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Boaray 600D/C Anesthesia Machine

Technical sheets



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Technical specifications

Physical specifications		
Dimensions and weight		
Dimensions (HxWxD)	1385mmx850mmx633mm	
Weight	80 kg (Without vaporizer and cylinder)	
top shelf		
Weight Limit	34kg	
Width X Depth	535x382mm	
Drawer (Internal Dimension)		
Dimensions (HxWxD)	150x338x308mm	
Amount	1	
Wheels		
Diameter	100mm	
Brakes	Two front wheels with brakes	
Ventilation Specifications		
Ventilation modes		
Ventilation modes	Boaray 600D	Boaray 600C
	Manual//Standby Volume Control Ventilation (VCV) Pressure Control Ventilation (PCV) Flashing Synchronized Mandatory ventilation: SIMV(V)+PSySIMV(P)+PS Optional Pressure Support Ventilation: (SPONT)	Manual//Standby Volume Control Ventilation (VCV) Pressure Control Ventilation (PCV) Flashing Synchronized Mandatory ventilation: SIMV(V)+PS
Compensation		
Compensation for gas leaks in the circuit and automatic compliance compensation		
Ventilation Parameter Range		
Patient Type	Adult,Pediatric,Infant	
Tidal Volume	Pediatric/Infant:40~300ml Adult:100~1500ml (5mL increments)	
pinsp	5 ~ 70 cmH2O (1 cmH2O increments)	
plimit	(PEEP+5) ~ 70 cmH2O (1 cmH2O increments)	
f(Rate)	f in SIMV mode: 1 ~ 40 bpm Other modes: 4 ~ 60 bpm (1 bpm increments)	
I:E	3:1 ~ 1:6 (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 increments)	
Support	5 ~ 60 cmH ₂ O (1 cmH ₂ O increments)	
Positive End Expiratory Pressure (PEEP)—Boaray 600D only		
Type	Integrated, electronically controlled	
PEEP	OFF, 4 ~ 20 cmH ₂ O (1 cmH ₂ O increment)	
fan performance		
driving pressure	280kPa to 600kPa	
Max gas flow 120L/min + fresh gas flow		
Monitoring Parameters		
minute volume	0~60L/min	
Tidal Volume	0~2000ml	
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	3:1~1:6	
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		
Volume Delivery	<100ml: ±20ml ≥100 mL: ±20 mL or ±15% of set value, whichever is greater	
Delivery accuracy ± 2.0 cmH ₂ O or ± 10% of set value, whichever is greater		
PEEP Delivery ±2.0 cmH ₂ O or ±10% of set point, whichever is greater		
Monitoring Precision		
Monitoring Volume	<100ml: ±20ml ≥100 mL: ±20 mL or ±15% of reading, whichever is greater	
Monitoring Accuracy ± 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		
alarm logbook		
Storage of 500 events, first in, first out		
alarm settings		
Tidal Volume	High	40 ~ 1500 mL, OFF
	Low	OFF, 40 ~ 1500 mL
Volume Minute	High	1 ~ 40 L/min, OFF
	Low	OFF, 1~40L/min
Airway pressure resp.	High	1~100cmH ₂ O
	Low	0~99cmH ₂ O
RR	High	1 ~ 60BPM, OFF
	Low	0~60BPM



apnea alarm	10~40s
inspired oxygen	Low: 21% ~ 100%, OFF High: OFF, 21% ~ 100%
Sustained airway pressure alarm	15s
subatmospheric pressure alarm	Paw < -10 cmH2O
silence of alarm	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	± (volume fraction of 2.5 % +2.5 % gas level)
Response time	≤15 seconds
fan screen	
screen type	ColorTFT touch screen, integrated
Size	8.4inch
pixel format	800x600
parameters	All alarm parameters (including Breath Rate, I / Eratio, Tidalvolume, Minutevolume, PEEP, MEAN, PEAK, PLAT and O2 concentration, EtCO2)
waveform	PT, FT, VT, CO2-T
Spirometry loops PV, FV, FP	
timer	on screen timer
communication ports	
A n RS-232C connector	
vaporizers	
vaporizers	Prunus BR60 Anesthetic Vaporizer Penlon Sigma Delta Anesthetic Vaporizer
agents	Halothane, enflurane, isoflurane, sevoflurane
Position	Standard 1, Optional 2(Boaray 600D)
mounting mode	Selectatec®, with interlock function
filling method	Key fill, Pour fill, Quick fill
modules	
MainStream CO2 Module (Masimo IRMA)—Boaray 600D only	



Displayed numbers EtCO ₂ , FiCO ₂	
Measurement range 0 ~ 99 mmHg	
Accuracy ± (0.3 vol%+ 4% of reading)	
Waveforms/ CO ₂ -time loop	
EtCO ₂ High Alarm Limits	1~100cmH ₂ O
alarm limits low EtCO ₂	0~99cmH ₂ O
Multi-gas Module (Masimo IRMA)—Boaray 600D only	
measurement mode	Mainstream
gas monitor	Gas monitor CO ₂ , N ₂ O, Halothane, Enflurane, Isoflurane, Sevoflurane, Desflurane, MAC. <20
heating time	seconds (concentrations are reported and automatic agent identification runs in 20 seconds).
precision	CO₂ ±(0.3vol%+4%of reading) N ₂ O ±(2vol%+5%of reading) HAL,ENF,ISO,SEV,DES ±(0.2vol%+10%of reading)
Electric specifications	
Power and battery backup	
Power input 110 ~ 240 Vac, 50/60 Hz	
Electric socket auxiliaries	Up to 3 outputs (1.5 A for each)
Backup battery	60 min for battery backup (powered by freshly charged batteries with a changeover temperature of 25°)
Battery Type	Built-in lithium ion battery, DC 11.1V, 7800 mAh
security feature	In case of power and battery failure, it is possible to manual ventilation, gas supply and gas supply.
pneumatic specifications	
ACGO (Auxiliary Common Gas Outlet)	
connector	ISO 22mm OD and 15mm ID
pipe supply	
gas type	Boaray 600D: O ₂ & N ₂ O & Air Boaray 600C: O ₂ & N ₂ O
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 true reading)



cylinder supply		
EC yilndro cylinders supply (Americano-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 true 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 —Boaray 600D only		
Range	0~15L/min	
Indicator	flow tube	
Mechanical Control Flow Meters		
O2 Flow Range Two flow tubes with 0~1L/Min and 1~10L/min ranges		
air flow range (Only available for Boaray600D)	A flow tube with ranges from 1~10L/min.	
N2O Flow Range Two flow tubes with 0~1L/Min and 1~10L/min ranges		
precision	±10% of indicated value (for flow between 10% and 100% of full scale) ± 200 ml / min (for flow less than 10% full scale)	
environmental specifications		
environmental specifications		
Temperature	Operation	10 ~ 40°C
	Storage and transport	-20 ~ 55°C
Relative humidity (non-condensing)	Operation	15% ~ 95% RH
	Storage and transport	10% ~ 93% RH
Atmospheric pressure	Operation	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	0.87ml /100Pa(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)	
Touch	2 ~ 70cmH2O
knob indication range above 30cmH2O	
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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Shenzhen Prunus Medical Co., Ltd.

6th Floor and Zone A of 9th Floor, Block C, No. 71-3, Xintian Road, Fuyong Street
Bao'an District, 518103 Shenzhen, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Tel: +86 755 2689 9781

Fax: +86 755 2689 9789

E-mail: international@prunusmedical.com

Web: www.prunusmedical.com