

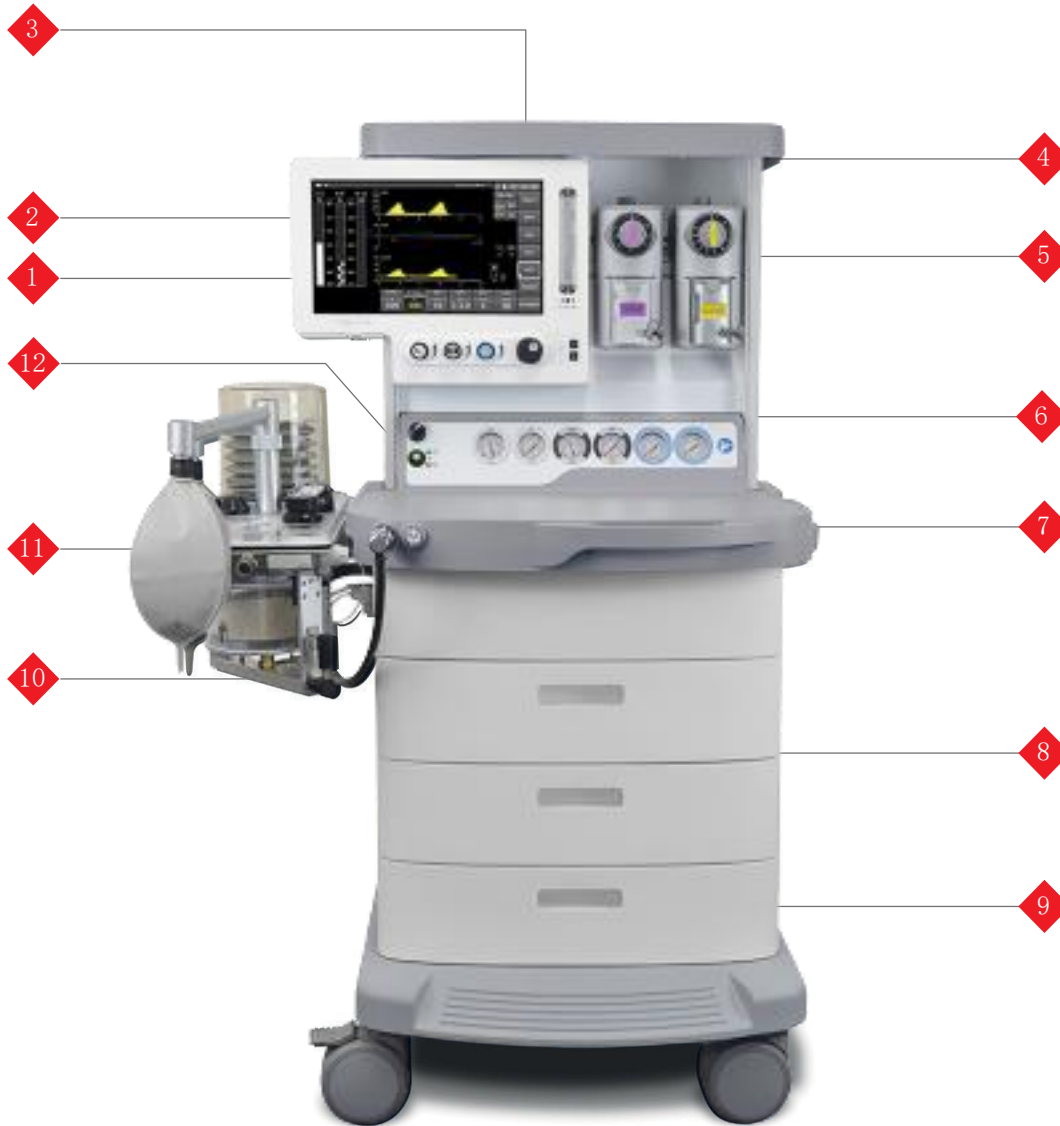
Avante Integra SL-X Anesthesia Machine Technical Specification

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Integra SL-X Anesthesia Machine



The features and options you need

- ◆ 1 15.4" high-definition touchscreen display with intuitive user interface and virtual flow display
- ◆ 2 Seven ventilation modes with PEEP in all modes
- ◆ 3 Versatile top shelf with secure GCX™ mounting system for patient monitors
- ◆ 4 Electrical outlet options
- ◆ 5 Selectatec® compatible backbar (two station)
- ◆ 6 Up to three cylinders
- ◆ 7 Illuminated workspace
- ◆ 8 GCX™ compatible aluminum uprights for additional accessory mounting
- ◆ 9 Standardized large capacity drawer units
- ◆ 10 Integrated CO₂ absorber and bellows unit with heater fitted as standard
- ◆ 11 Optional backlit Auxiliary Common Gas Outlet
- ◆ 12 Optional oxygen therapy flowmeter

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Physical Specifications

Dimensions	
Size (H × W × D)	1390 × 910 × 700 mm
Weight	130 kg (286 lbs.)
Top Shelf	
Size (W × D)	710 × 350 mm
Loading	30 kg - evenly distributed
Work Surface	
Height	860 mm
Size (W × D)	580 × 250 mm
Loading	30 kg - evenly distributed
Illumination	LED
Rail	
Top Rail	Top shelf with GCX™ mounting system for patient monitors
Side Rail	GCX™ compatible aluminum uprights for accessory mounting
Medical Rail	160 mm on the machine side
Drawers	
Size (H × W × D)	135 × 515 × 315 mm
Number of Drawers	3
Loading	10 kg - evenly distributed
Castors	
Diameter	125 mm
Brakes	Individually braked
Display	
Type	Colour touchscreen
Size	15.4" / 307 mm
Resolution	1920 × 1280 pixels
Construction	
Material	Frame: Aluminum and plastic Base: Aluminum

Ventilator Specifications

Ventilator Specification	
Type	Fully integrated, electronically controlled and pneumatically driven
Modes	<ul style="list-style-type: none"> • Volume Control Ventilation (VCV) • Pressure Control Ventilation (PCV) • Pressure Support Ventilation (PSV) • SPONT • Synchronized Intermittent Mandatory Ventilation (SIMV) • Synchronized Mandatory Minute Ventilation (SMMV) • Manual
Bellows	Adult (standard) Pediatric (optional)
Drive Gas	Type: O ₂ /Air Inlet pressure: 280 to 600 kPa
Compensation	Compliance, Fresh Gas, Altitude
Flow Sensors	Inspiratory and expiratory
Data Interface	1 × Serial port (for service only) 1 × RS232 (HL7 connectivity) 1 × USB
Ventilator Settings	
Tidal Volume (V _t) Range	20 to 1600 mL (Adult) 20 to 350 mL (Pediatric)
Minute Ventilation (MV) Range	2 to 50 L/min
Rate (BPM)	4 to 100 bpm
Pressure Limit (Volume Control Mode)	10 to 80 cmH ₂ O
Fresh Gas Compensation	Automatic tidal volume adjustment
SIGH Function (Volume Mode)	Set tidal volume (V _t) x 1.5 is delivered at every 10 to 100 breaths (sigh to breath ratio is user selectable)
Pressure Range (Pressure Control Mode)	5 to 70 cmH ₂ O
Spontaneous Mode	Active volume and pressure alarms
Inspiratory Time	0.3 to 10.0 seconds Support modes: 0.3 to 5.0 seconds
Respiratory Ratio (I:E)	1:0.2 to 1:8.0 Support modes: 1:2.0 to 1:8.0
Inspiratory Pause	0 to 60%
PEEP	4 to 20 cmH ₂ O (4 to 30 cmH ₂ O optional)

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Ventilator Monitoring	
Standard Parameters	PEEP, I:E, FiO2
Standard Waveforms	Flow, Volume, PAW, P-V (Loop), V-F (loop), P-F (loop)
Dual Displays	Dual displays of Pressure v Time, Volume v Time or Pressure v Volume waveform
PSV, SIMV, SMMV	
Trigger	0.7 to 4 L/min (PEEP referenced)
Trigger Window	60% of expiratory time
Tidal Volume (Vt)	As volume mode
Minute Volume (MV)	As volume mode
Inspiratory Time (Ti)	0.3 to 5 seconds
Support Pressure	3 to 20 cmH2O (PEEP referenced)

Alarms

Alarms	
Alarm Mute	30 seconds
Low Drive Gas Pressure	Less than 235 kPa (34 psi)
High Continuous Airway Pressure	Above 30 cmH2O at start of cycle (or PEEP +10 cmH2O)
Low Pressure	4 to 14 cmH2O, PEEP referenced
Low Tidal Volume	50% of Volume Set (Spirometry)
Incorrect Rate or Ratio	Ventilator parameter settings are unachievable
Mains Failure	60 minutes battery backup
Low Battery	< 20 minutes use
Vent Inop	Internal system or battery failure
Apnoea	Flow referenced
Settings	
Tidal Volume	High: 20 to 2400 ml Low: 10 to 1600 ml
Minute Volume	High: 1 to 75 L Low: 0 to 50 L
Low and High O2 Concentration	18% to 105%
Airway Pressure	10 to 80 cmH2O
Apnoea Alarm	15, 30, 60, or 120 seconds

Electrical Specification

Power	
Input Voltage	100 to 240 V
Input Frequency	50-60 Hz
Overload Protection	10A thermal circuit breaker USA: 20A
Power Cable	3 m permanently attached lead
Power Outlets	3 × 2A max. per outlet
Fuses	T2AH 250 V ceramic (5 × 20 mm) high breaking capacity (on live and neutral on each outlet)
Electromagnetic Compatibility	Meets the requirements of EN 60601-1-2
Battery Back Up	
Type	Lead Acid
Back Up Power	60 minutes, approximate
Charge Time	16 hours
Battery	12 V, 4 Ah

Pneumatic Specification

Auxiliary Common Gas Outlet (ACGO)	
Connector	22 mm male taper with coaxial 15 mm female taper connections
Gas Supply	
Pipeline Supply Pressure	280 to 600 kPa (40.6 to 87.0 psig)
Territory Specific Pipeline Connections	UK/Europe: NIST, USA: DISS Australia: SIS, AFNOR, Reverse DISS
Connections	Pipeline: O2, Air, N2O (with inlet filter) Cylinder: > 3 × Pin-indexed (with inlet filter) Cylinder options: O2, O2 and Air, O2 and Air and N2O
Regulator Diaphragm Bursting Pressure	2800 kPa (406 psig)
Pipeline Flow Rate	Air/O2: 40 to 100 L/min N2O: ≤ 15 L/min
Cylinder Supply Pressure	19,985 kPa (2900 psig)
Fresh Gas Safety Valve	90 cmH2O
Reduced Pressure from Regulator (at 5 L/min) - UK	380 kPa + 15 kPa / -35 kPa (55 psig + 2 psig / -5 psig)

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Reduced Pressure from Regulator (at 5 L/min) – US/Canada/Japan	310 kPa + 15 kPa / -35 kPa (45 psig + 2 psig / -5 psig)
Reduced Pressure from Secondary Regulators (at 5 L/min) – O2 and N2O	152 to 241 kPa (22 to 35 psig)
Reduced Pressure from Secondary Regulators (at 5 L/min) – Air	207 to 283 kPa (30 to 41 psig)
Auxiliary Gas Outlets	
Connections	1 × O2, self-sealing 1 × Air, self-sealing
Supply Pressure	Pipeline in use: Supply pressure Cylinders in use: Reduced pressure from the secondary regulator
Flow Rate	60 L/min (maximum) per gas
Auxiliary Oxygen Flowmeter	
Range	0 to 10 L/min
O2 Control	
O2 Flush Range	25 to 75 L/min when button is fully depressed
O2 monitor	Galvanic fuel cell type Measurement range: 0 to 100%
Gas Mixer	
Type	Mechanical
Anti-Hypoxic Fresh Gas Mixture	
Type	Mechanical
Minimum O2 Concentration	30% ±3% (of total O2 and N2O flow)
Basal Flow	100 to 200 mL/min
Fresh Gas Flow	
All Gases	0.1 to 15 L/min
Fresh Gas Display	
Resolution	0.1 to 1.0 L/min
Accuracy	±10% of the indicated value for flow rates between 10 and 100% of full scale

Environmental

Operating Conditions	
Temperature	+15 to 30° C (59 to 86° F)
Atmospheric Pressure	70 to 106 kPa
Altitude	2438 m (8000 feet) maximum
Humidity	10 to 85% R. H. non-condensing
Transport and Storage Conditions	
Temperature	-5 to 40° C (23 to 104° F)
Atmospheric Pressure	50 to 106 kPa
Humidity	10 to 85% R. H. non-condensing
Electromagnetic Compatibility	
Immunity	Meets the requirements of EN 60601-1-2
Emissions	CISPR 11 group 1 class A
Approvals	EN 60601-1-2, 80601-2-13
European Notified Body	CE 1639

Breathing System/Absorber

CO2 Absorber	
Absorbent Volume	1.5 L
Absorbent Type	Loose fill or pre-pack
Heater	Breathing system gas path: integrated heat pad. Spirometer sensors: heater elements
APL Valve	
Range	1.0 to 60 cmH2O
Bag/Vent Switch	
Type	Automatic switching from active ventilation modes to spontaneous mode.
Breathing System	
Valves	Visible inspiratory and expiratory check valves
Pressure Gauge	
Range	-1 to 10 kPa (-10 to 100 cmH2O)
Cleaning and Disinfection	
Cleaning (All Surfaces)	Clean daily with an appropriate disinfectant

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Display Screen	Soap-based sanitizing wipes – soft cloth only
Sterilization (Breathing System Components)	Breathing system hoses and other components must be sterilized to the manufacturer’s recommended methods
Sterilization (Ventilator Patient Block Assembly)	Peak sterilization temperatures should not exceed 134° C (275° F) to prevent possible damage

Anesthetic Gas Scavenging System (AGSS)

Physical	
Type	Active
Type of Disposal System	For use with a high flow rate disposal system
Dimensions	420 × 77 × 99 mm (H × W × D)
Mounting	Side of the system
Safety Indicator	If the flow rate falls below 60 L/min, the float will fall below the bottom of the window

Anesthetic Agent Delivery

Vaporizer Mounting	
Vaporizers	Sigma Delta and Sigma EVA (Sev, Iso, Hal, and Des)
Number of Positions	Two
Type	Selectatec® compatible backbar

Sigma Delta Vaporizer

Dimensions	
Cagemount	219 × 133 × 158 mm (H x W X D)
Selectatec compatible	242 × 120 × 190 mm (H x W X D)
Dräger compatible	242 × 100 × 190 mm (H x W X D)
Physical Specification	
Weight	4.8 kgs
Volume	Min: 35 ml Max: 250 ml
Anesthetic Agents	Sevoflurane, Isoflurane, Halothane
Filling Systems	Key fill, Quik-Fil or Pour fill
Concentration Control Dial Scale	0 to 2% vol, increments of 0.2% ≥2%+, increments of 0.5%

Environmental	
Operating Temperature	Sev: 15 to 40° C (58 to 104° F) Iso: 15 to 35° C (58 to 95° F) Hal: 15 to 35° C (58 to 95° F)
Storage Temperature	-5 to 40° C (23 to 104° F)
Transport Temperature	-5 to 40° C (23 to 104° F)
Atmospheric Pressure	11.5 to 110 kPa
Flow range	
Operating Flow	0.2 to 15 L/min
Pressure Range	
Operating Pressure Range	0 to 5 kPa (0 to 0.7 psi)
Maximum Manifold Pressure	38 kPa (5.5 psi)
Maximum Test Pressure	38 kPa (5.5 psi)

Sigma EVA Vaporizer

Dimensions	
Size (H × W × D)	256.5 × 120 × 273 mm (H x W X D)
Weight	4.45 kg
Capacity	
Maximum Volume	330 ml (nominal)
Volume At ‘Refill Required’ Indication	70 ml
Filling System	
Anesthetic Agent	Suprane (desflurane) only
Filling System	SAFE-FIL® compatible
Fill Time	One minute (at room temperature)
Concentration Control Dial Scale	
Concentration Output Range	1 to 18%
Control Dial Scale	1 to 10% vol, increments of 0.5% ≥10%, increments of 1%
Alarms and Information Signals	
Alarms	High and Medium priority
Alarm Volume	45 to 80 dB (A)
Alarm Mute	2 minutes
Low Agent	Single tone (every 60 seconds), and visual indicator

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Operating Conditions	
Temperature	18 to 30° C (64 to 86° F)
Atmospheric Pressure	70 to 110 kPa
Humidity	30% to 75% RH non-condensing
Tilt Angle	10° (any direction), maximum
Transport and Storage Conditions	
Temperature	-20 to 60° C (-4 to 140° F)
Atmospheric Pressure	11.5 to 110 kPa
Humidity	30% to 75% RH non-condensing
Altitude	Up to 2900 m
Electromagnetic Compatibility	
Immunity	EN 60601-1-2
Emissions	CISPR 11 group 1 class A
Approvals	EN 60601-1-2, 80601-2-13
European Notified Body	CE 1639
Gas Flow Range	
Operating Flow	0.2 to 15 L/min
Fresh Gas Flow Resistance	
Flow Resistance	< 15 kPa with a flow of 15 L/min O ₂
Pressure Range	
Maximum Manifold Pressure	38 kPa (5.5 psi)
Electrical Specification	
Input Voltage	100-240 VAC, 2.0-1.0 A
Input Frequency	50/60 Hz
Battery Back Up	5 minutes nominal (vaporizer set to deliver a concentration of 6% at a flow of 4 L/min)
Warm-Up Time	10 minutes, approximately