ALTERNATING PRESSURE PUMP WITH MATTRESS

USER MANUAL

Model: NEPT36/NEPT42/NEPT48/ NEPTEDG36/ NEPTEDG42/ NEPTEDG48

Airflo (Xiamen) Medical Co., Ltd.
1F, 3F, 4F, No. 6, East Haijing Road, Haicang Xiamen, Fujian, China

www.5mindsmobility.com
115 Mills Rd Ajax ON L1S2H2
Tel:(888)612-1116 | Fax:(877)426-5697

TABLE OF CONTENTS

IMPORTANT SAFEGUARDS..... 3

STATEMENTS..... 3

INTRODUCTION..... 4

INTENDED USE..... 4

CONTRAINDICATIONS..... 4

PRODUCT FUNCTIONS..... 5-7

PUMP..... 5-6

MATTRESS..... 7

CLASSIFICATION..... 7

INSTALLATION..... 8

OPERATING INSTRUCTIONS..... 9-11

ENVIRONMENT REQUIREMENTS..... 12

CLEANING GUIDELINES..... 12-13

MAINTENANCE..... 14

TROUBLE SHOOT..... 15

TECHINCAL SPECIFICATION..... 16

IMPORTANT SAFEGUARDS

When using electrical products, especially when children are present, basic safety precautions should always be followed, including the following:

Danger
To reduce the risk of electrocution:

- Always unplug this product immediately after use.
- Do not use while bathing.
- Do not place or store product where it can fall or be pulled into a tub or sink.
- Do not place in or drop into water or other liquids.
- Do not reach for a product that has fallen into water. Unplug immediately.

Warning
To reduce the risk of burns electrocution, fire, or injury to persons:

- A product should never be left unattended when plugged in.
- Close supervision is necessary when this product is used by, on, or near children or invalids.
- Use this product only for its intended use as described in this manual.
- Do not use attachments not recommended by the manufacturer.
- Never operate this product if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the product to a service center for examination and repair.
- Keep the power supply cord away from heated surfaces.
- Never block the air openings of the product or place it on a soft surface, such as a bed or couch, where the air openings may be blocked. Keep the air openings free of lint, hair, and the like.
- Never drop or insert any object into any opening or hose.
- Do not use outdoors or operate where aerosol (spray) products are being used.
- Connect this product to a properly grounded outlet only.
- Do not play with the product to prevent strangulation due to supply cord and air hose of product.

STATEMENTS

Note
Indicates some tips or some information users should be aware of.

Caution
Indicate correct operating or maintenance procedure in order to prevent damage to or destruction of the equipment or other property.

INTRODUCTION

This manual should be used for the initial set-up of the system and for reference purposes.

General

The product consists of an air pump and mattress, It is a high quality and affordable air mattress system support suitable for medium and high-risk pressure injuries treatment. It has been specifically designed for prevention of pressure injuries and offers an affordable solution to 24-hour pressure area care.

The product has been tested and certified for the following standards:

- CE
- UL

INTENDED USE

- To help and reduce the incidence of pressure injuries while optimizing patient comfort.
- For long term home care of patients suffering from pressure injuries.
- For pain management as prescribed by a physician.

It can be used in hospital and home healthcare environment.
The PATIENT can be an intended OPERATOR.

WARNING

1) No servicing and maintenance can be performed while the product is in use.
2) All the functions can be operated by patient.
3) No maintenance except for cleaning can be performed by patient.

CONTRAINDICATIONS

Patient conditions for which the application of pressure relieving therapy on an alternation system is contraindicated are as following:

1) Cervical or skeletal traction.
2) Unstable spinal cord injuries.
3) The patient's wound cannot be in direct contact with the mattress.

PRODUCT FUNCTIONS

Pump

The alternating air pump mainly consists of one air pump, a motor and a PCB pressure regulator. It has two air output terminals connecting to the mattress by two air hoses. The functions of the pump are described below, please refer to the figures of the pump.

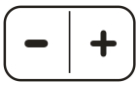
❖ 

Power Switch (1)

- The switch is at the right side of the pump.
- Turn ON/OFF the power and press Power button (10) on the panel, the pump will start/stop operation.
- The green indicator light indicates that the pump has power.

❖  **Press Cycle Time (2)**

- The cycle time can be selected from the panel.
- The cycle time options are 10, 15, 20, or 25 minutes. Use the green indicator to Indicate the current setting.

❖  **Press Pressure Range (3)**

- 80lbs-450lbs can be selected from the panel, this will increase or decrease the firmness of mattress. The green indicator light will indicate the current setting.

❖ 

Alarm Mute (4)

- The audible/visible alarm turns on when the pressure is low, or power failure or alternate failure. The red indicator light will illuminate when active.
- To mute the audible alarm, press the Mute button. The visible alarm indicator will flash till problem solved.
- Re-press the Mute button to reactivate the alarm.

❖  **Alternate mode (5)**

- Press to set the air mattress in alternate therapy mode. The green indicator light will indicate the current setting.

❖  **Static mode (6)**

- Press to set the air mattress in static therapy mode. The orange indicator light will indicate the current setting.
- The function will revert to alternating mode after 20 minutes.

❖ **Max Firm (7)**

- ➢ Press to set the air mattress in quick inflation mode, which facilitates nursing care.
- ➢ Under Max Firm mode, the system remains at highest pressure. The orange indicator light will illuminate to indicate it is active.
- ➢ The function will revert to alternating mode after 20 minutes.

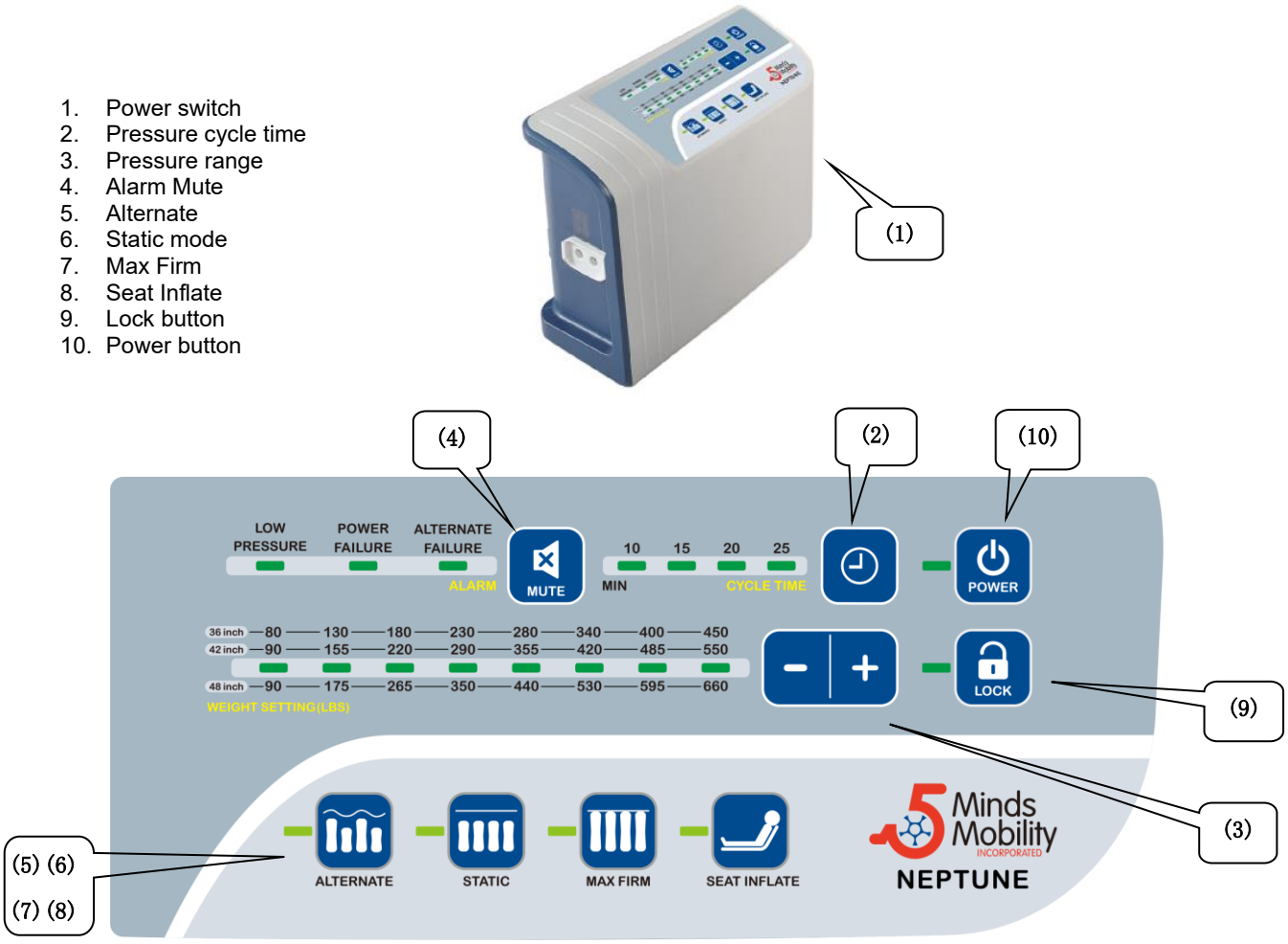
❖ **Seat Inflate (8)**

- ➢ Press to set the air mattress in seat inflate + alternate mode or seat inflate + static mode.
- ➢ Pressure value will increase by 5mmHg to facilitate more comfortable seating. The green indicator light will indicate the current setting.
- ➢ Under Max Firm mode, Seat Inflate button will not operate.

❖ **Lock Button (9)**

- ➢ Press to lock or unlock the panel. The green indicator light will illuminate to indicate it is active.
- ➢ Auto: control unit panel automatically locks in 5 minutes without operation.
- ➢ Manual: Press lock button for 3 seconds to lock the panel, press again for 3 seconds to unlock the panel.

1. Power switch
2. Pressure cycle time
3. Pressure range
4. Alarm Mute
5. Alternate
6. Static mode
7. Max Firm
8. Seat Inflate
9. Lock button
10. Power button



Mattress

The Neptune pump includes cell type mattress with materials made of (Nylon/PVC, Nylon TPU or TPU), provided optionally with the pump.

Please refer to the specifications section for details.

CLASSIFICATION

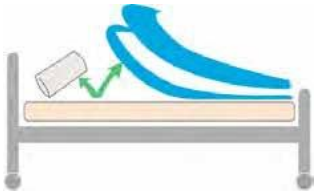
- Class II Medical electrical equipment (Protection against electric shock).
- Type BF Applied Part (The mattress is applied part).
- Continuous operation.
- IP21

Caution: The mains plug is used as the disconnect device and shall remain readily operable. Do not position the equipment where it is difficult to disconnect the device.

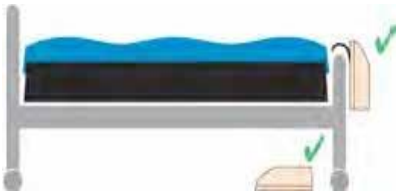
INSTALLATION

The following describes the procedures for setting up the system for the first time.

a) Remove all covers, sheets and mattress from the bed.



b) On a standard bed, position Mattress Replacement on top of bed, printed top cover facing upwards and air hoses towards the base of the bed. Attach to the bed by securing the adjustable straps under each end of your bed. Ensure buckles are securely fastened and straps are pulled tight.



c） On a profiling bed, secure the side straps around the moveable sections of the bed base. **DO NOT SECURE TO THE SIDE RAILS - STRAPS WILL TEAR OFF.**

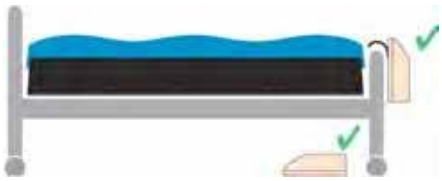
d) Confirm there are no sharp objects in the immediate area which may risk damage to the Mattress Replacement.



Important: Check that the attachment of the Mattress Replacement does not interfere with the movement or operation of the bed.

Pump Unit Activation

a) Position Control Unit by hanging hooks over foot board of the bed or place unit on the floor under the bed.



b) Attach the air hoses through the use of the quick connector to the Control Unit. Ensure air hoses do not kink between mattress, bed frame and Pump Unit.



c) Plug the power cord into an electrical outlet with grounded AC power.

NOTE: Before inserting the plug into the outlet, make sure the voltage is compatible. Also make sure this product is well grounded.



d) Switch the power button on. Allow up to 40 minutes for full inflation.



e) Once ready, the low pressure light will go out - lay the patient on the bed and select the appropriate comfort level.

Perform a “bottom out” test to ensure that patient is properly suspended. Slide your hand under the top cover along a deflated cell in the sacral (bottom) area. Secure sheets loosely enough to ensure they do not interfere with cell alternation.

OPERATING INSTRUCTIONS

NOTE: Always read the operating instructions before use.

General

This product is designed to provide maximum comfort to patients. Make sure that you operate this product properly. Below is some general information that you should be aware of .

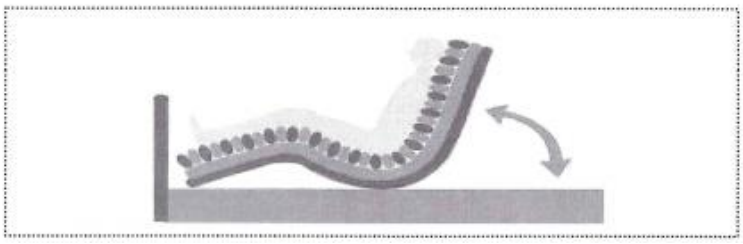
For products:

- DO NOT use another pump with different specifications unless instructed to do so by your local dealer. It is dangerous to use a pump with pressure capacity greater than 120 mmHg.
- DO NOT change any component by yourself. If there is need for replacement or repair, always contact your local dealer.

For patients:

When the pressure has been adjusted to a desired level of firmness, the patient can then lie on the mattress.

A firm surface will make it easier for the patient to transfer or reposition. Make use of the static mode function for this feature. To sit a patient up in bed, press the Seat Button to increase the pressure to have better support on sacrum area.



Hand check:

Check if the pressure is properly adjusted by sliding one hand between the air mattress and bed frame to feel the patient's buttock.

Users should be able to feel the space in between, and the acceptable range is approximately 25 to 40 mm (1" to 1-1/2").

NOTE: Please follow the instructions below for the correct operating procedure..

Step 1 Turn on the power, a beep sound will indicate inflation has begun.

Step 2 The pump will enter static mode when the power is initially turned on. First it will inflate the mattress to 10-15mmHg and then enter alternate mode.

If 10-15mmHg cannot be reached within 30 minutes, the unit will stay in static mode and keep inflating. If 10-15mmHg still cannot be reached within 40 minutes, the alarm will beep and its LED will come on.

Press the Alarm Mute button to mute the alarm. The alarm LED will continue flashing.
Press the Alarm Mute button again to re-enable the audible alarm.

Step 3 The alternating cycle time and pressure level are set at 10 minutes(1st LED) and 180lbs (3rd LED） initially. Select from the touch panel to adjust the cycle time and pressure level to the patients' specific requirements.

NOTE:
Press the static mode button from the touch panel to provide a firm surface that makes it easier for the patient to transfer or reposition. The static mode can support the patient by keeping the mattress from bottoming out when the patient is in a sitting position. The static mode will revert to alternating mode after 20 minutes.

Press the Max Firm button to automatically inflate the mattress to the maximum level (450lbs) for about 20 minutes. The pressure will return to a previously set level after 20 minutes.

Step 4 During normal operation, the unit will monitor pressure. If the mattress pressure is lower than the set pressure, the pump will automatically inflate the mattress to the set level and then stop. The alarm will beep and its LED will come on to alert a low-pressure condition.

1) In case of a bad connection of tubing or any air leakage from the mattress, this will result in a low-pressure condition, and it will activate the alarm within 1 min.
2) In case of power failure, for example caused by power cord unplugged or power off when pump is working, the audible alarm will be activated, and Power Failure indicator will flash. When power is back, pump will automatically start working. No need to press power button again.
3) In case of abnormal alternating or no alternating, the audible alarm will be activated and Alternate Failure indicator will flash.

Press the Alarm Mute button to mute the alarm. The alarm LED will continue flashing.
Press the Alarm Mute button again to re-enable the audible alarm.

NOTE:
For suitable pressure, please refer to the hand check procedure.

CPR function

When there is an emergency requirement to perform CPR on the patient, pull the CPR strap at the head section of the mattress to release the air quickly from the mattress.

The CPR straps are located at the front right-hand side of the mattress.

Pressure set up

Users can adjust the pressure of the air mattress to a desired firmness by themselves or according to the suggestion from a health care professional.

NOTE:

It is recommended to press Max Firm on the panel when the mattress is first inflated. Users can then easily adjust the air mattress to a desired firmness according to the patient's weight and comfort.

Low pressure warning

When abnormal pressure occurs, the Low Pressure indicator will come on. For some types of pumps, the alarm will be activated to alert of a low-pressure condition. Check if the connections are secure and correctly installed according to the relevant instructions.

NOTE:

If the pressure is consistently low, open the zipper and confirm that all the hoses are properly connected. Then check for any noticeable leakage in any of the tubes. If necessary, contact your local dealer to replace any damaged tubes or hoses.

DISCONNECT DEVICE

To fully disengage the power to the unit, please disconnect the power cord from the AC inlet.

ENVIRONMENT REQUIREMENTS

Operating Conditions

- Ambient Temperature: 5℃~40℃
- Relative Humidity: 15%~90%, non-condensing
- Atmospheric pressure: 700hPa to 1060hPa

Storage and shipping conditions

- Ambient temperature: -25℃~70℃
- Relative Humidity: 10%~90%, non-condensing
- Atmospheric pressure: 700hPa to 1060hPa

HANDLING AND STORAGE

- Lay the mattress out flat and upside down.
- Roll from the foot end towards the head end; the foot-end strap can then be stretched around the rolled mattress to prevent unrolling.
- Do not fold, crease or stack the mattress.

CLEANING GUIDELINES

In this section, we describe the procedures to clean and decontaminate the pump. It is important to follow these procedures before using the system again.
The cleaning task is required at least once a week to maintain personal hygiene.

Pump Unit

- DO NOT immerse or soak the pump in any water or fluids.
- Check for external damage and move the pump to the cleaning area.
- Place the pump on the work surface and spray or wipe the outside of the case with quaternary ammonium solution.
- DO NOT spray any cleaning solution directly on the surface of the pump.
- DO NOT use a Hypocarbonate or Phenolic based cleaning solution as this may cause damage to the case. Allow the solution to be incubated for 10 minutes or accordingly as stated by the cleaning product instructions.
- Wipe case with a clean cloth. Make sure all areas are clean (top and bottom, both sides).
- Spray cloth with cleaning solution and clean faceplate. DO NOT allow excess cleaning solution on faceplate or control panel(If solution gets inside, damage will occur). Allow surface to thoroughly dry after cleaning.
- After the pump is thoroughly cleaned and dried, proceed to plug in the pump and test to see if it runs normally.
- Unplug the pump and store with proper identification tag.
- Avoid long exposure to sunlight.

Mattress

- Brush off or wipe down all surfaces of the cover sheet with soap and water before wetting with any liquid disinfectant.
- Any obvious blood spots should be wet thoroughly with 1:9 Hypochiorite solution (1 part bleach to 9 parts water) and allow drying for at least 10 minutes. Then blot with a clean, damp cloth.
- Unzip the top cover from the mattress.
- Brush or wipe down all surfaces with soap and water before applying any liquid.
- Covers are immersed and soaked in disinfectant for the required incubation time.
- After pre-soaking, the cover is rinsed through a regular cycle in a washer with no soap then laundered with mild detergent (wash temperature 93°F/34°C, rinse temperature 78°F/26°C or on the coldest setting).
- Covers are aerated until they are fully dry. (Drying temperature range 90-120°F/32-49°C or on the coldest setting.)
- The air cells are unsnapped from one side and are sprayed on all sides with a disinfectant. Let it sit for the required incubation time and wipe down with a clean cloth. (Make sure to disconnect all the air cells, one by one, and spray the disinfectant on all sides, including all the connecting tubes and hoses. Let it sit for least 10 minutes.)
- If there is a base after you remove all the air cells, the base has to be sprayed down with the disinfectant, inside and outside. Let it sit for the required incubation time and wipe down with a cloth.
- Repeat the process with the tubing set: spray, incubate, and then wipe clean.
- The carrying bag should be turned inside out and completely wiped down using the disinfectant solution. Allow it to thoroughly air dry. Once the inside is dry, turn it back: wipe down the outside of the bag with disinfectant.
- Dry the mattress on a flat surface area after cleaning, away from exposure to the sun.
- Avoid long exposure to sunlight.

Statement: If used by different patients, clean before using for proper disinfection.

MAINTENANCE

General

- Check the power cord and plug to see if there are abrasions or excessive wear.
- Check the mattress cover for signs of wear or damage. Ensure the mattress cover and tubes are connected correctly.
- Plug in the pump unit and check the airflow from the hose connection port. The airflow should alternate between ports every half-cycle time.
- Check the air hoses to see if there are any kinks or breaks. For replacement, please contact your local agent or dealer.
- Make sure the mattress tube is well connected.
- Check the pump unit and make sure both power indicators are off when the switch is turned off.

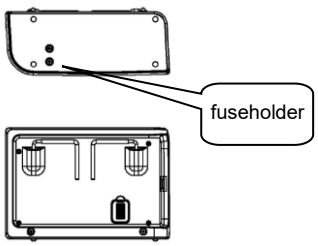
Low pressure

Examine if there is any air leakage between the pump and the mattress connections or from the air mattress tubes:

- Check connectors between the air mattress and pump. If there is any disconnection, please reconnect it.
- Check the CPR Valves. Ensure their outlets are sealed.
- Check the air-connecting tubes. Ensure each single cell is not broken.
- Set the pressure at Max firm. Keep the tubes fully inflated and inspect air leakage.
- Check if there is any air leakage from cells. Ensure no leakage occurs. If any leakage occurs, please contact your local agent or dealer.

Statement: Power supply cord and Fuse can be replaced by SERVICE PERSONNEL.

1) Turn off the power, unplug the power supply cord.
2) Unscrew the sleeve from fuse holder on the bottom enclosure of pump, replace the fuse inside of sleeve with same specification of fuse, screw the sleeve back to fuse holder.
3) Fuse rating: T1AL 250V



WARNING

No modification of this equipment is allowed.

Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

MANUFACTURER will provide circuit diagrams, component part lists, descriptions, calibration instructions to assist SERVICE PERSONNEL in parts repair.

Statement: LAY OPERATOR or LAY RESPONSIBLE ORGANIZATION should contact the MANUFACTURER or the MANUFACTURER'S representative for assistance in setting up, using or maintaining the product and to report unexpected operations or events.

TROUBLE SHOOT

Problems		Reasons	Maintenance
Mattress fail to inflate or do not inflate completely.	Pump issue	1.Pump does not work.	1. After powered on, check if visible LED light turns on. If not, please check the below issues: 1.1 Check if power cord is plugged into appropriate voltage AC outlet. 1.2 Check if fuse is loose or burned out, make sure it's connected well or replace with new one. 1.3 Open the pump and see if the wires inside are connected well, make sure they are not loose. 1.4 Change lower PCB.
		2.Air pressure from pump is too low.	1. Check if air pressure and air flow (100mmHg, 8.0L) are high enough from the compressor, if not then replace with new compressor. 2. Check if there is air leakage from the exchanger, if yes then replace with new exchanger. 3. Check if silicone tube inside the pump is connected well.
	Mattress issue	1. Quick connector on mattress does not connect well with pump. 2. Air tube connected to T/L connector and air valve is loose, CPR connector is not capped. 3. One way valve is broken. 4. Air cell is leaking.	1. Make sure quick connector on mattress is connected well with pump. 2. Make sure T/L connector and air valve are connected well, CPR connector is capped well. 3. Change one way valve. 4. Change air cell.
Mattress has pillow function, but air cell fail to inflate.		1. One way valve is assembled reversely.	1. Assemble the one way valve in correct direction.
Pump is working but synchronous motor does not work; thus mattress does not alternate, and alternate failure alarm is activated.		1. Synchronous motor is out of order. 2. Wires inside synchronous motor not connected well. 3. Lower PCB is out of order.	1. Change synchronous motor 2. Make sure wires are connected well. 3. Change the lower PCB.
Pump and motor keep working, but cycle time is incorrect. The alternate failure alarm is activated.		1. Micro switch on the exchanger is out of order. 2. Lower PCB is out of order.	1. Change the micro switch. 2. Change the lower PCB.
When powered on, compressor stops after working some time; but the exchanger keeps moving.		1. Pressure detector is out of order.	1. Change the lower PCB.
Mattress pressure is low but alarm is not activated.		1. Pressure detector is out of order.	1. Change the lower PCB.
Push button on panel is not operated well, and LED indicator does not light up.		1. Push button is not operated well. 2. LED is out of order.	1.Change the upper PCB.
Mattress pressure is too high or too low.		1. Pressure sensor is out of order.	1. Change the lower PCB.
Power failure alarm can't be activated after power failure.		1. Battery is out of order.	1. Change the lower PCB.

TECHNICAL SPECIFICATIONS

Pump	
Item:	NEPTUNE
Input rating:	110-120V, 60Hz, Max.1A
Air output:	9.0 liter/min
Pressure range:	20 mm Hg – 55 mmHg
Cycle time:	10/15/20/25 min
Case Material:	Flame Retardant ABS
Mode:	Max firm mode, Alternate/Static/Seat inflate mode
Alarm:	Low pressure, Power failure, Alternate failure
Size:	31cm(L) x 12.5cm(W) x 21cm(H)
Weight:	2.5 kg

Mattress		
Item:	NEPTUNE 36/42/48	NEPTUNE EDGE 36/42/48
Size:	NEPT36: 80”(L) x 36”(W) x 8”(H) NEPT42: 80”(L) x 42”(W) x 8”(H) NEPT48: 80”(L) x 48”(W) x 8”(H)	NEPTEDG36: 80”(L) x 36”(W) x 5”+3”Foam (H) NEPTEDG42: 80”(L) x 42”(W) x 5”+3”Foam (H) NEPTEDG48: 80”(L) x 48”(W) x 5”+3”Foam (H)
Maximum Weight Capacity:	NEPT36:450lbs NEPT42:550lbs NEPT48:660lbs	NEPTEDG36:450lbs NEPTEDG42:550lbs NEPTEDG48:660lbs
Top cover:	Vapor Permeable Nylon/PU	Bi-elastic PU
Air cells:	Nylon/TPU	Nylon/TPU
	20 x 8” cell-on-cell	20 x 5” cubic cell
Base:	Durable Nylon / PVC 840D	
Function:	CPR valve for emergency procedures Pillow function Quick connectors	