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Boaray600 Anesthesia Machine

Technical sheets



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Technical specifications

Physical specifications	
Dimensions and weight	
Dimensions (HxWxD)	1450mmx1000mmx1330mm
Weight	103 kg (Without vaporizer and cylinder)
top shelf	
Weight Limit	34kg
Width X Depth	578x360mm
work surface	
Dimensions (HxWxD)	827x557x311mm
Drawer (internal dimension)	
Dimensions (HxWxD)	150x298x348mm
Amount	Standard 2
Wheels	
Diameter	125mm
Brakes	All four wheels with brakes
Ventilation Specifications	
Ventilation modes	
ventilation mode	Manual/Spontaneous Ventilation/Bypass/Standby Ventilation Volume Control (VCV) with PLV function Pressure Control Ventilation (PCV) Synchronized Intermittent Mandatory ventilation: SIMV (V) + PS , SIMV (P) + PS Pressure Support Ventilation (PSV) with apnea support
Compensation	
Compensation for gas leaks in the circuit and automatic compliance compensation	
Ventilation Parameter Range	
patient type	Adult, Pediatric, Infant
Tidal Volume	Pediatric/Infant: 10 ~ 300ml Adult: 100~1500ml (5 mL increments)
pinsp	5 ~ 70 cmH ₂ O (1 cmH ₂ O increments)
plimit	5 ~ 100 cmH ₂ O (1 cmH ₂ O increments)
Ratio	RR in SIMV mode: 1 ~ 40 bpm Other modes: 4 ~ 100 bpm (1 bpm increments)
I:E	4:1 ~ 1:10 (0.5 increments)
Tpause	OFF, 5% ~ 50% (5% increments)
You	0.1 ~ 10s (0.1s increments)
flow trigger	1 ~ 15 L/min (1 L/min increment)
support	5 ~ 60 cmH ₂ O (1 cmH ₂ O increments)



Sigh	10 ~ 100	
Positive End Expiratory Pressure(PEEP)		
Guy	Integrated, electronically controlled	
PEEP	OFF, 4 ~ 30 cmH ₂ O (1 cmH ₂ O increments)	
fan performance		
driving pressure	280kPa to 600kPa	
Max gas flow 120L/min + fresh gas flow		
monitoring parameters		
minute volume	0~60L/min	
Tidal Volume	0~2500ml	
Inspired oxygen (FiO ₂)	21%~100%	
Peak airway pressure resp.	0~100cmH ₂ O	
average pressure	0~100cmH ₂ O	
plateau pressure	0~100cmH ₂ O	
I:E	4:1~1:10	
Ratio	0 ~100bpm	
PEEP	0~70cmH ₂ O	
Stamina(R)	0~200cmH ₂ O /(L/s)	
Compliance(C)	0~200ml/cmH ₂ O	
control precision		
delivery scope	<100ml: ±20ml ≥100 mL: ±20 mL or ±15% of set value, whichever is greater	
delivery pressure	± 2.0 cmH ₂ O or ± 10% of set point, whichever is greater	
PEEP delivery	±2.0 cmH ₂ O or ±10% of set point, whichever is greater	
flow trigger	±1.0 L/min or ±15% of set value, whichever is greater	
Monitoring Accuracy		
Monitoring Volume	<100ml: ±20ml ≥100 mL: ±20 mL or ±15% of reading, whichever is greater	
Monitoring Pressure	± 2.0 cmH ₂ O or ± 10% of reading, whichever is greater	
PEEP monitoring	± 2.0 cmH ₂ O or ± 10% of reading, whichever is greater	
MV Monitoring	1L/min or ±15% of reading, whichever is greater	
trend chart		
Continuous trending information for the last 24 hours		
alarm logbook		
Storage of 500 events, first in, first out		
alarm settings		
Tidal Volume	High	20 ~ 1500 mL, OFF
	Low	OFF, 10 ~ 1500 mL
Volume Minute	High	1 ~ 40 L/min, OFF
	Low	OFF, 0 ~ 40L/min
Airway pressure resp.	High	1~100cmH ₂ O
	Low	0~99cmH ₂ O



RR	High	1~100BPM
	Low	0~99BPM
apnea alarm	10~40s	
inspired oxygen	Low: 21% ~ 100% High: OFF, 18% ~ 99%	
Sustained airway pressure alarm	15s	
subatmospheric pressure alarm	Paw < -10 cmH2O	
alarm silence	120 to 0 seconds	
language system		
Chinese, English, Spanish, Russian, Turkish.		
fan components		
Flow sensor		
Guy	Variable Orifice Flow Sensor	
location	Inspiratory and expiratory port	
Oxygen sensor		
Guy	Galvanic fuel cell	
FiO2	21% to 100%	
precision	± (2.5% fraction volume +2.5% gas level)	
Response time	≤15 seconds	
fan screen		
Display type	ColorTFT touchscreen, rotatable	
Screen size	15 inches	
pixel format	1024x768	
Glow	Adjustable	
parameters	All alarm parameters (including respiration rate, I / E, VT, MV, PEEP, MEAN, PEAK, PLAT and O2 concentration, EtCO2, N2O, esthetician gas concentration)	
waveform	PT, FT, VT, CO2-T	
Spirometry loops	PV, FV and FP	
timer	on screen timer	
communication ports		
Two RS-232C connectors		
VGA		
vaporizers		
Vaporizer	Prunus BR60 Anesthetic Vaporizer Penlon Sigma Delta Anesthetic Vaporizer	
support agents	Halothane, enflurane, isoflurane, sevoflurane	
Position	Standard 2	
mounting mode	Selectatec®, with interlock function	



filling method	Key fill, Pour fill, Quick fill
modules	
MainStream CO2 Module (Masimo IRMA)	
Displayed numbers EtCO ₂ , FiCO ₂	
Measurement range 0 ~ 99 mmHg	
Accuracy ± (0.3 vol%+ 4% of reading)	
Waveforms / CO ₂ -time loop	
alarm limits high EtCO ₂	1~100cmH ₂ O
alarm limits low EtCO ₂	0~99cmH ₂ O
Multi-gas Module (Masimo IRMA)	
measurement mode	Mainstream
gas monitor	Gas monitor CO ₂ , N ₂ O, Halothane, Enflurane, Isoflurane, Sevoflurane, Desflurane, MAC. <20 seconds
heating time	(concentrations and automatic agent identification runs in 20 seconds)
precision	CO₂ ±(0.3 vol%+ 4% of reading) N₂O ±(2 vol%+ 5% of reading) HAL, ENF, ISO, SEV, DES ±(0.2 vol%+ 10% of reading)
SpO₂ module	
numeric displayed	SpO ₂ , PR
SpO ₂ measurement range	0~100%
PR measurement range	30~250BPM
waveform	Pleth
limit alarm low SpO ₂ 70 ~ 99%	
Electric specifications	
Power and battery backup	
Power input 110 ~ 240 Vac, 50/60 Hz	
Electric socket auxiliaries	Up to 3 outputs (2 A for each)
Backup battery	60 minutes for a 1 piece battery (powered by new fully charged batteries with a variable temperature of 25 °)
Battery Type	Built-in lithium-ion battery, 11.1 V DC, 7800 mAh
security feature	^{AND} In case of power and battery failure, it is possible to ventilate manual ation, gas supply and agent supply.



pneumatic specifications		
ACGO (Auxiliary Common Gas Outlet)		
connector	ISO 22mm OD and 15mm ID	
pipe supply		
gas type	O2, N2O and Air	
Pipe inlet range 280 to 600 kPa		
NIST pipe connection		
Pipeline Supply Pressure Gauges		
Guy	Mechanic	
Range	0 to 1MPa	
precision	± (4 % of full scale reading + 8 % of realread)	
cylinder supply		
Supply of E Cylindro Cylinders	(American or British style)	
O2 inlet range	400 to 450 MPa	
N2O inlet range	400 to 450 MPa	
Cylinder connections Pin-Index Security System (PISS)		
YOKE O2, N2O setup		
Cylinder Supply Gauges		
Guy	Mechanic	
O2 range	0 to 25MPa	
N2O range	0 to 25MPa	
precision	(4 % of full scale reading + 8 % of ± actual reading)	
O2 monitoring		
Method	N2O shutdown with O2 pressure loss	
O2 discharge	25~75L/min	
O2-N2O link system		
Guy	Mechanic	
Range	O2 concentration not less than 21%	
Auxiliary O2 flowmeter (optional)		
Range	0~15L/min	
Indicator	flow tube	
Mechanical Control Flowmeters		
O2 Flow Range	Two flow tubes with 0~1L/Min and 1~10L/min ranges	
Airflow Range	Two flow tubes with ranges of 0~1L/Min and 1~10L/min	
N2O Flow Range	Two flow tubes with 0~1L/Min and 1~10L/min ranges	
precision	± 10% of the indicated value (for flow between 10% and 100% of full scale) ±200 ml/min (for flow below 10% of full scale)	
environmental specifications		
environmental specifications		
Temperature	Operation	10 ~ 40°C
	Storage and transport	-20 ~ 55°C



Relative humidity (without condensation)	Operation	ÿ80%RH
	Storage and transportation peration	ÿ93% RH
Atmospheric pressure		70~106kPa
	Storage and transport	50~106kPa
Electromagnetic compatibility		
Immunity	Meets all requirements of IEC60601-1-2	
emissions	Meets all requirements of IEC60601-1-2	
Respiratory System Specification		
carbon dioxide absorbent container		
Absorbent capacity	1500 mL	
Breathing Circuit Parameters		
compliance	0.87 ml / 100 Pa (bag mode) Automatically compensates for compression losses within the breathing circuit in mechanical mode	
Expiratory resistance < 0.6 kPa @30 L/min		
Inspiratory resistance < 0.6 kPa @30 L/min		
system pressure gauge		
Range	-20~100cmH2O	
precision	± (2 % of full scale reading + 5 % of true reading)	
ports and connectors		
exhalation, inhalation, 22mm manual bag port	OD /15mm ID conical	
Integrated Adjustable Pressure relief valve (APL)		
Range	2 ~ 70cmH2O	
Touch knob indication above 30 cm H2O		
precision	±10 cmH2O or ±15% of set point, whichever is greater	
Anesthetic Gas Capture System (AGSS)		
Size (HxWxD)	480 x 134 x 95mm	
Type of system deletion	Low Flow Active AGSS	
Applicable standard	ISO 80601-2-13	
pumping rate	40~50L/min	
system connector deletion	ISO 9170-2	

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