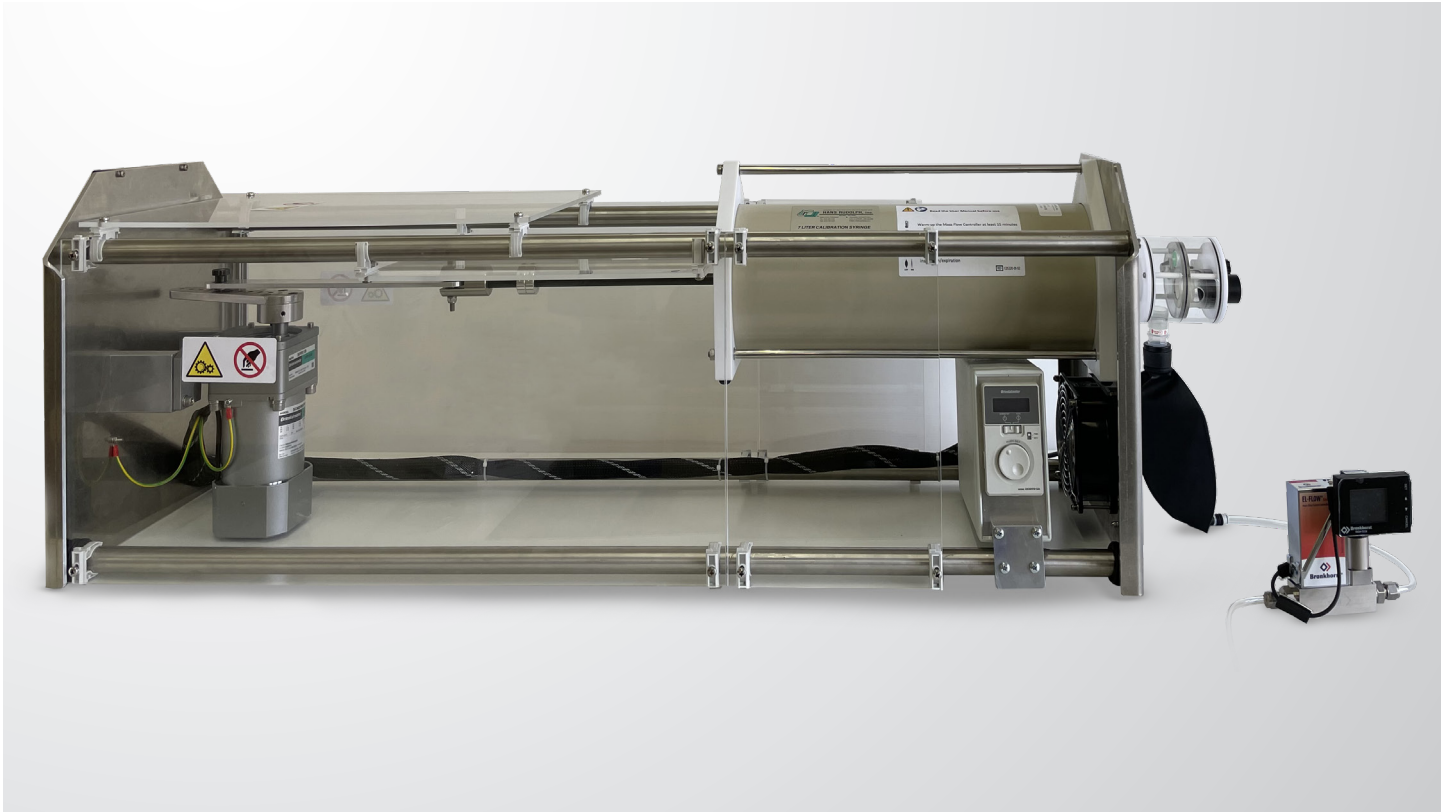


# Metabolic Simulator

Advanced verification tool to simulate human subject gas exchange and respiratory pattern for any metabolic systems



- ▶ 4-300 L/min Ventilation range
- ▶  $\text{VO}_2$  and  $\text{VCO}_2$  range up to 3900 mL/min
- ▶ Designed by COSMED, compatible with all metabolic devices on the market
- ▶ Reproduction of human breathing profile
- ▶ Adjustable respiratory parameters suitable for both clinical and research purposes
- ▶ Easy and precise quality control

Completely designed by COSMED, the Metabolic Simulator provides an important tool that can be used for periodic verification of metabolic systems in both clinical and research settings.

The COSMED metabolic simulator is able to replicate the typical waveform of the respiratory pattern and, by applying the dilution principle, gas exchanges (oxygen consumption and carbon dioxide production). The breathing pattern and gas exchanges can be easily adapted to specific applications by adjusting the tidal volume, respiratory frequency and the dilution flow of a certified gas (21%  $\text{CO}_2$ , bal.  $\text{N}_2$ ).

The test is carried out by OMNIA Software and data results are elaborated using a dedicated Excel spreadsheet, clearly showing the device performance.

The COSMED metabolic simulator can be used to test all COSMED devices and can be adapted to any other metabolic system on the market.

International guidelines<sup>1,2</sup> recommend the use of a metabolic simulator to perform a thorough systematic check on the overall performance of a metabolic system.

With COSMED Metabolic Simulator you will be able to address this recommendation and check that the accuracy of your metabolic system is in line with the declared values.

## Bibliography:

(1) T. Radtke, S. Crook et al., "ERS statement on standardisation of cardiopulmonary exercise testing in chronic lung disease". *Eur. Respir. J.* 54, 2019

(2) A. Huszczuk, B.J. Whipp and K. Wasserman, "A respiratory gas exchange simulator for routine calibration in metabolic studies". *Eur. Respir. J.* 3:465-468, 1990



Adjust and control the respiratory parameters with a simple and precise setup



The mass-flow controller allows to deliver any set point flow of the reference gas within a wide flow range



Respiratory frequency can be set on the digital regulator to reproduce resting to high respiratory rates

## Technical Specifications

Product	Description	REF
Metabolic Simulator	Metabolic Simulator (220 V)	C09070-01-99
Metabolic Simulator	Metabolic Simulator (110 V)	C09070-02-99
Standard packaging	Metabolic Simulator unit, connector for optoelectronic reader, cables, power cord, universal adapter, USB stick (with manual, spreadsheet, certificates).	
Technology		
VE range	5-300 L/min	
VT range	0.5-5 L	
VT resolution	0.5 L	
RF range	10-80 acts/min	
VO2 range	up to 3900 mL/min	
Required gas composition	21% CO <sub>2</sub> , N <sub>2</sub> balance (not included)	
Gas flow range	up to 20 L/min	
Simulator accuracy	± 1% (VO <sub>2</sub> , VCO <sub>2</sub> ), ± 1% (VT)	
Hardware		
Dimensions & Weight	133x36x39 cm / 40 kg	
Electrical requirements	220/110 V, 50/60 Hz	
Environmental conditions of use	Temperature 5-35 °C	
Safety & Quality Standards		
EN 61010-1:2010 / A1:2019, CE 2006/42, EN 12100		



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