

## **1. Safety Instructions**

### **1.1 General Safety Warnings**

- Pinching Hazard: Never place your hands or other body parts between the frame and the sash when closing, as this may cause serious injury or crushing.
- Wind and Draft Effects: In strong winds or drafts, sashes must be closed and latched. Open sashes can slam shut or swing open suddenly, potentially damaging hardware, causing property damage, or injuring people and animals nearby.
- Sash Loading: Do not load sashes with additional weight (e.g., do not use them as hangers or ladders).
- Glass Breakage: Glass may break due to strong impacts or thermal stress (e.g., radiators too close to glass, partial shading). Sharp edges of broken glass pose a cutting hazard.
- Maintenance: At least once a year, check the stability of safety-critical hardware components and lubricate or tighten them as needed.

### **1.2 Windows**

- Fall Hazard: When windows are open, there is a risk of falling, so special caution is required in households with children.
- Handle Position: If the handle is turned incorrectly when the window is open, the sash may release from the upper lock.

## **2. User Instructions**

### **2.1 Windows – Tilt-and-Turn Positions**

- Closed: Handle turned vertically downward.
- Open (Turn): Handle in horizontal position allows full opening of the sash.
- Tilt (Ventilation): Handle turned vertically upward allows tilting the sash for ventilation.
- Proper Closing: When closing, first push the sash against the frame, then turn the handle to the closed position.

## **3. Installation Instructions for Aluminium Windows**

Purpose: This document provides general, practical instructions for proper installation of aluminium windows in new construction or replacement. Instructions are intended for qualified installers.

**Important: Installation must comply with project details, structural requirements, building physics, and applicable regulations. If the project or technical documentation requires a different procedure, that takes precedence over these general instructions.**

### **3.1 Safety and Responsibilities**

- Handle elements (sashes, glass) as heavy loads: use appropriate grips, lifting aids, and personal protective equipment.
- When working at height, ensure fall protection and stable working platforms/steps.
- Sharp edges, metal filings, and glass: use gloves, safety glasses, and appropriate footwear.
- Do not make structural modifications (cutting load-bearing parts, widening openings, etc.) without confirmation from the designer or supervisor.
- Perform all measuring and fastening work in a way that does not damage thermal breaks, coatings, and seals.

### **3.2 Prerequisites Before Installation**

- The opening must be finished, load-bearing, and stable; surfaces clean of dust, mortar residue, and grease stains.
- Check opening dimensions (width, height, depth), flatness, squareness (diagonals), and adequate installation gaps.
- Ensure proper drainage at parapets and completed or prepared waterproofing where specified.
- Installation should take place under suitable conditions (no frost/excessive moisture, protected from rain), in accordance with material requirements.
- Store elements upright on padded supports; protect them from impacts, UV, and dirt.

### **3.3 General Principles of Proper Installation**

- Alignment: The frame must be level, plumb, and without twist; otherwise hardware will not function properly and sealing will fail.
- Load Transfer: Transfer element weight and loads (wind, use) through load-bearing shims and properly distributed fasteners.
- Joint sealing should be executed at three functional levels: inner airtight, middle thermal/acoustic insulating, outer weather-resistant and more vapor-permeable.
- Principle: The inner layer should be more vapor-tight than the outer (so moisture does not accumulate in the joint).
- Execute the connection with facade insulation without thermal bridges; if necessary, in the insulation plane with appropriate load-bearing brackets/systems.

### **3.4 Element Preparation**

- Inspect the element upon receipt: damage, dimension accuracy, opening direction, completeness of hardware and seals.
- Remove sashes (where appropriate) and/or protect glass from damage during installation.
- Prepare fastening points: brackets, anchors, or screws based on substrate and planned installation system.
- Before installation, apply necessary tapes/membranes for sealing (if used) to ensure continuous contact with the building structure.

### **3.5 ALU Windows Installation**

#### **3.5.1 Frame Positioning in Opening**

- Place load-bearing shims (at load transfer points) and spacers for alignment in the opening.
- Insert the frame into the opening, temporarily fix it, and precisely align it (horizontal, vertical, diagonals, plane).
- Check for uniform gap around the perimeter and ensure the frame is not twisted (critical for large elements).

#### **3.5.2 Anchoring**

- Select fasteners based on substrate (concrete, brick, prefab elements) and loads; observe minimum edge distances.
- Distribute fasteners according to structural requirements: typically more in hinge areas, corners, and for larger dimensions.
- Monitor alignment while tightening; do not 'pull' the frame into the substrate – use shims/spacers for alignment.

#### **3.5.3 Joint Insulation**

- Fill the middle level of the joint evenly with thermal/acoustic insulation (e.g., elastic foam or mineral wool) without voids.
- Do not block drainage paths or seal drainage openings in the frame.
- Ensure material compatibility (foam, membranes, sealants) with aluminium and the substrate.

#### **3.5.4 Joint Sealing (3 Levels)**

- Inner level: airtight and more vapor-tight execution (continuous strip around perimeter, proper overlap at corners).
- Middle level: insulating fill (thermal and acoustic).
- Outer level: weather sealing, resistant to rain and wind, and more vapor-permeable (allowing moisture to escape outward from the joint).

**3.5.5 Sash, Glazing, and Adjustment Installation**

- Install sashes, check hardware operation and seal contact around the entire perimeter.
- If glazing on site: properly shim the glass and position spacers according to system requirements so loads transfer to the frame.
- Perform basic hardware adjustments (height, lateral pressure, contact) so the sash opens/closes smoothly and seals evenly.

**3.5.6 Final Work and Inspection**

- Complete interior and exterior trim/reveals without damaging sealing and without creating thermal bridges.
- Remove temporary spacers only where they are not load-bearing; load-bearing shims remain in place.
- Check: level/plumb, diagonals, smooth operation, proper closing, drainage, seal continuity.
- Clean surfaces and remove protective films according to instructions (do not leave films on too long due to UV).

## 4. Care and Maintenance

### 4.1 General Guidelines

Before starting maintenance, follow these basic rules:

**Recommended:**

- Use mild and pH-neutral cleaners (pH approximately 5–8).
- Clean at surface temperatures up to 25°C maximum, never in direct sunlight.
- Always rinse the surface with water first before wiping (dust acts like sandpaper).
- Use soft microfiber cloths and non-abrasive sponges.
- Maintain hardware with lubricant as recommended by the manufacturer (acid-free oil or grease). Maintain the lock cylinder exclusively according to the cylinder manufacturer's instructions (e.g., synthetic lubricant or dedicated maintenance product).
- Always test a new cleaner on an inconspicuous area of the surface first.

**Forbidden:**

- Avoid polishing on matte and textured finishes, as it can permanently alter the surface appearance.
- Do not use abrasive cleaners, wire mesh, or coarse sponges.
- Do not use strongly acidic or strongly alkaline cleaners; stay within the pH range of approximately 5–8.
- Do not clean 'dry' without first rinsing with water.
- Do not use universal oil sprays in the cylinder unless explicitly designed for cylinders. Use lubricant according to the cylinder manufacturer's instructions.

### 4.2 Drainage Openings

When you open the window, you will notice drainage openings at the bottom of the frame. These must always be clear. Once a year, vacuum them or clean them with a cotton swab to remove dust and insects. Blocked drainage openings are a common cause of water leakage during heavy rain.

### 4.3 Hardware

Maintain window hardware (scissors at top, locks on sides) at least once a year with lubricant as recommended by the hardware manufacturer. A drop of acid-free oil on all points where metal rubs against metal ensures smooth handle operation.

#### **4.4 Glass**

The appearance of condensation (fogging) on the inside of the glass is not a product defect but a physical phenomenon caused by high humidity in the room and insufficient ventilation. Clean glass with regular glass cleaner and a soft, clean cloth. For stubborn stains, use dedicated cleaners.

#### **4.5 Troubleshooting**

- **During heavy rain, water leaks around the window frame:** A common cause is blocked drainage openings in the bottom frame. Clean them with a vacuum or cotton swab.
- **Condensation (fogging) appears on the inside of the glass:** This is not a product defect. Increase room ventilation and reduce humidity.