

# *ALTUS* PRO SERIES

## Operating Manual



# IMPORTANT SAFEGUARDS

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



It is important that you read all the warning and precautions included in this manual because they are intended to keep you safe, prevent injury and avoid a situation that could result in damage to the device.

## DANGER

To reduce the risk of electric shock:

- Always unplug this product immediately after using.
- Do not place or store product where it can fall or be pulled into a tub or sink.

## WARNING

To reduce the risk of burns, electric shock, fire, or injury:

- This 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, is not working properly, has been dropped or damaged, or has fallen into water. Return the product to a service center for examination and repair.
- Keep the cord away from heated surfaces.
- Never block the air openings of this product or place it on a soft surface, such as a bed or couch, where the openings may be blocked. Keep the air openings free of lint, hair, and other similar particles.
- Never drop or insert any object into any opening or hose.
- Connect this product to a properly grounded outlet only. See page 15 for grounding instructions.
- Do not use outdoors or operate where aerosol (spray) products are being used.

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# INTRODUCTION

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

## General Information

The Altus Pro System is a high quality and affordable Alternating Pressure Mattress (APM) system suitable for medium and high risk pressure ulcer treatment. It has been designed to aid in the prevention of bed sores and is an affordable solution to 24 hour pressure area care.

The Altus Pro System has been tested and certificated to the following standards:

- ANSI/AAMI ES60601-1
- CAN/CSA C22.2 NO.6060 -1
- IEC 60601-1-11

## Intended Use

The Altus Pro System is intended to reduce the incidence of pressure ulcers while optimizing patient comfort. Great for the following:

- Individual homecare setting.
- Long term care.
- Pain management as prescribed by a physician.

## Contraindication

Patient conditions for which this application of pressure relieving therapy should not be used:

- Cervical or skeletal traction
- Unstable spinal cord injuries

NOTE
<ul style="list-style-type: none"> <li>• These mattresses do not have AP or APG protection.</li> <li>• Do not operate directly on the floor.</li> </ul>



## How Alternating Pressure Mattresses (APM) Work

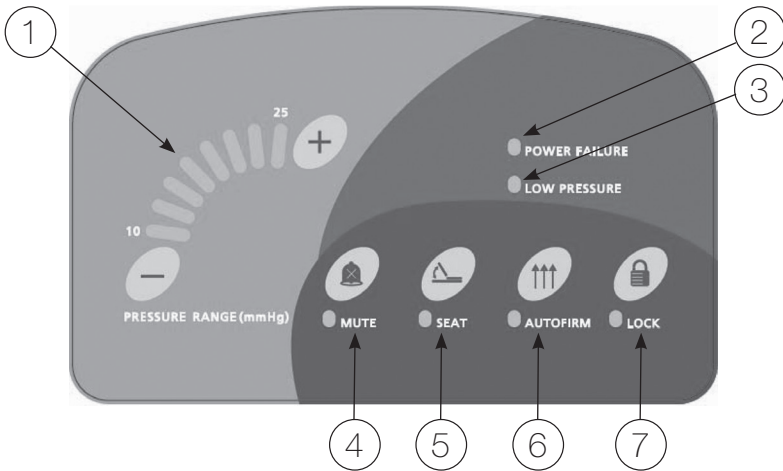
The APM is designed to reduce interface pressure and aid in the treatment and prevention of pressure ulcers/sores; specifically patients with visible pressure ulcers/sores falling under Stage 2 – 4. The pressure is created by an alternating/variable pressure pump that pumps air into a mattress filled with air cells. Each cell contains tiny holes allowing air to escape. This function provides a continuous pressure relief environment while helping to reduce heat and moisture from building up by allowing air to diffuse through the mattress surface. These products are prescribed as a means to “treat” pressure ulcers.

# PACKAGE CONTENTS

<b>Altus Pro Air Pump</b>	10mmHg~ 25mmHg @ 1,000 LPM
<b>Low Air Loss Mattress</b>	20 Snap type cells with low air loss
<b>Mattress Base</b>	Straps to bed frame with hose cover
<b>Cover Sheet</b>	Removable with waterfall zipper

# PRODUCT FUNCTIONS

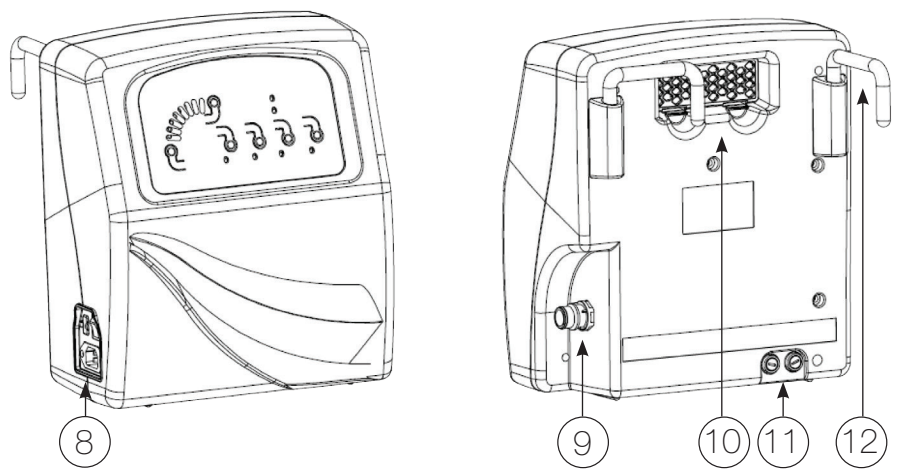
## Pump – Face Plate



No.	Item	Description
1	Pressure Adjustment	<ul style="list-style-type: none"> <li>Press + and – buttons to increase or decrease the firmness of the mattress.</li> <li>8 levels of pressure from 10 – 25 mmHg; the LED will light up for each level.</li> </ul>
2	Low Pressure Alarm	<ul style="list-style-type: none"> <li>Alarm will sound and LED will blink when pressure drops below the selected setting.</li> </ul>
3	Power Failure	<ul style="list-style-type: none"> <li>When power fails, alarm will sound and the power failure &amp; low pressure LEDs will blink.</li> </ul>
4	Mute Button	<ul style="list-style-type: none"> <li>Used to mute the audible alarm.</li> </ul>
5	Seat Mode	<ul style="list-style-type: none"> <li>Pressure increased by 5 mmHg to help patient sit up without bottoming out.</li> </ul>
6	Auto Firm	<ul style="list-style-type: none"> <li>The mattress will be fully inflated at the maximum pump output.</li> </ul>
7	Panel Lock	<ul style="list-style-type: none"> <li>To lock / unlock the panel controls.</li> </ul>

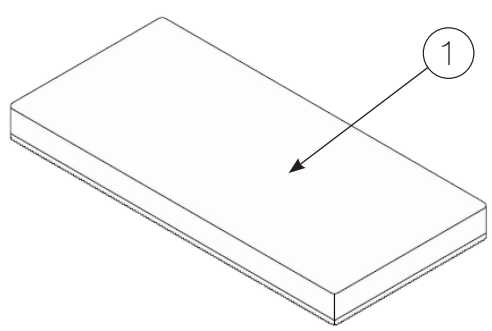
## PRODUCT FUNCTIONS (cont.)

### Pump



No.	Item	Description
8	Power	<ul style="list-style-type: none"> <li>• Green on/off switch.</li> <li>• Power cord outlet .</li> </ul>
9	Inflation/CPR Tube Connector	<ul style="list-style-type: none"> <li>• Connection for the mattress Inflation/CPR Tube.</li> </ul>
10	Air Filter	<ul style="list-style-type: none"> <li>• Filters incoming air to ensure sufficient output</li> </ul>
11	Fuses	<ul style="list-style-type: none"> <li>• T6.3A (110V) fuse (x2)</li> </ul>
12	Hooks	<ul style="list-style-type: none"> <li>• To mount the pump on the foot board or a medical bed frame.</li> </ul>

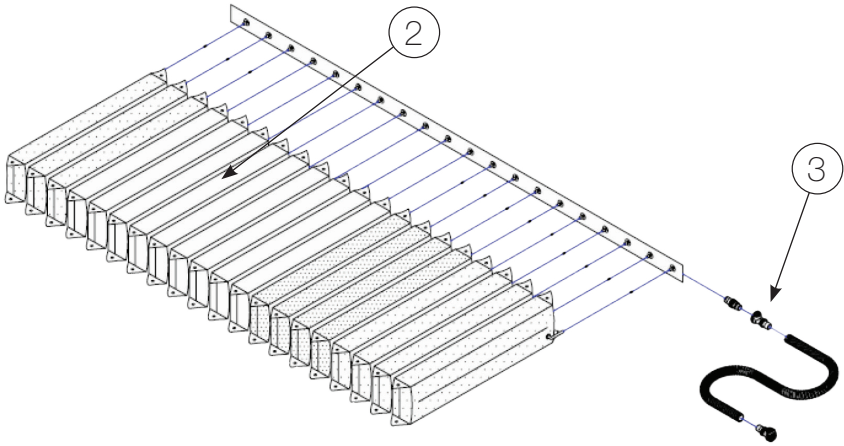
### Mattress — Cover Sheet



No.	Item	Description
1	Cover Sheet	<ul style="list-style-type: none"> <li>• Removable with waterfall zipper</li> </ul>

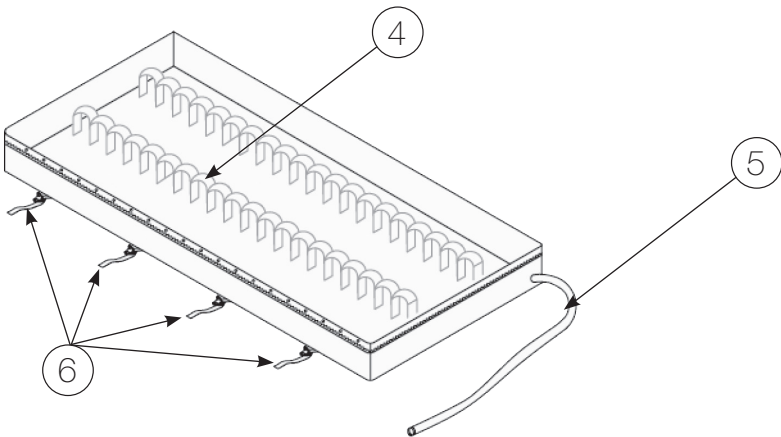
# PRODUCT FUNCTIONS (cont.)

## Mattress – Cells



No.	Item	Description
2	Cells	• 20 Snap type cells with low air loss holes
3	Inflation/CPR Tube	• To connect to the mattress to the air pump.

## Mattress – Base



No.	Item	Description
4	Loop Bridge	• Holds the air cells in place.
5	Inflation/CPR Tube Cover	• Added protection to reduce damage.
6	Mattress Tie downs	• Used to securely attach the mattress to a hospital style bed.

# INSTALLATION

Unpack the box and check for any damage. If damaged, please contact your dealer immediately.

## Pump & Mattress Installation

1. Place the mattress flat on the bed frame. The inflation tube should be towards the foot of the bed so that it can be connected to the inflation nozzle on the pump.
2. Hang the Altus Pro Pump over the frame or at the foot board of the bed. Make sure the pump is secured.
3. Connect the inflation tubes from the mattress to the pump's inflating nozzle. Make sure they are properly attached.
4. Make sure the air hose is not kinked or tucked under the mattress.
5. Before plugging in the Altus Pro Pump, make sure the voltage is compatible with AC120V/60Hz output.

### CAUTION

- **DO NOT** position any of the equipment where it will make it difficult to disconnect the power cord from outlet.
- Keep the power cord away from patient to prevent injuries such as strangulation.
- Make sure to disconnect the pump by unplugging the power cord when it is not in use.

# OPERATION

## Turning ON the power

When the power switch is pushed to the "ON" position, the switch will light up green along with a "BEEP" sound to signal the Altus Pro Pump will soon begin inflating the mattress. By default the pump will start in the Auto Firm mode to fill the mattress. There will be a three second delay from the sound of the "BEEP" till the time the pump begins to inflate the mattress. The LOW PRESSURE indicator (red) will flicker as the inflation of the mattress takes place.



**NOTE**

- The audible LOW PRESSURE alarm will not be heard when inflating the mattress for the first time.
- If the pressure does not reach the 10 mmHg pressure setting in 3.5 minutes after the pump is turned on, the audible alarm will start to beep, and the LOW PRESSURE indicator will continue blinking.
- The user can then adjust to the desired firmness once the mattress has been completely inflated.

**Pressure Adjustment**

The pressure of the mattress can be set by pressing the Pressure Range keys. There are a total of 8 different pressure levels to select from, ranging from 10 to 25 mmHg. See page 5, option No. 1 for location and details.

**Automatic pressure control**

During normal operation, the Altus Pro will monitor pressure changes and keep it at the set level. If the pressure drops below the set level, the blower will automatically speed up to compensate and increase inflation of the mattress. When the set pressure level is reached, the pump will maintain.

**NOTE**

- If the pressure is consistently low, the alarm will beep and the indicator light will turn on.
- If there is an obvious leakage (i.e. loose connection, hose disconnection, cell puncture, etc.) the audible/visible alarms will be activated.

**For Patients:**** WARNING**

- **DO NOT** use another pump other than the Altus Pro Pump supplied with this mattress. It is dangerous to use a pump with pressure capacity over 120 mmHg. This may result in cell-puncture.
- **DO NOT** change any component by yourself. If replacement or repair is needed, contact your local dealer or service center.

**Mute:** This button will silence the LOW PRESSURE alarm, but the indicator will continue blinking. Re-pressing the MUTE button will re-activate the audible alarm. To silence the POWER FAILURE alarm tone, press the power switch to the off position.

**Seat Mode:** Press the SEAT button to achieve even support and 5 mmHg higher pressure to prevent the patient from bottoming out when placing the patient in the seating position for feeding or other applications.

## For Patients (cont.):

**AUTOFIRM:** Will automatically inflate the mattress to the maximum level of 25 mmHg. Press the AUTOFIRM button again to return to the previous pressure level. After 30 minutes the pump will automatically return to the previous pressure level.

**Panel Lock:** To lock/unlock the panel controls.

## For Nursing Care

### Bed Mobility

- Press the AUTOFIRM button to automatically inflate the mattress to the maximum level of 25 mmHg
- Press the AUTOFIRM button again to return to the previous pressure level.
- After 30 minutes the pump will automatically return to the previous pressure level.

### Seating Position

- Press the SEAT button to achieve even support and 5 mmHg higher pressure to prevent the patient from bottoming out when placing the patient in the seating position for feeding or other applications.

### Alarm

- **LOW PRESSURE** — When the pressure drops below the predefined level, the indicator light will blink along with a BEEPING alarm tone.
- **POWER FAILURE** — If the pump loses power, the indicator light will blink along with a BEEPING alarm tone.
- **MUTE** — This button will silence only the LOW PRESSURE alarm, but the indicator will continue blinking. Re-pressing the MUTE button will re-activate the audible alarm. To silence the POWER FAILURE alarm tone, press the power switch to the off position.

## CPR

- When there is an emergency and CPR needs to be performed on the patient, pull the Inflation/CPR tube to quickly release the air from the mattress.
- The Inflation/CPR tube is located on the lower right side of the pump, opposite side from the power switch.

# CLEANING

In this section describes the procedures to clean and decontaminate the APM System. It is important to follow these procedures before using the system on patients.

## Pump

- Do not immerse or soak pump in water.
- Check for external damage and move the pump to clean, flat and level work surface where you will be able to clean your Altus Pro Pump.
- Place the pump on the work surface
- Spray a cloth with a quaternary ammonium solution first and wipe the outside of the case and faceplate.
- **DO NOT** spray any cleaning solution directly on the surface.
- **DO NOT** use a Hypocarbonate or Phenolic based cleaning solution as this may cause damage to the case.
- **DO NOT** allow excess cleaning solution on faceplate or control panel. (If solution gets inside the pump, damage will occur.)
- Wipe with a clean cloth and make sure all areas are clean and dry (top, bottom and both sides).
- 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.

## Mattress

- Wipe down all surfaces with soap and water before using any other disinfectant.
- Any obvious blood spots should be wet down thoroughly with a 1:9 Hypochlorite solution (1 part bleach to 9 parts water) and allow to dry for at least 10 minutes. Then blot with a clean, damp cloth.
- 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 out. 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.
- Dry the mattress in a SUNLESS area after cleaning.

## Cover

- Unbutton or Unzip the top cover and remove from the mattress.
- Brush or wipe down all surfaces with soap and water before applying other disinfectant.
- Cover needs to be immersed and soaked in disinfectant for the required incubation time.
- After pre-soaking, rinse thoroughly on a regular cycle in a washer with no soap, then laundered with mild detergent on a hot/cold setting. (wash temperature 93°F, rinse temperature 78°F).
- Cover can be dried on a low heat setting. (Drying temperature range 90°F – 120°F or on the coldest setting).

## MAINTENANCE

### General

- Regularly check the power cord and plug to inspect for abrasions or excessive wear.
- Regularly inspect the mattress cover for signs of wear or damage.
- Ensure mattress cover and tubes are connected together correctly.
- Plug in the pump and check the airflow from the hose connection port. Regularly inspect the air hose for any kinks or breaks. For replacement parts, please contact your local agent or dealer.

### Low pressure

If you are experiencing lower than normal pressure from your mattress, check the following:

- Check connections between the air mattress and pump. If they are loose or disconnected; reconnect them.
- Ensure each single cell is not broken. Set pressure dial to firm and keep the tubes fully inflated and inspect for air leakage. If any leakage occurs, please contact your local distributor.

## HANDLING AND STORAGE

- Remove all hoses and covers.
- Completely deflate the mattress.
- Lay the mattress out flat and upside down.
- Start from the foot end and roll the mattress towards the head; the foot-end strap can then be stretched around the rolled mattress to prevent unrolling.
- Do not fold, crease or stack the mattress.

# TECHNICAL DESCRIPTION

The Altus Pro System Pump & Mattress is designed and manufactured to meet the most demanding environment. The specifications are listed below:

## America, Canada

Equipment fulfills the requirement of the standard UL 1431. CE

- Europe CE.

## Pump Specifications

Item	Specification
Pump Size	27.2cm x 17.1cm x 31cm (10.7" x 6.3" x 12.2")
Pump Weight	4.8 kg (10.6 lbs.)
Type	Digital
Power Supply	110VAC/60Hz/250W
Power Cord	Power Cord Type: detachable Plug Type: SJT Grade: Medical, 3-PIN Length: 4.5M
Fuse	T6.3A (110V) fuse (x2)
Pressure Range	10mmHg ~ 25mmHg
Air Flow	Maximum Over 1,000 LPM
Outlet	Quick Release / O.D. 18.5mm/1 way
Regulation	UL 60601-1 (UL & cUL) FDA 21 CFR part 820/Class II
IP Rating	IP21
Type BF	Use directly on human body with adequate protection from electrical shock
Weight Capacity	425 lbs.
Environment / Temperature	Operation: 50°F – 95°F Storage: 59°F – 122°F Shipping: 59°F – 158°F Operation: 20% – 80% non-condensing
Humidity	Storage: 10% – 90% non-condensing
Warranty	2 year warranty on pump and mattress

## Mattress Specifications

Item	Specification
<b>GENERAL</b>	
Mattress Size	203cm x 89cm x 25 cm (80" x 35" x 9.8")
Mattress Weight	10kg (22 lbs.)
Loading	200kg (441 lbs.)
Connection with Pump	Quick Release: I.D. 18.5mm
Ulcer Stage	Stage I & II & III & IV
<b>COVER</b>	
Cover Size	203cm x 89cm x 12cm (80" x 35" x 4.7")
Material	Polyester PU transfer
Color	Gray-blue
Connection between cover and base	Zippered
<b>CELL</b>	
Cell Size	89cm x 10cm x 25cm (35" x 4" x 9.8")
Material	Nylon 70D/PU
Thickness	0.21mm
Color	Dark Blue
Total Cells	20 (with low air loss)
Cell's Fixed Type	Snap Type
Connector Type	Pipe Valve
<b>BASE</b>	
Base Size	203cm x 89cm x 13cm (80" x 35" x 5")
Material	Nylon 840 D/PU
Thickness	0.38mm
Color	Charcoal Gray
Fixed with Cell	Loop: Bridge Material: TPU Process: Welding Quantity: 2 pieces
Connection between cover and base	Zippered
Fixed with Bed Frame	PP Strap
Skid-proof Mat	Nylon Meshed Draping PVC

# GROUNDING INSTRUCTIONS

## Three-Wire Plug Ground Instructions

This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a cord having a grounding wire with an appropriate grounding plug. This plug must be plugged into an outlet that is installed properly and grounded in accordance with all local codes and ordinances.

### DANGER

- Improper use of the grounding plug can result in a risk of electric shock. If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.
- Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

## WARRANTY

**Please contact your dealer in case of a claim under the warranty.**

1. The warranty period for pump and mattress is two years from date of purchase. In case of a warranty claim, the date of purchase has to be proven by means of the sales receipt or invoice.
2. The warranty is not extended if Pump or Mattress is repaired/replaced during the warranty period.
3. The following is excluded under the warranty:
  - All damage which has arisen due to improper treatment, e.g. nonobservance of the user instruction.
  - All damage which is due to repairs or tampering by the customer or unauthorized third parties.
  - Damage which has arisen during transport from the manufacturer to the consumer or during transport to the service center.
  - Accessories which are subject to normal wear and tear.
4. Liability for direct or indirect consequential losses caused by the unit is excluded even if the damage to the unit is accepted as a warranty claim.

