SSCOR BOARD™

Clearing The Airway Is Our #1 Priority

Operating Instructions & Maintenance Manual

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ISO 13485:2016 CERTIFICATION™
Intertek

Caution-Notice

1. This suction system is for permanent installation in patient transport vehicles to be used exclusively by medical personnel trained in suctioning techniques and in the use of medical suction equipment. Not intended for hi-Vacuum/lo-flow applications.

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. This manual is restricted to the discussion of the use and maintenance of this device. It does not attempt to discuss professional techniques in suctioning procedures.

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

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

6. The SSCOR/board™ produces a powerful vacuum. Use the regulator to control vacuum as appropriate.

7. Observe gauge marking and pre-adjust the regulator for the anticipated procedure by occluding the patient tube without a catheter and the vacuum system running.

8. The mechanical shut-off valve in the canister lid will close down when canister is filled with fluids. If the vacuum shuts down, empty contents immediately or replace the canister with a new one. Spare canisters are available from SSCOR, Inc. or your dealer.

9. Use the canister in an upright position to keep fluids away from shut off valve and filter. A wet filter can close the system. Be sure the lid on the canister is tightened securely to prevent a loss of vacuum at a critical time.

10. 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.

11. Refer all servicing of electrical systems to qualified service personnel. Turn the SSCOR/board suction system off as soon as possible after use

12. If selecting alternate accessories make sure they meet specifications listed on page 9(tubing, canister and catheter) For the canister and tubing, ensure that you run the applicable test on pages 15-16.

SSCOR/board Suction System for EMS Vehicles

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General Description

The SSCOR/board suction system is a Hospital Grade medical vacuum system designed for EMS vehicles. It combines the safety and efficiency of a hospital system with the vehicular demand for rugged construction and durability.

The SSCOR/board can be specified and purchased as part of a new vehicle or, it can retrofit to an existing vehicle. The SSCOR/board can be installed in its entirety or any one of the component groups described in this manual can be installed to enhance an existing system.

SSCOR/board's unrestricted vacuum system maximizes the airflow from the vacuum pump to the patient. The powerful vacuum provided by the vacuum pump is controlled by a vented regulator and can be monitored by an easy to read gauge.

SSCOR/board's durable canister holders accept most hospital grade, suction canisters. The canister holder provides years of durable service and helps to protect the collector from blows which could shatter the plastic vessel and render it useless. Room is provided for organized storage of patient tubing.

The system can be powered by an installed 12V DC vacuum pump. It is designed to provide powerful, effective and reliable vacuum for suctioning procedures during patient transport. SSCOR/board exceeds performance standards for emergency vacuum when properly installed.

The SSCOR/board system is available in the following component groups: Canister Holder, Panel Mount Regulator and Gauge, Retrofit Regulator and Gauge and Vacuum Pumps.

Description of Symbols

SYMBOL	LOCATION	MEANING
	Shipping Carton	Manufacturer
	Shipping Carton	Date of Manufacturer

Model Description, Installation, and Test

DESCRIPTION OF PARTS: Model #22000 Stainless Steel Panel Mount Regulator

Part #	Description		Part #	Description
22015	Regulator		50150	10’ Tubing (5/16”ID x 9/16”OD) 304.8cm Tubing (.79cm ID x 1.428cm OD)
22006	Gauge		60000-90	Mounting Screws (4 each)
22018	Faceplate		90154	Hose barb, straight 1/4” x 5/16” (2 each)
40000-9	Regulator Bracket		50161	Hose clamps (2 each)

INSTALLATION: Model #22000 Stainless Steel Panel Mount Regulator

Use the template card to mark the hole placement in the panel 2-5/8" x 4-1/4" (6.67cm x 10.79cm) and mark the holes for the faceplate mounting screws. Connect the tubing from the vacuum pump to the hose barb on the regulator. Secure the tubing to the hose barb using the hose clamps. THE VACUUM SOURCE MAY BE CONNECTED TO EITHER SIDE OF THE REGULATOR. Run the tubing from the opposite hose barb on the regulator (secured with a hose clamp) to the suction canister.

DESCRIPTION OF PARTS: Model #25000 Stainless Steel Panel Mount Regulator (2-1/2” Gauge)

Part #	Description		Part #	Description
22015	Regulator		50150	10’ Tubing (5/16”ID x 9/16”OD) 304.8cm Tubing (.79cm ID x 1.428cm OD)
22025	Gauge		60000-90	Mounting Screws (4 each)
22019	Faceplate		90154	Hose barb, straight 1/4” x 5/16” (2 each)
40000-9	Regulator Bracket		50161	Hose clamps (2 each)

INSTALLATION: Model #25000 Stainless Steel Panel Mount Regulator (2-1/2” Gauge)

Use the template card to mark the hole placement in the panel 3-1/3" x 4-1/2" (8.45cm x 11.43cm) and mark the holes for the faceplate mounting screws. Connect the tubing from the vacuum pump to the hose barb on the regulator. Secure the tubing to the hose barb using the hose clamps. THE VACUUM SOURCE MAY BE CONNECTED TO EITHER SIDE OF THE REGULATOR. Run the tubing from the opposite hose barb on the regulator (secured with a hose clamp) to the suction canister.

Model Description, Installation, and Test

DESCRIPTION OF PARTS: Model #23001 ABS Plastic Panel Mount Regulator

Part #	Description		Part #	Description
22015	Regulator		50150	10’ Tubing (5/16”ID x 9/16”OD) 304.8cm Tubing (.79cm ID x 1.428cm OD)
22006	Gauge		60000-90	Mounting Screws (4 each)
23001-1	Faceplate		90154	Hose barb, straight 1/4” x 5/16” (2 each)
50007-87	Regulator Label		50161	Hose clamps (2 each)

INSTALLATION: Model #23001 ABS Plastic Panel Mount Regulator

Use the template card to mark the hole placement in the panel 2-5/8" x 4-1/4" (6.67cm x 10.79cm) and mark the holes for the faceplate mounting screws. Connect the tubing from the vacuum pump to the hose barb on the regulator. Secure the tubing to the hose barb using the hose clamps. THE VACUUM SOURCE MAY BE CONNECTED TO EITHER SIDE OF THE REGULATOR. Run the tubing from the opposite hose barb on the regulator (secured with a hose clamp) to the suction canister.

DESCRIPTION OF PARTS: Model #22500 Stainless Steel Retrofit Regulator

Part #	Description		Part #	Description
22015	Regulator		50150	3’ Tubing (5/16”ID x 9/16”OD) 91.44cm Tubing (.79cm ID x 1.428cm OD)
22006	Gauge		60000-90	Mounting Screws (3 each)
22108	Faceplate		90154	Hose barb, straight 1/4” x 5/16” (2 each)
40000-9	Regulator Bracket			

INSTALLATION: Model #22500 Stainless Steel Retrofit Regulator

Use the template card to mark the hole placement for the mounting screws. The vacuum connections on your existing system can be connected to the SSCOR/board™ system, providing your system is producing over 30 LPM. If your system is reading less than 30 LPM, check the LPM at the pump head. The LPM at the pump head should be over 40 LPM. If the airflow meets specifications, connect the SSCOR/board regulator directly to the pump head with the tubing. Secure the tubing to the hose barb on the regulator. THE VACUUM SOURCE MAY BE CONNECTED TO EITHER SIDE OF THE REGULATOR. Run the tubing from the opposite hose barb on the regulator to the suction canister. If it is necessary to mount the regulator to a forward facing bulkhead, the gauge may be adjusted 1/4 turn to face the patient compartment after removing the bracket that holds the gauge in the forward position.

FINAL TEST: Model #22000, Model 25000, Model 23001 and Model #22500

See the Daily Inspection and Operating Instruction section on page 7.

Model Description, Installation, and Test

DESCRIPTION OF PARTS: Model #22002 Stainless Steel Canister Holder

Part #	Description
22001	Stainless Steel Canister Holder
43200	9/32" ID (.71cm) Patient Connecting Tube
200-00002 Or 44241	SSCOR SDC Catheter Or SSCOR HI-D Catheter
48041	1200ml/cc Disposable Canister
60000-91	Mounting Screws (3)
22011	Grommet Material Roll-Rubber (4“)

DESCRIPTION OF PARTS: Model #23002 ABS Plastic Canister Holder

Part #	Description
43200	9/32" ID (.71cm) Patient Connecting Tube
200-00002 Or 44241	SSCOR SDC Catheter Or SSCOR HI-D Catheter
48041	1200ml/cc Disposable Canister
60000-90	Mounting Screws (6)
2314-4	Canister Holder Hook 2314 (1)
2314-5	Canister Holder Skirt 2314 (1)
2314-11	Canister Holder Diaphragm 2314 (1)
53051-1	Canister Holder wall plate-drilled (1)
60000-106	Screw 12x3/4” S/M Flat Head (4)

INSTALLATION AND TEST: Model #22002 and Model 23002 Canister Holder Assemblies

Use the template card to mark the hole placement the for the mounting screws and attach the canister holder to the wall. Firmly place the canister lid on the canister and use the vacuum tubing to connect the regulator to the canister. Attach the patient connecting tube to the canister and test the operation per the daily inspection and operating instructions below.

VACUUM PUMP PACKAGES:

The SSCOR/board™ pump package includes a 12VDC, oil free, diaphragm pump, complete with accessories for easy installation.

DAILY INSPECTION AND OPERATING INSTRUCTIONS

Conduct these first two steps daily to assure the equipment performs to specifications.

1. Place a canister into the canister holder. Make sure the tubing from the regulator is connected to the "vacuum" port of the canister. Attach the patient connecting tube to the "patient" port of the canister.
2. Turn on the vacuum system and occlude the patient connecting tube. Observe the negative pressure gauge and adjust the regulator while the tubing is occluded. With the regulator in the maximum vacuum position, the negative pressure should exceed -500mmHg. Note: If the negative pressure does not Register, check all fittings and connections for leaks including the caps on the canister lid and make sure the canister lid is properly seated to the body of the canister.
3. Install the appropriate suction tip to the distal end of the patient connecting tube.
4. Proceed to suction.
5. As soon as possible after use, turn the vacuum system off. The single use disposable canister, patient tubing and suction tip should be discarded according to local / regional / national requirements for the disposal of hazardous waste materials.

Maintenance

Observe the following maintenance routine to ensure readiness at any time:

1. Test the SSCOR/board ™ system daily; See page 7.
2. Make sure the SSCOR/board is always clean and ready for use.
3. If the procedure produced an excessive quantity of fluids, check the vacuum line (1) 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.
4. For technical assistance, call +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 the exterior of the SSCOR suction unit using a mild detergent and clear water by dampening a clean lint free cloth. Rinse using clear water and another damp clean lint free cloth to remove any detergent residue.

NOTE: The hydrophobic filter in the canister helps to ensure that no moisture or particulate matter reaches the inside of the device. When fluids fill the canister, the positive (mechanical float) shutoff valve closes immediately, shutting the vacuum port off so as to prevent fluid from contacting the pump. The filter has been tested by the manufacturer (Bemis) to screen out aerosolized microorganisms and particulate matter at a bacterial efficiency rating of 99.99% DOP. The canister also has sidewall gradation marks starting at 100 ml/cc and at every 50 ml/cc up to 1200 ml/cc indicating the fill level of the canister. In the unlikely event that fluids may have reached the vacuum pump, read the disinfection section. Your engineering department will have to open the unit to check the condition of the pump. 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.

Disinfect the SSCOR/board system using a mild surface disinfectant, such as a 10:1 mixture of water and bleach. The unit is designed to suction contaminated fluids, which should be removed from the system I immediately after use.

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.
SSCOR Suction Catheter	Disposable item, re-use not permitted. Use a new SSCOR Suction Catheter for each patient.
Vacuum Pump	Wipe with damp cloth or disinfectant wipe. Sterilization not permitted. Vacuum pump should be replaced if contaminated
Regulator	Wipe with damp cloth or disinfectant wipe. Sterilization not permitted. Regulator should be replaced if contaminated. The only foreseeable way fluids may reach the regulator is that the filter in the canister has been compromised or bypassed.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Unit does not function when switch is in the "ON" position or fails to reach maximum pressure of –525mmHg	• Loose connections • Vacuum Line Loose • Canister Cracked • Canister lid is not tight • Thumb vent on suction tip is not occluded.	• Tighten connections • Check connections • Replace canister • Re-secure canister lid • Occlude with thumb
Pump is sluggish	• Residual materials have collected in the pump head • Loose connections	• Replace pump • Check connections
System shuts down while suctioning heavy particulate matter	• Vacuum line clogged at canister lid • Float valve has closed	• Remove connector or canister lid and loosen obstruction • Loosen float valve, empty contents, or replace canister
Unit fails to reach minimum negative pressure reading of below –50mmHg	• Inaccurate gauge • Regulator clogged	• Replace gauge • Replace regulator

If any other problems occur or if the recommended remedy fails to resolve the problem phone SSCOR, Inc. at +1(818) 504-4054.

General / Accessories* Specifications

CHARACTERISTICS	SPECIFICATIONS
Vacuum Pump	12V DC., 3.0 A Clinical Airflow ≥ 30LPM Exceeds 525mmHg
Regulator	Controls negative pressure
Gauge	Accuracy ±2.5 Full Scale
*Collection Canister	1200cc/ml SSCOR part #48041
*Patient tubing	Vinyl tubing 9/32"ID x 72"L (7.1mm ID x 182.88 cm L) SSCOR Part #43200
*SSCOR Suction Catheter	SSCOR SDC Catheter SSCOR part #200-00002 Or SSCOR HI-D Catheter SSCOR part #44241

Environmental Conditions

CHARACTERISTICS	SPECIFICATIONS
Storage Temperature	−40 °C - +60 °C (-40° to 140°F).
Operational Temperature	−18 °C - +50 °C (-0.4° to 122°F).
Humidity	30% - 93% RH (non-condensing)

Warranty

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. If returned to SSCOR, we will arrange for repairs or replacement within the terms of the warranty. The product should be decontaminated and returned properly packaged and postage prepaid. Loss or damage in transit to the factory shall be at the purchaser's risk. Please call +1 818-504-4054 for return authorization. Loss or damage in return shipment from SSCOR shall be at the purchaser's risk.

The warranty shall not apply to any SSCOR product which has been repaired by anyone other than an authorized SSCOR representative, or altered in any way so as, in SSCOR's judgment, to affect its safety or efficacy, nor which has been subject to misuse, negligence, or accident, nor which has had the serial number altered, effaced or removed. Neither shall this warranty apply to any SSCOR product which has been connected otherwise than in accordance with the instructions furnished by SSCOR.

This warranty is in lieu of all other warranties expressed or implied and of all other obligations or liabilities on SSCOR's part, and SSCOR neither assumes, nor authorizes any representative or other persons to assume for it, any other liability in connection with the sale of SSCOR products.

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.

Accessory Specifications for Proper Selection by end user

The following accessories can be selected based on the preference of the end user, however using SSCOR parts is strongly recommended. When selecting alternate accessories please ensure they meet the below specifications and that the Collection Canister and suction tubing are tested per page 15 and 16 of this manual.

Patient Tubing: Vinyl Tubing 9/32”ID x 72”L (7.1mm ID x 182.88cm L), Single Use Disposable item. SSCOR Part Number 43200.

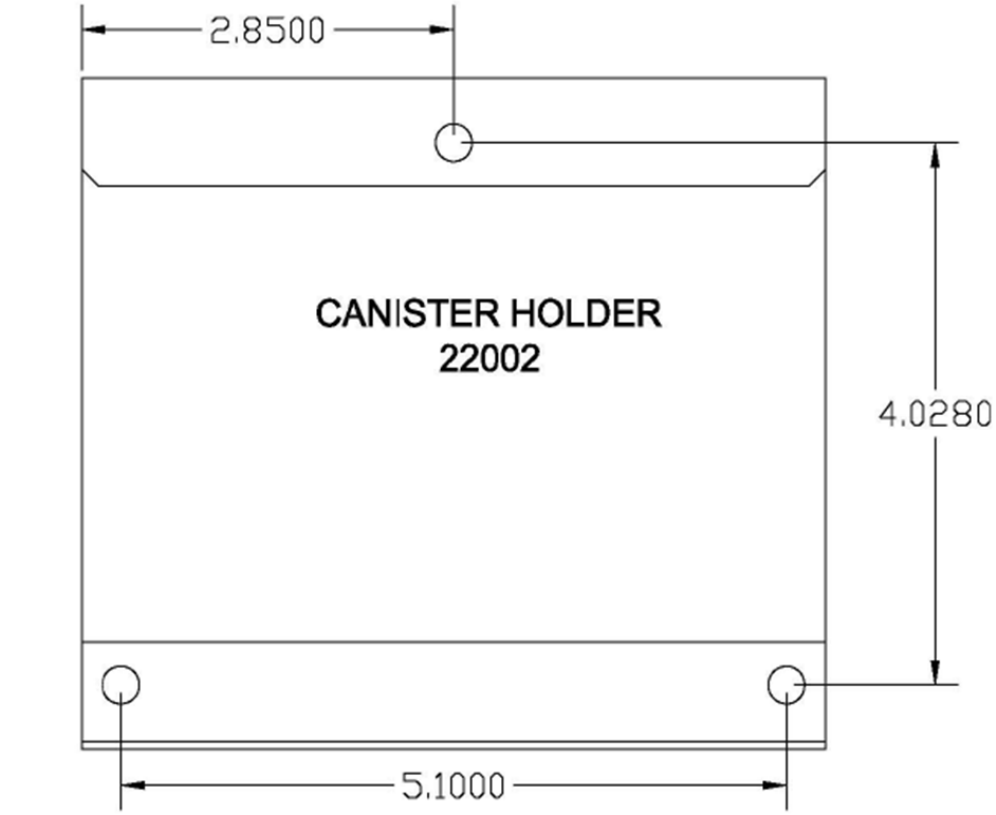
Collection Canister: The collection canister shall clearly show the level of contents in normal use. The usable volume shall not be less than 500ml and it shall be marked with its usable volume. The maximum volume of the canister shall not exceed 1100ml, it should be disposable. SSCOR Part Number 48041.

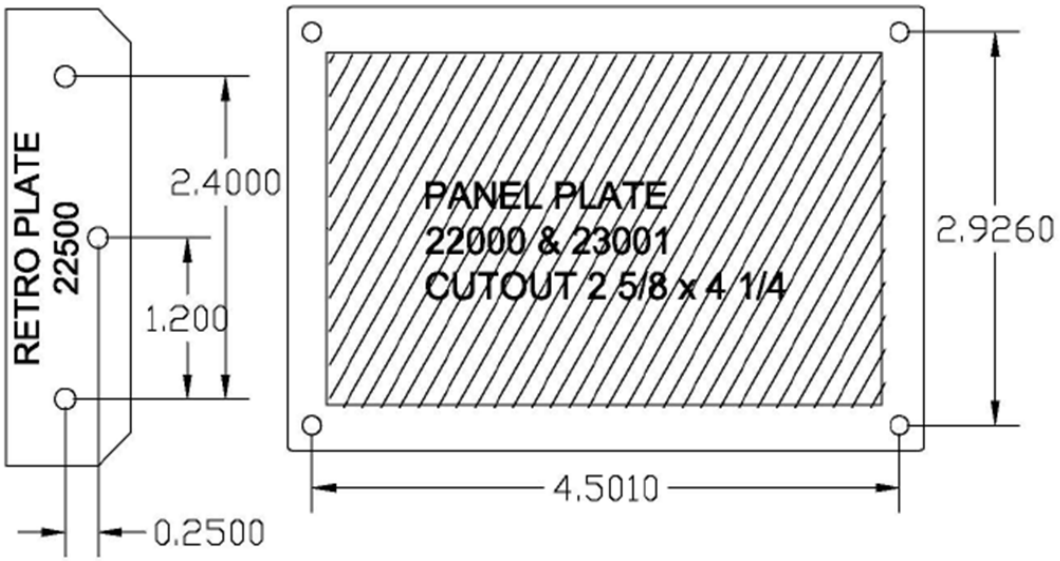
Catheter: Single use Yankauer Suction Tip made of Medical Grade PVC and is DEHP Free, is compatible with patient tubing and suction canister. SSCOR Part Number 200-00002.

Vacuum Pump: Can be electrical or engine driven as long as it is capable of creating a negative pressure of –500mmHg at a minimum airflow rate of $\geq$30 LPM.

TEMPLATES
22000, 23001, 22500, 22002

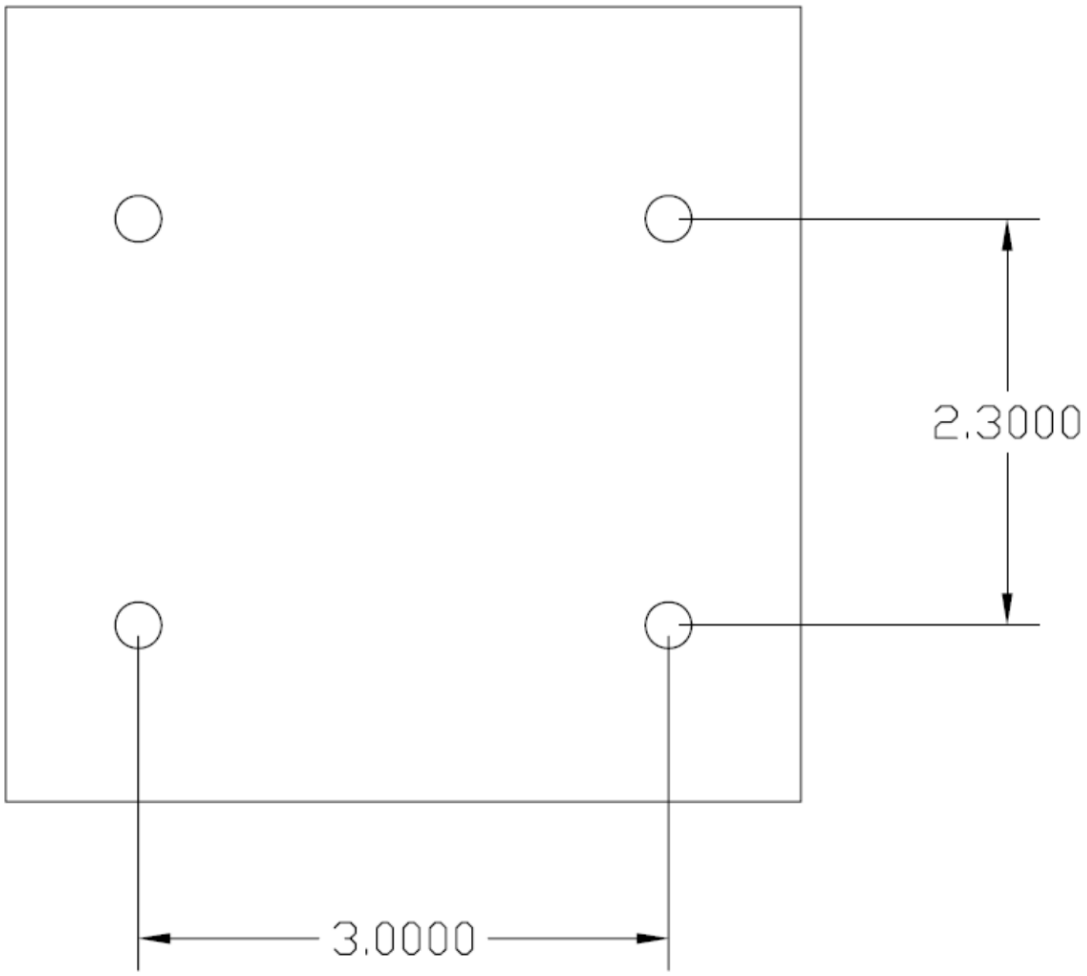
Please Note: Template size may vary on different printers. Make sure your holes are marked per the dimensions on the template and verified to the part. Note: All dimensions are in inches.





TEMPLATES
23002

Please Note: Template size may vary on different printers. Make sure your holes are marked per the dimensions on the template and verified to the part. Note: All dimensions are in inches.



Installation Alert.....

for the SSCOR/board ™ Suction System

The vacuum pumps installed in emergency vehicles generate enough airflow to supply one regulator. Air follows the path of least resistance. Therefore, two (or more) regulators on one vacuum line will render each other useless. The additional regulators merely act as pressure relief vents, diverting airflow away from the site where it is needed most. Negative pressure can fall to near zero in a system when one regulator is engaged in a low pressure procedure such as chest drainage or aspiration of fluids or is simply open to air. This can seriously impede the users ability to suction viscous fluids and food particles.

Therefore.....

Install a dedicated vacuum pump for each vacuum outlet and/or SSCOR/board regulator provided in a vehicle. An ambulance or mobile intensive care unit with three regulators should have three separate vacuum pumps to insure that each vacuum outlet generates the necessary airflow.

For use with electrical vacuum pumps only. Not to be used with engine vacuum aspirator systems. The SSCOR/board regulator does not function as a shut off valve.

Thank you for your attention to this very important fact about onboard suction. Call or write for additional information about vacuum and airflow characteristics of SSCOR/board regulators, canisters and vacuum pumps. Additionally, we would be happy to provide you with an airflow meter to assist you in analyzing existing vacuum systems.

SSCOR, Inc.

Verification for end users when selecting alternate Collection Canister

Collection Container	Criteria	Verification
	The collection canister shall clearly show the level of contents in normal use.	Visually Confirm
	Suction equipment including suction equipment intended for transport use, the usable volume of the collection canister shall be not less than 500 ml	Visually Confirm Volume
	The air leaving the collection canister should pass through a filter or other means of protecting the pump from inadvertent contamination before entering the vacuum pump. For reciprocating pumps, e.g. piston or diaphragm, depending on valves to control flow, a filter also protects against pump malfunction.	Visually Confirm that a filter is present
	The collection canister shall be marked with its usable volume, in milliliters. For collection containers of 500 ml or greater, approximate indication of the volume shall be given by graduations. The interval of the graduation should be not less than 50 ml and not more than 250 ml.	Visually confirm that the graduation are present
	The Collection Canister shall not implode, crack or permanently deform after being subjected to a pressure of either 120 % of the manufacturer's recommended maximum vacuum level or 95 kPa below atmospheric, whichever is less, for 5 min.	Compliance shall be checked by the following test. **Step 1**) Place the collection container in a protective enclosure, for example a box or bag, at 20 °C to 25 °C. **Step 2**) Attach a vacuum source to the collection container opening. **Step 3**) Evacuate the collection container to a vacuum of 95 kPa below atmospheric pressure. **Step 4**) Hold the vacuum for 5 min, and then release. **Step 5**) Repeat the procedure once. **Acceptance Criteria --** Visually inspect the collection container for deformation and/or implosion. Acceptance is based on no visual deformation and/or implosion.
Collection Canister Inlet Port	The inside diameter of the suction tubing connector (inlet port of the collection canister) shall be at least 6 mm and the inside diameter of the suction tubing connection (inlet port) shall be equal to or larger than the inside diameter of the largest tubing size specified by the manufacturer.	**NOTE 1** Suction performance may be markedly affected by the length and diameter of the suction tubing. **NOTE 2** Because of the risk of misconnection, the internal diameter of the inlet port of the collection container should not be greater than 14 mm. **NOTE 3** Special surgical situations such as suction lipectomy and suction curettage may require suction tubing and connectors of a larger bore.
Collection Canister Exhaust Port	It shall not be possible to connect suction tubing to the exhaust port.	Visually Confirm

Verification for end users when selecting alternate Patient (Suction) Tubing

	Criteria	Verification
Suction Tubing	Suction tubing shall have an inside diameter of not less than 6 mm.	IFU should ensure that if an alternate Suction Tubing is used it have at least a 9/32”ID (7.1mm ID)
	The degree of collapse of the suction tubing shall be less than 0.5mm throughout its entire length	**Step 1**) At a temperature of 20°C to 25°C, uncoil the suction tubing to its full length and plug one end to prevent any air flow through it. **Step 2**) Measure the inside and outside diameters of the suction tubing. **Step 3**) Attach a vacuum source to the other end of the suction tubing and adjust the level of vacuum to the maximum stated by the manufacturer, if applicable. If there is no disclosed maximum, adjust the vacuum to 60 kPa below atmospheric pressure. **Step 4**) Hold the vacuum for 5 min. **Step 5**) Measure the outside diameter of the suction tubing along its entire length with calipers at approximately every 10 % of the length including any visible regions of collapse. **Step 6**) Calculate the degree of collapse of the tubing from the following formula for each measurement point. Degree of collapse = (OD Initial __OD Test)/ID Initial **Step 7**) Repeat the test while the suction tube is loosely coiled around a cylinder of diameter 100 mm. NOTE Narrow grooves may be cut in the cylinder to aid caliper measurement. **Acceptance Criteria** - "The degree of collapse shall not exceed 0.5mm in either test. For equipment intended for field and/or transport use and intended to operate from the floor, the length of suction tubing shall be such that the end-piece can be positioned at least 1,3 m above the floor.
	Suction tubing supplied or recommended by the manufacturer shall have a minimum length of 1.3 m.	IFU should ensure that if an alternate suction tubing is used it have at least a 72”L (182.88 cm L)
	The connectors for the suction tubing and the intermediate tubing shall be designed to facilitate correct assembly or clearly marked to indicate correct assembly when all parts are mated.	Visually Confirm