



# CAE SimEquip

## User Guide





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# INTRODUCTION

The CAE SimEquip™ is a collection of tools that expertly simulates a variety of medical devices. These tools can be used for complex Simulated Clinical Experiences, improving training in both mobile and bedside applications. SimEquip is based on CAE’s Maestro™ software platform allowing users to practice subject-specific techniques and methods in ventilation, anesthesia, and cardiac resuscitation with patient simulators or standalone devices.

The simulated equipment is not intended to replace any courses or hands-on sessions with live subjects, but should be implemented as part of a blended learning solution.

**IMPORTANT:** The simulator is not intended to diagnose or identify life-threatening conditions in a live patient.

SimEquip provides simulated medical devices and accessories for:

CAE SimEquip Simulations	
<b>Portable Devices and Bag</b>	CAE SimEquip™ Defibrillator
	CAE SimEquip™ AED
	CAE SimEquip™ Transport Ventilator
<b>Bedside Devices and Medical Cart</b>	CAE SimEquip™ Ventilator
	CAE SimEquip™ Anesthesia



CAE SimEquip



The Sim Equip system is designed for compatibility with the following CAE patient simulators using Maestro:

- CAE Apollo™
- CAE Ares™
- CAE Athena™
- CAE Juno™
- CAE Maestro™ Evolve Embody (CAE's virtual simulator)

**Note:** Patient simulators are sold separately from the SimEquip system. Embody is included with the Maestro standalone package.

## Virtual Equipment

CAE SimEquip offers virtual equipment that may be used during simulation, providing user interfaces that mirror authentic medical equipment. Running equipment, modifying settings, and applying treatments will impact the physiology of the patient status in the CAE Maestro software offering a deeper learning experience.

Virtual equipment options include:

- **SimEquip AED** - a virtual automated external defibrillator that is easy to use, providing audible prompts guiding the learner on appropriate actions to take.
- **SimEquip Defibrillator** - an electrotherapy device that simulates cardiac pacing, cardioversion and defibrillation to the virtual patient during the simulation, providing the learner with knowledge of how to use this life-saving device.
- **SimEquip Transport Ventilator** - has many of the same features as the SimEquip Ventilator, though providing an interface that more closely resembles equipment used for portable respiratory support.
- **SimEquip Ventilator** - offers both invasive and non-invasive options, various modes, and a display featuring waveforms and audible alarms. Much like bedside medical equipment, the virtual ventilator allows for monitoring and treating the virtual patient with respiratory needs.
- **SimEquip Anesthesia** - provides the learner with anesthesia technology, by delivering the ability to virtually administer medical gases, adjusting pressure and flow while monitoring and providing ventilatory support.
  - **CAEPatient Monitor** - included with the SimEquip Anesthesia, this provides the ability to dynamically capture a patient's status from the display. Some of the on-screen patient monitor features are: 12-Lead ECG reports and preconfigured layouts or the ability to modify settings for the user's preference.

# SimEquip Software

The following identifies the software version associated with the release of this guide.

Document	Document Version	SimEquip Software Version	Maestro Compatability Version
CAESimEquip User Guide	905K001752 v1.3	CAESimEquip v1.0	CAEMaestro v2.5

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# CAUTIONS AND WARNINGS

Please read and understand these cautions and warnings before you begin using SimEquip.

## General

- When unpacking equipment for the first time, use box cutters carefully to protect both the packaging and the product.
- Be careful when unpacking the Medical Cart. There may be sharp metal corners and edges.
- Do not use equipment in a manner that is not specified by the manufacturer.
- Keep all electronic equipment free from high humidity or liquids.
- Do not leave the hardware powered on when the simulator is not in use.

## Operations

- When using the medical cart, always ensure the computer and monitor are plugged into a power source during simulator operation.
- Do not use or connect any USB device or cable to the devices other than the those provided.
- When installing equipment near an electric outlet, ensure cables do not represent a hazard.
- Allow for plenty of room when setting up the medical cart and accessories. There will be cords, cables and hoses used that may present tripping hazards. The power cord will be 6' or 7' long (depending upon the country). During assembly, keep the long power cord around the metal wrap attached to the power bar box.
- Avoid weighing down the equipment with any tools or accessories not relevant to the immediate exercise.
- Refrain from bending, kinking, or stepping on breathing tubes and medical hoses.
- Be aware and avoid people when maneuvering the equipment on the medical cart. Injuries may occur.
- Injuries may occur if the monitors and/or the cart falls or tips over.
- Always lock the caster wheels on the medical cart to ensure stability during setup and operations.
- NEVER attach medical gas hoses to real gas sources. These hoses are intended for simulation purposes only.
- Keep side flaps on the Transport Bag closed when not in use, to avoid debris from accumulating inside of bag and on equipment.

## Ergonomics

- Viewing a monitor screen for extended periods of time may result in eye strain.
- Lock the caster wheels on the medical cart to ensure proper orientation of monitors, display, and buttons. Equipment misuse and ergonomic injuries may result from improper setup.

# SPECIFICATIONS

## Medical Cart

Medical Cart	
Dimensions	50" x 27.5" (at the base without monitors) 127 cm x 70 cm (at the base without monitors)  Shipping Crate:  33" x 31" x 57" 84 cm x 78.74 cm x 144.78 cm
Weight	Without Monitors 58 lbs. 26.31 kg  Shipping Crate with Medical Cart:  450 lbs. 204.12 kg
Electrical	120-240 VAC

## Transport Bag

Transport Bag	
Dimensions	22.5" x 9" x 10" 57.15 cm x 22.86 cm x 25.4 cm
Weight	With Surface Go 2 Tablet and Power Adapter 4.0 lbs 1.81 kg



## Electronic Devices

All Electronic Devices	
Environmental Conditions (Operating)	32° - 104° F 0° - 40° C
Storage / Transportation Conditions	-4° - 158° F -20° - 70° C  Relative Humidity 0% - 90%, Non-condensing

Surface Go 2 Tablet	
Dimensions	10.5" Touchscreen with Power Supply
Weight	1.2 lbs. 544.31 grams
Memory	4 or 8 GB RAM
Operating System	Windows 10 Pro
Battery Life	10 hours

GL- iNet Travel AC Router	
Dimensions	3.46" x 2.67" x 0.94" 88 x 68 x 24 mm
Weight	2.33 lbs 66 grams
Security	WPA2
Speed	300 Mbps

Dell Notebook Power Bank Plus Battery (for Router) Includes Power Adapter	
Weight	480 g
Dimensions	78 mm x 162mm x 21.5 mm
Capacity	Lithium Ion - 18000 mAh - 65Wh
Battery Life	estimated 4 hours

Lenovo ThinkVision S22e LCD Monitor	
Dimensions	21.5 inch
Resolution	1920 x 1080 at 75 Hz

Lenovo ThinkCentre M720 Tiny Computer	
Dimensions	7.0" x 1.4" x 7.2" 179 x 36.5 x 182.9 (mm)
Weight	2.91 lbs 1.32 kg
Memory	4GB
Operation System	Windows 10 Pro

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# EQUIPMENT OVERVIEW

SimEquip can be configured in different ways. Configuration is dependent upon the physical equipment, electronic devices, tools, and accessories that are included. Additionally, optional items purchased can further customize the configuration. The following tables list equipment configurations based on the virtual medical device intended to simulate.

**Note:** When unpacking, check the inventory against the packing invoice to verify that all components have been received. It is recommended to keep all packing materials.

## Portable Simulation Configurations

SimEquip Defibrillator	
Equipment	<ul style="list-style-type: none"> <li>• Transport Bag</li> </ul>
Computer Hardware	<ul style="list-style-type: none"> <li>• Surface Go 2 Tablet with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• Dell Notebook Power Bank Plus Battery and Charger</li> </ul>
Software	<ul style="list-style-type: none"> <li>• CAE SimEquip</li> </ul>
Medical Accessories	<ul style="list-style-type: none"> <li>• 3-Lead ECG Cable</li> <li>• Electrotherapy Pads and Cable</li> </ul>
Medical Accessories (All Optional)	<ul style="list-style-type: none"> <li>• 12-Lead ECG Cable - Trunk with 4 wire limb leads</li> <li>• 12-Lead ECG Cable - 6 wire precordial attachment</li> <li>• SpO<sub>2</sub> Probe</li> <li>• EtCO<sub>2</sub> Sample Line</li> <li>• EtCO<sub>2</sub> Nasal Sample Line</li> <li>• Invasive Blood Pressure Catheter (IBP) Transducer and Cable</li> <li>• Temperature Sensor and Cable</li> <li>• NIBP Cuff and Hose</li> </ul>
Standalone Instructor Kit	<ul style="list-style-type: none"> <li>• Instructor Tablet - Surface Go 2 with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• Dell Notebook Power Bank Plus Battery with Charger and Power Adapter</li> <li>• CAE Maestro Standalone for SimEquip</li> </ul>

SimEquip AED	
Equipment	<ul style="list-style-type: none"> <li>• Transport Bag</li> </ul>
Computer Hardware	<ul style="list-style-type: none"> <li>• Surface Go 2 Tablet with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• Dell Notebook Power Bank Plus Battery and Charger</li> </ul>
Software	<ul style="list-style-type: none"> <li>• CAE SimEquip</li> </ul>
Medical Accessories	<ul style="list-style-type: none"> <li>• Electrotherapy Pads and Cable</li> </ul>
Standalone Instructor Kit	<ul style="list-style-type: none"> <li>• Instructor Tablet - Surface Go 2 with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• Dell Notebook Power Bank Plus Battery with Charger and Power Adapter</li> <li>• CAE Maestro Standalone for SimEquip</li> </ul>

SimEquip Transport Ventilator	
Equipment	<ul style="list-style-type: none"> <li>• Transport Bag</li> </ul>
Computer Hardware	<ul style="list-style-type: none"> <li>• Surface Go 2 Tablet with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• Dell Notebook Power Bank Plus Battery and Charger</li> </ul>
Software	<ul style="list-style-type: none"> <li>• CAE SimEquip</li> </ul>
Medical Accessories	<ul style="list-style-type: none"> <li>• Breathing Circuit - Includes: Inspiratory and Expiratory limbs, Wye Connector, Elbow Connector, and T-connector</li> <li>• Filter</li> <li>• Noninvasive Ventilation Mask</li> <li>• EtCO<sub>2</sub> Sample Line</li> <li>• Endotracheal Tube</li> <li>• O<sub>2</sub> Hose</li> <li>• SpO<sub>2</sub> Probe</li> </ul> <p><b>Note:</b> Colors of hoses may vary depending upon ISO or US configurations.</p>
Standalone Instructor Kit	<ul style="list-style-type: none"> <li>• Instructor Tablet - Surface Go 2 with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• Dell Notebook Power Bank Plus Battery with Charger and Power Adapter</li> <li>• CAE Maestro Standalone for SimEquip</li> </ul>

# Bedside Simulation Configurations

SimEquip Ventilator	
Equipment	<ul style="list-style-type: none"> <li>• Medical Cart</li> <li>• Articulating Arm</li> </ul>
Computer Hardware	<ul style="list-style-type: none"> <li>• Lenovo ThinkCentre M720 Tiny Computer (attached to the Monitor)</li> </ul>
Peripherals	<ul style="list-style-type: none"> <li>• One 22" Lenovo ThinkCentre Touchscreen Monitors with Speakers and Webcam</li> </ul>
Software	<ul style="list-style-type: none"> <li>• CAE SimEquip</li> </ul>
Medical Accessories	<ul style="list-style-type: none"> <li>• Breathing Circuit - Includes: Inspiratory and Expiratory limbs, Wye Connector, Elbow Connector, and T-connector</li> <li>• Filter</li> <li>• Noninvasive Ventilation Mask</li> <li>• EtCO<sub>2</sub> Sample Line</li> <li>• SpO<sub>2</sub> Probe</li> <li>• O<sub>2</sub> Hose</li> <li>• Endotracheal Tube</li> </ul> <p><b>Note:</b> Colors of hoses may vary depending upon ISO or US configurations.</p>
Standalone Instructor Kit	<ul style="list-style-type: none"> <li>• Instructor Tablet - Surface Go 2 with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• CAE Maestro Standalone for SimEquip</li> </ul>

SimEquip Anesthesia Machine	
Equipment	<ul style="list-style-type: none"> <li>• Medical Cart</li> <li>• Articulating Arm</li> </ul>
Computer Hardware	<ul style="list-style-type: none"> <li>• Lenovo ThinkCentre M720 Tiny Computer (attached to Monitor "A")</li> </ul>
Peripherals	<ul style="list-style-type: none"> <li>• Two 22" Lenovo ThinkCentre Touchscreen Monitors with Speakers and Webcam</li> </ul>
Software	<ul style="list-style-type: none"> <li>• CAE SimEquip</li> <li>• CAE Patient Monitor</li> </ul>
Medical Accessories	<ul style="list-style-type: none"> <li>• Breathing Circuit - Includes: Inspiratory and Expiratory limbs, Wye Connector, Elbow Connector, and T-connector</li> <li>• Filter</li> <li>• Noninvasive Ventilation Mask</li> <li>• EtCO<sub>2</sub> Sample Line</li> <li>• SpO<sub>2</sub> Probe</li> <li>• Endotracheal Tube</li> <li>• CO<sub>2</sub> Sensor with Cable and Airway Adapter</li> <li>• O<sub>2</sub> Hose</li> <li>• Medical Air Hose</li> <li>• Nitrous Oxide Hose</li> <li>• 3-Lead ECG Cable</li> <li>• Invasive Blood Pressure Catheter (IBP) Transducer and Cable</li> <li>• Temperature Sensor and Cable</li> <li>• NIBP Cuff and Hose</li> </ul> <p><b>Note:</b> Colors of hoses may vary depending upon ISO or US configurations.</p>
Standalone Instructor Kit	<ul style="list-style-type: none"> <li>• Instructor Tablet - Surface Go 2 with power cord</li> <li>• GL-iNet Travel AC Router with cable</li> <li>• CAE Maestro Standalone for SimEquip</li> </ul>

# Equipment

Equipment may have slight variations from the pictured items in this guide.

## Transport Bag



*Transport Bag*

## Medical Cart



*Medical Cart  
(Image Shown is Configured for Ventilator)*



## Medical Attachments

### *ECG Cables*

A 3-Lead ECG Cable is included with the Anesthesia Machine and the Defibrillator. Other cables are optional with the Defibrillator.



**3-Lead ECG Cable**



**12-Lead ECG Cable  
Trunk with 4 wire limb leads**



**12-Lead ECG Cable  
with 6 wire precordial  
attachment**

### *SpO<sub>2</sub> Probe*

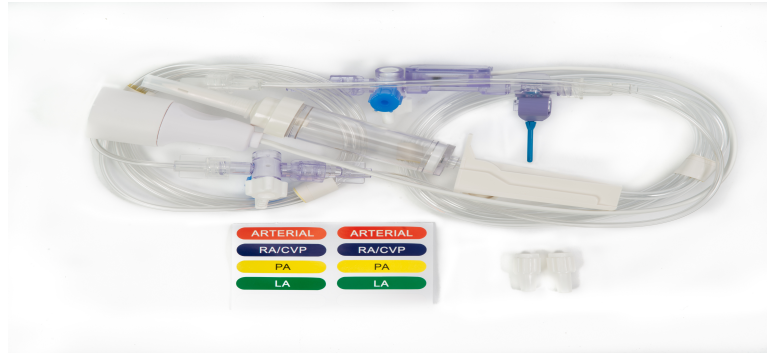
A SpO<sub>2</sub> Probe is included with the Anesthesia Machine, Ventilator and the Transport Vent. It is optional with the Defibrillator.



**SpO<sub>2</sub> Probe**

## *IBP Transducer*

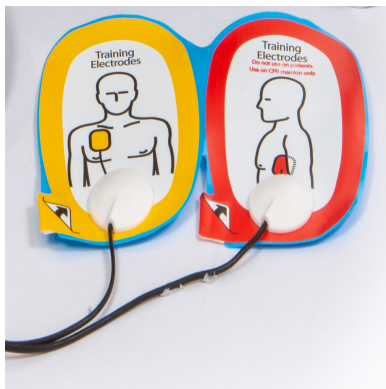
The IBP Transducer is included with the Anesthesia Machine. It is optional with the Defibrillator.



***IBP Transducer***

## *Electrotherapy Pads and Cable*

Electrotherapy pads and cable are included with the Defibrillator and AED.



***Electrotherapy Pads***



***Cable***

### *NIBP Cuff and Hose*

A NIBP Cuff and hose is included with the Anesthesia Machine and is optional with the Defibrillator.



***NIBP Cuff***



***Hose***

### *Breathing Circuit and Mask*

The breathing circuit consists of an elbow, wye, and T-connectors, inspiratory, and expiratory limbs.



***Breathing Circuit with Non-Invasive Mask and EtCO<sub>2</sub> Sample Line***

*Medical Gas Hoses*



*USA Medical Gas Hoses Shown*

Color Identification for Medical Gases		
GAS	ISO	USA
Oxygen	White	Green
Nitrous Oxide	Light Blue	Light Blue
Medical Air	Black and White	Yellow

## Electronic Devices

### Computer

The computer will be attached to the back of the Touchscreen monitor.



*Lenovo ThinkCentre M720 Tiny*



*Computer Shown Attached to the Monitor  
Ventilator Configuration*

### ***Router and Battery Accessories***

The router will be used for standalone simulations. The battery and accessories are used with the router for Transport Bag simulations.



***GL-iNet Travel AC Router***



***Dell Notebook Power Bank Plus Battery, Charger, and Power Adapter***

### Monitor



**Lenovo ThinkCentre 22" Touchscreen Monitor  
Shown Attached to Medical Cart**

### Tablet



**Surface Go 2 Tablet**



# SETUP

## Before Setting Up SimEquip

Proper operation requires correct configuration. Before setting up the system, keep in mind these basic guidelines:

- Read and understand the Cautions and Warnings in the beginning of this guide.
- Do not power on any components until instructed in the text.
- Do not install any Windows updates or anti-virus software when connecting to the network.
- Allow for plenty of room when setting up the medical cart and accessories. There will be cords, cables and hoses used that may present tripping hazards. The power cord will be 6' or 7' long (depending upon the country). During assembly, keep the long power cord around the metal wrap attached to the power bar box.
- Allow for plenty of room when setting up the medical cart and accessories. Bending and reaching may be involved.
- Using a table to set equipment and tools on during the setup process is beneficial. This will allow for easier access to what is needed during setup and may prevent damage to equipment.
- Be careful when unpacking the Medical Cart. There may be sharp metal corners and edges.
- Prior to attaching items to the Medical Cart, lock the caster wheels on the Medical Cart so that the cart is stable during the completion of setup.



## Portable Simulation Setup Steps

Setup steps are required for simulations that may use:

- Defibrillator
- AED or
- Transport Ventilator

Steps should be performed in the sequence provided in the Portable Simulation Setup table. Accompanying details are in the following pages.

Portable Simulation Setup	
1	Remove equipment from boxes.
2	Connect breathing circuit or medical cables.
3	Power on equipment.
4	Connect to WiFi:
	<ul style="list-style-type: none"><li>• Using a Patient Simulator or</li><li>• Standalone - Setup the Router</li></ul>
5	Launch Maestro software.
6	Launch SimEquip software.

## Step 1: Remove Equipment from Boxes

Tools required:

- Phillips head screwdriver (included) - needed for opening shipping crate and used for installation of equipment.
- Box Knife - suggested for opening cardboard boxes

**WARNING:** Be careful if using knives to open boxes, to prevent personal injury or damage to equipment.

It may be beneficial to place equipment on a table during unpacking so that it is visible and available during the setup process.

- a. Check the battery power prior to running a simulation. The battery may require charging.
- b. Place the router and router cable inside the Transport Bag.
- c. Place the tablet inside the front sleeve of the Transport Bag. Place the tablet cables inside the Transport Bag
- d. All additional limbs, cables, and equipment may be placed inside the Transport Bag until ready to use.

## Step 2: Connect Breathing Circuit or Medical Cables

The connection of the breathing circuit or cables will be determined by the type of simulation that is running and the intended use of virtual equipment.

### *CAE SimEquip Defibrillator*

The Defibrillator equipment:

- Transport Bag
- 3-Lead ECG therapy cable
- Therapy Cable with Pads
- SpO<sub>2</sub> Probe (Optional)
- IBP Transducer (Optional)
- NIBP Cuff (Optional)
- Temperature Sensor (Optional)
- EtCO<sub>2</sub> Sample Line (Optional)
- EtCO<sub>2</sub> Nasal Sample Line (Optional)

To assemble the Defibrillator:

- a. Unzip the front pocket on the Transport Bag and slide the SimEquip Surface Go 2 tablet out of the pocket.



***Slide Out SimEquip Tablet***

- b. Plug the power cord into the tablet. Slide the tablet back into the pocket and zip the pocket closed, leaving the power cord exposed.

- c. Place the opposite end of the power cord into the battery pack. Place the battery pack inside the middle section of the Transport bag. Zip the middle compartment closed.
- d. When facing the front of the Transport Bag, open the right compartment on the bag.
- e. Connect the therapy cable to the electrotherapy pads.
- f. Pass the therapy cables through the elastic port in the zippered compartment on the right side of the transport bag.
- g. Secure the therapy cable by passing the connector end of the cable through the elastic loop and inside the middle compartment of the Transport Bag.
- h. Repeat the steps c and d for the additional equipment as necessary.

**Note:** It may be required to pass the therapy cable through the elastic port from inside the Transport Bag and before connecting the therapy pads



***Defibrillator Assembled***

### CAE SimEquip AED

To assemble the AED, follow the same steps for assembling the Defibrillator, eliminating the 3-Lead ECG cable.



**AED Assembled**

## CAE SimEquip Transport Ventilator

The Transport Ventilator includes:

- Transport Bag
- Breathing Circuit with Non-invasive Mask or Endotracheal Tube
- Filter
- O<sub>2</sub> Hose
- SpO<sub>2</sub> Probe
- EtCO<sub>2</sub> Sample Line



**Transport Ventilator Unassembled**

The Transport Ventilator uses a breathing circuit. To assemble the breathing circuit:

- a. Connect plastic cuffs to the end of each breathing circuit limb.
- b. Connect one of the limbs to the wye connector (at the y).
- c. Connect the opposite limb to the wye connector (at the opposite side of the y).
- d. Connect the elbow to the wye connector (at the top of the y).
- e. Connect the T-connector to the elbow.
- f. Connect the EtCO<sub>2</sub> sample line to the T-connector.

- g. Connect the mask or the endotracheal tube to the T-connector (at the open end).



***Breathing Circuit Assembled with Non-Invasive Mask***

To assemble the Transport Ventilator:

- a. Unzip the front pocket on the Transport Bag and slide the SimEquip Surface Go 2 tablet out of the pocket.



***Slide Out SimEquip Tablet***

- b. Plug the power cord into the tablet. Slide the tablet back into the pocket and zip the pocket closed, leaving the power cord exposed.
- c. Place the opposite end of the power cord into the battery pack. Place the battery pack inside the middle section of the Transport Bag. Zip the middle compartment closed.
- d. When facing the front sleeve side of the Transport Bag, open the left compartment on the bag. Two ports will be visible, labeled: **EXP** and **INSP**.
- e. Using the metal snap, secure the open flap to the back of the transport bag.

- f. Attach a plastic adapter to each of the ports.
- g. Attach the filter to the port on the bag labeled **EXP**.
- h. Attach the plastic cuff to the port on the bag labeled **INSP**.
- i. Attach the breathing circuit limbs to the filter and cuff.



***Transport Bag - Expiratory and Inspiratory Connections***

- j. Open the side compartment on the opposite side of the transport bag and pull the O<sub>2</sub> hose through the elastic opening.
- k. Pull the SpO<sub>2</sub> probe through the same elastic opening on the right side of the bag.
- l. Attach the exposed end of the O<sub>2</sub> hose (outside of the bag) to a simulated oxygen source.

**WARNING:** Never attach the hose to a real O<sub>2</sub> source. The medical gas hoses included with SimEquip are intended for simulation purposes only.



- m. Proceed to *Step 3. Power On Equipment* to complete setup for Transport Ventilator.



*Transport Ventilator Assembled*

## Step 3: Power On Equipment

Power on the tablet in the Transport Bag by pressing and holding the button at the top of the tablet.

## Step 4: Connect to WiFi

Connection to WiFi may be done in two ways. The way to connect will be determined by whether the type of simulation running is:

- using a patient simulator or
- standalone (and requiring a router)

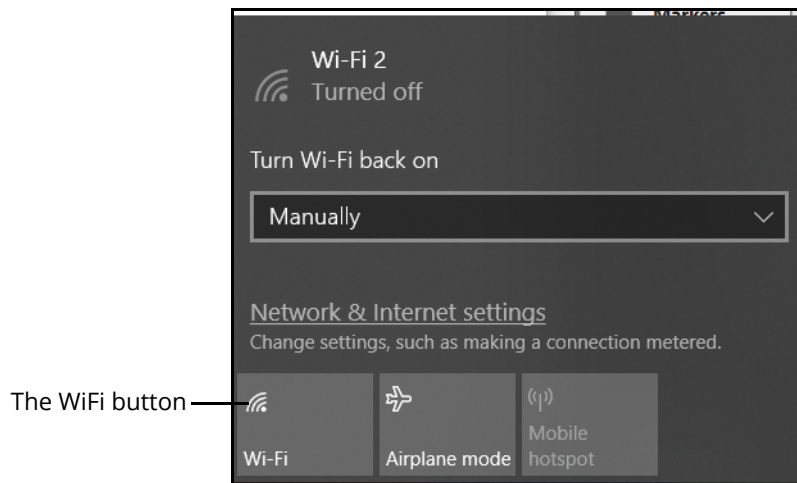
### *Using a Patient Simulator*

If the simulation will include a patient simulator, the system will use the manikin's WiFi.

- Turn on the patient simulator.  
**Note:** The power switch may be in different locations on the manikin depending upon the patient simulator being used. Reference the patient simulator User Guide if there is difficulty locating the power switch.
- If this is the first time running SimEquip, it may be necessary to update Maestro on the patient simulator. See *Appendix B - Software Upgrades* for more information on upgrading.
- If there is an Instructor tablet, power this tablet on also.

- d. If the tablet(s) does not automatically connect to the simulator’s network follow these instructions:
  - From the home screen, tap the Network icon located in the lower-right corner of the screen in the taskbar.

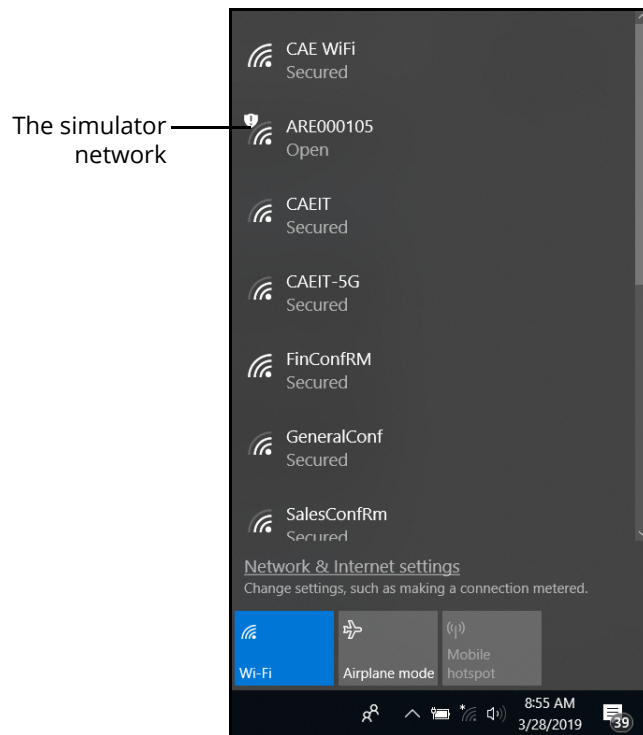
The Network window appears.



***The Network Window***

- Tap **WiFi** button to turn on WiFi (button turns blue).
- In the Network window, locate the simulator network from the list of available networks. The type of patient simulator that is being used, will determine the name of the network and where the name appears on the simulator.

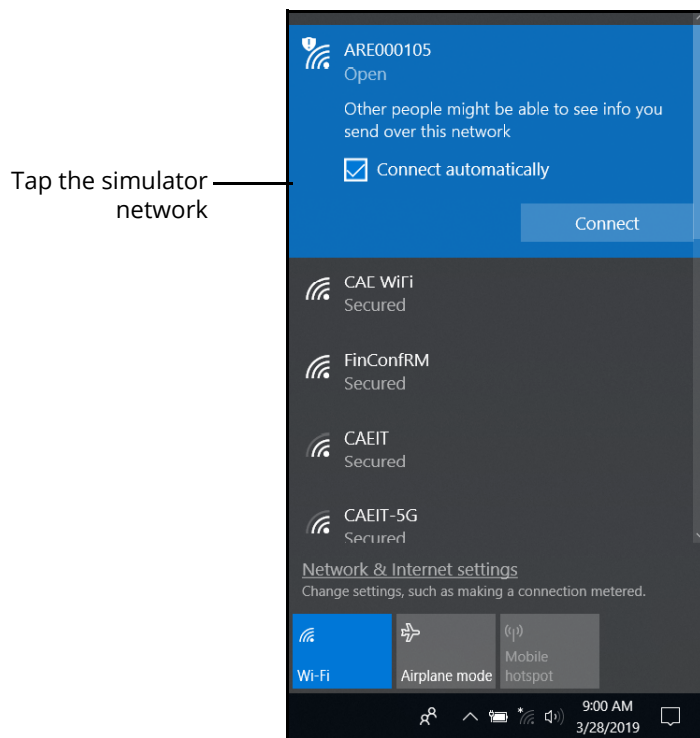
For example, the Ares network name is ARE00XXXX (where XXXX is the last 4 digits of Ares' serial number and is found on a label attached to Ares' side).



**The Network Window**

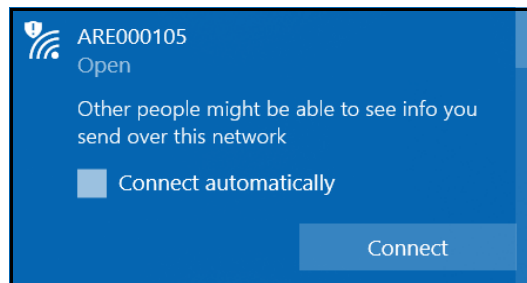
- Tap the simulator network.

The connection options appear in the Network window.



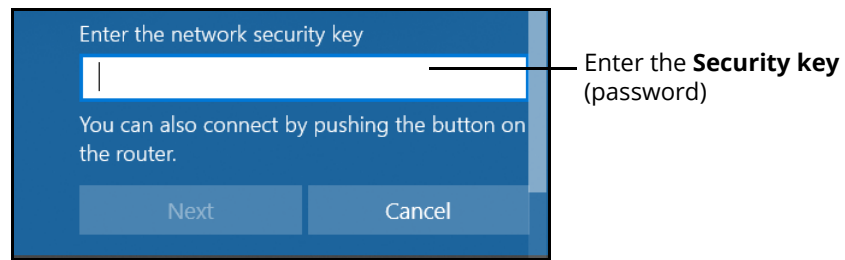
**The Network Window**

- Tap the **Connect automatically** box.
- Tap **Connect**.



**The Simulator Network**

The Enter a network security key window appears.



***Entering the Security Key (Password)***

- Tap in the **Enter the network security key** text field.
- Tap the **Keyboard** icon in the taskbar in the lower-right corner of the screen.

The on-screen keyboard appears.

- Enter *caeadmin* in the text field.
- Tap the **X** in the upper-right corner of the keyboard to exit.
- From the Enter a network security key window, tap **Next**.

The Connecting message appears, then disappears when the tablet is finished connecting to the simulator network.

## ***Standalone - Setup the Router***

If running standalone, it will be necessary to install the router included in the standalone package.

The following instructions provide information for setting up the router using WiFi.

- a. Prior to beginning a simulation, check the power level on the battery, it may need to be recharged.
- b. Power on the router by plugging the Micro USB cable from the battery (or to the computer if using the Medical Cart) into the power port of the router.

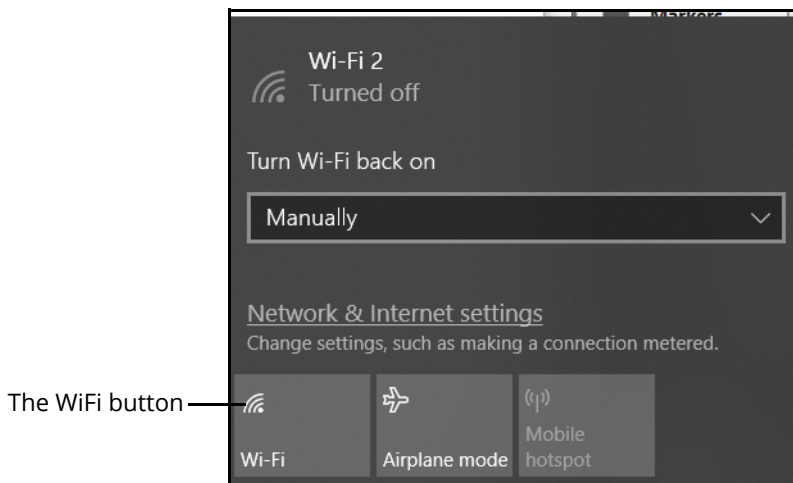
**Note:** The USB power cable for the router may be plugged into a standard 5V/2A power adapter instead of using the battery however, the battery allows for untethered mobility during the simulation.



**Router Plugged Into Battery Pack**

- c. From the home screen on the tablet, tap the Network icon located in the lower-right corner of the screen in the taskbar.

The Network window appears.



**The Network Window**

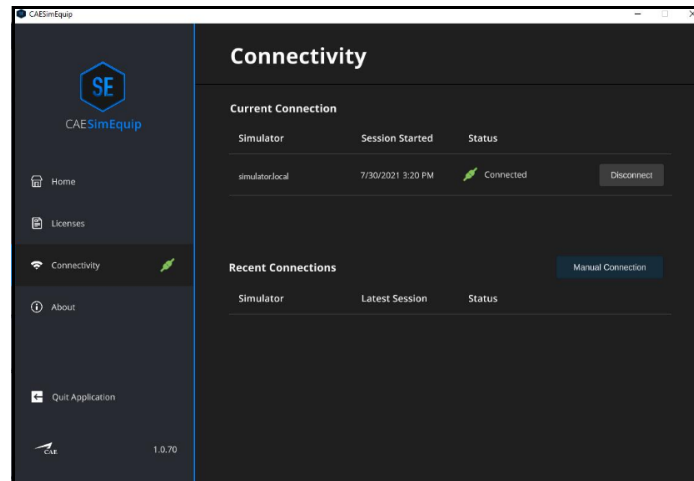
- d. Tap **WiFi** button to turn on WiFi (button turns blue).

### **Switching from Standalone to Patient Simulator Connections**

In the event Maestro Standalone for SimEquip is running and there is a need to switch to a Maestro patient simulator, for successful connectivity follow these steps:

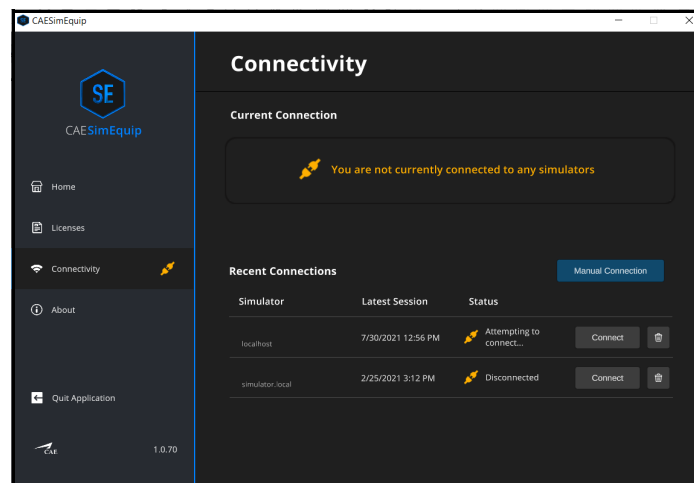
- a. Launch SimEquip.
- b. Disconnect SimEquip from the Maestro standalone simulation.

- c. From the SimEquip Home screen, select **Connectivity**.



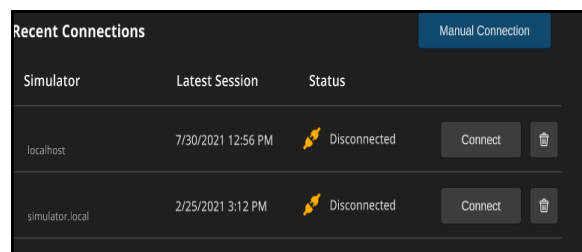
*SimEquip Connectivity Window - Connected*

- d. Select the **Disconnect** button associated with simulator.local.
- e. Confirm that **simulator.local** appears in the **Recent Connections** list in SimEquip.
- f. From the SimEquip Home screen, select **Connectivity**.



*SimEquip Connectivity Window*

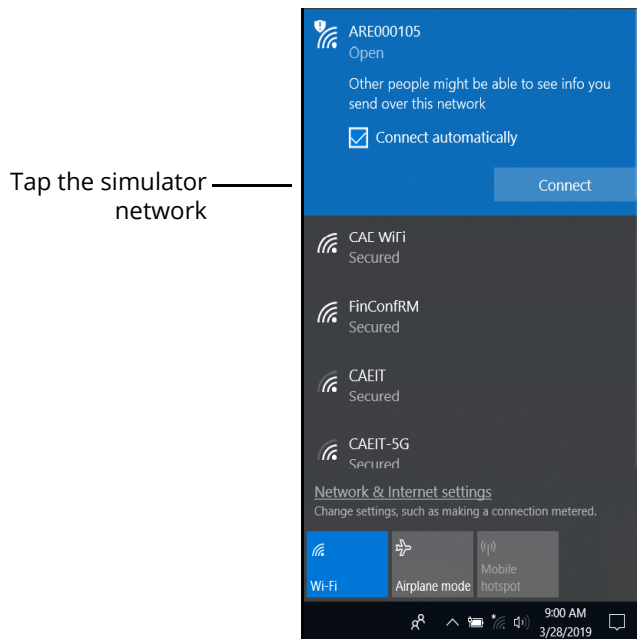
- g. In the **Recent Connections** list, confirm that **simulator.local** appears.



*Recent Connections*

- h. Close the SimEquip application.
- i. Change from the standalone router to the patient simulator router. See instructions in the previous section of this guide:
  - *Portable Simulation Setup Steps - Step 4. Connect to WiFi - Using a Patient Simulator*
- j. Confirm the connection to the patient simulator network.
  - From the home screen on the SimEquip device, tap the Network icon located in the lower-right corner of the screen in the taskbar.

The Network window appears. The type of patient simulator that is used will determine the name of the network. For example, Ares is shown in the following image.



***The Network Window - Connected to Ares Patient Simulator***

- k. Restart the SimEquip application.



## Step 5: Launch Maestro

The configuration of the equipment will determine how Maestro is launched.

- **Patient Simulator** - If using a patient simulator, Maestro is installed on the tablet that is used with the simulator.
- **Standalone** - When using the standalone with SimEquip, Maestro is installed on the Instructor tablet included with the standalone package.

To launch Maestro:

- a. Select the Maestro shortcut icon which appears on the desktop of the tablet.

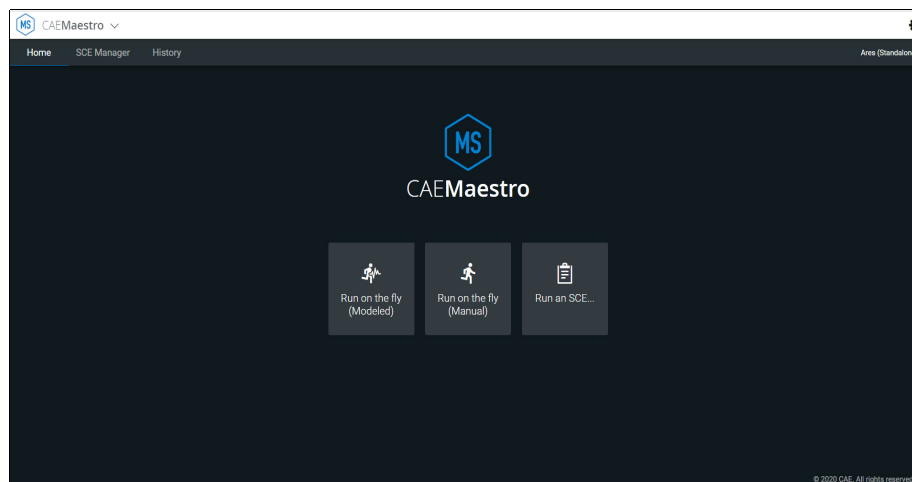


**Maestro Icon**

The Maestro Home Screen appears.

There are three options to choose from on the Home screen:

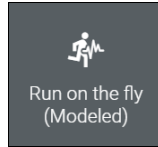
- Run on the fly (Modeled)
- Run on the fly (Manual)
- Run an SCE



**Maestro Home Screen**

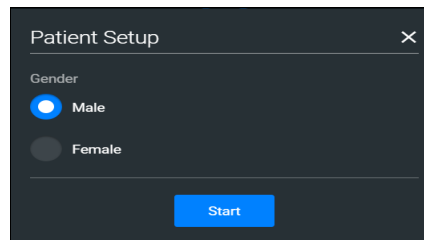
- a. Select **Run on the fly (Modeled)**.

**Note:** The Transport Ventilator, Ventilator, and Anesthesia Machine require Modeled mode.



**Run on the fly (Modeled)**

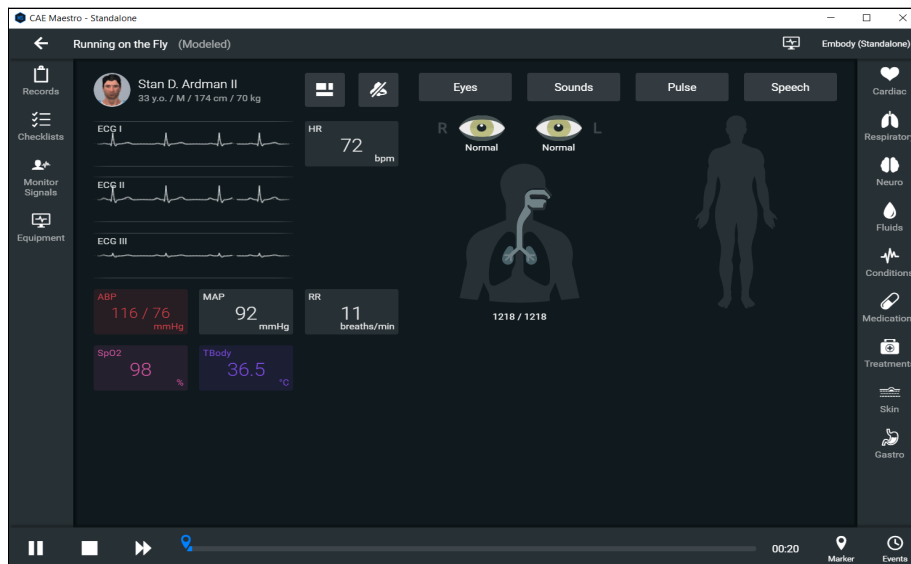
The **Patient Setup** prompt appears.



**Select Gender**

- b. Select **Male** or **Female**.
- c. Tap the **Start** button.

The Run Screen appears.



**Maestro Run Screen**

## Step 6: Launch SimEquip Software

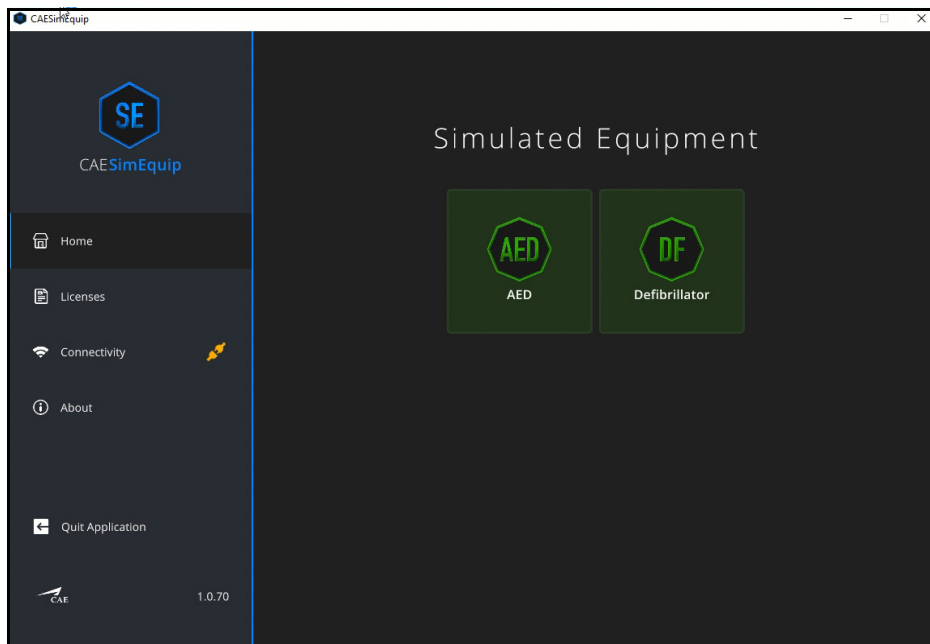
To launch SimEquip:

Using the tablet that is in the Transport Bag, tap the **CAE SimEquip** icon on the desktop screen.



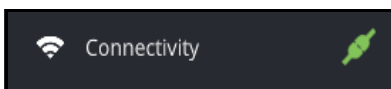
*The SimEquip Icon*

The SimEquip app opens and the SimEquip Home screen appears. Virtual equipment for which licenses are activated, will be displayed on the Home screen.



*SimEquip Home Screen  
AED and Defibrillator*

On the left panel, the **Connectivity** status will appear green, indicating that SimEquip is connected to a WiFi.



*Connectivity - Connected Status*

# Bedside Medical Cart Simulation Setup Steps

Setup steps are required for simulations that may use:

- Ventilator
- OR
- Anesthesia Machine

Steps should be performed in the sequence provided in the Bedside Simulation Setup table. Accompanying details are in the following pages.

Bedside Simulation Setup	
1	Remove equipment from cart and boxes.
2	Attach monitor(s) to cart.
3	Attach articulating arm.
4	Connect medical hoses and cables.
5	Power on equipment.
6	Connect to WiFi:
	<ul style="list-style-type: none"> <li>• Connect to the Patient Simulator WiFi or</li> <li>• Standalone - Setup the Router</li> </ul>
7	Launch CAE Maestro.
8	Launch CAE SimEquip software.
9	Launch CAE Patient Monitor (applicable for Anesthesia Machine only).

## Step 1: Remove Equipment from Boxes

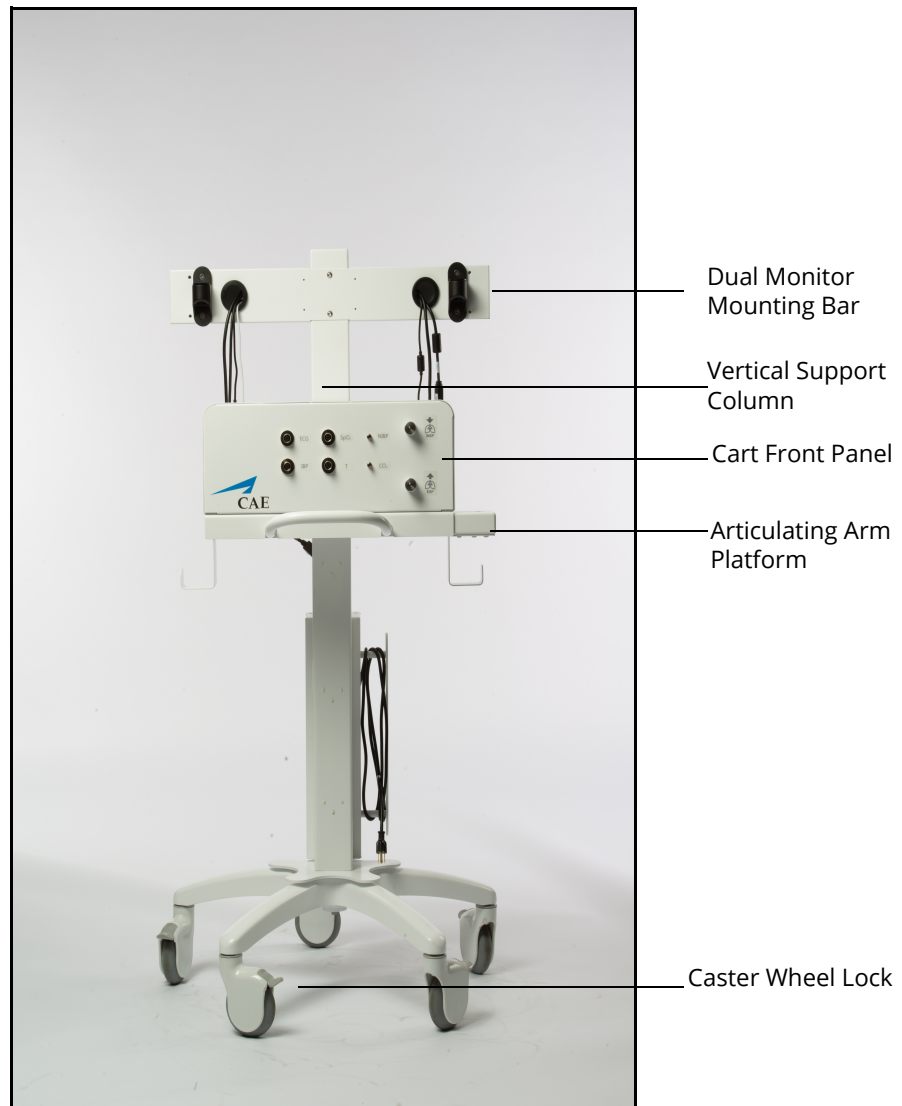
Tools required:

- Phillips Head screwdriver (included) -needed to open shipping crate and used for installation of equipment.
- Box Knife - suggested for opening cardboard boxes

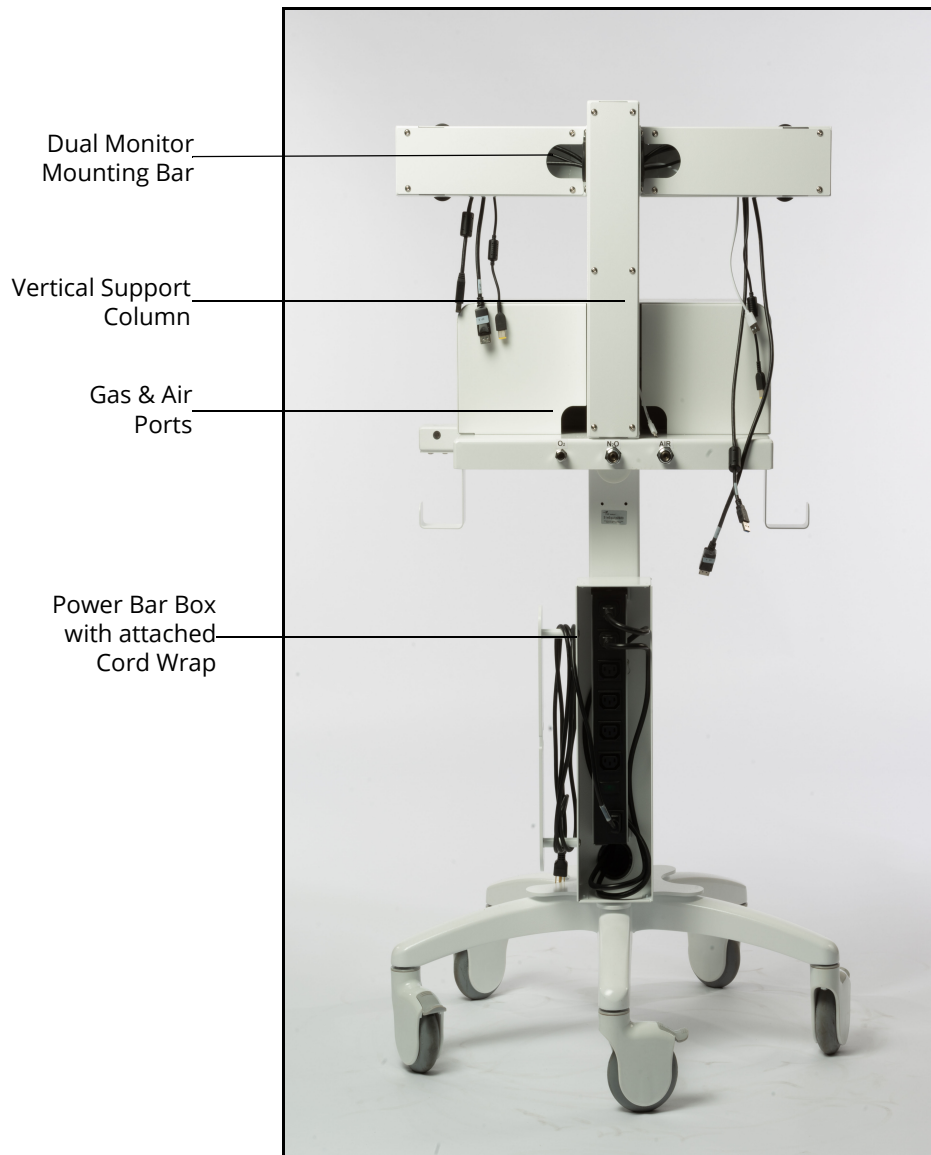
**WARNING:** Be careful if using knives to open boxes, to prevent personal injury or damage to equipment.

- a. The Medical cart will arrive in a shipping crate. When the crate is opened, there is a side panel on hinges. The hinged panel will function as a ramp which may be used to wheel the medical cart out of the crate.
- b. Additional equipment is shipped in cardboard boxes. Open the boxes. Do not remove the monitors from the boxes until after attaching the VESA monitor mounts to the monitors (see *Step 2 Attach Monitors to Cart*).

- c. All other items (with the exception of the monitors) from the smaller boxes may be placed on a table in the assembly area.



**Medical Cart Unassembled  
Anesthesia Machine - Front**



***Medical Cart Unassembled  
Anesthesia Machine - Back***

**IMPORTANT:** Lock the caster wheels on the cart so that the cart remains stable for the duration of the setup process.

**Note:** Do NOT plug the power cord into the outlet until the setup steps are complete.

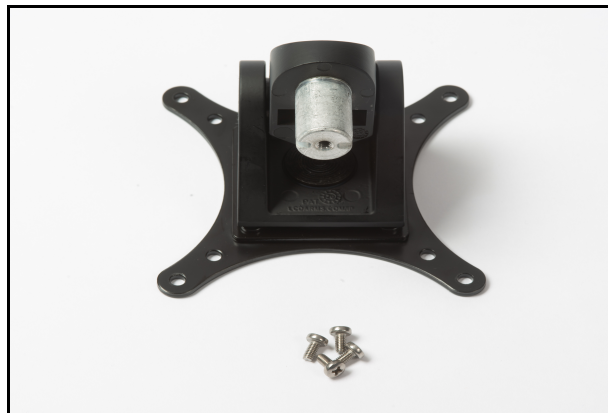
## Step 2: Attach Monitors to Cart

Do not remove the monitors from the box until instructed to do so in the following text. More than one person may be needed to lift and attach monitor(s) to the Medical Cart. When working with the monitor(s), be careful not to damage or drop the computer that is attached to the back of the monitor. Attaching monitors to the cart will require the following pieces of equipment:

- Monitor(s) with screws
- VESA Mount Hardware
- Phillip’s Head Screwdriver
- Additional Screws and Washers

**Note:** The Ventilator configuration will have one monitor with an attached computer. The Anesthesia Machine configuration will have two monitors. For the Dual Monitor configuration, “Monitor A” will have an attached computer and “Monitor B” will not.

- a. Ventilator Configuration - One Monitor: Open the box labeled “Monitor,” leaving the monitor in the box.  
Anesthesia Machine - Two Monitors: Open the box labeled “Monitor B.”?
- b. Remove the plastic bag with the VESA mount and hardware from the foam packing.



*VESA Mount and Screws*



- c. Remove the top molded Styrofoam piece from the box, exposing the back of the monitor.



**Monitor in Box**

- d. Leave the monitor in the bottom layer of molded Styrofoam.  
**Note:** Failure to leave the monitor in the foam while attaching the VESA mount (Steps 5-6) could result in damage to the monitor.
- e. Place the VESA mount hardware on the monitor. Verify that the silver knob on the VESA mount is pointing down (towards the bottom of the monitor). If not, rotate the VESA mount until it is appropriately positioned on the monitor.  
**Note:** This step insures that the monitor will be attached to the cart right side up.
- f. Insert the screws through the back of the VESA mount hardware. Using the Phillip's Head screwdriver, connect the VESA mount to the monitor by tightening the screws.
- g. If there are two monitors, repeat steps a-f for "Monitor A."
- h. Remove the monitor(s) from the box.
- i. Install the monitor(s) on the cart as follows:

***Ventilator Configuration - One Monitor:***

- Install the monitor on the cart by inserting the VESA mount hardware into the bracket attachment on the vertical support column.



***Back of Monitor - Attached to Ventilator Machine***

***Anesthesia Machine Configuration - Two Monitors:***

- The Dual Monitor Mounting Bar is horizontal and will be labeled “Monitor A” and “Monitor B”. When facing the Medical Cart, Monitor “A” will be installed on the left side of the Dual Monitor Mounting Bar. Install each monitor at the appropriate locations as per the labeling, by inserting the VESA mount hardware into the VESA bracket attachment on the horizontal Dual Monitor Mounting Bar.

**Note:** It is important to place the monitors on the appropriate side of the medical cart, to allow access to the computer ports on Monitor “A”.

- Place the additional washer and screw under the VESA mount bracket and attach to the support column (or bar).

***Plugging in the Cords***

**Ventilator**

All of the required cords are routed through the vertical support column on the Medical Cart.

- a. Plug the monitor power cord from the Medical Cart into the Monitor power port.



Monitor  
Power  
port

**Monitor Ports**

- b. Plug the Router USB cord (white) from the Medical Cart into the USB port on the computer.



**Router USB to Computer Connection**

## Anesthesia Machine

Equipment cords and cables are routed through the vertical support column on the Medical Cart. There will be two of each cord, one on each side of the horizontal mounting bar.

Locate the following:

- Monitor Power cords
- USB cables
- Display cables

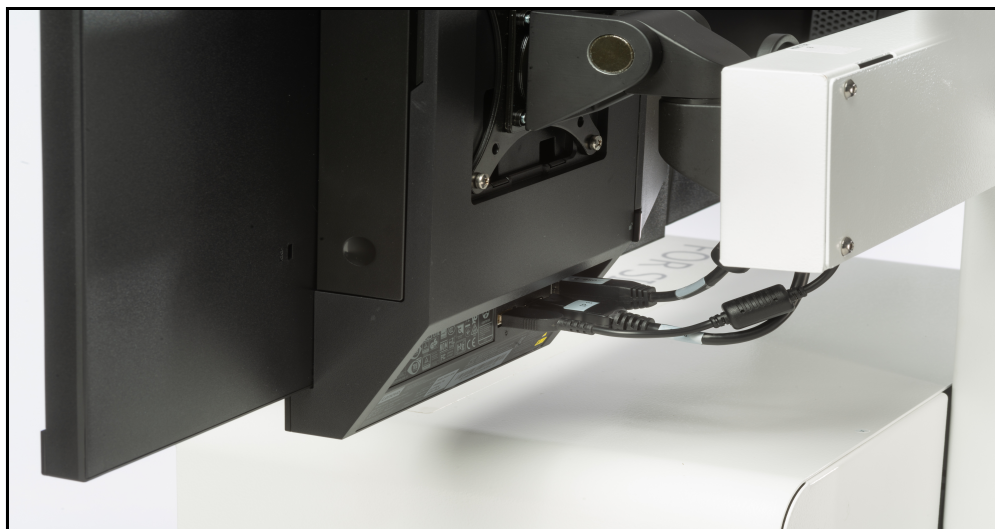
### Monitor B

- a. Plug the display cord from the Medical Cart into Monitor B display port.



**Monitor Ports**

- b. Plug the USB cable from the Medical Cart into the USB port.
- c. Plug in the power cord from the Medical Cart to the power port.



**Connections - Monitor B**

**Monitor A**

- a. Open the cover on the back of the monitor panel by pressing on the red tab. The cover is hinged at the top, flip the cover up. This will expose the computer ports.



**Open Computer Cover**

- b. Locate the Display Port Adapter cable attached to the port on the computer.
- c. Plug the Display cable from the Medical Cart into the Display Port Adapter cable (identified in the previous step).
- d. Plug in the USB cable from the Medical Cart into the USB port on the monitor.



**Monitor Ports**

- e. Plug in the router USB cable (white) into the front of the computer.

**Note:** Router cables are included with the Medical Cart, regardless if running standalone and using a router, or if using a patient simulator where there is no external router.

- f. Plug the power cord from the Medical Cart into the appropriate port on the monitor.



*Connections - Monitor A*



## Step 3: Attach Articulating Arm

There are two platforms for attaching the articulating arm, one on each side of the Medical Cart. Attach the Articulating Arm to the platform on the preferred side of the Medical Cart. This may be determined by the placement of the patient during the simulation.

To attach the arm:

- a. Disassemble the nut and eyebolt included in the package.



***Threaded End of Articulating Arm and Eyebolt with Nut***

- b. Align the articulating arm with the hole on top of the platform.
- c. From the underside of the platform, insert the eyebolt into the hole in the platform and further into the hole in the articulating arm.
- d. Secure the arm by threading and tightening the nut on the end of the eyebolt.



***Articulating Arm Installation - Eyebolt Under Platform***

## Step 4: Connect Medical Attachments and Hoses

The connection of limbs and / or cables will be determined by the type of simulation that is running and the intended use of virtual equipment. This section will describe how to connect the breathing circuits, medical attachments, and hoses for medical gases.

### CAE SimEquip Ventilator

Ventilator Medical Attachments	
Type	Location
Ventilator Breathing Circuit	Front
Filter	Front
SpO <sub>2</sub> Probe	Front
EtCO <sub>2</sub> Sample Line	Front
O <sub>2</sub> Hose	Back

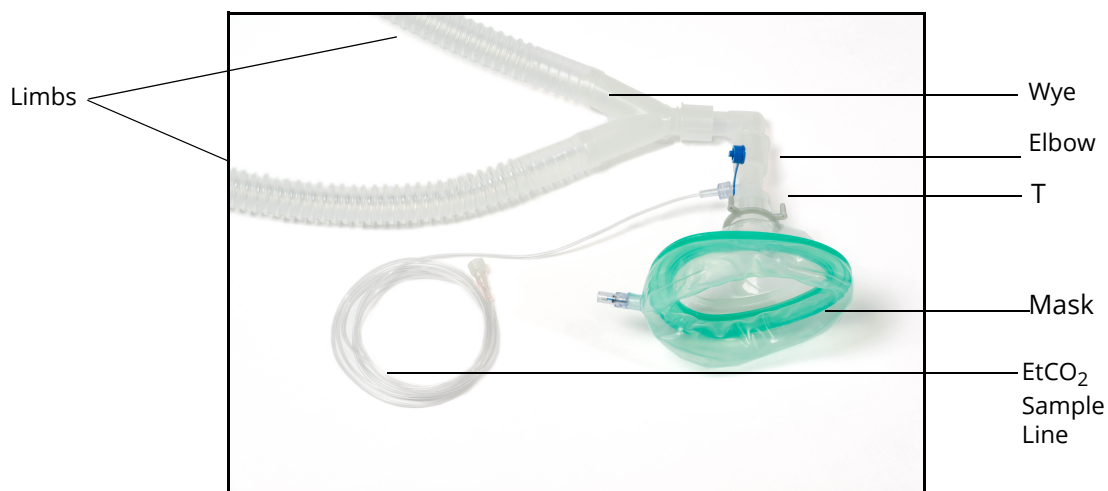


**Ventilator - Front Panel with Filter**

- e. Connect the filter to the front panel of the cart where port is labeled **EXP**. Ensure the filter ports are closed when the filters are installed.



- f. The Ventilator will require a breathing circuit. To assemble the breathing circuit:
- Connect one of the limbs to the wye connector (at the y).
  - Connect the opposite limb to the wye connector (at the opposite side of the y).
  - Connect the elbow to the wye connector (at the top of the y).
  - Connect the T-connector to the elbow.
  - Connect the EtCO<sub>2</sub> sample line to the T-connector.
  - Connect the mask or the endotracheal tube to the T-connector (at the open end).



***Breathing Circuit Assembled with Non-Invasive Mask***

- g. Connect the Ventilator Breathing Circuit to the Medical Cart:
- Connect one of the tubes to the filter on the front of the medical cart.
  - Connect the second tube to the front panel of the Medical Cart port labeled **INSP**.
  - Attach the EtCO<sub>2</sub> sample line to the front of the Medical Cart by gently twisting the fitting to secure.
  - Place the breathing circuit limbs inside the articulating arm support.
  - Place the EtCO<sub>2</sub> sample line in the articulating arm support.

- h. Attach the SpO<sub>2</sub> probe by aligning the notch and pushing in on the fitting.



**Front Panel of Medical Cart - Ventilator Configuration**

- i. Attach the O<sub>2</sub> hose to the **O<sub>2</sub>** port in the back of the Medical Cart by twisting the fitting. Attach the opposite end of the O<sub>2</sub> hose to a simulated Oxygen source.

**WARNING:** Never attach the hose to a real O<sub>2</sub> source. The medical hoses included with SimEquip are intended for simulation purposes only.



**Back of Medical Cart - Ventilator Configuration  
O<sub>2</sub> Connected - USA Green Shown**

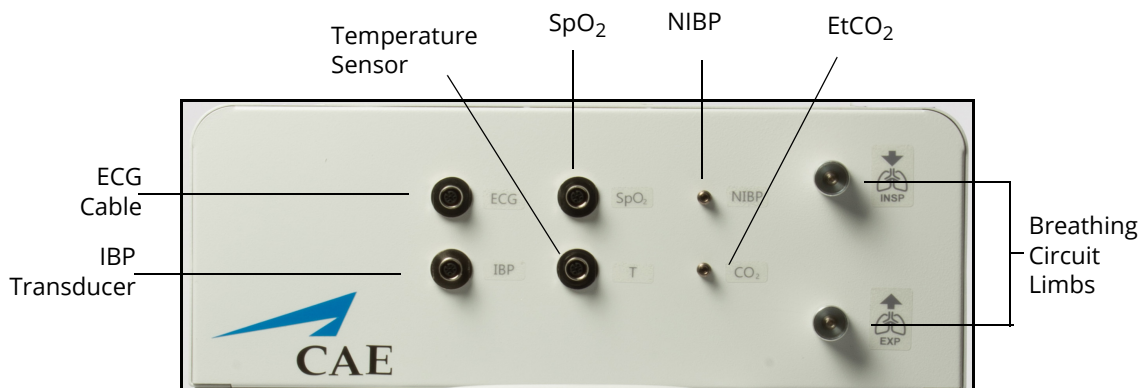
- j. Proceed to *Step 5: Power On Equipment*.

### CAE SimEquip Anesthesia

Medical hoses for the Anesthesia Machine may connect in the front or back of the Medical Cart, depending upon the type of hose. Connect the hoses as desired for the intended simulation.

**WARNING:** Never attach the hoses to a real gas source. The medical hoses included with SimEquip are intended for simulation purposes only.

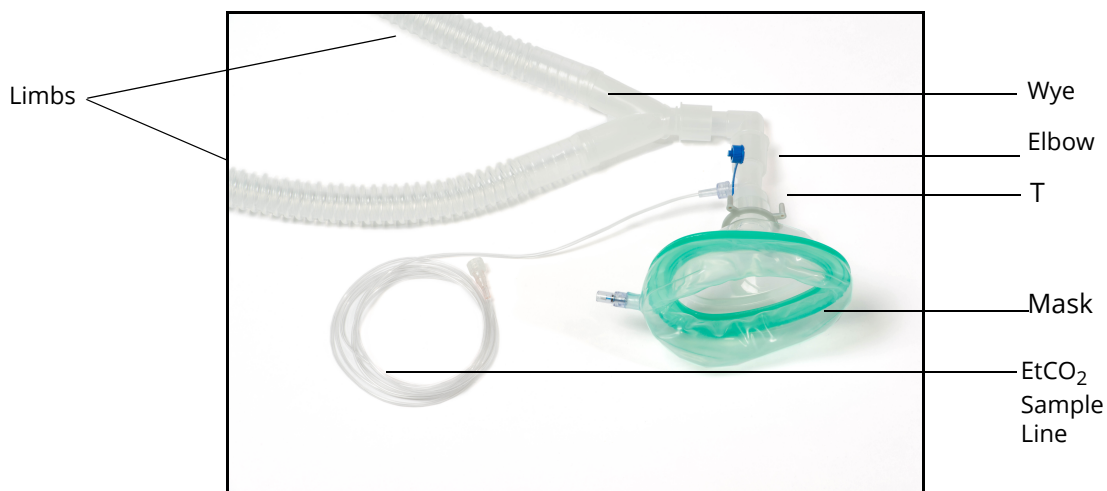
Anesthesia Medical Attachments	
Type	Location
Ventilator Breathing Circuit	Front
Filter	Front
NIBP Cuff Hose	Front
EtCO <sub>2</sub> Sample Line	Front
SpO <sub>2</sub> Probe	Front
Temperature Sensor	Front
ECG Cable (3 Lead)	Front
IBP Transducer	Front
O <sub>2</sub> Hose	Back
Medical Air Hose	Back
Nitrous Oxide Hose	Back



**Anesthesia Machine - Front Panel**

- Connect the filter to the front panel of the cart where port is labeled **EXP**. Ensure the filter ports are closed when the filters are installed.

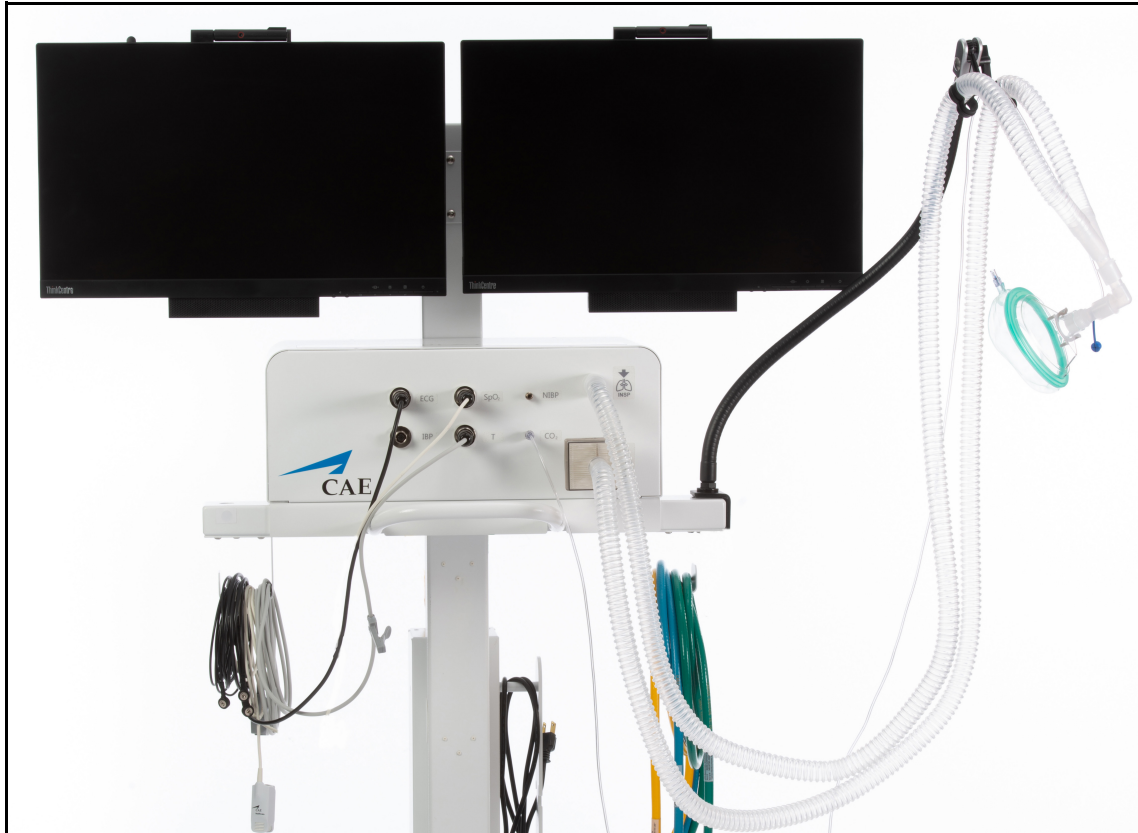
- b. The Anesthesia Machine will require a breathing circuit. To assemble the breathing circuit:
- Connect one of the limbs to the wye connector (at the y).
  - Connect the opposite limb to the wye connector (at the opposite side of the y).
  - Connect the elbow to the wye connector (at the top of the y).
  - Connect the T-connector to the elbow.
  - Connect the EtCO<sub>2</sub> sample line to the T-connector.
  - Connect the mask or the endotracheal tube to the T-connector (at the open end).



***Breathing Circuit Assembled with Non-Invasive Mask***

- c. Connect the Anesthesia Machine Breathing Circuit to the Medical Cart:
- Connect one of the tubes to the filter on the front of the Medical Cart.
  - Connect the second tube to the front panel of the Medical Cart port labeled **INSP**.
  - Attach the EtCO<sub>2</sub> sample line to the front of the Medical Cart by gently twisting the fitting to secure.
  - Place the breathing circuit limbs inside the articulating arm support.
  - Place the EtCO<sub>2</sub> sample line in the articulating arm support.
- d. Attach the SpO<sub>2</sub> probe by aligning the notch and pushing in on the fitting. Wrap the excess cord around the cord hook on the Medical Cart.
- e. Attach the ECG cable by aligning the notch and pushing in on the fitting. Attach the cable to electrotherapy pads (not shown in photo) and wrap the excess cord around the cord hook on the Medical Cart.
- f. Attach the Temperature sensor to the front of the Medical Cart. Wrap the excess cord around the cord hook on the Medical Cart.

- g. If using the NIBP cuff (not shown in the following picture), attach to the hose and then attach the hose to the front of the Medical Cart. Wrap the excess cord around the cord hook on the Medical Cart.
- h. If using the IBP Transducer (not shown in the following picture), attach to the hose and then attach the hose to the front of the Medical Cart. Wrap the excess cord around the cord hook on the Medical Cart.



**Front Panel of Medical Cart  
Anesthesia Machine Configuration**

- i. Attach the O<sub>2</sub> hose to the **O<sub>2</sub>** port in the back of the Medical Cart by twisting the fitting. Attach the opposite end of the O<sub>2</sub> hose to a simulated Oxygen source.
- j. Attach the Nitrous Oxide hose to the **N<sub>2</sub>O** port in the back of the Medical Cart by twisting the fitting. Attach the opposite end of the Nitrous Oxide hose to a simulated Nitrous Oxide source.

- k. Attach the Medical Air hose to the **AIR** port in the back of the Medical Cart by twisting the fitting. Attach the opposite end of the Medical Air hose to a simulated Medical Air source.



**Back of Medical Cart - Anesthesia Machine Configuration**  
*USA Colors Shown*

## Step 5: Power on Equipment

- a. Locate the power cord from the back of the Medical Cart, on the power bar and plug into an outlet.
- b. Power on Monitor(s).
- c. Power on the Tiny Computer on the back of the monitor.

## Step 6: Connect to WiFi

### *Using a Patient Simulator*

If the simulation will include a patient simulator, the system will use the manikin's WiFi.

- a. Turn on the patient simulator.
 

**Note:** The power switch may be in different locations on the manikin depending upon the patient simulator being used. Reference the patient simulator User Guide if there is difficulty locating the power switch.
- b. If this is the first time running SimEquip, it may be necessary to update Maestro on the patient simulator. See *Appendix B - Software Upgrades* for more information on upgrading.

### *Running Standalone*

If running standalone, it will be necessary to install the router included in the standalone package.

The following equipment is required:

- Router
- USB for Router

To install the router for standalone:

- a. Locate the USB cable that is routed at the top of the vertical support column and attach the cable to the appropriate port on the computer.



***Router USB to Computer Connection***

- b. At the back of the Medical Cart casing, gently pull the opposite end of the USB cable through the access hole and plug into the USB port on the router.



- c. Leaving all Velcro strips attached to the back of the router, remove the transparent film from the top Velcro strip. Affix the Velcro to the back of the cart, by gently applying pressure to the router in the desired position.

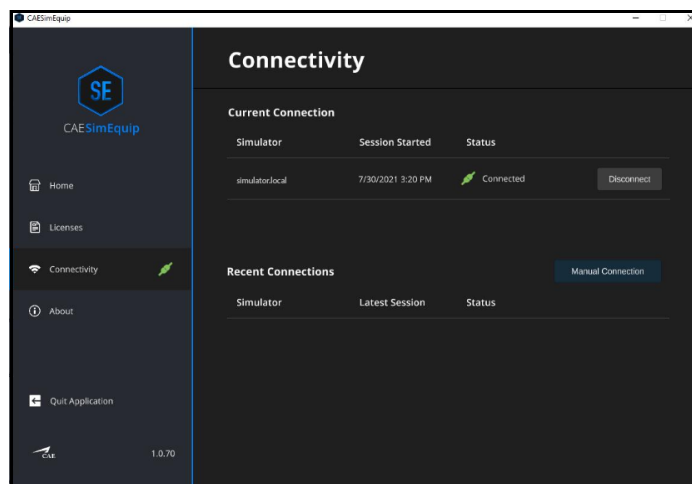


**USB to Router Connection**

### Switching from Standalone to Patient Simulator Connections

In the event Maestro Standalone for SimEquip is running and there is a need to switch to a Maestro patient simulator, for successful connectivity follow these steps:

- a. Launch SimEquip.
- b. Disconnect SimEquip from the Maestro standalone simulation.
  - From the SimEquip Home screen, select **Connectivity**.

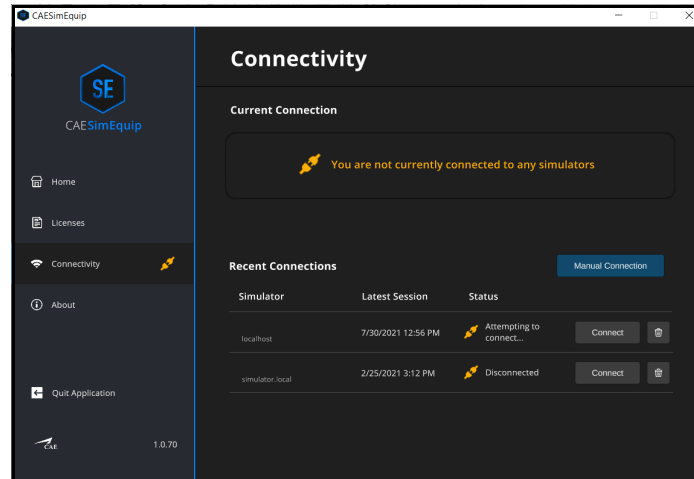


**SimEquip Connectivity Window - Connected**

- Select the **Disconnect** button associated with simulator.local.

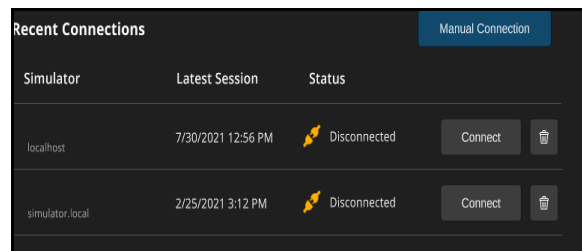


- c. Confirm that **simulator.local** appears in the **Recent Connections** list in SimEquip.
  - From the SimEquip Home screen, select **Connectivity**.



**SimEquip Connectivity Window**

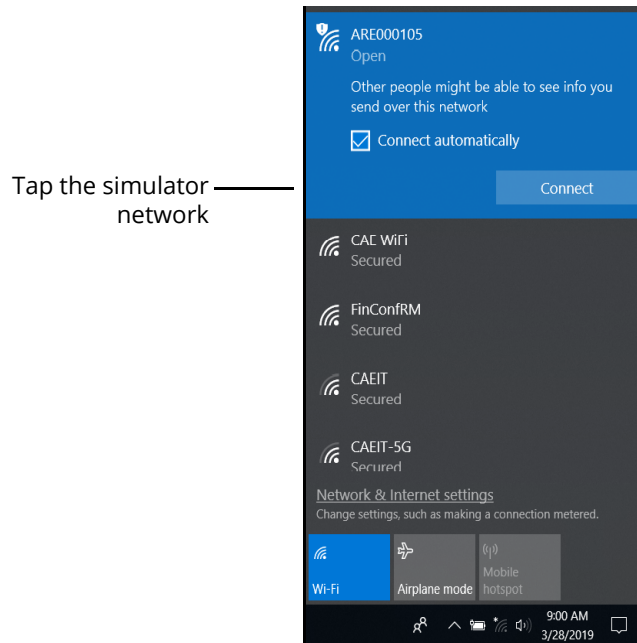
- In the **Recent Connections** list, confirm that **simulator.local** appears.



**Recent Connections**

- d. Close the SimEquip application.
- e. Change from the standalone router to the patient simulator router. See instructions in the previous section of this guide:
  - *Bedside Medical Cart Simulation Setup Steps - Step 6: Connect to WiFi - Using a Patient Simulator.*
- f. Confirm the connection to the patient simulator network.
  - From the home screen on the SimEquip device, tap the Network icon located in the lower-right corner of the screen in the taskbar.

The Network window appears. The type of patient simulator that is used will determine the name of the network. For example, Ares is shown in the following image.



***The Network Window - Connected to Ares Patient Simulator***

- Restart the SimEquip application.

## Step 7: Launch Maestro

The configuration of the equipment will determine how Maestro is launched.

- **Patient Simulator** - If using a patient simulator, Maestro is installed on the tablet that is used with the simulator.
- **Standalone** - When using the standalone with SimEquip, Maestro is installed on the Instructor tablet included with the standalone package.

To launch Maestro:

- a. Select the Maestro shortcut icon which appears on the desktop of the tablet.

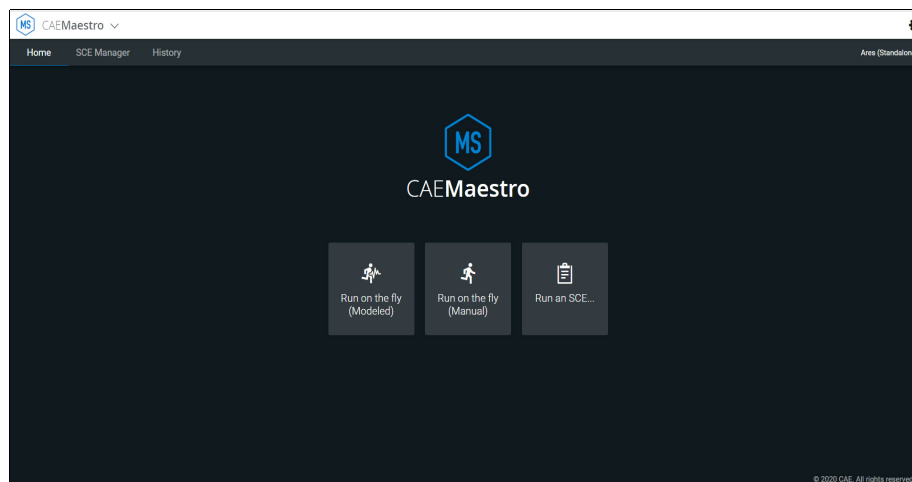


**Maestro Icon**

The Maestro Home Screen appears.

There are three options to choose from on the Home screen:

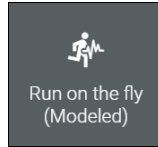
- Run on the fly (Modeled)
- Run on the fly (Manual)
- Run an SCE



**Maestro Home Screen**

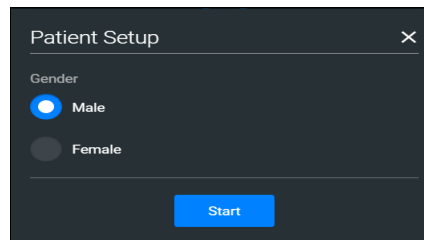
- b. Select **Run on the fly (Modeled)**.

**Note:** The Transport Ventilator, Ventilator, and Anesthesia Machine require Modeled mode.



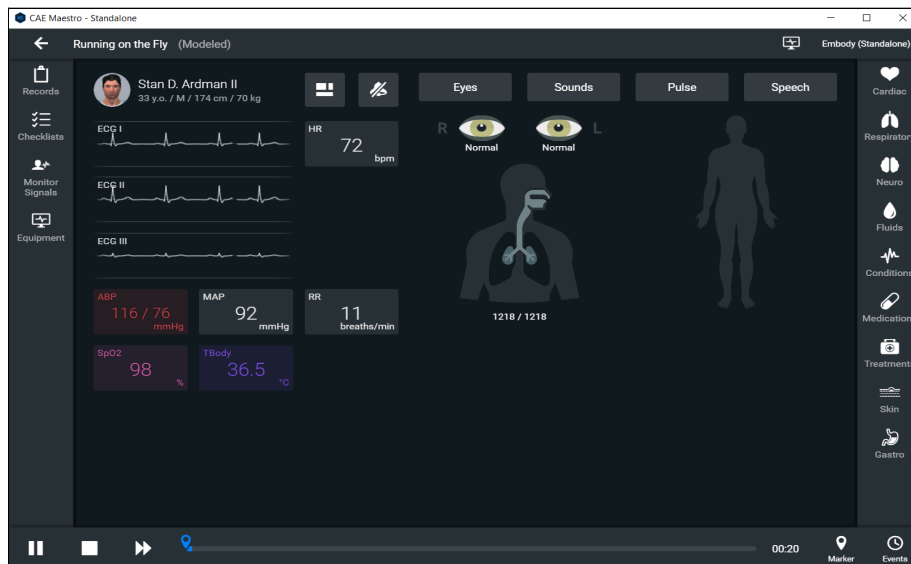
**Run on the fly (Modeled)**

A prompt to select gender appears.



**Patient Setup Window**

- c. Select **Male** or **Female**.
  - d. Tap the **Start** button.
- The Run Screen appears.



**Maestro Run Screen**

## Step 8: Launch SimEquip Software

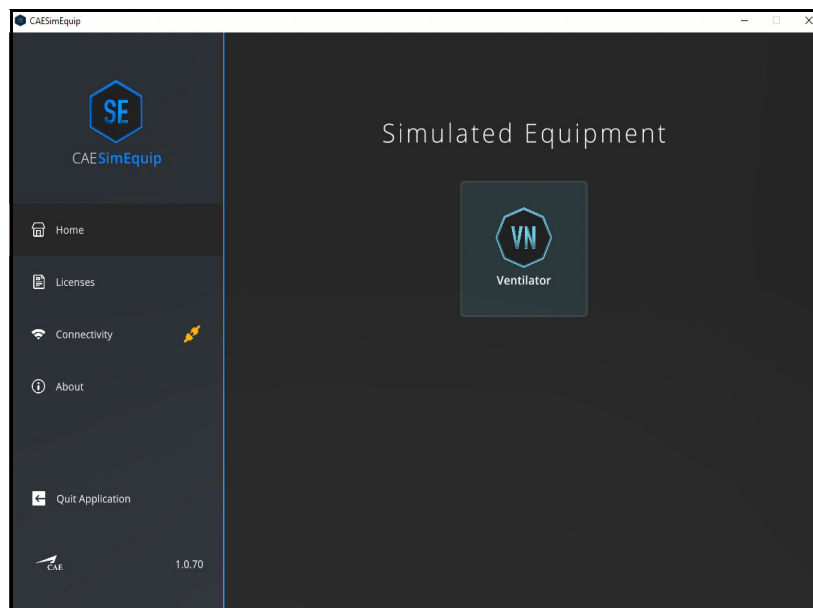
To launch SimEquip:

Using the Touchscreen monitor on the Medical Cart, select the SimEquip shortcut icon which appears on the desktop.



*SimEquip Icon*

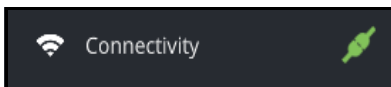
The SimEquip Home screen appears. Virtual equipment for which licenses are activated, will be displayed on the Home screen.



*SimEquip Home Screen*

Equipment applications for each software license purchased will appear on the center of the Home screen.

On the left panel, the **Connectivity** status will appear green, indicating that SimEquip is connected to a WiFi.



*Connectivity - Connected Status*

## Step 9: Launch Patient Monitor

This step only applies when performing a simulation using the Anesthesia Machine. The Patient Monitor icon appears on the monitor on the left side of the Medical Cart (Monitor “B”).



**Patient Monitor Icon**

Double-tap the Patient Monitor icon and the Patient Monitor screen appears.



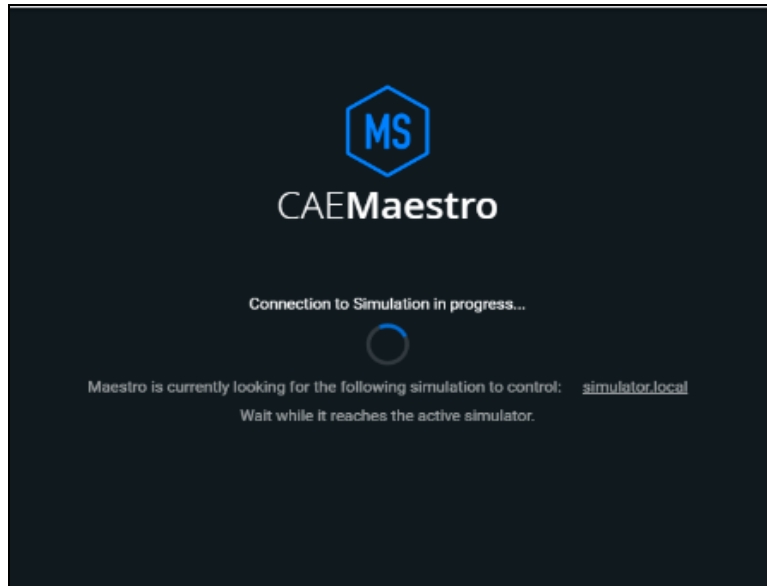
**CAE Patient Monitor**

In the event the Patient Monitor launches and the window is overlapping the SimEquip application window, drag the Patient Monitor window to the opposite monitor display.

If using the Anesthesia Machine running standalone, the Instructor tablet will require connecting before the Patient Monitor will function. An initial entry of the Instructor device IP address is necessary to setup this feature.

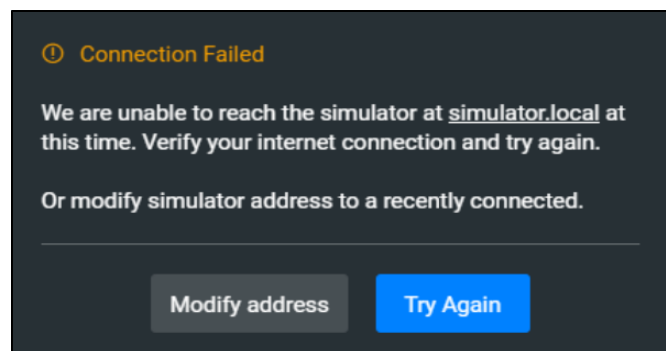
To setup Patient Monitor on the Instructor Device:

After attempting to launch the Patient Monitor, the Connection screen will appear.



**Connection Screen - Attempting to Connect**

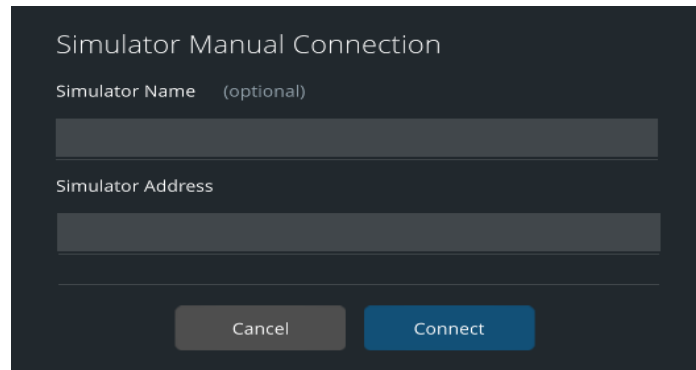
The Connection Failed message will appear.



**Connection Failed Message**

- a. Tap the **Modify address** button.

The Simulator Manual Connection Window will appear.

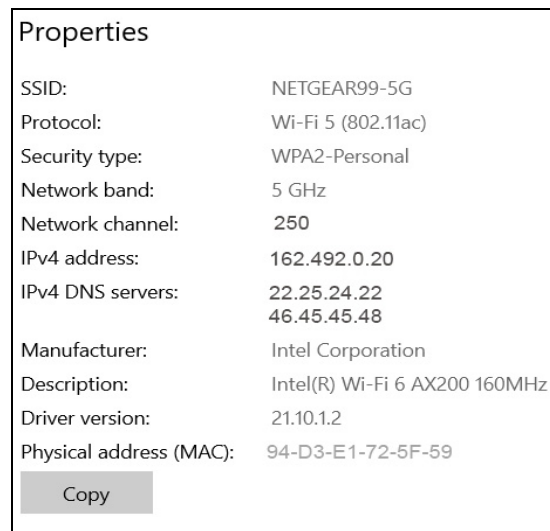


**Simulation Manual Connection Window**

b. In **Simulator Address**, enter the **IP address** for the Instructor tablet.

To identify the IP address:

- Tap the **Network** icon located in the lower-right corner of the screen in the taskbar.
- Tap **Properties**. The IP Address will be represented by the IPv4 address.



**Properties**

c. After entering the **IP address**, click on the **Connect** button.

d. Reattempt to launch the Patient Monitor.



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## USING SIM EQUIP DEFIBRILLATOR AND SIM EQUIP AED

Listed below are the steps to begin using SimEquip Defibrillator and SimEquip AED.

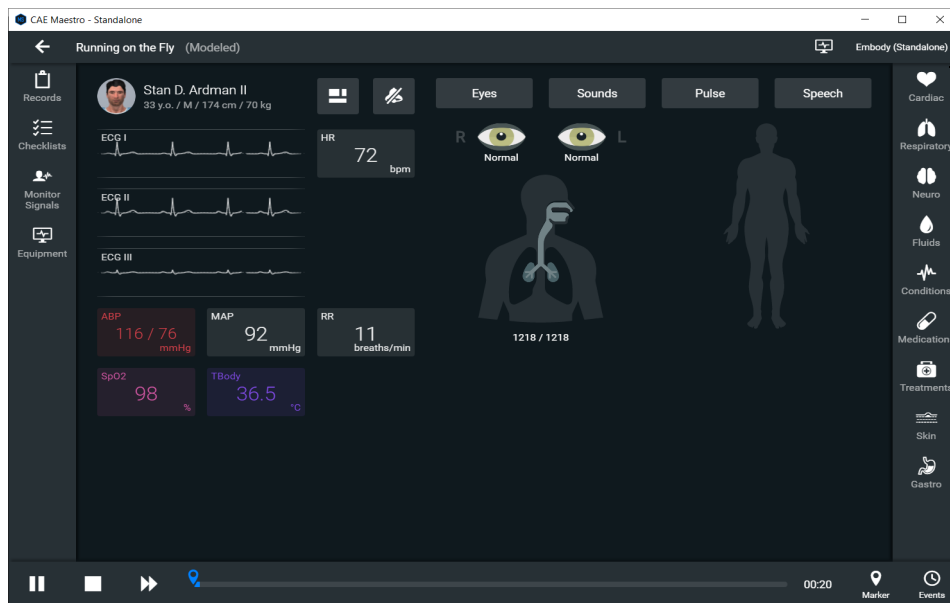
**Note:** Only one electrotherapy device may be used at a time. For example, if the AED is active, and the Defibrillator is powered on, the AED will automatically power off.

Defibrillator and AED Steps	
1	Set up the patient for electrotherapy
2	Set up the Defibrillator
3	Launch the Defibrillator
4	Set up the AED
5	Launch the AED

### Step 1: Set up the Patient for Electrotherapy

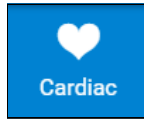
To perform a realistic and effective cardiac electrotherapy simulation, parameters are set to reflect a patient’s condition that would require use of a Defibrillator or AED. This section provides information on modifying and activating the appropriate parameters.

After launching Maestro and selecting the type of simulation, the SCE Run Screen appears.



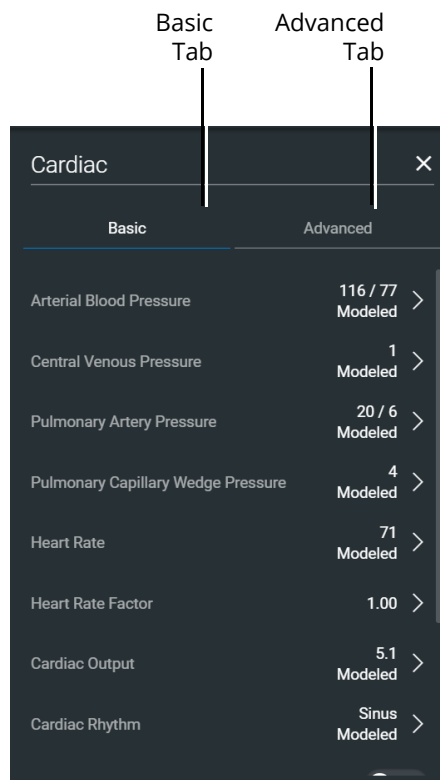
*SCE Run Screen*

1. From Patient Status panel, on the right side of the SCE Run Screen, click the **Cardiac Parameters** icon.



**Cardiac Parameters Icon**

The Cardiac Parameters panel appears.

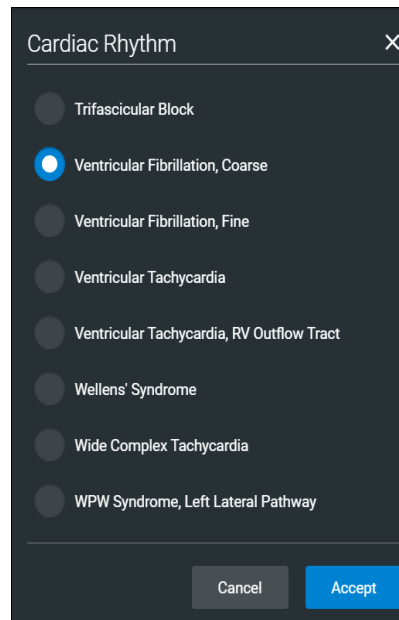


**Cardiac Parameters Panel**

2. From the Cardiac Parameters panel, select **Cardiac Rhythm**.

The Cardiac Rhythm Options appear.

3. Toggle Modeled to **Override**.



**Cardiac Rhythm Options**

4. The arrhythmias in the following table result in a shock advised state for the Defibrillator and AED.

Cardiac Rhythm Parameters - Arrhythmias	
Basic	Coarse Ventricular Fibrillation
	Fine Ventricular Fibrillation
	Torsade de Pointes
	Ventricular Tachycardia

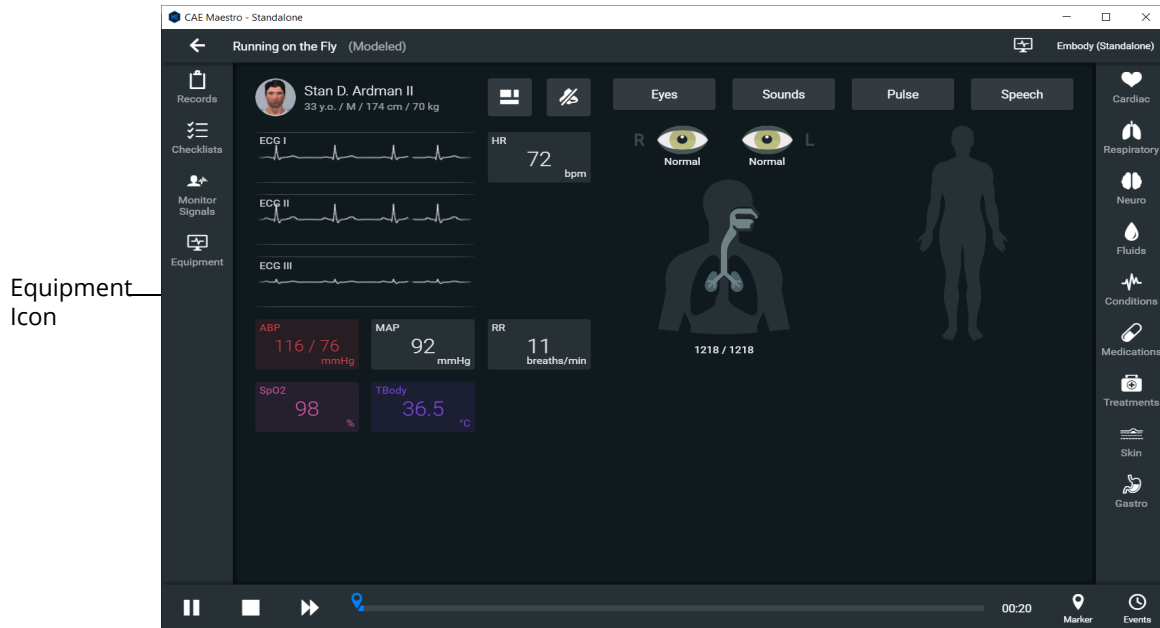
To change the Maestro default modeled cardiac parameters to one of the suggested arrhythmias:

- a. From the Cardiac Rhythm Options, scroll through the list to find the desired arrhythmia.
- b. Select the Arrhythmia.
- c. Click **Accept**.

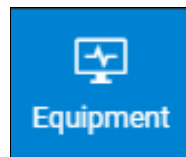
## Step 2: Set up the Defibrillator

To setup the Defibrillator, select probes and enabling the power as follows:

1. From the left panel of the SCE Run screen, select the **Equipment** icon.



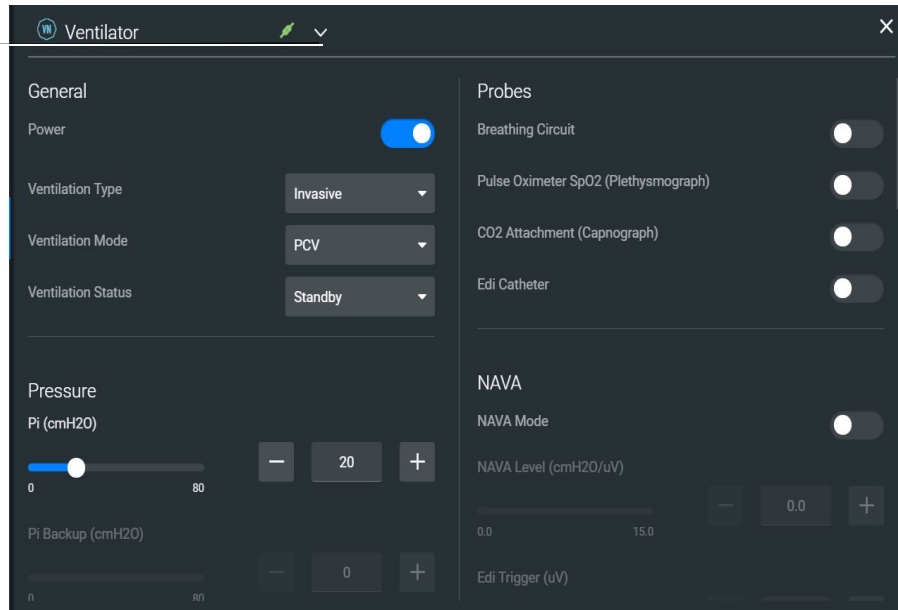
*SCE Run Screen*



*Equipment Icon*

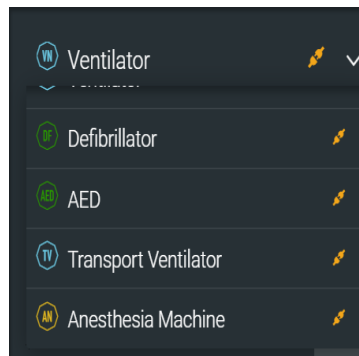
The Equipment parameters appear.

Select Equipment Parameters drop-down



**Equipment Parameters**

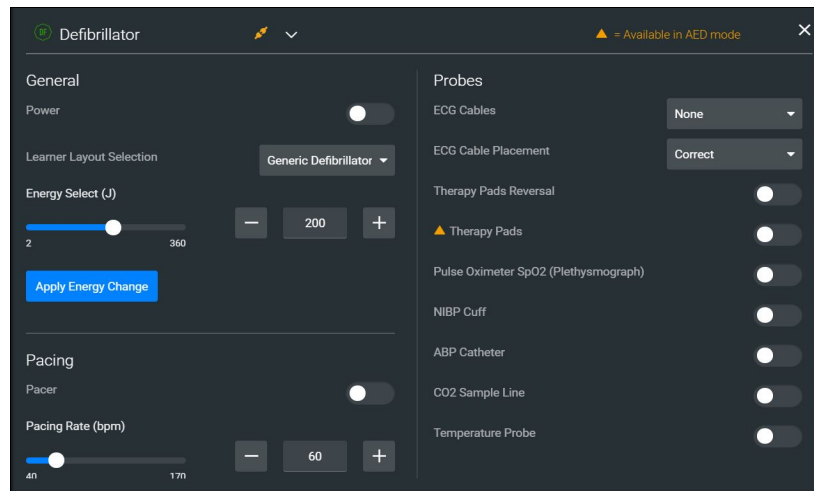
Click the **Select Equipment Parameters** drop-down indicator to the right of the equipment type at the top of the list.



**Select Equipment Parameters Drop-Down**

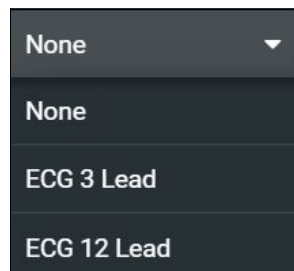
2. Select **Defibrillator** from the list.

The Defibrillator parameters appear for editing.



**Defibrillator Equipment Parameters**

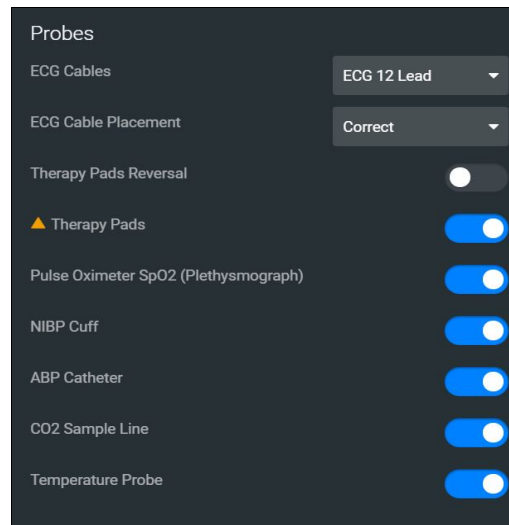
- From the Probes options, select the drop-down list for **ECG Cables**.



**ECG Cables Drop-Down List**

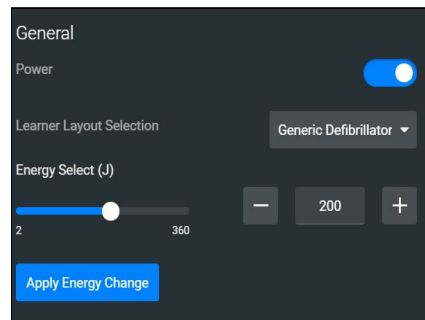
- Select **ECG 12 Lead** from the drop-down list.
- From the Probes options, select the drop-down list for **ECG Cable Placement**.
- Select **Correct** from the drop-down list.
- Ensure that the **Therapy Pads Reversal** is **disabled**.
- Enable** the following probes:
  - Therapy Pads
  - Pulse Oximeter SPO<sub>2</sub> (Plethysmograph)
  - NIBP Cuff
  - ABP Catheter
  - CO<sub>2</sub> Sample Line
  - Temperature Probe

The Probes options will appear as shown in the following image.



**Defibrillator Probes Enabled**

- From the General parameters, verify that the **Power** indicator is **enabled**.



**General Equipment Parameters - Power Enabled**

**Note:** Once the power is enabled to the Defibrillator, the simulation connection status will change at the top of the Equipment Parameters Panel. This same status icon will be displayed at the top of the defibrillator screen, when running the defibrillator.



**Simulation Connection Status**

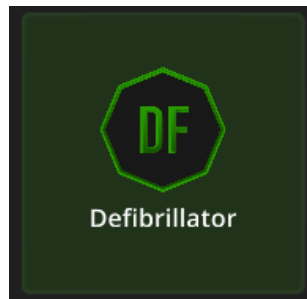
- Click the **X** in the upper-right corner to close the Equipment parameters panel and return to the SCE Run screen.



## Step 3: Launch the Defibrillator

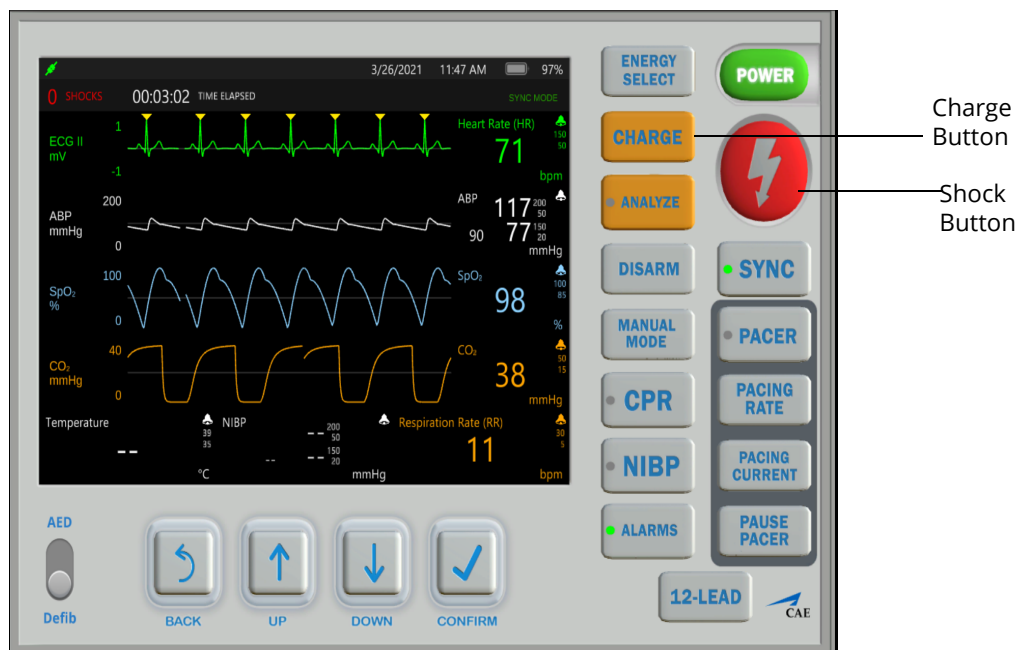
To launch the Defibrillator:

From the SimEquip Home screen, select the Defibrillator Icon.



**Defibrillator Icon**

After the system has initialized, the CAE Defibrillator screen appears.



**CAE SimEquip Defibrillator**

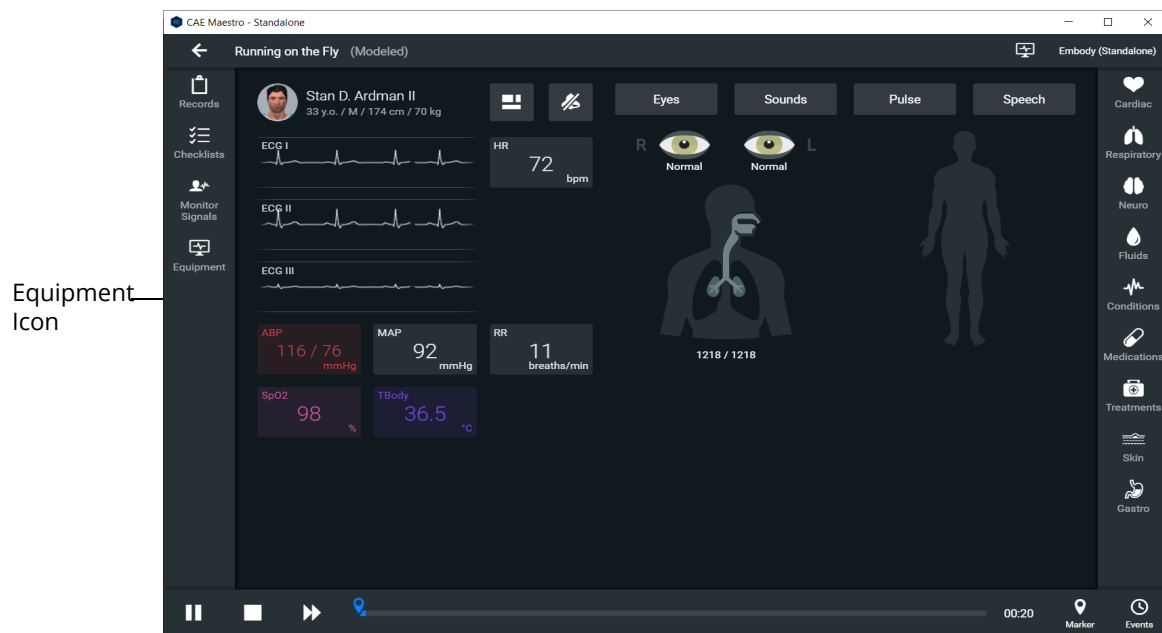
**Note:** Enable all probes as described in *Step 2: Set up the Defibrillator*. Having probes enabled will ensure appropriate patient vital signs are displayed and monitored by the equipment during the simulation.

See *Appendix C - Defibrillator Controls and Display Options* for more information.

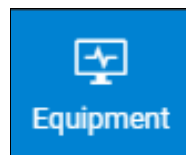
## Step 4: Set up the AED

To set up the AED:

1. Only one electrotherapy device may be used at a time. If the Defibrillator is running, close the Defibrillator by clicking on the **X** in the upper-right corner of the Defibrillator browser tab.
2. From the left panel of the SCE Run screen, select the **Equipment** icon.



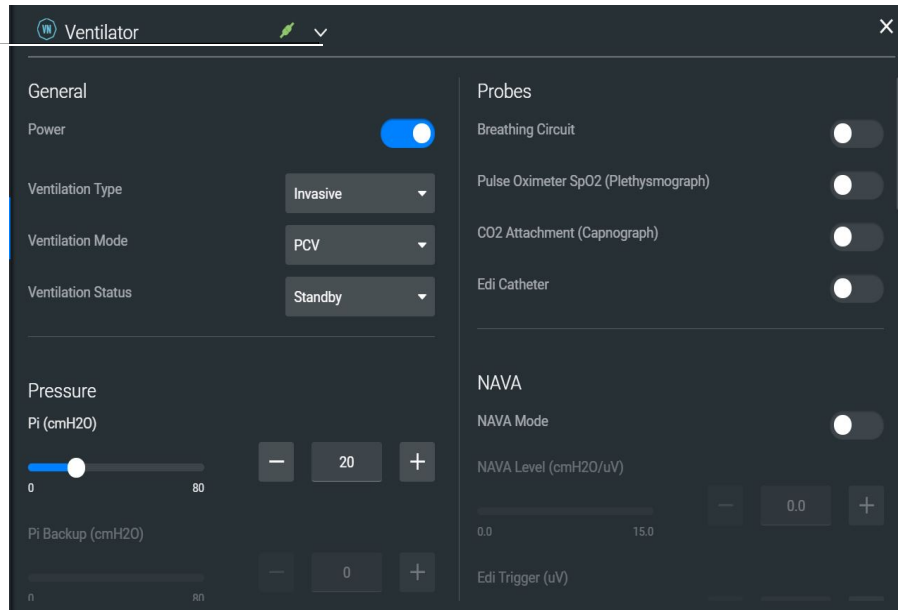
*SCE Run Screen*



*Equipment Icon*

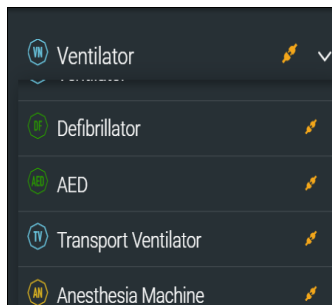
The Equipment parameters appear.

Select Equipment Parameters drop-down



**Equipment Parameters**

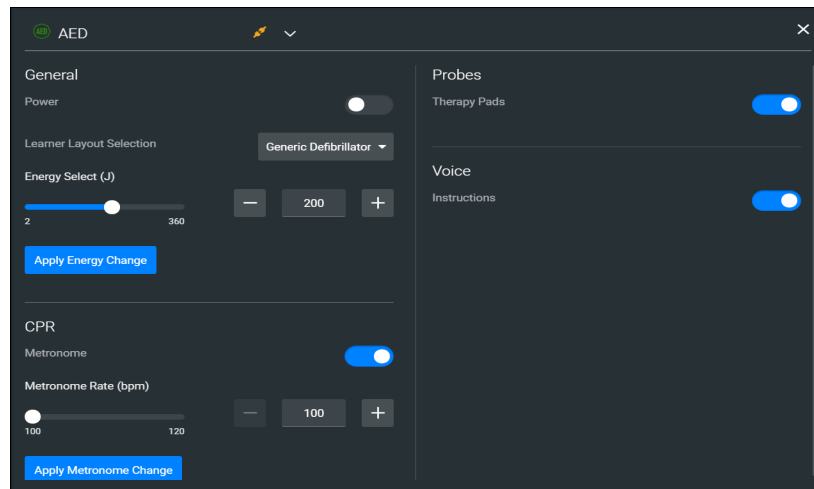
3. Click the **Select Equipment Parameters** drop-down indicator to the right of the equipment type at the top of the list.



**Select Equipment Parameters Drop-Down**

4. Select **AED** from the list.

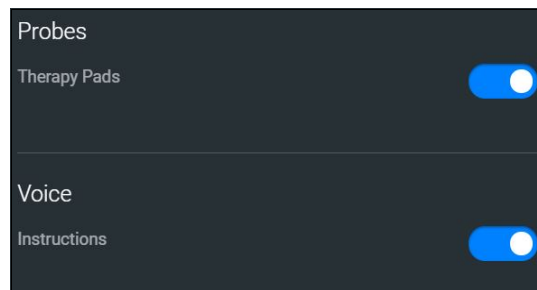
The AED parameters appear for editing.



***AED Equipment Parameters***

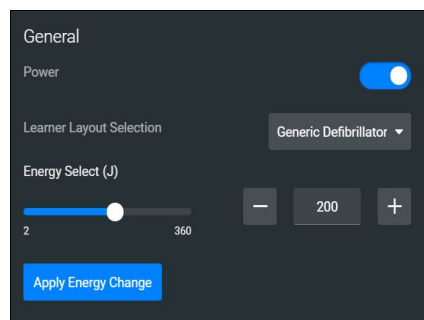
5. From the Probes options, ensure that the **Therapy Pads Reversal** is **disabled**.
6. **Enable** the **Therapy Pads**.
7. From the Voice options, **Enable** the **Instructions**.

The Probes and Voice options appear as shown in the following image.



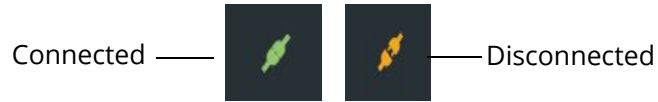
***AED Probes and Voice Options***

8. From the General parameters, verify that the **Power** indicator is **enabled**.



***General Equipment Parameters - Power Enabled***

**Note:** Once the power is enabled to the AED, the simulation connection status will change at the top of the Equipment Parameters Panel. This same status icon will be displayed at the top of the AED screen, when running the AED.



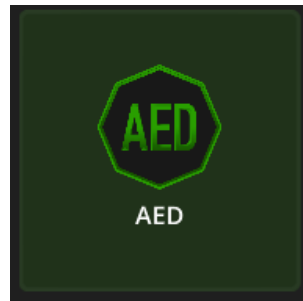
***Simulation Connection Status***

9. Click the **X** in the upper-right corner to close the Equipment parameters panel and return to the SCE Run screen.

## Step 5: Launch the AED

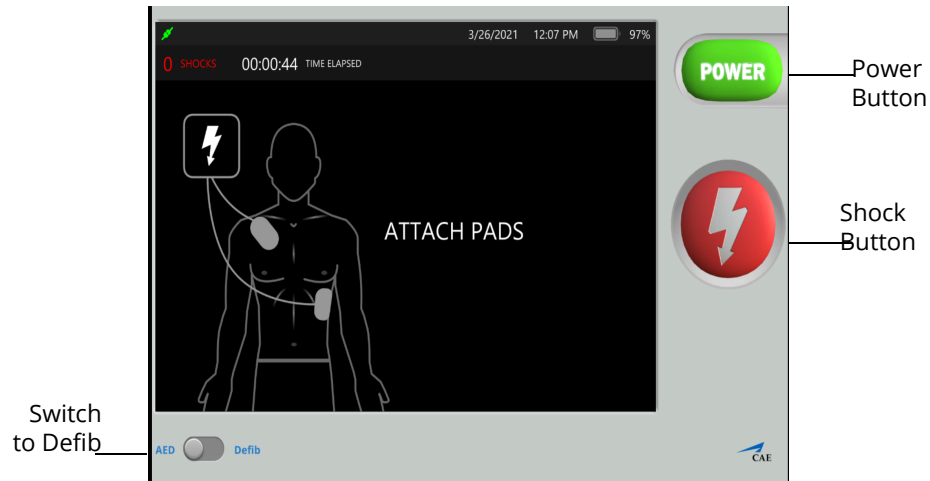
To launch the AED:

From the SimEquip Home screen, select the AED Icon.



***AED Icon***

After the system initializes, the SimEquip AED appears. When voice instructions are enabled, audible instructions will be heard, in addition to the textual instructions that appear on the screen.



**CAE SimEquip AED**

**Note:** Enable all probes as described in *Step 4: Set up the AED*. Having probes enabled will ensure appropriate patient vitals are displayed and monitored by the equipment during the simulation.

See *Appendix D - AED Controls and Display Options* for more information.

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# USING SIM EQUIP TRANSPORT VENTILATOR

Listed below are the steps to use CAE's SimEquip Transport Vent.

**Note:** Only one ventilation device may be used at a time. For example, if the Transport Ventilator is active, and the Ventilator or Anesthesia Machine is powered on, the Transport Ventilator will automatically power off.

Transport Ventilation Steps	
1	Set up the patient for ventilation
2	Set up the Transport Ventilator
3	Launch the Transport Ventilator

## Step 1: Set up the Patient

To perform a realistic and effective ventilation simulation, parameters are set to reflect a patient's condition that would require ventilation. This section provides information on modifying and activating the appropriate parameters.

- These settings should be set in CAE Maestro prior to powering on and using the ventilator.
- The same suggested patient parameters may be used for CAE Ventilator or CAE Transport Ventilator.

**Note:** Select a modeled simulation for the Ventilator to function appropriately.



The SCE Run Screen appears.



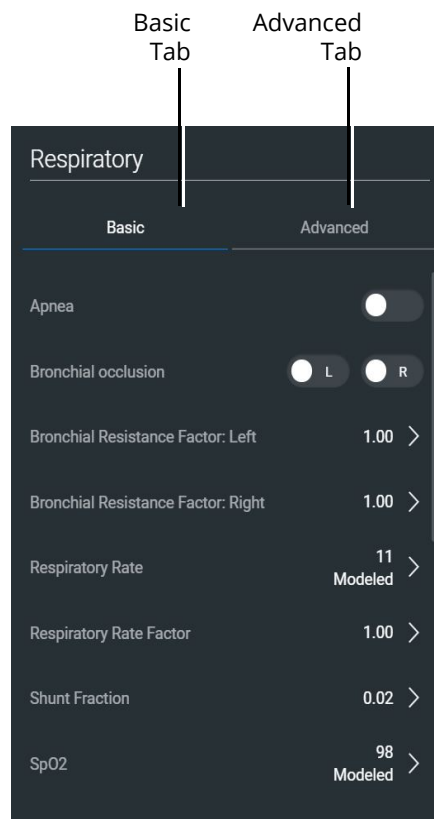
**SCE Run Screen**

1. From the Patient Status panel on right side of the SCE Run screen, click the **Respiratory Parameters** icon.



**Respiratory Parameters Icon**

The Respiratory Parameters panel appears.



***Respiratory Parameters Panel***

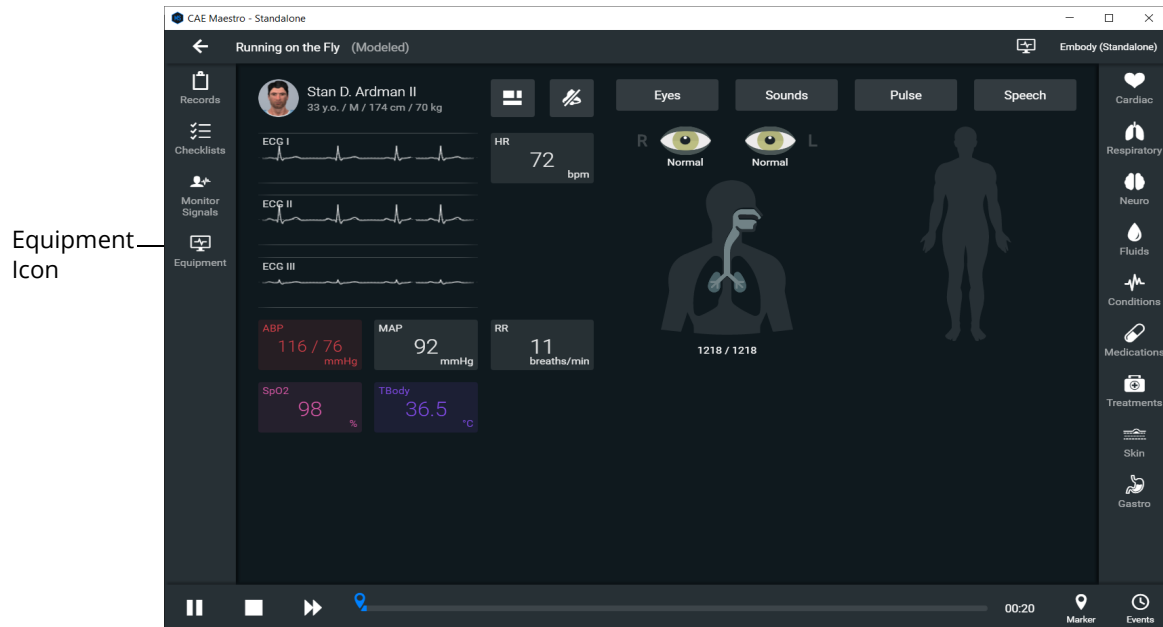
2. Set the following Respiratory Parameters in Maestro :

Respiratory Parameters		Setting
Basic	Bronchial Resistance Factors: Left	5.0
	Bronchial Resistance Factors: Right	5.0
	Apnea	<ul style="list-style-type: none"><li>• For testing <i>control</i> mode, <b>enable</b> Apnea.</li><li>• For testing <i>support</i> mode, <b>disable</b> Apnea.</li></ul>
Advanced	Chest Wall Compliance Factor	.50
	Lung Compliance Factor: Left	.50
	Lung Compliance Factor: Right	.50

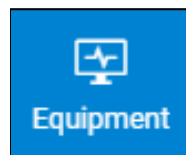
## Step 2: Set up the Transport Ventilator

Prior to running a simulation using the Transport Ventilator, there are setup steps involved; selecting probes and enabling the power as follows:

1. From the left panel of the SCE Run Screen, select the **Equipment** icon.



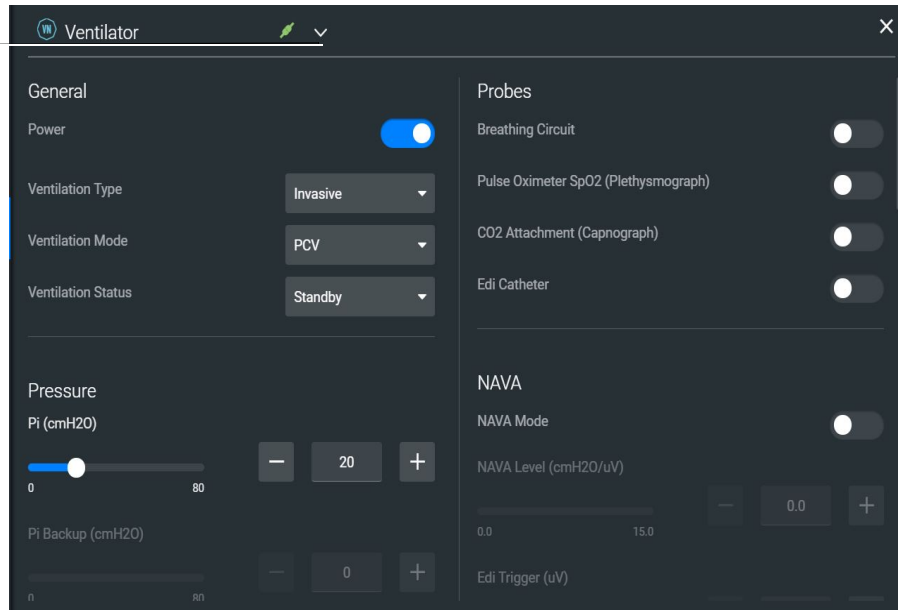
*SCE Run Screen*



*Equipment Icon*

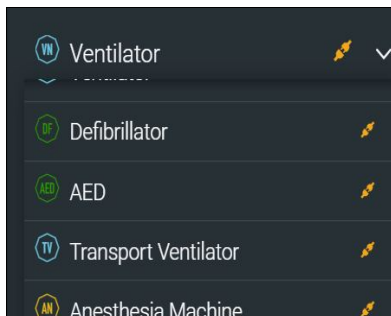
The Equipment parameters appear.

Select Equipment Parameters drop-down



**Equipment Parameters**

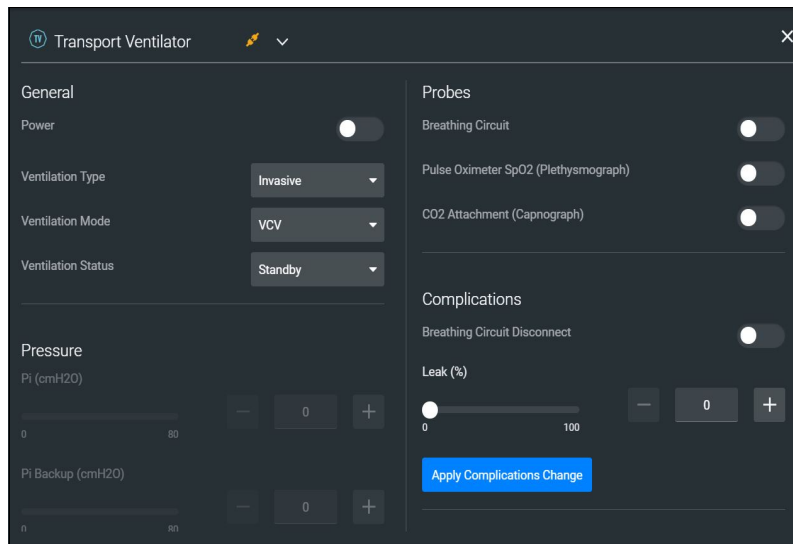
2. Click the **Select Equipment Parameters** drop-down indicator to the right of the equipment type at the top of the list.



**Select Equipment Parameters Drop-Down**

3. Scroll down the list and select **Transport Ventilator**.

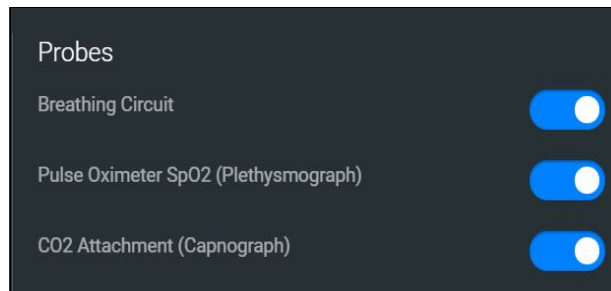
The Transport Ventilator parameters appear for editing.



***Transport Ventilator Equipment Parameters***

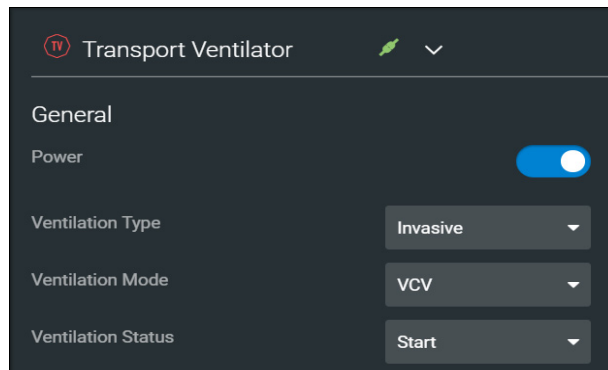
4. From the Probes options, **enable** the following **probes**:

- Breathing Circuit
- Pulse Oximeter SPO<sub>2</sub>
- CO<sub>2</sub> Attachment



***Transport Ventilator Probes Enabled***

- From the General parameters, verify that the **Power** indicator is **enabled**.



**General Equipment Parameters - Power Enabled**

**Note:** Once the power is enabled to the transport ventilator, the simulation connection status will change at the top of the Equipment parameters panel. This same status icon will be displayed at the top of the transport ventilator screen, when running the ventilator.



**Simulation Connection Status**

- Click the **X** in the upper-right corner to close the Equipment parameters panel and return to the SCE Run screen.

# Step 3: Launch the Transport Ventilator

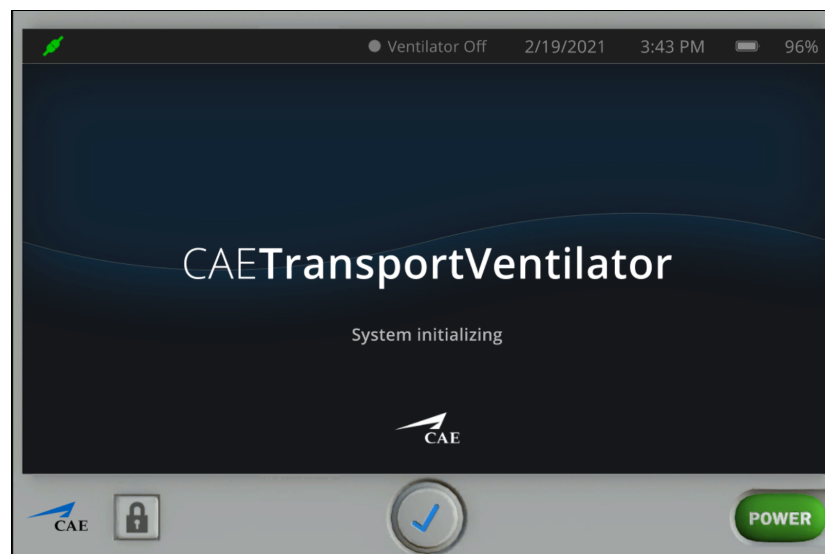
To launch the Transport Ventilator:

1. From the SimEquip Home screen, select the Transport Ventilator Icon.



*Transport Ventilator Icon*

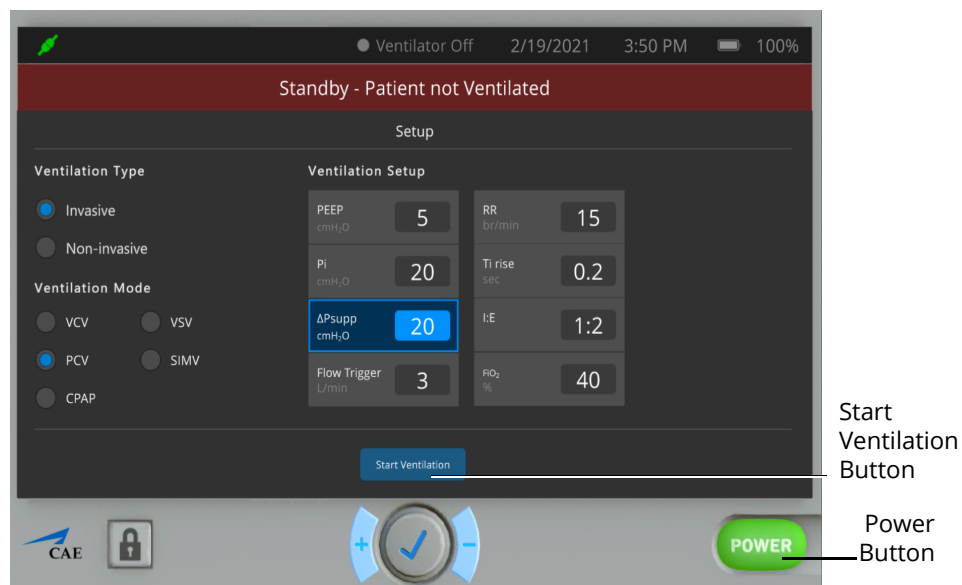
The System Initializing Screen appears.



*System Initializing Screen*



After the system has initialized, the CAE Transport Ventilator Standby screen appears.



**CAE SimEquip Transport Ventilator Screen**

2. Change the parameter values as needed. After positioning the cursor in one of the parameter value fields, and selecting the value for editing, additional control buttons will appear at the bottom of the screen.



**Value Select Buttons**

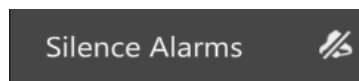
3. Use the **plus (+)** and **minus (-)** buttons at the bottom center of the screen to adjust the value lower or higher as needed.
4. Click the **Check mark symbol** in the center to finalize the change in value.
5. When finished making all changes on the Setup screen, click the **Start Ventilation** button.

The Ventilator screen will appear.



**Transport Ventilator Screen - Ventilator On**

To silence the alarms, from the upper-right corner of the transport ventilator screen, click the **Silence Alarms** button. When silencing is activated, the indicator will turn to blue.



**Silence Alarms Button**

There are additional settings that represent a typical ventilator used in a clinical setting. Status and parameters are displayed on the Ventilator screen based on options selected from the Settings and Controls panel at the right of the screen. Options to select from are:

- Modes
- Views
- Vitals
- Alarms

Refer to *Appendix E - Transport Ventilator Controls and Display Options* for further details.

**Note:** Enable all probes as described in *Step 2: Set up the Transport Ventilator*. Having probes enabled will ensure appropriate patient vital signs are displayed and monitored by the equipment during the simulation.

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# USING SIM EQUIP VENTILATOR

Listed below are the steps to use CAE's SimEquip Ventilator.

**Note:** Only one ventilation device may be used at a time. For example, if the Transport Ventilator is active, and the Ventilator or Anesthesia Machine is powered on, the Transport Ventilator will automatically power off. However, both an electrotherapy device and a ventilation device may be used in parallel.

Ventilator Steps	
1	Set up the patient for ventilation
2	Set up the Ventilator
3	Launch the Ventilator

## Step 1: Set up the Patient

To perform a realistic and effective ventilation simulation, parameters are set to reflect a patient's condition that would require ventilation. This section provides information on modifying and activating the appropriate parameters.

- These settings should be set in CAE Maestro prior to powering on and using the ventilator.
- The same suggested patient parameters may be used for CAE Ventilator or CAE Transport Ventilator.

**Note:** Select a modeled simulation for the Ventilator to function appropriately.

The SCE Run Screen appears.



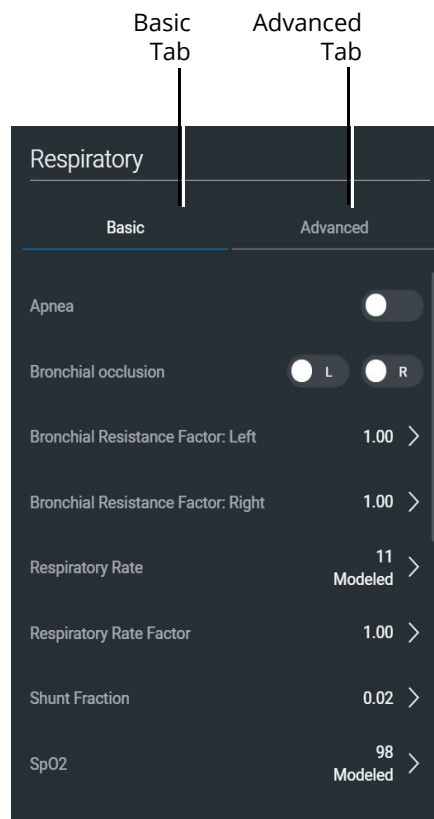
**SCE Run Screen**

1. From the Patient Status panel on right side of the SCE Run screen, click the **Respiratory Parameters** icon.



**Respiratory Parameters Icon**

The Respiratory Parameters panel appears.



***Respiratory Parameters Panel***

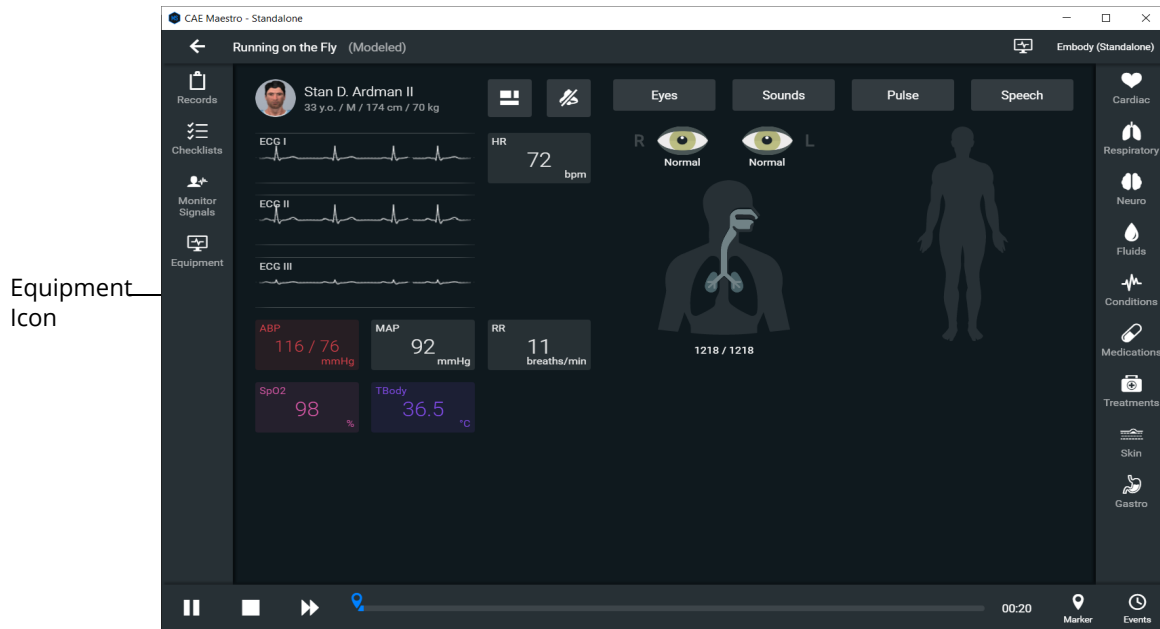
2. Set the following Respiratory Parameters in Maestro :

Respiratory Parameters		Setting
Basic	Bronchial Resistance Factors: Left	5.0
	Bronchial Resistance Factors: Right	5.0
	Apnea	<ul style="list-style-type: none"><li>• For testing <i>control</i> mode, <b>enable</b> Apnea.</li><li>• For testing <i>support</i> mode, <b>disable</b> Apnea.</li></ul>
Advanced	Chest Wall Compliance Factor	.50
	Lung Compliance Factor: Left	.50
	Lung Compliance Factor: Right	.50

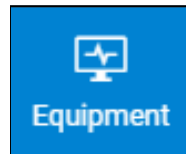
## Step 2: Set up the Ventilator

Prior to running a simulation using the Ventilator, there are setup steps involved; selecting probes and enabling the power as follows:

1. From the left panel of the SCE Run Screen, select the **Equipment** icon.



*SCE Run Screen*

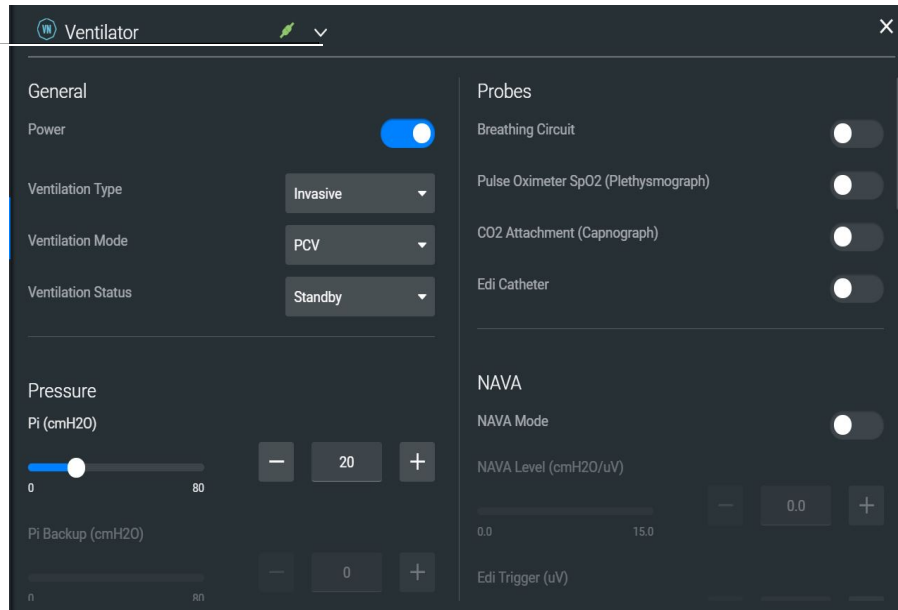


*Equipment Icon*



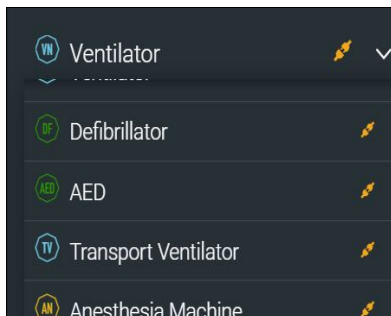
The Equipment parameters appear.

Select Equipment Parameters drop-down



**Equipment Parameters**

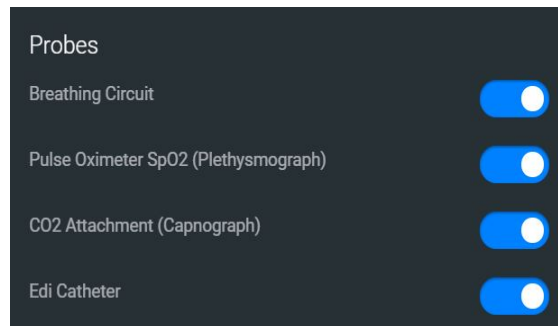
2. Click the **Select Equipment Parameters** drop-down indicator to the right of the equipment type at the top of the list.



**Select Equipment Parameters Drop-Down**

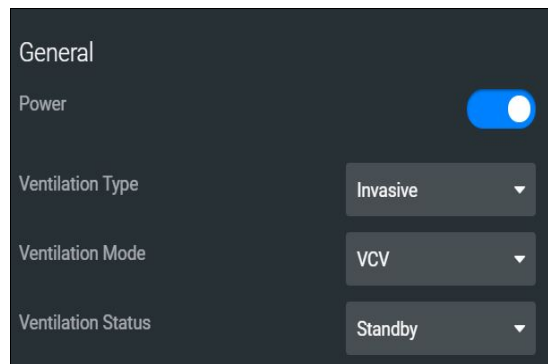
3. Scroll down the list and select **Ventilator**.

4. From the Probes options, **enable** the following **probes**:
  - Breathing Circuit
  - Pulse Oximeter SPO<sub>2</sub>
  - CO<sub>2</sub> Attachment



***Ventilator Probes Enabled***

5. From the General parameters, verify that the **Power** indicator is **enabled**.



***General Equipment Parameters - Power Enabled***

**Note:** Once the power is enabled to the ventilator, the simulation connection status will change at the top of the Equipment parameters panel. This same status icon will be displayed at the top of the ventilator screen, when running the ventilator.



***Simulation Connection Status***

6. Click the **X** in the upper-right corner to close the Equipment parameters panel and return to the SCE Run screen.

## Step 3: Launch the Ventilator

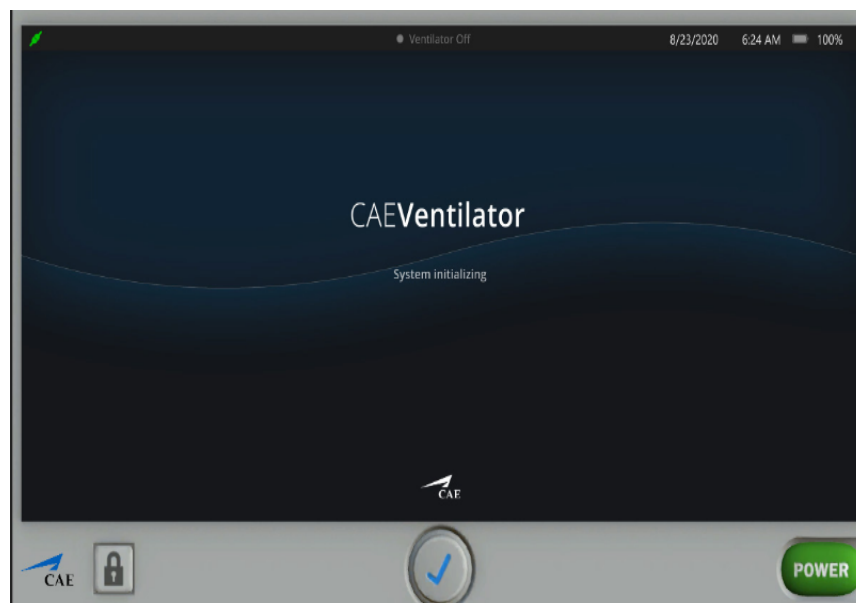
To launch the Ventilator:

1. From the SimEquip Home screen, select the Ventilator Icon.



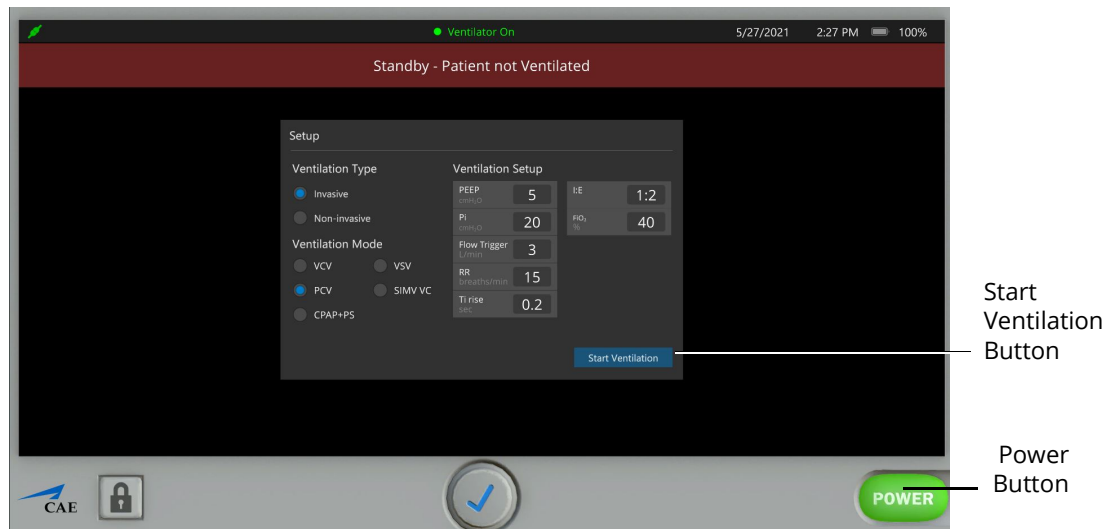
***Ventilator Icon***

The System Initializing Screen appears.



***CAE SimEquip Ventilator - System Initializing***

After the system has initialized, the Ventilator Setup Standby screen appears.



**SimEquip Ventilator Setup Standby Screen**

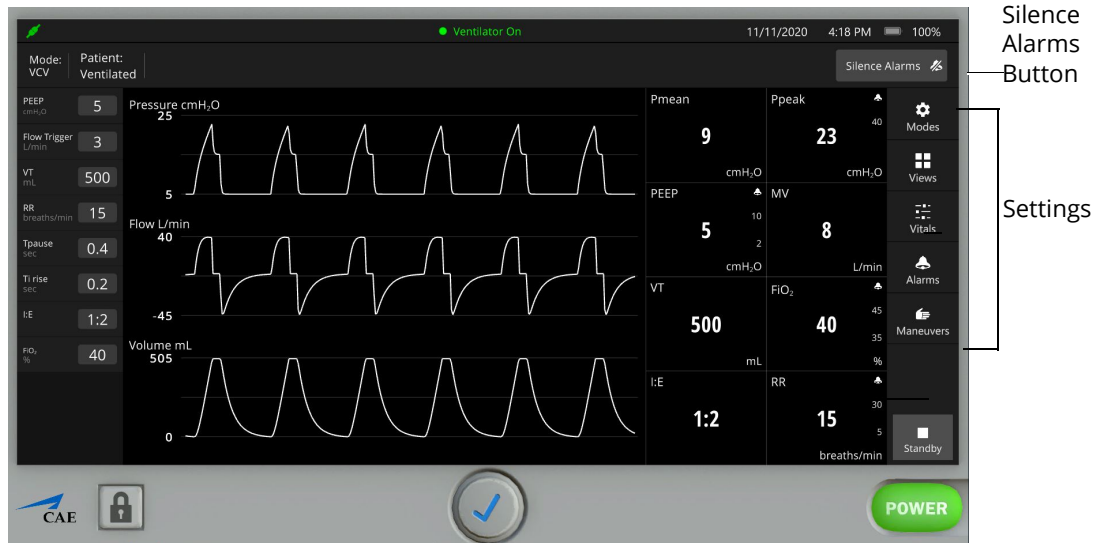
2. Change the parameter values as needed. After positioning the cursor in one of the parameter value fields, and selecting the value for editing, additional control buttons will appear at the bottom of the screen.



**Value Select Buttons**

3. Use the **plus (+)** and **minus (-)** buttons at the bottom center of the screen to adjust the value lower or higher as needed.
4. Click the **Check mark symbol** in the center to finalize the change in value.
5. When finished making all changes on the Setup screen, click the **Start Ventilation** button.

The Ventilator screen appears.



**Ventilator Screen - Ventilator On**

To silence the alarms, from the upper-right corner of the ventilator screen, click the **Silence Alarms** button. When silencing is activated, the indicator will appear blue.



**Silence Alarms Button**

There are additional settings that represent a typical ventilator used in a clinical setting. Status and parameters are displayed on the Ventilator screen based on options selected from the Settings and Controls panel at the right of the screen. Options to select from are:

- Modes
- Views
- Vitals
- Alarms
- Maneuvers

Refer to *Appendix F- Ventilator Controls and Display Options* for further details.

**Note:** Enable all probes as described in *Step 2: Set up the Ventilator*. Having probes enabled will ensure appropriate patient vital signs are displayed and monitored by the equipment during the simulation.

# USING SIM EQUIP ANESTHESIA

Listed below are the steps to begin using SimEquip Anesthesia Machine.

**Note:** Only one ventilation device may be used at a time. For example, if the Transport Ventilator is active, and the Ventilator or Anesthesia Machine is powered on, the Transport Ventilator will automatically power off. However, both an electrotherapy device and a ventilation device may be used in parallel.

Unlike the Ventilator and Transport Ventilator, it is not necessary to establish specific patient parameters in the setup process.

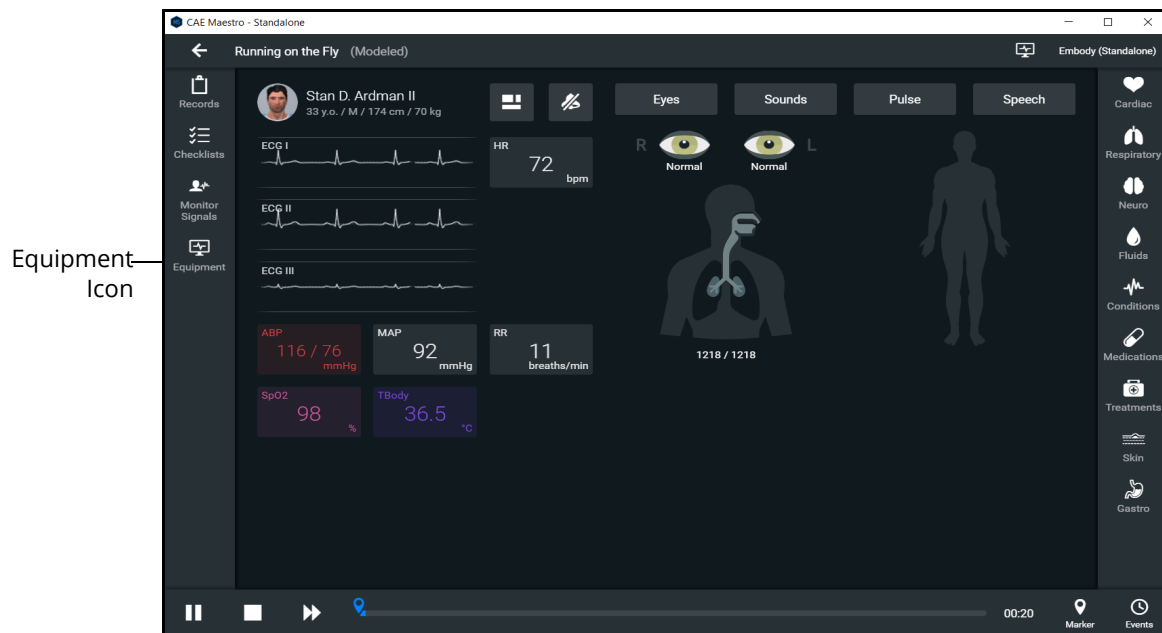
**Note:** Select a modeled simulation for the Anesthesia Machine to function appropriately.

Anesthesia Machine Steps	
1	Set up the Anesthesia Machine
2	Launch the Anesthesia Machine

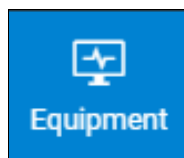
# Step 1: Set up the Anesthesia Machine

Prior to running the Anesthesia Machine, there are setup steps involved; selecting probes and setting gas parameters as follows:

1. From the left panel of the SCE Run Screen, select the **Equipment** icon.



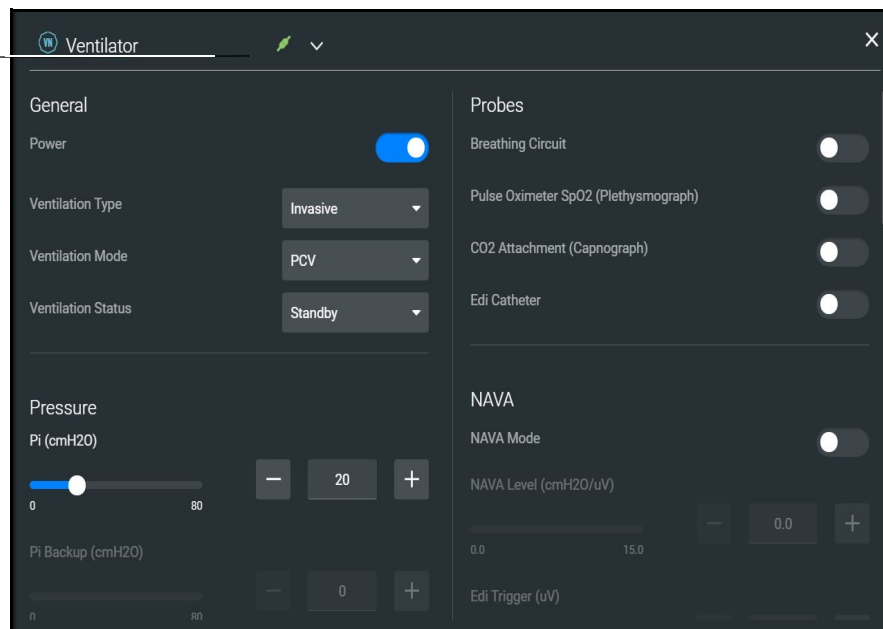
*SCE Run Screen*



*Equipment Icon*

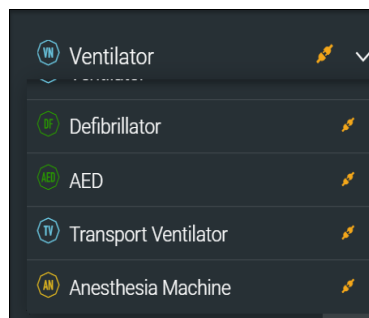
The Equipment parameters appears.

Select Equipment Parameters drop-down



**Equipment Parameters**

2. Click the **Select Equipment Parameters** drop-down indicator to the right of the equipment type at the top of the list.

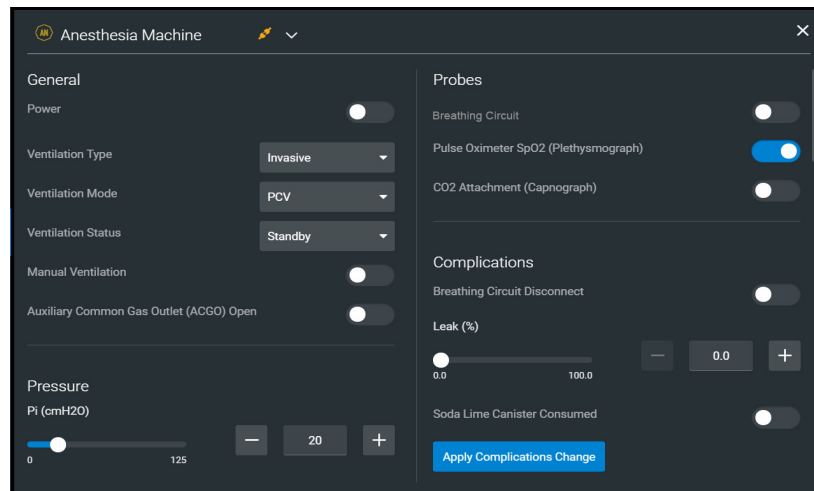


**Select Equipment Parameters Drop-Down**

3. Scroll down the list and select **Anesthesia Machine**.

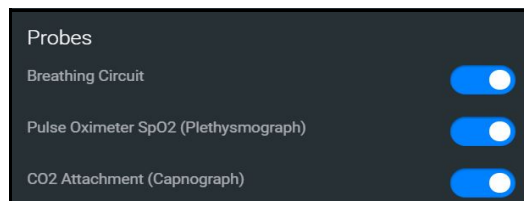


The Anesthesia Machine parameters appear for editing.



**Anesthesia Machine Equipment Parameters**

- From the Probes options, **enable** the following **probes**:
  - Breathing Circuit
  - Pulse Oximeter SPO<sub>2</sub>
  - CO<sub>2</sub> Attachment



**Anesthesia Probes Enabled**

- Click the **X** to close the Equipment parameters panel and return to the SCE Run screen.

## Step 2: Launch the Anesthesia Machine

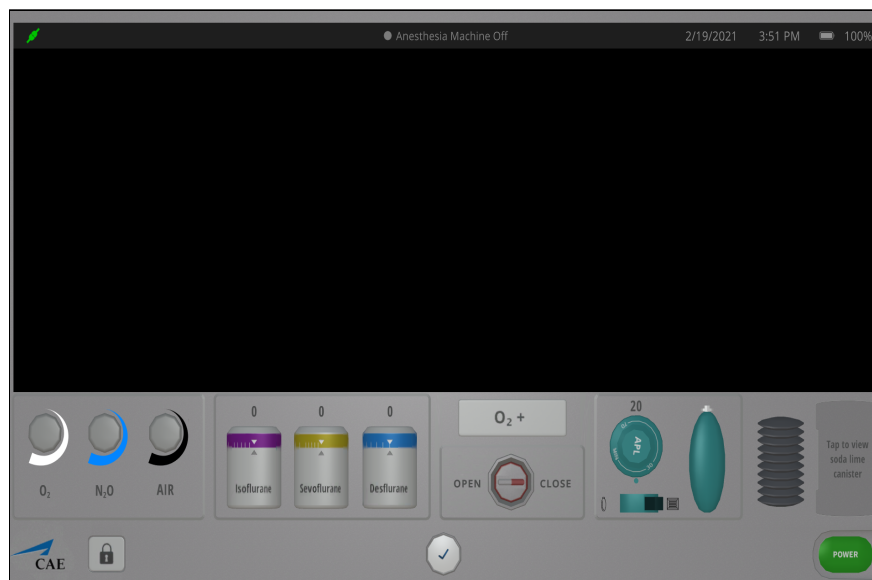
To launch the Anesthesia Machine:

1. From the desktop screen, select the **Anesthesia Machine** icon.



**Anesthesia Machine Icon**

The Anesthesia Machine Screen appears.



**CAE SimEquip Anesthesia Machine Screen - Machine Off**

## Power On the Anesthesia Machine

To turn on the Anesthesia Machine, click on the **Power** button in the lower-right corner of the Anesthesia Machine screen.



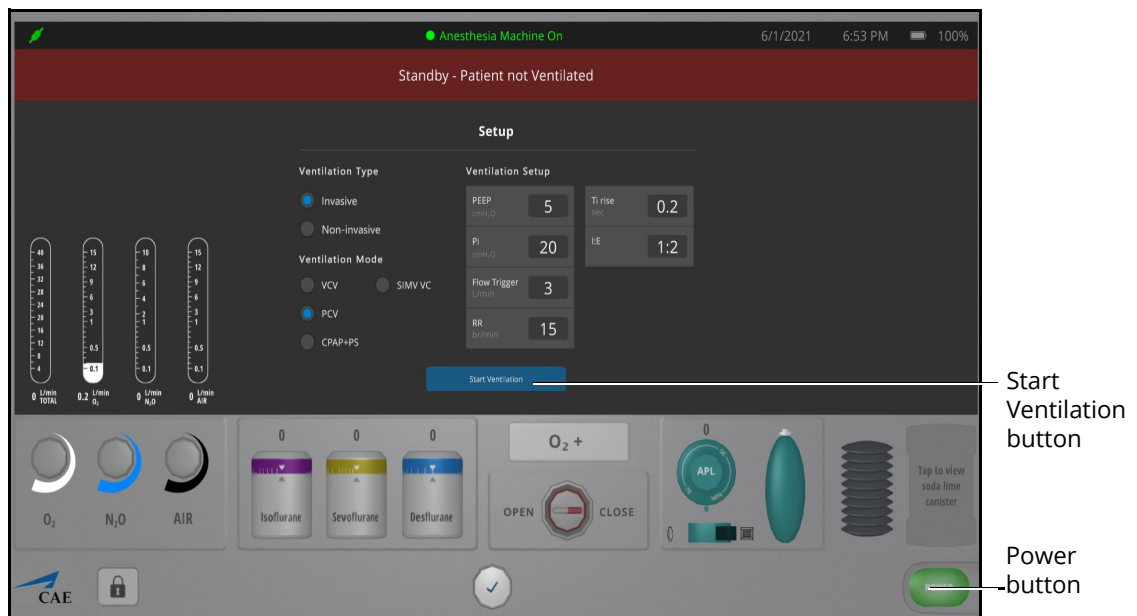
**Power Button**

The System Initializing Screen appears.



**CAE SimEquip Anesthesia Machine - System Initializing Screen**

After the system has initialized, the Anesthesia Setup Standby screen appears.



**Anesthesia Setup Standby Screen**

## Setting Ventilation Parameter Values

To change the ventilation parameter values:

1. Select the value for editing by positioning the cursor in one of the parameter value fields.  
Additional control buttons appear at the bottom of the screen.

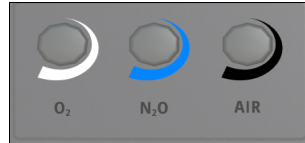


**Value Select Buttons**

2. Use the + and - buttons at the bottom center of the screen to adjust the value lower or higher as needed.
3. Click the **Check mark symbol** in the center to finalize the change in value.

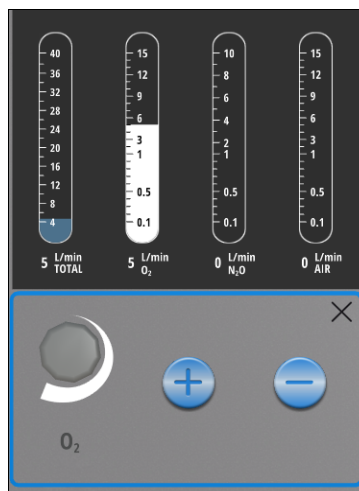
## Setting Fresh Gas Flow

To set fresh gas flow:



**Gas Controls**

1. From the Gas controls on the lower-left of the Anesthesia screen, click on the O<sub>2</sub> control.  
The O<sub>2</sub> controls are activated.
2. Click on the **plus (+)** control until the O<sub>2</sub> flow gauge displays 5 L per minute. Use the **minus (-)** control if necessary to decrease the value.



**O<sub>2</sub> Flow Set at 5.0**

3. Click on the **X** to close the O<sub>2</sub> control.
4. Click on the N<sub>2</sub>O control.
5. Adjust the N<sub>2</sub>O flow to 1 L per minute.
6. Click on the **X** to close the N<sub>2</sub>O control.
7. Click on the Air control.
8. Adjust the Air flow gauge to 10 L per minute.
9. Click on the **X** to close the Air flow control.

Gauges will reflect set flow.



**Fresh Gas Flow Settings**

## Setting Anesthetic Agent Volumes

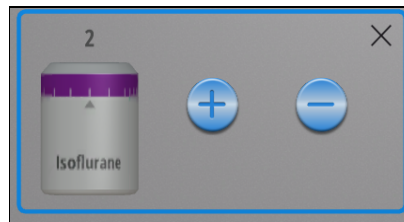
To set anesthetic agent volume percentages:

1. From the lower-left of the Anesthesia screen, select one of the anesthetic agents. In this example, **isoflurane** is selected.



**Anesthetic Agents**

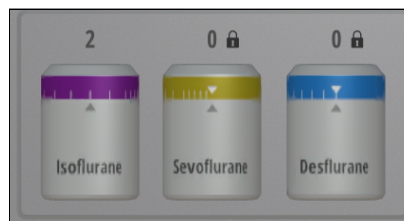
The anesthetic agent controls will appear.



***Isoflurane Controls***

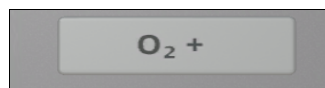
2. Click on the **plus (+)** to increase the amount of the anesthetic agent. In this example, **Isoflurane** is increased to 2 (2.0%). Depending upon the agent selected, the ranges will vary.
3. Click on the **X** to close the Anesthetic Agents Controls window.

*The Anesthetic Agents that were not selected will be shown locked, preventing the administration of additional agents. The agent chosen will display the value previously set using the controls.*



***Anesthetic Agents - Set and Locked***

## ***O2 Flush and Axillary Common Gas Outlet***



***O<sub>2</sub> Flush***

Click and hold on the **O<sub>2</sub> + Flush** control will push 100% O<sub>2</sub> into the breathing circuit.

To open and close the Axillary Common Gas Outlet (ACGO):

1. Click on the **ACGO Valve** control.

The valve control is activated.



***ACGO Valve Control Closed***

- Click on the **Open** or **Close** option.

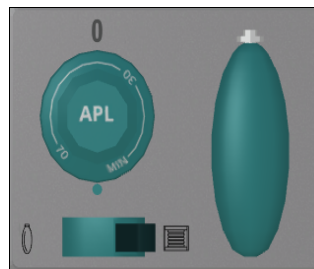
The red marker indicates the setting for the valve.

**Note:** If the valve is left open, the gases will not go to the main breathing circuit causing a leak followed by erratic patient vitals on the Maestro Run Screen display.

- Click on the **X** to close the ACGO valve control.

### Manual Ventilation Controls

On the lower-right side of the Anesthesia screen are the controls for the APL valve, the Manual Switch and the Rebreather Bag.



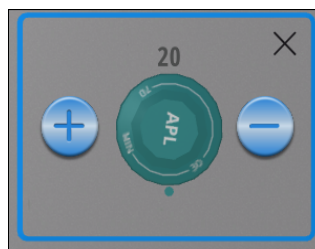
**APL Valve, Manual Switch and Rebreather Bag Controls**

### Adjusting the APL Valve

To adjust the Adjustable Pressure Limiting (APL) valve:

- Click on the **APL Valve** control.

The valve is activated.



**APL Valve Control**

- Click on the **plus (+) or minus (-)** option, to increase or decrease amount of pressure. The value will be displayed in the control.
- Click on the **X** to close the APL control.

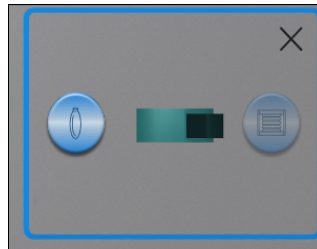


## Controlling Manual Ventilation

To control manual ventilation:

1. Click on the **Manual Switch** control.

The switch control is activated.



**Manual Switch Control**

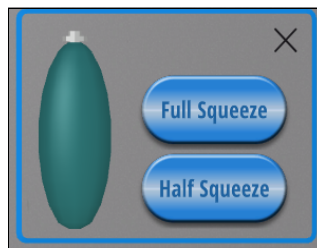
2. Click on the **Manual or Automatic** option.
3. Click on the **X** to close the **Manual Switch** control.

While the ventilation is set to manual, air may be administered using the rebreather bag.

To use the rebreather bag:

1. Click on the **Rebreather Bag** control.

The control is activated.

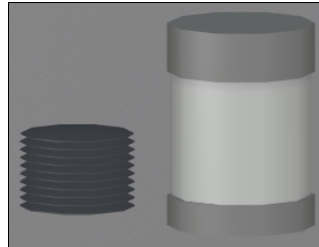


**Rebreather Bag Control**

2. Select **Full Squeeze** or **Half Squeeze**. Hold and release for exhalation.
3. Click on the **X** to close the **Rebreather Bag** control.

## Soda Lime Canister

The soda lime canister is a visual indicator of how much CO<sub>2</sub> is absorbed through the breathing circuit. If the canister is completely consumed, it will turn to purple.



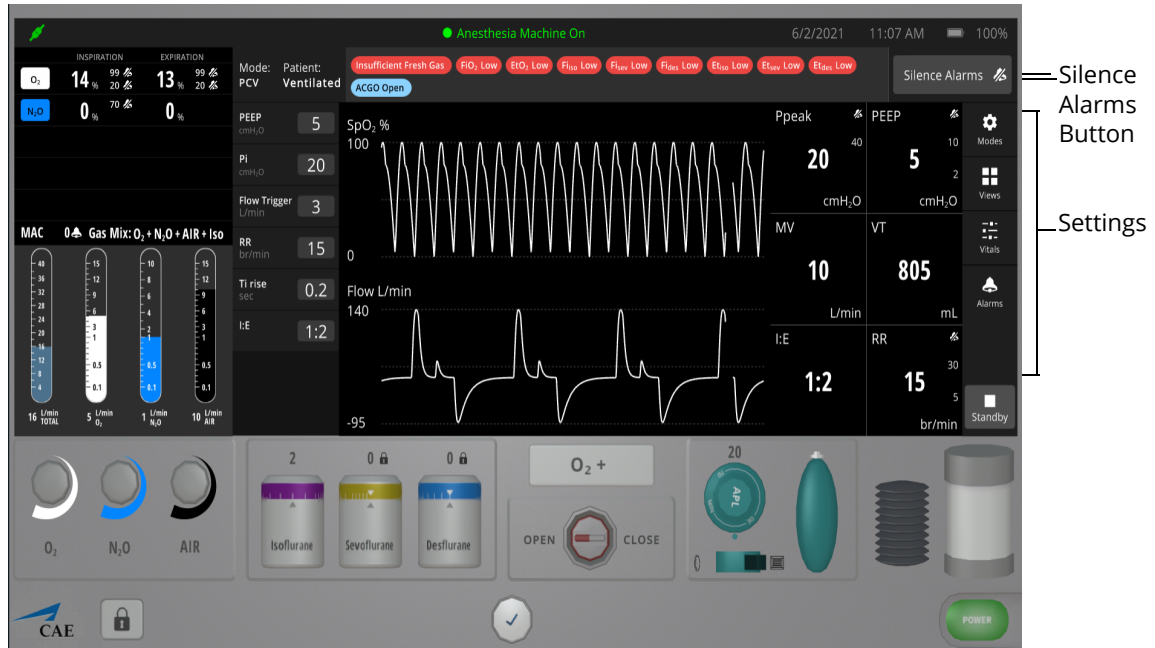
**Soda Lime Canister**

To view the soda lime canister, click the canister icon in the lower-right corner of the Anesthesia screen.

## Start Ventilation

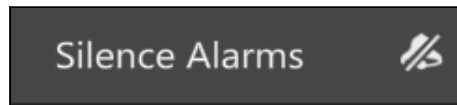
When finished making all changes on the Setup screen, click the **Start Ventilation** button.

The Anesthesia Machine screen will appear.



**Anesthesia Machine Screen - Power On**

To silence the alarms, from the upper-right corner of the ventilator screen, click the **Silence Alarms** button. When silencing is activated, the indicator will turn to blue.



**Silence Alarms Button**

There are additional settings that represent a typical anesthesia machine used in a clinical setting. Status and parameters are displayed on the anesthesia screen based on options selected from the Settings and Controls panel at the right of the screen. Options to select from are:

- Modes
- Views
- Vitals
- Alarms

Refer to *Appendix G - Anesthesia Machine Controls and Display Options* for further details.

**Note:** Enable all probes as described in *Step 1: Set up the Anesthesia Machine*. Having probes enabled will ensure appropriate patient vital signs are displayed and monitored by the equipment during the simulation.

Once the power is enabled to the anesthesia machine, the simulation connection status will change at the top of the Equipment parameters panel. This same status icon will be displayed at the top of the Anesthesia screen, when running the Anesthesia Machine.



**Simulation Connection Status**

# USING CAE PATIENT MONITOR

Included with the SimEquip Anesthesia, is CAE Patient Monitor. It may be displayed on either monitor though typically it would be used opposite of the Anesthesia Machine.

## Select a Preconfigured Layout

These are the preconfigured CAE Healthcare Layouts:

**Note:** Additional layouts may be available depending upon the simulator that is used.

To select a preconfigured layout:

1. Click the **Layout** drop-down menu in the upper-right corner of screen.



**Layout Drop-down Menu**

The Patient Monitor Settings menu appears.

2. Select a layout.

## Settings

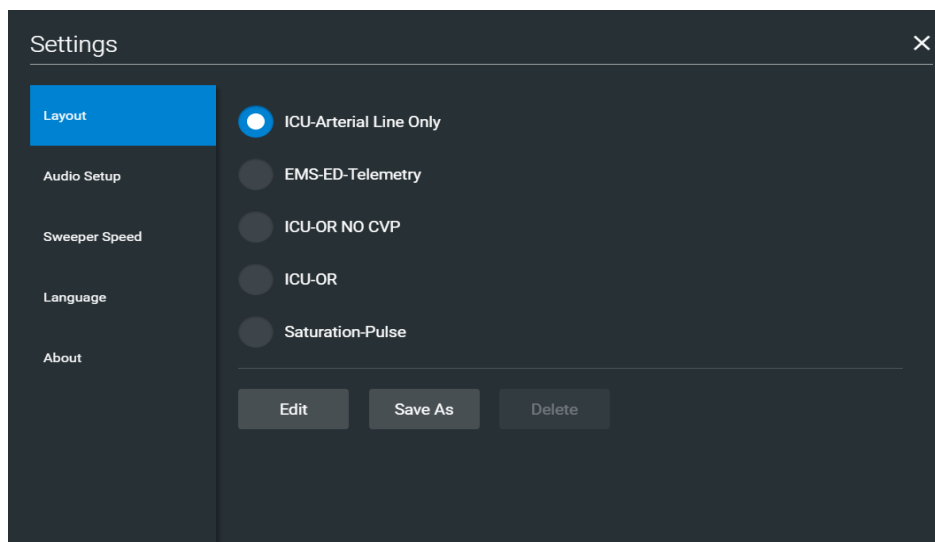
Patient Monitor settings options allow for configuration preferences. The following selections are available on the settings panel:

- Layout - customize specific vital signs, colors, wave forms, numerics and specific location of the parameters on the display.
- Audio - specify alarm ranges and suspension times.
- Sweeper Speed - adjust intervals from 3 to 60 seconds for sweeper speed.
- Language - select preferred language.

To access the Settings panel:

1. Click **Settings** in the lower-right corner of the screen.

The Settings menu appears. The **Layout** tab is displayed by default.

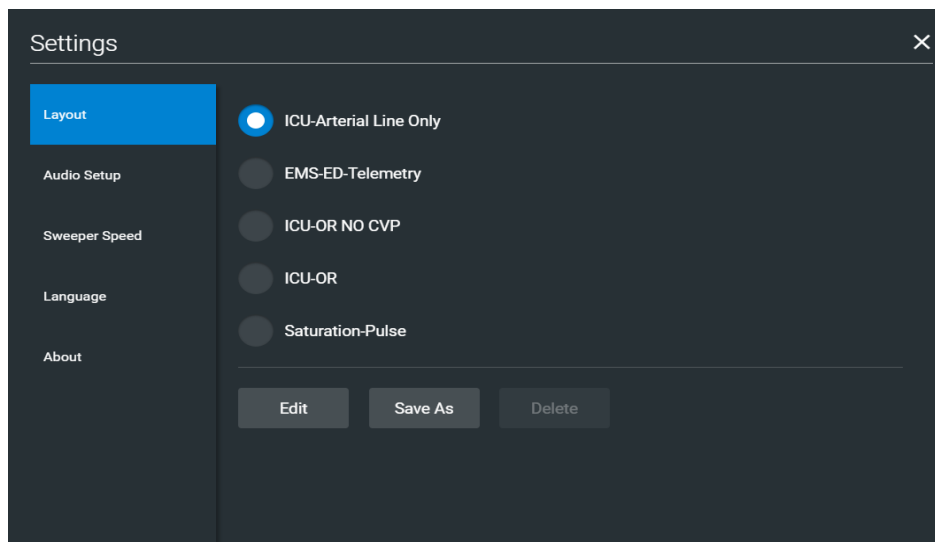


*Settings Panel - Layout Options*

## Layout

To access the Layout options:

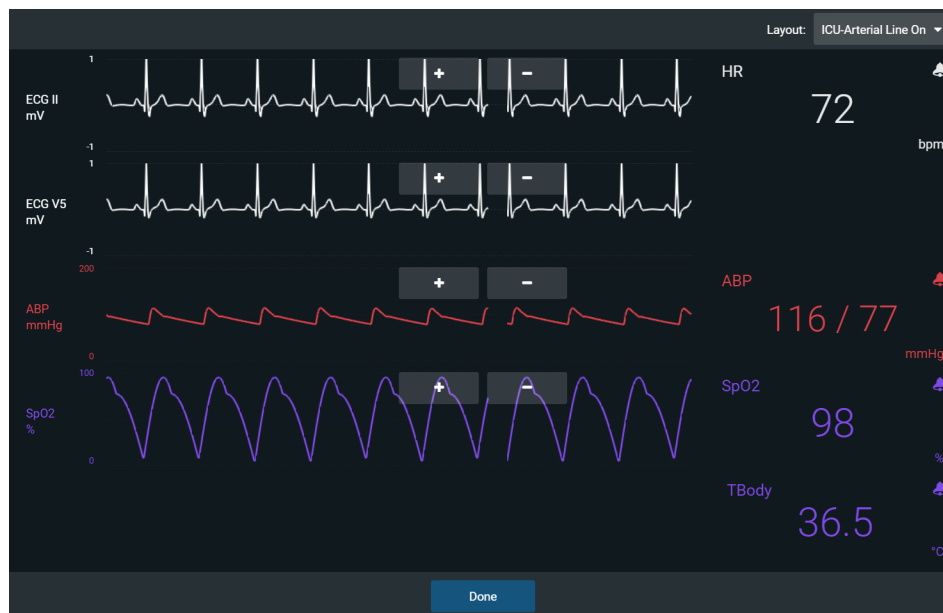
1. From the **Settings** panel, the **Layout** tab is displayed by default. From the Layout options, select a Layout. In this example, ICU-Arterial Line Only is selected.



**Settings Panel - Layout Options**

2. Click **Edit**.

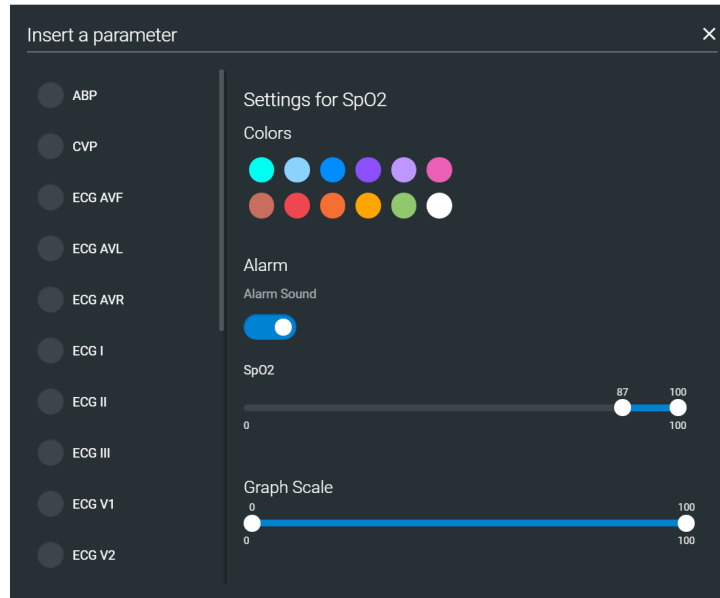
The Layout Edit screen appears.



**ICU-Arterial Layout Edit Screen**

3. Select a signal to edit its parameters.

The Insert a parameter screen appears.



*Insert a Parameter*

4. Adjust the signal's **Color**, **Alarm**, and **Graph Scale** parameters as needed.
- OR
- Select a parameter to insert it in the place of the selected parameter.
5. When finished, tap the **X** in the upper-right corner to close the panel.
- The Layout Edit screen reappears.
6. Use the plus (+) buttons to add waveforms to the layout.
- Patient Monitor adds a line to the Layout.
7. Select the new line to open the Insert a Parameter window.
  8. Select the parameter to display on the new line.
  9. Set the parameter's **Color** and **Alarms**. When finished, close the parameter panel.
  10. Click **Done** to close the Layout Edit screen.
- The Settings Layout panel opens.
11. Click **Edit** to resume editing the layout.
  12. Click **Save As** to save the layout.
- Type a name for the layout, then click **Save**.

### Audio Setup

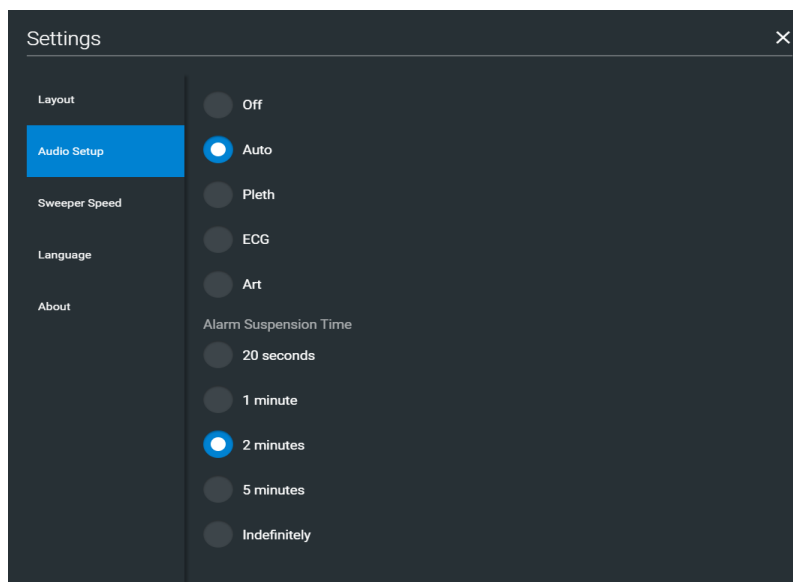
To silence all sounds, click the **Mute** button in the lower-left corner of the screen.



**Mute Button**

To set up the audio for Patient Monitor:

1. Click **Settings** in the lower-right corner of the Patient Monitor screen.
2. From the Settings panel, select the **Audio Setup** tab.



**Settings - Audio Setup Options**

3. (Optional) Select a waveform to set it as the pulse sound trigger.
4. (Optional) Select an **Alarm Suspension Time** to disable the selected waveform for an indicated amount of time.
5. When finished, tap **X** to close the window.

### Snapshot

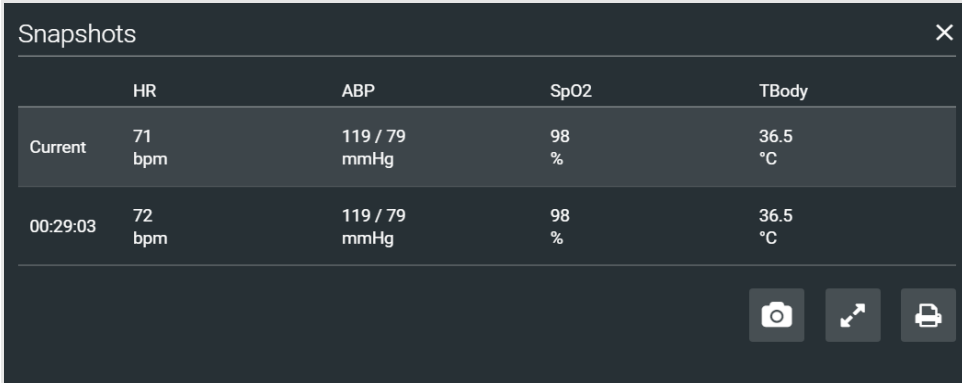
The snapshot tool captures an image of the data that is displayed on the screen. The image may then be printed or saved to a laptop or tablet. This function is unavailable if the device is connected to a wireless network where users cannot print a report.



To capture an image:

1. Tap **Snapshot** at the lower-right corner of the Patient Monitor screen.

The Snapshots window appears showing the live data available to capture.



The screenshot shows a window titled "Snapshots" with a close button (X) in the top right corner. The window contains a table with the following data:

	HR	ABP	SpO2	TBody
Current	71 bpm	119 / 79 mmHg	98 %	36.5 °C
00:29:03	72 bpm	119 / 79 mmHg	98 %	36.5 °C

At the bottom right of the window, there are three icons: a camera icon, a share icon, and a print icon.

*Snapshots Window*

2. To take another snapshot, tap the **Capture Snapshot** (camera) button at the lower-right corner of the screen.
3. (Optional) Tap the **Full Screen View** button at the lower-right corner of the screen.

Tap the **Esc** key to exit full screen view.

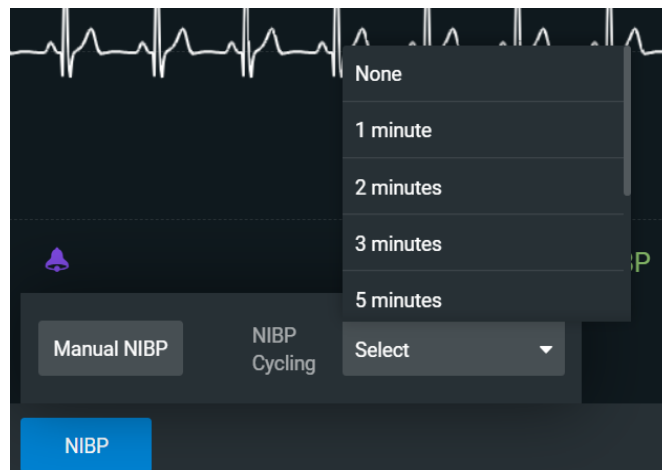
## NIBP Cycling

When non-invasive blood pressure (NIBP) is displayed, the patient's NIBP can be updated at specified intervals using NIBP Cycling.

To set NIBP cycling:

1. Select **NIBP** from patient monitor controls at the lower-left of the screen.
  2. Click **Manual**.
- OR
3. Click **Select**.

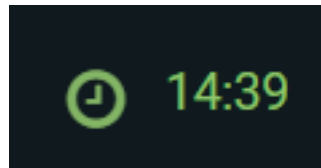
Auto cycling options will appear 1 minute to 60 minutes.



***NIBP Auto Cycling Options***

4. Select the desired interval for the cycling.

The NIBP Cycling timer will appear at the lower-center of the patient monitor screen.



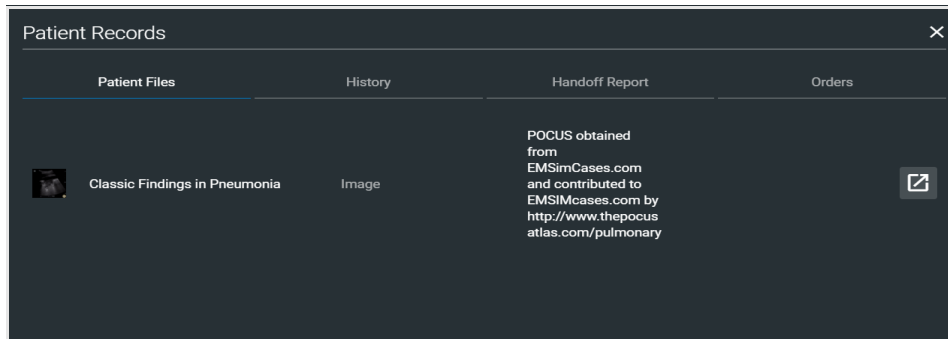
***NIBP Cycling Timer***

**Note:** Manual NIBP can be used at any time during cycling, however it turns off auto-cycling.

## Patient Record

To view Patient Records, tap **Patient Record** from patient monitor controls at the lower-left of the screen.

The Patient Records window appears.



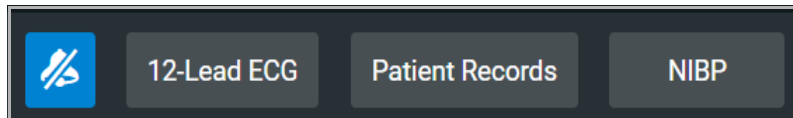
***Patient Records Window***

This information provides access to the same Patient Files, History, Handoff Report, and Orders information contained in Maestro.

## 12-Lead ECG

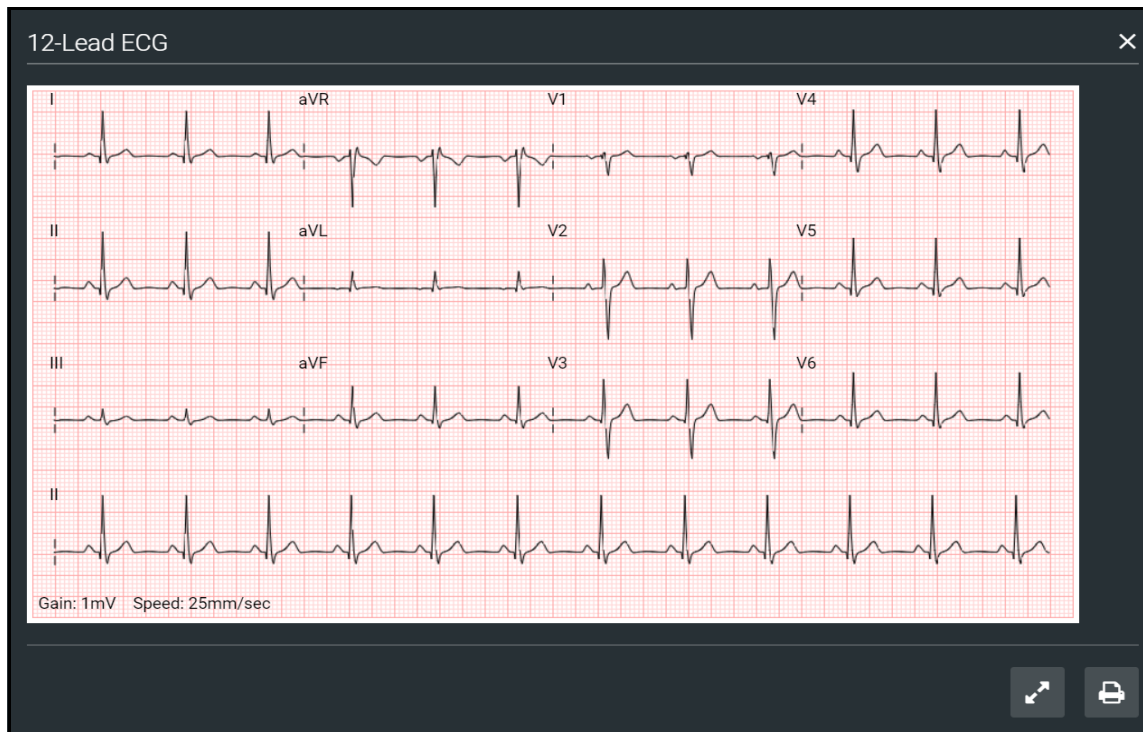
To view a 12-lead ECG report:

1. From patient monitor controls at the lower-left corner of the screen, select **12-Lead ECG** .



***Patient Monitor Controls***

The report appears.



**12-Lead ECG Report**

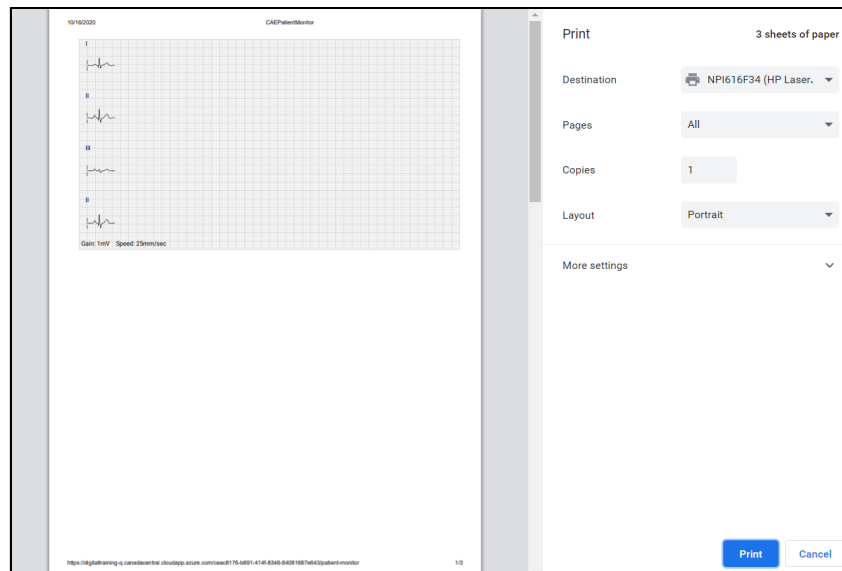
- (Optional) To view the full screen, tap the **Full Screen View** button at the lower-right corner of the 12-lead ECG report.



**Full Screen View and Print Buttons**

- Tap the **Esc** key to return to the inset view.
- Tap the **Print** button to print the report.

The Print Settings window appears.



**Print Settings Window**

5. Select the print settings on the right side of the window.
6. Tap **Print** to print the report.

# CARE AND MAINTENANCE

## Transport Bag Care

The Transport Bag is manufactured and treated with materials that are:

- Fire Retardant
- Water Resistant
- Antimicrobial
- Non-Rot (may be recycled)

## Cleaning Instructions

- When removing accumulated dust and grit, use a regular vacuum cleaner or wipe with a damp cloth.
- To remove more stubborn dirt, upholstery cleaner is recommended. Please use according to manufacturer's instructions.
- Stains that the upholstery cleaner won't remove ( e.g. spots of tar) try using white spirit. Dab it on with a piece of absorbent cloth or cotton and then wipe it off. Alternatively, try using washing up liquid on a damp cloth.
- Once washed, allow the bag to dry naturally. Do not tumble dry.
- Certain chlorine and alcohol based products like Clinell Clorox wipes, Actichlor tablets, Steri-7 wipes and isoprenol spray are also suitable for more stringent disinfection if required ( e.g. in a medical environment).

**IMPORTANT:** Always wipe surfaces again with water after using any cleaning agent, ensuring no residue is left on the material.

## Medical Cart Care and Maintenance

When cleaning the medical cart, be certain to keep any liquids away from the electronic equipment.

## Simulator

For care and maintenance of the patient simulator, refer to the specific User Guide for instructions (e.g. *CAE Ares User Guide*).

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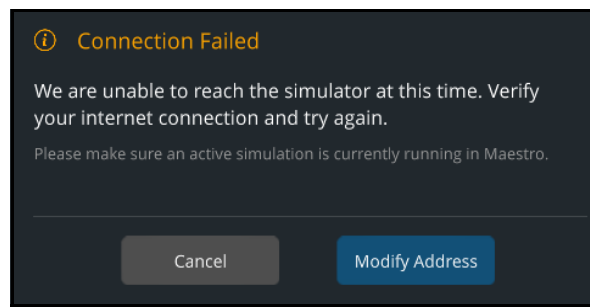
# APPENDIX A - TROUBLESHOOTING

This Troubleshooting section addresses some common concerns and inquiries. For any questions not addressed here, please contact CAE Healthcare Customer Service. Contact information is provided on the last page of this guide.

## Connection Issues

### Connection Failed

Connection issues may be caused by poor or non-existent WiFi connections, or settings and configurations related to the patient simulator.



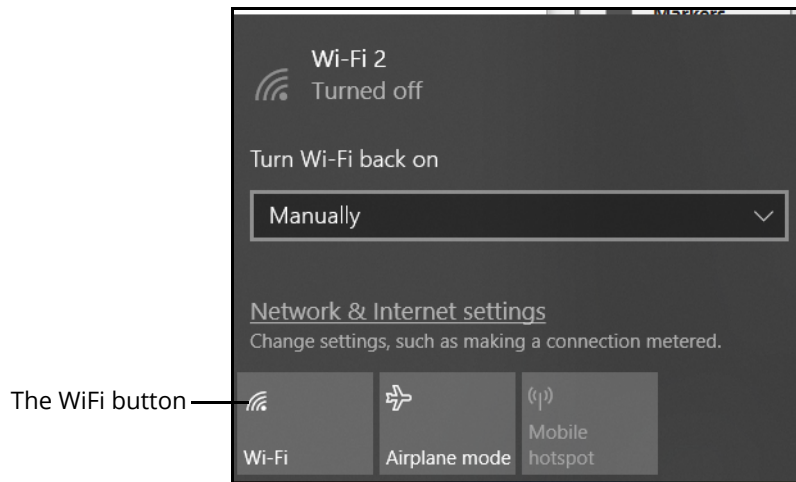
**Connection Failed Message**

If the Connection Failed message is displayed:

1. Verify there is a WiFi connection.
  - a. From the home screen, tap the Network icon located in the lower-right corner of the screen in the taskbar.



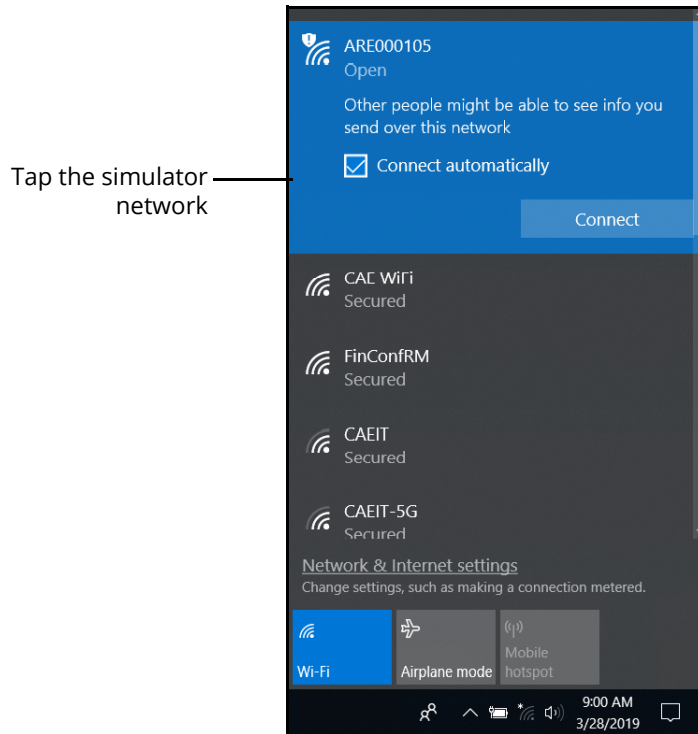
The Network window appears.



**The Network Window - Connection Off**

- b. If the network connection indicates the connection is off, reconnect to the patient simulator's router network before opening the SimEquip application. See the following sections in this User Guide for more information:
  - *Portable Simulation Setup Steps - Step 4. Connect to WiFi, page 32*
  - *Bedside Simulation Setup Steps - Step 6. Connect to WiFi*
2. Verify the SimEquip device (e.g. Anesthesia Machine) is connected to the patient simulator's router network before opening the SimEquip application.
  - a. From the home screen on the SimEquip device, tap the Network icon located in the lower-right corner of the screen in the taskbar.

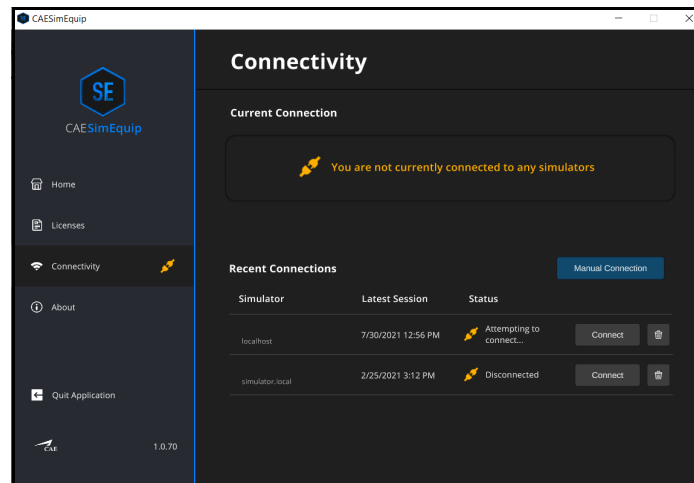
The Network window appears. The type of patient simulator that is used will determine the name of the network. For example, Ares is shown in the following image.



***The Network Window - Connected to Ares Patient Simulator***

- b. If the Patient Simulator is not connected, see the following sections in this User Guide for more information on how to connect:
  - *Portable Simulation Setup Steps - Step 4. Connect to WiFi - Using a Patient Simulator, page 32*
  - *Bedside Simulation Setup Steps - Step 6. Connect to WiFi- Using a Patient Simulator*
3. Confirm that **simulator.local** appears in the **Recent Connections** list in SimEquip.
  - a. Launch SimEquip.

- b. From the SimEquip Home screen, select **Connectivity**.



**SimEquip Connectivity Window**

- c. On the Connectivity window, confirm that **simulator.local** appears in the **Recent Connections** list.

Recent Connections			Manual Connection	
Simulator	Latest Session	Status	Connect	Remove
localhost	7/30/2021 12:56 PM	⚡ Disconnected	Connect	Remove
simulator.local	2/25/2021 3:12 PM	⚡ Disconnected	Connect	Remove

**Recent Connections**

If simulator.local does not appear on the Recent Connections list, a facilitator device running Maestro Standalone for the SimEquip application can be utilized to establish a successful connection (for simulator.local). If the Maestro Standalone for SimEquip application is not part of the setup being used, please contact CAE Customer service.

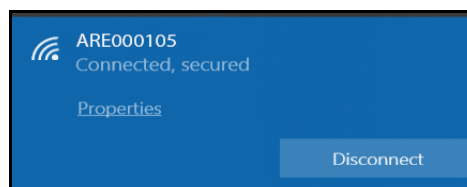
4. Make certain that the Maestro software launched and a compatible simulation for SimEquip is running.
5. If the automatic connection to a patient simulator fails when launching the SimEquip application:
  - a. At the Connection Failed window, select **Cancel**.
  - b. At the Connectivity window, in the Recent Connections list, select the **Connect** button associated with the **simulator.local** simulator.
6. If a simulation in Maestro Standalone was running, the SimEquip application must be closed or restarted after the network on the SimEquip device is changed from the

standalone router to the patient simulator router. See the following sections in this User Guide for more information:

- *Portable Simulation Setup Steps - Step 4. Connect to WiFi - Switching from Standalone to Patient Simulator Connections, page 38.*
- *Bedside Simulation Setup Steps - Step 6. Connect to WiFi- Switching from Standalone to Patient Simulator Connections*

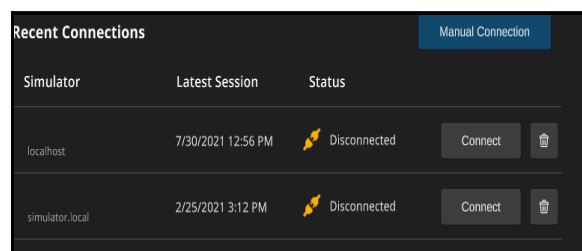
If the connection to a Patient Simulator repeatedly fails:

1. Close the SimEquip application.
2. Disconnect the SimEquip device from the patient simulator's router.
  - a. From the home screen on the SimEquip device, tap the Network icon located in the lower-right corner of the screen in the taskbar.
  - b. The Network window appears. Tap **Disconnect**.



**Network - Disconnect**

3. Reconnect the SimEquip device to the patient simulator's router. See the following sections of this User Guide for more information:
  - *Portable Simulation Setup Steps - Step 4. Connect to WiFi - Using a Patient Simulator, page 32.*
  - *Bedside Simulation Setup Steps - Step 6. Connect to WiFi- Using a Patient Simulator*
4. Open the SimEquip application.
5. At the Connectivity window, in the Recent Connections list, select the **Connect** button associated with the **simulator.local** simulator.



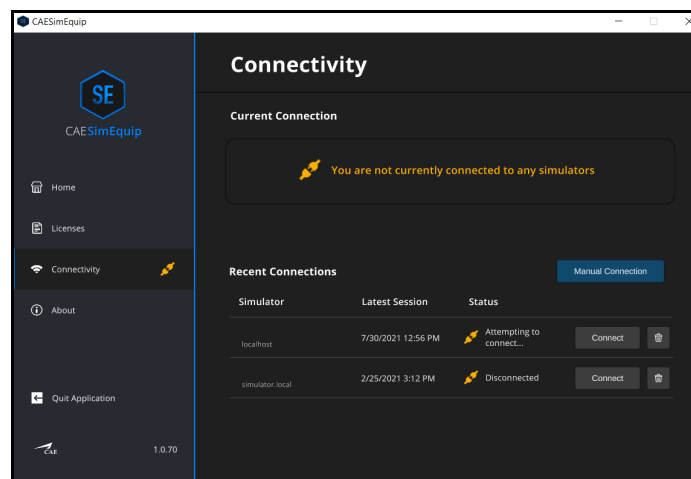
**Recent Connections**

## Simulator Manual Connection

In the event there are connectivity problems when using simulator.local, enter the IP address in manually.

To enter the IP address manually:

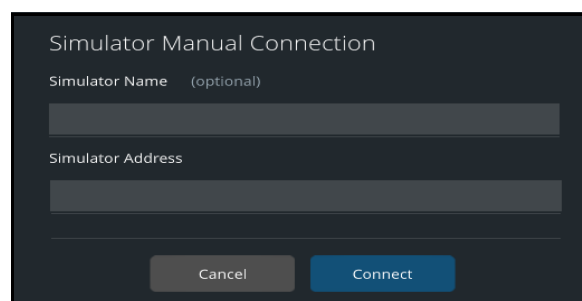
1. Launch the SimEquip.
2. From the SimEquip Home screen, select **Connectivity**.



**SimEquip Connectivity Window**

3. On the Connectivity window, tap the **Manual Connection** button.

The Simulator Manual Connection window appears.



**Simulator Manual Connection**

4. Enter the Simulator Name (optional).
5. Enter the Simulator Address.
  - If using a patient simulator, enter the IP address of the patient simulator (typically found on the manikin or in the printed materials shipped with the manikin).
  - If using the Anesthesia Machine and running standalone, enter the IP address of the Instructor's tablet.

6. Tap the **Connect** button.

## PC/Tablet Connections

### Screen Turns Off or Freezes

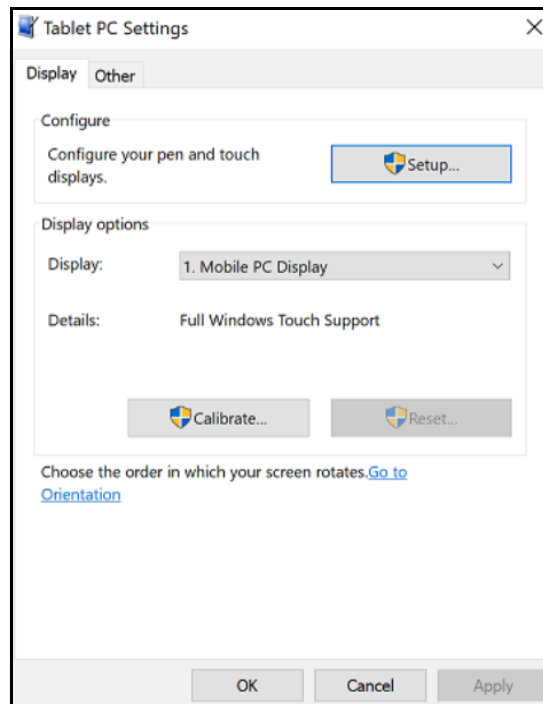
If the the screen turns off or freezes during an active simulation:

1. Confirm that the Power & sleep settings are set to never turn off for all options.
2. Connect the PC to the internet and confirm that the Windows OS is updated.

### Second Monitor Screen

**Note:** This instruction only applies to the Anesthesia Machine Medical Cart configuration.

If cables and connections are setup correctly and the second monitor touch input is non-functional, an external mouse will be required to access the Tablet PC Settings in the Control Panel of the PC.



**Tablet/PC Settings Window**

From the Tablet PC Settings window, select Setup and follow the on-screen prompts.

## Maestro Patient Parameters

### Insufficient Gas Flow Alarm

When pressure-control ventilation (PCV) mode is started with an On-the-Fly patient with the default settings, the inspiratory pressure that is given to the patient is more than required, and the resulting tidal volume is large. Additionally, when the tidal volume is large, a larger amount of gas flow is needed to provide the supply enough air in the circuit, resulting in a continuously active insufficient flow alarm.

Therefore, it is suggested to lower the inspiratory pressure to lower the tidal volume resulting in a much lower gas flow being required.

### Hypercapnia Condition

When the patient is not spontaneously breathing, the hypercapnia condition in Maestro may not work as expected. With SimEquip (transport ventilator/ventilator/anesthesia machine), the most effective way to raise the patient's EtCO<sub>2</sub> is to lower the VT or RR settings of the equipment.

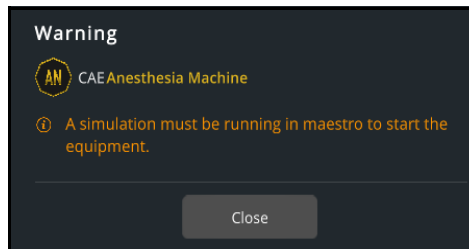
# Airway Resistance

When utilizing ventilation SimEquip (transport ventilator/ventilator/anesthesia machine) in volume-control ventilation (VCV) mode, the patient response to very high airway resistance may not be as expected. Therefore, it is suggested to not use the severe airway resistance condition or very high airway resistances in Maestro at this time.

# Warning Messages

## Maestro Warning

A warning message will appear when there is an attempt to launch the virtual equipment independent of a simulation.



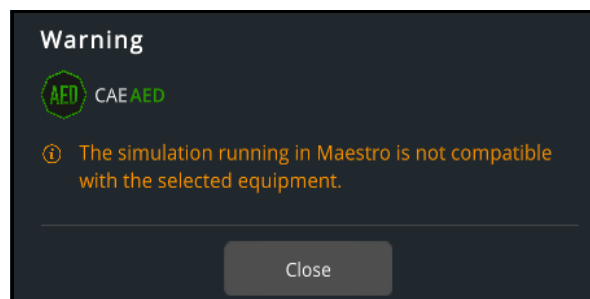
**Warning Message - Maestro Simulation**

If the Maestro Warning message is displayed:

- Make certain that the Maestro software launched and a compatible simulation for SimEquip is running.

## Simulation Not Compatible

SimEquip is designed to be compatible with Maestro 2.5 and will show a warning message if the active simulation is not compatible.



**Warning Message - Simulation Not Compatible**



If the Simulation Not Compatible message is displayed:

1. Verify that Maestro 2.5 is running.
  - a. From the Maestro Home screen, select the **Gear** icon in the upper right of the window.
  - b. From the drop-down menu, select **About**.

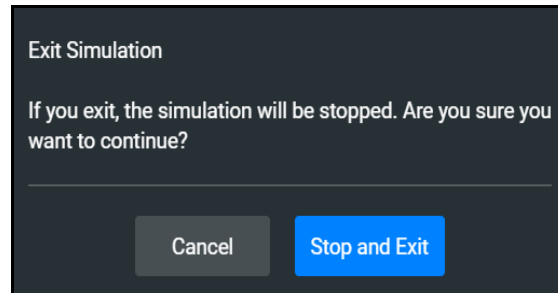


**CAE Maestro - About**

- c. If the version number displayed is an earlier release than 2.5, update Maestro. See *Appendix B - Software Upgrades* of this User Guide for more information on how to upgrade.
2. Is the patient simulator supported? SimEquip is compatible with CAE Simulators: Apollo, Ares, Athena, Juno, or Embody.
3. Is the equipment compatible with the mode of the active SCE (e.g. modeled or manual)? The following equipment requires modeled mode:
  - Transport Ventilator
  - Ventilator
  - Anesthesia Machine

To run an SCE in a different mode:

- a. From the SCE window, select the back arrow. The Maestro Exit Simulation prompt will appear.



***Maestro - Exit Simulation Prompt***

- b. From the Maestro Exit Simulation prompt, tap **Stop and Exit**.
- c. From the Maestro Home screen, select the appropriate SCE:
  - Run on the fly (Modeled)
  - Run on the fly (Manual)
  - Run an SCE (where the modeled or manual SCE may be selected)

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# APPENDIX B - SOFTWARE UPGRADES

## Upgrading Maestro

On occasion, it may be necessary to upgrade the version of Maestro on the patient simulator or on a computing device. An error message may be displayed indicating an incompatibility issue which would prompt the upgrade.

For information on downloading the software for updates to the simulator or computing device visit:

<https://caehealthcare.com/support/software-updates/maestro/>

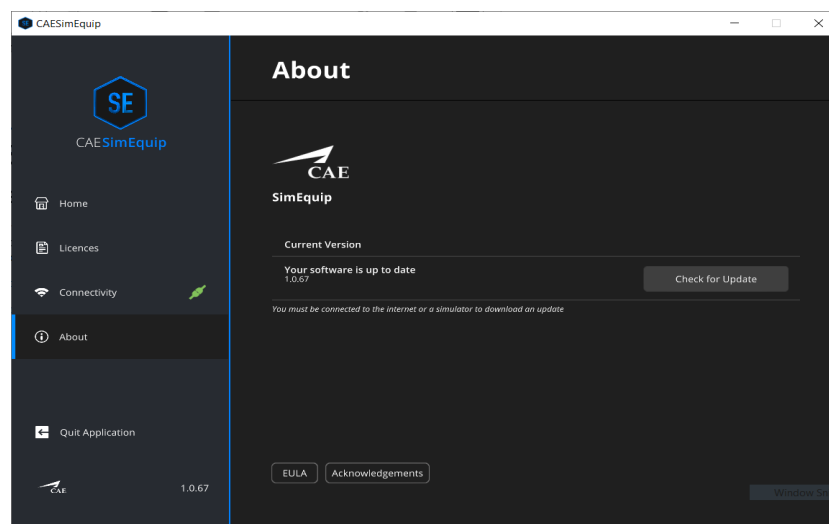
## Upgrading SimEquip

When updates are provided for the SimEquip application and the SimEquip computer is connected to the Internet, the software will automatically detect an update. If the SimEquip computer has been disconnected from the Internet for a period of time, it is suggested to check for updates. The status of the software will be reflected on the SimEquip About window.

To check the version status and updates of the SimEquip software:

1. Verify that the computer is connected to WiFi.
2. From the SimEquip Home screen, tap the **About** option on the left panel.

The About window will appear. The version number and status, indicating that the software is up to date, will be displayed.



**SimEquip About Window**

3. In the event the software is not up to date or the computer has been disconnected from the WiFi for a period of time, tap the **Check for Updates** button.

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# APPENDIX C - DEFIBRILLATOR CONTROLS AND DISPLAY OPTIONS

Available controls will vary based on the user’s role. The following tables provide the available selections and defaults (when applicable) for:

- Facilitator Controls
- Learner Controls
- Learner Parameters Displayed
- Associated Maestro Preferences

## Facilitator Controls

Defibrillator Facilitator Controls		
Parameter	Available Selections	Default
<b>ECG Cables</b>	None ECG 3 Lead ECG 12 Lead	None
<b>ECG Placement</b>	Correct Incorrect	Correct
<b>Therapy Pads Reversal (Available in AED Mode)</b>	On /Off	Off
<b>Therapy Pads (Available in AED Mode)</b>	On /Off	Off
<b>Pulse Oximeter SpO<sub>2</sub> (Plethysmograph)</b>	On /Off	Off
<b>NIBP Cuff</b>	On /Off	Off
<b>ABP Catheter</b>	On /Off	Off
<b>CO<sub>2</sub> Sample Line</b>	On /Off	Off
<b>Temperature Probe</b>	On /Off	Off
<b>Learner Layout Selection</b>	Generic Defibrillator	Generic Defibrillator
<b>Metronome Rate (Available in AED mode)</b>	100-120 beats per min.	100 beats per min.
<b>Power</b>	On /Off	Off
<b>Energy Select</b>	2-360 J	200 J

Defibrillator Facilitator Controls		
Parameter	Available Selections	Default
Pacing Rate	40-170 beats per min.	60 beats per min.
Pacing Current	0-200 mA	0 mA
AED Mode Metronome (Available in AED Mode)	On/Off	On
AED Mode Metronome C:V Ratio	30:2 15:2	30:2
Voice Instructions (Available in AED Mode)	On/Off	On

# Learner Controls

Defibrillator Learner Controls		
Parameter	Available Selections/Action	Default
<b>Power</b>	On/Off	Off
<b>Analyze</b>	Activates automated external defibrillator (AED) mode/analyzing status.	N/A
<b>Manual Mode</b>	Exits AED mode if analyze button is pressed.	N/A
<b>Energy Select</b>	2-360 J	200 J
<b>Charge</b>	Charges defibrillator to selected energy level.	N/A
<b>Shock</b>	Administers shock.	N/A
<b>Disarm</b>	Disarms energy for shock.	N/A
<b>Sync</b>	On/Off	Off
<b>Pacer</b>	On/Off	Off
<b>Pause Pacer</b>	On (Requires Hold) Off (Hold Released)	N/A
<b>Pacing Rate</b>	40-170 ppm	60 ppm
<b>Pacing Current</b>	0-200 mA	0 MA
<b>NIBP</b>	Manual 1 minute 2 minutes 3 minutes 5 minutes 10 minutes 15 minutes 30 minutes 60 minutes	Manual
<b>12-lead</b>	12-lead report generated	N/A
<b>Up</b>	Navigation button	N/A
<b>Down</b>	Navigation button	N/A



Defibrillator Learner Controls		
Parameter	Available Selections/Action	Default
<b>Back</b>	Navigation button	N/A
<b>Confirm</b>	Navigation button	N/A
<b>Scale</b>	Adjustment of scale level for waveforms.	N/A
<b>Color</b>	Adjustment of color for vitals.	N/A
<b>Layout</b>	Adjustment of display layout of the vitals.	N/A
<b>CPR</b>	Off 30:2 15:2	Off
<b>Alarms</b>	Off On Suspend for 20 seconds Suspend for 1 minute Suspend for 2 minutes Suspend for 5 minutes	On
<b>Alarm Level</b>	Available for each vital with an alarm.	
<b>Alarm Sound</b>	On/Off	On
<b>HR/PR Detection Sound</b>	On/Off	Off
<b>Display Lock</b>	Locked/Unlocked	Unlocked

# Learner Display

Defibrillator Learner Display	
Parameter	Values
Temperature	24.8-45.2 °C
Pulse Rate (PR) from SpO <sub>2</sub>	25-240 bpm
SpO <sub>2</sub>	0-100%
NIBP	Systolic: 30-255 mmHg Diastolic: 15-220 mmHg Mean: 20-235 mmHg
Pulse Rate (PR) from NIBP	30-240 bpm
ABP	Systolic: 0-300 mmHg Diastolic: 0-300 mmHg Mean: 0-300 mmHg
Pulse Rate (PR) from ABP	30-240 bpm
End-tidal CO <sub>2</sub> (EtCO <sub>2</sub> )	0-100 mmHg
Respiration Rate (RR)	0-100 bpm (breaths/min)
Heart Rate (HR) from ECG	20-300 bpm
STJ Level	-10.00-10.00 mm
PR Interval	0.000-1.000 s
QRS Interval	0.000-1.000 s
QT/QTc Interval	0.000-1.000 s
P-QRS-T Axes	-360-360 °
Shocks Delivered	0-50
Gain	1 mV
Speed	25 mm/sec
Status Messages - Active mode, instructions, indications	N/A
Elapsed Time	hh:mm:ss
Current Date and Time	dd/mm/yyyy, hh:mm AM/PM
Battery Status	N/A
Connection Status	N/A
Alarm Indicators	N/A

## Associated Maestro Preferences

Maestro Preferences Associated with Defibrillator		
Parameter	Available Selections	Default
Energy (electrical therapy)	J Ws	J
CO <sub>2</sub>	mmHg kPa %	mmHg

# APPENDIX D - AED CONTROLS AND DISPLAY OPTIONS

Available controls will vary based on the user's role. The following tables provide the available selections and defaults (when applicable) for:

- Facilitator Controls
- Learner Controls
- Learner Parameters Displayed
- Associated Maestro Preferences

## Facilitator Controls

AED Facilitator Controls		
Parameter	Available Selections	Default
Therapy Pads	On /Off	Off
Learner Layout Selection	Generic Defibrillator	Generic Defibrillator
Metronome Rate	100-120 beats per min.	100 beats per min.
Power	On /Off	Off
Energy Select	2-360 J	200 J
Metronome	On/Off	On
Voice Instructions	On/Off	On

## Learner Controls

AED Learner Controls		
Parameter	Available Selections/Action	Default
Power	On/Off	Off
Shock	Administers shock	N/A

## Learner Display

AED Learner Display	
Parameter	Values
Shocks Delivered	0-50
Status Messages - instructions, indications	N/A
Elapsed Time	hh:mm:ss
Current Date and Time	dd/mm/yyyy, hh:mm AM/PM
Battery Status	N/A
Connection Status	N/A
Alarm Indicators	N/A

## Associated Maestro Preferences

Maestro Preferences Associated with AED		
Parameter	Available Selections	Default
Energy (electrical therapy)	J Ws	J

# APPENDIX E - TRANSPORT VENTILATOR CONTROLS AND DISPLAY OPTIONS

Available controls will vary based on the user's role and the equipment that is used (e.g. not all controls are available when using the Transport Ventilator that may be available in the Ventilator). The following tables provide selections and defaults (when applicable) for:

- Facilitator Controls
- Learner Controls
- Learner Parameters Displayed
- Learner Display Options
- Associated Maestro Preferences

## Facilitator Controls

Transport Ventilator Facilitator Controls		
Parameter	Selections	Default
<b>Breathing Circuit</b>	On /Off	Off
<b>Pulse Oximeter SpO<sub>2</sub> - Plethysmograph</b>	On /Off	Off
<b>CO<sub>2</sub> Attachment - Capnograph</b>	On /Off	Off
<b>Breathing Circuit Disconnect</b>	On /Off	Off
<b>Leak</b>	0-100%	0%
<b>Power</b>	On /Off	Off
<b>Pi - Inspiratory Pressure</b>	0-80cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
<b>Pi Backup</b>	0-80cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
<b>ΔP<sub>supp</sub> - Support Pressure</b>	0-80cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
<b>PEEP - Positive End Expiratory Pressure</b>	0-50 cmH <sub>2</sub> O	5 cmH <sub>2</sub> O
<b>End Inspiration - Percent of Peak Flow</b>	0-70%	30%
<b>Flow Trigger</b>	0.2-20.0 L/min	3 L/min
<b>VT - Tidal Volume</b>	100-1500 ml	500 ml
<b>VT Backup</b>	100-1500 ml	500 ml
<b>FiO<sub>2</sub> - Oxygen Concentration of the Delivered Gas</b>	0-100%	40%

Transport Ventilator Facilitator Controls		
Parameter	Selections	Default
<b>Tpause - Pause Time</b>	0.0-1.5 seconds	0s
<b>I:E Inspiratory time:expiratory time ratio</b>	1.0:1.0 to 1.0:4.0 (I:E)	1:2
<b>I:E Inspiratory time:expiratory time ratio backup</b>	1.0:1.0 to 1.0:4.0 (I:E)	1:2
<b>RR - Respiratory Rate</b>	4-150 breaths per minute	15 breaths per min.
<b>RR Backup</b>	4-150 breaths per minute	15 breaths per min
<b>Ti rise - Inspiratory Rise Time</b>	0.1-0.4 seconds	0.2s
<b>Ta - Apnea Time</b>	15-45 seconds	20s
<b>Type of Ventilation</b>	Invasive Non-invasive	Invasive
<b>Ventilation Mode</b>	<ul style="list-style-type: none"> <li>• Volume-controlled Ventilation (VCV)</li> <li>• Pressure-controlled Ventilation (PCV)</li> <li>• Continuous Positive Airway Pressure + Pressure Support (CPAP + PS)</li> <li>• Volume Support Ventilation (VSV)</li> <li>• Synchronized Intermittent-Mandatory Ventilation Volume Control (SIMV VC)</li> </ul>	Volume-controlled Ventilation (VCV)
<b>Ventilation Status</b>	Start Standby	Standby

# Learner Controls

Transport Ventilator Learner Controls		
Parameter	Selections	Default
<b>Pi - Inspiratory Pressure</b>	0-80cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
<b>Pi Backup</b>	0-80cmH <sub>2</sub> O	20 cmH <sub>2</sub> O <sub>m</sub> ,
<b>ΔP<sub>supp</sub> - Support Pressure</b>	0-80cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
<b>PEEP - Positive end-expiratory Pressure</b>	0-50 cmH <sub>2</sub> O	5 cmH <sub>2</sub> O
<b>End Inspiration - Percent of Peak Flow</b>	0-70%	30%
<b>Flow Trigger</b>	0.2-20.0 L/min	3.0 L/min
<b>VT - Tidal Volume</b>	100-1500 ml	500 ml
<b>VT Backup</b>	100-1500 ml	500 ml
<b>FiO<sub>2</sub> - Oxygen Concentration of the Delivered Gas</b>	21-100%	40%
<b>T<sub>pause</sub>- Pause Time</b>	0.0-1.5 seconds	0s
<b>I:E Inspiratory time:expiratory time ratio</b>	1.0:1.0 to 1.0:4.0 (I:E)	1:2
<b>I:E Inspiratory time:expiratory time ratio backup</b>	1.0:1.0 to 1.0:4.0 (I:E)	1:2
<b>Ti rise - Inspiratory Rise Time</b>	0.1-0.4 seconds	0.2s
<b>T<sub>apnea</sub> - Apnea Time</b>	15-45 seconds	20s
<b>Type of Ventilation</b>	Invasive Non-invasive	Invasive
<b>Ventilation Mode</b>	<ul style="list-style-type: none"> <li>• Volume-controlled Ventilation (VCV)</li> <li>• Pressure-controlled Ventilation (PCV)</li> <li>• Continuous Positive Airway Pressure + Pressure Support (CPAP + PS)</li> <li>• Volume Support Ventilation (VSV)</li> <li>• Synchronized Intermittent-Mandatory Ventilation Volume Control (SIMV VC)</li> </ul>	Volume-controlled Ventilation (VCV)



Transport Ventilator Learner Controls		
Parameter	Selections	Default
<b>Ventilation Setup</b>	Setup options will vary depending upon the ventilation mode selected.	N/A
<b>Ventilation Status</b>	Start Standby	Standby
<b>Power</b>	On/Off	On
<b>Display Lock/Unlock</b>	Locked/Unlocked	Unlocked
<b>Navigation Dial and Select</b>	Navigate and select the highlighted option.	N/A
<b>Scale</b>	Adjustment of scale level for vital signs.	N/A
<b>Layout</b>	Adjustment of display layout of the vital signs.	N/A
<b>Alarms Silencer</b>	Silences all alarms for 2 minutes.	N/A
<b>Alarm Level</b>	Available for each vital sign.	N/A
<b>Alarm Sound (Silences for 2 minutes)</b>	On/Off	On

# Learner Parameters Displayed

Transport Ventilator Learner Display	
Parameter	Values
<b>Pmean - Mean airway pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Ppeak - Peak airway pressure</b>	-20-200 cmH <sub>2</sub> O
<b>PEEP - Positive end-expiratory Pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Insp Flow - Peak Inspiratory Flow</b>	-400-400 L/min
<b>Exp Flow - Peak Expiratory Flow</b>	-400-400 L/min
<b>MVe - Expiratory Minute Volume</b>	0-100 L/min
<b>MVi - Inspiratory Minute Volume</b>	0-100 L/min
<b>MV - Minute Volume</b>	0-100 L/min
<b>VT<sub>e</sub> - Expiratory Tidal Volume</b>	0-6000 ml
<b>VT<sub>i</sub> - Inspiratory Tidal Volume</b>	0-6000 ml
<b>Leak - Leakage percent</b>	0-100%
<b>VT - Tidal Volume</b>	0-6000 ml
<b>FiO<sub>2</sub> - Oxygen Concentration of the Delivered Gas</b>	0-100%
<b>Te - Expiratory Time</b>	0.10-0.80 seconds
<b>I:E - Inspiratory:Expiratory Ratio</b>	1.0:600 to 150:1.0 (I:E)
<b>T<sub>pause</sub> - Pause Time</b>	0.0-1.5 seconds
<b>Ti - Inspiratory Time</b>	0.2-10.0 seconds
<b>RR- Respiratory Rate</b>	0-150 breaths per minute
<b>Ti rise - Inspiratory Rise Time</b>	0.0-0.4 seconds
<b>EtCO<sub>2</sub> - End Tidal CO<sub>2</sub></b>	0-100 mmHg
<b>RREtCO<sub>2</sub> - Respiratory Rate From EtCO<sub>2</sub></b>	0-100 breaths per minute
<b>SpO<sub>2</sub> - Oxygen Saturation</b>	0-100%
<b>PRSpO<sub>2</sub> - Pulse rate from SpO<sub>2</sub> probe</b>	0-275 beats per minute
<b>Pressure Waveform</b>	-20 to 200 cmH <sub>2</sub> O
<b>Flow Waveform</b>	-400 to 400 L/min
<b>Volume Waveform</b>	0-6000 ml

Transport Ventilator Learner Display	
Parameter	Values
Pressure Volume Loop	-20 to 200 cmH <sub>2</sub> O to 0-6000 ml
Pressure Flow Loop	-20 to 200 cmH <sub>2</sub> O to -400 to 400 L/min
Volume Flow Loop	0-6000 ml to -400 to 400 L/min
SpO <sub>2</sub> (Plethysmograph) Waveform	0-100%
CO <sub>2</sub> (Capnograph) Waveform	0-100%
Status Messages Area - Alarms, Stand-by or Active, Ventilation Details, Patient Information	N/A
Alarm Indicators	N/A
Trigger Indicators - Flow and Edi Waveform Trigger Indicators	N/A
Current Date and Time	N/A
Battery Status	N/A
Connection Status	N/A

## Learner Display Options

Transport Ventilator Display Option	Selections
Waves and Numerics	2 Waveforms and 6 Numerics
Loop Graph and Numerics	2 Loops and 6 Numerics
All Numerics	23 Numerics

## Associated Maestro Preferences

Maestro Preferences Associated with Transport Ventilator		
Parameter	Selections	Default
Airway Pressure	cmH <sub>2</sub> O mBar	cmH <sub>2</sub> O
CO <sub>2</sub>	mmHg kPa %	mmHg

# APPENDIX F - VENTILATOR CONTROLS AND DISPLAY OPTIONS

Available controls will vary based on the user’s role and the equipment that is used (e.g. not all controls are available when using the Transport Ventilator that may be available in the Ventilator). The following tables provide selections and defaults (when applicable) for:

- Facilitator Controls
- Learner Controls
- Learner Parameters Displayed
- Learner Display Options
- Associated Maestro Preferences

## Facilitator Controls

Ventilator Facilitator Controls		
Parameter	Selections	Default
Breathing Circuit	On /Off	Off
Pulse Oximeter SpO <sub>2</sub> - Plethysmograph	On /Off	Off
CO <sub>2</sub> Attachment - Capnograph	On /Off	Off
Edi Catheter	On /Off	Off
Breathing Circuit Disconnect	On /Off	Off
Leak	0-100%	0%
NAVA Mode - Neurally Adjusted Ventilatory Assist Mode	Enabled/Disabled	Disabled
Power	On /Off	Off
Pi - Inspiratory Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
Pi Backup	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
ΔP <sub>supp</sub> - Support Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
PEEP - Positive End Expiratory Pressure	0-50 cmH <sub>2</sub> O	5 cmH <sub>2</sub> O
End Inspiration - Percent of Peak Flow	0-70%	30%
Flow Trigger	0.2-20.0 L/min	3 L/min
VT - Tidal Volume	100-4000 ml	500 ml

Ventilator Facilitator Controls		
Parameter	Selections	Default
VT Backup	100-4000 ml	500 ml
FiO <sub>2</sub> - Oxygen Concentration of the Delivered Gas	0-100%	40%
Tpause - Pause Time	0.0-1.5 seconds	0s
I:E Inspiratory time:expiratory time ratio	1.0:1.0 to 1.0:4.0 (I:E)	1:2
I:E Inspiratory time:expiratory time ratio backup	1.0:1.0 to 1.0:4.0 (I:E)	1:2
Ti - Inspiratory Time (non-functional)	0.1-5.0 seconds	N/A
Ti Backup (non-functional)	0.1-5.0 seconds	N/A
RR - Respiratory Rate	4-150 breaths per minute	15 breaths per min.
RR Backup	4-150 breaths per minute	15 breaths per min
Ti rise - Inspiratory Rise Time	0.1-0.4 seconds	0.2s
Ta - Apnea Time	15-45 seconds	20s
Edi Trigger (Depends on if NAVA mode is enabled or disabled)	0.1-2.0 $\mu$ V	0.5 $\mu$ V
NAVA Level (Depends on if NAVA mode is enabled or disabled)	0-15 cmH <sub>2</sub> O/ $\mu$ V	0.5 cmH <sub>2</sub> O/ $\mu$ V
Type of Ventilation	Invasive Non-invasive	Invasive
Ventilation Mode	<ul style="list-style-type: none"> <li>• Volume-controlled Ventilation (VCV)</li> <li>• Pressure-controlled Ventilation (PCV)</li> <li>• Continuous Positive Airway Pressure + Pressure Support (CPAP+PS)</li> <li>• Volume Support Ventilation (VSV)</li> <li>• Neurally Adjusted Ventilatory Assist (NAVA)</li> <li>• Synchronized Intermittent-Mandatory Ventilation Volume Control (SIMV VC)</li> </ul>	Volume-controlled Ventilation (VCV)

Ventilator Facilitator Controls		
Parameter	Selections	Default
Ventilation Status	Start Standby	Standby

## Learner Controls

Ventilator Learner Controls		
Parameter	Selections	Default
Pi - Inspiratory Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
Pi Backup	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
ΔPsupp - Support Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
PEEP - Positive end-expiratory Pressure	0-50 cmH <sub>2</sub> O	5 cmH <sub>2</sub> O
End Inspiration - Percent of Peak Flow	0-70%	30%
Flow Trigger	0.2-20.0 L/min	3.0 L/min
VT - Tidal Volume	100-1500ml	500 ml
VT Backup	100-1500 ml	500 ml
FiO <sub>2</sub> - Oxygen Concentration of the Delivered Gas	21-100%	40%
Tpause- Pause Time	0.0-1.5 seconds	0s
Inspiratory Hold	Input Control	N/A
Expiratory Hold	Input Control	N/A
I:E Inspiratory time:expiratory time ratio	1.0:1.0 to 1.0:4.0 (I:E)	1:2
I:E Inspiratory time:expiratory time ratio backup	1.0:1.0 to 1.0:4.0 (I:E)	1:2
Ti rise - Inspiratory Rise Time	0.1-0.4 seconds	0.2s
Tapnea - Apnea Time	15-45 seconds	20s
Edi Trigger (Depends on if NAVA mode is enabled or disabled)	0.1-2.0 μV	0.5 μV
NAVA Level (Depends on if NAVA mode is enabled or disabled)	0-15 cmH <sub>2</sub> O/μV	0.5 cmH <sub>2</sub> O/μV
Type of Ventilation	Invasive Non-invasive	Invasive

Ventilator Learner Controls		
Parameter	Selections	Default
<b>Ventilation Mode</b>	<ul style="list-style-type: none"> <li>• Volume-controlled Ventilation (VCV)</li> <li>• Pressure-controlled Ventilation (PCV)</li> <li>• Continuous Positive Airway Pressure + Pressure Support (CPAP+PS)</li> <li>• Volume Support Ventilation (VSV)</li> <li>• Neurally Adjusted Ventilatory Assist (NAVA)</li> <li>• Synchronized Intermittent-Mandatory Ventilation Volume Control (SIMV VC)</li> </ul>	Volume-controlled Ventilation (VCV)
<b>Ventilation Setup</b>	Setup options will vary depending upon the ventilation mode selected.	N/A
<b>Ventilation Status</b>	Start Standby	Standby
<b>Power</b>	On/Off	On
<b>Display Lock/Unlock</b>	Locked/Unlocked	Unlocked
<b>Navigation Dial and Select</b>	Navigate and select the highlighted option.	N/A
<b>Scale</b>	Adjustment of scale level for vital signs.	N/A
<b>Layout</b>	Adjustment of display layout of the vital signs.	N/A
<b>Alarms Silencer</b>	Silences all alarms for 2 minutes.	N/A
<b>Alarm Level</b>	Available for indicated vital signs.	N/A
<b>Alarm Sound (Silences for 2 minutes)</b>	On/Off	On



## Learner Parameters Displayed

Ventilator Learner Display	
Parameter	Values
<b>Pmean - Mean airway pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Ppeak - Peak airway pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Pplateau</b>	-20-200 cmH <sub>2</sub> O
<b>PEEP - Positive end-expiratory Pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Pi - Inspiratory Pressure (waveform value)</b>	-20-200 cmH <sub>2</sub> O
<b>Insp Flow - Peak Inspiratory Flow</b>	-400-400 L/min
<b>Exp Flow - Peak Expiratory Flow</b>	-400-400 L/min
<b>Flow Trig</b>	0.2 -20.0
<b>MVe - Expiratory Minute Volume</b>	0-100 L/min
<b>MVi - Inspiratory Minute Volume</b>	0-100 L/min
<b>MV - Minute Volume</b>	0-100 L/min
<b>MVspont - Spontaneous Expiratory Minute Volume</b>	0-100 L/min
<b>VT<sub>e</sub> - Expiratory Tidal Volume</b>	0-6000 ml
<b>VT<sub>i</sub> - Inspiratory Tidal Volume</b>	0-6000 ml
<b>Leak - Leakage percent</b>	0-100%
<b>VT - Tidal Volume</b>	0-6000 ml
<b>FiO<sub>2</sub> - Oxygen Concentration of the Delivered Gas</b>	0-100%
<b>RR<sub>sp</sub> - Spontaneous Respiratory Rate</b>	0-150 breaths per minute
<b>Te - Expiratory Time</b>	0.10-0.80 seconds
<b>I:E - Inspiratory:Expiratory Ratio</b>	1.0:600 to 150:1.0 (I:E)
<b>T<sub>pause</sub> - Pause Time</b>	0.0-1.5 seconds
<b>Ti - Inspiratory Time</b>	0.2-10.0 seconds
<b>RR - Respiratory Rate</b>	0-150 breaths per minute
<b>Ti rise - Inspiratory Rise Time</b>	0.0-0.4 seconds
<b>C<sub>stat</sub> - Static Compliance</b>	0-500 ml/ cmH <sub>2</sub> O
<b>C<sub>dyn</sub> - Dynamic Compliance</b>	0-200 ml/ cmH <sub>2</sub> O

Ventilator Learner Display	
Parameter	Values
Ri - Inspiratory Flow Resistance	0-500 cmH <sub>2</sub> O/(L/s)
Re - Expiratory Flow Resistance	0-500 cmH <sub>2</sub> O/(L/s)
RSB - Rapid Shallow Breathing Index	0.1-600.0 1/(L*min)
RCE- Expiratory Time Constant	0-3 seconds
RCi - Inspiratory Time Constant	0-3 seconds
EtCO <sub>2</sub> - End Tidal CO <sub>2</sub>	0-100 mmHg
VeCO <sub>2</sub> - Exhaled CO <sub>2</sub> Volume	0-1000 ml
ViCO <sub>2</sub> - Inspired CO <sub>2</sub> Volume	0-1000 ml
RREtCO <sub>2</sub> - Respiratory Rate From EtCO <sub>2</sub>	0-100 breaths per minute
SpO <sub>2</sub> - Oxygen Saturation	0-100%
PRSpO <sub>2</sub> - Pulse rate from SpO <sub>2</sub> probe	0-275 beats per minute
Edipeak	0-50 μV
Edimin	0-50 μV
Pressure Waveform	-20 to 200 cmH <sub>2</sub> O
Flow Waveform	-400 to 400 L/min
Volume Waveform	0 to 6000 ml
Pressure Volume Loop	-20 to 200 cmH <sub>2</sub> O and 0 to 6000 ml
Flow Pressure Loop	-400 to 400 L/min and -20 to 200 cmH <sub>2</sub> O
Volume Flow Loop	0 to 6000 ml and -400 to 400 L/min
Edi Waveform	0-50 μV
SpO <sub>2</sub> (Plethysmograph) Waveform	0-100%
CO <sub>2</sub> (Capnograph) Waveform	0-100%
Status Messages Area - Alarms, Stand-by or Active, Ventilation Details, Patient Information	N/A
Alarm Indicators	N/A
Trigger Indicators - Flow and Edi Waveform Trigger Indicators	N/A
Current Date and Time	N/A
Battery Status	N/A

Ventilator Learner Display	
Parameter	Values
Connection Status	N/A

## Learner Display Options

Ventilator Display Option	Selections
Waves and Numerics	3 Waveforms and 8 Numerics
Loop Graph, Waves and Numerics	3 Loops and 2 Waveforms and 8 Numerics
All Numerics	35 Numerics
Waves and Numerics	4 Waveforms and 8 Numerics

## Associated Maestro Preferences

Maestro Preferences Associated with Ventilator		
Parameter	Selections	Default
Airway Pressure	cmH <sub>2</sub> O mBar	cmH <sub>2</sub> O
CO <sub>2</sub>	mmHg kPa %	mmHg

# APPENDIX G - ANESTHESIA MACHINE CONTROLS AND DISPLAY

Available controls will vary based on the user's role and the equipment that is used (e.g. not all controls are available when using the Transport Ventilator that may be available in the Ventilator). The following tables provide selections and defaults (when applicable) for:

- Facilitator Controls
- Learner Controls
- Learner Parameters Displayed
- Learner Display Options
- Associated Maestro Preferences

## Facilitator Controls

Anesthesia Machine Facilitator Controls		
Parameter	Selections	Default
Breathing Circuit	On /Off	Off
Pulse Oximeter SpO <sub>2</sub> - Plethysmograph	On /Off	Off
CO <sub>2</sub> Attachment - Capnograph	On /Off	Off
Breathing Circuit Disconnect	On /Off	Off
Leak	0-100%	0%
Power	On /Off	Off
Pi - Inspiratory Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
Pi Backup	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
ΔPsupp - Support Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
PEEP - Positive End Expiratory Pressure	0-70 cmH <sub>2</sub> O	5 cmH <sub>2</sub> O
End Inspiration - Percent of Peak Flow	0-70%	30%
Flow Trigger	0.2-20.0 L/min	3 L/min
VT - Tidal Volume	100-1500 ml	500 ml
VT Backup	100-1500 ml	500 ml
Tpause - Pause Time	0.0-1.5 seconds	0s
I:E Inspiratory time:expiratory time ratio	1.0:1.0 to 1.0:4.0 (I:E)	1:2

Anesthesia Machine Facilitator Controls		
Parameter	Selections	Default
<b>I:E Inspiratory time:expiratory time ratio backup</b>	1.0:1.0 to 1.0:4.0 (I:E)	1:2
<b>RR - Respiratory Rate</b>	4-150 breaths per minute	15 breaths per min.
<b>RR Backup</b>	4-150 breaths per minute	15 breaths per min
<b>Ti rise - Inspiratory Rise Time</b>	0.1-0.4 seconds	0.2s
<b>Ta - Apnea Time</b>	15-45 seconds	20s
<b>Type of Ventilation</b>	Invasive Non-invasive	Invasive
<b>Ventilation Mode</b>	<ul style="list-style-type: none"> <li>• Volume-controlled Ventilation (VCV)</li> <li>• Pressure-controlled Ventilation (PCV)</li> <li>• Continuous Positive Airway Pressure + Pressure Support (CPAP+PS)</li> <li>• Volume Support Ventilation (VSV)</li> <li>• Synchronized Intermittent-Mandatory Ventilation Volume Control (SIMV VC)</li> </ul>	Pressure-controlled Ventilation (PCV)
<b>Ventilation Status</b>	Start Standby	Standby
<b>Soda Lime Canister Consumed</b>	On Off	Off
<b>Auxiliary Common Gas Outlet (ACGO) Open</b>	On Off	Off
<b>APL</b>	0-70 cmH <sub>2</sub> O	0 cmH <sub>2</sub> O
<b>O<sub>2</sub> Flow</b>	0.2-15.0 L/min	0.2 L/min
<b>N<sub>2</sub>O Flow</b>	0.0-10.0 L/min	0.0 L/min
<b>Air Flow</b>	0.0-15.0 L/min	0.0 L/min
<b>Volume Percent of Isoflurane</b>	0.0-6.0%	0%
<b>Volume Percent of Sevoflurane</b>	0.0-8.0%	0%

Anesthesia Machine Facilitator Controls		
Parameter	Selections	Default
Volume Percent of Desflurane	0.0-6.0%	0%
Manual Ventilation	On Off	Off

## Learner Controls

Anesthesia Machine Learner Controls		
Parameter	Selections	Default
Pi - Inspiratory Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
Pi Backup	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
ΔPsupp - Support Pressure	0-80 cmH <sub>2</sub> O	20 cmH <sub>2</sub> O
PEEP - Positive end-expiratory Pressure	0-70 cmH <sub>2</sub> O	5 cmH <sub>2</sub> O
End Inspiration - Percent of Peak Flow	0-70%	30%
Flow Trigger	0.2-20.0 L/min	3.0 L/min
VT - Tidal Volume	100-4000 ml	500 ml
VT Backup	100-4000 ml	500 ml
FiO <sub>2</sub> - Oxygen Concentration of the Delivered Gas	21-100%	40%
Tpause- Pause Time	0.0-1.5 seconds	0s
Inspiratory Hold (Rebreather Bag)	Input Control	N/A
I:E Inspiratory time:expiratory time ratio	1.0:1.0 to 1.0:4.0 (I:E)	1:2
I:E Inspiratory time:expiratory time ratio backup	1.0:1.0 to 1.0:4.0 (I:E)	1:2
Ti rise - Inspiratory Rise Time	0.1-0.4 seconds	0.2s
Tapnea - Apnea Time	15-45 seconds	20s
Type of Ventilation	Invasive Non-invasive	Invasive
Ventilation Mode	<ul style="list-style-type: none"> <li>• Volume-controlled Ventilation (VCV)</li> <li>• Pressure-controlled Ventilation (PCV)</li> <li>• Continuous Positive Airway Pressure + Pressure Support (CPAP+PS)</li> <li>• Volume Support Ventilation (VSV)</li> <li>• Synchronized Intermittent-Mandatory Ventilation Volume Control (SIMV VC)</li> </ul>	Pressure-controlled Ventilation (PCV)

Anesthesia Machine Learner Controls		
Parameter	Selections	Default
<b>Ventilation Setup</b>	Setup options will vary depending upon the ventilation mode selected.	N/A
<b>Ventilation Status</b>	Start Standby	Standby
<b>Power</b>	On/Off	On
<b>Display Lock/Unlock</b>	Locked/Unlocked	Unlocked
<b>Navigation Dial and Select</b>	Navigate and select the highlighted option.	N/A
<b>Scale</b>	Adjustment of scale level for vital signs.	N/A
<b>Layout</b>	Adjustment of display layout of the vital signs.	N/A
<b>Alarms Silencer</b>	Silences all alarms for 2 minutes.	N/A
<b>Alarm Level</b>	Available for each vital sign.	N/A
<b>Alarm Sound (Silences for 2 minutes)</b>	On/Off	On
<b>Rebreather Bag</b>	Full Squeeze Half Squeeze	N/A
<b>Soda Lime Canister Reveal</b>	On Off	Off
<b>Auxiliary Common Gas Outlet (ACGO) Open</b>	On Off	Off
<b>APL</b>	0-70 cmH <sub>2</sub> O	0 cmH <sub>2</sub> O
<b>O<sub>2</sub> Flow</b>	0.2-15.0 L/min	0.2 L/min
<b>N<sub>2</sub>O Flow</b>	0.0-10.0 L/min	0.0 L/min
<b>Air Flow</b>	0.0-15.0 L/min	0.0 L/min
<b>Volume Percent of Isoflurane</b>	0.0-6.0%	0%
<b>Volume Percent of Sevoflurane</b>	0.0-8.0%	0%
<b>Volume Percent of Desflurane</b>	0.0-6.0%	0%
<b>O<sub>2</sub> +</b>	On Off	Off



Anesthesia Machine Learner Controls		
Parameter	Selections	Default
<b>Manual Ventilation</b>	On Off	Off

# Learner Parameters Displayed

Anesthesia Machine Learner Display	
Parameter	Values
<b>Pmean - Mean airway pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Ppeak - Peak airway pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Pplateau</b>	-20-200 cmH <sub>2</sub> O
<b>PEEP - Positive end-expiratory Pressure</b>	-20-200 cmH <sub>2</sub> O
<b>Insp Flow - Peak Inspiratory Flow</b>	-400-400 L/min
<b>Exp Flow - Peak Expiratory Flow</b>	-400-400 L/min
<b>MVe - Expiratory Minute Volume</b>	0-100 L/min
<b>MVi - Inspiratory Minute Volume</b>	0-100 L/min
<b>MV - Minute Volume</b>	0-100 L/min
<b>MVspont - Spontaneous Expiratory Minute Volume</b>	0-100 L/min
<b>VT<sub>e</sub> - Expiratory Tidal Volume</b>	0-6000 ml
<b>VT<sub>i</sub> - Inspiratory Tidal Volume</b>	0-6000 ml
<b>Leak - Leakage percent</b>	0-100%
<b>VT - Tidal Volume</b>	0-6000 ml
<b>RR<sub>sp</sub> - Spontaneous Respiratory Rate</b>	0-150 breaths per minute
<b>T<sub>e</sub> - Expiratory Time</b>	0.10-0.80 seconds
<b>I:E - Inspiratory:Expiratory Ratio</b>	1.0:600 to 150:1.0 (I:E)
<b>T<sub>pause</sub> - Pause Time</b>	0.0-1.5 seconds
<b>T<sub>i</sub> - Inspiratory Time</b>	0.2-10.0 seconds
<b>RR - Respiratory Rate</b>	0-150 breaths per minute
<b>T<sub>i</sub> rise - Inspiratory Rise Time</b>	0.0-0.4 seconds
<b>C<sub>stat</sub> - Static Compliance</b>	0-500 ml/ cmH <sub>2</sub> O
<b>C<sub>dyn</sub> - Dynamic Compliance</b>	0-200 ml/ cmH <sub>2</sub> O
<b>R<sub>i</sub> - Inspiratory Flow Resistance</b>	0-500 cmH <sub>2</sub> O/(L/s)
<b>R<sub>e</sub> - Expiratory Flow Resistance</b>	0-500 cmH <sub>2</sub> O/(L/s)
<b>RSB - Rapid Shallow Breathing Index</b>	0.1-600.0 1/(L*min)
<b>R<sub>Ce</sub> - Expiratory Time Constant</b>	0-3 seconds

Anesthesia Machine Learner Display	
Parameter	Values
RCi - Inspiratory Time Constant	0-3 seconds
EtCO <sub>2</sub> - End Tidal CO <sub>2</sub>	0-100 mmHg
VeCO <sub>2</sub> - Exhaled CO <sub>2</sub> Volume	0-1000 ml
ViCO <sub>2</sub> - Inspired CO <sub>2</sub> Volume	X
RREtCO <sub>2</sub> - Respiratory Rate From EtCO <sub>2</sub>	0-100 breaths per minute
SpO <sub>2</sub> - Oxygen Saturation	0-100%
PRSpO <sub>2</sub> - Pulse rate from SpO <sub>2</sub> probe	0-275 beats per minute
Pressure Waveform	-20 to 200 cmH <sub>2</sub> O
Flow Waveform	-400 to 400 L/min
Volume Waveform	0 to 6000 ml
Pressure Volume Loop	-20 to 200 cmH <sub>2</sub> O and 0-6000 ml
Flow Pressure Loop	400 to 400 L/min and -20 to 200 cmH <sub>2</sub> O
Volume Flow Loop	0 to 6000 ml and -400 to 400 L/min
SpO <sub>2</sub> (Plethysmograph) Waveform	0-100%
CO <sub>2</sub> (Capnograph) Waveform	0-100%
Fraction of inspired oxygen	0-100%
End tidal oxygen	0-100%
Fraction of inspired nitrous oxide	0-100%
End tidal nitrous oxide	0-100%
Fraction of inspired isoflurane	0.0-6.0%
End tidal isoflurane	0.0-6.0%
Fraction of inspired sevoflurane	0.0-8.0%
End tidal sevoflurane	0.0-8.0%
Fraction of inspired desflurane	0.0-20.0%
End tidal desflurane	0.0-20.0%
Minimum alveolar concentration	0.0-100.0 MAC
TOTAL - Total gas flow	0.0-40.0 L/min
O <sub>2</sub> - Oxygen gas flow	0.2-15.0 L/min

Anesthesia Machine Learner Display	
Parameter	Values
N <sub>2</sub> O - N <sub>2</sub> O gas flow	0.0-10.0 L/min
Air - Air gas flow	0.0-15.0 L/min
Status Messages Area - Alarms, Stand-by or Active, Ventilation Details, Patient Information	N/A
Alarm Indicators	N/A
Trigger Indicators - Flow and Edi Waveform Trigger Indicators	N/A
Current Date and Time	N/A
Battery Status	N/A
Connection Status	N/A

## Learner Display Options

Ventilation Display Option	Selections
Waves and Numerics	2 Waveforms and 6 Numerics
Loop Graph and Numerics	2 Loops and 6 Numerics
All Numerics	35 Numerics

## Associated Maestro Preferences

Maestro Preferences Associated with Anesthesia Machine		
Parameter	Selections	Default
Airway Pressure	cmH <sub>2</sub> O mBar	cmH <sub>2</sub> O
CO <sub>2</sub>	mmHg kPa %	mmHg
Color Preference	ISO USA	ISO

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For more information about CAE products, contact your regional sales manager or the CAE distributor in your country, or visit [caehealthcare.com](http://caehealthcare.com).

Tel +1 941-377-5562 or 866-233-6384

For customer service, please contact CAE.

**Customer Service Headquarters - United States**

Monday - Friday from 7:00 a.m. to 6:00 p.m. ET

Phone 1-866-462-7920

Email: [srqcustomerservice@cae.com](mailto:srqcustomerservice@cae.com)

**Customer Service - Canada**

Monday - Friday from 8:00 a.m. to 5:00 p.m. ET

Phone 1-877-223-6273

Email: [can.service@cae.com](mailto:can.service@cae.com)

**Customer Service - Europe, Middle East, and Africa**

Monday - Friday from 8:00 a.m. to 5:00 p.m. CET

Phone +49 (0) 6131 4950354

Email: [international.service@cae.com](mailto:international.service@cae.com)

**Customer Service - United Kingdom and Ireland**

Monday - Friday from 9:00 a.m. to 5:00 p.m. GMT

Phone +44 (0)800-917-1851

Email: [uk.service@cae.com](mailto:uk.service@cae.com)

**Customer Service - Latin America**

Monday - Friday from 9:00 a.m. to 5:00 p.m. BRT/BRST

Phone +55 11 5069-1510

Email: [la.service@cae.com](mailto:la.service@cae.com)

**Customer Service - Asia Pacific**

Monday - Friday from 8:00 a.m. to 5:00 p.m. CET

Phone +49 (0) 6131 4950354

Email: [ap.service@cae.com](mailto:ap.service@cae.com)

