

Washington Township Fire Department Standard Operating Procedure

Division 200: Emergency Operations
Section 203: Fire Suppression
Subject 203.02: SCBA Air Compressor and Cascade System
Supersedes: Training Bulletin 93-02-4



Approved By:

Date: January 31, 2005

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PURPOSE:

To establish a uniform system to train personnel on the proper operation, maintenance and recharging of the cascade system in use by the fire department, as per factory and department standards.

RESPONSIBILITY:

It is the responsibility of all personnel to follow these procedures. Only those personnel who have been properly trained to use the air compressor and air cascade system shall operate any of its components.

PROCEDURES:

The following procedures have been developed to assist in the training of personnel in the proper use of the air system and the actual use of the system. If any unusual circumstances arise while using the air system and you are unsure of what the problem is, stop and seek assistance from another qualified person.

DESCRIPTION:

The Washington Township SCBA cascade system consists of a Bauer high-pressure compressor and 6-H steel cascade cylinders.

PREVENTATIVE MAINTAINENCE:

Bi-annual preventative maintenance is preformed by Breathing Air Systems. Additionally, before the compressor is used to fill the cascade system or Air Unit 42, the oil level shall be checked. The oil level sight glass is located behind the upper access panel on the left end of the unit.

SETTING THE PRESSURE REGULATOR:

Prior to filling a cylinder, it is imperative that you check and properly set the pressure regulator. The regulator should be kept at 4700 psi. However, should it not be set properly, turn the regulator clockwise to increase the pressure and counterclockwise to decrease the pressure until the Fill Pressure Gauge reads the correct pressure. This procedure is the same should you need to reduce the pressure to fill 2200 psi bottles, except that the Fill Pressure gauge should read 2400 psi. The 200-psi deviation is accounted for due to heating of the bottle during filling.

FILLING CYLINDERS:

Before filling any SCBA cylinder, there are several checks that must be preformed:

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- Hydrostatic test date, three years on all cylinders, except for the new gray carbon-fiber cylinders, which get tested every five years; if a cylinder is out of hydro, red tag the cylinder and place it on the cylinder rack at Station 42. The cylinder can be replaced with a 30-minute cylinder from Air 42.
- Visually inspect all cylinders for deep gouges, damaged valves, signs of obvious damage (including unraveling) and problems with the pressure gauges.
- All cylinders should be washed as needed before filling.
- If cylinder is from another department, check the capacity of the cylinder before filling (i.e. 2.2 vs. 4.5).

If the cylinder is from another department and is found to need hydro-tested or is damaged, the cylinder is not to be filled. Notify the person who brought the cylinders and explain the problem and the reason the cylinder cannot be filled, without exception!

After completing the above checks, you can start filling the cylinders. When filling a number of SCBA cylinders, try to arrange the cylinders in groups of three that have close to the same starting pressures, then proceed with the following steps (don hearing protection prior to performing tasks that create environments louder than 90 dba):

1. After grouping the cylinders, unlock and open the fill station door, place each cylinder in a compartment and attach the fill hose.
2. Ensure the bleeder valve on the fill line is closed, then open the cylinders, close the door and activate the door lock.
3. Open the fill valves and check each fill gauge on the front panel to ensure the cylinders have equalized.
4. To begin filling, start with the bank with the lowest pressure, which will typically be Bank 1. Slowly open the valve for the bank until you hear air moving through the system and the needle starts to barely move. The process should take approximately fifteen minutes for a 4,500 psi cylinder when the cylinder is completely empty; use your best judgment and ensure that the cylinders are filled slowly. Monitor the gauges and adjust the valve for the bank as necessary.
5. Allow the pressure to equalize between the bank and the cylinders, and then close the bank. If the pressure in the bank is not enough to bring the cylinder to the appropriate pressure, open the next highest bank and continue as you did with the first.
6. When the individual cylinders are brought to the correct pressure, close all bank and fill valves.
7. Unlock and open the fill station door, close all cylinders and bleed off the pressure in the fill lines. Remove the cylinder from the fill compartment. If more cylinders are to be filled, repeated the above steps.

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8. Update the blue colored log sheets, Form 61A – Cascade Usage Chart, to reflect the remaining pressures in the cascade cylinders.

REFILLING THE CASCADE SYSTEM WITH THE COMPRESSOR:

When you are finished filling cylinders and any of the cascade banks is below 3000 psi., the system should be recharged. The following procedure should be used:

1. Before the compressor is used to fill the cascade system, the oil level should be checked. The oil level sight glass is located behind the upper access panel on the left end of the unit.
2. Turn on the compressor with the On/Off switch.
3. The compressor will automatically shut off when the system is recharged; the door to the cascade room must be left open when the compressor is running.
4. Update the blue colored log sheets, Form 61A – Cascade Usage Chart, to reflect the pressures in the cascade cylinders.

RECHARGING THE CASCADE WHILE STILL FILLING SCBA CYLINDERS:

It is no longer recommended that you fill both the cascade system and SCBA cylinders at the same time since the new compressor can recharge the system in a limited amount of time.

References