



Safety
Works

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SR-100

60 Minutes Self Contained Self Rescuer



Donning Procedures
for
Person-Wearable
Self Contained Self Rescuer

CSE CORPORATION							
600 SECO ROAD, MONROEVILLE, PA. 15146, USA							
(412) 856-9200							
MODEL SR-100 SCSR							
 							
CLOSED-CIRCUIT, ESCAPE ONLY, SELF-CONTAINED BREATHING APPARATUS							
THESE RESPIRATORS ARE APPROVED ONLY IN THE FOLLOWING CONFIGURATIONS:							
RESPIRATOR COMPONENTS							
TC-	PROTECTION ¹		RESPIRATOR	ALTERNATE POUCHES			CAUTIONS AND LIMITATIONS ²
			Q15-20-0000-6	Q15-20-9002-6	Q15-20-9069-6	Q15-20-9042-6	
13F-239	60 min/SC/ESC		X	X	X	X	JMNOS
1. PROTECTION							
	SC - Self-Contained						
	ESC - Escape						
2. CAUTIONS AND LIMITATIONS							
J - Failure to properly use and maintain this product could result in injury or death.							
M - All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA and other applicable regulations.							
N - Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.							
O - Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.							
S - Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Instructions before donning							

Special User Instructions

(In accordance with Section "S" of the NIOSH cautions and limitations)



Safety Works

SR-100 SCSR

Warranty Policy

CSE Corporation warrants to the original end-user purchaser this product to be free from defects in material and workmanship for 1 year from the date of purchase. During this period, CSE will repair or replace defective parts on an exchange basis. F.O.B. the factory at Monroeville, Pennsylvania. Freight charges to and from the CSE factory will be paid by the end-user purchaser. The decision to repair or replace defective parts shall be determined by CSE.

Validation: To validate this warranty, the registration card must be detached, completed and returned to CSE's offices within 30 days of purchase.

Conditions and Exclusions: To maintain this warranty, the purchaser must perform maintenance and inspection as prescribed in the owners manual and such other necessary care as may be required according to the use of the equipment in the reasonable judgment of CSE. Normal wear and tear, parts damaged by abuse, misuse, negligence, or accidents are excluded from this warranty. Purchaser acknowledges that, notwithstanding any contrary term or provision in the purchaser's purchase order or otherwise, the only warranty extended by CSE is the express warranty contained herein. PURCHASER FURTHER ACKNOWLEDGES THAT THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATIONS, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE; THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF; THAT NO ORAL WARRANTIES, REPRESENTATIONS, OR GUARANTEES OF ANY KIND HAVE BEEN MADE BY CSE, ITS DISTRIBUTORS OR THE AGENTS OF EITHER OF THEM, THAT IN ANY WAY ALTER THE TERMS OF THIS WARRANTY; THAT CSE AND ITS DISTRIBUTORS SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING BUT NOT LIMITED TO INJURY TO THE PERSON OR PROPERTY OF THE PURCHASER OR OTHERS, AND FROM OTHER LOSSES OR EXPENSES INCURRED BY THE PURCHASER ARISING FROM THE USE, OPERATION, STORAGE, OR MAINTENANCE OF THE PRODUCT COVERED BY THE WARRANTY; THAT CSE'S LIABILITY UNDER THIS WARRANTY IS RESTRICTED TO REPAIR OR REPLACEMENT OF DEFECTIVE PARTS AT CSE'S SOLE DISCRETION. The warranty shall be void if the date and/or serial numbers affixed to the products by CSE are removed, obliterated, or defaced.

CSE Corporation, 600 Seco Rd. , Monroeville, PA. 15146 (412) 856-9200 or 1-800-245-2224

Part Number _____ Serial Number _____

SR-100 Warranty Statement

8/5/01



Safety Works

SR-100

Warranty Registration

Date of Purchase _____ Serial Number _____

Name _____ Phone _____

Company _____

Address _____

Mail or Fax SR-100 Warranty Card (412-856-9203)

Warranty is void unless registration card is completed and returned to CSE within 30 days of receipt of product.

SR-100 SAFETY GUIDELINES:

THIS MANUAL MUST BE READ COMPLETELY BY ALL INDIVIDUALS USING, INSPECTING OR PROVIDING TRAINING FOR THE CSE SR-100. The CSE SR-100 will perform as designed only if it is maintained and used in accordance with the manufacturer's instructions and regulatory standards. FAILURE TO FOLLOW THESE INSTRUCTIONS AND REGULATIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

SAFETY GUIDELINES – DEFINITIONS

SAFETY TERMINOLOGY. The following symbols are utilized throughout this manual to help you recognize safety related to the SR-100.

WARNING – Indicates a potential hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION – Indicates a potential hazardous situation which, if not avoided, may result in minor or moderate injury.

Warning: The CSE SR-100 has been designed by CSE and approved as an Escape Self Contained Breathing Apparatus (ESCBA) and should only be used to escape from atmospheres Immediately Dangerous to Life and Health (IDLH).

Warning: The CSE SR-100 is not approved for use as a Self Contained Breathing Apparatus (SCBA) and should not be used for rescue, fire-fighting or underwater breathing.

Warning: Before donning SR-100 remove any foreign matter from your mouth such as chewing tobacco or gum.

Warning: Breathing through the SR-100 differs from breathing ambient air; temperature and resistance will be slightly higher. This is normal during use and never warrants removal of the mouthpiece.

Warning: The user should be familiar with operational primary escape ways, secondary escape ways and SR-100 cache locations.

Warning: Never remove the mouthpiece unless you have reached fresh air or you are replacing the unit you are wearing with a reserve unit.

Warning: Do not attempt to talk while wearing SR-100, maintain a tight seal on mouthpiece and nose clip. Try to communicate via hand signals or writing.

SR-100 SAFETY GUIDELINES: Continued

NOTES:

Warning: Remove the SR-100 from service if any of the following conditions exist: top or bottom moisture indicator is not blue, the security seal is broken, the unit was exposed to temperatures above 130°F as indicated by the temperature indicator being red, or shows indications of physical abuse (Crushed, burnt, visible puncture holes, substantial cracks dents, or any other visible signs of trauma.)

Warning: The unit must temporarily be removed from service if the internal temperature of the unit drops below 32°F. Once the internal temperature rises above 32°F the unit may be returned to service.

Warning: Never attempt to use a damaged SR-100, unit already removed from service or that does not meet inspection criteria.

Warning: The SR-100 is intended as a one time use only product, once the unit is opened it is considered spent and should be disposed of properly.

Warning: Avoid direct contact between the breathing bag and open flames or chemicals during use.

Warning: The SR-100 and carrying pouch should be kept clean. Do not submerge the SR-100 in water or use petroleum solvents to clean.

Warning: The SR-100 is approved with the SR-100 carrying pouch, any modification or substitution of this pouch should be removed immediately and replaced with an approved SR-100 pouch.

Warning: The user should perform the daily inspection of the CSE SR-100 prior to carrying the unit.

Warning: Only a trained and qualified individual may perform the 90 day inspection of the CSE SR-100.

Warning: Do not introduce petroleum based liquids or flammable liquids into the unit. The chemical (potassium super oxide) in this unit is not combustible but it can ignite flammable liquids when they come in contact.

APPENDIX III: ACCESSORIES

Part Number	Description
Q152000006	SR-100 SELF CONTAINED SELF RESCUER
Q152090026	SR-100 POUCH
X151590058	SUSPENDERS
X151590098	BELT, ULTRA SMALL 28" - 34"
X151590108	BELT, SMALL 30" - 37"
X151590118	BELT, MEDIUM 36" - 43"
X151590128	BELT, LARGE 39" - 45"
X151590138	BELT, X-LARGE 45" - 51"
X151590148	BELT,XX-LARGE 51" - 57"
X151590158	BELT, XXX-LARGE 56" - 62"
X151590398	TRAINING VIDEO
2170611001	ACOUSTICS SOLIDS MOVEMENT DETECTOR
2170612001	ASMD SPOT CHECKER
21706KIT01	ACOUSTICS SOLIDS MOVEMENT DETECTOR KIT

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SR-100
NIOSH/MSHA Approved
TC-13F-239

APPENDIX II:GLOSSARY

ASMD - Acoustic Solids Movement Detector

CO₂ - Carbon Dioxide

EGRESS - to go or come out

EPA - Environmental Protection Agency

ESCBA - Escape Self Contained Breathing Apparatus

IDLH - Immediately Dangerous to Life and Health

KO₂ - Potassium Super Oxide

LiOH - Lithium Hydroxide

MSHA– Mine Safety and Health Administration

NIOSH - National Institute of Occupational Safety and Health

O₂ - Oxygen

PWSCSR - Pearson Wearable Self Contained Self Rescuer

SCSR - Self Contained Self Rescuer

APPENDIX I: SR100 SPECIFICATIONS

	SR100
Weight: Carried	5.7 lbs./2.6kg
Weight: In Use	4.9lbs/2.2kg
Dimensions	7.75" x 4" x 5.5"
Deliverable Oxygen	3.5 ft. ³ /100 Liters
Rated Duration (minimum)	60 Minutes
Method of Operation	Chemical based re-breather K02/LiOH
Oxygen supply rate (liters per minute)	On Demand
Bag Volume (liters)	9+/-0.5
Storage Temperatures	32° – 130° F 0° – 54° C
Maximum Service Life	10 Years
Warranty	1 Year
Approvals	MSHA/NIOSH TC-13F-239

SR-100 INFORMATION

GENERAL DESCRIPTION

The CSE SR-100 provides the highest level of respiratory protection for workers who must perform duties in conditions classified as having the potential to be Immediately Dangerous to Life and Health (IDLH). The light weight, compact design of the CSE SR-100 make it ideal to be carried on an individual's belt so that it can be donned in a matter of seconds in the event that the atmosphere changes to IDLH.

Approved as an Escape Self Contained Breathing Apparatus (ESCBAs) the CSE SR-100 may also be referred to as Person Wearable Self Contained Self Rescuer (PWSCSR), rebreather or closed circuit breathing apparatus. The SR-100 recycles the user's exhaled breath, chemically removing carbon dioxide and replenishing the oxygen based on the user's demand or work rate. The unit uses a bi-directional chemical canister system in which the users exhaled breath makes two passes through the carbon dioxide absorption/oxygen generation canister before the gas returns to the user. This innovative technology provides the highest level of protection for potentially IDLH applications found in mining, tunneling, chemical plants, pulp/paper plants, water treatment plants, and confined space entry.

The CSE SR-100 provides 100 liters of useable oxygen in the event the user must escape from a potential IDLH atmosphere.

SR-100 FEATURES

Sealed Configuration

The SR-100 is enclosed in a rugged stainless steel case.

Moisture and Temperature Indicators



MAINTENANCE

Keep the SR-100 clean, especially around the moisture indicators and the Temperature indicator. Use a damp cloth to wipe clean. Do not clean SR-100 with petroleum based solvents. Avoid dirt build-up between the carrying pouch and the canister.

The Carrying Pouch should be cleaned periodically using mild laundry detergent in cold water and air dried.

DISPOSAL INSTRUCTIONS

Contact CSE Corporation, CSE Distributor or Licensed Hazardous Material Handler for disposal of SR-100.

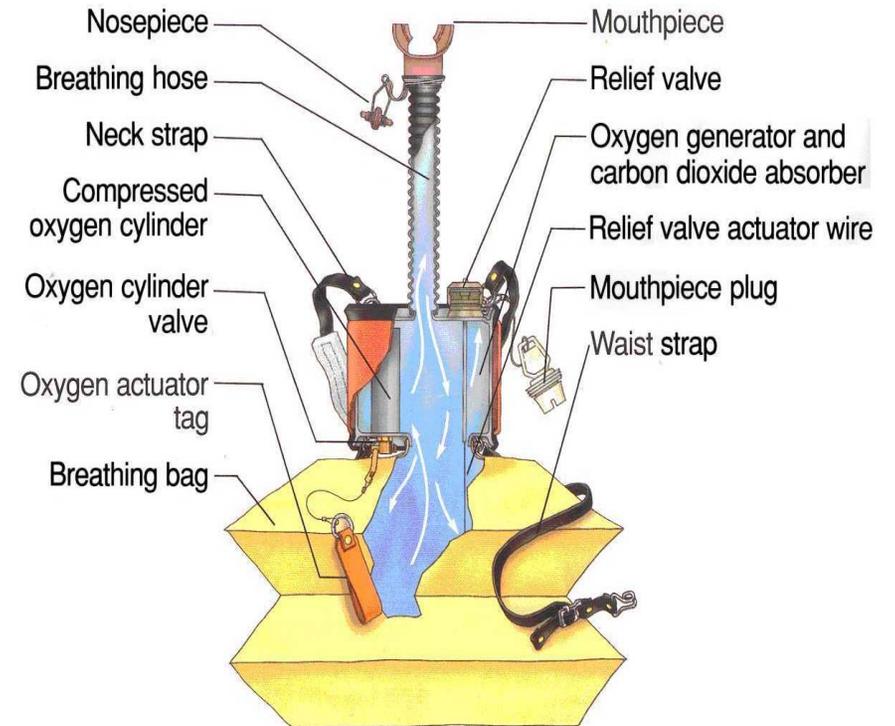
The EPA Hazardous Waste Classifications are:

D001, RQ, Potassium Superoxide, corrosive, 8, UN2466, PGI

D002, RQ, Potassium Superoxide, 5.1, N2466, PGI

Applicable state waste codes, codes that apply to conditions of the products use or specific Hazardous Waste Handler codes should be identified in accordance with federal, state and local regulations.

SR-100 Internal Components



SR-100 OPERATION

Donning from Kneeling Position

Remove SR-100 from carrying pouch and place it on the ground in front of you.

If equipped with a hard hat and lamp place it on the ground in front of you so that the light shines on the SR-100.

Unfasten the pull tab of the security band located at the top of the unit and place your pointer finger through the loop while placing your opposite hand on the top of the unit.

Now pull the tab toward you while pressing with the other hand against the top of the unit. As the security band is released the top and bottom covers can be removed.

Loop the neck strap over your head. Do not adjust the strap until you have completed the donning procedure.

Donning from Standing Position

Remove SR-100 from carry pouch and cradle the unit in one hand.

With the free hand unfasten the pull tab of the security band located at the top of the unit and place your pointer finger through the loop.

While firmly cradling the unit in your opposite hand pull the tab toward you. As the security band is released the top and bottom covers can be removed. Hold on to the goggles.

Loop the neck strap over your head. Do not adjust the strap until you have completed the donning procedure.

SHIPPING PROCEDURES: Continued

When preparing SR-100 packages for transportation by Cargo Aircraft the packages must be plainly marked with the above information and the following statement:

THIS PACKAGE IS NOT AUTHORIZED FOR TRANSPORTATION ABOARD AIRCRAFT IF IT HAS BEEN OPENED.

If you have any question regarding shipping procedures please call CSE Corporation Customer Service at 1-412-856-9200.

SHIPPING PROCEDURES

The CSE SR-100 is a Chemical Oxygen Generator, therefore it is classified as Hazardous Material by the U.S. Department of Transportation and United Nations Dangerous Goods. All SR-100 shipments should be prepared by an individual trained in hazardous materials shipping regulations and shipped in approved packaging with appropriate markings, labeling, shipping documentation, placard and carrier specific requirements:

Proper Shipping Name.....Chemical Oxygen Generator.
ApprovalCA 9912010
Hazard Class.....5.1
Subsidiary Risk.....N/A
UN Number.....3356
Packing Group.....II
SR-100 Net quantity of hazardous materials per0.6 kg

When preparing SR-100 packages for transportation by Motor Vehicle, Rail Freight, and Cargo Vessel the packages must be plainly marked with the above information and the following statement:

THIS PACKAGE IS NOT AUTHORIZED FOR TRANSPORTATION ABOARD AIRCRAFT.

SR-100 OPERATION: Continued

Removing a difficult top or bottom cover

Normally the top and bottom covers are easily removed once the security band has been released. In the unlikely event that the covers do stick, they can be removed by following the procedures listed below.

The top cover can be removed by twisting it just as you would twist off the lid of a jar.

The bottom cover can be removed by standing on the security band after it has been released and pulling on the body of the unit.

Holding the unit firmly in both hands, tap the top or bottom cover against a solid surface to knock the cover off.

A screw driver or tool can be used to pry difficult covers off, take care not to puncture or rip the breathing bag and hose when using a tool.

3+3 DONNING PROCEDURES

The 3+3 DONNING PROCEDURES provide an efficient method for donning the SR-100. The first 3 Primary Steps are designed to quickly isolate the individual's respiratory system from potentially IDLH atmosphere. Properly trained the user should be able carry out the Primary Steps in approximately 10 seconds. The next 3 Secondary Steps are designed to make the necessary adjustments to the unit while the user is safely under oxygen.

The user must be proficient in the 3+3 DONNING PROCEDURE before entering the work place.

3 Primary Steps

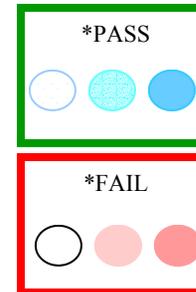
1. Activate Oxygen
2. Insert Mouthpiece
3. Put on Nosepiece

3 Secondary Steps

4. Put on Goggles
5. Adjust Straps
6. Replace Hard Hat and Move Out

CSE SR-100 INSPECTION CRITERIA: Continued

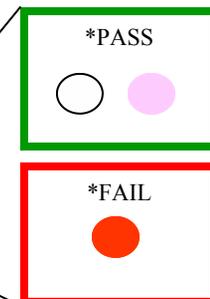
Moisture Indicator



* Actual color shade may differ slightly



Temperature Indicator



* Actual color shade may differ slightly. Fail indicates unit has been subjected to temperatures exceeding 130°F.



CSE SR-100 INSPECTION

CRITERIA: Continued

Check the Temperature indicator located on the security band, right side of top cover. The Temperature indicator is a dull white to dull pink under normal conditions.

Remove the unit from service if the Temperature Indicator turns to a bright red.

New SR-100 without carrying pouch and with approved carrying pouch.



The carrying pouch should be loose fitting so that the unit may be easily removed when needed in an emergency. See Maintenance for carrying pouch cleaning.

1. Oxygen



Pull the large fluorescent orange **oxygen actuator tag down** to activate the oxygen.

2. Mouthpiece



Remove the mouthpiece plug and immediately insert the **Mouthpiece** into your mouth, exhale into the unit first then start to **breathe normally**.

CSE SR-100 INSPECTION CRITERIA

DAILY VISUAL INSPECTION:

Readiness of the SR-100 is confirmed visually, at any time, by quickly checking the indicators and general condition of the unit prior to entering the workplace.

Check for the following items:

PASS Remain in Service	FAIL Remove from Service
Date of Manufacture, less than 10 years	Date of Manufacture, if date exceeds 10 years.
Security band is secure.	Security band has become slack, unattached, or unfastened.
Top and bottom moisture indicators are blue. Temperature indicator, located on the side of the unit should be pink or white.	If the top and bottom moisture indicators of either indicator is white or pink or damaged do not attempt to use. If the temperature indicator, located on the side of the unit is red, do not attempt to use.
Top and bottom covers are properly aligned.	Top and bottom covers are jarred or misaligned.
Top and bottom cover seals are properly aligned.	Top and bottom cover seals are cut, split or displaced.
No signs of significant trauma	Signs of significant trauma (beyond normal wear and tear) such as substantial dents in the top and bottom covers or substantial dents, breaks or punctures in the orange plastic outer cover. If the unit has been crushed, burnt, or suffered any damage that cause the security strap to become slack, unattached, or unfastened.

DURATION:Continued

The degree of training and familiarity can affect the duration. The more training and experience the subject has with an SCSR, the more their breathing will be calm and controlled. If a subject is familiar with a particular escape way, it may improve the mechanics of their escape. The greater the training and familiarity, the greater the duration.

Talking can increase breathing resistance by allowing saliva to enter the breathing hose and possibly enter the canister. Minimizing talking and swallowing one's own saliva, the greater the duration.

Removing all non-essential carrying weight, the greater the duration.

All SCSR(s) place some limited stress on the user due to increased breathing resistance and an increase in the temperature of the inhaled breath. For this reason, it is always advisable to limit the level of physical exertion, if possible, while wearing any SCSR.

3. Nosepiece



Grip each tab of nosepiece and squeeze gently while pulling the two nose pads apart just enough to slip the **nosepiece** on to nose so that both nostrils are completely closed.

4. Put On Goggles



Put on safety **goggles**. Corrective lens may be worn over top of goggles by looping temples of glasses under goggle straps.

DURATION

The SR-100 is tested and approved by several approval/ certification laboratories. These approvals will carry different duration ratings based on the testing criteria of the particular testing laboratory. Each of these units provide a certain range of protection based on the factors listed below. The duration of ALL SCSR(s) will vary, depending on the user's oxygen consumption rate. In most circumstances, your SR-100 will provide approximately 1 hour of protection. However, there are a number of factors that can affect the user's oxygen consumption and duration. These are:

The amount of work required to escape affects the duration. Running, walking bent over, crawling or climbing a ladder for example will increase the work required to escape. Less work results in greater duration.

The physical condition or fitness of the user affects the duration. A high heart rate, age and percent of body fat suggest inferior levels of fitness. The more fit the user, the more efficient utilization of oxygen, permitting higher work rates or longer durations.

The user's fitness, weight, response to inspired carbon dioxide and tolerance to breathing resistance all affect the amount of oxygen required by the user. The more fit and the less weight, the greater the duration.

The user's breathing rate affects the duration. The rate can be increased by excitement and fear. The lower the breathing rate, the greater the duration.

MANUAL START PROCEDURES

The user can easily confirm that the oxygen starter system has released oxygen into the breathing bag by two observations.

Once the Oxygen Actuator has been pulled the user will hear a faint hiss of the oxygen being released from the bottle into the unit for a few seconds.

Second and more noticeable indication, the user will see the breathing bag fill as long as the mouthpiece plug is still inserted into the mouthpiece.

In the event the compressed oxygen starter does not activate or the oxygen vents through the mouthpiece because the plug is left out of the mouthpiece during activation, the user should manually start the unit.

1. Remove the Mouthpiece from your mouth. The nose piece should remain attached to the nose.
2. Inhale ambient air through the mouth.
3. Exhale into the mouthpiece to begin inflating the breathing bag.
4. Repeat this process 3 to 6 times until the breathing bag is full.
5. Continue with the 3+3 Donning Procedure.
6. Begin the egress by moving at a moderate work rate, allowing the breathing bag to inflate with the excess oxygen. Once the bag is full, you can then increase your egress to a more normal rate.

5. Adjust Strap



Neck Strap Adjustment. Proper adjustment can be checked by raising your head to look up. If you feel a pull on the mouthpiece, the unit is too low on your chest. Wrap the **waist strap**, which hangs from the bottom of the canister, around your waist and fasten it to the clip on the opposite side of the canister.

6. Replace Hat and Move out



Replace **hard hat** and **move out**.

* After donning your SR-100, discard any non-essential equipment, and/or gear, to minimize your carrying weight.

SECOND UNIT TRANSITION DONNING PROCEDURES

In most circumstances, your SR-100 will provide approximately 1 hour of protection enabling you to safely exit an IDLH atmosphere. However, there are a number of factors that can affect the user's oxygen consumption and duration (See pages 15 - 16 for **Duration**). While donning a second unit is procedurally the same as donning the first unit it is important for the user to be prepared to carry out this change over.

The user should be trained on **Second Unit Transition Donning Procedures**.

1. Access a second unit from cache at the earliest possible time during the egress.
2. Monitor time on first unit, the volume of the breathing bag and breathing resistance. Near the end of use, the breathing bag volume will become noticeably lower and/or the breathing resistance will become almost intolerable. At the end of use the user will be unable to draw any more oxygen from the system.
3. Change over to second unit following donning procedures while there is still volume to the breathing bag and resistance is still tolerable.