GE Healthcare

Aespire 7900 SmartVent

Superior performance
Compact design

Features

- Enhanced monitor integration capabilities with our Datex-Ohmeda Anesthesia Monitor and Compact Monitor
- Lightweight and compact for easy maneuverability
- Optional integrated auxiliary O_2 flowmeter and suction control

Superior Ventilation: 7900 SmartVent™

- Maximum versatility for full patient range – neonatal to adult
- Ventilation Modes:
  - Volume Control
  - Pressure Control
  - PSVPro® (Pressure Support with Apnea Backup)
  - SIMV (Synchronized Intermittent Mandatory Ventilation
  - Electronic PEEP
- Automatic fresh gas flow (tidal volume) compensation
- Cardiac bypass case mode
- Direct access to ventilator parameter settings
- Pressure waveform for visual reference on a breath-by-breath basis
- Smart alarms direct user to specific problems and affected parameters
- Inspired oxygen monitoring

Advanced Breathing System (ABS™)

- Easy to clean, fully autoclavable, latex-free
- Faster response – ideal for low flow anesthesia
- Easy removal – no tools required
- Integrated design – less parts and connections reduces potential for leaks and misconnects
- One step bag/vent switch turns ventilator on/off

Aespire® 7900 SmartVent shown with Datex-Ohmeda Compact Monitor and Tec® 7 Vaporizer

Physical Specifications

Dimensions

Height:	134.5 cm/52.9 in
Width:	72 cm/28.3 in
Depth:	73 cm/28.7 in
Weight:	Approximately 108 kg/238 lb

Top shelf

Weight limit:	34 kg/75 lb
Width:	66 cm/26 in
Depth:	40 cm/15.75 in

Work surface

Height:	81.7 cm/32.2 in
Size:	2160 cm^2/334 in^2

DIN rail

Side of machine:	34.5 cm/13.6 in

Drawers (internal dimensions)

Height:	17.5 cm/6.9 in
Width:	33 cm/13 in
Depth:	26.5 cm/10.4 in

Absorber bag arm (optional)

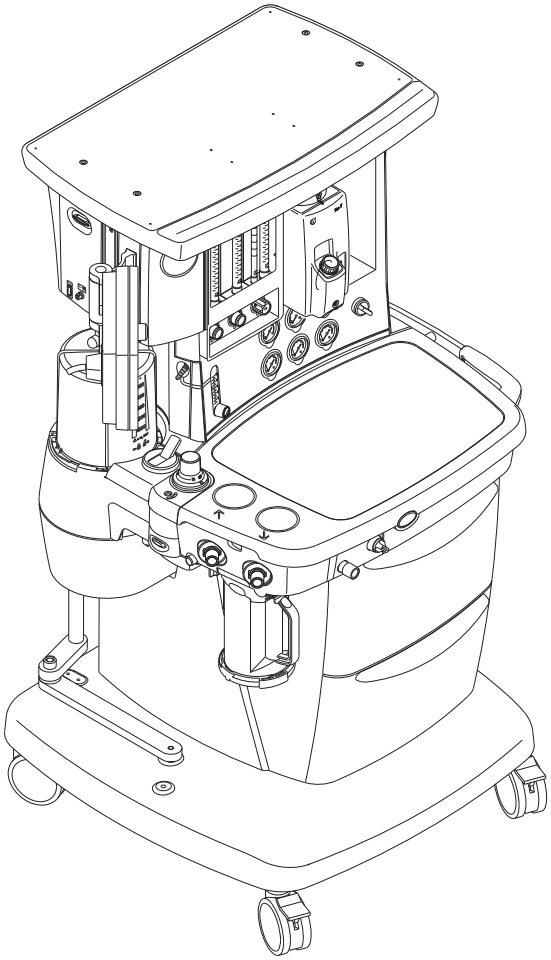
Arm length:	30.5 cm/12 in
Bag arm height (adjustable):	87 cm/34.3 in 104 cm/40.9 in

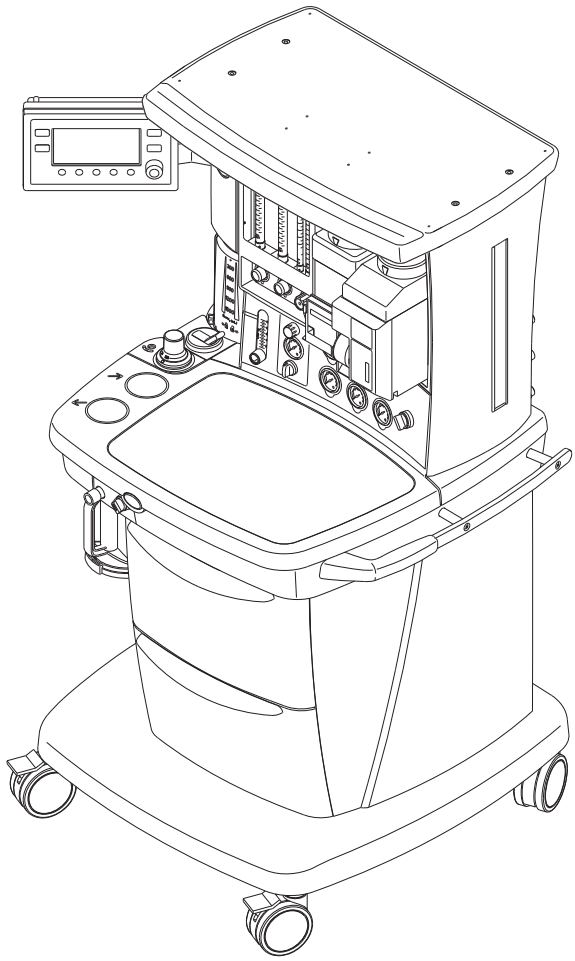
Casters

Diameter:	12.5 cm/5 in
Brakes:	Individual locking

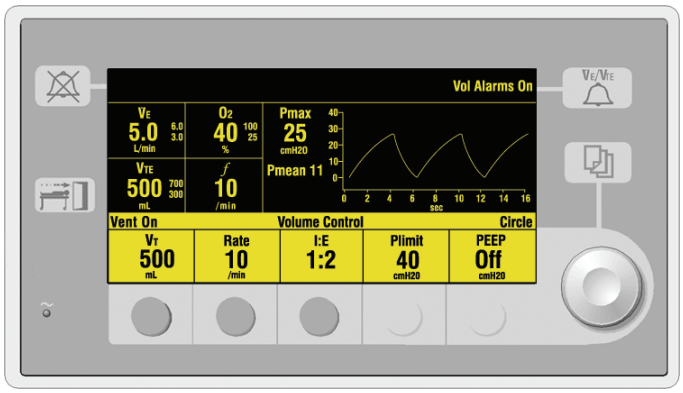
Ventilator screen

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





Ventilator Operating Specifications



Ventilation operating modes

VCV (Volume Control) Mode

Pressure Control

SIMV (Synchronized Intermittent Mandatory Ventilation)

Pressure Support (PSVPro) with Apnea Backup ventilation – (optional)

Ventilator (V_T) 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 50 mL (increments of 1 mL)
	50 to 100 mL (increments of 10 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 ($P_{Inspired}$) range:	5 to 60 cm H_2O (increments of 1 cm H_2O)
Pressure (P_{limit}) range:	12 to 100 cm H_2O (increments of 1 cm H_2O)
Pressure ($P_{support}$) range:	Off, 2 to 40 cm H_2O (increments of 1 cm H_2O)
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%)
T_{pause}:	Off, 5 to 60% (increments of 5%) (VCV and SIMV/PSV modes)
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 H_2O (increments of 1 cm H_2O)

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_2 %:	≤ 5 to 110%
Peak pressure:	-20 to 120 cm H_2O
Mean pressure:	-20 to 120 cm H_2O
Plateau pressure:	0 to 120 cm H_2O
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 H_2O
PEEP delivery:	±1.5 cm H_2O
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_2O

Alarm settings

Tidal volume (V_{TE}):	Low: OFF, 0 to 1500 mL High: 20 to 1600 mL, OFF
Minute volume (V_E):	Low: OFF, 0 to 10 L/min High: 0 to 30 L/min, OFF
Inspired oxygen (FiO_2):	Low: 18 to 99% High: 18 to 99%, 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_2O above PEEP
High pressure:	12 to 100 cm H_2O (increments of 1 cm H_2O)
Sustained airway pressure:	*Mechanical ventilation ON:* P_{limit} < 30 cm H_2O, the sustained limit is 6 cm H_2O P_{limit} 30 to 60 cm H_2O, the sustained limit is 20% of P_{limit} P_{limit} > 60 cm H_2O, the sustained limit is 12 cm H_2O *PEEP and mechanical ventilation ON:* Sustained limit increases by PEEP minus 2 cm H_2O *Mechanical ventilation OFF:* P_{limit} ≤ 60 cm H_2O, the sustained limit is 50% of P_{limit} P_{limit} > 60 cm H_2O, the sustained limit is 30 cm H_2O
Subatmospheric pressure:	Paw < -10 cm H_2O
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 outlet

(optional autoclavable sensor available)

Oxygen Sensor

Type:	Galvanic fuel cell
Life Cycle	Approximately 18 months (Dependent on usage)

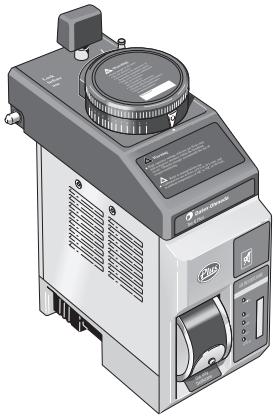
Vent Pneumatics

Pressure range at inlet:	240 kPa to 700kPa/ 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

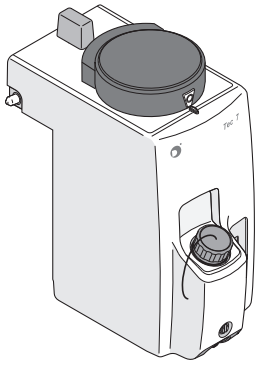
Anesthetic Agent Delivery

Delivery

Vaporizers:	Tec 5, Tec 6 Plus, Tec 7
Number of positions:	2
Mounting:	Tool-free installation Selectatec® Manifold interlocks and isolates vaporizers



Tec 6 Plus vaporizer



Tec 7 vaporizer

Electrical Specifications

Current leakage

100/120 V:	< 300µA
220/240 V:	< 500µA

Power and battery backup

Power input:	100-120 Vac, 50/60 Hz 220-240 Vac, 50/60 Hz
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: 10A @ 220 Vac or 15A @ 120 Vac

Communication port

Serial interface:	Isolated RS-232C compatible port

Inlet/outlet modules

220-240 V

System circuit breakers:	8A
Outlets:	4 outlets on back, 3-1A, 1-2A individual breakers, with isolation transformer

120 V

System circuit breakers:	15A
Outlets:	4 outlets on back, 3-2A, 1-3A individual breakers, with isolation transformer

100 V

System circuit breakers:	15A
Outlets:	3 outlets on back, 2-2A, 1-4A individual breakers, with isolation transformer

Pneumatic Specifications

Auxiliary common gas outlet

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, DISS-female, DIN 13252, AS4059, F90-116, PrEN737-6, or NIST (ISO 5359). All fittings available for O_2, N_2O, 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; two inboard mounted, one outboard mounted*
Primary regulator diaphragm minimum burst pressure:	2758 kPa/400 psig
Primary regulator nominal output:	≤ 338 kPa/49 psig Pin indexed cylinder connections ≤ 407 kPa/59 psig DIN cylinder connections

O_2 controls

Method:	Proportionate decrease of N_2O 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: 25 to 75 L/min

Pneumatic Specifications, continued

Flowmeters

O_2 ranges:	0.05 to 0.95 L/min and 1.0 to 15.0 L/min; Minimum O_2 flow: 50 mL/min ±25 mL
N_2O ranges:	0 to 0.95 L/min and 1.0 to 10.0 L/min
Air range:	0 to 0.95 and 1 to 15 L/min

Calibration:

Percent of full scale 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

Hypoxic guard system

Type:	Mechanical Link-25™
Range:	Provides a nominal minimum 25% concentration of oxygen in O_2/N_2O mixture

Materials

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

Environmental Specifications

System operation

Temperature:	10° to 40°C/50° to 104°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

Temperature:	-25° to 65°C/-13° to 149°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

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

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

Breathing Circuit Specifications

Operational modes

Breathing circuit is circle mode only

Carbon dioxide absorbent canister

Absorbent capacity: 800 g

Integrated expiratory limb water reservoír

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

Pressure gauge

Scale range: 0 to 10 kPa/-20 to 100 cm H_2O

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_2O
Tactile knob indication at:	30 cm H_2O and above
Adjustment range of rotation:	0.8 to 30 cm H_2O (0 to 230°) 30 to 70 cm H_2O (230 to 330°)

Materials

All materials in contact with exhaled patient gases are autoclavable, except disposable flow sensors and O_2 cell. (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_2O
	Mechanical mode:	Automatically compensates for compression losses within the absorber and bellows assembly
Circuit volume:		2.7 L Vent Mode 1.2 L Bag Mode

Expiratory resistance:

Flow rate	P_{exp} Bag Mode Pressure drop	P_{exp} Vent Mode Pressure drop
10 L/min	0.78 cm H_2O	0.77 cm H_2O
30 L/min	1.59 cm H_2O	1.71 cm H_2O
60 L/min	3.48 cm H_2O	3.88 cm H_2O

Note: With patient circuit and wye piece add +0.89 cm H_2O

Anesthetic gas scavenging

Type	Hospital system required	Machine connection
Active low flow:	High vacuum 36 L/min (300 mmHg) @ 12 in Hg	DISS evac
Active low flow:	Adjustable Venturi with > 30 L/min	12.7 mm/0.5 in hose barb
Active high flow:	Low vacuum 40 to 130 L/min	30 mm/1.2 in BSI male threaded
Active high flow:	Venturi 50 L/min	25 mm/0.98 in hose barb
Passive:	Passive or externally attached active system	30 mm/1/2 in MISO taper
Active:	Venturi/Ejector > 30 L/min	12 mm/0.47 in hose barb
Active:	Venturi/Ejector > 30 L/min	8 mm/0.31 in hose barb
Active adjustable flow:	> 30 L/min	

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

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GE imagination at work

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