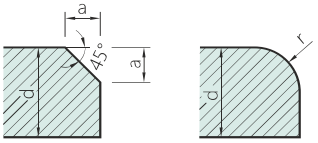
7.1.3.2 Mounting of CETRIS® PLANK Boards

CETRIS® cement bonded particleboards for PLANK system are available in widths of 300 or 200 mm, in a recommended length of maximum 1,875 mm (for a thickness of 12 mm). The boards have pre-drilled holes with a diameter of 8 mm (sliding – edge holes) and at least 1.2 multiple of the screw diameter (inner holes). The hole drilling and span of the load-bearing supports must correspond to the technological regulation, see the following table. Fixture of the boards to the load-bearing construction must allow the motion caused by the volumetric changes in the façade boards.

The individual façade elements must be installed with joints of min. 5 mm. The CETRIS® boards for the PLANK overlapped joint system are supplied with chamfered bottom edge at an angle of 45° or phased with semi-circular mill with r = 3.2 mm (this does not apply to CETRIS® PROFIL boards in all modifications).

Chamfering of the edges, rounding of the edges on CETRIS® boards for the PLANK system



a = min. 2 mm, max. 5 mm
r = 3,2 mm
d = thickness of CETRIS® board

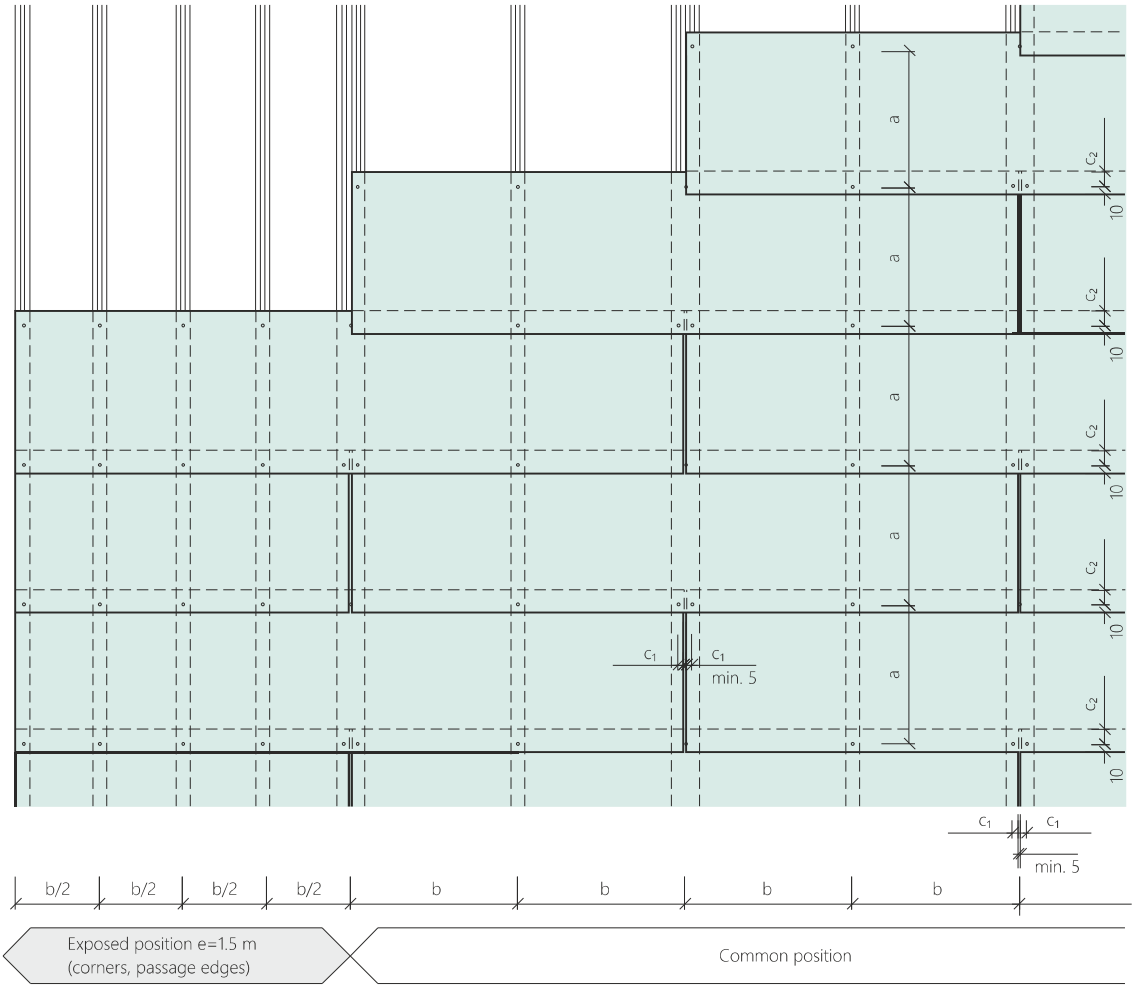
PLANK anchoring table

Board thickness (mm)	Screw span a (mm)	Support span b (mm)	Distance of screws from vertical edge c_1 (mm) Wood / Zinc / Aluminium	Distance of screws from horizontal edge c_2 (mm)	Max. board length (mm)
8	< 400	< 420	>35 <50	min. 40	1260
10	< 400	< 500			1500
12	< 400	< 625			1875
14	< 400	< 625			1875
16	< 400	< 700			2100

Note: The given values apply to a building height of max. 30 m. In case of taller building cladding with CETRIS® boards, contact the manufacturer.

Note: The recommended maximum length of CETRIS® board for the PLANK system is equal to triple the span of the auxiliary vertical profiles (laths) – i.e. for a board thickness of 10 mm this is max. 1,500 mm and for a board thickness of 12 mm it is 1,875 mm.

Diagram of the mounting of CETRIS® PLANK boards

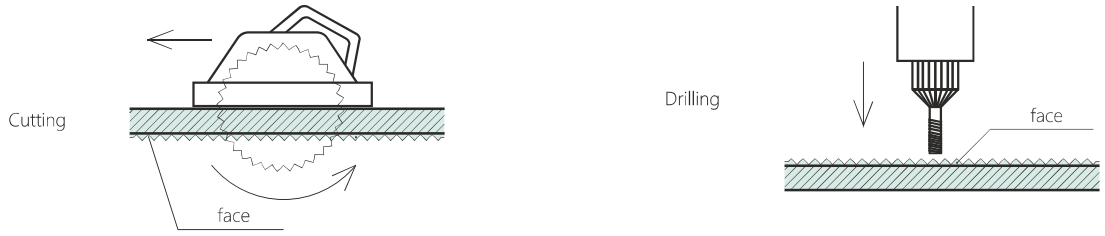


All values are given in mm.

7.1.4 Processing of CETRIS® Façade Boards

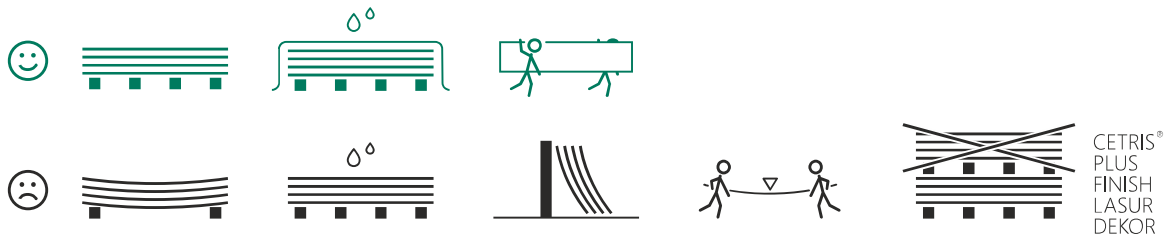
CETRIS® cement bonded particleboards can be cut with a circular saw with a hard metal tipped blade. For a clean and straight cut, it is necessary to use a guide bar and cut the boards from the reverse side to protect the face against damage. Immediately after working the boards with surface treatment it is necessary to clean dust from the edge and coat it. Holes are pre-drilled with a no impact drill on a firm surface. It is recommended to use a drill bit for metal drilling. As a rule, the holes are drilled from the front side.

Processing of CETRIS® boards with surface treatment



7.1.5 Packaging and Storage of CETRIS® Façade Boards

The CETRIS® cement bonded particleboards are supplied on wooden transport pallets wrapped in protective foil. The individual CETRIS® FINISH, CETRIS® PROFIL FINISH and LASUR DEKOR boards are separated with softened inlays preventing board damage during transport. The boards must be stored in their original packaging on a stable firm surface in a dry place, which is protected against rain and dust.



7.1.6 Composition of the CETRIS® Board Façade System

1) Base construction

The base construction must meet all requirements of the relevant technical standards prescribed for these constructions (Czech national technical standards – ČSN, construction and technical certificates, and technological procedures). This particularly applies to homogeneity, coherence, strength and straightness requirements, both local and overall. The base strengths are given by the requirements of the individual manufacturers of the anchoring technologies and their regulations for the design of individual anchoring elements.

2) Thermal insulation

If thermal insulation is required, we recommend using hydrophobic boards of mineral fibre of WV type pursuant to DIN 18165. The recommended reaction to fire class pursuant to EN 13 501-1 is A1 or A2 as the case may be. The minimum thickness of the boards is based on the manufacturing programmes of the individual manufacturers and the heat resistance requirements of the insulation layer (thermal technical calculation).

Recommended types of mineral boards

Manufacturer, contact	Product	Diffusion resistance factor μ	Thermal conductivity coefficient λ	Reaction to fire class
Saint-Gobain Insulations, www.isover.cz	ISOVER FASSIL	1,4	0,035 W/mK	A1
	ISOVER MULTIMAX	1,0	0,030 W/mK	
Rockwool International a.s., www.rockwool.cz	AIRROCK ND		0,035 W/mK	
	VENTI MAX		0,034 W/mK	

The insulation boards are fixed with disc dowels in lengths as instructed by the manufacturer. The minimum number of dowels per m^2 is according to the instructions of the mineral board manufacturers.

3) Air gap

The air gap serves for exhaustion of atmospheric humidity and rain and snow moisture penetrated into the open system through joints and for removal of humidity diffusing from the base construction. In the summer the air gap prevents temperature increase in the load-bearing base construction. The humidity condensation in the ventilated space mainly depends on the intensity of the volume flow and speed of the ventilation stream. The minimum size of the air gap is 25 mm, max. 50 mm.

4) Wind-tight safety hydro insulation

The basic function of these membranes is to provide for wind tightness and limit air movement from/to the heat insulation. Another function of these membranes is to prevent water penetration and effectively remove vapours. The most frequent manifestations of air movement inside the vented façade in the gap between the lamellae and the heat insulation include the arising chimney effect and the wind. Thanks to this movement there is heat loss due to the air flow – the heat is drawn from the heat insulation. Similarly, the mechanical particles such as dust may get into the insulation and absorb moisture, thus negatively affecting the heat insulation properties. Water may get into the construction of the suspended façade in different ways (rain, gravitation etc.). A suitable product is DuPont™ Tyvek® Façade – a wind tight and highly vapour permeable membrane. The membrane is laid directly on the surface of the heat insulating materials, anchored with disc dowels. At the points where the anchors and disc dowels penetrate the membrane and where the membrane overlaps, the joints shall be covered with Tyvek® system tape.

5) Wooden load-bearing grid

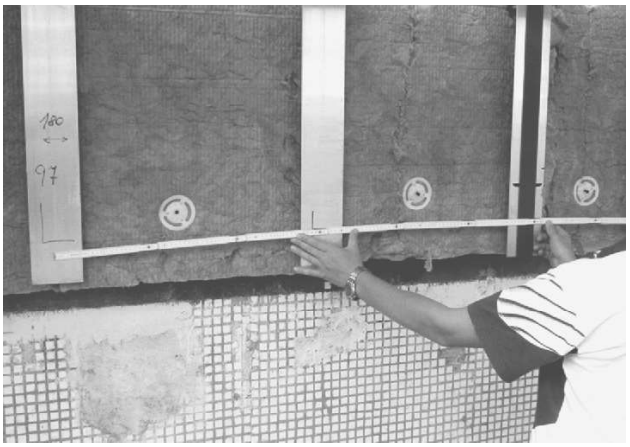
Load-bearing construction
The load-bearing skeleton consists of a grid made of wooden laths and planks. The laths and the planks are made of quality spruce cut timber dried to a max. 12% humidity. Such dried timber is impregnated with a suitable agent against mould and rot.

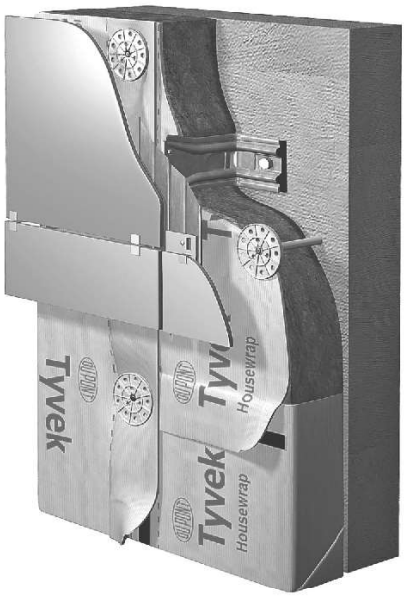
Primary – horizontal – grid
If additional thermal insulation is to be installed, a grid is also used in the composition. The thickness corresponds to the thickness of the insulation (max. 60 mm); the minimum width is 50 mm. The size, anchoring and spacing are specified by the designer on the basis of static and thermal technical assessment of the peripheral construction.

Secondary – vertical – grid
The grid forms the venting gap between the façade coat and also performs the function of the load-bearing construction for the façade boards. The lath thickness depends on the positioning of the primary grid laths and it is also necessary to keep the gap venting profile – the minimum cross-section should be 250 cm2/m and the max. 500 cm2/m. This means that the distance of the inside face of the façade board from the heat insulation or load-bearing wall of the building is min. 25 and max. 50 mm.

The laths are fixed to the primary grid and spaced according to the type of façade cladding. The lath width at the contact point of two façade elements is min. 80 mm; the width of the intermediate laths is 50 mm.

The scope of application of the ventilated façade on a wooden and combined (wood + galvanised, aluminium) load-bearing construction is limited by the fire regulations. During design of the base construction, it is necessary to act according to ČSN 73 0810, ČSN 73 0804 and ČSN 73 0802.





6) Metallic load-bearing grid

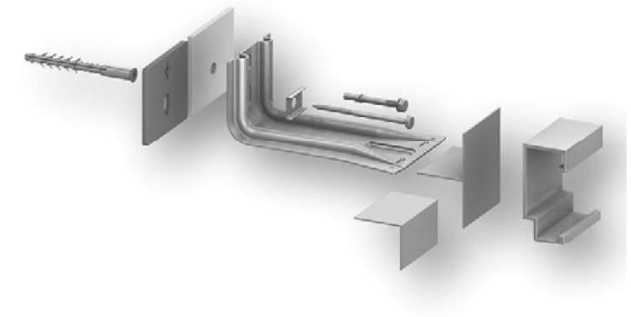
The load-bearing construction for the CETRIS® façade system may be made of anchored aluminium or galvanised profiles. Several types of load-bearing constructions for ventilated façades are available on the market, e.g. SPIDI, LA CENTRUM, DEKMETAL, ETANCO, ILTEGRO, KNAUF INSULATION.

7) CETRIS® boards

- without surface treatment - CETRIS®BASIC, CETRIS®PROFIL, CETRIS®INCOL
- with surface treatment – CETRIS®FINISH, CETRIS®LASUR, CETRIS® PROFIL FINISH, CETRIS® PROFIL LASUR, CETRIS®DEKOR

By their technical properties, the façade CETRIS® cement bonded particleboards fulfil the European regulation ETAG 034-1 and European technical approval ETA-14/0196 has been issued for them.

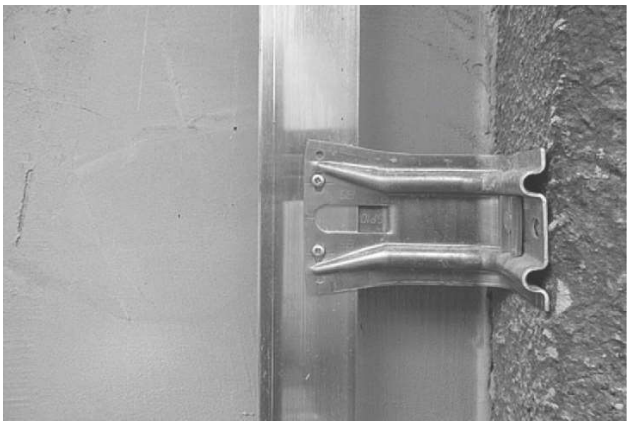
Note: the surface of the boards without surface treatment does not have a uniform colour (lime efflorescence); complaints concerning board appearance cannot be accepted.



7.1.6.1 Load-bearing grids

SPIDI load-bearing construction

The certified load-bearing systems for the SPIDI, or SPIDImax ventilated façade systems are made of aluminium or steel with anti-corrosion treatment. Thanks to the composition, the entire construction is resistant to corrosion and an aggressive environment. The stability of the load-bearing construction in terms of the temperature load is based on the system of fixed and sliding fixing points (pre-drilled round and oval holes in the SPIDI elements for fixture of load-bearing profiles). The basic load-bearing elements of the SPIDI system with a construction length of 60 – 300 mm thanks to combination with vertical load-bearing profiles of tongue and groove type allows for levelling of unevenness in the base constructions up to 35 mm in the plane perpendicular to the basic reference plane.



Composition of the SPIDI load-bearing construction

- SPIDI fixing element – anchor
- L or T load-bearing profile, or special profile
- fixing elements (spacing elements, plate fasteners)
- connecting elements (screws, bolts, rivets)
- assembly elements (battens, perforated profiles, rivet caps, base strips)

Technical service in the area of design, delivery and installation of the load-bearing structures is done by ISODOM, a.s. - www.isodom.cz

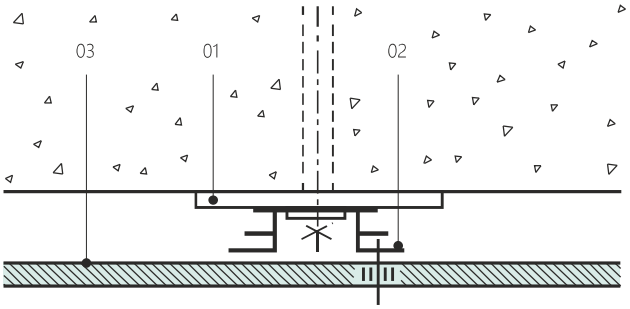
LA centrum load-bearing construction

The LA centrum system offers six different load-bearing construction variants for the façade boards. The load-bearing grids are based on aluminium, alloy and corrosion-resistant steel. Above-standard extension from 30 to 400 mm. Vertical beams – specially shaped aluminium alloy profiles. Fixing elements, small fastening and connecting material made of aluminium, its alloys and corrosion-resistant steel.

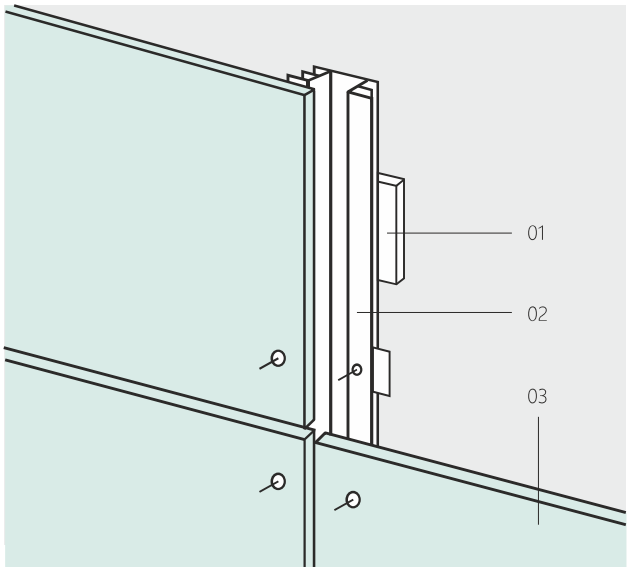
The LA-KV1 and LA-LV1 systems are suitable for fixture of the CETRIS® cement bonded particleboards.

The LA-KV1 load-bearing grid is an exceptionally economical metallic grid variant. The flat beams of special omega cross-section are laid in vertical position approx. 600 mm and are laid over the adjustable washers directly on the base. They are located at the point of the tile joint and as intermediate elements. Fixed and sliding fixing points ensure the dilatation of the beams. The width of vertical beams is uniform. At the point of the vertical joints, the joints may be expanded with firmly fixed wings. The LA-KV1 grid is a thin-layer alternative to the LA-LV1 grid.

The thickness of the ventilated LA-KV1 façades is identical to the thickness of classic glued tiles or plasters. Already from 28 mm including the load-bearing grid. Up to approx. 60 mm. They increase only by the unevenness of the base and thickness of the cladding boards. The vertical continuous ventilation air gap behind the boards are always maintained. It has a thickness of at least 20, normally 30 mm and above.



01 washer
02 KV beam
03 CETRIS® façade board



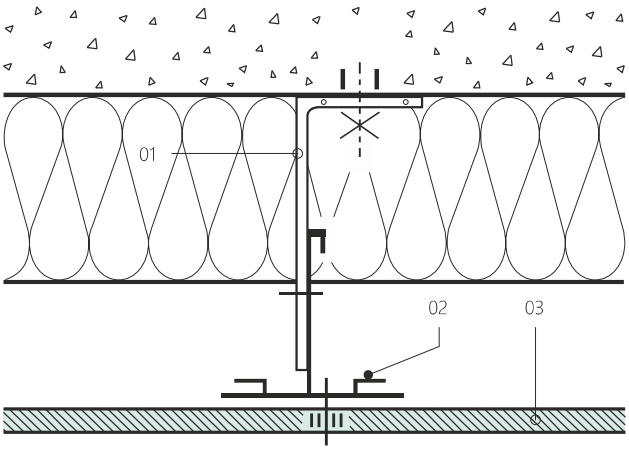
The LA-LV1 load-bearing grid comprises of vertical beams of special T-section, laid with a spacing of max. 625 mm (applies to a board thickness of 12 mm). They are clamped at the point of the tile joint and as intermediate elements. They are anchored to the base by consoles of various designs, according to the clear span of the tile and assembly requirements. The consoles are made in size series. In this way, it is possible to align a tile of any thickness. The dilatation of the beams is ensured by fixed, sliding or swinging connection to the consoles. The width of the beams is uniform. According to the anchoring of the boards, the wings fixed in the slots in the edges of the beams are expanded.

The fixture of the façade boards is a combination of fixed and sliding joints. It allows the full area dilatation of the boards independent of the dilatation of the load-bearing grid. The boards are fixed by shear rivets to the beam or wings with big heads over the holes pre-drilled in the boards. The holes of the sliding joints have a larger diameter.

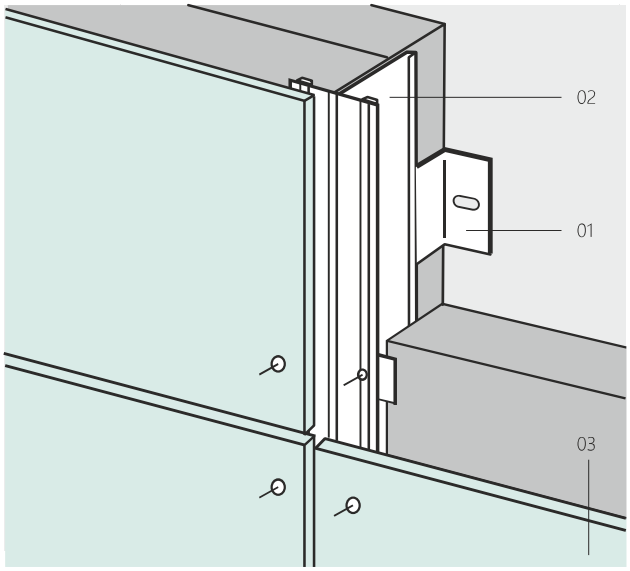
The thickness of the ventilated LA-LV1 façades is the total of all their layers. It also includes the necessary space for rectification, and the ventilation air gap behind the boards. This is vertically continuous with a thickness of at least 30 mm. The top and bottom end in ventilation slots. The overall thickness of the LA-LV ventilated façade is 65 to 400 mm and above.

Technical service in the area of design, delivery and installation of the load-bearing structures is done by THERMOSOLUTIONS s.r.o.

www.thermosolutions.cz



01 console
02 LV beam
03 CETRIS® façade board



DEKMETAL load-bearing construction

Assembly of the façade system from the DEKMETAL load-bearing construction can be divided into several phases as follows:

- creation of the horizontal grid
- installation of the thermal insulation
- fixture of the diffusion foil
- assembly of the vertical profiles
- assembly of the façade cladding including solution of details

The procedure in the first two steps depends on the type of base construction – whether it is a skeleton and C cassettes are used or whether a wall construction is involved and consoles and profiles are used. Further assembly procedure is identical.

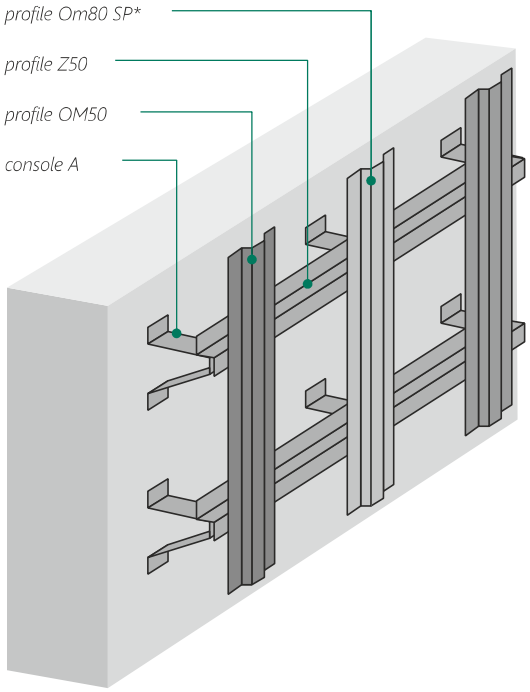
The first assembly phase of the façade system consists of the horizontal part of the grid. If the load-bearing construction comprises a skeleton, C cassettes are used. If the façade board is installed on a load-bearing wall, this grid is composed of a system of Z50 consoles and profiles. In the following text, the assembly variant is described more often – the base is a brick or concrete wall. The procedure of assembly for C cassettes (installed base constructions) is available from the system manufacturer.

When using the DEKMETAL load-bearing construction, the same principles apply to the spacing of vertical profiles and anchoring elements – see the table of the Maximum axial distances of anchoring elements in chapters 7.1.3.1 Application of the CETRIS® VARIO boards and 7.1.3.2 Application of CETRIS® PLANK boards.

Technical service in the area of design, delivery and installation of the load-bearing structures is done by DEKMETAL s.r.o.

www.dekmetal.cz

grid DKM2A

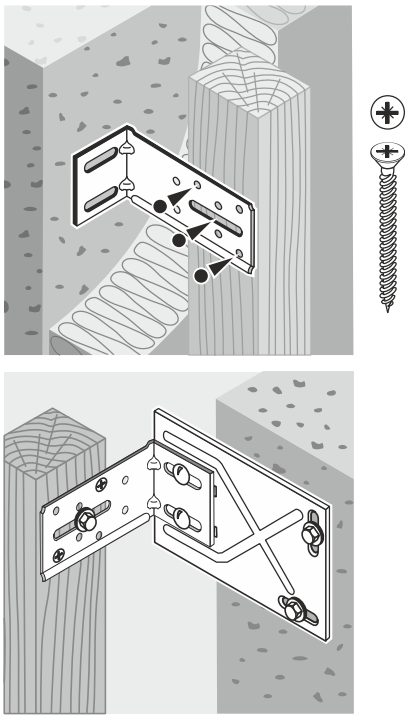


ETANCO load-bearing construction

ETANCO CZ s.r.o. is a supplier of anchoring (fixing) elements and anchoring equipment for the building construction industry, particularly in the specific sectors, such as, the cladding of the façades and roofs, ventilated façades, flat roofs, etc. and also ensures technical service in the area of design, supply and assembly of the load-bearing construction.

Combined load-bearing construction – wooden elements and metallic anchors

It is used for cladding up to a height of 9 m without limit; on higher buildings, it is used according to individual assessment of the entire structure pursuant to the requirements of ISO 5658-4 for vertical propagation of fire. The main advantage is its variability and affordability.



Aluminium construction

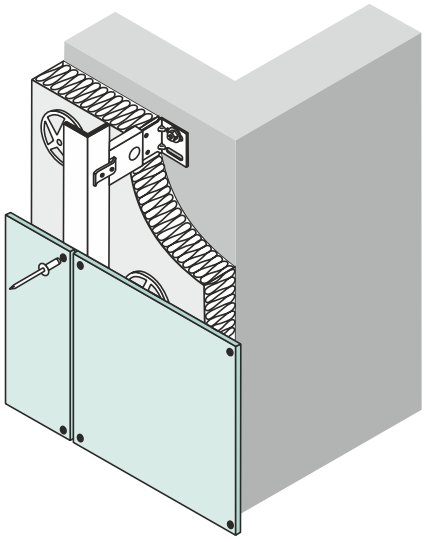
Its advantage is quick and easy assembly. Galvanising or other protective treatment is not necessary and its lower weight (as compared with steel) makes it possible to hang a larger weight on this construction or reduce the span and hence also the number of anchors. During the design and assembly of the façade boards on the construction, it is necessary to ensure adequate dilatation of the boards and the grid profiles (max. 3.35 m). The Façalu LR 110 aluminium construction system consists of ISOLALU wall anchors. These anchors are made in ten different lengths and it is possible to adjust them in the range 68 – 278 mm. The main grid elements are three basic aluminium profiles – T, L and Omega profile. Components of the system are also polypropylene pressed washers, which prevent the creation of a thermal bridge between the load-bearing construction of the building and the square.

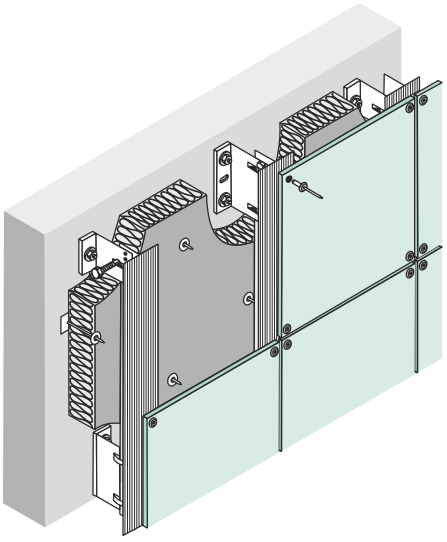
Technical service in the area of design, delivery and installation of the load-bearing structures is done by ETANCO CZ, s.r.o.

www.etanco.cz

Steel construction

It is not limited to a maximum height by safety regulations. The main advantage is affordability. During the design and assembly of the façade boards on the construction, it is necessary to ensure adequate dilatation of the boards and the grid profiles (max. 3.35 m). The basis system element of the combined and steel constructions consists of the pressed, reinforced anchoring consoles made of galvanised Z 350 - ISOLCO 3000P for vertical grids and CONSOLES for horizontal grids combined with L construction profiles.





Load-bearing construction - KNAUF INSULATION DIAGONAL 2H

The DIAGONAL 2H system is the result of efforts at minimising the effect of thermal bridges on the resulting thermal technical properties of the application of thermal insulation. It is possible to ensure the static function of the load-bearing construction and simultaneously reduce its effect on the efficiency of the thermal insulation if the console system is transformed into a more elegant truss system. In order to achieve the functionality of the thermal insulation, an important component of the composition is the outer weather protection and the possibility for its implementation as comprehensively as possible. During consideration of its location, it is however important to also consider how the resulting properties of the load-bearing construction shall influence the massiveness of the profiles that form the base for assembly of the foil and subsequently the base under the elements that form the outer face of the cladding. The more massive these elements will be – the more they will better transfer the heat to the exterior as an effective cooler and thus contribute to heat losses. For this reason, we divided the spar flanges into two elements. One of them is the auxiliary L profile, which is used to create the shape of the façade and also serves as the base for the air-tight foil. Over the foil, the Z and W profiles are added to prevent ventilated air spaces and also serve as the base construction for assembly of the CETRIS® board cladding.

As compared with construction versions for ventilated façades, the thermal bridge of this construction is relatively small. It can be compared with the effect of façade dowels on the efficiency of the contact thermal insulation system.

The DIAGONAL 2H steel construction for creation of a ventilated thermally insulated façade is designed to minimise the effect of thermal bridges on the effectiveness of the thermal insulation. On buildings up to 30 m tall, the construction allows the use of final cladding with a weight of up to 70 kg/m^2

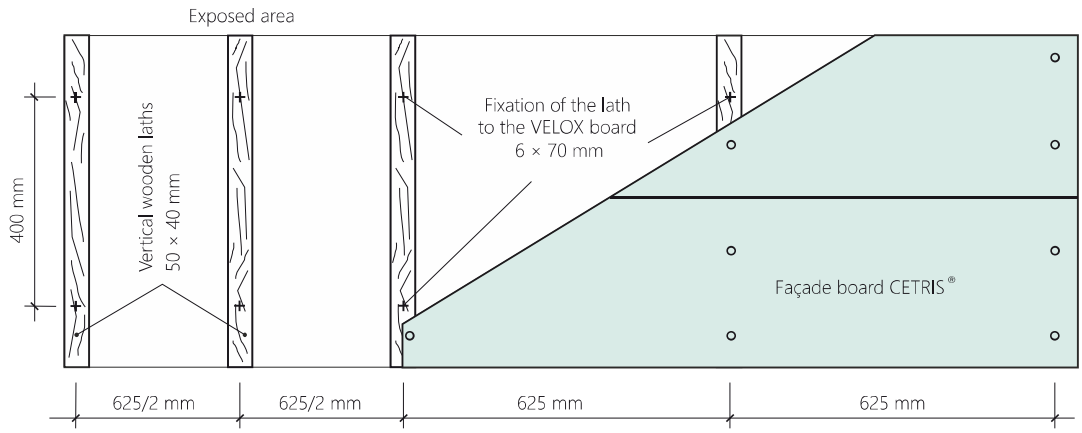
The system is applicable to refurbishment of old buildings or new buildings and also modifiable for use in wooden buildings and on extremely uneven surfaces with a high functional reserve and is undemanding in terms of machine requirements during assembly.

Technical service in the area of design, delivery and installation of the load-bearing structures is provided by KNAUF INSULATION.

www.knaufinsulation.cz

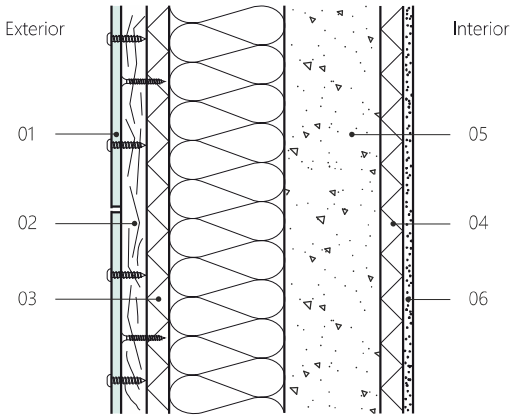
CETRIS® façade boards on a VELOX wall

Fixture of the load-bearing construction (wooden laths 50 × 40 mm) of the façade cladding for VELOX cement bonded chipboard:



- Wood screws, minimum diameter 6 mm, minimum length 70 mm
- Maximum screw spacing 400 mm
- The vertical lath itself may have a spacing of max. 625 mm; in the case of exposed surfaces (exterior corners, interior corners, thoroughfares, etc.) maximally half.

These recommendations apply if:
- the maximum building height is 12 m
- the maximum façade cladding – CETRIS® board thickness is 16 mm



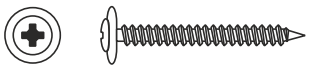
01 CETRIS® façade board
02 Vertical wooden lath 50 × 40 mm
03 VELOX WS-EPS board with thermal insulation
04 VELOX WSD board
05 Concrete
06 Plaster

7.1.6.2 Fixture CETRIS boards - auxiliary materials

Screws for fixture of the CETRIS® cement bonded particleboards to the grid

For fixture of CETRIS® cement bonded particleboards in the PLANK system (assumed) stainless steel or galvanised screws with frame or sunken head.
The recommended screws for the CETRIS® boards when mounted on PLANK thickness 10 (12) mm, wooden load-bearing construction:

- CETRIS PLANK screw 4.2 × 45 mm



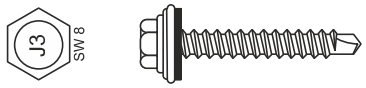
The recommended screws for the CETRIS® boards when mounted on PLANK thickness 10 (12) mm, load-bearing construction EuroFox:

- EJOT screw Climadur-Dabo TKR 4.8×35 mm

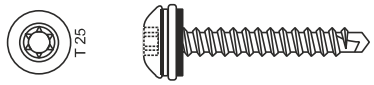
For fixture of CETRIS® boards in the VARIO system (visible joints), stainless steel or galvanized screws with semi-circular or hexagonal heads and compressive water-tight washers are used. The washers are treated on the bottom side with vulcanized elastomer EPDM for water-tight and flexible material connection. The bolt/screw type also depends on the base type – the load-bearing grid applied.

The recommended screws/bolts for anchoring the CETRIS® boards in the VARIO system on a wooden load-bearing construction:

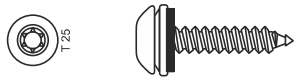
- JT 3 – 2 – 4,9 × 35 – E 14
  (max. thickness of the CETRIS® board 12 mm)



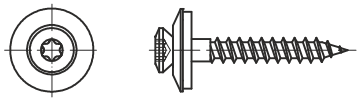
- JT 4 – FR – 2 – 4,9 × 35 – E 14
  (max. thickness of the CETRIS® board 12 mm)



- JA 3 – LT – 4,9 × 38 – E14
  (max. thickness of the CETRIS® board 14 mm)



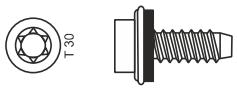
- VISIMPEX plumbing screw + EPDM,
  TX20 4,5 × 35 – 60 mm, stainless steel A2



- SFS TW-S-D12-A14-4,8 × 38, half lens, wood
- Mage 7060 screw Topex 4,8×45 mm, wood, hexagonal (max. board thickness 12 mm)
- Mage 7341 screw Topex Ufo 4.8×45 mm, wood, half lens (max. board thickness 12 mm)
- Visimpex CIBDJ 4,8×35 mm

The recommended screws for anchoring the CETRIS® boards in the VARIO system on an aluminium or galvanised load-bearing construction:

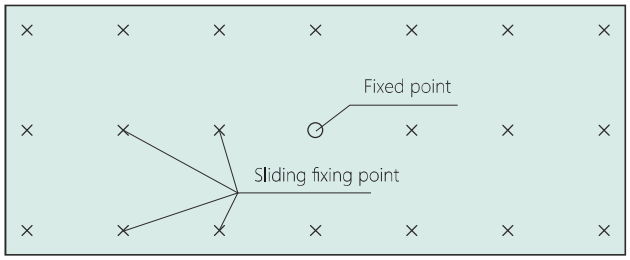
- JT 2 – 3 – 4,8 × 25 (38) – V 14



- SFS SX 3/15-L12-S16 – 5,5 × 38 mm – IRIUS head, (CETRIS board thickness 14 mm)
- SFS SX 3/15-S16 – 5,5 × 38 mm – hex head, clamping length 15 mm
- Mage 7010 – self-tapping screw Topex Ufo 4.8 × 38 mm, for Al, galvanised, half lens (max. board thickness 12 mm)

Anchoring of CETRIS® boards with rivets

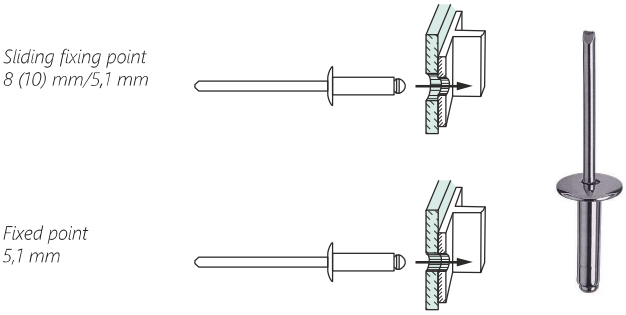
- The CETRIS® board must be pre-drilled, the hole diameter in the case of a sliding point is 8 mm (or 10 mm, if the board length is greater than 1,600 mm), for a fixed point, the pre-drilled hole diameter is 5.1 mm (diameter of the rivet body).
- The position of the pre-drilled holes in the board is identical to the anchoring of the boards with screws, one hole in the board always has a pre-drilled hole diameter of 5.1 mm (so-called fixed point). The position of the fixed point is chosen according to the shape of the board, number of holes, see diagram.
- Stainless steel or galvanised rivets with powder paint finish are suitable for riveting. Due to the pre-drilling the rivet head diameter shall be min. 14 mm, the rivet length depends on the clamping length (CETRIS® board thickness + the façade load-bearing construction profile thickness).
- When riveting, a spacer of max. 1 mm must be used to achieve the sliding joint.



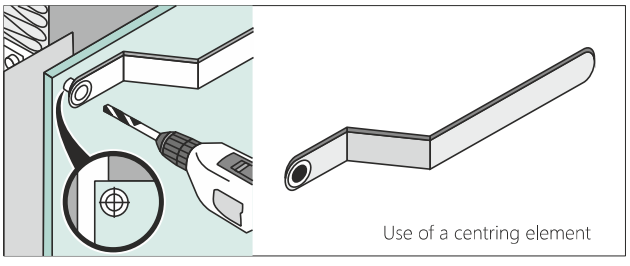
x - Sliding fixing point
o - Fixed point

Recommended rivet types:

- SFS - AP 14 - 50180 - S (dimensions 5.0 × 18.0 mm, head Ø 14 mm, clamping length 10.5 – 15.0 mm)
- SFS - AP 16 - 50180 - S (dimensions 5.0 × 18.0 mm, head Ø 16 mm, clamping length 10.5 – 15.0 mm)
- EJOT - K14 - Al/E 5×18 mm (head Ø 14 mm, clamping length 12 – 14 mm)
- ETANCO open Al/stainless steel rivet 4.8 × 18 mm (head diameter 16 mm, clamping length 12 – 14 mm)
- BS 4.8 × 25 mm Al/stainless steel A2, head diameter 16 mm, clamping length 15 mm



Note:
When anchoring CETRIS® boards with screws or rivets, it is necessary to set the anchoring element precisely at the middle of the pre-drilled hole (pre-drilled hole diameter 10 mm or 8 mm according to the CETRIS® board length). A centring piece can be used for precision setting (for drilling, screwing).



Invisible fixation (gluing) of CETRIS® boards

In the case of a requirement for invisible fixation (only applies to the VARIO system and vertical cladding) the CETRIS® boards may be glued to the grid.

The recommended system is supplied by Sika Company and consists of:

- Sika®Cleaner 205 – cleaner and activator for preparation of the glued surface with short venting time
- SikaTack® Panel Primer – primer for cladding boards, aluminium or wooden load-bearing elements
- SikaTack® Klebeland – assembly tape – two-sided adhesive tape for quick fixation of façade boards
- SikaTack® Panel – gluing filler

Recommended system developed by the AUTO-COLOR company consists of the following components:

- Dinitrol 520 cleaner-activator – cleaning and activating agent for the preparation of the glued surface
- Dinitrol 550 Multiprimer – primer for façade panels, aluminium or wooden supporting elements
- SPADA double sided mounting tape – fixing adhesive tape for quick fixation of façade boards
- Dinitrol F 500 LP – structural adhesive

Gluing by this technology may only be performed by trained companies and employees, strictly following the effective technological procedure issued by the manufacturer of the gluing system. Before actual gluing, it is necessary to hold technical consultation with the manufacturer's technical department.

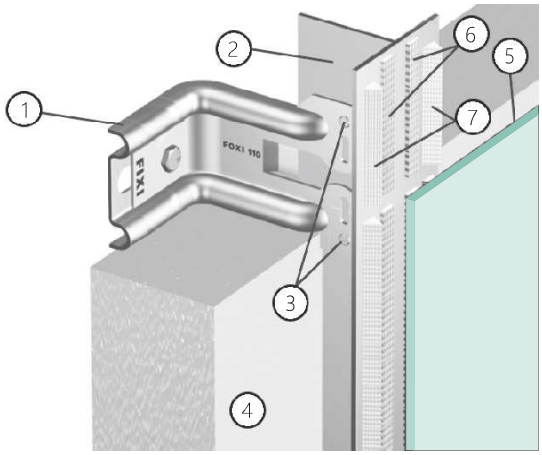
The most important principles for use of the gluing system for fixture of CETRIS® cement bonded particleboards:

- recommended thicknesses of boards are 10 and 12 mm
- suitable base are aluminium profiles and wooden laths (with planed surface on the gluing side), in the case of zinc-coated profiles surface treatment is necessary (pursuant to the instructions of the gluing system supplier)
- maximum spacing of supports 500 mm (for 10 mm thickness), or 625 mm (for 12 mm thickness), maximum length of the CETRIS® board equals to triple the max. support spacing (i.e. 1,500 mm for 10 mm thickness and 1,875 mm for 12 mm thickness)
- profiles must not be oriented horizontally, maximum acceptable profile (lath) length 5 m, dilatations between profiles (laths) is necessary
- assembly is possible only in dry conditions at an ambient temperature in the range +10° C to +30° C that must not drop below the lower for at least 5 hours after assembly.
- board gluing recommended up to max. 12 m height
- assembly may be performed only by trained staff acquainted with all principles and requirements.

Joining Flexible Fillers

For laying of CETRIS® cement bonded particleboards in the PLANK system, flexible fillers are recommended for application under the free ends of the façade boards. The recommended types are acrylic fillers with tensile strength of min. 0.1 MPa

Gluing of boards with the SIKA, DINITROL system



1 load-bearing anchor with dowel and screw
2 vertical T beam
3 self-tapping stainless steel screws
4 thermal insulation made of mineral hydrophobic boards
5 CETRIS® cement bonded particleboards
6 double-sided adhesive tape
7 special gluing filler

Rubber Tapes and Washers

Rubber tapes and washers are used as prevention of contact and fissure corrosion resulting from contact between elements of aluminium alloys and other metals, or for the extended life of wooden constructions (the washers are placed under the vertical joint in the points of contact between two cladding boards on a wooden grid).

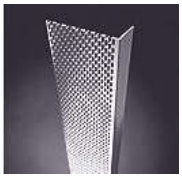
Anchoring Technique

The wooden grids are fixed with HILTI HRDU, MUNGO, MEA, EJOT, UPAT, POLYMAT frame dowels, etc. The layout and types of the dowels is specified by the designer. Stainless or galvanised screws are to be used for fixation of vertical laths to horizontal ones (secondary and primary grid).

Complementary profiles (laths) to the ventilated façade systems

Details of suspended vented façades (bottom end – venting, upper end – venting, cladding of the openings, external/internal corners etc.) are resolved with shaped profiles (laths). These laths are made of zinc-coated metal (with optional colour finish), aluminium sheets or PVC (Protector, Baukulit, DK GIPS systems).





7.1.7 Technological Procedure for Assembly of CETRIS® Ventilated Façades

7.1.7.1 Assembly of Wooden and Metallic Constructions

Assembly of Wooden Load-bearing Façade Construction

Specification of basic axes and reference plane for brick laying.

If possible, the basic axes should be specified, especially the widths of inter-window pillars, together with the reference plane for the full surface of the façade cladding base.

Load-bearing wooden construction of suspended ventilated façade:

Installation of primary grid – horizontal laths
Fix the wooden laths with dowels to a levelled base for corresponding stability of the resulting load-bearing construction. When selecting the type and size of the dowels the suitability of the base must be assessed. If the base is not sufficiently flat put wooden pieces under the laths to achieve local and overall planarity. To level the individual surfaces place vertical wooden laths along their edges first. Hammer nails into the laths and stretch a line between them. In this way, the front plane of the wooden grid is specified. The other horizontal laths must be aligned to this plane with the help of wooden pieces or cutting into the wall. We subsequently tighten the laths.

Assembly of thermal insulation layers
When applying thermal insulation to the façade, we first fix the horizontal laths to the base (the lath thickness must be the same as the insulation thickness, max. 60 mm). We lay longitudinal thermal insulation, which we attach to the base with disc dowels. Assembly of the thermal insulation layers is done using disc dowels according to the requirements of the manufacturers of the anchoring equipment. The number of the disc dowels is to be specified by the designer on the basis of recommendations of the heat insulation material manufacturers. The thermal insulation layer must adhere to the base, must be continuous without open joints (the individual parts must be placed tightly together!) The disc dowels must be firmly fixed to the base and must be fixed firmly to the thermal insulation layer.

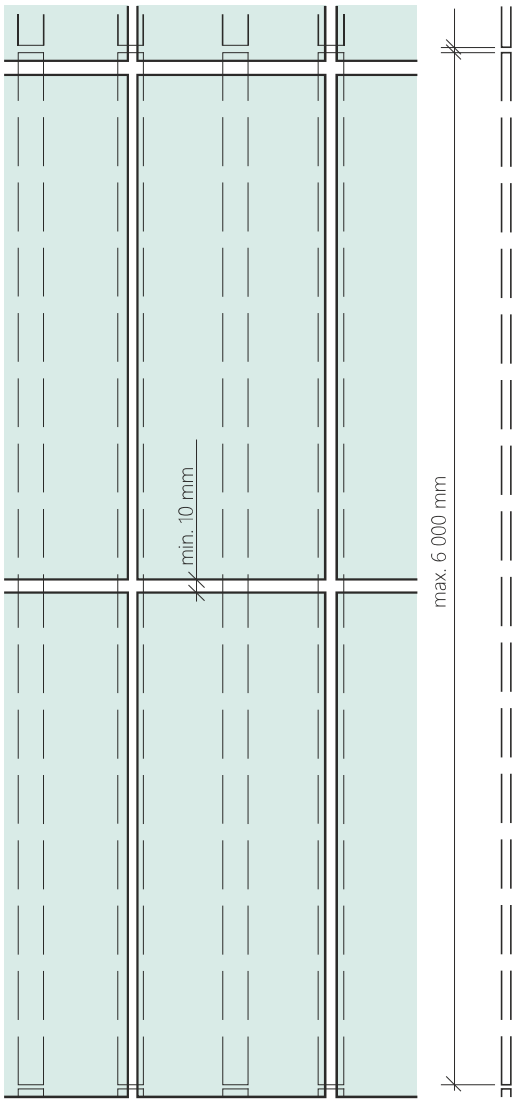
Installation of the secondary grid – vertical load-bearing laths
The vertical load-bearing laths (minimum width 50 mm, at the contact point of two boards minimum 100 mm or use two 50 or 60 mm laths) are fixed with screws to the primary grid. The axial distance of the laths must not exceed the stated values. After fixing the vertical laths, an air gap is created in the grid of minimum width 25 mm and maximum width 50 mm.

Installation of the auxiliary constructions
The auxiliary constructions are installed pursuant to the requirements of the detail drawings included in the manufacturing documentation. They mainly include auxiliary vertical and horizontal laths defining openings (jambs and heads of windows and doors), inner and outer corners, bottom and top lining etc.

The maximum length of the wooden lath grid is 6 m. Wooden elements must be dried and treated against humidity, insects and ligniperdous pests. In the case of a combined grid, anchors must be placed alternately on both sides of the wooden laths (to reduce twisting).

The dilatation between the laths at the point of the horizontal joint must always be at least 10 mm. Stainless anchoring material is recommended for joining.

Dilatation – wooden grid



Assembly of Aluminium or Zinc-coated Load-bearing Construction

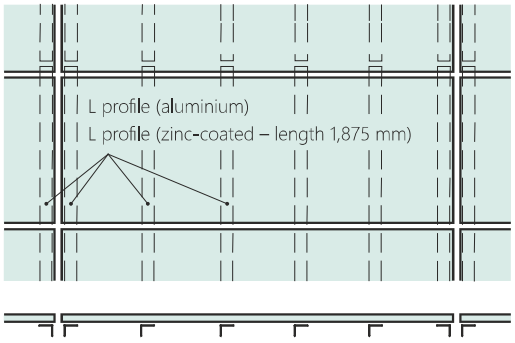
When assembling the grid of zinc-coated or aluminium profiles it is acceptable to use a joint profile for CETRIS® board laying in widths of up to 1,875 mm. For wider boards (laid lengthwise), use two separate L profiles instead of a joint profile.

The maximum length of an aluminium and zinc-coated profile grid is 3.35 m. The dilatation between the profiles at the point of the horizontal joint must always be at least 10 mm. The load-bearing grid (fixation and spacing of anchors, profile anchoring – fixed and slide anchoring points etc.) must be assembled pursuant to the instructions of the grid supplier. All the joining materials for aluminium grids must be stainless.

Fixation of a CETRIS® board to two different grids (different materials or different dilation units) is not permitted!

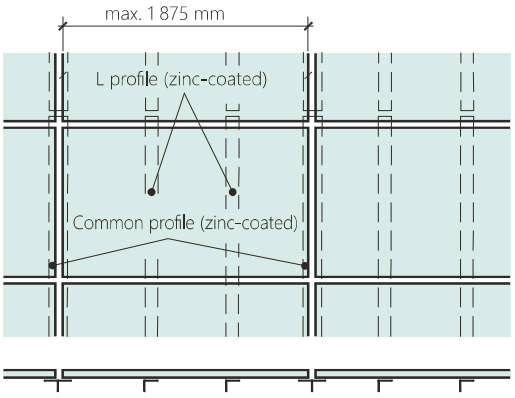
Correct assembly of L profiles at the vertical joint

Diagram of the installation of the galvanised and aluminium profiles for board widths >1,875 mm

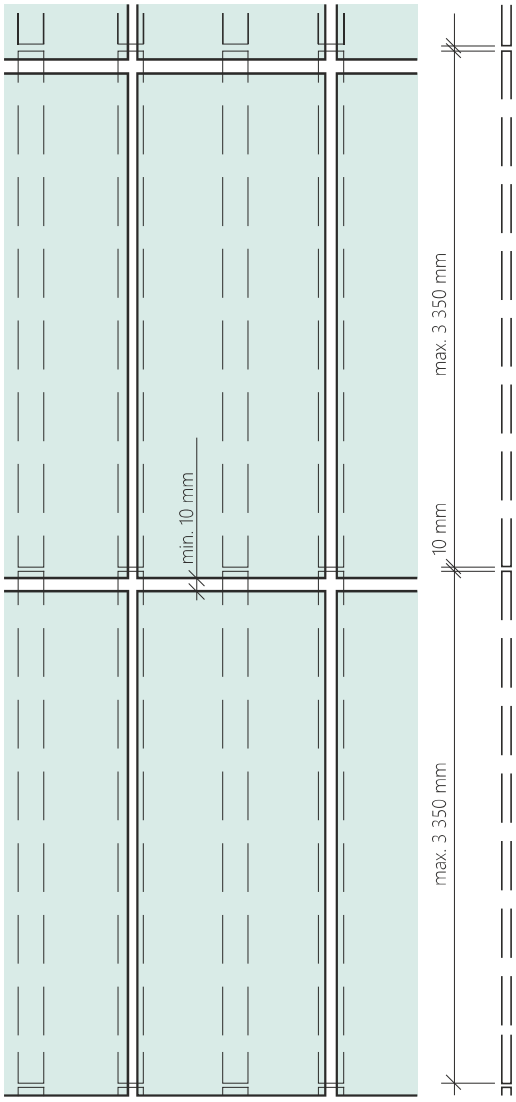


For façades wider than 8 metres, it is necessary to ensure continuous vertical dilatation in the load-bearing construction – i.e. the base construction at the points of the vertical joint must be resolved using two separate profiles.

Diagram of the installation of the galvanised and aluminium profiles for board widths < 1,875 mm



Dilatation – grid of aluminium or zinc-coated profiles



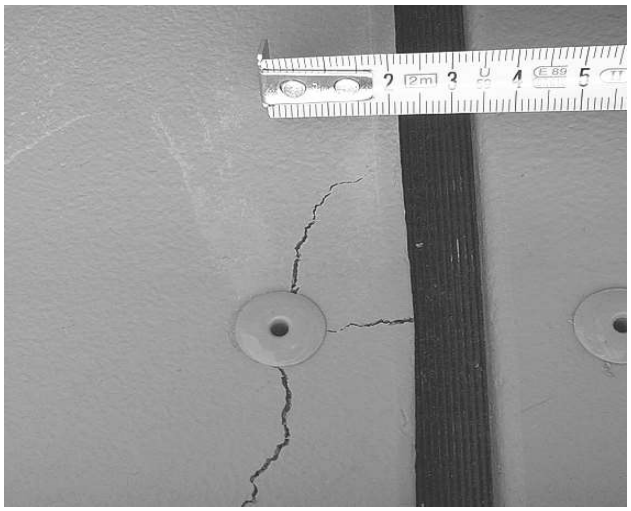
Exceeded support spacing

Insufficient anchoring of CETRIS® boards (exceeded maximum spacing of profiles and screws) causes deformations (bulging or swelling) or board damage (cracking)!

Incorrect grid dilatation

Incorrect profile dilation off the horizontal joint level between the CETRIS® boards.

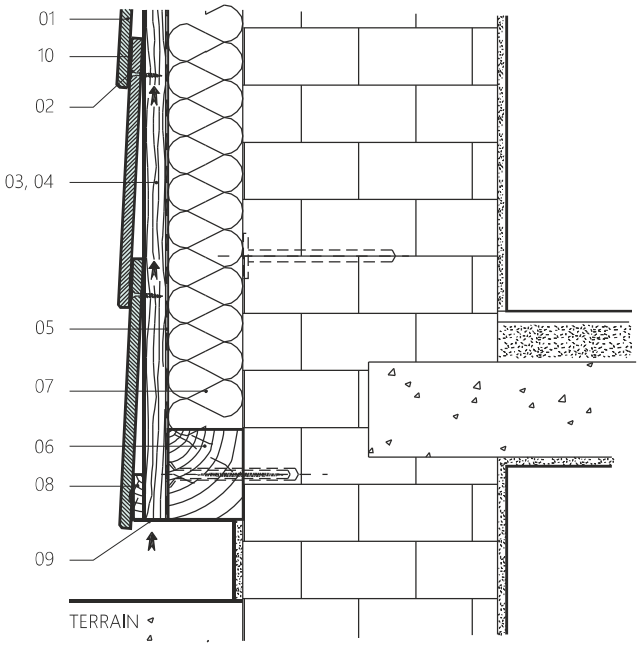
Inadequate spacing of the rivet from the edge



Correct use of rubber tape

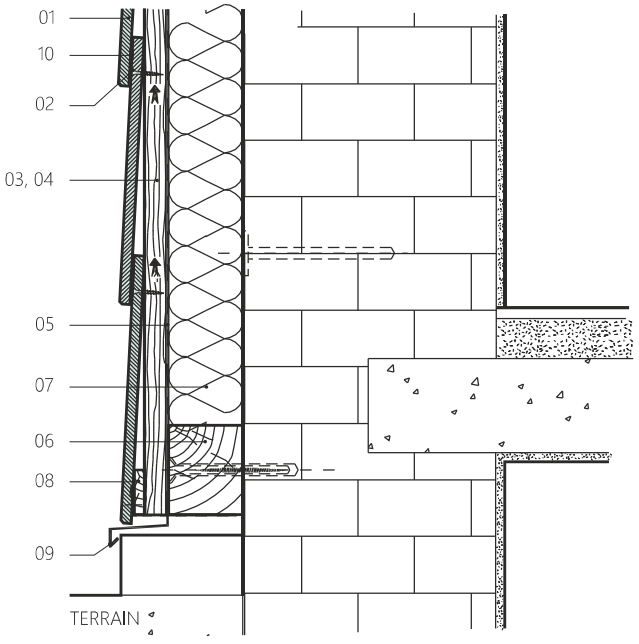
For base levelling and board dilation facilitation, a rubber EPT or EPDM UV stable tape must be placed under the CETRIS® boards. The tape will prevent the immediate transfer of heat, humidity and potential trickling corrosion (zinc-coated grid)

Detail of bottom ending. CETRIS® board on wooden grid, PLANK system
Vertical section



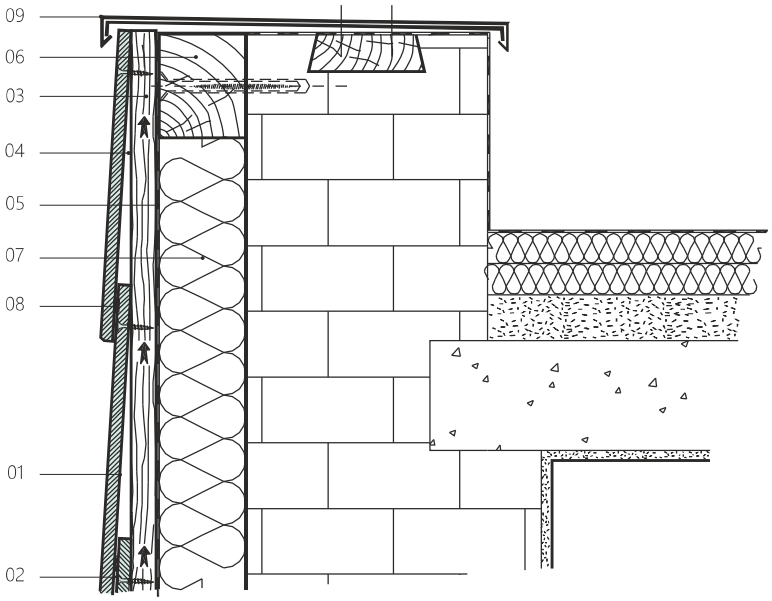
01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap min. 25 mm
05 safety foil
06 horizontal wooden lath with a width of 100 mm (thickness according to the insulation)
07 thermal insulation
08 base plate
09 perforated ventilation profile (PROTECTOR)
10 elastic sealant

Detail of bottom ending with sheet metal cladding. CETRIS® board on wooden grid, PLANK system
Vertical section



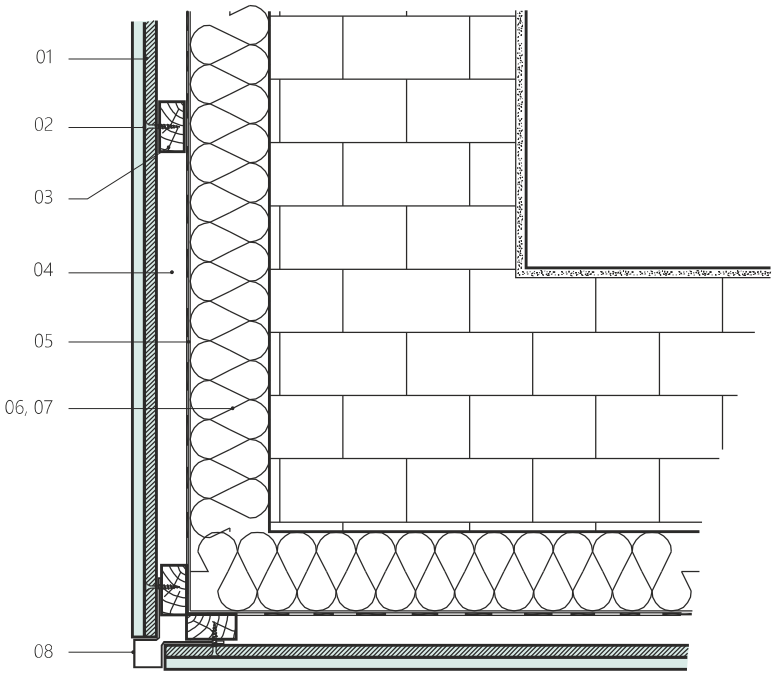
01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap min. 25 mm
05 safety foil
06 horizontal wooden lath with a width of 100 mm (thickness according to the insulation)
07 thermal insulation
08 base plate
09 perforated ventilation profile (PROTECTOR)
10 elastic sealant

Detail of upper ending of the CETRIS® board on a wooden grid, PLANK system
Vertical section



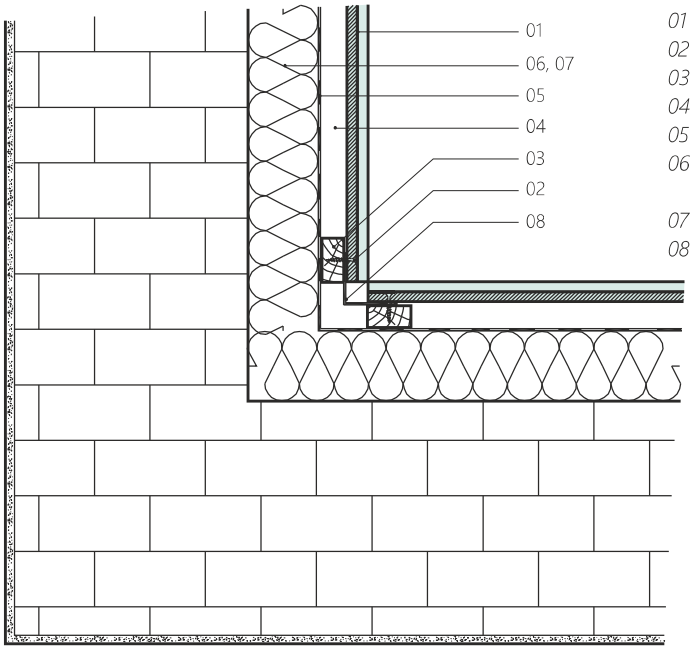
01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap min. 25 mm
05 safety foil
06 horizontal wooden lath of width 100 mm (thickness according to the insulation)
07 thermal insulation
08 elastic sealant
09 metal-plating – tinsmithing product

Detail of exterior corner. CETRIS® board on wooden grid with corner profile, PLANK system
Horizontal section



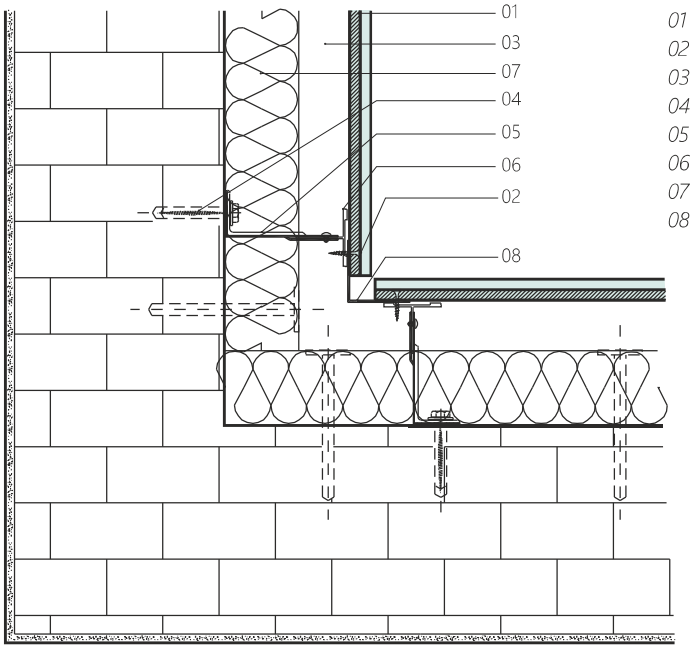
01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap min. 25 mm
05 safety foil
06 horizontal wooden lath of width 100 mm (thickness according to the insulation)
07 thermal insulation
08 corner profile – tinsmithing products, or PROTECTOR profile

Detail of interior corner. CETRIS® board on wooden grid with corner profile, PLANK system
Horizontal section



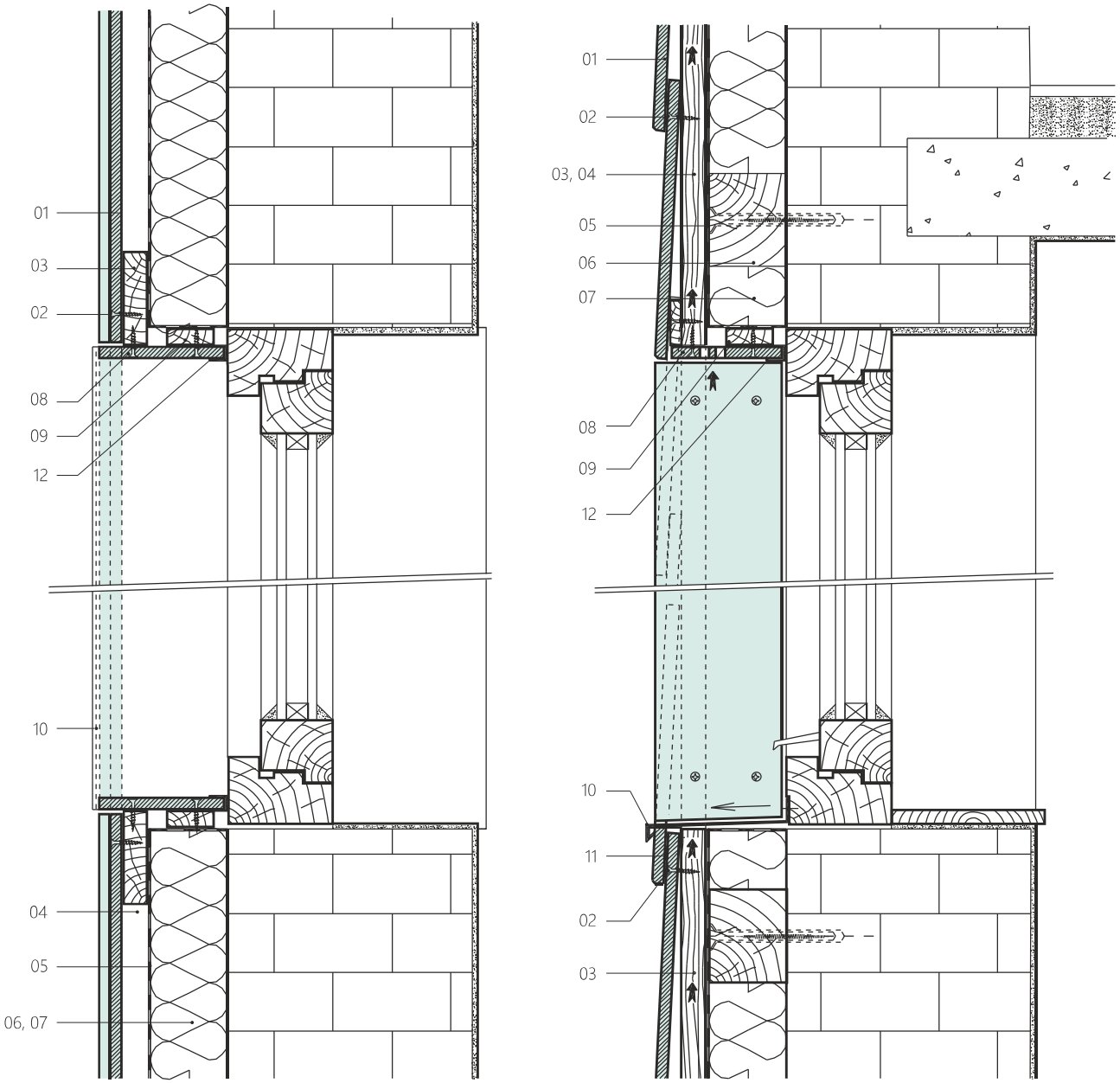
01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap min. 25 mm
05 safety foil
06 horizontal wooden lath with a width of 100 mm (thickness according to the insulation)
07 thermal insulation
08 corner profile – tinsmithing product, or PROTECTOR profile

Detail of interior corner. CETRIS® board on system profiles with corner profile, PLANK system
Horizontal section



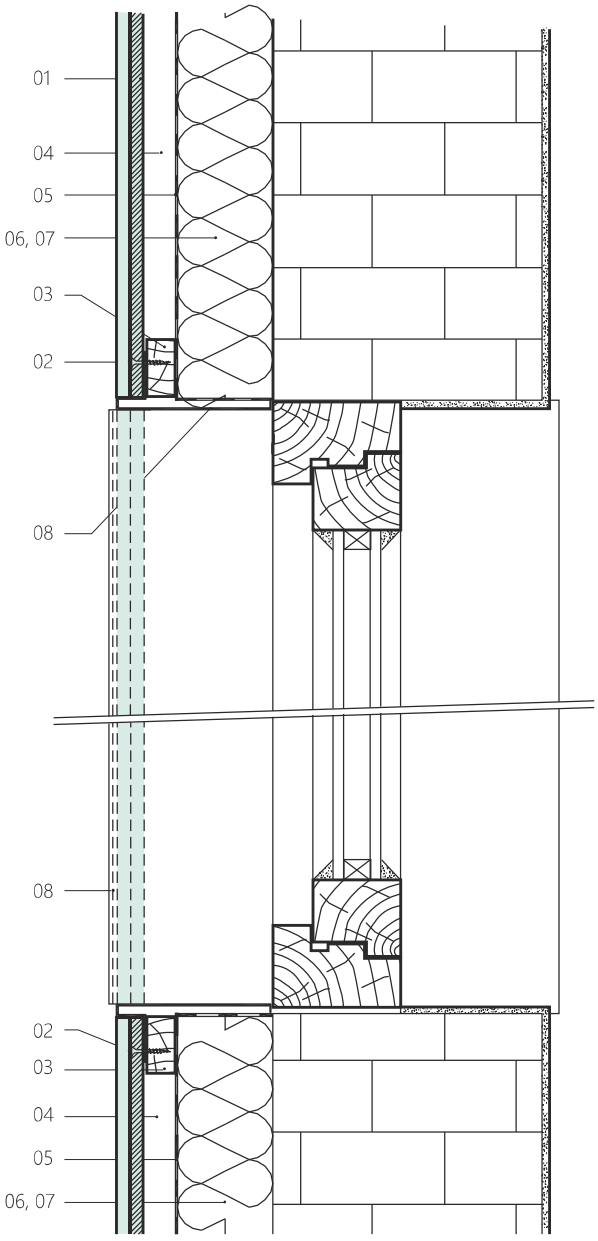
01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 thermal insulation
08 corner profile – tinsmithing product, or PROTECTOR profile

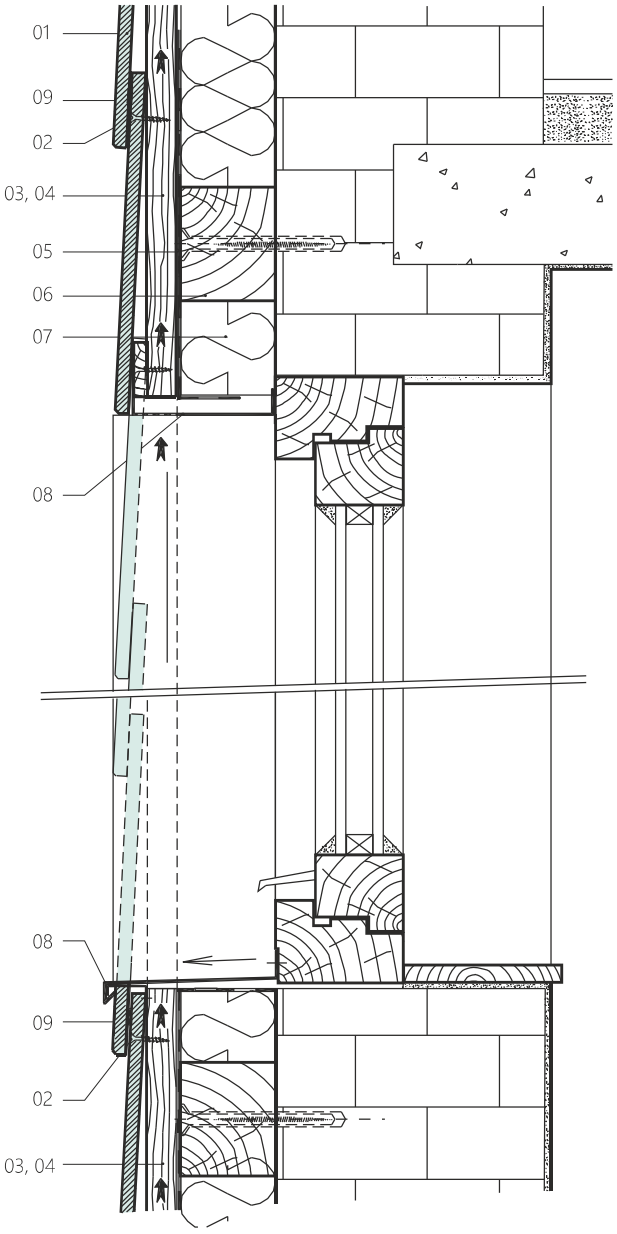
Detail of jamb and window head of opening, CETRIS® boards on wooden grid, PLANK system
Horizontal and vertical section



01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap – min. 25 mm
05 safety foil
06 horizontal wooden lath of width = 100 mm (thickness according to the insulation)
07 thermal insulation
08 jamb (window head) cladding – perforated CETRIS® board
09 wooden board thickness 18 mm
10 metal plating – tinsmithing product, or PROTECTOR profile
11 elastic sealant
12 end profile (PROTECTOR)

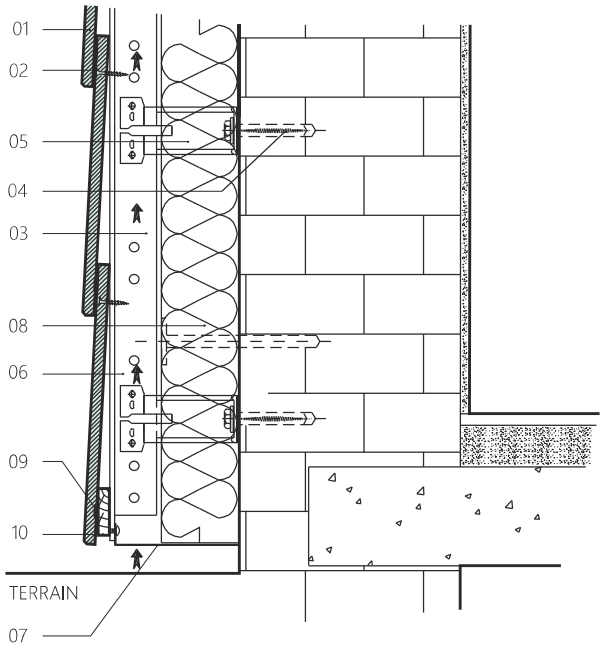
Detail of jamb and window head of opening with sheet metal cladding, CETRIS® boards on wooden grid, PLANK system
Horizontal and vertical section





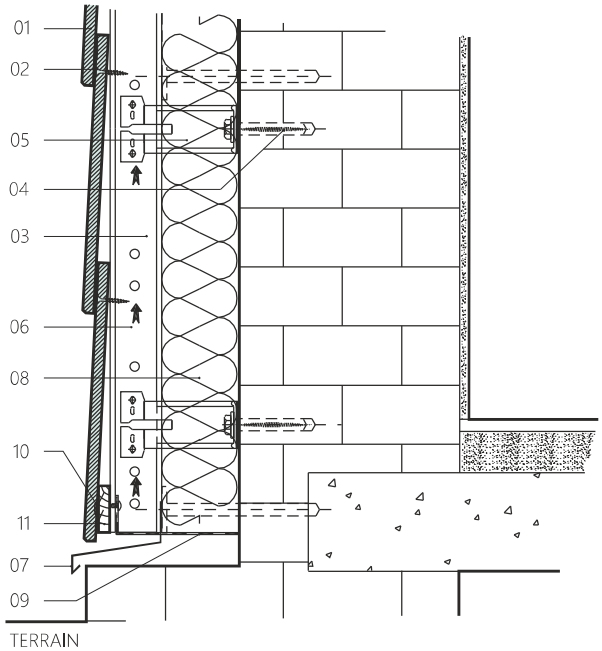
01 CETRIS® cement bonded particleboard
02 frame head screw
03 vertical wooden lath 50 × 25 (100 × 25) mm, impregnated
04 air gap min 25 mm
05 safety foil
06 horizontal wooden lath of width = 100 mm (thickness according to the insulation)
07 thermal insulation
08 metal plating – tinsmithing product, or PROTECTOR profile
09 elastic sealant

Detail of bottom end with overlap. CETRIS® board on system profiles, PLANK system
Vertical section



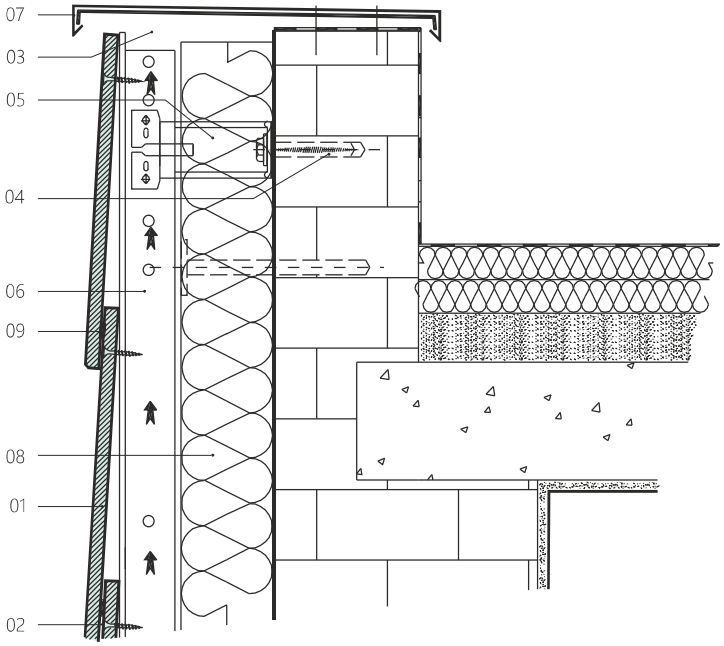
01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 perforated ventilation profile (PROTECTOR)
08 thermal insulation
09 elastic sealant
10 base plate

Detail of bottom end with sheet metal cladding. CETRIS® board on system profiles, PLANK system
Vertical section



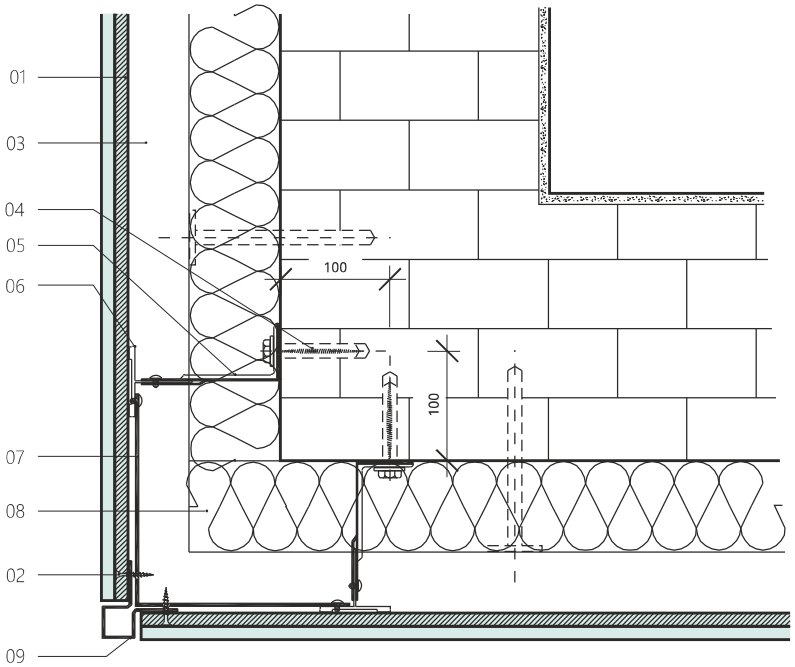
01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 metal-plating – tinsmithing product
08 thermal insulation
09 perforated ventilation profile (PROTECTOR)
10 elastic sealant
11 base plate

Detail of upper end. CETRIS® board on system profiles, PLANK system
Vertical section



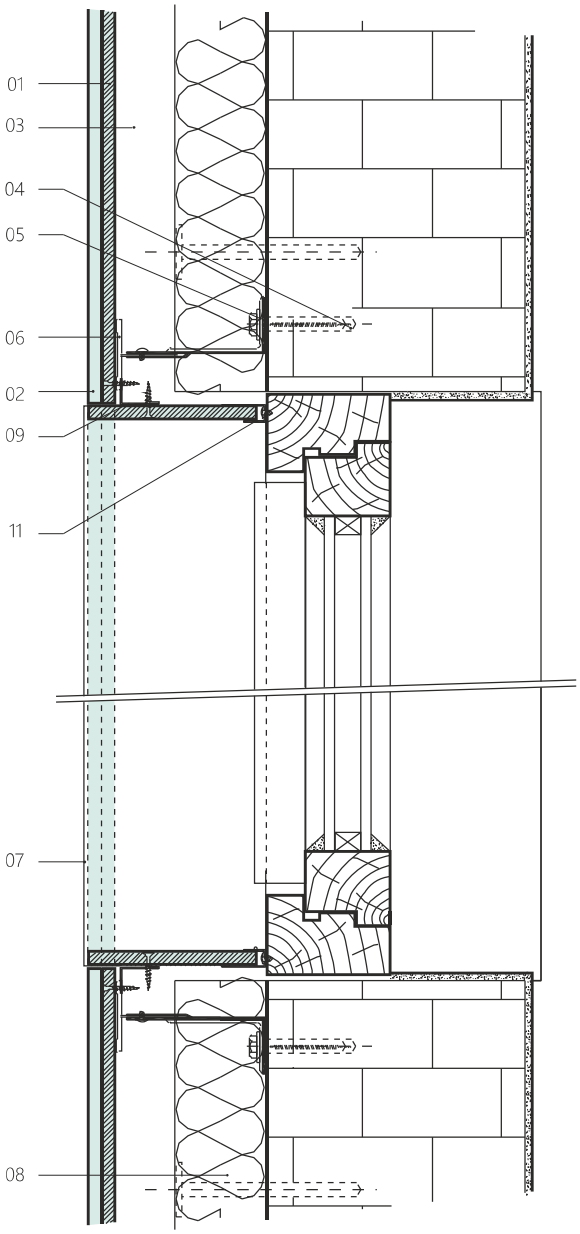
01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 metal-plating – tinsmithing product
08 thermal insulation
09 elastic sealant

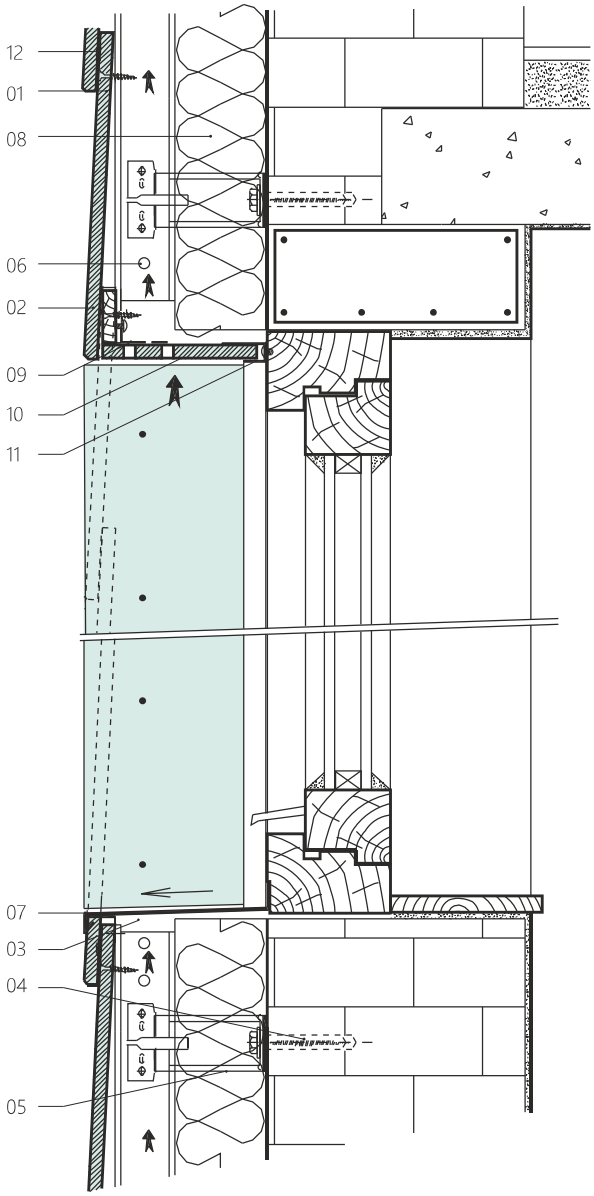
Detail of exterior corner. CETRIS® board on system profiles, PLANK system
Horizontal section



01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 aluminium "L"-profile
08 thermal insulation
09 corner profile – metal product, or PROTECTOR profile

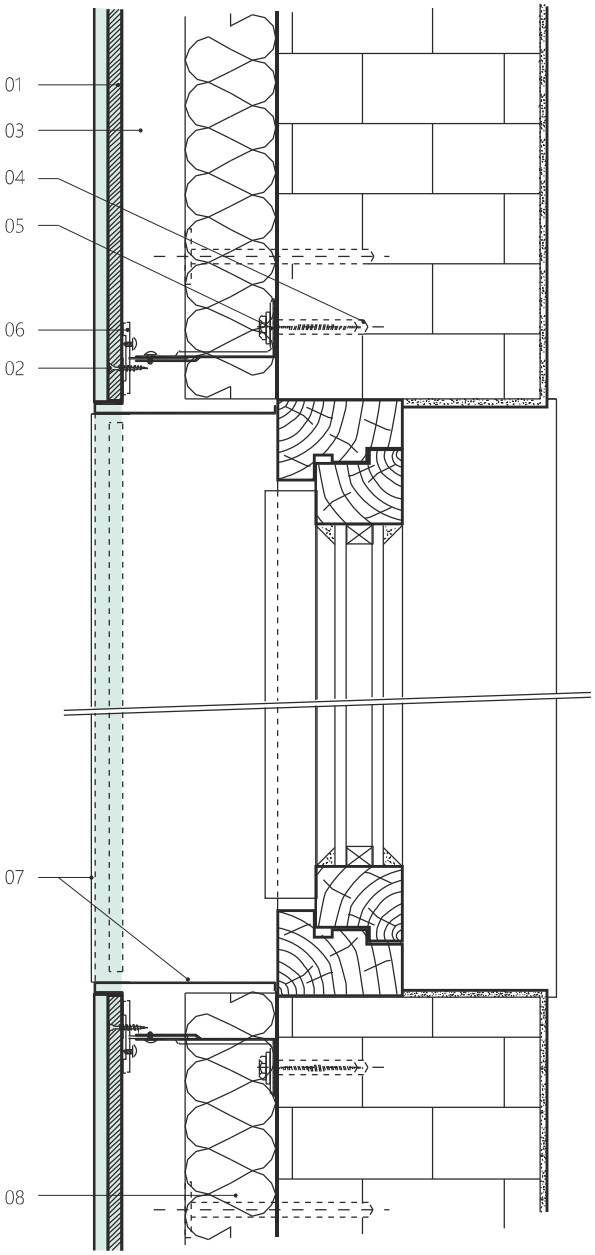
Detail of jamb and window head of opening, CETRIS® boards on system profiles, PLANK system
Horizontal and vertical section

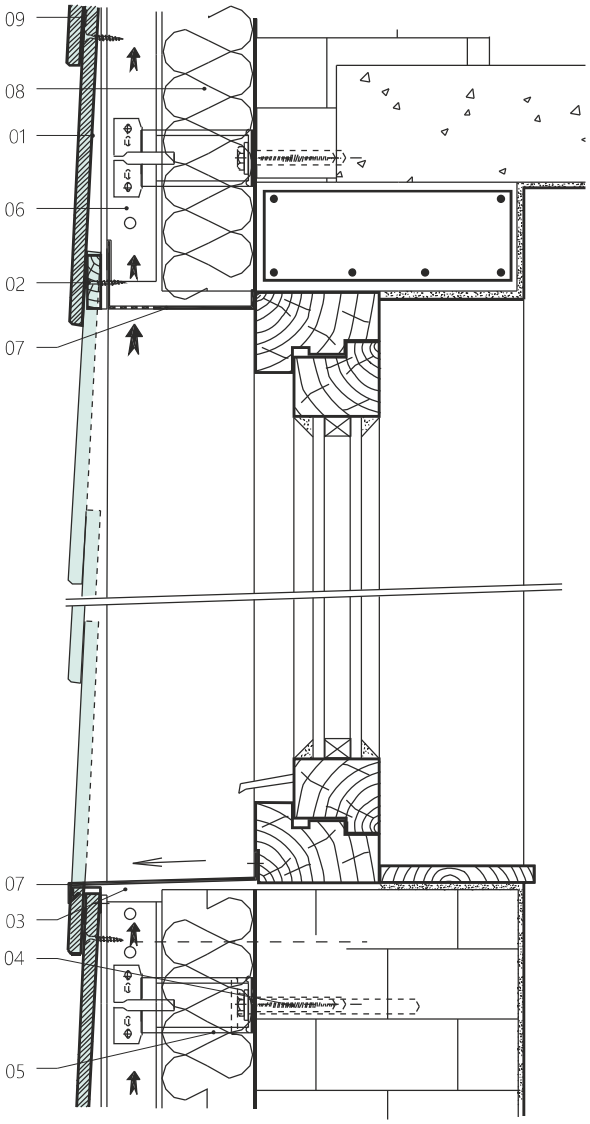




01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 metal-plating – tinsmithing product
08 thermal insulation
09 aluminium "L"-profile
10 jamb (door head) cladding – perforated CETRIS® board
11 end profile
12 elastic sealant

Detail of jamb and window head of opening with sheet metal cladding. CETRIS® boards on system profiles, PLANK system
Horizontal and vertical section





01 CETRIS® cement bonded particleboard
02 frame head screw
03 air gap min. 25 mm
04 anchoring element
05 system fixing element – anchor
06 system load-bearing profile
07 metal-plating – tinsmithing product
08 thermal insulation
09 elastic sealant