OSD GRUPPO ECOTECH
via Ponte Alto,10
41011 Campogalliano (MO)
Italy

BUDDYFLOW™ OPERATION MANUAL

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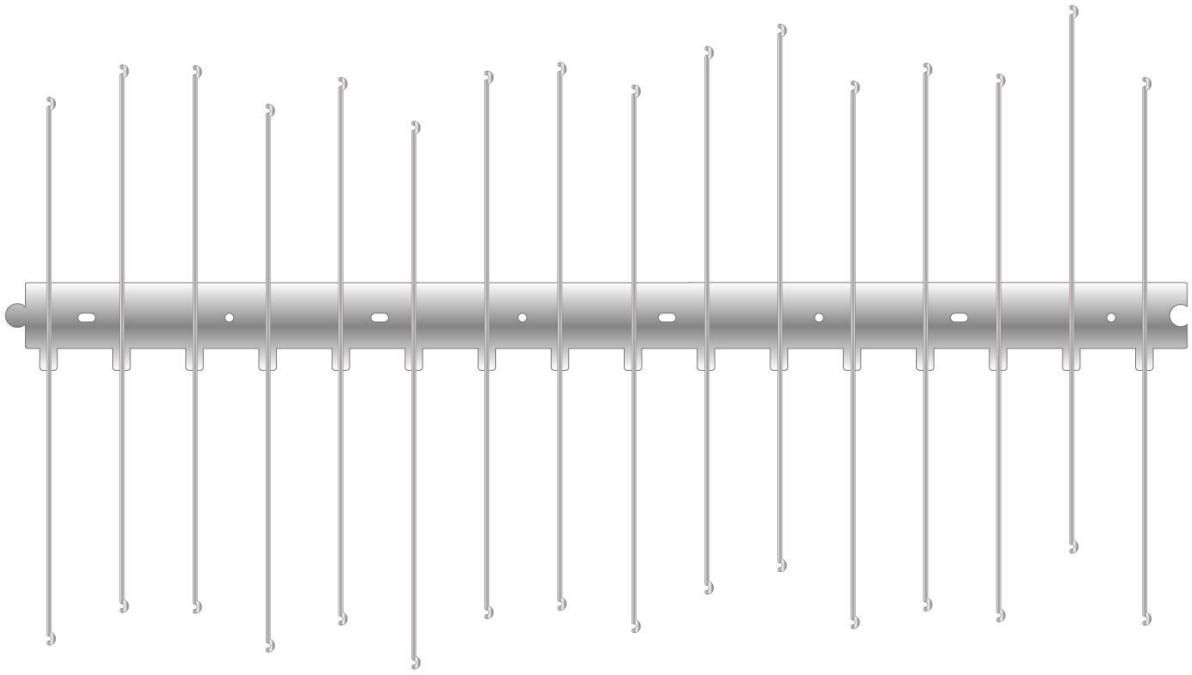
Contents

WARNING!
TAKE CARE TO AVOID ACCIDENTS WHEN HANDLING EACH PIECE.
ALWAYS WEAR GLOVES WHEN HANDLING THE BUDDYFLOW™ BARRIER.

FOR SAFETY REASONS READ THE INFORMATION CONTAINED IN THIS MANUAL BEFORE STARTING INSTALLATION OF THE BARRIER



1. Product description

The roofs of houses are often a popular gathering place for pigeons attracted by the heat that escapes through the roofing and chimneys.
When the roof is fitted with a solar panel system, the release of heat built up by the panels thanks to solar radiation is even higher.
As a result, pigeons tend to rest on the warm surface of the solar panels during the day, as well as sleeping below them at night.
Moreover, the nests and droppings between the panels and the roofing will eventually be washed away by rain, building up inside the gutters and creating blockages in the drain pipes with a consequent overflow of rain water. The space between the panels with respect to the top of the roof pitch allows the pigeons to find a comfortable recess in which to nest and stay overnight, creating other problems including, in addition to the accumulations of droppings described above, the presence of parasitic insects, pathogenic viruses, etc.
Their droppings are acidic, which can cause tarnishing of the glass and a rapid decline in the performance and output of the panels. The resulting need to use aggressive and abrasive cleaning products leads to further damage to the surface of the panels, which before long become degraded and ruined
BUDDYFLOW™ is an innovative self-shaping, patented Ecobirds® line anti-intrusion barrier for the fight against pigeons, crows, magpies and large rodents, such as dormice, squirrels and beavers that could gnaw on electrical cables near the panels.
BUDDYFLOW™ allows the recess between the roof pitch and the photovoltaic panels not integrated into the roof to be closed definitively and quickly, effectively preventing the intrusion of problematic animals.
Combined with the specific "FLOWTAPE" product - 3M double-sided adhesive tape with high tenacity, resistant to atmospheric agents, to thermal variations, water, snow and smog - for its installation the BUDDYFLOW™ barrier does not require the frame of the panels to be drilled.
The barrier made of anti-UV polycarbonate can also be anchored with neutral cross-linked silicone
Once installed, the barrier will shape itself to the configuration of the cover and will close any access to problem-causing birds and large rodents. Its installation is very quick and safe.

2. BUDDYFLOW™ BARRIER

The following description summarises the composition of the BUDDYFLOW™ barrier

BUDDYFLOW™ is arigid barrier made of polycarbonate equipped with a series of parallel rod-type segments made of stainless steel. The 53 cm long barrier is equipped with 16 vertical rod-type segments capable of self-moulding when positioned near corrugated roofs. Resistant to impacts and atmospheric agents, the barrier can be anchored, for example, by means of specific FLOWTAPE double-sided adhesive tape or silicone, screws, etc.

The following description summarises the composition of the FLOWTAPE double-sided adhesive tape

3M tape roll, adhesive on both sides, made with closed-cell visco-elastic acrylic foam ideal for outdoor applications. Its particular configuration allows excellent compensation in the event of thermal expansions and shocks, persistent humidity and water penetration. Treated with anti-UV additives, it is resistant to solar radiation. Suitable to bond polycarbonate parts on aluminium surfaces.

2.1. Features and limits of the BUDDYFLOW™ barrier

- Barrier structure: anti UV polycarbonate + stainless steel rod-type segments
- Barrier colour: translucent
- Material thickness: 7 mm
- Length of the single piece constituting the barrier: 530 mm
- Height of the single rod-type segment: 250 mm
- Number of rod-type segments in one meter: 32
- Maximum height of the recess to be protected: 220 mm
- BUDDYFLOW™ barrier classification: bird safe

2.2. Features and limits of FLOWTAPE double-sided adhesive tape

- Composition of double-sided adhesive tape: acrylic foam
- Double-sided tape height: 26 mm
- Length of double-sided tape: rolls of 3 – 12 – 15 m
- Double-sided tape thickness: 1200 µm

3. Installation of the BUDDYFLOW™ barrier

The BUDDYFLOW™ system is a professional product and should be treated as such. For its correct installation, precise procedures must be followed to obtain an excellent and long-lasting result.
For the installation see the following chapters

3.1. Preparation of recommended equipment

Prepare the following equipment and materials:

- Indelible marker
- Flexometer
- Standard scissors
- Steel wire cutter
- BUDDYCLEAN type high volatility degreasing diluent
- Cotton or microfibre cloth
- Manual roller
- Silicone
- BUDDYFLOW template
- Special BUDDYFLOW clips

3.2. Preparation of personal protection equipment

Introduction to safety.

Given that installation of the barrier is expected to be performed at height, therefore on the slope of a roof or in any case in areas at risk of an accidental fall from a height, it is advisable to perform the intervention using all the protective means and devices useful to avoid personal harm and damage to property. In case of uncertainty, it is advisable to use experienced, trained personnel who meet all the legal requirements.

Prepare Personal Protection Equipment (PPE) to prevent accidental falls from a height and to ensure personal safety:

- Helmet with chin strap
- Anti-abrasion gloves
- Non-slip shoes
- Full harness
- Positioning lanyard with carabiner
- Goggles
- Dust masks
- Other

3.3. Preparation of the BUDDYFLOW™ barrier

Clean the inner portion of the barrier where the double-sided adhesive tape is intended to be placed with a non-aggressive cleaning product compatible with polycarbonate to remove any residual dust or grease present due to manufacturing of the product.

3.4. Preparation of the photovoltaic modules

Thoroughly clean the outer portion of the perimeter frame of the photovoltaic modules with a degreasing product, with high volatility such as the specific BUDDYCLEAN product that removes any residual dust, dirt or greasiness due to smog and atmospheric agents.

3.5. Application of double-sided adhesive tape to the BUDDYFLOW™ barrier

Apply the FLOWTAPE double-sided tape to the inner portion of the BUDDYFLOW™ barrier. Apply the tape, unwinding it by hand with extreme care and being sure not to attach and detach the tape repeatedly, thereby weakening its tenacity. Press the tape with your hands or a roller to even out the application and to remove any air bubbles.
Carefully remove the silicone film along the entire tape, taking special care not to make the adhesive surface unstable by touching it with your hands, equipment, or by sprinkling it with liquids or powders.

WARNING!

Do not leave the double-sided adhesive tape without silicone film exposed for long periods in dusty places, at temperatures below 10°C and above 50°C. Similarly, avoid lengthy exposure to humidity, rain and other conditions that could destabilise the adhesive properties of the tape.

3.6. Silicone application to the BUDDYFLOW™ barrier

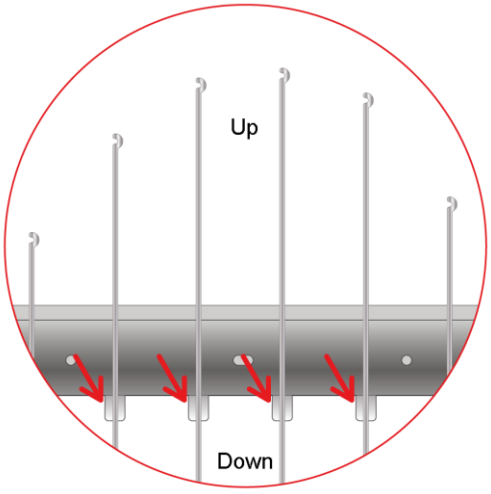
As an alternative to FLOWTAPE double-sided adhesive tape, neutral cross-linked silicone compatible with polycarbonate can be used. Carefully apply the silicone on the inner portion of the BUDDYFLOW™ barrier, taking special care to spread it evenly over the entire length of the base.

3.7. Anchoring the BUDDYFLOW™ barrier to the photovoltaic panel

Apply the BUDDYFLOW™ product to the photovoltaic module frame following the instructions below:

3.7.0 Hold the barrier with both hands taking special care to keep the rod-type elements all facing towards themselves and with the "structural tabs" facing the opposite side.

3.7.1 Place the polycarbonate module with the "structural tabs" facing downwards (see example below);

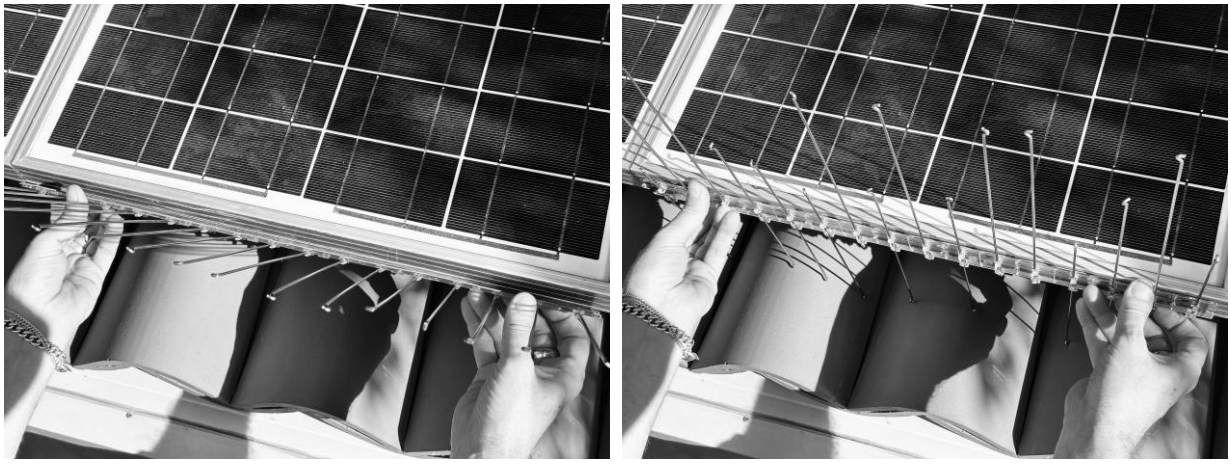


3.7.2 Use the lower edge of the aluminium frame of the photovoltaic panel as a reference to support the barrier and apply it (see example below).

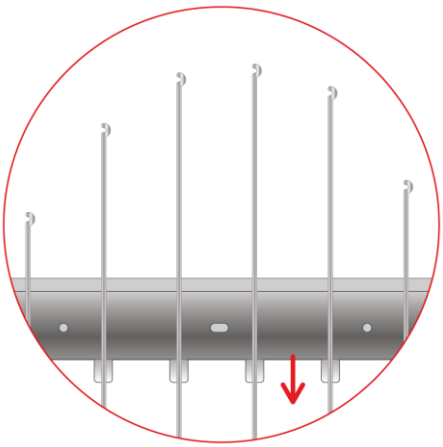
N.B.! At this stage, be careful to keep the adhesive tape or silicone spaced from the frame of the photovoltaic panel to avoid the "detach-attach" effect that would damage the effectiveness of the adhesive.

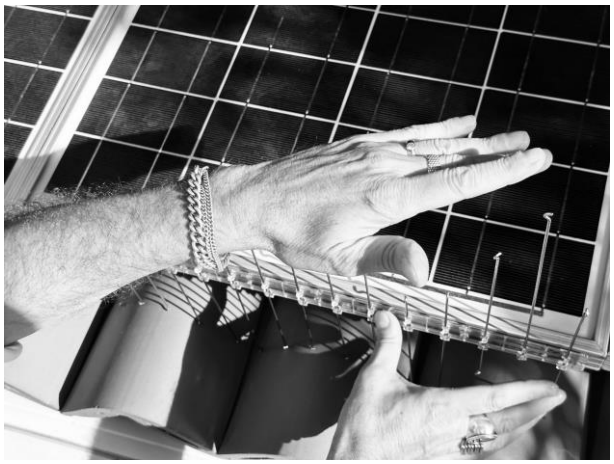
3.7.3 Once the correct reference points have been identified and the exact anchoring position of the barrier has been established, rotate the barrier firmly towards the frame, from the bottom upwards, pivoting on the lower edge of the same frame then press the barrier to the frame of the photovoltaic panel. (see example below)

3.7.4 Perform a uniform and fast rotation (see example below)



N.B.! The rod-type segments will begin to descend autonomously due to the effect of gravity, sliding inside their anchorage seats until they rest on the underlying cover in a uniform manner.
In the event that some segments do not descend independently, lightly press with your hands on the top of the same filaments until they reach their end of travel near the cover (see example below)

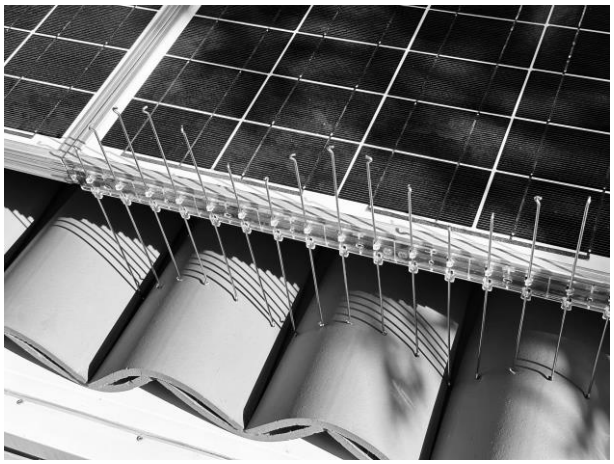




3.7.5 Exert a uniform pressure with your hands on the outside of the barrier applied to the frame of the photovoltaic panel by pressing the barrier along its entire length. (see example below)

3.7.6 Repeatedly press the entire length of the barrier with your fingers and/or the palm of your hands to obtain perfect adhesion of the barrier to the frame of the photovoltaic panel.

WARNING!
It is important that the rod-type segments of the BUDDYFLOW™ barrier are perfectly parallel to each other and all supporting the surface of the roof cover.

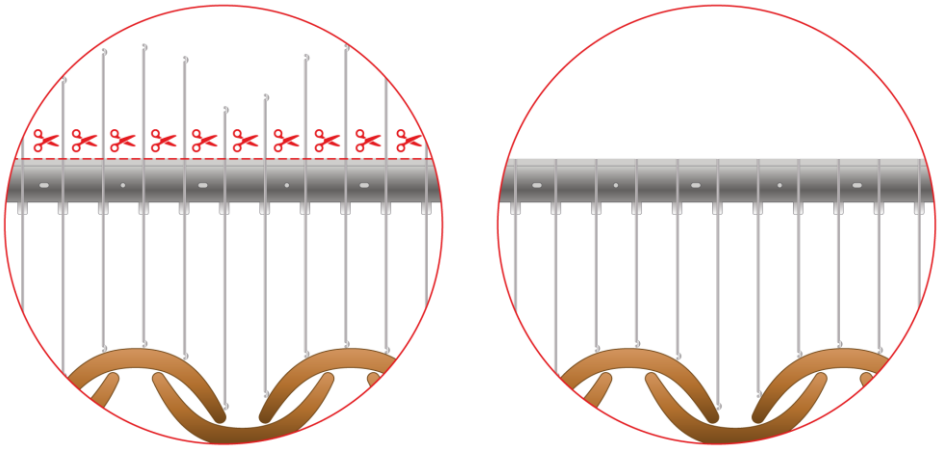


For further details, follow the tutorial at the link generated by the following QR Code

3.8. Adaptation of the BUDDYFLOW™ barrier in case of high probability of snowfall

The BUDDYFLOW™ barrier self-moulds to the undulating shape of the roof by resting on the roof underneath.
As can be seen from the diagram below, the "positive" segments will appear above the horizontal line of the photovoltaic panels following and reproducing the undulating shape of the roof.

For greater safety, on the only steep side of the panelling (gutter side), it is advisable to cut the portion of the rod-type segment in excess and protruding beyond the edge of the horizontal plane of the photovoltaic panels. (see example below)



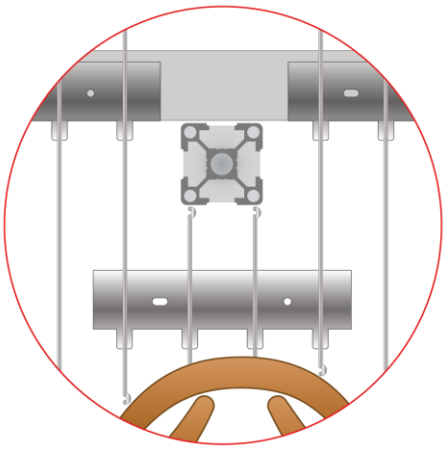
In this way, the snow can slide smoothly without being stopped by protruding segments that could create an impediment to its natural sliding. The snow could subject the protruding barrier to excessive pressure and under the weight of the snow itself, enveloping it and detaching it from the frame of the photovoltaic panels.

3.9. BUDDYFLOW™ barrier structural changes and cuts

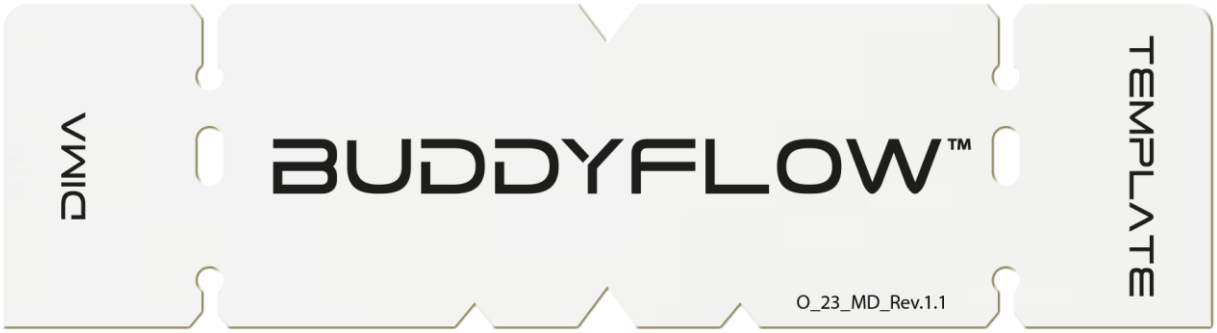
The BUDDYFLOW™ barrier is designed to be cut and shaped according to the requirements of the operator and the shape of the photovoltaic system.
The barrier can also be shortened manually, without the use of cutting equipment. Near the distinctive marks, an action can be performed on the barrier, repeatedly bending it in both directions quickly, thereby causing it to break.

3.10. Protection of the compartment present at the protruding load-bearing profile

Near the support profiles that protrude from the perimeter of the panels, it is necessary to shape the BUDDYFLOW™ barrier so that it can perfectly close the accesses to unwanted animals even below the protruding profile. (see example below)

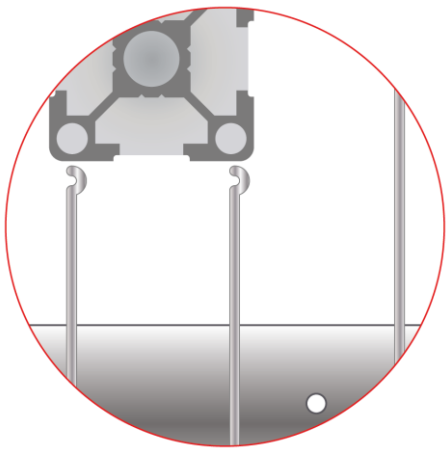


Dedicated templates are present in the package which precisely indicate the positions in which to place the barrier. This precise positioning will allow optimal installation of the barrier under the profiles in order to obtain perfect closure of the compartment. (see example below)



Once the exact positions in which to apply the barrier near the protruding profile have been identified, prepare the portion of the barrier to be applied below the profile.
The length of the barrier portion to be inserted between the roof cover and the base of the protruding profile must be suitable to align perfectly with the first segment of the barrier applied on the frame (both to the left and to the right of the profile). The exact positioning and the predetermined distance from the template will allow the rod-type segments to be introduced into the vertically aligned sliding elements of both the overlapping bases (the first positioned on the frame, the second placed under the profile)

N.B.!
It is necessary to cut part of the rod-type segments with a cutter so that they are precisely sized to allow them to be positioned between the cover and the base of the protruding profile (see example below)



For further details, follow the tutorial at the link generated by the following QR Code

4. Warnings for use

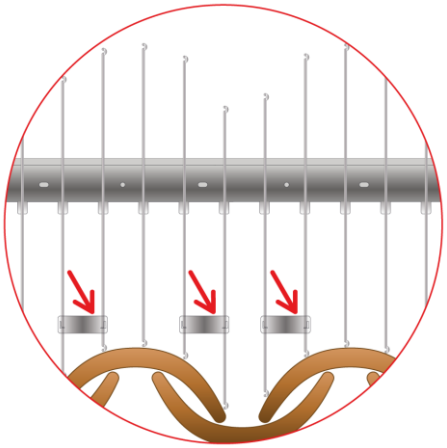
a) Do not install the BUDDYFLOW™ barrier if the recess to be protected exceeds a height of 22 cm;
b) Do not apply the FLOWTAPE double-sided adhesive tape in the presence of dirty, greasy, dusty or incorrectly cleaned surfaces;
c) Do not apply the barrier with FLOWTAPE double-sided adhesive if the photovoltaic module frame is dirty, greasy, wet or damp.
d) Do not apply the barrier with FLOWTAPE double-sided adhesive if it is raining or if the ambient humidity does not guarantee perfect drying of the photovoltaic module frame.
e) Do not apply the barrier with FLOWTAPE double-sided adhesive if the frame of the photovoltaic module has been made with materials other than aluminium (for example only, do not install on plastic, wood, fibreglass, etc.)
f) Do not apply the barrier with FLOWTAPE double-sided adhesive if the frame of the photovoltaic module is painted with powder or water colours.
g) Do not apply the FLOWTAPE double-sided adhesive barrier if the ambient temperatures are below 10°C or above 40°C.
h) Do not apply the barrier if the FLOWTAPE double-sided adhesive tape has been attached and detached several times. With each detach/attach action, the performance of the double-sided adhesive tape degrades significantly.
i) Avoid keeping the FLOWTAPE double-sided adhesive tape on site at temperatures below 10°C in order to avoid incurring abnormal stiffening of the acrylic foam and crystallisation of the glue with a clear fall in viscosity and performance.
j) Avoid leaving the FLOWTAPE double-sided adhesive tape on site for long periods in the sun or in dusty or damp places. Store the product in a dry, protected, shaded and cool place.

5. Warnings for correct application

a) Check the height of the recess to be protected. If this is greater than 22 cm use other protection systems that allow complete closure of the compartment.
b) Check the consistency and type of material that compose the frame of the photovoltaic panel. If the material is not aluminium, consider using, where permitted, anchoring systems other than FLOWTAPE double-sided adhesive tape such as silicone, screws, rivets, etc.
c) Check that the frame of the photovoltaic panels is perfectly clean before applying the barrier. If the frame is not perfectly clean from any residue, the perfect tenacity of the double-sided adhesive cannot be guaranteed over time. In this case, consider using, where permitted, other anchoring systems such as silicone, screws, rivets, etc.
d) Check that the frame of the photovoltaic panels has not been powder-coated. In this case provide for the use of an adhesion promoter product (Primer) to be spread on the frame before applying the BUDDYFLOW™ barrier using the FLOWTAPE double-sided adhesive tape. In case of uncertainty, consider using, where permitted, other anchoring systems such as silicone, screws, rivets, etc.
e) Check that the ambient temperature before installation is in a range of between 10°C and 40°C. If the temperature is below 10°C it is necessary to heat the surface of the frame of the photovoltaic panels with a heater. If the temperature is above 40°C wait for the temperature to drop, checking that the surface of the frame of the photovoltaic panel is not in any case at a temperature above 50°C. In case of uncertainty, consider using, where permitted, other anchoring systems such as silicone, screws, rivets, etc.

   WARNING! An ambient temperature of 10 degrees implies a decidedly lower surface temperature on the aluminium frame of the photovoltaic panel. An ambient temperature of 40 degrees generates a significantly higher surface temperature on the aluminium frame of the photovoltaic panel. Such excess temperatures could damage the performance of the glue.

N.B.!
Check for the presence, when installed, of any deformities between the parallel rod-type elements that could allow access to large birds or rodents due to excessive deformation. If necessary, use the appropriate clips supplied with the packaging to keep the rod-type elements integral and parallel to each other. (see example below)



6. Safety warnings

Work at height and on inclined surfaces can be dangerous if performed by inexperienced persons and may involve the risk of falling from a height.

a) Do not improvise the installation of the BUDDYFLOW™ product, underestimating the dangers related to this type of activity.
b) Do not install the BUDDYFLOW™ product without being in possession of the necessary skills, without being mentally and physically fit and without the technical requirements and the specific equipment to protect your safety. Falls from a height can cause serious damage to your health and danger to your life. In case of doubts and uncertainties, contact experienced and trained personnel for work at height.
c) Do not install the product on the roof of the building without taking the necessary precautions for your safety. Use appropriate personal protection equipment (PPE) to prevent cuts and abrasions, a mask for respiratory protection or to prevent contact with dust and liquids and goggles to prevent accidental contact with splinters or other processing residues that could come into contact with the eyes.

7. General warnings

It is very important that this instruction booklet is read before starting to install the BUDDYFLOW™ product.
Do not install the BUDDYFLOW™ barrier for purposes other than that for which it was designed and constructed.
Observe all the warnings in this manual to avoid BUDDYFLOW™ barrier malfunctions or health hazards.

For further details and information visit the website
Italy – www.buddyflow.it
Europe – www.buddyflow.eu

The BUDDYFLOW™ barrier is protected by patent ITA102023000021957
The BUDDYFLOW™ trademark is owned by:

OSD gruppo Ecotech
via Ponte Alto, 10
41011 Campogalliano (MO)
Italy