

# Armon Ayura



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## Foreword

This manual has been written for the owners and operators of the Armon Ayura. It contains general instructions on operation, precautionary practices, maintenance and parts information.



Before using the product please make sure that you read the complete manual thoroughly and become familiar with the controls as well as the accessories. This is essential for your own safety and in order to maximize the use, functionality, efficiency and lifespan of your unit.

Specifications put forth in this manual were in effect at the time of publication. However, owing to Armon Products BV's policy of continual improvement, changes to these specifications may be made at any time without obligation on the part of Armon Products BV.

## Symbols used in this manual



: **ATTENTION!** Read these parts extra carefully for they contain warnings.



: end-of-life; information about disposal at the end of the useful life of the product.

## In general

The Armon Ayura is an electronically controlled (24V=) mechanical arm support. The main goals are: to increase upper limb mobility, make the user less dependant and improve quality of life.

General idea: the Ayura compensates the weight of the arm. When the arm is compensated and therefore feels weightless, the user can make all movements possible using the strenght he/she's got left.

It's possible to also compensate the weight of an object and overcompensate to lift the arm above the head. The Ayura also has functions to ease or manipulate certain movements.

The weight compensation is electronically steplessly adjustable through the controls. The Ayura also has a horizontal/vertical lock, a rotation lock, and a tilt function.

The arm support does not take over any function. It only support the natural arm movements. The user makes all the movements himself. This is good for the muscles, joints and motor functions of the user. The Armon Ayura follows all movements and supports the arm in a 3D area.

The Armon Ayura can compensate an arm weight from +/- 900 gram up to 3400 gram. The Ayura light can compensate an arm weight from +/- 600 gram up to 2500 gram. It is possible to mount all types of Armon Braces.

### Intended use:

The Armon Ayura is an electronically controlled dynamic arm support and should only be used to support the weight of an arm with a maximum weight of 4500 gram per arm included held objects. This max load should never be exceeded.

Left, right or both arms can be supported. It is important to choose the right brace for optimal functionality. The Armon pura can be mounted on a wheel chair, working chair or on a stand.

## Parts of the Armon Ayura

*Upper arm:* the connection between the shoulder joint and brace mounting point.

*Brace mounting point:* on this point the Brace can be mounted.

*Brace:* (not in this picture) the Brace is the connection between the Ayura and the user. This is where the arm lies in.

*Shoulder joint:* the highest rotational point (near to the shoulder).

*Hip joint:* the middle rotational point (near to the hip).

*Main axle:* the vertical rotational axle

*Rotation frame:* frame on which the Ayura rotates.

*Main cable:* the main electronics cable



## Functions of the Armon Ayura

The Armon Ayura is available in different configurations. The following functions are available:

- weight compensation adjustment (comes standard)
- tilt function
- H/V lock (horizontal/vertical lock)
- rotation lock
- wireless control through bluetooth (only for Android)

Depending on the configuration you can have controls with a minimum of 2 buttons up to 6 buttons. It is possible to add extra functions in the future if necessary.

## Installation of the Armon Ayura

The Ayura can be installed on an electric wheelchair, work chair, floor base or an individual solution.



The installation of the Ayura can only be done by certified personnel of a certified distributor of Armon Products.

During the initial commissioning of the Ayura, the distributor should have taken care of: 1. the right placement of the wheelchair connection through an individual made frame 2. the installation of the wheelchair connection to a power source (24V=) 3. the installation and right placement of the controls, or integration of the controls within the desired controlling system 4. the right individual adjustment of the Brace.

## Placing and removing the Ayura

The Ayura is mounted to a wheelchair, workchair, floor base or an individual solution through the wheelchair connection (from now on WC). See picture.

The Ayura has a quick release system. This system makes it possible to place or remove the Ayura within a few seconds. This system is built into the rotation frame and the WC.



Never put anything between the red connector in the WC when the Ayura is not mounted. This may cause electrical problems.

When the Ayura is not placed and put away, never put it on the main cable underneath the rotation frame. This may cause cable breakage.

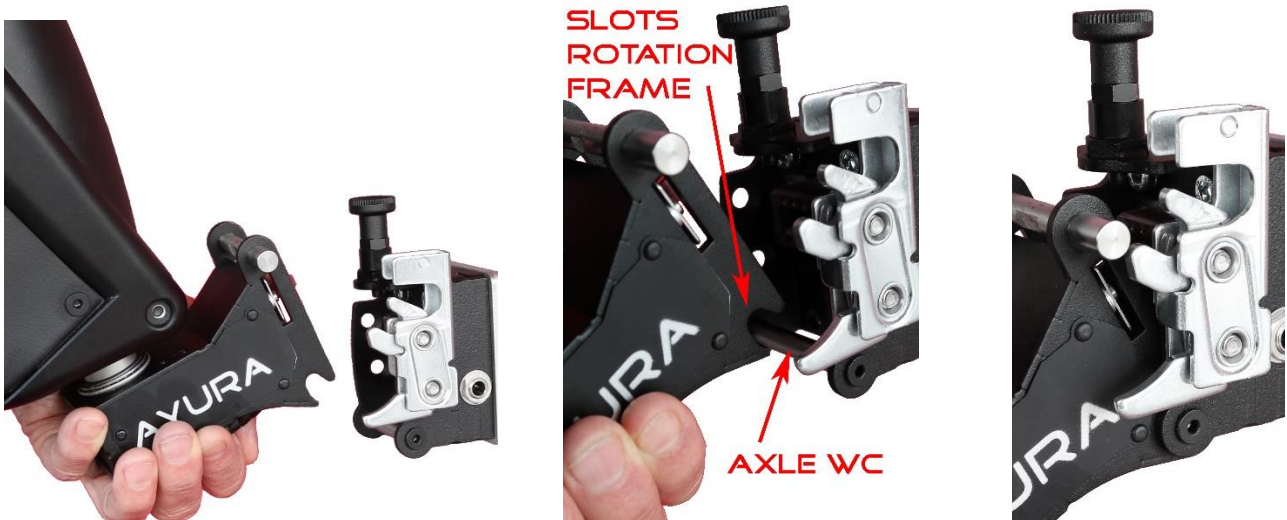


To place the Ayura apply the following steps:

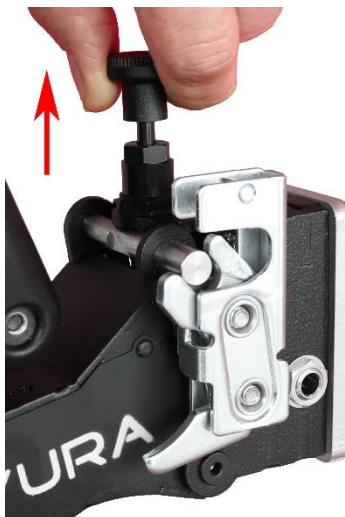
1. Lift the Ayura with two hands, of which one underneath the rotation frame.
2. Tilt it slightly towards yourself and bring it towards the WC.
3. Put rotation frame with the slots upon the horizontal axle of the WC.
4. Lift up the black top latch. Keep one hand on the Ayura at all times.
5. Rotate the Ayura vertical untill it locks into both (black and silver) latches.
6. Release the black top latch.
7. Make sure the pin of the black top latch has secured the silver axle of the WC like in the picture below. The axle of the WC should be locked behind the pin of the black latch. If the axle is not properly secured, remove the Ayura and repeat steps from step 1.
8. Let go of the Ayura.



See the following pictures for a clarification of these steps.



Steps 1, 2 and 3



Steps 4 and 5



Steps 6 and 7



Step 5,5

To remove the Ayura, follow the above steps in a reverse order with one extra step between step 6 and 5:  
5,5. Unlock the silver side latch by pushing down the handle.



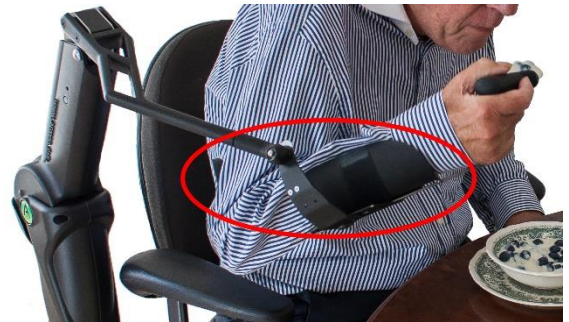
## Placing the controls cable

You can activate the several functions of the Ayura with the controls. The controls cable has a plug at one end that goes into the WC and the controls on the other end. The plug goes into the opening in the WC. Normally the controls are placed during initial commissioning. They do not need to be removed for any reason, except during a complete dismantling of the product.



## The Brace

The Brace is the part where the arm lies in. It is the connection between the arm support and the user. Armon Products has different types of braces and every type is available in different sizes. The braces are exchangeable between all our arm supports.



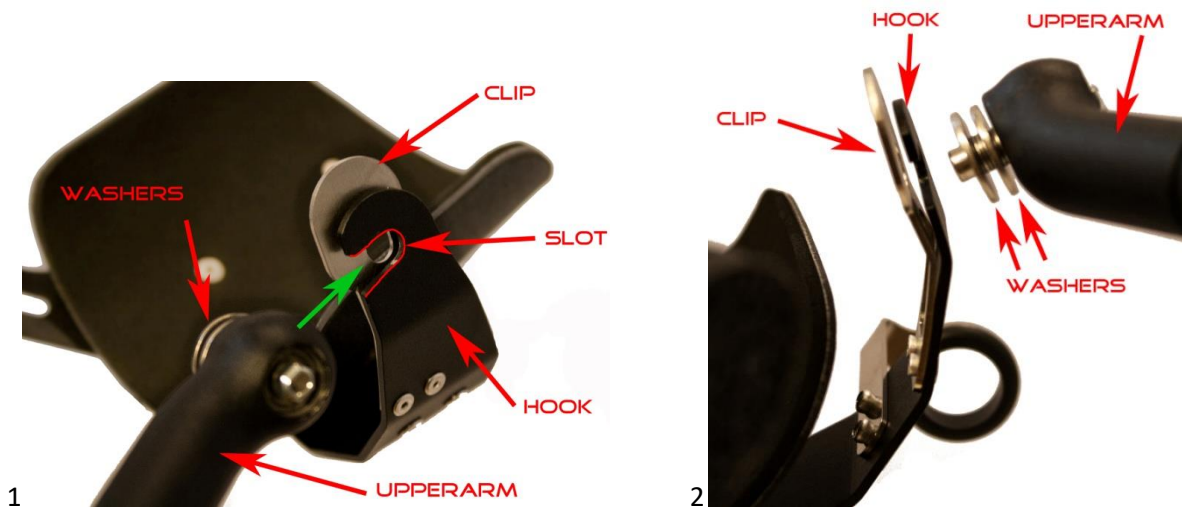
Example of different types of Braces:



The more advanced the Brace, the more functionality you can achieve with this Brace. It is possible that your Brace deviates from the pictures below. Several components of the Brace are adjustable to achieve a perfect personal fit. The right individual adjustment of your Brace should only be done by qualified and therefore trained specialists.

## Attaching the Brace

All our braces are exchangeable between all our arm supports. You can easily attach and detach them. See the pictures and explanation below.

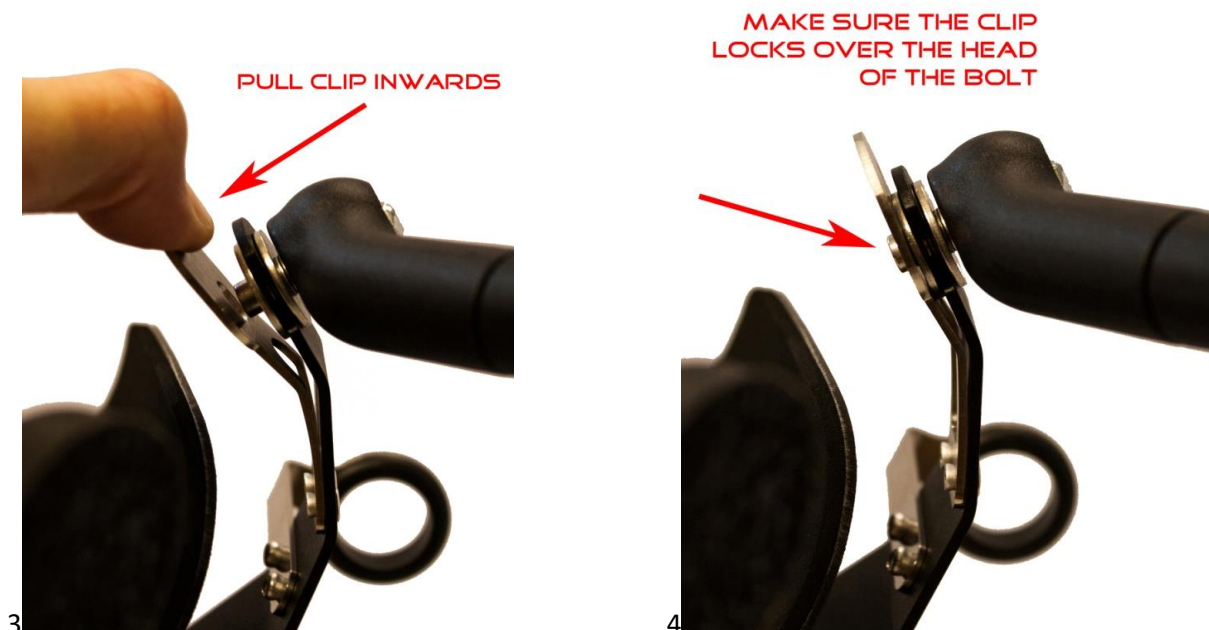


1/2 Hold the brace with the slot pointing in the direction of the washers.

3 Pull back the clip inwards until the hook can be positioned completely over the spindle.

Slide the hook completely over the spindle between the washers and release the clip

4 Make sure the clip locks over the head of the spindle. The head of the spindle should cross through the middle hole of the clip.



## Placing the arm

Place the arm in the brace in the following way:



- The underarm should lay in the arm shell.
- The upper arm should be placed against the upper arm support, not far above the elbow.
- The elbow should be free.
- The upper arm support consists out of non allergic rubber with a stainless steel frame in it that can be bent in any direction so that it is the most comfortable for the user



If you are not comfortable or sure how to properly place your arm into the Brace, please contact your local supplier. If available (depending on the type of Brace) it's mandatory to always fix the upper strap of the Brace which goes over the under arm so it's fixed and can't fall out of the Brace.

## The Controls

With the Controls you can activate the different functions of the Ayura. Depending on the configuration of the Ayura, the controls have a minimum of 2 buttons up to 6 buttons.

The buttons are especially designed for people with little strenght.

The functions of the Ayura controls can also be integrated into individual made controls, for instance: wheelchair control, environmental control, head-, eye-, chin-, knee-, foot controls. Please contact your local supplier about this.

- Red: more compensation
- Orange: less compensation
- Dark blue: tilt function forwards
- Light blue: tilt function backwards
- Dark yellow: rotation lock
- Light yellow: horizontal/vertical lock



For secure operation and your safety never push more than one button at a time.

## Adjusting the force

You can adjust the level of compensation (force) of the Ayura steplessly, to compensate the weight of every arm. This can be done by pushing the red and orange buttons. It's possible to hold down the buttons.

When the Ayura is connected to the power supply and used for the first time, you need to hold down one of the compensation buttons for at least 5 seconds. This to make an initial connection. After this the functions will instantly react. This has to be repeated every time it's disconnected from the power supply. When during the adjustment of the compensation level it reaches the minimum or maximum compensation point, the compensations motor will make a loud noise. It's not possible to compensate more or less so the button can be released.

## Tilt function

With the tilt function you can tilt the base of the Ayura forwards and backwards in the direction of the green arrows. The tilt function has three functions: 1. Enlarge the working range forward and backwards. 2. Make it easier for the user to reach forward or pull the arm backwards (towards mouth). 3. Keep the Ayura in a perfect vertical position when the underground (wheelchair or ground) tilts.



The tilt function can be activated by pushing the dark blue (forward tilt) or light blue (backward tilt) button. It's possible to hold down the buttons.

When the tilt reaches the minimum or maximum tilting point, you will hear a beep. When you hear this beep it's not possible to tilt any further, so the button can be released.

## Horizontal/vertical (H/V) lock

The H/V lock makes it possible to lock the vertical and horizontal movements of the Ayura. When applied only the rotational movement is available.

The H/V lock is engaged by shortly pressing the light yellow button once. When this button is pushed, it is necessary to move the arm in a circular direction slowly. The H/V lock is activated when you hear a click and it is impossible to move the arm.

To disengage the H/V lock, hold the light yellow button down for 2 seconds. When disengaging the arm weight must be in balance with the weight compensation so there is no force active pushing the arm support up or down.

If for some reason the H/V lock isn't activated within 2 seconds it is necessary to engage it again with a single push.



The H/V lock is designed to hold a force of 4,5 kilo maximum. If there is a bigger force applied, the H/V lock will break and needs to be repaired. This is a safety feature to prevent the arm from getting injured when, for instance, hitting a door post whilst driving a wheelchair. Please inform your caregivers about this.

If the H/V lock has been disengaged in case of overload, it is necessary to hold the button down for 2 seconds first, before being able to engage it again.



Never drive the wheelchair without the arm placed in the Brace and the H/V lock activated.





Never disengage the H/V lock without the arm placed in the brace!

### Rotation lock

The rotation lock makes it possible to lock the rotational movement of main axle of the Ayura. When applied only the horizontal and vertical movement is available.

The rotation lock is engaged by shortly pressing the dark yellow button once. When this button is pushed, it is necessary to rotate the Ayura inwards or outwards. The rotation lock is activated when you hear a click and it is impossible to further rotate the arm.

To disengage the rotation lock, shortly press the dark yellow button once.



If for some reason the rotation lock isn't activated within 2 seconds it is necessary to engage it again.



The rotation lock is designed to hold a force of  $\pm 1$  kilo maximum. This is enough to hold the users arm in place. If there is a bigger force applied, the rotation lock will break and needs to be repaired. This is a safety feature to prevent the arm from getting injured when, for instance, hitting a door post whilst driving a wheelchair. Please inform your caregivers about this.

### Wireless controls

It is possible to control the Ayura wireless, using Bluetooth, through an app (only for android). The app can be downloaded in the Google Play store by searching on: armonproducts. When the wireless module including touchscreen is bought, the app is already installed on the touchscreen.



How to use the app.

- Activate the bluetooth function on your phone/tablet. This is necessary to establish the connection.
- It will scan for all BT devices in the area. When done searching, select the Ayura from the list.
- The app will ask to enter a code to establish the connection. Enter the BT code that was included in the box. If you don't have this code, please contact your supplier. They can provide you with one.
- Once connected, you see 6 buttons. Every button activates a certain function similar as the normal controls (see page 7). The buttons are named:
  - Backwards: tilt function backwards
  - Lock Force: H/V lock
  - Down: less compensation force
  - Forwards: tilt function forwards
  - Rotation Lock: rotation lock
  - Up: more compensation force
- You can now start using the wireless controls



We recommend to use the wireless controls module as a secondary control option. The wired controls should be always available for backup when the wireless controls fail.

### User Maintenance:

The Armon Ayura does not require any particular maintenance except for cleaning and safe keeping. Make sure the Ayura is not subjected to excessive dust, sand, hair, water or other materials which could come within the housing. This can cause or accelerate a breakage of the mechanisms inside.

### Troubleshooting:

The Armon Ayura has been designed and manufactured using highly advanced technology and first class components to ensure a reliable and efficient performance. However, should you meet with any operational problems; it is recommended that you consult your local Armon Products distributor.



### CAUTIONS:

- Only Armon Products BV authorized technicians may carry out service on the internal parts of the equipment.
- For repairs and further information, contact your local Armon Products dealer or authorised service centre.

### Installation:

The installation of the Armon Ayura should only be done by qualified and therefore trained specialists. These specialists will receive a certificate after completing a training. To ensure the quality of the installation and individually made brackets their training and certificate should be updated on yearly bases. This to ensure proper use and complete safety for the user.



### Safety:

- The arm support works with a spring compensation mechanism. Hence it gets the energy for the compensation out of springs. When the upperarm of the arm support is down in any way, there will be tension on the springs. When the arm support isn't used, always bring the upper arm of the arm support back into its most upwards position so that there is no tension on the springs.
- When getting the arm support out of a 'parked' position, make sure the arm is placed properly in the brace, and therefore the compensation force sufficiently compensated, before you start moving the arm support out of its parked position.
- Always be aware of the tension of the springs when the upper arm is in a downwards position.
- The arm support may only be used for the proposed purpose. Any type of use which is not specified in this manual, will be considered as improper use. The customer is solely responsible for material damage and injury of persons resulting from improper use; Armon Products will not be liable under any circumstance.
- Assembly, commissioning and maintenance should only be carried out by trained specialists.
- In any circumstance, do not open the housing of the arm support. Warranty is void in such case.
- Do not use the arm support in environments exposed to corrosion hazards.
- Protect the arm support against sand, vapours and dust.
- The Ayura has several moving parts. Be aware of finger pinching between the front and back side of the hip joint and shoulder joint. Never stick your fingers, other body parts or objects in any cavity of the product.

### Liability:

To the maximum extent permitted by applicable law, in no event will Armon Products or its suppliers or resellers be liable for any indirect, special, incidental or consequential damages arising from the use of or inability to use the product, including, without limitation, damages for loss of goodwill, work and productivity, computer failure or malfunction, or any and all other commercial damages or losses, even if advised of the possibility thereof, and regardless of the legal or equitable theory (contract, tort or otherwise) upon which the claim is based. In any case,

Armon Products's entire liability under any provision of this agreement shall not exceed in the aggregate the sum of the fees paid for this product and fees for support of the product received by Armon Products under a separate support agreement (if any), with the exception of death or personal injury caused by the negligence of Armon Products to the extent applicable law prohibits the limitation of damages in such cases.

Armon Products cannot be held liable for any consequence resulting from incorrect information provided by its personnel, or errors incorporated in this manual and / or other accompanying documentation (including commercial documentation). The opposing party (product's user or its representative) shall disclaim Armon Products from all claims arising from third parties, whatever nature or whatever relationship to the opposing party. Any severe incident in relation to this product should be mentioned to the manufacturer and the competent national authority

### **Warranty:**

Warranty claims shall be voided in case:

- The conditions in the operating manual are ignored
- The appliance is used outside the described uses
- Any part of the appliance is modified or opened
- The appliance is improperly set up or incorrectly electrically connected
- Warranty does not cover cable breakage or damage to the PCB due to incorrect use

### **Cleaning:**

When cleaning the outer part of the Armon Ayura and the brace, make sure to use a soft, clean cloth dampened with lukewarm water and a non-abrasive liquid household cleaner. The Armon Ayura is IP 12, the brace and controls are IP 44. When cleaning do not use any chemicals or solvents



### **CAUTIONS:**

- When cleaning the outer part of the Armon Ayura, do not use any chemicals, detergents, acid solutions, abrasive or aggressive solutions or inflammable substances.
- Use of any of the above mentioned substances or improper use of the accessories will cause irreparable damage to the equipment and the guarantee will be no longer valid. Do not spray or pour liquid on the external parts of the equipment, or into the holes on the casing.
- Do not immerse the unit into water.
- The unit must under no circumstances be opened or dismantled in order to clean or check inner parts – the Armon Ayura does not require cleaning of inner parts and in all cases, only specialized technicians of Armon Products B.V. should carry out such operations.



### **End of life:**

The Armon Ayura contains materials that can be recycled and/or are noxious to the environment. Specialized companies can dismantle the unit and sort out these materials. When you dispose of the unit, find out about local regulations concerning waste management.

## **Durability and maintenance:**

- **Expected technical lifetime:**

The Armon Ayura is designed to guarantee a technical lifetime of at least 6 years.

Depending on the intensity of use and the environmental circumstances (dirt, dust, sea air, humidity etc.) the lifespan can be shortened or extended.

The Armon Edero is designed to guarantee a technical lifetime of at least 8 years.

Depending on the intensity of use and the environmental circumstances (dirt, dust, sea air, humidity etc.) the lifespan can be shortened or extended.

- **Maintenance:**

The Armon Ayura is in general a maintenance free product within the expected technical lifetime. However, wear and tear of the moving internal mechanics depends on the intensity of use and the environmental circumstances (dirt, dust, sea air, humidity etc.). Careless use or disregarding normal clean handling principles of similar products can lead to early repairs.

Inside parts can be replaced preventively in order to keep the product functioning with a high level of security. Contact your distributor for possible preventive maintenance contract terms and costs.

### **Technical data:**

<i>Weight:</i>	6400 gram
<i>Weight compensation range (normal):</i>	900 till 3400 gram (+/- 10%)
<i>Weight compensation range (light):</i>	600 till 2500 gram (+/- 10%)
<i>Housing size WxDxH (in upwards position)</i>	17x10x85 cm
<i>Ingress Protection / International Protection rating:</i>	Ayura: IP 12    Controls: IP 44    Brace: IP 45
<i>Power supply:</i>	24 volts =. The Ayura is electronically protected against overvoltage >26,5 V. The Ayura will operate on undervoltage >12 V. The Ayura is protected by a 3,15 A fuse on the red positive wire against overcurrent.
<i>Power consumption:</i>	Stand-by modus (weight compensation active)                      (A)= 0,03    (W)= 0,7 H/V lock and rotation lock (only when being (de-) activated)              (A)= 0,65    (W)= 15,5 Weight compensation force                      (A)= 0,53    (W)= 12,6 Tilt    (A)= 0,24    (W)= 5,7
<i>The base mechanism of the Ayura is fully mechanical. Therefore it uses almost no power when in standby modus (when no motors are being used, but the weight compensation is available).</i>	
<i>Housing material:</i>	Die cast aluminum and ABS plastic



<i>Operating temperature:</i>	Max. +40°C Min -10°C ( 104° F 14 F°)
<i>Storage temperature:</i>	Max. +40°C Min -10°C ( 104° F 14 F°)
<i>Unique identification of the object:</i>	SN: AYxxxxxx (product and serial number)
<i>Description of object:</i>	Electronically controlled, mechanical arm support
<i>The object complies with the following directive:</i>	93/42EEC Medical Device Directive
<i>The object complies with the following Standards:</i>	EN ISO 22523:2006 External Orthoses IEC 60601-1 Medical Electrical Equipment
<i>The object of the declaration described above meets the demands for CE labeling:</i>	Medical Device Class I



### **Armon Products**

Armon Products BV develops and manufactures high end dynamic arm supports and accessories according to the highest standards of quality making use of the latest technology and fully adhering to current directives and norms.

Particular attention has been paid to the design, easy operation, function and safety of the equipment and the final result is this modern, compact unit.

**Armon stands for Innovation, Design and Durability.**

**Our goals are to increase upper limb mobility, make people less dependant and improve quality of life.**

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