



# APH055 **Apollo 4 Plus**<sup>™</sup>



# **USER MANUAL**

AHSM-027\_Version\_1\_29.03.2022

[www.apollo-ht.co.uk](http://www.apollo-ht.co.uk)

## **INTRODUCTION**

Congratulations on the purchase of your Apollo 4 Plus alternating pressure cushion. The durable, high quality material used in the manufacturing of these products will ensure that you experience long-lasting and uninterrupted performance.

### **Intended Use**

This product is intended to help and reduce the incidence of pressure ulcers while optimising patient comfort. It also provides the following benefits:

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

The product can only be operated by personnel who are qualified to perform general nursing procedures and have received adequate training in knowledge of prevention and treatment of pressure ulcers.

### **Contraindication**

Patient conditions for which the application of pressure relieving therapy on an alternating system are contraindicated as follows:

- Cervical or skeletal traction
- Unstable spinal cord injuries



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## Symbol definition



CE Mark



European representative information



Product production batch



Product serial number



Manufacturer information



II type equipment symbol



Mandatory reading of instructions



BF device symbol

# IP21

Protected against solid foreign objects of 12.5mm and greater; protection against vertically falling water drops.



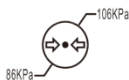
When the end user intends to discard this product, the product must be sent to the appropriate facility for recycling and recycling.



Environment temperature for operation or storage



Environment humidity for operation or storage



Atmospheric pressure for operation or storage



Maximum weight of the cushion load.



Do not wash the cushion.



Do not bleach the cushion.



Do not tumble dry.



Do not iron.



Do not dry clean.

## Products Features

1. The product consists of an alternating pressure air pump powered by an internal lithium battery and a moulded visco foam cushion base with 6 alternating cells. It is generally installed on a wheelchair and used as a cushion.



## Safety Precautions

In order to use this product safely, please read this IFU carefully and understand it. Please be sure to follow the instructions in this manual. In order to avoid a disaster when using this product, you must know in advance the factors that may be dangerous. However, it is difficult to predict all potential dangers. Therefore, warnings about security are defined and described in this manual.



**Warning** If you do not follow the instructions in this symbol, you are warned that there is a risk of property damage, injury or death. Because it is especially important, it is described below as "safety precautions and warnings"

## Safety warnings



**Warning 1** This product features a layer of soft air floating beneath the patient's body. Therefore, do not use when patients need to undergo cardiac resuscitation.



**Warning 2** Use this product with your doctor or specialist when using this product. In addition, if the body feels abnormal during use, or the symptoms are worse, or there is a risk of accident, stop using it immediately and consult an expert.



**Warning 3** When you move to a stand position or get out of cushion, be sure to ask someone else for assistance, otherwise there is a danger of falling.



**Warning 4** Smoking is not allowed on the cushion and may cause a fire.



**NO SMOKING**



**Warning 5** Please do not bundle the air outlet or press it under the cushion. When the blower tube is bent or compressed, air may not enter the air mattress and may not achieve the desired results.



**Warning 6** Do not use the air pump in a damp place. Do not use in or around water or urine, which may result in electric shock or malfunction. Avoid direct sunlight. In hot and humid places, keep it away from the wall or above 55cm to avoid moisture retention.



**Warning 7** Please do not remove the screw of the air pump to open the casing and repair it yourself; it may cause electric shock or malfunction. In addition, the modification of the air pump without our consent may pose a serious safety hazard. Never let customers modify the air pump.





**Warning 8** If you do not use the air pump for a long time or need to clean the air pump, be sure to unplug the power cord from the outlet. If not it may cause accidents, electric shocks, and malfunctions.



**Warning 9** Please do not pull on the power cord of the air pump, do not damage the power cord, and do not clip the power cord to the door. When removing the plug from the socket, be sure to hold the power plug and pull it out to avoid electrical accidents and fire.

## Confirm before using

Before using, please confirm whether the accessories are complete and whether you understand the contents and precautions of the manual.

## Packing list confirmation

- 1 Air pump for cushion.....x1
- 2 Power cord .....x1
- 3 Power Adapt.....x1
- 4 User manual.....x1
- 5 Cushion .....x1





## User instructions

### Step1:

- Place the cushion on the chair

N.B. Actual cushion may look different to that shown in the image



### Step2:

- Hang the hooks of the air pump on the chair frame or put on a nearby platform if the chair is not moving
- Connect the air pipes using the quick connector to the side of the pump



N.B. Actual pump may look different to above image

### Step3:

- Turn On the power **1**
- Adjust the Pressure **2**
- Adjust the Function **3**



- 1 Power: Press this button to turn the pump on and off.
- 2 Pressure: Press this button to cycle through the 3 pressure settings:  
 LOW = 20mmHg  
 MEDIUM = 40mmHg  
 HIGH = 60mmHg
- 3 Static: Press this button to cycle through the Static & Alternate settings:  
 Default setting is 6 min alternating cycle. You can select to put the pump into static function for 10 min or 20 min. After the selected time has elapsed, the pump automatically defaults to 6 min alternating cycle
- 4 Battery Indicator: Shows the level of charge currently in the battery. When all 4 lights are illuminated green, the battery is fully charged. As power is used, the number of lights illuminated reduces. When there is only 1 light left, it is time to charge the battery.
- 5 Charging Indicator: When the power adapter provided with the pump is connected to the pump and to a suitable power supply, the charging indicator symbol is illuminated green. As the battery charges the lights on the battery symbol illuminate gradually from no lights to 4 lights and then all lights extinguish and the sequences starts again until the battery is fully charged. When the battery is fully charged, all 4 lights on the battery symbol remain illuminated constantly. Once the battery is fully charged remove the power adapter from the pump, although there is a safety feature to prevent overcharging.

#### Step4: Terminate operation of device

- **When you do not need to use the device, turn off the power to save the charge in the battery.**



## Battery Charge

Please use the adapter provided by the manufacturer to charge the battery, otherwise it may cause the battery affect the life of the battery, or cause the battery to overcharge, or cause fire and other hazards.

## Maintenance

**Warning:** Do not carry out maintenance when the product is in use.

### Air pump output pressure check

- In the case of air pumps and air cushions, please check the pressure once a week. In addition, if you change the location, or if you suspend operation due to power outages, etc., please do it every time, even within a week.

## Cushion cleaning

- Usually use a dry cloth to clean the cushion
- If necessary, wet the cloth with a neutral detergent, wring the cloth and clean the cushion cover.
- Let it dry naturally
- Maintenance is required when the product is no longer in use.

Maintenance is required when the cushion is contaminated by the patient's bodily fluids. If the inner foam becomes wet, it must be replaced.

Maintenance is required every other week when in use.

### **Warning:**

- Dry cleaning is forbidden, otherwise it will hurt the cushion
- Please do not use a dryer to avoid deformation of the cushion.
- Do not use an iron to avoid damage to the cushion cover

## Air pump cleaning

- Turn off the power switch and unplug the power cord.
- Usually use a dry cloth to clean the air pump.

## Storage and disposal methods

**If you are no longer using this product, please follow the steps below.**

- 1. Turn off the power switch and unplug the power cord.**
- 2. Unplug the air tube**
- 3. Cleaning dirty air pumps and cushions**
- 4. Do not fold the cushion and put it in the plastic bag**
- 5. Tighten the power cord and put the air pump in a plastic bag.**
- 6. Put the air pump and cushion in the box, together with this manual**

### **Note:**

- Please put it in a stable place, do not drop from a height.
- Please do not put heavy objects on the box.
- Please keep it in a place with low humidity.

## Troubleshooting

| Trouble                                       | Possible reason  |
|---|--|
| Pump does not start, no light on power button | The battery is flat or the power plug is not plugged into the power outlet, the power supply does not work.                            |
| Air cushion is too soft                       | Valve does not work<br>Connector is off<br>Air pipes kinked<br>Damaged cell inside cushion   |
| Air cushion is too Firm                       | Pressure Selection error   |
| Air pump noise is abnormally high             | Put something on the air pump<br>The air pump is in contact with other things<br>Put the air pump on something that is easy to vibrate |
| Power outage                                  | The power plug<br>Internal fault   |



## Warranty and after-sales service(Please read carefully)

### Service life and Shelf life

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- EXPECTED SERVICE LIFE OF the pump is 5 years
- EXPECTED SERVICE LIFE OF the cushion is 2 years

### Warranty

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| Item    | Warranty  |
|---------|-----------|
| Pump    | 24 months |
| Cushion | 12 months |

### About the repair request

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First, look at the possible causes (see page 14). If you are still having trouble, turn off the product and contact your dealer or Apollo Healthcare Technologies.

#### During the warranty period:

- In the event of a malfunction in a normal use condition, your dealer should repair according to the provisions of the warranty.
- Please show your warranty when you are under warranty.
- In addition, if the second article of the guarantee is met, the repair is charged. Please confirm the guarantee for details.

#### After the warranty expires:

- Please consult with the shop or company you purchased, and if you can maintain the function through maintenance, you can repair it at a charge according to the customer's request.

### Service personnel requirements

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- Should have a certain understanding of the product.
- Should be able to understand the circuit schematic.
- Should be able to use screwdriver, soldering iron, and multimeter, etc.
- We (manufacturer) will provide the technical instructions, the circuit diagram, parts list to the service personnel.

#### **Warning:**

- Please don't replace the power cord by yourself and it must be replaced by professional service personnel.
- The parts should be replaced by professional service personnel when it is necessary to be replaced.
- The only safe way to turn off the power completely is to unplug the power cord

## Specification list

### Specifications


|   |                      |  |
|---|----------------------|--|
| Adapt Power Supply                          |                      | Input: AC 100-240Vac 50/60Hz 1.6A<br>Output: 28Vdc 2.0A  |
| Adapt dimension(LxWxH)                      |                      | 12x13.5x5.5 cm   |
| Internal Li-Battery                         |                      | 22.2Vdc 2000mAH  |
| Work time when the battery is fully charged |                      | 8 hours  |
| Cycle time                                  |                      | 6 mins, Fixed, non-adjustable (*Customization)   |
| Dimension(LxWxH)                            |                      | 27.5x14x9.5 cm   |
| Weight                                      |                      | 1.8Kg  |
| Environment                                 | Atmospheric pressure | 80KPa to 106KPa  |
|   | Temperature          | Operation: 5° C to 40° C (50° F to 104° F)<br>Storage: -15° C to 70° C (5° F to 158° F)<br>Shipping: -15° C to 70° C (5° F to 158° F)  |
|   | Humidity             | Operation: 10% to 90% non-condensing<br>Storage: 10% to 90% non-condensing<br>Shipping: 10 % to 90% non-condensing   |
| Classification                              |                      | Class II, Type BF, IP21<br><br>Applied part: Air mattress/Air pad<br><br>Not suitable for use in the presence of a flammable<br><br>Anesthetic mixture (No AP or APG protection) |
| Cushion                                     |                      | Size 45x45x10cm<br><br>Weight:1.0Kg  |

## EMC Declaration

### EMC information

| <b>Guidance and manufacturer's declaration-electromagnetic emissions</b>   |                   |  |
|--|-------------------|--|
| The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that they are used in such an environment.   |                   |  |
| <b>Emissions test</b>  | <b>Compliance</b> | <b>Electromagnetic environment - guidance</b>  |
| RF emissions<br>CISPR 11   | Group 1           | The models device use RF energy only for their internal function. Therefore, their RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.              |
| RF emissions<br>CISPR11  | Class B           | The models P01, P05 are suitable for used in domestic establishment and in establishment directly connected to a low voltage power supply network which supplies buildings used for domestic purposes. |
| Harmonic emissions<br>IEC 61000-3-2  | Class A           |  |
| Voltage fluctuations<br>/ flicker emissions<br>IEC 61000-3-3   | Complies          |  |
| <p><b>Warning:</b></p> <ol style="list-style-type: none"> <li>1. The device should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the device should be observed to verify normal operation in the configuration in which it will be used.</li> <li>2. Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.</li> <li>3. Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Pump, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.</li> </ol> |                   |  |

| <b>Guidance and Declaration-electromagnetic immunity</b>  |  |  |   |
|---|--|--|---|
| The model P08M device intended for use in the electromagnetic environment specified below.<br>The customer or the user of the device should assure that they are used in such an environment. |  |  |   |
| <b>Immunity test</b>  | <b>IEC 60601 test level</b>  | <b>Compliance level</b>  | <b>Electromagnetic environment -guidance</b>  |
| Electrostatic discharge (ESD)<br>IEC 61000-4-2  | ±8 kV contact<br>±2 kV, ±4 kV, ±8 kV,<br>±15 kV air  | ±8 kV contact<br>±2 kV, ±4 kV, ±8 kV,<br>±15 kV air  | Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.  |
| Electrical fast transient/burst<br>IEC 61000-4-4  | ±2kV for power supply lines<br>±1 kV for Input/output lines  | ±2kV for power supply lines  | Mains power quality should be that of a typical commercial or hospital environment.   |
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11.   | <5 % UT<br>(>95% dip in UT.)<br>for 0.5 cycle<br><5 % UT<br>(>95% dip in UT)<br>for 1 cycle<br>70% UT<br>(30% dip in UT)<br>for 25/30 cycles<br><5% UT<br>(>95 % dip in UT)<br>for 5/6 sec | <5 % UT<br>(>95% dip in UT.)<br>for 0.5 cycle<br><5 % UT<br>(>95% dip in UT)<br>for 1 cycle<br>70% UT<br>(30% dip in UT)<br>for 25/30 cycles<br><5% UT<br>(>95 % dip in UT)<br>for 5/6 sec | Mains power quality should be that of a typical commercial or hospital environment. If the user of the models P01, P05 require continued operation during power mains interruptions, it is recommended that the models P01, P05 powered from an uninterruptible power supply or a battery.                                    |
| Power frequency (50/60 Hz) magnetic field<br>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 commercial or hospital environment.   |
| <b>NOTE UT is the a.c. mains voltage prior to application of the test level.</b>  |  |  |   |
| Conducted RF IEC<br>61000-4-6   | 3 Vrms<br>150 kHz to 80 MHz<br>6 Vrms in ISM and amateur radio bands   | 3 Vrms<br>150 kHz to 80 MHz<br>6 Vrms in ISM and amateur radio bands   | Portable and mobile RF communications equipment should be used no closer to any part of the models P01, P05 including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br><br><b>Recommended separation distance</b><br>$d=[3,5/V1] \times P1/2$ |
| Radiated RF IEC<br>61000-4-3  | 10 V/m<br>80 MHz to 2.7 GHz.<br><b>385MHz- 5785MHz Test specifications for ENCLOSURE PORT</b>  | 10 V/m<br>80 MHz to 2.7 GHz<br><b>385MHz- 5785MHz Test specifications for ENCLOSURE PORT</b>   | $d=1.2 \times P1/2$ 80 MHz to 800 MHz<br>$d=2.3 \times P1/2$ 800 MHz to 2.7 GHz<br>where P is the maximum output power rating of the transmitter In watts (W) according to the transmitter manufacturer and d is the  |

|  |  |  |   |
|--|--|--|---|
|  | <p><b>IMMUNITY to RF wireless communication equipment (Refer to table 9 of IEC 60601-1-2:2014)</b></p> | <p><b>IMMUNITY to RF wireless communication equipment (Refer to table 9 of IEC 60601-1-2:2014)</b></p> | <p>recommended separation distance in meters (m).</p> <p>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:</p>  |
| <p>NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.</p>   |  |  |   |
| <p>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>  |  |  |   |
| <p>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 model P08M is used exceeds the applicable RF compliance level above, the model P08M should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the model P08M.</p> |  |  |   |
| <p>b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.</p>   |  |  |   |

**Recommended separation distances between portable and mobile RF communications equipment and the models P08M**

The model P08M are intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the model P08M can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the model P08M are recommended below, according to the maximum output power of the communications equipment.

| Rated maximum output<br>Power of transmitter<br>W | Separation distance according to frequency of transmitter<br>m |  |  |
|---|--|--|--|
|   | 150kHz to 80MHz<br>$d=1.2 \times P^{1/2}$                      | 80MHz to<br>800MHz<br>$d=1.2 \times P^{1/2}$ | 800MHz to 2,5GHz<br>$d=2.3 \times P^{1/2}$ |
| 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 meters (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) accordable 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.

| CHANGE HISTORY |                       |            |
|----------------|-----------------------|------------|
| Version        | Description           | Date       |
| 1.0            | First release version | 2022-03-29 |
|                |                       |            |
|                |                       |            |
|                |                       |            |
|                |                       |            |



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Due to ongoing research and development, Apollo Healthcare Technologies Ltd, reserve the right to change specifications without prior notice. This will not affect the efficacy of the system. Always consult the user manual for instructions for use.