GLIDESCOPE®

GLIDESCOPE SYSTEM
COBALT AVL SINGLE-USE
Operations & Maintenance Manual

VERATHON®

GLIDESCOPE SYSTEM
COBALT AVL SINGLE-USE
Operations & Maintenance Manual

Effective: January 15, 2021

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

For customers with GlideScope systems using the GlideScope Cobalt AVL Video Monitor (version 0570-0304).

CONTACT INFORMATION

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

Verathon Inc.
20001 North Creek Parkway
Bothell, WA 98011 U.S.A.
Tel: 800.331.2313 (US and Canada only)
Tel: 425.867.1348
Fax: 425.883.2896
verathon.com

EC REP

Verathon Medical (Europe) B.V.
Willem Fenengastraat 13
1096 BL Amsterdam
The Netherlands
Tel: +31 (0) 20 210 30 91
Fax: +31 (0) 20 210 30 92

Verathon Medical (Canada) ULC
2227 Douglas Road
Burnaby, BC V5C 5A9
Canada
Tel: 604.439.3009
Fax: 604.439.3039

CE

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.

TABLE OF CONTENTS

IMPORTANT INFORMATION

PRODUCT INFORMATION

The GlideScope® Cobalt AVL Single-Use video laryngoscope system is designed for "1st Pass Success." It provides a consistently clear view of a patient's airway, enabling quick intubations. The AVL design is based on the GlideScope GVL®, which is clinically proven to achieve a Cormack-Lehane Grade I or II view 99 percent of the time.*

STATEMENT OF INTENDED USE

The GlideScope Cobalt AVL Single-Use system is intended for use by qualified medical 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 AVL 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.

This system 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 system. Failure to do so may result in injury to the patient, compromise the performance of the system, and may void the system warranty.

Verathon recommends that new GlideScope users:

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

* Cooper RM, Pacey JA, Bishop MJ, McCluskey SA. Early clinical experience with a new videolaryngoscope (GlideScope) in 728 patients. Can J Anaesth. 2005;52(2):191-198.

PRECAUTIONS & 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 47.

To maintain electromagnetic interference (EMI) within certified limits, the GlideScope AVL 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

Bleach may be used on the video batons, but pay special attention to stainless steel components, as bleach can corrode stainless steel.

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.

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.

WARNINGS

WARNING

Several areas of the Stat 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

If the GlideScope Direct is powered on for an extended period of time, it is possible for the surface temperature to exceed 41°C (106°F) at the tip of the blade, where the lighting and camera are located.

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 to the tonsils or soft palate.

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. 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

GlideScope systems are delivered nonsterile and require cleaning or 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

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

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

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

Do not place the video baton in the cradle if any of the components are contaminated.

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

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

No modification of this equipment is allowed.

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

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.

WARNING

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

PRODUCT DESCRIPTION

The GlideScope AVL system is an ideal tool for physicians and other healthcare professionals who need to effectively manage routine to difficult airways. It is useful for the intubation of normal airways, anterior airways, neonatal patients, obese patients, and patients with limited neck extension. Additionally, it is useful for teaching purposes, verification of endotracheal tube (ETT) placement, nasal intubation, and ETT exchange. The AVL is easy to learn, use, and teach. It is ideal for acute care settings and emergency environments. It also integrates into standard ED, OR, ICU, and NICU applications.

The AVL system combines a high-resolution, full-color digital camera with an integrated LED light source and Reveal™ anti-fog feature. The AVL video batons and GlideScope Direct blade connect directly to a full-color, digital video monitor for real-time viewing.

The AVL system is recommended for use with an endotracheal tube stylet, particularly the GlideRite® Rigid Stylet, which complements the AVL blade angle. For more information about the stylet, see the *GlideRite Rigid Stylet Operations and Maintenance Manual*.

COBALT AVL MONITOR

The monitor can store up to one hour of video (approximately 40 typical intubations), which you can download to a USB flash drive for archiving and further review. The monitor also has a DVI video output through an HDMI connector. It is recommended that you use the HDMI-to-DVI cable provided by Verathon® to connect to an external monitor that is approved for medical use. You can operate the monitor by connecting it to the medical-grade power supply provided by Verathon or by using the internal, rechargeable lithium-ion battery.

Verathon creates software updates for the Cobalt AVL Monitor as needed. This manual documents the most current version of the Cobalt AVL 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.

Figure 1. Cobalt AVL Monitor

SINGLE-USE SYSTEM

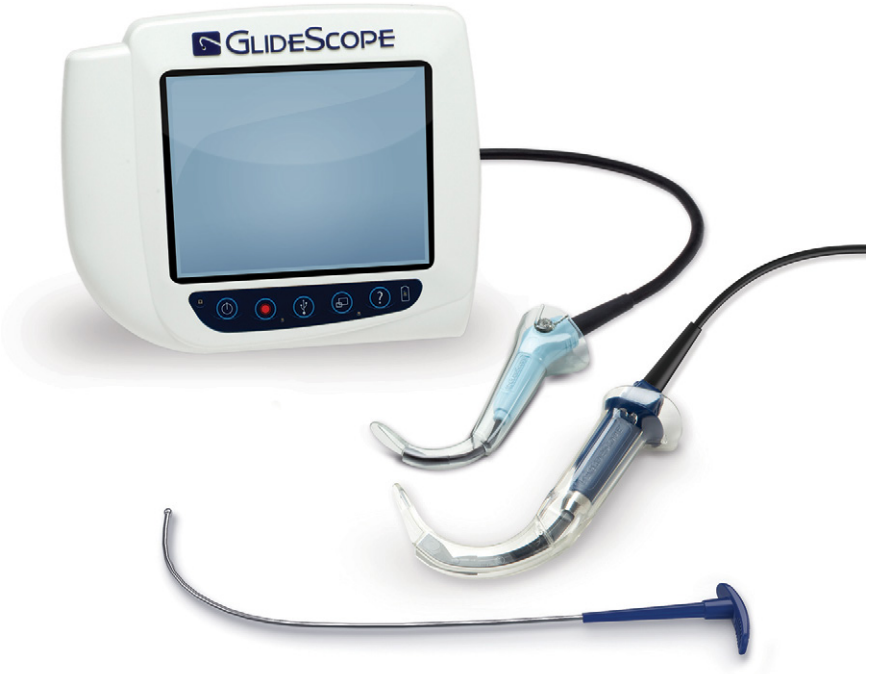
The AVL single-use system can be used with a choice of two video batons and multiple GVL® Stats. Single-use GVL Stats are offered in a comprehensive range of sizes, allowing clinicians to meet the particular requirements of patients ranging in size from preterm infants to morbidly obese adults.

The system may include the following components:

- Cobalt AVL Monitor
- AVL Video Baton 1-2 (for neonatal patients and small children)
    - GVL 0 Stat, for patients less than 1.5 kg (3.3 lbs)*
    - GVL 1 Stat, for patients between 1.5–3.8 kg (3.3–8.4 lbs)*
    - GVL 2 Stat, for patients between 1.8–10 kg (4–22 lbs)*
    - GVL 2.5 Stat, for patients between 10–28 kg (22–61.7 lbs)*
- AVL Video Baton 3-4 (for use on children and adults)
    - GVL 3 Stat, for patients between 10 kg–adult (22 lbs–adult)*
    - GVL 4 Stat, for patients between 40 kg–morbidly obese (88.2 lbs–morbidly obese)*
- GlideRite® Rigid Stylet (recommended for use with the AVL Video Baton 3-4)

** Weight ranges are approximate; a medical professional must evaluate on a patient-by-patient basis.*

Figure 2. GlideScope AVL Single-Use System



GLIDESCOPE DIRECT INTUBATION TRAINER

The GlideScope Direct intubation trainer is designed to work with the Cobalt AVL Monitor. The GlideScope Direct resembles a traditional Macintosh direct laryngoscope with the addition of a video camera near the end of the blade, permitting both direct laryngoscopy and a video display of the airway. This provides the user with a laryngeal view, permits mentoring by an instructor, and combined with the system monitor allows the image to be captured for documentation, quality control, and teaching.

The GlideScope Direct intubation trainer does not provide the same benefits of GlideScope video laryngoscopes in settings when a line of sight cannot be achieved. Typically, these occur in patients with difficult (Cormack-Lehane grade 3 or 4) airways. It will, however, facilitate the instruction of direct laryngoscopy. Should the GlideScope Direct fail to provide an adequate laryngeal view, the airway manager can easily convert to an AVL single-use video baton and GVL® Stat for an optimal view.

Figure 3. GlideScope Direct Intubation Trainer

SYSTEM PARTS & ACCESSORIES

The GlideScope AVL system consists of the following components.

Table 1. System Components

PARTS & ACCESSORIES	
Required Components	
Cobalt AVL Monitor 	Video batons (for Single-Use system only) 
GVL® Stat sizes 0, 1, 2.5, 3, and 4 (for Single-Use system only) 	
Video monitor 12 V DC power adapter 	Power cord 

PARTS & ACCESSORIES

Optional Components

GlideScope Premium Cart

Mobile stand

Universal accessory basket

Note: For use with AVL portable stand

Cradle for video baton

GlideScope Direct Intubation Trainer

IV pole mounting kit

HDMI-to-DVI cable

GlideRite® Rigid Stylet

VIDEO LARYNGOSCOPE COMPONENTS

Figure 4. AVL Single-Use Video Laryngoscope Components

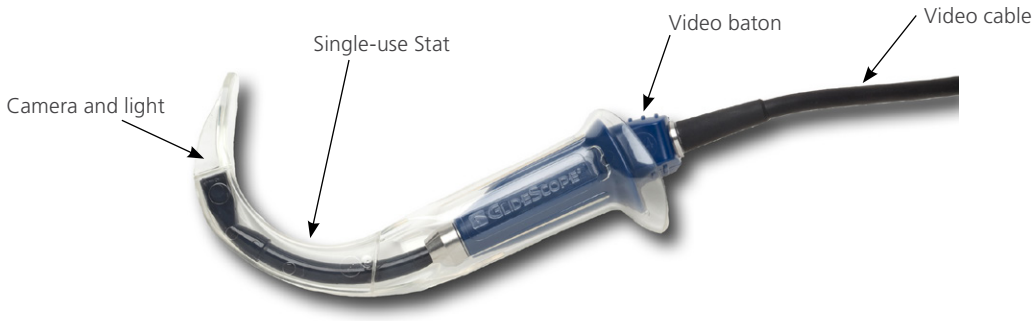


Figure 5. GlideScope Direct Intubation Trainer

BUTTONS, ICONS, & CONNECTIONS

The main component of the GlideScope AVL system is the digital, full-color monitor. The front of the monitor includes the screen and the buttons you use to operate the system.

The back panel of the monitor includes the sockets and ports for connecting the 12 V DC power adapter, 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 premium cart, mobile stand, or IV pole.

Figure 6. Cobalt AVL Monitor Keypad

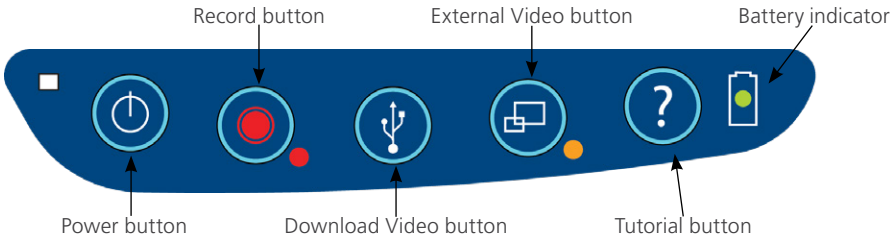


Table 2. Keypad Buttons

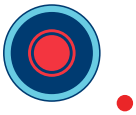
BUTTON	FUNCTION
	**Power:** Press and release to turn on the monitor. Press and hold to turn it off.
	**Record:** Press to start and stop recording video. When you are recording, the red LED indicator to the right of the button will be lit, and the Recording icon ◉ will be shown on the screen.
	**Download Video:** Press to download video clips from the device to a USB flash drive.
	**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 feature has been activated. Press the button again to deactivate the external video. *Note: An HDMI-to-DVI cable is required in order to display video on an external monitor.*
	**Tutorial:** Press and hold for three seconds to play a video tutorial about the GlideScope 4-Step Technique.
	**Battery Indicator:** LED is: **Green:** Unit fully charged **Red:** Unit charging **Flashing Red:** Indicates a problem with the battery. Charge for 12 hours, and if the LED is still flashing, contact Verathon® Customer Care.

Table 3. On-Screen Icons

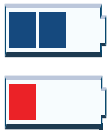
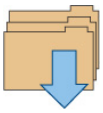
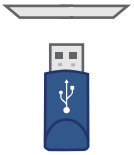
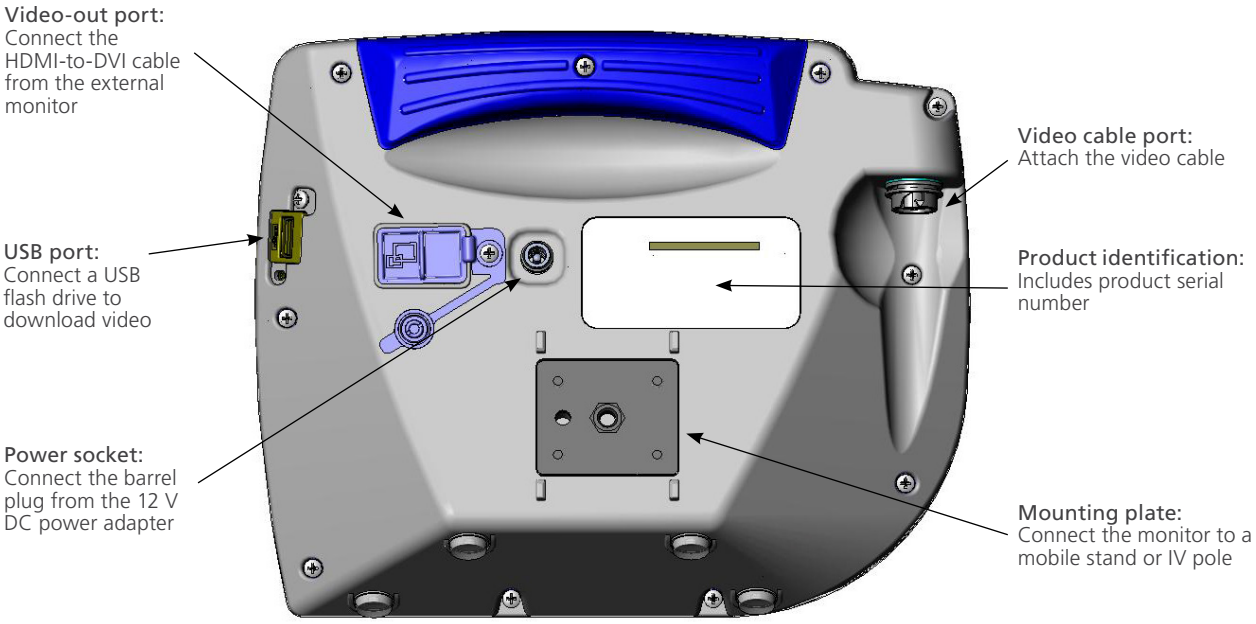
ICON	FUNCTION
	**Battery Status:** The remaining battery power is indicated by the Battery Status icon. If the icon is red, the battery should be charged as soon as possible. (See Charge the Monitor Battery.)
	**Cancel Operation:** Indicates the button that cancels the current operation, moves to the previous screen, or returns to the main menu.
	**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.
	**Download New**: Indicates the button that downloads the video clips that have not previously been downloaded.
	**Download All:** Indicates the button that downloads all stored video clips, whether they have previously been downloaded or not.
	**Cancel Download:** Indicates the button that cancels the video download currently in progress.
	**USB Flash Drive Not Found:** A flash drive needs to be inserted into the USB port.
	**Attach Video Cable:** The video baton or video laryngoscope is not attached to the monitor.
	**Recording:** The system is recording video.
	**Saving File:** The system is saving a video clip to its internal memory.

Figure 7. Cobalt AVL 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 Cobalt AVL Monitor (Optional)—Set up the Cobalt AVL Monitor on a mobile stand or IV pole.
3. Charge the Monitor Battery—You can use the system while the battery is charging.

   Note: The monitor will operate without charging the battery by using the Cobalt AVL Monitor 12 V DC Power Adapter that shipped with the unit.
4. Connect the Video Cable—Attach the cable that connects the video baton or laryngoscope with the monitor and transmits the video data.
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.

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 COBALT AVL MONITOR (OPTIONAL)

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

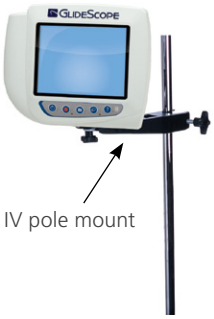
- Mount it on a GlideScope premium cart or mobile stand (Figure 8 or Figure 9). These solutions make it easy for you to move the system from one location to another.
- Mount it on an IV pole (Figure 10).

This procedure includes instructions for assembling the mobile stand, mounting the system on either the mobile stand or an IV pole, and adjusting the monitor angle.

Figure 8. GlideScope Premium Cart

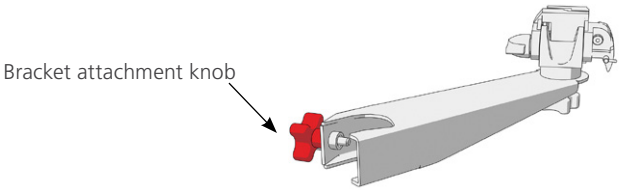
Figure 9. Mobile Stand

Figure 10. IV Pole Mount

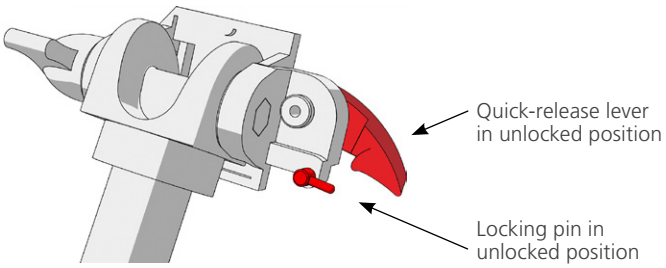


ATTACH THE MONITOR TO THE MOBILE STAND OR IV POLE

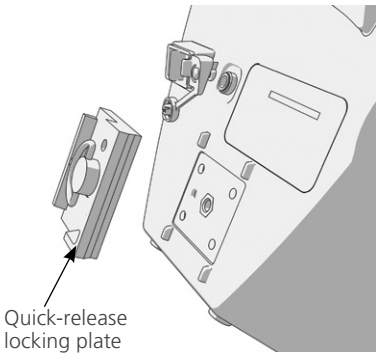
1. If you are using the GlideScope premium cart or mobile stand, assemble it according to the instructions included with the component.
2. If you are using an IV pole mount, place the mounting bracket on the IV pole, and then tighten the bracket attachment knob until the IV pole mount is secure.

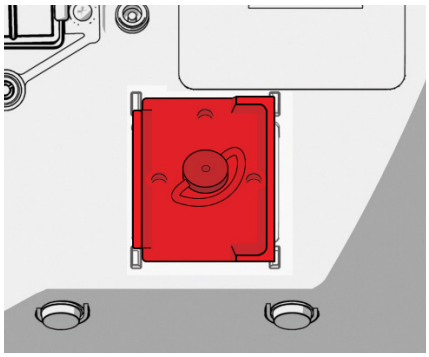


3. On the mobile stand mount or the IV pole mount, ensure that the locking pin and quick-release lever are in the unlocked (horizontal) position.



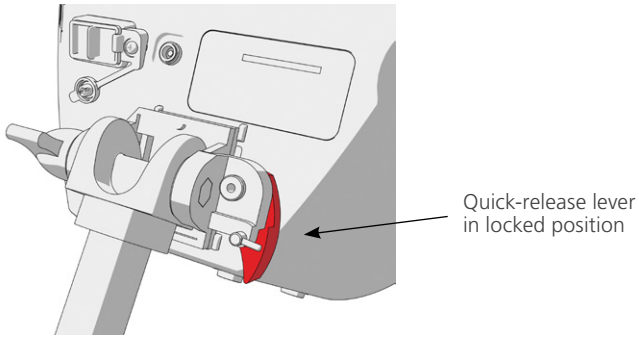
4. Using the orientation shown in the following images, screw the quick-release locking plate to the back panel of the monitor.



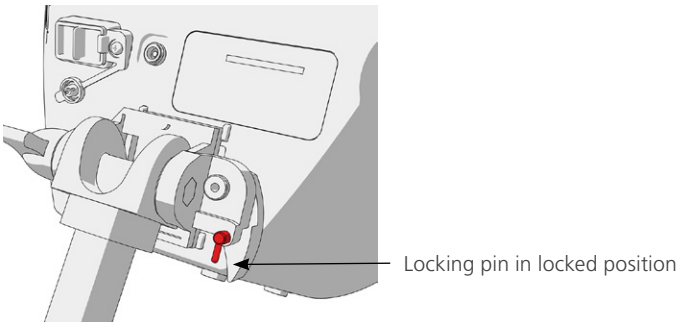


5. Seat the locking plate of the monitor on the quick-release mount. When properly situated, the monitor sits securely on the mount, and the quick-release lever automatically snaps into the locked (down) position.

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



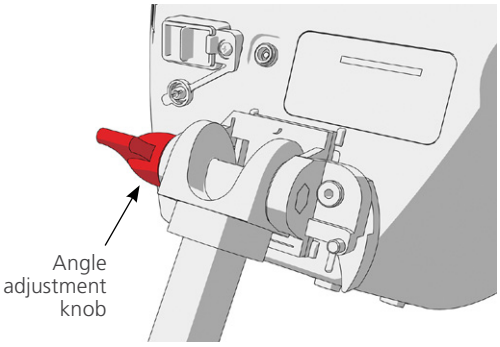
7. Adjust the locking pin to the locked (down) position. This secures the quick release lever in the locked position.



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.

1. Turn the angle adjustment knob counterclockwise.

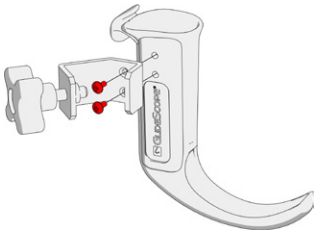


2. Tilt the monitor to the desired angle.
3. Turn the angle adjustment knob clockwise. This secures the monitor at the desired angle.
4. To attach a video baton cradle, see the procedure Attach the Video Baton Cradle (Optional).

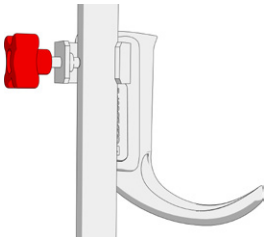
PROCEDURE 3. ATTACH THE VIDEO BATON CRADLE (OPTIONAL)

You may elect to attach a video baton cradle to the mobile stand or IV pole mount.

1. Screw the center pole clamp to the video baton cradle.



2. Attach the center pole clamp and video baton cradle to the pole, and then turn the adjustment knob clockwise to tighten.



PROCEDURE 4. CHARGE THE MONITOR BATTERY

WARNING

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

The Cobalt AVL Monitor includes an internal lithium-ion 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 or longer 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).

Figure 11. Battery Status Icons

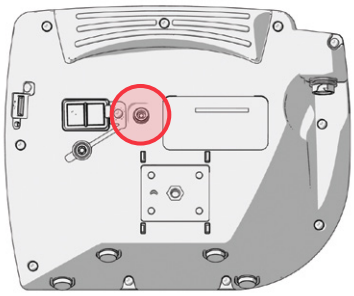
Battery must be charged

Approximately ⅓ battery life remains

Approximately ⅔ battery life remains

Battery is ⅔ to fully charged

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



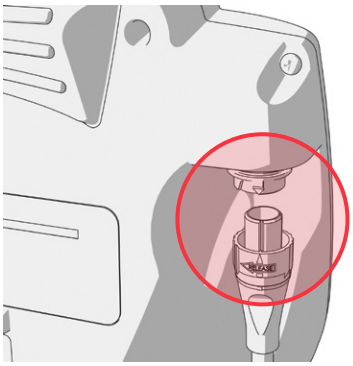
3. Plug the power supply into a hospital-grade power outlet.
4. Allow the battery to charge. Fully charging the battery may take up to 6 hours.

PROCEDURE 5. CONNECT THE VIDEO CABLE

This procedure connects the video cable to the monitor, which displays the image transmitted from the camera.

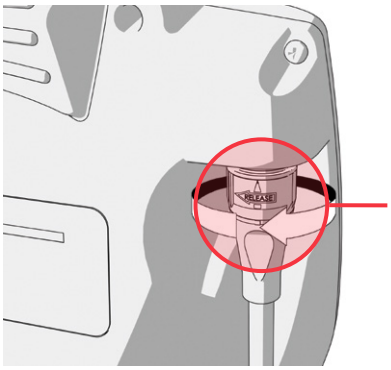
Ensure that the video monitor is turned off prior to connecting or disconnecting the video cable.

1. Align the arrow on the video cable and the arrow on the video cable port.



2. Insert the video cable into the port. You will hear a click when the cable is successfully connected.

   Note: When disconnecting the video cable from the monitor, rotate the connector ring in the direction of the arrow.



PROCEDURE 6. CONNECT TO AN EXTERNAL MONITOR (OPTIONAL)

WARNING

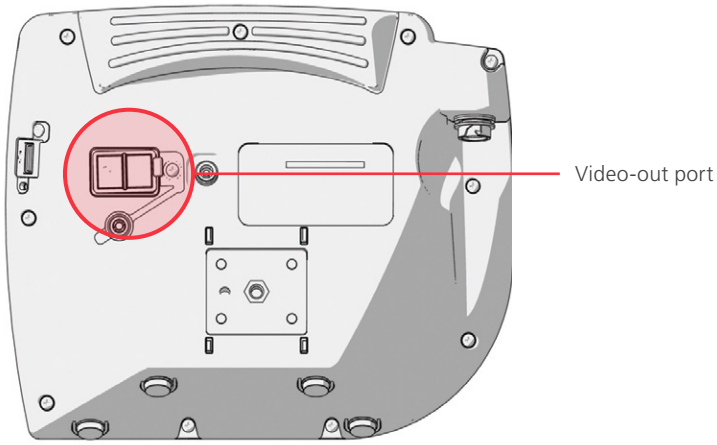
The external monitor must be safety-approved medical equipment.

By using an HDMI-to-DVI cable, you can connect the Cobalt AVL 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 the resolution of the external monitor.

Note: 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.

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.

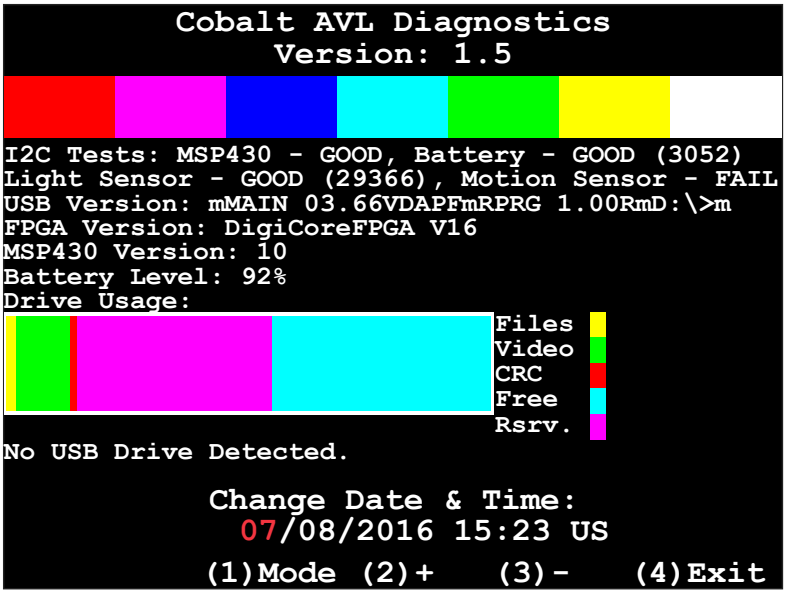
PROCEDURE 7. CONFIGURE USER SETTINGS

The Cobalt AVL Monitor imports most of its individual settings from a configuration file on a USB flash drive. Before importing the configuration file, you must create it using the Cobalt AVL User Settings Tool, which is available from Verathon Customer Care. The configuration file contains values for the following settings:

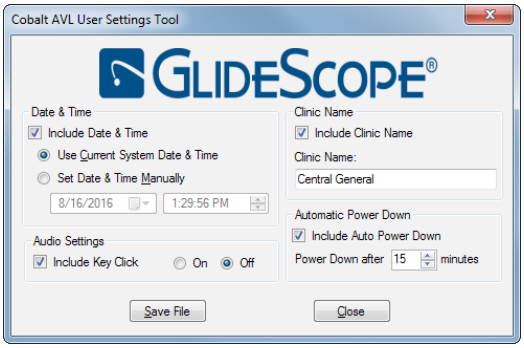
- Date and Time (approximate)
- Key Click Sound (on or off)
- Clinic Name (to be displayed on the monitor screen)
- Automatic Power Down (on or off)

You can enter an exact time and the displayed date and time format directly on the monitor's Diagnostics screen, as shown in the following figure.

Figure 12. Diagnostics Screen



1. Place a USB flash drive in one of the computer's USB ports.
2. Open a file window for the folder containing the User Settings Tool.
3. In the file window, double-click **Cobalt AVL User Settings Tool.exe**. The User Settings Tool window opens.



4. If you want to include date and time settings in the configuration file, under Date & Time, select the **Include Date & Time** check box. Underneath the check box, choose **Use Current System Date & Time** in order to include the current date and time in the configuration file automatically when you save it, or choose **Set Date & Time Manually** and then select the date and time you want to use.

   Note: Unless you perform this procedure quickly, the current time stored in the configuration file will be slightly inaccurate when the monitor imports it. Be sure to apply final time adjustments through the onscreen time setting.

5. If you want to turn audible key clicks on or off, select the **Include Key Click** check box and choose the appropriate setting.

6. If you want to define or update the clinic name displayed on the monitor, select the **Include Clinic Name** check box. In the **Clinic Name** box, type the name you want the monitor to display.

7. If you want to turn off automatic power-down, clear the Include Auto Power Down check box. Otherwise, select the check box and adjust the delay time (**Power Down after** *number* **minutes**) as desired.

8. Click **Save File**. In the Save As dialog box, navigate to the USB flash drive and then click **Save**.

9. Click **Close** in order to exit the User Settings Tool.

10. If the monitor is on, turn it off.

11. Ensure that the monitor's power adapter is plugged in and connected.

12. Remove the USB flash drive from the computer and insert it into the USB port on the monitor.

13. Press and release the **Power** button, and then **immediately** press and hold the **External Video** and **Tutorial** buttons. The monitor should turn on and display the message "Please wait, processing updates." After the monitor has loaded and applied the configuration file, it displays the Diagnostics screen.

14. Customize your user settings by using the following buttons:
    - Press the **Record** button to select the parameter you want to set.
    - Press the **Download Video** button to increase the parameter value.
    - Press the **External Video** button to decrease the parameter value.

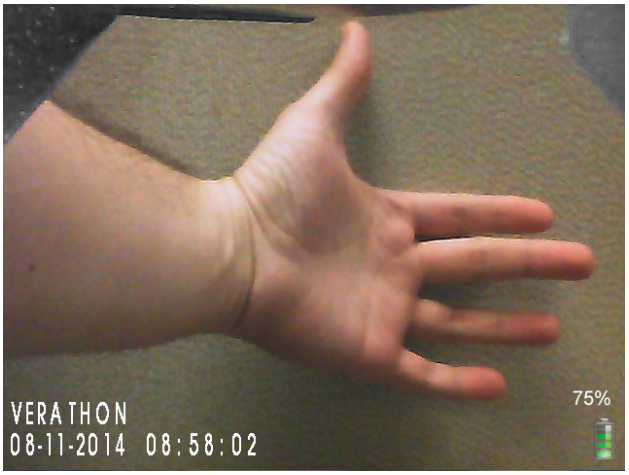
15. When you are finished customizing the settings, press the **Tutorial** button. This saves the parameters, and the Diagnostics screen closes.

16. Turn off the monitor, and then remove the USB drive from the monitor.

PROCEDURE 8. 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 local Verathon® representative or Verathon Customer Care if your system does not function as described below. For contact information, visit verathon.com/support.

1. Fully charge the monitor battery (this takes approximately 6 hours).
2. Attach the video cable to the monitor.
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 video baton or GlideScope Direct blade.



Note: There may be a slight blade intrusion in the upper-left and upper-right corners 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. Make a test recording and download it to a USB flash drive as described in the procedure Use the Recording Feature (Optional) on page 31.

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

GlideScope systems are delivered nonsterile and require cleaning or 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. 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.

AVL 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 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 anti-fog feature is not necessary in order to use the device; if desired, you may begin the intubation procedure immediately.

Note: If the video laryngoscope is stored in cold conditions, additional warming time may be required for optimal performance of the anti-fog feature.

Using the system consists of the following procedures:

- Procedure 1: Connect the Video Cable to the Monitor
- Procedure 2: Insert the Video Baton into the Stat (Single-Use Only)
- Procedure 3: Prepare the GlideScope System
- Procedure 4: Intubate Using the GlideScope 4-Step Technique
- Procedure 5: Intubate Using the GlideScope Direct
- Procedure 6: Use the Recording Feature (Optional)

PROCEDURE 1. CONNECT THE VIDEO CABLE TO THE MONITOR

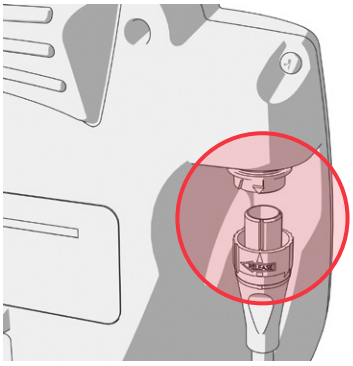
Ensure that the video monitor is turned off prior to connecting or disconnecting the video cable.

Table 4. Video Laryngoscope Sizes

SIZES		
Stat	Video Baton	Recommended Patient Weight/Size
GVL® 0 Stat	Video baton 1-2	Patients less than 1.5 kg (3.3 lbs)*
GVL 1 Stat	Video baton 1-2	Patients between 1.5–3.8 kg (3.3–8.4 lbs)*
GVL 2 Stat	Video baton 1-2	Patients between 1.8–10 kg (4–22 lbs)*
GVL 2.5 Stat	Video baton 1-2	Patients between 10–28 kg (22–61.7 lbs)*
GVL 3 Stat	Video baton 3-4	Patients between 10 kg–adult (22 lbs–adult)*
GVL 4 Stat	Video baton 3-4	Patients between 40 kg–morbidly obese (88 lbs–morbidly obese)*

** Weight ranges are approximate; a medical professional must evaluate on a patient-by-patient basis.*

1. Ensure the video laryngoscope and other system components have been properly cleaned and disinfected. For more information, see the Cleaning & Disinfecting chapter.
2. Using the information in Table 4, in combination with a clinical assessment of the patient and the experience and judgment of the clinician, select the single-use video baton/Stat combination that is appropriate for the patient.
3. Align the arrow on the video cable and the arrow on the video cable port.



4. Insert the video cable into the port. You will hear a click when the cable is successfully connected.

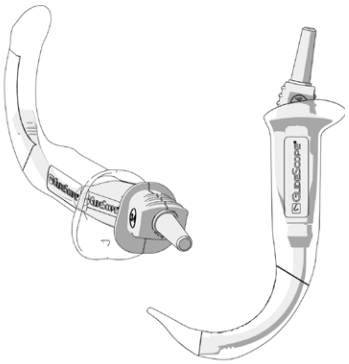
   Note: When disconnecting the video cable from the monitor, rotate the connector ring in the direction of the arrow.

PROCEDURE 2. INSERT THE VIDEO BATON INTO THE STAT (SINGLE-USE ONLY)

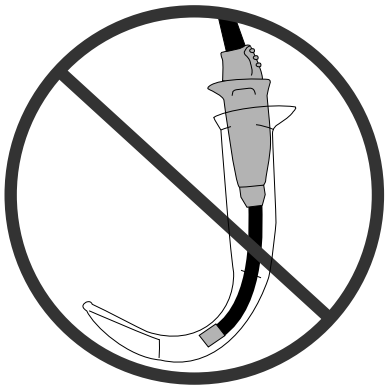
1. Open the GVL® Stat pouch, but do not remove the Stat from the packaging.
2. Ensure that the logo on the side of the baton and the logo on the side of the Stat are aligned.
3. Slide the video baton into the GVL Stat until it clicks into place. Do not remove the Stat from the pouch until you are ready to begin the intubation. This ensures that the Stat remains as clean as possible.

   Note: Ensure that you do not insert the video baton backwards.

Correct



Incorrect



4. When you remove the GVL Stat from the packaging, visually inspect the Stat to ensure that all exterior surfaces are free of unintended rough areas, sharp edges, protrusions, or cracks.

PROCEDURE 3. PREPARE THE GLIDESCOPE SYSTEM

1. Press the **Power** button. The video monitor turns on.

   Note: If the monitor locks up or becomes unresponsive for any reason, press and hold the Power button for 10 seconds to reboot the system.
2. Ensure that the battery is sufficiently charged. If necessary, connect the monitor directly to power.
3. On the monitor screen, verify that the image displayed is from the video laryngoscope camera. On the monitor, a small portion of the GVL Stat may be visible on the top or upper-left and right corners.
4. 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.
5. If desired to provide additional anti-fog benefits, you may apply Dexide™ Fred™ Lite to the camera window on the Stat.* Use the solution according to the manufacturer's instructions.

* Compatibility has been demonstrated for up to one hour of continuous exposure on video batons and Stats.

PROCEDURE 4. INTUBATE USING THE GLIDESCOPE 4-STEP TECHNIQUE

If you are using a GlideScope Direct intubation trainer, skip to the next procedure, Intubate Using the GlideScope Direct.

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 to the tonsils or soft palate.

WARNING

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

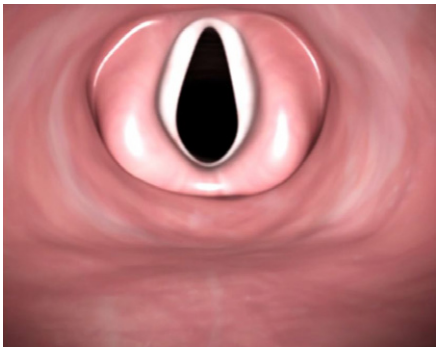
- The first area is the light-emitting area surrounding the camera. When used as indicated, continuous contact with this area is unlikely because, if tissue were to contact this area, the view would be lost and devices would need to be adjusted to regain the airway view.
- The second area is the area 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 in order 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 into 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 13. 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 5. INTUBATE USING THE GLIDESCOPE DIRECT

WARNING

If the GlideScope Direct is powered on for an extended period of time, it is possible for the surface temperature to exceed 41°C (106°F) at the tip of the blade, where the lighting and camera are located.

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. 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.

The following techniques are recommended for use of the GlideScope Direct intubation trainer. Ensure that the GlideScope Direct has been properly cleaned and high-level disinfected prior to use.

OPTION 1. RIGHT-SIDED APPROACH

This option details the use of a right-sided approach to the mouth, pharynx, and glottis.

1. The patient is optimally positioned with either extension of the neck or a "classic sniffing position."
2. The mouth is opened, and efforts are made to minimize contact with the lips and teeth. The GlideScope Direct is introduced along the right side of the tongue, which is displaced leftward.
3. The GlideScope Direct is advanced along the tongue base until the epiglottis is seen. The GlideScope Direct tip is placed in the vallecula, lifting the epiglottis by tension on the hyoepiglottic ligament.
4. A direct line of sight to the glottis may be achieved by elevation of the epiglottis. The operator can view this directly, and the instructor can observe the progress on the video monitor.
5. The use of a stylet is optional. The operator attempts to introduce the endotracheal tube through the vocal cords.

OPTION 2. MIDLINE APPROACH

This option details the use of a midline approach to the mouth, pharynx, and glottis.

1. The patient is optimally positioned with either extension of the neck or a "classic sniffing position."
2. Using the GlideScope Direct, the operator then enters the midline of the mouth, attempting to see directly to the epiglottis (guide to the glottis) and then the GlideScope Direct tip is placed in the vallecula, lifting the epiglottis by tension on the hyoepiglottic ligament.
3. The operator now attempts to gain a line of sight of the glottis, and the instructor observes the progress on the video monitor.
4. Where necessary, the operator may also observe the video view.

PROCEDURE 6. USE THE RECORDING FEATURE (OPTIONAL)

WARNING

Use only passive-mode USB flash drives provided by Verathon®. The monitor may not recognize some flash drives from other manufacturers. Never use USB drives powered by an external power source.

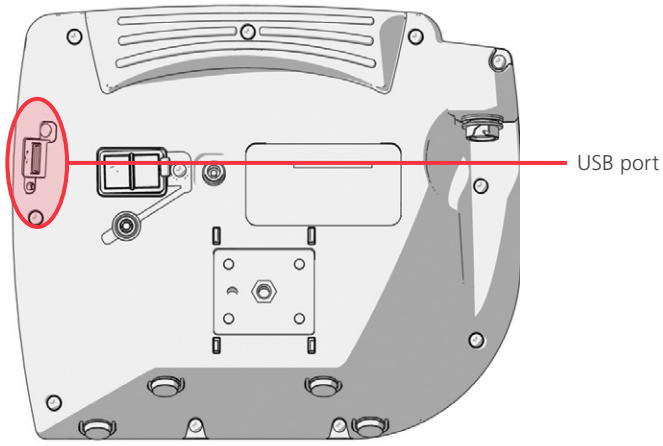
The GlideScope AVL monitor contains enough internal memory to record about 60 minutes of video. Under typical conditions, this is equivalent to about 40 intubation procedures. If you start a new recording and the video monitor has run out of memory, it deletes the oldest recordings automatically until it has created enough space. Because of this, you should download your recordings to an external USB flash drive regularly in order to preserve them.

MAKING A NEW RECORDING

1. After setting up the GlideScope system, press the **Record** button in order to begin the recording.
2. When you want to stop recording, press the **Record** button again.
3. Wait for the Saving File icon to disappear from the screen before starting a new recording.

DOWNLOADING RECORDINGS TO A USB FLASH DRIVE

4. Make sure that the flash drive has at least 1 GB of available space.
5. On the back of the monitor, remove the USB port cap, and then insert the USB flash drive into the port.



6. Press the **Download Video** button, ensuring that the USB Flash Drive Not Found icon does not appear on the screen.

7. Press the button for the action that you want to take next:

   Download only the new recordings (those that have not been downloaded previously) by pressing the **Download Video** button again.

   Download all recordings stored in the monitor by pressing the **External Video** button .

   Exit from download mode by pressing the **Record** button .

8. Wait for the progress bar to disappear from the screen before removing the USB flash drive from the monitor.

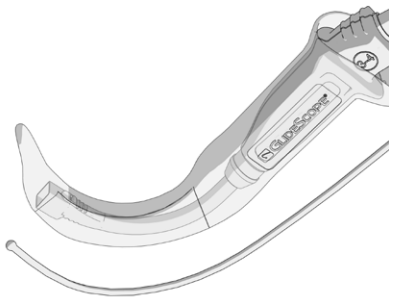
   If you need to cancel the download while the progress bar is displayed, press the **Download Video** button .

9. If you would like to review the recorded files, insert the USB flash drive into a computer and then play the .avi files using a media player installed there.

OPERATING SYSTEM (OS)	RECOMMENDED MEDIA PLAYER
Microsoft® Windows®	• Windows Media® Player (provided with the OS) • VLC® (available free at videolan.org/vlc)
Mac OS®	• MPlayerX • VLC®
iOS®	• VLC® • 8player lite • PlayerXtreme™ Media Player
Other	• VLC®

TIPS FOR USING THE GLIDESCOPE AVL SYSTEM

- The GlideScope video laryngoscope is designed to be inserted down the midline of the tongue to the epiglottis.
- Intubations using the GlideScope video laryngoscope only require approximately 0.5–1.5 kg (1–3.5 lbs) of lifting force.
- The use of an endotracheal tube stylet is recommended. The GlideRite® Rigid Stylet has been designed to complement the angle of the GlideScope video laryngoscope to facilitate intubation. For more information about the stylet, see the *GlideRite Rigid Stylet Operations and Maintenance Manual*.



TIPS FOR WORKING WITH ENDOTRACHEAL TUBES

- Insert the ETT behind or immediately adjacent to the GlideScope video laryngoscope.
- Do not insert the stylet into the larynx during intubation.
- Carefully introduce the distal end of the ETT between the vocal folds.
- When introducing the video laryngoscope or the endotracheal tube, look directly into the mouth to avoid damaging the endotracheal tube cuff, the patient's teeth, or soft tissues such as the soft palate or tonsils.
- Avoid excessive lifting or pushing of the glottis. Maximum laryngeal exposure may not facilitate intubation; reducing the elevation applied to the laryngoscope may make inserting the ETT easier.

CLEANING & DISINFECTING

GENERAL INFORMATION

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. Cleaning, disinfection, and sterilization methods listed are recommended by Verathon based on efficacy or compatibility with component materials.

WARNING

Ensure that you follow the manufacturer's instructions for handling and disposing of cleaning and disinfection solutions.

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

Do not place the video baton in the cradle if any of the components are contaminated.

Cleaning and disinfecting the GlideScope AVL system is an important part of using and maintaining the system. Prior to each use, ensure that each system component has been cleaned and disinfected according to the guidance provided in the "Cleaning & Disinfecting" chapter of one of the following manuals:

- *GlideScope System AVL Single-Use Operations & Maintenance Manual* (0900-4200)
- *GlideScope AVL System Operations & Maintenance Manual* (0900-4521, Canada only)
- *GlideRite® Rigid Stylet Operations & Maintenance Manual* (0900-4686)

For the latest versions of these manuals, please visit verathon.com/product-documentation.

MAINTENANCE & SAFETY

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.

COBALT AVL MONITOR BATTERY

Under normal operating conditions, the monitor battery will last 2–3 years; or approximately 500 charge/discharge cycles. For more information about the battery, see the Component Specifications section on page 40.

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 creates software updates for the Cobalt AVL Monitor as needed. If an update is required, Verathon Technical Services must install it.

This manual documents the most current version of the Cobalt AVL 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.

DEVICE REPAIR

The 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

Disposal of this device in accordance with WEEE requirements can be coordinated through your Verathon Service Center.

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:

- Cobalt AVL Monitor
- GlideScope AVL Video Baton (single-use system only)
- Direct Intubation Trainer

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 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

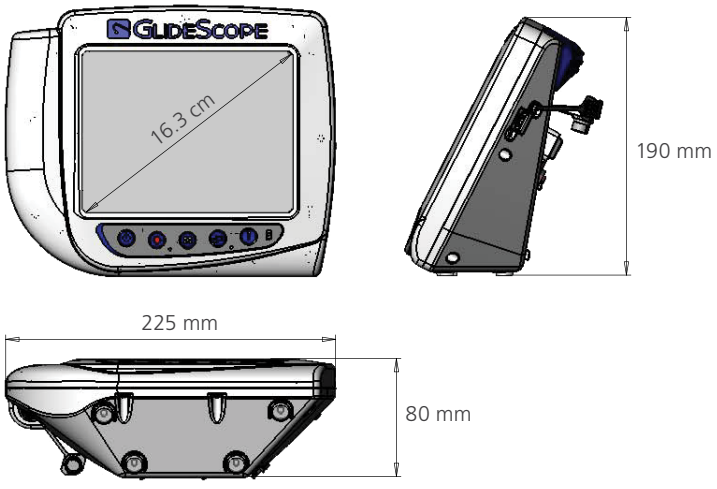
SYSTEM SPECIFICATIONS

Table 5. AVL System Specification

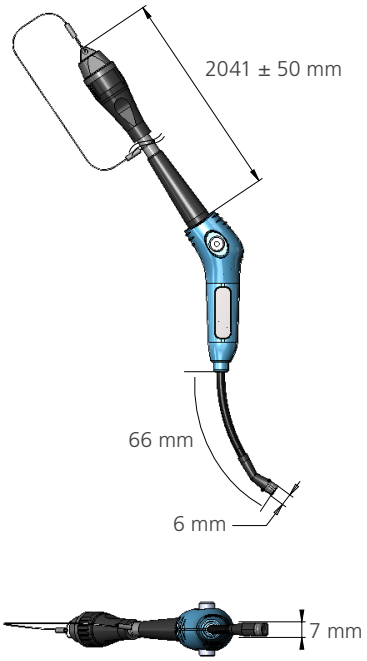
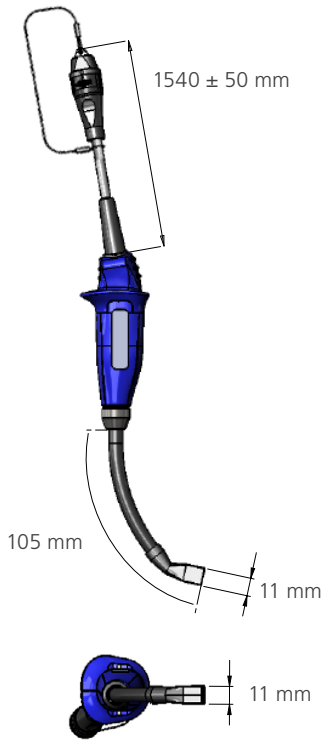
GENERAL SPECIFICATIONS		
Classification:	Electrical Class II, Applied Part BF	
Line voltage:	Range: 100–240 VAC, 50 and 60 Hz. Connect to a medical-grade power supply	
DC power supply:	12 V DC, 2.5 A max	
Fuse:	Internal 2.5 A Hold / 5 A Trip, 15 V max	
Ingress protection against water:	Video baton	IPX8
Expected product life:	Single-use Stat	1 use
OPERATING AND STORAGE SPECIFICATIONS		
Operating Specifications		
Temperature:	10 to 40°C (50 to 104°F)	
Relative humidity:	0 to 95%	
Atmospheric pressure:	440–1060 hPa	
Shipping and Storage Conditions		
Temperature:	-20 to 45°C (-4 to 113°F)	
Relative humidity:	0 to 95%	
Atmospheric pressure:	440–1060 hPa	

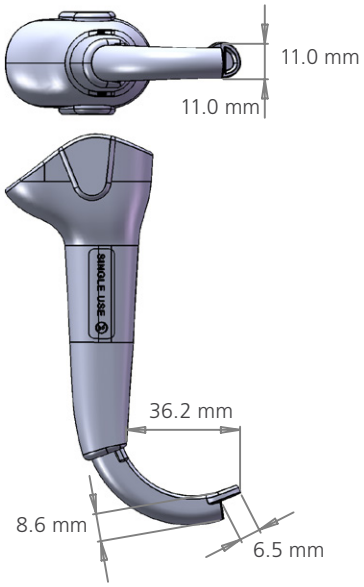
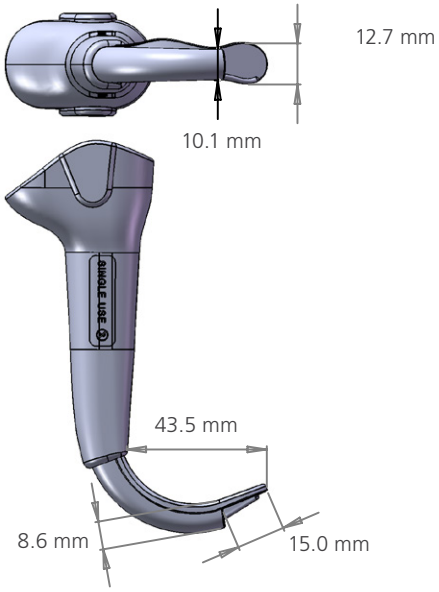
COMPONENT SPECIFICATIONS

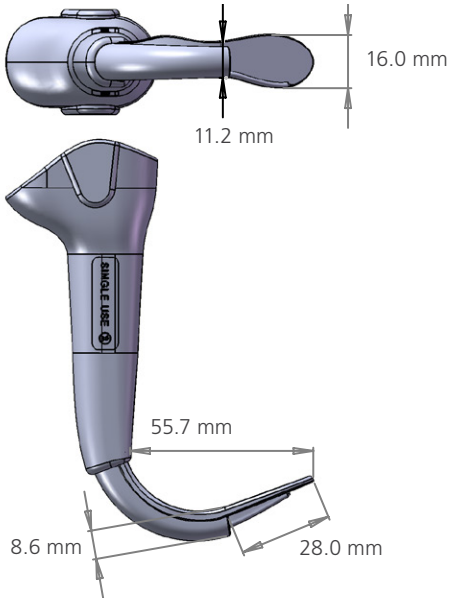
Table 6. System Component Specifications

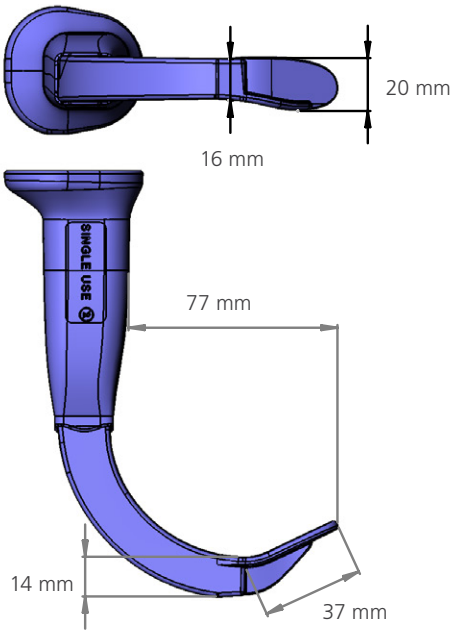
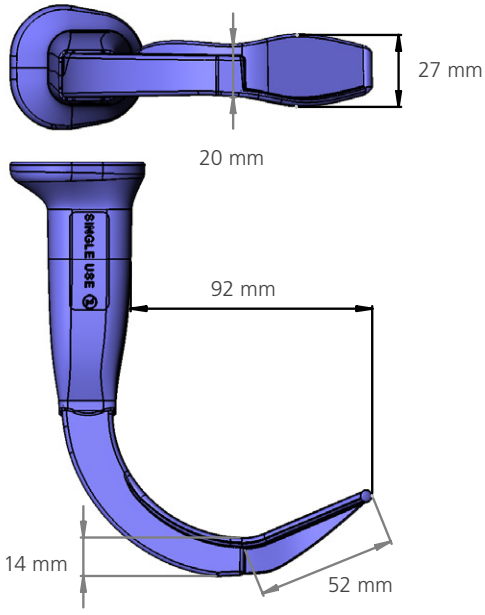
COBALT AVL MONITOR	
TFT Color, VGA 640 x 480 px Monitor: 16.3 cm (6.4 in) Height: 190 mm Width: 225 mm Depth: 80 mm Weight: 1.0 kg	

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

AVL VIDEO BATON 1-2	
Length of flexible portion of baton: 66 mm Height at camera: 6 mm Width at camera: 7 mm Video cable length: 2041 ± 50 mm	
AVL VIDEO BATON 3-4	
Length of flexible portion of baton: 105 mm Height at camera: 11 mm Width at camera: 11 mm Video cable length: 1540 ± 50 mm	

GVL® 0 STAT	
Blade tip to handle: 36.2 mm Height at camera: 8.6 mm Width at camera: 11.0 mm Blade length in front of camera: 6.5 mm Max blade width in front of camera: 11.0 mm 	
GVL 1 STAT	
Blade tip to handle: 43.5 mm Height at camera: 8.6 mm Width at camera: 10.1 mm Blade length in front of camera: 15.0 mm Max blade width in front of camera: 12.7 mm 	

GVL® 2 STAT	
Blade tip to handle: 55.7 mm Height at camera: 8.6 mm Width at camera: 11.2 mm Blade length in front of camera: 28.0 mm Max blade width in front of camera: 16.0 mm 	
GVL 2.5 STAT	
Blade tip to handle: 63.4 mm Height at camera: 9.1 mm Width at camera: 12.7 mm Blade length in front of camera: 37.0 mm Max blade width in front of camera: 19.7 mm 	

GVL® 3 STAT	
Blade tip to handle: 77 mm Height at camera: 14 mm Width at camera: 16 mm Blade length in front of camera: 37 mm Max blade width in front of camera: 20 mm 	
GVL 4 STAT	
Blade tip to handle: 92 mm Height at camera: 14 mm Width at camera: 20 mm Blade length in front of camera: 52 mm Max blade width in front of camera: 27 mm 	

GLIDESCOPE DIRECT INTUBATION TRAINER	
Cable length: 1942 ± 100 mm Height at camera: 15 mm Width at camera: 23 mm Blade tip to handle: 119 mm Max blade width in front of camera: 23 mm	

BATTERY SPECIFICATIONS

Table 7. 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 (3.17 oz)
Width	23 mm (0.9 in)
Length	391 mm (5.4 in)
Thickness	23 mm (0.9 in)

ELECTROMAGNETIC COMPATIBILITY

GlideScope AVL 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 AVL system complies with the applicable essential performance requirements specified in IEC 60601-1. 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 AVL system, see Essential Performance on page 1.

ELECTROMAGNETIC EMISSIONS

Table 8. Guidance and Manufacturer's Declaration—Electromagnetic Emissions

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

EMISSIONS TEST	COMPLIANCE	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
RF emissions CISPR 11	Class A	The GlideScope AVL 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 9. Guidance and Manufacturer's Declaration—Electromagnetic Immunity

The GlideScope AVL system is intended for use in the electromagnetic environment specified below. The customer or the user of the GlideScope AVL system should ensure 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.

Table 9. Guidance and Manufacturer's Declaration—Electromagnetic Immunity

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

IMMUNITY TESTS	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
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 AVL system requires continued operation during power mains interruptions, it is recommended that the GlideScope AVL system be powered from an uninterruptible power supply or a battery.
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 AVL 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 9. Guidance and Manufacturer's Declaration—Electromagnetic Immunity

The GlideScope AVL system is intended for use in the electromagnetic environment specified below. The customer or the user of the GlideScope AVL system should ensure 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 AVL system is used exceeds the applicable RF compliance level above, the GlideScope AVL 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 AVL system.

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

RECOMMENDED SEPARATION DISTANCES

Table 10. Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the GlideScope AVL System

The GlideScope AVL system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the GlideScope AVL system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the GlideScope AVL 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 11. EMC Standards for Accessories

ACCESSORY	LENGTH
AC power cord	4.5 m (15 ft)
DC medical power adapter	—
HDMI-to-DVI cable	6 m (20 ft)

GLOSSARY

The following table provides definitions for specialized terms used in this manual or on the product itself. For a full list of caution, warning, and informational symbols used on this and other Verathon® products, please refer to the *Verathon Symbol Directory* at verathon.com/symbols.

TERM	DEFINITION
A	Ampere
AC	Alternating current
C	Celsius
CFR	Code of Federal Regulations (U.S.)
CISPR	International Special Committee on Radio Interference
cm	Centimeter
DC	Direct current
DL	Direct laryngoscopy
ED	Emergency Department
EMI	Electromagnetic interference
ESD	Electrostatic discharge
Essential performance	The system performance necessary to achieve freedom from unacceptable risk
ETT	Endotracheal tube
F	Fahrenheit
g	Gram
GHz	Gigahertz
HDMI	High-definition multimedia interface
hPa	Hectopascal
Hz	Hertz
ICU	Intensive Care Unit
IEC	International Electrotechnical Commission
in	Inch
IPA	Isopropyl alcohol
ISM	Industrial, scientific, and medical
kHz	Kilohertz
kV	Kilovolt
lb	Pound
m	Meter
mAh	Milliampere-hour
MHz	Megahertz
mm	Millimeter
NICU	Neonatal Intensive Care Unit
OR	Operating Room

TERM	DEFINITION
OSHA	Occupational Safety and Health Administration (federal agency in U.S.)
oz	Ounce
ppm	Parts per million
Pure water	Water that is suitable for high-level disinfection according to local regulations and your medical facility
RF	Radio frequency
RH	Relative humidity
V	Volt
Vrms	Voltage root mean squared
W	Watt
WEEE	Waste electrical and electronic equipment


VERATHON®