

> **WINDOWS AND SHUTTERS**
User's Manual Use and maintenance



This manual was prepared following instructions and suggestions of the Agency CasaClima of Bolzano with the aim of increasing the living comfort and reducing energy waste due to improper use of windows.

In compliance with requirements under UNI 14351-1:2010 - UNI EN 13659: 2009 and Legislative Decree No. 206/2005

Issue February 2011

Dear customers,

We would like to thank you for choosing our windows; these modern products are characterised by high thermal and acoustic insulation performance; they will improve the living conditions in your home and help you gain considerable savings in terms of energy costs.

In order to make the best use out of them, we suggest you take some time and read this User's Manual carefully; this is the only way to obtain the best performance from the windows you have purchased, so that your home and your life will be better!

This short manual aims to provide you with instructions and suggestions on how to use our products in order to create a more comfortable living environment as well as preserve their beauty and functionality through care and maintenance: a section of this publication is dedicated to maintenance operations that will require just a few minutes a month to preserve our products as efficient and nice as when you first saw them.

We strongly recommend you to read these instructions carefully prior to using our products as well as during inspections and periodic cleaning.

Enjoy your reading.

Signature

A handwritten signature in black ink, appearing to read "Luca Di Biase", written over a horizontal line. The signature is fluid and cursive.

TABLE OF CONTENTS

1.00 INTRODUCTION

- 1.01 Safety instructions for the use of windows
- 1.02 Initial checks on products
- 1.03 Initial precautions

2.00 CORRECT USE OF WINDOWS

- 2.01 Air exchange
- 2.02 Humidity control
- 2.03 Mould inspection
- 2.04 Sunlight and temperature control in the rooms

3.00 MAINTENANCE

- 3.01 Cleaning and maintenance of the painted surface
- 3.02 Elimination of resin leaks
- 3.03 Pigment loss during cleaning operations of lacquered surfaces
- 3.04 Formation of opalescent stains on wet surface
- 3.05 Checks and lubrication of locking and suspension hardware

4.00 ADJUSTMENTS OF THE WINDOWS

- 4.01 Hardware adjustments and settings
- 4.02 Restoring the window lock system in case of false manoeuvring of the tilt and turn mechanism

5.00 DEMOLITION

6.00 SPARE PARTS

1.00 INTRODUCTION

INTENDED USE

Our products are intended for external use; prior to their use, you need to:

Follow the safety instructions

Understand the limits of their use in order to preserve hygiene and sanitary conditions in the rooms

Learn how to use them correctly to ensure a high comfort level in the rooms as well as energy saving

Identify and repair any faults and, mostly, perform proper maintenance



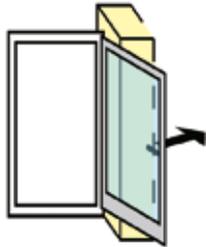
This manual constitutes an integral part of the product and must be stored in a suitable place for easy and quick reference.

1.1 SAFETY INSTRUCTIONS FOR THE USE OF WINDOWS

We strongly recommend you to follow the following essential instructions for safe and correct use of products:

- When opening, or in case of air currents, avoid slamming the shutters against the wall
- When the shutters are open, ensure that they are properly fastened to the latches
- When the shutters are pulled together, ensure that they are locked
- In case of difficulties in opening or closing windows and shutters, do not force but try to identify the cause
- Avoid performing any work on the products unless you are an expert
- Avoid opening and closing manoeuvres other than those provided by the system
- Avoid forcing the sash against the parapet of the wall over the functional opening limit (Figure 1)

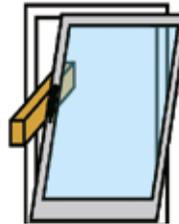
- Do not hang heavy objects on the handle (Figure 2)
- Avoid placing any objects that can obstruct the movements between the wing and the frame (Figures 3-4)
- Avoid any improper use of the product which is not included under its intended use
- Do not tamper the windows in any way and in any case.
- Periodically inspect and perform maintenance on all components of the windows
- Pay attention when closing the sash in order to avoid injury from crushing (Figures 5-6)
- For your own safety, do not lean excessively when opening and/or closing the windows
- Do not leave the windows wide open (Figure 7) if there are any unsupervised children around (even for a few moments)
- Leaving your windows or shutters partly open reduces security against burglary
- Check the state of the finishing and the correct functioning of hardware at least once a year and lubricate the



Picture. 1



Picture. 2



Picture. 3



Picture. 4



Picture. 5



The manufacturer cannot not be held liable for damages due to misuse of products or unauthorised modifications or interventions on the same, or in case of use of unauthorised spare parts or failure to follow the instructions herein.

In any case, the manufacturer cannot be held liable for damages arising from improper use of external windows and shutters.



Additional precautions for shutters

The shutters in the open position must always be fastened to the hooks and/or the wall mounting systems. Failure to do so could result in slamming in case of wind gusts, with consequent damages to people, animals or objects: to fasten the shutters use only fastening systems provided by the manufacturer.

In case of strong wind, we recommend to pay particular attention also when closing/opening the shutters.

In case of strong wind gusts (speed over 80 km/h), the shutters must be kept closed.



1.2 INITIAL CHECKS ON PRODUCTS

Before using the windows and screens, we recommend to carry out the following general checks:

- Ensure that no external objects hinder or prevent their proper functioning
- Make sure that all accessories are properly connected, positioned and functioning.

1.3 INITIAL PRECAUTIONS

Until construction is not finished, make sure that the artefacts are not smeared with aggressive products (mortar, lime, paints), as removing them could prove difficult and result in permanent damages to the surface of windows and shutters, for which the manufacturer assumes no responsibility.

Upon completion of work, if possible, clean windows and shutters following the instructions herein and using the products included in the maintenance kit.

In case of new buildings or renovation, keep windows and shutters open until the premises are inhabited in order to prevent moisture from affecting the artefacts.

2.00 CORRECT USE OF WINDOWS AND SHUTTERS TO ENSURE GOOD LIVING CONDITIONS IN THE ROOMS AND ENERGY SAVINGS

External windows and shutters play an essential role in controlling the level of sunlight, temperature, acoustic isolation and air quality in the rooms. The combination of these characteristics determines the living comfort in the house: this is why your windows and shutters are so important!

It is therefore appropriate to choose quality and performance of windows and shutters according to the climate and noise levels of the area where you live, in order to meet your expectations.

In addition, it is important to know that the new windows, due to their air permeability and thermal insulation properties, will perform very differently, sometimes even opposite, from the old ones and, therefore, it is absolutely imperative to learn how to use them properly in order to obtain the best performance.

It will fall under the responsibility of the persons living in the house to monitor a number of essential parameters, often connected with each other, that may influence the quality of living standards, specifically:

- **Air exchange**
- **Humidity control**
- **Mould inspection**
- **Sunlight and temperature control.**

Please read carefully the following paragraphs.

2.01 AIR EXCHANGE

The air quality in the house is key for the health and well-being of the ones who inhabit it.

In fact, human presence and activity in the rooms generate dust, increase carbon dioxide levels and water vapour, while reducing oxygen levels.

An incorrect balance of these elements (stale) may result in fatigue, depression, lack of concentration and other minor conditions.

Old design windows, devoid of seals and characterised by poor manufacturing precision, allowed for a sufficient air exchange through the drafts even without opening them.

Normally, in fact, even with closed windows, air exchange would take place in 1-4 hours in all rooms, so it was not necessary to ventilate any further.

This type of air exchange had several negative aspects though, for it could not be controlled, led to energy waste and resulted in considerable discomfort to people by causing over-ventilation in the rooms.

The new windows and shutters are almost 100% draft-proof and, therefore, air exchange can only be obtained with a correct opening of the windows or through demand controlled ventilation systems.

In case of natural ventilation, it is essential to open the windows correctly in order to avoid improper ventilation that could result in dispersion up to 25% of the whole energy required for heating and/or cooling the rooms.

For an effective air exchange, we must therefore differentiate between:

- Summer ventilation (when it is hot outside)
- Winter ventilation (when it is cold outside).

Summer ventilation

In the summer, it is recommended to ventilate mostly at night, when the temperature is lower, in order to avoid overheating the rooms. As we will explain further on in this manual, it is advisable to open the windows after sunset every time you can when during the hot season, not just to favour the air exchange but also to cool the house for free.

Winter ventilation

In the winter instead, in order to avoid energy waste, windows should be opened for limited periods of time.

However, providing ventilation of the rooms during this season is even more important than in the summer as the air inside the house is more polluted due to heating and, in addition, we need to maintain an optimal level of relative humidity in the air. In the winter, in fact, due to colder walls, failing to keep humidity under control may result in condensation on windows or walls, and therefore, in the creation of favourable conditions for mould growth.

To avoid such problems, allow for air exchange in the rooms by opening the windows for a short period of time, once or several times a day, according to the number of persons living in the house and the humidity generated. As inside and outside temperatures are quite different in the winter, as soon as we open the windows, ventilation will quickly take place and a few minutes will be enough for a complete air exchange.

The table on the side shows the time needed, according to different kinds of opening system of the window, for the complete air exchange in a medium size room (3.00 x 4.00m) provided with a standard 120 x 140 cm window.

As you can see, the fastest solution is to open the window with air current for 4 minutes, although the table offers other options too. Following the above indications, you will obtain a complete air exchange with the minimum waste of energy. In fact, when opening times are short, walls, furniture and floors will retain their heat and the initial temperature will be restored within a few minutes as soon as the window will be closed.

Tab. 1: time needed for complete air exchange in a room measuring 4 x 3m

Closed windows new type (with seals)		15 - 36 hours
Open windows, folded:	- without air current	20 - 50 minutes
	- with air current	15-30 minutes
Open windows:	- without air current	4 - 7 minutes
	- with air current	4 minutes

Consider that old windows (without seals) would allow for a complete air exchange in 1 - 4 hours even when they were closed.



Leaving your windows open for a period of time longer than the above indications is absolutely useless and might actually result in cooling of the walls, so that, when the windows are closed, thermal inertia might cause the humidity in the air to condense in the corners; since the new windows are draft-proof, this water from condensation will evaporate very slowly and thus create the ideal conditions for mould growth.

It is therefore essential to know that in the winter, in order to lower the humidity and avoid mould formation, you must ventilate the rooms frequently and for short intervals, opening the windows at least 2-3 times a day in the premises where most water vapour is produced (bathroom and kitchen) according to the above indications.

A thermo-hygrometer will help you figure out how to best use the new windows.

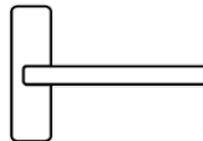
Opening systems for air exchange

In order to obtain a quick and intense air exchange, or a slower but more comfortable one, the windows are provided with two opening systems: conventional and flap opening.



TILT AND TURN OPENING

The handle should be turned upwards. It allows for controlled and non-invasive air exchange of the rooms. Not recommended in the winter for more than 30 minutes.



CONVENTIONAL OPENING

Move the handle in the horizontal position. This position is used to clean the pane and obtain quick ventilation.

Not recommended in the winter for more than 7-10 minutes.

Because the new windows are increasingly bigger in size, flap opening is frequently used to ventilate the rooms without bothering about the open sash; nevertheless, you should not use this kind of opening for intervals longer than 30 minutes in order to avoid unnecessary energy waste.

Demand controlled ventilation systems

New homes are often provided with demand controlled ventilation systems that automatically supply air based on the concentration of humidity and carbon dioxide in the premises. In addition, these systems are designed to allow for the transfer of outflow air heat to the incoming air through a heat exchanger: in this way, the correct temperature remains inside the rooms and you can save up on cooling or heating expenses.

These innovative energy recovery ventilation systems are mandatory in high energy efficiency buildings, where accurate design and the use of insulating materials may avoid installing heating systems also in areas characterised by cold climate.

In these buildings though, air exchange cannot be obtained by directly opening the windows, so mechanical ventilation systems are an imperative solution.

In high energy efficiency buildings in fact, in the winter windows are open only once or twice throughout the entire season, usually in the warmest time of the day, only for cleaning purposes.

Demand controlled ventilation systems are also useful in buildings where design errors and the presence of thermal bridges lead to winter condensation on window glass panes and walls and mould growth; continuous ventilation, besides reducing humidity, favours the drying of the wall and contributes to solve this problem.

Demand controlled ventilation systems are also recommended in crowded environments to obtain a good air quality.

2.02 HUMIDITY CONTROL

Indoor human activity generates a considerable amount of water vapour dispersed in the air (see Table 2).

During the winter, when walls or windows are cold, if the humidity in the air is excessive (over 65 %), you will notice dripping on windows and condensation on walls where the air stagnates (corners) and mould is more likely to form. These events can be often observed in environments characterised by thermal bridges, if the external walls are not well insulated or the rooms are not properly heated. The above-described situations are quite common in old buildings not provided with an external insulation layer and the installation of new windows

may actually generate such effects. These circumstances often lead to claims and complaints as the formation of mould, which did not occur prior to the installation of the new windows, prompts users to think that this problem is caused by the new products.



Actually, the above problem cannot be related to the new windows, but rather to an insufficient air exchange, which would take place spontaneously through the leaks (drafts) of the old windows, as they reduced the internal humidity and, therefore, prevented mould growth. On the other hand, with the new draft-proof windows ventilation must be provided manually and this operation must be carried out by those living in the house, who should open the windows according to the indications specified in the previous paragraphs. Alternatively, you could solve these occurrences by eliminating areas prone to condensation, by increasing the indoor temperature or removing the cold surfaces or thermal bridges. To reduce thermal bridges when installing the new windows on buildings located in cold areas and not provided with external insulation layer, the frame extensions of the windows should be insulated with an insulating layer that goes all the way up to the frame; this “warm frame” will at least avoid mould growth on the edge of the windows and will make it easier for any subsequent application of a thermal insulation layer on the external walls. Condensation and mould may frequently occur also in new construction or recently-restored buildings, since walls and floors still retain a great amount of water that needs to evaporate. In these situations, effective ventilation must be provided by opening the windows several times a day, otherwise mould growth and condensation will most likely occur during the cold months.

Table 2: water vapour formation in the rooms

Bath in bathtub	about. 1.100 g per bath
shower	about. 1.700 g per shower
cooking	about. 400-500 g per hour of cooking
boiling food	about. 450-900 g per hour
of boiling dishwasher	about. 200 g per wash
washing machine	about. 200-350 g per wash
person: - sleeping	about. 40-50 g/hour
housekeeping	about. 90 g/hour
intense activity	about. 175 g/hour

In a house inhabited by 4 people approximately 10 litres of water vapour are released into the air every day



You should never keep a level of relative moisture in the air above 70% at home in order to live comfortably and avoid condensation. At the same time, however, it is necessary to avoid low levels of relative moisture in the air, lower than 40%, as dry air favours the proliferation of bacteria and viruses that may cause bronchial diseases, dries the mucous membranes and leads to electrostatic discharge. As previously mentioned, a hygrometer helps measure with precision the relative moisture in the air in your rooms and adopt the necessary measures if you are outside the comfort range.

2.03 MOULD INSPECTION

Moulds that accumulate on the wall put your health at risk.

Moulds are multi-cellular fungi that grow on some surfaces in the form of grey, green and/or black spongy mycelia and reproduce through spores. Besides being awkward to look at and smelling bad, moulds may also harm our health.

Through respiration, in fact, both the spores and some toxins produced by the latter can seep into the mucous membranes, causing damage to the nervous system and the immune system; symptoms usually include fatigue, migraine, eczema, watery eyes, cough and bronchial asthma, conditions particularly dangerous for children, the elderly and those with allergies.

Moulds find the ideal conditions to grow in humid environments, such as basements and bathrooms, where the surface temperature is colder and there is limited air ventilation, such as in the corners or behind closets: keep in mind that 80% relative moisture in the air is enough to allow for the formation of mould also on dry surfaces.

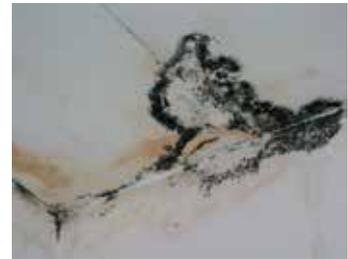
To proliferate, besides humidity, moulds need also suitable nourishment, which is often provided by the modern paints for walls, as they often contain the nutrients needed.

To avoid these problems, it is necessary to control humidity and condensation by adopting one or more of the following measures:

- Provide proper ventilation of the rooms, by opening windows one or more than one time a day for short intervals according to the instructions indicated in the previous paragraphs;
- Install a demand controlled ventilation system designed to maintain an optimal air flow rate without requiring any manual interventions (recommended for houses that are not inhabited during the day);
- Install a dehumidifier that condenses humidity and reduces its amount in the air;
- Eliminate thermal bridges by applying an external insulation layer on the building;
- Increase the room temperature and avoid keeping rooms colder than others;
- Reduce the amount of water vapour in the rooms, for instance, by drying laundry on the balcony; avoid placing too many plants in the apartment and water them with moderation; always use the fume hood when cooking.

Once again, a thermo-hygrometer will give you a precise idea if the measures adopted can effectively reduce the relative moisture in the air.

o treat any indoor mould formation, instead of applying chlorine-based products on the surface that will be inhaled by people for a prolonged period of time, we suggest to disinfect the areas affected with hydrogen peroxide and then re-paint the wall with lime-based paints, whose basicity and absence of organic materials, unlike modern paints, prevents further mould growth. However, be reminded that if you do not eliminate the causes, mould will show up again for sure sooner or later!



2.04 SUNLIGHT AND TEMPERATURE CONTROL IN THE ROOMS

Controlling the temperature in the rooms is key to ensure the comfort of those living in the house; in modern houses, to achieve this goal, we use heating systems in the winter and air-conditioning in the summer.

However, a rational choice of windows, their correct use and good habits may allow achieving a proper and natural temperature control, without exaggerating with artificial energy supply, providing thus a healthier and more comfortable environment while reducing energy waste.

Let's take a look then at what you should do in the winter and summertime.

Temperature control in the winter

In the winter, temperature in the rooms should be no higher than 20 degrees. This is because the amount of energy needed to increase the temperature by a degree is always greater than the previous degree.

This is why surpassing the 20 degrees is very expensive and quite polluting for the environment; therefore, it is better to wear an extra sweater.

If you live in cold areas and want to save up on heating expenses, the mandatory solution is to install energy-efficiency windows. This means choosing windows with excellent permeability to air, properly installed, with low-emissivity glazing filled with gas to reduce heat flows and, if possible, provided with a special spacer made of insulating material instead of aluminium. These new windows are characterised by insulating performances that are far superior to the old windows, therefore the need to produce heat is reduced while living comfort is improved. Besides opting for energy-efficiency windows, in order to obtain a correct indoor temperature and reduce energy waste, you will also need to ventilate the rooms following the instructions contained in the previous chapter.

Moreover, if the windows are provided with shutters, it is always a good idea to close them at night in order to take advantage of their insulating properties and keep an air cushion, more or less stagnant, in contact with the windows to further prevent unnecessary heat loss.

Temperature control in the summer

Controlling the temperature in the summer months, especially in rooms facing south and south-west, is essential to avoid over-heating and, consequently, excessive use of air-conditioning.

Paradoxically, this situation might occur even more frequently with the new windows, if they are not properly used, given their superior insulating and sealing properties.

To understand the correct actions to be adopted, we need to know and consider a few basic principles of physics.

Any time the sun rays directly enter the rooms, they get absorbed by the floors and furniture and then re-emitted with a wavelength slightly different than the original, which is no longer able to get through the glass.



Following this occurrence, heat accumulates in the rooms, generating the so-called “green-house effect”. Old windows contributed to effectively dissipate part of the heat indirectly, due to the drafts, and also directly through the frame and glass pane, as they both were less insulating. The new windows, instead, given their insulating properties and low-emissivity glass, which does not allow infrared radiation to go out, are much less effective in dissipating the heat, therefore the temperature in the rooms directly exposed to sunlight may significantly rise in the summer, often overheating the environment up to making it almost unbearable.

To solve this problem, at least in case of large windows, you should adopt one or more of the following:

- install external sun shading systems that prevent direct entry of sunlight
- use selective “solar control” glasses
- ventilate the rooms properly

✓ **the external sun shading structures** normally used to control sunlight are shutters, blinds or sunscreen grids.

Whatever the product of choice, besides preventing the direct sunlight from entering the rooms, these systems must also allow for the passage of a proper amount of light into the rooms in order to ensure adequate lighting as required by the Law.

This is why shutters with blackout panels are not the ideal solution, as they do not allow regulating light properly. On the other hand, sunscreen grids provided with adjustable blades are an excellent choice because they shade the glass properly while helping obtain optimal lighting. Sunscreen grids represent the most effective and modern external shading solution and are increasingly used to regulate the sunlight in environments that do not require total blackout.

In any case, any external shading system should not limit sun transmission in the winter, as the latter constitutes a free and essential source of heating that may help obtain energy savings and reduce pollution.

✓ **selective glasses** are coated panels whose surface is specifically treated to partially reflect solar radiation while remaining transparent to light. This characteristic, named “G Value”, refers to the percentage of global heat entering the house.

Solar control glasses should always be installed in windows facing south or west any time effective external sun shading systems are not available. In this case, make sure that the G value is not higher than 50%.

✓ **Providing proper ventilation** by letting fresh air into the house is another important measure to improve living comfort without energy waste, also during the summer months.

This is why in the summertime, unlike in the winter, you should only ventilate in the evening or at night.



Should you, in fact, ventilate the rooms during the day, hot air would enter the house and increase the temperature of the walls; in the evening, when the outside temperature decreases, the walls heated during the day would continue to release heat in the rooms, thus reducing living comfort and forcing us to use air-conditioning.

In the summer, during the day, when the outside temperature is higher than indoor temperature, you should keep your windows well closed and arrange for an effective external shading system to keep the environment cool.

At night, instead, you should open the folding panel, or the sash, if possible, for as long as possible: in this way, besides favouring air exchange, the cool of the night accumulates on walls and floors.

On the next day, this cool will be released in the rooms and, if the windows are be screened by proper external shading systems, you will be able to obtain an optimal temperature even without resorting to air-conditioning.

Those who don't follow these simple rules, if they have windows facing south or west, will be confronted by high indoor temperatures that will inevitably force to the use of air-conditioner. In this case, their living comfort will be disrupted by an alternate of cool and warm air currents in the rooms, besides facing greater energy expenses with consequent environmental pollution.

At the end of this chapter, we would like to emphasize that providing shading with curtains or Venetian blinds applied inside the windows is very useful to regulate the amount of sunlight, avoid flashing and protect your privacy, although it is not an effective measure for temperature control.

Direct sun rays must be blocked before they pass through the glass, otherwise the temperature will inevitably rise; curtains screening the windows may help decrease the temperature by a few degrees but cannot prevent sunlight transmission and overheating.

For this reason, if you live in low-energy buildings, you should always have external sun screening systems installed to regulate direct sunlight on the windows facing south and west.



3.00 MAINTENANCE OF WINDOWS

3.01 CLEANING AND MAINTENANCE OF THE PAINTED SURFACE

Modern windows and shutters are coated with long-duration resins and if periodic inspections are carried out and maintenance is regularly performed, they required just a minimal care. In order to identify the time intervals for inspections and maintenance, it is important to know that the major causes of degradation of the painted surfaces are represented by the simultaneous actions of direct sunlight and water stagnation on their surface.

This is why the parts that will deteriorate faster (and, therefore, the ones that must be taken care of more frequently) are the horizontal profiles of the windows and shutters on the south and west sides of buildings, especially when they are installed flush with the facade, as they are scarcely protected against rain.

Other significant factors of deterioration of the painted surfaces are smog and hail, which should be kept under control as well.

In light of this preamble, we recommend you to read carefully the following section of this manual in order to properly plan your ordinary maintenance interventions.

Cleaning the surface

Smog mixed with rain generates acid solutions that can corrode any material. An accurate semi-annual cleaning prevents this problem and allows maintaining a long-term appearance and functionality of the paint protection film.

Surfaces must be cleaned using soft and clean clothes and a solution of water and dishwashing liquid (1 tablespoon for 5 litres of water) or specific cleaning products recommended by the paint manufacturer; just use warm water and a soft cloth to clean



Never use aggressive detergents containing solvents, alcohol or abrasive parts for cleaning windows painted with water-based paints, as they could damage the paint film and also the surface of the artefacts. Avoid steam cleaning.



Every time you clean the surface, it is important to look for cracks of the paint films caused by hail or possible mechanical shocks that may allow water to penetrate in the wood underneath. Any time you notice such situations, you must intervene immediately with retouching.

While cleaning, check carefully the state of paint on the most exposed surfaces, specifically the lower third of the external part of the windows facing south or south-west and the external parts of the shutters.

Retouching

Retouching is an extremely simple operation involving the application of a new layer of paint where the original film went off; it must be performed before the water penetrates the wood underneath.

This operation takes a few minutes a year but allows maintaining the paint film always in perfect shape and avoiding more com



Periodic repainting

Periodic repainting consists of applying a new layer of paint throughout the surface, because the original paint film has worn out in the meantime.

If retouching is performed with diligence, this operation will not be necessary before 4 – 10 years from the installation of windows, according to the type of artefacts, their exposure and the coating system used by the manufacturer.

How do I find out when is the right time for repainting?

The right time to intervene is when you notice that the paint film has become thinner and rough to the touch and lost its original brilliance (usually not before 4 – 10 years). You should repaint the surface when the paint film is still intact, because in this case the operation will be simple and quick.

How do I repaint?

Pulire la superficie usando acqua e detersivo per piatti.

Stendere un nastro in carta gommata sul vetro attiguo al legno per evitare sia le accidentali abrasioni sulla lastra durante la carteggiatura sia l'applicazione inavvertita della vernice sul silicone e sul vetro.



Clean the surface using water and dishwashing liquid.

Apply a gummed paper tape on the glass pane close to the wood in order to avoid accidental abrasions on the glass during sandpapering or accidentally smearing paint over silicon or glass.

Using an abrasive cloth or 280-grit sandpaper, sand the whole surface to remove the small dirt encrustations that cannot be eliminated with normal cleaning operations, thus ensuring a better adhesion of the paint that will be later applied to the surface. During this intervention, do not insist too much on the corners in order to avoid removing the colour. The surface is well prepared when it all looks evenly opaque.

Remove sandpaper dust after sanding with a damp cloth or blow with a hairdryer using cold air.

Apply the new layer of paint with a brush. To obtain a nice-looking surface, hold the brush inclined at 45° and paint each part following their length. Paint in the shade and, if possible, avoid direct sunlight. Do not paint at temperatures lower than 10°C. As for the choice of paint, take a look at the identification sheet of the product you purchased in order to identify the original paint or contact the manufacturer to obtain more information.

Do not apply paint on seals.

Once you have finished the work, seal the paint can tightly and store it upside down to prevent air infiltration. The brush must be washed only with water and soap; then, wrap it in a paper towel and carefully place it horizontally. Store the paint can in a cool but frost-free place and keep it away from children.

Additional checks for wooden shutters.

Wooden shutters (sun-blinds, panels, shutters, etc.) are more exposed to weather conditions than windows and, therefore, more affected by sunlight and rain; this is why they require some additional checks.

It is important to follow the following control and maintenance instructions at least twice a year:

- check that the shutters do not rub on the windowsill and, if necessary, call an expert to adjust the suspension hardware;
- check that there is no rainwater stagnation on the windowsill and avoid the shutters to remain in contact with it for a prolonged period of time;
- Check the heads of the wooden shutters, namely their upper and lower ends. These sections are often subject to accidental rainwater absorption, which results in continuous expansion and contraction of the wood. Following such movements, few centimetre-long cracks may easily form on these parts. If this is the case, retouch by applying a new layer of paint on these areas in order to prevent water from penetrating and then breaking up the support, causing the detachment of the film.
- Check any horizontal surface where rainwater, frost or snow may stagnate for a prolonged period of time and thus penetrate into the wood through the paint.





warranty on the coat of paint released by the windows manufacturers does not cover the mechanical shocks that might be accidentally caused by customers or exceptional natural phenomena (such as severe hail or flooding) resulting in disruption of the paint surface and/or water penetration under the paint. In these cases, you must restore the paint coating in the damaged area in a timely fashion.

3.02 ELIMINATION OF RESIN LEAKS

Resin is a component of wood that increases its external durability; some kinds of wood, such as Douglas, Larch or Pine, may contain abundant quantities of it.

When the artefact is heated up by the sun, the resin becomes more fluid and tends to spill out, especially in the knots, generating droplets or dripping over the paint.

In principle, resin leaks cannot be considered a fault and should be accepted by customers who chose to purchase wooden windows and shutter

There are two solutions to eliminate the problem, depending on whether the resin is liquid or partially solidified.

- In the first case, the resin has just leaked, so it is still liquid and can be easily removed with a simple teaspoon; you must then clean the surface with a specific product. After cleaning, a wood conditioner must be applied. Both products should be requested to the paint manufacturer.
- In the second case (see figure), when the resin is already partially solidified, it is better to wait for the winter, when lower temperatures will lead to its crystallization. When the temperature is near 0°C, in fact, the resin solidifies and can easily be removed manually with a wooden stick, shaping its tip as if it were a chisel.

During this operation, keep the tip parallel to the surface to avoid cutting into the paint coating.



Check carefully the heads of the shutters and the horizontal surfaces where the first cracks on the paint film may appear



3.03 PIGMENT LOSS DURING CLEANING OPERATIONS OF LACQUERED SURFACES

In the event that the paint manufacturer uses a great quantity of pigments to colour the paint, when applying a certain amount of pressure with the hands or rubbing a rough cloth on the surface, some of these pigments may come off and end up on the cloth, which will look slightly coloured in the same colour of the window.

This pigment loss affects only the surface layer of the paint, where the coating cannot produce a structure solid enough to retain them and this may occur only during the first cleaning operations. The pigments at issue are of mineral origin, do not spoil surfaces and can be extracted only by exerting adequate mechanical stress.

In the layer immediately underneath the surface, pigments are firmly gripped and, therefore, cannot be removed.



This is a normal occurrence, as it involves all high-quality enamels and does not alter the paint protection film or its durability under warranty terms.

3.04 FORMATION OF MILKY OPALESCENT STAINS ON THE PAINTED SURFACE IN CASE OF WATER STAGNATION

The formulation of modern water-based paints for wooden windows and shutters include special resins that allow the support to perspire. Such resins dry quickly on the surface and more slowly in depth.

In order to obtain complete and definitive drying, it takes at least 8 weeks at a temperature of 20°C and relative moisture in the air around 50%.

Normally, windows are installed before the above period, so in the first months, following intense showers that wet their surface completely, some milky opalescent stains may appear on the paint film. These stains are formed because the film allows for humidity exchanges between the wood and the environment and actually it is one of the main characteristics that ensures the durability of the paint itself.

So, this occurrence cannot be considered a fault, you do not have to worry about it and, most important, no interventions are needed.

From an optical point of view, this phenomenon could be compared to the tarnishing of glass due to high humidity: we all know that the glass will return transparent when the humidity has dried. Likewise, the paint film will look transparent again as soon as the water on its surface has dried up, and in any case, it does not affect at all its quality performance.

When the paint will be definitely reticulated, this phenomenon will not occur any more.

Only in very rare cases, when extremely dry periods alternate to humid periods during the year, this situation can surface again to a minimal extent.

Opalescent stain due to water stagnation on the newly-painted surface.

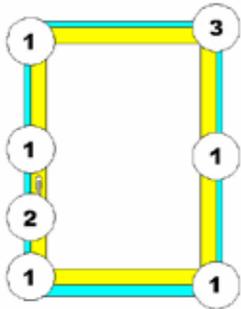


CHECKS AND LUBRICATION OF LOCKING AND SUSPENSION HARDWARE

One of the main maintenance interventions to ensure functionality, safety and energy efficiency of the windows is checking their wear and proper lubrication of the moving elements. Lubrication ensures the durability of the functional characteristics of the moving parts in terms of accuracy and smoothness, therefore, it must be carried out on all moving parts (hinges, joints and locking rods, sliding rails, fastener snaps). It must be performed by applied Vaseline, spray oil and Teflon oil like the one used when lubricating the chain of bicycles. Operate as shown in the following pictures:

The afore-described lubrication should be performed once a year, or more frequently, in the event that difficulties in manoeuvring and closing the windows are detected.

Even in case of shutters, lubrication must be carried out on all their moving parts (joints of the supporting hinges, locking rods, fastener straps), using Vaseline, spray oil or Teflon oil in the areas indicated in the pictures:



Lubrication points of the hardware



1



1



1



2



3

Considering that the shutters' hardware is subject to strong stress due to weather conditions, in this case too we recommend to perform maintenance once a year, or more frequently, if difficulties in maneuvering and closing are detected.



In case some hardware parts are in a state of high wear, you should contact the supplier and arrange for their replacement, or the whole hardware system.

4.00 ADJUSTMENTS OF WINDOWS AND SHUTTERS

4.01 HARDWARE ADJUSTMENTS AND SETTINGS

Adjusting hardware is important to ensure a perfect matching of the shutters and avoid undesired drafts or difficulties in opening and closing the windows. The modern tendency to build increasingly large and heavy windows result in great stress applied to the hinges, which may be subject to sagging. To obtain the best performance, therefore, it is necessary to call a specialized technician to carry out hardware inspections and proceed to the adjustments needed every 3 years or so (or more frequently). Usually the cost of the intervention will be quickly offset by the improved functionality and performance of the windows as well as the energy savings obtained.

Given the complexity of the hardware adjustment operations, we recommend that you avoid carrying them out yourself unless you are an expert. Here we illustrate some specific examples.

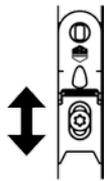
Adjusting the sash lifter: loosen the screw with wrench Torx T15, adjust the height and tighten (Figure 1)

Raising or lowering the sash: with Allen wrench 4 (Figure 2)

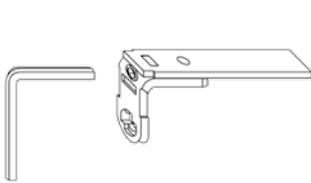
Scissor pressure: with Allen wrench 4 (Figure 3)

Horizontal and vertical adjustments on the hinges: with Allen wrench 4 (Figure 4)

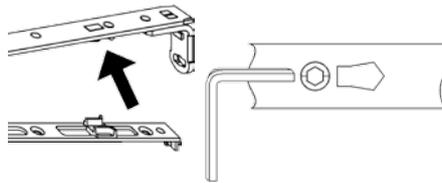
Pressure regulation: with wrench Torx T20



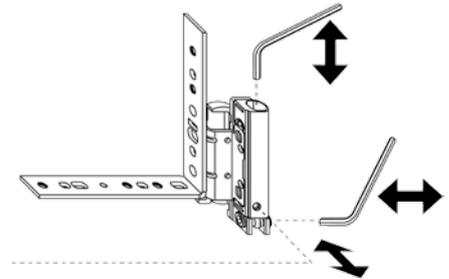
Picture.1



Picture.2



Picture.3



Picture.4

4.02 RESTORING THE WINDOW LOCKING SYSTEM IN CASE OF FALSE MANOEUVRING OF THE TILT AND TURN SYSTEM

Sometimes it may happen that the hinges securing the opening of the sash get disengaged and the window remains hinged only at the bottom and held by the opening gap in the upper part. This is not a big problem and it can be solved right away by hanging up the sash to the upper hinge following the steps below:

- Hold the window handle facing upwards and pull the lifting mishandling device towards you with your hand (the metallic part hinged on the locking rod) as indicated in figures 1 and 2;
- Hold the lifting mishandling device in place and push the sash against the frame so as to bring the upper hinge to its original position, see figure 3;
- Now rotate the window handle by 90° in normal open position, just like in figure 4, and release the lifting mishandling device; the upper hinge will remain perfectly held in its casement and you will be able to use the window normally.



Picture 1



Picture 2



Picture 3



Picture 4

5.00 DEMOLITION

In case of demolition of the windows and shutters, hand them over to a recycling centre in accordance with the Law or use the services of a specialized company.



6.00 SPARE PARTS

Over time, you might need to replace some elements of the windows, such as the seals, to repaint them or buy new hardware components.

In order to facilitate customers in the purchase of the correct spare parts, according to the Law manufacturers must include a product identification sheet indicating all perishable elements, including codes, names and manufacturers; only with regard to hardware, given the high number of elements used, you need to read the correct code on the products to be replaced.

In any case, we recommend contacting directly the original window supplier to carry out these operations too, if possible.



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Viale del Lavoro, 13 - 45100 Rovigo
Tel: +39 0425 474515 Fax: +39 0425 404269
www.pavanelloserramenti.it
info@pavanelloserramenti.it