User Manual

arsos® plus with dexos® light

Art. Nr. 111 550-DL-wds

Anti-Decubitus-Systems

Assembly and Operation instructions

CE

Health. Security. Independence.

Table of contents

1 Foreword

Dear client,

you are now reading the user manual of the arsos® plus therapeutic support system of ADL® GmbH.

arsos® plus is a multi-cell foam mattress with combined air-foam-cells. This air-foam technology enables the mattress to adjust itself to the weight and feeling of comfort of the patient by means of air support. The functions are based upon known reliable mechanisms. On the one hand, it is a soft foam mattress with reinforced edges. On the other hand, arsos plus is a static air filled mattress with a 21 cm safety soft foam mattress, which prevents the patient from sinking to the bed base level in case of system failure.

To be operated with alternating pressure, the soft foam mattress is connected to the alternating pressure power unit dexos light® wdm. The range of indications is extended by a wide variety of diseases. This modular system combines advantages concerning safety aspects and therapeutic purposes.

We are addressing the health professionals as well as the end users. Before the utilization, please keep in mind that the first set-up is to be done by an instructed person. The end user should also receive a briefing and read the entire user manual if used long-term.

With writing this user manual, the product management of the ADL GmbH has set itself the goal to create a good and understandable aid and guidance to maximize the use of the system. If, nevertheless, questions remain, please ask your provider for direction and assistance, or contact ADL GmbH in Amt Wachsenburg directly.

Your

ADL® GmbH

2 Safety instructions

The system may not be used in presence of open flames, heaters et cetera. Protect the equipment against humidity. Operate it only in dry areas. No combustible gases or liquids may enter into the system.

EXPLOSION DANGER!

Warning! Note! The compressor is energized as soon as the power supply plug is put in. Before opening the housing of the compressor, please unplug the power plug. Repairs must be performed only by qualified technical personnel. The compressor may only be used for its purpose. Please double check daily that the system is functioning flawlessly. In case of damage to the compressor, the power supply plug must be unplugged immediately. The damaged power supply cord should be replaced immediately. Only room temperatures of 0 – 35 °C provide assurance to good compressor operation. Only use the system in dry rooms. A multi-cell anti-decubitus-system does not replace the manual positioning support from the nursing staff. Do not remove cells from the system (except for repair). If applicable, batteries and accumulators must be disposed of properly. They do not belong in the household waste!

Obligation to report:

There are legal regulations in the EU that mandate the patients and users to report any product defects or unwanted side effects that worsened the patient's state of health while using the medical product. Immediate reporting to the manufacturer and the national bureau is mandatory.

3 Product overview

Quantity	Description	Item number
1	arsos® plus mattress	111 550-DL-wds
1	Power unit dexos® light wds, incl. bed mount	111 203-DL-wds, 64000000-FO
1	arsos® plus bi-elastic washable PU-cover	111 552
1	Service manual	999 190
1	User manual arsos® plus + dexos® light wds	112 022-FO

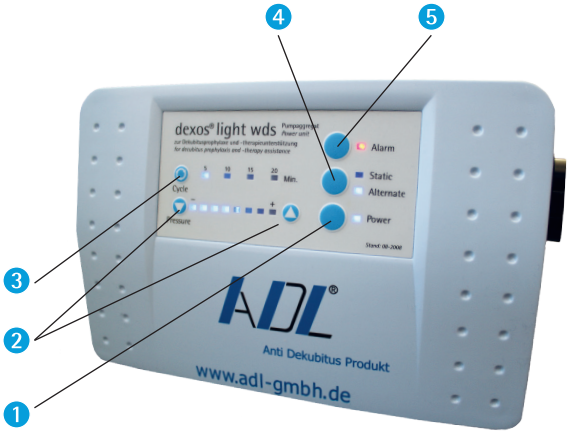
4 Introduction

The arsos® plus + dexos light® wds is a mattress replacement system, which means no additional treatment nursing mattress is required. The system is suitable for patients with a body weight of 40 – 150 kg. (Please note that these weight indications are applicable for patients in a laying position. Other positions will result in a different weight distribution.)

The core of soft foam adapts to the shape of the human body which results in maximum surface support and maximum pressure relaxation. The reinforcements of the foam edges are an advantage for the sense of feeling and mobility of the patient. The 'bottoming out' of the patient onto the bed base is prevented by the 21 cm foam core of the arsos plus-module.

This also helps to ensure compliance and conformity to DIN EN 1970:2000 because even with full air pressure in the cells, the safety function of the bed rails remain unchanged. In every instance, the standard DIN EN 1970:2000 must be complied with (view page 7).

5 Explanation of indications and functions



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

6 Installation and setting up the mattress

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 this can result in damage to the bed and mattress.
3. Place the mattress in such a way that the tubes are located at the foot end of the bed.
4. Check the CPR function. It must be locked. For systems with a screw cap, it should be in horizontal position when closed; in systems with a plug closure, ensure all plugs are firmly in the socket.
5. The dual stretch and breathing cover made of polyurethane is to be fixed to the base with the double-sided zipper.
6. Link the connector of the mattress to the pumping unit. The connector must give a clear clicking sound.

   Please note: Occasionally check the O-rings from the connector. To disconnect the connector from the power unit without damaging the construction, press both springs at the connector with your thumb and pointing finger before pulling it out.

7 Setting up

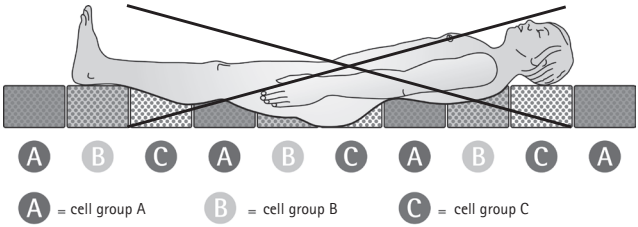
1. Plug in the power cord und turn on the unit. The unit is preinstalled. When the display lights are lit, the unit is operational. The power unit is pre-adjusted, so without the need of selecting a certain level, the pressure in the system builds up to between the minimum and maximum pressure levels. The unit starts up in alternating mode with a 5-minute cycle. After half an hour, the system is inflated, and the patient can be placed on the mattress.
2. The person lying on the mattress should always be placed to reach maximum 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 the neck lordosis to check if supporting material is present. When pressure is too high, there will be a lack of supporting material in those areas. The pressure must be reduced at the power unit. If the pressure is too low, the "hammock effect" takes place. The patient's buttocks are sinking to the bed base level (view page 10).
3. You must attach the bed mount to the power unit before placing it to the back of the bed. Slide the mount into the attachment at the bottom of the power unit.
4. Make sure that the air hoses are not bend or pinched in.
5. Turn on the system by pressing the power button 1 .
6. The red alarm light 5 will blink, and the system will begin to fill up with air (the light will turn off automatically after this step). The filling process with arsos® plus takes approximately 15-20 minutes.

   The red alarm light should cease when the mattress is strained. When a certain level of pressure is reached over a longer time, such as 2 minutes, the red alarm light will blink constantly. That means the system should be checked for leakage (also view page 10 under troubleshooting). A short flashing of the alarm light is of no importance. In addition to the visual alarm function, the unit has an acoustic alarm, which activates automatically after a certain time period. By pressing the alarm button 5, the acoustic alarm can be switched on or off.

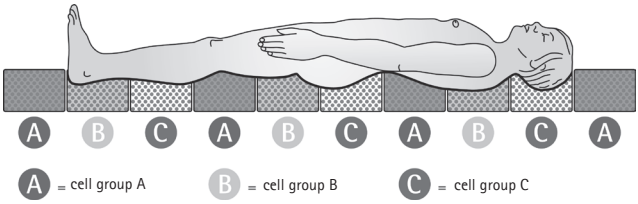
7. The optimum pressure can be set by pressing the pressure control button 2. The scale is divided into eight setting options. If one diode is lit, the mattress has the lowest possible pressure; if all eight diodes light up, the mattress has reached the largest possible pressure (view table below on page 9). The adjustable pressure is in the range of 5 and 40 mbar. After switching on the unit, the initial pressure is in the scale center, which corresponds to about 20 mbar. An optimal setting of the system must be checked by the "hand check". The sinking behavior of the patient does not only depend on his or her weight but also on the body stature. Try to move your hand under the knee-joint, the lumbar and the neck lordosis to check if supporting material is present. When pressure is too high, there will be a lack of supporting material in those areas. If the patient is sinking in too deep, the "hammock effect" takes place, which should be avoided (view page 10).

8. When pressure is too high, there will be a lack of supporting material underneath the cranial lordosis of the body. In this instance, reduce pressure by pressing once or several times the left pressure control button 2.
If pressure is too low ("hammock effect), press once or several times the right pressure control button 2 .
Each time you change the pressure level, you must wait for the set cycle to be done until the new pressure can be reached. Then you can check the contact area again.

Level setting	Body weight
Level 1 = 1 light	appr. 150 – 160 kg
Level 2 = 2 lights	appr. 165 – 175 kg
Level 3 = 3 lights	appr. 180 – 190 kg
Level 4 = 4 lights	appr. 195 – 205 kg
Level 5 = 5 lights	appr. 210 – 220 kg
Level 6 = 6 lights	appr. 225 – 230 kg
Level 7 = 7 lights	appr. 235 – 240 kg
Level 8 = 8 lights	appr. 245 – 250 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)

8 CPR-Function

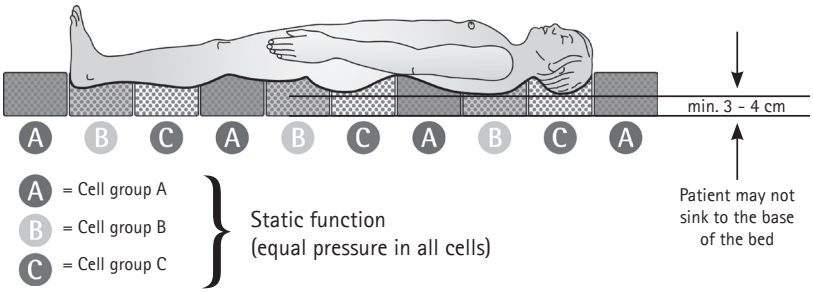
Please make sure that the CPR flap (Cardiopulmonary Resuscitation) is always closed. This CPR flap is located on the head side of the pad and is equipped with a red flag with the inscription CPR. To check the CPR closure, open the cover of the pad. The lid of the CPR should be tightly closed. To do this, the lid must be pressed firmly into the CPR base. When lowering the bed rail, avoid accidentally opening the CPR closure.

In an emergency, the system is vented by jerkily pulling on the CPR flap. The patient lies on the firmer foam after about 30 – 60 seconds. Please note that the Cardiopulmonary Resuscitation cannot be performed on foam mattresses. The patient must lie on a solid surface (e.g. a special resuscitation board).

9 Settings

1. The system can be switched to static mode by pressing button 4 which is the middle blue button on the right edge of the control panel. The display changes to the green diode (static). "Static" means that all cells of the pad are being filled with air and increase to the set pressure value. It should be noted that due to the pressure distribution on all cells, the maximum pressure is reduced by one or two scale points to ensure the proper positioning. As long as the right position for the static has not been reached, the green light diode flashes. The diode is lit permanently in the static position.

   To turn off the static function, press button 4 again. The display changes again to the blue diode (alternate). "Alternate" means that the system is back in the alternating pressure function. Now 2 out of 3 air chambers are filled with air, and the third remains without pressure. Any changes made in the static function must be reversed.



2. Furthermore, the cycle time can be changed on the power unit. The adjustable range is between a minimum of 5 and a maximum of 20 minutes. By pressing button 3, cycle time can be changed from the default value of 5 minutes in equal steps of 5 minutes to a maximum of 20 minutes. The cycle time is the time that is necessary for the system to inflate and deflate the 3 air chambers.

3. The alarm has two modes. The basic setting is both the visual and acoustic alarm, meaning that the red alarm light is blinking, and a beeping signal is audible. When pressing the alarm button 5 for approximately 5 seconds, the acoustic signal is switched off. The switch-off is confirmed by a beep signal. Only the visual alarm is activated now, the red alarm light lights permanently in case of emergency. The acoustic alarm can be reactivated by pressing the power button 1 or the alarm button 5.

Please note: During the initial setup, the acoustic alarm will only be activated after 30-40 minutes to prevent the acoustic alarm during the filling process. When using the lowest possible pressure of 5 mbar, it is possible that the alarm starts. When the alarm sounds for more than 1 minute, it is advised to check the system for leakages.

10 Auxiliary functions (only possible with appropriate equipment)

1. **Key lock**
   The keyboard has a key lock that is activated after about 5 minutes. This is to prevent unintentional changes to the set values. The key lock is released by simultaneous pressing the following buttons (alarm button 5 pressure button 2 or +). After this, the settings can be changed.

2. **Brightness of the display**
   The brightness of the display can be set in 3 modes with the key combination alarm button 5 and static/alternate button 4. The initial setting is the brightest display. The display dims when pressing the key combination.

3. **Power failure alarm**
   When the power supply to which the unit is connected fails, there is a power failure alarm and the red alarm light flashes. The acoustic alarm can be disabled with the alarm button 5 or the power button 1. 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.

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

6. Care function

When taking care of a patient, you have the option to activate this function by pressing the static button 4 for about 3 seconds. The alternating pressure system switches now to the patient care function, which is indicated by the flashing of the active cycle display and the green display for static. The alternating pressure system is now changing to the static setting with a maximal possible pressure for a duration of 30 minutes. After this time, it automatically returns to the original settings. During the patient care function, the buttons for the pressure settings and static settings are deactivated. When you need to leave the patient care setting earlier, you can do this by pressing the reset function (press alarm button and cycle button 3 simultaneously) or the power button 1.

11 Cleaning & Service instructions

- During use, the mattress and hoses should be cleaned weekly using a damp soft cloth. For this purpose, a mild, commercially available detergent and disinfected can be used.

Never use any detergents containing aldehyde!

- In the case of a patient change, the mattress should be disinfected by an accredited company approved by the Robert-Koch-Institute using a validated procedure. Please ensure conformity to the European guidelines for medical devices when preparing the anti-decubitus-systems and directions for hospital hygiene and prevention of infections from the Robert-Hoch-Institute or other guidelines they rule.
- The PU cover can be washed to a maximum temperature of 95 °C and be re-used after a thermal process (e.g. Ottalin-Peracet-Process). Also, a steam sterilization process can be applied as long as it does not exceed 75 °C. The pumping unit should be cleaning with a damp cloth. A soap detergent or a mild, non-aldehyde cleaning detergent can be used.
- Wipe disinfection is also feasible when the spectra of action and process time are properly kept.
- ADL® GmbH recommends safety related revisions of all electric powered parts after at least 2 years based on MPBetreibV §7 in accordance with DIN EN 62353. These checks may only be carried out by specially trained personnel (MPBetreibV §5).

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).

Prevent contact on electrical components with damp or moisture (cleaning cloths should be damp, not wet). Carefully check no moisture remains in the system before putting it back in. Execute a functions control procedure before using the system again. Check your cleaning process on effectiveness on a regular basis.

12 Troubleshooting

Modul	Problem	Cause	Solution
arsos® plus	Mattress does not inflate or inflates insufficiently.	The connector is not accurately locked, tubes are twisted or kinked.	Check tubing connectors and locks.
	The patient sinks too deep into the mattress.	Defect cell, tubing defect, pressure not correctly set.	Check cells, tubing connectors, and check pressure setting.
dexos® light wds	The unit does not operate (blue light at on switch is not illuminated).	No power available, defect plug, defect power cord, safety fuse defect.	Check plug and power cord, check safety fuse at the location where power cord enters power unit.
	Red alarm light is blinking, and the acoustic sound is on when the patient is on the mattress, mattress does not fully inflate.	Unit is not connected properly, defect air cell, defect tube, CPR valve is open.	Check cells and tubing, check CPR, check unit, check if pressure at the outlet of the power unit is within tolerance.

13 Indications · Contraindications

Function	Indicationen	Contraindication
Static pressure soft bedding	Decubitus prevention and therapy support up to high risk (stage 4), patients with uncontrolled muscular hypertonia stimulated by alternating pressure, pain-patients (osteoporosis, bone metastases, rheumatic).	Instable fractures, loss of sensitivity. Patient's body weight < 150 kg and < 250 kg.
Alternating pressure with dexos light® wds	Decubitus prevention and therapy support from high risk to very high risk (stage 4), basal stimulation. Patient's body weight from 150 kg to 250 kg.	Instable fracures, loss of sensitivity, pain, muscular hypertonia (e.g. contractions, spasm). Patient's body weight < 150 kg and < 250 kg.

14 Technical data

	Mattress arsos® plus	dexos® light wds	Cover
Item No.	111 550	111 203-DL-WDS	111 502
Material	Polyurethan	ABS	PU/PA
Dimensions (cm)	200 x 90 x 21 (ventilated)	23 x 15 x 8,5	200 x 90 x 21
Weight in kg	~ 11	~ 1,5	~ 0,2
Warranty*	2 years	2 years	--
Electrical values	--	230 V/7 W	--
Safety class	--	II	--
Microfuse	--	230 V/500 mA fuse	
Cleaning	We recommend a thermal process as disinfection. (Wipe disinfectant with adequate detergents using a validated procedure.)	Wipe disinfectable	95 °C washable, tumble dry up to 50 °C

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

15 Disposal

Please note:

Old electrical appliances do not belong in the household waste, please drop them off at the collection points for old equipment. The pad of the alternating pressure system can be disposed of at a collections point or recycling center for bulky waste. Please pay attention to the local regulations for waste disposal when disposing the alternating pressure systems.

16 Declaration of Conformity

Our declaration of conformity can be found under the QR-code below or in the download area under www.adl-gmbh.de

In case of technical problems please contact your appointed dealer or directly to ADL® GmbH.

(Stamp)

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Stand 01/2022