



SPIROMETRY

Simple – convenient – reliable

Quick and easy lung function measurements without additional requirements for your trained staff – saving time and money.

Clear instructions on patient guidance ensure continuously high quality of measurements for Cooperation-dependent measuring methods (e. g. spirometry and flow/volume).



SCHILLER

The Art of Diagnostics

SPIROVIT SP-1

Spirometry made simple and affordable!

The SPIROVIT SP-1 is a unique solution to simplify complex lung function testing. The LCD displays real-time flow/volume loops and detailed measurement matrices. The data can be either printed within seconds or transmitted to a PC.



Disposable Sensor SP-150

With SCHILLER's unique SP-150 disposable sensors, the risk of cross-contamination is reduced to a minimum. The small, lightweight sensors are low-cost and completely disposable. Simply remove, discard and replace the sensor after each patient performance. No need for disinfection, easy handling and saving time: these are maximum benefits for both patient and physician!

Reusable Sensor SP-20

SCHILLER's SP-20 reusable sensors are small, lightweight and very easy to clean. The low-cost filters provide the most economical method of performing pulmonary function tests.

Features

- FVC, SVC, MVV, MV and pre/post medication tests with choice of predicted normals
- Simple operation
- Internal memory for up to 100 tests (optional)
- Built-in mains and battery operation
- Ready-to-file reports within seconds on 3.5" (90 mm) paper
- Comparison of predicted and actual values
- Automatic interpretation
- Data transmission via built-in RS-232 interface to PC-based data management program SEMA for long-term storage, retrieval and trends
- Affordable, fast, reliable, labelled

SCHILLER PFT Filters

Advantage of using bacterial filters

All patients are susceptible to infections after performing pulmonary function tests.

Pre-pulmonary function test screening for infection by request form, although helpful, cannot be a substitute for more effective control measures. Most outpatients visiting pulmonary function departments are not routinely screened for infectious diseases prior to performing tests. Even when patients are screened, there may be a significant time interval between obtaining the culture results and performing the tests. It is very difficult to identify all the patients with infectious diseases or who are immuno-compromised.

A recent study showed that as many as 40 % of patients with chronic obstructive pulmonary disease (COPD) had positive sputum cultures to potentially pathogenic microorganisms⁽¹⁾.

Therefore, universal stringent precautions for everyone requiring pulmonary function tests are necessary⁽²⁾. A previous paper has shown that ultra-clean techniques can be used when performing most routine pulmonary function tests⁽³⁾.

However, the most practical and cost-effective way to ensure that there is no risk of cross-infection between patients is to use bacterial filters.

Other advantages of using bacterial filters are:

- protection against breathing circuits (especially flow sensors), being contaminated with droplets of saliva and mucus that may lead to errors in test measurement and may contain microorganisms^(4,5); and
- protecting patients and staff against inhaling pathogens from the breathing circuitry. (Many centers now have their staff perform pulmonary function tests on the equipment as part of their quality assurance program.)

Fulfilling the latest recommendations of both the American Thoracic and the European Respiratory Societies (ATS & ERS)

Bibliography:

1. Banerjee D, Khair OA, Honeybourne D. Impact of sputum bacteria on airway inflammation and health status in clinical stable COPD. *Eur Respir J* 2004; 23:685-691.
2. Zhang Y. High justification for universal stringent precautions in lung function testing. Letter to editor. *Resp Med* 2005; 99: 1064-1066.
3. Denison DM, Cramer DS, Hanson PJV. Lung function testing and AIDS. *Respir Med* 1989; 83: 133-138.
4. Townsend MC, Iiankinson JL, Lindesmith LA, et al. Is my lung function really good? Flow-type spirometer problems that elevate test results. *Chest* 2004; 125: 1902-1909.
5. Zhang Y. Using barrier filters to protect spirometer sensors from droplet deposition. Letter to editor. *Chest* 2005; 27: 2294.



PC Spirometry

The know-how of extensive lung function tests in a low-priced small format

Because there are no unimportant measurements in lung function diagnostics.

- Handy PC spirometer for spirometry and flow/volume measurement, in- and expiratory vital capacity, partial volumes, second-volume FEV1, maximum voluntary ventilation MVV, peak-flow and more than 40 sub-parameters
- Determination of resting spirometry and flow/volume curve in a single measurement manoeuvre
- Integrated database for measurement and patient data – compatible with the SCHILLER AT-104 PC ECG system
- Online display of the measurements on a PC or notebook screen
- Hygienic and easy to care for: easy cleaning, no time-consuming dismantling into its components



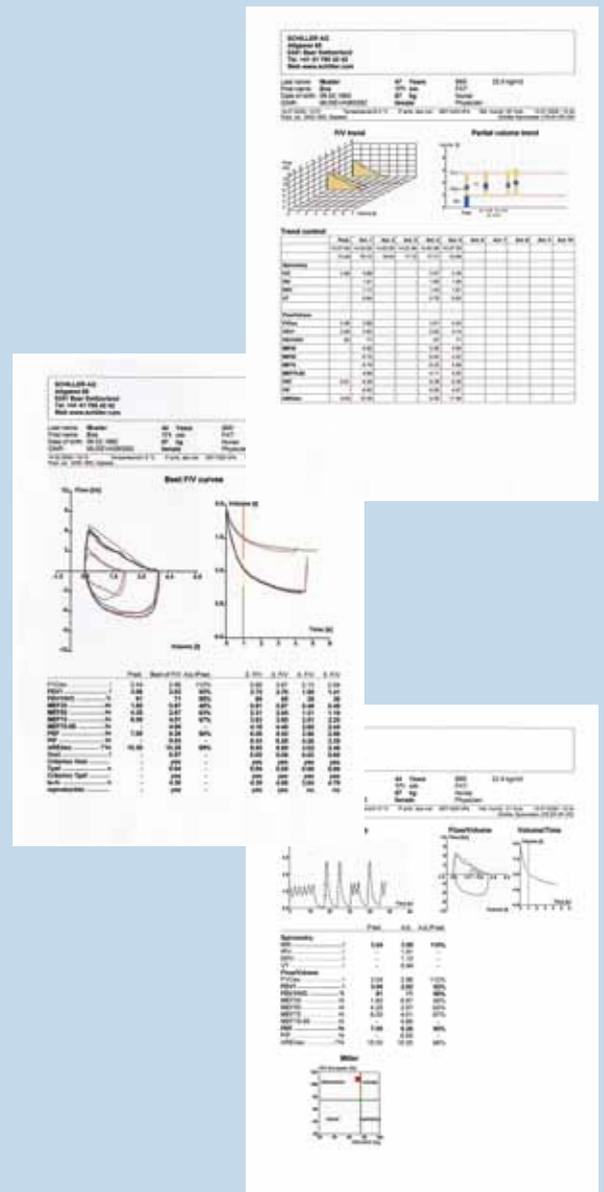
SP-250 Sensor

The SP-250 has a disposable sensor, which is replaced after each use. This ensures hygienically impeccable work and increases the efficiency as the sensor does not need to be disinfected between use, making the system available any time. The disposable sensors are tested for minimum tolerance and thereby warrant an absolutely accurate measurement.



SP-260 Sensor

The SP-260 allows the same accuracy as the SP-250, but with a reusable sensor. The sensor's inner tube can be removed and can easily be cleaned using a common disinfectant. In this sensor it is only necessary to replace the small measurement filter and the cardboard mouthpiece. This reduces material cost – ideal if there are only a few measurements carried out each day.



Motivation is everything (LF 8)

- Efficient assisting programs to monitor important cooperation criteria.
- Large assisting pictures for a precise control of the breathing manoeuvre for optimal patient motivation.
- Intelligent animation graphics for children and adults during simultaneous monitoring of important measuring parameters.
- Graphic insertion of patient-specific predicted value ranges to estimate the patient cooperation.

Clear reports for all cases

- Reports are individually configurable with the requested measurement data in charts, graphics, pre/post or variance comparison.
- Integration of medication, therapy and cooperation, as well as result text possible.
- Display of parameters of different measurements in one common report.
- Report output by screen, printer, intranet, or as graphic data for export into the doctor's file.

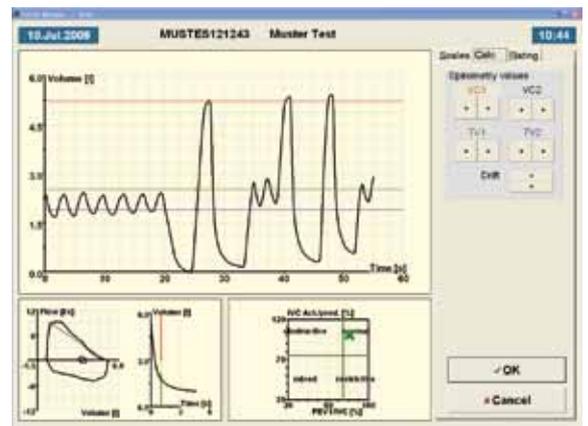
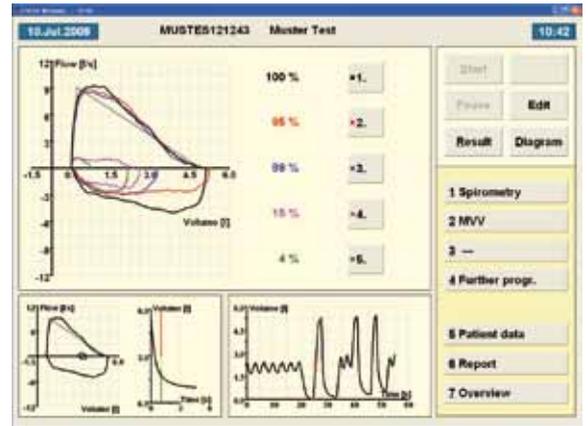
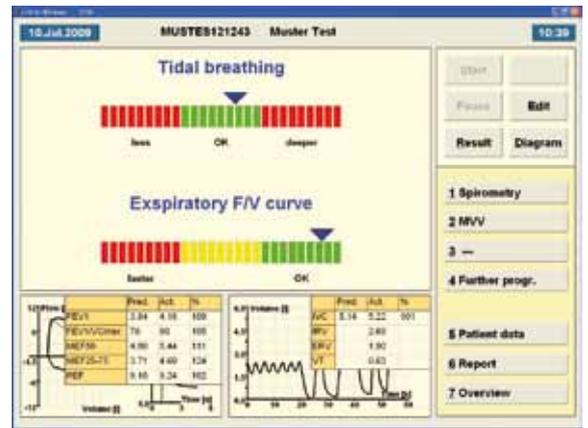
- Standard reports for all measuring programs available. Configuration of any individual report possible.
- Size, number, and position of graphics selectable within each report. More than 50 different graphics available.
- Possibility to export measurement results into word-processing and graphic programs.

PC Spirometry

Whether SCHILLER SP-250 or SCHILLER SP-260 – the hardware and software comprise spirometry, flow/volume measurement, direct and indirect maximum voluntary ventilation MVV, patient data administration, programs for provocation and bronchospasmolysis, pre/post comparisons, functions for trend, statistics and protocol, as well as interfaces and much more.

Integrated program for pre/post comparisons, broncho-spasmolysis tests, and provocations.

- Pre/post comparisons of any measurement
- Comparison already possible during post measurement
- More safety during provocations thanks to graphic and numeric progression control with trend display
- Free configuration, storage, and output of any specific and unspecific provocation series
- Automatic time management system with alarm functions



Tailor-made – the LF8 surface for measurements and reports

- Large online on-screen display of the measurements – essential for quick work and correct judgement of breathing manoeuvres
- Simple handling because of clear and standardized screen design as well as intelligible surfaces and logic user guidance
- Editing options for all measurements
- Large, clearly labeled keys
- Identical measurement operations for all measurements
- Pause function in all measuring programs
- Free selection of graphics and measurement parameters
- Flexible graphic and time scales
- Change of measurement graphic and scales also during the measurement
- Diagnosis possible by free text and templates, also interpretation assistance by diagnostic square by Miller

Technical Data

Technical Data SP-1:

Dimensions: 290 x 210 x 69 mm, app. 2.9 kg; 11.4 x 8.3 x 2.7 in, app. 6.3 lbs
Power Supply Requirements: 220-240V, nominal 230V, 50/60 Hz, or 100-115V, nominal 115V, 50/60 Hz; mains-independent operation with built-in rechargeable battery and charger unit, LED indication for line or battery operation
Battery Charging Time: 15 hours for a completely discharged battery (Battery Charging < 3 hours to 60 % capacity)
Battery Capacity: 2 hours of normal use
Power Consumption: max. 28VA
Storage: Memory for up to 100 tests
Liquid Crystal Display:
- Liquid crystal display for graphic and alphanumeric representation
- Resolution: 192 x 64 dots
- Contrast is manually variable via keyboard
Chart Paper: Thermoreactive, Z-folded, width 90 mm/3.6in, perforation each page
Printing Process: High-resolution thermal printhead, 8 dots/mm
Paper Speed: 25 mm/s
Safety Standards: MDD 93/42/EEC, Annex II; EN 60601-1: 1990; IEC 60601-1-2
Safety Class: BF according to IEC 60601-1
Protection Class:
- I according to IEC 60601-1, CSA 22.2 and UL 2601 (units with internal battery)
- IIa according to MDD 93/42/EEC (medical guideline)
Conformity: -0123 according 93/42/EEC
Control Panel and Keyboard: User-friendly rubber keys, LED indicators
Environmental Conditions:
- Temperature, operating: 10° to 40° C/50° to 104° F
- Temperature, storage: -10° to 50° C/14° to 122° F
- Relative Humidity: 25 to 95 % (not condensed)
- Pressure, operating: 700-1060 hPa
Standard Interfaces: 1x RS-232 serial interface
SPIROVIT SP-1 Basic Unit: Performs four inspiratory and expiratory pulmonary function tests with choice of predicted normals
Accessories:
- 1 pneumotach sensor (choice of SP-150 disposable or SP-20 reusable sensor)
- 1 noseclip
- 1 pack of disposable mouthpieces (for SP-150) or filters (for SP-20)
- 1 power cable
- 1 pack of paper
- 1 operating manual
Hardware Options: Transport case, calibration syringe (required)
Software Options:
- SEMA PC software for validation and archiving of test data on PC
- Memory for up to 100 tests
Measured Values:
FVC: FVC, FEV0.5, FEV1.0, FEV3.0, FEV0.5/FVC, FEV1.0/FVC, FEV3.0/FVC, FEF0.2-1.2, FEF25-75%, FEF75-85%, PEF, MEF75%, MEF50%, MEF25%, FIVC, FIV1.0, FIV1.0/FIVC, FIV1.0/FVC, PIF, MIF50%
SVC: SVC, ERV, IRV, TV
MV: MV, RR, TV
MVV: MVV, RR, TV
Prediction Equation:
- Adults: ECCS, Crapo, Morris, Knudson, Knudson 76, Austria, Berglund, Finnish, Indian, Composite, Polgar
- Children: Quanier&Tammeling, Austria, India, Knudson, Knudson 76, Polgar
- Comparison pre/post medication possible
- Extrapolated predicted values
Presentation:
- Flow/volume loop
- Flow/time plot
- Measurement values table
Standards Compliance: ATS 94, OSHA, NIOSH

SPIROVIT SP-150 Pneumotach Flowsensor for Pulmonary Function Testing with Disposable Sensors:

Dimensions: 118 x 36 x 28 mm, app. 120 g; 4.6 x 1.4 x 1.1 in., app. 0.26 lbs
Measuring Method: Pneumotachometer
Measuring Ranges:
- Flow: 0 to ±16 l/s
- Volume: 0 to ±15 l
Measuring Accuracy: According ATS 1994
Flow Impedance: <0.2 mbar *s/l at 12 l/s

SPIROVIT SP-20 Pneumotach Flowsensor for Pulmonary Function Testing with Reusable Sensor:

Dimensions: 125 x 36 x 28mm, app. 160g; 4.9 x 1.4 x 1.1 in., app. 0.34 lbs
Measuring Method, Measuring Ranges, Measuring Accuracy, Flow Impedance same as SP-150

All technical data is subject to changes aiming to continuous innovations.



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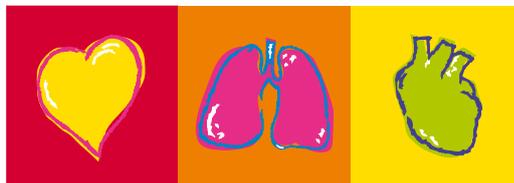
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