

# Aisys®

Clinical excellence through patient-focused care



## Exceptional Design

- Flexible and integrated, with the most advanced design, ventilation, vital signs monitoring and Advanced Breathing System (ABS™)
- Exclusive INview™ Patient Displays so that you can position the patient and ventilation data and controls where you need them
- Can be integrated with your hospital information system
- Fully upgradeable to add new technologies as your needs change

## Proven Clinical Excellence

- Superior ventilation for neonates to adults
  - Volume Control, Pressure Control, PSVPro® (Pressure Support with Apnea backup), Synchronized Intermittent Mandatory Ventilation, (SIMV) - Volume and Pressure, electronic PEEP
  - Tidal volume compensation
- Vital signs monitoring with our exclusive technology:
  - Patient Spirometry™ measures airway pressures, flow, volumes, compliance and airway resistance, breath by breath at the patient's airway
  - Entropy aids you in monitoring the state of the central nervous system
  - Neuromuscular transmission (NMT) provides a continuous, quantitative measurement of patient's responses to nerve stimulation and regional block

## Advanced Breathing System (ABS)

- Fewer connections reduce the risk of misconnects and leaks, enhancing patient safety
- Low circuit volume contributes to a fast response — ideal for low flow cases
- Rising, microprocessor-controlled bellows provides immediate visual feedback about the patient's status



## Physical specifications

### Dimensions

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Height: 133.9 cm/52.7 in  
Height (with horizontal arm): 150.2 cm/59.2 in  
Width: 73.45 cm/28.92 in  
Depth: 88.40 cm/34.80 in  
Weight: Approximately 168 kg/370 lb

### Top shelf

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Weight limit: 46 kg/100 lb  
Width: 55.01 cm/21.66 in  
Depth: 51.6 cm/20.31 in

### Top shelf (optional)

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Weight limit: 23 kg/50 lb  
Width: 54.8 cm/21.57 in  
Depth: 44.45 cm/17.50 in

### Work surface

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Height: 88.17 cm/34.71 in  
Size: 2358.1 cm<sup>2</sup>/365.5 in<sup>2</sup>

### Folding side shelf (optional)

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Weight limit: 23 kg/50 lb  
Height: 88.17 cm/34.7 in  
Width: 28.93 cm/11.39 in  
Depth: 36.29 cm/14.29 in

### DIN rail (optional)

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Side of machine: 38.3 cm/15.1 in

### Drawers (internal dimensions)

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#### *Small*

Height: 10.5 cm/4.13 in  
Width: 37.80 cm/14.88 in  
Depth: 37.64 cm/14.82 in

#### *Large*

Height: 15.0 cm/5.91 in  
Width: 37.80 cm/14.88 in  
Depth: 37.64 cm/14.82 in

### Absorber bag arm (optional)

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Arm length: 30.5 cm/12 in  
Bag arm height (adjustable): 87 cm/34.3 in  
104 cm/40.9 in

### Casters

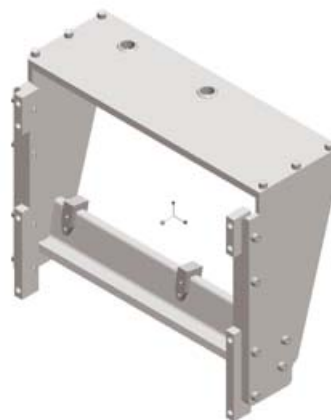
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Diameter: 12.5 cm/5 in  
Brakes: Individual locking front casters

### Pendant mounting interface (optional)\*

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Height from floor: 769 mm/30.28 in  
Suspended mass limit: 364 kg/800 lb



### Pendant Interface

\* Interface compatible with Kreuzer, Dräger and Getinge (ALM and Heraeus) ceiling columns. Contact your local GE Healthcare representative for solutions to other ceiling column manufacturers.

## Ventilator operating specifications

### Modes of ventilation (standard)

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Volume Control Mode  
With tidal volume compensation

### Modes of ventilation (optional)

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Pressure Control

Synchronized Intermittent Mandatory Ventilation (SIMV)  
(volume and pressure)

PSVPro (Pressure Support with Apnea backup)

### Ventilation parameters

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Tidal volume

range: 20 to 1500 mL  
(Volume Control and SIMV modes)

Incremental

settings: 20 to 100 mL (increments of 5 mL)  
100 to 300 mL (increments of 10 mL)  
300 to 1000 mL (increments of 25 mL)  
1000 to 1500 mL (increments of 50 mL)

Minute volume

range: 0 to 99.9 L/min

Pressure

( $P_{\text{Inspired}}$ )  
range: 5 to 60 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)  
5 to 1500 mL volume delivery

Pressure

( $P_{\text{limit}}$ )  
range: 12 to 100 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

Pressure

( $P_{\text{support}}$ )  
range: Off, 2 to 40 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

Rate: 4 to 100 breaths per minute for Volume Control  
and Pressure Control; 2 to 60 breaths per  
minute for SIMV, PSVPro and SIMV-PC+PSV  
(increments of 1 breath per minute)

Inspiratory/  
expiratory

ratio: 2:1 to 1:8 (increments of 0.5)

Inspiratory

time: 0.2 to 5.0 seconds (increments of 0.1 seconds)  
(SIMV and PSV Pro)

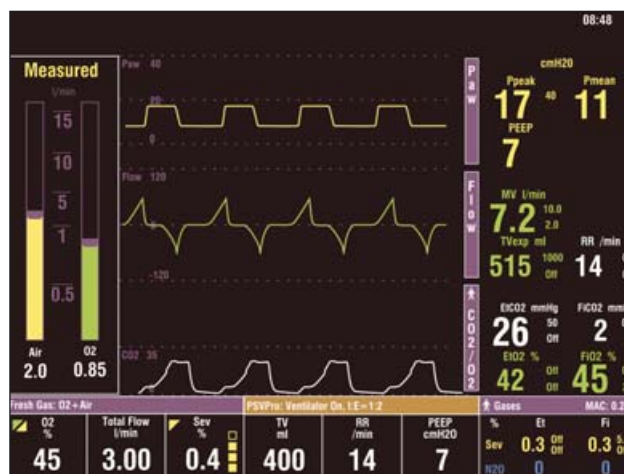
Trigger

window: 0 to 80% (increments of 5%)

Flow trigger: 1 to 10 L/min (increments of 0.5 L/min)  
0.2 to 1 L/min (increments of 0.2 L/min)

Inspiration  
termination

level: 5 to 50% (increments of 5%)



### Positive End Expiratory Pressure (PEEP)

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Type: Integrated, electronically controlled

Range: OFF, 4 to 30 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

### Ventilator performance

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Pressure range

at inlet: 240 kPa to 700 kPa/35 psig to 100 psig

Peak gas

flow: 120 L/min + fresh gas flow

Flow valve

range: 1 to 120 L/min

Flow

compensation

range: 200 mL/min to 15 L/min

### Ventilator accuracy

#### Delivery/monitoring accuracy

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Volume delivery: > 210 mL=better than 7%  
< 210 mL=better than 15 mL  
< 60 mL=better than 10 mL

Pressure delivery: ±10% or ±3 cm H<sub>2</sub>O

PEEP delivery: ±1.5 cm H<sub>2</sub>O

Volume monitoring: > 210 mL=better than 9%  
< 210 mL=better than 18 mL  
< 60 mL=better than 10 mL

Pressure monitoring: ±5% or ±2 cm H<sub>2</sub>O

#### Alarm settings

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Tidal volume (VTE): Low: OFF, 0 to 1500 mL  
High: 20 to 1600 mL, OFF

Minute volume (VE): Low: OFF, 0 to 10 L/min  
High: 0 to 30 L/min, OFF

Inspired oxygen (FiO<sub>2</sub>): Low: 18 to 100%  
High: 19 to 100%, OFF

## Ventilator accuracy, continued

Apnea alarm:	<i>Mechanical ventilation ON:</i> < 5 mL breath measured in 30 seconds  <i>Mechanical ventilation OFF:</i> < 5 mL breath measured in 30 seconds
Low airway pressure:	4 cm H <sub>2</sub> O above PEEP
High pressure:	12 to 100 cm H <sub>2</sub> O (increments of 1 cm H <sub>2</sub> O)
Sustained airway pressure:	<i>Mechanical ventilation ON:</i> Plimit < 30 cm H <sub>2</sub> O, the sustained limit is 6 cm H <sub>2</sub> O Plimit 30 to 60 cm H <sub>2</sub> O, the sustained limit is 20% of Plimit Plimit > 60 cm H <sub>2</sub> O, the sustained limit is 12 cm H <sub>2</sub> O  <i>PEEP and mechanical ventilation ON:</i> Sustained limit increases by PEEP minus 2 cm H <sub>2</sub> O  <i>Mechanical ventilation OFF:</i> Plimit ≤ 60 cm H <sub>2</sub> O, the sustained limit is 50% of Plimit Plimit > 60 cm H <sub>2</sub> O, the sustained limit is 30 cm H <sub>2</sub> O
Subatmospheric pressure:	Paw < -10 cm H <sub>2</sub> O
Alarm silence countdown timer:	120 to 0 seconds

## Ventilator components

### Flow transducer

Type:	Variable orifice flow sensor
Dimensions:	22 mm OD and 15 mm ID
Location:	Inspiratory outlet and expiratory inlet

(Optional autoclavable sensor available)

### Oxygen sensor

Type:	Optional galvanic fuel cell or paramagnetic with M-CAiO, M-CAiVO, M-CAiOVX or E-CAiO, E-CAiOV, E-CAiOVx options
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### Ventilator screen

Display size:	31 cm/12.1 in diagonal
Pixel format:	800 (H) x 600 (V)

### Communication ports

RS-232C compatible serial interface  
Ethernet  
Datex-Ohmeda device interface solutions port  
USB port

## Aladin Cassette



### Anesthetic agent delivery

Vaporizer:	Aladin Cassette
Number of active positions:	1

### Dimensions

Height:	70 mm/2.8 in
Depth:	230 mm/9 in
Width:	140 mm/5.5 in

### Empty weight (with key filler):

Enflurane, Isoflurane, Sevoflurane, Halothane:	2 kg/4.4 lbs
Empty weight:	
Desflurane:	3 kg/6.6 lbs
Sevoflurane Quik-Fil*:	2.5 kg/5.5 lbs

### Cassette handling

No restriction for tilting during storage or handling.

### Agent capacity

Total:	250 mL
When cassette indicator shows empty:	150 mL (100 mL residual volume)

\* Quik-Fil is the registered trademark of Abbott Laboratories and currently not available in the United States.

## Aladin Cassette, continued

### Accuracy

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All agents in typical operating conditions. Fresh gas flow range 0.2 to 10 L/min. Ambient temperature 18° to 25° C/64.4° to 77° F.

Sea level ambient pressure:

Halothane, Enflurane,  
Isoflurane, Sevoflurane      ±0.2% v/v of full scale or ±10%  
of setting (whichever is greater)

Desflurane                      ±0.5% v/v of full scale or ±10%  
of setting (whichever is greater)

In other operating conditions (10° to 35° C):

Halothane, Enflurane,  
Isoflurane, Sevoflurane      ±0.4% v/v of full scale or ±20%  
of setting (whichever is greater)

Desflurane                      ±1.0% v/v of full scale or ±20%  
of setting (whichever is greater)

### Agent setting ranges

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Halothane, Enflurane,  
Isoflurane:                      OFF, 0.2 to 5% in fresh gas flow,  
resolution 0.1%

Sevoflurane:                      OFF, 0.2 to 8% in fresh gas flow,  
resolution 0.1%

Desflurane:                      OFF, 1.0 to 18% in fresh gas flow,  
resolution 0.2%

## Compact Airway modules

### General

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M-CAiO, M-CAiOV, M-CAiOVX module software version 3.2 or higher; E-CAiO, E-CAiOV, E-CAiOVX module software version 4.5 or higher

Size (WxDxH):                      75 x 215 x 112 mm/2.9 x 8.4 x 4.4 in

Weight:                              1.6 kg/3.5 lb

Sampling rate:                      200 mL/min ±20 mL

Automatic compensation for atmospheric pressure variation (500 to 800 mmHg) temperature and CO<sub>2</sub>/N<sub>2</sub>O and CO<sub>2</sub>/O<sub>2</sub> collision broadening effect. Parameter display update interval typically breath-by-breath. Functional alarms for blocked sample line, D-fend check and D-fend replacement.

### Non-disturbing gases

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*Ethanol, acetone, methane, nitrogen, nitric oxide, carbon monoxide, water vapor.*

Maximum effect

on readings:                      CO<sub>2</sub> < 0.2 vol %; O<sub>2</sub> < 2 vol %

### Carbon dioxide (CO<sub>2</sub>)

EtCO<sub>2</sub>:                              End-tidal CO<sub>2</sub> concentration

FiCO<sub>2</sub>:                              Inspired CO<sub>2</sub> concentration

### CO<sub>2</sub> waveform

Measurement range:              0 to 15% (0 to 15 kPa, 0 to 113 mmHg)

Accuracy:                              ±0.3 vol %\*

Datex-Ohmeda infrared sensor

Adjustable low and high alarm limits for EtCO<sub>2</sub> and FiCO<sub>2</sub>

### Respiration rate (RR)

Measurement range:              4 to 60 breaths per minute

Detection criteria:                1% variation in CO<sub>2</sub>

Adjustable low and high alarm limits for respiration rate; alarm for apnea

### Patient Oxygen (O<sub>2</sub>)

FiO<sub>2</sub>:                                  Inspired O<sub>2</sub> concentration

EtO<sub>2</sub>:                                  End-tidal O<sub>2</sub> concentration

FiO<sub>2</sub>-EtO<sub>2</sub>:                        Inspired-expired difference

### O<sub>2</sub> waveform

Measurement range:              0 to 100 %

Accuracy:                              ±2 vol %\*

Datex-Ohmeda differential paramagnetic sensor

Adjustable low and high alarm limits for FiO<sub>2</sub> and EtO<sub>2</sub>; alarm for FiO<sub>2</sub> < 18%

### Nitrous Oxide (N<sub>2</sub>O)

Measurement range:              0 to 100%

Accuracy:                              ±3 vol %\* FiN<sub>2</sub>O > 82% alarm

### Anesthetic Agent (AA)

*Halothane, Isoflurane, Enflurane*

Measurement range:              0 to 6%

Accuracy:                              ±0.2 vol %\*

*Sevoflurane*

Measurement range:              0 to 8%

Accuracy:                              ±0.2 vol %\*

*Desflurane*

Measurement range:              0 to 20%

Accuracy:                              0 to 5% ±0.2 vol %\*

5 to 10% ±0.5 vol %

10 to 20% ±1 vol %\*

Waveform displayed

MAC value displayed

Identification threshold:        0.15 vol %\*

Agent mixture detection

Adjustable high and low alarm limits for EtAA, FiAA

## Patient Spirometry

(available in iMM Anesthesia Monitor module bay) – optional

Note: For ventilation parameters reference the ventilator operating specifications

Pressure-volume loop

Flow-volume loop

Airway pressure and flow waveforms

Adjustable low and high alarm limits for Ppeak, PEEPtot and MVexp

Alarms for MVexp << MVinsp and for MVexp low. Detection through D-lite or Pedi-lite flow sensor and gas sampler with following specifications:

Note: Compliance and airway resistance measurement are not available

	<b>D-lite™</b>	<b>Pedi-lite™</b>
Respiration rate:	4 to 35 bpm	4 to 50 bpm
Tidal volume		
Measurement range:	150 to 2000 mL	15 to 300 mL
Accuracy*:	±6% or 30 mL	±6% or 4 mL
Minute volume		
Measurement range:	2 to 20 L/min	0.5 to 5 L/min
Accuracy*:	±6%	±6%
Airway pressure		
Measurement range:	-20 to +100 cm H <sub>2</sub> O	-20 to +100 cm H <sub>2</sub> O
Accuracy*:	±1 cm H <sub>2</sub> O	±1 cm H <sub>2</sub> O
Display units:	cm H <sub>2</sub> O, mmHg, kPa, mbar, hPa	
Flow Measurement		
range:	1.5 to 100 L/min	0.25 to 25 L/min
I:E Measurement		
range:	1:4.5 to 2:1	

## Sensor specifications

	<b>D-lite</b>	<b>Pedi-lite</b>
Dead space:	9.5 mL	2.5 mL
Resistance:	at 30 L/min 0.5 cm H <sub>2</sub> O (D-lite) at 10 L/min 1.0 cm H <sub>2</sub> O (Pedi-lite)	

Gas exchange\*\* (available in iMM Anesthesia monitor module bay)

VO <sub>2</sub> :	Oxygen consumption
VCO <sub>2</sub> :	Carbon dioxide production
Measurement range:	20 to 1000 mL/min
Respiration rate range:	4 to 35 bpm

## Accuracy

FiO<sub>2</sub> < 65%: ±10% or 10 mL

65% < FiO<sub>2</sub> < 85%: ±15% or 15 mL

Detection through D-lite flow sensor or Pedi-lite flow sensor and gas sampler (see the measurement ranges and sensor specifications above).

\* Typical value

\*\* Measurement not valid with O<sub>2</sub> and N<sub>2</sub>O mixtures

## Electrical specifications

### Current leakage

100/120 V: < 300µA

220/240 V: < 500µA

### Power

Power input: 100-120 Vac, 50/60 Hz  
220-240 Vac, 50/60 Hz

Power cord: Length: 5 m/16.4 ft  
Rating: 10A @ 250 Vac or  
15A @ 120 Vac

### Battery backup

Backup power: Demonstrated battery time under typical operating conditions is 90 + minutes when anesthesia machine is fully charged. Battery time under extreme conditions is 30 minutes with monitor.

Battery type: Internal rechargeable sealed lead acid

### Inlet/outlet modules

#### 220-240 V

System circuit breakers: 8A

Outlets (optional): 4 outlets on back, 3-1A, 1-2A individual breakers, isolation transformer

#### 120 V

System circuit breakers: 15A

Outlets (optional): 4 outlets on back, 3-2A, 1-3A individual breakers, isolation transformer

#### 100 V

System circuit breakers: 15A

Outlets (optional): 3 outlets on back, 2-2A, 1-4A individual breakers, isolation transformer

## Pneumatic specifications

### Auxiliary common gas outlet (optional)

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Connector: ISO 22 mm OD and 15 mm ID

### Gas supply

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Pipeline input range: 280 kPa to 600 kPa/41 psig to 88 psig

Pipeline connections: DISS-male, DISS-female, DIN 13252, AS4059, BSPP 3/8, S90-116, or NIST  
All fittings available for O<sub>2</sub>, N<sub>2</sub>O, and Air, and contain pipeline filter and check valve.

Cylinder input: Pin indexed in accordance with CGA-V-1 or DIN (nut and gland); contains input filter and check valve.

Note: Maximum 3 cylinders

Primary regulator diaphragm minimum burst pressure:

2758 kPa/400 psig

Primary regulator nominal output:

≤ 345 kPa/50 psig  
Pin indexed cylinder and DIN cylinder connections

### O<sub>2</sub> controls

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Method: N<sub>2</sub>O shut off with loss of O<sub>2</sub> pressure

Supply failure alarm: Range: 193 kPa to 221 kPa/28 psig to 32 psig  
Sounds at maximum volume every 10 seconds

O<sub>2</sub> flush: Range: > 35 L/min

### Alternate O<sub>2</sub> (safety flow)

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Range: 500 mL/min minimum to 10 L/min

Indicator: Flow tube

Indicator accuracy: ±5% full scale

### Fresh gas

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Flow range: 0 and 200 mL/min to 15 L/min (minimal flow capable)

Total flow accuracy: ±10% or ±40 mL/min of setting (whichever is greater)

O<sub>2</sub> flow accuracy: ±5% or ±20 mL/min of setting (whichever is greater)

Balance gas flow accuracy: ±5% or ±20 mL/min of setting (whichever is greater) Air/N<sub>2</sub>O

O<sub>2</sub> concentration range: 25% to 100%

O<sub>2</sub> concentration accuracy: ±5% V/V for flows < 1 L/min  
±2.5% setting for flows > 1 L/min

Electronic mixer response time: 500ms (10% to 90% flow step)

Compensation: Temperature and atmospheric pressure compensated to standard conditions of 20°C and 101.3 kPa

Hypoxic guard: Electronic

### Materials

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All materials in contact with patient breathing gases are free of natural rubber latex.

## Environmental specifications

### System operation

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Temperature: 10° to 35°C/50° to 95°F

Humidity: 15 to 95% relative humidity (non-condensing) per IEC 68-2-3

Altitude: -440 to 3565 m/500 to 800 mmHg

### System storage

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Temperature: -25° to 60°C/-13° to 140°F

Humidity: 10 to 95% relative humidity (non-condensing) per IEC 68-2-3

Altitude: -440 to 5860 m/375 to 800 mmHg

Oxygen cell storage: -15° to 50°C/5° to 122°F  
10 to 95% relative humidity  
500 to 800 mmHg

### Electromagnetic compatibility

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Immunity: Complies with all requirements of EN 60601-1-2

Emissions: CISPR 11 group 1 class B

Approvals: UL 2601-1, CSA C22.2 #601.1, EN/IEC 60601-1, CE 0197, EN 740

## Breathing circuit specifications

### Operational modes

Breathing circuit is circle mode; SCGO option converts to open circuit mode

### Carbon dioxide absorbent canister

Absorbent capacity: 800 g  
Integrated expiratory limb water reservoir

### Ports and connectors

Exhalation: 22 mm OD ISO/15 mm ID taper  
Inhalation: 22 mm OD ISO/15 mm ID taper  
Bag port: 22 mm OD/22 mm ID (Australia)

### Bag-to-Ventilator switch

Type: Bi-stable  
Control: Controls ventilator and direction of breathing gas within the circuit

### Integrated Adjustable Pressure Limiting (APL) valve

Range: 0.8 to 70 cm H<sub>2</sub>O  
Tactile knob indication at: 30 cm H<sub>2</sub>O and above  
Adjustment range of rotation: 0.8 to 30 cm H<sub>2</sub>O (0 to 230°)  
30 to 70 cm H<sub>2</sub>O (230 to 330°)

### Materials

All materials in contact with exhaled patient gases are autoclavable, except disposable flow sensors, O<sub>2</sub> cell, and M-CAiOVX or E-CAiOVX modules. (Autoclavable flow sensors optional)

All materials in contact with patient gas are free of natural rubber latex.

### Breathing circuit parameters

Compliance: Bag mode: 1.82 mL/cm H<sub>2</sub>O  
Mechanical mode: Automatically compensates for compression losses within the absorber and bellows assembly

Total circuit volume: 2.7 L Vent Mode, 1.2 L Bag Mode  
Note: Includes Absorber volume

Expiratory resistance:

Flow rate	P <sub>exp</sub> Bag Mode Pressure drop	P <sub>exp</sub> Vent Mode Pressure drop
10 L/min	0.78 cm H <sub>2</sub> O	0.77 cm H <sub>2</sub> O
30 L/min	1.59 cm H <sub>2</sub> O	1.71 cm H <sub>2</sub> O
60 L/min	3.48 cm H <sub>2</sub> O	3.88 cm H <sub>2</sub> O

Note: With patient circuit and wye piece add 0.89 cm H<sub>2</sub>O

### Anesthetic gas scavenging

AGSS Type	Hospital extract system required	Machine connection
High vacuum, low flow with indicator	High vacuum 36 L/min @ 12 in Hg (305 mmHg)	DISS evac
High vacuum, variable flow with bag indicator	High vacuum 30 L/min extract flow @ 12 in Hg (305 mmHg)	DISS evac
Low vacuum, low flow without indicator	Adjustable Venturi with flowmeter, extract flow < 36 L/min	12.7 mm/0.5 in hose barb
Low vacuum, high flow with indicator	Low vacuum > 50 L/min extract flow	30 mm/1.2 in male threaded
Low vacuum, low flow	Venturi/Ejector with extract flow 36 L/min	25 mm/0.98 in hose barb
Passive	Passive or external active system with air break	30 mm/1.2 in M ISO taper

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