

NebuTech® HDN®

Breath Enhanced High Density Jet Nebulizer

The NebuTech® HDN® nebulizer, a revolutionary breath enhanced design, by Salter Labs® 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® HDN® is an affordable, easy to use, small volume nebulizer which will provide consistent results time after time.

Features:

- Breath Enhanced Design
- Faster Treatment Times
- Reduced Medication Waste
- High Aerosol Output
- Patented Bolus Design
- Ease of use
- Consistent Reliable Performance

Quality care begins with quality products.

Latex Free



NebuTech® HDN® 8660

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

SALTER LABS®

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

NebuTech® HDN® is a jet driven, breath enhanced, small volume, high density medication nebulizer. It utilizes a patented design and incorporates a combination of unique features to produce a dense 50cc aerosol bolus. This bolus is available for delivery during the crucial first one third of every breath. Eighty percent of the particles in the bolus are in a respirable range of 1.0-5.0µm and MMAD of 1.3µm.^{1,3} (FIG.2,7)

DEPOSITION OF AEROSOL

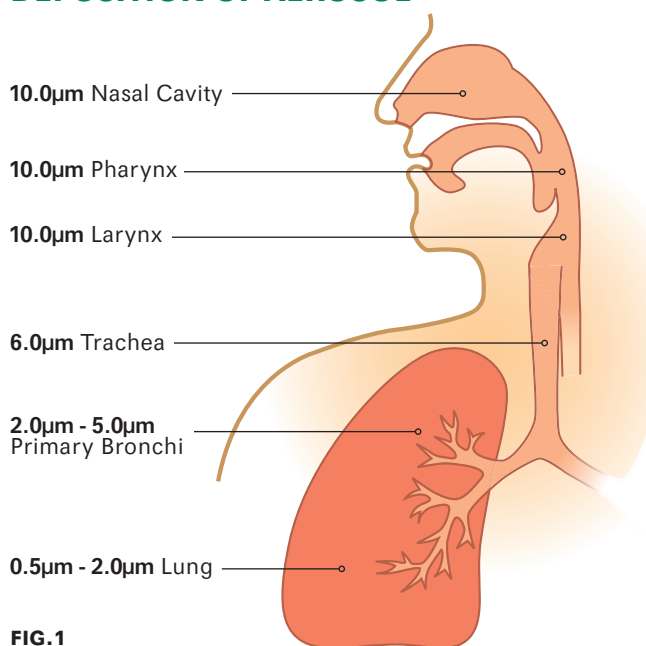


FIG.1

		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 1.0 - 5.0µm size and MMAD delivered by the NebuTech® HDN®

NebuTech® HDN® 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 with shorter aerosol treatment times. A shorter treatment is important to a patient and encourages them to be more compliant to the aerosol regime.

DOSE DELIVERED TIME (min./sec.)			
MAKE	MODEL	WALL 50 PSI	COMPRESSOR
Salter Labs®	8660 reuse.	3:24	5:13
Salter Labs®	8900 disp	3:55	6:10
Pari	LC Plus	3:40	6:38
Intersurgical	HOT Top	4:15	6:20
Respironics	Sidestream	4:50	5:42
WestMed	Vix One	6:47	7:20

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

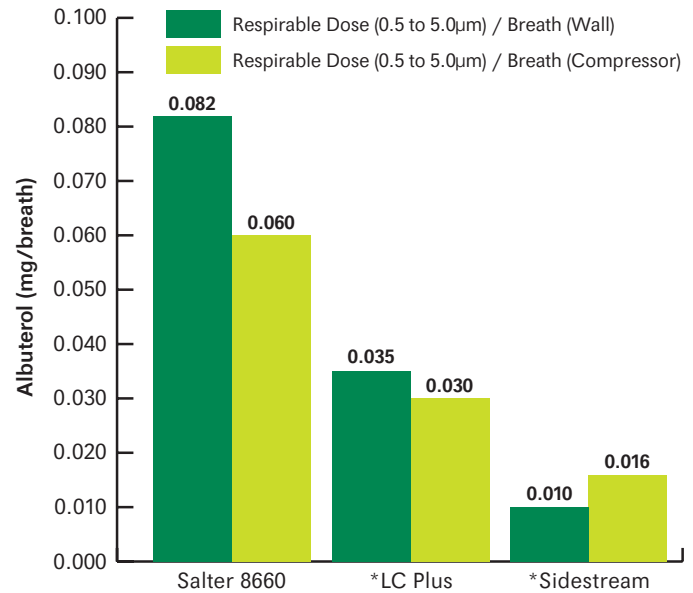
“Nebulization time is important for patient compliance in the outpatient setting and clinician supervision for hospitalization patients. A short nebulization time that delivers an effective dose is desirable.”³

The most important characteristic of nebulizer performance is the respirable dose provided for the patient.¹

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[®]HDN[®] 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)⁷

3ml albuterol 20 breaths

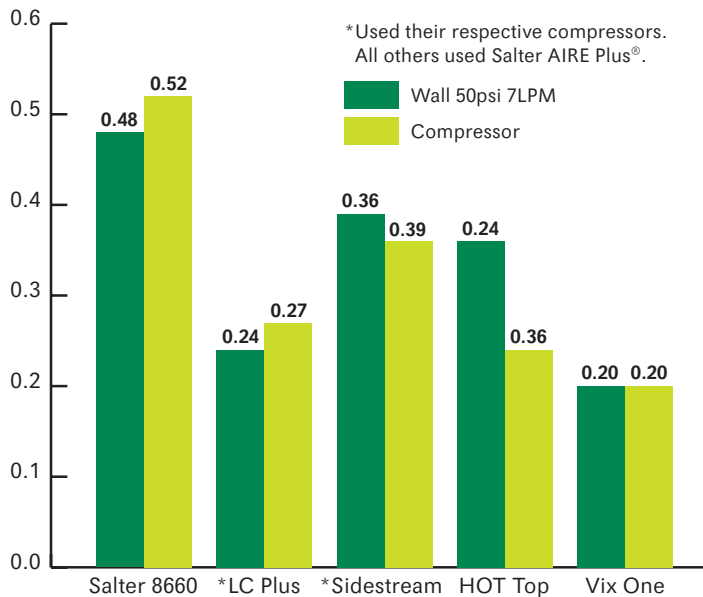


*Inhaled mass values reflect concentration of Albuterol used for product comparison purpose and does not imply therapeutic dose to the patient.

Simulator setting at 15 BPM, 500ml tidal volume

FIG.6

OUTPUT COMPARISON ML/MIN⁷



*Used their respective compressors. All others used Salter AIRE Plus[®].

FIG.4

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

The NebuTech[®]HDN[®] delivers a high aerosol with an MMAD of 1.3µm. Aerosol output (Fig. 4) of a nebulizer is simply the volume of aerosol that leaves the device over time (m;/min). It is important to remember that output alone does not represent what is the available to the patient. Only respirable particles which are delivered to the site where pharmacologic action takes place, should be counted as being the effective output of a device. Effective aerosol therapy depends on delivering a high output of aerosol in the respirable range.

Patients treated with Nebutech[®]HDN[®] nebulizers demonstrated significant decreases of stay, to

Effective Targeting of the Bronchial region can only be achieved with Bolus inhalations.¹

"In our Emergency Department study, nebulizer brand utilized to treat pediatric asthma appear to make an impact on both clinical and financial outcome."⁴

Patients requiring hospitalization in 27 monitored ED facilities from Oct. 1996 to Oct. 1997. had average stays lasting 3.8 days at an average cost of \$3,102.53. The majority of the cost was directly associated with nursing, respiratory care and medication. The patients which required hospitalization exceeded DRG by \$500.00! NebuTech®HDN® delivers a larger dose quicker and can bring relief faster...It can save time and money in labor and medicine...There are no unusual cost of new protocols or lengthy staff education...It just works better and faster.

BREATHING CYCLE

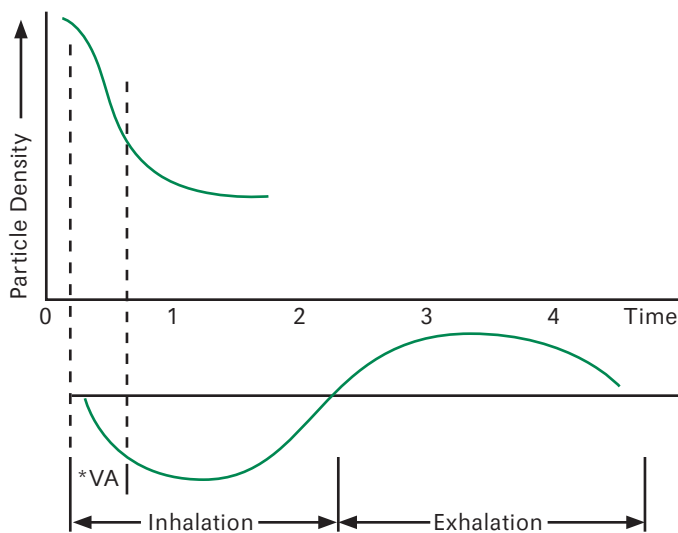
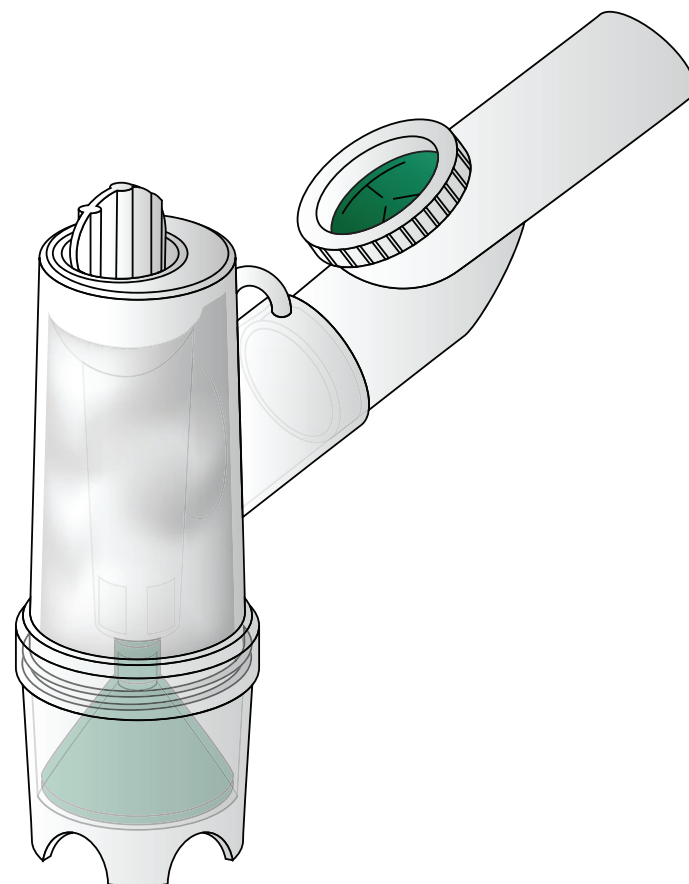


FIG.7 During exhalation the NebuTech®HDN® tower acts as a reservoir capturing a 50cc bolus of dense aerosol particles. Eighty percent of these particles are in the respirable range. They are delivered to the lungs in the critical first one third of inhalation of which the alveolar volume is composed. 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.



Nebutech® HDN® 8660

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 an conventional aerosol mask style or special valved configurations in adult and pediatric sizes.

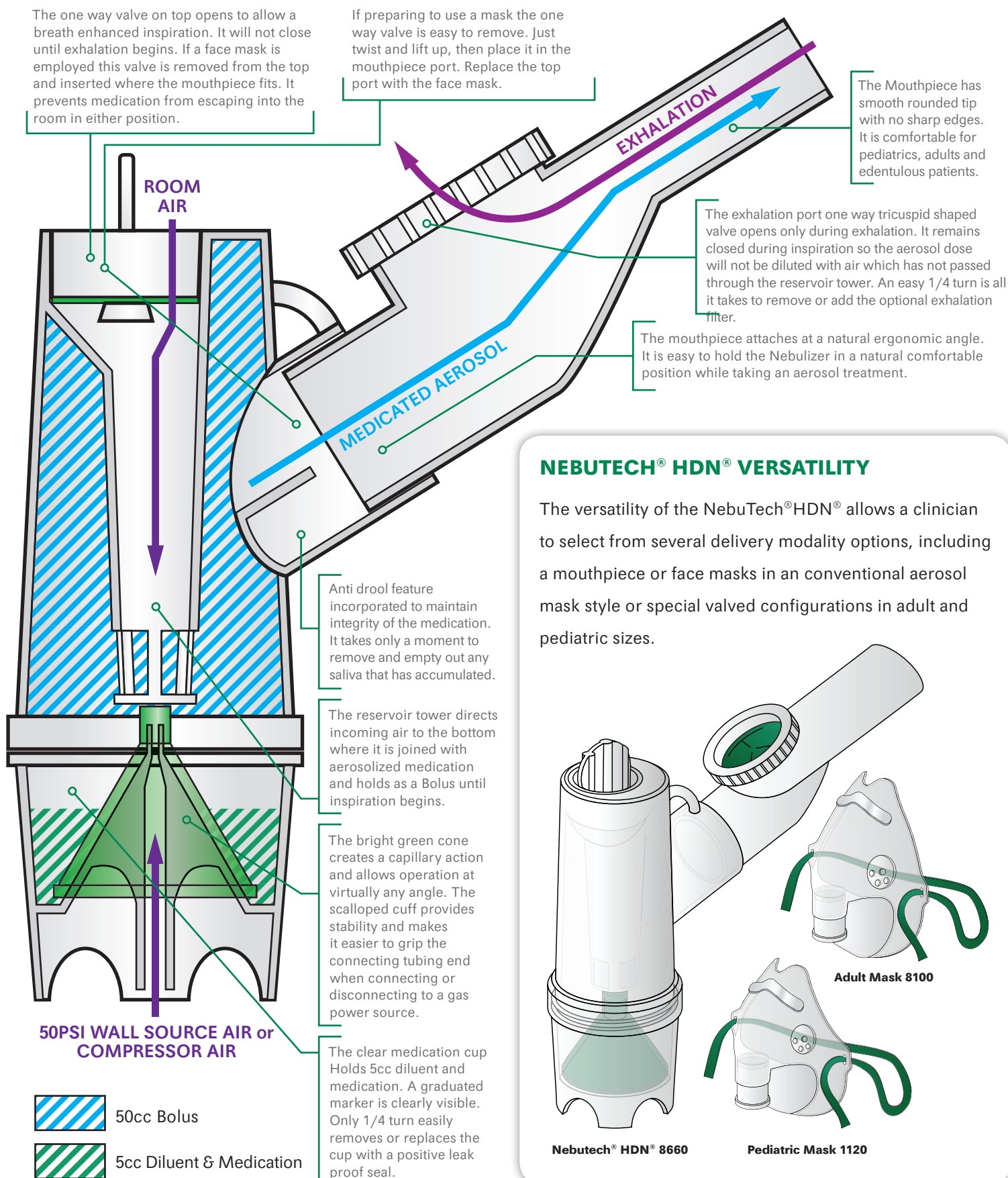


FIG.5

Features at a Glance

Anti-Drool Feature	Virtually Any Angle	Dishwasher Safe	50cc Bolus	Breath Enhanced	Mouthpiece & Reservoir Tube	Optional 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 Nebulizer

	Units per Case	Reusable #	Disposable #
NebuTech® HDN®, mouthpiece, Salter Safety™ PEP Device, nose clip and manometer.	10 or 25	8672	N/A
NebuTech® HDN® and mouthpiece only.	10 or 50	8661	8961
NebuTech® HDN®, mouthpiece and (disposable) 7' supply tube.	10 or 50	8660	8960
NebuTech® HDN®, mouthpiece, filter and (disposable) 7' supply tube.	10 or 50	8682	8982
NebuTech® HDN®, mouthpiece and (disposable) 7' supply tube with female thread grip connector	10 or 50	8660TG	8960TG
NebuTech® HDN®, Adult aerosol Mask, elastic strap style, 7' supply tube	10 or 50	N/A	8984
NebuTech® HDN®, Adult aerosol Mask with VADS, valved aerosol delivery system, 7' supply tube	10 or 50	N/A	8987
NebuTech® HDN®, Pediatric aerosol mask, elastic strap style, 7' supply tube	10 or 50	N/A	8966
NebuTech® HDN®, Pediatric aerosol Mask with VADS, valved aerosol delivery system, 7' supply tube	10 or 50	N/A	8967
Mouthpiece, with exhalation valve	10 or 50	8670	8970
8900 Series Nebulizer with anti-drool "T", mouthpiece, 6" reservoir tube and 7' supply tube	50	N/A	8900

Salter AIRE Plus®

Simply select the combination you want and add the four digit part number to the compressor part number

Part Number

Salter AIRE Plus® 115V portable treatment compressor with your selection of a nebulizer with, mouthpiece or mask.	8350 + mask or mouthpiece p/n
Salter AIRE Plus® 230V European Compressor with CEE 7-16 ungrounded plug (Europlug)	8352 + mask or mouthpiece p/n
Salter AIRE Plus® 230V United Kingdom Compressor with BS 1363 grounded plug.	8353 + mask or mouthpiece p/n

FOOTNOTE REFERENCE LIST:

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- 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
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- 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

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Authorized Representative in the E.U.:

MT Promed Consulting GmbH
Altenhofstrasse 80
D-66386 St. Ingbert
Germany



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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