



## FIRE INSTRUCTOR I Student Presentation Lesson Plan

### 18-SCBA Components

#### Outline of Instruction

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#### Objective

Upon successful completion of this lesson, the student shall be able to:

- Identify types of respiratory protection equipment. [NFPA® 1001, 5.3.1]

#### Instructor Directions

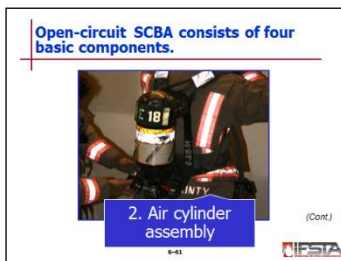
1. Set up non-projectable training aids
  - a. Chart pad to include:
    - i. Title Page
    - ii. Acronym
    - iii. Summary
    - iv. 1 Application scenario
    - v. 2 Evaluation questions
2. Set up projectable training aids (LCD projector & computer)
3. Present lecture utilizing this outline of instruction, non-projectable and projectable audio visual aids.
  - a. Overall time 18 min. (set up, present topic, and take down of audio visuals)
  - b. Presentation time 8-12 min. (presentation time is part of the 18 min)
4. Breakdown of projectable training aids.

**Reference** Stowell, F.(2013). Essentials of Fire Fighting and Fire Department Operations (6<sup>th</sup> ed.). Upper Saddle River, N.J.: Brady Pub.; ISBN# 978-013-314080-4

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## Preparation

## Presentation



## Introduction

- Instructor introduction
- Objectives
- Preparation Step

Open-circuit SCBAs – Use compressed air

Exhaled air vented to outside atmosphere

Backplate and harness assembly

Rigid frame with adjustable straps holds breathing air cylinder on backplate

Straps designed to stabilize unit, carry part of weight, provide secure and comfortable fit

Air cylinder assembly

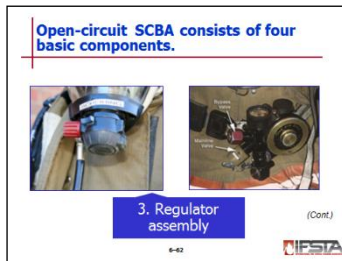
Cylinder contains breathing air under pressure

May be constructed of steel, aluminum, aluminum wrapped in fiberglass, or Kevlar™/carbon composite

Weight depends on size and construction materials – Significantly increases physical stress during operations

Control valve – threaded stem and/or quick connect fitting – and pressure gauge attached to one end; opened fully when in use

High pressure hose attaches to stem, connects cylinder to regulator assembly



Pressure gauge displays estimate of amount of air in cylinder in pounds per square inch (psi)

### Regulator assembly

Reduces high pressure of cylinder air to slightly above atmospheric pressure; controls air flow to wearer

Wearer inhales, creating pressure differential; diaphragm moves inward, low-pressure air flows into facepiece

Exhalation moves diaphragm back to closed position

Located on facepiece, shoulder harness, or waist belt harness

Control valves – Mainline and bypass

With both valves equipped – Mainline valve locked open during normal operations; bypass closed

Once set in normal operating position valves should not be changed unless emergency bypass function needed



Facepiece assembly – Provides fresh breathing air while protecting eyes and face from injury

Must fit tightly to face

Facepiece frame and lens — Made of clear safety plastic and mounted in flexible rubber facepiece frame; NFPA® 1981 requires all new SCBA facepieces be equipped with heads-up display (HUD)

Head harness and straps — Holds facepiece snugly against face with adjustable straps, net, or other arrangement

Exhalation valve — One-way valve that releases exhaled air without admitting any of contaminated outside atmosphere

Nose cup — Deflects exhalations away from lens, reducing fogging or condensation

Speaking diaphragm — Mechanical diaphragm permits limited communication by wearer; may be replaced by an electronic speaking diaphragm connected to portable radio

Regulator fitting or hose connection — Permits regulator or hose to attach to facepiece frame



#### Additional components

Remote pressure gauge displays pressure within cylinder – Must be mounted in visible position

Pressure readings most accurate at or near upper range of gauge – Always assume lowest reading is correct

End-of-service-time indicators (ESTI) – Warns user when system is reaching end of air-supply; typically 20-25% of cylinder capacity

ESTI has both audible alarm and flashing light or physical vibration – Cannot be turned off until air-cylinder valve closed and system bled of pressure

New SCBA equipped with rapid intervention crew universal air coupling (RIC UAC) – Located within 4 inches (101 mm) of outlet

RIC UAC allows cylinder to be trans-filled from another cylinder – Air

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supply equalizes between two  
cylinders when connected

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## Chart Pad:

### Title Page

- Name, Department, Title of Presentation

### Acronym

- **L.I.P.** (Life Safety, Incident Stabilization, Property Conservation)  
instructor relates these priorities to the lecture

### Summary (2-4 key points)

- Instructor reviews 2-4 key points of the lesson plan to clarify uncertainties, prevent misconceptions, increase learning and improve retention

### Application (1 scenario)

- The student is given a scenario where the student will apply all of the knowledge that was given in the lecture. *This is not a question*, it is merely the explanation of the scenario.

### Evaluation (2 questions)

- Instructor should ask students 2 direct questions that were presented during the lesson. *Answer to the questions must be give after asking the question.*