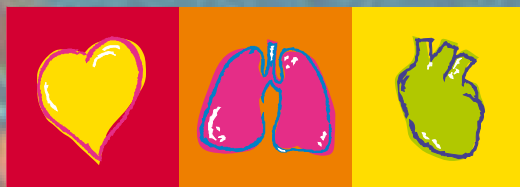# SPIROMETRY

## 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 high-resolution patient incentive screen 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 desinfection, 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
- Everything in one box … memory, battery, printer, patient incentive screen
- Affordable, fast, reliable, labelled

# SPIROVIT SP-2

## Compact technology – good things come in small packages!

- Combines all the functions of a conventional large spiro device in one handy unit
- Extremely easy to use
- Top design and top quality
- Excellent value for money
- Very low running and maintenance costs
- For practice use and home visits
- FVC, SVC
- MVV option
- Pre/post comparisons
- Lightning speed data transfer via infrared interface to printer
- Battery capacity of up to 30 hours
- Disposable mouthpieces designed to minimize the danger of cross-contamination
- High-quality LCD with a scale of four shades of gray

Underwater pictures: Erwin Portmann, erpo@datazug.ch

## The easy way to spirometry!

The device is handed over to the patient with a new disposable mouthpiece for each test in place. Data evaluation and test results are delivered immediately, irrespective of where the tests are carried out. Battery capacity for up to 300 tests!

## Data preparation

The SP-2 is equipped with a fast and efficient data evaluation software. Test results are transferred to the printer via an infrared interface where the curves are printed with high resolution to enable a precise diagnosis.

# 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 screein
- Hygienic and easy to care for: easy cleaning, no time-consuming dismantling into its components
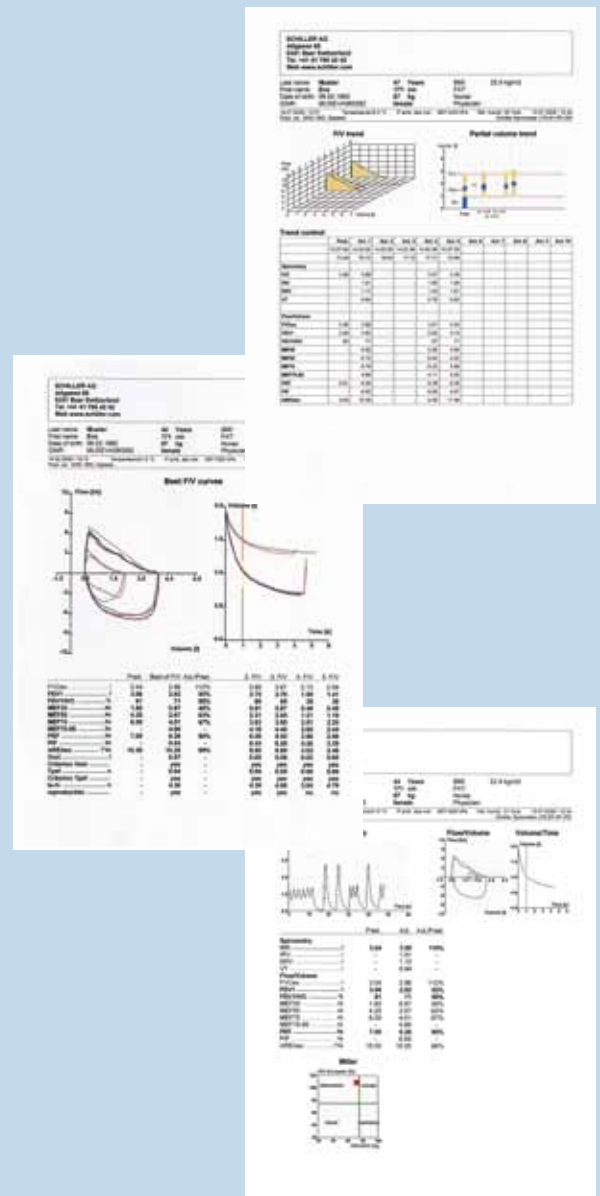
### SP-250 Sensor

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!

- 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.
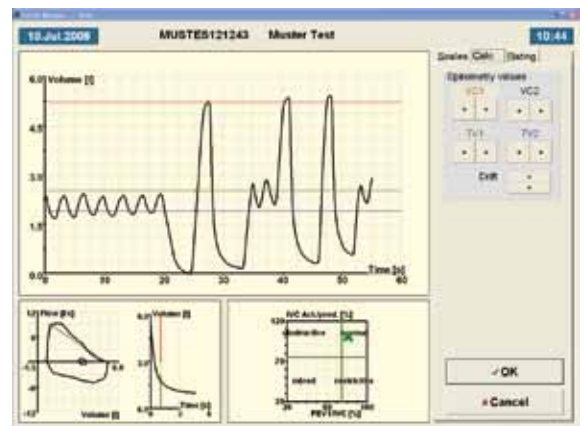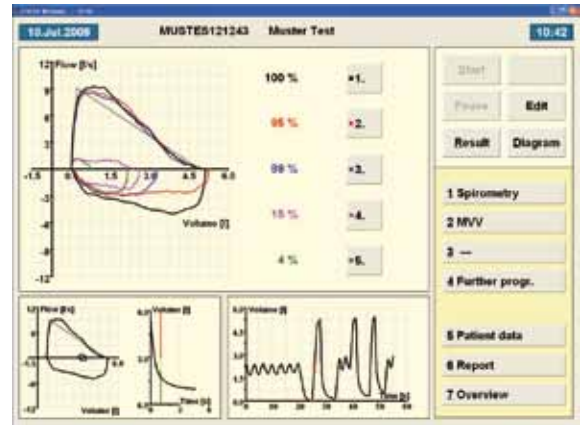- Report output by screen, printer, intranet, or as graphic data for export into the doctor's file.
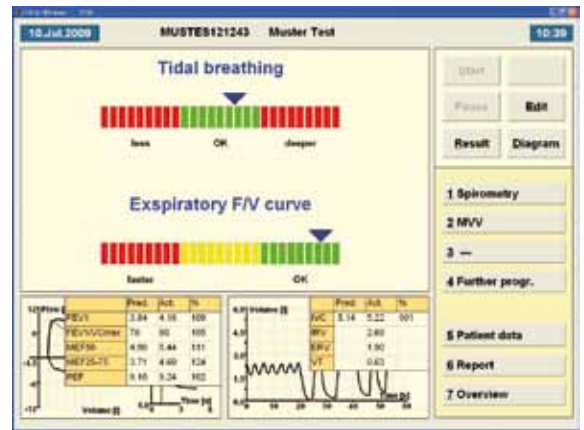
- Standard reports for all measuring programs available. Configuration of any individual report possible.
- Size, number, and position of graphics selectable within each report. More than 50 different graphics available.
- Possibility to export measurement results into word-processing and graphic programs.

# 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, bronchospasmolysis 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 rechargble 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: 6 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/FVC, 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

## Tecnical Data SP-2:

Dimension: 85 x 190 x 27 mm; 0.275 kg

Liquid Crystal Display (LCD):
– Liquid crystal display for graphic and alphanumeric representation
– Resolution: 160 x 100 pixel
– LCD can be backlighted

Control panel and keyboard: User-friendly rubber keys, 7 function keys, 12-key block

Battery capacity: Approx. 300 complete tests; 2 built-in AA 1.5 V alkaline primary batteries

Storage: Flash memory for up to 50 patients (3 pre and 3 post)

Standard interface: IrDA 1.0 Communication language PCL 3

Printer: IrDA compatible or with IrDA adapter

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 condensing)
– Pressure, operating: 700 to 1060 hPa

Accessories:
– 1 noseclip
– 1 disposable mouthpiece, P/N 2.100118
– 1 operating manual

Hardware option: Calibration syringe, P/N 2.100027

Software option: MVV test

Safety standards:

IEC/EN 60601-1: 1990; CSA 22.2 and UL 2601

Safety class: BF according to IEC 60601-1

Protection class: IIa according to MDD 93/42/EEC

Standards compliance: ATS, ATS94, OSHA, NIOSH

Conformity: according 93/42/EEC; FDA K 99 28 23

Prediction equation:
ECCS, Crapo, Morris, Knudson, Kundson 76, Austria, Berglund, Finnish, Indian, Composite, Polgar
– Comparison of pre/post medication possible
– Comparison nominal/actual with standard values possible
– Extrapolated predicted values

Measured values:
FVC: FVC, FEV1.0, FEV3.0, FEV0.5 /FVC, FEV1.0 /FVC, FEV3.0/FVC, FEF0.2-1.2, FEF25-75%, FEF75-85%, PEF, FEF75%, FEF50%, FEF25%, FIVC, FIV1.0, FIV1.0/FVC, FIV1.0/FVC, PIF, MIF50%, FMFT
SVC: SVC, ERV, IRV, TV
MVV: MVV, RR, TV (optional)

Measuring method: Pneumotachosensor

Measuring range:
– Flow: 0 to ± 16 l/s
– Volume: 0 to ± 15 l

Measuring accuracy: According ATS 1994

Flow impedance: < 0.2 mbar s/l at 16 l/s

Presentation:
– Flow/volume graph
– Volume/time graph
– Measurement value tables

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

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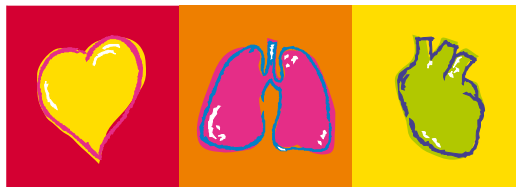sales@schiller-reomed.ch
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