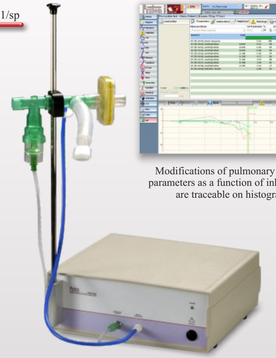
Dose controlled drug nebulizer PDD-301/sp

The nebulizer can be integrated into a system with all Piston made pulmonary function test equipment:

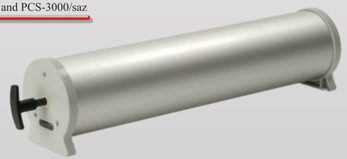
- Exact deposition of the medicine thanks to mechanical nebulizer with narrow range of particle sizes (1.2 µm or 3.5 µm)
- Full support of provocation test and broncholysis
- Constant concentration multi step protocol
- Increasing concentration, dilution row, multi step protocol
- Breath phase controlled, nebulizer runs only during inspiration
- Supervision of total inhaled dose and automatic limitation
- Exhalation of medicine thru bacterial and viral filter or into a collecting sack to prevent the environment



Modifications of pulmonary function parameters as a function of inhaled dose are traceable on histograms

Calibration syringe PCS-3000/az and PCS-3000/saz

Calibration syringe is for daily calibration and validation of lung diagnostic devices.
Our precision calibration syringe is extremely well sealed and its friction is very low.



PCS-3000/saz
Adjustable volume with laser engraved scale

Volume	3 litre ±15 ml
Connection	ISO-30 medical taper, female
Size	520x120x110 mm
Weight	2.2 kg

Pulse oximeter PPO-201

The pulse oximeter can be used with all Piston pulmonary function equipment:

- Continuous monitoring of the pulse and SpO2 oxygen saturation
- Graphical display and analysis of pulse waveform
- Infant, pediatric and adult sensors
- Disinfectable or single use sensors
- USB connection

Finger and ear sensors

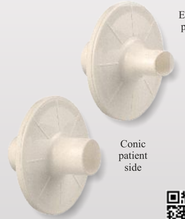
Bacterial and viral filter PBF-100 family

Using a bacterial and viral filter prevents cross-contamination during pulmonary function tests

Weekly at least 10 billion microorganisms can be detected in a dry closed system spirometer after 1000 measurements

Size	D: 100 mm, L: 75 mm
Filtration media	Filtrete by 3M, Electrostatically charged fiber
Resistance	60 Pa·L^{-1}·s^{-1} @ 12 l/s
Additional dead space	75 ml
Bacterium filtration efficiency	99.9999 % * and **
Virus filtration efficiency	99.9999 %* and **
* Tested by Nelson Laboratories, Salt Lake City, USA	
** Tested by HPA, Health Protection Agency, Salisbury, United Kingdom	

Code	Device side connection	Patient side connection	To fit spirometers
PBF-100-G-C	ISO-30 medical taper Female: ID 30.9 mm Basic taper 1:20	ISO-30 medical taper Male: OD 30.2 mm Basic taper 1:20	Piston Geratherm SensorMedics PK Morgan
PBF-100-G-M	ISO-30 medical taper Female: ID 30.9 mm Basic taper 1:20	Elliptic, form of lips	
PBF-100-B-C	Female: ID 29.9 mm Basic taper 1:50	ISO-30 medical taper Male: OD 30.2 mm Basic taper 1:20	Jaeger
PBF-100-B-M	Female: ID 29.9 mm Basic taper 1:50	Elliptic, form of lips	
PBF-100-W-C	Male: OD 30.0 mm Taper angle 2°	ISO-30 medical taper Male: OD 30.2 mm Basic taper 1:20	Micromedical MIR Vitalograph
PBF-100-W-M	Male: OD 30.0 mm Taper angle 2°	Elliptic, form of lips	

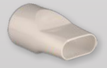


Elliptic patient side

Conic patient side

Fully recyclable

Additional consumables



MPA-30
Anatomically shaped mouth piece for the basic pulmonary function tests

PMP-30
Mouthpiece with bite-on grip guarantees perfect sealing for plethysmograph, diffusion capacity test and oscillometer

PNC-65
Nose clip is recommended for all pulmonary function tests in order to avoid any false breathing thru the nostrils

PNP-12, -14, -16
Nasal probes for rhinomanometer
Soft silicon rubber plug with smooth surface

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Specifications subject to change without notice

OGYÉI EMKI
National Institute of Pharmacy and Nutrition Directorate of Device Testing and Clinical Engineering

EN ISO 13485:2016

CE 1011

EN-2020-02-21

PISTON spirometry

LET'S BLOW

PULMONARY FUNCTION TEST

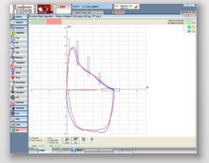
Spirometer PDD-301/sh

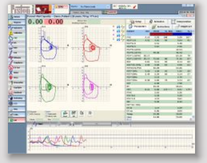
The spirometer is the basic device of functional lung diagnostics.
It is inevitable in detecting the early malfunction of the respiratory system:

- COPD
- Asthma
- Chronic bronchitis
- Obstructive ventilation disorder
- Emphysema

Measurement modes:

- Forced ex- and inspiration
- Static vital capacity
- Maximal voluntary ventilation





Sleek hand held design with the PinkFlow flow sensor.
It provides full portability when connected to a laptop PC.
USB interface.

PINK FLOW®

The PinkFlow flow meter is the newest innovation of our company.
It is an ideal flow senor for the most demanding pulmonary function tests.
All our diagnostic devices apply the PinkFlow flow sensor

The PinkFlow flow sensor fully complies with the international standards and recommendations:

- EN ISO 23747:2009
- EN ISO 26782:2009
- Standardization of Lung Function Testing ATS/ERS Task force (European Respiratory Journal 2005)

- Hygienic single-use application
- No moving parts
- Insensitive against condensation and vapour
- Integrated gas sampling port
- Fully interchangeable flow sensors, no need for recalibration after changing
- Quick pneumatic coupling
- Fully recyclable

"PinkFlow" is a Registered Trade Mark of Piston Ltd
USA patent: US 8,585,608 B2

System overview

The whole range of our diagnostic devices provides the following features:

General features:

- Eight identical measurements can be performed simultaneously
- Pre-Post examination
- Database management
- Trend analysis
- User definable printed report
- Multiple communication languages

Selectable and enhance able reference value algorithms:

- ECCS
- Cotton & Dust
- Crapo HSU
- Knudson
- Austrian, Finnish, Swedish

System integration into hospital information system (HIS):

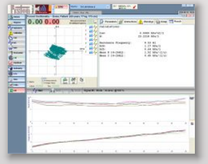
- Application of standard protocols
- HL7 (Health Level 7, USA)
- GDT (Geräte Daten Träger, Germany)

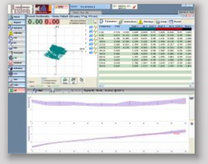
Oscillometer and spirometer: PDD-301/so

The Forced Oscillation Technique (FOT) offers an economical alternative for measuring the impedance of airways.
The test can be performed successfully without any special co-operation of the patients. During test the patient has to breath quietly.
The FOT device is especially useful in paediatric pulmonology.

Measurement modes:
- Measurement of airway impedance
- Measurement of resonance frequency of the airway
- Forced ex- and inspiration
- Static vital capacity
- Maximal voluntary ventilation

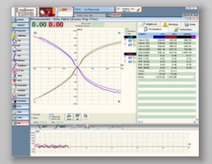
FFT Fast Fourier Transformation:
- Average calculation of Reproductive Spectrums
- Model matching for Reproductive Spectrums
- Separation of Resistance / Elastance / Inertia
- Random and sequentially induced frequencies





Rhinomanometer and spirometer PDD-301/sr

The device insures the measurement of nasal resistance and the basic pulmonary function testing.
It is inevitable in objective diagnose of rhinitis and in the ENT practice.



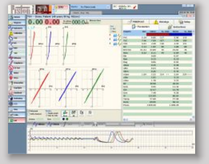
Measurement modes:
- Active anterior nasal resistance
- Active posterior nasal resistance
- Forced ex- and inspiration
- Static vital capacity
- Maximal voluntary ventilation

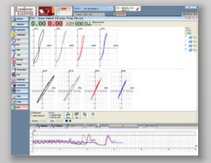
Whole body plethysmograph PDT-111/p

The device insures the measurement of mechanical parameters of the pulmonary system.

- Accessible for patients sitting in a wheelchair (optional)
- Double time constant of the cabin provides tests at normal breathing frequency and with panting as well
- Diffusion capacity test (optional)
- Robust welded cabin with four transparent walls and roof from hardened glass
- Electromagnetic door lock without any moving part
- Programmable audiovisual metronome
- Automatic BTPS correction based on the temperature, humidity and pressure measured inside the cabin
- Full automatic calibration and leakage test
- Communication system with built in speaker and microphone

Measurement modes:
- Thoracic gas volume
- All components of airway resistance
- Work of breathing
- Maximal occlusion pressure
- Dynamic and static compliance (optional)
- Diffusion capacity test (optional)
- Active anterior nasal resistance (optional)
- Active posterior nasal resistance (optional)
- Forced ex- and inspiration
- Static vital capacity
- Maximal voluntary ventilation

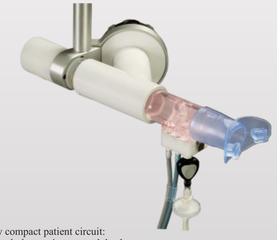




PDT-111/pwc
Optional wheelchair model

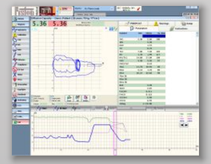
Diffusion capacity test PDT-111/d

The device measures the diffusion capacity (D_{LCO}), the transfer factor (T_{LCO}) and the functional residual capacity (FRC) as well.
Measurement modes:
- "Single breath" method with breath holding
- "Intra breath" method without breath holding
- Forced ex- and inspiration
- Static vital capacity
- Maximal voluntary ventilation

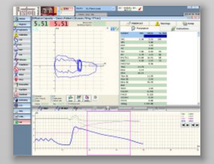


Uniquely compact patient circuit:
- Extremely low resistance and dead space
- No electrical connection
- Integrated demand valve for effortless supply of measuring gases
- Easy to dismantle and disinfect consequently it can be used even without a bacterial filter

Small size
desktop device

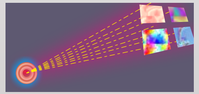


"Single breath" method with breath holding



"Intra breath" method without breath holding

Dedicated PC cart (PCC-1100 optional):
- Sitting or standing working position
- Patient circuit suspension with high degree of freedom
- Suspended 3 litre calibration syringe
- 10 litre gas cylinder holder



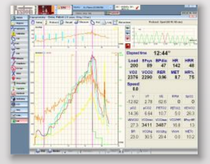
Non Dispersive Infra Red (NDIR) multi gas analyser:
- CO, CH4, CO2 simultaneous measurement
- Extremely low response time
- Direct gas analysis without gas sampling balloon

Cardiopulmonary exercise test PRE-201

Ergospirometry is increasingly being used in a wide spectrum of clinical applications for the evaluation of undiagnosed exercise intolerance and exercise-related symptoms.
Cardiopulmonary exercise test provides a global assessment of the integrative exercise responses involving the pulmonary and cardiovascular system.
International guidelines and requirements:
- Statement on Cardiopulmonary Exercise Testing, American Thoracic Society and American College of Chest Physicians November 1, 2001
- Clinician's Guide to Cardiopulmonary Exercise Testing in Adults
  A Scientific Statement from the American Heart Association, Circulation Journal, 2010-07-21
- Standardization of Lung Function Testing, ATS/ERS Task force, European Respiratory Journal 2005

PinkFlow flow sensor without any moving part and extremely low resistance

Wireless stress ECG and blood pressure meter (optional)



- Bicycle and treadmill control
- Selectable standard test protocols
- User definable exercise test protocols
- Non-depleting paramagnetic oxygen analyzer (optional)
- Dedicated PC cart (PCC-1100 optional)

- Wassermann's graphs
- Determination of Anaerobic Threshold
- Calorimetry
- Resting energy expenditure measurement

Mobile ergospirometer PRE-201/m

The mobile ergospirometer provides data acquisition of breathing, metabolism and ECG outside of PFT laboratories as well.
It is useful especially at sport medicine and rehabilitation program:
- GPS based position and work calculation
- More than half an hour battery mode
- Water resistant pouch