



GANSHORN
SCHILLER GROUP



SpiroScout

Desktop Spirometer

The first with ultrasound technology

OVERVIEW

With the development of ultrasound flow measurement, GANSHORN opened new perspectives for spirometry and lung function testing. Based on simultaneous flow and molar mass determination the SpiroScout measures all spirometry parameters not only precisely and

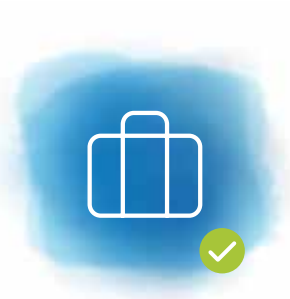
accurately, but also collects additional information about capnovolumetry, which adds another dimension to your diagnostic capabilities. Together with the LFX software the SpiroScout complies with current medical and technical standards.



Highly accurate and precise



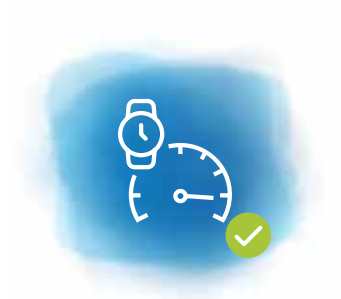
Calibration free



Compact and portable



Maintenance free



Reliable, ultra-fast and no warm-up time



Powerful, intuitive LFX software

Ultrasound technology

The heart of GANSHORN diagnostic systems is its ultrasound sensor. SpiroScout, PowerCube Body+ as well as the PowerCube Diffusion+ are based on GANSHORN ultrasound technology. So every measurement comes with precise and direct digital sound pulse transit-time flow determination of lung function. Every system, every session result, always the same accuracy and precision.

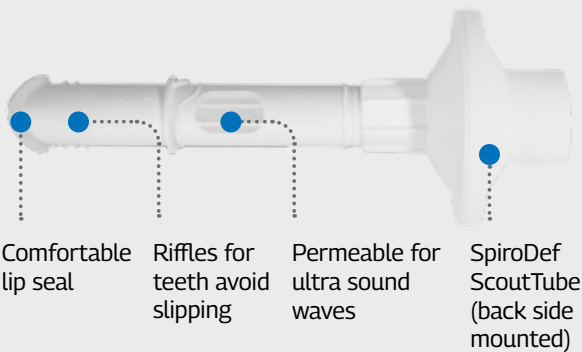
MEASURING OPTIONS



ScoutTube Mouthpiece

ScoutTube is the disposable mouthpiece of SpiroScout. It is easy to use and a hygienic solution, as you simply change it with every patient. Using the ScoutTube allows to measure without added resistance from a filter. It suits all ages from children to adults, at all levels of health. ScoutTubes are permeable to ultrasound waves. However, due to the small window size of the mesh and its arrangement, contamination of the device is unlikely.

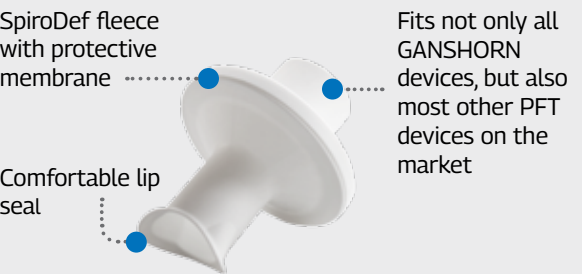
- ✓ Shape encourages tight seal of lips, avoiding leaks
- ✓ Cost-efficient
- ✓ No cleaning needed (single patient use)
- ✓ Eco-friendly biodegradable disposable
- ✓ No added resistance
- ✓ SpiroDef ScoutTube (back side mounted) protection against cross contamination and offers additional protection for operators and technicians



SpiroDef PFT filter

The SpiroDef contains a filter fleece matching highest quality standards. It provides an effective mechanical barrier for aerosols. This reliably filters aerosols, bacteria and viruses which prevents not only contamination of the device, but also protects the ambient air. The SpiroDef allows a clean, economical workflow and impresses with an ergonomic shape. The extra compact filter saves not only space, but also minimizes the use of plastic and thus reduces waste. In order to attach the filter to the SpiroScout, a permanent breathing tube* (picture below) is neccessary.

- ✓ Integrated mouthpiece
- ✓ Shape encourages tight seal of lips, avoiding leaks
- ✓ More compact design saves storage
- ✓ 30% less plastics used than in comparable products
- ✓ Comfortable to use



Sustainability

To guarantee sustainability GANSHORN offsets the emissions generated during production, packaging, delivery and disposal of ScoutTubes and SpiroDefs.



MEASUREMENT PRINCIPLE AND SET UPS

Two diagonally opposite ultrasound transducers alternately send and receive ultrasonic waves. Without any air flow inside the breathing insert, the transit time of the ultrasound waves is the same in both directions.

Any air flow inside the insert will accelerate the waves in one direction and decelerate in the other. The difference between the transit times of the ultrasonic waves allows to calculate the flow. Flow and gas density are calculated from the measured transit times, allowing changes in the concentration of the exhaled gases to be determined directly and at the same time with the respiratory volume.



ScoutSensor used with PowerCube Diffusion+

ScoutSensor used in PowerCube Body+

UPGRADES & ADDITIONAL OPTIONS

+ Tidal breathing analysis

Tidal breathing analysis can be performed on patients who are unable to perform a spirometry measurement, e.g. young children and even neonates.



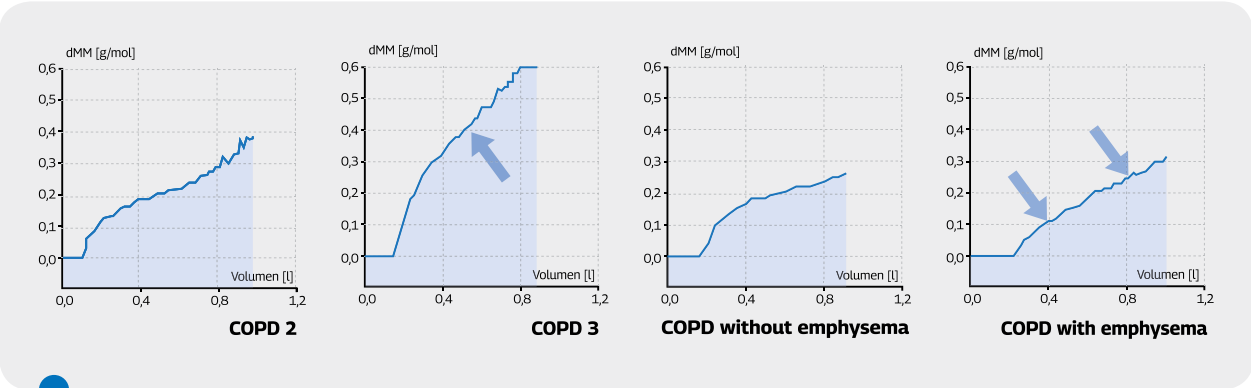
+ Rhinomanometry

Rhinomanometry is a form of manometry used to help evaluate the nasal cavity and the respiratory function of the nose. It measures pressure and flow during normal inspiration and expiration through the nose.



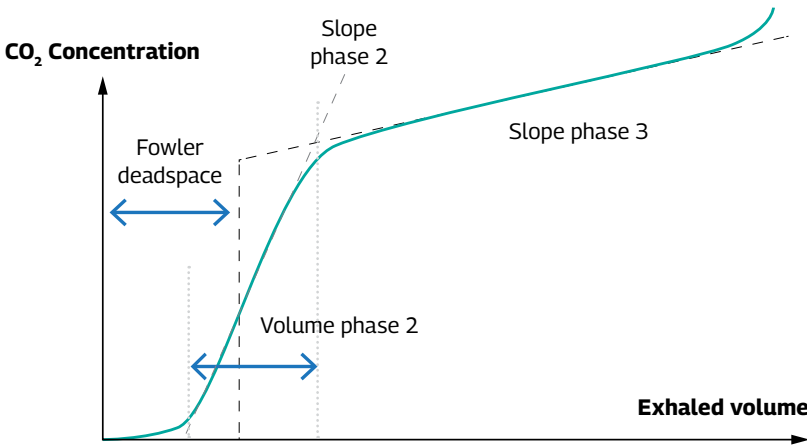
Capnovolumetry option

Capnovolumetry* is the analysis of the exhaled CO₂ compared to the exhaled volume. The CO₂ concentration of exhaled air is plotted against the exhaled volume and thereby the anatomical airway dead space as well as the functional airway dead space can be determined. This method is independent of patient cooperation and therefore especially useful for monitoring respiratory diseases in both pediatric and geriatric patients.



Example graphs of capnovolumetry in patients with COPD of GOLD 2 and 3 severity, and in patients with and without emphysema. With increasing severity as well as the presence of emphysema, phase 3 becomes steeper and the difference in the slope to phase 2 becomes smaller, correspondingly the quotient s3/s2 becomes larger.¹

* works only with ScoutTube



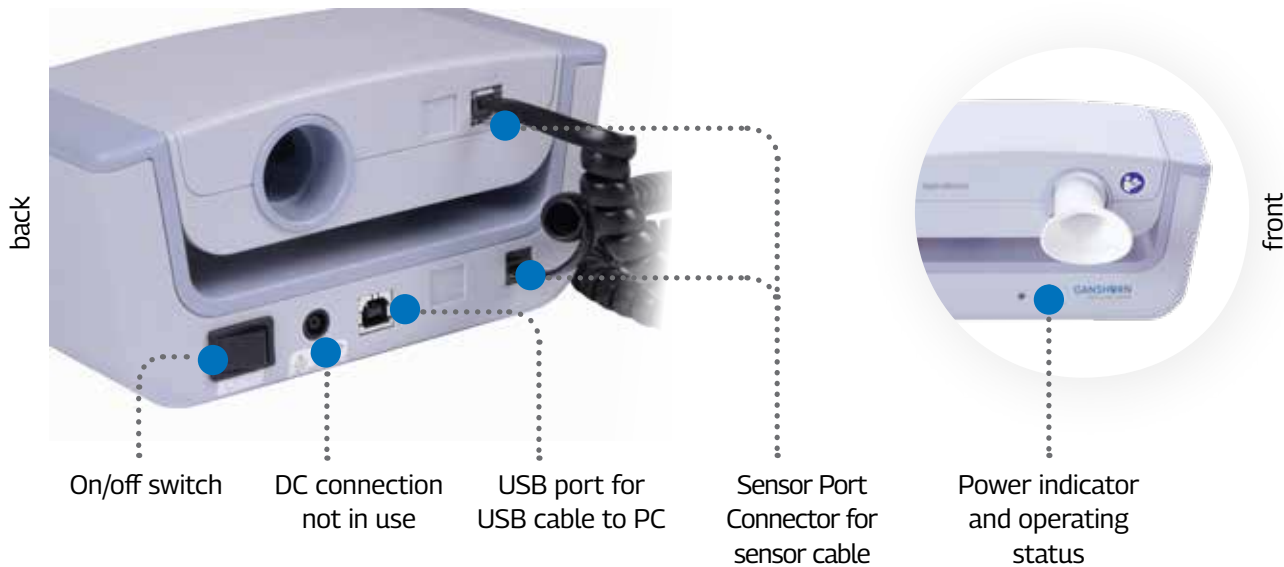
Software platform

The LFX software is the GANSHORN user-friendly interface, developed with the physiologist in mind. It provides all tools necessary to perform every task done in the laboratory, while remaining easy to operate. Built on state-of-the-art Windows tools like .Net, C# and SQL database, the software is the future of modern respiratory diagnostics. LFX has built-in quality control monitoring based on ATS/ERS guidelines, which are accessible during and after the measurements are performed.



¹ Klütsch et al.: Wertigkeit der Ultraschall-Kapnovolumetrie in der Differentialdiagnose von obstruktiven Atemwegserkrankungen in der klinischen Praxis, TU Munich, Munich

Connectors, controls, indicators



PROGRAMS AND FEATURES

Programs	Standard	Option	Features	Standard	Option
■ Microsoft SQL / MySQL	✓		■ Slow spirometry	✓	
■ Customizable reports		✓	■ Forced spirometry	✓	
■ Multiuser license		✓	■ Provocation		✓
■ Worklist		✓	■ Rhinomanometry		✓
■ DICOM/GDT/HL7		✓	■ Capnovolumetry		✓
			■ Measurement with filter		✓
			■ Tidal breathing analysis		✓

TECHNICAL DATA

Flow measurement

Method	Ultrasound transit time
Range	0 to ± 18 l/s
Accuracy	$\pm 2\%$ or 50 ml/s (for 0 to ± 16 l/s)

Volume measurement

Method	Digital integration
Range	Not limited
Accuracy	$\pm 2\%$ or 50 ml

Dimensions

Device	180 x 90 x 90 mm (W x H x D)
Weight	1000 g (sensor 185 g, station 730 g, cable 85 g)

Breathing insert

Breathing resistance	0.002 kPa/l/s
Dead space	18 cm ³ (pediatric inlet available)
Material	Polyethylene

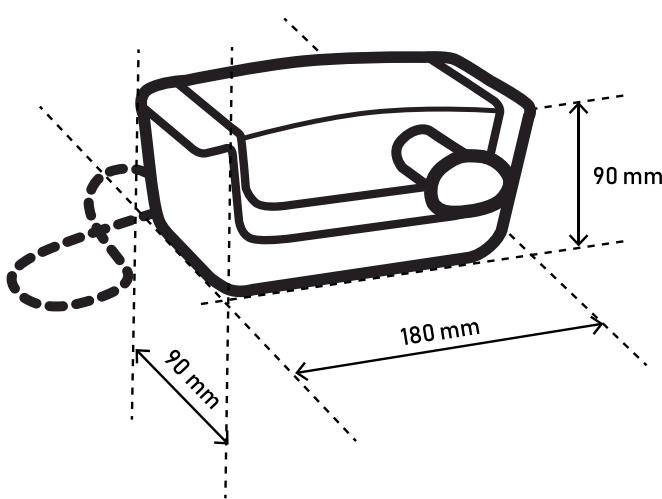
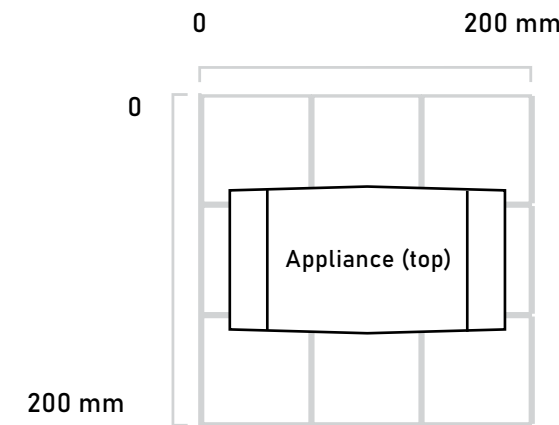
Computer interface

Data transfer to PC	USB 2.0
USB connection	Connector A - B, double shielded, 2x AWG24, 2 x AWG28

Power supply

Standard	Powered via USB 2.0 Power supply: 500 mA
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Dimensions



WHY GANSHORN?

For 40 years GANSHORN has been manufacturing a complete state-of-the-art portfolio of pulmonary function testing systems for spirometry, bodyplethysmography, diffusion, bronchial provocation and cardiopulmonary stress testing. With its technological innovations, the company has been a leader in the diagnostics market since 1982. Many of these are now perceived

as gold standards. In order to meet our high quality standards, it is important to us that all key components are made in Germany. Our devices are created in modern processes in Bavaria, from the initial idea to distribution. In the meantime GANSHORN is represented worldwide, with strong markets in Europe, Asia, North and South America.



PowerCube Body+

Bodyplethysmography



SpiroScout

Spirometry



PowerCube Diffusion+

Diffusion measurement



Provo.X

Provocation testing



PowerCube Ergo

Cardiopulmonary exercise testing (CPET)



Vivatmo pro

FeNO monitoring



tremoflo®

Airwave oscillometry



EucapSys

EVH provocation



AltiTrainer

Hypoxic challenge testing, hypoxia training



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The model shown may also include optional equipment which is not within the standard scope of supply. Design, equipment, and contents are subject to change without notice, as are misprints and errors.