

Aestiva™/5 7100 anesthesia machine

An evolution of performance
and value



*Two vaporizer configuration
shown with optional
Cardiocap™/5 monitor*



*Three vaporizer configuration
shown with two optional drawers
and Cardiocap™/5 monitor*

Features

- Low overall height
- User configurable drawers/shelving

Ventilation

- Volume and Pressure modes with electronic PEEP
- Exhaled volume, airway pressure and inspired oxygen monitoring capabilities
- Direct access to ventilator parameter settings
- Smart alarms direct user to specific problems and affected parameters
- Pressure bar graph for visual reference on a breath-by-breath basis (optional pressure waveform available)

Innovative patient breathing system

- Mechanical bag/vent switch turns the ventilator on/off
- Integrated machine hoses/cables to minimize disconnects
- “No tools” disassembly of components
- Autoclavable and latex-free

Improved low flow/reduced life cycle costs

- Fresh gas flow compensation – automatically
- Minimum O₂ flow of 50 mL
- Optional dual air flow tubes for resolution of low flows
- Two scheduled maintenance checks per year

Physical specifications

Dimensions

	2 Vaporizer configuration	3 Vaporizer configuration
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:	Approximately 136 kg/300 lbs	Approximately 154 kg/340 lbs

Top shelves (optional)

	2 Vaporizer configuration	3 Vaporizer configuration
Weight limit:	46 kg/ 100 lbs	46 kg/100 lbs
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:	87.5 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 lbs

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 bag arms

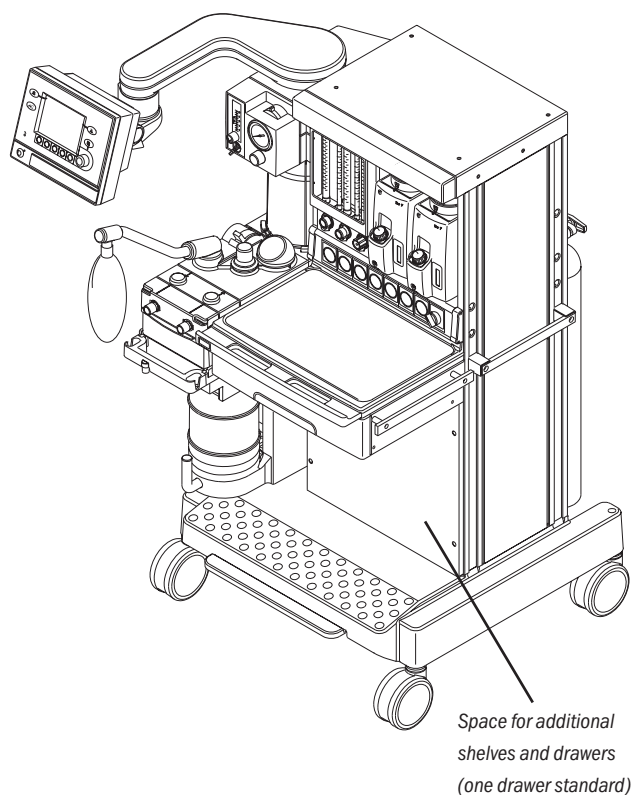
	Adjustable	Non-adjustable
Arm length:	30.5 cm/12 in	25.4 cm/10 in
Bag arm height:	87 cm/34.3 in	91.5 cm/36 in
	104 cm/40.9 in	

Absorber

Rotation:	85°
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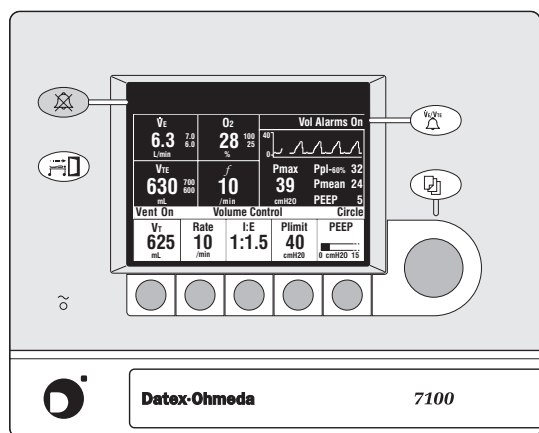
Casters

Diameter:	12.5 cm/5 in
Brakes:	Single foot lever locks and unlocks two front casters



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

Ventilator operating specifications



Optional pressure waveform shown

Modes of ventilation

Volume Control Mode

With tidal volume compensation

Pressure Mode (optional)

Ventilation parameters

Tidal volume range: 45 to 1500 mL

Incremental

settings: 45 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)

Pressure

(P_{Inspired}) range: 5 to 50 cm H₂O (increments of 1 cm H₂O)
(Pressure mode)

Rate: 4 to 65 breaths per minute
(increments of 1 breath per minute)

Inspiratory/
expiratory ratio: 2:1 to 1:6 (increments of 0.5)

Inspiratory
pause adjust: 5% to 60% of inspiratory time (increments of 5%)

Positive End Expiratory Pressure (PEEP)

Type: Integrated, electronically controlled

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

Ventilator monitored values

Tidal volume: 5 to 1500 mL, 1 mL resolution

Minute volume: 0 to 99.9 L/min, 0.1 L/min resolution

Breathing rate: 0 to 65 breaths per minute,
1 breath per minute resolution

Oxygen

percentage: 5% to 110%, 1% resolution

Airway pressure: -9 to 99 cm H₂O, 1 cm H₂O resolution

Alarm settings

Tidal volume ($V_{T\text{E}}$): Low: OFF, 5 to 1500 mL
High: 20 to 1600 mL, OFF

Minute volume (V_{E}): Low: OFF, 0.1 to 10 L/min
High: 0.5 to 30 L/min, OFF

Inspired oxygen

(FiO_2): Low: 18 to 100%
High: 21 to 100%, OFF

Apnea alarm:

Mechanical ventilation ON:
< 5 mL breath measured in 30 seconds

Mechanical ventilation OFF:
< 25 mL breath measured in 30 seconds

Low airway

pressure: Change of 4 cm H₂O above PEEP

Pressure

(P_{limit}) range: 12 to 99 cm H₂O (increments of 1 cm H₂O)

Sustained airway

pressure: Adjustable: 6 to 30 cm H₂O

Subatmospheric

pressure: $P_{\text{aw}} < -10$ cm H₂O

Alarm silence

countdown timer: 120 to 0 seconds

Ventilator accuracy

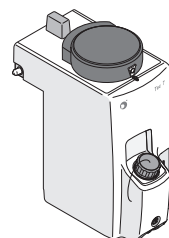
Delivery/monitoring accuracy	
Volume delivery:	> 200 mL = better than ±10% Set TV 75 to 200 mL = better than ±20 mL < 75 mL = better than ±15 mL
Pressure (P _{Inspired}) delivery repeatability:	±2 cm H ₂ O
PEEP delivery repeatability:	±2 cm H ₂ O
Volume monitoring:	> 200 mL = better than ±10% 75 to 200 mL = better than ±20 mL < 75 mL = better than ±15 mL
Pressure monitoring:	Better than ±2 cm H ₂ O or ±5% of reading (whichever is greater)

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
Ventilator pneumatics	
Pressure range at inlet:	240 kPa to 700 kPa/35 psig to 100 psig
Peak gas flow:	70 L/min + fresh gas flow
Flow range:	2 to 70 L/min
Flow compensation range:	200 mL/min to 15 L/min
Ventilator screen	
Display size:	120 mm x 92 mm
Display density:	1/4 VGA standard
Battery back-up	
Backup power:	Demonstrated battery time under typical operating conditions is 90+ minutes when fully charged. Battery time under extreme conditions is 30 minutes.
Battery type:	Internal rechargeable sealed lead acid
Communication port	
Serial interface:	Isolated RS-232C compatible port

Anesthetic agent delivery

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



Tec 7



Tec 6 Plus

Electrical specifications

Current leakage			
120 V:	< 300µA		
220 V:	< 500µA		
Power			
Power input:	USA/Canada/Mexico: 120 Vac, 60 Hz Euro: 220-240 Vac, 50 Hz France/Belgium: 230 Vac, 50 Hz Japan: 100 Vac, 50 or 60 Hz UK: 240 Vac, 50 Hz		
Power cord:	Length: 5 m/16.4 ft Rating: 10A @ 250 Vac or 15A @ 120 Vac		
Inlet/outlet modules			
	220-240 V	120 V	100 V
System circuit breakers:	No outlets 3A w/outlets 6A	No outlets 5A w/outlets 10A	No outlets 5A w/outlets 10A
Outlets (optional):	4 outlets on back, 3-1A, 1-2A individual breakers and 1-3A combined outlet breaker, optional isolation transformer	4 outlets on back, 3-2A, 1-3A individual breakers and 1-5A combined outlet breaker, optional isolation transformer	3 outlets on back, 2-2A, 1-4A individual breakers and 1-5A combined outlet breaker, optional isolation transformer

Electrical specifications, continued

Auxiliary outlet box (optional):	5 CEE 7/7 outlets on dovetail-mounted box, 5-2A breakers, isolation transformer	5 NEMA outlets on dovetail-mounted box, 5-2A breakers, isolation transformer
Tec 6 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, DISS-female, DIN 13252, AS4059, F90-116, PrEN737-6, or NIST (ISO 5359) 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 or DIN (nut and gland); contains input filter and check valve Note: Maximum 5 cylinders; three inboard mounted, two outboard mounted; one oxygen, one other.
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

Gas power outlet (optional)

Connector:	DISS indexed in accordance with CGA-V-5 or Anatrir
Gas:	Oxygen
Pressure and flow characteristics:	Varies with source

O₂ controls

Method:	Proportionate decrease of N ₂ O, CO ₂ , He/O ₂ 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	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.

Hypoxic guard system

Type:	Mechanical Link-25™
Range:	Provides a nominal minimum 25% concentration of oxygen in O ₂ /N ₂ O 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:	-20° to 70°C/-4° to 158°F
Humidity:	10 to 95% relative humidity (including 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

Safety and compliance

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

Breathing circuit specifications**Operational modes**

Breathing circuit modules:	Interchangeable circle or Bain (Mapleson D)
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Carbon dioxide absorbent canisters (2)

Absorbent capacity:	1.35 kg/3 lb each
Canister release:	Integrated sensing mechanism

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 ₂ O
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Bag-to-Ventilator switch

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

Integrated Adjustable Pressure Limiting (APL) valve

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

Materials

All materials in contact with exhaled patient gases are autoclavable, except standard flow sensors. (Autoclavable sensors optional)

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

Breathing circuit specifications, continued

Breathing circuit parameters

Compliance:	Bag mode:	5.15 mL/cm H ₂ O	
	Mechanical mode:	Automatically compensates for compression losses within the absorber and bellows assembly	
Circuit volume:	5.5 L		
Expiratory resistance:		P_{insp}	P_{exp}
	Flow rate	Pressure drop	Pressure drop
	10 L/min	0.74 cm H ₂ O	1.00 cm H ₂ O
	30 L/min	2.32 cm H ₂ O	2.36 cm H ₂ O
	60 L/min	5.93 cm H ₂ O	5.26 cm H ₂ O

Anesthetic gas scavenging

Type	Market	Hospital system required	Machine connection
Active low flow:	US and others	High vacuum 36 L/min (300 mmHg) @ 12 in Hg	DISS evac
Active low flow without flow indicator:	Japan	Adjustable Venturi with flowmeter > 30 L/min	12.7 mm/ 0.5 in hose barb
Active high flow:	UK/related	Low vacuum 40 - 130 L/min	30 mm/1.2 in BSI Male threaded
Passive:	Germany	Venturi 50 L/min	25 mm/0.98 in hose barb
Passive:	Generic	Passive or externally attached active system	30 mm/1.2 in M ISO taper
Passive:	Sweden Norway	Venturi/Ejector > 30 L/min	12 mm/0.47 in hose barb
Passive:	Denmark	Venturi/Ejector > 30 L/min	8 mm/0.31 in hose barb



Datex-Ohmeda Division • Instrumentarium Corp.
P.O. Box 900, FIN-00031 Datex-Ohmeda, Finland
Tel. +358 10 39411 • Fax +358 9 146 3310

www.datex-ohmeda.com

