

Electrical Specifications

Current Leakage

100 ~ 240V < 500 µA

Power And Battery Backup

Power input 220-240 Vac, 50/60 Hz, 6A
100-120 Vac, 50/60 Hz, 7A
100-240 Vac, 50/60 Hz, 7A

Auxiliary electrical outlets Up to 4 outlets (3A for each, total 5A)

Battery backup 90 min for 1 piece battery
(powered by new fully-charged batteries with 25°C ambient temperature)
240 min for 2 pieces battery
(powered by new fully-charged batteries with 25°C ambient temperature)

Battery type Build-in Li-ion battery, 4500 mAh (90 Min)
Safety feature In case of electricity and battery failure, manual ventilation, gas delivery and agent delivery are possible

Pneumatic Specifications

ACGO (Auxiliary Common Gas Outlet)

Connector ISO 22 mm OD and 15 mm ID

Pipeline Supply

Gas type O₂ and Air
Pipeline input range 280 to 600 kPa
Pipeline connections DISS or NIST

Pipeline Supply Pressure Gauges

Display type Mechanical
Ranges 0 to 1000kPa
Accuracy ± (4% of the full scale reading + 8% of the actual reading)

O₂ Controls

Driving gas
Supply failure alarm ≤ 220.6 kPa
O₂ Flush 25 ~ 75 L/min

Auxiliary O₂ Flowmeter

Range 0 ~ 15 L/min
Indicator Flow tube

Mechanical Control Flow Meters

O₂ flow range Two flow tubes with the ranges of 0 ~ 1 L/Min and 1 ~ 15 L/min
Air flow range Two flow tubes with the ranges of 0 ~ 1 L/Min and 1 ~ 15 L/min

Integrated Adjustable Pressure Limiting (APL) Valve

Range 1 ~ 75 cmH₂O
Tactile knob indication at above 30 cmH₂O
Accuracy ± 10 cmH₂O or ± 15% of the setting value, which is greater

Anesthetic Gas Scavenging System (AGSS)

Size (H x W x D) 430 x 132 x 114 mm
Type of disposal system

Active: High-flow or Low-flow
Passive

Applicable standard ISO 80601-2-13
Pump rate 75 ~ 105 L/min (High-flow)

25 ~ 50 L/min (Low-flow)

Pressure relief device: Pressure compensation opening to the air
State indication of the disposal system: The float falls below the "MIN" mark on the sight glass when the disposal system does not work or the pump rate is lower than 25 L/min (Low-flow) or 75 L/min (high-flow).

Filter Stainless screen with hole diameter of 140 ~ 150 µm

Connector of the disposal system: ISO 9170-2

Materials

All materials in contact with exhaled patient gases are autoclavable, except flow sensors (being not capable of being autoclaved), O₂ sensor, and mechanical pressure Gauge.

All materials in contact with patient gas are latex free.

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Since 2006 Mindray has successfully installed over 20,000 anesthetic machines to satisfied customers all over the world.

Mindray takes immense pride knowing that every few seconds a clinician, somewhere in the world, will be switching on a Mindray anesthesia machine and using it with complete confidence and satisfaction.

Over the last decade Mindray has continued to work closely with clinicians, across the world, to recognize and understand the clinical challenges encountered everyday and overcome them with new innovative and intuitive solutions. With this in mind, Mindray is now pleased to offer the improved WATO EX-35 with advanced features, functionality and fresh new look for 2016.

WATO EX-35

exceptional performance anesthesia workstation



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Better Usability

With conveniently located handles and smooth running castors the WATO EX-35 can easily be positioned effortlessly within the workplace.

The large easy-clean work surface provides plenty of space for note writing, placement of drugs and intubation equipment and an ergonomically designed footrest offers the user total comfort throughout the longest of cases.



WATO EX-35

Anesthesia System

Ventilator Specifications

Modes of Ventilation

- Manual/Spontaneous Ventilation/Bypass
- Volume Control Ventilation (VCV) with PLV function
- Pressure Control Ventilation (PCV) with/without volume guarantee (VG)
- Synchronized Intermittent Mandatory Ventilation (Option)
- (SIMV-Volume Controlled and SIMV-Pressure Controlled) (Option)
- Pressure Support Ventilation (PS) with apnea backup (Option)

Compensation

Circuit gas leakage compensation and automatic compliance compensation

Ventilation Parameters Range

Patient Size	Adult, Pediatric, Infant
Tidal volume	20~1500 mL (Volume Mode) (increments of 1 mL)
	5~1500 mL (Pressure Mode)
Pinsp	5~60 cmH ₂ O (increments of 1 cmH ₂ O)
Plimit	10~100 cmH ₂ O (increments of 1 cmH ₂ O)
ΔPsupp	3~60 cmH ₂ O (increments of 1 cmH ₂ O)
Rate	4~100 bpm (increments of 1 bpm)
I:E	4:1 - 1:8 (increments of 0.5)
Inspiratory pause (Tip:Ti)	OFF, 5% - 60% (increments of 1%)
Inspiratory time (T _{insp})	0.2 - 5.0 s (increments of 0.1 s)
Trigger window	5% - 90% (increments of 5%)
Flow trigger	0.5 ~ 15 L/min (increments of 0.5L/min)
Pressure trigger	-20~ -1 cmH ₂ O (increments of 1 cmH ₂ O)
Expiration termination level	5% - 60% (increments of 5%)
Min Rate	2 - 60 bpm (increments of 1 bpm)
Tslope	0.0 - 2.0 s (increments of 0.1 s)
Apnea I: E	4:1~1:8 (increments of 0.5)
ΔPapnea	3 - 30 cmH ₂ O (increments of 1 cmH ₂ O)

Positive End Expiratory Pressure (PEEP)

Type	Integrated, electronic controlled
Range	OFF, 3~30 cmH ₂ O (increments of 1 cm H ₂ O)

Ventilator Performance

Driving pressure	280 kPa to 600 kPa
Peak gas flow	120 L/min + Fresh Gas Flow

Monitoring Parameters

Minute volume	0 ~ 100 L/min
Tidal volume	0~2500 ml
Inspired oxygen (FiO ₂)	18% ~ 100%
Peak airway pressure	-20 ~ 120 cmH ₂ O
Mean pressure	-20 ~ 120 cmH ₂ O
Plateau pressure	-20 ~ 120 cmH ₂ O
I:E	8:1 ~ 1:10
Rate	0 ~120 bpm
PEEP	0 ~ 70 cmH ₂ O
Resistance (R)	0 ~ 600 cmH ₂ O/(L/s)
Compliance (C)	0 ~ 300 ml/ cmH ₂ O

Trend Table

Continuous trend information together with time discrete events for the latest 48 hours

Alarm Log Book

500 events storage, first in first out

Alarm Setting

Tidal volume	Low: 0 ~ 1595 ml High: 5 ~ 1600 ml
Minute volume	Low: 0 ~ 99 L/min High: 0.2 ~ 100 L/min
Inspired oxygen	Low: 18% ~ 98% High: OFF, 20% ~ 100%
Apnea alarm	VT _e < 10ml measured in 20s Paw < (PEEP + 3) cmH ₂ O in 20s
Airway pressure low	0 ~98 cmH ₂ O
Airway pressure high	2 ~100 cmH ₂ O
Sustained airway pressure alarm:	15s
Subatmospheric pressure alarm:	Paw < -10 cmH ₂ O
Alarm silence countdown timer:	120 to 0 seconds

Ventilator Components

Flow Sensor

Type	Variable orifice flow sensor
Location	Inspiratory and expiratory port

Oxygen Sensor

Type	Galvanic fuel cell
FiO ₂ displayed	18% to 100%
Accuracy	± (volume fraction of 2.5 % +2.5 % gas level)
Response Time	≤20 seconds

Ventilator Screen

Display type	Color active matrix TFT touch screen
Display size	10.4 in diagonal
Pixel format	1024 x 768
Brightness	Adjustable
Screen display	configurable
Display parameters	All setting and alarm parameters (including Breath rate, I/E ratio, Tidal volume, Minute volume, PEEP, MEAN, PEAK, PLAT, and O ₂ concentration, EtCO ₂ , N ₂ O, Aesthesia gas concentration)
Display waveforms	P-T, F-T, V-T, CO ₂ , O ₂ , Anesthetic gas, N ₂ O
Spirometry loops	P-V, F-V and F-P
Timer	On screen timer

Vaporizers

Vaporizer	Mindray V60 Anesthetic Vaporizer or Penlon Sigma Delta Anesthetic Vaporizer
Support agents	Halothane, Enflurane, Isoflurane, Sevoflurane
Position	MAX.2
Mounting mode	Selectatec®, with interlocking function Plug-in®, with interlocking function
Stander Vaporizers	Isoflurane