

**VELUX®**

# **Design Guide**

# Design Guide

30-60 mm

60-150 mm

2300  
2000

2300  
2000

1350

1350

950

700-750

700-750

140

55 mm

25-30 mm

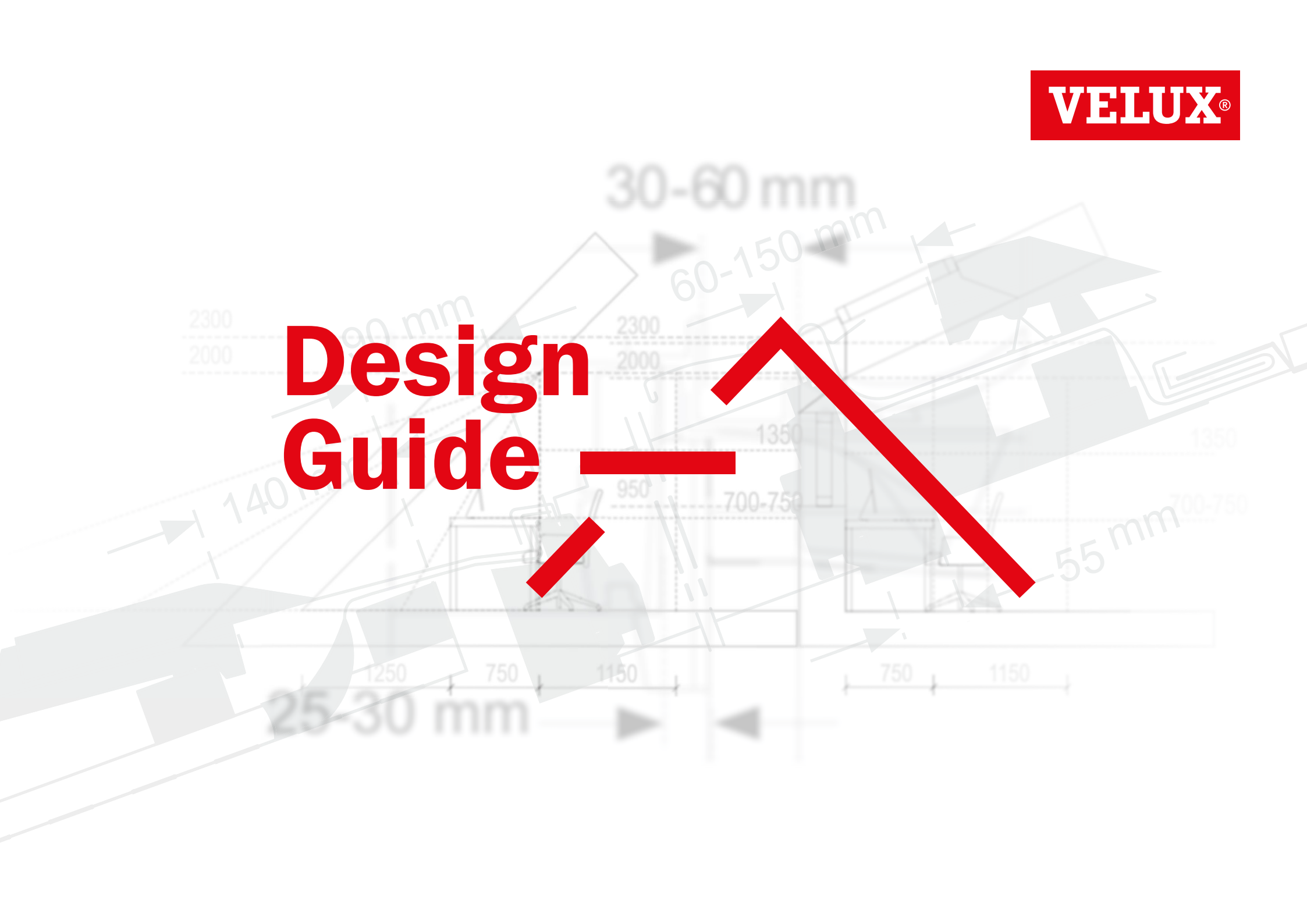
1250

750

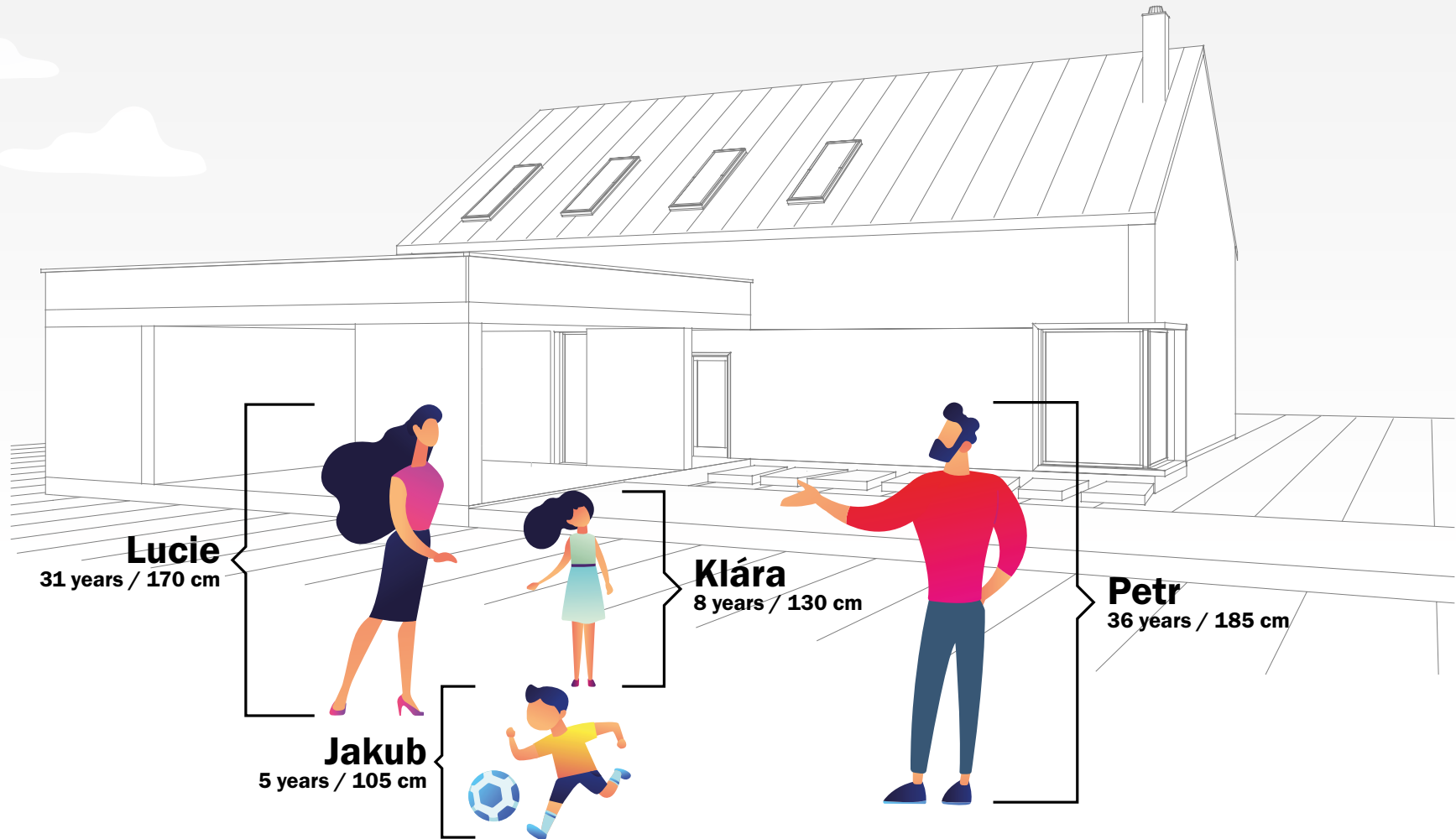
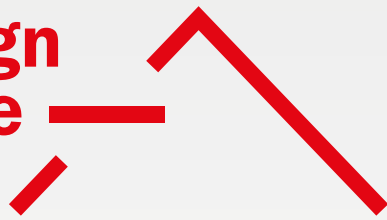
1150

750

1150

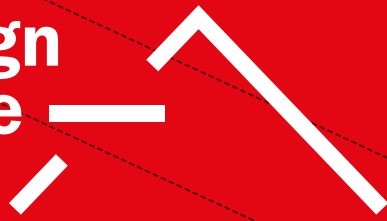


# Design Guide



Let's use the full potential of living  
in the space under the roof.  
Let's create an attractive airy  
and bright living space.

70% of buyers say lots of daylight  
is a crucial parameter when buying  
real estate.



## Basics

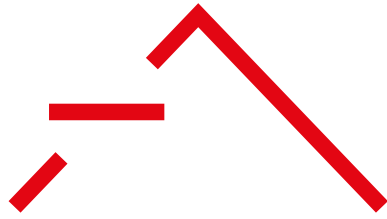
- 1.1 Roofs in general / shapes, slopes, types
- 1.2 Basic requirements
- 1.3 Optimal use of the attic
- 1.4 Ergonomics of the attic
- 1.5 Roof windows / types, sizes, method of control
- 1.6 Installation of a window in the roof structure
- 1.7 Tips and tricks

## Rooms in the attic

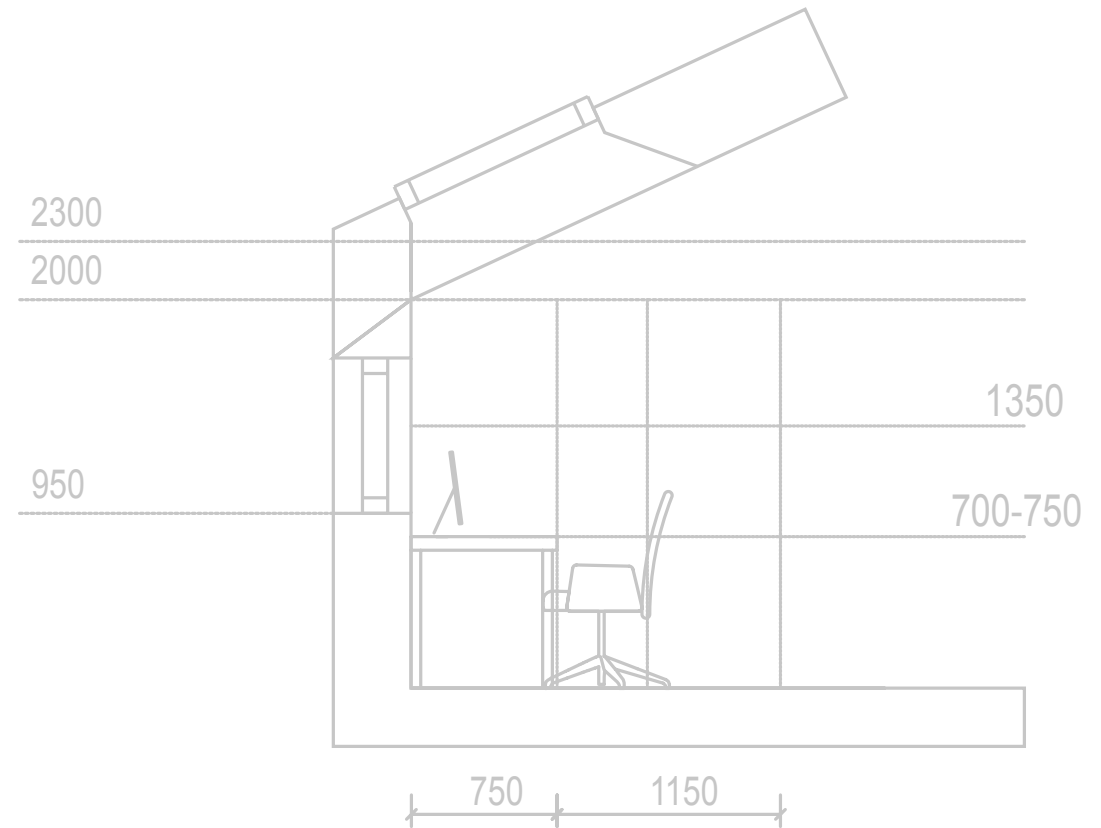
- 2.1 Children's room
- 2.2 Lounge
- 2.3 Bedroom
- 2.4 Study
- 2.5 Kitchen
- 2.6 Bathroom, toilet



# 01/ Basics



This chapter includes an introduction of the topic of roofs and attics. It summarizes the basic information, rules and requirements for the design of the space under the roof. We hope it will be a useful guide!

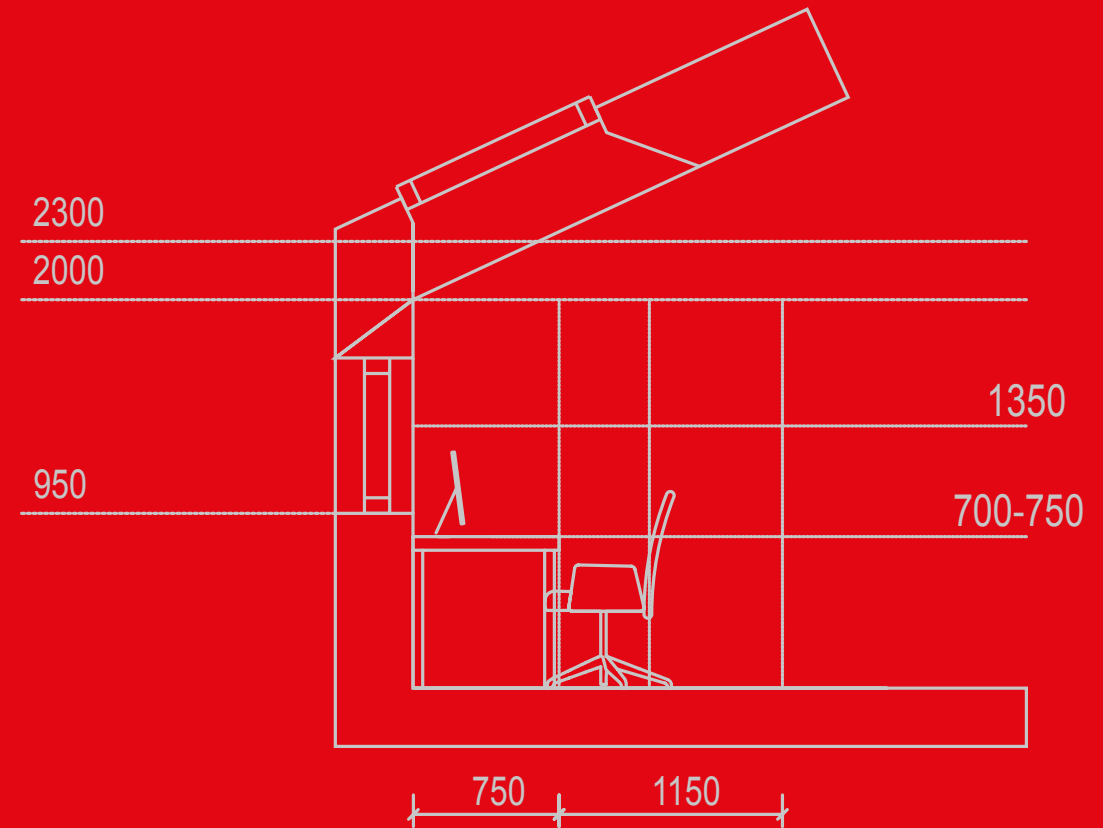


# 01/ Basics



## Basics

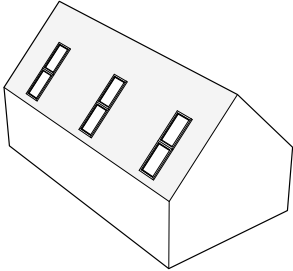
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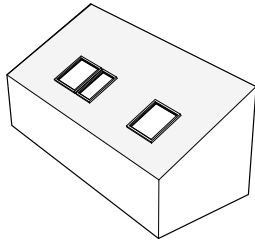
# 1.1.1 /Types of roofs



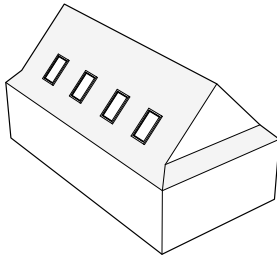
gable roof



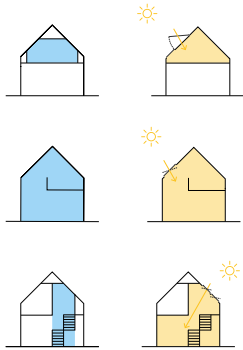
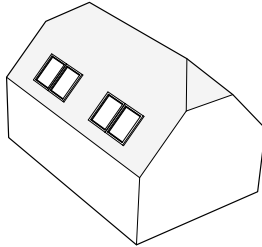
shed roof



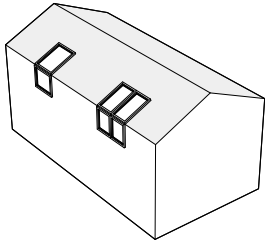
half-hipped roof



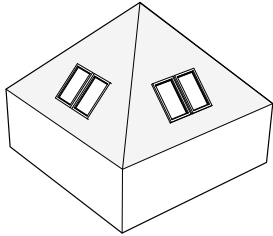
half-hipped roof



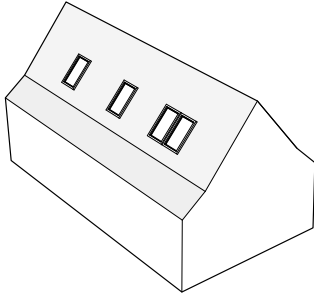
gable roof with high attic parapet



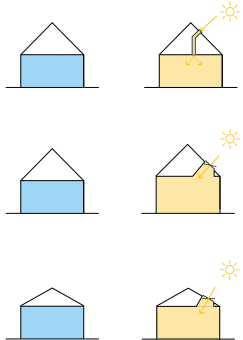
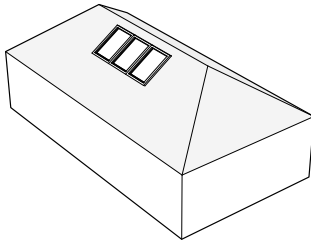
tent roof



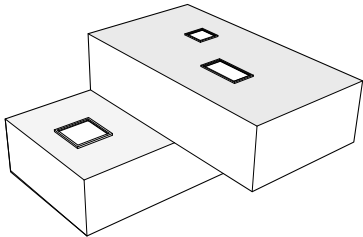
gable shaped roof



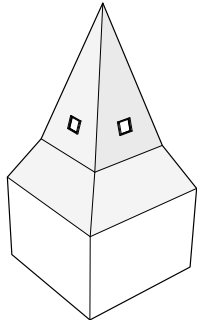
sloped roof



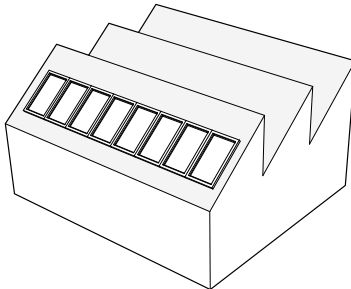
flat roof



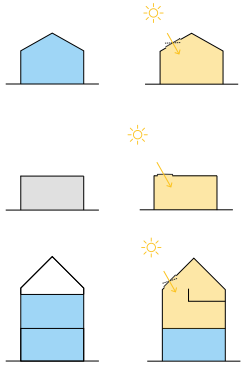
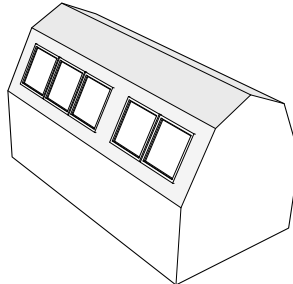
tower roof



saw tooth roof



mansard roof

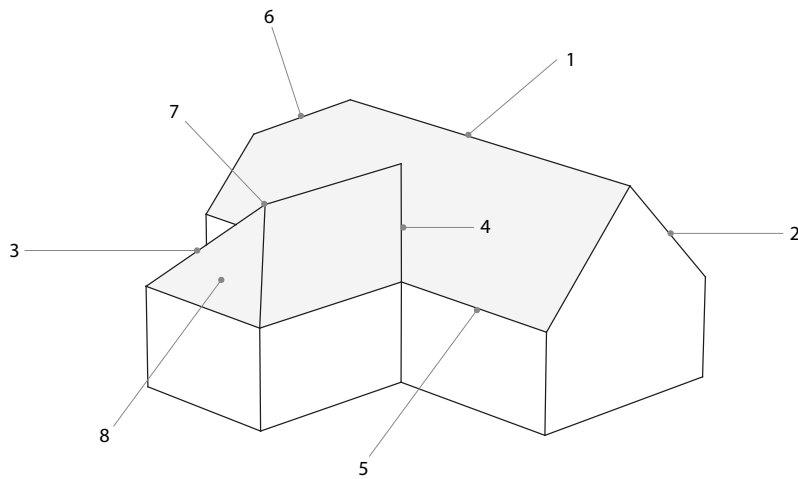


we will illuminate every roof

# 1.1.2 /Terminology

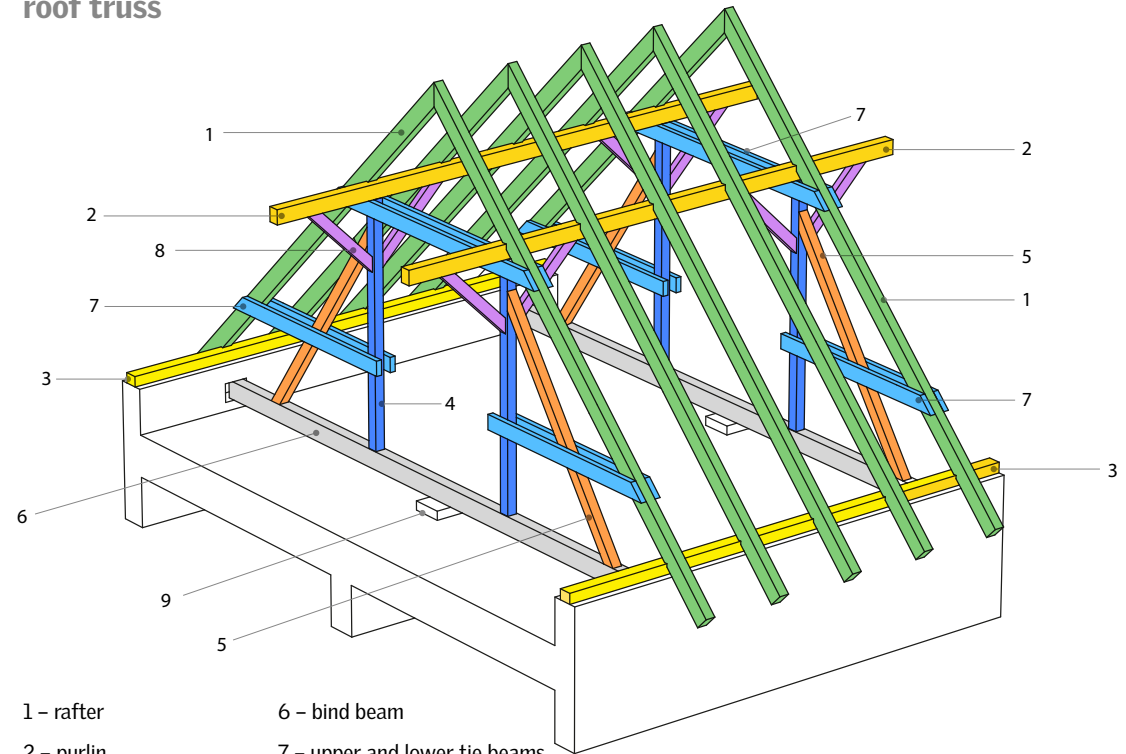


roof coverings



- 1 – roof ridge
- 2 – shield wall
- 3 – corner
- 4 – roof flashing
- 5 – gutter
- 6 – sloped
- 7 – hip point
- 8 – hip end

asic elements of the roof truss



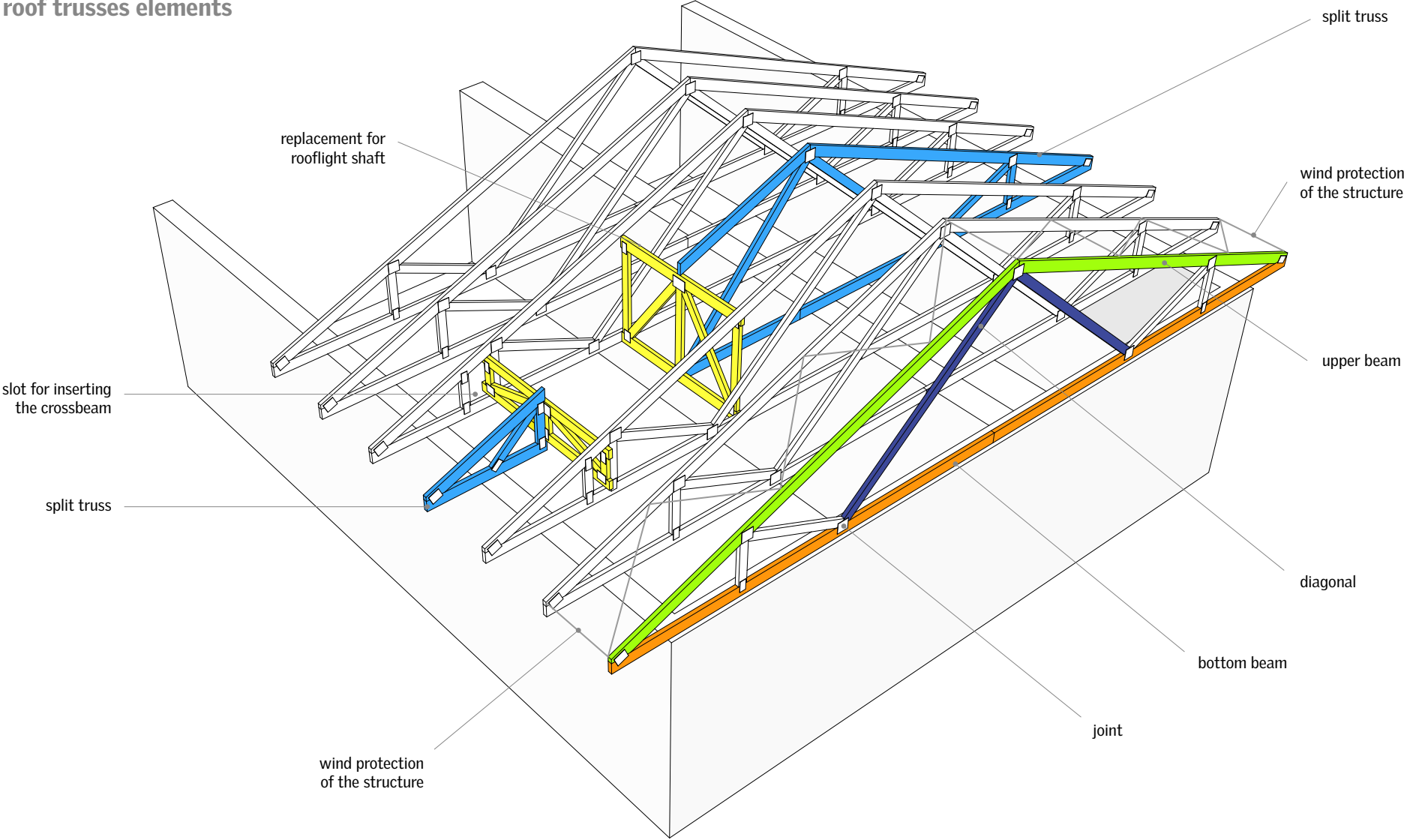
- 1 – rafter
- 2 – purlin
- 3 – heel strap
- 4 – framing
- 5 – inclined struts
- 6 – bind beam
- 7 – upper and lower tie beams
- 8 – straps
- 9 – beam support



# 1.1.2 /Terminology



## roof trusses elements



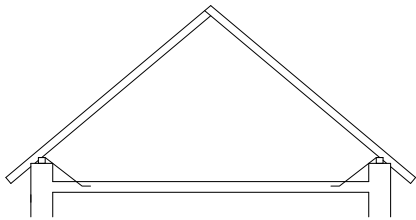
# 1.1.3 / Roof trusses



division of trusses according to the type of main connection / structure

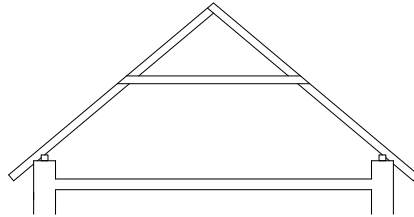
## rafter system

the structure consists of pairs of RAFTERS connected at the top



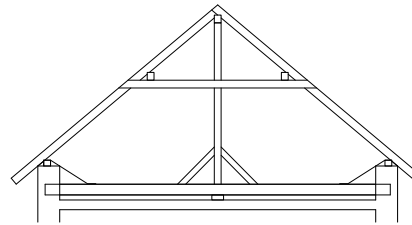
## collar beam truss

formed by rafters and horizontal reinforcements



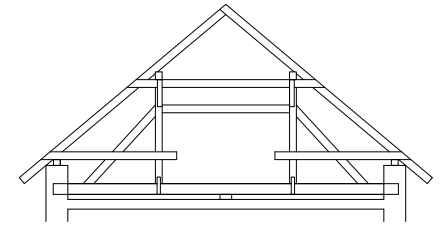
## purlin binding system

with vertical posts (king post)



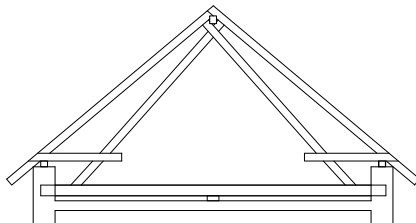
## purlin binding system

king post with double posts



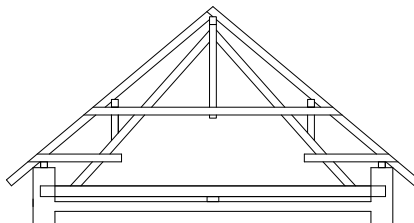
## purlin binding system

with sloping posts (queen post)



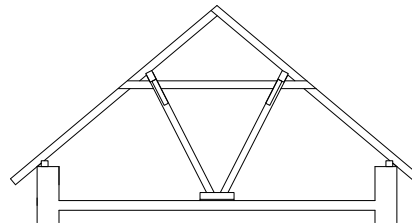
## purlin binding system

queen post with a strut



## purlin binding system

queen post with a shortened tie beam



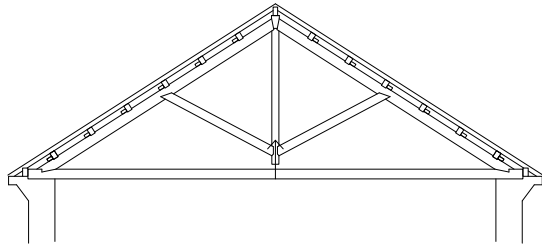
# 1.1.3 / Roof trusses



the most commonly used trusses in reconstructions

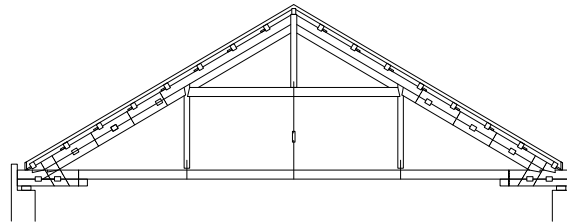
## king post truss

with a king post truss, a characteristic feature are horizontally oriented trusses with a gutter



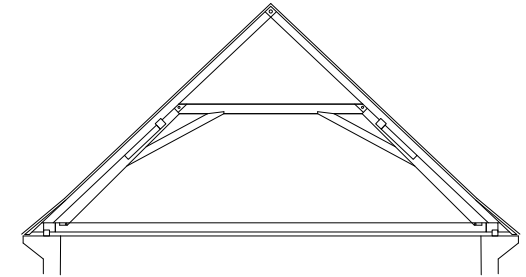
## queen post truss

with three hanging trusses, a characteristic feature are horizontally oriented trusses with a gutter



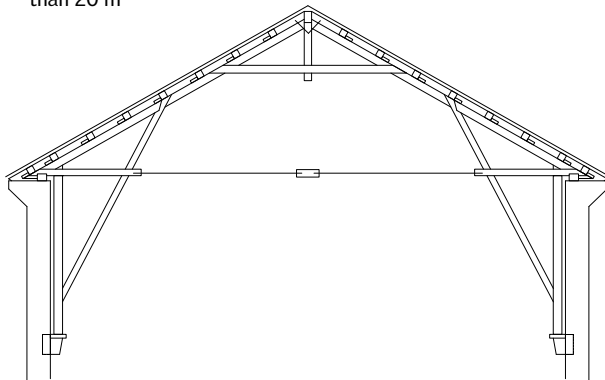
## scissor truss

inclined posts fixed by horizontal struts



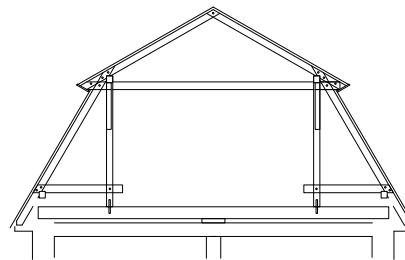
## ardant truss

principle of struts and hanging truss - for roofing spans larger than 20 m



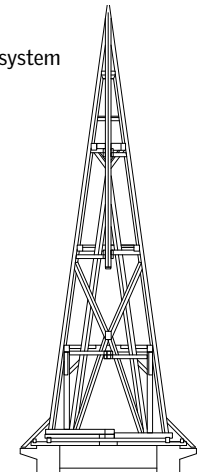
## mansard truss

from two roof planes of different inclinations



## tower trusses

truss derived from a purlin system



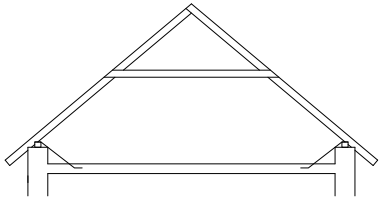
# 1.1.3 / Roof trusses



the most commonly used trusses in new buildings

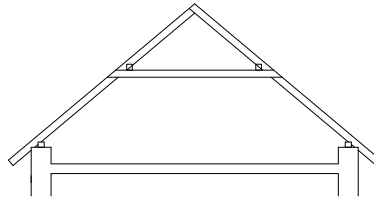
## collar beam truss

with anchoring of the wall beam to the ceiling structure, suitable for family houses with residential attics and span in the range of 6-9 m



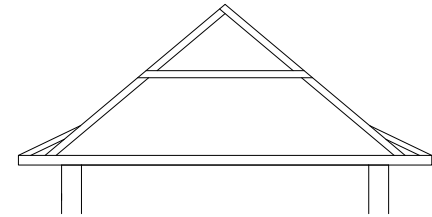
## collar beam truss

with hanger rod, suitable for family houses with a residential attic and a span of 6-11 m



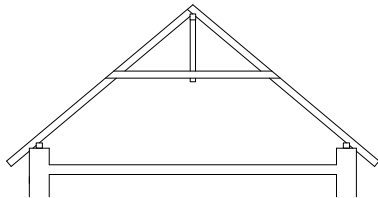
## collar beam truss

with flared eaves, suitable for family houses with a residential attic with a span of 6-11 m



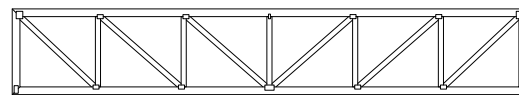
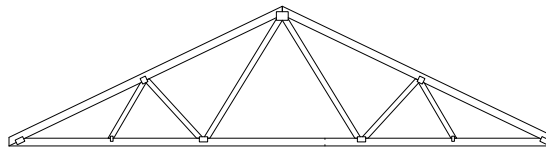
## collar beam truss

with hanger rod, suitable for family houses with a residential attic with a span of 6-11 m



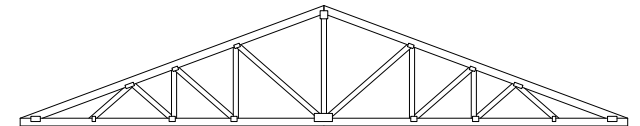
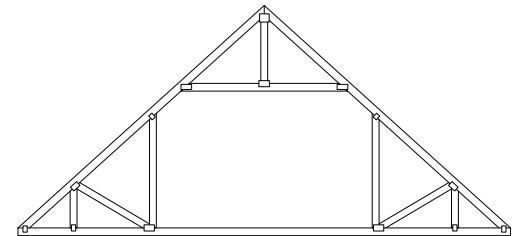
## frame system

suitable for family houses with a non-residential/partially used attic with a span of 6-30 m



## frame system

suitable for family houses with a non-residential/partially used attic with a span of 6-30 m



# 1.2 / Basic requirements

## living room and floor area with a sloping ceiling



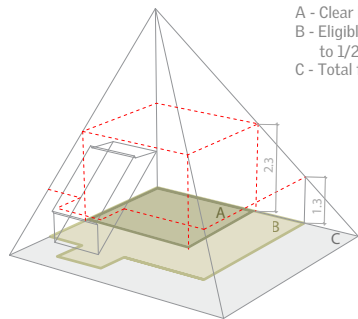
### Determination of floor area in the living room

**Decree No. 268/2009 Coll., Act No. 183/2006 Coll.**  
(Building Law):

The living room is a part of the apartment which / is intended for permanent living / has a minimum floor area of  $8 \text{ m}^2$  / if the apartment consists of one living room, it must have a floor area of at least  $16 \text{ m}^2$  / for rooms with sloping ceilings, the living room area does not include the area with a clear height of less than  $1.2 \text{ m}$  / the clear height of the rooms must be at least  $2.3 \text{ m}$  above at least half of the floor area of the room.

### ČSN 73 4301 Residential buildings:

The living room must have an area of at least  $8 \text{ m}^2$  / if the apartment consists of a single room, it must have an area of at least  $16 \text{ m}^2$  / a room with sloping ceilings must have a height of min.  $2.3 \text{ m}$  at least above half of the floor area / this is defined by an imaginary plane perpendicular to the floor plane, intersecting the plane of the sloping ceiling at a height of  $1.3 \text{ m}$  above the floor / for sleeping one person –  $8 \text{ m}^2$ , volume of at least  $20 \text{ m}^3$  / for sleeping of two people a volume of at least  $30 \text{ m}^3$ .



- A - Clear height 2.3 m
- B - Eligible area of living room min. to 1/2 of the floor
- C - Total floor area of the room

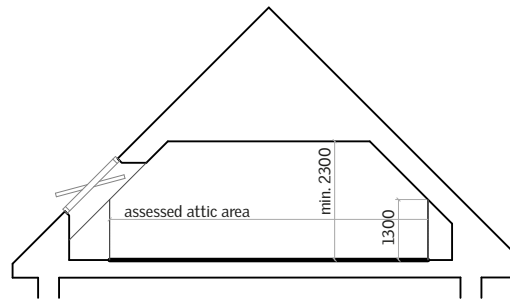
### Floor space area and statement of the area

We distinguish two areas of floor space / to assess whether it is a living room or not / for the purposes of the statement of area, i.e. to determine the actual floor covering needs for a given room.

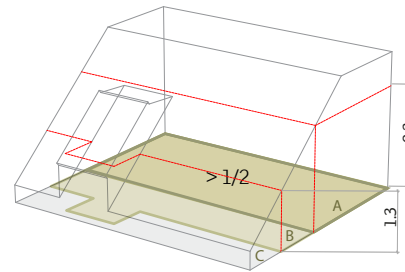
### The height of the attic parapet

the height of the attic parapet can be theoretically zero / realistically usable height at the place of the attic parapet is approx.  $0.8 \text{ m}$ .

### ČSN 73 4301 Residential buildings



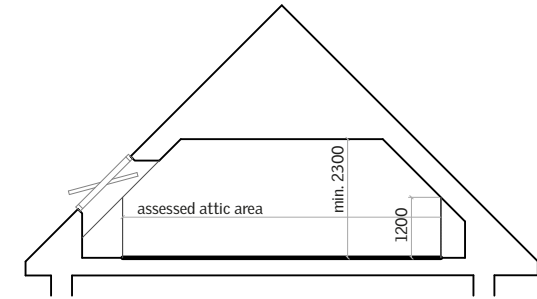
- A - Clear height 2.3 m
- B - Eligible area of living room min. to 1/2 of the floor
- C - Total floor area of the room



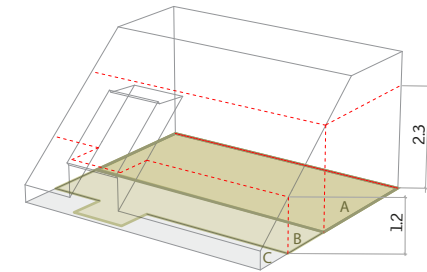
The height arrangement of the attic of residential buildings is  $1.3 \text{ meters}$  according to ČSN 73 4301 Residential buildings.

### Decree No. 268/2009 Coll.

Decree on technical requirements for constructions



- A - Clear height 2.3 m
- B - Eligible area of living room min. to 1/2 of the floor
- C - Total floor area of the room



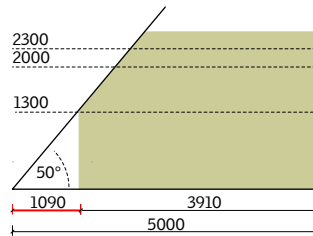
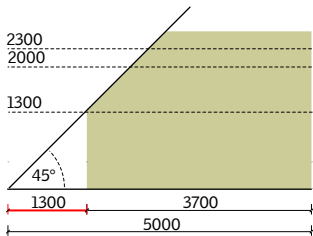
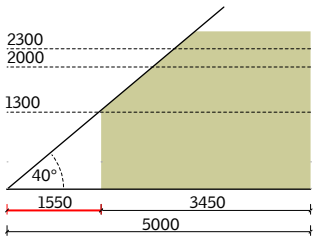
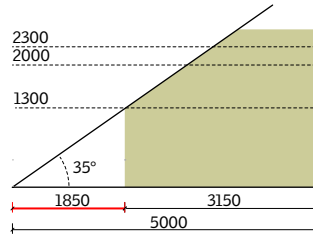
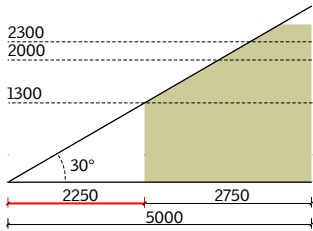
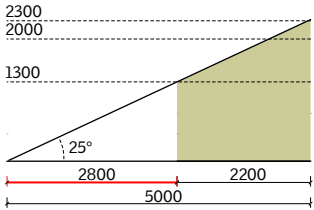
The height arrangement of the attic of residential buildings complies with the Decree No. 268/2009 Coll. of  $1.2 \text{ metres}$ .

# 1.3 / Optimal use of the attic



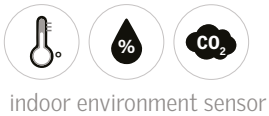
comparison of space use depending on the slope of the roof

attics with a higher roof pitch are better utilised

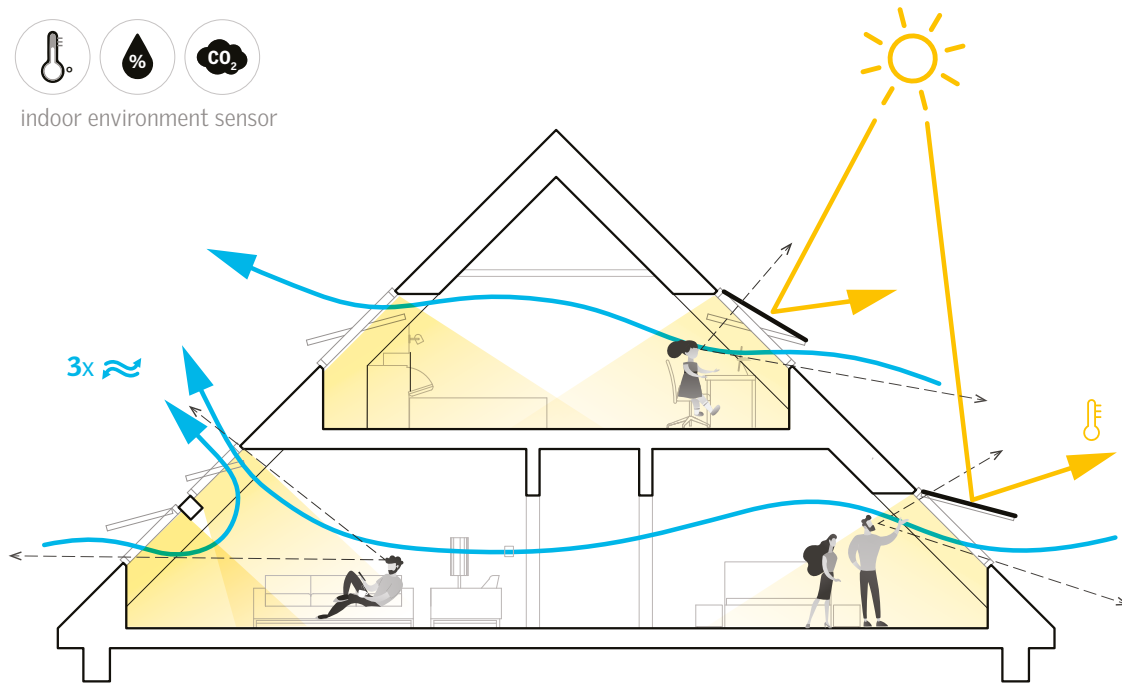


# 1.3 / Optimal use of the attic

ensuring the requirements for the quality of the indoor environment



indoor environment sensor



Daylight has a significant effect on the human psyche, affects our mood and sense of well-being during the day.

## Main design elements:



### 1. Daylight

Decree 20/2012 Coll. / ČSN EN 17037 / minimization of the use of artificial lighting during the day / we assess three parameters / amount of daylight / degree of sunlight / measures against glare / three levels of daylight in interiors: minimum, medium and large / mandatory minimum level – at 50% of comparative plane  $D_T$  2% (300 Lux) and at the same time to 95%  $D_{TM}$  0.7% (100 Lux).



### 2. Indoor air quality

Decree No. 268/2009 Coll. / during occupation a minimum amount of exchanged outdoor air of 25 m<sup>3</sup>/h per person must be ensured / minimum ventilation intensity 0.5 l/h / the indicator of the quality of the indoor environment is carbon dioxide CO<sub>2</sub> / the concentration in the indoor air must not exceed 1500 ppm / the CO<sub>2</sub> value is considered to be a healthy indoor environment up to 1000 ppm / controlled ventilation recommended – e.g. automatic window opening / transverse ventilation and chimney effect speeds up natural ventilation / larger room volume / tip: do not close the space above the tie beams.



### 3. Vision

ČSN EN 17037 Daylight in buildings / visual connection with the environment, which provides information about the local environment / we consider a horizontal angle of view (min. 14°) / length of view (min. 6 m) / number of landscape layers – sky layer / landscape layer / terrain layer (min. 1) / there are determined 3 levels of vision.



### 4. Temperature

Thermal stability of the attic is a fundamental criterion for the quality of the attic design / it is recommended to orient rooms with a larger volume of air and the possibility of effective air exchange / transverse ventilation and chimney effect on the sunny side of the roof / to design all window openings with external shading / to use automatic control. The difference in room temperature when using external shielding can be up to 7 °C / use of construction materials with thermal storage capacity / thermal insulation according to current requirements.



### 5. Room acoustics

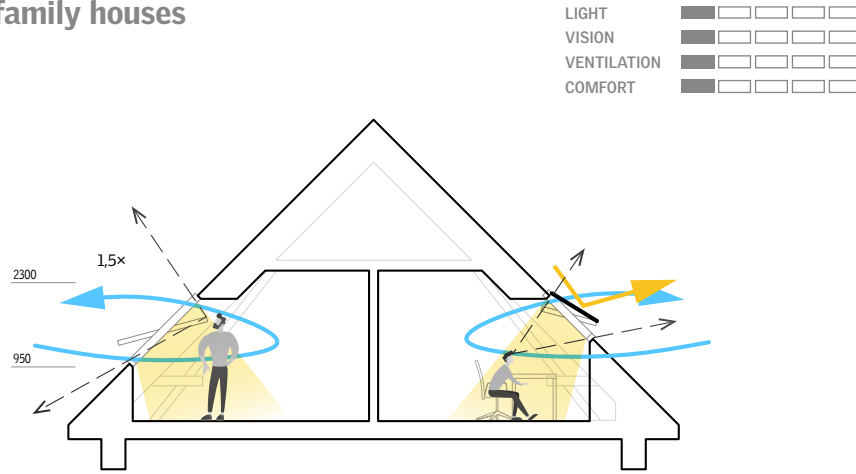
ČSN 73 0532 / reduction of outdoor noise by noise absorbing structures / eliminate internal noise by using materials with noise attenuation / design the layout of the room so that it allows good listening / on the street side, the roof window has an 8 dB lower noise level than the facade window / roof window to the yard by about 15 dB.

# 1.3 / Optimal use of the attic

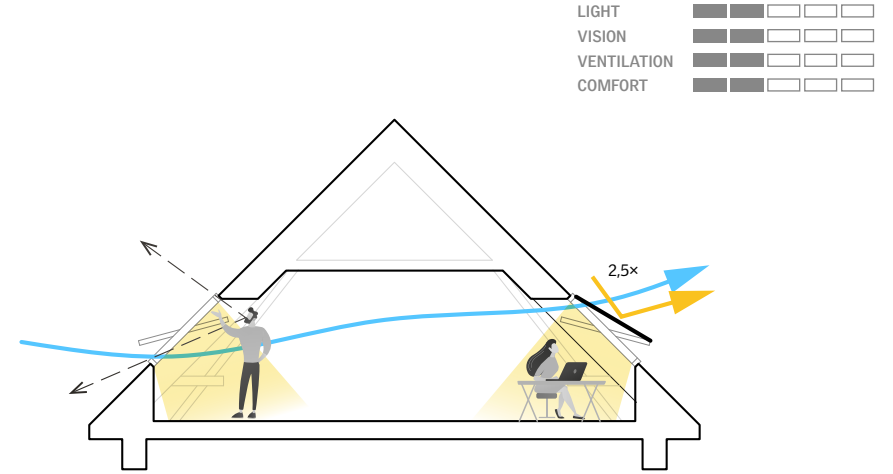
attic in family houses



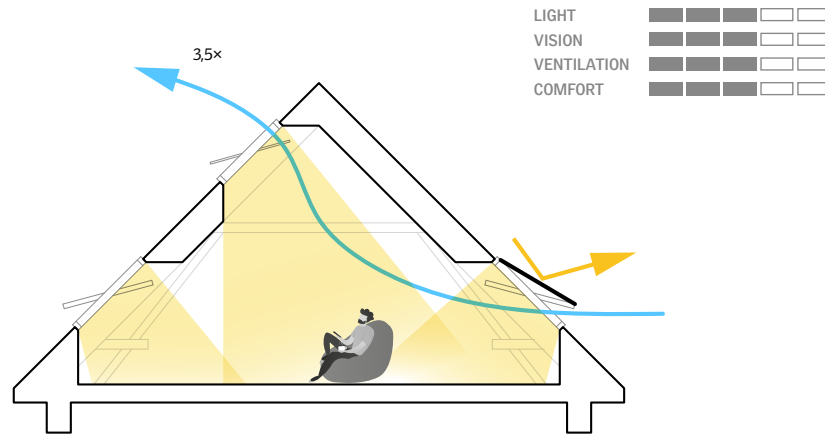
## attic in family houses



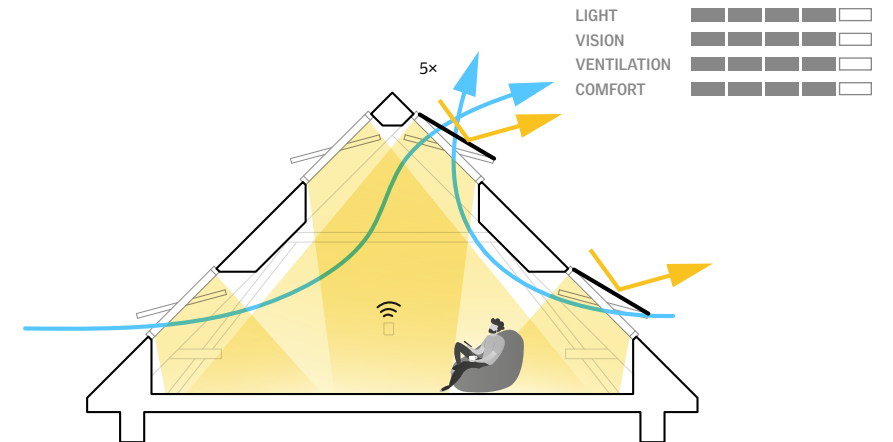
small rooms in the attic / lowered ceiling / high attic parapet / manual control of windows and shading



larger room / transverse ventilation / lowered ceiling / manual control of windows and shading



larger room / lighting of the entire depth of the room / open ceiling for a larger volume of air in the room / remote-controlled windows and shading



larger room / lighting of the entire depth of the room / open ceiling for a larger volume of air in the room / transverse ventilation and chimney effect / automatic window control and shading

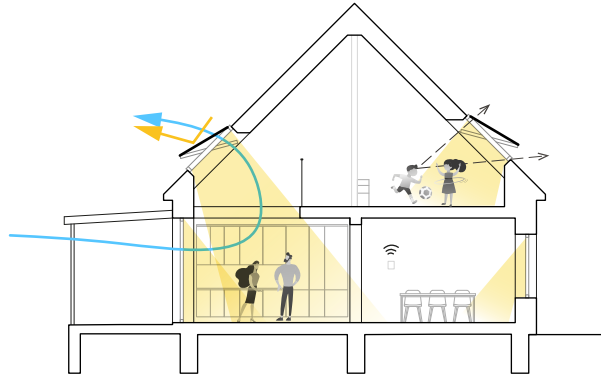


# 1.3 / Optimal use of the attic

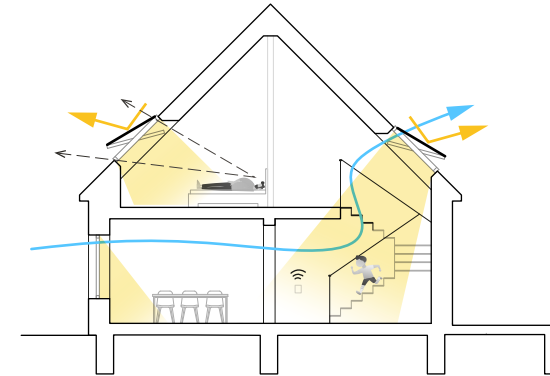
ensuring the requirements for the quality of the indoor environment



## family houses

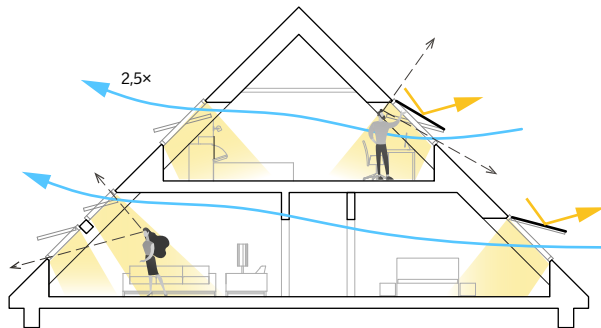


ground floor lighting through roof / daylight in the middle of the layout / efficient ventilation / design element / unique atmosphere / automatic window control

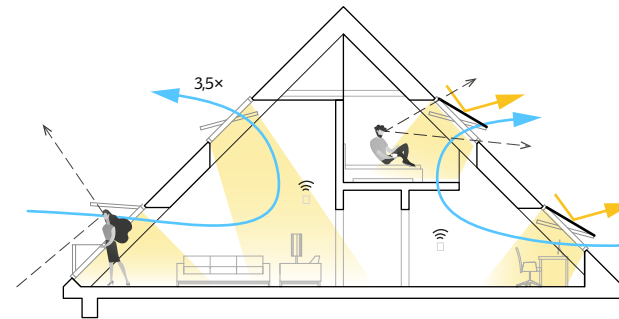


stairwell / the most efficient ventilation of the family house / increased safety of movement on the staircase / design element / unique atmosphere / automatic window control

## attic flats / lofts



combination of windows on top of each other in the living space / transverse ventilation of the bedroom / view from the living rooms even while sitting



two-storey living space / larger air volume / better lighting / ventilation chimney effect / atmosphere / room with mezzanine / remote control of high windows

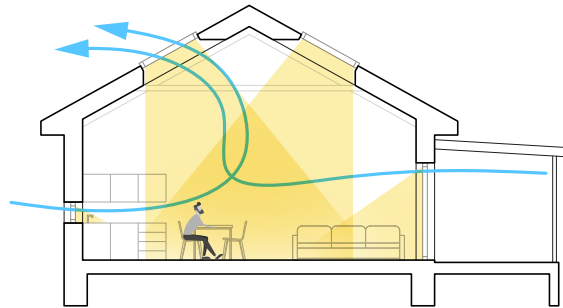
# 1.3 / Optimal use of the attic



ensuring the requirements for the quality of the indoor environment

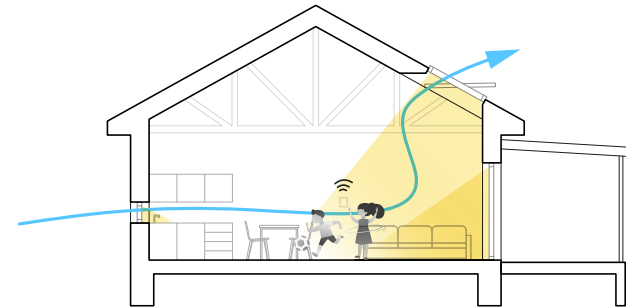


## open truss bungalow



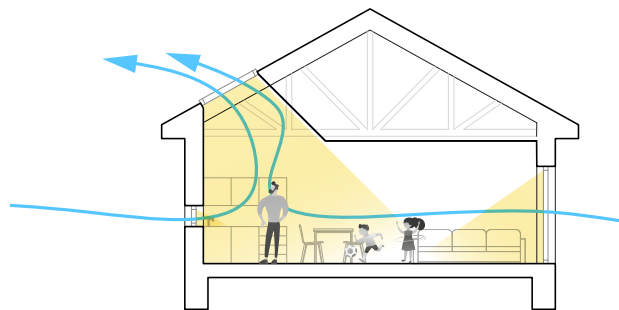
visual construction of trusses over a selected part of the layout / unique atmosphere / enough light in the entire depth of the room / effective ventilation

## bungalow with open truss and exposed trusses



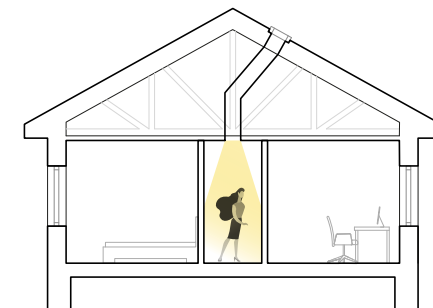
creation of a great visual impression by opening into the truss space / optical enlargement of the space with sufficient daylight intensity / even lighting of the room from above / larger volume of air in the room / controlled natural ventilation with chimney effect

## bungalow with light shaft



targeted lighting of a specific part of the layout / freeing up space for upper cabinets thanks to the use of a light shaft / effective ventilation through high-set windows / structurally small intervention in the truss

## bungalow with tubular skylight



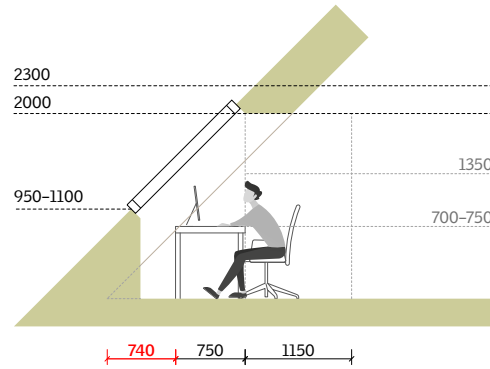
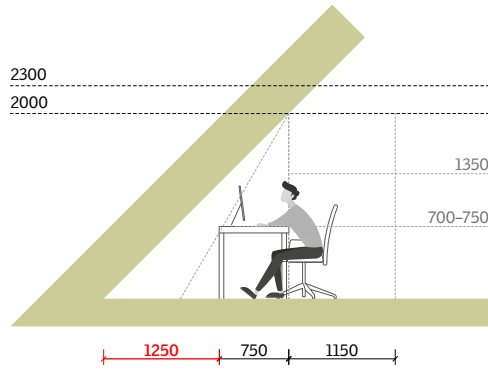
charming impression in the entrance area / the easiest way to illuminate the rooms in the middle of the layout / design solution

# 1.4 / Attic ergonomics

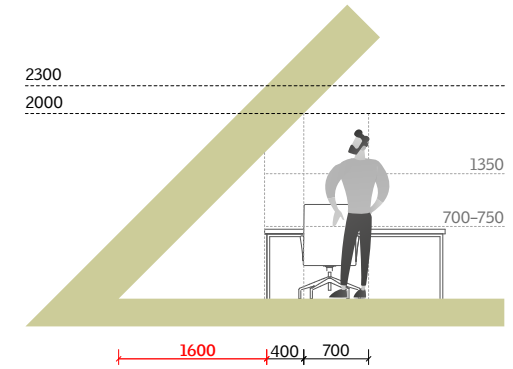


basic ergonomics of placing furniture under the sloping wall

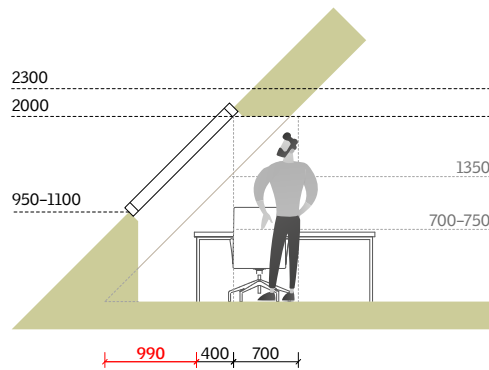
## desk location



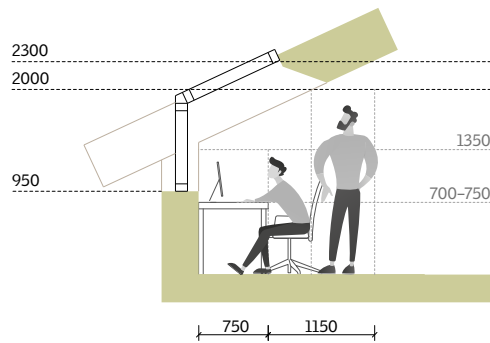
better use of space / targeted lighting of the work surface / perfect view



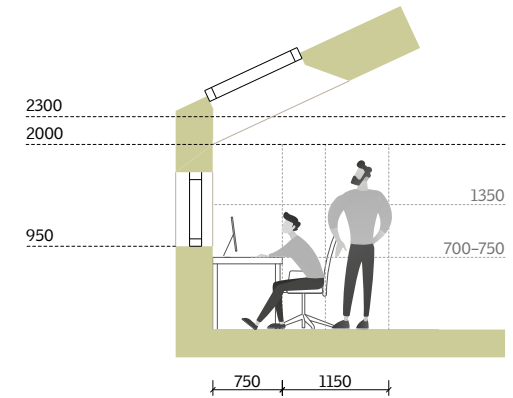
## placement of the desk in a space with a low roof pitch



extension of the handling space with the required height by the depth of the lining / pay attention to the direction of the light falling on the desk



better illumination of the depth of the layout / view provided by an additional window



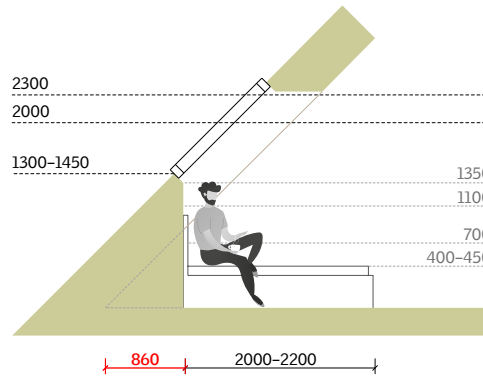
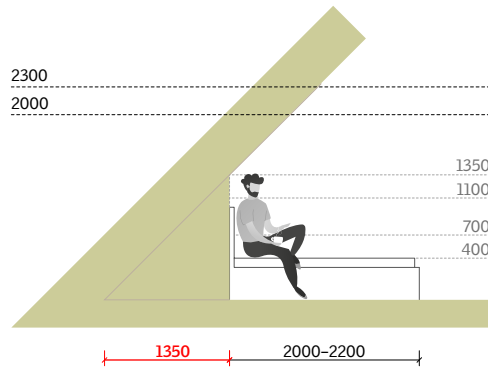
solution of undersizing of facade windows in buildings with low roof pitch / addition of roof lighting

# 1.4 / Attic ergonomics

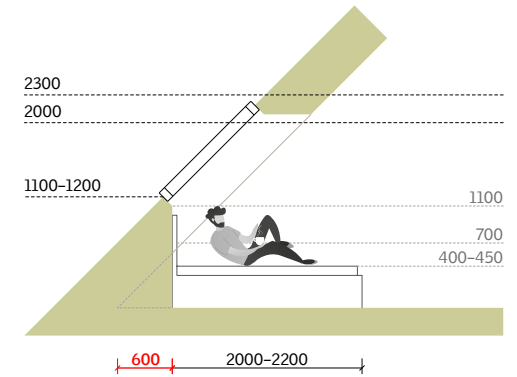


basic ergonomics of placing furniture under the sloping wall

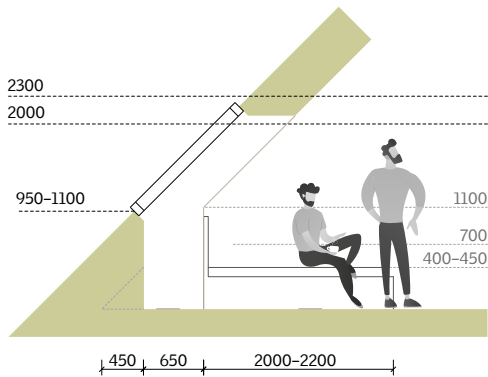
## bed location



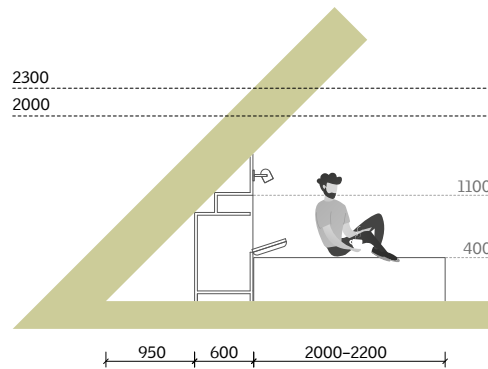
better use of layout / increase of usable area / higher attic parapet



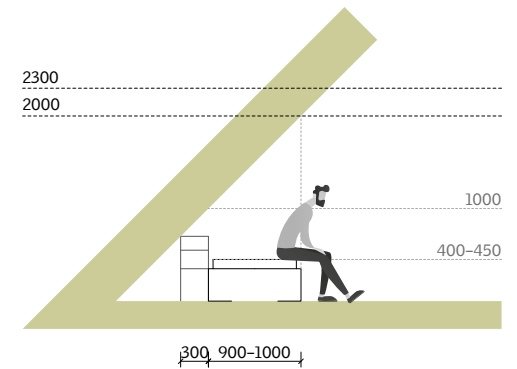
creation of a space with a minimum height for placing the bed under the window



easy access to the bed thanks to the roof windows in recess / low attic parapet / optimal view



use the inclined wall behind the bed for placement of the furniture



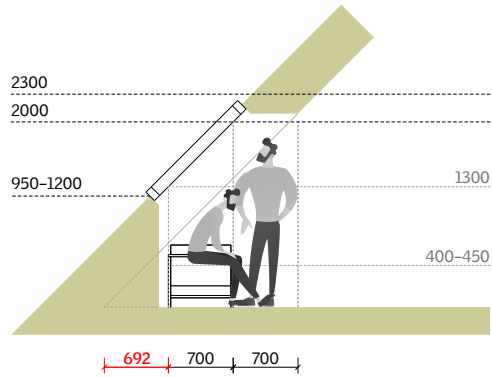
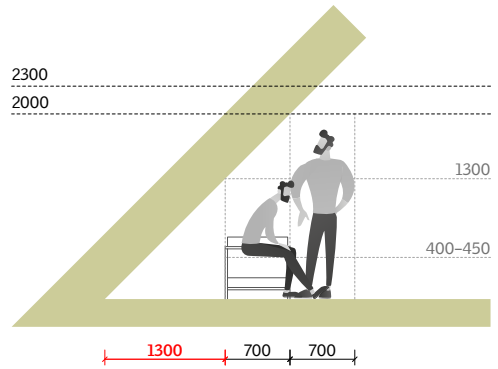
placement of the furniture by the bed parallel to the inclined wall

# 1.4 / Attic ergonomics

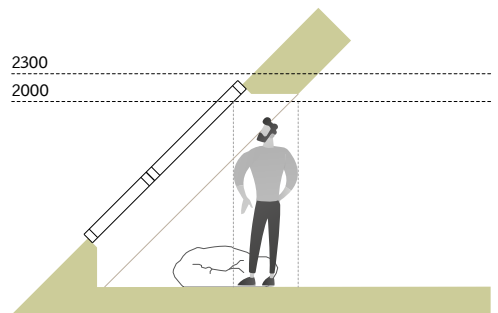
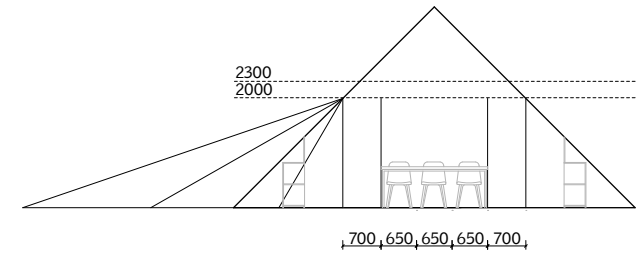


basic ergonomics of placing furniture under the sloping wall

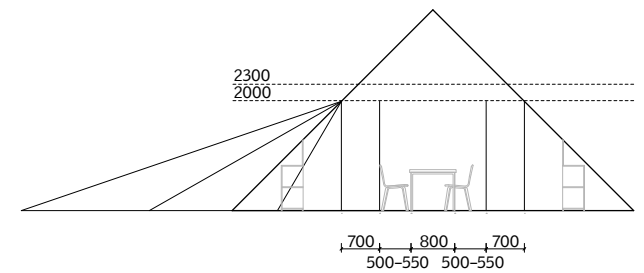
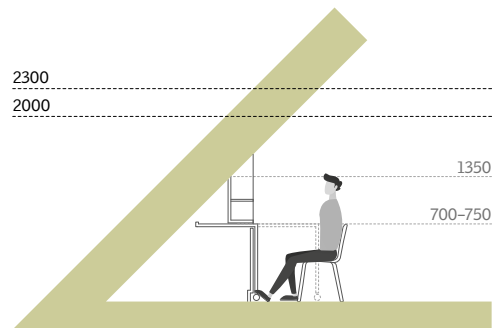
## seating location



increase the headroom by the depth of the lining



parapet function with lower windows with laminated glass / glazing to the ground as an attractive element of a modern interior

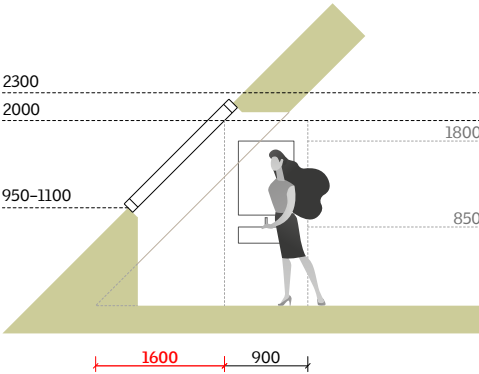
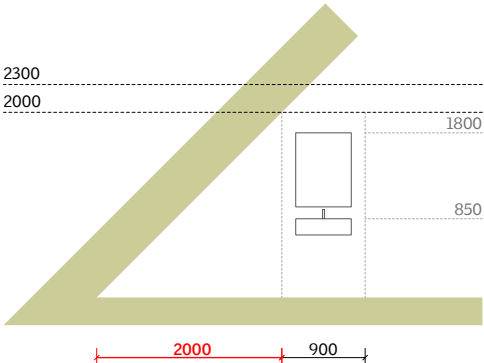


# 1.4 / Attic ergonomics

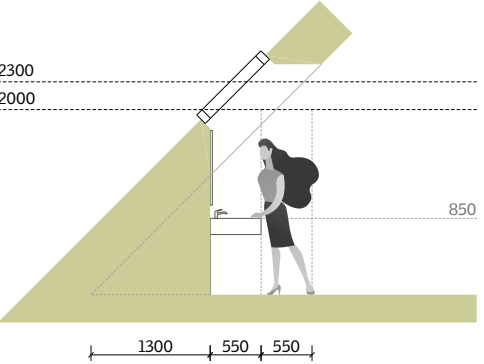
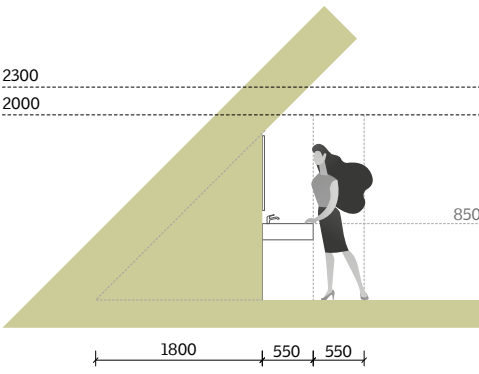


basic ergonomics of placing furniture under the sloping wall

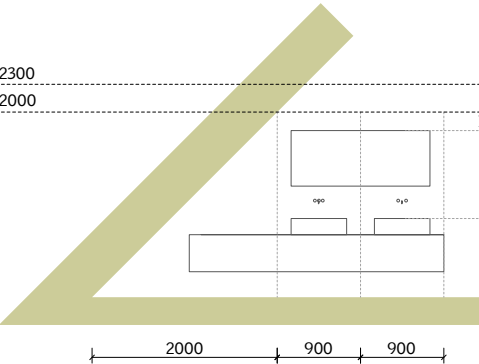
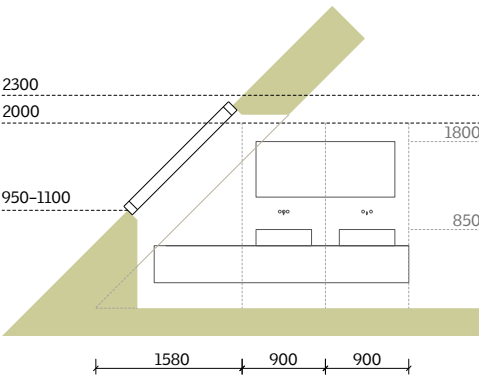
## location of the sink



more space / natural light near the mirror



more space / natural light near the mirror

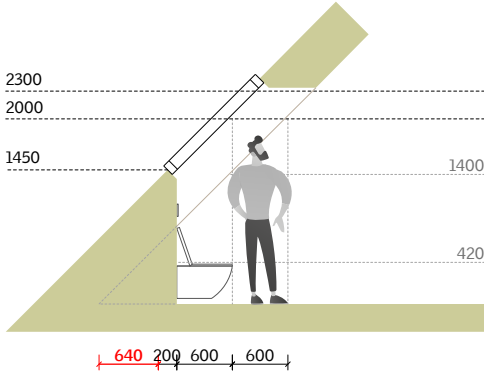
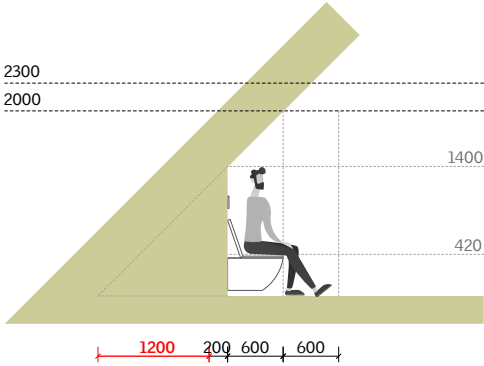


# 1.4 / Attic ergonomics

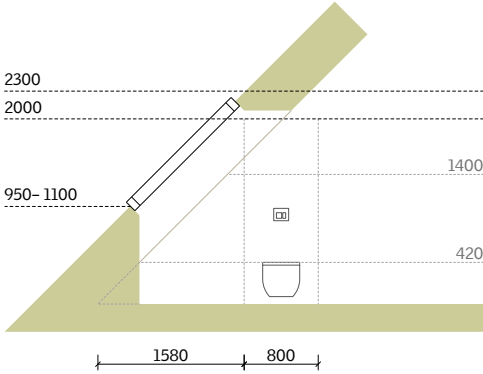


basic ergonomics of placing furniture under the sloping wall

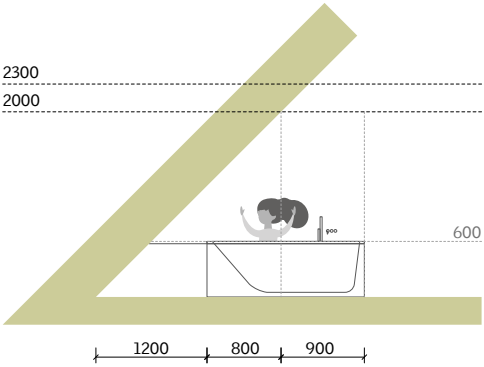
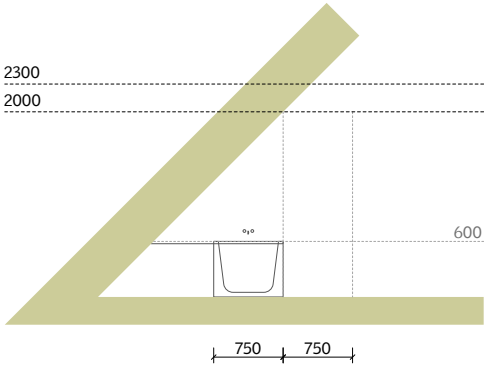
## toilet location



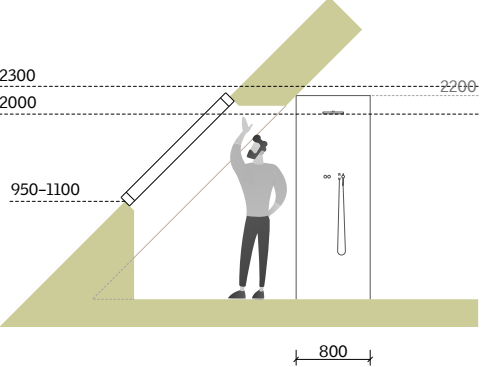
higher headroom / ventilation / lighting



## bath location



## shower location

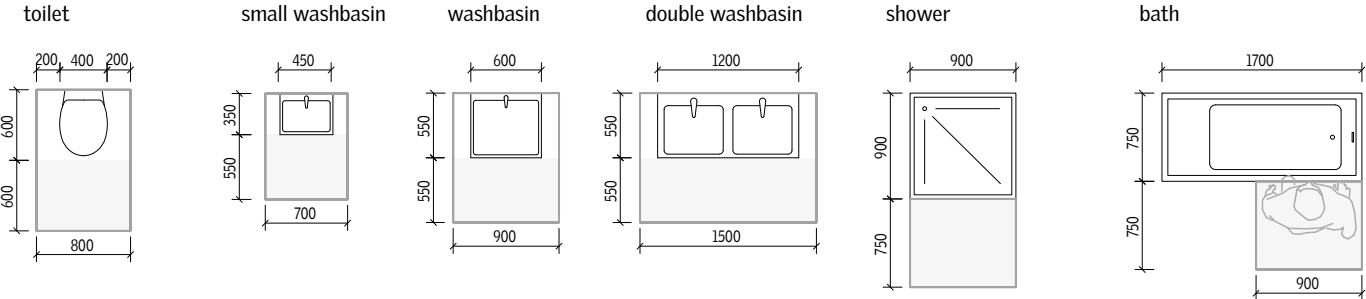


# 1.4 / Attic ergonomics

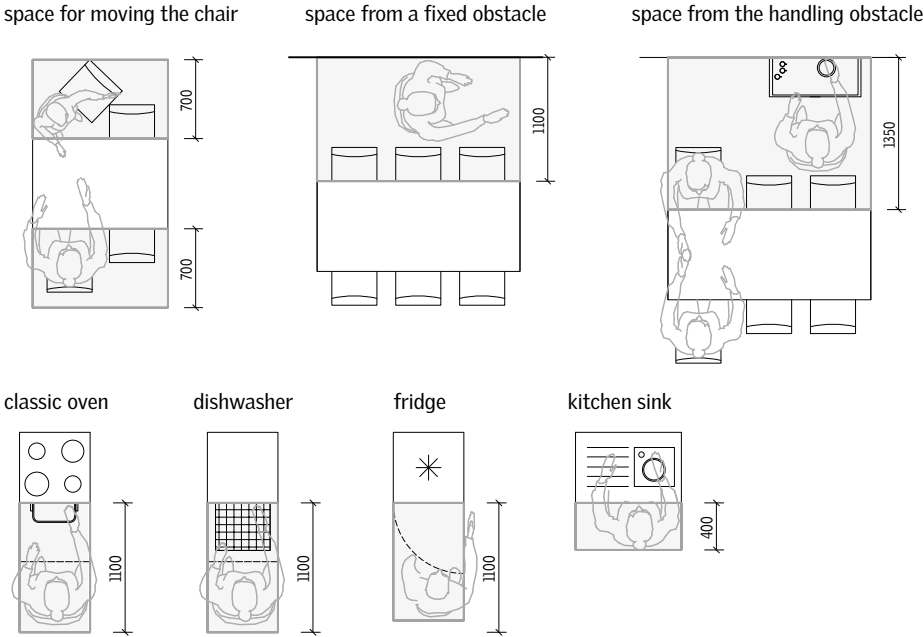
handling space



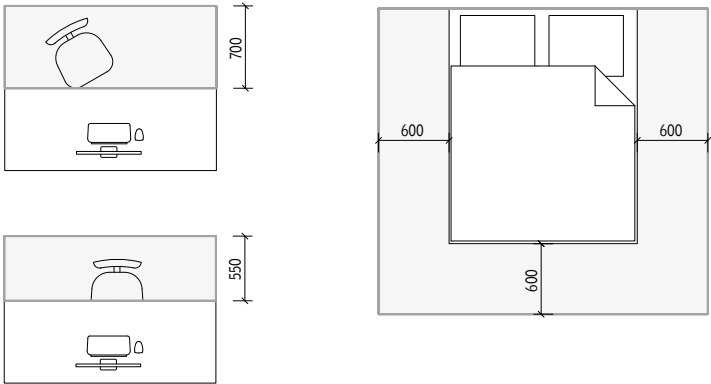
## bathrooms



## kitchen, dining room



## rooms



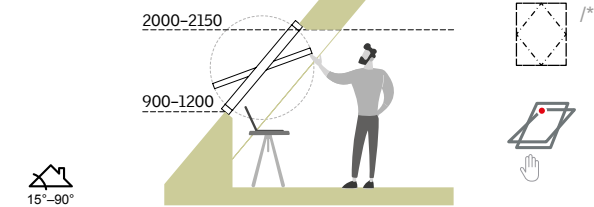


# 1.5 / Roof windows

types, methods of control



## centre pivot window GLL / GLU / GGL / GGU

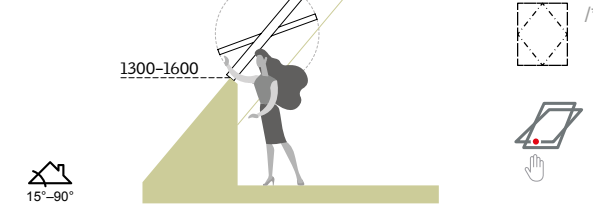


Top operated window

standard attic parapet / recommended when placing furniture under a window.

\*/ display in floor plan

## centre pivot window GLL B / GLU B

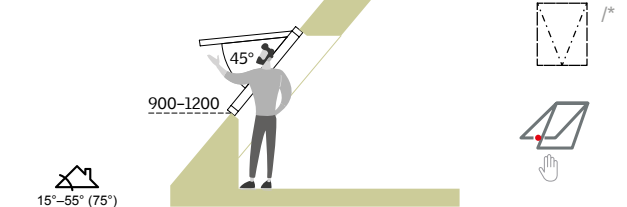


Bottom operated window

high attic parapet

**⚠** In the living room it can only be used as additional lighting – there is no view from the room.

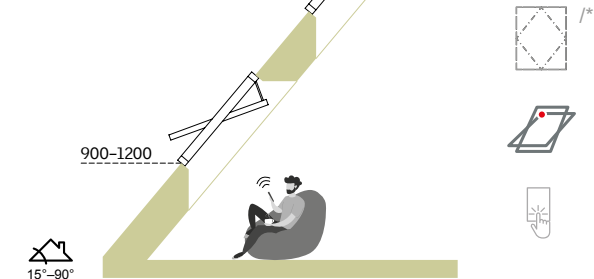
## top hung pivot window GPL / GPU



Bottom operated window

standard attic parapet / panoramic view / possibility to tilt above the roof plane / for washing the window the function of swivelling in a pivot position / not suitable for furniture placement under the window

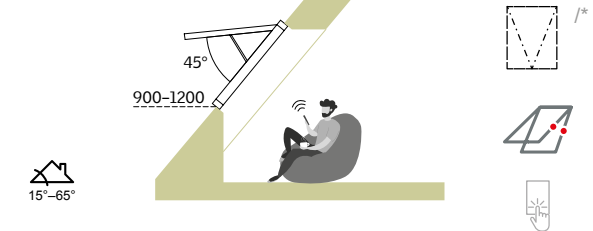
## centre pivot window GGL / GGU INTEGRA GLL / GLU + engine



Electric or solar powered remote control

not only for windows out of range / comfortable remote control / rain sensor

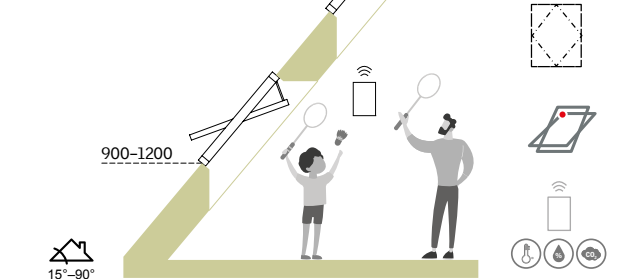
## top hung pivot window GPU INTEGRA



Remote controlled electric powered window

panoramic view / comfortable remote control / rain sensor

## control system VELUX ACTIVE with NETATMO



Automatic control of the VELUX ACTIVE indoor environment

automatic control of ventilation and shielding based on sensors / humidity, temperature, CO<sub>2</sub> level / smart home / for electrically and solar powered windows and blinds

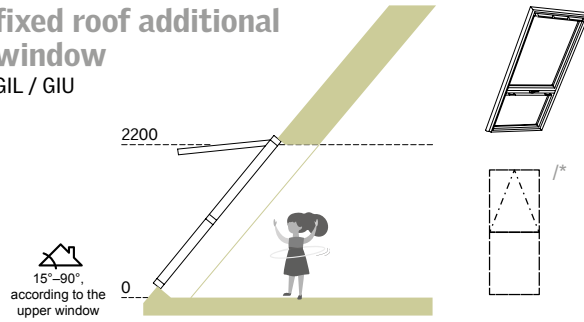
# 1.5 / Roof windows

types, methods of control



## fixed roof additional window

GIL / GIU



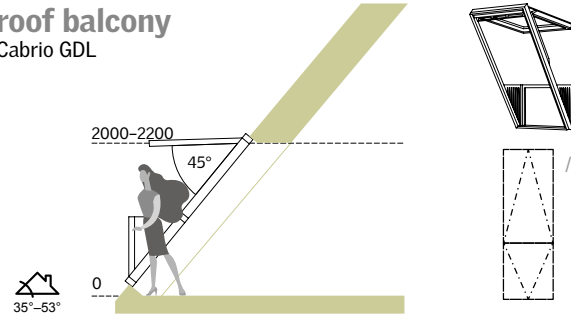
Non-opening, window sill function

can only be fitted under the roof window / laminated glass

\*/ display in floor plan

## roof balcony

Cabrio GDL

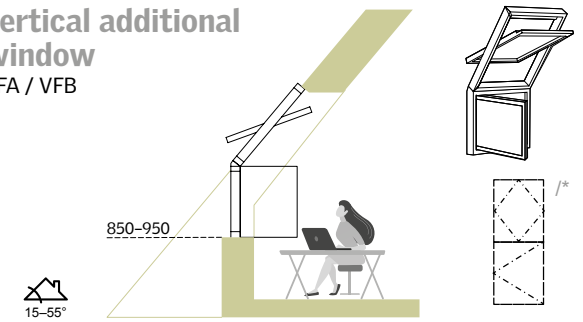


Balcony created by opening both parts of the window

the upper part operated by lower handle / lower part tilted by handles / side sliding railing with safety device against closing / glued glass

## vertical additional window

VFA / VFB

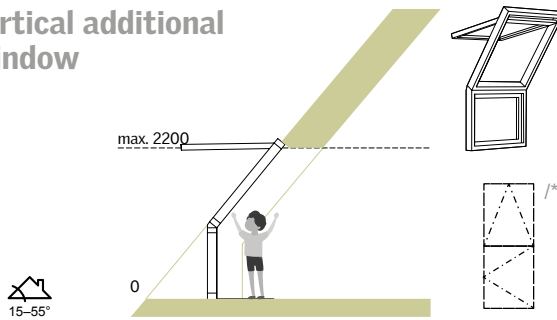


Openable vertical additional window

view from the facade window / installation only under the roof window / VFA – hinges on the left side / VFB – hinges on the right side

## vertical additional window

VIU

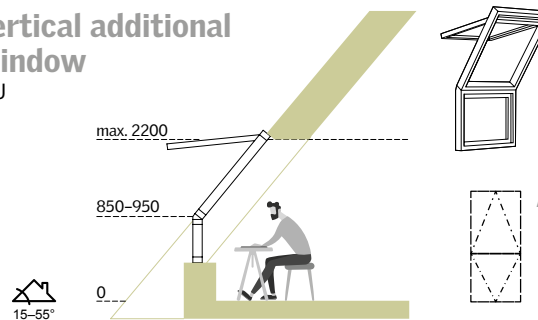


Non-opening vertical additional window

view from the roof window / installation only under the roof window / window sill function

## vertical additional window

VIU

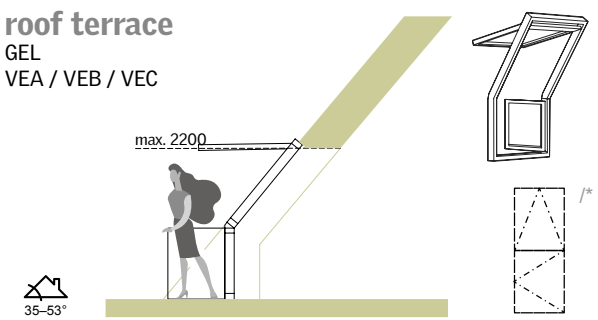


Non-opening vertical additional window

view from the additional window / installation only under the sunroof

## roof terrace

GEL  
VEA / VEB / VEC



Exit to the roof terrace

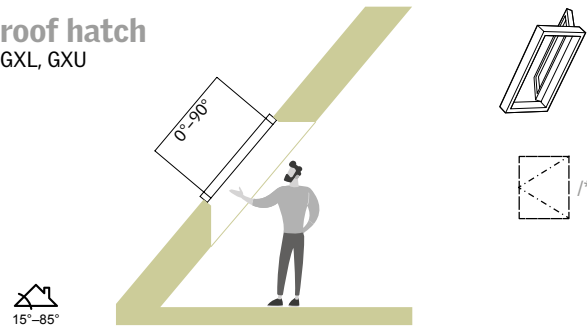
upper tilting window / lower opening or non-opening window / right and left opening / can be combined side by side

# 1.5 / Roof windows

types, methods of control



## roof hatch GXL, GXU



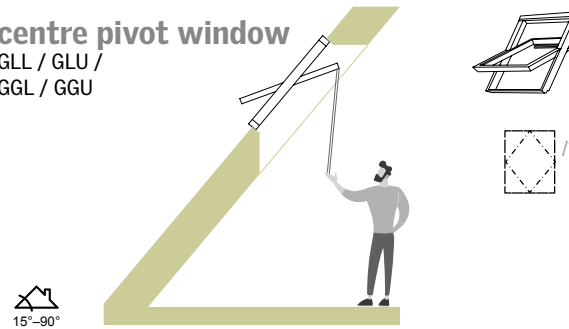
Openable with side hinges

for insulated roof / fixing of the open section

\*/ display in floor plan

## centre pivot window

GLL / GLU /  
GGL / GGU



control of the windows manually with a pole

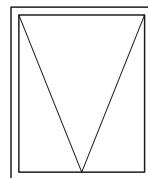
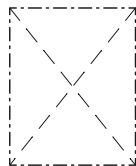
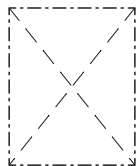
ČSN 01 3420 Drawings of buildings – Drawings of the construction part  
ČSN ISO 128-23 Technical drawings – Rules for representation - Part 23: Lines in construction drawings

Roof windows in floor plan

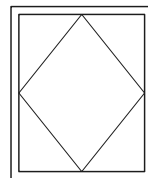
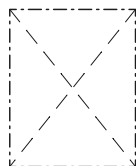
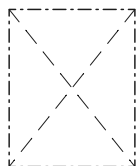
TRUSS

ATTIC

ROOF



top hung pivot roof window



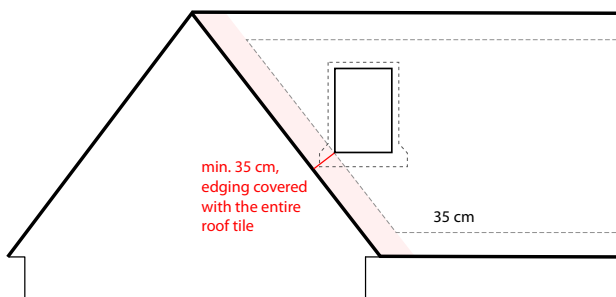
centre pivot roof window

# 1.5 / Roof windows

types, methods of control

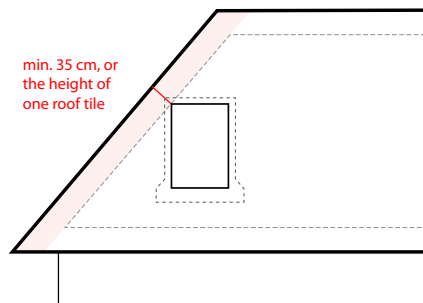


## minimum distances of the roof window from the valley



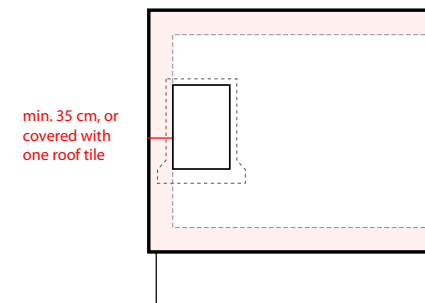
\* applies to roof tiles of 30 cm long

## minimum distances of the roof window from the yard

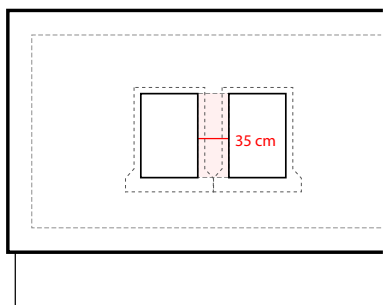


\* applies to roof tiles of 30 cm long

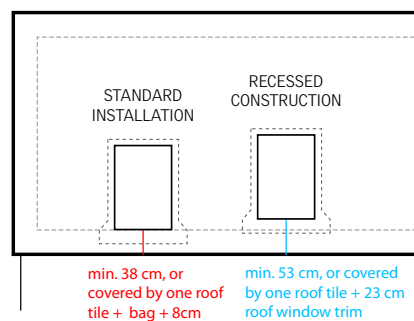
## minimum distances of the roof window from the roof edge



## minimum distances of two separately installed windows

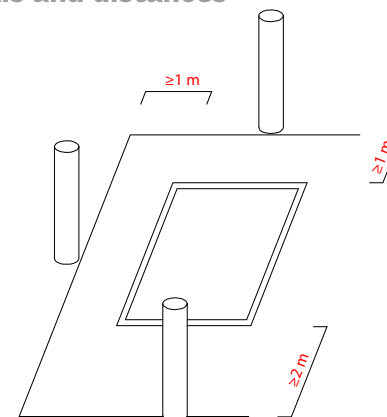


## minimum distances of the roof window from the gutter



\* applies to roof tiles of 30 cm long

## intervals and distances



ČSN 73 4201 Chimneys and smoke exhaust pipes – design, implementation and connection of fuel appliances.  
The location of roof windows and chimneys is determined by the minimum distances: 1 m from the sides; 2 m under the window; 1 m above the window

# 1.5 / Roof windows

dimension tables



				GGL PK25		
			GGL MK27			
	GGL CK01				GGL SK01	
	GGL GGU CK02					
GGL BK04	GGL GGU GPL GPU CK04	GGL GGU FK04	GGL GGU GPL GPU MK04	GGL GPL PK04		GGL GGU GPL UK04
	GGL GGU GPL GPU CK06	GGL GGU GPL GPU FK06	GGL GGU GPL GPU MK06	GGL GGU GPL GPU PK06	GGL GGU GPL GPU SK06	
		GGL GGU GPL GPU FK08	GGL GGU GPL GPU MK08	GGL GGU GPL GPU PK08	GGL GGU GPL GPU SK08	GGL GGU GPL GPU UK08
			GGL GGU GPL GPU MK10	GGL GGU GPL GPU PK10	GGL GGU GPL GPU SK10	GGL GGU GPL GPU UK10
			GGL MK12			

Dimensions (mm):  
 Vertical: 550, 624, 698, 778, 978, 1178, 1398, 1600, 1800  
 Horizontal: 472, 550, 660, 780, 942, 1140, 1340

## Additional windows

			GIL GIU MK34	GIL GIU PK34	GIL GIU SK34	GIL GIU UK34
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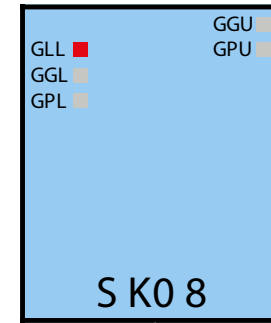
Dimensions (mm):  
 Vertical: 920  
 Horizontal: 472, 550, 660, 780, 942, 1140, 1340

## Vertical additional windows

			VFE VIU MK31	VFE VIU PK31	VFE VIU SK31	VFE VIU UK31
			VFE VIU MK35	VFE VIU PK35	VFE VIU SK35	VFE VIU UK35
			VFE VIU MK36	VFE VIU PK36	VFE VIU SK36	VFE VIU UK36
			VFE VIU MK38	VFE VIU PK38	VFE VIU SK38	VFE VIU UK38

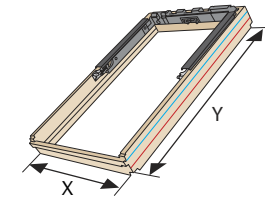
Dimensions (mm):  
 Vertical: 600, 954, 1154, 1374  
 Horizontal: 472, 550, 660, 780, 942, 1140, 1340

VELUX roof window type

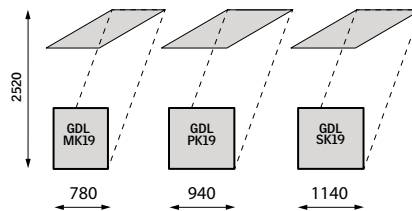


code for the size of the VELUX window

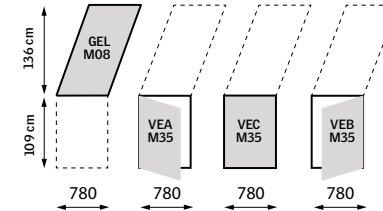
The dimensions of the windows apply to the outer frame of the roof window



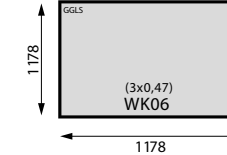
## Roof balcony



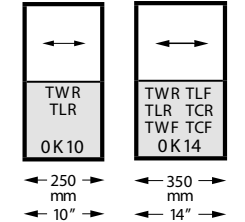
## Roof terrace



## VELUX Studio



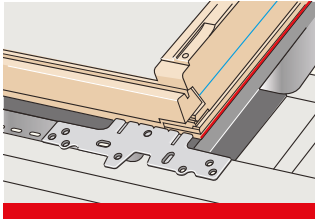
## Tubular skylights



# 1.6 / Installation of a window in the roof structure



## standard installation between truss insulation

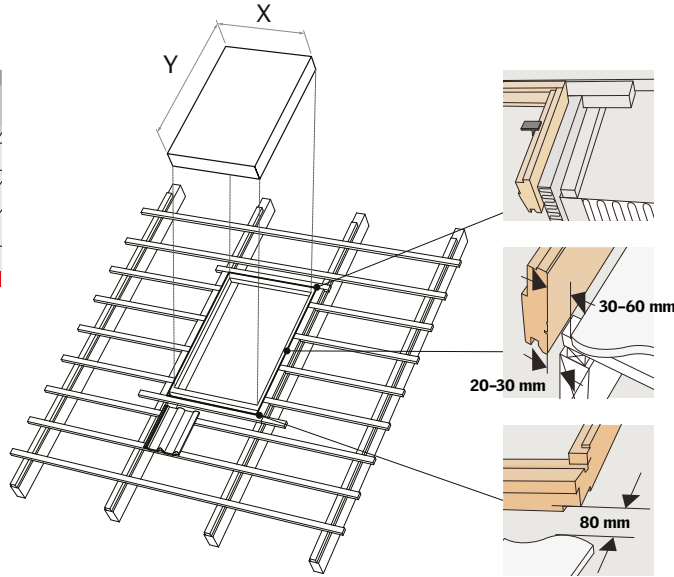


### Red level

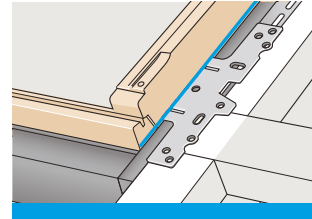
Standard installation of VELUX windows since 2001. Mounting brackets are mounted on the lower and upper part of the window frame.



15°-90°



## recess mounting between truss insulation

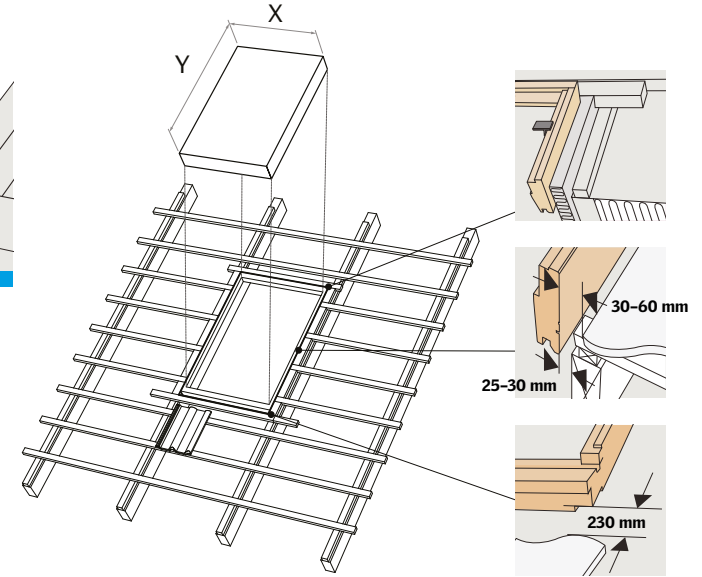


### Blue level

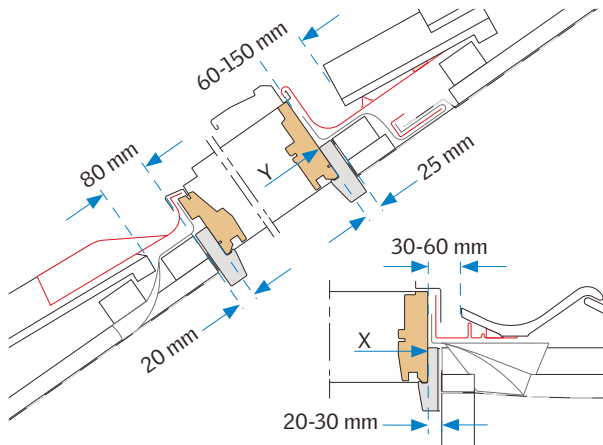
The roof window is set 40 mm deeper in the roof structure compared to the red level. Mounting brackets are mounted on the window frame from the sides.



20°-90°

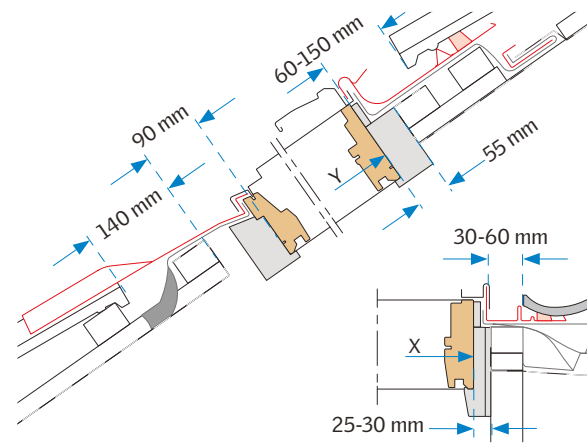


### Mounting hole size standard installation of edging EDW, EDS



	X	X+60	Y	Y+45
CK02	550	610	778	823
CK04	550	610	978	1023
FK06	660	720	1178	1223
FK08	660	720	1398	1443
MK04	780	840	978	1023
MK06	780	840	1178	1223
MK08	780	840	1398	1443
MK10	780	840	1600	1645
PK06	942	1002	1178	1223
PK08	942	1002	1398	1443
PK10	942	1002	1600	1645
SK06	1140	1200	1178	1223
SK08	1140	1200	1398	1443
SK10	1140	1200	1600	1645
UK08	1340	1400	1398	1443
UK10	1340	1400	1600	1645

### Mounting hole size recess mounting edging EDW, EDS

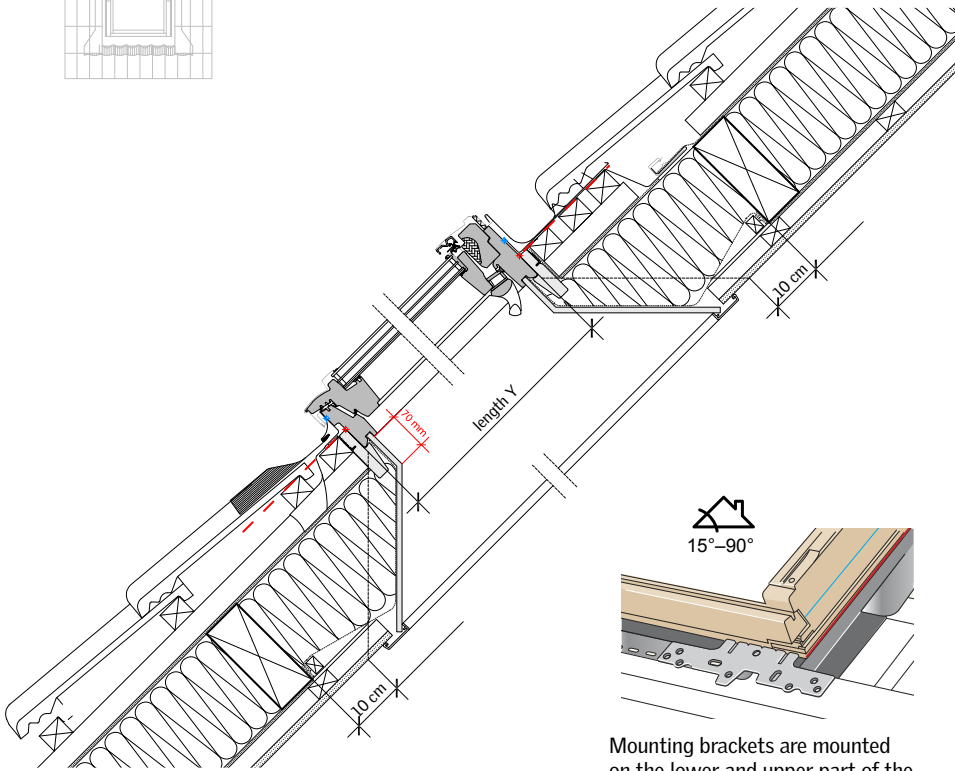
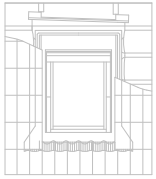


	X	X+60	Y	Y+145
CK02	550	610	778	923
CK04	550	610	978	1123
FK06	660	720	1178	1323
FK08	660	720	1398	1543
MK04	780	840	978	1123
MK06	780	840	1178	1323
MK08	780	840	1398	1543
MK10	780	840	1600	1745
PK06	942	1002	1178	1323
PK08	942	1002	1398	1543
PK10	942	1002	1600	1745
SK06	1140	1200	1178	1323
SK08	1140	1200	1398	1543
SK10	1140	1200	1600	1745
UK08	1340	1400	1398	1543
UK10	1340	1400	1600	1745

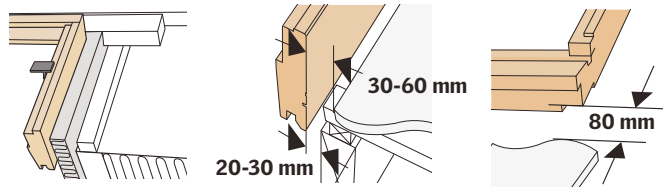
# 1.6 / Installation of a window in the roof structure



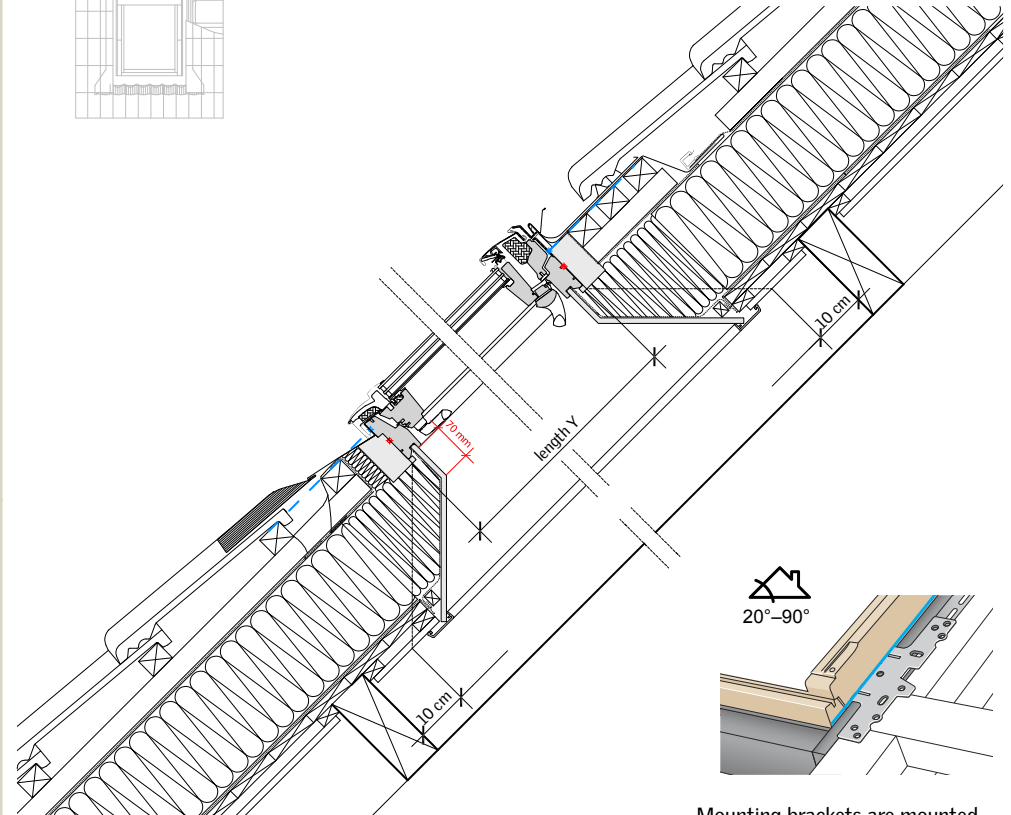
## standard installation between truss insulation



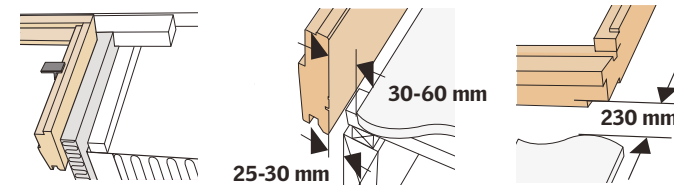
Mounting brackets are mounted on the lower and upper part of the window frame.



## recess mounting above truss insulation



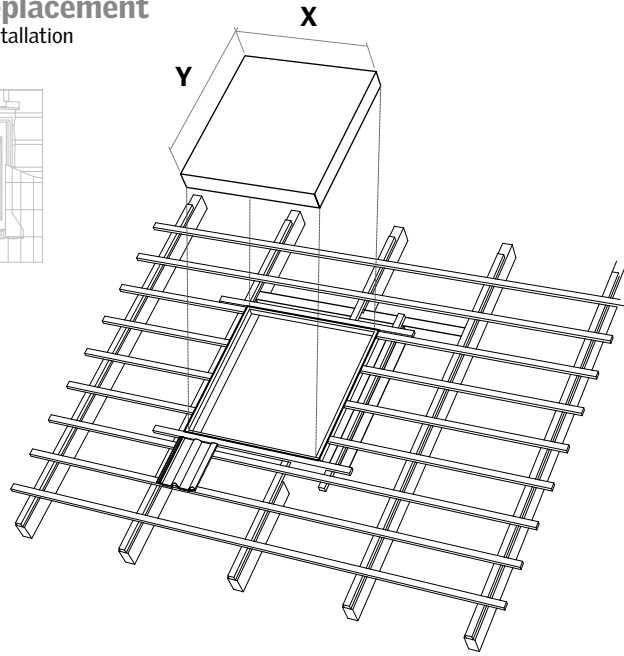
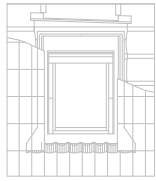
Mounting brackets are mounted on the side frame of the window.



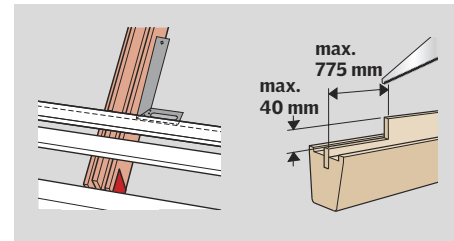
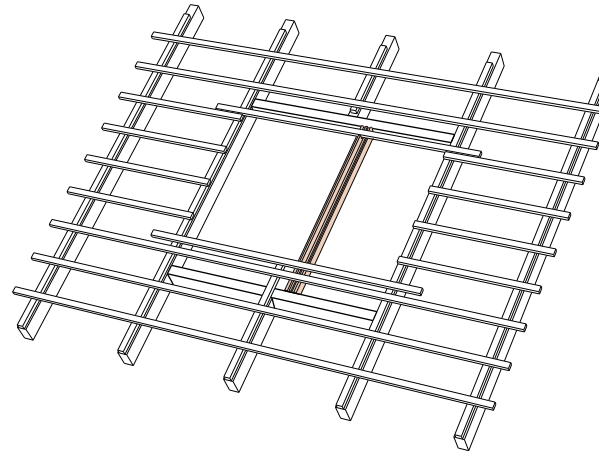
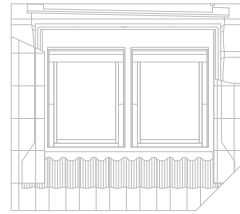
# 1.6 / Installation of a window in the roof structure



## truss replacement standard installation

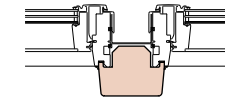


## truss replacement - EBY/EKY standard installation



## Interior truss EKY

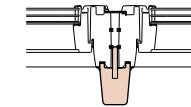
EKY W20 - length 2000 mm  
EKY W27 - length 2700 mm  
EKY W35 - length 3500 mm



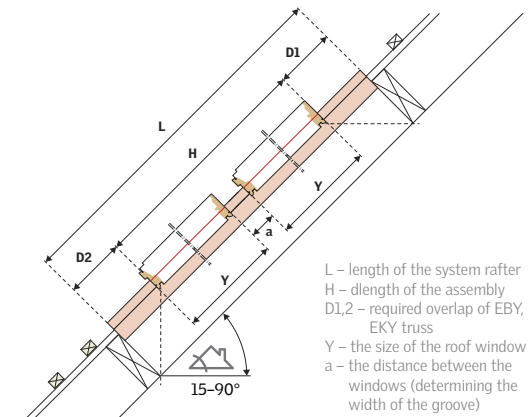
- Distance of window frames 100 mm
- unlimited installation width
- standard roof mounting
- recess mounting in the roof
- wood coated with lacquered foil veneer with white acrylic coating.

## Interior truss EBY

EBY W10 with hinge for combination with vertical additional window  
EBY W20 - length 2000 mm  
EBY W27 - length 2700 mm  
EBY W35 - length 3500 mm



- Distance of window frames 18 mm
- maximum assembly width 2780 mm
- standard roof mounting
- wood covered with lacquered veneer, foil with white acrylic coating.

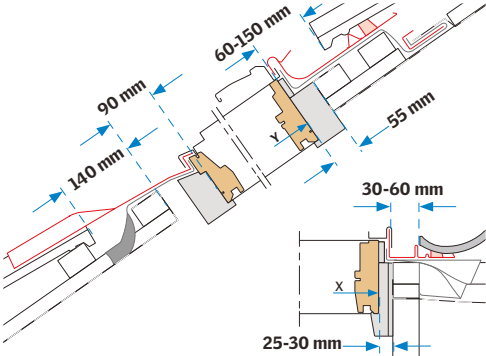
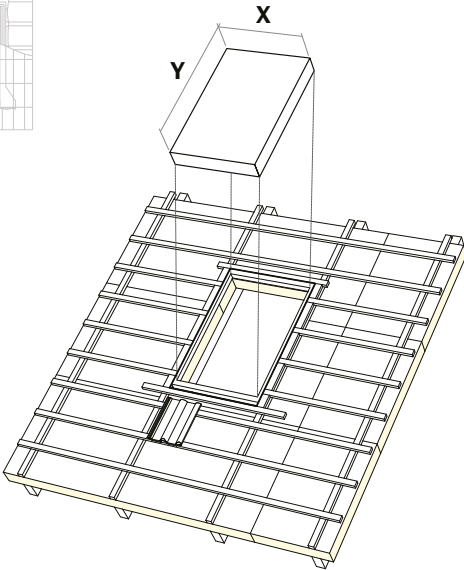




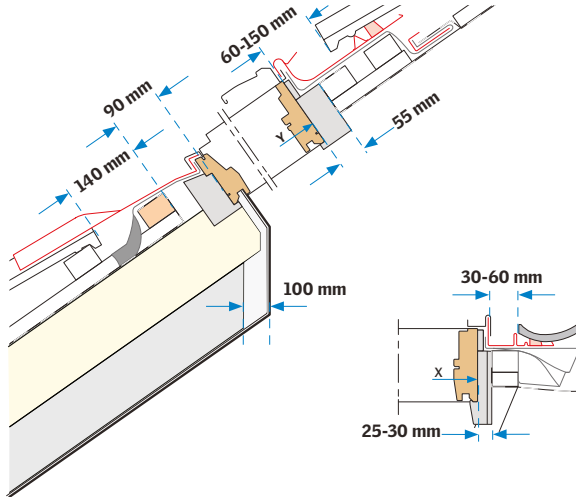
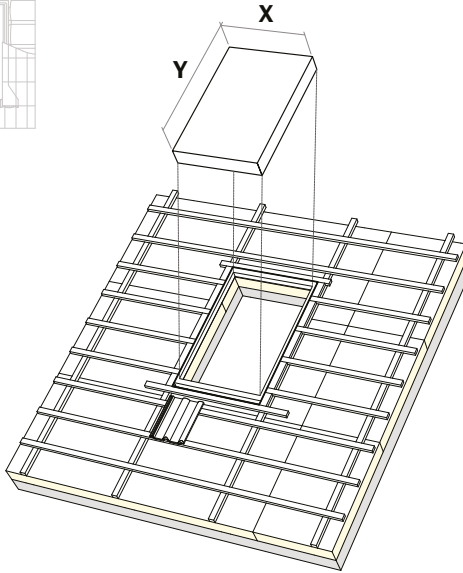
# 1.6 / Installation of a window in the roof structure



recess mounting  
above truss insulation



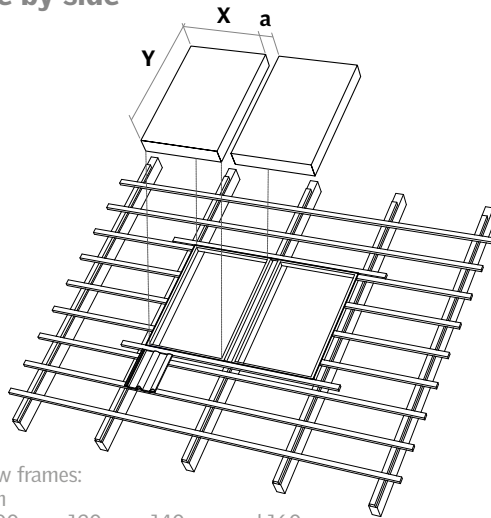
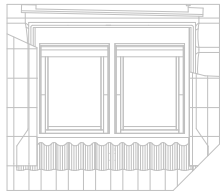
recess mounting - concrete roof  
above truss insulation



# 1.6 / Installation of a window in the roof structure

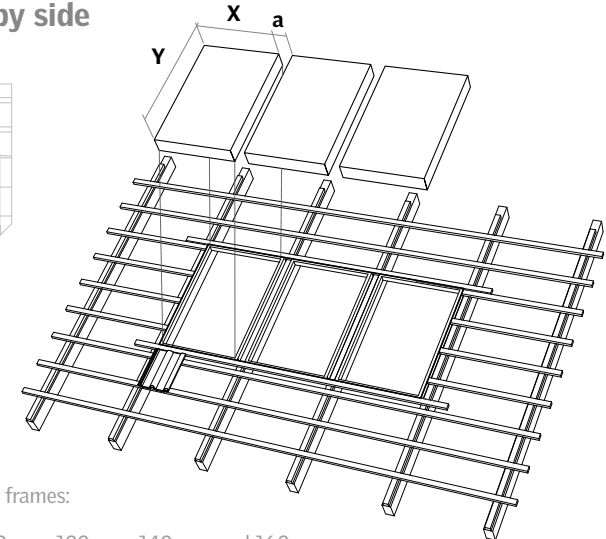


### double window side by side



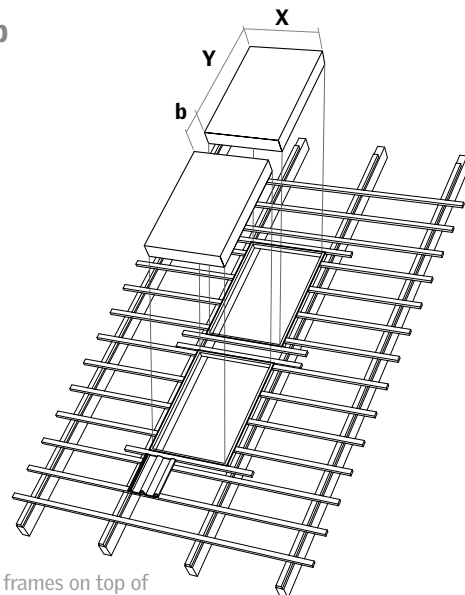
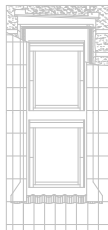
clear distance between window frames:  
a = min. 60 mm, max. 400 mm  
standard frame distances of 100 mm, 120 mm, 140 mm and 160 mm

### triple window side by side



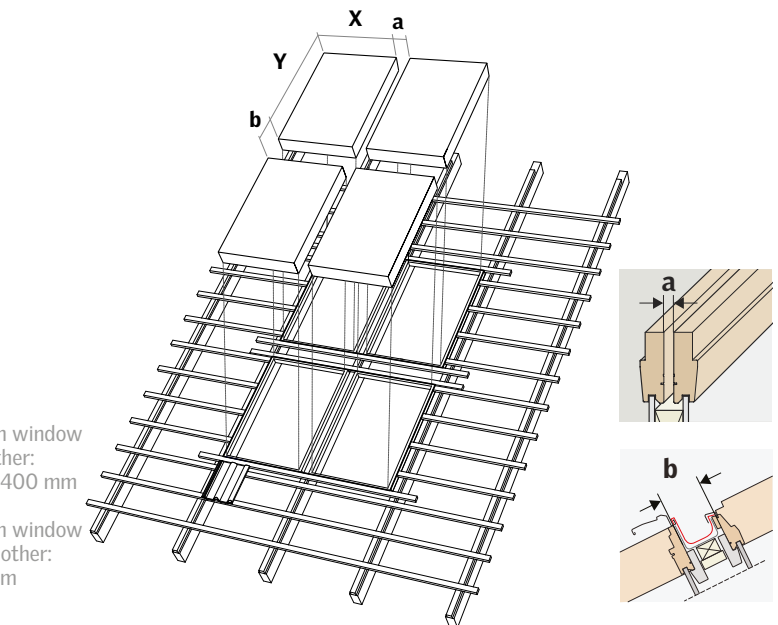
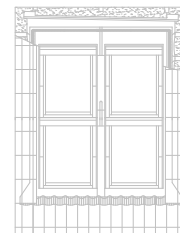
clear distance between window frames:  
a = min. 60 mm, max. 400 mm  
standard frame distances of 100 mm, 120 mm, 140 mm and 160 mm

### two windows on top of each other



clear distance between window frames on top of each other: b = 100 mm or 250 mm

### quaternion



clear distance between window frames next to each other:  
a = min. 60 mm, max. 400 mm

clear distance between window frames on top of each other:  
b = 100 mm or 250 mm

# 1.6 / Installation of a window in the roof structure

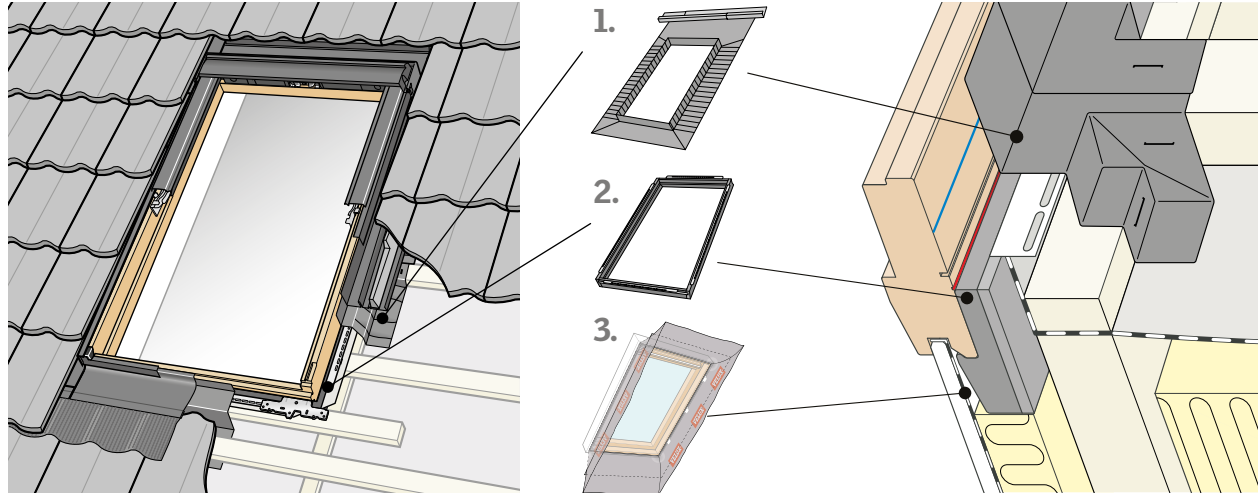


## roof window mounting system

solution for connection joints in all planes of the roof

### Roof window edging

Depending on the type of roofing, we choose the right type of roof window edging.

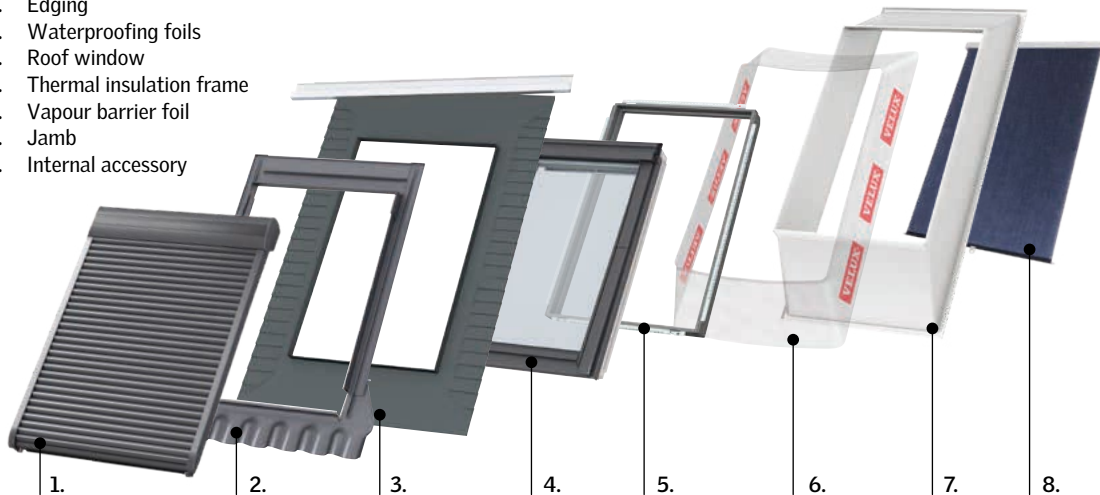


**1. Cuff made of BFX waterproofing foil** for watertightness of the roof window. It includes a drainage gutter for connecting the waterproofing layer of the roof.

**2. Insulation collar / insulation / set BDX** for the correct connection of the window frame to the roof insulation.

**3. Cuff made of BDX vapour barrier foil** for vapour-tight connection of the roof window.

1. Outdoor accessory
2. Edging
3. Waterproofing foils
4. Roof window
5. Thermal insulation frame
6. Vapour barrier foil
7. Jamb
8. Internal accessory



### Available materials for window cladding and edging



Aluminium,  
dark grey

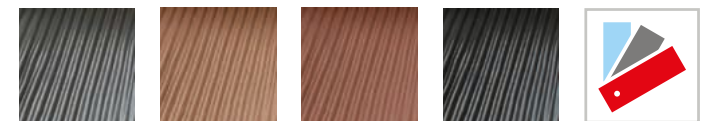
Aluminium,  
black

Zinc

Copper

Aluminium,  
any colour

### Cuff materials



Dark grey

Ochre

Brick

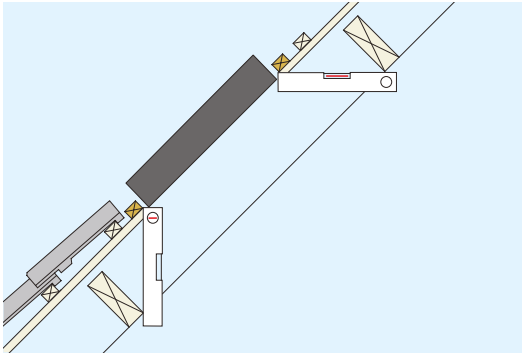
Black

Any colour

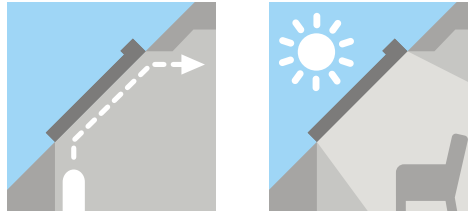
# 1.6 / Installation of a window in the roof structure



roof window lining

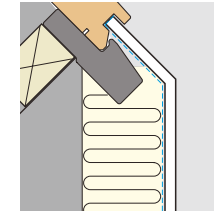


air circulation around the inner surface of the glazing / horizontal upper lining / vertical lower lining / replacements not interfering with oblique lining



upper lining horizontal / lower lining on the opposite vertical / heat source under the roof window keeping the inner surface of the glazing at a higher temperature / bigger supply of light into the room

the lighter the colour, the more daylight is reflected from the lining



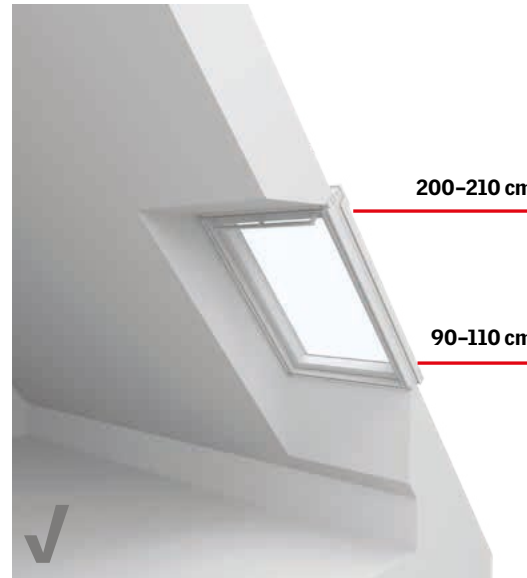
rise of the lining from the roof window frame towards the ceiling 7-8 cm.

## roof window mounting height

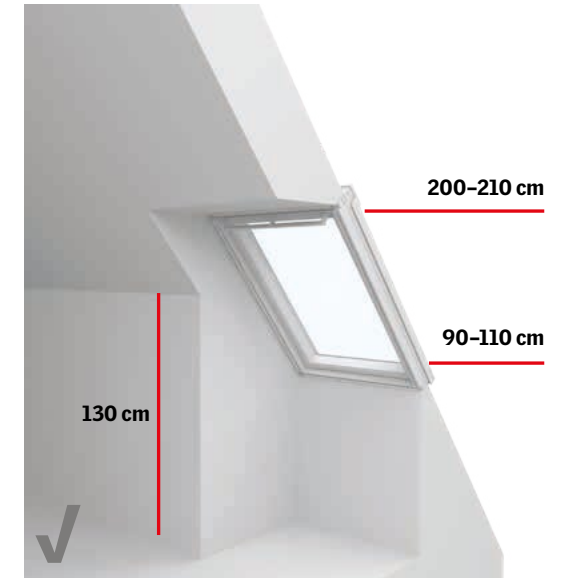
Too high attic parapet



Optimum height of attic parapet



Solution of attic parapet and recess for the roof window



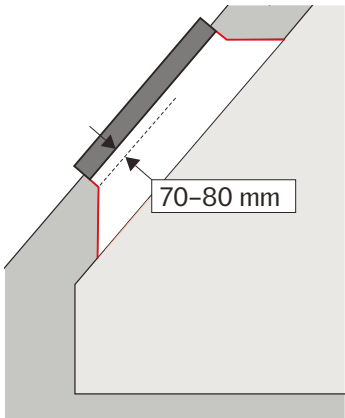
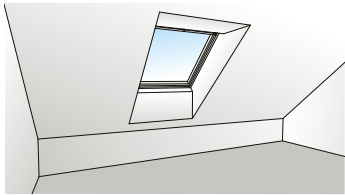
# 1.6 / Installation of a window in the roof structure



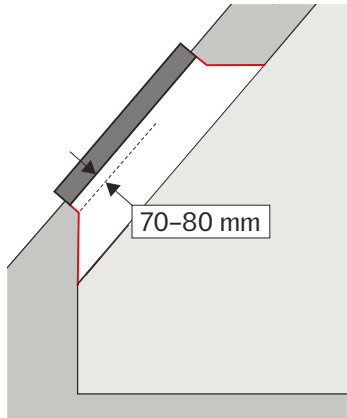
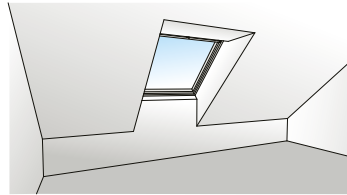
roof window lining

## lining shapes

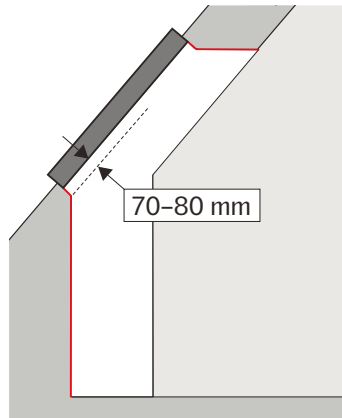
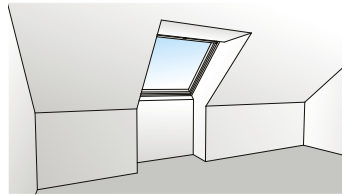
Standard mounting



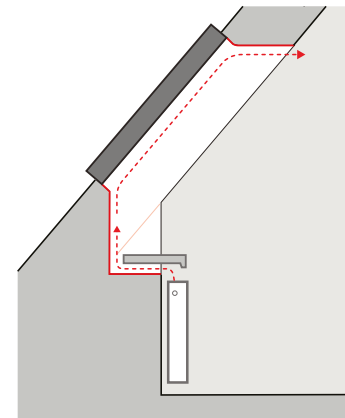
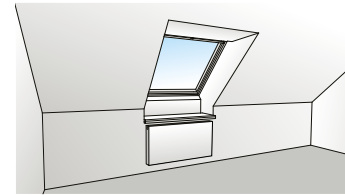
In the plane of the attic parapet



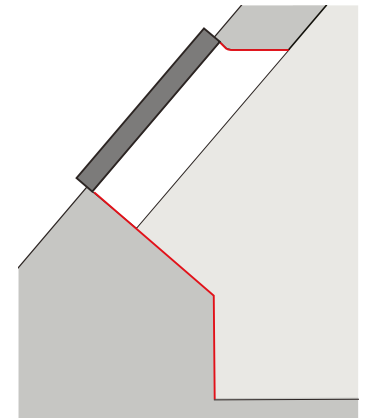
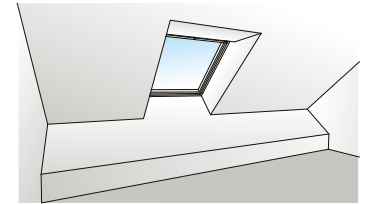
Lining in the recess



Ventilated window sill



Deep lining



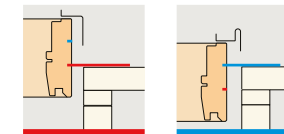
**Note:** Not suitable for rooms with a higher risk of condensation.

# 1.6 / Roof window installations

edging



	120 mm	2 x 8 mm	2 x 8 mm	16 mm	25-40 mm	15-90°	2 x 19 mm	2 x 8 mm	90 mm
	15°-90°	15°-90°	15°-90°	15°-90°	15°-90°	15°-90°	25°-90°	20°-90°	20°-90°
Roof windows									
	EDW	EDS	EDL		EDQ	EDE	EDB	EDN	EDJ
	EBW	EBS	EBL						
	EKW	EKS	EKL			EKE	EKB	EKN	EKJ
	EKW ---7- + EDW	EKS ---7- + EDS	EKL ---7- + EDL			EKE ---7- + EDE	EKB ---7- + EDB	EKN ---7- + EDN	EKJ ---7- + EDJ
	EFW	EFS	EFL					EFN (20°-55°)	EFJ (20°-55°)
	EFW --22-/--32-	EFS --22-/--32-	EFL --22-/--32-					EFN --22-/--32- (20°-55°)	EFJ --22-/--32- (20°-55°)
	EDW*	EDS*	EDL*			EDE*			
	ETW--00 + EDW	ETS--00 + EDS	ETL--00 + EDL			ETE + EDE		ETN --00 + EDN	ETJ --00 + EDJ
	ETW --00 + ETW --00- + EKW	ETS --00 + ETS --00- + EKS	ETL --00 + ETL --00- + EKL					ETN --00 + ETN --00- + EKN	ETJ --00 + ETJ --00- + EKJ
	EKX --88							EKX --88 (20°-55°)	
	EEW + EEX**	EES + EEX**	EEL + EEX**						
	EAW (10°-75°)	EAS (20°-75°)							
	EAW 6-21E/6-31E (10°-75°)	EAS 6-21E/6-31E (20°-75°)							



## Red level

Standard installation of VELUX windows since 2001. Mounting brackets are mounted on the lower and upper part of the window frame.

## Blue level

The roof window is set 40 mm deeper in the roof structure compared to the red level. Mounting brackets are mounted on the sides of the frame.

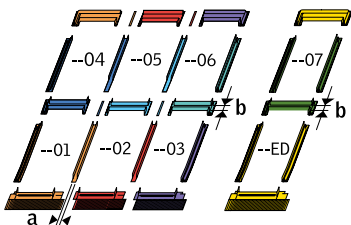
\* MK08/PK19/SK19  
\*\* M08

# 1.6 / Sestavy střešních oken

## lemování



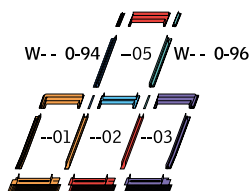
### EK- Codes for parts in assembly --W/S/J/N



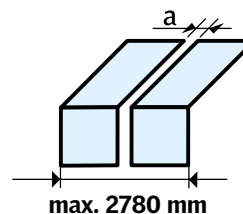
- 00 Part 0
- 01 Part 1 (a)
- 02 Part 2 (a)
- 03 Part 3 (a)
- 04 Part 4 (a) (b)
- 05 Part 5 (EKX) (a) (b)
- 06 Part 6 (b)
- 07 Part 7 (b)
- 21 Part 1 and 3 together

frame distance a = 100, 120, 140 or 160 mm  
(min. 60 mm, max. 400 mm)  
b = 100 or 250 mm

### EK- Asymmetric combination only in standard mounting

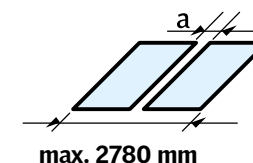


### EF- --W/S



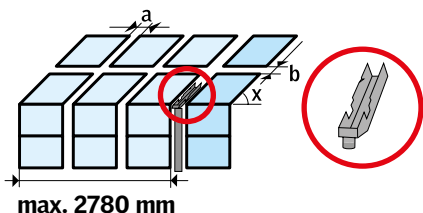
frame distance a = 18 or 100 mm  
b = 0 mm

### EB- only in standard mounting



special frame distance a = 18 mm  
with prefabricated EBY rafter

### EF- XK99 (all special combinations)

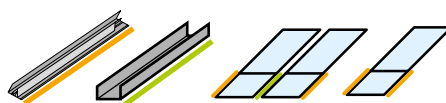


Maximum width 2780 mm  
a = 18 mm  
b = 100 mm or 250 mm  
 $x^\circ$  = roof pitch 15–55°

When the assembly width is greater than 2780 mm, a drain gutter will be added to the assembly at the factory.

Number of roof windows = 2 to  $\infty$  a = min. 60 mm, max. 400 mm  
b = 100 mm or 250 mm  
 $x^\circ$  = roof pitch 15–55°

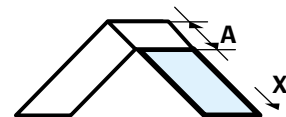
### ET-



**Standalone installation with GIL/GIU:**  
ET- side parts right and left

**Composition with GIL/GIU:**  
ET- + ET 00- medium groove for GIL/GIU  
frame distance a = 100, 120, 140 and 160 mm

### EKX Roof ridge



A – distance of the upper frame from the roof ridge, measured in the mounting plane (e.g. the surface of the tiling battens)

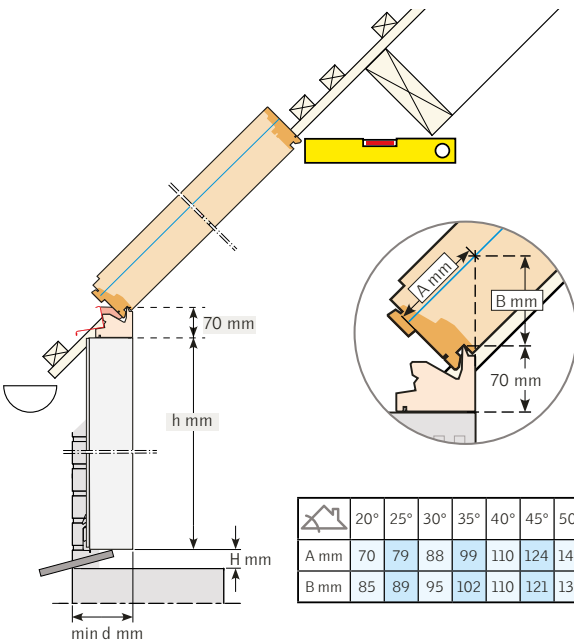
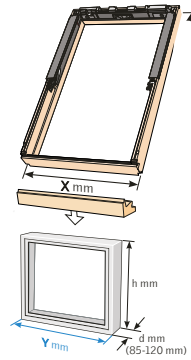
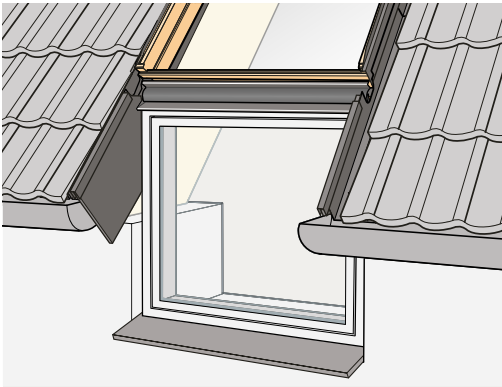
X – roof pitch

# 1.7 / Tips and tricks

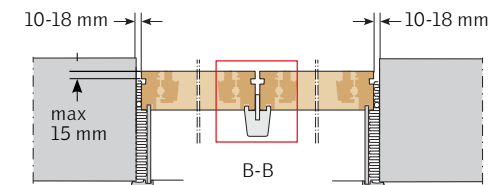
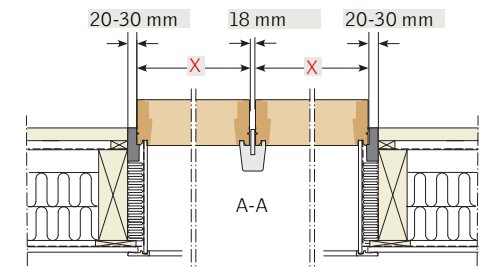
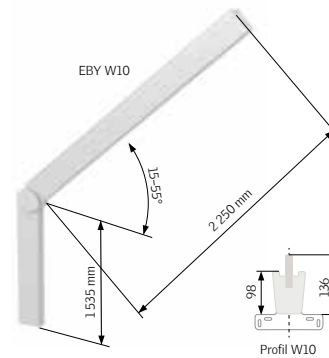
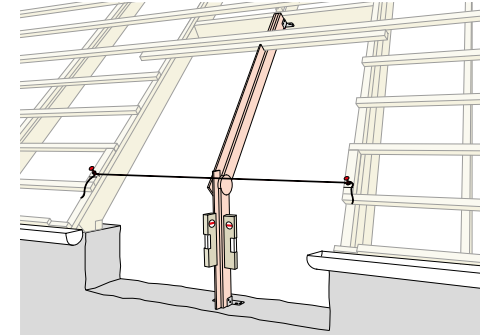


## connection of roof and facade window

Connecting element for roof windows and facade panels EFY 3012.  
For 2 different mounting types ■ ■ .



## mounting with articulated truss



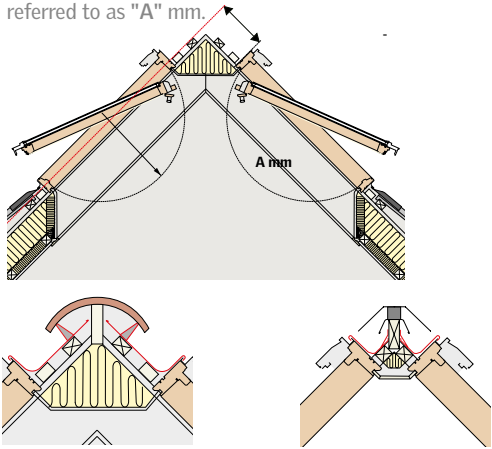


# 1.7 /Tips and tricks



## mounting at the ridge of the roof

When installing roof windows at the ridge of the roof, it is important to know the "ridge dimension". This is the distance from the upper frame of the window to the upper edge of the battens on the inside surface of the roof. In the following text, this distance is referred to as "A" mm.



If the dimension "A" is 200 mm or larger, standard edging can be used without special modifications.

In a roof with a slope of less than 30°, roof windows can be installed right next to each other without the risk of roof collision (degree of "A" 80 mm).

### Installation at the ridge of the roof

When fitting pivot hung roof windows with upper frames near the roof ridge, keep in mind that their location must allow them to open without the sash interfering with each other.

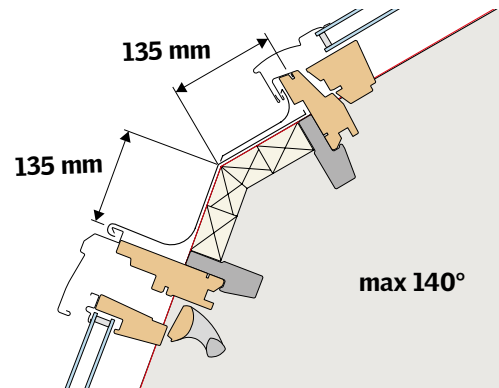
This can be achieved by following the degree "A" according to the following table:

The slope of the roof	Window height (mm)				
	780	980	1180	1400	1600
30°	80	80	80	80	100
35°	80	80	90	120	140
40°	90	110	140	170	185
45°	120	160	250	300	330
50°	230	290	340	400	460

In a roof with a slope of less than 30°, roof windows can be installed right next to each other without the risk of sash collisions (degree of "A" must always be at least 80 mm).

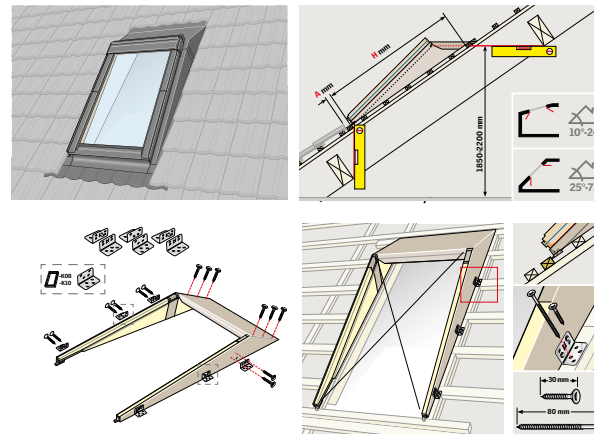
## mansard roof

Even with a mansard roof, it is possible to fit roof windows on both sides of the roof plane break. It is necessary to observe the basic distances of the window edging and the maximum slope of the roof.



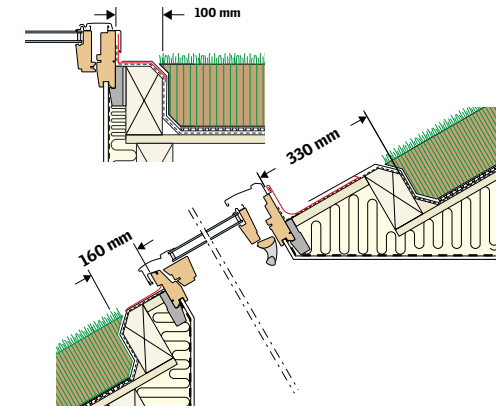
## lifting edging/sloping roof

Roof windows are installed from min. roof pitch of 20°. If the slope of the roof is smaller, it is possible to help with the lifting profile EAZ, EAW, EAS - depending on the type of roofing.



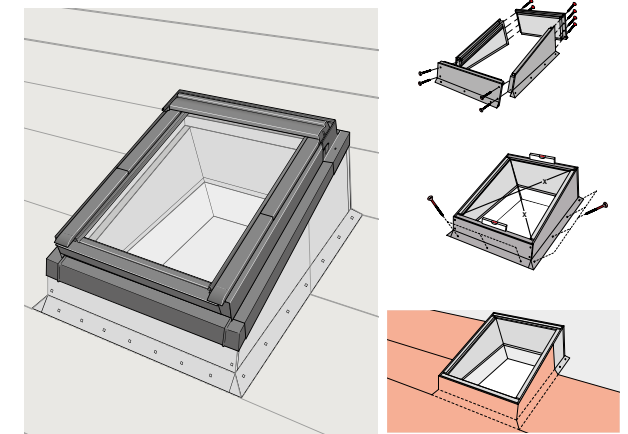
## green roof

When installing the roof window in the green roof, it is necessary to connect the waterproofing layer to the edging system, in this case EDL. The edging is carried out by a wooden frame, which must be adapted in size to the inner lining.



## lifting profile/flat roof

The roof window can also be installed in a flat roof using a special lifting frame. The lifting frame can be used in the case of a flat roof with a slope of up to 15°.



# 1.7 / Tips and tricks



## development of roof windows

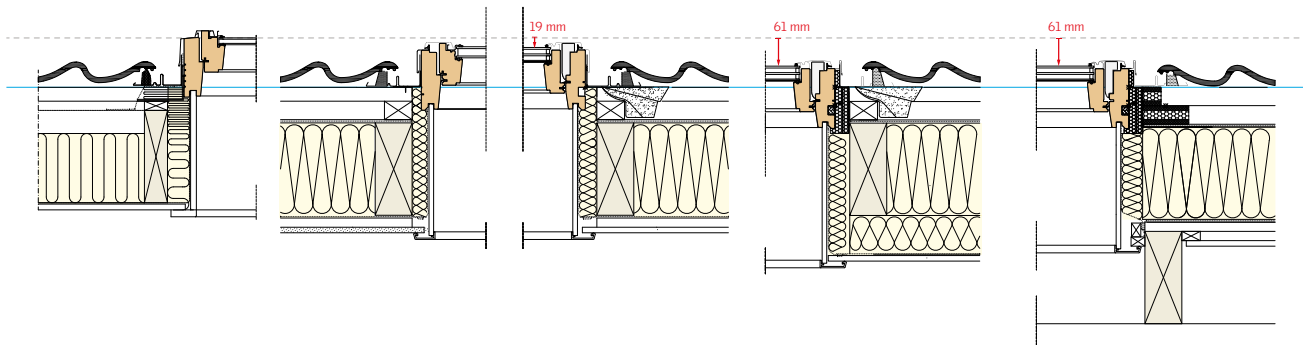
installation of windows in the years 1990-2002 / standard installation

installation of windows in the years 2002-2013 / standard installation

installation of windows since 2013 / standard installation

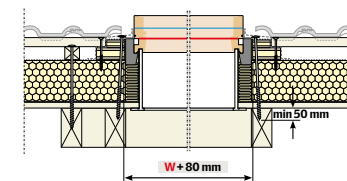
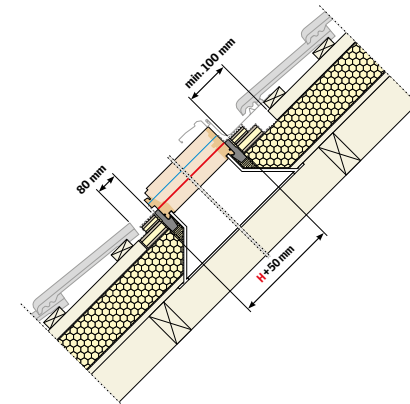
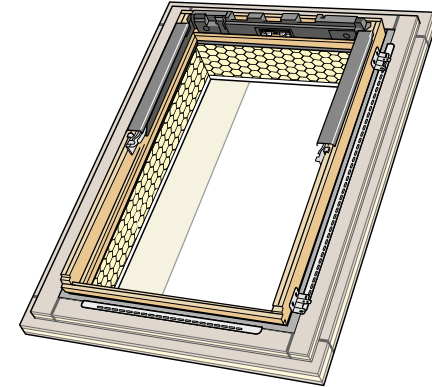
simultaneous window mounting / recessed mounting

simultaneous installation of windows in above truss insulation / recessed installation



## insulating collar/above truss insulation

can be used for perfect connection of the window to the above truss insulation system special insulating collar made of load-bearing thermal insulation materials



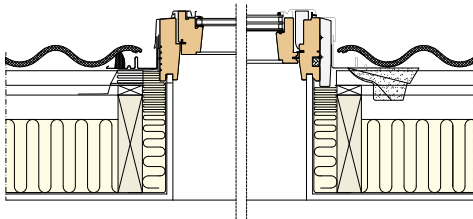
## replacement of roof windows

replacement of roof windows without interfering with the lining

replacement of roof windows with intervention in the lining

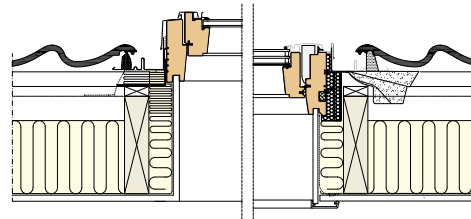
1990-2002 window

contemporary roof window with special edging for window replacement EDW 6000



1990-2002 window

current roof window, recessed mounting

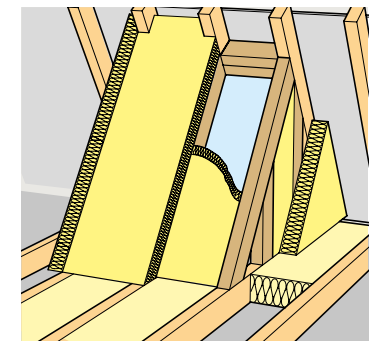
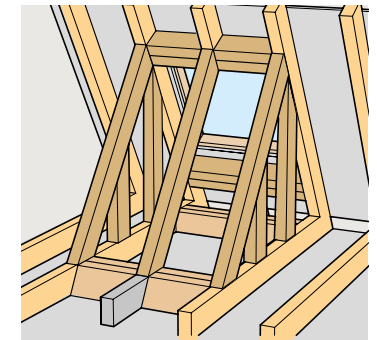
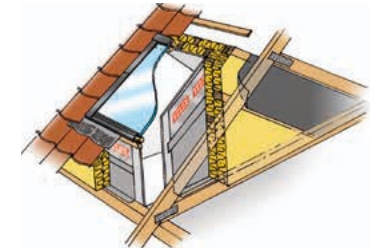
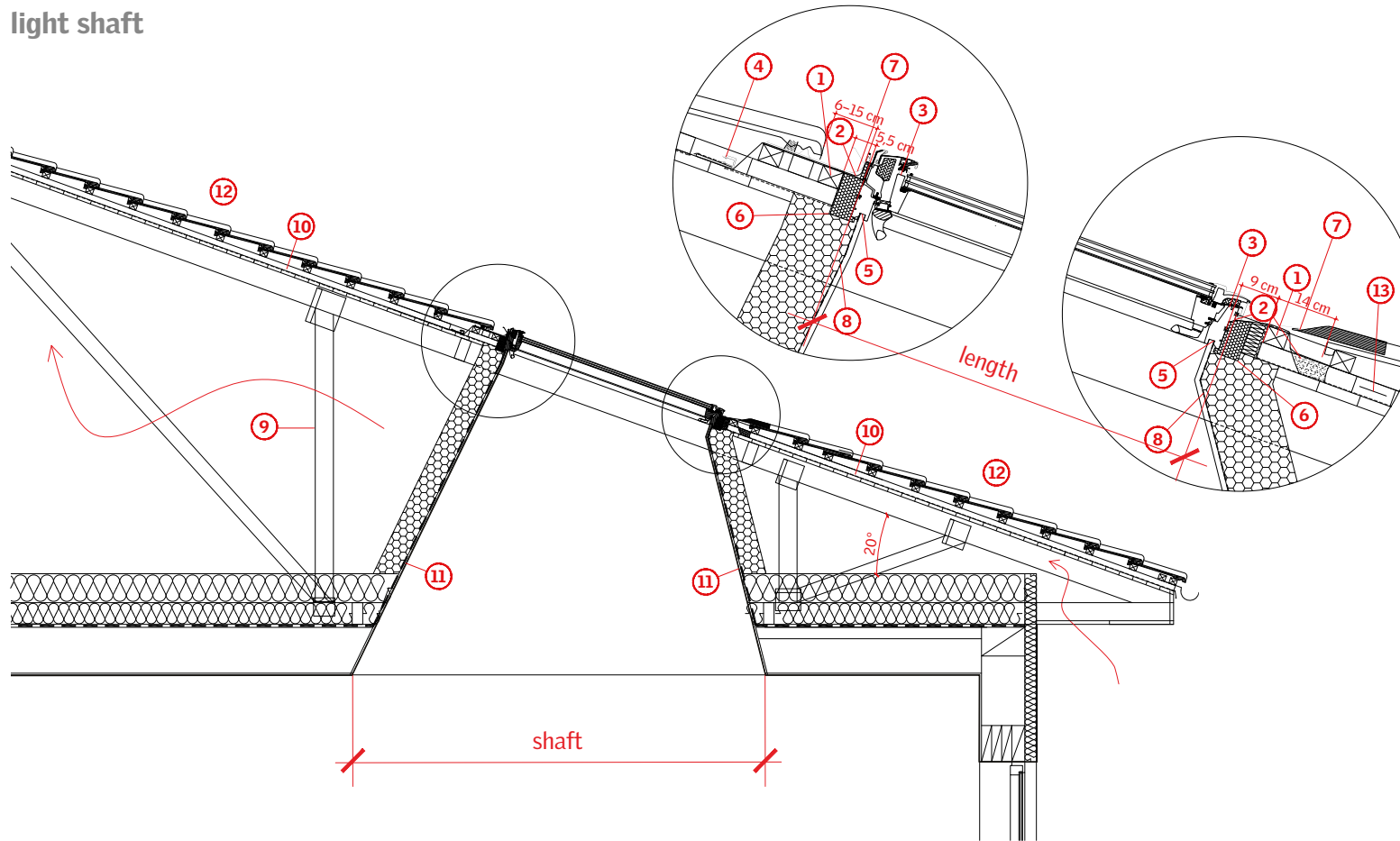


# 1.7 / Tips and tricks

drawing of roof windows



## light shaft



1. roof window mounting rail
2. VELUX BFX waterproofing foil
3. recess mounting: The window is installed 4 cm deeper than standard mounting, during mounting the mounting brackets are installed on the side of the frame at the height of the blue line GGU - VELUX INTEGRA 006621
4. drainage gutter of the VELUX system

5. instead of attaching the BBX vapour barrier foil to the roof window
6. BDX - thermal insulation system
7. EDJ 2000 - roof window edging
8. BBX - VELUX vapour barrier foil
9. hammered roof truss

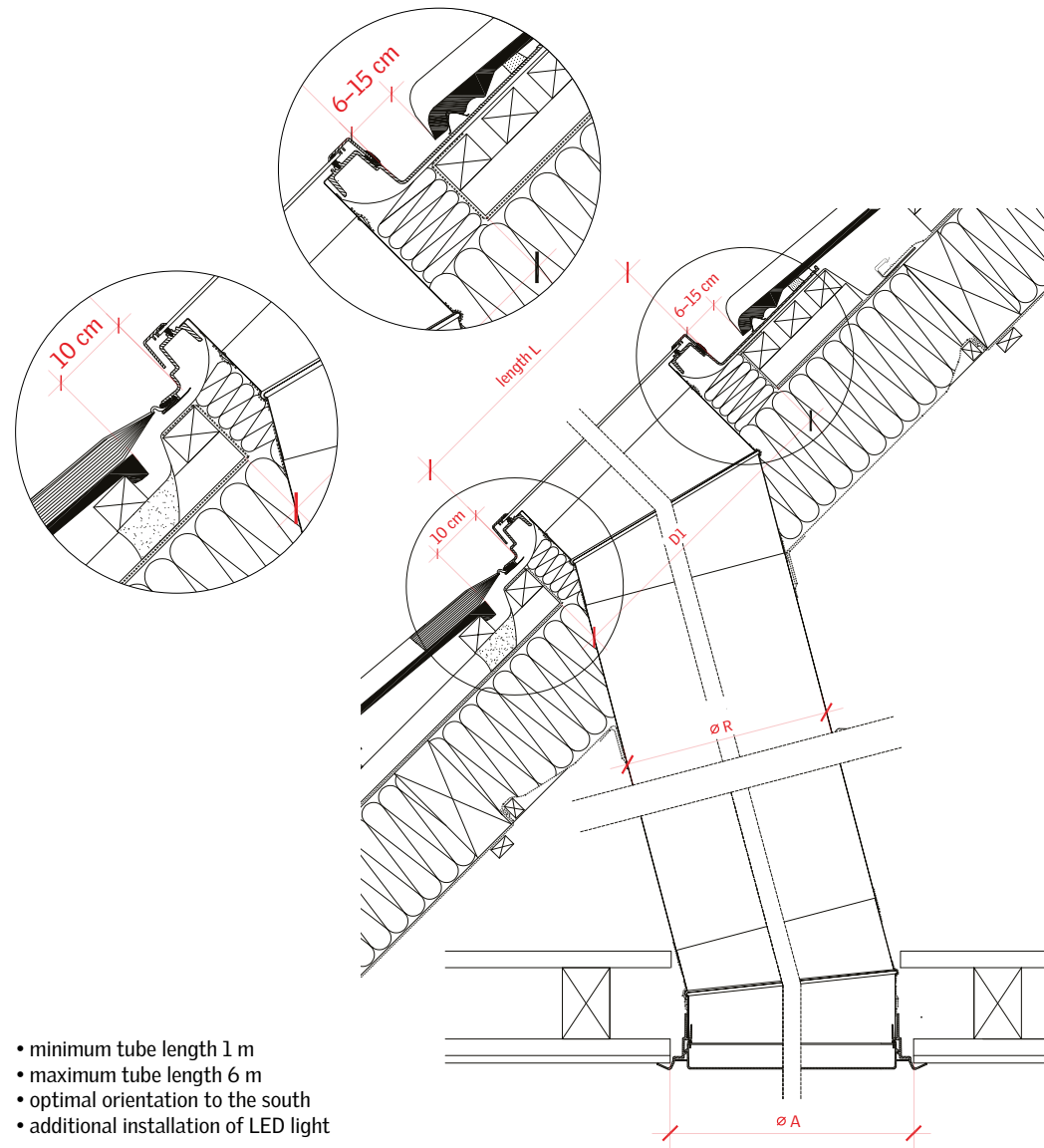
10. ventilated gap
11. plasterboard 12.5 mm
12. permissible roof pitch for the situation from 20° for recess mounting (standard installation from 15°)
13. interruption of counter laths (including adjacent ones) in the place under the roof window to ensure the continuity of the ventilation gap

# 1.7 / Tips and tricks

drawing of roof windows

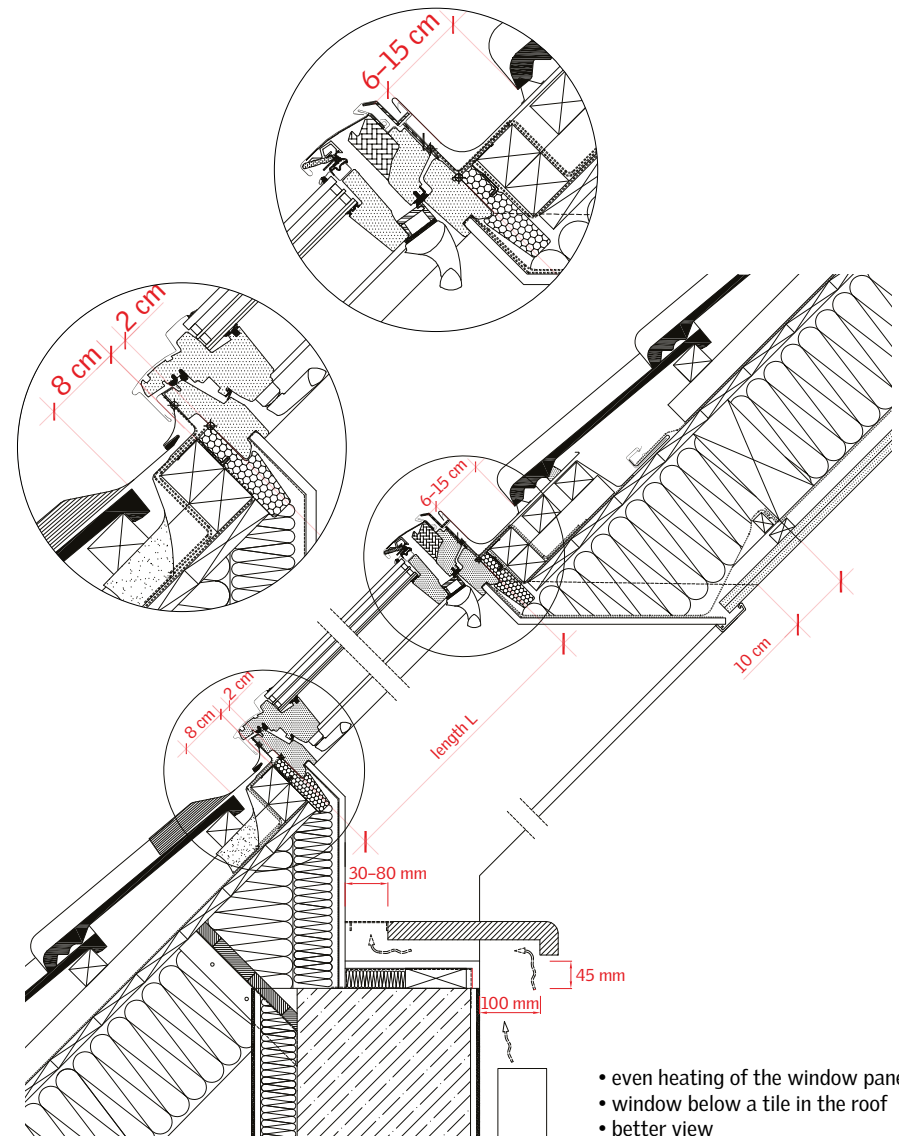


## tubular skylight to the sloping roof



- minimum tube length 1 m
- maximum tube length 6 m
- optimal orientation to the south
- additional installation of LED light

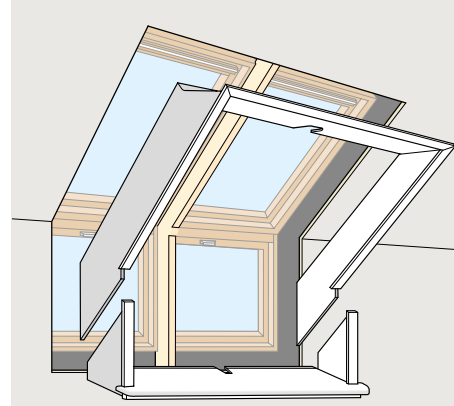
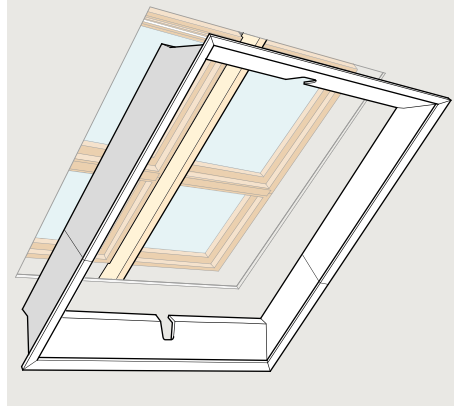
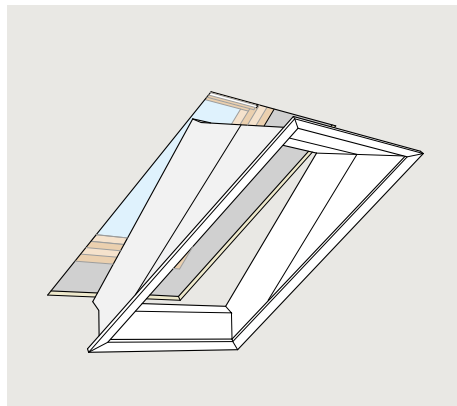
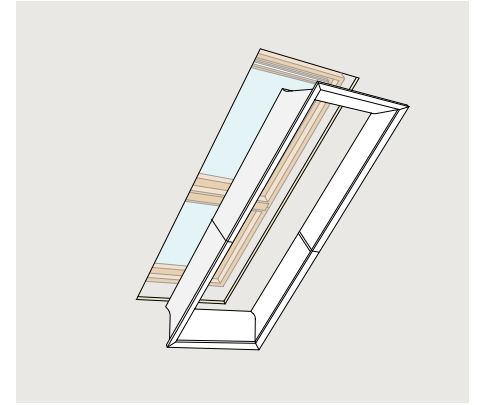
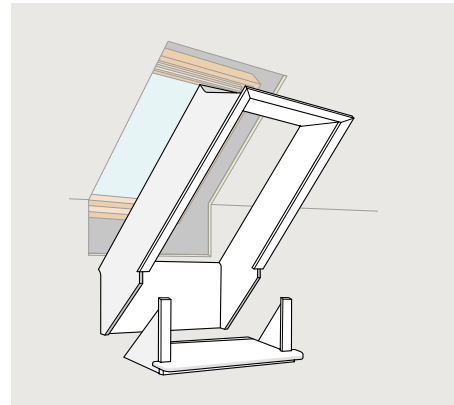
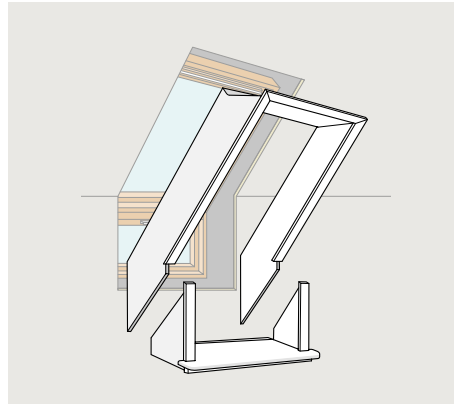
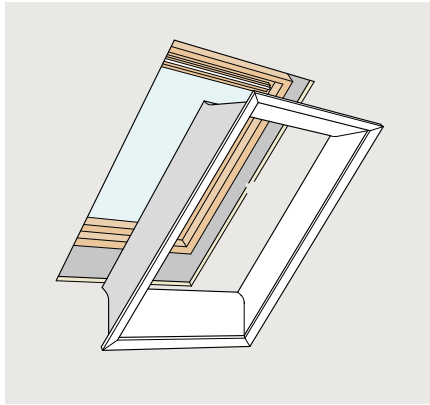
## ventilated window sill



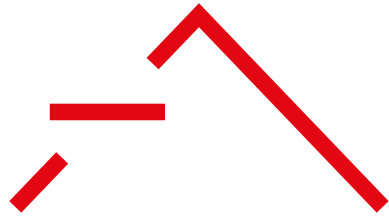
- even heating of the window pane
- window below a tile in the roof
- better view

# 1.7 / Tips and tricks

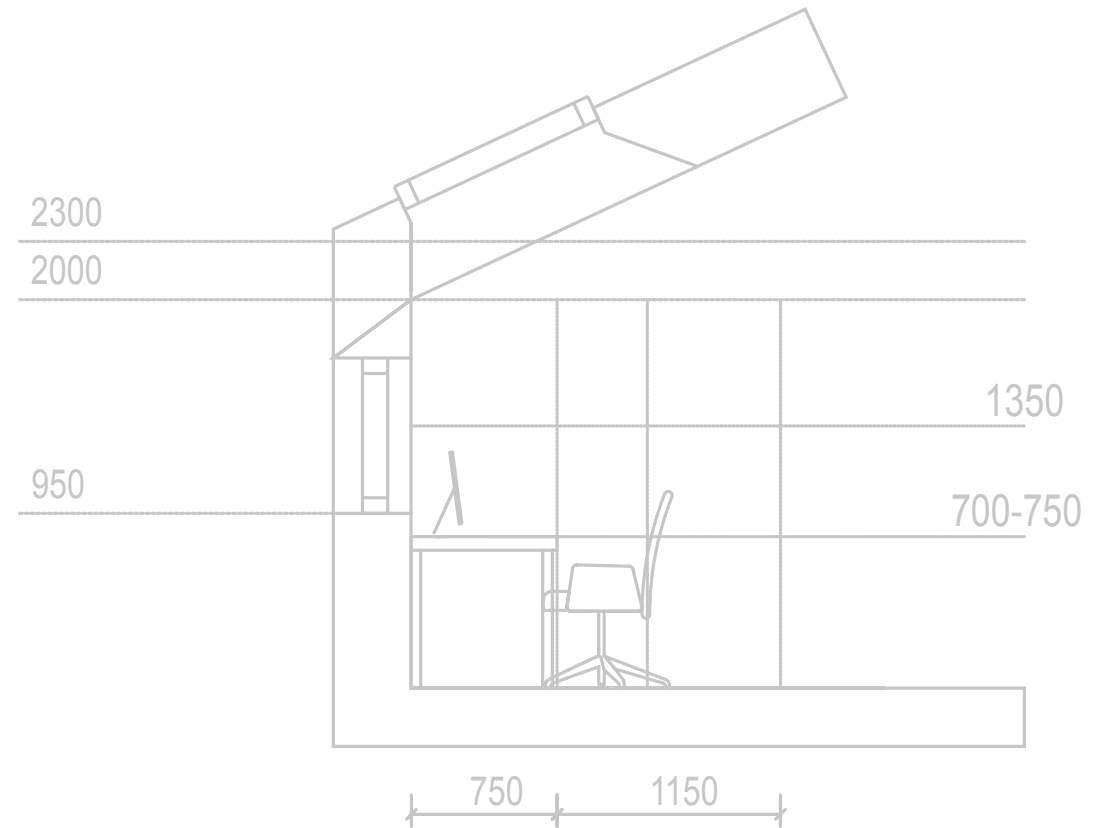
prefabricated roof window linings



## 02/ Rooms in the attic



The chapter contains options for layout solutions of attic rooms by their type. It includes examples of different room sizes, furniture organization, shows the headroom and usable area in the room.



## 02/ Rooms in the attic



### Rooms in the attic

2.1 Children's room

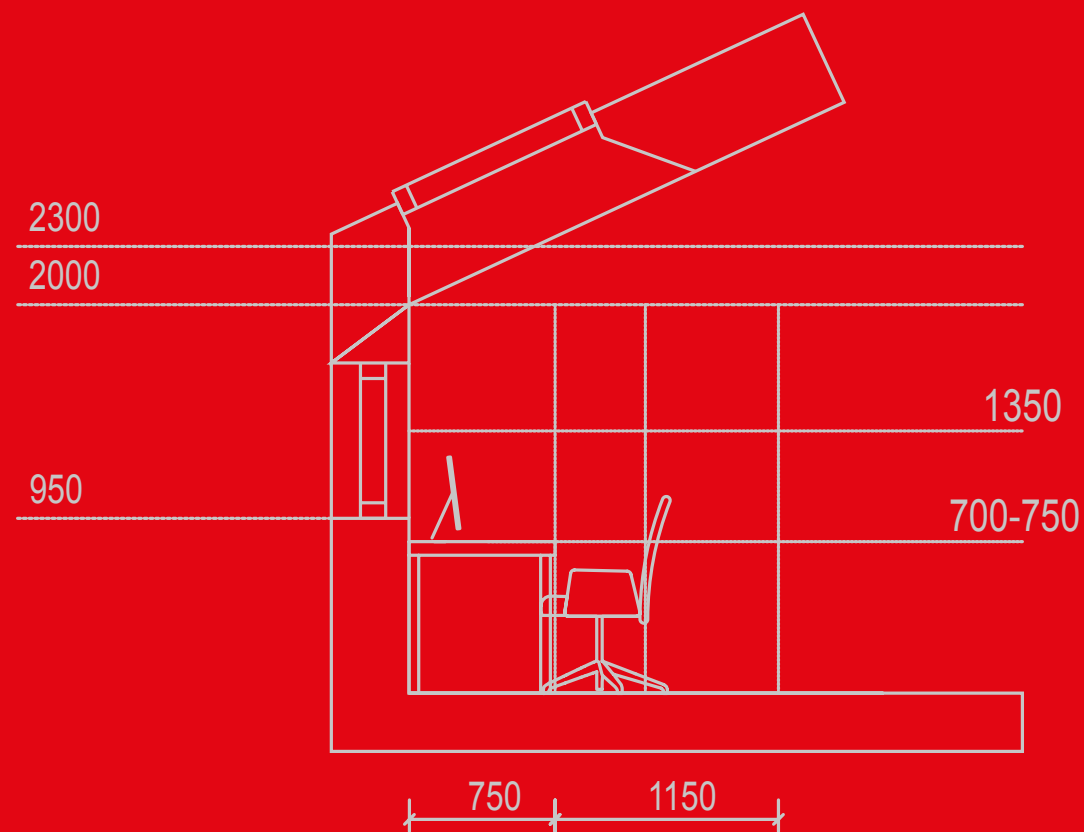
2.2 Lounge

2.3 Bedroom

2.4 Study

2.5 Kitchen

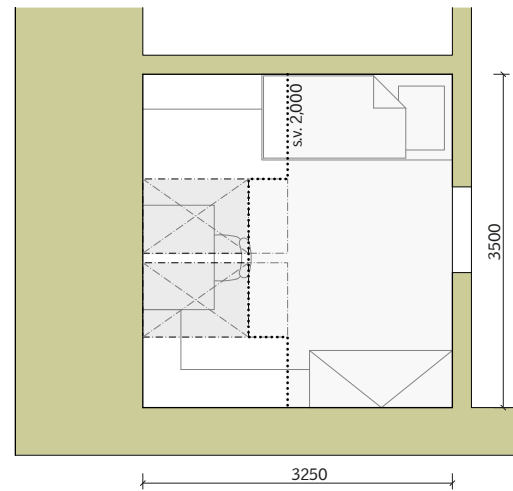
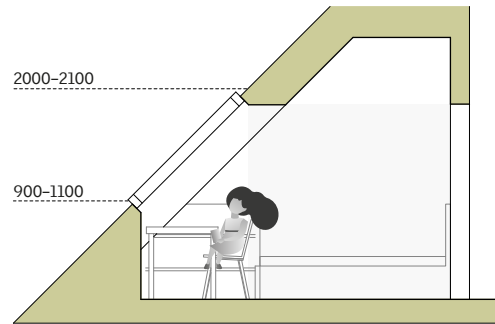
2.6 Bathroom, toilet



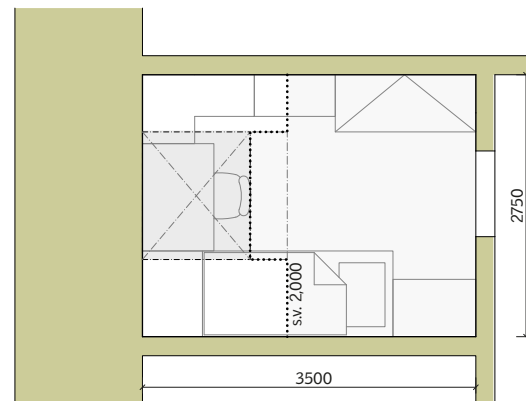
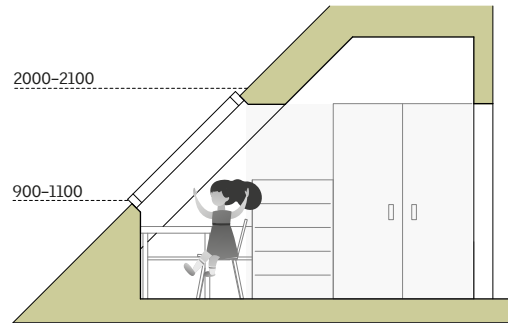
# 2.1 / Children's rooms



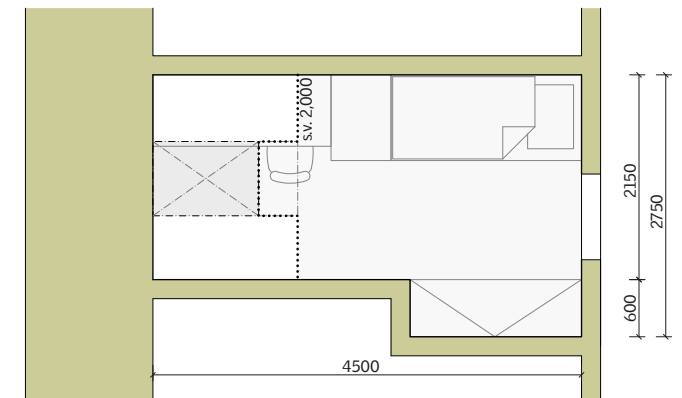
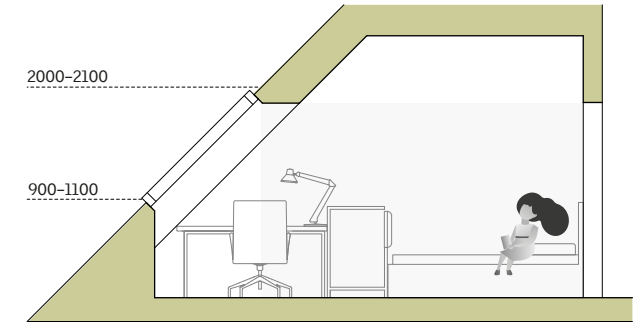
## children's rooms for one child



placement of the desk under the window which allows optimal lighting of the worktop / good view even while sitting



we place higher storage spaces outside the inclined wall / use of standard furniture



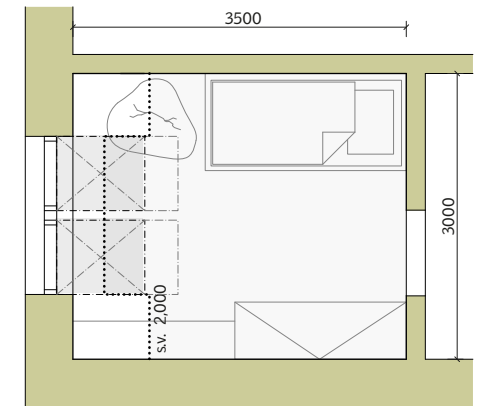
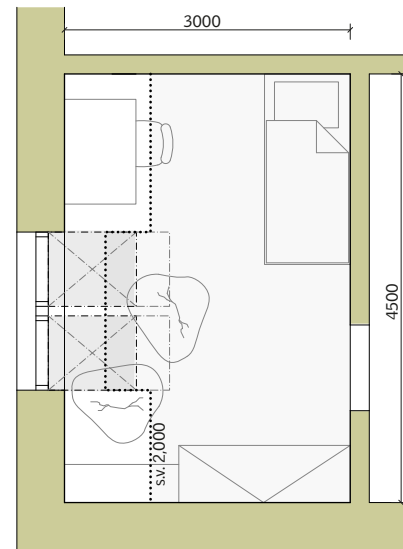
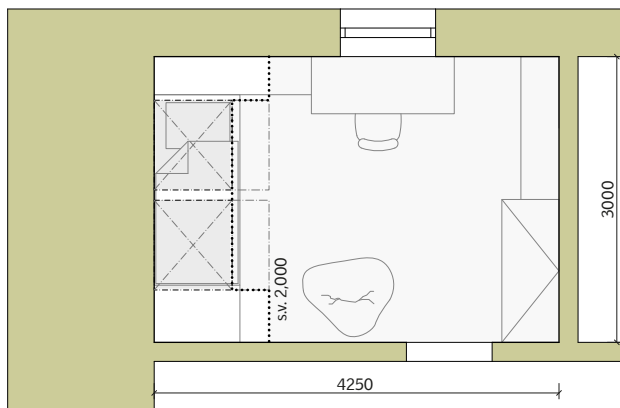
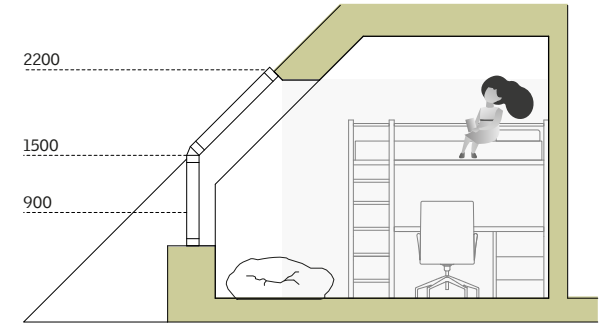
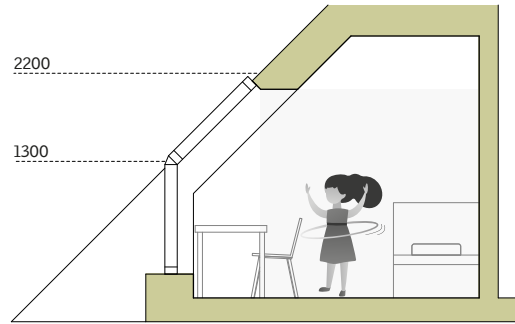
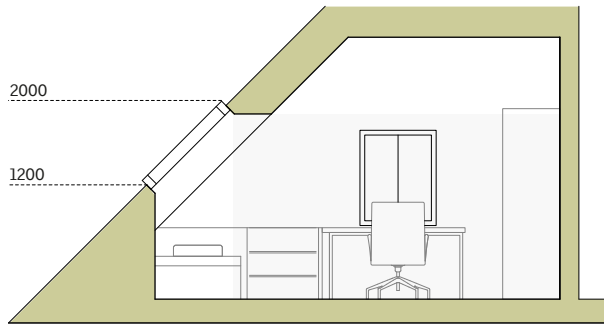
recess for wardrobes is a popular place in today's homes



# 2.1 / Children's rooms



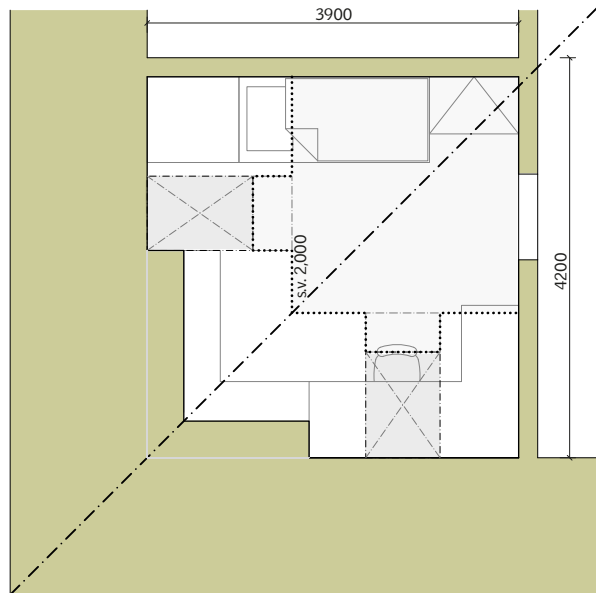
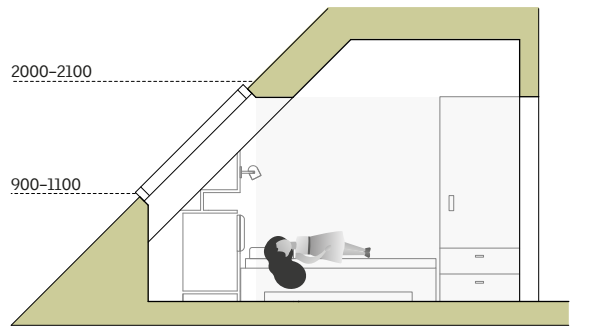
children's room for one child



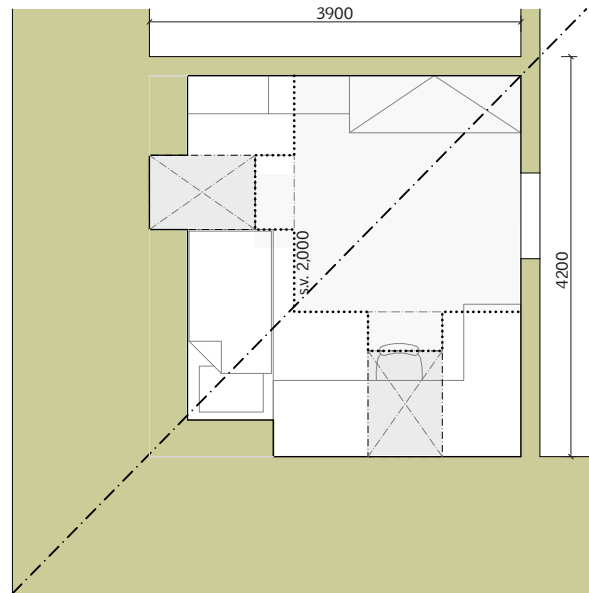
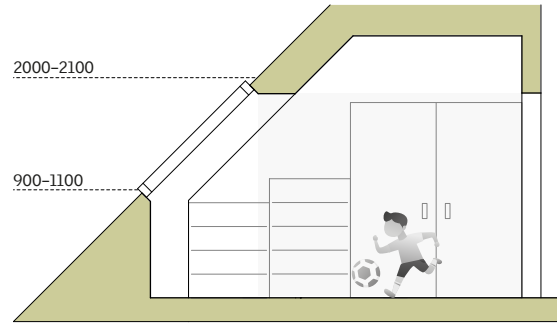
# 2.1 / Children's rooms



## children's room for one child



placement of roof windows in opposite parts of the roofs / even lighting / effective ventilation / changing height of the attic parapet according to the function / integrated storage system effectively use the space under the inclined wall

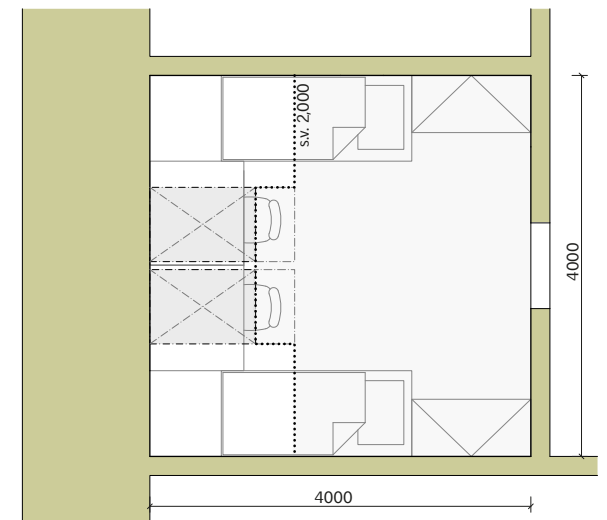
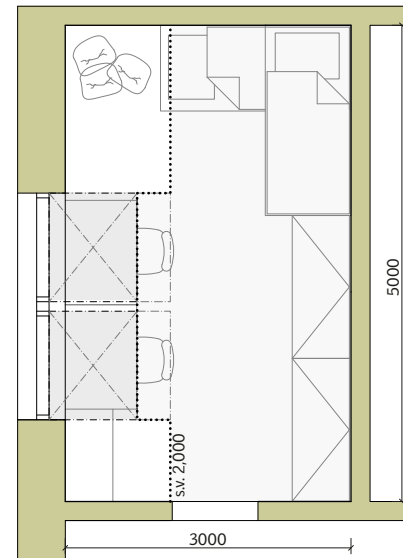
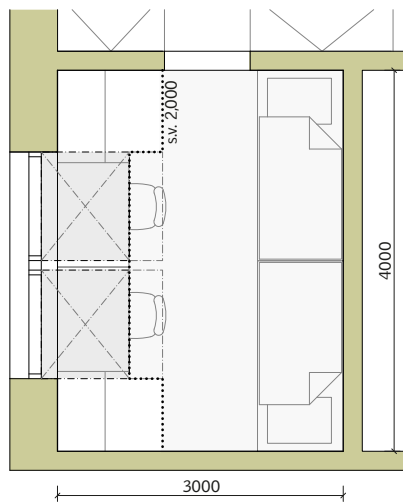
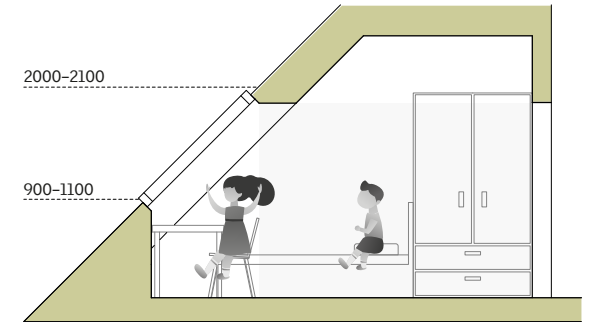
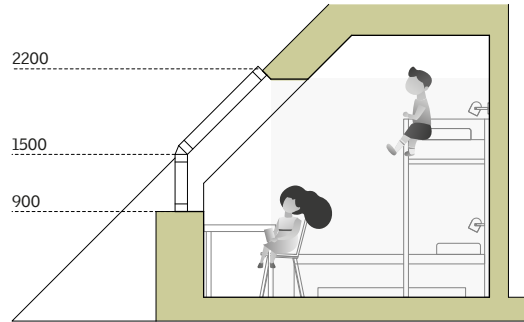
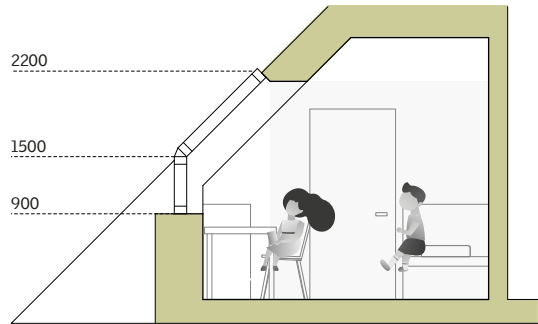


placement of windows in opposite parts of the roofs / even illumination / effective ventilation / changing height of the attic parapet according to function / wardrobes are located in the highest part of the room

# 2.1 / Children's rooms



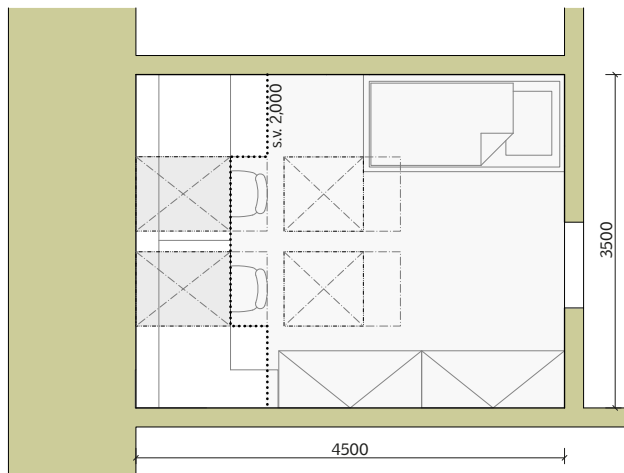
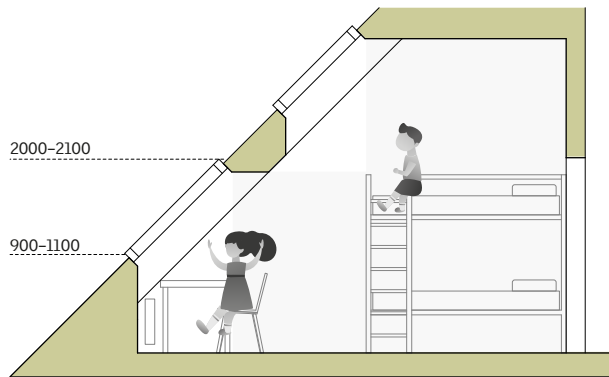
children's room for two children



# 2.1 / Children's rooms



## children's room for two children



the attic open to the truss will allow better use of the beds above each other / larger air volume / better lighting / more pronounced stimulation on a smaller floor area

The children's room is used for work, study, play and sleep. The right intensity and distribution of natural daylight improves sleep and the ability to learn.

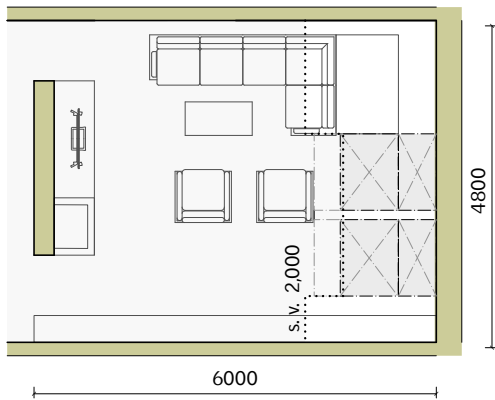
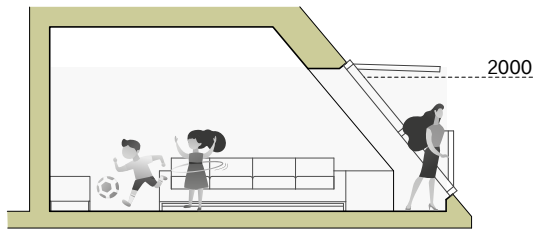
Studies show that concentration and the ability to learn can be increased by up to 15% with better light quality. In the early evening, natural daylight reduces the feeling of fatigue and prolongs the day.

Lighting 500 LUX is required for reading and writing.

# 2.2 / Living rooms

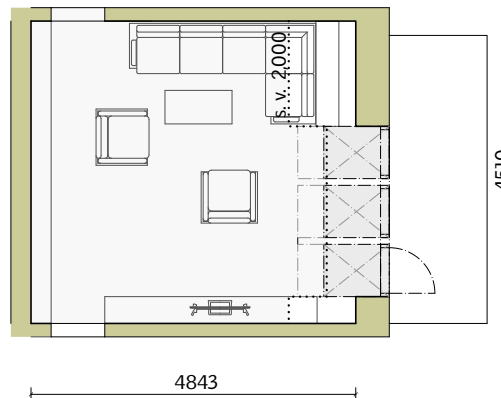
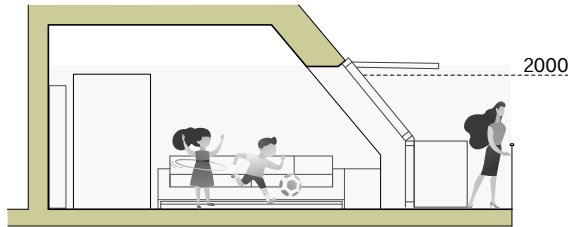


### living room with roof balcony



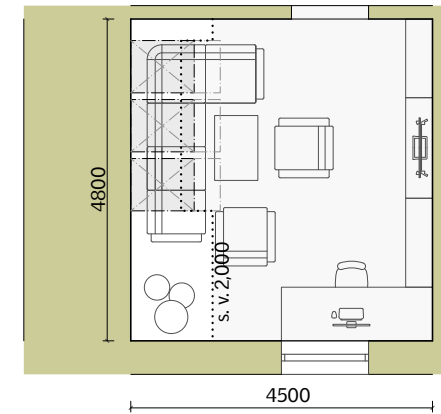
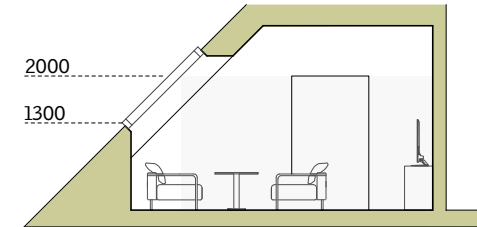
the roof balcony will improve the use of room space / attractive views

### living room with access to the terrace



comfortable lighting with access to the terrace / modern loft solution / full glazing optically enlarges the room

### economical living room

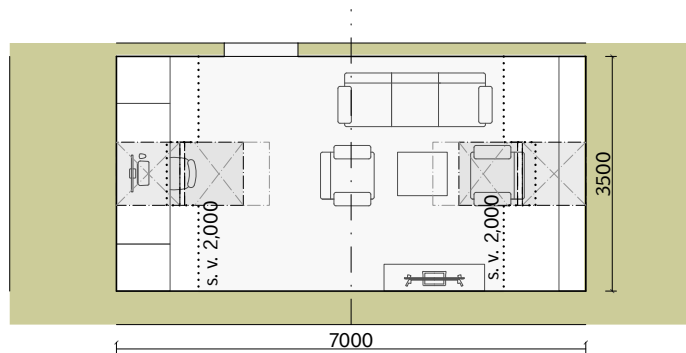
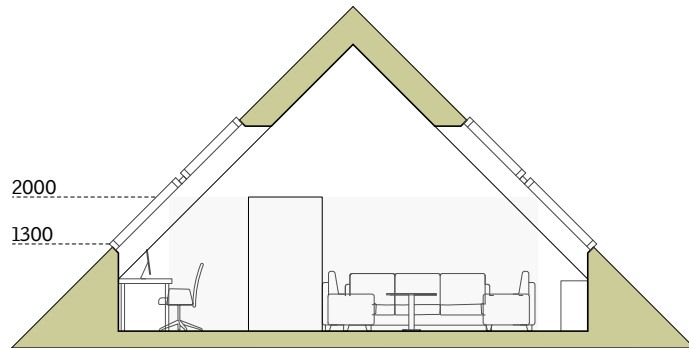


sitting under the roof window / increase in the headroom

# 2.2 / Living rooms

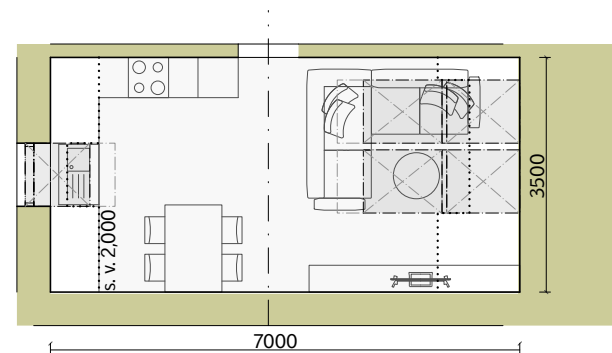
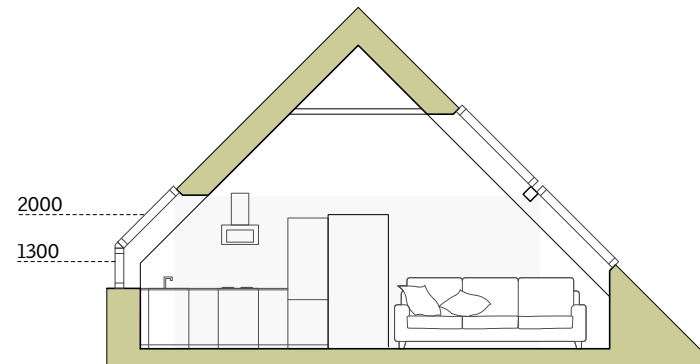


living room with work area



space open to the truss / narrow layout / lighting of the entire depth of the room

living area with kitchen and dining area



economical layout / combination of inclined walls with vertical windows in the kitchen / combination of windows in the living area optically enlarges the space

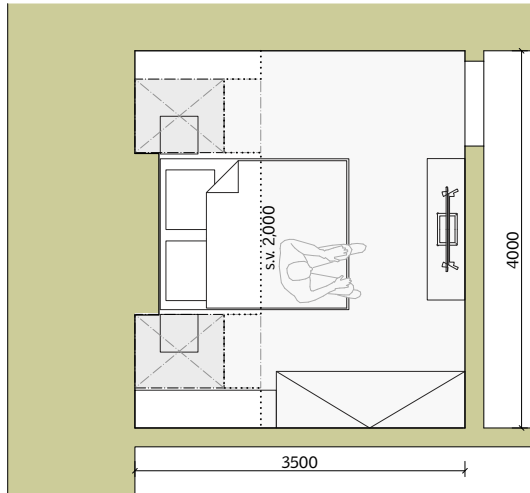
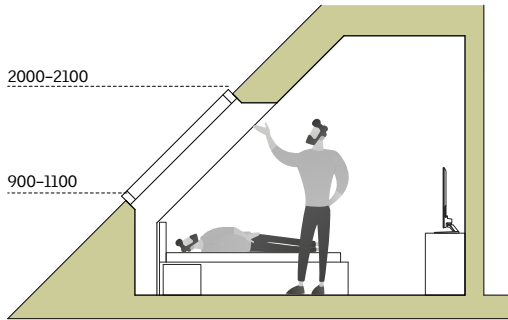
Plenty of daylight a výhled and the view optically enlarges each space. It creates a great visual impression, improves mood, reduces the feeling of fatigue and prolongs the day. If we achieve optimal lighting of the whole house at the level of recommended values, the reduction of energy for lighting is about 30%. Daylight is irreplaceable. No artificial light source has the same spectrum and does not change colour during the day. That's why even plants thrive best in daylight.

Lighting need is 500 LUX.

# 2.3 / Bedroom



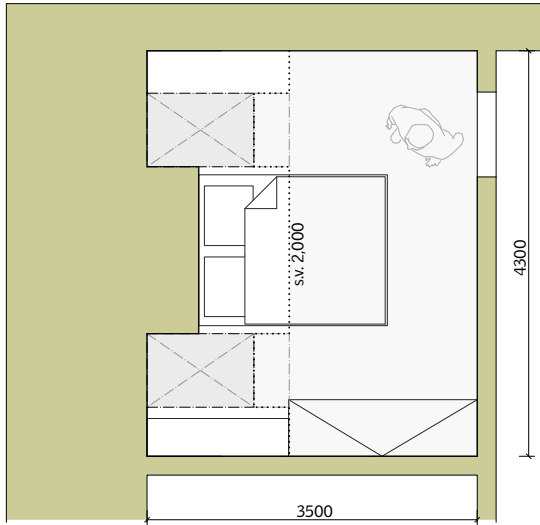
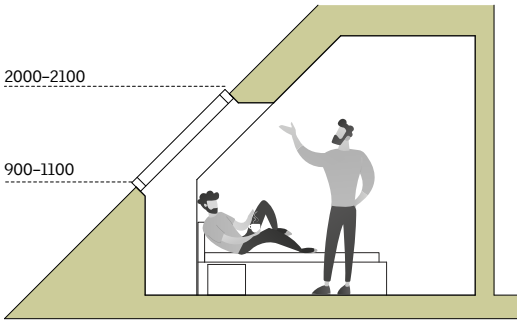
small attic bedroom



placement of the bed between the windows / low headboard / optimal view / increased floor height and easier access to the bed thanks to the placement of windows next to the bed

small attic bedroom

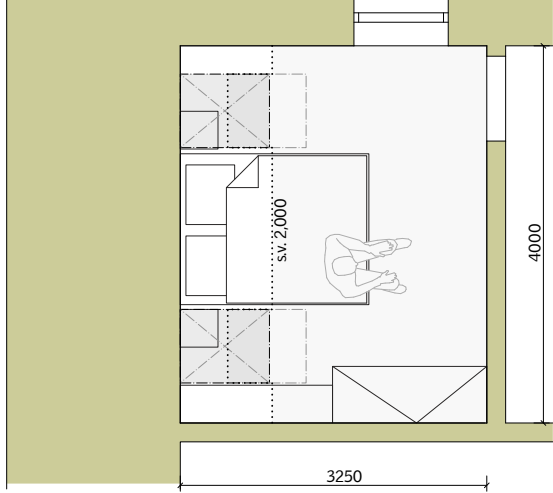
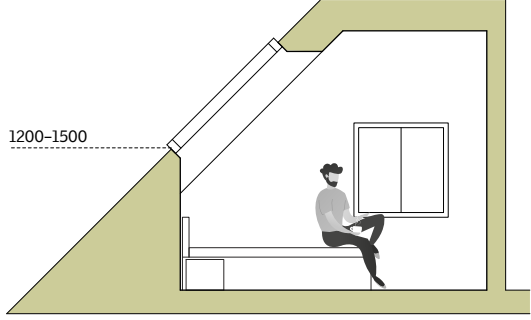
with attic parapet and recess for the roof window



placing the bed between the windows / wall behind the bed will allow you to leave the windows in the optimal position and use the high headboard

small attic bedroom

with high attic parapet

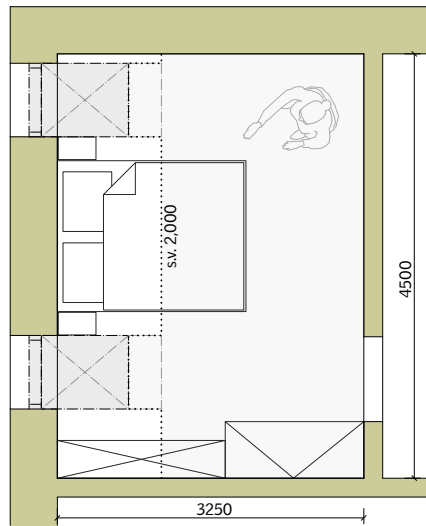
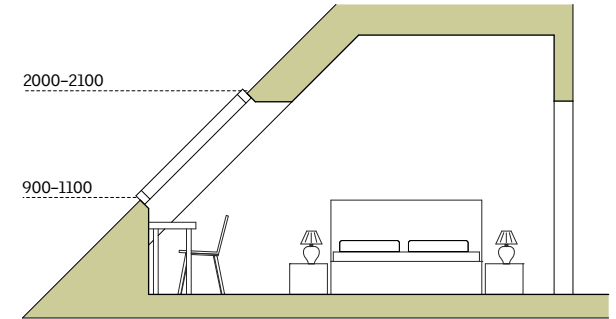
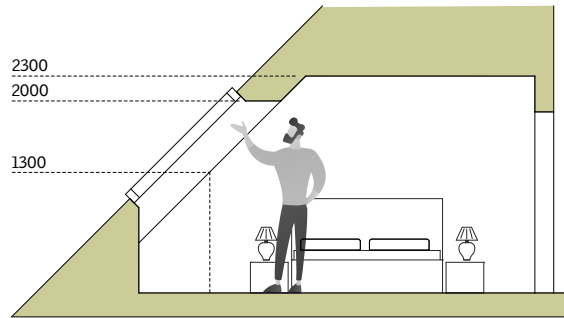
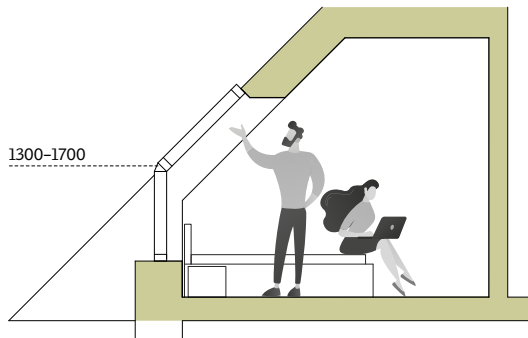


placement of the bed between the windows / at high attic parapet the optimal view is ensured by the facade window

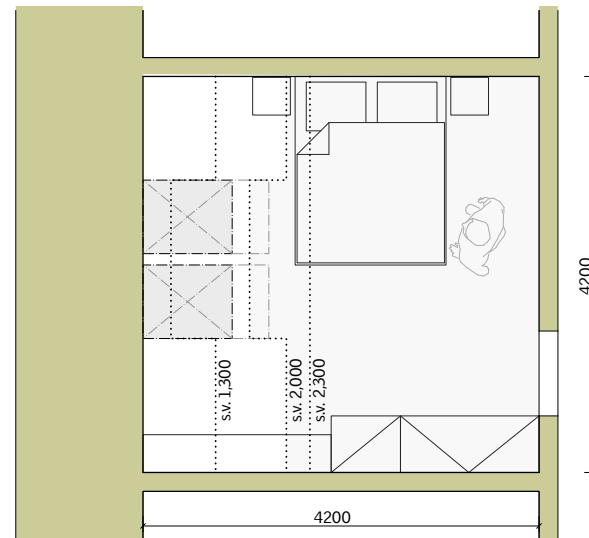
# 2.3 / Bedroom



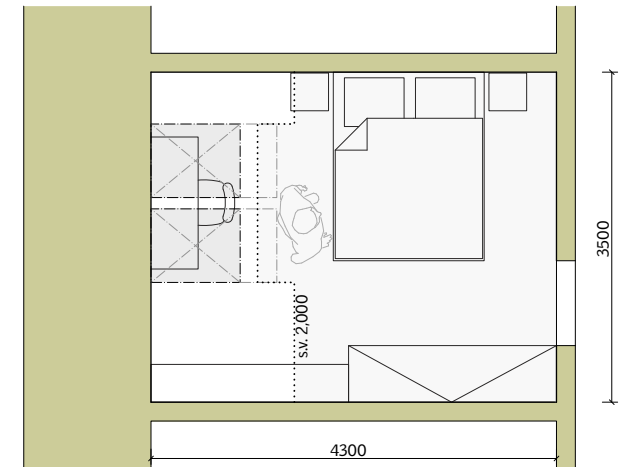
## small bedroom



placement of the bed between the windows / non-traditional use of angled window assemblies



placement of the bed by the wall / minimum dimensions / boarding only from one side of the bed



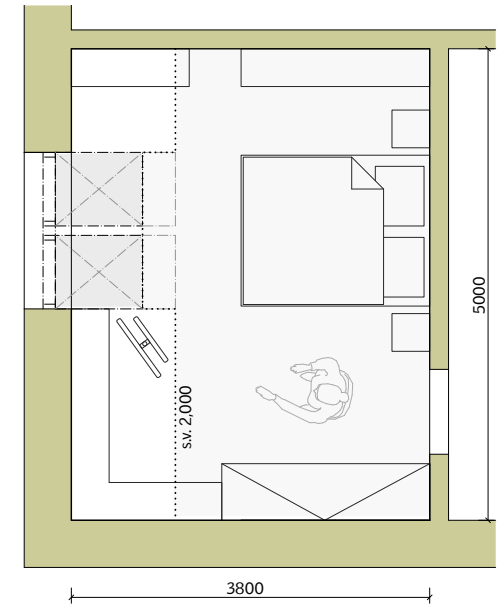
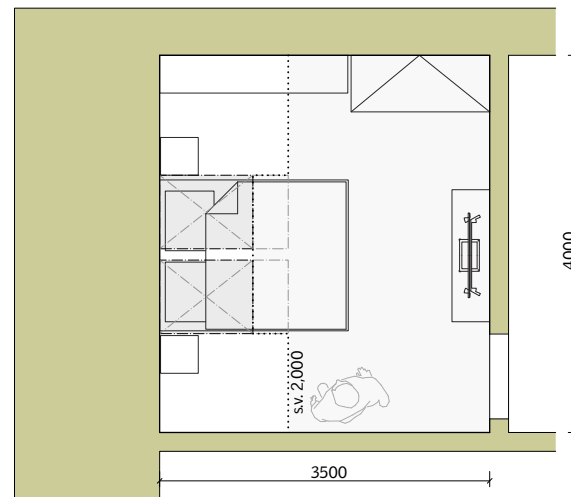
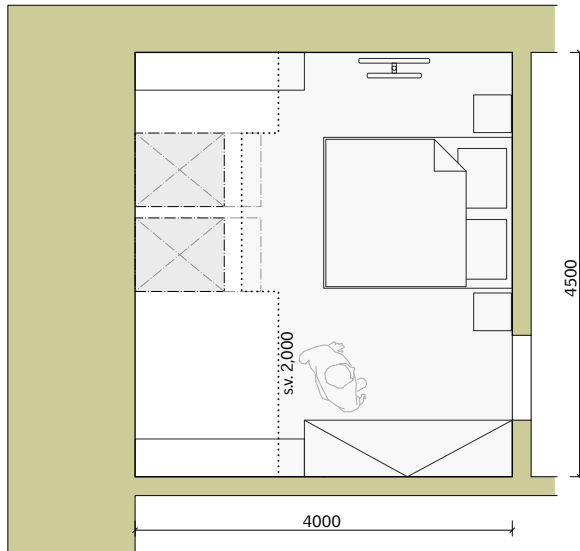
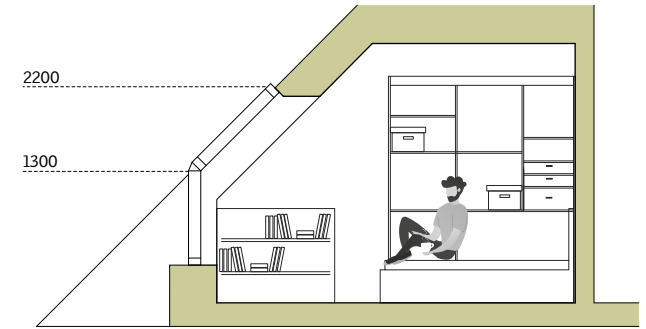
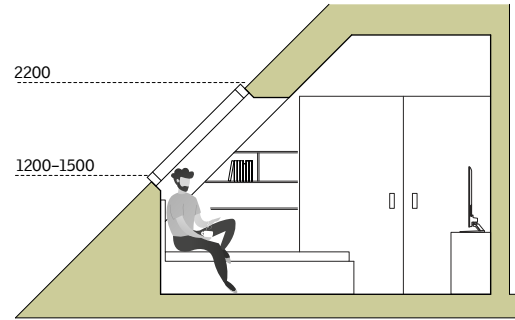
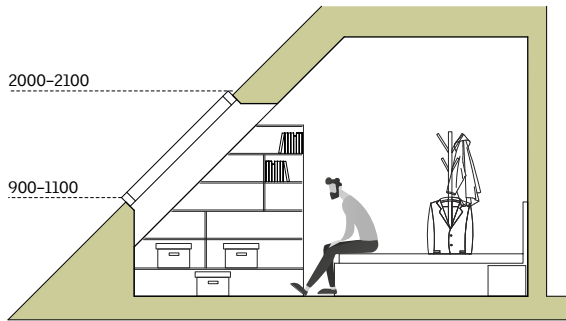
placement of the bed by the wall / minimum access to the bed from both sides



# 2.3 / Bedroom



## bedroom with a view

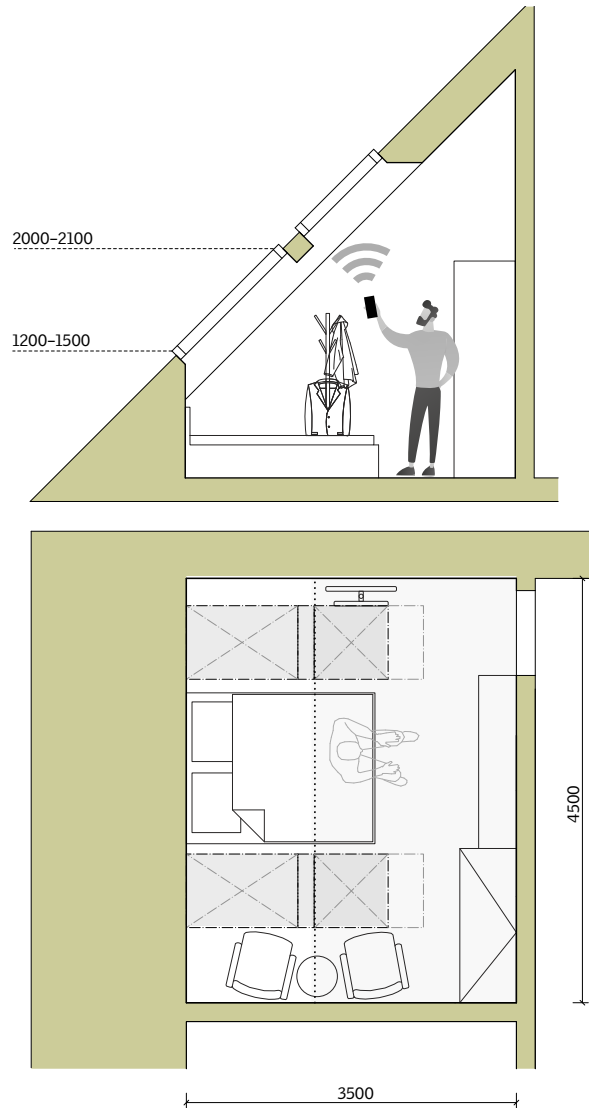


location of the bed opposite the windows / optimal view from the bed / effect on the size of the room

bed located under the windows / economy version layout / star view

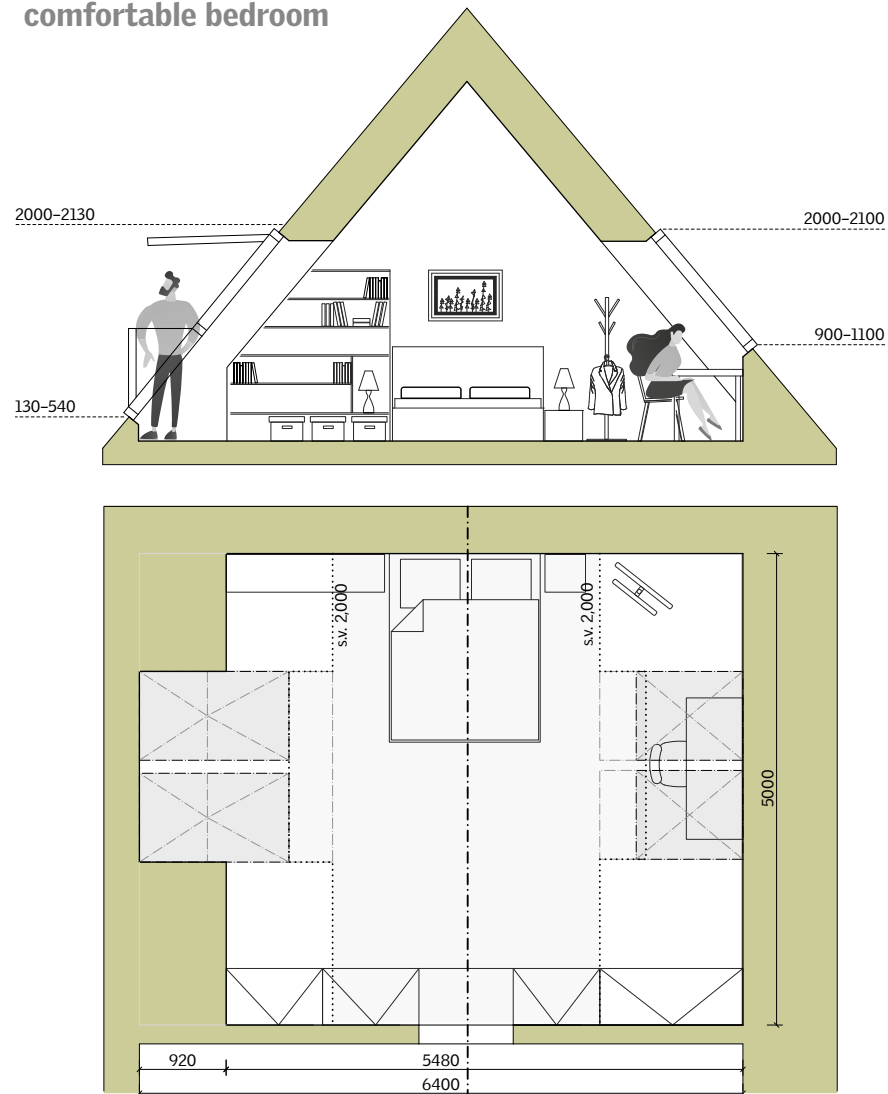
angled glazing for the best view

## 2.3 / Bedroom



optical enlargement of the space by opening into the truss / larger volume of air / ventilation through the chimney effect

### comfortable bedroom



opening into the truss gives the space the opportunity to stand out / connection with the work / the possibility of transverse ventilation / comfortable balcony window

Plenty of daylight and contact with the outside environment visually enlarge each room.  
We may underestimate the lighting of the bedroom, however it affects our 24-hour biological cycle.

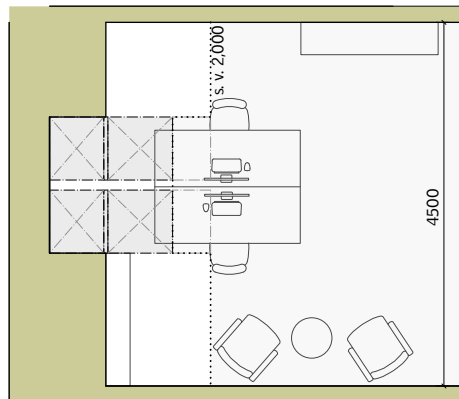
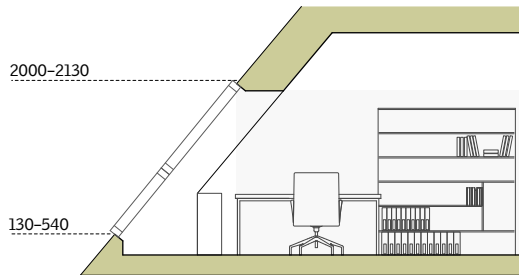
We need the right light at the right intensity at the right time. We may underestimate the lighting of the bedroom, however it affects our 24-hour biological cycle. It is assumed that healthy light is very closely related to healthy darkness, which basically means we need high light intensity during the day and darkened room while sleeping. High light intensity is important for the first 20 minutes in the morning after waking up.

Lighting need is 500 LUX.

# 2.4 / Study / work position

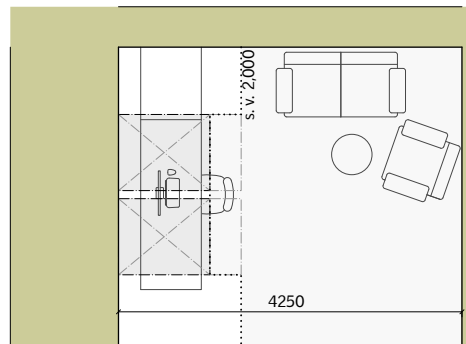
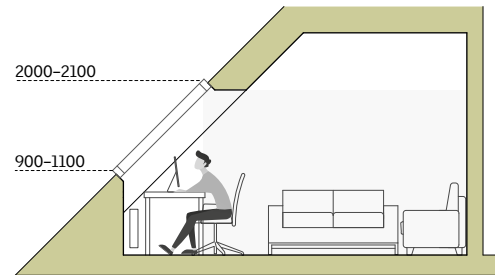


study for two people



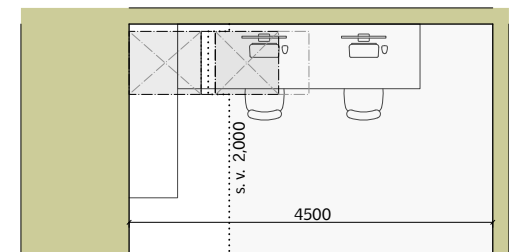
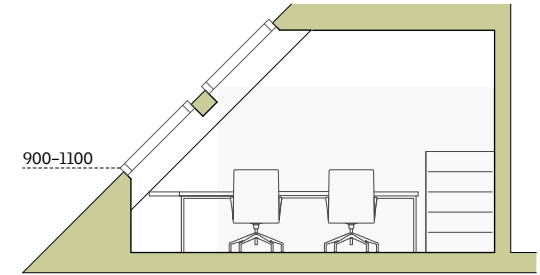
targeted desktop lighting / attractive view

study with a view



targeted desktop lighting / view / top window control

study for two people

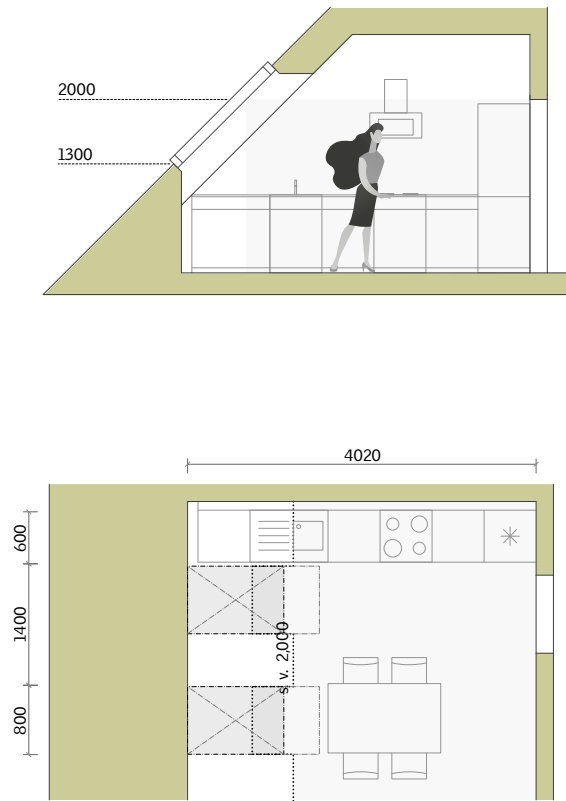


targeted lighting of the desktop / design-attractive organization of places

# 2.5 / Kitchen

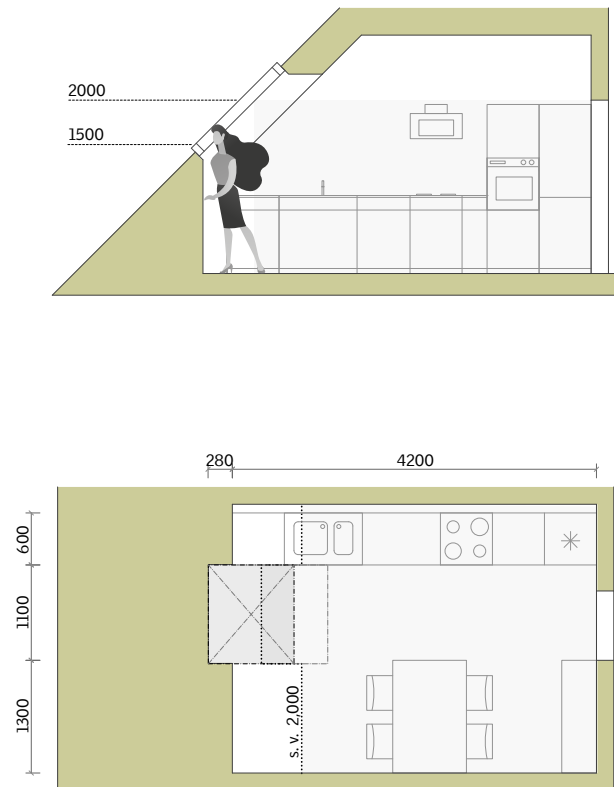


### small single row kitchen



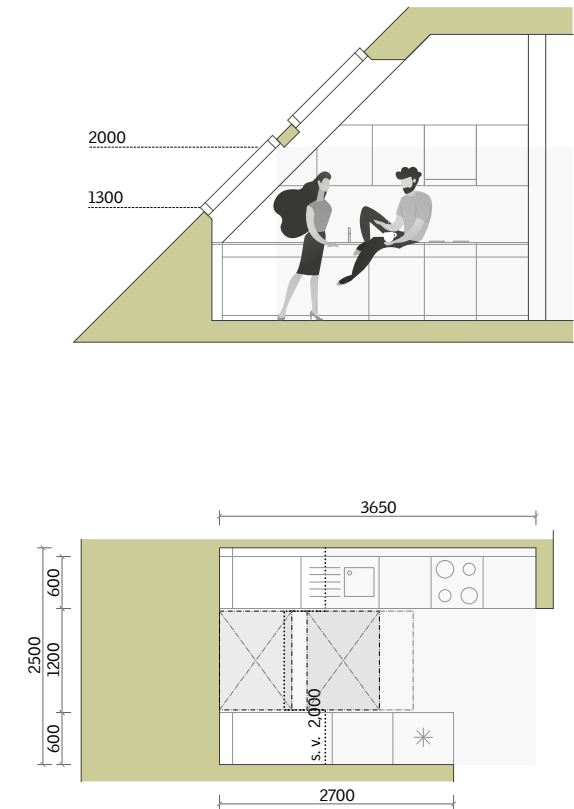
this location provides lighting for the work area as well as a view

### single row kitchen with high attic parapet



the roof window extends the handling space with the required height

### double row kitchen

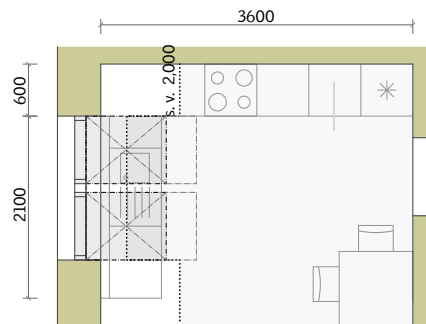
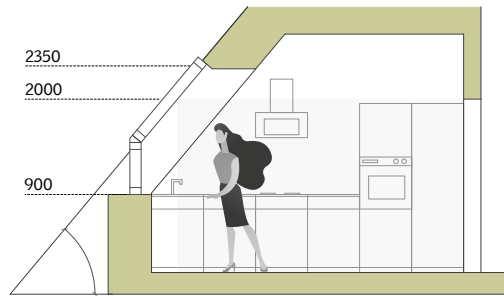


roof windows illuminate both work surfaces / windows above each other look great both from the interior and the exterior

# 2.5 / Kitchen



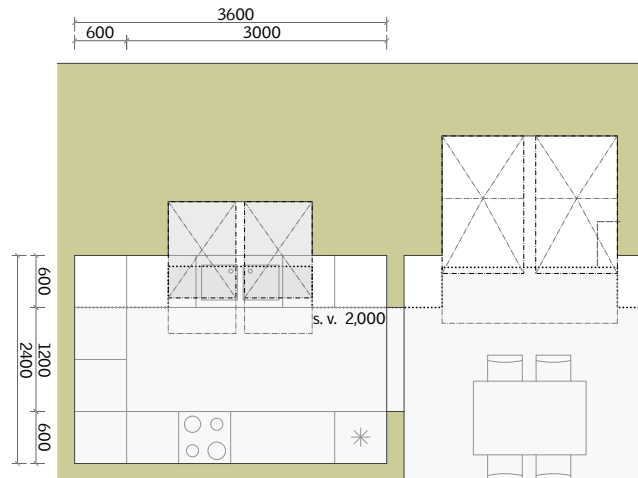
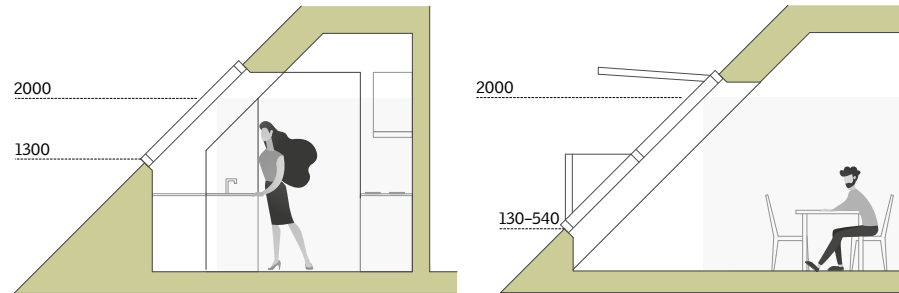
## L-shaped kitchen



the view from the attic with a high attic parapet is provided by a combination of a roof and a vertical window

## U-shaped kitchen

with high attic parapet / dining room with roof balcony

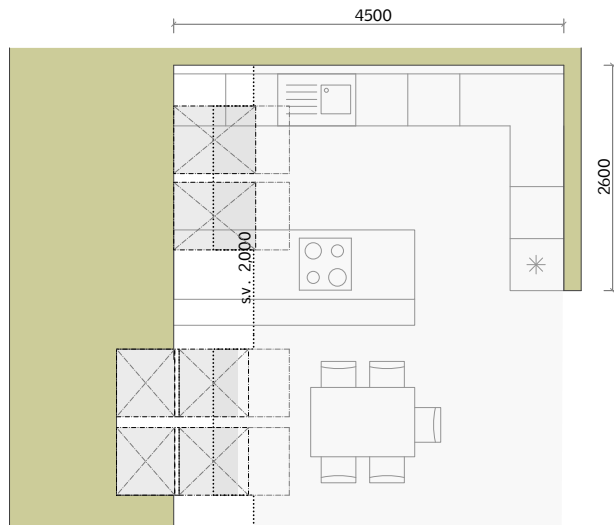
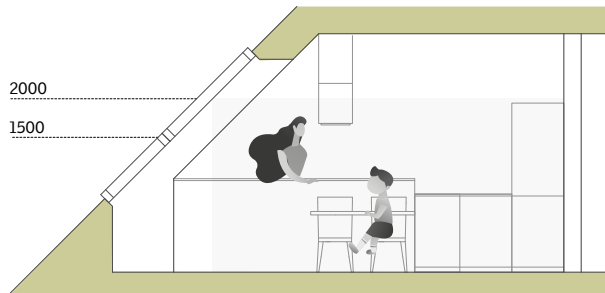


the height of the attic parapet can be chosen according to the needs of the room / dining room is a suitable space to place larger glazing

# 2.5 / Kitchen

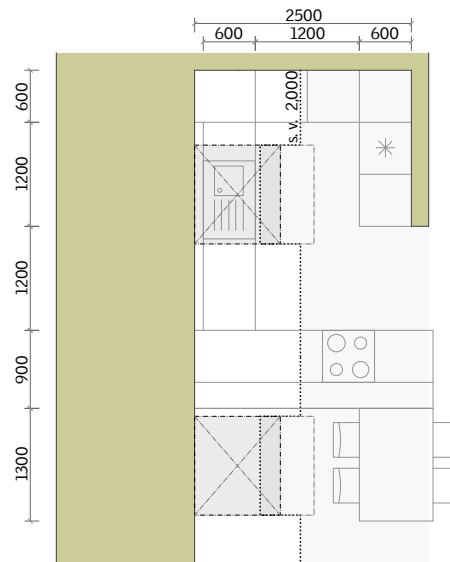
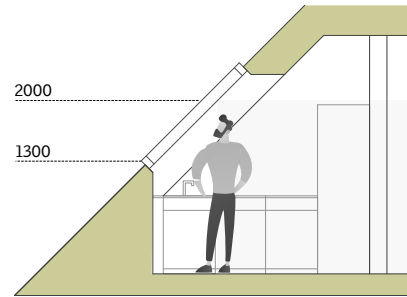


### L-shaped kitchen with an island



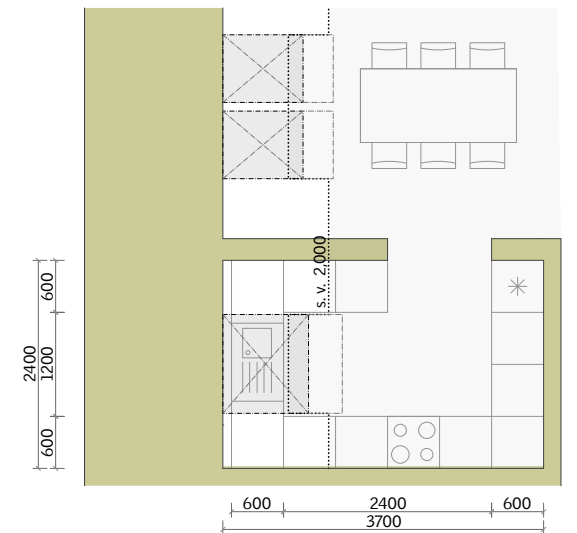
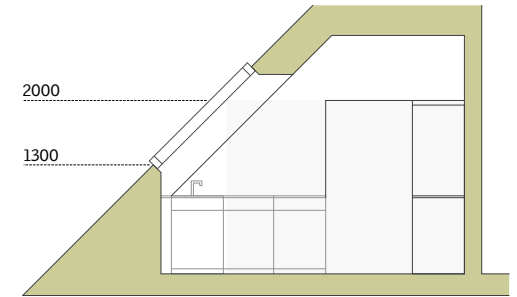
the set of roof windows in the dining room will bring a unique experience with the view / placing the windows in the recess will allow us to lower the window sill for a sitting view

### G-shaped kitchen



the sunroof will extend the handling space in the kitchen / a wider roof window will bring more daylight and space

### G-shaped kitchen

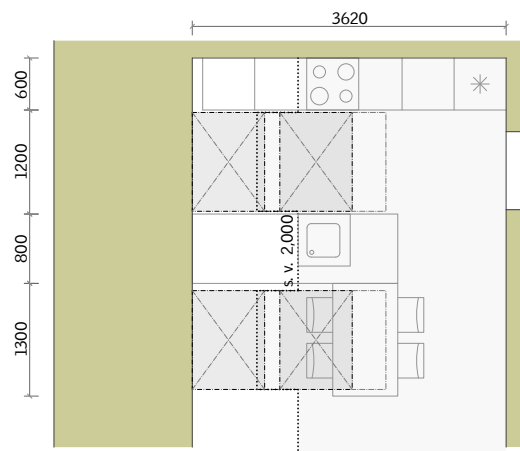
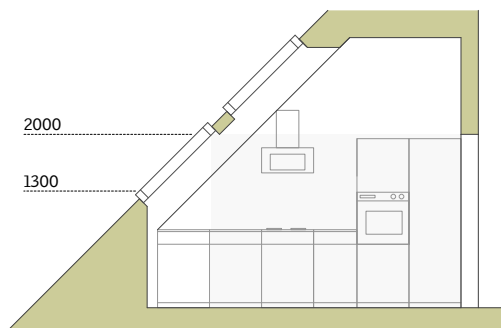


the optimal placement of tall cabinets is outside the inclined wall

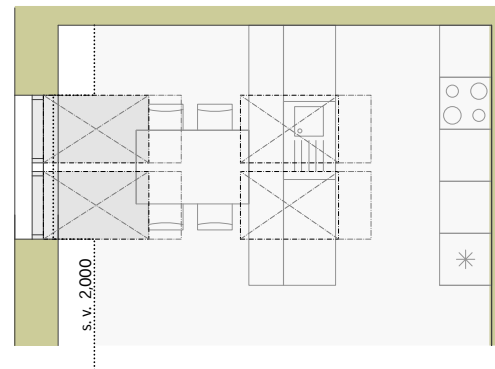
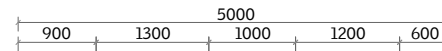
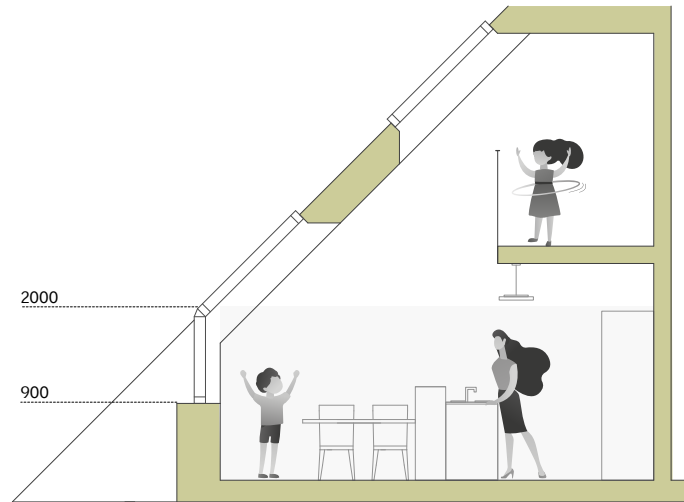
# 2.5 / Kitchen



## single row kitchen with an island



attic space should be large / larger volume of air / slower overheating / interesting design of windows on top of each other



the best attic spaces open over two floors / attractive space / even lighting and deeper lines / faster ventilation

The kitchen is the busiest work area in the household. Targeted lighting of the work surface brings maximum comfort when preparing food.

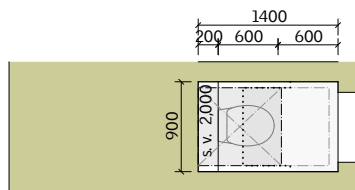
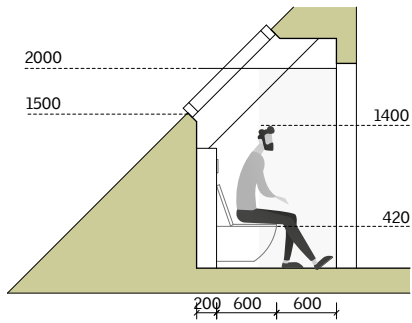
Top lighting is the best solution in this case. The high temperatures used in the preparation of food accelerate the chimney effect and natural ventilation through high windows is very effective.

The need for lighting for food preparation is 500 LUX, for food consumption 300 LUX.

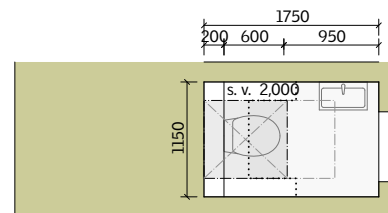
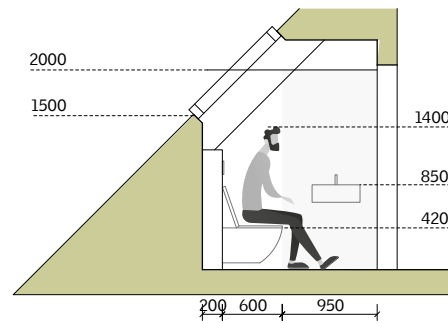
# 2.6 / Bathrooms, toilet



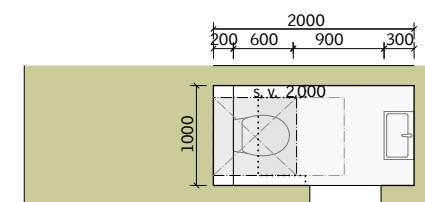
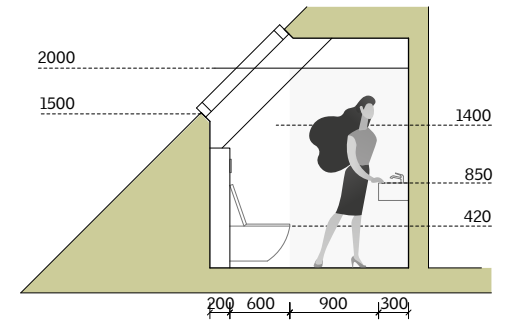
minimum toilet size



toilet with washbasin



toilet with washbasin and side entrance

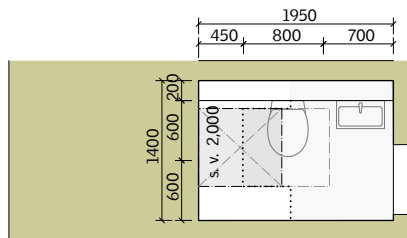
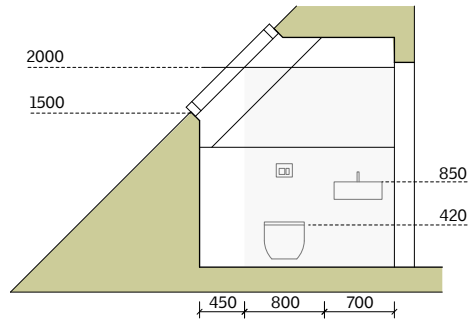




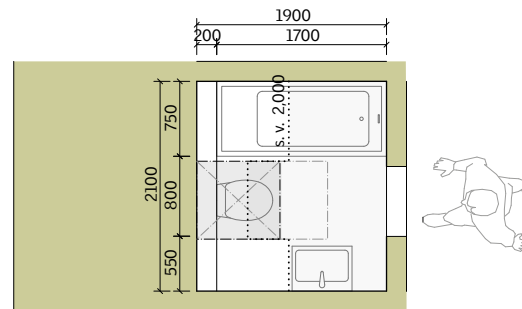
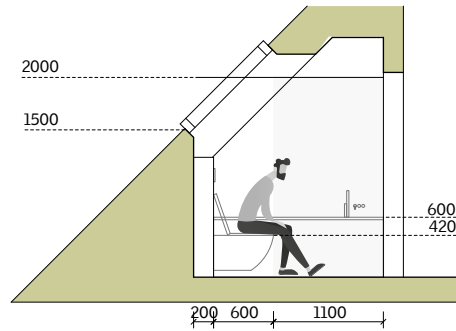
# 2.6 / Bathrooms, toilet



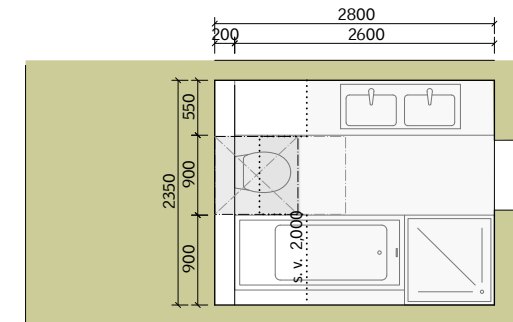
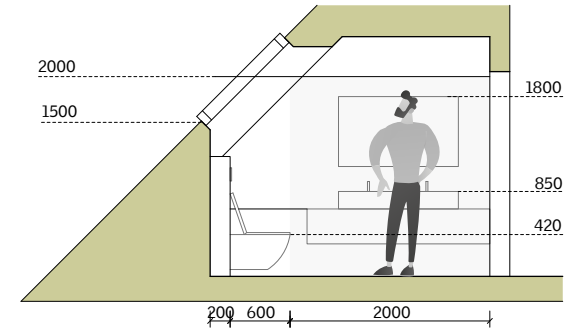
toilet with a washbasin



small bathroom with a bath



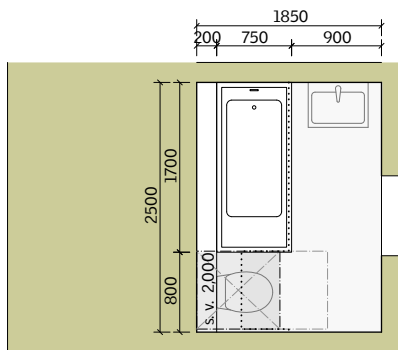
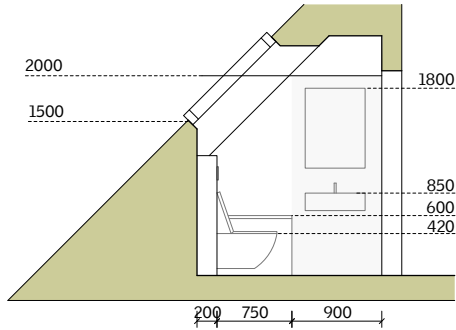
small bathroom with a bath, shower, double washbasin and toilet



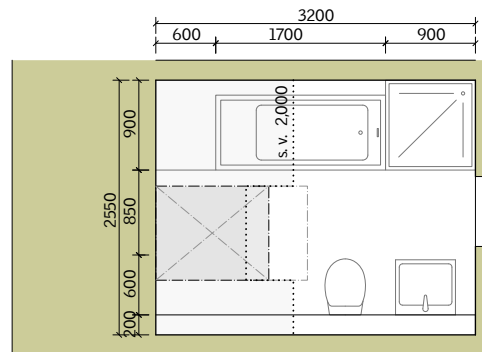
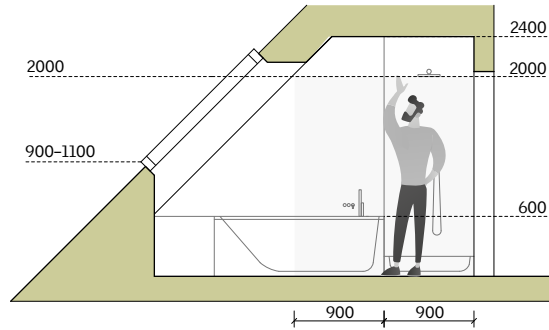
# 2.6 / Bathrooms, toilet



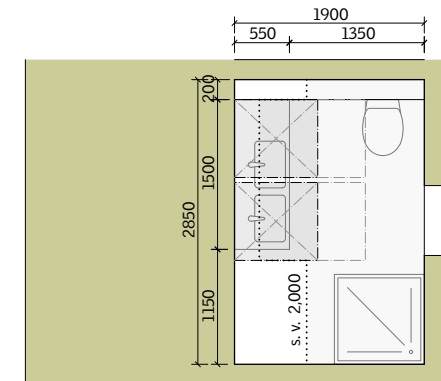
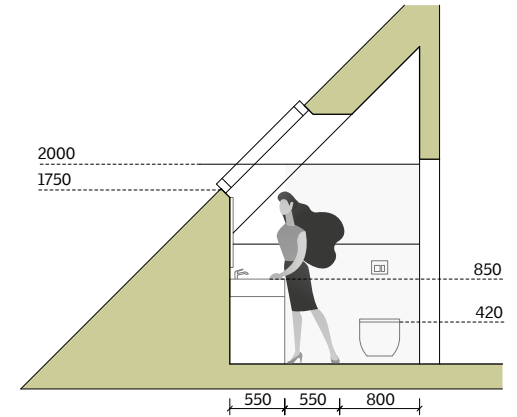
small bathroom with high ceiling



bathroom with low attic parapet



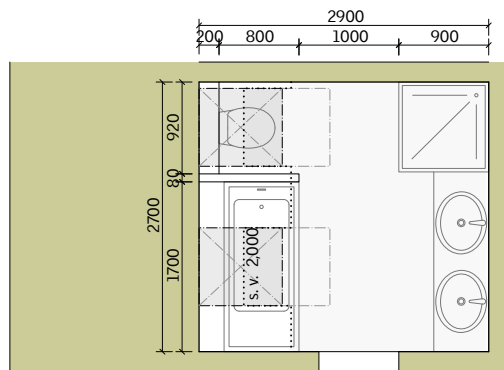
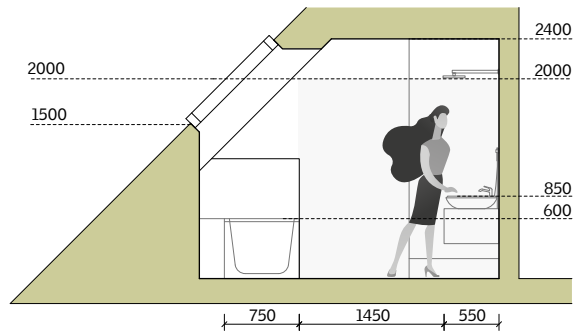
with washbasin below the inclined wall



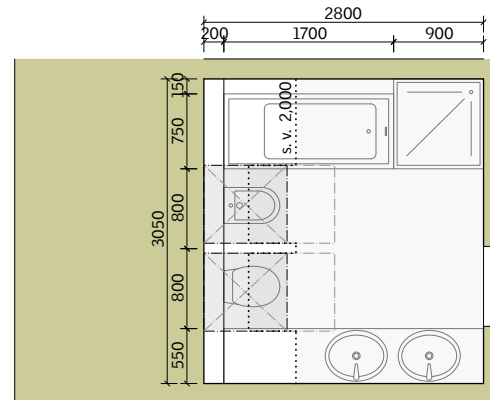
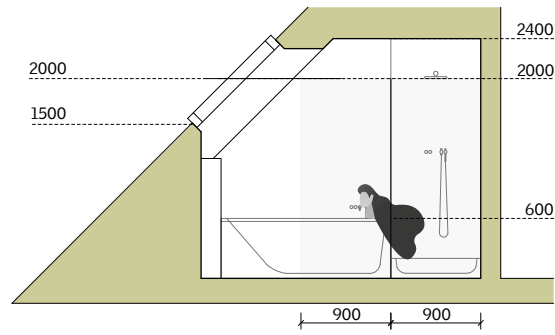
# 2.6 / Bathrooms, toilet



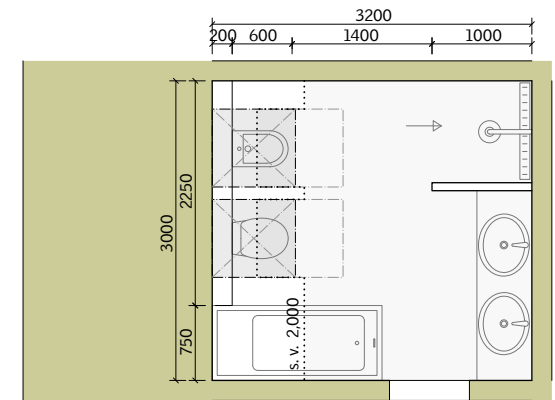
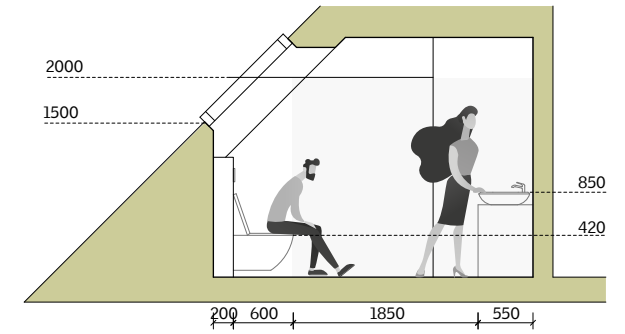
comfortable bathroom with a side entrance



comfortable bathroom with a toilet and bidet



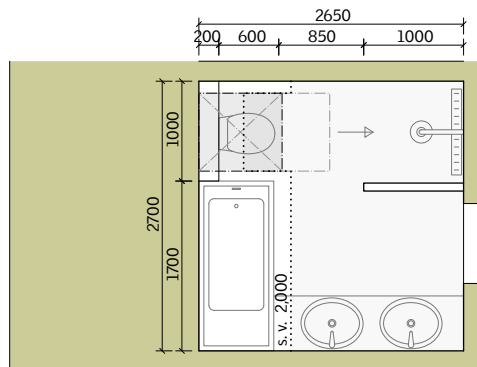
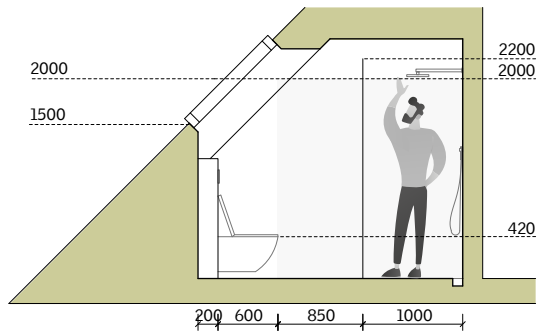
comfortable bathroom with a walk-in shower



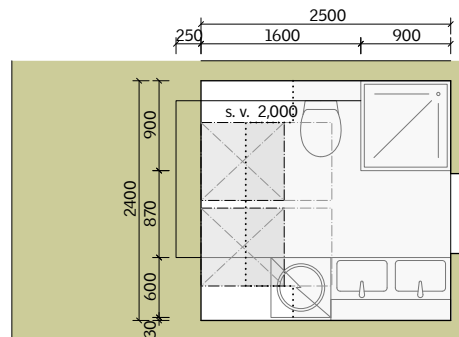
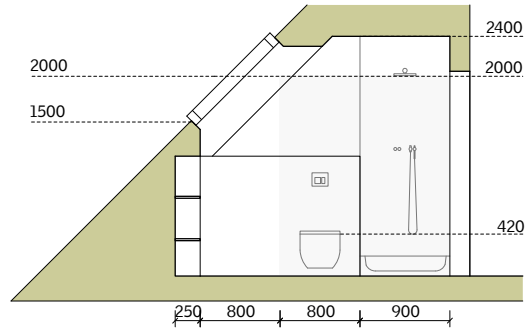
# 2.6 / Bathrooms, toilet



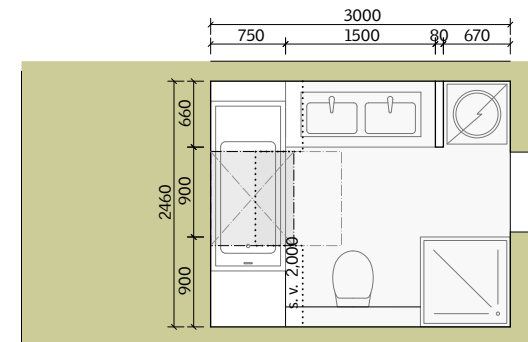
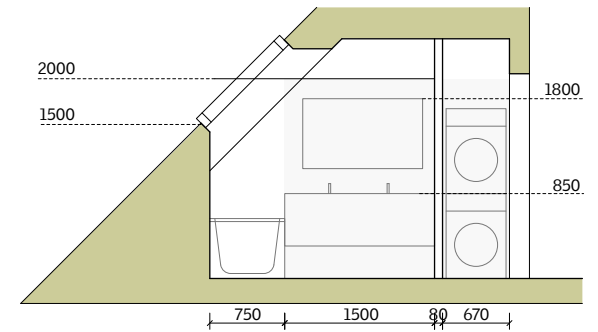
small bathroom with a walk-in shower



small bathroom with a washing machine



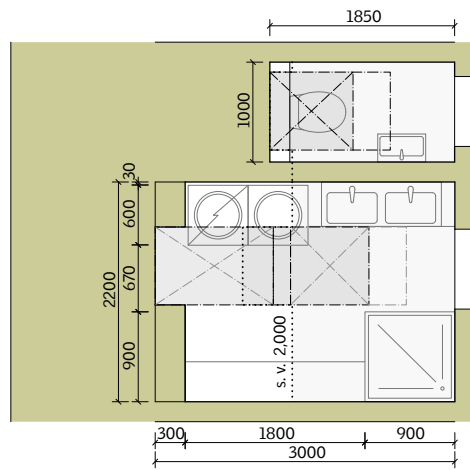
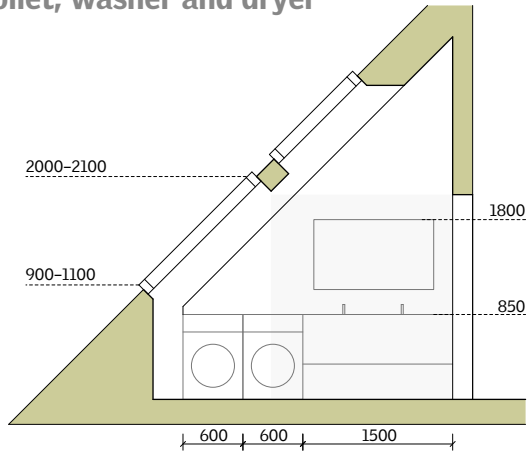
bathroom with a bath under the window



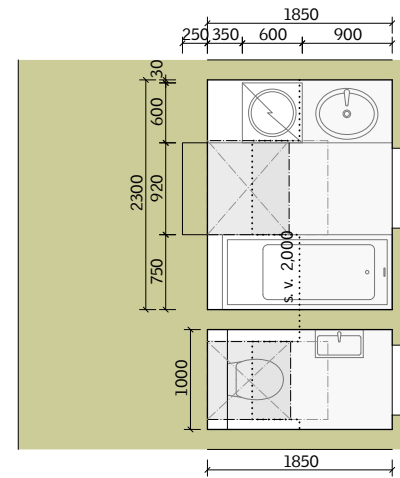
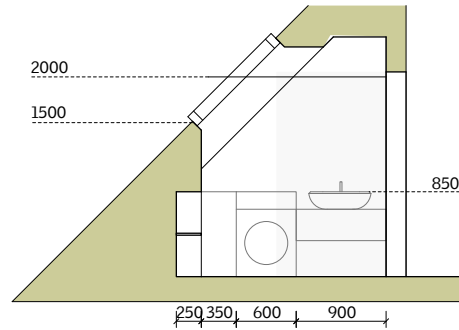
# 2.6 / Bathrooms, toilet



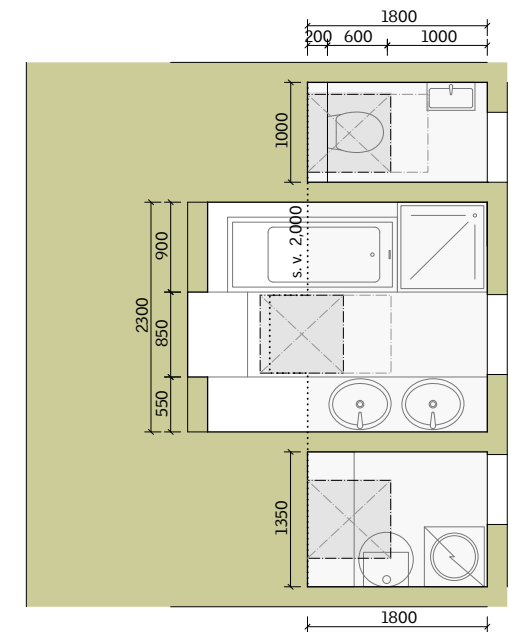
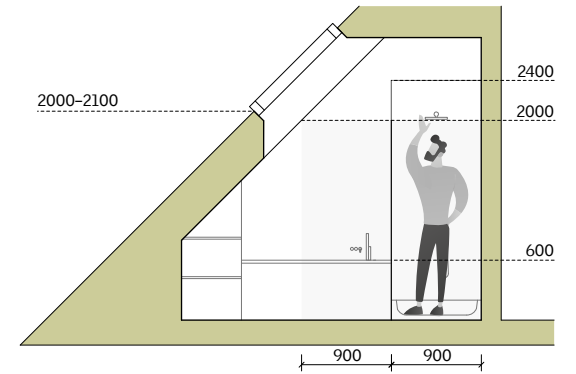
bathroom with a separate toilet, washer and dryer



small bathroom with a separate toilet and high attic parapet



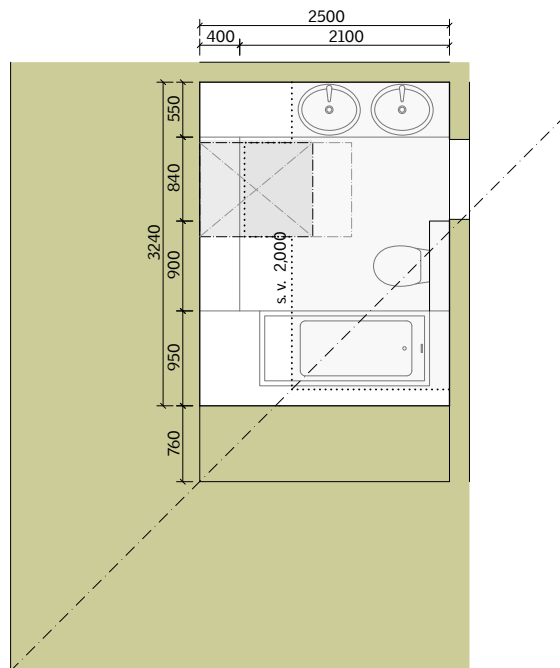
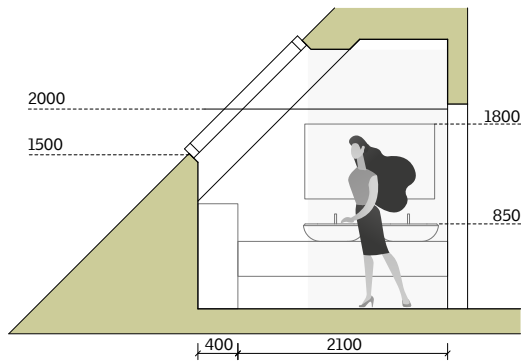
comfortable bathroom with a separate toilet and laundry



# 2.6 / Bathrooms, toilet



## bathroom in the tent roof



Daylight in the bathroom:

Daylight creates natural colour rendering. The best make-up is done in daylight.

The first 15 to 20 minutes of morning light help to "set" the biological clock of our body, higher intensity will start us up for the whole day.

The light intensity of 200 LUX is suitable for showering, washing and changing clothes.

Humidity will be helped to vent by the automatically operated roof window.