



City of Winter Park Fire-Rescue

Standard Operating Guideline

230.01

**Title: Breathing Apparatus / Refilling
Station Procedures**

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Purpose: To establish a procedure for the use, maintenance, storage and refilling of all self-contained breathing apparatus used by the Department.

Scope: This procedure will be followed by all members of the Department and will be supervised by the Deputy Fire Chief. Any deviation of this procedure will require prior notification of the Deputy Fire Chief and the Breathing Apparatus Specialist who will be assigned by the Fire Chief.

General:

230.01.01. Breathing Apparatus Assignments

All Department vehicles are equipped with a minimum of (1) 4500psi MSA self-contained breathing apparatus. Each SCBA is labeled as to the apparatus it is assigned to. Every attempt should be made to keep the correct SCBA with the correct apparatus.

Each employee of the Fire/Rescue Division, the Office of the Fire Marshal and Fire Administration has been issued a face-piece that is to be utilized with the MSA 4500psi MMR breathing apparatus. It is the responsibility of the individual to keep this mask in good working order. Any repairs that are needed should be directed to one of the Department's in-house breathing apparatus specialists.

Breathing Apparatus will be used by any employee that enters a potentially hazardous/contaminated environment to perform fire suppression/rescue or hazardous materials abatement activity or in any potentially oxygen deficient environment. This includes any environment outdoors, indoors or in a confined space.

230.01.02. Maintenance of All Breathing Apparatus

SCBA repair parts must only be installed by C.A.R.E. (Certified Airmask Repair Education) trained and certified repair technicians authorized by MSA and tested with an MSA approved dynamic flow tester.

Breathing apparatus must not be repaired beyond the manufacturer's recommendations. 29 CFR Part 1910.134, Par. (f) (4) makes these requirements clear: Replacement or repairs shall be done only by experienced persons with parts designed for the respirator. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

For maximum safety, all breathing cylinders should be stored with a pressure of 4500psi, or at a pressure above ambient but less than 100psi at all times when not in use to be considered full, and ready for service.

Cylinders should not be stored partially charged for two reasons:

- If used without recharge, the service time of the apparatus is reduced.
- The cylinder burst disc vents excess pressure if a full cylinder is over-exposed to fire or heat. If the cylinder is not full it may be damaged or rupture before the burst disc vents.

Each station will have extra stored SCBA cylinders and a cylinder log to maintain accountability of this additional equipment.

1. As part of the morning vehicle pass on from the off-going Engine Driver/Operator to the on-coming Engine Driver/Operator, a physical check of stored spare cylinders will take place, DAILY. If there are any problems the Station Officer is to be notified.
2. Both Driver/Operator's will initial the check-off list provided.
3. On the 1st of every month the current check-off will be removed and sent to the on duty Battalion Chief and a new check-off will be put in place.
4. The cascade and compressor will be checked by Engine 61 Driver/Operator to ensure the equipment is operational.

Any issues with the equipment or repairs must be reported to the SCBA department via the chain of command. New SCBA Cylinder Check-off Sheets are on the N:Drive under N:depts/fire/SCBA Cylinder Check-off.

Harness straps shall be kept in the fully open position while stored on the apparatus.

All face-piece mounted regulators shall be kept either attached to the belt clip holder for the unit or to the face piece itself. This will keep dirt from getting into the regulator while it is not being used.

After each use, each unit shall be fully checked, washed if needed, sanitized with MSA solution and dried properly.

If a unit is down for repair, a replacement unit will come from the MSA room, or off of an out of service apparatus. Any unit taken out of service for repair shall have notice attached to it explaining the problem, date and name of the employee reporting the problem.

Each member of the Department has been individually issued an MSA face piece, protective bag, and an ICM Tx PASS ID Tag as part of your protective equipment. The member will be responsible for the following maintenance of the face piece.

1. Check that their face piece is functioning properly and is in safe condition.
2. Place their face piece on their assigned apparatus for use each day.
3. Remove their face piece after their duty day and store it properly.
4. Keep the face piece in a sanitary and clean condition.
5. Report any problems to the MSA officer of the Department.

Perform the following functional checks after each use and monthly.

If the SCBA fails to perform properly when conducting any of the following Functional Checks, do not use it. The condition must be corrected by an MSA trained and certified repairperson. The SCBA must perform for all functional checks before using it. Failure to follow this precaution may result in serious personal injury or death.

FUNCTIONAL CHECKS

1. ICM Tx PASS ID Tag
 - a. Prior to pressurizing the SCBA and during the inspection the user should “tag in” to their assigned pack by depressing and holding the top mode button (green) until the word “DATA” appears in the display.
 - b. While “DATA” is displayed place the ID tag flat against the top of the ICM Unit.
 - c. The ICM will sound a single beep confirming that the ID data has been read.
 - d. If the word “DATA” disappears before the ID tag has been read the ICM Tx Unit has timed out and the top mode button must be depressed and held again until “DATA” reappears.

2. Check that the regulator and facepiece can hold a negative pressure.
 - a. Close the cylinder valve.
 - b. Hold the facepiece against your face to create an effective seal.
 - c. Attach the regulator to the facepiece and inhale until the facepiece begins to collapse against your face. Hold your breath for about 10 seconds. The negative pressure should be maintained and the facepiece should remain collapsed against your face for the entire 10 seconds.
 - d. Do not use the apparatus if negative pressure cannot be maintained in the facepiece. Return the apparatus and facepiece to a certified repairperson.

3. Check second stage regulator operation.
 - a. Push the regulator release buttons.
 - b. Verify that the regulator bypass knob is fully closed (clockwise).
 - c. Slowly open the cylinder valve to pressurize the SCBA. Verify that the cylinder valve is completely opened.
 - d. Check the pressure gauge to verify that the cylinder is full. Regulator functional checks must be conducted with a full cylinder.
 - e. Open the regulator bypass knob (counter-clockwise). Verify that air flows from the regulator. Close the bypass knob (clockwise).
 - f. Attach the regulator to the facepiece. Verify proper regulator attachment by pulling on the regulator.
 - g. Don the facepiece or hold the facepiece against your face to create an effective seal.
 - h. Inhale sharply to start air flow. Breathe normally. Verify proper regulator response. The regulator should not make any unusual sounds including: whistling, chattering, or popping.
 - i. Remove the facepiece from the face. Verify that air flows freely. Push the regulator release buttons. Verify that air flow stops.

- j. If the regulator fails to meet any of the above checks, remove the apparatus from service. Return the apparatus to a certified repairperson.
4. NightFighter Heads-Up Display System and Audible Alarm with URC Assembly
 - a. MSA recommends that the function of the Audi-Larm Alarm with URC Assembly, ICM Unit and NightFighter Heads-Up Display System warning device be checked by observing the Pressure Gauge or ICM Unit Gauge at which the alarms ring and tone. This test should be performed with a minimum cylinder pressure of 2,000psig for the High Pressure SCBA.
 - b. Pressurize the system by opening the cylinder valve for a moment and then closing it. The alarms should ring or tone, indicating they are cocked and armed.
 - c. Open bypass slowly.
 - d. Watch the drop in pressure on the Pressure Gauge or ICM Unit gauge and the point at which the Audi-Larm Alarm with URC Assembly begins to ring and the NightFighter Heads-Up Display System Receiver begins to flash. Nominal gauge readings at which the alarm should start to ring and tone or flash are 1175psig-approximately (high pressure system).
 - e. The alarms should continue until the air pressure is approximately 200psig or less. If the Audi-Larm Alarm with URC Assembly, ICM Unit Gauge or NightFighter Heads-Up Display System does not function properly, the apparatus must be removed from service.
 5. Audi-Larm Alarm with URC Assembly Body
 - a. Check that the bell is on tightly and is in the proper alignment.
 - b. Check URC Assembly and relief valve for damage or leaks.
 - c. Close the cylinder valve completely. Be sure that nothing blocks the regulator outlet. Do not disconnect the Audi-Larm coupling nut when pressure is shown on the regulator gauge. Release all pressure from the regulator by opening the bypass valve. Removing the coupling nut with the regulator pressurized can result in serious personal injury, death, or damage to equipment.
 - d. Open the bypass valve slowly to release trapped air. Close bypass valve.
 - e. Unscrew the Audi-Larm coupling nut from the cylinder valve. It is hand-tight and should not require tools. Inspect the coupling nut for thread damage. Also be sure there is an O-ring and that it is not damaged.

230.01.03. Use of Air Compressor and Refilling Station

The Department has a compressor / fill station / cascade system located at Station 61. This unit is designed for the filling of FIRE DEPARTMENT high-pressure 4500psi breathing cylinders, 2216psi confined space escape cylinders and 6000psi stored air banks. The filling of private SCUBA or other types of cylinders with this unit is not allowed. Permission must be received from the Assistant Chief / Operations to use the refilling station for any other reason than to fill Fire Department cylinders. This does not include cylinders from other Fire Departments or from other City Departments.

230.01.04. Operational Procedure:

MAKO BREATHING AIR MODULE (Cascade Bank Filling)

1. Check oil level by opening the front panel on the unit and viewing the sight glass on the compressor.
2. Drain condensation from the system by opening the lower left panel of the compressor and turning the ball valve open until all fluid has drained and close the valve.
3. Open slowly banks 1-4 on the fill station to equalize the pressure on all four banks.
4. Turn compressor on by pressing the POWER ON switch located on the front panel. If oil pressure does not begin to rise within 10 seconds, turn system off and notify the on duty battalion chief. The system will run until it reaches a pre-set pressure and will cut-off. The compressor panel will now indicate HIGH AIR meaning the compressor has reached its filling capability of 6000psi.
5. Close banks 1-4 on the fill station
6. Press the on switch to turn compressor off.

STATIONARY CONTAINMENT FILL STATION (SCBA Cylinder Filling)

The four-bank (6000psi) cascade system is designed to refill the smaller pack cylinders (2) at a time and (single) refill of large stored air cylinders. Once cylinders are filled, caution should be used in removing the fill hoses from the cylinders. Hi-pressure air is filling the line and bleeding the line rapidly can cause eye or hearing injury if protection is not used.

ALL EMPLOYEES MUST UTILIZE EYE AND EAR PROTECTION DURING THE OPERATION OF THE FILL STATION AND COMPRESSOR.

CYLINDER FILLING

1. Load SCBA cylinders to be filled into the drawer, connect the fill hoses, close bleed valves, and open cylinder valves.
2. Close cylinder containment drawer.
3. Open "From Bank #1" valve. The inlet pressure gauge will now read the same as the "Bank # 1" gauge.
4. Adjust the regulator to appropriate cylinder psi. The regulator pressure will only go up to the same amount as indicated on the inlet pressure. If more air is needed close "Bank #1" and open and close each sequential bank until desired regulator pressure has been reached. Once regulator has been set close all banks and re-open "Bank # 1"
5. Open fill valve slowly. The cascade will now fill the cylinders to the set regulated pressure. If Bank # 1 has less than the required pressure, close bank #1 and open and close each sequential bank until desired pressure is reached.
6. Close fill valve.
7. Open cylinder containment drawer.
8. Close cylinder valves.
9. Close hose valves.
10. Open bleeder valves.
11. Disconnect fill hoses.
12. Remove cylinder.
13. Close cylinder containment drawer.
14. Bleed pressure off the regulator and system until "Inlet Pressure", "Outlet Pressure" and "Bottle Pressure" all indicate 0psi.

Any questions concerning the operation of the fill station should be directed to one of the departments certified MSA Technicians or to the Assistant Chief / Operations.

230.01.05 SCBA Facepiece Fit Testing

Each member of the department that is issued a MSA facepiece will be fit tested annually to ensure proper facepiece seal and sizing in accordance to the current OSHA Regulations, Title 29 CFR, Part 1910.134.

A thorough cleaning of each facepiece and any repairs or battery changes will be conducted in conjunction with this test.

A Quantitative Fit Testing Measure (QNFT) will be assessed and documented with a TSI PortaCount machine.

It will be the responsibility of the MSA Officer to ensure the calibration of test equipment remains current and that all records are maintained.



A handwritten signature in black ink, appearing to read 'James E. White'. The signature is written in a cursive style with a horizontal line underneath.

James E. White
Chief of Department