



ADVANTAGE ADVANCED ANESTHESIA SYSTEM

Performance Specifications

Physical Specifications (Nominal)

Dimensions

Height	140 cm (55.1 in)
Width	105 cm (41.3 in)
Depth	80.5 cm (31.7 in)
Weight (without vaporizers and gas cylinders)	150 kg (331 lbs)

Top Shelf

Weight Limit	40 kg (88 lbs)
Width	61.6 cm (24.2 in)
Depth	36.2 cm (14.2 in)

Work Surface

Width	61.6 cm (24.2 in)
Depth	38 cm (15 in)
Height	85 cm (33.4 in)

Drawers (3 same size)

Height	13.5 cm (5.3 in)
Width	44 cm (17.3 in)
Depth	38.5 cm (15.1 in)

Casters (Dual Wheel)

Diameter	15 cm (5.9 in)
Individual Brake	On each caster

Mounting Rails

GCX Compatible	5 rails total
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Pneumatic Specifications

Pipeline Gas Supply Requirements

O ₂ , N ₂ O, Air	280 – 600 kPa (40 psi – 87 psi)
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Pipeline Gas Supply Connectors

Diameter indexed (DISS) threaded body as per CGA V-5

Cylinder Gas Supply Requirements

Compatibility E-Cylinder (O₂, Air)

Cylinder Gas Supply Connectors

Pin indexed (PISS) per CGA V-1

Fresh Gas Delivery System

Virtual Fresh Gas Flow Tubes

Electronic Display Range (O ₂ , Air, N ₂ O)	
High Scale	0 – 15 L/min
Low Scale	0 – 1 L/min

Hypoxic Guard System and O₂ Controls

Provides a minimum of 21% concentration of oxygen in fresh gas in any O₂/N₂O mixture

O ₂ flush flow rate	35 – 50 L/min
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Anesthetic Gas Scavenging System (AGSS)

Flow Rate	25-50 L/min
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Breathing System to AGSS connector

AGSS connector	30 mm OD
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Vaporizer Mounts

Connection Style	Selectatec®
In-line Vaps (standard)	2
In-line Vaps (optional)	3

Auxiliary O₂/Air Mixer

Total Flow Rate (max)	30 L/min at 60% O ₂
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O₂ Concentration Range 21% – 100%

Breathing System

Temperature Maintained to	31 – 40°C (88°F – 104°F)
CO ₂ Absorbent	1 loose fill or 1 Pre-Pak (1500 ml ±100 mL)
APL Valve	330° rotation, 5 – 75 cmH ₂ O

Breathing System Volume – Automatic Ventilation

Total Volume	4350 ml ±100 ml including bellows
Bellows	1500 ml ±100 ml

Breathing System Volume – Manual Ventilation

Total Volume	3300 ml ±100 ml not including Breathing Bag
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Anesthesia Gases (with optional AG Module)

Sampling Rate

Adult, Pediatric	
AG Water Trap	120, 150, 200 ml/min (user-selectable) (default: 120 ml/min)
Neonate AG Water Trap	70, 90, 120 ml/min (user-selectable) (default: 70 ml/min)
Sampling Delay Time	<4 s
Refresh Rate	1 s
Warm-up Time	45 sec to warm-up status 10 min to ready-to-measure status

Normal Operating Conditions After Warm-up

Ambient Temperature	10 – 55°C (50 – 131°F)
Ambient Pressure	700 – 1200 hPa
Ambient Humidity	10 – 95% RH, non-condensing

Measurement Range

CO ₂ /Des/Sev/Enf/Iso/Hal	0 – 30%
O ₂ /N ₂ O	0 – 100%
AwRR	2 – 100 bpm

Resolution

CO ₂	1 mmHg
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Ventilator Operating Specifications

Ventilator Function

Ventilation and manual assist	
Adult, Pediatric, Infant Patient Settings	
Standard Modes	VCV, CPAP/PS
Optional Modes	PCV, PCV-VG, SIMV-PC, SIMV-VC, SIMV-VG
Optional Low Flow Support	Optimizer Real-time agent consumption

Automatic Compensation

Fresh Gas Compensation	Automatic after start up sequence
Compliance Compensation	Automatic after start up sequence

Ventilator Performance

Drive Pressure	280 – 600 kPa
Inspiratory Flow Range	2.4 – 180 L/min



Displayed Parameters

Screen Type	Color LCD with touch screen
Screen Size	15 in diagonal (4:3 ratio)
Sweep Speed	15 s
Graphic Waveforms	Airway Pressure, Flow, Volume
Optional with AGM	CO ₂ , O ₂ , Agent, N ₂ O
Numeric Data	Tidal Volume, Minute Volume, Peak airway pressure, PEEP, Mean or Plateau pressure, Breath Rate, FIO ₂ ,
Optional with AGM	O ₂ , N ₂ O, AA, CO ₂ , MAC

Tidal Volume

Deliverable Range	20 – 1500 mL (VCV)
Accuracy	<60 mL: ±10 mL >60 mL and ≤210 mL: ±15 mL >210 mL: ±7% of the set Value

Incremental Setting

Measurable Range	0 – 3000 mL
Resolution	1 mL

Pressure Range

Manual Mode	0 – 75 cmH ₂ O
Pressure Control Ventilation	5 – 70 cmH ₂ O
Pressure Accuracy (PCV and PS)	Max. of ±2.5 cmH ₂ O or 7% of setting

Minute Volume

Display Range	0 – 100 L
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Breath Rate Range (per minute)

Deliverable Range	4 – 100 bpm
Display Range	0 – 120 bpm
I:E Ratio	4:1 – 1:8

End Inspiratory Plateau Range

OFF, 5 – 60% (of inspiratory time)

Positive End Expiratory Pressure (PEEP)

Type	Electronically controlled
Range	3 – 30 cmH ₂ O
Accuracy	±2 cmH ₂ O or ±10%

FiO₂

Sensor Type	Galvanic Fuel Cell
Display Range	18 – 100%
Resolution	1 vol/vol%

Alarms

Minute Volume

Low Limit Range	0 – 20 L/min
High Limit Range	0.2 – 25 L/min

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Alarms (continued)

Airway Pressure

Low Limit Range 0 – 70 cmH₂O
 High Limit Range 10 – 100 cmH₂O

FiO₂

Low Limit Range 18 – 98 vol/vol%
 High Limit Range 21 – 100 vol/vol%, Off

Breath Rate

Apnea – Manual Mode > 120 s
 Apnea – Automatic Mode, when Paw < (PEEP + 3 cmH₂O) and V_T < 10 mL for more than 30 s
 Alarm Silence 120 s

Electrical Specifications

Power and Battery Back-up

Mains Power Supply 100 – 120 VAC 50/60 Hz
 Current Input 12A total max
 Power Consumption Approx. 200 VA
 Power Cord Line cord
 Backup Battery Run Time Up to approx. 150 minutes with two batteries installed

Backup Battery Charge Time 8 hours max

Auxiliary Outlets

Number and Type of Outlets Three circuit breaker (3A each)

Environmental Specifications

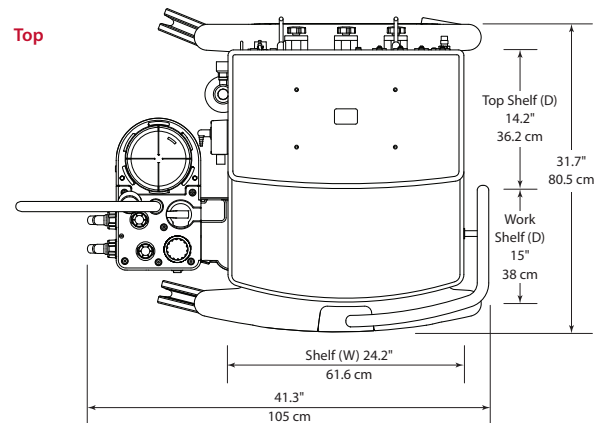
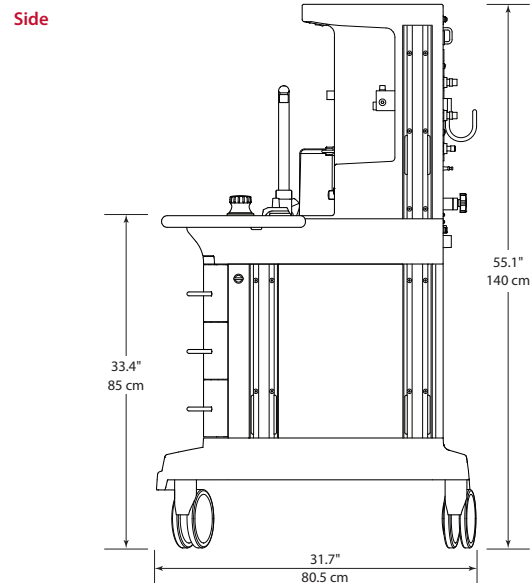
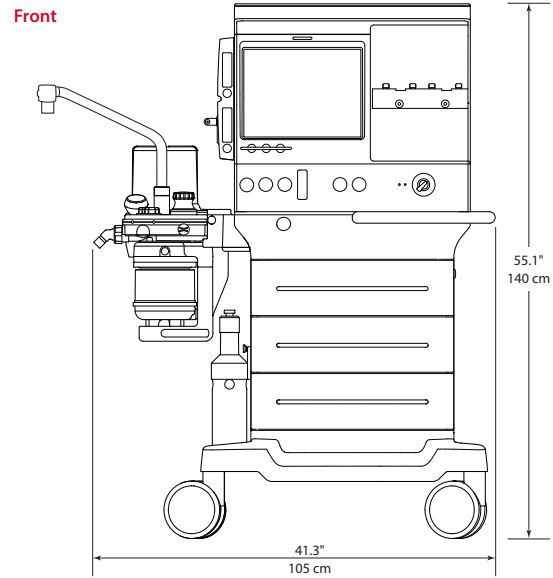
Operating Temperature +10 – +40°C (50 – 104°F)
 Storage Temperature -20 – +60°C (-4 – 140°F)
 Humidity 15 – 90% RH, non-condensing (operating and storage)

Materials

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

Specifications

Conditions defined at Ambient Temperature Pressure Dry



Mindray DS USA Document Revision

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	REVISION: B
	SHEET 3 of 3

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A	CR44401 08/10/2018	Original release as Rev A
B	CR44527 10/24/2018	Revised to update specifications.