

WATO EX-65

Anesthesia System

Operator's Manual



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4.4 Input Fresh Gas

4.4.1 Set O₂, N₂O and Air Inputs

1. Connect the gas supplies correctly and ensure adequate gas pressure.
2. You can control the O₂, N₂O and Air flows in the fresh gas through the O₂, N₂O and Air flow controls. Readings of the gas flow can be seen on the respective screen of electronic flowmeter below the main screen. On the left hand of the pressure gauges is the total flowmeter showing the flow rate of the mixed gas.

The O₂ and N₂O flow controls constitute a chain linkage:

- ◆ Turn the N₂O flow control counterclockwise to increase the N₂O flow to some extent. Then continuing turning the N₂O flow control will cause the O₂ flow control to turn counterclockwise together to increase the O₂ flow, keeping the O₂ concentration in the mixed gas above 25%.
- ◆ Turn the O₂ flow control clockwise to decrease the O₂ flow to some extent. Then continuing turning the O₂ flow control will cause the N₂O flow control to turn clockwise together to decrease the N₂O flow, keeping the O₂ concentration in the mixed gas above 25%.

NOTE

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- **This anesthesia system can be used alone as a ventilator. You can adjust O₂ concentration in the breathing system through the O₂ flow control.**
 - **The O₂ concentration in the fresh gas may be quite different from that in the breathing system.**
 - **The total flowmeter is calibrated based on 100% O₂. The accuracy of the flowmeter may degrade with other gas or mixed gas.**
 - **When viewing the readings on the total flowmeter, keep your visual angle at the same level as the level of the float. The reading of a same scale may vary when viewed at a different angle.**
 - **If the readings shown on the electronic flowmeters differ from that on the total flowmeter, the former shall prevail and the latter is an approximate value.**
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6 Preoperative Test

6.1 Preoperative Test Schedules

Perform the preoperative tests listed below at these events:

1. When required after a maintenance or service procedure.
2. Every day before the first patient.
3. Before each patient.

Test Item	Test Intervals
Pipeline tests	Every day before the first patient
Cylinder tests	
Backup oxygen supply tests	
Flow control system tests	
Vaporizer back pressure test	
Inspect the system	Before each patient
Alarm tests	
Power failure alarm test	
Breathing system tests	
Preoperative preparations	
Inspect the AGSS	
Inspect the negative pressure suction device	

NOTE

- Read and understand the operation and maintenance of each component before using the anesthesia system.
 - Do not use the anesthesia system if a test failure occurs. Contact us immediately.
 - A checklist of the anesthetic system should be provided including anesthetic gas delivery system, monitoring device, alarm system and protective device which are intended to be used for the anesthetic system, whether they are used alone or assembled together.
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9.3 Agent Usage Calculation

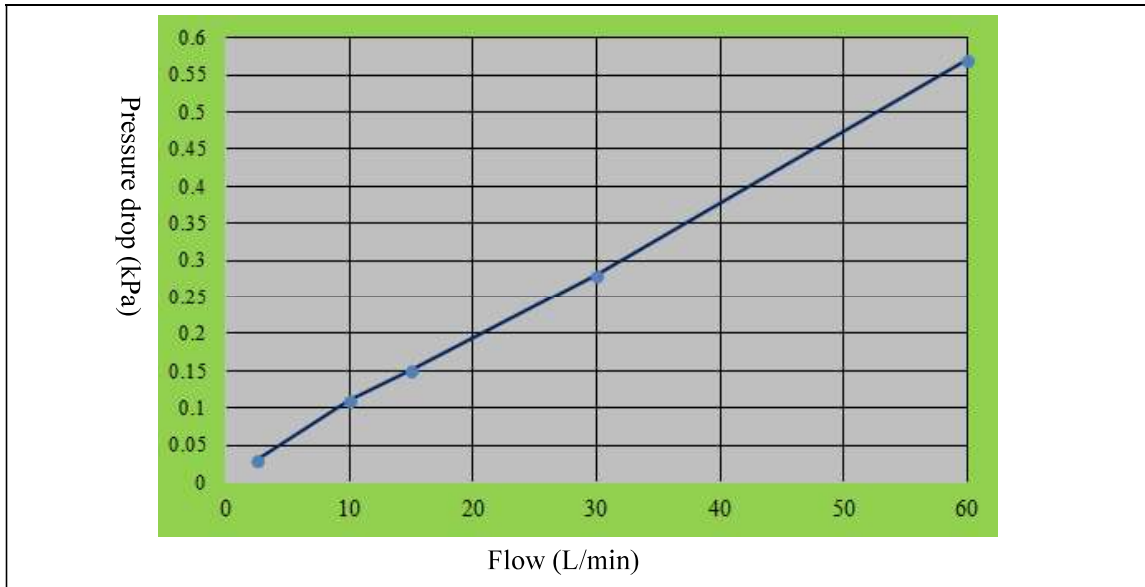
The system can calculate the usage of the agents when configured with AG module. The agent usage displays on the screen in standby mode. The agent usage accumulates from 0 when the system exits the standby mode. When the system enters standby, the agent usage stops accumulating. If restarting the machine within not more than 60s after accidental power failure in the case of non-standby mode, the agent usage continues accumulation until the system enters standby.



Agent Usage

NOTE

- When the breathing tube is disconnected , the system stops the calculation of the agent usage.
- When an alarm as below occurs, the system stops the calculation of the agent usage.
 - ◆ Flow Sensor Failure
 - ◆ Check Flow Sensors
 - ◆ AG Hardware Error
 - ◆ AG Hardware Malfunction
 - ◆ AG Init Error
 - ◆ AG No Watertrap
 - ◆ AG Comm Stop
 - ◆ AG Airway Occluded
 - ◆ External AG Self Test Error



* Adopt Medisorb™ absorbent to test breathing system flow resistance and compliance.

B.8 Ventilator Specifications

Ventilator parameters		
Parameter	Range	Step
Plimit	10 to 100 cmH ₂ O	1 cmH ₂ O
Pinsp	5 to 80 cmH ₂ O	1 cmH ₂ O
Δ P _{supp}	3 to 60 cmH ₂ O (SIMV)	1 cmH ₂ O
	0, 3 to 60 cmH ₂ O (CPAP/PS, " Δ P _{supp} =0" means CPAP mode)	
PEEP	OFF, 3 to 30 cmH ₂ O	1 cmH ₂ O
V _t	10 to 1500 ml (VCV, SIMV-VC)	1 ml (5 to 20 ml)
	5 to 1500 ml (PCV-VG, SIMV-VG)	5 mL (20 to 100 mL)
		10 mL (100 to 300 mL)
		25 mL (300 to 1500 mL)
Min Rate	2 to 60 bpm	1 bpm
Tslope	0.0 to 2.0 s	0.1 s
Rate	2 to 100 bpm	1 bpm
I:E	4:1 to 1:8	0.5
Tpause	OFF, 5 to 60 % of T _{insp}	5%
Apnea I:E	4:1 to 1:8	0.5
Trig Window	5 to 90 %	5%
T _{insp}	0.2 to 10 s	0.1 s

threshold ⁷	primary agent >10%	5% REL (10% REL for Isoflurane) of primary agent
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AG alarm limits	Range	Step	Unit
EtCO ₂ High Limit	OFF, (low limit + 2) to 99	1	mmHg
EtCO ₂ Low Limit	OFF, 0 to (high limit – 2)		
FiCO ₂ High Limit	OFF, 1 to 99		
EtN ₂ O High Limit	OFF, (low limit + 2) to 100	1	%
EtN ₂ O Low Limit	OFF, 0 to (high limit – 2)		
FiN ₂ O High Limit	OFF, (low limit + 2) to 100		
FiN ₂ O Low Limit	OFF, 0 to (high limit – 2)		
EtHal High Limit	OFF, (low limit + 0.2) to 5.0	0.1	%
EtHal Low Limit	OFF, 0.0 to (high limit – 0.2)		
FiHal High Limit	OFF, (low limit + 0.2) to 5.0		
FiHal Low Limit	OFF, 0.0 to (high limit – 0.2)		
EtEnf High Limit	OFF, (low limit + 0.2) to 5.0	0.1	%
EtEnf Low Limit	OFF, 0.0 to (high limit – 0.2)		
FiEnf High Limit	OFF, (low limit + 0.2) to 5.0		
FiEnf Low Limit	OFF, 0.0 to (high limit – 0.2)		
EtIso High Limit	OFF, (low limit + 0.2) to 5.0	0.1	%
EtIso Low Limit	OFF, 0.0 to (high limit – 0.2)		
FiIso High Limit	OFF, (low limit + 0.2) to 5.0		
FiIso Low Limit	OFF, 0.0 to (high limit – 0.2)		
EtSev High Limit	OFF, (low limit + 0.2) to 8.0	0.1	%
EtSev Low Limit	OFF, 0.0 to (high limit – 0.2)		
FiSev High Limit	OFF, (low limit + 0.2) to 8.0		
FiSev Low Limit	OFF, 0.0 to (high limit – 0.2)		
EtDes High Limit	OFF, (low limit + 0.2) to 18.0	0.1	%
EtDes Low Limit	OFF, 0.0 to (high limit – 0.2)		
FiDes High Limit	OFF, (low limit + 0.2) to 18.0		
FiDes Low Limit	OFF, 0.0 to (high limit – 0.2)		
MAC High Limit	OFF, (low limit + 0.2) to 12.0	0.1	/
MAC Low Limit	OFF, 0.0 to (high limit – 0.2)		

Effect of interfering gas on AG measured value

⁷ For Halothane: Increase in threshold by 0.1%_{ABS}.