

Veo-t / Veo-r Technical Specification

Product Overview

The Veo-t and Veo-r are turbine-driven transport ventilators designed to provide positive pressure ventilatory support to adult, pediatric, and neonatal patients. Both models share a common platform ensuring consistent performance across clinical environments.

Areas of use

Model	Use
Veo-t	In-hospital transport
Veo-r	Emergency transport (ambulance, helicopter, fixed wing)

Ventilation Modes

Mode form	Mode name	Mode	Adult/Ped	Neonatal
Volume-targeted	VCV	Volume controlled ventilation	✓	✓
	V-SIMV	Synchronized intermittent mandatory ventilation	✓	✓
Adaptive	PRVC	Pressure regulated volume control	✓	✓
	PRVC-SIMV	PRVC with SIMV	✓	✓
	AMV	Adaptive minute ventilation	✓	✓
Pressure-controlled	P-A/C	Pressure assist control	✓	✓
	P-SIMV	Pressure SIMV	✓	✓
	DuoPAP	Biphasic pressure ventilation	✓	✓
	APRV	Airway pressure release ventilation	✓	✓
Spontaneous / Support Modes	CPAP/PSV	Continuous positive airway pressure / support	✓	✓
Non-invasive	NIV-S	Spontaneous NIV	✓	✓
	NIV-ST	Timed NIV	✓	✓

Functions

Function	Adult/Ped	Neonatal
Leakage compensation	✓	✓
Altitude compensation	✓	✓
Apnea ventilation	✓	✓
CPR mode	✓	✓
Suction support with oxygen boost	✓	✓
Manual breath	✓	✓
Inspiratory hold / Expiratory hold	✓	✓
O ₂ therapy	✓	✓
Dynamic Lung monitoring	✓	✓
AMV chart	✓	✓
Spontaneous Breathing Trial (SBT)	✓	✓
Pressure-Volume (PV) tool	✓	✓
Sustained Inflation (SI)	✓	✓
Nebulizer	✓	✓
Standby mode	✓	✓
CO ₂ monitoring (mainstream / sidestream)	o	o
SpO ₂ monitoring	o	o

Technical Performance

Pressure & Ventilation Performance

Parameter	Adult / Pediatric	Neonatal
Working pressure	0 – 60 cmH ₂ O	0 – 45 cmH ₂ O
Maximum pressure limit	80 cmH ₂ O	45 cmH ₂ O (functional limit)
Maximum inspiratory flow	260 L/min	260 L/min
Minute volume capability	Up to 60 L/min	Up to 60 L/min
Inspiratory time	0.2 – 3 s	0.2 – 3 s
Minimum expiratory time	≥0.2 s (20% of cycle)	≥0.2 s (20% of cycle)

Volume Delivery

Parameter	Adult / Pediatric	Neonatal
Tidal volume (Vt)	20 – 2200 ml	2 – 300 ml
Delivered tidal volume examples	~500 ml typical	~30 ml typical

Gas Delivery & Mixing

Parameter	Adult / Pediatric	Neonatal
Delivered pressure (gas system)	0 – 60 cmH ₂ O	0 – 45 cmH ₂ O
Delivered flow	>260 L/min (≥200 L/min @ 100% O ₂)	>260 L/min (≥200 L/min @ 100% O ₂)
Flow accuracy	±10% or ±300 ml/min	±10% or ±300 ml/min

Breathing Circuit Characteristics

Parameter	Adult / Pediatric	Neonatal
Compliance	$\leq 10 \text{ ml/cmH}_2\text{O @ 60 cmH}_2\text{O} \pm 3 \text{ cmH}_2\text{O}$	$\leq 10 \text{ ml/cmH}_2\text{O @ 60 cmH}_2\text{O} \pm 3 \text{ cmH}_2\text{O}$
Inspiratory resistance	$\leq 6 \text{ cmH}_2\text{O @ 60 L/min}$	$\leq 12 \text{ cmH}_2\text{O @ 12 L/min}$
Expiratory resistance	$\leq 6 \text{ cmH}_2\text{O @ 60 L/min}$	$\leq 12 \text{ cmH}_2\text{O @ 12 L/min}$
Circuit volume	~2.4 L	~0.9 L

Gas Supply

Parameter	Specification
High-pressure O ₂	280 – 600 kPa, max 120 L/min
Connector	DISS (CGA 1240) or NIST
Low-pressure O ₂	<100 kPa, max 15 L/min
Connector	Quick coupling (CPC compatible)
Air supply	Integrated turbine

Additional Performance Parameters

Parameter	Specification
Nebulizer flow rate	$\leq 16 \text{ L/min}$
Safety valve pressure	$\leq 9.8 \text{ kPa}$
O ₂ boost / suction sequence	Automatic oxygenation cycles
Disconnect detection	Automatic
Reconnection detection	Automatic

Control Settings and Ranges

Parameter (units)	Adult / Pediatric	Neonatal
Tidal volume (ml)	20 – 2200	2 – 300
Respiratory rate (bpm)	1 – 120	1 – 120
Inspiratory time (s)	0.1 – 12.0	0.1 – 12.0
I:E ratio	Adjustable via Ti	Same
PEEP (cmH ₂ O)	0 – 40	3 – 25
FiO ₂ (%)	21 – 100	21 – 100
Inspiratory pressure (cmH ₂ O)	3 – 65	3 – 45
Max pressure limit (cmH ₂ O)	80	45
Pressure support (cmH ₂ O)	0 – 65	0 – 45
Flow trigger (L/min)	0.5 – 20	0.1 – 5
Trigger type	Flow trigger	Same
Minimum expiratory time (s)	≥ 0.2	≥ 0.2
Apnea time (s, default)	30	5
AMV target (MV)	Adjustable	Adjustable
SBT	Available	Available
SI (Sustained Inflation)	Adjustable	Adjustable (within neonatal limits)
Rise time / ramp	Adjustable	Adjustable
O ₂ therapy flow	Adjustable	Adjustable
O ₂ boost (O ₂ ↑)	100% O ₂ (timed)	Same
Nebulization time	Adjustable (~30 min default)	Same

Monitoring Parameters

Parameter	Description
P _{peak}	Peak airway pressure during inspiration
PEEP	Positive end-expiratory pressure
P _{mean}	Mean airway pressure over the respiratory cycle
Plateau pressure (P _{plat})	Pressure measured during inspiratory hold (alveolar pressure)
Tidal volume (V _t)	Delivered volume per breath
Expired tidal volume (V _{te})	Volume exhaled by the patient
Minute volume (MV / M _{Ve})	Total ventilation per minute
Respiratory rate (RR)	Number of breaths per minute
Flow (Insp/Exp)	Inspiratory and expiratory gas flow
Peak inspiratory flow	Maximum flow during inspiration
Peak expiratory flow	Maximum flow during expiration
FiO ₂	Fraction of inspired oxygen
EtCO ₂ (optional)	End-tidal carbon dioxide concentration
FiCO ₂ (optional)	Inspired carbon dioxide concentration
Compliance (C)	Lung compliance (volume/pressure relationship)
Resistance (R)	Airway resistance
Leak / MVLeak	Estimated leakage in the system
Spontaneous tidal volume	Volume generated by spontaneous breaths
Spontaneous minute volume	Minute ventilation from spontaneous breathing
awRR	Airway respiratory rate (measured breathing frequency)
Pulse rate (PR) (optional)	Patient heart rate via SpO ₂ module
SpO ₂ (optional)	Oxygen saturation
Perfusion Index (PI) (optional)	Indicator of peripheral perfusion

Alarms

Parameter-Based Alarms

Alarm	Description
Ppeak high	Airway pressure above upper limit
Ppeak low	Airway pressure below lower limit
PEEP high	PEEP above upper limit
PEEP low	PEEP below lower limit
Minute volume high (MVe high)	Minute ventilation above set limit
Minute volume low (MVe low)	Minute ventilation below set limit
Tidal volume high (Vte high)	Exhaled tidal volume above limit
Tidal volume low (Vte low)	Exhaled tidal volume below limit
Respiratory rate high (Rtotal high)	Respiratory rate above limit
Respiratory rate low (Rtotal low)	Respiratory rate below limit
FiO ₂ high	Oxygen concentration above limit
FiO ₂ low	Oxygen concentration below limit
Apnea	No detected breathing within set apnea time

System & Technical Alarms

Alarm	Description
Disconnection	Patient circuit disconnected
Obstruction	Airway or circuit blockage
Oxygen supply failure	Insufficient or missing O ₂ supply
Flow sensor error	Sensor malfunction or invalid reading
Device failure	Internal system fault
Power failure	Loss of external power
Battery low	Battery level low

Battery depleted

Battery critically low / empty

Monitoring Module Alarms (Optional)

Alarm	Description
EtCO ₂ high	End-tidal CO ₂ above limit
EtCO ₂ low	End-tidal CO ₂ below limit
FiCO ₂ high	Inspired CO ₂ above limit
SpO ₂ high	Oxygen saturation above limit
SpO ₂ low	Oxygen saturation below limit
Pulse rate high	Heart rate above limit
Pulse rate low	Heart rate below limit
Perfusion index low	Low peripheral perfusion

Graphical User Interface

Graphics type	Options
Waveforms	Pressure, Flow, Volume
Loops	Pressure–Volume (PV), Flow–Volume (FV)
Trends	Parameter trends (time-based)
Waveform functions	Waveform freeze
Monitoring display	Real-time numerical values (pressure, volume, flow, FiO ₂ , etc.)
Optional waveforms	CO ₂ waveform (with module), SpO ₂ waveform (with module)
Event handling	Event marking (“Sign”)
Alarm display	Visual alarm indicators and messages
Indicators	LED alarm indicators (priority-based)

Electrical Specifications

Parameter	Specification
AC input voltage	100 – 240 V~
AC frequency	50 / 60 Hz
Power consumption	150 VA
DC input voltage	12 – 30.3 V
DC input current	12.5 – 4.95 A
Battery type	Lithium-ion
Number of batteries	One or two
Battery voltage	14.4 V DC
Battery capacity	~6900 mAh
Operating time (1 battery)	Up to 4 hours
Operating time (2 batteries)	Up to 8 hours
Charging time	≤ 5 hours (operating or standby)

Additional Electrical / EMC Compliance

Parameter	Specification
EMC standard	IEC 60601-1-2
RF emissions (CISPR 11)	Group 1, Class B
Harmonic emissions	IEC 61000-3-2 Class A
Voltage fluctuations	IEC 61000-3-3 compliant

Safety classification

Item	Classification
Ingress Protection	IP34
Applicable standards	EN 60601-1:2006+A1:2013+A2:2021, EN 60601-1-2:2015+A1:2021, EN 60601-1-8:2007+A1:2013+A2:2021, EN 60601-1-6:2010+A1:2015+A2:2021, EN 62366-1:2015+A1:2020, EN 62304:2006+A1:2015, EN 1789:2020, EN ISO 80601-2-84:2023, EN ISO 80601-2-12:2020, EN ISO 80601-2-55:2018+A1:2023, EN ISO 80601-2-61:2019, EN 60601-1-9:2008 + A1:2013 + A2:2020, EN ISO 80601-2-90:2021, RCTA-DO 160G, EN ISO 18562-1:2020
Degree of safety for inflammable anesthetic gas	The equipment cannot be used with inflammable anesthetic gas mixed with air, oxygen or nitrous oxide.
Operating mode	Continuous operation
Classification of applied part	<p>The breathing tubing & veil, mask and nasal cannula are classified as type BF applied part with defibrillation-proof.</p> <p>The CO2 sampling line is classified as type BF applied part with defibrillation-proof.</p> <p>The SpO2 probe is classified as type CF applied part with defibrillation-proof.</p>

Physical specifications

Item	Size
Dimensions WxHxD	Veo-r: Main unit:330 mm x 261 mm x 315 mm (including handle) Main unit:330mm x205mm x 256mm (excluding handle) Veo-t: Main unit:328 mm x 208 mm x 288 mm
Weight	Main unit:6.5kg
Display	12"
Resolution	1280×800 pixels
Ports	USB2.0 and RJ45