



KNAUFCEILING
Solutions

INSTALLATION MANUAL METAL SOLUTIONS

KNAUFCEILINGSOLUTIONS.COM

YOUR **CEILING**
OUR **SOLUTIONS**

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GENERAL INFORMATIONS

GENERAL INSTALLATION CONDITIONS

Brief overview

This installation manual replaces all previous documents. It contains information for specifiers and installers of suspended ceilings and wall applications.

Field of validity and application

The installation manual is to be regarded as an application standard and does not represent a complete reference to other existing standards. All statements and guidelines given concerning structural design refer exclusively to Knauf Ceiling Solutions products. It defines dimensions, tolerances on dimensions and necessary installation requirements for suspension and ceiling elements for interiors. In addition, the installer is obliged to observe any project-related specifications and individually applicable standard requirements.

This installation manual is also in line with the guidelines provided in Annex A and Annex B of the suspended ceiling standard EN 13964.

For some areas, however, this installation manual is not valid.

These are as follows:

- ceilings in means of transport
- heating and cooling ceilings
- air leakage
- thermal insulation
- ceilings with seismic requirements, except specific indicated solutions.
- ceilings subject to requirements regarding ingress of water
- ceilings for exterior applications, for which other extended requirements apply (tunnels, shelters, petrol stations, arcades, public sports facilities, car parks etc.), except specific indicated solutions.
- suspended ceilings or its supporting structure, on which you can walk
- ceilings with specific requirements for corrosion resistance, dynamic and/or static effects of loads (swimming pools, underground railway stations etc.)

For mountings of all kinds, the regulations documented here are to be observed.

All specifications and technical information in this manual or other publications referring to Knauf Ceiling Solutions products are based on test results, according to EN 13964.

Technical modifications in the interest of improvements may be made by Knauf Ceiling Solutions at any time without prior notice.

The currently valid version can be obtained from Knauf Ceiling Solutions or can be downloaded directly from our website www.knaufceilingsolutions.com.

Safety

Thin-gauged materials, particularly profiles and cut tile edges, are to be handled with due care in order to prevent injuries and damage. It is the obligation and full responsibility of the ceiling fixer to ensure sufficient safety.

Quality

Knauf Ceiling Solutions is certified in accordance with the ISO 9001 quality standard. For material properties, dimensional accuracy and coloration, our quality standard shall apply. The installer is responsible for the quality of the finished ceiling, carried out according to the installation instructions shown in this document.

Fire protection

Knauf Ceiling Solutions delivers suspended ceiling components, which can be assembled and form fire protective barrier. Ceiling components have to be assembled in accordance with relevant classification report and country-specific and must comply with the requirements in accordance with EN 13501-1 (Reaction to fire), EN 13501-2 (Resistance to fire) and the country-specific standards and regulations.

Corrosion

In their standard version, Knauf Ceiling Solutions Suspension components are made of galvanised sheet steel or aluminium and thus protected against corrosion in accordance with EN 13964, provided that they are not exposed to any extreme corrosive atmospheres or emissions and the corrosion protection is not damaged during installation or the assembly of parts not supplied by Knauf Ceiling Solutions.

If it is evident from the design that contact corrosion can occur between different materials, this is to be pointed out by the planner and appropriate protective measures defined in accordance with EN ISO 12944-3 point 5.10.

To counteract the danger of condensation forming in ceiling cavities, sufficient rear ventilation of the ceiling construction is to be ensured. It is always advisable to consult a specialist.

Statics

In terms of their load-bearing capacity and fitness for use (deflection), all systems documented in the installation instructions are statically tested and documented. Technical documentation of loadbearing elements is in accordance with the valid European Standard EN 13964. Please specify the desired, permitted deflection e.g. EN13964, class 1-3 in advance.

Additional loads are not provided for in their standard version.

Apart from that of the dead load, the system constructions described have no load-bearing capacity for other components and are to be attached to supporting components. Neither the suspension nor the top layer must be walked on. The customer is responsible for defining the relevant additional loads and their written documentation.

Material expansion

The expansion of the ceiling construction as a result of temperature fluctuations due to exposure to direct sunlight or the failure of the air conditioning system is usually unproblematic. With very large ceiling areas and different material expansion coefficients, however, this may lead to issues.

Special attention should be paid here to wall joints and, if necessary, expansion joints. Careful, detailed planning and accurate installation are therefore all the more important.

Transport and storage

During transport and subsequent storage, the elements should be protected from moisture, high humidity and weather. Plastic packaging is not waterproof.

Attention should be given to the underlying surface which should be clean, dry and flat (full surface support) to avoid soiling or damage. Elements from different production dates / batches should not be installed within the same area.

Recognisable, visibly damaged and broken parts (tiles, profiles, accessories, etc.) must not be installed.

Handling

It is essential to carefully handle both full cartons as well as individual elements, in accordance with workplace safety standards. They must not be thrown, dragged, pushed or slid across the floor. Cartons and elements should not be stood or turned on their corners or edges. No heavy objects should be placed on the cartons. Even short-term external influences can lead to damage. We recommend that any risks that may arise from this type of handling are carefully assessed.

To remove the elements, the packaging should be opened and removed all the way around. Individual elements should be handled carefully, preferably using suitable, clean installation gloves (white material).

Installation conditions

Knauf Ceiling Solutions elements should only be installed once all wet trades have been completed, building is sealed with doors and windows fitted and the room completely dried out. The heating system should be in operation in order to ensure a working temperature of 15 - 20°C. Before starting the installation, we recommend taking measurements with regards humidity and temperature. It is not recommended to start the installation if the relative humidity is over 70%. During the subsequent period of use, the relative humidity may not exceed 90% or 95% depending on the type of tile used (see product data sheet).

In rooms with continually high relative humidity, special provisions should be made (see installation guidelines for wet rooms and swimming pools).

Improper handling and lack of observation of the installation conditions invalidates all warranties.

Installation

The individual installation company is responsible for correct, perfect installation as well as observance of the system standards specified here. Knauf Ceiling Solutions products and systems should only be installed by qualified and experienced fixers in order to maintain the high product quality of the Knauf Ceiling Solutions products.

Any materials that are visibly damaged or exhibiting recognisable optical or technical impairments must not be installed. In this case, please contact Knauf Ceiling Solutions.

Fixings

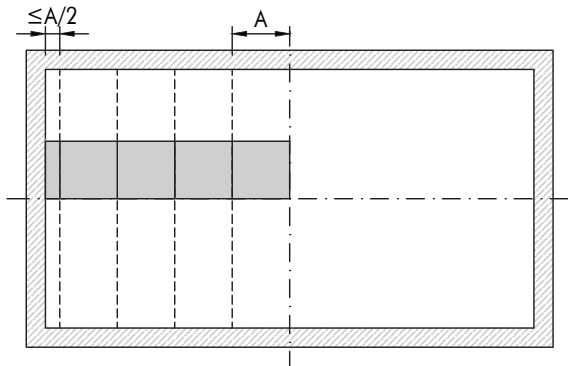
The fixing of the perimeter trim to adjacent walls as well as the installation of the hangers and cross bracing should be carried out with appropriate and approved fixings (by others). As this is dependent on what material is being fixed to, the choice of fixing should always be carried out in consultation with the fixing manufacturer and approvals (ETA: European Technical Approval).

General installation sequence

- 1 Read the Knauf Ceiling Solutions installation instructions carefully.
- 2 Check the ceiling layout drawings or installation sketch based on the actual building conditions.
- 3 Determine the location and layout of ceiling elements (Main Runners and Cross Tees / primary and secondary grid, etc) according to instructions.
The position of the service integrations must also be taken into account.
- 4 Construction site equipment (scaffolding, assembly area, ladders, power connection, etc.).
- 5 Check the soffit and walls for the appropriate type of fixings.
- 6 Attach perimeter trims to the walls at the specified height / level. Depending on the construction of the walls, choose the appropriate type of fixings. For perimeter solutions see separate datasheet.
- 7 Determine the grid direction and mark suspension points on the structural soffit in the exact module dimensions.
The suspension and profile distances must be as specified.
- 8 Align the grid system according to the specifications and fix to the structural soffit with the selected suspension method. Check the squareness.
- 9 Install the ceiling elements. At the perimeter, the ceiling elements have to be cut to size on site.
- 10 In the course of installing the ceiling elements, the service integration components must also be installed.
Heavy service integrations must be suspended separately.
- 11 Align ceiling elements with precise joints and clean any soiled areas as specified.
- 12 Ceiling acceptance by construction management.

Recommended layout for square tiles

Layout 1 - Not recommended



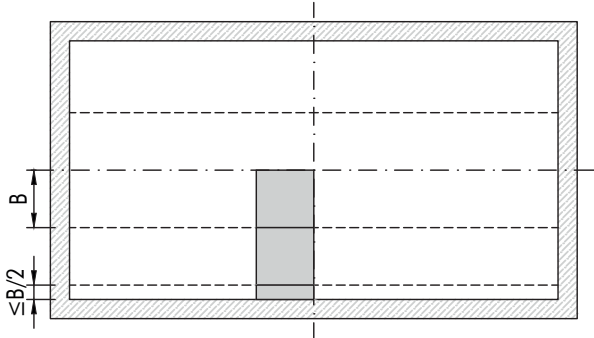
Layout 1 / 2

The ceiling is set out from the middle of the room in modules. In the example shown, the cut tile at the perimeter is very small.

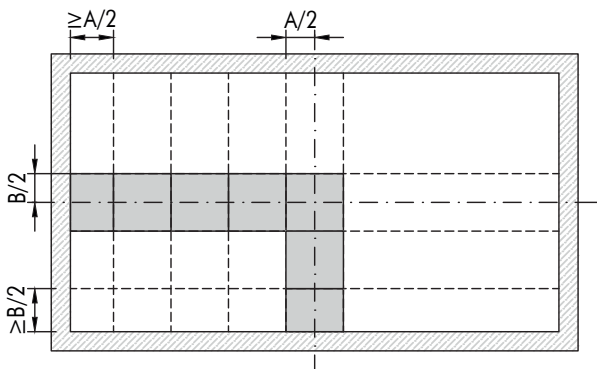
Tile length (A) = tile width (B)

If the cut tile is less than half the tile length (A) or width (B), the layout is not recommended and should be avoided. In addition to requiring more profiles, small cuts appear aesthetically poor. If layout 1 and / or 2 does not provide the desired visual appearance (small tile cuts), layout 3 should be chosen.

Layout 2 - Not recommended



Layout 3 - Recommended



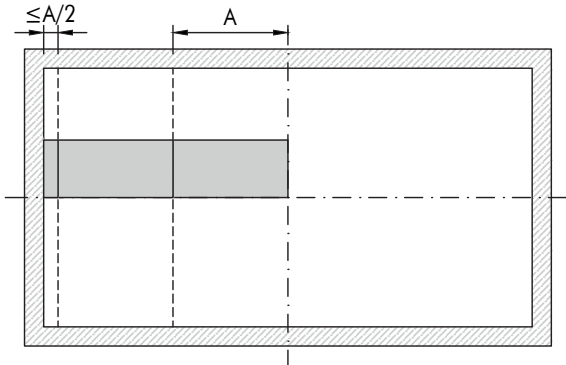
Layout 3

Ceilings with larger cut tiles are aesthetically more pleasing and are more efficient to install. When setting out the ceiling, start from the middle. Ideally the first tile should be directly on the centre line (half the tile each side of the centre) unless this results in a small perimeter cut in which case align the tile edge with the centre line.

The layout then continues in the other direction.

Recommended layout for rectangular panels

Layout 1 - Not recommended



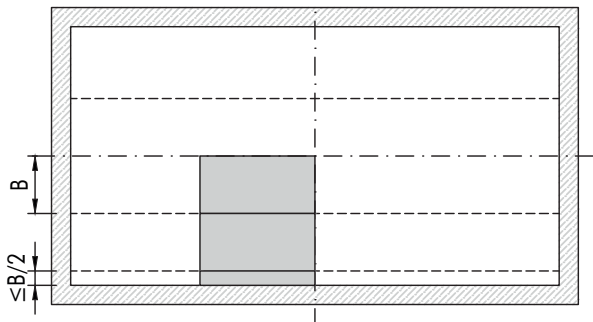
Layout 1 / 2

The ceiling is set out from the middle of the room in modules. In the example shown, the cut panel at the perimeter is very small.

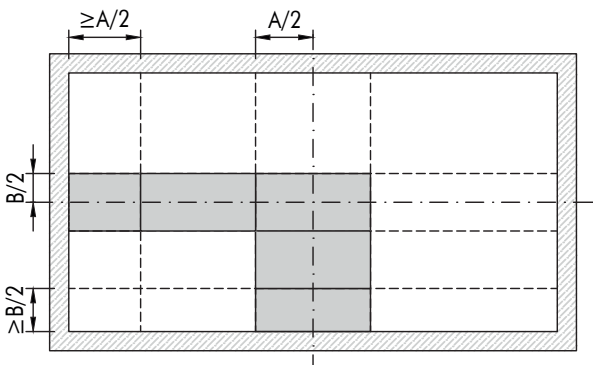
Panel length (A), panel width (B)

If the cut panel is less than half the panel length (A) or width (B), the layout is not recommended and should be avoided. In addition to requiring more profiles, small cuts appear aesthetically poor. If layout 1 and / or 2 does not provide the desired visual appearance (small panel cuts), layout 3 should be chosen.

Layout 2 - Not recommended



Layout 3 - Recommended



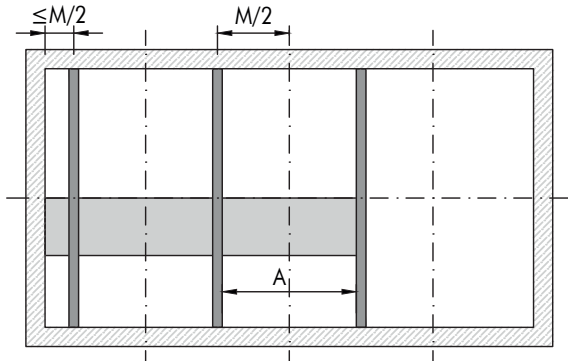
Layout 3

Ceilings with larger cut panels are aesthetically more pleasing and are more efficient to install. When setting out the ceiling, start from the first panel should be directly on the centre line (half the panel each side of the centre) unless this results in a small perimeter cut in which case align the panel edge with the centre line.

The layout then continues in the other direction.

Recommended layout for linear grid

Layout 1 - Not recommended



Bandraster module

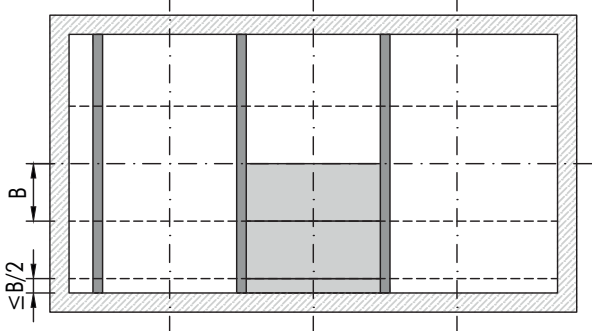
Each element has an overlay on the Bandraster. The overlay depends on the selected ceiling system. See individual document for more information.

C-Profile module

Since the plates sit between the profiles, the C-Profile width must be subtracted to get the correct panel length (A).

Module length (M), panel length (A), panel width (B)

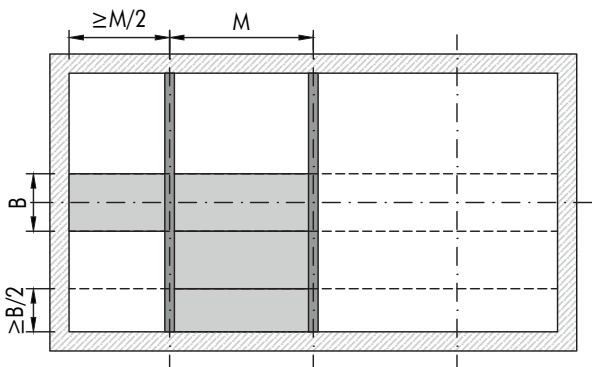
Layout 2 - Not recommended



Layout 1 / 2

If the cut panel is less than half the module length (M) or width (B), it could appear aesthetically poor and is therefore not a recommended layout.

Layout 3 - Recommended

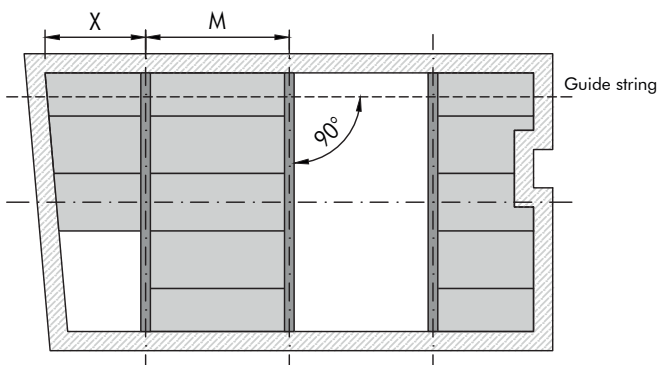


Layout 3

Usually the building center dimension specifies the alignment. The ceiling layout follows this modularisation.

If the layout of the building allows it, it is aesthetically more pleasing and more efficient to install a ceiling with larger cut panels. This will result in a cut panel length greater than half the module length (M) and therefore a correct layout.

Layout 4 - Guide string / angled rooms and walls



Layout 4

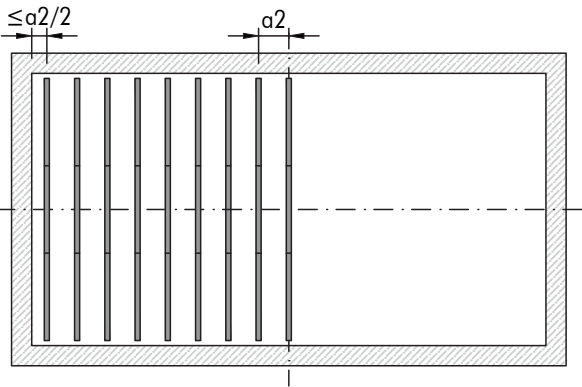
As the rest of the installation follows the first panel, special care should be taken to ensure its correct installation.

In order that the joints are aligned with the Bandraster, it is helpful to span a guide string or laser level across the entire room's length. Starting from this reference line, the panels are cut to fit. It is usually enough to measure the width adjacent to the linear grid and then transfer it to the panel to be cut (the element width should be measured in two places). This can then be cut accordingly.

The guide string can help to achieve a parallel joint pattern. Wall unevenness can also be better compensated for. Should the cut panels meet with an angled wall, the longest side (X) should equal the panel length; otherwise the layout should be adjusted.

Recommended layout for baffles

Layout 1 - Not recommended

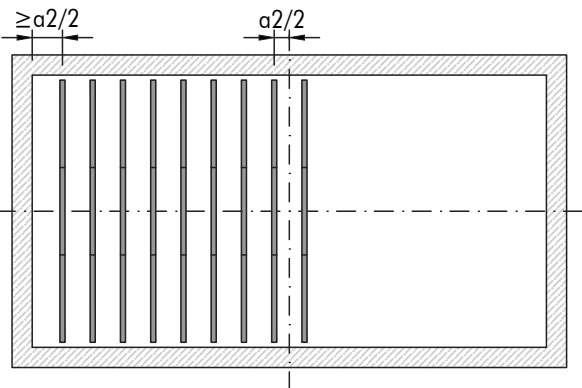


Layout 1

Starting from the middle of the room, the layout continues in baffle distances of ($a2$). The example shown results in a very small distance between the last baffle and the wall. If the last baffle distance to the wall is smaller than half ($a2$), the layout is not recommended for optical reasons.

Distance between baffles ($a2$), also termed pitch

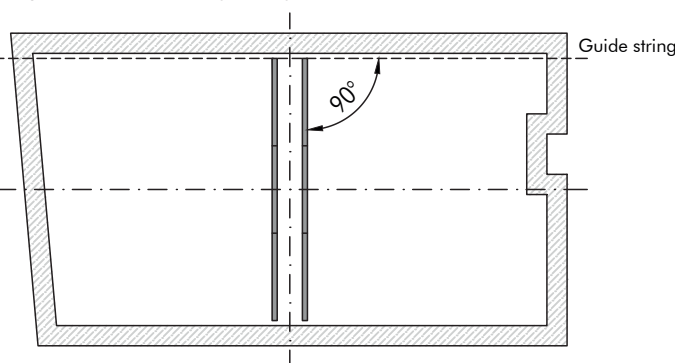
Layout 2 - Recommended



Layout 2

It is aesthetically more pleasing and more efficient to install a baffle ceiling with a larger distance between the last baffle and the wall. If, as described above, the baffles are set out from the middle of the room but results in an unfavourable layout, the baffle layout should be moved over by half of a distance ($a2$). This always results in a baffle distance to the wall larger than half a distance ($a2$).

Layout 3 - Guide string / angled rooms and walls



Layout 3

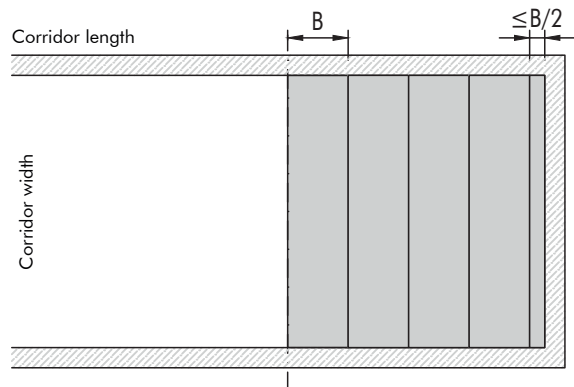
In order that the baffles are aligned in one row, it is helpful to span a guide string or laser level across the entire room's length. Starting from this reference line, the baffles can be aligned in long direction. The guide string can help to achieve a parallel layout. Wall unevenness can also be better compensated for.

Canopy layouts

Where available, positioning devices provided in the packaging can simplify the alignment of the floating ceilings. Especially with non-rectangular shapes, such as circular, etc.

Recommended layout for corridors

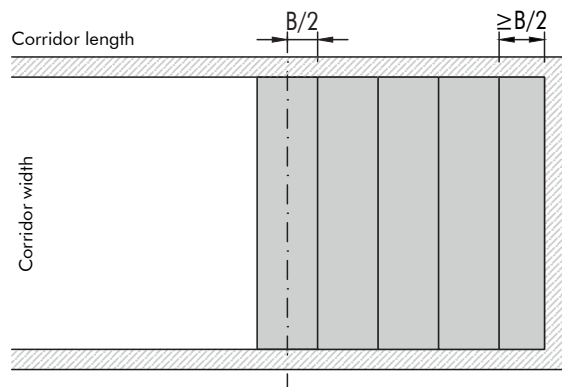
Layout 1 - Not recommended



Layout 1

Starting from the middle of the corridor, the layout continues in element widths (B). The example shown results in a very small cut panel width (B). If the last cut panel is smaller than half a panel width, the layout is not recommended for optical reasons. If layout 1 does not provide the desired visual appearance (small panel cuts), layout 2 should be chosen.

Layout 2 - Recommended



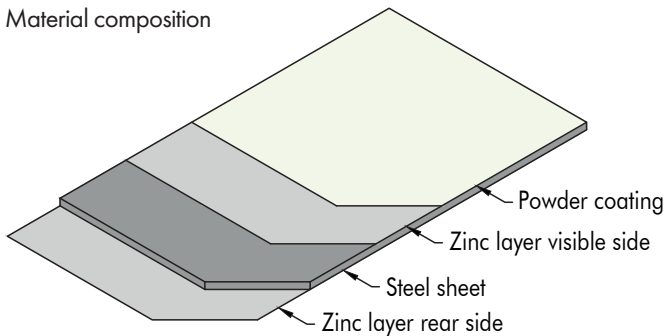
Layout 2

It is aesthetically more pleasing and more efficient to install a ceiling with larger cut panels. If, as described above, the ceiling is set out from the middle of the corridor but results in an unfavourable layout, the ceiling layout should be moved over by half a module width. This always results in a cut panel larger than half a panel width (B).

METAL GENERAL INFORMATION

Base material

Material composition



The metal ceiling and wall solutions from Knauf Ceiling Solutions are generally offered in galvanised steel. Some of the products can be made of aluminum on request. The material thickness depends on the selected product and the dimensions. Square tiles are manufactured with a gauge of 0.5 to 0.6 mm, rectangular panels with 0.6 - 0.7 mm and further products such as bulkheads, wall solutions, etc. in 1.0 mm. Knauf Ceiling Solutions also offers pre-coated products which have a separate specification.

Surface/coating

The standard finish is a high quality powder coating. A selection of popular colours is offered, other colours are available on request. By default, the visible side is coated, including edges that are defined as visible. All other surfaces are not supplied fully coated, which applies to the back and non-visible edges.

Small colour differences can occur between the metal elements and the profiles, wall angles, etc.

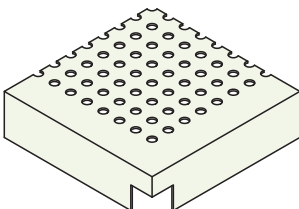
Since the surfaces can yellow over time, subsequent items may show a colour difference.

A low gloss level is recommended, otherwise reflections will make the ceiling appear more restless and the sagging of the elements will be emphasised (pillow effect).

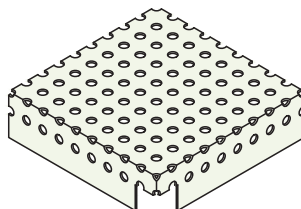
Whenever the coated surfaces are touched, this should always be done with soft white gloves, otherwise fingerprints will be left on the surface, which makes cleaning more time consuming.

Patterns/acoustic infills

Unperforated border



Over border perforated



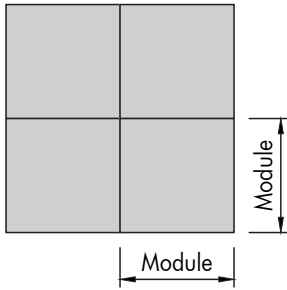
Smaller patterns up to 1.0 mm hole size are perforated over the edge. All other patterns are delivered with an unperforated border. This dimension depends on the selected pattern and the dimensions of the element. On request, patterns up to 2.5 mm hole size can be over border perforated.

Perforations with large holes and/or a large open area may increase the panel deflection, surface warping and affect product stability. The standard insert is a black acoustic fleece, which is glued in at the factory. Be careful with the acoustic fleece so that it is not damaged during handling and installation.

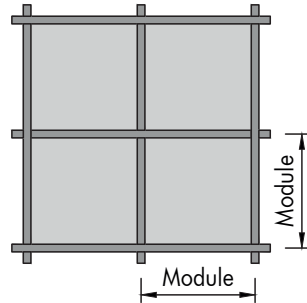
For higher acoustic requirements, acoustic pads or factory-bonded mineral boards (Premium infills) can be supplied. This increases the weight of the ceiling and can have an impact on the panel deflection. The spacing of the suspension system must be adjusted accordingly. The value +4 kg/m² should therefore be used for the specific systems. Higher loads must be checked and approved.

Dimensions/deflection/tolerances

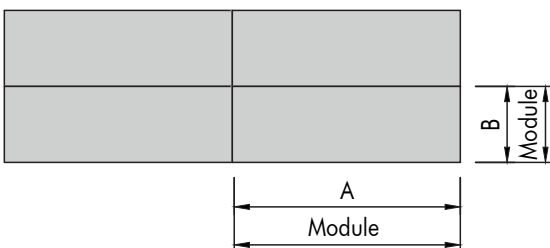
1. Clip in with square tiles



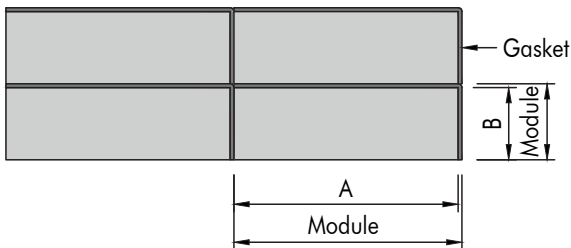
2. Lay-in with square tiles



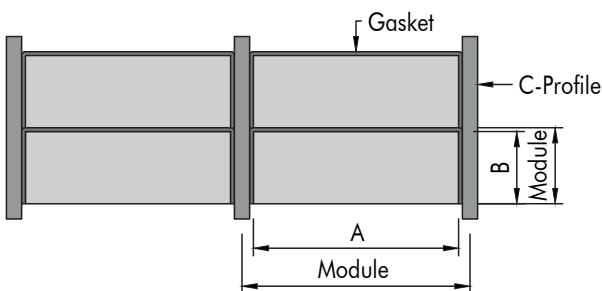
3. Clip-in or hook-on with rectangular panels



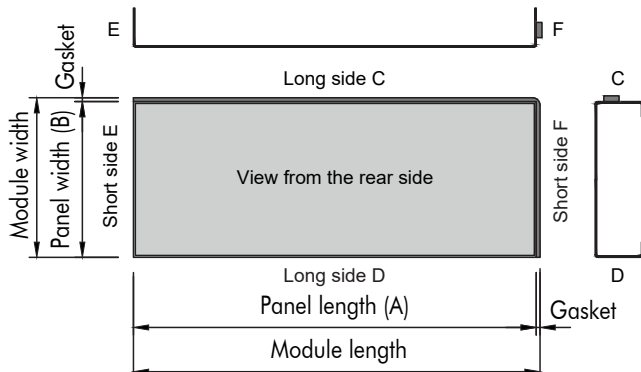
4. Hook-on with rectangular panels + gasket



5. Linear grid with rectangular panels + gasket



6. Rectangular panel parameters (example with gasket)



Square and rectangular tiles are specified in modular dimensions, such as 600 x 600, 625 x 625, 1200 x 600 mm. It doesn't matter whether these are the effective dimensions (1) or the distances between the T-grid (2), though this difference should be noted.

With configurable rectangular panels in the Vario Design range, a distinction must be made between module size and actual dimensions (manufacturing size).

Example: Ceiling module size 2000 x 400 mm

(3) Clip-in or hook-on = 2000 x 400 mm

(4) Hook-on with gasket = 1997 x 397 mm

(5) Linear with C-profile 100 mm + gasket = 1894 x 397 mm

This logic is applicable to all systems and products shown in this literature.

When planning and ordering, the rectangular panel (6) is shown reclined and from the rear side, with the long side C at the top, the long side D at the bottom, the short side E on the left and the short side F on the right. This allows each side to be uniquely defined. The upstands on the long sides C / D are responsible for the stability of the panel and therefore for the flatness of the ceiling. The longer the panel, the higher the upstands.

Large panels have an increased risk of being damaged during transport, handling and installation. Therefore, it is recommended not to exceed the specified limits. The panel width in particular is critical, as this is responsible for increased deflection in the center of the panel. If less deflection is desired, the panel width should be kept narrow. Reduce the width and use two panels instead of one wide one, if possible.

Tolerances and deflection are in accordance with EN 13964. Perforations with big hole size and/or a high free cross section must be checked and approved separately.

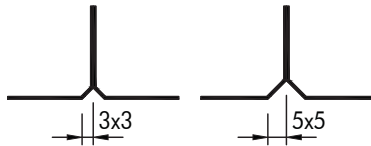
Joint Details

Ceiling elements
Square edged



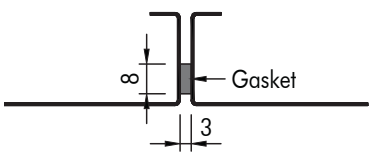
The bending radius depends on the selected material gauge. The thicker the gauge, the bigger the radius.

Bevel edged



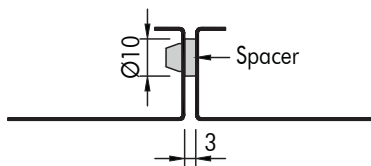
Depending on the product, a 3x3 or 5x5 mm bevel is available.

Square edged, with gasket



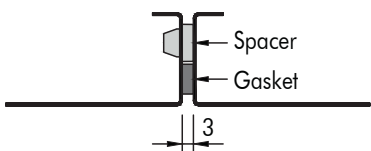
The joint is covered and "flexible"

Square edged, with spacer



The joint is open and fixed to the spacer width

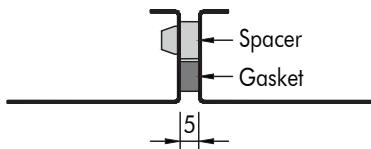
Square edged, with gasket + spacer



The joint is covered and fixed to the spacer width

Wall elements

Square edged, with gasket + spacer



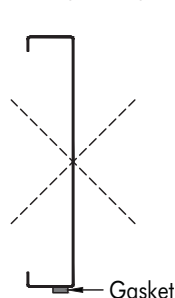
The joint is covered and fixed to the spacer width

Storage of products with a gasket

Correct Storage



Wrong Storage



With clip-in solutions, the elements are installed in such a way that they touch, i.e. without a gap in between. Depending on the system, either a square or bevel edge is available. The bevel forms a small "reveal" between the visible sides and helps to conceal any height differences between the elements. These are usually standard modules with fixed dimensions.

Most hook-on and lay-in rectangular panel solutions are designed with a 3 mm gasket as standard. This gasket, consisting of a PE foam, is used to accommodate any tolerances (length, width, squareness) and facilitates the installation and clean alignment of the panels. The more often the panels are removed and reinstalled during building maintenance, the more the joint pattern can shift. The gasket conceals and mitigates this so that the layout looks more homogeneous. Therefore the use of a gasket is recommended, especially for bespoke solutions, such as trapezoidal and triangular panels.

The panel dimensions are made smaller by the gasket width so that they fit into the module. This should be taken into account when ordering.

The gasket is fitted at the factory. For bespoke solutions, it may happen that the gasket rolls are delivered as a spare and attached on site.

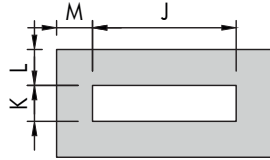
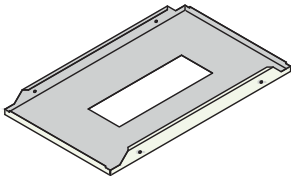
The panels should never be stored with the gasket on the bottom and the weight pressing on it. That would permanently damage the gasket. It should also be ensured that the gasket in systems that can be demounted with an extraction tool, is not damaged during removal. Optionally, most products can be supplied without a gasket.

Instead of a gasket, plastic spacers or PE glue-on spacers can be used on most systems. The spacers guarantee a minimum distance between the panels while leaving the joints open. This can be used, for example, when air flow is desired or the ceiling is installed with a slope. The gasket would be compressed. The spacers are installed at the factory and are available on request.

Continuous wall solutions are supplied with a 5 mm gasket and spacers at the horizontal and vertical joints. The gasket covers the joint and the spacers keep the distance.

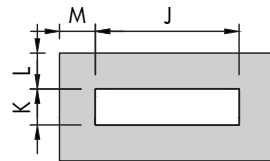
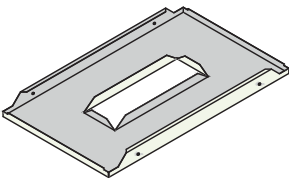
Cut-outs

Cut-out type 1



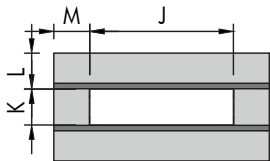
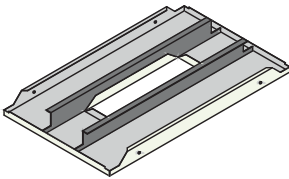
Cut-outs for service integrations can be cut on site (see separate pages for cutting & modifications). If there are a large number of panels with the same cut-outs, these can be manufactured at the factory.

Cut-out type 2



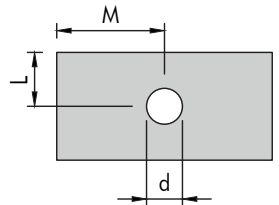
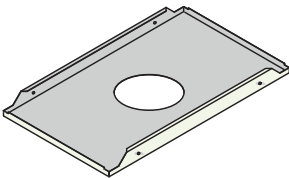
There are various options to choose from, starting with round (type 4) or rectangular flat (type 1) cut-outs with an upstand (type 2), up to rectangular cut-outs with an upstand and with additional reinforcements (type 2A).

Cut-out type 2A



With type 1 and 4, the edge is covered by the service integration. Type 2 can be used when using a service integration without a border that hides the edge. This version can also be used with additional welded reinforcement profiles, where the load is transferred to the short sides. Since this option depends on various parameters, the panel deflection should be checked and approved on site by a mock-up.

Cut-out type 4



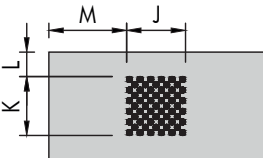
View from the rear side

In the case of prefabricated cut-outs, the position in the panel as well as the dimensions must be defined. The distances to the edges and dimensions of the cut-out depend on the selected system. Cut-outs and service integrations can affect panel stability and deflection.

On request, several cut-outs per panel can be made. A further option is ventilation and loudspeaker perforations. The options are available upon request.

When planning and ordering, the rectangular panel is shown reclined and from the rear side.

Ventilation & loudspeaker perforations



Demountability

In general, all standard and configurable products can be removed individually. This ensures access to the cavity. For clip-in systems, extraction tools are required. Choosing the right tool is crucial and prevents damage to the product.

When using security clips and brackets then individual tiles cannot be removed.

The modules have to be dismantled from the last one that was not secured.

Use systems like METAL R-H 200 and METAL R-H 215 that use clips that can be locked / unlocked from below.

Various hinge-down and swing-down solutions are available to facilitate access.



SUSPENSION SYSTEMS

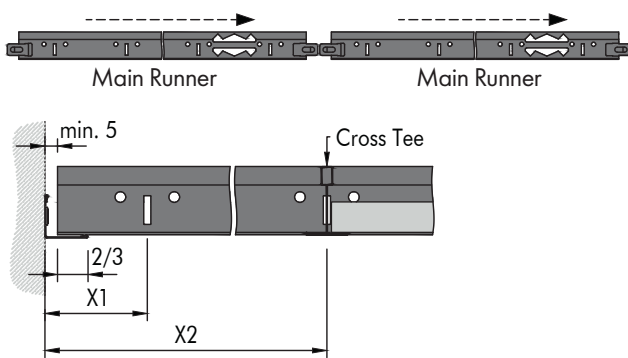
T-GRID (SYSTEM C)

Exposed grid solution for indoor applications

General information

- Suitable for indoor use only
- All profiles meet durability class B, according to EN 13964
- All standard items are held in stock
- Various suspension options available, depending on market needs
- Tried and tested solution with extensive experience

Main Runners

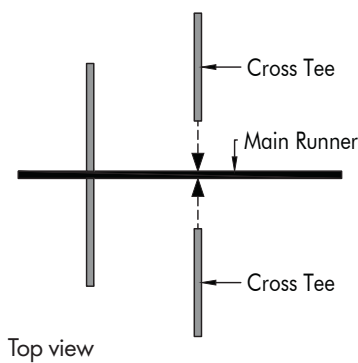


The Main Runners should always be installed in the same direction; two fire expansion notches should not be installed directly next to each other.

Main Runner cuts result depending on the ceiling symmetry as well as the cut tile width. The profiles should be cut to length so that the punching and therefore the layout of the Cross Tees is aligned. For every new row, the dimension X1 or X2 should be checked.

To ensure system alignment (squareness) and stability, all profile cuts should leave a 5-10 mm perimeter gap. In addition, the profile should sit on the trim to at least 2/3 of the trim flange width.

Main Runner / Cross Tee connection

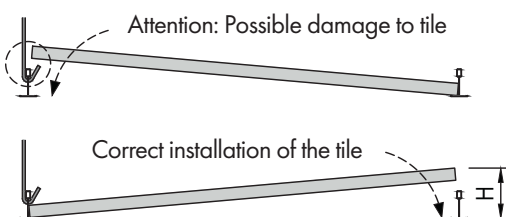


The handling of the Cross Tee connectors will differ during assembly, depending on the selected grid system (plug / click with audible engagement; left / right aligned), but also during disassembly.

IMPORTANT INFORMATION

The appropriate grid system and layout must be determined based upon the tile weight and additional loads. The corresponding load information and available components can be found in the respective data sheets. Components (Main Runners and Cross Tees) from different systems cannot be mixed.

Tile installation direction



Particularly when using wire hooks, there is risk of damaging the tiles during installation.

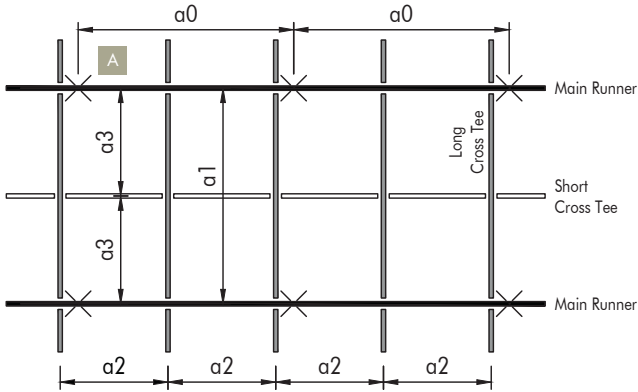
Please note the installation diagram opposite. Demounting should be carried out accordingly (lifting the tiles on the side with no hanger).

In principle, assembly and disassembly should not be carried out starting from Main Runners, as there is always a risk of collision with a hanger and damage to the tile edges.

The minimum height (H) to be able to insert and remove the tiles depends on the chosen system and is covered in the specific chapter.

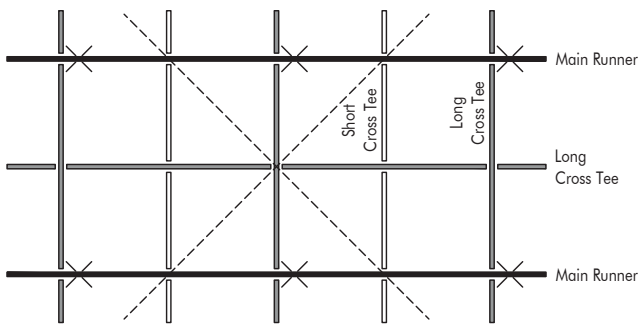
Square tiles

Layout 1



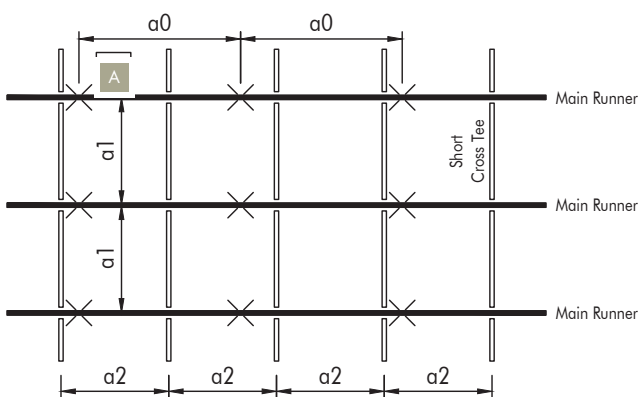
Between the Main Runners centres (a_1), a long Cross Tee is fitted at (a_2) centres. These Cross Tees are then subdivided by short Cross Tees at (a_3) to form the square module layout. The distance (a_0) stands for the distance between the suspension points.

Layout 2 - **not permitted**



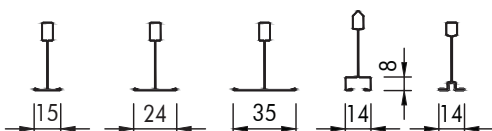
This construction is **not** permitted. A combination of long Cross Tee and second long Cross Tee parallel to the Main Runners due to increased deflection of the system.

Layout 3



Due to the small Main Runner centres (a_1) and the use of short Cross Tees at (a_2) centres, this construction can support heavier loads. Long Cross Tees are omitted and therefore the material requirements of Main Runners and short Cross Tees is increased.

T-grid



These are typical examples of T-grid. Detailed information and available options can be found in the product datasheets.

Parameters

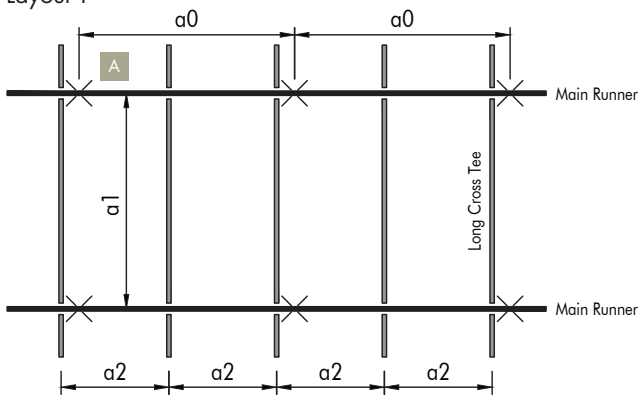
- a0 Max. distance between Main Runner suspension points
- a1 Distance between Main Runners
- a2 Distance between long Cross Tees (module width)

- a3 Distance between Main Runner and short Cross Tees (module length)
- a4 Distance from wall to first suspension point = max. 250 mm

Values see specific data sheets of the products.

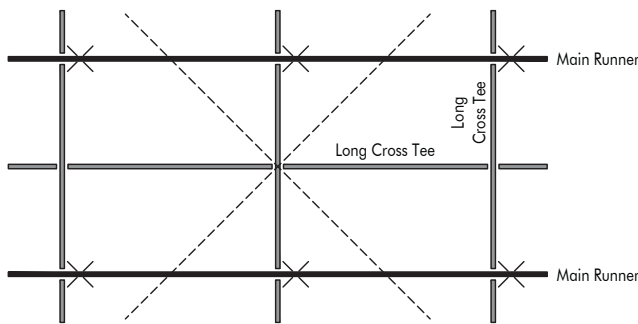
Rectangular tiles

Layout 1



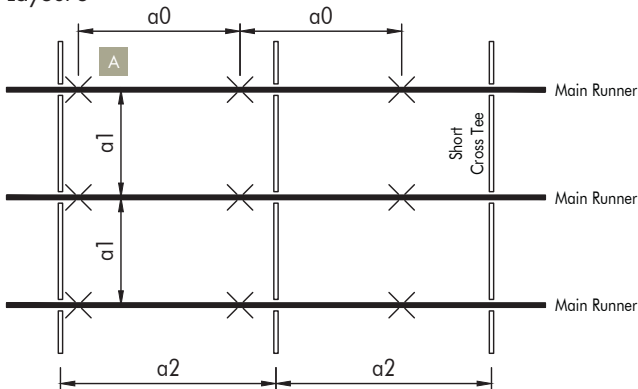
If the tiles are rectangular then the short Cross Tees are not required. Between the Main Runners centres (a1), a long Cross Tee is fitted at (a2) centres.

Layout 2 - **not permitted**



This construction is **not** permitted. A combination of long Cross Tee and second long Cross Tee parallel to the Main Runners due to increased deflection of the system.

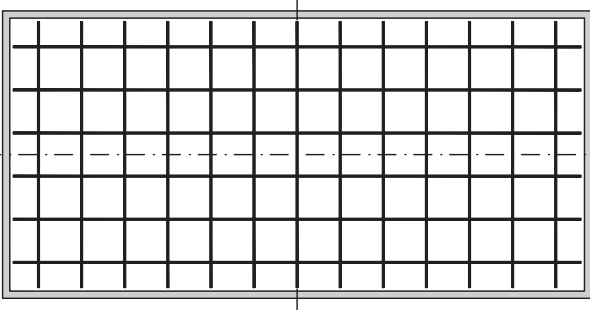
Layout 3



Due to the small Main Runner centres (a1) and the use of short Cross Tees at (a2) centres, this construction can support heavier loads.

Installation guidelines

Layout 1

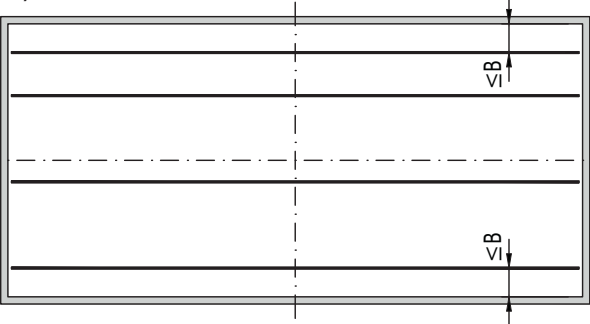


After determining the ceiling symmetry / layout, the direction of the Main Runners is determined. The long side of the room is normally chosen, but sometimes due to fixtures and fittings etc., the short direction may be more favourable.

PERIMETER TRIMS

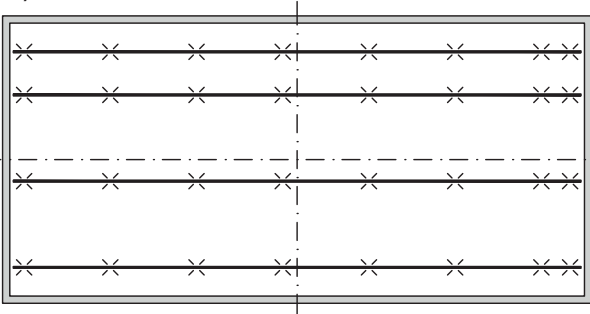
As preparation before the installation, all perimeter features (walls, columns etc.) should be marked with the ceiling height (the height of the top edge of the perimeter trim). Perimeter trims should be fixed as per chapter Perimeter trims (approved fixings, centres etc.).

Layout 2



The fixing points of the hangers are determined by the layout of the Main Runners. The distance of the first and last Main Runner from the wall should be smaller than module width B, so that laying long Cross Tees on the perimeter trim is avoided.

Layout 3



The fixing points are marked on the soffit using a chalk line, for example.

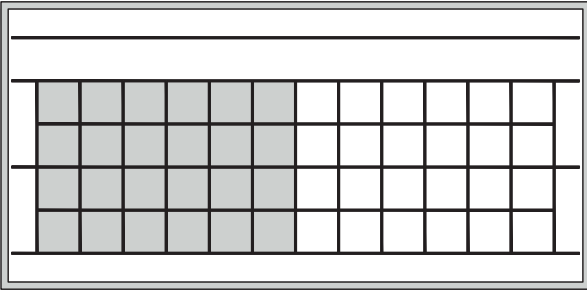
In addition to the relevant system hanger centres (load capacity of the grid system), additional hangers may be required for:

- Main runner joints / fire expansion notches
- Maximum perimeter distances (first and last hangers)
- Fixtures and fittings

It is recommended that the hangers are adjusted to the required length before installation, later only the fine adjustment is required.

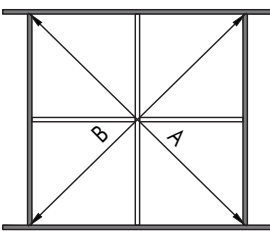
Soffit fixings is carried out with approved fixings as per the screw / plug manufacturer's recommendations. All hangers are to be installed in the same direction (e.g. direction of butterflies or hooks etc.) and vertical.

Layout 4



To complete the system, long and short Cross Tees are installed as required. To align and square the system, it is recommended to insert a few tiles and where necessary adjust the system before the entire grid system installation is complete.

Squareness check



Diagonal A = Diagonal B

Please ensure that the system and the profiles are installed at right angles to each other or correct this where necessary. This should be done as early as possible in the installation to reduce realignment work to a minimum.

Failure to do so can lead to major problems when installing the tiles, especially with recessed edge designs, e.g. edges at...

MINERAL: Tegular 15, Tegular 24, Tegular 15/90 ...

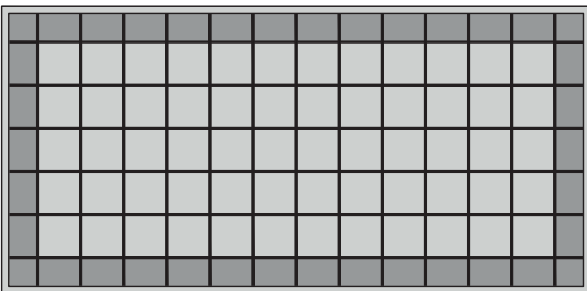
HERADESIGN: SK-05, SK-06 ...

METAL / MESH / WOOD : Microlook, Tegular...

and semi-exposed systems e.g. Vector edge

Furthermore, there is an increased risk of damage to tiles during subsequent demounting or maintenance.

Layout 5



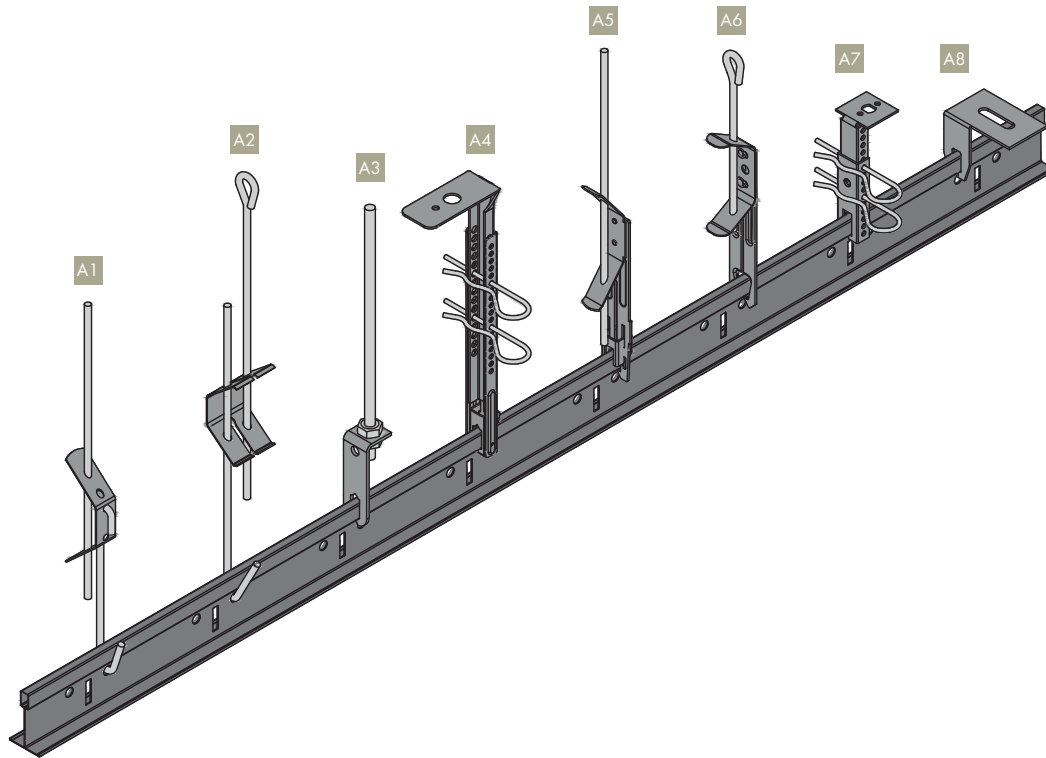
Finally, all profile and tile cuts are completed. The minimum support on perimeter trims should be adhered to.

Suspension heights

The following suspension heights enable simple installation of the tiles from below.

For low suspension heights, e.g. direct hangers, the profiles and tiles must be installed alternately.

Hangers



There is a range of suspension hangers available for the System C grid. Depending on the suspension height, object-related circumstances, availability or preference, all types can be used. It is important to ensure however, that the maximum load bearing capacity is not exceeded and the choice fits the system and the requirements.

In the case of push-on hangers, care is needed to ensure that installation and removal of the tiles does not displace the hangers. When using push-on hangers, the direction of installation should be at 90° to the Main Runners, tension free and vertical.

Hangers with visible defects must not be used.

Improper handling, such as forcibly bending open and closed tabs / parts of the hanger, will result in a loss of load-bearing capacity.

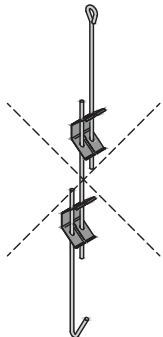
Hanger type		Min. installation height (H) [mm]
A1	Butterfly hanger with hook	140
A2	Quick hanger with loop	100
A3	Bent tee bar hanger for threaded rod	100
A4	Nonius top and bottom part	200
A5	Hanger Clickfix II	130
A6	SAH10 plus	130
A7	Direct hanger	80
A8	Direct hanger	65

Not all combinations of grid systems / Main Runner and hanger are possible. This primarily applies to hangers for sliding on and clipping on due to the different profile head heights and shapes - rectangle / roof (peak).

Hanger installation

A2

Multiple butterfly



Large top part



Large bottom part

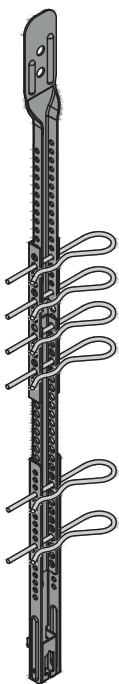


Not recommended

To facilitate access to the butterfly, it is recommended to use a longer eye wire (top part).

A4

Nonius hanger extension



Hangers must be installed vertically. The maximum hanger distance depends on the selected product (see specific product datasheets). In addition, a hanger is required at each Main Runner join and additional loads for service integrations require a minimum of two hangers (see Cutting & Modifications document). It should be ensured, that the distance from the perimeter to the first and last hanger does not exceed the maximum dimension (see specific product pages) and additional hangers should be installed where required.

Angled hangers can significantly reduce the load bearing capacity and not all hangers are suitable for. In most cases, additional measures (cross bracing, additional hangers etc.) are required.

For suspension heights of up to 3000 mm, suitable suspension wires can be obtained as standard for different variants. For suspension heights over 3000 mm Nonius hangers (A4) are recommended.

A combination of multiple butterflies (A2) or extensions is not permitted. Greater suspension heights can be created using suitable special lengths (the longest possible upper section facilitates accessibility and subsequent adjustment). A combination of different hangers / parts is not permitted.

HANGERS SUBJECT TO COMPRESSION

In normal situations the hangers are subjected to tension (ceiling tiles, grid structure, service integrations, etc.).

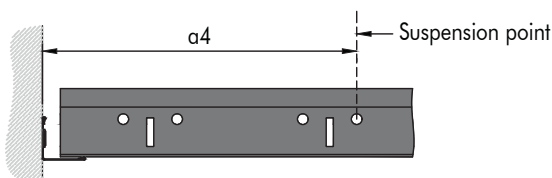
Certain applications may subject the hangers to compression forces. These applications can only be carried out with Nonius hangers. It is only limited available and must be clarified in relation to the object.

Please make sure that the elements have an overlap of at least 40 mm.

FIRE RATED APPLICATIONS

For fire rated applications, the relevant test certificates apply. Separate documents are available.

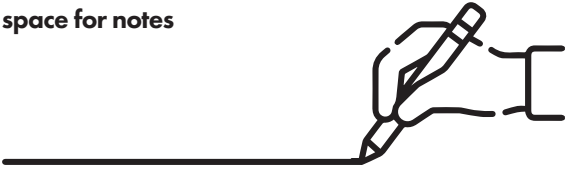
Perimeter hangers



To avoid overloading the perimeter trim, the first hanger must be positioned at a maximum distance from the perimeter (a4).

Depending on the system selected, the grid does not necessarily have to rest on the perimeter trim.

space for notes



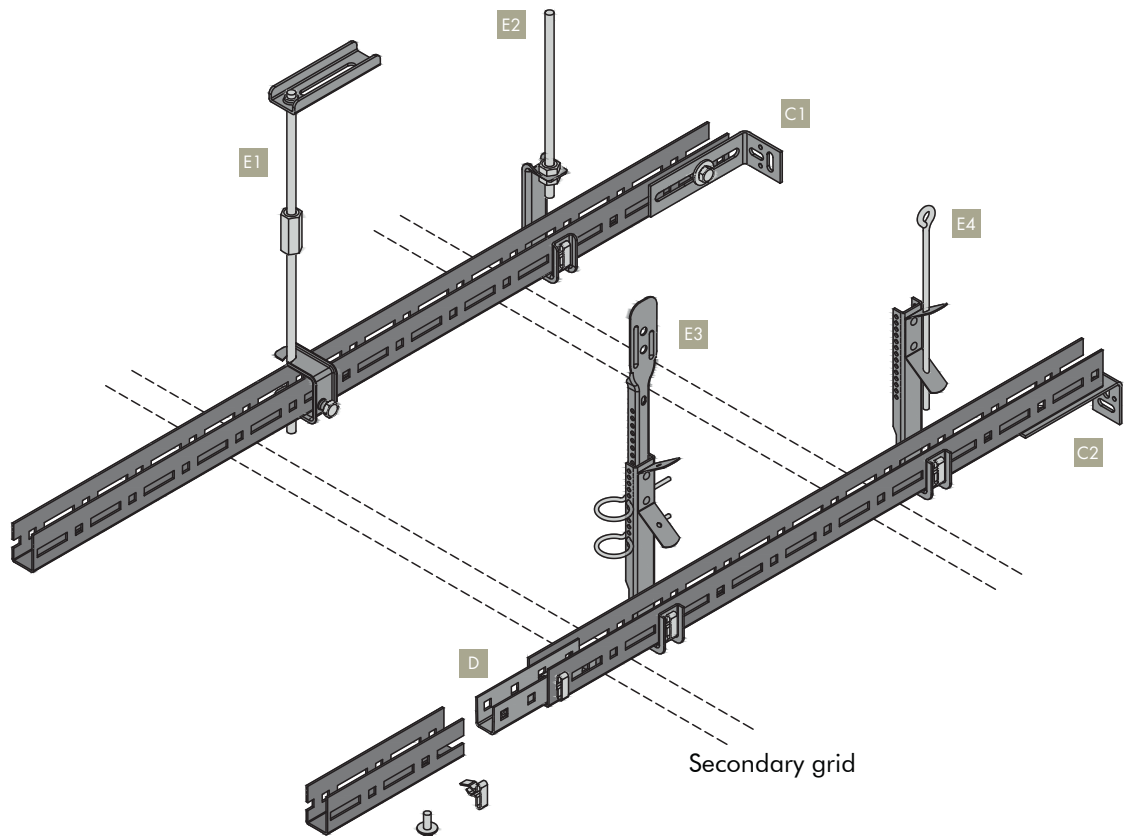
U-PROFILE PRIMARY GRID

Primary grid solution for indoor applications

General information

- Modular primary grid concept for small, medium, large rooms and floating solutions, with a minimum number of components
- For perpendicular installation with secondary grid
- High longitudinal and transverse stability
- Simple and time-saving installation, due to the use of system components
- All standard items are held in stock
- Various suspension options available, depending on market needs
- Tried and tested solution with extensive experience

Isometric view

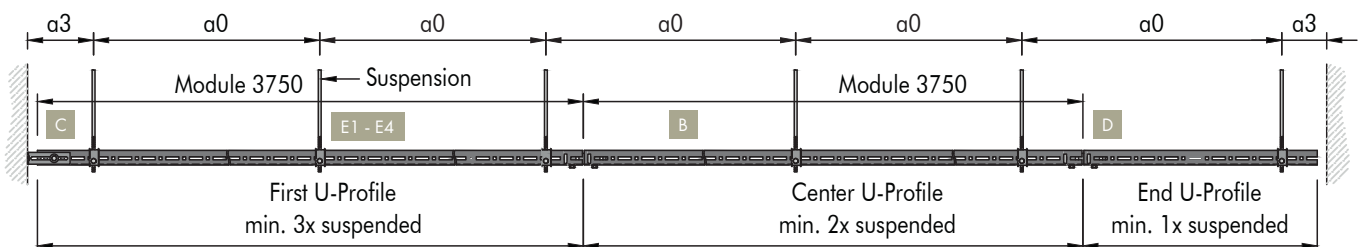


Important information

The U-Profile system fulfils the two conditions required in the European standard (EN 13964) concerning load-bearing capacity (2.5 times the failure criterion) and performance capability (deflection restriction).

Section A

Example with suspension option E1



Primary grid components

Standard components

- M300100 U-Profile
- M300119 Splice connector for U-Profile
- M300140 Wall anchor
- M300120 Plug-in clip for U-Profile
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm

Suspension options E1 - E4 components

Suspension option D1

- M300121 Clamping bracket for U-Profile
- M311101 Threaded rod M6 x 1000 mm
- M311315 Hexagonal extension nut M6 x 30 mm (optional)
- M311061 Suspension element (optional)

Suspension option D2

- M300366 Hanger for U-Profile
- M311103 Hexagonal nut M6
- M300120 Plug-in clip for U-Profile
- M311315 Hexagonal extension nut M6 x 30 mm (optional)
- M311061 Suspension element (optional)

Suspension option D3

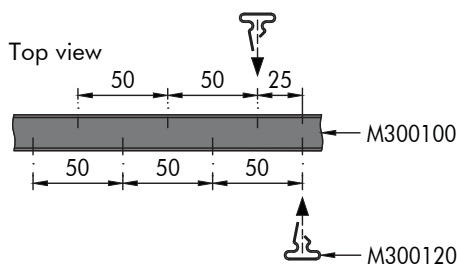
- M300166 Combi-Nonius hanger for U-Profile
- - Nonius top part (various lengths)
- M300036 Nonius locking pin
- M300120 Plug-in clip for U-Profile

Suspension option D4

- M300166 Combi-Nonius hanger for U-Profile
- - Eye wire (various lengths)
- M300120 Plug-in clip for U-Profile

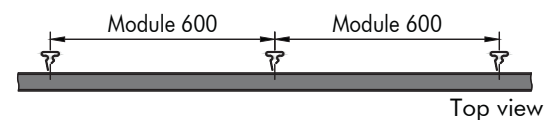
Detail B

U-Profile modulation



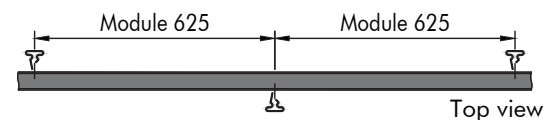
The U-Profile primary grid is a modular system based on a spacing of 50 mm. The holes on the lateral sides are offset from each other by 25 mm. This means that distances of 25 mm can be achieved. Other sizes covered by the long holes.

Example B1



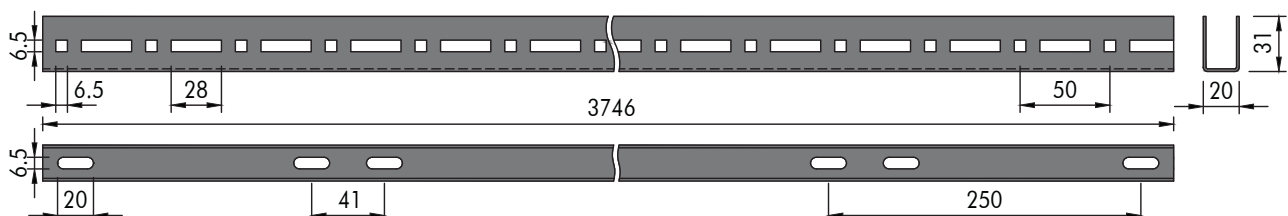
With a module size of e.g. 600 mm, the plug-in clips are always attached to the same side.

Example B2

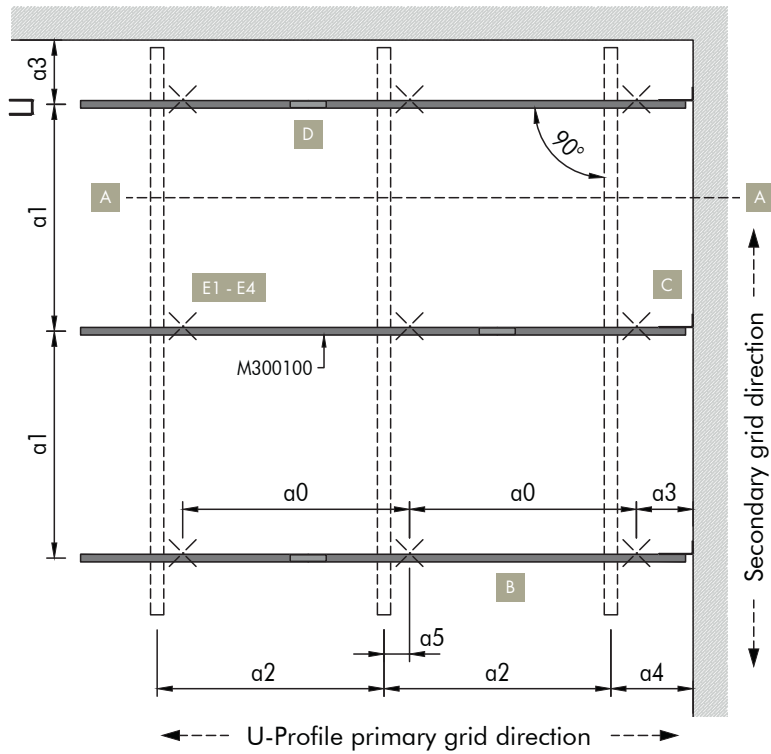


With a module size of e.g. 625 mm, the plug-in clips are attached alternately.

U-Profile



Typical grid layout



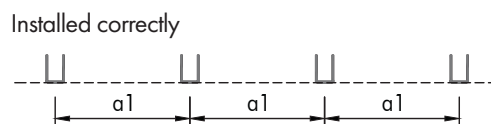
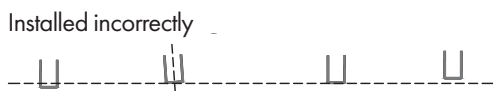
Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between secondary grid
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm

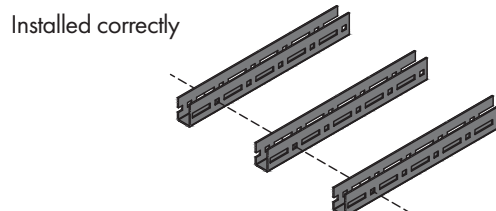
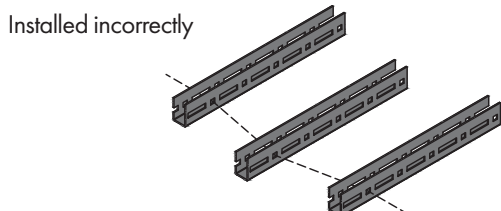
The required distances are shown in combination with the secondary grid and will vary depending on the system chosen.

U-Profile alignment

The U-profiles should be installed vertically and on the same level, in a max. distance of (a1).



U-Profiles should be aligned with each other in the longitudinal direction, otherwise the module will not be aligned.

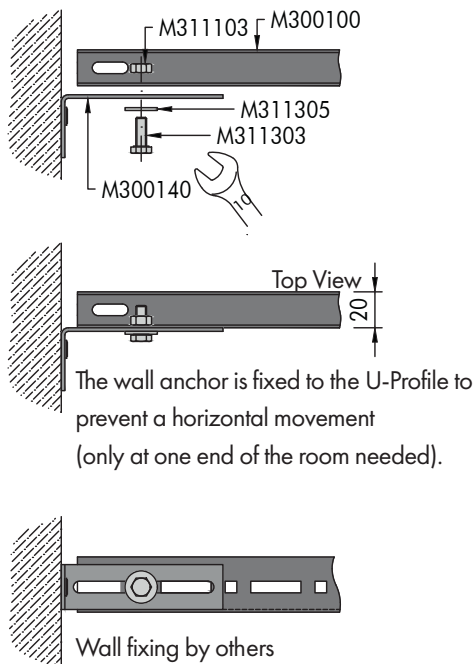


Detail C

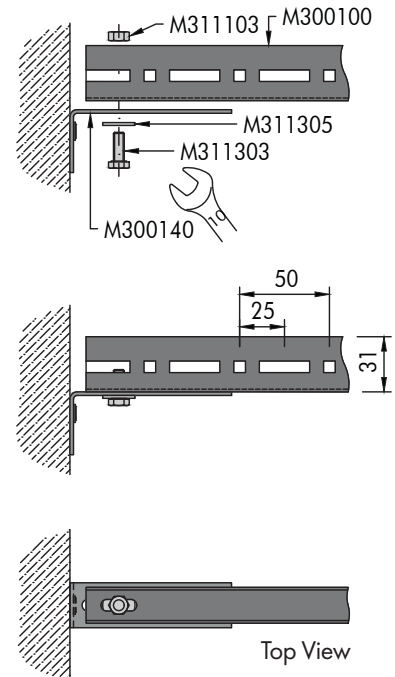
Wall fixing

The wall anchor can be attached either to the side (option B1) or below the U-Profile (option B2). It prevents the U-Profile from swinging and thus contributes to the safe installation of the substructure. The wall anchor has no load-bearing function and is only attached to one end of the room to secure the U-Profile. Maintain a small gap between the U-Profile and the wall.

Option C1

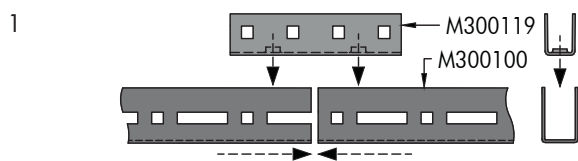


Option C2

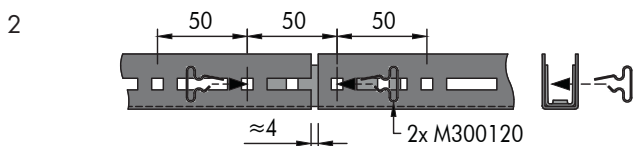


Detail D

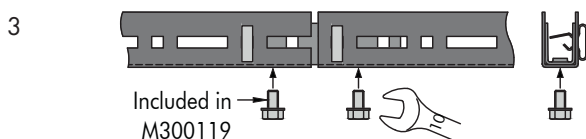
Splice connection



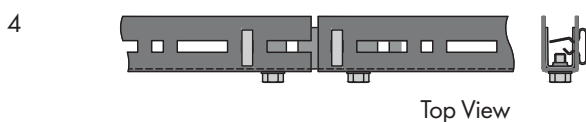
The splice connector for U-Profile comes with two bolts, which must first be removed. The splice connector is then placed between the two ends of the U-Profiles.



Fix the splice connector with two plug-in clips (large end upwards) at each end. This maintains the modular distance of 50 mm.



For a stable connection, the two supplied bolts are attached from below.

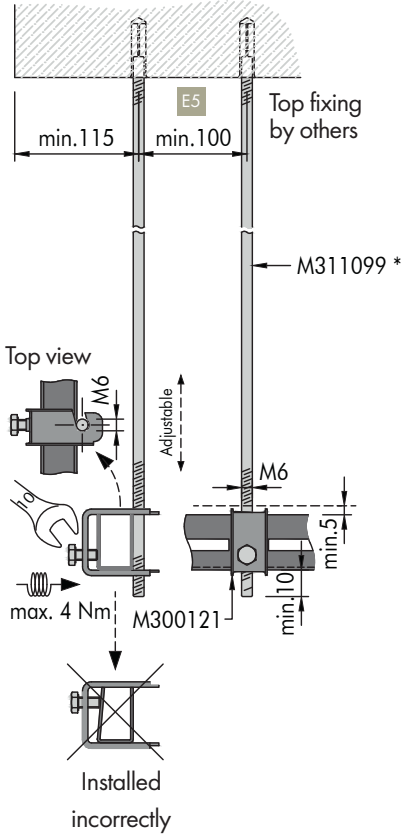


Since the U-Profile is a modular system, the ends must not touch. There is a distance of approx. 4 mm, depending on the length tolerance of the profile. Joints should be offset across the ceiling area.

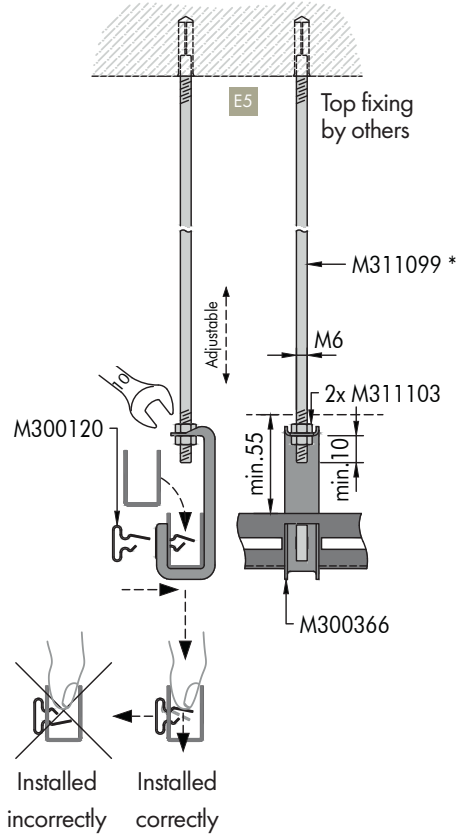
Detail J

Suspension options

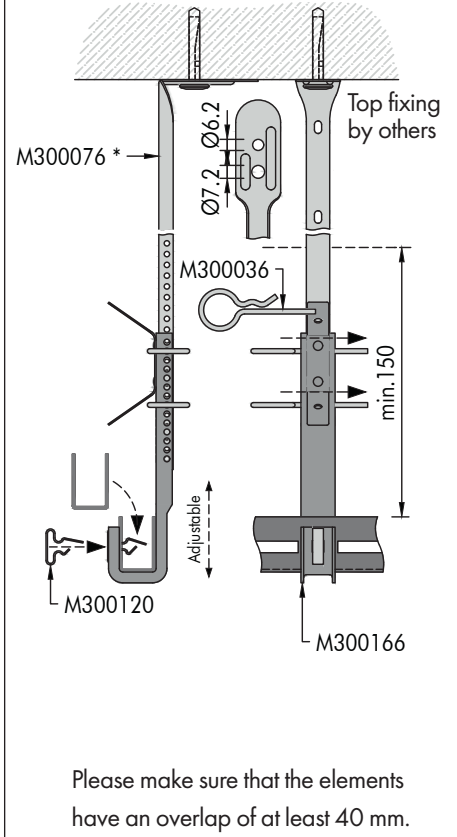
Option **E1**



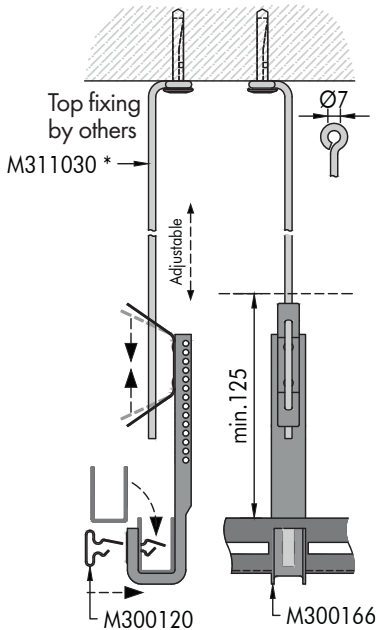
Option **E2**



Option **E3**



Option **E4**

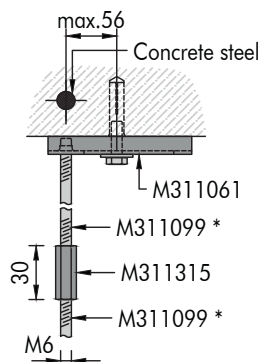


The suspension point should always be chosen close to the crossing point of the primary and secondary grid (a5) in order to absorb the ceiling load as best as possible and to prevent the U-profile from potentially deflecting.

Minimum pull-out force per suspension point = 1.25 kN (failure state)

Maximum permissible load per suspension point = 0.50 kN (incl. 2.5 times safety).
These values must always be observed and guaranteed by the installation company for each suspension point irrespective of the type of hanger selected.

Detail **E5**



Optional top fixing and extension detail for suspension option **E1** / **E2**

* Various lengths available

General installation sequence

1. The position of the suspension points must be marked on the soffit before installation (laser, measuring tape, chalk line, etc.). Then drill the holes and place the top fixing (not offered by Knauf Ceiling Solutions).
2. Set threaded rods, Nonius top parts or eye wires, shorten if necessary.
3. Wherever possible, fixing should begin on the centre axis of the ceiling area.
4. Align the wall angle with the laser (lower edge of the visible side of the ceiling components) and attach to the perimeter walls.
5. Suspension options:
 - E1 - Fasten the U-Profile to the threaded rod using a clamping bracket and align the height.
 - E2 - Align the height of the U-Profile hanger and fasten it to the threaded rod with two hexagonal nuts, then hang in the U-profile and fix the position with plug-in clips.
 - E3 - Align the height of the combi-Nonius hanger and fasten it to the Nonius top-part with two safety clips, then hang in the U-profile and fix the position with plug-in clips.
 - E4 - Align the height of the combi-Nonius hanger and fasten it to the eye wire, then hang in the U-profile and fix the position with plug-in clips.The minimum installation height is depending on the selected suspension option E1 - E4.
6. U-Profiles should be aligned with each other in the longitudinal direction and joints should be offset. Couple the U-Profiles with splice connectors and fix them to the perimeter walls with the wall anchor at one end of each row of U-Profiles.
7. See secondary grid pages for further steps.
8. Lay full ceiling elements, followed by cut or full perimeter elements.
9. Service integrations and additional loads must be suspended separately from the soffit. The additional measures must be carried out professionally.

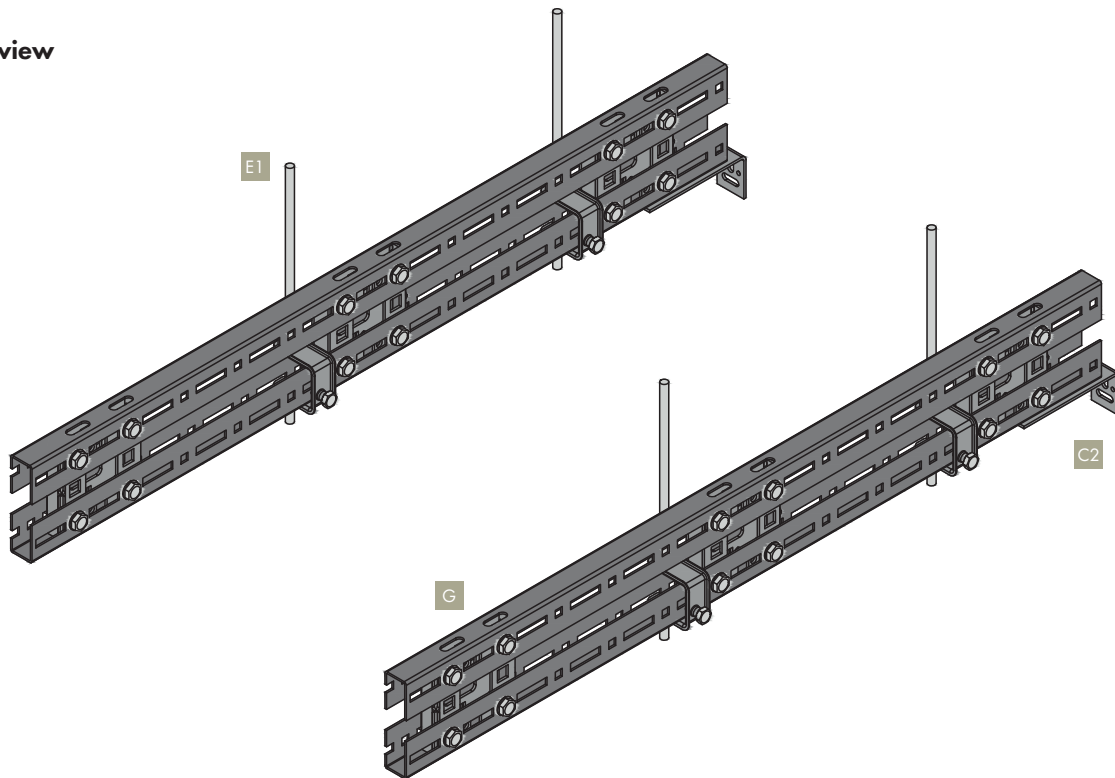
U-Profile bridging carrier

The U-Profile bridging carrier option has been designed as a single or continuous solution for smaller areas where direct suspension from the soffit is not possible with standard spacing. It is based on the standard U-Profile installation.

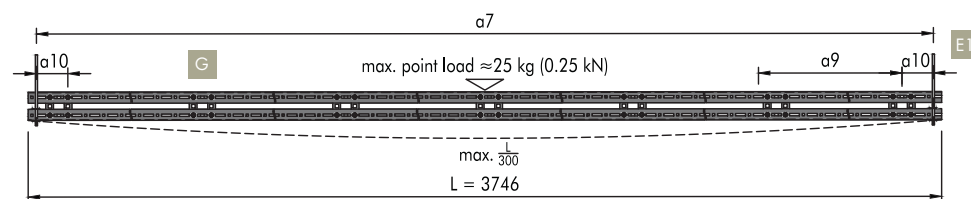
The bridging carrier can either be added to the standard primary grid structure or installed on top of it as an additional layer. Use on large areas is not recommended as assembly is time consuming, but still quicker than leaving the job site for another solution.

The connector and bolts can be stored in the tool box. This means that you always have a quick and easy solution to hand when you need it. When planning, it is important to ensure that the connectors are positioned so that they do not interfere with the suspension point (E1) nor the hanger for the secondary grid. The distance between the connectors (a9) and to the suspension point (a10) must not be exceeded.

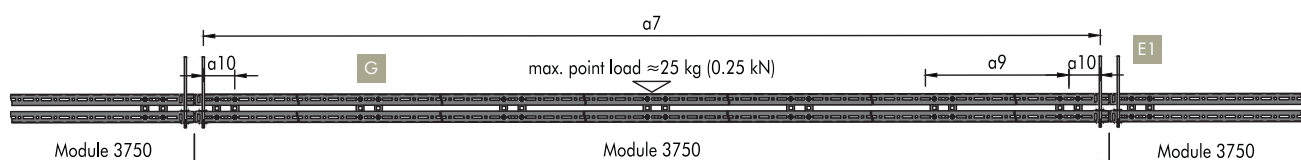
Isometric view



Single bridging carrier

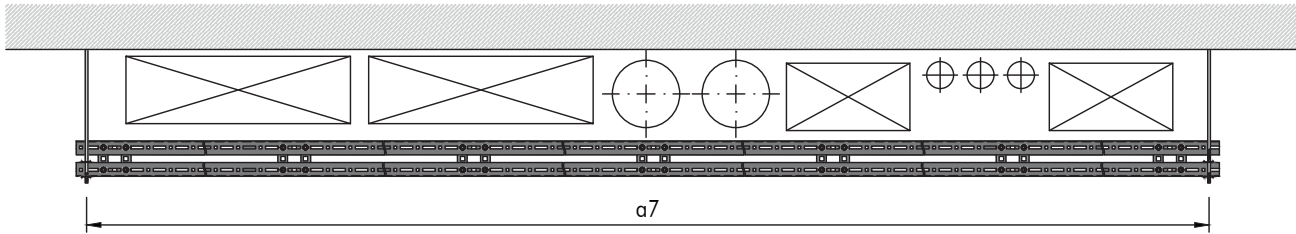


Continuous bridging carrier



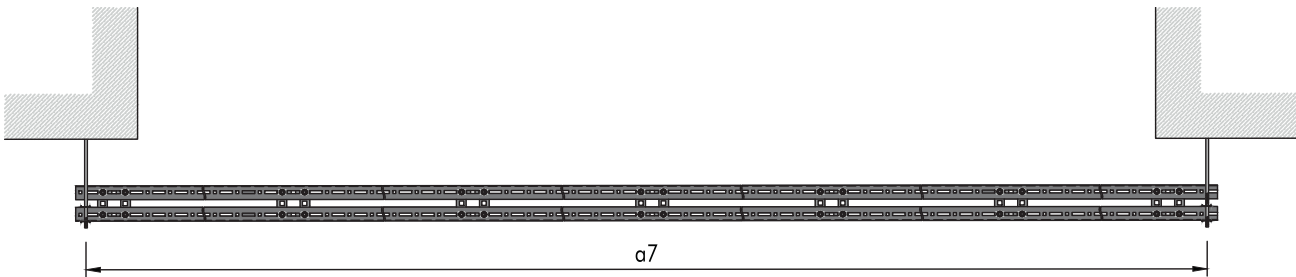
Application area 1

No fixation possible, due to building equipment



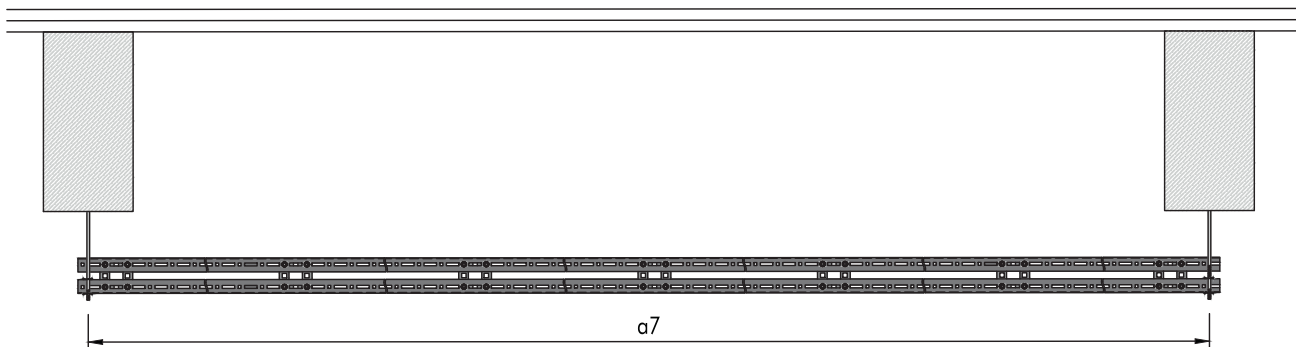
Application area 2

No fixation possible, due to ceiling aperture



Application area 3

No fixation possible, except on beams



U-Profile bridging carrier components

Standard components

- M300101 Connector for U-Profile bridging carrier
- M311195 Thread cutting bolt M6 x 10 mm

Spacing for DP12 A-Bar / L-Profile

System without additional load		System with additional load +4 kg/m ²	
a7	a8	a7	a8
[mm]	[mm]	[mm]	[mm]
2800	1900	2800	1900
2900	1900	2900	1900
3000	1900	3000	1800
3100	1900	3100	1650
3200	1900	3200	1500
3300	1900	3300	1350
3400	1900	3400	1250
3500	1750	3500	1150
3600	1600	3600	1050
3700	1500	3700	950

Spacing for Spring-T / J-Bar

System without additional load		System with additional load +4 kg/m ²	
a7	a8	a7	a8
[mm]	[mm]	[mm]	[mm]
2800	1900	2800	1900
2900	1900	2900	1900
3000	1900	3000	1750
3100	1900	3100	1550
3200	1900	3200	1400
3300	1900	3300	1300
3400	1800	3400	1200
3500	1650	3500	1100
3600	1500	3600	1000
3700	1400	3700	900

Spacing for H-Profile 28 / H-Profile 35

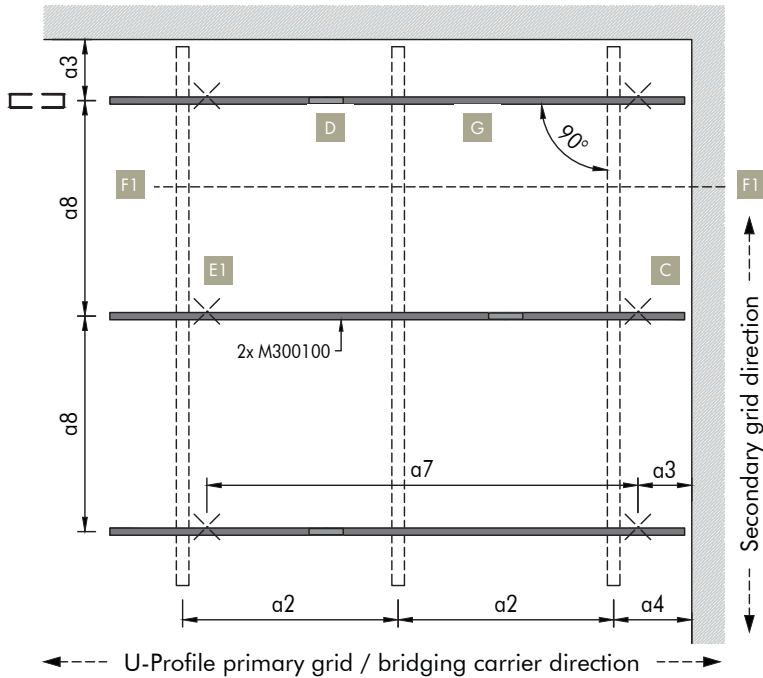
System without additional load		System with additional load +4 kg/m ²	
a7	a8	a7	a8
[mm]	[mm]	[mm]	[mm]
2800	1900	2800	1900
2900	1900	2900	1900
3000	1900	3000	1800
3100	1900	3100	1700
3200	1900	3200	1550
3300	1900	3300	1400
3400	1900	3400	1250
3500	1850	3500	1150
3600	1700	3600	1050
3700	1550	3700	1000

Spacing for C-Profile / Bandraster

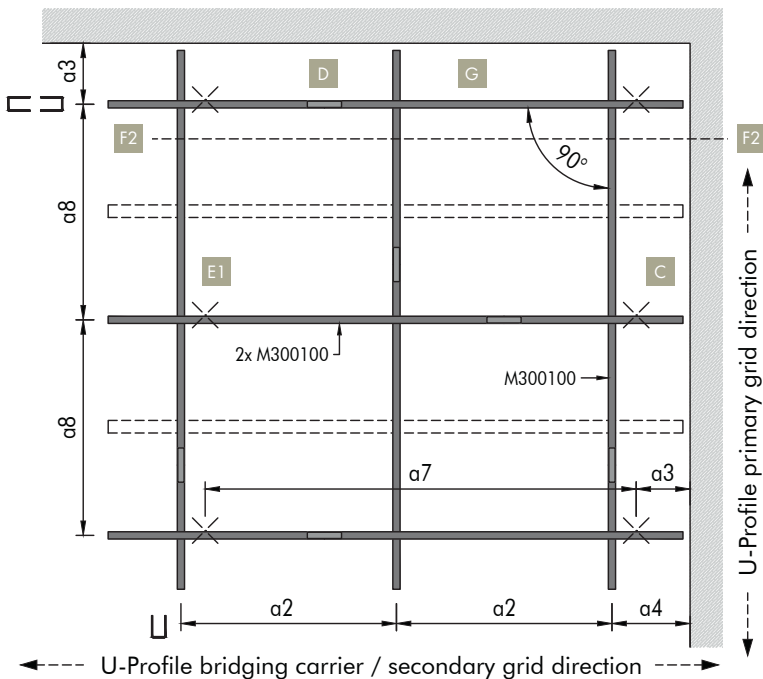
System without additional load		System with additional load +4 kg/m ²	
a7	a8	a7	a8
[mm]	[mm]	[mm]	[mm]
2800	1900	2800	1900
2900	1900	2900	1750
3000	1900	3000	1550
3100	1900	3100	1400
3200	1850	3200	1300
3300	1700	3300	1150
3400	1550	3400	1050
3500	1400	3500	1000
3600	1300	3600	900
3700	1200	3700	850

Typical grid layout

Bridging carrier as part of the U-Profile primary grid



Bridging carrier as additional layer above the U-Profile primary grid

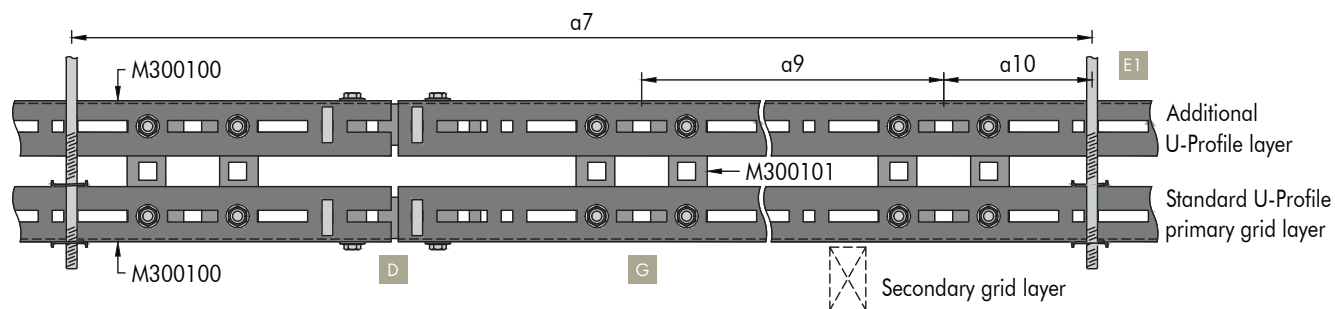


Parameters

- a_7 Distance between U-Profile bridging carrier suspension points = max. 3700 mm
- a_8 Max. distance between U-Profiles bridging carriers
- a_9 Distance between U-Profile bridging carrier connectors = max. 600 mm
- a_{10} Distance between U-Profile suspension point and connector = max. 100 mm

Section F1

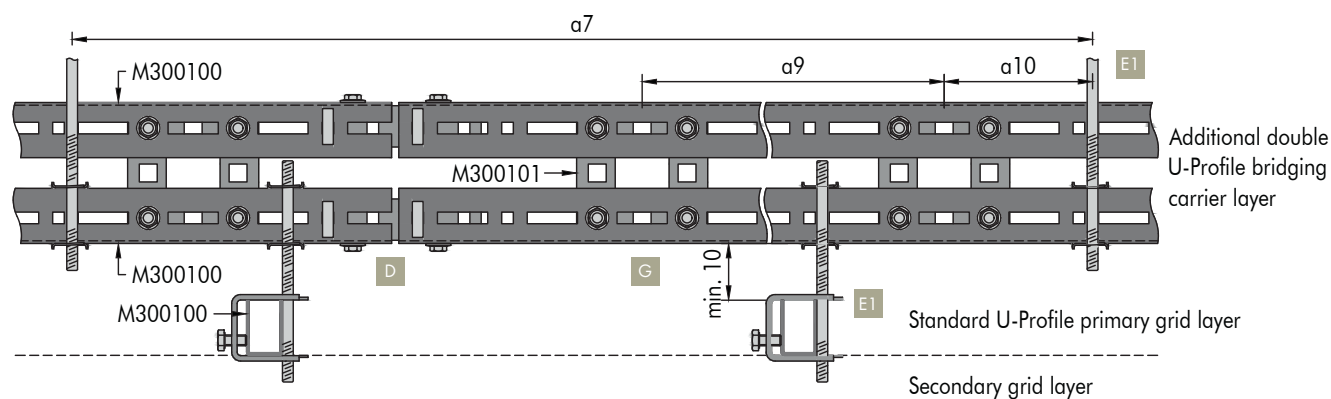
Bridging carrier as part of the U-Profile primary grid



With this option, the U-Profile is reinforced with a second one above it. The secondary grid below is installed as in the standard installation.

Section F2

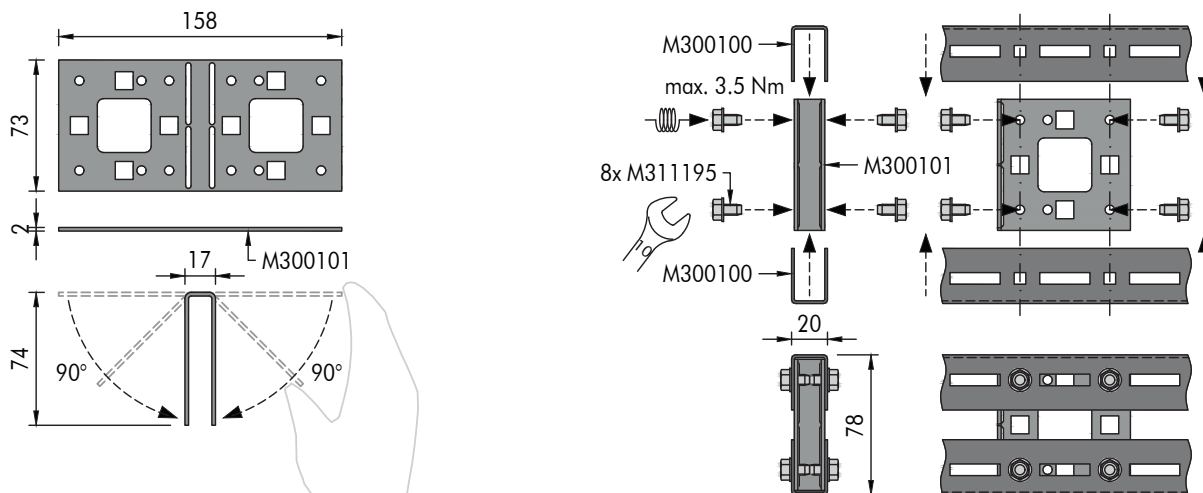
Bridging carrier as additional layer above the U-Profile primary grid



With this option, the U-Profile primary grid and the secondary grid are installed as in the standard installation. Additionally, a U-Profile bridging carrier layer is added above.

Detail G

Connector



The connector is supplied as a flat piece, which saves space, and is hand bent into a U-shape before installation.

Place the connector between the two U-Profile layers and connect it with the thread cutting bolts. In order to create a stable connection, 8 bolts are required per connector.

space for notes



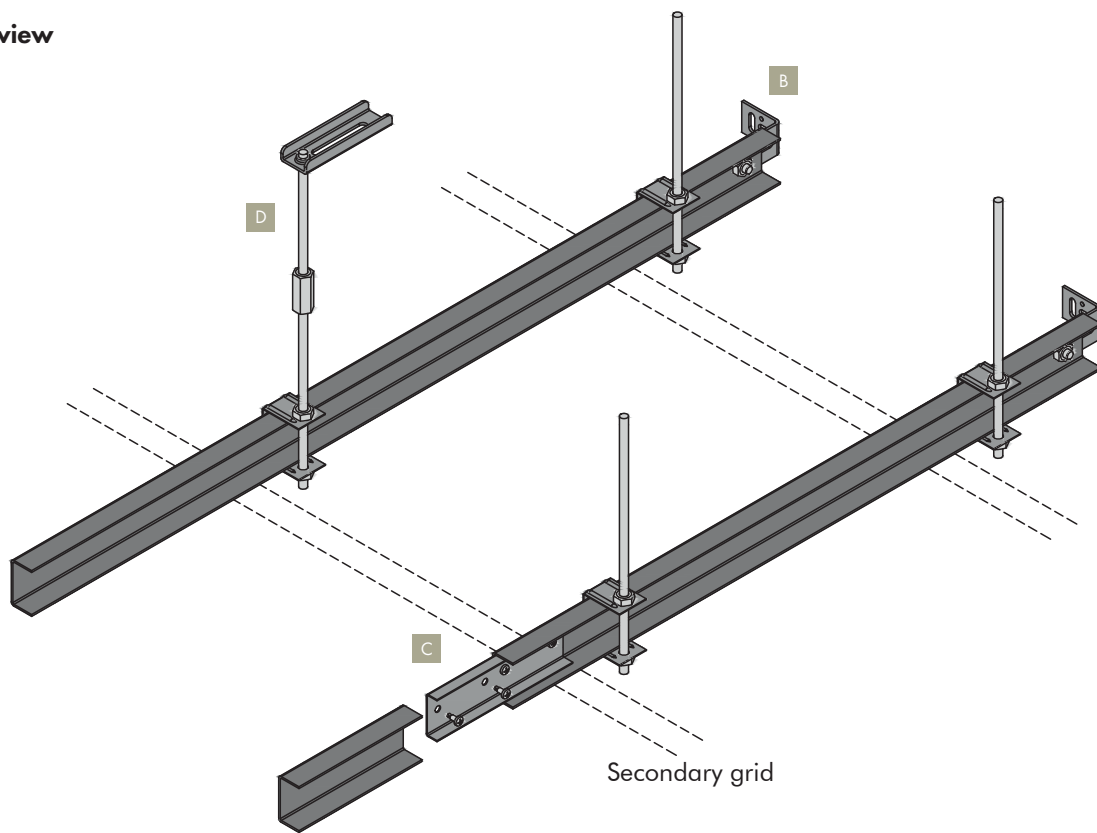
C-CHANNEL PRIMARY GRID

Primary grid solution for indoor applications

General information

- Primary grid concept for small, medium and large rooms, with a minimum number of components
- For perpendicular installation with secondary grid
- All standard items are held in stock
- Tried and tested solution

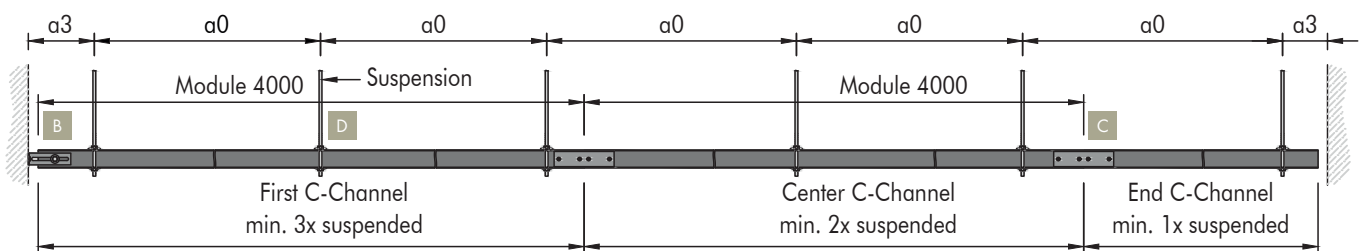
Isometric view



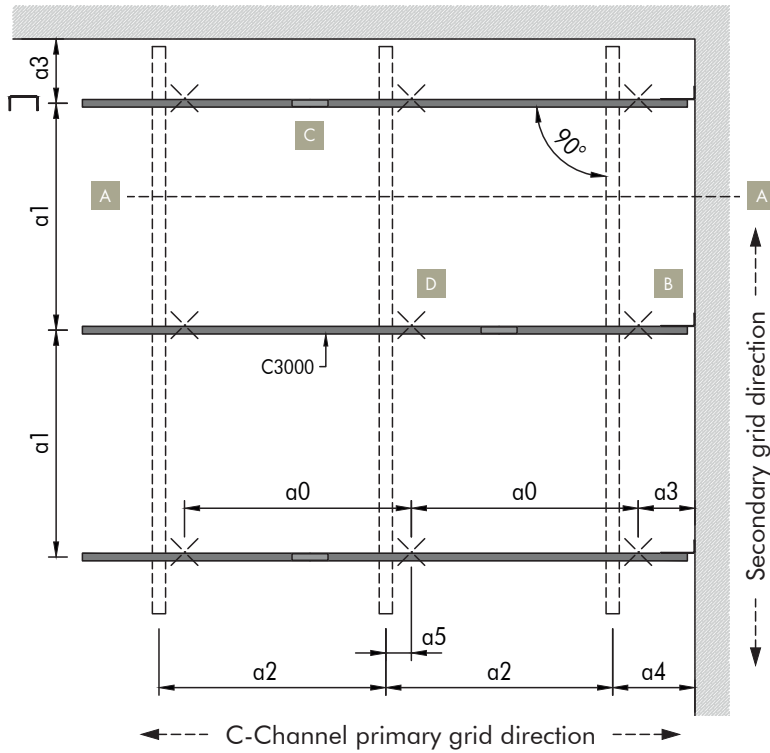
Important information

The C-Channel system fulfils the two conditions required in the European standard (EN 13964) concerning load-bearing capacity (2.5 times the failure criterion) and performance capability (deflection restriction).

Section A



Typical grid layout



Parameters

- a0 Distance between C-Channel suspension points = max. 1900 mm
- a1 Max. distance between C-Channels
- a2 Distance between secondary grid
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from C-Channel suspension point to hanger = max. 100 mm

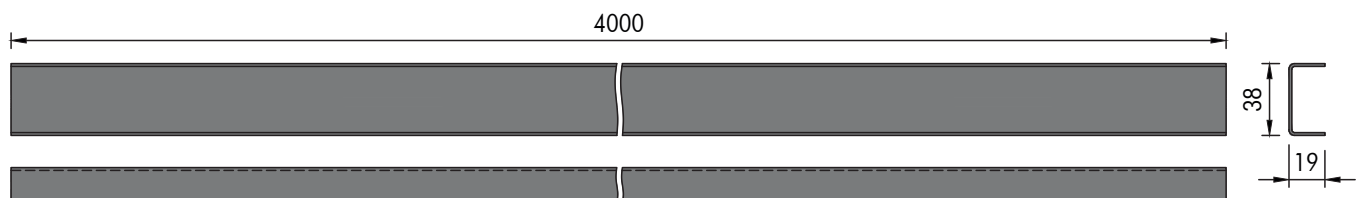
The required distances are shown in combination with the secondary grid and will vary depending on the system chosen.

Primary grid components

Standard components

- C3000 C-Channel
- C7140 Splice connector for C-Channel
- M300140 Wall anchor
- CA97 Clamping bracket for C-Channel
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm
- M311101 Threaded rod M6 x 1000 mm
- M311315 Hexagonal extension nut M6 x 30 mm (optional)
- M311061 Suspension element (optional)

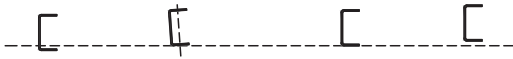
C-Channel



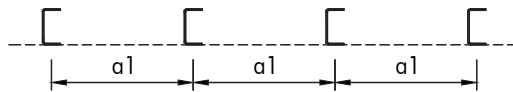
C-Channel alignment

The C-Channels should be installed vertically, level and evenly spaced (a_1).

Installed incorrectly



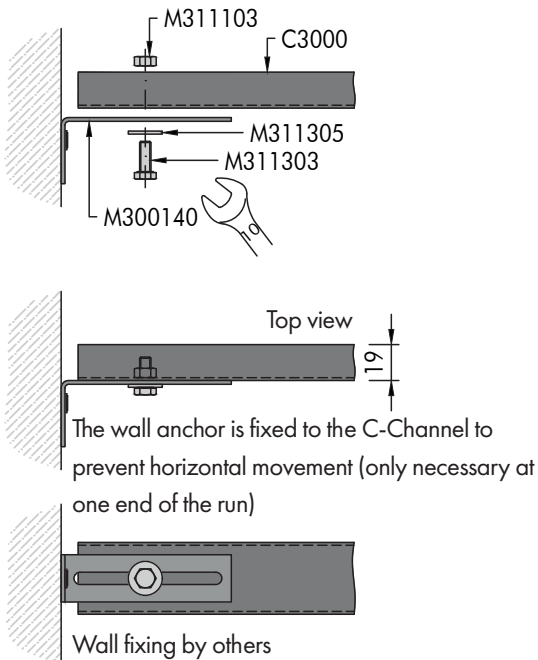
Installed correctly



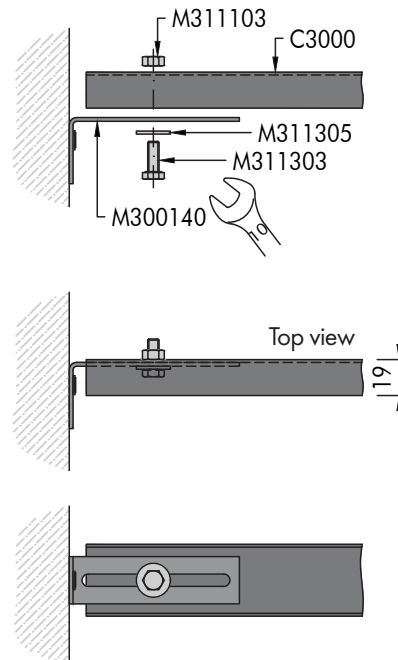
Detail B

Wall fixing

Option 1



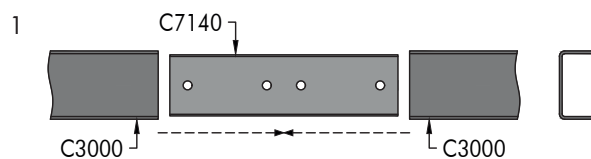
Option 2



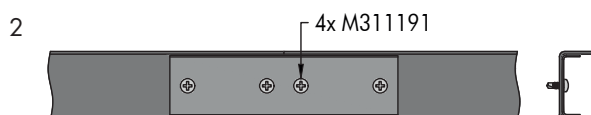
The wall anchor can be attached in two different ways to the C-Channel (option B1 / B2). It prevents the C-Channel from swinging and thus contributes to the safe installation of the substructure. The wall anchor has no load-bearing function and is only attached to one end of the room to secure the C-Channel. Maintain a gap between the end of the C-Channel and the wall, ≈ 10 mm.

Detail C

Splice connection



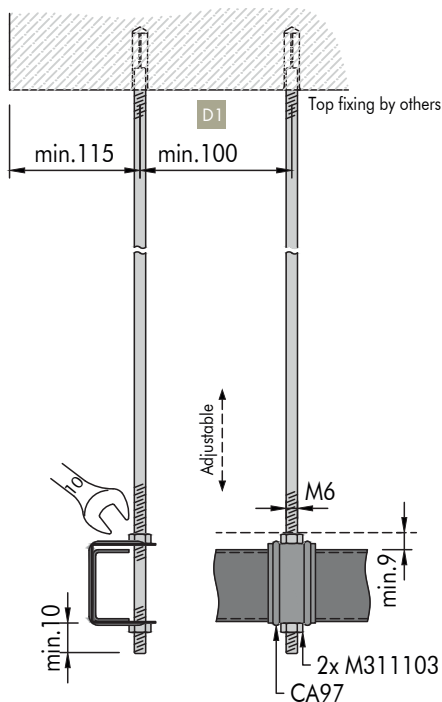
The splice connector is placed between the two ends of the C-Channels ensuring the C-Channels are butted together.



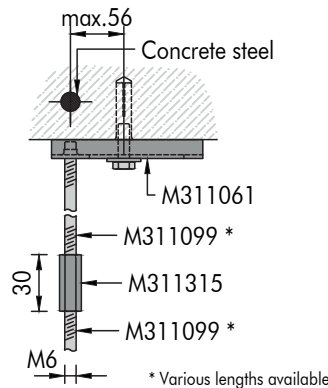
Fix the splice connector with four self-drilling screws.

Detail D

Suspension detail



Detail **D1**



Optional top fixing and extension detail

The suspension point should always be chosen close to the crossing point of the primary and secondary grid (α5) in order to support the ceiling load as best as possible and to prevent the C-Channel from potentially deflecting.

Minimum pull-out force per suspension point = 1.25 kN (failure state)

Maximum permissible load per suspension point = 0.50 kN (incl. 2.5 times safety). These values must always be observed and guaranteed by the installation company for each suspension point irrespective of the type of hanger selected.

General installation sequence

1. The position of the suspension points must be marked on the soffit before installation (laser, measuring tape, chalk line, etc.). Then drill the holes and place the top fixing (not offered by Knauf Ceiling Solutions).
2. Set threaded rods, shorten if necessary.
3. Wherever possible, fixing should begin on the centre axis of the ceiling area.
4. Align the wall angle with the laser (lower edge of the visible side of the ceiling components) and attach to the perimeter walls.
5. Fasten the C-Channel to the threaded rod using a clamping bracket and align the height.
6. C-Channel should be aligned with each other and joints should be offset. Couple the C-Channel with splice connectors and fix them to the boundary walls with the wall anchor at one end of each row of C-Channel.
7. See secondary grid pages for further steps.
8. Install full ceiling elements, followed by cut or full perimeter elements.
9. Service integrations and additional loads must be suspended from the soffit independently.



EXPOSED GRID CEILING

METAL BOARD / METAL AXAL VECTOR METAL MICROLOOK / METAL TEGULAR

15 or 24 mm T-grid
Exposed grid solution for indoor applications

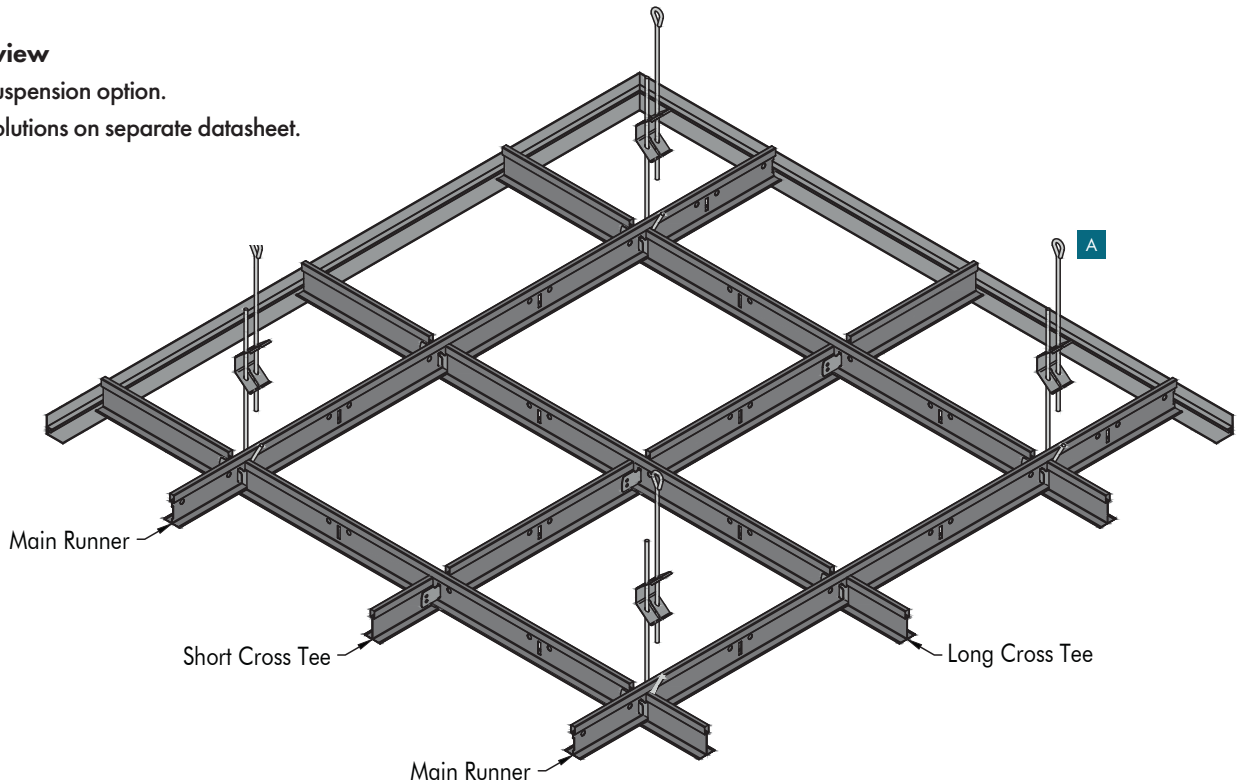
General information

- Exposed lay-in grid system for small, medium and large rooms
- Typical ceiling weight 5.0 kg/m² (indicative value for unperforated tiles, without additional load)
- Tiles are easily installed and fully demountable
- Systems can be installed with hold down clips to prevent movement
- Seismic design application available, see separate document

Isometric view

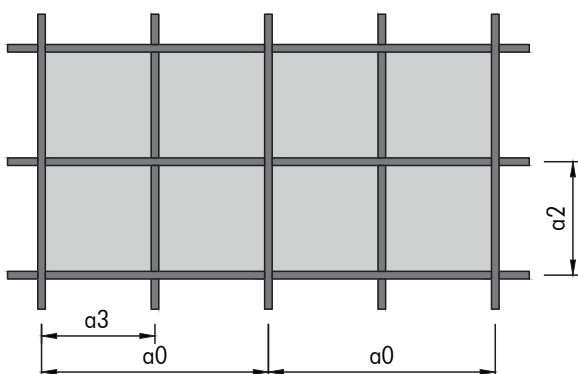
Select the suspension option.

Perimeter solutions on separate datasheet.

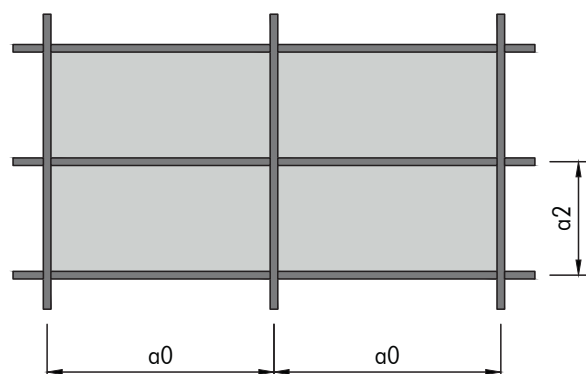


Standard layout options

Square tiles

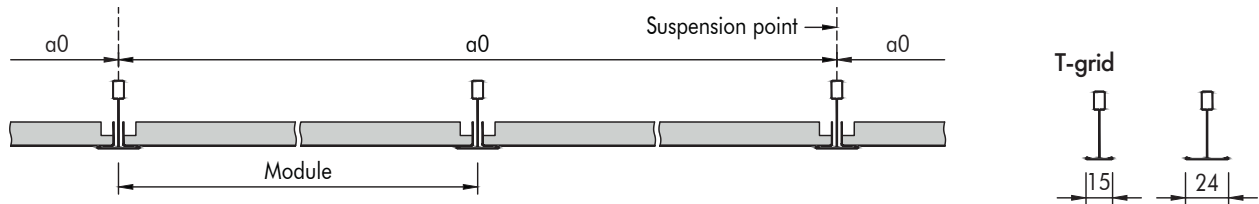


Rectangular tiles, without short Cross Tees



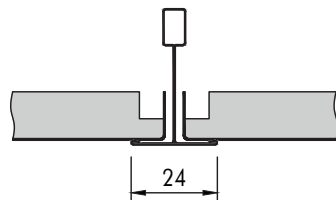
Section B

Example with METAL Board

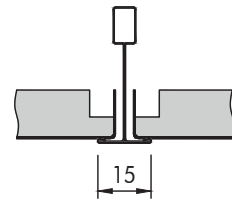


METAL Board

Installed on 24 mm T-grid, butt-cut (System C)

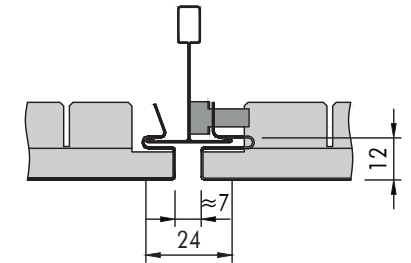


Installed on 15 mm T-grid, butt-cut (System C)



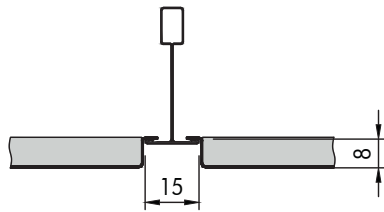
METAL Axal Vector

Tiles with ≈7 mm reveal, semi-concealed grid, Installed on 24 mm T-grid (System C)



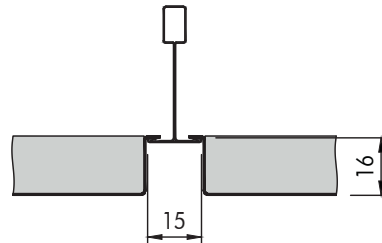
METAL MicroLook 8

Tiles with 8 mm drop
Installed on 15 mm T-grid (System C)



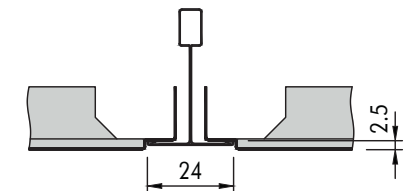
METAL MicroLook 16

Tiles with 16 mm drop
Installed on 15 mm T-grid (System C)



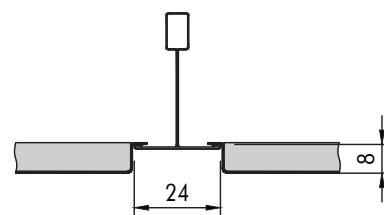
METAL Tegular 2

Tiles with 2.5 mm drop
Installed on 24 mm T-grid, butt-cut (System C)



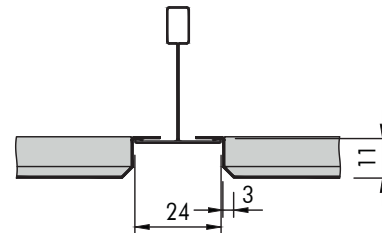
METAL Tegular 8

Tiles with 8 mm drop
Installed on 24 mm T-grid (System C)



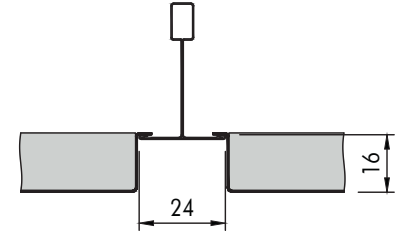
METAL Tegular 11 F

Tiles with 11 mm drop and 3 mm bevel
Installed on 24 mm T-grid (System C)



METAL Tegular 16

Tiles with 16 mm drop
Installed on 24 mm T-grid (System C)



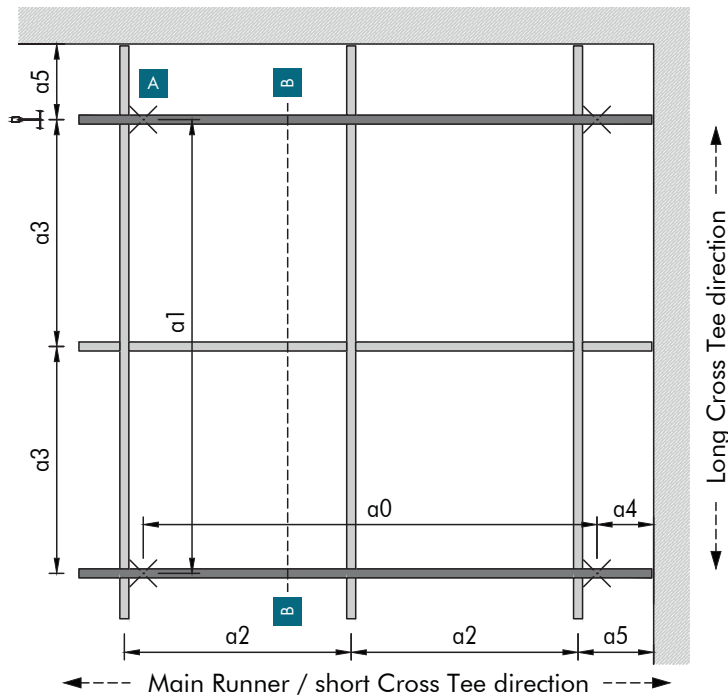
Optional grid components

Components

- M311062 Hold-down clip

See Main Runner for grid components

Typical grid layout



Parameters

- a0 Max. distance between Main Runner suspension points
- a1 Distance between Main Runner
- a2 Distance between Cross Tees (module width)
- a3 Distance between Cross Tees (module length)
- a4 Distance from wall = max. 250 mm
- a5 Distance from wall = max. module length / width, (min. 1/2 module length / width is recommended)

Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1500	1200	600	1200	1200
625	1500	1250	625	1200	1250

Start with the module width / distance between the long Cross Tees (a2) and take the values for (a0) and (a1) next to it. The shown values for (a0) are maximum allowed distances.

Material required per m² (no waste included)

System without additional load

Components	Module [mm]	600 x 600	625 x 625	1200 x 600
Main Runner	[m/m ²]	0.84	0.80	0.84
Long Cross-Tee	[m/m ²]	1.67	1.60	1.67
Short Cross-Tee	[m/m ²]	0.84	0.80	0
Suspension points (A)	[pcs/m ²]	0.56	0.54	0.56

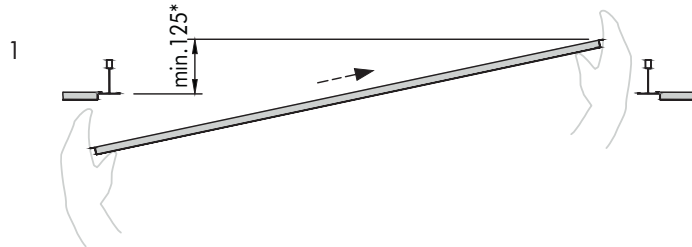
The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims.

Detail C

METAL Board / METAL MicroLook / METAL Tegular

Tile insertion



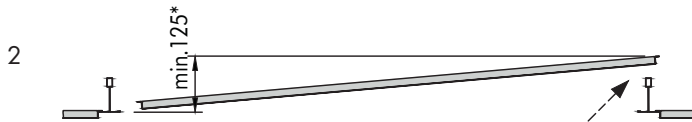
Insert the tile diagonally from below. The minimum recommended installation height is 125 mm, depending on the edge detail, module size and selected suspension method.



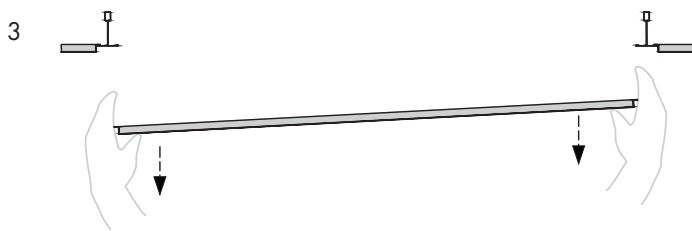
Place it on the T-grid.



Tile extraction



Lift the tile in one corner

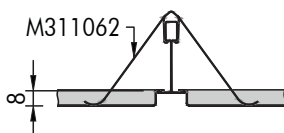


Remove it diagonally downwards.

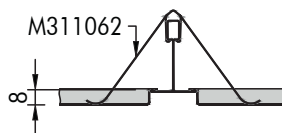
Detail D

The hold down clip option can be used to apply light pressure to the top of the tiles. This is not a security clip solution.

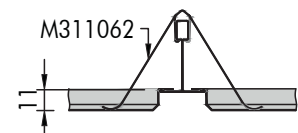
METAL MicroLook 8



METAL Tegular 8

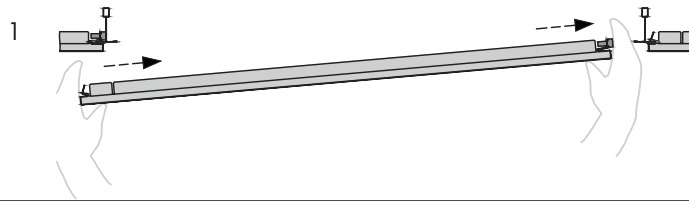


METAL Tegular 11 F

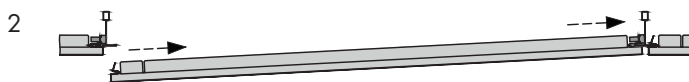


Detail E

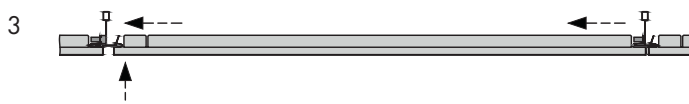
METAL Axal Vector
Tile insertion



One edge is fitted with two steel spring clips that serve to hold the tile in position. This edge is the first to engage the suspension system.



Press the tile with the spring kerf side against the T-grid flange...



until the kerf on the opposite side can be inserted.



The tiles will automatically center themselves and must be installed in the same direction.

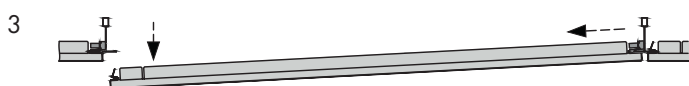
Tile extraction



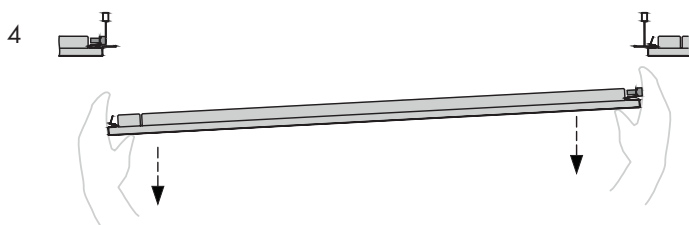
All full tiles can be removed and reinstalled downwardly without movement up into the plenum area.



Press the tile with the spring kerf side against the T-grid flange...



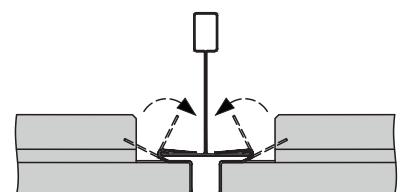
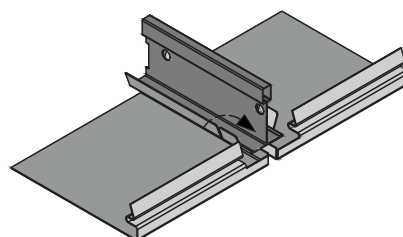
until kerf on the opposite side can be extracted.



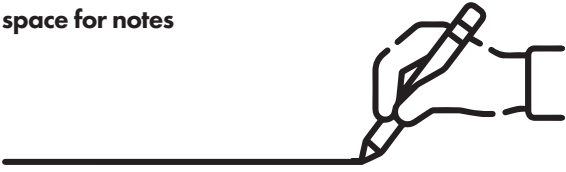
Detail F

METAL Axal Vector locking option

For security applications, METAL Axal Vector can be used where unauthorised removal of tiles is not desirable. This is achieved by installing tiles as normal and folding down the tabs.



space for notes



METAL R-L 201

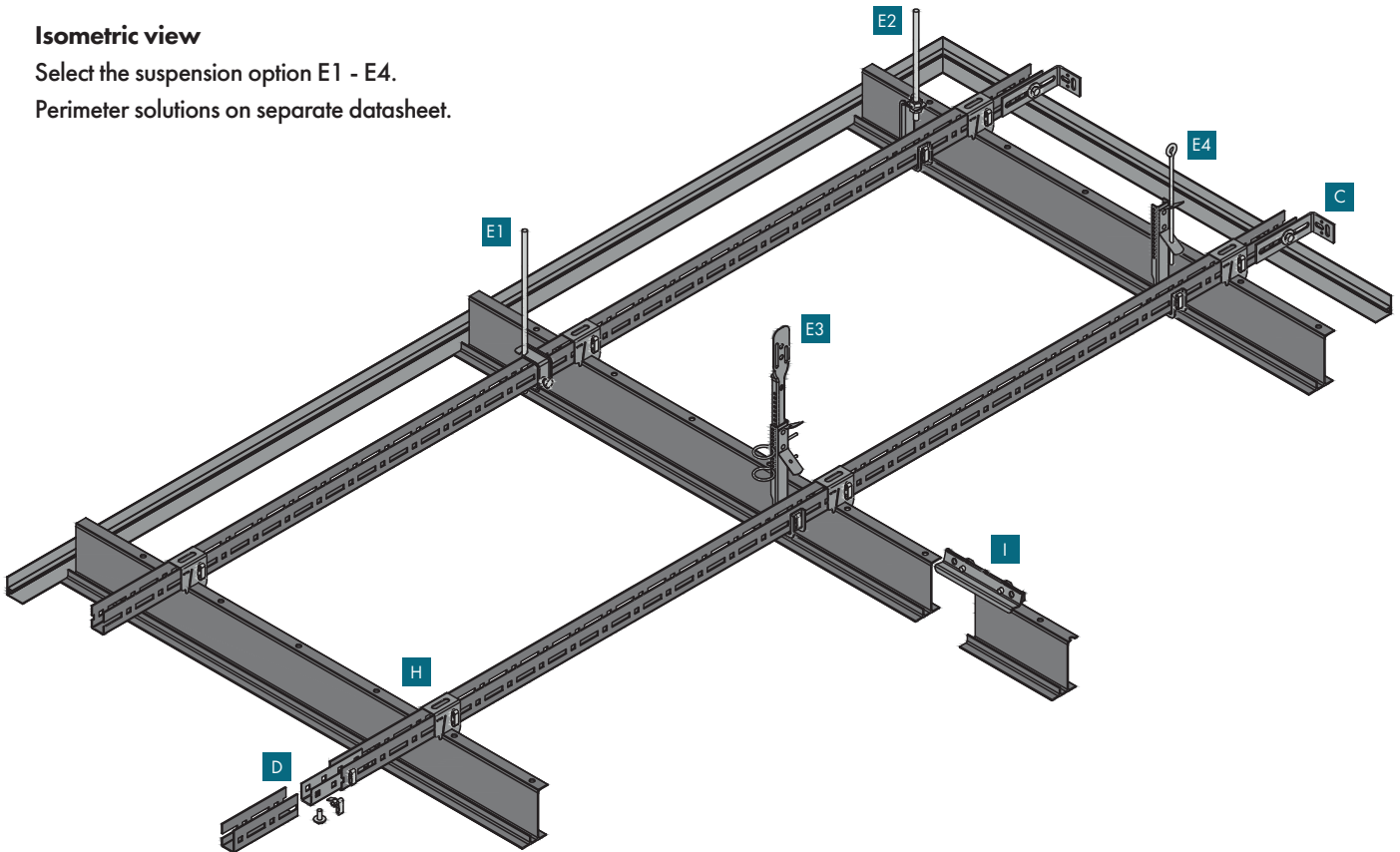
U-Profile primary grid + L-Profile secondary grid
Exposed grid solution for indoor applications

General information

- Exposed lay-in grid system for medium and large rooms
- For perpendicular installation on U-Profile primary grid
- L-Profile 38 mm in RAL 9010 made of aluminium (colour options on request)
- Typical ceiling weight 7.5 - 9.0 kg/m² (indicative value for unperforated panels, without additional load)
- Panels can be removed individually

Isometric view

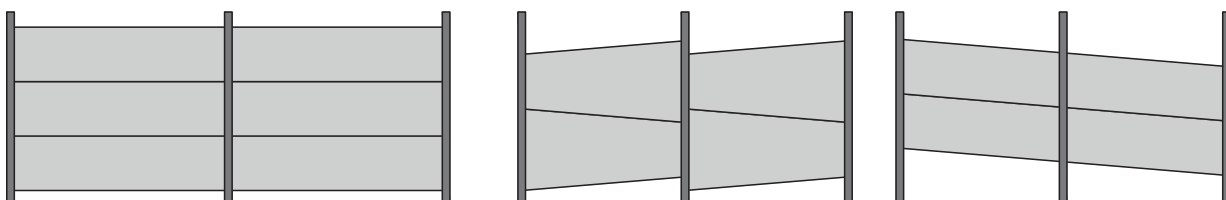
Select the suspension option E1 - E4.
Perimeter solutions on separate datasheet.



Vario Design & bespoke layout options

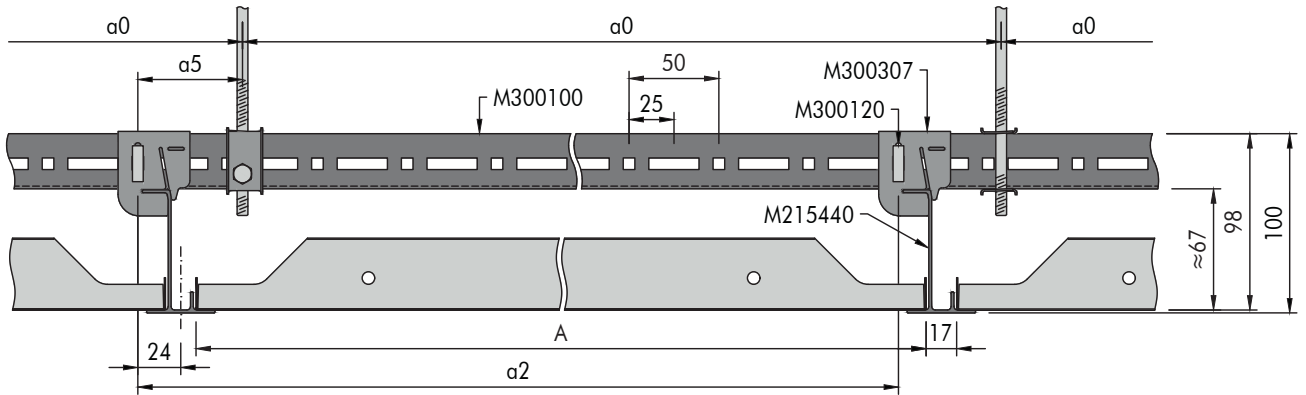
Vario Design

Bespoke (on request)



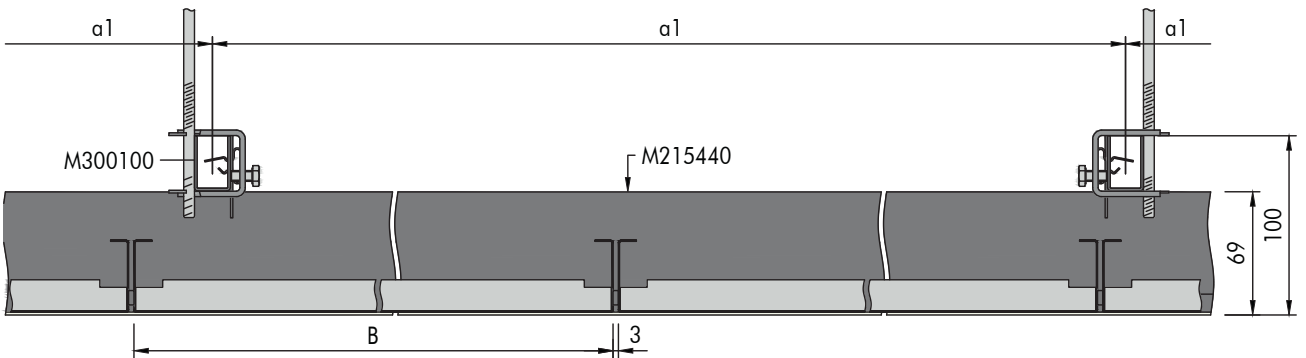
Section F

Example with suspension option E1



Section G

Example with suspension option E1



Panels supplied as standard with a 3 mm gasket on one long side to improve the visual appearance. Optionally panels can be installed without a gasket.

Secondary grid components

Standard components

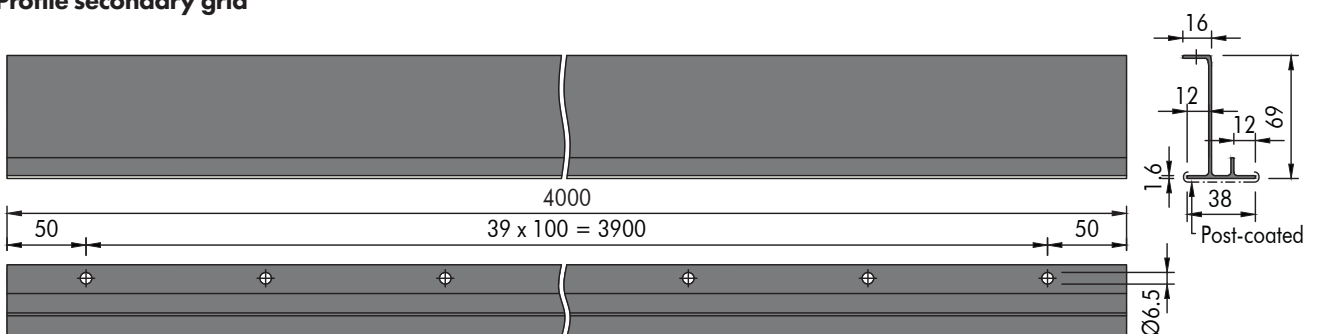
- M215440 L-Profile RAL 9010
- M300343 Splice connector for L-Profile
- M300307 Hanger for L-Profile
- M300120 Plug-in clip for U-Profile

Optional components

- M900000 Black gasket 8x3 mm (spare roll)

See U-Profile primary grid for primary grid components

L-Profile secondary grid



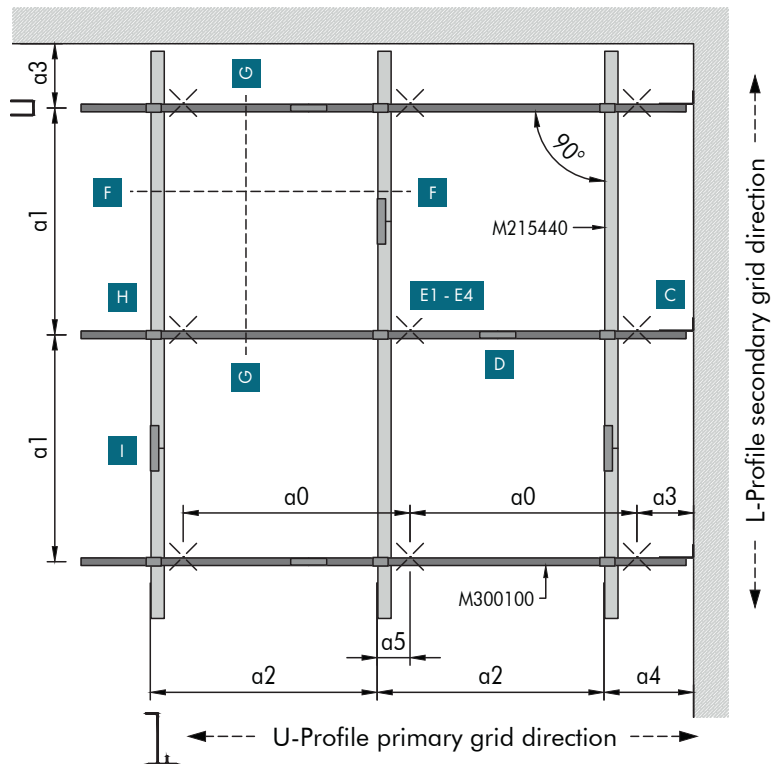
Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1900	600	1200	1900
650	1300	1900	650	1300	1600
700	1400	1900	700	1400	1400
750	1500	1900	750	750	1200
800	1600	1650	800	800	1050
850	1700	1400	850	850	900
900	900	1900	900	900	1900
950	950	1900	950	950	1900
1000	1000	1900	1000	1000	1900
1050	1050	1900	1050	1050	1850
1100	1100	1900	1100	1100	1850
1150	1150	1900	1150	1150	1800
1200	1200	1900	1200	1200	1750
1250	1250	1900	1250	1250	1700
1300	1300	1900	1300	1300	1600
1350	1350	1850	1350	1350	1450
1400	1400	1800	1400	1400	1350
1450	1450	1800	1450	1450	1250
1500	1500	1750	1500	1500	1150
1550	1550	1700	1550	1550	1100
1600	1600	1600	1600	1600	1000
1650	1650	1500	1650	1650	950
1700	1700	1400	1700	1700	900
1750	1750	1300	1750	1750	800
1800	1800	1150	1800	1800	750
1850	1850	1050	1850	1850	700
1900	1900	950	1900	1900	600
1950	975	1550	1950	975	1350
2000	1000	1500	2000	1000	1350
2050	1025	1500	2050	1025	1350
2100	1050	1500	2100	1050	1300
2150	1075	1450	2150	1075	1300
2200	1100	1450	2200	1100	1300
2250	1125	1450	2250	1125	1250
2300	1150	1400	2300	1150	1250
2350	1175	1400	2350	1175	1250
2400	1200	1400	2400	1200	1250
2450	1225	1350	2450	1225	1200
2500	1250	1350	2500	1250	1200
2600	1300	1300	2600	1300	1200
2700	1350	1300	2700	1350	1150
2800	1400	1250	2800	1400	1100
2900	1450	1250	2900	1450	1100
3000	1500	1200	3000	1500	1100
3100	1550	1200	3100	1550	1050
3200	1600	1150	3200	1600	950
3300	1650	1150	3300	1650	900

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between L-Profiles = panel length + 17 mm
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = panel length + 17 mm / panel width + gasket
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

Typical grid layout



To determine suspension layout

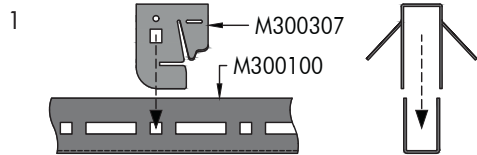
The module length (M) of the requested ceiling is equal to the distance between the L-Profile centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

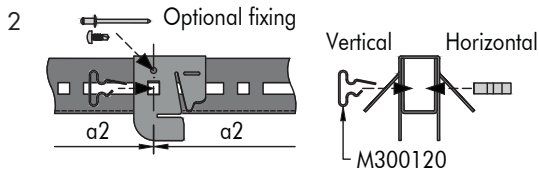
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

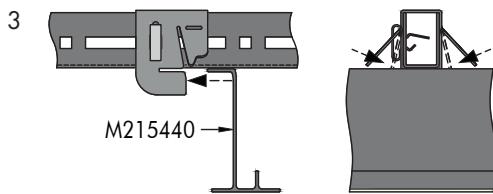
Hanger installation



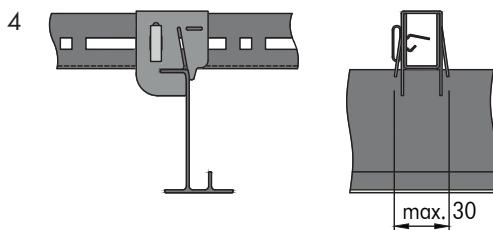
Place the hanger on the U-profile.



Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.



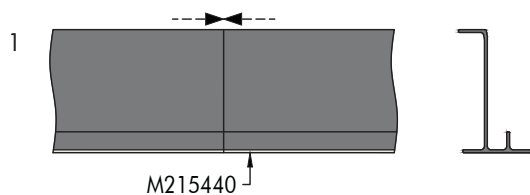
Insert the L-Profile into the hanger, press down the two hanger wings to lock the position of the L-Profile.



The L-Profile is now locked in position.

Detail I

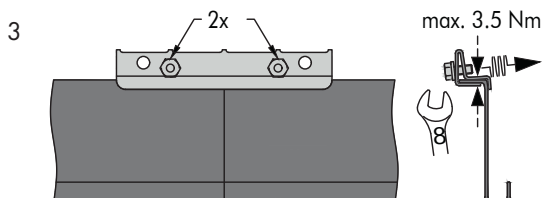
Splice connection



Once the L-Profiles are installed under the U-Profiles, the ends should be brought together without a gap.



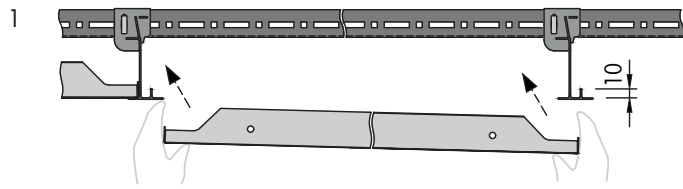
The connectors for the L-Profiles must be inserted from above.



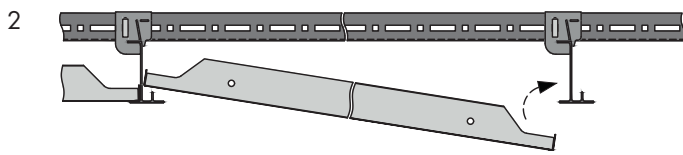
Use the bolts to secure the connector. Stagger the joints.

Detail J

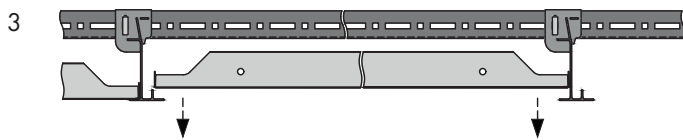
Panel insertion



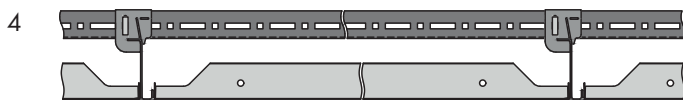
The L-Profile was designed asymmetrically with an additional upstand of 10 mm. As a result, the panels are a little shorter and require less height when installing and extracting.



Insert the panel first on the side where the upstand of the L-Profile is, followed by the opposite side.

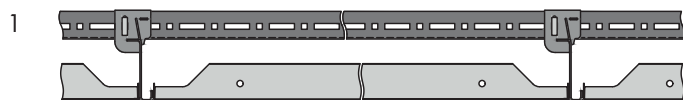


The panel is placed horizontally on the L-Profiles.

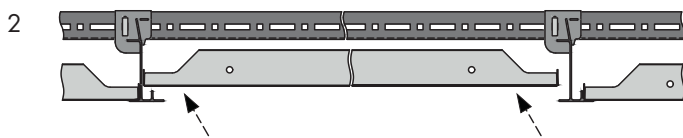


Continue with the next panel.

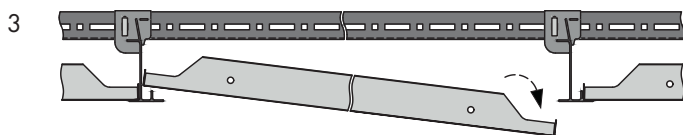
Panel extraction



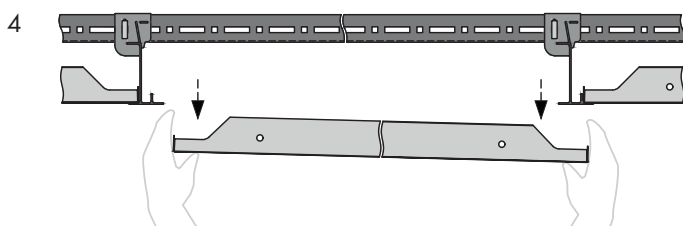
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the panel and move it to the direction where the L-Profile upstand is.



Lower the opposite side.



Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Material required per m² (no waste included)System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3100	3300
M215440	L-Profile RAL 9010	0.21	0.16	0.14	0.13	0.10	0.09	0.08	0.08
M300100	U-Profile	0.14	0.17	0.23	0.18	0.19	0.21	0.22	0.23
M300119	Splice connector for U-Profile	0.15	0.17	0.24	0.18	0.20	0.22	0.23	0.24
M300120	Plug-in clip for U-Profile	0.74	0.74	0.97	0.70	0.70	0.73	0.73	0.75
M300140	Wall anchor	0.06	0.07	0.09	0.07	0.08	0.09	0.09	0.09
M300307	Hanger for L-Profile	0.44	0.40	0.49	0.34	0.30	0.29	0.27	0.27
M300343	Splice connector for L-Profile	0.21	0.16	0.14	0.13	0.11	0.09	0.09	0.08
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Various	Suspension points (E1 - E4)	0.44	0.40	0.49	0.67	0.60	0.58	0.54	0.53

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional security brackets and extraction tools.

METAL B-L 302

U-Profile primary grid + Bandraster secondary grid
Exposed linear grid solution for indoor applications

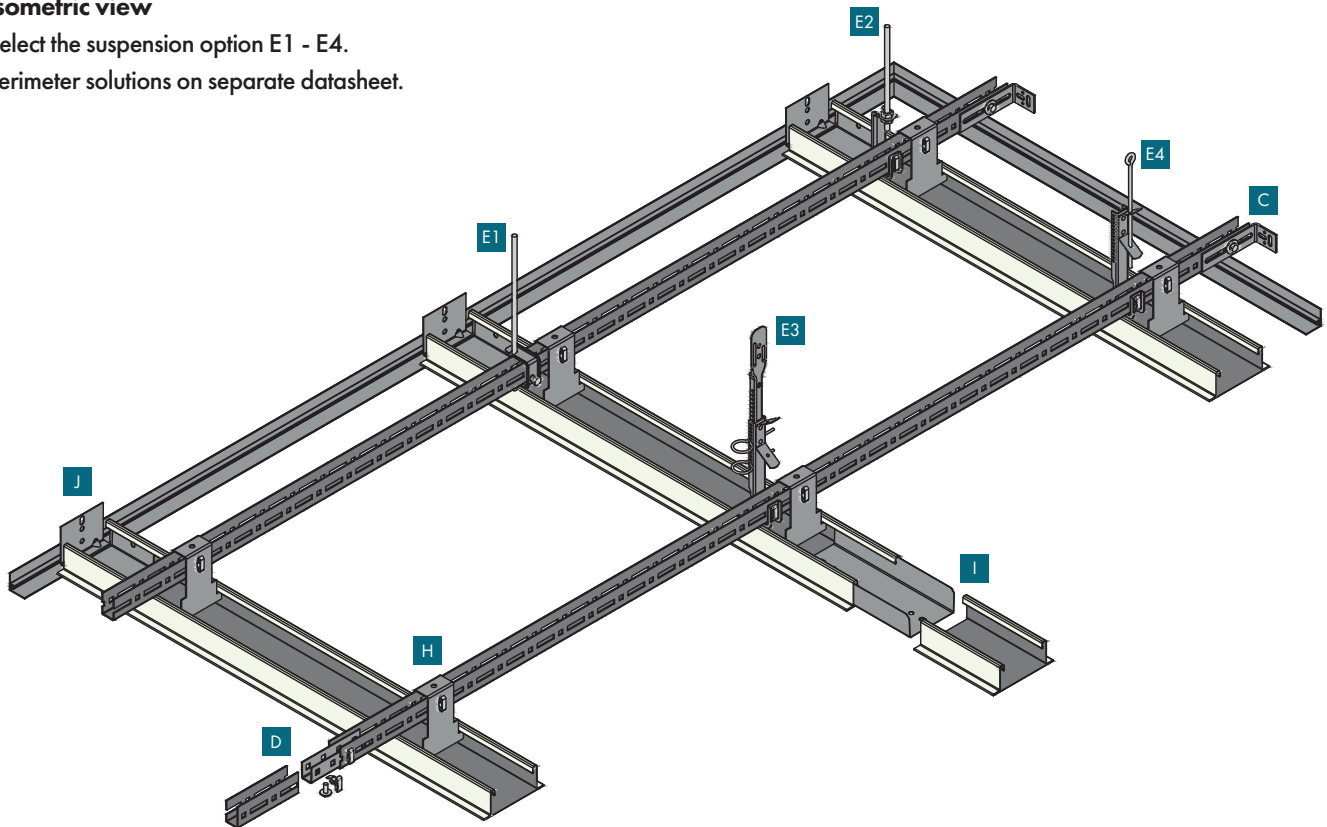
General information

- Exposed lay-in linear grid system for large rooms
- For perpendicular installation on U-Profile primary grid
- Bandraster 100 mm in RAL 9010 made of galvanised steel (colour options on request)
- Typical ceiling weight 8.0 - 9.5 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable
- Tartan grid layout option

Isometric view

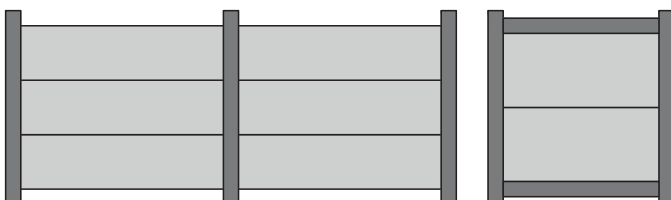
Select the suspension option E1 - E4.

Perimeter solutions on separate datasheet.

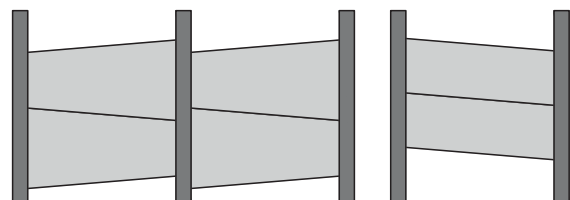


Vario Design & bespoke layout options

Vario Design

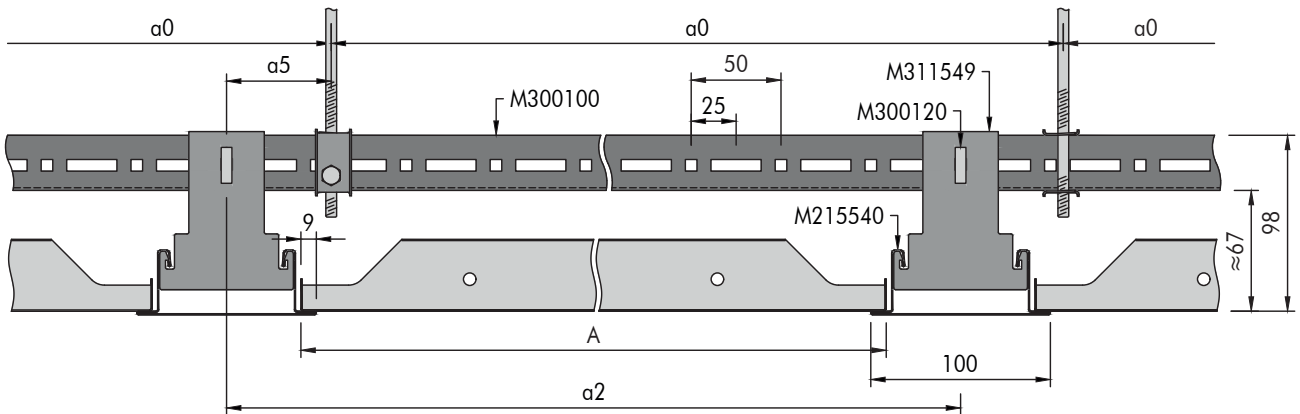


Bespoke (on request)



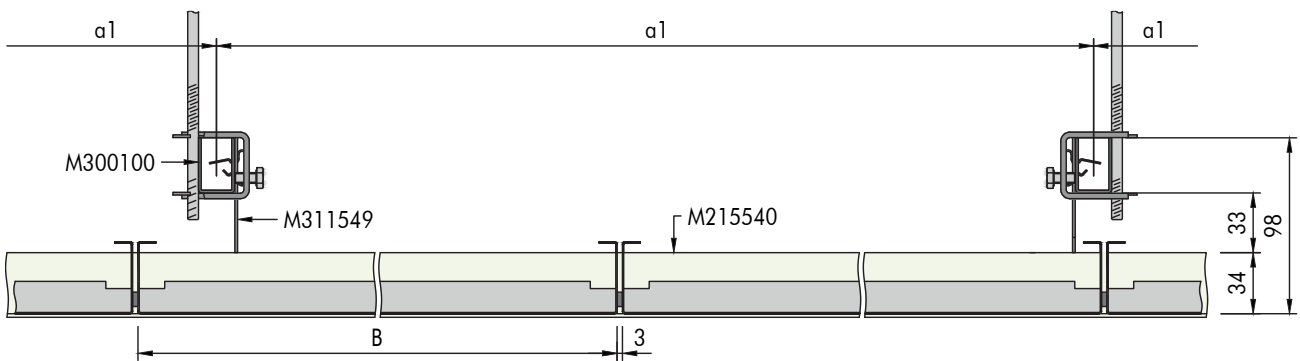
Section F

Example with suspension option E1



Section G

Example with suspension option E1



Panels supplied as standard with a 3 mm gasket on one long side to improve the visual appearance. Optionally panels can be installed without a gasket.

Secondary grid components

Standard components

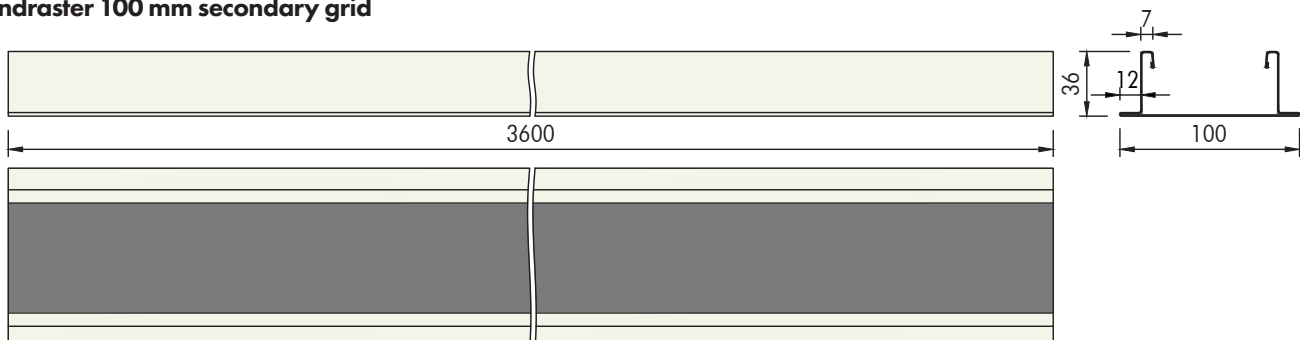
- A361005 Wall anchor for Bandraster 100 mm
- M215540 Bandraster 100 mm RAL 9010
- A361003 Splice connector for Bandraster 100 mm
- M300120 Plug-in clip for U-Profile
- M311549 Hanger for Bandraster 100 mm

Optional components

- A361004 Cross connector for Bandraster 100 mm
- M311191 Self-drilling screw 3.5 x 9.5 mm
- M900000 Black gasket 8x3 mm (spare roll)

See U-Profile primary grid for primary grid components

Bandraster 100 mm secondary grid



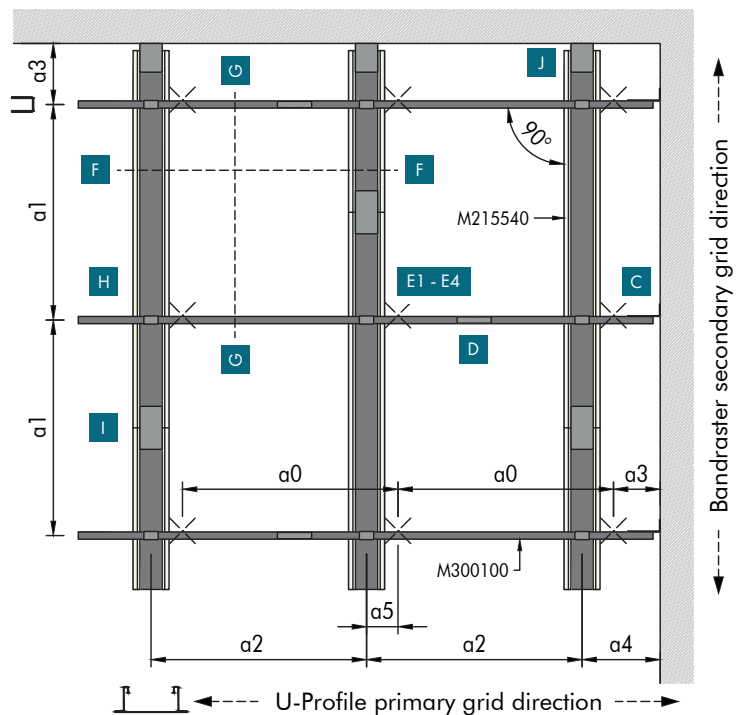
Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1900	600	1200	1900
650	1300	1900	650	1300	1700
700	1400	1900	700	700	1750
750	1500	1900	750	750	1700
800	1600	1650	800	800	1650
850	850	1800	850	850	1600
900	900	1750	900	900	1550
950	950	1700	950	950	1500
1000	1000	1650	1000	1000	1500
1050	1050	1600	1050	1050	1450
1100	1100	1600	1100	1100	1400
1150	1150	1550	1150	1150	1400
1200	1200	1500	1200	1200	1350
1250	1250	1500	1250	1250	1300
1300	1300	1450	1300	1300	1300
1350	1350	1400	1350	1350	1250
1400	1400	1400	1400	1400	1250
1450	1450	1350	1450	1450	1200
1500	1500	1350	1500	1500	1200
1550	1550	1350	1550	1550	1100
1600	1600	1300	1600	1600	1050
1650	1650	1300	1650	1650	1000
1700	1700	1250	1700	1700	900
1750	1750	1250	1750	1750	800
1800	1800	1150	1800	1800	750
1850	1850	1050	1850	1850	650
1900	1900	950	1900	1900	600
1950	975	1200	1950	975	1050
2000	1000	1150	2000	1000	1050
2050	1025	1150	2050	1025	1050
2100	1050	1150	2100	1050	1000
2150	1075	1150	2150	1075	1000
2200	1100	1100	2200	1100	1000
2250	1125	1100	2250	1125	1000
2300	1150	1100	2300	1150	950
2350	1175	1100	2350	1175	950
2400	1200	1050	2400	1200	950
2450	1225	1050	2450	1225	950
2500	1250	1050	2500	1250	900
2600	1300	1000	2600	1300	900
2700	1350	1000	2700	1350	900
2800	1400	950	2800	1400	850
2900	1450	950	2900	1450	850
3000	1500	950	3000	1500	850
3100	1550	900	3100	1550	800
3200	1600	900	3200	1600	800
3300	1650	900	3300	1650	800

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between Bandraster 100 mm
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = Bandraster width + panel length - 18 mm / panel width + gasket
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

Typical grid layout



To determine suspension layout

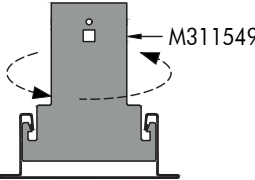
The module length (M) of the requested ceiling is equal to the distance between the Bandraster centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

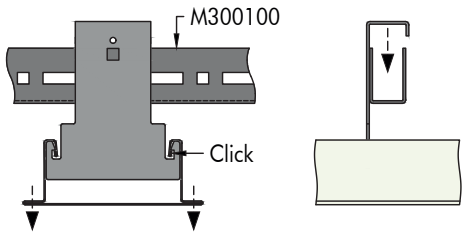
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

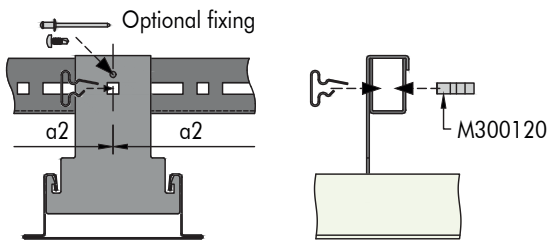
Hanger installation

- 1 

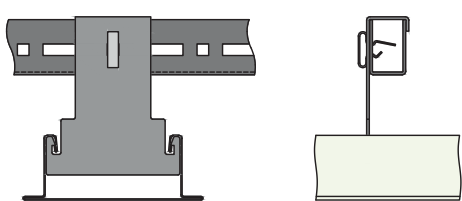
Twist the hanger into the Bandraster from above.

- 2 

Hook the Bandraster with the hangers on the U-Profile and pull the Bandraster carefully down until it snaps in (click).

- 3 

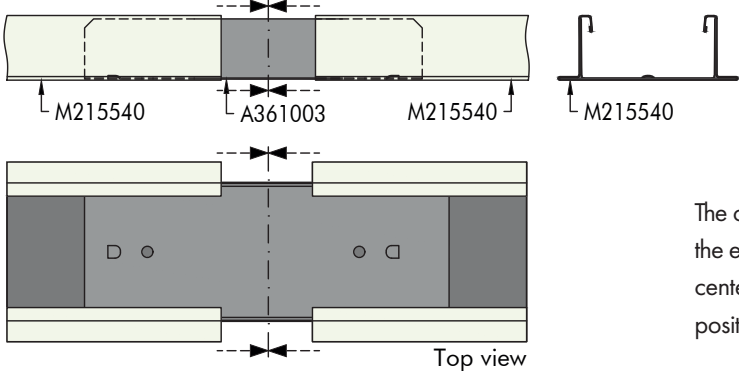
Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.

- 4 


The Bandraster is now locked in position.

Detail I

Splice connection

- 1 

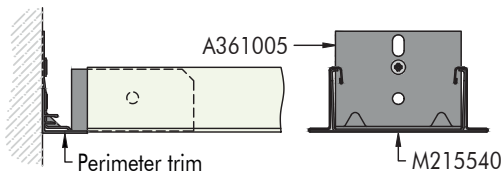
The connectors for the Bandraster must be inserted from the end. Make sure the connector is centered. To make centering easier, you can use a screwdriver to adjust the position using the small tabs on the back of the connector.

- 2 

The ends of the Bandraster should be brought together without a gap. Stagger the joints.

Detail J

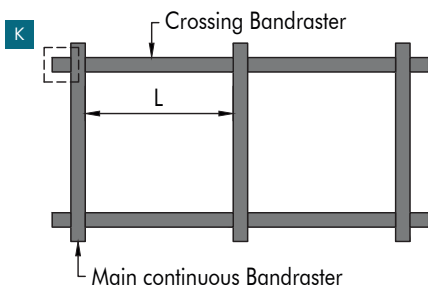
Wall anchor installation



The wall anchor prevents the Bandrastrer from swinging and thus contributes to the safe installation of the substructure. The wall anchor has no load-bearing function and is only attached to one end of the room to secure the Bandrastrer.

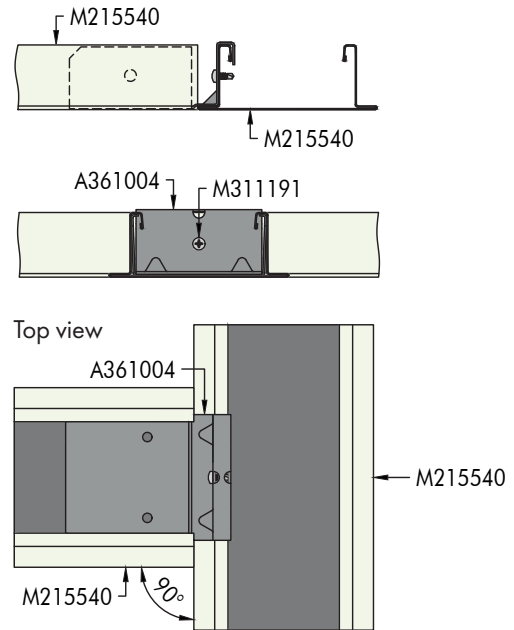
Detail K

Cross-connector installation for tartan grid layout option



With the cross-connector, a tartan grid layout can be simulated without using crossing-boxes. Bandrastrer cut to length are installed across the continuous Bandrastrer.

Crossing Bandrastrer (L) = module length - Bandrastrer width 100 mm



Material required per m² (no waste included)

System without additional load [pcs/m²]

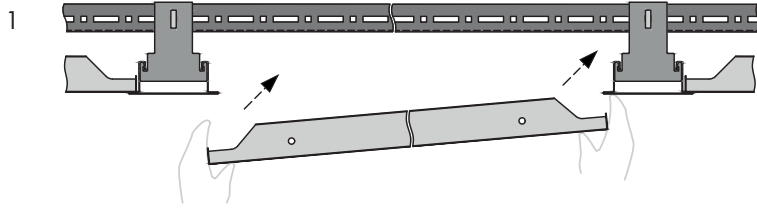
Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3100	3300
A361003	Splice connector for Bandrastrer 100 mm	0.24	0.18	0.16	0.14	0.12	0.10	0.09	0.09
A361005	Wall anchor for Bandrastrer 100 mm	0.18	0.14	0.12	0.12	0.10	0.08	0.08	0.08
M215540	Bandrastrer 100 mm RAL 9010	0.29	0.22	0.19	0.17	0.15	0.13	0.11	0.11
M300100	U-Profile	0.18	0.21	0.23	0.23	0.26	0.28	0.30	0.30
M300119	Splice connector for U-Profile	0.18	0.21	0.24	0.24	0.26	0.29	0.30	0.30
M300120	Plug-in clip for U-Profile	0.92	0.91	0.97	0.92	0.92	0.96	0.96	0.94
M300140	Wall anchor	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.12
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
M311549	Hanger for Bandrastrer 100 mm	0.56	0.49	0.49	0.44	0.40	0.38	0.36	0.34
Various	Suspension points (E1 - E4)	0.56	0.49	0.49	0.87	0.80	0.76	0.72	0.68

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

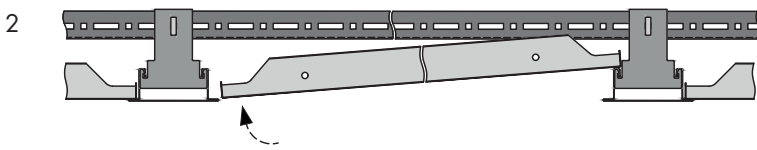
Not including perimeter trims, optional security brackets and extraction tools.

Detail L

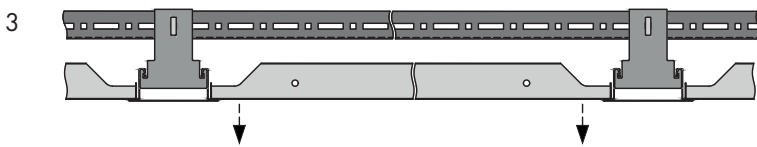
Panel insertion



Insert the panel at a slight angle, above the Bandraster.

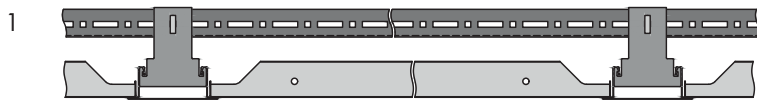


Lift up the opposite end of the panel above the leg of the Bandraster.

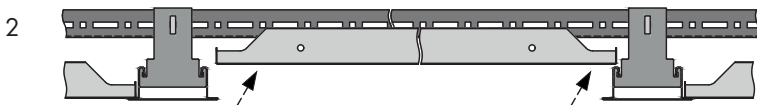


Rest the panel on the Bandraster.

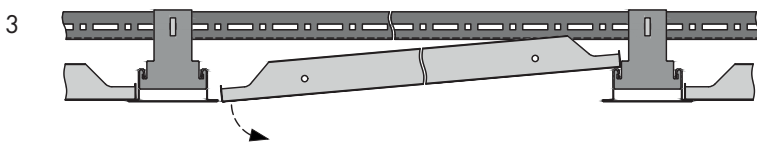
Panel extraction



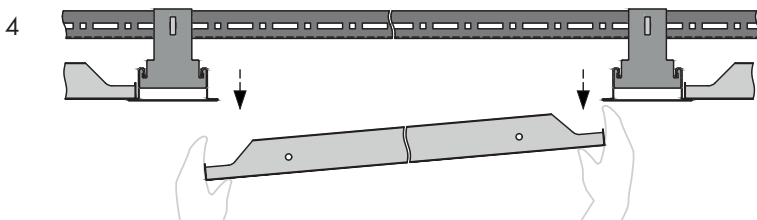
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the panel above the Bandraster.



Lower the opposite side.



Remove it downwards and store the panel in a safe place so that it cannot be damaged.

METAL B-H 300

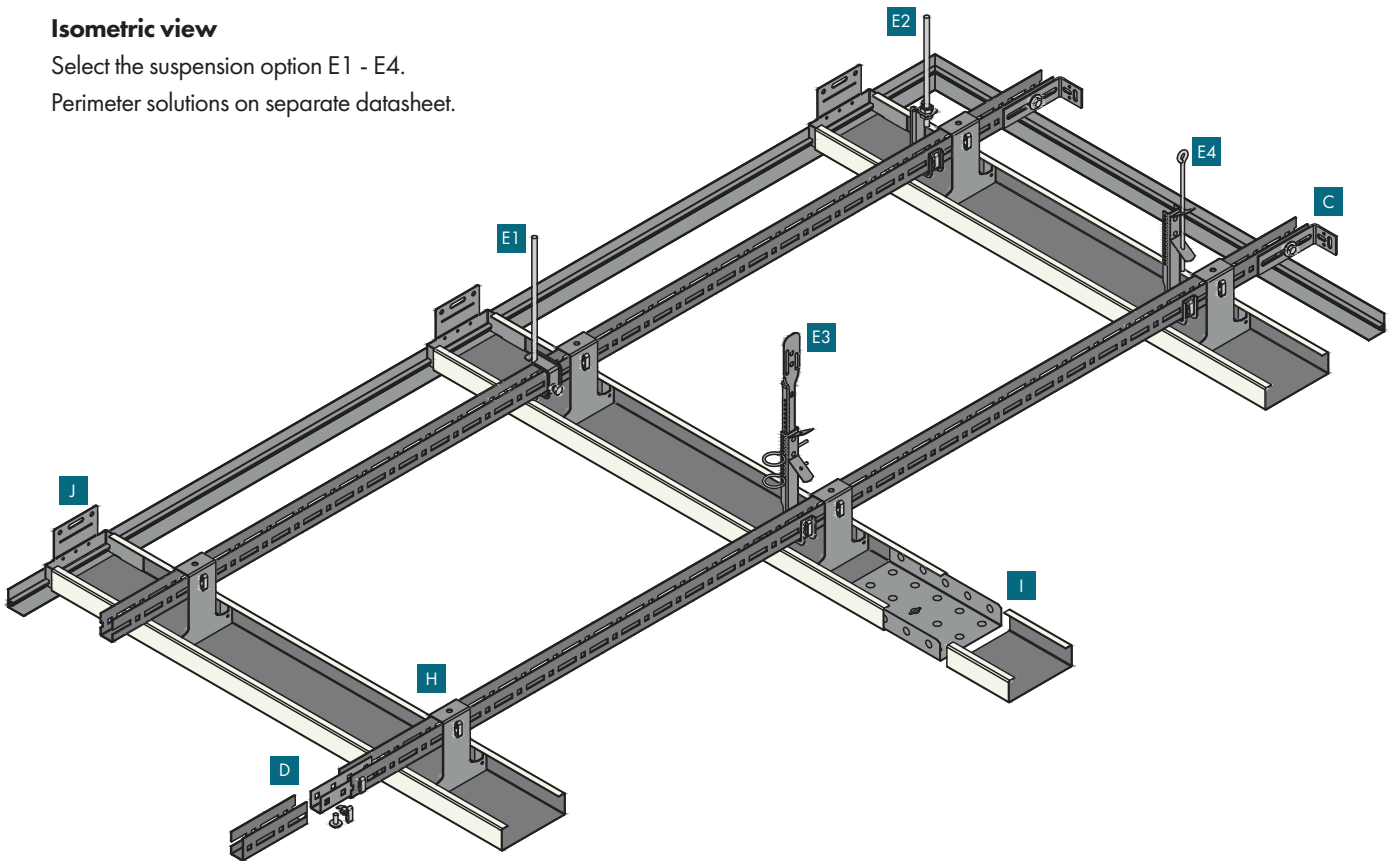
U-Profile primary grid + C-Profile secondary grid
Exposed linear grid solution for indoor applications

General information

- Exposed hook-on linear grid system for large rooms
- For perpendicular installation on U-Profile primary grid
- C-Profile 100 mm in RAL 9010 made of galvanised steel (further sizes, cut-outs and colour options on request)
- Typical ceiling weight 8.0 - 9.5 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable
- Various hinge-down and swing-down options
- Seismic design application available, see separate document
- Suitable for large panel sizes and chilled ceilings
- Tartan grid layout option

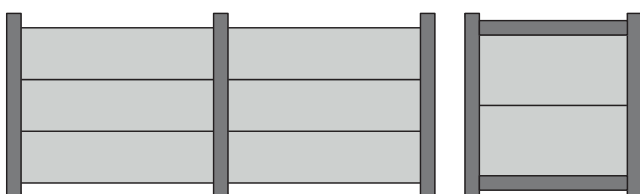
Isometric view

Select the suspension option E1 - E4.
Perimeter solutions on separate datasheet.

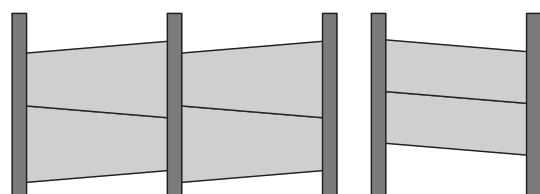


Vario Design & bespoke layout options

Vario Design

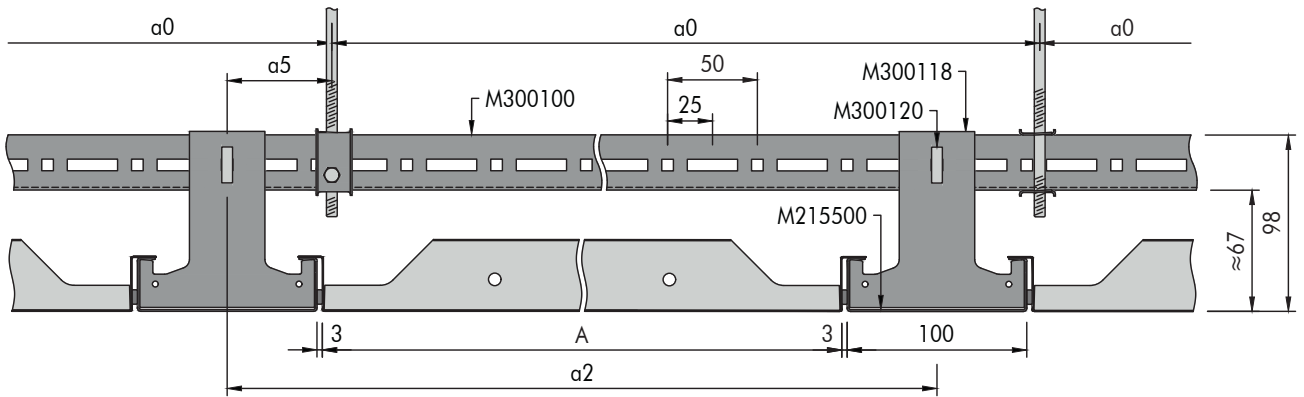


Bespoke (on request)



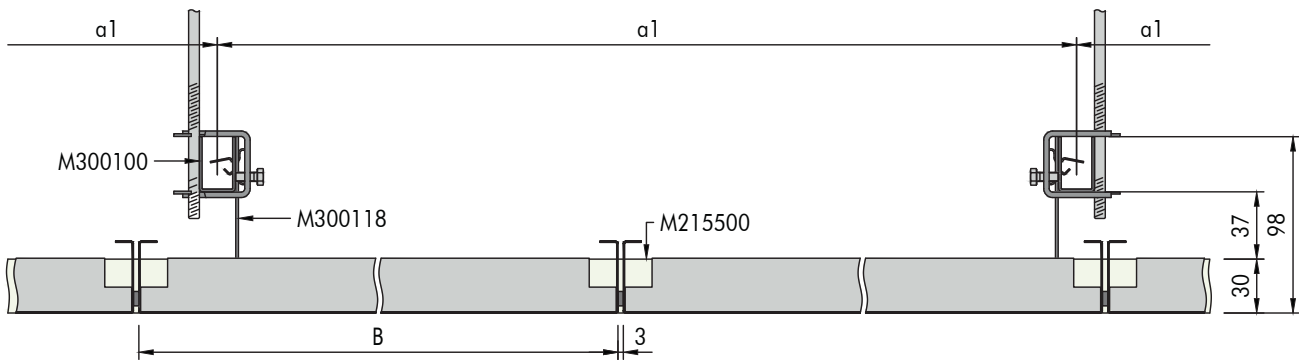
Section F

Example with suspension option E1



Section G

Example with suspension option E1



Panels supplied as standard with a 3 mm gasket on one long and both short sides to improve the visual appearance. Optionally panels can be supplied without a gasket (except Swing panel option).

Secondary grid components

Standard components

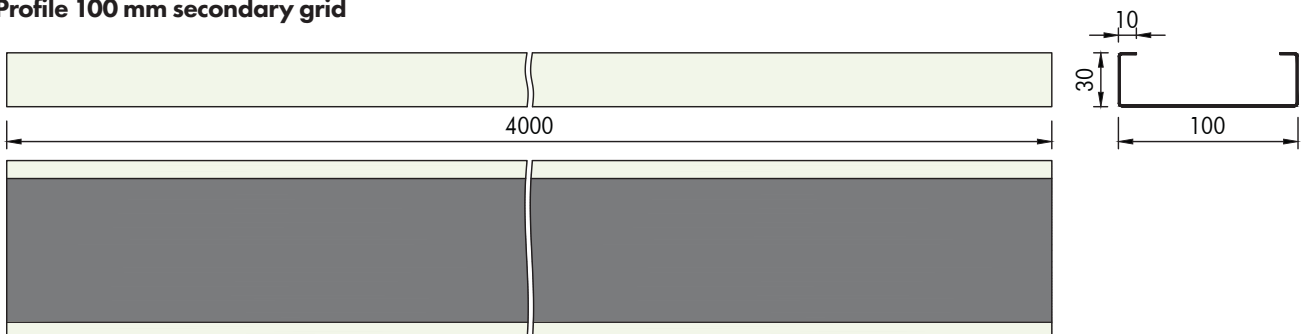
- M215500 C-Profile 100 mm RAL 9010
- M300118 Hanger for C-Profile 100 mm
- M300120 Plug-in clip for U-Profile
- M300144 Wall anchor for C-Profile 100 mm
- M311067 Splice connector for C-Profile 100 mm

Optional components

- M311034 Extraction tool (Swing function)
- M311191 Self-drilling screw 3.5 x 9.5 mm
- M900000 Black gasket 8x3 mm (spare roll)

See U-Profile primary grid for primary grid components

C-Profile 100 mm secondary grid



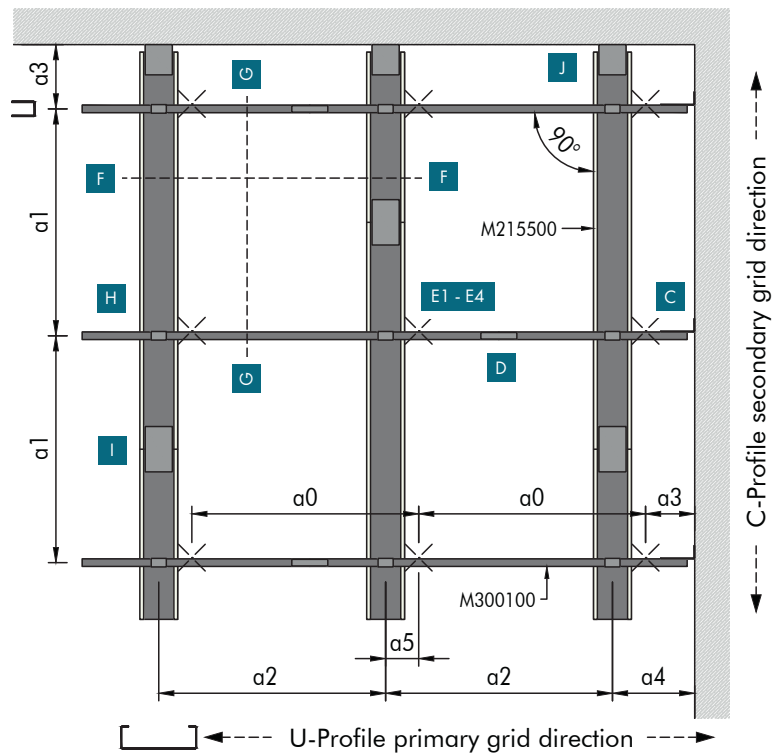
Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1900	600	1200	1900
650	1300	1900	650	1300	1650
700	1400	1900	700	700	1900
750	1500	1850	750	750	1900
800	1600	1500	800	800	1850
850	850	1900	850	850	1800
900	900	1900	900	900	1750
950	950	1900	950	950	1700
1000	1000	1850	1000	1000	1650
1050	1050	1800	1050	1050	1650
1100	1100	1800	1100	1100	1600
1150	1150	1750	1150	1150	1550
1200	1200	1700	1200	1200	1550
1250	1250	1700	1250	1250	1500
1300	1300	1650	1300	1300	1450
1350	1350	1600	1350	1350	1450
1400	1400	1550	1400	1400	1350
1450	1450	1550	1450	1450	1250
1500	1500	1500	1500	1500	1200
1550	1550	1500	1550	1550	1100
1600	1600	1450	1600	1600	1000
1650	1650	1450	1650	1650	950
1700	1700	1350	1700	1700	850
1750	1750	1200	1750	1750	800
1800	1800	1100	1800	1800	700
1850	1850	1000	1850	1850	650
1900	1900	950	1900	1900	600
1950	975	1350	1950	975	1200
2000	1000	1300	2000	1000	1200
2050	1025	1300	2050	1025	1150
2100	1050	1300	2100	1050	1150
2150	1075	1250	2150	1075	1150
2200	1100	1250	2200	1100	1100
2250	1125	1250	2250	1125	1100
2300	1150	1250	2300	1150	1100
2350	1175	1200	2350	1175	1100
2400	1200	1200	2400	1200	1050
2450	1225	1200	2450	1225	1050
2500	1250	1150	2500	1250	1050
2600	1300	1150	2600	1300	1000
2700	1350	1100	2700	1350	1000
2800	1400	1100	2800	1400	1000
2900	1450	1100	2900	1450	950
3000	1500	1050	3000	1500	950
3100	1550	1050	3100	1550	950
3200	1600	1050	3200	1600	900
3300	1650	1000	3300	1650	900

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between C-Profiles
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = C-Profile width + panel length + 2x gasket / panel width + gasket
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

Typical grid layout



To determine suspension layout

The module length (M) of the requested ceiling is equal to the distance between the C-Profile centres (a2).

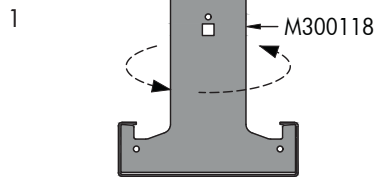
On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

The shown values are maximum allowed distances and can be reduced but not exceeded.

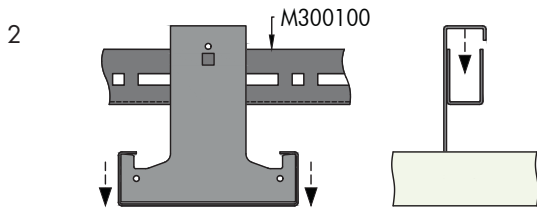


Detail H

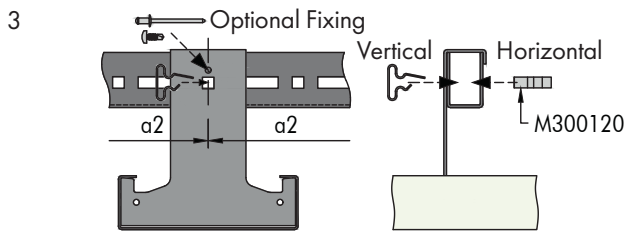
Hanger installation



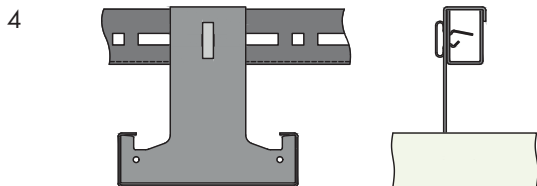
Twist the hanger on the C-Profile from above.



Hook the C-Profile with the hangers on the U-Profile.



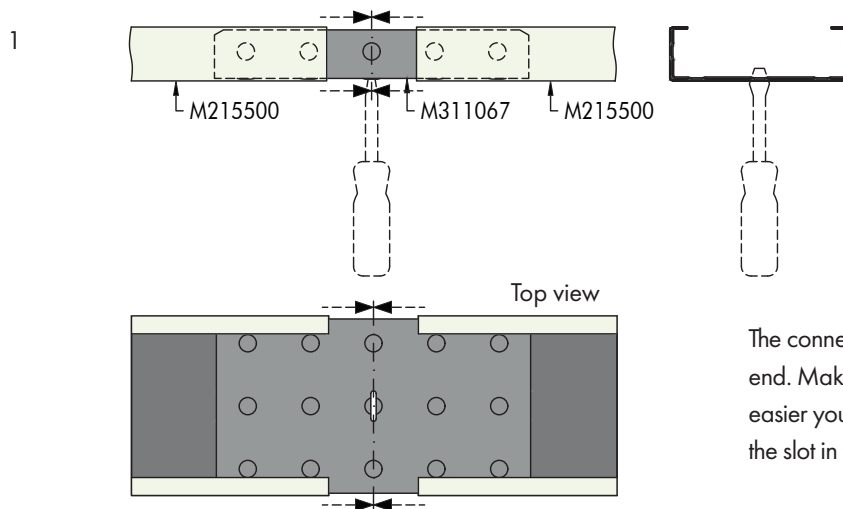
Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.



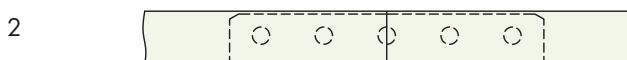
The C-Profile is now locked in position.

Detail I

Splice connection



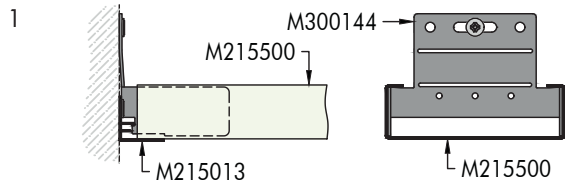
The connectors for the C-Profile must be inserted from the end. Make sure the connector is centered. To make centering easier you can use a screwdriver to adjust the position using the slot in the connector.



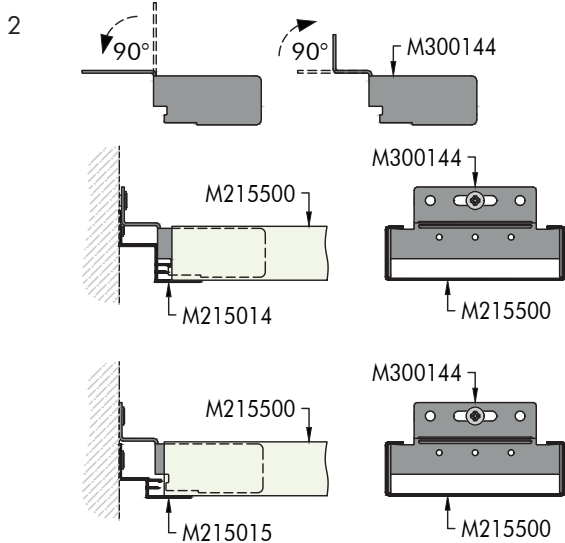
The ends of the C-Profiles should be brought together without a gap. Stagger the joints.

Detail J

Wall anchor installation



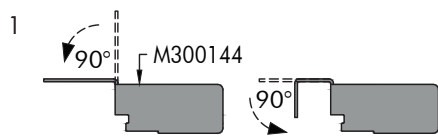
The wall anchor prevents the C-Profile from swinging and thus contributes to the safe installation of the substructure. The wall anchor has no load-bearing function and is only attached to one end of the room to secure the C-Profile.



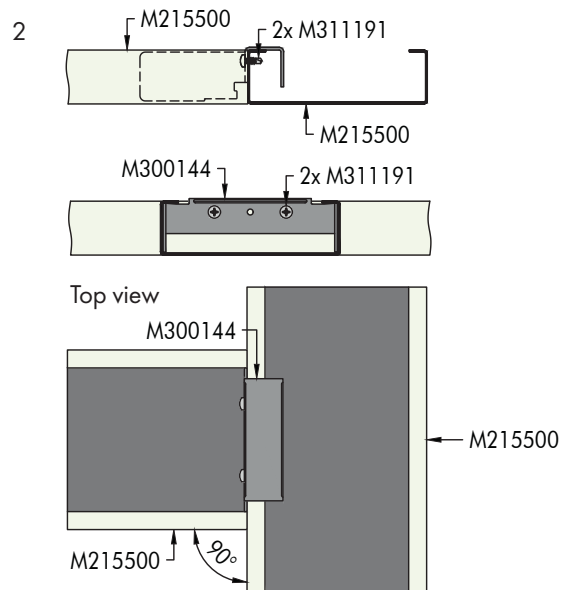
When using a shadowline perimeter trim, the upper part must first be bent 90° down and then 90° up again, so that a step is created.

Detail K

Cross-connector installation for tartan grid layout option

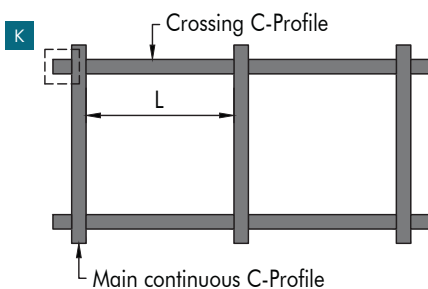


With the cross-connector, a tartan grid layout can be simulated without using crossing-boxes. Bend the upper part of the hanger twice by 90° until a hook is formed.



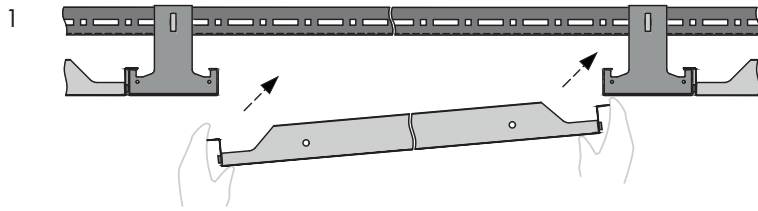
Use two self-drilling screws to attach the hanger to the C-Profile. C-Profiles cut to length are installed across the continuous C-Profiles.

Crossing C-Profile (L) = module length - C-Profile width

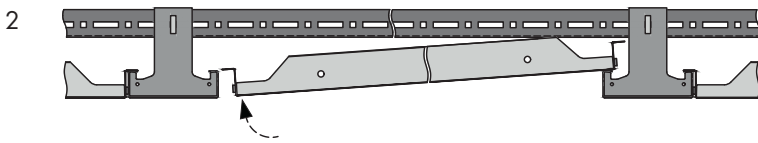


Detail L

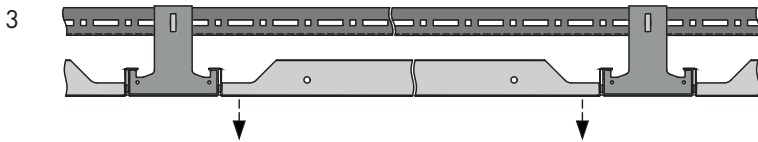
Panel insertion



Insert the panel at a slight angle, above the C-Profile.

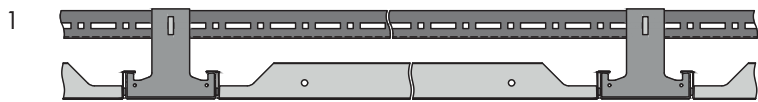


Lift up the opposite end of the panel above the opposite C-Profile.

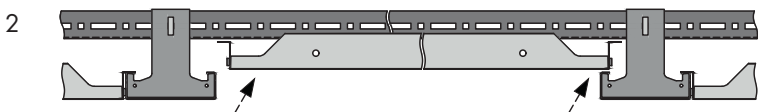


Rest the panel on the C-Profiles.

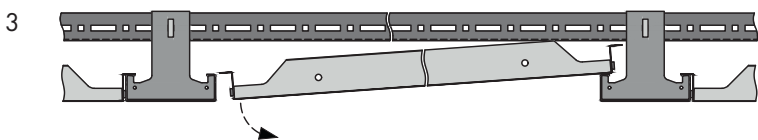
Panel extraction



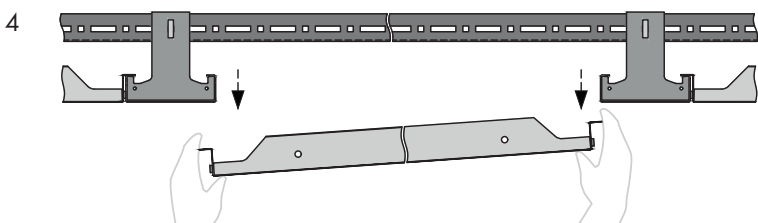
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the panel above the C-Profile.



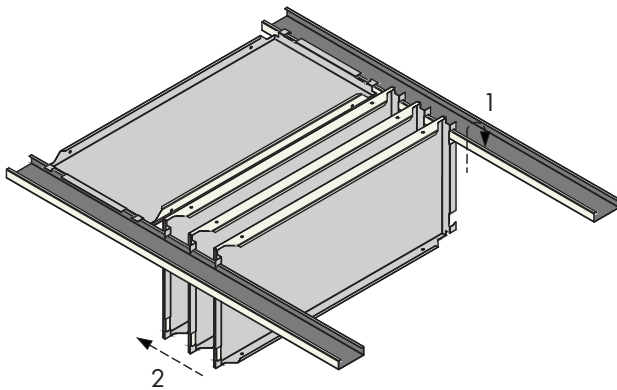
Lower the opposite side.



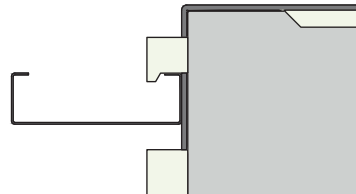
Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Detail M

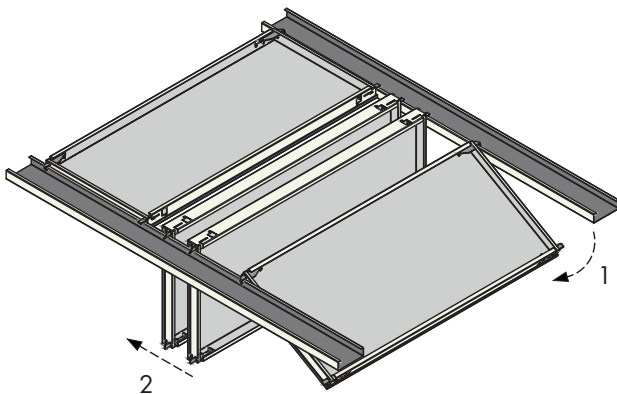
METAL B-H 300 Easy



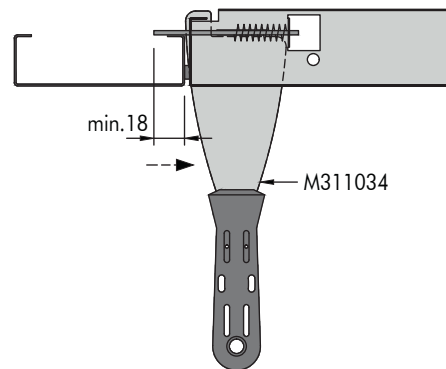
- 1 Extract the panel as shown under Detail L and hang it back vertically on the C-Profile. The panels hinge-down over the long side.
- 2 Move the panel aside to allow access to the plenum. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the C-Profile.



METAL B-H 300 Swing

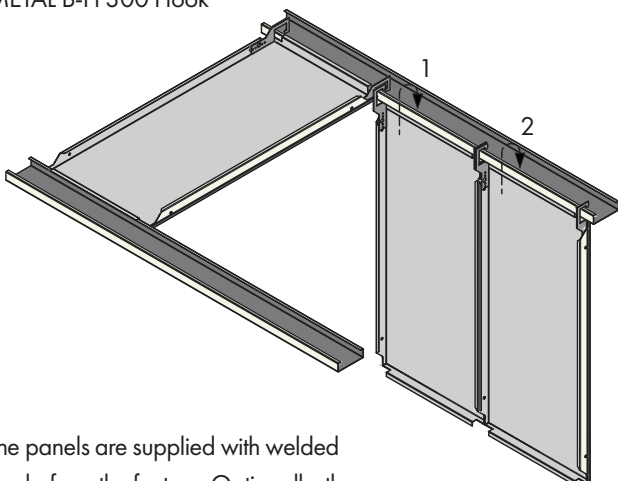


- 1 Use the extraction tool to release the brackets on the panel. Swing the panel down carefully. Insert the extraction tool carefully to avoid damaging the gasket. The panels swing-down over the long side.
- 2 Move the panel aside to allow access to the plenum. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the C-Profile.

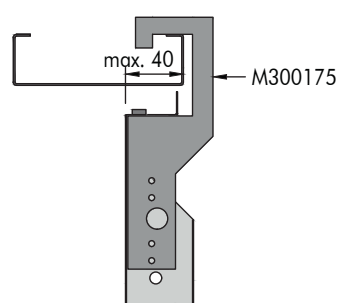


METAL B-H 300 Swing panels only available with 3 mm gasket on the long and both short sides.
Be careful that the brackets do not scratch the C-Profile.

METAL B-H 300 Hook



- 1 Extract the panel as shown under Detail L and hang it back vertically on the C-Profile. The panels hinge-down over the short side.
- 2 Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the C-Profile.

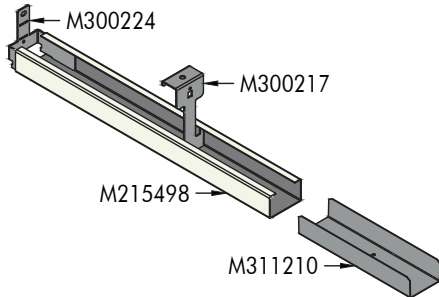


The panels are supplied with welded hooks from the factory. Optionally, the hooks can be fixed on site with two rivets.

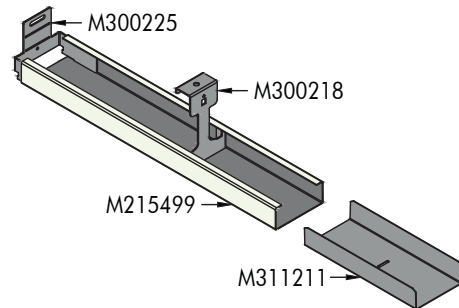
Detail N

C-Profile semi-standard options in RAL 9010

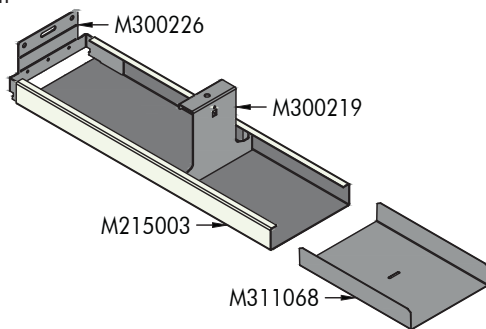
50 mm



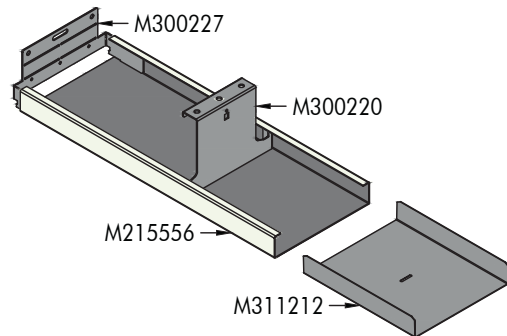
75 mm



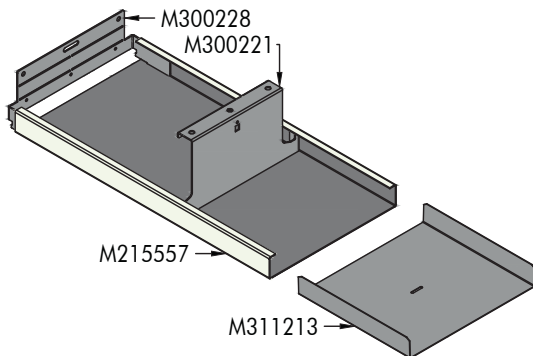
125 mm



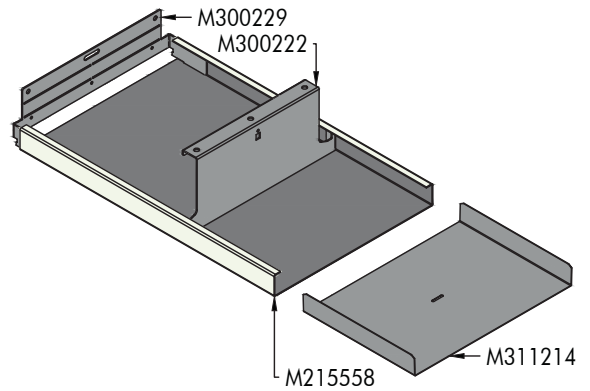
150 mm



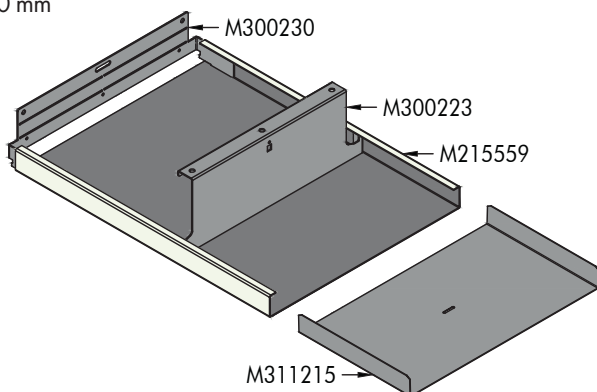
200 mm



250 mm



300 mm



Further options available on request

Material required per m² (no waste included)

System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3100	3300
M215500	C-Profile 100 mm RAL 9010	0.21	0.16	0.14	0.13	0.10	0.09	0.08	0.08
M300100	U-Profile	0.16	0.18	0.24	0.21	0.22	0.24	0.26	0.27
M300118	Hanger for C-Profile 100 mm	0.50	0.44	0.51	0.39	0.35	0.33	0.31	0.31
M300119	Splice connector for U-Profile	0.21	0.19	0.25	0.21	0.23	0.25	0.26	0.27
M300120	Plug-in clip for U-Profile	0.82	0.82	0.10	0.81	0.81	0.83	0.83	0.85
M300140	Wall anchor	0.06	0.07	0.10	0.08	0.09	0.10	0.10	0.11
M300144	Wall anchor for C-Profile 100 mm	0.18	0.14	0.12	0.12	0.10	0.08	0.08	0.08
M311067	Splice connector for C-Profile 100 mm	0.21	0.16	0.14	0.13	0.11	0.09	0.09	0.08
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
Various	Suspension points (E1 - E4)	0.50	0.44	0.51	0.77	0.70	0.65	0.62	0.61

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional security brackets and extraction tools.

space for notes



METAL K-H 400

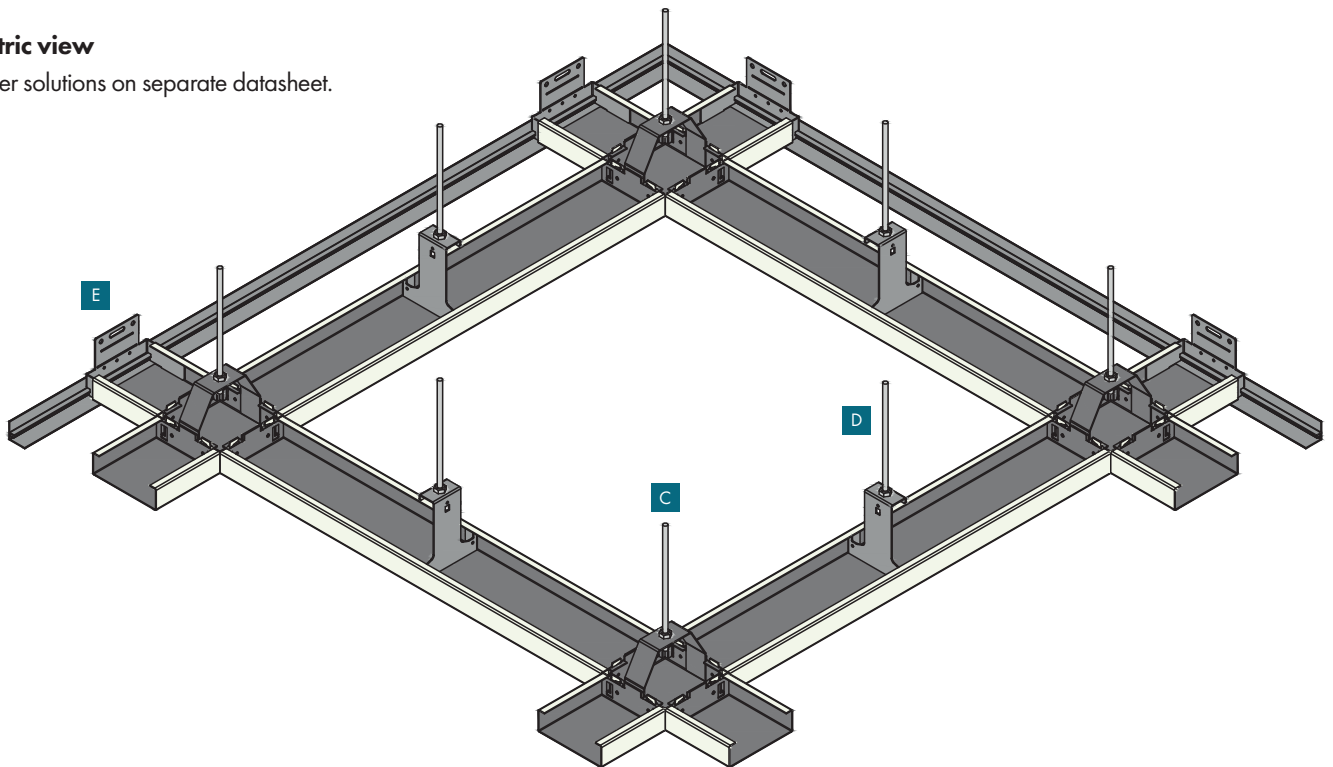
Crossing box + C-Profile
Exposed tartan grid solution for indoor applications

General information

- Exposed hook-on tartan grid system for large rooms
- Crossing box and C-Profile 100 mm in RAL 9010 made of galvanised steel (further sizes, cut-outs and colour options on request)
- Typical ceiling weight 8.0 - 9.0 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable
- Various hinge-down and swing-down options
- Suitable for large panel sizes and chilled ceilings

Isometric view

Perimeter solutions on separate datasheet.

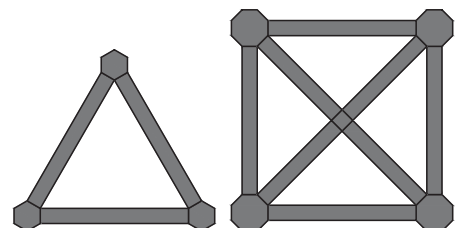


Vario Design & bespoke layout options

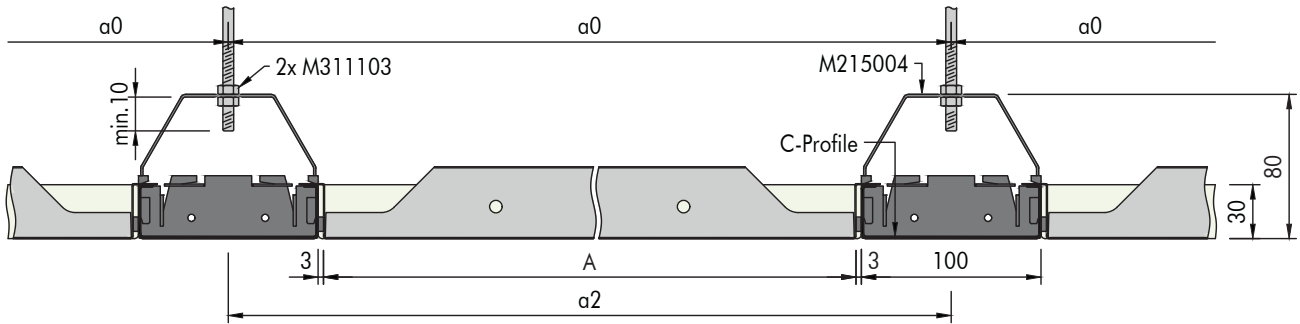
Vario Design



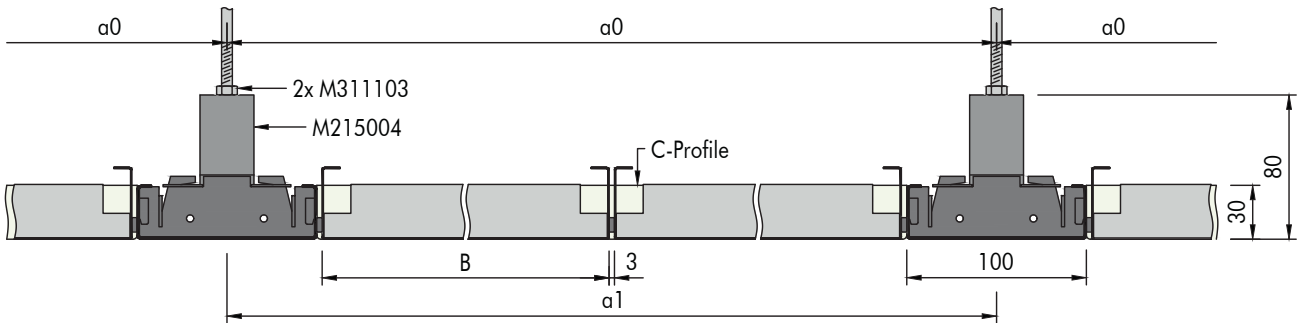
Bespoke (on request)



Section A



Section B



Panels supplied as standard with a 3mm gasket on one long and both short sides to improve the visual appearance. Optionally panels can be supplied without a gasket (except Swing panel option).

Grid components

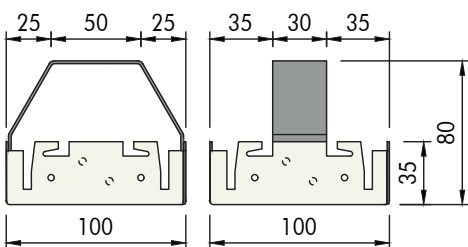
Standard components

- M215004 Crossing box 100 x 100 mm RAL 9010
- - C-Profile L x 100 mm RAL 9010
- M300118 Hanger for C-Profile 100 mm
- M300144 Wall anchor for C-Profile 100 mm
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm

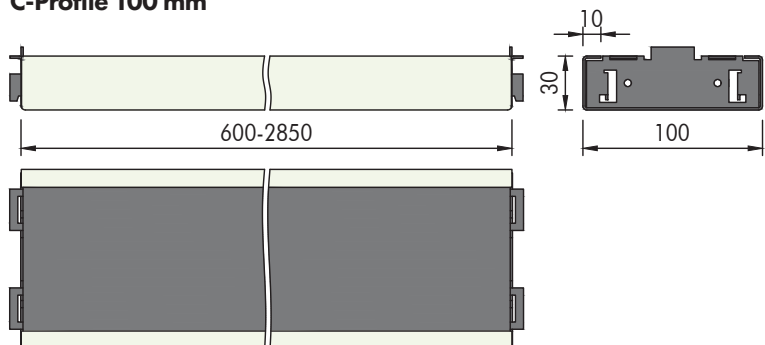
Optional components

- M300026 J-Bar
- M311034 Extraction tool (Swing function)
- M311103 Washer
- M311148 Holder for J-Bar
- M311191 Self-drilling screw 3.5 x 9.5 mm
- M311303 Hexagonal bolt M6 x 16 mm
- M311307 Pop-Rivet TAPD 44 BS
- M900000 Black gasket 8x3 mm (spare roll)

Crossing box 100 x 100 mm



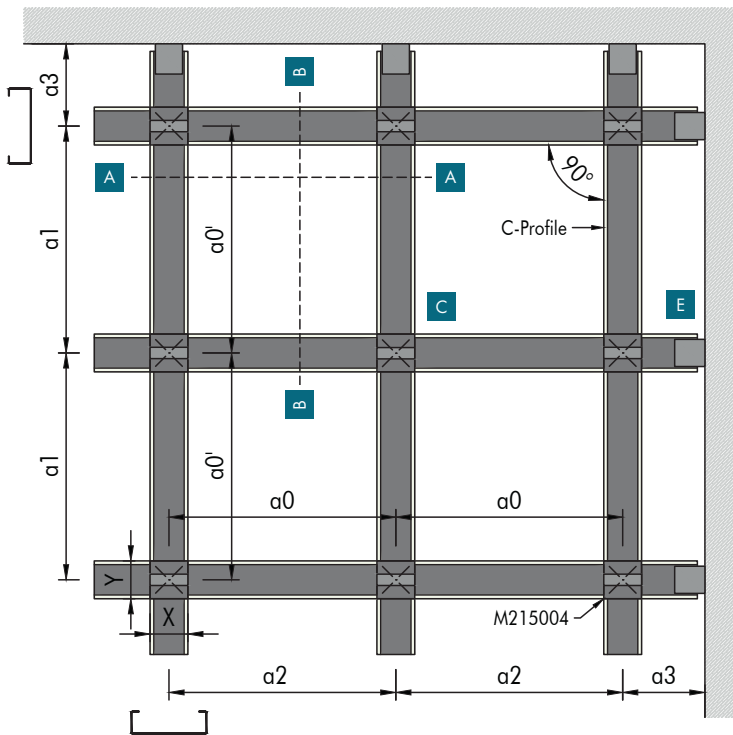
C-Profile 100 mm



The layout of the ceiling does not necessarily have to be square.
 The distance (a1) and (a2) can deviate from each other.
 This also results in different distances for (a0).

The same applies to the crossing box. This is usually square, but can also be supplied rectangular on request.

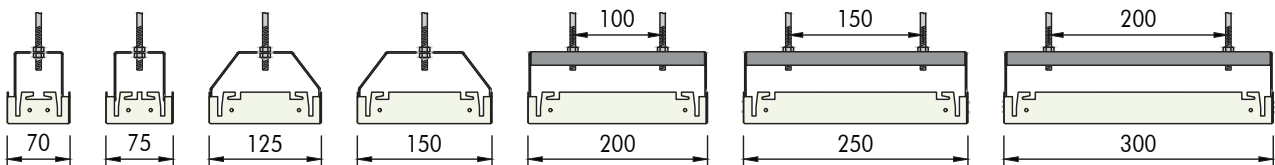
Typical grid layout



Parameters

- Distance between crossing box suspension points
 a_0 = max. 1900 mm (if a_1 or a_2 is larger than a_0 max., then the C-Profile will require additional suspension)
- a_1 Distance between C-Profile 100 mm
- a_2 Distance between C-Profile 100 mm
- a_3 Distance from wall (if the distance is larger than 600 mm, then the C-Profile will require additional suspension)
- A Panel length = min. 600 / max. 2850 mm
- B Panel width = min. 247 / max. 1350 mm
- X Crossing box length = standard 100 mm, min. 70 / max. 300 mm
- Y Crossing Box width = standard 100 mm, min. 70 / max. 300 mm

Crossing box & C-Profile options



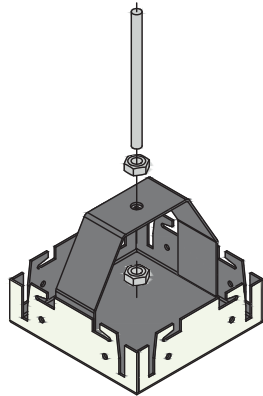
Crossing boxes and C-Profiles can be supplied in different sizes on request. For widths greater than 150 mm, two threaded rods are required for suspension.

Crossing boxes with cut-outs, hexagonal and octagonal shapes, etc. are available on request.

Detail C

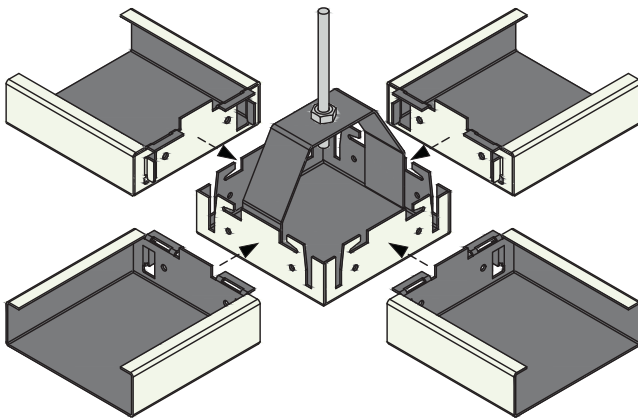
Crossing box installation

1



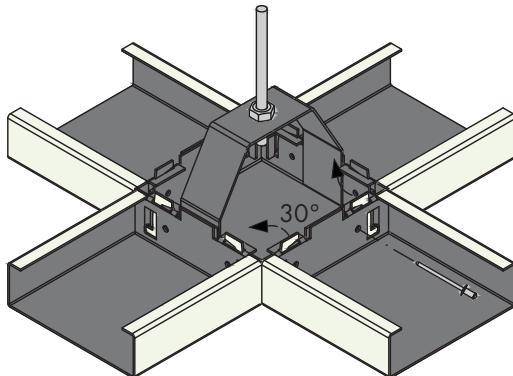
Set the threaded rods in the corners of the modules.
Level the height of the ceiling using the top hexagonal nut.
Insert the crossing box from below and secure using the second (lower) hexagonal nut. Align the crossing boxes.

2



Connect the crossing boxes with the C-Profiles. To do this, use the two tabs at the ends of the C-Profiles and hook them in.

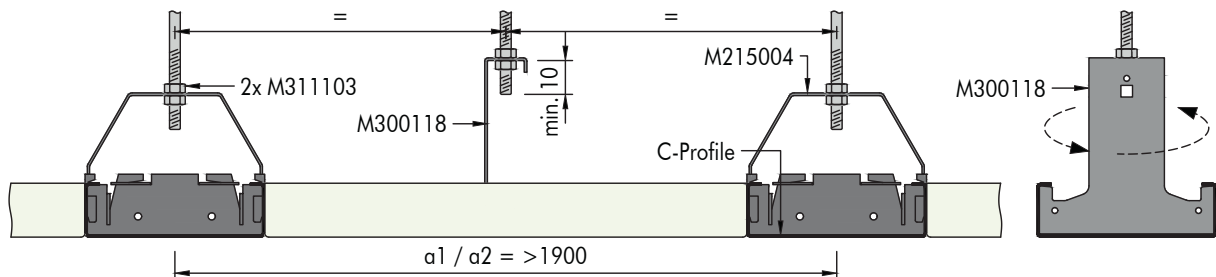
3



With pliers, the two tabs on the crossing box can be bent inwards by 30°. This secures the connection. Repeat the process to fix all C-Profiles. If the load is asymmetrical, the C-Profiles should also be fixed with two pop-rivets.

Detail D

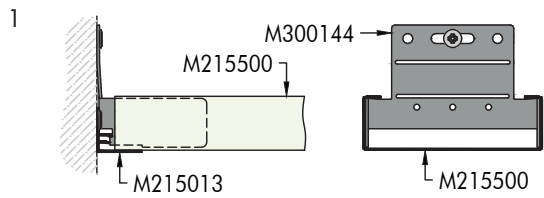
Additional hanger installation



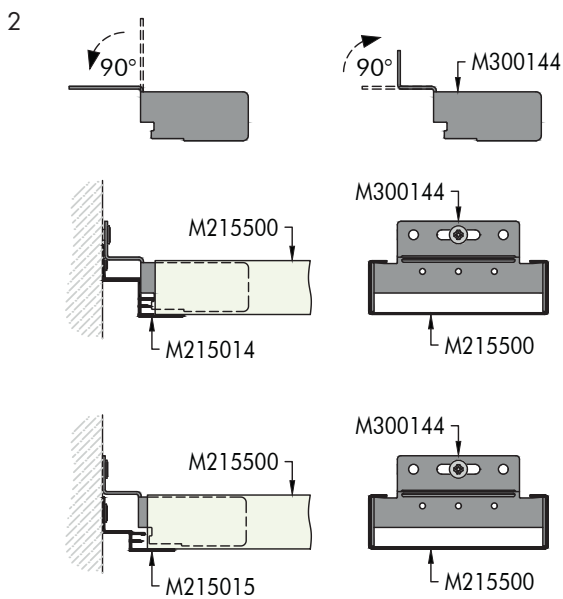
If the distance between the suspension points (a_0) is greater than 1900 mm, an additional hanger for C-Profile must be used. The same also applies to an additional load of +4 kg/m². A hanger is twisted in and suspended with a threaded rod. The hanger is ideally placed in the middle of the C Profile.

Detail E

Wall anchor installation



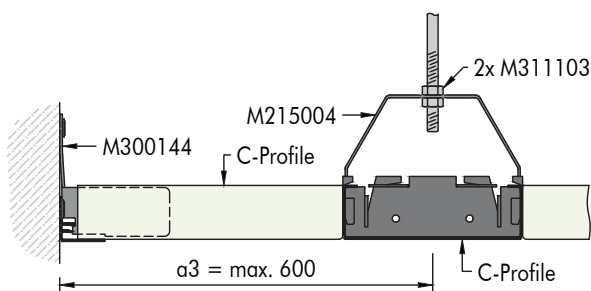
The wall anchor prevents the C-Profile from swinging and thus contributes to the safe installation of the substructure. The wall anchor has no load-bearing function and is only attached to one end of the room to secure the C-Profile.



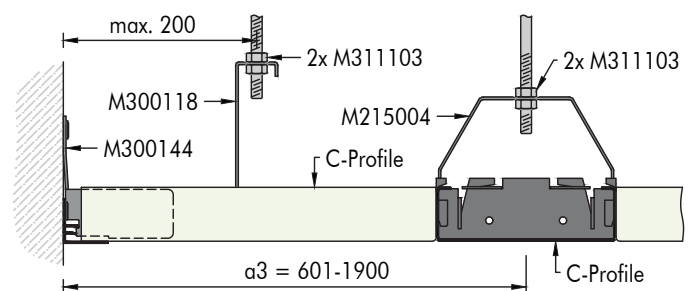
When using a shadowline perimeter trim, the upper part must first be bent 90° down and then 90° up again, so that a step is created.

Detail F

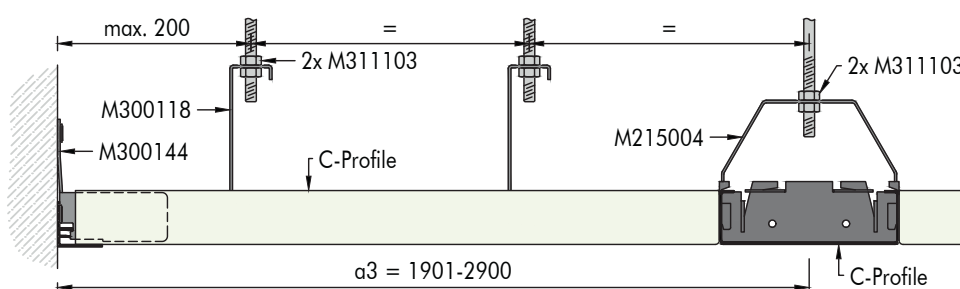
Perimeter detail max. 600 mm



Perimeter detail 601 - 1900 mm with additional hanger



Perimeter detail 1901 - 2900 mm with additional hangers

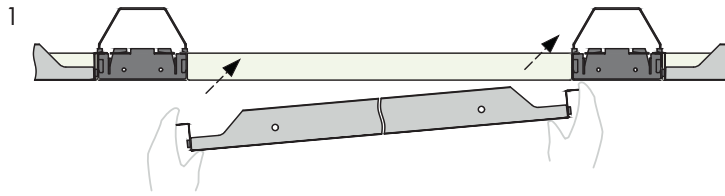


If the distance to the first suspension point (a_3) is greater than 600 mm, then the C-Profile will require additional suspension. If the distance is greater than 1900 mm, two hangers are needed.

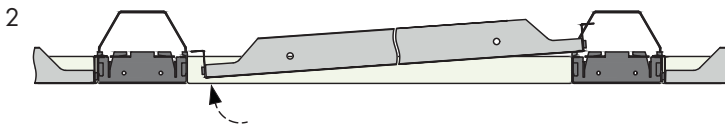


Detail G

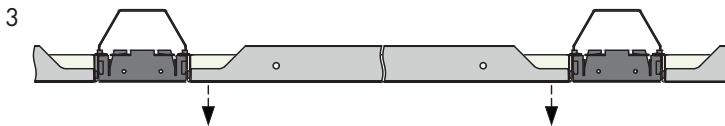
Panel insertion



Insert the panel at a slight angle, above the C-Profile.



Lift up the opposite end of the panel above the opposite C-Profile.

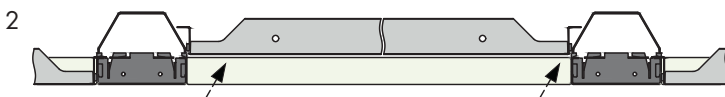


Rest the panel on the C-Profiles.

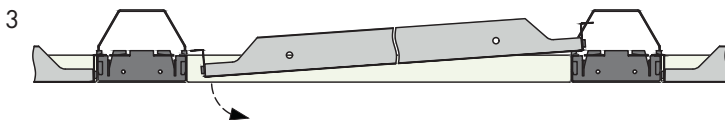
Panel extraction



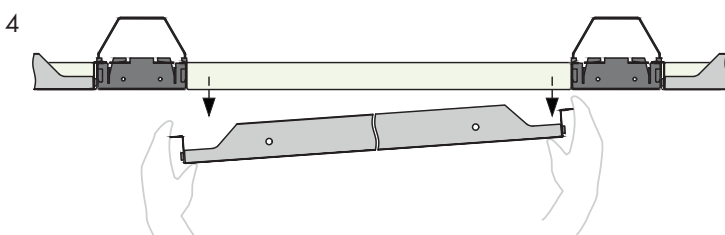
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the panel above the C-Profile.



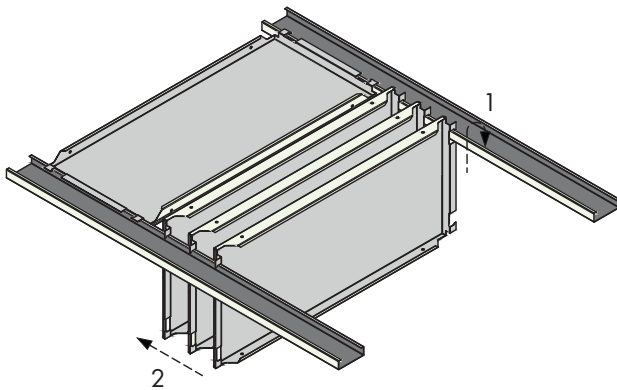
Lower the opposite side.



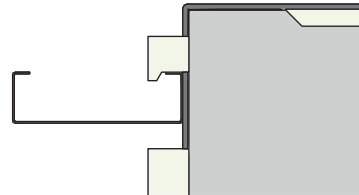
Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Detail H

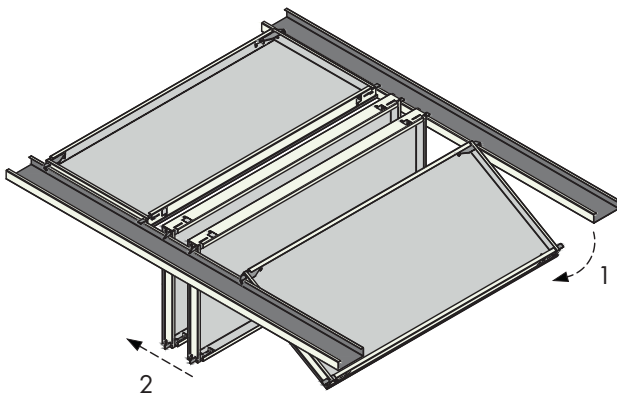
METAL K-H 400 Easy



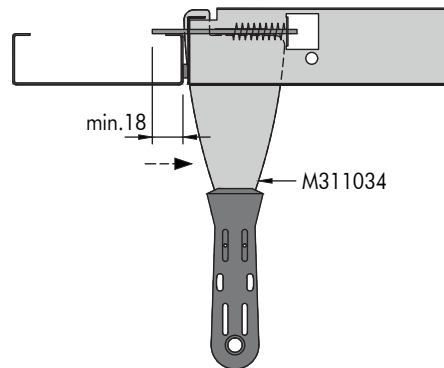
- 1 Extract the panel as shown under Detail L and hang it back vertically on the C-profile. The panels hinge-down over the long side.
- 2 Move the panel aside to allow access to the plenum. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the C-Profile.



METAL K-H 400 Swing

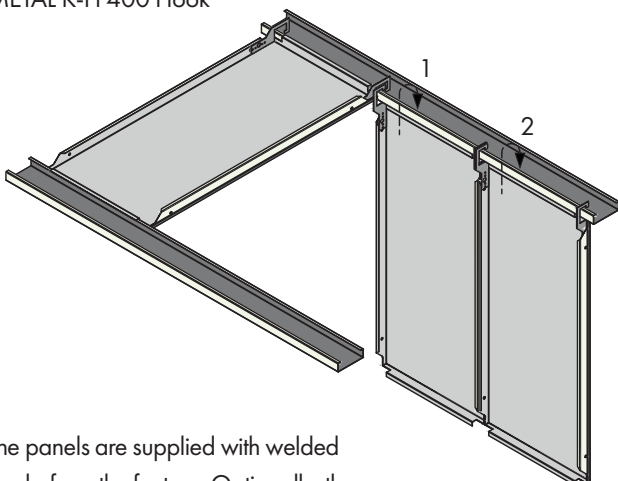


- 1 Use the extraction tool to release the brackets on the panel. Swing the panel down carefully. Insert the extraction tool carefully to avoid damaging the gasket. The panels swing-down over the long side.
- 2 Move the panel aside to allow access to the plenum. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the C-Profile.

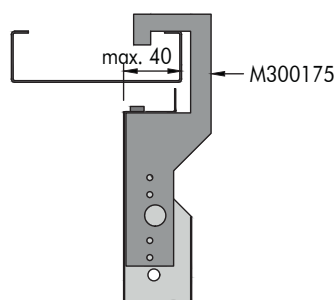


METAL K-H 400 Swing panels only available with 3 mm gasket on the long and both short sides. Be careful that the brackets do not scratch the C-Profile.

METAL K-H 400 Hook



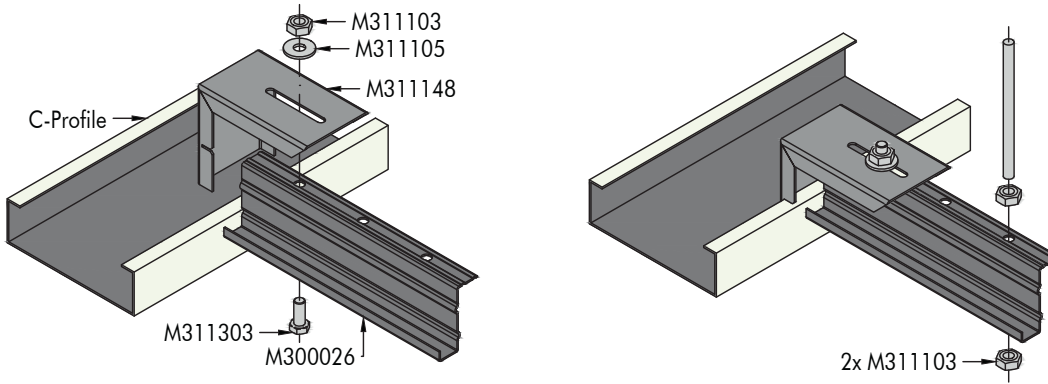
- 1 Extract the panel as shown under Detail L and hang it back vertically on the C-profile. The panels hinge-down over the short side.
- 2 Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the C-Profile.



The panels are supplied with welded hooks from the factory. Optionally, the hooks can be fixed on site with two rivets.

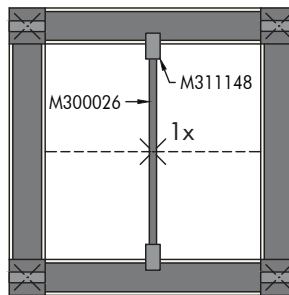
Detail I

J-Bar holder installation for 2x2 or 3x3 panel layout

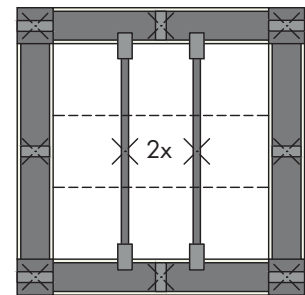


Layouts with 2x2 / 3x3 panels are possible. One / two J-bars are additionally required for this. These are fixed to the C-Profile with a J-Bar holder. In addition, the J-Bar must also be suspended in the middle with a threaded rod from a length of 1500 mm.

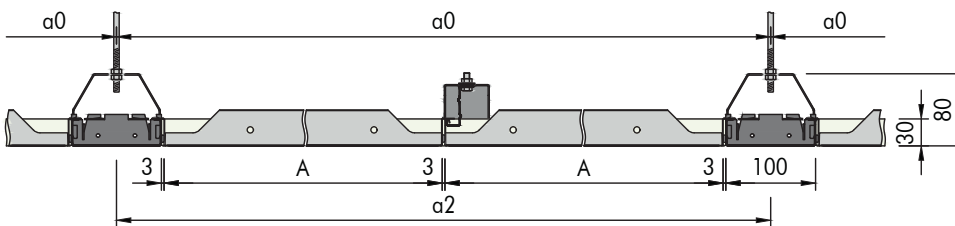
2x2 panel layout



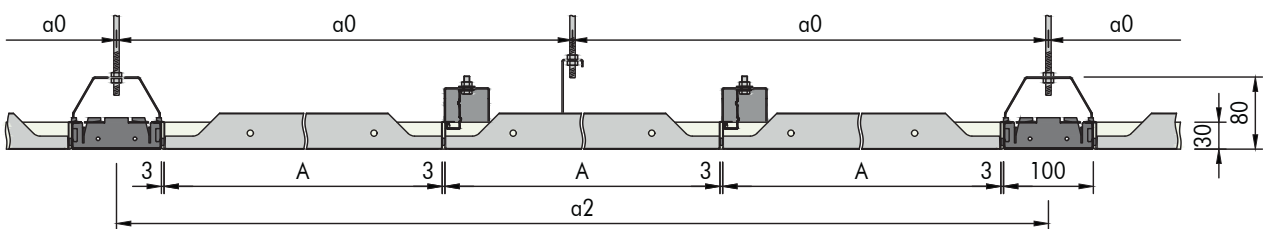
3x3 panel layout



Optional 2x2 panel layout



Optional 3x3 panel layout



Material required per m² (no waste included)

System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2200	2400	2600	2950
M215004	Crossing box 100 x 100 mm RAL 9010	0.70	0.39	0.31	0.25	0.21	0.17	0.15	0.12
-	C-Profile L x 100 mm RAL 9010	1.67	1.25	1.11	1.00	0.91	0.83	0.77	0.68
M300118	Hanger for C-Profile 100 mm	-	-	-	0.50	0.42	0.35	0.30	0.23
M300144	Wall anchor for C-Profile 100 mm	0.28	0.24	0.20	0.20	1.60	1.60	1.20	0.12
M311099	Threaded rod M6 x 1000 mm	0.70	0.40	0.31	0.75	0.63	0.53	0.45	0.35
M311103	Hexagonal nut M6	1.40	0.80	0.62	1.50	1.26	1.06	0.90	0.70
M311105	Washer	0.70	0.40	0.31	0.75	0.63	0.53	0.45	0.35
M311303	Hexagonal bolt M6 x 16 mm	0.70	0.40	0.33	0.75	0.63	0.53	0.45	0.35

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional components and extraction tools.

space for notes





CONCEALED GRID CEILING

METAL Q-CLIP / METAL Q-CLIP F / METAL R-CLIP / METAL R-CLIP F

U-Profile primary grid + DP12 A-Bar secondary grid
Concealed clip solution for indoor applications

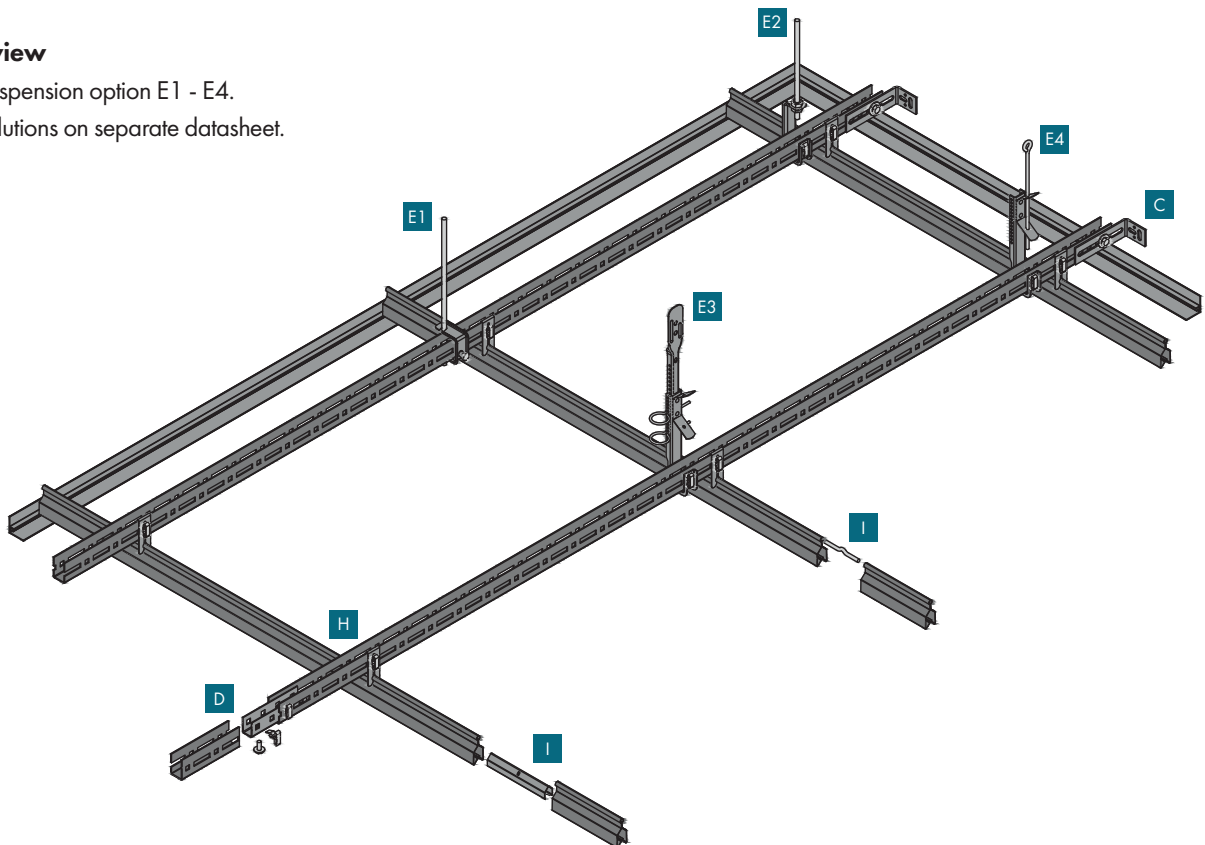
General information

- Concealed clip-in grid system for small and medium rooms (METAL Q-Clip, METAL Q-Clip F, METAL R-Clip F), medium and large rooms (METAL R-Clip)
- For perpendicular installation on U-Profile primary grid
- DP12 A-Bar made of galvanised steel
- Typical ceiling weight 5.5 - 6.5 kg/m² (METAL Q-Clip, METAL Q-Clip F, R-Clip F), 7.5 - 9.0 kg/m² (METAL R-Clip) (indicative value for unperforated panels / tiles, without additional load)
- Panels / tiles are easily installed and fully demountable
- Optional swing-down function Window
- Optional security clips available
- Exterior application see separate document

Isometric view

Select the suspension option E1 - E4.

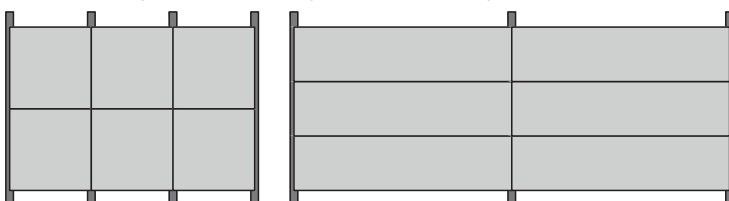
Perimeter solutions on separate datasheet.



Standard, Vario Design layout options

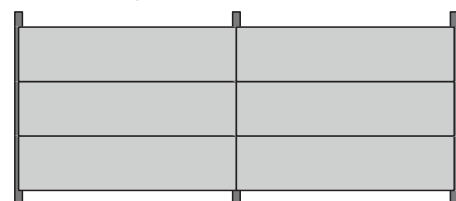
Standard

METAL Q-Clip / METAL Q-Clip F / METAL R-Clip F



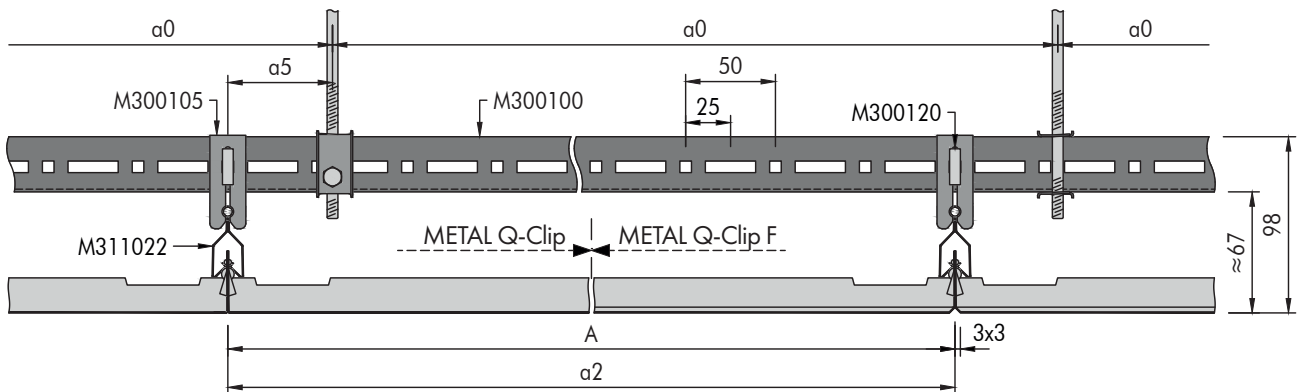
Vario Design

METAL R-Clip



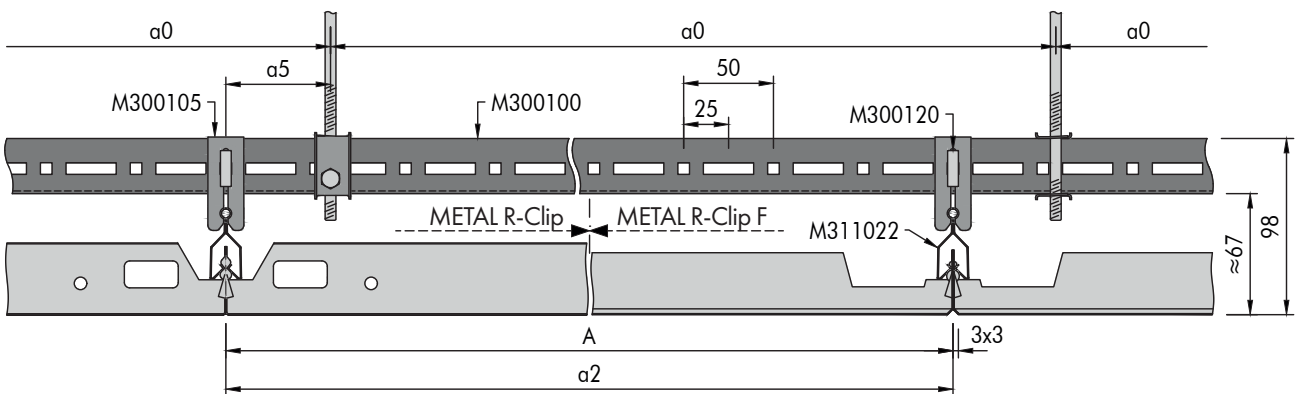
Section F (METAL Q-Clip, METAL Q-Clip F)

Example with suspension option E1



Section F (METAL R-Clip, METAL R-Clip F)

Example with suspension option E1



Secondary grid components

Standard components

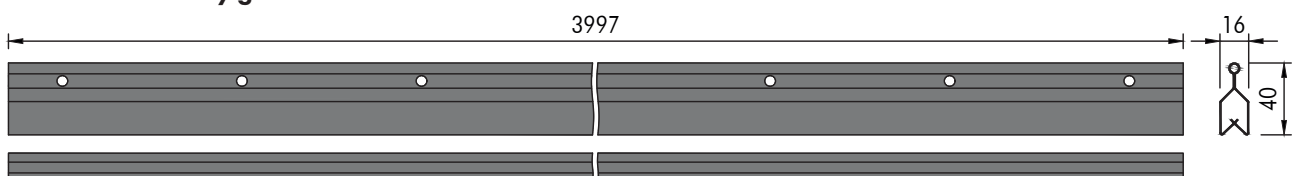
- M311022 DP12 A-Bar
- M300138 Connection pin for DP12 A-Bar
- M300105 Hanger for DP12 A-Bar
- M300120 Plug-in clip for U-Profile

Optional components

- M300106 Security clip
- M300157 Security clip for Window function
- M311023 Splice connector for DP12 A-Bar
- M311027 Swing-down clip for Window function
- M311028 Extraction tool
- M311191 Self-drilling screw 3.5 x 9.5 mm

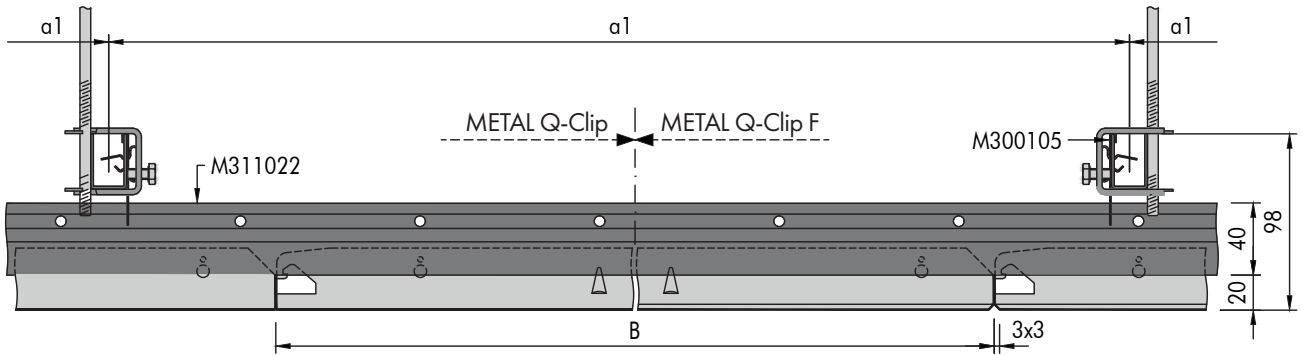
See U-Profile primary grid for primary grid components

DP12 A-Bar secondary grid



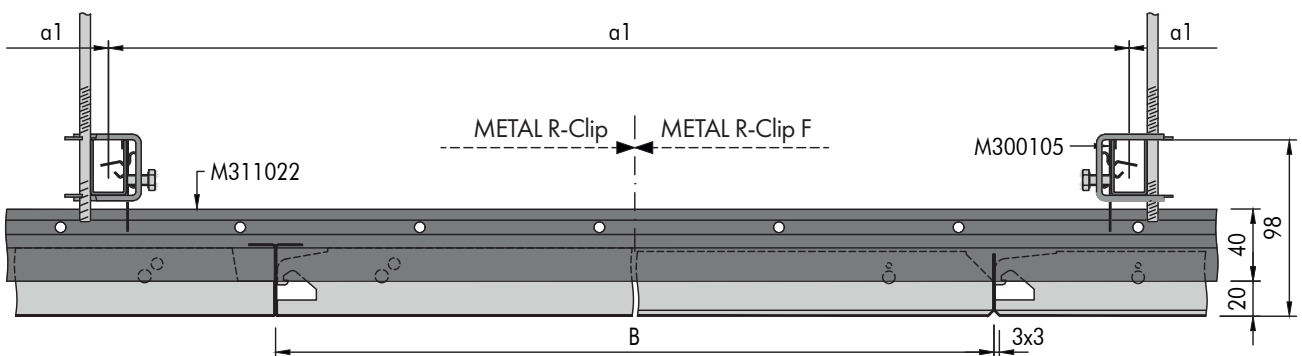
Section G (METAL Q-Clip, METAL Q-Clip F)

Example with suspension option **E1**



Section G (METAL R-Clip, METAL R-Clip F)

Example with suspension option **E1**



METAL Q-Clip and METAL R-Clip, as well as METAL Q-Clip F and METAL R-Clip F modules are compatible and can be combined with each other.

Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
500	1500	1550	500	1500	1050
600	1200	1900	600	1200	1700
625	1250	1850	625	1250	1550
650	1300	1800	650	1300	1450
700	1400	1750	700	1400	1250
750	1500	1650	750	750	1550
800	1600	1450	800	800	1500
850	850	1600	850	850	1450
900	900	1550	900	900	1400
950	950	1550	950	950	1400
1000	1000	1500	1000	1000	1350
1050	1050	1450	1050	1050	1300
1100	1100	1450	1100	1100	1300
1150	1150	1400	1150	1150	1250
1200	1200	1350	1200	1200	1250
1250	1250	1350	1250	1250	1200
1300	1300	1300	1300	1300	1200
1350	1350	1300	1350	1350	1150
1400	1400	1300	1400	1400	1150
1450	1450	1250	1450	1450	1100
1500	1500	1250	1500	1500	1100
1550	1550	1200	1550	1550	1050
1600	1600	1200	1600	1600	1000
1650	1650	1200	1650	1650	900
1700	1700	1150	1700	1700	850
1750	1750	1150	1750	1750	800
1800	1800	1100	1800	1800	700
1850	1850	1000	1850	1850	650
1900	1900	950	1900	1900	600
1950	975	1100	1950	975	950
2000	1000	1050	2000	1000	950
2050	1025	1050	2050	1025	950
2100	1050	1050	2100	1050	950
2150	1075	1050	2150	1075	900
2200	1100	1000	2200	1100	900
2250	1125	1000	2250	1125	900
2300	1150	1000	2300	1150	900
2350	1175	1000	2350	1175	900
2400	1200	1000	2400	1200	850
2450	1225	950	2450	1225	850
2500	1250	950	2500	1250	850

To determine suspension layout

The module length (M) of the requested ceiling is equal to the distance between the DP12 A-Bar centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

The shown values are maximum allowed distances and can be reduced but not exceeded.

Parameters

a0 Distance between U-Profile suspension points = max. 1900 mm

a1 Max. distance between U-Profiles

a2 Distance between DP12 A-Bars = tile/panel length

a3 Distance from wall = max. 200 mm

a4 Distance from wall = max. tile/panel length

a5 Distance from U-Profile suspension point to hanger = max. 100 mm

M Module size = tile/panel length / tile/panel width

METAL Q-Clip

M 600 x 600, 625 x 625 mm

METAL Q-Clip F

M 500 x 500, 600 x 600, 625 x 625 mm

METAL R-Clip F

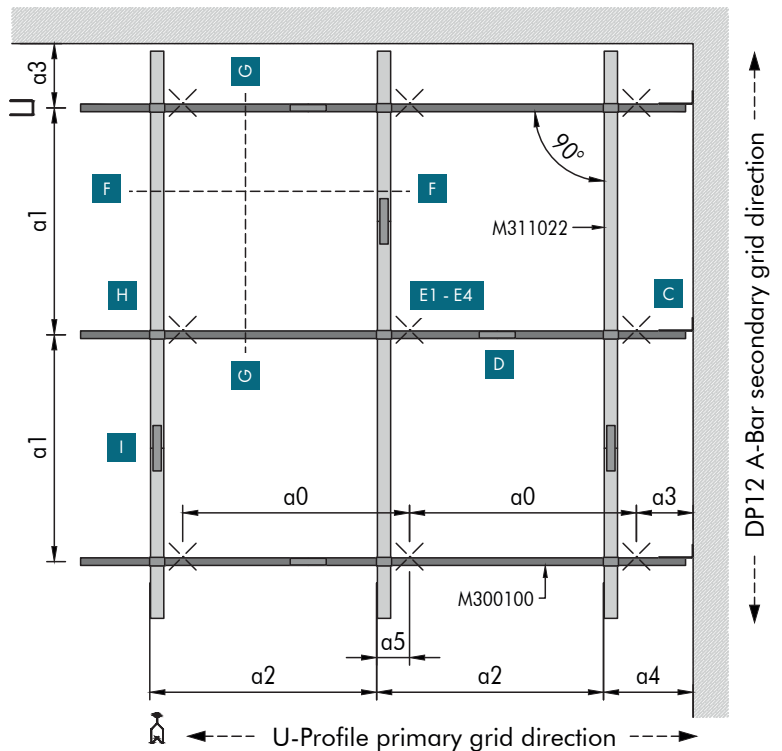
M 1200 x 300, 1200 x 600, 1800 x 400 mm

METAL R-Clip

A Panel length = min. 600 / max. 2500 mm

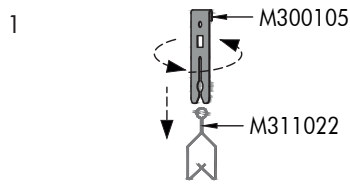
B Panel width = min. 250 / max. 600 mm

Typical grid layout

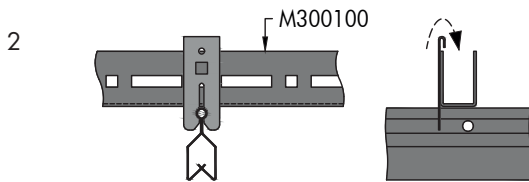


Detail H

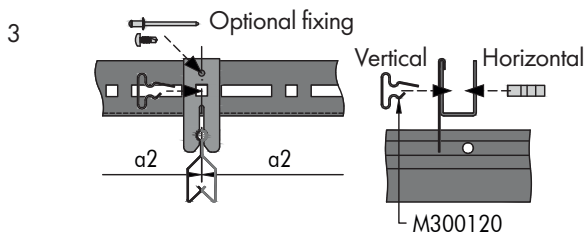
Hanger installation



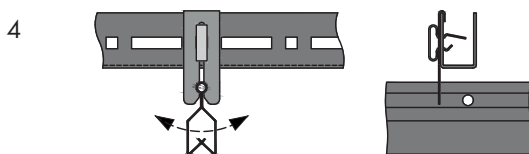
The hanger for DP12 A-Bar is made of spring steel and is therefore elastic. It is twisted on the DP12 A-Bar from above. Then it can be slid to the correct position.



Hang the DP12 A-Bar with the hangers under the U-Profile.



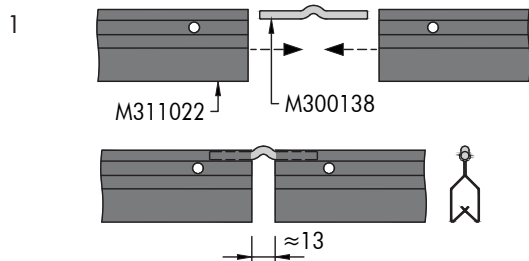
Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.



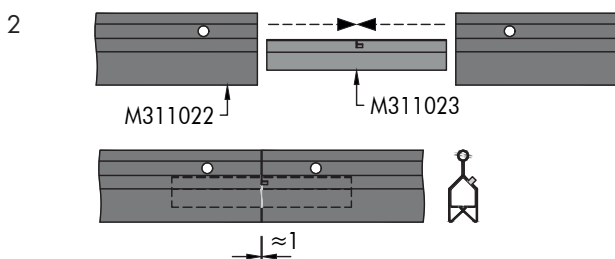
The DP12 A-Bar is now locked in position. Due to the round head of the DP12 A-Bar, it can swing. This is important because it allows any tolerances to be compensated. Otherwise the tiles/panels could no longer be inserted after a certain point.

Detail I

Splice connection



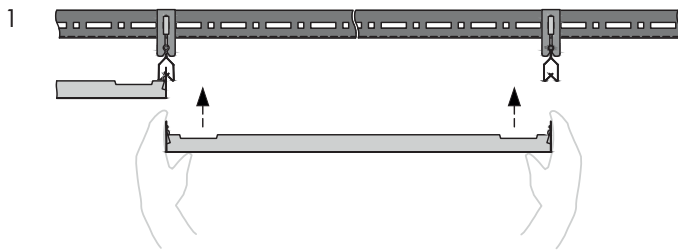
Insert the connection pin at the ends of the DP12 A-Bars and connect them. There is a gap between the DP12 A-Bars. The DP12 A-Bars must be aligned so that the joint is not in the same place as the pips on the tiles/panels.



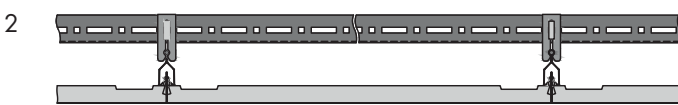
Optionally, the splice connector for DP12 A-Bar can be used. This is inserted at the ends of the DP12 A-Bars and an almost seamless connection is created.

Detail J

Tile/panel insertion (example with METAL Q-Clip)

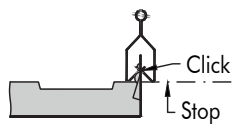


Take the tile/panel and carefully insert it into the DP12 A-Bars from below. All tiles/panels feature a double row of pips. The upper pip is inserted into the DP12 A-Bar, the lower one serves as a stop. Care is required when installing tiles. Always press along the edges with the pips and never on the transverse sides, otherwise the tile may be damaged. The tiles/panels should always be laid in such a way that the Window hooks point in the same direction.

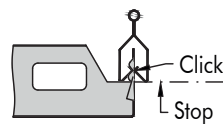


The tiles/panels are correctly inserted when all four corners are flush with the neighbouring tiles/panels. The tiles/panels are designed to match the DP12 A-Bar. If third party profiles are used there is a high probability the tiles will not be correctly inserted.

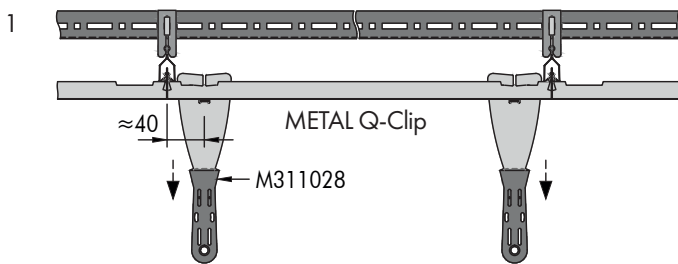
METAL Q-Clip



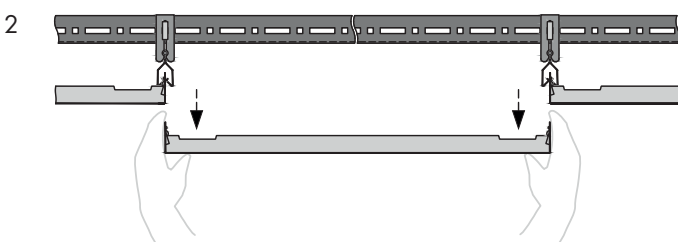
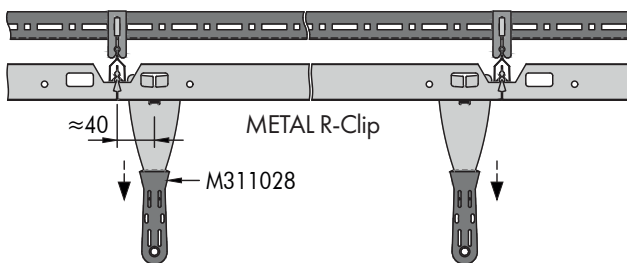
METAL R-Clip



Tile/panel extraction (example with METAL Q-Clip / METAL R-Clip)



The tiles/panels are designed in such a way that the extraction tool can only be inserted in the designated places so that it clicks into place. There is an indentation on the tiles for this purpose, and a rectangular cut-out on the panels. It is therefore important that the appropriate extraction tool is used. This prevents damage to the tiles/panels. Insert on one side first and pull down with a gentle tug, followed by the opposite side.



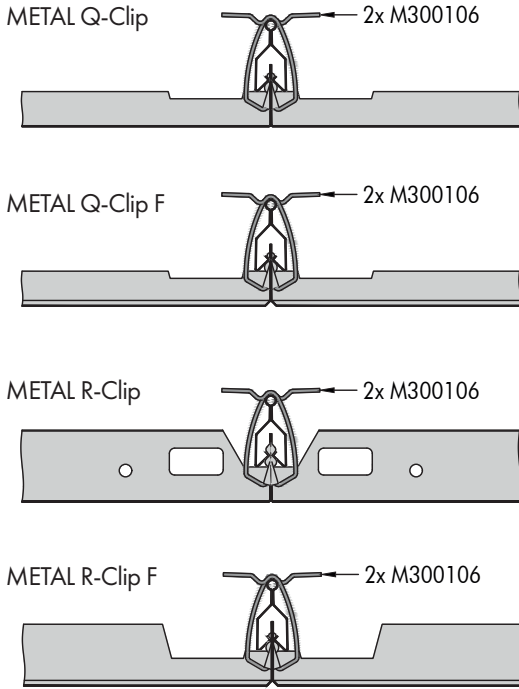
Remove it downwards and store the tile/panel in a safe place so that it cannot be damaged.

Detail K

Optional security clip

The security clip serves to secure the tiles/panels and prevents them from being removed.

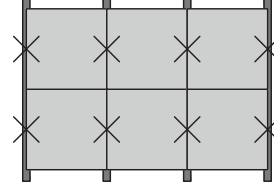
Tile/panel locking



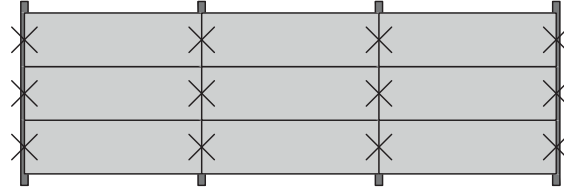
The tiles/panels have, on the sides where the pins are, an embossing where the security clip can be fixed. First hook the security clip into the tile/panel and then slip the upper end over the DP12 A-Bar. Two security clips are required per tile/panel.

Either individual tiles/panels or the entire ceiling can be secured. The tiles/panels are inserted and secured immediately. The last tile/panel cannot be locked.

METAL Q-Clip, METAL Q-Clip F



METAL R-Clip, METAL R-Clip F



Material required per m² (no waste included)

System without additional load [pcs/m²]

Components	α2 [mm]	500	600	625	1200	1500	1800	2000	2500
M300100	U-Profile	0.17	0.14	0.15	0.20	0.21	0.24	0.26	0.28
M300105	Hanger for DP12 A-Bar	1.30	0.88	0.87	0.62	0.54	0.51	0.48	0.43
M300119	Splice connector for U-Profile	0.18	0.15	0.15	0.20	0.22	0.25	0.26	0.29
M300120	Plug-in clip for U-Profile	1.66	1.28	1.17	1.02	0.98	1.01	1.00	1.01
M300138	Connection pin for DP12 A-Bar	0.50	0.42	0.40	0.21	0.17	0.14	0.13	0.10
M300140	Wall anchor	0.07	0.06	0.06	0.08	0.09	0.10	0.10	0.11
M311022	DP12 A-Bar	0.50	0.42	0.40	0.21	0.17	0.14	0.13	1.00
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
Various	Suspension points (E1 - E4)	0.44	0.44	0.44	0.62	0.54	0.51	0.96	0.85

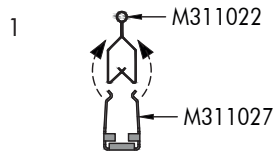
The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional security clips, extraction tools and swing-down brackets.

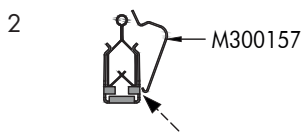
Detail L

Optional Window swing-down function

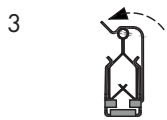
The tiles/panels are provided with two Window hooks, which are used to swing-down. Unlike the standard installation, the tiles/panels are installed alternately (hook to hook) and not in the same direction.



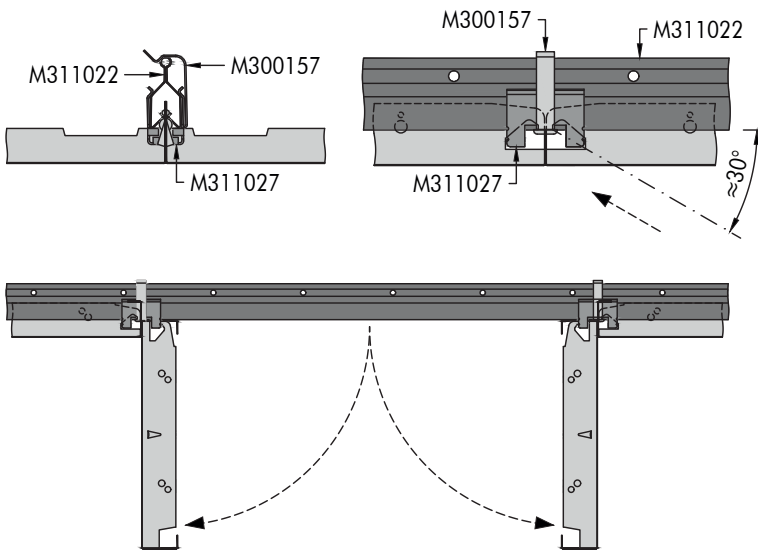
Where the hooks are positioned, the swing-down clip for Window function is placed on the DP12 A-Bar. This is hooked over the DP12 A-Bar from below and fixed with a security clip.



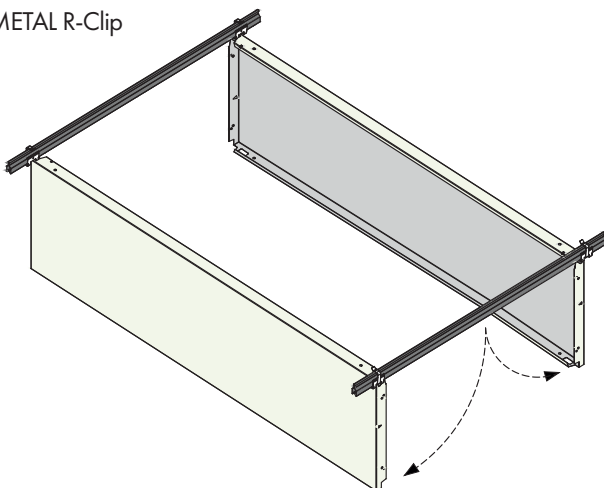
The security clip is first inserted from below and slipped over the DP12 A-Bar. The tiles/panels should be inserted at an angle of $\approx 30^\circ$ so that the hook is positioned over the swing-down clip for Window.



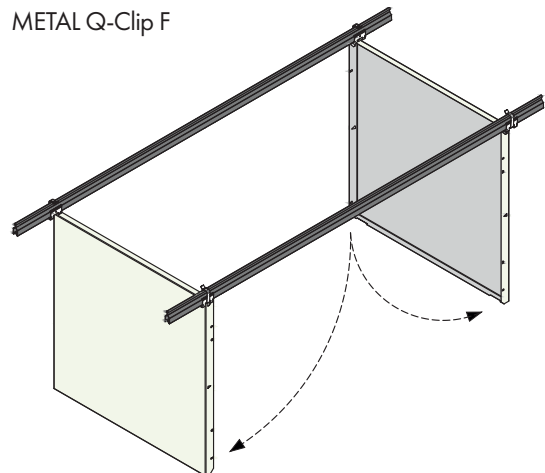
The ceiling is opened with the extraction tool, as shown under detail J.



METAL R-Clip



METAL Q-Clip F



METAL S-CLIP F

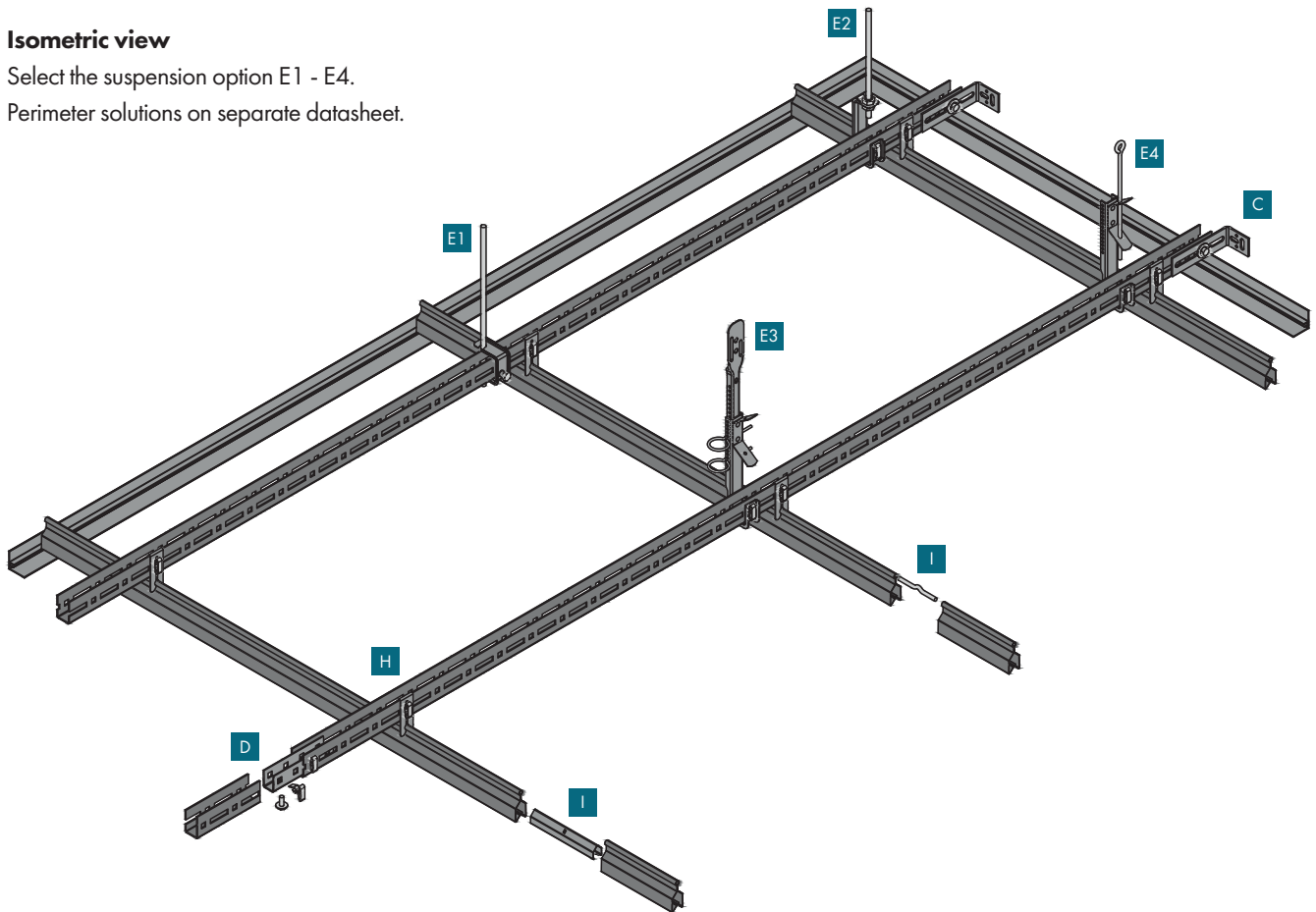
U-Profile primary grid + DP12 A-Bar secondary grid
Concealed grid solution for indoor applications

General information

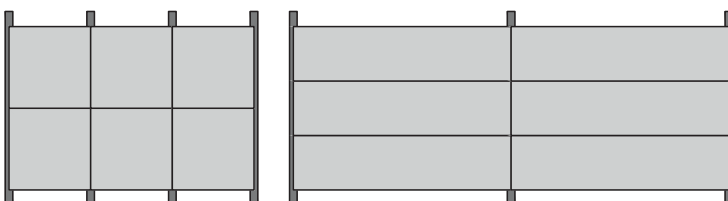
- Concealed clip-in grid system for small and medium rooms
- For perpendicular installation on U-Profile primary grid
- DP12 A-Bar made of galvanised steel
- Typical ceiling weight 5.0 - 5.5 kg/m² (indicative value for unperforated panels / tiles, without additional load)
- Tiles are easily installed and fully demountable
- Included swing-down function

Isometric view

Select the suspension option E1 - E4.
Perimeter solutions on separate datasheet.

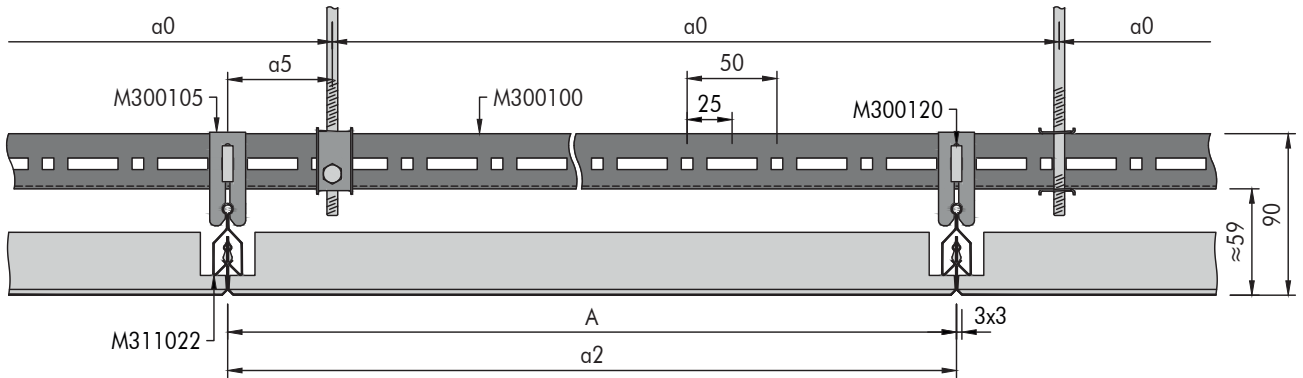


Standard layout options



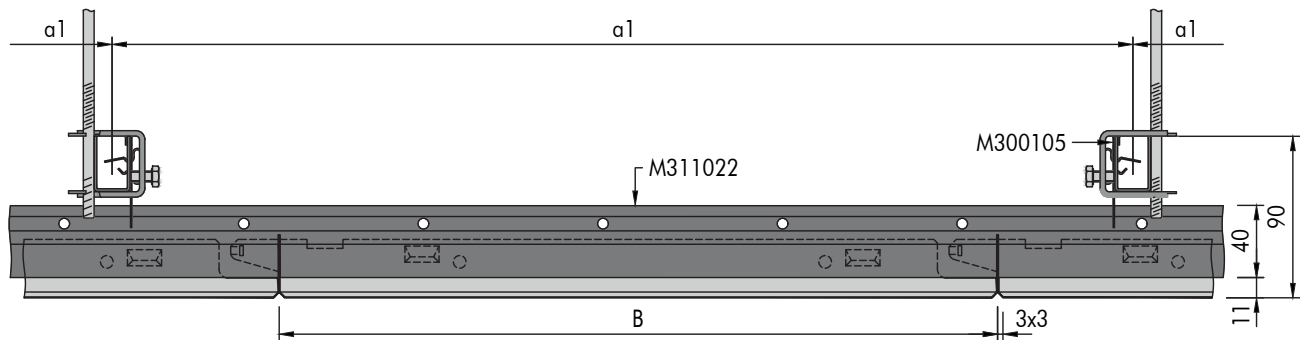
Section F

Example with suspension option **E1**



Section G

Example with suspension option **E1**



Secondary grid components

Standard components

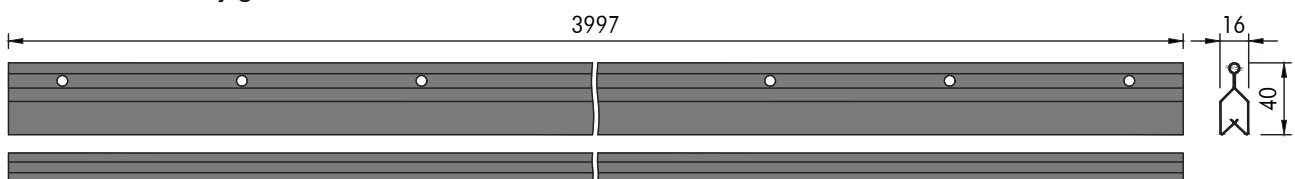
- M311022 DP12 A-Bar
- M300138 Connection pin for DP12 A-Bar
- M300105 Hanger for DP12 A-Bar
- M300120 Plug-in clip for U-Profile

Optional components

- M311023 Splice connector for DP12 A-Bar
- M311046 Extraction tool
- M311191 Self-drilling screw 3.5 x 9.5 mm

See U-Profile primary grid for primary grid components

DP12 A-Bar secondary grid



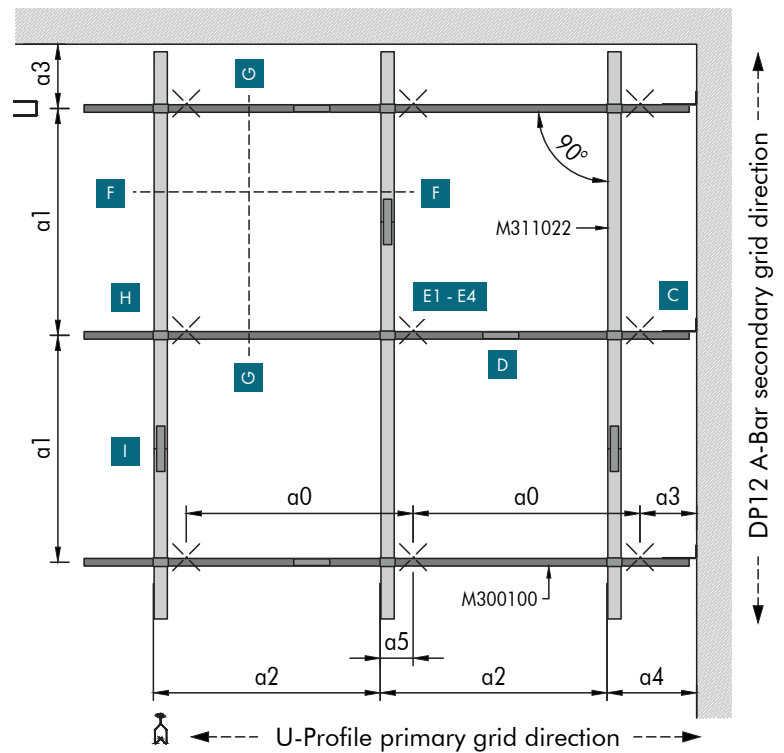
Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1900	600	1200	1700
625	1250	1850	625	1250	1550
900	900	1550	900	900	1400
1200	1200	1350	1200	1200	1250
1500	1500	1250	1500	1500	1100

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between DP12 A-Bars = tile / panel length
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. tile length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = tile length / tile width
600 x 600, 625 x 625, 900 x 300, 1200 x 300, 1500 x 300 mm

Typical grid layout



To determine suspension layout

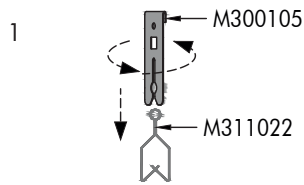
The module length (M) of the requested ceiling is equal to the distance between the DP12 A-Bar centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

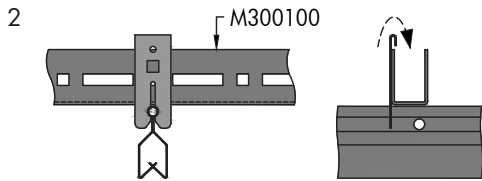
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

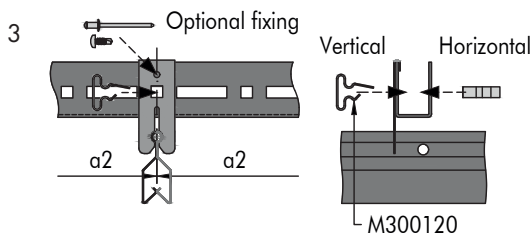
Hanger installation



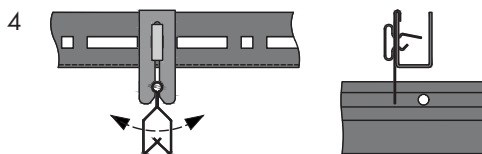
The hanger for DP12 A-Bar is made of spring steel and is therefore elastic. It is twisted on the DP12 A-Bar from above. Then it can be slid to the correct position.



Hang the DP12 A-Bar with the hangers under the U-Profile.



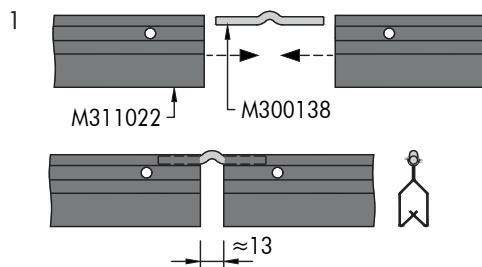
Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.



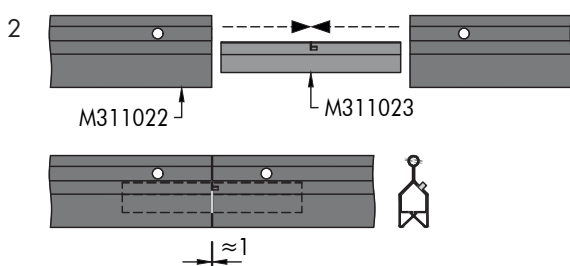
The DP12 A-Bar is now locked in position. Due to the round head of the DP12 A-Bar, it can swing. This is important, because it allows any tolerances to be compensated. Otherwise the tiles could no longer be inserted after a certain point.

Detail I

Splice connection



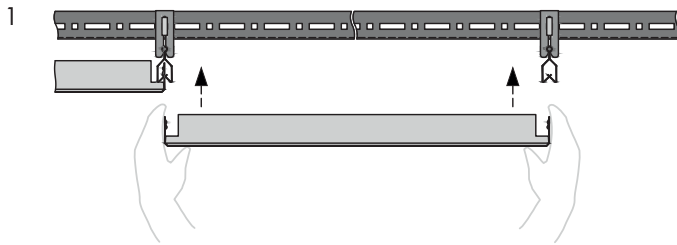
Insert the connection pin at the ends of the DP12 A-Bars and connect them. There is a gap between the DP12 A-Bars. The DP12 A-Bars must be aligned so that the joint is not in the same place as the pips on the tiles.



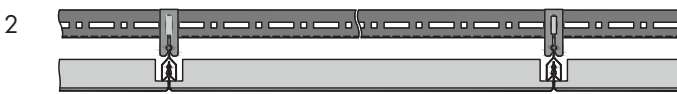
Optionally, the splice connector for DP12 A-Bar can be used. This is inserted at the ends of the DP12 A-Bars and an almost seamless connection is created.

Detail J

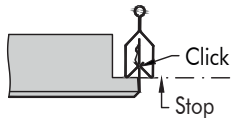
Tile insertion



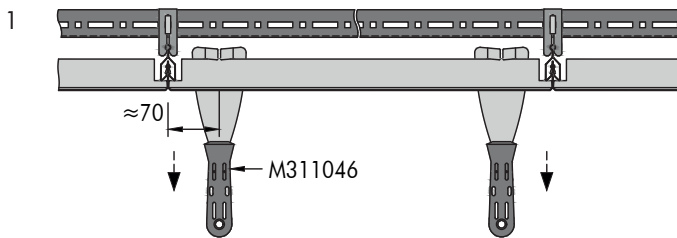
Take the tile and carefully insert it into the DP12 A-Bars from below. Care is required when installing tiles. Always press along the edges with the pips and never on the transverse sides, otherwise the tile may be damaged. The tiles can only be laid in the same direction.



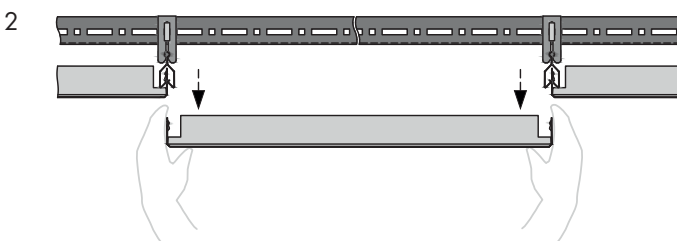
The tiles are correctly inserted when all four corners are flush with the neighbouring tiles. The tiles are designed to match the DP12 A-Bar. If third party profiles are used there is a high probability the tiles will not be correctly inserted.



Tile extraction



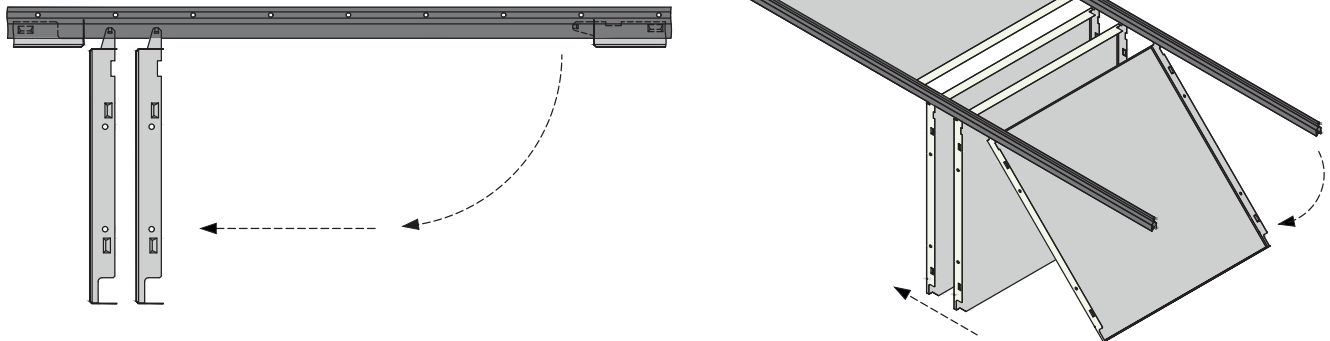
Insert the extraction tool on one side first and pull down with a gentle tug, followed by the opposite side.



Remove it downwards and store the tile in a safe place so that it cannot be damaged.

Detail K

Included swing-down function



The tiles are provided with two wings, which are used to swing-down. Swing-down a maximum of three consecutive tiles and push them aside. Be careful with the wings to avoid damaging them.

The ceiling is opened with the extraction tool, as shown under detail J.

Material required per m² (no waste included)

System without additional load [pcs/m²]

Components	a2 [mm]	600	625	900	1200	1500
M300100	U-Profile	0.14	0.15	0.17	0.20	0.21
M300105	Hanger for DP12 A-Bar	0.88	0.87	0.72	0.62	0.54
M300119	Splice connector for U-Profile	0.15	0.15	0.18	0.20	0.22
M300120	Plug-in clip for U-Profile	1.28	1.17	1.08	1.02	0.98
M300138	Connection pin for DP12 A-Bar	0.42	0.40	0.28	0.21	0.17
M300140	Wall anchor	0.06	0.06	0.07	0.08	0.09
M311022	DP12 A-Bar	0.42	0.40	0.28	0.21	0.17
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10
M311105	Washer	0.10	0.10	0.10	0.10	0.10
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10
Various	Suspension points (E1 - E4)	0.44	0.44	0.72	0.62	0.54

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims and extraction tools.

METAL T-CLIP / METAL T-CLIP F

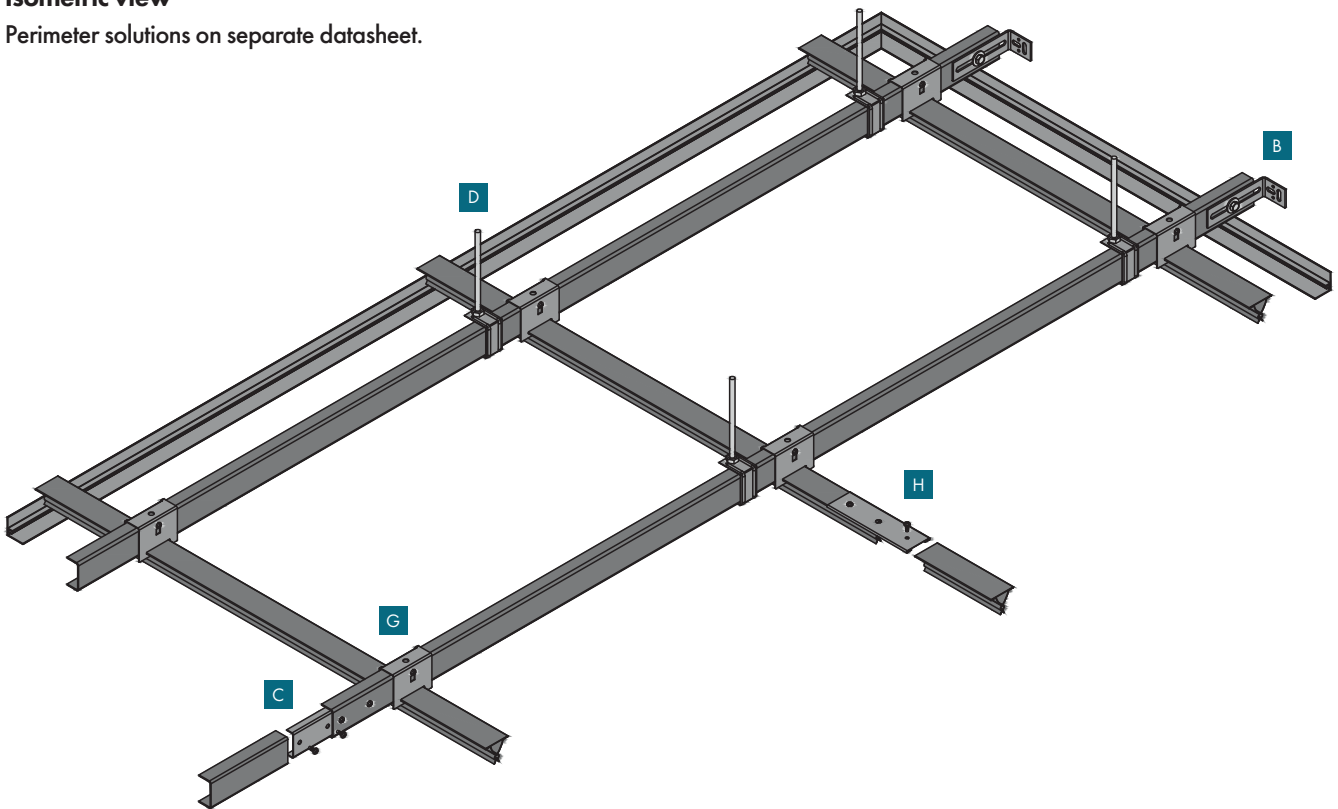
C-Channel primary grid + Spring-T secondary grid
Concealed grid solution for indoor applications

General information

- Concealed clip-in grid system for small and medium rooms (METAL T-Clip F), medium and large rooms (METAL T-Clip)
- For perpendicular installation on C-Channel primary grid
- Spring-T made of galvanised steel
- Typical ceiling weight 5.5 - 6.5 kg/m² (METAL T-Clip F), 7.5 - 9.0 kg/m² (METAL T-Clip)
(indicative value for unperforated panels / tiles, without additional load)
- Panels / tiles are easily installed and fully demountable
- Optional security clips available for METAL T-Clip F

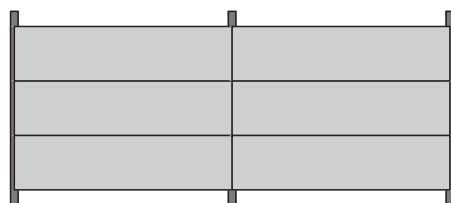
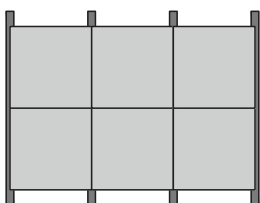
Isometric view

Perimeter solutions on separate datasheet.

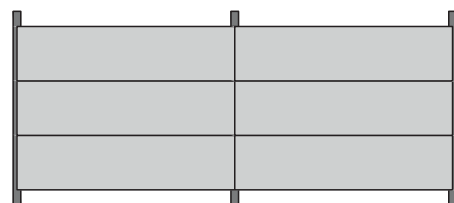


Standard, Vario Design layout options

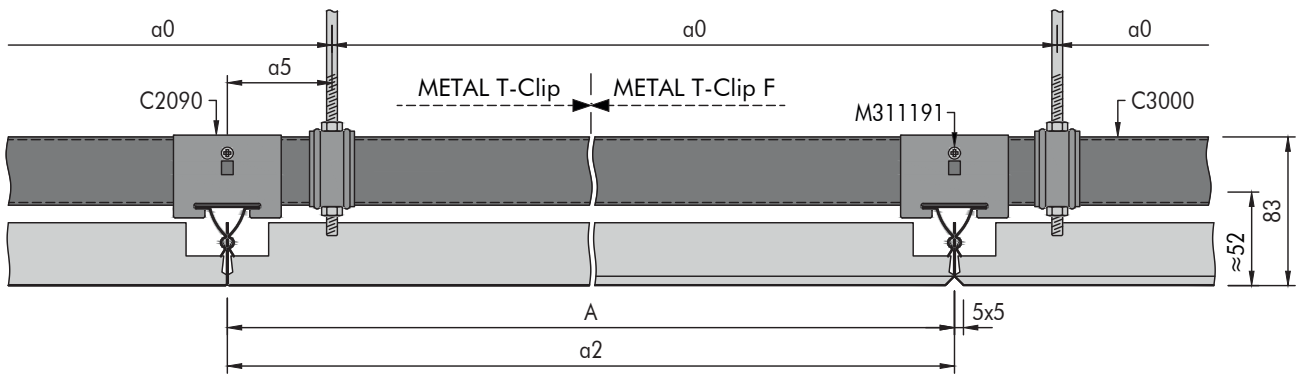
Standard
METAL T-Clip F



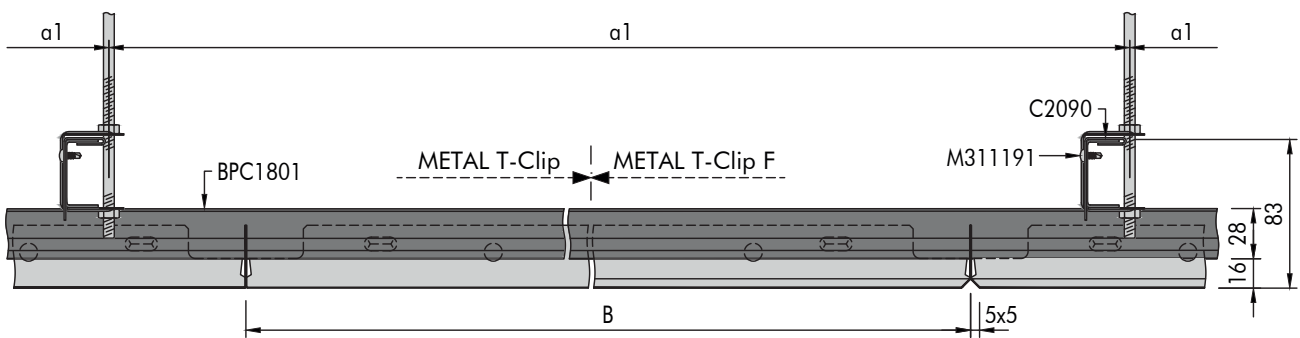
Vario Design
METAL T-Clip



Section E



Section F



Secondary grid components

Standard components

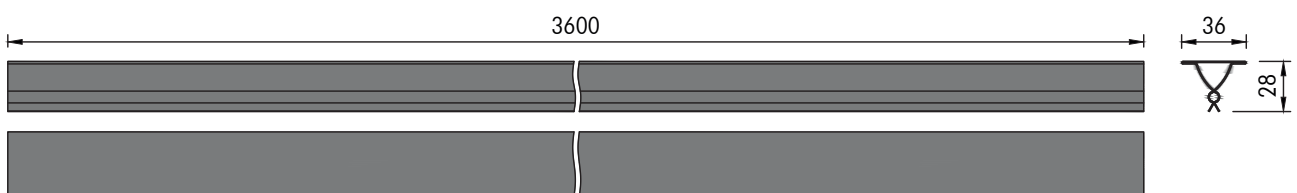
- C1801 Spring-T
- C1805 Splice connector for Spring-T
- C2090 Hanger for Spring-T
- M311191 Self-drilling screw 3.5 x 9.5 mm

Optional components

- C1775 Security clip
- M311046 Extraction tool

See C-Channel primary grid for primary grid components

Spring-T secondary grid



Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
500	1500	1700	500	1500	1100
600	1200	1800	600	1200	1600
675	1350	1700	675	1350	1400
750	1500	1600	750	750	1450
900	900	1500	900	900	1300
950	950	1450	950	950	1300
1000	1000	1400	1000	1000	1250
1050	1050	1350	1050	1050	1200
1100	1100	1350	1100	1100	1200
1150	1150	1300	1150	1150	1150
1200	1200	1300	1200	1200	1150
1250	1250	1250	1250	1250	1100
1300	1300	1250	1300	1300	1100
1350	1350	1200	1350	1350	1100
1400	1400	1200	1400	1400	1050
1450	1450	1150	1450	1450	1050
1500	1500	1150	1500	1500	1050
1550	1550	1150	1550	1550	1000
1600	1600	1100	1600	1600	1000
1650	1650	1100	1650	1650	950
1700	1700	1100	1700	1700	900
1750	1750	1050	1750	1750	850
1800	1800	1050	1800	1800	750
1850	1850	1050	1850	1850	700
1900	1900	1000	1900	1900	650
1950	975	1000	1950	975	900
2000	1000	1000	2000	1000	900
2050	1025	1000	2050	1025	900
2100	1050	1000	2100	1050	900
2150	1075	950	2150	1075	850
2200	1100	950	2200	1100	850
2250	1125	950	2250	1125	850
2300	1150	950	2300	1150	850
2350	1175	900	2350	1175	800
2400	1200	900	2400	1200	800
2450	1225	900	2450	1225	800
2500	1250	900	2500	1250	800

Parameters

- a0 Distance between C-Channel suspension points = max. 1900 mm
- a1 Max. distance between C-Channels
- a2 Distance between Spring-T = tile/panel length
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. tile/panel length
- a5 Distance from C-Channel suspension point to hanger = max. 100 mm
- M Module size = tile/panel length / tile/panel width

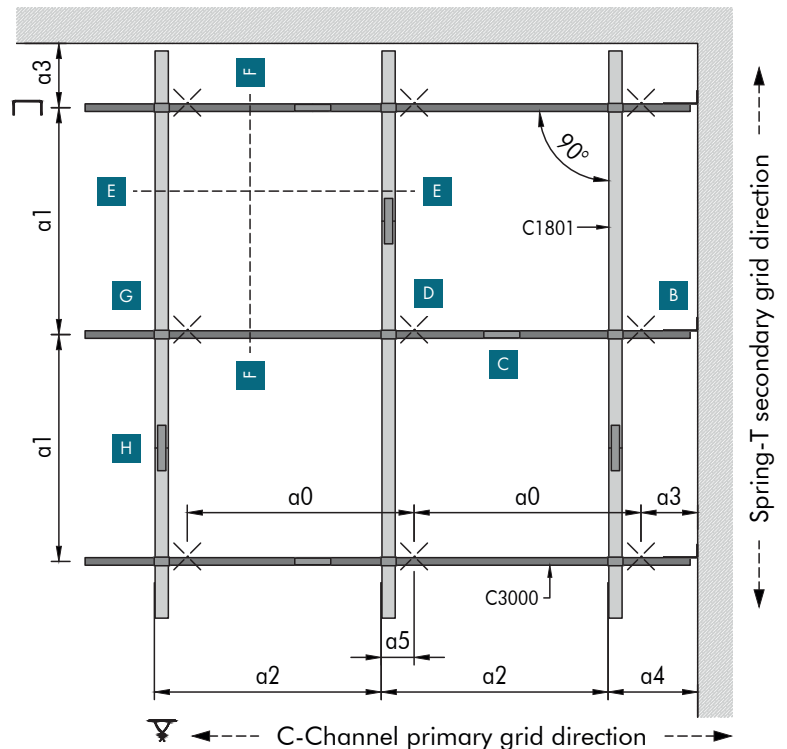
METAL T-Clip

- A Panel length = min. 900 / max. 2500 mm
- B Panel width = 300, 400, 500, 600 mm

METAL T-Clip F

- M 500 x 500, 600 x 600, 675 x 675, 750 x 750, 1200 x 300, 1200 x 600, 1500 x 300 mm

Typical grid layout



To determine suspension layout

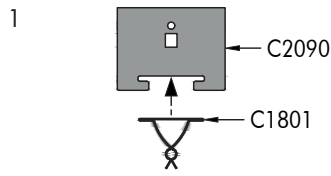
The module length (M) of the requested ceiling is equal to the distance between the Spring-T centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

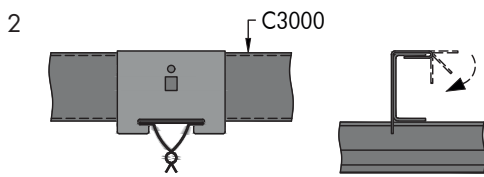
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail G

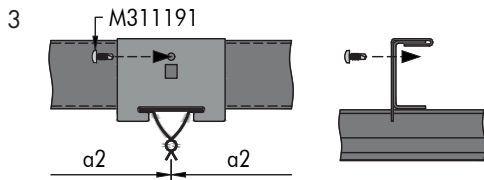
Hanger installation



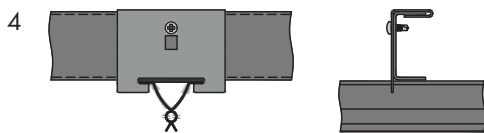
Insert the hanger for Spring-T from the end of the Spring-T.



Place the Spring-T including the hanger on the C-Channel. Bend the top flap of the hanger down 180°.



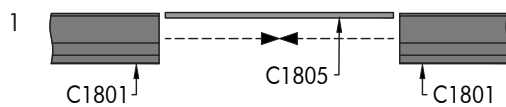
Take a self-drilling screw and fix the position of the hanger on the C-Channel.



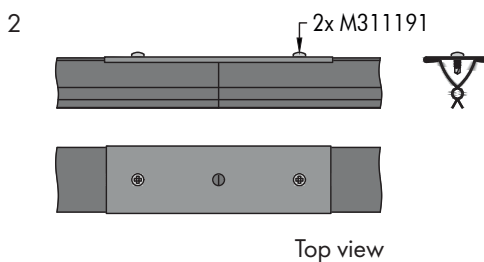
The DP12 A-Bar is now locked in position. The slot in the hanger is wider than the Spring-T. This is important because it allows any tolerances to be compensated. Otherwise the tiles could no longer be inserted after a certain point.

Detail H

Splice connection



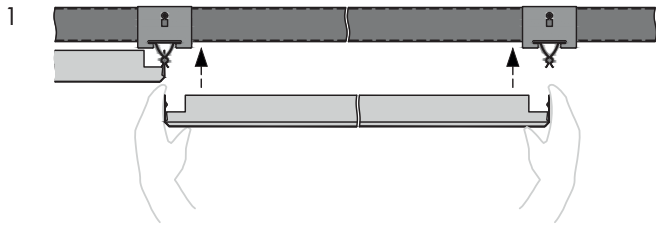
Insert the splice connector for Spring-T at the end of the Spring-T and connect both profiles.



The position of the splice connector is held with two self-drilling screws.

Detail I

Tile/panel insertion (example with METAL T-Clip F)

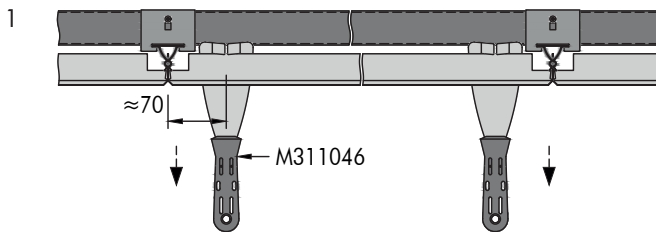


Take the tile/panel and carefully insert it into the Spring-T from below. Be careful with the tiles/panels. Always press along the edges with the pips and never on the transverse sides, otherwise the tile/panel may be damaged.

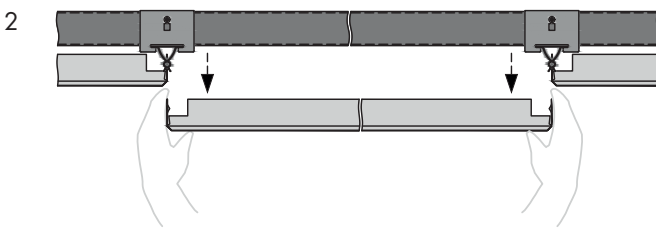


The tiles/panels are correctly inserted when all four corners are flush with the neighbouring tiles/panels. The tiles/panels are designed to match the Spring-T. If third party profiles are used there is a high probability the tiles will not be correctly inserted.

Tile/panel extraction (example with METAL T-Clip F)



Insert the extraction tool on one side first and pull down with a gentle tug, followed by the opposite side.

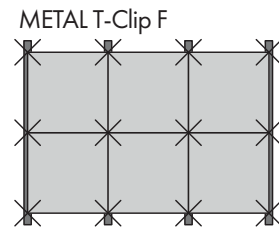


Remove it downwards and store the tile/panel in a safe place so that it cannot be damaged.

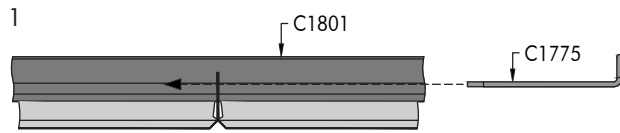
Detail J

Optional security clip for METAL T-Clip F

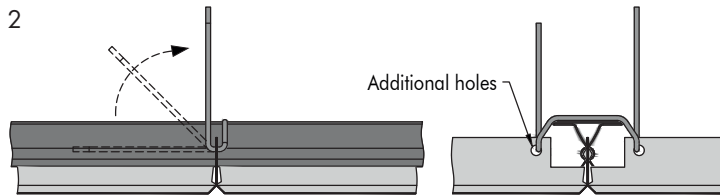
The security clip serves to secure the tiles and prevents them from being removed.



Tile locking



In order for the security clips to be used, the tiles must be ordered with additional holes. The security clip is placed at the crossing point of four tiles. The ends of the security clip are fed through the holes in the tiles.



Bend the ends of the security clip 90° upwards. The tiles are now secured. The tiles are inserted and secured immediately. One security clip per tile is needed. The last tile cannot be locked.

Material required per m² (no waste included)

System without additional load [pcs/m²]

Components	α2 [mm]	500	600	675	750	1200	1500	2000	2500
C1801	Spring-T	0.55	0.46	0.41	0.37	0.23	0.19	0.14	0.11
C1805	Splice connector for Spring-T	0.56	0.48	0.42	0.38	0.24	0.20	0.14	0.12
C2090	Hanger for Spring-T	1.18	0.94	0.88	0.84	0.66	0.58	0.50	0.46
C3000	C-Channel	0.19	0.17	0.19	0.20	0.24	0.27	0.31	0.35
C7140	Splice connector for C-Channel	0.15	0.15	0.15	0.18	0.20	0.23	0.25	0.30
CA97	Clamping bracket for C-Channel	0.40	0.47	0.44	0.42	0.65	0.58	1.00	0.89
M300140	Wall anchor	0.06	0.06	0.06	0.07	0.08	0.09	0.11	0.12
M311099	Threaded rod M6 x 1000 mm	0.40	0.47	0.44	0.42	0.65	0.58	1.00	0.89
M311103	Hexagonal nut M6	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311191	Self-drilling screw 3.5 x 9.5 mm	2.30	1.90	1.72	1.60	1.14	0.98	0.78	0.70
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional security clips, extraction tools and swing-down brackets.

METAL K-CLIP

U-Profile primary grid + DP12 A-Bar secondary grid
Concealed grid solution for indoor applications

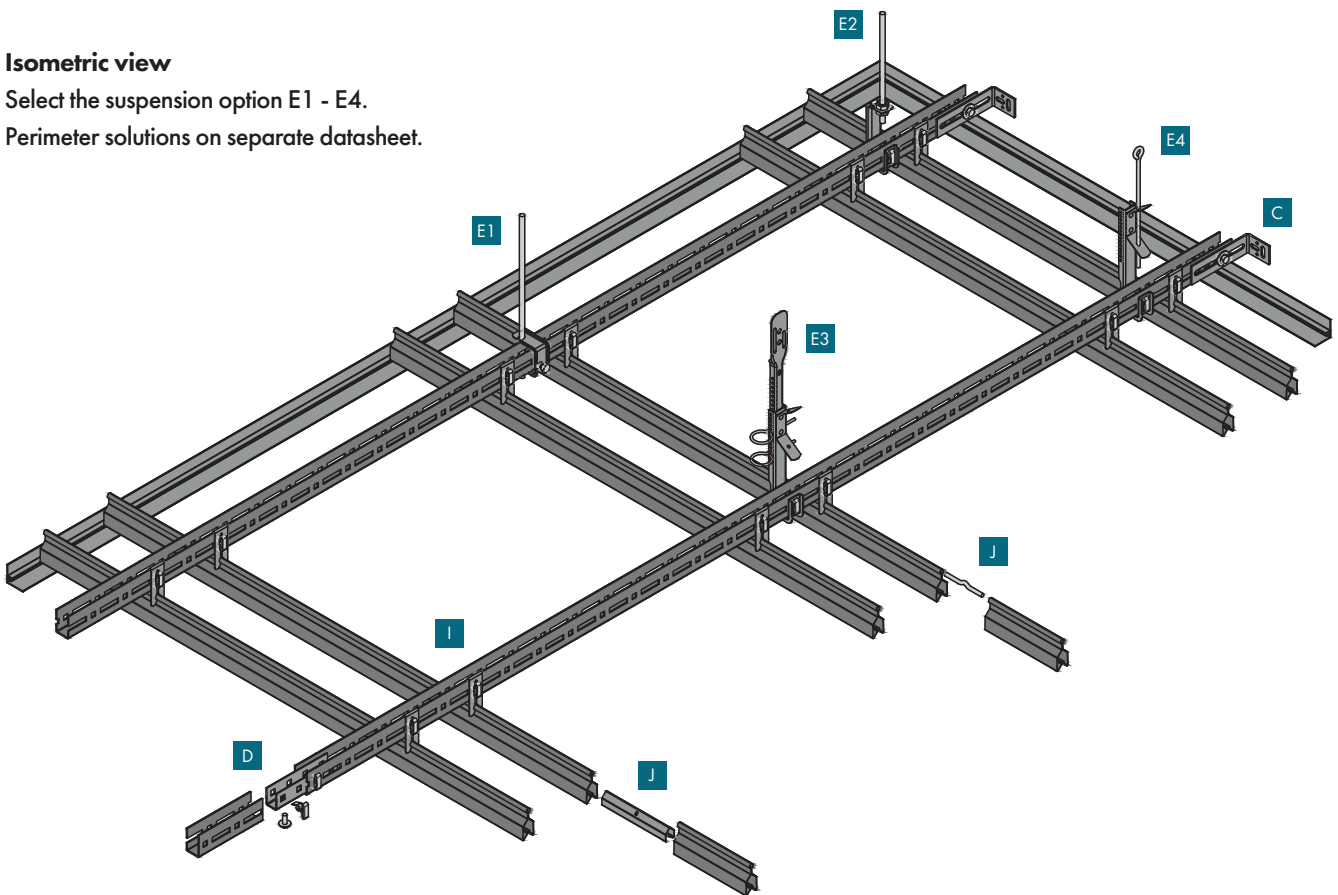
General information

- Concealed clip-in tartan grid system for large rooms
- Layouts with METAL Q-Clip tiles or METAL R-Clip panels in combination with crossing boxes and strips
- For perpendicular installation on U-Profile primary grid
- DP12 A-Bar made of galvanised steel
- Crossing box and strips in RAL 9010 made of galvanised steel (further sizes, cut-outs and colour options on request)
- Typical ceiling weight 6.0 kg/m² (with METAL Q-Clip), 7.0 kg/m² (with METAL R-Clip)
(indicative value for unperforated tiles / panels, without additional load)
- Tiles / panels are easily installed and fully demountable
- Optional security clips available for tiles / panels

Isometric view

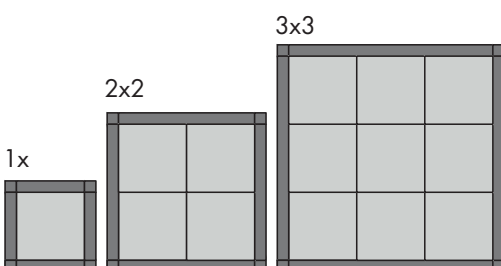
Select the suspension option E1 - E4.

Perimeter solutions on separate datasheet.

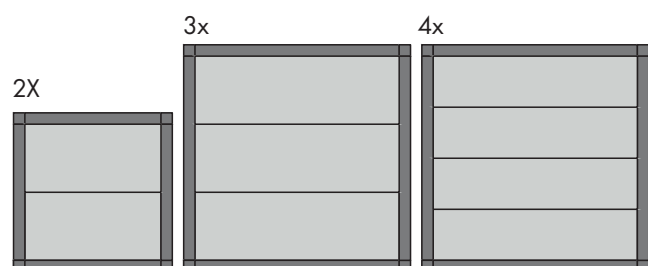


Standard, Vario Design layout options

Standard with METAL Q-Clip tiles

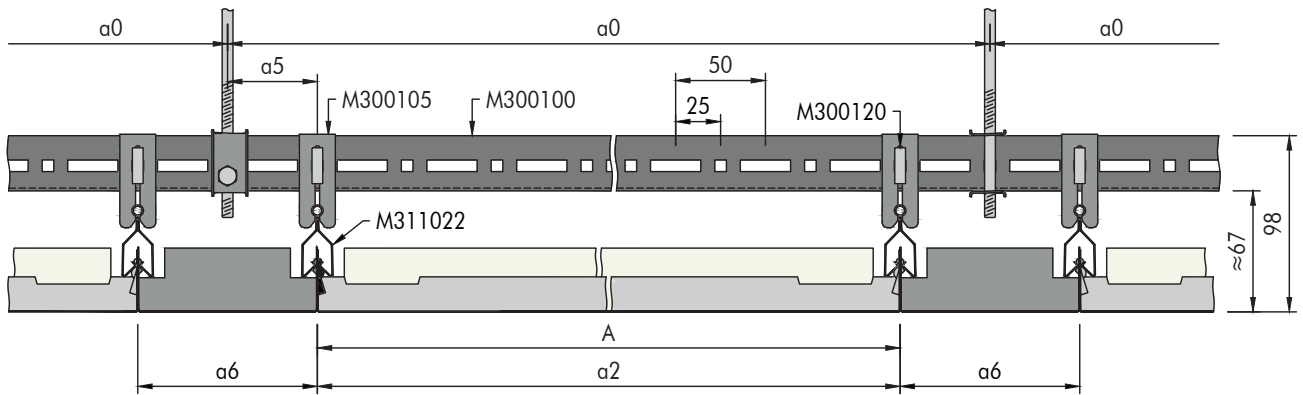


Vario Design with METAL R-Clip tiles



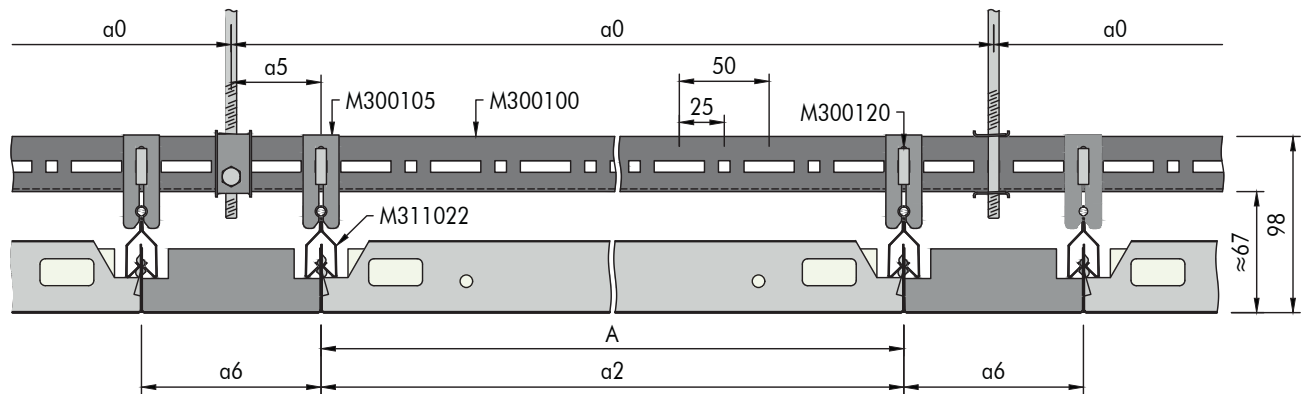
Section F (with 1 x METAL Q-Clip)

Example with suspension option E1



Section F (with METAL R-Clip)

Example with suspension option E1



Secondary grid components

Standard components

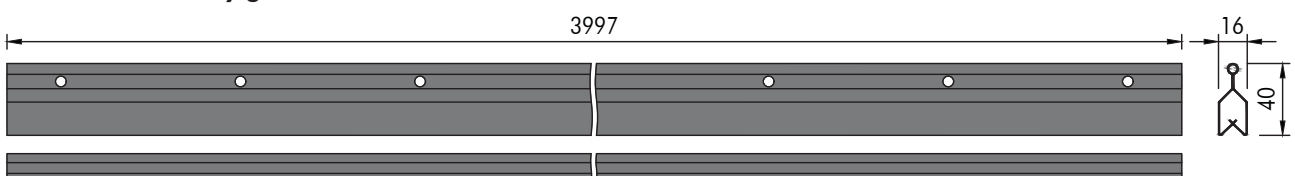
- M311022 DP12 A-Bar
- M300138 Connection pin for DP12 A-Bar
- M300105 Hanger for DP12 A-Bar
- M300120 Plug-in clip for U-Profile

Optional components

- M300106 Security clip
- M311023 Splice connector for DP12 A-Bar
- M311028 Extraction tool
- M311191 Self-drilling screw 3.5 x 9.5 mm

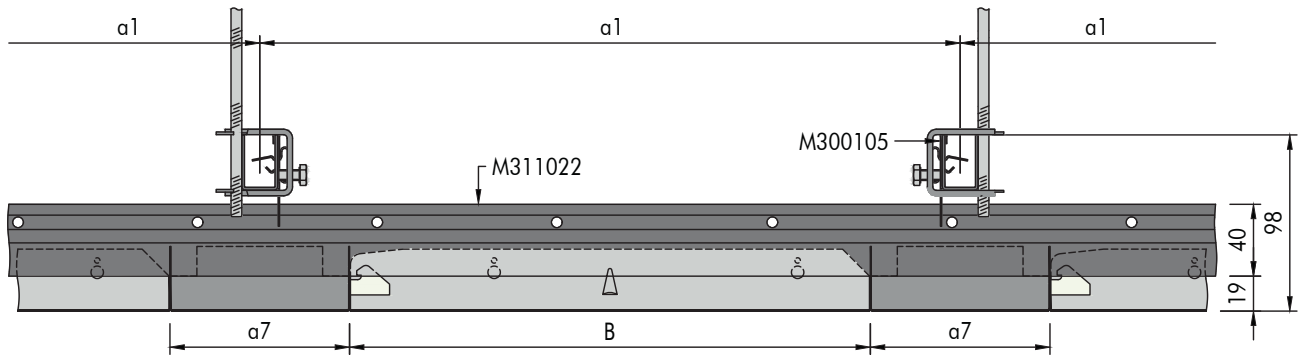
See U-Profile primary grid for primary grid components

DP12 A-Bar secondary grid



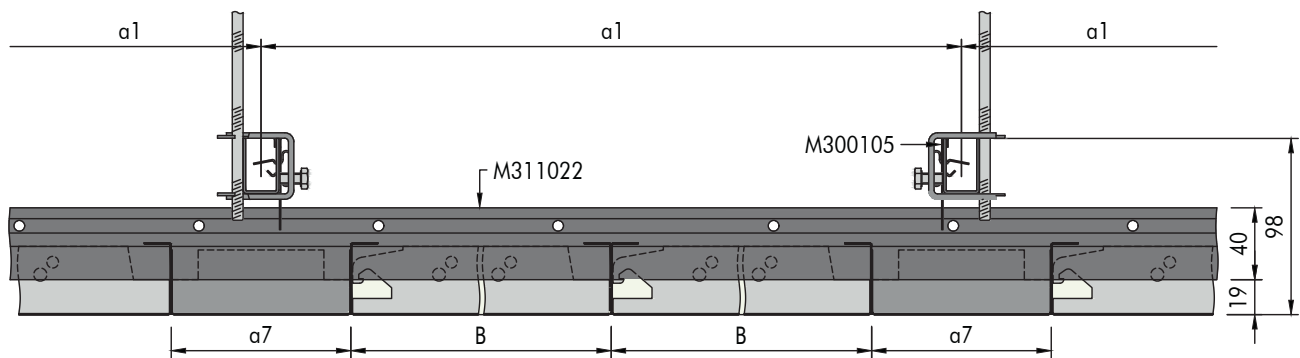
Section G (with 1x METAL Q-Clip)

Example with suspension option **E1**



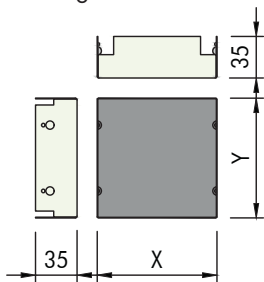
Section G (with METAL R-Clip)

Example with suspension option **E1**

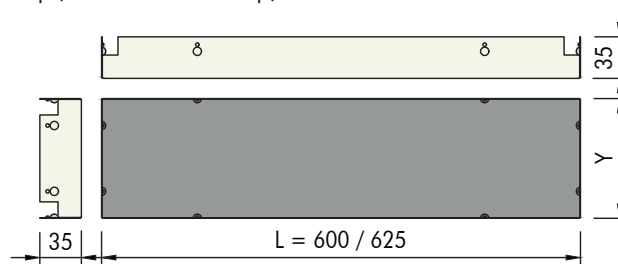


Crossing box & strips

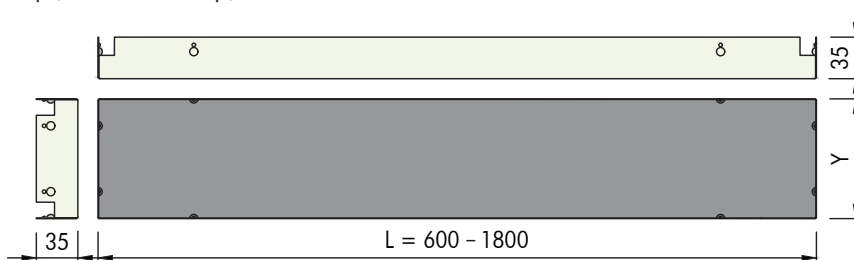
Crossing box



Strip (for 1x METAL Q-Clip)



Strip (for METAL R-Clip)



The strips are delivered with pips on all four sides.

This allows the same Strip to be installed lengthwise and crosswise.

Spacing

System without additional load			System with additional load +4 kg/m ²		
Module	a0	a1	Module	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
700	1400	1750	700	1400	1250
725	1450	1750	725	1450	1250
750	1500	1650	750	750	1550
775	1550	1550	775	775	1550
1300	1300	1300	1300	1300	1200
1325	1325	1300	1325	1325	1200
1350	1350	1300	1350	1350	1150
1375	1375	1300	1375	1375	1150
1400	1400	1300	1400	1400	1150
1450	1450	1250	1450	1450	1100
1500	1500	1250	1500	1500	1100
1550	1550	1200	1550	1550	1050
1600	1600	1200	1600	1600	1000
1650	1650	1200	1650	1650	900
1700	1700	1150	1700	1700	850
1750	1750	1150	1750	1750	800
1800	1800	1100	1800	1800	700
1850	1850	1000	1850	1850	650
1900	1900	950	1900	1900	600
1925	963	1100	1925	963	950
1950	975	1100	1950	975	950
1975	988	1050	1975	988	950
2000	1000	1050	2000	1000	950
2025	1013	1050	2025	1013	950

To determine suspension layout

The module length (M) of the requested ceiling is equal to the distance between the DP12 A-Bar centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

The shown values are maximum allowed distances and can be reduced but not exceeded.

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
 - a1 Max. distance between U-Profiles
 - a2 Distance between DP12 A-Bars = tile/panel length
 - a3 Distance from wall = max. 200 mm
 - a4 Distance from wall = max. tile/panel length
 - a5 Distance from U-Profile suspension point to hanger = max. 100 mm
 - a6 Crossing box length (X) / strip width (Y) = 100, 125, 150 mm
 - a7 Crossing box width (Y) / strip width (Y) = 100, 125, 150 mm
- M Module length = tile/panel length + strip width
 M Module width = tile/panel width (2, 3 or 4x) + strip width

METAL Q-Clip

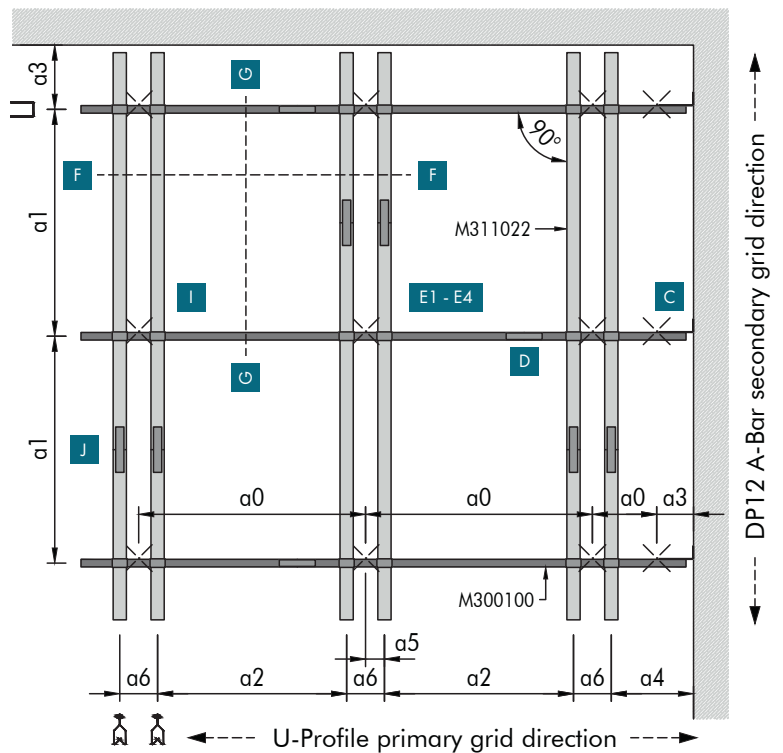
M 600 x 600, 625 x 625 mm

METAL R-Clip

A Panel length = min. 600 / max. 1800 mm

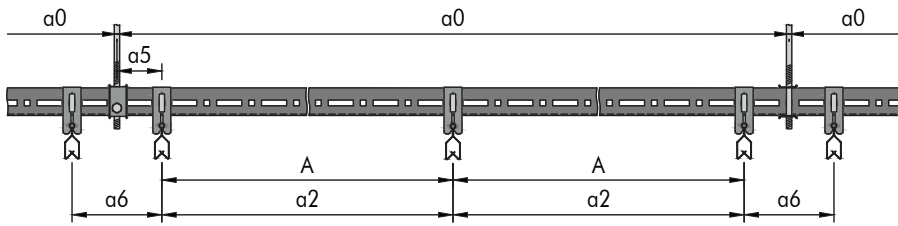
B Panel width = min. 250 / max. 600 mm

Typical grid layout



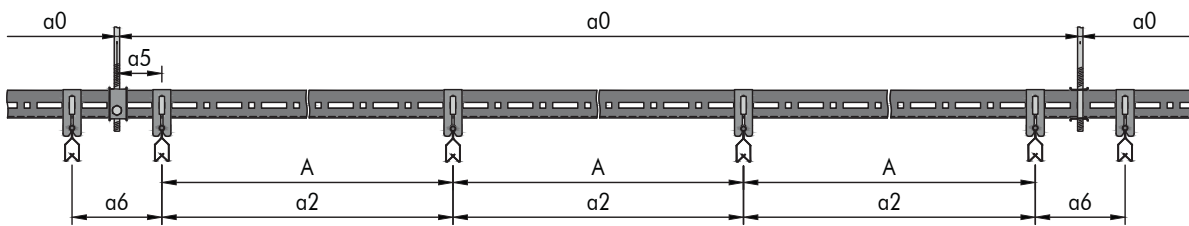
Section H (with 2x2 METAL Q-Clip)

Example with suspension option **E1**



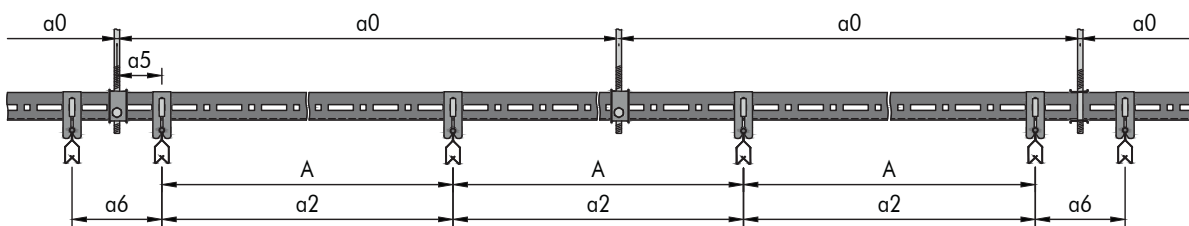
Section H (with 3x3 METAL Q-Clip)

Example with suspension option **E1**



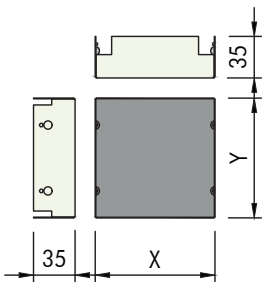
Section H (with 3x3 METAL Q-Clip)

Example with suspension option **E1**, module size >1900 mm

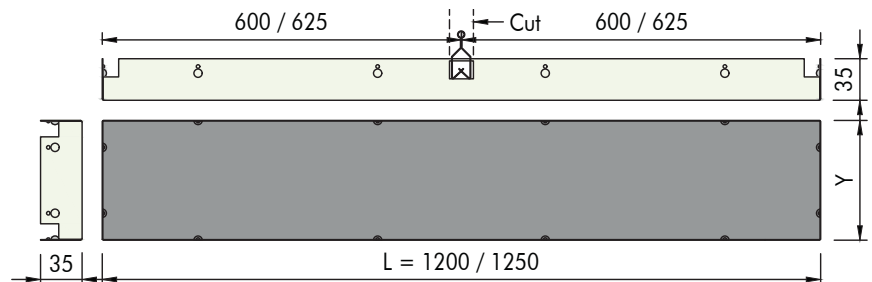


Crossing box & strips

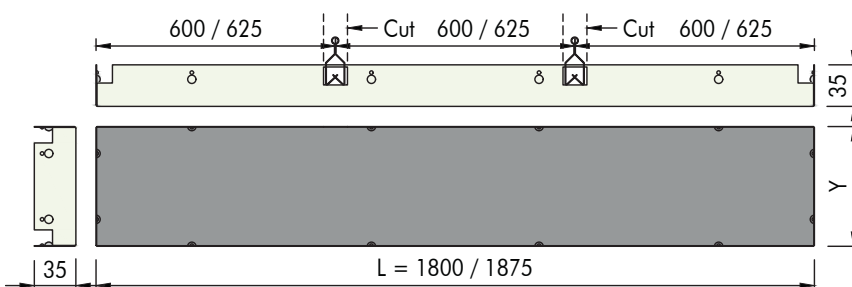
Crossing box



Strip (for 2x2 METAL Q-Clip)



Strip (for 3x3 METAL Q-Clip)



The strips are delivered with pips on all four sides. This allows the same strip to be installed lengthwise and crosswise. There are notches on the long sides that are cut away on site to allow the DP12 A-Bar to pass through.

Spacing

System without additional load			System with additional load +4 kg/m ²		
Module	a0	a1	Module	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
700	1400	1750	700	1400	1250
725	1450	1750	725	1450	1250
750	1500	1650	750	750	1550
775	1550	1550	775	775	1550
1300	1300	1300	1300	1300	1200
1325	1325	1300	1325	1325	1200
1350	1350	1300	1350	1350	1150
1375	1375	1300	1375	1375	1150
1400	1400	1300	1400	1400	1150
1450	1450	1250	1450	1450	1100
1500	1500	1250	1500	1500	1100
1550	1550	1200	1550	1550	1050
1600	1600	1200	1600	1600	1000
1650	1650	1200	1650	1650	900
1700	1700	1150	1700	1700	850
1750	1750	1150	1750	1750	800
1800	1800	1100	1800	1800	700
1850	1850	1000	1850	1850	650
1900	1900	950	1900	1900	600
1925	963	1100	1925	963	950
1950	975	1100	1950	975	950
1975	988	1050	1975	988	950
2000	1000	1050	2000	1000	950
2025	1013	1050	2025	1013	950

To determine suspension layout

The module length (M) of the requested ceiling is equal to the distance between the DP12 A-Bar centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

The shown values are maximum allowed distances and can be reduced but not exceeded.

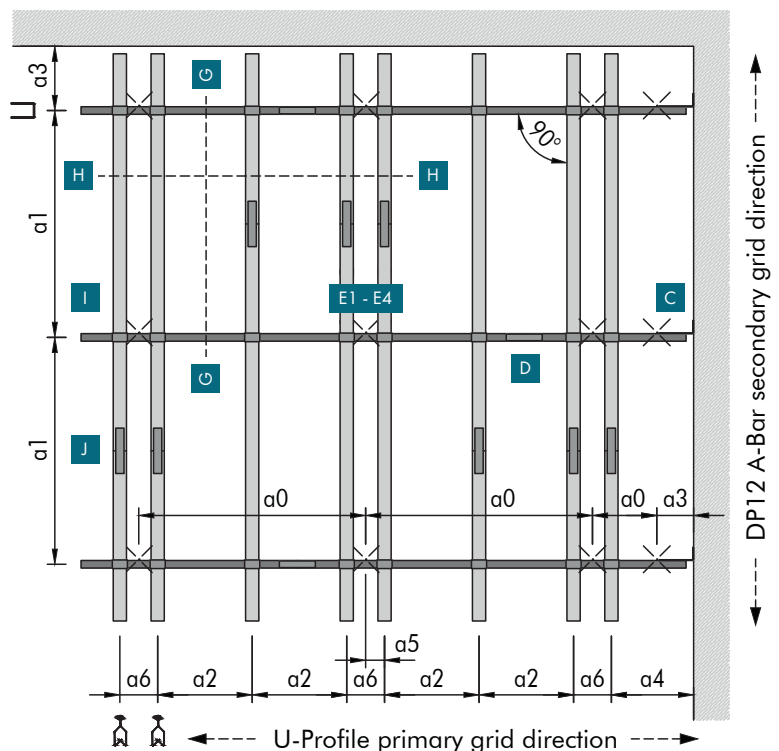
Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
 - a1 Max. distance between U-Profiles
 - a2 Distance between DP12 A-Bars = tile length
 - a3 Distance from wall = max. 200 mm
 - a4 Distance from wall = max. tile length
 - a5 Distance from U-Profile suspension point to hanger = max. 100 mm
 - a6 Crossing box length (X) / strip width (Y) = 100, 125, 150 mm
 - a7 Crossing box width (Y) / strip width (Y) = 100, 125, 150 mm
- M Module length = tile length (2 or 3x) + strip width
 Module width = tile width (2 or 3x) + strip width

METAL Q-Clip

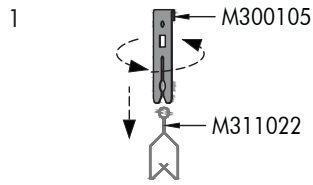
- M 600 x 600, 625 x 625 mm

Typical grid layout

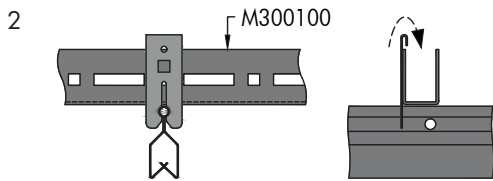


Detail I

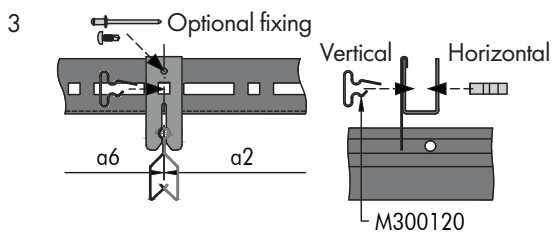
Hanger installation



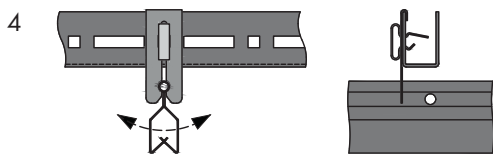
The hanger for DP12 A-Bar is made of spring steel and is therefore elastic. It is twisted on the DP12 A-Bar from above. Then it can be slid to the correct position.



Hang the DP12 A-Bar with the hangers under the U-Profile.



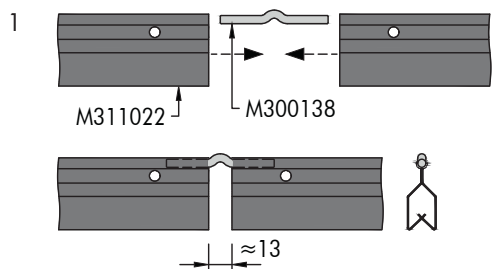
Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.



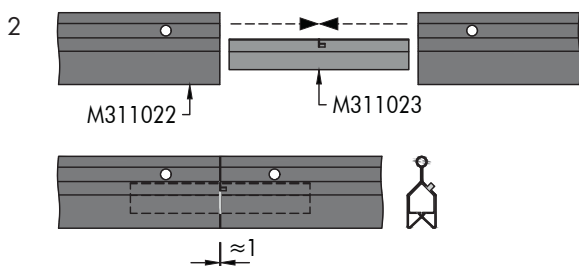
The DP12 A-Bar is now locked in position. Due to the round head of the DP12 A-Bar, it can swing. This is important because it allows any tolerances to be compensated. Otherwise the tiles/panels could no longer be inserted after a certain point.

Detail J

Splice connection



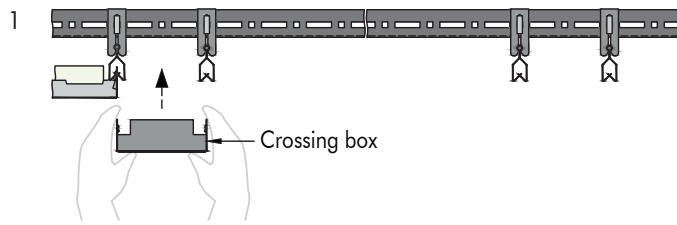
Insert the connection pin at the ends of the DP12 A-Bars and connect them. There is a gap between the DP12 A-Bars. The DP12 A-Bars must be aligned so that the joint is not in the same place as the pips on the tiles/panels.



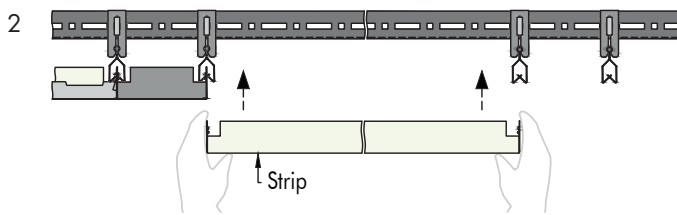
Optionally, the splice connector for DP12 A-Bar can be used. This is inserted at the ends of the DP12 A-Bars and an almost seamless connection is created.

Detail K

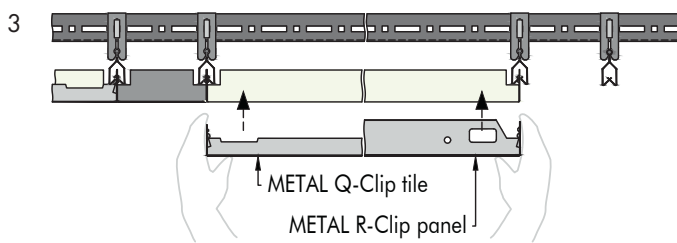
Tile/panel insertion



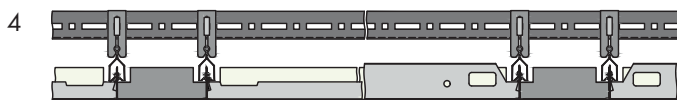
The components are installed continuously. Take the crossing box and insert into the DP12 A-Bars from below. The crossing box has pips on two sides, so it must always be laid in the same direction. The upper pip is clamped into the DP12 A-Bar.



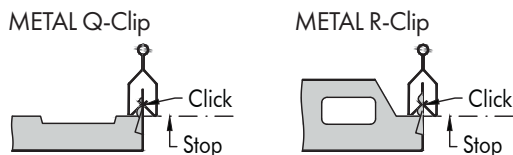
The strips feature pips on all four sides. This allows them to be inserted lengthwise and crosswise into the DP12 A-Bar.



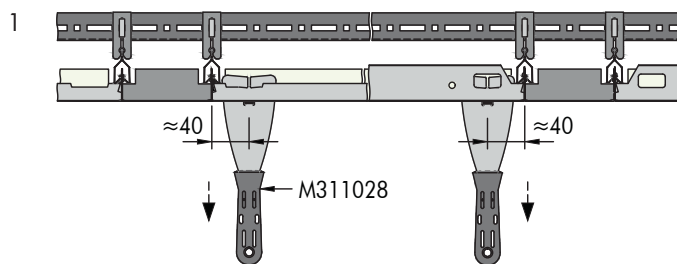
Take the tile/panel and carefully insert it into the DP12 A-Bars from below. All tiles/panels feature a double row of pips. The upper pip is inserted into the DP12 A-Bar, the lower one serves as a stop. Care is required when installing tiles/panels. Always press along the edges with the pips and never on the transverse sides, otherwise the tile may be damaged. The tiles/panels should always be laid in such a way that the Window hooks point in the same direction.



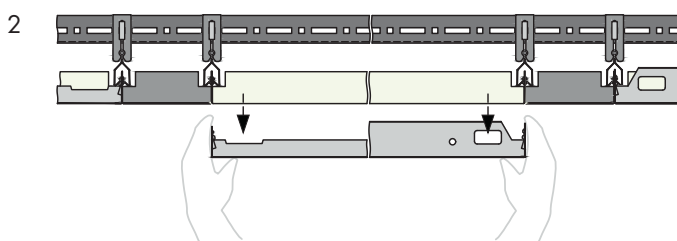
The tiles/panels are correctly inserted when all four corners are flush with the neighbouring tiles/panels. The tiles/panels are designed to match the DP12 A-Bar. If third party profiles are used there is a high probability the tiles will not be correctly inserted.



Tile/panel extraction



The tiles/panels are designed in such a way that the extraction tool can only be inserted in the designated places so that it clicks into place. There is an indentation on the tiles for this purpose, and a rectangular cut-out on the panels. It is therefore important that the appropriate extraction tool is used. This prevents damage to the tiles/panels. Insert on one side first and pull down with a gentle tug, followed by the opposite side.



Remove it downwards and store the tile/panel in a safe place so that it cannot be damaged. If you wish to gain access to the plenum, try to access it through the tiles/panels whenever possible. The crossing boxes and strips can also be removed if necessary. Be especially careful with the strips, as these can be damaged quickly, especially with long runs.

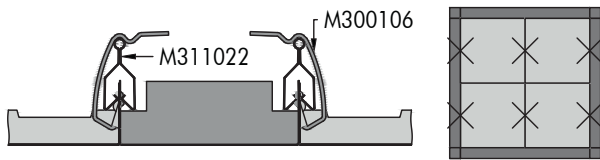
Detail L

Optional security clip

The security clip serves to secure the tiles/panels and prevents them from being removed.

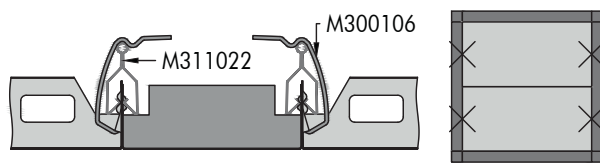
Tile/panel locking

METAL Q-Clip



The tiles/panels have, on the sides where the pins are, an embossing where the security clip can be fixed. First hook the security clip into the tile/panel and then slip the upper end over the DP12 A-Bar. Two security clips are required per tile/panel.

METAL R-Clip



Either individual tiles/panels or the entire ceiling can be secured. The tiles/panels are inserted and secured immediately. The last tile/panel cannot be locked, same as crossing boxes and strips. On request, the crossing boxes and strips can also be designed with an embossing for security clips.

Material required per m² (no waste included)

System without additional load [pcs/m²]

Components	Module [mm]	700	725	1000	1300	1350	1600	1900	2025
M300100	U-Profile	0.15	0.16	0.18	0.21	0.21	0.22	0.28	0.26
M300105	Hanger for DP12 A-Bar	1.64	1.68	1.34	1.2/1.8*	1.14/1.71*	1.06	1.12/1.68*	1.44
M300119	Splice connector for U-Profile	0.16	0.14	0.18	0.21	0.21	0.23	0.28	0.10
M300120	Plug-in clip for U-Profile	2.28	2.36	2.06	2.04/3.06*	1.88/2.82*	1.88	2.28/3.42*	3.00
M300138	Connection pin for DP12 A-Bar	0.72	0.70	0.50	0.4/0.6*	0.38/0.57*	0.32	0.28/0.42*	0.39
M300140	Wall anchor	0.06	0.07	0.07	0.08	0.08	0.09	0.11	0.10
M311022	DP12 A-Bar	0.72	0.79	0.50	0.38/0.57*	0.37/0.56*	0.31	0.26/0.39*	0.37
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Various	Suspension points (E1 - E4)	0.41	0.42	0.67	0.60	0.58	0.53	0.56	0.95

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage,, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

* values for modules with METAL R-Clip / METAL Q-Clip

Not including perimeter trims and extraction tools.

space for notes



METAL R-H 200 / METAL Q-H 100 F

U-Profile primary grid + J-Bar secondary grid
Concealed grid solution for indoor applications

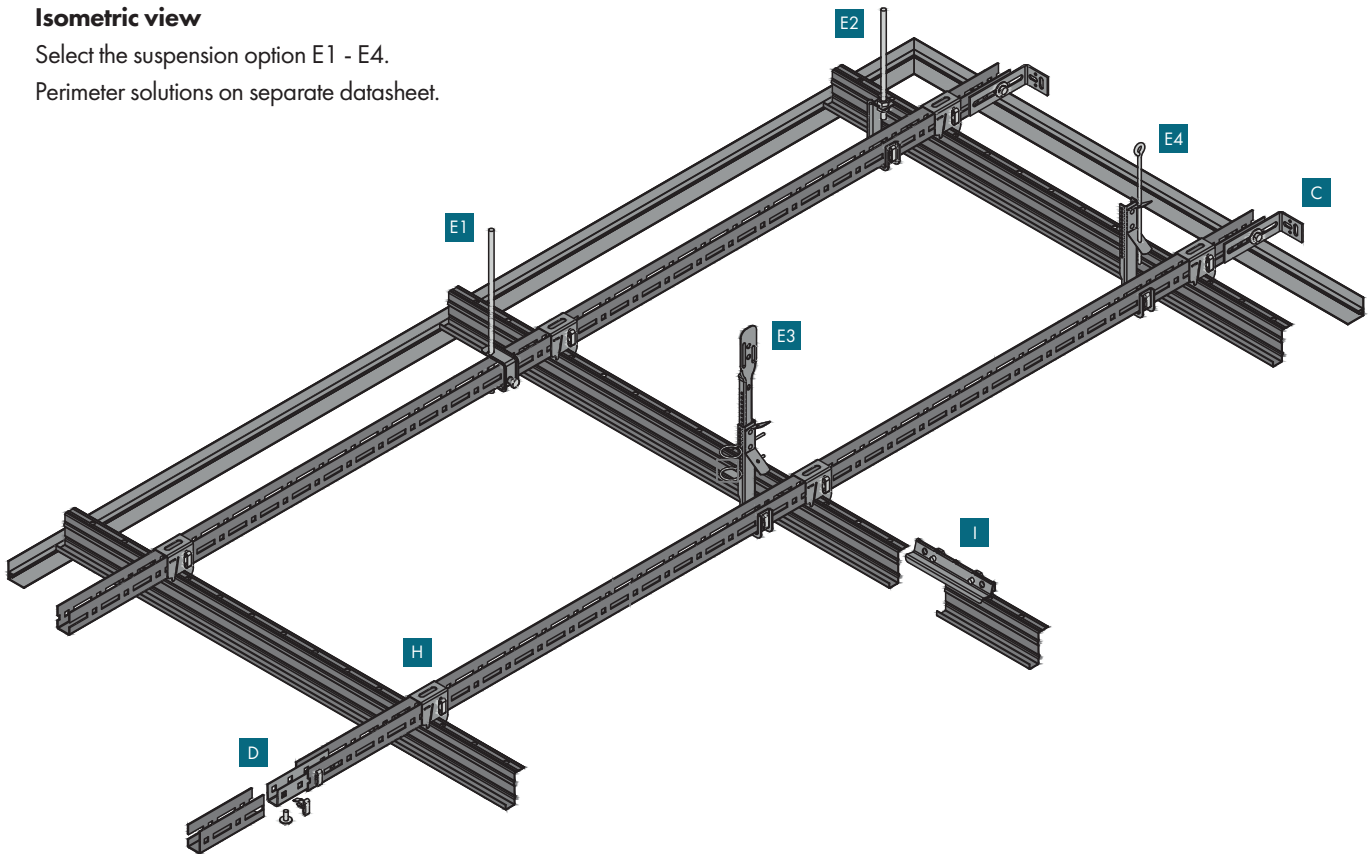
General information

- Concealed hook-on grid system for medium and large rooms (METAL R-H 200), small and medium rooms (METAL Q-H 100 F)
- For perpendicular installation on U-Profile primary grid
- J-Bar made of galvanised steel
- Typical ceiling weight 7.5 - 9.0 kg/m² (METAL R-H 200), 5.5 kg/m² (METAL Q-H 100 F) (indicative value for unperforated panels / tiles, without additional load)
- Panels / tiles are easily installed and fully demountable
- Security options available
- Seismic design application available, (METAL R-H 200) see separate document
- Suitable for large panel sizes and chilled ceilings (METAL R-H 200)

Isometric view

Select the suspension option E1 - E4.

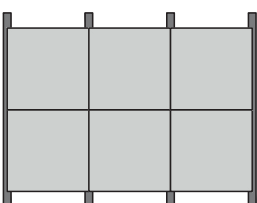
Perimeter solutions on separate datasheet.



Standard, Vario Design & bespoke layout options

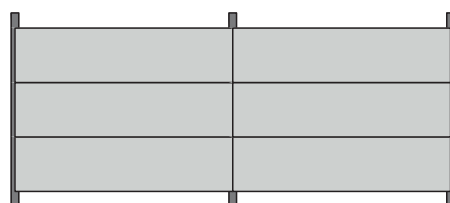
Standard

METAL Q-H 100 F



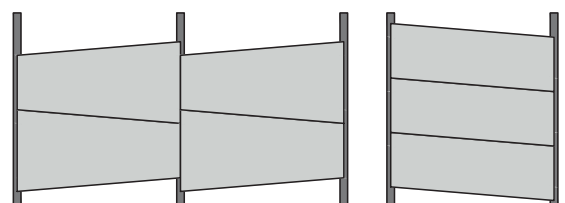
Vario Design

METAL R-H 200



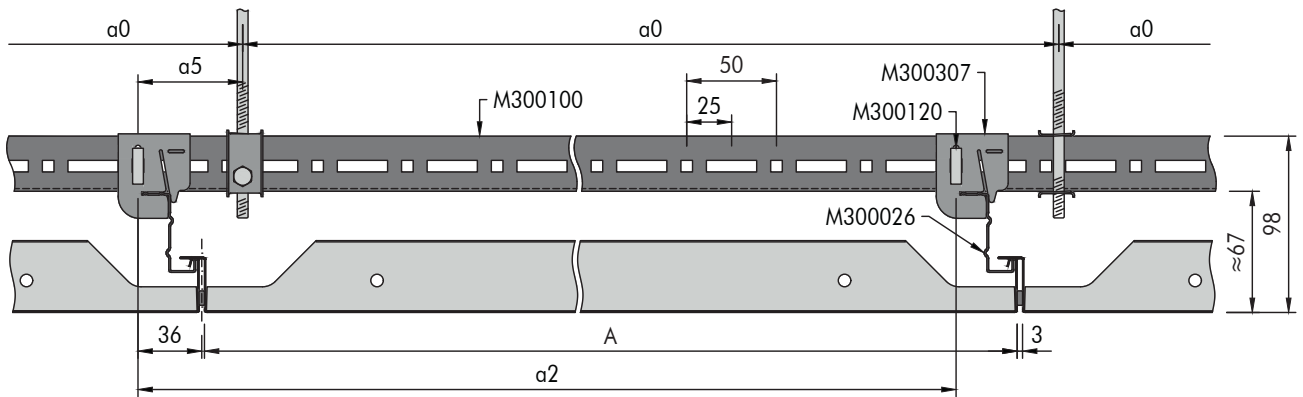
Bespoke (on request)

METAL R-H 200



Section F (METAL R-H 200)

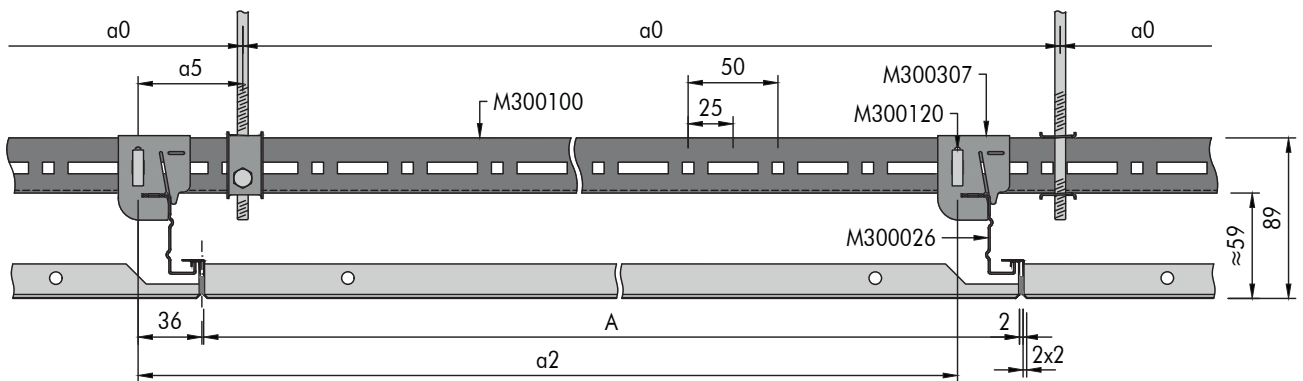
Example with suspension option **E1**



Panels supplied as standard with a 3 mm gasket on one long and one short side, to improve visual appearance. Optionally panels can be installed without a gasket.

Section F (METAL Q-H 100 F)

Example with suspension option **E1**



The tiles come standard with a 2 mm gasket on one long and one short side, to improve visual appearance. An option without gasket is not possible.

Secondary grid components

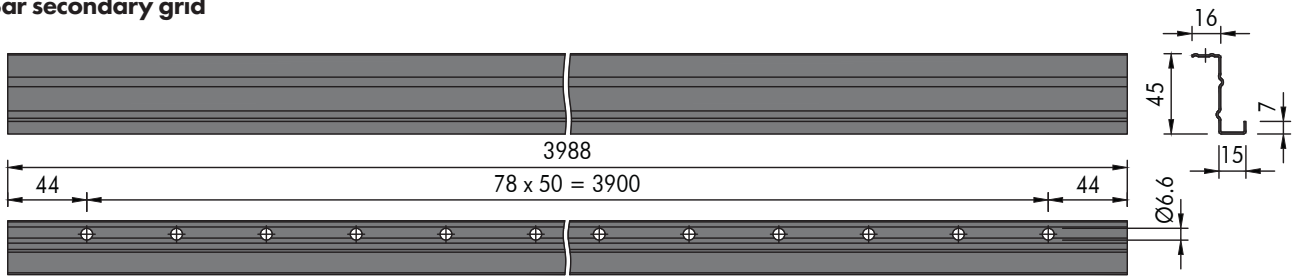
Standard components

- M300026 J-Bar
- M300343 Connector for J-Bar
- M300307 Hanger for J-Bar
- M300120 Plug-in clip for U-Profile

Optional components

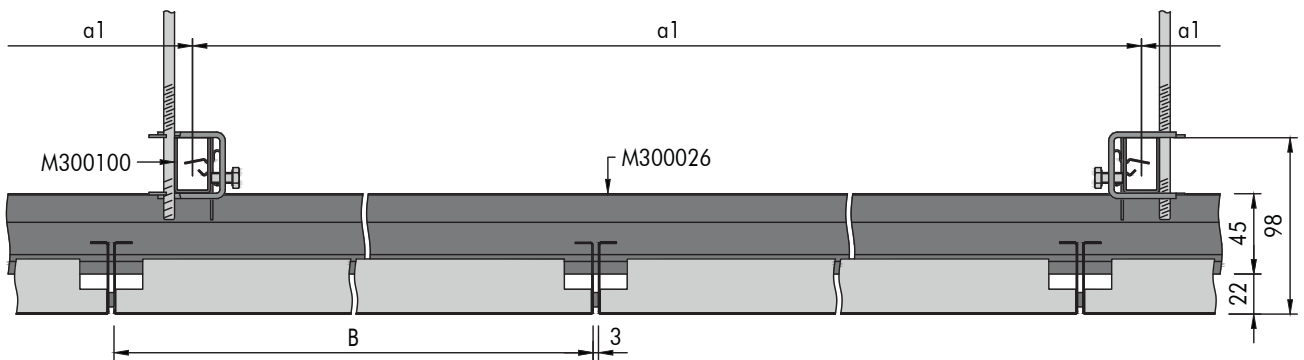
- M300216 Security clip (METAL R-H 200)
 - M311034 Extraction tool (METAL R-H 200)
 - M311218 Security bracket (screwed option)
 - M311191 Self-drilling screw 9.5 x 3.5mm
 - M900000 Black gasket 8x3 mm (spare roll for METAL R-H 200)
 - M900001 Black gasket 8x2 mm (spare roll for METAL Q-H 100 F)
- See U-Profile primary grid for primary grid components

J-Bar secondary grid



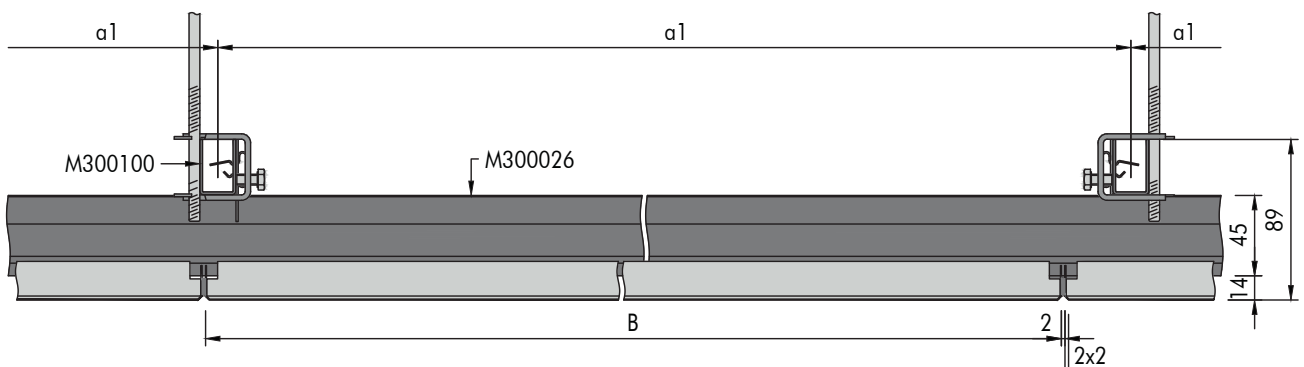
Section G (METAL R-H 200)

Example with suspension option **E1**



Section G (METAL Q-H 100 F)

Example with suspension option **E1**



Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1900	600	1200	1800
625	1250	1900	625	1250	1650
650	1300	1900	650	1300	1500
700	1400	1900	700	1400	1300
750	1500	1750	750	750	1800
800	1600	1550	800	800	1750
850	1700	1300	850	850	1700
900	900	1850	900	900	1650
950	950	1800	950	950	1600
1000	1000	1750	1000	1000	1550
1050	1050	1700	1050	1050	1550
1100	1100	1650	1100	1100	1500
1150	1150	1650	1150	1150	1450
1200	1200	1600	1200	1200	1450
1250	1250	1550	1250	1250	1400
1300	1300	1550	1300	1300	1350
1350	1350	1500	1350	1350	1350
1400	1400	1500	1400	1400	1300
1450	1450	1450	1450	1450	1200
1500	1500	1450	1500	1500	1150
1550	1550	1400	1550	1550	1050
1600	1600	1400	1600	1600	1000
1650	1650	1350	1650	1650	850
1700	1700	1350	1700	1700	850
1750	1750	1200	1750	1750	800
1800	1800	1150	1800	1800	750
1850	1850	1050	1850	1850	650
1900	1900	950	1900	1900	600
1950	975	1250	1950	975	1100
2000	1000	1250	2000	1000	1100
2050	1025	1200	2050	1025	1100
2100	1050	1200	2100	1050	1100
2150	1075	1200	2150	1075	1050
2200	1100	1200	2200	1100	1050
2250	1125	1150	2250	1125	1050
2300	1150	1150	2300	1150	1050
2350	1175	1150	2350	1175	1000
2400	1200	1150	2400	1200	1000
2450	1225	1100	2450	1225	1000
2500	1250	1100	2500	1250	1000
2600	1300	1100	2600	1300	950
2700	1350	1050	2700	1350	950
2800	1400	1050	2800	1400	900
2900	1450	1000	2900	1450	900
3000	1500	1000	3000	1500	900
3100	1550	1000	3100	1550	900
3200	1600	950	3200	1600	850
3300	1650	950	3300	1650	850

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between J-Bars = panel length + gasket
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = panel / tile length + gasket / panel / tile width + gasket

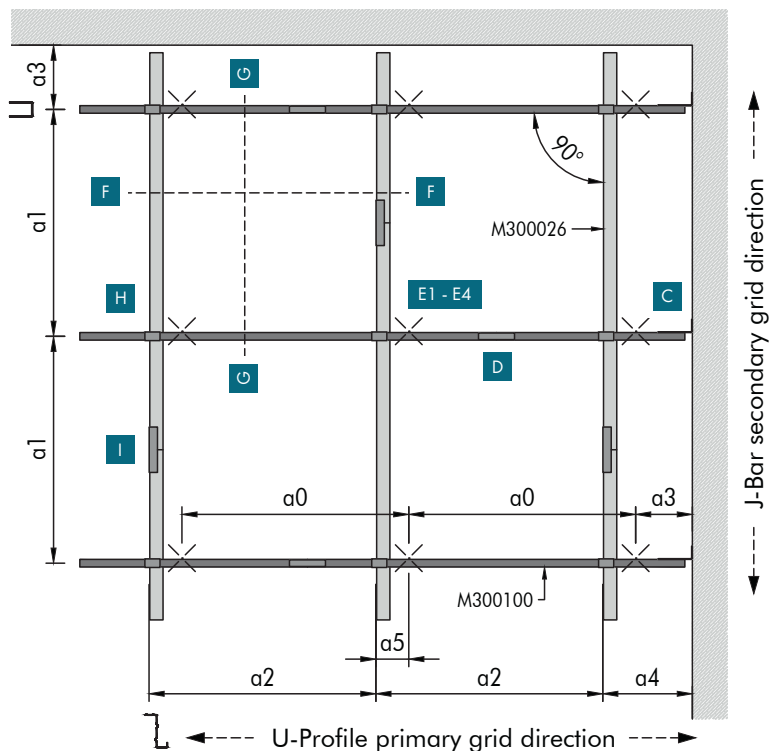
METAL R-H 200

- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

METAL Q-H 100 F

- M 600 x 600, 625 x 625 mm

Typical grid layout

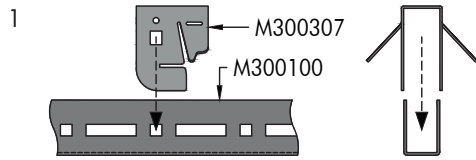


To determine suspension layout

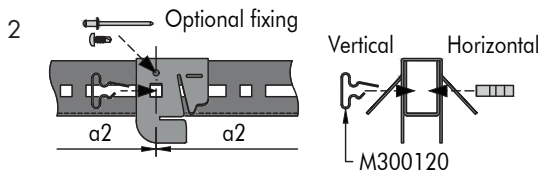
The module length (M) of the requested ceiling is equal to the distance between the J-Bar centres (a2).
 On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).
 The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

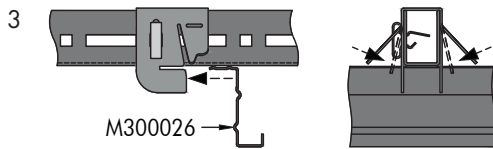
Hanger installation



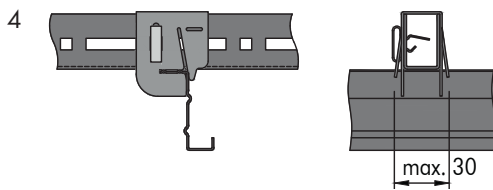
Place the hanger on the U-profile.



Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-rivet or self-drilling screw.



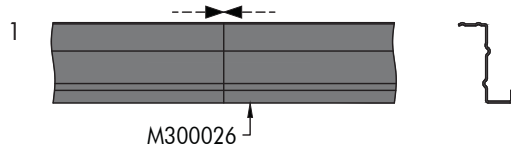
Insert the J-Bar into the hanger, press down the two hanger wings to lock the position of the J-Bar.



The J-Bar is now locked in position.

Detail I

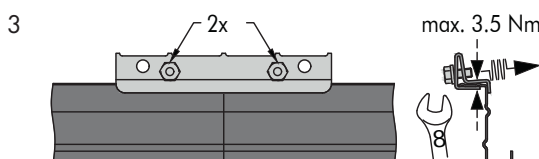
Connector installation



Once the J-Bars are installed under the U-Profiles, the ends should be brought together without a gap.



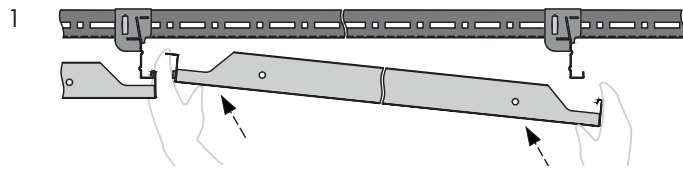
The connectors for the J-Bars must be inserted from above.



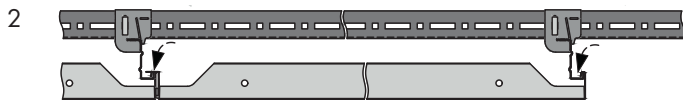
Use the bolts to secure the connector. Stagger the joints.

Detail J (METAL R-H 200)

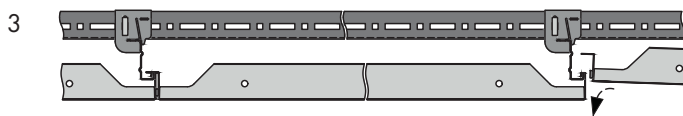
Panel insertion



First place the panels with the outward bend short side above the neighbor panel to the left.

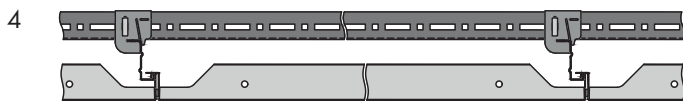


Hook-on the opposite side with the hook detail on the J-Bar to the right. The panel will rest now on the neighbor panel to the left and the J-Bar to the right.

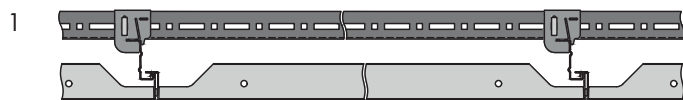


Continue with the next panel.

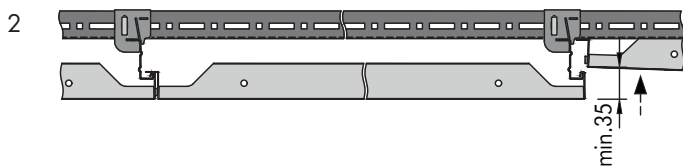
For METAL Q-H 100 F the sequence is the same.



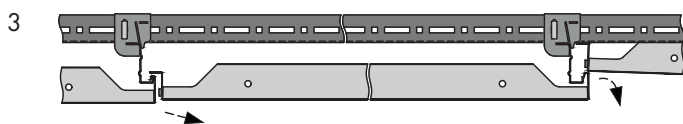
Panel extraction



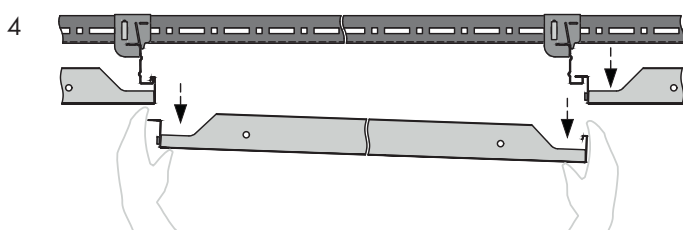
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the neighbor panel to the right min. 35 mm (for METAL Q-H 100 F min. 25 mm).



Detach the panel that is to be removed from the J-Bar.



Remove it downwards and store the panel in a safe place so that it cannot be damaged. The neighbor panel will rest again on the J-Bar.

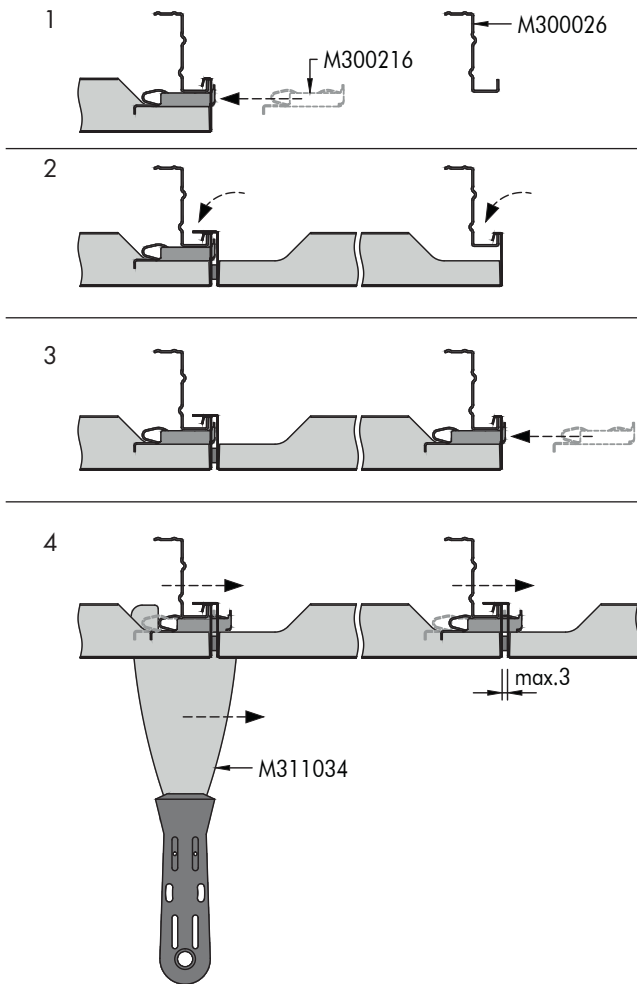
For METAL Q-H 100 F the sequence is the same.

Detail K

Optional security clip (unscrewed version) for METAL R-H 200

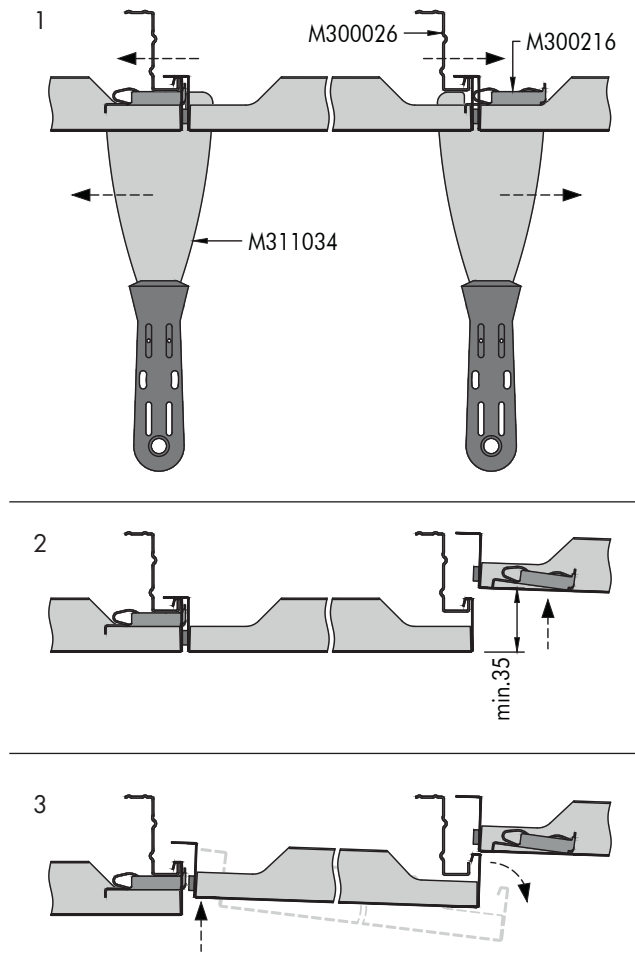
The security clip serves to secure the panels and prevents them from being removed without the use of the appropriate extraction tool.

Panel installation / locking



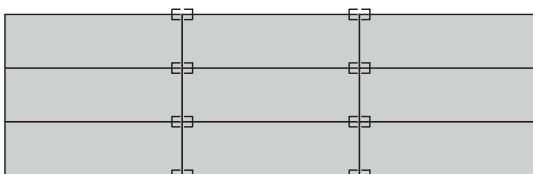
- 1 When using the optional security clip, panel by panel is installed and secured immediately. The clip is placed at the crossing point between the panels. Push the clip till it is almost flushing with the edge of the installed panel. One security clip per panel is needed and can only be used for panels with a gap of max. 3 mm.
- 2 Install the panel.
- 3 Place the next row of security clip, as described at step 1. Take the extraction tool and push the first clip row to the end position. Follow this row by row, until the ceiling is completely installed and locked.

Panel extraction / unlocking

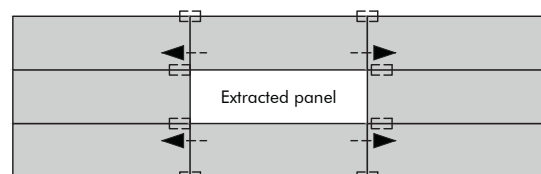


- 1 Take the extraction tool and push the four security clips away from the panel to be removed (see layout below). The security clips to the right will jump out and rest on the neighbor panel.
- 2 Lift the neighbor panel to the right min. 35 mm.
- 3 The panel can be extracted downwards, as explained in the panel extraction sequence. In order to install the panel back, the loose security clips are first collected and then installed again, as described to the left.

Locked position



Unlocked position

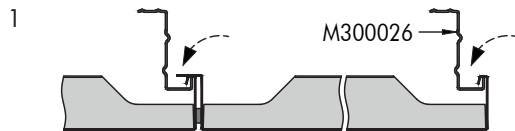


Detail L

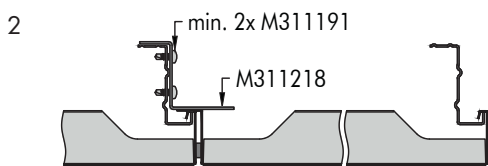
Optional security bracket (screwed version)

The security bracket serves to secure the panels and prevents them from being removed.

Panel installation / locking for METAL R-H 200



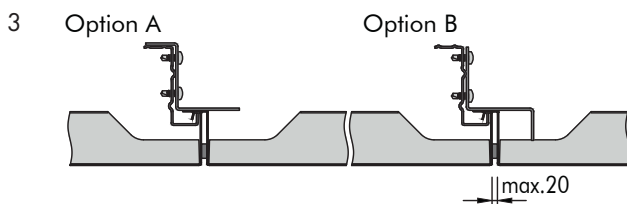
When using the screwed optional security bracket, panel by panel is installed and secured immediately.



The bracket is placed at the crossing point between the panels. There are two options (A / B) of how the security bracket can be installed.

Use at minimum 2 self-drilling screws to fix it.

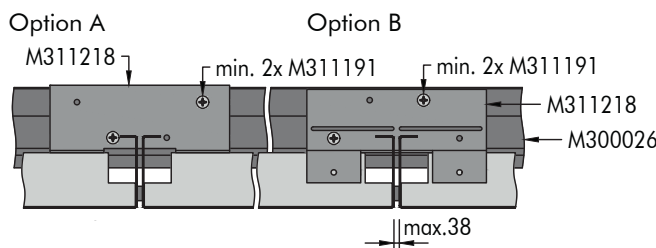
One security bracket per panel is needed.



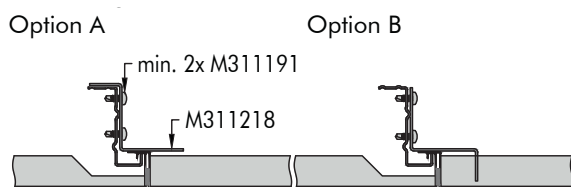
Follow this row by row, until the ceiling is completely installed and locked. The last panel remains unsecured.

If panels are to be removed, the ceiling must be opened from the last panel to the desired area.

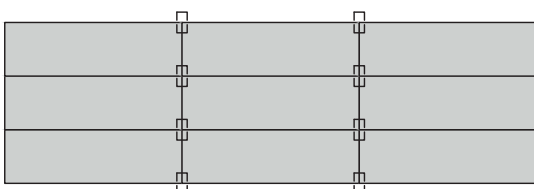
Front side view



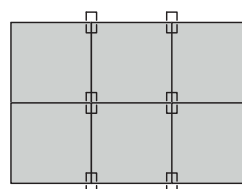
Tile locking for METAL Q-H 100 F



Locked position METAL R-H 200



Locked position METAL Q-H 100 F



Material required per m² (no waste included) METAL R-H 200

System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3100	3300
M300026	J-Bar	0.21	0.16	0.14	0.13	0.10	0.09	0.08	0.08
M300100	U-Profile	0.17	0.19	0.23	0.21	0.23	0.26	0.27	0.28
M300119	Splice connector for U-Profile	0.17	0.20	0.24	0.22	0.24	0.26	0.27	0.29
M300120	Plug-in clip for U-Profile	0.87	0.85	0.97	0.84	0.85	0.87	0.87	0.90
M300140	Wall anchor	0.07	0.08	0.09	0.09	0.09	0.10	0.11	0.11
M300307	Hanger for J-Bar	0.53	0.45	0.49	0.40	0.37	0.35	0.33	0.32
M300343	Splice connector for J-Bar	0.21	0.16	0.14	0.13	0.11	0.09	0.09	0.08
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
Various	Suspension points (E1 - E4)	0.53	0.45	0.49	0.80	0.73	0.69	0.65	0.64

Material required per m² (no waste included) METAL Q-H 100 F

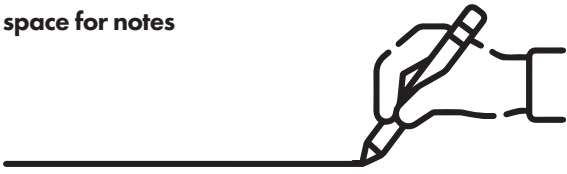
System without additional load [pcs/m²]

Components	a2 [mm]	600	625
M300026	J-Bar	0.42	0.4
M300100	U-Profile	0.44	0.41
M300119	Splice connector for U-Profile	0.15	0.15
M300120	Plug-in clip for U-Profile	0.12	0.12
M300140	Wall anchor	0.06	0.06
M300307	Hanger for J-Bar	0.88	0.85
M300343	Splice connector for J-Bar	0.42	0.41
M311103	Hexagonal nut M6	0.10	0.10
M311105	Washer	0.10	0.10
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10
Various	Suspension points (E1 - E4)	0.44	0.43

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional security brackets and extraction tools.

space for notes



METAL R-H 215

U-Profile primary grid + H-Profile 35 secondary grid
Concealed grid solution for indoor applications

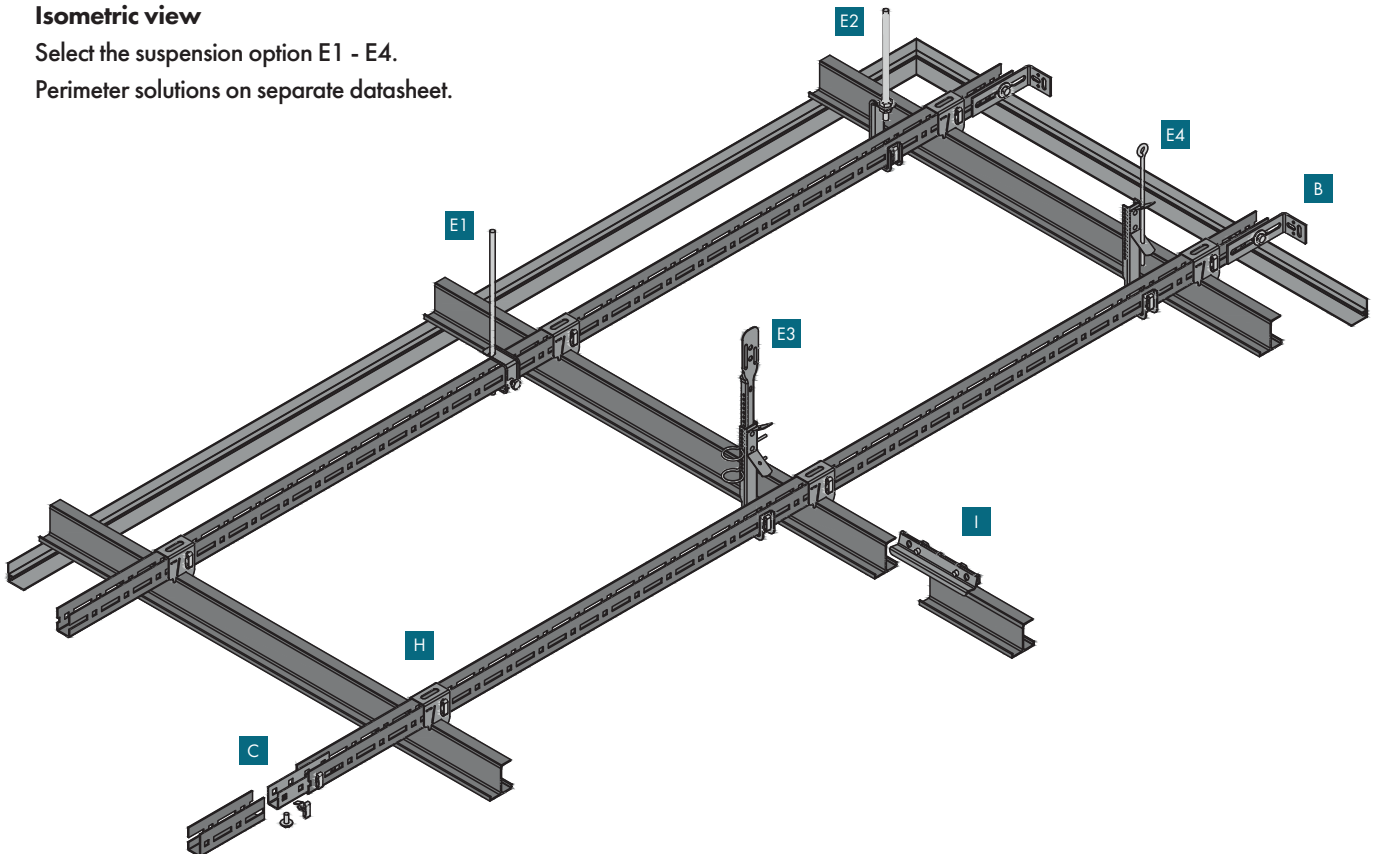
General information

- Concealed hook-on grid system for medium and large rooms
- For perpendicular installation on U-Profile primary grid
- H-Profile 35 made of aluminium
- Typical ceiling weight 7.5 - 9.0 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable
- Optional security clip available
- Power-Swing panel option for revision opening available
- Seismic design application available, separate document

Isometric view

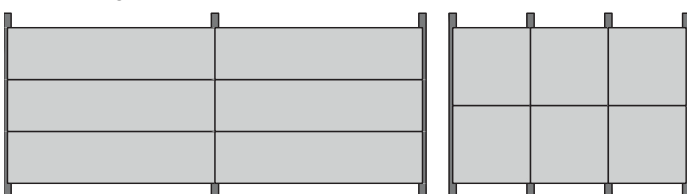
Select the suspension option E1 - E4.

Perimeter solutions on separate datasheet.

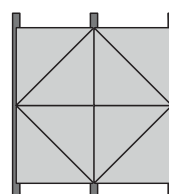


Vario Design, creative & bespoke layout options

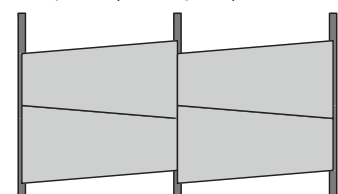
Vario Design



Creative

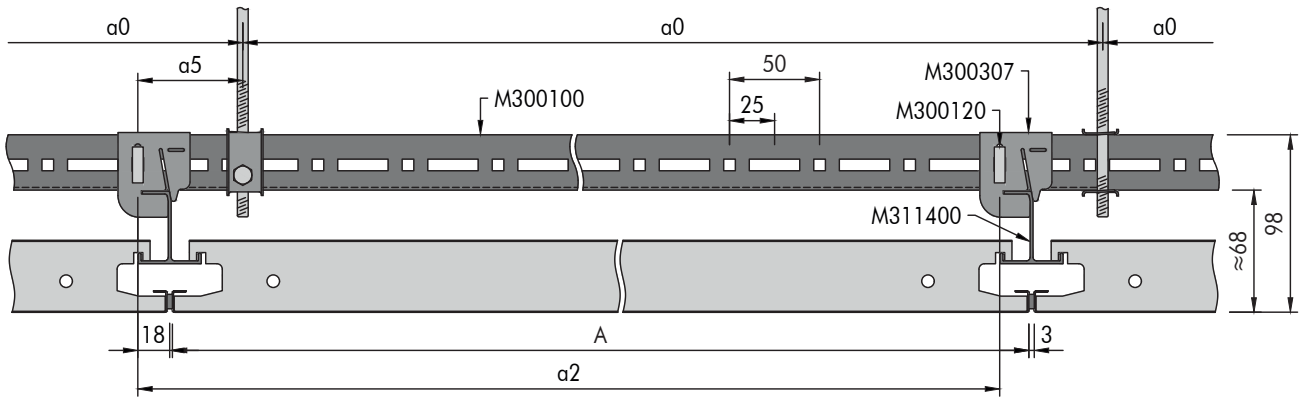


Bespoke (on request)



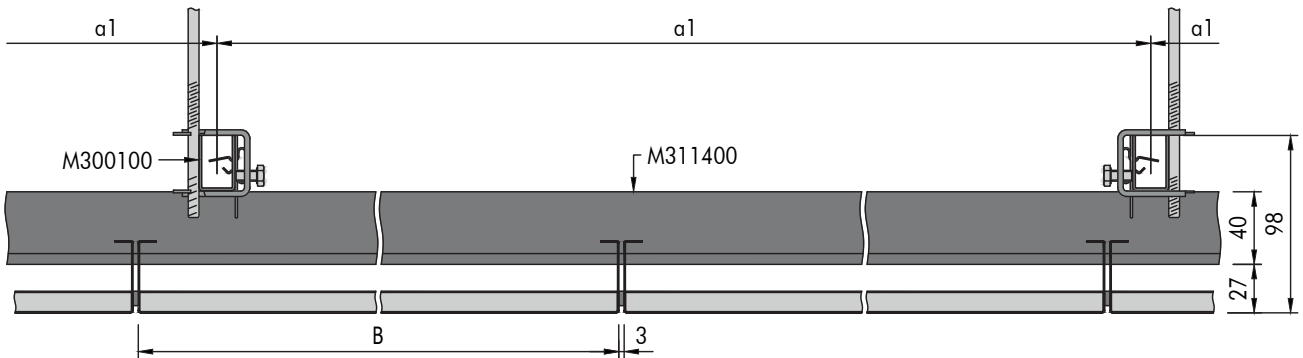
Section F

Example with suspension option E1



Section G

Example with suspension option E1



Panels supplied as standard with a 3 mm gasket on one long and one short side to improve the visual appearance. Optionally panels can be installed without a gasket.

Secondary grid components

Standard components

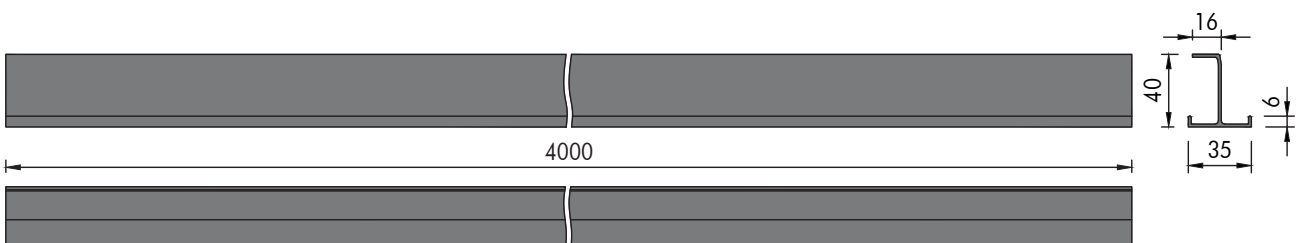
- M311400 H-Profile 35
- M300343 Connector for H-Profile 35
- M300307 Hanger for H-Profile 35
- M300120 Plug-in clip

Optional components

- M300235 Security bracket
- M311034 Extraction tool
- M900000 Black gasket 8x3 mm (spare roll)

See U-Profile primary grid for primary grid components

H-Profile 35 secondary grid



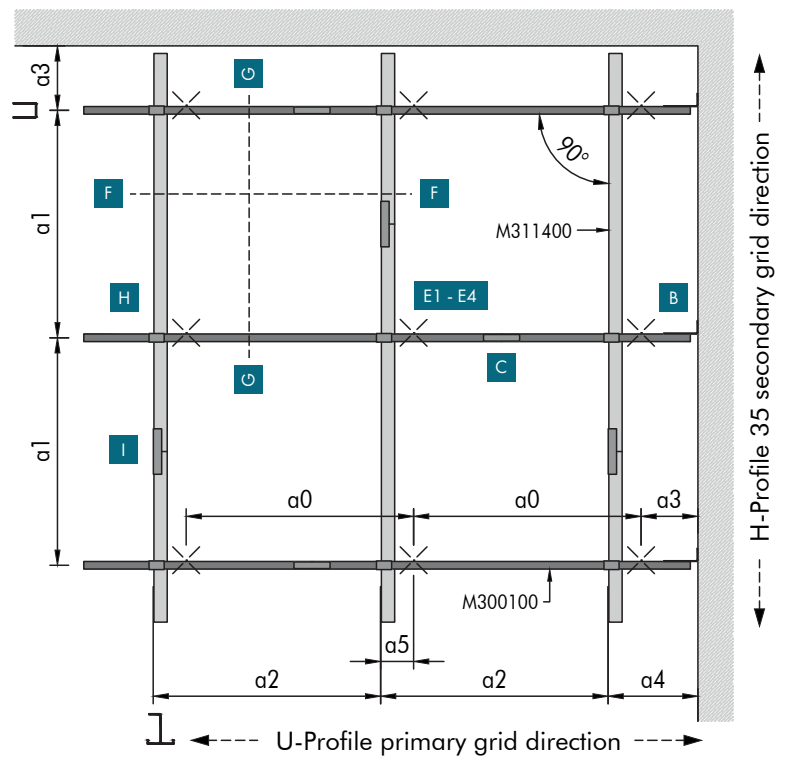
Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1900	600	1200	1750
650	1300	1900	650	1300	1550
700	1400	1850	700	1400	1300
750	1500	1800	750	750	1600
800	1600	1550	800	800	1550
850	1700	1350	850	850	1500
900	900	1650	900	900	1450
950	950	1600	950	950	1400
1000	1000	1550	1000	1000	1400
1050	1050	1500	1050	1050	1350
1100	1100	1500	1100	1100	1300
1150	1150	1450	1150	1150	1300
1200	1200	1400	1200	1200	1250
1250	1250	1400	1250	1250	1250
1300	1300	1350	1300	1300	1200
1350	1350	1350	1350	1350	1200
1400	1400	1300	1400	1400	1150
1450	1450	1300	1450	1450	1150
1500	1500	1250	1500	1500	1150
1550	1550	1250	1550	1550	1100
1600	1600	1250	1600	1600	1000
1650	1650	1200	1650	1650	950
1700	1700	1200	1700	1700	900
1750	1750	1150	1750	1750	800
1800	1800	1150	1800	1800	750
1850	1850	1050	1850	1850	650
1900	1900	950	1900	1900	600
1950	975	1100	1950	975	1000
2000	1000	1100	2000	1000	1000
2050	1025	1100	2050	1025	950
2100	1050	1050	2100	1050	950
2150	1075	1050	2150	1075	950
2200	1100	1050	2200	1100	950
2250	1125	1050	2250	1125	900
2300	1150	1050	2300	1150	900
2350	1175	1000	2350	1175	900
2400	1200	1000	2400	1200	900
2450	1225	1000	2450	1225	900
2500	1250	950	2500	1250	850
2600	1300	950	2600	1300	850
2700	1350	950	2700	1350	850
2800	1400	900	2800	1400	800
2900	1450	900	2900	1450	800
3000	1500	900	3000	1500	800
3100	1550	850	3100	1550	750
3200	1600	850	3200	1600	750
3300	1650	850	3300	1650	750

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between H-Profiles 35 = panel length + gasket
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = panel length + gasket / panel width + gasket
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

Typical grid layout



To determine suspension layout

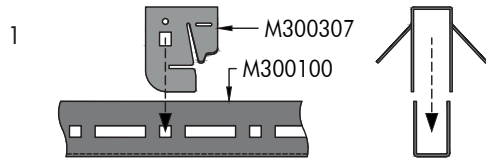
The module length (M) of the requested ceiling is equal to the distance between the H-Profile 35 centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

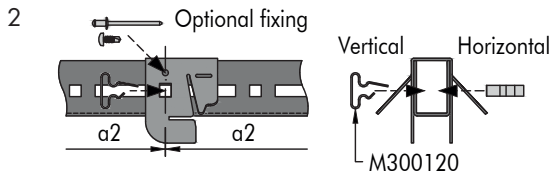
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

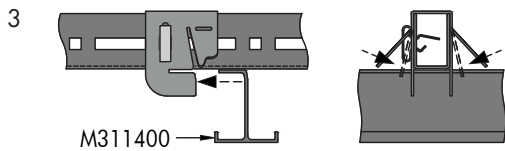
Hanger installation



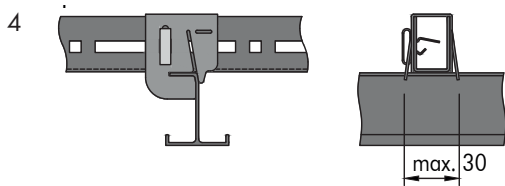
Place the hanger on the U-profile.



Fix hanger with plug-in clips at the specified module spacing (option A or B). If the panel size does not fit with the modulation of the U-Profile (25 mm increments), the plug-in clip needs to be inserted into a long hole. The hanger position can alternatively be fixed by using a pop-riquet or self-drilling screw.



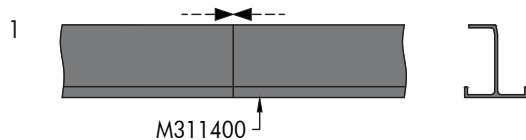
Insert the H-profile 35 into the hanger, press down the two hanger wings and lock the position of the H-Profile 35.



The H-Profile 35 is now locked in position.

Detail I

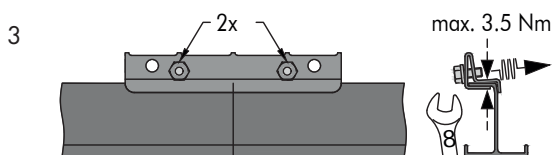
Connector installation



Once the H-Profiles 35 are installed under the U-Profiles, the ends should be brought together without a gap.

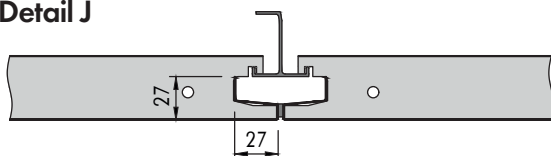


The connectors for the H-Profile 35 must be inserted from above.



Use the bolts to secure the connector. Stagger the joints.

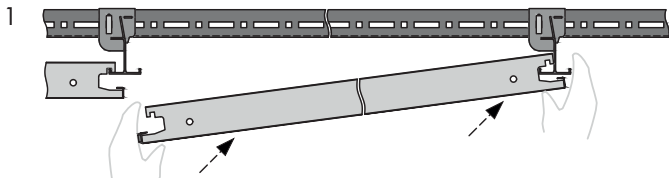
Detail J



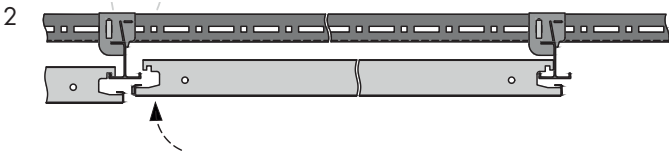
Wide panel option >625 mm

Detail K

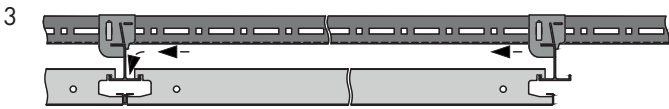
Panel insertion



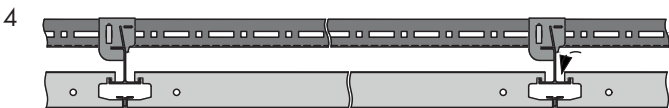
First hang the panels with the two hooks at one end.



Lift the opposite end of the panel to a horizontal position.

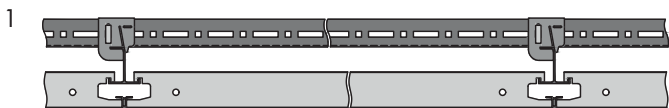


Now hang the opposite end of the panel with the hooks.

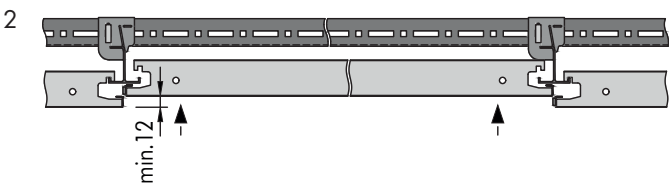


Make sure that all four hooks on the panel are hooked on to the H-Profiles 35.

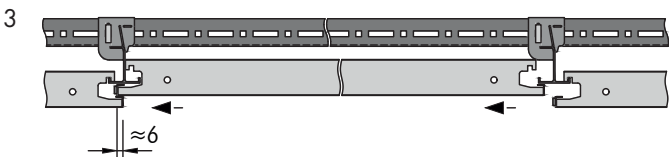
Panel extraction



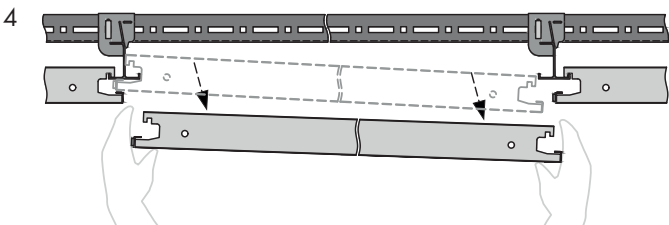
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the panel min. 12 mm.



Slide it horizontally lengthwise (to the left or right) so that the end fits between the next panel and the H-Profile 35.

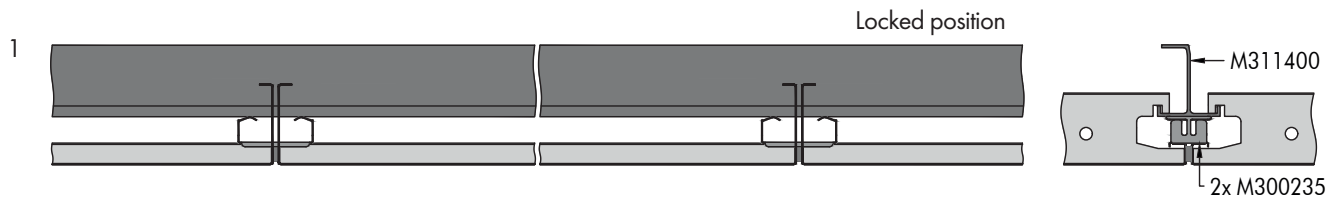


Remove it downwards and store the panel in a safe place so that it cannot be damaged.

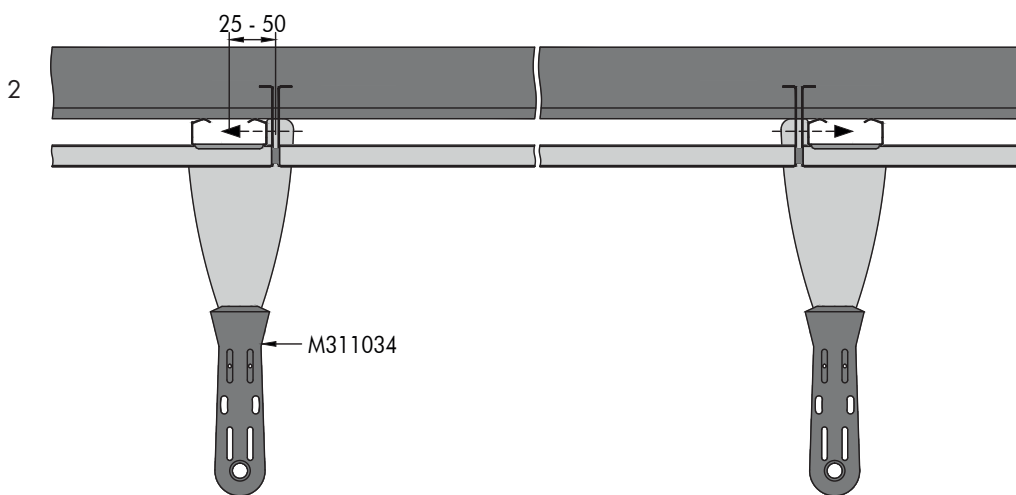
Detail L

Optional security clip

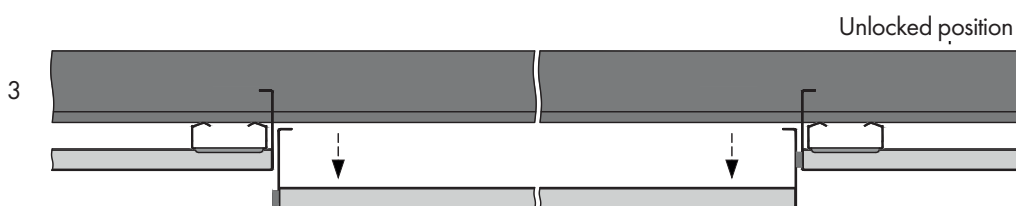
The security clip serves to secure the panels and prevents them from being removed without the use of the appropriate extraction tool.



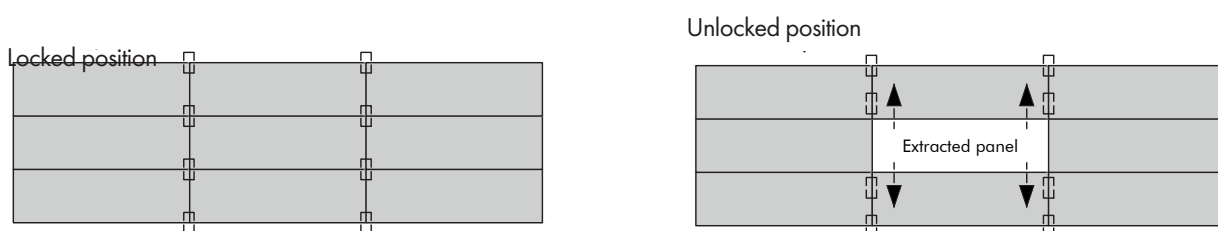
The clip is placed at the crossing point between the panels. One security clip per panel is needed and can only be used for panels with a width up to 625 mm.



Unlock the panel, by sliding the security clip about 25 - 50 mm above the panels to the left and right. The appropriate extraction tool must be used. Be careful to not damage the gasket.

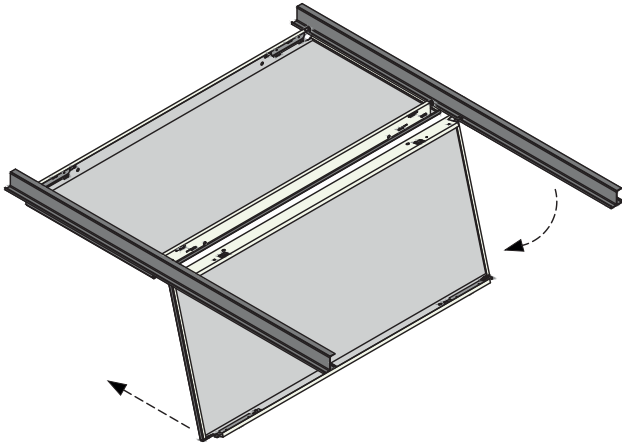


The panel can be extracted downwards, as explained in the panel extraction sequence.

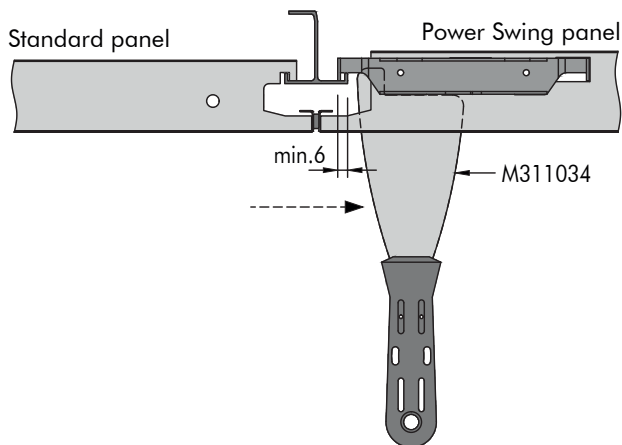


Detail M

METAL R-H 215 Power Swing (service access opening)



METAL R-H 215 Power Swing is a solution for service openings. Individual panels or the entire ceiling can be finished with METAL R-H 215 Power Swing. Use the appropriate extraction tool to release the brackets on the panel. Swing the panel down carefully. The panels swing-down over the long side. This solution is intended for service access purposes only. The panels must not support any additional load, as this could damage them.



METAL R-H 215 Power Swing panels only available with a 3 mm gasket on the long and short side.

Material required per m² (no waste included)System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3100	3300
M300100	U-Profile	0.21	0.16	0.14	0.13	0.10	0.09	0.08	0.08
M300119	Connector for U-Profile	0.20	0.21	0.24	0.25	0.27	0.30	0.32	0.32
M300120	Plug-in clip	1.00	0.97	0.97	0.96	0.96	1.00	1.02	1.00
M300140	Wall anchor	0.08	0.08	0.09	0.10	0.11	0.12	0.12	0.12
M300307	Hanger for H-Profile 35	0.60	0.55	0.49	0.46	0.42	0.40	0.38	0.36
M300343	Connector for H-Profile 35	0.21	0.18	0.14	0.13	0.11	0.09	0.09	0.08
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.12	0.12	0.12	0.12
M311105	Washer	0.10	0.10	0.10	0.10	0.12	0.12	0.12	0.12
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.12	0.12	0.12	0.12
M311400	H-Profile 35	0.21	0.18	0.14	0.13	0.11	0.09	0.08	0.08
Various	Suspension points (E1 - E4)	0.60	0.55	0.49	0.91	0.84	0.80	0.76	0.72

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims, optional security brackets and extraction tools.

METAL R-H 220 / METAL Q-H 120 F

SWISS MARKET ONLY

U-Profile primary grid + H-Profile 28 secondary grid
Concealed grid solution for indoor application

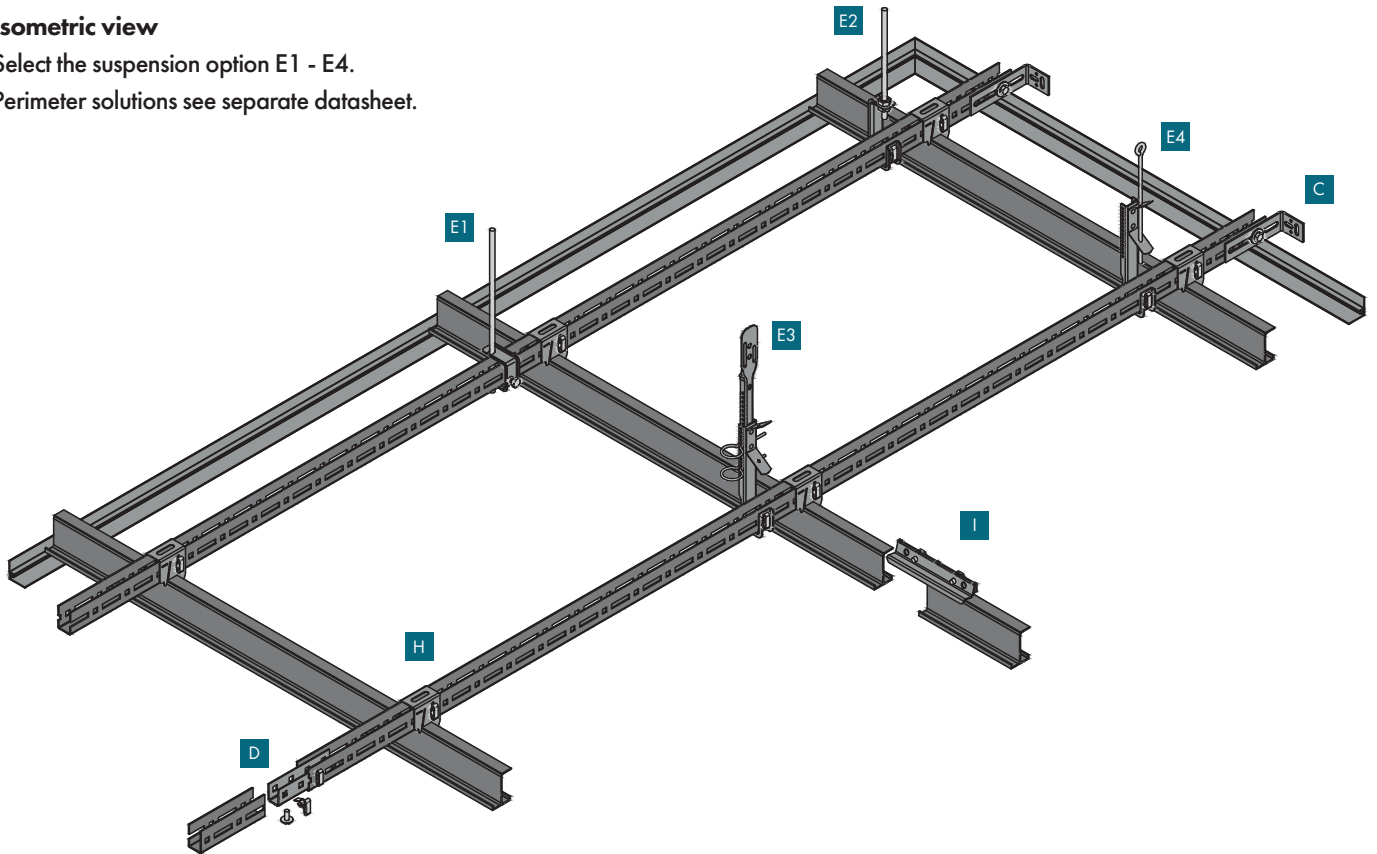
General information

- Concealed hook-on grid system for medium and large rooms (METAL R-H 220), small and medium rooms (METAL Q-H 120 F)
- For perpendicular installation on U-Profile primary grid
- H-Profile 28 made of aluminium
- Typical ceiling weight 7.5 - 9.0 kg/m² (METAL R-H 220), 5.5 kg/m² (METAL Q-H 120 F)
(indicative value for unperforated panels, without additional load)
- Panels can be removed individually
- Security option available (METAL R-H 220)

Isometric view

Select the suspension option E1 - E4.

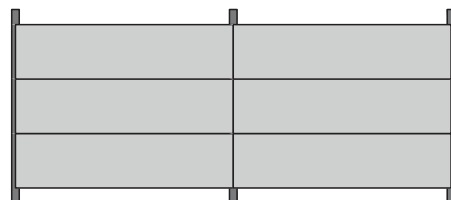
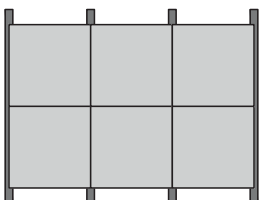
Perimeter solutions see separate datasheet.



Standard & Vario Design layout options

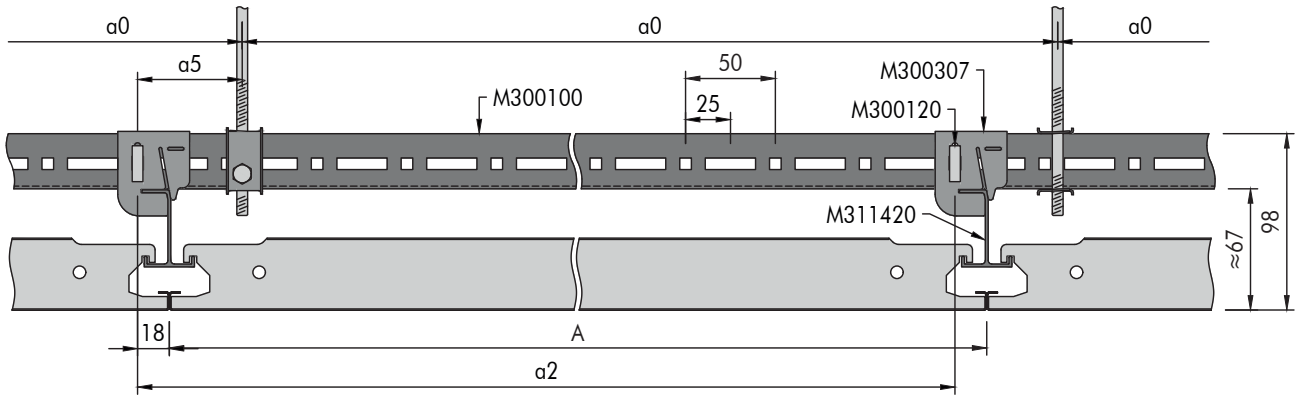
Standard

Vario Design



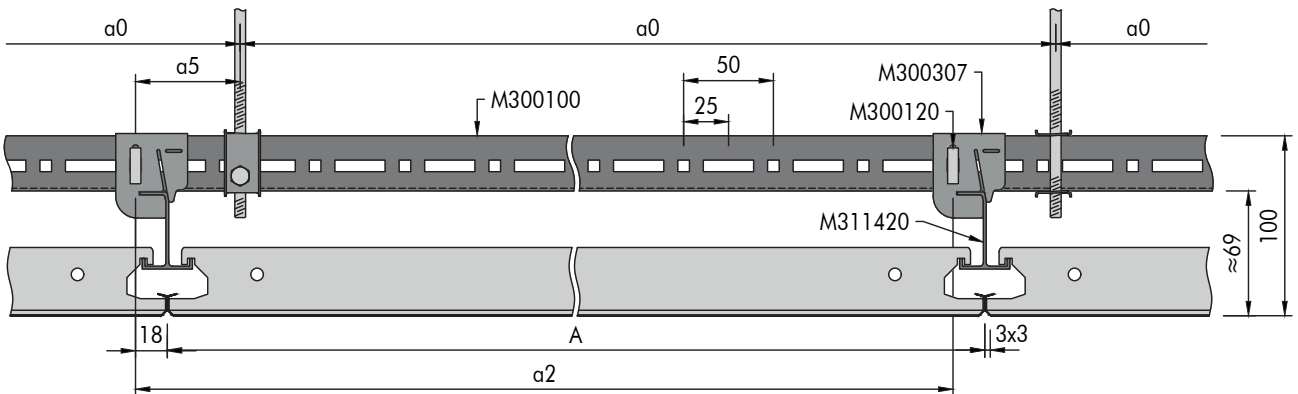
Section F (METAL R-H 220)

Example with suspension option **E1**



Section F (METAL Q-H 120 F)

Example with suspension option **E1**



Secondary grid components

Standard components

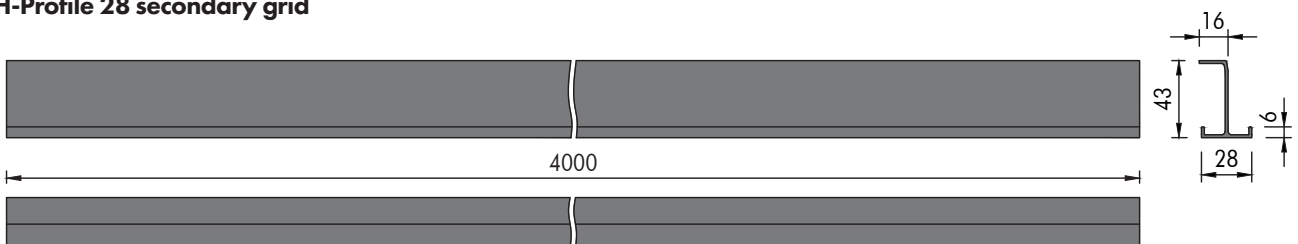
- M311420 H-Profile 28
- M300343 Splice connector for H-Profile 28
- M300307 Hanger for H-Profile 28
- M300120 Plug-in clip for U-Profile

Optional components

- M300235 Security clip (METAL R-H 220)
- M311034 Extraction tool (METAL R-H 220)
- M311191 Self-drilling screw 3.5 x 9.5 mm
- M900000 Black gasket 8x3 mm (spare roll) (METAL R-H 220)

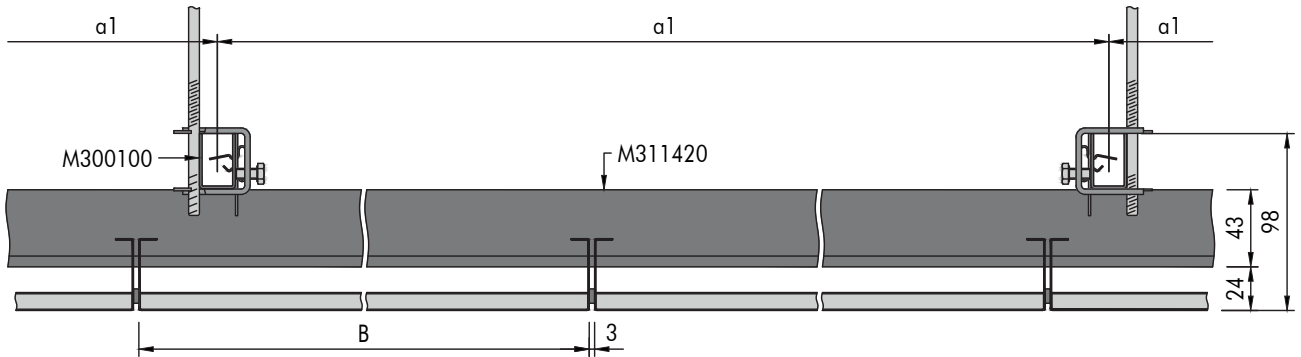
See U-Profile primary grid for primary grid components

H-Profile 28 secondary grid



Section G (METAL R-H 220)

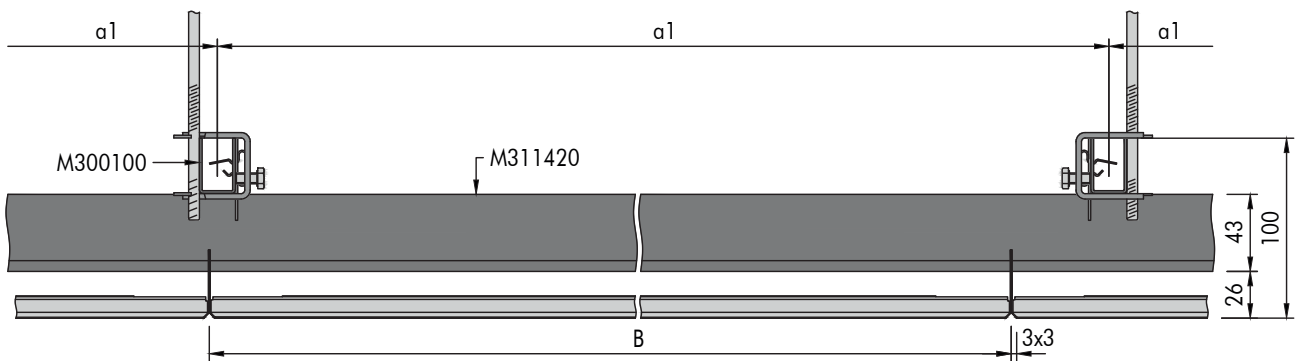
Example with suspension option **E1**



The panels come standard with a 3 mm gasket on the long side, which simplifies installation. Optionally, the panels can also be installed without gasket.

Section G (METAL Q-H 120 F)

Example with suspension option **E1**



Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
600	1200	1800	600	1200	1550
650	1300	1700	650	1300	1500
700	1400	1650	700	1400	1300
750	1500	1600	750	750	1150
800	1600	1550	800	800	1350
850	1700	1350	850	850	1300
900	900	1500	900	900	1250
950	950	1450	950	950	1250
1000	1000	1400	1000	1000	1200
1050	1050	1350	1050	1050	1150
1100	1100	1350	1100	1100	1150
1150	1150	1300	1150	1150	1150
1200	1200	1300	1200	1200	1100
1250	1250	1250	1250	1250	1100
1300	1300	1250	1300	1300	1050
1350	1350	1200	1350	1350	1050
1400	1400	1200	1400	1400	1000
1450	1450	1150	1450	1450	1000
1500	1500	1150	1500	1500	1000
1550	1550	1150	1550	1550	950
1600	1600	1100	1600	1600	950
1650	1650	1100	1650	1650	950
1700	1700	1100	1700	1700	900
1750	1750	1100	1750	1750	800
1800	1800	1050	1800	1800	750
1850	1850	1050	1850	1850	700
1900	1900	950	1900	1900	600
1950	975	1000	1950	975	850
2000	1000	1000	2000	1000	850
2050	1025	1000	2050	1025	850
2100	1050	950	2100	1050	850
2150	1075	950	2150	1075	850
2200	1100	950	2200	1100	800
2250	1125	950	2250	1125	800
2300	1150	950	2300	1150	800
2350	1175	900	2350	1175	800
2400	1200	900	2400	1200	800
2450	1225	900	2450	1225	750
2500	1250	900	2500	1250	750
2600	1300	850	2600	1300	750
2700	1350	850	2700	1350	750
2800	1400	800	2800	1400	700
2900	1450	800	2900	1450	700
3000	1500	800	3000	1500	700
3100	1550	800	3100	1550	650
3200	1600	750	3200	1600	650
3300	1650	750	3300	1650	650

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between H-Profiles 28 = panel length + gasket
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = max. panel length
- a5 Distance from U-Profile suspension point to hanger = max. 100 mm
- M Module size = panel length / panel width + gasket

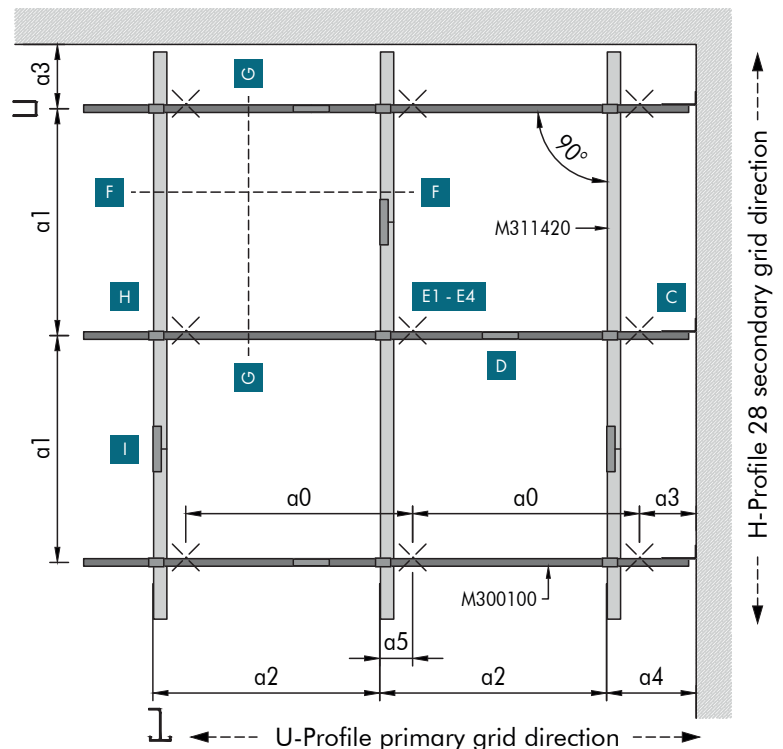
METAL R-H 220

- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

METAL Q-H 120 F

- M 625 x 625 mm

Typical grid layout



How to use

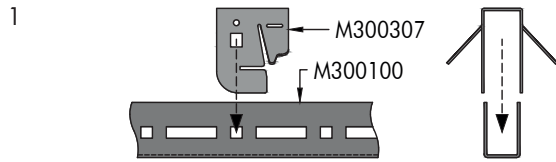
The module length (M) of the requested ceiling represents the known value and is therefore the starting point.

Take this length, which is equal to the distance between the secondary profiles (a2) and select the values for (a0) and (a1) next to it.

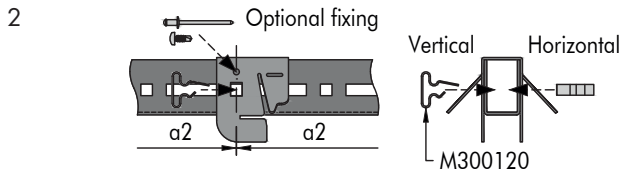
The shown values are maximum allowed distances and can be reduced if needed.

Detail H

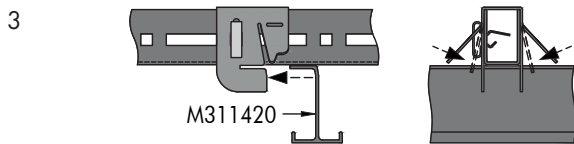
Hanger installation



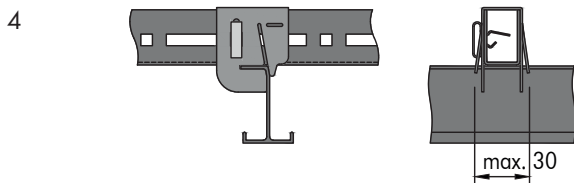
Place the hanger on the U-profile.



Fix it with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile (steps of 25 mm), the plug-in clip needs to be inserted into a long hole. The hanger position could be fixed by using a pop-rivet or self-drilling screw.



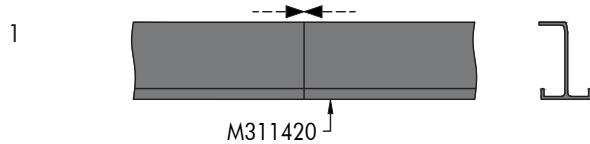
Insert the H-profile 28 into the hanger, press down the two hanger wings and lock the position of the H-Profile 28.



The H-Profile 28 is now locked in position.

Detail I

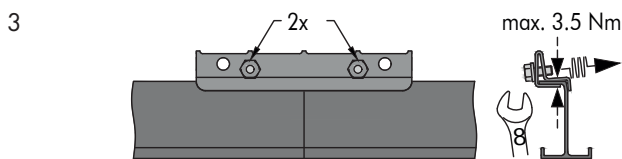
Splice connection



Once the H-Profiles 28 are installed under the U-Profiles, the ends should be brought together without a gap.

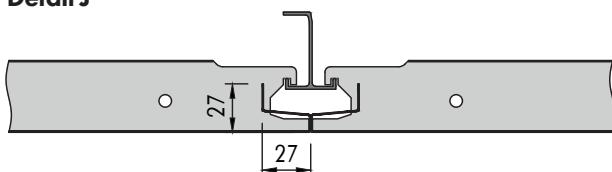


The connectors for the H-Profile 28 must be inserted from above.



Use the bolts to screw it together. Stagger the joints.

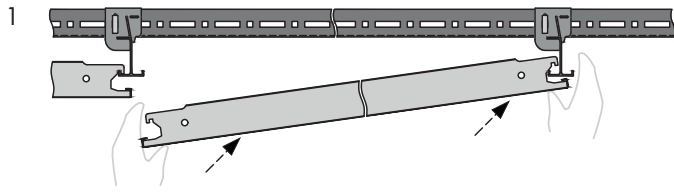
Detail J



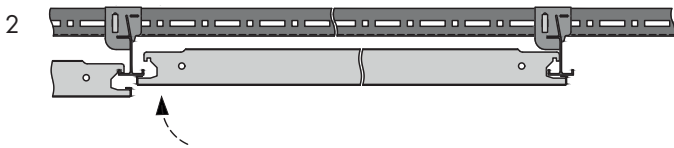
Wide panel option >625 mm

Detail K

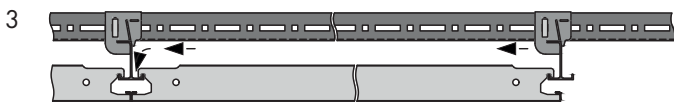
Panel insertion



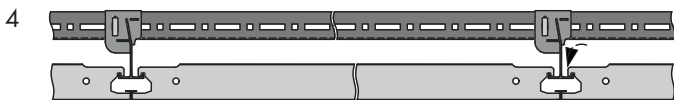
First hang the panels with the two hooks at one end.



Lift the opposite end of the panel to a horizontal position.



Now hang the opposite end of the panel with the hooks.



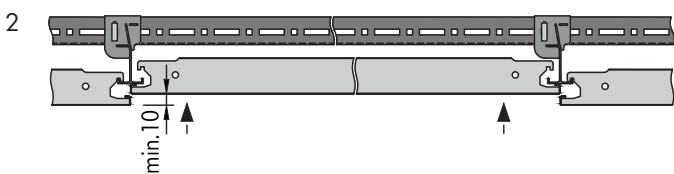
Make sure that all four hooks on the panel are hooked on to the H-Profiles 28.

For METAL Q-H 120 F the sequence is the same.

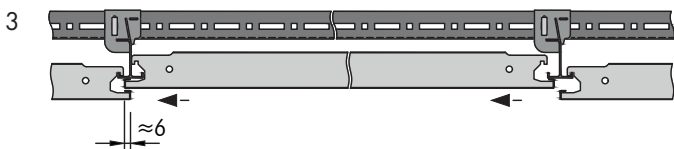
Panel extraction



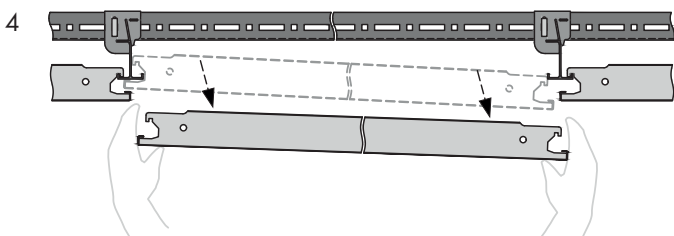
With a closed ceiling, any panel can be removed as long as there are no obstacles such as service integrations, etc.



Lift the panel min. 12 mm.



Slide it horizontally lengthwise (to the left or right) so that the end fits between the next panel and the H-Profile 28.



Remove it downwards and store the panel in a safe place so that it cannot be damaged.

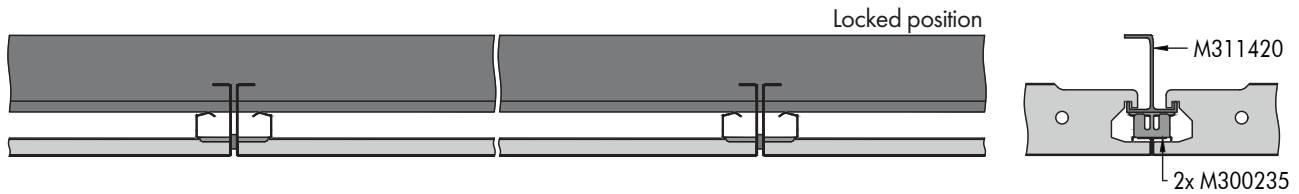
For METAL Q-H 120 F the sequence is the same.

Detail L

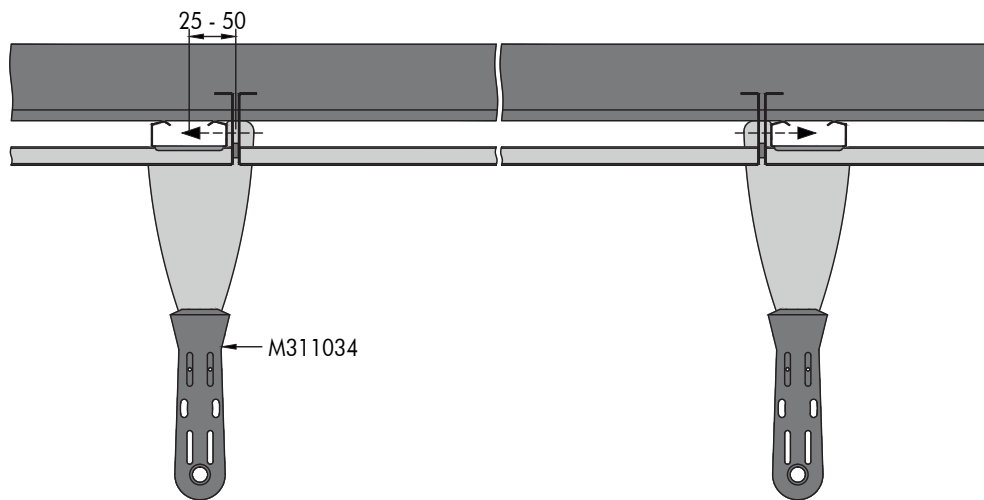
Optional security clip

The security clip serves to secure the panels and prevents them from being removed without the use of a suitable tool.

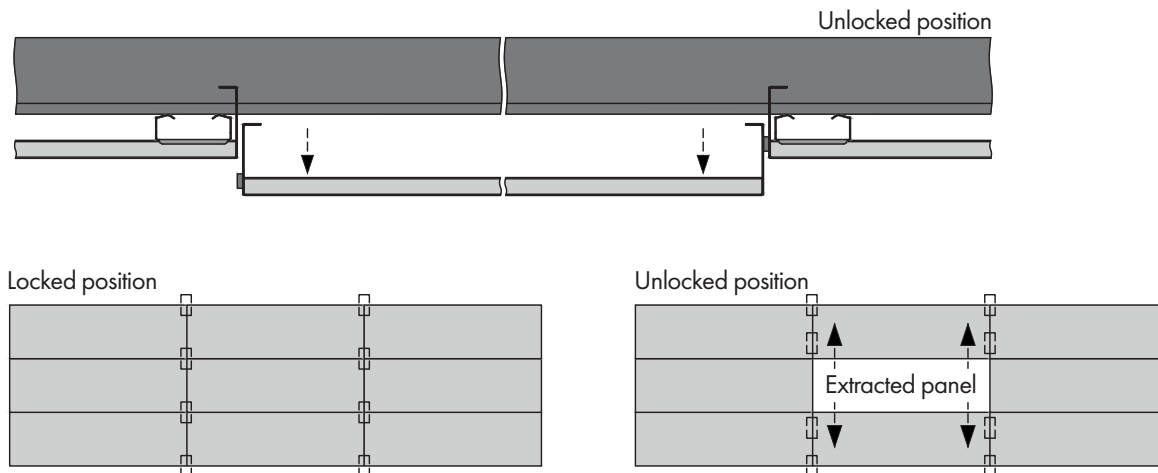
- 1 When using the optional security clip, panel by panel is installed and secured immediately. The clip is placed at the crossing point between the panels. One security clip per panel is needed and can only be used for panels with a width up to 625 mm.



- 2 Unlock the panel, by sliding the security clips about 25 - 50 mm above the panels to the left and right. The appropriate extraction tool must be used. Be careful to not damage the gasket.



- 3 The panel can be extracted downwards, as explained in the panel extraction sequence.



Consumption

System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3100	3300
M300100	U-Profile	0.21	0.24	0.25	0.27	0.30	0.33	0.33	0.36
M300119	Splice connector for U-Profile	0.21	0.25	0.26	0.27	0.30	0.34	0.34	0.36
M300120	Plug-in clip for U-Profile	1.07	1.07	1.05	1.04	1.07	1.13	1.09	1.13
M300140	Wall anchor	0.08	0.10	0.10	0.11	0.12	0.13	0.13	0.14
M300307	Hanger for H-Profile 28	0.65	0.57	0.53	0.50	0.47	0.45	0.41	0.41
M300343	Splice connector for H-Profile 28	0.21	0.16	0.14	0.13	0.11	0.09	0.09	0.08
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
M311420	H-Profile 28	2.09	1.57	1.39	1.25	1.05	0.90	0.81	0.76
Various	Suspension points (E1 - E4)	0.65	0.57	0.53	1.00	0.93	0.90	0.81	0.81

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any risk, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Top and wall fixing by others.

Not including perimeter trims, optional security clips and extraction tools.



OPEN CELL CEILINGS

METAL CELLIO

15 mm T-grid, butt-cut
Exposed grid solution for open cell layout indoor applications

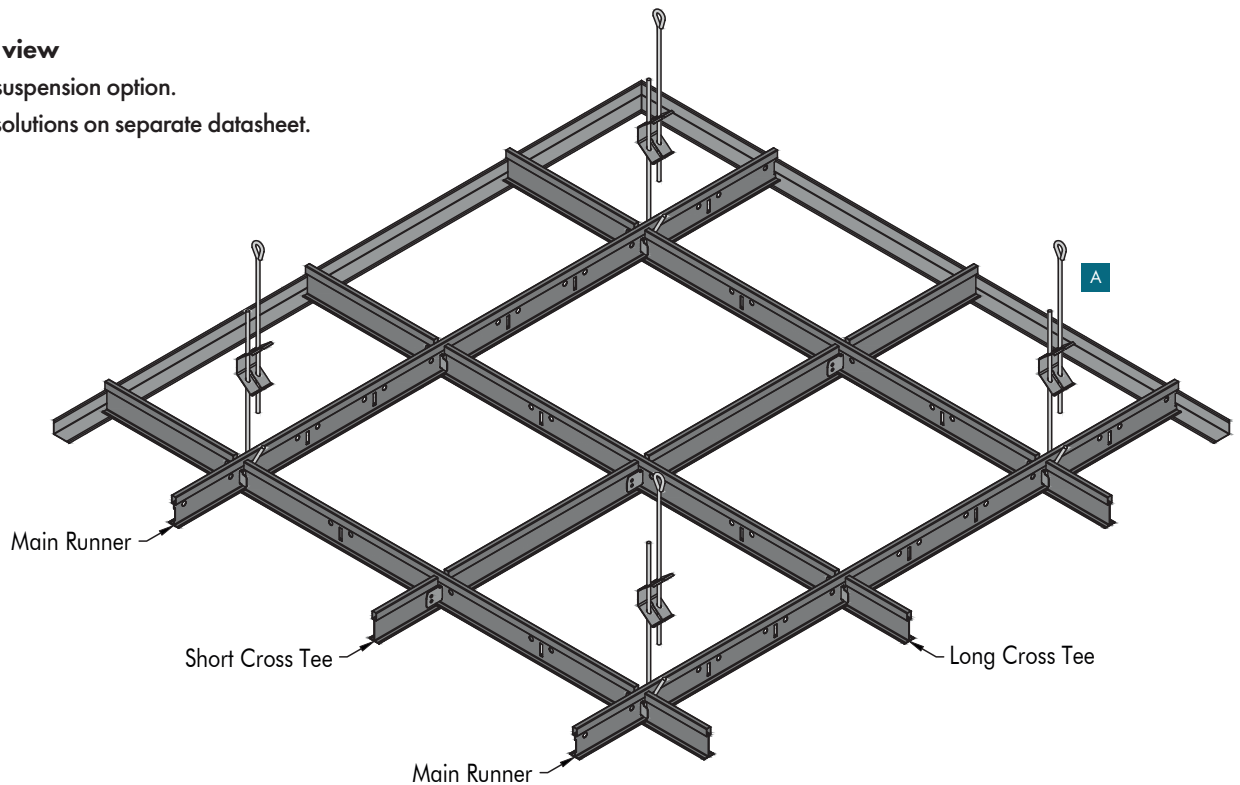
General information

- Exposed lay-in grid system for small, medium and large rooms
- Typical ceiling weight 3.0 - 6.0 kg/m² (indicative value, without additional load)
- Tiles made out of pre-coated galvanised steel, various standard colours available
- Tiles are easily installed and fully demountable

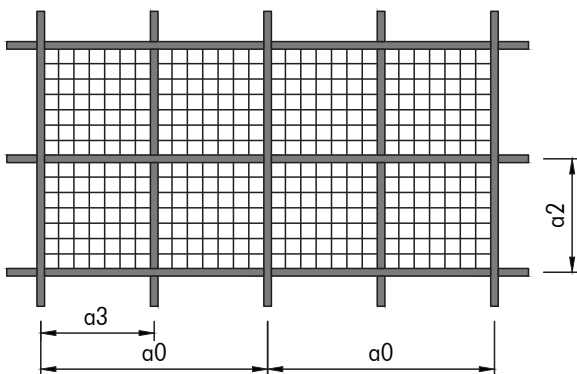
Isometric view

Select the suspension option.

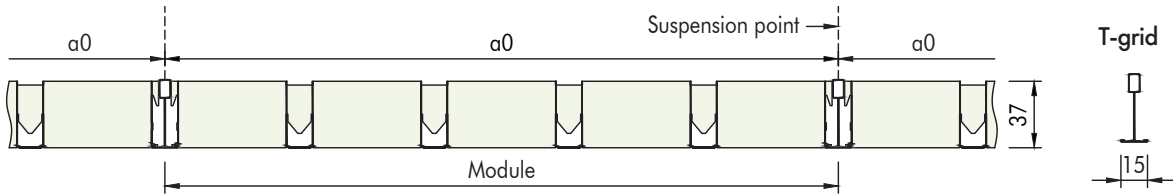
Perimeter solutions on separate datasheet.



Standard layout

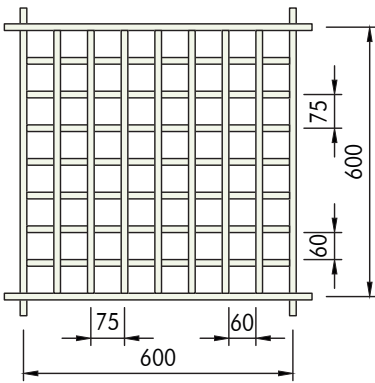


Section B

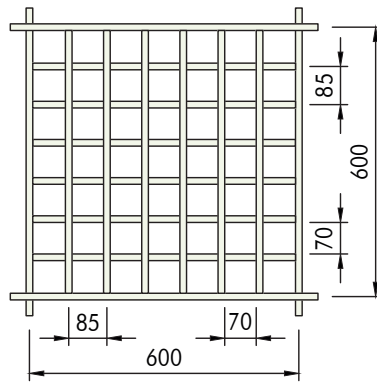


Modules

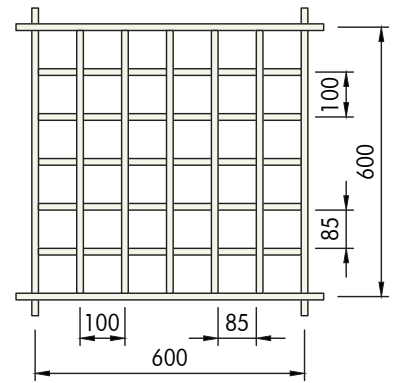
C64 (8x8 cells)



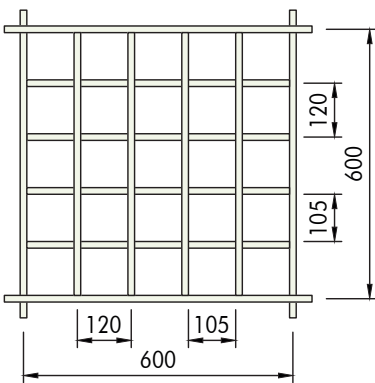
C49 (7x7 cells)



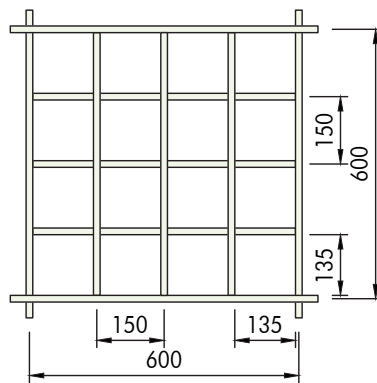
C36 (6x6 cells)



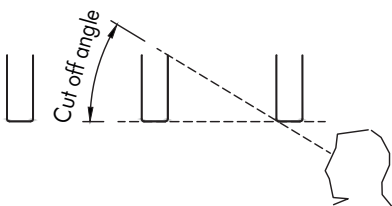
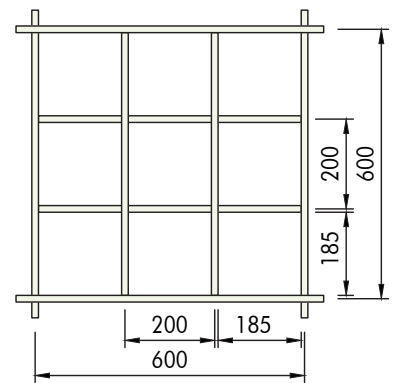
C25 (5x5 cells)



C16 (4x4 cells)



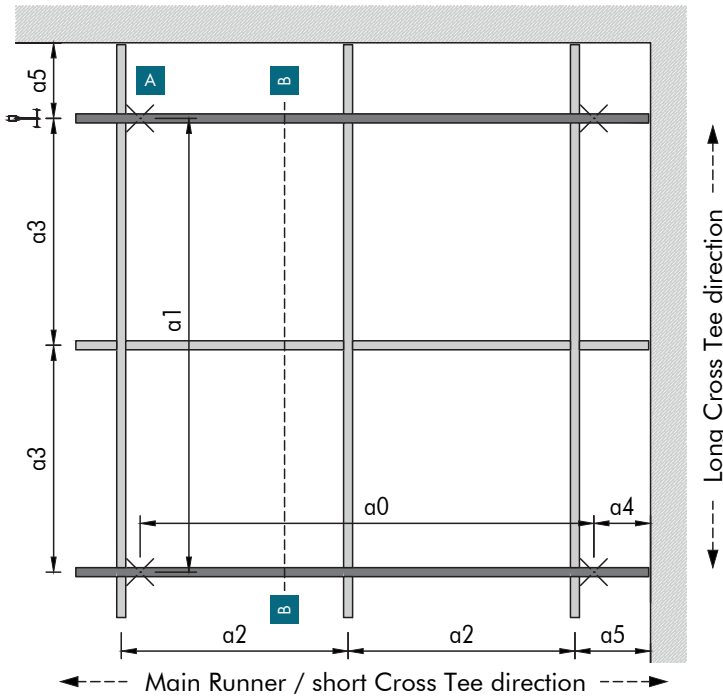
C9 (3x3 cells)



Values

Module		C64	C49	C36	C25	C16	C9
Cut off angle	[°]	31	27	23	19	15	11
Open area	[%]	64	68	72	76	81	85
Tile weight	[kg/m ²]	5.1	4.5	3.9	3.3	2.6	2.1

Typical grid layout



Parameters

- a0 Max. distance between Main Runner suspension points
- a1 Distance between Main Runner
- a2 Distance between Cross Tees (module width)
- a3 Distance between Cross Tees (module length)
- a4 Distance from wall = max. 250 mm
- a5 Distance from wall = max. module length / width, (min. 1/2 module length / width is recommended)

Spacing

System without additional load		
a2	a0	a1
[mm]	[mm]	[mm]
600	1500	1200

Start with the module width / distance between the long Cross Tees (a2) and take the values for (a0) and (a1) next to it. The shown values for (a0) are maximum allowed distances.

Material required per m² (no waste included)

System without additional load

Components	Module [mm]	600 x 600
Main Runner	[m/m ²]	84
Long Cross-Tee	[m/m ²]	167
Short Cross-Tee	[m/m ²]	84
Suspension points (A)	[pcs/m ²]	56

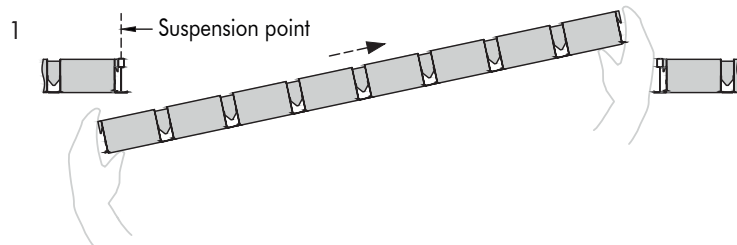
The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including perimeter trims.

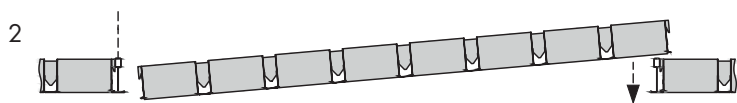
Detail C

METAL Board / METAL MicroLook / METAL Tegular

Tile insertion



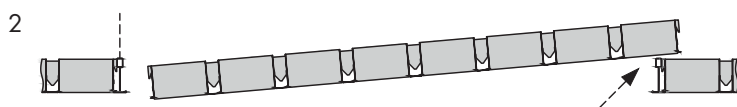
Since the height of the tiles is greater than that of other products, care must be taken where the hangers are placed. Always insert the opposite side first. Insert the tile diagonally. Care must be taken when choosing the right hangers.



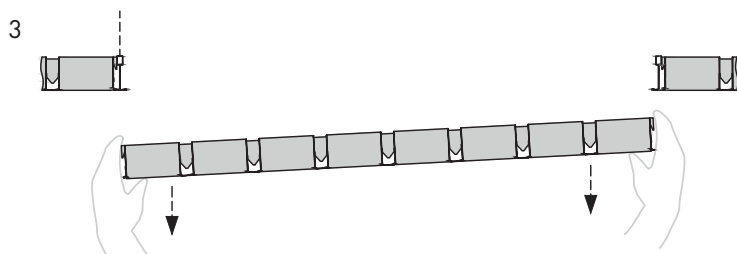
Place it on the T-grid.



Tile extraction



Lift the tile in one corner.



Remove it diagonally downwards.



FREE SPAN CORRIDOR CEILING

METAL F-L 601

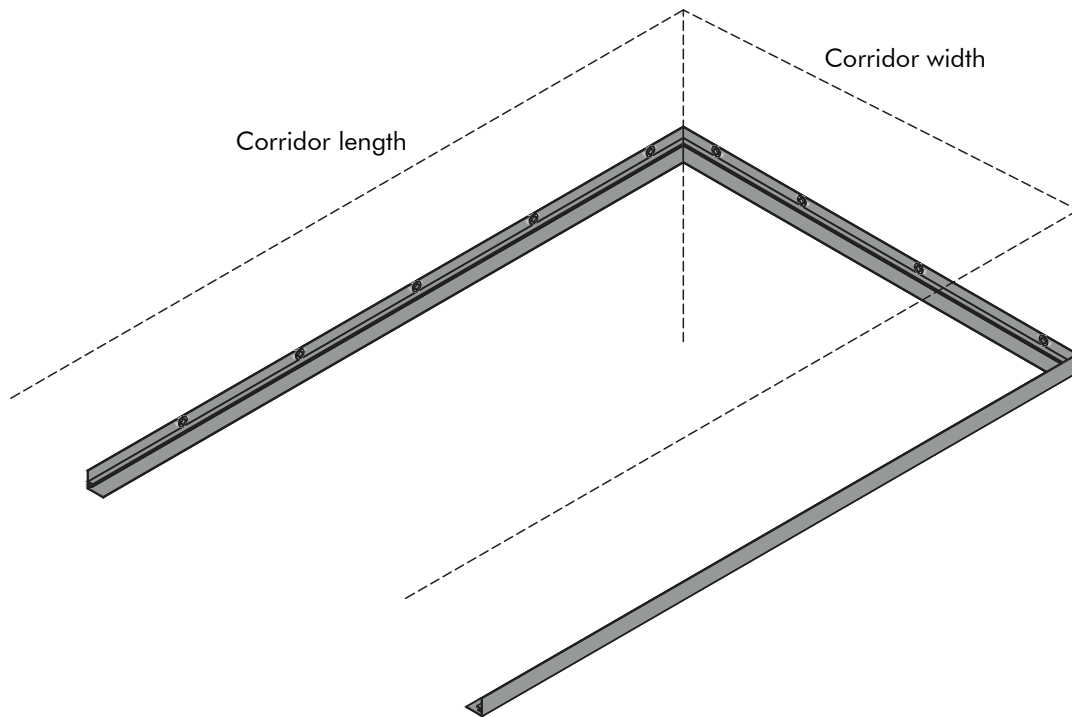
Perimeter trim range
Corridor solution for indoor applications

General information

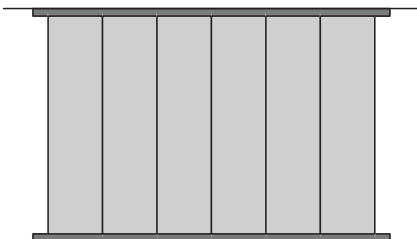
- Lay-in system for corridors
- Range of perimeter trims in RAL 9010 (further colour options on request)
- Typical ceiling weight 6.7 - 7.4 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable

Isometric view

Example with RA 4 F perimeter trim



Vario Design layout options



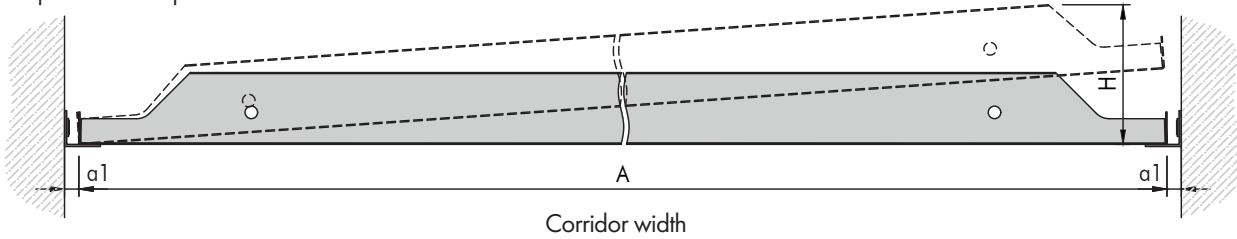
Minimum installation height (H)

Panel length (A) [mm]

Perimeter trim	1000	1500	2000	2500	3000	3300
RA 1, RA 1 S, RA 2	145	185	200	230	250	260
RA 3, RA 3 S, RA 5 F	60	70	70	80	85	85
RA 4 F, RA 9 F	115	140	150	165	180	185
RA 6 F	50	60	60	70	80	80

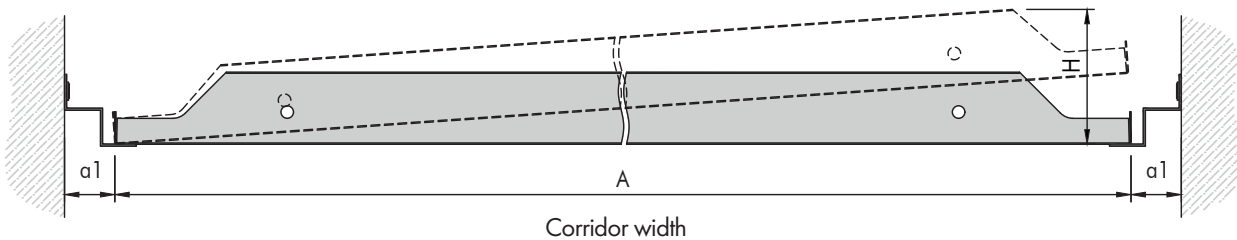
Section A

Example with RA 1 perimeter trim



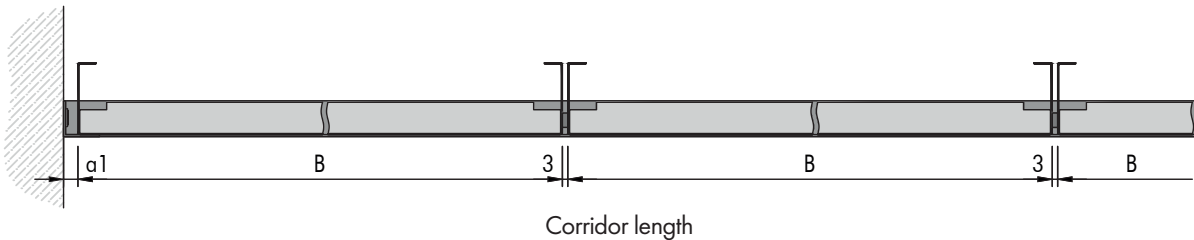
Section A

Example with RA 3 shadowline perimeter trim



Section B

Example with RA 1 perimeter trim



Panels supplied as standard with a 3 mm gasket on one long side to improve the visual appearance. Optionally panels can be installed without a gasket.

How to define the panel length (A)

Measure the corridor width. The distance measured at the widest point is used to define the panel length.

Panel length (A) = corridor width - 2x a1

In the narrower corridor areas, the panels may have to be cut to size.

See perimeter trim range for (a1) distances, perimeter trim options and detailed information.

Parameters

- a1 Distance from wall to panel (depending on the selected perimeter trim)
- X Distance between perimeter trim fixing points to wall
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

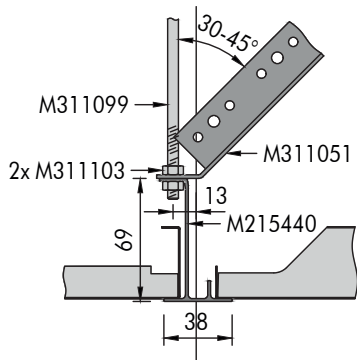
Grid components

Optional components

- M215440 L-Profile RAL 9010
- M311051 Primary angle 3000 x 27 x 22 mm
- M311099 Threaded rod M6 x 1000 mm
- M311103 Hexagonal nut M6
- M311191 Self-drilling screw 9.5 x 3.5 mm
- M311303 Hexagonal bolt M6 x 16 mm
- M311305 Washer
- M311330 Attachment bracket
- M900000 Black gasket 8x3 mm (spare roll)

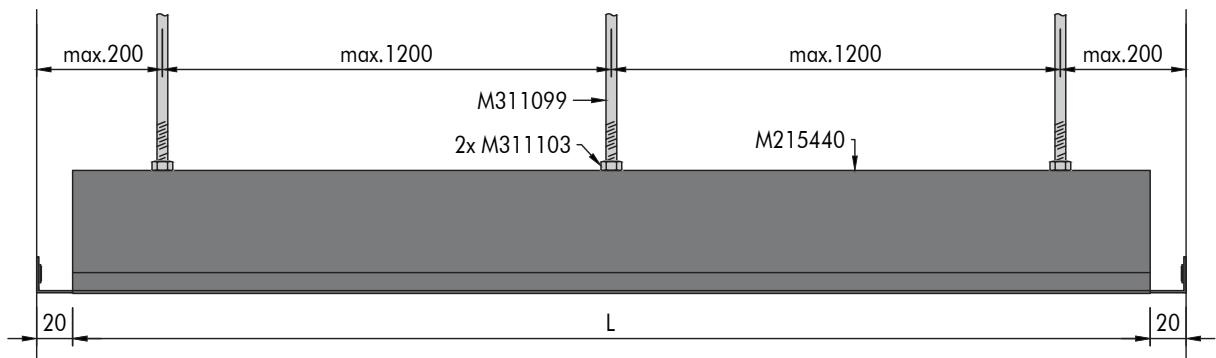
Detail C

C1 - Transition with L-Profile

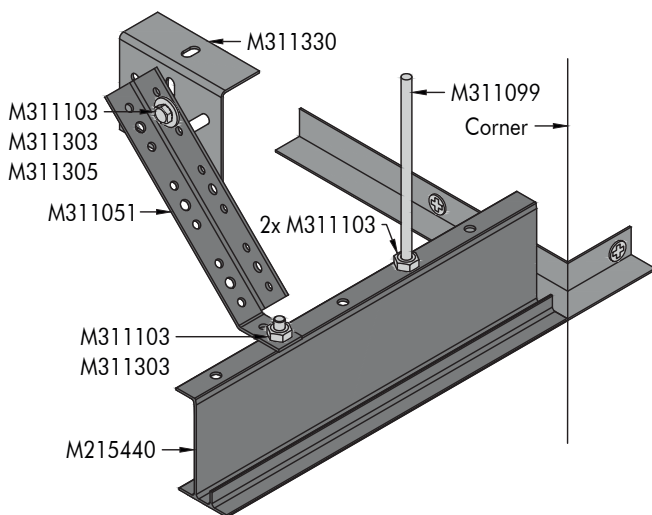


With T-junctions and corners you can use L-Profiles for the transition. The L-Profiles are suspended from the soffit with threaded rods at a distance of max. 1200 mm. The distance from the end to the first suspension point should be max. 200 mm. The L-Profile is aligned so that it is flush with one of the perimeter trims in the corner. In order to keep the L-Profile in position, an angle bracing is attached using a primary angle at an angle of 30 to 45°. This is connected at the top to an attachment bracket with an M6 nut and bolt. The attachment bracket is fixed to the soffit using appropriate fixings (by others). The end is cut at the bottom and bent to the required angle and attached to the L-profile with an M6 nut and bolt.

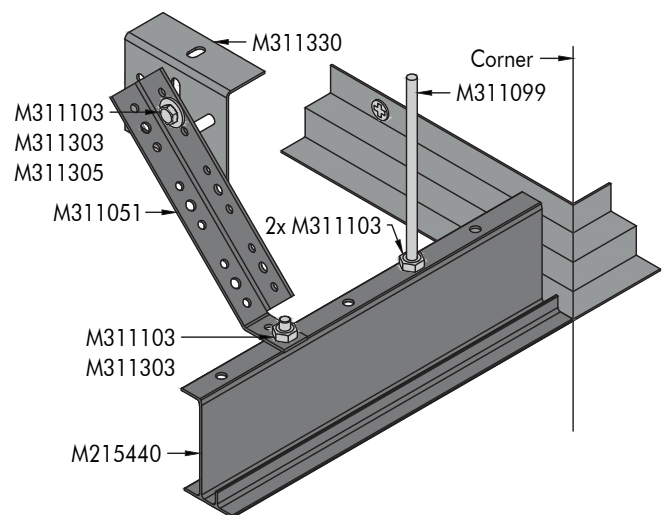
C2 - Transition with L-Profile, example with RA 1



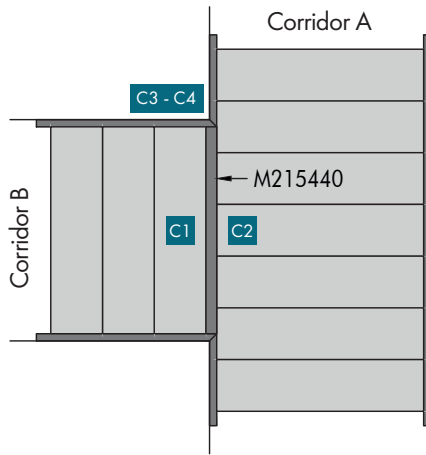
C3 - Transition example with RA 1



C4 - Transition example with RA 3

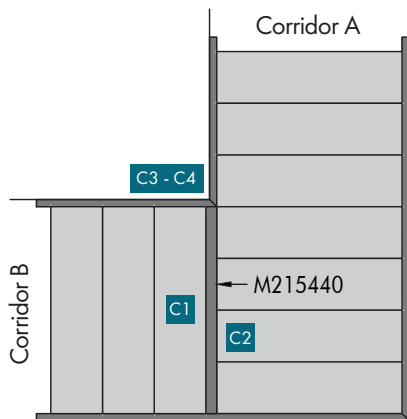


T-junction



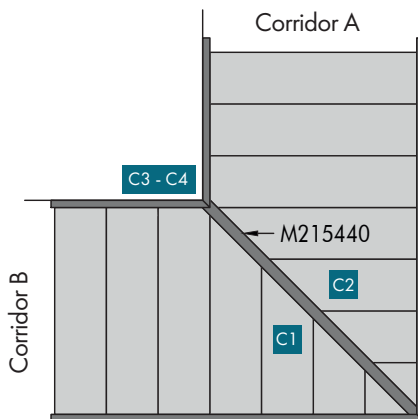
Corridor A runs through, corridor B connects to it and forms a T-junction.

Corner 1



Corridor A runs to the end, corridor B connects to it and forms a transition.

Corner 2

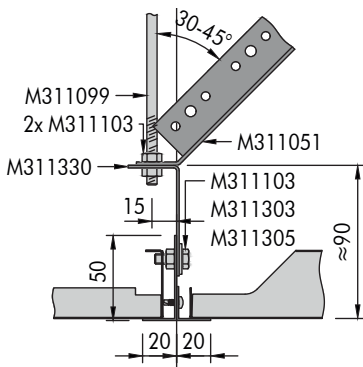


The L-Profile forms the transition and is attached diagonally, corridor A and B are equivalent. With this solution, the profile must be fitted exactly. Various details are possible. Panels get cut to size on site.

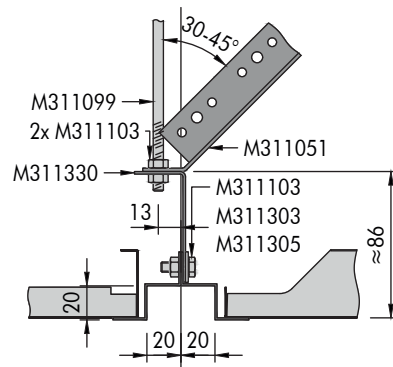
Detail D

As a transition, two perimeter trims can be fastened back to back. One of the perimeter trims forms an extension and spans the width of the corridor, the second is attached to it with self-drilling screws. The self-drilling screws are set at a maximum distance of 300 mm. The perimeter trims are suspended from the plenum with attachment brackets and threaded rods at a distance of max. 600 mm. The distance from the corner to the first suspension point should be max. 200 mm. In order to keep the perimeter trims in position, an angle bracing is attached using a primary angle at an angle of 30 to 45°. This is attached to the plenum at the top with an attachment bracket, using a M6 bolt. The end is cut at the bottom and bent to the required angle and attached to the perimeter trims with an M6 nut and bolt.

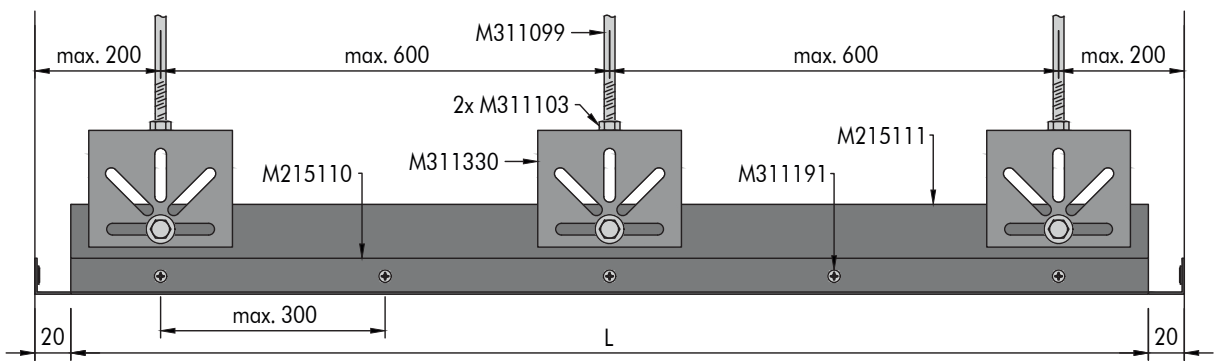
D1 - Transition with perimeter trims



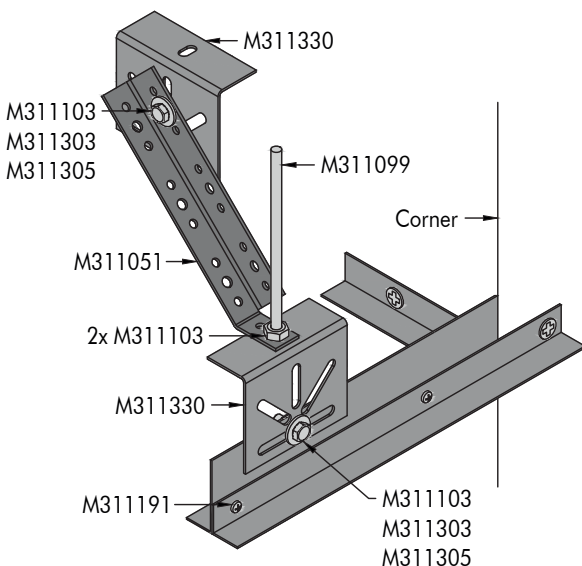
D2 - Transition with shadowline trims



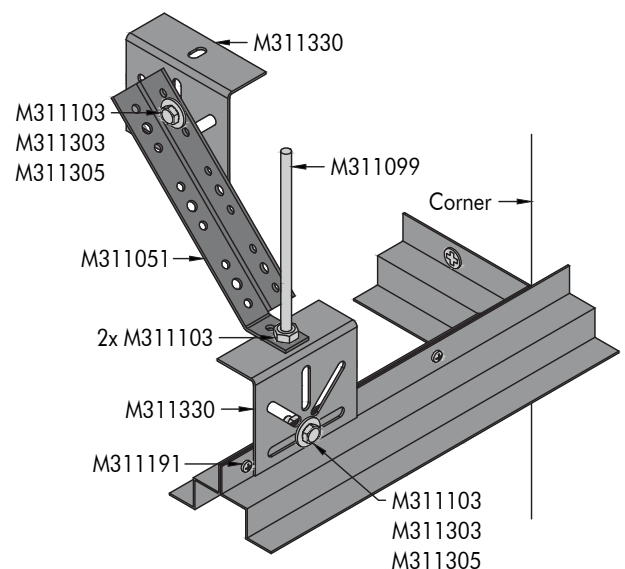
D3 - Transition with 2x perimeter trim, example with RA 1 / RA 2



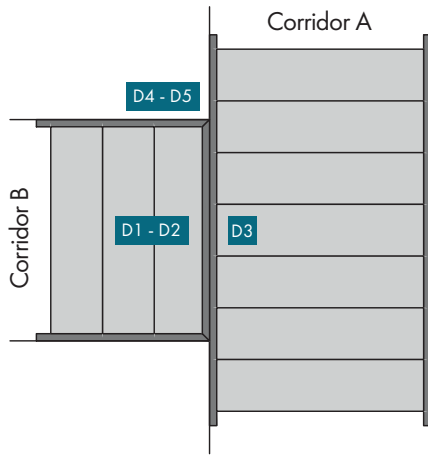
D4 - Transition example with RA 1 / RA 2



D5 - Transition example with RA 3

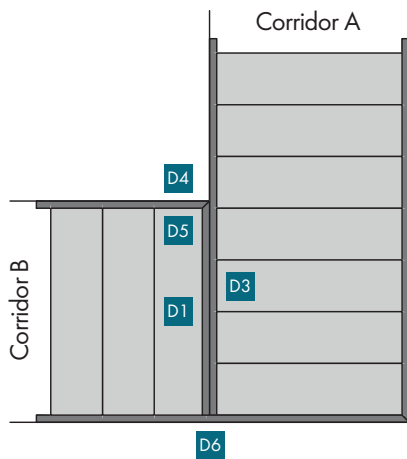


T-junction

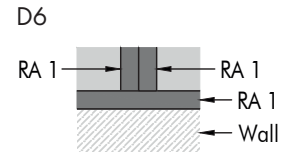
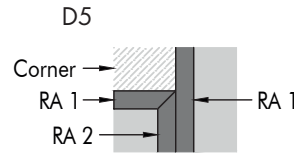


Corridor A runs through, corridor B connects to it and forms a T-junction.

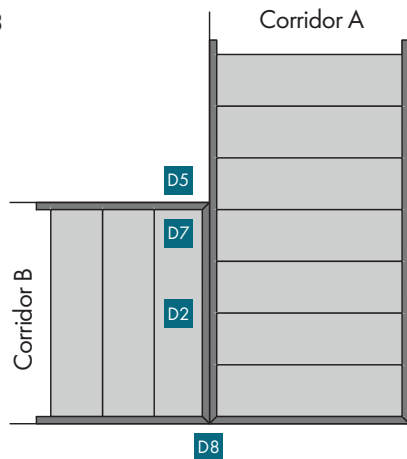
Corner 1 with RA 1



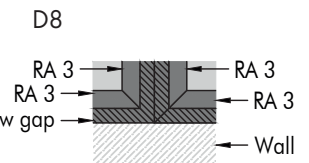
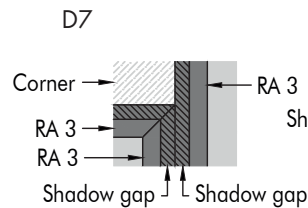
Corridor A runs to the end, corridor B connects to it and forms a transition. This solution is recommended for L-perimeter trims.



Corner 2 with RA 3



Corridor A runs to the end, corridor B connects to it and forms a transition. This solution is recommended for shadowline perimeter trims. Each corridor is completely framed by a shadowline perimeter trim.



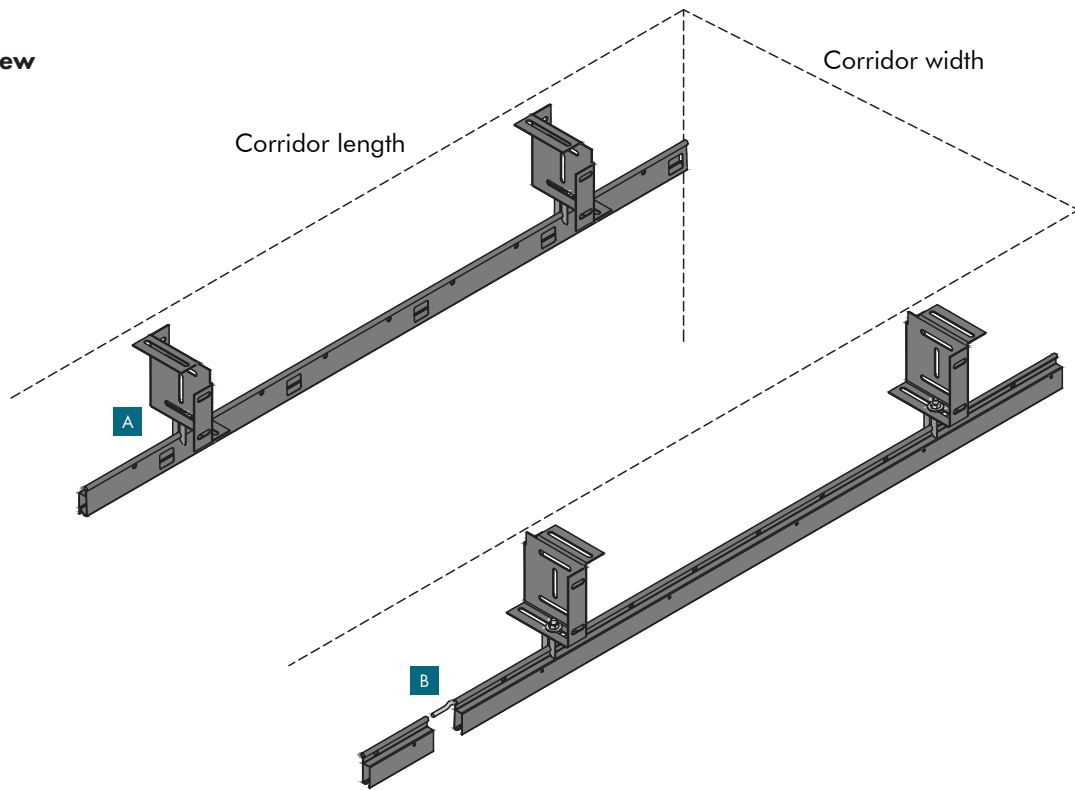
METAL F-CLIP ACCESS

Wall bracket + half DP12 A-Bar secondary grid
 Concealed grid corridor solution for indoor applications

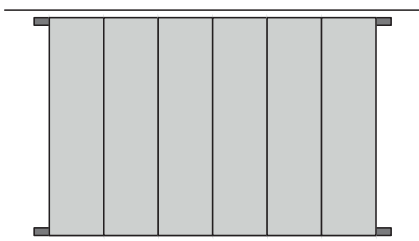
General information

- Concealed clip-in grid system for corridors
- Wall bracket (black coated) and half DP12 A-Bar made of galvanised steel
- Typical ceiling weight 8.6 - 9.5 kg/m² (indicative value for unperforated panels, without additional load)
- With variable shadow gap along the walls
- Panels are easily installed and fully demountable
- Optional swing-down function Access
- Optional security clips available

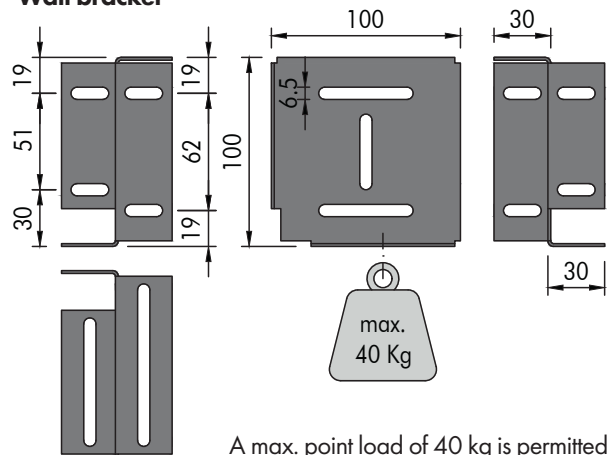
Isometric view



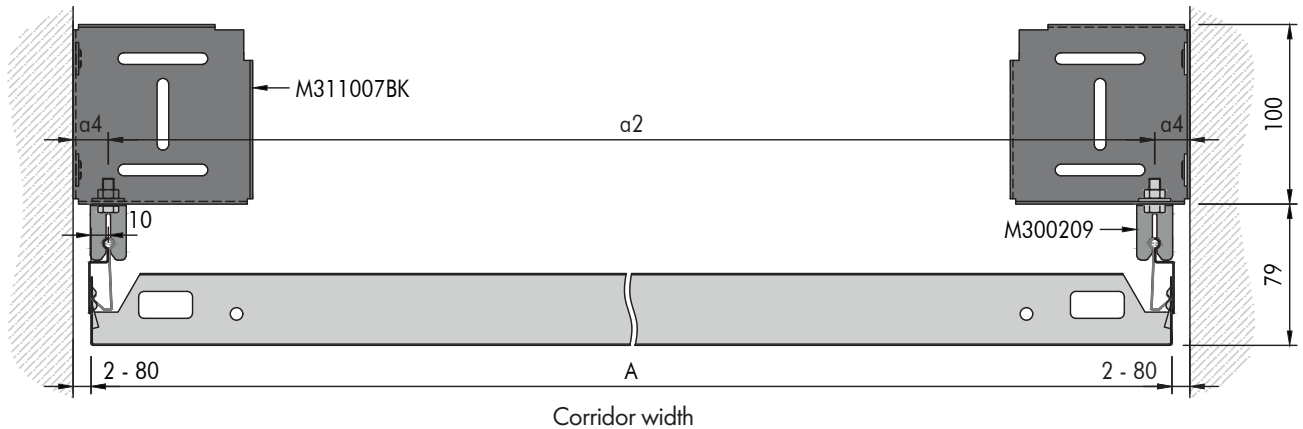
Vario Design layout options



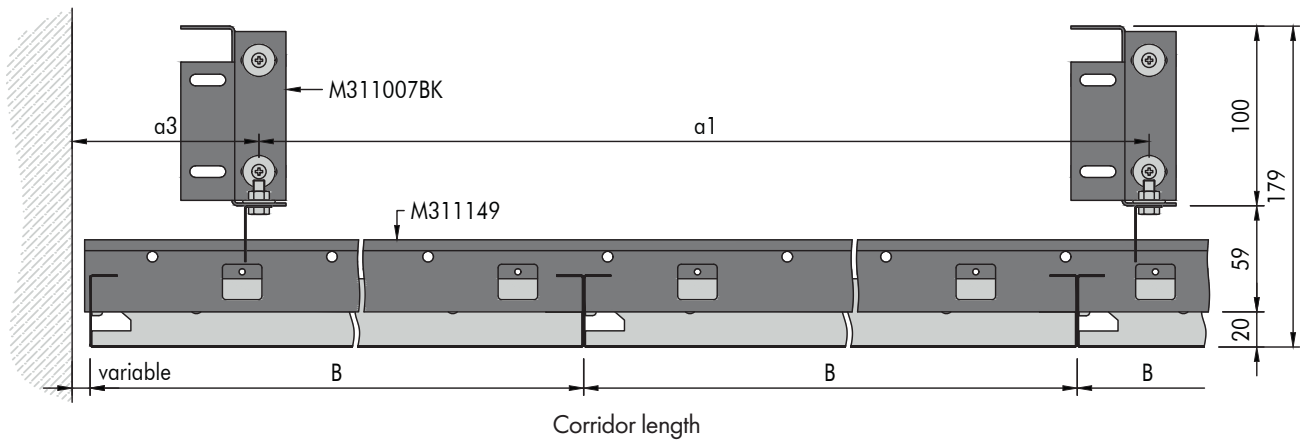
Wall bracket



Section C



Section D



Grid components

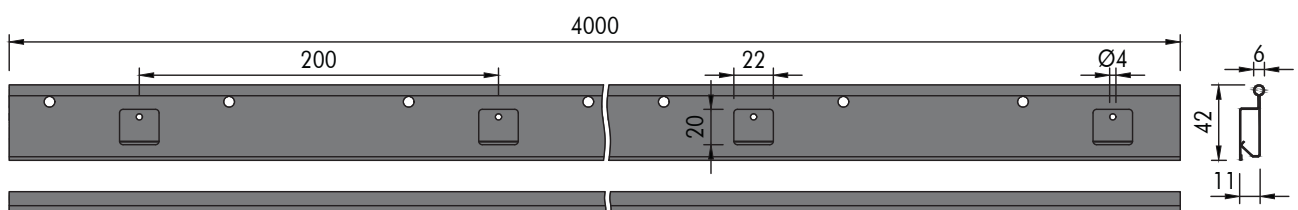
Standard components

- M311007BK Wall bracket
- M311149 Half DP12 A-Bar
- M300138 Connection pin for DP12 A-Bar
- M300209 Hanger for DP12 A-Bar
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm

Optional components

- M300106 Security clip
- M311028 Extraction tool
- M300189 Swing down clip for Access function (half DP12 A-Bar)
- M311051 Primary angle 3000 x 27 x 22 mm
- M311099 Threaded rod M6 x 1000 mm
- M215110 RA 1 perimeter trim 4000 x 20 x 20 mm RAL 9010

Half DP12 A-Bar secondary grid



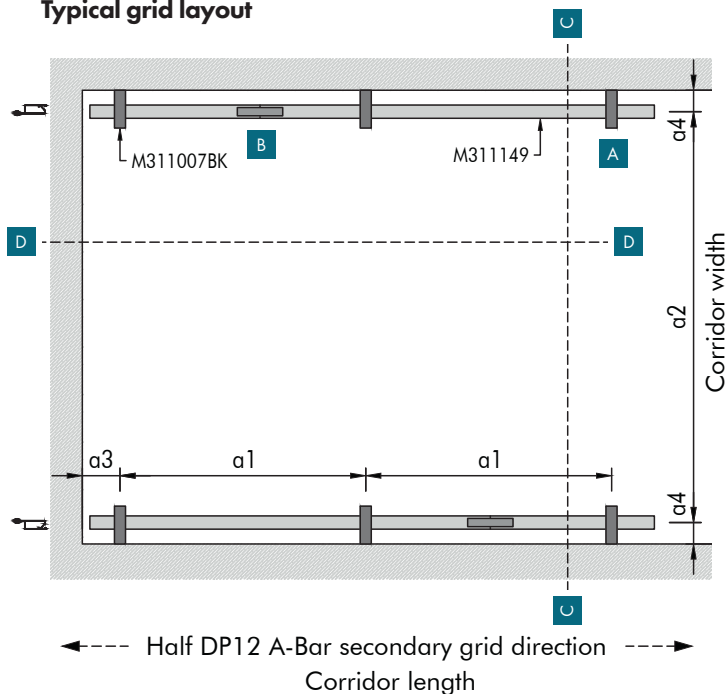
Spacing

System without additional load		System with additional load +4 kg/m ²	
a2	a1	a2	a1
[mm]	[mm]	[mm]	[mm]
1000	1600	1000	1450
1050	1550	1050	1400
1100	1550	1100	1400
1150	1500	1150	1350
1200	1450	1200	1300
1250	1450	1250	1300
1300	1400	1300	1250
1350	1400	1350	1250
1400	1350	1400	1200
1450	1350	1450	1200
1500	1300	1500	1200
1550	1300	1550	1150
1600	1250	1600	1150
1650	1250	1650	1100
1700	1250	1700	1100
1750	1200	1750	1100
1800	1200	1800	1100
1850	1200	1850	1050
1900	1150	1900	1050
1950	1150	1950	1050
2000	1150	2000	1000
2050	1100	2050	1000
2100	1100	2100	1000
2150	1100	2150	1000
2200	1100	2200	950
2250	1050	2250	950
2300	1050	2300	950
2350	1050	2350	950
2400	1050	2400	950
2450	1050	2450	900
2500	1000	2500	900

Parameters

- a1 Distance of wall brackets
- a2 Distance between half DP12 A-Bars fixing points = A - 20 mm
- a3 Distance from wall = max. 200 mm
- a4 Variable distance from wall to half DP12 A-Bar fixing point
- M Module size = panel length / panel width
- A Panel length = min. 600 / max. 2500 mm
- B Panel width = min. 250 / max. 600 mm

Typical grid layout



To determine suspension layout

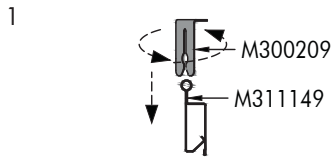
The panel length (A) of the requested ceiling -20 mm is equal to the distance between the half DP12 A-Bar centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required panel length then read across to determine the wall bracket spacing (a1).

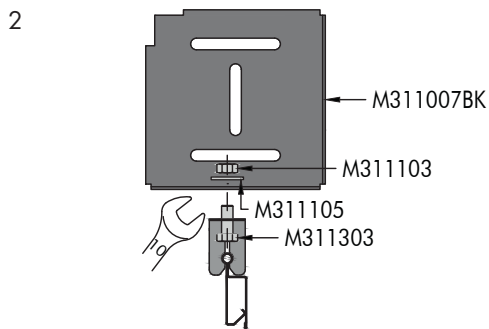
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail A

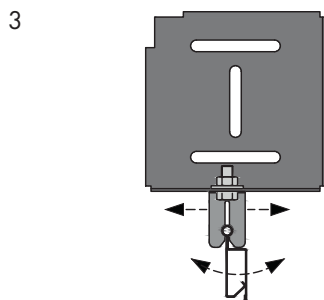
Hanger installation



The hanger for half DP12 A-Bar is made of spring steel and is therefore elastic. It is twisted on the half DP12 A-Bar from above. Then it can be slid to the correct position.



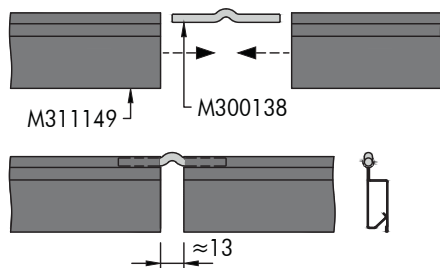
Fix the half DP12 A-Bar with fasteners below the wall bracket.



The half DP12 A-Bar is now locked in position. Due to the round head of the half DP12 A-Bar, it can swing. This is important because it allows any tolerances to be compensated.

Detail B

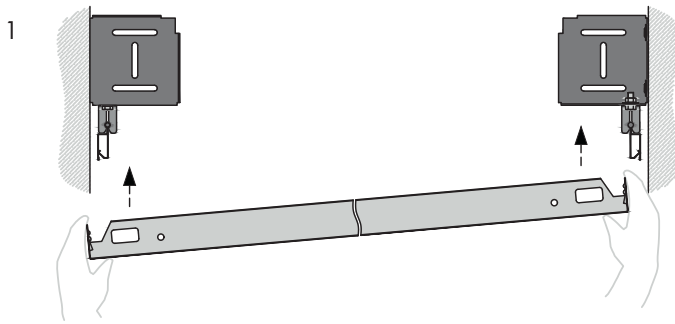
Splice connection



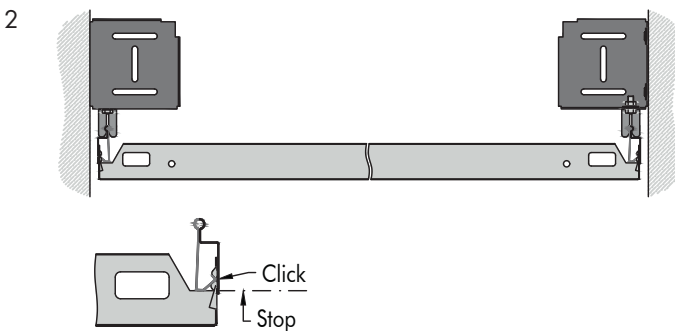
Insert the connection pin at the ends of the half DP12 A-Bars and connect them. There is a gap between the half DP12 A-Bars. The half DP12 A-Bars must be aligned so that the joint is not in the same place as the pips on the panels.

Detail E

Panel insertion

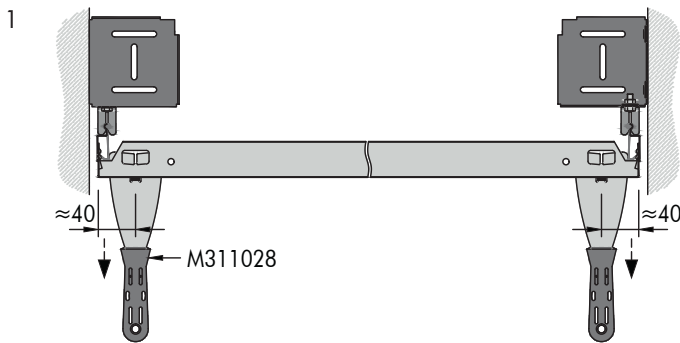


Take the panel and carefully insert it into the half DP12 A-Bars from below. All panels feature a double row of pips. The upper pip is inserted into the half DP12 A-Bar, the lower one serves as a stop. Be careful with the Panels. Always press along the edges with the pips and never on the transverse sides, otherwise the panels may be damaged. The panels should always be laid in such a way that the Window hooks point in the same direction.

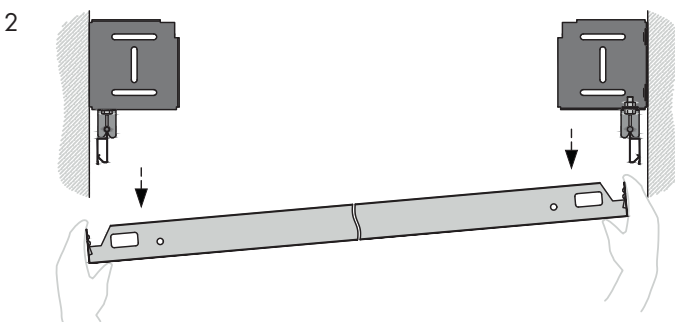


The panels are correctly inserted when all four corners are flush with the neighbouring panels. The panels are designed to match the half DP12 A-Bar. If third party profiles are used there is a high probability the tiles will not be correctly inserted.

Panel extraction



The panels are designed in such a way that the extraction tool can only be inserted in the designated places so that it clicks into place. There is a rectangular cut-out on the panels. It is therefore important that the appropriate extraction tool is used. This prevents damage to the panels. Insert on one side first and pull down with a gentle tug, followed by the opposite side.



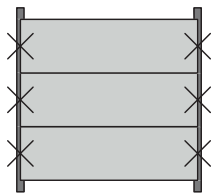
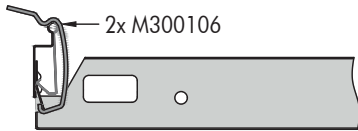
Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Detail F

Optional security clip

The security clip serves to secure the panels and prevents them from being removed.

Panel locking

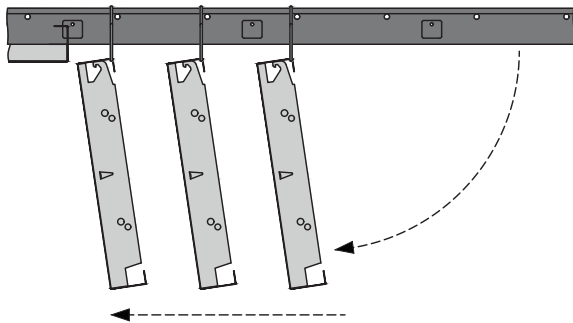
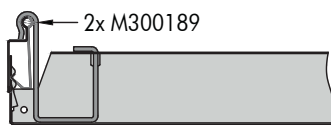


The panels have, on the sides where the pips are, an embossing where the security clip can be fixed. First hook the security clip into the embossing on the panel and then slip the upper end over the half DP12 A-Bar. Two security clips are required per panel.

Either individual panels or the entire ceiling can be secured. The panels are inserted and secured immediately. The last panel cannot be locked.

Detail G

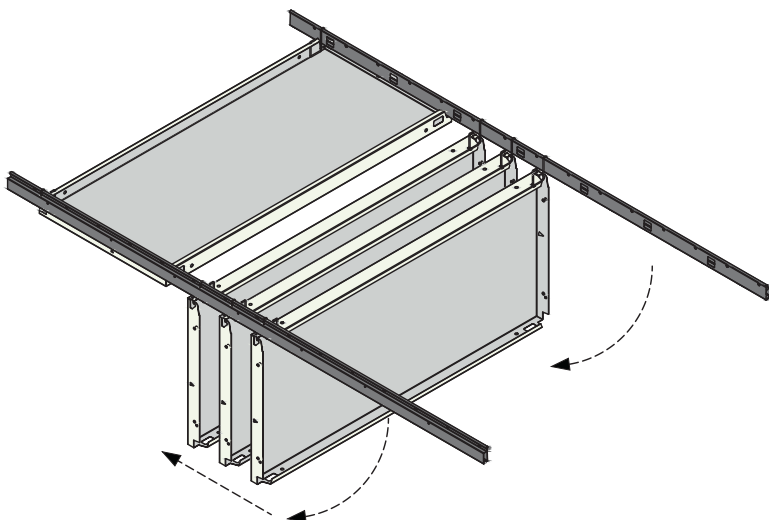
Optional Access swing-down function



The panels are hinged-down over the long side. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the half DP12 A-Bar. The panels are installed in the same direction (hook detail).

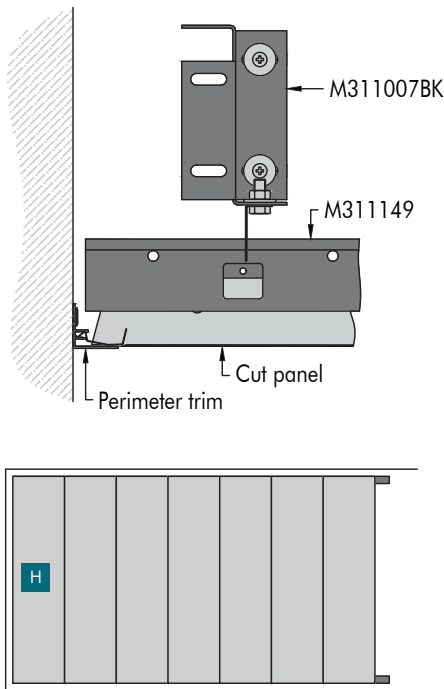
The panels are provided with two small holes, which are used to insert the Access swing-down clip. Once the clips are inserted, hook the panel on the half DP12 A-Bar. Two clips per panel are needed.

The ceiling is accessed with the extraction tool, as shown under detail D.



Detail H

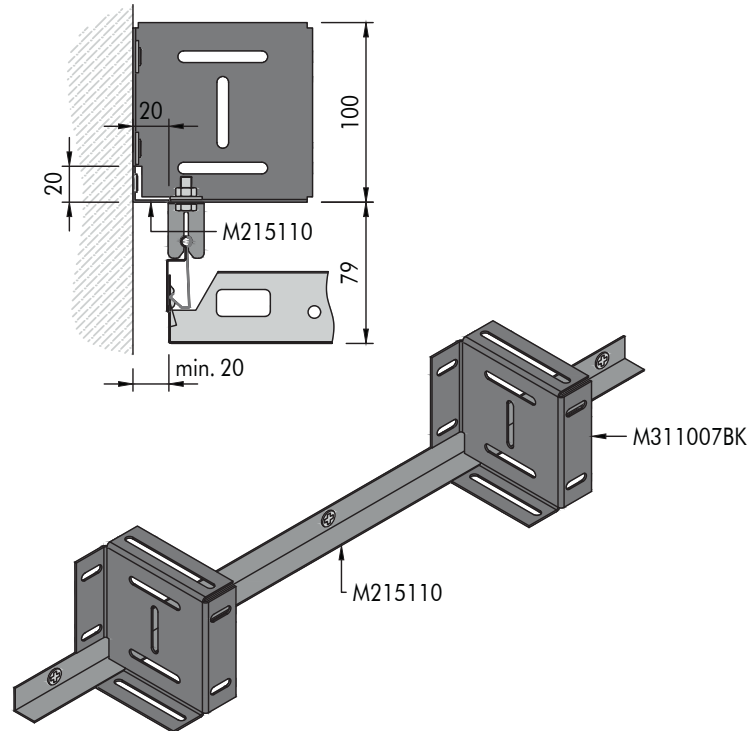
Optional perimeter trim for cut panels



The last panel at the end of the corridor can be made to measure. A cost-effective alternative is to use a perimeter trim. This allows panels to be cut to size on site. See separate document for perimeter trim options.

Detail I

Optional perimeter trim for shadow gap



The shadow gap remains open in the standard version. Optionally, this can be covered with a perimeter trim. The perimeter trim is attached at the correct height so that the wall brackets can be placed on it and then attached to the wall.

Material required per m² (no waste included)

System without additional load [pcs/m²]

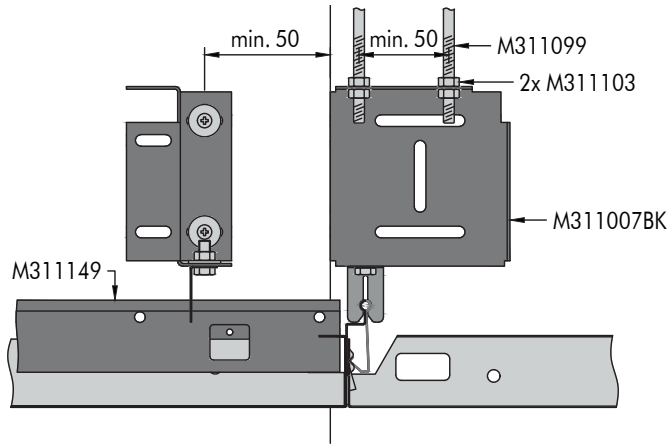
Components	α2 [mm]	1200	1400	1600	1800	2000	2200	2400	2500
M300138	Connection pin for DP12 A-Bar	0.42	0.36	0.31	0.28	0.25	0.23	0,21	0,20
M300209	Hanger for DP12 A-Bar	1.28	1.19	1.09	1.01	1.00	0.96	0.88	0.89
M311007BK	Wall bracket	1.28	1.19	1.09	1.01	1.00	0.96	0.88	0.89
M311103	Hexagonal nut M6	1.28	1.19	1.09	1.01	1.00	0.96	0.88	0.89
M311105	Washer	1.28	1.19	1.09	1.01	1.00	0.96	0.88	0.89
M311149	Half DP12 A-Bar	0.42	0.36	0.31	0.28	0.25	0.23	0.21	0.20
M311303	Hexagonal bolt M6 x 16 mm	1.28	1.19	1.09	1.01	1.00	0.96	0.88	0.89

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation 100 m². This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

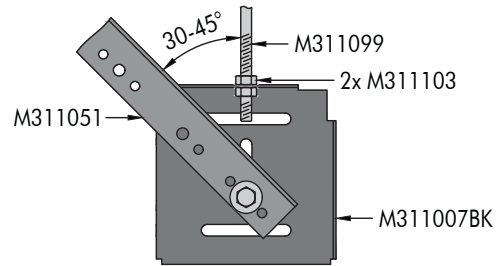
Not including optional items and extraction tools.

Detail J

Suspension option by double threaded rod

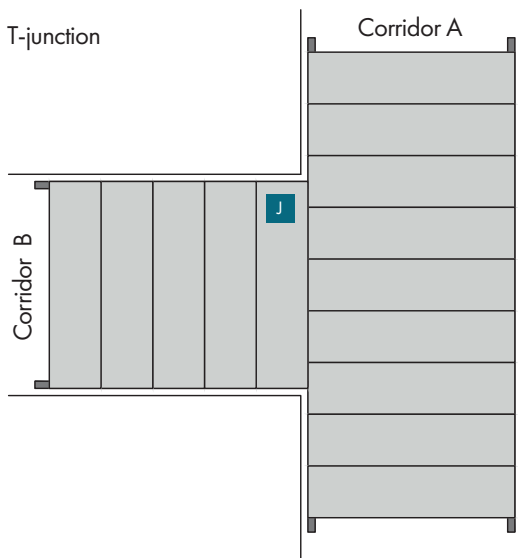


Suspension option by threaded rod with angle bracing



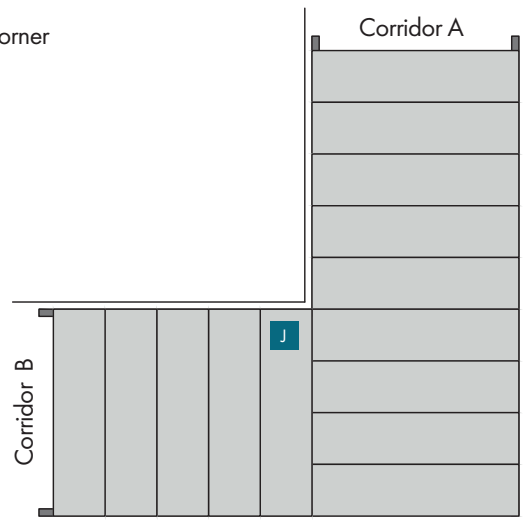
In these situations, the wall bracket can be suspended either with two threaded rods or one threaded rod and fixed by an angle bracing.

T-junction



Corridor A runs through, corridor B connects to it and forms a T-junction.

Corner



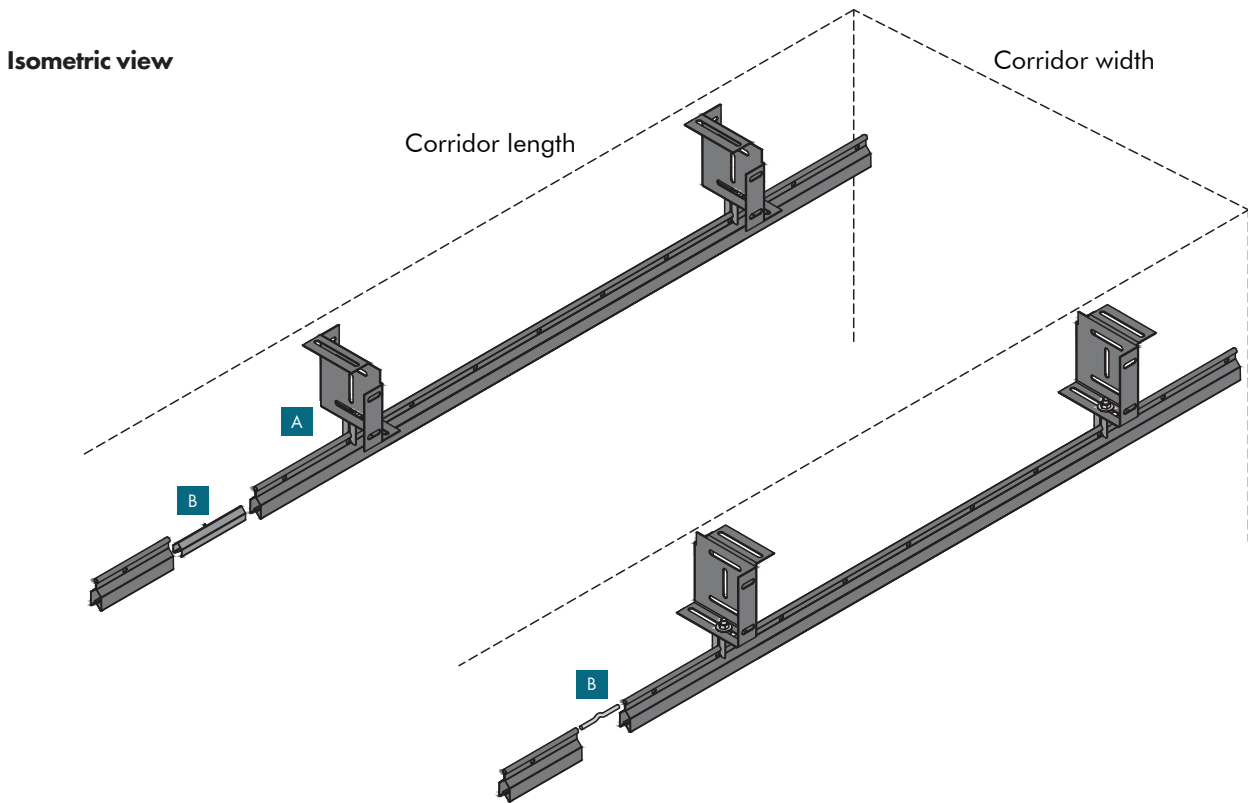
Corridor A runs to the end, corridor B connects to it and forms a transition.

METAL F-CLIP ACCESS

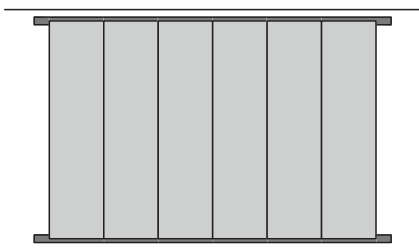
Wall bracket + DP12 A-Bar secondary grid
Concealed grid corridor solution for indoor applications

General information

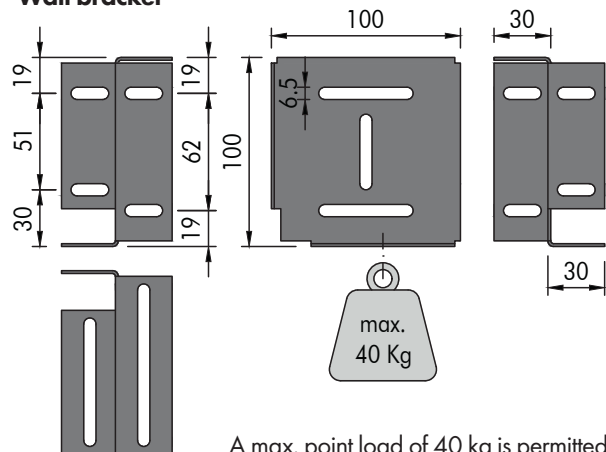
- Concealed clip-in grid system for corridors
- Wall bracket (black coated) and DP12 A-Bar made of galvanised steel
- Typical ceiling weight 8.6 - 9.5 kg/m² (indicative value for unperforated panels, without additional load)
- With variable shadow gap along the walls
- Panels are easily installed and fully demountable
- Optional swing-down function Access
- Optional security clips available



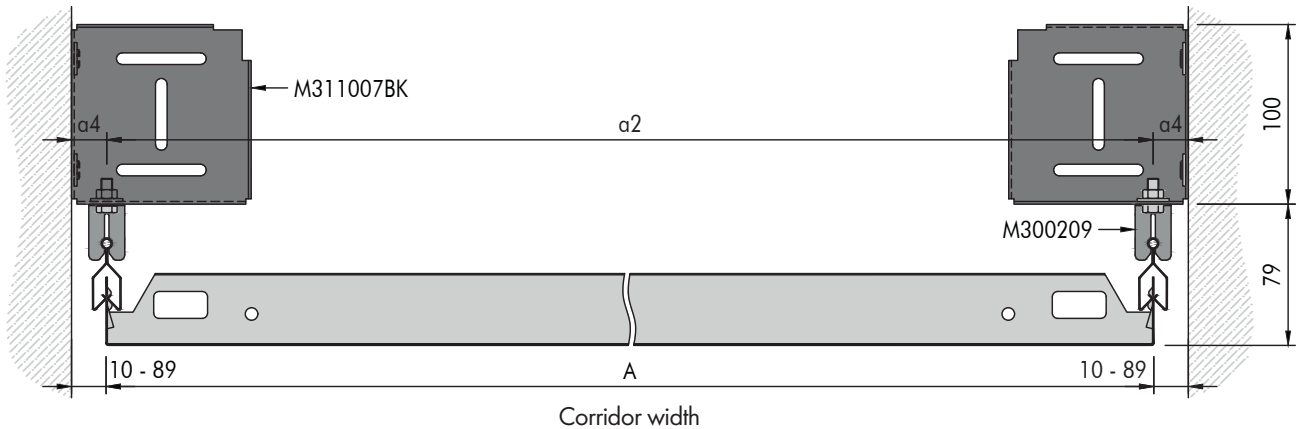
Vario Design layout options



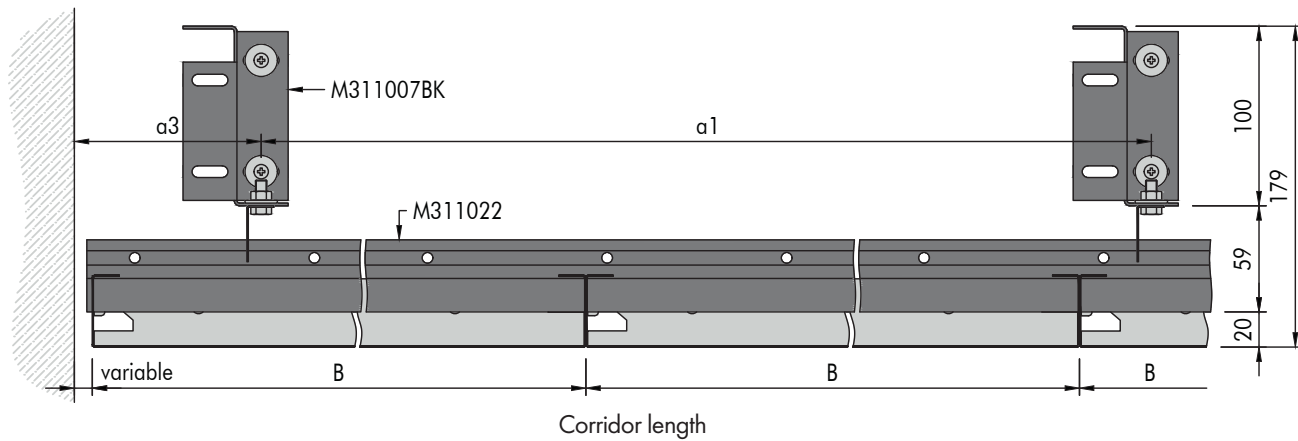
Wall bracket



Section C



Section D



Grid components

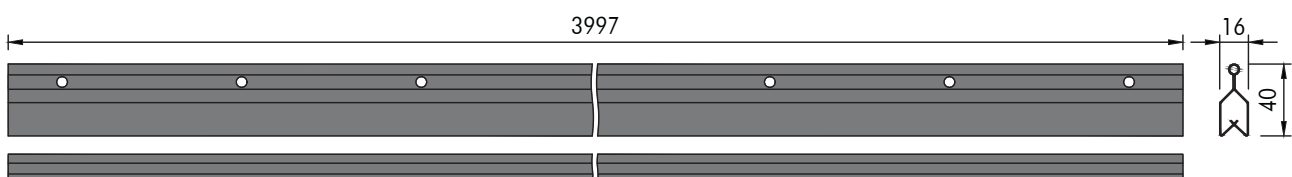
Standard components

- M311007BK Wall bracket
- M300138 Connection pin for DP12 A-Bar
- M300209 Hanger for DP12 A-Bar
- M311022 DP12 A-Bar
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm

Optional components

- M300106 Security clip
- M311023 Splice connector for DP12 A-Bar
- M311028 Extraction tool
- M300188 Swing down clip for Access function (DP12 A-Bar)
- M311051 Primary angle 3000 x 27 x 22 mm
- M311099 Threaded rod M6 x 1000 mm

DP12 A-Bar secondary grid



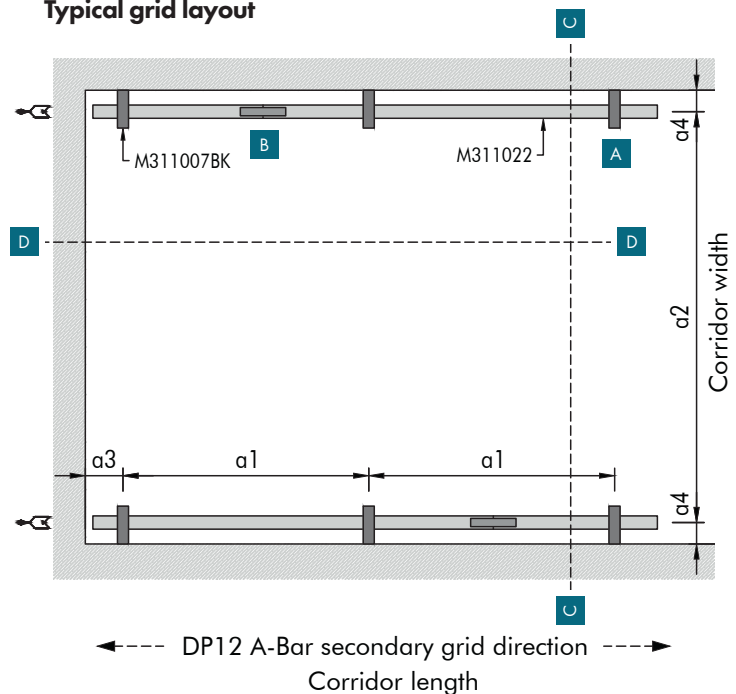
Spacing

System without additional load		System with additional load +4 kg/m ²	
a2	a1	a2	a1
[mm]	[mm]	[mm]	[mm]
1000	1600	1000	1450
1050	1550	1050	1400
1100	1550	1100	1400
1150	1500	1150	1350
1200	1450	1200	1300
1250	1450	1250	1300
1300	1400	1300	1250
1350	1400	1350	1250
1400	1350	1400	1200
1450	1350	1450	1200
1500	1300	1500	1200
1550	1300	1550	1150
1600	1250	1600	1150
1650	1250	1650	1100
1700	1250	1700	1100
1750	1200	1750	1100
1800	1200	1800	1100
1850	1200	1850	1050
1900	1150	1900	1050
1950	1150	1950	1050
2000	1150	2000	1000
2050	1100	2050	1000
2100	1100	2100	1000
2150	1100	2150	1000
2200	1100	2200	950
2250	1050	2250	950
2300	1050	2300	950
2350	1050	2350	950
2400	1050	2400	950
2450	1050	2450	900
2500	1000	2500	900

Parameters

- a1 Distance of wall brackets
- a2 Distance between DP12 A-Bars fixing points
- a3 Distance from wall = max. 200 mm
- a4 Variable distance from wall to DP12 A-Bar fixing point
- M Module size = panel length / panel width
- A Panel length = min. 600 / max. 2500 mm
- B Panel width = min. 250 / max. 600 mm

Typical grid layout



To determine suspension layout

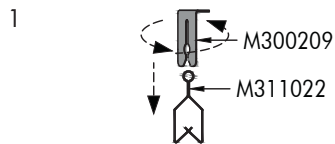
The panel length (A) of the requested ceiling is equal to the distance between the DP12 A-Bar centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required panel length then read across to determine the wall bracket spacing (a1).

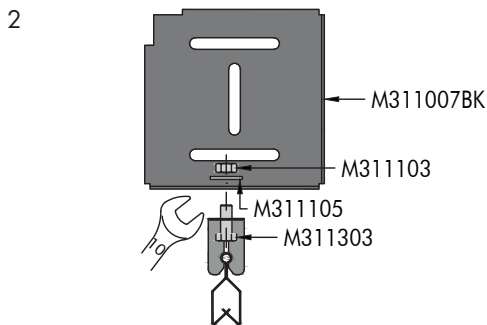
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail A

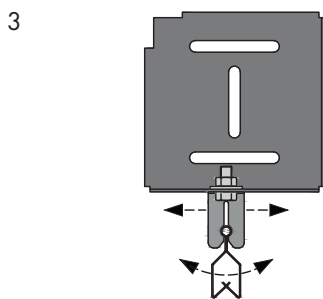
Hanger installation



The hanger for DP12 A-Bar is made of spring steel and is therefore elastic. It is twisted on the DP12 A-Bar from above. Then it can be slid to the correct position.



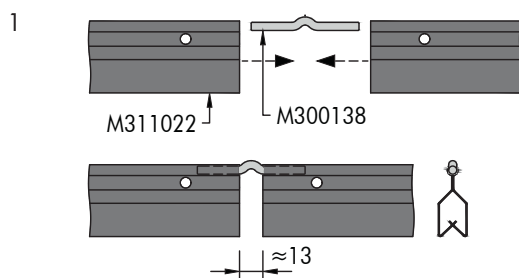
Fix the DP12 A-Bar with fasteners below the wall bracket.



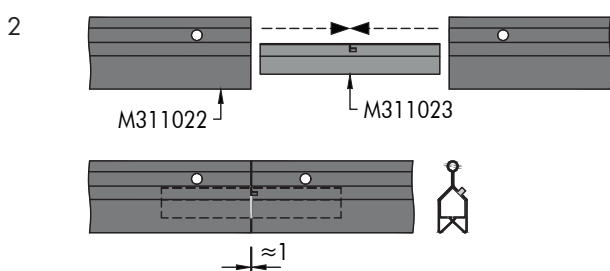
The DP12 A-Bar is now locked in position. Due to the round head of the DP12 A-Bar, it can swing. This is important because it allows any tolerances to be compensated.

Detail B

Splice connection



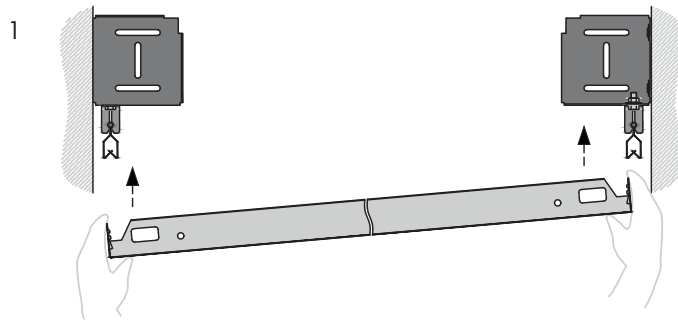
Insert the connection pin at the ends of the DP12 A-Bars and connect them. There is a gap between the DP12 A-Bars. The DP12 A-Bars must be aligned so that the joint is not in the same place as the pips on the tiles/panels.



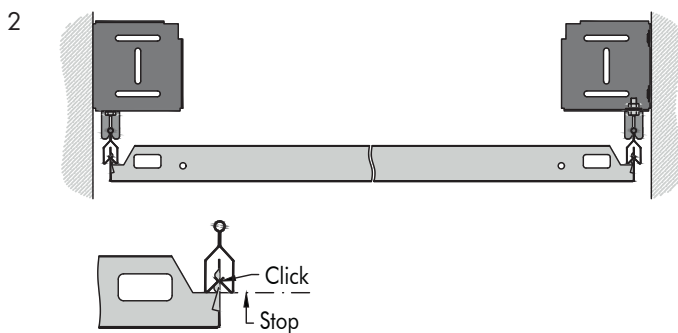
Optionally, the splice connector for DP12 A-Bar can be used. This is inserted at the ends of the DP12 A-Bars and an almost seamless connection is created.

Detail E

Panel insertion

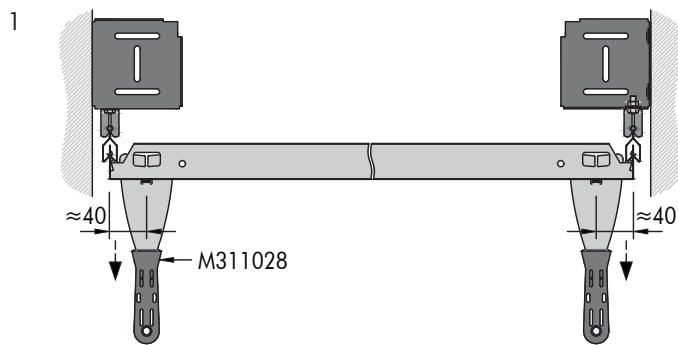


Take the panel and carefully insert it into the DP12 A-Bars from below. All panels feature a double row of pips. The upper pip is inserted into the DP12 A-Bar, the lower one serves as a stop. Be careful with the Panels. Always press along the edges with the pips and never on the transverse sides, otherwise the panels may be damaged. The panels should always be laid in such a way that the Window hooks point in the same direction.

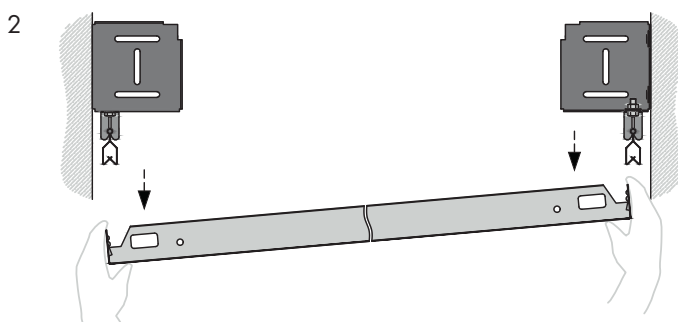


The panels are correctly inserted when all four corners are flush with the neighbouring panels. The panels are designed to match the DP12 A-Bar. If third party profiles are used there is a high probability the tiles will not be correctly inserted.

Panel extraction



The panels are designed in such a way that the extraction tool can only be inserted in the designated places so that it clicks into place. There is a rectangular cut-out on the panels. It is therefore important that the appropriate extraction tool is used. This prevents damage to the panels. Insert on one side first and pull down with a gentle tug, followed by the opposite side.



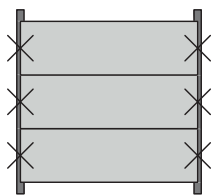
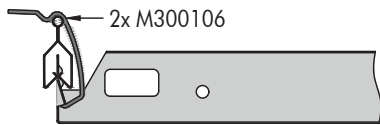
Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Detail F

Optional security clip

The security clip serves to secure the panels and prevents them from being removed.

Panel locking

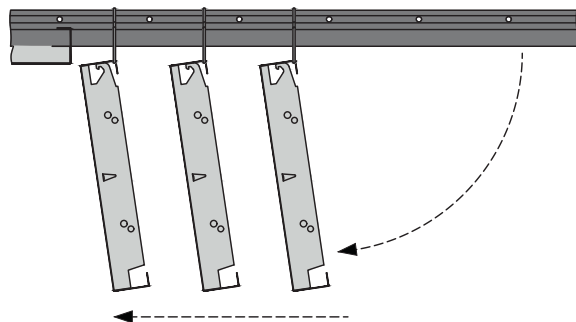
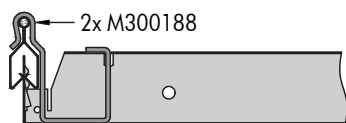


The panels have, on the sides where the pips are, an embossing where the security clip can be fixed. First hook the security clip into the embossing on the panel and then slip the upper end over the DP12 A-Bar. Two security clips are required per panel.

Either individual panels or the entire ceiling can be secured. The panels are inserted and secured immediately. The last panel cannot be locked.

Detail G

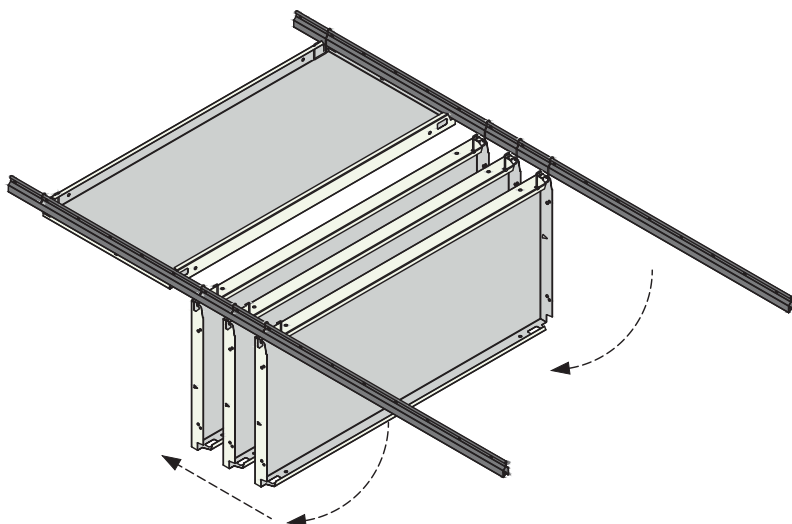
Optional Access swing-down function



The panels are hinged-down over the long side. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the DP12 A-Bar. The panels are installed in the same direction (hook detail).

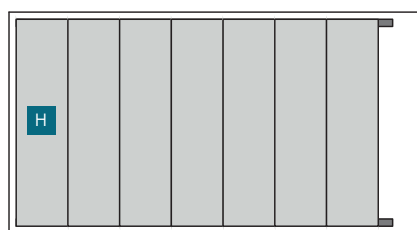
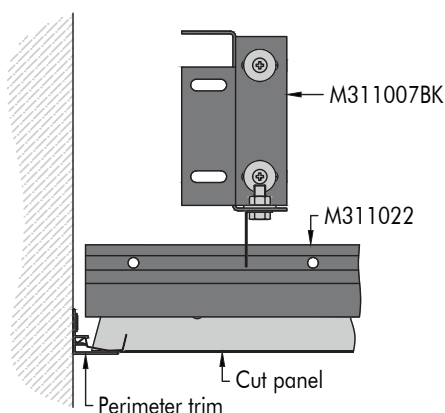
The panels are provided with two small holes, which are used to insert the Access swing-down clip. Once the clips are inserted, hook the panel on the DP12 A-Bar. Two clips per panel are needed.

The ceiling is accessed with the extraction tool, as shown under detail D.



Detail H

Optional perimeter trim for cut panels



The last panel at the end of the corridor can be made to measure. A cost-effective alternative is to use a perimeter trim. This allows panels to be cut to size on site. See separate document for perimeter trim options.

Material required per m² (no waste included)

System without additional load [pcs/m²]

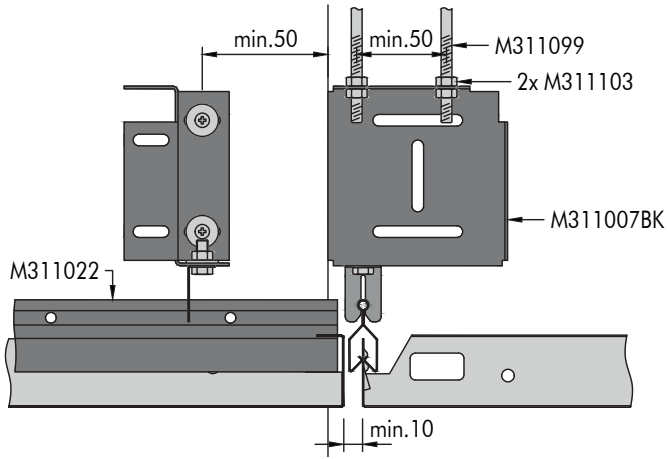
Components	a2 [mm]	1200	1400	1600	1800	2000	2200	2400	2500
M300138	Connection pin for DP12 A-Bar	0.42	0.36	0.31	0.28	0.25	0.23	0.21	0.20
M300209	Hanger for DP12 A-Bar	1.15	1.06	1.00	0.93	0.87	0.83	0.79	0.80
M311007BK	Wall bracket	1.15	1.06	1.00	0.93	0.87	0.83	0.79	0.80
M311022	DP12 A-Bar	0.42	0.36	0.31	0.28	0.25	0.23	0.21	0.20
M311103	Hexagonal nut M6	1.15	1.06	1.00	0.93	0.87	0.83	0.79	0.80
M311105	Washer	1.15	1.06	1.00	0.93	0.87	0.83	0.79	0.80
M311303	Hexagonal bolt M6 x 16 mm	1.15	1.06	1.00	0.93	0.87	0.83	0.79	0.80

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation 100 m². This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

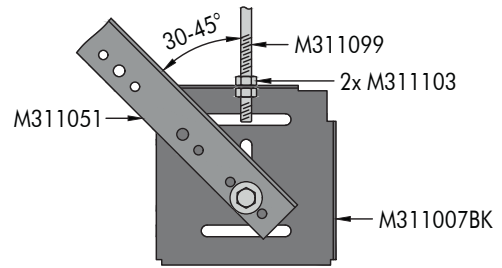
Not including optional items and extraction tools.

Detail I

Suspension option by double threaded rod

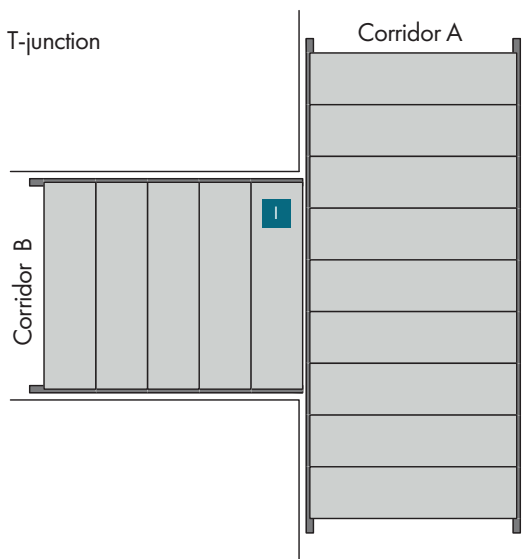


Suspension option by threaded rod with angle bracing



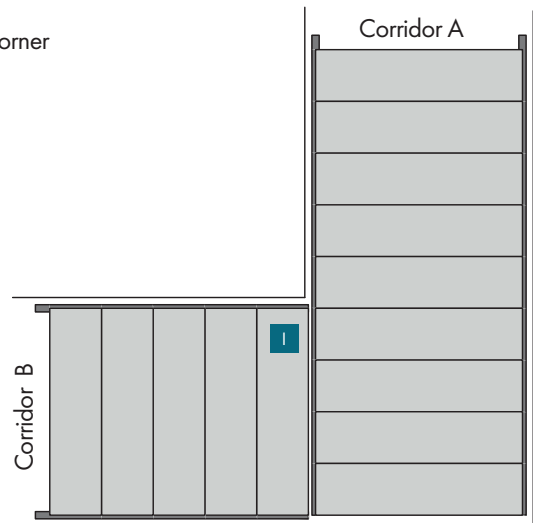
In these situations, the wall bracket can be suspended either with two threaded rods or one threaded rod and fixed by an angle bracing.

T-junction



Corridor A runs through, corridor B connects to it and forms a T-junction.

Corner



Corridor A runs to the end, corridor B connects to it and forms a transition.

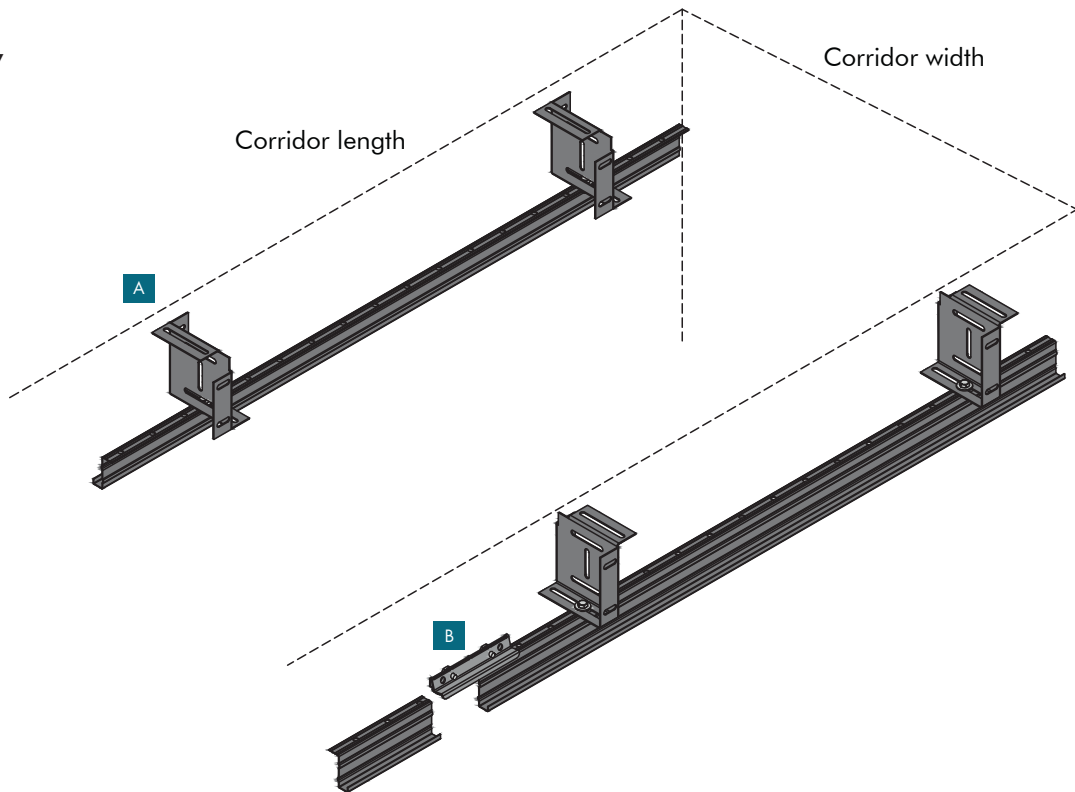
METAL F-H 600

Wall bracket + J-Bar secondary grid
Concealed grid corridor solution for indoor applications

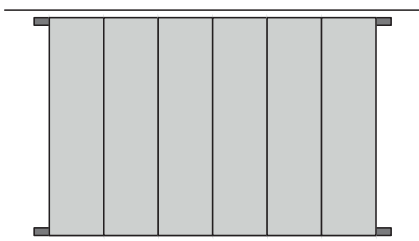
General information

- Concealed hook-on grid system for corridors
- Wall bracket (black coated) and J-Bar made of galvanised steel
- Typical ceiling weight 8.6 - 9.5 kg/m² (indicative value for unperforated panels, without additional load)
- With variable shadow gap along the walls
- Panels are easily installed and fully demountable
- Optional security brackets available
- Suitable for large panel sizes and chilled ceilings

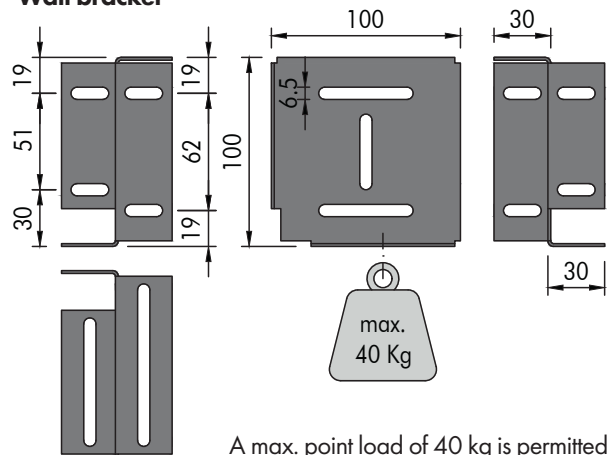
Isometric view



Vario Design layout options

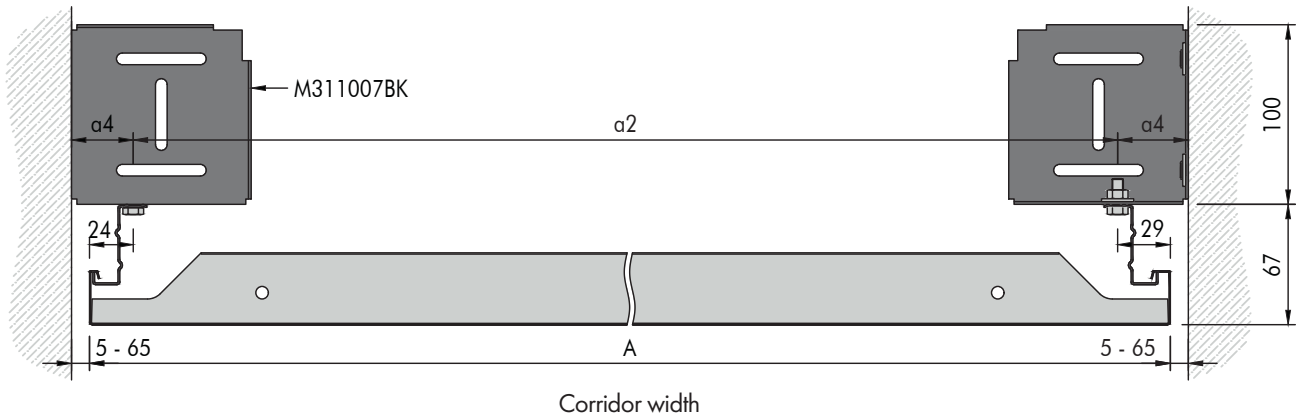


Wall bracket

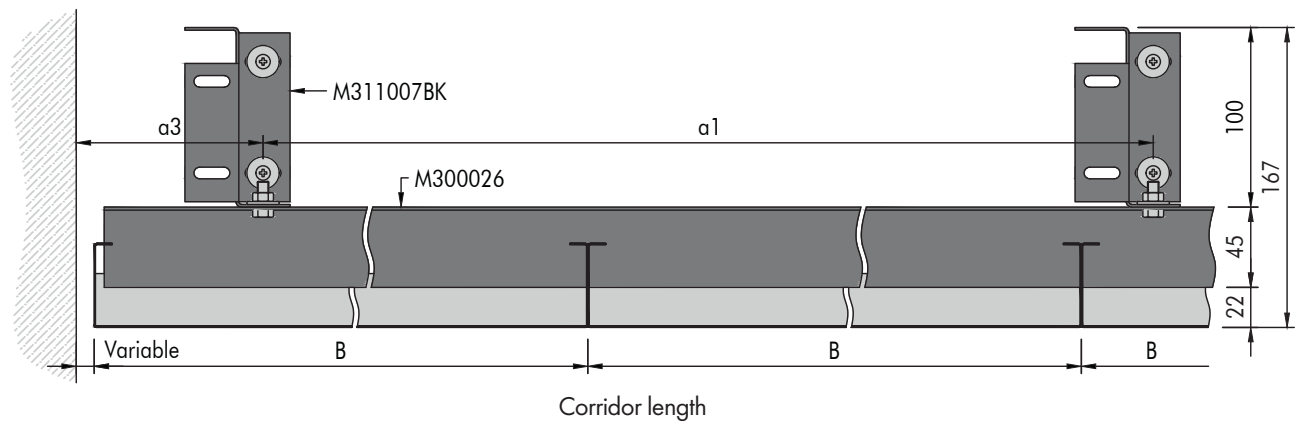


A max. point load of 40 kg is permitted.

Section C



Section D



Grid components

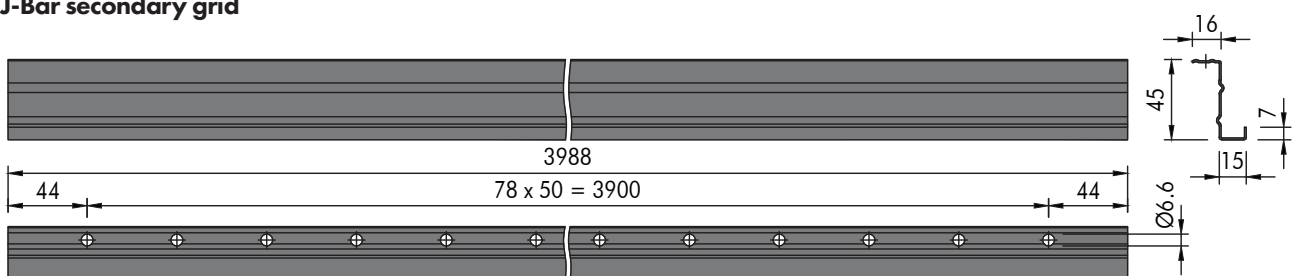
Standard components

- M311007BK Wall bracket
- M300026 J-Bar
- M300307 Splice connector for J-Bar
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm

Optional components

- M311218 Security bracket
- M311191 Self-drilling screw 3.5 x 9.5 mm
- M311051 Primary angle 3000 x 27 x 22 mm
- M311099 Threaded rod M6 x 1000 mm
- M215110 RA 1 perimeter trim 4000 x 20 x 20 mm RAL 9010

J-Bar secondary grid



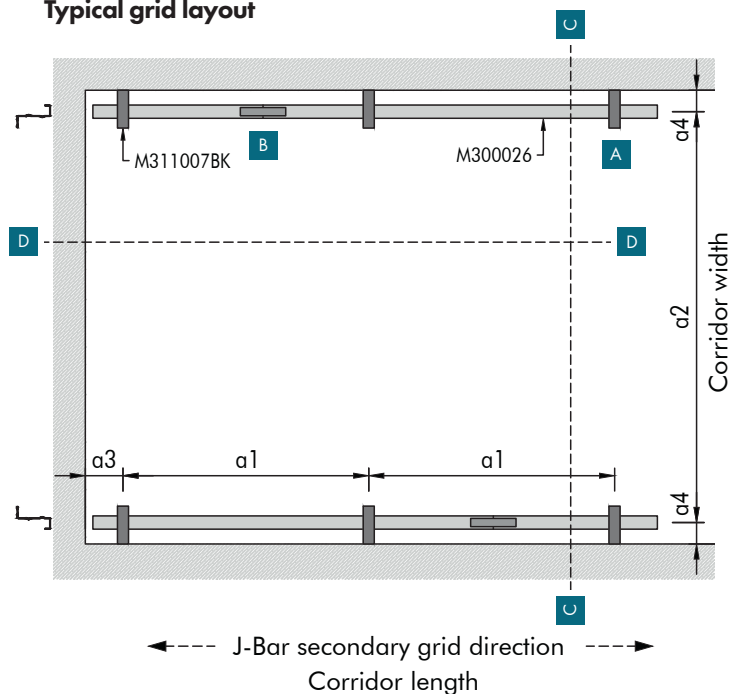
Spacing

System without additional load		System with additional load +4 kg/m ²	
a2	a1	a2	a1
[mm]	[mm]	[mm]	[mm]
1000	1750	1000	1550
1050	1700	1050	1500
1100	1650	1100	1500
1150	1600	1150	1450
1200	1600	1200	1450
1250	1550	1250	1400
1300	1550	1300	1350
1350	1500	1350	1350
1400	1450	1400	1300
1450	1450	1450	1250
1500	1400	1500	1250
1550	1400	1550	1250
1600	1400	1600	1250
1650	1350	1650	1200
1700	1350	1700	1200
1750	1300	1750	1200
1800	1300	1800	1150
1850	1300	1850	1150
1900	1250	1900	1150
1950	1250	1950	1100
2000	1250	2000	1100
2050	1200	2050	1100
2100	1200	2100	1100
2150	1200	2150	1050
2200	1150	2200	1050
2250	1150	2250	1050
2300	1150	2300	1050
2350	1150	2350	1000
2400	1100	2400	1000
2450	1100	2450	1000
2500	1100	2500	1000
2600	1100	2500	950
2700	1050	2500	950
2800	1050	2500	950
2900	1000	2500	900
3000	1000	2500	900
3100	1000	2500	900
3200	950	2500	850
3300	950	2500	850

Parameters

- a1 Distance of wall brackets
- a2 Distance between J-Bars fixing points = A - 53 mm
- a3 Distance from wall = max. 200 mm
- a4 Variable distance from wall to J-Bar fixing point
- M Module size = panel length / panel width
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

Typical grid layout



To determine suspension layout

The panel length (A) of the requested ceiling -53 mm is equal to the distance between the J-Bar centres (a2).

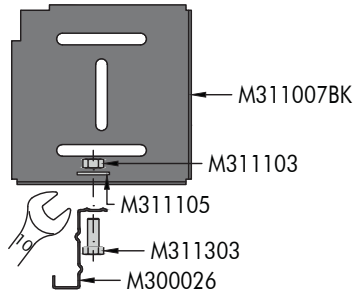
On the appropriate spacing table, read down the column headed (a2) to the required panel length then read across to determine the wall bracket spacing (a1).

The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail A

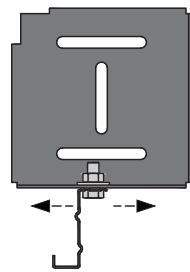
J-Bar installation

1



Fix the J-Bar with fasteners below the wall bracket.

2

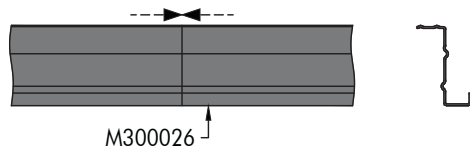


The J-Bar is now locked in position.

Detail B

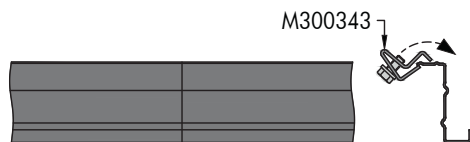
Splice connection

1



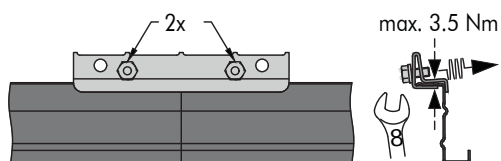
The ends of the J-Bars should be butt together without a gap.

2



The connectors for the J-Bars must be inserted from above.

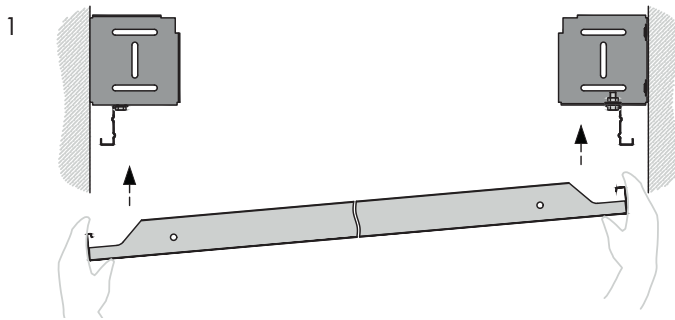
3



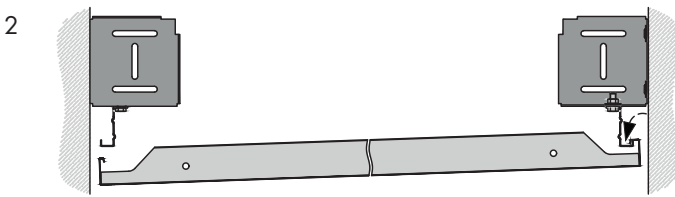
Use the bolts to secure the connector. Stagger the joints.

Detail E

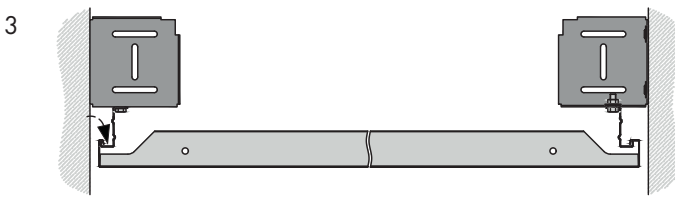
Panel insertion



The panels are designed asymmetrically so that they can be hooked on effortlessly.

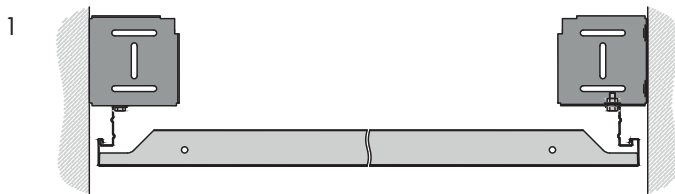


Hook the side with the wider hook edge detail into the J-Bar first.

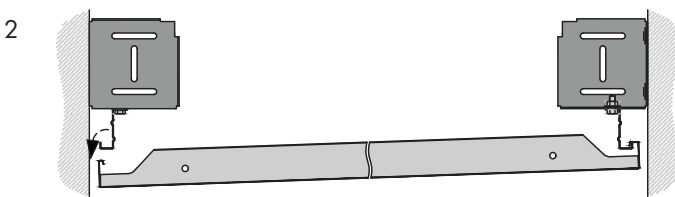


Followed by the side with the narrower hook edge detail.

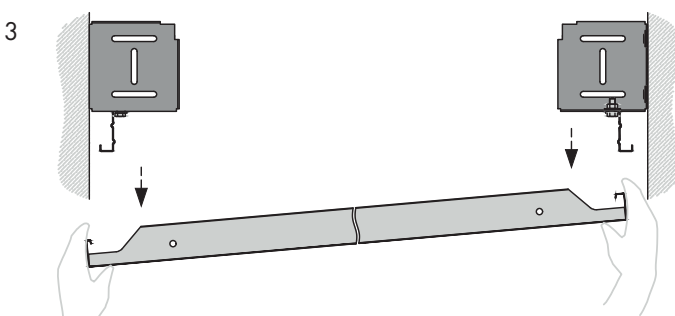
Panel extraction



Each panel can be removed individually.



Unhook the side with the narrower hook edge detail first.



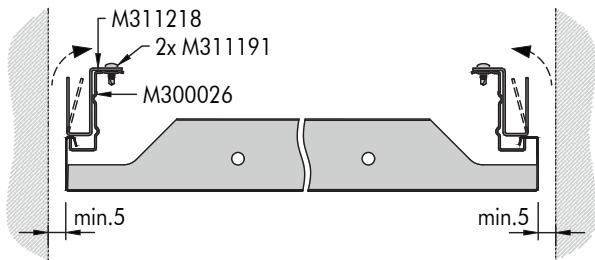
Followed by the side with the wider hook edge detail.



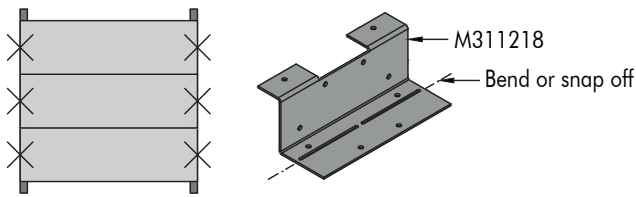
Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Detail F

Optional security bracket



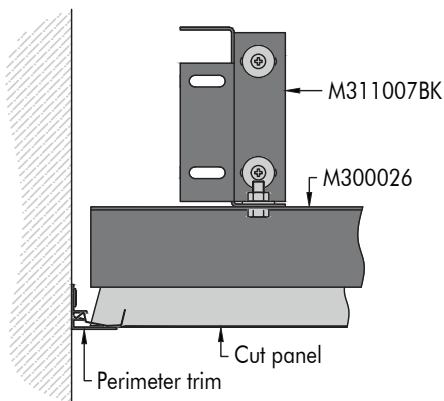
The security bracket serves to secure the panels and prevents them from being removed. The security bracket can be fixed to the J-Bar with two self-drilling screws. The easiest way is from above, but a minimum height is required for this. The bottom tab of the security bracket can either be bent up by hand or snapped off entirely.



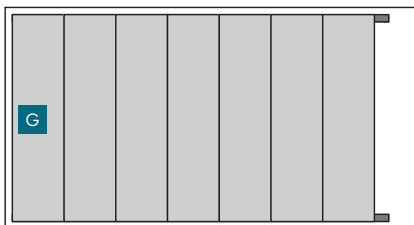
Either individual panels or the entire ceiling can be secured. The panels are inserted and secured immediately. The last panel cannot be locked.

Detail G

Optional perimeter trim for cut panels

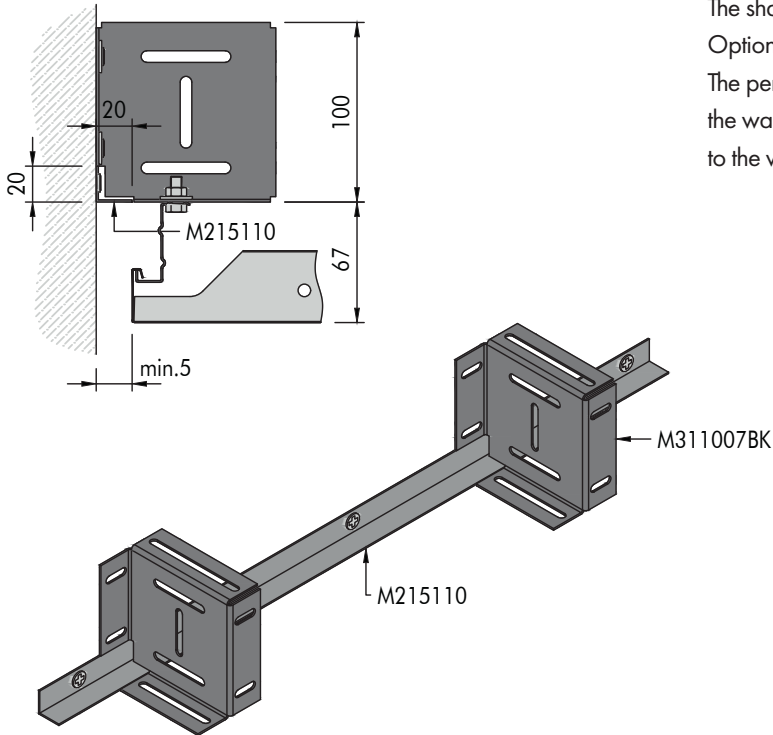


The last panel at the end of the corridor can be made to measure. A cost-effective alternative is to use a perimeter trim. This allows panels to be cut to size on site. See separate document for perimeter trim options.



Detail H

Optional perimeter trim for shadow gap



The shadow gap remains open in the standard version. Optionally, this can be covered with a perimeter trim. The perimeter trim is attached at the correct height so that the wall brackets can be placed on it and then attached to the wall.

Material required per m² (no waste included)

System without additional load [pcs/m²]

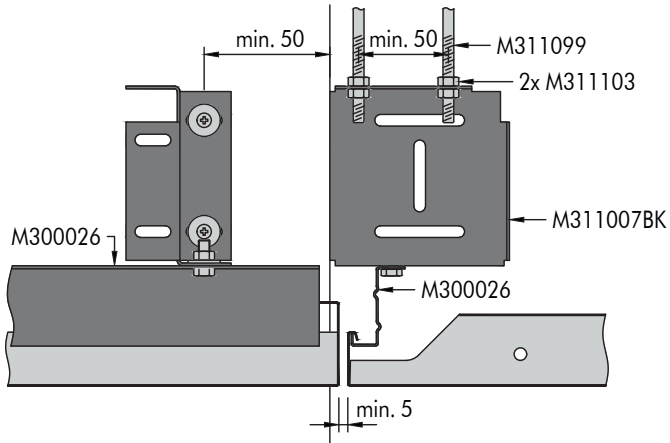
Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3000	3300
M300026	J-Bar	0.42	0.31	0.28	0.25	0.21	0.18	0.17	0.15
M300307	Splice connector for J-Bar	0.42	0.31	0.28	0.25	0.21	0.18	0.17	0.15
M311007BK	Wall bracket	1.28	1.09	1.01	1.00	0.88	0.68	0.67	0.64
M311103	Hexagonal nut M6	1.28	1.09	1.01	1.00	0.88	0.68	0.67	0.64
M311105	Washer	1.28	1.09	1.01	1.00	0.88	0.68	0.67	0.64
M311303	Hexagonal bolt M6 x 16 mm	1.28	1.09	1.01	1.00	0.88	0.68	0.67	0.64

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation 100 m². This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

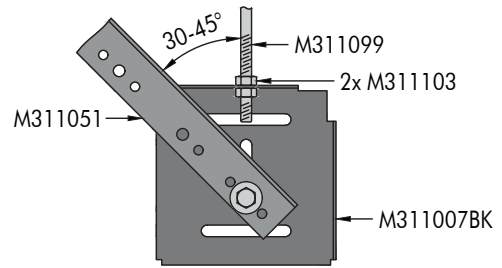
Not including optional items and extraction tools.

Detail I

Suspension option by double threaded rod

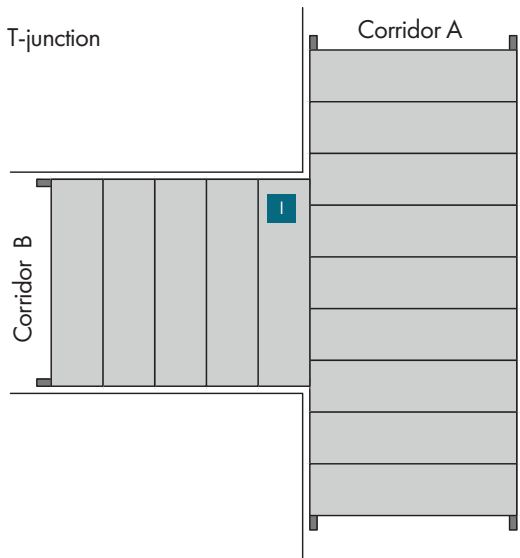


Suspension option by threaded rod with angle bracing



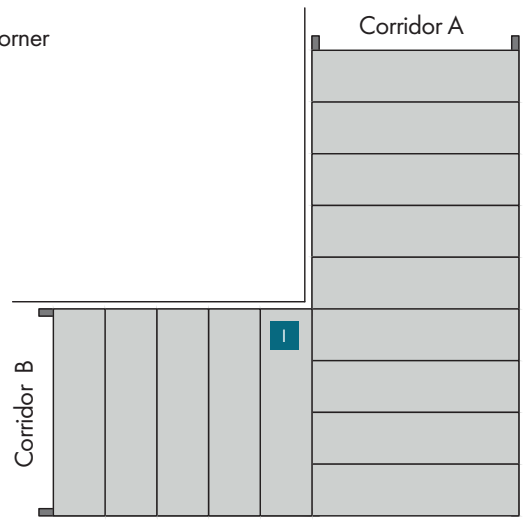
In these situations, the wall bracket can be suspended either with two threaded rods or one threaded rod and fixed by an angle bracing.

T-junction



Corridor A runs through, corridor B connects to it and forms a T-junction.

Corner



Corridor A runs to the end, corridor B connects to it and forms a transition.

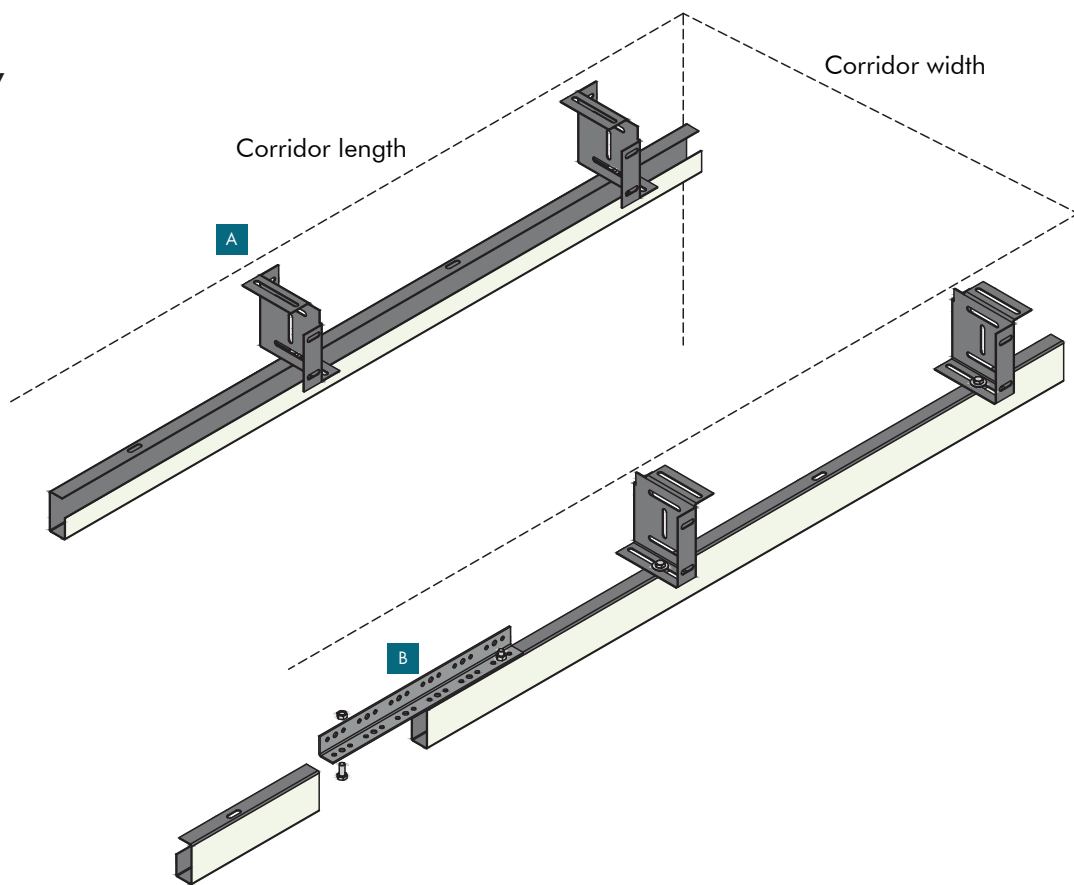
METAL F-H 600 SWING

Wall bracket + G-Profile secondary grid
Exposed grid corridor solution for indoor applications

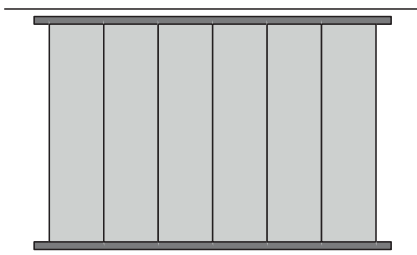
General information

- Exposed hook-on grid system for corridors
- Wall bracket (black coated) and G-Profile in RAL 9010 made of galvanised steel
- Typical ceiling weight 9.1 - 10.6 kg/m² (indicative value for unperforated panels, without additional load)
- With variable shadow gap along the walls
- Panels are easily installed and fully demountable
- Panels with swing down function
- Suitable for large panel sizes and chilled ceilings

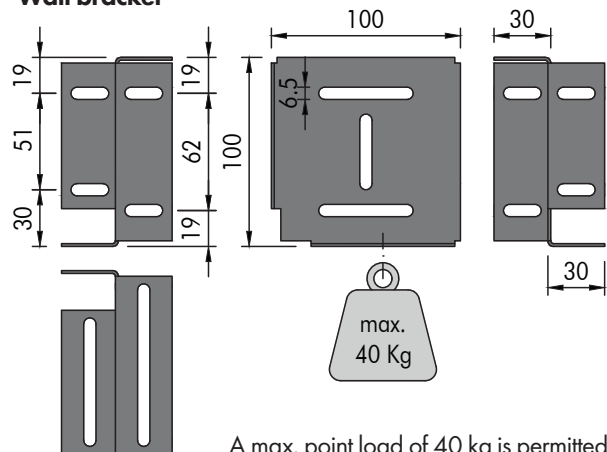
Isometric view



Vario Design layout options

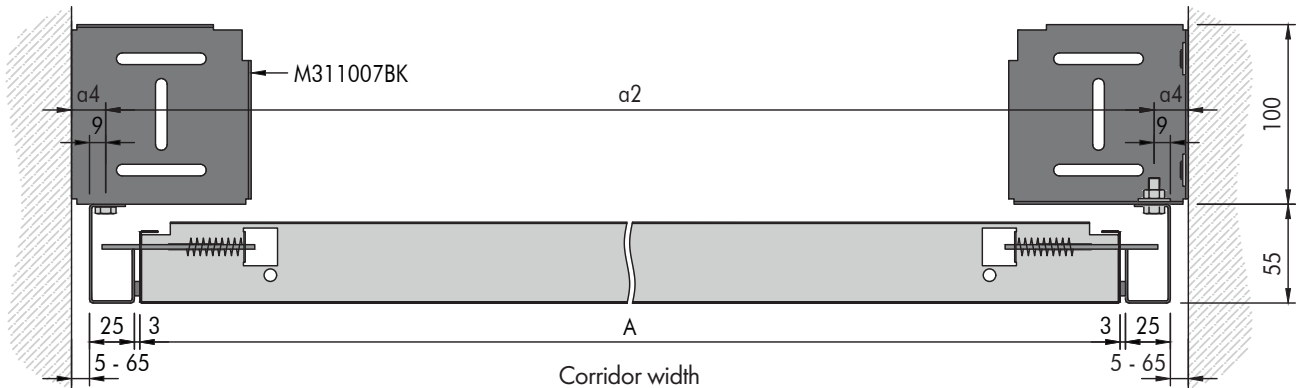


Wall bracket

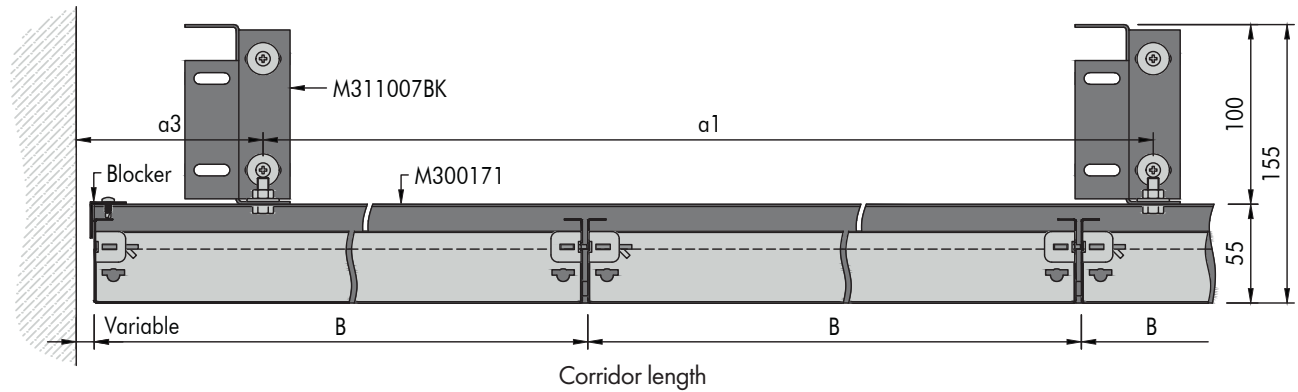


A max. point load of 40 kg is permitted.

Section C



Section D



Panels supplied as standard with a 3 mm gasket on one long and both short sides to improve the visual appearance. An option without gasket is not possible. Be careful with the last panel. Make sure that it cannot fall off the G-Profile. Use a blocker, in the shape of an angle.

Grid components

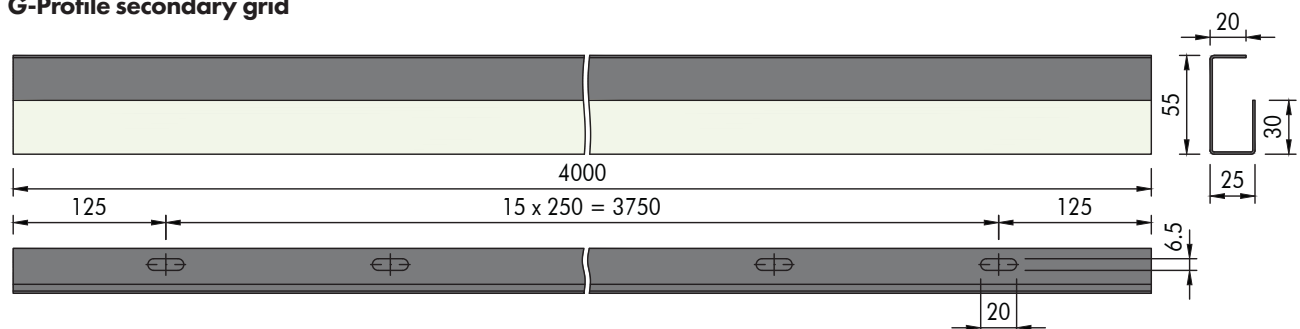
Standard components

- M311007BK Wall bracket
- M300171 G-Profile RAL 9010
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm
- M311051 Primary angle 3000 x 27 x 22 mm

Optional components

- M311099 Threaded rod M6 x 1000 mm
- M215110 RA 1 perimeter trim 4000 x 20 x 20 mm RAL 9010
- M311051 Black gasket 8x3 mm (spare roll)

G-Profile secondary grid



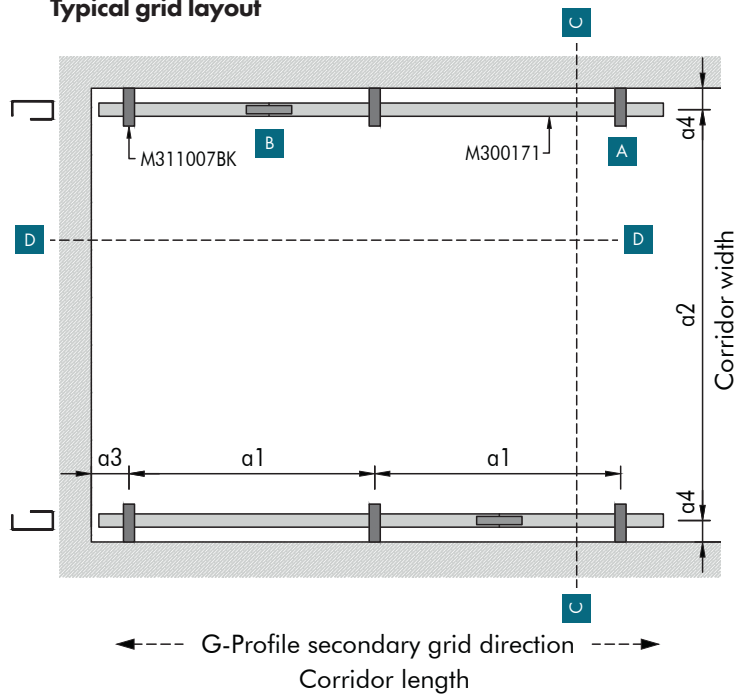
Spacing

System without additional load		System with additional load +4 kg/m ²	
a2	a1	a2	a1
[mm]	[mm]	[mm]	[mm]
1000	1750	1000	1500
1050	1750	1050	1500
1100	1750	1100	1500
1150	1750	1150	1500
1200	1500	1200	1500
1250	1500	1250	1250
1300	1500	1300	1250
1350	1500	1350	1250
1400	1500	1400	1250
1450	1250	1450	1250
1500	1250	1500	1250
1550	1250	1550	1250
1600	1250	1600	1250
1650	1250	1650	1000
1700	1250	1700	1000
1750	1250	1750	1000
1800	1250	1800	1000
1850	1000	1850	1000
1900	1000	1900	1000
1950	1000	1950	1000
2000	1000	2000	1000
2050	1000	2050	1000
2100	1000	2100	1000
2150	1000	2150	1000
2200	1000	2200	1000
2250	1000	2250	1000
2300	1000	2300	750
2350	1000	2350	750
2400	1000	2400	750
2450	1000	2450	750
2500	750	2500	750
2600	750	2500	750
2700	750	2500	750
2800	750	2500	750
2900	750	2500	750
3000	750	2500	750
3100	750	2500	750
3200	750	2500	750
3300	750	2500	750

Parameters

- a1 Distance of wall brackets
- a2 Distance between G-Profile fixing points = A - 38 mm
- a3 Distance from wall = max. 200 mm
- a4 Variable distance from wall to G-Profile fixing point
- M Module size = panel length / panel width
- A Panel length = min. 600 / max. 3300 mm
- B Panel width = min. 247 / max. 1350 mm

Typical grid layout



To determine suspension layout

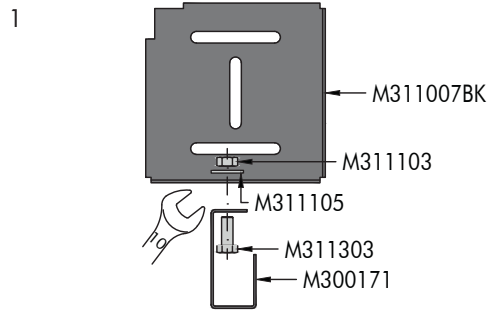
The panel length (A) of the requested ceiling -38 mm is equal to the distance between the G-Profile centres (a2).

On the appropriate spacing table, read down the column headed (a2) to the required panel length then read across to determine the wall bracket spacing (a1).

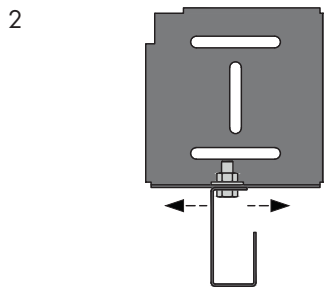
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail A

G-Profile installation



Fix the G-Profile with fasteners below the wall bracket.



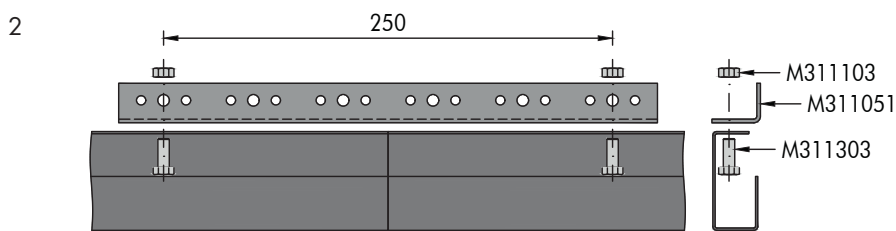
The G-Profile is now locked in position.

Detail B

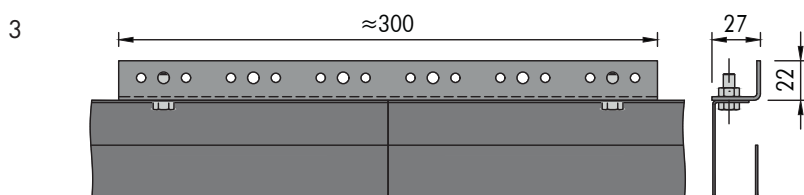
Splice connection



The ends of the G-Profiles should be butt together without a gap.



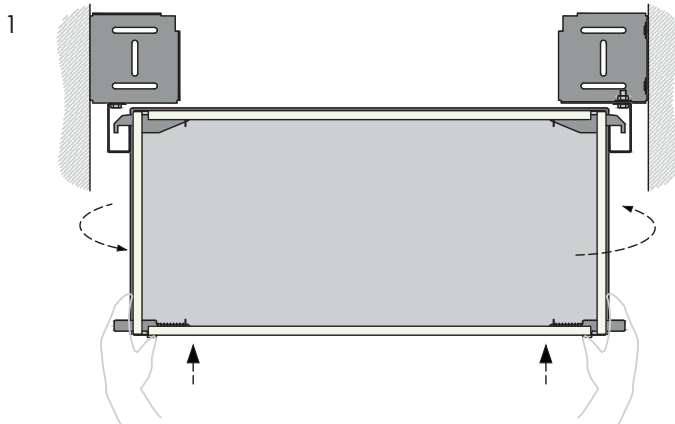
Use a primary angle and cut it to a length of ≈ 250 mm.



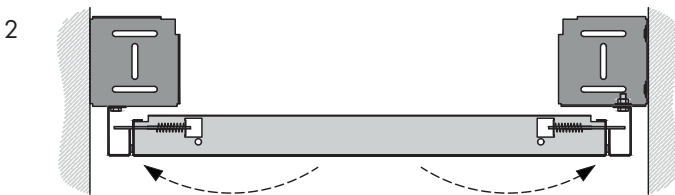
Use the bolts to screw it together. Stagger the joints.

Detail E

Panel insertion

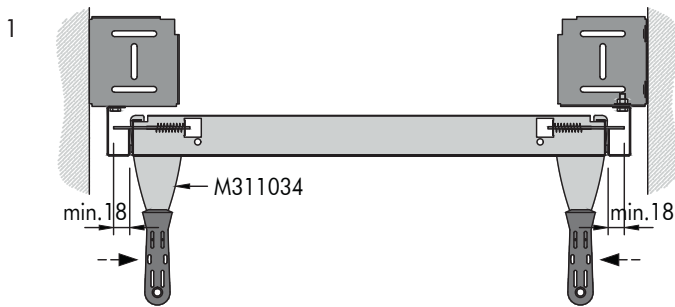


Unlike panels without a swing-down function, these are hung vertically in the G-Profiles. These have to be turned in slightly in order to be able to be hung on the G-Profiles.

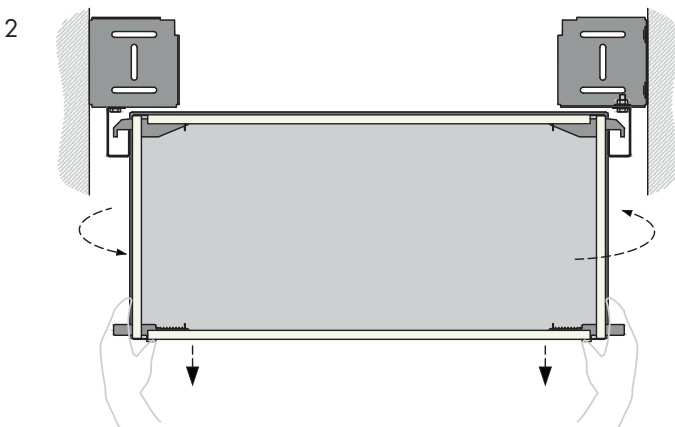


The panels can then be swung up. The brackets are carefully pushed inwards until they pass the G-Profile. Be careful that the brackets do not scratch the G-Profile.

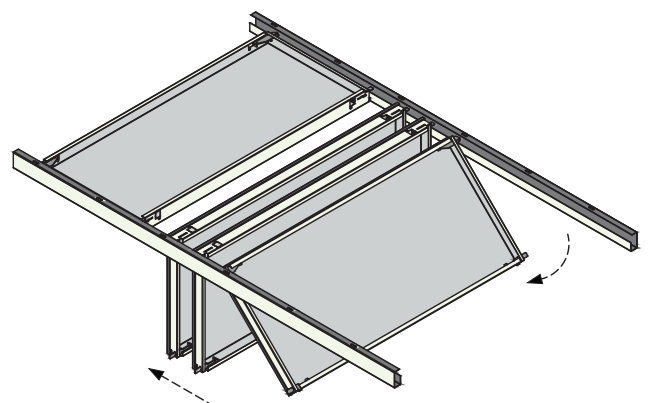
Panel extraction



Use the extraction tool to release the brackets on the panel. Swing the panel down carefully. The panels swing-down over the long side. Insert the extraction tool carefully to avoid damaging the gasket.

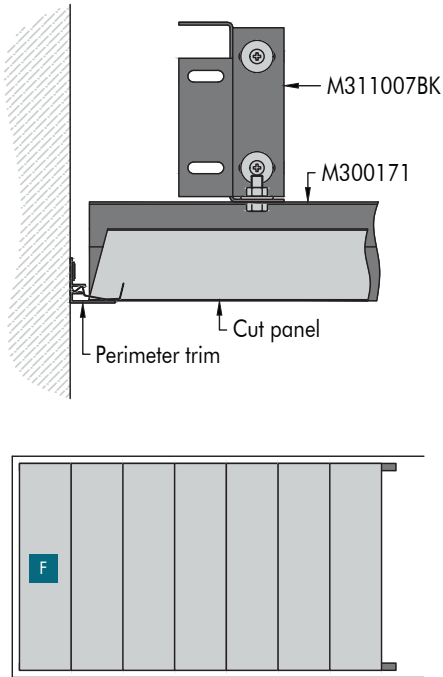


Move the panel aside to allow access to the plenum. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the G-Profile.



Detail F

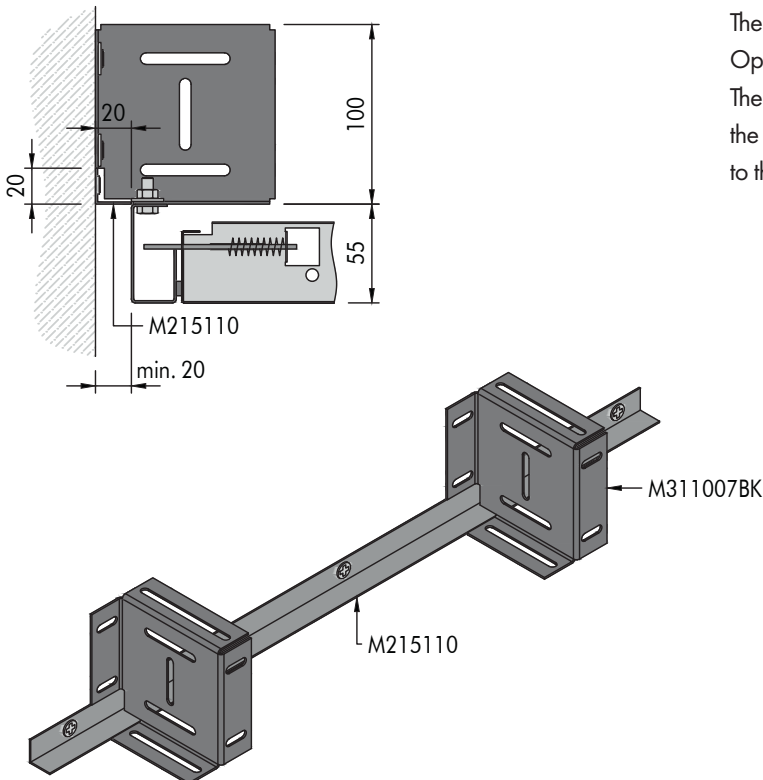
Optional perimeter trim for cut panels



The last panel at the end of the corridor can be made to measure. A cost-effective alternative is to use a perimeter trim. This allows panels to be cut to size on site. As a result, the last panel can no longer be swung down. See separate document for perimeter trim options.

Detail G

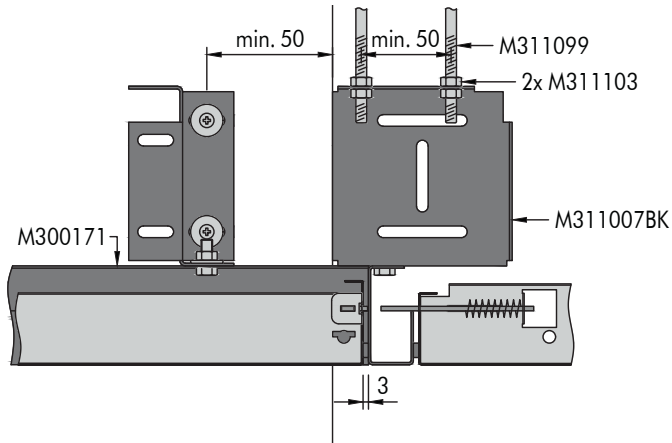
Optional perimeter trim for shadow gap



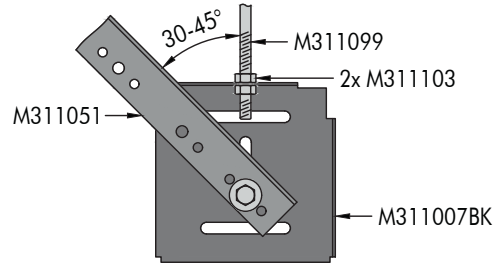
The shadow gap remains open in the standard version. Optionally, this can be covered with a perimeter trim. The perimeter trim is attached at the correct height so that the wall brackets can be placed on it and then attached to the wall.

Detail H

Suspension option by double threaded rod

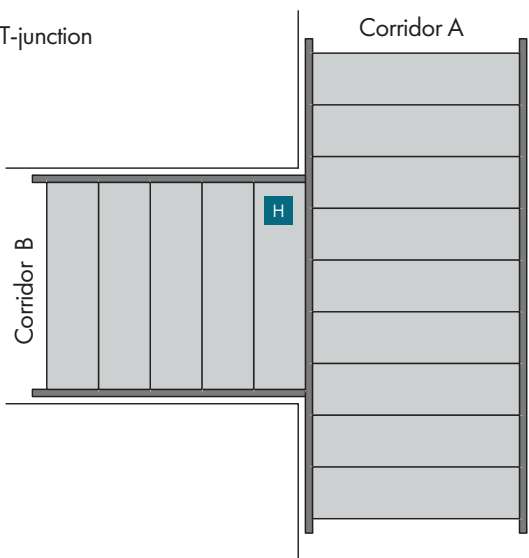


Suspension option by threaded rod with angle bracing



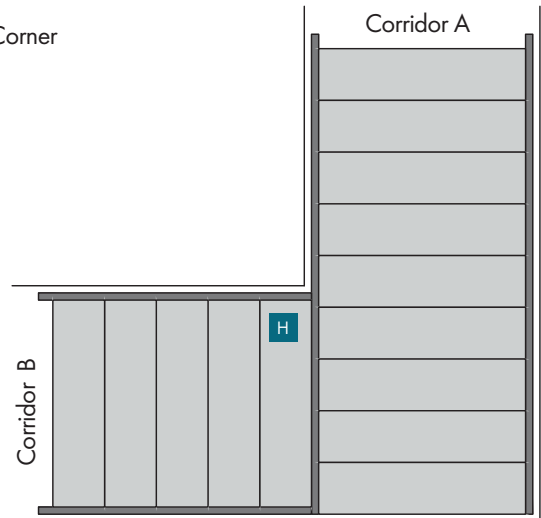
In these situations, the wall bracket can be suspended either with two threaded rods or one threaded rod and fixed by an angle bracing.

T-junction



Corridor A runs through, corridor B connects to it and forms a T-junction.

Corner



Corridor A runs to the end, corridor B connects to it and forms a transition.

Material required per m² (no waste included)System without additional load [pcs/m²]

Components	a2 [mm]	1200	1600	1800	2000	2400	2800	3000	3300
M300171	G-Profile RAL 9010	0.42	0.31	0.28	0.25	0.21	0.18	0.17	0.15
M311007BK	Wall bracket	1.11	1.00	0.89	1.00	0.83	0.95	0.89	0.81
M311051	Primary angle 3000 x 27 x 22 mm	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01
M311103	Hexagonal nut M6	1.53	1.31	1.17	1.25	1.04	1.13	1.06	0.96
M311105	Washer	1.11	1.00	0.89	1.00	0.83	0.95	0.89	0.81
M311303	Hexagonal bolt M6 x 16 mm	1.53	1.31	1.17	1.25	1.04	1.13	1.06	0.96

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation 100 m². This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including optional items.



FLOATING CEILING – CANOPIES

METAL SONIC ELEMENT

Hanging wire kit

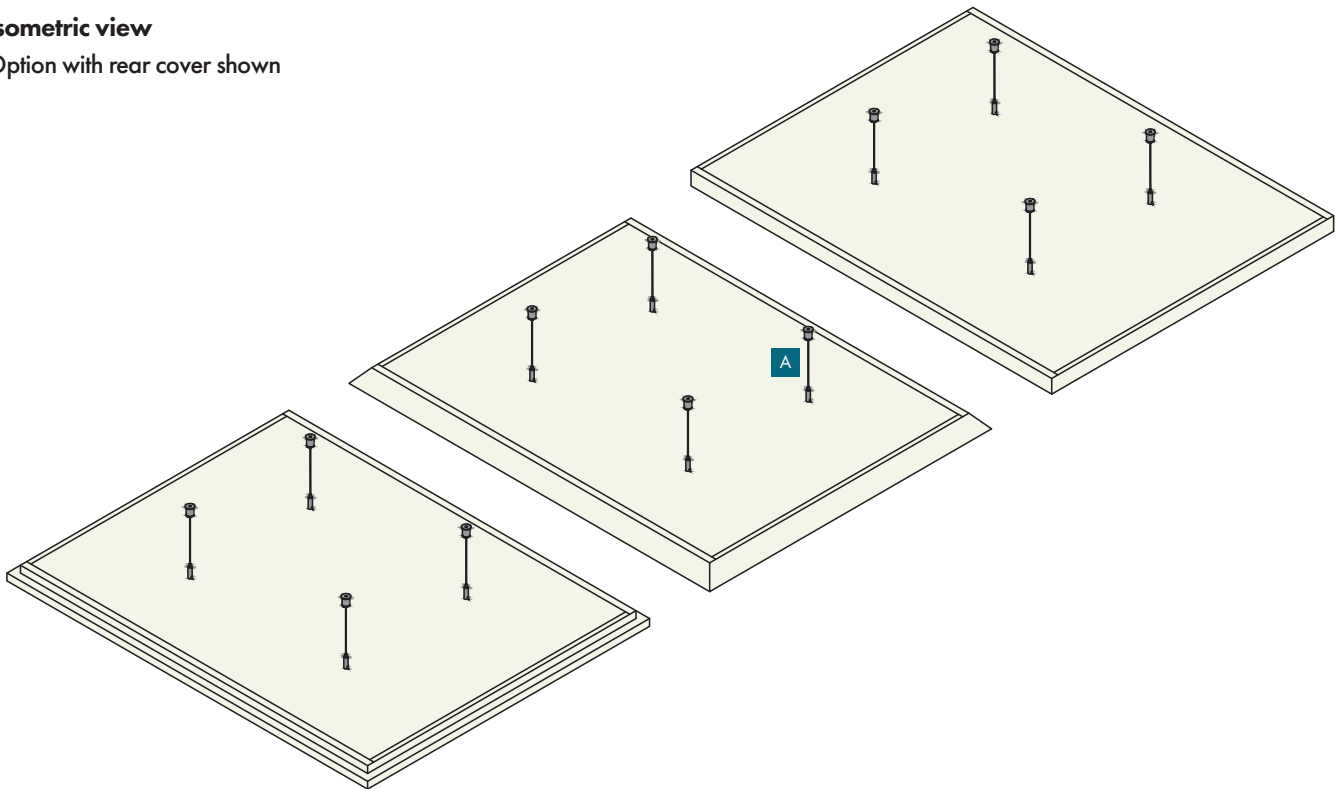
Single canopy solution for indoor applications

General information

- Hanging wire kit for single suspension in open spaces
- Optional acoustic pad and rear cover (factory fixed by pop-rivets)
- Typical canopy weight 4.3 - 26.0 kg/m² (indicative value for unperforated canopies, without additional load)
- Canopies are easily installed and fully demountable
- Acoustic & design elements

Isometric view

Option with rear cover shown



Important information:

The hanging wires are supplied in a length of 4000 mm. If the room height is lower than this, the suspension points can be attached to the back of the canopy while it is on the ground. Please make sure that the visible side is protected during the assembly and cannot be scratched.

In general, be careful when handling and transporting these large and heavy items.

The canopy was primarily designed for horizontal installation. Slight angles are possible, but the limit must be checked beforehand.

This installation depends on the dimensions and configuration of the canopy.

Since these are single canopies, a lateral distance of at least 200 mm is recommended for installation.

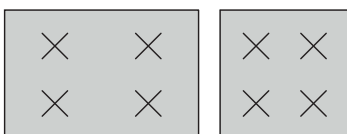
On request, the canopy can be supplied with a rear cover.

This prevents dust and dirt from entering the canopy. This makes cleaning easier.

Vario Design layout options:

Rectangular

Square

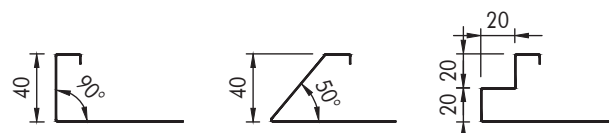


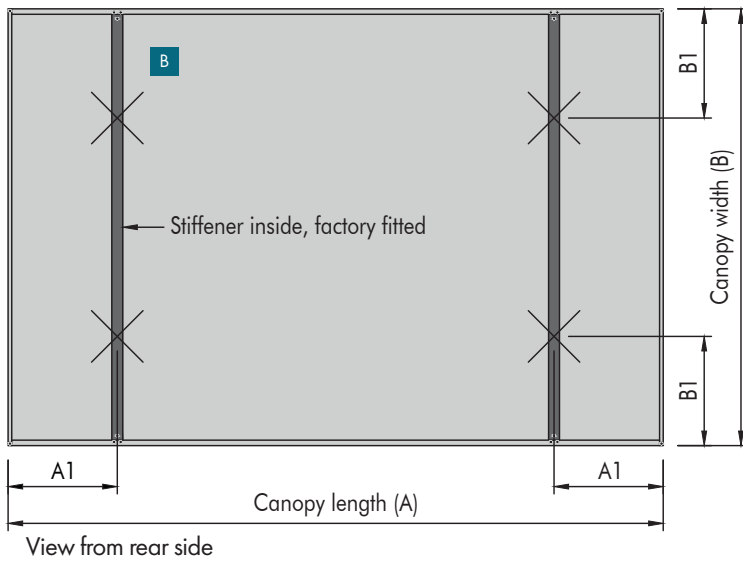
Canopy edge detail options:

90° edge

50° edge

20x20 mm edge



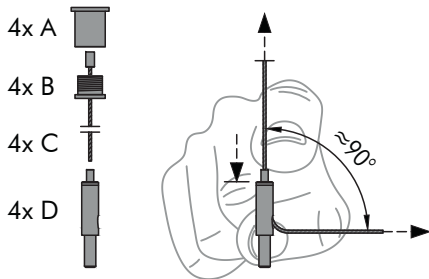


Parameters

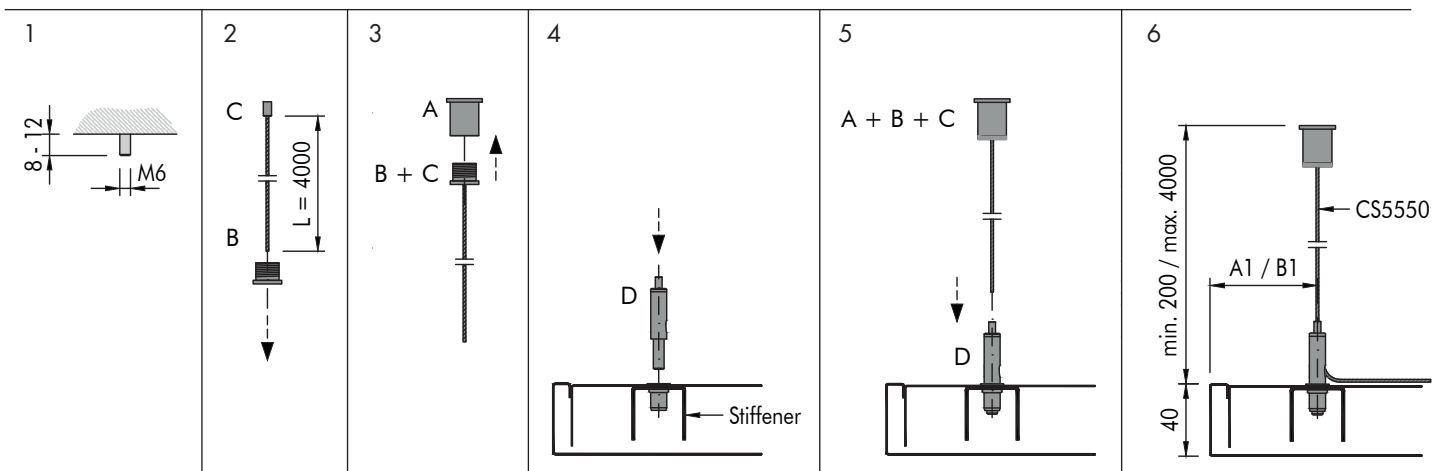
- A Canopy length = min. 600 / max. 1800 mm
- A1 (A = 600 - 899) = 100 - 150 mm
(A = 900 - 1800) = 150 - 300 mm
- B Canopy width = min. 600 / max. 1200 mm
- B1 (A = 600 - 899) = 100 - 150 mm
(A = 900 - 1200) = 150 - 300 mm

Detail A

CS5550 Wire hanging kit installation



- 1 Place an M6 threaded bolt on the ceiling soffit by others.
- 2 Take the hanging wire (C) and loop it through the top of the gripper anchor cap (B).
- 3 Screw the gripper anchor cap (B) onto the structure gripper anchor (A).
- 4 Screw the height adjuster (D) into the stiffener on the back of the canopy.
- 5 Guide the hanging wire (C) into the height adjuster (D). Pull the wire through the height adjuster, in an angle of $\approx 90^\circ$. Do not pull the wire upwards, otherwise it may be damaged.
- 6 Then either roll up the wire and deposit it on the canopy or cut it away. After cutting it away, it can no longer be adjusted in height. Repeat this for all four suspension points.



METAL SKY ELEMENT CLIP

(METAL D-CLIP)

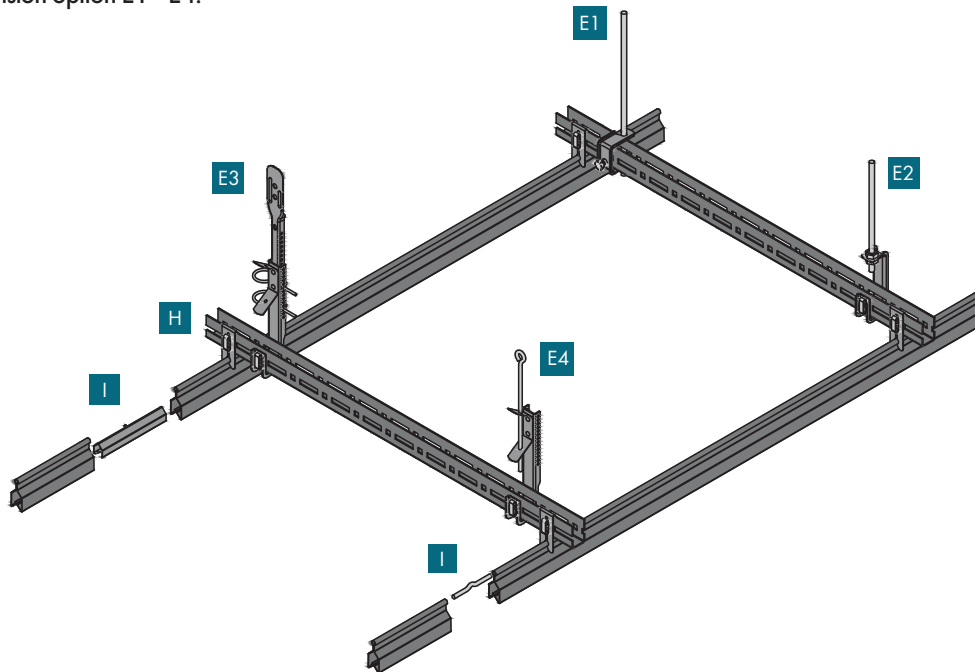
U-Profile primary grid + DP12 A-Bar secondary grid
Concealed grid solution for indoor applications

General information

- Concealed clip-in grid system for a single row of panels in open spaces
- For perpendicular installation on U-Profile primary grid
- DP12 A-Bar made of galvanised steel
- Typical ceiling weight 7.0 - 8.0 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable
- Optional swing-down function for standard panels
- DP12 A-Bar made of galvanised steel

Isometric view

Select the suspension option E1 - E4.



Vario Design layout options

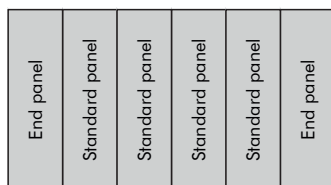
Single



Double

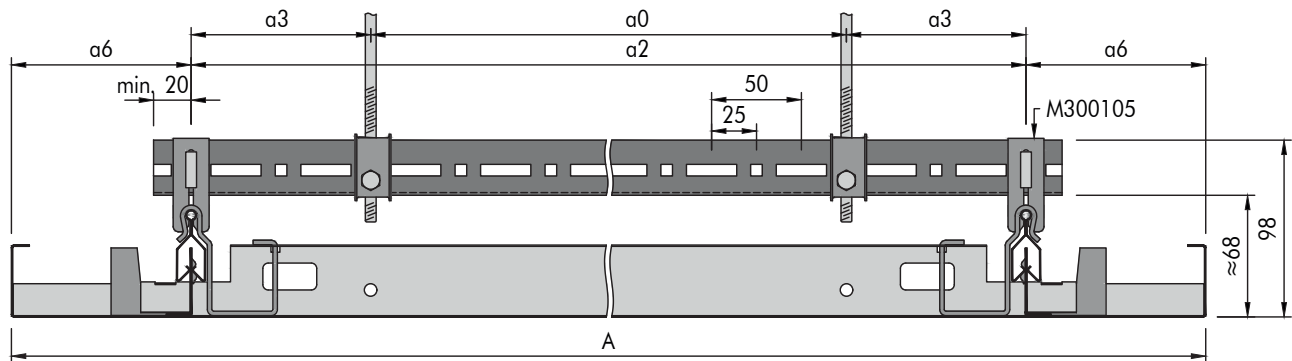


Multiple



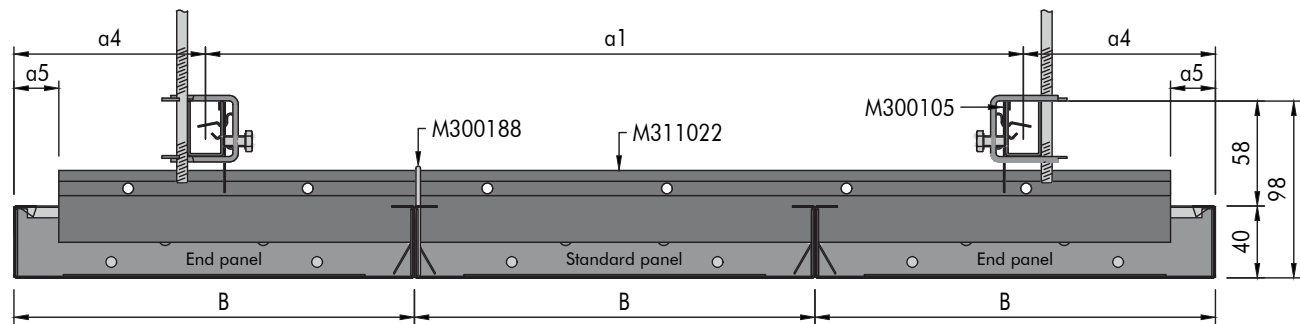
Section F

Example with suspension option E1



Section G

Example with suspension option E1



Secondary grid components

Standard components

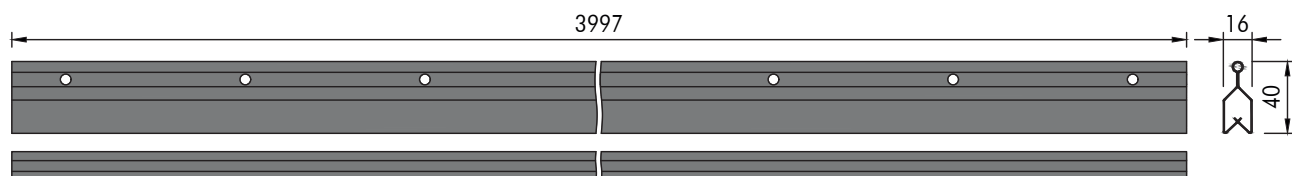
- M311022 DP12 A-Bar
- M300138 Connection pin for DP12 A-Bar
- M300105 Hanger for DP12 A-Bar
- M300120 Plug-in clip for U-Profile

Optional components

- M300106 Security clip
- M311028 Extraction tool
- M311023 Splice connector for DP12 A-Bar
- M311191 Self-drilling screw 3.5 x 9.5 mm
- M300188 Swing down clip for Access function (DP12 A-Bar)

See U-Profile primary grid for primary grid components.

DP12 A-Bar secondary grid



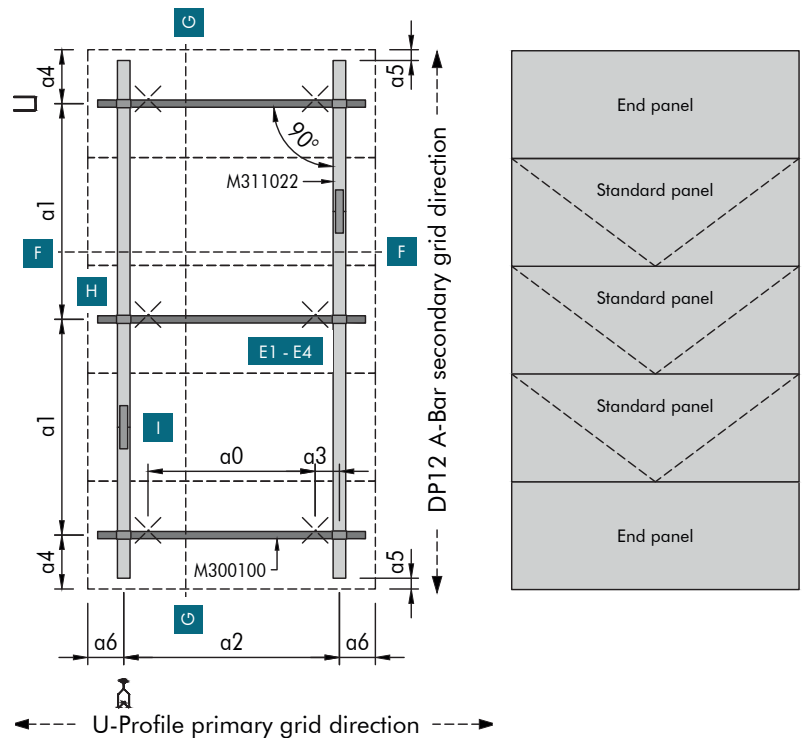
Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
800	700	1500	800	700	1400
900	800	1500	900	800	1400
1000	900	1500	1000	900	1400
1100	1000	1500	1100	1000	1400
1200	1100	1500	1200	1100	1400
1300	1200	1500	1300	1200	1400
1400	1300	1100	1400	1300	750
1500	1400	1100	1500	1400	750
1600	1500	1100	1600	1500	750
1700	1600	1100	1700	1600	750
1800	1700	1100	1800	1700	750
1900	1800	1100	1900	1800	750
2000	1900	1100	2000	1900	750
2100	1000	1100	2100	1000	750
2200	1050	1100	2200	1050	750
2300	1100	1100	2300	1100	750

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between DP12 A-Bars = panel length (A) - 2x a6
- a3 Distance from U-Profile suspension point to hanger = max. 100 mm
- a4 Distance from end panel edge to U-Profile = min. 150 / max. 350 mm
- a5 Distance from end panel edge to DP12 A-Bar = min. 15 / max. 30 mm
- a6 Distance from panel edge to hanger = 100 mm
- A Panel length = min. 600 / max. 2500 mm
- B Panel width = min. 250 / max. 600 mm

Typical grid layout



To determine suspension layout

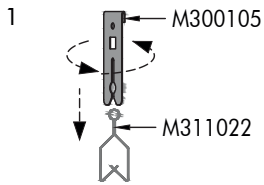
The panel length (A) of the requested ceiling is equal to the distance between the DP12 A-Bar centres (a2) - 2x (a6).

On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) and U-Profile spacing (a1).

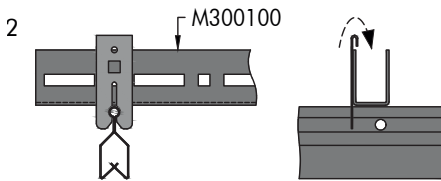
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

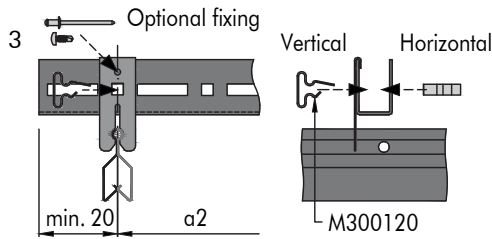
Hanger installation



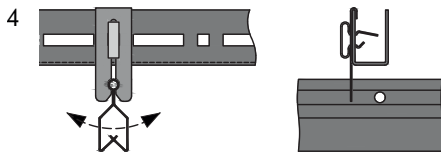
The hanger for DP12 A-Bar is made of spring steel and is therefore elastic. It is twisted on the DP12 A-Bar from above. Then it can be slid to the correct position.



Hang the DP12 A-Bar with the hangers under the U-Profile.



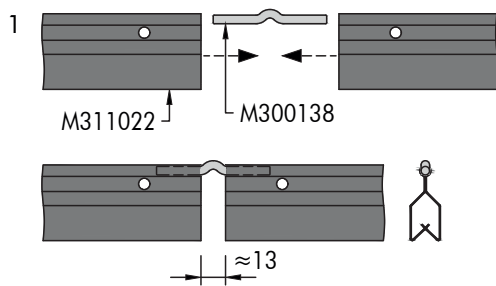
Fix hanger with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the panel size does not fit with the modulation of the U-Profile in 25 mm increments, the plug-in clip needs to be inserted into a long hole. The hanger position can be fixed by using a pop-riquet or self-drilling screw.



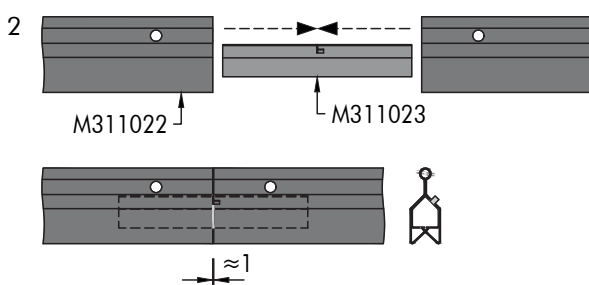
The DP12 A-Bar is now locked in position. Due to the round head of the DP12 A-Bar, it can swing. This is important because it allows any tolerances to be compensated. Otherwise the panels can no longer be inserted after a certain point.

Detail I

Splice connection



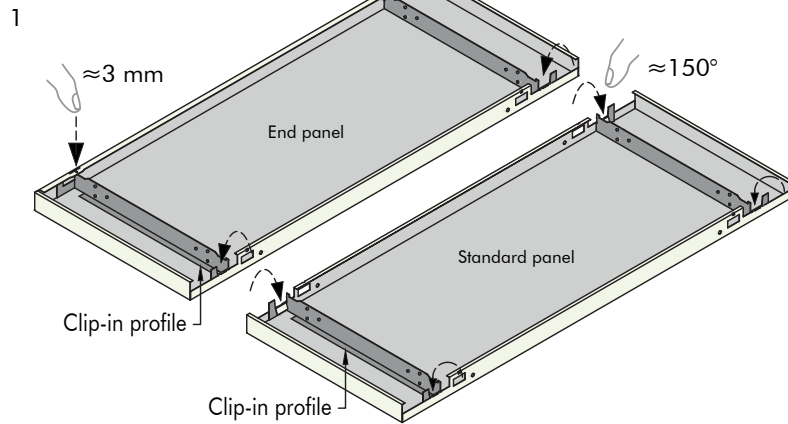
Insert the connection pin at the ends of the DP12 A-Bars and connect them. There is a gap between the DP12 A-Bars. The DP12 A-Bars must be aligned so that the joint is not in the same place as the pips on the panels.



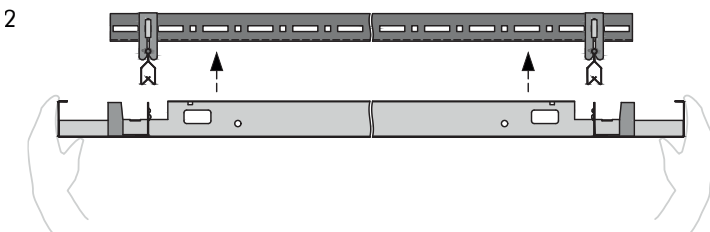
Optionally, the splice connector for DP12 A-Bar can be used. This is inserted at the ends of the DP12 A-Bars and an almost seamless connection is created.

Detail J

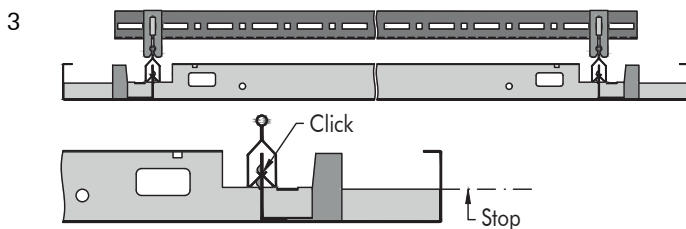
Panel insertion



The clip-in profiles are supplied loose and must be attached to the panels before insertion. The standard panels have two tabs on each long side, which are pressed inwards by $\approx 150^\circ$ with your finger. One long side of the end panel is visible. Therefore, the upper edge is carefully pressed down ≈ 3 mm until the profile sticks out a little at the top. This fixes the profiles.

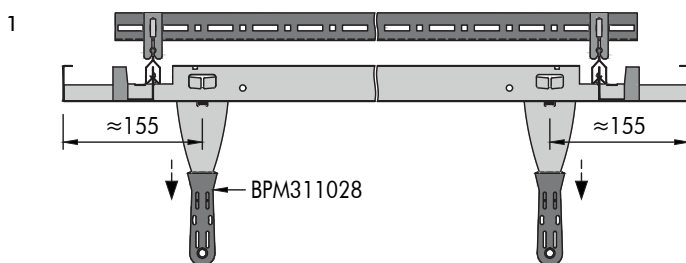


Take the panel and carefully insert it into the DP12 A-Bars from below. Be careful with the panels. Always press along the edges with the pips and never on the transverse sides, otherwise the panel may be damaged. The panels can only be laid in the same direction.

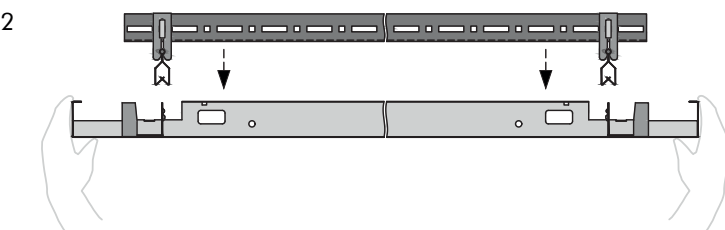


The panels are correctly inserted when all four corners are flush with the neighbouring panels. The panels are designed to match the DP12 A-Bar. If third party profiles are used there is a high probability the tiles will not be correctly inserted.

Panel extraction



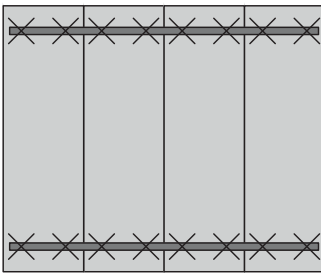
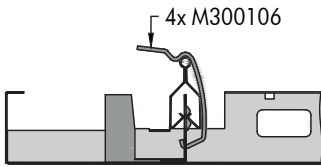
The panels are designed in such a way that the extraction tool can only be inserted in the designated places so that it clicks into place. There is a rectangular cut-out on the panels. It is therefore important that the appropriate extraction tool is used. This prevents damage to the panels. Insert the extraction tool on one side first and pull down with a gentle tug, followed by the opposite side.



Remove it downwards and store the panel in a safe place so that it cannot be damaged.

Detail K

Panel locking

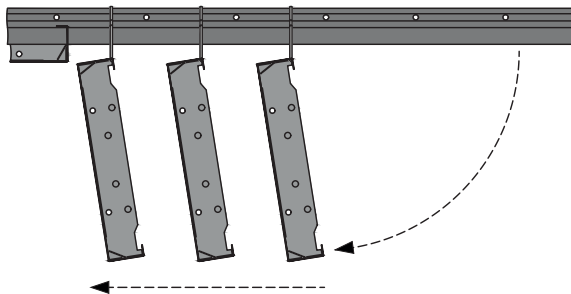


There are two holes in each of the clip-in profiles with which the panels can be fixed. First hook the security clip into the panel and then slip the upper end over the DP12 A-Bar. Four security clips are required per panel.

Either individual panels or the entire ceiling can be secured. The panels are inserted and secured immediately.

Detail L

Optional swing-down funktion

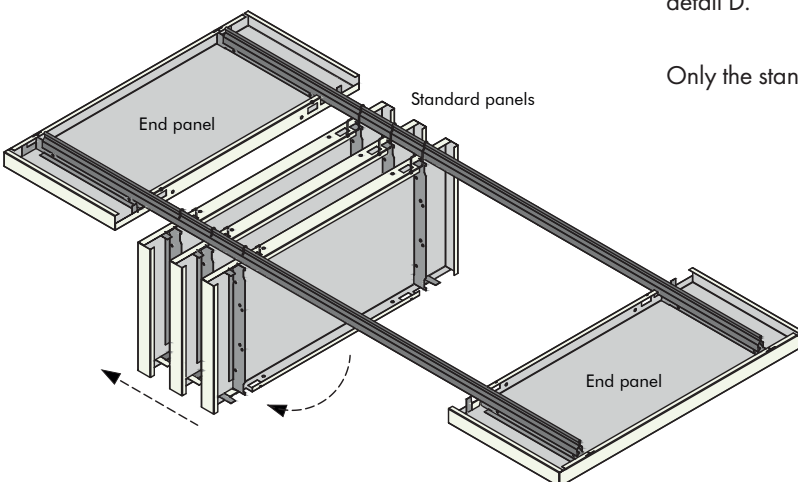


The panels are hinged-down over the long side. Up to three adjacent panels can be suspended at once. Do not exceed this number, otherwise the weight would be too high on the DP12 A-Bar. The panels are installed in the same direction (hook detail).

The panels are provided with two small holes, which are used to insert the Access swing-down clip. Once the clips are inserted, hook the panel on the DP12 A-Bar. Two clips per panel are needed.

The ceiling is accessed with the extraction tool, as shown under detail D.

Only the standard panels have a swing-down funktion.



METAL SKY ELEMENT HOOK

(METAL D-H 700)

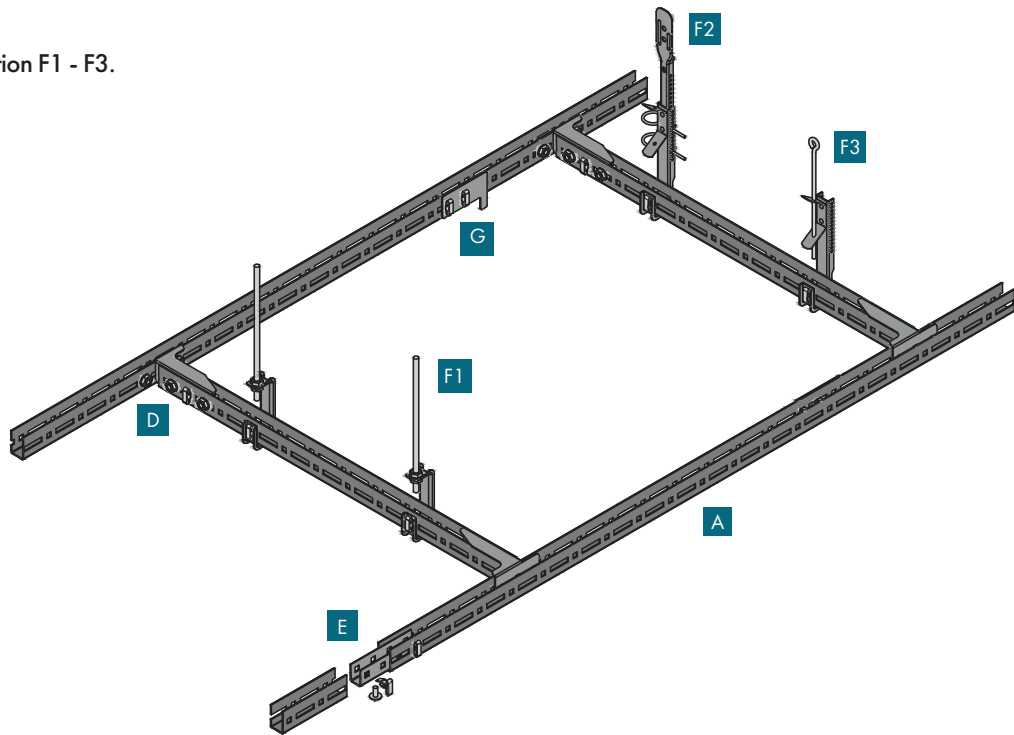
U-Profile cross-connected grid
Concealed grid solution for indoor applications

General information

- Concealed hook-on grid system for a single row of panels in open spaces
- For perpendicular installation on U-Profile primary grid
- U-Profile made of galvanised steel
- Typical ceiling weight 7.0 - 8.0 kg/m² (indicative value for unperforated panels, without additional load)
- Panels are easily installed and fully demountable
- Optional panel height of 65 mm for additional acoustic infills or chilled ceilings

Isometric view

Select the suspension option F1 - F3.



Important information

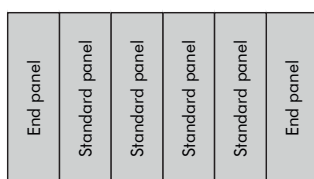
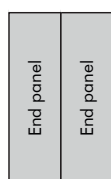
This system was developed for a single row of panels. In order for the components to be used, a panel length and width in increments of 25 mm must be maintained. For smaller module sizes, the U-Profile primary grid and the lateral U-Profiles can be assembled on the ground and then hung on the suspension points as a frame. Otherwise, the U-Profile primary grid is installed first and then the lateral U-Profiles attached to it.

Vario Design layout options

Single

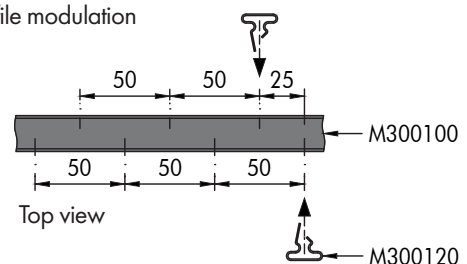
Double

Multiple



Detail A

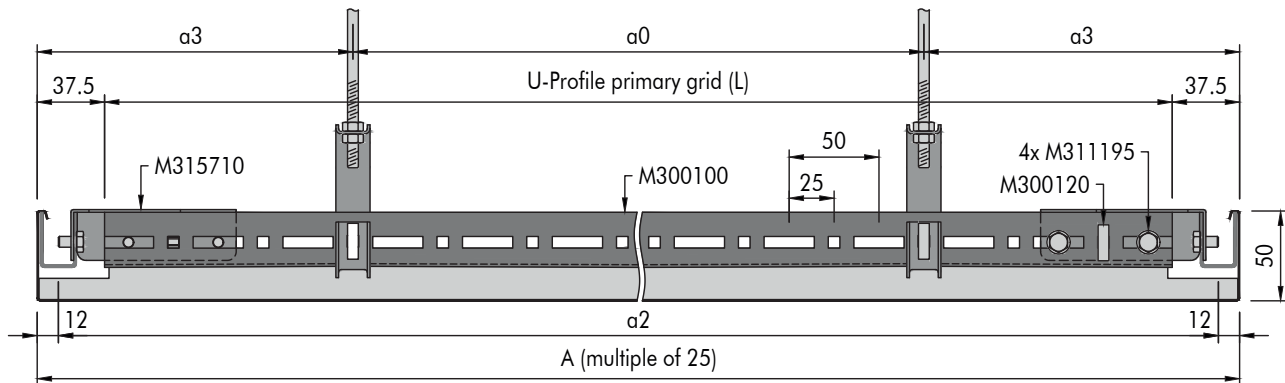
U-Profile modulation



The U-Profile primary grid is a modular system based on a spacing of 50 mm. The holes on the lateral sides are offset from each other by 25 mm. This means that distances of 25 mm can be achieved.

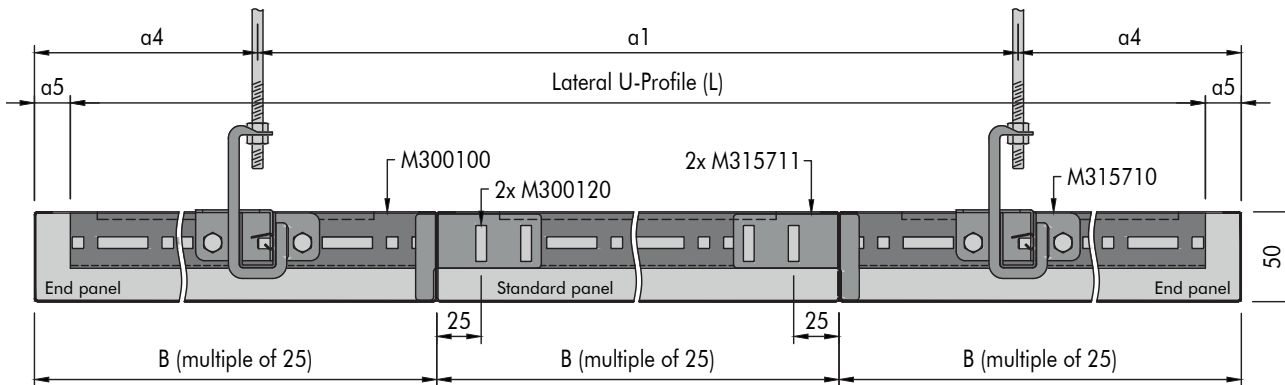
Section B

Example with suspension option F1



Section C

Example with suspension option F1



Grid components

Standard components

- M300100 U-Profile
- M300119 Splice connector for U-Profile
- M315710 Cross-connector for U-Profile
- M300120 Plug-in clip for U-Profile
- M311195 Thread cutting screw M6 x 10 mm
- M315711 Security bracket 50 mm

Suspension option F1

- M300366 Hanger for U-Profile
- M311103 Hexagonal bolt M6
- M300120 Plug-in clip for U-Profile
- M311315 Hexagonal extension nut M6 x 30 mm (optional)
- M311061 Suspension element (optional)

Suspension option F2

- M300166 Combi-Nonius hanger for U-Profile
- - Nonius top part (various lengths)
- M300036 Nonius locking pin
- M300120 Plug-in clip for U-Profile

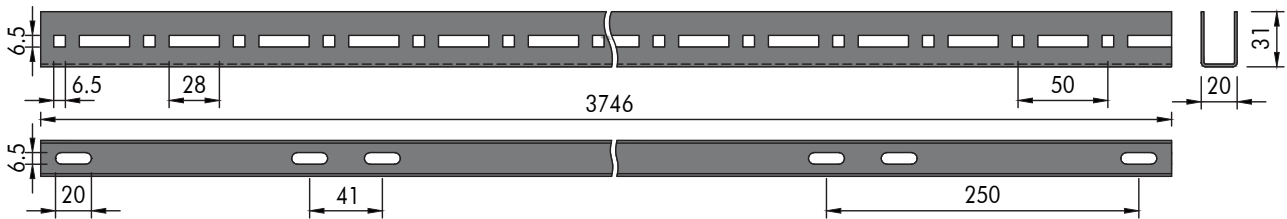
Suspension option F3

- M300166 Combi-Nonius hanger for U-Profile
- - Eye wire (various lengths)
- M300120 Plug-in clip for U-Profile

Optional components

- M315712 Security bracket 65 mm

U-Profile grid



Spacing

System without additional load			System with additional load +4 kg/m ²		
a2	a0	a1	a2	a0	a1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
800	500	1400	800	500	1300
900	400	1400	900	400	1300
1000	700	1400	1000	700	1300
1100	800	1400	1100	800	1300
1200	900	1400	1200	900	1300
1300	1000	1400	1300	1000	1300
1400	1100	1400	1400	1100	1300
1500	1200	1400	1500	1200	1300
1600	1300	1400	1600	1300	1300
1700	1400	1400	1700	1400	1300
1800	1500	1100	1800	1500	1000
1900	1600	1100	1900	1600	1000
2000	1700	1100	2000	1700	1000
2100	1800	1100	2100	1800	1000
2200	1900	1100	2200	1900	1000
2300	1000	1100	2300	1000	1000
2400	1050	1100	2400	1050	1000
2500	1100	1100	2500	1100	1000
2600	1150	1100	2600	1150	1000
2700	1200	1100	2700	1200	1000
2750	1225	1100	2750	1225	1000

To determine suspension layout

The panel length (A) of the requested ceiling is equal to the distance between the lateral U-Profile centres (a2) - 24 mm.

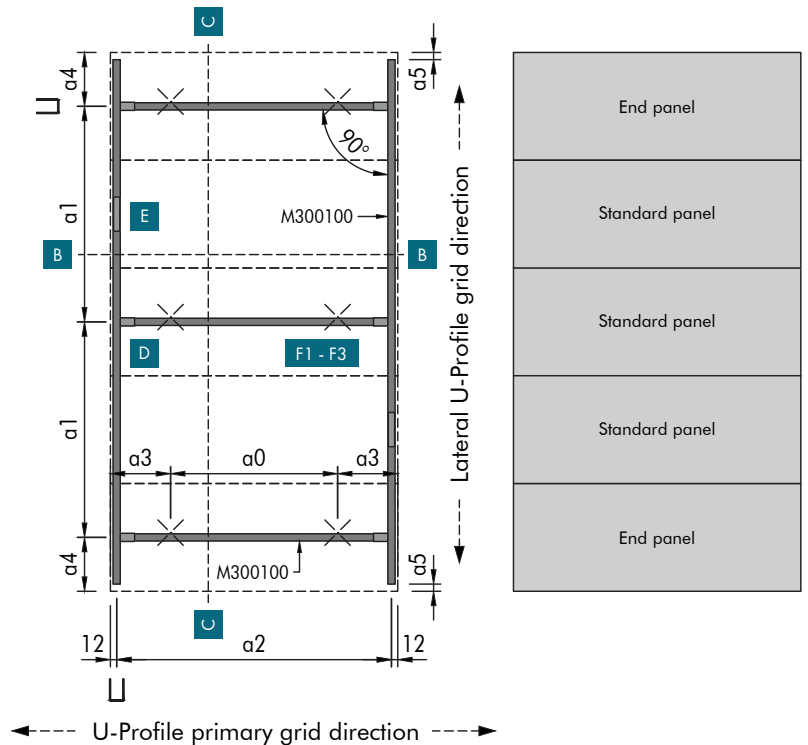
On the appropriate spacing table, read down the column headed (a2) to the required module length then read across to determine the suspension point spacing (a0) U-Profile primary grid spacing (a1).

The shown values are maximum allowed distances and can be reduced but not exceeded.

Parameters

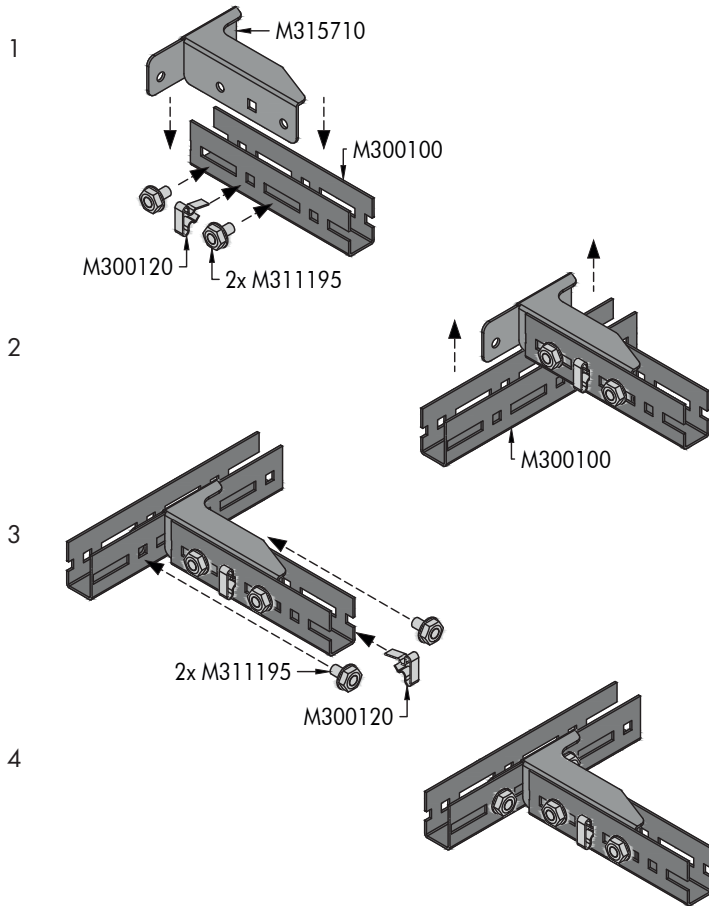
- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles
- a2 Distance between lateral U-Profiles = panel length (A) - 24 mm
- a3 Distance from panel edge to suspension point = min. 125 / max. 250 mm
- a4 Distance from end panel edge to U-Profile = min. 150 / max. 350 mm
- a5 Distance from end panel edge to lateral U-Profile end = max. 25 mm
- A Panel length = min. 600 / max. 2750 mm (in steps of 25 mm)
- B Panel width = min. 250 / max. 600 mm (in steps of 25 mm)

Typical grid layout



Detail D

Cross-connector installation



The cross-connector for U-Profile is fixed at both ends of the U-Profile primary grid. In order for this to work, a module dimension in 25 mm increments must be maintained. The plug-in clip can be used for positioning. The fixing itself is done with thread cutting screws. Standard M6 bolts cannot be used.

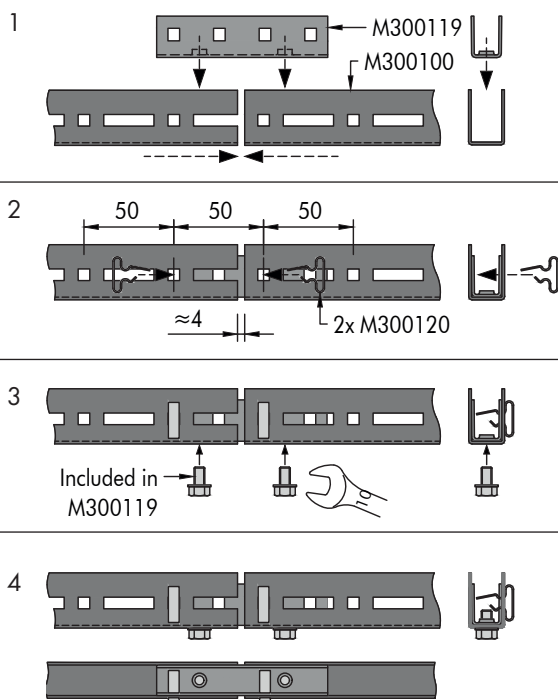
Align the lateral U-profile in the longitudinal direction and insert it so that the cross-connector is hooked.

Again use a plug-in clip and two thread cutting screws to fix the lateral U-Profile to the cross-connector.

The two profiles are now connected. Only a 90° connection is possible.

Detail E

Splice connection



The splice connector for U-Profile comes with two bolts, which must first be removed. The splice connector is then placed between the two ends of the U-Profiles.

Fix the splice connector with two plug-in clips (large end upwards) at each end. This maintains the modular distance of 50 mm.

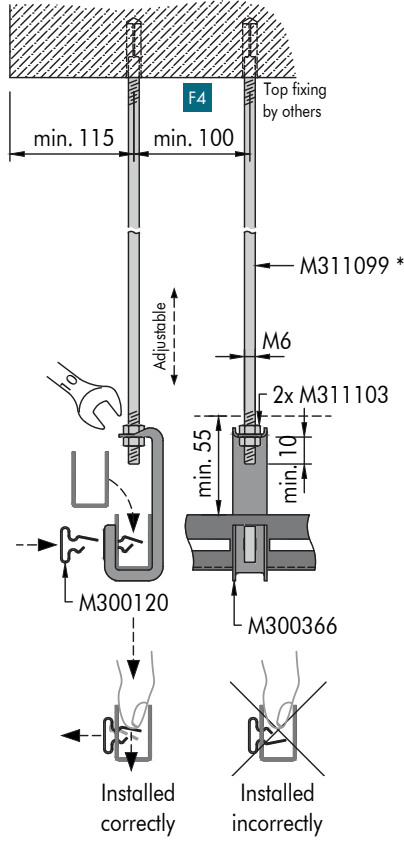
For a stable connection, the two supplied bolts are attached from below.

Since the U-Profile is a modular system, the ends must not touch. There is a distance of approx. 4 mm, depending on the length tolerance of the profile. Joints should be offset.

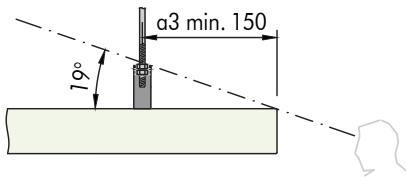
Detail F

Suspension options

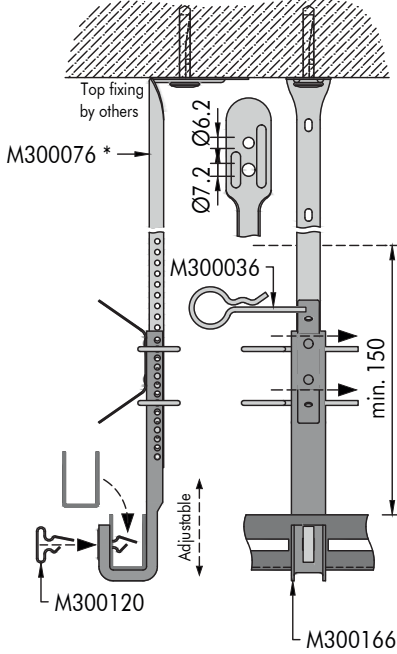
Option **F1**



Suspension option **F1** is recommended as it is the least visible from below.



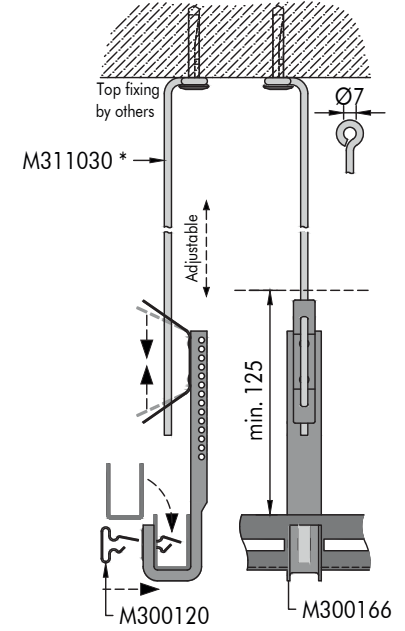
Option **F2**



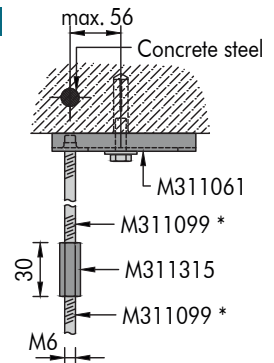
Please make sure that the elements have an overlap of at least 40 mm.

* Various lengths available

Option **F3**



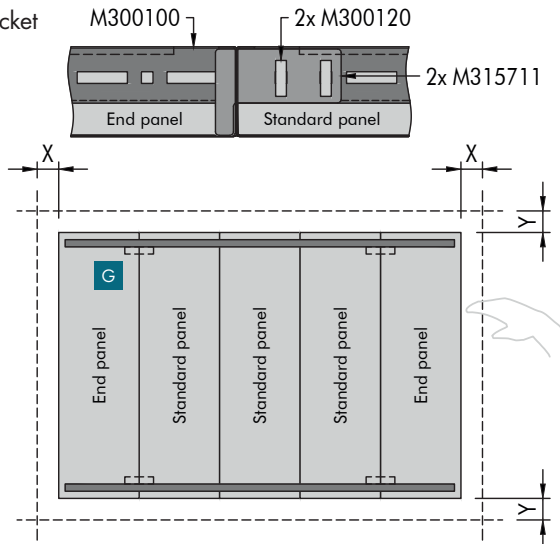
Detail **F4**



Optional top fixing and extension detail for suspension option **F1**

Detail G

Security bracket



Since the panels are only hooked-on, their position can shift, e.g. due to vibrations or maintenance work. To prevent this, the end panels are held in place with a security bracket. Two security brackets are required per end panel, which are each fixed with two plug-in clips.

The panels are fixed at the end of the installation. This requires a min. space from either the long or short side of the canopy.

X Space from the long side = min. 200 mm

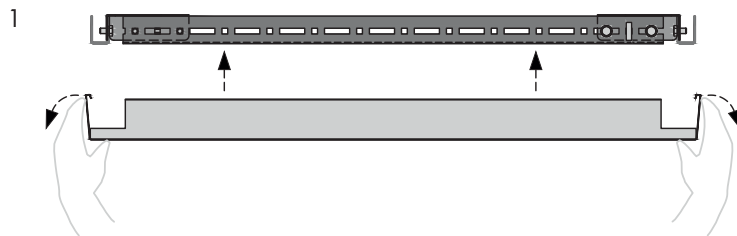
Y Space from the short side = min. 100 mm

The security bracket can be easily removed at any time.



Detail H

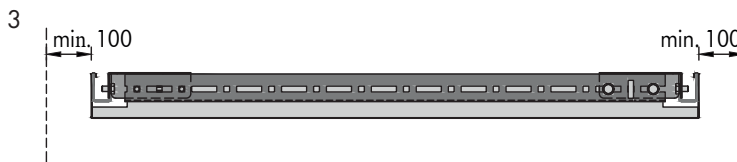
Panel insertion



Take the panel and carefully pull the two short end hook details outwards a little. Due to the higher edge detail, it is elastic enough not to be damaged.



Hook the panel on both lateral U-Profiles. The short ends then return to their original vertical position.

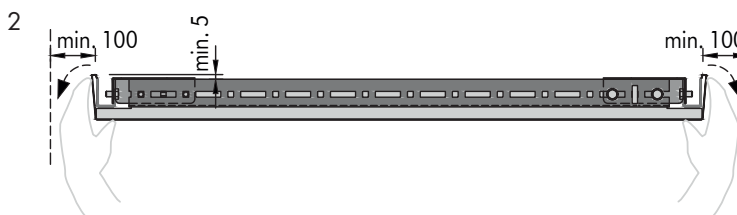


A lateral space of min. 100 mm is recommended in order to be able to hook-on the panels. Insert the panel holders to fix the position of the end panels (see detail G).

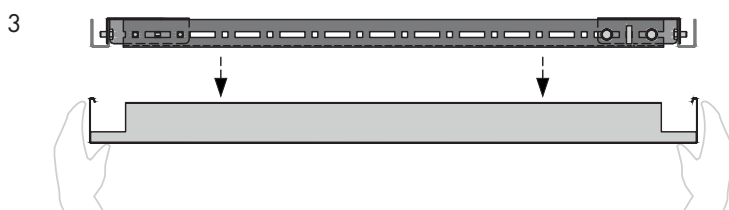
Panel extraction



If you want to extract an end panel, the panel holders must first be removed (see detail G). If it is a standard panel, then this is not necessary.



Lift the panel by at min. 5 mm and carefully pull the two short end hook details slightly outwards. Just enough so that the panel can be detached from the U-Profiles.



Remove it downwards and store the panel in a safe place so that it cannot be damaged.



FLOATING CEILING – BAFFLES

METAL BAFFLE ELEMENT

(METAL V-P 500)

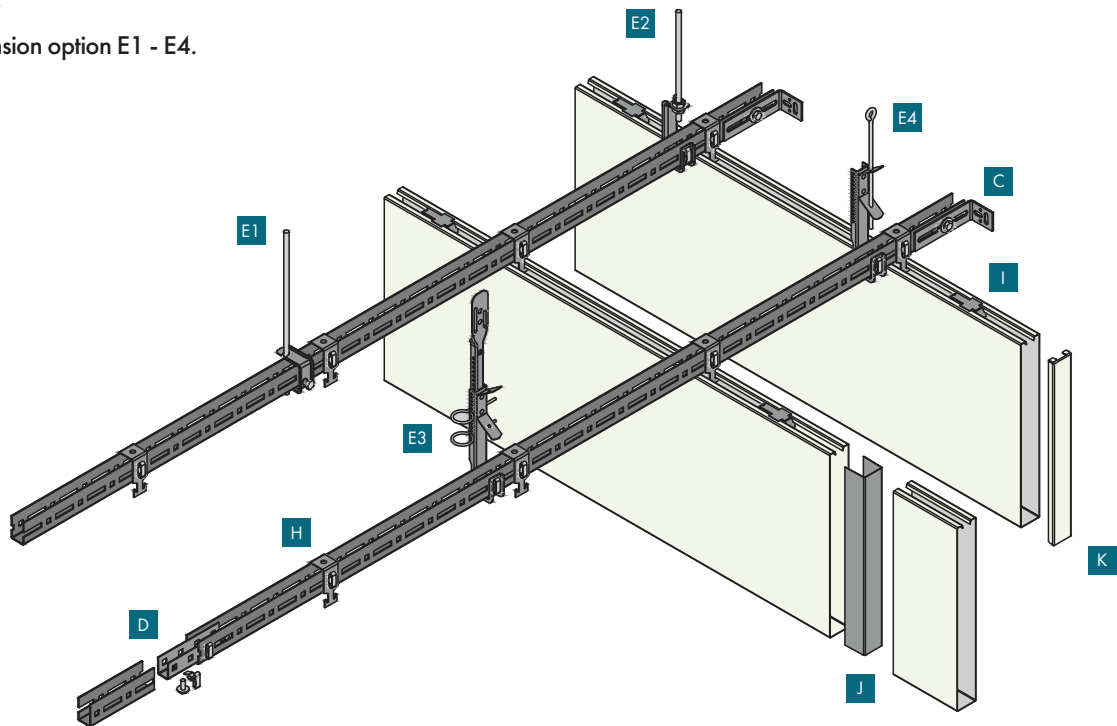
U-Profile primary grid + hanger for baffle
Semi-exposed grid solution for indoor applications

General information

- Semi-exposed hook-on grid system for medium and large rooms
- Fully configurable solution with variable baffle spacing
- For perpendicular installation on U-Profile primary grid
- Typical ceiling weight 2.7 - 37.5 kg/m² (indicative value for unperforated baffles, without additional load)
- Baffles parallel aligned
- Baffles are easily installed and fully demountable
- Optional end caps for baffles

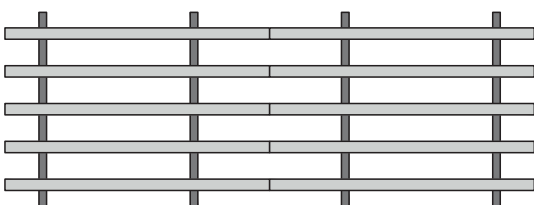
Isometric view

Select the suspension option E1 - E4.

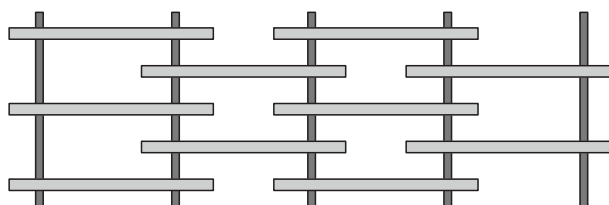


Vario Design & bespoke layout options

Vario Design

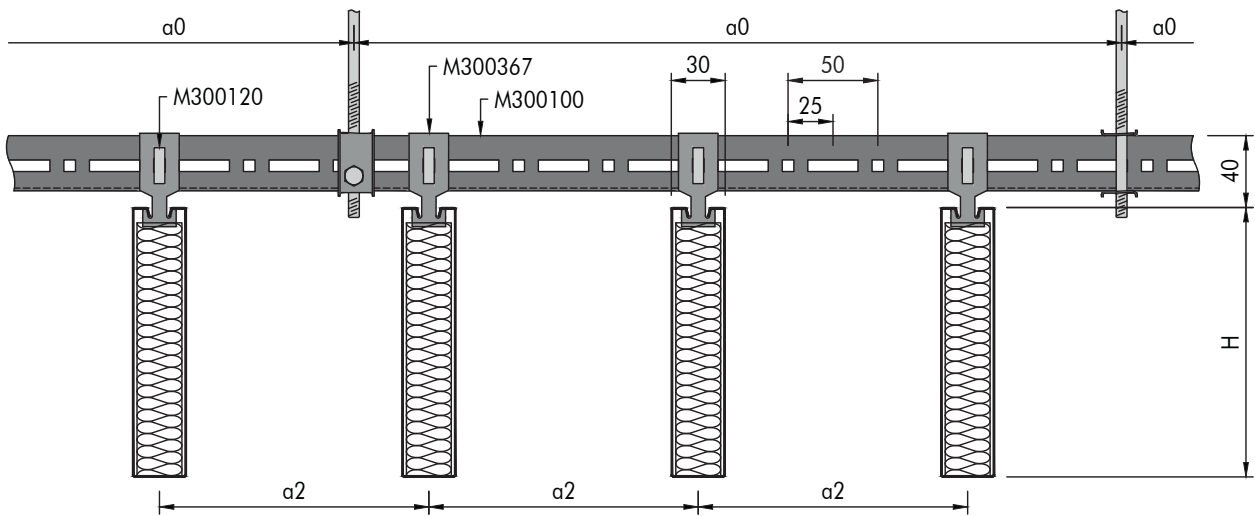


Bespoke (on request)



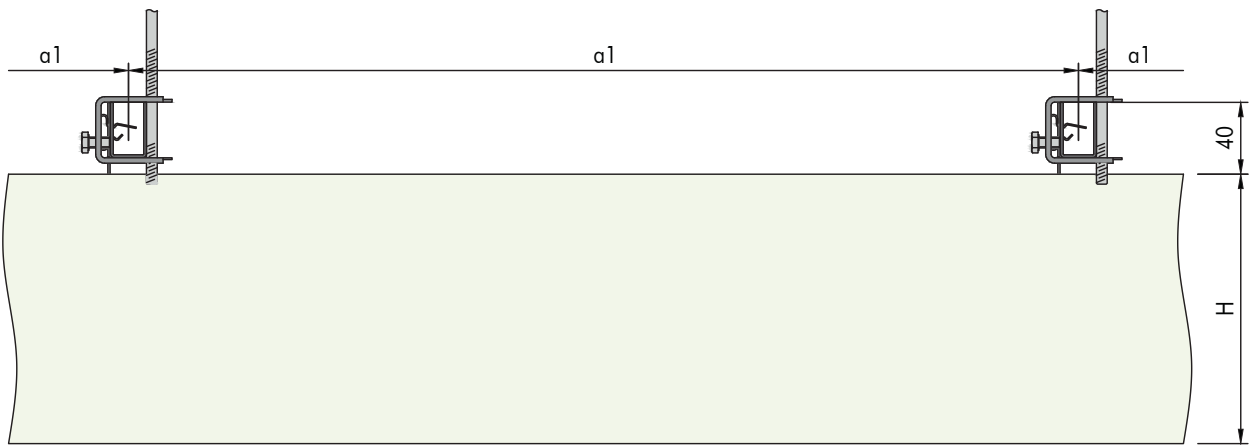
Section F

Example with suspension option E1



Section G

Example with suspension option E1



Secondary grid components

Standard components

- M300367BZC Hanger for baffle
- M311044 Distance holder for baffle
- M300120 Plug-in clip for U-Profile
- M300368BK Splice connector for baffle 150 mm RAL 9005
- M300369BK Splice connector for baffle 200 mm RAL 9005
- M300370BK Splice connector for baffle 250 mm RAL 9005
- M30037BK Splice connector for baffle 300 mm RAL 9005

Optional components

- M300372 End cap for baffle 150 mm RAL 9010
- M300373 End cap for baffle 200 mm RAL 9010
- M300374 End cap for baffle 250 mm RAL 9010
- M300375 End cap for baffle 300 mm RAL 9010
- M311191 Self-drilling screw 3.5 x 9.5 mm

See U-Profile primary grid for primary grid components

Spacing

System without additional load * / baffle height (H) = 150 mm	
a2	a0
[mm]	[mm]
100	900
200	1300
300	1500
400	1600
500	1750
600	1800
700	1900
800	1900
900	1900
1000	1900

System without additional load * / baffle height (H) = 200 mm	
a2	a0
[mm]	[mm]
100	800
200	1150
300	1400
400	1500
500	1650
600	1750
700	1800
800	1850
900	1900
1000	1900

System without additional load * / baffle height (H) = 250 mm	
a2	a0
[mm]	[mm]
100	750
200	1050
300	1300
400	1500
500	1600
600	1700
700	1750
800	1850
900	1900
1000	1900

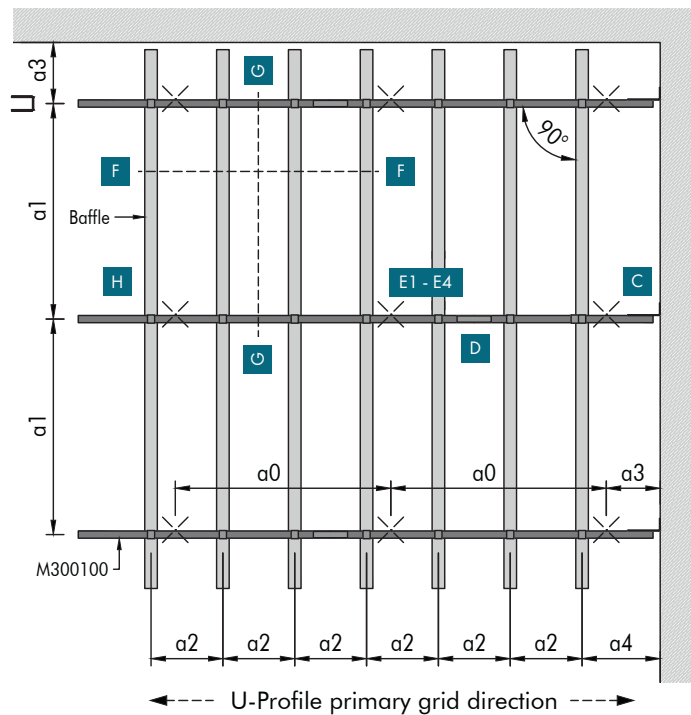
System without additional load * / baffle height (H) = 300 mm	
a2	a0
[mm]	[mm]
100	700
200	1000
300	1200
400	1400
500	1550
600	1600
700	1700
800	1750
900	1850
1000	1900

* Including standard acoustic infill

Parameters

- a0 Distance between U-Profile suspension points = max. 1900 mm
- a1 Max. distance between U-Profiles = max. 1500 mm
- a2 Distance between baffles
- a3 Distance from wall = max. 200 mm
- a4 Distance from wall = min. 20 mm
- L Baffle length = max. 3000 mm
- H Baffle height = 150 / 200 / 250 / 300 mm
- W Baffle width = 30 mm

Typical grid layout



To determine suspension layout

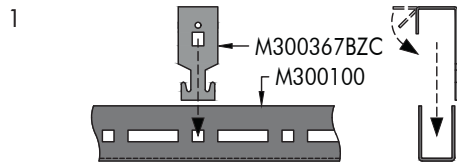
The baffle distance (a2) and the baffle height (H) of the requested ceiling are the required values to determine suspension layout. Take (a1) as 1500 mm max.

On the appropriate spacing table for baffle height (H), read down the column headed (a2) to the required baffle spacing then read across to determine the suspension point spacing (a0).

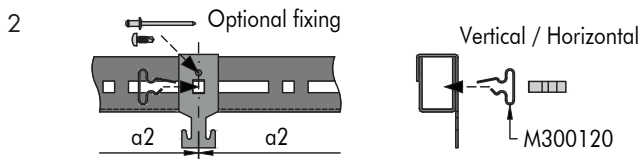
The shown values are maximum allowed distances and can be reduced but not exceeded.

Detail H

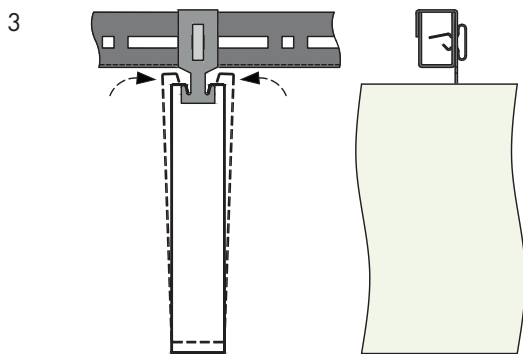
Hanger installation



Place the hanger on the U-profile and bend the upper part 90° downwards.



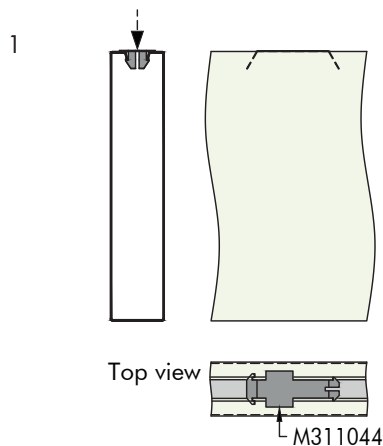
Fix it with plug-in clips at the specified module spacing (inserted vertically or horizontally). If the baffle distance does not fit with the modulation of the U-Profile (steps of 25 mm), the plug-in clip needs to be inserted into a long hole. The hanger position could be fixed by using a pop-rivet or self-drilling screw.



Hook the baffle on the hanger. The ends of the baffle are opened slightly. To prevent the baffles from being damaged by lateral pressure at the lower end, they are not rigidly connected to the hanger. The baffles are held in position by their own weight and therefore do not move due to an air flow or vibrations.

Detail I

Distance holder installation

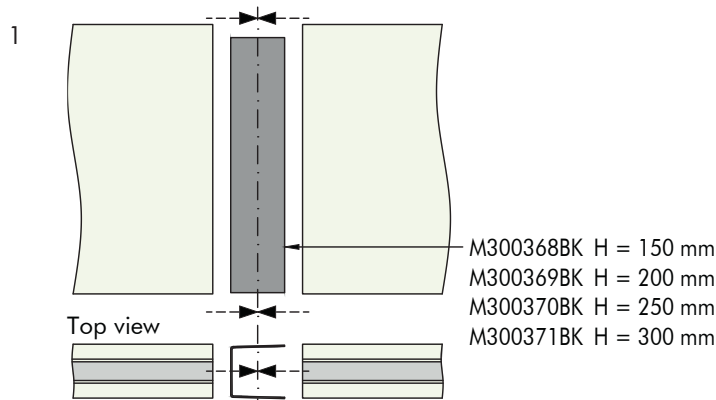


The distance holder is pushed into the top slot of the baffle from above. At least two pieces are required per baffle.

The distance holder keeps the top slot of the baffle at the correct dimension and parallel. This also prevents the baffles from becoming dislodged and falling.

Detail J

Splice connection

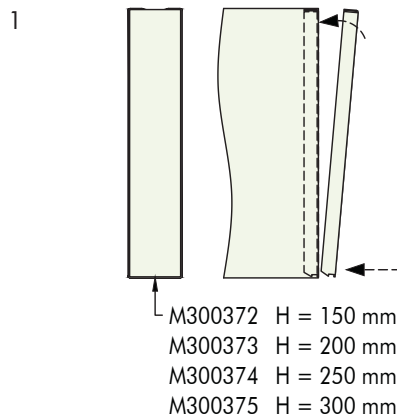


Place the splice connector between the ends of the baffles, as shown to the left. This will offset the acoustic infill slightly.

The splice connector results in a tight joint between baffles joined end on end and is supplied painted black to mask any separation of baffles. It is available in different sizes to suit baffle depths.

Detail K

End cap installation



If the baffles are not installed continuously from wall to wall, end caps can be used to visibly close off the ends.

The lower end of the end cap is inserted first, followed by the upper end. The end cap is available in different sizes to suit baffle depths.

Material required per m² (no waste included)System without additional load, including standard acoustic infill [pcs/m²]

Components	a2 [mm]	100	200	300	400	500	600	800	1000
M300100	U-Profile	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
M300119	Splice connector for U-Profile	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
M300120	Plug-in clip for U-Profile	7.03	3.70	2.59	2.03	1.70	1.48	1.20	1.03
M300140	Wall anchor	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
M300367BZC	Hanger for baffle	6.67	3.34	2.23	1.67	1.34	1.12	0.84	0.67
M311044	Distance holder for baffle	10.02	5.01	3.36	2.52	2.01	1.68	1.26	1.02
M311103	Hexagonal nut M6	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311105	Washer	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
M311303	Hexagonal bolt M6 x 16 mm	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Various	Suspension points (E1 - E4) for (H) = 150 mm	0.75	0.52	0.45	0.42	0.39	0.38	0.36	0.36
Various	Suspension points (E1 - E4) for (H) = 200 mm	0.84	0.58	0.48	0.45	0.41	0.39	0.37	0.36
Various	Suspension points (E1 - E4) for (H) = 250 mm	0.89	0.64	0.52	0.45	0.42	0.40	0.37	0.36
Various	Suspension points (E1 - E4) for (H) = 300 mm	0.96	0.67	0.56	0.48	0.44	0.42	0.39	0.36

The shown quantities are theoretical and based on an ideal layout, without considering the actual room layout. The ideal layout is based on a calculation of 10 x 10 m (100 m²). This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit and wall fixings by others.

Not including baffle splice connectors and end caps.

METAL BAFFLE ELEMENT

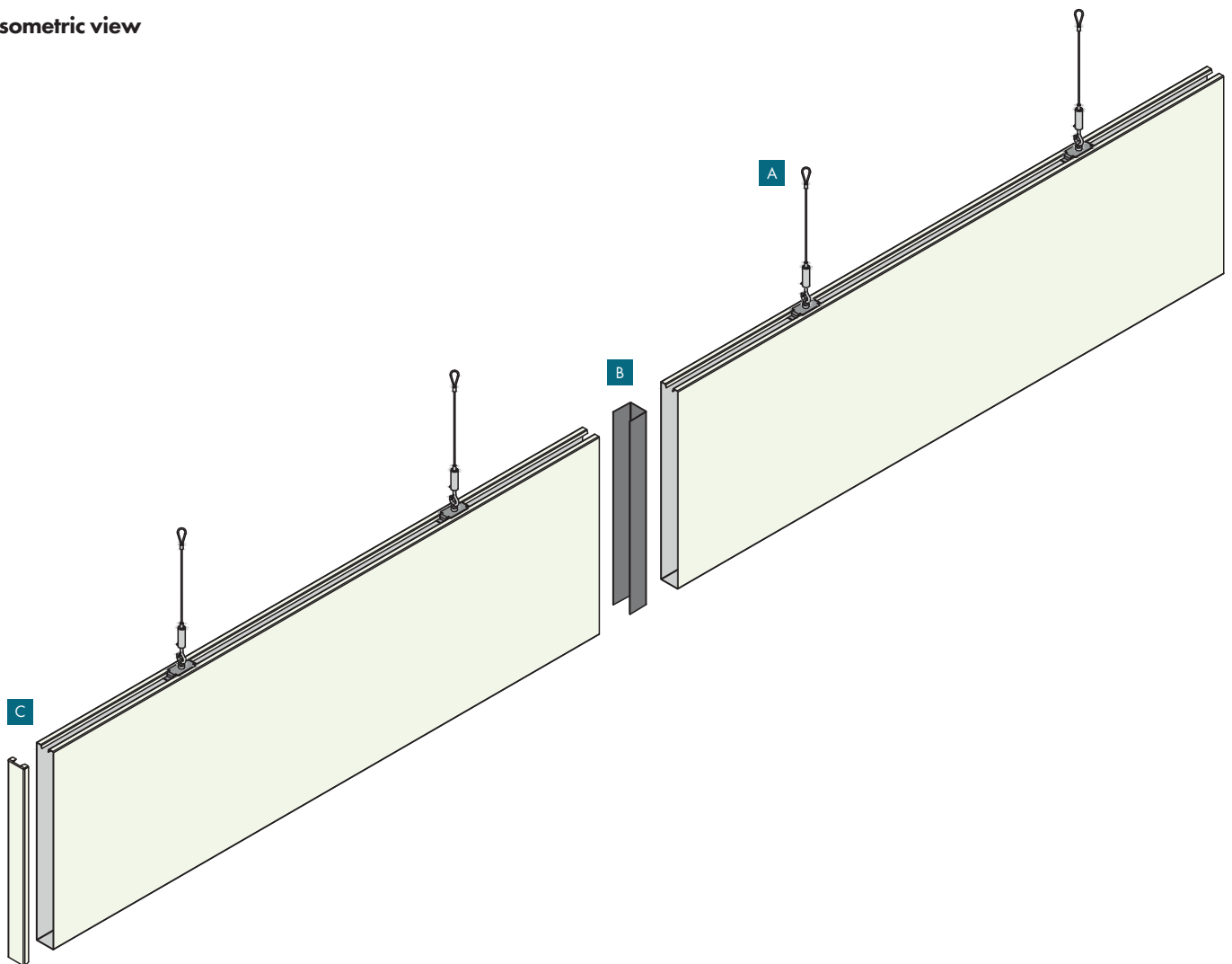
Hanging wire kit

Single suspended solution for indoor applications

General information

- Hanging wire kit for single suspension
- Typical ceiling weight 2.7 - 5.5 kg/m (indicative value for unperforated baffles, without additional load)
- Baffles are easily installed and fully demountable
- With end caps and optionally connected together
- Acoustic & design elements

Isometric view



Standard layout options



Important information

This type of suspension is intended for a smaller number of baffles or if they are not to be aligned parallel. Grouping with the U-Profile is recommended for larger areas or where spacing is critical.

The hanging wires are supplied in a length of 4000 mm. If the room height is lower than this, the suspension points can be attached to the back of the baffle while it is on the ground. Please make sure that the visible side is protected during the assembly and cannot be scratched. In general, be careful when handling and transporting these large items.

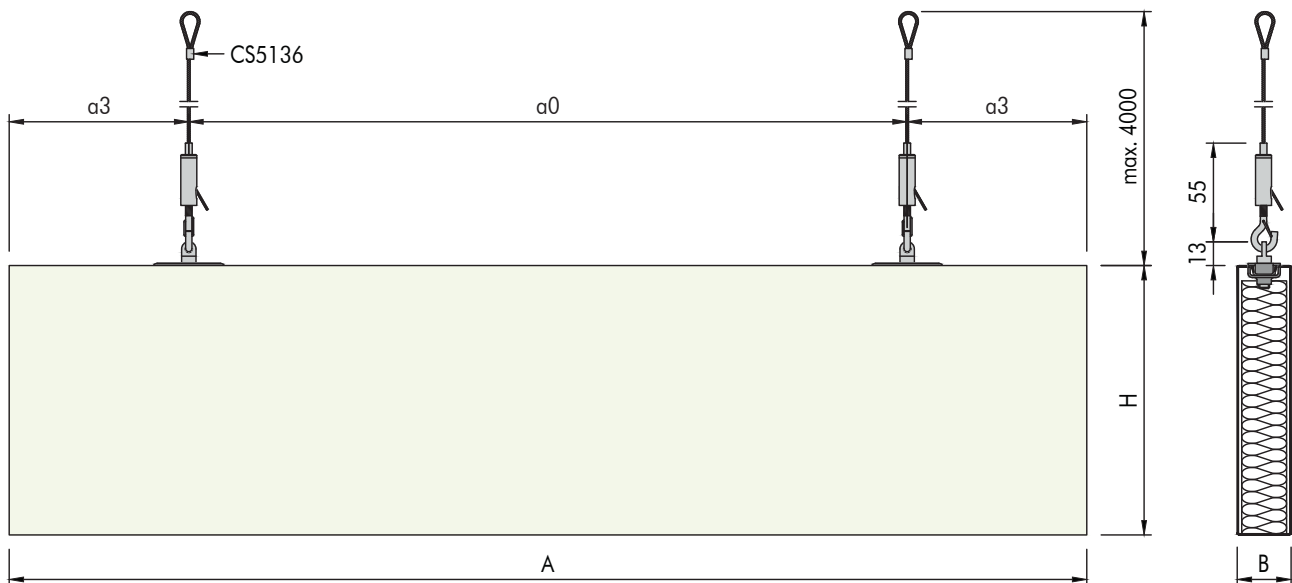
The baffle was primarily designed for horizontal installation. Slight angles are possible, but the limit must be checked beforehand.

It is recommended to keep a lateral distance between the baffles of at least 100 mm and at the ends min. 30 mm if not connected.

This installation depends on the dimensions and configuration of the baffle.

Section F

Example with suspension option **E1**

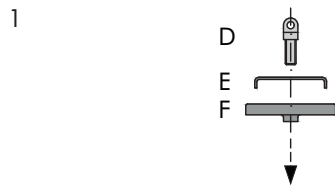
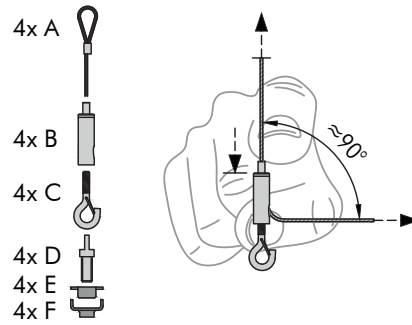


Parameters

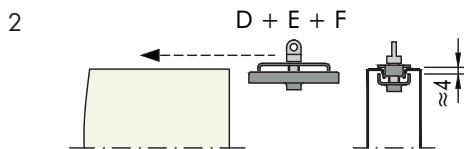
- | | | | |
|----|--|---|--|
| a0 | Distance between baffle suspension points = max. 1500 mm | L | Baffle length = max. 3000 mm |
| a3 | Distance from baffle end = max. 300 mm | H | Baffle height = 150 / 200 / 250 / 300 mm |
| | | W | Baffle width = 30 mm |

Detail A

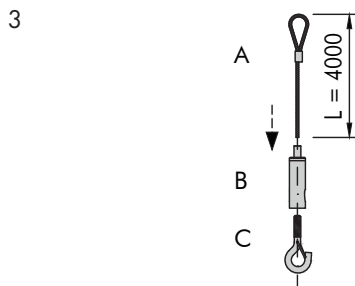
CS5136 Wire hanging kit installation



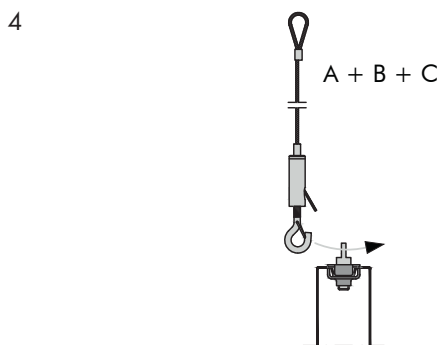
Take the eye bolt (D) and screw it through the top (E) and bottom part (F) of the suspension element. Leave a slight gap of ≈ 4 mm between the components.



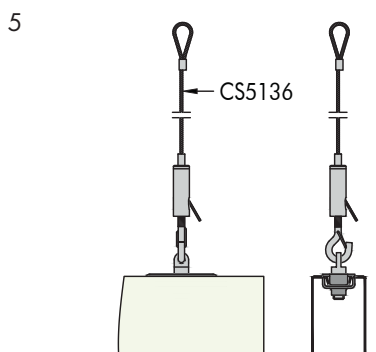
Slide this in from the baffle end. Lock the components with the eye bolt.



Screw the finishing hook (C) into the height adjuster (B). Guide the hanging wire (A) into the height adjuster (B). Pull the wire through the height adjuster, at an angle of $\approx 90^\circ$. Do not pull the wire upwards, otherwise it may be damaged. Fix the hanging wire to the soffit.



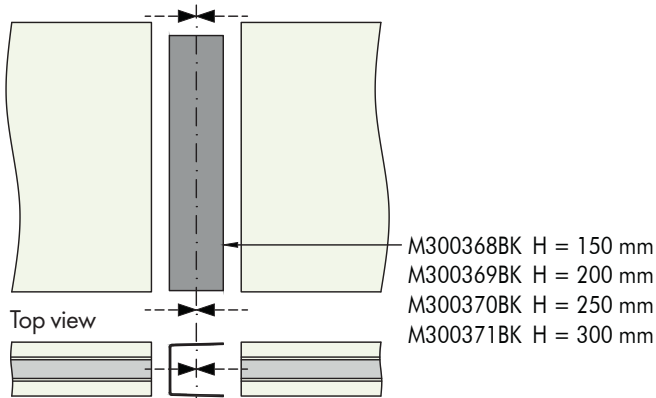
Take the baffle and hang it on the finishing hook. Min. two suspension points are needed per baffle.



Then either roll up the wire and deposit it on the baffle or cut it away. After cutting it away, it can no longer be adjusted in height. Repeat this for all suspension points.

Detail B

Splice connection

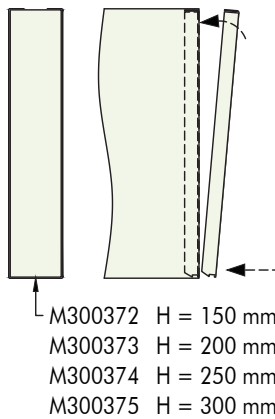


Place the splice connector between the ends of the baffles, as shown to the left. This will offset the acoustic infill slightly.

The splice connector is black coated and prevents an open joint where the light can shine through. It is available in different sizes.

Detail C

End cap installation



If the baffles are not installed continuously from wall to wall, end cap can be used to visibly close off the ends.

The lower end of the end cap is inserted first, followed by the upper end. The end cap is available in different sizes.

Components

Standard components

- CS5136 Wire hanging kit for METAL Baffle Element
- M300372 End cap for baffle 150 mm RAL 9010
- M300373 End cap for baffle 200 mm RAL 9010
- M300374 End cap for baffle 250 mm RAL 9010
- M300375 End cap for baffle 300 mm RAL 9010

Optional components

- M300368BK Splice connector for baffle 150 mm RAL 9005
- M300369BK Splice connector for baffle 200 mm RAL 9005
- M300370BK Splice connector for baffle 250 mm RAL 9005
- M300371BK Splice connector for baffle 300 mm RAL 9005

METAL BAFFLE SKY ELEMENT

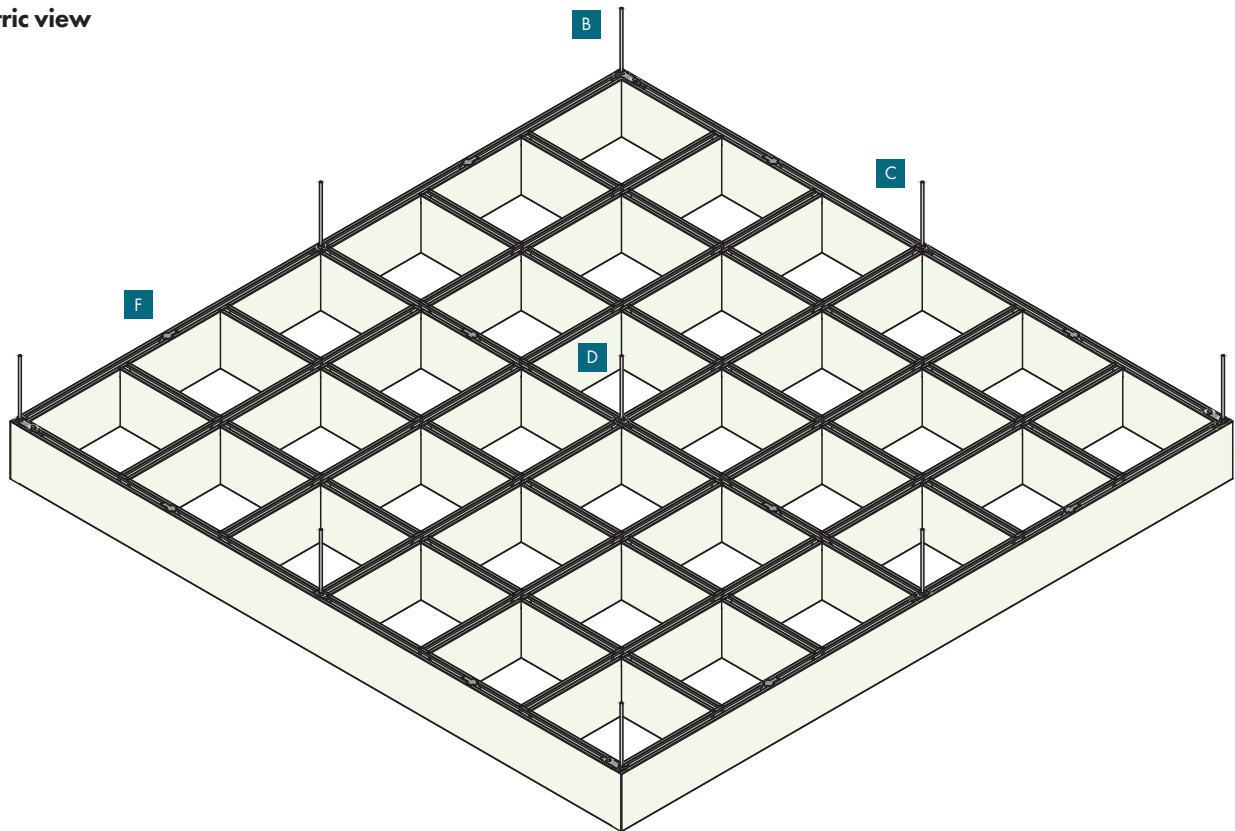
(METAL V-K 500)

Direct suspended by threaded rods
For indoor applications

General information

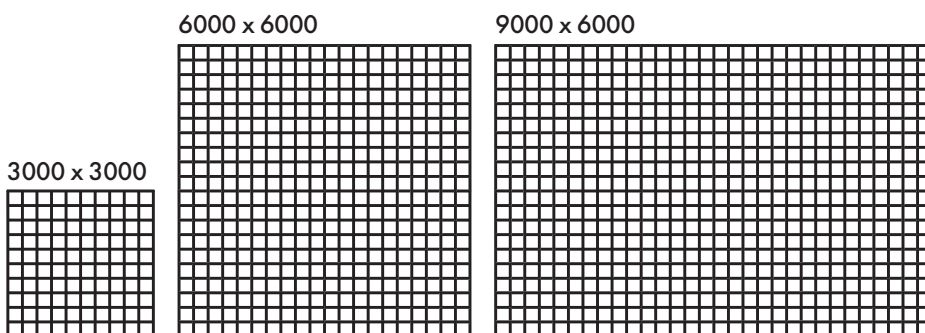
- Direct suspended system for medium and large rooms
- Typical ceiling weight 12.0 - 24.0 kg/m² (indicative value for unperforated baffles, without additional load)
- Baffles crosswise installed

Isometric view

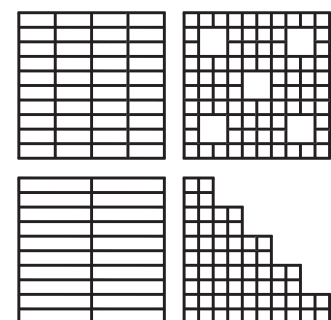


Vario Design & bespoke layout options

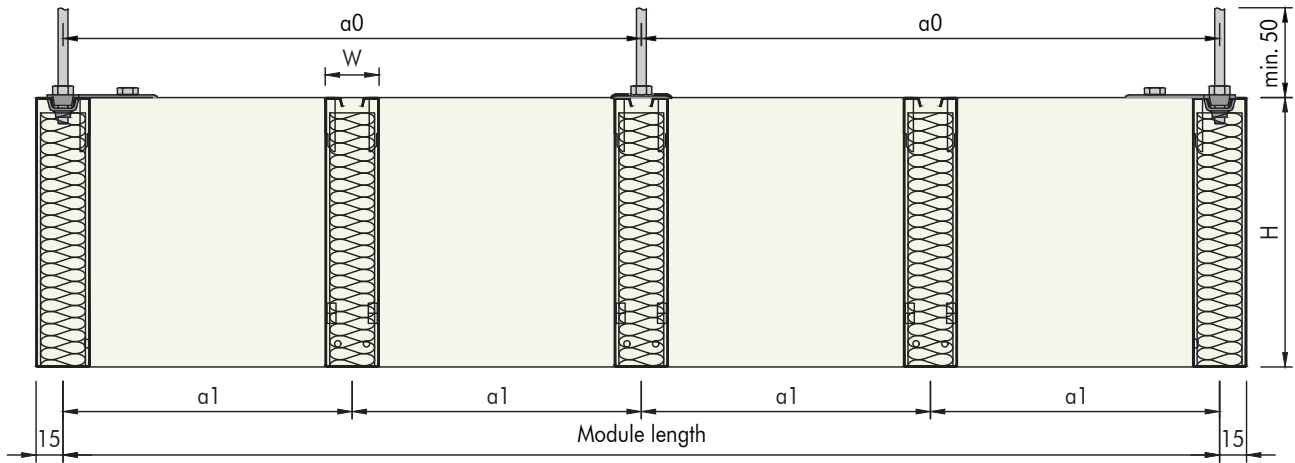
Vario Design



Bespoke (on request)

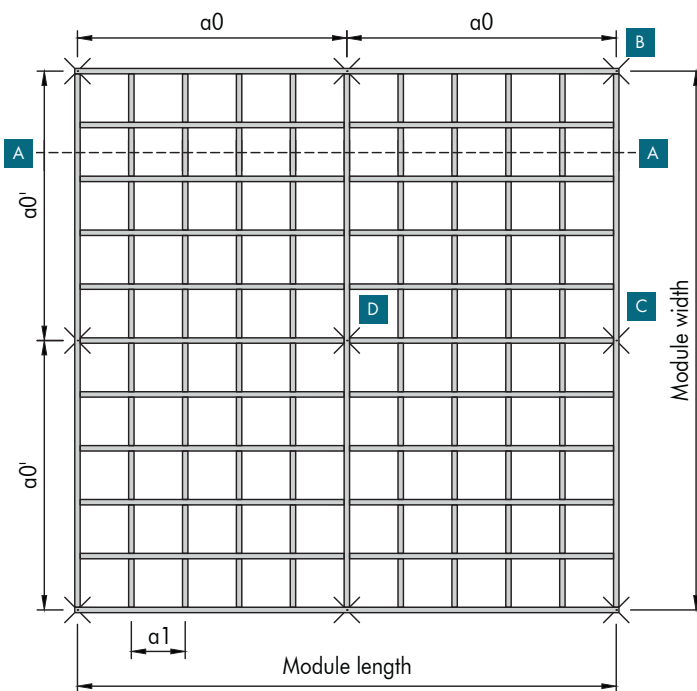


Section A



Typical layout

Example with 3000 x 3000 mm module



Parameters

- a_0 Distance between suspension points = 1500 mm
- a_0' Distance between suspension points = 1500 mm
- a_1 Distance between baffles = 300 mm
- L Baffle length = various lengths, up to 3030 mm
- H Baffle height = 150 / 200 / 250 / 300 mm
- W Baffle width = 30 mm

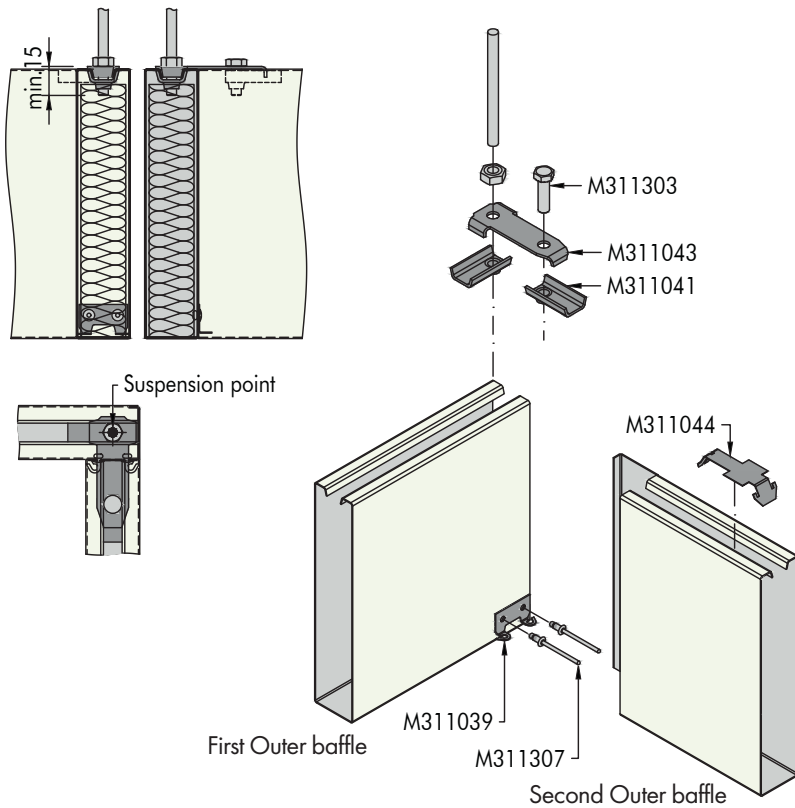
Grid components

Standard components

- M311039 Grip 30 mm for METAL Baffle Sky Element
- M311040 Coupling holder for METAL Baffle Sky Element
- M311041 Corner coupling holder for METAL Baffle Sky Element
- M311042 Coupling clamp for METAL Baffle Sky Element
- M311043 Corner clamp for METAL Baffle Sky Element
- M311044 Distance holder for baffle
- M311099 Threaded rod M6 x 1000 mm
- M311103 Hexagonal nut M6
- M311303 Hexagonal bolt M6 x 16 mm
- M311307 Pop-rivet TAPD 44 BS

Detail B

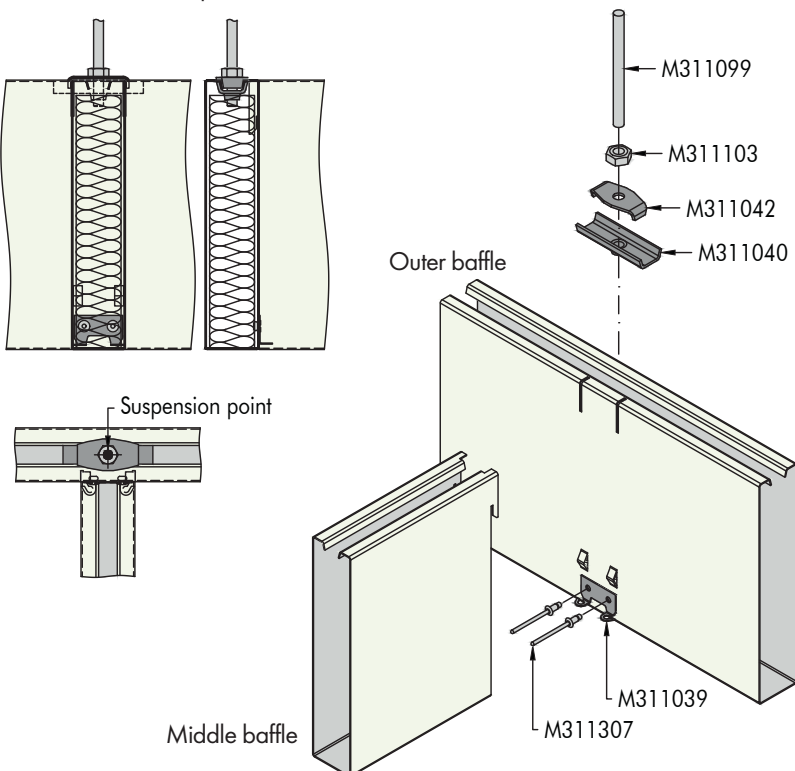
Corner connection with suspension



- 1 Install the threaded rod in the required length.
- 2 Insert the hexagonal nut M311303, followed by the corner coupling clamp M311043. The nut should be screwed in at least 10 mm higher than the end position.
- 3 Adjust the correct height by inserting the corner coupling holder M311041. Make sure the orientation is correct.
- 4 Insert the first outer baffle.
- 5 Complete the connection by tightening the nut.
- 6 Fix the grip M311039 on the baffle with two pop-rivets M311307.
- 7 Use the hexagonal bolt M6 M311303 to fix the second corner coupling holder M311041 to the corner coupling clamp M311043. Leave some space between.
- 8 Insert the second outer baffle and complete the connection by tightening the nut.
- 9 Insert the distance holder as described at detail F on both outer baffles.

Detail C

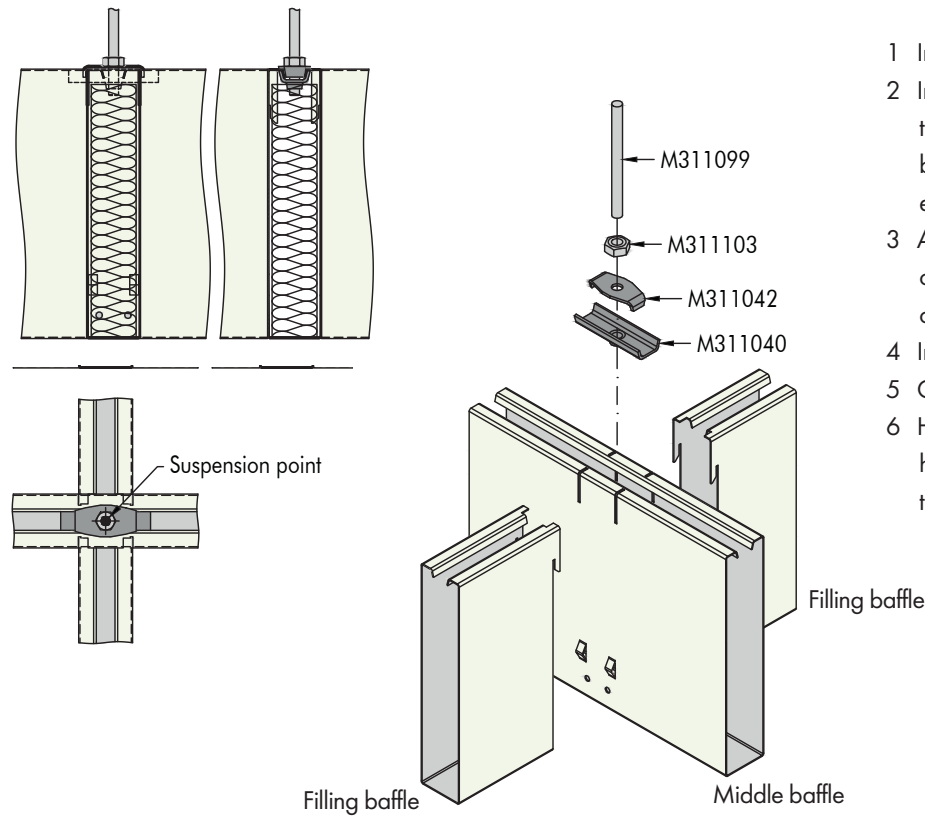
T-connection with suspension



- 1 Install the threaded rod in the required length.
- 2 Insert the hexagonal nut M311103, followed by the coupling clamp M311042. The nut should be screwed in at least 10 mm higher than the end position.
- 3 Adjust the correct height by inserting the coupling holder M311040. Make sure the orientation is correct.
- 4 Insert the outer baffle.
- 5 Complete the connection by tightening the nut.
- 6 Fix the grip M311039 on the baffle with two pop-rivets M311307.
- 7 Hang the middle baffle from above using the hooks and press the outer baffle with the grip against the end. This ensures that no gap is left between the baffles.

Detail D

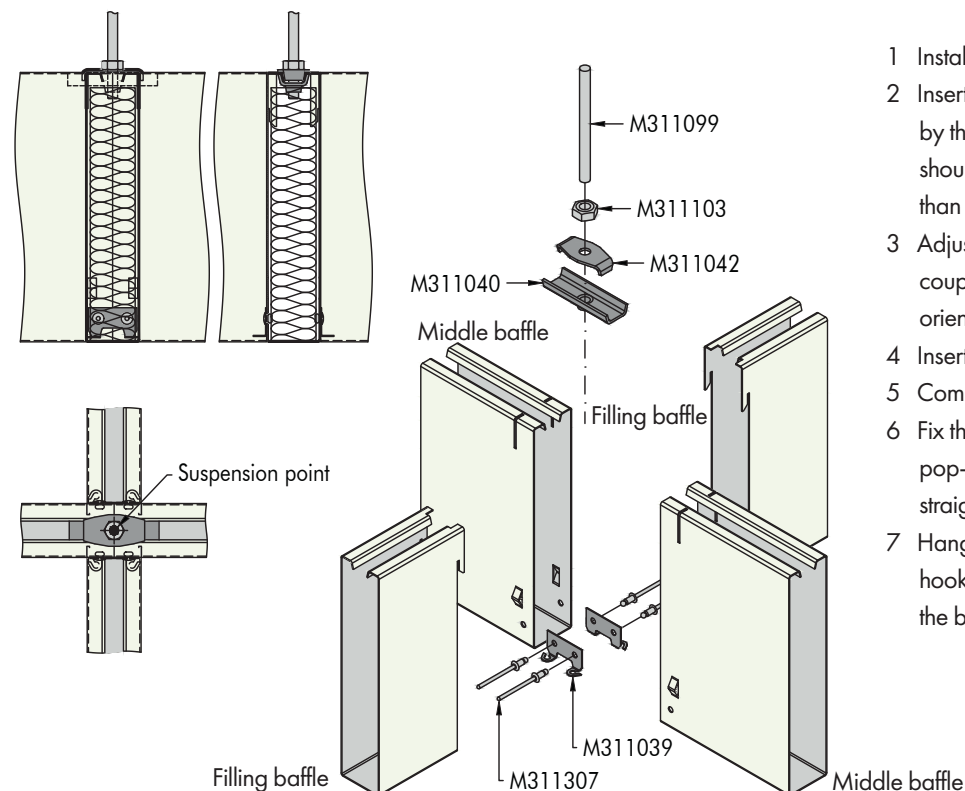
Three baffles cross connection with suspension



- 1 Install the threaded rod in the required length.
- 2 Insert the hexagonal nut M311303, followed by the coupling clamp M311042. The nut should be screwed in at least 10 mm higher than the end position.
- 3 Adjust the correct height by inserting the coupling holder M311040. Make sure the orientation is correct.
- 4 Insert the middle baffle.
- 5 Complete the connection by tightening the nut.
- 6 Hang the filling baffles from above using the hooks. The embossing at the bottom ensures the baffle is vertically aligned.

Detail E

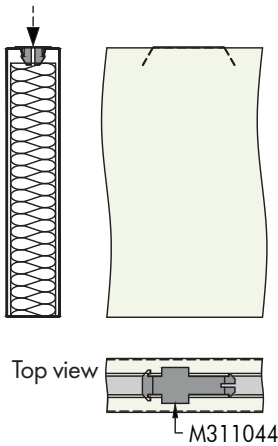
Four baffles cross connection with suspension



- 1 Install the threaded rod in the required length.
- 2 Insert the hexagonal nut M311303, followed by the coupling clamp M311042. The nut should be screwed in at least 10 mm higher than the end position.
- 3 Adjust the correct height by inserting the coupling holder M311040. Make sure the orientation is correct.
- 4 Insert the middle baffles.
- 5 Complete the connection by tightening the nut.
- 6 Fix the grips M311039 on the baffle with two pop-rivets M311307 each. This builds a straight connection.
- 7 Hang the filling baffles from above using the hooks. The embossing at the bottom ensures the baffle is vertically aligned.

Detail F

Distance holder



The distance holder is pushed into the baffle from above. At least two pieces are required per baffle. The distance holders are only needed on the outer and middle baffles.

The distance holder keeps the top ends of the baffle at the correct distance and parallel.

Material required per m² (no waste included)

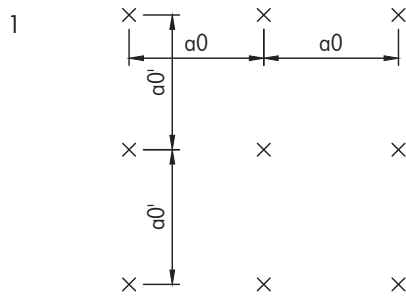
System without additional load, including standard acoustic infill [pcs/module]

Components	$\alpha 2$ [mm]	3000 x 3000	6000 x 6000	9000 x 6000
M311039	Grip 30 mm for METAL Baffle Sky Element	22	82	104
M311040	Coupling holder for METAL Baffle Sky Element	5	21	27
M311041	Corner coupling holder for METAL Baffle Sky Element	4	4	4
M311042	Coupling clamp for METAL Baffle Sky Element	5	21	27
M311043	Corner clamp for METAL Baffle Sky Element	4	4	4
M311044	Distance holder for baffle	10	20	28
M311099	Threaded rod M6 x 1000 mm	9	25	35
M311103	Hexagonal nut M6	9	25	35
M311303	Hexagonal bolt M6 x 16 mm	4	4	4
M311307	Pop-rivet TAPD 44 BS	44	164	208

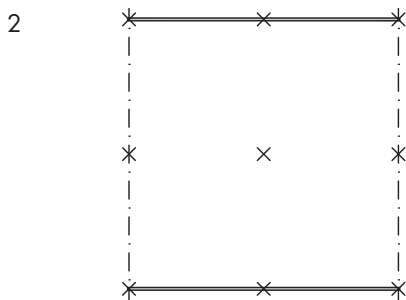
This calculation does not allow any damage, spare nor wastage. The final quantities and type of suspension have to be checked before ordering. Soffit fixing by others.

Installation sequence

Example with 3000 x 3000 mm module

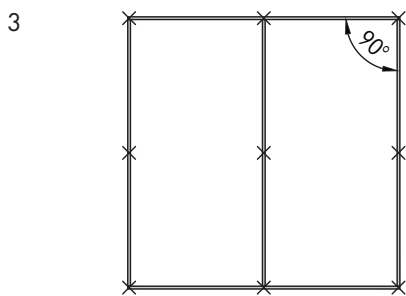


Place the threaded rods in the required length at a distance of a_0 and a_0' .



Install the outer two baffles. Make sure these are aligned with each other. See corner connection detail B.

Add two distance holders per baffle. See detail F.

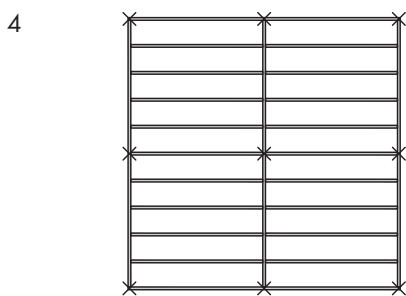


Add the cross baffles on the outside. See corner connection detail B.

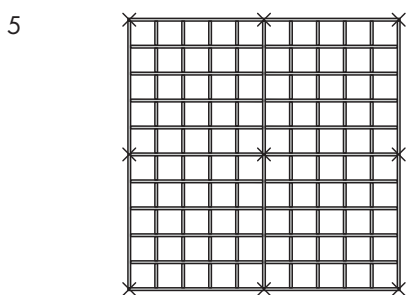
Fix the grips on the outer baffles with two pop-rivets, before hanging the middle baffle. See T-connection detail C.

Make sure the baffles are installed at a 90° angle.

Add two distance holders per baffle. See detail F.



Hang the long filling baffles. See cross-connection detail D.



Hang the short filling baffles to complete the installation.



WALL SOLUTIONS

METAL WALLCOUSTIC HORIZON 1000

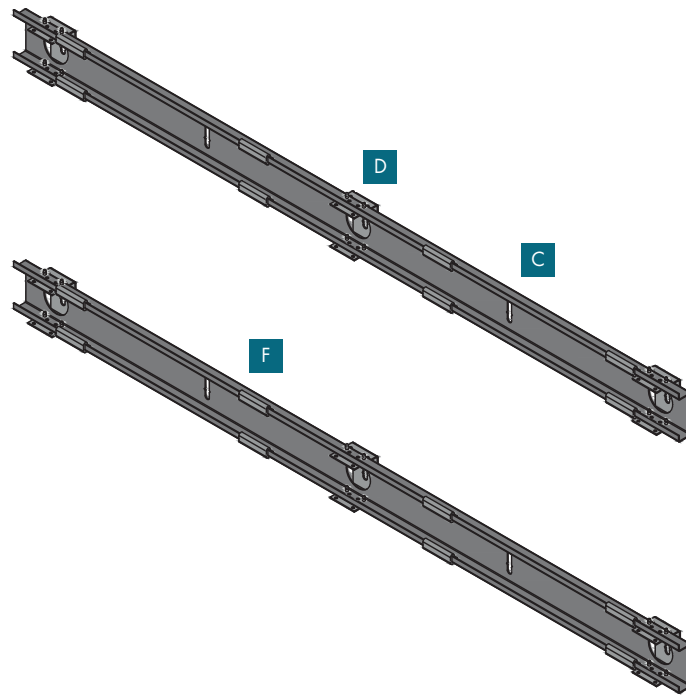
(METAL W-H 1000)

C-Wall Profile grid
Concealed wall solution for indoor applications

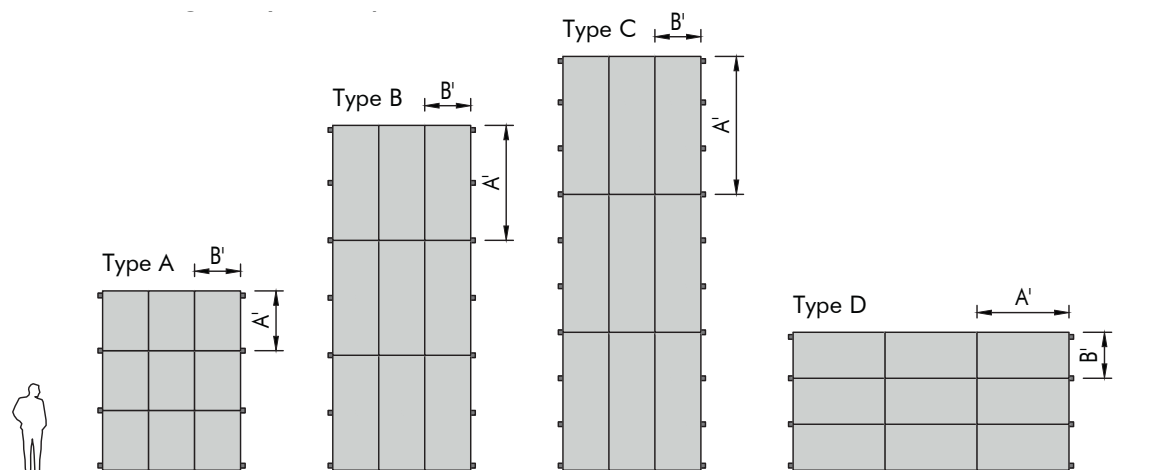
General information

- Concealed hook-on grid system for walls
- C-Wall Profile made of galvanised steel
- Typical ceiling weight up to 10.5 kg/m² (indicative value for unperforated panels, without additional load)
- Upright or reclined layout
- Panels are easily installed and fully demountable
- Acoustic & design solution
- Various panel types for corner, end and transition details available on request

Isometric view

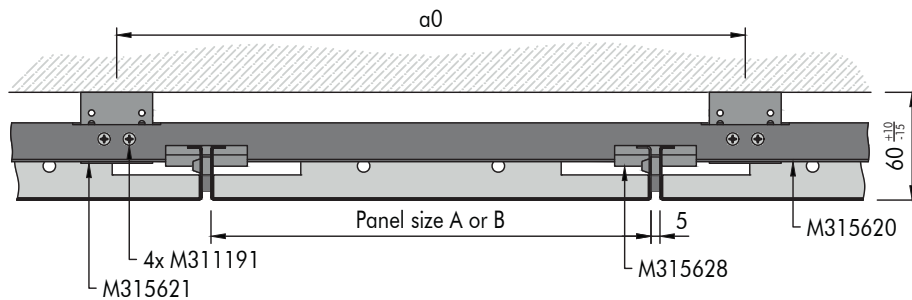


Vario Design layout options



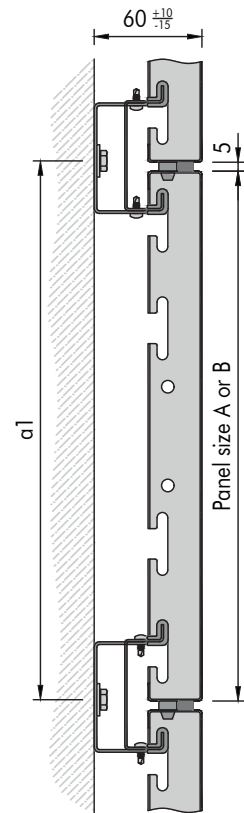
Section A

Horizontal section



Section B

Vertical section



Panel dimensions

- Type A A' = 600 - 1300, B' = 250 - 1000 mm, with 2 suspension points per long side
- Type B A' = 600 - 2500, B' = 250 - 1000 mm, with 3 suspension points per long side
- Type C A' = 600 - 3000, B' = 250 - 1000 mm, with 4 suspension points per long side
- Type D A' = 600 - 2000, B' = 250 - 1000 mm, with 2 suspension points per short side

Important informations

The panels are not designed for impact resistance. This is a pure acoustic and design solution.

The panels must be made to measure and cannot be cut to size on site.

The longer the upright installed panels are, the more suspension points are needed (type A, B, C).

The panels come standard with a 5 mm gasket and spacers on the long and short side, which simplifies installation and improves visual appearance. An option without gasket and spacers is not offered.

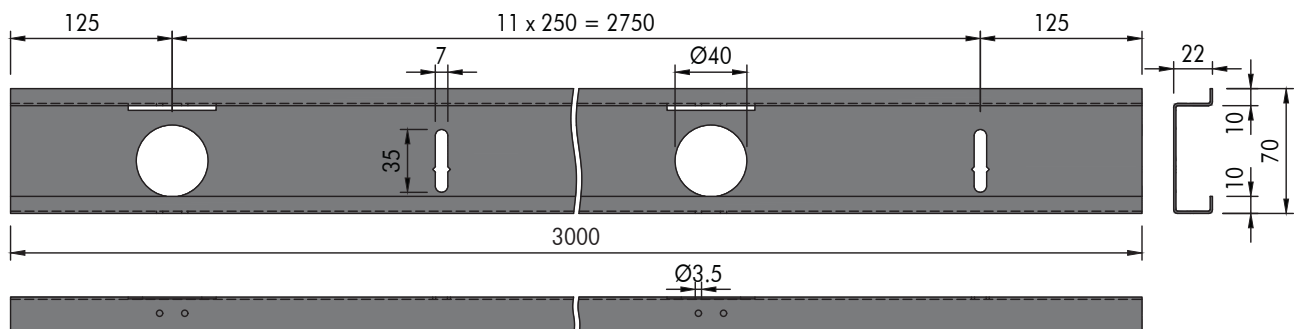
For a professional execution, CAD details are recommended (layouts, elevations, details).

Components

Standard components

- M315620 C-Wall Profile
- M315629 Splice connector for C-Wall Profile
- M315621 Wall anchor for C-Wall Profile
- M315628 Supporting bracket
- M311191 Self-drilling screw 3.5 x 9.5 mm

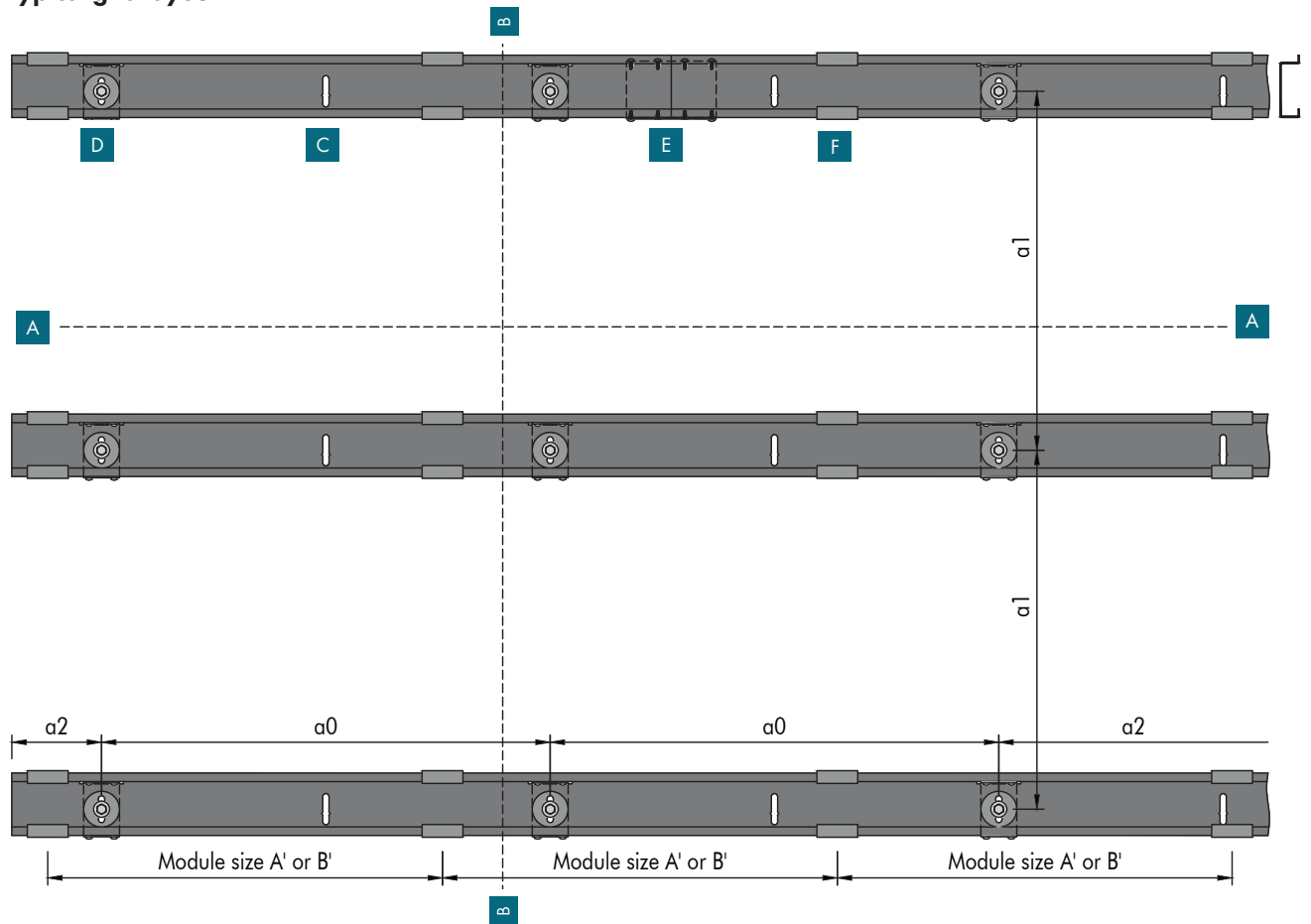
C-Wall Profile



Parameters

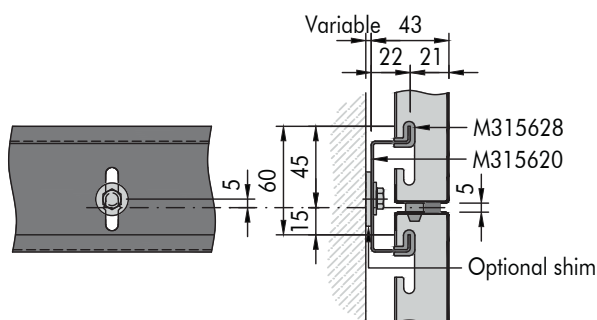
- a_0 Distance between wall fixing points = 500 mm
- a_1 Distance between C-Wall Profile = max. 1300 mm
- a_2 Distance from C-Wall Profile end to wall fixing point = max. 375 mm
- A' Module length = panel length (A) + 5 mm
- B' Module width = panel width (B) + 5 mm

Typical grid layout



Detail C

Direct fixing option

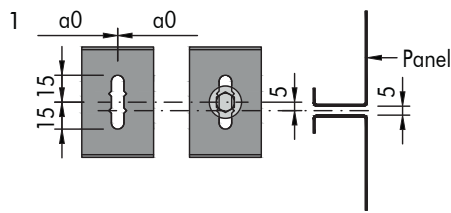


It is recommended to use the wall anchors for fixing to the wall as described in detail D. Optionally, the C-Wall Profile can be attached directly to the wall.

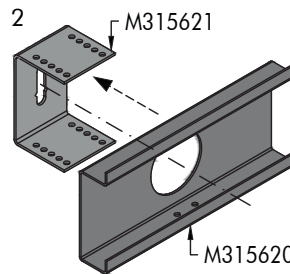
Position the C-Wall Profile on the wall and fix it (wall fixing min. 1 kN). Markings are stamped in the long hole. The lower one is on the central axis of the panel joint. The center of the long hole is 5 mm above it. Fix the C-Wall Profile at a distance of a_0 . Level out the unevenness of the wall with shims.

Detail D

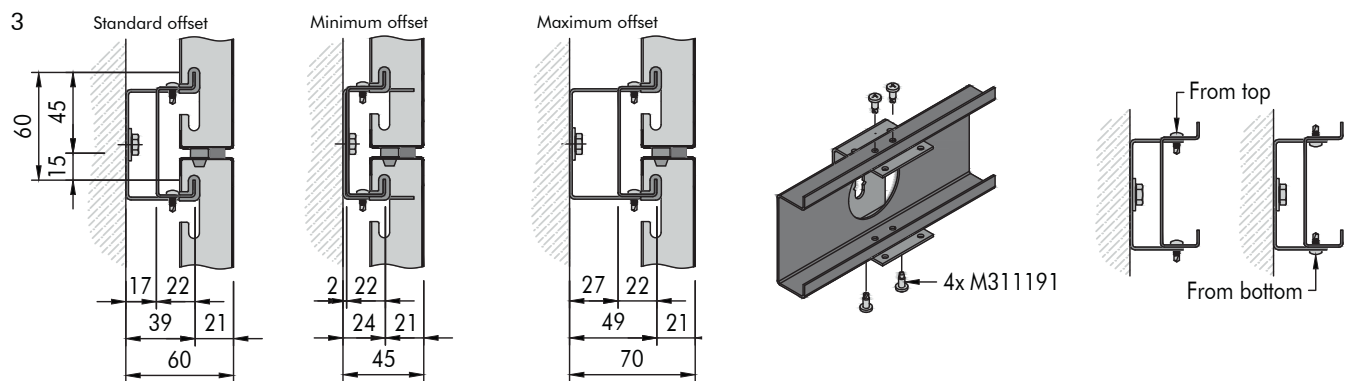
Wall anchor installation



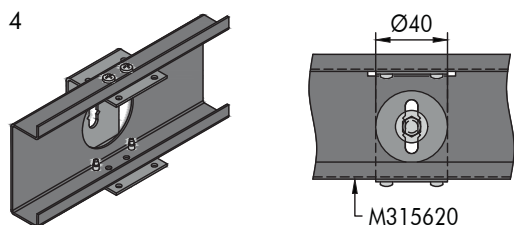
Position the wall anchor on the wall and fix it (wall fixing min. 1 kN). Markings are stamped in the long hole. The lower one is on the central axis of the panel joint. The center of the long hole is 5 mm above it. Lay the wall anchor at a distance of a_0 .



Guide the wall anchor through the slot in the C-Wall Profile.



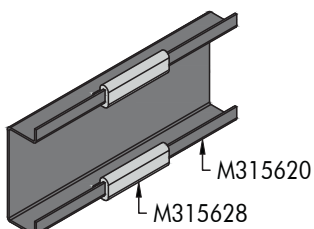
Align the depth of the profile and fix it with four self-drilling screws. The standard offset is 60 mm. The self-drilling screws can be screwed in either from above or from below, depending on the space available.



The C-Wall Profile has Ø40 mm round holes. The wall fixings can be loosened a bit so that the height of the profile can be corrected without having to dismantle everything.

Detail F

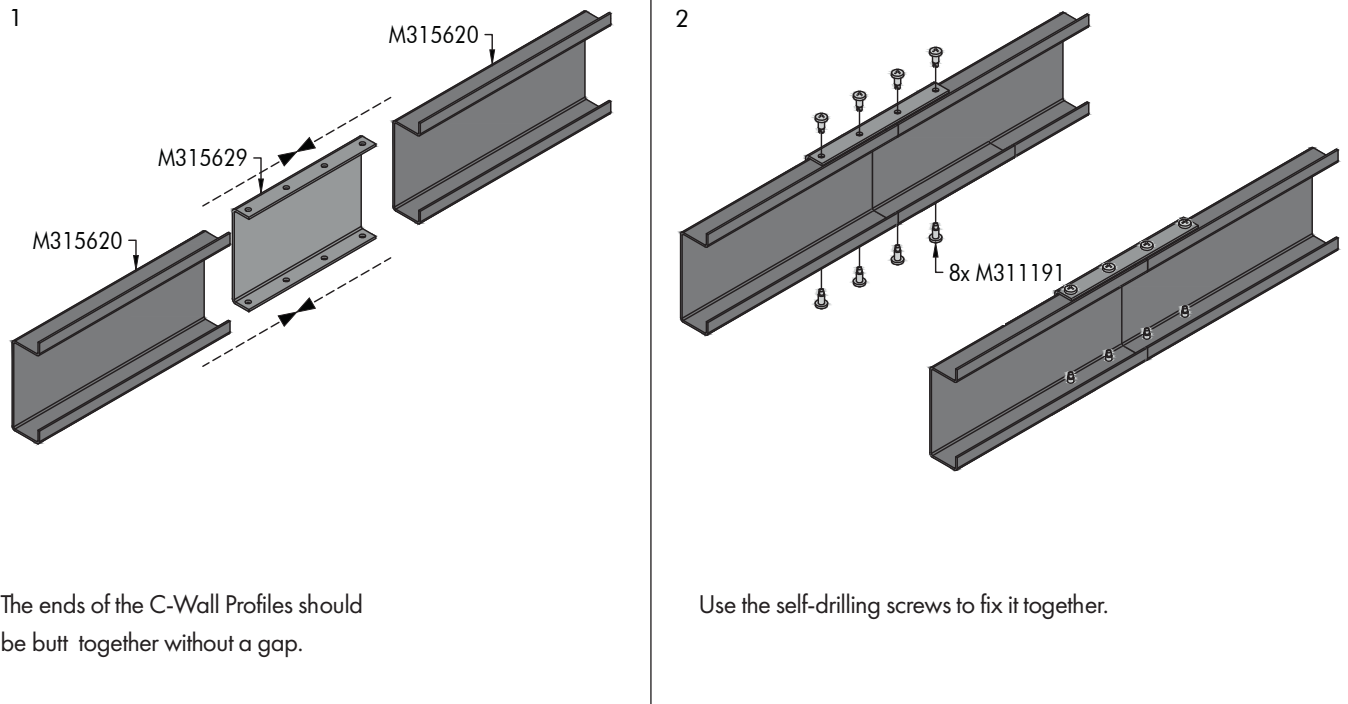
Supporting bracket



The panels are placed on supporting brackets M315628 made of rubber. As a result, the panels cannot easily shift and remain in position. There is also no noise in the event of any vibrations.

Detail E

Splice connection

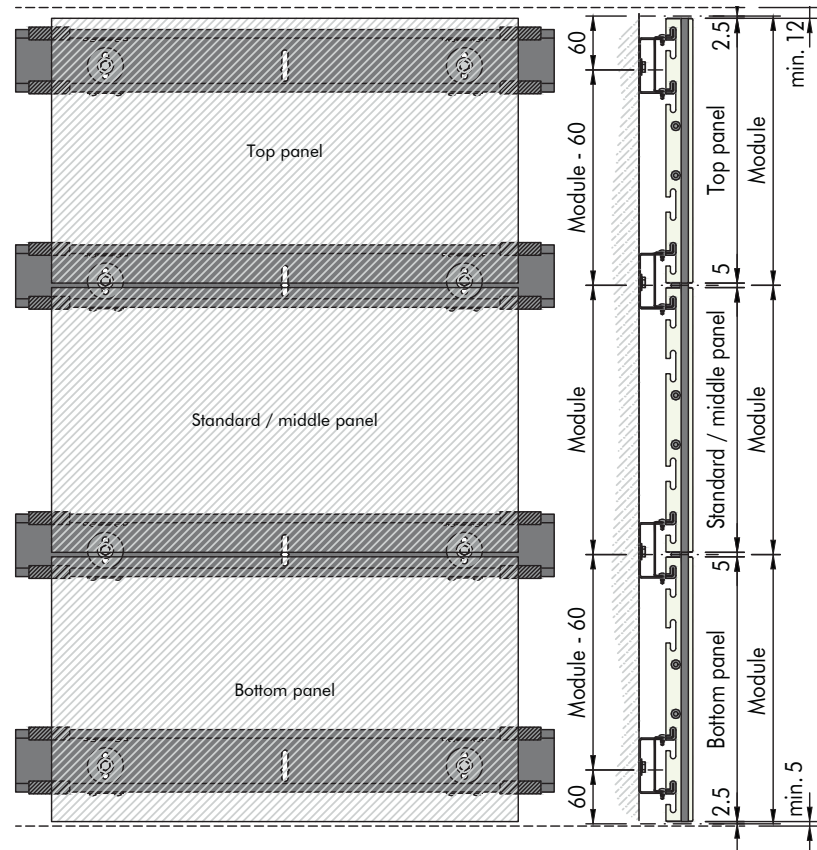


The ends of the C-Wall Profiles should be butt together without a gap.

Use the self-drilling screws to fix it together.

Detail G

Top and bottom end panels



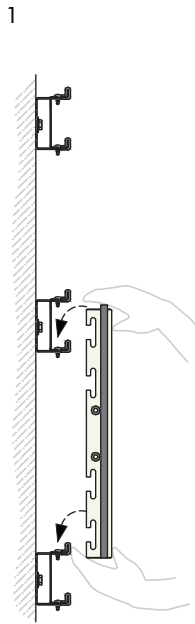
For the top and bottom panels, the C-Wall Profile can be moved inwards by 60 mm so that it is no longer visible. This is possible because the panels have a double notching.

In order to be able to hook-on the panels, a minimum distance of 12 mm is required at the top.

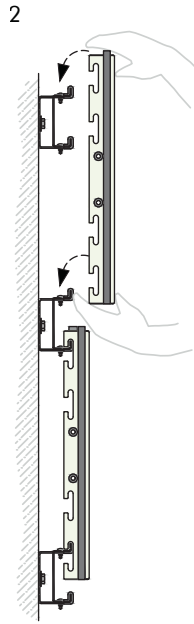
A minimum clearance of 5 mm is recommended at the bottom and vertical sides.

Detail H

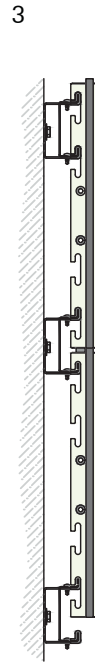
Panel insertion



When installing the panels, start with the bottom row first.

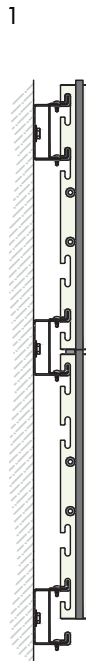


Follow with the next one up until the top row is reached.

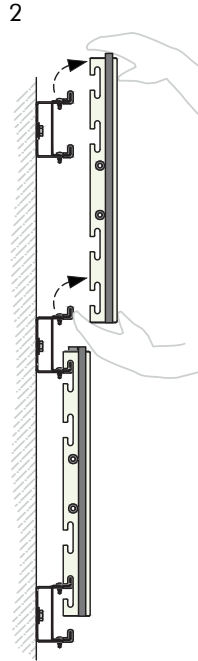


Gently press the panels down until the joint is 5 mm. The spacers ensure that the joint width is not exceeded.

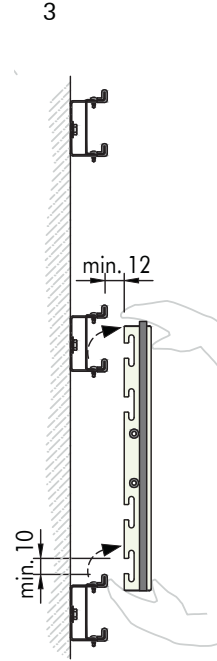
Panel extraction



The panels are removed in the reverse order of installation from top to bottom.



Start with the top panel first.



Lift up the panel by min. 10 mm and move it away from the wall by min. 12 mm. Store the panel in a safe place so that it cannot be damaged.

METAL WALLCOUSTIC HORIZON 1100

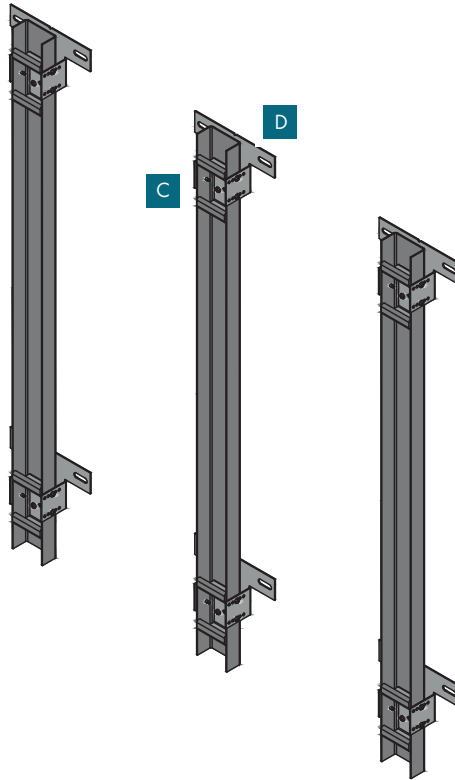
(METAL W-H 1100)

U-Wall Profile grid
Concealed wall solution for indoor applications

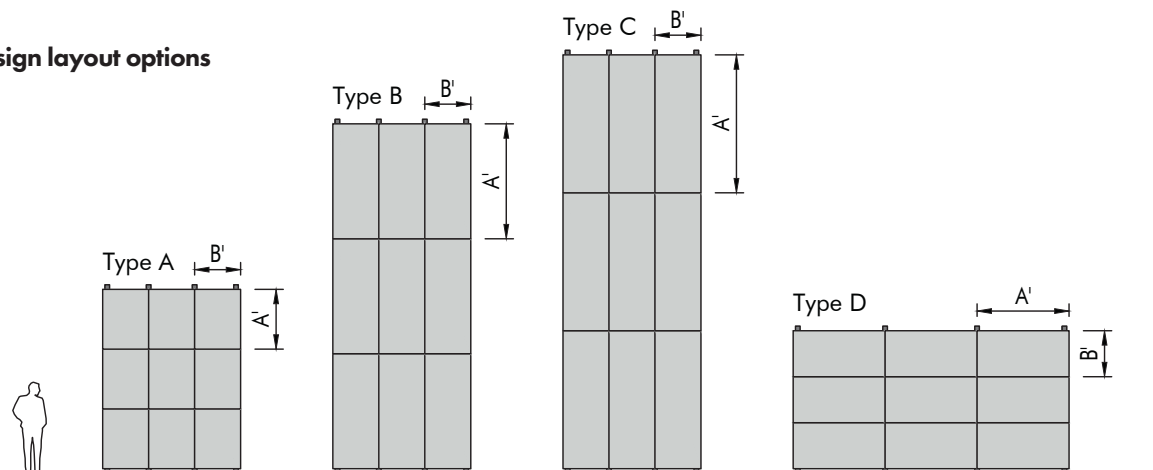
General information

- Concealed hook-on grid system for walls
- U-Wall Profile made of galvanised steel
- Typical ceiling weight up to 10.5 kg/m² (indicative value for unperforated panels, without additional load)
- Upright or reclined layout
- Panels are easily installed and fully demountable
- Acoustic & design solution
- Various panel types for corner, end and transition details available on request

Isometric view

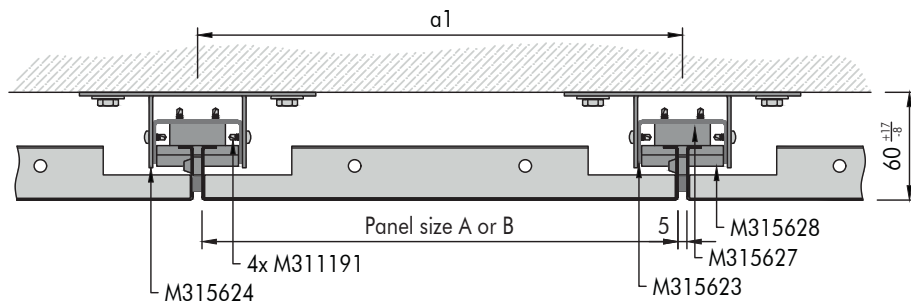


Vario Design layout options



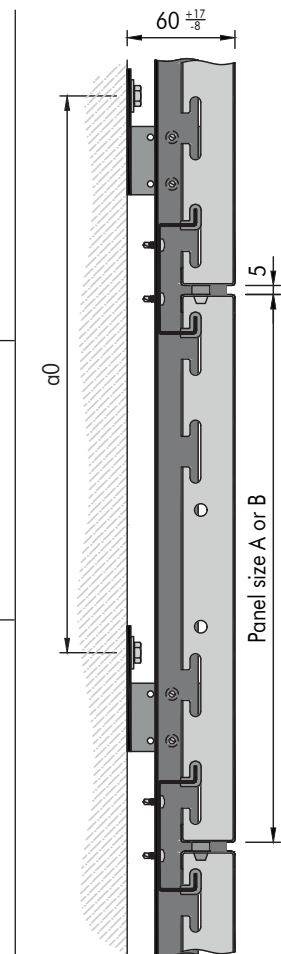
Section A

Horizontal section



Section B

Vertical section



Panel dimensions

- Type A A' = 600 - 1300, B' = 250 - 1000 mm, with 2 suspension points per long side
- Type B A' = 600 - 2500, B' = 250 - 1000 mm, with 3 suspension points per long side
- Type C A' = 600 - 3000, B' = 250 - 1000 mm, with 4 suspension points per long side
- Type D A' = 600 - 2000, B' = 250 - 1000 mm, with 2 suspension points per short side

Important informations

The panels are not designed for impact resistance. This is a pure acoustic and design solution.

The panels must be made to measure and cannot be cut to size on site.

The longer the upright installed panels are, the more suspension points are needed (type A, B, C).

The panels come standard with a 5 mm gasket and spacers on the long and short side, which simplifies installation and improves visual appearance. An option without gasket and spacers is not offered.

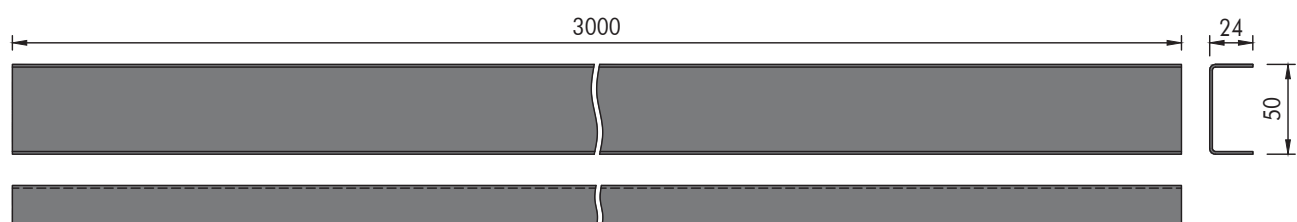
For a professional execution, CAD details are recommended (layouts, elevations, details).

Components

Standard components

- M315623 U-Wall Profile
- M315626 Splice connector for U-Wall Profile
- M315624 Wall anchor for U-Wall Profile
- M315625 Corner wall anchor for U-Wall Profile
- M315627 Suspension element for U-Wall Profile
- M315628 Supporting bracket
- M311191 Self-drilling screw 3.5 x 9.5 mm

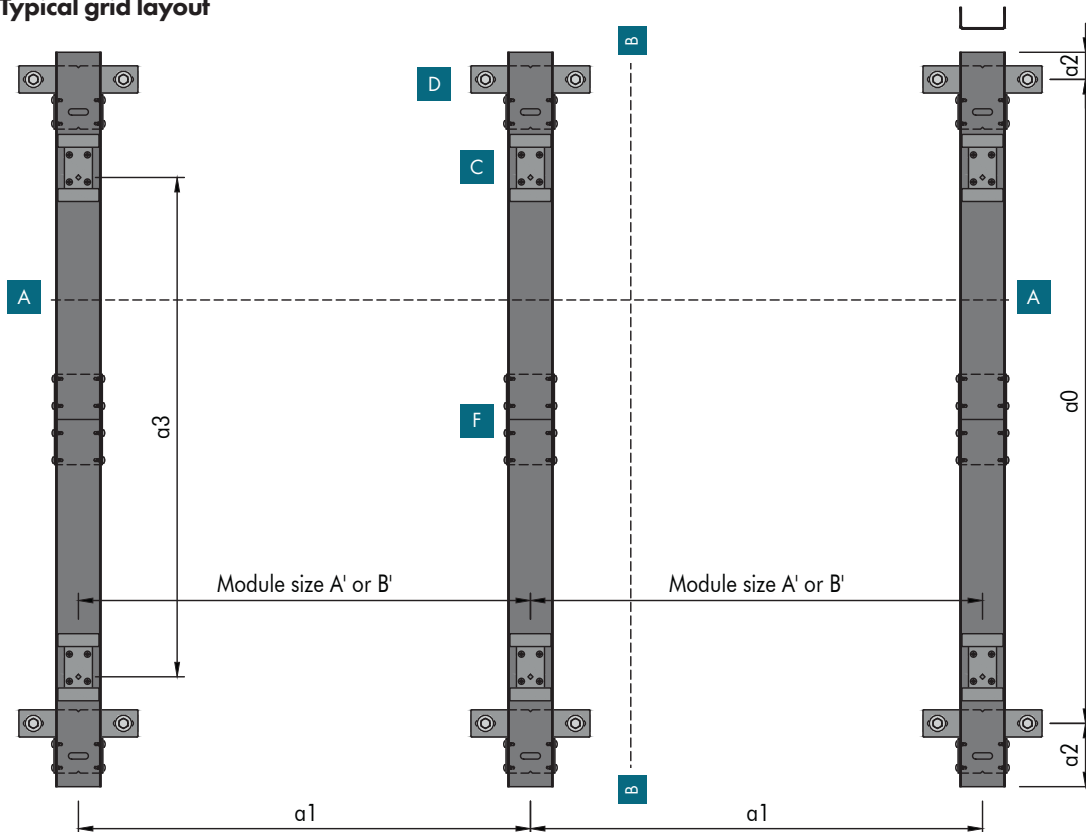
U-Wall Profile



Parameters

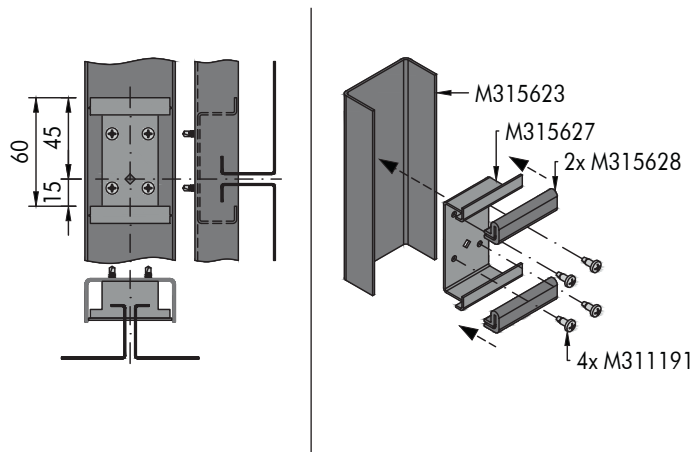
- α0 Distance between wall fixing points for type A, B, C = max. 750 mm, for type D = max. 500 mm
- α1 Distance between U-Wall Profile for type A, B, C = max. 1000 mm, for type D = max. 2000 mm
- α2 Distance from U-Wall Profile end to wall fixing point = max. 100 mm
- α3 Distance between panel suspension points
- A' Module length = panel length (A) + 5 mm
- B' Module width = panel width (B) + 5 mm

Typical grid layout



Detail C

Suspension element



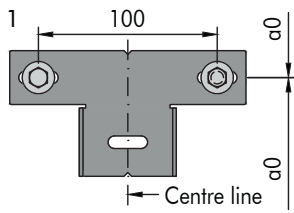
The suspension element has a square stamping that depicts the central axis of the horizontal and vertical panel joints.

Use four self-drilling screws to attach it to the C-Wall Profile.

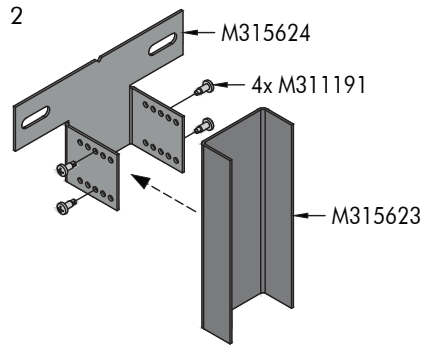
The panels are placed on supporting brackets M315628 made of rubber. As a result, the panels cannot easily shift and remain in position. There is also no noise in the event of any vibrations.

Detail D

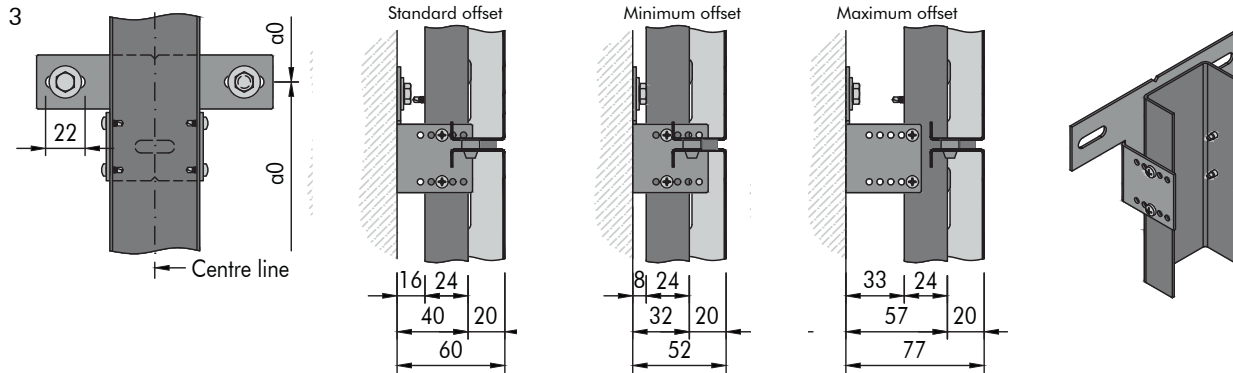
Wall anchor installation



Position the wall anchor on the wall and fix it (wall fixing min. 1 kN).
 Markings are stamped on top and bottom of the wall anchor, indicating the centre line. Install the wall anchor at a distance of $a0$.



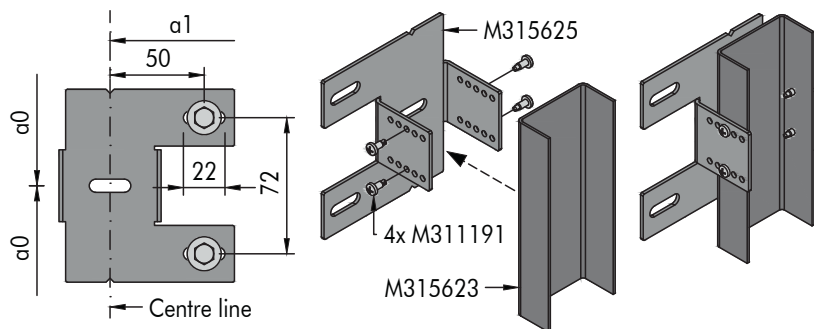
Align the depth of the profile and fix it with four self-drilling screws.
 The standard offset is 60 mm.



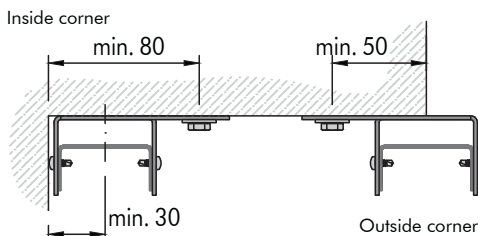
The wall anchor has 22 mm long holes. This allows the wall fixings to be loosened slightly so that the wall anchor and U-Wall Profile can be adjusted ≈ 7 mm to the left or right if necessary, without having to dismantle everything.

Detail E

Corner wall anchor installation



Installation is the same as explained in Detail D. The only difference is that the wall fixings are on top of each other. This allows installation where the standard wall anchor cannot be installed. The corner wall anchor can be installed pointing left or right. Custom panel solutions for inside and outside corners are available upon request.



Inside corner: The corner wall anchors are first assembled with the U-Wall profile and then everything is attached to the wall together. In this way, a minimum distance of 30 mm can be achieved.

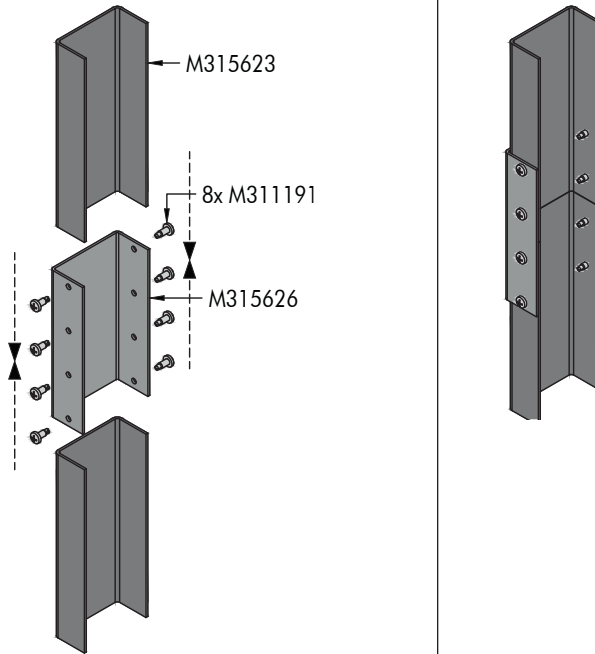
Outside corner: It must be ensured that a minimum distance of 50 mm is maintained between the wall fixing point and the corner

Detail F

Splice connection

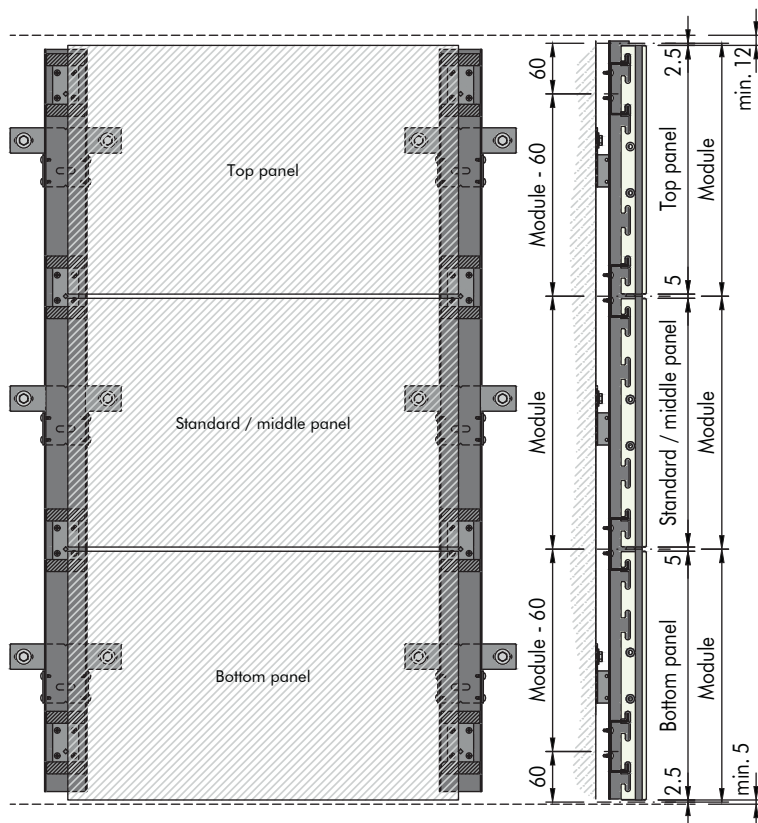
1 The ends of the U-Wall Profiles should be butt together without a gap.

2 Use the self-drilling screws to fix it together.



Detail G

Top and bottom end panels



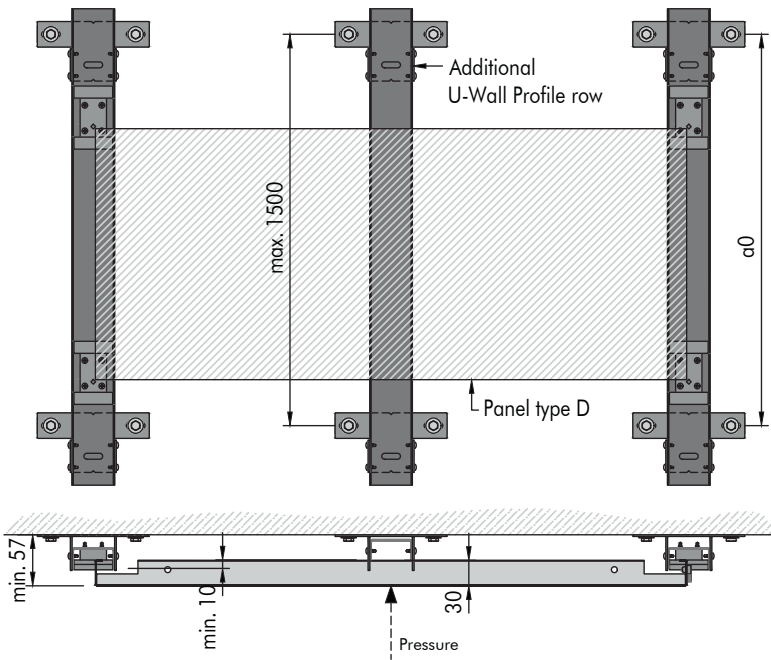
For the top and bottom panels, the suspension element for U-Wall Profile can be moved inwards by 60 mm so that it is no longer visible. This is possible because the panels have a double notching.

In order to be able to hook-on the panels, a minimum distance of 12 mm is required at the top.

A minimum clearance of 5 mm is recommended at the bottom and vertical sides.

Detail H

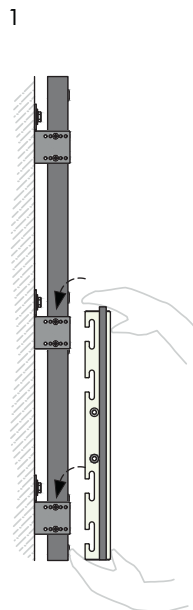
Panel type D reinforcement option



Optionally, an additional U-Wall Profile can be placed in between. This prevents deformation of longer reclined panels. The U-Wall Profile is aligned 10 mm further back. Since there is no load on the profile, it can be fixed to the wall at a distance of up to 1500 mm. This option requires a minimum offset of 57 mm.

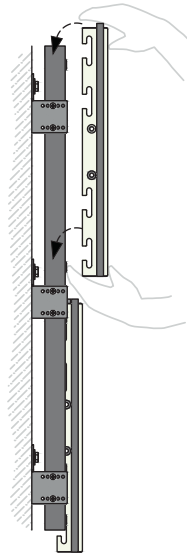
Detail I

Panel insertion



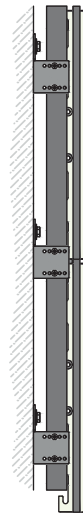
When installing the panels, start with the bottom row first.

2



Follow with the next one up until the top row is reached.

3



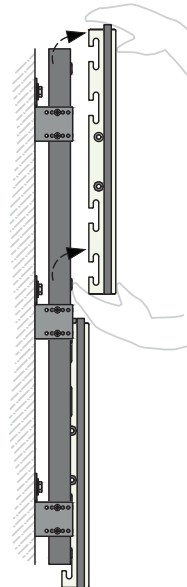
Gently press the panels down until the joint is 5 mm. The spacers ensure that the joint width is not exceeded.

Panel extraction



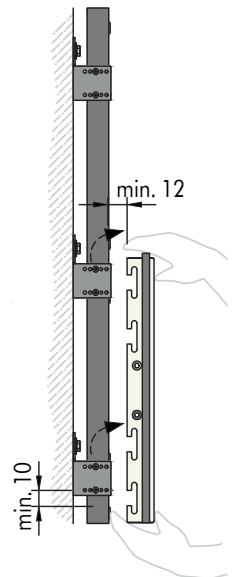
The panels are removed in the reverse order of installation from top to bottom.

2



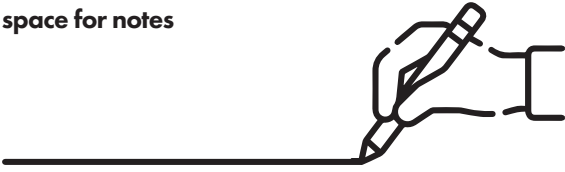
Start with the top panel first.

3



Lift up the panel by min. 10 mm and move it away from the wall by min. 12 mm. Store the panel in a safe place so that it cannot be damaged.

space for notes



METAL WALLCOUSTIC ELEMENT

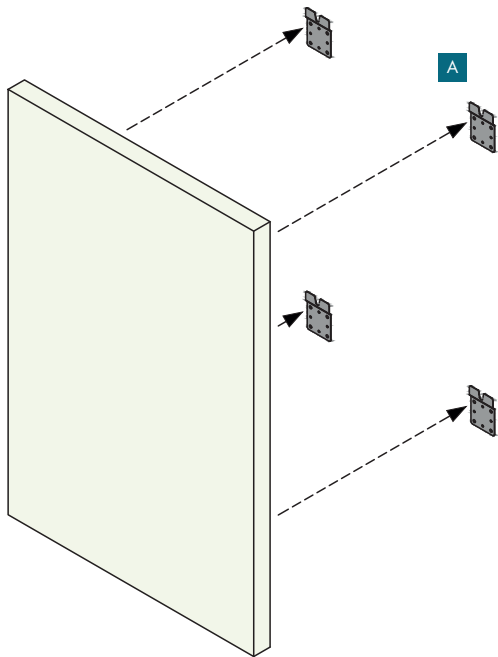
Wall hanging kit

Single wall absorber solution for indoor applications

General information

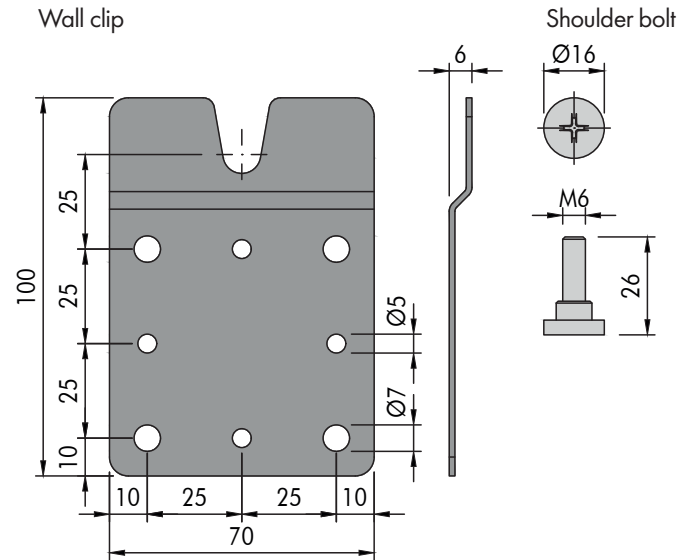
- Wall hanging kit for wall absorbers
- For upright or reclined installation
- Optional acoustic pad and rear cover (factory fixed by pop-rivets)
- Typical wall absorber weight 4.3 - 26.0 kg/m² (indicative value for unperforated wall absorbers, without additional load)
- Wall absorbers are easily installed and fully demountable
- Acoustic & design elements

Isometric view



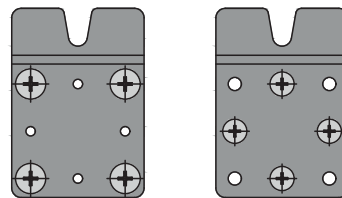
Detail A

Wall clip



Fasten the wall clips to the wall according to the spacing of the threads on the back of the wall absorbers.

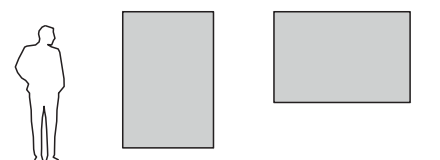
The wall clip has holes in two different dimensions. Depending on the type of the wall, determines which wall fixing can be used.



Vario Design layout options

Upright

Reclined

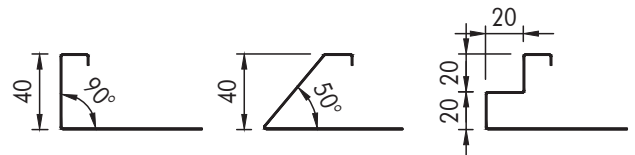


Wall absorber edge detail options

90° edge

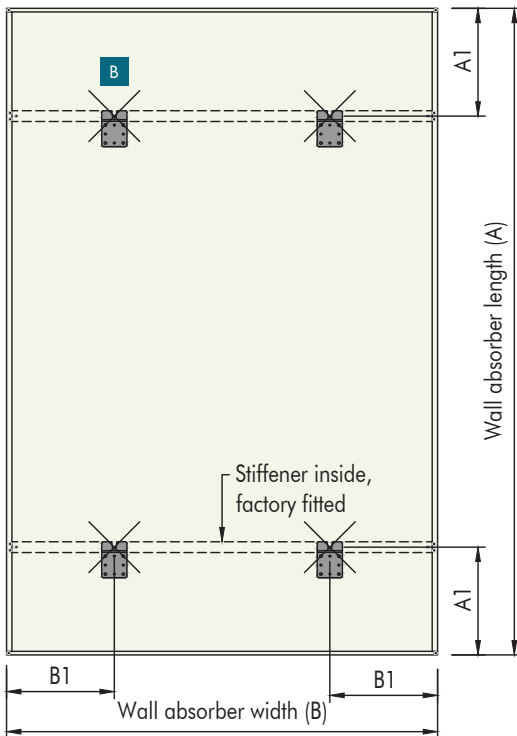
50° edge

20x20 mm edge

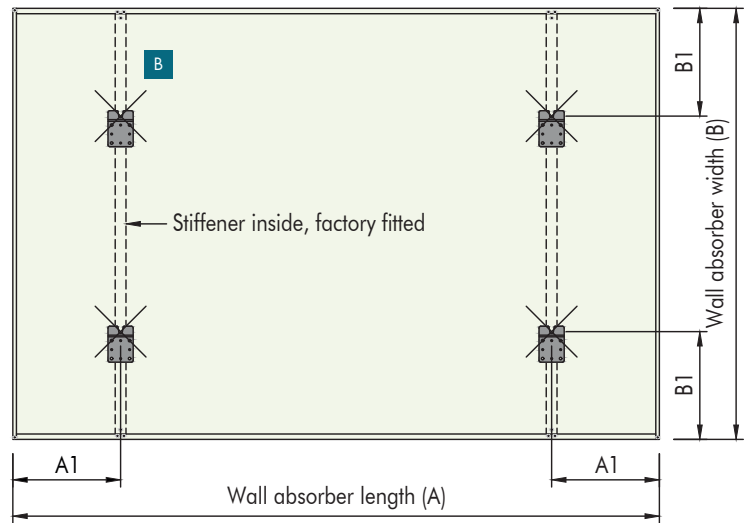


Orientation

Upright installation



Reclined installation



View from rear side

Important information

Please make sure that the visible side is protected during the assembly and cannot be scratched.

In general, be careful when handling and transporting these large and heavy items.

These wall absorbers are not designed for impact resistance.

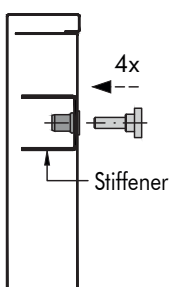
Parameters

- A Wall absorber length = min. 600 / max. 1800 mm
- A1 (A = 600 - 899) = 100 - 150 mm
(A = 900 - 1800) = 150 - 300 mm
- B Wall absorber width = min. 600 / max. 1200 mm
- B1 (A = 600 - 899) = 100 - 150 mm
(A = 900 - 1200) = 150 - 300 mm

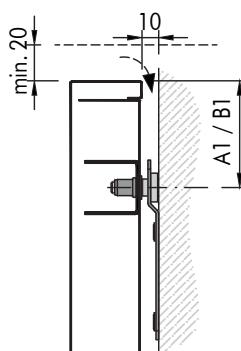
Detail B

Wall fixing

1 Insert the four shoulder bolts into the threads on the back of the wall absorber.



2 Hang the wall absorber on the wall clips with the four shoulder bolts. A distance of at least 20 mm is required from the upper edge of the wall absorber so that it can be hung.





PERIMETER TRIMS & TRANSITIONS

METAL PERIMETER SOLUTIONS

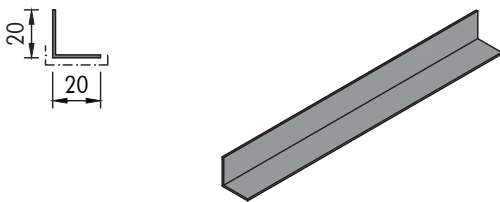
Range of perimeter trims for metal ceilings
For indoor applications

General information

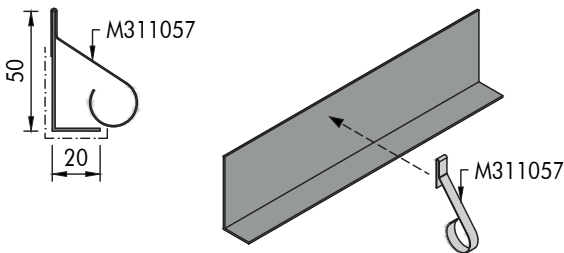
- Solutions for small, medium and large rooms, as well as corridors
- Perimeter trims made of aluminium and steel
- Perimeter trims for most common construction
- Shadowline trims for alternative construction (shadow gap)
- Available in standard RAL 9010, further colour options on request
- Pressure spring for F-perimeter trims
- Fixing spring and perimeter wedge available for some of the trims
- Curved trims and column rings (on request)

Aluminium perimeter trims

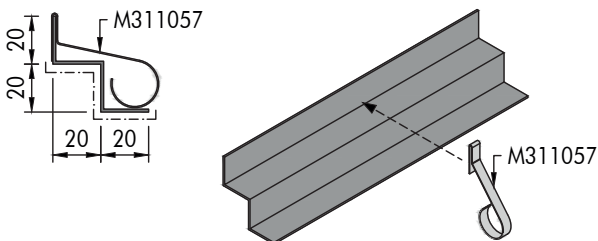
RA 1 perimeter trim



RA 2 perimeter trim

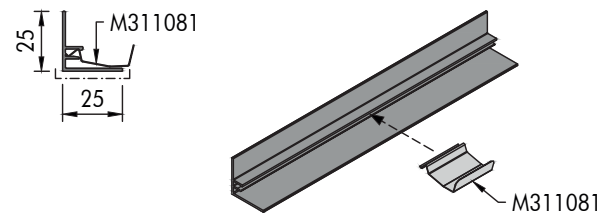


RA 3 shadowline perimeter trim

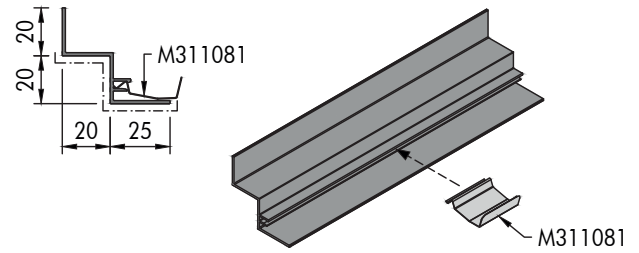


Aluminium F-perimeter trims

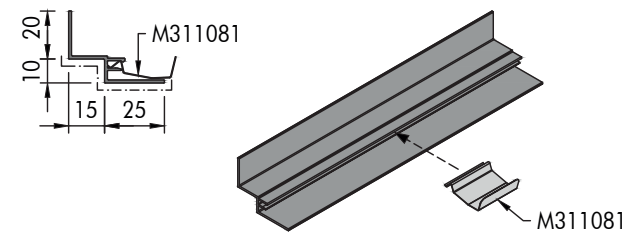
RA 4 F perimeter trim



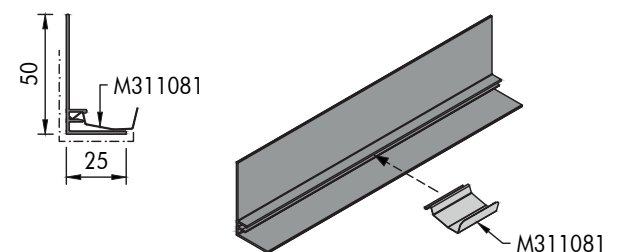
RA 5 F shadowline perimeter trim



RA 6 F shadowline perimeter trim



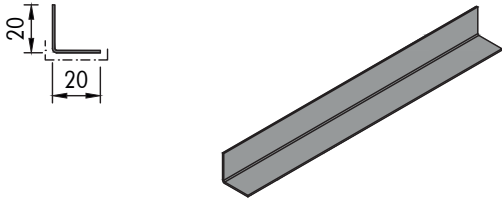
RA 9 F perimeter trim



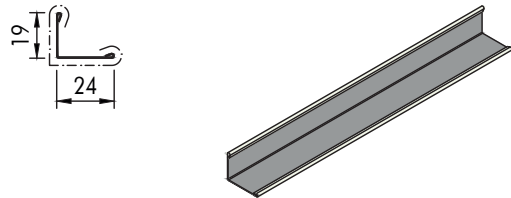
----- Coated surface

Galvanised steel perimeter trims

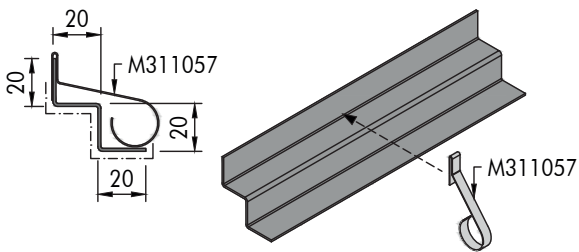
RA 1 S perimeter trim



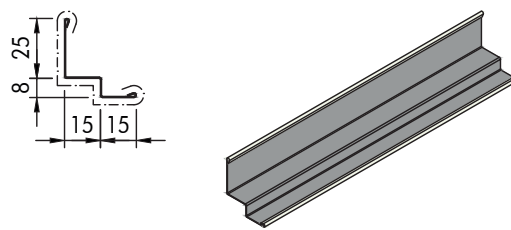
Perimeter L



RA 3 S shadowline perimeter trim



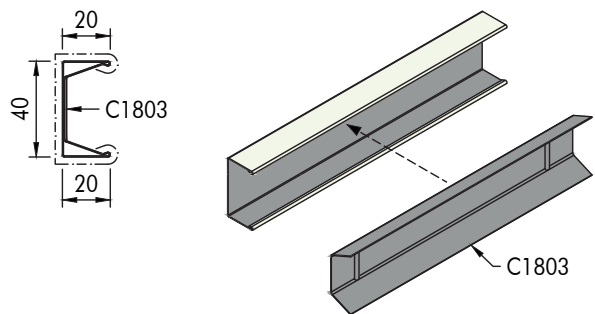
Shadowline perimeter



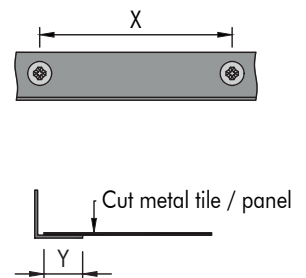
Generally, installation has to be carried out with approved fixings suitable for the type of wall being fixed to. Flat headed screws are recommended to prevent deformation of the trim. Wall fixings are not offered by Knauf Ceiling Solutions.

Cut tiles/panels can be held-down with springs or wedges.

Perimeter C



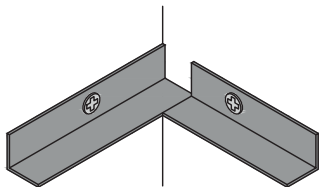
Perimeter trims		Length (L) [mm]	max. (X) [mm]	min. (Y) [mm]
M215110	RA 1	4000	600	12
M215111	RA 2	4000	600	12
M215112	RA 3	4000	600	14
M215013	RA 4 F	4000	600	13
M215014	RA 5 F	4000	600	13
M215015	RA 6 F	4000	600	13
M215233	RA 9 F	4000	600	13
M215213	RA 1 S	3000	600	12
M215214	RA 3 S	3000	600	14
Various	Perimeter L 19 x 24 mm	3000	400	16
Various	Shadowline perimeter trim 25 x 15 x 8 x 15 mm	3000 / 3050	400	10
Various	Perimeter C 20 x 40 x 20 mm	3000 / 3050	400	14



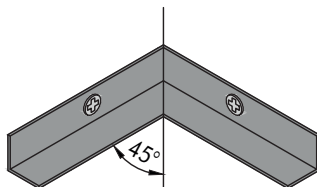
Perimeter trim corner details

For 90° corners, perimeter trims are recommended to be butt cut. Mitred cuts require increased precision and time.

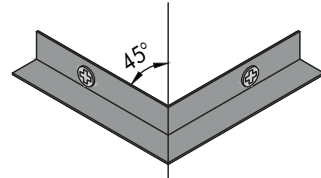
Butt-cut inside corner



Mitre-cut inside corner



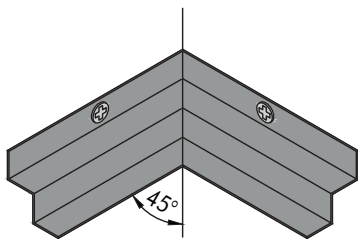
Mitre-cut outside corner



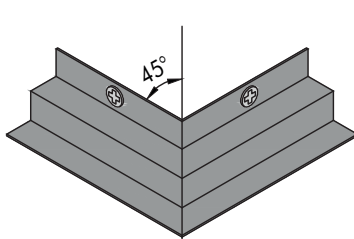
Shadowline perimeter trim corner details

Shadowline perimeter trims should be mitred as standard.

Mitre-cut inside corner



Mitre-cut outside corner

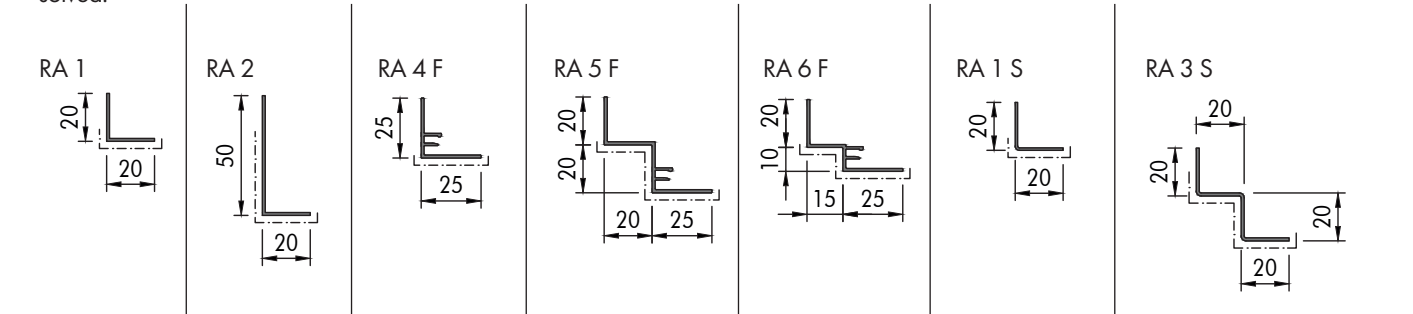


Accessories

- C1803 Perimeter wedge
- M311057 Fixing spring
- M311081 Pressure spring (for F-perimeter trims)

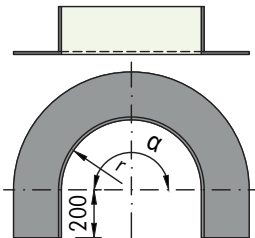
Curved perimeter trims

Some standard perimeter trims can be supplied curved on request. With this, details for curved walls, skylights, column rings, etc. can be solved.

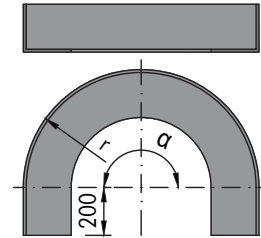


The ends of the perimeter trims are supplied straight and must be cut on site. In this way, they can be fitted and structural tolerances can be accommodated.

Curved outward



Curved inside

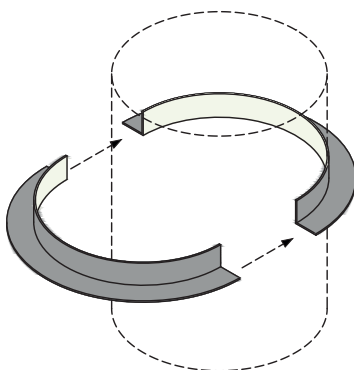


Curved perimeter trims	Curved outward Radius (r) min. [mm]	Curved inside Radius (r) min. [mm]	Angle (α) max. [mm]
RA 1 curved	90	750	180
RA 2 curved	300	750	180
RA 4 F curved	90	1000	180
RA 5 F curved	125	1500	180
RA 6 F curved	115	2000	180
RA 1 S curved	90	750	180
RA 3 S curved	120	800	180

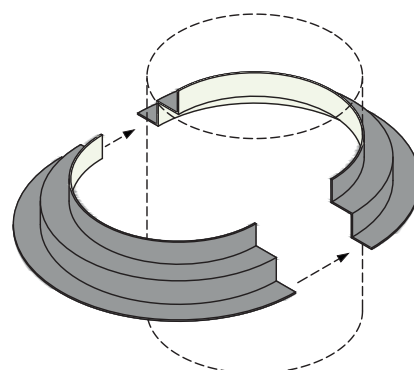
Column rings

Column rings are delivered in two parts, which simplifies assembly.

Semi-circular column ring



Semi-circular shadowline column ring



----- Coated Surface

METAL STEEL BULKHEAD SOLUTIONS

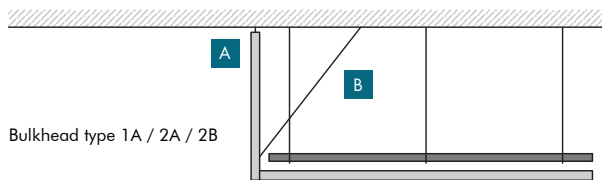
Range of bulkheads for metal ceilings
For indoor applications

General information

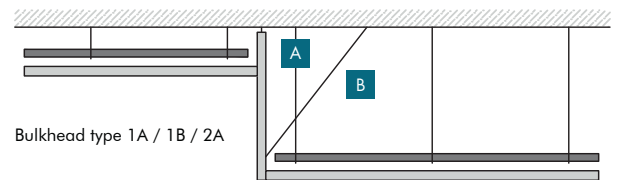
- Solutions for small, medium and large rooms, as well as corridors
- Bulkheads made of steel
- A range of standard bulkheads and Vario Design options
- Available in standard RAL 9010, further colour options on request
- For vertical closure and change in level
- Inside / outside corner options on request

Application area

Vertical closure

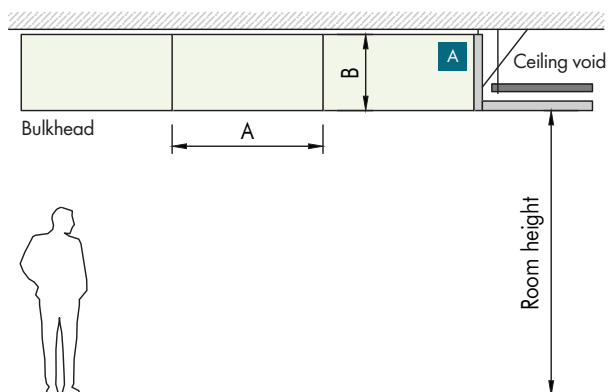


Change in level

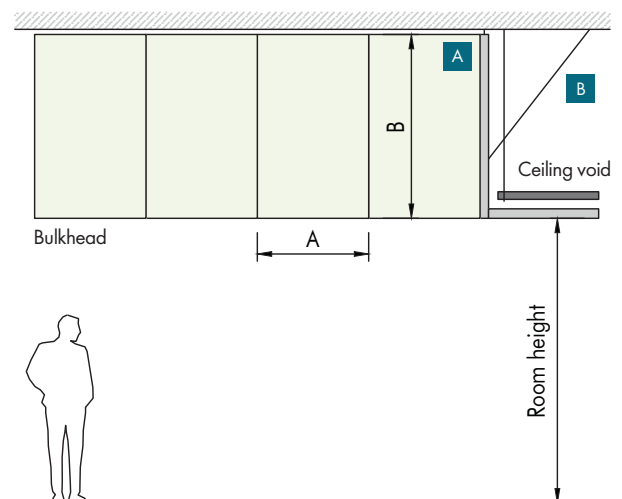


Bulkhead orientation

Reclined

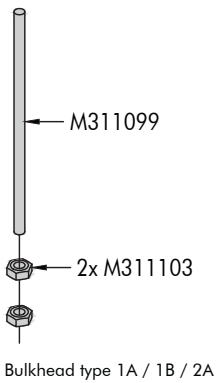


Upright

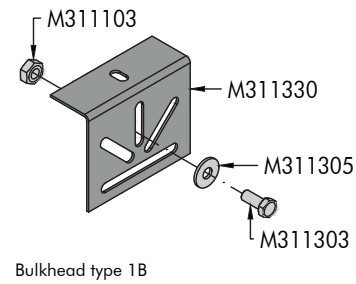


Detail A

Threaded rod



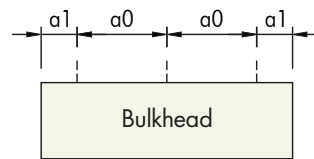
Attachment bracket



Depending on the bulkhead type and detail, two suspension options are available.

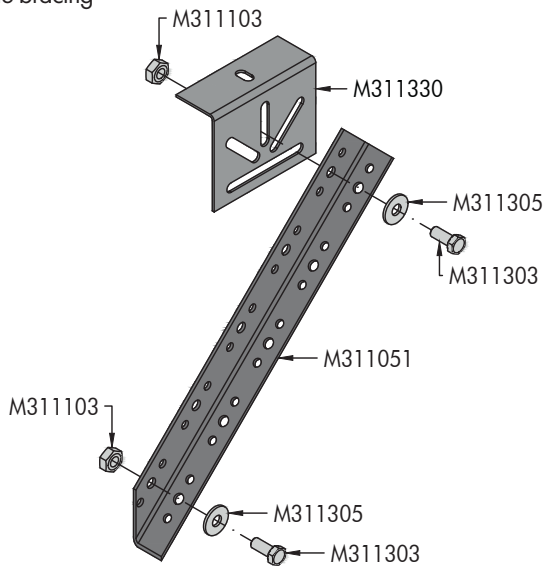
a0 Distance between suspension points = max. 600 mm

a1 Distance from bulkhead end to suspension point = max. 300 mm



Detail B

Angle bracing



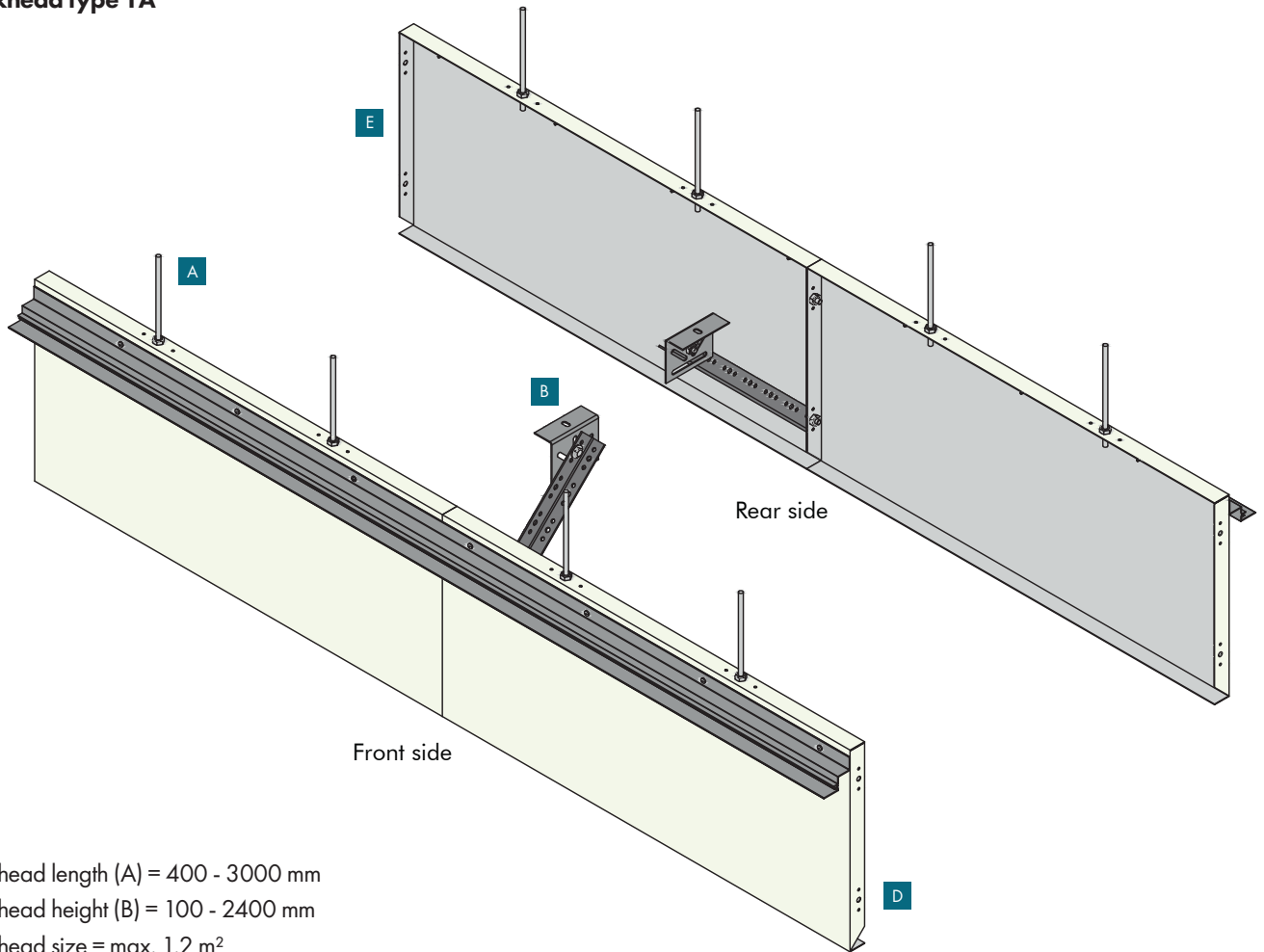
The bulkheads must be secured with an angle bracing in the lower half. A primary angle is suitable for this, which is attached to the bulkhead with M6 bolts.

The angle bracing is attached at an angle of max. 45°.

At the top, an attachment bracket gets fixed to the soffit. The primary angle is secured through the long holes in the bracket using an M6 nut and bolt.

Accessories		Length (L) [mm]
M215111	RA 2	4000
M215013	RA 4 F	4000
M215014	RA 5 F	4000
M311051	Primary angle 3000 x 27 x 22 mm	3000
M311081	Pressure spring (for F-perimeter trims)	-
M311099	Threaded rod M6 x 1000 mm	1000
M311103	Hexagonal nut M6	-
M311105	Washer	-
M311303	Hexagonal bolt M6 x 16 mm	-
M311330	Attachment bracket	-
M311191	Self-drilling screw 3.5 x 9.5 mm	-

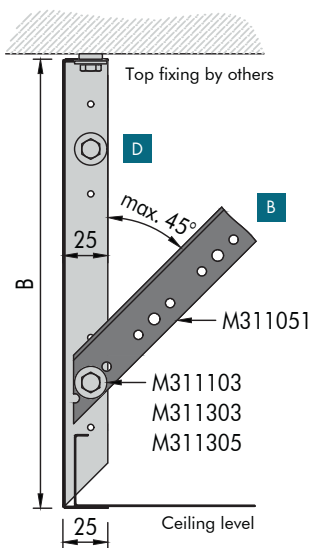
Bulkhead type 1A



Bulkhead length (A) = 400 - 3000 mm
 Bulkhead height (B) = 100 - 2400 mm
 Bulkhead size = max. 1.2 m²

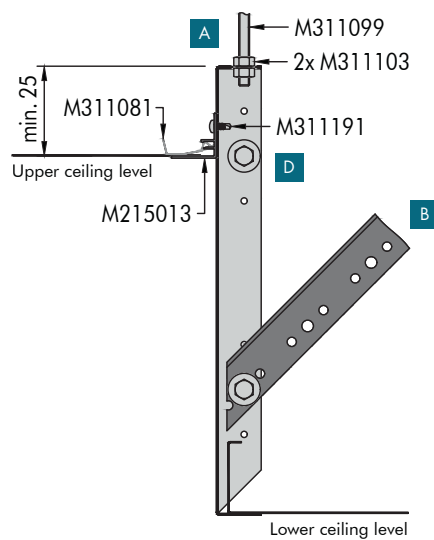
Option C1

Vertical closure



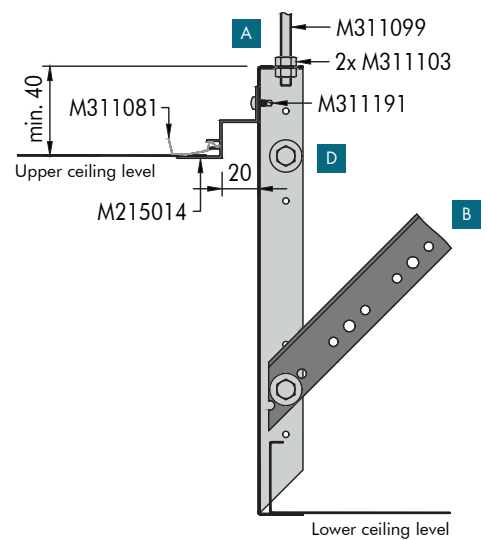
Option C2

Change in level with RA 4 F



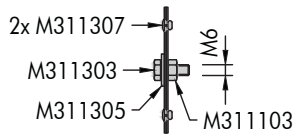
Option C3

Change in level with RA 5 F



Detail D

Bulkhead connection



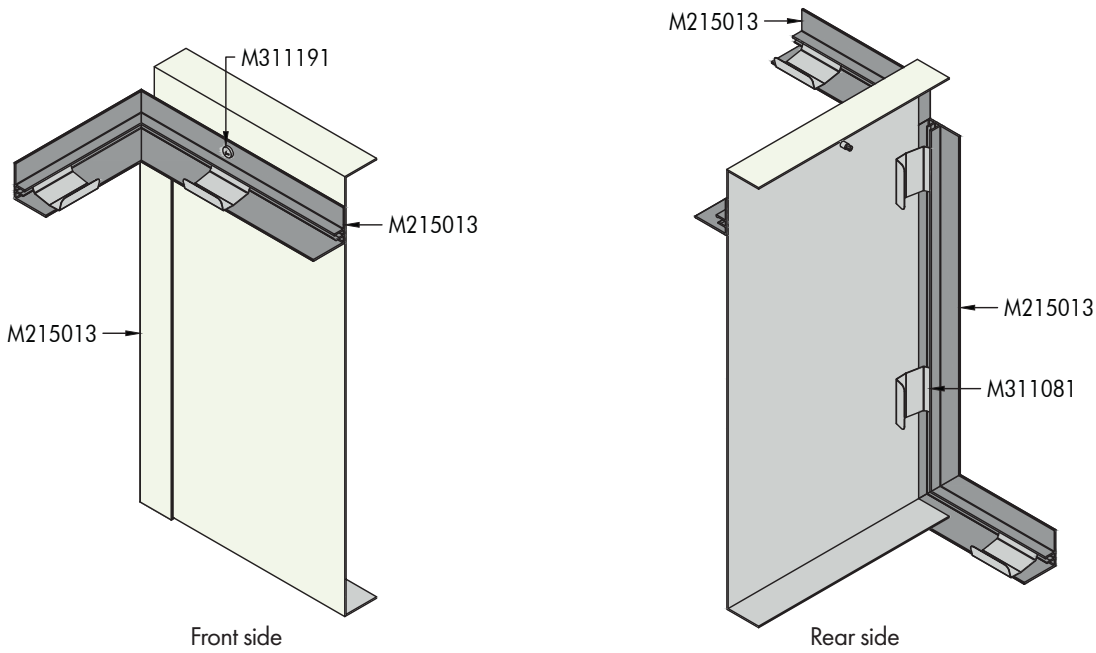
The bulkheads can either be connected by two pop-rivets or a M6 nut and bolt.

Option E1

Cut bulkhead wall detail with RA 4 F

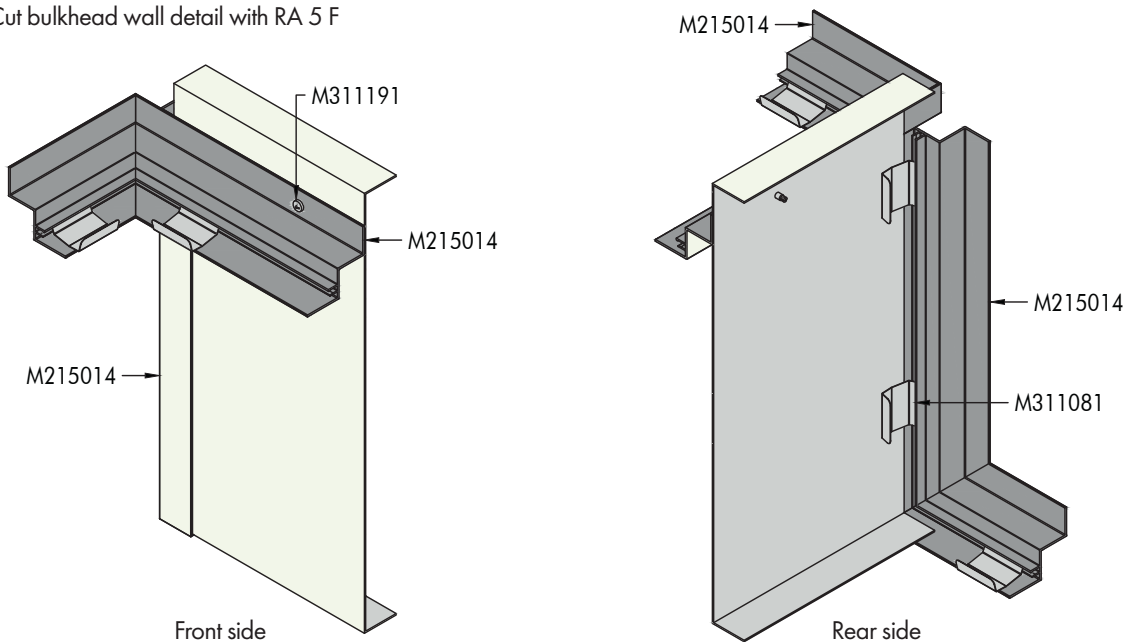
Perimeters fixed to the bulkhead in a distance of max. 600 mm.

Perimeter solutions see separate datasheet.



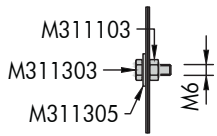
Option E2

Cut bulkhead wall detail with RA 5 F



Detail D

Bulkhead connection

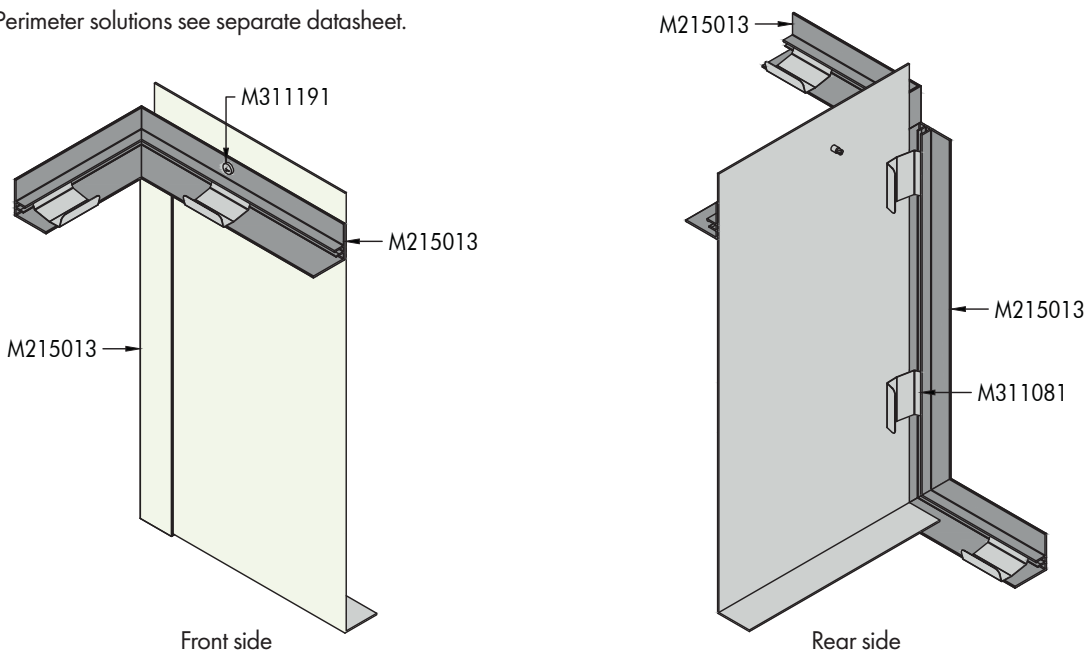


Option E1

Cut bulkhead wall detail with RA 4 F

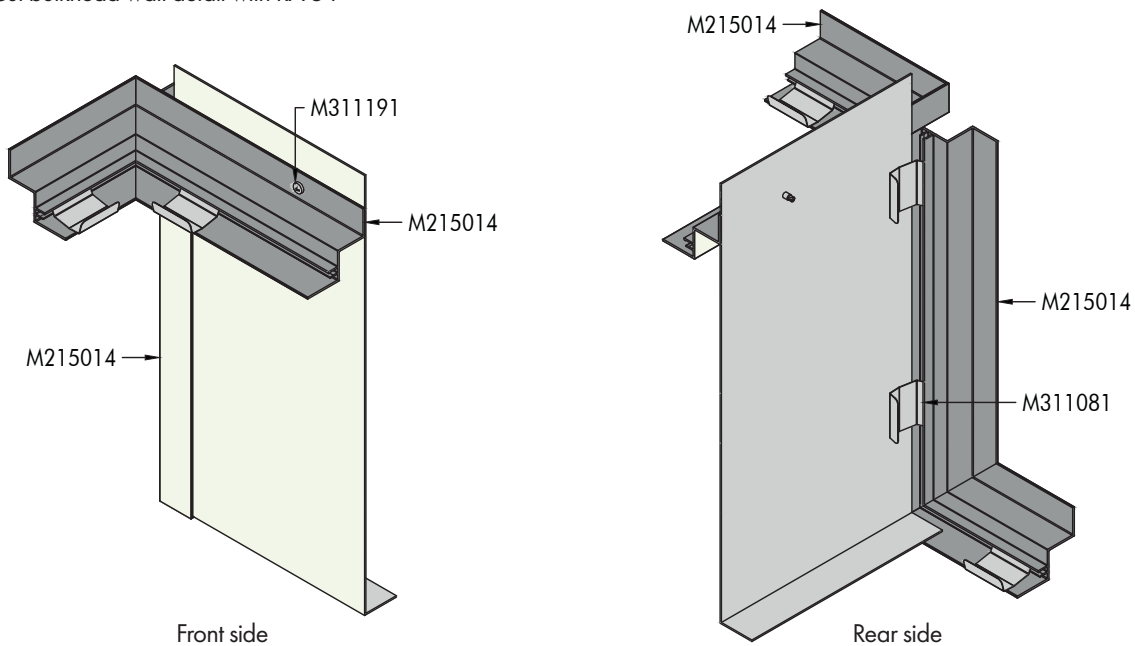
Perimeters fixed to the bulkhead in a distance of max. 600 mm.

Perimeter solutions see separate datasheet.

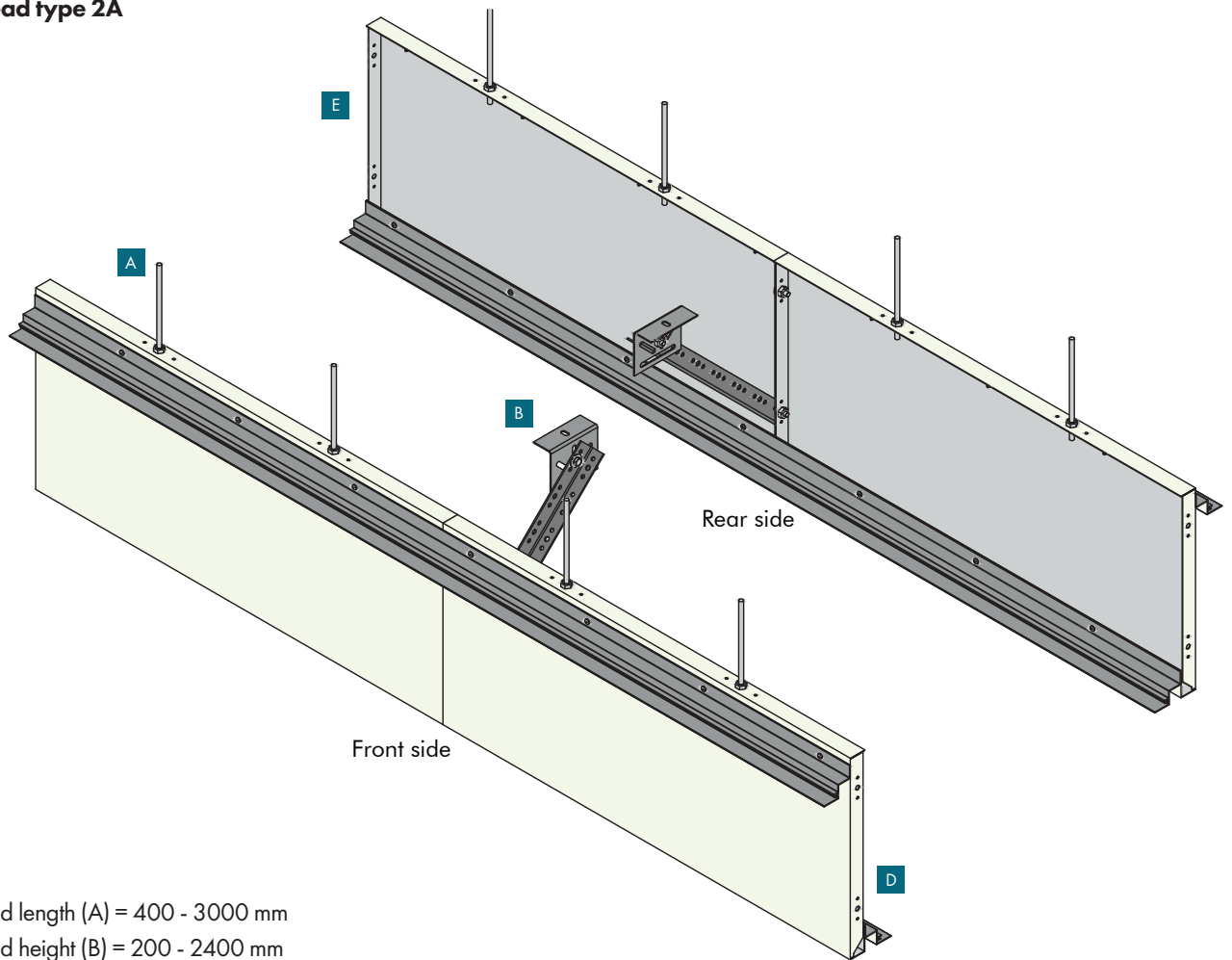


Option E2

Cut bulkhead wall detail with RA 5 F



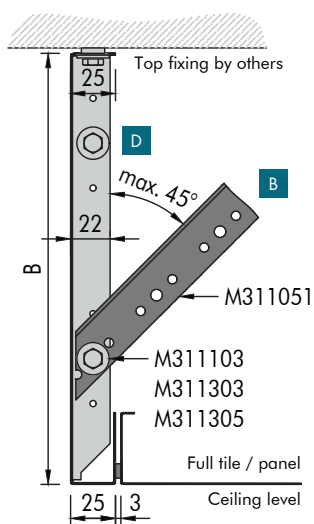
Bulkhead type 2A



Bulkhead length (A) = 400 - 3000 mm
 Bulkhead height (B) = 200 - 2400 mm
 Bulkhead size = max. 1.2 m²

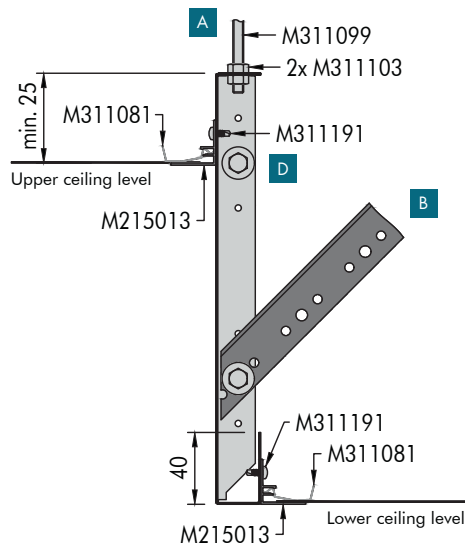
Option C1

Vertical closure



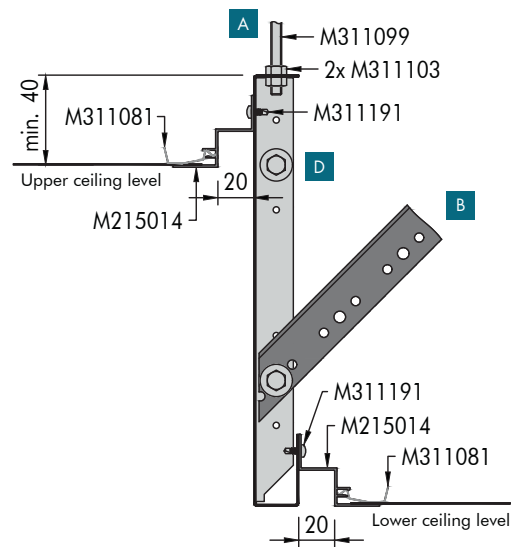
Option C2

Change in level with RA 4 F



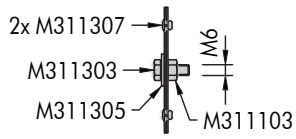
Option C3

Change in level with RA 5 F



Detail D

Bulkhead connection



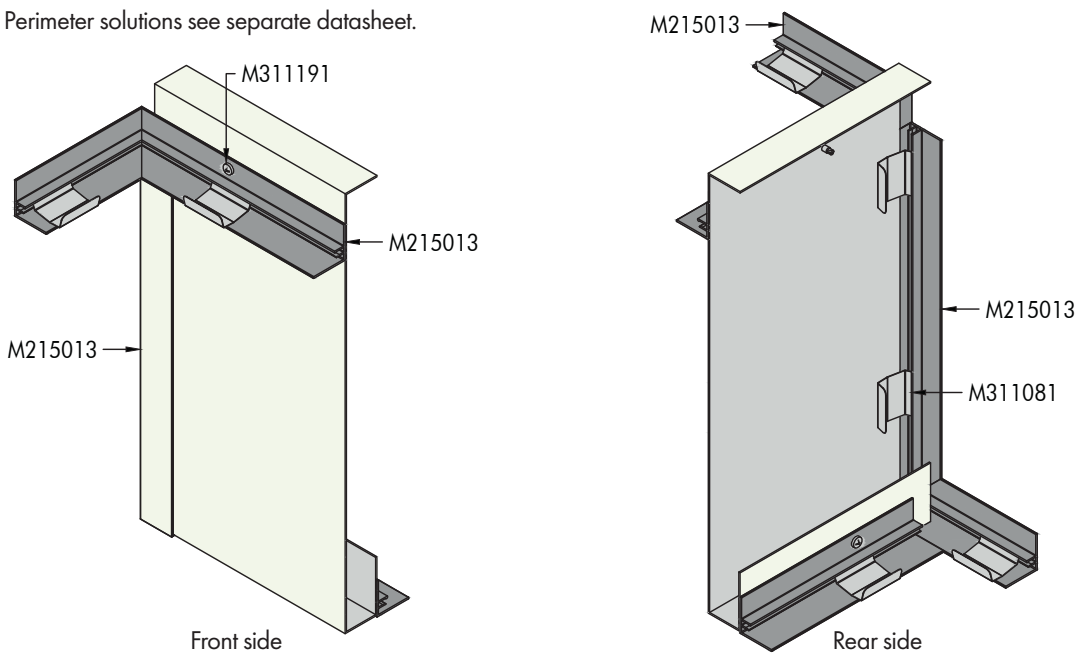
The bulkheads can either be connected by two pop-rivets or a M6 nut and bolt.

Option E1

Cut bulkhead wall detail with RA 4 F

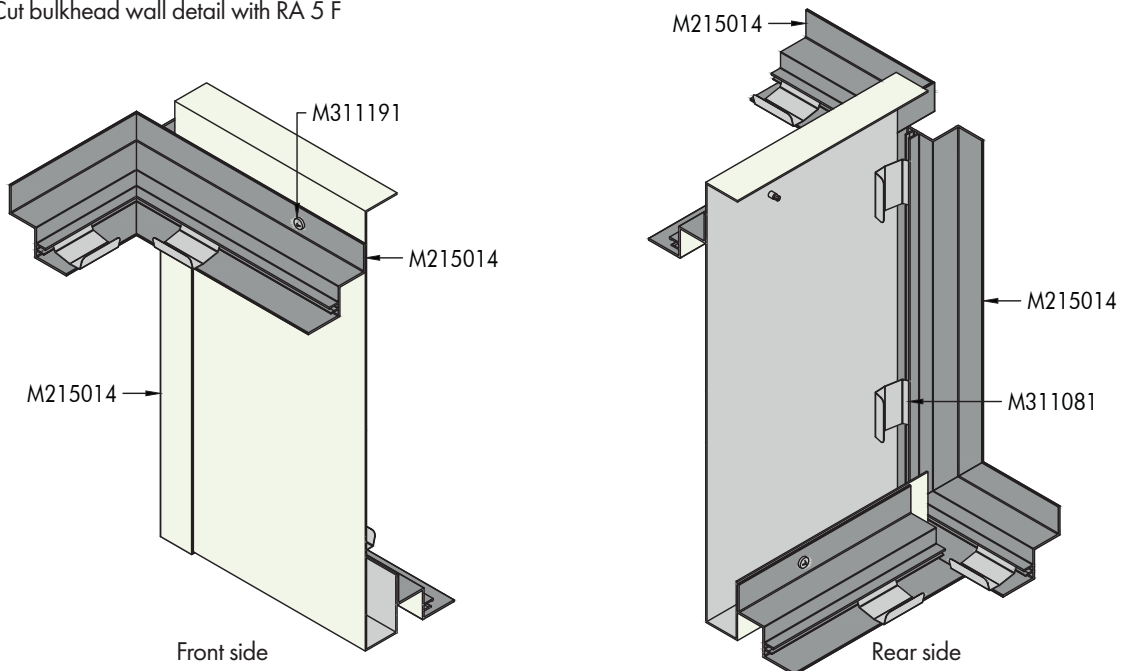
Perimeters fixed to the bulkhead in a distance of max. 600 mm.

Perimeter solutions see separate datasheet.

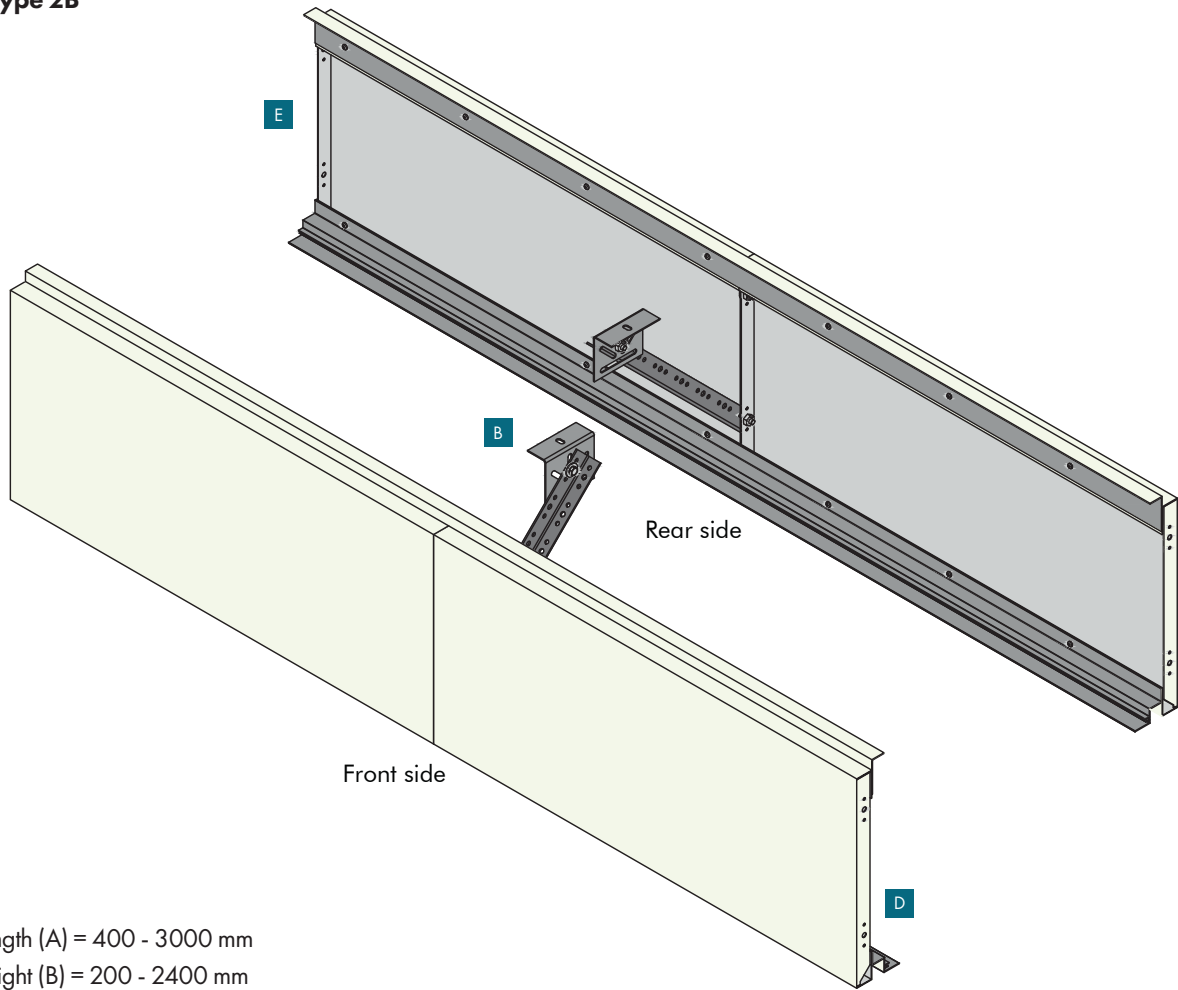


Option E2

Cut bulkhead wall detail with RA 5 F



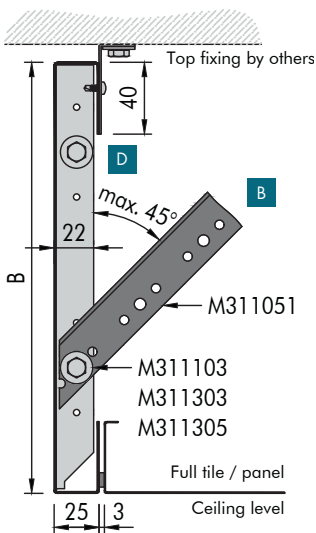
Bulkhead type 2B



Bulkhead length (A) = 400 - 3000 mm
 Bulkhead height (B) = 200 - 2400 mm
 Bulkhead size = max. 1.2 m²

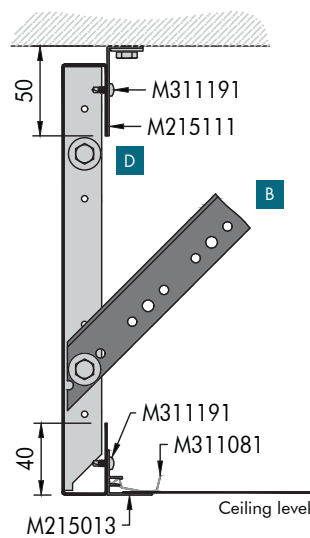
Option C1

Vertical closure



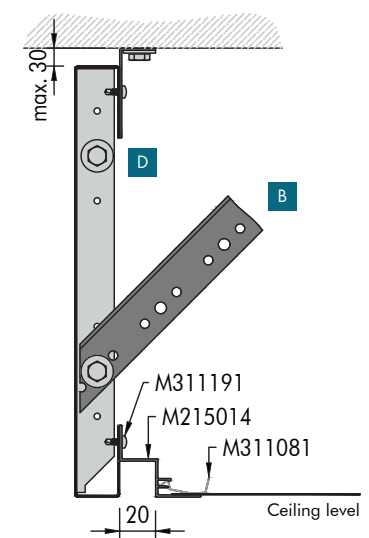
Option C2

Change in level with RA 4 F



Option C3

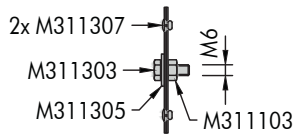
Change in level with RA 5 F



Detail D

Bulkhead connection

The bulkheads can either be connected by two pop-rivets or a M6 nut and bolt.

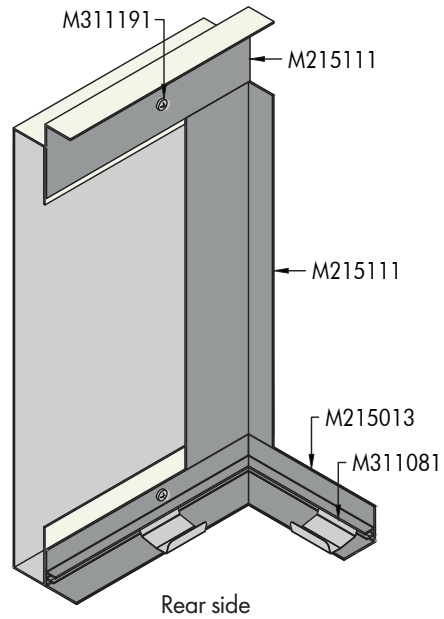
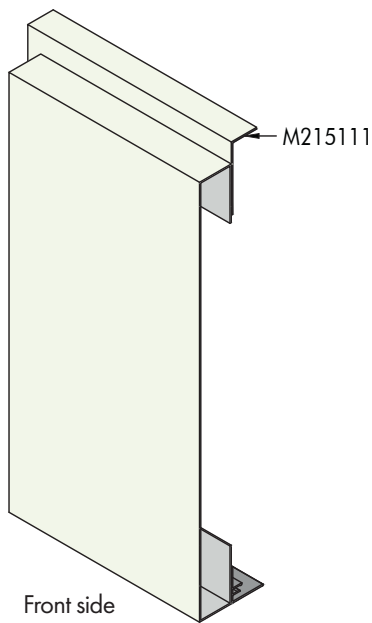


Option E1

Cut bulkhead wall detail with RA 4 F

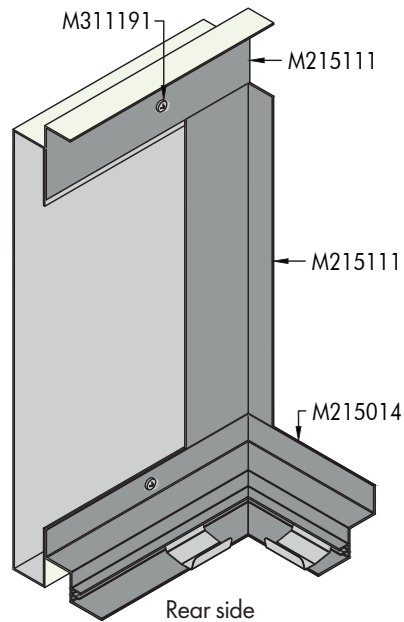
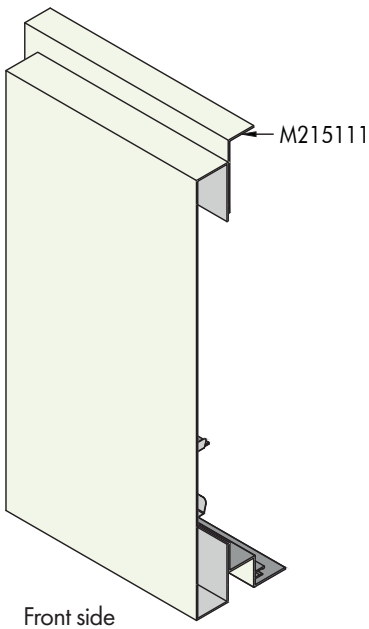
Perimeters fixed to the bulkhead in a distance of max. 600 mm.

Perimeter solutions see separate datasheet.



Option E2

Cut bulkhead wall detail with RA 5 F



METAL ALUMINIUM BULKHEAD SOLUTIONS

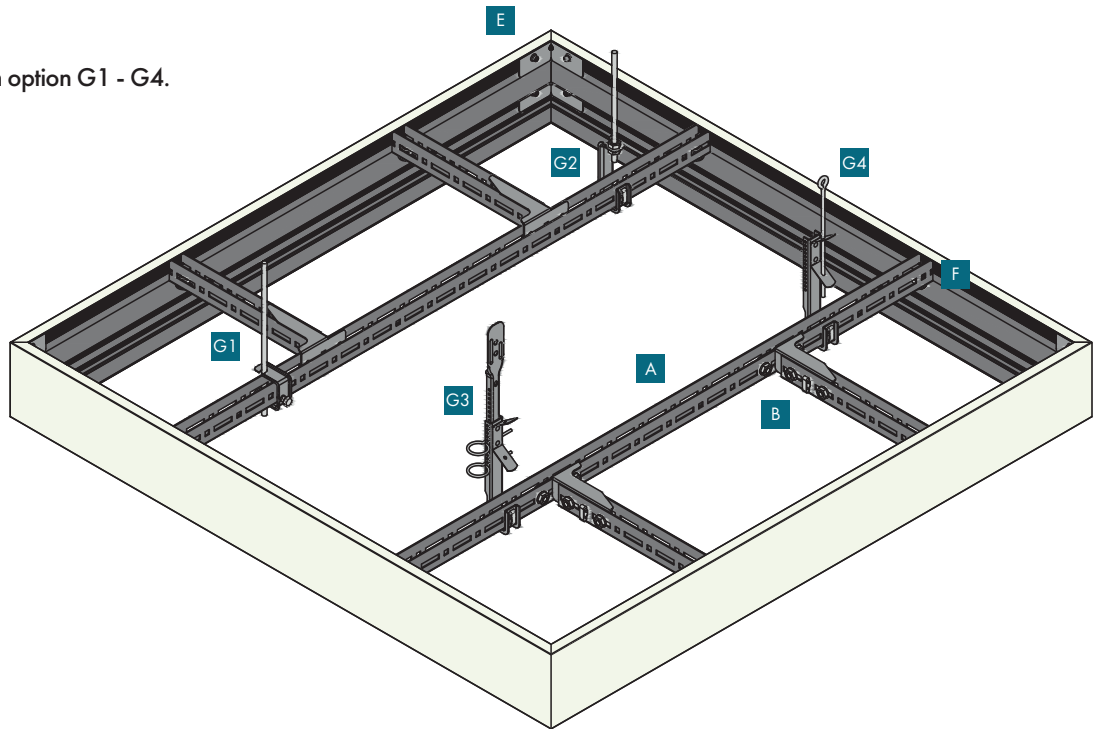
Range of bulkheads for metal ceilings
For indoor applications

General information

- Solutions for medium and large rooms
- A range of standard bulkheads made of aluminium
- Available in standard RAL 9010, further colour options on request
- Bulkhead, change in level and frame solution
- Suitable for ceiling solutions with a system height of 98 mm
- Inside / outside corner options
- Curved bulkheads on request

Isometric view

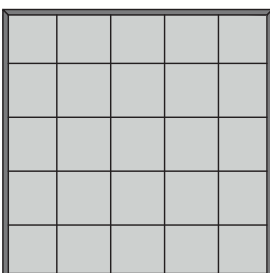
Select the suspension option G1 - G4.



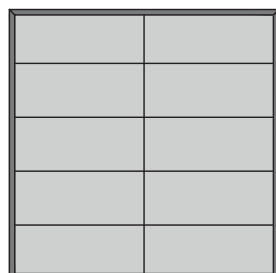
Vario Design & bespoke layout options

Vario Design

Square frame
with square tiles

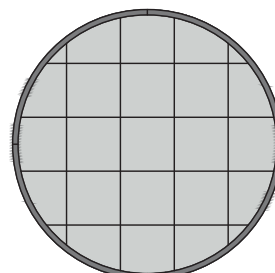


Square frame
with rectangular panels

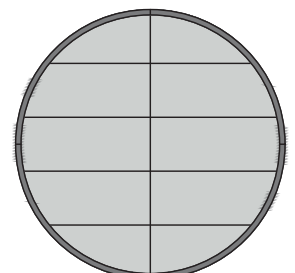


Bespoke (on request)

Circular frame
with square tiles



Circular frame
with rectangular panels



Grid components

Standard components

- M215562 Perimeter profile RAL 9010
- M215560 Bulkhead 4" RAL 9010
- M215561 Bulkhead 6" RAL 9010
- M315450 Splice connector for bulkhead
- M300100 U-Profile
- M300119 Splice connector for U-Profile
- M315710 Cross-connector for U-Profile
- M300120 Plug-in clip for U-Profile

- M311195 Thread cutting screw M6 x 10 mm
- M311103 Hexagonal nut M6
- M311105 Washer
- M311303 Hexagonal bolt M6 x 16 mm
- M311081 Pressure spring

Optional components

- M215013 RA 4 F
- M215014 RA 5 F
- M311191 Self-drilling screw 3.5 x 9.5 mm

Suspension option G1

- M300121 Clamping bracket for U-Profile
- M311101 Threaded rod M6 x 1000 mm
- M311315 Hexagonal extension nut M6 x 30 mm (optional)
- M311061 Suspension element (optional)

Suspension option G3

- M300166 Combi-Nonius hanger for U-Profile
- - Nonius top part (various lengths)
- M300036 Nonius locking pin
- M300120 Plug-in clip for U-Profile

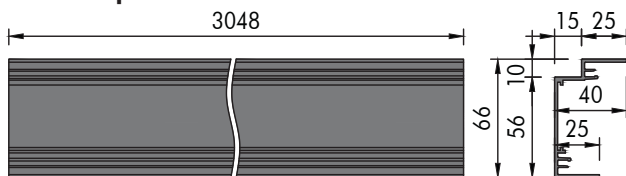
Suspension option G2

- M300366 Hanger for U-Profile
- M311103 Hexagonal bolt M6
- M300120 Plug-in clip for U-Profile
- M311315 Hexagonal extension nut M6 x 30 mm (optional)
- M311061 Suspension element (optional)

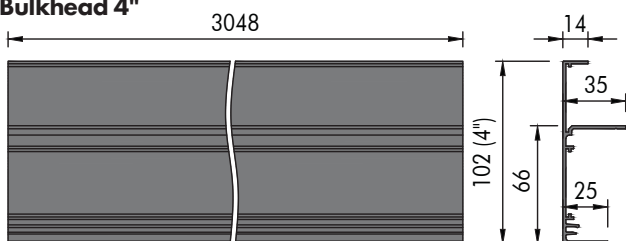
Suspension option G4

- M300166 Combi-Nonius hanger for U-Profile
- - Eye wire (various lengths)
- M300120 Plug-in clip for U-Profile

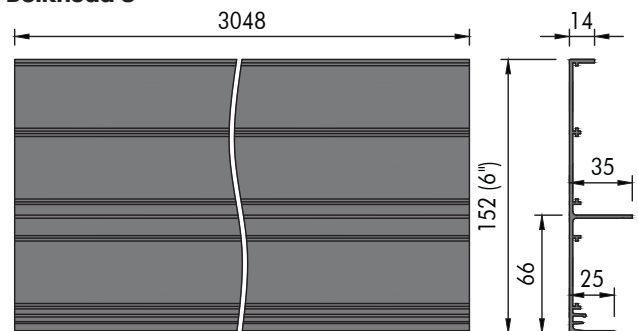
Perimeter profile



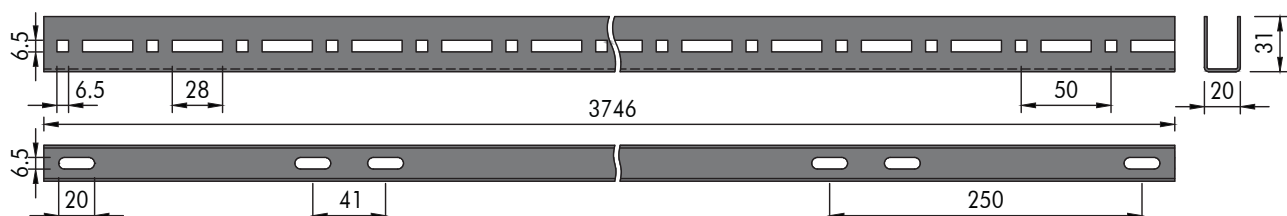
Bulkhead 4"



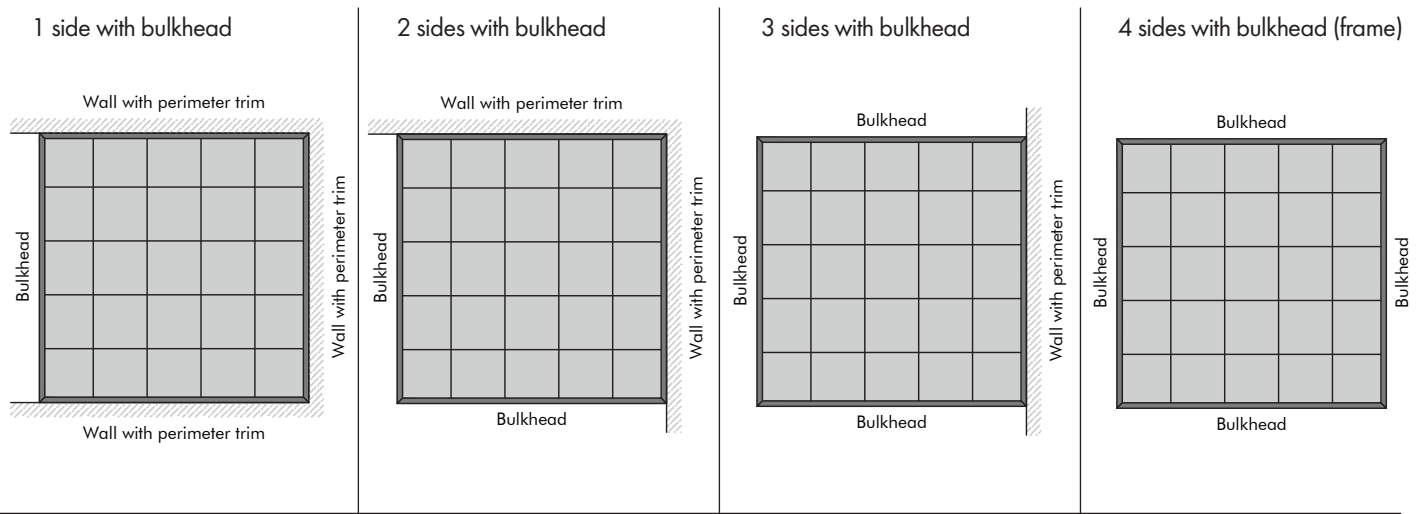
Bulkhead 6"



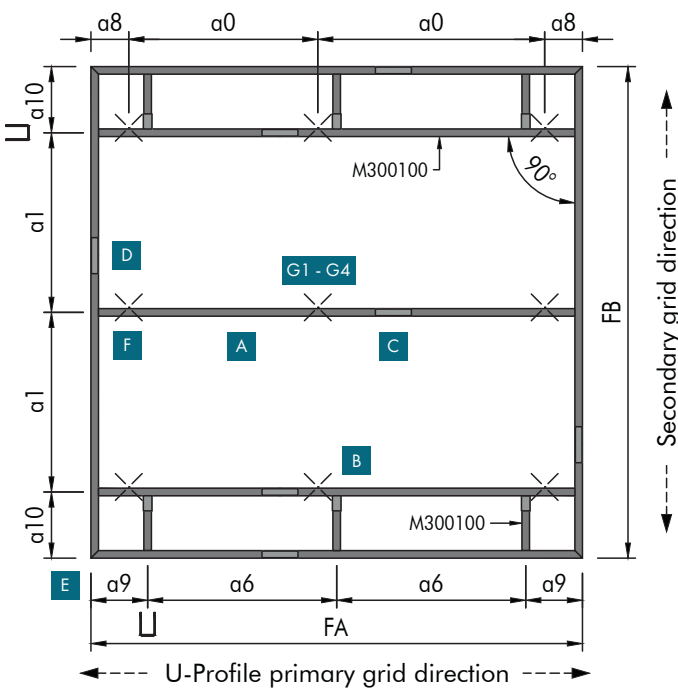
U-Profile grid



Application areas



Typical grid layout

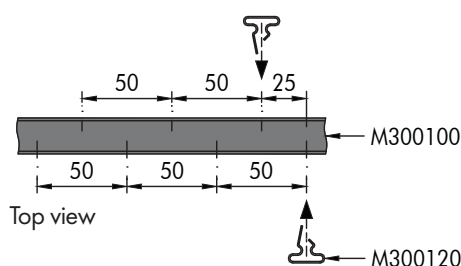


Parameters

- a_0 Distance between U-Profile suspension points = max. 1900 mm
- a_1 Max. distance between U-Profiles see selected system
- a_6 Distance between U-Profiles = max. 1500 mm (in steps of 50 mm)
- a_7 Distance from suspension point to cross connector = max. 100 mm
- a_8 Distance to bulkhead = min. 50 / max. 250 mm
- a_9 Distance to bulkhead = min. 100 / max. 300 mm
- a_{10} Distance to bulkhead = min. 50 / max. 250 mm
- a_{11} Distance to bulkhead = min. 50 / max. 125 mm
- FA Frame length = min. 1200 / no max. limit
- FB Frame width = min. 1200 / no max. limit
- L Bulkhead length = 3048 mm

Detail A

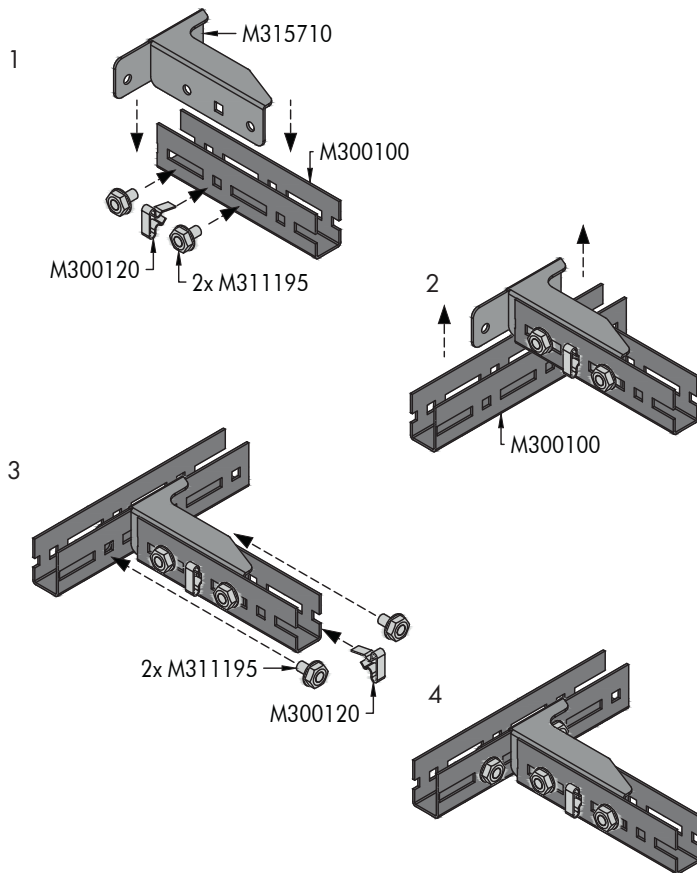
U-Profile modulation



The U-Profile primary grid is a modular system based on a spacing of 50 mm. The holes on the lateral sides are offset from each other by 25 mm. This means that increments of 25 mm can be achieved.

Detail B

U-Profile cross-connector installation



The cross-connector for U-Profile is fixed at both ends of the U-Profile primary grid. In order for this to work, a module dimension in 25 mm increments must be maintained. The plug-in clip can be used for positioning. The fixing itself is done with thread cutting screws. Standard M6 bolts cannot be used.

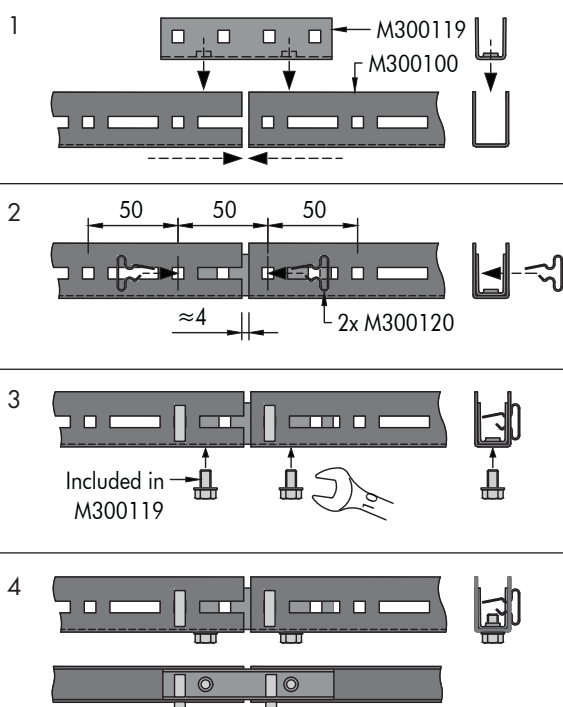
Align the lateral U-profile in the longitudinal direction and insert it so that the cross-connector is hooked.

Again use a plug-in clip and two thread cutting screws to fix the lateral U-Profile to the cross-connector.

The two profiles are now connected. Only a 90° connection is possible.

Detail C

U-Profile splice connection



The splice connector for U-Profile comes with two bolts, which must first be removed. The splice connector is then placed between the two ends of the U-Profiles.

Fix the splice connector with two plug-in clips (large end upwards) at each end. This ensures the modular distance of 50 mm.

For a stable connection, the two supplied bolts are attached from below.

Since the U-Profile is a modular system, the ends must not touch. There is a distance of approx. 4 mm, depending on the length tolerance of the profile. Joints should be offset.

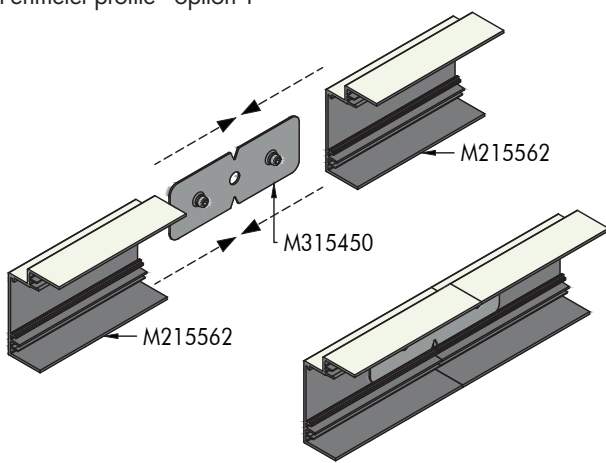
Detail D

Bulkhead splice connection

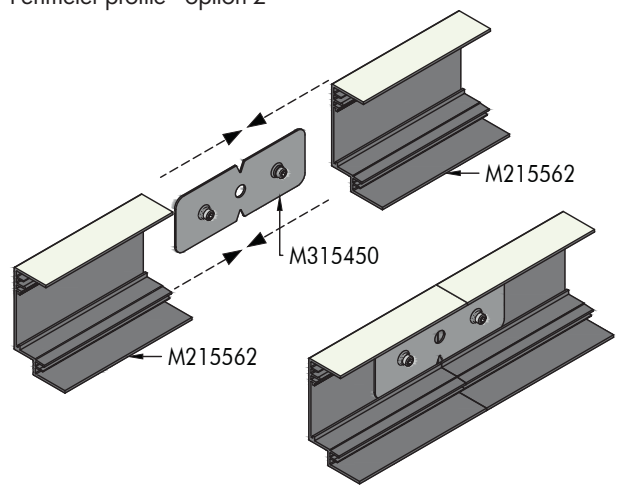
If necessary, cut the bulkhead to the required length. Make sure the face side is not damaged or scratched.

Bring the ends of the bulkheads and the the splice connector together. As soon as the gap is closed, the two bolts are tightened. Make sure that the bolts are not tightened too much, otherwise the visible side of the bulkhead could deform.

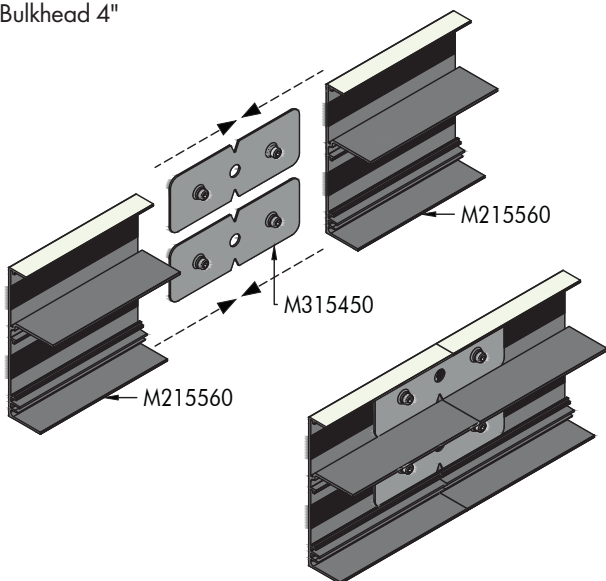
Perimeter profile - option 1



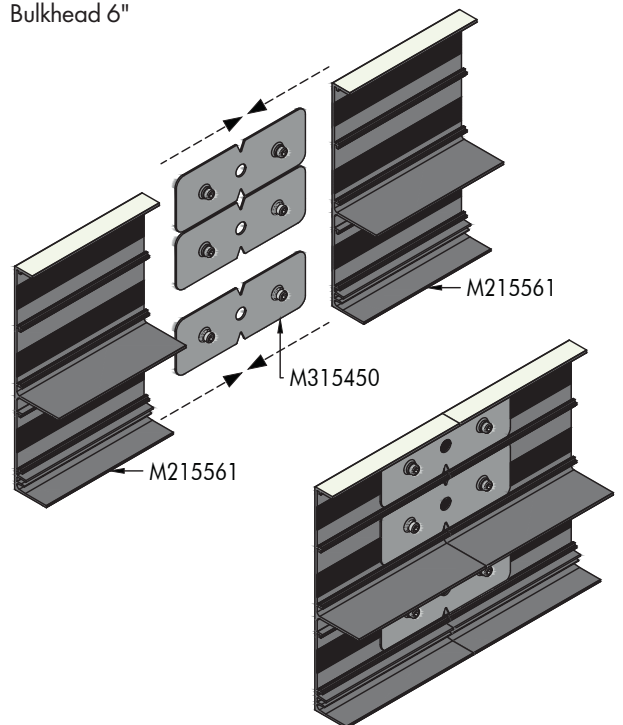
Perimeter profile - option 2



Bulkhead 4"



Bulkhead 6"



Detail E

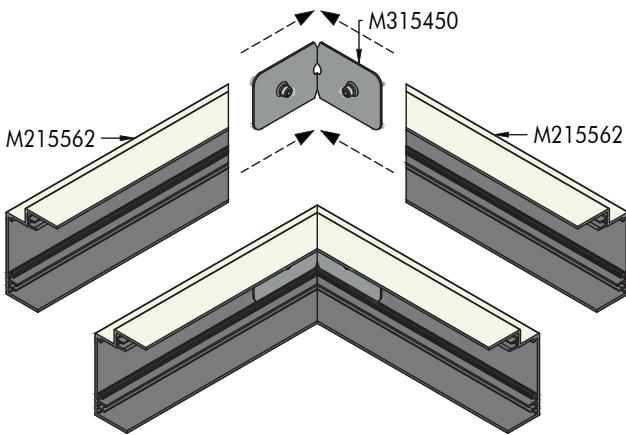
Bulkhead corner connection

The bulkhead is carefully mitred. Make sure the face side is not damaged or scratched.

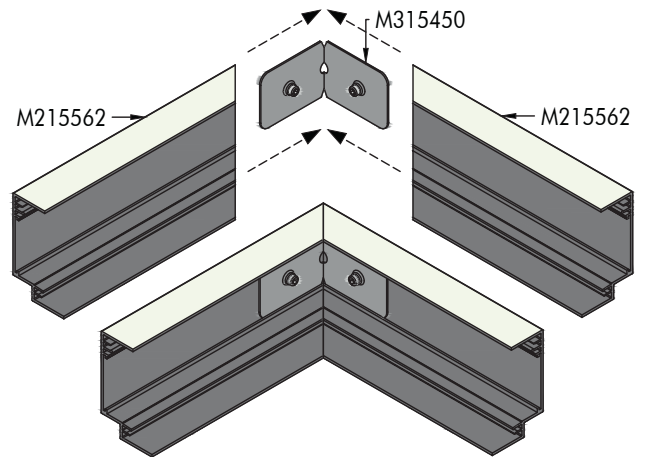
The splice connector for the straight connection is bent 90° by hand. In the case of an outside corner, it is bent in the opposite direction.

Bring the ends of the bulkheads and the splice connector together. As soon as the corner is closed, the two bolts are tightened. Make sure that the bolts are not tightened too much, otherwise the visible side of the bulkhead could deform.

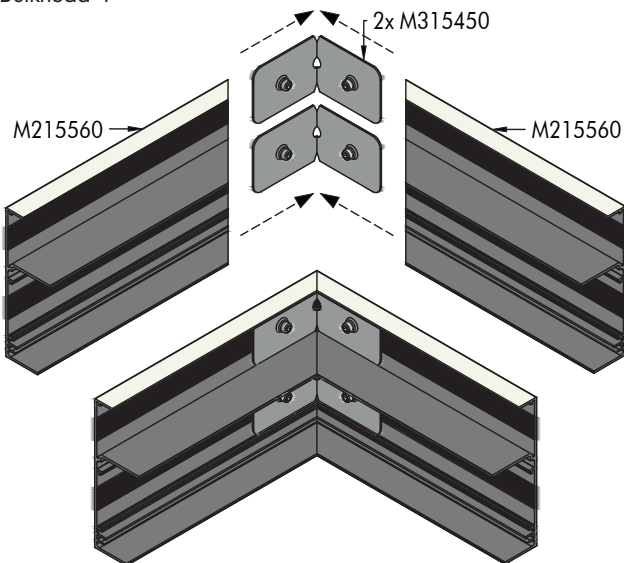
Perimeter profile - option 1



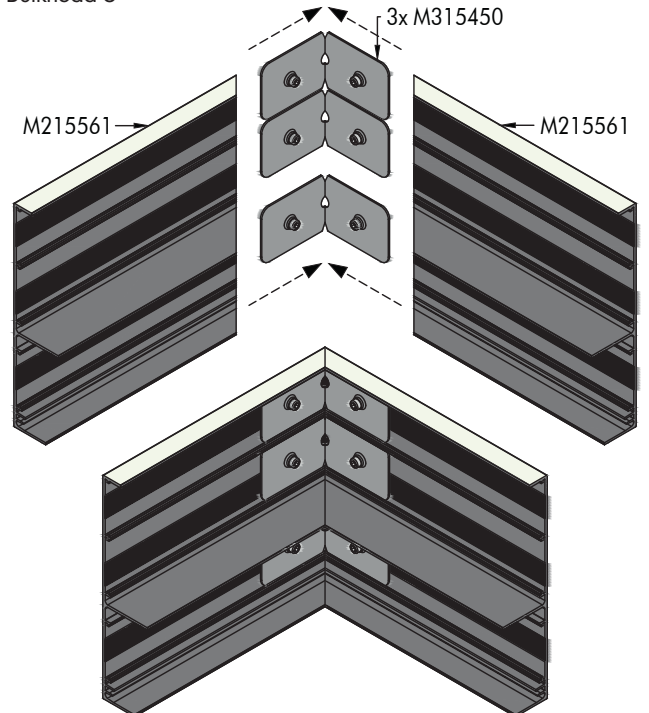
Perimeter profile - option 2



Bulkhead 4"



Bulkhead 6"



Detail F

Bulkhead connection to U-Profile

The perimeter profile was developed so that the ceiling does not connect to the wall and an open shadow gap is visible. The distance from the wall is variable.

The perimeter profile can be used in two ways. Option 1 for a simple square edge, option 2 for a 10 x 15 mm step finish.

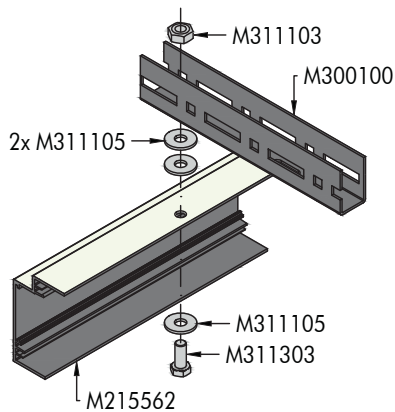
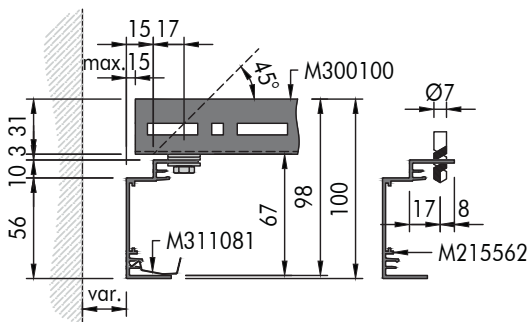
The perimeter profile is attached to the U-profile with an M6 bolt. Measure the required a1 distances and mark the position of the hole. A Ø7 mm hole must be drilled into the perimeter profile.

The U-profile is attached with two washers at a distance of 3 mm from the perimeter profile. This results in a height of 98 mm for the most common metal systems.

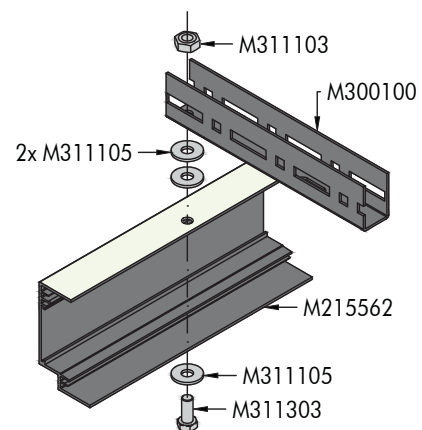
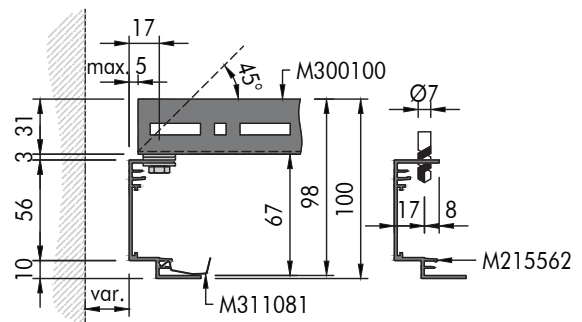
Depending on visibility, the U-Profile can be cut off at 45° at the ends. In option 1, the perimeter profile is compatible with the RA 4 F and RA 9 F perimeter trim.

As with the perimeter trims, a pressure spring can be used to hold down the cut tile / panels.

Perimeter profile - option 1



Perimeter profile - option 2



The bulkhead 4" and 6" were developed to completely cover the U-profile primary grid system.

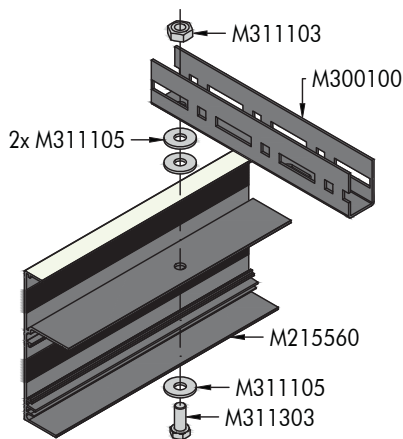
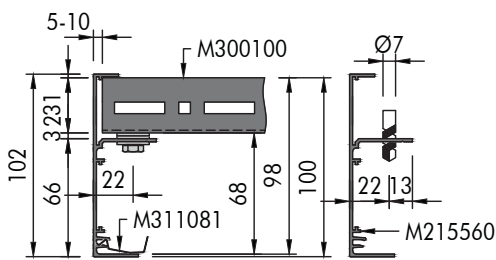
These solutions are suitable as a simple bulkhead detail or large size canopies with standard ceiling systems.

The bulkhead is attached to the U-profile with an M6 nut and bolt. Measure the required distances and mark the position of the hole. A Ø7 mm hole must be drilled into the bulkhead.

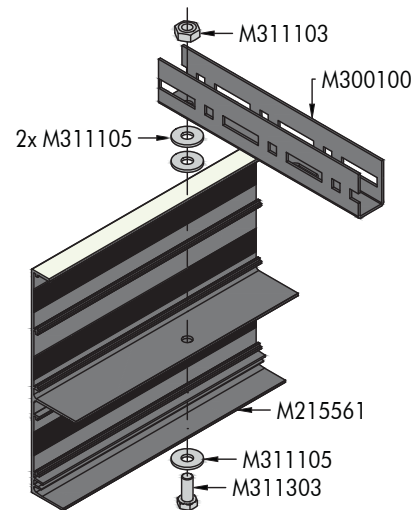
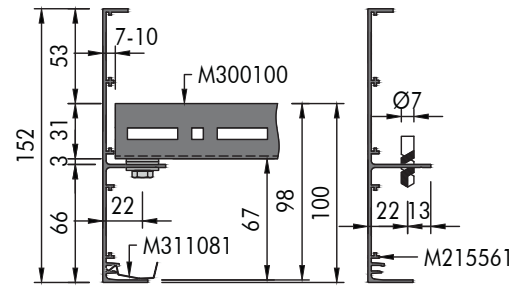
The bulkheads are compatible with the RA 4 F and RA 9 F perimeter trim.

As with the perimeter trims, a pressure spring can be used to hold down the cut tile / panels.

Bulkhead 4"



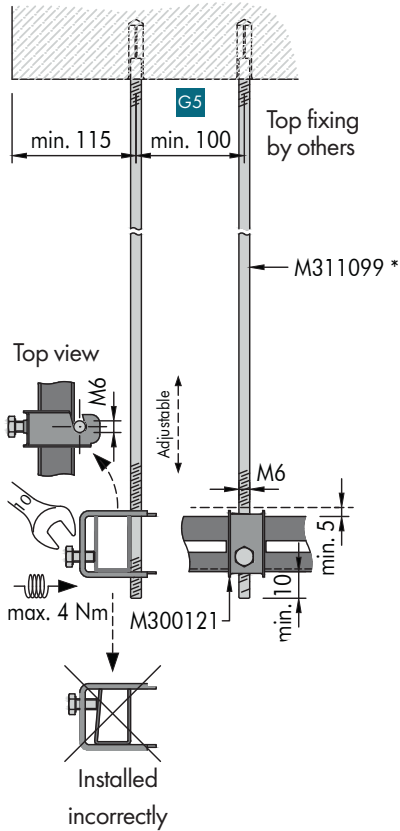
Bulkhead 6"



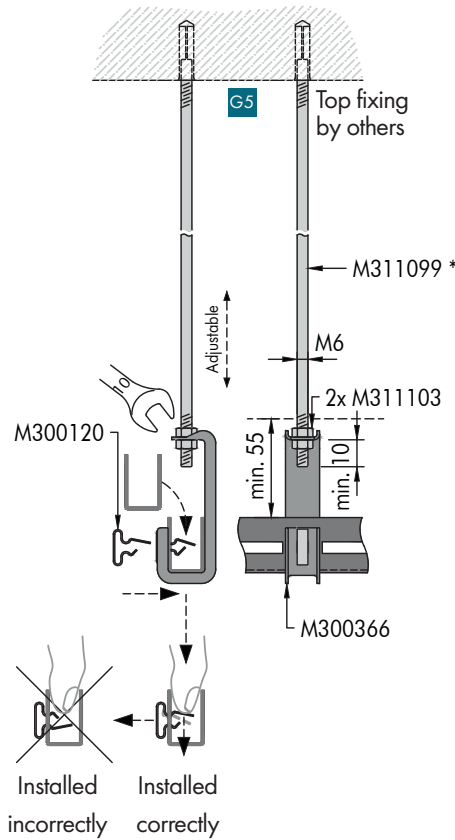
Detail G

Suspension options

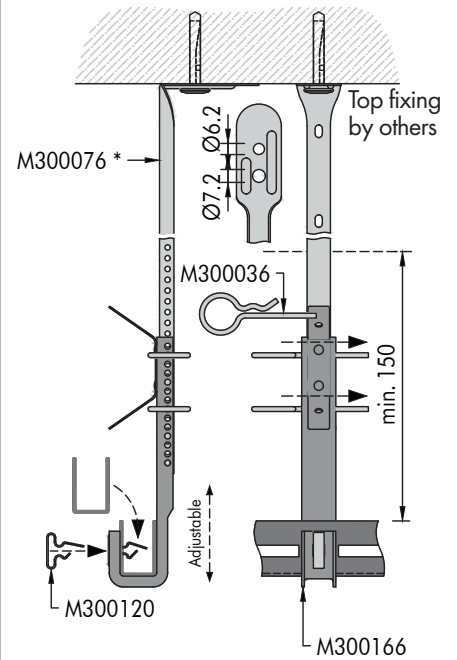
Option **G1**



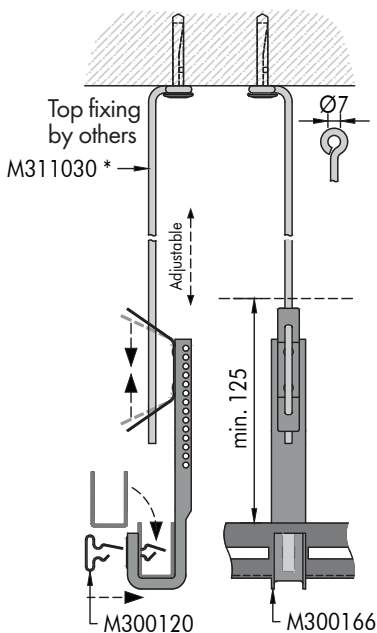
Option **G2**



Option **G3**

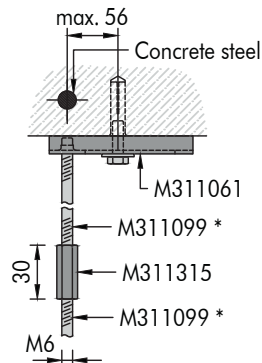


Option **G4**



The suspension point should always be chosen close to the crossing point of the primary and secondary grid in order to absorb the ceiling load as best as possible and to prevent the U-profile from potentially deflecting.

Detail **G5**



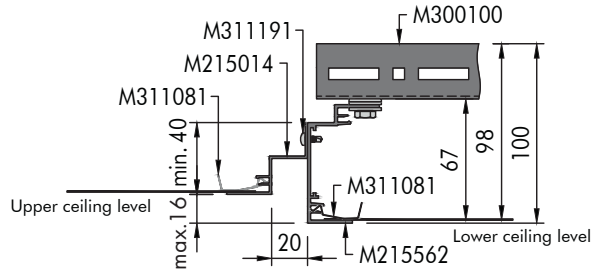
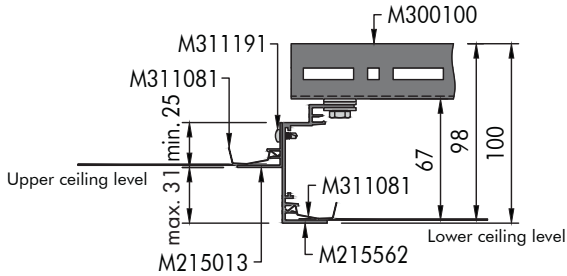
Optional top fixing and extension detail for suspension option **G1** / **G2**

* Various lengths available

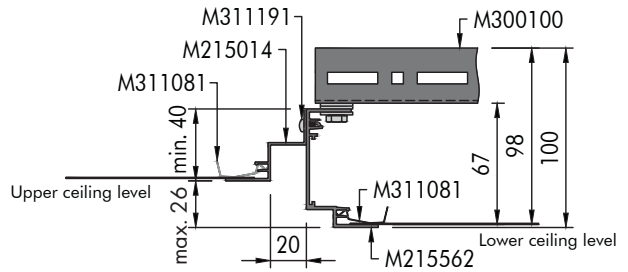
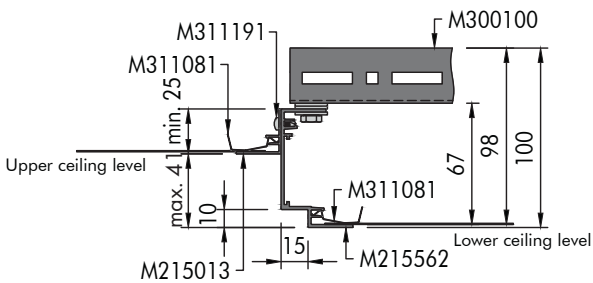
Detail H

Change in level

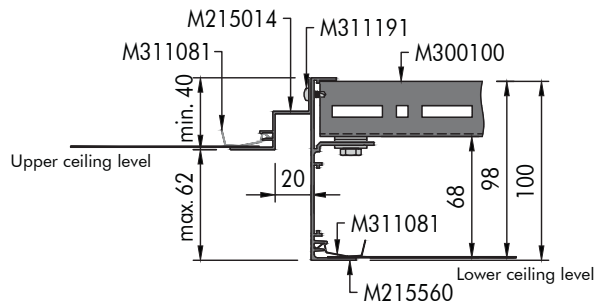
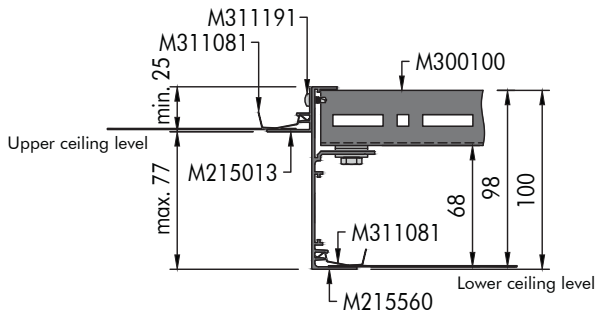
Perimeter profile - option 1 with RA 4 F and RA 5 F perimeter trim



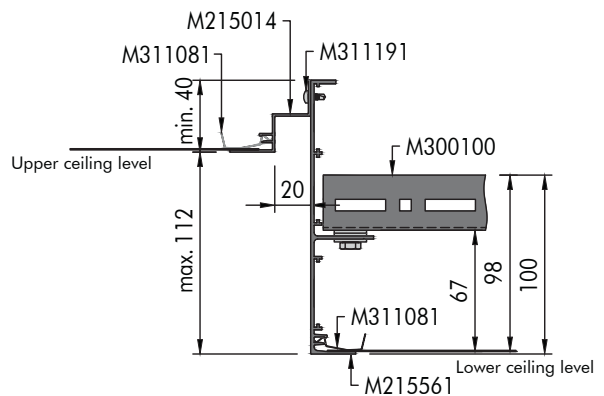
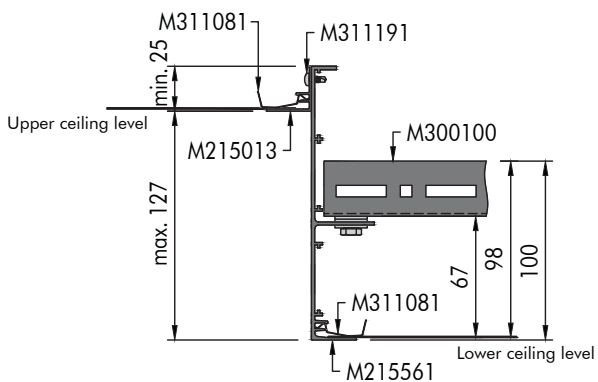
Perimeter profile - option 2 with RA 4 F and RA 5 F perimeter trim



Bulkhead 4" with RA 4 F and RA 5 F perimeter trim



Bulkhead 6" with RA 4 F and RA 5 F perimeter trim



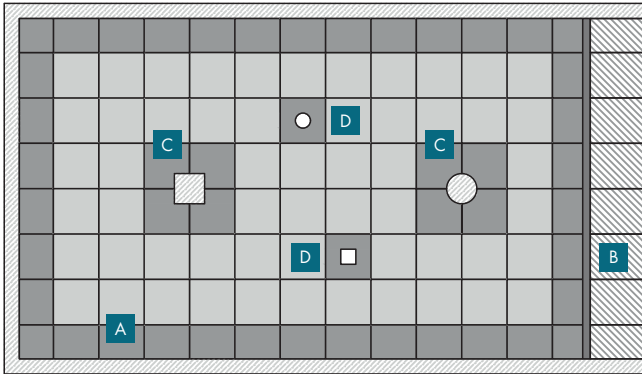
For higher changes in level see steel bulkheads datasheet. Further perimeter solutions see separate datasheet.



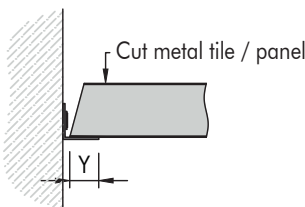
CUTTING & MODIFICATIONS

METAL CUTTING & MODIFICATIONS

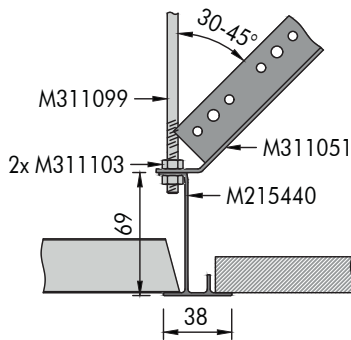
Cutting



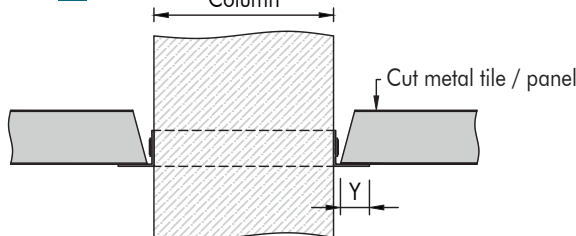
Detail **A** - Perimeter



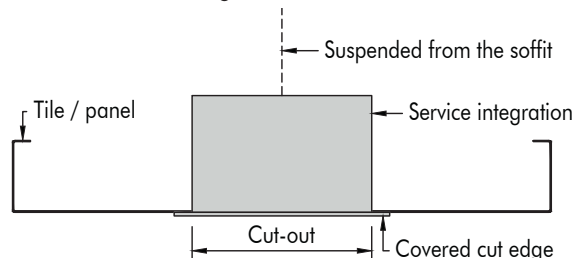
Detail **B** - Transitions (example with L-Profile)



Detail **C** - Columns



Detail **D** - Service integrations



General

Cuts are usually required in the perimeter area (detail **A**), for transitions (detail **B**), columns (details **C**) and cut-outs (detail **D**) for service integrations. The cut edges are covered by a profile or trim and should not be exposed.

A little practice is required for clean and precise cuts, especially for delicate work and tight curves. It is best to try out a few practice pieces beforehand to avoid unnecessary waste. Wear white gloves to avoid leaving fingerprints on the surface of the tiles/panels. Be careful when cutting sheet metal, as there is a risk of injury from the sharp exposed edges.

Tiles / panels

When cutting, the visible side of the tiles / panels should face up to avoid scratching. Measure the distances precisely and transfer the cutting line on the tile / panel.

The minimum contact surface (Y) depends on the selected trim (see perimeter trims). It is imperative that this value is adhered to, as otherwise it is possible that tile / panel could fall down and cause personal injury. For tiles with Premium infills, a saw should be used that cuts carefully and not damages the sheet metal and infill.

Baffles

Due to the fact that the raw edges remain visible, on-site trimming of baffles is not recommended. In most cases the result will not be appealing.

Profiles / trims

Profiles can be cut with a saw. Visible components, as with tiles / panels, care should be taken not to scratch or damage the visible side.

Service integrations

Generally, additional loads need to be supported with additional hangers from the soffit (detail D). Loading the tiles is not recommended.

The service integrations should not affect the visual appearance of the tiles / panels, i.e. no greater sag or stress on the surface.

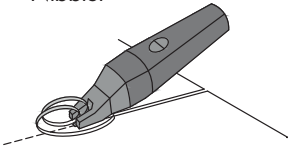
Small service integrations, such as for example smoke detectors, with little weight are the exception, but must be approved by the customer side after installation.

Round and square cut-outs are to be made in the dimensions specified by the supplier of the service integration.

Tiles / panels can be supplied with factory cut-outs on request. See METAL general information pages for options. Ventilation components can leave residues on the surface by sucking in the air, which contaminate them. See cleaning and maintenance chapter.

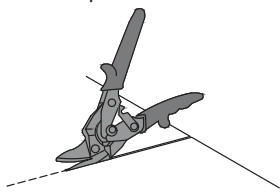
Tools

Nibbler



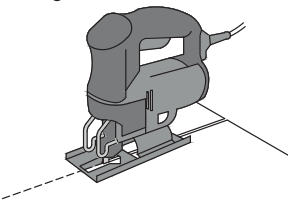
If available, the use of a nibbler is recommended for cutting tiles and panels, with or without an acoustic fleece. A narrow strip is nibbled out in progressively cut small sections of the metal sheet, emission and spark free. The nibbler is suitable for effortless cutting of straight as well as curved contours at the perimeter and cut-outs for service integrations. This allows standard steel and aluminum elements to be cut to size with a material thickness of up to 1.0 mm. This tool is suitable for both beginners and advanced users. It is easy to use and requires little effort, preventing the sheet metal from being deformed unintentionally. With the right speed and power, cutting is easy. The variant with a battery and no cable is particularly suitable for mobile use on construction sites.

Tin snips



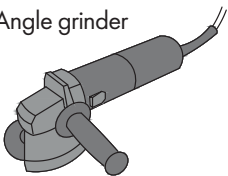
Tin snips can be used to cut tiles and panels if a nibbler is not available. There are different types of tin snips, for different applications. Tin snips work like normal household scissors, but require greater effort due to the hardness of the metal sheet. Tin snips are not suitable for beginners, as manual cutting can cause the sheet metal to buckle very quickly. Furthermore, thin-walled profiles (T-grid, perimeter trims, etc.) can also be cut to length. It is used primarily for butt cuts, but only suitable for mitre cuts to a limited extent. Generally, use is limited to tiles, panels and profiles with a gauge of max. 0.7 mm. For an optimal result, the sheet metal must be placed on the cutting jaw of the tin snips, otherwise it will warp. The tin snips should be opened wide and the sheet metal should be pushed deep into the mouth. It is important not to close the scissors completely when cutting, but to open them again after $\frac{3}{4}$ of the cutting length and push the material further. Otherwise unsightly transverse cracks will appear.

Jigsaw



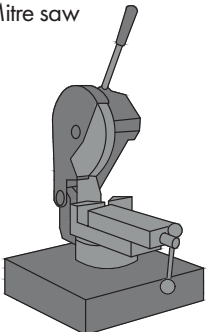
Tiles with premium infills can be cut with the jigsaw. The variant with a battery and no cable is particularly suitable for mobile use on construction sites.

Angle grinder



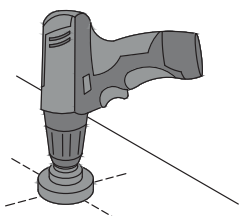
This is only suitable to a limited extent due to the heat development and the resultant discoloration of the metal. When using angle grinders, particularly for large material thicknesses of ≥ 1.0 mm, the heat development can be reduced by using suitable thin separation sheets, 1.0 mm thick. Even then, proceed with care.

Mitre saw



The use of a metal-mitre saw delivers by far the best results for butt and mitre cuts. Proceeding with care (low cutting speed) is also essential. Avoid damaging the surface with metal cuttings. When cutting shadow trims it is advantageous to use a suitable wooden batten underlay.

Drilling machine



A power drill can be used for small circular cutouts. Larger round cutouts can be made with an hole saw attachment.

Service integrations

Without weight distribution clip



With weight distribution clip



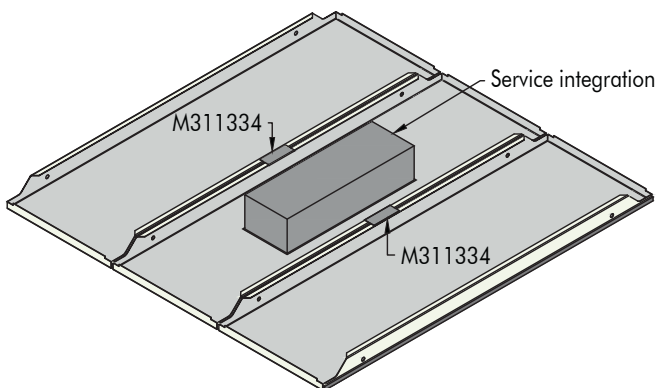
Weight distribution clip

For service integrations with little weight, a weight distribution clip can be used per long side. The additional load in the panel is distributed to the neighboring panels. Without it, the increased sag (X) might at best be visible. The clips are placed over the long side edges of the panels.

This solution was developed for lay-in or hook-on rectangular panel solutions for corridors and rooms. It is not recommended to use this for clip-in systems.

There is no fixed basic rule or weight specification, as various parameters have to be taken into account. These are primarily the additional weight of the service integration, the length and width of the panel, the material gauge, perforation, etc.

The application must be checked and approved on a case-by-case basis.

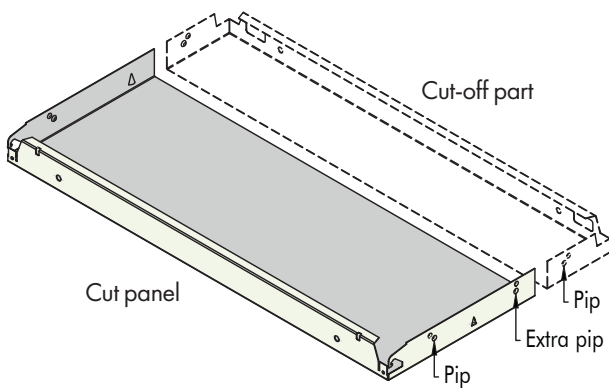


Modifications

Touch-up paint

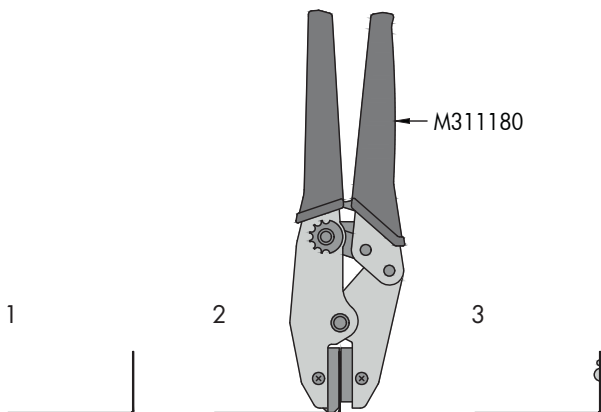
Although the coated surfaces are scratch-resistant, they can still be damaged during transport, handling or assembly. Touch-up paints are available for some standard colors on request. This allows small corrections to be made on the visible side of the products. Find a spot that is not visible or a practice piece that is no longer used and check, if the color matches before use. Apply the color carefully.

Example with METAL R-Clip



Nubby pliers

In order to be able to install a clip-in tile / panel, four pips per module are required. Normally, the cutting edge lies on a profile or trim, so only two pips are needed. In individual cases it can happen that additional pips are required because the original pips had to be cut away. In these cases, the nubby pliers M311180 are used.



- 1 Pick the location of the extra pips.
- 2 The pliers are inserted as far as they will go over the upstand from the rear. Squeeze the pliers to indent the pips.
- 3 The tile / panel can now be installed.

The pliers can be used with the following products:

- METAL Q-Clip
- METAL Q-Clip F
- METAL R-Clip
- METAL R-Clip F
- METAL K-Clip
- METAL F-Clip Access

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MAINTENANCE & CLEANING

METAL MAINTENANCE & CLEANING

Maintenance

ACCESS TO THE CEILING VOID

In general, all standard and configurable products can be removed individually. This is necessary to ensure maintenance work on the building services.

Extract the elements with care and store them in a place where they will not be damaged during the maintenance work. The products should be stored upright. No additional weight should be placed on it. If the product has a gasket then it should not be stored on it. Various hinge-down and swing-down solutions are available to facilitate access. This function can either be applied to all panels or individual elements. If desired, these can be marked on site to identify them. This is done by the installer or the person who will later be responsible for maintenance.

EXTRACTION TOOLS

There are systems where a tool is required to extract or unlock the element. Choosing the right tool is crucial and prevents damage to the product. The correct tool is specified in the Knauf Ceiling Solutions installation manual. Make sure not to damage the product when using the tool. This can be a deformation of the edge, scratches on the surface or damage to the gasket.

GASKET

If the tools are used more frequently on the same product, it could happen that the gasket has to be replaced due to heavy wear. If the room climate does not meet the specifications, the gasket can be damaged or detach from the element.

Rolls can be reordered separately and attached to the product on site. The damaged gasket should first be carefully removed without damaging the product. Then reattach the new gasket in the same place.

SECURITY CLIPS & BRACKETS

Individual tile access is not given when using security clips and brackets. If the entire ceiling gets locked, the modules have to be dismantled from the last one that was not secured.

Individual elements can also be locked, e.g. to protect service integrations from being damaged by attempts to remove them. Use systems like METAL R-H 200, METAL R-H 215 and METAL R-H 220 (for Swiss market only) that use clips that can be locked / unlocked from below.

INSTRUCTIONS

The person responsible for building maintenance should receive detailed instructions and have access to a tool where needed.

Extraction tools are offered by Knauf Ceiling Solutions.

Cleaning

GENERAL

Knauf Ceiling Solutions metal ceilings and walls are available with different surface finishes, patterns and acoustic infills, of which the visible face can be cleaned using a variety of types and methods.

The visible surface is electrostatically powder-coated as standard and is highly durable. There are exceptions where products are made out of pre-coated material. The types of cleaning shown here may not be applicable to these products. These products are identified in our literature.

Whenever the coated elements are touched, this should always be done with soft white gloves, otherwise fingerprints and staining will be left on the surface, which makes cleaning more time consuming.

Normally, ceiling and wall components do not need to be cleaned for the duration of their use in most standard applications. Nevertheless, it may be necessary to clean local soiling frequently to maintain their appearance. This is not necessary for functional reasons to maintain the fitness for use over the entire service life.

The frequency of cleaning will depend on the type and efficiency of the heating, ventilation and air conditioning system within the building and the type of occupancy. This can only be determined after the building is occupied.

The mechanical stresses of cleaning (scrubbing) may lead to changes to the surface. Do not apply excessive pressure to the surface as this may deform or damage it.

Highly adhesive dirt (grease, oils, acids and bases) can be resistant to cleaning and can affect the surface permanently.

If this cannot be removed by normal washing, then a small application of thinners can be used on the stain. However, care should be taken as this could affect the gloss level of the coated finish. It is recommended to test the proposed cleaning method on a sample piece or a non-visible part of the ceiling.

The cleaning should also be carried out over a large area and not limited to individual tiles or small areas.

High levels of moisture exposure due to regular cleaning or room climate conditions may cause increased corrosion protection requirements with regard to the substructure and the attachment. Additional measures must be taken into account if the suspended ceiling is subject to pressure.

RESISTANCE TO SOLVENTS

Coated surfaces get softened or swollen within minutes or hours by organic solvents. Changes in the degree of gloss are possible. Generally, coated surfaces are moderately or poorly resistant to organic solvents. Fuel can also strongly attack powder-coated surfaces.

RESISTANCE TO WATER-BASED ACIDS, ALKALIS, SALTS

Coated surfaces are highly resistant against purely water-based chemicals. Even by lack of wetting they scarcely get attacked by strong acids and alkaline solution. Strong oxidisers may change the color or even discolor. Preservatives, detergents, disinfectants - if solvent-based, can attack the surface.

RESISTANCE TO COLORANTS

Colorants from red wine, tea, coffee, inks, berries and similar substances can migrate into the coating layer and stay permanently. It does not attack or damage the surface. These resistances are difficult to predict and should always be checked case by case.

RECOMMENDATIONS

- The surface temperature of the coated elements should not exceed 25°C during the cleaning.
- Only use clean and pure water with slight additions of neutral or weakly alkaline detergents. With metallic coatings use only neutral cleaners.
- Do not use abrasive, scratching products, e.g. sanding pastes. Strong rubbing is prohibited.
- Do not use organic solvents containing ketones, esters, aromatics, halogenated hydrocarbons, etheric oils or similar.
- Do not use acids or high alkaline products.
- The action time of the products used should not exceed one hour.
- If the cleaning process has to be repeated, a 24 hours waiting period has to be observed.

METAL BIOGUARD PRODUCTS

Metal BioGuard is more effective in the control of bacteria than a standard powder coating because it prevents the settlement of bacteria on the surface of the product. It gives good cleanability and resistance to disinfectants. For more information, please get in touch with us.

METAL TRIOGUARD™ PRODUCTS

METAL TrioGuard™ dirt-resistant coating protects the ceiling from dirt build-up and colour fading, maintaining its original look for longer. Available in several metal designs. It shows lower maintenance costs and it is easy to clean.



DRY CLEANING

- Daily cleaning of all metal products

For standard cleaning of dust, loose dirt or deposit, a soft brush, a clean, dry, soft white cloth, a normal vacuum cleaner with a soft brush can be used.



DAMP CLEANING

- Daily cleaning of unperforated / perforated up to Ø1.0 mm surfaces
- Weekly cleaning of perforated surfaces >Ø1.0 mm

For more intensive cleaning, the surfaces can be damp cleaned. This should be carried out with a wrung-out soft cloth or sponge. After cleaning, the surface should be dried with a soft cloth.



WET CLEANING

- Daily cleaning of unperforated / perforated up to Ø1.0 mm surfaces
- Weekly cleaning of perforated surfaces >Ø1.0 mm

Wet cleaning should be carried out with lukewarm water (up to 40°C), using a sponge and mild cleaning agent (with a pH value between 7 and 9). It is important that the edges and the reverse side of the tile do not come into contact with moisture. After cleaning the surface should be dried with a soft cloth.



FOCUSSED COMPRESSED AIR CLEANING

- Daily cleaning of TrioGuard coated surfaces

The surface can be cleaned using focus compressed air. The apparatus used should be a cleaner that generates steam under pressure (8 bar and 175°C).



PRESSURE CLEANING

- Twice yearly cleaning of unperforated surfaces

Pressure cleaning (no steam) is carried out with the following technical restrictions:

- Water temperature: max. 40°C
- Working pressure: max. 80 bar, flow rate max. 500 l/h
- Minimum distance to surface: 1.0 m

Penetration of water into the suspension system should be avoided. Following cleaning, the surface should be dried.

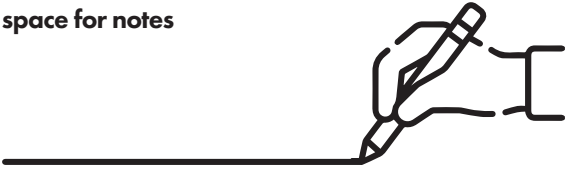


RESISTANCE TO POPULAR DESINFECTANTS

- Daily cleaning of unperforated / perforated up to Ø1.0 mm surfaces
- Weekly cleaning of perforated surfaces >Ø1.0 mm

Due to large number of types of disinfectants, always test a small area first.

space for notes



YOUR CEILING
OUR SOLUTIONS

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