

INSTALLING SKAALA WINDOWS AND DOORS

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DEAR CUSTOMER

Congratulations on a good Finnish choice – Skaala's products are designed for Northern conditions. Our products are custom-made in our factories in Finland respecting environment and using materials and methods that ensure comfort of living with fresh indoor air in your home.

In this Skaala manual you will find the most important instructions for installing your Skaala products. It is recommended that you read the instructions carefully and maintain the condition of Skaala products in accordance with our instructions and advice. This way, the use of Skaala products is as easy as possible for you and ensures their long-lasting durability.

For us, the most important thing is a satisfied customer. If you have any questions or feedback about the use or quality of the product, please contact us. You can find all contact information on our website **skaala.com**.

Thank you for choosing a Finnish Skaala product!

*Kind regards,
Skaala IFN Oy*

! Product liabilities – warnings

- Check delivery when it arrives.
- Follow the instructions you have received in the offer document / sales contract regarding the receipt and storage of Skaala products.
- Store and protect the uninstalled products according to the instructions. Save the equipment box that may have arrived in delivery. It contains small parts that disappear easily under construction conditions.
- Follow local instructions for installation and install only products without any errors.
- Do not remove stickers on the frame or sash surface of the product that identify the product or indicate its specific characteristics (ID-sticker, fire window, emergency escape, etc.).
- Use the products according to the instructions. Skaala guarantee does not cover damage caused by improper handling of the products.
- Clean and maintain products regularly to ensure their long-lasting serviceability and durability. Disregarding maintenance can lead to exclusion from warranty.

1. INSTALLING PRODUCTS

For the operation of the products, it is most important that the installation is carried out carefully and according to instructions. We recommend having a specialized installation team installing your doors and windows.

About installation materials and installation method, primarily follow the local regulations and standards.

The warranty does not cover damage caused by incorrect installation.

The defect product must not be installed without the manufacturer's permission.

Any customer feedback must be made and described before installation. Any transport damage must already be described the delivery note.

The product must never be used as a load-bearing structure.

Remember occupational safety.

1.1 Installation notifications

- The construction time humidity must be ventilated before installing windows and doors. We recommend installing Skaala-products only when humidity conditions have stabilised below 60%.
- After installation, ensure adequate ventilation, temperature, and humidity removal. It is not recommended to ventilate through windows during construction. Condensation or freezing in the window structures may cause serious damage to the product.
- Also note the instructions on moisture during construction in the warranty conditions.
- The use of windows as a route for persons or materials during construction is not recommended
- Windows and doors must not be used as a load-bearing structure or as part of it
- Windows and doors must always be fastened with screws, such as Jamo installation screws (Würth). Windows and doors must never be installed with Urethane foam alone.
- Do not tighten the installation screws too much. A screw tightened too tightly can open the corner of the frame and break its fastening. In addition, sealing materials in fixed windows may open and cause air leakage.
- Frames must be directly straight and in a cross-section after installation.
- Please note that the wall structures may not be exactly straight. Do not install windows or doors according to the surfaces of the building wall. Always use a leveler.

This is especially important when installing doors.

- To prevent damage to the structures surrounding the products, it is important that the exterior listings and water sills are installed immediately after the products have been installed
- The fire-resistant windows have gel filled glass, which may cause changes in tone. For this reason, all possible stickers and protective plastics must be removed from the fire protection window as soon as possible after installation.
- Remove static Skaala labels from windows no later than a couple of weeks after installation.
- Always follow the product-specific installation instructions.



1.2 Installing windows

! Regarding installation materials and procedures, we recommend that local standards and instructions be followed as a matter of priority. When installing windows in Finland, you must follow the RT-instructions (RT 41-103241 wood and wood aluminium windows and their installation in Finnish in www.rakennustieto.fi).

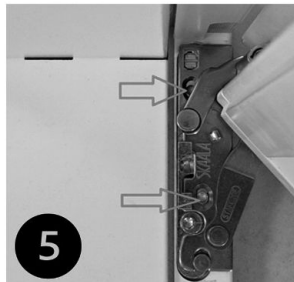
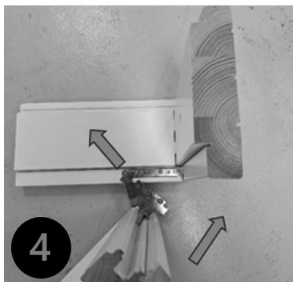
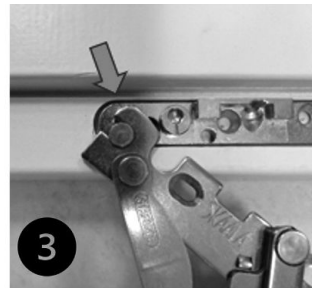
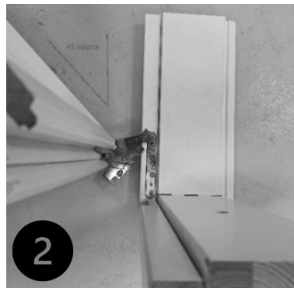
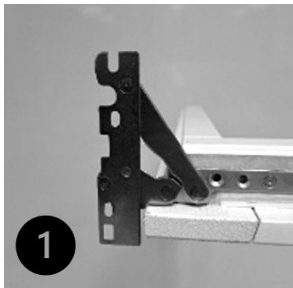
1. Insert stabile installation wedges under the windowsill and ensure that the sill is level by using a builder's level. Enough insulating material must be used around the installation wedges. When installing large windows (more than 1.5 m²) you must make sure that the installation wedges remain under the windowsill.
2. First attach the side jambs with fastening screws, check the cross measure of the window construction and that the jambs are straight. To ensure the functionality of the product, the cross-measure must not deviate by more than 1–3 mm.
3. Lift the outer sash in place and fasten the hinge pins.
4. Check the mobility of the outer sashes and the frame turning allowance. If needed adjust the hinges by turning them.
5. Put the inner sash in place and fasten the hinge pins.
6. Make sure that the turning allowance is even all round and that the corner joints are fastened. If necessary, adjust the hinges by turning them.
7. If necessary, fasten the rest of the frame screws and check the cross measure of the frame. Do not fasten the screws too tightly. If the screws are too tight the corner joints of the frame might break. Cover the installation holes with screw covers. Please note! Screw covers are not included in the standard delivery.
8. Insulate the sides of the window with either mineral wool or joint insulation. Please note that joint insulation material swells to 2–3 times its size.
9. Measure the damp-proof course (DPC), cut it to the right size and fasten it. If needed, add insulation before attaching the DPC. Please note that the front edge of the DPC must protrude at least 30 mm from the wall construction to prevent water from running down the wall.

10. Seal the gap between the DPC and the wall with elastic substance. Ensure that the inclination of the DPC is at least 1:3, rather 1:2 or steeper.
11. Measure the covering strips, saw them to the right size and fasten them. If needed, add insulation before fastening the covering strips.
12. Check the operation of the hinges and that there is no dust or other abrasive impurities in the hinges. Oil hinges before using and in the future at least once a year.
13. After installation, make sure that the moisture during construction does not condense on the inside of the product by ensuring adequate ventilation.
14. Regularly check that the hinge pins remain on the bottom. Tap them deeper into their space if necessary.

Installing a Window with Hidden Hinges

All screws required for installation are attached to the product upon delivery. The hidden hinge screws are already in place.

Begin installation by removing the inner sash (6). The inner sash is removed in the reverse order from installation (see images 5->1). The quick release is opened, for example, by pressing it with the tip of a screwdriver.



Installing the Inner Sash

- Both hinges are opened to 90 degrees.
- Hold the sash at a 45-degree angle to the frame.
- The hinge slot is fitted onto the knob of the mounting plate. Remember to ensure the hinge is fully seated before turning it inward.
- The hinge is turned by pressing the quick release while pushing the sash. At the same time, make sure the hinge remains fully seated against the knob.
- 3.5*25 screws are fastened into the two mounting holes. The screws must be driven perpendicular to the wood to prevent the hinge levers from touching them.



1.3 Installing fire-resistant windows

When installing fire-resistant windows you must also consider the following:

Installing openable fire-resistant windows

Openable fire-resistant windows can be installed in a wall made of concrete, brick, or other stone materials with a density more than 650 kg/m³ and a thickness more than 150 mm. The gap between the frame and the installation opening shall not exceed 20 mm. The frame is attached to the surrounding structure with a steel frame screw Jamo 6x90 mm or alternatively with Adjufix fasteners. The vertical parts shall be fastened with at least four screws, the distance between the outer screws shall not exceed 145 mm from the edges. Gaps between frame and the surrounding structure are sealed with class A1 stone wool or Polyurethane Wurth Seal Fire W350 / Nullfire FF197. The depth of the isolated part of the frame shall be at least 118 mm.

Installing fixed fire-resistant windows

Openable fire-resistant windows can be installed in a wall made of concrete, brick, or other stone materials with a density more than 550 kg/m³ and a thickness more than 150 mm. The gap between the frame and the installation opening shall not exceed 15 mm. The frame of the fire protection window is attached to the wall structure with a frame screw of at least 6x90 mm steel (number and position in Finland according to RT 41-10095). Alternatively, Adjufix fastening screws can be used. The distance of the outer screws from the edge of the frame shall not exceed 200 mm. Gaps between frame and the surrounding structure are sealed with Paroc FPS 17 Class A1 rock wool or Polyurethane Wurth Seal Fire W350 / Nullfire FF197 and the gap is covered with a wooden list.

! Carefully follow the separate installation instruction that is delivered with the fire-resistant windows!

! Fire-resistant windows must not be exposed to UV-light from the inside. Combustible material, such as curtains or blinds, must not be attached to the window.

1.4 Installing exterior and balcony doors

1. Ensure that the base of the threshold is level and sealable.
2. Insert the frame in place, wedge with double wedges (to prevent warping).
- ! The threshold must be carefully supported throughout, and it must be able to withstand e.g. the forces of weight caused by stepping on.
3. Check that the frame is level by using a leveller and taking the cross-measure.
4. Attach the frame on the hinge side by using the screws designed for this purpose.
5. Hang the door leaf on its hinges and make final adjustments to the frame so that the frame and the door leaf are level at every point.
6. Make sure that the turning allowance is even all round and that the corner joints of the frame are fastened. If necessary, adjust the hinges.
7. Ensure that the door opens and closes easily.
8. Attach the other sides of the frame. It is recommended to cover the attaching holes with screw covers (not included in the standard delivery).
9. Insulate the gap between the frame and the wall with insulation wool or urethane foam. Take care that the frame does not bulge due to excessive insulation.
10. Measure the covering strips, saw them to the right size and fasten them. If needed, add insulation before fastening the covering strips.

Please note! To ensure that the door does not get worse for wear prematurely, it should be fastened well, and its cross-measure should be precise. This is even more important regarding double doors and doors with one operating sidelight since any potential deviation in the measure doubles where the door elements meet. The door may be adjusted by +4 mm vertically and +3 mm horizontally.

11. The door fittings should be attached during installation. The product warranty does not apply to any damage caused by leaving the fittings unattached (e.g. humidity-induced damage).
12. Check the operation of the hinges and that there is no dust or other abrasive impurities in the hinges. Oil hinges before using and in the future at least once a year.
13. We recommend oiling the veneered doors immediately after installation.

! Exterior and balcony doors (especially double doors, full glazed doors, soundproof, and fire-resistant doors) are so heavy that the frames may be bended by the weight of the door leaf. When installing a heavy door, follow these additional steps:

- Hinges have two cone screws and two wood screws. After installation, the upper wooden screws are changed to either a 6x100 or 6x120 mm wood screw to secure the frame directly through the hinge to the frame of the building. In the case of stone or concrete walls, the corresponding concrete screws (screw anchor) are used. This method ensures that the door leaf does not bend down.

- Doors with four hinges the screw is installed to both upper hinges and on three hinge doors only on the upper hinge.
- If a fixed sidelight is installed right next to the door on the hinge side, it must be ensured that the installation screw is not too long and doesn't go through the frame structure of the fixed element. Too long screw is likely to meet the edge of the fixed glass element and break the glass.



- ! Removing the wind brake during installation: The wind brake can be removed from the upper frame of the window by plucking the wind brake from its frame end.

1.4.1 Installing aluminium cladded balcony door (IOA 2+1)

If necessary,

- disassemble the door restrictor from the upper frame.
- the door leaf can be lifted off the frame.

- ! Do not lift the door leaf from the outside with suction cups, the outer aluminium door leaf may loosen.

1. Place support pieces / shims on the lower auxiliary frame or use sufficiently strong screws or bolts, for example, instead of support pieces. Enough support screws are 6 (two rows of 3 in a row), or 3 for support pieces. Position the screws or pieces so that they are as close as possible to both side frames of the product and one in the middle.
2. Lift the frame into place in the doorway. Adjust frame sleeve is pre-assembled as standard. Sleeve screw is not included. Fix the frame with the frame sleeve and screw.

Start with the upper and lower sleeves. Check with a spirit level that the frame is in balance and does not tilt in or out. Check diagonal dimensions in frame. Insert the remaining sleeves and screws.

3. To avoid hanging, an anchor screw should be attached through the top hinge. Anchor screw (in the delivery) can be used in concrete with a plastic plug or in wood without a plastic plug. For wood a 4 mm hole has been pre-drilled through the frame behind the hinge. If the plastic plug is to be used, the hole must be drilled up to 8 mm. For sheet metal, a special screw must be used. The screw does not need to have a block between the frame and the wall. Mounting plate in the wall must be sufficiently dimensioned to provide good support for the frame screw.
4. Check the diagonal dimensions and make sure that the jamb parts do not bend or twist, which can happen with the double frame screws. To avoid hanging over time, wedges/ shims should be placed between the jamb and the wall at the top of the hatch jamb side and at the bottom of the hinge jamb side. Make sure that the wedge/ shims do not impede the application of the soft joint inside the sealing space. Sealing is otherwise the same as for windows.
5. Lift the door leaf into place in the frame's hinges, attach the brake and check function. Adjust if necessary. Seal the space between the frame and the doorway with polyurethane foam or rock wool. Fit the cover plugs.

6. The water damper is attached to the front surface of the sill aluminium profile - in the groove - with pop rivets 3.2x20 or drill screws. Screw spacing is CC 200mm.

1.4.2 Installing fire- and soundproof exterior doors

- ! Separate installation instructions are always provided with the classified door, and they must be strictly followed!

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Installing fireproof exterior door

A CE-marking label indicating the classification of the door is attached to doors. If the door deviates from the CE-marking terms, it must be approved by the local building control authority prior to the order.

A fireproof exterior door can be installed into a concrete, brick, or other stone wall. The wall density must be at least 550 kg/m³. The wall thickness must be at least 100 mm and the fire class must be at least equal to the fire resistance class of the exterior door. The door can also be installed in the opening of a lightweight, wooden, or metal-framed wall. The wall thickness should be at least 150 mm.

Principle of installation of classified exterior doors

1. The frame is lifted into the mounting opening and is installed with temporary support wedges so that the lower end of the frame reaches the level of the finished floor surface.
2. The lower end of the hinge side of the frame is fastened motionlessly by means of screws and permanent support pieces or double weales.
3. The top end of the hinge side shall then be fixed accordingly. Check the vertical flow of the hinge side. The lock side is fixed accordingly, and the threshold is installed. The joints between the lateral frames and the upper part of the frame and the threshold are wedged with double wedges placed in the upper and lower corners. Check the cross-measure. The door leaf is raised to its hinges. Check that the frame is vertical flow and that the spacing in all directions comply with the door plate.
4. Install the necessary patches and seals. Installation gaps are covered with lists, the holes in the frame screws are covered with plastic plugs, the locks etc. are installed.

Attaching exterior door frame to the wall installation method B

The installation gap between the frame and the door installation opening shall not exceed 20 mm on the sides and 20 mm at the top. The frame is fastened, for example, with adjusting frame screws or wood screws (e.g. 7.5 x 140/85mm, 6 x 90 general screws or 6 x 90 JAMO-frame screws). It's possible to use nylon bulbs that are suitable for the wall material and screws. The frames have 8 mounting holes as a default.



The suitability of the brackets for different wall materials shall be ensured by the manufacturer of the bracket, the mounting length to the wall shall not be less than 40 mm. The top vertical frame, which is more than 12 M wide, is attached from the centre of the frame. Wood support wedges or double wedges shall be used with the fasteners as shown in pictures in pages 152-153. The wedges must also be placed in each corner to prevent the frame from twisting. The maximum running distance at the door is 5.5 mm on the vertical sides, 5.5 mm at the top and 5.0 mm at the bottom (threshold).

Patching frame to fireproof

The gap between the frame and the wall of fire-classified doors and the base of the threshold mounted on the supports shall be patched with Wurth W350 or Nullfire FF197.

Sealing frame to sound isolation

In addition to patching, the gap between the frame and the wall of sound-proof doors and threshold shall be sealed with mass Wurth M1 or Illbruck LD703 (see picture in page 147, but make sure to use the right masses for exterior door!). Even a small opening in the seam mass causes sound leakage.

Listing the frame

The gap between frame and the wall is usually covered on both sides with wooden lists.

1.5 Installing fireproof and soundproof interior doors

! Separate installation instructions are always provided with the classified door, and they must be strictly followed!

A type-approval marking indicating the classification of the door is attached to fire- and sound-proof doors. If the door deviates from the type-approval I, it has a construction plate attached and must be approved by the local building control authority prior to the order.

A fire- and sound-proof door can be installed into a concrete, brick, or other stone wall. The wall density must be at least 550 kg/m³. The door can also be installed in the opening of a lightweight, wooden, or metal-framed wall. The wall thickness should be at least 150 mm.

Principle of installation of classified doors

1. The frame is lifted into the mounting opening and is installed with temporary support wedges so that the lower end of the frame reaches the level of the finished floor surface.
2. The lower end of the hinge side of the frame is fastened motionlessly by means of screws and permanent support pieces or double weales.
3. The top end of the hinge side shall then be fixed accordingly. Check the vertical flow of the hinge side. The lock side is fixed accordingly, and the threshold is installed. The joints

between the lateral frames and the upper part of the frame and the threshold are wedged with double wedges placed in the upper and lower corners. Check the cross-measure. The door leaf is raised to its hinges. Check that the frame is vertical flow and that the spacing in all directions comply with the door plate.

4. Install the necessary patches and seals. Installation gaps are covered with lists, the holes in the frame screws are covered with plastic plugs, the locks etc. are installed.

Compilation of frame

EI15_25DB and EI15_30DB doors: When the frame is supplied as parts, the top of the frame is connected to the side frames with 60 mm nails, screws, or hooks, 2pcs per joint.

EI30_35DB doors: When the frame supplied as parts, the top of the frame is connected to the side frames with 4x70x/48 screws 2pcs/joint and the threshold is connected to the side frames 4x70x/48 with the screws 3pcs/joint.

Attaching frame to the wall

The installation gap between the frame and the door installation opening shall not exceed 35 mm on the sides and 35 mm at the top. The frame is fastened, for example, with adjusting frame screws or wood screws (e.g. 7.5 x 140/85mm or 6 x 90 general screws or 6 x 90 JAMO frame screws). The frames have 8 mounting holes as a default.

The suitability of the brackets for different wall materials shall be ensured by the manufacturer of the bracket, the mounting length to the wall shall not be less than 40 mm.

The top vertical frame, which is more than 12 M wide, is attached from the centre of the frame. Wood support wedges or double wedges shall be used with the fasteners as shown in the picture. The wedges must also be placed in each corner to prevent the frame from twisting.

Patching frame to fireproof

The gap between the frame and the wall of fire-classified doors and the base of the threshold mounted on the supports shall be patched with non-combustion A1-stone wool or fire urethane Profipur Fire or Soudal Seafoam FR or Tremco Nullfire FF197 polyurethane foam. The gap can be covered on both sides with a pine list of at least 12 mm x 42 mm.

Sealing frame to sound isolation

In addition to patching, the gap between the frame and the wall of sound-proof doors and threshold shall be sealed with i.e. Profiseal Acryl, Soudal Acryrub LE or Tremco LD703 mass. Even a small opening in the seam mass causes sound leakage.

Listing the frame

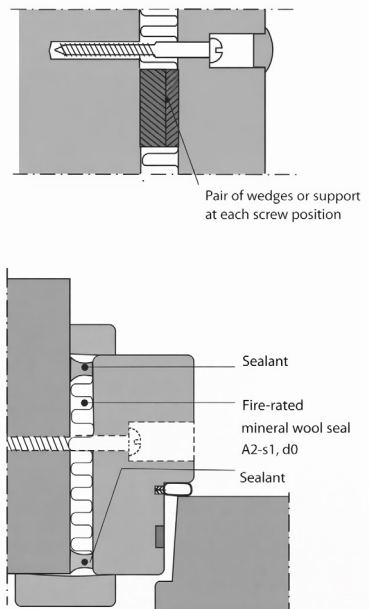
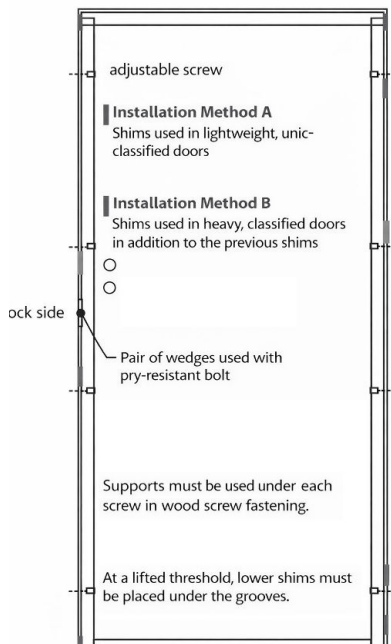
The gap between frame and the wall is usually covered on both sides with wooden lists. Check below for the door model and its recommended installation method:

- ! Separate installation instructions are always provided with the classified door, and they
- must be strictly followed!



Installing fire- or soundproof doors

Ovityyppi Door type	Nimitys Product name	Paloluokka Fire class	Rw	Aäniluokka Sound class	Asennustapa Installation
SK-430	Sisäovi / Apartment door	-	-	-	A
SK-431	Julkisen tilan sisäovi / Apartment door	-	-	-	
SK-432	Julkisen tilan sisäovi lasiaukolla / Apartment door with glass aperture	-	-	-	
SKCF-414	EI15 paloluokiteltu lasiaukollinen ovi / Fire proof Interior door	EI15	-	-	
SKCFS-410	EI15/25dB palo- ja ääniluokiteltu ovi / Fire and sound proof interior door	EI15	32 db	25 dB	
SKCFS-411	EI15/30dB palo- ja ääniluokiteltu Fire and sound proof interior door	EI15	37 db	30 dB	
SKCFS-440	Kerrostaso-ovi / Apartment door EI15/30dB (Rw37)	EI15	37 db	30 dB	
SKCS-401	dB25 ääniluokiteltu sisäovi / sound proof interior door (Rw 32dB)	-	32 db	25 dB	
SKCS-402	dB30 ääniluokiteltu sisäovi / sound proof interior door (Rw 37dB)	-	37 db	30 dB	
SK-450	Lasipieli / Sidelight	-	-	-	
SK-451	Sähköpieli / Electric side panel	-	-	-	
SK-452	Yläikkuna / Transom window	-	-	-	
SKCF-416	EI30 paloluokiteltu lasiaukollinen ovi / Fire proof Interior door	EI30	-	-	B
SKCFS-413	EI30/35dB palo- ja ääniluokiteltu / Fire and sound proof interior door	EI30	42 db	35 dB	
SKCFS-442	Kerrostaso-ovi / Apartment doo EI30/35dB (Rw 42)	EI30	42 db	35 dB	
SKCS-404	dB35 ääniluokiteltu sisäovi / sound proof interior door (Rw 42dB)	-	42 db	35 dB	



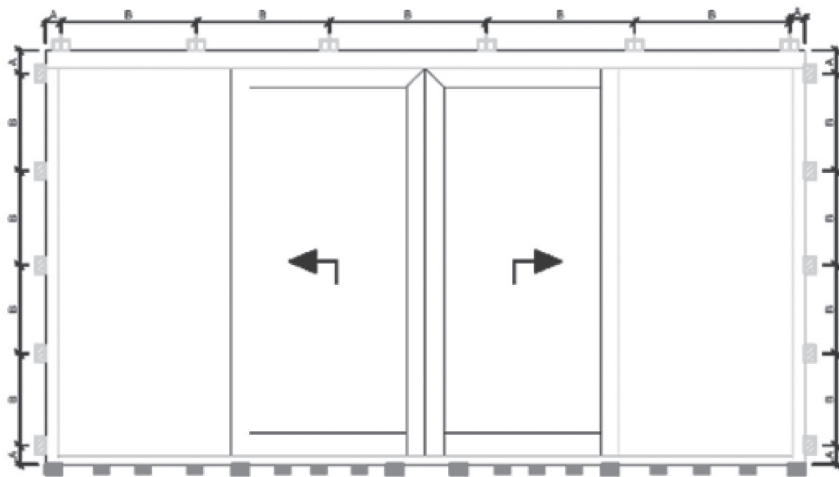
1.6 Installing sliding doors

Before starting the installation inspect the mounting opening and frame attachment points. It is essential that the installation opening in the wall is in cross dimension, that the bottom edge of the opening is sturdy and straight and can withstand the weight of the entire product. The product surrounding structures cannot lay weight to the product. Be especially careful with the upper frame. The upper side of the installation opening must be sufficiently load-bearing to prevent the weight of the building from laying weight on the frame. The installation gap at the top is 15 mm, in log houses even more (check from the log house supplier). The vertical sides of the installation opening must be sturdy for installation and have an installation gap of 15 mm. To lower the threshold height, frames can be lowered below the floor surface.

We recommend installing the sliding door as a complete product (without removing the sliding door leaf) and using the necessary lifting equipment. If necessary, it is possible to remove the sliding door leaf as follows: Remove the plastic part at the top of the door leaf and push the top-rail out of the frame and frame gap. Remove the rail (the door leaf now folds from the top). Remove the door leaf by folding it inside from the top and lifting it up from the bottom. To replace the door leaf, first put the bottom end on the rail and repeat the instructions in reverse order.

1. Check the cross dimension (1) of the installation opening and the horizontal alignment (2) at the bottom using a leveler. If necessary, place a moisture barrier on the concrete and use installation wedges.
2. When the bottom is straight, the sliding door is lifted into place. Place the frame according to the structural plans (depth). Check that the lower frame is placed horizontal, and it is straight.
3. The threshold and side frames (3) must be straight after installation.
4. Drill installation holes (4) to the vertical frames (distances according to the local instructions i.e. RT-cards in Finland). Make sure that the screws attach to the wall structure sturdy. Start attaching the vertical frame on the sliding (opening) part in both lateral and depth directions. Use installation wedges to prevent frame from twisting.
5. Then attach the second frame and check the horizontal and vertical parts. Attaching must always be carried out so that the frames do not twist (6) and the frame corner connections do not open. Ensure also that the threshold and side frames are installed exactly correct (5). Check the cross measure.
6. (If you removed the door leaf, install it as described earlier.)
7. Seal the frame and installing gap according to local instructions.
8. Finalize the installation with cover lists and water sills.

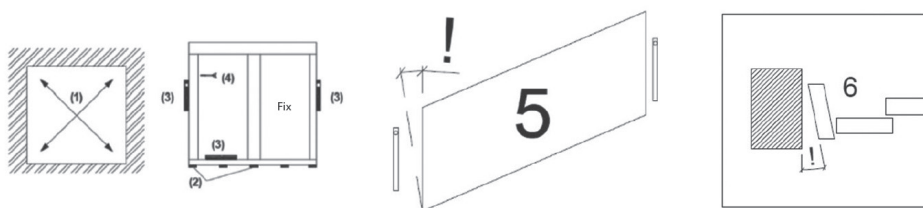
! Make sure that the threshold does not bend when stepping on it. Also ensure that the product works properly. If any malfunctions occur, do not use the product, and contact the person who installed it.



A = 150 - 200 mm
B = max 800 mm

- kannatuskiila
- ▨ tukikiila + kiinnitysruuvi
- ⊞ säätöruuvi tai tukikiila + kiinnitysruuvi

- support
- ▨ wedge + fixing screw
- ⊞ adjustable fixing



1.7 Possible errors in the installation of windows and doors

- If an error is detected, stop using the product to avoid further damage.
- Always also repair the possible damage to the paintwork.
- Re-adjust the opening parts after repair.
- Oil and tighten the hinges after repair.
- Installation errors caused by a third party and the resulting damage to products, buildings and persons are not covered by the Skaala warranty. Directly contact the person who performed the installation.

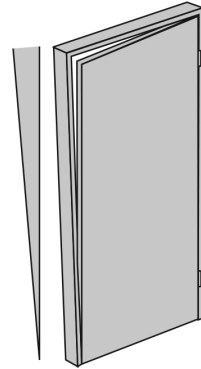
The vertical frames of the product are not vertically aligned

Disadvantage:

- Product does not close
- Gaps remain on the lock side. Lock is tight to open
- Seals do not work
- The hinges break
- Surface treatment is damaged

Fixing:

- Dismantling and re-installing the non-vertical side vertically
- Installation gap to be opened from at least 2 sides before the procedure



Vertical parallelism

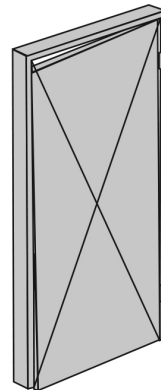
Cross measure does not match, or wedging is incomplete

Disadvantage:

- The opening parts of the product hang and close poorly.
- Errors occur in the surface treatment of the product
- Lock do not reach to the counterpart
- Seals do not work
- The hinges break
- Surface treatment is damaged

Fixing:

- Dismantling installation from three sides and re-wedging
- Increase wedging
- Check the cross dimension before fastening



Diagonal measurement error or insufficient support



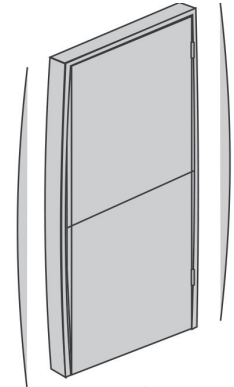
Frames are bottled or are on an hourglass shape

Disadvantage:

- The lock does not work
- The product does not open and close properly
- In encountered products, a gap remains in the middle
- The hinges break
- Surface treatment is damaged

Fixing:

- Uninstall from at least two sides
- Re-wedge
- Check the width of the nominal opening before fastening



Reveal gap

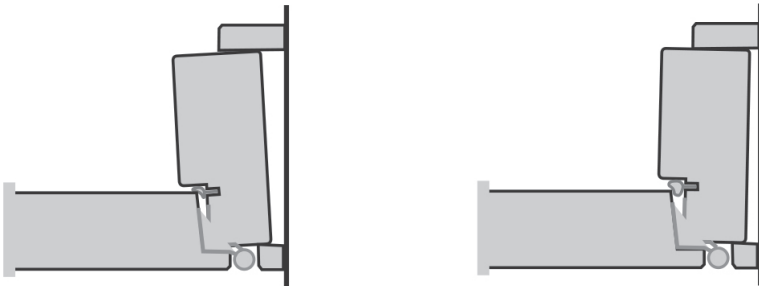
Frame is not at an angle of 90 degrees to the opening part

Disadvantage:

- Poor access to the opening section. The opening section does not fit to close
- Defects in surface treatment
- Seal not working
- Gaps between the opening part and the frame
- Gaps between encountering parts
- The hinges break
- Surface treatment is damaged

Fixing:

- Uninstalling at least from invalid pages
- Wedge check
- Check the positioning of the frame at a straight angle against the plate, or glass surface



Frame opening angle