ProCair Plus

USER GUIDE

Important Notice

Before operating this medical equipment, it is important to read this User Guide and understand the operating instructions and safety precautions. Failure to do so could result in patient injury and/or damage to the product.

We recommend you keep the User Guide near the product.

Therapeutic devices and/or medical equipment should only be used in accordance with manufacturer's instructions and under the consent, supervision and management of a suitably qualified health professional.

If you have any questions, please contact Novis Healthcare on 1300 738 885.

Novis Healthcare has a policy of continuous product improvement and reserves the right to amend specifications presented in this guide. Information correct at time of production (November 2017) .

Definitions of Symbols Used

The following symbols may appear in this User Guide, on the product, or on its accessories. Some of the symbols represent standards and compliances associated with the control unit and its use.

- Important Information
- Caution
- Electrical Hazard
- Infection Control
- Do Not...
- Class II Protection against Electric Shock
- Type BF Applied Part
- Alternating Current
- Manufacturer
- Manufacturing Date
- SN Serial Number
- Refer to User Guide
- Disposal: Do not dispose of this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.
- IP21 Protection against foreign object and vertically falling water drops.

Contents

System Overview

The ProCair Plus is an alternating mattress replacement system for the prevention and treatment of skin breakdown and pressure injuries in patients of high to very high risk. It is designed to replace your existing bed mattress on either a standard or profiling electric bed frame.

The system is constructed from transverse air cells that cyclically inflate and deflate in an alternating pattern, providing gentle and dynamic support. Cyclic alternation of pressure prevents arterial and venous capillary occlusion in the patient's surface tissue – maintaining and stimulating the flow of blood and lymphatic fluids through these tissues to provide essential oxygen and remove metabolic waste.

The system consists of the following components:

- Mattress replacement with umbilical air hoses and CPR release
- Control unit
- Power cord
- User Guide
- Carry bag

It is recommended that all packing materials and User Guides be kept in the carry bag provided, for ease of storage and/or transport.

Indications

The ProCair Plus mattress replacement systems are indicated for:

- The prevention and treatment of skin breakdown and pressure injuries in patients of high to very high risk.

Contraindications

Patient conditions for which the application of pressure therapy on the ProCair Plus mattress replacement systems contraindications include:

- Instable spinal cord injury
- Cervical traction

Intended Care Setting

Intended care settings for the ProCair Plus mattress replacement systems are:

- Home healthcare
- Professional healthcare

Working Environment

- Temperature: 15°C to 35°C (59° F to 95° F)
- Humidity: 30% to 75% non-condensing

Shipping / Storage Environment

- Temperature: 5°C to 60°C (41° F to 140° F)
- Humidity: 30% to 90% non-condensing

Connecting System to Other Devices

There no are other devices necessary for normal operation.

The ProCair Plus mattress replacement can be fitted to most standard hospital or single bed bases.

The ProCair Plus King Single mattress replacement can be fitted to most king single sized hospital or king single bed bases.

The ProCair Plus control unit can be fitted to the foot board of most hospital or aged care beds.

Therapeutic devices should only be used in accordance with manufacturer's instructions and under the consent, supervision and management of a suitably qualified health professional.

Novis Healthcare accepts no liability for any use, change or assembly of the product other than that stated in this User Guide. Refer to our Warranty Statement for more details.

Safety Precautions

The purpose of the following safety precautions are to direct attention to possible dangers. The safety symbols and their explanations require careful attention and understanding.

The safety warnings by themselves do not eliminate any danger. The instructions or warnings they give are not substitutes for proper accident prevention measures.

For your own safety and the safety of equipment, always take the following precautions.

General Safety Precautions

- **Read all instructions before using this medical device**
- This system must be used on top of an appropriate sized bed frame and the appropriate operating environment as stated in this User Guide.
- Before commencing set up or installation, ensure the power is switched off and disconnect the power cord from the control unit. Novis Healthcare recommends using the cord retention loops on either side of the mattress replacement where possible and attaching it to an electrical outlet by the head of the bed.
- Minimise layers between patient and mattress and secure bed sheets loosely so as not to affect the alternating cell movement. As part of a sensible pressure injury prevention strategy, avoid wearing clothing that may cause areas of localised damage due to creases, seams, objects in pockets, etc.
- Never use sharp objects or electrically heated blankets on or under the system.
- Product top cover may present a suffocation risk. It is the responsibility of the caregiver to ensure that the patient can use this product safely.
- Avoid blocking the air intakes of the control unit, located at the rear of the unit. Do not place items such as blankets over the control unit.
- Bed frames used with the systems can vary greatly depending on the specific healthcare setting (ie hospitals, aged care, home care, etc). It is the responsibility of the caregiver to take the necessary precautions to ensure the safety of the patient. This includes, but is not limited to, the appropriate use of side rails to prevent falls.
- Only the control unit and mattress combination as indicated by Novis Healthcare should be used, otherwise the correct function of the product cannot be guaranteed.

User Capacity

- The maximum recommended patient weight for this system is 220 kilograms.
- The minimum recommended patient weight for this system is 40 kilograms.
- Do not exceed this safe working load or you risk injury to the patient or carer and damage to the product.

Protection Against Hazards

Fluids

Avoid spilling fluids on any part of the control unit. If spills do occur:

- Turn off control unit power and disconnect the unit from the mains electricity supply.
- Immediately clean fluids from the casing by wiping with a soft cloth.
- Ensure there is no moisture in or near the power inlet, power switch and power cord before reconnecting the power supply.
- Check the operation of controls and other components around the spill area.
- Fluid or liquid remaining on the electronic controls can cause corrosion that may cause the electronic components to fail. Component failures may cause the unit to operate erratically, possibly producing potential hazards to patient and carers.

Explosion Hazard

Equipment is not suitable for use in the presence of a flammable anaesthetic mixture with air, oxygen or nitrous oxide.

- Do not use in the presence of smoking materials or open flame – air flowing through the mattress will support combustion.
- Do not open the control unit – risk of electrical shock. Refer servicing to qualified service personnel.

Disposal

Dispose of all components (control unit including batteries, air filter, air cells, mattress cover and base) according to local procedures and regulations or contact Novis Healthcare for advice.

Power Cord

The system should never be operated with a worn or damaged power cord. Keep the cord away from heated surfaces. Should the power cord be found to be worn or damaged, contact Novis Healthcare for a replacement.

Interference

Although this equipment conforms to the intent of directive IEC 60601-1-2[1] in relation to Electromagnetic Compatibility, all electrical equipment may produce interference. If interference is suspected, move equipment away from sensitive devices or contact Novis Healthcare.

1 IEC 60601-1-2. Medical Electrical Equipment - Part 1: General Equipments for Safety, Amendment No. 2. Collateral Standard. Electromagnetic Compatibility Requirements and Test).

System Preparation

Carefully unpack the system and inspect each item for any damage that may have occurred during transit and handling. Any damage or missing components should be reported to Novis Healthcare as soon as possible.

⚠ Confirm there are no sharp objects in the immediate area which may risk damage to the mattress replacement.

1 Remove your existing mattress and place the mattress replacement on top of your bed – printed top cover facing upwards and umbilical cord towards the base of the bed.

2 Attach to the bed by securing the adjustable straps, located on the underside of the mattress base under each bed end. On a profiling bed, secure the straps around the moveable sections of the base. Ensure the buckles are securely fastened and straps are pulled tight.

⚠ Do not secure mattress straps to bed side rails – straps will tear.

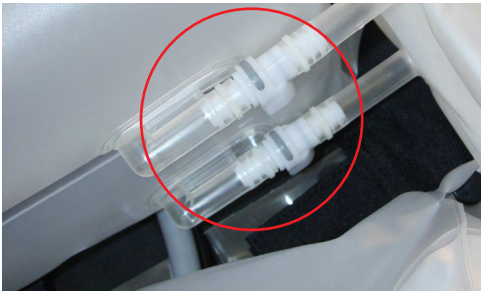
⚠ Ensure that straps do not interfere with the operation of the bed, and that the mattress is properly secured. Failure to do so could result in patient injury or equipment damage.

3 Check CPR sealing valve is closed – the arrows must be aligned to 'CLOSED' position.

"Non-Sealed Mattress Base CPR"

"Sealed Mattress Base CPR"

4 Check all internal quick release air hose connectors are securely connected. Open the top cover by unzipping the CPR-side of the mattress (zipper located at foot end), check each connector is secure by pushing the air hose connectors together (there should be no movement). If a connection is open, a click will be heard once connector is firmly closed.



5 Hang the control unit over the foot end of the bed, using the inbuilt spring loaded hanging hooks. Pull the hooks by the rubber tabs to prevent accidentally trapping your fingers.

Ensure it is secure before use; failure to do so could result in equipment damage.

6 Connect the umbilical cord to the side of the control unit. Listen for two clicks as confirmation the connector is locked in place.

⚠ Straighten any twists in the umbilical cord air hoses to ensure uninterrupted air flow between the control unit and mattress.

⚠ Ensure the umbilical cord is not trapped between the mattress and bed. Failure to do so could result in an under inflated mattress leading to patient injury.

7 Feed power cord through the cord retention loops along either side of the mattress base. Insert power cord plug into the side of the control unit, then connect to an appropriate electrical outlet and switch on mains power.

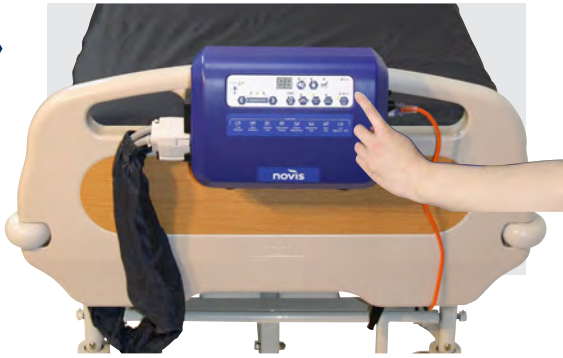
The Power indicator will glow amber, confirming the control unit is connected to a power source.

⚠ Ensure the power cord is not under strain; is free from obstruction; and is secured safely so as not to be a trip hazard.

8 On the control unit, press and hold the Power button for a minimum of three seconds. The Power indicator will glow green to indicate the system is operational and automatically inflating.

While inflating, three Pressure Setting indicators will flash green and the Max Inflate indicator will flash amber. Allow up to 45 minutes for complete inflation.

⚠ Do not lie a person (or any weight) on the mattress during initial inflation.



9 When initial inflation is complete, the Pressure Setting and Max Inflate indicators will extinguish, to indicate the system is ready for use.

The system automatically defaults to Alternating Mode at start up, with AutoCair feature (automatic weight detection) always in operation.

Once initial inflation is complete, a patient may be placed on the system.

1. Once the mattress is fully inflated, bedding can be replaced.

   Secure sheets loosely enough to ensure they do not interfere with cell alternation.

2. Place the patient on to the ProCair Plus mattress.

   The system will automatically set an optimum pressure for the patient's weight (weight range from 40 to 220 kg) and will continuously alternate over a 12 minute cycle.

3. Perform a '**bottoming out**' test (a test to ensure the patient is adequately suspended away from the base).

'Bottoming Out' Test

1. Check system is in alternation mode by ensuring the indicator above the ALT button is illuminated ,and that one set of air cells is inflated while the other set is deflated.

   You may need to unzip the cover to feel the cells for inflation.

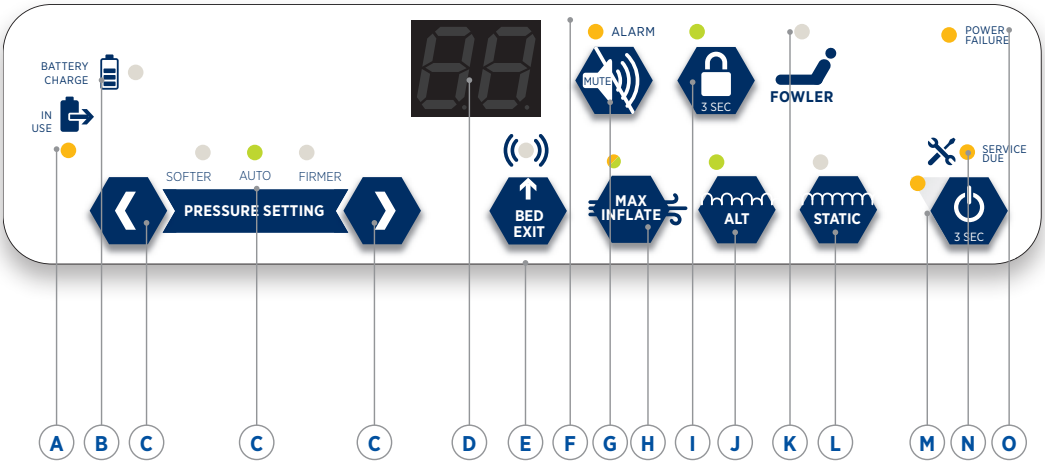
2. With the patient lying supine, unzip one side of the top cover just past sacral region (lower spine).

3. Slide your hand underneath the patient and feel for a deflated cell under the patient's lower spine. The inner static cell will remain inflated, however your hand should easily slide between patient and base.

4. If your hand can pass under the patient, then patient is adequately suspended. If not, manually adjust pressure to 'firmer' and wait at least one cycle (12 minutes) for pressure to increase before repeating step 3.

   If manual pressure adjustment fails, press Max Inflate to force mattress to full inflation. Wait at least one cycle (12 minutes) for pressure to reach maximum pressure, then press Alt to return to an alternation cycle. Wait at least one more cycle (12 minutes) for pressure to increase before repeating step 3.

5. We recommend repeating the Bottoming Out test at least 12 minutes after any manual pressure readjustment.



A Battery In Use

When illuminated, indicates the control unit is using battery power.

B Battery Charge

Indicates the amount of charge in the battery.

Solid green light battery fully charged

Flashing green light battery charging

Flashing amber light battery reserve low

C Pressure Setting – Manual Adjustment

The control unit constantly monitors patient weight to automatically adjust to the optimal pressure setting.

For individual comfort or therapy needs, slight adjustments to the automatic pressure setting can be made. These arrows allow optimal pressure setting to be fine tuned softer or firmer.

Auto light illuminates to indicate standard weight detection is functioning.

Press the left arrow (Softer) to select a safe low pressure range

Press the right arrow (Firmer) to select a safe high pressure range

Press either arrow to cycle back to standard automatic weight detection.

D Alarm Code Display

Displays visual alarm code. Refer to Alarm Codes (on page 20 and on control unit) for details.

E Bed Exit

Turns Bed Exit alarm on and off. Light above button illuminates to indicate the function is active (default). Press the button to toggle on and off.

F Alarm Indicator

Flashing amber light illuminates whenever an alarm is triggered. Refer to the corresponding Alarm Code (pages 14 and 20) for detail.

G Alarm Mute

Turns audible alarm off temporarily. Press to mute the alarm.
Alarm will resound in 20 minutes if the issues has not been resolved,
or immediately if new fault detected.

H Max Inflate

Rapidly inflates mattress to maximum pressure in Static mode. All pressure setting lights will be illuminated, no other pressure settings can be selected whilst the unit is in Max Inflate mode. System will automatically return to Alternating mode after 20 minutes.

I Lock/Unlock

Lock and unlock the control unit panel to prevent unwanted interference.

Press and hold the button for a minimum of three seconds – a beep sounds and the light illuminates to indicate system is locked. When locked, only the Alarm Mute and Lock/Unlock button remain operational.

Press again for at least three seconds to unlock (beep sounds and light turns off).

J Alternate

Press to set Alternating mode (alternate cells cyclically inflating and deflating). Light illuminates to indicate Alternating mode is active.

K Fowler Boost (Automatic)

When illuminated, indicates Fowler Boost feature is active.

When mattress is inclined to 30° or more, the system automatically activates Fowler Boost to increase mattress pressure to accommodate extra load in sacral region. When mattress declines to a flat position, Fowler Boost will automatically deactivate.

L Static

Press to set Static mode (all cells inflated with no dynamic alternation).

Light illuminates to indicate Static mode is active. System will automatically return to Alternating mode after 20 minutes , or 40 minutes when Fowler Boost is activated.

M Power

Press and hold for at least 3 seconds to turn system power on and off.

Green light
power on

Amber light
standby power, power source connected

N Service Due

When illuminated, indicates system is due for periodical service and maintenance procedures. Please contact Novis Healthcare for support. Equipment must only be serviced by qualified personnel.

O Power Failure

When illuminated, indicates no power supply to the control unit
or battery (ie battery power is depleted).

During a power failure, the control unit will automatically switch to FailSafe mode, as indicated by the Battery in Use indicator. Once battery power is depleted, the Power Failure indicator flashes amber with audible alarm to alert carer.

Alarm Codes

The system has eight different alarm codes, each with a unique identifier that displays in the window. Details of each code are listed below, and displayed on a label on the front of the control unit.

Press the Alarm Mute button to silence the audible alarm (for a maximum of 20 minutes unless the issue has been resolved or a new issue has been identified), which will override the mute function.

Refer to Troubleshooting on page 20 for further support.

ALARM CODES

LP	HP	SF	AF	Sd	bo	bE	Lb
Low Pressure	High Pressure	Startup Fail	Alternation Failure	Sensor Disconnect	Bottoming Out	Bed Exit	Low Battery < 10%
Check for leaks	Check for blockage	Check for leaks, restart	Contact your distributor	Check umbilical connector	Check for leaks, adjust pressure setting	Patient has left the bed	Connect to mains power ASAP

⚠ If the problem persists, contact Novis Healthcare for further advice about repair.

⚠ Do not try to open the control unit unless qualified. Doing so will void warranty and could cause personal injury or equipment damage.

Mode

In Alternating Mode, alternate mattress cells inflate and deflate following a fixed cycle time of 12 minutes, with the exception of static head cells.

Alternating mode is used for normal therapeutic function.

In Static Mode, all mattress cells remain fully inflated thereby suspending the alternation cycle and any therapeutic patient benefits.

This mode should be used to create a firm base for stable patient handling and transport or other special circumstances.

⚠ The system will automatically start in Static Mode to initiate mattress inflation, and revert to Alternating Mode once optimal pressure is reached.

⚠ The system will operate in Static Mode for a maximum of 20 minutes, after which it will automatically revert to Alternating Mode for patient safety.

Auto Fowler Boost

Fowler Boost mode will automatically become active whenever the head of the mattress is inclined to a 30° or greater angle. This mode increases air pressure to the cells, to compensate for the additional load of a seated patient. This automatic safety measure allows patients to remain in a seated position while minimising the risk of bottoming out.

Once the head of the mattress is brought back to a reclined position (or below a 5° angle), Fowler Boost mode will automatically disengage.

Quick Twist CPR

Rapid deflation of the mattress may be required for emergency treatment (or to decommission the unit).

The Quick Twist CPR valve is located at the top of the mattress, to the right of the patient's head.

If emergency treatment is required, turn the CPR valve to the 'OPEN' position. This will rapidly deflate the entire system, including static head cells.

Non-Sealed Mattress Base CPR "OPEN"

Sealed Mattress Base CPR "OPEN"

To reinflate the system after the Quick Twist CPR valve has been released, turn to the 'CLOSED' position, ensure control unit is switched on and wait for the system to gain optimal pressure.

Non-Sealed Mattress Base CPR "CLOSED"

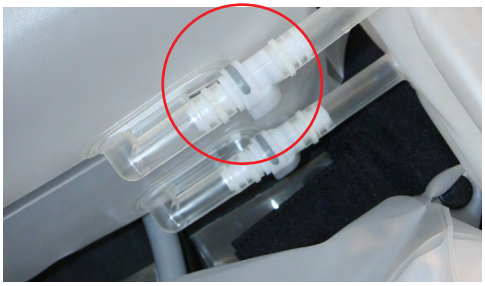
Sealed Mattress Base CPR "CLOSED"

⚠ CLOSED indicator arrows should align with CPR indicator arrow.

Specialised Heel Therapy

The specialised HeelCair zone enables the seven narrow alternating air cells in the heel zone to be disconnected, to remove all pressure on a patient's heels without interruption to mattress alternation.

To disconnect each of the seven heel zone cells, unzip the top cover and locate the top air hose connector of each heel cell. Press the grey tab and remove the male connector from the air supply line. A one-way air valve will protect the rest of the system from deflation and the heel cell will immediate deflate.



⚠ Do not disconnect the lower air hose connector in the heel cells, or other air connectors in the mattress or cell inflation/alternation may be disrupted.

Bed Exit Alarm

When activated this feature constantly monitors for patient presence and signals to indicate the patient has left the mattress.

To activate the CairAlert function, lay patient on the mattress and press Bed Exit – indicator glows green to confirm function is active.

If the patient leaves the mattress, an audible alarm sounds and the '**bE**' error code displays on the Alarm Code panel. To reset, press Alarm Mute and return patient to the mattress. The alarm will reset once patient weight is detected.

To deactivate

Press Bed Exit (green indicator stops glowing to confirm the function is no longer active).

Back Up Battery Function

The inbuilt Back Up Battery will power the system for up to 5 hours continuous operation.

To prepare for patient transport in Alternating mode, remove the power cord without switching off the control unit. Back Up battery will activate.

When the battery reaches 10% an alarm will sound and the system will need to be reconnected to mains power to remain operational.

Once mains power is reconnected the battery will be recharged. The rate of charge varies depending on whether the control unit is operation and the level of remaining charge.

⚠ The control unit can only be turned on with a mains power connection, regardless of battery charge level. If power to the control unit is turned off when backup battery is operational, the system requires mains power to turn on again.

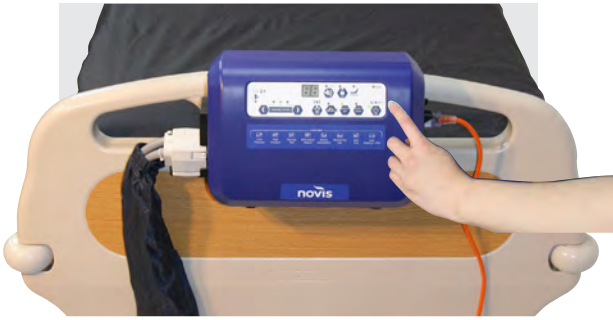
⚠ During long term storage, it is recommended that the battery level is checked every 6 months, and recharged if necessary.

Transport function

To prepare for patient transport in Static Mode, press the Static button and wait 12 minutes to ensure all cells are fully inflated, and Static Mode is active. Remove the umbilical air connector from the control unit – connector will automatically seal. Air will remain in the system for up to 24 hours, depending on patient and environmental circumstances.

Deflation and Storage

1. Press the power button for a minimum of three seconds to switch off the control unit.
2. Switch off mains power and unplug the power cord from the mains outlet.
3. Turn the Quick Twist CPR to OPEN to release air and deflate all cells.



4. Press the release buttons on the sides of the umbilical air connectors to disconnect the air hose from the control unit.
5. Once air has been released from the system, detach the mattress from the bed by unfastening the straps, then fold and roll the mattress from head end to foot end, pausing to squeeze out any trapped air with each roll for storage.

6. Return all items to the custom carry bag for safe keeping.

Care and Cleaning

- To prevent cross contamination, the mattress should be examined and disinfected between patient use.
- Clean the mattress in accordance with local infection control policy and government regulations. Failure to do so could cause patient or personal injury.
- The mattress is not protected against excessive amounts of fluid. Failure to do so could result in equipment damage or electric shock.
- Switch off and disconnect the control unit from mains power supply before cleaning. Do not immerse the control unit in fluid.
- Do not use high temperature autoclave steam cleaning devices or phenolic based products for cleaning. This could result in damage to the equipment and may result in damage to the polyurethane coating, or negate the biocompatibility properties of the fabric.

Cleaning and Infection Control

- It is recommended that the ProCair Plus system is cleaned every two weeks if in constant use.

Top Cover Cleaning

Unzip and remove the top cover from the base before washing (refer page 19 for instructions).

For basic care and cleaning, wipe down with warm water containing PH neutral detergent. The top cover can also be machine washed at a maximum of 95° C (203° F) using neutral detergents.

- Refer to the top cover wash tag for detailed cleaning instructions.
- Do not use system without top cover.

Base Cleaning

Swab the mattress base and cells with a solution of sodium hypochlorite or similar (up to 10,000 ppm available chlorine). Dry thoroughly before reassembly.

Do not machine wash or tumble dry the air cells or mattress base.

- If cleaning or disinfection is required, do not allow fluid to enter air cells and air hoses.

Control Unit Cleaning

Disconnect control unit from mains power before cleaning. Gently wipe down the external case with a soft cloth.

Soak the cloth in warm water containing mild PH neutral detergent, and wring any excess water before gently wiping all external controls. Repeat the process with a dry cloth to remove excess moisture. A soft bristled nylon brush can be used to gently clean crevices.

- Ensure the control unit is disconnected from mains power before cleaning.
- Do not spray disinfectant directly on to the control unit, or immerse the unit in water or other fluid.

Disinfection

The mattress, top cover and control unit may be decontaminated by a solution of sodium hypochlorite or similar (up to 10,000 ppm available chlorine). Dry thoroughly before use.

For infection control, swab with a solution of sodium hypochlorite or similar (up to 10,000 ppm available chlorine). Dry thoroughly before reattaching and use.

Top Cover Removal

1. Raise the waterfall skirt and locate the zippers at the foot end of the mattress.
2. Starting with either zipper, run the zipper along the side of the mattress towards the centre of the head end.
3. Repeat with other zipper. The top cover can now be detached from the mattress base.

To reattach, first reattach the zipper running in the opposite direction to the CPR. Second reattach the zipper running towards the CPR. Then close both zippers by zipping towards the foot end of the mattress.

Bed Exit Pad Removal

The Bed Exit detection pad can be removed from the mattress base to allow removal or cleaning of air cells underneath. It will remained connected to the mattress via the signal wire, which cannot be removed except by a trained technician.

To remove, unzip the pad from each side of the mattress and lift up gently, taking care not to fold or crease the pad. Place the pad on a clean, flat surface alongside the mattress.

⚠ Do not allow the pad to hang by the wire or the bed exit pad may be damaged. Ensure it is placed on a flat surface beside the mattress, without strain to the wiring.

Note: Non-Sealed Mattress model shown in image.

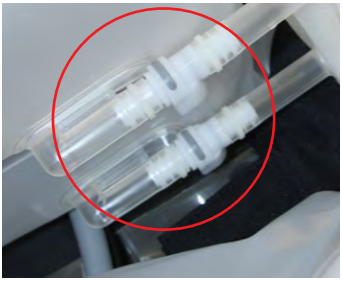
Air Cell Disconnection

1. Once top cover is removed, disconnect the press studs which fasten the air cells to the mattress base – there are two press studs located on each side of the cell, one at the top and one at the bottom.

   The static head cells have one connector, while all other cells have two connectors.
2. Detach the cell by releasing the quick release air hose connectors and pull the air tubes out from the retaining strap.
3. Reattach the air cell by sliding into the retaining straps, reconnecting the air hose connectors and reconnecting the press studs.

⚠ Refer to the relevant Technical Services User Guide for detailed maintenance support.

Note: Non-Sealed Mattress model shown in image.



Alarm Codes

An amber light flashes accompanied by an audible alarm and accompanying Alarm Code display, to indicate the control unit or mattress is experiencing a fault. The light will continue to flash until the fault is cleared. The audible alarm can be silenced for 20 minutes by pressing the Alarm Mute button. It will reactivate if the fault is not rectified, or if a new fault is detected.

CODE	TRIGGER	SOLUTION
LP Low Pressure	Air cells have failed to reach the pre-set pressure *	Ensure the main power is turned on and power cord is connected to mains and control unit. Check control unit/mattress air connections are fitted securely, and reconnect umbilical cord if loose. Ensure control unit is turned on. Ensure CPR valve is set to CLOSE position. Replace CPR valve if air leak is found. Check air intake from filter is not blocked by linen/dust. Replace with new filter if needed.
HP High Pressure	Air cell pressure exceeds the pre-set pressure	Check the air hoses for kinks, obstructions or damage. Undo any kinks and obstructions.
SF Startup Fail	Air cells have failed to reach operating pressure after turning on.	Turn off control unit and disconnect from power. Reconnect to power after 1 minute and restart initiation process. Check any leaks on control unit/mattress air connections, CPR valve and air cells.
AF Alternation Failure	Air cells have failed to alternate	Remove patient from mattress. Turn off control unit and disconnect from power. Reconnect to power after 1 minute and restart initiation process, return patient to mattress once initiated and alternation has resumed. If issue persists, contact Novis Healthcare – a service may be required.
Sd Sensor Disconnect	Control unit has failed to detect connection to patient weight sensor and exit pad sensor	Ensure air hose connector is securely fastened and reconnect if loose.
bo Bottoming Out	Patient bottoming out has been detected	Ensure air hose connector is securely fastened and reconnect if loose. Ensure CPR Valve is set to CLOSE position or replace if damaged. Replace air cells if damaged.
bE Bed Exit	Bed Exit pad has detected patient egress.	Check for patient on mattress. To reset bed exit alert, turn off bed exit alarm by pressing the “Bed Exit” button, return patient to mattress, press “Bed Exit” again to reactivate alert.

General Troubleshooting

CODE	TRIGGER	SOLUTION
 Low Battery < 10%	Battery charge below 10% of capacity	Check the control unit is connected to the mains power supply and the power is operational.
FAULT	**TRIGGER**	**SOLUTION**
	Power Failure	Check control unit is connected to the mains power supply. Check for loose connection on plug and main power is switched on. Check the fuses in control unit. Replace if necessary. Check condition of power cord and plug. Check if mains socket is faulty.
	Mains power has disengaged	If battery-powered operation is unintended, check for a power failure.
	Reminder that periodic service is due.	Please contact Novis Healthcare for system maintenance. This equipment must only be serviced by a qualified service agent.
Control unit does not operate; no display lights		Check control unit is connected to the mains power supply. Check for loose power cord connection and ensure main power is switched on. Check the fuses in control unit. Replace if necessary. Check condition of power cord and plug. Check if mains socket is faulty.
Patient is sinking or 'bottoming out' whilst lying flat on the mattress		The pressure may be set too low for the patient's weight – increase the pressure setting by pressing the firmer pressure arrow (right). Check for air leaks in the mattress and air hoses.
Control unit controls lock up, 'freeze'.		Turn off and unplug the control unit Rest the control unit for one minute before reconnecting the control unit to mains power and switching on.

* *For faster mattress reinflation, press **MAX INFLATE** and wait until the LP alarm code stops flashing. Press the **ALT** button to resume alternation.*

If the problem persists, move patient to an alternate product and contact Novis Healthcare.

Technical Specifications

SYSTEM	MODEL	ProCair Plus	ProCair Plus Sealed Base
	SYSTEM CODE	APMPC-R02	APMPC-R02S
	CAPACITY	40 *to* 220 kg	
	NO OF CELLS	20, including: 3 static head cells, 7 narrow heel cells All cells include a static lower chamber (cell-in-cell)	
	COMPLIANCE	IEC60601-1, IEC60601-1-2 and IEC60601-1-11	
	ARTG	289458	
CONTROL UNIT	CONTROL UNIT CODE	APMPC-CU02	
	CONTROL SYSTEM	Digital micro controller	
	CYCLE TIME	12 minutes (fixed)	
	SUPPLY VOLTAGE	AC100 - 240V / 50Hz - 60Hz	
	MAXIMUM CURRENT	0.3 *to* 0.2 A	
	FUSE RATING	T2AL 250V	
	MIN/ MAX PRESSURE	20 ~ 60 mmHg +/- 6 mmHg	
	PROTECTION TYPE	Class II Type BF	
	INGRESS PROTECTION RATING	IP21	
MATTRESS DIMENSIONS	LENGTH	2000 mm	
	WIDTH	880 mm	
	HEIGHT	200 mm	
	WEIGHT	12.5 kg	13 kg
	MATERIAL	Top Cover: PU laminated nylon Base Cover: PVC laminated polyester (non-sealed base) Base Cover: TPU laminated PU (sealed base) Air Cell: TPU	
CONTROL UNIT DIMENSIONS	HEIGHT	224 mm	
	WIDTH	350 mm	
	DEPTH	135 mm	
	WEIGHT	3.4 kg	
OPERATING ENVIRONMENT	AIR HUMIDITY	Operation: 30% to 75% non-condensing Storage: 30% to 90% non-condensing	
	AMBIENT TEMPERATURE	Operation: 15° C to 35° C Storage: 5° C to 60° C	
	ATMOSPHERIC PRESSURE RANGE	700 hPa *to* 1060 hPa	
	ALTITUDE	-310 metres *to* 3000 metres	

ProCair Plus King Single	ProCair Plus King Single Sealed Base
APMPC-R02K	APMPC-R02SK
40 *to* 220 kg	
20, including: 3 static head cells, 7 narrow heel cells All cells include a static lower chamber (cell-in-cell)	
IEC60601-1, IEC60601-1-2 and IEC60601-1-11	
289458	
APMPC-CU02	
Digital micro controller	
12 minutes (fixed)	
AC100 - 240V / 50Hz - 60Hz	
0.3 *to* 0.2 A	
T2AL 250V	
20 - 60 mmHg +/- 6 mmHg	
Class II Type BF	
IP21	
2000 mm	
1050 mm	
200 mm	
14 kg	14.5 kg
Top Cover Base Cover Base Cover Air Cell	PU laminated nylon PVC laminated polyester (non-sealed base) TPU laminated PU (sealed base) TPU
224 mm	
350 mm	
135 mm	
3.4 kg	
Operation Storage	30% to 75% non-condensing 30% to 90% non-condensing
Operation Storage	15° C to 35° C 5° C to 60° C
700 hPa *to* 1060 hPa	
-310 metres *to* 3000 metres	

Waste Disposal

This product has been supplied from an environmentally aware manufacturer that complies with the European Community's Waste Electrical and Electronic Equipment Directive (WEEE).

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according the legislation. Please be environmentally responsible and contact your local authority on available options to recycle this product at its end of life.

Service Life

The expected service life of a control unit and a mattress is highly dependent on frequency of use, servicing, care and maintenance.

To maintain the condition of the alternating mattress system, service the system regularly according to the schedule recommended by Novis.

Do NOT use unapproved accessories or attempt to modify, disassemble or otherwise misuse the ProCair Plus system or any of its components.

All product specifications are subject to change without notice.

⚠ Medical electrical equipment needs special precautions regarding EMC and needs to be installed according to the EMC information provided. Careful consideration of this information is essential when stacking or collocating equipment and when routing cables and accessories.

⚠ RF mobile communications equipment can effect medical electrical equipment.

Recommended separation distances between portable and mobile RF communications equipment and the ProCair Plus control unit

The ProCair Plus control unit is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the ProCair Plus control unit can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the ProCair Plus control unit as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (**W**)	Separation distance according to frequency of transmitter (**m**)		
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance **d** in metres (**m**) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (**W**) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

Guidance and manufacturer's declaration – electromagnetic emissions

The ProCair Plus control unit is intended for use in the electromagnetic environment specified below. The customer or the user of the ProCair Plus control unit should ensure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The ProCair Plus control unit uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The ProCair Plus control unit is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Compliance	

Guidance and manufacturer's declaration – electromagnetic immunity

The ProCair Plus control unit is intended for use in the electromagnetic environment specified below.
The customer or the user of the ProCair Plus control unit should ensure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment –guidance
Electrostatic discharge (ESD) IEC 61000-4-2	Contact ±8 kV	Contact ±8 kV	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
	Air ±2, ±4, ±8, ±15 kV	Air ±2, ±4, ±8, ±15 kV	
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines	±2 kV for power supply lines	Mains power quality should be that of a typical home healthcare and professional healthcare environment.
	±1 kV for input/output lines	Not applicable	
Surge IEC 61000-4-5	± 0.5kV, ± 1kV line(s) to line(s)	± 0.5kV, ±1kV line(s) to line(s)	Mains power quality should be that of a typical home healthcare and professional healthcare environment.
	± 0.5kV, ±1kV, ± 2kV line(s) to earth	Not applicable	
Voltage Dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	Voltage dips	Voltage dips	Mains power quality should be that of a typical home healthcare and professional healthcare environment. If the user of the ProCair Plus control unit requires continued operation during power main interruptions, it is recommended that the ProCair Plus control unit be powered from an uninterruptible power supply or a battery.
	0 % U_T; 0.5 cycle	0 % U_T; 0.5 cycle	
	0 % U_T; 0.1 cycle	0 % U_T; 0.1 cycle	
	70 % U_T; 25/30 cycles	70 % U_T; 25/30 cycles	
	Voltage interruptions	Voltage interruptions	
	0 % U_T; 250/300 cycle	0 % U_T; 250/300 cycle	
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical home healthcare and professional healthcare environment.
	50 Hz or 60 Hz	50 Hz	
Conducted RF IEC 61000-4-6	3 Vrms: 0.15 MHz – 80 MHz	3 Vrms: 0.15 MHz – 80 MHz	Portable and mobile RF communications equipment should be used no closer to any part of the ProCair Plus control unit, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2$ $d = 1.2\ \sqrt{P}$ 80 MHz to 800 MHz $d = 1.2\ \sqrt{P}$ 800 MHz to 2.5 GHz Where **P** is the maximum output power rating of the transmitter in watts (**W**) according to the transmitter manufacturer and d is the recommended separation distance in metres (**m**). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [A] should be less than the compliance level in each frequency range.[B] Interference may occur in the vicinity of equipment marked with the following symbol:
	6 Vrms: in ISM and amateur radio bands between 0.15 MHz and 80 MHz	6 Vrms: in ISM and amateur radio bands between 0.15 MHz and 80 MHz	
	80 % AM at 1 kHz	80 % AM at 1 kHz	
Radiated RF IEC 61000-4-3	10 V/m	10 V/m	
	80 MHz – 2,7 GHz	80 MHz – 2,7 GHz	
	80 % AM at 1 kHz	80 % AM at 1 kHz	

⚠ U_T is the A.C. mains voltage prior to application of the test level.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

A Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the ProCair Plus control unit is used exceeds the applicable RF compliance level above, the ProCair Plus control unit should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the ProCair Plus control unit.

B Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Manufacturer's declaration-electromagnetic immunity Test specifications for Enclosure Port Immunity to RF wireless communications equipment

The control unit is intended for use in the electromagnetic environment (for home healthcare and professional healthcare) specified below. The customer or the user of the control unit should assure that it is used in such an environment.

Test frequency (MHz)	Band [A] (MHz)	Service [A]	Modulation [B]	Maximum power (**W**)	Distance (**m**)	Immunity test level (V/m)	Compliance level (V/m) (for home healthcare)
385	380 –390	TETRA 400	Pulse modulation [B] 18 Hz	1.8	0,3	27	27
450	430 – 470	GMRS 460, FRS 460	FM [C] ±5 kHz deviation 1 kHz sine	2	0.3	28	28
710	704 – 787	LTE Band 13, 17	Pulse modulation [B] 217 Hz	0.2	0.3	9	9
745							
780							
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation [B] 18 Hz	2	0.3	28	28
870							
930							
1,720	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation [B] 217 Hz	2	0.3	28	28
1,845							
1,970							
2,450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation [B] 217 Hz	2	0,3	28	28
5,240	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation [B] 217 Hz	0.2	0.3	9	9
5,500							
5,785							

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

A For some services, only the uplink frequencies are included.

B The carrier shall be modulated using a 50 % duty cycle square wave signal.

C As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

Limited Warranty

This warranty is provided by Novis Healthcare (ABN 45 102 735 491) of Unit 12, 12 Mars Road, Lane Cove NSW 2066

Novis Healthcare (Novis) products are manufactured to the highest quality standards and are thoroughly tested and inspected before leaving our factory. In addition to any statutory rights and remedies you may have, Novis warrants all of its products sold directly or via an Authorised Novis Australia Dealer against defective workmanship and faulty materials from the date of purchase by the end user for a period of twelve months unless otherwise specified for that product and its components.

Soft Goods	3 year
Control unit	3 year

Warranty Claims

To claim under this warranty, please contact Novis Healthcare and have your receipt or proof of purchase available. Novis Healthcare may need to assess the defect before determining any claim, and additional information may be requested to process your claim. Claims without proof of purchase may not be able to be processed.

Novis Healthcare may at its option inspect the goods on site or require them to be returned to its premises or one of its Authorised Service Agents in person or freight prepaid by you.

Novis will undertake at its option, to repair or replace, free of charge, each product or part thereof on the condition that:

- The product found on examination, to be suffering from a manufacturing defect;
- The product or relevant part has been serviced regularly by Novis or one of its Authorised Service Agents and has not been subjected to misuse, neglect or been involved in an accident;
- The repairs are not required as part of normal wear and tear.
- At our option
- Goods repaired may be replaced by refurbished good of the same type rather than being repaired.
- Refurbished parts may be used to repair goods.

Novis Healthcare will not be held responsible for any repair other than those carried out by it or one of its Authorised Service Agents.

Warranty repairs do not extend the length of the warranty period.

Limited Liabilities

Our liability under this manufacturer's warranty is subject to us being satisfied that a defect was caused by faulty parts, manufacture or workmanship, and was not caused or substantially contributed to by other factors or circumstances beyond our control, including (but not limited to) defective installation, maintenance or repair, product modification or alteration, any neglect, misuse, or excessive use, normal wear and tear or failure to follow manufacturer's instructions.

IMPORTANT NOTICE FOR AUSTRALIAN CONSUMERS:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. To obtain compensation, you will need to provided documentary evidence of the loss or damage suffered and documentary evidence that such loss or damage was a reasonable foreseeable consequence of a failure Novis Healthcare to comply with a consumer guarantee under the Australian Consumer Law. Subject to the provisions of the Australian Consumer Law, Novis Healthcare excludes, to the fullest extent permitted by law, all liability in respect of loss of profit or other economic loss, direct to indirect or consequential, special, general or other damages or other expenses or costs which may include negligence.

Pressure care and patient handling specialists

novis.com.au / **1300 738 885**

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