

# LD-220C

Little Doctor®

**Ингалятор компрессорный LD**

*Руководство по эксплуатации*

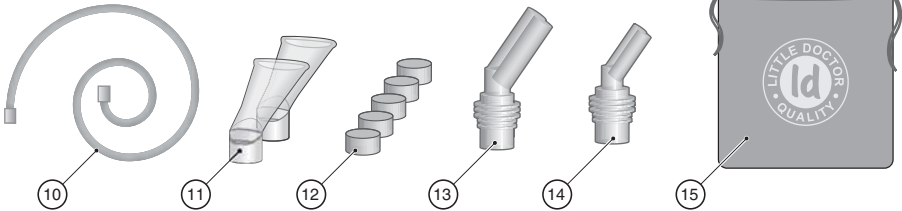
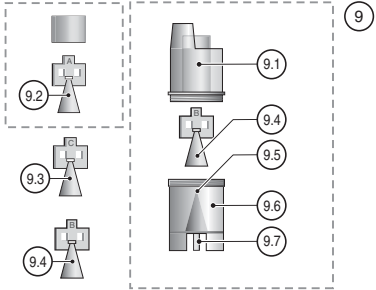
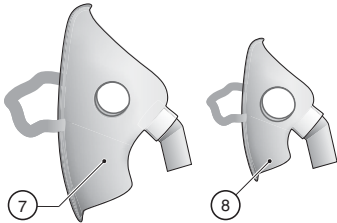
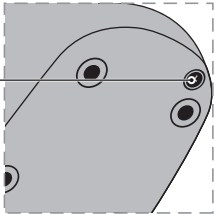
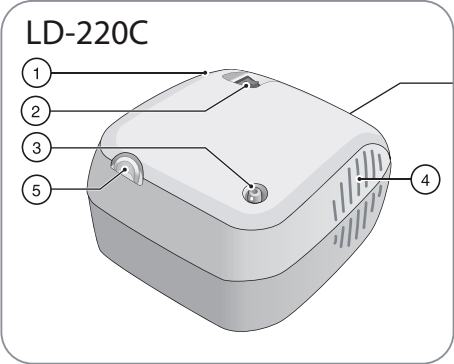
**Compressor Nebulizer LD**

*Instruction Manual*

RUS

ENG





## DEVICE PARTS DESCRIPTION

№ position on the scheme	NAME	DESCRIPTION
1	Compressor	Nebulizer compressor unit for to create air pressure.
2	Power Switch	Tumbler I/O – switch on/switch off power.
3	Connector of Compressor	Fitting compressor for connecting an inhalation tube.
4	Intake	Holes for air intake to cool the compressor.
5	Nebulizer holder	Holder for the nebulizer.
6	Socket for the filter	Position the air filter for nebulizer.
7	Adult mask LD-N041	Adult inhalation mask. <i>Expendable material.</i>
8	Child mask LD-N040	Child inhalation mask. <i>Expendable material.</i>
9	Nebulizer LD-N105	Chamber for inhalation of aerosol from a solution. <i>Expendable material.</i>
9.1	Upper part of the nebulizer	Part of the aerosol chamber. Place of connection to the sleeve.
9.2	Baffle "A" (Yellow) LD-N001	Inhalation baffle (mainly the lower respiratory tract). Consist of two parts: cone and cylinder. <i>Expendable material.</i>
9.3	Baffle "C" (Red) LD-N003	Inhalation baffle (mainly the upper respiratory tract). <i>Expendable material.</i>
9.4	Baffle "B" (Blue) LD-N002	Inhalation baffle (universal). <i>Expendable material.</i>
9.5	Nozzle	Cone-shaped nozzle to create a thin air jet.
9.6	Lower part of nebulizer	Part of the aerosol chamber ( for inhalation solution with a seat for the bump).
9.7	Air tube connector	Socket for connecting an inhalation tube.
10	Air tube LD-N051	Inhalation tube. <i>Expendable material.</i>
11	Inhalation mouthpiece LD-N022	Inhalation mouthpiece. <i>Expendable material.</i>
12	Air filter LD-N055	Filter inhalation. <i>Expendable material.</i>
13	Adult Nasal Nozzle LD-N058	Adult nozzle for inhalation through the nose. <i>Expendable material.</i>
14	Child Nasal Nozzle LD-N059	Child nozzle for inhalation through the nose. <i>Expendable material.</i>
15	Bag	Accessories storage bag

## NEBULIZER THERAPY – WHAT IS IT?

NEBULIZER IS A DEVICE FOR FORMATION AND SPRAYING OF AEROSOL. THE WORD "NEBULIZER" IS DERIVED FROM THE LATIN WORD "NEBULA" (FOG, CLOUD) AND WAS FIRST USED IN 1874 FOR A DEVICE THAT TURNS A LIQUID SUBSTANCE INTO AN AEROSOL FOR MEDICAL PURPOSES. ONE OF THE FIRST PORTABLE "AEROSOL APPARATUSES" WAS CREATED BY J. SALES-GIRONS IN PARIS IN 1859. THE FIRST NEBULIZERS WERE USED AS STEAM JET ENERGY SOURCES AND WERE APPLIED FOR INHALATION THE VAPORS OF RESINS AND ANTISEPTICS BY TUBERCULOSIS PATIENTS. PRESENTLY, THE TERM "INHALER" IS OFTEN USED INSTEAD OF "NEBULIZER".

The purpose of the nebulizer therapy is to quickly deliver to the respiratory passages a therapeutic dose of a preparation in aerosol form. Continuous supply of aerosol allows, within several minutes, creating high concentration of a medicine in the upper and lower respiratory passages and lungs, with low probability of any by-effects. Respectively, effective bronchodilation (bronchi expansion) is reached, and the need for hospitalization is eliminated or the hospital stay is reduced.

Little Doctor International (S) Pte. Ltd. offers you to use inhaler LD-220C, whose distinctive features are the possibility to use a wide range of medicines, low inhalation solution residual volume, and reliable and simple use. We thank you for your choice.

## GENERAL INFORMATION

Compressor nebulizer LD is designed for treating the diseases of respiratory passages and lungs by medicine solution aerosols in clinic.

This Instruction Manual is designed to assist the user with safe and effective operation of the Compressor Nebulizer LD.

Use this Device according to the rules described in this Manual. Operate the Device only as intended. Do not use the Device for any other purposes. Read and understand the whole Instruction Manual. Functionally, the device consists of an air compressor and nebulizer (aerosol formation chamber). The air compressor, on/off power switch and air filter are united in one casing. From the air compressor, the compressed air is fed through a pipe to the nebulizer, where aerosol is formed. For cooling the compressor, air is force-feed into the device's casing.

## INDICATIONS FOR USE

The LD compressor nebulizer is designed for the treatment of respiratory diseases such as rhinitis, pharyngitis, laryngotracheitis, acute and chronic bronchitis, bronchial asthma.

## CONTRAINDICATIONS

The LD compressor nebulizer is contraindicated for use if there are malignant neoplasms, systemic blood diseases, severe general exhaustion, stage III hypertension, pronounced atherosclerosis of the cerebral vessels, diseases of the cardiovascular system in the stage of decompensation, nosebleeds or a predisposition to nosebleeds, hemoptysis, fever (body temperature above 38 °C),

active pulmonary tuberculosis, acute pneumonia, hypertrophy of the mucous membranes of the respiratory tract, tonsillitis, pleurisy, epilepsy with frequent seizures, hysteria with severe convulsive seizures, psychosis with symptoms of psychomotor agitation, alcohol or drug intoxication, individual intolerance to procedures, general severe patient status. If the patient has recently undergone dental surgery or if the patient is undergoing treatment related to problems in the mouth or throat, it is necessary to consult a doctor before use of the device.

## SIDE EFFECTS

The use of the LD compressor nebulizer has no side effects if used with the observance of precautions.

## PRECAUTIONS

**!** **Important information!** For correct work of the nebulizer it is recommended to use all types of standard inhalation solutions in liquid form for nebulizer therapy produced by pharmaceutical companies.

- *Solutions for inhalation should be prepared under sterile conditions using 0.9% sodium chloride as a solvent.*

**!** **Attention!** Do not use tap (even boiled) or distilled water to prepare the inhalation solution. The dishes in which the solution is prepared should be pre-disinfected by boiling.

- *The type of inhalation (by mouth, using a mouthpiece or through the nose, using a mask or a nozzle), the frequency, the inhalation solutions used and the dosage must be determined by YOUR DOCTOR.*
- *Place the device on a flat table surface for use.*
- *To avoid overheating of the device, do not block the air inlet.*
- *Children must use the device under the supervision of an adult.*
- *If you are not using the device, disconnect it from the mains by pulling out the plug from the socket.*
- *Do not touch the power plug with wet hands.*
- *Do not place the device in water, under a water drain or in a shower stall. Do not use when bathing.*
- *Do not touch the device if it has fallen into water. Unplug it immediately.*
- *Make sure the power cord is not damaged before use.*
- *The power cord must not touch hot or heated surfaces.*
- *If the device does not work, see section "TROUBLESHOOTING TIPS".*
- *Use specified accessories specified for this model and described in this manual.*
- *This device cannot be used for inhalation anesthesia and artificial ventilation of the lungs.*
- *Do not insert foreign objects into the openings of the device.*
- *The device is not intended for outdoor use.*

## Preparing for inhalation.

**! Important!** Before using the appliance for the first time it is necessary to make a full cleaning, as described in last paragraph «SAFETY INFORMATION».

1. Place the nebulizer in front of you on the table. Make sure the device is turned off (power switch is in position «O»), and the power cord is not plugged into the mains.
2. Remove the top of the nebulizer by turning it counterclockwise (Fig.1).
3. Set the desired baffle.

Factory installed baffle inside the nebulizer is baffle «B» (Blue), which is effective to affect the entire respiratory tract.

For a more effective impact medicines on the upper respiratory tract, set, instead of the blue baffle, red baffle «C».

For a more effective impact on the lower respiratory tract – baffle «A» yellow color, which consists of two parts (Fig. 2, figures indicate the order of assembly).

4. Fill the bottom of the nebulizer inhalation solution. The dosage should not exceed the recommended by your doctor. The number of nebuliser solution is determined by the scratches on the case. The maximum reservoir volume of 10 ml.
5. Attach the nebuliser at the top, turning it clockwise until it stops.
6. Depending on the type of inhalation, using either a mouthpiece or nozzle and mask. The mask, mouthpiece or nose nozzle is connected directly to the upper part of the nebulizer (Fig.3). Hold the nebulizer vertically.

**! Important!** Each patient is encouraged to use personal mouthpiece, a mask and / or nozzle for the nose.

7. Plug the power cord to an electrical outlet.
8. Connect one end of the inhalation tube to the fitting of compressor, and others - to the fitting of nebulizer.
9. Turn on the nebulizer, switching the power switch in position «I». NEBULIZER IS READY FOR INHALATION.

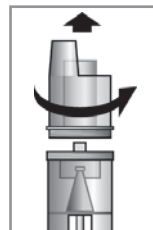


Fig. 1

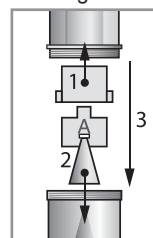


Fig. 2

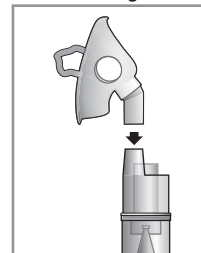
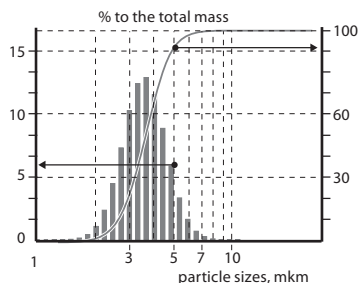
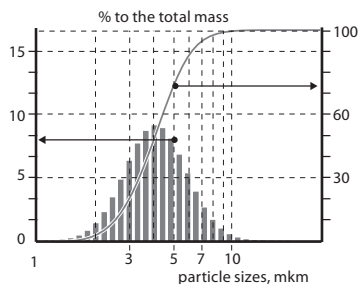
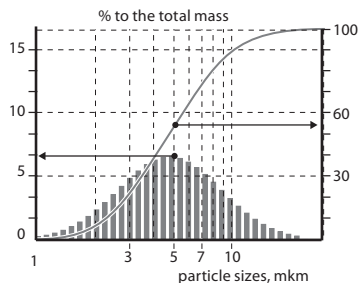


Fig. 3

Depending on the type of baffle, the particles of different sizes are distributed aerosols as follows\*:



Dispenser "C" (red)  
(mainly the upper respiratory tract)

Dispenser "B" (blue)  
(universal)

Dispenser "A" (yellow)  
(mainly lower respiratory tract)

For effective delivery medicines to a specific site of respiratory tract, need to use the appropriate dispenser.

\* - Measured by Little Doctor International (S) Pte. Ltd.

### Performing the inhalation.

The length of one treatment session should not exceed 20 minutes. Consult your attending physician about the length of the inhalation procedure.

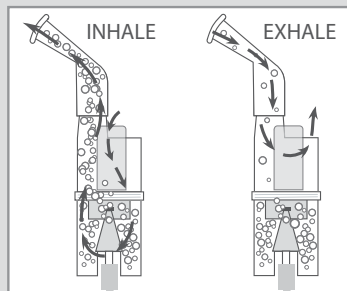
You should always be calm and relaxed during the inhalation. Breathing should be slow and deep, so that the preparation could fill the lungs well and reach the deep portions of bronchi.

Briefly hold your breath, and then exhale slowly. Do not attempt to breathe too rapidly. Make pauses if you feel that you need it.

### Breath-actuated nebulizer.

The special design of the nebulizer in the form of chambers connected in a certain manner provides different ways of air streams during inhaling and exhaling.

It allows obtaining the air stream with greatest aerosol concentration when inhalation and reducing aerosol loss when exhaling. The effectiveness of inhalation using the breath-actuated nebulizer is increased significantly.



### Completing the inhalation.

When the inhalation solution is used up and the inhalation time recommended by the doctor has expired, turn the device off by putting the tumbler in «O» position and unplug it.

After inhalation, breathe fresh air for some time for better treatment effect.

After each application of the device, the residual preparation should be removed out of it. Clean and wash the device as described in last paragraph «SAFETY INFORMATION».

## CARE, STORAGE, REPAIR AND DISPOSAL

1. Before the first use, as well as after each use of the device, it should be cleaned and disinfected.



**Attention!** When cleaning and disinfecting, do not allow solutions of detergents and disinfectants to get inside the compressor block housing.

### At home:

**Cleaning** of the nebulizer, baffles disconnected from the nebulizer, masks, nozzles for the nose, mouthpieces and the tube is carried out by rinsing with warm water (with a temperature not exceeding 45 °C) with the addition of a 0.5% detergent solution (it is recommended to use detergents for washing children's dishes or washing children's odorless laundry). The compressor block housing is cleaned by wiping with a gauze cloth soaked in a 0.5% detergent solution.

**Disinfection** of the nebulizer, baffles disconnected from the nebulizer, masks, nozzles for the nose, mouthpieces and tube is made by full immersion (soaking) in 3% hydrogen peroxide solution or in 3-6% vinegar solution (1 part vinegar to 3 parts distilled water). The disinfection time is 30 minutes.



The initial temperature of the solution is 50 °C. The shelf life of the working solution is 1 day. Make enough solution to dip all of the parts. Disinfecting solutions must not be reused! Mouthpieces and nozzles for the nose can be boiled in distilled (or pre-boiled) water for 10 minutes. After handling, wipe all parts of the appliance dry with a soft cloth.

#### In medical institutions:

**Cleaning and disinfection** of the nebulizer, baffles disconnected from the nebulizer, masks, nozzles for the nose, mouthpieces and tubing is performed using specialized disinfectants.

Nozzles for the noser LD-N058 and LD-N059, mouthpiece LD-N022 can be boiled for 10 minutes. If necessary, the nozzles for the nose LD-N058, LD-N059 and the mouthpiece LD-N022 can be sterilized in an autoclave at a temperature not exceeding 150 C for 10 minutes. After handling, wipe all parts of the appliance dry with a soft cloth.

2. Regularly check if the filter is dirty and, if necessary, replace the filter. To replace the filter, open the filter slot by prying the filter slot cover with a screwdriver; install a new filter; close the filter slot

**IT IS RECOMMENDED TO CHANGE THE FILTER AT LEAST ONE TIME A YEAR.**

3. The device must be protected from hits and direct sunlight.

4. Do not store or use the device in the immediate vicinity of heaters and open flames.

5. Protect the device from dirt.

6. Do not allow the device to come into contact with aggressive solutions.

7. If necessary, carry out repairs only in specialized organizations.

Contact information is provided in section «MANUFACTURER AND AUTHORIZED REPRESENTATIVES».

8. The service life of the compressor is 5 years from the start of operation. The service life of consumables is 1 year from the date of handover of the device to the consumer. After the expiration of the established service life, you should periodically contact the specialists (contact information is indicated in the section. «MANUFACTURER AND AUTHORIZED REPRESENTATIVES») to check the technical condition of the device and, if necessary, to dispose of it in accordance with the current disposal rules in your region. The manufacturer has not established special conditions for disposal.

9. The manufacturer does not establish specific standards for the frequency of preventive inspection and maintenance.

## WARRANTY

The following LD product is covered by warranty for the period 36 months. The warranty does not apply to the consumables (masks, mouthpieces, inhalation tubes etc.). The warranty liabilities are contained in the warranty card given at the sale of this device to a purchaser. The addresses of organizations for warranty maintenance are given in the warranty card.

## COMPLETENESS

№	NAME	MODEL	QUANTITY, pc.
1	Compressor	—	1
2	Nebulizer (with inhalation baffle LD-N002)	LD-N105	1
3	Inhalation baffle	LD-N001	
4	Inhalation baffle	LD-N002	1
5	Inhalation baffle	LD-N003	1
6	Inhalation mouthpiece	LD-N022	2
7	Adult inhalation mask	LD-N041	1
8	Child inhalation mask	LD-N040	1
9	Inhalation tube	LD-N051	1
10	Adult nasal nozzle	LD-N058	1
11	Child nasal nozzle	LD-N059	1
12	Inhalation filter	LD-N055	5
13	Instruction Manual	—	1
14	Warranty Card	—	1
15	Packaging	—	1
16	Bag	—	1

## TECHNICAL SPECIFICATIONS

Model	LD-220C
Type	Compressor Nebulizer
Rating:	AC 230V, 50Hz
Power Consumption	190 VA
Nebulizing Pressure, max	210-400 KPa
Noise Level, approx.	55 dB*
Max capacity of nebulizer kit	10 ml
Residual volume, not more	0,5 ml
Compressor productivity, not less	7 l/min
Nebulization rate, approximately	
Inhalation baffle «A» LD-N001	0.3 ml/min.*
Inhalation baffle «B» LD-N002	0.4 ml/min.*
Inhalation baffle «C» LD-N003	0.5 ml/min.*

Particle size (MMAD)	
Inhalation baffle «A» LD-N001	3.5 mkm*
Inhalation baffle «B» LD-N002	4.0 mkm*
Inhalation baffle «C» LD-N003	5.0 mkm*
Operation mode	20 minutes on, 40 minutes off
Operation Temperature and humidity/ atmospheric pressure	10°C ~ 35°C, 15%-80% / 860~1060hPa
Transport and storage temperature and humidity/ atmospheric pressure	-20°C ~ 40°C, 15%-95% / 500~1060hPa
Size	147mm x 95mm x 137mm
Net Weight, no more	1215 g
Protection against electric shock	type BF

## SYMBOLS

CE 0123 CE marking in conformity with EC directive 93/42/EEC



Important: Read the manual



EC Representative



Manufacturer



Class II



Type BF



Protect from moisture



The device has not been sterilized



Storage/operation temperature and humidity



Serial number

\* - Measured by Little Doctor International (S) Pte. Ltd.

Revision date of the present Manual is indicated on the last page as IXXX/YMM/NN, where YY is the year, MM is the month and NN is the number of revision. Technical characteristics may be changed without preliminary notification to improve the operation and quality of the product.

This device manufacturing is certified according to international standard ISO 13485. Device comply with the requirements of European Directive MDD 93/42/EEC, international standards EN 1041, EN 60601-1, EN 60601-1-2, ISO 14971.

## ELECTROMAGNETIC COMPATIBILITY INFORMATION

### Important information on electromagnetic compatibility (EMC)

As the number of electronic devices such as PCs and mobile (cellular) phones increases, medical devices in use may be susceptible to electromagnetic interference from other devices. Electromagnetic interference can interfere with the operation of the medical device and create a potentially unsafe situation. Medical devices should also not interfere with the functioning of other devices. To regulate the requirements on EMC (Electromagnetic Compatibility), the IEC 60601-1-2 standard has been introduced to prevent unsafe product use situations. This standard specifies levels of immunity to electromagnetic interference as well as maximum levels of electromagnetic

radiation for medical devices. This medical device manufactured by Little Doctor meets the requirements of IEC 60601-1-2 regarding immunity to interference and radiated emissions. However, special precautions should be taken:

Do not use mobile (cellular) phones or other devices that generate strong electric or electromagnetic fields near this medical device. This can disrupt the operation of the instrument and create a potentially unsafe situation. It is recommended to maintain a distance of at least 7 m. Make sure that the device is working correctly if the distance is less.

The rest of the IEC 60601-1-2 compliance documentation is available from Little Doctor company's office at the address provided in this manual. This documentation is also available on the [littledoctor.sg](http://littledoctor.sg) website.

## TROUBLESHOOTING TIPS

No power on device when the power switch is on:

- Turn the power switch off. Plug the power plug into an electrical outlet. Turn the device on.

No nebulization or low nebulization rate when the power is on:

- Add the correct amount of prescribed medication to the medication cup.
- Make sure the nebulizer kit is correctly assembled and the inhalation accessory is correctly attached.
- Hold the nebulizer kit correctly. Do not tilt the nebulizer kit so the angle of the kit is greater than 45 degrees.
- Make sure the air tube is correctly attached to the compressor and the nebulizer kit.
- Make sure the air tube is not folded, kinked or bent. Inspect the air tube for any damage. Replace the air tube if damaged.

The device is very hot:

- Do not cover the compressor with any type of cover during use. Turn the device off. Wait 40 minutes before using the device again.

## INFORMATION ON THE MANUFACTURER AND DISTRIBUTORS

✉ **Quality claims are recieved at the following address:**

EU: Little Doctor Europe Sp. z o.o.  
57G Zawila Street, 30-390, Krakow, Poland  
Service phone: +48 12 2684748, 2684749

Kazakhstan: TOO Kazmedimport, 24 Karbysheva Street Ust-Kamenogorsk, 070010 Kazakhstan.  
Phone: +7 (7232) 76-97-97. E-mail: [info@kazmedimport.kz](mailto:info@kazmedimport.kz). [www.kazmedimport.kz](http://www.kazmedimport.kz)

**Manufactured under control:**

Little Doctor International (S) Pte. Ltd., 7500A, Beach Road, 11-313 The Plaza 199591, Singapore.  
Postal address: Yishun Central P.O. Box 9293 Singapore 917699

**Manufacturer:**

Little Doctor Electronic (Nantong) Co., Ltd., No.8, Tongxing Road Economic & Technical Development Area, Nantong 226010, Jiangsu, PEOPLE'S REPUBLIC OF CHINA

**Distributor in Europe:**

Little Doctor Europe Sp. z o.o.  
57G Zawila Street, 30-390, Kraków, Poland  
Sales Office phone: +48 12 2684746, 12 2684747, fax: +48 12 268 47 53  
E-mail: [biuro@littledoctor.pl](mailto:biuro@littledoctor.pl) [www.LittleDoctor.pl](http://www.LittleDoctor.pl)

**Authorized Representative in the EU:**

Little Doctor Europe Sp. z o.o.  
57G Zawila Street Krakow 30-390 Poland.

**WWW.LITTLEDCTOR.SG**

**CE** 0123



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