

# Anestar™

## GENERAL DESCRIPTION

The Anestar™ Anesthesia System packages an array of state-of-the-art features in a flexible anesthesia workstation designed for delivery and monitoring of inhalation anesthesia.

Anestar offers comprehensive safety features with its integrated, warmed breathing system and low-maintenance components. Thoughtful ergonomics, quality construction, and outstanding customer service are additional reasons why Anestar and Datascope are the clear choice for all your anesthesia needs.

The Anestar™ complements Datascope's Passport 2™ and Expert™ monitors and the Gas Module SE™

## SUMMARY OF FEATURES AND BENEFITS

- A warmed breathing system (35°C) integrates the absorber and ventilator bellows in a warmed aluminum manifold. This system provides airway climatization of patient gases for improved patient comfort while eliminating condensation and rainout inside the breathing system.
- Fresh gas decoupling ensures constant tidal volume delivery by eliminating any dependency on fresh gas flow settings.
- Automatic compliance compensation adapts to changes within the breathing circuit to maintain tidal volume accuracy with a wide variety of breathing circuits.
- The state-of-the-art ventilator offers volume and pressure controlled ventilation, as well as manual operation for assisted and spontaneously breathing patients.
- Optional pressure controlled ventilation allows independent control of targeted plateau pressure and inspiratory flow rate.
- Integration reduces the number of connections and potential leak sites. The virtually leak-free breathing system helps maintain ventilatory stability while minimizing patient safety issues.
- Low flow techniques can be utilized while assuring safe O<sub>2</sub> supply to the patient.
- Touch screen access to ventilator settings saves time by reducing needless complexity and menus. Screen prompts guide the user while easy-to-use alarm management minimizes nuisance alarms.
- Evaluate patient status at a glance with Anestar's intuitive display interface. The pressure waveform and ventilator data are displayed in real time for immediate interpretation.
- Ergonomic design provides convenient positioning of the pivoting breathing system and bag arm. Easy viewing of ventilator and flow meter settings complement a roomy stainless steel work surface.
- Time saving features include: small footprint, automatic system tests, compatibility to standard breathing circuits and prepacks, and a standby mode for alarm-free room turn-over.
- Safety features include: O<sub>2</sub> ratio system, minimum O<sub>2</sub> flow, and automatic N<sub>2</sub>O cutoff if O<sub>2</sub> pressure falls below a safe limit. In case of insufficient fresh gas supply, ventilation with air is automatic through an integrated room air valve. Battery backup provides approximately 30 minutes of operation.



# PERFORMANCE SPECIFICATIONS

## Physical Specifications

<b>Dimensions</b>		<b>Top Drawers (2)</b>	
Height	1530 mm (60.2 in.)	Height	187 mm (7.4 in.)
Width	710 mm (28.0 in.)	Width	219 mm (8.6 in.)
Depth	790 mm (31.1 in.)	Depth	440 mm (17.3 in.)
Weight	Approx. 120 kg (265 lbs.)		
<b>Top shelf</b>		<b>Lower drawer</b>	
Weight limit	25 kg (55 lbs.)	Height	109 mm (4.3 in.)
Width	470 mm (18.5 in.)	Width	464 mm (18.3 in.)
Depth	267 mm (10.5 in.)	Depth	440 mm (17.3 in.)
<b>Large top tray (option)</b>		<b>Ventilator screen</b>	
Width	695 mm (27.4 in.)	Height	87 mm (3.4 in.)
Depth	445 mm (17.5 in.)	Width	115 mm (4.5 in.)
<b>Work surface</b>		<b>Casters</b>	
Height	914 mm (36.0 in.)	Diameter	125 mm (5 in.)
Width	425 mm (16.75 in.)		
Depth	349 mm (13.75 in.)		
<b>Mounting rail (optional)</b>			
Side of Machine	483 mm (19.0 in.)		

## Pneumatic Specifications

### Central gas supply requirements

O <sub>2</sub>	350 kPa + 100/-50 kPa (50 psi ± 14.5/-7.25 psi)
N <sub>2</sub> O	350 kPa + 100/-50 kPa (50 psi ± 14.5/-7.25 psi)
Air	350 kPa + 100/-50 kPa (50 psi ± 14.5/-7.25 psi)

### Pipeline Connectors

O <sub>2</sub>	DISS threaded body as per CGA V-5
N <sub>2</sub> O	DISS threaded body as per CGA V-5
Air	DISS threaded body as per CGA V-5

### Cylinder gas supply requirements

O <sub>2</sub>	E Cylinder / PIN indexed per CGA V-1
N <sub>2</sub> O	E Cylinder / PIN indexed per CGA V-1
Air	E Cylinder / PIN indexed per CGA V-1

### O<sub>2</sub> controls

Method	Proportional increase of O <sub>2</sub> with the increase of N <sub>2</sub> O
Supply failure alarm	Approx. 200 kPa (29 psig)
O <sub>2</sub> flush	Range – 35-50 L/min

### Flowmeters

O <sub>2</sub> ranges	0.1 – 1 L/min	1.5 – 10 L/min
N <sub>2</sub> O ranges	0.1 – 1 L/min	1.5 – 10 L/min
Air range	0.2 – 12 L/min	
Accuracy	± 3% of the scale value	
Accuracy conditions	ATPD	

### Hypoxic guard system

Type	"Ratio" system integrated w/automatic N <sub>2</sub> O cut off when O <sub>2</sub> fails
Range	Provides a minimum of 25% ± 5% concentration of oxygen in fresh gas in any O <sub>2</sub> /N <sub>2</sub> O mixture

### Materials

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

## Ventilator Operating Specifications

### Ventilator operating modes

Spontaneous breathing	Adult and pediatric PCV (option)
Manual/bag	Ventilator monitor
Adult and pediatric CMV	Real-time waveform

### Numerical values for tidal volumes, breathing frequency, minute volumes

Tidal Volume Range	10 to 9999 ml	<b>Ventilator performance ranges (continued)</b>
Minute Volume Range	0.1 to 99.9 liters	Waveform sweep speed
Rate	0 to 99 bpm	16 s
Resolution Tidal Volume	10 ml	I:E ratio
Resolution Minute Volume	0.1 liters	1:1; 1:1.5; 1:2; 1:2.5; 1:3
		Inverse I:E ratio
		2:1 and 3:1; 4:1
		(PCV Mode)

### Pressure monitor

Real-time waveform		<b>Positive End Expiratory Pressure (PEEP)</b>
Numerical pressure values for PEEP, Pmean, Ppeak		Type
Pressure range	-20 to 99 cm H <sub>2</sub> O	Electronically controlled
Resolution	1 cm H <sub>2</sub> O	Range
		0 – 15 cm
		H <sub>2</sub> O CMV mode
		0 – 10 cm
		H <sub>2</sub> O PCV mode

### Ventilator performance ranges

Tidal volume range	Child: 40 - 400 mL	<b>Ventilator performance</b>
	Adult: 300 - 1400 mL	Pressure range at inlet
Incremental settings	10mL: Child; 50mL: Adult	250 kPa – 600 kPa
Pressure range	-10 – 100 psi	(36 psi – 87 psi)
Plateau (end insp.)	20 – 30 % insp. time	Inspiratory flow
Rate	4 – 60 bpm	1 – 75 L/min

## Ventilator Accuracy

<b>Delivery/monitoring accuracy</b>		<b>Alarm settings (continued)</b>
Volume delivery	± 10%	Apnea alarm
Pressure delivery	± 5%	Variable 15-60 s
PEEP delivery	± 1 cm H <sub>2</sub> O	Low airway pressure
Volume monitoring	± 10%	2 – 70 cm H <sub>2</sub> O
Pressure monitoring	± 5% of the measured value	High pressure
<b>Alarm settings</b>		12 – 80 cm H <sub>2</sub> O
Tidal volume	Child: 20 – 400 mL Adult: 50 – 1400 mL	Subatmospheric pressure
Minute volume	Child: 0.5 – 3 L Adult: 0.5 – 5 L	-2 cm H <sub>2</sub> O
Inspired Oxygen	18 – 99%	Alarm silence
		2 minutes

## Electrical Specifications

<b>Mains power supply</b>	120 VAC 60 Hz	<b>Auxiliary Outlets</b>
<b>Current Input</b>	12A (5A for Anestar, 7A for auxiliary outlets)	Type
<b>Power and battery back-up</b>		Fuse
Power consumption	Approx. 210 VA	120 volt, Hospital Grade (4)
Power cord	captive line cord	10A resettable
Battery	12 v / 6.5Ah Lead Acid	(externally accessible)
Battery run time	Approx. 30 minutes	<b>Communication port</b>
Battery Charge Time	7 hours max, if apparatus activated	Output serial interface
Battery Fuse	5A resettable (externally accessible)	RS 232 Optical
Battery type	Internal rechargeable lead acid	

## Environmental Specifications

### System operation

Operating Temperature	10 to +35°C (50 – 95°F)
<b>System storage</b>	
Temperature	-5 – 50°C (23 – 122°F)
Humidity (Operating & Storage)	15 – 95% RH, non condensing

## Breathing Circuit Specifications

### Modular breathing system

Internal volume	approx. 2.5 l
Rotation	90°
Carbon dioxide absorber system	Pre-Pack canisters
Absorber capacity	2 Pre-packs
Condensation mgmt	Breathing circuit block heated at 35°C (95°F)
Processing	Can be autoclaved at 134°C (273°F)

System compliance	automatically compensated
Fresh gas decoupling	automatic during inspiration, allowing constant volume ventilation

### 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 ISO 15 mm ID taper

### Pressure gauge

Scale range	-10 – 100 psi
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### Integrated Adjustable Pressure Limiting Valve

Range	0 – 80 cm H <sub>2</sub> O
Tactile knob indication at	10 cm H <sub>2</sub> O
Adjustable range of rotation	270°

## Agency Compliances

This machine complies with the following industry standards:

<b>Safety:</b>	EN 60601-1:1990, +A1:1992, +A2:1995, +A13:1995 / IEC 601-1:1998, +A1:1991, +A2:1995, UL 2601-1 1997, CSA Standard C22.2 No. 601.1-M90, EN 60601-1-4:1996 / IEC 601-1-4:1996, CAN/CSA-C22.2 No. 601.2.13-94, IEC 601-2-13 :1989, ASTM F 1161-88 (1988)
<b>Performance:</b>	ASTM F 1463-93 (1993)
<b>EMC &amp; Environment:</b>	EN 60601-1-2:1993

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