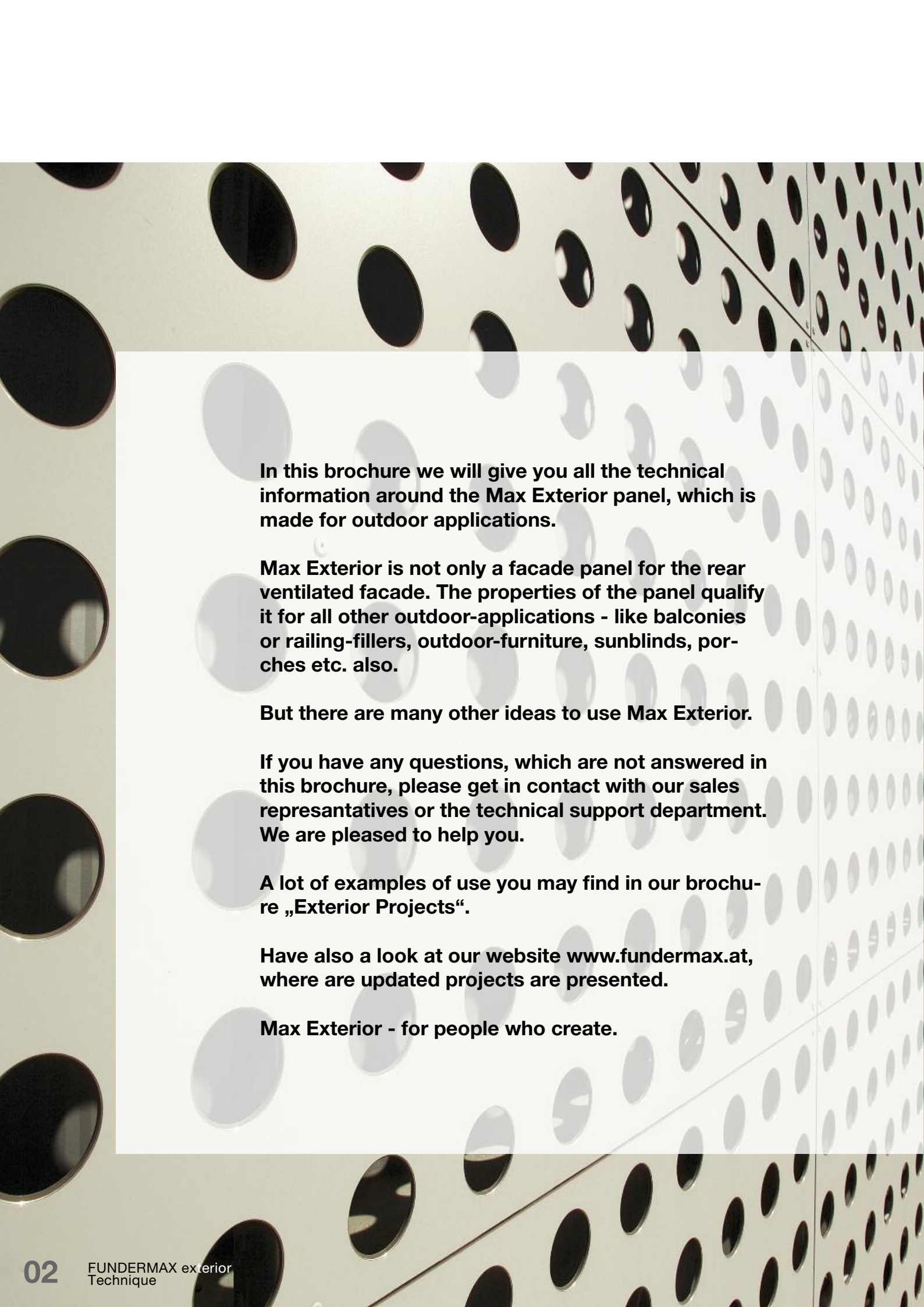


Technique Exterior

exterior

for
people
who
create



In this brochure we will give you all the technical information around the Max Exterior panel, which is made for outdoor applications.

Max Exterior is not only a facade panel for the rear ventilated facade. The properties of the panel qualify it for all other outdoor-applications - like balconies or railing-fillers, outdoor-furniture, sunblinds, porches etc. also.

But there are many other ideas to use Max Exterior.

If you have any questions, which are not answered in this brochure, please get in contact with our sales representatives or the technical support department. We are pleased to help you.

A lot of examples of use you may find in our brochure „Exterior Projects“.

Have also a look at our website www.fundermax.at, where are updated projects are presented.

Max Exterior - for people who create.

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The diagrams in this technical information are schematical representations.

Max Exterior panels are duromer high-pressure laminates (HPL) in accordance with EN 438-6 Type EDF that are produced in lamination presses under great pressure and high temperature. Double-hardened acrylic PUR resins provide extremely effective weather protection that is particularly suitable for long-lasting balconies and façade claddings.



Scratch resistant



Easy to clean



Solvent resistant



Easy to install



Extremely weather resistant



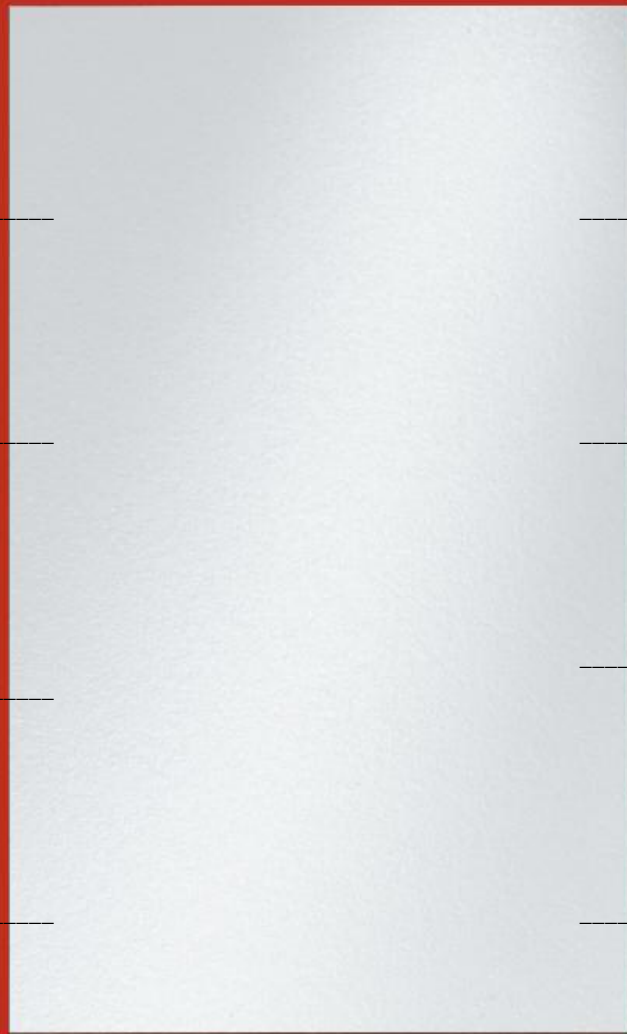
Optimal light-fastness



Impact resistant



Double hardened



Properties*:

- | | | |
|---|---|--|
| ☐ weather resistant to EN ISO 4892-2 | ☐ Easy to clean | ☐ Frost resistant -80°C bis 180°C (DMTA- OFI 300.128) |
| ☐ lightfast acc. to EN ISO 4892-3 | ☐ Impact resistant EN ISO 178 | ☐ Heat resistant -80°C bis 180°C (DMTA- OFI 300.128) |
| ☐ Double hardened | ☐ Suitable for all exterior applications | ☐ Easy to install |
| ☐ Scratch resistant | ☐ Decorative | |
| ☐ Solvent resistant | ☐ Self-supporting | |
| ☐ Hail resistant | ☐ Bending resistant EN ISO 178 | |

*Standard- and actual-values you will find in our current Max Exterior Collection.

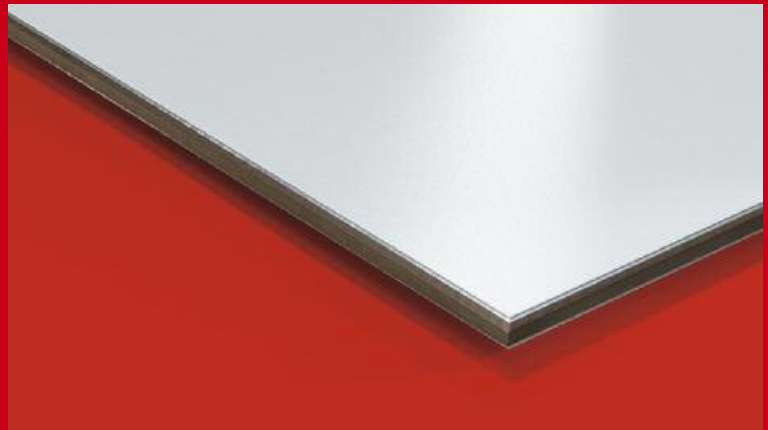
Max Exterior F-Quality

As a standard, Max Exterior panels come printed on both sides. The core is flame-retardant and the surface is light-fast. Thanks to the double-hardened resin, it is also extremely weather resistant.



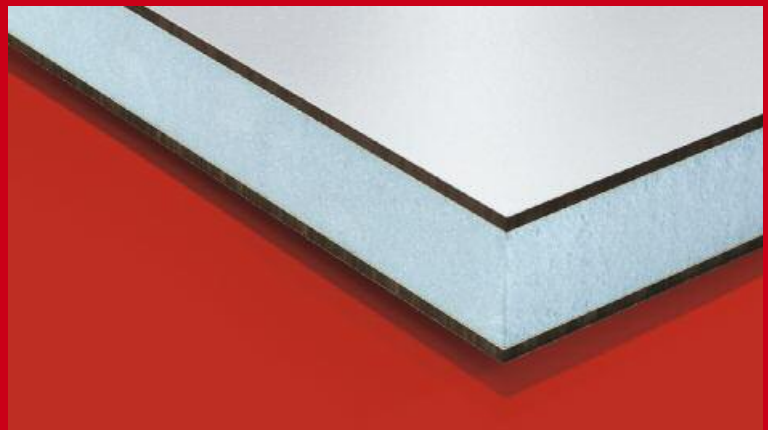
Max Exterior Alu-Compact 42 F-Quality

The design meets F-Quality standards and is additionally provided on both sides with aluminium bands under the print layer. This ensures that even perforated panels are extremely stable.



Sandwich-Elements

The Max Exterior panels in F-Quality also come polished on just one side for use in sandwich elements.



Processing

FunderMax offers CNC controlled processing and panel cutting. With state-of-the-art devices, it is possible to produce everything: from simple cutouts for mounting the facade panels, to intricate milling for balcony and fence elements. We can make just about anything you can dream up.



General information

Max Exterior F-Quality

Max Exterior is a high-quality construction product which is used especially for long-lasting balcony and facade claddings. Max Exterior panels are duromer high-pressure laminates (HPL) in accordance with EN 438 Type EDF with extremely effective weather protection. This weather protection consists of double-hardened acrylic polyurethane resins. They are produced in lamination presses under great pressure and at high temperatures.

Max Exterior panels are, of course, labeled with the CE-Mark necessary for their use in building applications.

Surface NT

Formats

2140 x 1060 mm = 2,27 m²

2800 x 1300 mm = 3,64 m²

4100 x 1300 mm = 5,33 m²

2800 x 1850 mm = 5,18 m²

4100 x 1850 mm = 7,59 m²

Tolerances +10 - 0 mm (EN 438-6, 5.3)

Panel formats are production formats. If exact dimensions and angles are necessary, we recommend an all-sided blank. Depending on the method of trimming, net size is reduced by ca. 10 mm.

Core F-Quality, flame-retardant, colour brown

Thicknesses

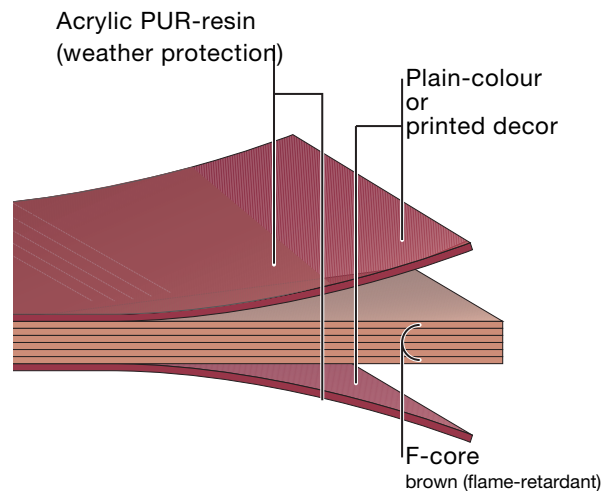
Panels with sanded-reverse side:

For symmetrically structured sandwich elements.

Thicknesses Tolerances (EN 438-6, 5.3)

2,0 - 2,9 mm ± 0,2 mm

3,0 - 4,0 mm ± 0,3 mm



Structure Max Exterior panel

Fig. 1

Panels with double-sided decor:

Thicknesses Tolerances (EN 438-6, 5.3)

4,0 - 4,9 mm ± 0,3 mm

5,0 - 7,9 mm ± 0,4 mm

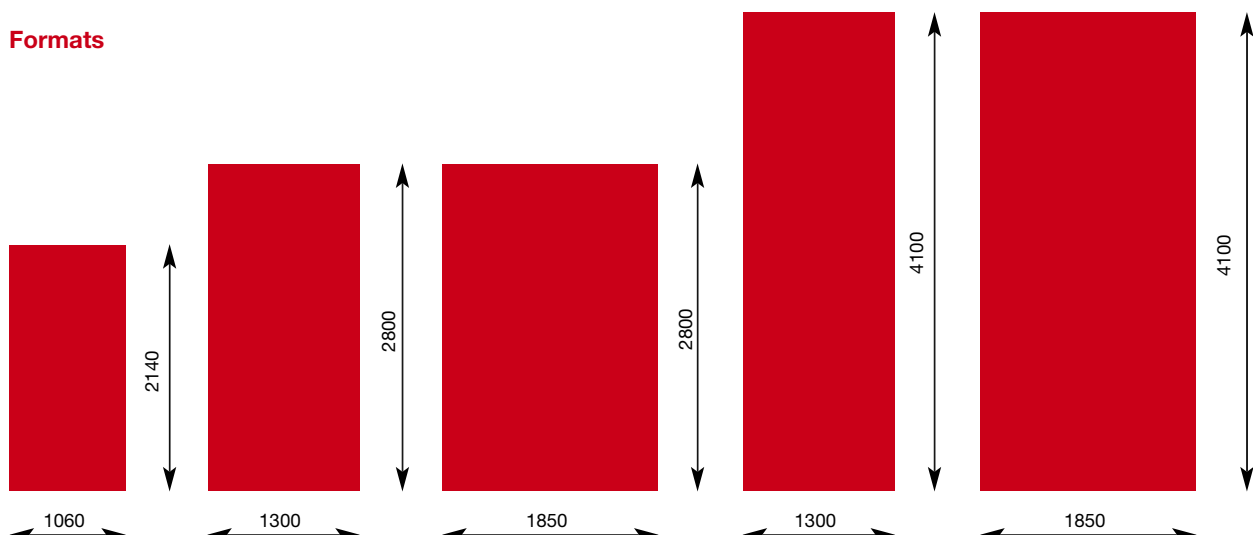
8,0 - 11,9 mm ± 0,5 mm

12,0 - 15,0 mm ± 0,6 mm

In order to be able to design the inner sides of balconies with a uniformly light look, it is also possible to produce Max Exterior panels with a white (rear) side using decor 0890 NT – Balcony white.

As a result of the differing decor structure, the fastening spacings given in our Technical Information brochures should be reduced by about 15 %.

Formats



Physical data

Properties	Test method	Assessment	Standard value	Actual value
------------	-------------	------------	----------------	--------------

Light-fastness and weather resistance (surface NT)

Artificial weathering	EN ISO 4892-2 3000 h	EN 20105-A02 greyscale	≥ 3	4-5
UV-light resistance	EN ISO 4892-3 1500 h	EN 20105-A02 greyscale	≥ 3	4-5

Properties	Test method	Unit of measurement	Standard value	Actual value
------------	-------------	---------------------	----------------	--------------

Mechanical properties

Apparent density	DIN 52350	g/cm³		1,45
Flexural strength	EN 438	N/mm²	> 80	≥ 90
Modulus of elasticity	EN 438	N/mm²	> 9.000	≥ 9.500
Tensile strength	EN 438	N/mm²	> 60	≥ 80
Coefficient of thermal expansion	DIN 52328	1/K		18 x 10 ⁻⁶
Dimensional stability at	EN 438	lengthwise %	< 0,3	≤ 0,15
elevated temperatures	for 6 mm thickness	crosswise %	< 0,6	≤ 0,25
Thermal conductivity		W/mK		0,3
Water vapour diffusion resistance		μ		ca. 17200

Fire behaviour

Europe	EN 13501-1	MA39-VFA Vienna	Euroclass B-s2, d0 for 6-10 mm
Austria	ÖNORM B3800/Teil 1	Austrian Plastics Institute	B1, Q1, TR1, ≥ 2 mm
Switzerland		EMPA Dübendorf	Fire classification 5.3 for 6 - 10 mm
Germany	DIN 4102	Institute for Construction-Berlin	B1 for 4 - 10 mm
France	NFP 92501	LNE	M1 for 2 - 10 mm
Spain	UNE 23727-90	LICOF	M1 für 6 - 10 mm

Permits

Facade permit Germany		Institute for Construction-Berlin	6, 8, 10 mm, Permit-No. Z-33.2-16
ETB guidelines for building components which safeguard against falls, June 1985. Balcony railings.		TU Hannover	Passed (depending on building regulation and railing construction 6, 8 or 10 mm panel thickness)
Avis technique France		CSTB	6, 8, 10 and 13 mm, wood- and metal subconstruction, permit no. AT 2/07-1264, AT 2/07-1265

All the respective current certificates and approvals are available in the download section at www.fundermax.at. Please observe all valid building regulations. We will assume no responsibility in this regard..

General information

Max Exterior Alucompact42 F-Quality

Max Exterior Alucompact panels are duromer high-pressure laminates (HPL) according to EN 438, with extremely effective weather protection. This weather protection consists of double-hardened acrylic polyurethane resins. They have 0,42 mm thick aluminium layers on both sides under the decor layers

These aluminium layers provide an extremely high breaking strength and stiffen the panels to an extraordinary degree. This makes it possible, on the one hand, to make perforated balcony elements and, on the other hand, to make fastening spacings larger.

Surface NT

Formats

2140 x 1060 mm = 2,27 m²

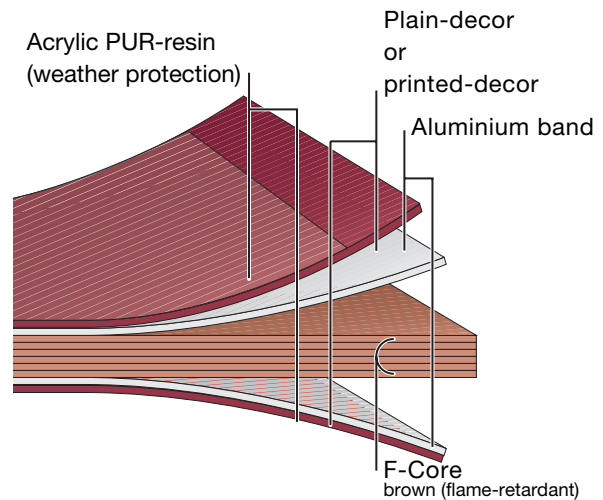
2800 x 1300 mm = 3,64 m²

4100 x 1300 mm = 5,33 m²

Tolerances +10 - 0 mm (EN 438-6, 5.3)

Panel formats are production formats. If exact dimensions and angles are necessary, we recommend an all-sided blank. Depending on the method of trimming, net size is reduced by ca. 10 mm.

Core F-Qualityt, flame-retardant, colour brown



Structure Max Exterior Alucompact42

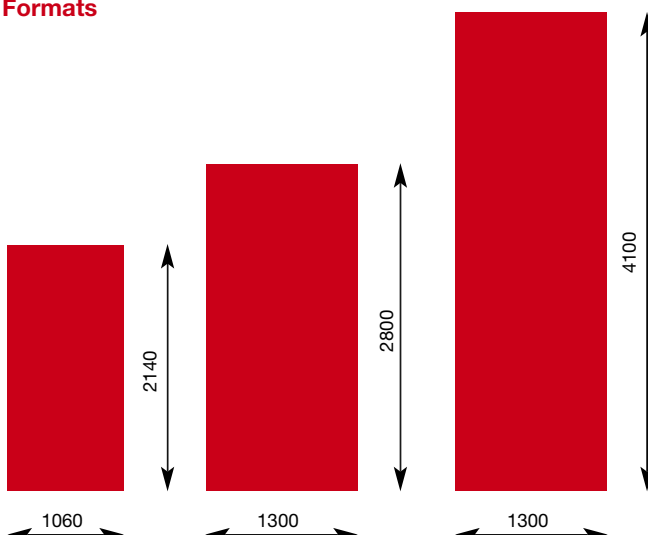
Fig. 2

Panels with double-sided decor

Thicknesses	Tolerances (EN 438-6, 5.3)
4,0 - 4,9 mm	± 0,3 mm
5,0 - 7,9 mm	± 0,4 mm
8,0 - 11,9 mm	± 0,5 mm
12,0 - 15,0 mm	± 0,6 mm

Max Exterior Alu-Compact panels with decors from the Max Exterior collection, are extremely impact resistant large sized balcony-cladding panels.

Formats



Physical data Alucompact

Properties	Test method	Assessment	Standard value	Actual value
------------	-------------	------------	----------------	--------------

Lichtehtheit und Witterungsbeständigkeit (Oberfläche NT)

Artificial weathering	EN ISO 4892-2 – 3000 h	EN 20105-A02 greyscale	≥ 3	4-5
UV-light resistance	EN ISO 4892-3 – 1500 h	EN 20105-A02 greyscale	≥ 3	4-5

Properties	Test method	Unit of measurement	Standard value	Actual value
------------	-------------	---------------------	----------------	--------------

Mechanical Properties

RohdichteApparent density	EN ISO 1183-1	g/cm ³		1,55
Flexural strength	EN ISO 178	N/mm ²	> 80	> 180
Modulus of elasticity	EN ISO 178	N/mm ²	> 9.000	> 18.000
Impact resistance (Dynstat)		kg/m ²		45
Water vapour diffusion resistance				730.000
Dimensional alteration in climate change	EN 438	lengthwise %	< 0,3	≤ 0,15
with increased temperature for 6 mm thickness		crosswise %	< 0,6	≤ 0,25

Fire behavior

Europe	EN 13501-1	MA39-VFA Vienna	Euroclass B-s2, d0	6-10 mm
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Permits

ETB-guidelines for building components which safeguard against falls, June 1985. Balcony railings.	TU Hannover	Passed (depending on building regulation and railing construction 6 mm panel thickness)		
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All the respective current certificates and approvals are available in the download section at www.fundermax.at. Please observe all valid building regulations. We will assume no responsibility in this regard.



Content Façades

Qualifications	11
Function and advantages of back ventilated façades	12
Material characteristics	13
Design- and setting-variants	14
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Visible revited fastening	20
Secret mechanical fastening (with undercut anchor)	24
Secret glued fastening	28
System ME 01	32
System ME 02	36
System ME 03 (lap siding)	40
More design possibilities for façades	44

Qualifications



Fig. 3



Fig. 4

A

Max Exterior panels in thicknesses of 6–10 mm are EUROCLASS B–s2, d0 in accordance with EN 13501–1.

CH

Fire Classifications 5 (200°C). 3 for 6–13 mm
Max Exterior Type CGF–VKF Permit. No. 9683

D

Max Exterior panels in thicknesses of 6–10 mm are B1 in accordance with DIN 4102 and have the General Building Construction Supervision Permit of the „Institut für Bautechnik“, Berlin. Permit Number: Z–33.2–16

F

Max Exterior panels in thicknesses 2–10 mm are M1 in accordance with NFP 92501.

Avis Technique No. 2/07–1264 for wood-subconstruction and Avis Technique No. 2/07–1265 for metallic-subconstruction.

Actual and more extensive documentation to all test methods and permits according Max Exterior panels you will find at our website:

www.fundermax.at/downloads/

Function and advantages of a non-bearing, rear-ventilated facade

Insulation

The non-bearing, rear-ventilated facade (VHF) system can be designed for different energy requirements with an individually calculated insulation. Insulation material of any desired thickness can be used. This means insulation values can easily be achieved that are typical of low-energy houses and comply with the current energy savings regulations. Based on the energy needs, the insulation maximizes the heat retention of the building. High summer temperatures in the interior of the building are regulated. By reducing the amount of energy needed for heating, the non-bearing facade minimizes the carbon dioxide emissions of the heating system.

Protection against condensation water

The construction of the non-bearing, rear-ventilated facade (VHF) decreases the vapor diffusion resistance from the interior to the exterior of the building: Moisture from the construction or use of the building is removed through the rear-ventilation space. Thus the lasting function of the insulation can be ensured and makes a significant contribution to a pleasant and healthy indoor climate.

Protection against rain

The VHF meets the norms for stress group III according to DIN 4108-3 and is driving-rain proof. The rear-ventilation space between insulation and panel (weather protection) quickly dissipates moisture.

Protection against noise

Depending on the thickness of the insulation layer, measurements of the panels and the proportion of open joints, noise protection can be increased by up to 14 dB.

Ecology

Minimization of CO₂ emissions.

Environmental objectives are fulfilled both for new buildings, as well as for renovation of existing buildings, through the use of rear-ventilated facades: The measurable reduction in energy required for heating minimizes the carbon dioxide emissions, one of the greatest causes of environmental pollution. State and regional subsidy programs are still available for energy-saving facade renovations.

Economy

The economic aspects can also be found again in the requirements of sustainable construction: Long service life, long maintenance intervals and the subsequent return of the components to their resource cycle are the essential points.

Cost certainty

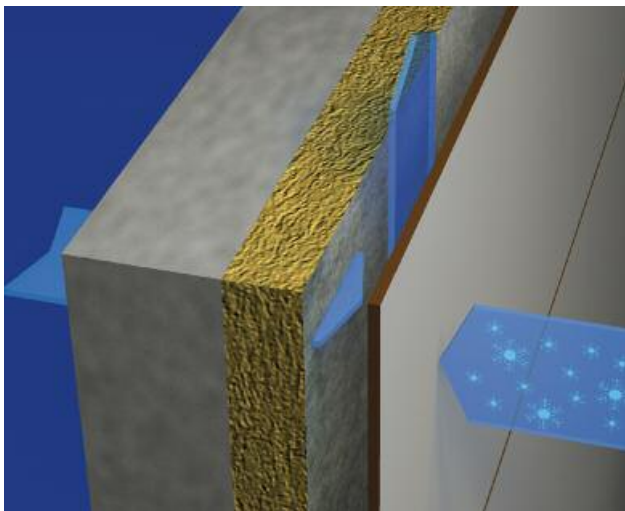
The cost estimation for a non-bearing, rear-ventilated facade, even in the case of renovations, is basically an exact cost planning.

Advantages of the non-bearing, rear-ventilated facade:

- Exact cost estimation of the facade
- Installation under any weather conditions
- Savings through the shorter scaffolding times
- No disposal costs during the installation phase
- Long maintenance intervals and low follow-up costs
- Long-term value retention and appreciation of the building

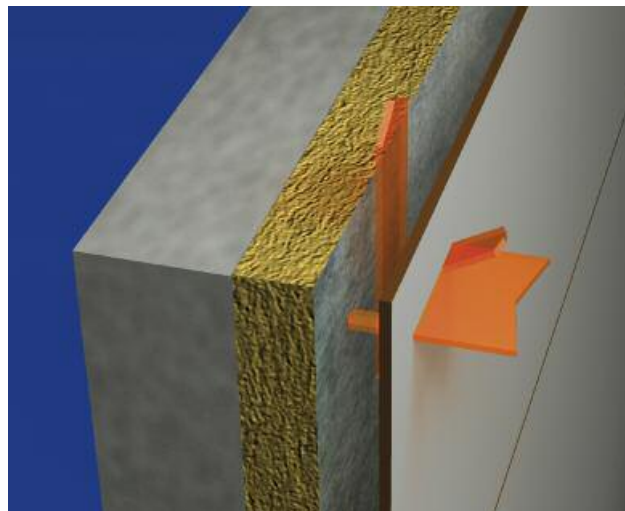
Basics of construction:

During construction and installation, care is to be taken that the material is not exposed to standing water. This means that the panels must always be able to dry out. Connections of Max Exterior panels to one another always have to be made in the same panel direction. Max Exterior can show deviations from being flat (see EN 438-6, 5.3), and this is to be compensated for by the subconstruction being executed so that it is stable and flat. All connections to other components or to the background must be executed firmly. Elastic intermediate spacers to the subconstruction elements and also between subconstruction elements which permit a greater tolerance than ± 0.5 mm must definitely be avoided.



Diffusion permeable

Fig. 5



Heat insulating

Fig. 6

Material Characteristics

Max Exterior shrinks when it loses moisture!
 Max Exterior expands when it absorbs moisture!
 When working and constructing with the panels,
 thought must be given to this possible dimensional
 change. For Max Exterior it is basically half as much
 lengthways as widthways (see properties on page 7
 and 9; lengthways is relative to the nominal panel for-
 mat!)

Element length = a

Element width = b

$\frac{a \text{ or } b \text{ (in mm)}}{500}$ = Expansion clearance

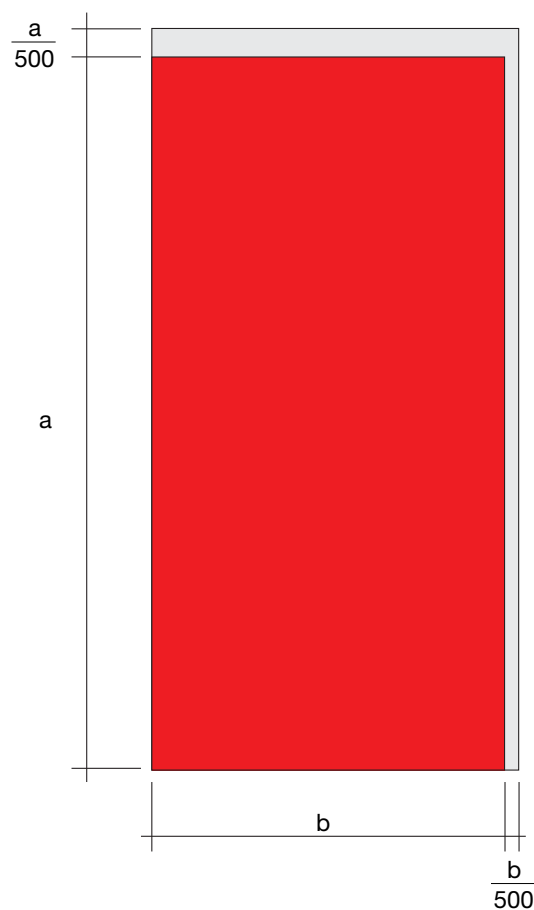


Fig. 7

Façades

Design- and setting-variants



Vertical design

Fig. 8



Horizontal design

Bild 9

Design- and setting-variants



Diagonal design

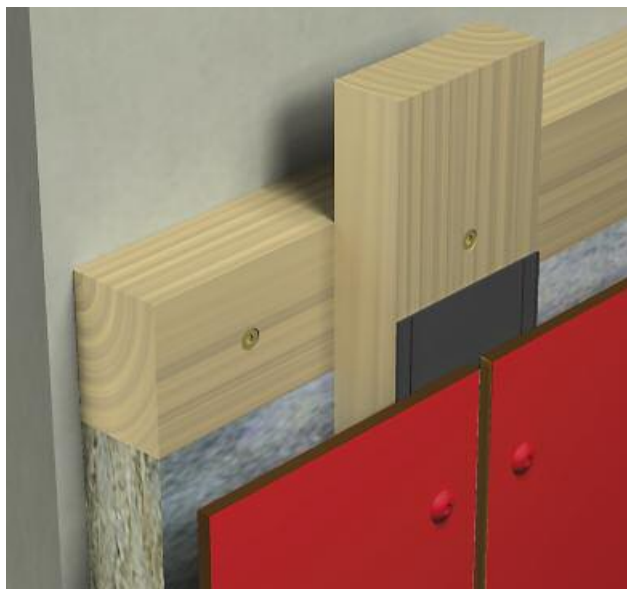
Fig. 10



Combined design

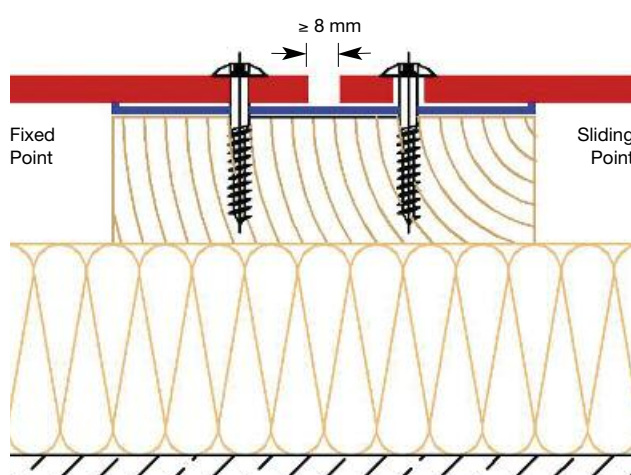
Fig. 11

Mounting of Max Exterior panels with screws on a wooden substructure



Visible mechanical fastening with screws

Fig. 12



Example vertical joint

Fig. 13

Substructure

The wooden substructure has to be made in accordance with national standards. For applications that do not require structural analysis, the dimensions should be at least 60 x 40 mm for the underlying horizontal base or counter slats, at least 50 x 30 mm for the vertical support slats, and 100 x 30 mm in the joint areas. The support slats of the substructure are to be permanently protected from moisture by UV- and weather-resistant joint tape. Due to the material properties of Max Exterior, fixed points and sliding points need to be made to mount the panels (Fig. 13).

Fixed points

Fixed points are used for uniform distribution (halving) of the expansion and shrinkage movements. The diameter of the drill hole in Max Exterior has to be made with 6,0 mm.

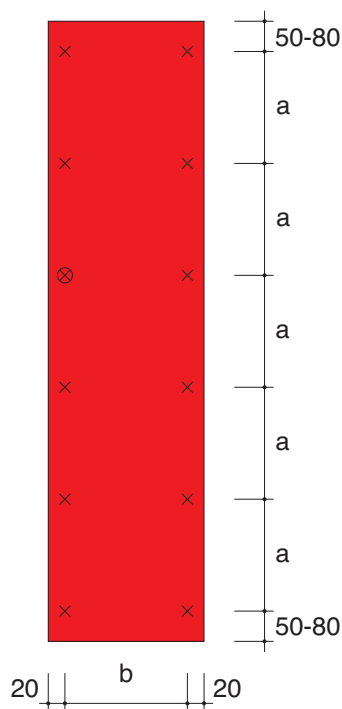
Sliding point

The diameter of the drill hole in Max Exterior must be drilled larger than the diameter of the fastening, depending on the required expansion clearance. This is the shaft diameter of the fastening plus 2 mm for every meter of cladding material starting from the fixed point. The head of the fastening must be big enough so that the drill hole in Max Exterior is always covered. The fastening is placed in such a way that the panel can move. Screws must not be over-tightened. Do not use any countersunk screws. The centre point of the drill hole in the subconstruction must coincide with the centre point of the drill hole in the Max Exterior panels. Drill with a centring piece. The fastenings should be put in place starting from the middle of panel outwards.

⊗ Fixed Point

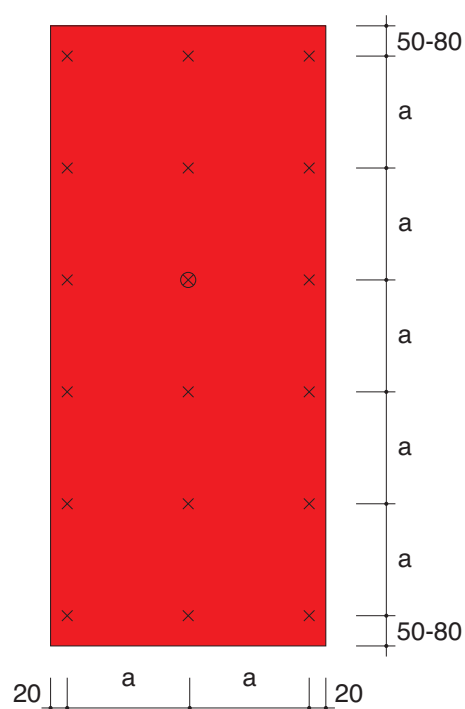
× Sliding Point

Space from edge



Single span panel

Fig. 14



Double span panel

Fig. 15

For installation with mechanical fastenings

Panel thickness	maximum fastening spacing „b“ single span panel	maximum fastening spacing „a“ double span panel
6 mm	470 mm	600 mm
8 mm	620 mm	770 mm
10 mm	770 mm	920 mm

Table 1

Edge spacings

For reasons of stability and flatness, the edge spacings must be kept to without fail. The joints must be made at least 8 mm wide so that changes in size can take place without hindrance (Fig. 14).

Fastening Spacings

These are to be chosen in accordance with the structural engineering requirements (calculations) or, if this is not necessary due to the local regulations, according to table no. 1. In the edge region of the construction, the spacings of the fastenings are to be chosen smaller than in the central region (pressure, suction).

Fastenings

It is essential that fastenings are made from non-corrosive materials.

Max Exterior Installation screw (Fig. 16) with torx wrench 20 made of stainless steel CrNiMo 17122 Material no. 1.4401 V4A.

Lacquered head on request.

Diameter of drill hole in Max Exterior

Sliding points: 8 mm or as required

Fixed points: 6,0 mm

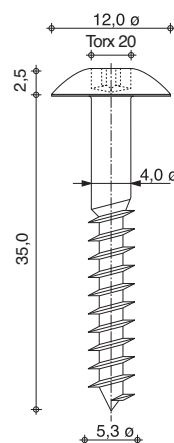
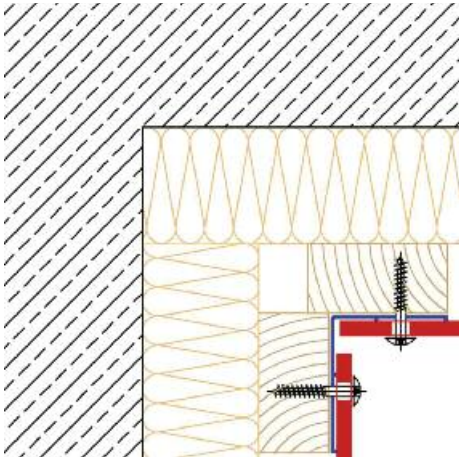


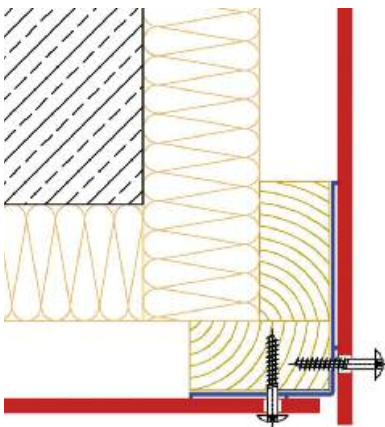
Fig. 16

Suppliers of fastening and sub-structures you will find on page 81 or at „www.fundermax.at“.

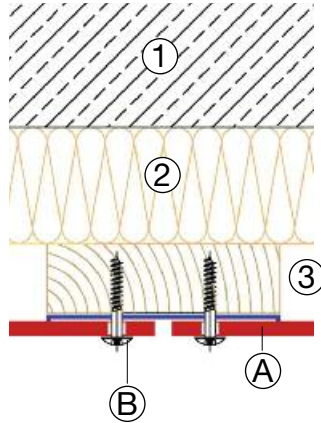
Construction-details wooden substructure horizontal sections



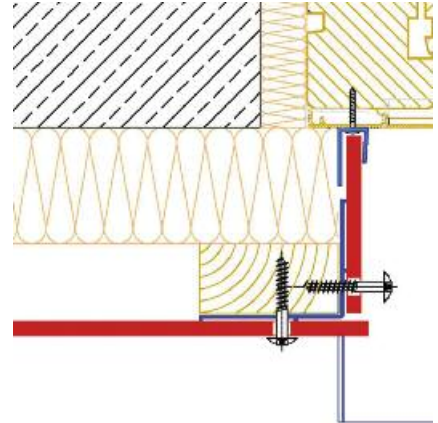
Internal corner



External corner



Vertical joint



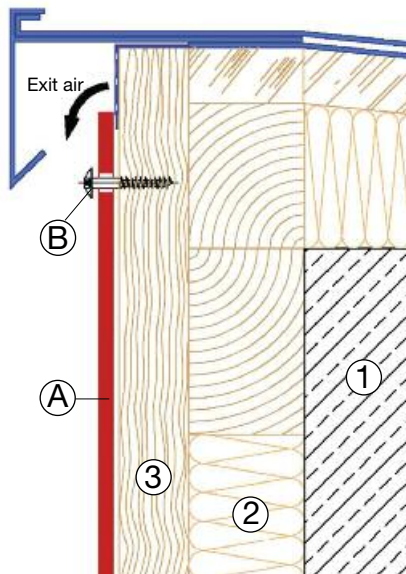
Window reveal

Legend:

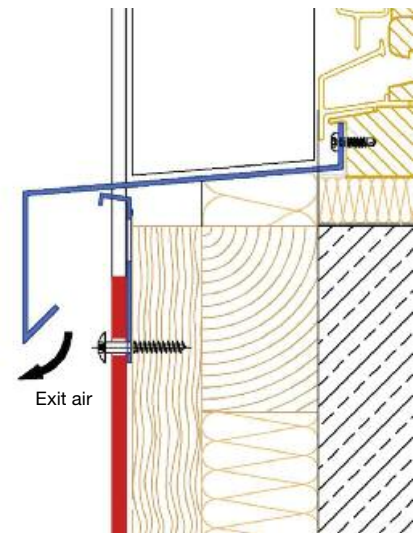
- ① Wall
- ② Insulation
- ③ Ventilation
- (A) Max Exterior Panel
- (B) Fastenings

All profiles and fastenings are shown in this brochure are planning-suggestions and not part of the FunderMax delivery programme.

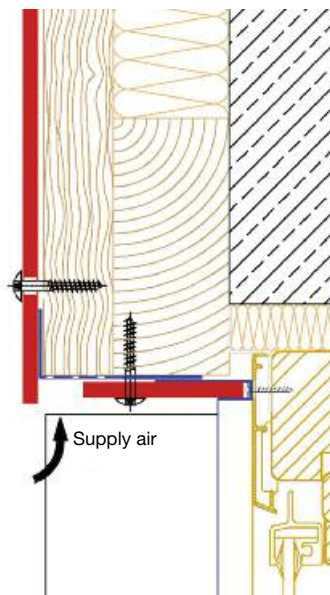
Construction-details wooden substructure vertical sections



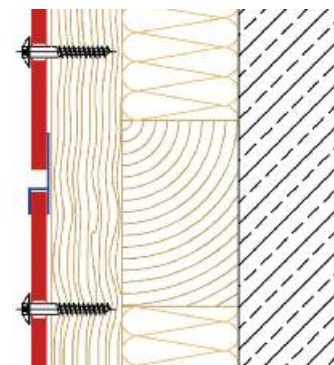
Attic connection



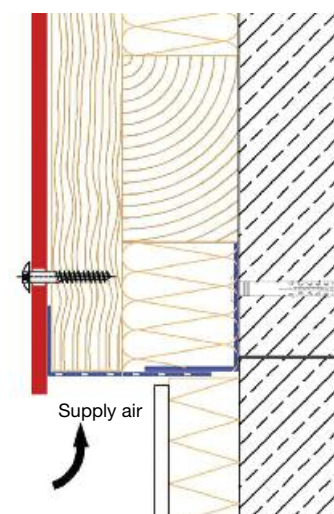
Window sill connection



Window lintel



Horizontal joint



Base connection

Mounting of Max Exterior panels with rivets on an aluminium-substructure

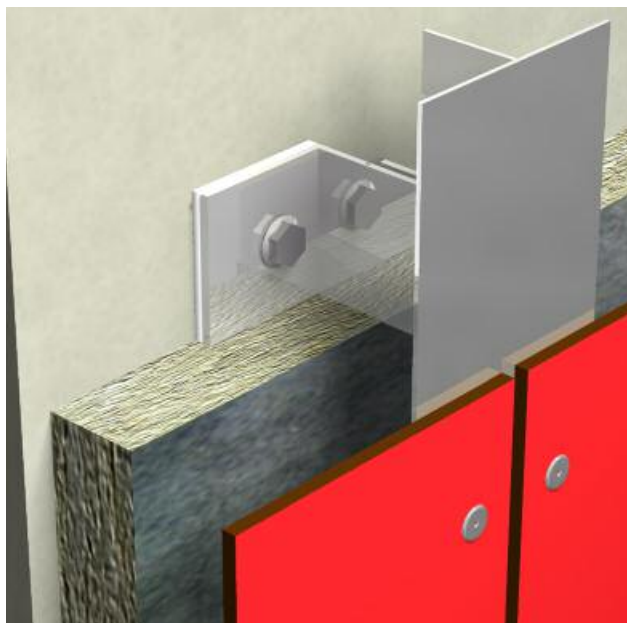


Fig. 17

Substructure

The aluminum substructure has to observe the requirements of the national standards and has to be installed in accordance with the manufacturer specifications for the substructure. The aluminum substructure basically consists of vertical support profiles which are mounted on the wall using angle brackets. Due to the material properties of Max Exterior panels, fixed points and sliding points need to be made to fix the panels (Fig. 18).

Metal subconstructions change their dimensions with differences in temperature. The dimensions of Max Exterior, however, alter under the influence of changing relative humidity. These changes in size of subconstruction and cladding material can be opposite to each other. When installing, attention must be paid to the expansion clearance. The rule of thumb for the required expansion clearance is:

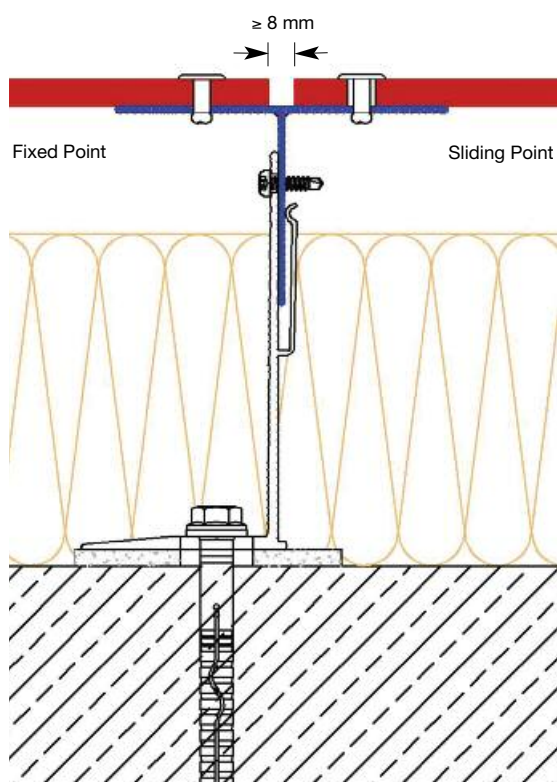
$$\frac{a \text{ or } b \text{ (in mm)}}{500} = \text{expansion clearance}$$

Fixed points

Fixed points are used for uniform distribution (halving) of the expansion and shrinkage movements. The diameter of the drill hole in Max Exterior has to be made with 5.1 mm.

Sliding point

The diameter of the drill hole in Max Exterior must be drilled larger than the diameter of the fastening, depending on the required expansion clearance. This is the shaft diameter of the fastening plus 2 mm for every meter of cladding material starting from the fixed point. The head of the fastening must be big enough so that the drill hole in Max Exterior is always covered. The fastening is placed in such a way that the panel can move. Rivets are put in place with flexible mouth-pieces. The defined clearance of the rivet head to the surface of the panel (0.3 mm) allows movement of the element in the drill hole (Fig. 22). The centre point of the drill hole in the subconstruction must coincide with the centre point of the drill hole in the Max Exterior panels. Drill with a centring piece. The fastenings should be put in place starting from the middle of panel outwards.



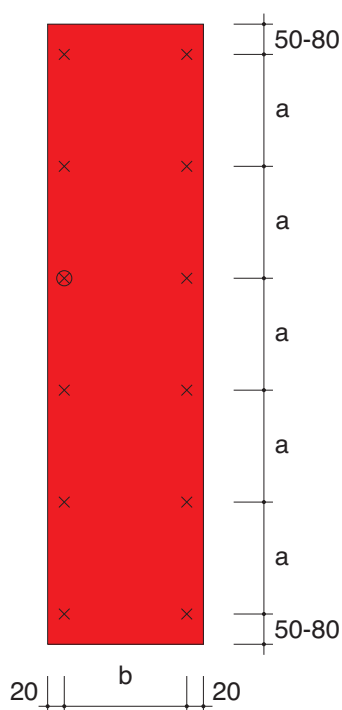
Example of a vertical joint

Fig. 18

⊗ Fixed point

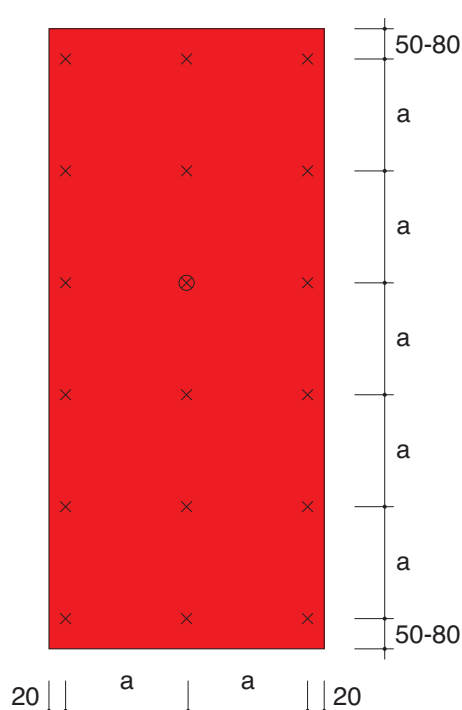
× Sliding points

Space from edge



Single span panel

Fig. 19



Double span panel

Fig. 20

For installation with mechanical fastenings

Panel thickness	maximum fastening spacing „b“ single span panel	maximum fastening spacing „a“ double span panel
6 mm	470 mm	600 mm
8 mm	620 mm	770 mm
10 mm	770 mm	920 mm

Table 2

Edge spacings

For reasons of stability and flatness, the edge spacings must be kept to without fail. The joints must be made at least 8 mm wide so that changes in size can take place without hindrance (Fig. 18).

Fastening Spacings

These are to be chosen in accordance with the structural engineering requirements (calculations) or, if this is not necessary due to the local regulations, according to table no. 2. In the edge region of the construction, the spacings of the fastenings are to be chosen smaller than in the central region (pressure, suction).

Fastenings

Alu-Blind rivet with big head colour lacquered or with covering cap on aluminium-substructures.

Rivet sleeve: Al Mg 5 material-no. EN AW-5019

Rivet pin: material-no. 1.4541

Pull-off strength of rivet pin: 5,2 kN

Diameter of drill hole in Max Exterior panels:

Sliding points: 8,5 mm or as required

Fixed points: 5,1 mm

Diameter of drill hole

in the aluminium substructure: 5,1 mm

Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.

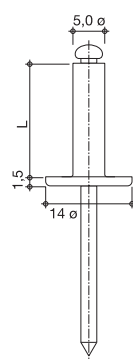


Fig. 21

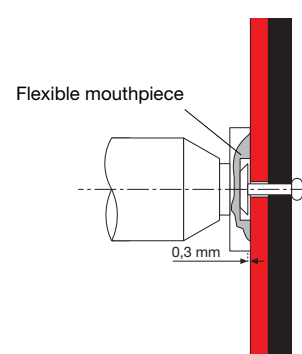
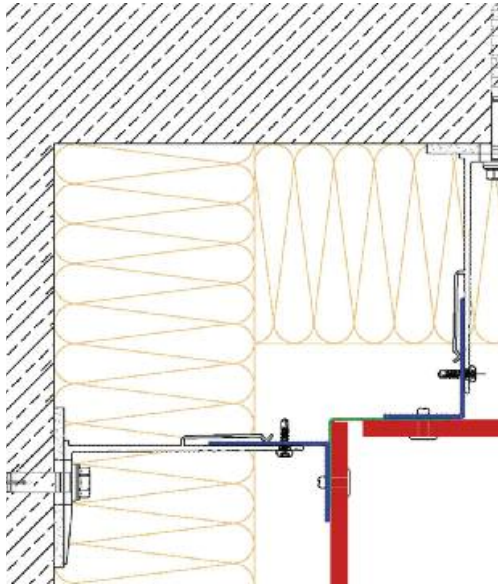


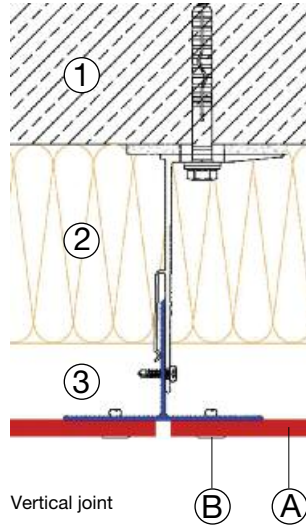
Fig. 22

The rivets must be put in place with a flexible mouthpiece, clearance 0.3 mm.

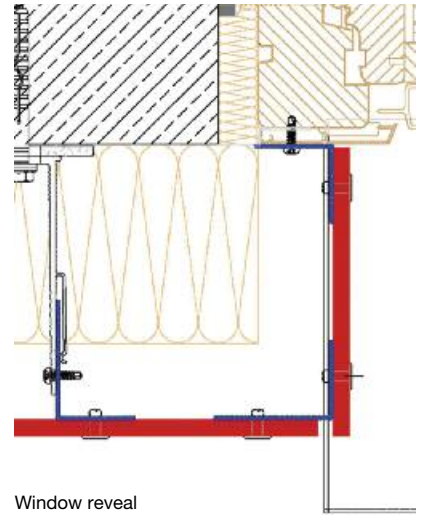
Construction-details horizontal sections Alu-substructure riveted



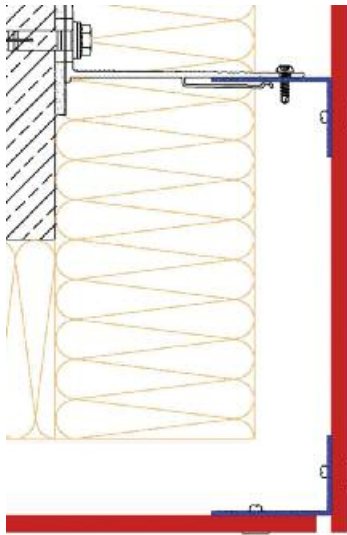
Internal corner



Vertical joint



Window reveal



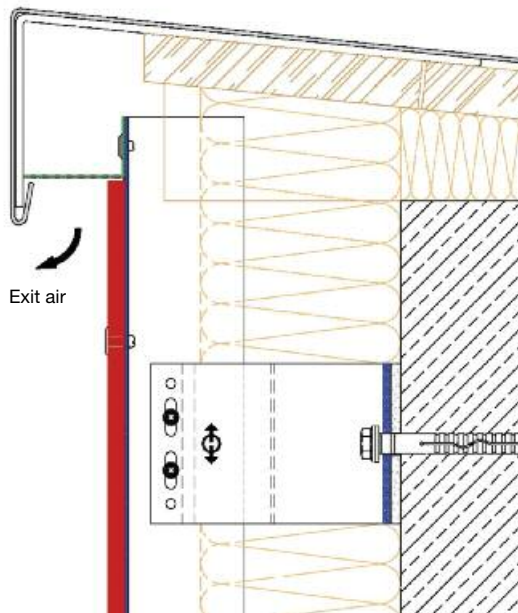
External corner

Legend:

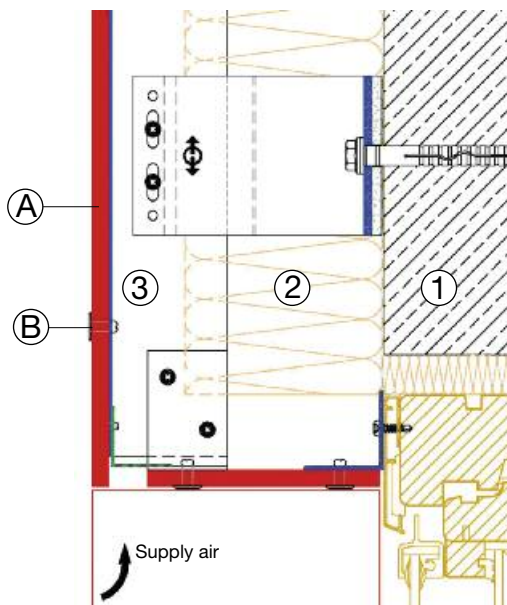
- ① Wall
- ② Insulation
- ③ Ventilation
- Ⓐ Max Exterior Panel
- Ⓑ Fastenings

All profiles and fastenings are shown in this brochure are planning-suggestions and not part of the FunderMax delivery programme.

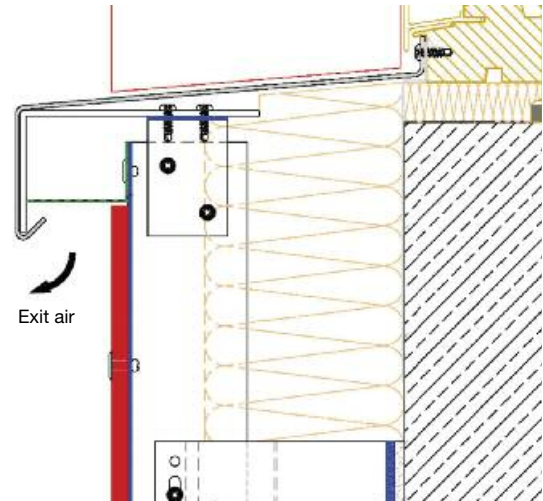
Construction-details vertical sections Alu-substructure riveted



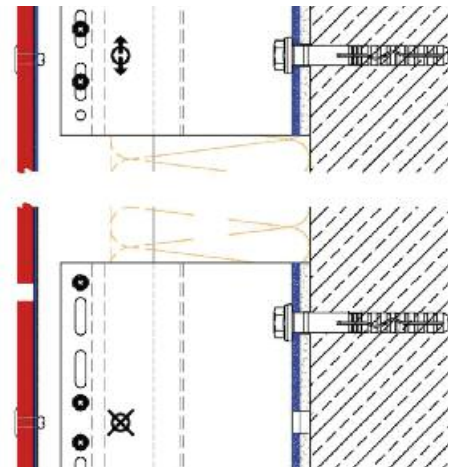
Attic connection



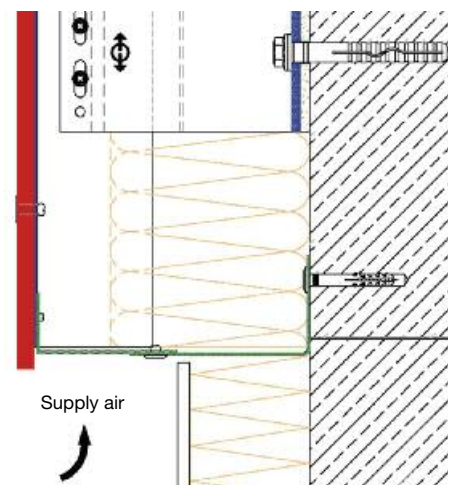
Window lintel



Window sill connection



Horizontal joint



Base connection

Secret mechanical fastening with undercut panel anchor

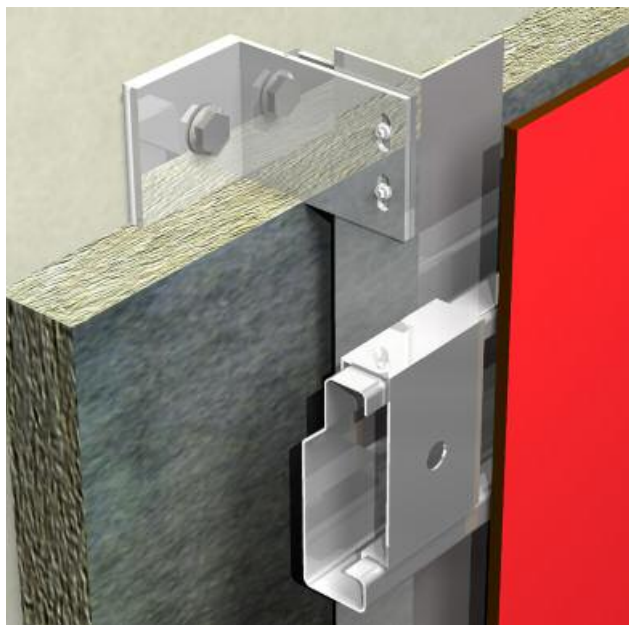


Fig. 23

Installation of Max Exterior panels using concealed, mechanical fastening brackets on an aluminium sub-construction.

The fastening of the brackets to the Max Exterior panel using the fischer-cyclone panel anchor FZP-N in accordance with the ETA-09/0002 has been approved by the building authorities.

The current approval notifications can be found and reviewed for changes in the downloads section at www.fundermax.at.

Basics:

The panel anchor consists of a double-slotted conical plug sleeve with an integrated blind rivet.

The plug is placed into the undercut drill hole of the facade panel so that it has a positive fit and then carefully anchored.

Max Exterior panel thickness: 8 und 10 mm

Maximum dimensions of the Max Exterior panel according to ETA-09/0002 with at least four and at most six individual brackets.

The substructure is to be formed in such a way that unstressed fastening of the Max Exterior panels is guaranteed.

When the fastenings are made (drill hole, plug installa-

tion) a responsible, qualified employee of the manufacturer must be present in the factory or, at the construction site, the employer, a construction manager appointed by him or a proficient representative of the construction manager must be present. This person must ensure that the work is carried out properly.

Facades of this type must only be installed by trained specialist employees.

Supporting profile joints in the subconstruction are not allowed to be covered by the panels.

The undercut drill holes are to be made in the factory or under workshop conditions with a special drilling tool. The number of anchors must be determined in accordance with approval ETA-09/0002. Individual drill holes can also be made with portable drilling tools on the construction site under workshop conditions. The drilling dust must be removed from the drill hole. The nominal drill hole diameter must correspond to the values in the permit. In the event of a mis-drilling, a new drill hole has to be positioned away from the mis-drilled one at a distance of at least twice the depth.

Anchoring depths:

8 mm thick panels4 mm

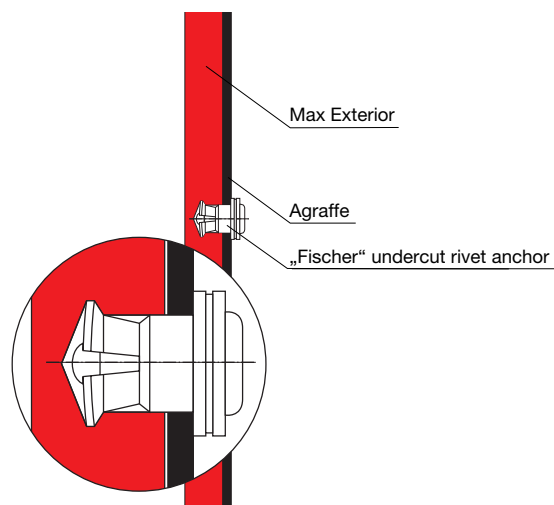
10 mm thick panels6 mm

The plug is installed with a plug positioning device which is suitable for the system.

Note:

FunderMax can also provide the panels complete with factory-made undercut drill holes in conformity with the approval.

Please contact us if you are interested in panels with undercut bores.



„Fischer“ undercut rivet anchor

Fig. 24

Checking of the execution:

The drill holes and the installed plugs are to undergo the following checks.

At 1 % of all drill holes, the geometry of the drill holes is to be checked. The following measurements are to be checked and documented in accordance with the instructions of the plug manufacturers.

- Diameter of the cylindrical drill hole
- Diameter of the undercut
- Drill hole overcovering and drill hole depth.

The positive fit of the plug in the drill hole is to be tested by a visual check. The edge of the sleeve must finally support itself evenly on the bracket.

Concerning the making of the fastenings, records of the proof of proper installation are to be kept by the construction manager or his representative.

These records have to be saved for 5 years by the employer.

The permit ETA-09/0002 should be given appropriate attention before starting the planning.

Information must be obtained without fail from:

Fischerwerke

Artur Fischer GmbH. u. Co KG

Weinhalde 14 – 18

D-72178 Waldachtal

Tel.: +49 (0) 7443/124553

Fax: +49 (0) 7443/124568

E-Mail: anwendungstechnik@fischerwerke.de

Internet: www.fischerwerke.de

The local building regulations must be obeyed.

Name	Material
Anchor sleeve	Stainless steel, 1.4571 oder 1.4401
Sleeve	Stainless steel, 1.4567 oder 1.4303
Rivet pin	Stainless steel, 1.4571

Table 3

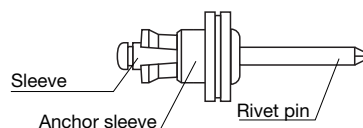
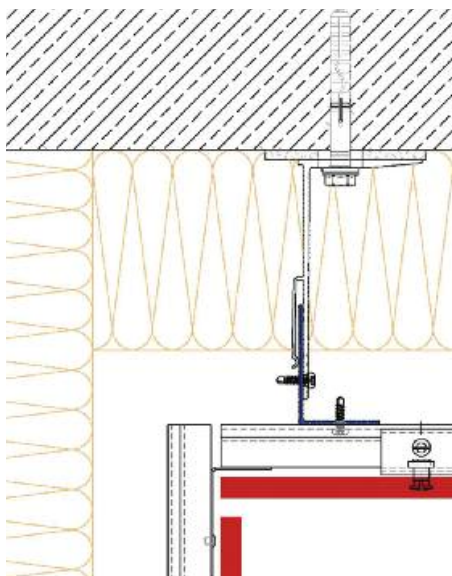


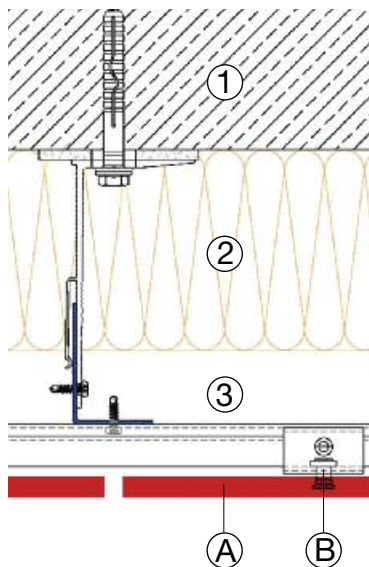
Fig. 25

Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.

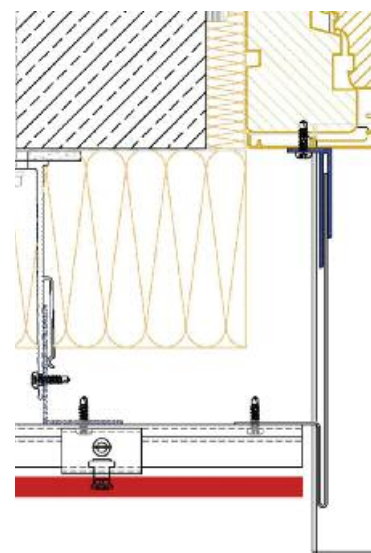
Construction-details horizontal sections undercut panel anchor



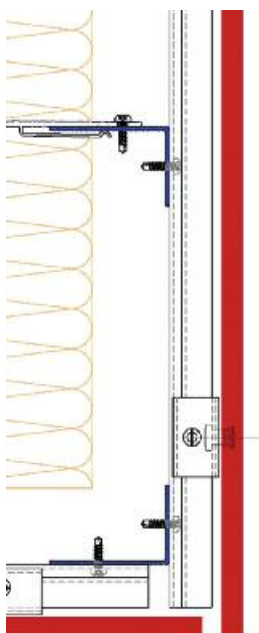
Internal corner



Vertical joint



Window reveal



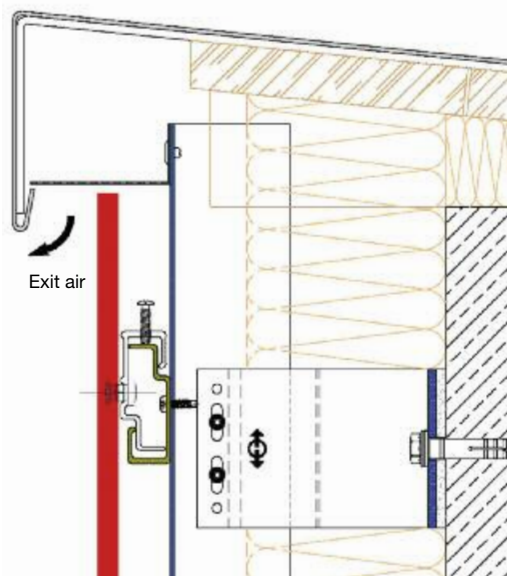
External corner

Legend:

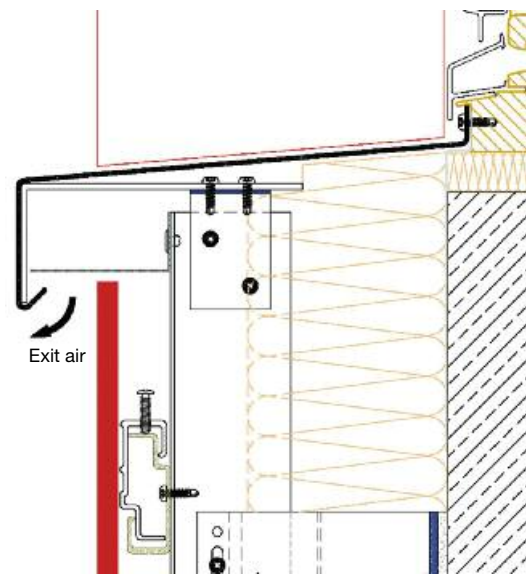
- ① Wall
- ② Insulation
- ③ Ventilation
- Ⓐ Max Exterior Panel
- Ⓑ Fastenings

All profiles and fastenings are shown in this brochure are planning-suggestions and not part of the FunderMax delivery programme.

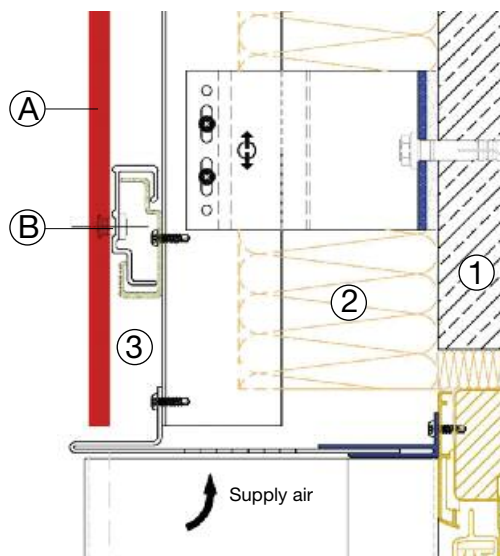
Construction-details vertical sections undercut panel anchor



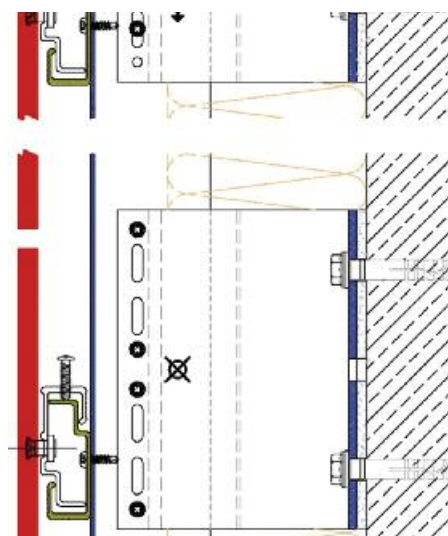
Attic connection



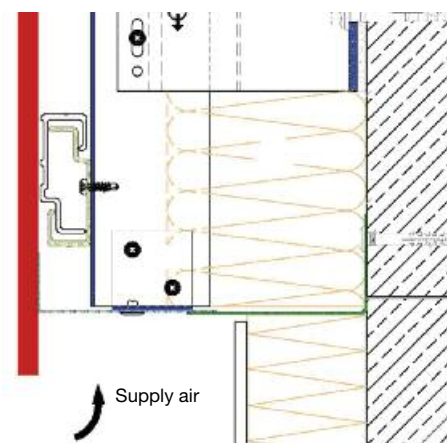
Window sills connection



Window lintel



Horizontal joint



Base connection

A 3D cutaway diagram of a wall assembly. The wall consists of an exterior sheathing layer, a thick insulation layer, and an interior sheathing layer. A vertical crack runs through the insulation and the interior sheathing. Moisture, represented by wavy lines, is shown entering the wall through the crack. The interior of the wall is colored red, and the exterior is light gray.

For glued installation with Sika Tack Panel
(spacing of the vertical support construction)

Table 4

Construction

The local building regulations are to be followed without fail!



These gluing systems in connection with Max Exterior panels are permitted generally by building authorities in Germany.

Sika Tack Panel	Z-10.8-408
MBE Panel-loc Gluing-System	Z-10.8-350

Working sequence

Pretreatment of aluminium subconstructions

- Rub down with an abrasive fleece
- Clean with Sika Cleaner 205 (cellulose cloth)
- Ventilation time - 10 minutes
- Apply Sika Tack Primer thinly with a brush
- Ventilation time - at least 30 minutes, maximum 8 hours

Pretreatment of wooden subconstructions

(Wooden subconstructions are not permitted in Germany)

- Planed wood with untreated surfaces without wood preservative
- Apply Sika Tack Primer thinly with a brush
- Ventilation time - at least 30 minutes, maximum 8 hours

Pretreatment of Max Exterior panels:

- Rub down with an abrasive fleece
- Clean with Sika Cleaner 205 (cellulose cloth)¹⁾
- Ventilation time - 10 minutes
- Apply Sika Tack Primer thinly with a brush
- Ventilation time - at least 30 minutes, maximum 8 hours
- Sika cleaner should not be used to clean soiled panels.

All surfaces to be glued must be kept clean, dry and grease-free.

Gluing:

- Apply the installation band over the entire length of the vertical profiles. (Do not remove protective film yet).
- Apply glue: The glue is applied as a triangular bead (width, height in accordance to the application recommendation of the producer) at a distance of at least of 5 or 6 mm from the edge of the profile and the installation band.
- Install panel: Remove the protective film from the installation band. Align the panel exactly (installation angle) until in contact with the installation band, then press on.

Basics:

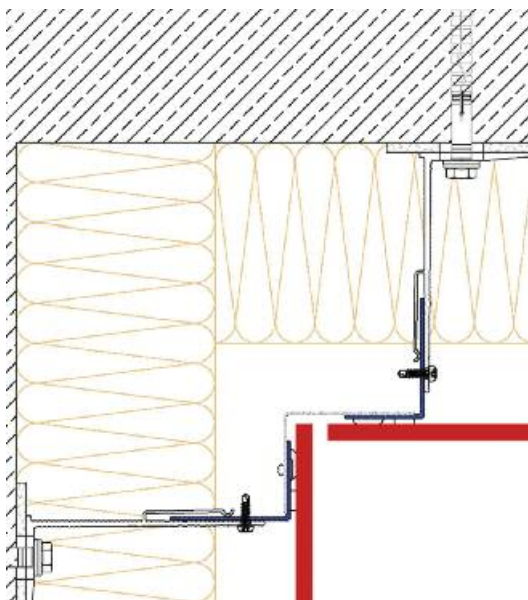
- It is necessary to keep the work protected from the weather and dust (gluing work can be done on the construction site).
- Air temperature not below 5°C and not over 35°C.
- Relative air humidity not higher than 75%.
- Temperature of the construction elements which are to be glued at least 3°C higher than the dew point temperature of the air.
- Joints in the subconstruction profiles must not be glued if covered with Max Exterior panels.
- The subconstruction must always be arranged vertically.
- The general building authority permit, as well as the manufacturer's working instructions, must be present during the gluing work at every construction site.
- The gluing must only be done by companies with proof of training (for Germany, proof of qualification is necessary in accordance with the building authority permit).
- A construction site log is to be made.

Information must be obtained without fail from Sika and MBE-GmbH.

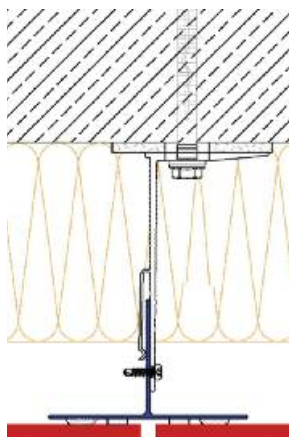
Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.

¹⁾ Sika Cleaner 205 activates the material surface and leaves a grey sheen. Do not apply to the front side of the panels. Remove any splashes immediately.

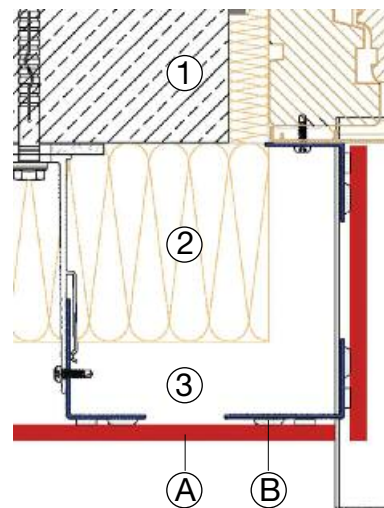
Construction-details vertical sections



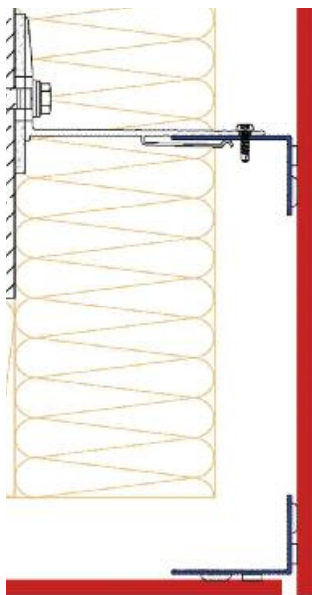
Internal corner



Vertical joint



Window reveal



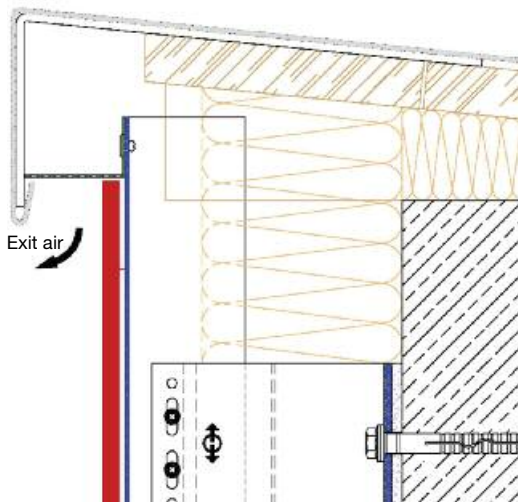
External corner

All profiles and fastenings are shown in this brochure are planning-suggestions and not part of the FunderMax delivery programme.

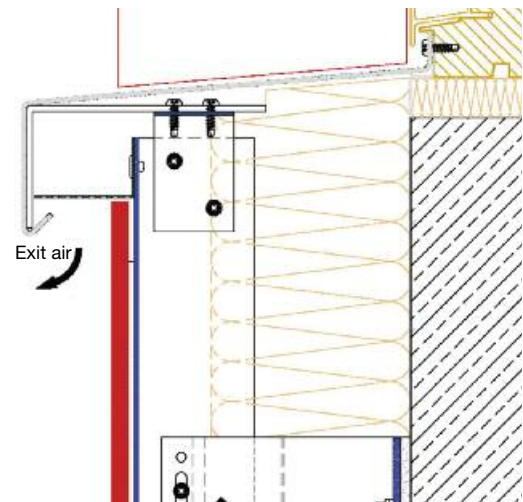
Legend:

- ① Wall
- ② Insulation
- ③ Ventilation
- Ⓐ Max Exterior Panel
- Ⓑ Fastenings

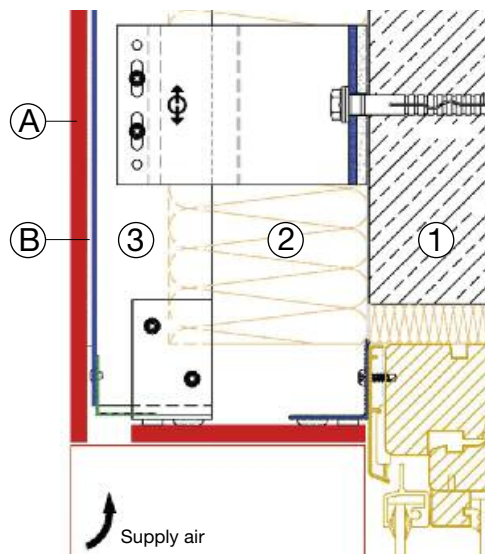
Construction-details vertical sections



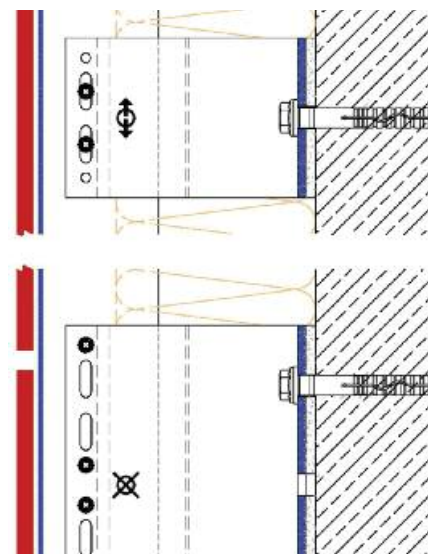
Attic connection



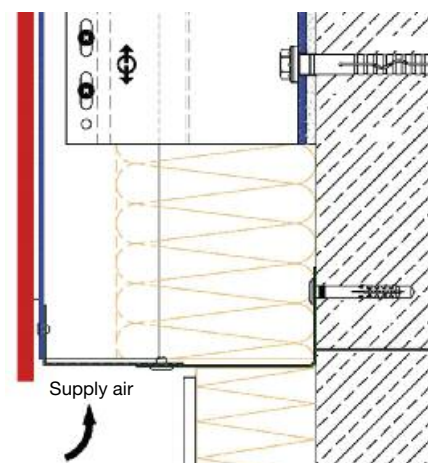
Window sill connection



Window lintel



Horizontal joint



Base connection

The ME 01 system for the concealed mounting of Max Exterior facade panels.

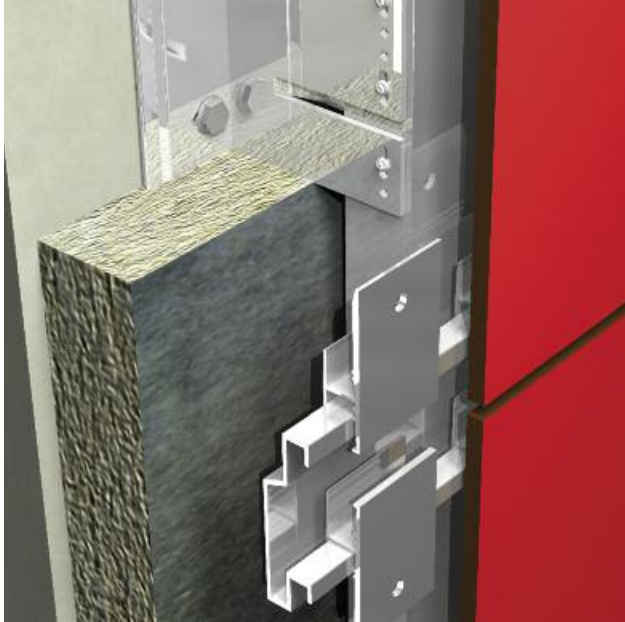


Fig. 28

The ME 01 is a specially developed system of concealed mechanical fastening brackets for the rational installation of the Max Exterior facade panel. The system components (Max Exterior panel, bracket, undercut anchor and support profile), are designed for optimum compatibility.

System advantages:

- ___ Can be used for both horizontal or vertical panel/joint formats
- ___ Only one support profile required for horizontal panel joint
- ___ Experienced system partners
- ___ No visible mounting brackets
- ___ Can be installed under any weather conditions
- ___ Low installation costs
- ___ The fastening means have been approved by the building authorities
- ___ Can be used with 8 mm and 10 mm panels

Fastening bracket:

Germany - Fischer undercut anchor FZP technical approval ETA-09/0002

France - SFS TU-S 50 Avis Technique (pending)

For countries in which the fastening means do not require an approval from the building authorities, we recommend using one of the aforementioned approvals.



Fig. 29

System description:

Using undercut anchors or special blind fasteners, hanging brackets are fastened in the mounting drill holes made with special tools on the back of the Max Exterior facade panels.

The panels provided with brackets are hung in the suspension profiles mounted on the substructure, their height is adjusted, and they are secured against lateral movement.

Process for the undercut anchors:

After the detailed planning for the facade has been completed (mounting distances according to approval of the building authorities), we or a partner will cut the Max Exterior facade panels to size and provide them with the special drill holes. The basis for this is a CAD drawing for each part.

The brackets can be attached quickly and easily at the facade builder's or on the construction site using a commercial riveting machine.

The SFS TU-50 blind fastener does not require any special mounting drill holes.

Checking of the execution:

The drill holes and the installed plugs are to undergo the following checks.

At 1% of all drill holes, the geometry of the drill holes is to be checked. The following measurements are to be checked and documented in accordance with the instructions of the plug manufacturers.

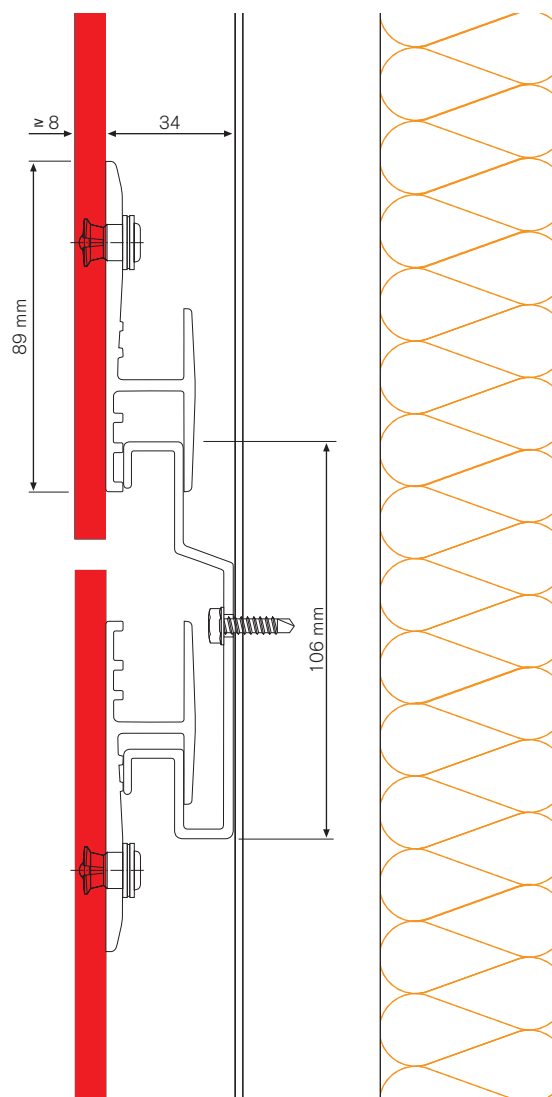
- Diameter of the cylindrical drill hole
- Diameter of the undercut
- Drill hole overcovering and drill hole depth.

The positive fit of the plug in the drill hole is to be tested by a visual check. The edge of the sleeve must finally support itself evenly on the bracket.

Concerning the making of the fastenings, records of the proof of proper installation are to be kept by the construction manager or his representative. These records have to be saved for 5 years by the employer. The permit ETA-09/0002 should be given appropriate attention before starting the planning.

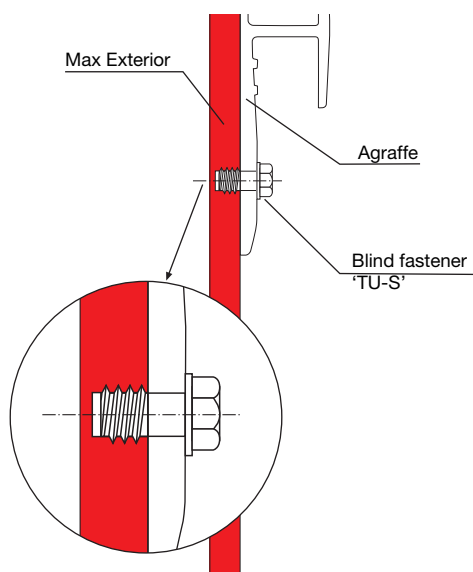
The local building regulations must be obeyed.

Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.



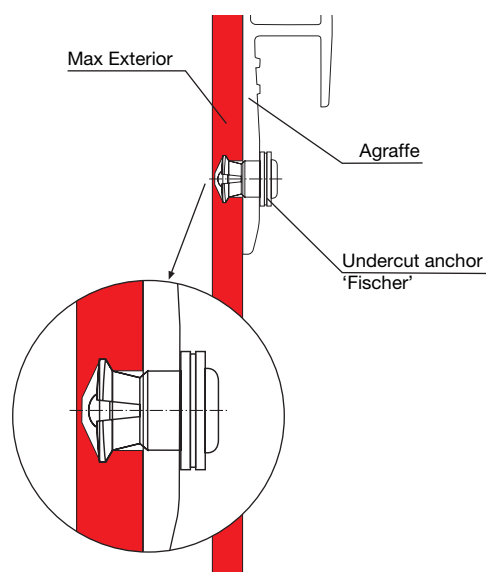
Vertical section of a horizontal joint

Fig. 30



Detail blind fastener

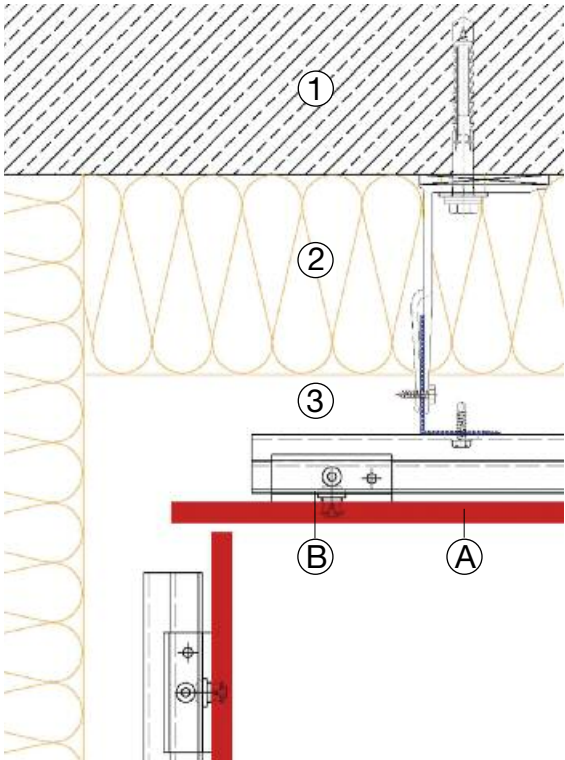
Fig. 31



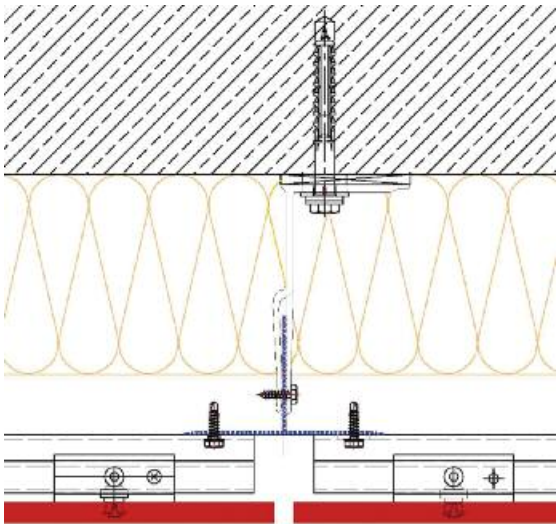
Detail undercut anchor

Fig. 32

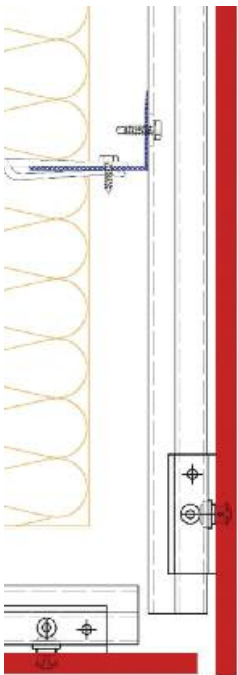
Construction-details horizontal sections
System ME 01



Internal corner



Vertical joint



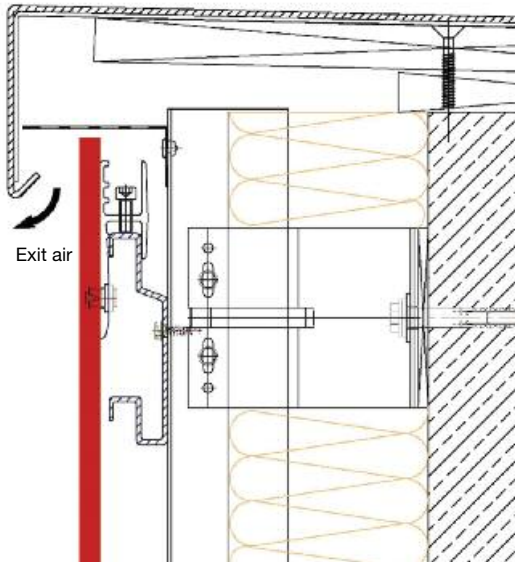
External corner

All profiles and fastenings are shown in this brochure
are planning-suggestions and not part of the FunderMax
delivery programme.

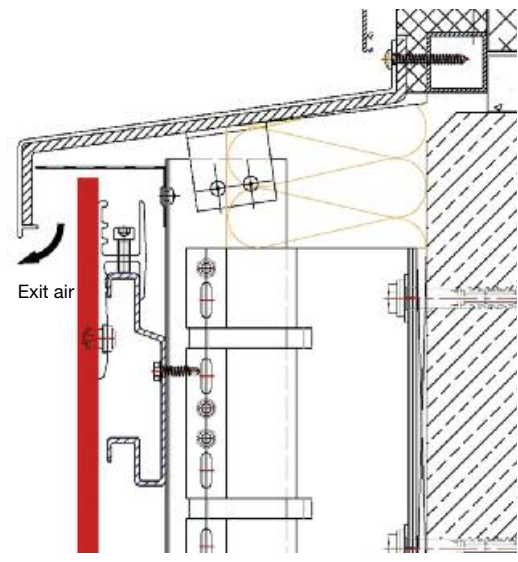
Legend:

- ① Wall
- ② Insulation
- ③ Ventilation
- Ⓐ Max Exterior Panel
- Ⓑ Fastenings

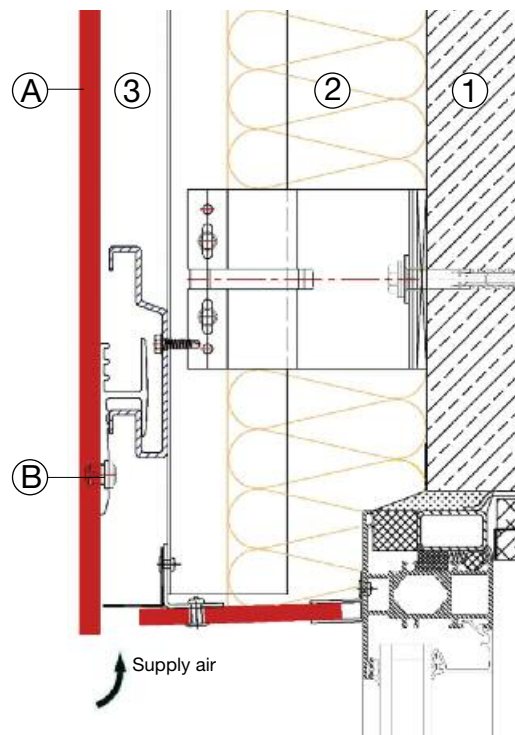
Construction-details vertical sections System ME 01



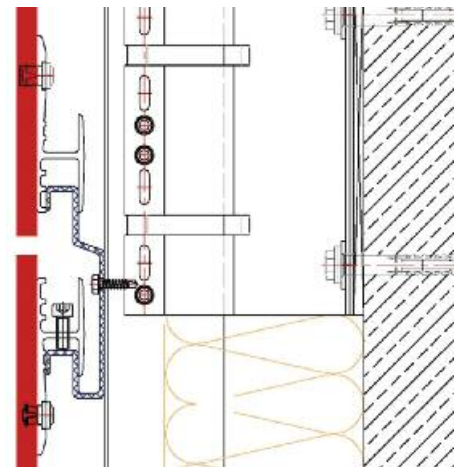
Attic connection



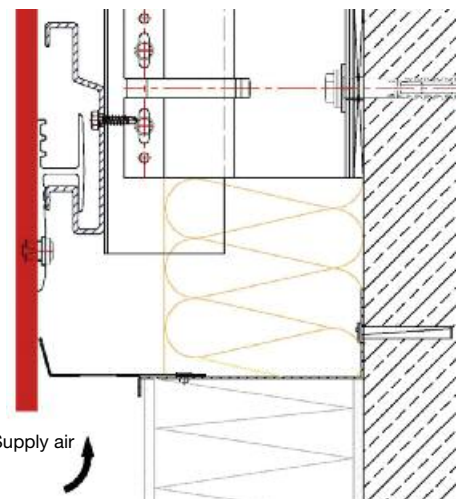
Window sill connection



Window lintel



Horizontal joint



Base connection

The ME 02 system for mounting Max Exterior facade panels.



Fig. 33



Fig. 34

The ME 02 is a special designed system of mechanical fastening for the installation of 6 mm and 8 mm Max Exterior panels.

The system components (holding profile and Max Exterior panel including the special, factory-milled fastening groove), are designed for optimum compatibility.

System description:

The Max Exterior panel with the factory-made special holding groove (ME 02) is attached to the previously mounted holding profile and fixed in place by the next profile. If necessary, the 6 mm panel at the upper edge of the façade can be adjusted at the construction site.

Please note:

As of January 2009, the ME 02 system is not approved by the building authorities in Germany (§ 21 MBO-Bauarten).

System advantages:

- Design with horizontal emphasis
- Panels are available in a wide variety of formats
- Only one fastening profile is necessary
- Elegant, slim profile
- Fastening profile available in a variety of colors or natural anodized aluminum
- Greater safety through the factory-made holding groove
- Easy to mount
- Can be used by using 6 mm and 8 mm panels
- Flush with 8 mm panels
- Can be installed under any weather conditions
- Low cost and quick installation
- Object-related substructure statics
- Panel width of 200 - 650 mm
- Wooden or aluminum subconstruction

Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.

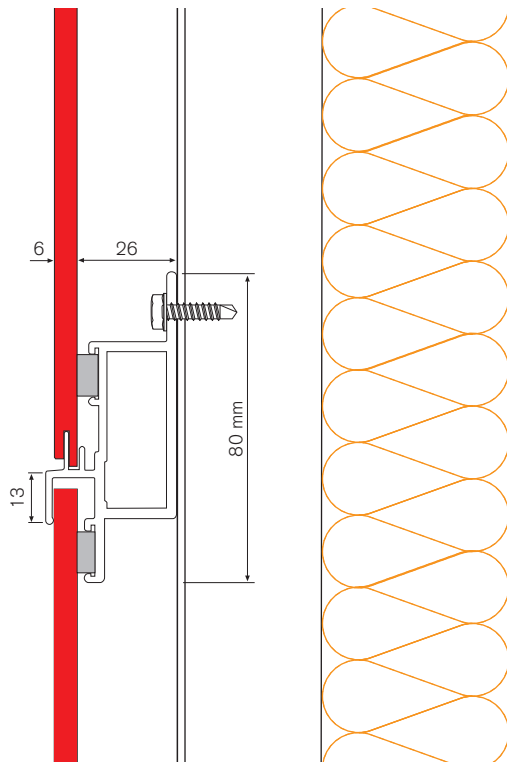


Fig. 35

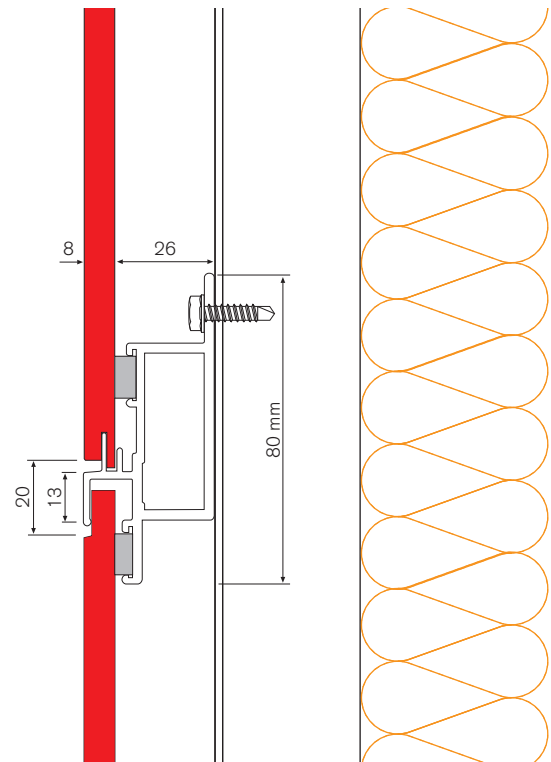


Fig. 36

Mounting- Designvariants with System ME 02



Fig. 37



Fig. 38

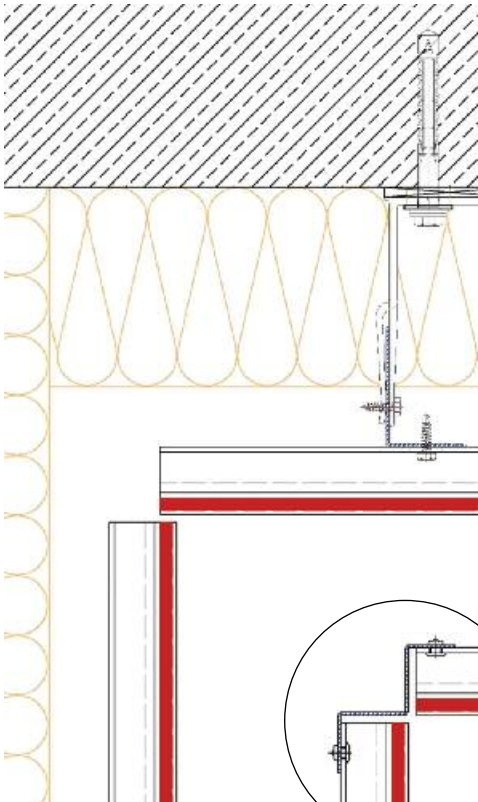


Fig. 39

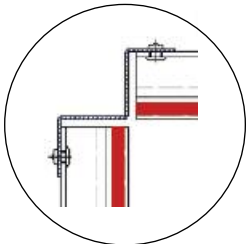


Fig. 40

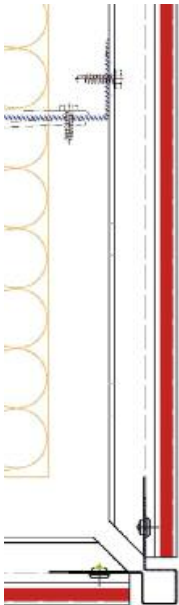
Construction-details horizontal sections System ME 02



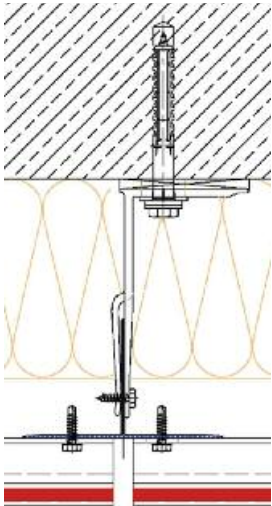
Internal corner



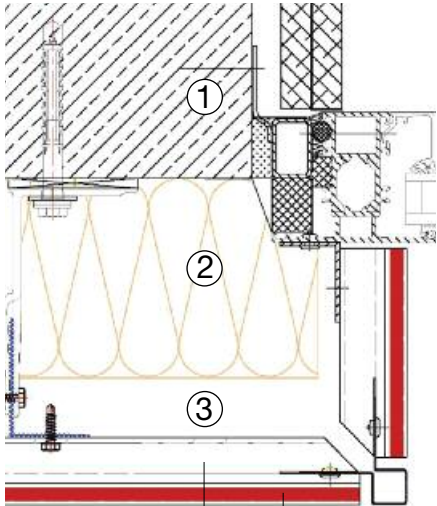
Variant for internal corner



External corner



Vertical joint

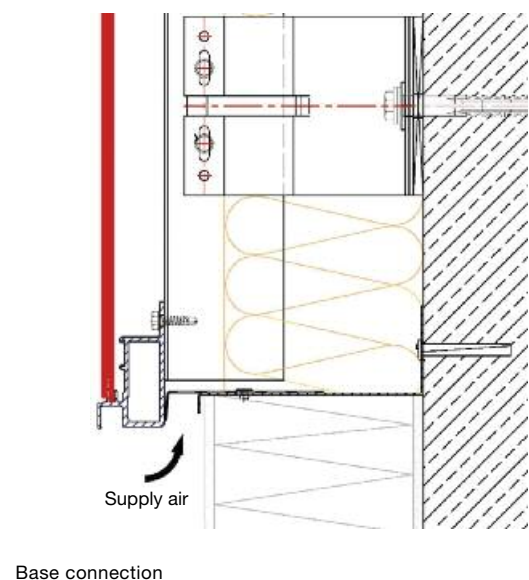
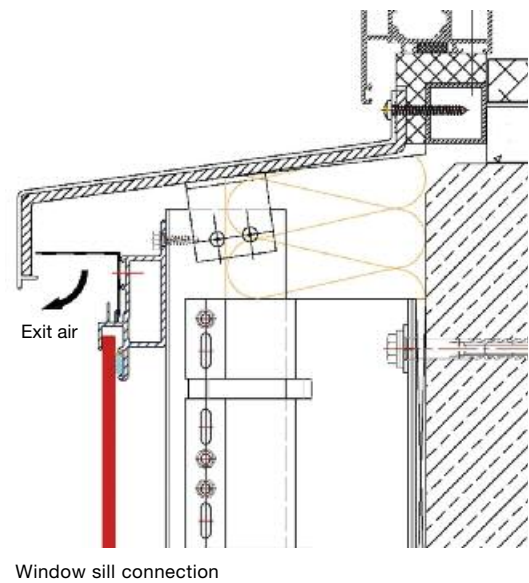
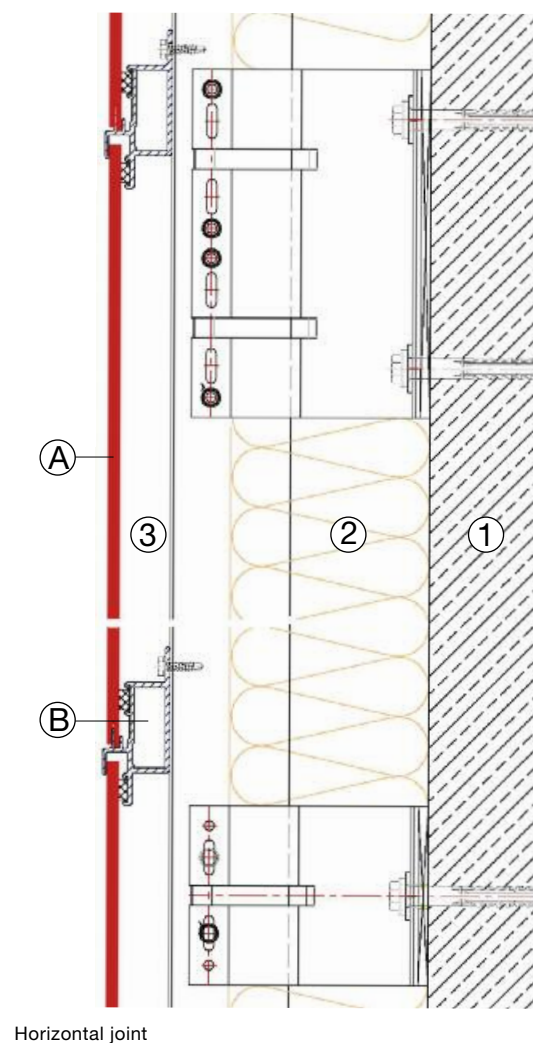
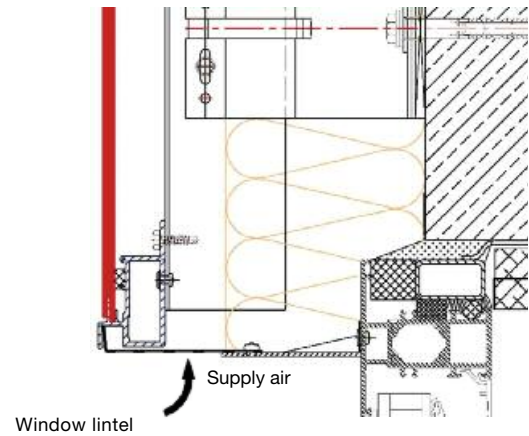
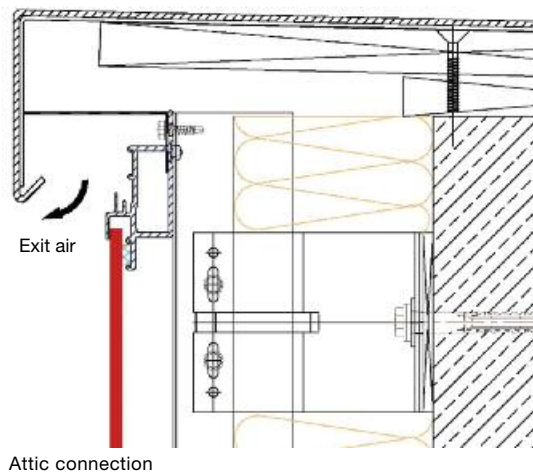


Window reveal

Legend:

- ① Wall
- ② Insulation
- ③ Ventilation
- Ⓐ Max Exterior Panel
- Ⓑ Fastenings

Construction-details vertical sections System ME 02



System ME 03 Lap siding with Max Exterior



Fig. 41

The advantages of an attractive system. With pre-fabricated Max Exterior panels for lap sidings, it is easy to design robust and modern facades. Through an ideal combination of an easy to install holding system with the proven characteristics of the Max Exterior facade panels.

As accessories available:

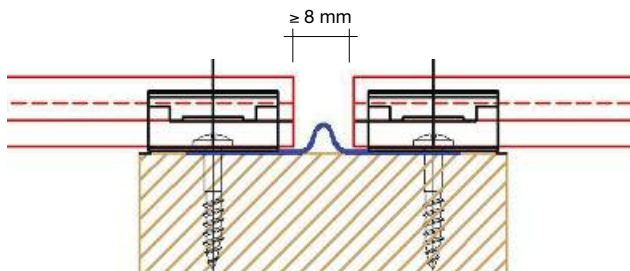
- Mounting clips incl. mounting instructions
- Vertical backing profile

Advantages:

- Fast delivery for stock program
- Wide selection of decors
- Easy to mount (on wooden substructure)
- All the benefits of the Max Exterior NT surface
- Ideal board dimensions

Panels

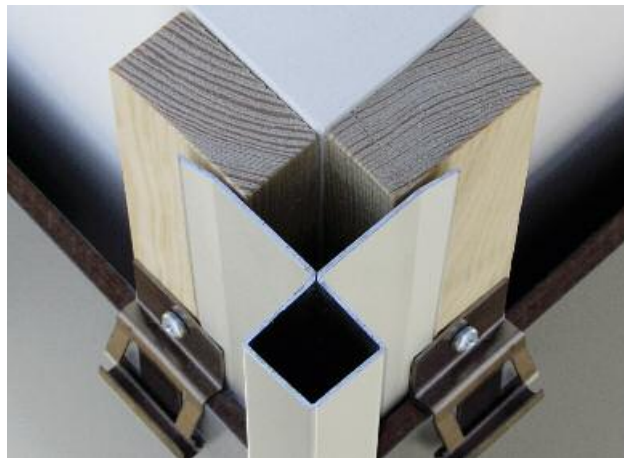
See our website - www.fundermax.at - for available cuts and dimensions.



Vertical backing profile

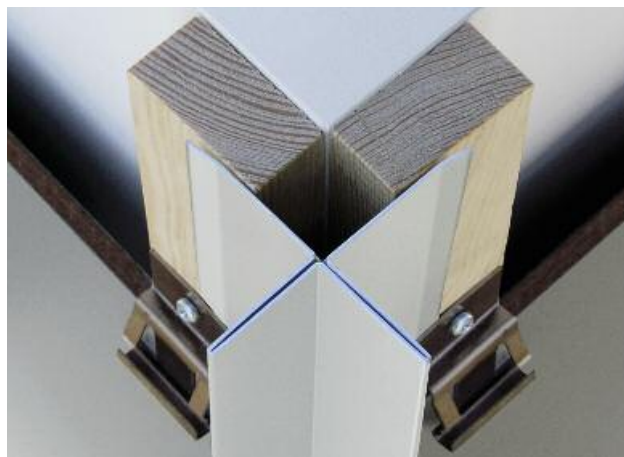
Fig. 42

Profile variants:



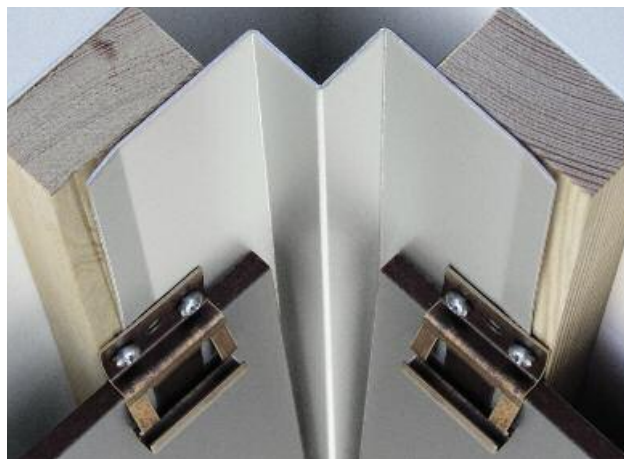
External corner with square profile

Fig. 43



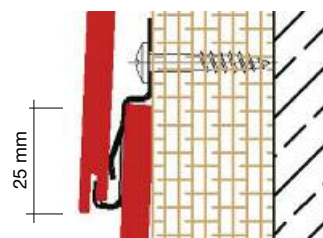
External corner with cross profile

Fig. 44



Internal corner profile

Fig. 45



Overlap dimension lap-siding elements

Fig. 46

Mounting instructions



Fig. 47

1. Preparing the substructure

Max Exterior lap siding elements are installed using mounting clips fixed to a substructure of vertical wooden slats. Each slat must be at least 50 mm wide for a single mounting clip, or 75 mm wide where two panels join to allow enough space for two mounting clips side-by-side. The gap between each slat should not exceed 500 mm*. The panels are installed starting from the bottom. First of all, fit a horizontal base bar. Now fit the first row of mounting clips so they rest on the bar. Make sure you fit 2 mounting clips at each vertical joint between panels.

* The spacing specified applies to low buildings, i.e. up to 8 m in height.



Fig. 48

2. Installing the first row of panels

Place the groove along the lower edge of the Max Exterior lap siding elements onto the mounting clips. Secure the panels in place by fixing mounting clips along the top edge of each panel. The panel above overlaps the first row of panels by approximately 25 mm. Fit a screw next to the top middle mounting clip on each panel. This is designed to stop the panel shifting sideways.



Fig. 49

3. Vertical joints

A slat for fixing the mounting clips must be located at each vertical joint. Two mounting clips, one either side of the joint, are needed to provide the necessary hold. Please use Max Exterior backing strips to seal the vertical joint between cladding panels.



Fig. 50

If the siding elements are arranged so the vertical joints are offset then it is sufficient to install the panel plus backing strip using a single mounting clip. If the vertical joints are in a line then two mounting clips need to be used. There must be a gap of at least 8 mm between the panels at the joint.

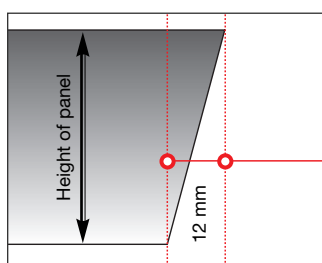


Fig. 51

4. Outside corners/inside corners with mitre

Max Exterior lap siding elements can be mitred for both outside and inside corners. Outside corners: The top edge of the panel must be 12 mm shorter than the lower edge of the panel (regardless of the panel width). Inside corners: The lower edge of the panel must be 12 mm shorter than the top edge of the panel (regardless of the panel width). The mitred edges must have a chamfer. The substructure needs to be protected with a plastic sheet to prevent water entering. Elements can be installed on both outside and inside corners using a variety of shapes of corner profile. In this case the panels are cut to size without a mitre. Make sure there is a gap of at least 5 mm between each panel and the corner profile.

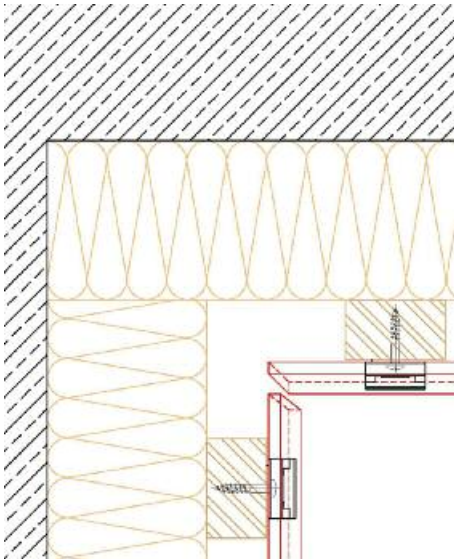


Fig. 52

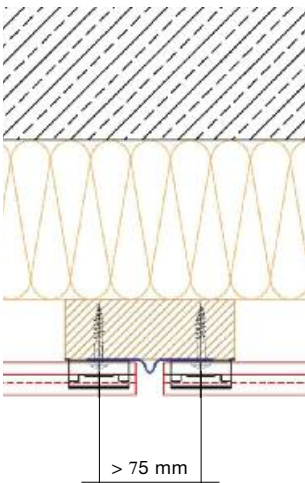
5. Installing the top row of panels

Secure the top row of panels by fitting screws along the top edge of each panel. Use screws with painted heads to match the colour of the panels, as used for the installation of full-sized Max Exterior cladding boards.

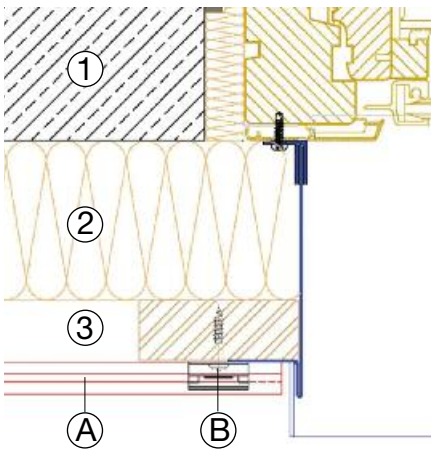
Construction-details horizontal sections Lap siding with Max Exterior



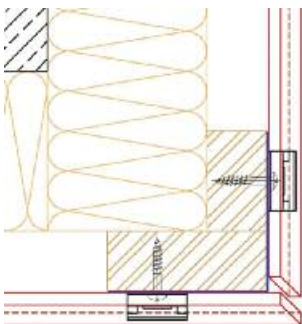
Internal corner without profile



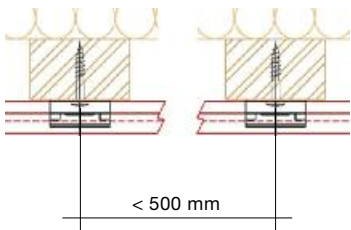
Vertical joint with profile



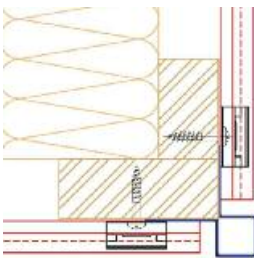
Window reveal



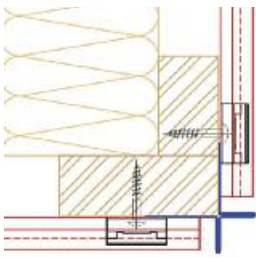
External corner without profile



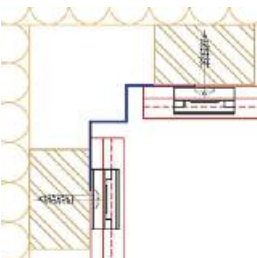
Spacing of mounting clips



External corner with square profile

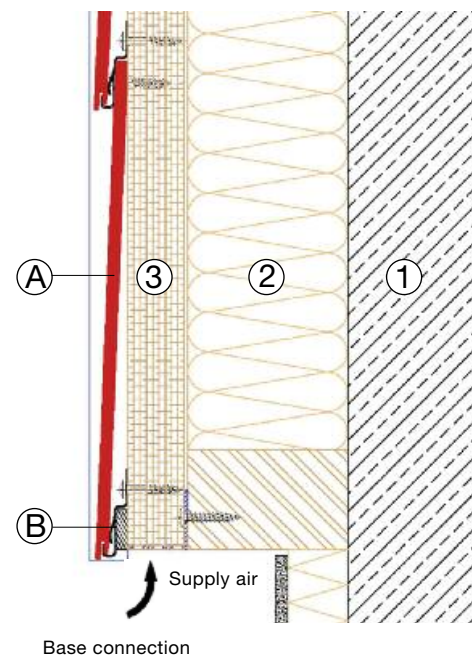
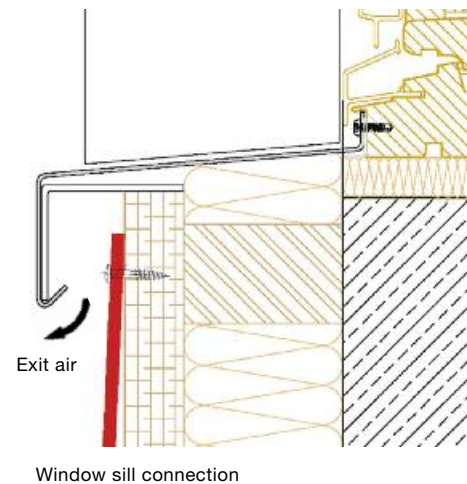
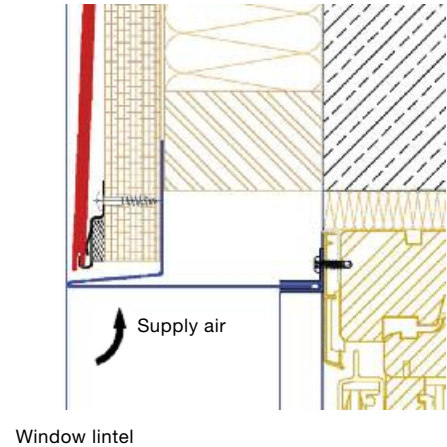
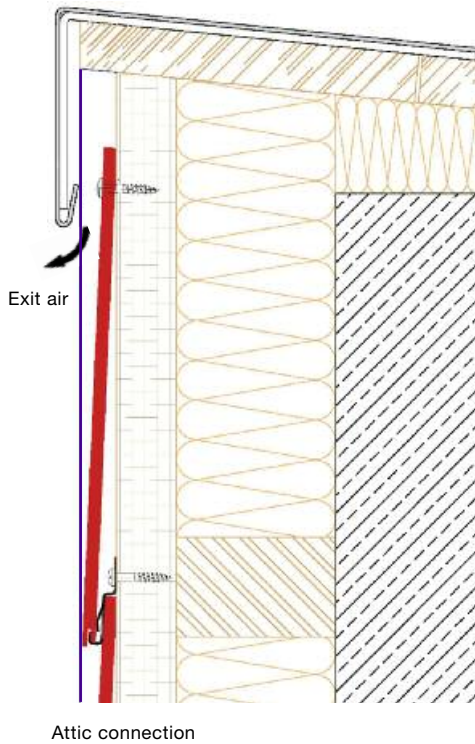


External corner with cross profile



Internal corner profile

Construction-details vertical sections Lap siding with Max Exterior



Legend:

- ① Wall
- ② Insulation
- ③ Ventilation
- (A) Max Exterior Panel
- (B) Fastenings

Façades

Design ideas



Provincial retirement home, Austria

Fig. 53



Residential building, Austria

Fig. 54



Green electricity power station, St. Veit/Glan, Austria

Fig. 55



Office building, Germany

Fig. 56



Public library, South-Corea

Fig. 57



Office building, Landeck, Austria

Fig. 58

Visible mechanical fastenings with rivets or screws



Fig. 58



Fig. 60

Max Exterior panels can be mounted using rivets on an aluminium substructure, or with screws on a wood framework.

Due to the material properties of Max Exterior, fixed-point and sliding points need to be made to mount the panels.

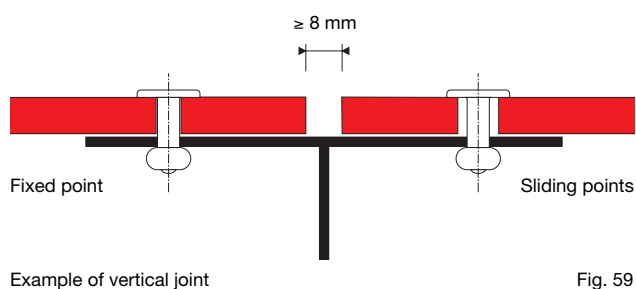


Fig. 59

Fixed points

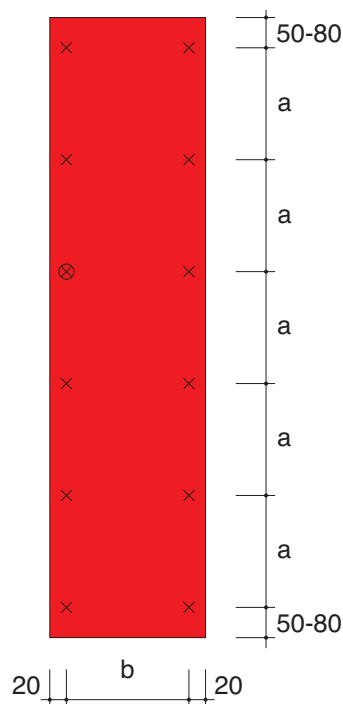
Fixed points are used for uniform distribution (halving) of the expansion and shrinkage movements. The diameter of the drill hole in Max Exterior has to be made with 6,0 mm.

Sliding point

The diameter of the drill hole in Max Exterior must be drilled larger than the diameter of the fastening, depending on the required expansion clearance. This is the shaft diameter of the fastening plus 2 mm for every meter of cladding material starting from the fixed point. The head of the fastening must be big enough so that the drill hole in Max Exterior is always covered. The fastening is placed in such a way that the panel can move. Screws must not be over-tightened. Do not use any countersunk screws.

The centre point of the drill hole in the subconstruction must coincide with the centre point of the drill hole in the Max Exterior panels. Drill with a centring piece. The fastenings should be put in place starting from the middle of panel outwards.

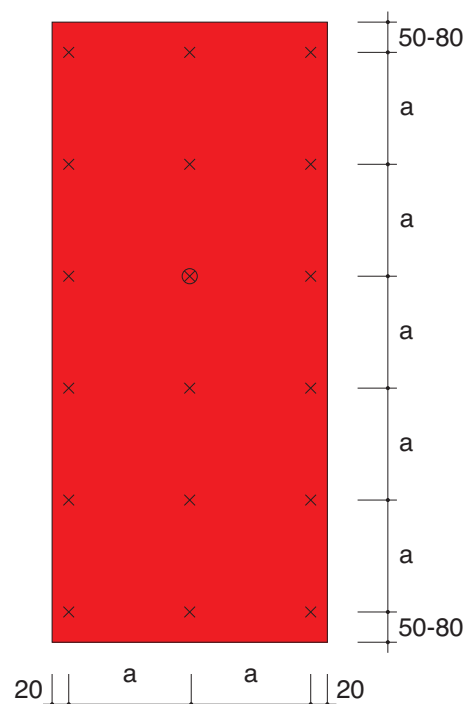
⊗ Fixed point × Sliding points



Single span panel

Fig. 61

Space to the edges



Double span panel

Fig. 62

Edge spacings

For reasons of stability and flatness, the edge spacings must be kept to without fail. The joints must be made at least 8 mm wide so that changes in size can take place without hindrance (Fig. 59).

Fastening Spacings

These are to be chosen in accordance with the structural engineering requirements (calculations) or, if this is not necessary due to the local regulations, according to table no. 5.

For installation with mechanical fastenings

Panel thickness	maximum fastening spacing „b“ single span panel	maximum fastening spacing „a“ double span panel
6 mm	350 mm	400 mm
8 mm	400 mm	450 mm
10 mm	450 mm	500 mm

Table 5

Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.

Fastenings

It is essential that fastenings are made from non-corrosive materials.

Max Exterior Installation screw (Fig. 16) with Torx wrench 20 made of stainless steel CrNiMo 17122 Material no. 1.4401 V4A. Lacquered head on request.

Diameter of drill hole in Max Exterior for installation with screw

Sliding points: 8 mm or as required

Fixed points: 6,0 mm

Alu-Blind rivet (Fig. 12) with big head colour lacquered or with covering cap for outdoor applications with Max Exterior panels on aluminium-substructures.

Rivet sleeve: Al Mg 5 material-no. 3.3535

Rivet pin: steel material-no. 1.4541

Pull-off strength of rivet pin: < 5,2 KN
lacquered haed on request.

Diameter of drill hole in Max Exterior for installation with rivets

Sliding points: 8,5 mm or as required

Fixed points: 5,1 mm

Diameter of drill hole in aluminium substructure: 5,1 mm

The rivets must be put in place with a flexible mouth-piece, clearance 0.3 mm. The rivet, flexible mouthpiece and riveting tool must be suited to each other.

Concealed mounting with gluing system

As an alternative to installation with visible mounting means, Max Exterior panels can be installed with gluing systems on aluminum substructures.

A structural analysis must be performed to verify the stability of each object.

It is important that necessary approvals are obtained from the relevant competent municipal or federal building authorities. Due to the different building regulations in different regions, it could be that the building authorities require additional mechanical securing means such as rivets, screws, or the like.

The gluing process is to be performed in accordance with the manufacturer guidelines for the glue.

FunderMax recommends using gluing systems that are approved by the responsible building authorities for the installation of non-bearing, rear-ventilated facades.

In principle, the following points should be considered during the work process:

Pretreatment of aluminium subconstructions

- ___ Rub down with an abrasive fleece
- ___ Clean with a cleaner of the producer of the glue
- ___ Apply the primer as told by the glue system producer

Pretreatment of Max Exterior panel

- ___ Rub down with an abrasive fleece
- ___ Clean with a cleaner of the producer of the glue
- ___ Apply the primer as told by the glue system producer

All surfaces to be glued must be kept clean, dry and grease-free.

The construction design must ensure that the glue is not subjected to any accumulating moisture.

Recommendation for the production of sandwich elements with Max Exterior



Fig. 63

The sandwich elements are produced as follows:

- They are directly foamed in suitable technical installations.
 - The Max Exterior panel is ground on one side and glued to the core material.
- This type of sandwich element is also easy for hand-workers to make.

Core material:

- ___ Polystyrene rigid foam panel (XPS or EPS)
- ___ Polyurethane rigid foam panel
- ___ Rock wool panel (high density necessary)

Important notes:

Both sides of the Max Exterior panels must be processed in the same direction (grinding direction). The expansion and shrinkage behavior in the lateral direction of the panel is twice that of the longitudinal direction.

Max Exterior panels must be conditioned before gluing. Based on a normal workshop climate, a period of 7-14 days depending on the thickness of the panel is required for sufficient conditioning. All surfaces to be glued must be kept clean, dry and grease-free. If a glue application machine is not available, the glue can be applied with a notched trowel. Follow the manufacturer guidelines for the glue in determining how much to apply.

Foams with a degree of elasticity compensate for any variations in length.

For example due to differences in temperature or humidity between the inside and the outside.

Glue:

Solvent-free reactive adhesives such as polyurethane or epoxy resin adhesives such as:

ICEMA R 145/44 or

ICEMA R 145/12 from the company

H.B. Fuller Austria GmbH

Kleiberit

Attention:

Not every glue can be removed from the panels afterwards.

Individual experimentation with the glues should in any case be carried out before beginning with the gluing work. Please be sure to observe the manufacturer guidelines for the glue.

In order to protect the panel surface, be sure to leave the protective film in place.

When performing the gluing with heat, be sure not to exceed 60° C.

Installation

Sandwich elements with Max Exterior should be installed with sufficient space for expansion (2mm/m) and must be inserted into an enclosing frame.

It must be ensured that moisture does not accumulate in the frame profile.

Drainage for the frame and setting blocks should be provided. The weather side should be taped with glazing tape in preparation for later grouting.

The rebated moldings are sufficiently stable for mechanical fastening (screws, nails, rivets, etc.) in order to easily withstand any tensions or wind pressure that may occur.

The fastening must at least be equal to that of laminated glass.

Application areas for sandwich elements with Max Exterior are gate, door or window parapet panels, partition wall panels, and paneling for automobile-, container-, and trade fair and cold-store construction.

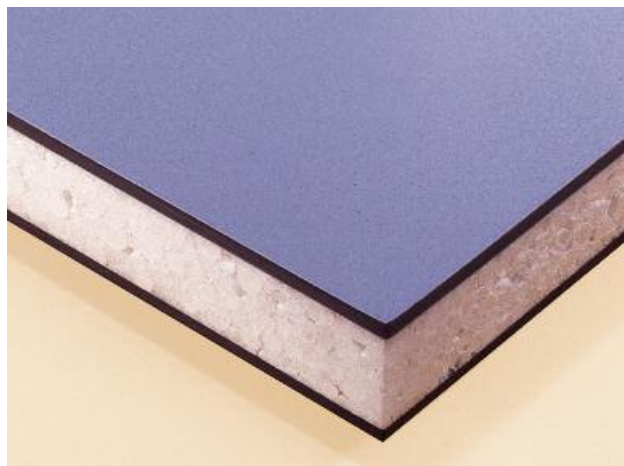


Fig. 64

Balconies and Railings



Content Balconies and Railings

Basics	51
Fastenings for Balconies	53
Principle of Fastening the Railing-structure	54
Fastening and Edge Spacing- Variants	55

Max Exterior panels can be mounted in a variety of different designs as panels for balconies, railings or fencing.

Basics

During construction and installation, care is to be taken that the material is not exposed to standing water. This means that the panels must always be able to dry out.

Connections of Max Exterior panels to one another always have to be made in the same panel direction. Max Exterior can show deviations from being flat (see EN 438-6, 5.3), and this is to be compensated for by the subconstruction being executed so that it is stable and flat. All connections to other components or to the background must be executed firmly. Elastic intermediate spacers to the subconstruction elements and also between subconstruction elements which permit a greater tolerance than ± 0.5 mm must definitely be avoided.

Max Exterior panels can be mounted with rivets or screws. Due to the material properties of Max Exterior panels, fixed point and sliding points need to be made to mount the panels (see page 52, Fig. 67).

Technical notes

The substructure is to be protected against corrosion regardless of the material or system used. Anchoring elements for installation on walls or for installation of the panels must be suitably dimensioned to withstand the local wind loads and meet the local structural requirements.

Verifications are to be submitted to the client.

The necessary space for expansion according to the manufacturer's recommendations must be taken into account when installing Max Exterior panels.

Balconies and Railings

Sliding point

The diameter of the drill hole in Max Exterior must be drilled larger than the diameter of the fastening, depending on the required expansion clearance. This is the shaft diameter of the fastening plus 2 mm for every meter of cladding material starting from the fixed point. The head of the fastening must be big enough so that the drill hole in Max Exterior is always covered. The fastening is placed in such a way that the panel can move.

Rivets are put in place with flexible mouth-pieces. The defined clearance of the rivet head, allows movement of the elements in the drill hole. Clearance + 0.3 mm (Fig. 71).

Screws must not be over-tightened. Do not use any countersunk screws - use washers if necessary. The centre point of the drill hole in the subconstruction must coincide with the centre point of the drill hole in Max Exterior panel. Drill with a centring piece! The fastenings should be put in place starting from the middle of panel outwards.

Fixed point

Fixed points are used for uniform distribution (halving) of the expansion and shrinkage movements. The diameter of the drill hole in Max Exterior is the same size as the diameter of the fastening.

Panel joints

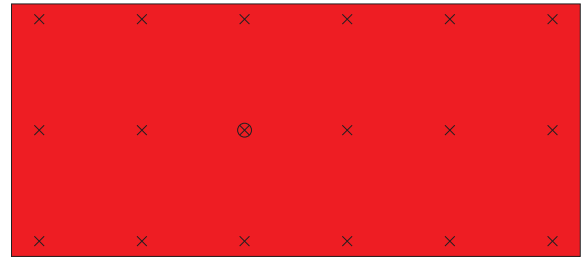
The joints must be made at least 8 mm wide so that changes in size can take place without hindrance.

In order to be able to design the inner sides of balconies so that they are uniformly sight, it is possible to produce Max Exterior panels with a white (rear) side decor 0890 NT balcony white.

Due to the asymmetric composition the fixing distances should be reduced by 15%.

Balcony corners

Especially, in some circumstances, when refurbishing with very uneven subconstructions, it is important to have the front panel protrude about 10 mm in front of the side panel. In this way, inaccuracies can be concealed from the main viewing side.



Double span panel

Fig. 65



Single span panel

Fig. 66

⊗ Fixed point

× Sliding points

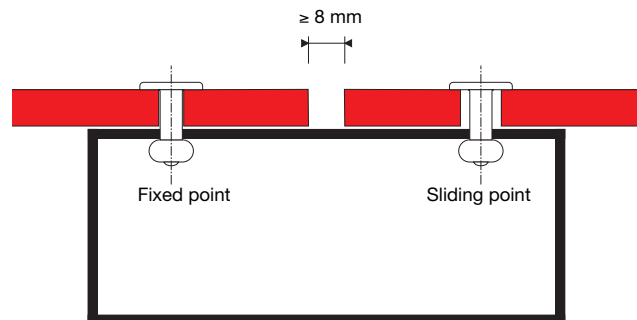


Fig. 67

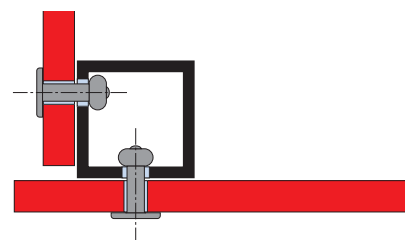


Fig. 68

Fastenings for balconies

It is essential that fastenings are made from non-corrosive materials.

Max Exterior installation screw

for wooden-substructure with Torx 20, lacquered head on request.

Stainless steel: X5 CrNiMo 17122, material no. 1.4401

Diameter of drill hole in Max Exterior Panel:

Sliding points: 8 mm or as required

Fixed points: 6 mm

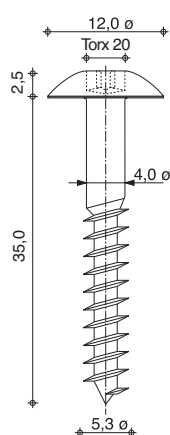


Fig. 69

Max Exterior balcony screw (A2) with bare head, can be lacquered.

Washer between Max Exterior panel and subconstruction made of polyamide.

Diameter of drill hole in Max Exterior Panel:

Sliding points: 6 mm

Fixed points: 6 mm

Diameter of drill hole in substructure:

Sliding points: 8 mm or as required

Fixed points: 6 mm

Screw length = Clamping thickness + ≥ 9 mm

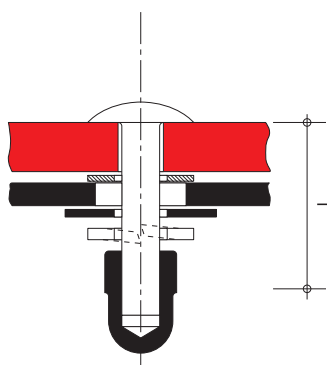


Fig. 70

Aluminium blind rivet with big head colour lacquered or with covering cap for metal subconstructions.

Rivet sleeve: Al Mg 5 material-no. EN AW-5019

Rivet pin: Steel, Material no. 1.4541

Pull-off strength of rivet pin: ≥ 5.6 kN

Diameter of the drill hole in the Max Exterior panel.

Sliding points: 8.5 mm or as required.

Fixed points: 5.1 mm

Diameter of drill hole in the metal subconstruction: 5.1 mm

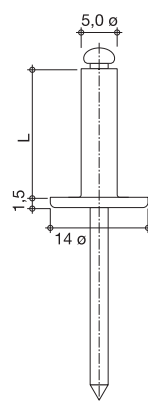


Fig. 71

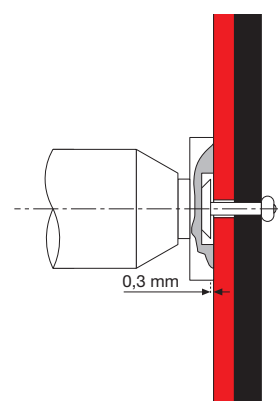


Fig. 72

The rivets must be put in place with a flexible mouthpiece, clearance 0.3 mm.

Glass mounting brackets may be used for fixing Max Exterior panels also. Clamping jaws should have securing pins which prevent the filler elements from falling if the clamp should slacken.

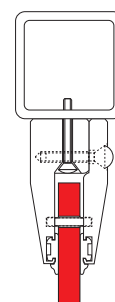


Fig. 73

Approvals from the building authorities for screws and rivets can be obtained from the respective suppliers.

Suppliers of fastening and substructures you will find on page 81 or at „www.fundermax.at“.

Balconies and Railings

Principle of fastening the railing-structure

Fastening below the concrete base

x = Fastening screw
according to the static needs.

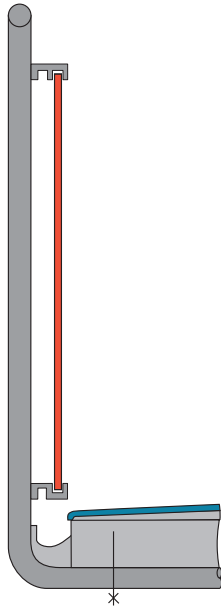


Fig. 74

Fastening on the concrete base

x = Fastening screw
according to the static needs.

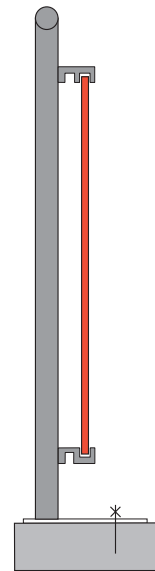
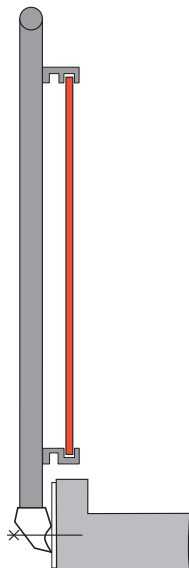


Fig. 76

Fastening on the frontside of the concrete base

x = Fastening screw
according to the static needs.



The railing height is calculated from the upper edge of the concrete upstand as this is to be regarded as the step surface.

Fig. 75

Fastening and Edge Spacing - Variants

A) Max Exterior riveted panels

Riveting done as described on page 53.



Fig. 77

The railing installation variants shown here have been tested at the University of Technology, Hanover in accordance with the ETB guidelines for "Building Components which Safeguard against Falls, June 1985" and passed..

$F1 \leq 120 \text{ mm}$

$F2 \leq 40 \text{ mm}$

Projecting ends E

- for 6 mm panels: $20 \text{ mm} \leq E \leq 120 \text{ mm}$

- for 8 mm panels: $20 \text{ mm} \leq E \leq 200 \text{ mm}$

- for 10 mm panels: $20 \text{ mm} \leq E \leq 250 \text{ mm}$

Panel thickness
in mm

Height of railing*
 $H = 900-1100 \text{ mm}$
= maximum fastening spacing

6 mm	A	350 mm
	L	800 mm
8 mm	A	350 mm
	L	950 mm
10 mm	A	400 mm
	L	1000 mm

* The height of the railing must comply with the local building regulations.

e.g. **OIB Directive 1 - use and accessibility**

The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

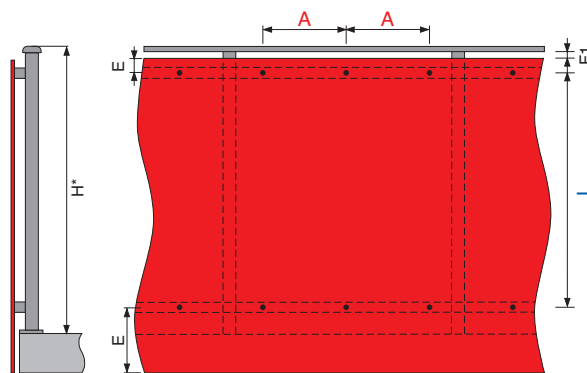


Fig. 78

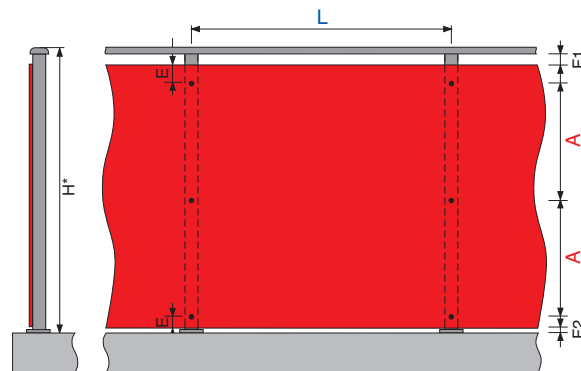


Fig. 79

Balconies and Railings

Fastening and Edge Spacing - Variants

B) Max Exterior screwed panels
 Balcony screws as described on page 53.



Fig. 80

- F1 ≤ 120 mm
 F2 ≤ 40mm
 Projecting ends E
 - for 6 mm panels: 20 mm ≤ E ≤ 120 mm
 - for 8 mm panels: 20 mm ≤ E ≤ 200 mm
 - for 10 mm panels: 20 mm ≤ E ≤ 250 mm

Panel thickness in mm	Height of railing* H = 900 - 1100 mm = maximum fastening spacing	
6 mm	A	450 mm
	L	850 mm
8 mm	A	500 mm
	L	1000 mm
10 mm	A	550 mm
	L	1100 mm

* The height of the railing must comply with the local building regulations.
 e.g. **OIB Directive 1 - use and accessibility**
 The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

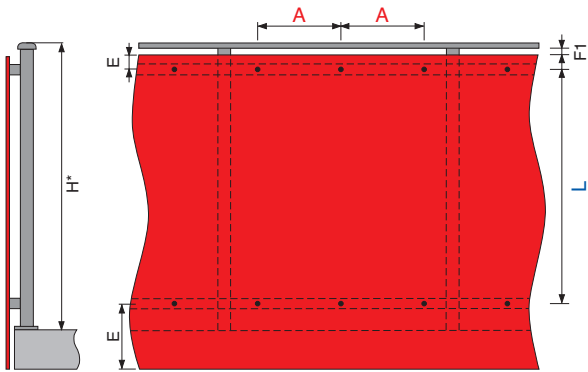


Fig. 81

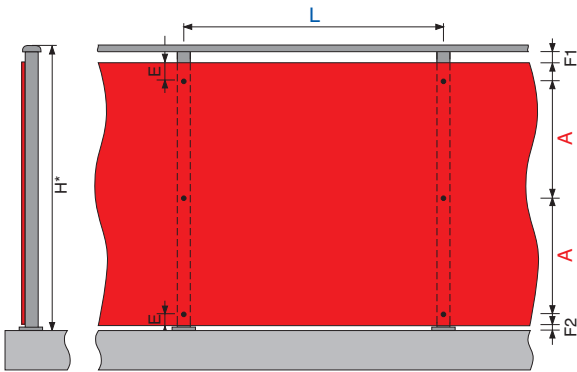


Fig. 82

Fastening and Edge Spacing - Variants

C) Max Exterior Alucompact panel - screwed. Balcony screws as described on page 53



Fig. 83

$F1 \leq 120 \text{ mm}$
 $F2 \leq 40 \text{ mm}$
 Projecting ends E
 - for 6 mm panels: $20 \text{ mm} \leq E \leq 250 \text{ mm}$

Panel thickness in mm		Height of railing* $H = 900\text{-}1100 \text{ mm}$ = maximum fastening spacing
6 mm	A	500 mm
	L	1350 mm

* The height of the railing must comply with the local building regulations.
 e.g. **OIB Directive 1 - use and accessibility**
 The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

Description:

Max Exterior Alucompact panels each have an aluminium band positioned below the décor layer. These aluminium bands give an extremely high breaking strength and stiffen the panel. Due to this, very large fastening spacings are possible with low material thicknesses. The working and machining is to be carried out as for the Max Exterior panels.

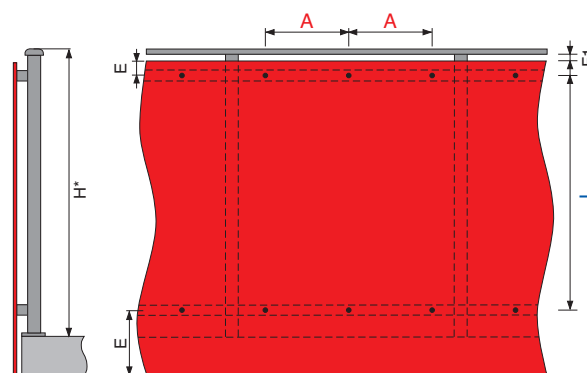


Fig. 84

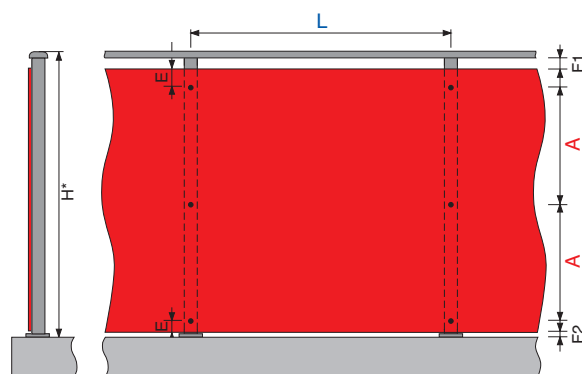


Fig. 85

Balconies and Railings

Fastening and Edge Spacing - Variants

D) Max Exterior Alucompact Panels perforated and screwed. Balcony screws as described on page 53.



Fig. 86

$F1 \leq 120 \text{ mm}$
 $F2 \leq 40 \text{ mm}$
Projecting ends E
- for 6 mm panels: $20 \text{ mm} \leq E \leq 250 \text{ mm}$

Panel thickness in mm	Height of railing* $H = 900-1100 \text{ mm}$ = maximum fastening spacing
6 mm	A 450 mm L 1000 mm

* The height of the railing must comply with the local building regulations.
e.g. **OIB Directive 1 - use and accessibility**
The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

Due to the extremely high breaking strength, it is also possible to execute these Max Exterior Alucompact panels perforated. This is normally done by milling with CNC machines.
FunderMax offers this service. We invite your request.

The fastening spacings given in the table relate to hole patterns for which the remaining webs $\geq$ the hole diameter. This variant is ETB tested. The holes must not provide climbing assistance for small children. If you have any questions, please contact our Application Engineering Department.

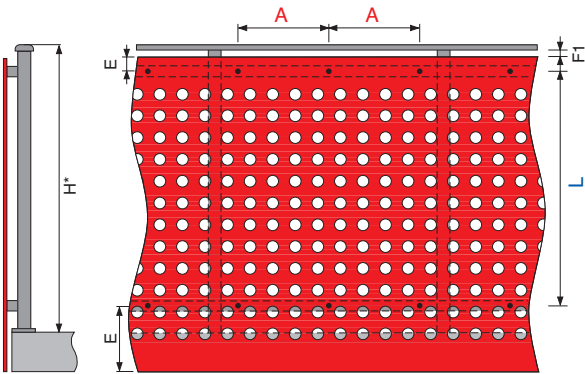


Fig. 87

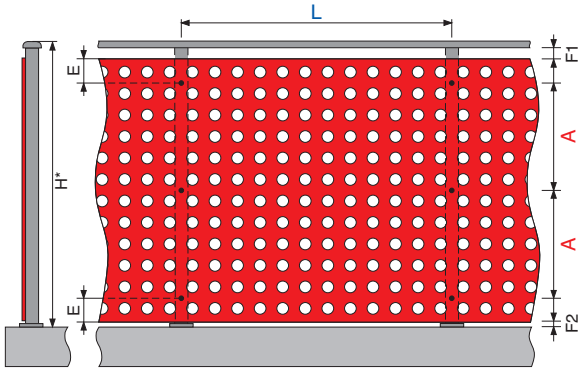


Fig. 88

Axis distances are generally to be made in straight square rows.

Standard hole diameter:

25 mm, 30 mm, 40 mm, 50 mm

Pay attention to the local building regulations.

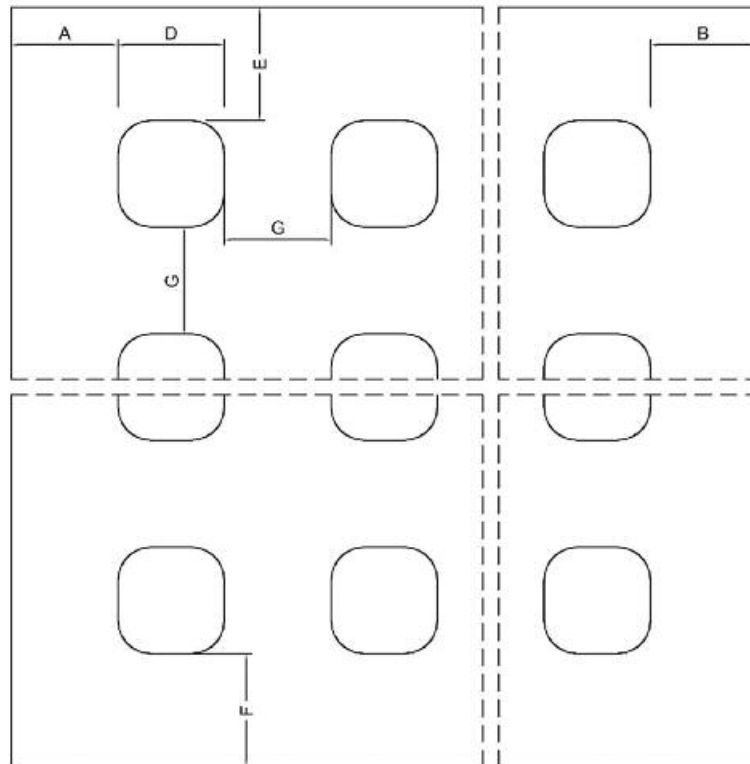


Fig. 89

Legend:

- Ⓐ Edge distance horizontal
- Ⓑ Edge distance horizontal
- Ⓓ Diameter of hole
- Ⓔ Edge distance vertical
- Ⓕ Edge distance vertical
- Ⓖ Hole distance horizontal and vertical
- Ⓗ Centre distance horizontal and vertical

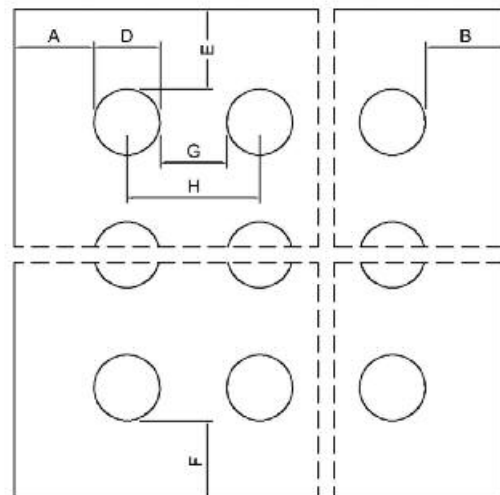


Fig. 90

Balconies and Railings

Fastening and Edge Spacing - Variants

E) Max Exterior Panels panels with clamping sections fixed (glass mounting brackets)



Fig. 91

$F1 \leq 120 \text{ mm}$
 $F2 \leq 40 \text{ mm}$
 $20 \text{ mm} \leq E \leq 20 \times \text{Panel thickness}$
 $G \geq 35 \text{ mm}$

At least 3 fastening points must be positioned per side.
For each panel element a bracket with safety pin has to be used.

Panel thickness in mm	Height of railing* H = 900-1100 mm = maximum fastening spacing	
8 mm	A	450 mm
	L	950 mm
10 mm	A	500 mm
	L	1100 mm
13 mm	A	550 mm
	L	1150 mm

* The height of the railing must comply with the local building regulations.
e.g. **OIB Directive 1 - use and accessibility**
The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

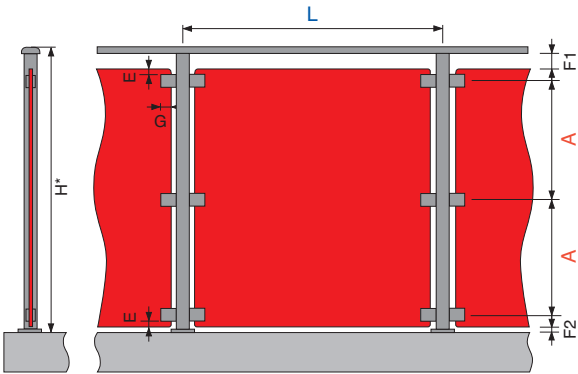


Fig. 92

Fastening and Edge Spacing - Variants

F) Max Exterior Panels with aluminium edge strips fixed. Dimensioning according to structural engineering requirements



Fig. 93

$F1 \leq 120 \text{ mm}$
 $F2 \leq 40 \text{ mm}$
 $B \geq 1300 \text{ mm}$ = Length of element
 $P \geq 28 \text{ mm}$ Depth of profile
 $D \geq 8 \text{ mm}$ Expansion gap

Attention must be paid to the drainage of the bottom profile!

Panel thickness in mm	Height of railings* H = 900-1100 mm = maximum fastening spacing	
6 mm	A	950 mm
8 mm	A	1150 mm

* The height of the railing must comply with the local building regulations.

e.g. **OIB Directive 1 - use and accessibility**

The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

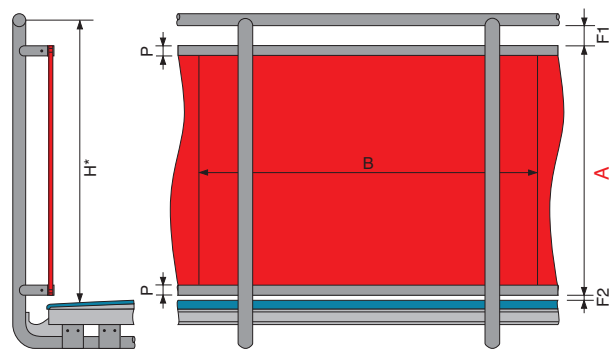


Fig. 94

Balconies and Railings

Fastening and Edge Spacing - Variants

G) Curved balcony with MAX EXTERIOR panels and metal edge strips. Dimensioning according to structural engineering requirements.



Fig. 95

The top and bottom edge profiles (2 mm thick) must be pre-bent. Only sliding line fastenings are allowed (no point fastenings). The straight ends and joints of the exterior panels must likewise be edged. (U-profile, H-profile).

Radius at least 3 m

- $F1 \leq 120 \text{ mm}$
- $F2 \leq 40 \text{ mm}$
- $B \geq 1300 \text{ mm}$ = Length of element
- $P \geq 28 \text{ mm}$ Depth of profile

Attention must be paid to the drainage of the bottom profile!

Panel thickness in mm	Height of railing* $H = 900\text{--}1100 \text{ mm}$ = maximum fastening spacing
6 mm	A 1000 mm

* The height of the railing must comply with the local building regulations.
e.g. **OIB Directive 1 - use and accessibility**
The height of the railing must be at least 1000 mm; starting from a height of fall with more than 12 m, measured from the base, must be minimum 110 cm.

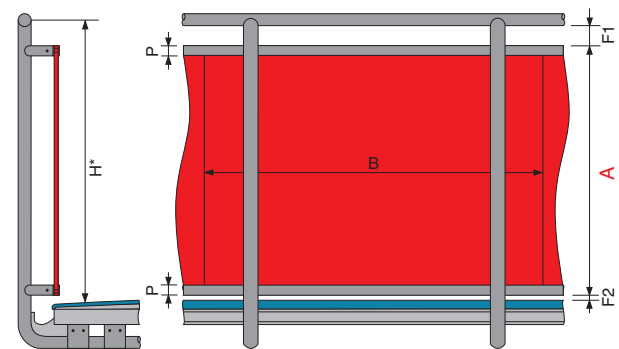


Fig. 96

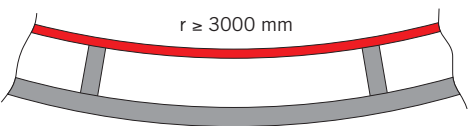


Fig. 97

Balcony dividing wall

At least 3 fastening points have to be provided on each side.

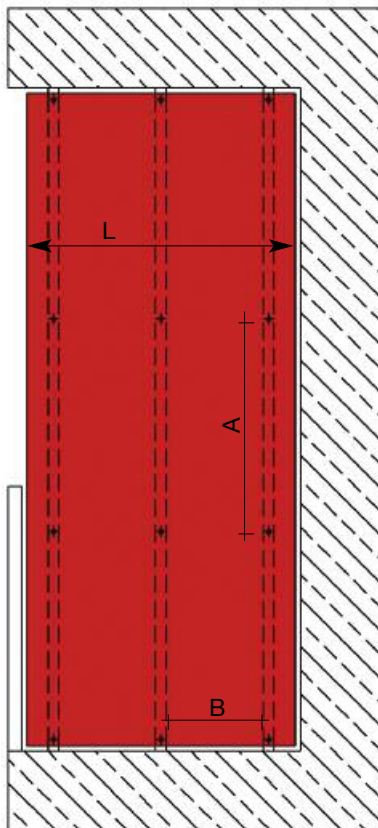
$$F \geq 8 \text{ mm}$$

$$20 \text{ mm} \leq G \leq 30 \text{ mm}$$

$$50 \text{ mm} \leq E \leq 80 \text{ mm}$$

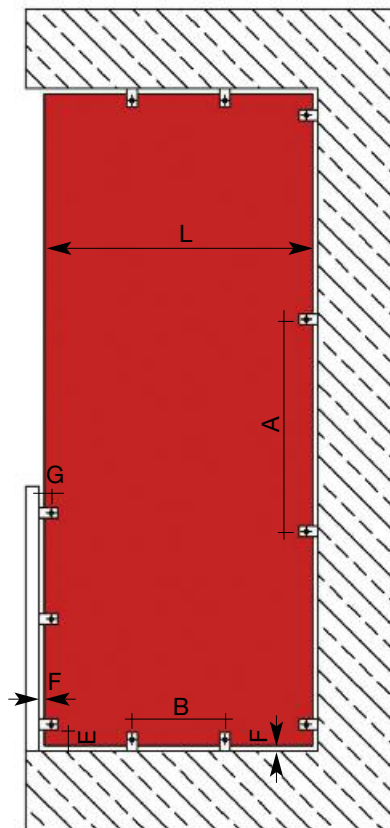
Panel thickness
in mm

6 mm	A	470 mm
	B	600 mm
8 mm	A	770 mm
	B	620 mm
10 mm	A	900 mm
	B	770 mm



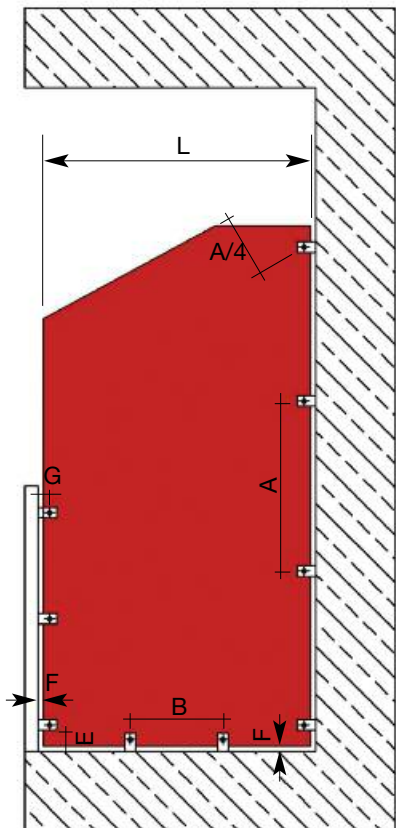
Variant 1

Fig. 97



Variant 2

Fig. 98



Variant 3

Fig. 99

Balcony dividing wall (variant)

Construction using metal rabbet pipes. Max Exterior panel thicknesses according to the bay size, 6-10 mm. Dimensions of the frames according to the structural engineering requirements.

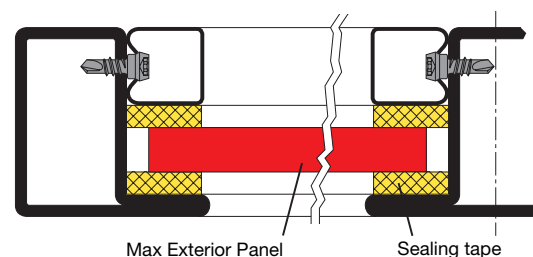


Fig. 101

Balcony Floor Panel

Max Exterior Balcony Floor Panel

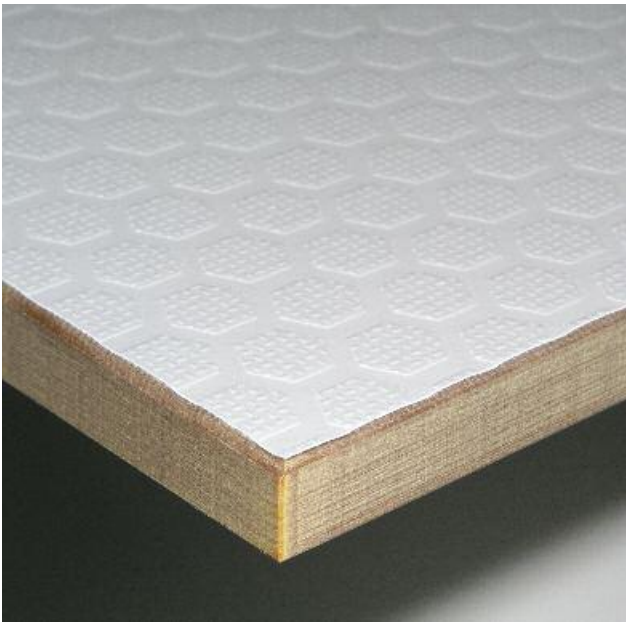


Fig. 102

Panel formats are production formats. If exact dimensions and angles are necessary, we recommend an all-sided blank. Depending on the method of trimming, net size is reduced by ca. 10 mm.

Core F-Quality, flame-retardant, colour brown

Thickness	
6,0 - 20,0 mm (depending on the static requirement)	
Thicknesses	Tolerances (EN 438-6.5.3)
6,0 . 7,9 mm	±0,4 mm
8,0 . 11,9 mm	±0,5 mm
12,0 . 15,9 mm	±0,6 mm
16,0 . 20,0 mm	±0,7 mm



Surface Hexa

Fig. 103

Material description

The Max Exterior balcony floor panel is a high-quality construction product that is perfect for permanent use on balconies, loggias, staircases, landings and the like because of its anti-slip hexagon surface among other things.

Max Exterior panels are duomer high-pressure laminates (HPL) conforming to EN 438-6 Type EDF with additional, extremely effective, weather protection. This weather protection is made from double hardened Acrylic-Polyurethan-resins. They are produced in lamination presses at great pressure and high temperature. Max Exterior panels carry the necessary CE label for applications in the construction sector.

Surface	Front side:	NH - Hexa
	Rear side:	NT

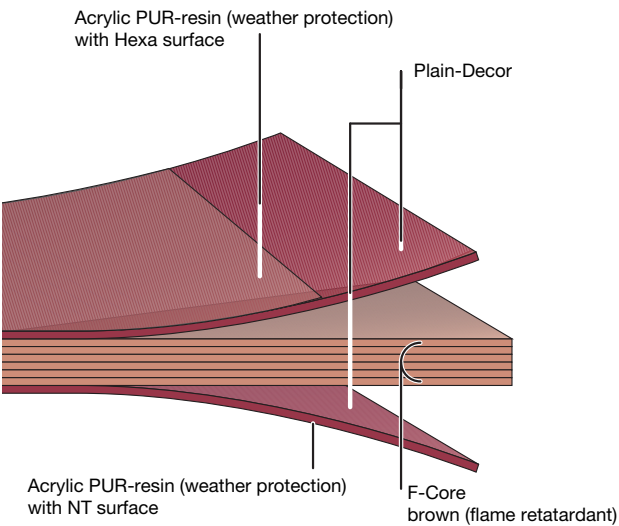
Decors

two-sided; see our valid Max Exterior delivery programme or at www.fundermax.at

Format

on request or on our website - www.fundermax.at - you may find the up-to-date information.

Tolerances	+10 - 0 mm (EN 438-6, 5.3)
------------	----------------------------



Structure of Balcony Floor Panel

Fig. 104

Basics

Max Exterior balcony floor panels can be screwed or glued to a variety of suitable substructures with an incline.

During construction and installation it is important to ensure that the material is not subjected to accumulating moisture. This means that the panels must always be able to dry off. Generally, balconies should be provided with an incline of 1.5 - 2%.

Due to the material properties of Max Exterior balcony floor panels, suitable room for expansion must be taken into account. The joints between panels must be at least 8 mm wide.

For substructures that run parallel to joints, the gaps between the panels must always be placed above a substructure, and can additionally be held at the same

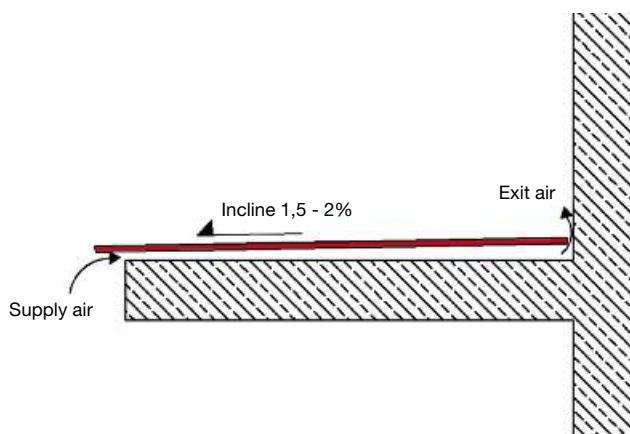
height by suitable joints, such as tongue and groove joints for example, that allow the appropriate room for expansion.

Elastic intermediate layers between the panel and the substructure, as well as between parts of the subconstruction, that allow a tolerance of greater than ± 0.5 mm are absolutely to be avoided.

When installing Max Exterior balcony floor panels on a wooden substructure with screws, fixed and sliding points must be formed.

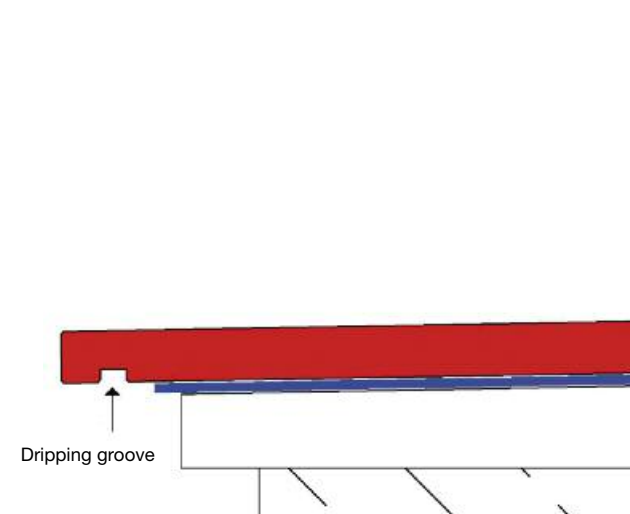
Suitable rear-ventilation is to be ensured so that the panels can be conditioned on both sides. The panels should not be allowed to rest fully on the ground below.

The substructure is to be protected against corrosion regardless of the material or system used.



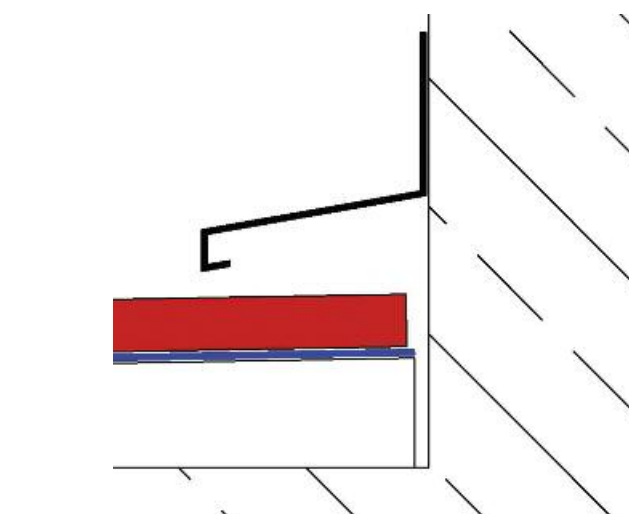
Vertical section principle for rear-ventilation and inclines

Fig. 105



Vertical section principle of a dripping groove

Fig. 106



Vertical section principle of the facade connection

Fig. 107

Balcony Floor Panel

Guidelines for laying the floor panels

Fixing distances

The substructure slats must have a width of ≥ 60 mm, in the joint area ≥ 80 mm.

Edge distances

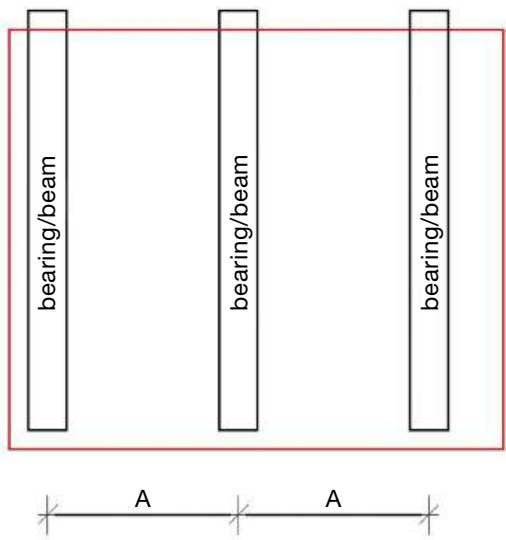
For installation with screws, the edge distance can be 20 - 100 mm.

Panel joints and joint formation

The joints must be at least 8 mm wide so that changes in size can take place without hindrance. The joints are filled with permanently elastic sealant SIKAFlex 221 (colors: black, white, gray). To ensure a lasting surface adhesion, it is absolutely necessary to pre-treat the panels with Sika Primer 209N.

For designs with tongue and groove joints, it must be observed that the sealant only sticks to the edges of the Max Exterior balcony floor panels and not to a third edge (tongue) in order to ensure the necessary space for expansion.

A permanently elastic rubber band can also be placed in the groove.



Distances of the subconstruction

Fig. 108

Traffic load kN/m²			
max. allowable deflec- tion of 1/300	3,0	4,0	5,0
panel thickness	Support spacing in mm		
A ≤ 500			
12 mm	X	-	-
16 mm	X	X	X
18 mm	X	X	X
20 mm	X	X	X
A ≤ 600			
16 mm	X	X	-
18 mm	X	X	X
20 mm	X	X	X
A ≤ 800			
20 mm	X	X	-

X = allowable

Table 6



Balcony floor panel site in St. Veit/Glan, Austria

Fig. 109



Substructure/beams

Fig. 110



Incline and panel joints

Fig. 111



External corner and edges

Fig. 112



Incline

Fig. 113

Balcony Floor Panel

Mounting of Max Exterior balcony floor panels mechanical non visible fixed

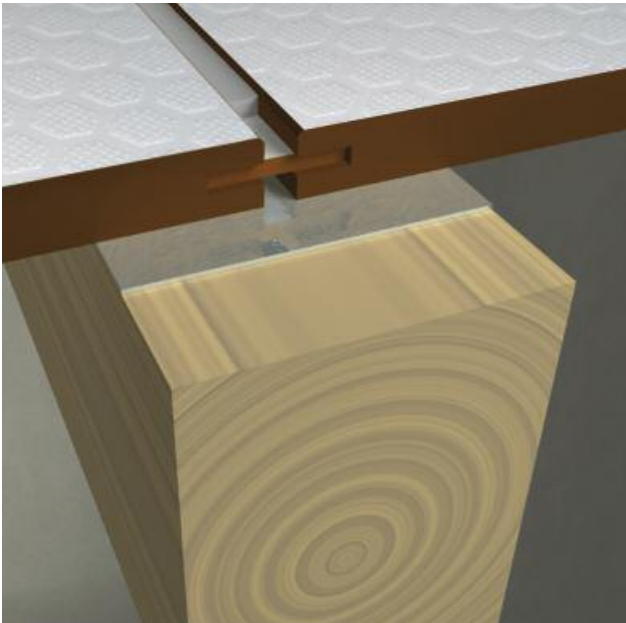


Fig. 114

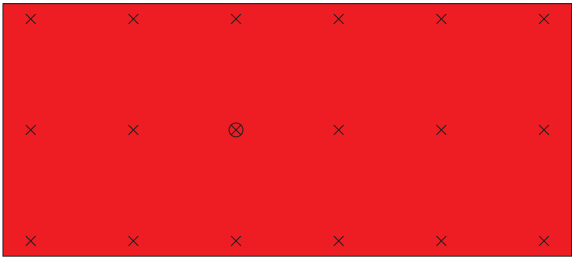
Fixed point

Fixed points serve the uniform distribution (halving) of the swelling and shrinkage movements.

Sliding point

Based on how much space is needed for expansion, the diameter of the drill hole in the substructure should be that much larger than the diameter of the fastening means. The diameter of the shank of the fastening means plus 2 mm per meter of paneling from the fixed point. The fastening means is set such that the panel can move. Screws must not be overtightened. Do not use counter sunk screws.

The center of the drill hole in the substructure must coincide with the center of the drill hole in the Max Exterior panel. Suitable drilling aids (drilling equipment) should be used. The fastenings should be put in place starting from the middle of the panel outwards.



Double span panel

Fig. 115



Single span panel

Fig. 116

⊗ Fixed point

× Sliding point



Balcony floor panel invisible fixed (screwed) on wooden beam

Fig. 117



Balcony floor panel invisible fixed (screwed) on steel beam

Fig. 118

Mounting of Max Exterior balcony floor panels with gluing system

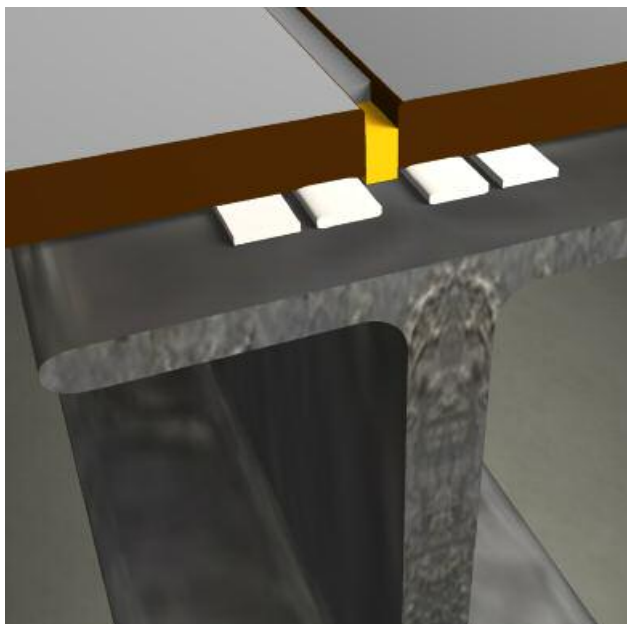


Fig. 119

Note:

Ensure that the Max Exterior (balcony floor-) panel is not subjected stress when gluing it into place. When installing the Max Exterior panel, be sure to take the expansion and shrinkage behavior into account.

Gluing

An alternative to mechanical fastening is gluing the Max Exterior balcony floor panel with the gluing system SIKA-Plastiment - the Sika Tack Panel which was specially developed for this purpose.

This works on conventional planed wood substructures or on metal.



Balcony floor panel with secret fixing (glued) on wooden beam

Fig. 120



Balcony floor panel with secret fixing (glued) on steel beam

Fig. 121

Roof Claddings

General information



Fig. 122

In order to meet the current architectural demands, trend-setting design variations allow the use of a product for both the facade as well as the roof. Design and planning for these constructions is to be carried out with the utmost care, particularly regarding the detail connections. Supporting structures in conjunction with decorative panel materials allow both the architect as well as the builders to provide the object with a special, independent character. By reducing the external shell to the essential optical fields, the gaze of the viewer is consciously directed by the shape and color. Of course nearly all the advantages of the non-bearing, rear-ventilated facade can be applied to the roof: design, engineering, and cost-efficiency

Construction design

Max Exterior can be used for ventilated roof structures taking into account the following points: Minimum roof pitch 6°

Verification of stability

This must be determined for all applications in the facade and roof areas for each project and must be performed under consideration of the regional building regulations.

Wind load

Snow and wind loads are to be taken into account when determining the proper fasteners and spacing of the substructure.

For Austria: Eurocode ÖNORM EN 1991-1-4

For Germany: DIN EN 1991-1-4

Ventilation

Ventilation between the subroof and the panel (height of the counter slats) depends on the rafter length and roof pitch.

Subroof

The subroof must be designed and constructed as a seamless water transport layer for all roof pitches and structural variations. The drainage takes place in the substructure of the facade.

Substructure

Depending on the design, the construction consists of horizontal or vertical support profiles and counter slats sufficiently fixed mechanically to the counter slats.

Counter slats

If wooden counter slats are used, they are to be permanently protected against weathering and thus a loss in their load-bearing abilities. The dimensions of the counter slats depends on the rear-ventilation cross-section, however they must be at least 60 x 40 mm. The slat spacing is to be determined through structural analysis.

Support slats (-profile)

Vertical or horizontal metal support profiles serve as support slats; single profiles serve as middle supports, and in the joint areas double profiles are used which also serve a drainage function.

Component connections

For example such as skylights, ventilation and exhaust pipes, etc. are to be made with the appropriate sheet metal flashing.

Panel material - technical data:

Product classification B-s2, d0 according to EN 13501-1

Panel installation

The roof panels are fastened to the support profiles with stainless steel blind rivets. The fastening distances are to be determined for each object individually.

Fixed point, sliding points

The fastening of the Max Exterior panel to the support profiles requires sliding and fixed point installation.

Drill holes in the panel

The drill hole diameter for the fixed point has to be 5.1 mm, and for the sliding point 8.5 mm or as required.

The rivets must be centered and put in place with a flexible mouthpiece.

Drill holes in the support profile

The drill holes in the support profile should be 5.1 mm in diameter and aligned with the drill holes in the panel.

Fixing the support profile

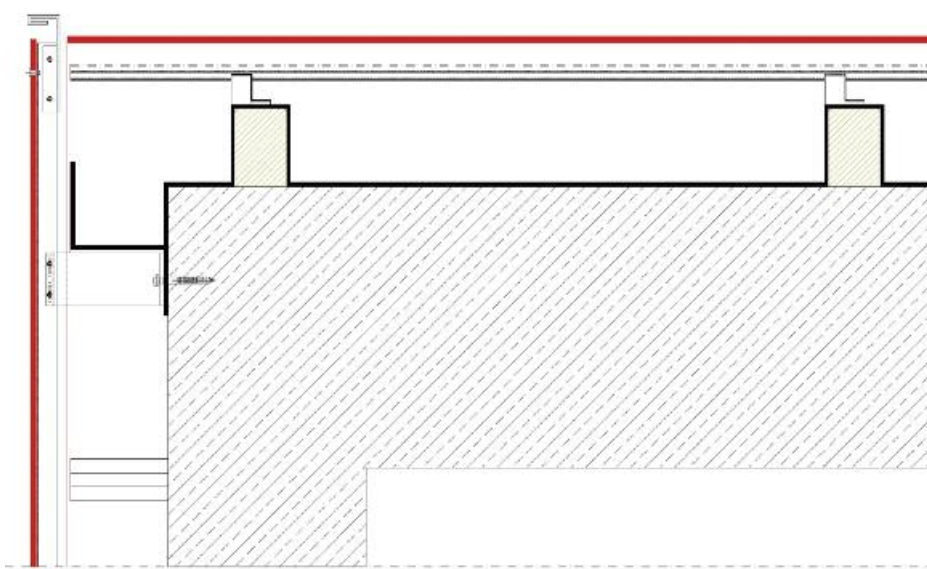
Depending on the design of the counter slats, the support profile is fixed in place with suitable screws or rivets.

Soiling

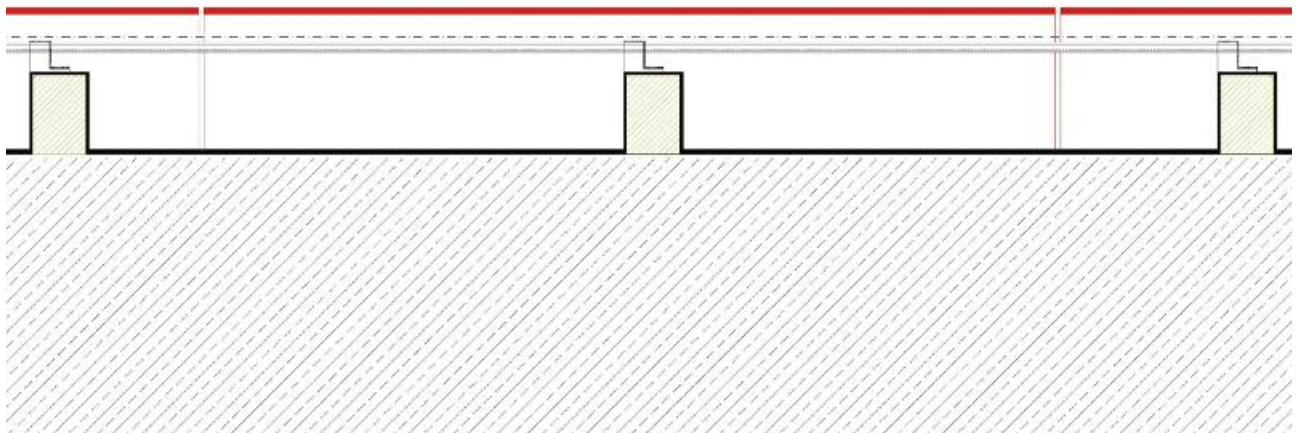
Avoid soiling though:

- ___ Construction measures
- ___ Higher elevated roof surfaces
- ___ separate drainage.

Construction-details roof with Max Exterior Panels



Vertical section of the bargeboard



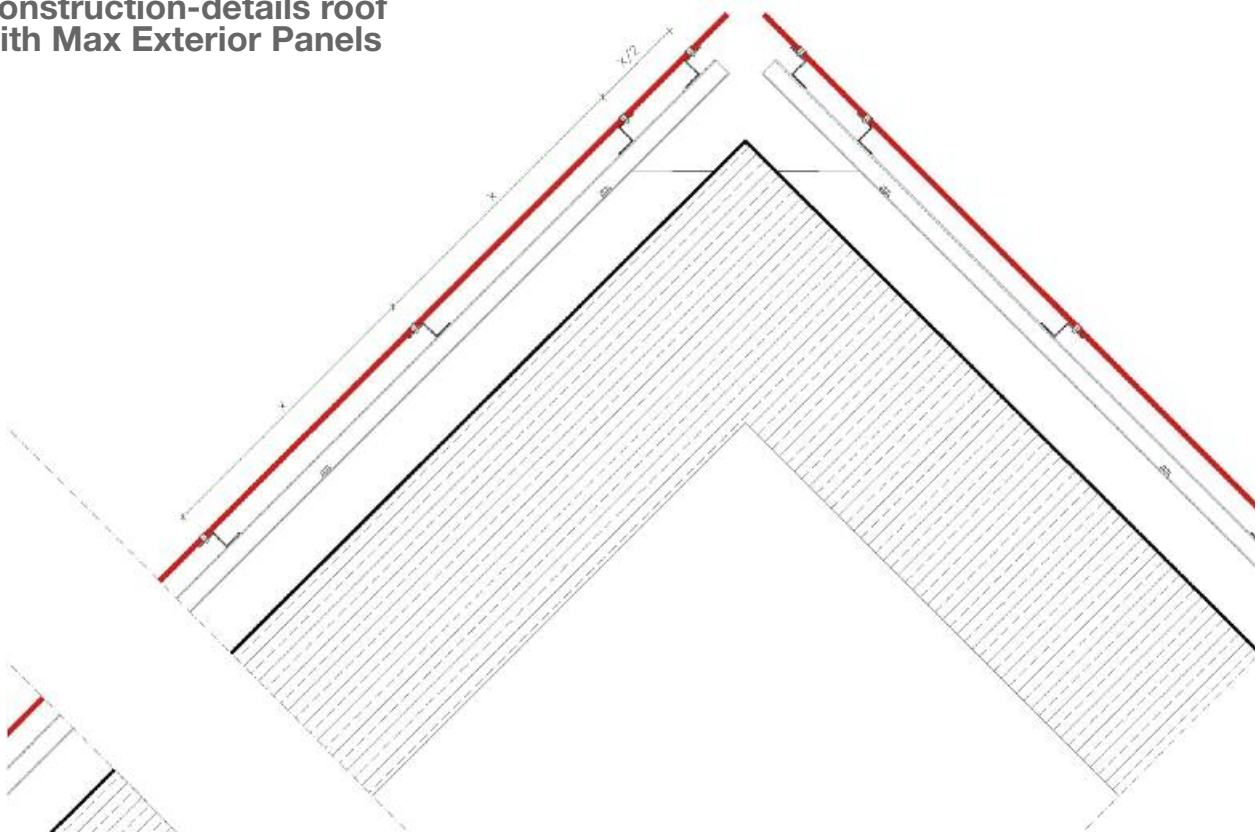
Vertical section of the roof structure

Roof structure from outside to inside:

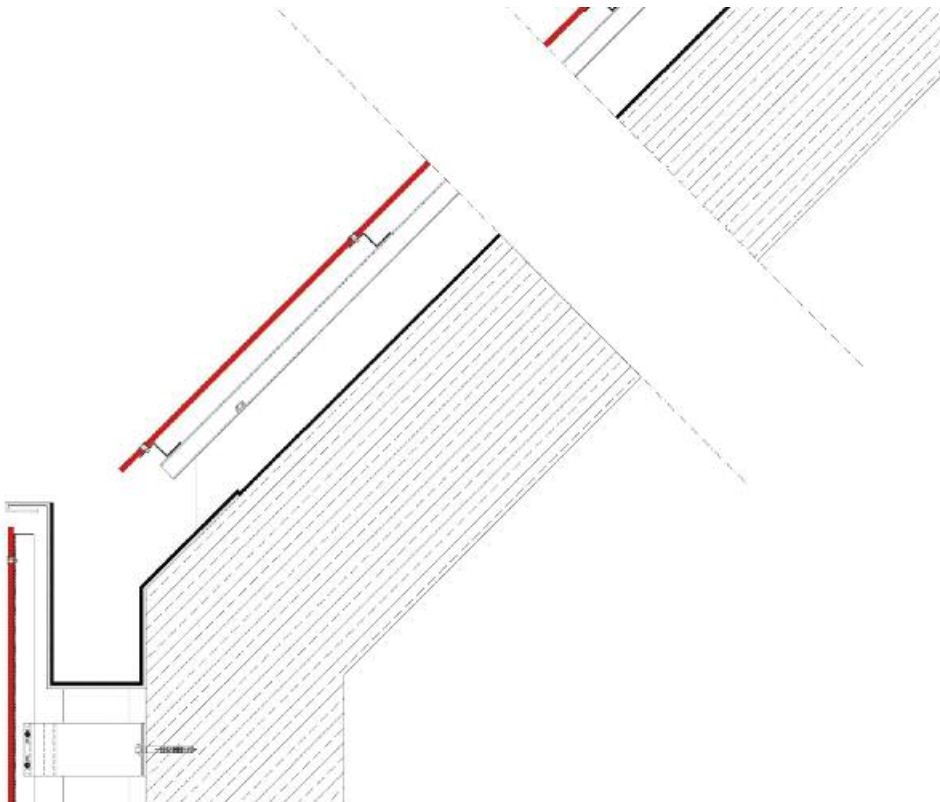
- ___ Max Exterior panel F-core 8 mm
- ___ Support profile (dimensions according to structural requirements). For example: Z-profile
- ___ Roof seal – elastomer e.g.: EPDM
- ___ Counter or base slats
- ___ Support slats according to fire resistance and country-specific building codes

Roof Claddings

Construction-details roof with Max Exterior Panels

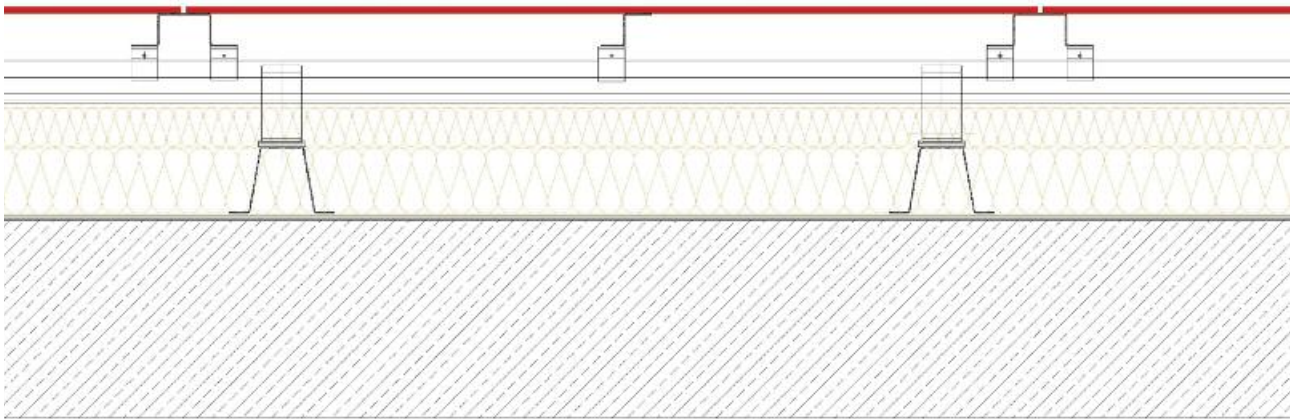


Vertical section of the apex of the roof-structure

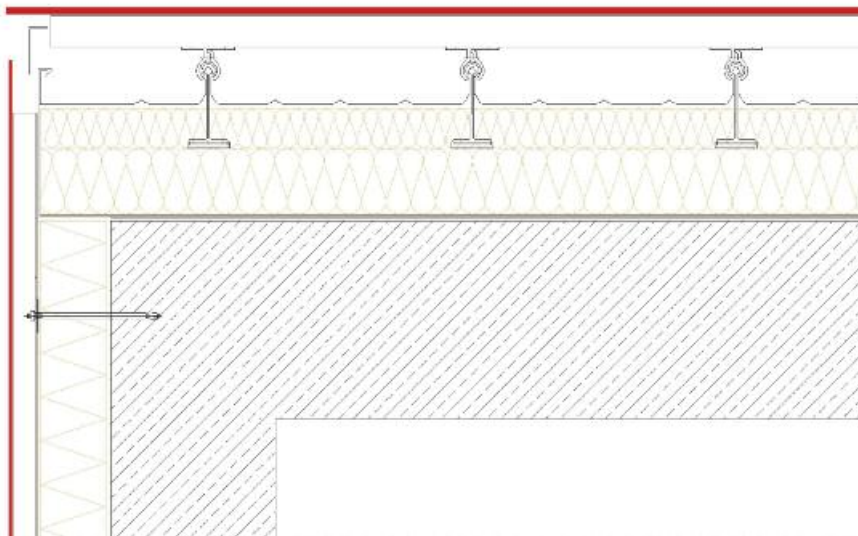


Vertical section of the eave of the roof-structure

Construction-details roof with Max Exterior Panels



Vertical section of the structure of the roof



Vertical section of bargeboard



Fig. 123

Construction

Max Exterior can be used for canopies taking the following points into account. During construction and installation it is important to ensure that the material is not subjected to accumulating moisture. Max Exterior panels must always be connected to each other in the same direction.

Max Exterior panels may exhibit planar deviations. These should be corrected through a stable, level substructure. All connections to other components or the sub-base are to be force-fitted.

Panel joints should overlap, or be kept at the same level through appropriate connections such as tongue and groove or H-profiles that allow sufficient space for expansion.

Minimum roof pitch: 6°

Verification of stability:

This must be determined for all applications in the facade and roof areas as well as for porches for each project and must be performed under consideration of the regional building regulations.

Wind load

Snow and wind loads are to be taken into account when determining the proper fasteners and spacing of the subconstruction.

For Austria: Eurocode ÖNORM EN 1991-1-4

For Germany: DIN EN 1991-1-4

Soiling

Avoid soiling through:

- Construction measures.
- Higher elevated roof surfaces, separate drainage.



Fig. 124



Fig. 125



Fig. 126

Further applications with Max Exterior



Fig. 127



Fig. 129



Fig. 128



Fig. 122



Fig. 130



Fig. 131



Fig. 133



Fig. 132



Fig. 134

Recommendations for working

Transport and Handling

Handle MAX EXTERIOR panels with care in order not to damage the edges and surfaces of the high-quality material.

In spite of the excellent surface hardness and the installation protection film, the stack weight of MAX EXTERIOR is a possible cause of damage. Therefore, any form of dirt or dust between the panels must definitely be avoided.

Max Exterior must be secured against slippage during transport. When loading or unloading, the panels must be lifted. Do not push or pull them over the edge.

Transport protection films must always be removed from both sides at the same time.

The transport protection film must not be exposed to heat or direct sunshine.

Storage and Air Conditioning

must be stacked horizontally on flat, stable supports and supporting panels. The goods must lie completely flat.

Cover plates must always be left on the stack. The top cover should be weighted down.

After removal of panels, PE films must again be closed over the stack.

The same applies, in principle, for cut-panel stacks. Incorrect storage can lead to permanent deformation of the panels.

Max Exterior is to be stored in closed rooms under normal climatic conditions.

Climate differences on the two surfaces of a panel are to be avoided.

With pre-installed fastening elements, therefore, care is to be taken that the climatic effect is uniform on all sides. Use intermediate layers of wood or plastic.

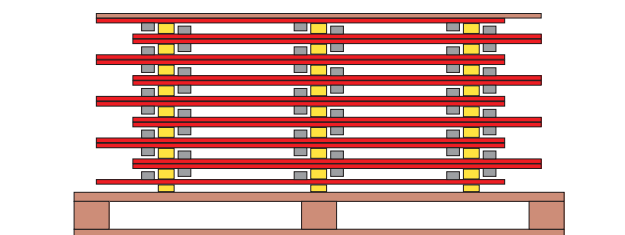


Fig. 135

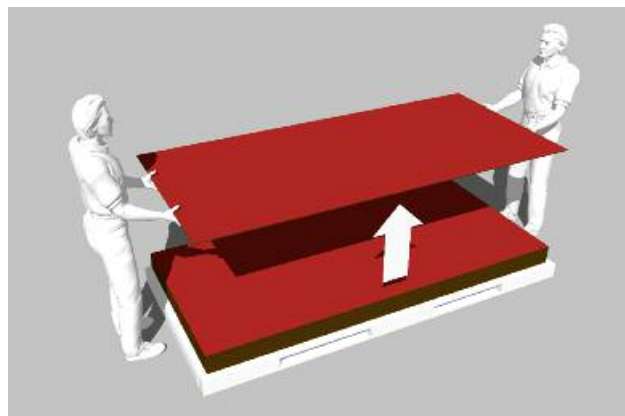


Fig. 136



Fig. 137

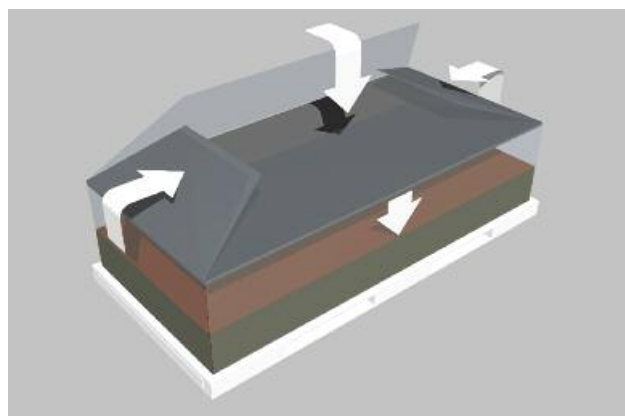


Fig. 138

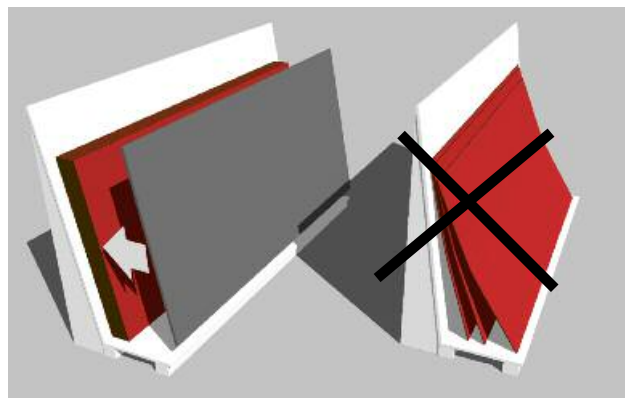


Fig. 139

Machining

Max Exterior can be easily machined, like hardwood, laminated chipboard or bonded chipboard, with carbide-tipped woodworking tools.

Saw with stable circular saws or hand-held circular saws for installation cutting. All well-known producers of hand-held machines (Festo, Bosch, Metabo and many more) offer guide rails.

Carbide-tipped saw blades with (group) trapezoidal teeth FZ/TR - see Figure 142 (e.g. Leitz) have produced good results. To achieve good cutting quality, feed EXTERIOR as smoothly as possible.

Cutting rate:

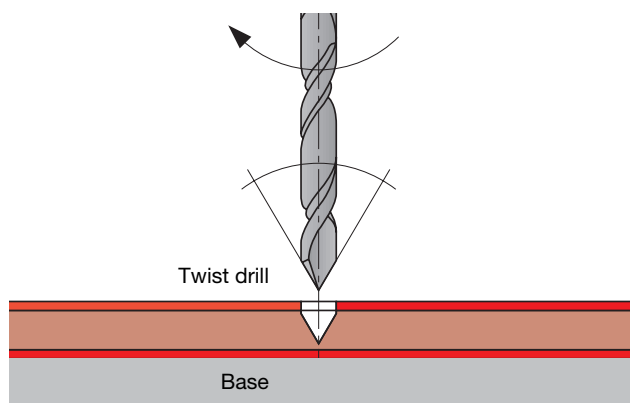
50-60 m/sec depending on tool diameter and rpm, e.g. 4000 rpm, Ø 250 mm, 64 teeth.

Depth of cut per tooth: 0.02 - 0.04 mm

Feed: 6 - 10 m/min depending on thickness.

Sharp saws and optimum setting of the saw blade projection are necessary in order to achieve clean cut edges.

For fitting work and chamfering on the construction site, electrical hand planes with a chamfering or a mitring groove have proven themselves.



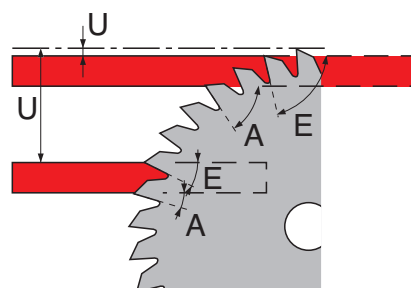
Use HSS twist drills for manual drilling. Drill tip $\leq 90^\circ$. When using carbide-tipped drills use pillar drilling machines - carbide metal tends to break off when drilling by hand.

Do not allow the drill to break through the backside of the panel, or if necessary, drill against an appropriate base applying enough pressure to ensure a clean exit hole.

Cleaning

Max Exterior has a hygienic, sealed surface - it needs no looking after. Cleaning is necessary under certain circumstances. This is most easily done as follows: for cleaning use clean, warm water, clean cloths or rags, and soap (household cleaners which are sold in shops). Avoid scouring substances.

For Max Exterior surfaces, solvent cleaners can be used for removing stubborn marks such as varnish, paint sprays (graffiti) etc.



If the projection 'U' becomes greater, the top cut edge gets better and the bottom cut edge gets worse, and vice versa.

E = Entry angle

A = Exit angle

Fig. 141

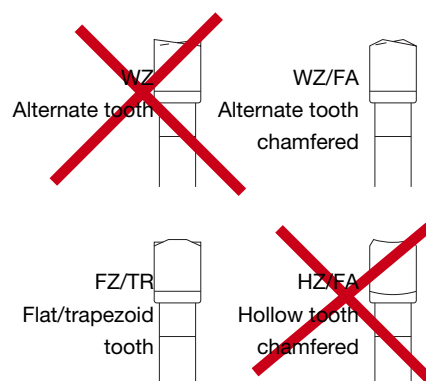


Fig. 142

Max Exterior and the environment



Fig. 141

Warranty

FunderMax warrants the quality of Max Exterior within the framework of the given values and test standards. However, they are expressly not liable for defects in the substructure or defective installation as they have no control over the execution of these. The local building regulations are to be followed without fail - we accept no liability with regard to these. All information corresponds to the current state of the technology. Suitability for particular applications cannot be confirmed in general.

Production

Max Exterior consists of lengths of natural fibre - about 65% of the weight - and synthetic resins. The panels do not contain organic halogen (chlorine, fluorine, bromine etc.) compounds, such as occur in propellant gases or PVC. They contain neither asbestos nor wood preservatives (fungicide, pesticide etc.) and are free from sulphur, mercury and cadmium. The precisely managed production processes have no negative effects whatsoever on the environment.

Waste disposal

The shavings which arise when machining (cutting and milling) are not hazardous to health. Consequently, even with the thermal disposal of waste - assuming modern heating plants - no environmental poisons such as hydrochloric acid, organic chlorine compounds or dioxins can arise.

Max Exterior combust - with appropriately high combustion chamber temperatures and dwell times of the combustion gases in the combustion chamber, as well as an adequate supply of oxygen - into carbon dioxide, nitrogen, water and ashes. The energy which results from this can be utilised.

Disposal on well-ordered commercial landfills is not problematic. Always observe the country-specific rules and regulations which apply to disposal.

Subconstruction:

Austria

EUROFOX GmbH
Gewerbepark 10
A-2810 Lanzenkirchen
Tel.: +43 (0) 2627 42400 - 0
Fax: +43 (0) 2627 42400 - 40
www.eurofox.com

ALLFACE Befestigungstechnologie GmbH & CoKG
Aredstraße 29/Büro 222,
A-2544 Leobersdorf
Tel.: +43 (0)2256/625 18,
Fax: +43 (0)2256/625 18 18
E-mail: office@allface.com,
www.allface.com

MAGE Alu Systems GmbH
Industriepark Ost 2
A-9211 Haimburg
Tel.: +43 (0)4232/4180-900
Fax: +43 (0)4232/4180-2
E-mail: facadotec@mage.at
www.magealusystems.at

Germany

BWM
Dübel und Montagetechnik GmbH
Ernst-Mey-Str. 1
D-70771 Leinfelden-Echterdingen
Tel.: +49 (0) 711 / 90 313 - 0
Fax: +49 (0) 711 / 90 313 - 20
www.bwm.de

WS Fassadenelemente GmbH
Brackestraße 1
38159 Vechelde
Telefon: (0 53 02) 91 91-0
Fax: (0 53 02) 91 91-69
www.wagner-system.com

Systea DWS Pohl GmbH
Margarete-Steiff-Str. 6
D-24558 Henstedt-Ulzburg
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Fax: +49 4193 / 99 11 -49
www.pohl.net

NAUTH SL Fassadentechnik GmbH
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D-76887 Bad Bergzabern
Tel.: +49(0) 6343 7003-0
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www.nauth.de

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L.R ETANCO
38/40 Rue des Cormiers - BP 21
78401 CHATOU CEDEX (France)
Phone: +.33.1.3480.5288
Fax: +.33.1.3480.5240
www.etanco.fr

Fastenings (mechanical):

Austria

EJOT AUSTRIA GmbH
Grazer Vorstadt 146
A-8570 Voitsberg
phone +43 3142 2 76 00-0
fax +43 3142 2 76 00-30
e-mail: info@ejot.at, www.ejot.at

Koenig Austria GmbH
Bahnhofstrasse 1,
A-4481 Asten /Linz
Tel.: +43 (0)7224 67090 0
Fax: +43 (0)7224 67752
www.kvt-koenig.at

Germany

MBE GmbH
Siemensstraße 1
D-58706 Menden
Tel.: +49 (0)2373 17430 - 0
Fax: +49 (0)2373 17430 - 11
www.mbe-gmbh.de

Fischerwerke
Arthur Fischer GmbH&CoKG
Weinhalde 14-18
D-72178 Waldachtal/Tuurlingen
Tel.: +49 (0) 7443 120
Fax: +49 (0) 7743 1242 22
www.fischer.de

KEIL Werkzeugefabrik
Karl Eischeid GmbH
Postfach 1158
D-51751 Engelskirchen-Loope
Im Auel 42
D-51766 Engelskirchen-Loope
Tel.: +49 (0) 2263 8070
Fax: +49 (0) 2263 807333
www.keil-werkzeuge.com

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SFS intec AG (Headquarters)
Rosenbergsaustasse 10
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Fax: +41 71 727 53 07
E-Mail: gmi.heerbrugg@sfsintec.biz
www.sfsintec.biz

Koenig Verbindungstechnik AG
Lagerstrasse 8
CH-8953 Dietikon
Tel.: +41 1 743 33 33
Fax: +41 1 740 65 66
www.kvt.ch

Fastenings (glueing):

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Walter Hallschmid GmbH
Dichten und Kleben am Bau
Leonard-Bernsteinstr. 4-6/8/10
A-1220 Wien
Tel.: +43 (0) 676 727 1724
Fax: +43 (0) 197 475 40
www.dichten-und- kleben.de

Germany

Walter Hallschmid GmbH&Co.KG
Dichten und Kleben am Bau
SIKA Chemie GmbH
Wiesentstraße 1
D-94424 Arnsdorf
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Fax: +49 (0) 8723 / 96 127
www.dichten-und- kleben.de

MBE GmbH
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www.mbe-gmbh.de

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SIKA Chemie GmbH
Tüffenwies 16-22
CH-8048 Zürich
Tel.: +41 (0) 1 / 436 40 40
Fax: +41 (0) 1 / 270 52 39
www.sika.ch

More suppliers of glue

(Für die angeführten Kleberlieferanten bzw. Kleber gibt es in Deutschland keine Bauaufsichtliche Zulassungen . Vor der Montage sind unbedingt technische Zulassungen und Verarbeitungsrichtlinien mit dem Hersteller zu klären!)

SIKA Österreich GmbH
Lohnergasse 3
A-1210 Wien
Tel.: +43 (0)1 / 278 86 11
Fax: +43 (0)1 / 270 52 39
www.sika.at

DKS GesmbH
Dichten-Kleben-Schützen
Regensburgerstraße 9
A-4020 Linz
Tel.: +43 (0) 732 77 53 81
Fax: +43 (0) 78 4612
www.dks.at

INNOTEC Industries
VertriebsgmbH
Boden 35
A-6322 Kirchbichl
Tel.: +43 (0) 5332 / 71138
Fax: +43 (0) 5332 / 72891
www.innotec.at

SOUDAL N.V.
Olof-Palme-Str. 13
D-51371 Leverkusen
Tel.: +49 (0) 214 / 6904-0
Fax: +49 (0) 217 / 6904-23
www.soudal.com

Profiles/Accessories:

Austria

Protektor Bauprofile GmbH
Heinrich von Buol Gasse 18
A-1210 Wien
Tel.: +43 (0)1 259 45 00 -0
Fax: +43 (0)1 259 45 00 - 19
www.protektor.com

Germany

Protektorwerk
Florenz Maisch GmbH & Co.KG
Viktoriastraße 58
D-76571 Gaggenau
Tel.: +49 (0)7225 977 - 0
Fax: +49 (0)7225 977 - 111
www.protektor.com

France

PROTEKTOR S.A. BATI-PROFIL
Rue Pasteur Prolongée
F-94400 Vitry sur Seine
Tel.: +33 (0) 1 / 55 53 17 50
Fax: +33 (0) 1 / 55 53 17 40

Glass mounting brackets:

Austria

Fa. Längle, A-6840 Götzis,
www.langleglas.com

Fa. Schmidtschläger, A-1070
Wien, www.schmidtschlaeger.at

Fa. Hueck, A-1230 Wien,
www.hueck.at

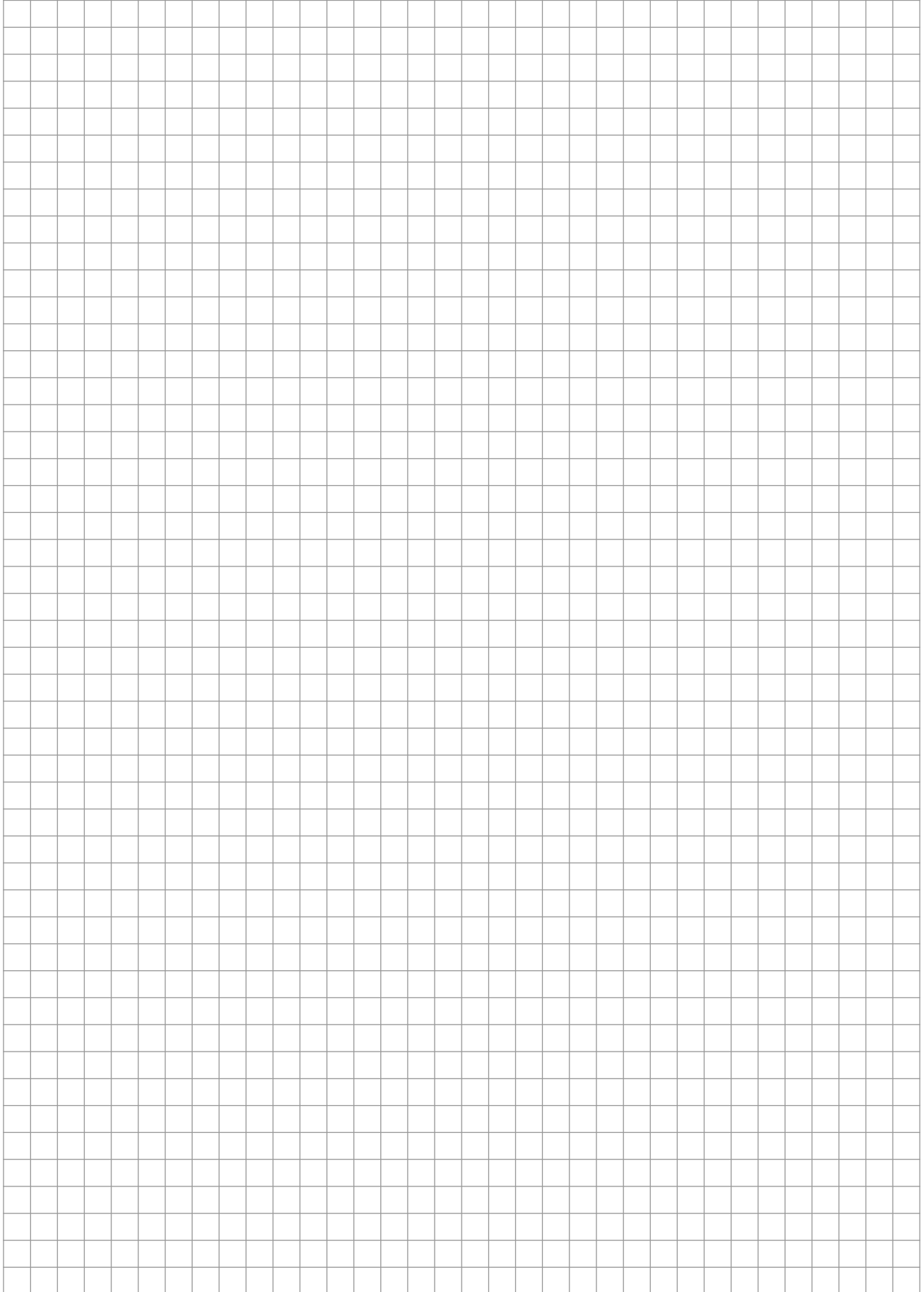
Germany

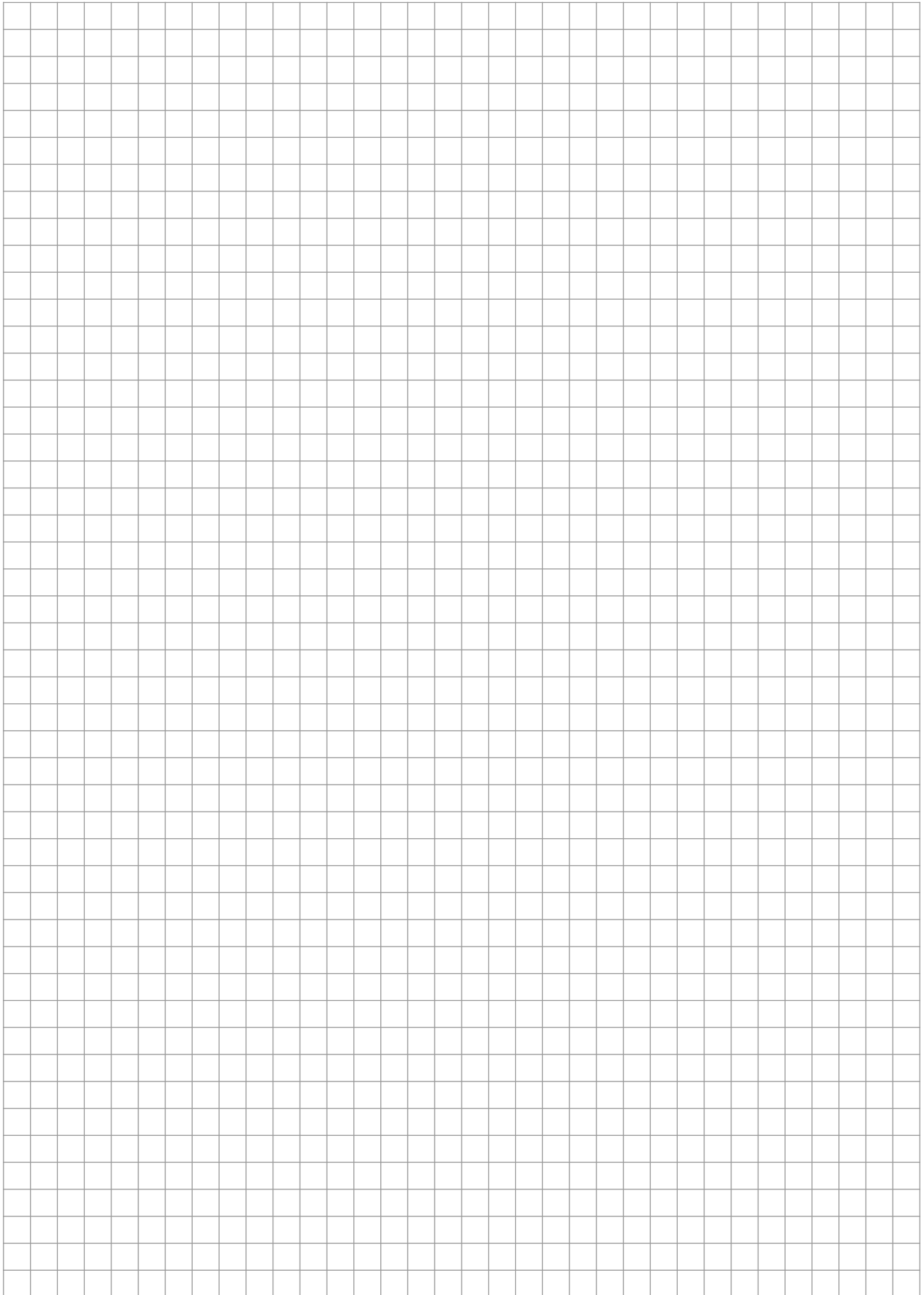
Fa. Pauli, D-51545 Waldbröl,
www.pauli.de

Fa. SWS, D-51545 Waldbröl,
www.sws-gmbh.de

Fa. QTEC, D-06749 Bitterfeld,
www.qtec-gmbh.de

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