

CARESCAPE ONE

Service Manual

Software version 3

Hardware version 1



CARESCAPE ONE

English

2nd edition

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Due to continuing product innovation, specifications in this manual are subject to change without notice.

For technical documentation purposes, the abbreviation GE is used for the legal entity names, GE Medical Systems *Information Technologies*, Inc. and GE Healthcare Finland Oy.

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1

About this manual

Intended use of this manual

The list below indicates the compatible products (brands, models and descriptions as applicable) with which this manual is to be used. Supported products are covered by the manuals that were delivered with those products.

- CARESCAPE ONE
- CARESCAPE ECG
- CARESCAPE Pressure
- CARESCAPE Temperature
- CARESCAPE SpO₂
- CARESCAPE SpO₂ — Masimo
- CARESCAPE SpO₂ — Nellcor
- CARESCAPE CO₂ — LoFlo
- CARESCAPE Dock F0
- Mini Dock
- Parameter Dock 1
- Parameter Dock 3
- Parameter Dock 4
- Parameter Dock 5

This manual contains instructions necessary to install, maintain and service the device to the assembly level. It gives an overview of the CARESCAPE ONE monitoring system, and contains information needed for system installation. Information for the planned and corrective maintenance of the CARESCAPE ONE, CARESCAPE Dock F0, and CARESCAPE Parameters is also provided.

This manual supports the CARESCAPE ONE when used as a standalone multi-parameter physiological patient monitor.

Use the manual as a guide for installation, maintenance and repairs considered field repairable. Where necessary the manual identifies additional sources of relevant information and technical assistance.

See the user manual for the technical specifications, default settings and compatibility information, including electromagnetic compatibility.

See the user manual for the instructions necessary to operate the device safely in accordance with its function and intended use.

Intended audience of this manual

This manual is intended for service representatives and technical personnel who install, maintain, troubleshoot, or repair this device.

Manual conventions

This manual uses the following styles to emphasize text or indicate an action. Also note the terminology conventions.

Item	Description
bold	Indicates hardware keys and connectors.
<i>bold italic</i>	Indicates menu options, software keys and messages.
<i>italic</i>	Indicates terms for emphasis.
>	Indicates menu options to select consecutively.
select	The word select means choosing and confirming.
NOTE	Note statements provide application tips or other useful information.
Supplemental information	In the CARESCAPE ONE Service Manual, the phrase supplemental information refers to the information that appears in the appendices of the CARESCAPE ONE User Manual.

Monitor naming conventions

In this manual, the CARESCAPE ONE is also referred to as CS ONE. When a generic term is more appropriate, it is referred to as the device, acquisition platform, or monitor.

In this manual, the CARESCAPE B450, CARESCAPE B650, and CARESCAPE B850 monitor are referred to as the host monitor.

Other naming conventions

For technical documentation purposes, the abbreviation GE is used for the legal entity names, GE Medical Systems *Information Technologies*, Inc., and GE Healthcare Finland Oy.

In this manual, CARESCAPE Parameters is used as a generic term when referring to all of the following products:

Graphic on the CARESCAPE Parameter	Explanation
CARESCAPE [ECG]	CARESCAPE Parameter for measuring ECG. Note that in the manual, the following name is used instead of the graphic: CARESCAPE ECG.
CARESCAPE [PRES]	CARESCAPE Parameter for measuring invasive pressures. Note that in the manual, the following name is used instead of the graphic: CARESCAPE Pressure.
CARESCAPE [TEMP]	CARESCAPE Parameter for measuring temperature. Note that in the manual, the following name is used instead of the graphic: CARESCAPE Temperature.

Graphic on the CARESCAPE Parameter	Explanation
CARESCAPE  -LoFlo	CARESCAPE Parameter for measuring CO ₂ with Resironics LoFlo technology. Note that in the manual, the following name is used instead of the graphic: CARESCAPE CO ₂ .
CARESCAPE 	CARESCAPE Parameter for measuring SpO ₂ with GE TruSignal technology. Note that in the manual, the following name is used instead of the graphic: CARESCAPE SpO ₂ .
CARESCAPE  - Masimo	CARESCAPE Parameter for measuring SpO ₂ with Masimo SET technology. Note that in the manual, the following name is used instead of the graphic: CARESCAPE SpO ₂ — Masimo.
CARESCAPE  - Nellcor	CARESCAPE Parameter for measuring SpO ₂ with Nellcor™ sensors with OxiMax™ technology. Note that in the manual, the following name is used instead of the graphic: CARESCAPE SpO ₂ — Nellcor.

In this manual, CARESCAPE SpO₂ device is used as a generic term when referring to all of the following products: CARESCAPE SpO₂, CARESCAPE SpO₂ — Nellcor, and CARESCAPE SpO₂ — Masimo.

In this manual, acquisition platform refers to the CARESCAPE ONE. Note that software references to **Monitor** also apply to the acquisition platform when it is used as an independent device.

Illustrations and names

This manual uses illustrations as examples only. Illustrations in this manual may not necessarily reflect all system settings, features, configurations, or displayed data.

Names of persons, institutions, and places and related information are fictitious; any similarity to actual persons, entities, or places is purely coincidental.

Related documents

- CARESCAPE ONE User Manual

Revision history

Revision	Description
1st Edition	Initial release.
2nd Edition	Minor editorial changes.

Product availability

NOTE

Due to continual product innovation, design and specifications for these products are subject to change without notice.

Some of the products mentioned in this manual may not be available in all countries. Please consult your local representative for the availability.

Trademarks

GE, GE Monogram, and CARESCAPE are trademarks of General Electric Company.

DINAMAP and TruSignal are trademarks of General Electric Company or one of its subsidiaries.

Third party trademarks

Masimo SET is a trademark of Masimo Corporation.

Nellcor and OxiMax are trademarks of a Medtronic company.

Multi-Link is a trademark of CareFusion Corporation or one of its affiliates.

LoFlo is a trademark of Koninklijke Philips Electronics N.V.

Manufacturer responsibility

GE is responsible for the effects on safety, reliability, and performance of the equipment only if:

- Assembly operations, extensions, readjustments, modifications, servicing, or repairs are carried out by authorized service personnel.
- The electrical installation of the relevant room complies with the requirements of the appropriate regulations.
- The equipment is used in accordance with the instructions for use.
- The equipment is installed, maintained and serviced in accordance with the instructions provided in the related service manuals.

WARNING

SAFETY HAZARD. To avoid risks to personnel and patient, or damage to the equipment, only perform maintenance procedures described in this manual. Unauthorized modifications can lead to safety hazards.

2

Safety

Safety message signal words

Safety message signal words designate the severity of a potential hazard.

DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a hazardous situation not related to personal injury that, if not avoided, could result in property damage.

Safety symbols

Symbol	Explanation
	General warning sign. ISO 7010. This symbol is identified by a yellow background, black triangular band, and a black symbol. Unless noted otherwise, the DANGER, WARNING, and CAUTION statements within this manual correspond to the use of this symbol on the equipment.
	Caution. ISO 7000. This symbol is identified by a white background, black triangular band, and a black symbol.
	Follow instructions for use. ISO 7010. This symbol indicates mandatory action and it is identified by a blue background and a white symbol.
	Consult operating instructions. / Operating instructions.
	WARNING — Electric shock hazard. This equipment must be serviced by qualified service personnel only. ISO 7010. This symbol is identified by a yellow background, black triangular band, and a black symbol.

Symbol	Explanation
	MR Unsafe. Indicates that the device is not intended for use in an MR environment. This symbol is identified by a white background, red or black circular band, and a black symbol.
	Electrostatic sensitive device. Connections should not be made to this device unless ESD precautionary procedures are followed.
	Non-ionizing electromagnetic radiation. Interference may occur in the vicinity of this device.
	Type BF (IEC 60601-1) protection against electric shock. Isolated (floating) applied part suitable for intentional external and internal application to the patient, excluding direct cardiac application.
	Type BF (IEC 60601-1) defibrillator-proof protection against electric shock. Isolated (floating) applied part suitable for intentional external and internal application to the patient, excluding direct cardiac application.
	Type CF (IEC 60601-1) protection against electric shock. Isolated (floating) applied part suitable for intentional external and internal application to the patient, including direct cardiac application.
	Type CF (IEC 60601-1) defibrillator-proof protection against electric shock. Isolated (floating) applied part suitable for intentional external and internal application to the patient including direct cardiac application.
 U.S. only: 	Safety ground. Remove power cord from the mains source by grasping the plug. Do not pull on the cable.
	Class II equipment with Functional Earth.

System safety

For a complete list of system safety messages that apply to the entire system, refer to the user manual. For safety messages specific to parts of the system or to a certain installation or service task, refer to the relevant sections.

3

System introduction

Short description of the equipment



The CARESCAPE ONE is both a multi-parameter physiological patient monitor and an acquisition device to a multi-parameter patient monitor intended for use in multiple areas and intrahospital transport within a professional healthcare facility.

The CARESCAPE ONE includes an integrated display, touchscreen, alarm light, user input buttons, and an audio subsystem. Realtime physiological parameter measurements and waveforms are displayed on the integrated display. Visual alarms are conveyed using both the integrated display and alarm light. Audible alarms are conveyed using the integrated audio subsystem. User input for configuration control and interaction is provided via the touchscreen. In addition, both a power button and touchscreen lock button are provided.

The CARESCAPE ONE can be used as a standalone monitor. In this mode of operation, the CARESCAPE ONE provides ECG, ST segment, arrhythmia detection, impedance respiration, SpO₂, non-invasive blood pressure, invasive pressure, temperature, and CO₂ airway gas parameter acquisition and monitoring.

The CARESCAPE ONE can be connected as an accessory to a host monitor. In this mode of operation, the CARESCAPE ONE provides ECG, ST segment, arrhythmia detection, impedance respiration, SpO₂, non-invasive blood pressure, invasive pressure, temperature, and CO₂ airway gas parameter acquisition. It also enables ECG diagnostic analysis and measurement. Visual and audible alarms, user controls, and user interface on the CARESCAPE ONE are not active in this mode.

Software

The CARESCAPE ONE is highly configurable and provides many monitoring possibilities.

The CARESCAPE ONE supports care area specific software packages for OR, PACU, ICU, ED and NICU. Each dedicated software package provides a comprehensive feature set for the different monitoring needs.

The CARESCAPE ONE supports a Demo Mode providing simulated data and waveforms for demonstration purposes only.



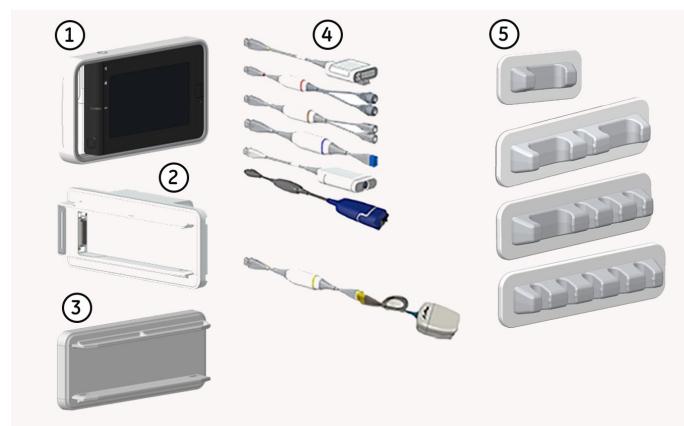
Battery

The CARESCAPE ONE is designed to operate on battery power when used in transport or whenever AC power is interrupted. A complete battery management system allows you to obtain maximum battery performance. On-screen capacity gauges indicate battery charge condition and capacity.

The Lithium-Ion battery is a rechargeable battery containing Lithium-Ion cells. Each battery contains an integrated electronic fuel gauge and a safety protection circuit. The processor within the equipment communicates with both the battery and the charger.

CARESCAPE ONE system components

Your system may not include all these components. Consult your local representative for the available components.



1. CARESCAPE ONE
2. CARESCAPE Dock F0: Provides powered docking and battery charging for CARESCAPE ONE.
3. Mini Dock: Provides unpowered docking for CARESCAPE ONE.
4. CARESCAPE Parameters used with CARESCAPE ONE:
 - CARESCAPE ECG
 - CARESCAPE Pressure
 - CARESCAPE Temperature
 - CARESCAPE CO₂
 - CARESCAPE SpO₂
 - CARESCAPE SpO₂ — Masimo
 - CARESCAPE SpO₂ — Nellcor
5. Parameter Dock 1, 3, 4 and 5: Allows CARESCAPE Parameters to be mounted.

CARESCAPE Parameters

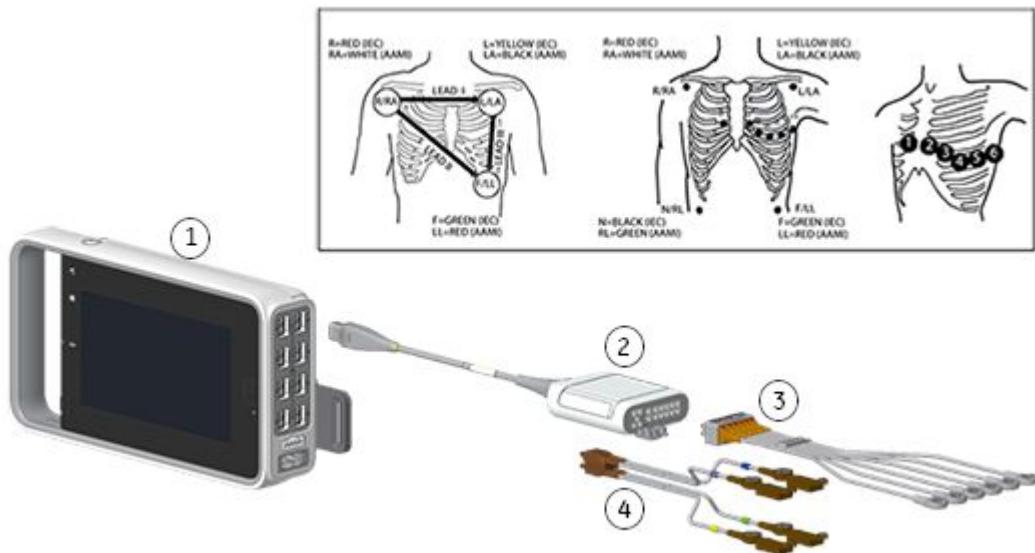
Parameter	CARESCAPE Parameter
ECG	CARESCAPE ECG 3, 5, or 6 leads, or 12 leads viewed with a 10-leadwire set
Impedance respiration	CARESCAPE ECG
Invasive pressures	CARESCAPE Pressure 2
NIBP	No CARESCAPE Parameter required, measurement is available with NIBP hose connected directly to CARESCAPE ONE
Temperature	CARESCAPE Temperature 2
SpO ₂ TruSignal	CARESCAPE SpO ₂
SpO ₂ Masimo	CARESCAPE SpO ₂ — Masimo
SpO ₂ Nellcor	CARESCAPE SpO ₂ — Nellcor
CO ₂	CARESCAPE CO ₂

CARESCAPE ECG

Device compatibility

For detailed information regarding the CARESCAPE ONE, CARESCAPE Parameters, and accessory compatibility, see the supplemental information provided.

ECG equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. CARESCAPE ECG
3. 3-lead, 5-lead, or 6-lead AAMI/AHA or IEC Multi-Link ECG cable
4. 4-lead expansion cable

ECG measurement principle

Electrocardiography analyzes the electrical activity of the heart by measuring the electrical potential produced with electrodes placed on the surface of the body.

ECG reflects:

- Electrical activity of the heart.
- Normal/abnormal function of the heart.
- Effects of anesthesia on heart function.
- Effects of surgery on heart function.

See the user manual for electrodes' positions and other information.

Respiration measurement principle

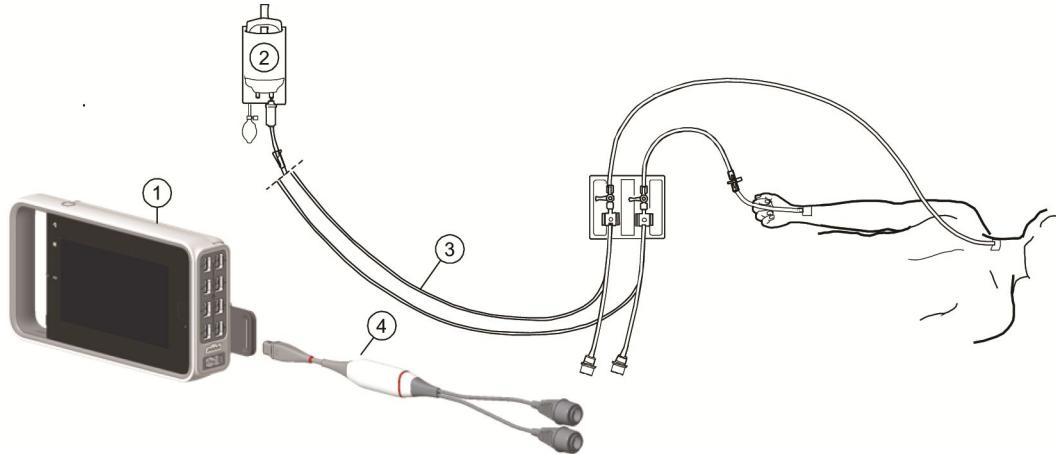
Impedance respiration is measured across the thorax between ECG electrodes. The respiration signal is made by supplying current between the electrodes and by measuring the differential current from the electrodes. The signal measured is the impedance change caused by breathing. The respiration rate is calculated from these impedance changes, and the respiration waveform is displayed on the screen.

CARESCAPE Pressure

Device compatibility

For detailed information regarding the CARESCAPE ONE, CARESCAPE Parameters, and accessory compatibility, see the supplemental information provided.

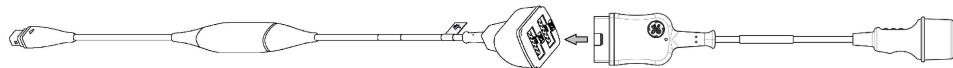
Invasive pressure equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. Fluid bag with pressure infusor
3. Transducer setup
4. CARESCAPE Pressure; single or dual cable (optional)

CARESCAPE Pressure dual adapter cable

The CARESCAPE Pressure dual adapter cable can be used to measure invasive pressures. A CARESCAPE Pressure dual adapter cable can be connected to the CARESCAPE ONE, allowing up to 2 invasive pressures to be measured.



Invasive blood pressure measurement principle

To measure invasive blood pressure, a catheter is inserted into an artery or vein. The invasive pressure setup, consisting of a connecting tubing, a pressure transducer, an intravenous bag of normal saline, all connected together by stopcocks, is attached to the catheter. The transducer is placed at the same level with the heart, and is electrically zeroed.

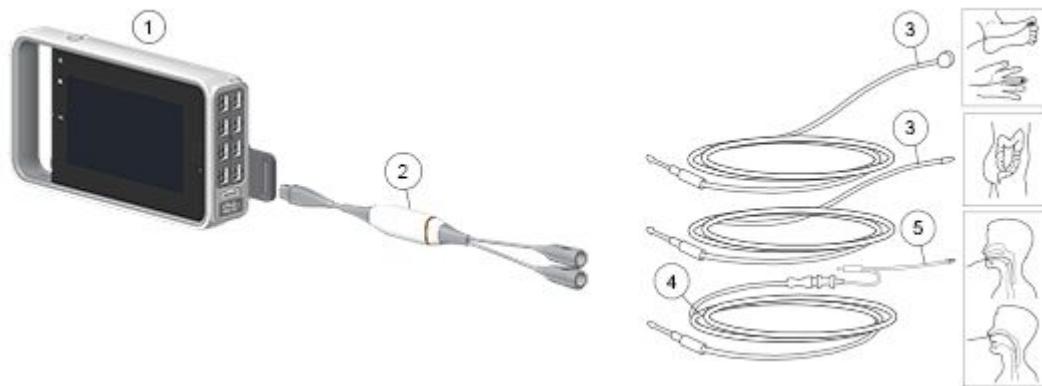
The transducer is a piezo-resistive device that converts the pressure signal to a voltage. The monitor interprets the voltage signal so that pressure data and pressure waveforms can be displayed.

CARESCAPE Temperature

Device compatibility

For detailed information regarding the CARESCAPE ONE, CARESCAPE Parameters, and accessory compatibility, see the supplemental information provided.

Temperature equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. CARESCAPE Temperature (dual)
3. Reusable temperature probe (example)
4. Temperature interconnect cable for disposable temperature probes
5. Disposable temperature probe (example)

Measurement principle for CARESCAPE Temperature

The temperature is measured by a probe with an internal thermistor (NTC -Negative Temperature Coefficient) whose resistance varies as the temperature changes.

The resistance can be measured by two complementary methods:

- Applying a constant voltage source across the thermistor in series with a linearization resistor and measuring the voltage change across the linearization resistor.
- Applying a constant current through thermistor in parallel with a linearization resistor and measuring the voltage that is generated across the parallel combination.

CARESCAPE Temperature uses the constant current method. The NTC resistor is connected in series with a normal resistor and a constant current is applied through them. The temperature dependent voltage can be detected at the junction of the resistors, thus producing the temperature signal from the patient. The signal is amplified by analog amplifiers and further processed by digital electronics.

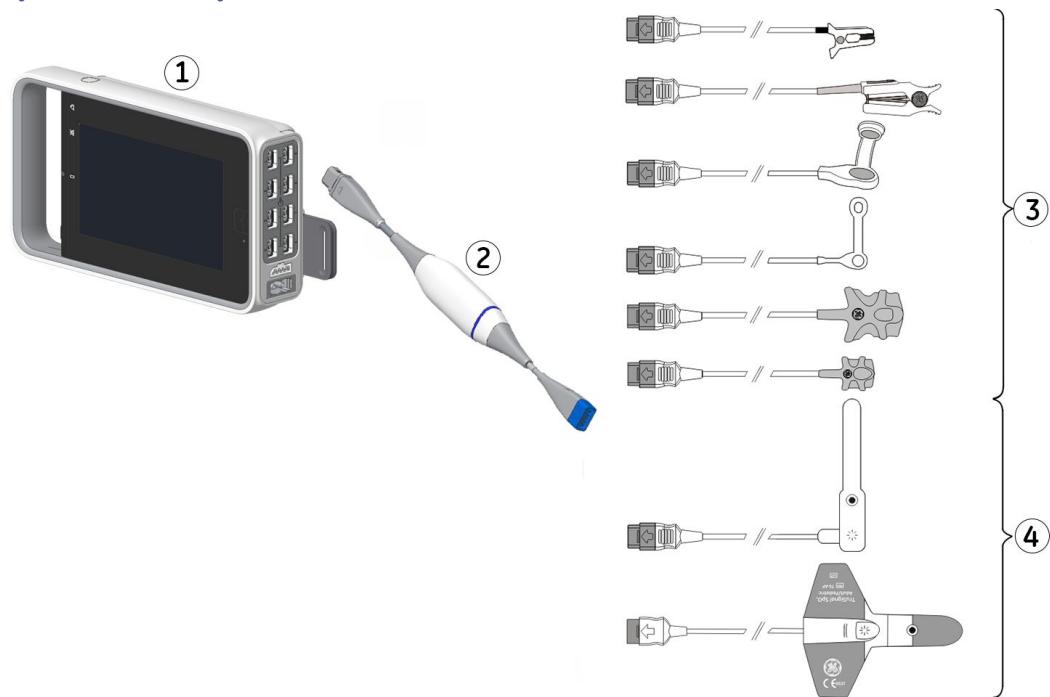
CARESCAPE SpO₂ devices

The CARESCAPE SpO₂ device comes in three different models to support GE TruSignal, Masimo SET, and Nellcor™ with OxiMax™ pulse oximetry technologies.

Device compatibility

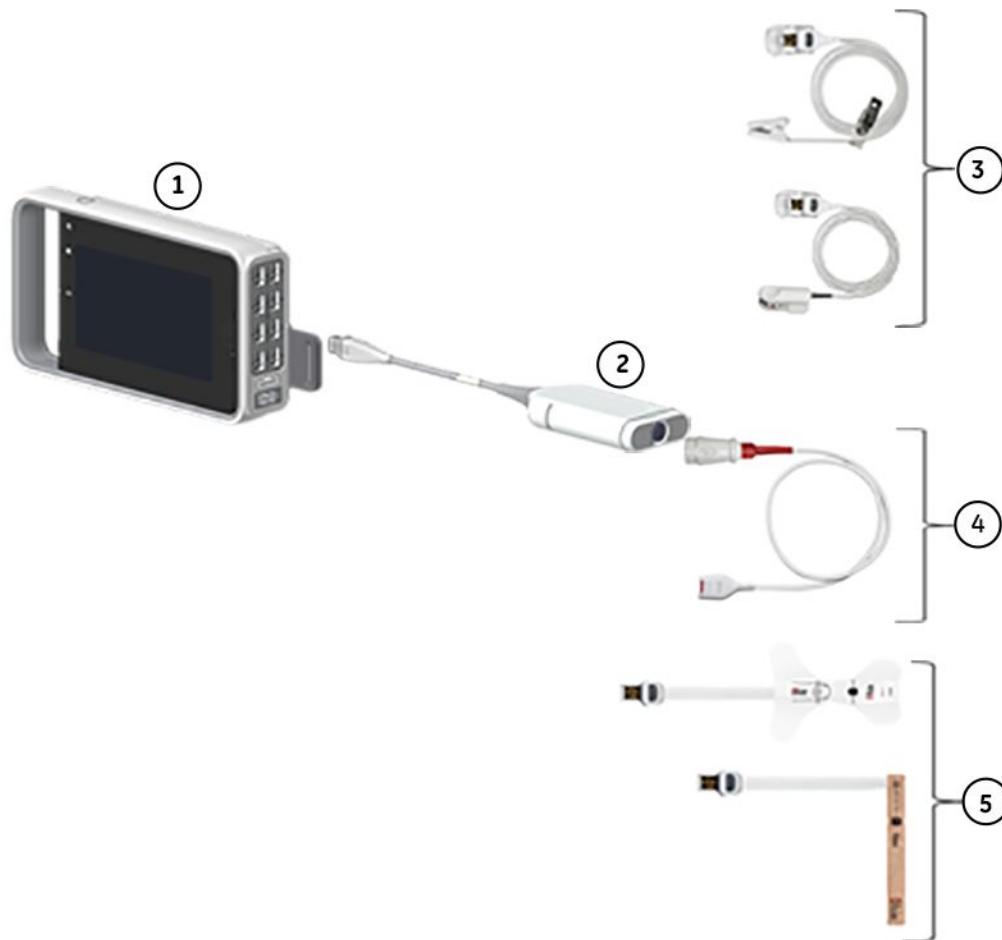
For detailed information regarding the CARESCAPE ONE, CARESCAPE Parameters, and accessory compatibility, see the supplemental information provided.

SpO₂ equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. CARESCAPE SpO₂
3. Reusable sensors
4. Disposable sensors

Masimo SET SpO₂ equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. CARESCAPE SpO₂ — Masimo
3. Reusable sensors
4. SpO₂ sensor connector interface cable
5. Disposable sensors

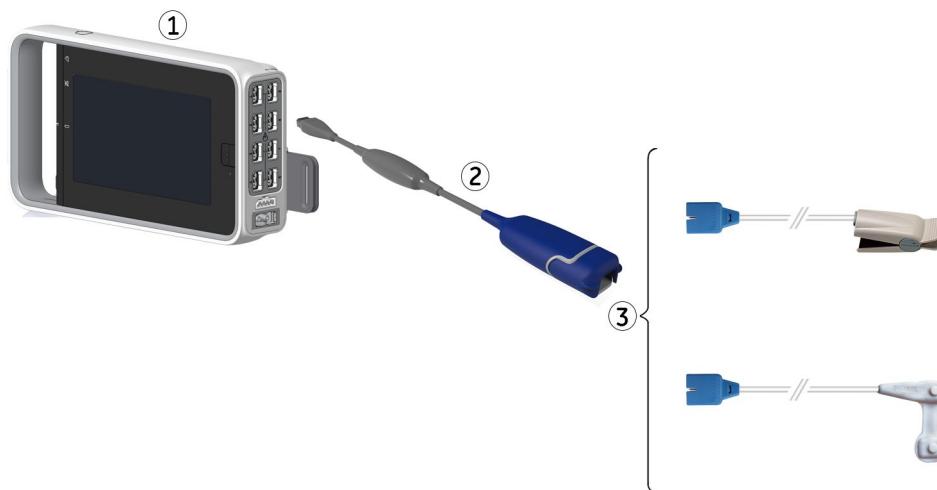
Additional information for Masimo SET technology

NO IMPLIED LICENSE: Possession or purchase of this device does not convey any express or implied license to use the device with unauthorized replacement parts which would, alone, or in combination with this device, fall within the scope of one or more of the patents relating to this device. Sensors that are designated for single use are licensed for use on a single patient only, and are not sold. There is no license, implied or otherwise, that would allow use of single use Masimo Sensors beyond their intended single use. After use of single use Masimo Sensors, the license is exhausted, there is no further license granted by MASIMO, and they must be discarded.

This device is covered under one or more patents as set forth at <http://www.masimo.com/patents.htm>.

Masimo SET SpO₂ technology is designed to be used with Masimo Sensors only. Use of sensors other than Masimo Sensors may yield unreliable results. We recommend the use of Masimo SET sensors for use with Masimo technology.

Nellcor™ with OxiMax™ technology SpO₂ equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. CARESCAPE SpO₂ — Nellcor
3. OxiMax SpO₂ sensor (reusable or single use)

Pulse oximetry measurement principle

A pulse oximeter measures the light absorption of blood at two wavelengths, one in the near infrared and the other in the red region of the light spectrum. These wavelengths are emitted by LEDs in the SpO₂ probe, the light is transmitted through peripheral tissue and is finally detected by a PIN-diode opposite the LEDs in the probe. The pulse oximeter derives the oxygen saturation (SpO₂) using an empirically determined relationship between the relative absorption at the two wavelengths and the arterial oxygen saturation SaO₂.

In order to measure the arterial saturation accurately, pulse oximeters use the component of light absorption giving variations synchronous with heart beat as primary information on the arterial saturation.

A general limitation of pulse oximetry is that due to the use of only two wavelengths, only two hemoglobin species can be discriminated by the measurement.

The modern pulse oximeters are empirically calibrated either against fractional saturation SaO₂frac;

$$SaO_2frac = \frac{HbO_2}{HbO_2 + Hb + Dyshemoglobin} \quad \text{Formula 1}$$

or against functional saturation SaO_2func :

$$SaO_2func = \frac{HbO_2}{HbO_2 + Hb} \quad \text{Formula 2}$$

Functional saturation is more insensitive to changes of carboxyhemoglobin and methemoglobin concentrations in blood.

The oxygen saturation percentage SpO_2 measured by the module is calibrated against functional saturation SaO_2func . The advantage of this method is that the accuracy of SpO_2 measurement relative to SaO_2func can be maintained even at rather high concentrations of carboxyhemoglobin in blood. Independent of the calibration method, pulse oximeters are not able to correctly measure oxygen content of the arterial blood at elevated carboxyhemoglobin or methemoglobin levels.

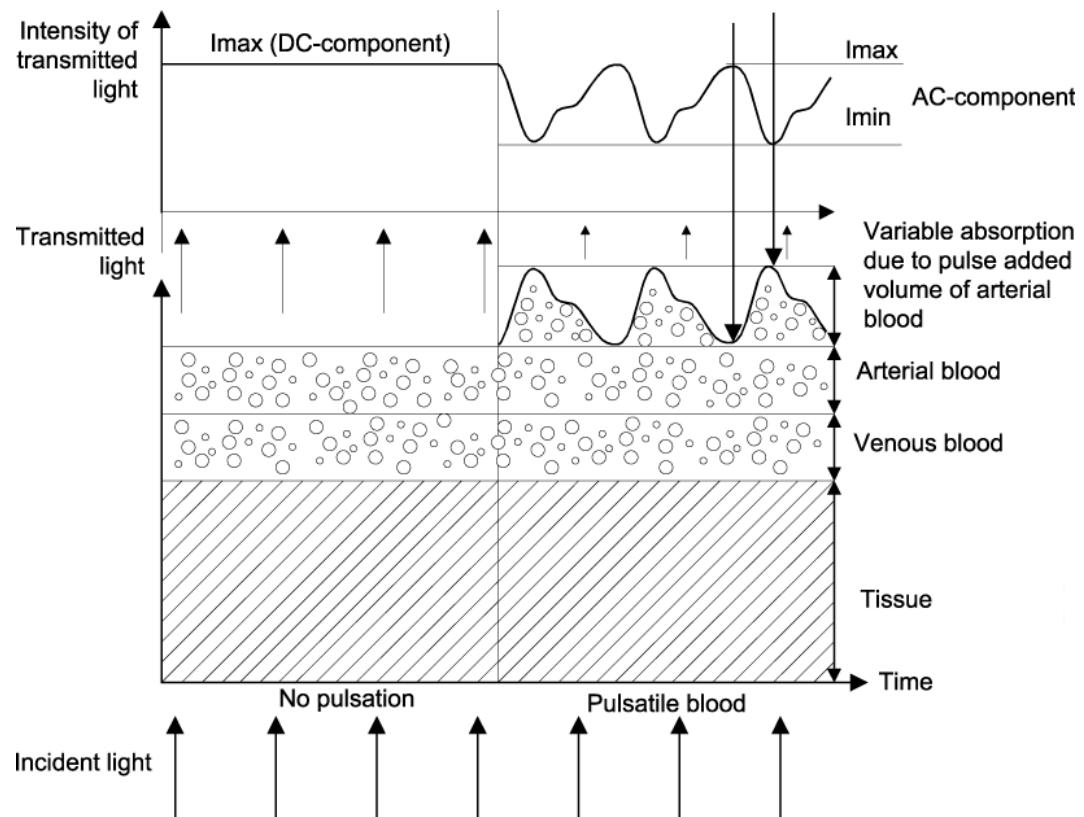
Plethysmographic pulse wave

The plethysmographic waveform is derived from the IR signal and reflects the blood pulsation at the measuring site.

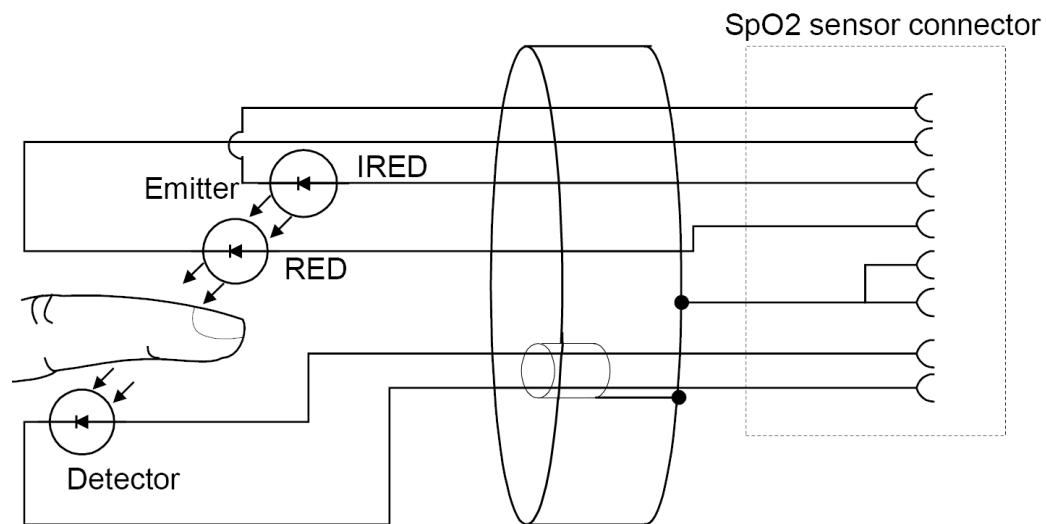
Pulse rate

The pulse rate calculation is done by peak detection of the plethysmographic pulse wave. The signals are filtered to reduce noise and checked to separate artifacts.

The following illustration shows the absorption of infrared light in the finger:



The following illustration shows the layout and schematic diagram of pulse oximetry probe parts:



A finger probe (or sensor) contains the light source LEDs in one half and the photodiode detector in the other half.

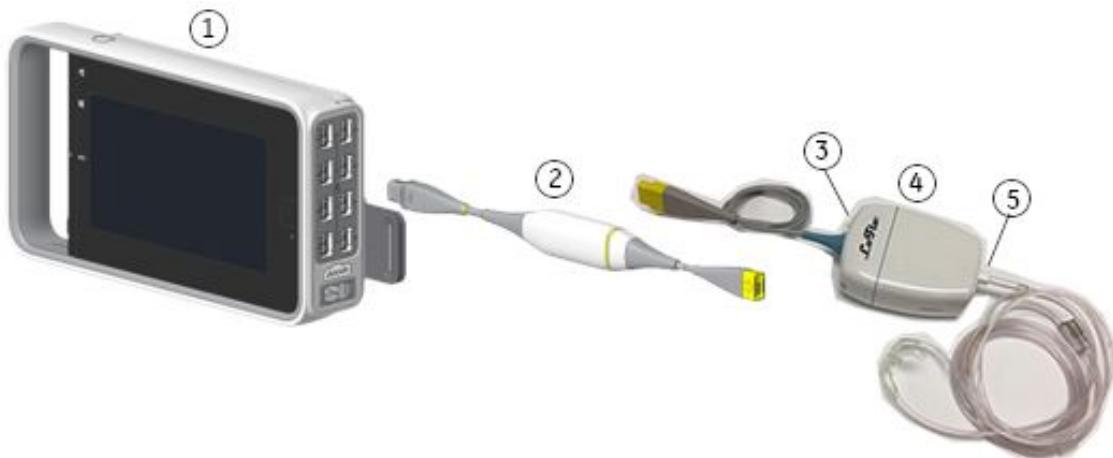
CARESCAPE CO₂

Device compatibility

For detailed information regarding the CARESCAPE ONE, CARESCAPE Parameters, and accessory compatibility, see the supplemental information provided.

Equipment connection with CARESCAPE CO₂

For intubated and non-intubated patients.



1. CARESCAPE ONE
2. CARESCAPE CO₂
3. Exhaust port
4. LoFlo Sidestream Module
5. Accessory port (for sample lines, nasal cannulas, etc.)

Measurement principle for CARESCAPE CO₂

The LoFlo Sidestream Module uses infrared spectroscopy to continuously measure CO₂ (carbon dioxide) and reports the End Tidal carbon dioxide (EtCO₂), Final Inspiratory carbon dioxide (FiCO₂), and respiratory rate values.

The LoFlo Sidestream Module is a sidestream sampling system with a 50 ml/min low sample flow that is used to measure CO₂ of non-intubated and intubated neonate, infant, pediatric, and adult patients.

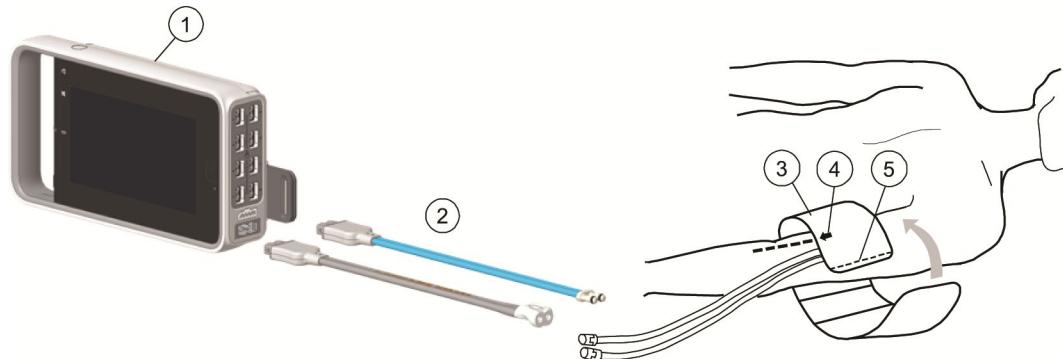
In CARESCAPE CO₂, infrared light is generated by the sensor and beamed through the sample cell to a detector on the opposite side. CO₂ from the patient that is aspirated into the sample cell absorbs some of this infrared energy. The monitor determines CO₂ concentration in the breathing gases by measuring the amount of light absorbed by these gases. EtCO₂ is displayed as a numerical value in millimeters of mercury (mmHg), percent (%), or kilopascals (kPa). In addition, a CO₂ waveform (capnogram) may be displayed which is a valuable clinical tool that can be used to assess patient airway integrity and proper endotracheal tube (ETT) placement. Respiration rate is calculated by measuring the time interval between detected breaths.

Non-invasive blood pressure measurement

Device compatibility

For detailed information regarding the CARESCAPE ONE, CARESCAPE Parameters, and accessory compatibility, see the supplemental information provided.

NIBP equipment to patient connection with CARESCAPE ONE



1. CARESCAPE ONE
2. Cuff hose (blue for neonatal, gray for adult)
3. Cuff of correct size
4. Brachial artery arrow (printed on cuff)
5. Cuff index line (printed on cuff)

NIBP measurement principle

NIBP (Non-Invasive Blood Pressure) is an indirect method for measuring blood pressure.

The NIBP measurement is performed according to the oscillometric measuring principle. The cuff is inflated with a pressure slightly higher than the presumed systolic pressure, and deflated at a speed based on the patient's pulse, collecting data from the oscillations caused by the pulsating artery. Based on these oscillations, values for systolic, mean, and diastolic pressures are calculated.

The following parts are necessary for the NIBP measurement:

- CARESCAPE ONE
- Twin hose (adult or infant model)
- Blood pressure cuffs (various sizes)

Docks

CARESCAPE Dock F0

Front and back views.

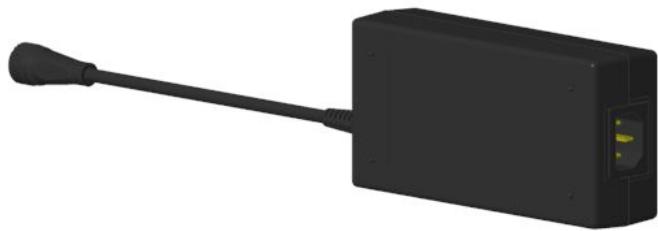


The CARESCAPE Dock F0 connects with a host monitor to provide the docked CARESCAPE ONE with communication to the monitor and a DC power source.

The CARESCAPE Dock F0 provides a docked CARESCAPE ONE with a DC power source and connection to a service PC.

A standard GCX or VESA hole pattern on the back of the CARESCAPE Dock F0 supports bed rail, incubator, infant warmer, pole, fixed wall, rollstand, and anesthesia machine mounting options.

AC mains to DC power supply for CARESCAPE Dock F0



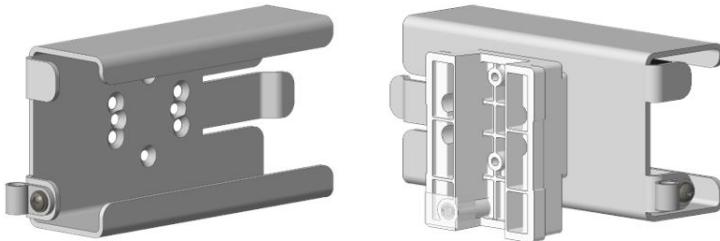
The AC mains to DC power supply connects to the CARESCAPE Dock F0 power receptacle and provides power to a docked CARESCAPE ONE.

To provide system isolation from the mains power, you must disconnect the CARESCAPE Dock F0 from the AC power source.

Power supply mounting bracket

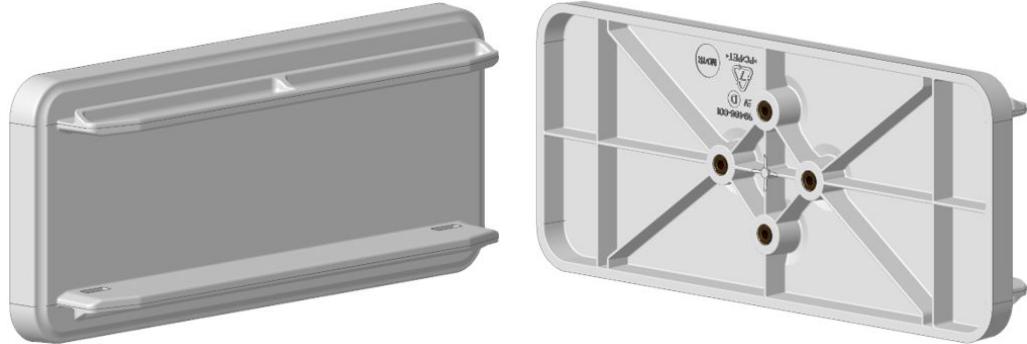
The power supply mounting bracket captures the power supply and allows the power supply to be mounted to an IV pole.

Front and back views.



Mini Dock

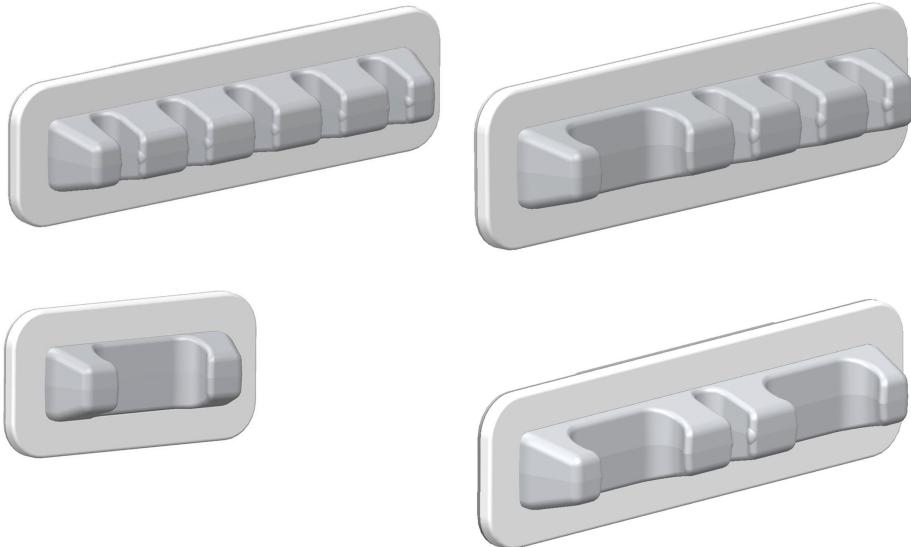
Front and back views.



The Mini Dock is an unpowered mount that allows the docked CARESCAPE ONE to be mounted to a bed rail.

A standard GCX or VESA hole pattern on the back of the Mini Dock supports a bed rail mount.

Parameter Docks

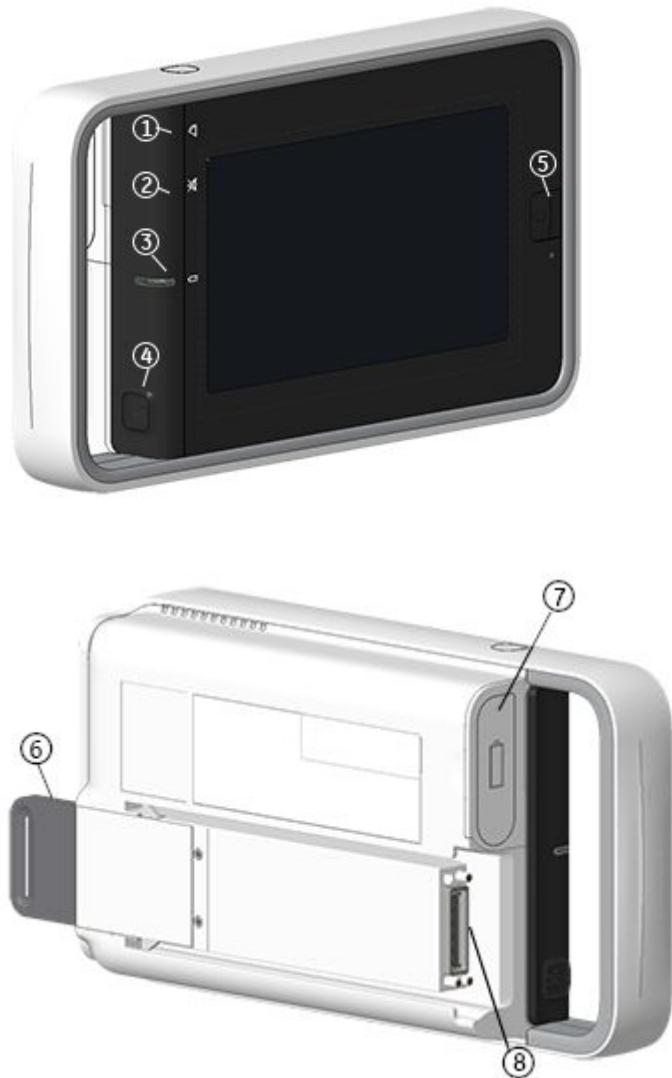


The Parameter Docks provide multiple mounting options for the CARESCAPE Parameters.

The GCX hole pattern located on the back of the Parameter Dock facilitates all mounting options. Refer to the manufacturer instructions included with the mounting hardware.

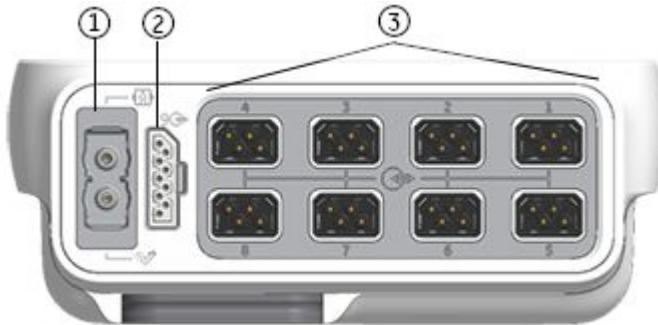
Controls and connectors

CARESCAPE ONE front and back views



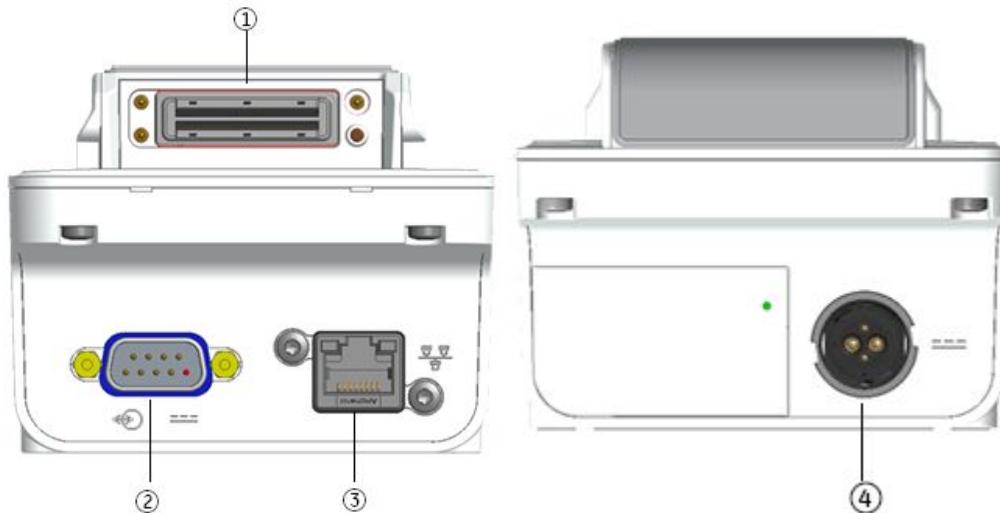
1	Alarm light area (blue, yellow, or red)
2	Audio alarm paused/off indicator (blue)
3	Battery status indicator (yellow or green)
4	Power on/standby button
5	Screen lock/unlock button
6	Pull tab
7	Battery door
8	Docking interface connector to the CARESCAPE Dock F0

CARESCAPE ONE side view



1	NIBP hose connector
2	Analog out / Defibrillator synchronization connector Connect IEC 60601-1 compliant medical devices to this port only.
3	CARESCAPE Parameter connectors

CARESCAPE Dock F0 side views



1	Docking interface connector to the CARESCAPE ONE.
2	ePort connector to the host monitor.
3	RJ-45 connector. The service port is configured for direct connection to a service PC only. Do not connect the service port to a network.
4	Power receptacle for the AC mains to DC power supply.

Indicators

Power status indicator

The on/standby key indicates the power status.

LED	Description
On/standby (yellow) 	The yellow on/standby key should be lit when one of the following occurs: <ul style="list-style-type: none"> • The device is connected to an external power source and the device is turned off. • The device is booting up or is in standby.
On/standby (green) 	The green on/standby key indicates the device is ready for operation.
On/standby (unlit) 	The unlit on/standby key indicates there is no power applied to the device.

Battery status indicator

LED	Description
Yellow	Solid yellow indicates the battery is being charged.
Yellow, blinking once every 1 to 5 seconds	Slow blinking yellow indicates one of the following: <ul style="list-style-type: none"> • The device battery is not present. • A battery is present, but device communication with the battery cannot be established.
Yellow, blinking multiple times per second	Fast blinking yellow indicates the battery charge capacity is less than 60% of the design capacity.
Green and yellow, blinking once every 1 to 5 seconds	Slow blinking green and yellow indicates the battery time to empty is 20 minutes or less.
Green	Solid green indicates the device battery is in use.
Green and yellow, blinking multiple times per second	Fast blinking green and yellow indicates the battery time to empty is 5 minutes or less.

IEC 60601-1

- Type of protection against electrical shock: Class II.
- Degree of protection against electrical shock: applied parts are marked with a symbol indicating degree of protection.
- Degree of safety of application in the presence of flammable anesthetic mixture with air or with oxygen or nitrous oxide: Not suitable.

WARNING

EXPLOSION. Do not use this equipment in the presence of flammable anesthetics, vapors or liquids.

- Mode of operation: Continuous.

IEC 60601-1-2

The system complies with IEC 60601-1-2:2014-02.

According to parameter-specific IEC 60601-2-x series standard requirements for ESU (electrosurgical unit) tests, the equipment is protected against malfunction caused by electrosurgery.

IEC 60529

Degree of protection provided by the enclosure against ingress of solid foreign objects and against ingress of water with harmful effects per IEC 60529.

- CARESCAPE ONE: IP44
- CARESCAPE ECG: IP47
- CARESCAPE Pressure: IP47
- CARESCAPE Temperature: IP47
- CARESCAPE SpO₂: IP47
- CARESCAPE SpO₂ – Masimo: IP47
- CARESCAPE SpO₂ – Nellcor: IP47
- CARESCAPE CO₂ LoFlo Module Assembly: IP24
- CARESCAPE CO₂ enclosure: IP47
- CARESCAPE Dock F0: IP42

Equipment symbols

The following symbols may appear on one or more of the devices.	
	Bell cancel. Audio off.
	General alarm.
	Battery.
	On/standby button.
	Non-invasive blood pressure.
	USB connectors.
 	Ethernet connectors.
	Input/output.

The following symbols may appear on one or more of the devices.	
	Gas inlet.
	Gas outlet.
IPXX	Degree of protection provided by enclosures. Degree of protection provided by the enclosure against the ingress of solid foreign objects and against ingress of water with harmful effects per IEC 60529.
	Do not reuse.
	Use by.
	Latex-free.
	Electrical equipment designed primarily for indoor use.
	Direct current.
	Stacking limit by number (number varies).
	Date of manufacture. This symbol indicates the date of manufacture of this device. The first four digits identify the year, the following two digits identify the month, and the last two digits identify the day.
	Manufacturer address and date of manufacture. The first four digits identify the year, the following two digits identify the month, and the last two digits identify the day.
	Manufacturer name and address.
LOT	Batch or lot number.
lbl p/n	Abbreviation for label part number.
P/N	Abbreviation for product number.
TYPE	Identifies the device type.
REF	Catalogue or orderable part number.
SN	Device serial number.

The following symbols may appear on one or more of the devices.

VER	Device hardware version.
UDI	Every device has a unique marking for identification. The UDI marking appears on the device label.
CARESCAPE ECG	CARESCAPE Parameter for measuring ECG
CARESCAPE PRES	CARESCAPE Parameter for measuring invasive pressures
CARESCAPE TEMP	CARESCAPE Parameter for measuring temperature
CARESCAPE CO₂ -LoFlo	CARESCAPE Parameter for measuring CO ₂ with Resironics LoFlo technology
CARESCAPE SpO₂	CARESCAPE Parameter for measuring SpO ₂ with GE TruSignal technology
CARESCAPE SpO₂ - Masimo	CARESCAPE Parameter for measuring SpO ₂ with Masimo SET technology
CARESCAPE SpO₂ - Nellcor	CARESCAPE Parameter for measuring SpO ₂ with Nellcor Oximax technology
12 kg	Mass of typical portable RGM (respiratory gas monitor) configuration. The indicated mass (12 kg in this example) varies per RGM configuration.
LOCK	Locked. Touchscreen lock key.
hPa	Atmospheric pressure limitations.
+...°C -...°C +...°F -...°F	Temperature limitations.
%	Humidity limitations.
RAIN	Keep dry. Protect from rain.
FRAGILE	Fragile. Handle with care.
UP	This way up.

The following symbols may appear on one or more of the devices.	
	This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.
	Recycled materials or may be recycled.
	Recyclable Lithium-Ion.
	European authorized representative.
	European Union Conformity Mark
	Indicates that the product is certified for both the U.S. and Canadian markets, to the applicable U.S. and Canadian standards. Applies to Medtronic components only.
	Indicates that the product is compliant to North American safety standards. Applies to Masimo components only.
	FCC. USA only. Complies with applicable US government (Federal Communications Commission) radio-frequency interference regulations.
Rx ONLY U.S.	CAUTION U.S. Federal law restricts this device to sale by or on the order of a physician.
	Russia only. GOST-R mark.
	Eurasian Economic Union countries only. Eurasian Conformity mark. Conformity to applicable technical regulations of Customs Union.
	Brazil only. INMETRO certificate.

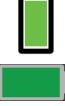
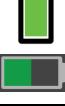
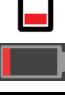
The following symbols may appear on one or more of the devices.

   	<p>The following symbols (required by China law only) are representative of what you may see on your equipment.</p> <p>The number in the symbol indicates the EFUP period in years, as explained below. Check the symbol on your equipment for its EFUP period.</p> <p>This symbol indicates the product contains hazardous materials in excess of the limits established by the Chinese standard GB/T 26572. Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products. The number in the symbol is the Environment-friendly Use Period (EFUP), which indicates the period during which the hazardous substances or elements contained in electronic information products will not leak or mutate under normal operating conditions so that the use of such electronic information products will not result in any severe environmental pollution, any bodily injury or damage to any assets. The unit of the period is "Year".</p> <p>In order to maintain the declared EFUP, the product shall be operated normally according to the instructions and environmental conditions as defined in the product manual, and periodic maintenance schedules specified in Product Maintenance Procedures shall be followed strictly.</p> <p>Consumables or certain parts may have their own label with an EFUP value less than the product. Periodic replacement of those consumables or parts to maintain the declared EFUP shall be done in accordance with the Product Maintenance Procedures. This product must not be disposed of as unsorted municipal waste, and must be collected separately and handled properly after decommissioning.</p> <p>This symbol indicates that this electronic information product does not contain any hazardous substance or elements above the maximum concentration value established by the Chinese standard GB/T 26572, and can be recycled after being discarded, and should not be casually discarded.</p>
	<p>Underwriters Laboratories product certification mark. Applies to GE design components only.</p>
IC	Canada only. Industry Canada certification number indicates that this product meets the applicable Industry Canada technical specifications.
	China only. Chinese Compulsory Certification as required by AQSIQ. Safety & EMC compliance.
	India only. Indian Conformity Assessment Certification granted by the Bureau of Indian Standards.
CMIIT ID	China only. China Ministry of Industry and Information Technology identification number for Radio Transmission Equipment Type Approval.

The following symbols may appear on one or more of the devices.	
	Australia only. The product complies with the applicable Australian standard and establishes a traceable link between the equipment and the manufacturer, importer or their agent responsible for compliance.
	Japan only. The PSE mark (Product Safety Electric Appliance and Materials) is a mandatory mark required on Electrical Appliances in Japan as authorized by the Electrical Appliance and Material Safety Law (DENAN). This mark signifies that a product complies with the law according to a set of standards for electric devices.
	Japan only. Approved under Japan TELEC requirements.
	Brazil only. Approved under ANATEL (Agência Nacional de Telecomunicações) requirements.
	South Africa only. Approved under ICASA (Independent Communications Authority of South Africa) requirements.
	Korea only. Approved under KCC (Korea Communications Commission) requirements.
	Ukraine only. Mark of conformity with the Technical Regulations. This product meets the requirements of the Technical Regulations on medical devices, approved by Resolution No. 753 of the Cabinet of Ministers of Ukraine on October 2nd 2013

User interface indicators

The following indicators appear in the software user interface.	
	Alarm volume adjustment for high and medium priority. Can also be used to adjust low priority alarm volume when high, medium, and low priority alarms are configured in <i>Care Unit Settings</i> to Common for All .
	Alarm volume adjustment for low priority.
	Audio alarms off indicator.
	Audio alarms paused indicator with countdown timer - Indicates all audio alarms are paused and the amount of time remaining for the alarm pause period displays as a countdown timer.
	Alarms audio pause indicator. Indicates that alarm audio pause has been activated.
	Acknowledge alarms indicator. Indicates that the alarm can be acknowledged by touching the alarm message.

The following indicators appear in the software user interface.	
	Low priority audio off alarm indicator.
	General warning sign. Displays when the priority setting deviates from the recommendation of international alarm safety standards.
	Touch indicator.
	Home indicator. Close all menus/applications displayed on the monitor.
	Patient indicator.
	CARESCAPE ONE battery is full indicator.
	CARESCAPE ONE battery indicator (green). The higher the charge, the bigger the green bar within the indicator.
	CARESCAPE ONE battery indicator (yellow). Appears when there is less than 20 minutes of run time left.
	CARESCAPE ONE battery indicator (red). Appears when there is less than 5 minutes of run time left.
	CARESCAPE ONE battery is charging indicator.
	CARESCAPE ONE no battery or battery error indicator.
	Red indicator (blinking): beat source indicator.
	Respiration indicator. Indicates a breath is detected by the impedance respiration algorithm.
	Volume indicator. Adjust the volume of the tone that sounds.

The following indicators appear in the software user interface.	
	Manual NIBP indicator. Start a manual NIBP measurement.
	NIBP Auto cycling indicator.
	Nellcor™ OxiMax™ SatSeconds™ alarm management indicator. Indicates the amount of time the SpO ₂ saturation is outside the limits before alarms are generated.
	SpO ₂ signal strength indicator. Indicates the signal strength, with three asterisks indicating the strongest signal.
0  2 min	Non-invasive blood pressure progress bar indicator. Indicates the amount of time remaining until the next automatic measurement.
*	Required input indicator.
	Normal screen page 1 and page 2 indicators. The left dot indicates page 1 and the right dot indicates page 2. The dot for the page being viewed is illuminated white.

Service requirements

Follow the service requirements listed below.

- Refer servicing of the equipment to qualified service personnel only. Service personnel servicing this product must have an appropriate technical qualification, or equivalent work experience, and be familiar with the service requirements described in this manual and in any related service documentation. Service training for the product is recommended.
- Any unauthorized attempt to repair equipment under warranty voids that warranty.
- It is the user's responsibility to report the need for service to GE or to one of their authorized agents.
- Failure on the part of the responsible individual, hospital, or institution using this equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.
- Regular maintenance, irrespective of usage, is essential to ensure that the equipment will always be functional when required.

WARNING

Do not perform any service activities on the monitor in the patient vicinity while a patient is being connected to the monitor.

CAUTION

DISPOSAL. At the end of its service life, the product described in this manual, as well as its accessories, must be disposed of in compliance with the guidelines regulating the disposal of each product. If you have any questions concerning disposal of a product, please contact GE or its representatives.

Masimo SpO₂ safety precaution

CAUTION

Disposal of product. Comply with local laws in the disposal of the instrument and/or its accessories.

Unique Device Identifier (UDI)

UDI  (01) 1234567891234(21) SJN14241237HA(11) 150628	<p>Unique Device Identifier. (UDI) Every medical device has a unique marking for identification. The UDI marking appears on the device labeling. Note that this is only an example of a UDI marking. The device may have a linear barcode as in this example, or a DataMatrix code, or only alphanumeric identifiers with no barcode. Also the identifiers vary per product.</p>
--	--

The characters used in the UDI marking represent specific identifiers. In the example above:

Device identifiers:

- (01) = GS1 global trade item number (GTIN) of the device.
- 1234567891234 = Global trade item number.

Production identifiers:

- (21) = GS1 application identifier for the serial number of the device.
- SJN14241237HA = Serial number.
- (11) = GS1 application identifier for the manufacturing date of the device.
- 150628 = Manufacturing date: year,month,day (YYMMDD).

Note that for some product types the production identifiers can have other elements instead of the ones listed above:

- (10) = GS1 application identifier for the batch or lot number, followed by the batch or lot number.
- (17) = GS1 application identifier for the expiration date of the device, followed by the expiration date.

In addition to the UDI marking, also note the following:

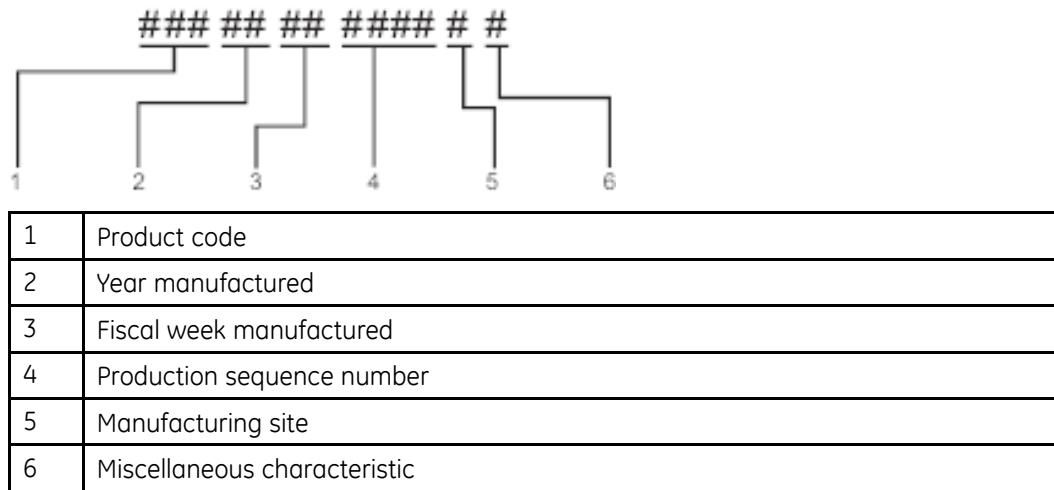
 2008-06-13	Date of manufacturing. This symbol indicates the date of manufacturing of the device. The first four digits identify the year, the following two digits identify the month, and the last two digits identify the day.
---	---

Equipment identification

Every GE device has a unique serial number for identification. The serial number is written in a device label.

The product code for the CARESCAPE ONE is SNA.

The product code for the CARESCAPE Dock F0 is SNB



Product security

Access control

The clinical user interface and service interface have a role-based access control (for example, **biomed** and **clinical**), with a fixed set of user names. A user with the required access rights may log into these interfaces (for example, the service interface) to perform operations that are limited to the generic user. It is not possible to add, remove, or change user names.

The monitor does not provide any other access, apart from the clinical user interface, service interface, and GE remote service platform.

Service interface sessions have a fixed inactivity timeout of 15 minutes. Clinical user interface authenticated sessions do not time out.

User accounts

The following table lists the available user names for accessing the clinical configuration, demo mode, service interface, and service calibrations:

User name	Access rights
biomed	Use this user account to access service interface and service calibrations: <ul style="list-style-type: none"> • Monitor Setup > Defaults & Service > Service • Monitor Setup > Defaults & Service > Service Calibrations
clinical	Use this user account to access password protected clinical configurations: <ul style="list-style-type: none"> • Monitor Setup > Defaults & Service > Default Setup See the user manual and supplemental information provided for more information.

User name	Access rights
demomode	Use this user account to access demo mode. See the user manual and supplemental information provided for more information.
service	GE service uses this user account to access service interface and service calibrations.

Authentication

In the clinical user interface and service interface, there are certain features that require user authentication. To access these features, the user must log into the interface with a valid username and password. Two-factor, biometric, or centralized authentication is not supported.

It is strongly recommended that you change the default passwords before taking the monitor into clinical use. All the default passwords can be changed by the user.

To improve the security of remote access to the service interface, the responsible organization can:

- create a certificate signing request (CSR)
- install the security certificate (from a trusted certificate authority) on the monitor

For more information, see the Certificate management section.

Authorization

Authorization is the process of granting and revoking access to information, and is another key element in an access control system. Although primarily an administrative process that is driven by an organization's policies and procedures, the monitor contains features that help implement and enforce the organization's method. Both the clinical user interface and the service interface have an authorization mechanism to provide information to the user.

Audit

The ability to record and examine system activity is crucial to a successful information security program, as well as a regulatory requirement in most environments. The monitor logs certain user actions and system events. The following logs are produced:

- Logs collected from attached devices (EMBC, PDM)
- Logs produced by the monitor's operating system and its daemons
- Clinical application log
- Log of the service interface web server

The logs produced by the clinical applications and the service interface web server contain information about successful and unsuccessful login attempts to the corresponding applications.

Logs are rotated, so that the older logs are erased when the disk partition is close to being full. Service users can view and download logs by logging into the service interface and selecting **Diagnostics**. For more information, see the Troubleshooting chapter. Only GE service personnel can clean logs.

Network traffic protection

When mounted to the CARESCAPE Dock F0, the CARESCAPE ONE provides a fixed IP address (<https://192.168.1.1>) for web server connection with a service PC and access the service interface. An Ethernet connection between the CARESCAPE Dock F0 and the service PC is required. There is no other network functionality.

To ensure secure communication, the traffic on the service interface is directed to the HTTPS port 443 and encrypted by TLS v1.2. By factory default, the monitor uses a self-signed certificate, that is unique to each device and is issued by GE for all service interface traffic. To improve access security, the user can install a certificate that is issued and signed by a trusted certificate authority.

Malicious software protection

The following product features protect the monitor against malicious software:

- Device design and configuration (hardening)
The monitor has been hardened through the removal of any user access besides the dedicated clinical and service functionality. The monitor's operating system does not have any generic components that are not explicitly needed.
- Security updates and patching processes
Security updates and patches cannot be applied to the CARESCAPE product without going through GE's vigorous software verification and validation process. Any software update needs will be communicated by GE.

NOTE

To provide seamless real-time patient monitoring, the monitor does not have antivirus software.

4

Using service applications

Using the service applications

This chapter introduces the service interface.

Local access with a service PC

- Service interface



Service PC

CARESCAPE ONE mounted to a CARESCAPE Dock F0

Service interface

With the service interface you can:

- Configure the platform settings of the monitor.
- Transfer settings from one monitor to another.
- Install software and software licenses.
- Retrieve system information for maintenance and troubleshooting, and access service log files.

You can access the service interface locally through a configured service PC.

For more information on platform configuration, software and license management, and settings transfer, see the Configuration chapter. For information on accessing system and configuration information, troubleshooting tools, and service log files, see the Troubleshooting chapter.

User accounts and passwords for service applications

This manual instructs you to access the service applications using the **biomed** user account and default password **Change Me**. GE recommends the responsible organization to change the default passwords for all user accounts at the time of the installation. The default passwords are provided in this manual and therefore pose a security risk if they are not changed.

Refer to the following sections in the Configuration chapter for more information on passwords:

- User accounts and passwords
- Changing passwords
- Resetting passwords

Accessing the service interface with a service PC

Service PC network settings

The service PC must be in the same subnet with the monitor and have a unique IP address. Note that the monitor uses a fixed IP address (192.168.1.1) and subnet mask (255.255.255.0).

- Configure the service PC to operate in the same subnet with the target monitor. For example, configure the service PC as follows:
 - IP address: 192.168.1.2
 - Subnet mask: 255.255.255.0

For more information on configuring the network settings on the service PC, refer to the PC's documentation.

Supported web browsers in service PC

The service interface has been verified to operate correctly with the following web browsers:

- Microsoft Internet Explorer version 11
- Google Chrome version 67
- Mozilla Firefox version 52

NOTE

Newer web browser versions, which have TLS 1.2 enabled, may also operate correctly with the service interface, but this has not been verified by GE.

Secure access with service PC

The service interface uses the https protocol for secure communications between the monitor and the service PC. If a certificate recognized by the web browser running in the service PC is not installed into the monitor (web server), the web browser in the service PC will report about a certificate error and/or insecure network connection. The message shown depends on the web browser being used. The web browsers typically allow you to ignore the certificate errors and continue accessing the monitor.

By factory default, the monitor has a self-signed certificate installed by GE. To improve access security, GE recommends the responsible organization to install a valid security certificate issued by a trusted certificate authority to all the monitors. For more information, see the Certificate management section.

Accessing the service interface locally with a service PC

You can access the service interface locally with a direct cable connection to a service PC.

WARNING	Non-medical equipment does not provide the same level of protection against electrical shock. Do not touch the patient and any part of non-medical equipment at the same time. Some examples of non-medical equipment are laser printers and non-medical computers.
WARNING	EXCESSIVE LEAKAGE CURRENT. Connect only certified UL 60950/IEC 60950 equipment to the CARESCAPE Dock F0 RJ-45 connection.
NOTE	Do not connect the CARESCAPE Dock F0 to a network. The CARESCAPE Dock F0 RJ-45 connector is configured for direct connection to a service PC only. The CARESCAPE ONE has a fixed IP address (192.168.1.1). If the CARESCAPE Dock F0 is connected to a network, an IP address conflict may occur with another device on the network with the same IP address.

Tools needed:

- a service PC
 - an Ethernet cable
 - a CARESCAPE Dock F0
1. Connect the CARESCAPE Dock F0 power supply to an AC power source.
 2. Mount the monitor to the CARESCAPE Dock F0.
 3. Connect the service PC to the CARESCAPE Dock F0 RJ-45 connector with an Ethernet cable.
 4. Configure the service PC to operate in the same subnetwork with the monitor. For more information, see the Service PC network settings section.
 5. Launch a web browser on the service PC.
 6. In the address field of the web browser, type ***https://192.168.1.1*** and press **Enter**.

Note that every CARESCAPE ONE uses the same fixed IP address, **192.168.1.1**.

If the web browser displays a message informing you that your network connection is not private or secure, use the browser to proceed to the unsecured IP address **192.168.1.1**. Note that the message displayed and how you would proceed to the IP address depends on the web browser being used.

7. Type your username and password, and select **Log in**.

NOTE

Username and password are case sensitive.

Username:

biomed

Password:

Change<space>Me

The service interface opens.

5

Pre-installation requirements

Unpacking

WARNING

EXCESSIVE LEAKAGE CURRENT. If the device has been transported or stored outside operating temperature range allow it to stabilize back to operating temperature range before removing it from the plastic bag and connecting it to the power line.

CAUTION

PACKAGING DISPOSAL. Dispose of the packaging material, observing the applicable waste control regulations.

1. Confirm that the packing box is undamaged. If the box is damaged, contact the shipper.
2. Open the top of the box and carefully unpack all components.
3. Confirm that all components are undamaged. If any of the components is damaged, contact the shipper.
4. Confirm that all components are included. If any of the components is missing, contact your GE distributor.

Pre-installation checklist

Before you start installing a monitor ensure the following:

- All the system components are compatible.
- Mounting solutions are properly installed.
- The installation site meets power and environmental requirements.

System compatibility

WARNING

BEFORE INSTALLATION. Compatibility is critical to safe and effective use of this device. Verify the compatibility of all system components and device interfaces, including hardware and software versions, prior to installation and use.

WARNING	Do not use identical measurement devices or measurement devices that map a measurement to the same channel or parameter window. If such measurement devices have been connected, remove the measurement device that has been most recently connected. You can also remove both measurement devices and reconnect the new measurement device after five seconds.
WARNING	INTERFACING OTHER EQUIPMENT. Connect only items that are specified as part of the system and as compatible. For more information, see the supplemental information provided.
WARNING	For detailed instructions and information regarding supplies and accessories, always refer to their own instructions for use.
WARNING	Before connecting an interfacing module to the device, verify compatibility. Verify the connectivity of device interfaces before using the equipment. Verify the compatibility of software versions before using the equipment.
WARNING	The operator is responsible for checking the compatibility of the device, sensor, and patient cable prior to use. Incompatible components can result in degraded performance and/or device malfunction.

Check the compatibility of all the system components before installing the monitor.

For a list of the compatible devices, supplies and accessories, see the supplemental information provided.

Refer to the supplemental information provided with the monitor for a list of compatible devices, including measurement devices, supplies and accessories, and mounts.

Mounting solutions

WARNING	Use only manufacturer specified mounts.
----------------	---

GE devices provide reliable mounting attachments to the mounts listed in the supplemental information provided. Follow mount manufacturer instructions for installation and loading.

Before installing the following system components, ensure that all the needed mounting hardware is properly installed:

- CARESCAPE ONE
- CARESCAPE Dock F0
- CARESCAPE Parameters

Power and environmental requirements

Refer to the user manual for power and environmental requirements.

Power requirements

Ensure that the electrical installation of the relevant room complies with the requirements of the appropriate regulations.

The installation site shall have hospital-grade grounded power outlets and power cords for all system components.

Environmental requirements

WARNING

INACCURATE RESULTS. Do not use or store the equipment outside the specified temperature, humidity, or altitude ranges, or outside the specified performance range. Using or storing the equipment outside of the specified operating environment or outside the specified performance range may cause inaccurate results.

Install the monitor to a location that meets the specified environmental requirements of operating temperature, humidity and atmospheric pressure.

Place each device in a location with sufficient ventilation. Observe the ventilation openings of a device and make sure not to obstruct them.

Electromagnetic compatibility safety precautions

WARNING

Do not use the device in high electromagnetic fields (for example, during magnetic resonance imaging).

WARNING

The use of accessories, transducers and cables other than those specified may result in increased emissions or decreased immunity performance of the equipment or system.

WARNING

Other equipment may interfere with the system, even if that other equipment complies with CISPR emission requirements.

WARNING

EMC. Magnetic and electrical fields are capable of interfering with the proper performance of the device. For this reason make sure that all external devices operated in the vicinity of the monitor comply with the relevant EMC requirements. X-ray equipment or MRI devices are a possible source of interference as they may emit higher levels of electromagnetic radiation. Changes or modifications to this device/system not expressly approved by GE may cause EMC issues with this or other equipment. This device/system is designed and tested to comply with applicable standards and regulations regarding EMC and needs to be installed and put into service according to the EMC information stated as follows: This device/system is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. Mains power should be that of a typical commercial or hospital environment. Device is compliant to Class A.

WARNING

DEGRADED PERFORMANCE. Do not use portable RF communications equipment (including peripherals such as antenna cables and external antennas) closer than 30 cm (12 inches) to any part of this device/system, including cables specified by the manufacturer. Otherwise, the performance of this device/system may degrade.

- CAUTION** Use of known RF sources, such as cell/portable phones, RFID, electronic article surveillance (EAS) systems, diathermy, or other radio frequency (RF) emitting equipment near the system may cause unexpected or adverse operation of this device/system. Consult qualified personnel regarding device/system configuration.
- CAUTION** Changes or modifications to this device/system not expressly approved by GE may cause EMC issues with this or other equipment.

Ensure that the monitor is isolated from sources of strong electromagnetic and radio frequency interference. Refer to the user manual for more information.

Masimo SpO₂ safety precautions

- CAUTION** Do not place the pulse co-oximeter on electrical equipment that may affect the instrument, preventing it from working properly.
- CAUTION** To minimize radio interference, other electrical equipment that emits radio frequency transmissions should not be in close proximity to the pulse co-oximeter.

6

Hardware installation

Hardware installation

WARNING	SITE REQUIREMENTS. Do not route cables or tubing in a way that they may present a stumbling hazard.
WARNING	EXPLOSION. Do not use this system in the presence of flammable anesthetics, vapors or liquids.
WARNING	After transferring or reinstalling the device, always check that it is properly connected and all parts are securely attached.
WARNING	The acquisition modules are not able to withstand unpacked drops from a height of 1 m without damage. If a module is dropped, please service it before taking it back into use.
CAUTION	LOSS OF MONITORING. Leave space for circulation of air to prevent the device from overheating. The manufacturer is not responsible for damage to device caused by improperly vented cabinets, improper or faulty power, or insufficient wall strength to support device mounted on such walls.

Masimo SpO₂ safety precautions

WARNING	Do not place the pulse co-oximeter or accessories in a any position that might cause it to fall on the patient.
WARNING	To ensure safety, avoid stacking multiple devices or placing anything on the instrument during operation.
WARNING	Explosion hazard: Do not use the pulse co-oximeter in the presence of flammable anesthetics or other flammable substance in combination with air, oxygen-enriched environments, or nitrous oxide.

CAUTION	ELECTRICAL SHOCK HAZARD. Carry out periodic tests to verify that leakage currents of patient-applied circuits and the system are within acceptable limits as specified by the applicable safety standards. The summation of leakage currents must be checked and in compliance with IEC 60601-1 and UL60601-1. The system leakage current must be checked when connecting external equipment to the system. When an event such as the component drop of approximately 1 meter or greater or a spillage of blood or other liquids occurs, retest before further use. Injury to personnel could occur.
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Installing batteries

WARNING	EXPLOSION OR FIRE. Using non-recommended batteries could result in injury/burns to the patients or users. Only use batteries recommended or manufactured by GE. The warranty can be voided if non-recommended batteries are used.
WARNING	PHYSICAL INJURY. Do not install the device above a patient. Make sure the battery is completely inserted and the battery door is completely closed. Falling batteries could seriously or fatally injure neonatal or other vulnerable patients.
WARNING	EXPLOSION HAZARD. Do not incinerate a battery or store at high temperatures. Serious injury or death could result.
WARNING	The battery is replaceable. Periodically check the battery and replace when necessary.

Batteries must be installed and fully charged prior to taking into use.

Testing the battery charge

Before installing a battery, verify the battery's state of charge. Each battery must be fully charged before use.

1. Press the **TEST** button on the battery and check the green charging level indicators to see how much charge is left:
 - Four LEDs illuminated: 75% to 100% of full-charge capacity.
 - Three LEDs illuminated: 50% to 74.9% of full-charge capacity.
 - Two LEDs illuminated: 25% to 49.9% of full-charge capacity.
 - One LED illuminated: 11% to 24.9% of full-charge capacity.
 - One LED flashing: < 11% of full-charge capacity.

Inserting and removing the CARESCAPE ONE battery

WARNING	EXPLOSION OR FIRE. Using non-recommended batteries could result in injury/burns to the patients or users. Only use batteries recommended or manufactured by GE. The warranty can be voided if non-recommended batteries are used.
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WARNING

PHYSICAL INJURY. Do not install the device above a patient. Make sure the battery is completely inserted and the battery door is completely closed. Falling batteries could seriously or fatally injure neonatal or other vulnerable patients.

WARNING

PHYSICAL INJURY. Do not install the device above a patient. Leaks from the battery cells can occur under extreme conditions. The liquid is caustic to the eyes and skin. If the liquid comes in contact with eyes or skin, flush with clean water and seek medical attention.

1. To insert a battery:
 - a. Open the battery door by gently peeling down the corner of the battery door pull tab.



- b. Position the battery with the connector end facing towards the battery slot and insert the battery all the way into the battery slot.



- c. Close the battery door. Ensure that the battery door tightly seals the battery into the battery slot.

2. To remove a battery:
 - a. Open the battery door by gently pulling on the battery door pull tab.
 - b. Pull on the battery cord to remove the battery from the battery slot.



Checking the battery charge with the software

You can check the battery charge status using the monitor software:

1. Select the battery status area in the upper right corner of the screen, or select **Monitor Setup > Battery Status**.
2. Check the **Estimated time remaining** for the battery to empty or the **Charging – time to full** battery charge status.
3. If you wish to see more detailed battery information, select the **Advanced** tab and pages.

Installing the CARESCAPE Dock F0

WARNING

Never install equipment above the patient.

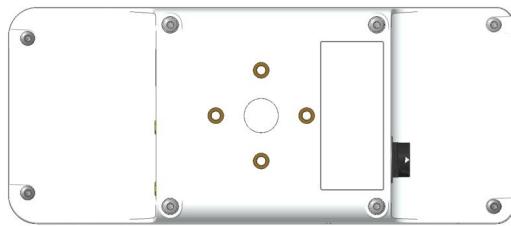
WARNING

Use only manufacturer specified mounts.

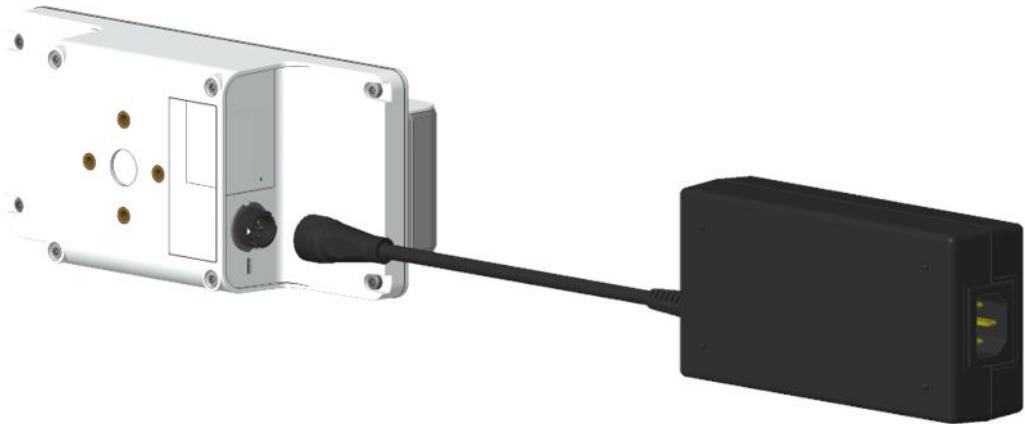
WARNING

The device/system should not be used adjacent to, or stacked with, other equipment. Consult qualified personnel regarding device/system configuration.

The CARESCAPE Dock F0 has a standard GCX hole pattern. This facilitates all mounting options for the CARESCAPE Dock F0. Refer to the manufacturer instructions included with the mounting hardware.



1. Install the CARESCAPE Dock F0 to the mounting hardware according to the manufacturer instructions included with the mounting hardware.
2. Aligning the two arrows, connect the AC mains to DC power supply to the CARESCAPE F0 Dock power receptacle and to a wall outlet.



Mounting the CARESCAPE Dock F0 power supply

The power supply bracket may be mounted to a roll stand or on a wall in a horizontal or vertical position.

1. Check that a wall outlet located near where you will mount the CARESCAPE Dock F0 power supply bracket.
2. Install the mounting hardware for the CARESCAPE Dock F0 power supply bracket and the power supply according to the manufacturer instructions included with the mounting hardware.
3. Install the power cable into the power supply.
4. Connect the power cable to an AC power source.

Mounting the CARESCAPE ONE

WARNING

PHYSICAL INJURY. Take care when mounting devices to an IV pole. If a device is mounted too high the IV pole may become unbalanced and tip over.

WARNING

Never install equipment above the patient.

WARNING

Use only manufacturer specified mounts.

WARNING

The device/system should not be used adjacent to, or stacked with, other equipment. Consult qualified personnel regarding device/system configuration.

The CARESCAPE ONE has an integrated slide mount for mounting onto the CARESCAPE DOCK F0 or the Mini Dock. The docks facilitate all mounting options for the CARESCAPE ONE. Refer to the supplemental information provided to identify compatible mounting hardware options.

1. Align the CARESCAPE ONE with the dock rails.
2. Push the CARESCAPE ONE into the dock until it stops.



CARESCAPE Parameter assembly

Before installation, the following CARESCAPE Parameters may require minor assembly:

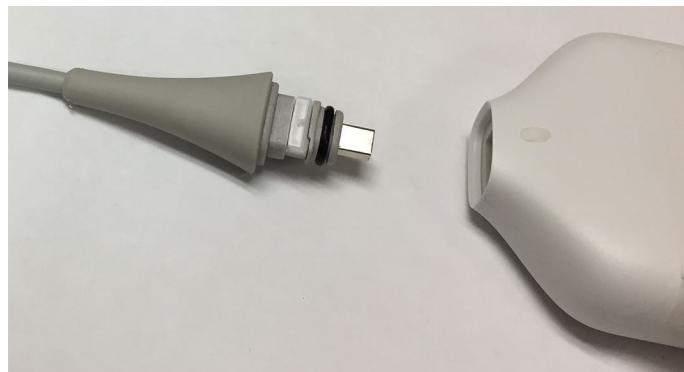
- CARESCAPE ECG
- CARESCAPE SpO₂ — Masimo
- CARESCAPE Pressure
- CARESCAPE Temperature

Installing the USB patient cable

1. Ensure the USB patient cable O-ring is seated in the groove as shown.



2. Insert the USB patient cable into the connector opening until the USB patient cable locks into place.



Installing CARESCAPE Parameters

1. Refer to the supplemental information provided to verify compatible CARESCAPE Parameters.
2. Refer to the user manual to identify CARESCAPE Parameters with identical measurements.
3. Connect the CARESCAPE Parameter to any unused CARESCAPE ONE Parameter connector and check that the connection is secure.

WARNING

PARTIAL LOSS OF PARAMETERS. To prevent partial loss of parameters, do not route patient cables with the AC mains power cord or ePort cable. Doing so may affect acquisition of parameter data.

Mounting the LoFlo Sidestream Module

The mounting bracket keeps the module in the proper operating position.

1. Insert the LoFlo Sidestream Module into the mounting bracket and check that the LoFlo Sidestream Module is secure.

2. Use the bracket clip to attach the mounting bracket to an IV pole or bed rail.



Connecting CARESCAPE CO₂ to an anesthesia cart exhaust circuit

The gas exhaust may be scavenged using a length of tubing inserted into the exhaust port. Follow the steps below to properly connect the LoFlo Sidestream Module to an anesthesia cart exhaust circuit.

1. Connect an appropriate length of 0.32 cm (1/8 in) diameter tubing into the LoFlo Sidestream Module exhaust port. Make sure the tubing is captured by the barbed fitting inside the exhaust port.
2. Route the tubing into a gas scavenging system.
3. Drape the exhaust line so that it does not obstruct the work area.

Connecting to the mains power

WARNING

Use only AC power cords recommended or manufactured by GE.

WARNING	EXCESSIVE LEAKAGE CURRENT - To avoid summation of leakage currents when interfacing the device with other equipment, the devices may only be interconnected with each other or to parts of the system when it has been determined by qualified biomedical personnel that there is no danger to the patient, the operator, or the environment as a result. In those instances where there is any element of doubt concerning the safety of the connected devices, the user must contact the manufacturers concerned (or other informed experts) for proper use. In all cases, safe and proper operation should be verified with the applicable manufacturer's instructions for use, and system standards IEC60601-1 must be complied with.
WARNING	Do not under any circumstances remove the grounding conductor from the power plug. Always check that power cord and plug are intact and undamaged.
WARNING	EXCESSIVE LEAKAGE CURRENT. Do not use a multiple socket outlet or extension cord in an ME system.
CAUTION	POWER REQUIREMENTS. Before connecting the device to the power line, check that the voltage and frequency ratings of the power line are the same as those indicated on the device's label. If this is not the case, do not connect the system to the power line until you adjust the device to match the power source. In U.S.A., if the installation of this equipment will use 240V rather than 120V, the source must be a center-tapped, 240V, single-phase circuit. This equipment is suitable for connection to public mains as defined in CISPR 11.
<ol style="list-style-type: none">1. Connect the power cord to the mains power supply inlet and to a wall outlet on all system components that require AC main power input, including the CARESCAPE Dock F0. Note that the third conductor in the power supply cord is only a functional earth.2. Do not power on any devices.3. Secure all power cords by routing through the retaining clips or cable clamps, as applicable.	

Masimo SpO₂ safety precaution

CAUTION	The instrument must be configured to match your local power line frequency to allow for the cancellation of noise introduced by fluorescent lights and other sources.
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7

Configuration

Platform configuration

The configuration of a monitor consists of platform configuration and clinical configuration.

This chapter describes:

- The platform configuration needed before taking the monitor into use for the first time.
- The configuration tasks needed for administration and maintenance.

For information on how to perform the clinical configuration, including care unit settings and user profiles, refer to the user manual.

Configuring date and time

1. Log in to the service interface.
2. Select **Configuration > Time**.
The **Time Configuration** window displays.
3. **Clock type**, select the type from the drop-down list:
 - a. Select either **12 Hours** or **24 Hours**.
 - b. Select **Save**.
4. **Configure Date and Time**, enter the local date and time:
 - a. To automatically fill in the current date and time, select the **Fill with current monitor time** button.
The current date and time will be filled into the data fields.
 - b. To manually enter the date and the time, enter the following information:
 - **Date**: use **YYYY-MM-DD** date format.
 - **Time**: use **HH:MM:SS** time format.
 - **AM/PM**: This applies when the clock type is set to **12 Hours**.
 - c. Select **Save**.

The manual time configuration takes effect immediately.

Setting power frequency

WARNING Incorrect power line frequency setting could adversely affect ECG processing.

1. Log in to the service interface.
2. Select **Configuration > Power Frequency**.
3. Select the applicable power line frequency.
4. Select **Save**.

The change will take effect immediately.

Selecting language and locale

Select the language used in the clinical interface.

1. Log in to the service interface.
2. Select the **Configuration** tab.
3. Select **Language Settings**.
4. Select the monitor language from the drop-down list and select **Save**.

NOTE Configuring **Keyboard Locale** is not applicable to the monitor.

The change will take effect immediately.

Configuring modules

You can configure some CARESCAPE Parameter settings via the service interface. These settings are saved to the permanent memory of the connected CARESCAPE Parameter and the settings travel with the CARESCAPE Parameter from one monitor to another.

Configuring the ECG Filter

The ECG filter is always enabled. The ECG filter can be temporarily disabled, but it will always default to **Enabled** after a power cycle or reboot.

CAUTION Do not disable **ECG Filter** during clinical use.

1. Log in to the service interface.
2. Select **Configuration > Modules**.
3. Under **ECG Filter Configuration**, select **Disable ECG filter**.
4. Select **Save**.

Configuring host asset settings

Configuring host asset number

The asset number is an optional, user-assigned unique identifier for the monitor. This identifier can be up to 32 ASCII characters long.

1. Log in to the service interface.
 2. Select **Configuration > Host Asset Settings**.
- The current value for the asset number, if available, is shown below the **Current value**.
3. Enter the new value into the **Change value to** field.
 4. Select **Save**.

The change will take effect immediately.

Configuring serial number

A serial number is a unique, manufacturer-assigned identifier for the monitor. The serial number is printed to the device label and/or UDI label of the monitor. The monitor serial number is also shown in the service interface and stored to the main board.

If the main board is replaced, the original serial number will be lost, and it needs to be re-entered manually to ensure correct operation of the monitor. The serial number of the replacement main board is set to factory default "SED08349999GP".

There are two options to re-enter the serial number:

1. If the current value of the serial number is set to factory default, you can enter the new serial number without a serial number reset key and save it.
2. If the current value of the serial number is set to something other than the factory default, you need to contact your local GE representative and request a serial number reset key. When requesting for the serial number reset key, provide the original printed serial number from the device label, the MAC address that is displayed on the service interface login screen, and the reason for the request. The serial number reset key you will receive back consists of a **Password** and an **Expiration date**.

NOTE

The created serial number reset key is monitor specific, and it is valid for 5 days.

1. Log in to the service interface.
 2. Select **Configuration > Host Asset Settings**.
- The **Current value** for the serial number is shown in the **Serial Number** area.
3. Enter a new value into the **Change value to** field. Check the correct serial number of the monitor from the device label.
 4. If needed, enter the **Expiration date** you received for the serial number reset.
 5. If needed, enter the **Password** you received for the serial number reset.
 6. Select **Save**.

The change will take effect immediately.

Password management

User accounts and passwords

The following table lists the available user names and default passwords for accessing the clinical configuration, service interface, and service calibrations:

User name	Default password	Access rights	Password change
<i>biomed</i>	<i>Change Me</i>	Use this user account to access service interface and service calibrations: <ul style="list-style-type: none"> • <i>Monitor Setup > Defaults & Service > Service</i> • <i>Monitor Setup > Defaults & Service > Service Calibrations</i> 	Password change in service interface is possible for the following user accounts: <ul style="list-style-type: none"> • <i>biomed</i> • <i>clinical</i>
<i>clinical</i>	<i>Change Me</i>	Use this user account to access password protected clinical configurations: <ul style="list-style-type: none"> • <i>Monitor Setup > Defaults & Service > Default Setup</i> See the user manual and supplemental information provided for more information.	Clinical user can change the default password for the <i>clinical</i> user account in the clinical interface: <ul style="list-style-type: none"> • <i>Monitor Setup > Defaults & Service > Default Setup</i>

For information on passwords related to other user accounts, contact GE service.

Changing passwords

GE recommends that you change the default passwords for all user accounts at the time of installation.

WARNING

Change the default passwords at the time of installation, and periodically thereafter. Use strong passwords. Do not store the passwords in insecure manner or share them with unauthorized persons. Failure to do so may compromise patient safety, privacy and security and/or system performance.

NOTE

The username and password are case sensitive. Use only letters A to Z, or a to z, numbers from 0 to 9, and space. The password may be between 8 and 16 characters long.

1. Log in to the service interface.
2. Select **Configuration > Passwords**.

The user accounts for which you can change the password are shown on the screen.

3. Depending on the password you want to change:
 - To change the **biomed** password:
 - i. In the **Change Password** area, re-enter the **biomed** password in the **Current Password** field.
 - ii. In the **New Password** field, provide a new password for the **biomed** user account.
 - iii. In the **Confirm password** field, re-enter the new password.
 - iv. Select **Save**.
 - To change the **clinical** password:
 - i. In the **Change Password for clinical** area, re-enter the **biomed** password in the **Your Password** field.
 - ii. In the **New Password** field, provide a new password for the **clinical** user account.
 - iii. In the **Confirm password** field, re-enter the new password.
 - iv. Select **Save**.

The change will take effect immediately.

Resetting passwords

If the valid password for the **biomed** user account is forgotten, contact your local GE representative to request a password reset key.

Provide the following information when requesting a password reset key:

- Serial Number of the monitor.
- The user account for which the password reset key is needed for.

NOTE

The created reset key will be monitor and user account specific, and valid for 90 days. If you need password reset keys for several monitors and/or user accounts, provide the requested information for all affected monitors / user accounts.

Once you have received the password reset key:

1. Go to the service interface login screen.
2. Select **Forgot password?**.
3. Enter the **Username** for the **biomed** user account.
4. Enter a new password to the **New Password** field.
5. Confirm the new password to the **Confirm Password** field.
6. Enter the received **Activation Code** to the **Reset Key** field.
7. Enter the received **Expiration Date** for the reset key in format YYYY-MM-DD.
8. Select **Reset Password**.

The new password for the user account is now valid. Try to log into the account with the new password.

Restarting the monitor

You can use the Restart function in the service interface to restart the monitor after making configuration changes that require a manual restart before the changed setting come into effect. For example, after changing language settings, or adding activation codes for licenses.

NOTE

Loss of monitoring - This function is enabled only when the monitor is in a discharged state. Before restarting the monitor, verify that the patient is discharged from the monitor.

1. Log in to the service interface.
2. Select **Configuration > Restart**.
3. Select the **Restart** button.

The monitor will shut down and restart automatically.

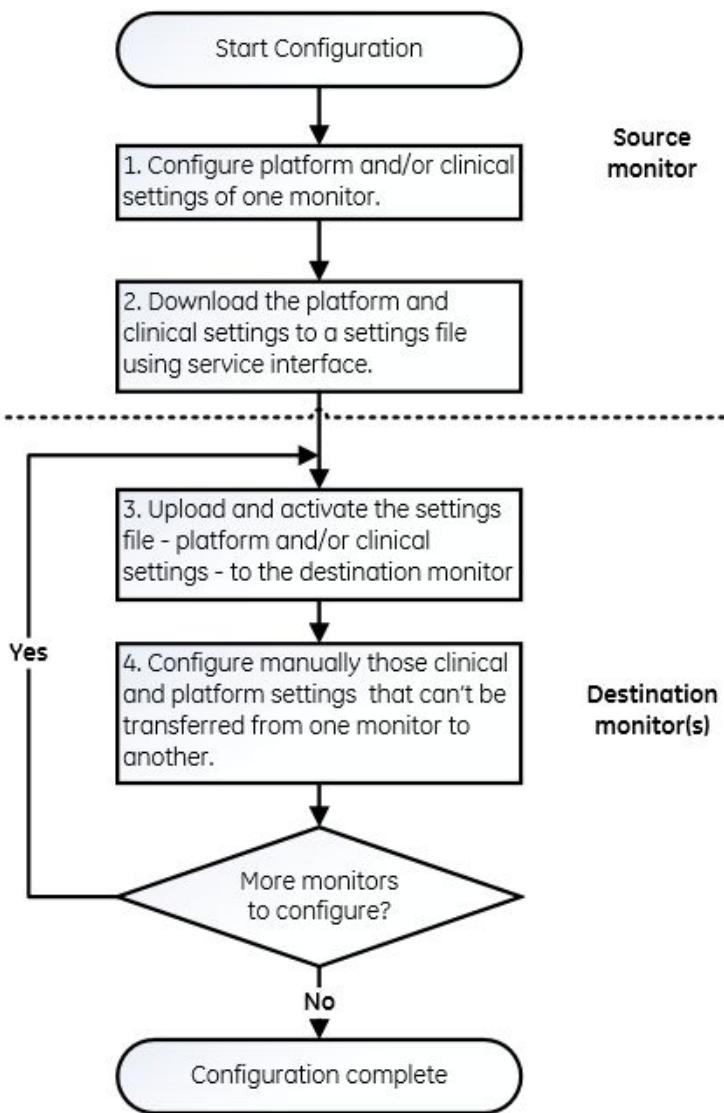
Settings management

This section explains how to:

- Transfer the clinical and/or platform settings configured for one monitor to other similar monitors.
- Reset the clinical and/or platform settings configured for one monitor back to factory defaults.

Settings transfer process

To simplify the installation process for several monitors, you can configure the clinical and/or platform settings manually for one monitor (source monitor) and then transfer the monitor settings to other similar monitors (destination monitors). This figure provides an overview of the settings transfer process.



1. Use the clinical and service interfaces to complete the platform and/or clinical configuration for one source monitor. Note that:
 - Clinical settings cover both care unit settings and profile settings.
 - Many of the clinical settings are either software package and/or profile specific. Ensure that you have completed the clinical configuration for all applicable software packages and profiles in the source monitor and saved the settings to the profiles before proceeding.
2. Use the service interface to download the platform and clinical settings of the source monitor to a settings file.
 - The downloaded settings file will be encrypted using 7-Zip open-source file archiver (<http://7-zip.org/>) and have a file extension .7z. The file name contains the source monitor serial number followed by the date and time of the download. For example: SNA16060035SP_20170720_163709.7z
3. Use the service interface to upload and activate the platform and/or clinical settings in the destination monitor.

4. Configure manually those clinical and/or platform settings that cannot be transferred from one monitor to another.
 - The following platform settings are unique to each monitor and must be configured manually:
 - host asset settings
 - Clinical settings may differ between CARESCAPE software versions. A new software version may have new or changed features that may affect some settings. These new or changed settings will remain in factory defaults in the destination monitor after the settings are transferred from a source monitor with an older software version.
5. Repeat steps 3 and 4 for each monitor that you wish to configure.

Downloading clinical and platform settings

Download the platform and clinical settings of the source monitor to a settings file.

NOTE

For security reasons, the contents of the settings file are encrypted with a user-selectable password. Store the password in a secure way. You will need the password for uploading the settings file to the destination monitors.

1. Log in to the service interface.
2. Select **Configuration > Settings > Download**.
3. Provide a password for encrypting the settings file.
4. Download and save the settings file to any storage device connected to the service PC:
 - a. Select **Download**.
 - b. Save the settings file according to the instructions provided by the web browser.

The steps to download the settings file to a service PC depend on the web browser used. The web browser may also notify you about security issues. Refer to the web browser documentation for details.

The downloaded settings file is now ready to be uploaded and activated into the destination monitors. The settings file contains both the platform and clinical settings of the source monitor.

Activating settings

You can upload and activate the previously downloaded settings file to the destination monitor(s).

NOTE

Some platform settings cannot be transferred from one monitor to another. They need to be configured manually in the destination monitor after the activation is completed.

1. Log in to the service interface.
2. Select **Configuration > Settings > Activate**.

3. Upload the settings file from any storage device connected to the service PC:
 - Search for the settings file from the destination drive and folder according to the instructions provided by the web browser.
The web browser may also notify you about security issues. Refer to the web browser documentation for details.
4. Enter the password that was used for encrypting the settings file.
5. Below **Settings that are to be Activated**, select the settings you want to activate.
Choices are:
 - **All (clinical and platform) settings**: Activates both the clinical and platform settings.
 - **Clinical settings**: Activates clinical settings only.
 - **Platform settings**: Activates platform settings only.
6. Below **Schedule**, select when you want the setting activation to occur.
Choices are:
 - **Immediately**: The settings upload and activation starts immediately.
 - **After discharge**: The settings activation starts after the next patient discharge/case end.

NOTE

Immediately option is only available if the monitor is in a patient discharged/case end state.

7. Select the **Activate** button.

NOTE

If you selected the settings activation to take place after the next patient discharge/case end, you can cancel the activation while it is pending. To cancel the activation, select **Configuration > Settings > Activate > Cancel activation**.

- a. If the settings activate immediately, do the following:
 - Wait until the settings activation is completed and the monitor has performed an automatic restart.
 - Check that the settings activation was successful and the monitor is using the activated settings.
 - Configure manually those clinical and platform settings that cannot be transferred from the source monitor to the destination monitor.
- b. If the settings are activated after the patient is discharged, do the following:
 - The monitor shows a **Setting activation after next discharge / Setting activation after next case end** message until the clinical user performs a patient discharge/case end. The patient monitoring can continue normally until then.
 - Settings activation will start automatically after the next patient discharge/case end. Wait until the settings activation is completed and the monitor has performed an automatic restart.
 - Check that the settings activation was successful and the monitor is using the activated settings.
 - Configure manually those clinical and platform settings that cannot be transferred from the source monitor to the destination monitor.

The settings activation will fail if the settings file is invalid, the password is incorrect or the settings file is not found.

Resetting to factory settings

You can reset the platform and/or clinical settings of a monitor to factory defaults.

NOTE

Resetting to factory defaults does not affect the following platform settings:

- licenses
- host asset settings
- passwords

1. Log in to the service interface.
2. Select **Configuration > Settings > Reset**.
3. In **Settings Type** area, select the settings you want to reset.

Choices are:

- **Clinical and platform settings**: Resets both the clinical and platform settings.
- **Clinical settings**: Resets the clinical settings only.

4. In **Defaults** area, select the defaults to be used for clinical settings.

Choices are:

- **Factory defaults**: Resets the clinical settings to the global factory defaults
- **US defaults**: Resets the clinical settings to the US factory defaults.

Refer to the supplemental information provided for a list of the global or US-specific factory default values for clinical settings.

5. In **Schedule** area, select when you want the reset to occur.

Choices are:

- **Immediately**: The reset starts immediately.
- **After discharge**: The reset starts after the next patient discharge/case end.

NOTE

Immediately option is only available if the monitor is in a patient discharged/case end state.

6. Select the **Reset** button.

NOTE

If you selected the reset to take place after the next patient discharge/case end, you can cancel the reset while it is pending. To cancel the reset, select **Configuration > Settings > Reset > Cancel reset**.

- a. If the reset starts immediately, do the following:
 - Wait until the settings reset is completed and the monitor has performed an automatic restart.
 - Check that the settings reset was successful and the selected settings have been reset to factory defaults.
- b. If the reset starts after the patient is discharged, do the following:
 - The monitor shows a **Setting activation after next discharge / Setting activation after next case end** message until the clinical user performs a patient discharge/case end. The patient monitoring can continue normally until then.
 - Settings reset will start automatically after the next patient discharge/case end. Wait until the settings reset is completed and the monitor has performed an automatic restart.
 - Check that the settings reset was successful and the selected settings have been reset to factory defaults.

License management

You can view the monitor's host license and software package information and select an individual software package manually. Note that uploading licenses on the monitor is not supported at this time.

Software packages

You can customize CARESCAPE software to meet the needs of different care areas with software package licenses. The supported software packages are: ED, ICU, NICU, OR and PACU.

Many of the monitor's clinical settings are separately configurable for different software packages (care unit settings) and different profiles (profile settings). See the user manual for more information about the configuration and factory defaults for care unit settings and profile settings.

You can have several software packages enabled, but only one of them can be active at a time.

Changing the active software package

WARNING

If the software package is changed, all clinical settings will reset to factory defaults.

The factory default value for the software package is ICU.

NOTE

The operation is not allowed while a patient is admitted.

To change the active software package:

1. Log in to the service interface.

2. Select **Configuration > Licenses > Software Package**.

The currently active software package is shown under **Active Software Package**.

3. Select the new software package from the drop-down list.

4. Select **Save**.

The changes take effect after the next monitor restart.

Backup and restore

Take a backup of the platform and clinical settings of each monitor after the initial installation is completed, and every time the platform settings have been changed.

The availability of a valid backup file can save your time if you ever need to replace the main board, and you need to restore the original settings.

The backup file contains a complete image of the monitor platform and clinical settings, including serial number, IP addresses, and other unique settings. The created backup file can be restored only to the same monitor.

NOTE

For security reasons, the contents of the backup file are encrypted with a user-selectable password. Store the password in a secure way, separately from the monitor's backup file. You will need the password later if you have to restore the backup file to the monitor.

Taking a backup

The default file name contains the serial number of the monitor, followed by the date and the time the backup file was created.

NOTE

For security reasons, the contents of the backup file is encrypted with a user-selectable password. Store the password in a secure way. It will be needed for restoring the backup file to the monitor.

1. Log in to the service interface.
2. Select **Configuration > Backup > Download**.
3. Provide a password for encrypting the backup file. This password is user-selectable.
4. Save the backup file to any storage device connected to the service PC:
 - a. Select **Download**.
 - b. Save the backup file according to the instructions provided by the web browser.

The steps to download the backup file to a service PC depend on the web browser used. The web browser may also notify you about security issues. Refer to the web browser documentation for details.
5. Store the backup file and the password to a secure location.

Restoring a backup

Note that the backup file is monitor specific, and can be restored only to the original monitor with the same serial number. Before restoring the backup file, ensure that the backup file is for the intended monitor, and that you have the password to decrypt the

backup file. If restore is done after the main board replacement, first enter the original serial number manually, before restoring the backup file.

1. Log in to the service interface.
2. Select **Configuration > Backup > Restore**.
3. Upload the backup file from any storage device connected to the service PC:
 - Search for the backup file from the destination drive and folder according to the instructions provided by the web browser.
The web browser may also notify you about security issues. Refer to the web browser documentation for details.
4. To decrypt the contents of the backup file, enter the password that was used to encrypt the backup file.
5. Select **Restore**.

Certificate management

The CARESCAPE monitor allows you to use an X.509 certificate to authenticate it to the service web client. The monitor's service interface provides tools to create a certificate signing request, and to install the signed certificate to the monitor.

By factory default, each monitor has a unique self-signed certificate issued by GE. To improve access security, you can send a certificate signing request (CSR) to a publicly trusted certificate authority (CA). The CA validates the information in the CSR and creates a signed certificate, which you can install on the monitor later. The web browsers used to access the service interface recognize and trust the signed certificate. The users who access the monitors via the service interface will know that their peer is actually the monitor which possesses the private key of such certificate. For example, this prevents spoofing or man-in-the-middle attacks which can be mounted in attempt to steal the passwords of monitor users.

Creating a certificate signing request (CSR)

Creating the certificate signing request is only supported when you access the service interface with a service PC.

1. Log in to the service interface.
2. Select **Configuration > Certificates > Certificate Signing Request**.
3. Enter the following information:
 - **Common Name:** Enter the name of the host device. This is the only mandatory field, the rest of the fields are optional.
 - **Organization Name:** Enter the name of the hospital requesting the signed certificate.
 - **Organizational Unit Name:** Enter the unit name (for example, hospital department).
 - **City:** Enter the name of the city.
 - **State or Province:** Enter the state or province information.
 - **Country Code:** Enter the 2-letter country code.
 - **Email Address:** Enter the email address of the hospital requesting the signed certificate.

4. Select **Create**.

The monitor creates a certificate signing request (CSR) file. It also creates a new device-specific private key which will be taken into use when the signed certificate is later uploaded to the monitor.

5. Save the CSR file according to the instructions provided by the web browser.

The steps to save the CSR file to a service PC depend on the web browser used. The web browser may also notify you about security issues. Refer to the web browser documentation for details.

6. Send the CSR to a publicly trusted certificate authority (CA). The CA validates the information in the CSR and creates a signed certificate to be installed on the monitor later.

Installing the certificate

The certificate installation is only supported when you access the service interface with a service PC.

Note that the certificate must be in a PEM-encoded file format, which is readable as ASCII text.

1. Log in to the service interface.

2. Select **Configuration > Certificates > Upload Certificate**.

3. Install the certificate using one of the following methods:

- a. Paste the certificate from a PEM file that contains the certificate.

- i. Open the PEM file with a text editor.

- ii. Copy the certificate information.

- iii. In the service interface, paste the information into the box under the **Certificate** title.

- b. Upload the PEM file that contains the certificate.

- i. Select **load from file** next to the **Certificate** title.

- ii. Search the drive and folder where the file is located and choose the file to upload. Follow the instruction of the web browser used.

The whole file content populates into the box under the **Certificate** title.

4. Select **Upload**.

The change will take effect immediately.

Note that the service interface can become unresponsive after a new certificate is uploaded. You may be required to reload the page or reopen the browser after uploading a certificate.

Viewing the current certificate

1. Log in to the service interface.

2. Select **Configuration > Certificates > Upload Certificate**.

3. Under Current Certificate, you can see an overview of the current certificate:
 - the issuer of the certificate
 - the subject of the certificate (issued to)
 - the validity period of the certificate
 - the SHA-1, SHA-256 and SHA-512 fingerprints
4. To see more information about the current certificate, open the certificate view / security report from the address bar of the web browser in the service PC.
Note that this functionality depends on the web browser you use. For example, in Internet Explorer, select the lock symbol or certificate error next to the address bar of the browser to view a detailed certificate view / security report.

Software management

Software management consist of two main steps:

1. Software upload
2. Software activation (installation)

Software management is supported for the following system components.

Software image	Image type	Target device
CARESCAPE Software package	Host Software	CARESCAPE software for the CARESCAPE ONE.

Software upload

Software upload loads a software file from a service PC to one target monitor, but does not activate / install it.

Contact your local GE distributor for any inquiries for software files. Software is delivered in a software media (DVD or USB flash drive).

Software activation

Software activation installs the uploaded software images to the target devices.

- Software activation for CARESCAPE software is done in **Configuration > Software Management > Host Software**. The host software activation takes place either immediately or after the next discharge. If a patient is not admitted or a case is not started in the target monitor, the activation takes place immediately. If a patient is admitted or a case is started in the target monitor, the activation takes place after the patient is discharged or case is ended. If the activation takes place after the next case end/discharge, the user can cancel pending software activation at any time before the activation starts.

A successful software activation will automatically erase the previous version of the installed software from the target monitor or connected device.

Uploading software

1. Log in to the service interface.

2. Select **Configuration > Software Management > Upload**.

The currently uploaded software image(s) that are ready to be activated are shown in the **Uploaded software image** area. If the monitor does not have any software images uploaded, a message **No uploaded image** is shown.

To see the currently active, running software version of the monitor and any connected devices:

- Select **Information > Host Information** to see the currently active CARESCAPE software (host software).

NOTE The menu options in steps 3 and 4 depend on the web browser.

3. In the **Upload New Software Image** area, select **Browse** or **Choose File**.

An Open / Choose File to Upload -dialog box will open.

4. Browse the drive and folder to find the software file. Select the software file by double-clicking it or by selecting **Open**.

5. Select **Upload image**.

The software upload will start. The status of the software upload is shown using a progress bar. Do not leave the menu page until the software image is completely uploaded. You can cancel the software upload any time by selecting **Cancel upload**, or by leaving the **Upload** page. Once the upload of the software file is completed, the software images are shown under the title **Uploaded Software Image**.

The uploaded software images are now ready to be activated to the target devices or connected devices.

NOTE To delete a previously uploaded software images, select **Delete image**.

Activating the host software

WARNING

BEFORE INSTALLATION- Compatibility is critical to safe and effective use of this device. Verify the compatibility of all system components and device interfaces, including hardware and software versions, prior to installation and use.

Before you start activating new host software:

- Verify the compatibility of the new software to be activated with the current monitor hardware, and with all the connected bedside devices. Refer to the supplemental information provided for a list of compatible bedside devices.
- Contact GE to get the latest version of the user and service documentation.
- If applicable, contact GE to acquire an activation code for the new host software version.

NOTE

LOSS OF MONITORING. Software is activated only when the monitor is in a patient discharged/case reset state. Normal patient monitoring is unavailable until the software activation is completed. This may take up to 10 minutes.

NOTE The existing clinical and platform settings of the monitor are saved and are not affected by the activation of the new host software version. However, any new or changed clinical and platform settings in the activated monitor software version have their factory default values, and may require manual configuration. For more information, refer to the latest version of the user manual.

NOTE Do not shut down the monitor until the software activation is successfully completed.

1. Log in to the service interface.
2. Select **Configuration > Software Management > Host Software**.
 - **Current version** shows the currently active CARESCAPE software version.
 - **Uploaded version** shows the new CARESCAPE software version to be activated.
3. Select **Activate** to start the host software activation.

The software activation takes place in either of the following ways:

- immediately if no patient case is currently ongoing (a patient is not admitted / no case started)
- after the next discharge, if there is currently an ongoing patient case (a patient is admitted, or case is started)

Activating the host software immediately

If the host software activation occurs immediately, the monitor shows the following screen saver:

Software activation in progress. Do not disconnect any measurement modules or other peripheral devices, or shut down the monitor until the software activation is complete. Activation may take up to 10 minutes. The device will automatically restart once the software activation is complete.

1. Wait until the software activation completes and the monitor restarts automatically.
2. Verify that the software activation is successful and the monitor runs the activated software.

Activating host software after next case end / discharge

The monitor informs the clinical users about pending software activation with the following message: **Software activation after next case end / Software activation after next discharge**. The monitoring can continue normally.

NOTE To cancel the pending software activation, select **Cancel activation**.

The software activation starts automatically after the patient is discharged, or patient case is ended. The patient monitor displays a screen saver that informs about the ongoing software activation:

Software activation in progress. Do not disconnect any measurement modules or other peripheral devices, or shut down the monitor until the software activation is complete. Activation may take up to 10 minutes. The device will automatically restart once the software activation is complete.

Configuration

1. Wait until the software activation is complete and the monitor restarts automatically.

If the monitor starts up normally and no error messages appear on the display, the activation is successful.

8

Theory of operation

CARESCAPE ONE theory of operation

The CARESCAPE ONE is a bedside monitor containing the Carescape Service Interface (CSI) and PDM software. The CARESCAPE ONE collects physiological data from a patient, detects alarm conditions, and stores historical data. The CARESCAPE ONE can be run off either battery or a direct power connection through the CARESCAPE Dock F0. It can run in two modes:

- Standalone: acquisition, display and user interface occur on the CARESCAPE ONE device.
- Acquisition mode: acquisition occurs on the CARESCAPE ONE and display and user interface occur on a host monitor.

The CARESCAPE ONE is intended for transport in which it can be connected to a host monitor in acquisition mode, disconnected to become a standalone monitor, and then reconnected to a host monitor in acquisition mode again.

CARESCAPE Dock F0 theory of operation

The CARESCAPE Dock F0 is a quick-release docking station for the CARESCAPE ONE.

The CARESCAPE Dock F0 supports the following:

- Ethernet connectivity (RJ-45) for communication between the CARESCAPE ONE and a computer
- High speed USB connectivity for communication between the CARESCAPE ONE and a host monitor
- I2C connectivity for communication between the CARESCAPE ONE and CARESCAPE Dock F0

The CARESCAPE Dock F0 provides power via the DC Power connector to the CARESCAPE ONE and an Ethernet connection when the CARESCAPE ONE is functioning as a standalone monitor.

The CARESCAPE Dock F0 provides power via the DC power connector or the ePort connector and a host interface to a CARESCAPE monitor when the CARESCAPE ONE is connected as an accessory to a host monitor.

CARESCAPE ECG theory of operation

With CARESCAPE ECG, the system detects heartbeats, arrhythmias, and pacemaker events, measures heart rate (HR) and ST segment deviation, and when connected as an accessory to a host monitor, provides input data for 12SL diagnostic interpretation.

CARESCAPE ECG measures respiration rate (RR) and detects apnea through the ECG leadwires using the impedance variation technique.

CARESCAPE ECG provides interfaces for up to ten ECG electrodes. It also supports one measurement channel of impedance-based respiration. The impedance respiration function can be performed on one of three selectable pairs of ECG electrodes (vectors). CARESCAPE ECG also supports detection of pacemaker activity from up to three simultaneous differential pairs of ECG electrodes.

CARESCAPE Pressure theory of operation

CARESCAPE Pressure supports one or two channels of blood pressure data.

When the CARESCAPE Pressure is connected to the host device (monitor), it enumerates itself via USB with the GE vendor ID and a product ID based on the cable type setting stored within the cable.

CARESCAPE Pressure applies a 40Hz low-pass filter for the analog output data stream. The acquisition firmware is responsible for the configuration of the digital filter.

CARESCAPE Temperature theory of operation

CARESCAPE Temperature supports two channels of temperature data, T1 and T2. Calibration is performed at the hardware level and no self-calibration is required at the temperature measurement device software. Data for both the T1 and T2 channels is delivered from the cable at a rate of 1 Hz.

Pulse oximetry theory of operation

The CARESCAPE SpO₂ device comes in three different models to support GE TruSignal, Masimo SET, and Nellcor™ with OxiMax™ technology. The CARESCAPE SpO₂ device runs the algorithm and sends the processed data to the host device.

CARESCAPE CO₂ theory of operation

The CARESCAPE CO₂ assembly runs the CO₂ algorithms and sends the processed data to the host device.

The CARESCAPE CO₂ assembly is comprised of the CARESCAPE CO₂ and the LoFlo Sidestream Module.

The LoFlo Sidestream Module is an infra red CO₂ analyzer utilizing the dual beam infrared Capnostat technology. It contains a sampling pump for pulling a gas sample into the analyzer.

The sampling flow rate is fixed and internally regulated to 50 ± 10 ml/min. A differential pressure sensor in the sampling circuit provides the signal for flow rate regulation. An occlusion will be detected by a second, built-in pressure sensor that constantly samples the system for a decrease or increase in pressure. If the preset pressure is exceeded for 15 seconds, a message displays requesting the user to check the adapter or the sample line. If the occlusion is not cleared within two minutes, the pump will shut off.

The inlet to the analyzer is mechanically unique and only accepts an approved sampling line containing the water protection trap. The sampling cell and water trap are integral to the disposable sampling assembly. A reflective optical sensor detects the sampling line and will enable the pump. The LoFlo Sidestream Module uses a

combination of the optical path to acquire the CO₂ measurement. Reflection is not used.

There is no field calibration required.

The CARESCAPE CO₂ provides the electrical isolation.

Non-invasive blood pressure theory of operation

CARESCAPE ONE contains the DINAMAP SuperStat NIBP algorithm. The SuperStat algorithm uses the oscillometric method of non-invasive blood pressure measurement.

The DINAMAP SuperStat algorithm relies on information from ECG in order to meet its performance requirements during periods of irregular rhythm activity. The algorithm requires notification of a detected R-wave, ECG R-R interval information, an indication of the validity of the R-wave stream, and notification of atrial fibrillation conditions.

Theory of operation

9

Checkout procedures

About the checkout procedures

This chapter describes the checkout procedures for the CARESCAPE ONE monitoring system.

The installation and the planned and corrective maintenance checks cover the CARESCAPE ONE monitoring system including the following devices:

- CARESCAPE ONE
- CARESCAPE Dock F0
- CARESCAPE Parameters

The cleaning precautions, cleaning requirements, cleaning procedures, and recommended cleaning solutions are described in the monitor's user manual.

For details about cleaning, disinfecting and sterilizing the accessories, see the instructions for use in the accessory package.

To help ensure the equipment remains in proper operational and functional order and maintains its essential performance and basic safety, follow the corrective and planned maintenance recommendations. The tests that are related to the essential performance and basic safety are marked with an asterisk *.

Record the results of the check procedures to the Checkforms delivered on the electronic media.

Required checkout procedures

Perform the following tests during installation, planned maintenance and corrective maintenance:

Checkout procedures

Checkout procedure	Required checks		
	Visual inspections	Electrical safety test*	Functional check
Installation check	Yes	No. The manufacturer has performed the electrical safety test for the monitor and measurement devices during final inspection. You do not have to perform the electrical safety tests.	Yes, perform: <ul style="list-style-type: none">• System functional check
Planned maintenance check	Yes	Yes. Perform all tests, except the patient leakage current tests, every two years: <ul style="list-style-type: none">• CARESCAPE ONE• CARESCAPE Dock F0 Yes, perform the patient leakage current tests every two years: <ul style="list-style-type: none">• CARESCAPE CO₂• CARESCAPE SpO₂ — Masimo• CARESCAPE SpO₂ — Nellcor Yes, perform the patient leakage current tests as required by local policy, or a minimum of once within seven years of installation and every year after seven years. <ul style="list-style-type: none">• CARESCAPE ECG• CARESCAPE Pressure• CARESCAPE SpO₂• CARESCAPE Temperature	Yes, perform: <ul style="list-style-type: none">• System functional check• Measurement parameter functional check

Checkout procedure	Required checks		
	Visual inspections	Electrical safety test*	Functional check
Corrective maintenance check — CARESCAPE ONE	After detaching or replacing: <ul style="list-style-type: none">• Pull tab assembly (FRU)	Yes	No
	After detaching or replacing: <ul style="list-style-type: none">• Monitor battery (FRU)	Yes	No Yes, perform: <ul style="list-style-type: none">• Startup functional check
	After detaching or replacing: <ul style="list-style-type: none">• Any other FRU part for the monitor.	Yes	Yes, perform all tests except the patient leakage current tests. Yes, perform: <ul style="list-style-type: none">• System functional check After replacing the CARESCAPE ONE main board assembly, the analog outputs calibration procedure must be completed.
Corrective maintenance check — CARESCAPE Dock F0	After detaching or replacing: <ul style="list-style-type: none">• Power supply and cable (FRU)	Yes	Yes, verify the power cord and plug. Yes, perform: <ul style="list-style-type: none">• CARESCAPE Dock F0 charging a battery functional check
	After detaching or replacing: <ul style="list-style-type: none">• Any other FRU part for the dock.	Yes	Yes, perform all tests except the patient leakage current tests. Yes, perform: <ul style="list-style-type: none">• CARESCAPE Dock F0 charging a battery functional check

Checkout procedure	Required checks		
	Visual inspections	Electrical safety test*	Functional check
Corrective maintenance check — CARESCAPE Parameters	After detaching or replacing: <ul style="list-style-type: none"> USB patient cable for CARESCAPE ECG (FRU) USB patient cable for CARESCAPE SpO₂ – Masimo (FRU) 	Yes	No
	After detaching or replacing: <ul style="list-style-type: none"> CARESCAPE Parameter cable for CARESCAPE Pressure (FRU) CARESCAPE Parameter cable for CARESCAPE Temperature (FRU) 	Yes	No
	After detaching or replacing: <ul style="list-style-type: none"> LoFlo Sidestream Module mounting bracket 	Yes	No

CARESCAPE SpO₂ — Nellcor checkout procedures

Perform the following procedures every two years after installation:

- Visual inspection
- Electrical safety test
- Functional check

There are no user-serviceable parts inside the CARESCAPE SpO₂ — Nellcor. Users may not modify any components. The CARESCAPE SpO₂ — Nellcor requires no calibration.

For technical information and assistance if unable to correct a problem, or for instructions to complete the Medtronic performance verification procedure, upgrade the CARESCAPE SpO₂ — Nellcor, or to order parts, contact your GE representative or a local Medtronic representative.

www.medtronic.com

When contacting a local Medtronic representative, have the CARESCAPE SpO₂ — Nellcor serial number available.

Installation check

The purpose of the installation check is to ensure that the patient monitoring system, including the connected devices, is properly installed and configured for use.

Perform the installation check after the hardware installation and platform configuration is completed before taking the monitor into clinical use.

The manufacturer has performed the electrical safety test for the monitor and measurement devices during final inspection. You do not have to perform the electrical safety tests during the installation checkout.

Planned maintenance check

The purpose of the planned maintenance check is to periodically check that the product remains safe to use and maintains its performance characteristics.

Perform the planned maintenance according to the recommended interval.

Device	Planned maintenance schedule
<ul style="list-style-type: none"> • CARESCAPE ONE • CARESCAPE Dock F0 • CARESCAPE CO₂ • CARESCAPE SpO₂ — Masimo • CARESCAPE SpO₂ — Nellcor 	Every two years after installation.
<ul style="list-style-type: none"> • CARESCAPE ECG • CARESCAPE Pressure • CARESCAPE SpO₂ • CARESCAPE Temperature 	Perform the patient leakage current tests as required by local policy, or a minimum of once within seven years of installation and every year after seven years.

WARNING Only perform maintenance procedures specifically described in the manual.

WARNING Planned maintenance must be carried out at the specified interval. Failure to implement the maintenance schedule may cause equipment failure and possible health hazards.

WARNING PATIENT RISK HAZARD. Never service the equipment while connected to a patient.

NOTE The manufacturer does not, in any manner, assume the responsibility for performing the recommended maintenance schedule, unless an Equipment Maintenance Agreement exists. The sole responsibility rests with the individuals, hospitals, or institutions utilizing the device.

NOTE The planned maintenance check must be performed to the whole patient monitoring system, including all the connected devices. This service manual covers the planned maintenance procedure for the CARESCAPE ONE, CARESCAPE Dock F0, and CARESCAPE Parameters.

Corrective maintenance check

The purpose of the corrective maintenance check is to ensure that the product was repaired correctly, and to check that the product is safe to use and maintains its performance characteristics. Perform the corrective maintenance check after any corrective maintenance, before taking the device back into clinical use.

CARESCAPE SpO₂ — Nellcor corrective maintenance

There are no user-serviceable parts inside the CARESCAPE SpO₂ — Nellcor. Users may not modify any components. The CARESCAPE SpO₂ — Nellcor requires no calibration.

For technical information and assistance if unable to correct a problem, or for instructions to complete the Medtronic performance verification procedure, upgrade the CARESCAPE SpO₂ — Nellcor, or to order parts, contact your GE representative or a local Medtronic representative.

www.medtronic.com

When contacting a local Medtronic representative, have the CARESCAPE SpO₂ — Nellcor serial number available.

Performing visual inspection

Perform the following visual inspection to the installed monitoring system:

1. Check that all product labeling, markings and symbols are intact and readable.
2. Check that the monitor and the connected devices do not have any visible damage.
3. Check that the monitor and the connected devices are properly mounted with specified mounting solutions.
4. Check that all mounting solution fasteners are intact, properly tightened, and correctly secured.
5. Check that the power cord and power supply are properly secured.
6. Check CARESCAPE Parameter cables and cable strain reliefs for abrasion and damage. If damaged, replace the cable.
7. Check that the CARESCAPE Parameters are properly connected.

Performing electrical safety tests

Electrical safety tests provide a method of determining if potential electrical health hazards to the patient or operator of the device exist.

WARNING EXCESSIVE LEAKAGE CURRENT. Do not use a multiple socket outlet or extension cord in an ME system.

WARNING EXCESSIVE LEAKAGE CURRENT. A display or printer that is a non-medical grade device and is used within the patient environment, must always be powered from an additional transformer providing at least basic isolation (isolating or separating transformer). Using without an isolating transformer could result in unacceptable enclosure leakage currents.

WARNING	EXCESSIVE LEAKAGE CURRENT - Laser printers are UL 60950/IEC 60950 certified equipment, which may not meet the leakage current requirements of patient care equipment. This equipment must not be located in the patient environment unless the medical system standard IEC 60601-1 is followed. Do not connect a laser printer to a multiple socket outlet supplying patient care equipment. The use of multiple socket outlet for a system will result in an enclosure leakage current equal to the sum of all the individual ground leakage currents of the system if there is an interruption of the multiple socket outlet protective earth conductor.
WARNING	EXCESSIVE LEAKAGE CURRENT - To avoid summation of leakage currents when interfacing the device with other equipment, the devices may only be interconnected with each other or to parts of the system when it has been determined by qualified biomedical personnel that there is no danger to the patient, the operator, or the environment as a result. In those instances where there is any element of doubt concerning the safety of the connected devices, the user must contact the manufacturers concerned (or other informed experts) for proper use. In all cases, safe and proper operation should be verified with the applicable manufacturer's instructions for use, and system standards IEC60601-1 must be complied with.

Test setup

Test conditions

Perform electrical safety tests under normal ambient conditions of temperature, humidity and pressure.

Test equipment

The test equipment required to perform electrical safety tests is listed below.

Tool	Part number / requirement
Safety Analyzer / Leakage Current Tester	ESA180 or equivalent.
Safety Test Body Kit	P/N 2101836-001 or equivalent

Perform electrical safety tests using an electrical safety analyzer according to IEC 60601-1; 3.1 edition, AAMI ES60601-1 + C1 + A1 + A2, EN 60601-1 or CSA CAN/CSA-C22.2 NO. 60601-1:14. The schematics in this section provide a general understanding of the test equipment. Actual configuration of test equipment may vary. Refer to the instructions delivered with the safety analyzer to perform each test.

The monitor being tested should be placed on an insulating surface.

NOTE Before proceeding, make sure that all test equipment is properly calibrated, maintained and functioning.

NOTE GE recommends that the qualified personnel performing the tests should record the test results of each electrical safety test, for example by using the check forms provided.

System setup

These instructions are intended for every component in the system. Ensure that all system components are properly connected to the monitor.

Verifying power outlets

1. Verify that the power outlet is wired correctly according to the country's electrical code standard before starting the following electrical safety tests.

The results of the following tests will be inaccurate unless a properly wired power outlet is used.

Verifying power cords and plugs

1. Verify that the power cords being used with the CARESCAPE Dock F0 are undamaged:
 - a. Inspect the power cord for wear or damage. If damage is suspected, test for continuity through each conductor of the power cord connector.
 - b. Replace the power cord, as necessary, with a regulatory-approved cord for the country of use.

WARNING

Use only AC power cords recommended or manufactured by GE.

About leakage current

Leakage current is the amount of current that flows from the point where a person comes into contact with the monitor, through the person's body, and back to ground.

Testing ground leakage current

Refer to the instructions delivered with the electrical safety analyzer to perform this test.

Ground leakage current is the current that flows in the ground wire of the power cable to return the chassis leakage current to true earth ground.

1. Connect the equipment for the test:
 - a. Mount the CARESCAPE ONE to the CARESCAPE Dock F0.
 - b. Connect the CARESCAPE Dock F0 to the CARESCAPE Dock F0 power supply and power cord.
 - c. Connect the CARESCAPE Dock F0 power cord to the power outlet on the electrical safety analyzer.
2. Set the electrical safety analyzer selection switch to GROUND.
3. Set the NEUTRAL switch CLOSED and record the current with NORMAL and REVERSE polarity.
Allow the CARESCAPE ONE to fully power up when switching between polarities.
4. Verify that the recorded current is less than 1000 μ .

5. Set the polarity switch to NORMAL and the NEUTRAL switch OPEN.

Note that when the NEUTRAL switch is in the OPEN position power to the electrical safety analyzer outlet is OFF and the CARESCAPE ONE will be powered down.

6. Verify that the recorded current is less than 1000 μ A.

Testing chassis leakage current to the ePort connection

Refer to the instructions delivered with the electrical safety analyzer to perform this test.

Chassis leakage current is the current that flows between the accessible conductive parts of the enclosure and earth ground.

1. Connect the equipment for the test:
 - a. Mount the CARESCAPE ONE to the CARESCAPE Dock F0.
 - b. Connect the CARESCAPE Dock F0 to the CARESCAPE Dock F0 power supply and power cord.
 - c. Connect the CARESCAPE Dock F0 power cord to the power outlet on the electrical safety analyzer.
 - d. Connect the CARESCAPE Dock F0 ePort safety test cable to the ePort connector on the CARESCAPE Dock F0.
 - e. Connect the CHASSIS cable from the electrical safety analyzer to the CARESCAPE Dock F0 ePort safety test cable.
2. Set the electrical safety analyzer selection switch to CHASSIS.
3. Set the NEUTRAL switch CLOSED and record the current with NORMAL and REVERSE polarity.
Allow the CARESCAPE ONE to fully power up when switching between polarities.
4. Verify that the recorded current is less than 100 μ A.
5. Set the GND switch OPEN.
6. Verify that the recorded current is less than 100 μ A.
7. Set the polarity switch to NORMAL and the NEUTRAL switch OPEN.
Note that when the NEUTRAL switch is in the OPEN position power to the electrical safety analyzer outlet is OFF and the CARESCAPE ONE will be powered down.
8. Verify that the recorded current is less than 500 μ A.

Testing chassis leakage current to the Ethernet connection

Refer to the instructions delivered with the electrical safety analyzer to perform this test.

Chassis leakage current is the current that flows between the accessible conductive parts of the enclosure and earth ground.

1. Connect the equipment for the test:
 - a. Mount the CARESCAPE ONE to the CARESCAPE Dock F0.
 - b. Connect the CARESCAPE Dock F0 to the CARESCAPE Dock F0 power supply and power cord.
 - c. Connect the CARESCAPE Dock F0 power cord to the power outlet on the electrical safety analyzer.
 - d. Connect the CARESCAPE Dock F0 Ethernet safety test cable to the Ethernet connector on the CARESCAPE Dock F0.
 - e. Connect the CHASSIS cable from the electrical safety analyzer to the CARESCAPE Dock F0 Ethernet safety test cable.
2. Set the electrical safety analyzer selection switch to CHASSIS.
3. Set the NEUTRAL switch CLOSED and record the current with NORMAL and REVERSE polarity.

Allow the CARESCAPE ONE to fully power up when switching between polarities.
4. Verify that the recorded current is less than 100 μ .
5. Set the GND switch OPEN.
6. Verify that the recorded current is less than 100 μ .
7. Set the polarity switch to NORMAL and the NEUTRAL switch OPEN.

Note that when the NEUTRAL switch is in the OPEN position power to the electrical safety analyzer outlet is OFF and the CARESCAPE ONE will be powered down.
8. Verify that the recorded current is less than 500 μ .

Patient leakage current tests

The CARESCAPE Parameters and the related patient connectors are to be tested in the Patient (source) leakage current tests and in the Patient (sink) leakage current tests.

Use the safety test body kit, P/N 2101836-001 (or equivalent), to perform patient leakage current tests. The safety test body kit contains various patient connectors where all pins are shorted out together.

Testing patient source leakage current

Refer to the instructions delivered with the electrical safety analyzer to perform this test.

Patient Source current would flow between an individual patient lead and ground if the patient were to come into contact with earth ground.

The following CARESCAPE Parameters are to be tested in the patient source leakage current test:

- CARESCAPE ECG
- CARESCAPE Pressure
- CARESCAPE Temperature
- CARESCAPE SpO₂
- CARESCAPE SpO₂ – Masimo
- CARESCAPE SpO₂ – Nellcor

- CARESCAPE CO₂
 1. Connect the equipment for the test:
 - a. Mount the CARESCAPE ONE to the CARESCAPE Dock F0.
 - b. Connect the CARESCAPE Dock F0 to the CARESCAPE Dock F0 power supply and power cord.
 - c. Connect the CARESCAPE Dock F0 power cord to the power outlet on the electrical safety analyzer.
 - d. Connect the patient parameter safety test cable to the patient lead input connector on the CARESCAPE Parameter under test.
 - e. Connect the output of the patient parameter safety test cable to the RL connection on the electrical safety analyzer.
 2. Set the electrical safety analyzer selection switch to LEAD-GND.
 3. Set the electrical safety analyzer LEAD to RL.
 4. Set the NEUTRAL switch CLOSED and record the current with NORMAL and REVERSE polarity.
Allow the CARESCAPE ONE to fully power up when switching between polarities.
 5. Verify that the recorded current is less than 10µ.
 6. Set the polarity switch to NORMAL and the NEUTRAL switch OPEN.
Note that when the NEUTRAL switch is in the OPEN position power to the electrical safety analyzer outlet is OFF and the CARESCAPE ONE will be powered down.
 7. Verify that the recorded current is less than 50µ.
 8. Repeat this test for all CARESCAPE Parameters.

Testing patient sink leakage current – system test

Refer to the instructions delivered with the electrical safety analyzer to perform this test.

Patient sink current would flow into the patient monitor if the patient were to come into contact with full line voltage.

The following CARESCAPE Parameters are to be tested in the patient sink leakage current test:

- CARESCAPE ECG
- CARESCAPE Pressure
- CARESCAPE Temperature
- CARESCAPE SpO₂
- CARESCAPE SpO₂ – Masimo
- CARESCAPE SpO₂ – Nellcor
- CARESCAPE CO₂

1. Connect the equipment for the test:
 - a. Mount the CARESCAPE ONE to the CARESCAPE Dock F0.
 - b. Connect the CARESCAPE Dock F0 to the CARESCAPE Dock F0 power supply and power cord.
 - c. Connect the CARESCAPE Dock F0 power cord to the power outlet on the electrical safety analyzer.
 - d. Connect the patient parameter safety test cable to the patient lead input connector on the CARESCAPE Parameter under test.
 - e. Connect the output of the patient parameter safety test cable to the RL connection on the electrical safety analyzer.
2. Set the electrical safety analyzer selection switch to LEAD-ISO.
3. Set the electrical safety analyzer LEAD to RL.
4. Set the NEUTRAL switch CLOSED and NORMAL polarity.
5. Press the ISO TEST switch and record the current.
6. Verify that the recorded current is less than 50 μ A.
7. Set the NEUTRAL switch CLOSED and REVERSE polarity.
8. Press the ISO TEST switch and record the current.
9. Verify that the recorded current is less than 50 μ A.
10. Set the polarity switch to NORMAL and the NEUTRAL switch OPEN.

Note that when the NEUTRAL switch is in the OPEN position power to the electrical safety analyzer outlet is OFF and the CARESCAPE ONE will be powered down.

11. Press the ISO TEST switch and record the current.
12. Verify that the recorded current is less than 50 μ A.
13. Repeat this test for all CARESCAPE Parameters.

Testing patient sink leakage current – single CARESCAPE Parameter test

Refer to the instructions delivered with the electrical safety analyzer to perform this test.

Patient sink current would flow into the patient monitor if the patient were to come into contact with full line voltage.

This test measures the leakage current that would flow if the CARESCAPE Parameter cable was disconnected from the CARESCAPE ONE and the CARESCAPE ONE side of the cable came into contact with earth ground. This test is also useful for safety testing an individual CARESCAPE Parameter.

The following CARESCAPE Parameters may be tested in the patient sink leakage current test:

- CARESCAPE ECG
- CARESCAPE Pressure
- CARESCAPE Temperature

- CARESCAPE SpO₂
 - CARESCAPE SpO₂ — Masimo
 - CARESCAPE SpO₂ — Nellcor
 - CARESCAPE CO₂
1. Set the electrical safety analyzer selection switch to DUAL.
 2. Connect the CHASSIS and DUAL test cables to the electrical safety analyzer.
 3. Connect the CHASSIS cable from the electrical safety analyzer to the outer shield on the CARESCAPE Parameter non-isolated parameter connector.
 4. Connect the DUAL cable from the electrical safety analyzer to the isolated parameter safety test cable.
 5. Set the NEUTRAL switch CLOSED and the OUTLET OFF.
 6. Press the ISO TEST switch and record the current.
 7. Verify that the recorded current is less than 50µ.
 8. Set the NEUTRAL switch CLOSED and REVERSE polarity.
 9. Press the ISO TEST switch and record the current.
 10. Verify that the recorded current is less than 50µ.
 11. Repeat this test for all CARESCAPE Parameters.

Completing electrical safety tests

1. Disconnect the safety analyzer from the power outlet.
2. Disconnect the test equipment from the patient monitor.
3. Disconnect the patient monitor's power cord from the leakage tester.

Performing functional check of the system

Preparing for the functional check

1. Turn off the power:
 - a. Press the on/standby button located on the side of the monitor. Complete the shutdown procedure by pressing the button a second time when a message prompts you to do so.

The monitor is now turned off.

The monitor battery keeps charging if the mains cable is connected. You can leave the battery inside the monitor even if the mains cable is connected.

Testing the alarm light

1. Press the on/standby button located on the side of the monitor.
2. Check the following:
 - The power status indicator is lit.
 - The blue, yellow and red alarm light blinks.
 - The blue pause audio alarm indicator blinks.

Checking the startup

For the start of this functional check, the monitor must be turned off.

1. If the monitor is turned on, turn off the power:
 - a. Press the on/standby button located on the side of the monitor. Complete the shutdown procedure by pressing the button a second time when a message prompts you to do so.
- The monitor is now turned off.
2. Press the on/standby button located on the side of the monitor.
 3. Check that the monitor starts up normally:
 - The green on/standby key is lit.
 - The start-up screen briefly displays.
 - The software package and software version indicated in the welcoming screen are correct.
 - The speaker gives an audible beep.
 - The normal monitoring screen appears and there are no error messages on the screen.

NOTE

If you receive a **Condition monitor battery** or a **Battery failure** message, refer to the troubleshooting instructions for battery conditioning or replacement.

4. Check that the battery is fully charged.
 - a. If the battery is not fully charged, keep the monitor connected to the mains until the battery is fully charged. The battery must be fully charged before taking the monitor into use for the first time.

Checking display

Perform the following tests for the integrated main display.

Checking picture quality

1. Check that all text is readable and all images are clear.
2. Check that the display brightness is adequate in the use environment. Adjust if necessary.

Testing touchscreen control

CAUTION

To prevent loss of touchscreen functionality, do not touch the screen until the device is fully initialized. If all or part of the touchscreen is unresponsive after power up, restart the device.

1. To check the touchscreen operation, touch a corner of an active parameter window.

Check that the related menu is opened.

2. Select  to return to the normal screen.

Checking CARESCAPE Parameters identification

To display a measurement parameter on the screen, the measurement parameter must be configured to display with adequate priority. To configure the measurement parameter to display with adequate priority, select **Monitor Setup > Screen Setup** and choose the screen location where you want the selected parameter waveform field or parameter window displayed.

1. Configure the following parameters to the screen with adequate priority:

Note that you will need to configure three parameters in the **Upper Parameter Area** and four parameters in the **Lower Parameter Area**.

- *ECG 1*
- *Resp*
- *Art 1*
- *T1*
- *SpO2*
- *CO2*
- *NIBP*

2. Connect the following to the CARESCAPE ONE:

- CARESCAPE ECG
- CARESCAPE Pressure
- CARESCAPE Temperature
- CARESCAPE SpO₂ device
- CARESCAPE CO₂

3. Confirm that the following parameters display on the CARESCAPE ONE:

- ECG
- Impedance respiration
- Invasive pressure
- Temperature
- SpO₂
- CO₂
- NIBP

NOTE

Connection of an NIBP hose and cuff is not necessary to display the NIBP parameter on the CARESCAPE ONE.

Checking the status of connected devices

Check that the following devices are properly identified and configured. Skip the steps that are not applicable for the installed monitoring system.

1. Log in to the service interface.

2. Select **Information**:
 - a. Select **Host Information**: Check that **Host Serial Number** and **Active Software Version** are correct.
 - b. Select **Host License Information**: Check that all the ordered licenses are enabled.
 - c. Select **Acquisition Information- CARESCAPE Parameters**: Check that the CARESCAPE parameters connected to the CARESCAPE ONE are correctly identified.
 - d. Select **Power Line Frequency**: Check that the power line frequency is correctly configured according to the line frequency used in your country.
3. Stay connected to the service interface.

Checking that the CARESCAPE Dock F0 is charging a battery

Check that the CARESCAPE Dock F0 can charge a monitor's battery.

1. Connect the CARESCAPE Dock F0 power supply to an AC power source.
2. Insert a battery into the monitor.
3. Mount the monitor to the CARESCAPE Dock F0.
4. Turn on the power and wait for the normal screen to appear.
5. Check that the battery icon displayed in the upper right corner of the monitor's screen indicates that the installed battery is charging.

Performing functional check of the measurement parameters

Required tools for CARESCAPE ONE Parameters' functional check

For a list of compatible accessories, see the supplemental information provided.

- For ECG/impedance respiration:
 - Multiparameter patient simulator that supports ECG measurement
 - CARESCAPE ECG
 - 6-lead Multi-Link ECG cable, AAMI/AHA or IEC
 - 4-leadwire expansion cable
- For invasive pressure:
 - Multiparameter patient simulator that supports invasive pressure measurement with invasive pressure adapter cables to GE invasive pressure connectors.
 - CARESCAPE Pressure
- For temperature:
 - Multiparameter patient simulator that supports temperature measurement with temperature adapter cables to GE temperature connectors.
 - CARESCAPE Temperature

- For SpO₂:
 - Masimo SpO₂ Tester and SpO₂ Sensor Adapter Cable (2021087-001), or another Masimo compatible SpO₂ simulator.
 - Masimo SpO₂ interconnection cable
 - Nellcor™ SpO₂ OxiMax™ pulse oximeter functional tester, model SRC-MAX (2007650-002), or another Nellcor™ compatible SpO₂ simulator.
 - For GE TruSignal SpO₂, use any commercially available pulse oximeter functional tester .
 - CARESCAPE SpO₂ – Masimo, CARESCAPE SpO₂ – Nellcor, or CARESCAPE SpO₂
 - For CO₂:
 - LoFlo Sidestream Module
 - CARESCAPE CO₂
 - Sample line: Sampling Line Kit (with male Luer connector), GE PN 2013069-001 or Sampling Line Kit with Dehumidification Tubing (with male Luer connector), GE PN 2013069-002
 - Calibrated flow meter, minimum measurement range 100 to 300 ml/min, with accuracy of 5% in the 100 to 300 ml/min range
 - Calibration gas regulator
 - Calibration gas: 5% CO₂ and balance air, GE PN 755580
 - Host monitor (choose one):
 - ◆ CARESCAPE B850, F5/F7 Frame, and a Frame-CPU cable
 - ◆ CARESCAPE B650
 - ◆ CARESCAPE B450
 - CARESCAPE Respiratory Module or E-miniC Module
 - CARESCAPE Dock F0 and an ePort CARESCAPE ONE to host cable
For more information about connecting the host monitor to the CARESCAPE Dock F0, refer to the host monitor service manual.
 - ◆ If a 1.5- or 4.5-meter ePort CARESCAPE ONE to host cable is used, the host monitor provides power to the docked CARESCAPE ONE.
 - ◆ If a 30-meter ePort CARESCAPE ONE to host cable is used, the CARESCAPE Dock F0 must be powered by its AC mains to DC power supply to provide power to the docked CARESCAPE ONE.
- For NIBP:
 - Adult NIBP hose
 - Adult NIBP cuff
 - A rigid cylinder or pipe
 - Digital manometer with a range of at least 0 to 1000 mmHg and accuracy 0.5% FS.
 - Tubing parts to connect a manometer to the NIBP cuff and hose.
- For Defib/Sync analog outputs:
 - GE Analog Out/Defib Sync Tester, GE PN 2040582-001
 - Analog output/Defib sync cable for the device you are testing. It is recommended that you strip the ends of the unterminated analog output cable and tin the ends with a soldering Iron.

- A multiparameter patient simulator that supports the ECG and invasive pressure measurements. The multiparameter patient simulator may have to be isolated from ground or run on battery power to eliminate noise while doing this test.
- CARESCAPE ECG
- 6-lead Multi-Link ECG cable, AAMI/AHA or IEC
- 4-leadwire expansion cable
- CARESCAPE Pressure

Making connections for CARESCAPE ONE Parameters' functional check

The functional check is performed with the CARESCAPE ONE disconnected from the host monitor, unless otherwise indicated.

1. Turn on the CARESCAPE ONE and wait until the normal screen appears.
2. Connect ECG and impedance respiration:
Note that impedance respiration is calculated from the ECG data.
 - a. Connect the CARESCAPE ECG to the CARESCAPE ONE.
 - b. Connect the 6-leadwire Multi-Link ECG cable to the CARESCAPE ECG.
 - c. Connect the 4-leadwire expansion cable to the CARESCAPE ECG.
 - d. Connect all leadwires to the simulator.
3. Connect invasive pressure:
 - a. Connect the CARESCAPE Pressure to the CARESCAPE ONE.
 - b. Connect the multiparameter patient simulator with its invasive pressure adapter cables to the CARESCAPE Pressure.
4. Connect temperature cables:
 - a. Connect the CARESCAPE Temperature to the CARESCAPE ONE.
 - b. Connect the multiparameter patient simulator with its temperature adapter cables to the CARESCAPE Temperature.
5. Connect SpO₂:
 - a. Connect the CARESCAPE SpO₂ device to the CARESCAPE ONE.
 - b. Connect the SpO₂ simulator to the CARESCAPE SpO₂ device with the applicable SpO₂ and/or simulator accessories.

6. Connect CO₂:
 - a. For LoFlo CO₂ sample flow rate accuracy test:
 - i. Connect the CARESCAPE CO₂ to the LoFlo Sidestream Module.
 - ii. Connect the CARESCAPE CO₂ to the CARESCAPE ONE.
 - b. For LoFlo CO₂ accuracy test:

For more information about connecting the host monitor to the CARESCAPE Dock F0 or connecting E-modules, refer to the host monitor service manual.

 - i. For the CARESCAPE B850, connect the CARESCAPE B850 to the F7/F5 Frame:
 - Connect one end of the Frame-CPU cable to the ePort connector on the rear panel of the CARESCAPE B850.
 - Connect the other end of the Frame-CPU cable to the F7/F5 Frame.
 - ii. For CARESCAPE B650 or CARESCAPE B450, proceed to the next step.
 - iii. Connect the CARESCAPE Dock F0 to the host monitor:
 - Connect one end of the ePort CARESCAPE ONE to host cable to the ePort connector on the rear of the host monitor.
 - Connect the other end of the ePort CARESCAPE ONE to host cable to the ePort connector on the CARESCAPE Dock F0.
 - iv. Connect the CARESCAPE ONE to the CARESCAPE CO₂ and LoFlo Sidestream Module:
 - Connect the CARESCAPE CO₂ to the LoFlo Sidestream Module.
 - Connect the CARESCAPE CO₂ to the CARESCAPE ONE.
7. Connect NIBP:
 - a. Connect the NIBP hose to the CARESCAPE ONE NIBP connector.
 - b. Connect the NIBP cuff to the NIBP hose.
 - c. Wrap the cuff around a rigid cylinder or pipe.
 - d. Connect the pressure manometer to the NIBP hose and NIBP cuff with a piece of tubing.
 - e. Ensure that all of the connections are leak-proof.
8. Connect Defib/Sync analog outputs:
 - a. For ECG, connect the CARESCAPE ECG to the CARESCAPE ONE and the ECG leadwires to the simulator.
 - b. For invasive pressure, connect the CARESCAPE Pressure to the CARESCAPE ONE and to the simulator.

Configuring the CARESCAPE ONE for CARESCAPE Parameters' functional check

The functional check is performed with the CARESCAPE ONE disconnected from the host monitor, unless otherwise indicated.

To display a measurement parameter on the screen, the measurement parameter must be configured to display with adequate priority. To configure the measurement parameter to display with adequate priority, select **Monitor Setup > Screen Setup** and

choose the screen location where you want the selected parameter waveform field or parameter window displayed.

1. Configure ECG measurement:
 - a. Configure the ECG 1, ECG 2 and ECG 3 waveform fields to the screen with adequate priority.
 - b. Select **Monitor Setup > Main Setup > Parameter Setup**.
 - c. Select **ECG > Setup** tab.
 - d. Select **Page 1** and configure:
 - **ECG 1 Lead:** II
 - **ECG 2 Lead:** V1
 - **ECG 3 Lead:** aVL
 - e. Select **Page 2** and configure:
 - **Size:** 1x
 - **Primary HR Source:** AUTO
 - **Beat Volume:** 1 or greater
 - f. Select the **Advanced** tab.
 - g. Select **Page 1** and configure:
 - **Pacemaker Detection:** Sensitive (Pace 2)
 - h. Select **Previous Menu**.
2. Configure impedance respiration:
 - a. Configure the Resp waveform field to the screen with adequate priority.
 - b. Select **Monitor Setup > Main Setup > Parameter Setup**.
 - c. Select **Impedance Respiration > Setup** tab.
 - d. Select **Page 1**.
 - e. Select **Resp Measurement > On** and configure:
 - **Resp Lead:** I (RA-LA), II (RA-LL), or RL-LL
 - f. Select **Impedance Respiration > Alarms** tab and configure:
 - **Apnea Limit Seconds:** 3 sec
 - g. Select **Previous Menu**.
3. Configure invasive pressure measurement:
 - a. Select **P1** and **P2** waveform fields to the screen with adequate priority.
 - b. Select **Monitor Setup > Main Setup > Parameter Setup**.
 - c. Select **P1** and configure:
 - **Label:** Artx
 - **Scale (mmHg):** 0-250 mmHg
 - **Display Format:** Sys/Dia (Mean)
 - d. Repeat steps b and c for P2 waveform.
 - e. Select **Previous Menu**.

4. Configure temperature:
 - a. Select **T1** and **T2** parameter windows to the screen with adequate priority.
 - b. Select **Monitor Setup > Main Setup > Parameter Setup**.
 - c. Select **Page 2 > Temperatures**.
 - d. Select **Setup** tab and configure:
 - **T1 Measurement:** On
 - **T2 Measurement:** On
 - e. Select **Previous Menu** twice.
5. Configure SpO₂:
 - a. Select SpO₂ waveform field to the screen with adequate priority.
 - b. Select **Monitor Setup > Main Setup > Parameter Setup**.
 - c. Select **SpO2 > Setup** tab.
 - d. Select **Page 1** and configure:
 - **Show pulse rate:** On
 - e. Select **Previous Menu** twice.
6. Configure the CO₂:
 - a. For LoFlo CO₂ sample flow rate accuracy test, configure the waveform field to the display with adequate priority:
 - i. Select **Monitor Setup > Screen Setup > Upper Parameter Area**.
 - ii. Select the screen location where you want the CO₂ parameter displayed and select **CO2**.
 - iii. Select **Previous Menu > Close**.
7. Configure Defib/Sync analog outputs:
 - a. For ECG:
 - If the second ECG waveform displayed on the monitor is not the V Lead, set the second waveform to the V Lead.
 - b. For invasive pressure:
 - Zero the pressure on the simulator and on the monitor.
 - Configure **P1 ART1 scale:** 0–160 mmHg/0–30 kPa

Configuring simulator/manometer for CARESCAPE ONE Parameters' functional check

For instructions on how to use and configure the simulators and manometer, refer to the documentation provided with the simulator and manometer.

1. Configure the ECG settings as follows:
 - **ECG Rhythm:** a normal sinus rhythm
 - **Heart Rate:** 80 bpm
 - **Amplitude:** 1 mV

2. Configure the impedance respiration settings as follows:
 - **Baseline impedance:** 1000 Ω
 - **Amplitude:** 1 Ω
 - **Respiration rate:** 20 breaths per minute
 - **Lead selection:** II (or RL-LL)
3. Configure the simulator's invasive pressure channels P1 and P2 as follows:
 - **Sensitivity:** 5 µV/V/mmHg
 - **InvBP output:** 0 mmHg static pressure or atmosphere
4. Configure the simulator's temperature settings for all temperature channels as follows:
 - Temperature probes: 400 series
 - **Temperature:** 32 – 40 °C/ 89.6 – 104 °F
5. Configure the simulator's SpO₂ settings as follows:
 - **SpO₂:** 90–100
 - **PR:** 50–70
6. Configure the digital manometer's pressure unit of measure and scale for NIBP.
7. Configure the simulator's Defib/Sync analog output settings as follows:
 - a. For ECG:
 - **ECG rhythm:** a normal sinus rhythm: V Lead
 - **Heart rate:** 80–90 bpm
 - b. For invasive pressure:
 - **BP:** 120/80 dynamic waveform output

Testing ECG measurement *

1. Test for a normal sinus rhythm.
 - a. Check that the monitor displays the selected ECG leads and the waveforms are noise-free.

The monitor shall display a 80 ± 5 bpm heart rate and an audible QRS tone sounds with each QRS complex. If necessary, turn up the QRS volume.
Flex the ECG cable near the connectors to verify no irregularities. If irregularities exist, replace the USB patient cable.
 - b. Open the **ECG Setup** tab by selecting **ECG** parameter window.
 - c. From **ECG I Lead**, select lead **I**.
 - d. Check that the selected waveform displays and that it is noise free.
 - e. Repeat to display and check each of the remaining ECG leads: **II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, and V6**.
 - f. Select **Close**.

2. Check pacemaker detection:
 - a. Configure the simulator's ECG output to Asynchronous Pacemaker Pulse.
 - b. Check that pacemaker spikes are shown on the ECG waveform.
 - c. Configure the simulator's ECG output to 80 beats per minute, Normal Sinus Rhythm.
 - d. Check that the heart rate value is 80 ± 5 beats per minute.
3. Check Asystole detection:
 - a. Configure the simulator's ECG output to Asystole.
 - b. Check that the **Asystole** alarm appears on the monitor screen.
 - c. Configure the simulator's ECG output to 80 beats per minute, Normal Sinus Rhythm.
 - d. Check that the heart rate value is 80 ± 1 beats per minute.
4. Check leads off detection:
 - a. Detach the RA/R leadwire from the simulator.
 - b. Check that the Lead II waveform disappears from the ECG1 waveform field, followed by an **RA/R lead off** message.
 - c. Check that Lead II is replaced by Lead III in the ECG1 waveform field after a while.
 - d. Reconnect the RA/R leadwire to the simulator.
 - e. Check that Lead III is replaced with Lead II in the ECG waveform field.

Testing impedance respiration measurement

1. Check the respiration rate:
 - a. Check that the RESP waveform is shown.
 - b. Check that the **RR** value is 20 (± 5) breaths per minute.
2. Check the apnea detection:
 - a. Configure the simulator to simulate a continuous apnea situation (respiration rate: zero breaths per minute/flat line).
 - b. Wait and check that the monitor activates an **Apnea** alarm.
 - c. Configure the simulator's respiration rate back to 20 breaths per minute.
 - d. Check that the **RR** value is 20 (± 5) breaths per minute.

Testing invasive pressure measurement *

Check the functionality of the measurement with a patient simulator.

Perform the following steps to all invasive pressure channels.

1. Zero the tested pressure channel:
 - a. Ensure that the simulator's invasive pressure output channel is configured to 0 mmHg/0 kPa static.
 - b. Zero the tested invasive pressure channel by pressing the related Zero key on the module.
 - c. Check that a **Zeroing** message followed by a **Zeroed** message is shown in the related parameter windows.
2. Test a static pressure:
 - a. Configure the simulator's invasive pressure output channel to 200 mmHg/26.7 kPa static pressure.
 - b. Check that a flat pressure line appears on the related waveform field.
 - c. Check that the reading in the parameter window is 200 ± 4 mmHg/ 26.7 ± 0.5 kPa.
3. Check the pressure waveform:
 - a. Configure the simulator's invasive pressure output channel to Arterial 120/80 mmHg / 16/10.7 kPa.
 - b. Check that the pressure waveform for the tested invasive pressure channel appears in the waveform window.
 - c. Check that the Art X Sys/Dia (Mean) pressure values 120/80 mmHg / 16/10.7 kPa are shown in the related parameter window.

Testing temperature measurement *

Check the functionality of the measurement with a patient simulator.

Perform the following steps to both the temperature channels in the module.

NOTE The 'x' in the Tx refers to the temperature channel being tested.

1. Check that:
 - a. Tx temperature matches the configured simulator value chosen earlier ± 0.1 °C/ ± 0.2 °F.
 - b. There are no error messages on the screen.

Testing SpO₂ measurement *

1. Check that:
 - The SpO₂ reading appears in the parameter window.
 - The plethysmographic waveform appears on the screen.

SpO₂ functional testers

You can verify the functionality of pulse oximeter sensor and monitor with a functional SpO₂ tester but you cannot evaluate their accuracy with such a device. For more information, refer to the standard ISO 80601-2-61 Annex FF (Simulators, calibrators and functional testers for pulse oximeter equipment).

Testing LoFlo CO₂

Testing LoFlo CO₂ sample flow rate accuracy

The sample flow rate accuracy test must be completed under load.

This test uses a CARESCAPE ONE with the CARESCAPE CO₂ and LoFlo Sidestream Module.

1. Attach the sample line to the sample receptacle of the LoFlo Sidestream Module. A “click” will be heard when the sample line is properly inserted into the sample receptacle.
2. Wait for approximately two minutes for the LoFlo Sidestream Module to warm up and for the warm up messages to clear.
3. Connect the calibrated flow meter to the exhaust port of the LoFlo Sidestream Module.
4. Check that the flow rate is 50 ml/min +/- 10 ml.

If the measured flow rate is outside of the specified limits, remove the CO₂ assembly from use and return the CO₂ assembly to GE for service.

Testing LoFlo CO₂ accuracy

This test uses the CARESCAPE B850 with an F7/F5 Frame, CARESCAPE B650, or CARESCAPE B450. In addition, this test uses a CARESCAPE Respiratory Module or E-miniC Module, CARESCAPE Dock F0, and a CARESCAPE ONE with the CARESCAPE CO₂ and LoFlo Sidestream Module.

1. Attach a sample line to the LoFlo Sidestream Module. Make sure that the LoFlo Sidestream Module is disconnected from the patient circuit.
2. Wait for five minutes for the LoFlo Sidestream Module to warm up. Note that the warming up message clears earlier, within two minutes. For the most accurate results, wait for more than a total of 10 minutes.
3. From the host monitor, select **Monitor Setup > Main Setup > Parameter Setup > Gases > CO₂ > Setup** and check that the settings for CO₂ are as follows:
 - **FiO₂ level %:** 21–40
 - **N₂O level %:** 0–40
4. Select **Monitor Setup > Main Setup > Parameter Setup > Gases > Zeroing** to zero the LoFlo Sidestream Module with the sample line used for this test.

5. Select **Monitor Setup > Defaults & Service > Service Calibrations > Gases**.
Note that you may have to alternatively select **Monitor Setup > Main Setup > Parameter Setup > Gases > CO₂ > Setup** and do the following:
 - a. Check that the CO₂ Measurement Source is set to **Automatic (A)**.
 - b. Connect a CARESCAPE Respiratory Module or a E-MiniC Module to the F5/F7 Frame or to the CARESCAPE B650 or CARESCAPE B450.
 - c. Disconnect the CARESCAPE CO₂ and the LoFlo Sidestream Module from the CARESCAPE ONE.
 - d. Select **Monitor Setup > Defaults & Service > Service Calibrations > Gases**.
 - e. Reconnect the CARESCAPE CO₂ with the LoFlo Sidestream Module to the CARESCAPE ONE.
 - f. Disconnect the CARESCAPE Respiratory Module or a E-MiniC Module from the F5/F7 Frame or from the CARESCAPE B650 or CARESCAPE B450.
6. Attach a regulated flowing gas mixture of 5.0 +/- 0.3% CO₂, balance air to the sample line.
Note that when GE PN 755580 calibration gas is used, the accuracy of its CO₂ is 5.00 +/- 0.025% (or 5%, relative accuracy +/- 0.5%).
7. Allow the gas mixture to stabilize for 10 seconds, then check the results:
 - The CO₂ value displayed should be 5.0 +/- 0.3%.
 - If a waveform is present, the waveform should appear as a straight line at approximately 5%.
8. Return the CO₂ settings for gas compensations to their previous settings.

Testing NIBP measurement

1. Check the NIBP tubing system for leaks and check if NIBP calibration is required.
 - a. Select **Monitor Setup > Defaults & Service > Service Calibrations**.
 - b. Enter the Username and Password and select **Enter** to display the **Calibrations** menu.
 - c. Select **NIBP**.
 - d. Set the **Target Pressure** to **250 mmHg**.
 - e. Next to **Calibration Check**, select **Start**.
The CARESCAPE ONE starts inflating approximately 250 mmHg static pressure into the cuff. The pressure measured by the CARESCAPE ONE is updated in real-time to the calibration menu, and on the manometer screen. The pump shuts off at the set target pressure, and the pressure drops a little before stabilizing.
 - f. Keep the NIBP test setup pressurized for at least one minute. Then check that the NIBP tubing is not leaking and that the CARESCAPE ONE shows an accurate NIBP reading.
 - g. Use the following table to evaluate the NIBP leakage and NIBP calibration status.

Observed results	Conclusion	Recommended action
NIBP is leaking.	<p>Test failed.</p> <p>The NIBP tubing is leaking if the pressure does not stabilize and drops at a rate of 1 mmHg or more for every five seconds.</p>	<p>Troubleshoot the root cause for the NIBP leakage and correct the problem.</p> <ol style="list-style-type: none"> Check that the external NIBP test setup is not leaking. Correct the root cause for the leak and repeat the NIBP measurement test. Check that the internal NIBP tubing is not leaking. Re-perform all the check out procedures required after performing corrective maintenance to the CARESCAPE ONE.
NIBP is out of calibration.	<p>Test failed.</p> <p>NIBP calibration is required if the readings in the manometer and in the NIBP calibration menu differ more than ± 1 mmHg.</p>	<ol style="list-style-type: none"> Calibrate NIBP. Perform functional check to retest the NIBP measurement.
No leakage and NIBP is accurate.	<p>Test passed.</p> <p>NIBP is working properly when:</p> <ul style="list-style-type: none"> The pressure readings shown on the Calibration Check menu and on the manometer are the same ± 1 mmHg. The pressure stabilizes and the readings shown on the Calibration Check menu and does not drop at a rate of 1 mmHg or more for every five seconds. 	Perform the next step of this procedure.

- Select **Verify Pressure**. The pressure releases from the NIBP cuff.
- Disconnect the NIBP cuff and manometer from the CARESCAPE ONE.

Testing analog output and defibrillator synchronization marker out signals

This test is performed using the GE Analog Out/Defib Sync Tester.

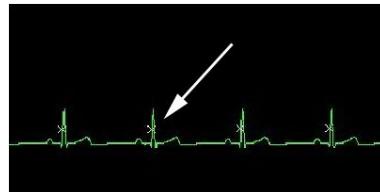
- Connect analog output/Defib sync cable to the **Defib/Sync** connector on the device.

2. Connect the bare wires of the analog output/Defib sync cable to their corresponding connections in the tester:
 - a. Connect the green wire (ANALOG_RETURN) from the analog output/Defib sync cable to the tester's ground terminal (**GND**).
 - b. Connect the gray wire (DEFIB_SYNC_MARKER_OUT) from the analog output/Defib sync cable to the tester's **Mark** connector.
 - c. Connect the brown wire (ECG_ANALOG_OUT) from the analog output/Defib sync cable to the tester's **ECG** connector.
 - d. Connect the red wire (BP_ANALOG_OUT) from the analog output/Defib sync cable to the tester's **BP** connector.

Analog output/Defib sync cable	
Wire color	Signal name
Brown	ECG_ANALOG_OUT
Red	BP_ANALOG_OUT
Orange	NO_CONNECTION
Yellow	MARKER_RETURN
Shield	DRAIN WIRE
Green	ANALOG_RETURN
Blue	NO_CONNECTION
Violet	DEFIB_SYNC_MARKER_IN
Gray	DEFIB_SYNC_MARKER_OUT

3. Plug the RL ground cable from the tester into the simulator's **RL** terminal and connect the patient leadwire to the simulator's **RL** terminal.
4. Disconnect the V lead of the patient cable from the simulator and connect it to the **V LEAD** terminal of the tester.
5. Test ECG:
 - a. Set the tester selector switch to **ECG**.
 - b. On the monitor observe that the V lead waveform resembles the primary ECG waveform.
6. Test invasive blood pressure:
 - a. Set the tester selector switch to **BP**.
 - b. On the monitor observe that the V lead waveform resembles the BP waveform.
7. Test Marker Out:
 - a. Set the tester selector switch to **MARK**.
 - b. On the monitor observe that the V lead waveform has a marker pulse corresponding to the R wave of the primary ECG waveform.

8. Test Marker In:
 - a. Set the tester selector switch to ECG.
 - b. Connect the violet wire (DEFIB_SYNC_MARKER_IN) and the gray wire (DEFIB_SYNC_MARKER_OUT) of the analog output/Defib sync cable to the tester's **Mark** connector.
 - c. On the monitor, check that the markers are present on the ECG waveform:



If the test fails, calibrate analog outputs and re-test. If the test continues to fail, replace the main board.

Zeroing CO₂ to room air

The LoFlo Sidestream Module may need to be zeroed to room air during the initial power-up of the LoFlo Sidestream Module or when the CO₂ sensor detects changes in the optical properties of the sample cell.

You may zero CO₂ at any time. The following conditions apply:

- The system will not allow you to zero CO₂ until 20 seconds after the last breath is detected.
- The system will not allow you to zero CO₂ if the temperature is not stable.
- You cannot zero CO₂ unless a sample cell is connected to the LoFlo Sidestream Module.

Required tools for zeroing CO₂ to room air

For a list of compatible accessories, see the supplemental information provided.

- LoFlo Sidestream Module
- CARESCAPE CO₂
- LoFlo CO₂ sampling kit

Making connections to zero CO₂ to room air

1. Turn on the CARESCAPE ONE and wait until the normal screen appears.
2. Connect the CARESCAPE CO₂ and LoFlo Sidestream Module to the CARESCAPE ONE.
3. Connect the sampling accessory to the sampling receptacle of the LoFlo Sidestream Module.
4. Wait for approximately five minutes for the LoFlo Sidestream Module to warm up and for the warm up messages to clear.
5. Check that the sampling accessory is exposed to room air and is away from all sources of CO₂, including the ventilator, the patient's breath, and your own breath.

Configuring CARESCAPE ONE for zeroing CO₂ to room air

To display a measurement parameter on the screen, the measurement parameter must be configured to display with adequate priority. To configure the measurement parameter to display with adequate priority, select **Monitor Setup > Screen Setup** and choose the screen location where you want the selected parameter waveform field or parameter window displayed.

1. Configure the CO₂ waveform field to the display with adequate priority:
 - a. Select **Monitor Setup > Screen Setup > Upper Parameter Area**.
 - b. Select the screen location where you want the CO₂ parameter displayed and select **CO2**.
 - c. Select **Previous Menu > Close**.
2. Check that the CO₂ parameter is active.

Zeroing CO₂ to room air

1. Check that the CARESCAPE ONE is not displaying a message indicating that the sensor is not ready to zero.
2. Enter the CO₂ menu.
3. Select **Zeroing > Zero to room air**.

The maximum time for the LoFlo Sidestream Module to zero is 40 seconds. The typical time for a zero is 15 to 20 seconds.

Completing the functional check

1. Select **Discharge Patient** or **Reset Case** to discard any changes made to the monitor configuration during the functional check.
2. Disconnect the test setup.

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Battery maintenance

About the lithium-ion battery

The lithium-ion (Li-Ion) battery is a rechargeable battery containing lithium-ion cells. Each battery contains an integrated electronic fuel gauge and a safety protection circuit.

- The battery discharges on its own, even when it is not installed in the equipment. This discharge is the result of the lithium-ion cells and the bias current required for the integrated electronics.
- The self-discharge rate of lithium-ion cells double for every 10°C (18°F) rise in temperature.
- The capacity loss of the battery degrades significantly at higher temperatures.
- As the battery ages, the full-charge capacity of the battery degrades and is permanently lost. As a result, the amount of charge that is stored and available for use is reduced.

The following terms are used to define the battery capacity:

- Design capacity The rated/nominal capacity of the battery cells when the battery is new.
- Full-charge capacity The actual amount of charge the battery can store and deliver.
- Remaining charge capacity The amount of full-charge capacity currently remaining in the battery. This is a percent of full-charge capacity.

Improving battery performance

Follow these guidelines to improve the battery performance:

1. Position the equipment in a location that does not artificially increase the operating temperature of the battery.
2. GE recommends using an approved GE external battery charger to charge the battery whenever possible. The external battery charger maintains a lower battery cell temperature during the charge cycle.

This reduction in temperature can extend the life of the battery.

3. Condition the battery when the Battery quality status indicates **Condition** (**Monitor Setup > Battery Status > Advanced > Page 1**).
Battery conditioning re-calibrates the electronic fuel gauge. GE recommends using an approved GE external battery charger to condition the battery.
See the supplemental information provided for details about a compatible external battery charger.

Battery storage recommendations

GE recommends storing the battery outside of the device at a temperature between 20°C to 25°C (68°F to 77°F) if the device will not be used for a long period of time.

Testing the battery charge

Before installing a battery, verify the battery's state of charge. Each battery must be fully charged before use.

1. Press the **TEST** button on the battery and check the green charging level indicators to see how much charge is left:
 - Four LEDs illuminated: 75% to 100% of full-charge capacity.
 - Three LEDs illuminated: 50% to 74.9% of full-charge capacity.
 - Two LEDs illuminated: 25% to 49.9% of full-charge capacity.
 - One LED illuminated: 11% to 24.9% of full-charge capacity.
 - One LED flashing: < 11% of full-charge capacity.

Charging a battery inside the CARESCAPE ONE

The battery is charged whenever the CARESCAPE ONE is mounted on the CARESCAPE Dock F0 and is connected to an AC power source. The battery charges when the CARESCAPE ONE is turned on and when the CARESCAPE ONE is in the standby mode.

There are some special conditions when battery charging is temporarily denied, for example, when the battery temperature is too high.

Charging and conditioning a battery using an external battery charger

Follow the external battery charger instructions for charging and conditioning the battery.

Checking the battery charge with the software

You can check the battery charge status using the monitor software:

1. Select the battery status area in the upper right corner of the screen, or select **Monitor Setup > Battery Status**.
2. Check the **Estimated time remaining** for the battery to empty or the **Charging – time to full** battery charge status.
3. If you wish to see more detailed battery information, select the **Advanced** tab and pages.

Conditioning the battery

Battery conditioning re-calibrates the electronic fuel gauge. GE recommends using an external battery charger to condition the battery. See the supplemental information provided for details about an approved GE external battery charger.

Condition the battery when the Battery quality status indicates **Condition**.

1. Select **Monitor Setup > Battery Status > Advanced > Page 1**.
2. Under **Battery Quality**, check for a **Condition** status.
A **Condition** status means that the battery requires conditioning.
3. Follow the external battery charger instructions for use to condition the battery.

Inserting and removing the CARESCAPE ONE battery

WARNING	EXPLOSION OR FIRE. Using non-recommended batteries could result in injury/burns to the patients or users. Only use batteries recommended or manufactured by GE. The warranty can be voided if non-recommended batteries are used.
WARNING	PHYSICAL INJURY. Do not install the device above a patient. Make sure the battery is completely inserted and the battery door is completely closed. Falling batteries could seriously or fatally injure neonatal or other vulnerable patients.
WARNING	PHYSICAL INJURY. Do not install the device above a patient. Leaks from the battery cells can occur under extreme conditions. The liquid is caustic to the eyes and skin. If the liquid comes in contact with eyes or skin, flush with clean water and seek medical attention.

1. To insert a battery:
 - a. Open the battery door by gently peeling down the corner of the battery door pull tab.



- b. Position the battery with the connector end facing towards the battery slot and insert the battery all the way into the battery slot.



- c. Close the battery door. Ensure that the battery door tightly seals the battery into the battery slot.

2. To remove a battery:
 - a. Open the battery door by gently pulling on the battery door pull tab.
 - b. Pull on the battery cord to remove the battery from the battery slot.



Battery recycling



This product contains Lithium-Ion batteries. At the end of their service life, batteries in this product must be recycled or disposed in accordance with local or national regulations. Do not dispose of batteries as trash or unsorted municipal waste. Requirements and services for recycling of batteries vary between countries.

- USA: You may follow the battery manufacturers instructions on the battery to recycle it. Alternatively, you may return GE product batteries to GE for recycling. For information about returning batteries to GE, contact your authorized GE Service representative or contact GE Equipment Services at 1-800-437-1171.
- Canada: Contact the approved battery stewardship program in your province for information on recycling your batteries.
- Other countries: Recycle batteries through your local, regional or national collective scheme in accordance with your local or national regulations.

11

Calibration and adjustments

Calibration and adjustments

CAUTION

Make sure the patient is disconnected from the monitor before performing any service on the device.

Calibration and adjustments

No calibration or adjustments are needed for the following measurement devices:

- CO₂
- SpO₂
- Temperature

NIBP calibration

NIBP calibration must be performed:

- If the NIBP calibration check failed.
- If the measured value is not within the specification limits.

Required tools for NIBP

NOTE

Use only accurate, properly maintained, calibrated, and traceable calibration tools for the parameter calibration to ensure measurement accuracy.

- For NIBP:
 - Adult NIBP hose
 - Adult NIBP cuff
 - A rigid cylinder or pipe
 - Digital manometer with a range of at least 0 to 1000 mmHg and accuracy 0.5% FS.
 - Tubing parts to connect a manometer to the NIBP cuff and hose.

NOTE

See the supplemental information provided for compatible accessories.

Making connections for NIBP calibration



1. Turn on the CARESCAPE ONE and wait until the normal screen appears.
2. Connect the NIBP hose to the CARESCAPE ONE NIBP connector.
3. Connect the NIBP cuff to the NIBP hose.
4. Wrap the cuff around a rigid cylinder or pipe.
5. Connect the pressure manometer to the NIBP hose and NIBP cuff with a piece of tubing.
6. Turn on the pressure manometer.
For instructions on how to use and configure the manometer, refer to the manometer documentation.
7. Ensure that all of the connections are leak-proof.

Calibrating NIBP

NIBP calibration is required whenever the NIBP calibration check failed.

1. Select **Monitor Setup > Defaults & Service > Service Calibrations**.
2. Enter the Username and Password and select **Confirm** to display the **Service/Calibrations** menu.
3. Select **NIBP**.
4. Select **Calibration** page.
5. Next to **Zero Calibration**, select **Start**.

6. Next to ***Gain Calibration***, select ***Start***.

The following occurs:

- The CARESCAPE ONE starts pumping up the pressure cuff and the pressures displayed on both the CARESCAPE ONE and the manometer show an increase.
- The pump shuts off at about 250 mmHg, and the pressure drops slowly to about 240 mmHg before stabilizing. If the pressure continues to drop at a rate of 1 mmHg or more for every five seconds, there is a leak in the NIBP tubing. If there is a leak in the NIBP tubing, correct the problem and restart this calibration procedure.

NOTE

To abort the calibration process with no changes, next to ***Gain Calibration***, press ***Stop***.

7. Under ***Set the measured pressure /mmHg***, use the up or down arrow to select a pressure value that is 1 mmHg lower than the current manometer reading.

NOTE

When selecting the pressure value, ignore the pressure value displayed in the ***Pressure mmHg*** field. This is the pressure at the pressure transducer without gain calibration.

8. When the manometer falls to exactly the value that you selected in the popup window, select ***Confirm*** to enter the value. The pressure to the cuff is released.

NOTE

If the pressure value selected under ***Set the measured pressure /mmHg*** exceeds the maximum allowed gain correction, the ***Confirm*** button will be inactive. NIBP calibration cannot be completed and corrective maintenance is required to replace the main CPU.

9. Perform the functional check to test the NIBP measurement.

10. Disconnect the NIBP cuff and manometer from the CARESCAPE ONE.

Functional check for CARESCAPE NIBP

Required tools for CARESCAPE ONE NIBP functional check

For a list of compatible accessories, see the supplemental information provided.

- Adult NIBP hose
- Adult NIBP cuff
- A rigid cylinder or pipe
- Digital manometer with a range of at least 0 to 1000 mmHg and accuracy 0.5% FS.
- Tubing parts to connect a manometer to the NIBP cuff and hose.

Making connections for CARESCAPE ONE NIBP functional check

1. Turn on the CARESCAPE ONE and wait until the normal screen appears.
2. Connect the NIBP hose to the CARESCAPE ONE NIBP connector.
3. Connect the NIBP cuff to the NIBP hose.
4. Wrap the cuff around a rigid cylinder or pipe.
5. Connect the pressure manometer to the NIBP hose and NIBP cuff with a piece of tubing.

Calibration and adjustments

6. Ensure that all of the connections are leak-proof.

Configuring the manometer for CARESCAPE ONE NIBP functional check

For instructions on how to use the manometer, refer to the documentation provided with the manometer.

1. Configure the digital manometer's pressure unit of measure and scale for NIBP.

Testing NIBP measurement

1. Check the NIBP tubing system for leaks and check if NIBP calibration is required.
 - a. Select **Monitor Setup > Defaults & Service > Service Calibrations**.
 - b. Enter the Username and Password and select **Enter** to display the **Calibrations** menu.
 - c. Select **NIBP**.
 - d. Set the **Target Pressure** to **250 mmHg**.
 - e. Next to **Calibration Check**, select **Start**.

The CARESCAPE ONE starts inflating approximately 250 mmHg static pressure into the cuff. The pressure measured by the CARESCAPE ONE is updated in real-time to the calibration menu, and on the manometer screen. The pump shuts off at the set target pressure, and the pressure drops a little before stabilizing.

- f. Keep the NIBP test setup pressurized for at least one minute. Then check that the NIBP tubing is not leaking and that the CARESCAPE ONE shows an accurate NIBP reading.
- g. Use the following table to evaluate the NIBP leakage and NIBP calibration status.

Observed results	Conclusion	Recommended action
NIBP is leaking.	Test failed. The NIBP tubing is leaking if the pressure does not stabilize and drops at a rate of 1 mmHg or more for every five seconds.	Troubleshoot the root cause for the NIBP leakage and correct the problem. <ol style="list-style-type: none"> 1. Check that the external NIBP test setup is not leaking. Correct the root cause for the leak and repeat the NIBP measurement test. 2. Check that the internal NIBP tubing is not leaking. Re-perform all the check out procedures required after performing corrective maintenance to the CARESCAPE ONE.
NIBP is out of calibration.	Test failed. NIBP calibration is required if the readings in the manometer and in the NIBP calibration menu differ more than ± 1 mmHg.	1. Calibrate NIBP. 2. Perform functional check to retest the NIBP measurement.
No leakage and NIBP is accurate.	Test passed. NIBP is working properly when: <ul style="list-style-type: none"> • The pressure readings shown on the Calibration Check menu and on the manometer are the same ± 1 mmHg. • The pressure stabilizes and the readings shown on the Calibration Check menu and does not drop at a rate of 1 mmHg or more for every five seconds. 	Perform the next step of this procedure.

2. Select **Verify Pressure**. The pressure releases from the NIBP cuff.

3. Disconnect the NIBP cuff and manometer from the CARESCAPE ONE.

Analog outputs calibration

Analog outputs calibration shall be performed:

- If the main board is replaced.
- If the measured value is not within the specification limits.

Required tools for analog output calibration

NOTE

Use only accurate, properly maintained, calibrated, and traceable calibration tools for the parameter calibration to ensure measurement accuracy.

- Unterminated defib sync cable (2017842-001)
- Digital voltmeter

Making connections for CARESCAPE ONE analog outputs calibration

1. Turn on the CARESCAPE ONE and wait until the normal screen appears.
2. Disconnect all CARESCAPE Parameters and the NIBP hose.
3. Connect the unterminated cable to the **Defib/ Sync** connector on the CARESCAPE ONE.

Configuring CARESCAPE ONE for analog outputs calibration

1. Select **Monitor Setup > Defaults & Service > Service Calibrations**.
2. Enter the Username and Password and select **Confirm** to display the Service/Calibrations menu.
3. Select **Analog Outputs**.

Calibrating analog outputs

Calibrating analog outputs is required after the main board is replaced.

1. Calibrate ECG analog output:
 - a. Connect the digital voltmeter to the appropriate unterminated cable:

Wire color	Signal name	Digital voltmeter
Brown	ECG_ANALOG_OUT	POSITIVE
Green	ANALOG_RETURN	GROUND
 - b. Next to **ECG Output Calibration** on the **Service/Calibrations/Analog Outputs** screen, select **Start**.
To abort the calibration process with no changes, press **Stop**.
 - c. Measure DC voltages across the pins and type in or use the scroll buttons to enter the measured voltages for **Low Point**, **High Point** and **Calibration Point**.
Select **Confirm** after entering each measured voltage.

2. Calibrate the invasive pressure analog output:

- a. Select **IP** page.
- b. Connect the digital voltmeter to the appropriate unterminated cable:

Wire color	Signal name	Digital voltmeter
Red	BP_ANALOG_OUT	POSITIVE
Green	ANALOG_RETURN	GROUND

- c. Next to **IP Output Calibration** on the *Service/Calibrations/Analog Outputs* screen, select **Start**.
To abort the calibration process with no changes, press **Stop**.
- d. Measure DC voltages across the pins and type in or use the scroll buttons to enter the measured voltages for **Low Point**, **High Point** and **Calibration Point**.
Select **Confirm** after entering each measured voltage.

3. Perform the functional check to test the analog output and defibrillator synchronization marker out signals.

Functional check for CARESCAPE ONE Defib/Sync analog outputs

Required tools for CARESCAPE ONE Defib/Sync analog outputs functional check

For a list of compatible accessories, see the supplemental information provided.

- GE Analog Out/Defib Sync Tester, GE PN 2040582-001
- Analog output/Defib sync cable for the device you are testing. It is recommended that you strip the ends of the unterminated analog output cable and tin the ends with a soldering Iron.
- A multiparameter patient simulator that supports the ECG and invasive pressure measurements. The multiparameter patient simulator may have to be isolated from ground or run on battery power to eliminate noise while doing this test.
- CARESCAPE ECG
- 6-lead Multi-Link ECG cable, AAMI/AHA or IEC
- 4-leadwire expansion cable
- CARESCAPE Pressure

Making connections for CARESCAPE ONE Defib/Sync analog outputs functional check

1. Turn on the CARESCAPE ONE and wait until the normal screen appears.
2. Connect Defib/Sync analog outputs:
 - a. For ECG, connect the CARESCAPE ECG to the CARESCAPE ONE and the ECG leadwires to the simulator.
 - b. For invasive pressure, connect the CARESCAPE Pressure to the CARESCAPE ONE and to the simulator.

Configuring the CARESCAPE ONE for Defib/Sync analog outputs functional check

To display a measurement parameter on the screen, the measurement parameter must be configured to display with adequate priority. To configure the measurement

parameter to display with adequate priority, select **Monitor Setup > Screen Setup** and choose the screen location where you want the selected parameter waveform field or parameter window displayed.

1. Configure Defib/Sync analog outputs:
 - a. For ECG:
 - If the second ECG waveform displayed on the monitor is not the V Lead, set the second waveform to the V Lead.
 - b. For invasive pressure:
 - Zero the pressure on the simulator and on the monitor.
 - Configure **P1 ART1 scale**: 0–160 mmHg/0–30 kPa

[Configuring simulator for CARESCAPE ONE Defib/Sync analog outputs functional check](#)

For instructions on how to use and configure the simulator, refer to the documentation provided with the simulator.

1. Configure the simulator's Defib/Sync analog output settings as follows:
 - a. For ECG:
 - **ECG rhythm**: a normal sinus rhythm: V Lead
 - **Heart rate**: 80–90 bpm
 - b. For invasive pressure:
 - **BP**: 120/80 dynamic waveform output

[Testing analog output and defibrillator synchronization marker out signals](#)

This test is performed using the GE Analog Out/Defib Sync Tester.

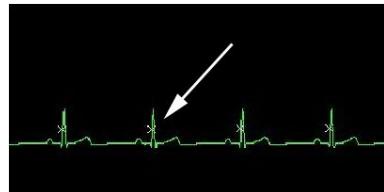
1. Connect analog output/Defib sync cable to the **Defib/Sync** connector on the device.

2. Connect the bare wires of the analog output/Defib sync cable to their corresponding connections in the tester:
 - a. Connect the green wire (ANALOG_RETURN) from the analog output/Defib sync cable to the tester's ground terminal (**GND**).
 - b. Connect the gray wire (DEFIB_SYNC_MARKER_OUT) from the analog output/Defib sync cable to the tester's **Mark** connector.
 - c. Connect the brown wire (ECG_ANALOG_OUT) from the analog output/Defib sync cable to the tester's **ECG** connector.
 - d. Connect the red wire (BP_ANALOG_OUT) from the analog output/Defib sync cable to the tester's **BP** connector.

Analog output/Defib sync cable	
Wire color	Signal name
Brown	ECG_ANALOG_OUT
Red	BP_ANALOG_OUT
Orange	NO_CONNECTION
Yellow	MARKER_RETURN
Shield	DRAIN WIRE
Green	ANALOG_RETURN
Blue	NO_CONNECTION
Violet	DEFIB_SYNC_MARKER_IN
Gray	DEFIB_SYNC_MARKER_OUT

3. Plug the RL ground cable from the tester into the simulator's **RL** terminal and connect the patient leadwire to the simulator's **RL** terminal.
4. Disconnect the V lead of the patient cable from the simulator and connect it to the **V LEAD** terminal of the tester.
5. Test ECG:
 - a. Set the tester selector switch to **ECG**.
 - b. On the monitor observe that the V lead waveform resembles the primary ECG waveform.
6. Test invasive blood pressure:
 - a. Set the tester selector switch to **BP**.
 - b. On the monitor observe that the V lead waveform resembles the BP waveform.
7. Test Marker Out:
 - a. Set the tester selector switch to **MARK**.
 - b. On the monitor observe that the V lead waveform has a marker pulse corresponding to the R wave of the primary ECG waveform.

8. Test Marker In:
 - a. Set the tester selector switch to ECG.
 - b. Connect the violet wire (DEFIB_SYNC_MARKER_IN) and the gray wire (DEFIB_SYNC_MARKER_OUT) of the analog output/Defib sync cable to the tester's **Mark** connector.
 - c. On the monitor, check that the markers are present on the ECG waveform:



If the test fails, calibrate analog outputs and re-test. If the test continues to fail, replace the main board.

12

Messages and error codes

Messages related to ECG measurement

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
<ul style="list-style-type: none">• Check device• ECG malfunction	<ul style="list-style-type: none">• wavef.• al. area	<p>Hardware or software fault in CARESCAPE ECG:</p> <ul style="list-style-type: none">• Cable fault• No updated data• Data sample drift• Configuration failure	<ul style="list-style-type: none">• Reconnect the CARESCAPE ECG.• Replace the CARESCAPE ECG.
<ul style="list-style-type: none">• Device overheating• Move ECG device to a cooler location	<ul style="list-style-type: none">• wavef.• al. area	CARESCAPE ECG surface temperature is too high.	<ul style="list-style-type: none">• Check the CARESCAPE ECG placement and ensure that it is not covered by anything that might lead to overheating.• Replace the CARESCAPE ECG.
<ul style="list-style-type: none">• ECG device failure: Call service	<ul style="list-style-type: none">• al. area	<ul style="list-style-type: none">• CARESCAPE ECG startup or initialization failure.	<ul style="list-style-type: none">• Reconnect the CARESCAPE ECG.• Replace the CARESCAPE ECG.
<ul style="list-style-type: none">• ECG device overheated. Shutting down	<ul style="list-style-type: none">• al. area	<ul style="list-style-type: none">• CARESCAPE ONE turns off the CARESCAPE ECG because its surface temperature is too high.	<ul style="list-style-type: none">• Check the CARESCAPE ECG placement and ensure that it is not covered by anything that might lead to overheating.• Replace the CARESCAPE ECG.

Message	Location	Possible causes	Suggested actions
• <i>ECG measurements removed</i>	• al. area	CARESCAPE ECG has been removed.	• Check all connections and reconnect as required.
• <i>Identical ECG device</i>	• al. area	There are two CARESCAPE ECGs.	• Remove one CARESCAPE ECG.

Messages related to impedance respiration measurement with CARESCAPE ONE

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• <i>Check device</i> • <i>Imped. malfunction</i>	• param., wavef. • al. area	Hardware or software fault in CARESCAPE ECG: <ul style="list-style-type: none">• Cable fault• Configuration failure• No updated data• Data sample drift	• Reconnect the CARESCAPE ECG. • Replace the CARESCAPE ECG.
• <i>Measurement off</i> • <i>OFF</i>	• param., wavef. • param.	ECG leads not connected to the patient. Measurement has been turned off from the setup menu.	• Connect the ECG leads to the patient to start the impedance respiration measurement. • Turn on the measurement from the setup menu.

Messages related to SpO₂ measurement with CARESCAPE ONE

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• Check device • SpO₂ malfunction	• param. • al. area	CARESCAPE SpO ₂ device malfunction. No SpO ₂ data detected.	• Check the CARESCAPE SpO ₂ device. • Replace if needed.
• Check probe • Check SpO₂ probe	• param. • al. area	There is no detectable SpO ₂ signal, the sensor is faulty or is detached from the patient. With CARESCAPE SpO ₂ – Nellcor this message also appears when the saturation updates exceed 30 seconds, the pulse rate is lost, or the pulse timeout condition occurs.	• Check the sensor and connections. • Check the patient status.
• Demo mode • SpO₂ Demo mode	• param. • al. area	CARESCAPE SpO ₂ – Masimo is in demo mode.	• Exit Demo mode . See the supplemental information provided in the user manual.
• Expiring cable	• param.	CARESCAPE SpO ₂ – Masimo has detected that the interconnect cable is near its expiration date.	• Replace the interconnect cable.
• Expiring probe	• param.	CARESCAPE SpO ₂ – Masimo has detected that the sensor or adhesive sensor is near its expiration date.	• Replace the sensor or adhesive sensor.
• Faulty cable • SpO₂ faulty cable	• param. • al. area	CARESCAPE SpO ₂ – Masimo has detected a defective interconnect cable.	• Replace the interconnect cable.
• Faulty probe • SpO₂ faulty probe • Faulty adhesive SpO₂ probe	• param. • al. area	The sensor has failed. The adhesive sensor has failed.	• Replace the sensor. • Replace the adhesive sensor.
• Identical SpO₂ device	• al. area	You can only have one CARESCAPE SpO ₂ , CARESCAPE SpO ₂ – Masimo, or CARESCAPE SpO ₂ – Nellcor in the system.	• Remove all but one CARESCAPE SpO ₂ device.
• Incompatible cable • Incompatible SpO₂ cable	• param. • al. area	CARESCAPE SpO ₂ – Masimo has detected that an incompatible or unrecognized interconnect cable has been connected.	• Connect a Masimo compatible interconnect cable.
• Incompatible probe • Incompatible SpO₂ probe • Incompatible adhesive SpO₂ probe	• param. • al. area	The sensor is not compatible or it is not recognized. Adhesive sensor is not compatible or it is not recognized.	• Replace the sensor with a compatible one. See the supplemental information provided. • If the problem persists, contact qualified service personnel.

Message	Location	Possible causes	Suggested actions
• Incompatible SpO₂ device	• al.area	CARESCAPE SpO ₂ device startup or initialization failure. CARESCAPE SpO ₂ device hardware fault.	• Reconnect the CARESCAPE SpO ₂ device. • Replace the CARESCAPE SpO ₂ device. • If the problem persists, contact qualified service personnel.
• Insufficient power for SpO₂ device	• al. area	There is not enough power for the CARESCAPE SpO ₂ device.	• Connect mains power. • Charge the CARESCAPE ONE battery.
• Move SpO₂ device to a cooler location	• al. area	CARESCAPE SpO ₂ device surface temperature is too high.	• Check the CARESCAPE SpO ₂ device placement and ensure that it is not covered by anything that might lead to overheating. • Replace the CARESCAPE SpO ₂ device.
• No cable • No SpO₂ cable	• param. • al. area	Interconnect cable is not connected to the CARESCAPE SpO ₂ – Masimo.	• Check the connection between the interconnect cable and CARESCAPE SpO ₂ device.
• No probe • No SpO₂ probe • No adhesive SpO₂ probe	• param. • al. area	Sensor is not connected to the CARESCAPE SpO ₂ device. Adhesive sensor is not connected to the CARESCAPE SpO ₂ device.	• Check the connection between the sensor and the CARESCAPE SpO ₂ device.
• Probe initializing	• param.	CARESCAPE SpO ₂ – Masimo has detected that the sensor is initializing.	• SpO ₂ monitoring will begin after initialization is complete.
• Replace cable • Replace SpO₂ cable	• param. • al. area	CARESCAPE SpO ₂ – Masimo has detected that the interconnect cable has expired.	• Replace the interconnect cable.
• Replace probe • Replace SpO₂ probe • Replace adhesive SpO₂ probe	• param. • al. area	CARESCAPE SpO ₂ – Masimo has detected that the sensor has expired. CARESCAPE SpO ₂ – Masimo has detected that the adhesive sensor has expired.	• Replace the sensor.
• SpO₂ device failure: Call service	• al. area	CARESCAPE SpO ₂ device startup or initialization failure.	• Reconnect the CARESCAPE SpO ₂ . • Replace the CARESCAPE SpO ₂ . • If the problem persists, contact qualified service personnel.

Message	Location	Possible causes	Suggested actions
• <i>SpO₂ device overheated Shutting down</i>	• al. area	The surface temperature of the CARESCAPE SpO ₂ is too high and the CARESCAPE ONE turns the CARESCAPE SpO ₂ off.	<ul style="list-style-type: none"> Check the CARESCAPE SpO₂ device placement and ensure that it is not covered by anything that might lead to overheating. Replace the CARESCAPE SpO₂ device.
• <i>SpO₂ measurement removed</i>	• al. area	CARESCAPE SpO ₂ device is disconnected.	<ul style="list-style-type: none"> Connect a CARESCAPE SpO₂ device

Messages related to NIBP measurement

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• <i>Calibrated</i>	• param.	Channel calibrated successfully.	<ul style="list-style-type: none"> Wait until the message disappears before starting a measurement.
• <i>Calibrating</i>	• param.	Calibration of a channel is in progress.	<ul style="list-style-type: none"> No action required.
• <i>Calibration error</i>	• param.	Calibration has failed.	<ul style="list-style-type: none"> Recalibrate. NIBP hardware fault in CARESCAPE ONE.
• <i>Call service</i>	• param.	NIBP hardware fault in CARESCAPE ONE.	<ul style="list-style-type: none"> Contact qualified service personnel.
• <i>Check NIBP</i>	• al. area	Systolic and/or diastolic results missing.	<ul style="list-style-type: none"> Check the patient status. Check NIBP cuff and hoses. Repeat the measurement.
• <i>Cuff occlusion</i>	• param.	Occlusion during measurement or overpressured cuff.	<ul style="list-style-type: none"> Check the cuff.
• <i>Cuff loose</i>	• param.	Loose cuff or cuff hose.	<ul style="list-style-type: none"> Check the cuff and cuff hose.
• <i>Cuff overpressure</i>	• param.	NIBP cuff is squeezed during measurement and exceeded the pressure safety limits.	<ul style="list-style-type: none"> Check NIBP cuff and hoses. Repeat the measurement.

Message	Location	Possible causes	Suggested actions
• Long meas. time	• param.	The measurement time is long. The triggering values vary according to the cuff type in use: • >2 min for adult/ child, 85 s for infant	• Check the patient status. • Check the cuff and hose connections. • If the problem persists, contact qualified service personnel.
• NIBP cuff occlusion	• al. area	Occlusion during measurement or overpressured cuff.	• Check the cuff.
• NIBP cuff loose	• al. area	Loose cuff or cuff hose.	• Check the cuff and cuff hose.
• NIBP auto stopped	• al. area	NIBP Auto mode is stopped because of a loose cuff or cuff hose.	• Check the cuff and cuff hose. • Restart the NIBP Auto mode.
• NIBP malfunction	• al. area	NIBP hardware fault in CARESCAPE ONE.	• Replace the main board.
• NIBP STAT stopped	• al. area	STAT mode is stopped because of a loose cuff or cuff hose.	• Check the cuff and cuff hose. • Restart the STAT mode.
• Zeroing	• param.	Zeroing is in progress.	• Wait until the zeroing is completed.
• Zero OK	• param.	Zeroing was successful.	• No action required.

Messages related to invasive pressures measurement

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• Device overheating • Move pressure device to a cooler location	• param. • al. area	The CARESCAPE Pressure surface temperature is too high.	• Check the CARESCAPE Pressure placement and ensure that it is not covered by anything that might lead to overheating. • If the problem persists, replace the CARESCAPE Pressure.
• Check device • P1 pressure malfunction to P2 pressure malfunction	• param. • al. area	The CARESCAPE Pressure has malfunctioned.	• Check the patient status. • Check connections. • Replace the CARESCAPE Pressure.
• Identical pressure devices	• al. area	There are two or more CARESCAPE Pressures connected.	• Remove all but one CARESCAPE Pressure.
• PX not zeroed where X = channel number (1 or 2)	• param.	There is at least one invasive pressure channel that has not been zeroed.	• Perform zeroing for all channels.
• P1 standby to P2 standby	• param.	The IP channel has been set to standby.	• Reactivate the channel by selecting Activate P1 to Activate P2 . • Channels are reactivated if pressures have remained between 10 and 250 mmHg for 10 seconds or longer.
• P1 zeroing failed to P2 zeroing failed	• param.	The channel has not been zeroed successfully.	• Repeat the zeroing.
• Pressure device failure: Call service	• al. area	Faulty CARESCAPE Pressure.	• Contact qualified service personnel.
• Pressure device initializing	• al. area	New software is being downloaded to the CARESCAPE Pressure.	• Wait. The message will clear when the download is complete.
• Pressure device overheated. Shutting it down	• al. area	CARESCAPE ONE turns off the CARESCAPE Pressure because its surface temperature is too high.	• Check the CARESCAPE Pressure placement and ensure that it is not covered by anything that might lead to overheating. • If the problem persists, replace the CARESCAPE Pressure.
• Pressure measurement removed	• al. area	CARESCAPE Pressure has been removed or active pressure channel becomes inactive.	• Check all connections and reconnect as required.
• Pressure Sensed	• param.	Pressure has been sensed during zeroing.	• Open the venting stopcock to air. • Re-zero.

Message	Location	Possible causes	Suggested actions
• <i>Zeroed</i>	• param.	Zeroing was successful.	<ul style="list-style-type: none"> No action required. <p>Message is automatically removed after 10 seconds.</p>
• <i>Zeroing</i>	• param.	IP channel is currently being zeroed.	<ul style="list-style-type: none"> No action required. <p>Message is automatically removed and replaced with the zeroing results after completion.</p>
• <i>Zero ICP separately</i>	• al. area	The ICP channel must be zeroed separately from all other invasive pressures.	<ul style="list-style-type: none"> Zero the channel using the Zero option found under the ICP channel setup menu.

Messages related to temperature measurement

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• <i>Calibration fail</i> • <i>T1 calibration fail / T2 calibration fail</i>	• param. • al. area	Calibration of a channel has failed.	<ul style="list-style-type: none"> Check connections. Replace the CARESCAPE Temperature.
• <i>Check device</i> • <i>Temperature malfunction</i>	• param. • al. area	Hardware or software fault in CARESCAPE Temperature: <ul style="list-style-type: none"> Cable fault No updated data Data sample drift Data out of expected range 	<ul style="list-style-type: none"> Reconnect the CARESCAPE Temperature. Replace the CARESCAPE Temperature.
• <i>Device overheating</i> • <i>Move Temp device to a cooler location</i>	• param. • al. area	CARESCAPE Temperature surface temperature is too high. Error code: 0x11CD.	<ul style="list-style-type: none"> Check the CARESCAPE Temperature placement and ensure that it is not covered by anything that might lead to overheating. Replace the CARESCAPE Temperature.
• <i>Identical Temp device</i>	• al. area	There are two CARESCAPE Temperatures. Error code: 0x110D.	<ul style="list-style-type: none"> Remove one CARESCAPE Temperature.

Message	Location	Possible causes	Suggested actions
• Temp measurement removed	• al. area	CARESCAPE Temperature has been removed or active temperature channel becomes inactive.	• Check all connections and reconnect as required.
• Temp device failure: Call service	• al. area	CARESCAPE Temperature startup failure. Error code: 0x108D CARESCAPE Temperature initialization failure. Error code: 0x124D	• Reconnect the CARESCAPE Temperature. • Replace the CARESCAPE Temperature. • If the problem persists, contact qualified service personnel.
• Temp device overheated. Shutting down	• al. area	CARESCAPE ONE turns off the CARESCAPE Temperature because its surface temperature is too high. Error code: 0x120D.	• Check the CARESCAPE Temperature placement and ensure that it is not covered by anything that might lead to overheating. • Replace the CARESCAPE Temperature.

Messages related to CO₂ measurement

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
<ul style="list-style-type: none"> • Check CO2 adapter • Check Adapter 	<ul style="list-style-type: none"> • al. area • param. 	<p>There is an obstruction in the LoFlo receptacle sample cell, or the LoFlo receptacle sample cell is not within the optimal operating range for CO₂ measurement.</p>	<ul style="list-style-type: none"> • Ensure that the sampling line connector is correctly and fully inserted. • Check that the sample cell windows and receptacle windows do not have any foreign material on them. • Perform zeroing procedure to optimize the operation. • If the problem persists, replace the adapter.
<ul style="list-style-type: none"> • Check sample line 	<ul style="list-style-type: none"> • al. area • param. 	<p>Sample flow rate is lower or higher than the nominal flow due to an obstruction in the sample line or exhaust port, or a cut or split in the sample line.</p> <p>The filter in the sample line is completely saturated.</p> <p>If the situation persists for more than 2 minutes, the pump will turn off.</p>	<ul style="list-style-type: none"> • Check the sample line and exhaust port for obstructions. • Check the sample line for cuts or splits and replace if necessary. • Remove the sample line and dispose of it following hospital protocol. • If the pump has shut off, disconnect then reconnect the accessory to restart the pump
<ul style="list-style-type: none"> • CO2 device failure: Call service 	<ul style="list-style-type: none"> • al. area 	<ul style="list-style-type: none"> • Front end processor startup failure, error code 0x108F • Incorrect initialization, error code 0x124F • No keep alive response, error code 0x128F 	<ul style="list-style-type: none"> • Reconnect the CARESCAPE CO₂. • Replace the CARESCAPE CO₂.
<ul style="list-style-type: none"> • CO2 device initializing 	<ul style="list-style-type: none"> • al. area 	<p>The CARESCAPE CO₂ is in the software download mode.</p>	<ul style="list-style-type: none"> • Wait and see if the message disappears. • Replace the CARESCAPE CO₂.
<ul style="list-style-type: none"> • CO2 device malfunction • Check device 	<ul style="list-style-type: none"> • al. area • param. 	<ul style="list-style-type: none"> • Cable fault • Stale data • Sample drift • Out of range • Configuration failure 	<ul style="list-style-type: none"> • Reconnect the CARESCAPE CO₂. • Replace the CARESCAPE CO₂.
<ul style="list-style-type: none"> • CO2 device overheated Shutting down 	<ul style="list-style-type: none"> • al. area 	<p>The CARESCAPE CO₂ surface temperature is too high and the CARESCAPE ONE turns the measurement off.</p> <p>Error code: 0x120F.</p>	<ul style="list-style-type: none"> • Check the CARESCAPE CO₂ placement and ensure that it is not covered by anything that might lead to overheating. • Replace the CARESCAPE CO₂.

Message	Location	Possible causes	Suggested actions
• CO₂ measurement removed	• al. area	The CARESCAPE CO ₂ has been disconnected from the CARESCAPE ONE.	• Connect the CARESCAPE CO ₂ and LoFlo Sidestream Module if you want to restart the measurement.
• CO₂ sensor removed • Sensor removed	• al. area • param.	The LoFlo Sidestream Module has been disconnected from the CARESCAPE CO ₂ .	• Connect the LoFlo Sidestream Module to the CARESCAPE CO ₂ if you want to restart the measurement.
• CO₂ zero required • Zero required	• al. area • param.	The CARESCAPE CO ₂ needs zeroing.	• Disconnect the patient and perform zeroing from the CO ₂ menu: Zeroing > Zero to room air . • If the problem persists, replace the sampling line and zero again.
• Identical CO₂ device	• al. area	There is more than one CARESCAPE CO ₂ device in the system. Error code: 0x110F.	• Remove all but one CARESCAPE CO ₂ .
• Move CO₂ device to a cooler location • Device overheating	• al. area • param.	The CARESCAPE CO ₂ surface temperature is too high. Error code: 0x11CF	• Check the CARESCAPE CO ₂ placement and ensure that it is not covered by anything that might lead to overheating. • Replace the CARESCAPE CO ₂ .
• Move CO₂ sensor to a cooler location • Sensor overheating	• al. area • param.	The LoFlo Sidestream Module temperature is too high.	• Check the LoFlo Sidestream Module placement and ensure that it is not covered by anything that might lead to overheating. • Replace the LoFlo Sidestream Module.
• Over range	• param.	The CO ₂ value is outside the measurable range and cannot be measured	• Zero CO ₂ . • Replace the CARESCAPE CO ₂ .
• Sample line disconnected • Line disconnected	• al. area • param.	The sample line is disconnected.	• Check the sample line connection and reconnect as needed, then perform zeroing.
• Service CO₂ sensor • Check sensor	• al. area • param.	There is a problem with the LoFlo Sidestream Module.	• Replace the LoFlo Sidestream Module. • Service the CO ₂ sensor.
• Warming up	• param.	The LoFlo Sidestream Module is warming up.	• Wait until the warm-up is completed and the message disappears.
• Zeroing	• wavef. • param.	Zeroing is in progress.	• Wait until the zeroing is completed and the message disappears.

Messages related to various technical issues

The following table lists messages that are not directly related to any parameter or measurement. They are mostly technical messages related to hardware, configuration, and similar issues.

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• Analog output malfunction	• al. area	CARESCAPE ONE analog output voltage failure.	• Replace the main board and reinstall the software.
• Battery empty!	• al. area	The CARESCAPE ONE is being used on battery power, and there is less than 5 minutes of charge left.	• Charge the battery by connecting the CARESCAPE ONE to a powered CARESCAPE Dock F0.
• Battery failure	• al. area	The battery is faulty.	• Replace the battery.
• Battery low	• al. area	The CARESCAPE ONE is being used on battery power, and there is less than 20 minutes of charge left.	• Charge the battery by connecting the CARESCAPE ONE to a powered CARESCAPE Dock F0.
• Battery temp high	• al. area	Battery temperature error due to faulty battery or battery management error.	• Replace the battery.
• Call Service: Text(s) missing	• al. area	The software text is missing in this language; the text file may be corrupted.	• Reinstall the software and check if the message disappears. • If the problem persists, contact your local GE Service representative for support.
• Condition battery	• al. area	The battery needs to be conditioned.	• Replace the battery, and condition the battery that was removed.

Message	Location	Possible causes	Suggested actions
• Configuration error(s)	• al. area	One or more errors have been detected in the configuration.	<ol style="list-style-type: none"> 1. Acknowledge the message. 2. If the message reappears, try the following: <ol style="list-style-type: none"> a. Restart the monitor and check if the message disappears. b. Reset the settings to the factory defaults, and restore the original monitor settings from a backup file. c. Reload the software and reconfigure the monitor settings.
• ECG analog output malfunction • Analog output malfunction	• al. area • wavef.	<p>Hardware or software fault in CARESCAPE ECG analog output:</p> <ul style="list-style-type: none"> • Cable fault • Configuration failure • No updated data • Data sample drift 	• Replace the CARESCAPE ECG.
• IP analog output malfunction • Analog output malfunction	• al. area • wavef.	<p>Hardware or software fault in CARESCAPE Pressure analog output:</p> <ul style="list-style-type: none"> • Cable fault • Configuration failure • No updated data • Data sample drift 	• Replace the CARESCAPE Pressure.
• Measurement error	• al. area	Technical fault in the monitor.	• Replace the main board.
• No battery backup	• al. area	There is no battery in the CARESCAPE ONE.	• Install a battery in the CARESCAPE ONE battery compartment.
• Powering down!	• al. area	The CARESCAPE ONE is being used on battery power and there is less than 1 minute of charge left.	• Charge the battery by connecting the CARESCAPE ONE to a powered CARESCAPE Dock F0.
• Replace battery	• al. area	The full capacity of the battery is less than 60% compared to the full capacity of a new battery.	• Replace the battery.
• Unable to read licenses	• al. area	The license file could not be read.	• Contact your local GE Service representative for support.

13

Troubleshooting

Troubleshooting guidelines

This chapter focuses on troubleshooting technical problems. Refer to the user manual for troubleshooting monitoring problems and clinical configuration issues.

If a problem remains, contact technical support for service. To ensure accurate problem solving, please be prepared to provide the following information:

- Product name and serial number or UDI
- Hardware and software versions
- Detailed problem description
- Error messages, if any
- Configuration information (or settings file)
- Service Logs
- The troubleshooting you have done so far

Perform the specified corrective maintenance check after any corrective maintenance to the product.

Performing basic troubleshooting

Before beginning any detailed troubleshooting, complete the following steps:

1. Check if there are any error messages shown in the message field. For a list of possible causes and solutions, see [Messages related to various technical issues](#).
2. Perform visual inspection to be sure that:
 - There is no physical damage.
 - All peripheral devices are connected properly.
 - The monitor and the connected peripheral devices are properly powered.
3. Verify the compatibility of all system components.
For a list of the compatible devices, supplies and accessories, see the supplemental information provided.
4. Verify that the platform and clinical configurations are correct.
For the clinical configuration see user's manual and for the platform configuration see [Configuration chapter](#).

5. If you suspect loose parts or cable connections inside the monitor, disassemble the monitor to a level needed to perform an internal visual check. Check that:
 - a. All screws are tightened properly.
 - b. All cables are connected properly.
 - c. There are no loose objects inside the monitor.Perform the electrical safety test and the checkout procedure every time you have disassembled the monitor.

Viewing configuration and device information

To view current platform configuration, hardware and software information of the monitor and the connected peripheral devices:

1. Log in to the service interface.
2. Select **Information**.
3. Select the menu option on the left side of the screen, or scroll down the page to view the information.

Information

Item	Description
Host Information	Active software part number and version, uploaded software part number and version, Host serial number, Host asset number, MC Network IP address, IX Network IP address, MAC address, CPU hardware version, PUIC software version.
Active Software Package	Current active software package in use.
Host License Information	Each host license name, its current status (enabled, disabled or trial), feature code, and the expiration date for a trial license.
Default Clinical Settings	Current default clinical settings.
Acquisition Information - CARESCAPE Parameters	Shows current information related to the CARESCAPE Parameters: Cable type, Serial number, and Software version.
Admit Settings	Patient ID Prefix. This option is not supported by the monitor.
Unit and Bed Name	Unit name and Bed name for CARESCAPE Network. This option is not supported by the monitor.
Language	Clinical user interface language.
Power Line Frequency	Current power line frequency setting in use.
USB Port Information	Product name, Manufacturer, Vendor code, Product ID, and Serial number.

Viewing hardware statistics

You can view internal voltages, temperatures and power consumption in the **Hardware Statistics** menu.

Points to note:

- Too low or high temperature may also trigger a **Service CS ONE 0xHOST 3001** message. If the internal temperatures get too high, the monitor may shut down.
- Too low or high internal supply voltages may also trigger a **Service CS ONE 0xHOST 3002** message.
- For more information about the monitor battery status, see **Monitor Setup > Battery status Advanced**.

A value is displayed in red if the current reading exceeds a pre-determined lower or upper limit. A value is displayed either as "0" or as "--" if it cannot be measured.

1. Log in to the service interface.
2. Select **Diagnostics > Hardware Statistics**.
3. Scroll down the page to view the information.

The controlled parameters are measured with voltage monitors and temperature sensors in the specified subsystem.

Hardware statistics

Measurement	Description
System input voltage	Battery – Provides a nominal 10.8VDC to the system. AC Power Supply – Receives worldwide AC line voltage to provide regulated 15.0V DC.
Power rail voltage 1.25V (V)	This rail supplies core power to the iMX CPU. The rail is generated by the PMIC (U26).
Power rail voltage 1.3V (V)	This rail supplies the 1.3V to the iMX CPU and powers the RTC on the CPU. This rail is generated by the PMIC (U26).
Power rail voltage 1.5V (V)	This rail supplies 1.5V power required for proper operation of the DDR3 RAM. This rail is generated by the PMIC (U26).
Power rail voltage 1.8V (V)	This rail powers numerous 1.8V CMOS devices in the system. This rail is generated by the PMIC(U26).
Power rail voltage 3.3V (V)	This rail powers numerous 3.3V devices on the board as well as the LCD / Touchscreen assembly. This rail is generated by a step-down DC-DC regulator (U189).
Power rail voltage 5V (V)	This rail powers numerous 5V devices on the board as well as the LCD / Touchscreen assembly. This rail is generated by a step-down DC-DC regulator (U99).
PMIC temperature (°C)	Power management IC – regulates and monitors several voltage rails. Operating junction temperature is -40°C to 125°C. This device has a built-in temperature monitor.
Board temperature (°C)	The CARESCAPE ONE main board temperature is measured via a TI I2C temperature sensor TMP112 (U8). The main board operating temperature range is specified from 0°C to 45°C within the enclosure. This is a guideline only. The maximum temperature is driven by IC junction temperatures.

Viewing log files

1. Log in to the service interface.
2. Select **Diagnostics > View Logs**.

3. Select the log you want to view. The contents of the selected log file are shown on the screen.

Downloading log files

For security reasons, the contents of the log file(s) will be encrypted with a user-selectable password before the download. Provide the password in a secure way only for the authorized receiver of the log file. Use 7-Zip open-source file archiver (<http://7-zip.org/>) and the password to decrypt the downloaded log file.

1. Log in to the service interface.
2. Select **Diagnostics > Download Logs**.
3. Select the log(s) you want to download.
4. Provide a password to encrypt the contents of the log file. This password is user-selectable.
5. Download and save the log file to any storage device connected to the service PC:
 - a. Select **Download**.
 - b. Save the log file according to the instructions provided by the web browser.

The steps to download the log file to a service PC depend on the web browser used. The web browser may also notify you about security issues. Refer to the web browser documentation for details.
6. Send the log file and the password in a secure way to GE Service for further investigation.

Checking the battery charge with the software

You can check the battery charge status using the monitor software:

1. Select the battery status area in the upper right corner of the screen, or select **Monitor Setup > Battery Status**.
2. Check the **Estimated time remaining** for the battery to empty or the **Charging – time to full** battery charge status.
3. If you wish to see more detailed battery information, select the **Advanced** tab and pages.

Battery status – Advanced > Page 1

Field	Status	Description
Time to empty (HH:MM)	HH:MM	Estimated operating time before the battery is empty.
	N/A	Battery is not connected to the monitor or battery is being charged.
Charge level (%)	XX	Battery charge level compared to full capacity (in percentage).
	N/A	Battery is not connected to the monitor.

Field	Status	Description
Slot status	"No battery"	Battery is not connected to the monitor.
	"No communication"	Battery is connected to the monitor, but battery communication failure error condition is on.
	"Failure"	Battery error condition is on.
	"Discharging"	Monitor is operating on battery power.
	"Charging"	Monitor is connected to AC mains and charging the battery.
	"Full"	Monitor is connected to AC mains and battery is fully charged.
Time to full (HH:MM)	HH:MM	Estimated time to charge the battery to full capacity.
	N/A	Battery is not connected to the monitor or battery is being discharged.
Temperature (°C or °F)	"N/A"	<ul style="list-style-type: none"> Temperature (°C or °F): Battery temperature displays in degrees Celsius or Fahrenheit. N/A: The battery data is not available.
Battery quality	"OK"	The full capacity of the battery is equal or greater than 60% compared to the full capacity of a new battery.
	"Condition"	Battery requires conditioning.
	"Replace"	The full capacity of the battery is less than 60% compared to the full capacity of a new battery.
	"N/A"	Battery is not connected to the monitor.

Battery status – Advanced > Page 2

Field	Description
Remaining capacity (mAh)	Remaining capacity of the battery in mAh.
Full capacity (mAh)	Full capacity of the battery in mAh.
Full capacity compared to new (%)	Full capacity of the battery compared to the nominal full capacity of a new battery.
Cycle count	The total count of charging and discharging cycles of the battery.
Voltage (V)	Battery voltage.
Current (mA)	Battery current. Positive when charging, negative when discharging.

Battery status – Advanced > Page 3

Field	Status	Description
During use	OK	Battery is operating without errors.
	"Fail during use"	Battery is unable to establish communication.
	"N/A"	Battery is not installed in the monitor.

Field	Status	Description
<i>During charge</i>	"OK"	Battery is operating without errors.
	"Over current"	Battery charge current is over the limit.
	"Over charge"	Battery charge is over the charging limit.
	"Over voltage"	Battery charge voltage is over the limit.
	"Over temperature"	Battery temperature error due to high battery temperature.
	"N/A"	Battery is not connected to the monitor.
<i>Temperature</i>	"OK"	Battery is operating without errors.
	"Over temperature"	Battery temperature error due to high battery temperature.
	"N/A"	Battery is not installed in the monitor.
<i>Battery quality</i>	"OK"	Battery is operating without errors.
	"Conditioning required"	Battery requires conditioning.
	"Replace"	Battery must be replaced.
	"N/A"	Battery is not installed in the monitor.

Battery status – Manufacturing Information

Field	Description
<i>Serial number</i>	Serial number of the battery.
<i>Date of manufacture</i>	Date the battery was manufactured.
<i>Manufacturer</i>	Name of the battery manufacturer.
<i>Design capacity</i>	Design capacity of the battery.

Messages related to various technical issues

The following table lists messages that are not directly related to any parameter or measurement. They are mostly technical messages related to hardware, configuration, and similar issues.

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

Message	Location	Possible causes	Suggested actions
• Analog output malfunction	• al. area	CARESCAPE ONE analog output voltage failure.	• Replace the main board and reinstall the software.
• Battery empty!	• al. area	The CARESCAPE ONE is being used on battery power, and there is less than 5 minutes of charge left.	• Charge the battery by connecting the CARESCAPE ONE to a powered CARESCAPE Dock F0.
• Battery failure	• al. area	The battery is faulty.	• Replace the battery.
• Battery low	• al. area	The CARESCAPE ONE is being used on battery power, and there is less than 20 minutes of charge left.	• Charge the battery by connecting the CARESCAPE ONE to a powered CARESCAPE Dock F0.
• Battery temp high	• al. area	Battery temperature error due to faulty battery or battery management error.	• Replace the battery.
• Call Service: Text(s) missing	• al. area	The software text is missing in this language; the text file may be corrupted.	• Reinstall the software and check if the message disappears. • If the problem persists, contact your local GE Service representative for support.
• Condition battery	• al. area	The battery needs to be conditioned.	• Replace the battery, and condition the battery that was removed.
• Configuration error(s)	• al. area	One or more errors have been detected in the configuration.	1. Acknowledge the message. 2. If the message reappears, try the following: a. Restart the monitor and check if the message disappears. b. Reset the settings to the factory defaults, and restore the original monitor settings from a backup file. c. Reload the software and reconfigure the monitor settings.
• ECG analog output malfunction • Analog output malfunction	• al. area • wavef.	Hardware or software fault in CARESCAPE ECG analog output: • Cable fault • Configuration failure • No updated data • Data sample drift	• Replace the CARESCAPE ECG.

Message	Location	Possible causes	Suggested actions
<ul style="list-style-type: none"> • IP analog output malfunction • Analog output malfunction 	<ul style="list-style-type: none"> • al. area • wavef. 	Hardware or software fault in CARESCAPE Pressure analog output: <ul style="list-style-type: none"> • Cable fault • Configuration failure • No updated data • Data sample drift 	<ul style="list-style-type: none"> • Replace the CARESCAPE Pressure.
• Measurement error	• al. area	Technical fault in the monitor.	<ul style="list-style-type: none"> • Replace the main board.
• No battery backup	• al. area	There is no battery in the CARESCAPE ONE.	<ul style="list-style-type: none"> • Install a battery in the CARESCAPE ONE battery compartment.
• Powering down!	• al. area	The CARESCAPE ONE is being used on battery power and there is less than 1 minute of charge left.	<ul style="list-style-type: none"> • Charge the battery by connecting the CARESCAPE ONE to a powered CARESCAPE Dock F0.
• Replace battery	• al. area	The full capacity of the battery is less than 60% compared to the full capacity of a new battery.	<ul style="list-style-type: none"> • Replace the battery.
• Unable to read licenses	• al. area	The license file could not be read.	<ul style="list-style-type: none"> • Contact your local GE Service representative for support.

Messages related to servicing the CARESCAPE ONE

For information regarding alarm priorities and escalation times, see the supplemental information provided in the user manual.

Make sure you are familiar with the generic layout of the screen. This will help you identify where on screen the following messages appear. The message location is indicated with the following abbreviations:

- al. area = alarm area
- param. = parameter window
- wavef. = waveform area

For further assistance, contact GE Service with the error code and device serial number.

Message	Location	Possible causes	Suggested actions
• Analog output malfunction	• al. area.	CARESCAPE ONE analog output voltage failure	<ul style="list-style-type: none"> • Replace the main board and reinstall the software.
• CS ONE Faulty Device Connected	• al. area.	One of the connected CARESCAPE Parameters has a communication failure.	<ul style="list-style-type: none"> • Identify and replace the CARESCAPE Parameter causing the communication failure.

Message	Location	Possible causes	Suggested actions
• CS ONE Faulty Device in Port #x	• al. area.	• CARESCAPE ONE USB port 1 to 8 is reporting an overcurrent. • Main board failure.	• Replace the main board and reinstall the software.
• CS ONE Unknown Device in Port #x code	• al. area.	An unauthorized device is connected to one of the eight CARESCAPE ONE USB ports is detected.	• Disconnect the unauthorized device.
• Service CS ONE Faulty Port #x	• al. area.	• CARESCAPE ONE USB port 1 to 8 is reporting an overcurrent. • Main board failure.	• Replace the main board and reinstall the software.
• Service CS ONE 0xPDM1000	• al. area.	Data in secure storage corrupt.	• Replace the main board and reinstall the software.
• Service CS ONE 0xPDM1002	• al. area.	Error occurred writing data to secured storage.	• Replace the main board and reinstall the software.
• Service CS ONE 0xPDM1200	• al. area.	Initialization of platform security library returned an invalid directory error code.	• Replace the main board and reinstall the software.
• Service CS ONE Calibrate NIBP	• al. area.	NIBP calibration values could not be read from secure storage using defaults.	• Perform NIBP calibration.
• Service CS ONE ECG Analog Out	• al. area.	ECG calibration values could not be read from secure storage using defaults.	• Perform analog out ECG calibration.
• Service CS ONE IP Analog Out	• al. area.	Invasive pressure calibration values could not be read from secure storage using default.	• Perform analog out invasive pressure calibration.

Message	Location	Possible causes	Suggested actions
<ul style="list-style-type: none"> • <i>Service CS ONE 0xHOST 3001</i> 	<ul style="list-style-type: none"> • al. area. 	<p>One of the internal temperature sensors indicate that the internal temperature of the CARESCAPE ONE is out of specification. The message stays on the screen as long as the error condition is valid.</p>	<p>If the temperature is too high:</p> <ol style="list-style-type: none"> 1. Turn off the CARESCAPE ONE. 2. Let the CARESCAPE ONE cool down. 3. Check the the CARESCAPE ONE is installed to a location that meets the specified environmental requirements of operating temperature. 4. Investigate the CARESCAPE ONE thoroughly for potential short circuits and other electrical faults. 5. If possible, log in to the service interface and select Diagnostics > Hardware Statistics to identify the root cause for the error message. <p>If the temperature is too low (or high):</p> <ul style="list-style-type: none"> • If the CARESCAPE ONE has been transported or stored outside the operating temperature range, allow it to stabilize back to operating temperature range before applying power.
<ul style="list-style-type: none"> • <i>Service CS ONE 0xHOST 3002</i> 	<ul style="list-style-type: none"> • al. area. 	<p>One of the internal supply voltages is out of the specification. The message stays on screen as long as the condition is valid.</p>	<ul style="list-style-type: none"> • Log in to the service interface and select Diagnostics > Hardware Statistics to identify the supply voltage that is below or above the specification limit.
<ul style="list-style-type: none"> • <i>Service CS ONE 0xHOST 3004</i> 	<ul style="list-style-type: none"> • al. area. 	<p>CARESCAPE ONE disk utilization of partition has exceeded 90%.</p>	<ol style="list-style-type: none"> 1. Back up the clinical and platform settings. 2. Reinstall the software.
<ul style="list-style-type: none"> • <i>Service CS ONE 0xHOST 3100</i> 	<ul style="list-style-type: none"> • al. area. 	<p>CARESCAPE ONE main board battery voltage is out of the specification.</p>	<ul style="list-style-type: none"> • Replace the main board and reinstall the software.
<ul style="list-style-type: none"> • <i>Service CS ONE activation failed</i> 	<ul style="list-style-type: none"> • al. area. 	<p>Settings activation failed.</p>	<ul style="list-style-type: none"> • Reactivate the settings.
<ul style="list-style-type: none"> • <i>Service CS ONE Power Failure</i> 	<ul style="list-style-type: none"> • al. area. 	<p>CARESCAPE ONE has lost communication with power management controller.</p>	<ul style="list-style-type: none"> • Replace the main board and reinstall the software.
<ul style="list-style-type: none"> • <i>CS ONE Speaker Failure</i> 	<ul style="list-style-type: none"> • al. area. 	<p>Alarm loudspeaker is inoperative.</p>	<ul style="list-style-type: none"> • Replace the speakers.

Problems and solutions

Start-up failures

Problem	Possible causes	Recommended action
Unable to turn on the monitor, when the following conditions apply: <ul style="list-style-type: none"> The monitor is connected to the CARESCAPE Dock F0 and the CARESCAPE Dock F0 is powered from the AC mains. 	Power cord is loose.	Ensure that the power cord is connected properly to the wall outlet and to the CARESCAPE Dock F0.
	Power cord is faulty.	Check the power cord for wear and damage, and replace if necessary.
	The power outlet does not meet specified requirements.	Check the power outlet being used: <ul style="list-style-type: none"> Refer to the supplemental information provided in the user manual for power requirements. Check the power outlet being used.
	The AC/DC power supply is faulty.	Replace the AC/DC power supply unit.
Unable to turn on the monitor: <ul style="list-style-type: none"> The monitor starts, but the primary display remains "white", i.e., the backlight illuminates the LCD display, but nothing appears on the screen. No error messages. 	The display cable is damaged or loose.	Check that the display cable is intact and properly connected to the LCD display and the main board.
	The LCD display is faulty.	Replace the LCD display unit.
Unable to turn on the monitor: <ul style="list-style-type: none"> Start-up sequence does not advance beyond the GE logo screen. Error messages may appear. 	Unable to read software from the memory.	Replace the main board and reinstall the software.

Troubleshooting CARESCAPE Parameters and NIBP

Troubleshooting the absence of parameter data

Problem	Possible causes	Recommended actions
No parameter data displayed.	CARESCAPE ONE is not configured to display the parameter.	Check that the CARESCAPE ONE is configured to display the parameter.
	CARESCAPE Parameter is disconnected.	Check for loose cable connections. Secure connections if loose.
	The cable is damaged.	For CARESCAPE ECG or CARESCAPE SpO ₂ – Masimo: 1. Check for damage to the USB patient cable. Flex the cable near the connectors to verify no irregularities. 2. If damage or irregularities exist, remove and replace the USB patient cable. For CARESCAPE Temperature or CARESCAPE Pressure: 1. Check for damage to the CARESCAPE Parameter cable. 2. If damaged, remove and replace the CARESCAPE Parameter cable.

Problem	Possible causes	Recommended actions
No parameter data displayed.	CARESCAPE Parameter is damaged.	<p>For CARESCAPE ECG or CARESCAPE SpO₂ — Masimo:</p> <ol style="list-style-type: none"> 1. Check for damage to CARESCAPE ECG or CARESCAPE SpO₂ — Masimo. 2. If damaged, remove and retain the USB patient cable. 3. Return the damaged CARESCAPE ECG or CARESCAPE SpO₂ — Masimo to GE. <p>For CARESCAPE Pressure or CARESCAPE Temperature:</p> <ol style="list-style-type: none"> 1. Check for damage to CARESCAPE Pressure or CARESCAPE Temperature. 2. If damaged, remove and retain the CARESCAPE Parameter cable. 3. Return the damaged CARESCAPE Pressure or CARESCAPE —Temperature to GE. <p>For CARESCAPE CO₂:</p> <ol style="list-style-type: none"> 1. Check for damage to the LoFlo Sidestream Module. <ol style="list-style-type: none"> a. If damaged, remove the CARESCAPE CO₂ from the LoFlo Sidestream Module. b. Retain the CARESCAPE CO₂ so that it can be put it back into service. c. Return the damaged LoFlo Sidestream Module to GE. 2. Check for damage to the CARESCAPE CO₂. <ol style="list-style-type: none"> a. If damaged, remove the CARESCAPE CO₂ from the LoFlo Sidestream Module. b. Retain the LoFlo Sidestream Module so it can be put back into service. c. Return the damaged CARESCAPE CO₂ to GE. <p>For CARESCAPE SpO₂ or CARESCAPE SpO₂ — Nellcor:</p> <ol style="list-style-type: none"> 1. Check for damage to CARESCAPE SpO₂ or CARESCAPE SpO₂ — Nellcor. 2. If damaged, return the CARESCAPE SpO₂ or CARESCAPE SpO₂ — Nellcor to GE.
No parameter data displayed.	CARESCAPE ONE patient block connector is damaged.	Check for damage to the CARESCAPE ONE patient block connector. If damaged, replace the patient block assembly.

Troubleshooting invasive pressure measurement

Problem	Possible causes	Recommended actions
Abnormally low pressure.	Transducer wrongly positioned.	Check mid-heart level and reposition transducer.
No pressure.	Defective transducer.	Check or replace transducer.
	Module not connected.	Connect module.
	Transducer adapter cable not connected to the module.	Connect the transducer adapter cable with the transducer to the module.
	Invasive pressure channel not configured to the screen (with adequate priority).	Configure the invasive pressure channel to the screen with adequate priority and check that it is active.
	Invasive pressure channel not zeroed.	Zero the invasive pressure channel.

Troubleshooting temperature measurement

Problem	Possible causes	Suggested actions
No temperature displayed.	Temperature channel not configured to the screen (with adequate priority).	Configure the temperature channel to the screen with adequate priority and check that it is active.
	Incompatible temperature probe.	Use correct probe (400 series).
	Faulty temperature probe.	Replace temperature probe.
	Faulty CARESCAPE Parameter cable.	Replace CARESCAPE Parameter cable.
	Faulty CARESCAPE Temperature.	Return faulty CARESCAPE Temperature to GE.
	Temperature out of measurement range.	The measurement range is between 0 and 45°C (32 and 113°F). Return faulty CARESCAPE Temperature to GE.

Troubleshooting non-invasive blood pressure measurement

Problem	Possible causes	Recommended actions
NIBP is not functioning.	<ul style="list-style-type: none"> NIBP is not calibrated. Cuff pressure is not being maintained. 	<ol style="list-style-type: none"> Check to see if calibration is required. <ul style="list-style-type: none"> To calibrate the NIBP measurement, perform the NIBP calibration procedure. Check to see if the NIBP cuff is maintaining cuff pressure for at least one minute (listen for hissing as the air escapes). If the cuff is leaking air, replace the cuff. If the NIBP measurement is still not functioning, replace the NIBP pneumatic components.
Unable to complete NIBP calibration because the Confirm button is inactive.	Maximum permitted gain correction is exceeded. When NIBP calibration requires more than $\pm 10\%$ change from the original factory calibration, the NIBP components on the main board are not functioning properly.	<p>Replace the main CPU.</p> <p>Replace the main board and reinstall the software.</p>

CARESCAPE SpO₂—Masimo status indicator

LEDs		Status	Recommended actions
Amber	Green		
Off	Off	<ul style="list-style-type: none"> Power is not applied. Software failure. 	<ul style="list-style-type: none"> Apply power and wait for the CARESCAPE SpO₂—Masimo to start up. If the CARESCAPE SpO₂—Masimo does not start up, contact your local GE representative for replacement. Return the failed CARESCAPE SpO₂—Masimo to GE.
On	Off	<ul style="list-style-type: none"> Starting up. Power is applied and the CARESCAPE SpO₂—Masimo is starting up. 	Wait one minute. The amber LED should change to green once the CARESCAPE SpO ₂ —Masimo is running.

LEDs		Status	Recommended actions
Off	On	<ul style="list-style-type: none"> • Running. • The CARESCAPE SpO₂ — Masimo is ready to send or is already sending patient data to the host device. 	No action required. This is normal operation.
Flashing on and off.	Off	<ul style="list-style-type: none"> • Software failure. • Power is applied but the CARESCAPE SpO₂ — Masimo does not startup or run. 	<ul style="list-style-type: none"> • Contact your local GE representative for replacement. • Return the failed CARESCAPE SpO₂ — Masimo to GE.

User interface issues

Troubleshooting touchscreen issues

Problem	Possible cause	Recommended action
Touchscreen is inoperative.	Touchscreen cable is loose.	Connect the touchscreen cable to the main board.
	Faulty touchscreen sensor.	Replace the LCD assembly.
	Touchscreen is dirty.	Clean the touchscreen. Refer to the user manual for the cleaning instructions.

Troubleshooting audible alarms and speaker

Problem	Possible cause	Recommended action
Audible alarms do not work.	Audible alarms are turned off.	Enable audible alarms: select Alarm setup > Audible & Visual > Activate All Audible Alarms > Close .
	Alarm volume is too low.	Adjust alarm volume: select Monitor Setup > Sound Volumes .
	Defective speaker.	Replace the speaker unit.
Low audio volume or no audio	Speaker covers are blocked by dust or debris.	<ul style="list-style-type: none"> • Remove CARESCAPE ONE handle and check that the speaker covers are not blocked by dust or debris. • If dust or debris are present on the speaker covers, replace the speaker covers.

Troubleshooting software package issues

Problem	Possible cause	Recommended action
Unable to view a certain feature although the license is enabled.	The software package in use does not include the feature in question. For example, Anesthetic agent measurement is not supported by ICU software package.	<ol style="list-style-type: none"> Log in to the service interface. Select Configuration > Licenses > Software Package. Select the correct option and select Save.
A wrong software package is in use. (The active software package is displayed on the screen during monitor startup.)	A wrong software package is activated for the device.	<ol style="list-style-type: none"> To view the software package that is currently activated, log in to the service interface. Select Configuration > Licenses > Host License. Make sure that the desired software package is displayed in Currently Active Software Package. If you need to activate a different software package, select Configuration > Licenses > Software Package. Select the correct option and select Save.

Troubleshooting the battery

Problem	Possible causes	Recommended actions
Battery is not charging.	Battery connector is damaged.	<ol style="list-style-type: none"> Check for damage to the battery connector inside the battery compartment. If damaged, contact GE technical support to service the CARESCAPE ONE. Check that the battery is charging by inserting a known good battery in the CARESCAPE ONE. If not charging, contact GE technical support to service the CARESCAPE ONE.
	Battery is bad.	<ol style="list-style-type: none"> Check that the battery is fully charged by pressing the TEST button on the battery. If the LED is not at 100%, charge the battery. Check for damage to the battery connector and external surfaces. If damaged, replace the battery. Check that the battery is charging with the GE recommended battery charger. If not charging, replace the battery.

Troubleshooting

14

Disassembly and reassembly

Disassembly procedures

For reference, see the exploded view in Service parts chapter.

Disassembly guidelines

Field repair of the device is limited to replacing field replaceable units (FRUs).

The only parts that can be used to repair the device are found in the FRU Kits.

WARNING Perform an electrical safety leakage current test after servicing or repairing the CARESCAPE Dock F0.

NOTE Only qualified service personnel should perform field replacement procedures.

NOTE Perform the specified corrective maintenance check after any corrective maintenance to the product.

Masimo SpO₂ safety precaution

WARNING Do not adjust, repair, open, disassemble, or modify the pulse co-oximeter or accessories. Injury to personnel or equipment damage could occur. Return the pulse co-oximeter for servicing if necessary.

Nellcor™ SpO₂ safety precaution

WARNING There are no user-serviceable parts inside the CARESCAPE SpO₂ — Nellcor. Users should not modify any components of the CARESCAPE SpO₂ — Nellcor.

ESD precautions

All external connectors of the device are designed with protection from ESD damage. However, if the device requires service, exposed components and assemblies inside are susceptible to ESD damage. This includes human hands, non-ESD protected work stations or improperly grounded test equipment. The following guidelines may not guarantee a 100% static-free workstation, but can greatly reduce the potential for failure of any electronic assemblies being serviced:

- Discharge any static charge you may have built up before handling semiconductors or assemblies containing semiconductors.

- Wear a grounded, antistatic wristband or heel strap at all times while handling or repairing assemblies containing semiconductors.
- Use properly grounded test equipment.
- Use a static-free work surface while handling or working on assemblies containing semiconductors.
- Do not remove semiconductors or assemblies containing semiconductors from antistatic containers until absolutely necessary.
- Do not slide semiconductors or electrical/electronic assemblies across any surface.
- Do not touch semiconductor leads unless absolutely necessary.
- Store the semiconductors and electronic assemblies only in antistatic bags or boxes.
- Handle all PCB assemblies by their edges.
- Do not flex or twist a circuit board.

Reassembly precautions

Pay attention to the following generic precautions when reassembling the monitor:

- Note the positions of any wires, cables or connectors. Mark them if necessary to ensure that they are reassembled correctly.
- Save and set aside all hardware for reassembly.
- GE recommends using the new fasteners (screws, washers, etc.) provided in the FRU kits rather than reusing the old fasteners. Some fasteners are not intended to be re-used.

When you fasten the screws:

- Visually ensure that the screws are properly started.
- Do not use too much force, as this may damage the existing threads.
- If you use a battery-operated tool, ensure that it is equipped with torque limiter and the torque is properly adjusted.
- Use new screws for light metal parts. Before installing a screw, turn it counterclockwise until it drops into existing threads.

Required tools

- T6 Torx driver
- T10 Torx ball end driver
- T10 Torx driver (optional)
- Spanner drive bit (Amphenol nut), GE PN 2103235-001
- 5mm nut driver
- Rubber tipped tweezers
- Standard set of hand tools
- Safety glasses
- Antistatic wristband

Preparing for disassembly

WARNING

ELECTRIC SHOCK — Always disconnect the device from the power line before servicing internal components.

WARNING

DISCONNECTION FROM MAINS. When disconnecting the device from the power line, remove the plug from the wall outlet first. Then you may disconnect the power cord from the device. If you do not observe this sequence, there is a risk of coming into contact with line voltage by inserting metal objects, such as the pins of leadwires, into the sockets of the power cord by mistake.

WARNING

SAFETY GROUND. Remove power cord from the mains source by grasping the plug. Do not pull on the cable.

1. Turn off the power:
 - a. Press the on/standby button located on the side of the CARESCAPE ONE. Complete the shutdown procedure by pressing the button a second time when a message prompts you to do so.
2. Remove the CARESCAPE ONE battery.
3. Disconnect the NIBP hose and all CARESCAPE Parameters from the CARESCAPE ONE.
4. Disconnect the CARESCAPE ONE from the CARESCAPE Dock F0.
5. Disconnect the power cable, first from the wall outlet and then from the CARESCAPE Dock F0.
6. Detach the CARESCAPE Dock F0 from the mounting.

CARESCAPE ONE disassembly and reassembly

Replacing the CARESCAPE ONE battery

1. Open the battery door by gently peeling down the corner of the battery door pull tab.



2. Pull on the battery cord to remove the battery from the battery slot.



3. Position the battery with the connector end facing up and insert the battery all the way into the battery slot.



4. Close the battery door. Ensure that the battery door tightly seals the battery into the battery slot.

WARNING

PHYSICAL INJURY. Do not install the device above a patient. Make sure the battery is completely inserted and the battery door is completely closed. Falling batteries could seriously or fatally injure neonatal or other vulnerable patients.

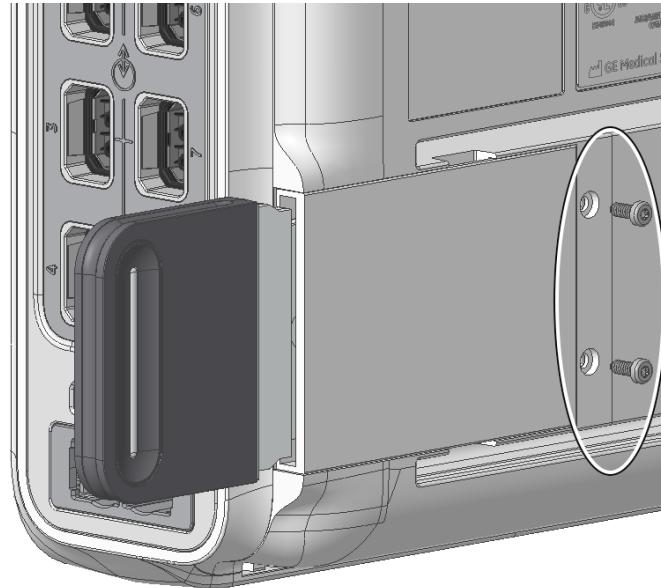
5. Press the Power/Standby button on the CARESCAPE ONE.
6. Check that the Power LED illuminates amber while the CARESCAPE ONE powers up, then illuminates green.
7. Check that the battery status icon displays on screen without battery error messages.

Replacing the CARESCAPE ONE pull tab assembly

1. Use a T6 Torx driver to remove the pull tab screws.

Disassembly and reassembly

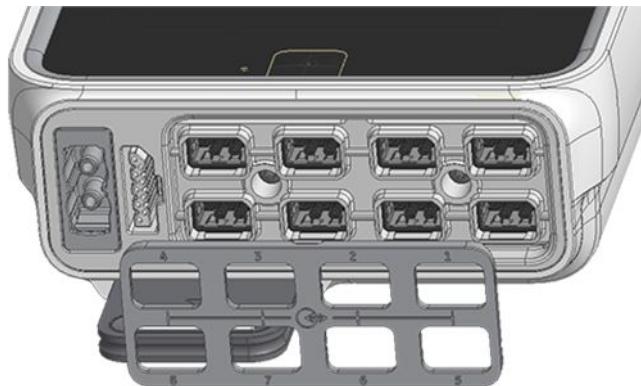
2. Pull the tab to retract the tab locks, continue pulling the tab until the pull tab assembly is removed from the rear housing.



3. Reassemble in reverse order, including the following steps:
 - a. Slightly pull out the pull tab tongue to retract the tab locks.
 - b. Slide the pull tab into the pull tab slot from left to right (as shown in the accompanying image) until the screw holes line up and the tabs snap into the slots in the rear housing.
 - c. Use a T6 Torx driver to tighten the screws.

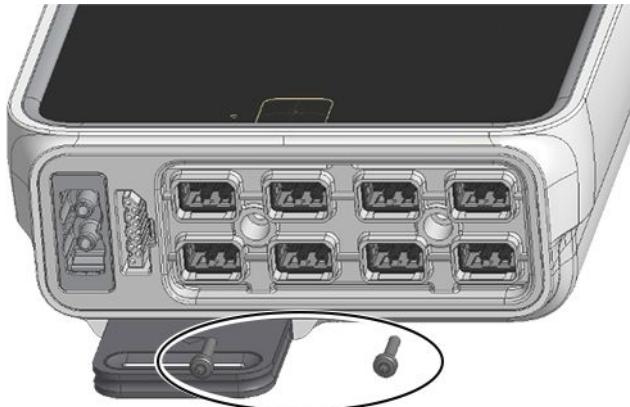
Replacing the CARESCAPE ONE patient block assembly

1. Starting at one of the edges, use the small flat bladed screwdriver to carefully pry out and remove the patient block bezel gasket.

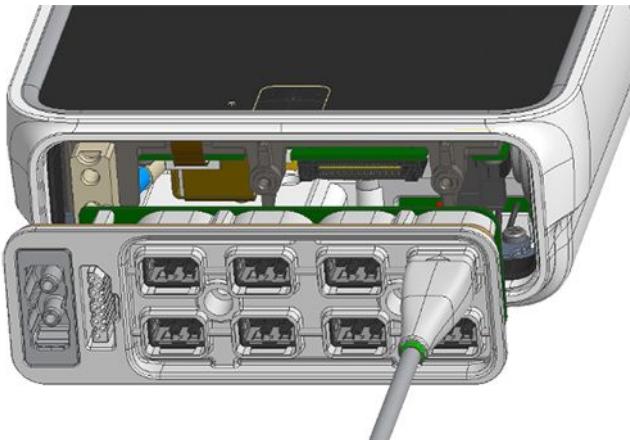


2. Use a T10 ball end Torx driver to remove the two screws from the patient block assembly.

Note that a standard T10 Torx driver may also be used.



3. Insert a CARESCAPE Parameter cable into a patient block connector to assist pulling the patient block out of the device.



4. Reassemble in reverse order.

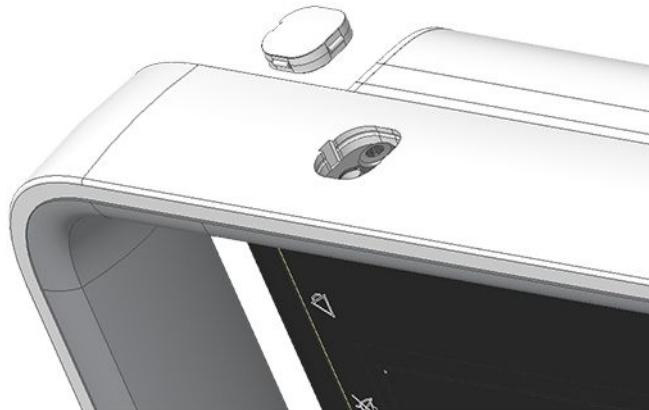
Replacing the CARESCAPE ONE handle assembly

Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.

Disassembly and reassembly

1. Use a flat bladed screw driver to carefully pry out the screw covers located on the top and bottom of the handle.

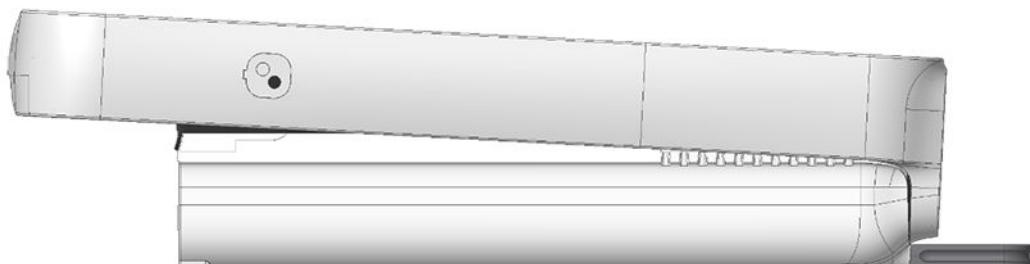


2. Use a T10 ball end Torx driver to remove the two handle screws and washers located on the top and bottom of the handle.

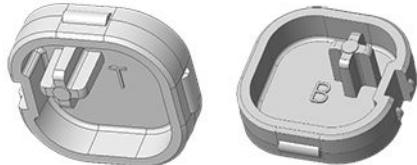
Note that a standard T10 Torx driver may be used.



3. Swing the handle upwards and gently push the handle towards the patient block opening to release the handle from the housing.



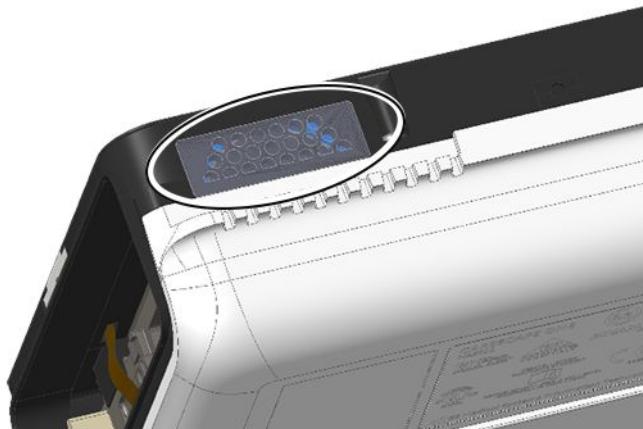
4. Reassemble in reverse order, including the following steps:
 - a. Tighten the patient block assembly screws before tightening the handle screws.
 - b. Note that the top and bottom handle screw covers are different.



Replacing the CARESCAPE ONE speaker covers

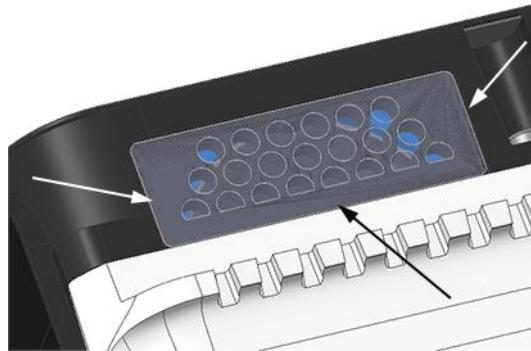
Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
 - Remove the CARESCAPE ONE handle assembly.
1. Use a small flat bladed screw driver to carefully peel off and remove the two speaker covers.



2. Peel off the protective backing from the speaker cover.
 3. Remove excess adhesive from the bezel using isopropyl alcohol.
- This provides a clean, oil-free surface for the new speaker cover to adhere to.

4. Use a rubber-tipped tweezers to apply the speaker covers:
 - a. Align the bottom edge and one of the side edges of the speaker cover as shown.
 - b. Use your finger to rub over the speaker cover in multiple directions to adhere the speaker cover to the bezel.



Opening and separating the CARESCAPE ONE front bezel and rear housing

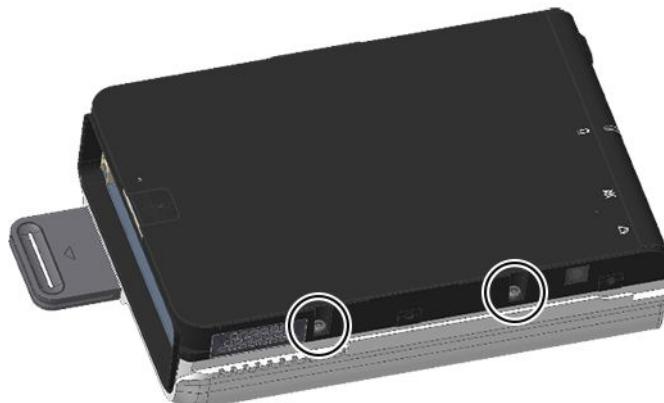
Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
- Remove the CARESCAPE ONE handle assembly.

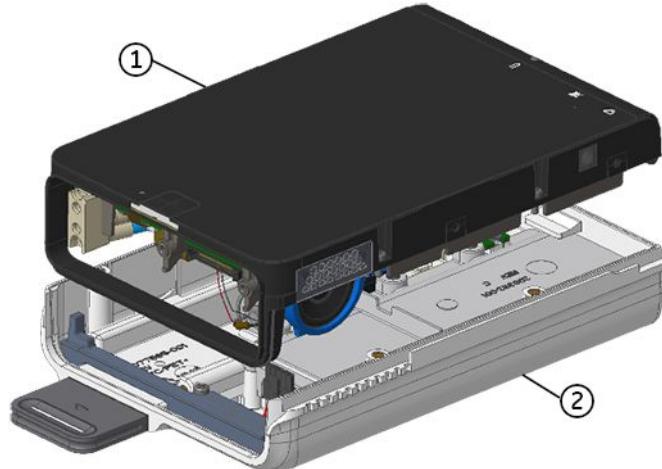
To prevent damaging the touchscreen glass:

- Use a T10 with ball end Torx driver to remove and install the front bezel screws.
- Do not apply pressure to the glass while servicing the CARESCAPE ONE.
- Do not allow the shaft of the Torx driver to come into contact with the touchscreen glass during disassembly or reassembly.

1. Use T10 with ball end Torx driver to remove the four front bezel screws (two on each side) securing the front bezel and rear housings together.

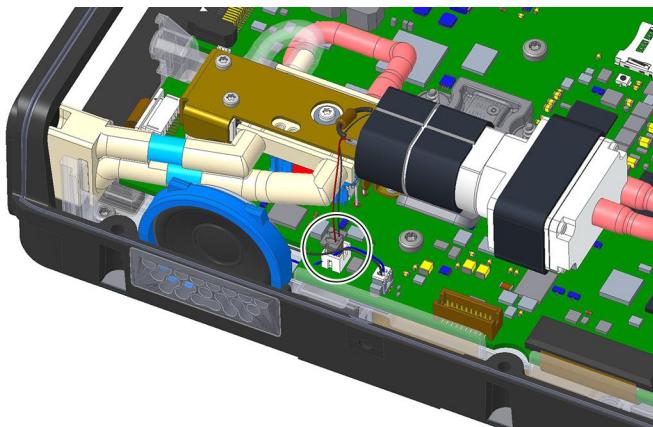


2. Carefully separate the front bezel (1) and the rear housing (2).

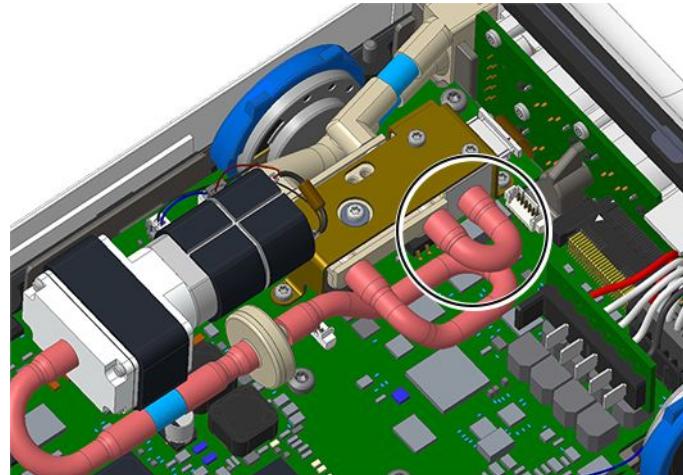


Note that the front bezel and rear housing have snap features on the front bezel and rear housing faces.

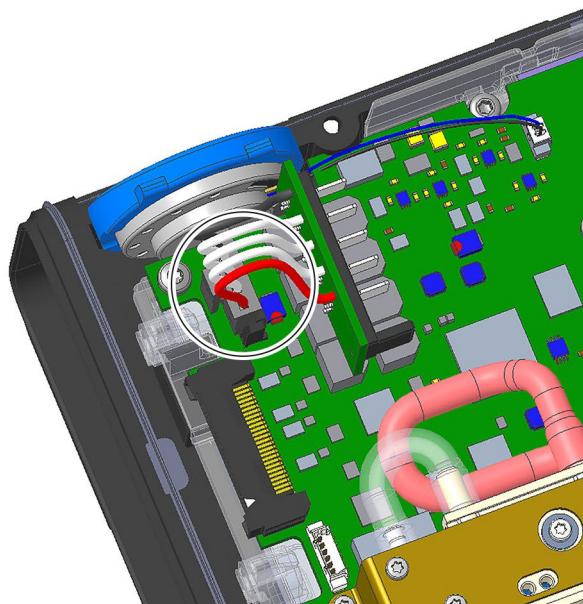
3. Disconnect the NIBP pump motor power cable from the main board.



4. Disconnect the NIBP hose from the NIBP pump connector.



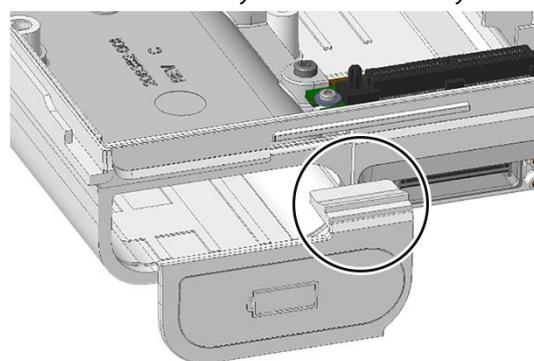
5. Disconnect the battery power connector from the main board.



Replacing the CARESCAPE ONE battery door

Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
 - Remove the CARESCAPE ONE handle assembly.
 - Open and separate the CARESCAPE ONE front bezel and rear housing.
1. Remove the battery door and battery tab from the rear housing.



2. Reassemble in reverse order, including the following steps:
 - a. Use a needle nose pliers, to pull the battery door tab through the housing opening.
 - b. Close the battery door, pressing the door until it is flush with the rear housing.

Replacing the CARESCAPE ONE NIBP pneumatics assembly

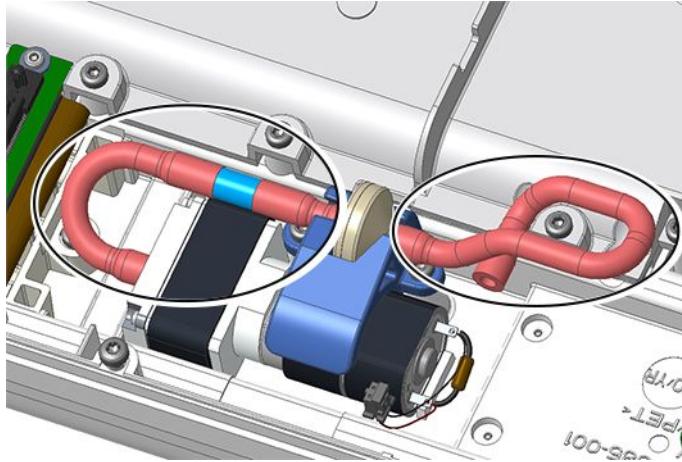
Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
- Remove the CARESCAPE ONE handle assembly.

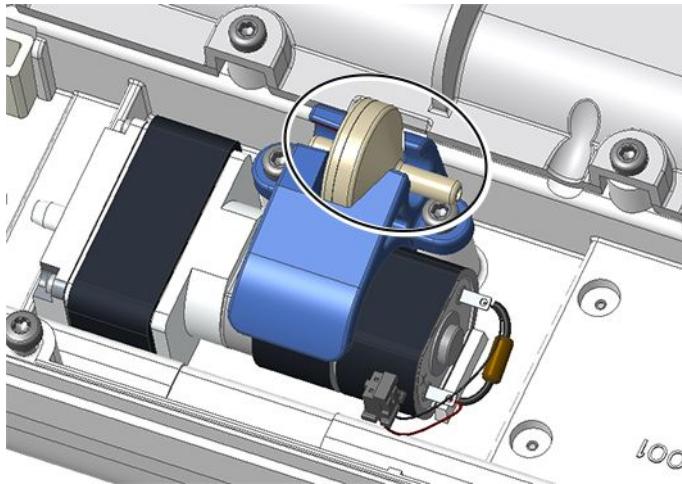
- Open and separate the CARESCAPE ONE front bezel and rear housing.

1. Remove the NIBP pump motor assembly from the rear housing:

- a. Remove the NIBP tubing from the check valve.

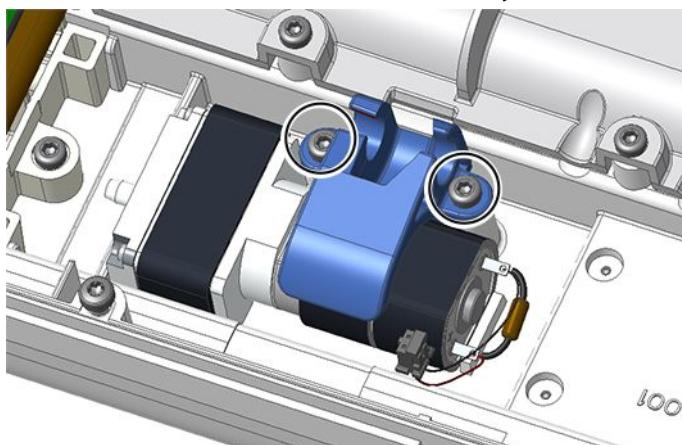


- b. Remove the check valve.



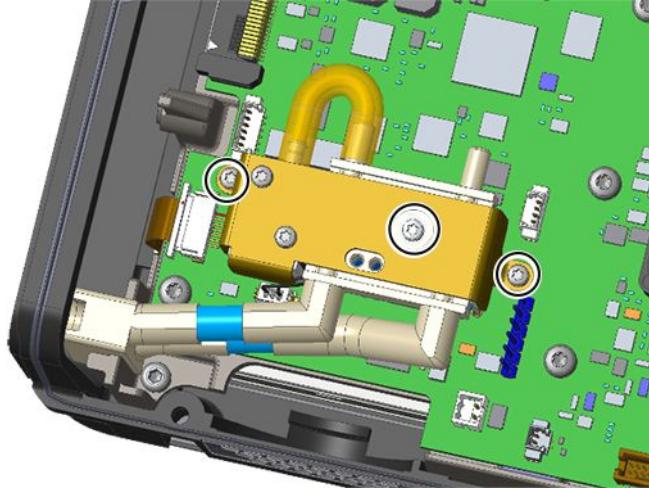
- c. Use a T10 ball end Torx driver to remove the two screws from the pump motor bracket.

Note that a standard T10 Torx driver may be used.

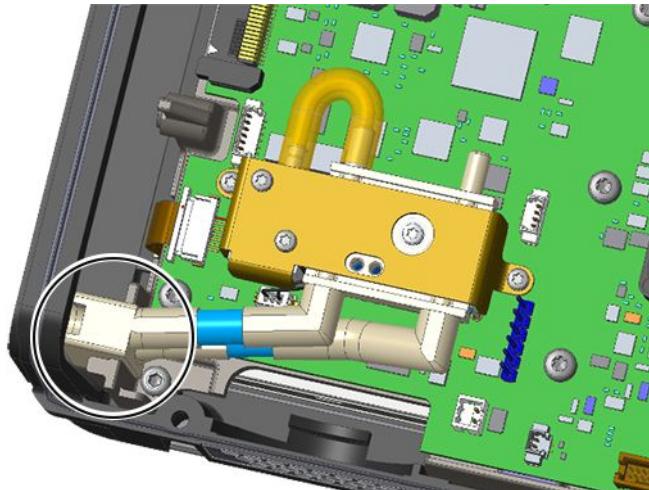


Disassembly and reassembly

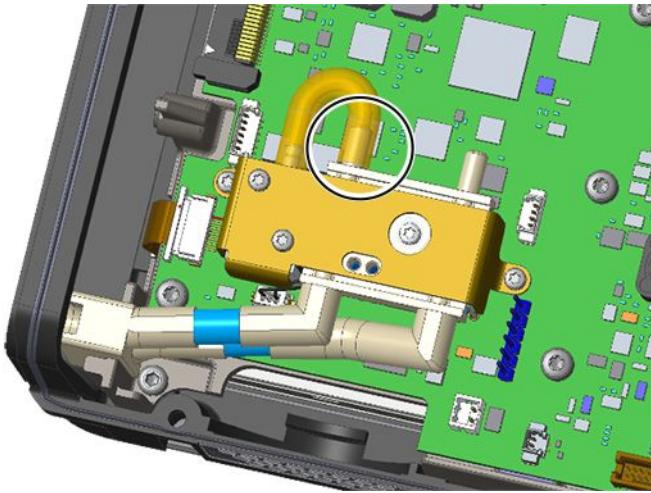
- d. Remove the NIBP pump motor assembly from the rear housing.
2. Remove the NIBP valve assembly from the main board:
 - a. Use a T6 Torx driver to remove the three screws securing the NIBP dump valve bracket to the main board.



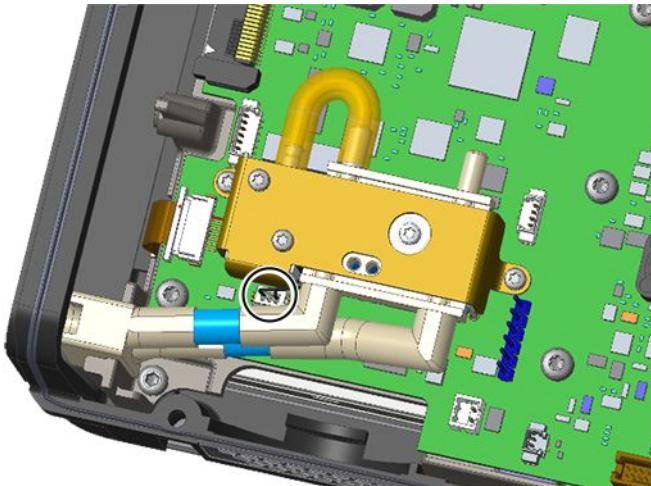
- b. Disconnect the NIBP hose connector from the chassis slot.



- c. Disconnect the dump valve connector from the NIBP manifold.



- d. Disconnect the dump valve cable connector from the main board and remove the NIBP dump valve bracket.

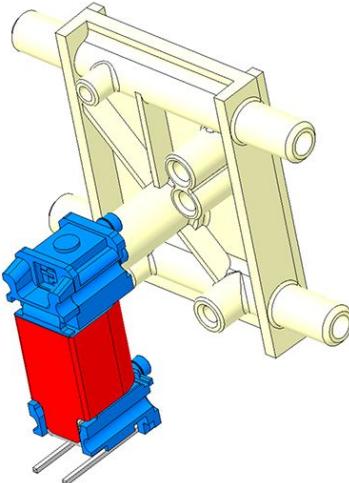


- e. Gently rock the NIBP manifold from left to right to release it from the main board.

Note that the long pins connected to the NIBP X-valve are easily bent or damaged.

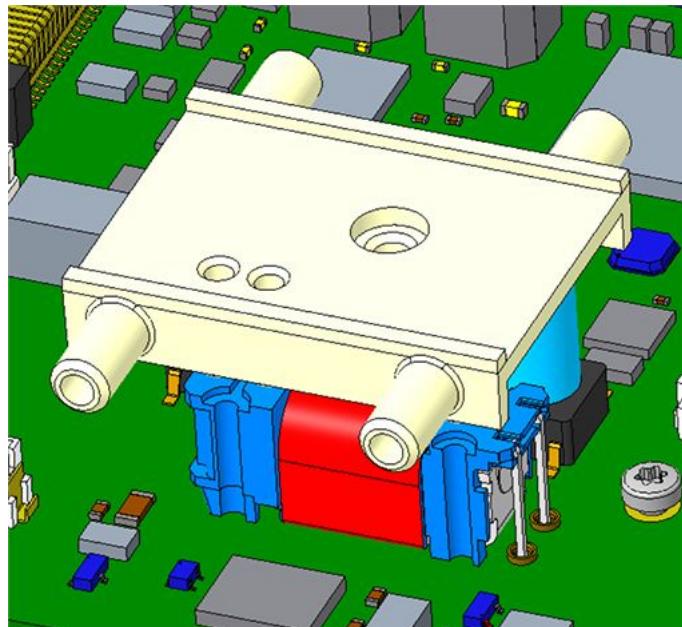
Disassembly and reassembly

3. Reassemble in reverse order, including the following steps:
 - a. Install the NIBP X-valve into the manifold ports.



- b. Install the NIBP manifold and X-valve, applying even pressure to the transducer ports.

Be careful aligning the long pins on the NIBP X-valve with the main board sockets as they are easily bent and damaged.



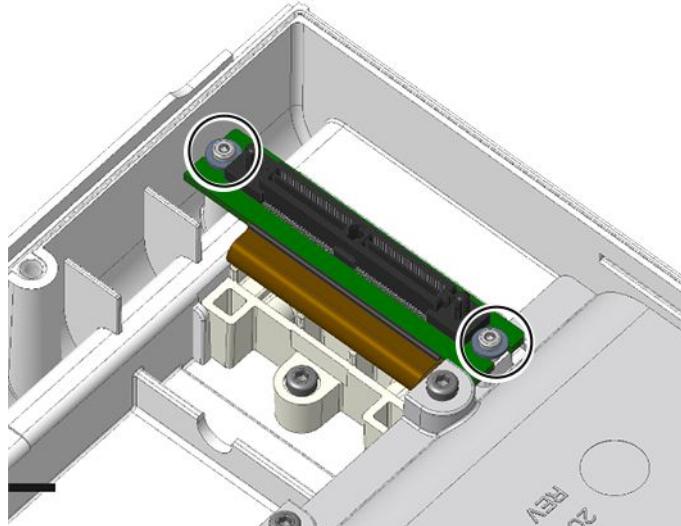
- c. Install the remaining components.

Replacing the CARESCAPE ONE dock flex assembly

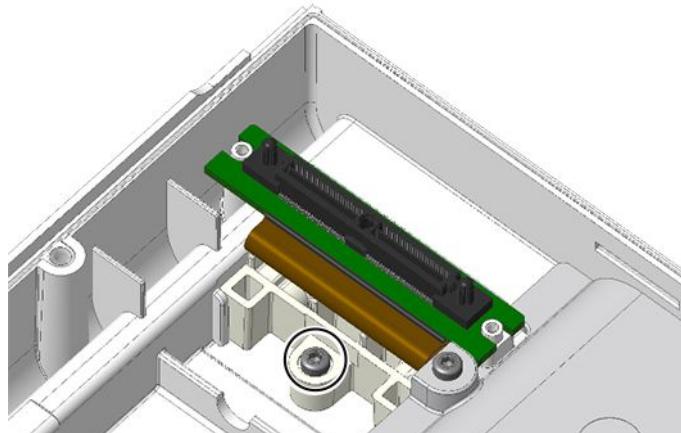
Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
- Remove the CARESCAPE ONE handle assembly.
- Open and separate the CARESCAPE ONE front bezel and rear housing.

1. Use a T6 Torx driver to remove the two screws and washers from the dock flex cable.



2. Use a T10 ball end Torx driver to remove the flex cable bracket screw.
NOTE that a standard T10 Torx driver may be used.



3. Remove the bracket and dock flex cable from the rear housing.
4. Reassemble in reverse order, including the following step:
 - a. Install the flex cable connector seal.

Replacing the CARESCAPE ONE speaker assembly

Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
- Remove the CARESCAPE ONE handle assembly.
- Open and separate the CARESCAPE ONE front bezel and rear housing.

1. Disconnect the speaker cable connectors from the main board.
Note that a rubber tipped tweezers or needle nose pliers may be used.



2. Remove the speakers from the top housing.
3. Reassemble in reverse order.

Replacing the CARESCAPE ONE main board

NOTE

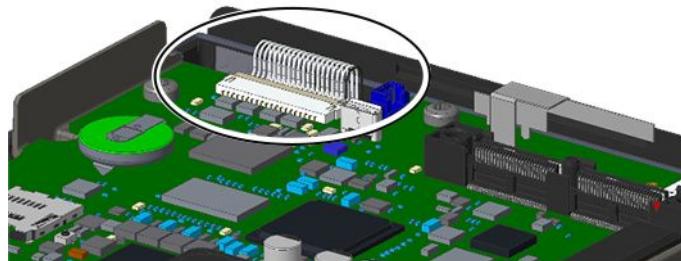
The monitor software and all the platform and clinical settings will be lost when you replace the main board.

Contact your local GE representative to order the monitor software. Provide the original monitor software version and the serial number of the monitor to ensure that you will get the correct software. Check the serial number of the device from the serial number label attached to the device.

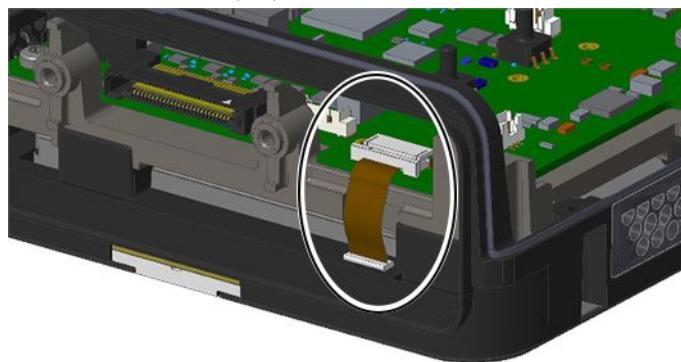
Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
- Remove the CARESCAPE ONE handle assembly.
- Open and separate the CARESCAPE ONE front bezel and rear housing.
- Remove the CARESCAPE ONE NIBP manifold from the main board.
- Remove the CARESCAPE ONE speakers.

1. Disconnect the alarm light cable from the main board.

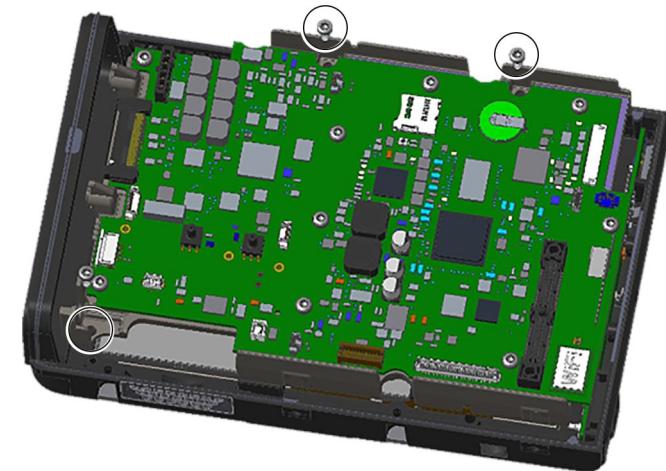


2. Disconnect the display lock flex cable from the main board:



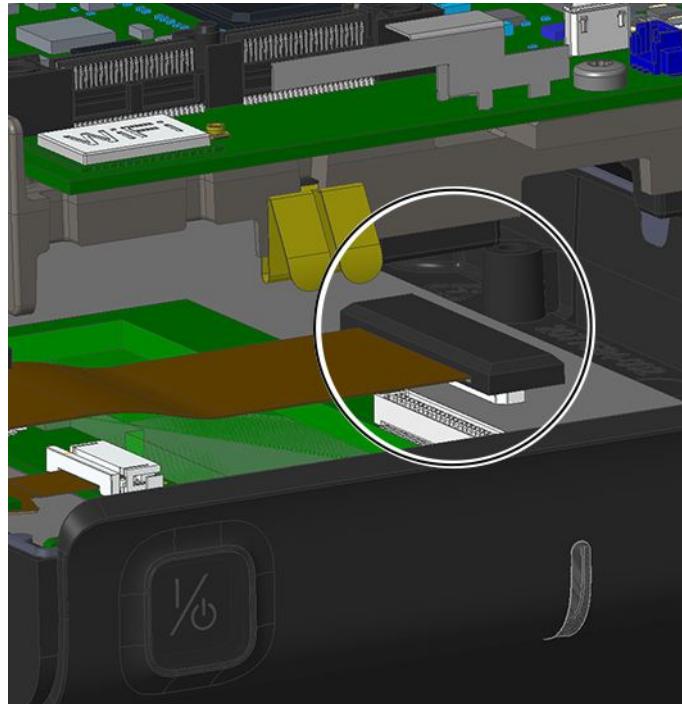
- a. Extend the FFC connector end away from the main board to open the connector.
 - b. Remove the flex cable from the connector port.
3. Use a T10 ball end Torx driver to remove the three screws from the main board sub-assembly.

Note that a standard T10 Torx driver may be used



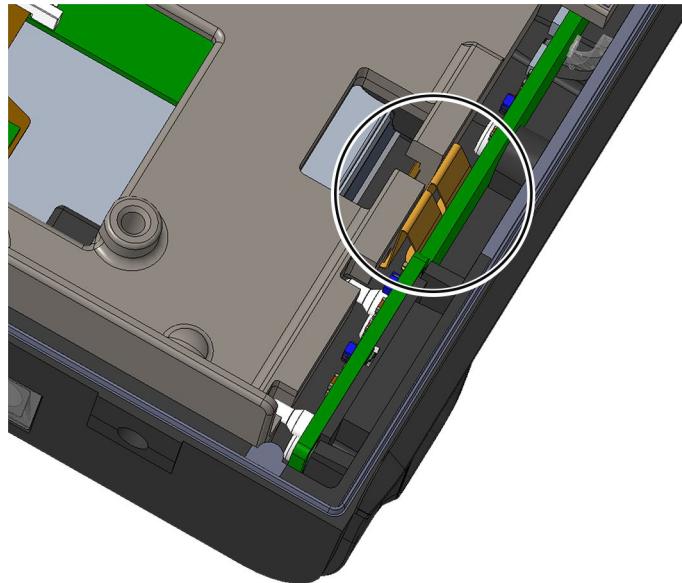
Disassembly and reassembly

4. Lift the main board sub-assembly out of the front bezel and disconnect the LCD display flex connector.

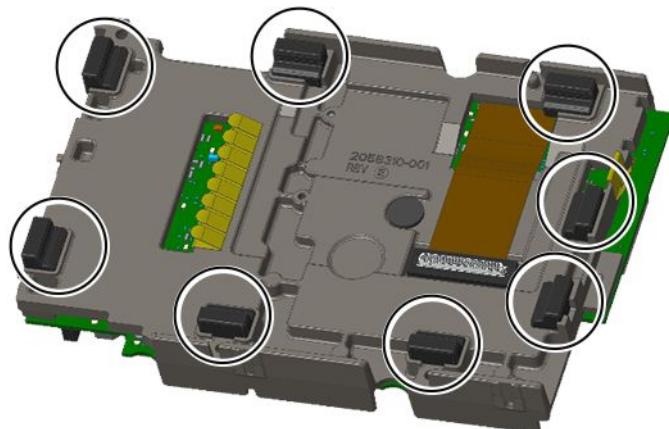


5. Replace the main board FRU, if required.

6. Reassemble in reverse order, including the following steps:
 - a. Check that the grounding plate is touching the grounded side of the alarm light PWA.



- b. Check that the original LCD shock mounts are inserted into the chassis pockets before reassembling the main board sub-assembly.



After reassembly:

1. Reload the software and the settings.

Reloading software and settings

The monitor software and all the platform and clinical settings will be lost when the main board is replaced.

You will need to perform the following tasks after replacing the main board with a new one, before the checkout procedure.

1. Reinstall the original monitor software.
 - Contact your local GE representative to order the monitor software. Provide the original monitor software version and the serial number of the monitor to ensure that you get the correct software. See the Software management section in the Configuration chapter for detailed instructions about the monitor software installation.
2. Re-enter the original Host serial number of the monitor. For details, see the Configuring serial number section in the Configuration chapter.
3. Restore the clinical and the platform settings:
 - If you have the monitor serial number specific backup file available, restore the original clinical and platform settings from the backup file. For details, see the Restoring a backup section in the Configuration chapter.
 - If you don't have the monitor specific backup file available:
 1. Contact your local GE representative and provide the original serial number of the monitor to get the original license file. For details, see the Uploading license file section in the Configuration chapter.
 2. Transfer all available platform and clinical settings from another monitor, and then configure only the unique platform settings manually. For details, see Settings management section in the Configuration chapter.

Replacing the CARESCAPE ONE LCD

Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
 - Remove the CARESCAPE ONE handle assembly.
 - Open and separate the CARESCAPE ONE front bezel and rear housing.
 - Remove the CARESCAPE ONE NIBP manifold from the main board.
 - Remove the CARESCAPE ONE speakers.
 - Remove the CARESCAPE ONE main board
1. Disconnect the touch screen flex cable from the FFC connector.



2. Lift the LCD off of the touch screen panel.

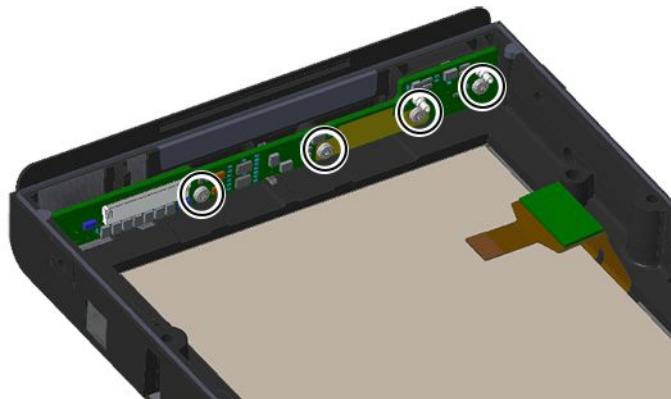


3. Reassemble in reverse order, including the following steps:
 - a. If present, remove the protective film from the LCD before reassembly.
 - b. Position the loose ferrite with foam into the original location before reassembly.

Replacing the CARESCAPE ONE alarm light PWA with power button

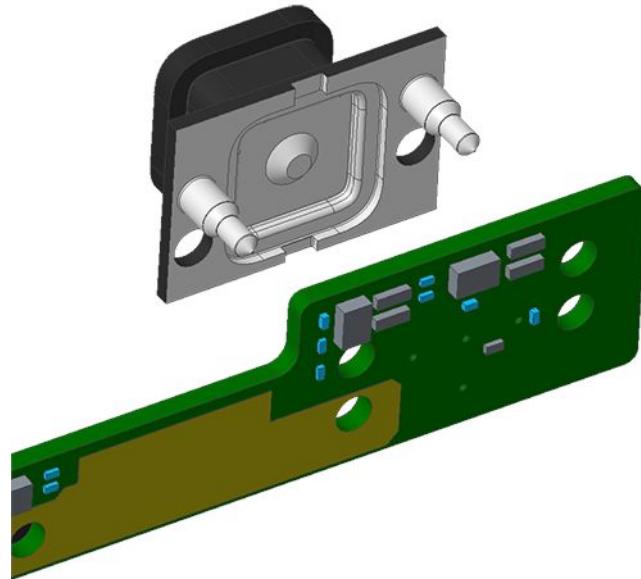
Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
 - Remove the CARESCAPE ONE handle assembly.
 - Open and separate the CARESCAPE ONE front bezel and rear housing.
 - Remove the CARESCAPE ONE NIBP manifold from the main board.
 - Remove the CARESCAPE ONE speakers.
 - Remove the CARESCAPE ONE main board
 - Remove the CARESCAPE ONE LCD.
1. Use a T6 Torx driver to remove the four screws from the alarm light PCB assembly.



2. Pull the alarm light PCB assembly away from the bezel to remove.

3. Reassemble in reverse order, including the following step:
 - a. Assemble power button by pulling rubber stakes through the holes on the PCB assembly until completely seated.



Replacing the CARESCAPE ONE front bezel assembly with lens

Disassemble first:

- Remove the CARESCAPE ONE patient block assembly.
- Remove the CARESCAPE ONE handle assembly.
- Open and separate the CARESCAPE ONE front bezel and rear housing.
- Remove the CARESCAPE ONE NIBP manifold from the main board.
- Remove the CARESCAPE ONE speakers.
- Remove the CARESCAPE ONE main board
- Remove the CARESCAPE ONE LCD.

1. Disassemble the CARESCAPE ONE to the expose the front bezel assembly with lens.

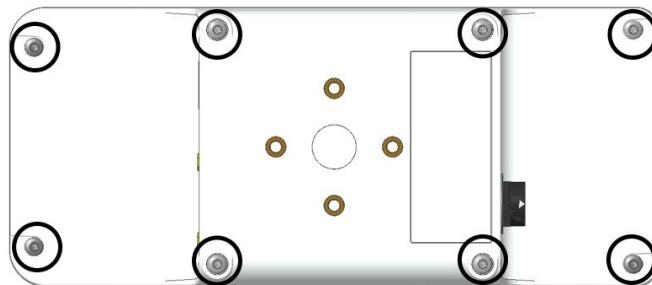


2. Reassemble in reverse order.

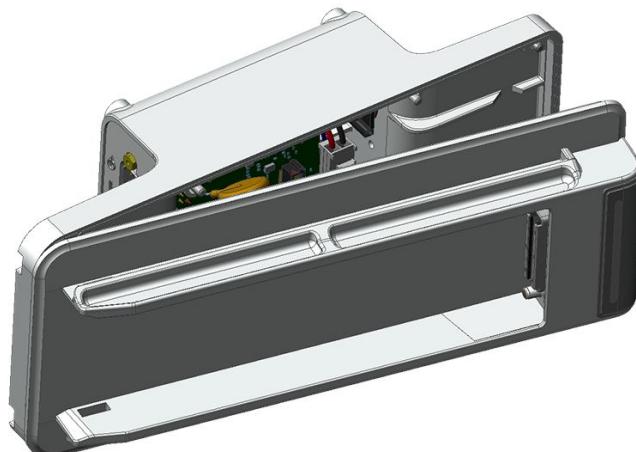
CARESCAPE Dock F0 disassembly and reassembly

Opening the CARESCAPE Dock F0 case

1. Position the CARESCAPE Dock F0 on a flat surface with the rail facing down.
2. Remove the eight screws from the rear of the housing.

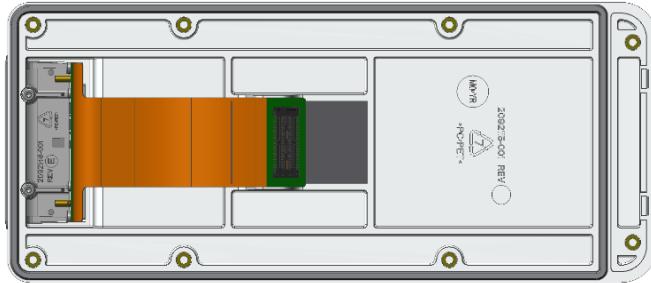


3. Carefully open and separate the top and rear housings.

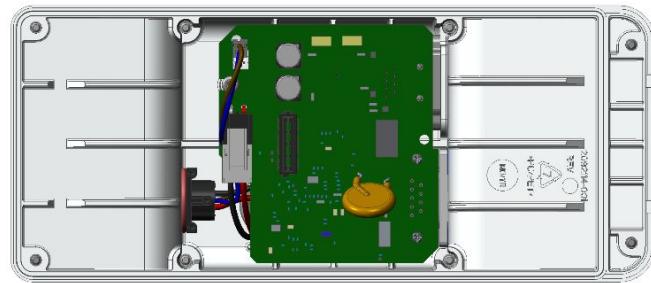


Disassembly and reassembly

Top housing with rail assembly and dock flex cable.



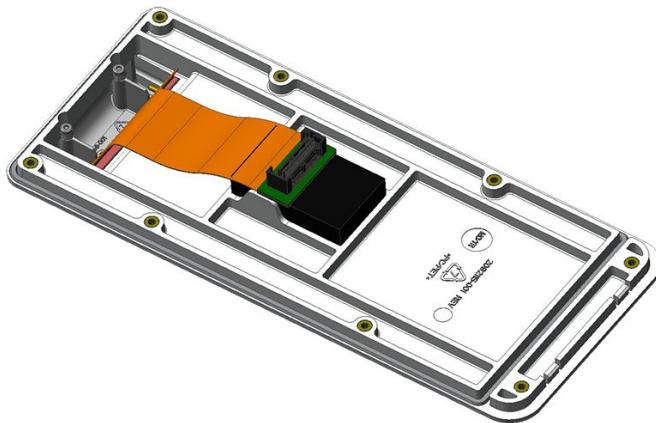
Rear housing with the power cable, and interface board.



Replacing the CARESCAPE Dock F0 flex and rail assembly

Disassemble first:

- Open the CARESCAPE Dock F0 case.
- 1. Replace the CARESCAPE Dock F0 flex and rail assembly.

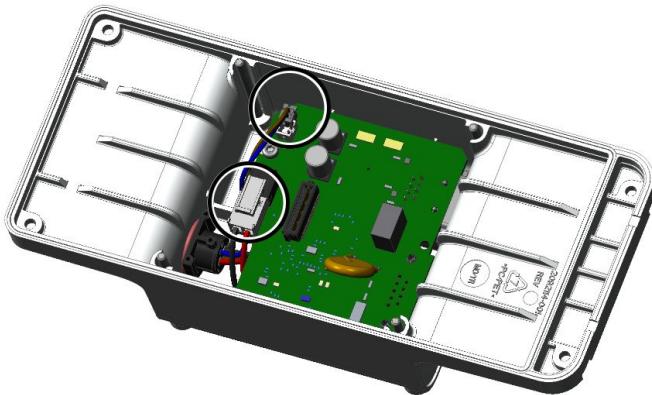


Replacing the CARESCAPE Dock F0 interface board

Disassemble first:

- Open the CARESCAPE Dock F0 case.

1. From the rear housing, disconnect the two interface board cable connectors.



2. Remove the two screws from the RJ-45 connector.

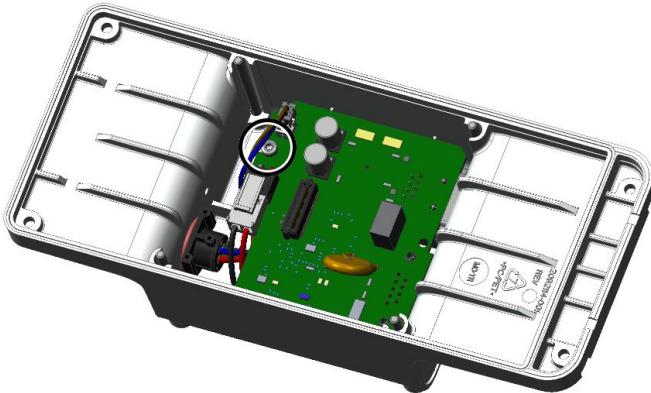


3. Use a 5 mm nut driver to remove the two jack screws from the ePort connector.

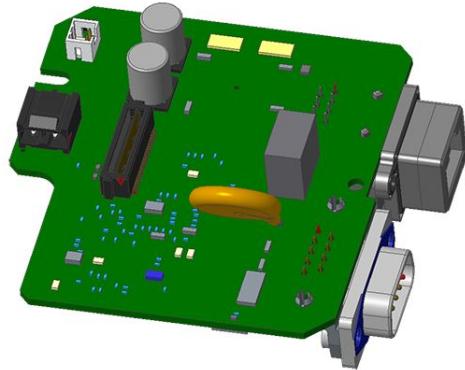


Disassembly and reassembly

4. Remove the single screw from the interface board.



5. Tilt the interface board to release the RJ-45 and ePort connectors from the rear housing.
6. Remove the interface board.



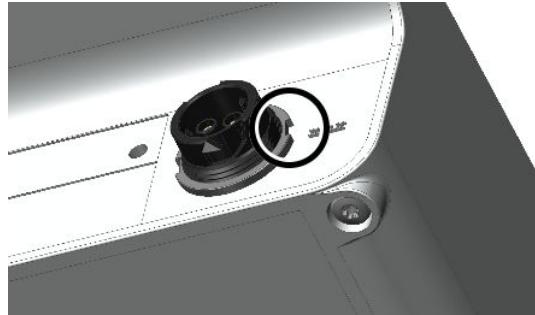
7. Reassemble in reverse order.

Replacing the CARESCAPE Dock F0 internal power cable

Disassemble first:

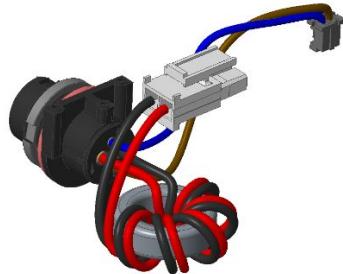
- Open the CARESCAPE Dock F0 case.
- Remove the interface board.

1. Remove the interface power cable:
 - a. Placing a small bladed screw driver into the notch, loosen and remove the spanner nut.



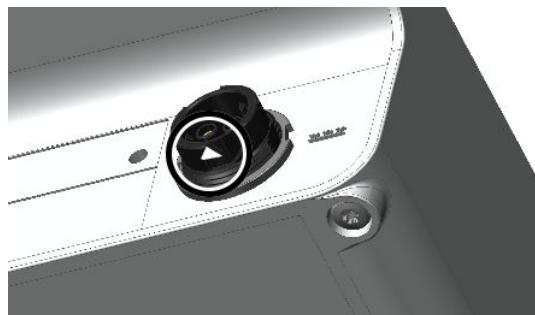
Alternately, use a spanner bit to loosen and remove the spanner nut.

- b. Push the power cable connector back into the rear housing and remove the internal power cable.



2. To install the internal power cable:

- a. Install the O-ring onto the end of the cable connector.
 - b. Insert the power cable connector into the rear housing. Make sure that the white arrow located on the power cable connector faces the bottom of the rear housing as shown.



- c. Install and finger-tighten the spanner nut. Place the blade of the flat bladed screw driver into the notch and tighten.

Alternately, use a spanner bit to tighten the spanner nut.

Replacing the CARESCAPE Dock F0 DC power supply and power cable

1. Replace the DC power supply and power cable.



CARESCAPE Parameters disassembly and reassembly

Replacing the CARESCAPE Parameter USB patient cable

Use the following procedure to replace the CARESCAPE Parameter USB patient cable of the CARESCAPE ECG or the CARESCAPE SpO2 — Masimo.

Removing the hole plug and USB patient cable from the CARESCAPE Parameter

1. Insert a small screw driver (or straightened paper clip) into the hole plug and gently pry the plug out of the hole. Discard the used hole plug.



2. Insert the small screw driver (or straightened paper clip) into the open hole. Gently press down and apply pressure to release the cable latch while simultaneously removing the USB patient cable from the CARESCAPE Parameter.



3. Remove the USB patient cable from the connector opening.



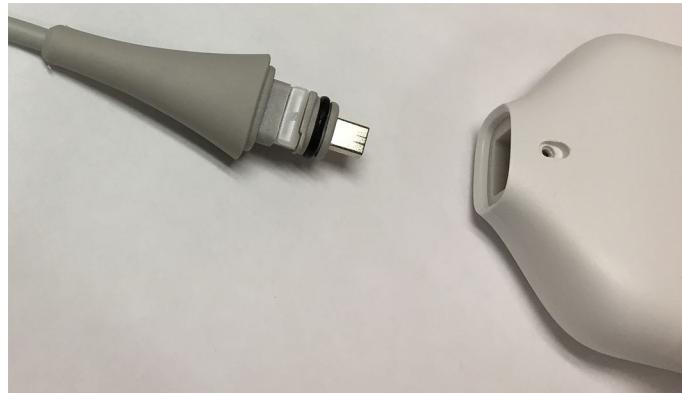
Installing the USB patient cable

1. Ensure the USB patient cable O-ring is seated in the groove as shown.



Disassembly and reassembly

2. Insert the USB patient cable into the connector opening until you hear a click and the cable locks into place.



3. Insert the hole plug and press down until the plug lies flush with the module surface.



Replacing the CARESCAPE Parameter cable

Use this procedure to replace the CARESCAPE Parameter cable of the CARESCAPE Pressure, CARESCAPE Pressure dual adapter cable, or CARESCAPE Temperature.

1. Remove the catheter, probe, sampling line, or sensor from the CARESCAPE Parameter cable and set aside.
2. Disconnect the CARESCAPE Parameter from the CARESCAPE ONE.

3. Remove the CARESCAPE Parameter cable from the CARESCAPE Parameter:
 - a. Insert a small screw driver (or straightened paper clip) into the hole plug and gently pry the plug out of the hole. Discard the used hole plug.



- b. Insert the small screw driver (or straightened paper clip) into the open hole. Gently press down and apply pressure to release the cable latch while simultaneously removing the CARESCAPE Parameter cable from the CARESCAPE Parameter.



- c. Remove the O-ring from the CARESCAPE Parameter. Discard the used O-ring.



Disassembly and reassembly

4. Install the CARESCAPE Parameter cable into the CARESCAPE Parameter:
 - a. Install the replacement O-ring onto the CARESCAPE Parameter.



- b. Insert the CARESCAPE Parameter cable connector into the CARESCAPE Parameter until the cable locks into place.



- c. Install the hole plug and make sure the plug lies flat.

Replacing the CARESCAPE ECG dust cover

1. Disconnect the CARESCAPE ECG from the CARESCAPE ONE.
2. Grasp the existing CARESCAPE ECG dust cover and pull until the dust cover is disconnected. Discard the used dust cover.
3. Insert the replacement CARESCAPE ECG dust cover tab into the slot.



4. Press until the dust cover tab lies flush with the module surface.



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Service parts

Service parts

Perform the specified corrective maintenance check after any corrective maintenance to the product. For the spare part graphics, see the disassembly procedures.

Ordering parts

To order parts, contact your local GE representative. Contact information is available at www.gehealthcare.com. To make sure you get the correct service part, provide the device type and the serial number information.

Returning failed CARESCAPE Parameters to the vendor

Item	Return to vendor
<ul style="list-style-type: none">• CARESCAPE ECG• CARESCAPE Pressure• CARESCAPE Temperature• CARESCAPE SpO₂• CARESCAPE SpO₂ — Masimo• CARESCAPE SpO₂ — Nellcor	<p>Contact GE service for replacement.</p> <p>Contact GE service for instructions for returning a failed CARESCAPE Parameter.</p>
CARESCAPE CO ₂	<ul style="list-style-type: none">• Contact GE service for replacement.• Contact GE service for instructions for returning a failed LoFlo Sidestream Module for service.• Return failed CARESCAPE CO₂ to GE.

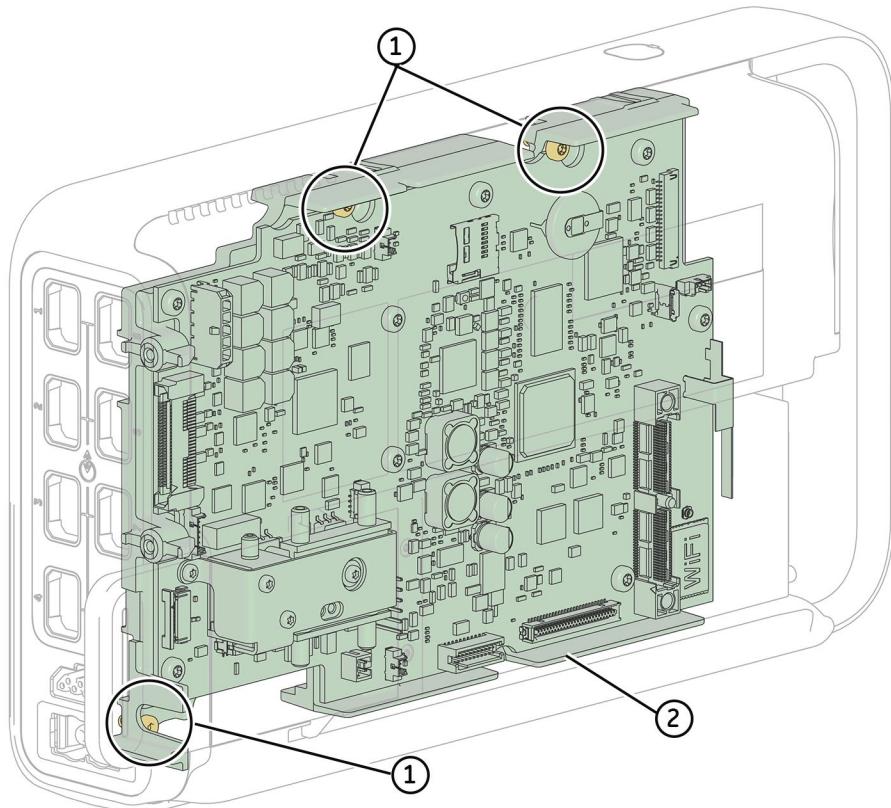
CARESCAPE ONE

List of FRUs for CARESCAPE ONE

Part number	Description
2090382-001	FRU, Main Board Assembly, CARESCAPE ONE
2090382-002	FRU, Pneumatic Components, NIBP, CARESCAPE ONE

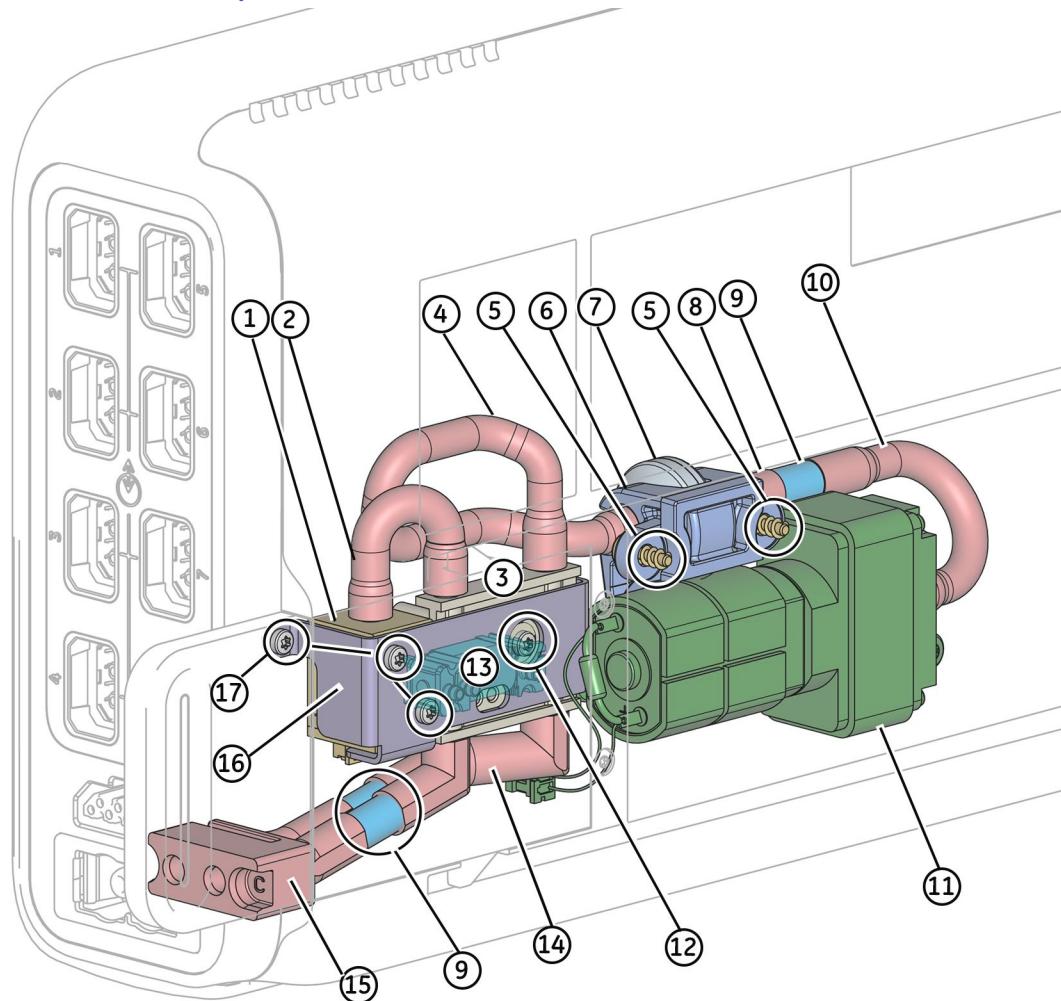
Part number	Description
2090382-003	FRU, Patient Block Assembly, CARESCAPE ONE
2090382-004	FRU, Front Bezel Assembly With Lens, CARESCAPE ONE
2090382-005	FRU, Speaker Assembly, CARESCAPE ONE
2090382-006	FRU, Pull Tab Assembly, CARESCAPE ONE
2090382-007	FRU, Dock Flex Assembly, CARESCAPE ONE
2090382-010	FRU, Handle Assembly, CARESCAPE ONE
2090382-012	FRU, Speaker Covers, CARESCAPE ONE
2090382-013	FRU, Battery Door, CARESCAPE ONE
2090382-016	FRU, LCD With Shock Mounts, CARESCAPE ONE
2090382-017	FRU, Alarm Light PCB With Power Button, CARESCAPE ONE

FRU, main board assembly, CARESCAPE ONE



Part number	Description
2090382-001	<p>FRU, Main Board Assembly, CARESCAPE ONE</p> <ul style="list-style-type: none"> • 1 Main board assembly (#2) • 3 mounting screws for the center frame, K30 x 8 mm (#1) • 2 speaker cover labels (not shown) • 2 screw covers for the bottom of the handle (not shown) • 2 screw covers for the top of the handle (not shown) • 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown) • 2 washers for the top and bottom handle screws (not shown)

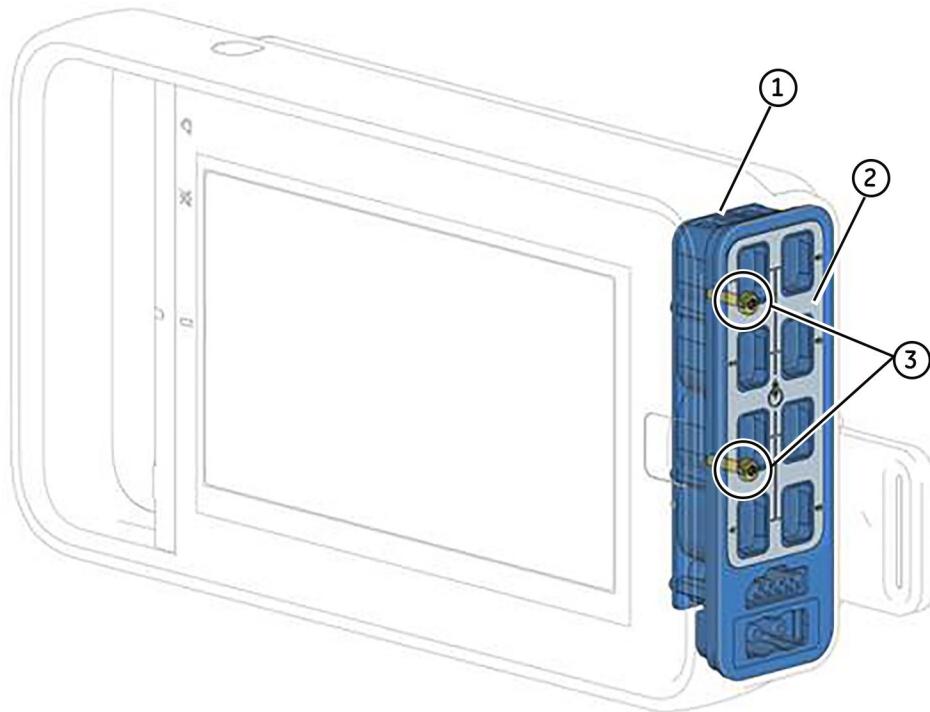
FRU, NIBP pneumatic components, CARESCAPE ONE



Service parts

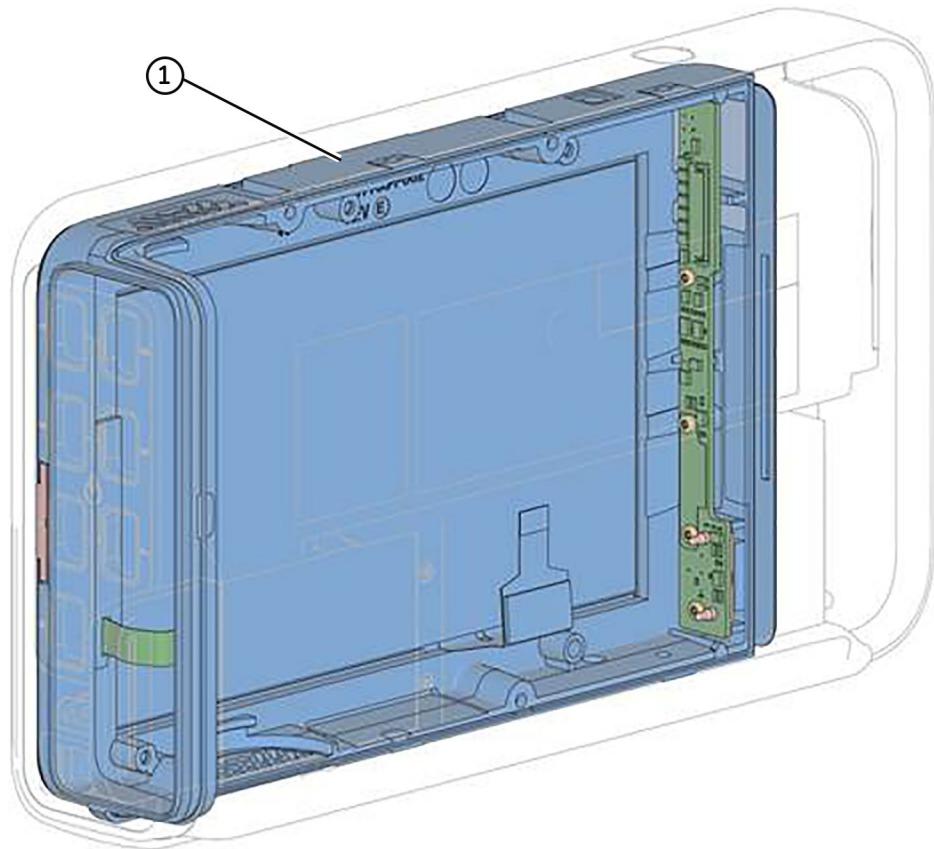
Part number	Description
2090382-002	<p>FRU, Pneumatic Components, NIBP, CARESCAPE ONE</p> <ul style="list-style-type: none"> • 2 mounting screws for the check valve/NIBP pump bracket, K30 x 8mm long (#5) • 1 x-valve (#13) • 1 manifold, B40 (#3) • 1 NIBP dump valve assembly (#1) • 1 check valve/NIBP pump bracket (#6) • 1 NIBP pump assembly (#11) • 4 mounting screws for the dump valve bracket, M2 x 3 mm long (#17) • 1 shoulder screw for the dump valve bracket (#12) • 1 NIBP manifold front connector (#14) • 1 NIBP manifold base connector (#15) • 1 NIBP manifold to dump valve connector (#2) • 1 silicone tubing, clear, 150 mm long (#4) • 1 silicone tubing, clear, 20 mm long (#8) • 1 silicone tubing, clear, 65 mm long (#10) • 1 dump valve bracket (#16) • 3 in-line filters, 1/8 ID, 43 micron (#9) • 1 NIBP check valve, 1/8 inch (#7) • 2 speaker cover labels (not shown) • 1 screw cover for the bottom of the handle (not shown) • 1 screw cover for the top of the handle (not shown) • 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown) • 2 washers for the top and bottom handle screws (not shown)

FRU, patient block assembly, CARESCAPE ONE



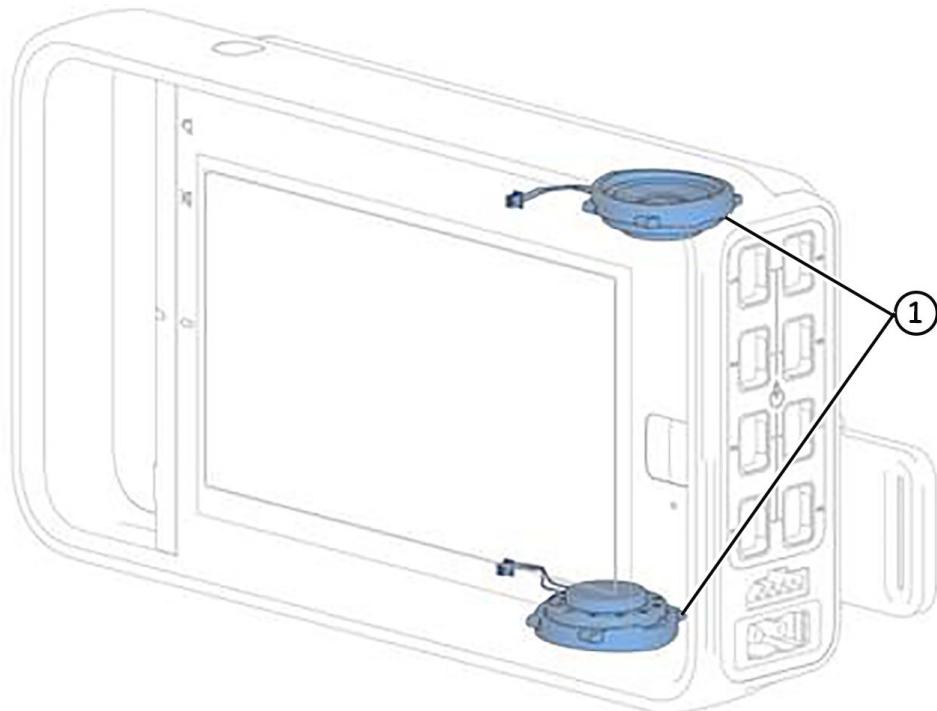
Part number	Description
2090382-003	<p>FRU, Patient Block Assembly, CARESCAPE ONE</p> <ul style="list-style-type: none">• 1 patient block assembly (#1)• 1 patient block bezel insert (#2)• 2 mounting screws for the patient block assembly, M3 x 14 mm (#3)• 2 speaker cover labels (not shown)• 2 mounting screw covers for the bottom of the handle (not shown)• 2 mounting screw covers for the top of the handle (not shown)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 2 washers for the top and bottom handle screws (not shown)

FRU, front bezel assembly with lens, CARESCAPE ONE



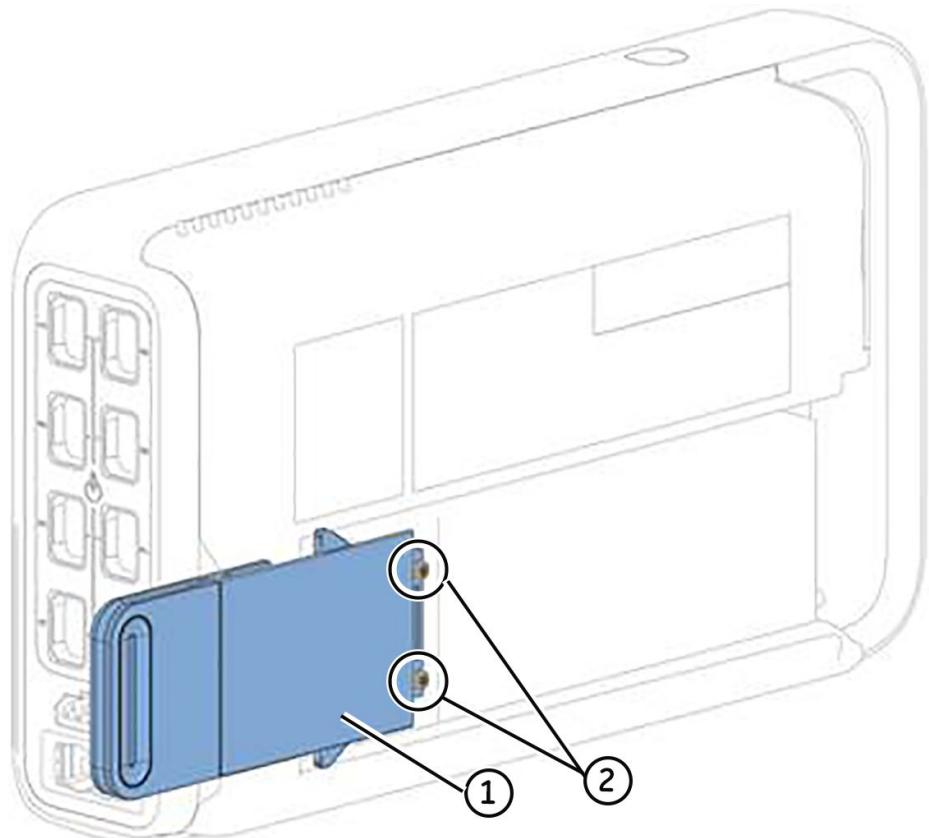
Part number	Description
2090382-004	<p>FRU, Front Bezel Assembly With Lens, CARESCAPE ONE</p> <ul style="list-style-type: none">• 1 front bezel assembly with touch screen and display lock (#1)• 2 speaker cover labels (not shown)• 2 mounting screw covers for the bottom of the handle (not shown)• 2 mounting screw covers for the top of the handle (not shown)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 2 washers for the top and bottom handle screws (not shown)

FRU, speaker assembly, CARESCAPE ONE



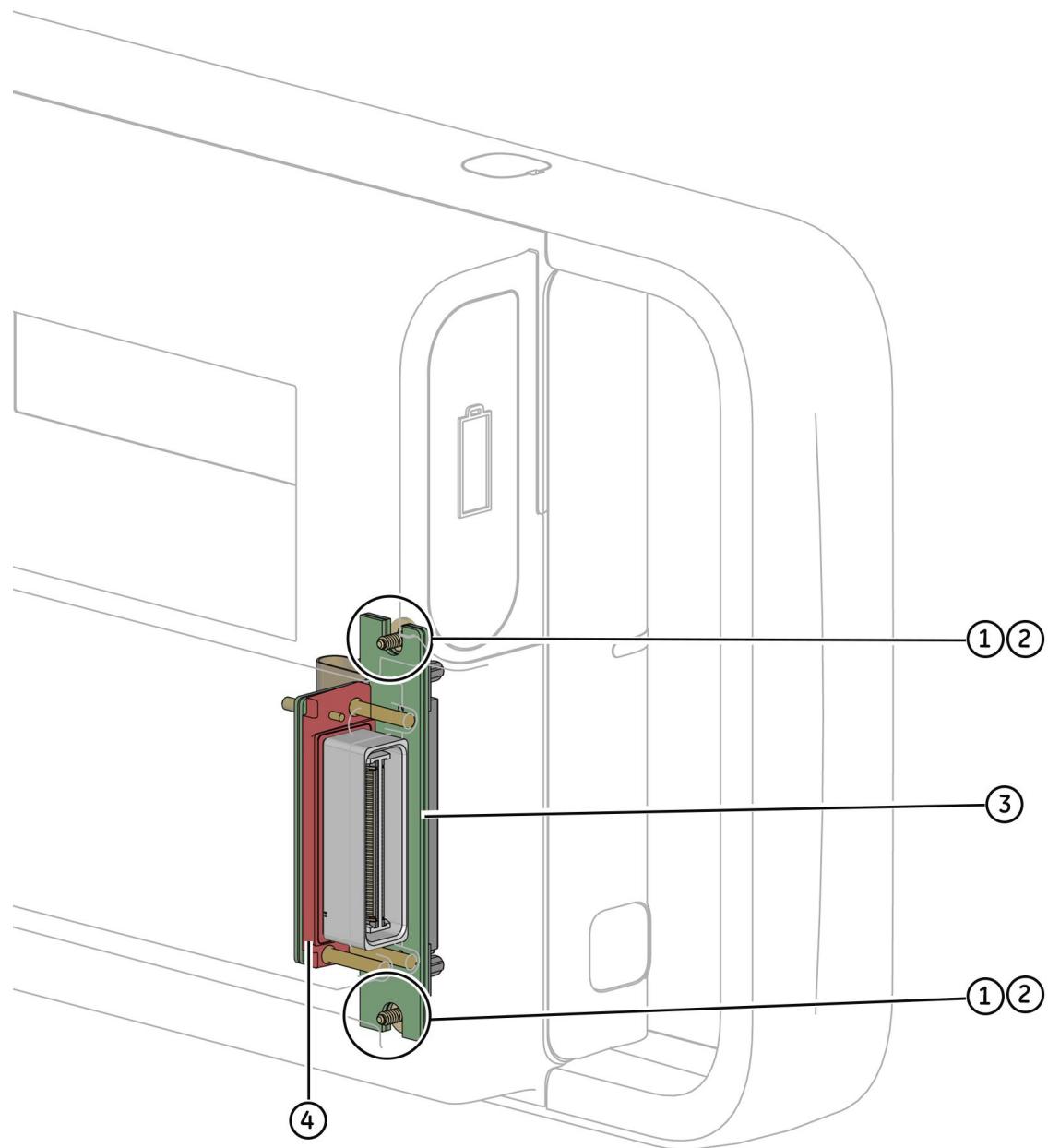
Part number	Description
2090382-005	FRU, Speaker Assembly, CARESCAPE ONE <ul style="list-style-type: none">• 2 speaker assemblies (#1)• 2 speaker cover labels (not shown)• 2 mounting screw covers for the bottom of the handle (not shown)• 2 mounting screw covers for the top of the handle (not shown)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 2 washers for the top and bottom handle screws (not shown)

FRU, pull tab assembly, CARESCAPE ONE



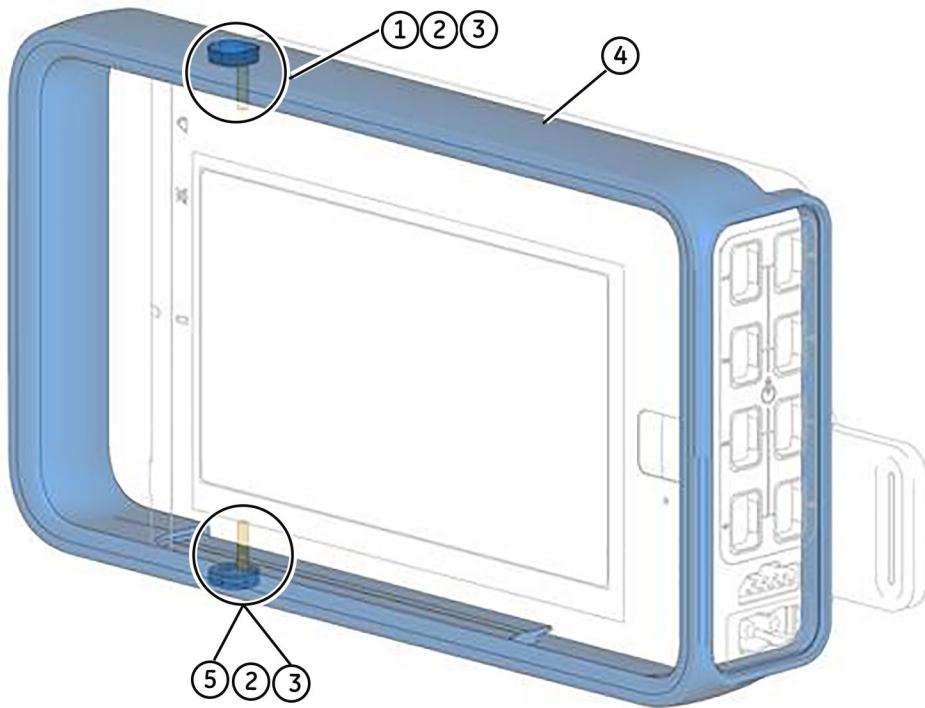
Part number	Description
2090382-006	FRU, Pull Tab Assembly, CARESCAPE ONE <ul style="list-style-type: none">• 1 pull tab assembly (#1)• 2 mounting screws for the pull tab assembly, K22 x 6 mm (#2)

FRU, dock flex assembly, CARESCAPE ONE



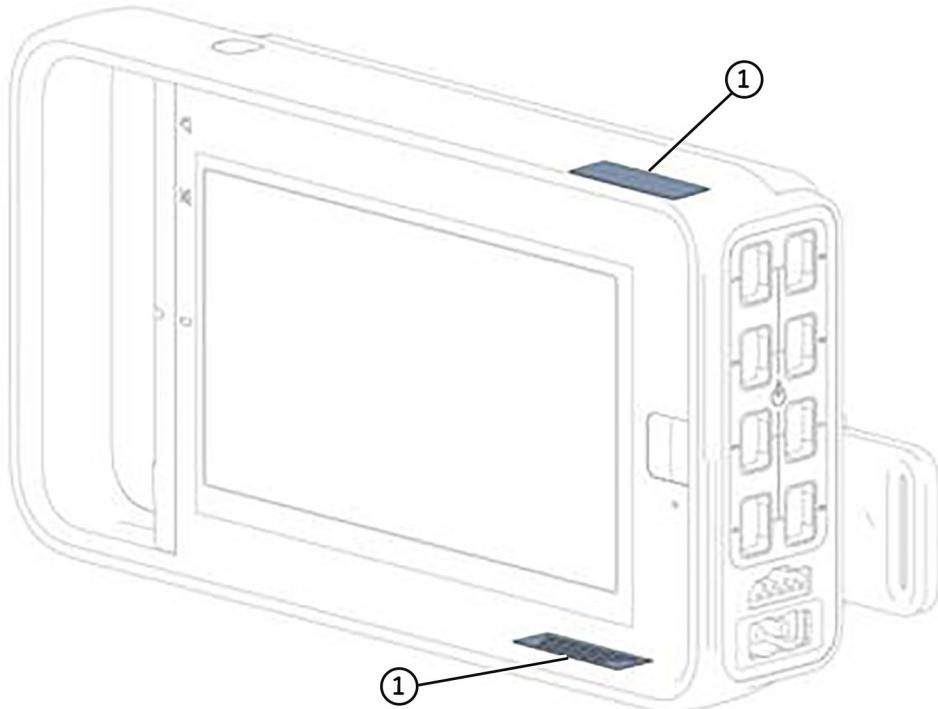
Part number	Description
2090382-007	FRU, Dock Flex Assembly, CARESCAPE ONE <ul style="list-style-type: none">• 1 dock flex assembly (#3)• 1 dock connector seal (#4)• 2 mounting screws for the dock flex assembly, K22 x 6mm (#1)• 2 washers for the dock flex assembly mounting screws (#2)

FRU, handle assembly, CARESCAPE ONE



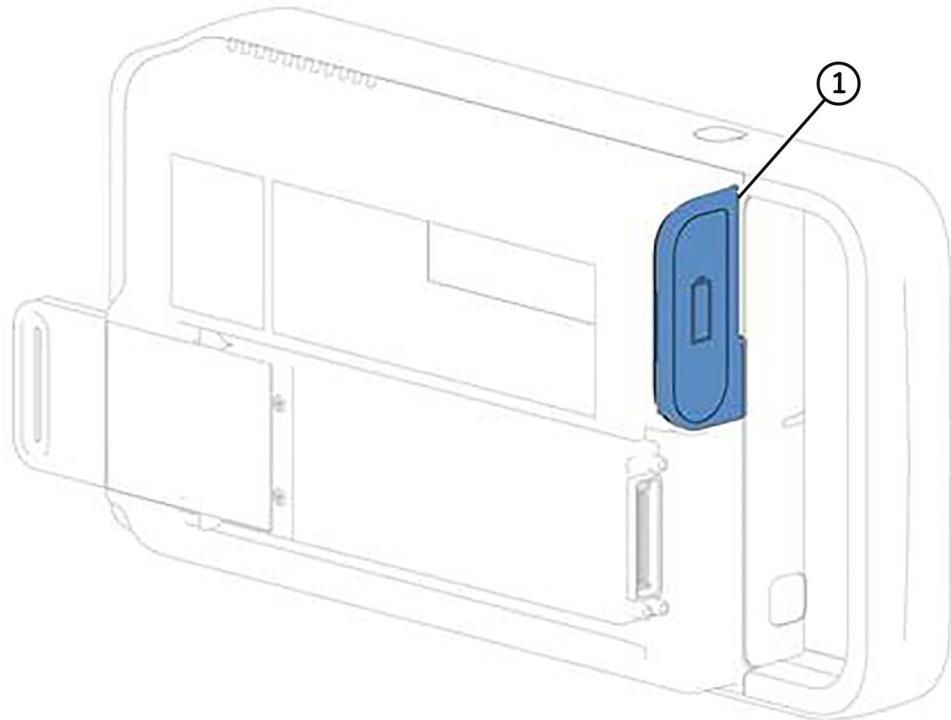
Part number	Description
2090382-010	<p>FRU, Handle Assembly, CARESCAPE ONE</p> <ul style="list-style-type: none">• 1 handle assembly (#4)• 4 speaker cover labels (not shown)• 2 screw covers for the bottom of the handle (#5)• 2 screw covers for the top of the handle (#1)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (#3)• 2 washers for the top and bottom handle screws (#2)

FRU, speaker covers, CARESCAPE ONE

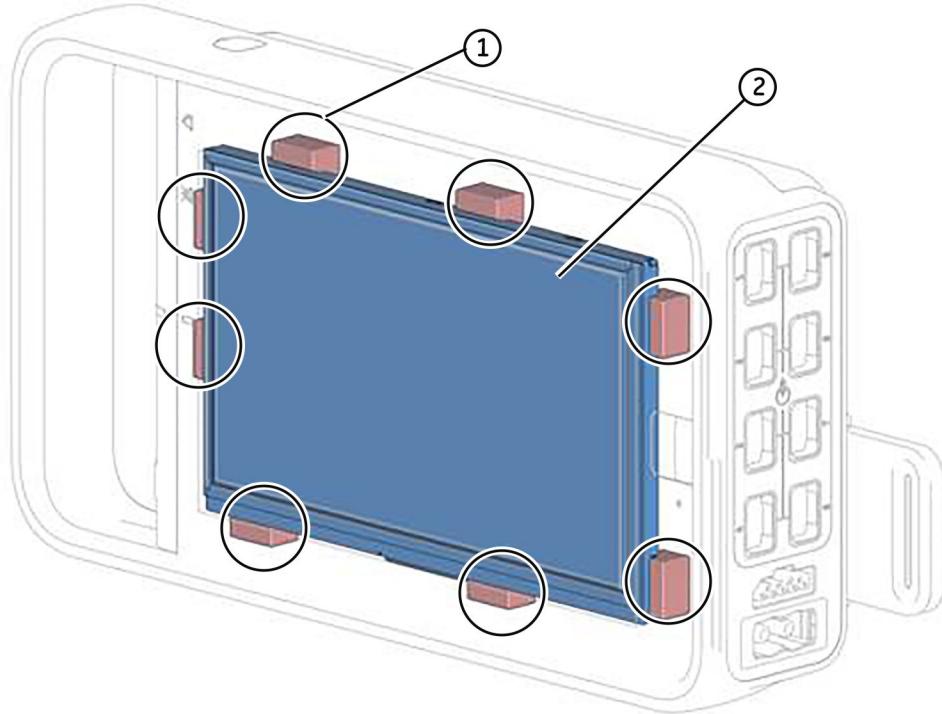


Part number	Description
2090382-012	<p>FRU, Speaker Covers, CARESCAPE ONE</p> <ul style="list-style-type: none">• 10 speaker cover labels (#1)• 10 screw covers for the bottom of the handle (not shown)• 10 screw covers for the top of the handle (not shown)• 10 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 10 washers for the top and bottom handle screws (not shown)

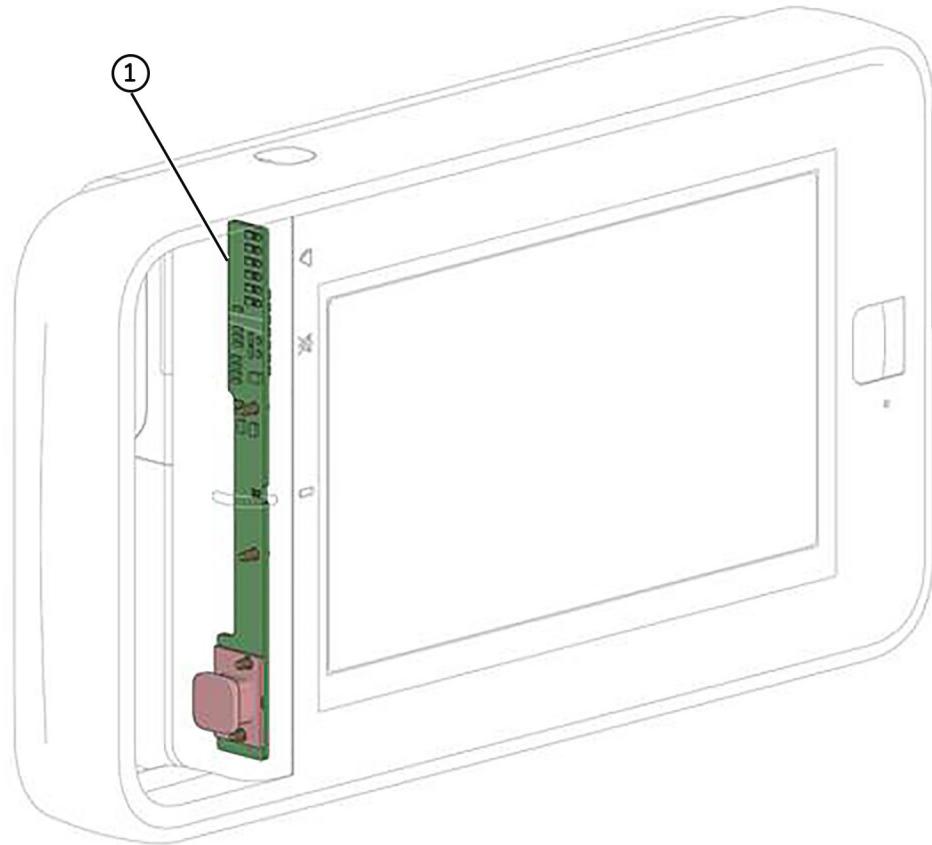
FRU, battery door, CARESCAPE ONE



Part number	Description
2090382-013	<p>FRU, Battery Door, CARESCAPE ONE</p> <ul style="list-style-type: none">• 4 battery door covers (#1)• 4 speaker cover labels (not shown)• 2 screw covers for the bottom of the handle (not shown)• 2 screw covers for the top of the handle (not shown)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 2 washers for the top and bottom handle screws (not shown)

FRU, LCD with shock mounts, CARESCAPE ONE

Part number	Description
2090382-016	<p>FRU, LCD With Shock Mounts, CARESCAPE ONE</p> <ul style="list-style-type: none">• 1 LCD assembly (#2)• 8 LCD shock mounts (#1)• 4 speaker cover labels (not shown)• 2 screw covers for the bottom of the handle (not shown)• 2 screw covers for the top of the handle (not shown)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 2 washers for the top and bottom handle screws (not shown)

FRU, alarm light PCB with power button, CARESCAPE ONE

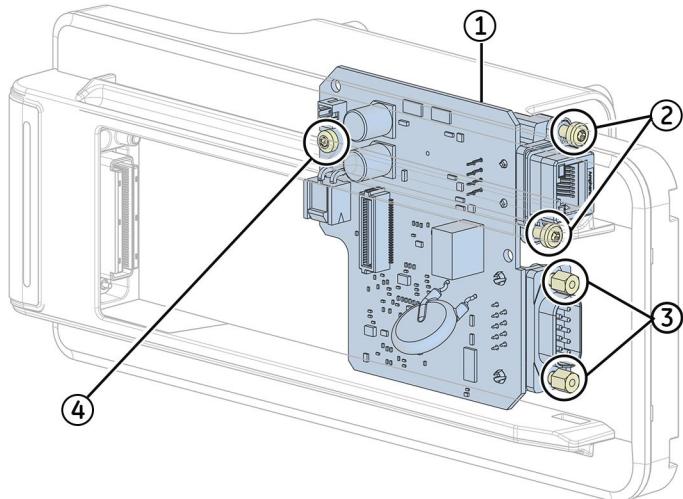
Part number	Description
2090382-017	FRU, Alarm Light PCB With Power Button, CARESCAPE ONE <ul style="list-style-type: none">• 1 Alarm light PCB with power button assembly (#1)• 2 speaker cover labels (not shown)• 2 screw covers for the bottom of the handle (not shown)• 2 screw covers for the top of the handle (not shown)• 2 mounting screws for the top and bottom of the handle, M3 x 14 mm (not shown)• 2 washers for the top and bottom handle screws (not shown)

CARESCAPE Dock F0**List of FRUs for CARESCAPE Dock F0**

Part number	Description
2094695-001	FRU, Interface PCB, CARESCAPE Dock F0
2094695-002	FRU, Flex and Cover Rail Assembly, CARESCAPE Dock F0

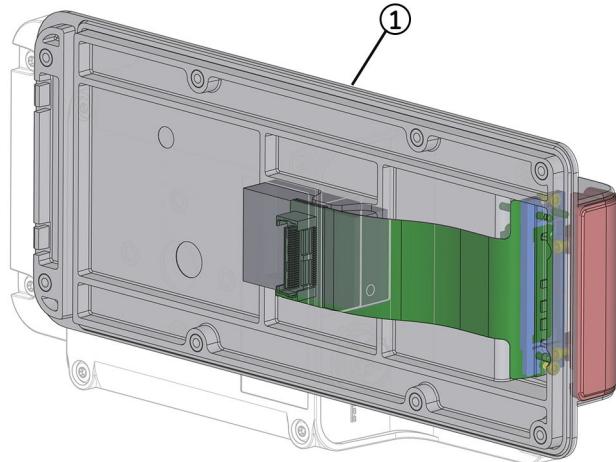
Part number	Description
2094695-003	FRU, Internal Power Cable, CARESCAPE Dock F0
2094695-004	FRU, DC Power Supply, 15V, CARESCAPE Dock F0 (#7)

FRU, interface PCB, CARESCAPE Dock F0



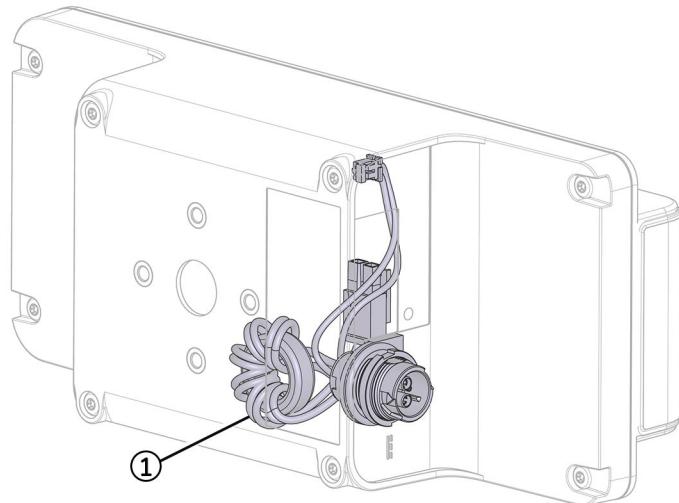
Part number	Description
2094695-001	FRU, Interface PCB, CARESCAPE Dock F0 <ul style="list-style-type: none"> • 1 PCB interface (#1) • 2 mounting screws for RJ-45 connector, M3 x 8 mm long (#2) • 2 jackscrews for ePort connector, 4-40 x 18 mm long (#3) • 1 mounting screw for PCB interface, K30 x 8 mm long (#4) • 4 long mounting screws for rear housing, M3 x 45 mm long (not shown) • 4 short mounting screws for rear housing, M3 x 6 mm long (not shown)

FRU, flex and cover rail assembly, CARESCAPE Dock F0



Part number	Description
2094695-002	<p>FRU, Flex and Cover Rail Assembly, CARESCAPE Dock F0</p> <ul style="list-style-type: none">• Flex and cover rail assembly (#1)• 4 long mounting screws for rear housing, M3 x 45 mm long (not shown)• 4 short mounting screws for rear housing, M3 x 6 mm long (not shown)

FRU, internal power cable, CARESCAPE Dock F0



Part number	Description
2094695-003	<p>FRU, Internal Power Cable, CARESCAPE Dock F0</p> <ul style="list-style-type: none"> • 1 internal power cable (#1) • 1 mounting screw for PCB interface, K30 x 8 mm long (not shown) • 2 mounting screws for RJ-45 connector, M3 x 8 mm long (not shown) • 2 jackscrews for ePort connector, 4-40 x 18 mm long (not shown) • 4 long mounting screws for rear housing, M3 x 45 mm long (not shown) • 4 short mounting screws for rear housing, M3 x 6 mm long (not shown)

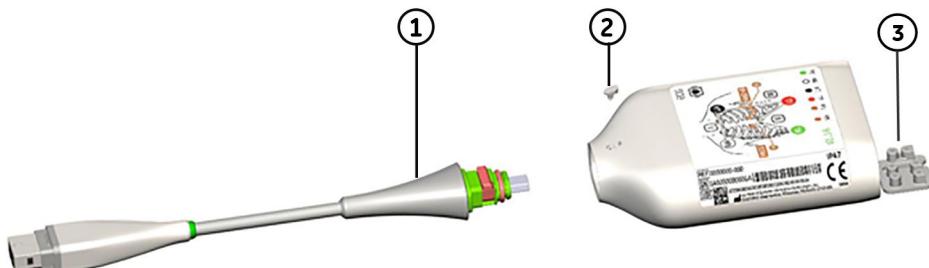
FRU, DC power supply, CARESCAPE Dock F0



Part number	Description
2094695-004	FRU, DC Power Supply, 15V, CARESCAPE Dock F0

CARESCAPE Parameters

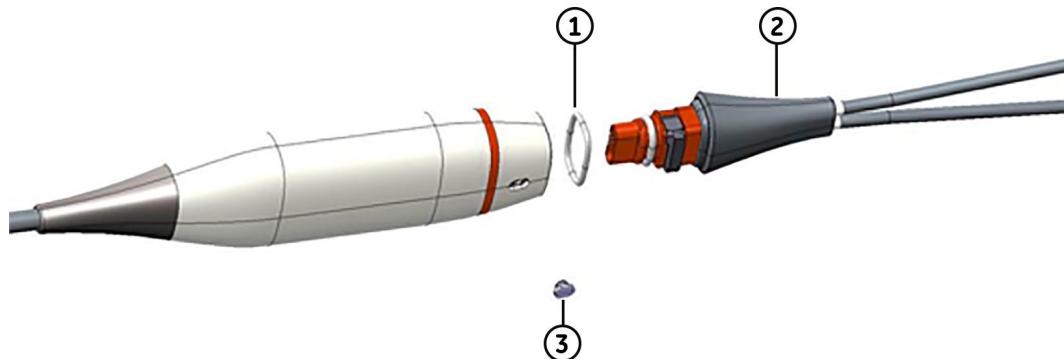
Exploded view of CARESCAPE ECG assembly



List of FRUs for CARESCAPE ECG

Part number	Description
2094688-001	FRU, Host Cable, Short, CARESCAPE ECG <ul style="list-style-type: none"> • Patient cable, USB, 1.8 m (5 ft 10.87 in) (#1) • 2 Hole Plugs (#2)
2094688-002	FRU, Host Cable, Long, CARESCAPE ECG <ul style="list-style-type: none"> • Patient cable, USB, 3.6 m (11 ft 9.72 in) (#1) • 2 Hole Plugs (#2)
2094688-010	FRU, ECG Dust Covers, CARESCAPE ECG <ul style="list-style-type: none"> • 10 ECG Dust Covers (#3)

Exploded view of CARESCAPE Pressure assembly

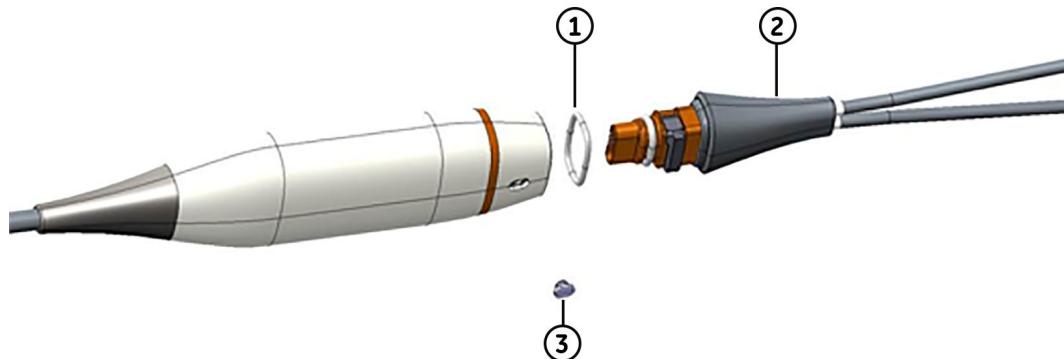


List of FRUs for CARESCAPE Pressure

Part number	Description
2094690-001	FRU, CARESCAPE ONE Interface Cable, Argon Medical, DTXPLUS Dual, Short <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Argon Medical, DTXPLUS Dual, 0.773 m (2 ft 6.43 in) (#2) • 2 Hole Plugs (#3)
2094690-002	FRU, CARESCAPE ONE Interface Cable, Argon Medical, DTXPLUS Dual, Long <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Argon Medical, DTXPLUS Dual, 2.573 m (8 ft 5.29 in) (#2) • 2 Hole Plugs (#3)

Part number	Description
2094690-003	FRU, CARESCAPE ONE Interface Cable, Utah Medical DELTRAN, Dual, Short <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Utah Medical DELTRAN, Dual, 0.773 m (2 ft 6.43 in) (#2) • 2 Hole Plugs (#3)
2094690-004	FRU, CARESCAPE ONE Interface Cable, Utah Medical DELTRAN, Dual, Long <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Utah Medical DELTRAN, Dual, 2.573 m (8 ft 5.29 in) (#2) • 2 Hole Plugs (#3)
2094690-005	FRU, CARESCAPE ONE Interface Cable, ICU Medical TRANSPACT, IV Dual, Short <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, ICU Medical TRANSPACT, Dual, 0.773 m (2 ft 6.43 in) (#2) • 2 Hole Plugs (#3)
2094690-006	FRU, CARESCAPE ONE Interface Cable, ICU Medical TRANSPACT, IV Dual, Long <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, ICU Medical TRANSPACT, Dual, 2.573 m (8 ft 5.29 in) (#2) • 2 Hole Plugs (#3)
2094690-007	FRU, CARESCAPE ONE Interface Cable, Edwards TRUWAVE Dual, Short <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Edwards TRUWAVE Dual, 0.773 m (2 ft 6.43 in) (#2) • 2 Hole Plugs (#3)
2094690-008	FRU, CARESCAPE ONE Interface Cable, Edwards TRUWAVE Dual, Long <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Edwards TRUWAVE Dual, 2.573 m (8 ft 5.29 in) • 2 Hole Plugs (#3)
2094690-010	FRU, CARESCAPE Pressure Parameter Cable Adapter <ul style="list-style-type: none"> • O-ring, CARESCAPE Parameter Cable (#1) • CARESCAPE Parameter Cable, Pressure, Dual, 0.3 m (0.98 ft) (not shown) • 2 Hole Plugs (#3) <p>This adapter cable provides connection to the 11-pin rectangle pressure transducer (sensor) interfaces similarly used by the Patient Data Module.</p>

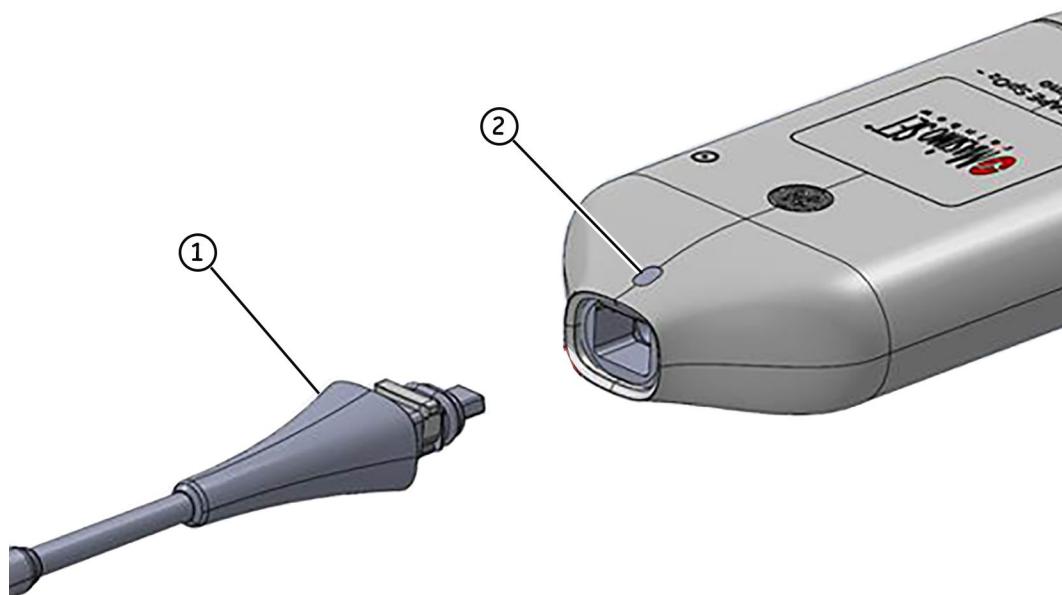
Exploded view of CARESCAPE Temperature assembly



List of FRUs for CARESCAPE Temperature

Part number	Description
2094689-001	FRU, CARESCAPE ONE Interface Cable, Temperature, Dual <ul style="list-style-type: none">• O-ring, CARESCAPE Parameter Cable (#1)• CARESCAPE Parameter Cable, Temperature 400 Series, Dual, 0.473 m (1 ft 6.62 in) (#2)• 2 Hole Plugs (#3)
2094689-002	FRU, CARESCAPE ONE Interface Cable, Temperature, Disposable, Dual, Short <ul style="list-style-type: none">• O-ring, CARESCAPE Parameter Cable (#1)• CARESCAPE Parameter Cable, Temperature 400 Series, Disposable, Dual, 0.473 m (1 ft 6.62 in) (#2)• 2 Hole Plugs (#3)
2094689-003	FRU, CARESCAPE ONE Interface Cable, Temperature, Disposable, Dual, Long <ul style="list-style-type: none">• O-ring, CARESCAPE Parameter Cable (#1)• CARESCAPE Parameter Cable, Temperature 400 Series, Disposable, Dual, 1.97 m (6 ft 5.56 in) (#2)• 2 Hole Plugs (#3)

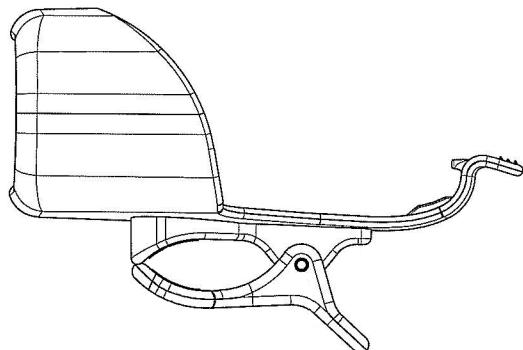
Exploded view for CARESCAPE SpO₂ – Masimo assembly



List of FRUs for CARESCAPE SpO₂ – Masimo

Part number	Description
2094693-003	FRU, USB Patient Cable, Masimo, Long <ul style="list-style-type: none"> Patient Cable, USB, Masimo, 1.80 m (5 ft 10.87 in) (#1) 2 Hole Plugs (#2)
2094693-004	FRU, USB Patient Cable, Masimo, Short <ul style="list-style-type: none"> Patient Cable, USB, Masimo, 0.90 m. (2 ft 11.43 in) (#1) 2 Hole Plugs (#2)

FRU, LoFlo Sidestream Module mounting bracket



List of FRUs for CARESCAPE CO₂

Part number	Description
2094694-004	FRU, LoFlo Sidestream Module Mounting Bracket <ul style="list-style-type: none"> 1 LoFlo Sidestream Module mounting bracket

Service parts

A

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Product	Archive file
CARESCAPE ONE	oss-licenses.html

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1. Open the service interface logon screen. Refer to the Using service applications chapter for information about accessing the service interface.
2. Select the **OSS Licensing Information** web link displayed on the log on screen:

The screenshot shows a 'Please log in' page with a GE Healthcare logo. To the right is a table of system information:

Server	GE004097290413
Monitor	CARESCAPE ONE
Serial Number	SNA16260013SP
MAC Address	00:40:97:29:04:13
Service IP Address	192.168.1.1
Service IP Netmask	255.255.255.0
Software	CARESCAPE Software
Software Version	3
Software Build	3.0.1128 EXTRA
Software Package	XICU

Below the table are two logos: a stylized building icon and a CE mark with the number 0537. A red oval highlights the 'OSS licensing information' link at the bottom of the page.

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4. Close the web browser when you are finished viewing the license files.



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