

# PERSONAL BREATHING APPARATUS TESTING SYSTEM

For performance testing of breathing apparatus

**PCCI Hyperbaric Systems has been a producer of quality breathing simulators and life support equipment for over 30 years.** The Personal Breathing Apparatus Test Station (PBATS) represents a masterful integration of that experience with easy-to-use, state-of-the-art technology. The PBATS is designed to accurately test and document the performance of a wide variety of breathing apparatus, such as those used for: **DIVING, FIREFIGHTING, MINE RESCUE, AEROSPACE and more.**

- ✓ **State-of-the-art technology**
- ✓ **Compact, portable**
- ✓ **Fully functional** and ready to go to work
- ✓ **Versatile** and upgradeable
- ✓ **Simple** and robust design



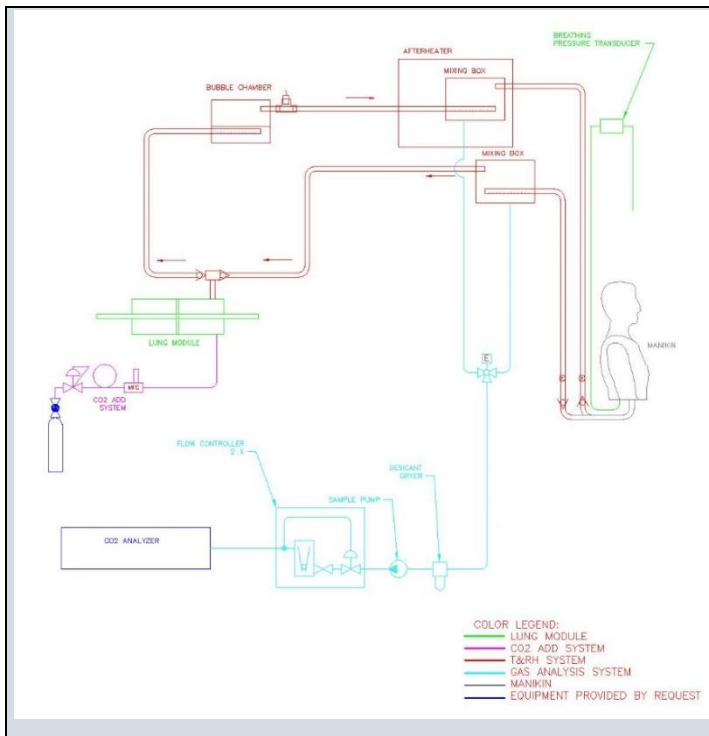
Model LM-150 vertical arrangement



Model LM-150 horizontal arrangement lung module.



Model CC with CO<sub>2</sub> add and Temperature & Relative Humidity control.



Typical test schematic for breathing apparatus testing. Select the required options for your application.

### **Lung Module:**

- ✓ **Computer controlled:** Sinusoidal waveforms are easily configured on the computer with any desired breathing rate or tidal volume that is within the specifications. Non-sinusoidal waveforms can be set up using an Excel spreadsheet and downloaded to the breathing machine.
- ✓ **Versatile:** Can produce any physiologically reasonable waveform. Can be placed within a pressure vessel while the control module remains outside (optional wire feed thru kit is available).
- ✓ **Smooth** waveform generation, even at low RMV's, by use of a ball screw & servo motor drive. None of the roughness in motion associated with stepper motor drives.
- ✓ **Easy to use and maintain:** Design is elegantly simple and thus reduces potential testing anomalies.
- ✓ **Overload protection** in the event of gas port blockage.
- ✓ **Model LM-90:** 3-liter tidal volume, 283 lpm peak flow
- ✓ **Model LM-150:** 6-liter tidal volume, 500 lpm peak flow

### **Control Module:**

- ✓ 110 or 220 VAC power: user specified.
- ✓ Servo control system: digital motion controller and power supplies.
- ✓ Standard network interface to computer. Computer requires no special boards.

### **Software:**

- ✓ A familiar windows program interface is provided for controlling the breathing machine from the computer.
- ✓ Motion control is provided by a versatile and general servo control program that provides a broad range of control options or can be modified as necessary using a simple control language.  
An Excel spreadsheet template is provided to assist in deriving non-sinusoidal waveforms.

### **Options:**

- ✓ Wire feed thru kit (for using the Lung Module within a pressure or altitude chamber)
- ✓ Computer data acquisition systems
- ✓ Temperature and Humidity Control
- ✓ CO<sub>2</sub> add System
- ✓ Larger tidal volumes
- ✓ High pressure models
- ✓ Tandem, auxiliary cylinders
- ✓ Built to your specifications

- ✓ Rugged re-usable shipping containers
- ✓ Dual test ports: Both sides of the piston can be used simultaneously to test two breathing apparatus at the same time.
- ✓ Model CC (“cam crank”). This model is not servo motor controlled and is much simpler and less expensive. It provides all of the US Navy standard sine waveforms. This unit is ideal for regular sine wave tests in which the machine can be stopped to change tidal volume.