

## Dependable ventilation and a user-friendly design

### Features the SmartVent™ ventilator

The easy-to-use SmartVent ventilator offers Pressure and Volume modes, and can ventilate neonates, trauma and compromised patients.

The Smart Vent now features SIMV (Synchronized Intermittent Mandatory Ventilation) with Pressure Support and Pressure Support with Apnea backup mode (PSVPro<sup>®</sup>), which expands the Aestiva/5's clinical capabilities to help meet your patients' needs. Featuring electronic PEEP, apnea backup mode and an adjustable flow trigger, both the PSVPro and SIMV modes can help simplify efforts for providing care to spontaneously breathing patients. Examples of persons who can benefit from these modes include patients with LMAs, pediatric patients and patients unable to tolerate certain anesthetic agents.

- **Pressure Control mode:** You can choose a target pressure and deliver the maximum tidal volume for the pressure selected and desired time.
- **Volume Control mode:** Delivers the tidal volume that you set, regardless of changes in the fresh gas flow and airway pressure, up to the user selectable pressure limit.
- **Low flow delivery techniques:** Optimized by the innovative compensation system, which provides more consistent delivery of set tidal volumes by automatically adjusting for changes in small system leaks, fresh gas flows, changing lung compliance or compression losses in the bellows, absorber and ventilator.



### Common features

- SmartVent ventilator
- O<sub>2</sub> and N<sub>2</sub>O gas delivery
- Lockable drawer
- Light strip
- Patient breathing system with circle module

### Optional features, as available

- Frame style—two or three in-line vaporizers, left or right-handed, trolley or pendant-mounted
- Additional gases: Air and heliox or CO<sub>2</sub>
- Air-flow tube: Single or dual
- Cylinder yokes: Up to four on a two-vaporizer system, five on a three-vaporizer system
- Auxiliary common gas outlet
- Bain module
- Integrated suction (central or Venturi)
- Integrated auxiliary O<sub>2</sub> flowmeter
- Silicone breathing circuit kits

### Physical Specifications

#### Dimensions

	2 vaporizers	3 vaporizers
Height:	135.8 cm/53.4 in	135.8 cm/53.4 in
Width:	75 cm/29.5 in	93 cm/36.6 in
Depth:	83 cm/32.7 in	83 cm/32.7 in
Weight:	136 kg/300 lb (Approximation)	154 kg/340 lb (Approximation)

#### Top shelves (optional)

	2 vaporizers	3 vaporizers
Weight limit:	46 kg/100 lb	46 kg/100 lb
Width:	47.5, 67.5 or 87.5 cm/ 18.7, 26.6 or 34.4 in	87.5 or 67.5 cm/ 34.4 or 26.6 in
Depth:	41 cm/16.1 in	41 cm/16.1 in

#### Work surface

Height:	87.6 cm/34.5 in
Width:	47 cm/18.5 in
Depth:	31.5 cm/12.4 in

#### Folding side shelf (optional)

Height:	87.5 cm/34.5 in
Width:	26.5 cm/10.4 in
Depth:	31.5 cm/12.4 in
Weight limit:	11.3 kg/25 lb

#### DIN rail (optional)

Side of tabletop:	30 cm/12 in
Side of machine:	23.5 cm/9.25 in

#### Top drawer (1 standard)—locking (internal dimensions)

Height:	10.5 cm/4.1 in
Width:	38.5 cm/15.2 in
Depth:	26 cm/10.2 in

#### Lower drawers (optional)\*

Height:	14.5 cm/5.7 in
Width:	38.5 cm/15.2 in
Depth:	26 cm/10.2 in

#### Lower shelves (optional)\*

Heights:	9.2 cm/3.7 in	13.2 cm/5.2 in
	20.6 cm/8.2 in	24.6 cm/9.8 in
	28.6 cm/11.4 in	36 cm/14.4 in
Width:	42.5 cm/16.75 in	42.5 cm/16.75 in
Depth:	36 cm/14 in	36 cm/14 in

#### Absorber arms

	Adjustable	Non-adjustable
Arm length:	30.5 cm/12 in	25.4 cm/10 in
Bag arm height:	87 cm/34.3 in	91.5 cm/36 in
	104 cm/40.9 in	
Absorber rotation:	85°	85°

#### Ventilator screen

Height:	7.6 cm/3 in
Width:	15.2 cm/6 in

### Integrated breathing system

- Helps improve patient safety and simplify cable management
- Protects components from getting disconnected or damaged
- Uninterrupted communication between the breathing circuit and the SmartVent ventilator provided by smart sensors and switches

### Open architecture

- Can easily fit with existing equipment
- Configurations available with a wide variety of lower cabinet combinations of drawers and shelves, and with top shelving options that are configurable
- Configurations available with an integral dovetail rail that can be used to incorporate additional accessories

### Additional features

- Built-in service diagnostics and durable components can make service support more cost-effective and easier
- It is an effective, safe unit when practicing low flow and minimal flow anesthesia, as it can minimize agent consumption, helping reduce anesthetic agent costs
- Can provide intensive care ventilation features, which can save on cost of bringing an additional ICU ventilator into your operating room

### Ventilator Operating Specifications

#### Ventilation operating modes

Volume Control and Pressure Control  
Synchronized Intermittent Mandatory Ventilation (SIMV)  
Pressure Support (PSVPro) with Apnea Backup ventilation — (optional)

#### Ventilator (V<sub>T</sub>) parameter ranges

Tidal volume range: 20 to 1500 mL (Volume Control and SIMV modes)  
5 to 1500 mL (Pressure Control Mode)  
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<sub>in</sub>) range: 5 to 60 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

Pressure (P<sub>lim</sub>) range: 12 to 100 cm H<sub>2</sub>O (increments of 1 cm H<sub>2</sub>O)

Pressure (P<sub>support</sub>) 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 PSVPro)

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

Flow trigger: 0.2 to 1.0 L/min (increments of 0.2 L/min)  
1 to 10 L/min (increments of 0.5 L/min)

Inspiration termination level: 5 to 75% (increments of 5%)

Backup mode delay: 10 to 30 seconds (increments of 5 seconds)

\*Lower cabinet can be configured with a variety of shelf and drawer combinations

### Ventilator Operating Specifications, continued

Positive End Expiratory Pressure (PEEP)  
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  
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 monitoring  
Expiratory minute volume range: 0 to 99.9 L/min  
Expiratory tidal volume range: 0 to 1500 mL  
O<sub>2</sub> %: 5 to 110%  
Peak pressure: -20 to 120 cm H<sub>2</sub>O  
Mean pressure: -20 to 120 cm H<sub>2</sub>O  
Plateau pressure: 0 to 120 cm H<sub>2</sub>O  
Pressure waveform sweep speed: 4-25 breaths per minute (0 to 15 seconds)  
26 to 75 breaths per minute (0 to 5 seconds)  
75 breaths per minute (0 to 3 seconds)

### Ventilator Accuracy

Delivery/monitoring accuracy  
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  
Tidal volume (V<sub>T</sub>): Low: OFF, 0 to 1500 mL  
High: 20 to 1600 mL, OFF  
Minute volume (V<sub>E</sub>): 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: 18 to 100%, OFF  
Apnea alarm: Mechanical ventilation ON:  
< 5 mL breath measured in 30 seconds  
Mechanical ventilation OFF:  
< 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: Mechanical ventilation ON:  
P<sub>limit</sub> < 30 cm H<sub>2</sub>O, sustained limit is 6 cm H<sub>2</sub>O  
P<sub>limit</sub> 30-60 cm H<sub>2</sub>O, sustained limit is 20% of P<sub>limit</sub>  
P<sub>limit</sub> > 60 cm H<sub>2</sub>O, the sustained limit is 12 cm H<sub>2</sub>O  
PEEP and mechanical ventilation ON:  
Sustained limit increases by PEEP minus 2 cm H<sub>2</sub>O  
Mechanical ventilation OFF:  
P<sub>limit</sub> 60 cm H<sub>2</sub>O, sustained limit is 50% of P<sub>limit</sub>  
P<sub>limit</sub> > 60 cm H<sub>2</sub>O, the sustained limit is 30 cm H<sub>2</sub>O  
Subatmospheric pressure: P<sub>aw</sub> < -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: Galvanic fuel cell  
Life cycle: Approximately 18 months (dependent on usage)

Anesthetic agent delivery  
Vaporizers: Tec 4, Tec 5, Tec 6 Plus, Tec 7  
Number of positions: 2 or 3  
Mounting: Tool-free installation Selectatec® manifold interlocks and isolates vaporizers

### Electrical Specifications

Current leakage  
120V: < 300µA

Light package  
Task light: 12V, 3 lamps, type 194, .270A each  
Goose neck (optional): 12V, type 1815, .200A

Power and battery backup  
Power input: 120 Vac, 60 Hz, 10A  
Backup power: Demonstrated battery backup time under typical operating conditions is 45 minutes when fully charged  
Battery type: Internal rechargeable sealed lead acid  
Power cord: Length: 5 m/16.4 ft  
Rating: 15A @ 120Vac

Communication Port  
Serial interface: Isolated RS-232C compatible port

Inlet/outlet modules (120V)  
System circuit breakers: No outlets 5A w/outlets 10A  
Outlets (optional): 4 outlets on back, 3-2A, 1-3A individual breakers and 1-5A combined outlet breaker, optional isolation transformer  
Auxiliary outlet box (optional): 5 NEMA outlets on dovetail-mounted box, 5-2A breakers, isolation transformer  
Tec 6 Plus outlet: 1 IEC 320 located above vaporizer backbar

# GE Datex Ohmeda Aestiva 5 Anesthesia Delivery System

Equipment for the way *you* operate

## Pneumatic Specifications

Internal common gas outlet  
Connector: ISO 22 mm OD and 15 mm ID

Auxiliary common gas outlet (optional)  
Connector: ISO 22 mm OD and 15 mm ID

Gas supply  
Pipeline input range: 240 kPa to 600 kPa/35 psig to 88 psig  
Pipeline connections: DISS-male

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; contains  
input filter and check valve  
*Note: Maximum 5 cylinders total; one oxygen  
required.* Primary regulator diaphragm minimum burst pressure: 2758  
kPa/400 psig Primary regulator nominal output: < 338 kPa/49 psig  
Pin indexed cylinder connections

Gas power outlet (optional)  
Connector: DISS indexed in accordance with CGA-V-5  
Gas: Oxygen  
Pressure and flow characteristics: Varies with source

O<sub>2</sub> controls  
Method: Proportionate decrease of N<sub>2</sub>O, CO<sub>2</sub>,  
O<sub>2</sub>/He with reduction in 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 to 50 L/min

## Flowmeters

O<sub>2</sub> ranges: Two tubes: 0.05 to 0.95 L/min and 1 to 15 L/min  
Minimum O<sub>2</sub> flow: 50 mL/min ± 25 mL  
N<sub>2</sub>O ranges: Two tubes: 0 to 0.95 L/min and 1 to 10 L/min  
Air range: One tube option: 1 to 15 L/min  
Two tube option: 0 to 0.95 and 1 to 15 L/min  
(low flow tube optional)  
CO<sub>2</sub> (optional): One tube: 0 to 0.5 L/min  
Heliox range (optional): One tube: 0 to 15 L/min

Calibration:	Percent of fullscale flow	Accuracy (% of flowrate)
	100	±2.5%
	90	±2.5%
	80	±2.6%
	70	±2.7%
	60	±2.9%
	50	±3.1%
	40	±3.4%
	30	±4.0%
	20	±5.0%
	10	±8.1%

Calibration conditions: \* 20°C/68°F  
101.3 kPa/760 mmHg

\* Different breathing circuit pressures, barometric pressures or temperatures  
change flowtube accuracy.

## Flowmeters, continued

Hyoxic guard system  
Type: Mechanical Link-25™  
Range: Provides a nominal 25%  
concentration of oxygen in any  
O<sub>2</sub>/N<sub>2</sub>O mixture

## Environmental Specifications

System operation  
Temperature: 10° to 40°C/50° to 104°F  
Humidity: 15 to 95% relative humidity (non-condensing)  
Altitude: -440 to 3565 m/500 to 800 mmHg  
System storage  
Temperature: -25° to 65°C/-13° to 149°F  
Humidity: 10 to 100% relative humidity (including condensing)  
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  
Immunity: Complies with all requirements  
of EN 60601-1-2  
Emissions: CISPR 11 group 1 class B  
UL 2601-1,  
CSA C22.2 #601.1  
IEC 601-1  
EN 60601-1