

Spiropalm 6MWT

Hand-Held Spirometer



The first and unique solution combining Spirometry and the advanced Six-Minute Walk Test

- ▶ Realtime testing for the standard 6MWT (Six-Minute Walk Test)
- ▶ Measurement of Minute Ventilation (VE) and Breathing Pattern during walking, and Breathing Reserve (BR) with Ventilation Limitation Statement
- ▶ HR and SpO₂ Monitoring by Nonin®
- ▶ Evaluation of Dynamic Hyperinflation with the measurement of Inspiratory Capacity (IC)
- ▶ USB connection for external printer and PC software for data management



The Spiropalm 6MWT is a new medical device designed by COSMED incorporating the latest design for portable spirometry and a unique tool for the standardized “Six-Minute Walk Test”(6MWT). The versatility of the Spiropalm 6MWT allows a new way of measuring and reporting results for the Six-Minute Walk Test. No more clipboards, stopwatches, lap counters, or non-integrated pulse oximeters. The Spiropalm 6MWT is a complete testing package with an integrated pulse oximeter, and including the ability to measure ventilation during the test. With the integration of the pulse oximeter, the technician can monitor SpO₂ during the Six-Minute Walk Test, as well as provide a complete O₂ saturation report for oxygen prescription. Measuring ventilation is important clinical information, as technicians will be able to assess ventilatory limitations. The Spiropalm 6MWT also allows for the measurement and evaluation of hyperinflation and air trapping in patients with pulmonary disease.

With a limited investment, the Spiropalm 6MWT performs an integrated evaluation of the cardiovascular, respiratory, and muscular adaptation during walking and other types of exercise.

The Spiropalm 6MWT fully complies with requirements from “ATS/ERS Guidelines for the Six-Minute Walk Test” (2002).

Applications

- ▶ Hospitals: RT Departments, PFT labs, Allergy Clinics
- ▶ Physicians: Allergy, Primary Care, Pulmonology, Pediatric Pulmonology
- ▶ Pulmonary Rehabilitation
- ▶ Allied Health Education, RT, PT, Nursing

Key Features

The Spiropalm 6MWT includes:

- ▶ A turbine flowmeter, connected to a silicone face mask with head cap, for measurement of ventilatory parameters
- ▶ An Integrated pulse oximeter (Nonin®) for oxygen saturation (SpO₂) and HR monitoring
- ▶ A convenient design for comfortable testing, the Spiropalm 6MWT is attached at the patient’s waist with an elastic belt and holder, or attached directly to the patient’s waistband. The practical design of the holder also neatly organizes the cables.

6MWT Parameters

Before test:

- ▶ FEV1
- ▶ Dyspnea baseline (Borg scale)
- ▶ Fatigue baseline (Borg scale)
- ▶ SBp (mmHg)
- ▶ DBp (mmHg)
- ▶ Supplemental Oxygen
- ▶ O₂ Flow (L/min)
- ▶ Test duration (min)

During test:

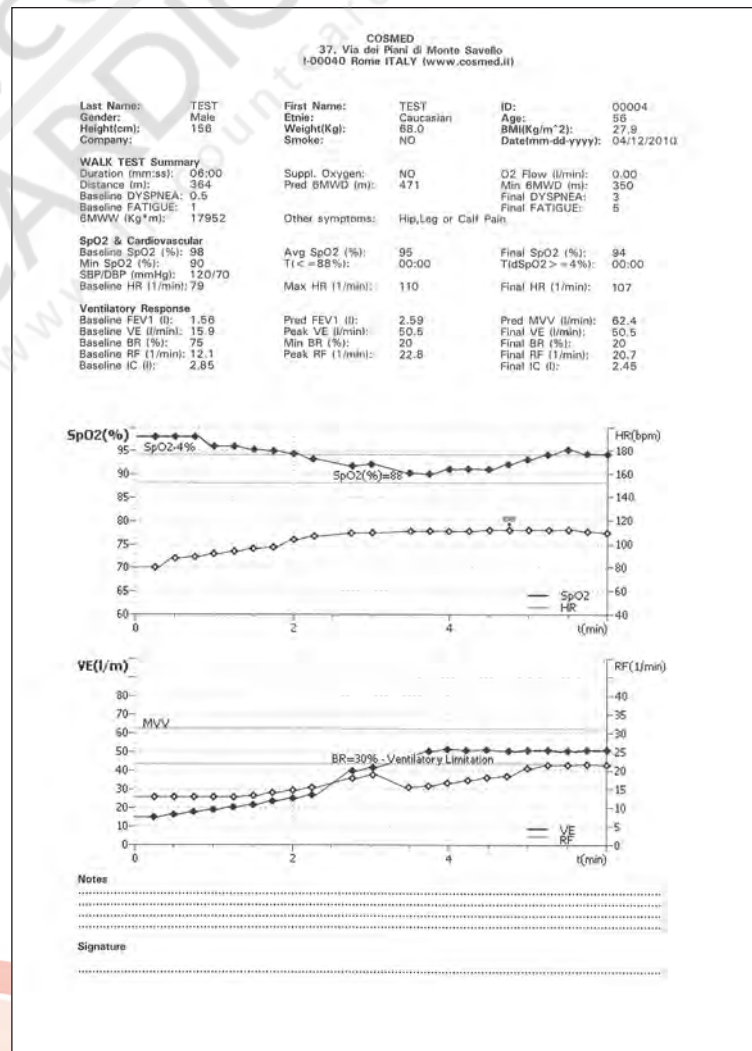
- ▶ Elapsed Time (mm:ss)
- ▶ SpO₂ (%)
- ▶ Heart Rate HR (1/min)
- ▶ Ventilation VE (l/min)
- ▶ Respiratory Frequency RF (1/min)
- ▶ Dynamic Inspiratory Capacity IC (l)

End of test:

- ▶ Walk Distance (m)
- ▶ Dyspnea & Fatigue End
- ▶ Symptoms

1 Test 2 Stampa 3 Diagn. 4 Vis.BC 5Elim. 0 Esci			
Param	Meas	Pred	
FVC 16/03/10			
Six Minute 17/03/10			
Distance(m)	385		
DYSPNEA end	1		
FATIGUE end	1		
BL SpO2(%)	98		
Min SpO2(%)	94		
Final SpO2(%)	98		
Max VE(l/min)	38		
BR(%)	40.0		
Max HR(1/min)	85		

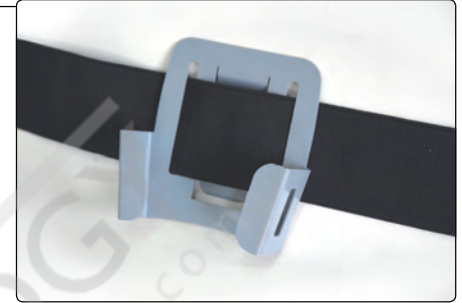
Spiropalm Screenshot: End of 6MWT



Spiropalm 6MWT reports can be printed with compatible printers via a direct USB connection. Reports can also be saved in PDF format to a configured USB flash drive.



1.BaseLine 2.Start Walk 3.Mn 4.IC 5.End 0.Exit	
Time (mm:ss)	05:17
SpO2(%)	98
HR(1/min)	95
VE(L/min)	24.7
RF(1/min)	21.3
IC(L)	1.0



Full Spirometry

The Spiropalm 6MWT allows the option to perform standard spirometry testing:

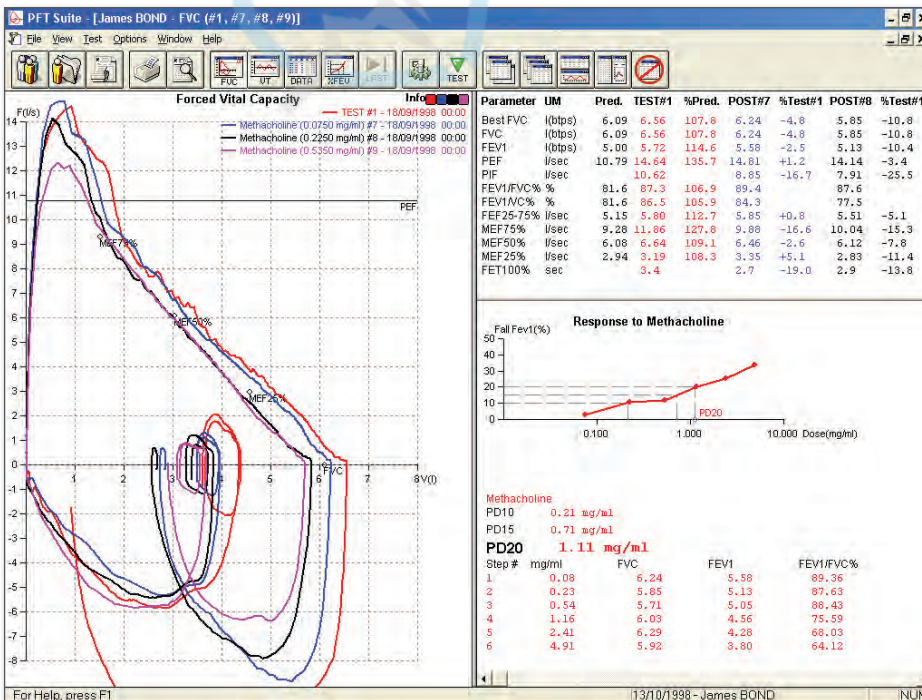
- ▶ Slow/Forced Vital Capacity (SVC/ FVC)
- ▶ Maximal Voluntary Ventilation (MVV)
- ▶ Bronchial Challenge Test (Pre/Post)

PC Software (Spirometry only)

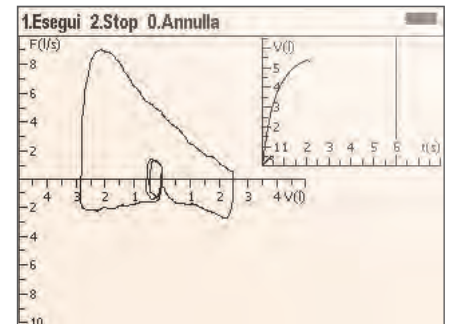
User-friendly software allows spirometry testing via a USB interface and data download for results management through simple, intuitive commands and icons. The software's advanced features and user-defined protocols allow for easy management of bronchial challenge tests. The ability to compare tests performed in different sessions is available.

Test	
1	FVC
2	FVC post BD
3	FVC post BC
4	SVC
5	MVV
6	SPO2
7	Test del cammino

Spiropalm Screenshot: List of spirometry tests



PC software allows realtime graphic and numeric viewing of spirometry tests



Spiropalm Screenshot: Graphical representation during spirometry testing

1.Start 2.Save & Exit 3.Curve 0.Exit			
Param	Meas	Pred	%
#1BEST			
FVC	5.29	4.88	108
FEV1	3.95	3.97	99
#2 LAST			
FVC	4.91	4.88	100
FEV1	3.75	3.97	94
#3			
FVC	4.86	4.88	99
FEV1	3.75	3.97	94

Spiropalm Screenshot: Spirometry results



Save PDF reports to the USB flash drive

6MWT References:

- *ATS Statement: Guidelines for the Six-Minute Walk Test. American Journal of Respiratory and Critical Care Medicine, 166:111-117 (2002)*
- *Enright PL, Sherrill DL. Reference equations for the six-minute walk in healthy adults. American Journal of Respiratory and Critical Care Medicine, 158:1384-1387 (1998)*
- *Troosters T, Gosselink R, Decramer M. Six minute walking distance in healthy elderly subjects. European Respiratory Journal, 14: 270-274 (1999)*

Spirometry References:

- *ERS 1993 (ECCS 1983), NHANES III, Knudson 1983, ECCS 1971, ITS, Zapletal, LAM, Pneumobil, Gutierrez (Chile), Multicentrico, Barcelona, Thai 2000, Austria (Forche), Crapo 1981*

Technical Specifications

Products Features

Flowmeter	Digital Turbine
Type	Bidirectional
Flow Range	0.08-20l/s
Volume Range	12 liters
Accuracy of Reading	±2%
Resistance	<0.6 cm H ₂ O/l/s @ 14 l/s
Temperature Sensor	0-50°C

Measured Parameters

6MWT Parameters:

Distance (m), 6MWW (Kg*m), SpO₂(%), HR (%), T88 (≤88%) (mm:ss), T (ΔSpO₂ ≥ 4%) (mm:ss), VE (L/min), RF (1/min), BR (%), IC (L), SBp (mmHg), DBp (mmHg), Borg Dyspnea (x.x), Borg Fatigue (x.x)

Spirometry Parameters:

FVC • IVC • VC • MVV • VT • FEV1 • FEV6 • FEV1/FEV6 • FEV6/FVC • PEF • PIF • FEV1/FVC • FEF 25-75 • FEV1/VC% • %FEV1 • MEF25% • MEF50% • MEF75% • FET 100% • Lung Age • ERV • IRV • VE • Rf • ti • te • ti/t.tot • VT/ti • Best FVC • Best FEV1 • IC • SpO₂ • HR

Hardware

Dimensions (mm/in)	185 x 86 x 31 / 7.25 x 3.25 x 1.25
Weight (g/oz)	390 / 13.5
Display	LCD B/W 320 x 240 pixels (amber backlit)
Internal Memory	of up to 1000 tests/patients
Calibration	3 liter Calibration Syringe (optional)
Recording Time	2-30 minutes

Direct USB Printing

Compatible with HP PCL printers with a USB port for data transmission

Standard Packaging Includes

PC software and user manual, flowmeter, AC/DC adapter (110-240V), USB communication cable, carrying case, pediatric mouthpiece adapter, mouthpieces and nose clips, anti-bacterial filters. CD-rom, 6MWT kit (Nonin pulse oximeter, silicone face mask, headcap, elastic belt, and product holder), USB flash drive

Available Languages

English, Italian, French, German, Spanish, Portuguese, Turkish, Chinese (Mandarin), Korean, Dutch

PC Configuration Required

Pentium or faster. Operating system: Windows XP, 2000, 98/95, NT, Vista (32 bit), Windows 7 (32 bit). 32 Mb RAM or more, available USB port, CD-ROM drive, 20 Mb on HD space available, monitor VGA, SVGA, XGA, any mouse and printer compatible with the MS Windows™ operating system

Electrical Requirements

Internal batteries	Rechargeable Li-Ion (1800mAh)
Battery Charger	Input: AC 100-240V 200A, Output: DC 12V 700A

Safety & Quality Standards

Equipment complies with MDD (93/42 EEC)
EN 60601-1 (safety) / EN 60601-1-2 (EMC)



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