

THE UNIVENTOR 400 ANAESTHESIA UNIT

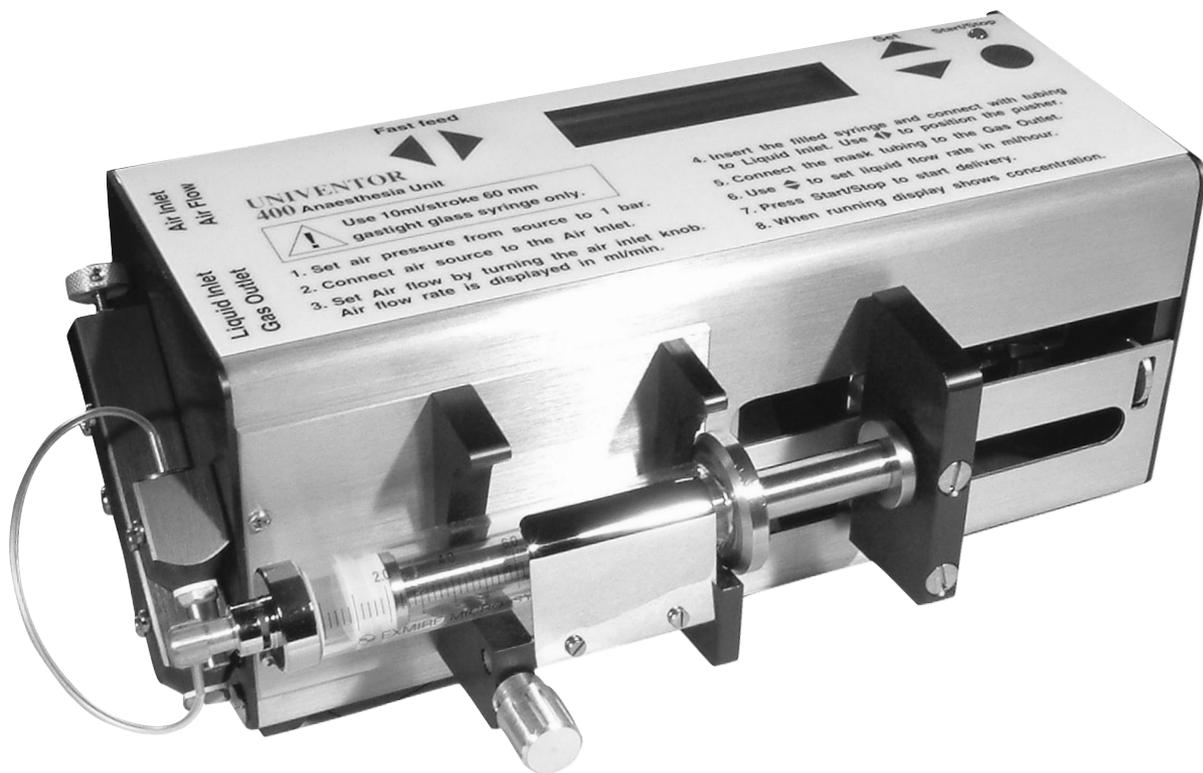


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Section 1 - WARRANTY & SERVICE

1.1. WARRANTY

Univentor Ltd guarantees all components of the 400 Anaesthesia Unit to be free from defects of material and workmanship for a period of two years after initial purchase. Univentor will repair or replace, at its discretion, all defective components during the aforementioned warranty period.

For warranty service or repair, all Univentor's products must be returned to Univentor or to an authorised Univentor representative. The client is responsible for shipping charges to Univentor.

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the client, unauthorised modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

For any product expressly covered under this warranty, Univentor is liable only to the extent of replacement or repair of the defective items. Univentor shall not be liable for any personal injury, property damage, or consequential damages of any kind whatsoever. The foregoing warranty is in lieu of all other warranties of merchant ability and fitness for a particular purpose.

1.2. DAMAGED SHIPMENTS

Damage to any part of this instrument during shipping should be reported immediately to Univentor or an authorised representative. You must retain the original packing box and contents for inspection by the freight handler. Univentor will replace any new instrument damaged in shipping with an identical product as soon as possible after the claim filing date. Claims not filed within 30 days after the shipping date will be invalid. Do not return damaged goods to Univentor without first contacting Customer Service for a Return Authorisation Number (RA#). When a defective part is returned to Univentor, the RA# immediately identifies you as the sender, and describes the item being returned. Univentor refuses all unauthorised return shipments.

1.3. SERVICE

Univentor has a skilled service staff available to solve any technical problem. For further details contact Univentor or Univentor's representative. Following discussion of your specific difficulties, an appropriate course of action will be described and the problem resolved accordingly. Do not return any products for service until a RETURN AUTHORISATION NUMBER (RA#) has been obtained. The RA# identifies you as the sender and describes in full detail the problems you have. Turnaround time for service can be quoted to you at the time your RA# is issued, although we can not determine the actual amount of service required until we have received your unit and diagnosed the problem. All correspondence and shipments should be sent to Univentor Ltd. or your Univentor representative.

Section 2 - INTRODUCTION

2.1. INTRODUCTION

The Univentor 400 Anaesthesia Unit is designed to control the mixture of liquid anaesthetic and air with the precision required to successfully operate on animals weighing from 20 - 500 grams.

The Univentor 8323001 is designed to operate with compressed air reduced to not more than 1 bar whereas the Univentor 8323002 has been adapted to work with a pulse-free airpump.

Air and anaesthetic is mixed in a vaporiser according to settings and may be delivered into an anaesthetised box, through a mask or to a ventilator.

Your unit is calibrated for Isoflurane and must at all times be operated with a 10 mL/stroke 60 mm gas-tight glass syringe.

Should you wish to use other liquid anaesthetics you will have to take the different properties into consideration and adapt your percentage accordingly.

Whilst reliability and safety features have been incorporated we recommend continuous monitoring of the anaesthetised animal at all times.

We urge you to read this manual and to follow the instructions!

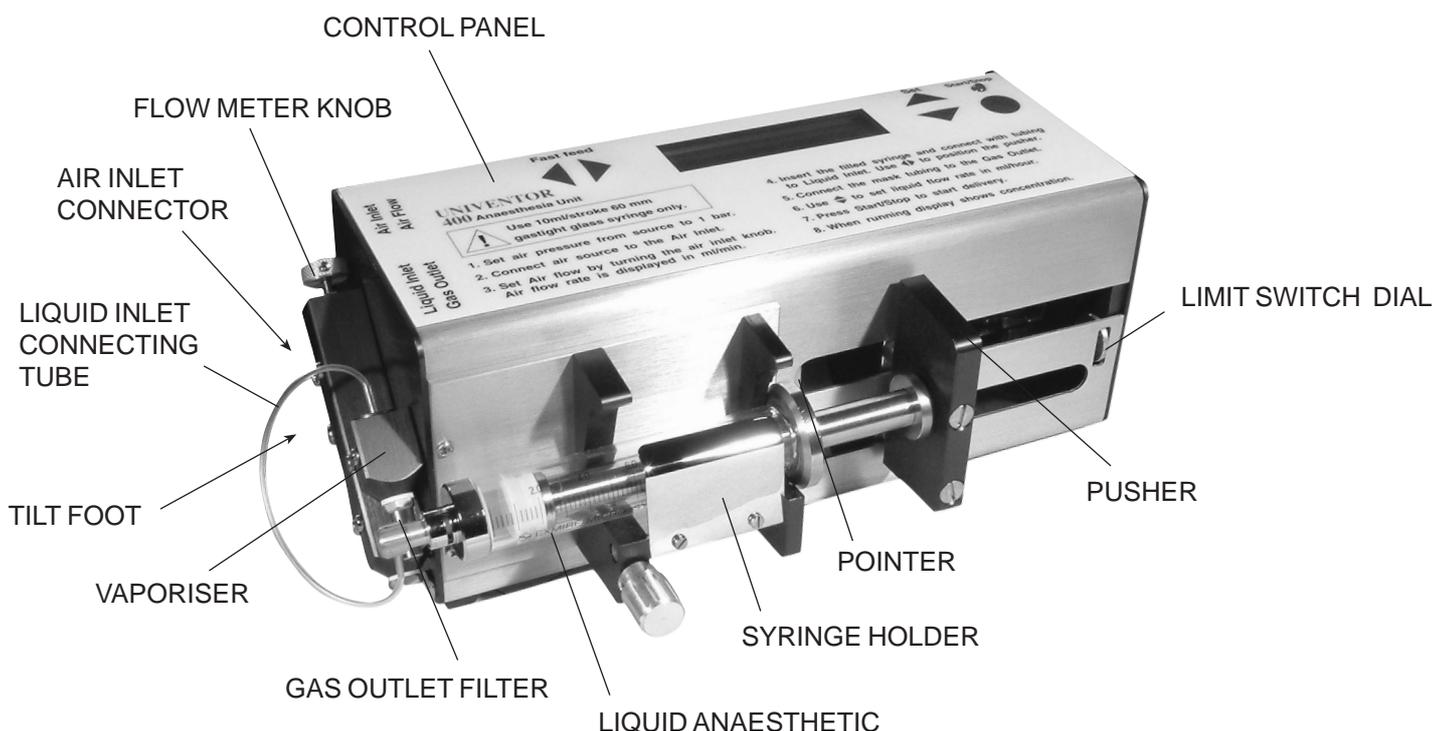


FIGURE 2.1. - The Univentor 400 Anaesthesia Unit

Section 3 - GENERAL

3.1. UNPACKING AND INSTALLATION

Remove the instrument from the shipping packaging and inspect both the instrument and the packaging for any signs of damage. If any damage is noted, contact the freight handler and your Univentor representative immediately, see section 1.2.

Missing Items?

Your 400 Anaesthesia Unit is delivered with:

1. 1 10mL gas-tight glass syringe
2. 1m PVC tubing
3. 1 syringe and Liquid Inlet connecting tube
4. Power supply
5. Mains lead

3.2. POWER SUPPLY

MAINS - Use an earthed wall plug and the power supply supplied with the 400 Anaesthesia Unit. The power supply can automatically handle input voltage in the range from 100V AC to 240V AC, 50 to 60 Hz.

BATTERY - 12V. Consumption: 400 mA.

3.3. CONTROL PANEL

The following functions, together with brief instructions, are located on the panel of the Univentor 400 Anaesthesia Unit. (See Figure 3.3.)

TEXT FUNCTION

Fast Feed	forward/reverse fast feed to position pusher.
Set	increasing/decreasing liquid flow rate.
Start/Stop	starting/stopping liquid delivery. Lights green when delivering and red in case of alarm. ref:3.5.

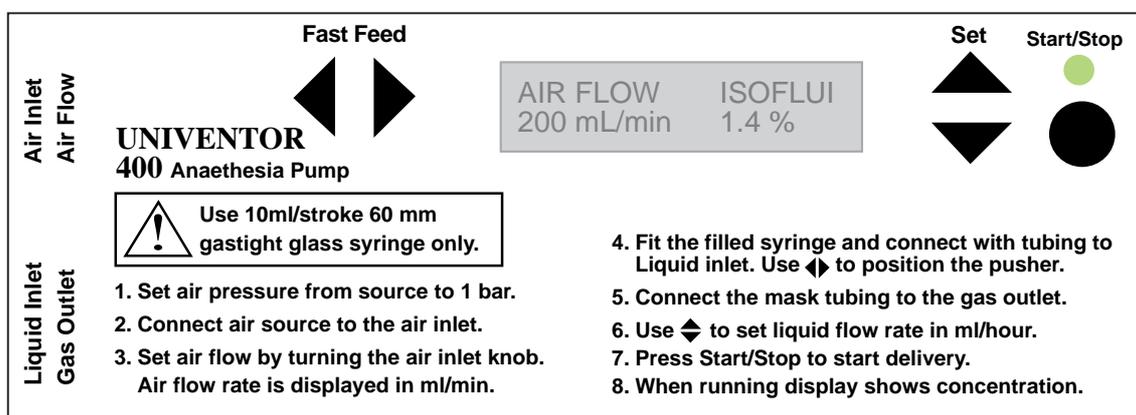


FIGURE 3.3. - The control panel of the Univentor 400 Anaesthesia Unit.

3.4. DISPLAY

1. AIR-FLOW: current air-flow in mL/min.
2. LIQUID:
 - a) when switched on set liquid flow rate in mL/hour is displayed.
 - b) when switched on and running the current anaesthetic concentration is displayed in % as calculated.

3.5. SAFETY FEATURES

An audible alarm will be triggered should any one of the following occur:

1. The pusher has reached set stopping position.
2. The air flow is blocked.
3. The air flow is below 50mL/min.
4. The air flow is above 999 mL/min.
5. The liquid delivery is stopped.

Refer to SECTION 5 - ROUTINE MAINTENANCE & TROUBLE SHOOTING.

Section 4 - OPERATION

4.1. INSTRUCTIONS

HANDLING OF ISOFLURANE AND/OR ANY OTHER CHEMICAL SHOULD AT ALL TIMES FOLLOW THE MANUFACTURER'S INSTRUCTIONS AS WELL AS REGULATIONS APPLICABLE TO YOUR COUNTRY. ALWAYS WORK ON A VENTILATION BENCH.

1. Connect the instrument to the power supply and earthed mains.
2. Set air pressure from source to 1 bar in the case of 8323001 or connect air pump, making sure not to exceed 0.5 bar, in case of 8323002.
3. Remove protective cover and connect air source to the Air Inlet connector.

NOTE: make sure that your air source is adequately filtered to prevent liquids entering the system.

4. Set the air flow, minimum 50 mL/min and maximum 999 mL/min, by turning the Flow Meter knob. Air Flow is displayed in mL/min.

Mice - approximately 150 - 250 mL/min

Rats - approximately 400 - 500 mL/min

Should you use a chamber you will need to increase the air flow, and anaesthetic, until the animal is asleep:

Mice - approximately 400 - 500 mL/min

Rats - approximately 700 - 800 mL/min

Once asleep turn the stopcock and route the gas to the mask and decrease the airflow.

NOTE: the unit will NOT operate without air!

5. Press Start/Stop ● to start the instrument and set the concentration percentage by pressing Set arrows ◀▶ and then press Start/Stop ● again to stop the instrument during which time the liquid flow rate, mL/ hour, is displayed.

Concentration - approximately 1.7 - 2.5%

The following setting would give a concentration of 1.7%:

Air flow rate - 200 mL/min

Liquid flow rate - 1 mL/hour

Should you use a chamber the induction dose should be approximately 4%

NOTE: To increase and/or decrease the % concentration during operation, you may find it easier to adjust the air flow.

6. Following the manufacturer's handling instructions fill the 10mL gas-tight syringe (stroke 60 mm) with anaesthetic and make sure that there are no air bubbles.
7. Using Fast Feed ◀▶ reverse/forward the pusher as necessary and clamp syringe. Connect the syringe and Liquid Inlet with the supplied tubing and move the pusher forward until the liquid in the connecting tube is visibly just about to enter the vaporiser.

NOTE: The fast feed forward will not work without air and the fast forward ◀ button must be pressed continuously.

8. Protect the syringe by turning the limit switch dial until the pointer is in the required stopping position.
9. Remove protective cover and connect one end of the supplied PVC tubing to the Gas Outlet and the other to the anaesthetised box, mask or ventilator. Keep tubing as short as possible.
10. Calculate the operating time available by dividing the liquid volume with the flow rate and make sure that the time is adequate.

Flow rate is displayed when the instrument is in stop mode for this purpose.

eg: with 10 mL Isoflurane in the syringe and set flow rate at 1.5 mL/hour the available time will be 6.666 hours (6 hours 40 minutes).

11. Press Start/Stop ● to start delivery.
12. Monitor the animal at all times and adjust the concentration percentage as necessary by pressing Set arrows ◀▶ or by increasing/decreasing the air flow.
13. When ready press Start/Stop ● to stop the liquid delivery and allow the air flow to continue for a period of 15 minutes to clean the vaporiser.

DO NOT STORE ANAESTHETIC IN SYRINGE WHEN NOT IN USE

NOTES

1. All values are approximate due to variations in weight and procedures.
2. The instrument can be tilted to maintain visual contact with display even while seated.
3. Delivery can be instantly terminated by pressing Start/Stop ● to stop the instrument. However, in case of emergency remove the mask due to gas in outlet tubing.

When started again the previous settings will be displayed.

Section 5 - ROUTINE MAINTENANCE

5.1. CLEANING THE INSTRUMENT

1. After every use stop the liquid delivery and allow the air flow to continue for a period of 15 minutes to clean the vaporiser.
2. Keep your Anaesthesia Unit clean.
3. DO NOT STORE ANAESTHETIC IN SYRINGE WHEN NOT IN USE

5.2. LEAKAGES

We recommend that the unit is regularly checked for gas leakages.

1. Switch the unit on.
2. Set air flow on 500mL/min.

N.B. If air supply pressure exceeds 1 bar the unit will be damaged.

3. Block the gas outlet.
4. Reading on display should rapidly decrease to less than 10mL/min.

Should unit leak (i.e. more than 10mL/min on display) contact your Univentor representative.

5.3. REPLACING PARTS

We recommend that the gas outlet filter part number 2423017 is changed at least yearly or as necessary according to use.

5.4. STORAGE

If the Univentor 400 Anaesthesia Unit is not to be used for a significant length of time, it is recommended to clean the instrument, fit protective covers on air inlet and outlet and store it safely in the shipping carton.

5.5. TROUBLE SHOOTING

1. Unit does not start delivery:
 - a) The air flow is below 50 mL/min or above 999 mL/min
 - check settings ref. Section 4/OPERATIONS/Step 4.
 - check source and tubing.
 2. The liquid delivery is stopped.
 - a) Pusher has reached set stopping position
 - check if syringe is empty.
 - check position of limit switch and reset if necessary.
 - b) Pusher is blocked - make sure stroke is clear.

3. Display shows 'SLIP ERROR STOP'.

Occurs when force exceeds 100 N due to:

- a) Pusher is blocked - make sure clear.
- b) Syringe and/or tubing blocked - check and replace as necessary.
- c) Gearbox is slipping - contact your Univentor representative.
- d) Cannula to vaporiser is blocked - to test fill syringe with air, connect to luer lock and try pushing plunger. If air passes easily it is not blocked. If very tough to push and plunger bounces back when released it is blocked.

To unblock remove gas outlet adaptor and the tubing from the luer lock to vaporiser and push a thin wire through the cannula to clean any dirt that may be blocking the liquid.

4. Animal not being anaesthetised:

- a) Faulty air sensor - contact your Univentor representative.
- b) Syringe no longer gas tight - replace.
- c) Cannula to vaporiser is blocked - to test fill syringe with air, connect to luer lock and try pushing plunger. If air passes easily it is not blocked. If very tough to push and plunger bounces back when released it is blocked.

To unblock remove gas outlet adaptor and the tubing from the luer lock to vaporiser and push a thin wire through the cannula to clean any dirt that may be blocking the liquid.

- d) Stroke of 10mL syringe not 60mm - replace

5. Animal over anaesthetised:

- a) Faulty sensor - contact your Univentor representative
- b) Air leakage
 - check air connections
 - check internal tubing - contact your Univentor representative
- c) Stroke of 10mL syringe not 60mm - replace

Section 6 - SPECIFICATIONS

Power	POWER SUPPLY: 100 - 240V AC 50 - 60 Hz. BATTERY: 12V 400 mA.
Dimensions	120 mm (w) x 285 mm (l) x 95 mm (h).
Weight	1.8 kg.
Shipping weight	3 kg.
Drive motor	Pulse free DC motor with variable speed setting.
Fast feed	Pusher movement of 45 mm/min.
Syringe	1 glass and gas-tight 10 mL syringe with 60 mm stroke.
Min. liquid flow rate	0.4 mL/hr.
Max. liquid flow rate	10 mL/hr.
Min. air flow rate	50 mL/min.
Max. air flow rate	999 mL/min.
Min. air pressure/8323001	0.5 bar.
Max. air pressure/8323001	1.0 bar.
Min. air pressure/8323002	0.3 bar.
Max. air pressure/8323002	0.5 bar.
Max. pusher force	100 N.
Pusher movement tolerance	+/- 0.01 mm or +/- 1% of total distance.
Concentration tolerance	+/- 0.15 units of displayed % value.
Display	2x16 Characters.
Safety features	Audible alarm and red LED.

Section 7 ACCESSORIES & REPLACEMENT PARTS

ORDERING INFORMATION

CAT. No.	DESCRIPTION
8323001	Univentor 400 Anaesthesia Unit.
8323002	Univentor 400 Anaesthesia Unit adapted for airpump.
2423017	Gas Outlet Filter.
8433005	Gas Routing Switch
8329001	Induction Chamber 0.8l.
8329002	Induction Chamber 1.4l.

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