

# Self-Contained Breathing Apparatus Basics

Water and Wastewater Workshop  
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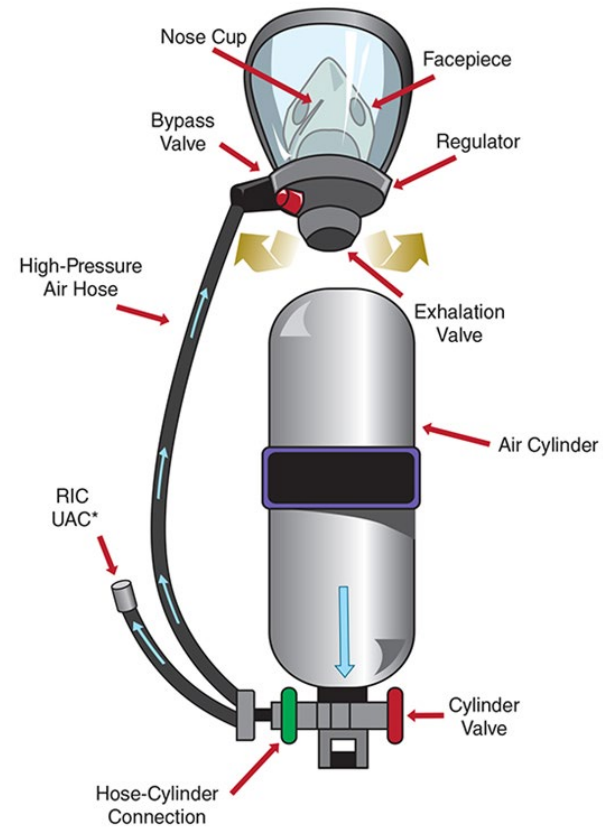
# Outline

In this session we will discuss:

- SCBA Components
- Donning SCBA
- SCBA Inspection and Cleaning

# SCBA Components

## Open-Circuit SCBA Operation



\* Rapid Intervention Crew Universal Air Coupling

# SCBA Components



# Breathing Air Cylinder Capacities

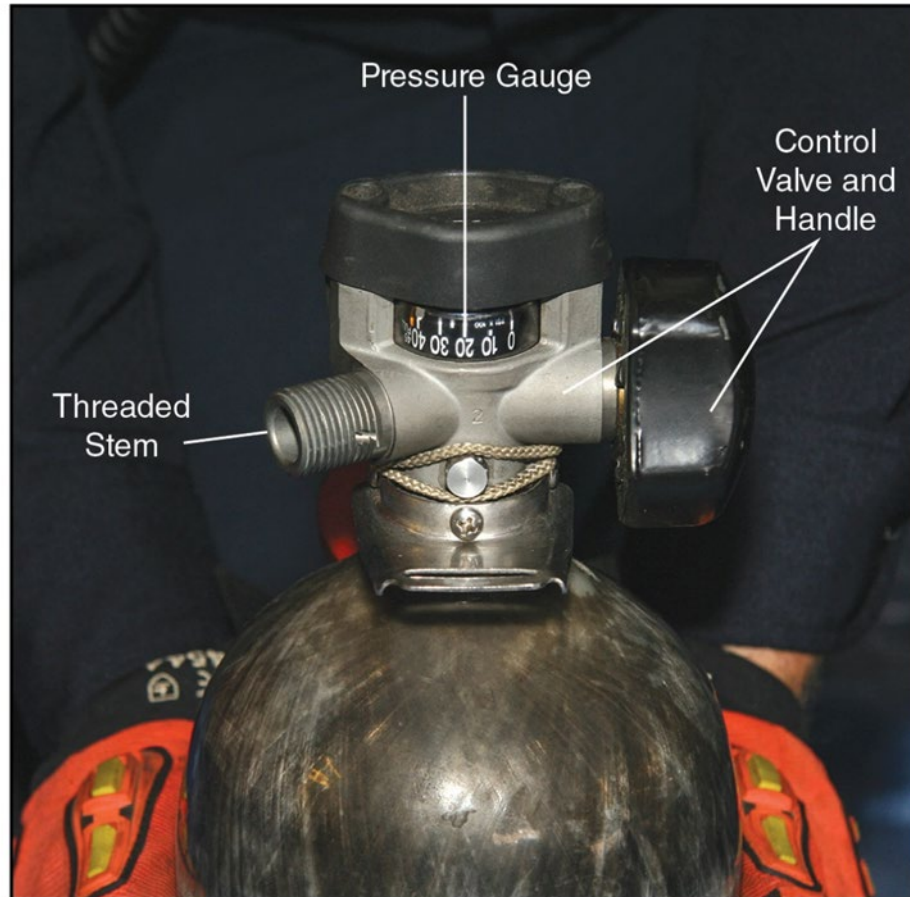
**Table 5.1**  
**Breathing Air Cylinder Capacities**

<b>Rated Duration</b>	<b>Pressure</b>	<b>Volume</b>
30-minute	2,216 psi (15 290 kPa)	45 ft <sup>3</sup> (1 270 L) cylinders
30-minute	4,500 psi (31 000 kPa)	45 ft <sup>3</sup> (1 270 L) cylinders
45-minute	3,000 psi (21 000 kPa)	66 ft <sup>3</sup> (1 870 L) cylinders
45-minute	4,500 psi (31 000 kPa)	66 ft <sup>3</sup> (1 870 L) cylinders
60-minute	4,500 psi (31 000 kPa)	87 ft <sup>3</sup> (2 460 L) cylinders

- Rated duration does not indicate the actual amount of time that the cylinder will provide air.



# Air Cylinder Assembly



Cylinder contains breathing air under pressure

Constructed of steel, aluminum, aluminum wrapped in fiberglass, or a Kevlar/carbon composite

Cylinders weigh 8 to 20 pounds (4 to 9.5 kg)

# Regulator Assembly



Depending on SCBA model, the regulator will have valves for normal and emergency operations

Mainline valve

Bypass valve



# Facepiece Assembly





# Facepiece Fit

Qualitative or quantitative fit test required

Facial hair that prevents a complete seal is prohibited

Eyeglasses are prohibited if the side frames pass through the seal area

Contact lenses are allowed if firefighter demonstrates successful long-term use



# Additional SCBA Components



Remote pressure gauge



End-of-service-time indicator

Rapid  
intervention  
crew  
universal air  
coupling





# Additional SCBA Components



Emergency escape breathing support system (EEBSS)

Heads up display (HUD)



Integrated PASS control module

Alert lighting systems

Voice communications systems

# SCBA Inspection Prior To Donning



- ✓ Check air cylinder gauge and remote gauge
- ✓ Fully extend facepiece and harness straps
- ✓ Check valve function
- ✓ Test low-pressure alarm
- ✓ Test PASS device
- ✓ Check battery-powered functions



# Donning Unmounted SCBA



SCBA positioned on the ground in front of the firefighter



All straps extended



# Donning The Facepiece

Most facepieces are donned using similar steps, regardless of differences

- Rubber harness or mesh skull cap
- Some have more straps than others
- Regulator may be attached to facepiece or mounted on the waist belt or shoulder harness
- Shape and size of facepiece lens may differ

# Donning The Facepiece

Fully extend straps

Ensure no hair is between skin and facepiece seal

Center chin in chin cup and harness at rear of the head

Tighten facepiece straps by pulling to the rear

Check the seal, exhalation valve, and all connections



# Inspection And Maintenance Of SCBA

Department  
schedule  
determines  
frequency of  
inspection

Inspections  
typically  
performed  
daily, weekly,  
or whenever  
firefighters  
report for  
duty

Period  
between  
inspections  
must not  
exceed one  
week

Must be  
inspected by  
SCBA repair  
technician  
annually and  
after any  
repairs



# Daily/Weekly Inspections



Facepiece

Backplate  
and harness  
assembly

Breathing air  
cylinder  
assembly

Hoses

Low-pressure  
alarm

Regulator

Pressure  
indicator  
gauges

Integrated  
PASS

# Daily/Weekly Inspections



Identify wear and tear, damage, and potential problems before they result in failure during an emergency

Should be documented to record findings, report problems, and show trends

# Daily/Weekly Inspections

During the inspection, the inspector should check the hydrostatic test date label on the air cylinder to see if the cylinder is due for hydrostatic testing to check for flaws and leaks.



# Annual SCBA Inspection And Maintenance

Must be performed by specially trained, factory-qualified technicians according to manufacturer's recommendations

Fire department  
personnel

Certified maintenance  
contractors



# Breathing Air

Thing to remember about the air in the cylinders:

- Must be changed at least every 12 months.
- Fill stations must have had an air quality test completed within the last 6-months
- You should have a copy of the air quality certificate posted in your facility
- Cylinder must be within their hydrostatic testing date to be filled
  - Every 5 years



# Questions?

Credit for training material to the International Fire Service Training Association

