Instruction Manual

⚠️ CAUTION! ⚠️

ROTARION and accessories are optical instruments with moving parts to be used only by adults.

Keep away body and fingers from moving parts!

READ THIS MANUAL BEFORE USING ROTARION!

AstrON SCIENTIFIC
ASTRONOMY MADE EASY
Congratulations on your purchase of ROTARION PHOTO!

The ROTARION PHOTO accessory is designed and manufactured to be used with the ROTARION for daytime terrestrial photography and for nighttime astronomical photography.

The ROTARION PHOTO is the universal tripod for cameras and other imaging equipment for your ROTARION, patented in the European Union and the United States.

The ROTARION PHOTO accessory installed in your ROTARION allows you to change the power or magnification of your telescope with just a simple click, and therefore without touching any image equipment mounted on your ROTARION PHOTO.

The ROTARION PHOTO includes an electromechanical shutter with fully automatic forward and backward movement. The shutter opens and closes the gap between your optics mounted on the ROTARION, and your camera or image equipment mounted in the ROTARION PHOTO, and therefore avoiding interference of any ambient light in your image equipment.

In addition, in this box you will find the accessory ROTARION PRIMEFOCUS. This T2 accessory (thread M42x0.75) of variable length installed in the ROTARION, and in combination with the ROTARION PHOTO, allows you to change from planetary eyepiece projection photography to primary focus photography for deep sky objects only with a simple Click!
The ROTARION PRIMEFOCUS accessory makes the ROTARION and ROTARION PHOTO the first optics and imaging equipment accessory compatible with the two main techniques of astronomical photography.

With the ROTARION PHOTO you can photograph different sky objects on the same night without the tedious work of disassembling and reassembling your telescope optics and imaging accessories, when you want to change photographic technique.

ROTARION PHOTO is a device of the highest quality, designed and manufactured in BARCELONA with the latest state-of-the-art techniques and the best materials and components from the USA, Japan, and Germany.

First, read this instruction manual thoroughly and then follow the assembly instructions step-by-step. If you follow the installation instructions correctly, even if the installation is laborious, the use of the ROTARION PHOTO is fully automatic. All this to offer you many hours of enjoyment and satisfaction with your telescope.

Maximum quality, universal, versatile, and easy to use, ROTARION continues our company mission:

AstronSCIENTIFIC S.L.
Astronomy Made Easy
In the box

- **ROTARION PHOTO**, universal camera tripod with automatic electromechanical shutter with:
  - 3 short length adjustable hollow arms, stainless steel, with pass through white cables mounted on the ROTARION PHOTO, for short height eyepieces or optics.
  - 3 pairs of stainless steel DIN standard and aluminum nuts for easy manual height adjustment and collimation of ROTARION PHOTO with ROTARION.
  - 3 pairs of white cables for the ROTARION red/black quick connector.
  - Black ring T2 (M42x0.75) "Extender" of 5mm length for mounting imaging equipment.
- Black plastic tubes for pass through white cables.
- 3 additional hollow bolts with larger length, stainless steel, to replace the 3 short hollow arms with pass through cables mounted on the ROTARION PHOTO, for longer height eyepieces or optics.
- **ROTARION PRIMEFOCUS** accessory: "Extender" T2 (M42x0.75) of variable length, to image prime focus for deep sky objects.
- Allen wrench.
- User's manual.
- Telescope, eyepieces, optics and other ROTARION products or accessories not included.
System Requirements

To operate the ROTARION PHOTO with your ROTARION EyepieceWheel you need the following equipment:

Not included in the box

- 1 Telescope with 2 "focuser (A).
- 1 mount and tripod or telescope column supporting the weight of the telescope, the weight of the 3 or 4 eyepieces to be used, the weight of your imaging equipment and an additional 2.5 kg (B).
- 3 or 4 1.25 "eyepieces with maximum outer diameter 50mm.
- ROTARION EyepieceWheel (C).
- ROTARION REMOTE CONTROL Software.
- Image camera or equipment with ring T2 (M42) (D).
- Computer or Windows PC (E).

Included in the box:

- ROTARION PHOTO (F).
- ROTARION PRIMEFOCUS

![Diagram of telescope and accessories]
Index

A-ROTARION PHOTO
1. Introduction
2. Read the Instruction Manual Of ROTARION Eyepiecewheel
3. Eyepiece Projection Imaging & Prime Focus Imaging
4. Verification of Your Optics Assembly In The ROTARION
5. Preparation of The ROTARION For the Installation of The Accessory ROTARION PRIMEFOCUS
6. Assembly of The ROTARION PRIMEFOCUS Kit in the ROTARION
7. Assembly of The ROTARION PHOTO In The ROTARION
8. Collimation of ROTARION PHOTO

B- Using ROTARION And ROTARION PHOTO
1. CAUTION! MOVING PARTS!
2. Checking the Operation of The ROTARION PHOTO
3. Using Cameras and Imaging Equipment with The ROTARION PHOTO
4. Photographing Objects with The ROTARION PHOTO
5. The "Zoom Effect"
6. The "Finder Effect"

C-Additional Product Information
1. Product Compliance Information
2. Service, Maintenance, Cleaning, Disposal, Serial Number, And Dealer

D-Warranty
1. Warranty Period
2. Warranty Coverage
3. Warranty Nullity
1. Introduction

*Change the power-magnification of your telescope with a simple Click without touching your telescope and without touching your imaging equipment!*

*AstronSCIENTIFIC ROTARION PHOTO is the universal tripod for imaging equipment with automatic electromechanical shutter for the ROTARION EyepieceWheel. You can quick change 1.25″ optics automatically in your ROTARION without touching your imaging equipment.*

*Also, with the ROTARION PRIMEFOCUS accessory included in this box, you can change photographic technique with a simple Click. Replace one of the four optics mounted on your ROTARION with the ROTARION PRIMEFOCUS accessory and you can switch from planetary eyepiece projection to prime focus imaging for deep sky objects. You only need one telescope, three 1.25″ optics and a camera compatible with both imaging techniques.*

2. Read first the ROTARION Eyepiece Wheel Instruction Manual.

*Before proceeding with this ROTARION PHOTO Instruction Manual, you must perform the ROTARION assembly according to the instructions in the Instruction Manual of the ROTARION EyepieceWheel and ROTARION REMOTE CONTROL software.*

*In the Instruction Manual of the ROTARION EyepieceWheel and ROTARION REMOTE CONTROL software it is indicated how to equal/level in height the eyepieces and optics mounted in your ROTARION, a*
fundamental requirement for the proper functioning of the ROTARION PHOTO.

Only after having read the Instruction Manual of the ROTARION EyepieceWheel and ROTARION REMOTE CONTROL software, after verifying the leveling of heights of the eyepieces and optics mounted in your ROTARION, as well as having mounted the ROTARION correctly in your telescope, and having finally learned the easy use of ROTARION, continue with the reading of this ROTARION PHOTO Instruction Manual.

Also, always follow the safety WARNINGS indicated in the Instruction Manual of the ROTARION EyepieceWheel and ROTARION REMOTE CONTROL software in addition to the safety warnings in this manual.

3. Eyepiece Projection Imaging & Primary Focus Imaging.

Among the different techniques of photography with telescopes, two of the techniques most used in astronomy are: 1) eyepiece projection imaging for planets and 2) prime focus imaging, without eyepieces for deep-sky objects such as galaxies and nebulae among others.

1. To photograph planets, you will use the eyepiece projection technique in order to obtain the greatest magnification in your telescope.

   This way, although the planets are near objects, they are small in comparison to the rest of the sky objects,
and for this reason you need the greatest magnification possible.

Advanced photographers in planetary imaging use the greatest magnification in the telescope with eyepieces and / or optical Barlow lenses, and a technique called image stacking. This technique consists in the making of films of a few minutes duration to obtain hundreds or thousands of short exposure frames. Due to the turbulence of the atmosphere, only a small percentage of those frames are good. Using image processing software, only the good frames are selected and after are stacked, resulting in a single high-quality image. In the internet, there is free software for processing and stacking planetary images such as "RegiStax", among others, in addition to commercial software.

This stacking imaging technique is also useful in long-distance daytime and nighttime terrestrial photography and “digiscoping” with telescope magnification to minimize the effects of atmospheric turbulence.

2. To photograph galaxies, nebulae and other deep sky objects, you will use the prime focus photography technique without eyepieces, replacing one of the four eyepieces mounted on your ROTARION with the ROTARION PRIMEFOCUS accessory included in this box.

Although deep sky objects are light-years from Earth, its size in the sky is very large and therefore no increase in magnification is needed with eyepieces on the telescope, as they reduce the field of view.
For this prime focus photographic technique without eyepieces in the telescope there are a few very long exposures images, which are then stacked with image processing software. On the internet you can find free software, as well as better known commercial image processing programs such as MaximDL and others.

With large focal-length telescopes, such as the popular reflectors Schmidt-Cassegrain, Ritchey-Chretien, Maksutov and other refracting telescopes, a "Reducer" or "TeleCompressor" focal-reducing lens are normally used with this imaging technique to photograph deep sky objects. The advantages of using this type of optics are the reduction of the focal length of the telescope and the increase in the field of view. Reducing the F number of the telescope reduces the exposure times of the camera, and the overall time of the imaging session. You can replace an eyepiece mounted on the ROTARION by focal reducer optics at your own discretion.

The ROTARION PRIMEFOCUS accessory for primary focus photography mounting on the ROTARION EyepieceWheel and the ROTARION PHOTO is explained later in this manual.

If you are starting in astro-photography we recommend that you begin with the single image shooting technique until you master the operation of your telescope and your imaging equipment.

Finally, although in the market there are cameras and other specialized imaging equipment for each imaging technique, we recommend beginning with multipurpose cameras, compatible with both photographic techniques such as DSRL and others until you choose your specialization.
4. Verification of your optics assembly in the ROTARION.

At the end of Section 4 of Chapter C ROTARION EyepieceWheel and ROTARION REMOTE CONTROL software Instruction Manual, the mathematical calculations for the recommended maximum power or magnification of the eyepieces for your telescope are explained.

As you can see in the example of the following data sheet, you had 6 eyepieces 1.25" with different magnification (mm), for the initial assembly of the ROTARION you selected 4 eyepieces, with the scale of the increases and magnification between them were the most proportioned as possible.

<table>
<thead>
<tr>
<th>Available Eyepiece</th>
<th>mm</th>
<th>Selected Eyepiece</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TeleVue</td>
<td>40</td>
<td>TeleVue</td>
<td>40</td>
</tr>
<tr>
<td>TeleVue</td>
<td>35</td>
<td>Meade</td>
<td>28</td>
</tr>
<tr>
<td>Meade</td>
<td>28</td>
<td>Baader</td>
<td>17</td>
</tr>
<tr>
<td>Baader</td>
<td>17</td>
<td>Celestron</td>
<td>10</td>
</tr>
<tr>
<td>Celestron</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Celestron</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

First, you mounted the largest height eyepiece of the Selected list, in this case the 17mm eyepiece, and therefore in the position [POS-3] of the ROTARION.
removing the "Extenders" mounted under the Baader Click-Lock.

- Position [POS-1] -------------------------> (A).
- Position [POS-2] -------------------------> (B).
- Position [POS-3] -------------------------> (C).
- Position [POS-4] -------------------------> (D).

The result after mounting all eyepieces or optics and after leveling the heights between the optics by adding or removing "Extenders" to the Baader Click-locks to increase or decrease the heights, and also adjusting the heights of the Baader Click-locks with the helical top ring as indicated in Chapter A, Section 3 of the Instruction Manual of the ROTARION Eyepiece Wheel and ROTARION REMOTE CONTROL software, was as follows:
If your ROTARION does not have all the optics leveled in height, as shown in the previous drawing, you should check the assembly again. Follow the instructions in the ROTARION EyepieceWheel and ROTARION REMOTE CONTROL software Instruction Manual in Chapter A, Section 3.

If you are only going to make eyepiece projection imaging, especially suitable for Planetary astronomy photography and terrestrial photography, skip to Section 7 of Chapter A, Mounting the ROTARION PHOTO in the ROTARION.

If you wish to install the ROTARION PRIMEFOCUS accessory on the ROTARION to perform a prime focus imaging of deep-sky objects too, such as galaxies, nebulae and others, read the following Section 5 of this Chapter A: Preparation of the ROTARION for the installation of the ROTARION PRIMEFOCUS accessory.

5. Preparation of the ROTARION for the installation of the ROTARION PRIMEFOCUS accessory.

The ROTARION PRIMEFOCUS accessory kit included in the box is a 3 piece black anodized aluminum cylinder, height adjustable with a T2 thread, hollow and without any internal optics, designed for prime focus imaging of objects such as galaxies, nebulae, etc.
If you have the ROTARION mounted on your telescope, now remove it carefully from your telescope and perform the following operations on a table.

To mount the ROTARION PRIME FOCUS accessory you must release the [POS-4] position of the ROTARION where you will install it, selecting and relocating 3 optics or eyepieces in the ROTARION:

1. First unscrew (A) to remove all the elements of group (B) that form the eyepiece assembly of the smaller number of mm eyepiece and greater magnification or power, Baader Click-Lock and the "Extenders" (if any) of the [POS-4] position, except the part with ring "T2 male to T2 male" threaded to the red carousel of the ROTARION.

2. Unscrew and remove the group (C) from the upper drawing corresponding to the [POS-3] formed by the eyepiece, the Click-Lock Baader and the "Extenders", leaving the piece with central ring of double thread
"T2 male a T2 male "on the red carousel of the ROTARION. See the following drawing:

3. Next, you assemble the previous group (B) corresponding to the smallest number of mm eyepiece and greatest magnification, Baader Click-Lock and the "Extenders" (if any) in the [POS-3] of the ROTARION, where Before the group (C) was located.
4. Now you remove the group (D) from the position [POS-2] of the ROTARION, leaving the piece with central ring of double thread "T2 male to T2 male" in the red carousel of ROTARION. (D)

5. If you have performed the previous steps 1 to 4 correctly, the result shown in the following drawing is: ROTARION with the eyepiece named "large field of view" and greater number of mm and smaller power in position [POS-1] that you have never removed; In position [POS-3] the smallest number of mm and greater magnification eyepiece known as "planetary" eyepiece; And finally, there are 2 unmounted groups (C) and (D) of eyepieces, 2 Baader Click-Locks and some "Extenders".
NOTE: Before mounting the "resolutive" eyepiece in the position [POS-2] of the ROTARION, you must select the intermediate eyepiece between the “large field of view" eyepiece with greater number of mm and smaller magnification in [POS-1] and the eyepiece with the highest magnification and the smallest number of mm referred to as "planetary" in position [POS-3], both already mounted on the ROTARION according to the drawing on the previous page.

To do this, you return to our sample data sheet of available eyepieces. As you can see in the sheet, the eyepiece that has the best intermediate scale between 40mm and 8mm is the 17mm eyepiece.

<table>
<thead>
<tr>
<th>Available</th>
<th>Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyepiece</td>
<td>mm</td>
</tr>
<tr>
<td>TeleVue</td>
<td>40</td>
</tr>
<tr>
<td>TeleVue</td>
<td>35</td>
</tr>
<tr>
<td>Meade</td>
<td>28</td>
</tr>
<tr>
<td>Baader</td>
<td>17</td>
</tr>
<tr>
<td>Celestron</td>
<td>10</td>
</tr>
</tbody>
</table>

When selecting proportional scaling, you ensure that when you command the ROTARION to change an eyepiece, the next eyepiece will always show you the object you are imaging. If scaling between the eyepieces is not proportional enough and when changing the eyepiece with the ROTARION REMOTE CONTROL software the object you were viewing does not appear, you may need to get a new
"resolutive" eyepiece of 1.25", with better scaling between the "large field of view" eyepiece [POS-1] and the "planetary" eyepiece in [POS-3].

6. Continuing with the preparation steps of the ROTARION for the ROTARION PRIMEFOCUS Assembly, select the 17mm "resolutive" eyepiece according to the previous example.

In this example, the selected group (C) with the 17mm "resolutive" eyepiece mounted in the Click-Lock Baader is located in position [POS-2] and is already leveled in height with the groups of the 40mm and 8mm eyepieces and you do not need to add or remove "Extenders". The ROTARION is ready for mounting the ROTARION PRIMEFOCUS kit.
ATTENTION: If in the previous points 6 and 7 you had mounted another "resolutive" eyepiece different from the one of 17mm with different height, lower or greater, when assembling in the Baader Click-Lock the height of the group (C) of the [POS-2] position would be different from the heights of the 40mm and 8mm eyepiece groups plus the Baader Click-Locks and the "Extenders" in positions [POS-1] and [POS-3]. Then you would have to readjust all the heights of all eyepieces and always first mount the largest height eyepiece plus the Click-Lock Baader without "Extenders" in the [POS-1], [POS-2] or [POS-3] of the ROTARION. Then you should match the other group’s height of eyepieces plus the Click-Locks Baader with the available Extenders and the fine tuning of the helical top ring of the Click-Locks Baader.

NOTE: Replacement of small number of mm or high magnification eyepieces by Barlow optics, extending the focal length of the telescope, is common in high quality planetary imaging. In which case, you may replace the “planetary” eyepiece. In addition, the ROTARION allows the assembly of focal reducing optics such as "Focal Reducers" or "TeleCompresors". In which case, you may also replace the eyepiece that suits you. It is very important to respect the distance from the focal reducer to the camera imaging chip. The supplier of these optics should provide the optimal distance to the camera.

ATTENTION: ROTARION is designed to accept 1.25" optics of 50mm maximum external diameter to avoid interferences in the assembly and operation problems of ROTARION and ROTARION PHOTO. You may exceed the maximum outside diameter of 50mm at your own risk and responsibility.
6. ROTARION PRIMEFOCUS kit assembly in the ROTARION.

As we indicated at the beginning of Section 4 of Chapter A of this ROTARION PHOTO Instructions Manual, the ROTARION PRIMEFOCUS accessory allows you to photograph deep sky objects.

If you have performed the steps in the previous Section 4, your ROTARION is ready for installation in the [POS-4] position of the ROTARION PRIMEFOCUS accessory.

1. Loosen the center ring (A) of the ROTARION PRIMEFOCUS kit and turn the upper body (B) to increase the height of the accessory.

2. Mount the ROTARION PRIMEFOCUS in the position [POS-4] of your ROTARY by screwing it on the T2 ring of the red carousel and once mounted equal the height (B) to the rest of the eyepieces or optics and tighten the center ring (A).
7. Mounting the ROTATION PHOTO in the ROTARION.

If you have completed the above instructions, you can begin the assembly of the ROTARION PHOTO in your ROTARION.

To install the ROTATION PHOTO, it is necessary to remove from the ROTARION the stainless-steel handle of the ROTARION.

1. Unscrew the 2 screws (A) located on the bottom of the ROTARION with the Allen wrench (included in the ROTARION PHOTO box) and remove the handle (B) carefully. The result is shown in the lower right drawing.

2. Remove the ROTARION PHOTO and other accessories from the box. The universal tripod for imaging equipment ROTARION PHOTO with electromechanical automatic shutter consists of the
following elements and components that you identify in the following drawing.

(I) T2 ring (M42x0.75) for mounting imaging equipment.

(II) Thermal radiators.

(III) Clamping nuts.

(IV) Threaded Stainless steel arms for height adjustment.

(V) DIN stainless Steel nuts.

(VI) Aluminum collimating nuts.

(VII) Connection cables to the ROTATION.

(VIII) Shutter with automatic forward and backward 5mm motion.
3. First, pull out (A) the 3 aluminum (VI) collimation nuts and then unscrew (B) the 3 stainless steel DIN (V) nuts from the 3 ROTARION PHOTO stainless steel (IV) arms. Look at the drawing on the next page. Finally, unscrew the clamping nut (III) and unscrew (D) the 3 arms (IV) to obtain the maximum possible length of the stainless steel arms (IV).

4. Insert through the white connecting cable pairs (VII) of the 3 arms of the ROTARION PHOTO into the 3 black plastic tubes (D) included in the box. These black plastic tubes are used as guides to facilitate the passage of the cables in the 2 holes of the handle screws that you removed in Point 1 of this section and through the central hole of the ROTARION.
5. Carefully insert the 3 black plastic tubes (with the 3 pairs of white connecting cables (VII) included) into the 2 holes of the screws where the handle (A) was located before, and also through the central carousel hole of the ROTARION (B). To do this, we recommend that you support the ROTARION PHOTO horizontally on a table as shown in the following drawing.

ATTENTION: note that the shorter length arms (C) are the ones that are leaning down on your assembly table and the longer arm is above (D). Also, loosen the locking nuts on the arms and extend them as far out as possible.

6. Once the 3 black plastic tubes with the white wires have been inserted into the ROTARION, push (E) slowly and carefully the ROTARION PHOTO towards the ROTARION and assist it by pulling the 3 black plastic tubes (F) as you approach the ROTARION PHOTO at ROTARION.
7. Fully insert the 3 arms (IV) of the ROTARION PHOTO through the 2 holes where the handle was located before and through the central hole of the ROTARION carousel until they stop and exit the ends of the 3 arms (A) through the base of the ROTARION.

NOTE: If you have fully inserted the 3 arms (IV) of the ROTARION PHOTO through the 2 holes where the handle was previously located and through the central hole of the ROTARION carousel and do not see the arms through the back of the ROTARION (A), but the shutter (VIII) touches the eyepieces (C), you must remove the ROTARION PHOTO completely from the ROTARION and replace the 3 short arms (VII) by the additional set of 3 arms of greater length included in the box.

You must ensure a space/gap of 4mm to 5mm between the shutter and the optics (B) similar to the one indicated in the top drawing of this page in Item 7.
8. After having inserted the ROTARION PHOTO correctly and the discs of the 3 arms (IV) touch firmly in the ROTARION and that also these arms are seen through the back of the ROTARION, you will extract/remove the black cable tubes (A).

9. You thread (A) the 3 pairs of 2 white wires by the 3 manual stainless-steel nuts (V) respectively and thread them (B) to the 3 stainless steel arms (IV).

10. Then you will thread the 3 pairs of 2 white wires (C) through the 3 aluminum collimation nuts (VI) and mount them (D) to the 3 stainless steel arms. The procedure is seen in the previous drawing.
11. With the tightening nuts of the stainless arms and the assembly of the manual collimation nuts, there is only left the connection of the 3 pairs of cables to the red and black connector on the back of the ROTARION. You will group together and thread together a white wire of each stainless steel arm in the red connector (A), as shown in the lower drawing. Then you will perform the same operation, grouping by twisting and inserting a remaining white wire from each stainless steel arm into the black connector (B). To do this you select the black tubes once again and you introduce the pairs of 2 cables in the black tubes, but only in the white cables corresponding to the holes where the handle that was extracted at the beginning of Section 6, Point 1.
12. The final result is shown in the following drawing. Where a single white wire from each stainless-steel arm is screwed into a single threaded cable that is inserted into the connector (A). Also, the rest of the 3 white cables, each coming from different stainless arms, are also screwed/twisted between them to form a single cable that you connect in the second connector (B).

With this last action of the above item 12, the assembly of the ROTARION and ROTARION PHOTO is finished and ready for the next Section 8: Collimation of the ROTARION PHOTO.

**CAUTION! MOVING PARTS!** Do not connect the power cord to the ROTARION yet. The ROTARION PHOTO automatically advances the shutter if the ROTARION is connected to the power supply.

Wait to complete Section 8 of Chapter 2 before beginning Chapter 3: Using the ROTARION & ROTARION PHOTO.
8. Collimation of ROTATION PHOTO

In this Section 8 of Chapter A, you will perform two basic actions for the proper operation of the ROTARION PHOTO: a) fine adjustment of height of the automatic shutter using manual collimation nuts and b) collimation (alignment) of the optical axis. Both actions are interrelated and to perform both actions you will use the same methods and adjustment elements.

For both, the fine height adjustment of the shutter (A) and the collimation of the optical axis (B) of the ROTARION PHOTO, you will perform the following procedure:
1. Unscrew the 3 clamping nuts (III) from the 3 stainless steel arms (IV).

2. Unscrew 1 of the 3 stainless-steel (V) DIN nuts from one arm (IV).

3. Rotate the aluminum collimation nut (VI) 1 turn to gain / reduce arm height (A) and ROTARION PHOTO (B) inclination.

4. Screw back tightly the stainless-steel DIN nut (IV) so that the arm (IV) is well supported in the ROTARION.

5. Repeat Points 2, 3, and 4 with the rest of the nuts and arms assemblies in an alternate manner so as not to force any of the arms.
An easy collimation verification method is to look through the shutter (VIII) from the top of the ROTARION. This way you can verify the centering of the shutter with respect to the optics mounted in the ROTARION.

6. Once the required 4-5mm height has been obtained between the shutter and the optics mounted on the ROTARION and the alignment, centering or collimation of the optical axis between the ROTARION and ROTARION PHOTO, tighten the 3 tightening nuts (III) by stop with the 3 red radiators (II) of the ROTARION PHOTO to fix the system.

**NOTE:** The height adjustment system is designed so that you can do it without tools. Although the procedure is by trial and error and is laborious, once you have obtained the necessary adjustment, the ROTARION PHOTO tripod is rigid and stable for the support of cameras and filter wheels. And it is fully automatic when you order a change of optics in the ROTARION.

When the automatic electromechanical shutter of the ROTARION PHOTO is without electrical power, it is in the inward/back position.
Only when you connect the power to the ROTARION, the shutter automatically advances forward closing the space/gap between your optics and your image equipment avoiding the entrance of ambient light to your imaging equipment.

When you order a change of optics or eyepiece to the ROTARION, the electromechanical shutter of the ROTARION PHOTO has an automatic movement of recoil to allow the change of eyepieces without interference.

Only when the ROTARION carousel has rotated and reached the optical axis of the next eyepiece, the shutter advances 4-5mm to close the space between your camera and its optics, avoiding the ambient light coming into the sensor of your camera.

If there is a power failure of the ROTARION, the shutter automatically retracts so that you can extract the eyepieces, optics and ROTARION PRIMEFOCUS mounted in the ROTARION without interference of the ROTARION PHOTO.
B-Using ROTARION and ROTARION PHOTO.

1. CAUTION! MOVING PARTS!

ROTARION EyepieceWheel, ROTARION REMOTE CONTROL software and its accessories are not toys, they are optical instruments with mechanisms that must be used by adults at all times.

The carousel (A) of the ROTARION EyepieceWheel performs revolving-type turning movements until reaching the position requested in the ROTARION REMOTE CONTROL software.

Remove hands, cables, and other nearby objects (B) that may interfere with the movement of the ROTARION EyepieceWheel carousel before you order a turn or eyepiece, or lens change in the ROTARION REMOTE CONTROL software.

If any object interferes with the rotating movement of the ROTARION EyepieceWheel carousel by generating an entrapment and preventing reaching the position indicated in the ROTARION REMOTE CONTROL, the safety system automatically activates after 3 seconds, interrupting the requested turning movement and performing a partial reverse rotation to release the trap, indicating a [ERROR] message on the ROTARION REMOTE CONTROL software screen.
Follow the instructions in this manual and the main message window of the ROTARION REMOTE CONTROL software at all times.

**WARNING!**

Do not point your ROTARION and telescope to the sun! Viewing the sun through a telescope without proper solar filters will cause severe and permanent eye damage or blindness!

**CAUTION!**
Remove hands and objects! (B)

**MOVING PARTS!**
Wheel turning (A)
2. Checking the operation of the ROTARION PHOTO.

For the photographic use of the ROTARION and ROTARION PHOTO you will verify that the advance motion of the shutter of the ROTARION PHOTO is enough to close the space/gap on the optics to avoid the entrance of ambient light.

1. Connect the power cable to the ROTARION, you should hear a sound and see how the automatic shutter has advanced until reaching the optics or eyepiece.
2. Using the ROTARION REMOTE CONTROL software command to the ROTARION several eyepiece changes and observe the advance and recoil automatic movement of the ROTARION PHOTO’s shutter.
3. The shutter should close the gap between the optics and ROTARION PHOTO automatically, touching the eyepiece when the eyepiece change movement is finished.
4. The following table shows how to solve the ROTARION PHOTO operational problems, ensuring it is perfectly fined tuned and adjusted:

CAUTION: you may have to remove the elastic eyecups of your eyepieces. The intensive use of the ROTARION PHOTO moving shutter, may damage your eyepiece’s removable elastic eyecups.
<table>
<thead>
<tr>
<th>STATUS</th>
<th>PROBLEM</th>
<th>SOLUCION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shutter has not moved / advanced.</td>
<td>YES</td>
<td>Check ROTARION electrical connection cable. Check the connection of white ROTATION PHOTO cables connected to the Red / Black connector on the bottom of the ROTARION. Check the status of the power supply.</td>
</tr>
<tr>
<td>Shutter has advanced but does not touch any optics, eyepiece or ROTARION PRIMEFOCUS.</td>
<td>YES</td>
<td>The distance between your optics and the shutter is too much, see Chapter A Section 8, Collimation and Shutter Height Adjustment, and reduce shutter clearance by the manual collimation arms and nuts.</td>
</tr>
<tr>
<td>Shutter has advanced but does not touch optics, eyepiece or ROTARION PRIMEFOCUS.</td>
<td>YES</td>
<td>The distance between some optics and the shutter is too much, see Chapter A, Section 3 Equal Height between eyepieces and optics.</td>
</tr>
<tr>
<td>Shutter has advanced but does not hold the position forward and then always recoils.</td>
<td>YES</td>
<td>The distance between your optics and the shutter is insufficient, see Chapter A Section 8, Collimation and Shutter Height Adjustment, and increase the shutter clearance by the manual collimation arms and nuts. Check ROTARION electrical connection cables. Check the connection of white ROTATION PHOTO cables connected to the Red / Black connector on the bottom of the ROTARION. Check the status of the power supply.</td>
</tr>
<tr>
<td>Shutter has advanced but then sometimes recedes.</td>
<td>YES</td>
<td>The distance between some optics and the obturator is insufficient, see Chapter A, Section 3 Equal Height between eyepieces and optics.</td>
</tr>
<tr>
<td>The optics or eyepieces are not centered when I look through the shutter without the camera.</td>
<td>YES</td>
<td>The collimation of the 3 arms is not correct, see Chapter A, Section 8. Re-adjust the heights of the stainless steel arms.</td>
</tr>
<tr>
<td>The Red Radiators are hot.</td>
<td>NO</td>
<td>It is normal, the radiators must be between hot and temperate, but in no case can cause burns.</td>
</tr>
</tbody>
</table>
3. Using Cameras and Imaging Equipment with the ROTATION PHOTO.

For photographic use with the ROTARION PHOTO you must use image equipment with T2 ring with thread M42x0,75.

If you cannot screw the camera or the imaging equipment because there are dimensional interferences with your camera when you thread-in the black T2 ring of the ROTARION PHOTO, you may supplement it with an "Extender" T2 with sufficient height (A) to allow the thread completely.
Once the original "Extender" M42x0.75 of the ROTARION PHOTO or another "Extender" is screwed to the T2 ring of your camera, the operation is fully automatic.

You should only select the optics, eyepiece or ROTARION PRIMEFOCUS kit, focus with your telescope and you can start your imaging shoot.

4. Photographing objects with the ROTATION PHOTO.

To locate objects it is convenient to use your eyepiece with a greater number of mm or less magnification. The less magnified eyepieces have the largest field of view and therefore it is easier to locate objects with your telescope than with an eyepiece of greater magnification and less visual field.

If you have followed these instructions correctly, your lower power or magnification eyepiece should be located in the [POS-1] of your ROTARION and with a larger number in mm and greater field of view.

Once the object is located, you should focus with the telescope and center the object (A) on the eyepiece before changing the eyepiece, so that the image of the object in the next eyepiece is in your field of view.

[POS-1] Centering NO OK.  [POS-1] Centering OK. (A)
4. The "Zoom Effect"

With the object centered on the eyepiece and focused, by pressing the [POS-2] button of the ROTARION REMOTE CONTROL software, the ROTARION changes the eyepiece on the [POS-1] to the eyepiece [POS-2] with increased power or magnification.

Now you must focus the telescope again. The observed image should be larger and have less visual field. Center the image again in the eyepiece (B).

Subsequently, you can increase the magnification of your telescope by changing to the following eyepieces of smaller number of mm and higher magnifications, [POS-3] and [POS-4].

As long as you perform the object centering procedure on the eyepiece before switching to the next eyepiece, the object will appear in your field of view.
5. The "Finder Effect".
If the image of an object moves or trails through the field of view (A) of the eyepiece due to tracking problems or because the telescope has not been set correctly and finally disappears from the field of view (B), you can re-relocate the object by pressing [POS-1] that changes to the eyepiece with the largest number in mm, the lowest power or magnification and greater field of view (C).

Once the object has been relocated, remember to center the image in the eyepiece (D) before making the change to an eyepiece of smaller number of mm, greater power or magnification and smaller field of view. This ensures that the object will appear in the field of view of the next eyepiece.
C-Additional Product Information

Please read the following instructions and information.

1. Product Compliance Information

The AstronSCIENTIFIC S.L. corporation with address at Martí i Julia 6-8, Barcelona 08834 Spain E.U. has certified this product with the IEC 61010-1 Norm for Safety requirements for electrical equipment for measurement, control, and laboratory use in compliance with the Bureau Veritas Consumer Products Services Germany GmbH corporation based at Türkheim, Germany.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

- The CE Certificate Product Marking:

![CE Certificate Product Marking]

- Instruction Manual Version:

  Rotarion Photo V:1.0 CE
2. Service, Maintenance, Cleaning, Disposal, Serial Number, and Dealer:

Car adapter fuse:

- 4 Amp 12V 6.3x32mm, fast acting.
- To replace it, unscrew the tip and replace.

Operating environmental conditions:

- Max. 2000m. / 0-40 °C / 32-104 Fahrenheit and 80% humidity.

Degree of Protection IEC 60529:

- Not applicable.

The Power Supply:

- Input: 100-240Vac; 50/60Hz; 0,55A
- Output: 12Vdc; 2A; Limited Power Source
- Disconnect the Power Supply unit from the ROTARION. The Power Supply unit must be freely accessible and must not be covered nor obstructed for disconnecting the ROTARION when needed.
- Only use the supplied Power Supply unit.
- Please compare the rating plate of the Power supply unit with the local mains voltage and frequency.

Maintenance technical data:

- Maintenance free.

Cleaning:

- Use a soft cloth without liquids.
Disposal:

- Equipment with this symbol shall not be disposed of together with household or commercial waste.
- Please find out about separate disposal at your regional offices.
- The directive 2012/19/EU on waste electrical and electronical equipment (WEEE) is applicable in the European Union member states.

Serial Number (or PN): ________________________________

Dealer: ________________________________

Date: ________________________________
D-Warranty

The warranty is extended to all countries where this product is distributed by AstronSCIENTIFIC S.L. or by a distributor assigned by it. This warranty is subject to the legal provisions of each country.

3. Warranty period
The Warranty period is 2 years from the date of the sales invoice issued by AstronSCIENTIFIC S.L. Or by the distributor authorized by AstronSCIENTIFIC S.L.

4. Warranty Coverage
The conformity of the product is warranted according to the use for which it is intended.

Within the warranty period, we will remedy any defect in the operation of the product due to its manufacture, whether repairing, replacing parts or providing a new product, provided that the option chosen is feasible and not economically disproportionate according to the criteria of AstronSCIENTIFIC S.L.

For any of the three options, repair, replacement of parts or exchange for a new product, the consumer must go to the authorized distributor of AstronSCIENTIFIC S.L. where the product was purchased.

5. Warranty Nullity
This warranty will not be valid in the following cases:

Misuse, improper use, neglect, accident, or deterioration of the product due to failure to comply with the warnings and restrictions contained in this Instruction Manual or in
the operating instructions provided by AstronSCIENTIFIC S.L.

External agents such as water or other harmful chemicals, obstructive or corrosive.

Likewise, faults or malfunctions caused by incorrect voltages and electrical installations will not be covered by this guarantee.

This warranty does not cover any product that has been altered or repaired by any person other than AstronSCIENTIFIC S.L. repair personnel, or any product whose serial number, model number or identification has been removed, defective or altered.

AstronSCIENTIFIC S.L. Shall not be liable for any indirect, special, incidental or consequential damages related to the sale or use of the product.