



Manhattan Fire Protection District

SOP #: 200-5	Effective Date: 08/27/90	Revised Date: 07/01/16
Section: Protective Clothing & Equipment		
Subject: Self-Contained Breathing Apparatus		

PURPOSE:

The purpose of this procedure is to define the procedures for selection, training, use, care and maintenance of self-contained breathing apparatus and related safety devices.

SCOPE:

This procedure applies to all members that are expected to wear a self-contained breathing apparatus (SCBA).

DEFINITIONS:

Self-Contained Breathing Apparatus – includes backplate and straps, approved cylinder, integrated PASS device, buddy breathing line, RIT fitting and other components as defined in NFPA 1981, 2007 edition.

GUIDELINE:

Section 1: Goals of the SCBA Program

The goals of the Department's SCBA program includes, but is not limited to:

- Prevent injury to the department's firefighters.
- Protect the public which we serve.
- Allow the efficient fighting of fires to prevent the further loss of property.
- Facilitate the safe rescue of persons from hazardous atmospheres.
- Facilitate the proper identification, containment and control of spills, leaks and releases of hazardous, noxious or other regulated materials.
- Facilitate the proper training of department personnel.
- Encourage and insure the proper care of department equipment.
- Establish a routine maintenance program for SCBA.

Section 2: Personal Mask/Fit Test

All personnel expected to wear a SCBA by the Manhattan Fire Protection District will be fitted/fit tested for the proper mask size prior to the use of the department's SCBA. This will be done subject to the following conditions:

- Fit testing will be done by negative pressure fit testing. The fit test standard this will follow is OSHA 29cfr 1910.134.
- Fit testing will be done prior to the wearer performing any function requiring the use of SCBA and shall be re tested at least annually and any time the mask fit is believed to be changed, in accordance with NFPA 1500.
- No facial hair will be permitted where it may interfere with the sealing of the mask or mask valve function as set forth in 29 CFR 1910.134(e)(5)(i).



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- If corrective lenses must be worn, they must be worn in the manufacturer's approved spectacle kit in such a manner as not to interfere with the mask seal. No straps or temple bars will be permitted if they pass through the mask seal.
- Soft contact lenses may be worn only if the wearer demonstrates successful prior use for a period of six months minimum without any adverse effects.
- No articles of clothing, protective or otherwise, may be worn between the mask attachment harness and the wearer.
- Any mask worn must be the proper brand and model for the SCBA being worn.
- SCBA must not be used by anyone with a punctured or ruptured eardrum, unless approved by the department's physician.

Section 3: Personal Distress Alarms

Personal alert safety systems (PASS) devices will be used properly whenever SCBA's are worn.

- All PASS devices will be purchased to comply with NFPA 1982, 2007 edition.
- All PASS devices shall be tested when SCBA are routinely checked and before and after each use.
- Pass devices shall be maintained in accordance with the manufacturer's instructions.

Section 4: Selection and Use of SCBA

- Self-contained positive pressure type.
- Minimum rated supply of one half hour duration.
- The type that personnel have been thoroughly trained in the use of, including the acceptable emergency and temperature extreme procedures applicable to that SCBA.
- The type that personnel have been mask fit tested for and use in conjunction with that mask.
- NIOSH certified and meeting the requirements of NFPA 1981 at time of purchase.
- SCBA that are appropriate for the type of work being performed.
- The least bulky and lightest SCBA available to reduce stress and fatigue.

Firefighters will wear and use SCBA:

- In all oxygen deficient atmospheres where the level of oxygen is less than 19.5 %.
- In the presence of any irritating, noxious or toxic chemicals, gases, vapors, fumes or smoke.
- In any atmosphere determined to be immediately dangerous to life and health (IDLH).
- Anytime the atmosphere is suspected of being hazardous.
- Anytime the atmosphere may rapidly become hazardous
- Until they are completely sure the atmosphere is safe to the firefighter and will remain so, either by testing with appropriate equipment or by leaving the area.
- Always in a team of a minimum of two firefighters.
- Always maintaining voice, visual or physical contact with their partner(s).
- In full accordance with instructions and training received.
- Using due caution to prevent unnecessary damage to the SCBA.
- Only after meeting the department's fitness standards.
- Only after obtaining a proper qualitative fit of the face-piece.
- Only when their starting tank pressure is 4000 psi or more on 4500 psi cylinders
- Always with grade "E" breathing air or better as defined CGA, Std. G-7.1, 2004 edition and NFPA 1989-2008.



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- Always in conjunction with an approved and fully operational PASS device.
- Never underwater.

Section 5: Emergency Breathing Procedures

When in a hazardous or immediately dangerous to life and health (IDLH) atmosphere or environment, if any member of a team receives a low air alarm or has a malfunction of any part of their SCBA, the entire crew must exit the hazardous atmosphere.

- Any team entering a hazardous environment must monitor their remaining air supply carefully. They must leave the hazardous environment while they each still have sufficient supply to reach a safe area.
- Any time an emergency procedure (buddy breathing, transfill, etc.) the entire crew must exit the hazardous atmosphere.

Section 6: Air Quality Standards

Only natural, filtered breathing air in a gaseous state may be used in SCBA. Breathing air, synthetically produced or in a liquid state will not be permitted.

- Breathing air must meet or exceed Grade E standards set forth in CGA G 7.1 (2004) / NFPA 1989-2008, as well as meeting a dew point level of 65o F (54o C) or dryer (24 ppm v/v or less) and a minimum particulate level of 0.05 mg/m³ air.
- Compressor air quality must pass testing every three months by an independent testing laboratory, with the results posted near the compressor in a visible place.
- Anytime our department's cascade cylinders are filled by another department or agency, proof must be shown that the air quality meets or exceeds Grade E standards.

Section 7: Care, Maintenance and Testing

Upon receipt of a new SCBA, it will be inspected by the SCBA Coordinator for defects and prepare it for use according to the manufacturer's instructions prior to use. The SCBA will also be donned and used while checking audibly and visually for normal operation. The same will be done for any SCBA items returned after repair by any outside agency. The serial numbers will be recorded and the mask, cylinder and harness assemblies will be marked with a department SCBA ID number on any new equipment.

Daily Inspection:

All personnel must check for proper condition, fit and operation of their mask at the start of their shift. Any mask not passing inspection will be removed from service until repaired or replaced. SCBA will be inspected each time a vehicle checkout is performed. The inspection shall include the following:

- The entire unit must be clean and free from debris. This includes any masks stored for use with a particular SCBA. Clean and sanitize as necessary, following the manufacturer's instructions.
- Cylinder pressure must be 4300 psi or more on 4500 psi cylinders. The cylinder must be refilled if below minimum.
- Verify that the cylinder is firmly clamped into the harness, then turn the cylinder on and verify that the low air pressure alarm rings briefly.
- Check to see that the cylinder gauge pressure and the regulator gauge pressure are within 500 psi of each other.
- Verify proper working of the mainline system.
- Verify proper working of the regulator bypass system.



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- Turn unit off and verify there is no significant leakage of pressure.
- Verify proper working of the low air alarm.
- Verify proper working of the PASS device.
- Verify proper working of any masks that are stored for use with a particular SCBA.
- The entire SCBA unit should be thoroughly checked for any signs of damage, wear or corrosion that may prevent any part of the unit from functioning properly.
- Immediately tag and remove from service any SCBA equipment that does not work properly or has excessive damage or wear.
- Each station must record the SCBA inspections for the vehicles they checked that shift on the vehicle checkout forms. It is the responsibility of the person in charge of that station for that shift to verify the necessary inspections were completed, recorded, and given to the SCBA coordinator.

Before each use, the user will:

- Turn SCBA on and verify a brief ringing of the low air alarm.
- Verify proper minimum acceptable cylinder pressure.
- Ensure the PASS device/Electric Module is operating properly.
- Correctly don the SCBA using all straps and buckles.
- Don the mask and verify a proper negative pressure seal for ten seconds.
- Inhale deeply, then breathe out normally while covering the mask inlet port to verify proper function of the exhalation valve.
- Go “on air” and verify sufficient airflow for 2 breaths.
- Open bypass valve briefly to verify operation.

After each use:

- Thoroughly wash and disinfect the SCBA and face-piece according to the manufacturer's instructions.
- Thoroughly inspect the entire SCBA for any signs of damage or corrosion that may prevent proper operation or cause failure. If any is found, tag the SCBA and remove the Unit from service immediately.
- Thoroughly dry the SCBA paying particular attention to the mask and regulators.
- Ensure proper operation of the entire SCBA and PASS device.
- Refill SCBA cylinder to maximum pressure.
- Open all straps to their fully extended position.
- Properly store SCBA back on vehicle.

Monthly Inspection:

This inspection is to be done by assigned members of the duty crew or the SCBA Coordinator. It includes all the parts of a daily inspection with particular attention paid to details concerning long term wear, dry rot, corrosion and damage. The monthly inspection form will be filled out correctly and the results will be forwarded to the SCBA Coordinator.

Out of Service Equipment:

All SCBA equipment that is broken, damaged or shows significant signs of wear or corrosion must be immediately removed from service. An O.O.S. tag shall be tied to the item with the following information clearly printed on it:

- Name
- Date



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- Unit number
- Description of the problem

Upon receipt of the SCBA, the SCBA coordinator will either repair the problem or arrange for service. A copy of the repair order must be kept on file until the repair is completed. Upon repair, a copy of the repairs performed must be kept on file for that SCBA component.

Testing of SCBA:

Testing of SCBA must be done annually by a certified manufacturer's technician to certify that the SCBA meets all the applicable standards. Hydrostatic testing of all cylinders will be done every three years. Any repairs or reconditioning needed must be performed prior to placing the SCBA back in service. Masks will be inspected annually when SCBA's are flow tested and twice a year when PPE Inspections are completed. Records of all testing will be kept on file by the SCBA coordinator. This will be the responsibility of the SCBA coordinator.

Section 8: Training Standards

All personnel that are expected to wear and operate a SCBA must complete a minimum of 13 hours of SCBA Training annually that must include the following:

- SCBA Donning Times
- SCBA Emergency Procedures
- SCBA Consumption Test
- SCBA Maze
- SCBA Inspection, Maintenance and Sanitation
- SCBA Fit Testing

All documentation sheets, course layout, JPR's, etc. are located in our training platform, Target Solutions, under each activity.

Recognition of hazards that may be encountered:

- Identify hazardous situations and environments that may require SCBA use.
- Identify primary gases produced by combustion.
- Identify primary characteristics of gases that may be present or generated by processes other than combustion.

Understanding The Components Of SCBA Used:

- Identify the components of the masks, regulators, harnesses and cylinders used by the department.
- Demonstrate operation of the SCBA used by the department.
- Describe the operation of the SCBA used by the department.
- Describe the potential incompatibility of different makes and models of SCBA.

Understanding the safety features and limitations of SCBA:

- Describe the operational principles of all warning devices required on SCBA.
- Identify the limitations of the SCBA used by the department.
- Describe the limitations of the SCBA's ability to protect the body from the absorption of toxins through the skin.
- Describe the procedures if unintentionally submerged in liquid when wearing SCBA.
- Demonstrate alternative means to communicate when in SCBA.



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Donning and doffing procedures:

- Demonstrate the proper methods for donning and doffing all types of SCBA used by the department while wearing full protective gear.
- Demonstrate that a proper mask seal has been achieved.
- Demonstrate proper safety and operational check of SCBA prior to use in a hazardous environment.

Demonstrate Practical Application And Use Of SCBA:

- Demonstrate knowledge of all types of SCBA used by the department in conditions of obscured visibility.
- Demonstrate the emergency operations that may be required when a SCBA fails.
- Demonstrate emergency techniques using SCBA to assist other firefighters, conserve air and show restrictions in the use of bypass valves.
- Demonstrate the use of SCBA in limited or confined spaces.
- Demonstrate Location, Unit, Name, Assignment, Resources (LUNAR) protocol when under low air alarm conditions.

Understanding the care, maintenance and testing procedures for SCBA:

- Demonstrate the procedure for conducting daily inspections of SCBA.
- Demonstrate the proper procedure for a post incident inspection of SCBA.
- Demonstrate the proper procedure for reporting defective SCBA and removing it from service.
- Demonstrate the proper procedure for cleaning and disinfecting all SCBA equipment.

Annual SCBA Consumption Testing.

- All members will participate in an annual test that includes the following components per Manhattan Fire Protection Districts “consumption testing” policy/procedure.
- Demonstrate proper use of SCBA during simulated fire and rescue scenarios.
- Determine personal consumption limitations under physically demanding conditions.
- Determine personal air consumption for reserve capacity.
- Develop efficient air consumption skills
- Consumption testing will follow the attached layout annually.

Proper Techniques for Refilling Air Cylinders:

- Demonstrate proper cylinder re-filling techniques using the in-house fill station.
- Demonstrate proper cylinder refilling techniques using mobile cascade systems on equipped apparatus.
- Demonstrate proper refilling of mobile cascade system (all apparatus) from fill station.
- Demonstrate proper usage/care of in-house compressor system.

Understanding the proper storage of SCBA and spare cylinders:

- Demonstrate the proper storage of SCBA on apparatus.
- Demonstrate the proper storage of SCBA in carrying cases.
- Demonstrate the proper storage of reserve cylinders.
- Demonstrate the proper storage of SCBA masks.



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Section 9: SCBA Program Maintenance and Recordkeeping:

The entire SCBA program must be reviewed annually and updated or revised as needed by the SCBA Coordinator and revisions must be submitted to the Deputy Chief for approval and implementation. It will be the responsibility of the SCBA Coordinator to ensure that records are kept for each of the following areas:

- The serial numbers of masks, harnesses and cylinders.
- Manufacturer's instructions for the care, use and routine maintenance for SCBA.
- Results of mask fit testing and assignment of masks to personnel.
- Air quality testing results.
- Filling of breathing air cascade systems.
- Monthly inspections performed.
- SCBA equipment out of service for repair.
- SCBA equipment testing and repairs performed, by whom and the parts used.
- Certification level of team members who perform repairs and testing of SCBA.
- Compressor repairs and routine maintenance performed.
- Current copies of applicable federal and fire service standards regarding SCBA.

SAFETY CONSIDERATIONS:

If at any time the SCBA is not functioning properly, DO NOT USE THE SCBA!

SPECIAL CONSIDERATIONS:

All practical training should be done under simulated stressful circumstances to promote immediate response to emergency operations.

Approved By:

Signature: Daniel Forsythe

Date: 07/01/16