

EasyOne Pro Lab

Spirometry Single Breath CO Diffusion
Multiple Breath Nitrogen Washout



DLCO Standard 2019

The Proven Ultrasound Technology

- ◆ No Calibration, No warm-up time, No moving parts
- ◆ Automated user guidance throughout maneuvers based on ATS/ERS standards 2019 and 2005
- ◆ Z-score, LLN and %predicted for fast interpretation of results
- ◆ Reproducible results ensure comparability in multicenter studies
- ◆ Real-time curves and pediatric incentives
- ◆ Immediate test quality feedback in accordance with ATS/ERS criteria
- ◆ Export of pdf files and raw data
- ◆ Flexible HL7 and XML interface for easy EMR integration Only 1 gas for DLCO and 1 gas for MBW testing, no calibration gas required
- ◆ Absolute hygienic solution with Filteratte and Barriette consumables eliminates the risk of cross-contamination
- ◆ Compact device with smooth surfaces for easy and thorough cleaning
- ◆ Quality grades based on NLHEP and ATS/ERS 2005 and 2019 for all tests
- ◆ N₂ washout FRC lung volume studies and LCI measurement
- ◆ Upgradable to BodyBox, Rocc, MIP/MEP & Rhinomanometry

Standards & Recommendations

Quality, Medical	ISO 13485, ISO 14971, IEC 62366,
Devices & Electrical	IEC 62304, ISO 26782, ISO 23747, IEC 60601-1, IEC 60601-2, ISO 10993-1
FDA	510(k) market clearance
MDD 93/42/EEC	CE marked
Associations & Institutes	ATS/ERS 2019 and 2005, NIOSH/OSHA, SSA Disability

Technical

Printing options	PCL standard, direct to printer or over network
Data management	EasyOne Connect (SQLite, MS SQL Server)
Export	HL7, XML, GDT, via USB, LAN Network
Data links	Ethernet port, USB, possibility to upgrade to WLAN
No. of tests	> 10'000 tests
Age range	Spirometry > 4 years, DLCO > 6 years, MBW > 4 years or > 18kg
Dimensions	27 x 33.5 x 27 cm3 (H x W x D), 8 kg
Device classification	Protection class I, Type BF applied part
Operating conditions	Temp. 10 - 40°C / 50 - 104°F Rel. Humidity 30 - 75%, Non-condensing Atmosph. Pressure 700 - 1060 hPa
Power Consumption	Up to 80 VA

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Parameters

FVC	ATI, BEV, EOTV, FEF10, FEF25, FEF 2575, FEF2575_6, FEF40, FEF50, FEF50/FVC, FEF50/VCmax, FEF60, FEF75, FEF75-85, FEF80, FET, FET25-75, FEV.25, FEV.5, FEV.5/FVC, FEV.75, FEV.75/FEV6, FEV.75/FVC, FEV.75/VCmax, FEV1, FEV1/FEV6, FEV1/FVC, FEV1/FVC6, FEV1/VC, FEV1/VCmax, FEV3/FVC, FEV3/VCmax, FEV3, FEV6, FVC, MEF20, MEF25, MEF40, MEF50, MEF60, MEF75, MEF90, MMEF, MTC1, MTC2, MTC3, MTCR, PEF, PEFT, t0, VCmax
FVL	ATI, BEV, CVI, E50/150, EOTV, FEF10, FEF25, FEF2575, FEF2575_6, FEF40, FEF50, FEF50/FVC, FEF50/VCmax, FEF60, FEF75, FEF75-85, FEF80, FET, FET25-75, FEV.25, FEV.5, FEV.5/FVC, FEV.75, FEV.75/FEV6, FEV.75/FVC, FEV.75/VCmax, FEV1, FEV1/FEV6, FEV1/FIV1, FEV1/FIVC, FEV1/FVC, FEV1/VC, FEV1/VCmax, FEV3/FVC, FEV3/VCmax, FEV3, FEV6, FIF25, FIF2575, FIF50, FIF50/FEF50, FIF75, FIV.25, FIV.5, FIV1, FIVC, FVC, MEF20, MEF25, MEF40, MEF50, MEF60, MEF75, MEF90, MIF25, MIF50, MIF75, MMEF, MMIF, MTC1, MTC2, MTC3, MTCR, PEF, PEFT, PIF, t0, VCmax
SVC	ERV, IC, IRV, Rf, VC, VCex, VCin, VCmax, VT
MVV	MVV, MVV6, MVVtime, Rf, VCext, VT
DLCO	BHT, COHb, ColBarVol, CO Conc, HE Conc, O2 Conc, Anatomic Dead Space, System Dead Space, Discard Volume, DLadj, DLadj/VA, DLCO, DLCO/VA (KCO), ERV, FA CO, FA HE, FE CO, FEV1/FVC, FI CO, FI HE, FRC sb, FRC Cor, Hb, tl, Kroghs K, PaO2, RV sb, RV Cor, RV/TLC sb, RV/TLC Cor, TLC sb, TLC Cor, TLCO, VA sb, VA Cor, VCext, VCmax, Vd, VI, VT
MBW	CEV, CEV5, Anatomic Dead Space, Syst Dead Space, ERV, fN2 End, fN2 Start, FRC base, FRC extrapol, FRC mb, IC, IRV, LCI, LCI5, M0, MR1, MR2, Rf, RV mb, RV/TLC mb, TLC mb, VA mb, VC, VCex, VCin, Vd, VT, VT/FRC mb, VT/kg, Scond, Sacin

Gas Specification

DLCO	9% to 11% medical grade helium 0.27% to 0.33% medical grade carbon monoxide 18% to 25% medical grade oxygen, balance nitrogen The DLCO test requires a gas mixture within an accuracy range of <2%
MBW	Oxygen for hospital use

Gas Sensor

	CO	CO ₂
Type	Non-dispersive infrared	
Range	0 to 0.35%	0 to 10%
Resolution	0.0001% (1 ppm)	0.005 %
Accuracy	± 0.0015% (15 ppm)	0-1%: 0.05% CO ₂ 1-3%: 0.1% CO ₂ 3-6%: 0.15% CO ₂ 6-9%: 0.2% CO ₂ 9-10%: 0.3% CO ₂

Tracer Gas Sensor

	Helium	N ₂
Type	Ultrasonic transit time	
Range	0 to 50%	0 to 100%
Resolution	0.02%	0.1%
Accuracy	0.05%	0.2%



Predicted Normal Values Spirometry

Asia	Chhabra (India) 2014 , Dejsomritrurai (Thailand) 2000, Indonesia 1992, IP (China, HongKong) 2000 & 2006, JRS 2001 & 2014
GLI	Quanjer 2012, Stanojevic 2009
North America	Crapo 1981, Dockery (Harvard) 1993, Eigen 2001, Gutierrez (Canada) 2004, Hsu 1979, Knudson 1983, Knudson 1976, Morris 1971 & 1976, NHANES III (Hankinson) 1999, Polgar 1971
Latin America	Chile 2010, Chile (Pediatrics) 1997, Pereira 1992, Pereira 2006/2008, Pérez-Padilla (PLATINO) 2006, Pérez-Padilla (Mexico) 2001, Pérez-Padilla (Mexico, Pediatrics) 2003
Europe	ERS (ECCS, EGKS, Quanjer) 1993, Garcia-Rio (SEPAR) 2013, Falaschetti 2004, Forche (Austria) 1988 & 1994, Klement (Russia) 1986, Roca (Spain, SEPAR) 1982, Rosenthal 1993, Sapaldia (Switzerland) 1996, Vilozni 2005, Zapletal 1977, Zapletal 2003
Europe	Berglund Birath (Sweden) 1963, Scandinavia Finnish 1982 (1998), Gulsvik (Norway) 1985, Hedenström 1985 & 1986, Langhammer (Norway) 2001, Kainu (Finland), 2016, Nystad 2002
Australia	Gore Crockett 1995, Hibbert 1989
Africa	Mengesha (Ethiopia), 1985

Predicted Normal Values DLCO

Asia	Chhabra (India) 2015 , Pereira 2008, Thompson 2008, Kim 2012, Ip (China, HongKong) 2007, JRS (Japan) 2001
North America	Ayers 1975, Burrows 1961, Crapo 1981 & 1982, Knudson 1987, McGrath & Thompson 1959, Miller 1980, Gutierrez (Canada) 2004, NHANES (Neas) 1996, Polgar 1971
Latin America	Vazquez Garcia (ALAT) 2016, Gochicoa 2019
Europe	Stanojevic (GLI) 2017, ERS ECCS/EGKS 1993, Zapletal 1977, Roca 1990 & 1998, Hedenström 1985 & 1986, Gulsvik 1992, Klement (Russia) 1986

Predicted Normal Values MBW

Europe	Verbanck 2012
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