

## *Pulmonary Maneuvers System*



Pressure Panel

The BioSystem for Maneuvers is a complete hardware and software package. It automates and analyzes a battery of maneuvers on anesthetized animals, including forced ventilation tests - similar to tests performed on cooperative humans in a pulmonary function laboratory. The animal is either spontaneously breathing, or its trachea is switched to positive or negative pressure reservoirs, or forced to inspire different gas mixtures.

This intensive analysis provides a precise picture of the pulmonary system, examining its separate components in different ways, enabling a comprehensive and localized description of the physiological and pathological condition. The system comes in two sizes: one for rat or guinea pig; the other for larger animals, like dog or monkey.

The BioSystem for Maneuvers software automates and controls the function of the hardware. The real-time display of the maneuvers allow you to decide immediately if a run is acceptable or not, or if it must be repeated. For each maneuver, a set of comprehensive parameters is derived, which can be seen on screen and also printed or saved to file for later review. The software provides for entry of safety parameters to protect the animal during the test, ensuring that life-threatening circumstances do not occur. It also imposes a standard sequence of deep breaths on the animal preceding each forced test to precondition the animal, so that each test is performed after the identical history. This ensures reliable comparison between test results done at different times, or at different laboratories.

The BioSystem for Maneuvers hardware includes all components needed to make these measurements \*\*, including software, plethysmographs, pressure panel, transducers, preamplifiers, valves, reservoirs and fittings. A source of compressed air, between 30 and 50 psi, is required. (The air flow requirements are minimal). The Pressure Panel houses all the components (except the plethysmograph), and provides accurate control of the parameters of the test. Pressure and flow levels are displayed digitally on LCDs.



### **Tests Included**

#### **Boyle's Law FRC:**

This maneuver determines the lung volume at end expiration. It is performed with the plethysmograph closed and the pneumotachs plugged.

#### **Single Breath Nitrogen Washout:**

This maneuver will help determine the distribution of residual Nitrogen gas within the lung after a maximal inspiration of oxygen.

#### **Fast Flow Volume:**

This maneuver detects obstruction in the lung passages. It analyzes the fast expiration induced by switching the trachea to a high negative pressure.

#### **Quasistatic Pressure Volume:**

This maneuver measures the compliance of the lung, and in the lung volumes. It analyzes a slow expiration induced by switching the trachea to a high negative measure, with the expiratory flow held at a low level.

#### **Tidal Breathing:**

This maneuver does not perform any forced functions on the subject; it monitors the flow and pressure during spontaneous breathing and derives ventilatory and mechanical parameters.

#### **DLCO:**

The DLCO maneuver determines the animal's gas exchange capability, specifically, the capacity to diffuse Carbon Monoxide in one single breath.

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### **Catalog No.**

CGS 8309.69

### **Product**

Pulmonary Maneuvers System, Including: BioSystem for Maneuvers Software SFT1510, Plethysmograph PLY3114 for Maneuvers, Pressure Panel (Small) AUT 6110, Pressure Panel (Large) AUT6120