

Reserve Air Supply System

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South Carolina
Aquarium

South Carolina Aquarium Dive Operations

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It is the mission of the South Carolina Aquarium (SCA) Dive Team to provide excellence in animal care and husbandry, to actively support both the educational and conservation endeavors of the SCA, and to provide a memorable, positive guest experience to all those who visit our facility.

Training Schedule

- PowerPoint Presentation
 - > Statement of Understanding and Quiz required before in-water use
- GOT: 2 dives minimum
 - > Dive One: RASS use
 - > Dive Two: RASS use w/ ascent

J. KING
SCUBA-DIVING-SMILES.COM



“You might want to make yourself comfortable. I may be down there for awhile.”

Reserve Air Supply System (RASS)

- The purpose of redundant Reserve Air Supply Systems is to allow the diver a sufficient air supply to safely ascend to the surface in case a diver runs out of air in the primary air source or there is an equipment malfunction.
- By definition of redundant this configuration is independent of your primary gas source and has its own air supply, regulator and pressure gauge

Basic Reminders

All Divers must surface with a minimum primary air source of:

- 1000 PSI in the GOT
- 500 PSI in Open Water
- 500 PSI in Surface Supply

Dive Planning

Depth	Volume	Pressure	Density
0'	1	1 ATM	1
33'	1/2	2 ATM	2
66'	1/3	3 ATM	3
99'	1/4	4 ATM	4
132'	1/5	5 ATM	5

- A scuba tank that lasts 60 minutes on the surface will last 30 minutes at 33 feet. (1/2 volume)

Air Volume of RASS cylinder

The volume of air needed will be determined by depth and calculated based on a normal SAC (breathing) rate

For Example:

13 cu ft tank

3000 PSI

Ascent Rate of 30' /minute from 130'

At surface cylinder should still have 500psi

RASS Cylinders at the aquarium

- Open Water 13 cu ft. cylinder
- GOT 6 cu ft. cylinder
- Surface Supplied 1.7 cu ft. cylinder

2 styles

- “Pony Bottle” (Open Water and GOT)
 - > Traditional looking cylinder, 1st stage, second stage, and button pressure gauge
- Spare Air (Surface Supplied)
 - > Cylinder with 1st and second stages built into the valve, and a button gauge

Pony Bottle Assembly

- The traditional pony bottle is assembled just like normal scuba with 1st stage secured to cylinder valve.
- Turn cylinder on and check psi
 - **3000 is a “full cylinder”**
- **Turn cylinder off before your dive per commercial regulations**
- **Don't depressurize after you turn cylinder off**
- The pony cylinder will be clipped to the left side of the BCD as shown in the photo



Pony Attachment



Pony Bottle Use

- Turn Cylinder on
- Pull second stage free from bungee
- Watch orientation of second stage
- Purge or exhale into second stage to remove any water

**Remember to blow bubbles (do not hold your breath) when swapping regulators



Pony Bottles add weight

- Pony bottles add ~ 3 lbs of weight to you and all on the left side.
- Divers should consider possibly reducing their normal dive weight use
- Divers should also consider rearranging their weights more to the right side to balance the extra 3 lbs from the pony bottle
- *Spare Air do not add any significant weight to the diver

Spare Air Assemble

- Spare Airs are **Always On-** ready for use
- Confirm PSI in cylinder
 - > **3000 PSI is a full cylinder**

Attach the unit to the left side of the diver on the harness as indicated by the arrows in the photo



Spare Air Use

- Cylinder is always on
- Remove cylinder from carrier pouch
- Purge or exhale into second stage to remove any water

**Remember to blow bubbles (do not hold your breath) when swapping regulators



Bail Out – RASS Ascents

- Emergency use of an RASS (Bail Out)
 - > Diver should do a slow ascent
 - > Skip Safety Stop
- Incidents involving use of RASS **MUST** be reported to Dive Ops
 - > **Unintentional depletion of any significant amount of air in RASS must also be reported to Dive Ops**

Disinfect

- Pony bottles and Spare Air are to be disinfected like normal cylinder and regulator guidelines

Filling RASS

- Pony bottles are filled just like traditional cylinders
- Use care lowering the cylinder into the fill station
- Spare Air systems require a special adaptor.
- Only Dive Ops is authorized to fill Spare Air's

***Special hands on instruction is required for filling both types of RASS**

***Cylinders must have 2500 PSI minimum for a dive**

Dive 1

Pre-dive buddy check

Descend to Shallow Ledge of exhibit

Switch from primary air system to RASS.

Switch from RASS back to primary air system

Dive 2

Pre-dive buddy check

Descend to bottom of the exhibit

Switch from primary air system to RASS.

Complete a slow ascent on the RASS

