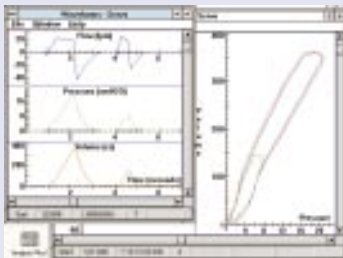
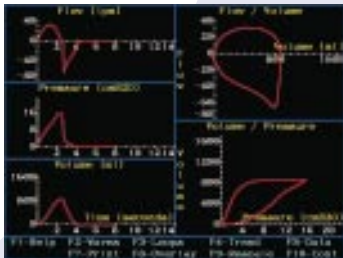


# INGMAR MEDICAL

## Adult/Pediatric Lung Model

*Expand Your Vision with  
The Complete Portable Solution for Lung Simulation*



### Visual Impressions that Last

IngMar Medical Lung Models allow you to demonstrate the dynamics of patient-ventilator interaction in a very intuitive, visual fashion. The IngMar Medical Adult/Pediatric Lung Model is a fully configured, compact two-bellows simulator. It is ideal for teaching, training and ventilator demonstrations where the ability to quickly change patient

parameters is essential for the success of instruction. Using the IngMar Medical Adult/Pediatric Lung Model, you can easily set up real-world scenarios, including ET-tube and lung leaks as well as spontaneous breathing. You can also show special effects such as the increased work of breathing induced by an endotracheal tube.

Expanding the Vision of Respiratory Therapy

# IngMar Medical Adult/Pediatric Lung Model

**Easy Set Up:** simply open the lid and select settings

**Compliance Springs:** multiple settings with quick-acting grip latches easily simulate a wide range of clinical scenarios, including lung overdistention

**Two-Bellows System:** realistic simulation of compartmentalized lung problems (leaks, resistive anomalies)

**Resistance and Leak Settings:** 4-position knobs conveniently control resistances, ET-tube leak and lung leak

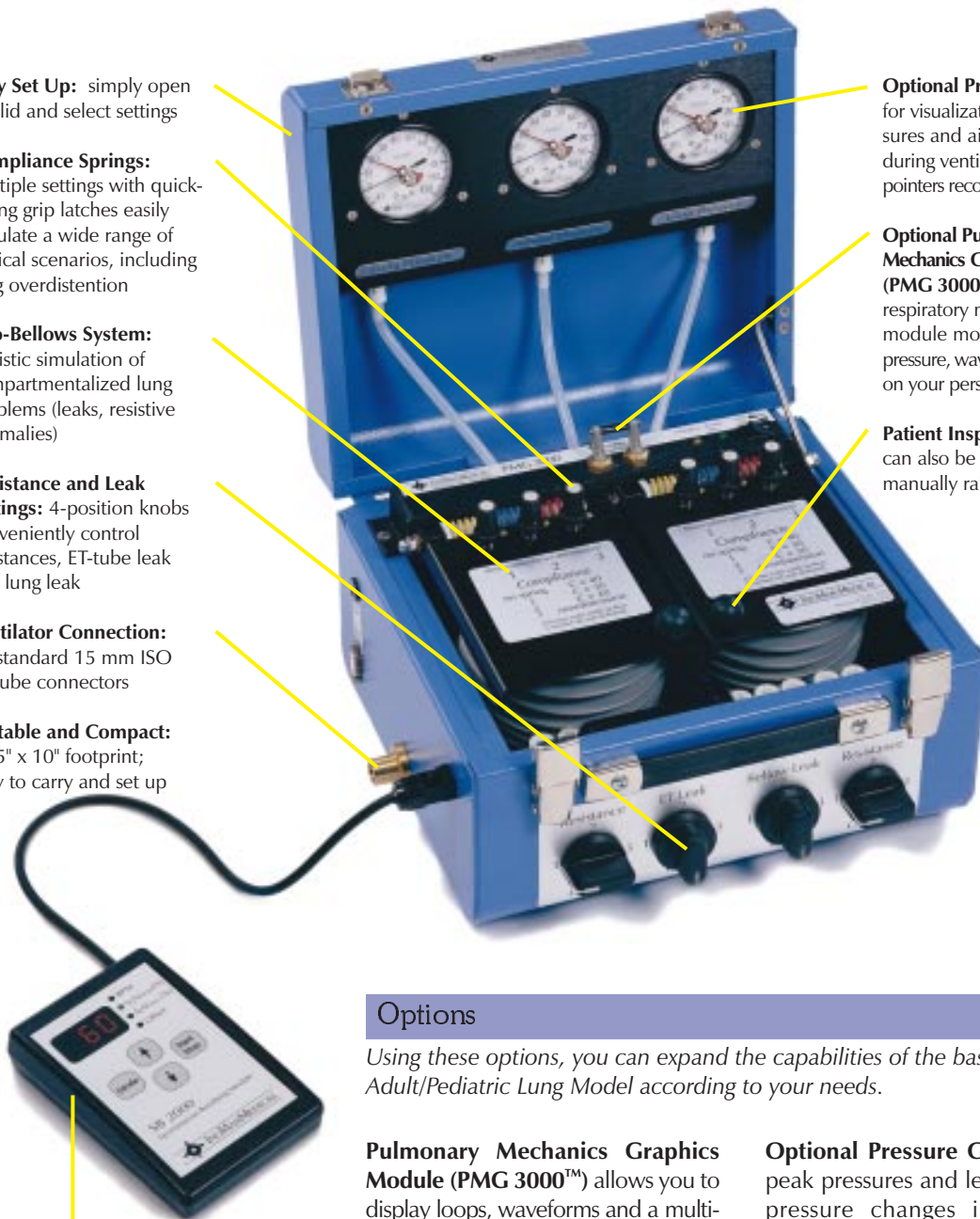
**Ventilator Connection:** for standard 15 mm ISO ET-tube connectors

**Portable and Compact:** 12.5" x 10" footprint; easy to carry and set up

**Optional Pressure Gauges:** for visualization of lung pressures and airway pressure during ventilation. Drag pointers record peak pressures.

**Optional Pulmonary Mechanics Graphics Module (PMG 3000):** integrated respiratory mechanics module monitors flow and pressure, waveforms and loops on your personal computer

**Patient Inspiratory Efforts:** can also be simulated by manually raising the bellows



## Options

Using these options, you can expand the capabilities of the basic Adult/Pediatric Lung Model according to your needs.

**Optional Spontaneous Breathing Module (SB 2000):** patient inspiration up to 500 mL tidal volume, variable breathing rate and peak flow

**Pulmonary Mechanics Graphics Module (PMG 3000™)** allows you to display loops, waveforms and a multitude of pressure and flow related parameters on a personal computer.  
**Spontaneous Breathing Module (SB 2000™)** helps you teach about advanced modes of ventilation.

**Optional Pressure Gauges** record peak pressures and let you observe pressure changes in both lung compartments and at the airway.

**Cordura® Nylon Carrying Case** protects the device and provides space for accessories and teaching materials.



While the introduction of ventilator graphics offers the opportunity for improved treatment of ventilator patients, it also demands more sophisticated skills of today's clinicians. The IngMar Medical PMG 3000 is a state-of-the-art tool for training in pulmonary mechanics graphics analysis. Integrated into the Adult/Pediatric Lung Model, the PMG 3000 is a full-scale respiratory mechanics module.

Capturing the real-time interaction between a ventilator and an adaptable lung, the PMG 3000 fills the gap between computer software simulations and the limitations of learning from patient examples in the clinical setting.

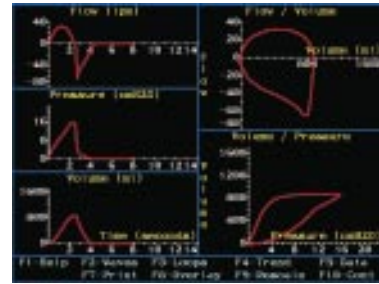
## Pulmonary Mechanics Graphics Module (PMG 3000)

*Expanded Insight into the Dynamics of Patient-Ventilator Interaction*

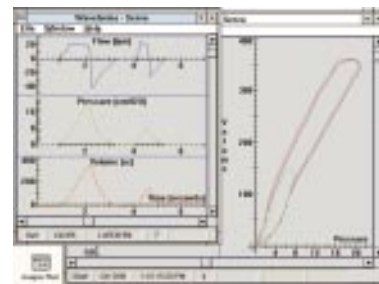
The PMG 3000 easily connects to the RS232 port of your personal computer. Pressure and flow data can be overlaid for valuable comparisons. With the included software, replay of stored data is easy with or without the lung model attached. What's more, the PMG 3000 is battery powered for complete portability.

### PMG 3000 Features

- Integrated flow measurement for real-time data under all simulator parameter combinations, including ET-tube and lung leaks
- Real-time waveforms and loops provide a complete picture of ventilator-model interaction
- Two fixed orifice flow sensors located at the airway and in one lung branch display the differences between what a ventilator is able to "see" of a patient and actual conditions inside the lungs
- Twenty data parameters calculated



*Powerful Software: with its system software derived from patient monitoring, the PMG 3000 helps you to become familiar with the terms, parameters and graphic formats used in pulmonary mechanics monitoring.*



*Analysis Plus™ Software: allows you to easily fine-tune educational materials in the Windows™ environment. Zoom-in to display just a single breath and study the trigger response of your ventilator, or prepare slides of pressure/volume loops for a course on pressure support ventilation.*



All advanced modes of ventilation aim to perfect the interaction between a spontaneously breathing patient and the supporting ventilator.

The IngMar Medical Spontaneous Breathing Module (SB 2000) is specifically designed to help you

## Spontaneous Breathing (SB 2000) Module

*An Expanded Understanding of Active Breathing*

### Adjustable Parameters

- **Breath per minute:** controls spontaneous breath rate
- **Tidal volume:** (as % of maximum) up to a total of approximately 500 mL
- **Peak flow:** (as % of maximum) below inspiratory flow of up to 60 L/min
- **Tidal volume offset:** adjustment to accommodate PEEP settings

teach about these advanced modes of ventilation. Whether it's the newest ICU ventilator with proportional assist ventilation mode or a non-invasive home care ventilator, simulating clinical applications is much more realistic with the SB 2000.

### SB 2000 Features

- Realistic triggering of ventilators in pressure and volume assisted modes
- Microprocessor-controlled servo motor drive
- Handheld external controller for easy operation



*IngMar Medical is committed to providing innovative technology and products that clearly increase the understanding of respiratory care. It is our vision to raise the standards for respiratory care around the world.*

## Adult/Pediatric Lung Model

Passive Lung Simulator with two independent compartments for simulating pediatric and adult patients. Not intended for ventilator calibration or performance verification.  
(Part No. 20 00 000)

Volume	2 x 1.0 L nominal
Compliances	15 to 80 mL/cm H <sub>2</sub> O overall range
Resistances	switch-selectable 15, 25, 50 cm H <sub>2</sub> O/L/s (exchangeable)
Leakage	switch-selectable 10, 16, 25 L/min for both ET-tube and lung leak at 40 cm H <sub>2</sub> O (exchangeable)
Dimensions	12.5 x 9 x 6 inches (318 x 230 x 155 mm)
Weight	14.5 lbs. (7 kg) to 17.5 lbs. (8 kg) depending on installed options.
Color	blue

## Options

### Pulmonary Mechanics Graphics Module (PMG 3000):

Adult/Pediatric pressure and flow monitoring system with RS232 interface and software.  
(Part No. 26 00 000)

#### Hardware

Flow sensors	2 fixed orifice sensors, one located in "main airway", one in right lung branch
Flow range	1.8 to 180 L/min
Accuracy	greater of $\pm 3\%$ , $\pm 0.5$ L/min
Minute volume	2 to 180 L/min
Tidal volume	100 to 3000
Airway pressure	-20 to 120 cm H <sub>2</sub> O
Data sample rate	100 Hz
Electrical supply	NiCd battery pack (approx. 2 hrs run time) and wall-mount charger
Calibration	Automatic calibration of pressure sensors

#### Graphic Displays

Airway flow  $V_{AW}$  (t)  
Airway pressure  $P_{AW}$  (t)  
Lung flow  $V_{RL}$  (t)  
Lung pressure  $P_{RL}$  (t)  
Pressure/volume loops  
Flow/volume loops  
Trending for all parameters

#### Parameters

Minute ventilation  
Tidal volume (insp., exp.)  
Respiratory rate  
Peak expiratory flow  
Airway resistance  
Dynamic compliance  
Mean airway pressure  
PEEP and Auto-PEEP  
Work of breathing  
I:E-ratio

#### Software

##### PMG 3000 System Software:

MS-DOS based; includes drivers for common printers and video displays

**Analysis Plus!** data management and analysis software MS-Windows based

### Spontaneous Breathing Module (SB 2000)

(Part No. 27 00 000)

Breath rate	0-60/min
Tidal volume	50-500 mL
Peak flow rate	60 L/min
Electrical supply	external power supply included

### Pressure Gauges:

three 2.5" pressure gauges, range -10 to 100 cm H<sub>2</sub>O, with peak pressure drag pointer (Part No. 24 00 000)

### Carrying Case:

Cordura nylon zippered case, includes compartments for documents, shoulder strap, color: gray (Part No. 25 00 000)

**Note:** Specifications are subject to change without notice.

SB 2000 and PMG 3000 are trademarks of IngMar Medical, Ltd.  
Analysis Plus! Software is a trademark of Novamatrix Medical Systems Inc. All other company and product names mentioned are used for identification purposes only and may be trademarks of their respective owners.

## For Further Information:

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