

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

1 of 9



PURPOSE

It is the policy of the Salt River Fire Department that all personnel expected or likely to respond to, and function in, areas defined as “immediately dangerous to life and health” (IDLH), shall be equipped with, and trained in the proper use and maintenance of self-contained breathing apparatus.

Information, guidelines and procedures in this policy are recommended in NFPA Standards and the SCBA manufacturer

USE OF SCBA

An evaluation of all members of the Operations Division in the use of the S.C.B.A. shall be conducted annually. Each member of the Department with emergency response duties shall be able to demonstrate a high level of proficiency with self-contained breathing apparatus (SCBA) under conditions comparable to those encountered in the performance of emergency work. Each Member shall be able to don their SCBA and achieve a non-leaking face-piece-to-skin seal within established time limits.

Each member is required to undergo a medical examination annually if they are expected to respond and function in areas of atmospheric contamination. Facial hair shall not be allowed at points where the S.C.B.A. face piece is designed to seal with the face. **INDIVIDUAL MEMBERS SHALL BE ACCOUNTABLE FOR COMPLIANCE WITH THIS REQUIREMENT.**

The use of breathing apparatus means that personnel shall have face piece in place, breathing air from the supply provided. Self-Contained Breathing Apparatus shall be used by all personnel operating:

1. In a contaminated atmosphere
2. In an atmosphere which may suddenly become contaminated
3. In an atmosphere which is oxygen deficient
4. In an atmosphere which is suspected of being contaminated or oxygen deficient

This includes all personnel operating:

1. In an active fire area
2. Directly above an active fire area
3. In a potential explosion or fire area, including gas leaks and fuel spills
4. Where products of combustion are visible in the atmosphere, including vehicle fires and dumpster fires
5. Where invisible contaminants are suspected to be present (i.e. Carbon Monoxide and cyanide during overhaul)

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

2 of 9



6. Where toxic products are present, suspected to be present, or may be released without warning in any confined space that has not been tested to establish respiratory safety

In addition to the above, S.C.B.A. shall be worn by all personnel operating at fire incidents above ground, below ground or in any other area, which is not, but which may become contaminated by products of combustion or other hazardous substances.

Premature removal of S.C.B.A. must be avoided at all times. This is particularly significant during overhaul when smoldering materials may produce increased quantities of carbon monoxide, cyanide and other toxic products. In these cases S.C.B.A. must be used or the atmosphere must be changed.

In routine fire situations, the decision to remove S.C.B.A. shall be made by Company Officers, with the approval of group officers, based on an evaluation of atmospheric conditions. Prior to removal, fire areas shall be thoroughly ventilated and, where necessary, continuous ventilation shall be provided. If there is any doubt about respiratory safety, S.C.B.A. use shall be maintained until the atmosphere is established to be safe by testing. Command and Safety officer shall be responsible for this determination. This is required in complex situations, particularly when toxic materials may be involved.

SCBA INSTRUCTIONS

"Ready" State of Condition for SCBA

Each department member that is SCBA user certified, and assigned an SCBA shall be accountable for one SCBA and one personal issue facemask. Each member shall check that SCBA and facemask and place them in a "ready" condition at the beginning of each shift and after each use; or at any other time it may be necessary to render the equipment in a ready state of condition.

It is the individual member's responsibility to maintain possession of his/her assigned facemask while on duty. If a member is roving, time trading, working overtime or special events, each member is responsible for his/her facemask being in a "ready" state with their protective clothing.

SCBA's not specifically assigned on an apparatus will be checked by the engineer of that unit.

The LDR (Lung Demand Regulator) will be kept secured in the LDR holster located on the waist belt of the SCBA at all times when not attached to a facemask and or not in use.

Face mask nets will be stored in a non-stretched, non-pulled over fashion- that is not pulled over the front of the face mask.

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

3 of 9

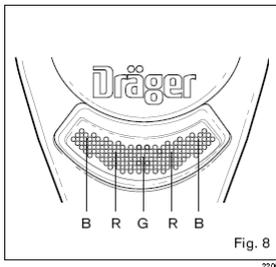


Operational Check-Off sequence

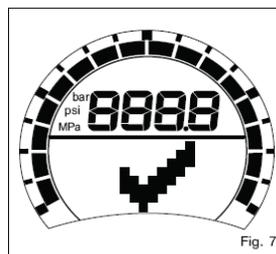
- Check cylinder gauge- Air cylinders will be maintained with a minimum of 4300 PSI (4300-4500 PSI is acceptable)
- Check hoses, couplings, connections, cylinder, harness and backplate for damage and wear.
- Ensure quick connect connection is seated correctly into the latching mechanism and cylinder cam lock is secured correctly
- Check your facemask for cracks, tears and wear. Check the netting and head straps for elasticity and wear.
- Adjust backplate to correct height
- Place facemask within 3 feet of SCBA
- Ensure Donning button and By-pass is closed- Open cylinder valve fully listening for any leaks

The Sentinel and HUD systems will activate as follows:

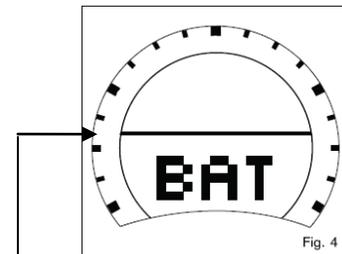
- The Sentinel will emit a single tone and will commence a 4 stage, self-check sequence.
- At the end of the sequence – Two ‘trill’ alarms will sound; the display will show the normal operating screen; the green LED will flash at approximately one second intervals to confirm that the Sentinel has passed the self check and is in the active mode.



Light Positions



Initial Start-up screen



Battery indicator- 2nd screen after start up. Level of battery power indicated by bar graph along outer edge. Replace batteries when indicator is down to 4 bars.

- Up to approximately 45 seconds after the start of the self check, all six HUD LEDs will flash twice to indicate that the Sentinel is communicating with the HUD.
- The HUD LEDs (red/amber/green/green) will flash (on for 15 seconds/off for 45 seconds).
- Check that the blue LEDs on the backplate are functioning

Cylinder Air Level	HUD LEDs			
	Red	Amber	Green	Green
Full to 3 / 4	●	●	●	●
3 / 4 to 1 / 2	●	●	●	
1 / 2 to 1 / 4	●	●		
1 / 4 to approx 100 psi	●			

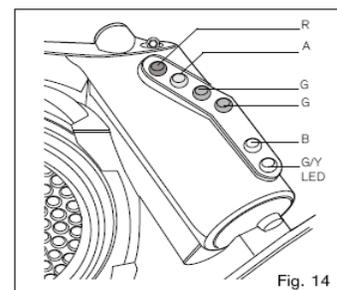


Fig. 14

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

4 of 9



Face Mask and LDR (Lung Demand Regulator)

- Check that the face mask port and the connector O-ring of the LDR are clean and undamaged.
- Check air flow and operation of “by-pass”
- Don facemask, align and push the LDR into the face mask port until it latches in position.
- Check the attachment by attempting to pull the LDR away from the face mask.
- Check integrity of facemask-to-skin seal by performing a negative pressure leak test;
 - Press the donning button, and hold it down for three (3) seconds
 - As you take a breath the facemask should collapse against your face
 - If the facemask does not hold the negative pressure you have a possible leak around the face sealing edge. Adjust the head straps and perform a negative pressure leak test again
 - If the facemask collapses and stays collapsed to the face for three (3) seconds you have a good seal.
 - Release the button and doff mask

EOST (end of service time) alarms and Shut down

- Close the cylinder valve and observe the Sentinel display. The pressure reading shall not decrease more than 200 psi in 1 minute.
- Cover the outlet of the LDR (Lung Demand Regulator) with your hand and press the front button
- Lift your hand to slowly vent the system – observe the pressure displayed on the user interface, noting the pressures for EOST activation (indicated by an audible alarm tone; flashing red and blue LEDs on the user interface; flashing red LED on the HUD) and the mechanical whistle operation. Electronic and Mechanical activation does not need to be simultaneous but both must be within the acceptable range (1215 psi to 1035 psi).
- Allow the system to vent to zero pressure. The display will show zero pressure and all of the user interface LEDs will flash at approximately one second intervals. The green LED indicates that the system is still in active mode.
- Turn off Sentinel- Press and hold the RH and LH buttons of the user interface until the display clears, then immediately release the buttons.
- After approximately 180 seconds all six HUD LEDs will flash twice to indicate that the unit has logged off from the Sentinel.

Do not use the equipment if any of the following is found:

- The SCBA fails to meet any of the test specifications.
- Any cracks, breaks, damage to hoses, couplings, connections, cylinder, backplate, LDR
- The LCD display of the user interface cannot be read, or one or more of the display segments is inoperative.
- Audible and/or visual alarms are not functioning.
- Lower battery power level indicated
- Any fault icon is shown.

If a cross icon with a fault code is displayed, the Sentinel has failed the self check.

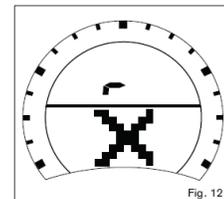


Fig. 12

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

5 of 9



Donning SCBA

All SCBA users will be able to don an SCBA within 45 seconds.

The exact sequence and method of donning will be at the users' discretion. The following criteria will be used when demonstrating compliance with this section

- With the SCBA on the ground the user will be wearing full PPE (the user's helmet, gloves and facemask may be off at the beginning)
- Timing will begin when the user opens the air cylinder valve and will stop when the user has donned the SCBA and all PPE and has established a non-leaking air supply from the SCBA
- The air cylinder valve must be fully open
- Any air loss constitutes an unsuccessful completion
- The user should not have any skin exposure from their PPE.

Operation of SCBA

Regularly observe your air level, estimated minutes to EOST (End of Service Time) and HUD display. Observe and react to all warning signals and alarms.

Manage your air; always leave yourself enough air to exit the structure.

EOST is the point at which the low air warning alarms sound. This point down is your reserve air and an emergency condition if still in an IDLH. Always exit the IDLH prior to the EOST.

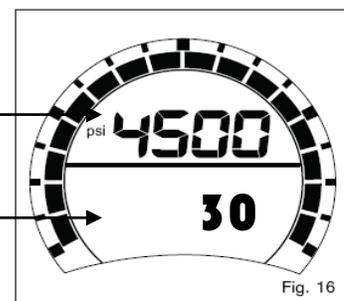
Always confirm LDR is securely connected to facemask by pulling on it after donning

For emergencies and Maydays press the yellow button in the center of the Sentinel to activate the PASS alarm.

To illuminate the display backlight, press and release the LH or RH button of the user interface. To refresh the HUD press both LH and RH buttons at the same time. HUD will light up within a few seconds.

Remaining cylinder pressure is indicated on the user interface and the HUD LEDs.

- The user interface shows the cylinder pressure digitally (numeric) and as an analogue segment display.
- The user interface digital display is the most accurate indicator.
- Remaining time to EOST alarms is indicated on the user interface as a digital (numeric) display (minutes to EOST).



Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

6 of 9



React to the following alarm and warning signals as necessary:

EOST – The user interface will emit an audible alarm tone, and red and blue LEDs will flash; the red LED on the HUD will flash; the mechanical whistle on the first-stage regulator will sound.

PASS pre-alarm – A repeating audible alarm tone will be emitted from the user interface sounder and the additional alarm sounders. Move the user interface to cancel the alarm (move in a lateral fashion; do not attempt to use the buttons to switch off the pre alarm).

PASS alarm – A high-level sweeping alarm will be emitted from the user interface sounder and the additional alarm sounders on the back plate; red and blue LEDs on the user interface and top and bottom of the additional alarm sounders will flash intermittently; the user interface will show the alarm icon. Simultaneously press and hold the RH and LH buttons of the user interface to cancel the alarm.

Low main battery – A low battery icon will be displayed on the user interface or the G/Y battery LED will flash yellow.

Low HUD battery – The G/Y battery LED will flash green.

Loss of HUD communication – The HUD blue LED flash

Additional air flow can be delivered into the face mask during emergency situations as follows:

- Single jet of air into the face mask- Press and release the bypass button
- Sustained air flow (80 to 130 liters/minute) into the face mask- Press and rotate the bypass button
- Excessive or loss of air flow – Close the cylinder valve then immediately begin to slowly reopen the valve.

Replacing and Refilling Cylinders

Removing the cylinder

The cylinder valve must be closed and the system vented of pressure before any attempt is made to remove the cylinder.

- Lift the free end of the cylinder strap from the Velcro and lift the strap against the Cam lock buckle to open and release the buckle tension. Loosen the strap
- Turn the handgrip fully clockwise until it stops – hold in position. Push down on the handgrip and then lift the valve from the latching mechanism.

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

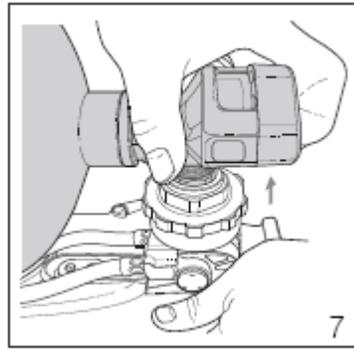
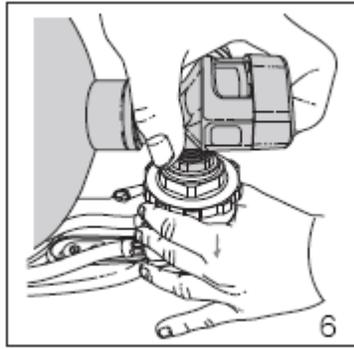
Rev. May 2010

202.05B

7 of 9

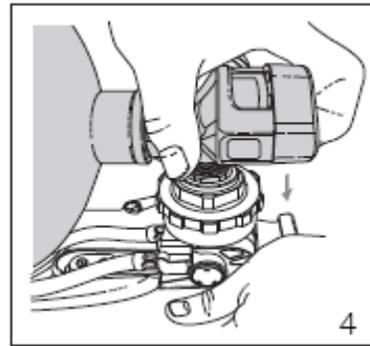
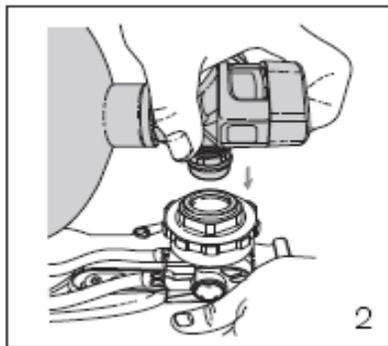


- Lift and carefully slide the cylinder away from first stage pressure regulator towards the top of the backplate. Remove the cylinder from the apparatus.



Replacing the cylinder

- Lay the carrying frame of the SCBA horizontal and fully extend the cylinder support strap. Insert the cylinder (valve end first) through the loop of the support strap, from the top end of the backplate, and then slide the cylinder aligning the valve with the latching mechanism with handgrip of the first stage pressure regulator.
- Pivot the pressure regulator to align the valve to the bore of the latching mechanism.
- Push the valve port (male adaptor) into the bore of the latching mechanism until a positive 'click' is heard. The handgrip will rapidly rotate approx. 70° - 80° counter clockwise indicating that the valve is connected to the pressure regulator.



Refilling Cylinders

Refill stations are located at Station 291, 292 and 294. Mobile refill is accomplished through U292. Each of these fill stations are fitted with Quick Connect Adapters. SCBA cylinder bottles may be refilled through the Quick Connect adapters located on each fill port of the above listed stations.

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

8 of 9



In the event an SCBA cylinder does not have a Quick Connect the Quick Connect adapter on the refill station maybe removed to fill the bottle. In this case immediately replace the adapter back onto the fill station port after refilling the SCBA cylinder.

Operating instructions are in place at each fill station. Refer to the specific fill station for further directions.

The UAC may only be used for refilling an SCBA cylinder from Fire Department Utility trucks that have a UAC refill connection, and from Firefighter Breathing Air Replenishment Systems (FBARS) such as in place at Talking Stick Resort. In these cases the SCBA should only be filled to 4500psi.

Cleaning and Disinfecting

SCBA's, facemasks and LDV's should be cleaned after every use. Follow the below procedures;

SCBA

Clean with mild soap (dishwashing type soap) and water. Unit may be sprayed with water. Wipe clean and dry with soft cloth. Let unit air dry. Do not use any harsh cleaners, degreasers, alcohol or bleach.

Facemask

Clean with mild soap (dishwashing type soap) and water. Unit may be submerged in mild germicidal solution for disinfecting. If submerged thoroughly rinse with running water. Wipe clean and dry with soft cloth. Let mask air dry. Do not use any harsh cleaners, degreasers, alcohol or bleach.

LDV

Clean with mild soap (dishwashing type soap) and water. Unit may be submerged in mild germicidal solution for disinfecting. If submerged thoroughly rinse with running water. Attach LDV to pack and flow air through unit ensuring all water has been blown out. Wipe clean and dry with soft cloth. Let LDV air dry. Do not use any harsh cleaners, degreasers, alcohol or bleach.

Service and Repair

Units found with;

- Operational problems, faulty components, improperly functioning components, low battery, error messages or any other problem;

Salt River Fire Department Operating Guidelines

Self Contained Breathing Apparatus

Rev. May 2010

202.05B

9 of 9



should be taken out of service. Complete an equipment repair form or otherwise document;

- the specific problem
- person making report (person who found problem)

Attach the form to the SCBA and forward the unit to station 294.

UAC/RIC Operation and Buddy Breathing

The UAC port is used for RIC operations. It allows for a quick connection to be made to the SCBA and the user's cylinder refilled. The UAC port is only used for RIC operations but can also be used to quick fill a cylinder from approved sources as listed previously. The UAC cap should be kept on the port at all times.

The buddy breathing line is used to assist another firefighter that may be low and or out of air. The buddy breathing line is a quick connect line that can be connected to either port by the opposite port from another firefighter's buddy breathing line. If a firefighter is out of air they must stay connected to the other person's buddy breathing line until out of the IDLH. The buddy breathing line does not fill air from one cylinder to the other. For example; if firefighter A is out of air he can connect his buddy breathing line to firefighter B, firefighter A is now breathing off of firefighter B's SCBA. The buddy line should always be kept in the pouch and the caps always kept on the port ends.