User Manual
arsos® light-DL

Item No. 111 500-DL-wds-new

Anti-Decubitus-System

Assembly and Operation instructions

Mattress arsos® light

Power unit dexos® light wds

pressure relief products

Health. Security. Independence.

List of contents

Foreword

Dear client!

You are now holding the user manual of the **arsos® light-DL** therapeutic support system of **ADL® GmbH** in your hands.

arsos® light-DL is a multi cell foam replacement mattress system with polyurethane cover, which enables the Mattress by means of air support to adjust itself to the weight and feeling of comfort of the patient.
The functions are based upon known mechanisms. The system is equipped with a soft foam mattress with reinforced edges. Further the arsos® light is a static air filled mattress with an 11,5 cm safety foam core in the cells which prevents the patient to sink to the bed base level in case of a system disorder.
In combination with the **dexos® light wds** power unit the system can be used in static and alternating mode.

The composition of the system can be considered a system in a system making adaptations possible to suit a wide variety of diseases.

With the writing of this user manual the product management of the **ADL® GmbH** has set itself the goal, to create a good and understandable aid and guidance for the employment of the system. If nevertheless questions remain, please ask your provider for direction and assistance.

Your

ADL® GmbH

1 Safety instructions

The system may not be used in presence of open flames, heaters a.o's. Protect the system against humidity. Operate it only in dry areas. No combustible gasses of liquids may enter into the system.

Warning! Note! The compressor is under power, as soon as the power supply plug is put in. Before opening the housing of the compressor the power plug is to be unplugged. Repairs must be performed only by qualified personnel.

The compressor may only to be used for it's purpose. In case of damage to the compressor, the power supply plug must be unplugged immediately.
A damaged power supply cord should be replaced immediately.
Only room temperatures of 0 – 35 °C provide assurance to good compressor operation.
The use of a pressure relieving mattress will not eliminate the need for a turning routine for the patient.

Do not remove any cells from the system, except for repairs.
When applicable, batteries and accumulators should be disposed on a proper way. These materials are not suitable to be disposed with normal (house) garbage.

2 Product overview arsos® light-DL

Units	Parts list	Art. no.
1	arsos® light mattress	111 500
1	Base tub with 10 cell fixations and 4 mattress fixation straps	111 501
1	Bi-elastic washable PU-cover	111 502
1	Service manual	999 190
1	User manual arsos® light-DL	112 011-FO-GB
1	Large bracket, extra cost at choice	64000000-FO
1	dexos® light wds, power unit, incl. small bracket	111 203-DL-WDS-neu

3 Introduction

arsos® light-DL is an air mattress system, meaning that no extra treatment nursing mattress is required.

This system is suitable for patients with a body weight of 40 to 150 kg.
Please note that these weight indications are applicable for patients in a laying position. Other positions will result in another distribution of weight.
The core of soft foam will ensure adaptation to the shape of the human body which results in an as large as possible surface and maximum pressure relaxation.
The reinforcements of the foam edges are an advantage for the sense of feeling and the mobility of the patient.

Touching the bed base is prevented by the 115 mm foam core in the cells of the **arsos® light** mattress.

This also helps to ensure compliance and conformity to **DIN EN 1970:2000** and **DIN EN 60601-2-38** because even with full air pressure in the cells the safety function of the bed rails remains unchanged.

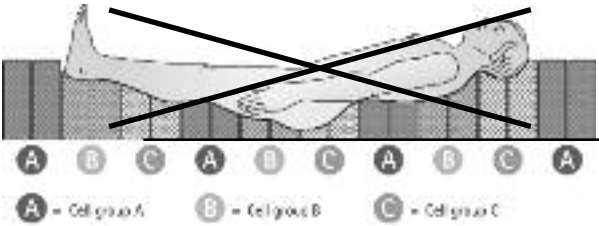
4 System installation and setting up arsos® light

1. Remove the existing nursing mattress.
2. Put the **arsos® light** mattress on the bed base frame and fasten it with the fixation straps to the bed (to the "up and down" moving parts of the bed).
   If not properly attached to the bed can result in damage to the bed and mattress.
3. Place the mattress in such a way that the tubing's are located at the foot end of the bed.
4. Verify the **CPR** valve is closed. In systems with a valve this should be in horizontal position; in systems with a plug closure, have all plugs put firmly in.
   The CPR is designed to deflate the mattress immediately.
5. The dual stretch and breathing cover is to be fixed to the bed base with the zipper on both sides.
6. Before hanging the power unit at the foot end of the bed you have to mount the bracket at the back of the power unit. Slide the bracket from below up into the fixation slot. Hang the power unit at the foot end of the bed, but you can also put it under the bed.
   Please note that the power unit should not be covered in any way, as thermal damage can occur!
7. Connect the tubes of the mattress to the power unit by connecting the tube connectors. The connectors must give a clear clicking sound. Check with a short pull at the tube if the connecter is rightly adjusted.
   Please check rubber O-rings on regular intervals!
8. Check if the tubes of the mattress are not bent or clamped between other parts.
9. Put the power supply plug in and switch on the unit with the power button.
   When the lights at the display are lighting up, the unit is operational.
   The power unit is pre-adjusted so at the start a pressure is building up in the system right between the minimum and maximum level.
   The unit starts up in alternating mode with a 5 minute cycle.
10. The red alarm light 5 is blinking and the system will start to be filled with air. Together with the optic alarm, the power unit has an acoustic alarm. The acoustic sound can be switched off and on with the alarm button 5. The alarm is put out of circuit when the process is completed. After approximately 30 minutes the system is filled and you can put the patient on the mattress.
    The red alarm light should be put out of circuit when the patient is laying on the mattress. When pressure drops below the set level, the red alarm light is blinking again. It has no meaning when the alarm now and then briefly flashes.

11. There are no standard settings. The most effective pressure level can be set with the pressure setting button.
The scale is divided into 8 parts. After the power unit is turned on, the standard pressure is set in the middle of the scale, about 30 mbar. Pressure can be lowered by repeated pressing on the left button 2 (▼ lower) to about 5 mbar. By repeated pressing on the right button 2 (▲ higher), a maximum pressure of 60 mbar can be set.
12. Try to reach an as large as possible contact surface. This will reduce the pressure at the patient's skin to a minimum. It is imperative to check the pre-adjustment with a "hand check". Try to move your hand under the knee-joint, the lumbar and neck lordosis. In order to check if supporting material is present.
When the patient sinks too far in the mattress the so called "hammock-effect" occurs. This should be prevented at all times.
13. When pressure is to high there will be a lack of supporting material underneath the lumbar and cranial lordosis and the knee joints.
The situation can be improved by pressing button 2 (▼ lower).
When pressure is too low (hammock effect), press button 2 (▲ higher).
Please note that status of the air cells is to be checked daily and whenever required adjustment is needed!
Only use covers which are properly sized and sufficiently elastic in order to prevent the "hammock effect". Creases in the sheets must be moothed from time to time, but do not tuck the sheets underneath the mattress as the tension of the sheets can increase pressure.
Each time when changing the pressure level you have to wait for the same time interval of the set cycle time, before the right level has been reached.
Only after this you can check the contact area again.

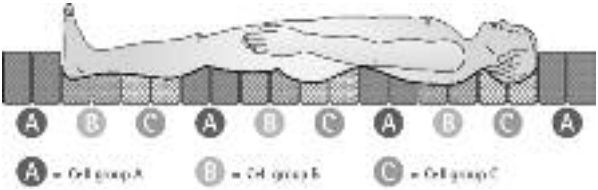
Pressure Preset

Level setting	body weight
Level 1 = 1 light	appr. 30 – 40 kg
Level 2 = 2 lights	appr. 40 – 45 kg
Level 3 = 3 lights	appr. 45 – 55 kg
Level 4 = 4 lights	appr. 55 – 60 kg
Level 5 = 5 lights	appr. 60 – 70 kg
Level 6 = 6 lights	appr. 70 – 95 kg
Level 7 = 7 lights	appr. 95 – 130 kg
Level 8 = 8 lights	appr. 130 – 150 kg



"Hammock effect"
(is to avoid)

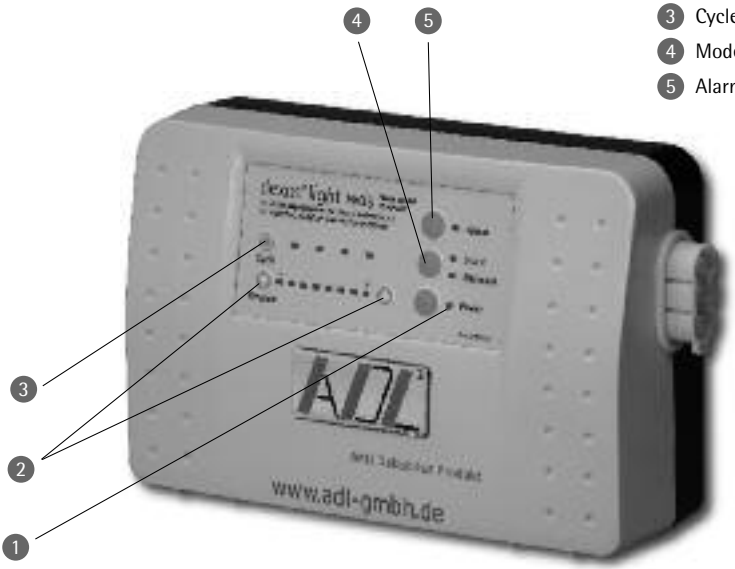
High extended pressure in the sacral area



Optimum surface
(Supporting material under the knee-point and lordosis of neck and lumbar)

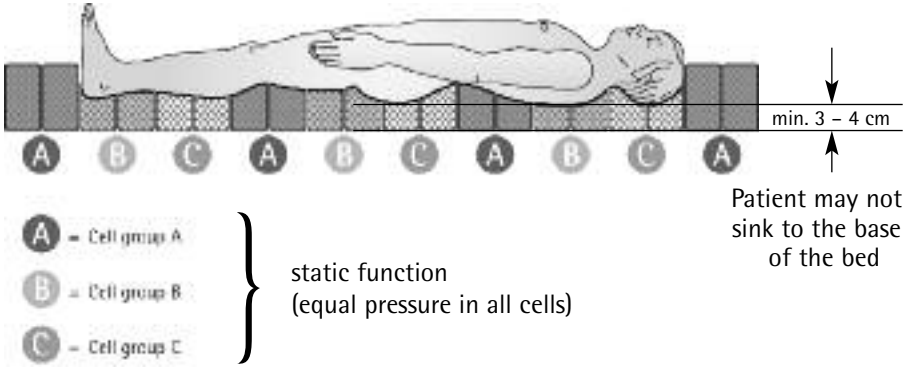
5 Explanation of indications and functions

1. On / off switch
2. Pressure setting
   - ▲ higher
   - ▼ lower
3. Cycle time
4. Mode (Static / Alternating)
5. Alarm button



6 Settings

1. The system can be switched to static mode by pressing button 4 (static/alternate). The light will change from blue to green (static). In static mode all cells of the system will be filled with air to the set pressure level.
In static mode all cells are active; therefore it is necessary to reduce the set pressure with about 5 – 10 mbar (1 – 2 steps on the scale).
To switch back to alternating mode, again press button 4 (static/alternate). The light will change from green to blue (alternate).
In alternate mode 2 out of 3 cells are filled with air to the set pressure level. One cell remains without pressure.
Don't forget to increase the pressure when switching over to alternating pressure with the same difference used to reduce, switching over to static mode.



2. The cycle time on the power unit can be varied from 5 to 20 minutes. By pressing button 3 ("Cycle"), cycle time can be changed from standard 5 minutes with equal steps of 5 minutes to a maximum of 20 minutes. Within a cycle all three cell groups are inflated and deflated once.

3. The alarm has two modes. The basic setting is both the optic and acoustic alarm, meaning that the red alarm light is blinking and a beeping signal sounds. When pressing the alarm button 5 during 5 seconds, the acoustic signal is switched off. The switch-off is confirmed by a beep-signal, the red alarm light now lights permanently.

The acoustic alarm can be re-established by pressing the power button 1 or the alarm button 5 .

Note: the acoustic alarm will only be active after 30-40 minutes, in order to prevent the acoustic alarm to sound when the mattress is inflated for the first time. When using the lowest possible pressure of 5 mbar it is possible the alarm switches on. Only when this lasts longer than 1 minute, it is advised to check the system on leakages.

7 Auxiliary functions

1. Key lock
The keyboard has a key lock that is activated after about 5 minutes.

This is to prevent an unintentional displacement of the set values.
The key lock is released by simultaneous actuation of the following buttons: alarm 5 and pressure 2 - and pressure 2 +. After this the settings can be changed.

2. Brightness of the display
The brightness of the display can be set in 3 stages with the key combination alarm 4 and static/alternate 5 .
The starting situation is the brightest. By actuating the key combination it sets the display less bright.

3. Power failure alarm
When the power system to which the unit is connected fails, there is a power failure alarm. The unit beeps and the red alarm light flashes. The acoustic alarm can be disabled with the alarm 4 and power 1 button. When the power supply is restored, the alarm will also be disabled.

4. Memory function
The unit has a memory function. This means, when the power is interrupted, the unit will remember the set values up to about 24 hours.
Thus, after transfer of a patient, connecting to the power supply again and switching on the unit, is sufficient to continue with the same settings as before.

5. Reset function
By pressing the buttons alarm 2 and cycle 3 , the device can be put back to factory settings. All settings are lost. The factory settings are alternating pressure mode with pressure at 20 mbar, cycle time at 5 minutes, audible and visual alarm.

8 Cleaning & servicing instructions

- During use the mattress and tubes should be cleaned weekly using a damp soft cloth and mild detergent or non-phenol germicidal solution

Never use any detergents containing aldehyds!

- After changing to another patient the mattress should be disinfected by a accredited company approved by the **Robert-Koch-Institute**. Please ensure conformity to the European guideline for medical devices , directions for preparation of medicine products and directions for hospital hygiene and prevention of infections from the Robert-Koch-Institute or other guidelines they rule.
- The PU cover can be washed to a maximum temperature of **95 °C** and be prepared after a thermal process (e.g. Ottalin - Peracet - process). When disinfecting the mattress, a maximum temperature of 75 °C should be kept. In case of an **arsos® light**-mattress with an alternating power unit, this power unit should be cleaned with an damp cloth and soap detergent or a mild non-aldehyds cleaning detergent.
- Disinfection with cleaning on locations is also possible, when instruction for use and process time are properly followed.
- **ADL® GmbH** prescribes safety-related revises of all electric powered parts after at least 2 years.
  The rules for accident prevention BGV A2 will remain unaffected.
  The revises may only be conducted by especially trained personal.

Disinfectant recommendations:
BACILLOCID RASANT (BODE), BACILLOL AF (BODE), BACILLOCID SPEZIAL (BODE), KOHRSOLIN FF (BODE), KOHRSOLIN (BODE), MICROBAC FORTE (BODE), DISMOZON PUR (BODE), INCIDIN FOAM (ECOLAB), INDUR DES (ECOLAB).

Check with your supplier that the disinfectant does not damage plastic surfaces (PUR, PA, ABS, PVC).
Prevent contact on electrical components with damp or moisture.
Cleaning cloths should be damp, not wet.
Carefully check no **moisture** remains in the system.
Execute a **functions control** procedure before using the system again.
Check your cleaning process on **effectiveness** on a regular basis.

9 CPR-function

The quick deflating function for **CPR (Cardio Pulmonary Resuscitation)**, is located at the head end of the mattress.
At systems with a valve, this valve should be turned anti-clockwise for one quarter of a stroke.
At systems with a plug closure give a firm pull at the red strap.

10 Troubleshooting

Modul	Problem	Cause	Measure
arsos® light	Mattress is not or insufficiently inflating. The patient sinks to deep into the mattress.	Connectors are not accurately locked. Tubes are twisted or kinked. Air cell defect. Tubing defect. Pressure not correctly set.	Check connection and position of the tubes. Check cells and tubing connections. Check if the tubing is properly functioning. Check if cells are in proper position. Check pressure setting.
dexos® light wds	The power unit does not operate (blue light at power switch is not illuminated). Red alarm light is blinking when patient is on the mattress, mattress is not fully inflated.	No power available. Power supply plug defect, safety fuse defect. Defect air cell, defect tube, CPR valve open.	Check power supply plug and partition power cord socket. Check the safety fuse underneath the location where the power cord enters the power unit. Check cells and tubes, check CPR valve, check if pressure at the outlet of the power unit is within tolerance.

11 Indications · Contra indications

Modus	Indication	Contra indication
Static Pressure soft bedding	Decubitus prevention and therapy support up to High Risk (stage 3; EPUAP), patients with uncontrolled muscular hypertonia stimulated by dynamic pressure relief, pain-patients (osteoporoses, bone metastases, rheumatic).	Instable fractures, limited counter-indication with desensitization, pressure decubitus prevention and therapy support.
Alternating pressure with dexos® light wds	Decubitus prevention and therapy support up to High Risk (stage 3; EPUAP).	Instable fractures, loss of sensitivity, pain, muscular hypertonia, (e.g. contractions, spasms).
Static soft bedding with dexos® light wds	Decubitus prevention and therapy support up to High Risk (stage 3; EPUAP) Secondary therapy pressure decubitus up to Very High Risk (stage 4; EPUAP), pain, muscular hypertonia.	Instable fractures, loss of sensitivity.

12 Technical data

	Mattress arsos® light	dexos® light wds	Cover
Item No.	111 500	111 203-wds	111 502
Material	PU Hybrid Cell with foam	ABS	PU/PA
Dimensions (cm)	198 x 90 x 11,5	23 x 15 x 8,5	200 x 95 x 12
Weight (kg)	~ 5,9	~ 1,5	~ 0,2
Warranty*	2 years	2 years	--
Electr. connections	--	230 V / 7 W	--
Cleaning	Wipe disinfectable with adequate detergents. We recommend autoclave.	Wipe disinfectable	95 °C washable, Dryer can be used

* Warranty only valid in case of production or material failures.

13 Possible combinations with the arsos® light mattress

Item No.	Item/ Item combinations	Short description Scope of supply
111 500	arsos® light	Mattress incl. cover, and tubing
111 500-DL-wds	arsos® light and dexos® light wds up to High Risk; stage 3	mattress incl. cover, power unit and tubing
111 500-DL-AUTO.PL.	arsos® light and dexos® autoplus up to Very High Risk; stage 4	mattress incl. cover, automatic power unit and tubing
111 350	lenos® light	Turning system to be used in combination with the air foam-system, including power unit and air bags

In case of technical problems please contact your appointed dealer or direct the ADL® GmbH.

(Dealer stamp)

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