Solar X 2 owner's manual

Icaro 2000 congratulates you on your purchase of a new **Solar X 2 helmet** (IC2003-03). This helmet has long been a favourite from microlight pilots all over the world, who love its lightness, style and certified safety. But technology is constantly developing, and so we have **completely redesigned** Solar X with new features to offer even higher levels of performance, protection and comfort. We have recalibrated its **internal ventilation**, added an **inner cap** in the high-tech fabric **Coolmax**, and optimized sizes with **two new outer shells**. Characteristics that remain unchanged are the Italian design, the appealing style and colours, and the quality of a helmet made exclusively in Italy.

The principal purpose of our helmets, **safety**, has been achieved without sacrificing comfort or aerodynamic performance, by virtue of the innovative technology that we have applied.

Icaro 2000 helmets are certified by the Italian notified body "ITALCERT".
IC2003-03 is an open face helmet, **certified for UL**, in accordance with the EU standard **EN 966:2012+A1:2012**.

Icaro 2000 recommends the use of certified helmets only.

Our network of distributors worldwide ensures the availability of parts and service wherever you practice your sport.

This manual can be also viewed online, at the following web address:
https://icaro2000.com/Products/Helmets/Solar2/Solar2.htm

Or you can scan the QR on the sheet inserted in the helmet box to access to helmet manual and other important information.

For further information or service, please consult your nearest Icaro 2000 retailer, or contact the company direct at:

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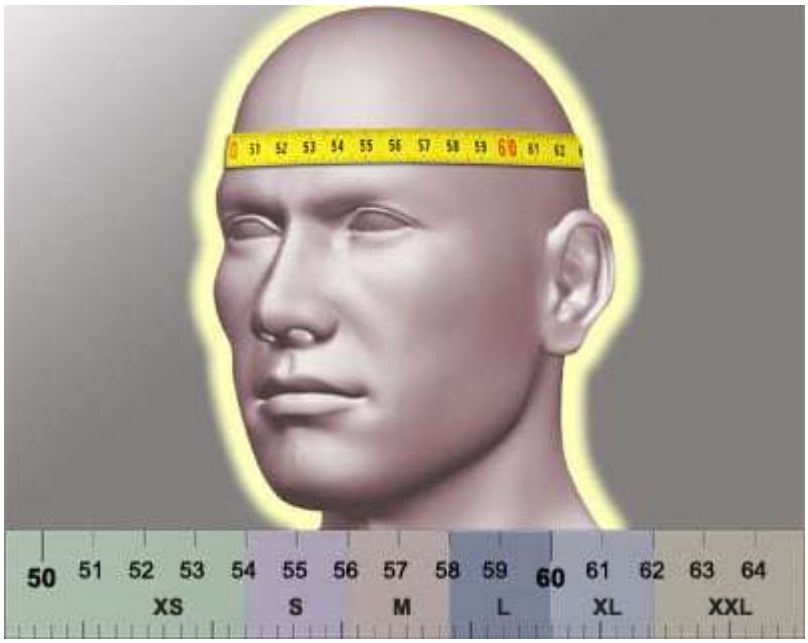
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General information

Choosing and purchasing a helmet

When you purchase a helmet, the most important moment is choosing the **right size**. If you have never purchased a helmet, you probably don't know your own size. The size of a helmet is specified by the **inner circumference** of the internal padding. The size number therefore corresponds to the head circumference in centimetres.



Take your time when choosing a helmet. Try several, and follow these criteria:

Put the helmet on and fasten the strap:

- The helmet should not be so loose that it moves around, but neither so tight that you can feel a continuous pressure on your head
- A helmet that is too large may slide down and obstruct your eyes
- Try to pull it off, moving it back and forth: if it tends to slip off or move around, it is too large
- Lean your head forwards, grip the helmet's rear edge, and try to pull the helmet off. If the helmet slides off, it is not suitable for the shape of your head.
- For **Solar X 2**, there are **two versions** of the **carbon outer shell**, one larger for sizes 59 - 62, and a smaller version for sizes 53 - 58. It is important to choose the correct version. If you are in doubt whether to opt for the larger helmet with size 59, or the smaller helmet with size 58, we recommend choosing the larger version. The larger helmet can be adjusted using the replaceable inner caps as described below. On the other hand, there is no way of adjusting the smaller size 58 helmet if it feels too tight.

If, while trying on the helmet, it does not perform satisfactorily for just one of these criteria, you should try another size or another model.

When compared with the jet, or open-face, helmet, a full-face helmet also guarantees protection for the chin area. Consider this carefully when you are choosing your helmet.

Never purchase a second-hand helmet, even if the price is good. There is no way of discerning its real conditions (whether it has been involved in an accident, etc.).

How to try and use, a helmet with headset

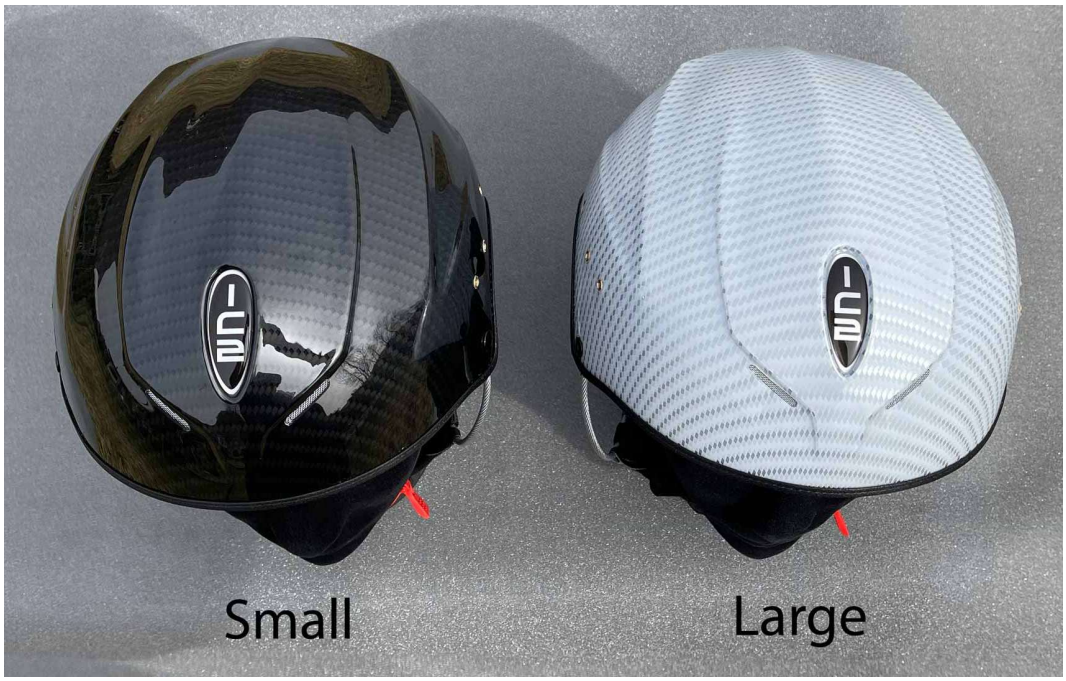
When you are trying on a helmet whose shell has an opening in correspondence with the ears, because they are designed to be used with headsets (whether for noise reduction or radio communications), it is essential to **fasten the chinstrap correctly** and position the **headphone cups** (swing them down into the closed position) firmly **over the ears**.
In fact, if these helmets are worn without headphones, a large portion of the contact surface, which contributes considerably to the helmet's stability on the head, is missing.
So if you try on the helmet with the headphone cups in the open position, the helmet will feel unstable.

In addition, the **headphones are part of the certification**, and so a helmet of this type worn without headphones cannot be considered as certified.

Structure of the Solar X 2 helmet

Outer shell:

- Solar X 2 is made with an outer shell in 1.5 mm polycarbonate, giving it **high perforation resistance, strength, elasticity, and lightness.**



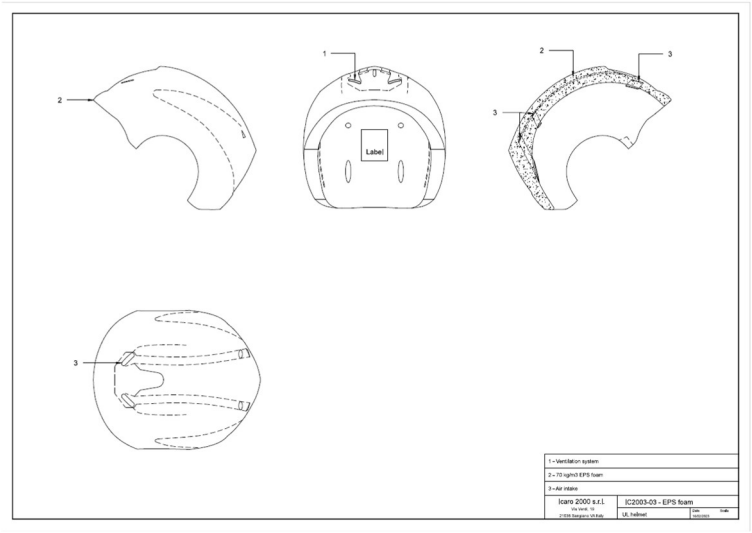
Outer shell edging finish:

- We have improved the finish of Solar X 2 by developing a method of sewing a **fabric strip** around the edge of the outer shell, instead of the conventional rubber edging strip. The result is unique, durable and very attractive.



Crushable foam inner shell:

- Solar X 2 has an **inner polystyrene shell** of increased thickness, in order to further enhance the **safety** and **protection** provided by the helmet. This component can be damaged even by a minimal impact, and after such an event, the helmet should be replaced. This is part of the helmet's intrinsic protective role. In fact, polystyrene is easily deformable, and in this context its function is to **absorb shock** by means of deformation and/or partial destruction. A more rigid material would not have the effect of dissipating impact energy, and so it would transmit all the shock energy to the head.



Comfort lining

- **Solar X 2** has a comfort lining comprising a **cap** in the high-technology fabric **Coolmax**, which increases comfort by wicking perspiration away from the head and enabling it to evaporate rapidly, keeping you cool and dry. Every Solar X 2 helmet has a label that guarantees the use of this famous new textile, which is also soft to touch and so makes the product even more comfortable.



Rotary size regulator

- The **new rotary size regulator** can be used to modify not only the helmet's internal circumference, but also its position with respect to the back of the neck. It is simple to adjust and the operation can be performed directly by the pilot. Comfort is ensured by padding on the size regulator's inner surface.



Vents

- Vents on the helmet's exterior guarantee **internal air flow**, with two channels between the outer shell and the polystyrene inner shell optimizing comfort and temperature in flight.



Sidepieces

- Solar X 2 has **sidepieces in stainless steel wire** coated in plastic. This strong, robust arrangement is unique to Icaro2000.



Micrometric chin strap

- The chinstrap is released by pulling up the red tab. It can be regulated with millimetric precision by adjusting the web strap through the plastic buckle.



Visor

- For the Solar X 2 helmet, the visor is an **optional accessory**. It is made in polycarbonate, with anti-scratch treatment.
- The visor should be replaced when vision is impeded by small scratches on the surface. **In a free flight helmet, a visor has been shown by wind tunnel tests to be necessary to obtain the best possible aerodynamic efficiency.**
- The visor is available in two types, each with different colours:
    - Short – transparent or tinted brown
    - Long – transparent or tinted brown

The visor increases the **active safety,** providing a better wind protection and increasing the width of the field of vision when compared to the use of any type of sunglasses.





Visor fixing system

- There is an **O-ring** inside the aluminium disc which provides the friction necessary to adjust visor position continuously and smoothly.
- When the visor is lifted completely, it is entirely outside the field of vision.

Headphones

- **Headphones are mandatory** for Solar X 2's EN 966 certification. We supply the helmet with the best ear defenders available on the market, mounting them to perfection. The system is very practical, because the ear cups can be flipped upwards or sideways quickly and easily. As a result, you can hear normally even when wearing the helmet on the ground. When you are in the air, you can ventilate your ears whenever you like.
- Please note that this **helmet should not be used** with conventional **head-arch headphones** worn under the helmet. In this case, your head would no longer be correctly protected.



Technical specifications

- **Weight**:
  - Solar X 2 with large outer shell: 520 grams
  - Solar X 2 with small outer shell: 540 grams
  - Short visor: 101 grams
  - Long visor: 135 grams
  - Headphones: 230 grams
- **Sizes**:
  - The Solar X 2 helmet is available in different sizes, with two outer shell sizes and four internal padding caps:
    - Small outer shell
      - Cap size Small (S), sizes 55 - 56
      - Cap size Medium (M), sizes 57 - 58
    - Large outer shell
      - Cap size Large (L), 59 – 60
      - Cap size Extra Large (XL), 61 – 62
  - The Extra Small (XS), 53 – 54 cm size, it is achieved by means of the rotary size regulator.

Certification

- Solar X 2 was certified by the Italian notified body Italcert. It is designed and built to be as light as possible while optimizing safety for hang glider, paraglider and microlight pilots. This certification is valid only for the helmet fitted with ear defenders
- **Colours**:
  - One of the advantages of using polycarbonate for the outer shell is the fact that it offers great freedom in the graphic design and colours used for its surface finish. But this flexibility also means that it is difficult to maintain an identical colour in successive production runs. So the finished helmets may show slight chromatic variations. Of course, once we have defined the desired hue, we do everything possible to ensure that it remains the same, as far as is possible, from batch to batch.

Using the helmet

It is important that you **wear your helmet correctly.** For safety, it should always fit snugly, and the **strap** should be **tightly fastened**.
A helmet will never be able to guarantee total protection for the head when subject to the forces produced by whatever type of impact. However this is no excuse to forego wearing a helmet. You should **always wear your helmet,** in order to exploit the protection that it provides, whatever impact may occur.

4 things that you should never forget

1. **Before using the helmet,** read all the instructions, and follow the suggestions carefully to ensure a correct fit.
2. **Do not use the helmet without fastening the strap.** An unfastened helmet will fall off during the first impact, leaving the head defenceless for successive impacts. There is also the risk of it falling off during flight.
3. **Do not** fasten the helmet **using just the velcro.** The velcro that may be present on the strap serves purely to stop it flapping in the wind.
4. To ensure maximum performance, **never modify your helmet**, whatever the circumstances.

In case of accident

- If the accident happens to you:
  - The inner shell will be deformed – though the deformation may not be visible to the naked eye – because it has absorbed the impact.
  - **After an accident, even if the impact was minor, the helmet should be replaced, regardless of whether there is visible damage or not.**
- If you witness an accident:
  - Keep calm.
  - Report the accident immediately, if possible by phoning for an ambulance (dial 118 in Italy). Only medically-qualified personnel know exactly how to deal with injuries.
  - Never move an injured person, unless this is absolutely essential because of a situation of greater danger.
    If the spinal column is damaged, moving the injured person could harm the spinal cord, causing permanent paralysis.
  - If the victim is wearing a helmet, do not remove it, but open the visor to facilitate breathing.
  - Keep the victim calm, and, if possible, cover him/her. Shock provokes shivering and a sensation of cold.
  - Do not give the victim alcoholic drinks.
  - Stem the flow of blood from wounds, protecting your hands with gloves or similar, throwing them away later if they have been soiled with blood. Do not apply tourniquets: if you place a tourniquet in the wrong position, you could worsen the situation.
  - Never put the victim into a private car. Wait for the ambulance. If the victim is conscious, talk to him or her and try to calm him or her down.

Helmet maintenance

The helmet protects your head, and so it should be **treated with care.**
The **visor** should be **changed** when it has **scratches** preventing satisfactory vision.

To prevent damage and errors in assembly, ask your dealer or Icaro 2000 directly to change your visor, or contact us for further information. (See contact details at the beginning of this manual).

The helmet can be **seriously damaged by:**

- Paints and varnish
- Petrol
- All types of chemical solvent
- Excessive heat (do not leave your helmet exposed to the sun)
- Inappropriate modifications

Scrupulously follow the instructions provided by the manufacturer.
If you think that the helmet that you have chosen is not right for the shape of your head, replace it… and this time choose more carefully!
A helmet does not have a fixed lifespan. However, it is a good rule to replace it after five years of normal use.

Important!

- **THE EXTERNAL SHELL OF THE HELMET SHOULD NEVER BE ALTERED IN ANY WAY.**
- **INTERNAL POLYSTYRENE PARTS SHOULD NEVER BE MODIFIED OR REMOVED.**
- **NEVER APPLY PETROL, DILUENTS, TOLUENE OR OTHER SOLVENTS OR CHEMICAL SUBSTANCES TO ANY PART OF THE HELMET.**

Personalization

Removal and reassembly of internal padding

Important: do not use sharp or pointed tools such as screwdrivers, etc., in order to not to scratch or damage the helmet and its structural components
Solar X 2 has a **comfort lining** that can be removed and re-installed in order to personalize the helmet's fit, or to wash the lining.



The comfort lining of Solar X 2, comprising a cap in **Coolmax**, is fixed to the polystyrene inner shell by means of a series of Velcro strips. It is easy to remove. Just ensure that you **detach the Velcro strips by holding and pulling the strips themselves. Don't just pull the inner cap out from the helmet**.

Reassembly
To reassemble the lining, reverse the removal sequence, ensuring that the Coolmax cap is positioned centrally and symmetrically.
When you are sure that the cap is in the correct position inside the helmet, press firmly over the Velcro fastening strips in order to fasten the lining.

Visor installation and removal

The visor can be removed if it has to be cleaned thoroughly or replaced, or if you have purchased a new visor for your Solar X 2 helmet.

Important: when fitting and removing the visor, be careful not to scratch the surface of the helmet or visor with a screwdriver or other sharp or abrasive objects.
Don't touch a mirror-finish visor with your hands, because it may be opacified by the acid contained in perspiration.

Adding a visor to a Solar X 2 helmet:
The visor is supplied with the two screws and separators, and the two pinlock screws, needed for assembly.
Removal of the visor

- Place the helmet onto a table, ensuring that it is entirely stable, and lower the visor into its position of normal use.
- Unscrew and remove the two pinlock screws that determine the visor's travel between the open and closed positions.
- Unscrew the two lateral fixing screws. When the first screw has almost been completely unscrewed, be careful not to lose the rubber O-ring, positioned inside the aluminium, and the Mylar washers between the visor and the outer shell.
- If you decide to fly without a visor, remove all the elements that are not part of the outer shell, and cover the threaded bushes in the shell using the stickers provided.
- It may be necessary to periodically replace the rubber O-rings in order to guarantee the correct damping of visor closure

Fixing the visor to the helmet
On each side of the outer shell, there are two holes with threaded bush, one in front for the pinlock screw, and one behind for the visor pivot.

- Place the rubber O-ring into the circular housing on the aluminium washer.
- Then place the aluminium washer with the O-ring into one of the holes on the side of the visor.
- Insert the screw into the aluminium washer and then position the Mylar washer on the inside of the visor.
- Holding the washers and the screw in their correct position in the hole in the visor, position the screw into the threaded bush on the helmet, and screw it in using the appropriate hex key.
- Screw in the pinlock screw with its plastic washer.
- Follow the same procedure for the other side of the helmet.

Cleaning

External shell

- Remove the visor, ear defenders and other accessories. Use **only a damp microfibre cloth** for cleaning. If the external shell is soiled with mud, insects etc., soak a microfibre cloth with warm water, wring out excess water, place on the helmet and leave for a few minutes. This will loosen the grime. Use damp microfibre cloths to gently clean the outer surface of the helmet. Dry with a dry microfibre cloth. **Do not use solvents, chemicals or petroleum-based products** which may cause damage to the helmet's structure.

Internal parts

Interior polystyrene

- Use **only a damp cloth**.
- Leave to **dry** at room temperature, protected from direct sunlight.

Internal padding

- Hand-wash carefully, using just water at maximum 30° C and **neutral soap.**
- Rinse in cold water.
- Leave to **dry** at room temperature, protected from direct sunlight.

Important information

Pilots who are used to flying with just sunglasses or even with no eye protection at all **may take a few flights to get accustomed to the visor.** If you don't feel comfortable with the visor to start with, just lower and raise the visor during your first flights with the helmet until you get used to it.
In conditions of high humidity and/or large temperature excursions, the visor may fog. On such occasions you will immediately appreciate the difference between flying with sunglasses and with a visor: in the latter case, you just have to open the visor slightly to obtain the complete clearance of any fogging.

- Never fly without a helmet
  - Your life is too precious to risk losing it just because you have forgotten something.
- Use only certified helmets
  - The IC2003-03 helmet is constructed in compliance with regulation EU 2016/425, and it is certified in compliance with the EU standards EN 966:2012+A1:2012
  - Never trust a helmet that has no label guaranteeing these standards.
- Proper use of the headphones
  - On the Solar X 2, headphones are part of the certification and so, without them, this helmet cannot be considered as certified. For this reason, it is essential to fasten the chinstrap correctly and position the headphone cups (swing them down into the closed position) firmly over the ears.
- We recommend the use of a full-face helmet
  - A full-face helmet offers optimized protection in every situation.
- Never modify your helmet for whatever reason
  - Modifications could reduce the level of protection, and could annul the helmet's certification.
- Never use headphones under the helmet
  - Any rigid components placed inside the helmet, between polystyrene lining and the head, could become percussive and damaging elements.
- Always ensure that the chin strap is tightly fastened.
  - An unfastened helmet will fall off during the first impact, leaving the head defenceless for successive impacts. There is also the risk of it falling off while using it.
- Transportation
  - During transportation keep your helmet in the protective bag provided.
  - If you keep your helmet in the backpack, don't sit on it.
  - Ensure that the helmet never falls onto the ground or the floor.
  - Handle the helmet and visor (if present) with great care at all times.

- In case of accident
  - After an accident, even when the impact is minimal, the helmet should be replaced, regardless of whether there is any visible damage or not.

- Helmets and action cameras

  Many pilots mount an action camera onto their helmets in order to record their adventures. It is important to remember that **any object projecting for more than 5 mm above the level of the outer shell annuls the helmet's certification**, just as for any other modification that is not specified in the user manual. The reason for this is that an object mounted onto the external shell could concentrate a percussive force onto a small area. Therefore, it is potentially dangerous and reduces the level of protection that the helmet can provide. Considering that even the most compact action camera projects at least 30/40 mm from the helmet's outer shell, there is no doubt that a helmet equipped with this sort of device can no longer be considered as compliant with its respective certification. For this reason, because we at **Icaro2000** wish to offer the highest possible level of protection for our customers, we recommend **not fitting action cameras** or other devices onto the outer shell of a helmet.

Icaro 2000 wishes you happy and safe flying.

Icaro 2000 is committed to the ongoing development of its technology, and therefore it reserves the right to modify the characteristics of its products at any time and in any way, without prior notice.