

EXHALYZER[®]V

A unique system to analyze the equines respiratory system



Your advantage:

Easy to measure flow and volumes in normal and forced breathing

Peak flow measurement greater than 100 l/s for exercise testing

Dead space calculation of the horse's airways

Measurement of the functional residual lung capacity

Measurement of oxygen uptake and CO₂ production



The unique patented ultrasonic flow measurement offers an easy and accurate principle to detect the equines respiratory volumes and physiology. The basic instrument EXHALYZER[®]V is suited for normal tidal breathing measurement as well as exercise testing. A whole physiology check up may be performed in combination with the optional modules for gas analysis and functional residual volume calculation. Discover the respiratory system of large animals with a "state of the art" technology.

Daily routine, education, research

The EXHALYZER[®]V is a powerful tool to detect early pulmonary dysfunctions in the horse. Recurrent airway obstruction plays a crucial role in the equine medicine. In many cases the onset of a disease is insidious, only frequent measurements of tidal breathing and pulmonary gas exchange may detect bronchial hypersensitivity to e.g. hay dust, mites and spores in the environment.

Ultrasonic spirometry in combination with capnography is a simple, reliable, economical and rapid method to evaluate volumetric capnograms for pulmonary function testing in equine clinical practice.

In combination with exercise testing, the obstructive nature of upper airway diseases can be quantified reliably.

Specifications:

<i>Flow range:</i>	> 100 l/s
<i>Pressure measurement:</i>	± 100 mbar, optional
<i>Gas monitoring:</i>	side stream, optional
<i>Voltage:</i>	100 - 240 V, 150 VA
<i>Weight instrument:</i>	5 kg
<i>Weight flow head:</i>	1.2 kg at 300 ml Vd
<i>Dimensions instrument:</i>	250x150x280mm

The EXHALYZER[®]V offers linear measurement over a large dynamic range and is independent from gas composition, temperature and pressure in comparison to conventional spirometry devices.

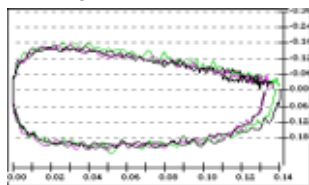
The flexible concept of the EXHALYZER[®]V guarantees easy future hardware upgrades as well as adaptations for scientific research applications.

Scientific references:

- 1) Differences in tidal breathing flow volume loop indices in horses suffering from recurrent airway obstruction considering the utility of the horse. *Veterinary Record* 2002, Herholz et al
- 2) Ultrasound spirometry and capnography in horses. Analysis of measurement reliability. *Veterinary research communications* 2001, Herholz et al
- 3) Early detection of pulmonary dysfunction in the horse, *Habilitationsschrift Dr. C. Herholz* (2002)

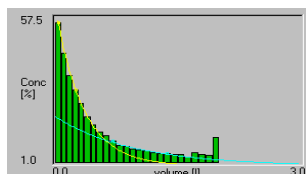
Specifications EXHALYZER®V

Tidal breathing (TBFVL)



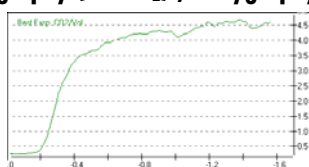
Analysis of in- and expiratory flow volume loops
Normal and forced breathing
Graphical and numerical analysis
Automatic or user selectable breath selection filter
Volume range up to 20 l
Derived parameters: VT, RR, MVV, MEV, I:E, etc.

Functional residual capacity measurement (FRC)



Multiple wash-in / wash-out maneuver using SF₆, or Helium (inert gas method)
Automatic flow control and analysis
Functional residual capacity measurement of the lung (FRC)
Calculation of lung clearing index (LCI)
(FVC, RV and TLC in combination with exercise testing)

Capnography (SB-CO₂) / Oxygraphy



Easy to use side stream measurement
CO₂ measurement range from 0 to 99 mmHg (0-14 %)
O₂ measurement range from 10 to 100 Vol%
V_D, ETCO₂, VCO₂, single breath capnogram
In combination with Oxygraph module:
EEO₂, VO₂, VO₂max and RQ calculation

The next generation of the unique patented ultrasonic spirometry for horses



Flow Head



EXHALYZER®V basic unit

System Requirements

PC Pentium 3 or better, Microsoft Windows XP or higher and Internet Explorer (V5.0 or higher)
16Mbyte of RAM, 10MB of free disk space, XGA graphic adapter or better, CD- and 3.5" disk drive
(Note: PC and Printer are not part of our delivery).

ECO MEDICS reserves the right to change these specifications without notice.

