

## ASL 5000 Breathing Simulator



# Accurate and Automated Device Testing

Simulate almost any breathing profile, from neonatal to adult patients, while at the same time automating your device testing with the ASL 5000 Breathing Simulator. The ASL 5000 can help you save time and achieve greater consistency in your testing.

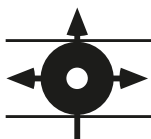
Because of its exceptional accuracy, versatility, and data analysis capabilities, the ASL 5000 has established itself as an essential instrument for respiratory product development and quality control worldwide.

### Use the ASL 5000 Breathing Simulator to

- Cycle a ventilator through a test sequence during development or production
- Perform long-term troubleshooting tests with trending of breath parameters
- Integrate ventilator performance results directly into data reporting for agency submissions
- Evaluate advanced respiratory modes, such as proportional assist ventilation
- Examine performance parameters and ventilator-patient interaction
- Test all types of drug delivery devices including nebulizers, inhalers (MDIs and DPIs), and spacers



Use the ASL 5000 alone or integrate with IngMar Medical's RespiPatient® or Laerdal's SimMan® 3G and SimMan Essential.



**INGMAR MEDICAL**  
Respiratory Simulation Specialists

## Exceptional Accuracy

- Resistance +/-10%
- Compliance +/-5%
- Flow +/-2%
- Volume uncertainty ranges
  - up to 10mL greater of +10% of reading or 1 mL
  - up to 100 mL greater of +2.5% of reading or 2.5 mL
  - up to 1000 mL greater of +2% of reading or 20 mL

## Quality

- IngMar Medical is ISO 9001:2015 certified and our calibration lab is ISO/IEC 17025:2005 accredited
- The ASL 5000 meets or exceeds ISO requirements for test lungs used for volume testing

## Test Automation Interface (TAI)

- Control the ASL 5000 software from within an external automated environment (i.e. LabVIEW, C, C++, etc.)
- Run multiple ASL 5000 systems on the same CPU

## Ventilator-grade Spontaneous Breathing

- Ventilator recognizes breaths produced by the ASL 5000 as if it were a real patient
- Use with any ventilator and all modes of ventilation including PAV, APRV, SIMV, HFOV
- Simulate neonatal through adult patients with one device (tidal volume 2 mL to 2.7 L)
- Introduce PEEP including values > 20 cmH<sub>2</sub>O without triggering unrealistic ventilator alarms

## Minutely Adjustable Lung Mechanics to Simulate Virtually Any Patient Condition

- Compliance: 0.5 to 250 mL/cmH<sub>2</sub>O
- Resistance: 3 to 500 cmH<sub>2</sub>O/L/s
- Spontaneous breath rate: 3 to 150 breaths/min

## Sophisticated Respiratory Mechanics

- Two compartment lung models
- Non-linear compliance curves
- Inspiratory vs. expiratory resistance
- Forced exhalation

## Patient Model Library with 36 Conditions

Includes apnea, chronic bronchitis, emphysema, neonatal obstruction, asthma, COPD and ARDS.

## Enhanced Data Analysis

- Access 100+ breath-by-breath parameters and export to analysis tools such as Microsoft Excel
- Conduct detailed analysis of ventilator events with 512Hz data sampling rate

## Options

For specialized applications such as use with humidified gas and aerosol drugs, and increased accuracy within the neonatal range.

## Related Products

### RespiSim<sup>®</sup> System

Software interface is designed for medical educators and includes curriculum modules as well as a manikin simulator.

### ASL 5000 Lung Solution for SimMan<sup>®</sup>

Developed in collaboration with Laerdal, this solution allows you to integrate the ASL 5000 with SimMan 3G and SimMan Essential.



# Survival Technology

Your Link in the  
Chain of Survival

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