



## THE LS2000+ FOR AEROSOL THERAPY

### TECHNOLOGY



Ultrasonic  
Technology

### INDICATIONS



AEROSOL THERAPY

ENT +  
BRONCHIAL ++  
TUBES  
LOWER ++  
LUNG



HUMIDIFICATION

### CARACTERISTICS

#### GENERATOR FEATURES

Quartz frequency : ..... 2,4 Mhz  
Ventilation for use by patients  
both active and inactive

#### NEBULISATION CAPACITY

In aerosol  
therapy :  
- 2 to 8 ml with Control'Dose®  
- 8 to 30 ml without  
Control'Dose®  
- 0,2 to 1 l in humidification  
universal bottle supply system  
Dead volume : ..... ± 0,6 ml

#### OTHER

- Dust filter  
- Meets electrical safety norms  
and CEM NF EN 60601-1 &  
60601-2

#### CHARACTERISTICS OF THE PARTICLES

To norm NF-EN 13544-1  
(NaF 1% - filled volume 4ml)

MMAD = ..... 4,2 µm  
(measure by Malvern® optical laser diffraction)  
Output liquid aerosol produced :  
..... 0,19 ml/min  
Quantity of produced aerosol  
(inhalable volume) : ..... 1,36 ml  
Delivered fraction  
(inhaled) : ..... 34 %  
71 % of the particles < 5 µm

#### ADVANTAGES OF AEROSOL THERAPY IN RAPPORT TO THE ADMINISTRATION OF MEDICATION BY MOUTH

- The aerosol reaches directly the targeted organ, thus providing much greater treatment efficiency.
- Good bio-availability at the bronchial epithelium.
- Requires less medication doses.
- Low systemic absorption : reduction of side effects.

#### INDICATIONS

- Asthma, cystic fibrosis, bronchial pneumonia, COPD, bronchiolitis, winter ailments, ENT ailments, sinusitis, rhinitis...

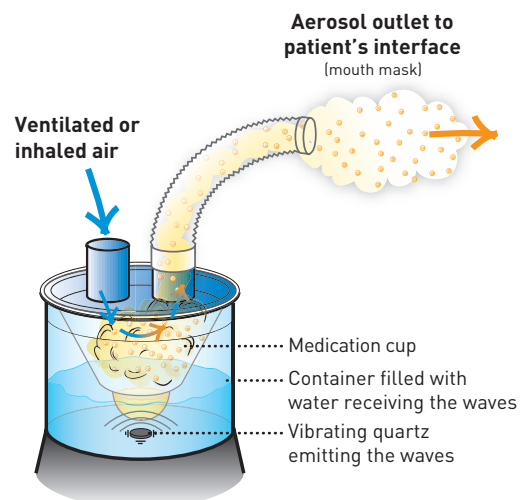


LS2000+



### ULTRASONIC TECHNOLOGY

- Under the action of an oscillator the quartz located at the base of the container is subjected to very high frequency vibrations producing the effect of ultrasound (waves).
- These waves travel through the liquid up to the surface of the solution producing a liquid film of very fine droplets (cavitation process).
- The size of the particles thus formed is proportional to the length of the quartz wave (fixed for each unit) but the nebulisation density (= quantity of particles produced or output) can be modified by varying the amplitude of the quartz.





## ULTRASONIC HUMIDIFIERS AND NEBULISERS **LS2000+**

### THE EFFICIENCY OF ULTRASONIC TECHNOLOGY

- Optimal sized particles :  
MMAD = 4,2 µm (measured by Malvern2 laser optical diffraction).
- Great homogeneity in the aerosol particles (71% of particles < 5 µm), for a greater portion of molecules of suitable size and therefore greater treatment efficiency.

### DOUBLE CONTAINER UNITS

- The system of double container ultrasonic units avoids all risk of heating the molecules and the deterioration of the main ingredient (type RH Dnase fragile and thermolabile molecules).
- Possibility to nebulise suspensions such as budesonide.
- Closed inhaling circuit (no contact with the unit) = device suitable for multi-patients-use.
- Prevents wear of the quartz.

### PARTICULARLY SUITABLE FOR PAEDIATRIC USE

- Low noise.
- Very short sessions.

### POLYVALENT DEVICE

- Can also be used for aerosols therapy during a humidification session.
- The humidification is done with a close humidification set, reducing the contamination and bacterial proliferation.

### DURABLE DESIGN

- The device has been design for heavy duties and with durable features.



### FOR MEDICINE AEROSOL THERAPY PATENTED CONTROL'DOSE® SYSTEM : A SYST'AM® INNOVATION

- Reduces the dead volume thus limiting the dilution of the medication
- Shorter sessions
- Maximum proportion of inhaled medication



### CONTROLLED DOSAGE...

- Permits the nebulisation of very small quantities of medication (from 2 to 8 ml) without dilution.
- Permits the nebulisation of a dose with a residual volume of 0.6 ml. The medicinal solution is contained in the volume created under the Control'Dose® and the medication particles are transmitted to the patient.

### ...CONTROLLED TIME !

- Reduces the duration of the aerosol session.
- Reduces therefore the patient participation (particularly for children of young age).
- Therefore guarantees more effective treatment. la durée de la séance d'aérosolthérapie.

MEDICATION PARTICLES OUTLET  
AIR INLET

Disimpaction chamber

Control'Dose®

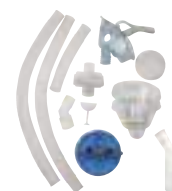
Particles production area

Medication solution

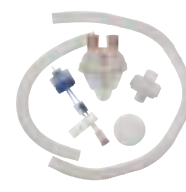
## CORRESPONDING CONSUMABLES

		<b>PATIENTS FROM 0 À 10 ANS</b>	<b>PATIENTS &gt; À 10 ANS</b>
<b>AEROSOL THERAPY</b>		<b>2901N</b>	<b>2901</b>
<b>HUMIDIFICATION</b>		<b>2901HUVN / 2901HUVNT/2901HUPN</b>	

**2901**



**2901HUVN**



**2901N (CHILD'S MASK)**



**2901HUVNT**



## THE LS2000+ AS A HUMIDIFIER

### H<sub>2</sub>O WHY HUMIDIFY ?

- Humidification becomes necessary due the dry nature of compressed gases used in hospital (oxygen therapy). It avoids the drying out of the bronchial mucosa and at the same time fluidising the expectorations in the event of bronco-pulmonary infection.
- In normal time the upper airways provide the warming and humidification of the inhaled air. Also they retain the warmth and humidity contained in exhaled air .  
In the case of ventilated patients under anaesthetic (with tracheal probe) or tracheotomies the upper airways are no longer able to function.

Prolonged exposure to dry compressed gasses can bring harmful effects including a localised inflammation in the trachea, a reduction in the ciliary function, a reduction in secretions, a lowering of body temperature, a reduction in the function of the cardio-pulmonary, an increased risk of a blockage in the tracheotomy tube...

- Humidification is mainly obtained in the hospital environment by the production of aerosols (sprays, micro-droplets) from an ultrasonic nebuliser providing particles from 0,5 to 6 µm, optimal size for reaching both the tracheobronchial and the cavities.
- It may also be preferable, for patient comfort, to warm the compressed gasses prior to a humidification sessions...

#### INDICATIONS

- Tracheotomy, tracheostomy
- Trauma, palliative care
- Neonatology, bronchiolitis
- Bronchio-pulmonary infections...



### SYST'AM® CONSUMABLE FOR HUMIDIFICATION FOR USE WITH THE LS2000+

#### CLOSED HUMIDIFICATION SETS

FOR BOTTLES WITH SCREW-TOP :  
REF. 2901HUVN

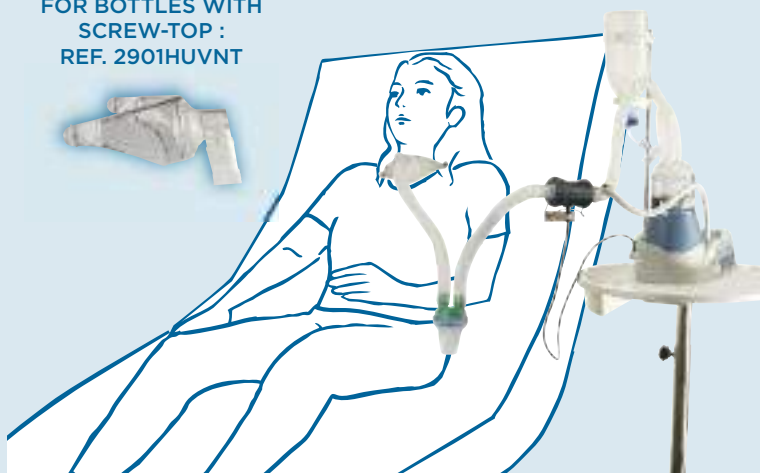


FOR BOTTLES WITH PUNCTURE CAP :  
REF. 2901HUPN



#### CLOSED HUMIDIFICATION SETS FOR TRACHEOTOMY

FOR BOTTLES WITH SCREW-TOP :  
REF. 2901HUVNT





## ULTRASONIC HUMIDIFIERS AND NEBULISERS **LS2000+**

### THE BENEFITS OF A SINGLE-PATIENT CLOSED SYSTEM HAVING NO DIRECT CONTACT WITH THE DEVICE (2901HUVN, 2901HUPN, 2901HUVNT)

Systems with an open respiratory circuit present potential contamination risks.

The single-patient closed consumable prevents all hand-carried contamination risks, stops the infiltration of pathogenic agents and thus contributes to improving patient's quality of treatment.

#### CONTROLLED HYGIENE

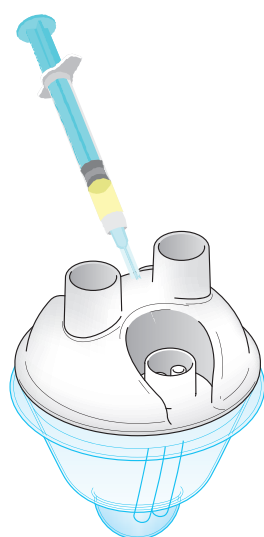
- Limitation of contamination
- Closed breathing circuit without contact with the device.

#### UNIVERSAL SYSTEM CAN BE USED WITH MOST BOTTLES TYPES

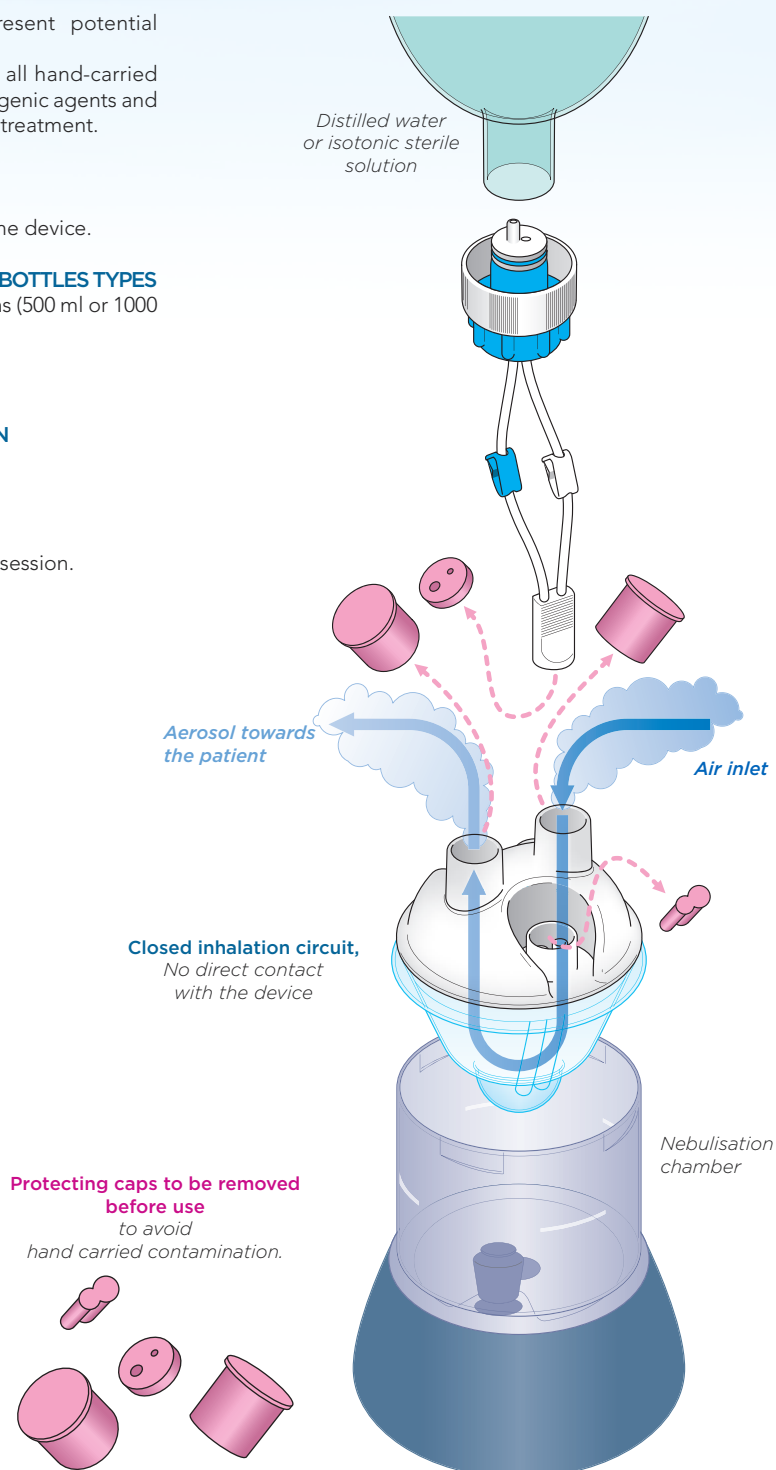
- Distilled sterile water or isotonic sterile solutions (500 ml or 1000 ml screw thread or puncture top)
- Stock's handling and purchasing are simplified
- Easy installation and use for nursing staff.

#### OVERALL IMPROVES QUALITY OF CARE IN INSTITUTIONS THROUGH :

- Time saving
- Greater patient safety
- Lower daily treatment cost
- Capacity of nebulising during a humidification session.



**CAN ALSO BE USED FOR  
AEROSOL THERAPY  
DURING  
A HUMIDIFICATION SESSION**



# FOR MEDICAL INSTITUTIONS

## TECHNICAL CHARACTERISTICS

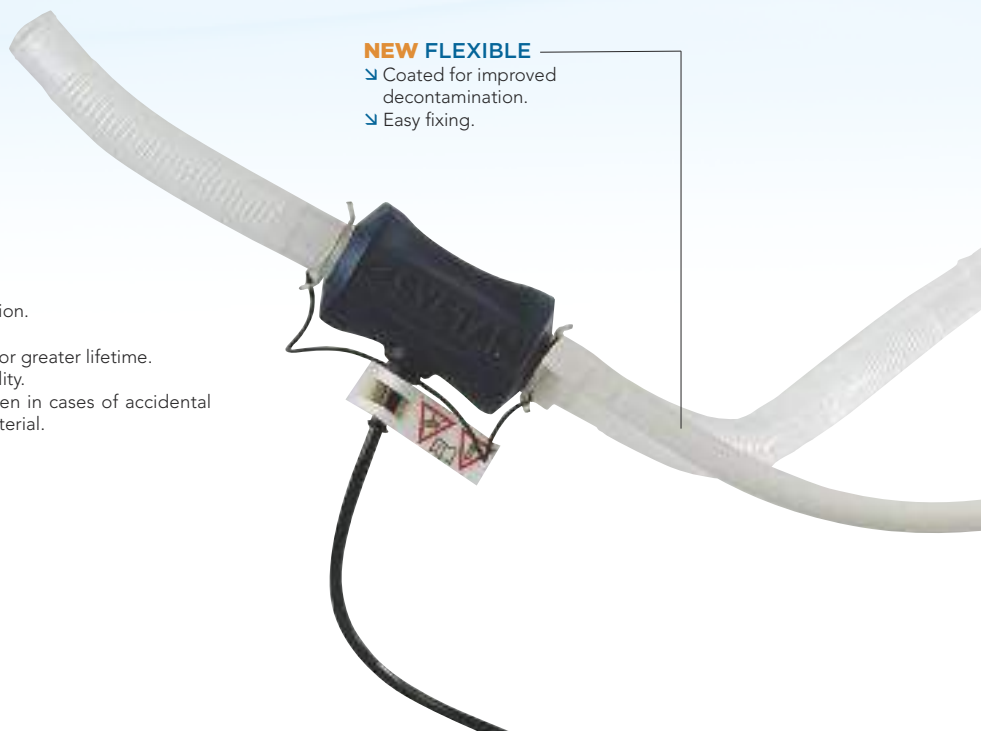


### NEW CONTAINER

- Stands upright : convenient for preparing the session.
- With simple and quick connector.
- Integrated protecting metal disc in the container for greater lifetime.
- Electronic built into the housing for greater reliability.
- Design ensures flow and evacuation of water even in cases of accidental infiltration, preventing any deterioration of the material.

### NEW FLEXIBLE


- Coated for improved decontamination.
- Easy fixing.





## SETTINGS AND FUNCTIONALITIES



### SETTINGS :

 **Adjustable nebulisation :**  
6 settings for nebulisation.

 **Ventilation :**  
5 settings of intensity for direct humidification electronically managed for a better setting precision.

 **Mist-heater alarm presence indicator**

### NEW FUNCTIONALITIES



#### AUTOMATIC STOP END OF THE SESSION

- Automatic stop of the device at the end of the session when the nebulisation chamber is empty: facility and time saving for the nursing staff who do not need to supervise the end of the session, to switch off the device in time with risks of damaged consumable (deteriorated chamber).
- Also detects an exceptionally high water level in the chamber (in the event of incorrect settings).

#### THE MANAGEMENT OF THE SERVICE LIFE OF THE QUARTZ

- The device analyses and indicates a quartz whose end of service life is close. The functioning of the device is not at this stage blocked but the nebulisation power will be automatically reduced and capped at a level determined by the part's degree of wear (it is then recommended to schedule the replacement of the quartz element).
- When the quartz is totally outworn the device will stop and the alarm light will be triggered.



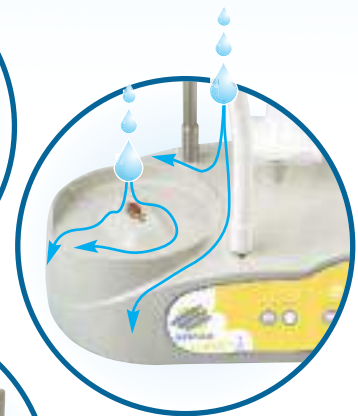


## ULTRASONIC HUMIDIFIERS AND NEBULISERS **LS2000+**



### NEW UNIVERSAL BOTTLE SUPPORT ROD

- Easy fixing.
- Free rotation to 180° even after fixing. Suitable for different types of bottle and for different consumable configurations.



- A protecting visard at the back provides protection for the connections.
- Slopes provide flow.

### NEW DESIGN

- Housing completely water repellent and watertight thanks to its design : the slopes and flow circuits avoid stagnation of liquid thus protecting the electronic components for added reliability and safety.
- Removable ventilator without tools allows a perfect decontamination of air circuits.
- No heat discharge on the surface of the casing.

