



ULTRANEB
Large Volume, High Performance
Ultrasonic Nebuliser

Introduction 1.

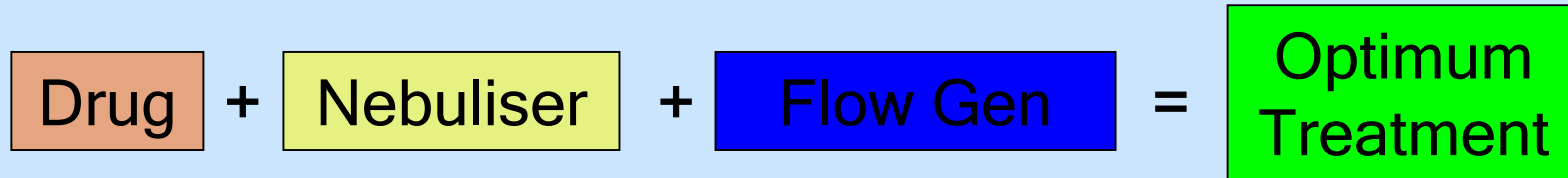
Aerosol Inhalation is a preferred route for the delivery of pharmaceutical compounds to the lungs when treating various respiratory diseases.

In the development and improvement of drugs e.g. antibiotics, hormones, peptides and proteins, the inhaled route gains more importance. There is also an increasing trend in using the lungs as a way of delivering systemic drug therapy.

Inhaled insulin has been successfully administered and is likely to become an alternative routine treatment to injecting for the treatment of diabetes

Introduction 2.

The delivery device chosen must be adapted and matched with the specific drug formulation in order to achieve a high efficiency and economic use of the drug substance.

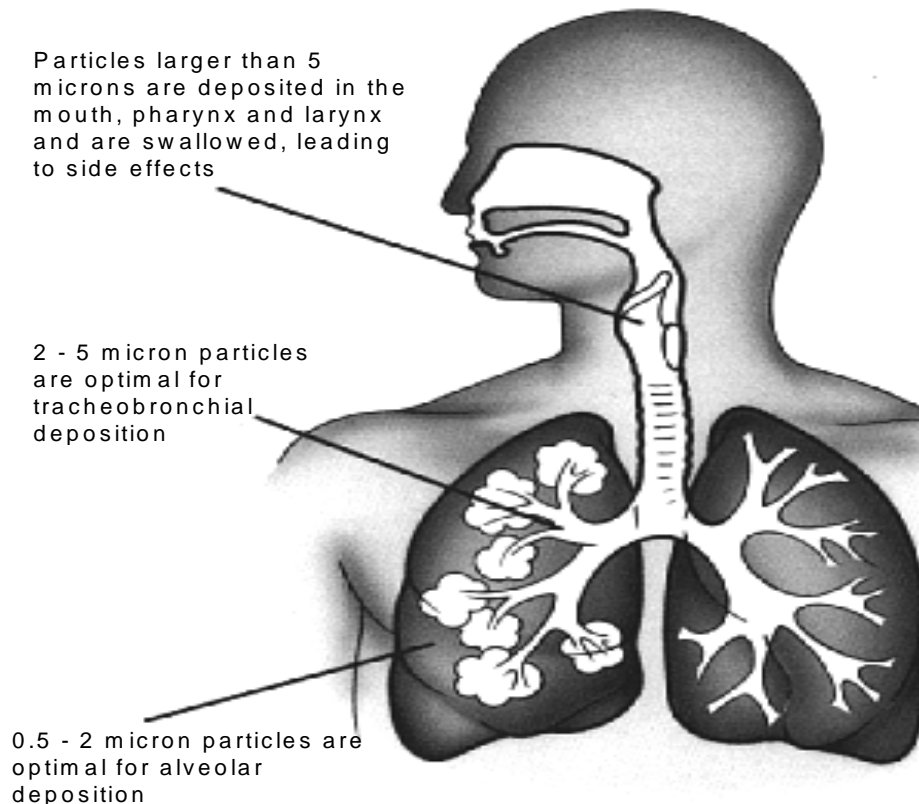


It is necessary to work in close contact with a pharmaceutical partner in order to develop and optimise the inhalation system.

Effective drug deposition 1.

Aerosol drug delivery allows treatment to be directed directly to the site of action, minimising systemic dilution and undesired side effects.

Rapid relief of symptoms and good tolerance due to reduced systemic side effects are the main advantage of aerosol therapy in comparison to the oral application route.



Effective drug deposition 2.

The deposition of aerosolised drug in the lung is determined by different factors;

Patient related and drug/device related.

The individual lung anatomy and breathing manoeuvre of the patient have a major impact on drug deposition.

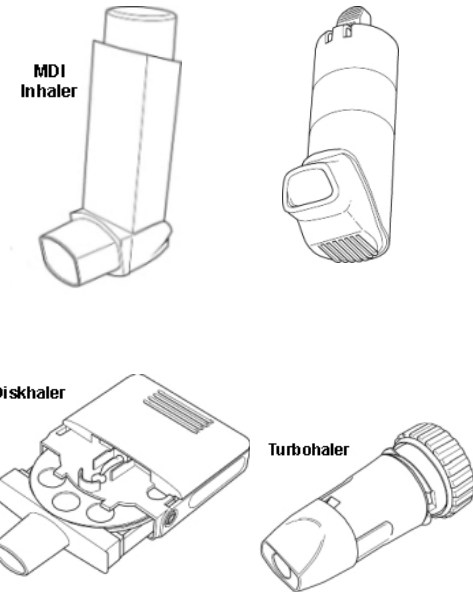
The design and Quality of the device as well as the interaction of drug formulation and device play an important role. Crucial parameters include, particle size, delivery efficiency and delivery rate.

An inhalation system has to produce a particle-size distribution suitable to the lungs. Ideally, the diameter of the aerosol droplets should be in the range of 1 μ m to 5 μ m (respirable fraction). Particles in this size range will be deposited primarily by sedimentation in the peripheral lung regions, the bronchi and alveoli. Sedimentation is the major mechanism of deposition in the therapeutic use of aerosols.

Delivery systems

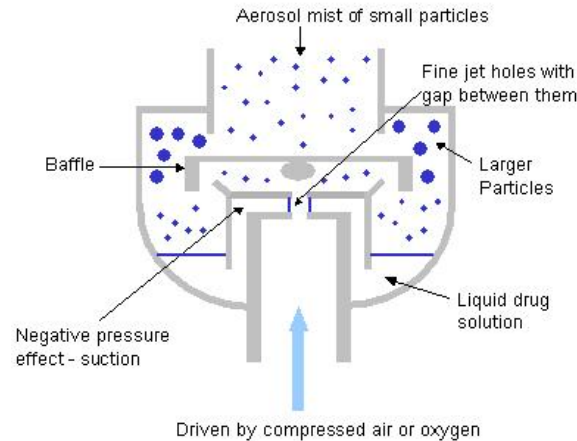
Three systems are widely used for the delivery of aerosol medication

- **Pressured metered dose inhalers (pMDI's)** -the drug is either suspended or dissolved in a propellant and filled under pressure into a canister. Releasing a metered volume of the fluid causes the propellant to expand and evaporate rapidly, leaving the drug in the form of dry aerosol particles suitable to inhalation
- **Dry Powder Inhalers (DPI's)** - Disperse small powder particles for inhalation into the lung. Shear forces generated by the patients inhalation flow are used to disagglomerate the drug particles, which are commonly adhered to carrier particles
- **Nebulisers** - There are two type of medical nebulisers; the jet Nebuliser and the ultrasonic Nebuliser which derives the energy required to aerosolise drugs from high frequency sound waves.

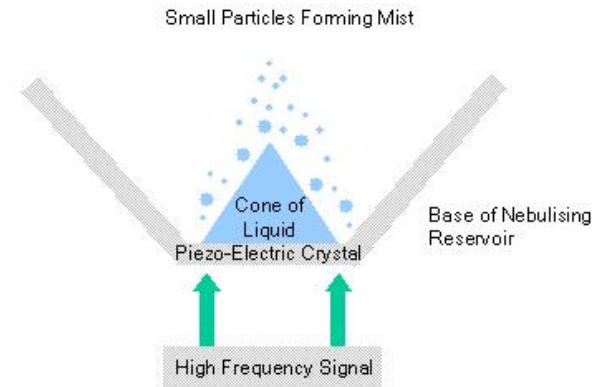


Jet Nebuliser vs. Ultrasonic

Compressor nebulisers work by using compressed air to break down the liquid into particles that the patient can then inhale.



Ultrasonic nebulisers work by using a crystal that vibrates when an electric current is passed through it. This vibration breaks down the liquid into particles for inhalation.



Why use an Ultrasonic Nebuliser ?

Ultrasonic nebulisers use ultrasonic vibrations to turn a liquid medication into an aerosol. Using this method to produce an aerosol makes the particles much more uniform in size. This in theory allows more of the aerosol particles to penetrate deeper into the lungs and produces a more effective treatment over a conventional jet nebuliser.

Small Volume Ultrasonic Nebulisers

These devices work in the same principle as the UltraNeb and have the advantage over the Jet Nebuliser/Compressor of being smaller, quieter and far more portable. Unfortunately the small volume nebuliser cannot produce an aerosol output any near the volume of a Jet Nebuliser . This severely restricts their use. The Ultrasonic nebuliser also has components such as the piezo transducer which are very sensitive, expensive and not really suited to a portable device. Both Clement Clarke and Omron have now moved away from Ultrasonic devices. Schill continues with devices for Cystic Fibrosis



Advantages

- Little patient co-ordination required
- Small dead volume
- Quiet
- Aerosol accumulates during exhalation
- High doses possible
- No chloroflucarbon release
- Fast drug delivery

Disadvantages

- Expensive
- Contamination possible
- Prone to Electrical and Mechanical Breakdown (not our device!!!)
- Not all drug formulations available
- Drug preparation required

Factors affecting output from UltraSonic Tranducers

- Fluid characteristics:
 - Density, viscosity, surface tension, vapour pressure
- Piezoelectric tranducer:
 - Frequency of vibration
 - amplitude of vibration, configuration (foused or flat)
 - Coupling of medication chamber to transducer
- Medication Chamber:
 - Size, baffles, flow from fan

Medical Indications/Uses

- Asthma
- Acute bronchitis
- Chronic bronchitis
- Cystic fibrosis
- Tracheotomy
- Laryngitis
- Pharmaceutical Research

ULTRANEB Variations



Base Model
U3000



Desktop Version
U3000DA



Wall/rail
clamp option
6003-07-0-
000



5-Foot Stand
Version U30005S

All available with the heated tube option (add 'H') eg: U3000H

Heated tube option

Requires ULTRANEB heated tube



Heater connection



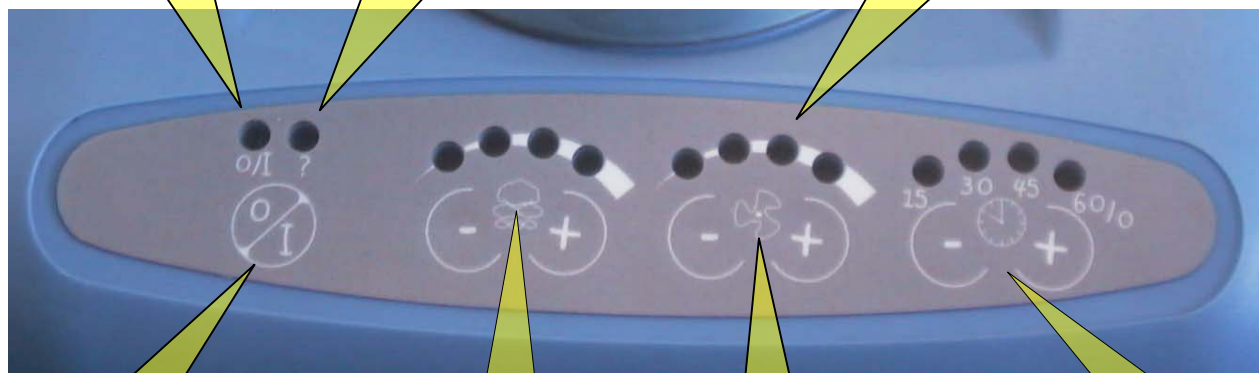
ULTRANEB - Ultrasonic Nebuliser

UltraNeb - Front panel

Standby mode
Green LED O/I

Fault Condition
Red LED (+
Alarm)

Operating mode incl.
level (1-4) of mode
Yellow LED



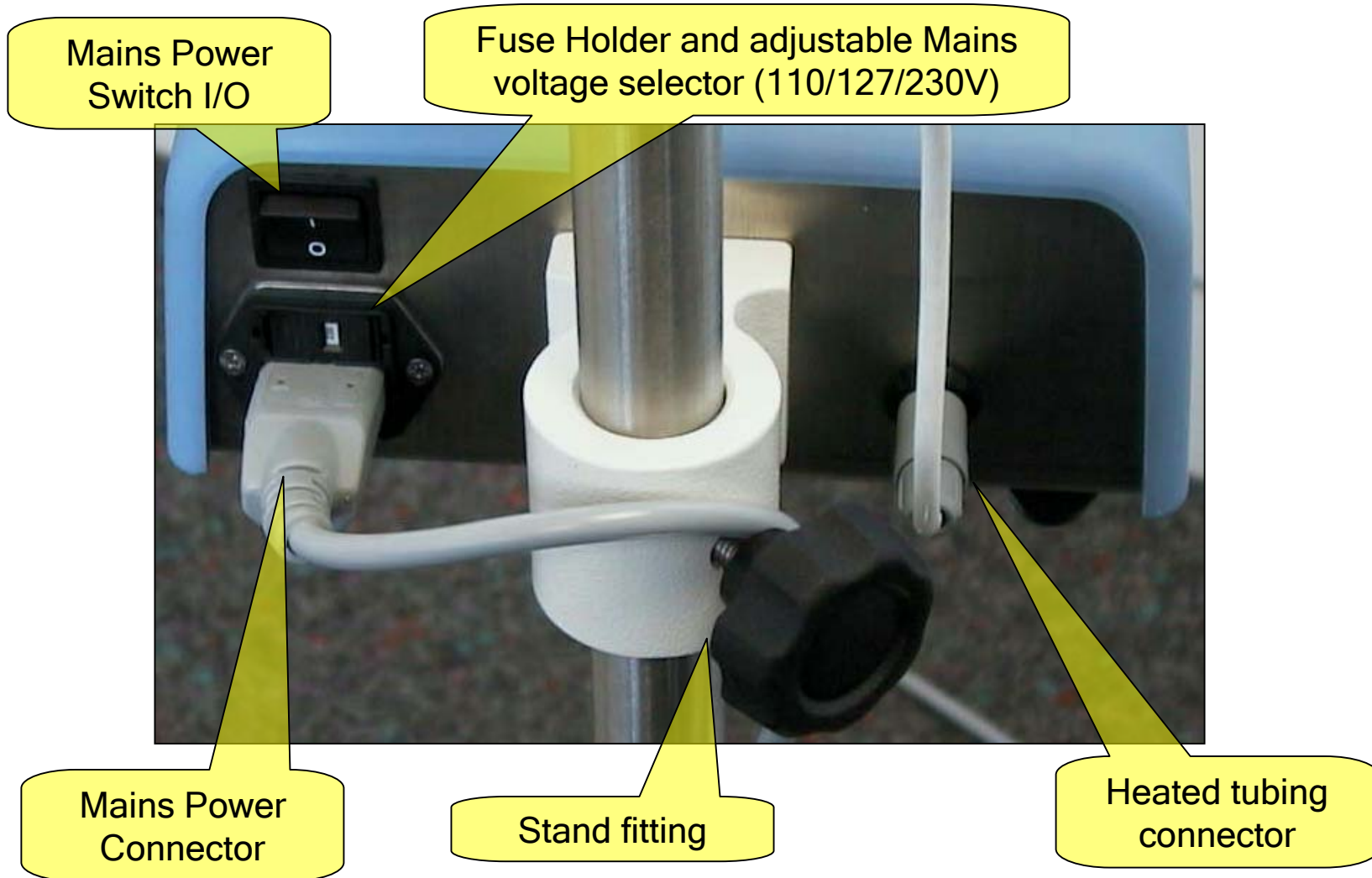
Standby mode
O/I

Output
performance
4 Steps

Air Flow
4 Steps up to
max. 20 L/min

Timer
15/30/46/60/0
Minutes

UltraNeb - Rear Connections

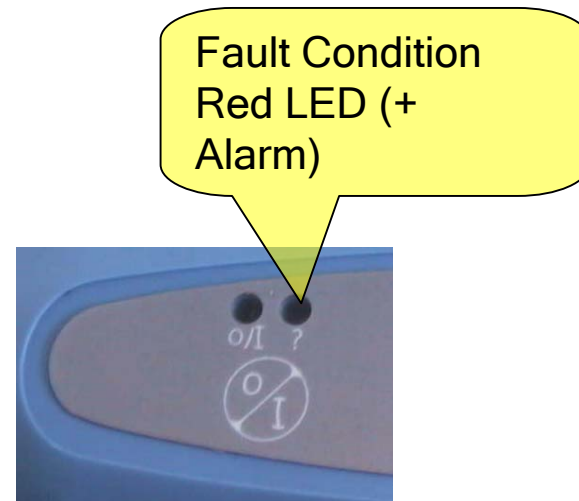


Alarm functions

The ULTRANEB has 4 different Alarm conditions:

- No chamber
- No water or too less water level
- Set medication time exceeded
- Unit failure

Red LED Lights - Alarm sounds for 12 seconds then a 4 second pause and then repeats for up to 2 minutes. Red LED remains on permanently until the fault is corrected



Chamber - configuration options

Chamber - Standard

Long-term nebulizing flow fitting for a non-collapsing bottle



Chamber - Long-term

Long-term nebulising flow fitting for collapsing sterile water bag



Chamber - Sterile Water Bottle

Next slide for more details



Disposable medication cups



Sterile water Systems

available from

- Tyco
- Kendall - Respiflow
- MPV-Truma



Technical Data 1.

Output:	3ml/min
MMAD:	< 4µm
Air Flow:	Up to 20 l/min
Degree of protection against water:	IP32
Wight:	ca. 3.5 Kg
Dimension (WxHxD):	20,5x19x31,5 cm
power consumption:	50VA non heated Version, 80VA heated Version
Ultrasonic frequency:	1,68MHz +-5%
Aerosol temperature:	max. 37°C
continuous operation	
Sound level :	< 35 dB(A)

Technical Data 2.

Electrical requirements:	110V, 127V und 230V / 50Hz-60Hz
Classification:	MPG II a
Class of protection:	I, Type B
Fuse type:	IEC 127-T800 L 250 V, 2 pieces
Operating temperature range:	10°C-40°C
Operating humidity range:	0% to 90% RH non condensing
Transport u.	
Storage temperature range:	-20°C to +70°C
Storage humidity range:	0% to 90% RH non condensing
Warranty:	2 years

Comparison ULTRANEB vs. ULTRANEB 2000

ULTRANEB

1. Modern Design
2. Digital Controls
3. Heated Tube option
4. Medication Timer
5. 4 Alarm types Audio u. Visual
6. Extremely quiet < 35 dB
7. Low power consumption
50 VA or. 80 VA heated version
8. Selectable power input
110V/127V/230V
9. Easy to clean (autoclavable)
10. Easy changing of the ultrasonic transducer.
11. Chamber dishwasher safe
12. Chamber autoclave able at 134°C
13. All distilled Water systems can be used
14. Separate Air path channel for Patient air and cooling

ULTRANEB 2000

1. Design > 10 Years Old!
2. Analogue Switches
3. Only cold Version available
4. no Timer
5. Only one LED Alarm
6. Louder noise level
7. Higher power consumption
1. 90 VA
8. Only 230V or 110V version
9. Only dishwasher safe
10. change of the ultrasonic transducer only for Technician possible
11. Only Hand wash Chamber
12. No Sterile Water use available
13. No separated Air path for patient air

Pricing - UltraNeb Variations

Description Versions	Part number	EUROPEAN List Price €	INTERNATIONAL List Price \$	UNITED KINGDOM List Price £
Basic Unit (longterm nebulizing lid, 300 mm tube, 1200mm tube, user manual, power cord (UK power cord), bacterial filter,	U3000 Comprising of 2010-00-00	1413.33	1824.19	975.20
Basic Unit + Heated version (heatable tube) (longterm nebulizing lid, 300 mm tube, 1200mm tube, user manual, power cord (UK cord must be added), bacterial filter,	U3000H Comprising of 2010-00-01+ 2100-11-0-000	1640.48	2117.36	1131.93
Basic Unit + Desk model Accessory (Stainless steel support pipe 25 x 600 mm) Pin-joint arm with adjusting ring Stainless steel infusion hook with adjusting ring Stainless steel nebulizer chamber retainer	U3000-DA Comprising of 2010-00-0-00 + 2002-00-3-200	1592.52	2055.47	1098.84
Basic Unit + Desk model Accessory Heated version (heatable tube) (Stainless steel support pipe 25 x 600 mm) Pin-joint arm with adjusting ring Stainless steel infusion hook with adjusting ring Stainless steel nebulizer chamber retainer	U3000H-DA Comprising of 2010-00-0-00 + 2002-00-3-201 + 2100-11-0-000	1819.67	2348.64	1255.57
Basic unit + 5-Foot Stand (longterm nebulizing lid, 300 mm tube, 1200mm tube, user manual, power cord (UK cord must be added), bacterial filter, (5-foot trolley) Stainless steel support pipe Pin-joint arm with adjusting ring Stainless steel infusion hook w	U3000-5S Comprising of 2010-00-0-00 + 2002-00-5-200	1718.71	2218.34	1185.91
Basic unit + 5-Foot Stand Heated version (heatable tube) (longterm nebulizing lid, 300 mm tube, 1200mm tube, user manual, power cord (UK cord must be added), bacterial filter, (5-foot trolley) Stainless steel support pipe Pin-joint arm with adjusting ring	U3000H-5S Comprising of 2010-00-0-00 + 2002-00-5-201 + 2100-11-0-000	1945.86	2511.52	1342.64

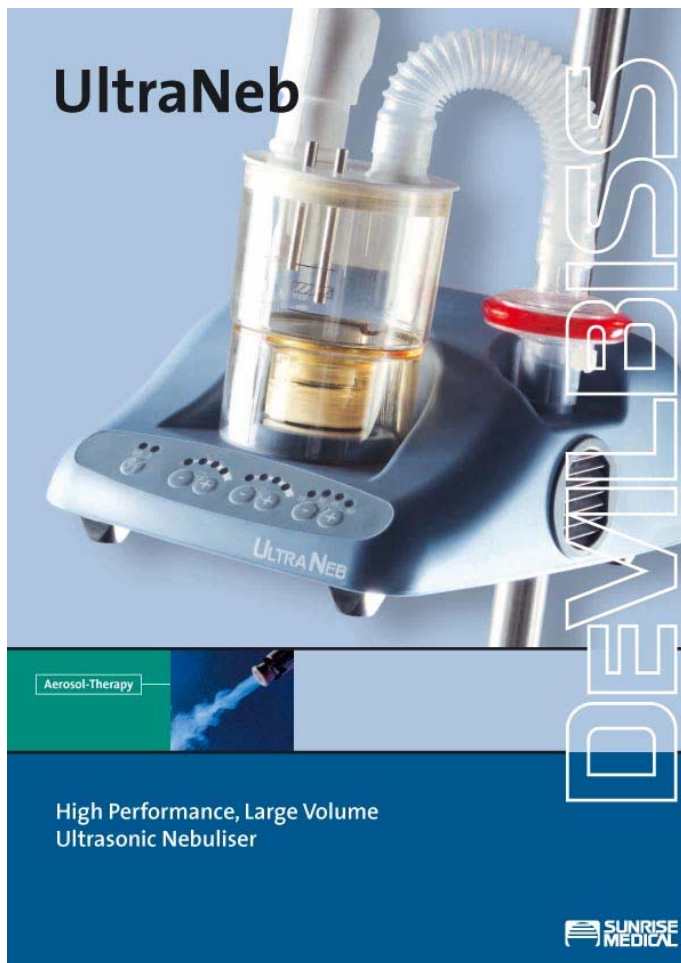
Pricing - UltraNeb Products

Description	Part number	EUROPEAN List Price €	INTERNATIONAL List Price\$	UNITED KINGDOM List Price £
Products				
Basic unit (longterm nebulizing lid, 300 mm tube, 1200mm tube, user manual, power cord (UK power cord), bacterial filter,	2010-00-0-00	1413.33	1824.19	975.20
Desk model Accessory (Stainless steel support pipe 25 x 600 mm Pin-joint arm with adjusting ring Stainless steel infusion hook with adjusting ring Stainless steel nebulizer chamber retainer	2002-00-3-200	179.19	231.28	123.64
5-Feet (5-foot trolley Stainless steel support pipe Pin-joint arm with adjusting ring Stainless steel infusion hook with adjusting ring Stainless steel nebulizer chamber retainer)	2002-00-5-200	305.38	394.16	210.71
Heated version (heatable tube)	2100-11-0-000	227.14	293.17	156.73

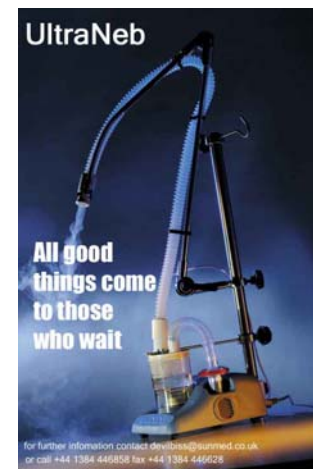
Pricing - UltraNeb Accessories

Description	Part number	EUROPEAN List Price €	INTERNATIONAL List Price \$	UNITED KINGDOM List Price £
Accessory				
Silicone tube heatable 1200mm	2100-11-0-000	227.14	293.17	156.73
Nebulizer Chamber complete	2002-02-1-550			
(Chamber, standard Lid with 5mm tubes, O-ring, ultrasonic Transducer)		184.36	237.96	127.21
Continuous filling set complete (Chamber, Lid, cannula, O-ring, Ultrasonic transducer)	2002-02-1-560			
		256.24	330.73	176.81
Mouthpiece (22mm connection)	2002-02-1-306			
		0.91	1.17	0.63
Rail clamp for equipment rail 25x10mm	6003-07-0-000			
		37.18	47.98	25.65
Reducing coupling 25mm-22mm	91306-25			
		10.50	13.55	7.24
Spare parts				
Sterilizable 300mm tube	2002-02-1-146			
sterilizable/autoclavable		7.92	10.23	5.47
Sterilizable 1200mm tube	2002-02-1-147			
sterilizable/autoclavable		23.27	30.03	16.06
Nebulizing Chamber without transducer and Lid	2002-02-1-058			
		75.37	97.27	52.00
Ultrasonic Transducer	2002-02-1-250	124.51	160.71	85.92
Bacterial Filter	2002-02-1-350	11.09	14.32	7.66
Clamps (package of 4)	7108-20-0-000	11.17	14.41	7.70
Clamping wheel	91018-00	3.82	4.93	2.63
Five feet stand with 50mm wheels and 1200mm support	3511-20-0-000			
		197.87	255.39	136.53
Stainless steel Support 25mmx600mm	3001-32-1-100			
		20.67	26.68	14.26
Pin-joint arm with adjusting ring	5003-63-0-000	136.95	176.76	94.50
Stainless steel nebulizer chamber retainer	3151-02-1-100	46.89	60.52	32.35
Standard Lid	2002-02-1-150	68.97	89.02	47.59
Continuous filling Lid (Chamber Lid, regulator, connection tube with cannula)	2002-02-6-600			
		169.60	218.90	117.02
bottle holder stainless steel with adjustment ring	3101-02-1-200			
		46.89	60.52	32.35
Rubber feet	91480-14-05	2.33	3.01	1.61
PC-Board	2010-00-2-002-99	220.48	284.57	152.13
Display board	98504-00-0-001-99	166.77	215.25	115.07
Power Level Set	2002-02-1-400	172.07	222.10	118.73
Cooling fan	98503-00-0-010-99	44.27	57.14	30.55
suppresor (socket)	98506-00-0-002-05	181.05	233.68	124.92
heater jack	2002-02-1-018	63.11	81.45	43.54
Patient fan	2002-02-1-021	87.34	112.73	60.27
Transformer	98507-00-0-001-99	136.74	176.49	94.35
Ribbon cable	98501-00-0-002-99	63.25	81.63	43.64
Cover	2010-02-1-100-99	123.17	158.98	84.99

UltraNeb - Brochure



UltraNeb - Wall Posters/ Ad campaign



Slide

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