

LD-221C

Little Doctor®

Ингалятор компрессорный LD

Руководство по эксплуатации

Compressor Nebulizer LD

Instruction Manual

Ауа сығымдағыш LD ингаляторы

Пайдалану жөніндегі басшылық құжат

RUS

ENG

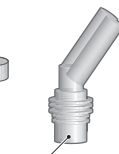
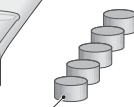
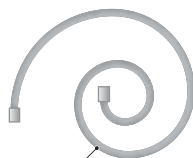
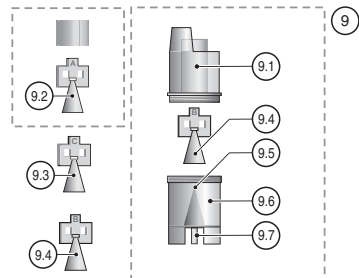
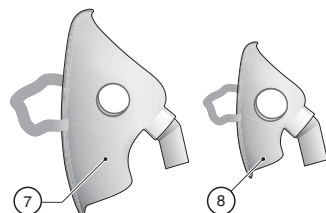
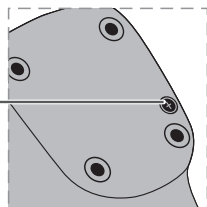
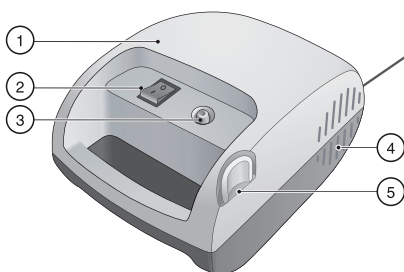
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PARTS AND COMPONENTS

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LD-221C



DEVICE PARTS DESCRIPTION

No 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.
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-221C, 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.

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-fed into the device's casing.

SAFETY INFORMATION

To assure the correct use of the product, basic safety measures should always be followed including the warnings and cautions listed in this instruction manual.

WARNING

- For regime of medication shall follow the instructions of your physician or licensed healthcare practitioner.
- Do not cover the compressor with a blanket, towel, or any other type of cover during using. This could result in the compressor overheating or malfunctioning.
- Do not use the device where the device may be exposed to flammable gas or vapors.

- Do not use mineral water in the nebulizer for nebulizing purposes.
- Always dispose of any remaining medication in the medication tank after each use. Use fresh medication each time you use the device.
- Do not leave the device or its parts where it will be exposed to extreme temperatures or changes in humidity, such as leaving the device in a vehicle during warm or hot months, or where it will be exposed to direct sunlight.

CAUTION

- Limit the use of the device to 20 minutes at a time, and wait 40 minutes before using the device again.
- Provide close supervision when this device is used by, on, or near infants, children or compromised individuals.
- Do not insert any object into the compressor.
- Make sure that the air filter is clean. If the air filter has changed color or has not been used for 60 days, replace the filter.
- Make sure that the nebulizer kit is correctly assembled, the air filter is properly installed, and the air tube is correctly connected to the compressor and the nebulizer kit. Air may leak from the air tube during use if not securely connected.
- Inspect the compressor (main unit) and the nebulizer parts each time before using the device. Make sure no parts are damaged, the nozzle and air tube are not blocked and the compressor operates normally.
- Do not use the device if the air tube is bent.
- Do not block the air filter cover.
- Do not alter the baffle, the nozzle in the medication tank or any part of the nebulizer kit.
- Do not add more than 10ml of medication to the medication tank.
- Do not operate the device at temperatures greater than 40°C.
- Do not tilt the nebulizer kit so the angle of the kit is greater than 45°. Medication may flow into the mouth.
- Do not shake the nebulizer kit while using the device.
- Do not subject the compressor, or any of the components to strong shocks, such as dropping on the floor.
- This device is approved for human use only.
- Do not disassemble or attempt to repair the device or components.
- Use the device only for its intended use as described in the instruction manual. Do not use attachments not recommended by the manufacturer.
- Dispose of the device, components and optional accessories according to applicable local regulations. Unlawful disposal may cause environmental pollution.
- Make sure that the air tube is securely attached to the compressor (main unit) and nebulizing parts, and does not come loose. Twist the air tube slightly when inserting it into the connectors to avoid the tube disconnecting during use.

RISK OF ELECTRICAL SHOCK

- Do not use the compressor (main unit) and the power cord while they are wet.
- Do not plug or unplug the power cord into the electrical outlet with wet hands.
- Do not immerse the compressor (main unit) in water or other liquid.

- Do not spill water or other liquids on the compressor .These parts are not waterproof. If liquid spills on these parts, please unplug the power cord and wipe off the liquid with gauze or other soft absorbent material immediately.
- Do not use or store the device in humid locations or outdoors. Use the device within the operating temperature and humidity.
- Do not overload power outlets. Plug the device into the appropriate voltage outlet.
- Do not use extension cords. Plug the power cord directly into the electrical outlet.
- Unplug the power cord from the electrical outlet after using the device. Never leave this product unattended when plugged in.
- Unplug the power cord from the electrical outlet before cleaning the device.
- Completely read all of the instructions included the optional accessories before using them.
- Not to position the ME EQUIPMENT so that it is difficult to operate the disconnection device.
- The power switch is used to isolate the device from the supply mains.
- The direction of movement of the actuator of the supply mains switch is comply with IEC 60447.

MAINTENANCE AND STORAGE

- Keep the device out of the reach of unsupervised infants and children. The device may contain small parts that can be swallowed.
- Do not leave the cleaning solution in the nebulizer parts. Rinse the nebulizer parts with clean hot tap water after disinfecting.
- Wash the nebulizer parts after each use. Dry the parts immediately after washing.
- Do not store the air tube with moisture or medication remaining in the air tube. This could result in infection as a result of bacteria.
- Store the device and the components in a clean, safe location.
- Do not carry or leave the nebulizer with medication in the medication tank.
- Do not place or attempt to dry the device, components or any of the nebulizer parts in a microwave oven.
- Do not wrap the power cord around the compressor (main unit).

The followings are maintenance and repair which can be taken by operator, or which must be operated by manufacturer or distributor.

SERVICE AND MAINTENANCE	RESPONSIBLE
Change the inhalation tube	Operator
Change the applied part	Operator
Change the air filter	Operator
Clean the surface of the device	Operator
Daily cleaning and disinfecting	Operator
All components which need to be repaired or changed by seperating the device	Authorized service center of distributor or manufacturer

WARNING:


- Do not modify this equipment without authorization of the manufacturer
- Do not service or maintain the device while in use with the patient.

CARE AND DISPOSAL

- Regularly clean the device and all accessories. It is recommended that all the accessories should be wiped with a 3% solution of hydrogen peroxide with addition of 0.5% solution of a detergent (for example, a laundry powder). After that, the nebulizer should be washed by a rich jet of water. The mouthpieces and nose nozzles may be treated by boiling for 10 minutes or autoclaving at 150°C. After the treatment, wipe dry all parts of the device with a soft cloth.
- Repair the Device only in authorized organizations.
- On expiration of the warranted service life apply from time to time to authorized repair organizations to check the technical condition of the Device. Dispose of time to authorized repair organizations to check the technical condition of the Device. Dispose of the Device and its components according to the application local regulations. No special requirements to disposal of this Device are defined by the manufacturer.

USING THE DEVICE

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). Graphics of the differential particle size distribution by mass for different nozzles are shown in Fig. 4.

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 nebulizer at the top, turning it clockwise until it stops.
6. Depending on the type of inhalation, using either a mouthpiece or nozzle or mask. The mask, mouthpiece or nose nozzle is connected directly to the upper part of the nebulizer (Fig.3). Hold the nebulizer vertically.

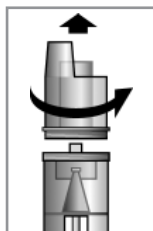


Fig. 1

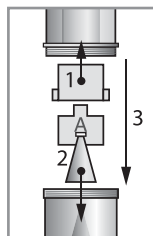


Fig. 2

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.

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

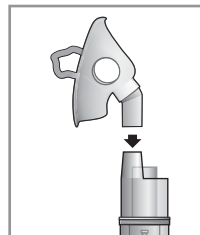
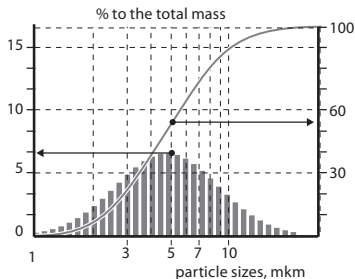
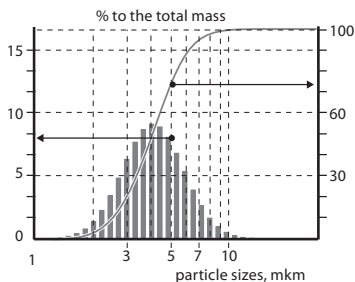


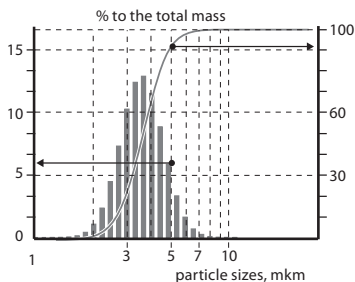
Fig. 3



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.

Fig. 4

* - 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.

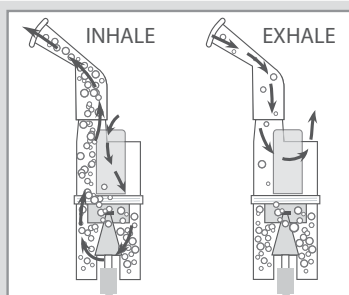
You should always be calm and relaxed during the inhalation. Breathing should be slow and deep, so that the preparation could fill the lungs well and reach the deep portions of bronchi.

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 inhalation 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».

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-221C
Type	Compressor Nebulizer
Rating:	AC 230V, 50Hz
Power Consumption	190VA
Nebulizing Pressure, max	210-400 KPa
Noise Level, approx.	54 dB*
Max capacity of nebulizer kit	10 ml
Residual volume, not more	0,5 ml
Compressor productivity, not more	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	130mm x 98mm x 180mm
Net Weight, no more	1250 g
Protection against electric shock	type BF

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

SYMBOLS

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



Important: Read the manual



EC Representative



Manufacturer



Ukrainian Conformity Mark



Class II



Type BF



Protect from moisture



The device has not been sterilized



Eurasian Conformity Mark



Storage/operation temperature and humidity



Serial number

Revision date of the present Manual is indicated on the last page as IXXX/YYMM/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.

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.

CERTIFICATION AND STATE REGISTRATION

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.

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

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