

# Appendix B Specifications

## Controls (\*psv)

Mode	AC, Flow cycled AC*, SIMV/IMV, Flow Cycled SIMV*, SIMV/PSV*, PSV*,CPAP,
Ventilator Rate	1.0 to 150 BPM
Inspiratory Time	0.1 to 3.0 sec
Inspiratory Flow	1.0 to 30 LPM
Base Flow	1.0 to 30 LPM
Volume Limit	5.0 to 300 ml
PEEP	0 to 30 cmH2O
Inspiratory Pressure	0 to 72 cmH2O
Manual Breath	x One
Assist Sensitivity	0.2 to 5.0 LPM; Minimum to Maximum bar*
Over Pressure Relief	15 to 75 cmH2O
% O2	21 to 100%
Alarm Loudness	Min. 60 to Max. 75 dbA
Audible Off Volume Limit*	LED On/Off

## Alarms

High Breath Rate	3.0 to 255 BPM
Low PEEP/CPAP	-5.0 to 30 cmH2O
Low Inspiratory Pressure (vs)	1.0 to 65 cmH2O
Low Inspiratory Pressure (psv)	5 to 41 cmH2O (derived from High Pressure Limit and Low PEEP/CPAP Alarm settings)
Patient Circuit	LED On/Off
Failed to Cycle	LED On/Off
Low Gas Supply	LED On/Off
Apnea Alarm	5, 10, 20, 30 sec
Settings Incompatible	LED On/Off
Pressure Settings Incompatible	LED On/Off
Prolonged Inspiratory Pressure	LED On/Off
Flow Sensor	LED On/Off
Low Battery	LED On/Off
Alarm Silence	60 sec

Visual Reset	Push Button
High Pressure Limit	10 to 75 cmH <sub>2</sub> O
Low Minute Volume*	Off to 99 lpm

## Monitors

PEEP*	0 to 30 cmH <sub>2</sub> O
Breath Rate	0 to 255 BPM
Breath Type (Patient Initiated)	LED
Minute Volume	0 to 30.0 LPM
Tidal Volume (Exhaled)	0 to 500 ml
%Tube Leak	0 to 100%
Inspiratory Time	0.1 to 3.10 sec Expiratory Time 0 to 99.9 sec
I:E Ratio	9.9:1 to 1:9.9
Peak Inspiratory Pressure	0 to 99 cmH <sub>2</sub> O
Mean Airway Pressure	0 to 75 cmH <sub>2</sub> O
Air Pressure	0 to 100 psig; 0 to 99 psig*
O <sub>2</sub> Pressure	0 to 100 psig; 0 to 99 psig*
Proximal Airway Pressure	-10 to 100 cmH <sub>2</sub> O
Hour meter	0 to 99,999 hours
Test	Push Button
Line Power	Green/Red LED
Battery	LED On/Off
Inspired Tidal Volume*	0 to 500 ml

## Limits to Ventilation (Fixed)

Minimum Expiratory Time	0.15 seconds
Maximum Inspiratory Time	3.10 seconds
Maximum settable I:E Ratio	4:1

## Tolerances

Monitors:	
Breath Rate	± 1 BPM or ± 20 msec, whichever is greater
Inspiratory Time	± 0.02 sec
Expiratory Time	± 0.02 sec
I:E Ratio	± 0.1 or ± 20 msec (on the calculation based on the monitored inspiratory and expiratory times), whichever is greater

Airway Pressure	± 1 cmH <sub>2</sub> O (-10 to 20 cmH <sub>2</sub> O)
(continuous)	± 2 cmH <sub>2</sub> O (20 to 65 cmH <sub>2</sub> O)
	± 3 cmH <sub>2</sub> O (65 to 100 cmH <sub>2</sub> O)
Peak Inspiratory Pressure	± 2 cmH <sub>2</sub> O or ± 5%, whichever is greater
Mean Airway Pressure	± 2 cmH <sub>2</sub> O or ± 3%, whichever is greater
PEEP	± 2 cmH <sub>2</sub> O or ± 5%, whichever is greater
Air/O <sub>2</sub> Pressure	± 5 psig
Minute Volume Accuracy is based on the Tidal Volume and Breath Rate monitors	
Inspiratory Tidal Volume	± 1 ml or ± 10%, whichever is greater
Expiratory Tidal Volume	± 1 ml or ± 10%, whichever is greater
% Leak	± 1 ml or ± 2%, whichever is greater
(when compared to the Inspired and Expired Tidal Volume monitors)	
Hour Meter	± 2% of reading
Alarms/Limits:	
Low PEEP/CPAP	± 2 cmH <sub>2</sub> O
High Breath Rate	± 1 BPM
Low Minute Volume	± 10 ml/min (0 to 99 ml/min)
	± 0.1 L/min (0.1 to 9.9 L/min)
High Pressure Limit	± 4 cmH <sub>2</sub> O
Prolonged Inspiratory Pressure	± 2 cmH <sub>2</sub> O
Volume Limit	± 2 ml or ± 10% of setting, whichever is greater
Apnea	± 1 sec
Maximum (Pop-off) Pressure	± 4 cmH <sub>2</sub> O
Controls:	
Ventilator Rate	± 1 BPM or ± 20 msec (applied to the breath interval), whichever is greater
Inspiratory Time	± 0.020 sec (0.10 to 0.50 sec)
	± 0.025 sec (0.50 to 3.00 sec)
Assist Sensitivity	Not a calibrated scale
PEEP/CPAP and Inspiratory Pressure (Repeatability)	± 1 cmH <sub>2</sub> O or ± 5%, whichever is greater (breath to breath)
Base/Inspiratory Flow	± 0.5 LPM or ± 10% of setting, whichever is greater (0 to 60 cmH <sub>2</sub> O)
	± 1 LPM or ± 10/-15% of setting, whichever is greater (60 to 72 cmH <sub>2</sub> O)
Oxygen %	± 3%
Degree of Protection	

Electric Shock Type B

Harmful Ingress of Water	None (Ordinary Equipment)
Method of Sterilization/Disinfection	See Cleaning and Maintenance (Chapter 7)
Degree of Safety of Application in Presence of Flammable Anesthetics	None
Mode of Operation	Continuous

## Breathing Circuit Parameters

Inspiratory Resistance	0.42 cmH <sub>2</sub> O//min
Expiratory Resistance	0.08 cmH <sub>2</sub> O//min
Compliance	1.34 ml/cmH <sub>2</sub> O
Internal Volume	1370 ml

## Outputs

Digital	RS-232 Bi-Directional
Analog: (see page 5-29)	
Proximal Pressure	-10 to 100 cmH <sub>2</sub> O, 1 cmH <sub>2</sub> O/25 mV
Proximal Inspiratory/Expiratory Flow	-40 (expiratory) to 40 (inspiratory) LPM, 1 LPM/50 mV
Machine Delivered Flow	0 to 30 lpm, 1 LPM/50 mV
Breath Phase	0, 5V Logic signal
Remote Nurse Call	0.5 amps max at 24 vdc
Auxiliary Blended Gas Outlet	7 to 17 psig, 0 to 8 LPM

## Inputs

### *Electrical:*

Supply Ratings	
Voltage:	100V 80 to 110 VAC
	120V 96 to 132 VAC
	220V** 176 to 242 VAC
	240V 192 to 264 VAC
Current:	100V 1.0 A maximum
	120V 1.0 A maximum
	220V 0.5 A maximum
	240V 0.5 A maximum
Frequency:	100V 50/60 Hz
	120V 50/60 Hz
	220V 50/60 Hz

	240V	50/60 Hz
Fuses:	100/120V	T 0.5 A, 5 x 20 mm
	230/240V	T 0.25 A, 5 x 20 mm

*\*\* For 220V operation, set the power entry module selector switch to 230V setting.*

### ***Pneumatic:***

Oxygen and Air	30 to 80 psig, 50 LPM Supply Ratings KPa (206 to 551)
----------------	--

## **Physical Dimension and Shipping information**

Ventilator Weight	12 kg; 13.6 kg *
Graphics Display Weight	2.5 kg
Pedestal Stand Weight	4.1 kg
Compressor Weight	50 kg
Ventilator Dimensions	13.5" W x 10" D x 11" H
Graphics Display Dimensions	13" W x 2.5" D x 9.5" H
Pedestal Stand Dimensions	24" x 40.5" H
Compressor Dimensions	22"W x 21.5"D x 36" H
Shipping Weight Including Ventilator	17 kg; 18.2 kg.*
Graphics Display	5 kg
Pedestal Stand	5.1 kg
Compressor	9.1 kg
Shipping Dimensions	
Ventilator	18" W x 18" D x 19" H
Graphics Display	16" W x 13" D x 11" H
Pedestal Stand	25" W x 5" D x 45" H
Compressor	26" W x 22" D x 40" H

## **Environmental Specifications**

### ***Temperature:***

Storage and Shipping	- 40 to 70 C
Checkout and Operating	10 to 40 C

***Altitude:***

Checkout, Operating, Transport and Storage 0 to 3,000 meters (14.7 to 10.5 PSIA/760 to 543 mm Hg)

***Humidity:***

Storage and Shipping	0 to 99% Relative Humidity — Non-condensing
Checkout and Operating	0 to 95% Relative Humidity — Non-condensing