OPERATING AND MAINTENANCE INSTRUCTIONS

FOR TECHNICAL FIRE DOORS AND WINDOWS

CONTENTS

ALURON AS 75EI
SYSTEM IN CLASSES EI 30 & EI 60

PREMIUM QUALITY

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1. Transport, storage

The production process for doors of the AS 75 EI system takes place in the contractor's workshop in accordance with the established Factory Production Control plan. Structures fitted with all necessary components for proper operation and prepared for installation in structural openings must be secured and prepared for transport to the final installation site.

The rules for transport and storage of Aluron sp. z o.o. products are specified in the General Terms and Conditions of Sale and Delivery, as well as in the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

2. Securing profiles and fillings

Each time before starting unloading operations, the Recipient is obliged to thoroughly check:

- that the load is properly secured for transport,
- that the delivered items match the shipping documents,
- the identification of the product and its installation location.

If aluminium structures are not installed immediately after delivery to the construction site, do not unpack the product more than is necessary for proper identification. Non-glazed structures should be stored in an upright position, resting against stable walls or on stands. Individual structures should be kept separate from each other, e.g. with soft, non-scratch cardboard dividers. Also, make sure that the structures are not supported by protruding elements. This applies in particular to surface-mounted hardware, provided that the structures have been equipped with such hardware in the workshop. Other system components should be stored in dry places where the ambient temperature stays between +5 °C and +30 °C. Aluminium structures should not be stored in places exposed to strong sunlight.

Until installation, fillings (including glass ones) should be transported and stored on their original steel or wooden racks, in an upright position – preferably in a manner consistent with the packaging preferred by the manufacturer of such fillings. Each glass pane must be thoroughly checked before installation in the frame. If any abnormalities are found (e.g. scratches, cracks, etc.), put the product aside, describe the issue, and do not install it under any circumstances.

The rules for securing of Aluron sp. z o.o. products are specified in catalogues and product manuals and in the General Terms and Conditions of Sale and Delivery, as well as in the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

3. Cutting and processing of aluminium profiles

To avoid damaging the surface of the processed component, use only tools that are sharp and in good working order. Silicones, joint sealants, glazing compounds, lubricants and coolants used for mechanical processing should be certified as pH neutral (approx. 7) and should not contain substances harmful to plastic, rubber, paint or oxide coatings.
The Buyer is obliged to protect all cut and machined edges of profiles and sheets with COSMO HD-100.411 anti-corrosion sealant or its equivalent with similar, confirmed technical characteristics and intended use.

Detailed guidelines for this are specified in the respective catalogues and product manuals, as well as in the General Terms and Conditions of Sale and Delivery and the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

4. Durability of aluminium profile surfaces

Both paint and oxide coatings are not resistant to mechanical damage. Products should be secured against contact with corrosive substances, acids, and alkalis. For anodised products, avoid direct contact with lime, cement, and other alkaline building materials.

Detailed guidelines for this are specified in the respective catalogues and product manuals, as well as in the General Terms and Conditions of Sale and Delivery and the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

5. Performance and protection requirements

The assessment of coatings, including paint/anodised coatings, and the classification of defects in terms of properties / tolerances /technical parameters is carried out in accordance with the Guarantor's applicable workmanship tolerance assessment system, Qualicoat/Qualanod guidelines, and is regulated by specific industry standards. Anodised, powder-coated and Decoral-coated surfaces require periodic cleaning and maintenance by a specialised service provider, with documented confirmation of the date of the procedure. Documentation includes, for example: invoices, contracts, entries in the Facility Log issued by a qualified service provider for cleaning and maintenance services. Minimum cleaning and maintenance required:

	CORROSION CLASS	MIN. INTERVAL
Cleaning and maintenance of coatings	1	**every 12 months**
	2	**every 12 months**
	3	**every 12 months**
	4	**every 3 months**
	5	**every 3 months**

Failure to perform maintenance in accordance with the Guarantor's recommendations will void the warranty on the coating. Do not use salt or chemicals to de-ice the surroundings of the products in use. Detailed guidelines for this are specified in the respective catalogues and product manuals, as well as in the General Terms and Conditions of Sale and Delivery and the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

6. Maintaining coatings

Before any cleaning or maintenance, test the effect of the tools and products used for this purpose on invisible/non-decorative surfaces to avoid any damage to the decorative surface.

- When cleaning, use clean water to which a small amount of specialised neutral or slightly alkaline detergents can be added (e.g. COSMO CL-350.110 for anodised surfaces or COSMO CL-360.110 for painted surfaces).
- Use a soft, non-abrasive cloth to wipe the surface.
- During cleaning, the ambient temperature should be between 10 °C and 20 °C, and the coating should not be exposed to direct sunlight.
- Do not wash the coating with a steam jet.
- Maintenance and cleaning products must be certified for use on the specific type of surface.
- Do not use detergents of unknown origin.
- Do not use strongly acidic (pH below 3) or strongly alkaline (pH above 12) detergents, as well as surfactants that may react with the product.
- Do not use abrasive cleaning agents nor clean the surface by rubbing. Gentle fabrics intended for professional cleaning may be used. When cleaning, do not press the cloth too hard against the surface being cleaned.
- Do not use organic solvents containing esters, ketones, alcohols, aromatic compounds, glycol esters, chlorinated hydrocarbons, etc.
- The detergents used for cleaning must not react with the cleaned surface for longer than one hour. If necessary, the cleaning process can be repeated after 24 hours.
- After each cleaning, the surface must be rinsed.

Note: The procedures described in the GRM and preservatives that are on the GRM approval list, published at www.grm--online.de are permitted. GRM stands for Gutegemeinschaft Reinigung von Fassa-den e.V. (Facade Cleaning Quality Association).

Detailed guidelines for this are specified in the respective catalogues and product manuals, as well as in the General Terms and Conditions of Sale and Delivery and the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

7. Maintaining seals

Seals are exposed to many adverse factors such as temperature fluctuations, solar radiation, acid rain, etc. Therefore, they require special consideration and care. Seals perform important functions in joinery, and if neglected, they wear out faster and cease to perform these functions properly. They should therefore be cleaned regularly (at least twice a year) with clean water and, after drying, treated with a commercially available seal maintenance product.

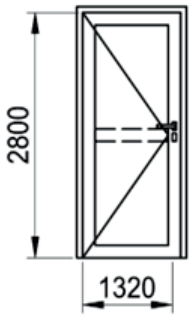
Before any maintenance, test the effect of the measures used for this purpose on invisible/non-decorative surfaces to avoid potential damage.

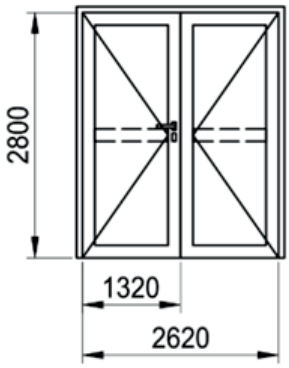
- During cleaning and maintenance, the ambient temperature should be between 10 °C and 25 °C.
- Do not wash the seals with a steam jet.
- Maintenance products must be certified for use on seals.
- Do not use abrasive materials for cleaning.
- Do not use organic solvents containing esters, ketones, alcohols, aromatic compounds, glycol esters, chlorinated hydrocarbons, etc.

Detailed guidelines for this are specified in the respective catalogues and product manuals, as well as in the General Terms and Conditions of Sale and Delivery and the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu

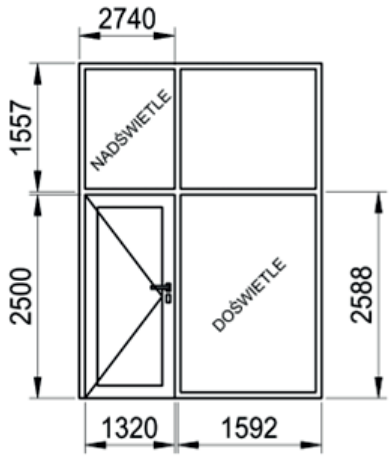
8. Guidelines for installing door structures

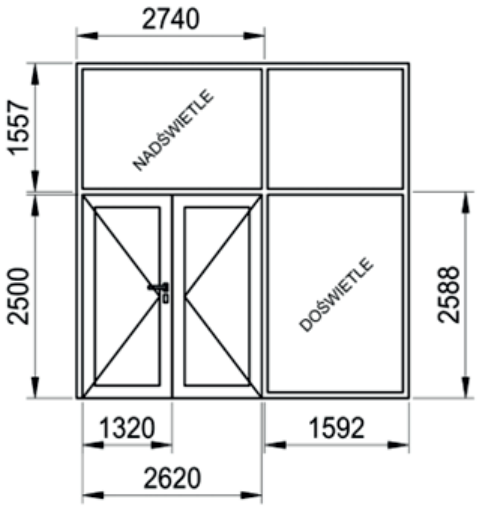
Bespoke single and double doors:





Technical doors and windows with transom windows and sidelights:



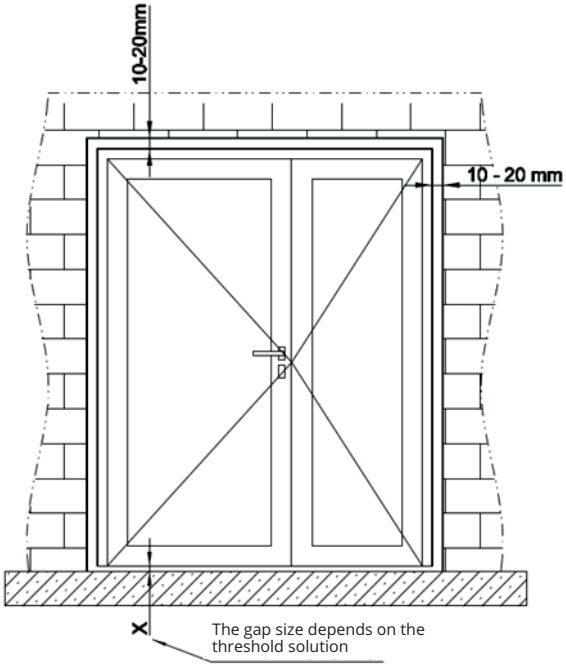


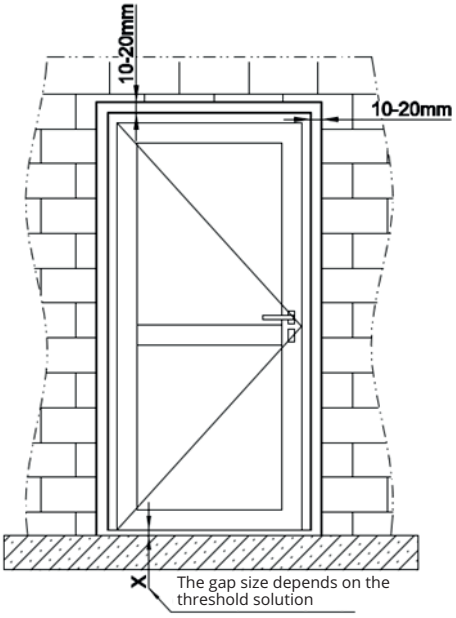
GUIDELINES FOR MAKING THE INSTALLATION HOLE:

Installation hole dimensions

The installation hole should be larger than the external dimensions of the structure [BW x HW] by:

- The installation gap in the opening is 10–20 mm on vertical and horizontal elements (lintel).
- Maximum threshold gap size:
  - EI 30 - 19,8 mm
  - EI 60 – 24 mm
  - It is acceptable to reduce the threshold gap.





Material for the installation hole:

EI 30 structures:

- Standard rigid structure with a minimum thickness of 120 mm made of materials with a minimum density of 600 kg/m³.
- Standard flexible mounting structure, minimum thickness 100 mm.

EI 60 structures:

- Standard rigid structure with a minimum thickness of 175 mm made of materials with a minimum density of 600 kg/m³.
- Standard flexible mounting structure, minimum thickness 125 mm.

The side edges of the installation hole should be even and perpendicular to the floor. The floor (final floor) should be constructed on a level surface that allows the door to open with an acceptable clearance between the floor and the door leaf. The floor should be covered with a hard, flat material (concrete, tiles, parquet).

Aluminium structures with fire-resistant properties should always be installed in structural openings that have been constructed with a fire resistance rating no lower than that of the aluminium structure itself.

- The surfaces of the profiles should be protected with a film to shield them from weather conditions and dirt from construction.
- The installation of the AS 75EI system doors should be carried out at an ambient temperature of no less than -5 °C.
- Place the door frame without door leaves in the structural opening. The next step is to secure it with wedges and struts, while positioning the structure in the required installation plane in the opening. Next, set the level of the top element of the door frame and the verticality of the side posts of the door frame. Alignment adjustments are made by repositioning the locking wedges (driving them in or loosening the bracing). After positioning the structure, check the mutual perpendicularity between the lintel section of the door frame and its vertical profiles.
  This check should be carried out using an angle bracket with a minimum arm length of 600 mm. At least 4 adjustment struts should be placed symmetrically along the entire height of the door frame and the width dimensions in the frame rebate should be checked. Their size should be the same across the entire height of the door frame.

- Permissible installation deviations are as follows:
  - angle deviation in the corners of the frame ± 0.025 °
  - deviation from the vertical of the frame posts ± 0.25 mm/m
  - twists and folds in the frame plane are unacceptable
- After correctly positioning the door frame vertically and horizontally, and checking that it is correctly positioned, perform a preliminary installation by anchoring the structure at 2 or 3 points on the hinge side of the door frame (note: do not tighten the fasteners all the way). Spacers made of hardwood or metal should be placed in the space between the structural opening and the post of the fixed door frame at the location of the anchoring element. Spacers prevent deformation of the frame during tightening of the fasteners.
- The next step is to install the door leaf and check the gaps between the door leaf and the frame, as well as the gap between the door leaf and the floor. The permissible clearance values are presented later in this instruction manual. After satisfactory verification, proceed to anchor the remaining frame elements, tightening the anchoring elements to the desired torque. After completing the mechanical installation, re-check the clearances and verify that the door leaf is properly aligned with the door frame. If the door leaf does not fit tightly and evenly across its entire height, it is necessary to make corrective adjustments to the hinges. Corrective adjustments can only be made within the tolerances permitted by the hinge manufacturer. The hinge adjustment of the door leaf should never be considered as an adjustment that compensates for errors and imperfections in the mechanical installation of the door frame. After completing the above installation steps, remove the door leaf(s) and proceed to fill the gaps between the installation opening and the door frame.

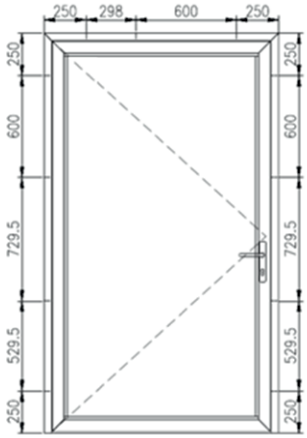
Minimum quantities of fasteners for EI 30 and EI 60:

- For single-leaf doors, the minimum permissible number of frame screws for fixing the structure is 11.
- For double-leaf doors, the minimum permissible number of frame screws for fixing the structure is 13.

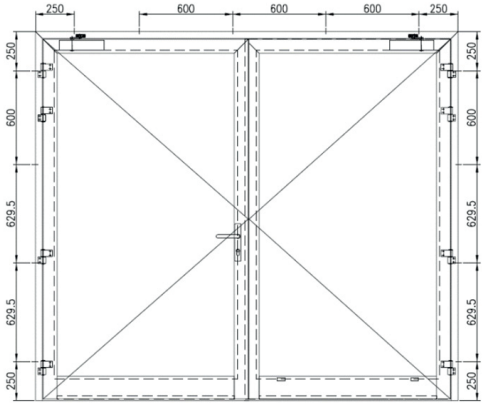
Minimum permissible size of fasteners:

- Door frame screws: minimum Ø 7.5 x 152 mm
- Sleeve anchor: minimum Ø 10 x 120 mm

Maximum permissible spacing of fixing anchors for single-leaf doors according to the diagram below:



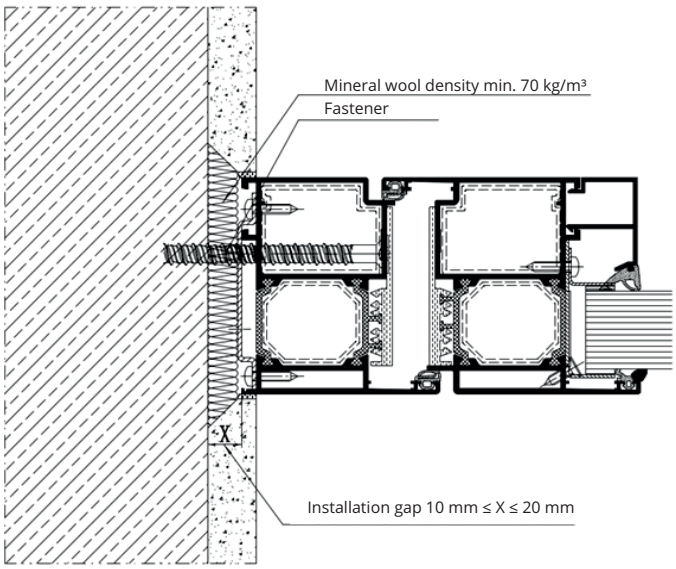
The maximum permissible fastener spacing for aluminium structures is 600 mm, with the distance between the outermost mounting elements and the corners being at most 250 mm.

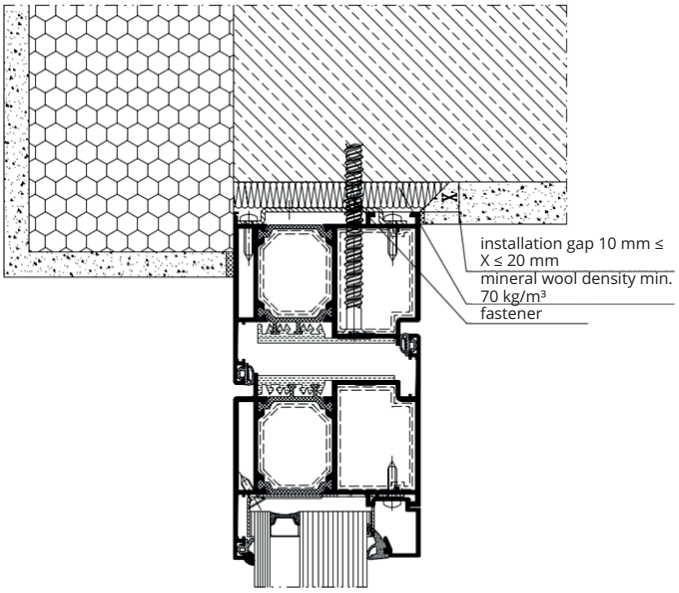


Fixing method for structures in the AS 75 EI system:

The aluminium structure is fixed in the structural opening by means of process holes made in the frame during the production stage. The following drawings illustrate the installation principle for door structures with fire resistance ratings of EI 30 and EI 60:

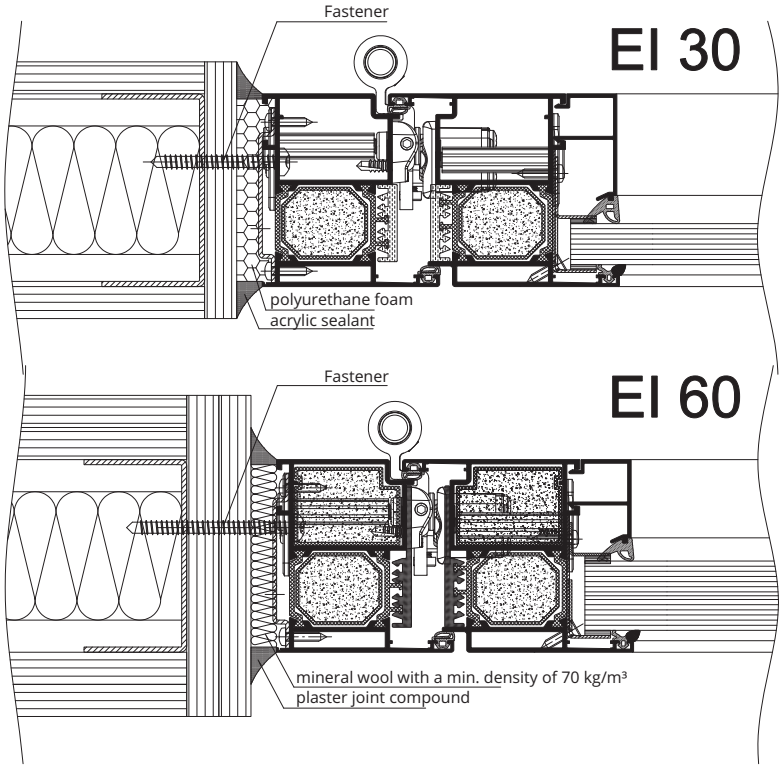
Fixing method for aluminium structures in standard rigid structure





Fixing method for aluminium structures in standard flexible structure

- Installation gaps should be filled with mineral wool with a density of at least 70 kg/m³. The wool should be laid as tightly as possible to ensure the best possible filling of the installation space. Insulation installed in this manner should be secured on both sides with plaster mortar.
- Polyurethane foam sealed on both sides with acrylic. The material should be selected in accordance with the marketing authorisation dossier.



9. Guidelines for installing fillings (glass/opaque panels) in an installed door structure

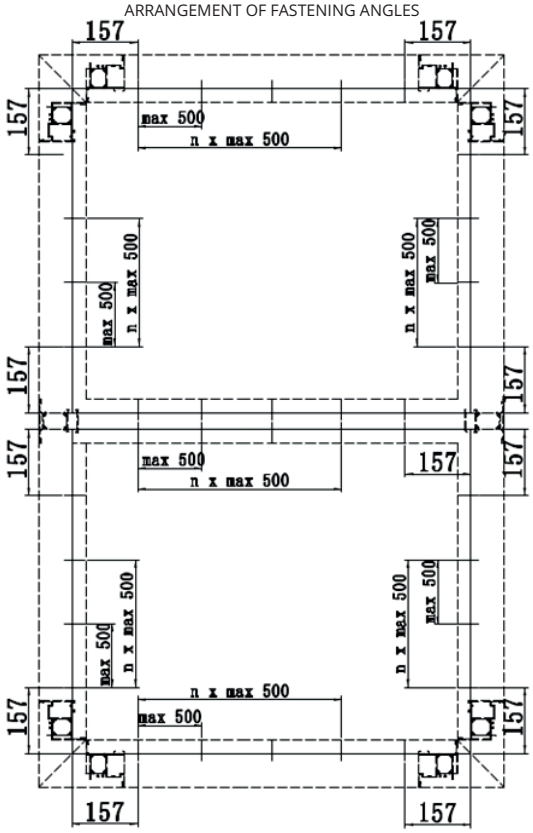
In the AS 75EI system, the structure is filled with single or double glazing units or opaque panels selected so that the installation meets the requirements of the relevant fire resistance class EI 30 or EI 60, as well as the requirements for thermal and acoustic insulation and safety of use. All fillings used in the AS 75EI system must have the appropriate approvals for use in fire-resistant structures.

The production of glass fillings and opaque panels is subject to tolerances due to the physical parameters of the components used to construct the fillings. Consequently, within a single filling format, there may be differences in the thickness of the filling measured at its edges.

Aluminium structures are manufactured to the nominal thickness of the filling, which does not allow for the compensation of imperfections in the filling thickness. Therefore, before proceeding with the installation of the fillings, the thickness of the fillings received should be checked. Measurements should be taken using a calliper (with a measurement accuracy of 0.01 mm) according to the following guidelines in the indicated locations:

- thickness of the filling in the four corners of the pane,
- the thickness of the filling along each edge of the pane as follows:
  - for window edges up to 1.2 m long at half the length;
  - for window edges up to 1.8 m long, every 1/3 of the edge length;
  - for edges longer than 1.8 m, every 1/4 of the edge length.
- Based on these measurements, calculate the average thickness of the filling.
  The installation of fillings in fire-resistant structures is carried out using steel fasteners, which are selected according to the thickness of the filling based on the glazing table included in the AS 75 EI system catalogue. The spacing of the angle brackets securing the filling in an aluminium structure with fire resistance class EI 30/EI 60 and the method of securing them are shown in the figure below. The type and size of angle brackets depends on the thickness of the glass and the method of installation.

ARRANGEMENT OF FASTENING ANGLES



Door leaf displacement

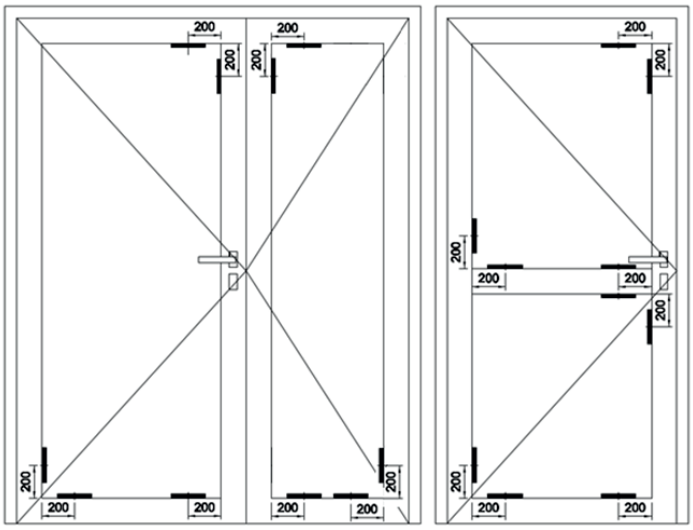
For the installation of fillings, use system glazing pads made of special wood with thicknesses of 1, 2 and 5 mm. The basic support pad is 5 mm thick. Due to manufacturing tolerances, 1 and 2 mm thick pads are used as an option to ensure correct filling alignment. The filling in the door leafs is displaced using the same glazing pads that are used for installing the filling – pads made of hardwood.

The location of the spacers displacing the filling in the leaf is shown in the diagram below. Wooden spacers should be placed in thespace between the glass and the leaf profile:

- on the hinge side – in the bottom corner,
- on the handle side – in the top corner.

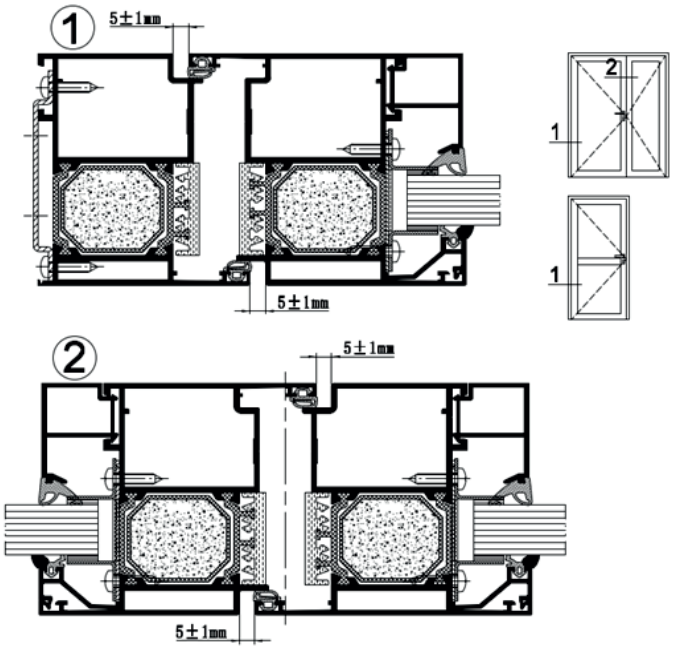
If the door leaf has a horizontal crossbar, the layout of the displacement pads remains unchanged, but the displacement operation is performed on each area in the leaf.

Correct leaf displacement is a crucial step. By removing the filling, the correct rigidity of the door leaf structure is achieved and the correct geometry of the door leaves necessary for the proper functioning of the door is ensured.

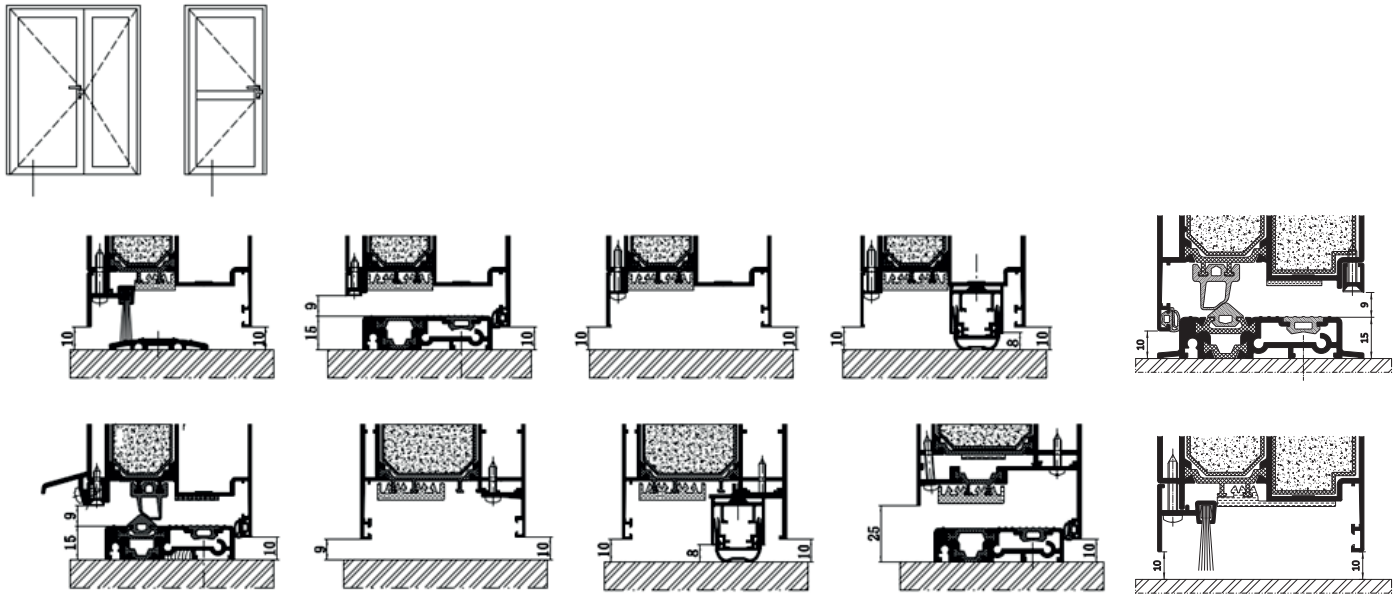


After correctly pushing out the door leafs, proceed to check the gaps around the perimeter between the door frame and the door leafs.

The figures below show the permissible clearances/gaps between the door frame and door leaves:



The figure below shows the permissible gaps in AS 75EI threshold solutions:



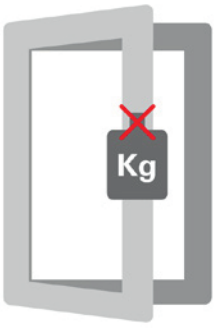
10. As-built inspection and common errors

The as-built inspection of the door structure installation should include, among other things:

- correct installation of the door frame: parallelism and squareness of the aluminium structure;
- correct filling of the installation gaps between the door frame and the structural opening reveal;
- checking the correct installation and operation of locking elements such as:
  - lock (latch, bolt);
  - passive leaf bolts;
- correct installation and operation of other equipment such as: drop-down thresholds, door closers, electric strikes, hardware used on escape and emergency routes, etc.;
- checking the correctness of the glazing installation;
- checking the perimeter gaps;
- checking that doors are correctly marked with information plates in accordance with the guidelines in the standard.
  In order to ensure the long and proper functioning of windows and doors constructed using Aluron systems, as well as to prevent possible mechanical and visual damage, it is advisable to read and follow the following advice:

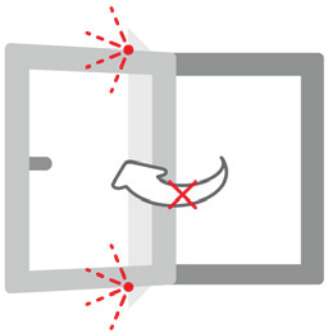
USAGE ERRORS:

- Do not place any additional weight on window and/or door leaves or their components (e.g. handles). Such additional loads may cause deformation of the leaves and damage to moving parts, resulting in malfunction of the entire structure.

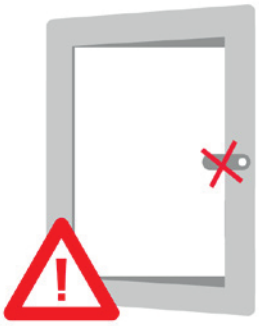


- Do not leave/wedge any objects between the door leaf and the frame. This may damage the woodwork and/or hardware.

- Do not bend the open leaf towards the frame and hinges (see figure) as this may damage the hardware and/or warp the leaf frame, resulting in window and/or door leaves not closing properly.

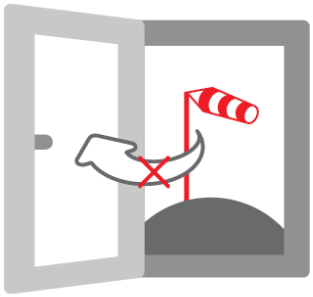


- Do not turn the handles beyond their defined direction and range of rotation, as this could damage the hardware.



RISKS RESULTING FROM USAGE ERRORS:

- **Wind gusts and draughts** - pay special attention to wind strength and weather forecasts if you want to leave a window or door open/ajar - sudden, violent movement of the leaf may damage the leaf itself and other elements of the window/door.



- **Falling out** – open window or door elements pose an increased risk of bystanders falling out, which is particularly important to note in the case of access by children, disabled persons or unauthorised persons. Therefore, it is recommended to use a key-lockable handle or a leaf opening lock.

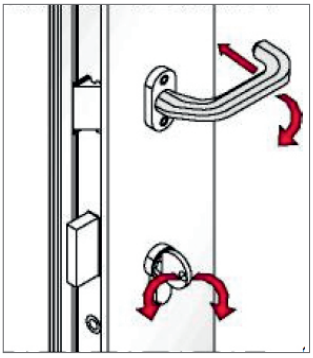
- **Pinching** – when using window and door frames, there is a risk of injury caused by an improperly closed leaf. To prevent this, make sure that nothing is between the leaf and the frame when closing the window/door. Pay particular attention to your hands, which are particularly vulnerable to injury during this operation. Leaving anything in the closing space of the door leaf may result in injury to persons in the vicinity and/or damage to the door frame.

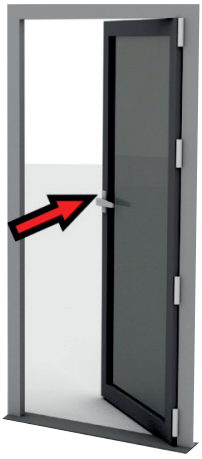
- **Knocking over** – open or partially closed window or door leaves may move uncontrollably during strong draughts and/or gusts of wind, thereby hitting/knocking over objects in their path. For this reason, keep the area in front of window and door leaves clear.

- **Hitting open elements** – when a window/door leaf is open, there is a risk of injury or bruising for people in the vicinity due to protruding elements. This is particularly common when performing activities under an open window leaf, so it is recommended to close them when working underneath them, but also when, for example, children are playing in the room.

11. Correct door use

Single-leaf doors
To open the door, insert the key into the keyhole and turn it. Press the handle and then pull it when opening the door towards you, or push it when opening the door in the opposite direction.
When you want to lock the door, follow the steps described above in reverse order, remembering that turning the key twice locks the lock.





Double-leaf doors
They are an extension of single-leaf doors with an additional "passive" leaf. To open the door, first open the active leaf as described for "single-leaf doors" and then unlock the bolts on the passive leaf. To close the door, follow the steps described above in reverse order.

Emergency and panic doors
The doors are opened using panic bars (levers, strips) by pressing them while pushing the leaves on which they are mounted.

12. Maintaining hardware

To ensure the smooth and long-lasting operation of the hardware mechanisms, it is essential to follow the maintenance and operating guidelines provided by the hardware manufacturer.
The frequency of hardware adjustment depends on the manufacturer's guidelines and/or the size of the piece, as well as the frequency and method of opening the joinery. Instructions for maintaining hardware are available from the manufacturer and/or retailer.
This publication should be considered in conjunction with the General Terms and Conditions of Sale and Delivery, as well as the Guarantee Certificate of Aluron sp. z o.o., which are published at www.aluron.eu, as they form an integral part of this document.