

User manual



Frame IC & Nation IC

Idealcombi is delighted that you have chosen our windows and external doors which we hope you will enjoy for many years to come.

Idealcombi A/S is one of the largest and most well-consolidated window manufacturers in Denmark. When purchasing windows and doors from Idealcombi, you are guaranteed beautiful and durable products requiring only minimum maintenance.

Idealcombi also enjoys a reputation for using the best materials available. With one of Denmark's largest window production facilities under one roof in north-western Jutland, we combine high standards of craftsmanship with state-of-the-art production technology.

Windows and doors from Idealcombi is your guarantee of high-quality products. Idealcombi is a member of the Association of Danish Windows Manufacturers, and all our products and elements conform to the Danish Window Certification standard (DVC).

Our production is based on good craftsmanship and state-of-the-art technology. The result is quality products which, with normal maintenance, will last for many years.



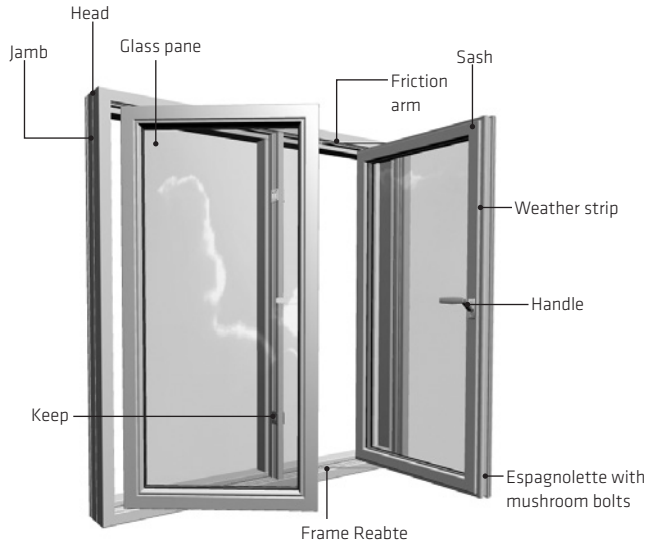
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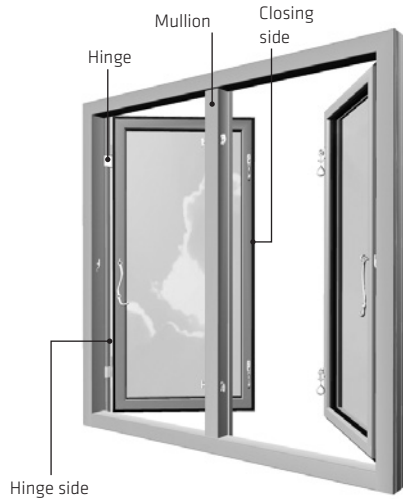
Window Construction

To make it easier to understand the technical terms used in this Installation and user manual, the terms are shown on the two general drawings below.

External view



Internal view



Danish Window Manufacturers and DVV



The Association of Danish Window Manufacturers

Idealcombi A/S is a member of the Association of Danish Window Manufacturers.

Founded in 1977, the Association of Danish Window Manufacturers is the trade organisation of approx. 65 Danish manufacturers of windows and external doors.

The association's general purpose is to safeguard the interests of the window and door manufacturing business, but it also gives high priority to consumer safety in connection with window and external door purchases.

Another essential function of the Association of Danish Window Manufacturers is the technical regulations which form the basis for quality control procedures carried out in pursuance of the Danish Window Certification body, DVC.

The technical regulations ensure the best possible conditions for the manufacture of windows and external doors, both in terms of function, life span and focus on energy and the environmental issues. For further information, please visit the Association of Danish Window Manufacturers website at: www.vinduesindustrien.dk



Danish Window Verification

All Idealcombi A/S' products are DVV-labelled.

All the Association of Danish Window Manufacturers members are affiliated with Danish Window Verification (DVV). This means that consumers are guaranteed windows or doors that have been quality inspected.

DVV is a fully independent certification body which is affiliated with the Danish Technological Institute. DVV affiliated manufacturers are subject to systematic control of their products and quality management systems twice a year.

Under the DVV programme, the manufacturers are subject to special requirements for quality assurance and management, product design, material quality and workmanship.

The Association of Danish Window Manufacturers' members include manufacturers of windows and exterior doors of wood, wood/aluminium, plastic and aluminium. Consumers can rely on all the Association of Danish Window Manufacturers' member products being DVV-labelled.

For more information about DVV and the requirements made for DVV-labelled products, please visit the DVV website: www.vinduesindustrien.dk

The warranty conditions shall come into effect upon placing of an order. These conditions shall be valid from 1 June 2002

Disposal

Elements from Idealcombi has a long life-span, but when it is time for disposal the majority of the product can be recycled. We recommend all elements are sent to a recycling centre and split into their basic elements, for best possible recycling.

Top Guided Window



The ironmongery to the head detail comes in a variety of types all with a fixed centre of rotation close to the upper edge of the sash. The window is supplied with a handle as standard.

The guide in the top has no adjustment options. Thus, the window must be installed level square, as to ensure that the guides have sufficient slip to allow them to slide



The sash, however, can be adjusted up or down slightly on the adjustment screws on the hinge.

When the window is opened, the bottom part of the sash is pushed forward, while the top part remains in position. The sash can be held in a random ventilation position by means of the built-in friction/opening restriction device in the sash's sides.



Friction can be tightened or loosened by adjusting the **friction screw** in the ironmongery on the side of the sash – to ensure easy operation and proper function, always make sure that the friction is adjusted evenly in both sides.



The friction brake does not secure the sash's position during strong winds or draughts.

Espagnolette operation

The top guided window is available with espagnolette, Fitted with a handle at the middle of the sash.

Function video: tiny.cc/ictopguided

The edge espagnolette has an adjustable mushroom bolt, locking into the keep ensuring the window against forced access to a high extend.



Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the seals.



The **keep** is fitted with both front screws and slanted screws in the frame, which improves the window's strength against intruders.

The keep has two slots, the inner slot is for closing the window, while the outer slot produces a gap at the bottom of 10-20 mm for a night ventilation facility which can be securely locked in position.

Top Swing Reversible Window



With the top swing ironmongery, the window sash can be pushed out and turned around 170° outside the frame, so the outside of the glass can be cleaned from the inside.

The sash is operated by a handle at the centre of the bottom sash which activates an espagnolette that engages with the keep in the frame when the sash is closed. The sash may be inverted but has no adjustment functions. Thus, the window must be mounted precisely, as to ensure perfect function.



The sash, however, can be adjusted up or down slightly on the adjustment screws on the hinge.

The espagnolette has an adjustable mushroom bolt, locking into the keep, and effectively secures the window against forced access.



Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the sealing.



The keep is secured with both front screws and slanted screws in the frame, which improves the window's strength against intruders.

The keep has two slots, the inner slot is for closing the window, while the outer slot produces a gap at the bottom of 10-20 mm for a night ventilation facility which can be securely locked in position.

Function video: tiny.cc/icReversible



The top-swing window is equipped with an integrated child safety lock which blocks the sash when it is opened approx. 100 mm. Further

opening of the window is done by deactivating the child safety lock and the sash can now be turned 170° outside the façade of the

house, so the outside of the glass can be cleaned from the inside.

The sash can also be opened to a random angle and secured by the built-in friction in the ironmongery. Note that the position of the sash cannot be secured during strong winds or draughts.

Side Hung Window



Side hung windows are hinged in the jamb of the window with powder coated hinges.



Casement catches may be adjusted by tightening or slacking the lug on the thread plate on the frame.



The hinges may be adjusted using a hinge straightener, if the sash is sagging.



Never open a side hung window for the purpose of airing the room unless it is secured by either a window stay or a safety catch. The sash may be damaged by hard impact on the wall with wind or draft.



Casement catch

The side hung window is also available with adjustable hook/cam, holding the frame in closed position. The window is held open by an internal storm rod/hook, fitted at the side of the hinge.



Activation with espagnolette

The side hung window is available with espagnolette, mounted with a handle in the closing side of the frame. The espagnolette has an adjustable mushroom bolt, locking into a keep, ensuring the window against intrusion.



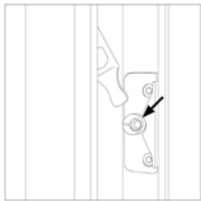
Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the seal.

The keep is mounted with both front screws and angled screws in the frame, which improves strength and security.



The keep has two slots, the inner slot is for closing the window, while the outer slot produces a gap at the bottom of 10-20 mm for a night ventilation facility which

can be securely locked in position




When closed, the sash is held in position by the sash support which can be adjusted to avoid the sash from sagging.

The side hung window is available with either a handle activated- or a friction brake.



Handle activated brake makes it possible to hold the frame in any position, from about 15 cm to 90°. To lock the frame in ventilation position, turn

the handle to closed position, while the window is open.



Never try to close the window when the handle brake is activated.




Friction brake makes it possible to hold the frame in any ventilation position, but do not provide a lock of the ventilation position. The friction

brake may be adjusted by tightening or loosening the friction bolt in the slider on the rail of the brake.

Function videos:

tiny.cc/icSideHung

tiny.cc/icSideHungEspag



Never use the windows / external doors as structural supports for any part of the building.

Side Guided Window



Frame with build-in "easy-clean hinge" windows has the advantage, that window cleaning may be done from inside. Hinges are hidden in the groove and has built-in adjustable friction. With the side mounted fitting, the frame may be opened 90° producing an opening of around 10 cm at the back edge of the frame - enough to reach out and clean the outer face.



The side guided ironmongery has only very limited adjustment options, the sash can be adjusted slightly laterally by the adjustment screws on the ironmongery.

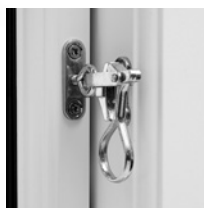


On larger opening, the frame is controlled by the built-in friction in the side mounted fitting. The friction may be adjusted by tightening or loosening the

friction bolt in the slider on the rail of the fitting below.

Casement catch

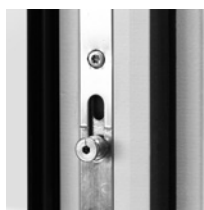
The side mounted window is also available with adjustable hook/cam, holding the frame in closed position.



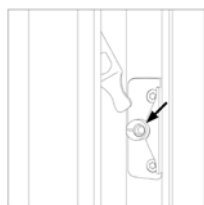
Casement catches may be adjusted by tightening or slacking the lug on the thread plate on the frame.

Activation with espagnolette

The side guided window is available with espagnolette, fitted with a handle in the closing side of the sash. The espagnolette has an adjustable mushroom bolt, locking into the keep, and ensuring the window against forced access.



Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the sealing.



When closed, the sash is held in position by the sash support which can be adjusted to avoid the sash from sagging.



The keep is mounted with both front screws and slanted screws in the frame, which improves the window's strength against intruders.

The keep has two slots, the inner slot is for closing the window, while the outer slot produces a gap of 10-20 mm for a night ventilation facility which can be securely locked in position.



The friction brake does not secure the sash's position during strong winds or draughts.

Function video: tiny.cc/icSideGuided

Terrace Door



Terrace doors may be inward or outward opening doors, designed as frame doors with glass and perhaps panels.

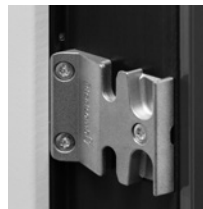


Terrace doors are hinged in the side jamb with powder coated hinges. The hinges may be adjusted in height with an adjustment screw on the frame part.

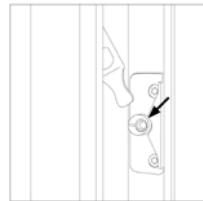
Terrace doors are available with espagnolette fitted with a handle in the closing side of the door leaf. The espagnolette has an adjustable mushroom bolt, locking into the keep, and ensuring the door against forced access.



Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the sealing. The lock plate is mounted with both front screws and slanted screws in the frame, which improves strength and security.



The keep has two slots, the inner slot is for closing the window, while the outer slot produces a gap of 10-20 mm for a night ventilation facility which can be securely locked in position.



When closed, the sash is held in position by the sash support which can be adjusted to avoid the sash from sagging.

Terrace doors are available with either a handle activated brake or a friction brake.

Video handle operated brake:
tiny.cc/icHandleBrake



Handle activated brake makes it possible to hold the frame in any position, from about 5 cm to 90°. To lock the frame in ven-

tilation position, turn the handle to closed position, while the door is open.



Never try to close the door when the friction brake is activated.



Friction brakes make it possible to hold the sash in any ventilation position, but do not provide a lock of the ventilation position.

The friction brake may be adjusted by tightening or loosening the friction bolt in the slider on the rail of the brake.



The friction brake does not secure the sash's position during strong winds or draughts.

Double terrace doors are available with edge espagnolette and handle on both door leaves.

Video - Outward opening terrace door:

tiny.cc/icOutTDoor

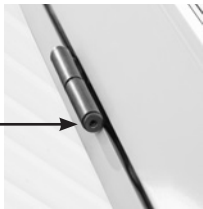
Video - Inward opening terrace door:

tiny.cc/icInTDoor

Front Door and Stable Door



Entrance doors may be inward or outward opening. Entrance doors may be designed as frame doors with glass and perhaps panels or as flush doors.



Entrance doors are hinged in the side with powder coated hinges. The hinges may be adjusted in height with an adjustment screw on the frame part.



Entrance doors are available as standard with 3 locking points espagnolette. The espagnolette has the lock box in the middle of the frame and

heavy duty hook bolts, mushroom bolts and safety locking plate at the top and bottom. Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the sealing in the closing side.

The keep is mounted with both front screws and slanted screws in the frame, which improves strength and security.

The lock box has a latch and heavy duty hook bolts and safety locking plate.



On operating the handle, all closing points are released and the door may be opened. The lower and upper closing points are activated by lifting the handle up – then the door may be locked.

Video - Ineard opening Front Door:

tiny.cc/iclnFront

The door can be delivered with another type of espagnolette, like for electronic systems or other options.

The door can also be delivered with 1-point locking. Please be aware, that this solution is not covered by any warranty.

Double entrance door is delivered with handle on both leafs. The slave leaf has an edge espagnolette with two end bolts.

Entrance stable doors are only produced as outward opening.

The two door halves may be opened as one door, when the handle on the lower door is turned to open position – before activating the handle on the upper door.

The door may only be locked with key, when the handle on the upper door has been lifted upwards.

Video - Outward Opening Front Door:

tiny.cc/icOutFront

Video - Stable door:

tiny.cc/icOutStable

Sliding Door



The sliding door consists of a sliding part and a fixed part.

To open the door, turn the handle 180° all the way up, whereby the door is released from the frame and protrudes 8 mm outward. It can then slide freely past the fixed pane.

Video - Sliding Door Handle:

tiny.cc/icSlidingDoor

It is not possible to lock the sliding door in an open position. If the handle is turned to closed position while the door is open, there is a risk of damaging the top and bottom of the sash.



On the guide track at the top there is an end stop to ensure the door is not opened too far.

On the closing side the door has a minimum of 4 locking points with keeps and mushroom bolts. The mushroom bolts can be adjusted for correct seal against the frame.



There is at least three locking points on the mullion. When the handle is turned to closed position the mushroom bolts locks into the keeps to ensure a tight seal

against the frame.

Shutter Element



The external louvre panel is fixed, and the internal hatch may be opened sideways or bottom hinged inward opening.

Right behind the external shutter is a mosquito net, protecting against insects entering the room.

The hatch is available with espagnolette, mounted with a handle in the closing jamb. The espagnolette has an adjustable mushroom bolt, catching in the keep.



Mushroom bolts may be adjusted from time to time to increase or reduce the pressure on the sealing.



On a side hung hatch, the handle activated brake makes it possible to hold the sash in any position, from about 15 cm to 90°. To lock the board door in ventilation position, turn the handle to closed position, while the hatch is open.

On a bottom hinged hatch, the sash is controlled by the built-in friction in the bottom mounted fitting. The friction may be adjusted by tightening or loosening the friction screw in the glider on the rail of the fitting - and it is important that the friction is the same in both sides for the handling and function.



Never try to close the window when the handle brake is activated.

Maintenance, Cleaning and Lubrication

Maintenance, general

Windows and doors from Idealcombi require minimum maintenance. Under normal conditions, maintenance can be limited to regular cleaning of exterior surfaces with lukewarm water and a neutral cleaning agent to remove dirt from the surface. Apart from this, moveable ironmongery parts must be lubricated as required - **at least once a year**. Keeping hinge sliders, guides, weatherstrips, etc. free from dust and dirt will ensure smooth operation in years to come.



Cleaning, general

The outer sash and frame surfaces are affected by the surrounding environment such as city and industrial areas with high traffic intensity and air pollution and coastal areas with salty air which soil and affect the surface more than clean country air.

Cleaning should be done on a regular basis and **at least twice a year**, maybe in connection with window cleaning. Wash sash and frame surfaces in lukewarm water with a neutral cleaning fluid such as car shampoo and wipe surfaces and edges with a cloth.



Lubrication, general

It is important to lubricate and maintain all types of ironmongery to ensure easy and smooth operation and function of your windows and doors and to uphold the warranty on the elements.

Lubrication and maintenance frequency depend on the use and the effect weather

conditions, pollution, etc. have on the ironmongery.

We know from experience that ironmongery used in for instance city and industrial areas, areas with high traffic intensity and coastal areas with salty air should be lubricated and maintained more often than ironmongery in a less harsh environment.

Important

All ironmongery is lubricated at the factory. But we would like to stress that the person/contractor responsible for the installation must ensure that all moveable parts, with the exception of friction parts/hinge sliders, are lubricated with a suitable lubricant before they are delivered to the client.

Generally, all moveable parts on hinges and closing/locking ironmongery should be lubricated as required, however, **at least once a year**.

General information about stainless steel handles and fittings

As standard, our stainless steel handles and fittings are made in matte brushed AISI 304 stainless steel which is well suited for modern construction work and provides optimum corrosion protection. Our products can be used indoors and outdoors where they will contribute with optimum function and quality.

Maintenance, Cleaning and Lubrication

Material and surface

Stainless steel is extremely suited for applications with requirements for high wear resistance, excellent hygiene and good corrosion resistance.

Stainless steel forms a thin, protective surface oxide film which provides for a dense, durable surface with high mechanical load resistance.

Despite containing e.g. nickel, stainless steel is considered to be a non-allergenic material when used for door handles, fittings etc. A number of sub-components may be made from other materials, such as polymer, brass or aluminium, all of which have been used with due consideration to the optimum function, manufacture and durability of the product.

Cleaning and maintenance

Regularly check the function of fittings, retighten any loose fixings and clean product surfaces. In areas and environments with elevated impact from sulphur and nitrogen oxides, and in coastal environments with chloride condensation, the protective oxide layer on stainless steel may corrode, oxidising the surface and possibly forming reddish brown stains that resemble rust formations. However, this corrosion is only superficial.

The discolourations can easily be prevented or removed through normal surface cleaning. Use hot water, mild detergent, soft brushes or synthetic sponges for cleaning. In special cases, you may use custom-made polish for stainless steel. Never use scouring pads,

steel sponges or steel brushes as these may damage the surface! The product is only covered by warranty if correctly installed and maintained.

Environment

If used alone, stainless steel emits no hazardous vapours or metals. Generally, stainless steel is not classified as environmentally dangerous waste, but because the material contains heavy metals, the products must be disposed of according to the regulations for industrial iron/metal waste, which ensures optimum sorting and recirculation.

Specific lubrication instructions



Side hung hinges

Hinges on side hung windows and doors should be lubricated with acid-free oil during repeated activation. We recommend lubrication with acid-free grease. It will, however, be necessary to lift the sash off the hinges and apply the grease directly onto the hinges.



Top guided, side guided and reversible

Hinges, side bolts and keeps on tilt and turn windows and doors should be lubricated with acid-free oil or acid-free grease during repeated activation. Scissor ironmongery and friction brake must be lubricated in all joints during repeated activation, so that the lubricant reaches the moveable arms.

The joints should be lubricated on the outside and in the crack between the arms. Use an easily penetrating acid-free oil followed by a

long-lasting acid-free grease in spray form. Sliding surfaces, hinge sliders and sliding blocks should be maintained in a clean state to facilitate sliding.

It is possible to apply stearin or a dry lubrication product on the sliding surfaces to facilitate friction. Never use oil on these surfaces as it binds dust and dirt to the surface.

For vertical rails on reversible windows, the lubrication must be Shell Cassida RLS 2.



Sliding surfaces

All sliding surfaces are made from anodised aluminium and must be cleaned regularly depending on climatic conditions and the degree of air pollution. We recommend that the surface is wiped with a cloth or sponge. Never use emery cloth, steel wool, soda or other cleaning or abrasive agents containing alkali or acid on these surfaces. Only use neutral cleaning fluids such as car shampoo.

Espagnolettes

These are lubricated using acid-free oil or acid-free grease on spray in the lock box and on bolts and locking plate. Lubrication must be done with repeated activation.



Friction brakes

Friction brakes are not normally lubricated, but always make sure the hinge slider is clean. If necessary, a handle activated brake connected to the espagnolettes on

side-hung windows and terrace doors can be lubricated with a dry lubrication product.

Lubrication tools

Lubrication can be made with an oil can, a syringe or a spray can with a thin pipe. For further advice on lubrication, please call Idealcombi's Service Department on tel.: **01582 860 940**



Inspection of weatherstrips and glazing gaskets

The condition of weather strips and glazing gaskets should be inspected concurrently with the annual lubrication.



Weatherstrips

Our weatherstrips are made from EPDM rubbers and several of them in a combination with a solid foot and a soft cellular sealing surface.

The weatherstrips do not require any special maintenance but should be kept clean and free of dirt. This is done by wiping them off once a year with lukewarm water and a neutral cleaning fluid using a cloth. We recommend brushing the weatherstrips with a silicone stick to minimize friction during operation.

Also check that the weather strips are positioned and secured correctly and that they have maintained their sealing function.

Maintenance, Cleaning and Lubrication

All weatherstrips are loosely fitted in a perimeter groove making them easy to remove and install on most element types if they are damaged and need replacement – or in connection with surface treatment maintenance.



Never paint weatherstrips or brush them with wood preservatives/oils.

Glazing gaskets

Our glazing gaskets are made of EPDM/cellular rubber and require no special maintenance other than being kept clean and free of dirt as described under weatherstrips. For further advice, please call Idealcombi's Service Department on tel. **0 1582 860 940**.



Maintenance of powder coated aluminium surfaces

The outer aluminium covering is yellow chromed as standard and surface treated with a polyester powder coating, Corro-Coat PE-F from Jotun Powder Coatings.

This treatment offering a very strong and weather-resistant surface requiring only limited maintenance. In practice this means cleaning it a couple of times a year with a soft brush or cloth and lukewarm water with a neutral cleaning fluid such as car shampoo.

Minor damage to the surface treatment will not affect the element's durability, since a

natural oxide film quickly forms on exposed aluminium, preventing corrosion and white rust attacks.

However, for cosmetic reasons it may be desirable to repair such damage, and Idealcombi's service department would be happy to provide advice and guidance.

For further advice, please call Idealcombi's Service Department on tel. **0 1582 860 940**



Maintenance of anodised surfaces

The outer aluminium covering on our products in wood/aluminium can alternatively be supplied with anodised treatment. Once the alu-profiles have been chemically prepared and cleaned thoroughly, they undergo an electrolytic process. Direct current is applied to the profiles which become anodised, thus turning the surface metal into oxide. This process continues until the desired film thickness has been achieved.

An anodised surface treatment provides excellent corrosion resistance in most environments. It also offers a very smooth, dirt repellent surface along with the ability to preserve what we call a "new" appearance.

Anodised aluminium profiles are almost maintenance free provided that the surface is cleaned a couple of times a year with a soft brush or cloth and lukewarm water with a neutral cleaning fluid such as car shampoo.



General facts about surface treatments on wood profiles

Resin lumps and discolouration from knots

All wood profiles from Idealcombi are quality optimised, finger jointed/laminated ensuring elimination of at least 95% of all knots, star shakes and other defects. This gives the wood profiles greater stability and significantly reduces problems such as knot discolouration, yellow blotches and resin lumps in the surface treatment.

Please bear in mind that wood is a natural material, and as such resin lumps may form underneath the paint and discolouration from the wood treatment may occur – even with the best surface treatment.

Small droplets of resin penetrating the paint can easily be removed with rubbing alcohol. If small lumps of resin form underneath the paint, leave them for 2-3 years or until the resin has penetrated the surface treatment, then remove them with rubbing alcohol or, in more serious cases, scrape and sandpaper them away before applying new paint. Yellow discolouration, which can normally be removed with rubbing alcohol, often occurs on light colour finishes.

The above mentioned problems are often more pronounced during hot summers (tropic climates) and may occur rapidly particularly on facades facing south.

F of the technical regulations which deal with "Expected outcome of industrially surface treated timber elements" – page 27.



Maintenance of surface treatment – Timber



When cleaning the wooden parts with lukewarm water and a neutral cleaning fluid, check for any damage or wear to the surface treatment. If a degraded surface treatment needs restoration, we recommend the following procedure:

Cleaning

Thorough preparatory work is decisive for the durability and adhesion of the treatment. First, wash thoroughly with water and ammonia or a strong cleaning agent (not dish soap). Scrape off loose paint and remove any resin with rubbing alcohol.

Priming

Exposed wood facing the outside environment must be primed with a clear wood preservative or priming oil. When dry, sand all surfaces and edges lightly with sandpaper and remove the dust with a brush or cloth.

Finish

Finish with two coats of paint of the desired colour. We recommend that you use the same water dilutable product as the elements were originally treated with.

Maintenance, Cleaning and Lubrication

Piece of advice

- Always read the instructions on the paint thoroughly before you begin painting.
- All surfaces and rebates must be dry and free of dirt before you begin.
- Weatherstrips and movable parts of hinges and handles should not be painted. Please note that the weatherstrip is fitted loosely in a groove, making it easy to remove before you paint and to refit when the paint is dry.
- DVV's guarantee label must not be painted.
- Use masking tape to facilitate painting along edges.
- Always use a good brush with a proper width.
- Always have a cloth and plastic bag at hand. Use the cloth to dry off incorrect strokes and drips from the brush. Use the plastic bag to wrap around your brush if your work is interrupted for a short period of time.
- Remember that hinged sashes must not be closed before the paint is completely dry

Expected outcome of industrially surface treated timber elements

Manufacturers associated with DVV use surface treatment on wood elements which, as a minimum, provide the following results:



We advise you not to use pure plastic paints as the weatherstrips between frame and sash may contain synthetic rubbers, which have a tendency to stick to such surfaces.

| | Expected result | Function class | Comments |
|-------------------------------------|-----------------|----------------|---|
| Visible surfaces of closed elements | DLC** | III | Mean value of coating thickness > 60 mm (80 mm) |
| Visible surfaces of open elements | DG** | III | Surface must be non-absorbant |
| Nonvisible surfaces (against wall) | | | No requirements |

| References: | Examples: |
|-------------|-----------|
|-------------|-----------|

**Function class III
Parts of buildings facing south or west, affected by varying levels of humidity, pollution from traffic or other aggressive impacts. See also supplementary description of outcome.

**Covered, closed and smooth surface (DLCU)



Surfaces, edges and rebates are of a uniform colour and gloss and feel smooth to the touch. Rough spots originating from the base may occur. Pores, holes, cracks and joints are closed, but not necessarily filled out.

*** Covered and smooth surface (DGU)



Surfaces, edges and rebates are of a uniform colour and gloss and feel smooth to the touch. Rough spots, open pores, holes, cracks and joints originating from the base may occur.

Supplementary description of outcome

Wood is a natural material and therefore often very heterogeneous. Variations in structure and gloss, star shakes and other variations are normal such as irregularities around knots where partial peeling, blistering and wrinkling may occur. Discolouration from knots and finger joints may occur, especially on light colour finishes. Knots may be plugged or filled with a suitable filler, but they will always be visible.

Other colour variations such as yellow lines/surfaces may occur. Other irregularities such as lumps of resin may also appear in the surface treatment. The lumps may be randomly spread out or situated along the wood grains. The resin may also penetrate the coating and form little droplets on the surface. After a while, when the droplets have crystallised on the surface, they can be lightly brushed or scraped off without damaging the surface treatment.

Wood elements with a high content of resin may occur. In such cases, larger quantities of resin may seep through. Production is carried out industrially providing benefits such as uniform, high quality treatment of all surfaces.

All surfaces have been treated, but a uniform coating thickness cannot be expected.

Maintenance, Cleaning and Lubrication

Thermal Glazing

Internal condensation of glazing units

Double glazing units may be subject to internal condensation which is determined by:

- The moisture produced by human activity in the house
- Heating of the room
- Ventilation conditions.

If condensed water from a double glazing unit runs into the sash/frame construction it may lead to the formation of mould fungus or, at worst, decay fungus on the wood. There are a number of things/conditions which may cause condensation in the house. Notice especially the following::

- That new windows are considerably more airtight than old ones. When new windows have been installed, the house will need more ventilation than before.
- That newly-built houses must be ventilated more often than old ones. It may take more than a year to dry a new house properly. This is also the case when extensions have been made or the house has been renovated.
- That an adult person – or a medium-sized dog – releases approx. 2 litres of water per day.
- That cooking, bathing, laundering and drying from two adults and two children can easily produce 3-5 litres of water per day.
- The problem with humidity increase when the room temperature is lowered and decrease when the room temperature is raised. Even lowering of the temperature for a short period of time (e.g. at night) can cause the formation of condensed water on the glass.

- That heavy curtains and broad window boards/frames can make the air stagnate at the glass causing cold and moist air to form condensate on the glass.
- That insufficient ventilation causes a bad indoor climate which may lead to coughing, headaches, smarting eyes, rashes and respiratory allergies.
- That a house which has been subject to a high level of humidity for a period of 8 to 14 days should be ventilated thoroughly. This is done by having 2-3 windows open in their ventilation position day and night and, at the same time, raising the temperature 4-5° C above normal for 8 to 10 days. You can also leave your extractor fan on in the kitchen day and night
- That on days with calm, sunny weather, the sun will supply more free heat than the heat that disappears during normal ventilation
- That it is a balancing act to find the perfect equilibrium between saving energy and minimising humidity problems

External condensation of double and triple glazing units

It is not until in recent years, that we have seen exterior condensation (dew) on low energy units. It arises when emissions to the atmosphere causes the temperature on the exterior layer of glass to become lower than the exterior air's dew-point temperature.

This typically occurs in periods when the relative air humidity is near 100%. Exterior condensation of low-energy units typically occurs in the months of autumn and spring, usually at night and in the morning, until the condensation is removed by sun and air.

Thermal Fracture | Warm Edge

It can be especially noticeable during the months of April and September. Exterior condensation is usually the result of energy saving units having a very low U-value.

The primary reason is that the heat transfer from the interior to the exterior side of the glazing unit is so low that the temperature of the exterior surface becomes lower than that of ordinary double glazing units. As standard, Idealcombi A/S uses energy class A glass with low emission coating and a U-value of 1.1. You cannot prevent the physical phenomenon "exterior condensation", but you can make some safety precautions to reduce the extent and inconveniences of it.

Thermal rupture of glazing units

When constructing windows and mounting the double glazing units in the sash, Idealcombi A/S makes allowance for the glass to "work" as a natural part of temperature fluctuations.

If a double glazing unit is exposed to uneven heat exposure it may cause thermal rupture of the glass. Uneven heat exposure can be caused by e.g. deep shadows, adhesion of (especially dark coloured) streamers, posters or signs, painting of the glass or parts of it, or adhesion of plastic foil or sun filters.

It can also be caused by placing heat-reflecting materials close to the glass or if heavy curtains, blinds or large plants obstruct proper, even heating of the glass. Under such conditions, double glazing units may absorb so much solar energy that tensions in the glass can cause a very characteristic rupture.

To avoid thermal rupture under such conditions it is necessary to use pre-stressed glass for the double glazing unit. Defects caused by the above-mentioned conditions are not covered by the warranty of the glass supplier and Idealcombi A/S.

Warm edge

Warm edge is a thermoplastic spacer that minimises the thermal bridge at the edge of the pane, thereby contributing directly to reducing the window's total heat loss. This is not only good for the environment and your heating bill, it also increases the temperature along the edge of the pane, thereby reducing the risk of internal condensation forming in the rim zone. Idealcombi uses warm edge as standard on all units and the dark spacer gives the window an attractive and harmonious look

1. WINDOWS AND DOORS

1. 1 This warranty is given by Idealcombi A/S. It does not in any way restrict or change any of the rights you may otherwise have vis-à-vis your supplier/contractor or Idealcombi A/S as provided by a contract or general legislation.

2. If you, within a period of 10 years from Idealcombi's time of delivery, complain about any defects in manufacture or materials, this warranty shall give you the rights described in item 3 against Idealcombi A/S. The time of manufacture will appear from the label on the product. If requested, you will be responsible for providing documentation for the time of delivery.

3. Provided that you make a legitimate complaint about defects in manufacture or materials within the period mentioned under item 2, Idealcombi A/S shall be obliged to repair the defect or, if necessary, supply a new product at its own expense. Idealcombi A/S does not, however, under this warranty cover the costs of removing and installing, just as any subsequent works arising from such replacement of a product are not covered by this warranty. If the product is no longer in production when the complaint is made, Idealcombi A/S shall be entitled to supply another similar product instead. If a defect in manufacture or materials can be properly corrected by repair/partial replacement, Idealcombi A/S may choose this solution instead. In such case the repair work/partial replacement will be made at the expense of Idealcombi A/S.

4. This warranty does not give you any rights other than those described under item 3.

5. If you wish to complain about defects in manufacture or materials, the complaint must be made within a reasonable period of time after the defect has been or should have been detected. Complaints can be made to Idealcombi A/S or to the contractor/dealer who has supplied the product.

6. This warranty does not apply in case the claimed defects in manufacture or materials are caused by faulty installation, missing or insufficient maintenance or faulty operation. Please see Idealcombi's Installation and user manual. As regards the window's wood components, which have received surface treatment at the factory, please take special notice of the Installation and user manual and "Expected outcome of surface-treated wood components" (Appendix 14 of the technical regulations of The Danish Window Manufacturers' Association. You can order the regulations from Idealcombi A/S). It is impor-

tant that the exterior window surfaces are washed twice a year to keep the properties of the surface treatment.

7. This warranty does not cover defects which are the result of circumstances other than normal application and use. Idealcombi A/S is not liable under this warranty for defects which are caused by faulty storage, transportation, installation, etc. by a dealer/contractor.

8. This guarantee applies solely to products purchased and installed in England, Wales, Scotland, Ireland, Isle of Man, Orkney and Shetland Isles, Channel Isles and Iceland.

2. GLAZING UNITS

For a period of 10 years calculated from the time of manufacturing (as stamped into the unit), Idealcombi A/S warrants that double glazing units mounted in doors/windows remain free of dust and mist inside the units. The warranty shall apply on the condition that:

- The unit is mounted at the factory or by one of Idealcombi's fitters.
- The time of manufacture (month and year) appears from the unit's spacer bar.
- The unit has been properly cleaned and protected during the construction period.
- The glass has not been damaged on the outside by e.g. bumps, impacts, movements of adjacent constructions and the like.
- There are no defects caused by frost bursts, other thermal impacts or chemical impacts on the glass.
- The unit has not been subject to subsequent treatment upon delivery such as sanding, sandblasting, etching, painting, affixing or other forms of surface treatment
- Sash and frame have been subject to proper, regular maintenance.

For glazing with "attached" and/or "built-in" accessories, such as lead glazing, alarm systems, blinds etc. there is given no fixed warranties beyond 1 year. Other warranties must be treated individually.

3. ELECTRICAL EQUIPMENT

A 1-year warranty is granted for all electrical equipment.



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