Five Second Head

BY SENNA

User manual

Look for the video instructions on You Tube and Vimeo:
http://www.youtube.com/watch?v=ocMmi8PmO_s
http://vimeo.com/65045628
http://vimeo.com/65038326

1. Introduction

Aimed toward the DSLR and small HD cam market, the Five Second Head weighs in at 4.4lbs (2kg), allows 360 degrees of pan/tilt, six points of memory for scene storage, speed replay, memory recalls and loop cycles. Motion Control features allow time lapse in six different speed settings and storage of 30 seconds head movements.

1.1 Features:

- Pan and tilt 360 degree rotations, two axes
- For payload up to 4 kg
- Wireless Range: 300m line of sight
- Time lapse function 90 degreed – 60 minutes, six different speeds
- Six memory points to store favorite scene and speed replay
- Auto memory recalls and loop cycle
- Motion Control – store up to 30 seconds of wanted head movement
- Two ramp modes for smooth starting and stopping
- Tilt and Pan joystick polarity configuration

1.2 Specifications:

Parameter	Description
Operating voltage	$12V_{DC}$
Head Weight	4.4lbs (2kg)
Weight Capacity	8.8lbs (4kg)
Operating temperature	0 ÷ 45 °C (or more if connected to power adapters)
Battery	Rechargeable 12V, 1200 mAh Joystick, 2450mAh Head
Motor power output	$12V_{DC}$, 1A max. for one motor
Wireless frequency	431 ÷ 478 MHz, frequency is preset on 444 MHz and can not be changed on device, only in factory when ordering, in steps of 200 KHz (235 channels)
RF modulation	GFSK
Wireless output power	20 mW
Wireless range	up to 300 m in open area
Joystick dimension	10 x 9 x 14 cm (W x H x D) without antenna
Head dimension	23 x 28 x 12 cm (W x H x D) without antenna

1.3 Five Second Head set includes:

Five Second Head Unit

Five second head controller

- External spare battery

- L shaped camera mount holder

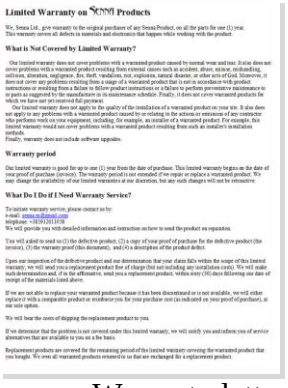
- Balancing adapter

- Communication cable

- 2 Battery chargers

- Camera plate with rods and mini weights

- Flight Case



Limited Warranty on SENNA Products

We, Senna Ltd., give warranty to the original purchaser of any Senna Product, on all the parts for one (1) year.
This warranty covers all defects in materials and electronics that happen while working with the product.

What is Not Covered by Limited Warranty?

Our limited warranty does not cover problems with a warranted product caused by normal wear and tear. It also does not cover problems with a warranted product resulting from external causes such as accident, abuse, misuse, mishandling, collision, alteration, negligence, fire, theft, vandalism, riot, explosion, natural disaster, or other acts of God. Moreover, it does not cover any problems resulting from a usage of a warranted product that is not in accordance with product instructions or resulting from a failure to follow product instructions or a failure to perform preventive maintenance to or parts as suggested by the manufacturer in its maintenance schedule. Finally, it does not cover warranted products for which the serial number has been removed.

Our limited warranty does not apply to the quality of the installation of a warranted product on your site. It also does not apply to any problems with a warranted product caused by or relating to the actions or omissions of any contractor who performs work on your equipment, including, for example, an installer of a warranted product. For example, this limited warranty would not cover problems with a warranted product resulting from such an installer's installation methods.
Finally, warranty does not include software upgrades.

Warranty period

Our limited warranty is good for up to one (1) year from the date of purchase. This limited warranty begins on the date of your proof of purchase (invoice). The warranty period is not extended if we repair or replace a warranted product. We may change the availability of our limited warranties at our discretion, but any such changes will not be retroactive.

What Do I Do if I Need Warranty Service?

To initiate warranty service, please contact us by:
e-mail: senna.ltd@gmail.com
telephone: +38091201858
We will provide you with detailed information and instruction on how to send the product on reparation.

You will added to send us (1) the defective product, (2) a copy of your proof of purchase for the defective product (the invoice), (3) the warranty proof (this document), and (4) a description of the product defect.

Upon our inspection of the defective product and our determination that your claim falls within the scope of this limited warranty, we will send you a replacement product free of charge (but not including any installation cost). We will make such determination and, if to the affirmative, send you a replacement product, within sixty (30) days following our date of receipt of the materials listed above.

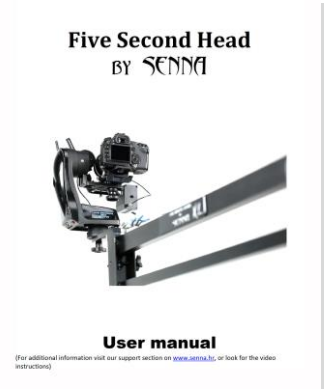
If we are not able to replace your warranted product because it has been discontinued or is not available, we will either replace it with a comparable product or reimburse you for your purchase cost (as indicated on your proof of purchase), at our sole option.

We will bear the costs of shipping the replacement product to you.

If we determine that the problem is not covered under this limited warranty, we will notify you and inform you of service alternatives that are available to you on a fee basis.

Replacement products are covered for the remaining period of the limited warranty covering the warranted product that you bought. We cover all warranted products returned to us that are exchanged for a replacement product.

- Warranty letter



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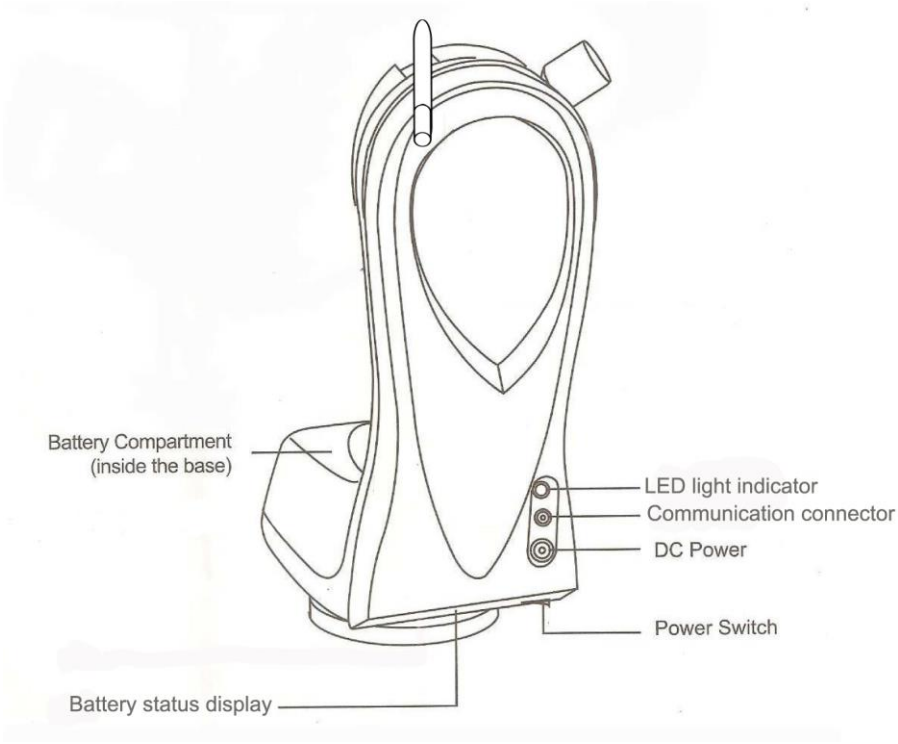
User manual
(For additional information visit our support section on www.senna.hr, or look for the video instructions)

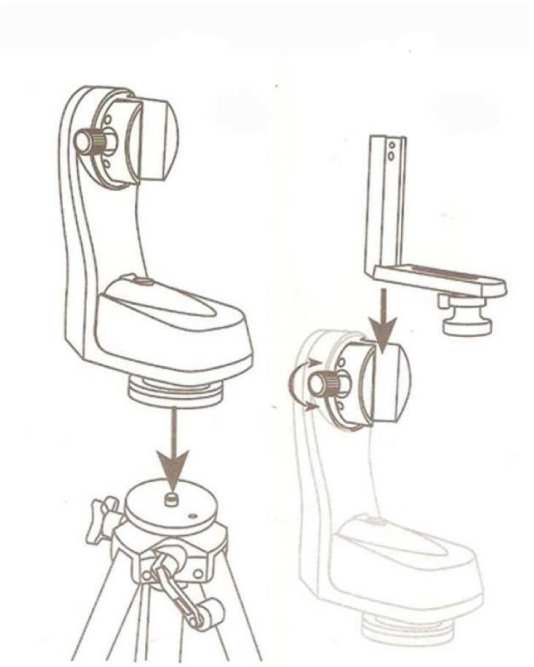
- User Manual

2. Head Unit

2.1 Parts diagram



2.2 Mounting the 5s Head



Five Second Head can be mounted on any tripod, slider or a crane. (See the picture)

The Remote Head Five Second can be mounted on your crane in two different positions:

- For shooting the sky use upwards position of the head, as shown in the picture.

- For shooting the ground use downwards position, as shown in the picture.

Five Second Head allows changes of pan/tilt polarity for both head positions. See the chapter *Configuration.*

- NEVER USE THE HEAD WITHOUT MAKING THE RIGHT CAMERA BALANCE WITH THE BALANCE ADAPTER.
- USING UNBALANCED CAMERA CAN DAMAGE THE REMOTE HEAD'S MOTORS PERMANENTLY.
- NEVER MOVE THE HEAD WITH YOUR HAND; IT CAN MAKE UNREPARABLE DAMAGE TO THE HEAD'S MOTORS. TO MOVE THE HEAD ALWAYS USE JOYSTICK

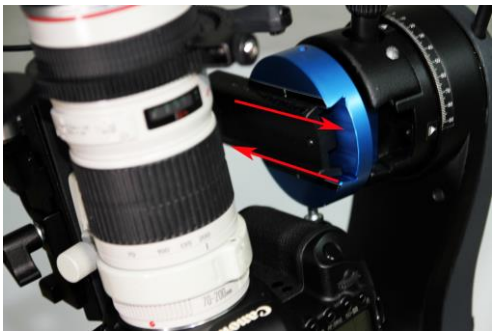
2.3 Balancing the camera

To make the right balance of your camera follow the steps:

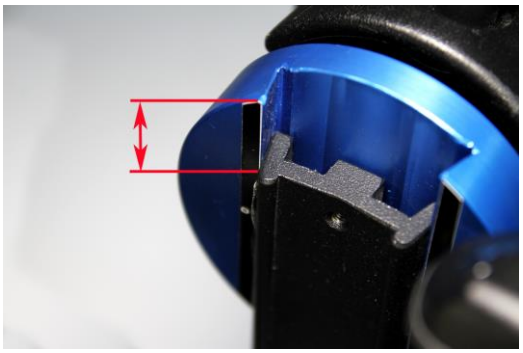
1. Mount the balancing adapter instead of L-shaped camera holder.

2. Balancing adapter is mounted. Now you can attach the L-holder and your camera to it

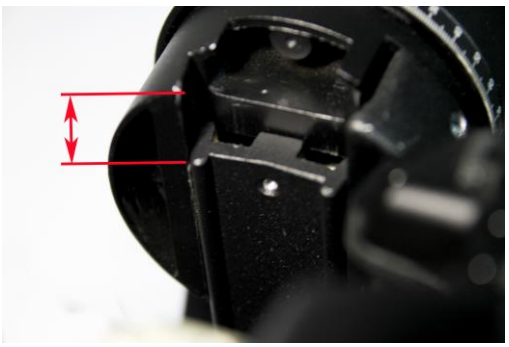
3. Move the camera back and forth using the camera plate until you find a position in which the camera stands still (does not fall back or forth)



4. Turn the camera in vertical position and now move L-holder back/forth until you find a position in which the camera stands still.



5. Mark the position of the L-holder in the blue adapter.



6. Now remove the balance adapter and mount the L-holder directly onto the Head but in the same position as it was in the balance adapter. **Your camera is now properly balanced.**

Detailed video instructions on making the right balance on Five Second Head are given on You Tube: 5S Head – User Manual: http://www.youtube.com/watch?v=ocMmi8PmO_s)

MAKING CAMERA BALANCE ON FIVE SECOND HEAD USING MINI WEIGHTS

- When mounting heavier lens on your camera, you may have difficulties with making the right balance of the camera. In that case, mount holder with rods on your camera plate and attach the mini weights from the back in order to make counter weight to your camera lens and find the balance very easily. (See the pictures below)

1. Set includes holder, two-extension rods, 2 mini weights

2. Attach the holder to the camera plate with enclosed screws

3. Depending on your lens weights you can use short or long extensions or both of them to make the right balance.

4. Combine the extentions with weights and repeat the steps 3 and 4 of the charter *Balancing the Head* untill you have reached the right balance.

3. Control plate diagram

3.1 First start

After you have installed 5sH and made the right balance of your camera, you can turn 5sH on by following the steps:

1. Turn the power switch button on.
2. Blue LED will start flashing slowly.
3. Turn on the power switch of the head controller.
4. Head and controller will start establishing wireless connection and the lights will flash on all buttons.
5. When the lights on buttons turn off, wireless connection is established and your 5sH system is ready for use.

3.2 Head Speed

Smart controller is equipped with big-knob joystick for the best precision of the head motion.

To get finest head control, you can also tune the speed of the head with the HEAD SPEED potentiometer. Left end position will give you finest and slowest motion of the head, and right end position will give you the fastest head motion.

4. Configuration

5sH system allows you to configure controls to suit your needs in the best way.

* Active option will be presented with button light turned on and vice versa. Every time you turn the controller ON, previously stored configuration will be loaded from the memory.

4.1 Ramp

To perform smooth starting and stopping of the movements, there are two ramp stages. To set the desired ramp stage, please follow the steps:

1. Press and hold the *Menu* button, indicators will flash and *Menu* button will turn from blue to yellow.
2. When the *Menu* button becomes yellow, you have entered the menu.
3. For the ramp stage 1 shortly press memory button 1; For the ramp stage 2 shortly press memory buttons 1 and 2.
4. Memory button, 1 or 1 and 2 will turn green. (See the pictures below)
5. Shortly press the *Menu* button to confirm the changes.
6. You have now set the ramp.

Ramp 1

Ramp 2

To disable the *Ramp* option, follow the steps:

1. Press and hold the *Menu* button, indicators will flash and Menu button will turn from blue to yellow.
2. When the *Menu* button becomes yellow, you have entered the menu.
3. Press shortly the memory button with (1 or 1 and 2, depending on which stage of *ramp* is previously set)
4. Green light on memory buttons will turn off.
5. Shortly press the *Menu* button to confirm the changes.
6. You have now disabled the *ramp*.

4.2 Polarity

To reverse the direction of pan/tilt movements on your joystick, please follow the steps:

1. Press and hold the *Menu* button, indicators will flash and Menu button will turn from blue to yellow.
2. When the *Menu* button becomes yellow, you have entered the menu.
3. Shortly press memory button 3 for tilt polarity/or memory button 4 for pan polarity, green light will turn on. (See the pictures below)
4. Shortly press the *Menu* button to confirm the changes.
5. You have now changed *pan* or *tilt polarity*.

Changing tilt polarity

Changing pan polarity

4.3 Limit

Zero position

This option allows you to limit the range of the head motion to ±240° in PAN direction from *zero point* and ±190° in TILT direction from *zero point*. (See the picture)

IMPORTANT! This option must be enabled when using the advanced options such as memory points, motion control, time laps and auto memory recall!

To set the limit, please follow the steps:

1. Press and hold the *Menu* button, indicators will flash and Menu button will turn from blue to yellow.
2. When the *Menu* button becomes yellow, you have entered the menu.
3. Shortly press the memory button 5, green light will turn on. (See the picture)
4. Shortly press the *Menu* button to confirm the changes.
5. You have now set the *limit*.

IMPORTANT! If you want that head moves TILT/PAN infinitely, you need to deactivate the *limit*.
When *limit* is deactivated advanced options such as memory points, motion control, time laps and auto memory recall are disabled!

To deactivate *limit*, please follow the steps:

1. Press and hold the *Menu* button, indicators will flash and Menu button will turn from blue to yellow.
2. When the *Menu* button becomes yellow, you have entered the menu.
3. Shortly press the memory button 5, green light will turn off.
4. Shortly press the *Menu* button to confirm the changes.
5. You have now deactivated the *limit*.

4.4 Time Lapse

This option allows you to set extremely slow head motion speed. There are 6 different time lapse speeds available.

IMPORTANT! Time lapse speed only affects the head speed for the stored memory point's recall. Time lapse option is available only when limit is turned on.

For example:

If you want to make a panorama scene in time lapse, you should follow these steps:

1. Turn the remote head to the left end position (use joystick!)
2. Press memory button 1, green light will turn on.
3. You have now stored the initial point of movement.
4. Now turn the head to the right end position.
5. Press the memory button 2, green light will turn on.
6. You have now stored the ending point of movement.
7. Shortly press the memory button 1, Head will turn to the initial point you have stored.
8. Press and hold the *Menu* button, indicators will flash and Menu button will turn from blue to yellow.
9. When the *Menu* button becomes yellow, you have entered the menu.
10. Shortly press memory button 6, green light will turn on. (See the picture below)
11. Shortly press the *Menu* button to confirm the changes.
12. Turn the replay speed potentiometer to choose the desirable speed of *time lapse*. Red lights will turn on the memory buttons showing the speed presets of time lapse (See the picture in the charter *Replay speed*)
13. Shortly press the memory button 2.
14. *Time lapse* option is now activated.

To deactivate *Time Lapse* option, follow the steps:

1. Press and hold the *Menu* button, indicators will flash and *Menu* button will turn from blue to yellow.
2. When the *Menu* button becomes yellow, you have entered the menu
3. Shortly press the memory button 6, green light will turn off.
4. Shortly press the menu button to confirm the changes.
5. You have now deactivated *time lapse* option.

4.4.1 Replay speed

Time Lapse function allows 6 speed presents. The speed of *Time Lapse* is set with REPLAY SPEED potentiometer (as described in step 12, charter *Time Lapse*)

When you move the *Replay Speed* potentiometer, red light will turn on the memory button showing which speed preset is selected:

One LED light on - slowest *Time Lapse* speed (90 degrees of head motion in 1 hour)

Six LEDs lights on - fastest *Time Lapse* speed (90 degrees of head motion in 30 minutes)

4.5 Memory presets

To store desirable memory point, please follow the steps:

1. Turn the head to desired direction using joystick.
2. Press and hold wanted memory button (1-6)
3. All memory buttons will flash red.
4. The desirable position is now stored and can be recalled any time by short press to the memory button. When recalled, memory button will turn green.

To store another memory point, repeat the steps 1-4. The controller allows the storage of 6 different memory points.

4.5.1 Replay speed

To change the speed of head moving from one stored position to another, use potentiometer labeled as REPLAY SPEED. Left end position for slowest moving, right end for fastest.

4.6 Auto Memory Recall

After you have stored the desired memory points, you can set the automatic memory recall.
To set memory recall, follow the steps:

1. Press and hold *Menu* button (*hold it to the last step*) and before the system enters the Menu (before the *Menu* button turns yellow) press memory button on which the first memory point is stored (with which you would like to start the recall session). Green light on the memory button will turn on.
2. Now press memory button where the second wanted point is stored. Green light on the first memory point will turn on, and then on the second memory point (the lights will constantly loop showing the order of memory recall session)
3. Repeat the step 2 until you have set all wanted points of memory recall session.
4. Now you can release the *Menu* button.
5. Auto Memory recall session is now set.

To activate *Auto memory recall* press the *Menu* button shortly. The head will turn to the first stored memory point, and then to each next added point and it will stop on the last stored position.

- If a point is added to memory recall session by mistake, press that last memory point button again and the point will be deleted from memory recall session.
- You can check the order of your auto memory recall session by tracking the green lights.

4.6.1 Loop cycle

This option allows the head to constantly loop over the stored memory points in the order you have set.
To set loop cycle option, you should follow the steps 1-5 in the charter *Auto Memory Recall*, **but pay attention to set the same memory point as the first and the last in the memory recall session!**
Set as described, the head will keep looping as long as you do not move the joystick or press the *Menu* button shortly once again.

* For example:
You want to store the memory points: M1, M2, M3.

To visit all points starting with M1:
MENUBUTTON_HOLD
M1_BUTTON, M2_BUTTON , M3_BUTTON
MENUBUTTON_RELEASE

The head will go to M1 - M2 - M3 and then it will stop.

To visit all point and repeat the session constantly:
MENUBUTTON_HOLD
M1_BUTTON, M2_BUTTON, M3_BUTTON, M1_BUTTON
MENUBUTTON_RELEASE

System will go to M1 - M2 - M3 - M1 - M2 - M3 - M1 … constantly looping.

To visit all point and go back over point M2 repeat the session constantly:
MENUBUTTON_HOLD
M1_BUTTON, M2_BUTTON, M3_BUTTON, M2_BUTTON, M1_BUTTON
MENUBUTTON_RELEASE
System will go to M1 - M2 - M3 - M2 - M1 - M2 - M3 - M2 - M1 … constantly looping.

To visit all point, go back to the first memory point but without loop cycle:
STORE THE SAME HEAD POSITION ON MEMORY BUTTONS 1 AND 4(M1 = M4)
MENUBUTTON_HOLD
M1_BUTTON, M2_BUTTON, M3_BUTTON, M4_BUTTON
MENUBUTTON_RELEASE
System will go to M1 - M2 - M3 – M4=1 and then it will stop.

4.7 Motion control

Motion Control option allows you to record up to 30 seconds of the head movements.

To record the desirable head movement, follow the steps:

1. Turn the head to the position from where you want to start the desirable movement. (Use joystick)
2. Press and hold the *Menu* button
3. Before the system enters the Menu (before the *Menu* button turns yellow) move the joystick a little bit in any direction.
4. System is now ready for recording, **but recording has not started yet**.
5. To start recording of the movement release the *Menu* button.
6. Recording has now started.
7. Make a desirable head moves using joystick.
8. Red light will turn on the memory buttons (one by one) showing how much time you have left.
9. Recording will stop when you press the *Menu* button again or automatically after 30sec of recording.
10. To play the recorded movements shortly press the *Menu* button. The head will first turn to the initial position and then it will repeat the recorded movements.
    You can repeat the recording movements as many times as you like by pressing the *Menu* button.

IMPORTANT! *Auto memory recall* and *Motion control* are both controlled with the same *Menu* button, because of that *Auto memory recall* setting will erase *Motion control* record and vice versa.

5. Good to know

Loss of communication

In the case that communication between the *head unit* and *controller* is lost, head will stop moving and try to reconnect to the controller.
This can be caused by interference with used radio frequency or due to the large distance between devices or when the controller is turned off.

Time Lapse and Memory recall

When *Time Lapse* option is activated or when *Auto memory recall* is started, 5sH will start to work independently from the controller. Even if you turn the controller off, the head will continue to work by itself.

To reestablish the connection between the controller and the head, it is necessary to turn the head off and then on again.

IMPORTANT! Do not move the head pan/tilt with your hand. It can cause unrepeatable damage to the motors!

6. Wired connection

Whenever possible, it is recommended to use wired communication. When wired connection is used, wireless modules are in standby mode and system uses less power.
When you use wired communication, system will start working when you turn ON either the Head or the controller.

If you turn the head ON, the head's battery will power the controller as well. If you turn the controller ON, controller's battery will power the head electronic and motors.
If you need extra power (when working in wired mode) you should turn both devices ON. This way the capacity of the batteries will be summarized.
When the head and the controller are connected with cable, charging of one device will charge the other as well *(Power switch on both devices must be in power on position to charge the batteries with communication cable!*).

6.1 Power supply

If you want the system to work on electricity, you should connect 5sH and the controller with communication cable, and then connect the controller to the power supply *(5sH will be powered automatically over communication cable).* It is not necessary to connect both devices to the power supply.

7. Batteries

The head works on 8 AA 1.5V batteries. (Rechargeable AA batteries are included in the head set)
Head controller uses internal lithium batteries.
The head and controller can run on power supply as well.

Batteries of the head and controller should be charged for 3 hours max.
DO NOT charge the batteries over night!
DO NOT leave the batteries to get empty completely! You will not be able to charge them again!
The capacity of the head and controller batteries is 4 working hours.

7.1 Checking the state of batteries:

To check the state of the batteries in the head unit please follow the steps:

1. Turn the Head ON.
2. Read the voltage on the display placed at the bottom of the Remote Head.

If the voltage is under 10,0 batteries need to be charged.
If the voltage is 12,0 batteries are fully charged.

To check the state of the batteries in the control plate, please follow the steps:

1. Connect the head and the controller with communication cable
2. Keep the head OFF.
3. Turn the controller ON.
4. Read the voltage on the display placed at the bottom of the Remote Head.

If the voltage is under 10,0 batteries need to be charged.
If the voltage is 12,0 batteries are fully charged.

7.2 When the batteries get empty:

If the head will be used for a longer time, it is strongly recommended to connect it to the power supply to make sure that batteries will not get empty.

In the case the power supply is not available on site and the batteries in the head get empty, it is easy to replace them with standard AA 1.5V batteries.

IMPORTANT! If standard batteries are in use, **DO NOT** connect power adapter to the head power socket.

Replacing the head batteries

If the batteries inside the head are empty, and you do not have spare AA batteries, extra power can be achieved by connecting the head and the controller with the cable. This will allow the head to use the power of controller's batteries.

7.3 Spare batteries

If the batteries are empty or broken, you can replace them with external spare battery which is included in the set. (See the pictures)

Attaching the external battery

The capacity of the spare battery is 4 working hours.
This spare battery should be charged for 3 hours max.

IMPORTANT! When being charged, spare battery must always be turned on.
Always turn the spare battery off when it is not in use or being charged. If it gets empty completely it cannot be charged again.