OPERATING INSTRUCTIONS
AND
MAINTENANCE MANUAL

SSCOR Duet®
Model 2314 Series
AC Suction with Battery Back-up

SSCOR, INC.
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Caution-Notice

1. SSCOR suction units are not designed or intended for use in extended procedures that require prolonged high vacuum/low airflow applications, as is the case in wound drainage or endoscopic use or in any other procedure that produces high vacuum levels within an occluded system for an extended period of time. Turn the suction unit off when it is not in use.

2. Federal law restricts this device to sale, distribution, and use by, or on the order of a physician, emergency medical technician, or other medical practitioner. For use by medical personnel trained in suctioning techniques and in the use of medical suction equipment.

3. Operator should be thoroughly familiar with these operating instructions before this device is used.

4. Do not use in the presence of flammable agents or anesthetics.

5. Before testing for vacuum over -300mmHg look for an expiration date on the canister (where applicable) and change the canister if the canister has passed the expiration date to minimize the possibility of implosion, which can occur when a canister is aged or damaged.

6. External equipment intended for connection to signal input, signal output or other connectors, shall comply with relevant IEC standard (e.g. IEC 60950 for IT equipment and the IEC 60601 series for medical electrical equipment). In addition, all such combinations –systems – shall comply with the standard IEC 60601-1-1, safety requirements for medical electrical systems. Equipment not complying with IEC 60601 shall be kept outside the patient environment, as defined in the standard.
   Any person who connects external equipment to signal input, signal output or other connectors has formed a system and is therefore responsible for the system to comply with the requirements of IEC 60601-1-1. If in doubt, contact qualified technician or your local representative.

7. A blinking LED on the control panel indicates low battery capacity. This means the battery has been subjected to irreparable damage. REPLACE THE BATTERY!

8. Where the integrity of the external protective earth conductor arrangement (ground) is in doubt, the unit shall be operated from its internal electrical power source (battery only). Grounding reliability can only be achieved when connected to an equivalent receptacle marked “Hospital Only” or “Hospital Grade”
SSCOR suction units are designed for hospital crash carts, patient transport and emergency medical service. Battery condition is automatically monitored and visualized by indicator lights on the control panel. The battery should be charged to a dependable working charge in 6 to 8 hours when connected to the charging source. Suction power can be regulated when full power may be considered harmful to the patient. SSCOR suction units are designed to provide instant, effective suctioning, independent of external sources of power and can be pre-set to be activated immediately upon reaching the distressed patient. All controls are clearly labeled and easily accessible.

The SSCOR Duet is a portable, 100V-240V AC constant suction device, with a 12V DC battery back-up. The battery is charged by an internal, DC dual mode battery charger. The charger monitors the battery, charges the battery only when necessary, shuts down the unit if the battery is low and signals battery condition. A fully charged battery at full capacity will power the unit for 45 minutes (±10%).

SSCOR warrants that each new product is free from defects in material and workmanship under normal use and service for a period of one year from date of purchase. This warranty gives you specific legal rights and you may also have other rights that vary from jurisdiction to jurisdiction. For countries where minimum warranty terms are determined by statute, the warranty term is the longer of the statutory period or the term listed above. Batteries, disposable items including collection canisters, patient tubing and catheters are excluded from this warranty.

See the SSCOR Warranty for terms and conditions, available on [www.sscor.com](http://www.sscor.com)

**Model 2314 Series Battery Replacement Policy**

SSCOR will replace any SSCOR Duet battery which fails to operate the pump to specifications for a period of three years from the date of purchase. Verify the condition of the battery per the battery test on Page 6 in this Operations Manual.
## Description of Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Location</th>
<th>Meaning</th>
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<tbody>
<tr>
<td><img src="image1" alt="Type B Equipment" /></td>
<td>Serialized Label</td>
<td>Type B Equipment</td>
</tr>
<tr>
<td><img src="image2" alt="Separate Collection" /></td>
<td>Serialized Label</td>
<td>Separate Collection for Electronic Equipment</td>
</tr>
<tr>
<td><img src="image3" alt="Attention" /></td>
<td>Serialized Label</td>
<td>Attention - Consult Accompanying Documents</td>
</tr>
<tr>
<td><img src="image4" alt="Manufacturer" /></td>
<td>Shipping Carton</td>
<td>Manufacturer</td>
</tr>
<tr>
<td><img src="image5" alt="Date of Manufacture" /></td>
<td>Shipping Carton</td>
<td>Date of Manufacture</td>
</tr>
<tr>
<td><img src="image6" alt="Authorized Representative" /></td>
<td>Shipping Carton</td>
<td>Authorized Representative in the European Community</td>
</tr>
<tr>
<td><img src="image7" alt="Power Source Connected" /></td>
<td>Control Panel</td>
<td>Power Source Connected</td>
</tr>
<tr>
<td><img src="image8" alt="Pump is On" /></td>
<td>Control Panel</td>
<td>Pump is On</td>
</tr>
<tr>
<td><img src="image9" alt="Battery Level of Charge" /></td>
<td>Control Panel</td>
<td>Battery Level of Charge</td>
</tr>
<tr>
<td><img src="image10" alt="Full Battery" /></td>
<td>Green LED = Full</td>
<td></td>
</tr>
<tr>
<td><img src="image11" alt="High Battery" /></td>
<td>Green / Yellow LED = High</td>
<td></td>
</tr>
<tr>
<td><img src="image12" alt="Half Battery" /></td>
<td>Yellow LED = Half</td>
<td></td>
</tr>
<tr>
<td><img src="image13" alt="Low Battery" /></td>
<td>Yellow / Red LED = Low</td>
<td></td>
</tr>
<tr>
<td><img src="image14" alt="Battery Depleted" /></td>
<td>Red LED = Battery Depleted</td>
<td></td>
</tr>
<tr>
<td><img src="image15" alt="Put unit back on charge" /></td>
<td>Put unit back on charge</td>
<td></td>
</tr>
<tr>
<td><img src="image16" alt="Push On / Push Off" /></td>
<td>Control Panel</td>
<td>Push On / Push Off</td>
</tr>
<tr>
<td><img src="image17" alt="Class II Equipment" /></td>
<td>Serialized Label</td>
<td>Class II Equipment Double Insulated</td>
</tr>
<tr>
<td><img src="image18" alt="Alternating Current" /></td>
<td>Serialized Label</td>
<td>Alternating Current (100-240V AC)</td>
</tr>
</tbody>
</table>
Getting Acquainted

Running the unit and Charging the Internal Battery from AC Power
1. Connect the female plug on the AC power cord (1) to the AC receptacle on the device (1A).
2. Connect the male plug on the AC power cord (1) to a grounded wall receptacle.
3. Check the control panel (2). The “power source connected” orange LED (3) indicates a good connection to the AC power source and indicates the battery is charging. The battery condition indicators (4) show the charge level of the battery (See Description of Symbols page 4).
4. Press the ON/OFF switch (5) on the control panel to start the vacuum pump.

Running the unit from DC power
1. Disconnect the power cord (1) and press the ON/OFF switch (5) on the control panel to start the vacuum pump.
2. Check battery condition indicators (4)

Adjusting the vacuum level
1. Occlude the patient tube and turn the vacuum regulator (7) clockwise to the stop.
2. Observe gauge (located above the vacuum regulator). The vacuum reading should rise to -300mmHg from zero in 3 seconds. It should max out at approximately >= -525mmHg. Lower levels of negative pressure will be observed at altitude.
3. Adjust the vacuum reading to your desired level. If the vacuum does not meet or exceed -525mmHg, check for a leak in the system i.e. tubing, barb connections or loose canister lid. Refer internal vacuum problems to qualified personnel. After using the device, reconnect the unit to the charging source; check the power source connected LED (3).

Charging the Battery Using the 8323 Charging / Retention Bracket Model 2314BV -230 Only): Hard wire the Model 8323 Charging / Retention Bracket to the hot DC circuit (in front of the master switch). Make certain the circuit is properly fused according to appropriate vehicle standards. The vehicle electrical system will furnish power to both run the pump and charge the battery. See page 10 for additional information.
**BATTERY TEST**

Run the following test whenever poor battery quality is suspected to ensure proper performance of the device

1. Check that the power source connected LED on the control panel (3) and the green battery condition LED are lit.
2. Remove the power cord and run the unit from its internal DC battery.
3. Check for vacuum by occluding the patient tube and set the vacuum regulator (7) to the maximum vacuum setting.
4. Observe the regulator gauge (8). The vacuum reading should rise to -300mmHg from zero in less than 3 seconds. It should max out at \( \geq -525\text{mmHg} \). Un-occlude the patient tubing.
5. Allow the unit to run for 15 minutes on DC power. If the unit stops or slows during the 15 minutes, or if the battery condition indicators (4) begin to blink, it is possible the battery capacity has been depleted. It is time to replace the battery.
6. If the unit is still running at full power after 15 minutes, adjust the regulator to the desired setting, turn the device off and put it back on charge.

**SSCOR recommends replacement of the battery after 3 years.**

**Trouble Shooting**

**WARNING:** DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT IF YOU ARE NOT A QUALIFIED MEDICAL REPAIR TECHNICIAN

<table>
<thead>
<tr>
<th><strong>Problem</strong></th>
<th><strong>Possible Cause</strong></th>
<th><strong>Corrective Action</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Source Connected LED not lit.</td>
<td>Fuse blown</td>
<td>Replace fuse in power supply, input receptacle, or wiring harness.</td>
</tr>
<tr>
<td></td>
<td>Molex connections disconnected</td>
<td>Open unit and check to see Molex connections are secure.</td>
</tr>
<tr>
<td></td>
<td>Power cord disconnected</td>
<td>Reconnect cord.</td>
</tr>
<tr>
<td>Does not function when switch is turned on</td>
<td>Battery discharged</td>
<td>Reconnect to charging source</td>
</tr>
<tr>
<td></td>
<td>Molex connections disconnected.</td>
<td>Open unit and check to see Molex connections are secure.</td>
</tr>
<tr>
<td>Blinking LED</td>
<td>Low battery capacity</td>
<td>Replace battery.</td>
</tr>
<tr>
<td>No suction when pump is running</td>
<td>Vacuum line (10) loose</td>
<td>Tighten vacuum line</td>
</tr>
<tr>
<td></td>
<td>Canister (13) defective</td>
<td>Replace canister</td>
</tr>
<tr>
<td></td>
<td>Canister lid (13) loose</td>
<td>Tighten canister lid</td>
</tr>
<tr>
<td></td>
<td>Catheter thumb vent is open</td>
<td>Occlude thumb vent</td>
</tr>
<tr>
<td></td>
<td>Debris has collected in the pump</td>
<td>Refer to maintenance section</td>
</tr>
</tbody>
</table>
### General Specifications

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 17”L x 9”H x 5.25”W (43.18cm L x 22.86cm H x 13.33cm W)</td>
<td>12V DC oil-less diaphragm. Clinical Airflow &gt;= 30LPM</td>
</tr>
<tr>
<td>Weight 10.15 lbs/4.6 kgs Device only</td>
<td>Controls negative pressure</td>
</tr>
<tr>
<td>Vacuum Pump</td>
<td>Calibrated in mmHg. Color-coded.</td>
</tr>
<tr>
<td>Variable Regulator (7)</td>
<td>Battery (DC Power) Rechargeable Sealed Lead Acid.</td>
</tr>
<tr>
<td>Gauge (8)</td>
<td>SSCOR part # 80635</td>
</tr>
<tr>
<td>Power Source: Battery (DC Power)</td>
<td>Medical Switcher (AC Power) 100V-240VAC, 47-63Hz</td>
</tr>
<tr>
<td>Switch (5) -</td>
<td>Uses 1ea. 3A 250V fast acting fuse</td>
</tr>
<tr>
<td>AC receptacle (1A)</td>
<td>Off/Standby/On membrane switch</td>
</tr>
<tr>
<td>Collection Canister (13)</td>
<td>Uses (2) 2.5A 250V fast acting fuses</td>
</tr>
<tr>
<td>Patient tubing</td>
<td>1200cc/ml SSCOR part #48041</td>
</tr>
<tr>
<td>Vinyl tubing 9/32”ID x 72”L (7.1mm ID x 182.88 cm L)</td>
<td>SSCOR part #43200</td>
</tr>
<tr>
<td>Suction Tip</td>
<td>HI-D® “Big Stick®” SSCOR part #44241C</td>
</tr>
</tbody>
</table>
Internal Access for Electrical and Pneumatics

WARNING: DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT IF YOU ARE NOT A QUALIFIED MEDICAL REPAIR TECHNICIAN

To open or close the unit, first remove the canister holder:
Remove the set screws on the canister bracket.
Lift the canister holder up and out of the main chassis.

The clamshell design enables access to internal components. All 6-32 phillips head fastening screws are located in back of the unit.

REMOVE MAIN CHASSIS SCREWS
(A) 1 screw under the canister holder
(B) 2 screws in the back of the handle
(B) 3 screws in the back of the main chassis.
(C) It should not be necessary to open the exhaust door unless fluids have entered the system

(E) PC Board-Electrical Circuits (Internal Dual Mode Battery Charger). Do not attempt to service the PC Board. Return to SSCOR or authorized service center for service.
(F) Power Supply. Do not attempt to service the Power Supply. Return to SSCOR or authorized service center for service.
(G) Functional ground.
(H) AC receptacle. Two 250V-2.5A fuses are in the receptacle fuse drawer.
(I) Battery Bracket
(J) Battery, 12V, Sealed Lead Acid
(K) Wiring connection to the control panel
(L) Vacuum pump. Return to SSCOR or authorized service center for service. Do not attempt to service the vacuum pump.
(M) Exhaust barb
(N) Vacuum barb
Maintenance

Preventive Care
Observe the following maintenance routine to ensure readiness at any time:
1. When the SSCOR aspirator is not in use, keep batteries on continuous charge.
2. Test the SSCOR aspirator at regular intervals; See page 6.
3. Make sure the SSCOR aspirator is always clean and ready for use.
4. If the procedure produced an excessive quantity of fluids, check the vacuum line (7) for evidence of moisture. If the vacuum line between the pump and canister is moist, it is possible that fluids have reached the vacuum pump. See Disinfection Instructions below.
5. For technical assistance, call (800) 434-5211 or international +1 818-504-4054.

Note: No part requires lubrication and lubricants should not be used.

Sanitation
As soon as possible after use, the single use disposable canister, patient tubing and catheter should be discarded according to local / regional / national requirements for the disposal of hazardous waste materials. Clean using a mild detergent and if necessary disinfect with a mild disinfectant such as 10 to 1 bleach and rinse using clear water to remove any residue.
If the exhaust filter is soiled, remove the two screws holding the filter door in place (see page 8), remove the soiled filter and replace with new filter (SSCOR part number 90160).
Do not reuse any single use disposable parts; do not submerge the device into any liquid, this will void the warranty and cause the device to malfunction.

Disinfection
Use personal protective equipment such as gloves, a smock, and face and eye protection when handling units that are suspected to be contaminated. Caution: Disconnect the unit from any power source prior to cleaning the unit. When cleaning the interior of the chassis, disconnect the battery from the PC Board to prevent damaging the PC Board.

Part Cleaning and Disinfecting
Collection Canister Disposable item, re-use not permitted. Use new canister for each patient.
Patient Tubing Disposable item, re-use not permitted. Use new patient tubing for each patient.
HI-D® Stick Disposable item, re-use not permitted. Use new HI-D Stick for each patient.
Vacuum Pump Wipe with damp cloth or disinfectant wipe. Sterilization not permitted. Vacuum pump should be replaced if contaminated.
PC Board Sterilization not permitted. PC Board should be replaced if contaminated.
Plastic Chassis Wipe with damp cloth or disinfectant wipe. Sterilization not permitted.
Retention Bracket Mounting Instructions SSCOR Duet®

If you purchased the Model 2314B and intend to mount the device to the side of a crash cart, see the instructions below:

Mount the retention bracket to a suitable safe mounting surface using the four holes on the side of the shelf (1). Mount the retention bracket so the Duet suction unit can be released from the bracket easily and there is enough room to work the handle (4). The control panel (2) should be easily viewed and the battery condition LED’s (3) visible when the unit (5) is connected to a grounded hospital receptacle. When placing the suction unit into the retention bracket, be sure the unit snaps into the bracket and is securely held in place.

Model 2314BV-230 Charging/Retention Bracket Mounting Instructions

If you purchased the Model 2314BV-230 and intend to mount the device to the action area inside a vehicle, see the instructions below:

The Model 8323 Charging/Retention bracket can be mounted by the base or mounted vertically in order to hold the SSCOR Duet portable suction unit. Mount the retention bracket to a suitable safe mounting surface so the indicator lights on the control panel are visible to the user. The unit is shipped ready to be mounted vertically, but if that does not fit your requirements, you can easily modify the unit to mount it by the base. Note: the mounting bracket will hold the Duet in place to a force of 10G. Select and prepare a mounting surface, and take care in the mounting procedure, so the bracket and pump will be secure at a force equal to, or greater than, 10G.

Vertical Mount

Remove the four ¼-20 x 1-1/2” hex head screws from hardware packet. Mark the hole placement for a vertical mount and use a 5/16”drill to drill the holes. Coat the screws with Loctite (not supplied) before securing the Charging/Retention Bracket. Put the four 1-1/2” screws through the holes in the charging bracket (Model 8323). Reattach the washers and nuts to the screws to secure the Charging/Retention bracket in place.

Base Mount (part #8314-7)

Mark the hole placement for a base mount and use a 5/16” drill to drill the holes. Remove the hardware from the hardware packet. Coat the screws with Loctite (not supplied) and place the screws through the bottom of the Bracket, Retention - Counter Mount (#8314-7) and through the holes you have drilled. Reattach the washers and nuts to secure the Bracket, Retention - Counter Mount (#8314-7) in place.

Mount the charging bracket (Model 8323) to the base mount (#8314-7) using the hardware in the hardware packet. Coat the screws with Loctite (not supplied) before securing the Charging/Retention Bracket to the base mount bracket (#8314-7).

Electrical (MODEL 8323 ONLY)

Hard wire the Charging / Retention Bracket to the DC Electrical System of the vehicle in front of the master switch. Make certain that the circuit is properly fused according to appropriate vehicle standards.
DECLARATION OF CONFORMITY

SSCOR, Incorporated
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Fax: +1 (818) 504-6032

Type of Equipment: Portable Powered Suction Pump

Model Name and Type: SSCOR Quickdraw ® Model 2400 Series
SSCOR Duet® Model 2314 Series
SSCOR VX-2® Model 2310 Series
SSCOR EVX™ Model 2309 Series

We herewith declare that the above mentioned product meets with the following requirements of the EC Directive concerning Medical Devices – 93/42/EEC and the Swedish regulation LVFS 2003:11

Safety: IEC/EN 60601-1: 1990

Safety Requirements -
Medical Suction Unit ISO 10079-1
Medical Vehicles and their Equipment EN 1789: 1999

Degrees of Protection Provided by
Enclosure IPX4
Classification Class Ila
Rules of Classification Annex IX, Rule 11
Annex used for CE Declaration Annex V & Annex VI
Notified Body INTERTEK SEMKO, AB

Signature, Date: December 12, 2013
Name: Sam D. Say
Title: President

Authorized European Representative
Emergo Europe
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Tel: (+31) 70 345 8570
Fax: (+31) 70 346 7299