilization methods listed are recommended by Verathon® based on efficacy or compatibility with component materials.

WARNING

Availability of cleaning, disinfection, and sterilization products varies by country, and Verathon is unable to test products in every market. For more information, please contact Verathon Customer Care. For contact information, visit verathon.com/support.

WARNING

Ensure that you follow the manufacturer's instructions for handling and disposing of the cleaning, disinfection, or sterilization solutions provided in this manual.

WARNING

Do not reuse, reprocess, or resterilize single-use components. Reuse, reprocessing, or resterilization may create a risk of contamination of the device.

WARNING

To reduce the risk of cytotoxic residual when cleaning with Metrex® CaviCide®, thoroughly rinse the component as instructed in this manual.

WARNING

This instrument and related devices may contain mineral oils, batteries, and other environmentally hazardous materials. When the instrument or accessories have reached the end of their useful service life, see the section Device Disposal on page 47. Dispose of used, single-use components as infectious waste.

WARNING

Several areas of the video laryngoscope that contact the patient can exceed 41°C (106°F) as part of normal operation:

- The first area is the light-emitting area surrounding the camera. When used as indicated, continuous contact with this area is unlikely because, if tissue were to contact this area, the view would be lost and devices would need to be adjusted to regain the airway view.
- The second area is the area surrounding the camera, out of view of the camera. Continuous contact with this area is unlikely because the product is typically not held stationary for an extended period of time exceeding 1 minute.

If continuous contact is maintained for longer than 1 minute, it is possible to cause thermal damage such as a burn to the mucosal tissue.

WARNING

The reusable Titanium video laryngoscope is considered a semi-critical device intended to contact the airway. It must be thoroughly cleaned and undergo high-level disinfection after each use.

WARNING

When you are guiding the endotracheal tube to the distal tip of the video laryngoscope, ensure that you are looking in the patient's mouth, not at the video monitor screen. Failure to do so may result in injury, such as to the tonsils or soft palate.

WARNING

The external monitor must be safety-approved medical equipment.

WARNING

Use only a passive-type USB flash drive. Do not use USB drives powered by another external source.

WARNING

In order to maintain electrical safety, use only the provided, medical-approved power supply.

WARNING

To reduce the risk of electrical shock, use only the accessories and peripherals recommended by Verathon®.

WARNING

No modification of this equipment is allowed.

WARNING

Electric shock hazard. Do not attempt to open the system components. This may cause serious injury to the operator or damage to the instrument and will void the warranty. Contact Verathon Customer Care for all servicing needs.

WARNING

When cleaning the power adapter, use a cloth dampened with isopropyl alcohol on the outside of the enclosure. Do not immerse the power adapter in water.

WARNING

Do not use the power adapter in the presence of flammable anesthetics.

INTRODUCTION

REUSABLE & SPECTRUM SINGLE-USE SYSTEMS

The system is available in the following configurations:

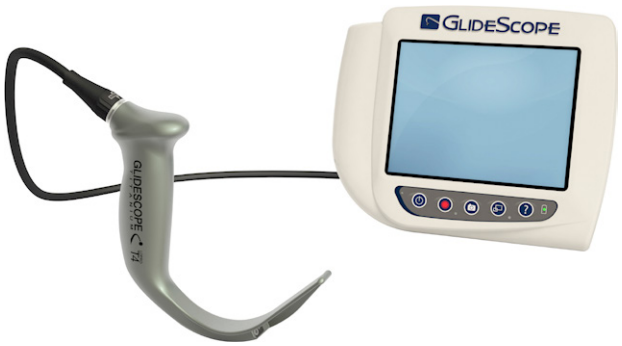
- GlideScope Titanium Spectrum Single-Use System
- GlideScope Titanium Reusable System

Both configurations feature the same video monitor, the cables and adapters to power the device, and any optional system components that may facilitate intubations or provide convenience to the user. The primary differences between the systems are the video laryngoscopes and the connecting cable.

You may use either the single-use or reusable system configurations, or your facility may elect to provide both configurations. This manual details both single-use and reusable system information and notes where the systems differ. In this document, unless otherwise noted, the term *video cable* describes both the Spectrum Smart Cable for the single-use system and the video cable for the reusable system.

Figure 1. Titanium Spectrum Single-Use System

Figure 2. Titanium Reusable System



SPECTRUM SINGLE-USE SYSTEM

The single-use system features durable, plastic blades that must be disposed of after one use. It also features the GlideScope Titanium Spectrum Smart Cable—a reusable video cable that connects the single-use blade to the video monitor and contains the electronics that process the video data captured by the blade. Single-use video laryngoscopes are identified by an *S* in the blade name, such as *LoPro S4*.

IMPORTANT

Single-use blades in S3 and S4 sizes may also be available in white. These are not part of the Spectrum Single-Use system. For more information about the white blades, see the *GlideScope Titanium Single-Use Operations and Maintenance Manual* at verathon.com/product-documentation.

REUSABLE SYSTEM

The reusable system features a titanium video laryngoscope that must be cleaned and high-level disinfected between uses. The blade is connected to the video monitor via a reusable video cable. Unlike the single-use system, the reusable system video electronics are located within the laryngoscope. Due to their titanium construction, reusable video laryngoscopes contain a *T* in the blade name, such as *LoPro T4*.

SYSTEM PARTS & ACCESSORIES

Table 1. Required System Components

<table>
<tr><th colspan="6">REQUIRED PARTS & ACCESSORIES</th></tr>
<tr><td colspan="2">GlideScope Video Monitor
  </td><td colspan="2">Video cable
(for reusable system)
Note: Cable shortened for illustration purposes.
  </td><td colspan="2">Spectrum Smart Cable
(for single-use system)
Note: Cable shortened for illustration purposes.
  </td></tr>
<tr><td colspan="6">One or more of the following reusable or single-use video laryngoscopes:</td></tr>
<tr><td colspan="6">Spectrum Single-Use Sizes</td></tr>
<tr><td>LoPro S1
  </td><td>LoPro S2
  </td><td>LoPro S3
  </td><td>LoPro S4
  </td><td>MAC S3
  </td><td>MAC S4
  </td></tr>
<tr><td colspan="6">Reusable Sizes</td></tr>
<tr><td></td><td></td><td>LoPro T3
  </td><td>LoPro T4
  </td><td>MAC T3
  </td><td>MAC T4
  </td></tr>
<tr><td colspan="2">Video monitor 12V DC
power adapter (0400-0105)
  </td><td colspan="2">Power cable
  </td><td colspan="2">In-service USB flash drive
Note: Contains instructions for use.
  </td></tr>
</table>

Table 2. Optional System Components

<table>
<tr><th colspan="4">OPTIONAL PARTS & ACCESSORIES</th></tr>
<tr><td>Premium cart
  </td><td>Mobile stand
  </td><td colspan="2">Media storage USB flash drive
  </td></tr>
<tr><td colspan="2" rowspan="2"></td><td>GlideRite® Rigid Stylet
Note: For ET tubes 6.0 mm or larger
  </td><td>GlideRite Single-Use Stylet (Small)
Note: For ET tubes 3.0–4.0 mm
  </td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Universal accessory basket
Note: For use with mobile stand
  </td><td>HDMI-to-DVI cable
  </td><td>IV pole mounting kit
  </td></tr>
</table>

The monitor is also compatible with GlideScope AVL system components. For more information, contact Verathon® Customer Care or see the *GlideScope AVL Single-Use Operations and Maintenance Manual*.

LANGUAGE SETTINGS

The video monitor software is available in a variety of languages. To change the language used on your system, you must install a new software version via a USB flash drive. For more information, contact Verathon Customer Care or your local representative. For contact information, see verathon.com/support.

VIDEO LARYNGOSCOPE COMPONENTS

The main components of the system are the LoPro or MAC video laryngoscopes in either single-use (S) or reusable (T) configurations. The LoPro single-use blades feature the signature GlideScope curve in a disposable format. The LoPro reusable blades combine the performance of a GlideScope blade with the strength of titanium, and the MAC blades incorporate the look and feel of traditional Macintosh blades.

Figure 3. Video Laryngoscope Components

Table 3. Video Laryngoscope Components

FIGURE KEY	COMPONENT	NOTES
1	Connector	—
2	Handle	—
3	Blade	The low-profile, thinner blade design allows for more working room in the airway and mouth
4	Distal tip/lifter	—
5	Camera and light	High-resolution, full-color camera with integrated LED light source
6	Product number and serial number	On the left side of the handle of reusable LoPro and MAC blades. (Not available on single-use blades.)

VIDEO MONITOR BUTTONS, ICONS, & CONNECTIONS

The digital, full-color GlideScope Video Monitor clearly displays the images transmitted from the camera in the video laryngoscope. The front of the monitor includes the screen and a keypad with the buttons you use to operate the system.

The back panel of the monitor includes the sockets and ports for connecting the power cord, the video cable, an HDMI-to-DVI cable for external video display, and a USB flash drive. When a socket or port is not in use, it is recommended that the rubber cap is inserted into the opening. This protects the exposed connectors from dust and other contamination. The back of the video monitor also features a mounting plate fitting that allows you to attach the monitor to a mobile stand or IV pole.

Figure 4. GlideScope Video Monitor Keypad

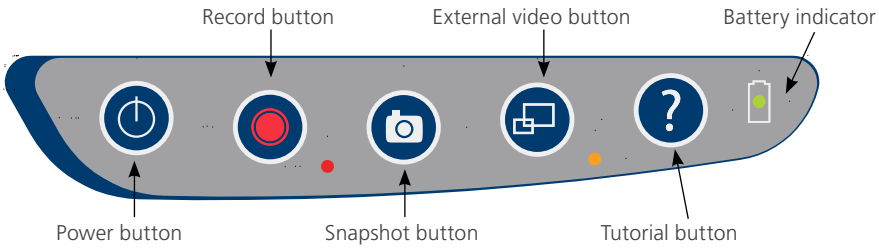


Table 4. Keypad Buttons

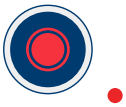
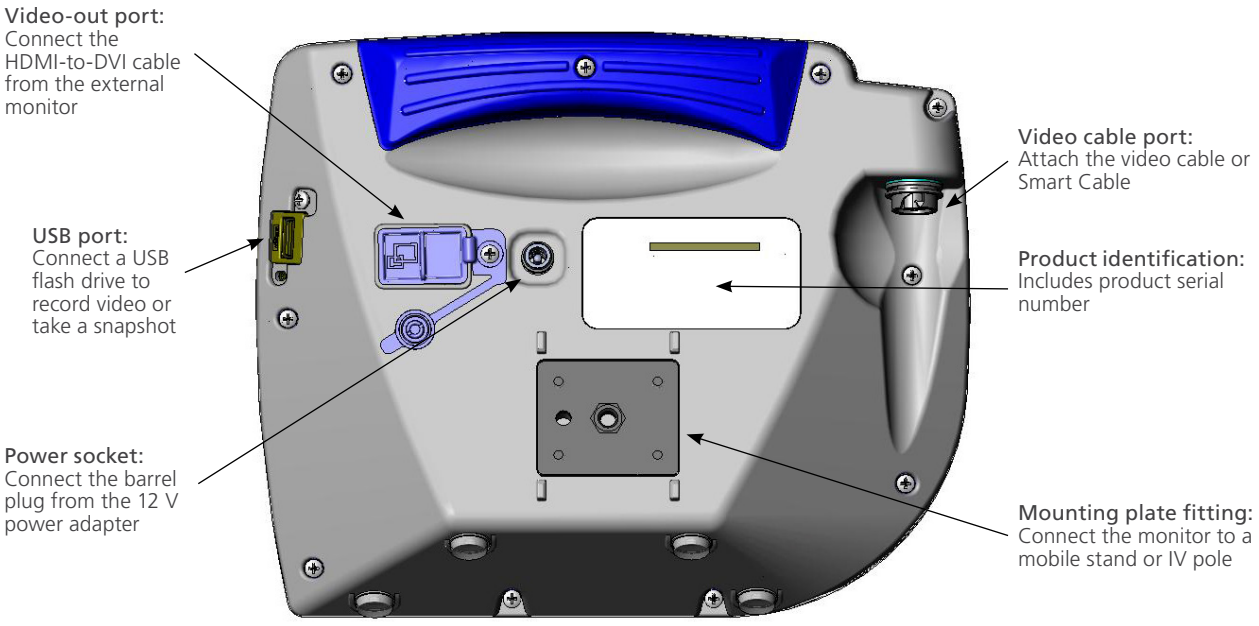
BUTTON	FUNCTION
	**Power:** Press and release to turn on the monitor. Press and hold to turn it off. *Note: If the monitor freezes at any time during use, press and hold the Power button for 10 seconds to reset the system.*
	**Record:** Press to start and stop recording directly to a USB flash drive that has been inserted in the USB port. When you are recording, the red LED indicator to the right of the button will be lit, and the Recording icon will be shown on the screen. *Note: To record video, a USB flash drive must be inserted into the monitor USB port.*
	**Snapshot:** Press this button to save a snapshot of the live display to the USB flash drive. You may take a snapshot while video recording or independent of recording. *Note: To take a snapshot, a USB flash drive must be inserted into the monitor USB port.*
	**External Video:** Press to display video on an external monitor. The yellow LED to the right of the button will light up to indicate that the key has been activated. Press the key again to deactivate the external video. *Note: An HDMI-to-DVI cable is required in order to display video on an external monitor.*
	**Tutorial:** If a USB flash drive is not inserted into the monitor, press and hold to access the video tutorial. If a USB flash drive is inserted into the monitor, press and hold to access the playback menu.
	**Battery Indicator:** LED is: **Green:** Unit fully charged **Red:** Unit charging **Flashing Red:** Indicates a problem with the battery. Charge for 6 hours, and if still flashing, contact Verathon® Customer Care.

Table 5. On-Screen Icons

ICON	FUNCTION
	**Battery Status:** The remaining battery power is indicated by the Battery Status icon and the percentage above the icon. If the icon is red, the battery should be charged as soon as possible. (See Charge the Monitor Battery.) While the battery is being charged, a lightning bolt will be displayed alongside the Battery Status icon.
	**Progress Confirmation:** While the user is pressing a button, the operation is loading. If the button is released before the loading process is completed, the operation is canceled.
	**Power-Down Countdown:** The unit is about to turn off. If this is due to the Auto Power Off feature that saves battery life, pressing any button stops the power-down sequence. *Note: The Auto Power Off feature can be adjusted or disabled on the User Settings screen. For more info, see* Configure User Settings *on* page 22.
	**USB Flash Drive:** A USB flash drive is detected. While recording, a number next to the icon indicates approximately what percentage of the USB flash drive has been used. When the USB flash drive is full, recording stops.
	**Incompatible USB Drive:** The USB flash drive that is plugged into the monitor is not suitable for recording videos. (This normally occurs when using an encrypted USB flash drive or when using an older, inexpensive model that is not capable of the speed necessary to save video in real time.)
	**USB Flash Drive Not Found:** A USB flash drive needs to be inserted into the monitor USB port.
	**Attach Video Cable:** The video cable or blade is not properly attached to the monitor.
	**Recording:** The system is recording video to the USB flash drive. *Note: Do not remove the USB flash drive while recording is in progress, or the recording will be lost.*
	**Saving Snapshot:** The system is saving a snapshot to the USB flash drive. *Note: Do not remove the USB flash drive while saving a snapshot, or the snapshot will be lost.*
	**Saving File:** The system is saving a recorded file to the USB flash drive. *Note: Do not remove the USB flash drive while this icon is displayed, or the recording will be lost.*
	**External Monitor:** The HDMI-to-DVI connection for external video is enabled, and video is being displayed on an external monitor.

ICON	FUNCTION
	**Hourglass:** Please wait while the system prepares for the next action.
	**Audio Recording is Active:** Audio is being recorded on the video. *Note: The default for audio recording is OFF. Audio recording on the video occurs only if the setting has been changed to ON in user settings.*
	**Back Arrow:** Exit to previous screen.
	**Up Arrow:** Select previous file for playback.
	**Down Arrow:** Select next file for playback.
	**Play:** Play the selected file or continue playing a paused video file.
	**Pause:** Pause the video playback.
	**Snapshot:** On the playback menu, this icon indicates that a file is a snapshot.
	**Video:** On the playback menu, this icon indicates that a file is a video.

Figure 5. GlideScope Video Monitor Back Panel



SETTING UP

WARNING

To reduce the risk of electrical shock, use only the accessories and peripherals recommended by Verathon®.

Before you can use the system for the first time, you must inspect the components, set up the system, and perform a functional test as recommended by Verathon®. Complete the following procedures:

1. Perform Initial Inspection—Inspect the system for any obvious physical damage that may have occurred during shipment.
2. Mount the System (Optional)—Set up the GlideScope Video Monitor on a mobile stand or IV pole.
3. Charge the Monitor Battery—Note that you can use the system while the battery is charging.

   Note: The monitor will operate without charging the battery by using the GlideScope Video Monitor 12V DC power adapter that shipped with the unit.
4. Attach the Video Cable & Blade—Connect the video cable or Smart Cable to the monitor, and then connect the video laryngoscope to the video cable or Smart Cable.
5. Connect to an External Monitor (Optional)—Connect the monitor to an external display source, such as a larger monitor screen, by using the HDMI-to-DVI cable.
6. Configure User Settings—Enter data customized to your clinic, and configure settings such as the date and time.
7. Perform a Functional Check—Before you use the device for the first time, perform a functional check to ensure that the system is working properly.

PROCEDURE 1. PERFORM INITIAL INSPECTION

When you receive the system, Verathon recommends that an operator familiar with the instrument perform a full visual inspection of the system for any obvious physical damage that may have occurred during shipment.

Note: Due to the hand-polishing method used to create the titanium exterior of the reusable blades, slight variations or irregularities may occur in the finish. These variations do not affect the cleaning process or system efficacy.

1. Verify that you have received the appropriate components for your system by referring to the packing list included with the system.
2. Inspect the components for damage.
3. If any of the components are missing or damaged, notify the carrier and Verathon Customer Care or your local representative. For contact information, visit verathon.com/support.

PROCEDURE 2. MOUNT THE SYSTEM (OPTIONAL)

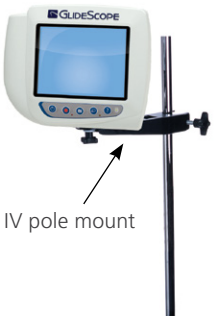
If you choose to mount the system, you may use either of the following configurations:

- Mount it on a GlideScope premium cart or mobile stand (Figure 6 or Figure 7). These solutions make it easy for you to move the system from one location to another.
- Mount it on an IV pole (Figure 8).

Figure 6. GlideScope Premium Cart

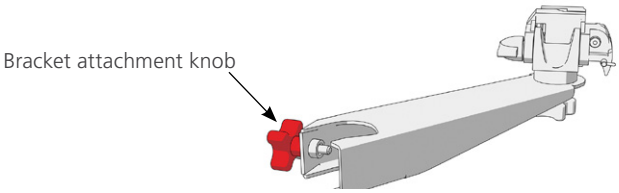
Figure 7. Mobile Stand

Figure 8. IV Pole Mount

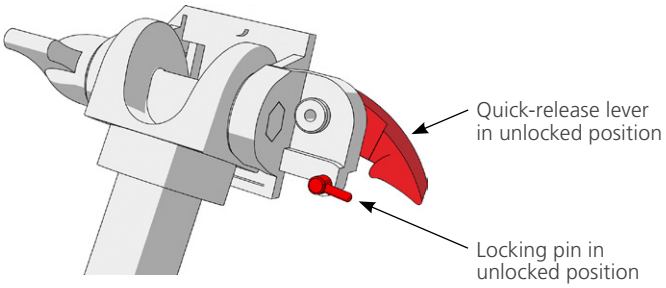


ATTACH THE MONITOR TO THE CART OR IV POLE

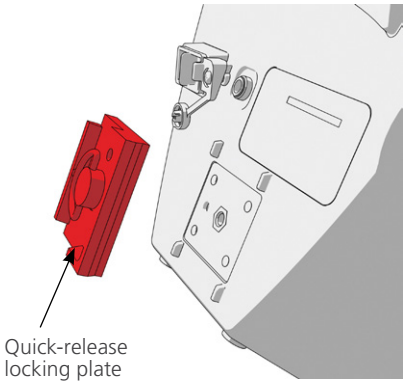
1. If you are using the GlideScope premium cart or mobile stand, assemble it according to the instructions included with the component.
2. If you are using an IV pole mount, place the mounting bracket on the IV pole, and then tighten the bracket attachment knob until the IV pole mount is secure.

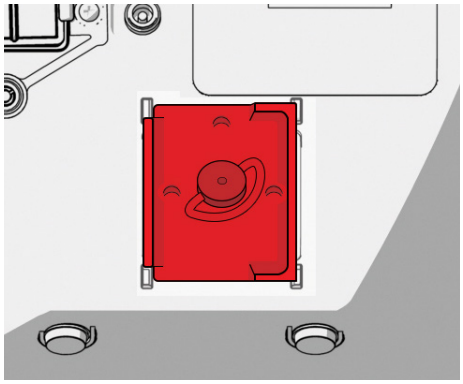


3. On the cart mount or the IV pole mount, ensure that the locking pin and quick-release lever are in the unlocked (horizontal) position.



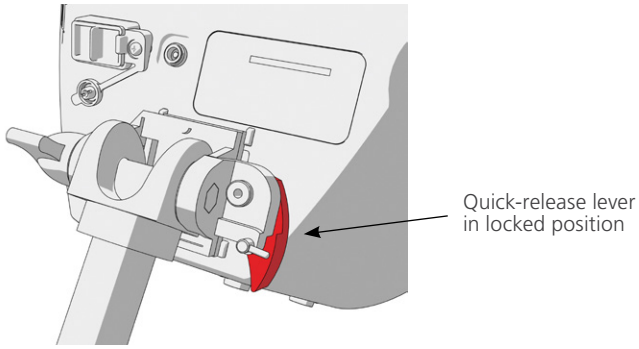
4. Using the orientation shown in the following images, screw the quick-release locking plate to the back panel of the monitor.



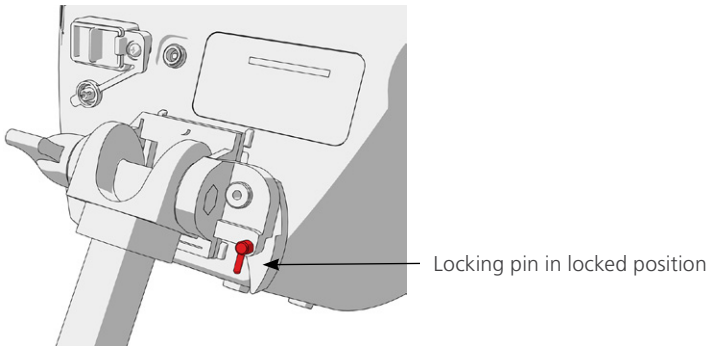


5. Seat the locking plate of the monitor on the quick-release mount. When properly situated, the monitor sits securely on the mount, and the quick-release lever automatically snaps into the locked (down) position.

6. Ensure that the quick-release lever is fully in the locked (down) position. This secures the monitor in place.



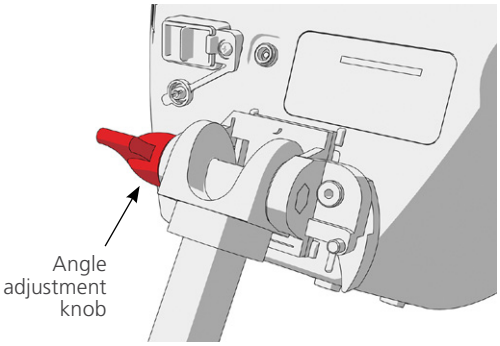
7. Adjust the locking pin to the locked (down) position. This secures the quick-release lever in the locked position.



ADJUST THE MONITOR ANGLE

Before you start using the video monitor, adjust the angle of the monitor for optimal viewing. The ideal angle minimizes glare and maximizes visibility.

8. Turn the angle adjustment knob counterclockwise.



9. Tilt the monitor to the desired angle.
10. Turn the angle adjustment knob clockwise. This secures the monitor at the desired angle.

PROCEDURE 3. CHARGE THE MONITOR BATTERY

WARNING

In order to maintain electrical safety, use only the provided, medical-approved power supply.

The GlideScope Video Monitor includes an internal lithium battery. Verathon® recommends that you charge the battery fully prior to first use.

Under normal operating conditions, a fully charged battery lasts approximately 90 minutes before it needs to be recharged. For optimal battery life, ensure that the battery is fully charged before you try to use the monitor in battery mode. You should charge the battery at temperatures between 0–35°C (32–95°F).

The percentage above the Battery Status icon indicates the remaining battery charge.

Figure 9. Battery Status Icons

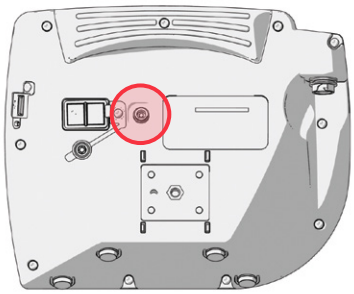

Battery must be charged


Approximately ⅓ battery life remaining


Approximately ⅔ battery life remaining


Battery is ⅔ to fully charged. The lightning bolt indicates that the battery is charging.

1. Connect the video monitor 12V DC power adapter to the power cable.
2. On the back panel of the monitor, remove the power socket cap, and then connect the 12V DC power adapter to the power socket.



3. Plug the power supply into a hospital-grade power outlet.
4. Allow the battery to charge. Fully charging the battery may take up to 6 hours.

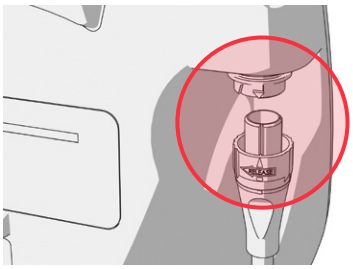
PROCEDURE 4. ATTACH THE VIDEO CABLE & BLADE

The video cable attaches the video laryngoscope to the GlideScope Video Monitor, supplying power to the blade and transmitting video data from the camera to the monitor. This procedure provides options for single-use and reusable systems—complete the option appropriate for your configuration.

The monitor is also compatible with GlideScope AVL system components. For more information, contact Verathon® Customer Care or see the *GlideScope AVL Single-Use Operations and Maintenance Manual*.

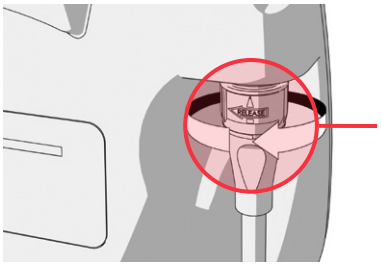
OPTION 1. REUSABLE SYSTEM

1. Ensure that the video monitor is turned off.
2. Align the arrow on the video cable and the arrow on the video cable port.



3. Insert the video cable connector into the port. You will hear a click when the cable is successfully connected.
4. Align the arrow on the video cable with the dot on the reusable blade, and then insert the video cable into the blade port. You will hear a click when the cable is successfully connected.

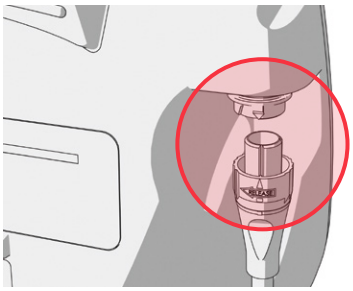
5. To disconnect the video cable from the monitor or reusable blade, rotate the connector ring in the direction of the release arrow, and then remove the connector from the port.



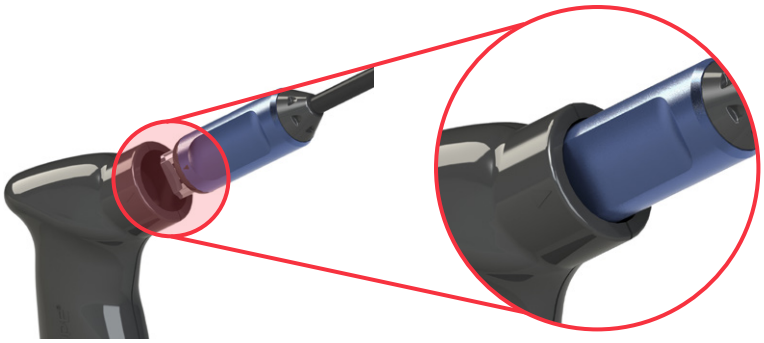
OPTION 2. SPECTRUM SINGLE-USE SYSTEM

It is recommended that you leave the sterile, single-use blade in the packaging while connecting the blade and that you do not remove the blade until you are ready to perform an intubation procedure. This helps ensure that the blade remains as clean as possible.

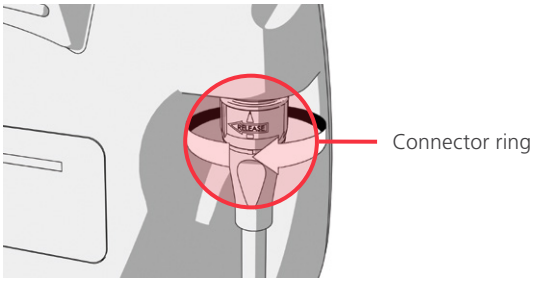
1. Ensure that the video monitor is turned off.
2. Align the arrow on the Smart Cable and the arrow on the video cable port.



3. Insert the Smart Cable connector into the port. You will hear a click when the cable is successfully connected.
4. Align the arrow on the Smart Cable with the dot on the single-use blade port, and then insert the connector fully into the port.



5. To disconnect the Smart Cable from the monitor, rotate the connector ring in the direction of the release arrow, and then remove the connector from the port.



6. To disconnect a single-use blade from the Smart Cable, hold the cable connector in one hand and the blade handle in the other, and then pull. The blade disconnects from the cable.

PROCEDURE 5. CONNECT TO AN EXTERNAL MONITOR (OPTIONAL)

WARNING

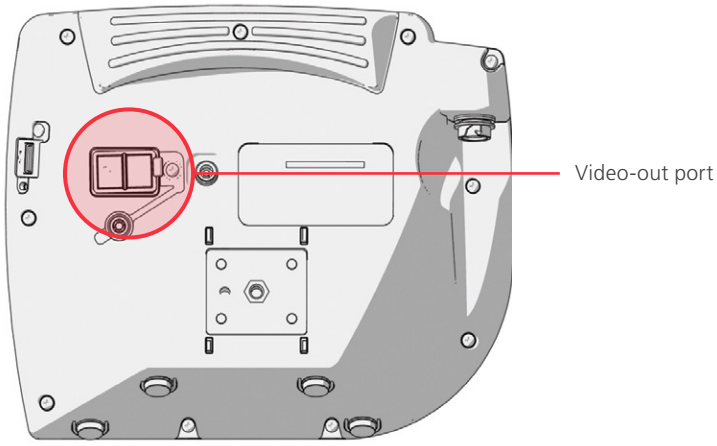
The external monitor must be safety-approved medical equipment.

By using an HDMI-to-DVI cable, you can connect the GlideScope Video Monitor to an external monitor that is approved for medical use. For more information, please contact your Verathon® Customer Care representative.

Note: Image quality on the external monitor may vary according to the resolution of the external monitor.

Note: To maintain electromagnetic interference (EMI) within certified limits, the GlideScope Titanium system must be used with the cables, components, and accessories specified or supplied by Verathon. For additional information, see the System Parts & Accessories *and* Component Specifications *sections. The use of accessories or cables other than those specified or supplied may result in increased emissions or decreased immunity of the system.*

1. Ensure that the video monitor is turned off.
2. On the back of the monitor, remove the HDMI cap from the video-out port.
3. Connect the HDMI end of the cable to the video-out port.



4. Connect the other end of the cable to the DVI port on an external monitor that is approved for medical use.
5. Press the **Power** button. The monitor turns on.
6. Press the **External Video** button. The indicator LED to the right of the button illuminates when the connection is successful, and the video displays on the external monitor.
7. To stop sending video to an external monitor, press the **External Video** button again.
8. Prior to disconnecting the HDMI-to-DVI cable, ensure the video monitor is turned off.

PROCEDURE 6. CONFIGURE USER SETTINGS

You may configure the following settings directly on the unit:

- Date and Time
- Date and Time Format
- Key Click Sound
- Auto Power Off
- Audio Recording
- Auto Recording
- Auto External Video
- Clinic Name

The second page of user settings, as seen in Figure 11, displays system-use information, and it does not contain any configurable settings.

Figure 10. User Settings Screen Page 1

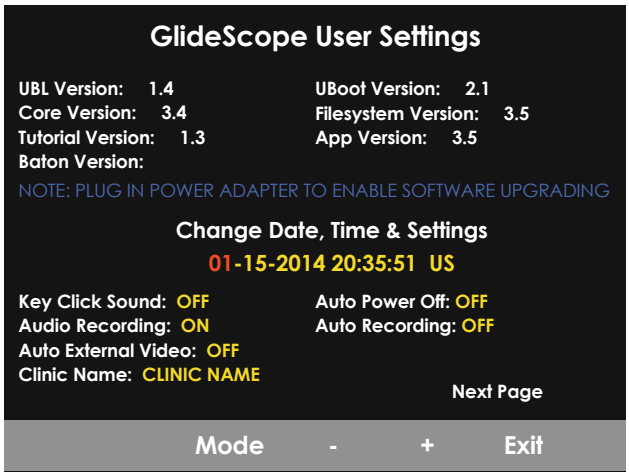


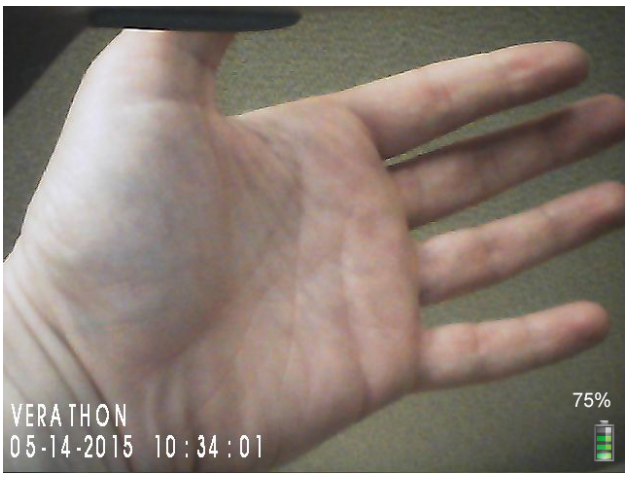
Figure 11. User Settings Screen Page 2

1. If a USB flash drive is inserted into the monitor, remove it.
2. Press the **Power** button. The monitor turns on.
3. Hold the **Tutorial** button, and then press the **Snapshot** button. The User Settings screen appears on the monitor. The configurable user settings are displayed in yellow, and the selected setting is highlighted in red.
4. Customize your user settings by using the following buttons:
   - Press the **Record** button to select the parameter you want to set.
   - Press the **Snapshot** button to decrease the parameter value.
   - Press the **External Video** button to increase the parameter value.
   - When inputting the Clinic Name, the **Tutorial** button moves the selection to the next letter. Press the **Record** button twice to return the selection back to the Date/Time setting.
   - To view the second page of user settings, press the **Record** button until **Next Page** is highlighted in red, and then press the **Tutorial** button. To exit the second page of user settings, press the **Tutorial** button again.
5. When you are finished customizing the settings, press the **Record** button until the option **Exit** is available in the gray bar, and then press the **Tutorial** button. This saves the parameters, and the User Settings screen closes.

PROCEDURE 7. PERFORM A FUNCTIONAL CHECK

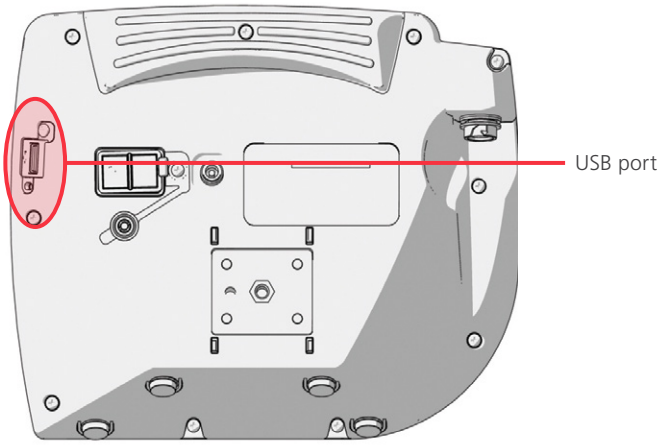
Before you use the device for the first time, perform the following functional check to ensure that the system is working properly. Please contact your Verathon® Customer Care representative if your system does not function as described below.

1. Fully charge the monitor battery (this takes approximately 6 hours).
2. Attach the video cable and video laryngoscope to the monitor, according to the instructions in Attach the Video Cable & Blade.
3. Press the **Power** button. The monitor turns on.
4. Look at the monitor screen, and verify that the image displayed is being received from the blade.



Note: There may be a slight blade intrusion in the upper-left corner of the monitor, and a thin line may appear along the top. These blade edges are captured in the view because of the wide-angle camera lens used in the video laryngoscope. This image acts as a frame of reference during the intubation process and ensures that the orientation of the image is correct in the monitor.

5. On the back of the monitor, remove the USB port cap, and then insert a USB flash drive into the port.



6. Ensure that the USB flash drive is detected by checking if the **USB Flash Drive** icon on the bottom of the screen is displayed.
7. Press the **Record** button. Recording starts.
8. To stop recording, press the **Record** button again.

9. Wait until the **Saving File** icon  has disappeared from the screen, and then remove the USB flash drive from the monitor.

10. On a computer, verify that the recorded video (.avi) file can be played.

    Note:

    If you are viewing the recorded file on a Windows® operating system (OS), use an application such as Windows Media Player®.

    If you are viewing the recorded video file on Mac OS®, use an application such as one of the following:

    - *MPlayerX (free in the App Store℠)*
    - VLC® (free at http://www.videolan.org/vlc/index.html)

    If you are viewing the recorded video file on iOS®, use an application such as one of the following:

    - *VLC® for iOS® (free in the App Store℠)*
    - *8player lite (free in the App Store℠)*
    - *Media Player - PlayerXtreme™ HD (free in the App Store℠)*

USING THE DEVICE

Prior to using the device, set up the device according to the instructions in the previous chapter, and verify the setup by completing the procedure Perform a Functional Check.

WARNING

Reusable Titanium video laryngoscopes are delivered nonsterile and require cleaning and high-level disinfection prior to initial use.

WARNING

Before every use, ensure the instrument is operating correctly and has no sign of damage. Do not use this product if the device appears damaged. Refer servicing to qualified personnel.

To ensure patient safety, routinely inspect the reusable video laryngoscope before and after every use in order to ensure the blade is free of rough surfaces, sharp edges, cracks, protrusions, or any other indication of wear. If found, do not use the damaged or worn blade.

Always ensure that alternative airway management methods and equipment are readily available.

Report any suspected defects to Verathon® Customer Care. For contact information, visit verathon.com/support.

Reusable Titanium video laryngoscopes are equipped with the Reveal™ anti-fog feature, which reduces camera fogging during the intubation procedure. To fully optimize the feature, you must allow the reusable video laryngoscope to warm up for 30–120 seconds prior to use, depending on the ambient temperature and humidity of the clinical environment. Full optimization of the Reveal™ anti-fog feature is not necessary to use the device; if desired, you may begin the intubation procedure immediately.

Using the Titanium system consists of the following:

- Prepare the GlideScope System
- Intubate Using the GlideScope 4-Step Technique
- Use the Record & Snapshot Features (Optional)
- Use the Playback Feature (Optional)

PROCEDURE 1. PREPARE THE GLIDESCOPE SYSTEM

In this procedure, you select and attach the appropriate video laryngoscope for the patient, turn the system on, and verify that the system is functioning properly.

*Table 6. Video Laryngoscope Sizes**

GLIDESCOPE TITANIUM BLADE	RECOMMENDED PATIENT WEIGHT/SIZE
Spectrum LoPro S1	1.5–3.8 kg (3.3–8.4 lbs)
Spectrum LoPro S2	1.8–10 kg (4–22 lbs)
LoPro T3 or Spectrum LoPro S3	10 kg (22 lbs) to medium adult
LoPro T4 or Spectrum LoPro S4	40 kg (88 lbs) to large adult
MAC T3 or Spectrum MAC S3	Medium adult
MAC T4 or Spectrum MAC S4	Large adult

1. Ensure that each GlideScope system component has been properly cleaned, disinfected, or sterilized according to the guidance provided in Table 7 on page 32.
2. Using the information in Table 6, in combination with a clinical assessment of the patient and the experience and judgment of the clinician, select the GlideScope video laryngoscope that is appropriate for the patient.
3. Attach the video cable and video laryngoscope to the monitor, according to the instructions in Attach the Video Cable & Blade on page 19.
4. Press the **Power** button. The video monitor turns on.

   Note: If the GlideScope Video Monitor locks up, becomes unresponsive for any reason, or does not show an image from the blade, press and hold the Power button for 10 seconds to reboot the system.
5. Ensure that the battery is sufficiently charged. If necessary, connect the monitor directly to power.
6. On the monitor screen, verify that the image displayed is from the video laryngoscope camera. A small portion of the blade may be visible on the upper-left corner or top of the monitor screen.
7. If you are using a reusable blade and if needed, allow the GlideScope Reveal™ anti-fog feature to warm up for 30–120 seconds.

   Note: The time required for the anti-fog feature to be fully optimized varies according to the ambient temperature and humidity where the equipment is being stored or used. If the video laryngoscope is stored in cold conditions, additional warming time may be required for optimal performance of the anti-fog feature.
8. If desired to provide additional anti-fog benefits, you may apply Dexide™ Fred™ or Dexide Fred Lite to the camera window on the reusable blade.† Use the solution according to the manufacturer's instructions.

* Weight ranges are approximate; a medical professional must evaluate on a patient-by-patient basis.
† Compatibility has been demonstrated for up to 100 cycles on reusable blades.

PROCEDURE 2. INTUBATE USING THE GLIDESCOPE 4-STEP TECHNIQUE

WARNING

When you are guiding the endotracheal tube to the distal tip of the video laryngoscope, ensure that you are looking in the patient's mouth, not at the video monitor screen. Failure to do so may result in injury, such as to the tonsils or soft palate.

WARNING

Several areas of the video laryngoscope that contact the patient can exceed 41°C (106°F) as part of normal operation:

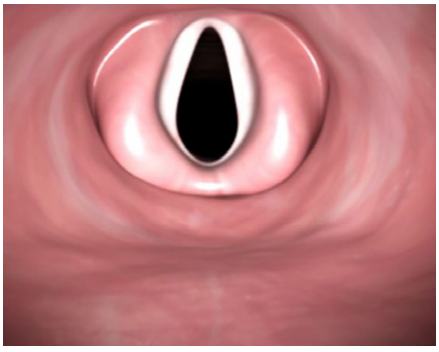
- The first area is the light-emitting area surrounding the camera. When used as indicated, continuous contact with this area is unlikely because, if tissue were to contact this area, the view would be lost and devices would need to be adjusted to regain the airway view.
- The second area is the area surrounding the camera, out of view of the camera. Continuous contact with this area is unlikely because the product is typically not held stationary for an extended period of time exceeding 1 minute.

If continuous contact is maintained for longer than 1 minute, it is possible to cause thermal damage such as a burn to the mucosal tissue.

To perform an intubation, Verathon® recommends using the GlideScope 4-Step Technique as outlined in this procedure. Each step begins with where the user should be looking to complete that action. Prior to beginning this procedure, verify that the monitor is receiving an accurate image from the video laryngoscope.

1. **Look in the Mouth:** With the video laryngoscope in your left hand, introduce it along the midline of the oropharynx.
2. **Look at the Screen:** Identify the epiglottis, and then manipulate the blade in order to obtain the best glottic view.

   Figure 12. Ideal Glottic View



3. **Look in the Mouth:** Carefully guide the distal tip of the tube into position near the tip of the laryngoscope.
4. **Look at the Screen:** Complete the intubation, gently rotating or angling the tube as needed to redirect it.

PROCEDURE 3. USE THE RECORD & SNAPSHOT FEATURES (OPTIONAL)

WARNING

Use only a passive-type USB flash drive. Do not use USB drives powered by another external source.

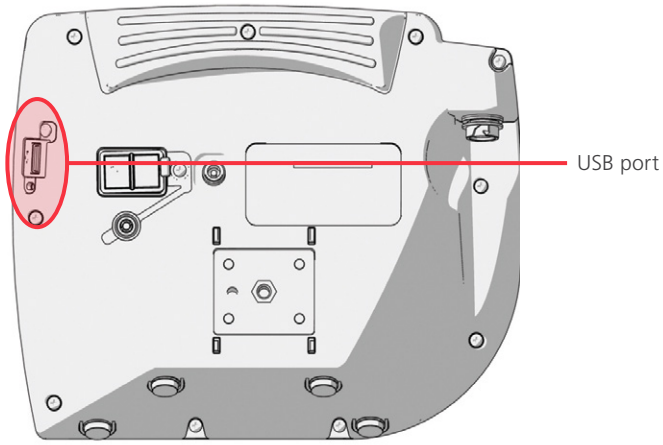
The system is equipped with video and audio recording features and the ability to save a snapshot of the live display on the monitor. The system saves this data to a USB flash drive, and you can view the recordings or snapshots on the video monitor or a computer.

By default, audio recording is disabled. If you would like the system to record audio in addition to video, complete the procedure Configure User Settings to enter the User Settings screen, and then change the **Audio Recording** setting to **On**.

While recording, a number next to the icon indicates approximately what percentage of the USB flash drive has been used. When the USB flash drive is full, recording stops.

1. On the back of the monitor, remove the USB port cap, and then insert a USB flash drive into the port.

   Note: If you do not insert a USB flash drive, the video recording, audio recording, and snapshot features will not be available.



2. Ensure that the USB flash drive is detected by checking if the **USB Flash Drive** icon on the bottom of the screen is displayed.
3. If you want to record the intubation, press the **Record** button . Video recording starts and is saved to the USB flash drive.

   If audio recording is enabled in the User Settings display, the **Audio Recording is Active** icon will appear on the screen, and audio will be recorded with the video.
4. When you are finished recording, press the **Record** button again, and then wait for the **Saving File** icon to disappear.

   Note: If you remove the USB flash drive before the Saving File icon disappears, the recording will be lost.

5. If at any point you would like to save a photo of the live display to the USB flash drive, press the **Snapshot** button, and then wait for the **Saving Snapshot** icon to disappear.

   Note: If you remove the USB flash drive before the Saving Snapshot icon disappears, the photo will be lost.

6. If you would like to review the recorded files on the video monitor, complete the following procedure, Use the Playback Feature (Optional).

   If you would like to review the recorded files on a computer, insert the USB flash drive into the PC, and then view the .avi or .jpg files.

   Note:

   If you are viewing the recorded file on a Windows® operating system (OS), use an application such as Windows Media Player®.

   If you are viewing the recorded video file on Mac OS®, use an application such as one of the following:

   - *MPlayerX (free in the App Store℠)*
   - VLC® (free at http://www.videolan.org/vlc/index.html)

   If you are viewing the recorded video file on iOS®, use an application such as one of the following:

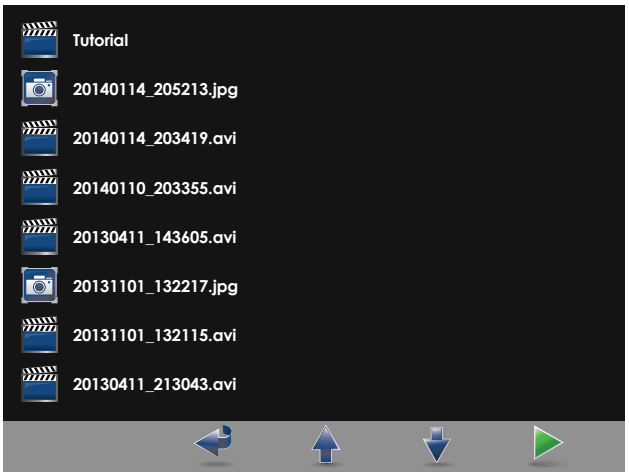
   - *VLC® for iOS® (free in the App Store℠)*
   - *8player lite (free in the App Store℠)*
   - *Media Player - PlayerXtreme™ HD (free in the App Store℠)*

PROCEDURE 4. USE THE PLAYBACK FEATURE (OPTIONAL)

Recorded videos and snapshots on a USB flash drive can be viewed on the GlideScope Video Monitor.

1. On the back of the monitor, remove the USB port cap, and then insert a USB flash drive into the port.
2. Ensure that the USB flash drive is detected by checking if the **USB Flash Drive** icon on the bottom of the screen is displayed.
3. Press and hold the **Tutorial** button 3 seconds or longer. The playback menu is displayed.

Figure 13. Playback Menu



4. Navigate the menu as follows:
   - Press the **Snapshot** button to move up the list of playback files.
   - Press the **External Video** button to move down the list of playback files.
5. When you have selected the item that you want to play, press the **Tutorial** button. Playback starts.
6. When the file is being played back and is displayed on the screen, press the **Snapshot** button to playback the next file above the one currently displayed. Press the **External Video** button to play the next file below the one currently displayed.
7. If the file being played back is a video, pause and resume playback by pressing the **Tutorial** button.
8. Press the **Record** button to return to the playback menu.
9. Press the **Record** button again to close the playback menu.

CLEANING & DISINFECTING

IMPORTANT

In this chapter, the term *video cable* refers to the cable for the reusable system, and the term *Smart Cable* refers to the cable for the single-use system.

WARNING

Because the product may be contaminated with human blood or body fluids capable of transmitting pathogens, all cleaning facilities must be in compliance with (U.S.) OSHA Standard 29 CFR 1910.1030 "Bloodborne Pathogens" or an equivalent standard. For more information, visit www.osha.gov.

WARNING

Availability of cleaning, disinfection, and sterilization products varies by country, and Verathon is unable to test products in every market. For more information, please contact Verathon Customer Care. For contact information, visit verathon.com/support.

WARNING

This product may only be cleaned, disinfected, or sterilized by using the approved low-temperature processes provided in this manual. Cleaning, disinfection, and sterilization methods listed are recommended by Verathon® based on efficacy or compatibility with component materials.

WARNING

The reusable Titanium video laryngoscope is considered a semi-critical device intended to contact the airway. It must be thoroughly cleaned and undergo high-level disinfection after each use.

WARNING

Ensure that you follow the manufacturer's instructions for handling and disposing of the cleaning, disinfection, or sterilization solutions provided in this manual.

WARNING

Do not reuse, reprocess, or resterilize single-use components. Reuse, reprocessing, or resterilization may create a risk of contamination of the device.

Cleaning and disinfecting the GlideScope Titanium system is an important part of using and maintaining the system. Prior to each use, ensure that each system component has been cleaned, disinfected, or sterilized according to the guidance provided in Table 7.

The availability and regulatory compliance of the cleaning, disinfection, and sterilization products provided in this manual vary by region; ensure that you select products in accordance with your local laws and regulations.

Titanium single-use blades arrive sterilized by ethylene oxide, and they do not require cleaning, disinfection, or sterilization prior to use. Dispose of single-use blades once they have been used. Do not attempt to disinfect and reuse single-use video laryngoscopes.

The following table describes the risk assessment for each system component, including the Spaulding's/CDC classification for the minimum required disinfection level.

Table 7. Titanium System Risk Assessment

DEVICE	PACKAGED	USE	SPAULDING'S/CDC CLASSIFICATION	DISINFECTION LEVEL		STERILIZE
				Low	High	
Blade	Nonsterile	Reusable	Semi-critical		X	
Video cable	Nonsterile	Reusable	Noncritical	X*		
Smart Cable	Nonsterile	Reusable	Noncritical	X*		
Monitor†	Nonsterile	Reusable	Noncritical			
Cart†	Nonsterile	Reusable	Noncritical			
GlideRite® Rigid Stylet§	Nonsterile	Reusable	Semi-critical		X	
Single-use blades‡	Sterile	Single-use	—			
GlideRite Single-Use Stylet‡	Sterile	Single-use	—			

* *The low-level disinfection solutions in this manual are not available in all geographic regions. If they are not available in your region, such as the United States, use a high-level disinfection method only.*

† *Clean the video monitor or cart when visibly soiled and on a regular basis, as per a schedule established by the medical care facility or provider.*

§ *For instructions on cleaning and disinfection, see the GlideRite Rigid Stylet Operations and Maintenance Manual.*

‡ *Single-use blades and stylets may not be cleaned, disinfected, or sterilized. Dispose of single-use items after use.*

X Checked boxes show minimum disinfection level requirement.

Shaded areas indicate that the disinfection/sterilization level is not required/not compatible with the device materials.

Unshaded areas show permissible levels of disinfection or sterilization based on compatibility with the device materials.

After reviewing Table 7, complete the following procedures to clean, disinfect, or sterilize the GlideScope Titanium system components:

- Clean a Blade, Video Cable, or Smart Cable
- Disinfect a Blade, Video Cable, or Smart Cable
- Sterilize a Blade, Video Cable, or Smart Cable (Optional)
- Clean the GlideScope Video Monitor
- Clean the GlideScope Premium Cart

PROCEDURE 1. CLEAN A BLADE, VIDEO CABLE, OR SMART CABLE

WARNING

Cleaning is critical to ensuring a component is ready for disinfection or sterilization. Failure to properly clean the device could result in a contaminated instrument after completing the disinfection or sterilization procedure.

When cleaning, ensure all foreign matter is removed from the surface of the device. This allows the active ingredients of the chosen disinfection method to reach all the surfaces.

Use this procedure in order to clean the Smart Cable, video cable, or reusable Titanium video laryngoscope. By reducing as many hard-to-access areas as possible, all of the reusable GlideScope Titanium blades have been designed to be easy to clean. It is critical to remove all traces of contamination from the component prior to completing disinfection or sterilization procedures.

To significantly reduce the amount of effort needed to clean the system, do not let contaminant(s) dry on any system component. Bodily contaminants tend to become securely attached to solid surfaces when dried, making removal more difficult.

The reusable GlideScope Titanium blades and reusable system video cable are IPX8 compliant and can be completely immersed in the recommended cleaning solutions. The Smart Cable is IPX7 compliant and may also be completely immersed in the solutions. The use of protective caps is not required during reprocessing.

IMPORTANT

Do not use metal or abrasive brushes, scrub pads, or rigid tools when cleaning the reusable video laryngoscope. The window that protects the camera and light can be scratched, permanently damaging the device.

This product is heat-sensitive, and exposing the components to temperatures in excess of 60°C (140°F) will cause damage to the electronics.

Table 8. Cleaning Methods for Video Cables, Smart Cables, and Reusable Video Laryngoscopes

CHEMICAL	LEVEL	COMPONENT	CYCLES*	CONDITIONS
Certol® ProEZ Foam™ ‡	Pre-Cleaner	Blade Video Cable Smart Cable	500	Spray components until wet. Follow application with use of an approved cleaner in this table.
STERIS® eSSENTIALS Concentrates™	Cleaner	Blade	3000	**Water temperature:** 30–40°C (86–104°F) **Exposure:** Prepare solution at 0.125–1 ounce/gallon (1–8 mL/L). Soak component for 5 minutes. Before removing from solution, brush all surfaces and pay special attention to hard-to-reach areas. Use a syringe to flush the connector. **Rinse:** Rinse for 3 minutes under running water. Flush the connector with running water and a syringe.

CHEMICAL	LEVEL	COMPONENT	CYCLES*	CONDITIONS
Metrex® CaviCide®	Cleaner	Blade	3000	**Water temperature:** 33–40°C (91–104°F) **Exposure:** Spray all surfaces until drenched. Allow to remain wet for 3 minutes. Brush all surfaces. **Rinse:** Rinse for 5 minutes under running water. While rinsing, use a soft-bristled brush and a syringe to flush and brush any hard-to-reach areas.
		Video Cable	3000	**Water temperature:** 33–40°C (91–104°F) **Exposure:** Spray all surfaces until drenched. Allow to remain wet for 5 minutes. Brush all surfaces. Rinse under running water for 3 minutes. Spray all surfaces until drenched. Allow to remain wet for 10 minutes. **Rinse:** Rinse under running water for 5 minutes. Fully immerse in water and agitate for 2 minutes. Before removing from water, brush the cable with a soft-bristled brush. Remove from water and flush the connectors with running water and a syringe. Fully immerse in **fresh** water and agitate for 2 minutes. Rinse under running water for 1 minute.
		Smart Cable	1500	**Water temperature:** 33–40°C (91–104°F) **Exposure:** Spray all surfaces until drenched. Allow to remain wet for 10 minutes. Brush all surfaces. Rinse under running water for 5 minutes. Spray all surfaces until drenched. Allow to remain wet for 10 minutes. **Rinse:** Rinse under running water for 5 minutes. Fully immerse in water and agitate for 3 minutes. Before removing from water, brush the cable with a soft-bristled brush. Remove from water and flush the connectors with running water and a syringe. Fully immerse in **fresh** water and agitate for 3 minutes. Rinse under running water for 2 minutes.
Getinge® Tec Wash III†	Cleaner	Blade	3000	**Water temperature:** 20–40°C (68–104°F) **Exposure:** Soak for 3 minutes. Brush all surfaces. **Rinse:** Rinse for 3 minutes under running water.
		Video Cable	3000	
Metrex® EmPower™	Cleaner	Blade	3000	**Water temperature:** 19–29°C (66–84°F) **Exposure:** Prepare solution at 1 ounce/gallon (7.8 mL/L). Soak component for 3 minutes. Before removing from solution, brush all surfaces and pay special attention to hard-to-reach areas. **Rinse:** Rinse for 3 minutes under running water.
		Video Cable	3000	
		Smart Cable	1500	
Tristel™ Trio Wipes System (outside U.S.)	Cleaner	Blade	3000	**Pre-clean:** Use two or more pre-clean towelettes to remove all visible contamination from the component. Continue to the entry "Tristel™ Trio Wipes System" in Table 9 on page 39.
		Video Cable	3000	
		Smart Cable	1500	

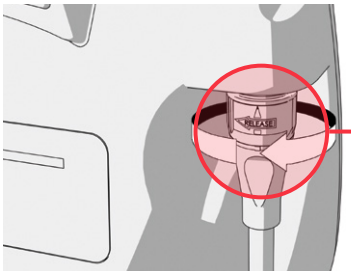
CHEMICAL	LEVEL	COMPONENT	CYCLES*	CONDITIONS
Pro-Line Solutions EcoZyme®	Cleaner	Blade	3000	**Water temperature:** 19–29°C (66–84°F) **Exposure:** Prepare solution at 1 ounce/gallon (7.8 mL/L) in 30–40°C (86–104°F) water. Soak component for 5 minutes. Before removing from solution, brush all surfaces and pay special attention to hard-to-reach areas. Using a syringe, flush the connectors. **Rinse:** Rinse for 5 minutes under running water. Using a syringe, flush the connectors.
		Video Cable	3000	
		Smart Cable	1500	
Metrex® CaviWipes™	Cleaner	Video Cable	1500	**Water temperature:** N/A **Exposure:** Use towelette(s) to remove all visible contamination from the component. Using fresh towelette(s), wet all surfaces and allow to remain wet for 3 minutes. **Rinse:** N/A. Allow the component to thoroughly air dry.
		Smart Cable	1500	
Wip'Anios Premium	Cleaner	Video Cable	1500	**Water temperature:** N/A **Exposure:** Use towelette(s) to remove all visible contamination from the component. Using fresh towelette(s), wet all surfaces and allow to remain wet for 5 minutes. **Rinse:** N/A. Allow the component to thoroughly air dry.
		Smart Cable	1500	
Clinell® Universal Sanitizing Wipes	Cleaner	Video Cable	1500	**Water temperature:** N/A **Exposure:** Use towelette(s) to remove all visible contamination from the component. Using fresh towelette(s), wet all surfaces and allow to remain wet for 5 minutes. **Rinse:** N/A. Allow the component to thoroughly air dry.
		Smart Cable	1500	
Sani Cloth® Active Wipes	Cleaner	Video Cable	1500	**Water temperature:** N/A **Exposure:** Use towelette(s) to remove all visible contamination from the component. Using fresh towelette(s), wet all surfaces and allow to remain wet for 5 minutes. **Rinse:** N/A. Allow the component to thoroughly air dry.
		Smart Cable	1500	

* *Value indicates number of compatibility cycles tested on the component. Exceeding the recommended number of cycles may affect the potential life of the product.*

† *Do not use this solution to clean a Smart Cable.*

‡ *Certol® ProEZ Foam™ is a foaming enzymatic solution that is used to prevent contaminants from drying on the component. It has demonstrated compatibility with the listed components, but it has not been tested for efficacy as a cleaner. Use of this solution must be followed by use of an approved cleaner in this table.*

1. Ensure the video monitor has been turned off.
2. Detach the video cable from the monitor by turning the connector ring in the direction of the release arrow.



3. If you are cleaning a reusable system, detach the cable from the blade by rotating the connector ring in the direction of the release arrow, and then pulling gently in order to disconnect the components.

   If you are cleaning a single-use system, detach the cable from the blade by holding the Smart Cable connector in one hand and the blade handle in the other, and then pulling. Dispose of the single-use blade.
4. If you are using a wipe method to clean the component, skip to Step 10.
5. If you are using a pre-cleaning solution, apply it to the component as specified in Table 8.
6. Using the water temperature specified in Table 8, rinse the component in clean tap water and scrub with a soft-bristled brush until all visible contamination has been removed.

   If you are cleaning a reusable video laryngoscope, to prevent damage, use a cotton swab in order to clean around the camera window. Pay extra attention to cleaning the areas highlighted in the following figures: around the tip, inner corners, and camera.

LoPro T3 or T4 Blade

LoPro T3 or T4 Blade

MAC T3 or T4 Blade

7. Examine all connectors for contamination.

LoPro T3 or T4 Connector

MAC T3 or T4 Connector

Video Cable Connector

Smart Cable Connector

8. If there is any visible sign of contamination in the connectors, use a long, soft-bristled brush or cotton swab to remove it.
9. Prepare one of the approved cleaning solutions in Table 8 according to the solution manufacturer's instructions.
10. Expose the components to the cleaning solution according to the instructions in Table 8. The exposure process and times vary depending on the solution and the component.

    Note:

    - *If you are using Metrex® CaviCide®, spray additional solution as needed in order to ensure that the component remains visibly wet for the duration of the exposure period(s).*
    - *If you are using a wipe method, rewipe the component as needed in order to ensure that it remains visibly wet for the duration of the exposure period. You may use multiple wipes as necessary.*
11. If applicable for the cleaning solution, rinse the components according to the instructions in Table 8. The rinsing process and times vary depending on the solution and the component.

WARNING

To reduce the risk of cytotoxic residual when cleaning with Metrex® CaviCide®, thoroughly rinse the component as instructed in this manual.

12. Visually inspect the component for contamination. If there is any sign of contamination, restart the procedure.
13. Using hospital-grade clean air, which is free from oils and residuals found in common compressed air, blow out the connectors. This dries the connectors and removes any remaining residuals.
14. Using a clean, lint-free cloth, hospital-grade clean air, or a low-temperature dryer, dry the component.

    Note: If you are using a wipe method, allow the component to thoroughly air dry.
15. Examine the component for any signs of damage. Reusable titanium blades should not have any signs of damage other than minor surface scratches or discoloration of the metal as the result of use. If damage is present, do not use the component, and contact Verathon® Customer Care.

The component should now be clean and free of contamination. Handle the product carefully to avoid recontamination.

Note: Before each use, reusable video laryngoscopes must be high-level disinfected, and video cables and Smart Cables must be low-level disinfected.

PROCEDURE 2. DISINFECT A BLADE, VIDEO CABLE, OR SMART CABLE

Before each use, reusable video laryngoscopes must be high-level disinfected, and video cables and Smart Cables must be low-level disinfected. Use the following instructions to disinfect the Smart Cable, video cable, or reusable Titanium video laryngoscope. Not all chemical solutions listed in Table 9 are compatible with each component. Ensure that you select a chemical that is compatible with the component you are disinfecting.

In this procedure, the term *pure water* refers to water that is suitable for disinfection according to local regulations and your medical facility.

IMPORTANT

Do not use metal or abrasive brushes, scrub pads, or rigid tools when disinfecting the reusable video laryngoscope. The window that protects the camera and light can be scratched, permanently damaging the device.

This product is heat-sensitive, and exposing the components to temperatures in excess of 60°C (140°F) will cause damage to the electronics.

When high-level disinfecting a blade, video cable, or Smart Cable, you may use a Medivators® CER Optima 1 & 2 AER, DSD-201 AER, or SSD-102 AER system, provided you do the following:

- Use an approved high-level disinfectant from Table 9.
- Use a disinfectant that is compatible with the Medivators® system. For more information about chemical compatibility, contact Medivators.®
- Use the conditions provided in Table 9, such as temperature, exposure, and concentration.
- Do not expose the component to temperatures exceeding 60°C (140°F) on any cycle.

Table 9. Disinfection Methods for Video Cables, Smart Cables, and Reusable Video Laryngoscopes

CHEMICAL	DISINFECTION LEVEL	COMPONENT	CYCLES*	CONDITIONS
Clinell® Universal Sanitizing Wipes†	Low	Video Cable	1500	**Conditioning:** N/A **Water temperature:** N/A **Exposure:** Using fresh towelette(s), wet all surfaces and allow to remain wet for 6 minutes. **Rinse:** N/A. Allow the component to thoroughly air dry.
		Smart Cable	1500	
Clorox® Bleach Germicidal Wipes	Low	Video Cable	3000	**Conditioning:** N/A **Water temperature:** N/A **Exposure:** Using fresh towelette(s), wet all surfaces and allow to remain wet for 3 minutes. **Rinse:** N/A. Allow the component to thoroughly air dry.
		Smart Cable	1500	

CHEMICAL	DISINFECTION LEVEL	COMPONENT	CYCLES*	CONDITIONS
Tristel™ Trio Wipes System (outside U.S.)	High	Blade	3000	Clean according to the entry "Tristel™ Trio Wipes System" in Table 8 on page 34. **Sporocidal:** Apply two pumps of the activator foam to a sporocidal towelette and manipulate towelette for 15 seconds. Wet all surfaces of the component and allow to remain wet for 30 seconds. **Rinse:** Use a rinse towelette to wipe all surfaces.
		Video Cable	3000	
		Smart Cable	1500	
STERIS® Revital-Ox™ Resert® XL HLD ‡ Revital-Ox™ Resert® HLD/ Chemosterilant ‡ Resert® XL HLD ‡	High	Blade	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 8 minutes, ensuring that all air bubbles are removed from the surface of the component. **Rinse:** (1) 1-minute immersion with agitation in pure water. Ensure the connector is properly rinsed.
		Video Cable	3000	
		Smart Cable	1500	
STERIS® S40™ or S20™	High	Blade	675	Standard cycles in the following processors: STERIS® SYSTEM 1® (outside U.S.) SYSTEM 1E® (in U.S.) SYSTEM 1 EXPRESS (outside U.S.) SYSTEM 1 PLUS (outside U.S.)
		Video Cable	600	
		Smart Cable	750	
ASP® Cidex® OPA	High	Blade	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 12 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 1-minute immersions with agitation in pure water.
		Video Cable	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 10 minutes, ensuring that all air bubbles are removed from the surface of the cable. **Rinse:** (3) 1-minute immersions with agitation in pure water.
		Smart Cable	1500	
Metrex® MetriCide® OPA Plus	High	Blade	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 12 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 1-minute immersions with agitation in pure water.
		Video Cable	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 10 minutes, ensuring that all air bubbles are removed from the surface of the cable. **Rinse:** (3) 1-minute immersions with agitation in pure water.
		Smart Cable	1500	

CHEMICAL	DISINFECTION LEVEL	COMPONENT	CYCLES*	CONDITIONS
Medivators® Rapicide® OPA/28	High	Blade	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 12 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 1-minute immersions with agitation in pure water
		Video Cable	3000	**Conditioning:** 20°C (68°F) or higher **Water Temperature:** 20°C (68°F) or higher **Exposure:** Soak for 10 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 1-minute immersions with agitation in pure water
		Smart Cable	1500	
Metrex® MetriCide® 28 §	High	Blade	3000	**Conditioning:** 25 ± 2°C (77 ± 4°F) **Water temperature:** 33–40°C (91–104°F) **Exposure:** Soak for 20 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 3-minute immersions in pure water, while agitating, flushing, and brushing with a sterile, soft-bristled brush.
		Video Cable	3000	**Conditioning:** 25 ± 2°C (77 ± 4°F) **Water temperature:** 33–40°C (91–104°F) **Exposure:** Soak for 20 minutes, ensuring that all air bubbles are removed from the surface of the cable. **Rinse:** (3) 1-minute immersions in pure water, while agitating, flushing, and brushing with a sterile, soft-bristled brush.
Metrex® MetriCide® Plus 30	High	Blade	3000	**Conditioning:** 25 ± 2°C (77 ± 4°F) **Water temperature:** 33–40°C (91–104°F) **Exposure:** Soak for 20 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 3-minute immersions in pure water, while agitating, flushing, and brushing with a sterile, soft-bristled brush.
Sultan® Healthcare Sporox® II §	High	Video Cable	3000	**Conditioning:** 20 ± 2°C (68 ± 4°F) **Water Temperature:** 33–40°C (91–104°F) **Exposure:** Soak for 30 minutes, ensuring that all air bubbles are removed from the surface of the cable. Following soak, brush and flush. Repeat 30-minute soak. **Rinse:** (3) 3-minute immersions with brushing and flushing in pure water.

CHEMICAL	DISINFECTION LEVEL	COMPONENT	CYCLES*	CONDITIONS
ASP® Cidex® Activated Dialdehyde Solution (ADS) §	High	Blade	1000	**Conditioning:** 25 ± 2°C (77 ± 4°F) **Water temperature:** 33–40°C (91–104°F) **Exposure:** Soak for 45 minutes, ensuring that all air bubbles are removed from the surface of the blade. **Rinse:** (3) 3-minute immersions in pure water, while agitating, flushing, and brushing with a sterile, soft-bristled brush.
		Video Cable	1000	**Conditioning:** 25 ± 2°C (77 ± 4°F) **Water temperature:** 33–40°C (91–104°F) **Exposure:** Soak for 45 minutes, ensuring that all air bubbles are removed from the surface of the cable. **Rinse:** (3) 1-minute immersions in pure water, while agitating, flushing, and brushing with a sterile, soft-bristled brush.
Medivators® Rapicide® PA 30°C	High	Blade	100	**Concentration:** 850 ± 100 parts per million **Conditioning:** 28–32°C (82–90°F) **Exposure:** 5 minutes in a Medivators® Advantage Plus AER reprocessing system with the following configuration: • Hookup: 2-8-002HAN Rev. B • Parameter: 1-24-010 C DISF
		Video Cable	100	
		Smart Cable	100	

* *Value indicates number of compatibility cycles tested on the component. Exceeding the recommended number of cycles may affect the potential life of the product.*

† *Clinell® Universal Sanitizing Wipes are not available in all geographic regions, such as the United States.*

‡ *This chemical may cause discoloration of metal components, but the discoloration does not affect system efficacy or functionality.*

§ *Do not use this solution to disinfect a Smart Cable.*

1. Ensure the video laryngoscope, video cable, or Smart Cable has been properly cleaned, according to the procedure Clean a Blade, Video Cable, or Smart Cable.
2. Prepare and condition the disinfection solution according to the solution manufacturer's instructions and the conditions stated in Table 9.
3. Disinfect the component according to the conditions stated in Table 9. The exposure process and times vary depending on the solution and the component.

   Note: If you are using a wipe method, rewipe the component as needed in order to ensure that it remains visibly wet for the duration of the exposure period. You may use multiple wipes as necessary.
4. Rinse the component according to the conditions stated in Table 9. The rinsing process and times vary depending on the solution and the component.
5. Dry the component by using a sterile cloth, hospital-grade clean air, or a low-temperature dryer.

   Note: If you are using a wipe method, allow the component to thoroughly air dry.
6. Examine the component for any signs of damage. Reusable titanium blades should not have any signs of damage other than minor surface scratches or discoloration of the metal as the result of use. If damage is present, do not use the component, and contact Verathon® Customer Care.
7. Store the component in a clean environment.

PROCEDURE 3. STERILIZE A BLADE, VIDEO CABLE, OR SMART CABLE (OPTIONAL)

Reusable Titanium video laryngoscopes are considered to be semi-critical devices; therefore, sterilization of the blade, video cable, or Smart Cable is optional. Your medical care facility or provider may require sterilization of these components prior to use. These components use an identical sterilization process, so you may use the following instructions to sterilize any component.

IMPORTANT

This product is heat-sensitive, and exposing the components to temperatures in excess of 60°C (140°F) will cause damage to the electronics.

Table 10. Sterilization Methods for Video Cables, Smart Cables, and Reusable Video Laryngoscopes

CHEMICAL	DISINFECTION LEVEL	COMPONENT	CYCLES*	CONDITIONS
STERIS® S40™ or S20™	High/ Sterilization	Blade	675	Standard cycles in the following processors: STERIS® SYSTEM 1® (outside U.S.) SYSTEM 1E® (in U.S.) SYSTEM 1 EXPRESS (outside U.S.) SYSTEM 1 PLUS (outside U.S.)
		Video Cable	600	
		Smart Cable	750	
STERIS® Vaprox® HC	Sterilization	Blade	125	Non-lumen cycle in any STERIS® Amsco® V-PRO® low-temperature sterilization system.
		Video Cable	125	
		Smart Cable	100	
ASP® Hydrogen Peroxide Gas Plasma	Sterilization	Blade	300	Insert blade into Tyvek® pouch and use one of the following processors: STERRAD® 100S (in U.S.) STERRAD® 100S short cycle (outside U.S.) STERRAD® NX standard cycle STERRAD® 100NX standard cycle STERRAD® 50 STERRAD® 200 short cycle
		Video Cable	125	Use one of the following processors: STERRAD® 100S (in U.S.) STERRAD® 100S short cycle (outside U.S.) STERRAD® NX standard cycle STERRAD® 100NX standard cycle STERRAD® 50 STERRAD® 200 short cycle
		Smart Cable	100	

* *Value indicates number of compatibility cycles tested on the component. Exceeding the recommended number of cycles may affect the potential life of the product.*

1. Ensure that the component has been properly cleaned according to the procedure Clean a Blade, Video Cable, or Smart Cable.
2. Package the component according to the instructions provided by the manufacturer of the sterilization system (Example: trays, pouches, or wraps).
3. Sterilize the component according to the manufacturer's instructions or according to the conditions stated in Table 10.
4. Examine the component for any signs of damage. Reusable titanium blades should not have any signs of damage other than minor surface scratches or discoloration of the metal as the result of use. If damage is present, do not use the component, and contact Verathon® Customer Care.
5. Store the component in a clean environment that is appropriate for sterile equipment.

PROCEDURE 4. CLEAN THE GLIDESCOPE VIDEO MONITOR

IMPORTANT

Ensure that you do not use any abrasive substances, brushes, pads, or tools when cleaning the video monitor screen. The screen can be scratched, permanently damaging the device.

Clean the video monitor when it is visibly soiled and on a regular basis, as per a schedule established by the medical care facility or provider.

1. Turn off the GlideScope Video Monitor, and then unplug the device.
2. Using 70% isopropyl alcohol (IPA),* Metrex® CaviWipes™,* or AHP® Oxivir®,* wipe the exterior of the video monitor.

   * *Tested for 100 compatibility cycles. Exceeding the recommended number of cycles may affect the potential life of the product.*

PROCEDURE 5. CLEAN THE GLIDESCOPE PREMIUM CART

Clean the cart when it is visibly soiled and on a regular basis, as per a schedule established by the medical care facility or provider.

*Table 11. Cleaning Methods for the GlideScope Premium Cart**

PRIMARY ACTIVE INGREDIENT†	BRAND NAME	CONCENTRATION
Sodium hypochlorite	Clorox® Bleach	0.16% (1600 ppm)
Hydrogen peroxide	Virox® Technologies Accel® TB Wipes	0.5%
	Diversey® Oxivir® TB Wipes	
Isopropyl alcohol	—	70%
Quaternary ammonium compound (alcohol-based)	PDI® Super Sani-Cloth® Germicidal Disposable Wipes	0.5%
	Metrex® CaviWipes™	0.28%

* *All solutions have been tested for 100 compatibility cycles. Exceeding the recommended number of cycles may affect the potential life of the product.*

† *See solution manufacturer's label for additional active and inactive ingredients.*

1. If you are using bleach, prepare the solution to the concentration indicated in Table 11.

   Note: If you are using a product containing 5% bleach, dilute 120 mL (4 ounces) of bleach in 3.8 L (1 gallon) of water.

2. Using one of the solutions in Table 11, expose the cart to the cleaning solution according to the solution manufacturer's instructions.

MAINTENANCE & SAFETY

PERIODIC INSPECTIONS

In addition to the user performing routine inspections before and after every use, periodic inspections should be performed to ensure safe and effective operation. It is recommended that an operator familiar with the instrument perform a full visual inspection of all components at least every three months. The inspector should check the system for the following:

- External damage to the equipment
- Damage to the power supply or adapter
- Damage to the connectors or cable insulation

Report any suspected defects to Verathon® Customer Care or your local representative. For contact information, visit verathon.com/support.

ELUTION COMPATIBILITY

For use with GlideScope Titanium reusable blades, Verathon has completed testing of compatibility with a 1% sodium dodecyl sulphate (SDS) solution with pH 11.0.

The SDS solution is commonly utilized in Europe as an eluting solution to collect residual protein samples from medical tools or devices that are cleaned after contacting patient tissue. The protein sample solution is then examined as a verification of the hospital cleaning process.

The testing concluded that 1% SDS solution with pH 11.0 is chemically compatible with the reusable blades and gives no adverse results when performing repeated 30-minute soaking for 100 cycles.

GLIDESCOPE VIDEO MONITOR BATTERY

Under normal operating conditions, the monitor battery will last 2–3 years, or approximately 500 charge and discharge cycles. For more information about the battery, see Battery Specifications.

The battery is not user-replaceable. In case of battery malfunction, do not attempt to replace the monitor battery. Any attempts to replace the battery by unauthorized service technicians may cause serious harm to the user and will void the warranty. Please contact your Verathon Customer Care representative for more information on battery replacement.

SYSTEM SOFTWARE

Verathon® may release software upgrades for the GlideScope Video Monitor. Software upgrades are supplied directly by Verathon or an authorized representative, and installation instructions are provided with the upgrade.

This manual documents the most current version of the GlideScope Video Monitor software. If your monitor does not function as described in this manual, or to determine if your software should be updated, contact Verathon Customer Care.

Do not perform any software upgrades from third-party vendors or attempt to modify the existing software. Doing so may damage the monitor and void the warranty.

For information about software language options, see Language Settings on page 9.

DEVICE REPAIR

The GlideScope Titanium system components are not user-serviceable. Verathon does not make available any type of circuit diagrams, component parts lists, descriptions, or other information that would be required for repairing the device and related accessories. All service must be performed by a qualified technician.

If you have any questions, contact your local Verathon representative or Verathon Customer Care.

WARNING

No modification of this equipment is allowed.

WARNING

Electric shock hazard. Do not attempt to open the system components. This may cause serious injury to the operator or damage to the instrument and will void the warranty. Contact Verathon Customer Care for all servicing needs.

DEVICE DISPOSAL

The system and related accessories may contain batteries and other environmentally hazardous materials. When the instrument has reached the end of its useful service life, it must be disposed of in accordance with WEEE requirements. Coordinate disposal through your Verathon Service Center, or alternatively, follow your local protocols for hazardous waste disposal.

WARRANTY

ORIGINAL FIRST YEAR TOTAL CUSTOMER CARE WARRANTY

Verathon® warrants the system against defects in material and workmanship. The limited warranty applies for one (1) year from the date of shipment from Verathon and applies only to the original purchaser of the system. The terms of this warranty are subject to the *Terms and Conditions of Sale* or any other contractual document between the parties.

Verathon's policy is to honor product warranties and to perform services only on products purchased from an authorized Verathon dealer. If you purchase a Verathon product or system components from an unauthorized dealer or if the original factory serial number has been removed, defaced or altered, your Verathon warranty will be void. Purchasing Verathon products from unauthorized entities could result in receipt of product that is counterfeit, stolen, used, defective, or not intended for use in your region.

If a customer's system requires service or repair, Verathon will, at its discretion, either repair or replace the customer's unit and provide a loaner unit. The customer agrees to send the defective unit to Verathon (cleaned and disinfected as appropriate) upon receipt of the loaner unit, and the customer agrees to return the loaner unit within two (2) business days of receipt of the repaired unit. All exchanged parts become property of Verathon.

Each product manufactured by Verathon is warranted to be free from defects in material and workmanship under normal use and services. Verathon's warranty does not cover defects or problems caused by the buyer's acts (or failure to act), the acts of others, or events beyond Verathon's reasonable control. The buyer shall be solely responsible, for any problem, failure, malfunction, defect, claim, damage, liability, or safety issue arising out of the following:

- Accident, theft, misuse, abuse, extraordinary wear and tear, or neglect.
- Misapplication, improper use, or other failure to follow Verathon's product instructions and safety precautions. The system shall be used in accordance with the instructions contained in this manual. This warranty does not apply if there is evidence of the equipment being exposed to temperatures in excess of 60°C (140°F).
- Use of the system in conjunction with hardware, software, components, services, accessories, attachments, interfaces, or consumables, other than those supplied or specified by Verathon.
- Products that have been repaired or maintained by anyone other than a Verathon authorized service provider. Modification, disassembly, rewiring, re-engineering, recalibration, and/or reprogramming of products other than as specifically authorized by Verathon in writing is prohibited and will void all warranties.

This warranty provides coverage if the instrument is rendered inoperable as a result of an accidental drop or mishandling after payment by the buyer of the current deductible as determined by Verathon. The deductible charge will be applied on each warranty request and may be applied an unlimited number of times per instrument.

WHAT IS COVERED?

Warranty coverage applies to the following system components:

- GlideScope Video Monitor
- GlideScope Titanium Spectrum Smart Cable (single-use system only)
- Reusable video cable (reusable system only)
- Reusable GlideScope Titanium video laryngoscope (reusable system only)

Additional reusable components purchased either singularly or as a part of a system are warranted separately. Consumable items are not covered under this warranty.

PREMIUM CUSTOMER CARE WARRANTY

You may purchase a Premium Total Customer Care℠ warranty that extends the limited warranty. For more information, contact Verathon® Customer Care or your local representative.

DISCLAIMER OF ADDITIONAL WARRANTIES

There are no understandings, agreements, representations of warranties expressed or implied (including warranties of merchantability or fitness for a particular purpose) other than those set forth in this chapter and the *Terms and Conditions of Sale*. The contents of this manual do not constitute a warranty.

Some states disallow certain limitations on applied warranties. The purchaser should consult state law if there is a question regarding this disclaimer. The information, descriptions, recommendations, and safety notations in this manual are based upon Verathon experience and judgment. The contents of this manual should not be considered to be all-inclusive or to cover all contingencies.

PRODUCT SPECIFICATIONS

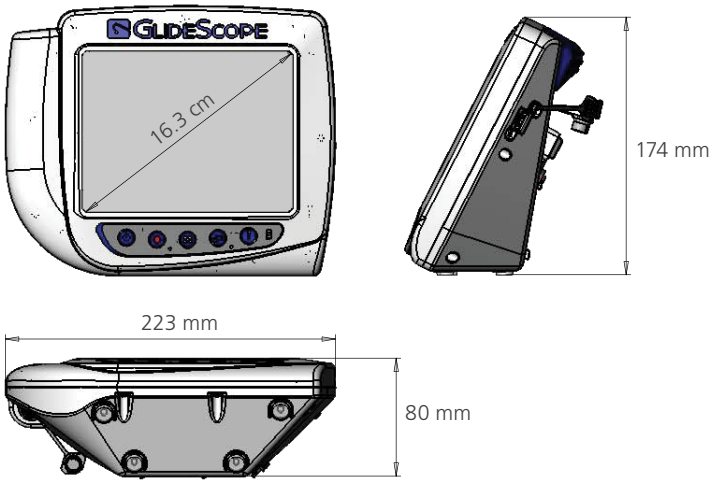
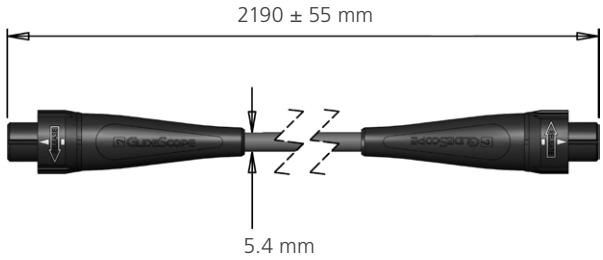
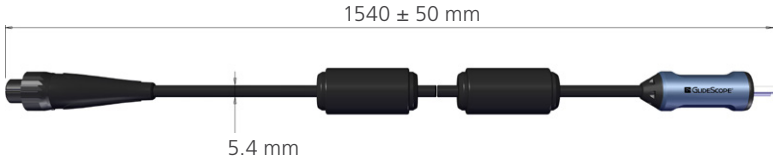
SYSTEM SPECIFICATIONS, STANDARDS, & APPROVALS

Table 12. Titanium System Specifications

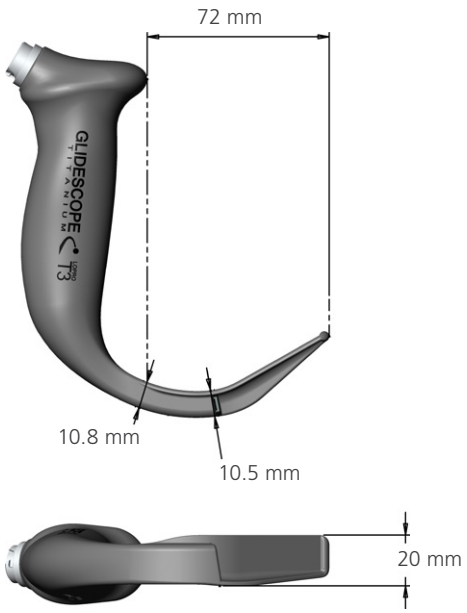
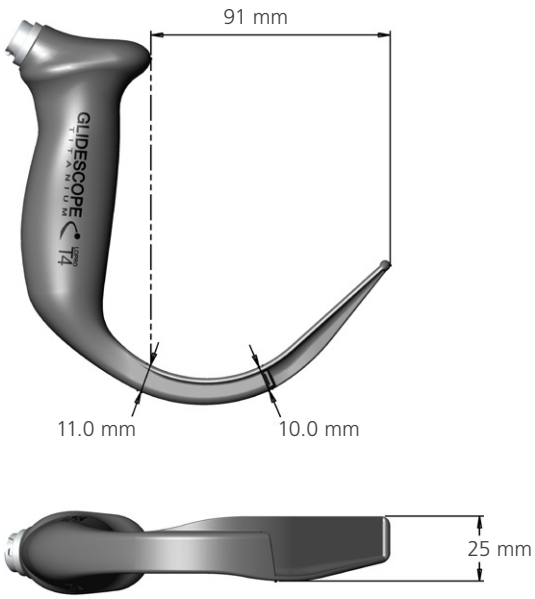
GENERAL SPECIFICATIONS		
Classification:	Electrical Class II, Applied Part BF	
Line voltage:	Range: 100–240 V AC, 50 and 60 Hz. Connect to a medical-grade power supply.	
DC power supply:	12 V DC, 2.5 A max	
Fuse:	Internal 2.5 A hold / 5 A trip, 15 V max	
Ingress protection against water:	Video monitor	IP54
	Single-use blade	IPX4
	Smart Cable	IPX7
	Reusable blade and video cable	IPX8
Expected product life:	Reusable blade	3 years or 3000 cycles
	Spectrum Single-Use S1 or S2 blade	1 use or 1-year shelf life
	Spectrum Single-Use S3 or S4 blade	1 use or 3-year shelf life
OPERATING & STORAGE SPECIFICATIONS		
Operating Conditions		
Temperature:	10 to 35°C (50 to 95°F)	
Relative humidity:	0 to 95%	
Atmospheric pressure:	540–1060 hPa	
Shipping & Storage Conditions		
Temperature:	-20 to 40°C (-4 to 104°F)	
Relative humidity:	0 to 95%	
Atmospheric pressure:	440–1060 hPa	

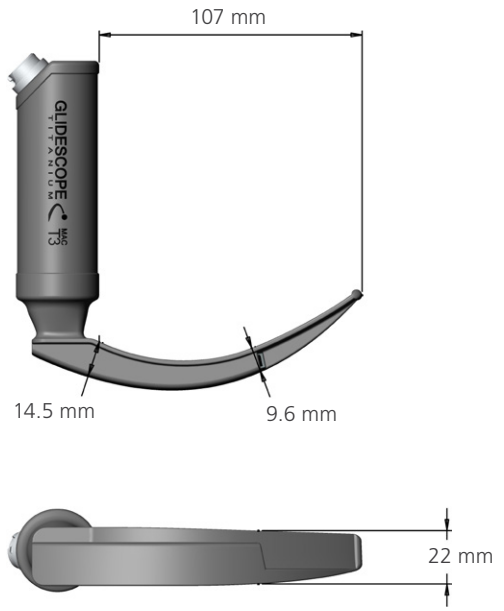
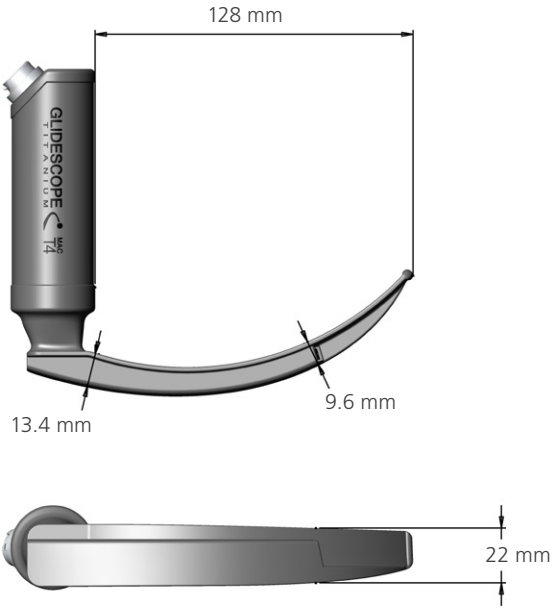
COMPONENT SPECIFICATIONS

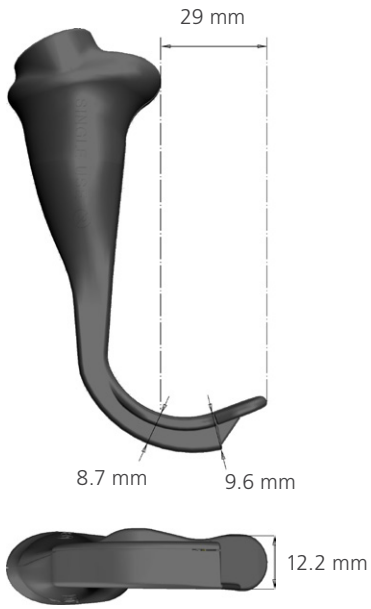
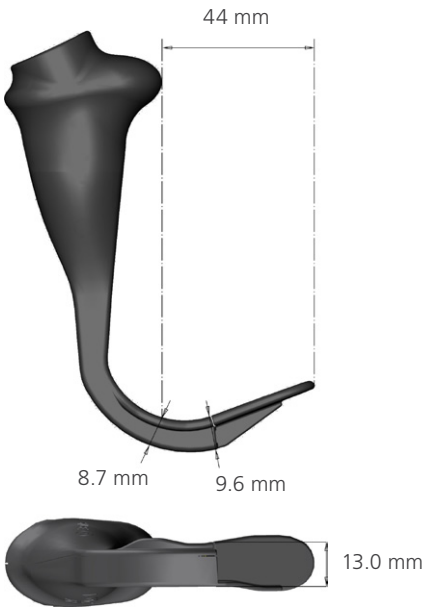
Table 13. System Component Specifications

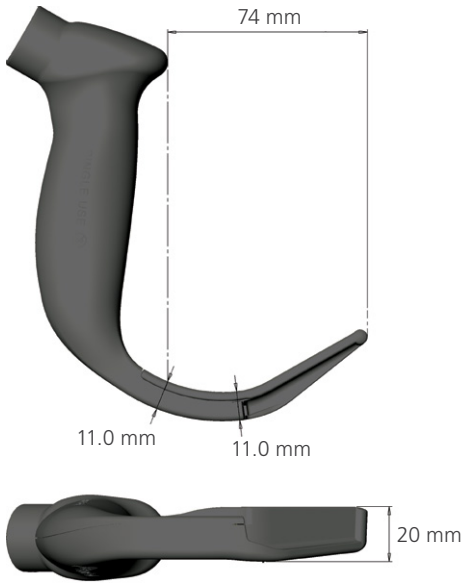
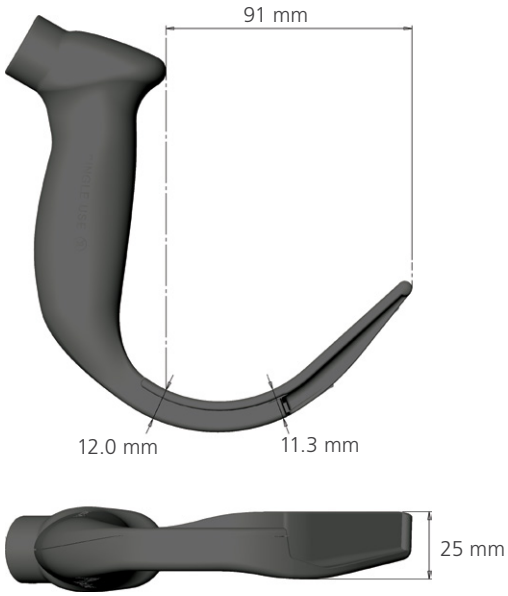
GLIDESCOPE VIDEO MONITOR	
TFT Color, VGA 640 x 480 px Monitor: 16.3 cm (6.4 in) Height: 174 mm Width: 223 mm Depth: 80 mm Weight: 1.0 kg	
VIDEO CABLE (REUSABLE SYSTEM)	
Cable length: 2190 ± 55 mm Diameter: 5.4 mm	
SPECTRUM SMART CABLE (SINGLE-USE SYSTEM)	
Length: 1540 ± 50 mm Diameter: 5.4 mm	

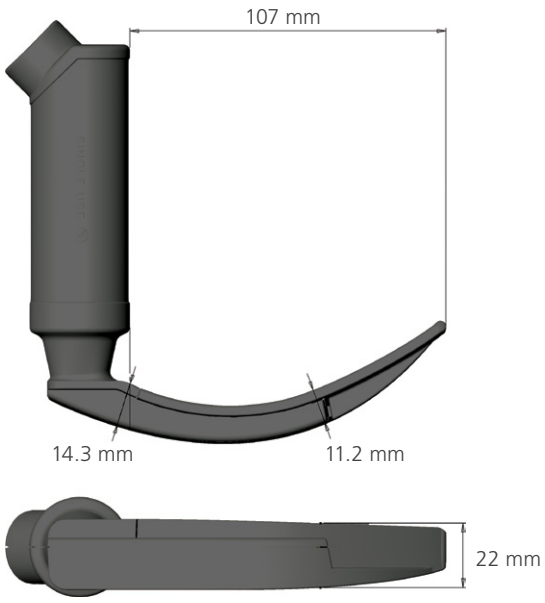
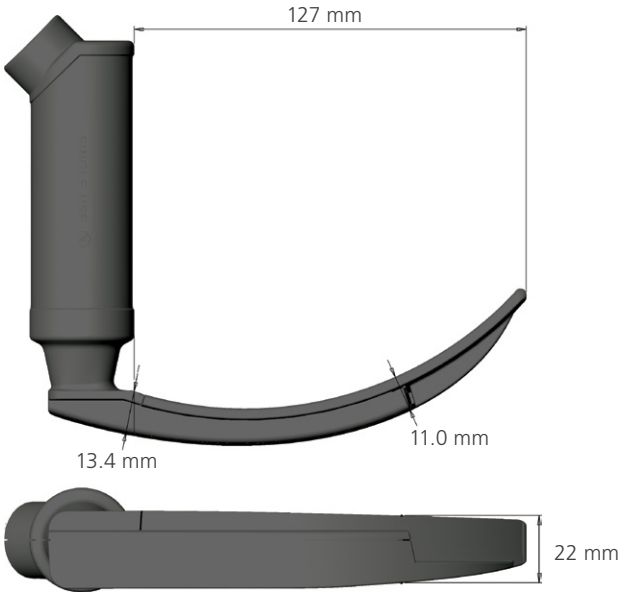
GLIDESCOPE PREMIUM CART	
Wheelbase diameter: 53.3 cm Min. height: 101.6 cm Max. height: 132.1 cm Weight: 8.0–8.4 kg	
MOBILE STAND	
Wheelbase diameter: 61 cm Min. height: 76 cm Max. height: 122 cm	
IV POLE MOUNT	
Weight: 0.9 kg Arm length: 27 cm Width: 6.2 cm	

LOPRO T3 (REUSABLE SYSTEM)	
Height at handle: 10.8 mm Height at camera: 10.5 mm Blade tip to handle: 72 mm Width at camera: 20 mm	
LOPRO T4 (REUSABLE SYSTEM)	
Height at handle: 11.0 mm Height at camera: 10.0 mm Blade tip to handle: 91 mm Width at camera: 25 mm	

MAC T3 (REUSABLE SYSTEM)	
Height at handle: 14.5 mm Height at camera: 9.6 mm Blade tip to handle: 107 mm Width at camera: 22 mm	
MAC T4 (REUSABLE SYSTEM)	
Height at handle: 13.4 mm Height at camera: 9.6 mm Blade tip to handle: 128 mm Width at camera: 22 mm	

SPECTRUM LOPRO S1 (SINGLE-USE SYSTEM)	
Height at handle: 8.7 mm Height at camera: 9.6 mm Blade tip to handle: 29 mm Width at camera: 12.2 mm	
SPECTRUM LOPRO S2 (SINGLE-USE SYSTEM)	
Height at handle: 8.7 mm Height at camera: 9.6 mm Blade tip to handle: 44 mm Width at camera: 13.0 mm	

SPECTRUM LOPRO S3 (SINGLE-USE SYSTEM)	
Height at handle: 11.0 mm Height at camera: 11.0 mm Blade tip to handle: 74 mm Width at camera: 20 mm	
SPECTRUM LOPRO S4 (SINGLE-USE SYSTEM)	
Height at handle: 12.0 mm Height at camera: 11.3 mm Blade tip to handle: 91 mm Width at camera: 25 mm	

SPECTRUM MAC S3 (SINGLE-USE SYSTEM)	
Height at handle: 14.3 mm Height at camera: 11.2 mm Blade tip to handle: 107 mm Width at camera: 22 mm	
SPECTRUM MAC S4 (SINGLE-USE SYSTEM)	
Height at handle: 13.4 mm Height at camera: 11.0 mm Blade tip to handle: 127 mm Width at camera: 22 mm	

BATTERY SPECIFICATIONS

Table 14. Battery Specifications

CONDITION	DESCRIPTION
Battery type	Lithium-ion
Battery life	Under normal operating conditions, a fully charged battery lasts approximately 90 minutes
Charging time	Charging time off line will take no more than 6 hours from an empty battery to a full charge
Rated capacity	2150 mAh
Nominal voltage	7.2 V
Max charging voltage	8.4 V
Nominal weight	90 g (0.2 lbs)
Width	23 mm (0.9 in)
Length	391 mm (5.4 in)
Thickness	23 mm (0.9 in)

ELECTROMAGNETIC COMPATIBILITY

The GlideScope Titanium system is designed to be in compliance with IEC 60601-1-2:2007, which contains electromagnetic compatibility (EMC) requirements for medical electrical equipment. The limits for emissions and immunity specified in this standard are designed to provide reasonable protection against harmful interference in a typical medical installation.

The GlideScope Titanium system complies with the applicable essential performance requirements specified in IEC 60601-1 and IEC 60601-2-18. Results of immunity testing show that the essential performance of the system is not affected under the test conditions described in the following tables. For more information about the essential performance of the GlideScope Titanium system, see Essential Performance on page 1.

ELECTROMAGNETIC EMISSIONS

Table 15. Guidance and Manufacturer's Declaration—Electromagnetic Emissions

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

EMISSIONS TEST	COMPLIANCE	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
RF emissions CISPR 11	Group 1	The GlideScope Titanium system uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The GlideScope Titanium system is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

ELECTROMAGNETIC IMMUNITY

Table 16. Guidance and Manufacturer's Declaration—Electromagnetic Immunity

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

IMMUNITY TESTS	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	In compliance	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/ burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/ output lines	In compliance	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	In compliance	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	In compliance	Mains power quality should be that of a typical commercial or hospital environment. If the user of the GlideScope Titanium system requires continued operation during power mains interruptions, it is recommended that the GlideScope Titanium system be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	In compliance	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	Portable and mobile RF communications equipment should be used no closer to any part of the GlideScope Titanium system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance d (m)** $d=1.2\sqrt{P}$

Table 16. Guidance and Manufacturer's Declaration—Electromagnetic Immunity

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

IMMUNITY TESTS	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	d=1.2 $\sqrt{P}$ 80 MHz to 800 MHz d=2.3 $\sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol: 

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

At 80 MHz and 800 MHz, the higher frequency range applies.

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

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

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

RECOMMENDED SEPARATION DISTANCES

Table 17. Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the GlideScope Titanium System

The GlideScope Titanium system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the GlideScope Titanium system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the GlideScope Titanium system as recommended below, according to the maximum output power of the communications equipment.

RATED MAXIMUM OUTPUT POWER OF TRANSMITTER (W)	SEPARATION DISTANCE ACCORDING TO FREQUENCY OF TRANSMITTER (m)		
	150 kHz to 80 MHz $d=1.2\sqrt{P}$	80 MHz to 800 MHz $d=1.2\sqrt{P}$	800 MHz to 2.5 GHz $d=2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

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

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

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

ACCESSORY CONFORMANCE TO STANDARDS

To maintain electromagnetic interference (EMI) within certified limits, the system must be used with the cables, components, and accessories specified or supplied by Verathon®. For additional information, see the System Parts & Accessories and Component Specifications sections. The use of accessories or cables other than those specified or supplied may result in increased emissions or decreased immunity of the system.

Table 18. EMC Standards for Accessories

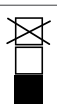
ACCESSORY	MAX LENGTH
AC power cord	4.5 m (15 ft)
DC medical power adapter	—
HDMI-to-DVI cable	6 m (20 ft)
Video cable (reusable system)	2.2 m (7.2 ft)
Smart Cable (single-use system)	1.6 m (5.2 ft)

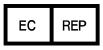
SYMBOL DIRECTORY

The following table explains the symbols used with the system in order to indicate safety information, instructions for use, and compliance with standards and regulations.

Table 19. Directory of Symbols

SYMBOL	MEANING
	Warnings & Cautions
	Warning or Caution—Consult accompanying documents. Read instructions before connecting or operating.
	Risk of electric shock
	Flammable material
	Non-ionizing, electromagnetic radiation
	Product Use & Specifications
	Refer to the operations & maintenance manual
	Refer to the operations & maintenance manual
	Manufacturer
	Date of manufacture
	Use-by date
	Catalogue (part) number
	Serial number
	Batch code
	Upper temperature limit
	Temperature limitation

SYMBOL	MEANING
	Humidity limitation
	Atmospheric pressure limitation
	USB
	Statement of prescription
	USB flash drive for media storage
	Sterilized using ethylene oxide
	Non sterile
	Reuse is not allowed
Shipping	
	Fragile item, handle carefully
	Keep dry
	Handle with care
	This way up
	Do not use if package is damaged
	Quantity per box
	Stacking limit by number—Indicates that the items are not to be vertically stacked higher than the specified number of items
	Shipping box is made of corrugated cardboard and should be recycled accordingly

SYMBOL	MEANING
	Electrical & Power
	Class II equipment
	Type BF applied part
	Energy Efficiency Level IV
	Connector polarity mark
	Direct current
	Alternating current
	Standards & Certifications
	CE—Marked in accordance with the Medical Device Directive (MDD)
	CSA—Canadian Standards Association mark of certification to applicable standards for electromedical equipment
	EC REP—Authorized Representative in the European Community
	TUV—Safety approval mark for components or subassemblies
	UL—Underwriters Laboratories Recognized Component certification mark in Canada and the United States
	WEEE—Subject to waste electrical and electronic equipment regulations

GLOSSARY

TERM	DEFINITION
A	Ampere
AC	Alternating current
AER	Automated endoscope reprocessor
C	Celsius
CFR	Code of Federal Regulations (U.S.)
CISPR	International Special Committee on Radio Interference
cm	Centimeter
CSA	Canadian Standards Association
DL	Direct laryngoscopy
EMI	Electromagnetic interference
ESD	Electrostatic discharge
Essential performance	The system performance necessary to achieve freedom from unacceptable risk
F	Fahrenheit
g	Gram
GHz	Gigahertz
HDMI	High-definition multimedia interface
hPa	Hectopascal
Hz	Hertz
IEC	International Electrotechnical Commission
in	Inch
IPA	Isopropyl alcohol
ISM	Industrial, scientific, and medical
kHz	Kilohertz
kV	Kilovolt
L	Liter
lbs	Pounds
m	Meter
mAh	Milliampere-hour
MDD	Medical Device Directive
MHz	Megahertz
mL	Milliliter
mm	Millimeter
MSDS	Material Safety Data Sheet
OSHA	Occupational Safety and Health Administration (federal agency in U.S.)
psia	Pounds per square inch absolute

TERM	DEFINITION
Pure water	Water that is suitable for high-level disinfection according to local regulations and your medical facility
RF	Radio frequency
RH	Relative humidity
RoHS	Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
SDS	Sodium dodecyl sulphate
V	Volt
Vrms	Voltage root mean squared
W	Watt
WEEE	Waste electrical and electronic equipment


VERATHON®