Aestiva/5 anesthesia machine

More than superior ventilation

Features

Superior ventilation: 7900 SmartVent™

• Volume Mode, pressure
• Volume Mode, Pressure Control Mode, Pressure Support (PSVPro®), Synchronized Intermittent Mandatory Ventilation (SIMV), electronic PEEP
• Tidal volume compensation
• One motion from mechanical to manual mode
• Two key presses to total standby: end case
• Cardiac bypass case mode

Open systems architecture

• Lower overall height
• User configurable drawers/shelving

Innovative patient breathing system

• Eight machine hoses/cables integrated
• “No tools” disassembly of components
• Autoclavable and latex-free
• Responsive location of common gas outlet

Improved low flow/reduced life cycle costs

• Fresh gas flow compensation—automatically
• Smooth, faster acting fresh gas flow control
• Minimum O₂ flow of 50 mL
• Dual air flow tube for low flow
• Two scheduled maintenance checks per year
## Physical Specifications

### Dimensions

<table>
<thead>
<tr>
<th>2 vaporizer configuration</th>
<th>3 vaporizer configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height: 135.8 cm/53.4 in</td>
<td>Height: 135.8 cm/53.4 in</td>
</tr>
<tr>
<td>Width: 75 cm/29.5 in</td>
<td>Width: 93 cm/36.6 in</td>
</tr>
<tr>
<td>Depth: 83 cm/32.7 in</td>
<td>Depth: 83 cm/32.7 in</td>
</tr>
<tr>
<td>Weight: Approximately 136 kg/300 lb</td>
<td>Weight: Approximately 154 kg/340 lb</td>
</tr>
</tbody>
</table>

### Top shelves (optional)

<table>
<thead>
<tr>
<th>2 vaporizer configuration</th>
<th>3 vaporizer configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight limit: 46 kg/100 lb</td>
<td>Weight limit: 46 kg/100 lb</td>
</tr>
<tr>
<td>Width: 47.5, 67.5 or 87.5 cm/18.7, 26.6 or 34.4 in</td>
<td>Width: 87.5 or 67.5 cm/34.4 or 26.6 in</td>
</tr>
<tr>
<td>Depth: 41 cm/16.1 in</td>
<td>Depth: 41 cm/16.1 in</td>
</tr>
</tbody>
</table>

### 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 | Space for additional shelves and drawers |

### Machine:

| Height: 23.5 cm/9.25 in | Width: 38.5 cm/15.2 in | Depth: 26 cm/10.2 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 | Width: 42.5 cm/16.75 in |
| Heights: 20.6 cm/8.2 in, 24.6 cm/9.8 in | Width: 42.5 cm/16.75 in |
| Heights: 28.6 cm/11.4 in, 36 cm/14.4 in | Width: 42.5 cm/16.75 in |

* Lower cabinet can be configured with a variety of shelf and drawer combinations
Depth: 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  104 cm/40.9 in  
  91.5 cm/36 in
Absorber rotation: 85°  85°
Ventilator screen
Height: 7.6 cm/3 in
Width: 15.2 cm/6 in
Casters
Diameter: 12.5 cm/5 in
Brakes: Single foot lever locks and
  unlocks two front casters
Ventilator operating specifications
Ventilation operating modes
  Volume Control
  Pressure Control
Synchronized Intermittent Mandatory Ventilation (SIMV)
Pressure Support (PSVPro) with Apnea Backup ventilation
—(optional)

**Ventilator (V_t) parameter ranges**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range/Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal volume range:</td>
<td>20 to 1500 mL (Volume Control and SIMV modes)</td>
</tr>
<tr>
<td></td>
<td>5 to 1500 mL (Pressure Control Mode)</td>
</tr>
<tr>
<td>Incremental settings:</td>
<td>20 to 100 mL</td>
</tr>
<tr>
<td></td>
<td>(increments of 5 mL)</td>
</tr>
<tr>
<td></td>
<td>100 to 300 mL</td>
</tr>
<tr>
<td></td>
<td>(increments of 10 mL)</td>
</tr>
<tr>
<td></td>
<td>300 to 1000 mL</td>
</tr>
<tr>
<td></td>
<td>(increments of 25 mL)</td>
</tr>
<tr>
<td></td>
<td>1000 to 1500 mL</td>
</tr>
<tr>
<td></td>
<td>(increments of 50 mL)</td>
</tr>
<tr>
<td>Minute volume range:</td>
<td>0 to 99.9 L/min</td>
</tr>
<tr>
<td>Pressure (P_inspired) range:</td>
<td>5 to 60 cm H_2O (increments of 1 cm H_2O)</td>
</tr>
<tr>
<td>Pressure (P_limit) range:</td>
<td>12 to 100 cm H_2O (increments of 1 cm H_2O)</td>
</tr>
<tr>
<td>Pressure (P_support) range:</td>
<td>Off, 2 to 40 cm H_2O (increments of 1 cm H_2O)</td>
</tr>
<tr>
<td>Rate:</td>
<td>4 to 100 breaths per minute for Volume Control and Pressure Control;</td>
</tr>
<tr>
<td></td>
<td>2 to 60 breaths per minute for SIMV, PSVPro and SIMV–PC+PSV (increments of 1 breath per minute)</td>
</tr>
<tr>
<td>Inspiratory/expiratory ratio:</td>
<td>2:1 to 1.8 (increments of 0.5)</td>
</tr>
<tr>
<td>Inspiratory time:</td>
<td>0.2 to 5.0 seconds (increments of 0.1 seconds) (SIMV and PSV Pro)</td>
</tr>
<tr>
<td>Trigger window:</td>
<td>0 to 80% (increments of 5%)</td>
</tr>
<tr>
<td>Flow trigger:</td>
<td>0.2 to 1.0 L/min (increments of 0.2 L/min)</td>
</tr>
<tr>
<td></td>
<td>1 to 10 L/min (increments of 0.5 L/min)</td>
</tr>
</tbody>
</table>
### Inspiration

**Termination level:** 5 to 75% (increments of 5%)

### Backup mode

**Delay:** 10 to 30 seconds (increments of 5 seconds)

### Positive End Expiratory Pressure (PEEP)

**Type:** Integrated, electronically controlled

**Range:** OFF, 4 to 30 cm H₂O (increments of 1 cm H₂O)

### 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

**O₂ %:** ≤ 5 to 110%

**Peak pressure:** -20 to 120 cm H₂O

**Mean pressure:** -20 to 120 cm H₂O

**Plateau pressure:** 0 to 120 cm H₂O

**Pressure waveform sweep speed:** 4 to 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 H₂O

- **PEEP delivery:** ±1.5 cm H₂O

- **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 H₂O

### Alarm settings

**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 (FiO₂):**
- **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 H₂O above PEEP

**High pressure:** 12 to 100 cm H₂O (increments of 1 cm H₂O)

**Sustained airway pressure:**
- **Mechanical ventilation ON:**
  - Pₗₘᵢₜ < 30 cm H₂O, the sustained limit is 6 cm H₂O
  - Pₗₘᵢₜ 30 to 60 cm H₂O, the sustained limit is 20% of Pₗₘᵢₜ
  - Pₗₘᵢₜ > 60 cm H₂O, the sustained limit is 12 cm H₂O

**PEEP and mechanical ventilation ON:**
- Sustained limit increases by PEEP minus 2 cm H₂O
- Mechanical ventilation
Limit: $P_{\text{limit}} \leq 60 \, \text{cm H}_2\text{O}$, the sustained limit is 50% of $P_{\text{limit}}$

Limit: $P_{\text{limit}} > 60 \, \text{cm H}_2\text{O}$, the sustained limit is 30 cm H$_2$O

Subatmospheric pressure: Paw $< -10 \, \text{cm H}_2\text{O}$

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
- 120 V: < 300µA

Light package
- Task light: 12 V, 3 lamps, type 194, .270A each
- Goose neck (optional): 12 V, 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 @ 120 Vac

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

Inlet/outlet modules (120 V)
- 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

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\(_2\), N\(_2\)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\(_2\) controls
Method: Proportionate decrease of N\(_2\)O, CO\(_2\), O\(_2\)/He with reduction in O\(_2\) pressure

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

O\(_2\) flush:
Range: 35 to 50 L/min

Flowmeters
O\(_2\) ranges:
Two tubes: 0.05 to 0.95 L/min and 1 to 15 L/min
Minimum O\(_2\) flow: 50 mL/min ±25 mL
N\(_2\)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\(_2\) (optional):
One tube: 0 to 0.5 L/min
Heliox range (optional):
One tube: 0 to 15 L/min

Calibration:
Percent of full scale flow: Percent of flowrate
Accuracy

<table>
<thead>
<tr>
<th>Percent of Flowrate</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>±2.5%</td>
</tr>
<tr>
<td>90</td>
<td>±2.5%</td>
</tr>
<tr>
<td>80</td>
<td>±2.6%</td>
</tr>
<tr>
<td>70</td>
<td>±2.7%</td>
</tr>
<tr>
<td>60</td>
<td>±2.9%</td>
</tr>
<tr>
<td>50</td>
<td>±3.1%</td>
</tr>
<tr>
<td>40</td>
<td>±3.4%</td>
</tr>
<tr>
<td>30</td>
<td>±4.0%</td>
</tr>
<tr>
<td>20</td>
<td>±5.0%</td>
</tr>
<tr>
<td>10</td>
<td>±8.1%</td>
</tr>
</tbody>
</table>

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

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

Hypoxic guard system
Type: Mechanical Link-25™
Range: Provides a nominal 25% concentration of oxygen in any \( \text{O}_2/\text{N}_2\text{O} \) mixture

Materials

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

Environmental specifications

System operation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td>10° to 40°C/50° to 104°F</td>
</tr>
<tr>
<td>Humidity:</td>
<td>15 to 95% relative humidity (non-condensing)</td>
</tr>
<tr>
<td>Altitude:</td>
<td>–440 to 3565 m/500 to 800 mmHg</td>
</tr>
</tbody>
</table>

System storage

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td>–25° to 65°C/–13° to 149°F</td>
</tr>
<tr>
<td>Humidity:</td>
<td>10 to 100% relative humidity (including condensing)</td>
</tr>
<tr>
<td>Altitude:</td>
<td>–440 to 5860 m/375 to 800 mmHg</td>
</tr>
</tbody>
</table>

Oxygen cell storage

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td>–15° to 50°C/5° to 122°F</td>
</tr>
<tr>
<td>Humidity:</td>
<td>10 to 95% relative humidity</td>
</tr>
<tr>
<td></td>
<td>500 to 800 mmHg</td>
</tr>
</tbody>
</table>

Electromagnetic compatibility

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunity:</td>
<td>Complies with all requirements of EN 60601-1-2</td>
</tr>
<tr>
<td>Emissions:</td>
<td>CISPR 11 group 1 class B</td>
</tr>
<tr>
<td>Approvals:</td>
<td>UL 2601-1, CSA C22.2 #601.1, IEC 601-1, EN 60601-1</td>
</tr>
</tbody>
</table>
About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our “healthymagination” vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality around the world. Headquartered in the United Kingdom, GE Healthcare is a unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employees are committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

GE Healthcare
P.O. Box 7550
Madison, WI 53707-7550
U.S.A.

www.gehealthcare.com

imagination at work