

# NebuTech<sup>®</sup> HDN<sup>®</sup>

## Breath Enhanced High Density Jet Nebulizer

The NebuTech<sup>®</sup> HDN<sup>®</sup> nebulizer, a breath enhanced design, by Salter Labs<sup>®</sup> is quickly becoming the product of choice for caregivers and patients alike. This unique nebulizer incorporates patented design elements to enhance the concentration or density of medication delivered per breath with less waste than conventional nebulizers.

The NebuTech<sup>®</sup>HDN<sup>®</sup> is an affordable, easy to use, small volume nebulizer which will provide consistent results time after time.

### Features:

- Bolus Delivery
- Faster Treatment Times
- Reduced Medication Waste
- High Aerosol Output
- Ease of use
- Consistent Reliable Performance



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*Quality care begins with quality products.*

## Latex Free



**An affordable, easy to use,  
high density, small volume  
nebulizer with a breath  
enhanced design!**

**SALTER LABS<sup>®</sup>**

**“Delivery of aerosol early in inspiration puts the aerosol at the (front end) of the breath for deeper penetration”<sup>5</sup>**

## DEPOSITION OF AEROSOL

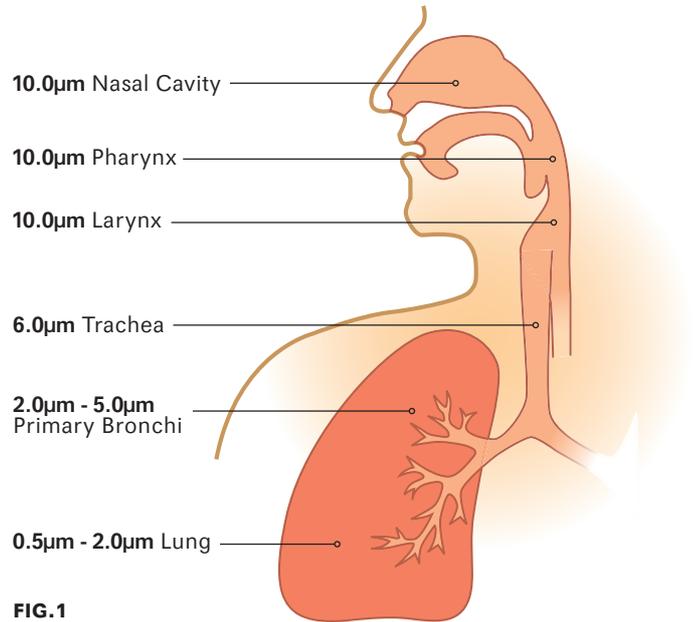


FIG. 1

		PARTICLE SIZE (microns)										
		0.14	0.23	0.40	0.62	1.30	2.30	3.20	4.60	6.50	9.20	MMAD
FLOW RATE (L/min.)	4	3%	5%	10%	21%	25%	26%	6%	2%	1%	2%	1.30
	6	4%	9%	15%	26%	25%	16%	2%	1%	2%	1%	1.10
	7	4%	11%	16%	27%	22%	14%	2%	1%	1%	1%	1.10
	8	4%	12%	17%	30%	20%	12%	2%	0%	1%	1%	1.00
	10	4%	14%	19%	31%	17%	10%	1%	1%	1%	1%	.98

FIG. 2 The colored portion of the particle size chart shows the respirable dose in the 0.5 - 5.0µm size and MMAD delivered by the NebuTech<sup>®</sup>HDN<sup>®</sup>

NebuTech<sup>®</sup>HDN<sup>®</sup> will produce high output aerosol in MMAD of 1.0 to 1.3µm (FIG.2) and deliver a larger respirable dose to the patients lungs (FIG.6) in a short amount of treatment time (FIG.3). The valved tower chamber prepares and holds the dense 50cc bolus ready for the beginning of each inspiration. It is delivered in the first third of every breath, which ensures delivery to the lung and primary bronchi. This may benefit the patient by providing fast relief and can encourage improved patient compliance.

DOSE DELIVERED TIME (min./sec.)		
MAKE	MODEL	WALL 50 PSI
Salter Labs <sup>®</sup>	8960	3:24
Salter Labs <sup>®</sup>	8900 disp	3:55
Intersurgical	HOT Top	4:15
Respironics	Sidestream	4:50
WestMed	Vix One	6:47

FIG. 3 3cc normal saline until first sputter +1 sec. of complete break in aerosol stream. Data on file.

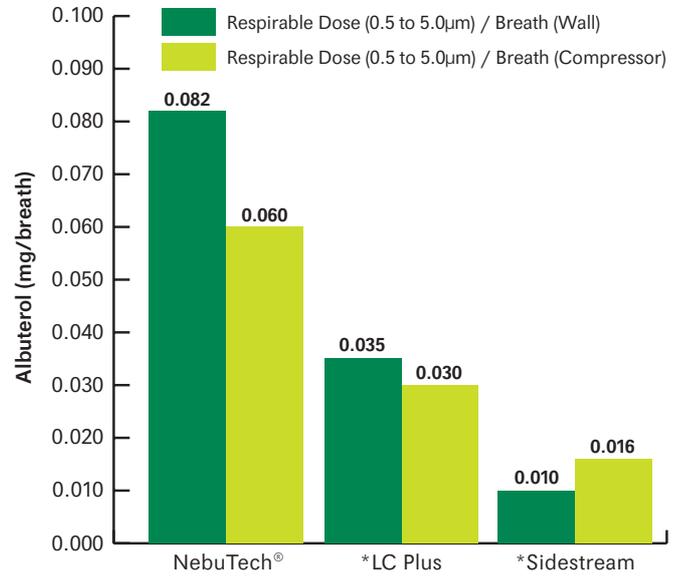
**“Nebulization time is important for patient compliance in the outpatient setting and clinician supervision for hospitalization patients. A short nebulization time that delivers an effective dose is desirable.”<sup>3</sup>**

# The most important characteristic of nebulizer performance is the respirable dose provided for the patient.<sup>1</sup>

The mechanics of breathing dictate that the denser an aerosol is in the first one third of an inspiration the higher the concentration of a drug will reach the area of the lung where it can be most effective. If all nebulizers delivered their entire aerosol in the respirable range there would still be a difference from one device to another in the amount of dose delivered. Nebulizers which are open to the atmosphere or are unable to recycle non-respirable particles and do not have the capacity to retain a 50cc bolus of dense aerosol can not deliver the same level of aerosol as the NebuTech<sup>®</sup>HDN<sup>®</sup> nebulizer. Efficiency of the design with valves and a bolus chamber can be seen in (Fig. 4,6,7). The ability to deliver repeatable precharged aerosol at the onset of each inspiration provides a larger dose per breath which results in substantial benefit to the patient as well as the hospital with improved compliance and resources utilization.

## INHALED RESPIRABLE MASS (mg/breath)<sup>7</sup>

3ml albuterol 20 breaths



\*Inhaled mass values reflect concentration of Albuterol used for product comparison purpose and does not imply therapeutic dose to the patient.

Simulator setting at 15 BPM, 500ml tidal volume

FIG.6

## OUTPUT COMPARISON ML/MIN<sup>7</sup>

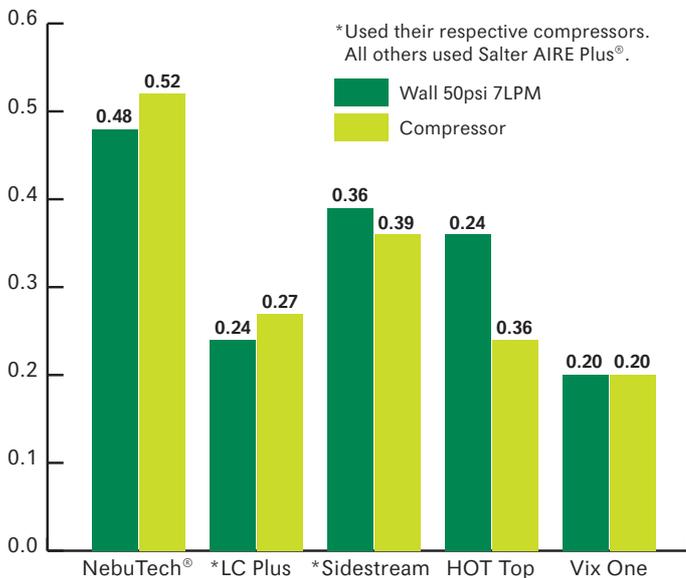


FIG.4

**“Clearly, the ability to produce High Density Aerosol with a large RF (respirable fraction) during the inspiratory phase is the basic principle.”<sup>1</sup>**

Patients treated with NebuTech<sup>®</sup>HDN<sup>®</sup> nebulizers demonstrated significant decreases of stay, to

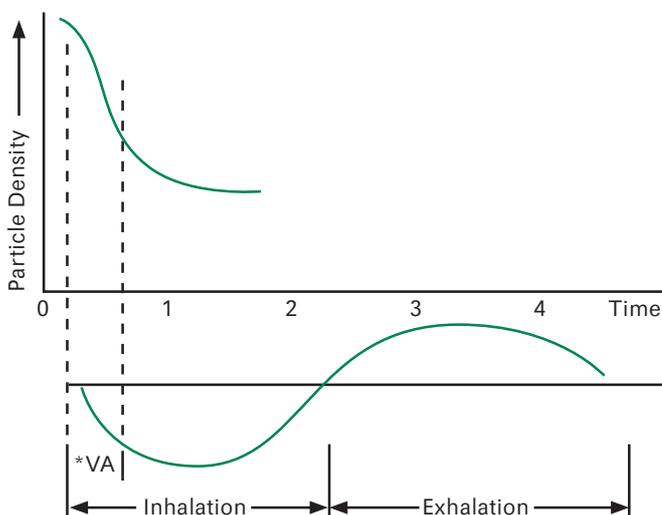
**Effective Targeting of the Bronchial region can only be achieved with Bolus inhalations.<sup>1</sup>**

**“In our Emergency Department study, nebulizer brand utilized to treat pediatric asthma appear to make an impact on both clinical and financial outcome.”<sup>4</sup>**



**NebuTech® HDN® 8960**

#### **BREATHING CYCLE**



**FIG.7** During exhalation the NebuTech®HDN® tower acts as a reservoir capturing a 50cc bolus of dense aerosol particles. They are delivered to the lungs in the critical first one third of inhalation of which the alveolar volume is composed. Aerosol production and delivery continues throughout the inspiratory cycle. During the exhalation cycle aerosol precharges the 50cc tower with a new bolus ready for the next inspiration and will be delivered during the critical first one third of each breath.

A major benefit for a respiratory care, emergency department or general floor treatments is the opportunity for substantial savings in FTE, full time equivalent, as well as enable better utilization of human resources. It may allow existing staff to perform additional or new tasks. One institution discovered substantial savings in their emergency department through the faster treatment time and patients responding more quickly to the aerosol medication delivered. This led to fewer ED admissions, reduced numbers of treatments and higher respiratory staff efficiency and productivity.

**The versatility of the NebuTech®HDN® allows a clinician to select from several delivery modality options, including a mouthpiece or face masks in a conventional aerosol mask style or special valved configurations in adult and pediatric sizes.**

The one way valve on top opens to allow a breath enhanced inspiration. It will not close until exhalation begins. If a face mask is employed this valve is removed from the top and inserted where the mouthpiece fits. It prevents medication from escaping into the room in either position.

If preparing to use a mask the one way valve is easy to remove. Just twist and lift up, then place it in the mouthpiece port. Replace the top port with the face mask.

The Mouthpiece has smooth rounded tip with no sharp edges. It is comfortable for pediatrics, adults and edentulous patients.

The exhalation port one way tricuspid shaped valve opens only during exhalation. It remains closed during inspiration so the aerosol dose will not be diluted with air which has not passed through the reservoir tower. An easy 1/4 turn is all it takes to remove or add the optional exhalation filter.

The mouthpiece attaches at a natural ergonomic angle. It is easy to hold the Nebulizer in a natural comfortable position while taking an aerosol treatment.

Anti drool feature incorporated to maintain integrity of the medication. It takes only a moment to remove and empty out any saliva that has accumulated.

The reservoir tower directs incoming air to the bottom where it is joined with aerosolized medication and holds as a Bolus until inspiration begins.

The bright green cone creates a capillary action and allows operation at virtually any angle. The scalloped cuff provides stability and makes it easier to grip the connecting tubing end when connecting or disconnecting to a gas power source.

The clear medication cup holds 5cc diluent and medication. A graduated marker is clearly visible. Only 1/4 turn easily removes or replaces the cup with a positive leak proof seal.

ROOM AIR

ROOM AIR

MEDICATED AEROSOL

EXHALATION

50PSI WALL SOURCE AIR or COMPRESSOR AIR

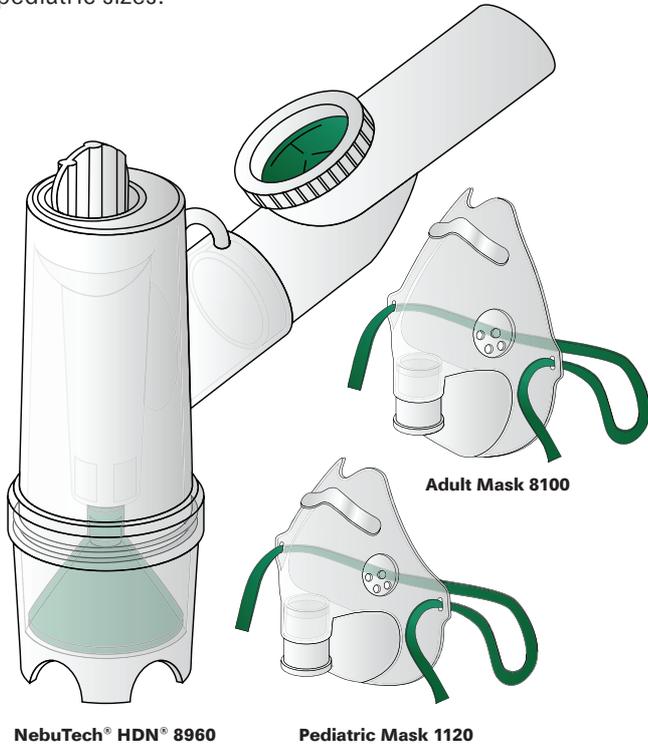
50cc Bolus

5cc Diluent & Medication

FIG.5

### NEBUTECH® HDN® VERSATILITY

The versatility of the NebuTech®HDN® allows a clinician to select from several delivery modality options, including a mouthpiece or face masks in a conventional aerosol mask style or special valved configurations in adult and pediatric sizes.



NebuTech® HDN® 8960

Pediatric Mask 1120

Adult Mask 8100

## Features at a Glance

	Anti-Drool Feature	Virtually Any Angle	Dishwasher Safe	50cc Bolus	Breath Enhanced	Mouthpiece & Reservoir Tube	Valved Mouthpiece	Optional Valved Pediatric Mask	Optional Valved Adult Mask	Optional Pediatric Mask	Optional Adult Mask	Works with Compressor	PEP Attachment	Environmental Filter	Reusable	Single Patient Use	High Density	
	•	•		•	•		•	•	•	•	•	•	•		•	•		NebuTech® HDN® 8960
	•	•	•	•			•	•	•	•	•	•	•	•			•	NebuTech® HDN® 8660
	•	•			•		•	•	•	•	•				•			Salter Labs® 8900 Series SVN

## Ordering Information

### NebuTech® HDN®\* High Density Jet Nebulizer

	Units per Case	Disposable #
NebuTech® HDN®, mouthpiece and (disposable) 7' supply tube	50	8960
NebuTech® HDN®, mouthpiece, filter and (disposable) 7' supply tube	50	8982
NebuTech® HDN®, mouthpiece and (disposable) 7' supply tube with female thread grip connector	50	8960TG
NebuTech® HDN®, Adult aerosol mask, elastic strap style, 7' supply tube	50	8984
NebuTech® HDN®, Adult aerosol mask with VADS, valved aerosol delivery system, 7' supply tube	50	8987
NebuTech® HDN®, Pediatric aerosol mask with VADS, valved aerosol delivery system, 7' supply tube	50	8967
8900 Series Nebulizer with anti-drool "T", mouthpiece, 6" reservoir tube and 7' supply tube	50	8900

#### FOOTNOTE REFERENCE LIST:

- Heyder J ; Deposition of Inhaled Particles in the Human Respiratory Tract and Consequences for Regional Targeting in Respiratory Drug delivery. Am Thorc Soc. 2004 vol 1, 315-320.
- Leung K, Louca E, Coates A ; Comparison of Breath-Enhanced to Breath-Actuated Nebulizers for Rate, Consistency and Efficiency. Chest 2004, 126/5/November.
- Hess R ; Resp Care 2000, June, 45(6) 609-610.
- Myers TR, Chatburn R, Rogers M, Richardson K, Kersmar C; Does nebulizer Brand make a Clinical Difference in the Emergency Room Management of Pediatric Asthma. Resp Care 1999,44 (10) 1278
- Consensus Statement; Aerosols and Delivery Devices. Resp Care 2000, 45 (6) 589
- Dunne PJ; Novel Designs for nebulizer Technology Improve Effectiveness and Efficiency. Adv. For Mgrs Resp Care 2003, Jan 12-16
- Data on file. Arvin, CA



100 West Sycamore Road • Arvin, CA 93203  
 Phone: 661.854.3166 • 1-800.421.0024 • 1.800.235.4203  
 Fax: 661.854.3850 • Toll Free Fax: 1.800.628.4690  
 Email: salterlabs@us.salterlabs.com • www.salterlabs.com