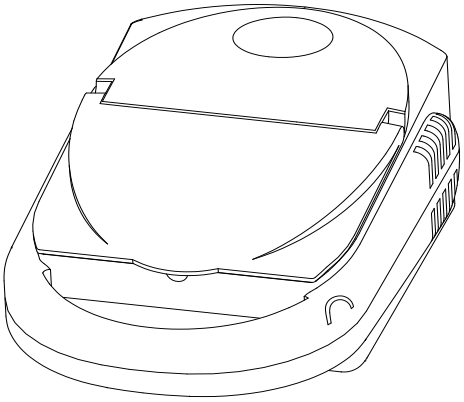
User Manual

Piston Compressor Nebulizer

MODEL: JLN-2305AS

Revision: V1.6

Date: 18th May, 2024



Read the instructions carefully before using the device.

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1. INTRODUCTION

Thank you for purchasing the HOMED Piston Compressor Nebulizer. It is a compact medical device designed to efficiently deliver physician prescribed medication to the bronchial lung passages. With proper care and use, it will provide you with many years of reliable treatment.

We encourage you to thoroughly read this guidebook to learn about the features of this product. Any use of this product other than its intended purpose should always be avoided.

1.1 Intended purpose

a) Intended purpose
It is intended for use in the treatment of asthma, COPD and other respiratory ailments in which an aerosolized medication is required during therapy. The device is for pediatric and adult population, and it should be used under the supervision of a licensed physician and/or a respiratory therapist.

b) Medical condition
- The device should be used under the supervision of a licensed physician and/or a respiratory therapist.
- Child/Adult patient with mild or moderate or severe asthma and COPD, as well as other respiratory infections or diseases, may use the device for drug nebulization.

1.2 Applicable models

As the Piston Compressor Nebulizers, the following models:
JLN-2304AS, JLN-2300AS, JLN-2300BS, JLN-2301AS, JLN-2301HD, JLN-2302AS, JLN-2300Air, JLN-2304HD, JLN-2305BS, JLN-2305BS-B, JLN-2305HD, JLN-2306AS, JLN-2306HD, JLN-2307AS, JLN-2307HD, JLN-2308AS, JLN-2309AS, JLN-2310AS, JLN-2311HD, JLN-2312AS, JLN-2313AS, JLN-2315AS, JLN-2316AS, JLN-2317AS, JLN-2318AS, JLN-2319AS, JLN-2320AS, JLN-2321AS, JLN-2322AS, JLN-2323AS, JLN-2304AS (MQ5800), JLN-2325AS (MQ5900)
All the models above have the same intended purpose, basic technique principle and technical specification, just different in shape, size and color, so they can share the user manual of Model JLN-2305AS.

2. PRODUCT IDENTIFICATION

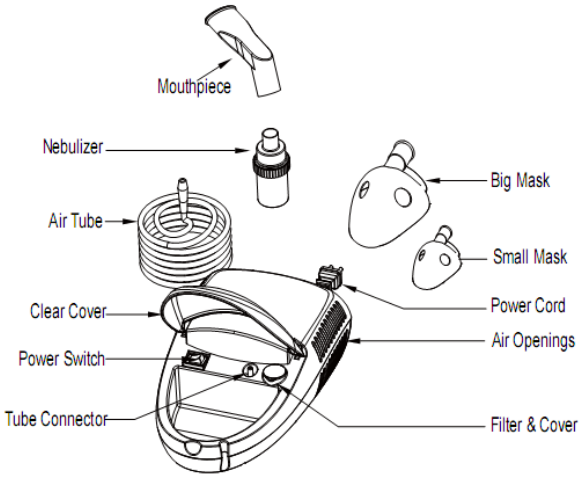
Your Piston Compressor Nebulizer comes with the following components:

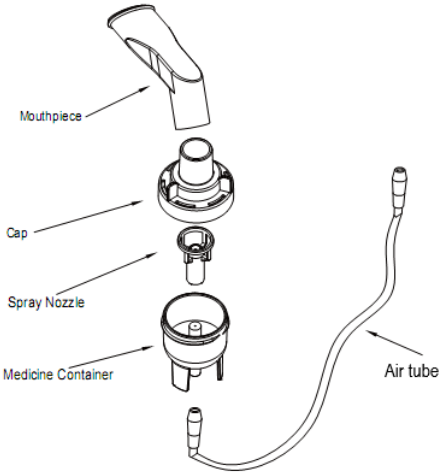
a) Main Unit and parts
- Compressor;
- User Manual
- Air Filters

- Power cord

b) Accessories

- Nebulizer
- Air tube
- Mouthpiece
- Big/Adult Mask and/or Small/Child Mask





3. IMPORTANT SAFEGUARDS

Note: Please read this instruction manual thoroughly before using the product. The following basic precautions are needed when using an electrical product:
Caution: Failure to read and observe all precautions could result in personal injury or equipment damage.

3.1 Product cautions:

a) Contraindication and side-effect

For the portable piston compressor and its accessory kits, there is not contraindication and side-effects.
However, check in the medicine package leaflet for any contraindications for use with common aerosol therapy systems; or ask your physicians for the information about it.

b) To avoid electrical shock:

- Do not connect the power cord terminal by using wire or other metallic conductors.
- Do not use the compressor (main unit) or power cord while they are wet.
- Keep the unit away from water.
- Do not use or store the device in humid locations, such as a bathroom. Use the device within the operating temperature and humidity.
- Use only the power cord provided by Homed for this device. Use of any other power cord may damage the device.

- Do not immerse the power cord or the unit in liquid.
- Do not use while bathing.
- Do not reach for a unit that has fallen into water - immediately unplug the unit.
- Do not overload power outlets. Plug the power cord into the appropriate voltage outlet.

c) Never operate the unit if it has any damaged parts (including power cord), if it has been dropped or submersed in water. Promptly send it to a service center for examination and repair.
d) The unit should not be used where flammable gas, oxygen or aerosol spray products are being used.
e) Disconnect the unit from the electrical outlet before cleaning, filling and after each use.

3.2 Operating Cautions:

a) Connect this product to an appropriate voltage outlet for your model.
b) Never operate it if this unit has a damaged cord or plug, if it has been dropped, or in any way, into water, if it does not work properly. Return it to a service center for repair.
c) If any abnormality occurs, discontinue use immediately until the unit has been examined and repaired.
d) If you feel anything unusual during use, stop using the device immediately and consult your physician.
e) Do not cover the compressor with a blanket, towel, or any other type of cover during use. This could result in the compressor overheating or malfunctioning.
f) Always unplug the product immediately after use.
g) Never block the air openings of the main unit or place it where the air openings may be obstructed.
h) The compressor is not waterproof. If liquid spills on these parts, immediately unplug the power cord and wipe off the liquid with gauze or other soft absorbent material.
i) Do not use a cellular phone near the device. It may result in an operational failure.
j) Do not use extension cords. Plug the power cord directly into the electrical outlet.
k) For type, dose, and regime of medication follow the instructions of your licensed physician and/or respiratory therapist.
l) Do not add more than 8ml of medication to the medication cup.
m) Do not use the device if the air tube is bent.
n) Clean and disinfect the nebulizer, air tube, mouthpiece or masks before using them for the first time after purchase.
o) Provide close supervision when this device is used by, on, or near infants, children or disabled individuals.
p) Make sure the air filter is clean. If the air filter has changed color or has been

used on average for more than 30 days, replace it with a new one.

q) Make sure the air tube is correctly connected to the compressor and the nebulizer. Air may leak from the air tube during use if not securely connected.
r) Use only Homed authorized parts and accessories. Parts and accessories not approved for use with the device do not perform the expected specification or it may damage the unit.
s) To avoid the medication residue on the face. After nebulization, be sure to wipe the face after removing the optional masks.
t) Do not use the device where the device may be exposed to flammable gas or vapors.
u) Using a solution, suspension, or emulsion different from that recommended by the manufacturer, in particular, a suspension and/or high-viscosity solution, can alter the particle size distribution curve, the mass median aerodynamic diameter (MMAD), aerosol output, and/or aerosol output rate, which can then be different from those disclosed by the manufacturer.
v) The nebulizer and other accessories are designed for single-patient reuse, do not reuse them among different people to avoid cross-contamination.
w) The nebulizing system is not suitable for use in an aesthetic breathing system or a ventilator breathing system.

3.3 Storage Cautions:

a) Do not store the unit under direct sunlight, high temperature or humidity. Store the device within the storage temperature and humidity.
b) Keep the unit out of reach of small children.
c) Always keep the unit unplugged while not in use.
d) Store the device and the components in a clean and safe place.
e) Do not wrap the power cord around the compressor (main unit).

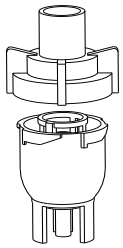
3.4 Cleaning Cautions:

a) Do not immerse the unit in water. It may damage the unit.
b) Disconnect the unit from the electrical outlet before cleaning.
c) Clean all necessary parts after each use as instructed in this guidebook.

4. OPERATING YOUR COMPRESSOR NEBULIZER

Note: Prior to initial operation, the nebulizer should be thoroughly cleaned referring to the “Cleaning Procedures” in the manual.

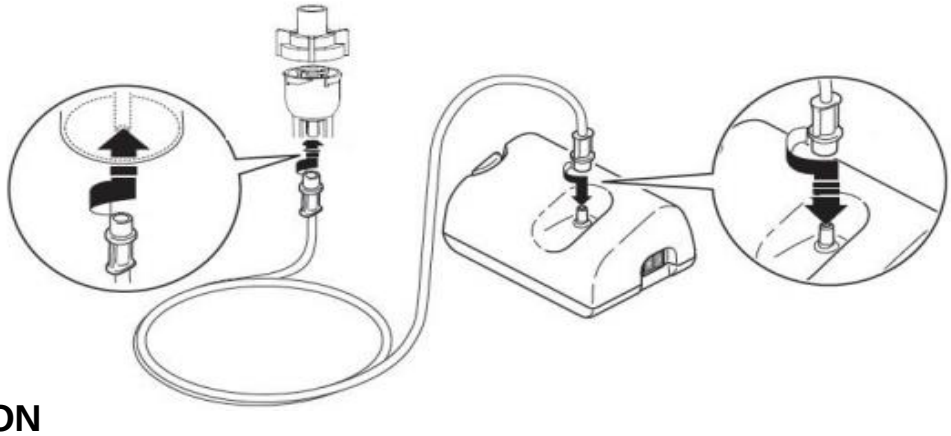
a) Place your Piston Compressor Nebulizer on a flat and stable surface. Be sure that you can easily reach the controls when you are seated.
b) Open the clear cover and remove the inside accessories.
c) Gently twist the top part of the nebulizer counter-clockwise to disassemble the nebulizer.
d) Fill the bottom section of the nebulizer with the medication prescribed by your



Place cone inside and fill medication

physician. Be sure that the cone is put inside the bottom section.

e) Gently twist the top part clockwise to re-assemble the nebulizer. Be sure the two sections fit well.
f) Attach one end of air tube to the base of the nebulizer.
g) Attach the other end of air tube to the air tube connector located on the front of the compressor.



CAUTION

• Make sure the nebulizer is correctly assembled, the air filter is properly installed, and the air tube is correctly connected to the compressor and the nebulizer . Air may leak from the air tube during use if not securely connected.

• Do not use the device if the air tube is bent.

h) Attach mouthpiece or mask per your choice to the top section of nebulizer.
i) Plug the power cord into an appropriate electrical outlet. Make sure at this stage, the power switch is at “OFF” status.
j) Press power switch to begin your prescribed treatment.

Important:

The compressor motor has a thermal protector which will shut off the unit before the unit is overheated. When the thermal protector shuts the unit off, please:

a) Switch off the unit.
b) Unplug the unit from the electrical outlet.
c) Wait 30 minutes for the motor to cool down before another treatment. Make sure the air openings are not obstructed.

k) When treatment is finished, shut off the unit and unplug it from the electrical outlet.

5. CLEANING and Disinfection

5.1 Main unit

5.1.1 Cleaning the compressor

a) Remove the air tube from the compressor.
b) Clean the casing of the main unit by using a soft cloth moistened with water or a mild detergent.
c) Do not use abrasive cleaners.
d) Dry the casing immediately by using a soft, dry and clean cloth.

5.1.2 Changing the Air Filter

a) Do not use cotton or any other materials. Do not wash or clean the filter. Use only filters supplied by HOMED. And do not operate without a filter.
b) Change the filter every 30 days or when the filter turns gray.
c) Before inserting the new air filter make sure the air filter is clean and free of dust. Do not operate the device without the air filter. Use only the Omron air filter designed for this device.
d) Changing procedure:
    i) Pull the air filter cover to remove from the back side of the compressor.
    ii) Remove the dirty air filter.
    iii) Replace the used filter with a new one.
    iv) Put the air filter cover back on the compressor.

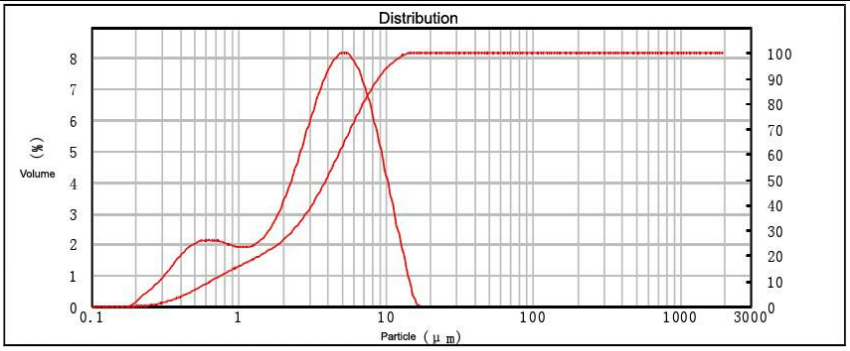
5.2 Accessories

Please follow the cleaning and disinfection instructions of the Accessories (including mouthpiece, mask, air tube, and nebulizer etc.) if they are reusable; It is suggested that the accessories are disinfected after each treatment of the day.
If the accessories are disposable, please handle them by following the local regulations of medical waste after use.

6 Particle distribution diagram

6.1 Particle distribution diagram

The following table is particle distribution diagram, the test particles are respective NaCl.



Particle distribution diagram of NaCl

6.2 Particulate distribution data

Testing solution: Albuterol 0.1% (M/V) concentration in 0.9 % sodium chloride solution.
Testing volumes: 8ml (capacity of the nebulizer)

Item		Face mask	Mouthpiece
Percentage of particulate distribution (%)	>5 μm	2.93%	3.80%
	>2 μm and <5 μm	74.80%	79.80%
	<2 μm	22.27%	19.73%
	<1 μm	3.36%	2.83%
MMAD		2.88μm	2.98μm
GSD		1.53	1.46
Respirable fraction (>0.5 μm and <5 μm) (%)		96.57%	95.80%
Aerosol output		58.23%	59.68%
Aerosol output rate		≥0.2ml/min	≥0.2ml/min
Percentage of fill volume emitted (8ml)		>70.25%	>70.25%
Residual volume		<0.94ml	<0.94ml

Note: Nebulizer performance is based upon testing that utilizes adult ventilatory patterns and are likely to be different from those stated for paediatric populations.

7. EMC information

The device needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided, and the device can be affected by portable and mobile RF communications equipment.

EMC Warning:

1) The portable (ultrasonic) nebulizer is intended to be used in the hospital and family setting except for near active HF SURGICAL EQUIPMENT and the RF shielded room of an ME SYSTEM for magnetic resonance imaging, where the intensity of EM DISTURBANCES is high.

2) Do not use a mobile phone or other devices that emit electromagnetic fields near the unit. This may result in incorrect operation of the unit.

3) Caution: This unit has been thoroughly tested and inspected to assure proper performance and operation.

4) Caution: Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this device and the other equipment should be observed to verify that they are operating normally.

5) Use of accessories other than those specified or provided by the manufacturer of this the nebulizer could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

6) Do not expose the device to RFID systems.

Essential performance of the mesh nebulizer:

Model Number	JLN-2305AS
Power on/off	Normally turn on and turn off
Flow	≧8L/min

Guidance and manufacturer's declaration – electromagnetic emissions The JLN-2305AS is intended for use in the electromagnetic environment specified below. The customer or the user of the JLN-2305AS should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions CISPR 11	Group 1	The JLN-2305AS uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The JLN-2305AS is suitable for use in all establishments including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Complies	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity The JLN-2305AS is intended for use in the electromagnetic environment specified below. The customer or the user of the JLN-2305AS should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment – guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8V Contact ±15 kV Air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %. If ESD interfere with the operation of equipment, counter measurements

			such as wrist strap, grounding shall be considered.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for Power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1kV differential mode ±2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% UT; 0.5 cycle at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, 0% UT; 1 cycle 0 degree 70% UT (30% dip in UT) for 25 cycle single phase at 0 degree 0% UT; 250 cycle	0% UT; 0.5 cycle at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, 0% UT; 1 cycle 0 degree 70% UT (30% dip in UT) for 25 cycle single phase at 0 degree 0% UT; 250 cycle	Mains power quality should be that of a typical commercial or hospital environment. If the user of the JLN-2305AS requires continued operation during power mains interruptions, it is recommended that the JLN-2305AS be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m 50Hz/60Hz	30 A/m 50Hz/60Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Guidance and manufacturer's declaration – electromagnetic immunity –for EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING

Guidance and manufacturer's declaration – electromagnetic immunity The JLN-2305AS is intended for use in the electromagnetic environment specified below. The customer or the user of the JLN-2305AS should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment – guidance**
Conducted RF IEC 61000-4-6	3 VRMS 150kHz to 80MHz 6Vrms in ISM bands between 150kHz to 80MHz 80%AM at 1kHz	3V	Portable and mobile RF communications equipment should be used no closer to any part of the JLN-2305AS, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2\sqrt{p}$ $d = 1.2\sqrt{p}$ 80 MHz to 800 MHz $d = 2.3\sqrt{p}$ 800 MHz to 2,7 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of
Radiated RF IEC 61000-4-3	10 V/m 80MHz to 2.7GHz 80%AM at 1kHz	10 V/m	

			equipment marked with the following symbol: 

Recommended separation distances between portable and mobile RF communications equipment and the EQUIPMENT or SYSTEM –For EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING

Recommended separation distances between Portable and mobile RF communications equipment and the JLN-2305AS			
The JLN-2305AS is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the JLN-2305AS can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the JLN-2305AS as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2\sqrt{p}$	80 MHz to 800 MHz $d = 1.2\sqrt{p}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{p}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

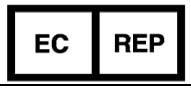
8. SPECIFICATIONS

Power supply	AC 230V 50 Hz
Rated power	≤ 65W
Flow	≥ 8L/min
Medication Capacity	2-8ml
Particle Size	0.5-6 μM
Sound Level (noise)	≤ 70dB
Working pressure-nebulizer	50-150 kPa
Water protection	IPX0
Working Environment	10℃-40℃; 15%-90%RH; 700 hPa -1060hPa

Storage & transport environment	-25℃-55℃; 10%-95%RH (non-condensing); 500 hPa -1060hPa
Standard requirements	Comply with EN 60601-1-2, EN60601-1 and EN60601-1-11

Weight and Size			
Model	Weight / Size	Model	Weight / Size
JLN-2305AS	1.6kg / 168mm*144mm*118mm	JLN-2305BS-B	1.6kg / 280mm*170mm*102mm
JLN-2307AS	1.6kg / 168mm*144mm*118mm	JLN-2300AS	1.6kg / 222mm*173mm*100mm
JLN-2304AS	1.6g / 168mm*144mm*118mm	JLN-2308AS	1.55kg / 205mm*155mm*113mm
JLN-2306AS	1.6kg / 168mm*144mm*118mm	JLN-2305HD	1.9kg / 290mm*210mm*100mm
JLN-2304HD	1.68kg / 265mm*135mm*185mm	JLN-2309AS	1.29kg / 163mm*140mm*95mm
JLN-2311HD	2.0kg /265mm*158mm*118mm	JLN-2310AS	1.65kg / 262mm*135m*185mm
JLN-2312AS	1.3kg / 160mm*117mm*200mm	JLN-2315AS	1.5kg / 182mm*175mm*140mm
JLN-2313AS	1.4kg / 190mm*150mm*108mm	JLN-2316AS	2.11kg / 208mm*208mm*152mm
JLN-2302AS	1.3kg / 206mm*115mm*170mm	JLN-2317AS	1.42kg / 210mm*140mm*95mm
JLN-2304AS (MQ5800)	1.42kg / 210mm*140mm*95mm	JLN-2318AS	1.4kg / 160mm*136mm*80mm
JLN-2300BS	1.1kg /180mm*150mm*97mm	JLN-2319AS	1.25kg / 146mm*102mm*152mm
JLN-2301HD	1.35kg / 212mm*153mm*104mm	JLN-2320AS	1.4kg / 200mm*163mm*97mm
JLN-2300Air	1.1kg /172mm*175mm*75mm	JLN-2321AS	1.27kg / 215mm*183mm*114mm
JLN-2306HD	2.2kg /300mm*190mm*95mm	JLN-2322AS	1.33kg / 194mm*149mm*96mm
JLN-2323AS	1.4kg / 160mm*136mm*80mm	JLN-2307HD	1.6kg / 168mm*144mm*118mmm
JLN-2325AS (MQ5900)	1.4kg / 160mm*136mm*80mm	JLN-2305BS	2.1kg / 290mm*210mm*100mm
JLN-2301AS	1.35kg / 212mm*153mm*104mm		

9. Symbols

Symbol	Explanation
	Manufacturer
	Authorised representative in the European Community
	Lot Number
	Serial Number
	Date of Manufacturing

	Caution
	Electronic instruments must be disposed of in accordance with the locally applicable regulations, not with domestic waste.
CE 2862	Intertek Medical Notified Body AB
	Refer to instruction manual/ booklet
	Class II device
	Type BF applied parts
MD	Medical device

Degree of safety in the presence of flammable anesthetics or oxygen
-No AP/APG(Not suitable for use in the presence of flammable anesthetice or oxygen)

Notice to User and/or patient:

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

Address: 3rd Floor, Block 1, Longquan Industrial Zone, Huarong Road, Dalang Street, Longhua New District, Shenzhen 518109, People's Republic of China

TeL: 0755-29821671/29821673/29821675 Fax: 0755-29821673
Website: www.homedgroup.com

EC REP Shanghai International Holding Corp. GmbH (Europe) Eiffestrasse 80, 20537 Hamburg, Germany

Tel: +49-40-2513175