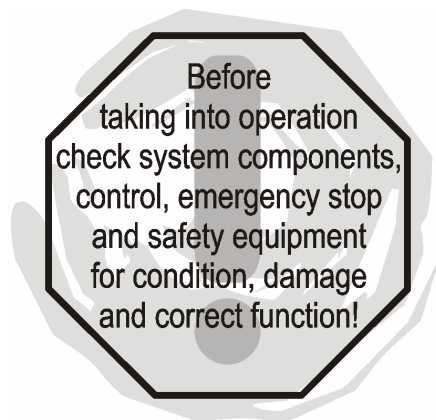


## Instructions for Use

### AEROPLUS S



Read the instructions for use  
before working with the unit



© Kröber Medizintechnik GmbH  
Salzheck 4  
D-56332 Dieblich

Phone: +49 (0) 2607 9404 0  
Fax: +49 (0) 2607 9404 22

E-Mail: [info@kroeber.de](mailto:info@kroeber.de)  
Internet: [www.kroeber.de](http://www.kroeber.de)

Revision 2

<b>1 Preliminary statement .....</b>	<b>5</b>
<b>2 General .....</b>	<b>6</b>
2.1 Information in these instructions for use.....	6
2.2 Type plate.....	6
2.3 Liability and warranty .....	6
2.4 Explanation of symbols .....	7
2.5 Copyright protection.....	7
2.6 Return and waste disposal.....	8
2.7 Customer service.....	8
<b>3 Safety.....</b>	<b>9</b>
3.1 General.....	9
3.2 Customer's responsibility .....	9
3.3 Intended use.....	10
3.4 Dangers which may arise from the unit .....	10
<b>4 Design and Function .....</b>	<b>13</b>
4.1 General description.....	13
4.2 System shipping contents .....	13
<b>5 Technical Specifications .....</b>	<b>15</b>
<b>6 Transport, packaging and storage .....</b>	<b>16</b>
6.1 Transport inspection .....	16
6.2 Storage.....	16
<b>7 Taking into service .....</b>	<b>17</b>
7.1 Before assembling.....	17
7.2 Assembly.....	17
7.2.1 Inserting and changing the batteries.....	17
7.2.2 Connecting the unit.....	18
7.2.3 Detaching connections .....	19
<b>8 Operation.....</b>	<b>20</b>
8.1 Taking into service.....	20
8.2 Functional test .....	21
8.3 Setting the oxygen volume.....	22
8.4 Alarms .....	23

8.4.1 Alarm priorities.....	23
8.4.2 Alarm categories.....	24
8.4.3 Alarm muting .....	26
8.5 Switching off .....	26
<b>9 Maintenance .....</b>	<b>27</b>
9.1 Safety .....	27
9.2 General notes .....	27
9.2.1 Cleaning .....	27
9.2.2 Disinfecting .....	27
9.3 Maintenance plan .....	28
9.4 Maintenance work.....	30
<b>10 Troubleshooting.....</b>	<b>32</b>
<b>11 Accessories and replacement parts .....</b>	<b>33</b>
11.1 Replacement parts.....	33
11.2 Accessories .....	33
11.3 Symbols used .....	34
<b>12 Index .....</b>	<b>36</b>

## **1 Preliminary statement**

Your doctor has found that you require an additional oxygen supply. With the **AEROPLUS S** you received a German brand product for portable oxygen therapy, which has been developed on the basis of the latest knowledge in both medical engineering and electronics. Permanent quality inspections ensure uniform quality on the highest level

The **AEROPLUS S** is a highly reliable oxygen conserving system , intended for use in homes or at home, as well as for clinical applications.

However, should problems arise with the AEROPLUS S, you may contact your dealer at any time.

This medical care product from Kröber Medizintechnik GmbH is labelled with the CE-mark according to MDD (Medical Device Directive ).

**Only use the AEROPLUS S after a medical indication and only in compliance with the doctor's orders by following these instructions for use.**

**If side effects or extreme health restrictions occur during the therapy, you should immediately consult your doctor.**

## **2 General**

### **2.1 Information in these instructions for use**

These instructions for use describe the installation, operation and maintenance of the unit. Strict compliance with the stated notes on safety and instructions for use is a prerequisite for safe and proper work with the unit.

Moreover, compliance with the accident prevention instructions valid at the location of use and the general safety regulations is mandatory.

This instruction manual is part of the product and should be kept near the unit so that it is at any time available for personnel involved in installation, operation, maintenance and cleaning.

The graphic illustrations in this manual may perhaps differ slightly from the actual design of the unit.

### **2.2 Type plate**

The type plate of the AEROPLUS S is attached to the back of the unit above the battery compartment.

### **2.3 Liability and warranty**

All details and notes for the operation, maintenance and cleaning of the unit are made to the best of our knowledge taking into consideration our experience and knowledge gained up to now.

We reserve the right to make technical changes to the machine dealt with in these instructions for use within the context of ongoing development.

Translations are also carried out to the best of knowledge. We do not accept any liability for errors in translation. The German version of the instructions for use, which is also delivered with the unit, is the definitive version.

Texts and illustrations do not necessarily correspond to the scope of delivery. The drawings and graphics are not to scale 1:1.

Read instructions for use carefully before starting operation of the unit!

The manufacturer will not assume liability for damage or disruptions that occur as a result of non-compliance with the instructions for use.

Handing over these instructions for use to third parties is not permitted and results in the obligation for compensation.

## 2.4 Explanation of symbols

Important safety and equipment related notes in these instructions for use are highlighted by symbols. These notes must be strictly adhered to in order to avoid accidents, personal injuries and damage to property.



### **WARNING!**

**This symbol warns of dangers that can lead to adverse effects on health, injuries, permanent physical damage or to death.**

**Strictly comply with all notes regarding work safety, and be particularly careful in these situations.**



### **WARNING! Danger of electric current!**

**This symbol draws attention to dangerous situations involving electrical currents. There is a danger of serious injury or death if the safety notes are not complied with. The related work may only be carried out by qualified electricians.**



### **ATTENTION!**

**Information highlighted with this symbol must be strictly complied with in order to avoid damage to the machine, malfunction and/or breakdown.**



### **NOTE!**

*This symbol highlights hints and information to be observed for efficient and non-disrupted operation of the unit.*

## 2.5 Copyright protection

These instructions for use are to be treated confidentially. They should only be used by persons who have been authorized accordingly. It may only be passed on to third parties with the written consent of the manufacturer.

All documents are protected by copyright protection law.

It is not permissible to pass on or reproduce the documents, either as a whole or excerpts thereof, to evaluate or communicate their content, unless explicitly entitled to do so. Any violations are liable to prosecution and require compensation.

We reserve the right to exercise industrial property rights.

## 2.6 Return and waste disposal

- If the unit has been delivered through a parcel service and not directly by a dealer you should keep the packaging material for possible service instances.
- If there is no corresponding agreement regarding the return of packing material, then the packing material remains with the customer. He is responsible for environmental waste disposal in accordance with the applicable waste disposal legislation.
- After use the unit may be returned to the dealer, who is then responsible for proper disposal of the unit.
- Non-infectious used accessories (e.g. nasal cannula) can be disposed off as domestic waste
- Infectious accessories (e.g. nasal cannula of an infected user) must be disposed of through a specially approved waste disposal company. Addresses are available from your local municipality.

## 2.7 Customer service

You can contact Kröber Medizintechnik GmbH as follows:

<b>Office hours:</b>	Mo-Thu from 7.30 a.m. - 4.00 p.m. and Fr. from 7.30 a.m. - 2.00 p.m.
<b>Address:</b>	Kröber Medizintechnik GmbH Salzheck 4 D-56332 Dieblich
<b>Phone:</b>	02607-94040
<b>Fax:</b>	02607-940422
<b>Internet:</b>	<a href="http://www.kroeber.de">www.kroeber.de</a>
<b>eMail:</b>	<a href="mailto:info@kroeber.de">info@kroeber.de</a>



## **3 Safety**

This section provides an overview over all important safety aspects for safe and trouble-free operation of the unit.

The individual chapters additionally contain actual safety notes highlighted with symbols, which will help to avoid immediate dangers.

### **3.1 General**

This device is built according to the currently applicable rules of technology and is safe to operate.

However, dangers may still arise from the unit if it is incorrectly operated or used for purposes it is not intended for.

Any persons using this unit must have read and understood these instructions before starting operation. This also applies if the person in question has already worked with just such a unit or similar equipment or was trained by the manufacturer.

Knowing the content of these instructions for use is a prerequisite for the avoidance of mistakes and for safe and trouble-free operation of the unit.

Neither changes nor conversions may be carried out on the equipment, which have not been explicitly authorized by the manufacturer, to avoid dangers and to ensure optimal performance.

All safety decals and operating signs on the unit must be kept well legible at all times. Damaged or illegible decals must be replaced immediately.

### **3.2 Customer's responsibility**

These instructions for use must be kept near the unit, so that it is available for the user at any time.

Apart from the notes on safety mentioned in this manual, all generally valid safety and accident prevention instructions must also be observed and adhered to.

The machine may only be operated in a technically perfect condition and if operationally safe.

The information contained in the instruction manual is complete and must be adhered to without limitation.

### 3.3 Intended use

The operational safety of the unit is only assured when used for the purpose it is intended for, as specified in the instructions for use.

The **AEROPLUS S** is only intended to be used for continuous portable oxygen therapy. The unit may thereby be used in hospitals, homes or at home.

The unit must only be used according to the medical indication and only in accordance with the doctor's prescription by following these instructions for use

The intended use also includes the compliance with the assembly instructions, as well as the notes on cleaning and maintenance of the unit.

**Any other use of the unit beyond these limits is prohibited and is not considered as unintended use! Claims of any kind against the manufacturer and/or his authorized representatives resulting from damage caused by unintended use of the unit are excluded. The customer is solely liable for any damage resulting from unintended use.**

### 3.4 Dangers which may arise from the unit

The unit was subjected to a risk analysis. The resultant construction and design of the unit corresponds to the current status of technology.

However, there is still a remaining risk!

The unit requires responsibly minded and cautious operation. Improper operation or operation by unauthorized persons can endanger persons.



#### **WARNING! Risk of health damage!**

**If an absolutely safe oxygen supply is required, it is strictly necessary to have a second, independent oxygen source available as replacement (e.g. an oxygen concentrator or an additional oxygen cylinder).**

**If the patient or the operator notices at any time that the available amount of oxygen is not sufficient, you should immediately contact your dealer and/or doctor.**



#### **WARNING! Risk of health damage!**

**Particular supervision is required if the unit is to be used in the vicinity of children or bedfast persons. The unit must under no circumstances be used with children without additional supervision!**

**WARNING! Danger of side effects!**

If side effects or extreme health restrictions occur during the therapy, you should immediately consult your doctor.

**WARNING! Fire hazard caused by oxygen!**

Oxygen is vital, but in concentrators with only a few percentage points above the normal oxygen content in the air it is a highly dangerous fire accelerant. There are only a few materials which will not burn off like an explosion under a raised concentration of oxygen.

Therefore:

**Oxygen may only be handled by trained or specially instructed persons!**

- The misuse of oxygen, e.g. to cool down or improve the ambient air, to cool down and dust or blow off of persons, clothes, furniture etc. is dangerous and therefore prohibited!
- Smoking and handling ignition sources and open flames is prohibited when working with oxygen!
- Keep a minimum distance of 2 meters from all spark generating equipment and open fire!
- After having stayed in a possible oxygen saturated atmosphere you should thoroughly aerate your cloths, because oxygen adheres to the clothes very well! An ignition source, e.g. a burning cigarette, could easily cause burning of your clothes.
- Materials that do not burn in air may burn very vigorously and even spontaneously in oxygen or oxygen enriched air. This already applies for an enrichment of only a few percent!
- Oil and grease (even creams and gels) can react in an explosion like manner when coming in contact with oxygen. It is therefore mandatory to keep the unit free of oil and grease!
- Oxygen considerably increases the temperature of a flame and the speed of combustion!
- Protect oxygen cylinders from tumbling!
- When changing oxygen cylinders, fasten all threads only hand-tight. Never use tools!
- Open the oxygen valve slowly!
- Never use a suspect or defect oxygen pressure regulator. Contact your medical service provider!
- Also observe any instructions given in the instructions for use of the pressure regulator!

**WARNING! Danger of electric current!**

Electric energies can cause severe injury. Damaged insulation or components cause a danger to life.

Therefore:

- Work on the equipment must only be performed by trained professionals.
- Pull the mains plug out before starting work on the unit!
- Check mains leads of the plug-in power supply for damage before every use.

**ATTENTION! Observe high frequency safety!**

Medical equipment can be influenced by (mobile) HF communication equipment (e.g. mobile phones).

Do not use mobile radio equipment in the immediate vicinity of the **AEROPLUS S**.

**ATTENTION! Observe electromagnetic compatibility!**

Electrical medical equipment is subjected to stringent protective measures concerning electromagnetic compatibility (EMC) and must be installed and operated in accordance with the EMC information contained in the accompanying documents. The following should be noted in particular:

- Floors should be made of wood or concrete or should be covered with ceramic tiles. If the floor is covered with a synthetic material, the relative humidity must be at least 30%.
- During operation the unit must therefore not be exposed to extremely strong magnetic fields.
- Magnetic fields at mains frequency must comply with the typical values found in business or hospital environments.

**ATTENTION! Observe environmental conditions!**

Protect the unit from intensive sunlight and also from low temperatures!


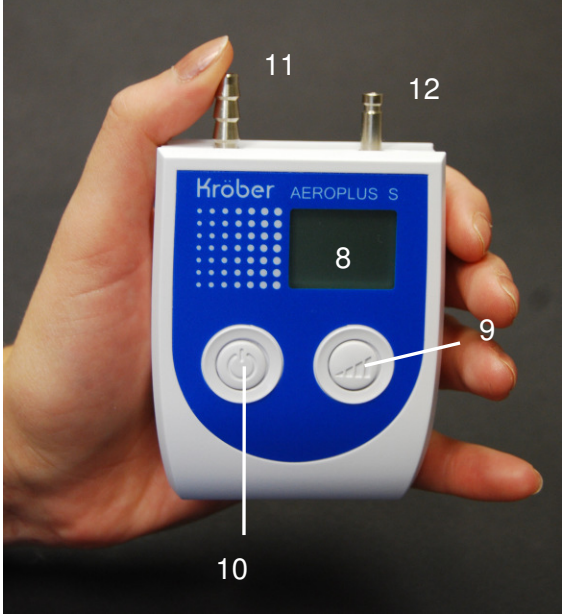
The oxygen conserving system **AEROPLUS S** is a sensitive electronic device to be treated and transported with adequate carefulness!

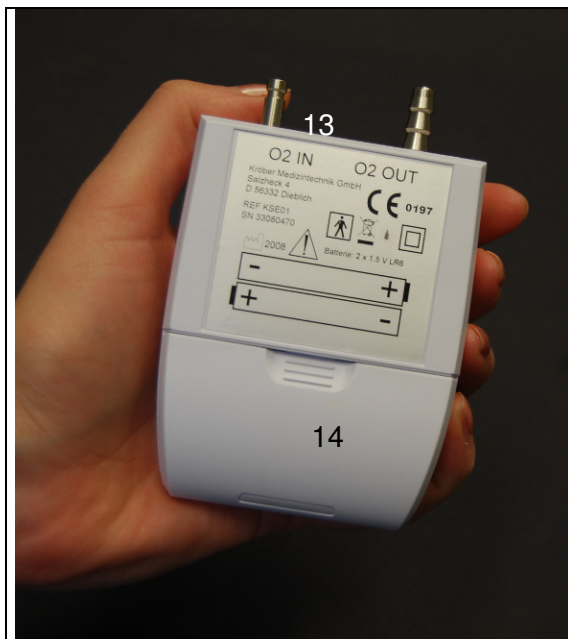
## 4 Design and Function

### 4.1 General description

The **AEROPLUS S** oxygen conserving system for has been optimized for the portable oxygen supply. Electronically controlled, it detects the inspiration of the patient via the nasal cannula and delivers pure oxygen during the early inspiration cycle. After delivery of the pre-set volume, the flow of oxygen is stopped – a savings effect in comparison with continuous flow. Since only oxygen delivered very early in the inspiration cycle contributes to the gas exchange in the lungs (the rest remains in the dead space and is therefore lost), the same therapeutic effect may be achieved.

### 4.2 System shipping contents

	<ul style="list-style-type: none"> <li>1 Electronic conserver AEROPLUS S</li> <li>2 Spiral tubing</li> <li>3 Carrying case for oxygen cylinder</li> <li>4 Carrying case</li> <li>5 Instructions for Use</li> <li>6 Nasal cannula</li> <li>7 Set of 2 batteries</li> </ul>
	<ul style="list-style-type: none"> <li>8 LC display</li> <li>9 Program Button</li> <li>10 On-Off-Button</li> <li>11 Oxygen outlet</li> <li>12 Oxygen inlet</li> </ul>



**13** Type plate

**14** Battery compartment

## 5 Technical Specifications

Model	AEROPLUS S
Classification acc. to MDD	IIb (in connection with medical high pressure oxygen regulator)
Temperature range (without batteries)	Operation: -10 to +40 °C Storage: -40 to +70 °C
Humidity (Operation and Storage)	10 to 95% rel. humidity (non condensing)
Barometric pressure (Operation and Storage)	700 to 1060 hPa
Batteries:	2 x 1.5V-Mignon, type LR6
Battery life time:	175 hours (@ program 4 and 20 breaths per minute)
DC input voltage:	5.0 Volt DC (option)
Trigger:	per breath
Trigger threshold:	< 10 Pa
Inlet pressure range:	0.15 MPa to 0.5 MPa
Inlet flow range::	6 lpm +/- 10%
Dimensions (HxWxD)	(86 x 68 x 29) mm
Weight (without batteries)	185 g
Alarms	Oxygen failure Inspiration failure Low battery capacity
Degree of protection	II
Type	BF
Pacemaker pulse suppression	not applicable (no electrically conductive patient connection)
Defibrillator protection	not applicable (no electrically conductive patient connection)

## 6 Transport, packaging and storage

The following should be noted when transporting the **AEROPLUS S**:

- The unit should only be shipped and transported in its original packaging.

### 6.1 Transport inspection

It is highly recommended to check the complete delivery for completeness and possible transport damage, immediately after receipt.

In case of externally detectable transport damage you should not accept the delivery, or only with reservation. Acknowledge the receipt only with reservation (e.g. on the freight document). Specify the expected damage and inform the manufacturer immediately.

Hidden damage should be claimed immediately after detection, because damage claims can only be lodged within the applicable claims periods.

The packaging material should be saved, it may be needed if the unit has to be returned.

### 6.2 Storage

If the package is to be stored before it is taken into service, please observe the following instructions:

- Store in a dry environment. Relative humidity: max. 60 %.
- It must be assured that the package is not stored outdoors.  
It must also be assured that the floor used for storage is dry over the entire storage period.
- Storage temperature -20 to +70 °C.
- Store in a dust-free environment.
- Avoid mechanical shocks and damages.



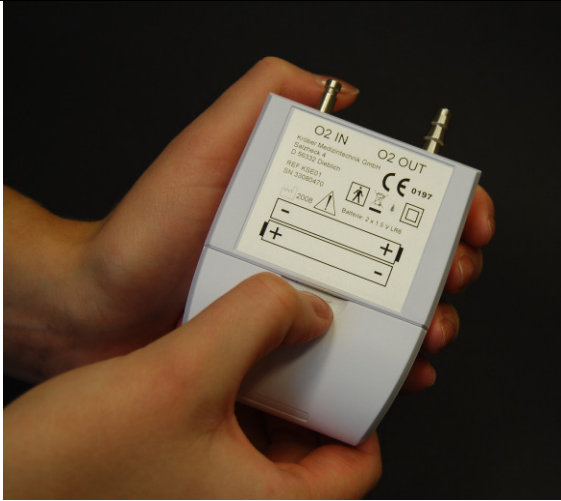

## 7 Taking into service

### 7.1 Before assembling

Check before assembling whether all components needed for correct operation are available.

### 7.2 Assembly

#### 7.2.1 Inserting and changing the batteries

	<p><b>1</b> Press down the battery cover lock. Gently push the battery compartment cover downwards and release the locking mechanism.</p>
	<p><b>2</b> Insert batteries. Note correct polarity.</p>
	<p><b>3</b> Insert and close the battery compartment cover.</p>



**WARNING! Danger caused by wrong battery type!**  
Use only the specified battery type! (AA, Mignon Alkali/Mangan, LR6)


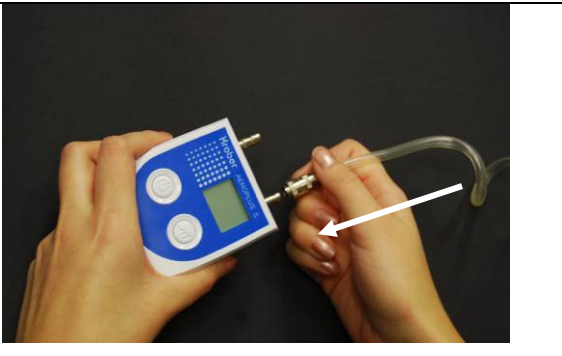

**Change batteries only by pairs!**

**Before changing the batteries, remove the mains power connection!**

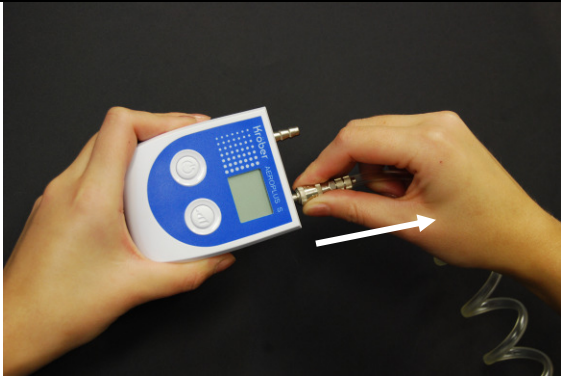
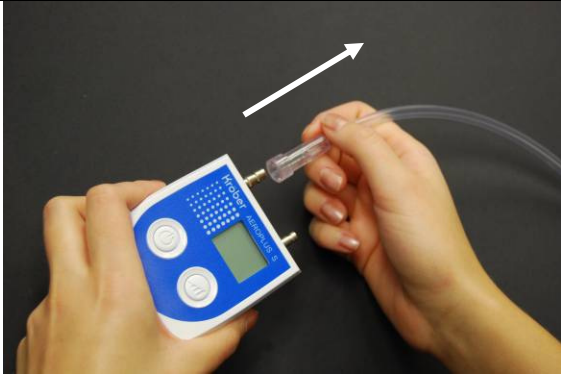
**For longer periods of storage (> 1 month) remove all batteries!**

**The unit contains batteries, which are not allowed to be discarded into the domestic refuse. Therefore, rather than throw the batteries into the domestic refuse, dispose of them instead at an appropriate collection site!**

## 7.2.2 Connecting the unit

	<p>1 Connect one side of the spiral oxygen supply tubing with the oxygen source.</p> <p><b>! WARNING!</b></p> <p>The usage of the <b>AEROPLUS S</b> is only specified for oxygen sources from 1.5 – 5.0 MPa outlet pressure and 6 lpm volume flow.</p> <p><b>NOTE!</b></p> <p>The <b>AEROPLUS S</b> may be used with gaseous and liquid oxygen as well.</p>
	<p>2 Connect the other side at the right oxygen inlet connector on the AEROPLUS S. The connector locks with an audible sound.</p> <p><b>NOTE!</b></p> <p>The connectors are non-interchangeable and may not be misconnected.</p>
	<p>3 Connect the oxygen nasal cannula with the left oxygen outlet nipple connector.</p>
	<p>4 Open the oxygen source slowly.</p>

### 7.2.3 Detaching connections

	1 Close the oxygen source.
	2 Switch off the AEROPLUS S.
	3 Detach the spiral oxygen tubing from the AEROPLUS S by pulling the knurled ring. The coupling will be released.
	4 Pull off the nasal cannula from the left oxygen nipple.

## 8 Operation



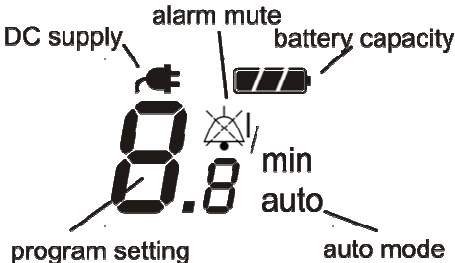



**WARNING! Health risk!**

Inappropriate use of the AEROPLUS S can lead to severe personal and/or material damage.

You should therefore only start up the unit in strict compliance with the instructions for use and the notes on safety.

### 8.1 Taking into service

	<p><b>1</b> Start the AEROPLUS S by pressing the On/Off-Button (1).</p> <ul style="list-style-type: none"> <li>– The <b>AEROPLUS S</b> runs a self test: <ul style="list-style-type: none"> <li>– All elements appear briefly on the LCD display a simultaneously.</li> <li>– An alarm sound is issued.</li> <li>– The unit goes through extensive internal hardware testing.</li> </ul> </li> <li>– The AEROPLUS S tests the valve: <ul style="list-style-type: none"> <li>– The valve opens.</li> <li>– The actual battery capacity is determined and displayed on the LC display.</li> <li>– The unit goes through extensive internal hardware testing.</li> </ul> </li> <li>– The unit is now operational.</li> </ul> <p> <b>NOTE!</b> <i>The unit starts with the last setting.</i></p>
	<ul style="list-style-type: none"> <li>– Information concerning the operating status of the unit can be found in the display.</li> </ul>

	<p><b>2 Put on your nasal cannula.</b> Insert both cannula openings into your nose. Place both feed hoses over your ears. Pull the sling with the sliding piece tight under your chin</p>
---	---



**WARNING! Risk of health damage!**

Only use nasal cannulas bearing the CE-mark. With non-certified products, damages of skin and/or airway might occur.

Nasal cannulas are NOT intended to be used on several patients – they are a single patient device!

Nasal cannulas must be shorter than 2.2 m in length. (e.g. AEROquip O2 nasal cannula, part# HSB 01-S, HUM; Hudson RCI, # 1110; Salter Labs, # 1600)



**WARNING! Risk of health damage!**

Do not smoke while operating the AEROPLUS S! Oxygen must NOT be used near open fire, sparks, glowing objects, etc.!

## 8.2 Functional test

Before using the AEROPLUS S, a functional test must be carried out to prove safety and performance of the system:

Test step	Expected result
1. Inspire with complete running system.	Trigger and delivery of oxygen.
2. Detach spiral oxygen tubing from AEROPLUS S; inhale.	Trigger, no delivery of oxygen; oxygen failure alarm.
3. Reconnect spiral oxygen tubing; inhale.	Trigger and delivery of oxygen, Oxygen failure alarm is cancelled.
4. Stop inspiration for 15 seconds.	Apnea alarm is triggered.
5. Inspire.	Trigger and release of oxygen bolus, apnea alarm is cancelled.

Should this functional test not bring the result expected, the respective test step should be repeated. If the expected result is not achieved after retrying, please contact your health care service provider.

### 8.3 Setting the oxygen volume



- 1 A short push on the right button increments the actual program by one step. If the maximum program is reached, the program jumps to the lowest possible setting with the next push.



**NOTE!**

*The high and low limits have been preset by the medical service provider. They cannot be changed by the patient!*

- 2 Oxygen delivery will be triggered with the next inspiration.

Program [l/min]	O2 [ml] (+/-10%)
0.5 l/min	4,4
1.0 l/min	8,8
1.5 l/min	13,1
2.0 l/min	17,5
2.5 l/min	21,9
3.0 l/min	26,3
3.5 l/min	30,6
4.0 l/min	35,0
4.5 l/min	39,4
5.0 l/min	43,8
5.5 l/min	48,1
6.0 l/min	52,5
6.5 l/min	56,9
7.0 l/min	61,3
7.5 l/min	65,6
8.0 l/min	70,0



**NOTE!**

*The oxygen conserving system may not detect all breathing efforts! This is particularly with shallow or mouth breathing the case!*

## 8.4 Alarms




**WARNING! Risk of health damage!**

If an alarm cannot be switched off by applying certain countermeasures, you should immediately change over to an alternative oxygen supply (e.g. oxygen cylinder). You should also immediately contact the customer service of the manufacturer.

### 8.4.1 Alarm priorities

We differentiate between three alarm priorities:

Alarm priority	Description
High priority:	 <b>WARNING! Risk of health damage!</b> <b>Immediate countermeasures required to save the patient from any harm.</b>
Medium priority:	Quick countermeasures by the user are required.
Low priority:	Utmost attention of the user is required.



**NOTE!**

*The alarm priorities can audibly be differentiated by different alarm sound sequences. With a higher priority the number of alarm signals per unit of time increases.*




### 8.4.2 Alarm categories








#### NOTE!

*Alarms can occur simultaneously! E.g., an apnea alarm might be replaced by an oxygen alarm.*

Alarm category / LC display	Description
<b>Oxygen alarm</b> 	<b>High priority</b> <p>A non-connected, not sufficiently filled oxygen source and / or an interrupted connection (spiral supply tubing) from the source to the AEROPLUS S will trigger an oxygen alarm.</p> <p><b>Countermeasures:</b></p> <ul style="list-style-type: none"> <li>– Check the contents of the oxygen source! If necessary, replace it with a new and filled oxygen source!</li> <li>– Check the routing of the spiral oxygen tubing. If kinked, straighten it.</li> </ul>



Alarm category / LC display	Description
<b>Apnea Alarm</b> 	<b>High priority</b> <p>If no breath is detected for 15 seconds, a visual and acoustic apnea alarm is triggered.</p> <p><b>Countermeasures:</b></p> <ul style="list-style-type: none"> <li>– Check routing and fit of the nasal cannula! If kinked or shifted, align it properly.</li> </ul> <p> <b>NOTE!</b></p> <p><i>If the alarm is not reset within 15 seconds, the solenoid will open for 10 seconds assuring an oxygen flow to the patient. It will subsequently close for 10 seconds and detect an inspiration. After a detected inspiration the alarm will be reset; after no detection the oxygen flow will be assured a.s.o.</i></p>
<b>Battery-weak alarm</b> 	<b>Medium priority</b> <p>The battery capacity is weak.</p> <p><b>Countermeasures:</b></p> <ul style="list-style-type: none"> <li>– Replace the batteries or connect it to the DC plug-in power pack!</li> </ul> <p> <b>NOTE!</b></p> <p><i>Should the device fail due to insufficient battery capacity while on the road, connect the nasal cannula directly to the oxygen source. This way your oxygen supply is ensured.</i></p>
<b>Battery depleted alarm</b>	<b>High priority</b> <p>The battery capacity is insufficient.</p> <p><b>Countermeasures:</b></p> <ul style="list-style-type: none"> <li>– Replace the batteries or connect it to the DC plug-in power pack!</li> </ul> <p> <b>NOTE!</b></p> <p><i>Should the device fail due to insufficient battery capacity while on the road, connect the nasal cannula directly to the oxygen source. This way your oxygen supply is ensured.</i></p>

### 8.4.3 Alarm muting

All acoustic alarms can be suppressed for 10 seconds by a short push of the left button. This period could be used to remedy the fault. A renewed push after another activation of the alarm will lead to another suppression period of 10 seconds. This procedure may be infinitely repeated.

### 8.5 Switching off



- 1 Press the On-/Off button for approx. 5 seconds.
- 2 The LCD displays all symbols for approx. 2 seconds.
- 3 Press the On-/Off button again.



**NOTE!**

*Close also all oxygen sources!*

## 9 Maintenance

### 9.1 Safety



**WARNING! Danger of electric current!**

**Before starting cleaning the unit must be switched off and disconnected from the mains supply.**

### 9.2 General notes

Cleanliness is a prerequisite for the success of an oxygen therapy at home. The specified cleaning intervals must therefore strictly adhered to!

#### 9.2.1 Cleaning

- The unit should be cleaned with a damp (not wet) cloth, so that not fluid can enter.
- You should only use commercial cleansing agents (e.g. washing-up liquid).
- Aggressive cleansers must not be used under any condition!

#### 9.2.2 Disinfecting

- Any commercial disinfectant can be used for disinfecting. An up-to-date list is available from the manufacturer.
- The information for use issued by the disinfectant manufacturer must be strictly complied with.


### 9.3 Maintenance plan

Maintenance and cleaning work must be performed at regular intervals as specified in the table below.



**WARNING! Danger by neglected maintenance!**


Observe also any necessary maintenance procedures outlined in the respective instructions for use of any combined accessory (e.g. oxygen pressure regulator).

Interval	Cleaning work
<b>daily</b> (in case of stationary or ambulant use)	<b>Nasal cannula</b> should be disposed of and replaced every day.
<b>daily</b> (when used in homes or for nursing care)	<b>Clean the nasal cannula.</b>
<b>every 14 days</b> <b>earlier if necessary</b>	The <b>AEROPLUS S</b> must be cleaned with a damp cloth and disinfected after.
<b>every 14 days</b> <b>earlier if necessary</b>	<b>Clean outside of spiral tubing.</b>
<b>every 4 weeks</b> (when used in homes or for nursing care)	<b>Replace the nasal cannula.</b>
<b>with changing patients</b>	The <b>AEROPLUS S</b> must be cleaned with a damp cloth and disinfected after.
<b>with changing patients</b>	<b>Clean outside of spiral tubing disinfect after.</b>
<b>with changing patients</b>	<b>Replace nasal cannula.</b>   <b>WARNING! Health risk!</b> <b>In order to avoid cross infection, each user of the AEROPLUS S should wear his/her own nasal cannula.</b>
<b>after infections</b>	After an infection a new <b>nasal cannula</b> should be used to prevent re-infection.

Interval	Cleaning work
after service work	The <b>AEROPLUS S</b> must be cleaned with a damp cloth and disinfected after.
after service work	<b>Nasal cannula</b> should be disposed of and replaced by a new one.

Interval	Inspection
annually	Safety inspection

## 9.4 Maintenance work

Maintenance work	Description
<b>Cleaning the nasal cannula</b>	<ol style="list-style-type: none"> <li>1 Disconnect the hose of the nasal cannula from the AEROPLUS S.</li> <li>2 Clean the outside of the nasal cannula.</li> <li>3 Clean the nasal prongs of the nasal cannula with a suitable disinfectant.</li> <li>4 Let the nasal cannula dry in air. The nasal cannula may only be used again for the therapy after it has properly dried.</li> </ol> <p> <b>NOTE!</b> <i>Never try to clean the nasal cannula. Moisture entering the inside of the AEROPLUS S might destroy or harm sensitive electronic components!</i></p>
<b>Cleaning the spiral tubing</b>	<ol style="list-style-type: none"> <li>1 Disconnect the hoses of the nasal cannula from the AEROPLUS S and from the oxygen source.</li> <li>2 Clean the outside of the nasal cannula.</li> <li>3 Let the nasal cannula dry in air. The nasal cannula may only be used again for the therapy after it has properly dried.</li> </ol>



## 10 Troubleshooting

Problem	Possible Cause	Remedy
Device cannot be switched on	<ul style="list-style-type: none"> <li>Batteries not inserted or wrong polarity</li> <li>Batteries discharged</li> <li>Device defective</li> </ul>	<ul style="list-style-type: none"> <li>Open battery slot and check polarity</li> <li>Insert new pair of batteries</li> <li>Contact customer service</li> </ul>
Device shows permanent cylinder alarm	<ul style="list-style-type: none"> <li>Spiral tube pinched or not connected</li> <li>Oxygen cylinder empty</li> <li>Cylinder valve not opened</li> <li>Device component defective</li> </ul>	<ul style="list-style-type: none"> <li>Check spiral supply tubing connector on pressure regulator and on AEROPLUS S</li> <li>Verify content of oxygen cylinder; if pressure is lower than 50 bar refill or change</li> <li>Check status of the cylinder valve</li> <li>Contact customer service</li> </ul>
Device shows permanent breathing alarm	<ul style="list-style-type: none"> <li>Nasal cannula pinched, slid-off or not connected</li> <li>Exclusive mouth respiration</li> <li>Sensitivity of inhalation too low</li> <li>Device component defective</li> </ul>	<ul style="list-style-type: none"> <li>Check seat and connection of nasal cannula</li> <li>Check breathing technique.</li> <li>Contact customer service</li> <li>Contact customer service</li> </ul>
Device shows only visual but doesn't sound acoustic alarm	<ul style="list-style-type: none"> <li>Alarm-suppression selected</li> <li>Device component defective</li> </ul>	<ul style="list-style-type: none"> <li>Wait out alarm suppression time</li> <li>Contact customer service</li> </ul>
Not all programs available can be selected	<ul style="list-style-type: none"> <li>Upper and/or lower program steps are locked</li> </ul>	<ul style="list-style-type: none"> <li>Device has been programmed that way ex works for you</li> </ul>



## 11 Accessories and replacement parts



### ATTENTION!

Wrong or defective accessory or replacement parts as well as parts from secondary manufacturers can lead to severe damage to the unit.

All guarantees and service agreements are void without prior notice by the use of unapproved accessories or replacement parts.

Prior to installation of any system accessories, perform a risk assessment for the complete system!

### 11.1 Replacement parts

Only use original supply parts from the manufacturer!

O/N	article
KSE01.01	Battery compartment cover

### 11.2 Accessories










### ATTENTION!

The intended use of the equipment is only possible when using approved accessories. The use of accessories that have not been designed for use with this unit, can severely affect the performance of the unit.

The following article numbers should be used when ordering:

O/N	article
KS08	Instructions for Use for <b>AEROPLUS S</b>
K684	Nasal cannula, 2m
KS04.1	Spiral tubing
KSE06	Carrying case, small, for AEROPLUS S
KS03	Carrying case, large, for 2l oxygen cylinder
KS07	Set of 2 alkaline AA batteries
KS02	Pressure regulator, 0.275 MPa, 6 lpm
KS05	Oxygen cylinder, 2.0-l

### 11.3 Symbols used

Symbol	Meaning
	Unit and accessories (in particular batteries) may not be disposed in the standard domestic household rubbish
	Manufacturing year
	Notified Body TÜV Rheinland Product Safety GmbH
	Observe notes in the instructions for use!
	type BF
	drip proof
	Degree of protection class II



## 12 Index

### A

Accessories .....	33
Alarms .....	23
Assembly .....	17

### B

Batteries, changing .....	17
Battery compartment.....	14
Before assembling .....	17

### C

Carrying case.....	13
Carrying case for oxygen cylinder .....	13
Cleaning intervals .....	27
Cleanliness .....	27
Connecting.....	18
Copyright protection.....	7
Customer service .....	8

### D

Dangers .....	10
Design .....	13
Disinfecting .....	27

### E

EMC.....	12
----------	----

### F

Fire hazard.....	11
Function.....	13
Functional test .....	21

### G

General description.....	13
--------------------------	----

### H

HF communication equipment.....	12
---------------------------------	----

### I

Instructions for use .....	6
Instructions for Use.....	13

### L

LC display .....	13
Liability .....	6

### M

Maintenance.....	27
Maintenance plan .....	28
Maintenance work .....	30
Medical Device Directive .....	5
Mobile phones .....	12

### O

On-Off-Button .....	13
Operation .....	20
Oxygen.....	11
Oxygen concentrator .....	10
Oxygen conserving system.....	5
Oxygen cylinder.....	10
Oxygen supply.....	5

### P

Preliminary statement.....	5
Program Button .....	13

### R

Replacement Parts.....	33
------------------------	----

### S

Safety.....	9
Safety during maintenance .....	27
Setting the oxygen volume .....	22
Shipping contents.....	13

Side effects.....	5, 11	Transport damage .....	16
Spiral tubing.....	13	Transport inspection.....	16
Storage.....	16	Troubleshooting.....	32
Symbols.....	7, 34	Type plate .....	14
<b>T</b>		<b>V</b>	
Taking into service .....	17	Verbindungen lösen .....	19
Taking into service .....	20	<b>W</b>	
Technical Specifications .....	15	Warranty.....	6
Transport .....	16	Waste disposal.....	8