

VersaMed

iVent₂₀₁

Disclaimer

This training program is intended as a “quick reference” for operation of this ventilator in an emergency situation. Users of this device in an emergency situation should do under the supervision of a regular user. Regular users should go through detailed training provided by employers or through VersaMed.

Resources

- Request online demonstrations
www.versamed.com
- Training videos
<http://www.versamed.com/resources/trainingvideos.html>
- Clinical specialist
dnormand@versamed.com

Patient Capabilities

- Patients \geq 10 kg – volume modes
- As low as 3 kg – pressure modes
- Limiting factor – 30 ml deadspace in flow transducer

Quick set-up Oxygen Supply

- 40-60 psi high pressure source

Quick set-up - Low Pressure O₂

- Remove air inlet filter
- Attach low flow/pressure adapter
- Sources: Flowmeter, cylinders, concentrator, liquid
- Must switch to low pressure source in ADVANCED SETTINGS

Quick set-up Power

- A/C power primary source
- Internal Battery
 - If no line power or external power
 - 1 – 2 hours if fully charged (depends on mode, so plan on 1 hour)

Quick set-up External Power

- 6-8 hours when external battery is fully charged

Quick set-up - Circuit Connection

- Connections
 - Main flow tube
 - Two leuc connections (male and female) for flow transducer
 - Exhalation valve tube

Quick set-up Power - up

- Power switch on rear of iVent
- Alarm check
- Select patient size 10 kg to > 70 kg
- Pt. size determines default settings
- May also select last patient to return to previous mode and parameters

Quick Set-up - Default Parameters

Default Start Parameters for Volume Ventilation for 10 kg to 70 kg

<i>Wt.</i>		<i>Rate</i>	<i>Vt</i>	<i>Max Pres.</i>
<i>(kg)</i>	<i>(lb)</i>	<i>(bpm)</i>	<i>(mL)</i>	<i>(cmH2O)</i>
<i>10</i>	<i>22</i>	<i>30</i>	<i>100</i>	<i>18</i>
<i>15</i>	<i>33</i>	<i>25</i>	<i>150</i>	<i>20</i>
<i>20</i>	<i>44</i>	<i>20</i>	<i>200</i>	<i>25</i>
<i>30</i>	<i>66</i>	<i>18</i>	<i>300</i>	<i>28</i>
<i>40</i>	<i>88</i>	<i>16</i>	<i>400</i>	<i>30</i>
<i>50</i>	<i>110</i>	<i>14</i>	<i>500</i>	<i>35</i>
<i>60</i>	<i>132</i>	<i>12</i>	<i>600</i>	<i>35</i>
<i>70+</i>	<i>154</i>	<i>12</i>	<i>700</i>	<i>35</i>

Quick Set-up - Default Alarms

Alarm Default Parameters for Volume Ventilation for 10 kg to 70 kg

Alarm Parameter	Weight (kg)							
	10	15	20	30	40	50	60	70+
High Pressure (cmH20)	23	25	30	33	35	40	40	40
High Rate (bpm)	40	35	30	30	30	30	30	30
Low Rate (bpm)	10	10	10	8	6	6	6	6
High Min Vol. (LPM)	5	7	10	14	17	20	24	24
Low Min Vol. (LPM)	1	1	2	2	3	3	4	4

Quick Set-up - Default Parameters

Default Parameters for Pressure Ventilation for 10 kg to 70 kg

Wt		Rate	Pinsp.	I Time	Volume
(kg)	(lb)	(bpm)	Above PEEP (cmH20)	(sec)	Limit (mL)
10	22	30	20	0.6	200
15	33	25	20	0.8	300
20	44	20	20	1.0	400
30	66	18	20	1.1	600
40	88	16	20	1.2	800
50	110	14	20	1.4	1000
60	132	12	20	1.7	1100
70+	154	12	20	1.7	1200

Quick Set-up - Default Alarms

Alarm Default Parameters for Pressure Ventilation for 10 kg to 70 kg

Alarm	Weight (kg)							
	10	15	20	30	40	50	60	70+
Volume Limit Reached, mL	200	300	400	600	800	1000	1100	1200
High Pressure (cmH20)	30 for all weights							

Quick Set-up - Alarm Defaults

The following alarms remain constant for all weights:

<i>Low Pressure</i>	<i>5 cmH₂O</i>
<i>Apnea Time</i>	<i>20 sec</i>
<i>High F_IO₂</i>	<i>+ 20%</i>
<i>Low F_IO₂</i>	<i>- 10%</i>
<i>Leak</i>	<i>100% (off)</i>
<i>Inverse I:E Ratio</i>	<i>On</i>
<i>Low V_T Alarm Range</i>	<i>85%</i>

Set-up Operation Verification Test (OVT)

- *Performed with each new patient or circuit*
- *Highlight OVT and press control knob*
- *Use plastic caps to cap the patient wye and the exhalation valve*
- *Press knob to begin test*
- *When prompted, remove the cap from the exhalation valve*
- *Press control knob when you hear an alarm and are prompts to do so*

Front Panel Buttons and LED's

- LED's
 - Green = power on
 - Amber = charging internal battery (plugged in with power on or off)
 - Red = Alarm condition

Front panel dedicated buttons

Alarm silence

two minute silence

minimizes alarms

press again for additional two minutes

press and hold for three seconds to cancel alarm silence

100% oxygen

100% oxygen for three minutes

alarm silence for two minutes

Manual breath

Hold

press once to initiate inspiratory hold

press twice for expiratory hold

Clear

returns to previous window

minimizes alarm messages

press and hold to clear corrected alarm (green) messages

Display Screen

- Measured values displayed in blue
- Set values displayed in black
- Green dashed line on the pressure display indicates the pressure limit (non-alarmed)
- Red dashed line on the pressure display indicates the pressure alarm (alarmed) and is automatically kept at 5 cm H₂O above pressure limit

Modes

- Mode Control – Highlight current mode and tap ROTATIONAL CONTROL KNOB
 - Adaptive Bi-Level
 - SMV – Volume Control
 - SIMV – Pressure Control
 - A/C - Volume Control
 - A/C Pressure Control
 - CPAP/PSV
 - Standby

Rate Control

- 1-80 BPM

• *Tidal Volume Control*

- 50 – 2000 ML
- Blue fan icon signifies a controlled breath
- Pink fan icon signifies a patient-triggered breath
- Green fan icon signifies a green breath
- Pink man icon indicates a pressure support breath

Pressure Limit/Inspiratory Pressure Control

- 5 – 80 cm H₂O
- Limits volume breaths in volume modes
- Adjusts pressure control level in pressure control mode

F_IO₂ Control

- 21 – 100%
- Alarms will be automatically set 20% above set FiO₂ and 10% below the set FiO₂

Peak Flow

- Three ways to set
 - Set to fixed flowrate
 - Adaptive flow with fixed inspiratory time will produce variable inspiratory flow
 - Adaptive flow with Adaptive inspiratory time will produce flows and inspiratory times to deliver a 1:2 I:E ratio
 - A and M icons signify adaptive or manual flowrates
 - Flashing display means turbine cannot meet the set flow

Pressure Support

- 0 – 60 cm H₂O

PEEP Control

- 0 - 40

Breath Triggers

- Pressure and flow triggered
- Either can be turned off

Inspiratory Time

- Fixed inspiratory time
- Adaptive flow with Adaptive inspiratory time will produce flows and inspiratory times to deliver a 1:2 I:E ratio
- A and M icons signify adaptive or manual inspiratory times
- Display will flash if breath cannot be delivered in the set time or I:E is less than 1:1

Menu - Alarm Settings

- Adjust all high and low alarm settings
- Highlight- tap – adjust – tap

Menu - Advanced Settings

- Sign Breath Every – sets sigh breath frequency
- Rise time – adjusts rise time
- Easy Exhale – clears all pressure from the circuit to prevent expiratory resistance
 - (PEEP is re-applied at end exhalation)
- Oxygen Supply (Pressure) – changes between high and low pressure oxygen
 - Sources
- Adaptive Peak Flow – adjusts sensitivity for Adaptive Peak Flow
- Purge Every – adjusts the frequency of pressure transducer purges (default 5 Min)
- Nebulizer
 - Nebulizes on inspiration
 - Functions with high pressure only
 - Functional with tidal volumes > 200 ml
 - In Advanced Settings (Menu), select nebulizer
 - Time is adjustable between 5 minutes and 4 hours
- Set Time and Date

Menu - Restore Defaults

- Returns all settings to ventilator default settings

Menu - Show Graphs

- Allows changes to the graphic displays

Menu - Show Trends

- Shows ventilator trends

Menu - Show Loops

- Allows selection and display of loops

Menu - Show Mechanics

- Shows ventilator mechanics
- Displays compliance and Auto-PEEP after inspiratory and expiratory hold maneuvers

Menu - Show Log Book

- Shows last 300 alarms or setting changes – cleared when ventilator turned off
- 1500 events saved internally

Menu - Display

- Adjusts three types of displays

Maintenance

- Cooling vents and filters – Clean Q 1500 hours or 3 months
- Air inlet filter – Change Q 500 hours or 1 month
- Battery pack – recharge Q 90 days and replace Q year
- O2 sensor – change Q 5000 hrs
- Inlet and outlet mufflers – replace Q 5000 hrs or annually
- Pneumatic unit – Replace Q 15,000 hrs or 2 years

Unit Highlights (testable)

- Patient capabilities
- Battery – internal external
- Gas sources – High pressure, low pressure
- Circuit – flow transducer, one-way valve and connections
- Start-up and OVT
- Adaptive flow and inspiratory time
- Pressure limit vs. high pressure alarm
- Event Log