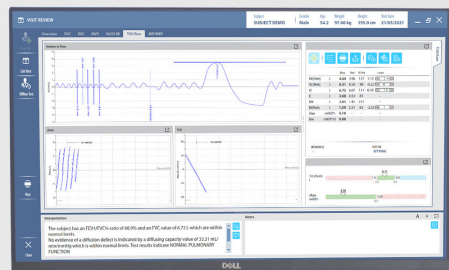


*"When one breath
does matter"*

Q-Box
Body Plethysmography



Q-Box Body Plethysmography

Accuracy and simplicity for the new
benchmark in Body Plethysmography



COSMED
The Metabolic Company

“The new generation of body-box cabin for lung volume measurement and airway resistance with the Gold Standard method of Body Plethysmography”

- ▶ **All-in-one solution for Lung Volumes, DLCO, Spirometry, Airways Resistance, and Respiratory Mechanics**
- ▶ **DLCO module for single-breath, intra-breath and membrane lung diffusion capacity**
- ▶ **Compliant with ATS/ERS 2017 DLCO, 2019 Spirometry and 2023 Lung Volumes Guidelines**
- ▶ **Forced Oscillation Technique module for respiratory system assessment at tidal breathing**
- ▶ **Large cabin provides comfort while keeping high measurements accuracy**
- ▶ **Perform tests (except TGV and sRaw) either inside or outside the cabin**



COSMED Q-Box is a high-performance body plethysmograph designed to deliver gold standard measurements of static lung volumes (TLC, RV, FRC) and airway resistance and conductance (Raw, Gaw) with superior accuracy and reliability. Equipped with high-precision pneumotachs and fast-response gas analyzers, Q-Box ensures consistent performance across diverse patient profiles and clinical settings.

Spirometry and respiratory mechanics testing are included as standard and can be performed either inside or outside the cabin. Optional modules, such as the Lung Diffusing Capacity (DLCO) and the Forced Oscillation Technique (FOT) ones, expand its diagnostic capability.

Built with a transparent glass, durable aluminum frame, and hermetic sealing for reliable performance, the Q-Box features a spacious constant-volume cabin that allows for easy access and natural positioning, even for patients with limited mobility. A 180° opening door and adjustable chair further support accessibility and comfort.

The body box is also available as a module for the Quark PFT, with a choice of either an ergonomic adjustable chair or a reinforced bench to suit different clinical preferences and patient needs alike.

Q-Box modular design simplifies field maintenance and supports long-term performance with minimal service needs.

Testing Capabilities and Features

BODY PLETHYSMOGRAPHY (TGV/RAW)

Core component of the Q-Box system, body plethysmography enables gold-standard assessment of static lung volumes and airway resistance with exceptional reproducibility.

- Fully customizable testing sequences across TGV, sRAW, SVC, IC and FVC maneuvers, with real-time display and easy capture of multiple RAW measurements.
- Optimal data reliability with fast calibration and stabilization times, features like polytropic factor calibration and body box leakage check, and in-vitro accuracy verification with optional TGV Simulator.
- Consistent measurements in quiet breathing scenarios with thermal drift-compensated sRAW values.
- Flexible TLC calculation using either Inspiratory Capacity or complete Slow Vital Capacity maneuvers.
- Automatic interpretation statements according to measured TLC.
- Minimized environmental interference with transparent compensation box.
- Optimized patient cooperation with quick-release arm mechanism for one-handed adjustment and open-door simulation mode.

SPIROMETRY

Included as standard, Q-Box spirometry offers complete, guideline-compliant lung function testing for both routine screening and advanced diagnostics.

- Comprehensive diagnostics enabled by support for FVC, SVC, MVV, and Pre/Post Bronchial Provocation maneuvers.
- Flexible hardware configuration with compatibility for both pneumotach and turbine flowmeters.
- Reliable data quality through real-time quality control and automatic trial selection compliant with ATS/ERS standards.
- Improved pediatric and elderly engagement using animated incentives with user-defined effort grading.
- Clear clinical interpretation with GOLD-standard COPD classification on FVC Post BD.
- Streamlined bronchial challenge testing with automated protocol management, with or without integrated dosimeter
- Accurate assessment of predicted values through integration of Global Lung Initiative (GLI) reference equations, including z-scores

RESPIRATORY MECHANICS

Standard in all Q-Box systems, respiratory mechanics testing delivers a detailed evaluation of respiratory muscle strength and ventilatory drive.

- Comprehensive muscle assessment with MIP (Maximal Inspiratory Pressure) and MEP (Maximal Expiratory Pressure).
- Added diagnostic flexibility through SNIP testing.
- Advanced ventilatory drive evaluation with P0.1, including enriched O₂ or CO₂ testing options.

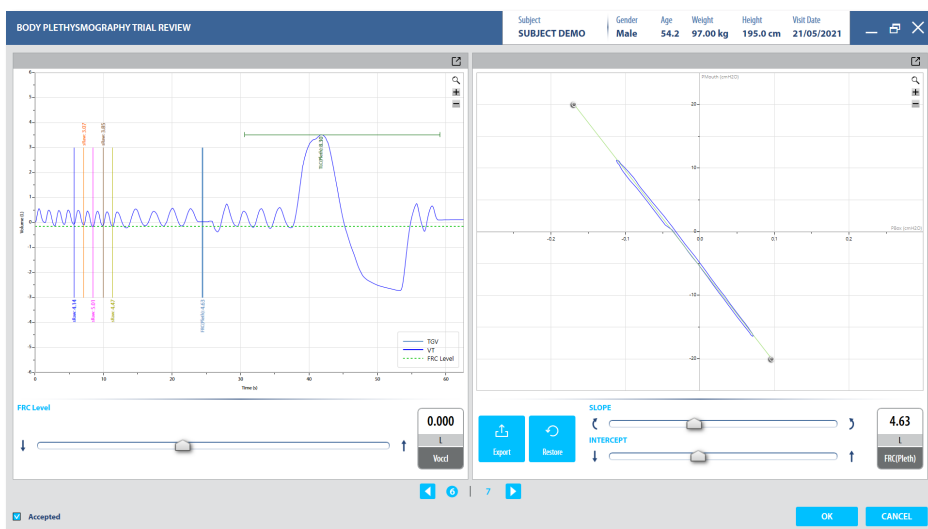
LUNG DIFFUSING CAPACITY (DLCO)

The optional DLCO module expands diagnostic capability by accurately measuring gas transfer across the alveolar membrane.

- Improved measurement accuracy using fast-response CO and CH₄ analyzers.
- Enhanced accuracy with a dedicated CO analyzer that eliminates interference from exhaled CO₂.
- Improved result reliability through “zero wet” correction, compensating for CO back-pressure and anaemia effects.
- Guideline-aligned alveolar volume calculation using the Mass Balance technique (ATS/ERS 2017).
- Confirmation of gas washout through early-phase exhaled CH₄ monitoring, ensuring accurate test conditions before gas inhalation.
- Real-time quality assurance with continuous monitoring of mouth pressure during testing.
- Accurate lung volume estimation in obstructive patients via corrected TLC measurement during DLCO.
- Automatic activation of membrane diffusion analysis when multiple DLCO_{sb} or DLCO_{ib} maneuvers are performed.
- Streamlined test preparation by allowing patient coaching without gas mixture use.
- Flexible quality assessment with both automated and customizable grading options
- Standards-compliant breath-hold timing configurable to Jones, Ogilvie, or ESP guidelines

Lung Function Testing	Q-Box Standalone
Spirometry (FVC Pre/Post, SVC Pre/Post, MVV, Broncho-Challenge)	●
Body Plethysmography (TGV, sRaw, sGaw, Pre/Post, Challenge)	●
Respiratory Mechanics (MIP/MEP, P0.1, SNIP)	●
Diffusing Lung Capacity (Single Breath, IntraBreath, Membrane Diffusion)	○
Forced Oscillation Technique (Rrs, Xrs, Ax, Broncho-Challenge)	○
Airway Resistance by Occlusion Technique (Rint/Rocc)	○
Integrated Dosimeter	○

● Standard ○ Optional



TGV capture edit.

FORCED OSCILLATION TECHNIQUE

This optional, non-invasive method allows sensitive assessment of respiratory impedance, even in uncooperative or pediatric patients.

- Reliable impedance measurement using pseudo-random noise signals.
- Full compliance with ATS/ERS 2019 guidelines on frequency range and acquisition time.
- Adapted for challenging populations, such as children and the elderly.
- Expanded diagnostic capability with post-bronchoconstriction testing.

OMNIA Software

Q-Box is powered by OMNIA, the unified software platform designed by COSMED to support healthcare professionals throughout every phase of pulmonary testing.

Developed with a clinical-first approach, OMNIA delivers a seamless experience by combining intelligent automation, real-time data visualization, and secure interoperability.

- Clean design with logical workflows minimizes training and streamlines daily use.
- Guided daily routines for calibration and verification ensure reliable data from the start.
- Adaptable test screens and settings tailored to clinical preferences.
- Automated analysis aligned with current standards, featuring editable results, z-scores, and visual aids.
- Real-Time quality control with on-screen indicators and coaching tools to support accurate testing.
- Fully GDPR and HIPAA compliant with encryption, access control, and automated data backups.
- Optional Network configuration with client-server architecture enables centralized data access and multi-workstation coordination.
- Full compatibility with HIS via HL7, DICOM, and GDT protocols for seamless data exchange.
- Operates across all COSMED devices, ensuring consistency in workflow and data management.

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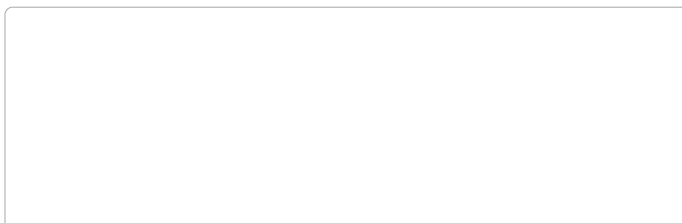
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To know more



COSMED Q-Box is a medical device.

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