INSTRUCTIONS

OPERATION AND MAINTENANCE OF WINDOWS AND DOORS




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1. Transport

- In case of personal collection windows and doors must be transported in covered, dry and clean means of transport.
- For the duration of the transport sections and other goods must be carefully protected against damage.

During unloading, it is necessary to verify the quality of packaging in presence of the driver. Detection of any discrepancies, such as: damage to the packaging, moisture or quantitative shortages must be noted on the transport document.

2. Storage

- Windows and doors before installation must be protected against rain, moisture and direct or indirect contact with other metals. It is necessary to keep them in dry, clean, ventilated rooms that are also heated in winter. The rooms, in which the windows and doors are stored, should also be free from any kind of chemical substances, regardless of their state of aggregation (liquid, gas).

- Aluminium constructions should be stored horizontally. The layers of profiles should be separated with spacers made of soft cardboard or other similar material. Support points should be distributed in a manner prohibiting the windows and doors from deformation.

- Products should be stored in areas with constant positive temperature oscillating between 41 °F to 96 °F max. Stored products cannot be exposed to direct effects of all kinds of devices that emit heat, such as radiators, heating pipes, lamps and other heat emitters.

- The high insolation (UV rays effect) has a very negative impact on both the profiles covered with a protective film, and on the rubber products. For this reason, it is recommended to store them in shaded rooms.

- Raw aluminium is susceptible to corrosion. Therefore, do not touch the raw profiles with bare hands. It is recommended to use gloves.

3. Foil protection

- Do not expose the protective foil to direct sunlight or high temperature differences. The film used is not resistant to UV rays, and therefore should be removed from the profiles within 3 months of delivery. Leaving the protective tape on the surface of paint coating, especially with sun exposure and high temperature of the environment, can lead to chemical reactions that cause permanent combination of the tape with the coating or other damages, e.g. discoloration.

4. Aluminium profiles surface resistance

- Both the paint and oxide coatings are not resistant to mechanical damage. Contact of coatings with any kind of organic thinners, concentrated alcohol, acids, bases and petroleum compounds is prohibited. Damage of the above-mentioned coating may also occur in contact with the cement, lime and other alkaline construction materials.

5. Cleaning and maintenance of paint and oxidized surfaces

Elements of aluminium structures should be cleaned with the frequency resulting from place of use, and in particular the corrosion aggressiveness of the natural environment:
- in low-aggressive environments (rural, small towns) - at least twice a year,
- in medium-aggressive environments (small towns on transportation routes of high traffic intensity, medium-sized cities with low industrialization) - at least three times a year,
- in highly aggressive environments (highly industrialized cities with very high traffic and also within 3 miles of salt water) - at least four times a year.

Please note that regular cleaning prevents formation of intense and hard to remove stains.

Aluminium painted or anodized profiles should be washed with soft rag, using delicate detergents. Do not use liquids based on strongly alkaline or acid compounds, which can damage the oxide or painted coatings. Do not use detergents with a pH below 5 and 8 above. During washing the temperature of coatings and temperature of water must not exceed 77 °F. Do not wash the coating with steam jet. After each wash the surface must be rinsed immediately with clean, cold water.

In addition, during washing:

- Do not use abrasive cleaners; also do not clean the surface by friction. It is allowed to use soft cotton fabrics intended for industrial cleaning. During wiping, do not force the fabric too much to the cleaned surface.
- Do not use organic solvents containing esters, ketones, alcohols, aromatic compounds, glycol esters, chlorinated hydrocarbons etc.
- Do not use detergents of unknown origin.
- Do not use base (ammonia, soda, lime) or acid means.
- Detergents used for cleaning may not react with the washed surface for longer than an hour. It is necessary the washing process can be repeated only after 24 hours.
- In order to verify that the cleaning agent used does not negatively affect the coating, it is recommended to try a little portion of the detergent on the less visible surfaces of the structure.

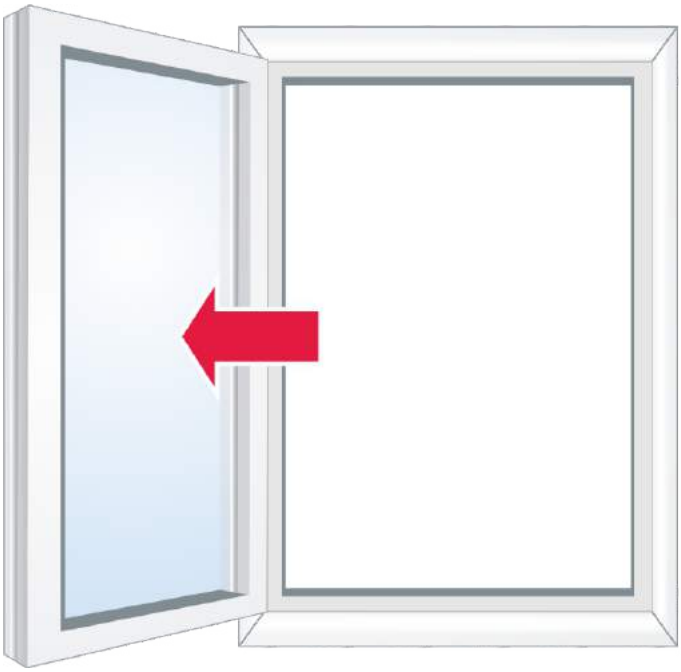
The detergent recommended by Yawal is cleaner for aluminium fixtures COSMOFEN 60. This product is available in our offer under catalogue number 109.2105.0000. COSMOFEN 60 is fast drying cleaner to clean anodized and powder-coated aluminium profiles. It removes dust, adhesive residues from the protective foil, traces of grease, rubber, not dried remnants of polyurethane foam, tares etc.

In case of very hard to remove dirt, when the above methods prove ineffective, please contact our technical team in order to obtain a solution.

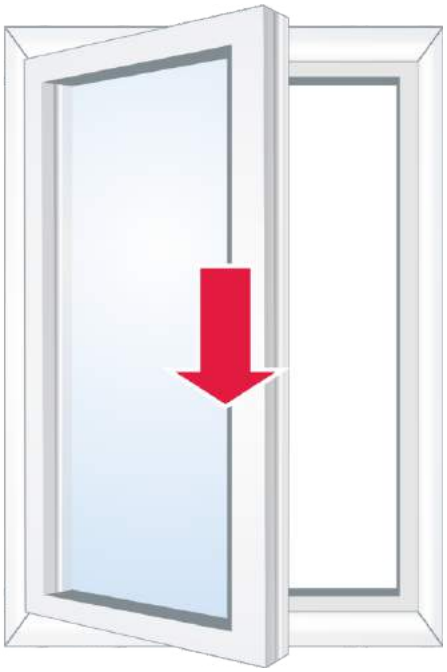
1. Operation of windows and doors

In order to maintain the efficiency and reliability of the window function for many years, and to ensure safety of users the instructions below must be strictly followed.

a) Improper uses of windows and doors.



Do not press the window sashes to frame.



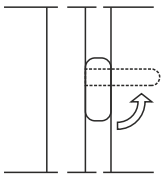
None other additional burden may affect the window sash.

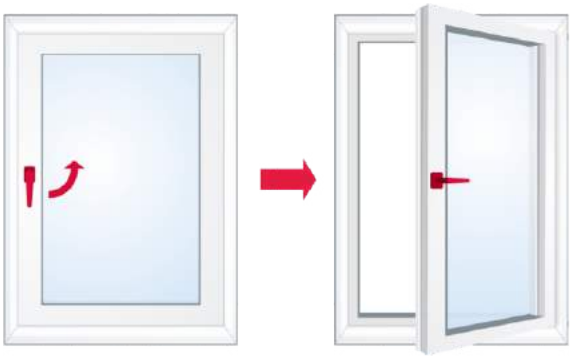
The locking device (eg the open lock or lockable handle) has to be installed to prevent from unwanted window opening by children or people with mental disease.

By closing the window do not put your hand between the sash and the frame. Strongly snapping sash may result in injury. Also, do not insert any items between sash and the frame, because it can lead to structural damage.

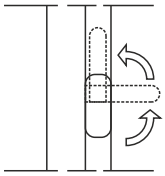
During strong winds do not leave the sash in partially opened position.

b) Proper handling of windows

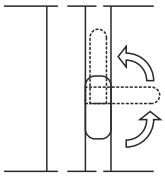




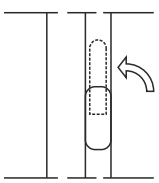
Turning window (closing - turning)

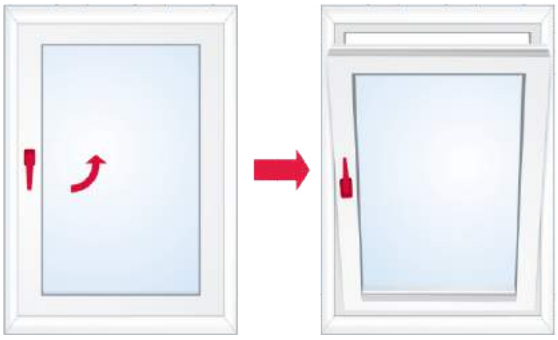


Turning - tilting window (closing – turning - tilting)

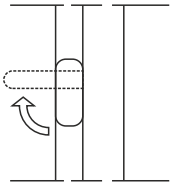


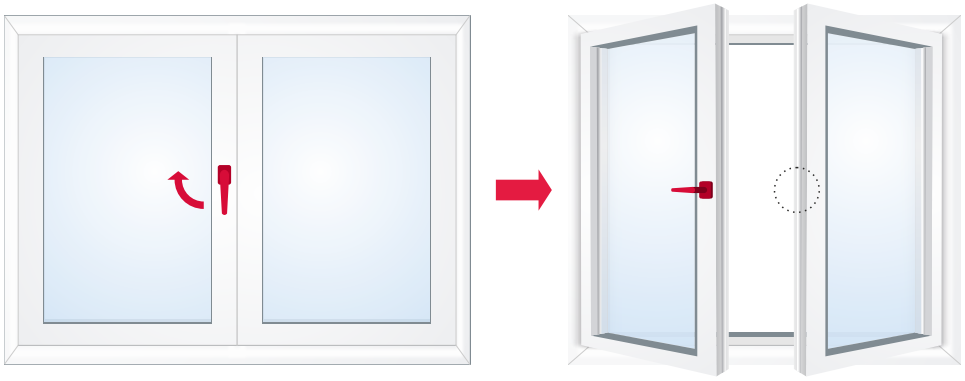
Tilting – turning window (closing - tilting - turning)



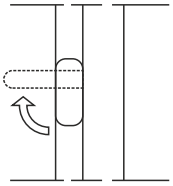


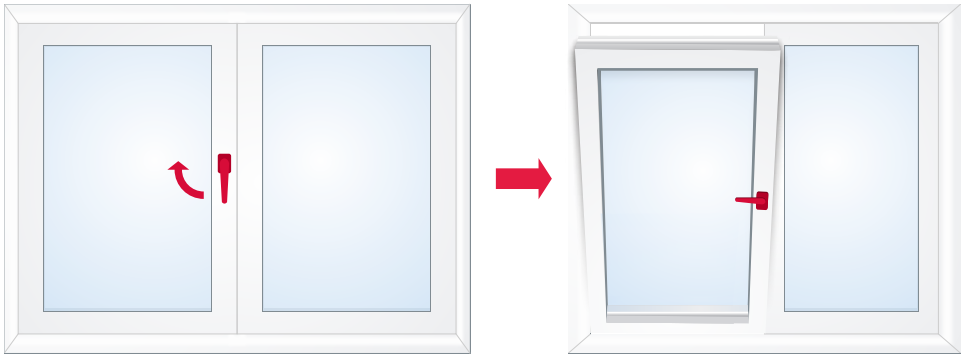
Tilting window with a handle on the side (closing - tilting)



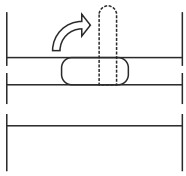


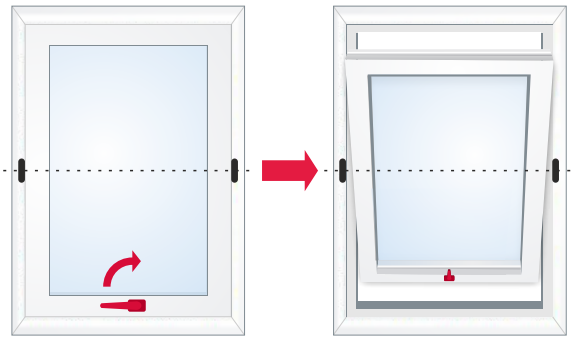
Two-sash window with a movable post – turning (closing - turning)



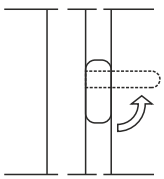


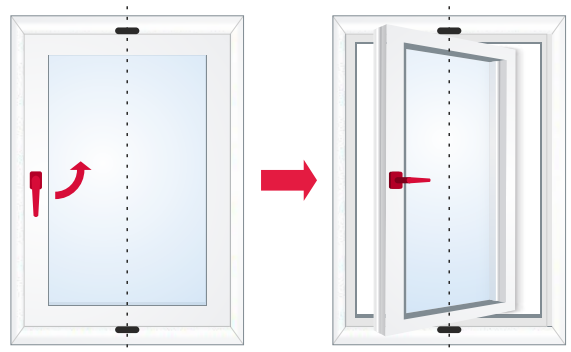
Two-sash window with a movable post - turning - tilting
(closing - tilting - turning)





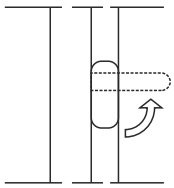
Pivot window with a horizontal axis of rotation (closing - opening)

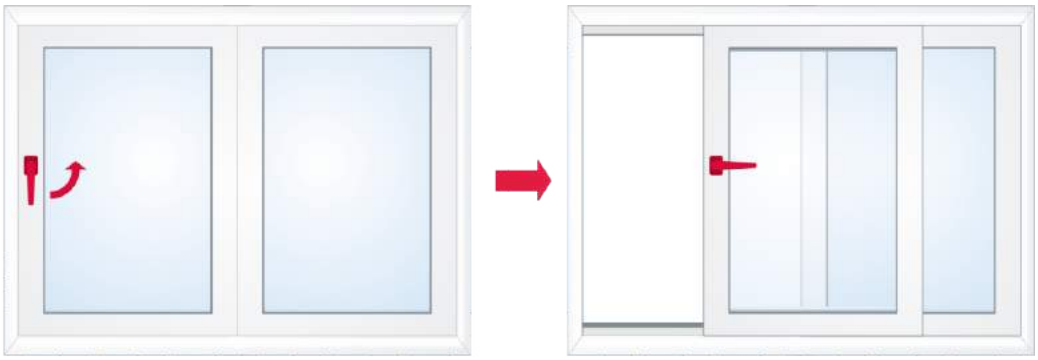




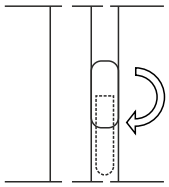
Pivot window with a vertical axis of rotation (closing - opening)

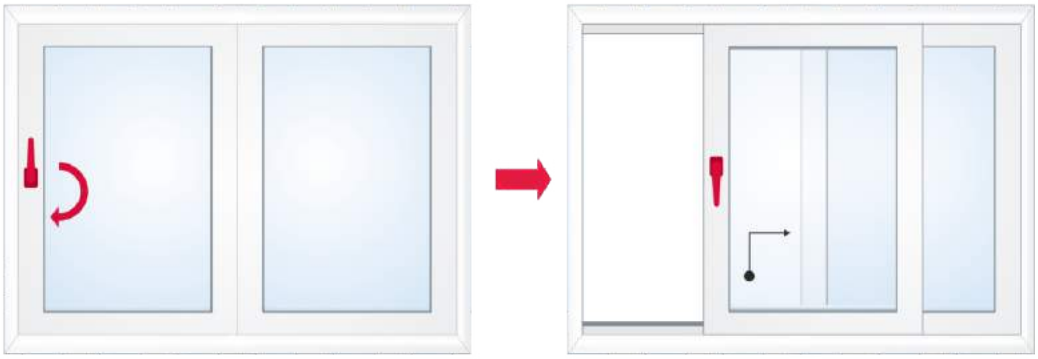
c) Proper handling of doors



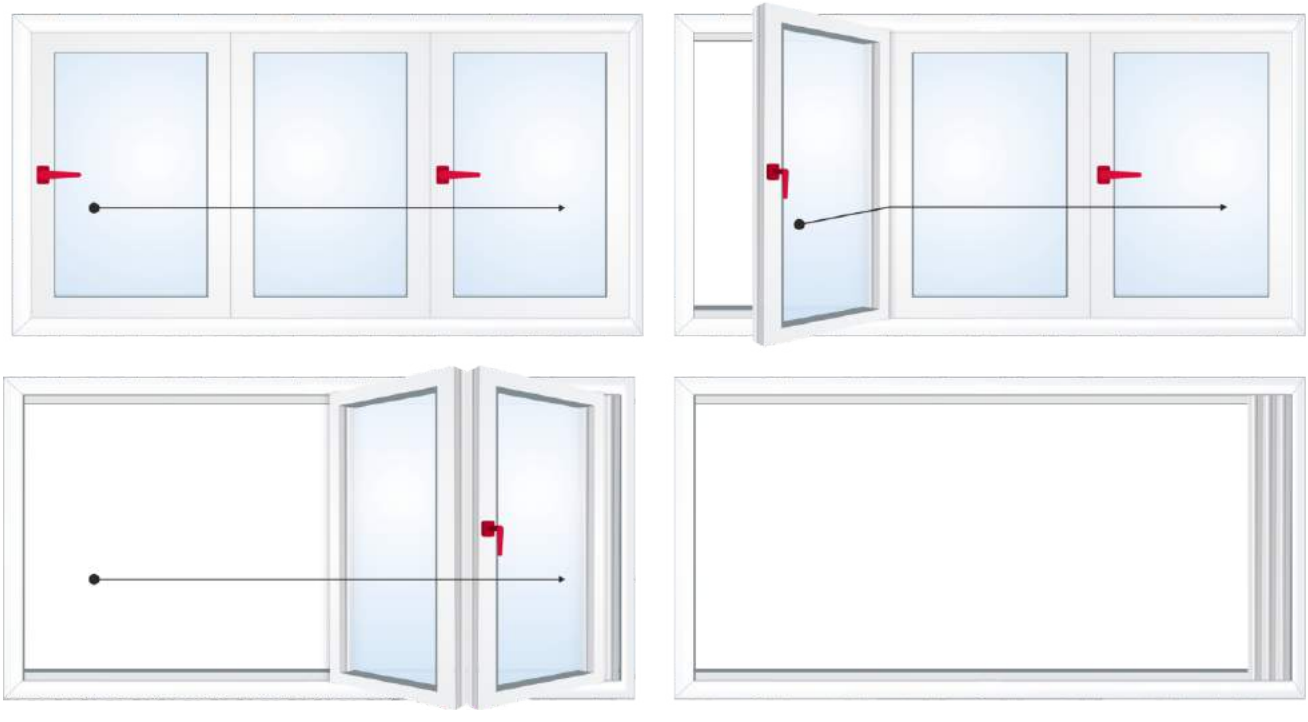


Sliding doors (closing - moving)

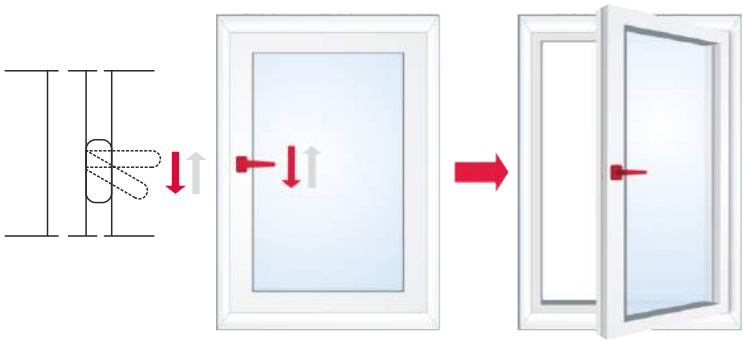




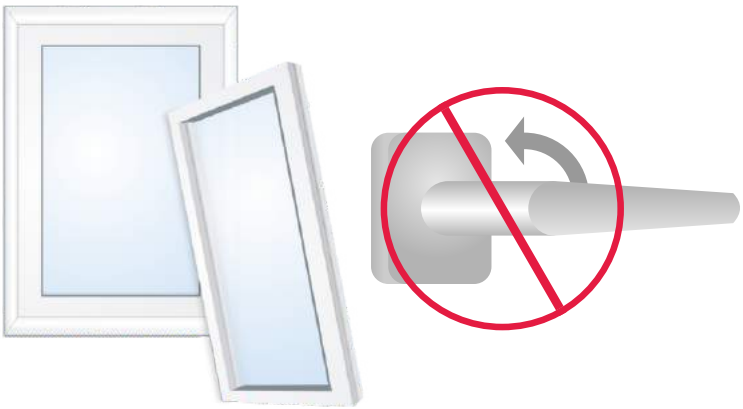
Lifting - sliding doors (closing - moving)



Folding doors (closing – turning - moving - folding).



One-leaf doors (closing - turning)



Warning! In case of tilt & turn windows and doors do not turn the handle when the window or door is open!

8. Maintenance and technical supervision.

- The condition for smooth and seamless operation of the mechanisms is to follow the catalogue guidelines on size and weight of the leaf, as well as recommendations of the fittings manufacturer.
- In all of the moving parts of fittings, visible after element opening, sliding surfaces should be lubricated with suitable oil at least once a year. After applying grease perform all of the opening and closing functions several times, to evenly distribute the oil on the sliding surfaces. Work of the mechanism with resistance indicates bad adjustment of the fittings. In this case, the fittings must be quickly adjusted by a specialist. The frequency of adjustment depends on the size of the element and the way of opening. Regularly check whether fittings elements are not loose or worn.

Use only machine grease or oils, free of resins and acids.

9. Conditions for technical acceptance of painted elements.

The quality reception of the paint coatings should be made in accordance with the QUALICOAT / GSB or AAMA 2603/2604/2605 guideline.

Appearance

Appearance of the coating is assessed on guidelines that have been established in the technical documentation of the product. Quality acceptance of coatings must be made under the angle of about 60° to the assessed area. Defects in the form of: excessive roughness, runs, blisters, numerous inclusions, craters, matt spots, pores, cavities, scratches (or other lowering aesthetics of the product) cannot be seen from a distance of 10 ft.

Thickness of the coating
Measuring the thickness of the coating should only be made on significantly important surfaces. Minimum thickness of the coating should be 60 µm.

Color
Color assessment should be made in the shade, using only reference samples. By assessment, ensure that reference material is at the same angle as the assessed one. The distance at which the assessment is to be made is:

10 ft - elements used indoors,
16 ft - elements used outdoors.

The colors on paper samples are to be used only as a guide to the RAL color pallet. Thus, these samples cannot be the basis for complaint in the scope of color shades on profiles, sheets and accessories.
Due to the specificity of the powder coating technology (color, quality of powder coatings offered by different suppliers) YAWAL reserves the right to choose the supplier of powder paint. Therefore, the Customer by placing order is obliged to inform about the possible continuation of the color from previous work.

10. Conditions for technical acceptance of anodized elements.

The quality reception of the anodized coatings should be made in accordance with the QUALANOD / GSB or AAMA 2603/2604/2605 guideline.

Appearance
Appearance of the coating is assessed on the significantly important surfaces that have been established in the technical documentation of the product. The distance at which the assessment is to be made is:

10 ft - elements used indoors,
16 ft - elements used outdoors.

Anodized aluminium has the effect of dual reflection of light, so for the visual comparative evaluation place the elements one plane and view them in the perpendicular direction, according to the direction of manufacturing the substrate aluminium. If the products will be used in the natural light, appearance of the surface should be assessed from the north (for the northern hemisphere) in natural diffused light. If the product will be used in artificial light, visual

inspection should be carried out, with the source of diffused light placed over and behind the assessing person.

b. Thickness of the coating
Measuring the thickness of the coating should only be made on significantly important surfaces. Minimum thickness of the coating should be 20 µm.

c. Color
Color evaluation should be made solely on the basis of the reference samples. By assessment, ensure that reference material is at the same angle as the assessed one. Due to the anodizing technology, the permissible color deviations should be determined using samples accepted by both parties. The distance at which the assessment is to be made is:

10 ft - elements used indoors,
16 ft - elements used outdoors.

Due to the specificity of the anodizing technology, by placing orders the Customer is obliged to inform about the possible continuation of the order. In this case, it is necessary to determine the reference samples.

11. Conditions for technical acceptance of elements decorated by sublimation method.

Quality acceptance of decorative coatings should be carried out as for painted coatings i.e. in accordance with the QUALICOAT / GSB or AAMA 2603/2604/2605 guideline.
Due to its specificity and the manner of placing rings. Decorative coatings (the so-called wood effect) may in subsequent deliveries show a slight difference in the structure of wood imitation and in shade, and as such cannot be complained.

12. Installation and maintenance of gaskets.

Before mounting the gaskets, pay special attention to their correct selection. During assembly the gaskets must be carefully deposited in the seat with an adequate length and at least 5% longer reserve and the ends must be in each case joined together with adhesive.
Gaskets in the corners should be cut at an angle of 45° or angle joints should be made using the rubber corners and all must be joined together by vulcanizing adhesive.

- Gaskets due to their properties should be stored in shaded areas with constant positive temperature oscillating between 41 °F to 86 °F max. The stored sealing materials cannot be exposed to direct influence of various types of heat emitters, such as radiators, heating pipes, lamps and others.

- Gaskets should be maintained at least once a year with silicone-based agents, which will ensure maintaining their flexibility for years to come. However please remember to always maintain them after washing the aluminium structure, which they are placed in.

Use of intumescent gaskets.

Adhesion and bond strength.

The highest adhesion is obtained by using assumptions in points:
• Foundation,
• Temperature,
• Treatment.

Foundation:
- Do not use on surfaces, where there are silicones, paraffin and wax.
- Do not apply on paints containing additives reducing adhesion (silicones, paraffin, waxes and other substances for increasing liquidity).
- Remove dust and dirt from the surfaces intended for adhesion.
- Clean the surfaces of softening agents.
- Use only on dry surfaces.
- Use possibly on smooth, closed surfaces.
- In case of rough and uneven surfaces use additional layers of adhesive tape.
- Do not allow chemical reactions on bonded surfaces (substances containing copper and manganese react with rubber-based adhesives).
Temperature:
- The optimum temperature in dry rooms is between 68 and 86 °F. Avoid using in temperatures below 50 °F.
- Storage temperature about 65 °F with relative humidity of air at about 55%.

Treatment:
- The best bonding results are obtained after proper and uniform pressing of the surface.
- Tools (and hands!) must be cleaned of adhesive agents.
- In case of bonding surfaces exposed to extreme loads, remember that the maximum strength of the joint is obtained only after approx. 24 hours.
- Avoid constant stresses occurring in the place of joint.

Tips for bonding the most commonly used materials:

Materials with anti-adhesive properties

Despite the fact that almost all materials have good bonding properties, please remember that some show significant anti-adhesive characteristics. These include i.a. Teflon, silicone-based materials and non-polar plastics such as PE and PP. Bonding characteristics of these materials are referred to as critical. Increase of bonding properties of these materials can only be achieved through adequate mechanical, physical or chemical preparation of the surfaces to be bonded (e.g. crowning of the PE or PP surfaces).

Plastics / varnished surfaces

These mainly include surfaces that do not pose major problems during bonding. In few cases, however, the adhesive properties may be reduced as a reaction between the bonded surface and adhesive compound, which is a result of the displacement of softeners or discolouration of the surface. In such situation prior examination of mutual tolerance of the used components is recommended. This is particularly advised in cases where the adhesive tape is to be removed after a certain time, or when it is used on soft PVC.

Bonding of metals

In case of non-ferrous metals, such as: lead, cadmium, copper, brass and nickel, check in advance whether they come in a chemical reaction with the adhesive mass. Unwanted result of the chemical reaction may be discolouration.
In case of anodized aluminium after removing the adhesive tape on the bonded surface there may be hard to remove remains of adhesive mass.
Preliminary examination: If the cloth soaked with ink leave marks on the surface after wiping, the adhesive tape should be used after prior trial application.

Preparation of the surface

For optimum adhesion the bonded surfaces should be clean, dry and degreased.
Before starting the process of bonding all anti-adhesive substances: dust, means prohibiting bonding, greases and waxes should be removed from the surfaces to be bonded.

Preparing adhesive tapes
Bonding should be carried out at room temperature (65-77 °F). To achieve the best characteristics of bonding a sufficiently large pressure on the bonded surfaces must be provided (maximum strength of the bonding is obtained after approx. 24 hours).

Guidelines for removal of adhesive tapes
Often there is a situation in which adhesive tapes are used improperly. If the products intended for short-term use outdoors are exposed to prolonged weathering and UV radiation, there can be significant difficulties in their removal. In these cases, we recommend the following steps:

A carrier tape
- should be removed slowly and evenly, if this is necessary it can be heated with hair dryer.

Remnants of adhesive
- should be removed gradually:

Remnants of adhesive based on rubber
If carrier of the adhesive tape can be peeled off, and the adhesive has not yet hardened, use mineral spirits.
If carrier of the adhesive tape is brittle and breaks, and the adhesive is to some extent hardened, use a hair dryer, and after warming up carefully tear or soften with mineral spirit for at least a minute, and then remove with plastic spatula.
If the adhesive has firmly hardened soften with universal thinner for at least a minute and then remove with plastic spatula.
If the adhesive is firmly hardened, and the above methods proved ineffective, special chemicals should be used and then remove with plastic spatula.

Adhesives based on acrylate
If the carrier of the adhesive tape is brittle and breaks, and the adhesive is to some extent hardened, use a hair dryer, and after warming up carefully tear.
If the adhesive is firmly hardened, use the following steps in turn or their combination:
- mineral spirit,
- mixture (50% ethyl acetate, 50% dimethylbenzene),
- mixture (40% spirit, 40% mineral spirit and 20 % acetone),
- special chemical agents.

The above methods to remove adhesive tapes may cause the adhesive to only swell, but it will still be difficult to remove. In this case it is recommended to completely soften and remove it, using a plastic spatula. Remnants of the adhesive can then be removed with a cloth soaked in diluents. To avoid discoloration or surface damage, before using the thinner try it on a not visible place. During work it is necessary to ventilate the room, and in some cases use gas mask equipped with A2 filter.

13. Inspection

Yawal strongly advises that a yearly on-site maintenance inspection and review is done to the product by an authorized installer and dealer of Yawal material. Yawal believes in supporting its products and that our service can keep your doors and windows working at their very best. For more information please visit www.yawalusa.com.

Procedure 1 (Every 1 Year)
a. Frame & Panels: Make visual inspections around the installation looking for: water leaks around the frame, making sure all weep holes are free of blockage, and confirming all components are operational.

b. Glazing Vinyl: Inspect for gaps or damage. Black silicone sealant can be used to correct small gaps due to normal shrinkage.

Procedure 2 (Every 5 Years)
SEALANTS AND WEATHER-STRIPPING BREAK DOWN OVER TIME. EVERY 5 YEARS, A COMPLETE INSPECTIONS IS RECOMMENDED OF ALL FRAME CORNERS.

a. Glass: Inspect each insulated glass lite for moisture between the panes. For laminated and annealed monolithic glass, check for cracks or runs. Report any such findings to the Authorized Dealer through whom you purchased the products.

b. Frame & Panels: Inspect all exposed sealant in each frame corner and reseal if needed with a compatibile sealant (not required if sill pans exist). Replace all weather-stripping / glazins vinyl as needed.

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