Self-Contained Breathing Apparatus

6

Section I - Firefighting Fundamentals

Assemblies

Normal Operating Procedures

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SCBA Filling Operations

Revised - May 2017

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Objectives

- Identify the 7 assemblies of the Scott Air Pak NxG
- Describe how to operate the donning switch to stop air flow
- Describe how to operate the purge valve and state when it may be useful to do so
- Explain the difference between the terms Fit Test and Fit Check
- Identify situations requiring SDFD employees to obtain a face piece Fit Test
- Demonstrate a face piece Fit Check
- Describe why facial hair touching the sealing surface of the face piece may compromise the seal
- Correctly don the Scott Air Pak NxG, perform the correct checks and, if the unit is not in working order, identify the cause of the failure
- Correctly doff the Scott Air Pak NxG so that it is ready for use when needed again
- Explain the function of the Vibralert system and the circumstances under which it will operate
- Outline the procedures to be followed if an SCBA fails to operate properly during use
- Describe the function of the Pak-Alert sensor module personal alarm device (PAD) and the conditions under which it will operate
- Demonstrate morning checks of the Scott Air Pak NxG
- Describe the maintenance procedures for daily, monthly and after use inspections of the Scott Air Pak NxG
- Explain the purpose of the SDFD Respiratory Program Guide
- Demonstrate the process of filling an SCBA air bottle
- Describe the use and limitation of the Scott Air Purifying Respirator

Introduction

Figure 6-1 Scott NxG SCBA

The Self-Contained Breathing Apparatus (SCBA) used by the San Diego Fire-Rescue Department (SDFD) is the Scott Nex-Gen (NxG) Air Pak, Figure 6-1. It is a positive-pressure breathing apparatus, sometimes referred to as a pressure-demand unit. Positive-pressure SCBA's operate by supplying static air to the user on inhalation and by maintaining a constant, low flow of air within the face piece. This constant air flow maintains a pressure within the face piece greater than that of the surrounding atmosphere, thereby preventing contaminated air to enter the mask.

Respiratory injuries are alarmingly high in the fire service. The human respiratory system is a sensitive and delicate group of organs. The lungs and respiratory tract are probably more vulnerable to injury than any other part of the body. Standard operating procedures at all incidents include not entering any structure or atmosphere that is charged with smoke or fire gases, or any other suspected respiratory hazard, unless one is equipped with an SCBA. The most appropriate approach to take at all incidents is to assume that any smoke and gases that are present are hazardous to all humans, including victims, bystanders and firefighters. An atmosphere should be considered hazardous when any one of the following is present:

- High heat
- Smoke
- Toxic gases
- Oxygen deficiency
- Suspected hazardous material release

Many of today's modern buildings are constructed with materials which release toxic chemicals as they burn. Failure to use an SCBA in hazardous atmospheres greatly increases the chance that firefighters will be unnecessarily exposed to inhaled poisons and deadly levels of carbon monoxide and other toxic gases. Additionally, proper use of an SCBA will protect the user from inhaling dangerously high levels of heat associated with fire fighting, which have the potential to damage the lungs and respiratory tract. If there is any doubt whether an SCBA is required, firefighters should always err on the side of safety.

All SDFD firefighters shall receive training and be proficient in the proper use of SCBA's, specifically the Scott Air Pak NxG. Firefighters must be able to demonstrate proficiency in all aspects of SCBA use, including donning and doffing, performing a face piece Fit Check, Pak-Alert sensor module operation, emergency operations, maintenance and testing procedures and proper cleaning procedures. Additionally, firefighters should be able demonstrate a thorough knowledge of the unit's specifications.

NxG2	NxG7
• Discontinued Scott SCBA's	• Future Scott SCBA's
• 3 C Batteries	• 6 AA Batteries, Figure 6-3
• Batteries stored vertically on side of backframe	• Batteries stored horizontaly on side of backframe
• Not intrinsically safe	• Intrinsically safe
• No drag rescue loop	• Drag rescue loop, Figure 6-2

NxG2 vs. NxG7

SDFD is currently using two models of the Scott NxG SCBA, the NxG2 and NxG7. The NxG2 is the older model SCBA and has been discontinued by Scott for distribution. Its replacement is the Scott NxG7 and will be slowly phased in during the coming years. Both models of SCBA will be found in the ranks and firefighters must be familiar with the operation of each.

In general, these two SCBA's operate very similarly with only a few distinguishing characteristics (see table above). Unless specifically stated, the information in this SCBA chapter applies to both the NxG2 and NxG7 SCBA's used by the SDFD.

Figure 6-2 NxG7 Drag Rescue Loop

Figure 6-3 NxG7 Battery Location (6 AA)

Assemblies

1. Back Frame and Harness Assembly

Figure 6-4 Back Frame and Harness Assembly

The back frame and harness assembly is constructed of a solid, one piece, black, aluminum alloy frame, Figure 6-4. The harness consists of adjustable shoulder and waist straps made of heavy braided webbing. The back frame joins all the assemblies of SCBA together and is welded. The air cylinder is secured to the back frame using a Kevlar fabric band and a double locking latch. Air cylinders of 30, 45 or 60 minutes can be secured by the Kevlar strap. The two shoulder straps can be adjusted by pulling the excess slack of the straps through the two alligator clips. To release the straps push the alligator clip and pull the slack back through. The waist belt is secured with a single hand release, seat belt style buckle. The weight of the SCBA is designed to be carried on the waist and not the shoulders. This is done by tightening the waist straps snugly and loosening the shoulder straps until weight is relieved from the shoulders. This will prevent fatigue if worn correctly and feels much more comfortable.

There are several assemblies attached to the back frame. At the bottom of the back frame is the pressure reducer and cylinder housing block. This is where you would find the Universal Air Connector (UAC) and Rapid Intervention Crew (RIC) connection. Just right of the pressure reducer is a pouch which holds the dual Emergency Breathing Support System (EBSS) buddy breathing hose. Above the pressure reducer is the electronics module with mounted LEDs and sounders and a sleeve which contains the batteries for the SCBA. The regulator is attached to a low pressure hose which comes over the left shoulder when the SCBA is donned. There is a regulator keeper on the left waist strap and should be used to protect the regulator when not in use. Coming over the right shoulder is the remote pressure gauge which will allow the user to see how much air is left in the cylinder. Caution should be taken in Operations to not mount any extra equipment to the back frame other than the drop bags which are attached by using a two inch ring, supplied by Station 36.

2. Cylinder and Valve Assembly

Figure 6-5 Cylinder and Valve Assembly

The cylinders are constructed of a lightweight, composite material made of an aluminum alloy inner shell, over wrapped with carbon fiber, fiberglass and epoxy resin.

There are two sizes of air cylinders used with the Scott Air Pac NxG. The smallest and most common cylinder is rated for 30 minutes and contains 45 cubic feet of 99.9% certified breathable air, Figure 6-5. The 60-minute rated bottle contains 90 cubic feet of breathable air and is typically found on RIC packs, Haz Mat and Rescue 4 fire apparatus.

It is important to note that rated air times are accurate only under non-working

conditions. The actual duration time of the air cylinder will depend on a number of factors including:

- The cylinder pressure at the start of the work period
- Breathing pattern affected by physical activity, conditioning and emotional factors
- Any SCBA or face piece air leaks

Most air cylinders snap into the SCBA with the quick-connect fitting (Hansen valve), allowing for a quick and efficient bottle exchange, Figure 6-6. These bottles also have a straight Compressed Gas Association (CGA) male threaded inlet for recharging. The exception to this are the 60-minute RIC and some isolated air-tool bottles. These bottles do not have a quick-connect Hansen valve and are connected only through the CGA inlet, Figure 6-7.

Figure 6-6 Cylinder Valve Assembly w/ Hansen Valve

WARNING: Using a quick-connect 60-minute bottle in the RIC pack will not provide air and may have catastrophic result.

A cylinder valve is attached to each cylinder as an integral part of the unit. This is manually operated and contains a dual-reading primary pressure gauge. The valve cam is turned "OPEN" by turning the valve wheel counter-clockwise.

WARNING: Failure to ensure the valve is fully open may induce outlet freezing and prevent air from being provided to the user.

To "CLOSE" the valve it must be simultaneously pushed in and rotated clockwise. The gauge displays the amount of pressure in the cylinder in pounds per square inch (psi). The fully-charged working pressure is 4500 psi, label "Full". The cylinder will withstand three times the working pressure charged into the cylinder (approximately 13,500 psi) prior to failure. Located within the cylinder valve assembly is a frangible disc. The frangible disc acts as a safety device and is intended to burst and allow gas to escape to prevent rupture of the cylinder. It is similar in function to a safety relief valve; however, it has no reset capability. The frangible disc is set to burst at 7,500 psi (5/3 the working pressure of the cylinder).

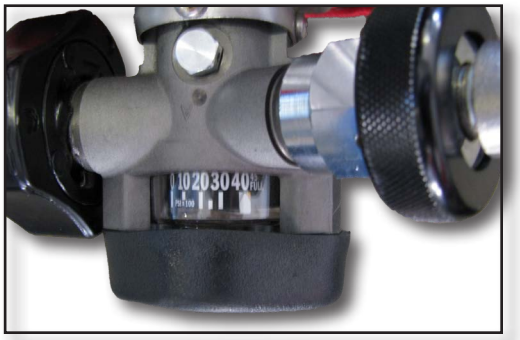


Figure 6-7 Cylinder Valve Assembly w/o Hansen Valve

The cylinders should be inspected for condition and hydrostatic test dates prior to being recharged. The cylinders are hydrostatically tested every five years or when exposed to extreme heat or subjected to damage. Cylinders are placed out of service 15 years after manufacture.

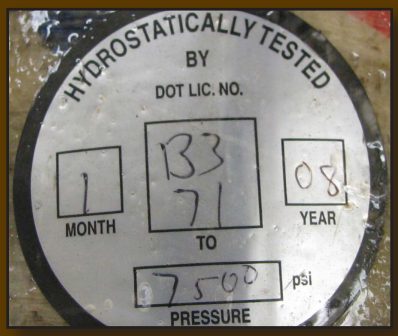
Every air cylinder is marked with the following information:

- Barcode or Scott ID number
- Department of Transportation (DOT) number
- Manufacture Date
- Hydrostatic test date (beginning 5 years after manufacture)

Cylinder Markings

Barcode

DOT #, Date of Manufacture, and Initial Hydro Test Date



Hydro Test Seal (every 5 years)

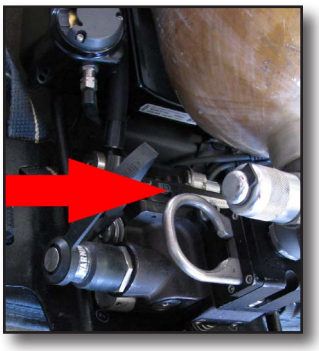


Figure 6-8 Pressure Reducer

3. Pressure Reducer Assembly

The pressure reducer is located on the bottom of the back frame connected to the cylinder housing block, where the air cylinder is connected, Figure 6-8. It is a redundant dual path reducing system broken down into the primary and secondary reducer. During normal operation air is supplied from the cylinder and valve assembly to the regulator through the primary reducer. Pressure from the cylinder is reduced from 4500 psi to 85-110 psi.

If the primary reducer fails or becomes blocked the air supply automatically flows through the secondary reducer to the regulator via the automatic transfer valve. If the secondary reducer becomes active the Vibralert activates to alert the user the primary reducer has malfunctioned. If this should happen in an incident, the user should exit the IDLH atmosphere immediately. The secondary reducer transfers airflow from 4500 psi to 145-175 psi.

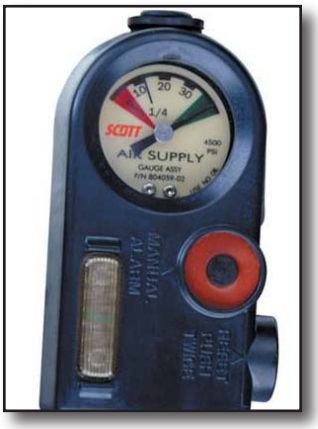


Figure 6-9 Remote Gauge

The pressure reducer is also equipped with a low cylinder transfer valve which activates the Vibralert when the cylinder pressure reaches 25%, (approximately 1100 psi). **The user shall exit the IDLH immediately upon any activation of Vibralert.**

4. Remote Gauge

The remote pressure gauge is located on the right shoulder harness and is attached to the pressure reducer and the electronics module. It has a mechanical gauge that indicates to the user how much air is remaining in the system, Figure 6-9. The gauge must read within 250 psi of the primary cylinder gauge and consists of a glow in the dark backing with readings of 10, 20, 30 and 45.

The first 25% of the gauge is marked in red and the top 25% is marked green denoting full.

There are two buttons located on the remote gauge, a red manual alarm and a yellow reset button. Pressing the red button triggers the manual alarm to sound. The alarm will activate even if the SCBA is not in use. The yellow button is used to reset the SCBA during pre-alarm or full alarm with just two presses. Holding the yellow button also performs a battery check. To do this, press and hold the yellow button until you get a color showing on the remote pressure gauge and the back frame LEDs. Red denotes batteries need to be changed and green shows batteries are in good working condition, Figure 6-10.

Figure 6-10 Remote Lights

Pak-Alert Sensor Module

The Pak-Alert sensor assembly alerts of a downed firefighter utilizing audible and visual indicators. The system incorporates dual visual and audible alarms. The sensor module is located on the back frame and harness assembly and on the user's right shoulder strap in the remote gauge. It is powered by the three (3) "C" cell batteries in the sleeve located on the back frame (NxG2 model). When the air cylinder is charged the sensor module automatically turns on. This will be indicated by a green flashing LED light on the sensor module and with an activation chirp.

Media 6-1 Pak-Alert

In the event the user remains motionless for 20 seconds, a pre-alert will cause the sensor LED lights to flash RED and a two-toned alert to sound. After the tones increase and 10-12 more seconds pass, the Pak-Alert will go into full alarm, Media 6-1. This causes the sensor LED lights to flash RED and a high frequency three-toned alert to sound.

The system also has a "hands-free" reset which is activated by of a slight movement of the SCBA when the system is in a pre-alert mode. Full alarm can only be reset by pushing the reset button on the remote gauge twice. Once the breathing apparatus is shut down and the air bled from the system the Pak-Alert needs to be turned off by pressing the reset button twice.

Figure 6-11 Mask-Mounted Regulator

5. Mask-Mounted Regulator

The mask-mounted regulator is the link between the low pressure hose from the pressure reducer and the face piece, Figure 6-11. It regulates the air to the face piece and provides several emergency functions. Normal operation of the regulator provides air upon inhalation and has a capacity of 500 liters per minute. Externally it contains a purge valve (red), a donning/doffing switch (black) and a Heads-Up Display (HUD). Inside the breathing regulator assembly are the Vibralert low air pressure warning device, a diaphragm and several other internal regulating components.

The regulator mounts to the face piece by a spring-loaded latching mechanism.

Figure 6-12 Purge Valve

The breathing regulator can be disconnected from the low pressure hose during emergency use with a quick disconnect fitting. The breathing regulator shall be kept covered at all times when not in use to prevent dirt and loose particulate from accumulating inside its mechanisms.

Purge Valve

The purge valve allows air to bypass the breathing regulator and is used in situations where the face piece needs to be purged, defogged or in the event of a breathing regulator failure, Figure 6-12. To open the valve, turn the valve knob counterclockwise one-half turn. To close the valve, turn it clockwise one-half turn. Normally this valve will remain in the closed position.

Be aware that use of the purge valve will cause the supply of air in the cylinder to be depleted faster than normal.

Donning Switch

Figure 6-13 Donning Switch

The donning switch is a black rectangular-shaped button located on top of the breathing regulator assembly and functions to control air flow to the face piece, Figure 6-13. Pushing the donning switch downward will stop air flow; when the user inhales sharply air flow will resume.

Free flow will occur when the:

- Cylinder valve is initially opened and the donning switch has not been pressed
- Regulator is disconnected or the face piece and regulator assembly is removed/dislodged while the cylinder valve is still open

In these instances air flow can be stopped by pushing downward on the donning switch.

Heads up Display (HUD)

Figure 6-14 HUD

The heads up display, or HUD, utilizes LED indicator lights to allow the user to monitor the remaining air supply and battery life, Figure 6-14. The HUD is located within the breathing regulator and is visible to the user through the face piece during fire fighting operations. When the SCBA is first charged, all lights appear on the HUD for 20 seconds. Then the lights illuminate to show the proper pressure.

- Full- Two solid green lights
- ¾- One solid green light
- ½ Yellow light flashing slowly
- ¼ Red light flashing rapidly

When the batteries require changing the round red light will illuminate and flash slowly at once a second. When this indicator is actuated change batteries immediately upon termination of the respirator or before reentry into an IDLH.

Vibralert System

The Vibralert system located in the regulator alerts the user to a diminished air supply or malfunction by causing an audible alarm to sound upon inhalation and simultaneously causing a vibration of the face piece.

Media 6-2 Vibralert

Under normal operations, the pressure reducer uses its primary system to provide air to the regulator at 85-110 psi. When air pressure falls below 25% or there is a mechanical malfunction of the primary system, a transfer valve redirects air through a secondary system. This secondary reducer functions at a higher pressure (145-175 psi) which activates the Vibralert alarm, Media 6-2.

Vibralert will operate under the following conditions:

- Air cylinder pressure falls below 25% of full (~1100 psi)
- A failure occurs within the primary reducing system
- Buddy Breathing with a user that has less than 1100 psi
- Initially upon opening the cylinder valve, to indicate the system is activated

The alarm will not be audible when initially opening the cylinder valve unless the purge valve is in the closed position and the donning button has been depressed.

WARNING: Under no circumstances should an SCBA be put into operation if the Vibralert does not function properly.

Figure 6-15 Face Piece (AV 2000)

Diaphragm

There is a diaphragm inside the regulator which activates and deactivates air flow. If the regulator is Chemical, Biologic, Radiation, Nuclear (CBRN) compliant it will have orange Scott regulator lettering and be indicated by a "+" in the name; if it is not the sticker will be white.

WARNING: All field (Non Training) regulators shall be CBRN

Figure 6-16 Face Piece (AV 3000)

6. Face Piece

There are two primary types of face piece masks used by SDFD, the Scott AV2000 and AV3000. Each is comprised of a lens, face piece seal, nose cup, head harness, and straps.

AV2000 are an older mask version and are no longer in production, Figure 6-15. Some individuals, however, continue to use the AV2000 due to a better fit. It has three sizes indicated by a colored face piece seal (Small/Green, Medium/Black, Large/Red). The masks are nonadjustable and use a clamp-type voice-amp adapter.

Figure 6-17 Voice Amplifier

AV3000 is the newer version, Figure 6-16, and as of 2010 comes in two styles. One has four attachment straps, the other has a dual seal and five straps (the fifth being on the top) to meet NFPA requirements for fit while wearing WMD adapter attachments.

Both styles of AV3000 masks are highly customizable with various sized face piece seals and nose cups. The size of each AV-3000 or AV-3000 Sure Seal seal is indicated with circular color inserts behind the head harness anchors and a letter at the bottom of the seal. The sizes are Small (Green/S), Medium (Black/M), and Large (Red/L). There are two styles of nose cups, colored black or gray. The black nose cup is available only for the AV3000 and comes in four sizes (S, M, L, XL). The gray is available in three sizes (S, M, L), indicated by a small letter on the left side of the nose cup. Black nose cups are designed to be placed inside the seal while gray nose cups are designed to be outside the seal.

The AV3000 head harness is available in two sizes, standard (SD) and large (L) and can be determined by looking at either of the upper head harness anchors. The AV3000 Sure Seal has only one universal size. Both are made of Kevlar and have flame resistant straps.

The face piece consists of a poly carbonate plastic, hard-coated to resist abrasion. Additionally there is an eyeglass adapter and a Mask Seal Kit to improve fit. Each is able to mount a screw type voice amp adapter on the wearer's right. **It is critical that the face piece fits properly. If it does not fit and a proper seal cannot be obtained the user is not protected.**

Voice Amplifier

Each SCBA will have a voice amplifier that can be stored on the face piece or clipped to the shoulder strap when not in use. Voice amplifiers attach to the face piece voice emitters in order to amplify the user's voice for improved communications during fire fighting operations, Figure 6-17. Voice amplifiers are activated by depressing a simple on/off switch on the unit. A green indicator light will light when the voice amplifier is turned on. Voice amplifiers are powered by one 9-Volt battery.

Other masks

Figure 6-18 Dual Manifold EBSS

There are additional masks in the department for specialized purposes. The MSA Millennium mask is currently used for Metropolitan Medical Strike Teams (MMST) and the Draeger mask is used by the Bomb Squad.

7. Emergency Components

Emergency Breathing Support System (EBSS)

The Emergency Breathing Support System (Buddy Breathing) Hose allows the user to share or "buddy-breathe" from a second Scott SCBA without disconnecting the regulator supply hose. **The system is not universal across SCBA types or departments and can be only be used by another user with a**

similar system. The EBBS utilizes a 2 ½' hose with a dual female/male connection port, allowing users to maneuver up to 5' apart, Figure 6-18. To operate the EBBS, either port can be connected. Only one set of connections needs to be plugged in to function and the system can support multiple users by daisy-chaining the connection ports.

The EBBS Hose is normally stored downward in a pouch secured on the right side of the waist strap (when worn), utilizing two snap buttons, Figure 6-19. It is also secured to a holder within the pouch by rotating one-quarter turn. **Always keep the connections covered and the breathing hose stored in its pouch downward to prevent debris from blocking the ports**.

Figure 6-19 EBSS Pouch

Buddy Breathing Mechanics

When an SCBA air cylinder is less than 25% full (~1100 psi), the low cylinder transfer valve in the pressure reducer switches from the primary to the secondary system. The secondary reducer provides a higher pressure to the regulator which activates the Vibralert.

WARNING: If the EBSS hoses are connected to an SCBA with an active Vibralert, AIR WILL BE PROVIDED TO BOTH USERS FROM THE LOWER AIR CYLINDER due to the higher reducer pressure of the low cylinder (~160 psi).

Figure 6-20 EBSS Connection

This is critical to understand because it means that two firefighters are now both depleting the lowest bottle. Also, due to the higher pressure, this will activate both users' Vibralerts even though one SCBA may have greater than 25% air.

After the low cylinder has been brought below the pressure needed to activate the secondary reducer and Vibralert (~120 psi), air will be switched and be provided by the higher cylinder. If that cylinder is greater than 25%, both Vibralerts will secure until the bottle reaches that level, in which case they will activate again.

WARNING: It is critical to understand that once the EBSS system switches to the higher bottle, the low bottle user has less than 120 psi of air left (less than 60 seconds). Any disconnection of the EBSS hose after that point may lead to fatal consequences.

Example:

- User 1 has 500 psi. User 2 has 3000 psi.
- User 1 has an active Vibralert due to air being below 1100 psi. User 2 does not.
- If User 2 connects to User 1 with a buddy breathing hose, both users will feel their Vibralert and both will be breathing from the 500 psi bottle.
- When the low bottle reaches ~120 psi, User 1 and 2 will begin breath-

ing on the 3000 psi bottle. Both Vibralerts will secure.

- Ultimately, both User 1 and User 2 will breathe the second bottle to below ~1100 psi and the Vibralerts will activate for each user.
- If at any time after the buddy breathing system has switched to the higher cylinder (indicated by Vibralert going off), User 1 disconnects, there will be ~1 min. of air remaining in the low cylinder.

Rapid Intervention Crew (RIC) / Universal Air Connector (UAC)

The RIC connection is a universal air connection (UAC) used to resupply air to a downed firefighter in the event of a RIC deployment or trapped firefighter scenario, Figure 6-21. It is a high pressure (up to 4500 psi) procedure which refills the downed firefighter's air cylinder by equalizing pressure between it and the RIC cylinder.

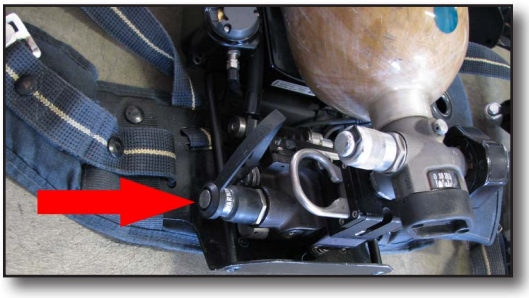


Figure 6-21 RIC/UAC

It consists of a large UAC located at the lower left side of pressure reducing block (when worn or viewed from the bottle side). **It should always be covered with a dust cap for protection from debris blocking the port**. The UAC fitting is universal to all SCBA types that are NFPA compliant and may be used in a multi-agency scenario. The UAC fitting is used in conjunction with a quick-fill hose and a 60-minute air cylinder contained in RIC bags. RIC bags are located on all truck company apparatus and heavy rescue/USAR apparatus.

Additional SCBA Components

The SCBA is also utilized to carry several additional pieces of firefighting equipment. Although these are not considered an actual assembly of the SCBA, these additional components are of equal importance and must be checked and maintained on a daily basis.

Drop Bag

The drop bag contains 75 feet of 8mm rope which is attached to the SCBA's backframe assembly by an aluminum locking carabiner, Figure 6-22. This rope bag is not designed to be used for any lifeline loads. This rope is used for hauling equipment aloft, tying off hose, as a tag line for large area searches and any other situation where a non-life safety load shall be placed on the rope.

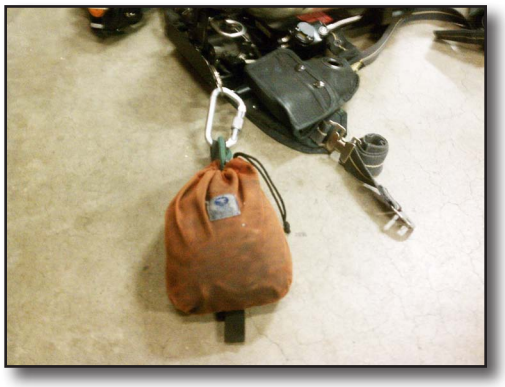


Figure 6-22 Drop Bag

Accountability Tags

As mentioned in Chapter 3, accountability tags are attached to the left shoulder strap of all SCBA's. Each SCBA should have one tag that corresponds to the firefighter and the Captain's SCBA should have two tags; one personal accountabilty tag and one crew accountability tag which is used for highrise firefighting operations.

Radiation Pager

The "Radiation Pager" is a small, self-contained gamma-ray radiation detector. It was specifically designed to be easily used by government agencies and emergency responders. When x-rays or gamma rays are detected at levels significantly above the natural background, the unit quickly alerts the operator by flashing high intensity light and sounding an audio alarm. The operator can quickly localize the source of the alarm with a single digit display, a flashing Light Emitting Diode (LED), and audible tone. The pager can operate continuously for one year on a pair of AA alkaline batteries.

Figure 6-23 Radiation Pager

The Radiation Pager is intended to be worn on the right hip belt of FF#3's SCBA, Figure 6-23. The Radiation Pager should be checked for power on the 1st and 15th of the month. To do this, depress the display button. There should be a flash of the green LED, audio tone and a numeric display to verify power to the unit. Any repairs and calibrations will be arranged by contacting the Hazardous Materials Incident Response Team.

See the Radiation Training Bulletin 00-03 for more detailed information, Link 6-1.

Link 6-1 Radiation Pager Training Bulletin 00-03

Normal Operating Procedures

Daily Checks

Daily checks must be performed by the user prior to using an SCBA. This starts with a visual inspection. The user must look for rips or excessive wear in the Kevlar straps and webbing, broken clips, cracking rubber on the hoses or regulator, or plastic that is cracked on the regulator or back frame.

Media 6-3 Donning the SCBA

The cylinder should be inspected for damage and the hydro date noted. Only a cylinder marked full is appropriate for emergency use. The regulator purge valve must be closed and the donning switch must be pressed prior to operation. Once the BA is charged, the user must note the Vibralert at startup as well as activation chips and lighted LEDs. The remote gauge must reflect the pressure in the cylinder and be within +/- 250 psi. The HUD will initially light all lights, then after approximately 10-20 seconds it shall display the correct light for the amount of air in the cylinder.

The Pak-Alert must be tested by allowing the BA to cycle through one set of alarms beginning at the pre-alarm and ending in full alarm. In addition, the manual alarm must be tested. The user must then attach the regulator to the face piece and test the flow of air. The user should be able to inhale to activate air flow and breathe normally. If correct, remove the face piece and note free air flow briefly before pressing the air saver switch. Check the purge valve for proper flow.

Next, close the air cylinder and slowly bleed air from the purge valve, monitoring proper HUD lights and remote pressure gauge readings. Make sure the Vibralert activates with the accompanying low air LED's and sounders at 25%. Once air is completely bled from the system reset the alarms by pressing the yellow button on the remote gauge twice.

Donning the SCBA

Note: Prior to using a SCBA for emergency use, the user must be properly trained and current in the annual Fit Test procedures. Daily checks must be done prior to use.

Media 6-4 SCBA Start-Up

Upon donning the SCBA, Media 6-3, make sure the cylinder is full and properly locked in place with the cylinder retention strap. Open the cylinder fully and note the Vibralert and Pak-Alert at startup, Media 6-4. Grasp the back frame with one hand on each side of the cylinder; swing the unit up and over your head, making sure your elbows are in close to your head. Rest the SCBA on your back while slightly bent over at the waist. The shoulder straps will fall into place on your shoulders. Walk your hands down the shoulder straps until you find the strap ends. Straighten up as you pull down on the strap ends, tightening the straps. Connect the waist strap buckle. Tighten the waist strap

by pulling forward simultaneously on the two side-mounted strap ends. The SCBA is designed so that its weight is carried on the hips. Readjust the shoulder straps if needed to ensure proper weight distribution.

- If donning a face piece: adjust the head straps to a loose position then hold the head harness out of the way with one hand while placing the face piece on your face. Make sure your chin is properly seated in the pocket and pull the head harness over your head. Tighten the neck straps then the temple straps. Overtightening may cause discomfort. With the face piece sealed to the face inhale to actuate the respirator. Air will be supplied upon inhalation. Make sure you do not feel any air leaking past your seal. Pull your Nomex hood over the head harness and make sure no skin is showing. Then put on your helmet.
- If placing in standby mode: make sure your donning switch is pressed and placed in the regulator keeper or attached to a face piece not yet on your face.

Fit Check

A face piece Fit Check is a negative-pressure test performed by the user prior to each use of the face piece, Figure 6-24. This is conducted to ensure a good seal exists.

To perform the Fit Check:

1. Don the face piece
2. Attach the breathing regulator to the face piece
3. Manually depress and hold the center of the donning switch on top of the breathing regulator
4. Inhale slowly and hold your breath momentarily
5. No leakage of air should be detected and the face piece should be snug and slightly drawn into the face

Figure 6-24 Fit Check

The purpose of the Fit Check is to ensure that the face piece conforms to the user's face to reduce the possibility of leakage through the rubber face seal. It is unlikely that face seal leakage can be attributed to only one factor, but rather a combination of two or more. For example, movement of the head, particularly a nodding motion, may create a leak, but its extent would also depend upon facial characteristics and actual face piece fit. It should be kept in mind that inward leakage may still occur in a positive-pressure SCBA; at high breathing rates positive pressure is not always maintained.

Fit Test

Each firefighter shall be initially tested for proper fit and be issued a face piece for their personal use. Thereafter, each firefighter shall participate in an annual face piece Fit Test program. This test will be conducted by Fire Station 36 personnel who have received specialized training from Scott Health and

Safety on testing and repair of NxG SCBA's. The Fit Test requires the user to be present and includes a computerized "Port-a-count" test to evaluate the effectiveness of the face piece seal in various circumstances. SCBA's are also tested by the SCBA technicians for overall function, utilizing the "Pos-i-check" system. These tests are mandated by both state and federal laws which regulate the use of respirators in the workplace. For a more detailed description of the SCBA Fit Test and SCBA testing procedures, employees should refer to the SDFD Respiratory Protection Program Guide, Link 6-2.

Link 6-2 SDFD Respiratory Protection Guide

The face piece Fit Test is an evaluation of the face piece to create an adequate and safe seal for the user. It is performed annually or whenever required by department regulations.

The Fit Test is required in the following situations:

- Annually
- A weight gain/loss equal to 10% of an employee's body weight
- Facial configuration changes due to, but not limited to, dentures, scarring, reconstructive or cosmetic surgery or pregnancy
- Return from a special or administrative assignment where the employee has been away from operations for greater than one year and has not participated in the annual Fit Test program.

Doffing

First, remove your helmet and Nomex hood. Second, loosen the head straps, then the neck straps on the face piece by simultaneously lifting the buckle-release lever outward (away from your head) and lifting the face piece away from your face. Stop the air flow by fully depressing the donning switch on the top of the breathing regulator. Remove the face piece by pulling it up and over your head. Be sure to store it with the Kevlar head harness pulled over the lens.

Turn the cylinder valve completely off by pushing the valve inward and tuning clockwise. Bleed off any residual pressure using the purge valve. Press the yellow re-set button on the remote pressure gauge/control module twice to deactivate the Pak-Alert system. The unit is shut off when the green indicator light on the remote pressure gauge/control module stops flashing.

To remove the SCBA, uncouple the waist straps and then loosen the shoulder straps. When you loosen the waist and shoulder straps, adjust them so that a 2" to 3" tab extends from the adjusting clamps to facilitate easy donning when the unit is needed again. After the shoulder straps have been loosened, grasp them and remove one arm at a time.

Changing Air Cylinders

Depleted or partially depleted cylinders should be replaced with full cylinders as soon as possible. This can be done by the user or with the assistance of another person. All cylinders used with the Scott Air-Pak NxG must use a cylinder marked for 4500 psi, however, three different capacities may be used. Ratings of 30 minute, 45 minute, and 60 minute cylinders can be used. Inspect the snap-change connector on the cylinder valve assembly before connecting to the pressure reducer coupling.

Changing the cylinder by user, Figure 6-25

1. Exit the IDLH atmosphere
2. Close cylinder valve and bleed residual air pressure by using the purge valve. When fully bled close the purge valve fully.
3. Remove the SCBA and place on a solid surface with the cylinder facing up.
4. Release the cylinder retention strap.
5. Pull both Snap-change locks horizontally to release the cylinder connector. Note a series of descending tones and flashing LEDs
6. Grasp the cylinder and lift it free from the back frame.
7. Inspect the seal in the high pressure inlet and send it for repair if it is damaged or missing.
8. Slide the top of a full cylinder under the retention strap.
9. Align the snap-change connector over the cylinder connector and press inward until you hear clicks and ascending tones and see lighted LEDs.
10. Secure the cylinder by pushing the regulator release latch toward the back frame to lock the cylinder latch.

Figure 6-25 Bottle change with one firefighter

Changing the cylinder with an assistant, Figure 6-26

1. Leave the IDLH and doff face piece.
2. Close the cylinder knob completely and bleed the residual pressure. After air flow stops close the purge valve fully.
3. The assistant will stand behind the respirator user and disengage the cylinder retention strap.
4. The assistant will pull the snap-change locks horizontally and release the cylinder while supporting it from falling. Listen for descending tones and look for flashing LEDs.

Figure 6-26 Bottle change with two firefighters

5. Assistant will lift the cylinder free from the back frame and remove.

6. Assistant will inspect the high pressure seal in the inlet and if it is damaged send it off for repair.

7. The assistant will insert a fully charged cylinder by sliding the top of the cylinder under the cylinder retention strap and orient the snap-change connector over the high pressure inlet.

8. The assistant will engage the cylinder snap-change into the pressure reducer by pushing the cylinder inward until both locks click into place. Ascending tones will sound and lighted LEDs will show.

9. The assistant will secure the cylinder by engaging the latch assembly.

SCBA Emergency Procedures

Vibralert Activation

If your Vibralert is activated in an IDLH, it indicates that:

- Air cylinder pressure fell below 25% of full (~1100 psi)
- A failure occurred within the primary reducing system
- Buddy Breathing was initiated with a user that has less than 1100 psi

Media 6-5 Vibralert

In all circumstances, immediately leave the IDLH. In the case of a mechanical malfunction, remove the SCBA from service and contact the chain-of-command.

SCBA Malfunction

There have been multiple instances of an air cylinder that has stopped providing air. In nearly every instance, the cause was determined to be a partially opened air cylinder valve which either mechanically rotated closed or froze over due to a restricted opening of high pressure air. This can easily be avoided by fully opening the air cylinder upon donning.

The importance of opening your SCBA bottle completely cannot be stressed enough!

If your air supply is partially or completely cut off:

1. RESIST the urge to remove your face piece
2. OPEN the air cylinder valve completely
3. OPEN the red purge valve completely
4. EXIT the IDLH immediately (consider buddy breathing)

If your face piece is providing free flowing air, check that your purge valve did not accidently open. If not, the SCBA has malfunctioned and you should:

1. PARTIALLY CLOSE the air cylinder valve (to regulate and conserve air)
2. OPEN the red purge valve completely (to bypass any regulator malfunction)
3. EXIT the IDLH immediately (consider buddy breathing)

Buddy Breathing

Figure 6-27 Buddy Breathing - EBSS to EBSS (top 2 images)

To connect:

1. Remove EBSS hose from recipient's pouch and take off dust cap
2. Remove EBSS hose from donor's pouch and take off dust cap
3. Connect using either combination of male/female fittings and push together until sleeve snaps in place, Figure 6-27

To disconnect:

1. Push male/female fitting together
2. Retract collar
3. Pull hoses apart

Advantages:

- No break in air supply
- No loss of positive pressure

Disadvantages:

- Both (or multiple) users will breathe down the lowest air cylinder first
- An air leak in one SCBA will ultimately bleed down both users' cylinders
- Only Scott SCBA's will be compatible

Alternate Method (Air Hose Malfunction)

If there is an air leak or a malfunction blocking air into the low pressure hose, the EBSS hose may be connected directly to the regulator quick connect.

1. Hold breath as recipient
2. Disconnect regulator by pushing and retracting the quick-disconnect collar
3. Connect to donor's EBSS hose, Figure 6-28

Advantages:

- Air leaks in the recipient's SCBA will not deplete the donor's supply
- All air used is from the donor only

Disadvantages:

- Breaks the positive pressure seal
- Shortens the distance between users reducing maneuverability
- Circumvents usable air from the recipient's cylinder

Alternate Buddy Breathing (Air conservation)

As discussed earlier, Buddy Breathing uses the air from the lowest air cylinder first. In order to save this air and use the donor's air instead, use the following procedure.

ALWAYS ADD BEFORE YOU SUBTRACT AND COMMUNICATE CLEARLY

To conserve the recipient's air:

1. Connect EBBS hoses
2. Close the low cylinder air valve
3. Confirm recipient has air

If for any reason you decide to disconnect or need to use to low cylinder's air:

1. Open the recipient's air cylinder
2. Disconnect EBSS hose
3. Confirm both users have air

Advantages:

- Saves low cylinder air for later situations

Disadvantages:

- Multiple critical steps which require effective communication in an IDLH
- Risks recipient having no air if done improperly

Figure 6-28 Alternative Buddy Breathing method - EBSS to Regulator (above 4 images)

Rapid Intervention Crew (RIC) Bag

Figure 6-30 RIC Bag

Rapid Intervention Crew (RIC) is an emergency procedure which allows a downed or trapped firefighter to receive air from an external RIC bottle (60 minute rated) and hose.

Prior to entry:

1. Confirm RIC bottle is of the CGA type and full
2. Open bottle fully prior to IDLH
3. DO NOT USE A QUICK CONNECT TYPE BOTTLE

Upon reaching the downed firefighter:

4. Open trapped firefighter's air cylinder fully (to prevent freezing)
5. Remove dust caps RIC hose and SCBA
6. Connect RIC hose to the RIC-UAC connection,

Figure 6-29

7. Confirm air transferred and bottles have equalized (~10 sec.)

After exiting IDLH and complete with evolution:

8. Disconnect RIC hose from RIC-UAC fitting
9. Relieve pressure on RIC hose by replacing RIC hose dust cap and pressing carefully on flat surface until discharge is heard

Never use the RIC-UAC assembly for routine fills of an air cylinder.

Figure 6-29 RIC Bag "Hot Fill" (above 2 images)

Buddy Breathing vs. RIC

Both Buddy Breathing and RIC can provide air to a user in need. However each has advantages and disadvantages. This is a basic comparison of the two.

EBSS:

- Immediate
- Requires no extra equipment
- Low pressure (120-160 psi)
- Does not fill air cylinder
- All users breathe off low cylinder first (standard method)
- Must generally remain connected
- Not universal (Scott only)

RIC:

- Hot fills low bottle
- Brings extra air to the evolution rather than using any one user's
- May be disconnected once complete
- Universal
- Takes time to initiate
- Requires RIC bag
- High pressure

It is very possible both Buddy Breathing and RIC may be used simultaneously in an emergency situation. For example, if a firefighter becomes trapped, a partner may connect the EBSS hose while initiating and waiting for RIC. Alternatively, if a RIC evolution becomes extended, a rescuer may provide buddy breathing in the interim. Note that in these combined scenarios, a RIC hot fill will only charge the SCBA bottle it is directly connected to and will not fill a secondary bottle across a buddy breathing line.

Training and a full understanding of how each procedure works is imperative to a successful rescue evolution. KNOW YOUR SYSTEM; IT MAY SAVE YOUR LIFE!

SCBA Maintenance

SCBA's should be inspected routinely, including daily, after each use and monthly.

Daily Checks

SCBA's shall be inspected and tested daily by each employee at the beginning of their assigned work period, utilizing the procedures detailed in the "Daily Checks" section of this chapter under Normal Operating Procedures.

Monthly And/Or After Each Use

SCBA's should be inspected after each use and monthly. The results of these checks need only be recorded once a month. This inspection is usually completed on the last day of each month. The results of these inspections are recorded on SDFD forms FDM 9 (Apparatus Maintenance Log) and FDM 16 (Monthly Breathing Apparatus Test Log) and stored in the assigned apparatus Engineer's Manual.

The following inspections shall be performed:

Air Cylinders

When inspecting the cylinder and valve, first close the cylinder valve and then bleed the residual air pressure from the system. Next, remove the cylinder from the frame assembly and inspect it. If the cylinder exhibits any of the following defects it should be removed from service immediately:

- Deep cuts or scratches (0.090" deep)
- Unraveling of the glass wrap
- Paint discoloration due to heat
- Decals charred or missing
- Gauge lens melted
- Elastomeric bumper distorted
- Cylinder hanger shows excessive wear

Air cylinders receive a hydrostatic test every five years. Cylinders are sent to Fire Station 36, which then are sent to an outside vendor for hydrostatic testing. Fire Station 36 SCBA technicians are responsible for maintaining this schedule. Additionally, if at any time a cylinder is exposed to high heat or sustains dents or cuts it should be hydrostatically tested.

Cylinders shall be cleaned using a damp sponge with mild soap and water. Rinse the cylinders with clear water and then towel dry.

Face Piece Assembly

Figure 6-31 Scratched Face Piece

The face piece shall be checked for cracks or tears in the rubber seal. Check the inner rubber seal to ensure that it is bonded to the lens. Lenses with deep scratches or several small scratches that may impair vision shall be removed from service and replaced, Figure 6-31. Check the buckles for damage. Finally, check the elastic straps for fraying and/or lack of elasticity and replace if necessary.

Clean the face piece with the regulator removed. If possible use a Scott-recommended cleaner according to the instructions provided with the cleaner. Clean off dirt and debris with warm water and a mild soap or detergent. Rinse thoroughly and dry with a clean lint free cloth or gently blow dry with clean, dry breathing air of 30 psi or less pressure. Do not use shop air or any air containing lubricants or moisture. Do not use paper towels to clean or wipe the face piece. This will scratch the lens.

Regulator and Low-Pressure Hose

The breathing regulator and low pressure hose should be inspected for breakage, cuts, excessive wear and missing screws (regulator). If the unit is broken or if screws are missing, clean, tag, and send the SCBA to Fire Station 36 for repair or replacement.

Check the regulator-to-face mating gasket (gray gasket) for tearing and wear. Send the SCBA to Fire Station 36 for replacement of the gasket when needed. Attempt to move the locking tab. It should move freely and return to the locked position.

Remove any obvious dirt from the external surfaces of the regulator using Scott-recommended sanitizing or disinfecting cleaner with a soft sponge or cloth. If a noticeable amount of dirt or soil is inside the regulator, send it to station 36 for a thorough cleaning. Rinse the regulator with tap water using a spray bottle. Shake out the regulator and air dry before use. You may also connect to an air supply and open the purge to remove moisture from the spray bar. Check the regulator for proper functionality and send regulator for repair if an air leak is heard.

To check the regulator for proper air flow, perform the following procedure:

- Ensure the donning switch is depressed
- Ensure the purge valve is closed (turn clockwise)
- Attach the breathing regulator to the face piece and slowly open the cylinder valve. You should hear the Vibralert sound and then stop. If air flow occurs push down the black donning switch..
- Place the mask on your face and inhale. You will hear and feel the donning switch release and air will flow. You should feel a mild air pressure against your face. Breathing should be normal.

- Holding the mask against your face, close down the cylinder valve. Watch the remote pressure gauge and slowly breathe the air out of the system. When the remote pressure gauge indicates approximately "1/4" the Vibralert should activate.
- Depress the black donning switch.

Back frame and Harness Assembly

Inspect these components for wear, deterioration and missing parts. The welds and rivets should be strong and secure. The straps and buckles should be in good working order. Clean, tag and send units in poor condition to Fire Station 36. Clean the back frame and harness with a mild soap and rinse with clean, tepid water. Allow the unit to air dry completely after cleaning.

Pressure Reducer and High-Pressure Air Hose

Figure 6-32 NxG2 Battery Location, 3 C's

Check the pressure reducer for damage due to heat exposure and missing or loose parts (e.g., Allen bolts and screws), dents, deterioration, or other problems which could hamper proper operation of the unit.

DO NOT SUBMERGE THE PRESSURE REDUCER AT ANY TIME. DOING SO WILL CAUSE DAMAGE TO THE INTERNAL MECHANISMS.

Pressure Gauge

Inspect the pressure gauge assembly for breakage, wear and heat damage which may have melted the gauge lens. Hold the face piece on your face and open the cylinder valve. Compare the cylinder gauge with the remote gauge; the indicator pointers should read at approximately the same position. Use a mild soap to clean the pressure gauges and rinse with warm, tepid water.

Battery Replacement

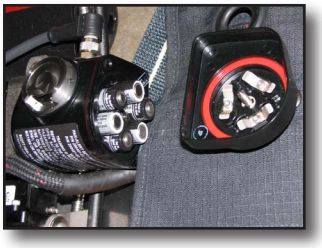


Figure 6-33 NxG7 Battery Location, 5 AA's

As discussed earlier, the model of the Scott NxG SCBA will determine which batteries are used and where.

Three "C" batteries for the NxG2 can be accessed by removing a flat head screw from the top of the Pak-Alert module and sliding out the vertical locking battery sleeve, Figure 6-32. For the NxG7, 6 "AA" batteries can be accessed from a removable sleeve located horizontally on the Pak-Alert near the user's hips, Figure 6-33.

Biennial Maintenance and Repair

Fire Station 36 is the designated specialty station responsible to perform preventive maintenance and repairs on the Scott Air Pac NxG. Fire Station 36 personnel receive training by the manufacturer certifying them as technicians allowed to perform the mandatory preventive maintenance every two years as well as any other required SCBA repairs. In addition, Fire Station 36 SCBA technicians are trained by the SDFD Risk Management Division to conduct the annual face piece Fit Test.

SDFD Respiratory Protection Program

Link 6-3 SDFD Respiratory Protection Guide

California Code of Regulations Title 8, General Industry Safety Orders Section 5144 and OSHA dictate that whenever respirator use is required, the following requirements must be met:

- A written respiratory protection program with procedures that are specific to the work site be implemented
- The program be updated, as necessary
- A qualified program administrator be assigned to run and evaluate the program

The SDFD Respiratory Protection Program Guide is the official document used to satisfy this requirement and is a combination of several manuals including the operations and drill manual. This document outlines specific instructions and responsibilities for SCBA managers, administrators, technicians, supervisors and employees. It also describes the necessary training, repairs, medical, and Fit Testing requirements that must be met to ensure OSHA compliance.

This document can be found in the "Manuals" folder on Target Safety and the "S" Drive on fire station computers, Link 6-3.

Air Filling Procedures

Pressure in air cylinders shall be maintained at 4500 psi ("Full" or "45" on the primary or secondary pressure gauges) and should be replaced when less than full capacity. A cylinder is considered full when any part of the gauge pointer is in the word "FULL" or number "45" on either the primary or remote pressure gauges.

In addition to Light & Air apparatus used to fill empty SCBA bottles, several fixed air compressor units are available for firefighters to fill bottles. SDFD maintains 10 SCBA filling stations for the purpose of refilling SCBA air cylinders. Each battalion has a designated primary location which will be used to refill and replace SCBA cylinders in the course of non-emergency use, Figure 6-34. Refer to SDFD Operations Manual SI-06, Section VI (Station Management) for additional information on SCBA fill stations, Link 6-4.

Fill Station Operations

When filling the cylinder the recommended rate is 300 psi per minute. To prevent unnecessary cylinder expansion, over-pressurization or possible premature failure, DO NOT fill air cylinders at a rate greater than 500 psi per minute. When a cylinder is cooled, it may need to be topped off due to a reduction in pressure at lower temperatures.

Note: Compressor may be run before, during, or after filling bottles depending on your needs.

1. Unlock fill station door. Push fill station door handle down and pull the door open.

Battalion	Filling Station Locations
B-1	Light & Air 1
B-2	Station 18 & 36
B-3	NTC (Staffed by Station 22)
B-4	Station 10
B-5	Station 35
B-6	Station 12 & 29
B-7	Station 37 & Light & Air 40

Figure 6-34 SCBA Filling Locations

2. Place bottles into the holders and connect the fill adapters to the bottles hand tight only.

3. Close the fill hose bleed valves (do not over tighten); on old style bottles open the cylinder valve. Do not open the cylinder valve on new style bottles with the quick connect fitting.

4. Close and lock fill station door. Locking bar must drop down, locking the top of the door.

5. Select air source with the fill select valve. Generally air storage (cascade) is used.

6. Open the bank valve with lowest pressure first, generally the left one.

7. Ensure the fill regulator is set to appropriate fill pressure, 4500 for SCBA bottles.

8. Open the fill valves to fill bottles at the recommended rate of no more than 300 psi per minute.

9. If the pressure between the bank and fill valves equalizes before the bottles are full, close the bank valve in use, then open the next bank valve. Repeat this procedure as necessary until the fill pressure gauge reaches the proper pressure. Filling is now complete.
10. Close bank valve.
11. Close fill valves.
12. Unlock and open fill station door.
13. Close bottle valves, if they were opened.
14. Don hearing protection, then open fill hose bleed valves and bleed off air completely.
15. Remove fill adapters from bottles and place them in their holders.

Start Up Procedures

1. Check compressor oil in sight glass. Do not operate if below minimum.
2. Open manual condensate drain to relieve any remaining pressure, catch water in bottle.
3. Close manual condensate valve after draining water and relieving pressure.
4. Ensure that the Red Emergency Stop Button is in the "out position". The Red Emergency Stop Button shall be used (pushed in) for emergency shut down of a running compressor only.
5. Don hearing protection. Press the ON button on the compressor control panel.
6. Allow compressor to build pressure, monitor pressure gauge. If excessive knocking or vibrations are observed, shut down unit.
7. Allow compressor to reach full pressure. It will shut itself off.

Figure 6-35 Bauer Air Compressor

Shut Down Procedures

1. Verify all bottle and fill valves are closed.
2. Press the OFF button on the compressor control panel.
3. Open the condensate drain valves to relieve any remaining pressure and drain any moisture from the separators.
4. Close the condensate valves.

Alarms & Warnings

- All alarms and warnings will be displayed on the LCD of the compressor control panel.
- Any alarm or warning should be followed by a corrective action to be taken, and will scroll on the display every three seconds. Some warnings will automatically shut down the compressor to protect it from damage. In this case do not restart the compressor, and contact the Facilities Maintenance Officer (FMO) immediately. Some warnings just notify users that it is time to schedule maintenance.
- Regardless of the type, ALL alarms and warnings must be reported (e-mail to SDFDFacilities@sandiego.gov) within 24 hours; in addition, if it caused the compressor to shut down, it must be immediately phoned in to the FMO 24/7 or duty Logistics personnel.
- This system is capable of operating with pressures in excess of normal bottle fill pressure. DO NOT overfill bottles as explosive forces may be released if the bottle fails.
- Every bottle should be stamped with maximum pressure and last inspection (hydro) date. Do not exceed maximum pressure or fill bottles with an outdated inspection date.
- Visually inspect each bottle and valve for signs of damage before filling. DO NOT fill any bottle which appears to be damaged. Reference manufacturer's recommendations for damage criteria. Be sure the regulator and safety valves are set properly.

Link 6-4 Operations Manual SI-06, Sec VI - SCBA Filling Procedures

Periodic Maintenance

Daily, check oil level in sight glass, drain condensation, dump clean condensation water in deep sink. Contact Facilities Maintenance if drain water contains contaminates or oil. Listen for air leaks or unusual noises. Watch for warnings or alarms. Report (e-mail) all issues or suspected problems to "SDFD Facilities" within 24 hours. Phoning in questions or problems is encouraged but does not remove the requirement to send an e-mail notification.

DO NOT PERFORM ANY IN HOUSE REPAIRS OR MODIFICATIONS.

All other maintenance will be performed by trained Facilities Staff, or qualified, contracted vendors.

For questions or to report problems contact SDFD Facilities Maintenance Officer by phone or by e-mail at "SDFD Facilities" on the city e-mail server. This will send the e-mail to all facilities personnel for prompt attention.

Summary

The SCBA is a sophisticated piece of equipment. Firefighters must understand all aspects of how the SCBA works and how to safely operate it in all conditions. Because firefighters work in extreme IDLH environments, misuse or failure of any element of the SCBA cannot be tolerated, as this may lead to serious injury and death. Firefighters must continuously train with, and maintain this important piece of equipment to be safe and effective in their duties.

Not only is it department policy, SDFD firefighters are required by OSHA regulation to conduct annual training exercises to ensure safe use of the SCBA. Firefighters must be able to describe and explain the function of the 7 SCBA assemblies, additional SCBA components, emergency procedures, inspection and maintenance procedures, as well as the use of air compressor fill stations.

It is imperative that all firefighters follow the guidelines set forth in this chapter and the SDFD Respiratory Protection Guide.

Media & Link Index

- NxG7 Presentation
- Donning SCBA
- RIC Bag Video
- NxG2 & NxG7 Refresher Training Video
- SCBA Emergency Procedures
- SCBA Emergency Breathing Support System (EBSS)
- SCBA Bottle Procedures

- Radiation Pager Training Bulletin 00-03
- SDFD Respiratory Protection Guide
- Operations Manual SI-06, Sec VI - SCBA Filling Procedures
- SDFD Safety Message - PASS Alarms
- SDFD Safety Message - Air Management

- Opening SCBA Bottle with Vibralert and Pak-Alert Activation
- Pak-Alert
- Vibralert

References

1. 72nd Academy SCBA Power Point Presentation - SDFD Training 2009
2. San Diego Fire-Rescue Department Respiratory Protection Guide
3. San Diego Fire-Rescue Department Drill Manual, Section 3, pages 3-1 to 3-17
4. San Diego Fire-Rescue Department Operations Manual, Standard Instruction 01, Section II, pages 11-13
5. San Diego Fire-Rescue Department Operations Manual, Standard Instruction 06, Section VI,
6. Fire Station 36 Personnel A,B,C Divisions.

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