

# The EasyOne CS Spirometer

Spirometry uniquely designed for the CardioSoft system

This easy-to-use spirometer uses patented digital ultrasonic flow measurement technology for fast, accurate and reliable operation. The EasyOne™ CS is uniquely designed to provide calibration-free spirometry testing with CardioSoft™. It provides comparisons to predicted values, pre- and post-bronchodilator assessments, and test quality controls that automatically assess patient effort. It displays simple user prompts and messages that aid in patient coaching.

The graphic display shows waveforms, and the color printout is easy to read and interpret. What's more, the single-patient-use Spirette™ minimizes risk of cross-infection. Compact and battery-powered, the hand-held EasyOne CS serves as a next generation spirometry option for CardioSoft.



## Advantages of the EasyOne CS Spirometer:

- Easy to use
- Fast and accurate
- Reliable
- Hygienic
- Affordable



# The EasyOne CS Spirometer Specifications

Test Types	Forced Vital Capacity (FVC), Flow Volume Loop (FVL), SVC, Maximum Voluntary Ventilation (MVV), OSHA Cotton Dust, Disability
Parameters	FEV1, FVC, (or FEV6), FEV1/FEV6, MVV, FEF 25% - 75%, PEF, FET, FIVC, PIF, variability, pre-post % change, VC, IRV, ERV, VT, IC, FEV1/VC
Predicted Normals	NHANES III, Knudson 76, Knudson 83, Morris, Crapo, Dockery, Hsu
Languages	English, Spanish, French, German, Italian, Polish, Portuguese
Accuracy	Volume: + 2% OR 0.050 L, whichever is greater Flow: + 2% or 0.020 L/s, whichever is greater (except PEF) PEF: + 5% or 0.0200 L/s, whichever is greater
Range	Volume: 0 to 12 L, Flow: 0 to 16 L/s
Resistance	Less than 0.3 cm H2O/L/s
Cal Check	With 3-liter Syringe (not required, but optional)
Power	(2) AA alkaline batteries, capacity for 400 tests
Size and Weight	8.4 x 15.7 x 4.3 cm (3.3 x 6.2 x 1.7 inches) 255 gr. (9 ounces)

## Meeting the latest standards

2005 ATS/ERS Standardization of Spirometry and NLHEP Spirometry review  
Process include:

### – Equipment requirements

The spirometer must be capable of accumulating volume for >15 s (longer times are recommended) and measuring volumes of  $\geq 8$  L (BTPS) with an accuracy of at least  $\pm 3\%$  of reading or  $\pm 0.050$  L, whichever is greater, with flows between 0 and 14 L/s-1. The total resistance to airflow at 14.0 L/s-1 must be  $< 1.5$  cmH2O/L-1 (0.15 kPa/L-1/s-1). EasyOne CS meets this standard.

### – Between-maneuver evaluation requirements

Acceptable repeatability is achieved when the difference between the largest FVC is  $\leq 0.150$  L and the difference between the largest and next largest FEV 1 is  $\leq 0.150$  L. EasyOne CS meets this standard.

### – Maximum expiratory flow-volume loops scale requirements

A 2:1 ratio must be maintained between the flow and volume scales, e.g. 2 L/s-1 of flow and 1 L of exhaled volume must be the same distance on their respective axes. EasyOne CS meets this standard.

### – Display Requirements

For the start of test display, the volume- time display should include  $\geq 0.25$  s before exhalation starts (zero volume). When a volume-time curve is plotted as hardcopy, the volume scale must be  $\geq 10$  mm/L-1 (BTPS). When the volume-time plot is used in conjunction with a flow-volume curve, the time scale requirement is reduced to 10 mm/s-1. EasyOne CS meets this standard.

# The EasyOne CS Disposable Spirette

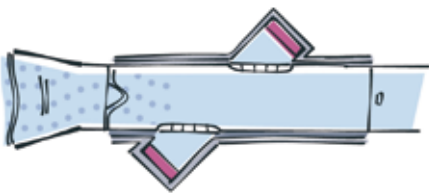
## True Flow Technology

EasyOne CS Spirometer incorporates an ultrasonic flow sensor to measure the flow of air in and out of the patients lungs. Ultrasonic flow measurement eliminates problems associated with traditional methods of flow measurement. There are no moving parts, no codes to enter, no screens to catch sputum, and no disposables to calibrate.

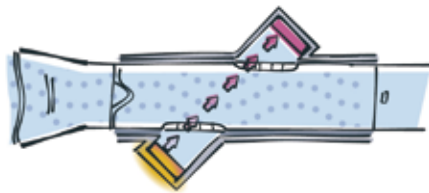
Ultrasonic flow measurement is independent of gas composition pressure, temperature, and humidity; and eliminates errors due to these variables. The disposable Spirette acts only as a hygienic shield and is transparent to the ultrasonic pulses traveling between the measurement transducers. Since the disposable Spirette has no sensor elements, it does not perform a measurement function and does not require calibration.

## Disposable Spirette Technology

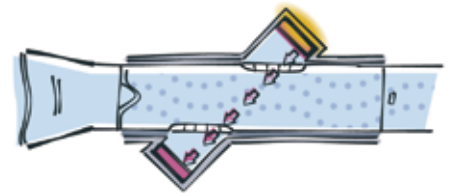
### Ultrasonic Flow Measurement



Transducers located on either side of the Spirette cavity emit and receive sound in alternating directions.



When gas flow is present in the tube, a pulse that travels against the flow is slowed down and takes a longer time to reach the opposite transducer.



Conversely, a pulse traveling with the flow is sped up and takes a shorter time to reach the opposite transducer.

## Sensor Technology

The transit time of the sound pulses is precisely measured with a digital dock. The gas flow through the Spirette is then calculated from the upstream and downstream transit times. This calculation is independent of gas composition, pressure, temperature, and humidity; and eliminates errors due to these variables.

## Advantages of the EasyOne CS Disposable Spirette

- No Calibration Required
- Single patient use Spirette
- No Cleaning
- Hygienic Packaging
- Low Cost
- Available in a 50 dispenser pack or economy 200 bulk with refillable dispenser
- Ergonomically designed to fit both pediatrics and adults comfortably

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