FAKRO®

PRODUCT CATALOGUE **2014**

WE CHANGE THE VIEW

TAKING FROM

this experience we create a better, more perfect future. When designing our products, we take into account the values that shape our lives. Setting the highest standards we try to mobilise others. Changing the point of view we introduce innovations that help make life more comfortable. With our quality products, life gains an edge.

WE CARE ABOUT NATURE

One of the major objectives to be taken into account when designing products is their impact on nature. For this reason, the FAKRO products are extremely energy efficient and safe, whilst also contributing to the conservation of exhaustible natural resources of the Earth. Our environmental responsibility is not only the acquisition of raw materials, mainly wood acquired from well-managed forests which is used in the production of natural, organic products but rational waste management as well.

WHAT DISTINGUISHES US

MAINTENANCE FREE VENTILATION
Always fresh air in the loft space.

Given the tightness of joinery used in modern construction, problems seem to arise with proper ventilation, which in turn can cause condensation in the room. In order to reduce this phenomenon, FAKRO windows use a number of different air inlets:

V40P

V40P automatic air inlet with a capacity of 52m³/ h (value without filter in the profile, with filter at 40m³/h) at a pressure difference 10Pa depending upon window width. By automatically adjusting the volume of flow channel, the air inlet secures the optimum amount of air into the room providing a healthy climate in the attic and saving heat and energy cost.

V35

Efficient air inlet V35 – has a manual adjustment of air flow. When fully opened the air inlet provides fresh air up to 43m³/h (without filter in the profile, with filter up to 35m³/h) at a presure difference of 10 Pa, depending on the width of the window. With increased efficiency, indoor air humidity is reduced effectively, and thus the condensation effect is limited.

V10

Air inlet V10 - has a manual adjustment of air flow. When fully opened this inlet provides fresh air up to 9m³/h at a pressure difference of 10Pa. V10 air inlet should be used only in areas where unassisted gravitational ventilation works well.
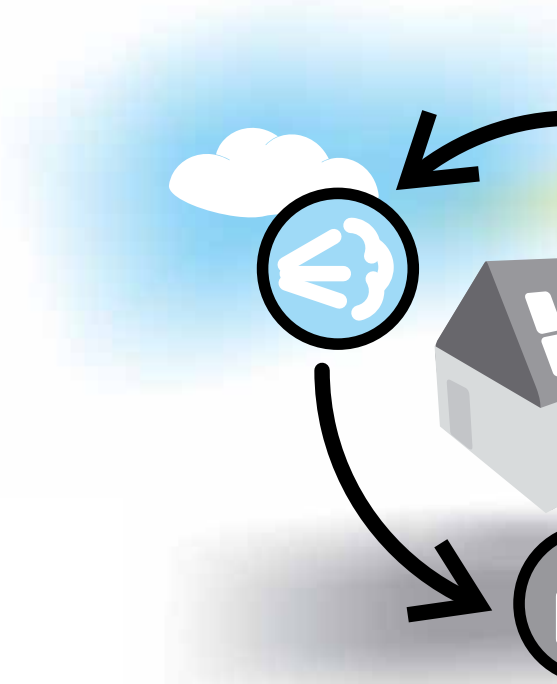
INCREASED SECURITY
In your home you want to feel safe.

The glass in the roof windows must withstand hail storm or accidental fall of tree branches. FAKRO windows glazing units are perfect protection against this potential threat as they are equipped with exterior toughened glass.

It is also important that the roof windows special design will protect against an accidental opening while stepping on the sash. Such solutions also significantly increase windows' resistance against burglary. Most of the roof windows have a

special FAKRO re-inforcement system TopSafe, consisting of:

1 innovative installation system of specially shaped hinges,
2 metal element strengthening the locking system,

3 metal slat, making it difficult to break the window open with the help of tools.

AMPLE NATURAL LIGHT
Natural light is beneficial.

Design of FAKRO roof windows provides appropriate illumination of room within the loft space. Specially shaped profiles of the frame and sash as well as air inlet location in the upper part of the frame allows for the influx of high amount of natural light.

Another important issue is the installation height of the window. Placing the handle in the bottom of the sash ensures correct roof window installation according to DIN, which indicates a minimum height of 220cm above the floor for the upper edge of the glazing. With such installation the handle is always within the reach. Higher installation of windows means that even tall people can comfortably stand at the open window. This higher installation height also ensures that it complies with building regulations and provides free, unobstructed views to the outside.
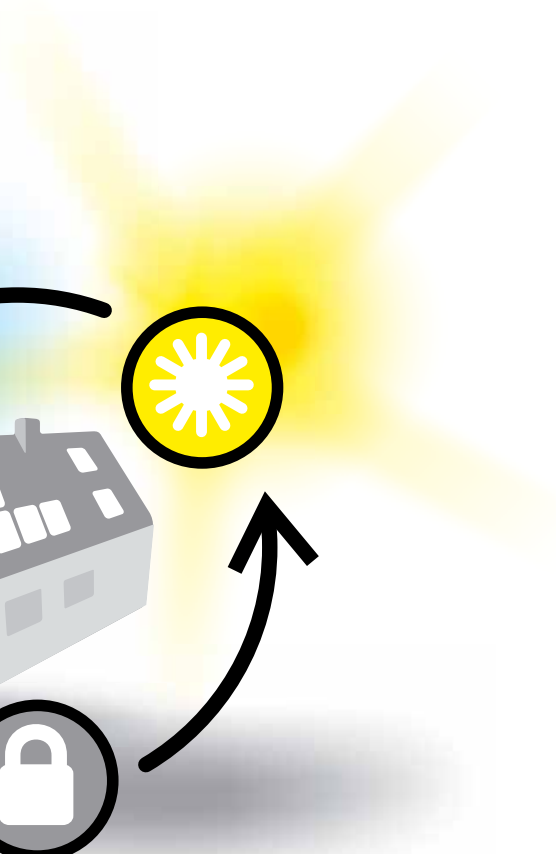
HIGH ENERGY SAVINGS
Heating does not have to be expensive.

In winter, energy-efficient roof windows reduce energy consumption. Roof window means not only light but also passive acquisition of heat in winter and its retention inside the room, thanks to an energy-efficient structure. FTT Thermo U8 window with $U_w = 0.58$ W/m²K, delivered and installed with EHV-AT Thermo flashing is the most efficient window on the market.
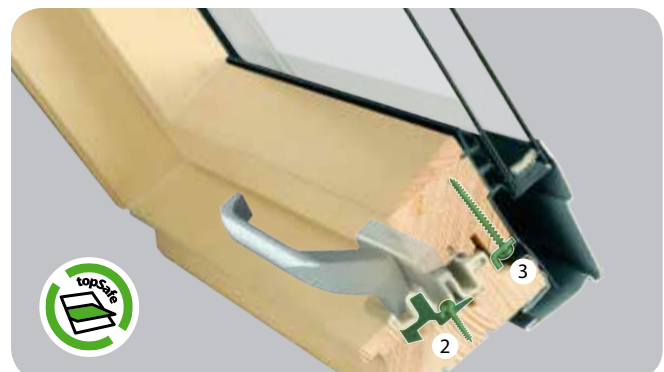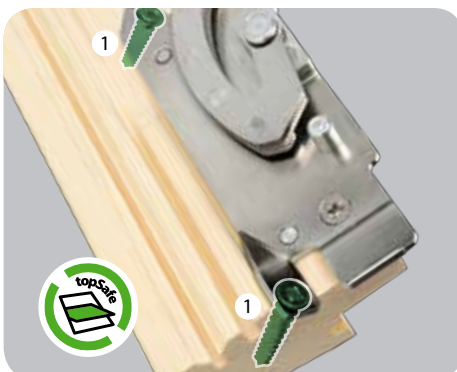
FTT U8Thermo
U_w **0.58** W/m²K
THE WARMEST ROOF WINDOWS ON THE MARKET
ASSEMBLED TOGETHER WITH EHV-AT THERMO FLASHINGS

topSafe SYSTEM

➜ WINDOW DESIGN

The basic raw material for the manufacture of windows is highest quality pine wood, glued in layers. The wood is vacuum-impregnated and painted with ecological acrylic lacquer in natural colour.

For rooms with periodically elevated humidity levels (kitchens, bathrooms), there are wooden windows with three coats of polyurethane varnish ideal for creating a durable and smooth finish in white on the surface of the frame.

The windows may also have aluminium-plastic structure. Multi-chamber PVC profiles in white are re-inforced with steel cores. Material does not absorb moisture, the window is durable and resistant to corrosion. The windows are also available in golden oak or pine-coloured veneer. Designed for rooms where elevated humidity level stays for longer period (bathrooms, laundry rooms). FAKRO PVC profiles are in Class A - the highest, made according to European standard EN 12608.

GLAZING UNIT

TECHNICAL SPECIFICATION

Ug (according to EN673)

NUMBER OF CHAMBERS

EXTERNAL TOUGHENED GLAZING

EASY MAINTENANCE LAYER

SPACER

INNER LAMINATED GLASS

INERT GAS

FORWARD-LOOKING PRODUCTS

FAKRO products combine excellent quality and innovative solutions. The best materials and technologies provide very good technical and thermal parameters. They ensure long lasting roof windows' durability.

➜ EXTERNAL PROFILES

The window from outside is covered with profiles pressed from aluminum sheet coated with a modified polyester in grey-brown colour resistant to weathering and UV rays.

➜ GLAZING UNITS

U2	U3	U5	U6	U8	L3	P2
ENERGY SAVING	ENERGY SAVING	HIGHLY ENERGY EFFICIENT	HIGHLY ENERGY EFFICIENT	PASSIVE GLAZING	SAFE	ANTI-BURGLARY
1.1 W/m²	1.1 W/m²	0.5 W/m²	0.5 W/m²	0.3 W/m²	1.1 W/m²	1.1 W/m²
SINGLE CHAMBER	SINGLE CHAMBER	DOUBLE CHAMBER	DOUBLE CHAMBER	TRIPLE CHAMBER	SINGLE CHAMBER	SINGLE CHAMBER
+	+	+	+	+	+	+
					+	+
STEEL	WARM TGI	WARM TGI	WARM TGI	WARM TGI	WARM TGI	WARM TGI
			+(Class P2A)		+	+(Class P2A)
ARGON	ARGON	KRYPTON	ARGON	KRYPTON	ARGON	ARGON
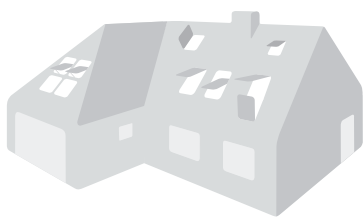
➡ ROOF WINDOWS
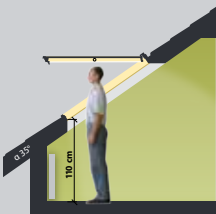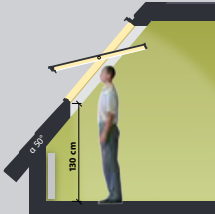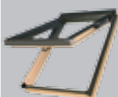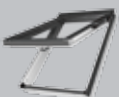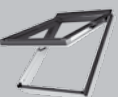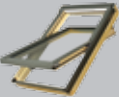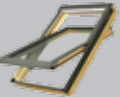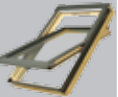
are the optimal solution used in modern construction. Roof windows illuminate the room interior, provide a view to the outside and allow ventilation of the attic.

Depending on the type of loft space and customer requirements the appropriate roof window type can be chosen for each room.

The top hung and pivot window functional design ensures comfort and ease of use. The outward opening function enables easy approach to the edge of the window and provides a wide view through the open sash. The pivot function enables the cleaning of the outer pane and operation the awning blind.
Pivot windows are popular types of roof windows. Due to the user's comfort, ease of use and versatility they have found many buyers worldwide. There are several types of roof windows which differ in technical parameters and equipment so they can be used in different rooms in the loft space. Wooden windows are installed in a standard room in the loft space (bedroom, rooms for children or corridors). In places where there is elevated level of moisture (kitchens, bathrooms, laundries, drying rooms) special aluminum-plastic windows or white polyurethane may be used. For

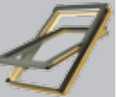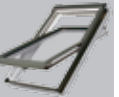|	ROOF WINDOWS									
type	TOP HUNG AND PIVOT WINDOWS			CENTRE PIVOT						
symbol:	FPP-V U3 preSelect	FPU-V U3 preSelect	PPP-V U3 preSelect	FTP-V U3	FTP-V U5	FTS-V U2	FTS U2	FTU-V U3	PTP-V U3	PTP U3
material	wood	wood	aluminium-plastic	wood	wood	wood	wood	wood	aluminium-plastic	aluminium-plastic
vacuum impregnated	+	+	—	+	+	+	+	+	—	—
lacquer	two layers	three layers	—	two layers	two layers	single layer	single layer	three layers	—	—
air inlet	V40P	V40P	V35	V40P	V40P	V10	—	V40P	V35	—
air inlet air flow	up to 52 m³/h	up to 52 m³/h	up to 43 m³/h	up to 52 m³/h	up to 52 m³/h	up to 10 m³/h	—	up to 52 m³/h	up to 43 m³/h	—
glazing unit	single chamber	single chamber	single chamber	single chamber	double chamber	single chamber	single chamber	single chamber	single chamber	single chamber
Ug (wg EN 673)	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	0.5 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K
Uw	1.3W/m²K	1.3W/m²K	1.3 W/m²K	1.3W/m²K	0.97W/m²K	1.4W/m²K	1.4W/m²K	1.3W/m²K	1.3W/m²K	1.3W/m²K
acoustic insulation Rw:	32dB	32dB	32dB	32dB	33dB	32dB	32dB	32dB	31 dB	33 dB
topSafe system	+	+	+	+	+	—	—	+	+	+
handle	Elegant	Elegant	Elegant white	Elegant	Elegant	standard	standard	Elegant	Elegant white	Elegant white
multi-point opening	+	+	+	+	+	+	+	+	+	+
seals	4	4	4	4	4	2	2	4	4	4
installtion pitch	15-55º (85º)	15-55º (85º)	15-55º (85º)	15-90º	15-90º	15-90º	15-90º	15-90º	15-90º	15-90º
page	10	10	10	12	12	12	12	14	14	14
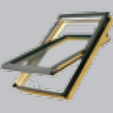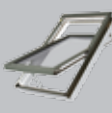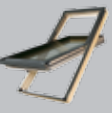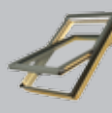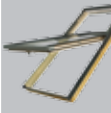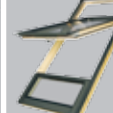
buildings with particular emphasis on energy saving, windows with highly energy efficient glazing units are recommended, and for passive buildings there are special windows FTT Thermo U8. Roof window with increased resistance to burglary FTP Secure P2-V is recommended for installation in low roof pitches and multi-family buildings, which are especially vulnerable to burglary through the roof window.

Windows with raised axis of rotation are pivotally opened, but the axis of rotation is positioned above the middle height of the window, so even a tall person can walk up to the window edge. The lower part of the sash acts as the window with outward opening function and the top provides additional illumination.

The window with raised axis of rotation and lower transom has two sashes: the top sash with raised axis of rotation and the bottom non-opening sash with laminated safety glass.

Balcony window is a modern, large, two sash window. After opening the sashes, it creates a balcony in the the attic.

L-shaped windows designed to be installed where the roof meets a vertical wall. They can be combined with roof windows of any design. This results in the amount of light entering the room and the field of view being greatly increased.

					HIGH PIVOT		BALCONY	L-SHAPED	SIDE HUNG
FTP-V U3 Z-Wave	FTU-V U3 Z-Wave	FTT U6	FTT U8 Thermo	FTP-V P2 Secure	FYP-V U3 proSky	FDY-V U3 Duet proSky	FGH-V P2 Galeria	BDL L3 BDR L3 BVP L3	FWR U3 FWL U3
wood	wood	wood	wood	wood	wood	wood	wood	wood	wood
+	+	+	+	+	+	+	+	+	+
two layers	three layers	two layers	two layers	two layers	two layers	two layers	two layers	two layers	two layers
V40P	V40P	—	—	V40P	V40P	V40P	V40P	—	—
up to 52 m³/h	up to 52 m³/h	—	—	up to 52 m³/h	up to 52 m³/h	up to 52 m³/h	up to 32 m³/h	—	—
single chamber	single chamber	double chamber	triple chamber	single chamber	single chamber	single chamber	single chamber	single chamber	single chamber
1.1 W/m²K	1.1 W/m²K	0.5 W/m²K	0.3 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K	1.1 W/m²K
1.3W/m²K	1.3W/m²K	0.80W/m²K	0.58W/m²K	1.3W/m²K	1.3 W/m²K	1.3 W/m²K	1.5 W/m²K	1.3 W/m²K	1.4 W/m²K
32dB	32dB	38dB	36 dB	35 dB	32 dB	32 dB	35dB	37 dB	34 dB
+	+	+	+	+	+	+	+	+	—
—	—	Elegant	Elegant	Elegant	Elegant	Elegant	Elegant	Elegant slim	standard
—	—	—	—	+	+	+	—	—	+
4	4	5	5	4	4	4	4	2	2
15-90°	15-90°	15-70°	15-70°	15-90°	20-65°	25-65°	35-55°	roof window 15-55°	15-55°
16	16	18	18	20	24	24	26	28	34

FPP-V
preSelect

FPU-V
preSelect

PPP-V
preSelect

- A new generation of top hung and pivot windows with two separate opening functions of sash: top hung and pivot. Separate opening functions provide sash stability and increase safety. The outward opening function enables the sash to be opened in any poisition from 0 to 35 degrees enabling easy approach to the edge of the open windows, which increases the usable area and provides unlimited view to the outside. The pivot function enables the sash to be rotated through 180 ° and is used when cleaning the outer pane or operating an awning blind. Innovative hardware system guarantees the use of only one way of opening and complete stability of the sash in outward as well as in pivot opening function. Opening method can be switched using the preSelect sliding switch positioned in the middle of the frame accessible when the window is open.
- Comfort of operation when using the handle located at the bottom of the sash. Elegant handle is equipped with a two step micro-opening facilty.
- Easy cleaning of the outer pane and setting the awning blind with the use of blocking sash bolt when rotated through 180 degrees.
- Available as standard with energy-saving glazing U3.
- Increased resistance to burglary - TopSafe system.
- A wide range of accessories.
- Suitable for roof pitches from 15 to 55 degrees, special version of windows from 15 to 85 degrees.

FPP-V preSelect

- Automatic air inlet V40P

- highest quality pine wood, glued in layers, vacuum impregnated

- wood painted twice with ecological acrylic lacquer in natural colour

FPU-V preSelect

- Automatic air inlet V40P

- highest quality pine wood, glued in layers, vacuum impregnated,

- with three coats of polyurethane varnish ideal for creating a durable and smooth finish in white on the frame surface. Designed for rooms with periodically elevated humidity levels (kitchens, bathrooms)
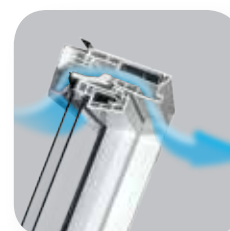
PPP-V preSelect

- Efficient air inlet V35

- multi chamber white PVC profile with reinforced steel core. Also available in golden oak or pine veneer

- the material does not absorb moisture, the window is durable and resistant to corrosion. Designed for rooms where elevated humidity level stays for long time (bathrooms, laundry rooms)

TOP HUNG AND PIVOT WINDOWS													
windows external dimensions [cm]	55x78	55x98	66x98	66x118	78x98	78x118	78x140	94x118	94x140	114x118	114x140	134x98	78x160
effectve glazing area [m²]	0.21	0.29	0.38	0.47	0.47	0.59	0.72	0.75	0.92	0.95	1.16	0.92	0.85
size symbol	01	02	03	04	05	06	07	08	09	10	11	12	13
FPP-V U3 preSelect	-	+	+	+	+	+	+	+	+	+	+	+	+
FPU-V U3 preSelect	-	+	+	+	+	+	+	+	+	+	+	+	+
PPP-V U3 preSelect	-	+	+	+	+	+	+	+	+	-	-	-	-

FTP-V
FTS-V
FTS

↓ CENTRE PIVOT WINDOW

- A popular design of windows with a hinge located in the middle of the window height.
- Convenient way to use the window as the handle is located at the bottom of the sash. The handle is equipped with a two step micro-opening facilty.
- Easy cleaning of the outer pane and operating the awning blind with the use of blocking sash bolt when rotated through 180 degrees. A wide range of accessories. Ability to install electrical controls.
- Installation in roof pitches from 15 to 90 degrees.

FTP-V

- automatic air V40P
- topSafe system, with increased resistance to burglary
- energy saving glazing unit U3 or highly energy efficient U5
- the highest quality pine wood, glued in layers, vacuum impregnated
- double coated wood with ecological acrylic lacquer in natural colour

FTS-V

- air inlet V10
- —
- energy saving glazing unit U2
- pine wood, glued in layers, vacuum impregnated
- wood painted with ecological acrylic lacquer in natural colour

FTS

- —
- —
- energy saving glazing unit U2
- pine wood, glued in layers, vacuum impregnated
- wood painted with ecological acrylic lacquer in natural colour

CENTRE PIVOT WINDOWS

windows external dimensions [cm]	55x78	55x98	66x98	66x118	78x98	78x118	78x140	94x118	94x140	114x118	114x140	134x98	78x160
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size symbol	01	02	03	04	05	06	07	08	09	10	11	12	13
FTP-V U3	+	+	+	+	+	+	+	+	+	+	+	+	+
FTP-V U5	+	+	+	+	+	+	+	+	+	+	+	+	-
FTS-V U2	+	+	+	+	+	+	+	+	+	+	+	+	+
FTS U2	+	+	+	+	+	+	+	+	+	+	+	+	+
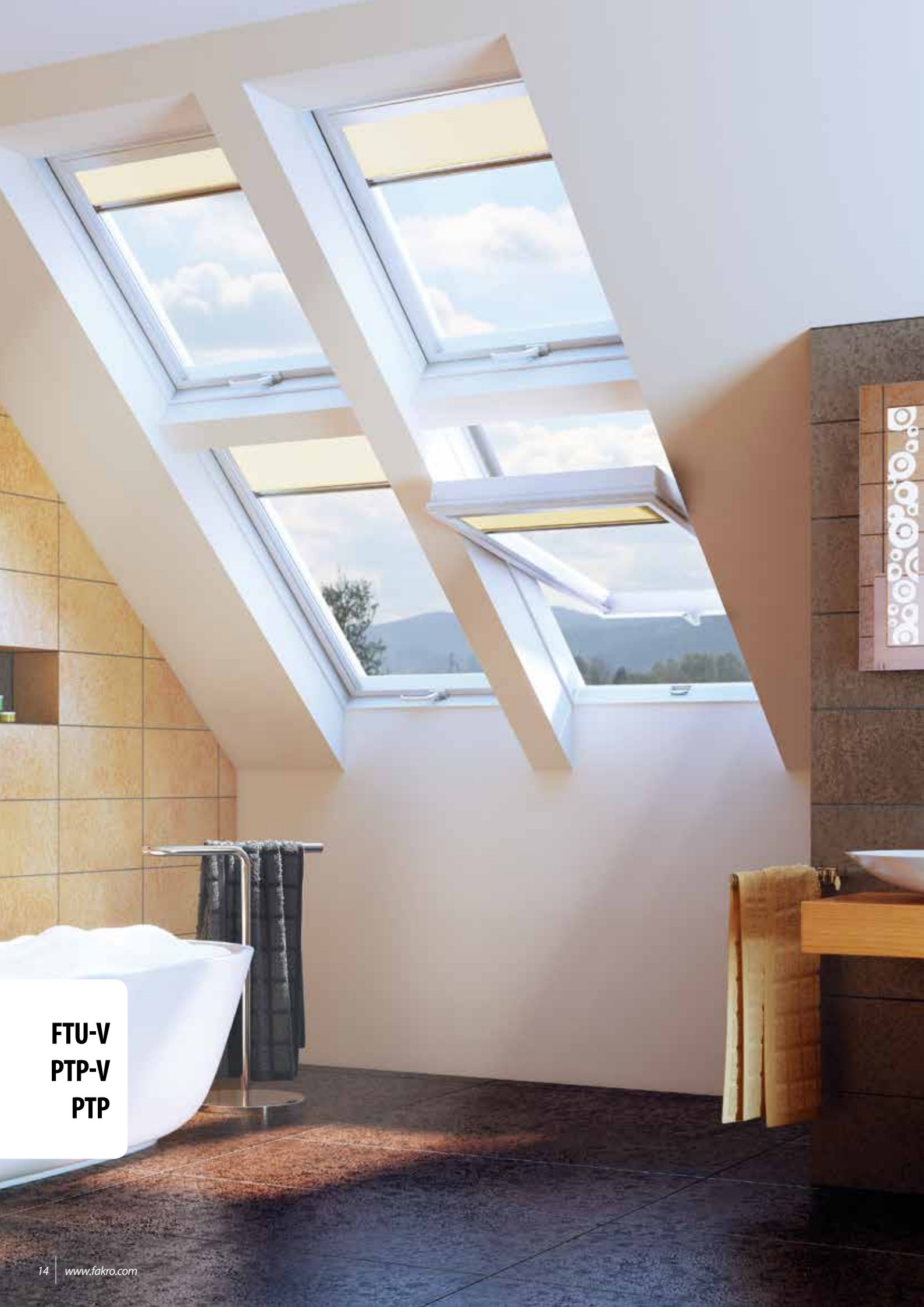
FTU-V
PTP-V
PTP

WINDOWS WITH INCREASED RESISTANCE TO MOISTURE

- A popular design of the windows with a hinge located in the middle of the window height, designed for rooms with higher humidity.
- Convenient way of using the window as the handle is located at the bottom of the sash. The handle is equipped with a two step micro-opening facilty.
- Easy cleaning of the outer pane and operating an awning blind with the use of blocking sash bolt when rotated through 180 degrees.
- Available as standard with energy-saving glazing U3.
- Increased resistance to burglary - TopSafe system.
- A wide range of accessories.
- Possibility to install electrical control.
- Installation in roof pitches from 15 to 90 degrees.

FTU-V

- automatic air V40P

- highest quality pine wood, glued in layers, vacuum impregnated

- three coats of polyurethane varnish ideal for creating a durable and smooth finish in white on the surface of the frame. Designed for rooms with periodically increased humidity (kitchens, bathrooms)

PTP-V

- efficient air inlet V35

- multi-chamber white PVC profile with reinforced steel core.
- available in white, golden oak (PTP-V/GO) or pine (PTP-V/PI) veneer
- the material does not absorb moisture, the window is durable and resistant to corrosion. Designed for rooms where elevated humidity level stays for long time (bathrooms, laundry rooms)

PTP

—

- multi-chamber white PVC profile with reinforced steel core.
- available in white, golden oak (PTP/GO) or pine (PTP/PI) veneer
- the material does not absorb moisture, the window is durable and resistant to corrosion. Designed for rooms where elevated humidity level stays for long time (bathrooms, laundry rooms)

WINDOWS with INCREASED RESISTANCE TO MOISTURE

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size symbol	01	02	03	04	05	06	07	08	09	10	11	12	13
FTU-V U3	+	+	+	+	+	+	+	+	+	+	+	+	+
PTP-V U3	+	+	+	+	+	+	+	+	+	+	+	+	+
PTP U3	+	+	+	+	+	+	+	+	+	+	+	+	+

Z-WAVE WIRELESS CONTROL

Electrically operated windows, usually installed outside the immediate reach of the user, are as standard equipped in module of Z-Wave system. Z-Wave is a wireless radio protocol. It is used to connect electrical devices that have a Z-Wave module in one network. To the wireless network can be connected, for example: lighting, thermostats, alarms, computers, telephones, air conditioning, electric windows and blinds.

FTP-V
Electro Z-Wave

FTU-V
Electro Z-Wave

CENTRE PIVOT WINDOWS Z-WAVE CONTROLED

- Pivot window with factory-fitted equipment (switchboard, motor and transformer) to enable it to remotely open, close and control accessories via the remote control. Equipped with a rain sensor that automatically closes the sash during the rain. It has contacts on the frame for easy fitting of the electrical accessories.
- Easy connection to the mains supply 230V.
- Comfortable operation by remote control window. By turning the handle 90° the sash is disconnected with the actuator.
- Automatic air inlet V40P.
- Standard equipped with energy saving glazing unit U3.
- Increased resistance to burglary - TopSafe system.
- Accessories in the electric version are additionally equipped in Z-Wave module.
- Suitable for roof pitches 15 to 90 degrees.
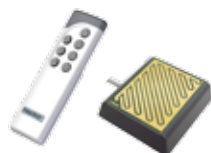
FTP-V Electro Z-Wave

- the highest quality pine wood, glued in layers, vacuum impregnated

- double coated wood with ecological acrylic lacquer in natural colour

FTU-V Electro Z-Wave

- the highest quality pine wood, glued in layers vacuum impregnated

- three coats of polyurethane varnish ideal for creating a durable and smooth finish in white on the surface of the frame. Designed for rooms with periodically increased humidity (kitchens, bathrooms)

CENTRE PIVOT WINDOWS Z-WAVE CONTROLED

windows external dimensions [cm]	55x78	55x98	66x98	66x118	78x98	78x118	78x140	94x118	94x140	114x118	114x140	134x98	78x160
effectve glazing area [m²]	0.21	0.29	0.38	0.47	0.47	0.59	0.72	0.75	0.92	0.95	1.16	0.92	0.85
size symbol	01	02	03	04	05	06	07	08	09	10	11	12	13
FTP-V U3 Electro Z-Wave	+	+	+	+	+	+	+	+	+	+	+	+	+
FTU-V U3 Electro Z-Wave	+	+	+	+	+	+	+	+	+	+	+	+	+

FTT U6
FTT U8
Thermo

HIGHLY ENERGY EFFICIENT WINDOWS

- Special roof windows for energy-efficient construction and passive buildings. The glazing units are installed to the specially designed sash frames. The sashes have widened frames when compared to standard windows. Such a structure minimizes the phenomenon of thermal bridges and better window insulation.
- The pivot window with hinge situated above the centre of the window height, so even a tall person can comfortably stand at the open window. The special window design with widened sash frames and quadruple sealing system.
- Convenient way to use the window as the handle is located at the bottom of the sash.
- Easy cleaning of the outer pane and operating the awning blind with the use of blocking sash bolt when sash rotated through 180 degrees.
- High quality pine wood, glued in layers, vacuum impregnated
- Double coated wood with ecological acrylic lacquer in natural colour
- Increased resistance to burglary - topSafe system.
- A wide range of accessories.
- Suitable for roof pitches 15 to 70 degrees.

FTT U8Thermo THE WARMEST ROOF WINDOWS ON THE MARKET
ASSEMBLED TOGETHER WITH EHV-AT THERMO FLASHINGS
U_w **0.58** W/m²K

FTT U6

U6
- highly energy efficient glazing unit U6

FTT U8 Thermo

U8
- passive U8 glazing unit

+⃞
- the most efficient roof window available on the market. Supplied and installed with flashing EHV-AT Thermo

HIGHLY ENERGY EFFICIENT WINDOWS													
windows external dimensions [cm]	55x78	55x98	66x98	66x118	78x98	78x118	78x140	94x118	94x140	114x118	114x140	134x98	78x160
effectve glazing area [m²]	0.21	0.29	0.38	0.47	0.47	0.59	0.72	0.75	0.92	0.95	1.16	0.92	0.85
size symbol	01	02	03	04	05	06	07	08	09	10	11	12	13
FTT U6	-	+	+	+	+	+	+	+	+	+	+	+	+
FTT U8 Thermo	-	+	+	+	+	+	+	+	+	+	+	+	+

FTP-V P2
Secure

CENTRE PIVOT WINDOW WITH INCREASED RESISTANCE TO BURGLARY Secure

- Window equipped with reinforcement structure provided by the topSafe system, a new system preventing removal of anti-burglary glass Class P2A and handle with a lock. Such a window no longer requires any additional safeguards, such as additional locks that hinder the use of windows.
- Easy and convenient operation as for any standard window by the use of handle situated at the bottom of the sash. Handle with lock has a two-stage micro-opening.
- Automatic air inlet V40P.
- Easy way of cleaning the outer pane and setting the awning blind with the use of blocking sash bolt when sash rotated through 180 degrees.
- Laminated and anti-burglary glass P2.
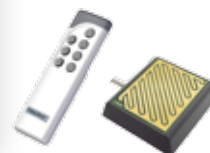- The highest quality pine wood, glued in layers, vacuum impregnated.
- Double coated wood with ecological acrylic lacquer in natural colour
- A wide range of accessories.
- Suitable for roof pitches from 15 to 90 degrees.

laminated and anti-burglary glass Class **P2A**

system preventing removal of the glass

handle with safety **lock**

POLITIE KEURMERK VEILIG WONEN
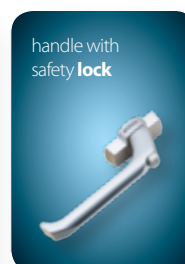
FTP-V P2 Secure

- Roof Window FTP-V P2 Secure holds the Dutch police quality certificate- "Live safely"
- Roof Window FTP-V P2 Secure is protected against different types of break-in attempts, such as:
  - hitting the top of the window
  - levering the handle with the use of tool
  - window glass removal
  - breaking glass

CENTRE PIVOT WINDOW WITH INCREASED RESISTANCE TO BURGLARY Secure

windows external dimensions [cm]	55x78	55x98	66x98	66x118	78x98	78x118	78x140	94x118	94x140	114x118	114x140	134x98	78x160
effectve glazing area [m²]	0.21	0.29	0.38	0.47	0.47	0.59	0.72	0.75	0.92	0.95	1.16	0.92	0.85
size symbol	01	02	03	04	05	06	07	08	09	10	11	12	13
FTP-V P2 Secure	+	+	+	+	+	+	+	+	+	+	+	+	+

FLASHINGS

Flashings are essential for the correct installation of window in the roof. Precisely designed flashing details ensure durable and neat fit with the roofing material used. The purpose of flashing is to ensure good drainage away of rainwater and melting snow from the window and to provide protection from the wind. In FAKRO product range there are many types of flashing solutions, which are made of aluminum sheet, protected by polyester lacquer. The basic colour is grey - brown RAL 7022, by which the window matches perfectly any standard roofing colour.

Standard flashings allow to install windows in the most popular types of roofing materials:
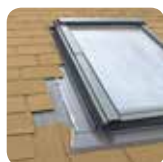
ES_
for flat roof coverings up to 10mm thickness (2x5mm)

EZ_
for profiled roof coverings (up to 45mm profile depth)

EH_
for high profile roof coverings (up to 90mm profile depth)

EHV-AT Thermo
provides thermal insulation of roof windows above the surface of battens

EL_
for slated roof coverings up to 10mm thickness (2x5mm)

EG_
for slated roof coverings with thickness 24-32mm

EFW
flat roof system

FLASHINGS FOR CENTRE PIVOT WINDOW, TOP HUNG AND PIVOT WINDOWS

window dimensions [cm] size symbol	55x78 01	55x98 02	66x98 03	66x118 04	78x98 05	78x118 06	78x140 07	94x118 08	94x140 09	114x118 10	114x140 11	134x98 12	78x160 13
ESV for flat roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+
EZV-P for profiled roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+
EHN-P for high profile roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+
EHV-ATThermo*	+	+	+	+	+	+	+	+	+	+	+	+	+
ELV for slated roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+
EGV for thick slated roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+
EFW flat roof system	-	+	-	+	+	+	+	+	-	+	-	-	-

*flashing for flat, profiled and high profiled roof coverings (up to 90mm profile depth)

FLASHING FOR JOINING WINDOWS IN COMBINATIONS

Flashing systems are ready made flashing combinations for joining windows in the groups: horizontally, vertically, and in a block. The distance between the windows joined horizontally and vertically is normally 10cm. If external shutters are installed on windows installed vertically, a gap of at least 20cm is required. There are seven modules in the FAKRO combination system to cater for any layout you may require.

B2/1
horizontal combination

B1/2
vertical combination

B2/2
block combination

THE MOST POPULAR-FLASHING COMBINATIONS FOR PROFILED ROOF COVERINGS

window dimensions [cm] size symbol	55x78 01	55x98 02	66x98 03	66x118 04	78x98 05	78x118 06	78x140 07	94x118 08	94x140 09	114x118 10	114x140 11	134x98 12	78x160 13
B2/1	+	+	+	+	+	+	+	+	+	+	+	+	+
B1/2	+	+	+	+	+	+	+	+	+	+	+	+	+
B2/2	+	+	+	+	+	+	+	+	+	+	+	+	+

FYP-V
proSky

FDY-V
Duet proSky

WINDOW WITH RAISED AXIS OF ROTATION
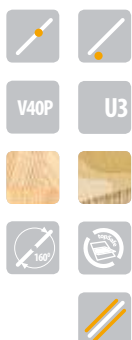
- The centre pivot window, but its axis of rotation is situated above the centre of the window so even a tall person can easily walk up to the window edge. The lower part of the sash fulfils a top hung window function and the upper part of the sash is an additional source of daylight. The sash when opened in position from 0 to 45 degrees is supported by innovative supporting mechanism enabling the sash to be open in any position within this range. The window when installed in roofs with pitches 39-43 degrees will satisfy the requirements of DIN 5034-1 standard*, according to which the bottom window edge has to be situated 95cm above the floor level and the top minimum 220cm.
- The window is operated by the use of handle located at the bottom of the sash. The handle is equipped with a two step micro-opening facilty.
- Automatic air inlet V40P
- Standard equipped with energy efficient glazing unit U3.
- The highest quality pine wood, glued in layers, vacuum impregnated.
- Double coated wood with ecological acrylic lacquer in natural colour
- Sash rotated through 160 degrees is locked by the bolt for cleaning.
- Increased resistance to burglary - TopSafe system.
- A wide range of accessories.

* Rule applies to the German market

FYP-V proSky

- single sash window

- installation range 20-65 °

FDY-V Duet proSky

- two sash window, lower non-opening sash with safe glass L3
- installation range 25-65 °

WINDOWS WITH RAISED AXIS OF ROTATION FYP-V U3

windows external dimensions [cm]	66x118	78x98	78x118	78x140	78x160	78x180	94x140	94x160	94x180	114x160
glazing area [m²]	0,47	0,47	0,59	0.73	0.85	0.96	0.92	1.07	1.22	1,35
size symbol	04	05	06	07	13	40	09	80	41	50
	+	+	+	+	+	+	+	+	+	+

WITH LOWER TRANSOM FDY-V U3 Duet proSky

	78x186	78x206	94x186	94x206
	1.05	1.19	1.29	1.46
	CA	CB	DA	DB
	+	+	+	+

FLASHINGS FOR WINDOWS WITH RAISED AXIS OF ROTATION

window external dimensions [cm] size symbol	66x118 04	78x98 05	78x118 06	78x140 07	78x160 13	78x180 40	94x140 09	94x160 80	94x180 41	114x160 50	78x186 CA	78x206 CB	94x186 DA	94x206 DB
ESV for flat roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+	+
EZV-P for profiled roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+	+
EHN-P for high profile roof coverings	+	+	+	+	+	+	+	+	+	+	+	+	+	+

FGH-V
Galeria

BALCONY WINDOW **Galeria**
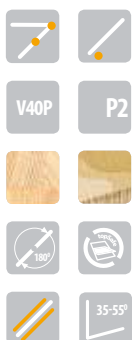
- Innovative, large roof window in which the open sashes create a balcony. The upper sash is opened upwards, the lower forward allowing easy access to the balcony bay. The sash when opened in position form 0 °to 45 ° is supported by innovative supporting mechanism enabling to leave the sash open in any position within this range.
- The window is operated by the handle located at the bottom of the upper sash. Handle with two-point locking mechanism.
- The sash when rotated through 180 degrees is locked by the bolt for cleaning.
- Automatic air inlet V40P.
- Both the upper and lower sashes are equipped with safety glazing unit P2.
- The highest quality pine wood, glued in layers, vacuum impregnated.
- Double coated wood with ecological acrylic lacquer in natural colour.
- Increased resistance to burglary - TopSafe system.
- A wide range of accessories.
- Installation range from 35 to 55 degrees.

FGH-V Galeria

- the upper sash can be raised smoothly up to an angle of 45 °. Side safety barriers are integrated into the bottom sash and they tilt forward during the sash opening
- when closing the lower sash, the balcony barriers are hidden below the window profiles and are not visible above the roof, so do not get dirty and do not spoil aesthetics of the roof.

Installation of balcony window can only be performed by qualified personnel. Cost of installation services is determined individually.

FGH-V balcony window in combination with other FAKRO windows e.g. FDY-V can be realised only by means of K__ / G flashing.

BALCONY WINDOW	
	94x255
window external dimensions [cm]	
glazing area [m^2]	1.67
FGH-V P2 Galeria	+

FLASHING	window external dimensions [cm]	**94x255**
	ESV/G for flat roof coverings	+
	EZV-A/G for profiled roof coverings	+
	EHN-AT Thermo/G	+

BDL
BDR
BVP
BXP

L- SHAPE COMBINATION WINDOW

- The L-shaped windows are designed to be installed where the roof meets a vertical wall. These windows serve to extend the roof window into the wall. This results in the amount of light entering the room and the field of view being greatly increased. The L-shaped combination windows can be combined with roof windows of any design.
- Standard equipped with safety glazing unit L3 or P5.
- Windows equipped with multi-point locking fittings.
- The highest quality pine wood, glued in layers, vacuum impregnated.
- Double coated wood with ecological acrylic lacquer.
- A wide range of accessories.
- The roof window installation range joined with L-shaped combination window is 15 to 55 degrees.

BD_

- tilt and turn opening system.
- The sash opened by tilting 12cm and turned to 90 degrees. Operated by one handle located on the side of the sash. As standard comes with a key, by which you can lock the window. Opened to the right (BDR) or left side (BDL).

BVP

- tilt opening
- The sash opened by tilting about 12 cm. The handle with key lock is situated on the upper part of the sash.

BXP

- non-openining

L-SHAPED WINDOW B_ - WOODEN													
window external dimensions [cm]	78x60	78x75	78x95	78x115	78x137	94x60	94x75	94x95	94x115	114x60	114x75	114x95	114x115
size symbol	33	81	82	83	84	34	85	86	87	35	89	90	91
BDL L3 (left) / BDR L3 (right)	+	+	+	+	+	-	+	+	+	-	-	+	+
BVP L3	+	+	+	+	+	+	+	+	+	+	+	+	+
BXP L3	+	+	+	+	+	+	+	+	+	+	+	+	+
BDL P5 (left) / BDR P5 (right)	+	+	+	+	+	-	+	+	+	-	-	+	+
BVP P5	+	+	+	+	+	+	+	+	+	+	+	+	+
BXP P5	+	+	+	+	+	+	+	+	+	+	+	+	+

FLASHING FOR L-SHAPED WINDOW EU_/B										
window external dimensions [cm]	78x98	78x118	78x140	94x118	94x140	114x118	114x140	134x98	78x160	
size symbol	05	06	07	08	09	10	11	12	13	
EUV/B	+	+	+	+	+	+	+	-	+	

L-shaped combination flashing is selected on the basis of the roof windows size.

ROOF WINDOW ACCESSORIES

Roof window accessories combine functionality and utility features with an attractive decorative form. Make it possible to control the action of light, reducing heat excess in the summer and save energy in winter. A wide range of types, patterns and colours of accessories ensures that the window matches with any interior décor and offers the possibility of shaping the style of any room.

ROOF WINDOW ACCESSORIES

INTERNAL ACCESSORIES

Venetian blind
AJP

- ability to control the amount of incoming light to the room
- control the direction of light entering through by changing the angle of lamellaes

roller blind standard
ARS

- protection from light
- can leave the blind in three different positions

dimming roller blinds
ARP

- protection against sunlight during sunny days
- possibility to lock the blind in any position

blackout blinds
ARF SUNSET

- very good protection from sunlight
- the possibility of darkening the room
- possibility to lock the blind in any position
- partial protection from solar heat

pleated blinds
APS

- provide a soft and diffused light into the room
- possibility to lock the blind in any position

Insect screen
AMS

- protection against insects
- minimum shading of the room
- can be installed with other internal and external accessories

EXTERNAL ACCESSORIES

AMONG THE EXTERNAL ACCESSORIES WHICH SERVE AS A PROTECTION AGAINST HEATING OF THE ROOM THERE ARE:

awning blind
AMZ

8 times more effective

- 8 times more efficient against room overheating
- optimal protection against burdensome heat (effect - price)
- effective shading of the interior while providing visibility
- comfortable use, the awnig blind can cover the window for a whole summer without the need to roll it up and down every day

external roller shutter
ARZ

- effective protection against burdensome heat
- reducing heat loss in winter
- darkening the room
- makes break-in attempts difficult

For more information please look at

FAKRO

ROOF WINDOW 2014

⬇ WINDOW CONTROL ACCESSORIES

ZST

- Universal telescopic rod for windows, shutters and blinds installed beyond the immediate reach of the user

ZBB

- product that allows secure, limited window opening. Thanks to the application of the restrictor, it is possible to leave the window ajar tilted by approximately 10cm,

ZBL

- atractive white window lock prevents accidental opening of the window. It is installed in the bottom part of the window.

ZWS 12

- actuator to control the windows - 12DC (control device and switched mode power supply have to be bought additionally)*

For more information please look at

⬇ ELECTRICAL CONTROLS Z-WAVE

ZWK 10

- wall controller to control many of the products separately or simultaneously

ZWP 10

- remote control to control multiple receivers separately or simultaneously

ZZ60

- switched mode power supply 12VDC to power electrical devices. Provides power for up to three electrical accessories

*more information available in Electric Control 2011 catalogue

↓ INSTALLATION ACCESSORIES

FAKRO installation accessories guarantee quick and easy connection between the roof window and the roof construction. Using XDP insulating set and XDS air-tight flashing ensures the complete protection of a fitted roof window. The installation accessories reduce the risk of thermal bridging and guarantee the proper draining of any moisture around the FAKRO window. Using original installation accessories will allow the proper use of the windows for many years.

XLW Lining

- is designed to ensure quick finish around the window from the inside of the room.
- proper finish of the lining, the bottom part vertical and the top horizontal ensures good light access and guarantees proper air circulation over the surface of the glass. The XLW-F lining is designed to be installed solely with wooden windows, whereas XLW-P with aluminium clad plastic windows.

XDP insulation kit with XDS air-tight flashing constitute XDK insulation flashing set
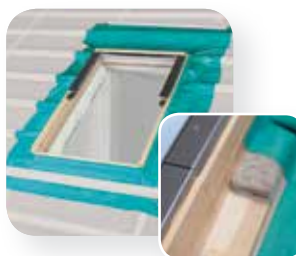
XDP Insulation set

- is designed to enable fast and tight installation of thermal and air-permeable insulation around the window. The set consists of air-permeable membrane and thermo-insulation material made of natural wool in shape of wool cubes and wool tress. The thermo-insulating material is made of specially impregnated sheep wool. Its high elasticity enables ideal adjustment of the material to the space it fills. Universal way of insulating enables roof window insulation irrespective of the roof opening size. Air-permeable collar connects window with roof membrane and protects thermo-insulating material from moisture.

- XDP insulation kit with XDS air-tight flashing constitute XDK insulation flashing set

XDS air tight collar

- is used to form air-impermeable barrier around the roof window. This ensures tight connection of the film with roof window. The film is installed in the groove specially made in the window's frame ready for installation of the lining. Air tight collar is installed from the inside of the room as a barrier against warm, humid air, as any moisture on the surface of the insulation greatly reduces its thermal insulation properties.

INSTALLATION ACCESSORIES

window external dimensions [cm] size symbol	55x78 01	55x98 02	66x98 03	66x118 04	78x98 05	78x118 06	78x140 07	94x118 08	94x140 09	114x118 10	114x140 11	134x98 12	78x160 13
XLW-F 30/40 **XLW-P 30/40**	+	+	+	+	+	+	+	+	+	+	+	+	+
XDP	+	+	+	+	+	+	+	+	+	+	+	+	+
XDS	+	+	+	+	+	+	+	+	+	+	+	+	+
XDK	+	+	+	+	+	+	+	+	+	+	+	+	+

ROOF ACCESS WINDOWS

Roof access windows provide fast, easy and safe access to the roof for conservation, installation or maintenance. Depending on the type of room in the loft space, proper roof access window can be installed.

FW_

WS_
WG_
WLI

ESCAPE WINDOW FW

Escape window FW combines advantages of roof window and roof access window. As a roof access window provides easy and safe access to the roof and as a roof window it lets sunlight and fresh air enter the space. The FW escape window also has good thermal insulation properties.
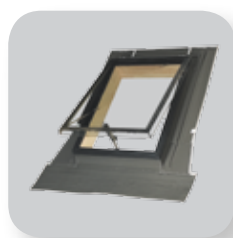
STANDARD ACCESS ROOF LIGHTS

The main function of standard access roof lights is to enable access to the roof. They provide lighting and fresh air which thanks to the possiblity to leave the sash ajar enters the space inside.

FW_

- is designed for inhabited, heated and insulated attics. There is a version of opening to the right or left side

WS_

- top hung design, semi-circular made from polycarbonate dome opens upwards through 180 degrees, providing easy access to the roof, and the effective lighting of the room.
- The material from which it is made is characterised by increased resistance to weathering and UV rays' penetration.
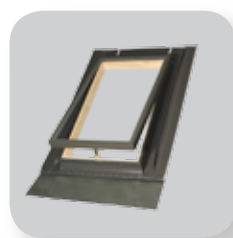
WG_

- top hung design, the sash opens upwards.
- is available in two versions:
- WGT version with single toughened glass 4H,
- WGI version with integrated toughened glass 4H-10-4H

WLI

- top hung design with sash which opens on side. It can be installed in such a way as to be opened to the right or the left. The applied turn limiter holds the sash stable when opened and prevents it slamming shut accidentally.

SIDE HUNG ESCAPE WINDOW

external dimensions [cm] size symbol	66x78 22	66x98 03	66x118 04	78x98 05	78x118 06	94x118 08	94x98 15
FWL U3 (left) **FWR U3 (right)**	+	+	+	+	+	+	+

FLASHING FOR ROOF ACCESS LIGHTS

ESW for flat roof covering	+	+	+	+	+	+	+
EZW-P for profiled roof coverings	+	+	+	+	+	+	+
EHW-P for high profile roof coverings	+	+	+	+	+	+	+

STANDARD ACCESS ROOF LIGHTS

external dimensions [cm]	54x75	86x86
WSS for flat roof covering	+	+
WSZ for profiled roof coverings	+	+
WSH for high profile roof coverings	+	+

external dimensions [cm]	45x55	45x75
WGT	+	+
WGI	+	+

external dimensions [cm]	54x83	86x87
WLI	+	+

FSP P1

SMOKE VENTILATION WINDOW FSP P1

Window is a part of gravitational smoke ventilation system and is used to expel the excess of smoke and heat during the fire. Additionally, the system enables daily ventilation and allows light into the room. The window is equipped with two electric motors, which open the window sash after a electric signal from the control unit. The open window protects the roof opening against the lateral wind. The window is installed in such a way that all the window edges are below the roof ridge level. The smoke ventilation window has been manufactured and certified according to harmonised standard EN 12101-2:2005. This window is usually applied in stairways.

FSP

Features

- manufactured according to EN 12101-2:RE1000(+1000), SL500, WL1500, T(00), B300;
- maximum sash opening pitch 75° in 51 seconds, when fully loaded;
- suitable for roofs with pitches between 20° and 60° with special flashing E_S;
- made of wood, vacuum impregnated with two coats of acrylic lacquer;

Technical specifications	Electric motor SP8
reach	350 mm
power supply voltage	24 V DC
rated current	2x1A
strength of pushing out the sash	800 N
strength of pulling	400 N
operating speed	7 mm/s
operating temperature	(– 5°C) do (75°C)
power cable	2x2x0.75 m² (2x1mb)

SIZES OF STANDARD WINDOWS

windows external dimensions [cm]	78x140	94x140	114x118	114x140	134x98
max free ventilation area (EN 12101-2) [m²]	0.53	0.65	0.67	0.80	0.65
effectve glazing area [m²]	0.72	0.92	0.95	1.16	0.92
size symbol	07	09	10	11	12
FSP	+	+	+	+	+

SIZES OF STANDARD FLASHING

external dimensions [cm]	78x140	94x140	114x118	114x140	134x98
size symbol	07	09	10	11	12
ESS flashing for thin, flat roof coverings	+	+	+	+	+
EZS-P flashing for tiled and metal sheeting roof coverings	+	+	+	+	+
EHS-P flashing for high-profiled coverings	+	+	+	+	+
ELS flashing for slate roof coverings	+	+	+	+	+

OTHER PRODUCTS

Solar Panels

FAKRO solar panels can be installed either independently or together with FAKRO roof windows in visually appealing combinations using standard flashings. Solar panels are becoming increasingly popular as an eco-friendly way of harnessing the sun's energy to heat water.

Typical system consists of: SKW-solar panel, solar cylinder, expansion tank, solar pump with controller, glycol, mixing valve, connecting set, panel connecting set
Note: Possible installation range for SKW 15° – 90°, SKC 30° – 90°

For more information please look at

5 People Solar Panels System Based on 1m²/person of absorption this would give a 5 people house—options

SKW 78/140 (5.46m²)		SKW 114/118 (5.65m²)		SKW 114/140 (5.44m²)		SKW 114/206 (6.21m²)	
SKW 07 (78x140)	6	SKW 10 (114x118)	5	SKW 11 (114x140)	4	SKW 44 (114x206)	3
400litre Solar Cylinder	1	400litre Solar Cylinder	1	400litre Solar Cylinder	1	400litre Solar Cylinder	1
SBV 24L Expansion Tank	1	SBV 24L Expansion Tank	1	SBV 24L Expansion Tank	1	SBV 24L Expansion Tank	1
Solar Pump With Controler	1	Solar Pump With Controler	1	Solar Pump With Controler	1	Solar Pump With Controler	1
Glycol 30l	1	Glycol 30l	1	Glycol 30l	1	Glycol 30l	1
SMB 10m	2	SMB 10m	2	SMB 10m	2	SMB 10m	2
SMK 33cm	5	SMK 33cm	4	SMK 33cm	3	SMK 33cm	2
SWM Hot Mixing Valve	1	SWM Hot Mixing Valve	1	SWM Hot Mixing Valve	1	SWM Hot Mixing Valve	1
SAS Air Seperator	1	SAS Air Seperator	1				

Light Tunnels

In order to supply interior with natural light where there are no opportunities to install roof or vertical windows, an effective solution can be a light tunnel. Thanks to the light tunnel, the natural light gets into the building illuminating its interior. Dimly lit interiors without access to the natural light can become light and comfortable to use.
There are two types of light tunnels available: SRT with rigid light transmitting tube and SLT with flexible light transmitting tube. Flashings enable installation of light tunnels in nearly every roof covering and even in flat roofs.

For more information please look at

Sizes of Light Tunnels

SLT With standard flashing

35/200	55/200
○	○
+	+

SLT Plus With lamp and standard flashing

35/300	55/300	Diameter/Tube length [cm]
○	○	
+	+	

SRT With standard flashing

25/200	35/200
○	○
+	+

SRT Plus With lamp and standard flashing

25/200	35/200	Diameter/Tube length [cm]
○	○	
+	+	

WINDOW SIZES AT A GLANCE

Simply check the height and width dimensions for your chosen window, and see the choice of products available based on the U3 glazing unit.

Standard Roof Windows

HEIGHT in cm \ WIDTH in cm	55	66	78	94	114	134
60			FNP U3*	FNP U3*	FNP U3*	FNP U3*
78	FTP-V U3, PTP U3	FWR U3, FWL U3, FTP-V U3, PTP-V U3, PTP U3	FNP/D U3*, FTP-V U3, PTP-V U3, PTP U3	FNP/D U3*, FTP-V U3, PTP-V U3, PTP U3	FNP/D U3*, FTP-V U3, PTP-V U3, PTP U3	FNP/D U3*, FTP-V U3, PTP-V U3, PTP U3
98	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FWR U3, FWL U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FWR U3, FWL U3	FWL U3	FTP-V U3, PTP-V U3, PTP U3	FTP-V U3, FPP-V U3
118	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FHP, FWR U3, FWL U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FHP, FWR U3, FWL U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FHP, FWR U3, FWL U3	FTP-V U3, FPP-V U3, PTP U3, FSP, FWR U3, FWL U3	FTP-V U3, PTP-V U3, PTP U3
140	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FYP-V U3, FHP, FWR U3, FWL U3	FTP-V U3, FPP-V U3, PTP U3, PPP-V U3, FYP-V U3, FHP, FWR U3, FWL U3	FTP-V U3, FPP-V U3, PPP-V U3, FSP	
160			FYP-V U3, FTP-V U3, PTP-V U3, PTP U3	FYP-V U3, FTP-V U3, PTP-V U3**, PTP U3**		
180			FYP-V U3	FYP-V U3		
186			FDY-V U3	FDY-V U3		
206			FDY-V U3, FYP-V U3	FDY-V U3, FYP-V U3		
235			FDY-V U3***	FDY-V U3***		
255			FDY-V U3***	FDY-V U3***, FGH-V P2		

Combination Bottom Windows

HEIGHT in cm \ WIDTH in cm	78	94	114
60	BDL L3, BDR L3, BXP L3	BXP L3	BXP L3
75	BDL L3, BDR L3, BXP L3	BDL L3, BDR L3, BXP L3	
95	BDL L3, BDR L3	BDL L3, BDR L3	BDL L3, BDR L3

Access Roof Lights

HEIGHT in cm \ WIDTH in cm	45	54
55	WGT	
61	WGI/C	
75	WGT, WGI	
98		WLI/C

Flat Roof Windows

HEIGHT in cm \ WIDTH in cm	55	66	78	94	114	134
78	EFW					
98	EFW	EFW	EFW			EFW
118		EFW	EFW	EFW	EFW	
140			EFW	EFW	EFW	

Fakro Light Tunnels

FAKRO Light Tunnels are available with either flexible or rigid ducting. Either product may also be purchased with an abutment accessory for fitting on flat roofs.

SLT: 35/200, 55/200
SRT: 25/200, 35/200

Note: The sizes not stated in the Product Catalogue may be available to individual orders.

* non-opening windows.
** PTP-V U3, PTP U3 recommended for the roofs with pitch from 25 degree
*** Available to individual orders.

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