s.a.c. silent
acoustic system for buildings

Installation Guidelines

Grey-Line

The jointless acoustic system from S.A.C. Silent AG was developed in cooperation with Knauf AMF.

s.a.c. topcoat final layer
s.a.c. basic layer
AMF Tacet Base Board
Knauf Power-Elast
End profil PVC, 3mm
UD-edge profil 27/28/27
Aquapanel Maxi screws SN39
Primary and main profile, CD 60/27
Nonius hanger

Contents

1. Material requirements

Material	AMF article number	*Requirement per m²
Knauf anchor nail alternative: other approved fixing	-	1.4 pieces/m²
Knauf Nonius hanger - Nonius upper part - Nonius clip - Nonius lower part for CD-profile 60/27	-	1.4 pieces/m²
Knauf CD- profile 60/27/06	-	4.0 lin. m. / m²
Knauf cross connector for CD 60/27	-	3.0 pieces/m²
Knauf multi connector for CD 60/27	-	0.8 pieces/m²
Knauf UD- profile 28/27/06 C3	-	optional
Knauf POWER-ELAST	200373	0.20 cartridge/m²
Aquapanel Maxi screws SN 39	053500	20 pieces/m²
AMF Base Board	543173	1.1 pieces/m²
PVC Finishing Profile 3 mm l= 2.5m	604812	Dependent on room size and form approx. 1 lin. m./m²
PVC Finishing Profile flexible, 10/33 mm, l=3.0m	636200	optional
Aluminium Finishing Angle 30 x 30 mm, white, l=3.0m	618217	optional
PVC Corner Protection Angle 25x25mm, white, l=2,5m	613633	optional
Basic Base Plaster 25.0 litre/bucket	603688	3.0 / plaster/m²
Topcoat Acoustic Plaster 27.0 litre/bucket	603691	2.7 / plaster/m²
Top Coat colour additive: - pastel tones - dark colours	518128 518129	optional; 1 tin/ bucket Top Coat
Knauf Quarzgrund (adhesive primer)	616478	optional
Alu-Top access panel 300x300mm (other sizes available)	526478	optional

* The values stated in the table are guideline only. For asymmetrical rooms, protrusions and movement joints, higher material requirement should be expected. Cut-offs and waste are not included. No responsibility or liability is accepted for the accuracy of the information provided.

2. Tools required

The following tools and aids are required for the installation of the grid and the subsequent application of the plaster:

Material	AMF article number
Tin snips / metal chop saw / angle grinder	-
Stanley knife	-
Hand-held circular saw with guide rail	-
Jigsaw	-
Hammer drill	-
Auto-feed screwdriver	-
Electric screw driver	-
Cartridge gun	-
Chalk line	-
Headlamp/spot lamp	-
Mixer (non-abrasive and clean)	-
Sanding board 500mm, 60 grit	-
Notched trowel 4x4mm 500mm, stainless	639941
Special trowel 80mm, stainless	639943
Plastering trowel 500mm, stainless	639942
Plastering trowel 800mm, stainless	639945
Trowel	639940
Brush / sponge for cleaning trowels	-
Soft brush / broom	-

All tools used must be free from dirt, paint residue and rust.

The number of tools needed varies with the number of people working on the job.

3. Time required for installation and plaster application

3.1 Time required for ceiling installation / m²

Installation steps including scaffold work (platform scaffold)	*Duration (min)
Installation of the CD grid structure • Hanger centres ≤ 800mm • Primary profile centres ≤ 900mm • Main profile centres = 400mm	25
Installation of the AMF Base Board Screwing and adhering the base boards and end profiles	15
Application of the Basic base plaster • Mix the material • Apply the base plaster • Scraping the plaster • Smoothing • Finishing • Control the evenness/smoothness, sanding	15
Application of the Top Coat acoustic plaster • Mix the material • Apply the acoustic plaster • Scraping the plaster • Smoothing • Finishing	20
Guideline for time requirements per m²	**75**

* Cut outs, special constructions or similar are not included in the calculation. All stated values are average figures and are guideline only.

No responsibility or liability is accepted for the accuracy of the information provided. Project and/or company specific differences are the responsibility of the company carrying out the work.

3.2 Timeline ceiling installation

Day	Installation step
1	Installation of the grid structure
2	Installation and adhering of the Base Boards and the end profiles
3	Application of the AMF Basic base plaster
4 + 5	Drying (dependent on room climate 1 – 2 days)
6	Application of the Top Coat acoustic plaster
7 + 8	Drying (dependent on room climate1 – 2 days)

This timeline for the installation of the S.A.C. Grey-Line is a guideline.
Installation and drying times can vary depending on the room climate and local conditions.
No responsibility or liability is accepted for the accuracy of the information provided.

Notes on installation:

- *Professional installation of this high quality system, from the grid system to the top plaster, is essential to achieve an optimum, smooth and high quality surface finish. Without an even and level underlying surface, a first class, jointless appearance cannot be achieved.*
- *The jointless acoustic system places high demands on workmanship. Even when installed professionally, under certain light conditions, irregularities may be visible.*
- *The Gry-Line system cannot be assessed according to quality levels Q1 - Q4.*
- *It is not possible to re-plaster or sand the finished surface of the end coating.*

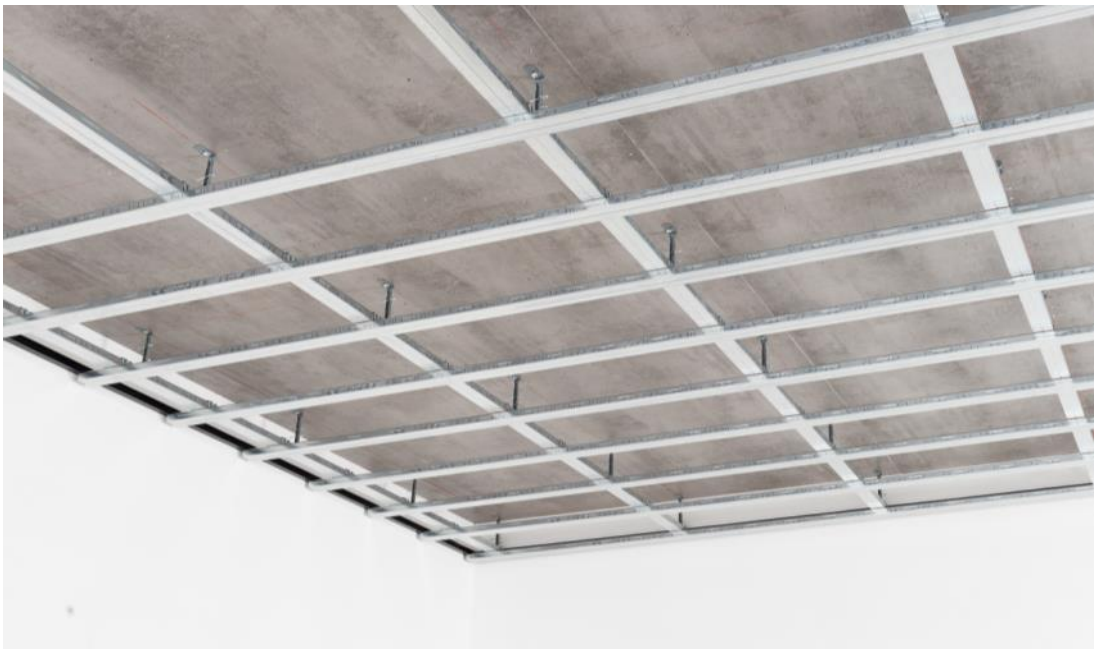
4. Construction site requirements

The work for the jointless base and top plasters is carried out above head and in a backwards direction. For this a level, platform scaffold is required, which safely enables this work. There must be no steps, holes or other obstructions. The platform scaffold is installed at a distance of approx. 1.80 - 1.90 m from the lower edge of the finished ceiling to create sufficient working space.
Before the work begins, floors, walls and other components should be covered with protective material.

- Regular ventilation of the rooms is essential. Air exchange must be ensured by cross ventilation. Furthermore, the use of construction site fans is recommended.
- During the entire processing and drying time of the plaster, the room temperature must not fall below 12 ° C. For room temperatures below 20 ° C, heating the rooms is recommended.
- By relative humidity of and above 50%, active measures to reduce room humidity are recommended. Only then will the specified drying times of 24h / mm layer thickness remain valid.
- In general, unfavourable climatic conditions and thicker application quantities lead to longer drying times. If in doubt, check the material moisture with a measuring device.
- The personnel requirement for the application of the plaster is at least three people for areas up to 20 m². For larger areas, it should be four people.

5. Installation of the grid structure

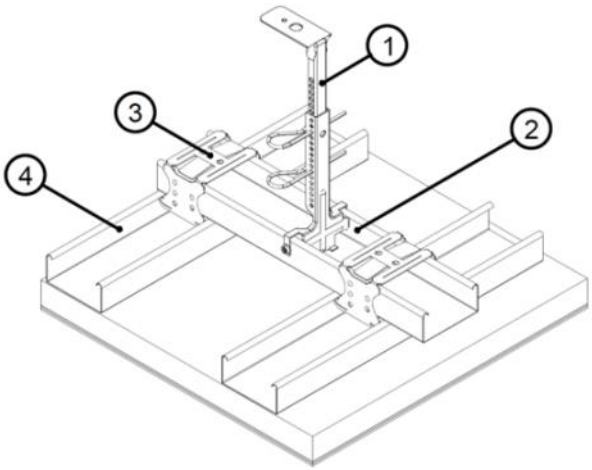
The grid structure consists of a classic CD grid construction with primary and main profiles. The primary profiles are installed at max. 900mm centres with hanger centres of max. 800mm. The main profiles are installed at max. 400mm centres. Both CD profiles should be connected using cross connectors. To stabilise the grid structure, a UD perimeter profile is installed at the height of the primary profiles.



In order to achieve a visually appealing appearance of the shadow gaps, the use of corrosion-protected UD profiles is recommended. These are painted black and are therefore less visible.

If movement joints are intended, the substructure must be adapted accordingly. Further information can be found in section 7. Ceiling transitions and movement joints.

It is also possible to fix the grid structure using direct hangers, when a lower ceiling installation height is required.

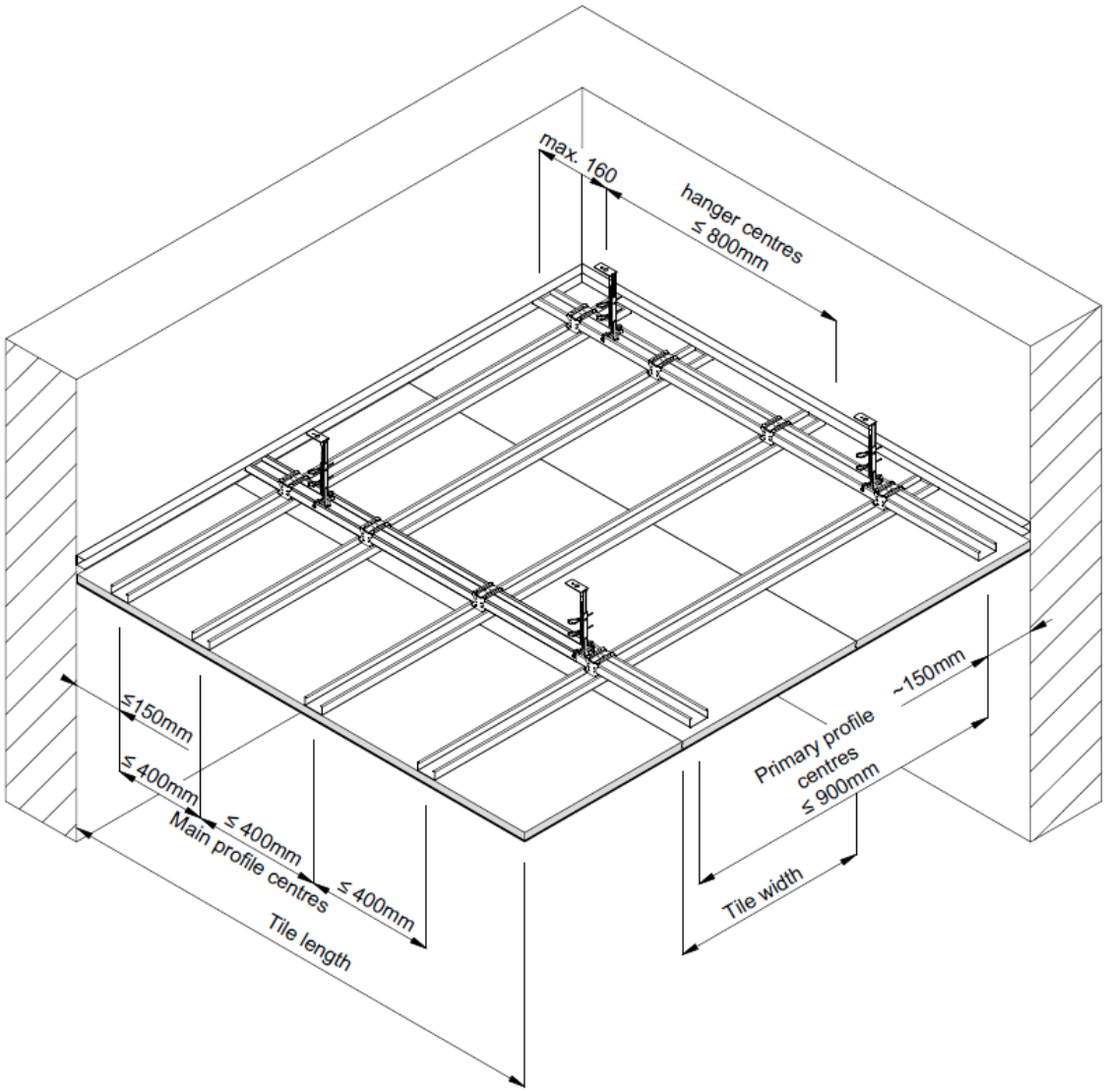


① **Nonius hanger:** centres ≤ 800mm

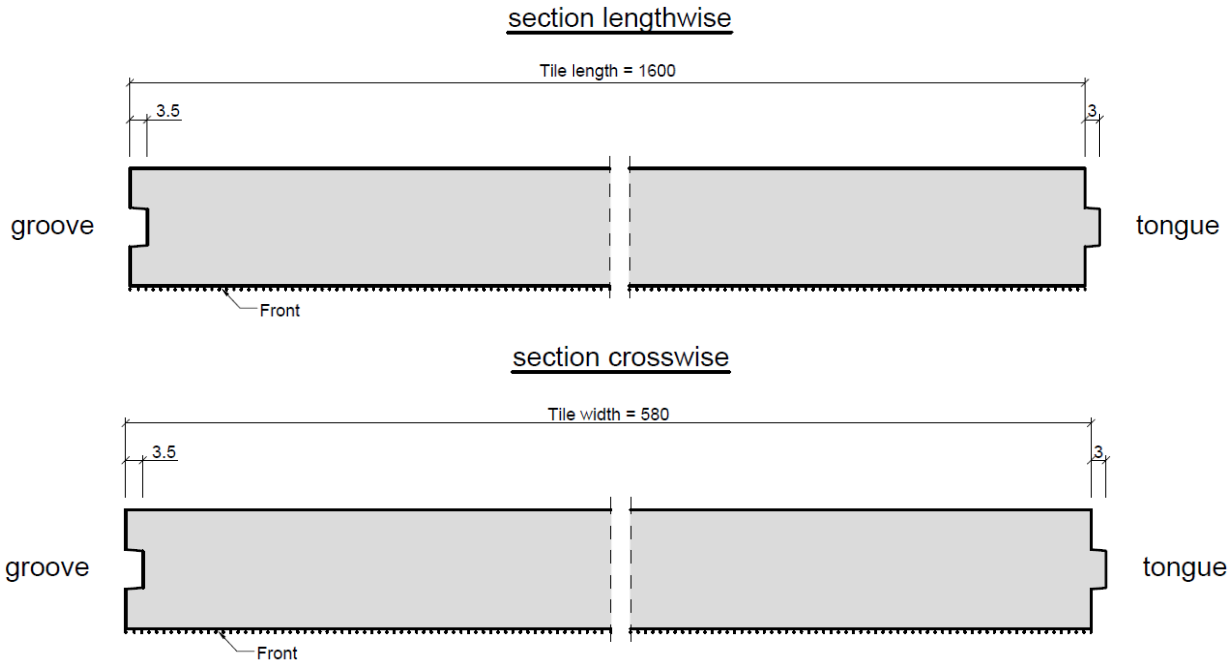
② **Primary profile:** centres ≤ 900mm

③ **Cross connector**

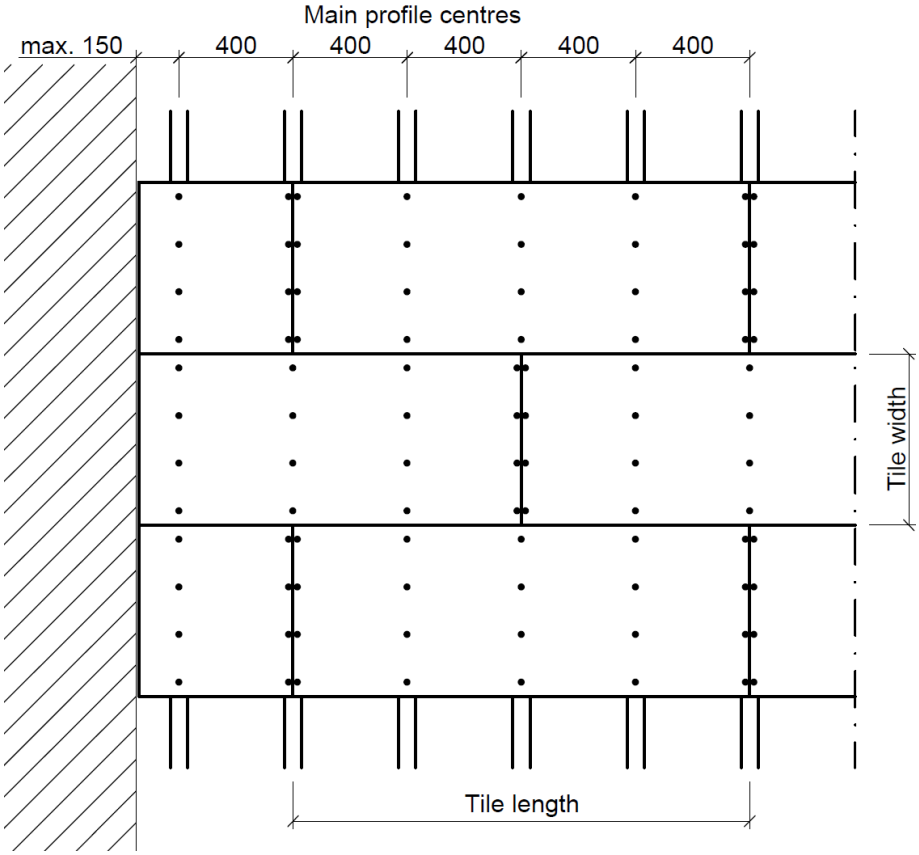
④ **Main profile:** centres = 400mm



6. Installation of the AMF Base Board



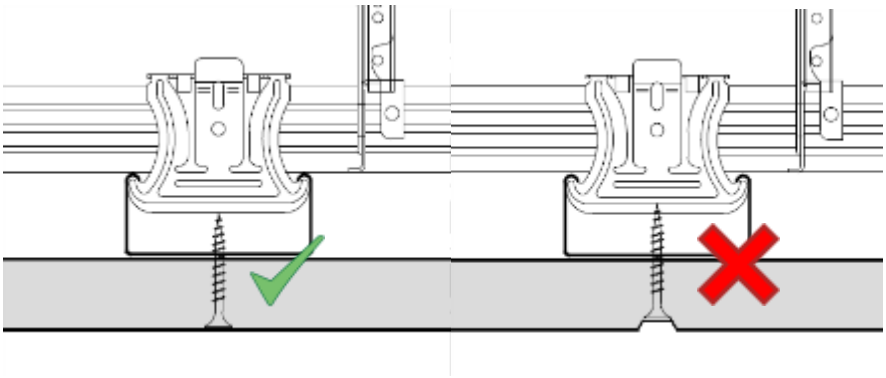
The installation of the Base Boards is carried out according to the screw pattern below with Knauf Aquapanel Maxi screws. For every complete tile, 20 screws are required. Leaving a row of screws out at the joints is not permitted.



The tiles have a 400mm perforated area and a 70mm non-perforated area to improve the grip of the tile during screwing. If it is necessary to screw the tiles in the perforated areas, the screws must be installed between the holes.

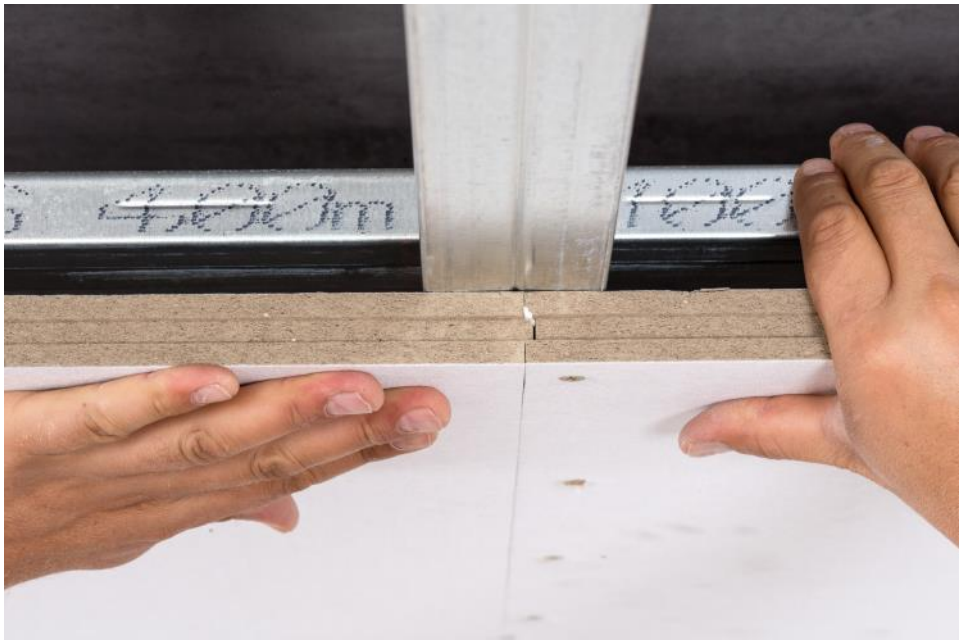
Please ensure that for every tile connection, the tongue and groove is glued. No cut tiles may be connected to another. The last main profile must be a maximum of 150mm from the edge of the ceiling. The installation of the tiles should be carried out in the direction across the main profiles. Installation of the tiles in the long direction of the main profiles is not permitted.

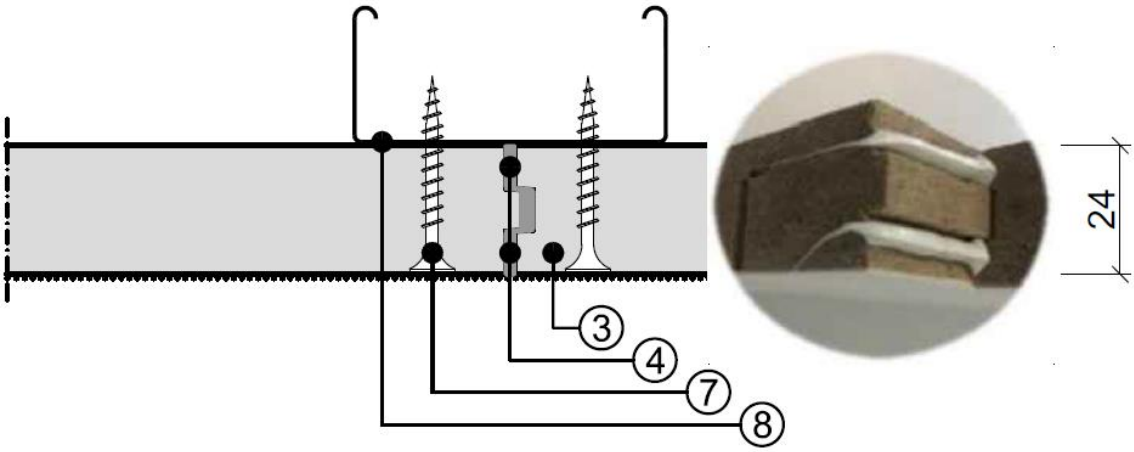
The screws must carefully be screwed into the tiles until they sit flush. The screw heads should not be sunk into the tile. Should a screw be screwed to deep, it is advisable to install another screw in the same area to ensure a secure hold. The resulting indent should be filled with POWER-ELAST.



The first tile of an area is positioned with the tongue against the wall. This can also be cut. An even perimeter distance should be maintained. Only then should the tiles be screwed. Knauf POWER-ELAST is applied to the upper and lower side of the tongue of the next tile. Tongue and groove joints must be free from dirt and dust. The tongue is then pushed into the groove of the next tile and fixed with a screw.


knauf POWER-ELAST





Key

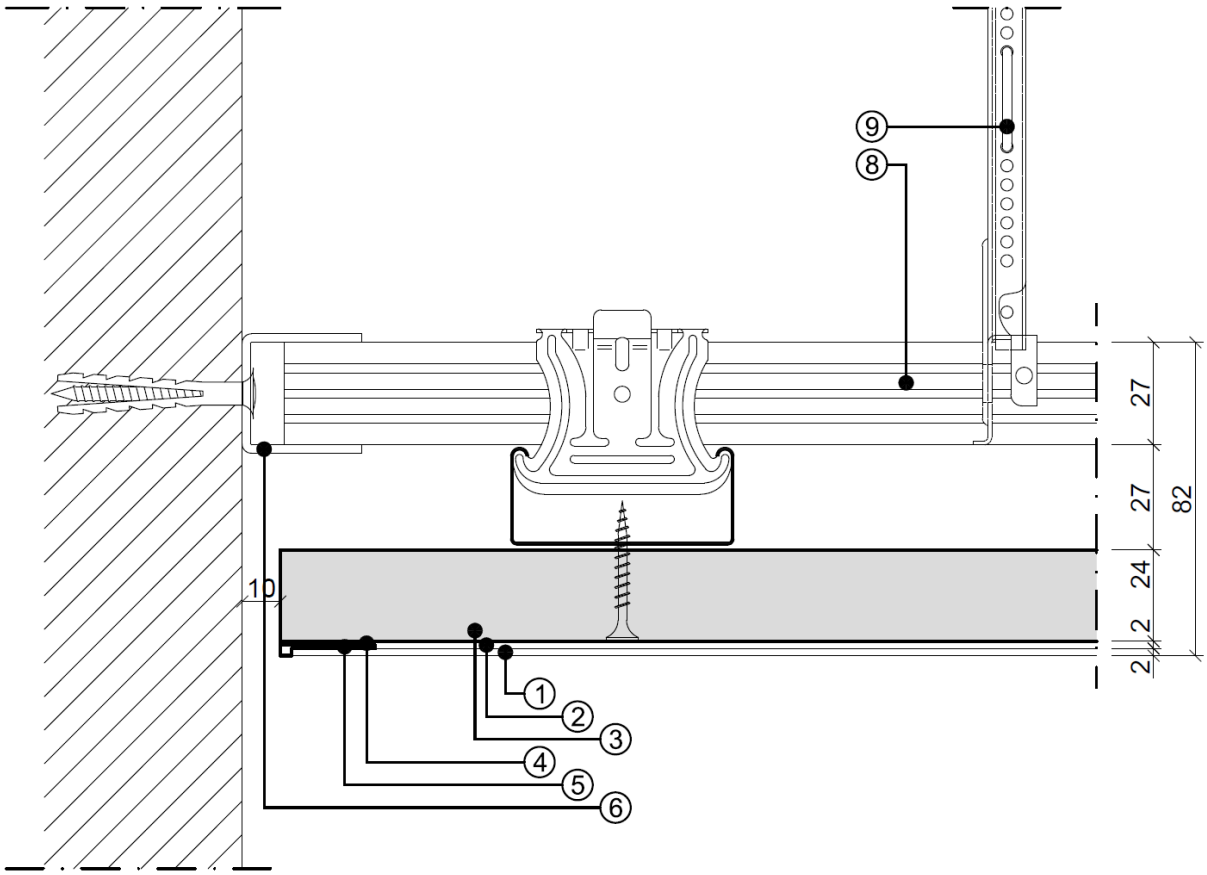
1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Knauf POWER-ELAST
5. PVC end profile 3mm
6. UD perimeter profile 27/28/27
7. Aquapanel Maxi screws SN39
8. Primary and main profiles CD60/27
9. Nonius hanger

If excess adhesive pushes out onto the surface of the tiles, it should not be spread, but scraped off with a trowel.

To ensure that the adhesive in the joints and in the end profiles is fully dry, a drying time of 24 hours must be left before the plaster is applied. If the plaster is applied before the adhesive is fully dry, the tiles can move which can later lead to cracks in the finished surface.

7. Ceiling transitions and movement joints

A. Version with concealed edges and movement joints



Key

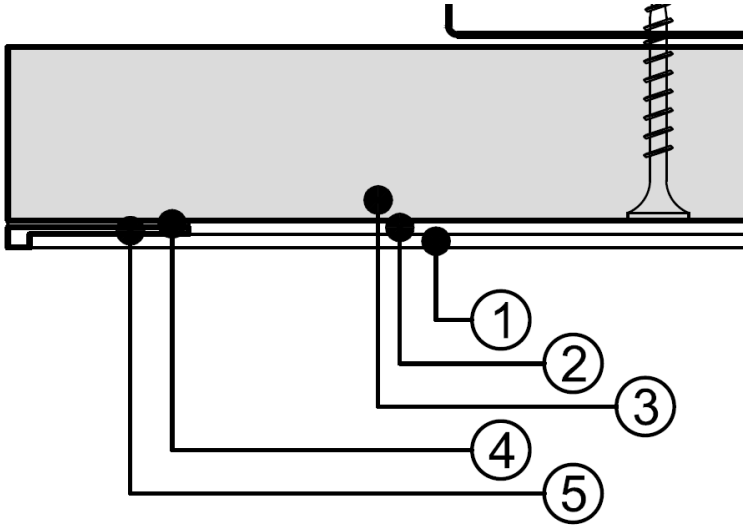
1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Knauf POWER-ELAST
5. PVC end profile 3mm
6. UD perimeter profile 27/28/27
7. Aquapanel Maxi screws SN39
8. Primary and main profiles CD60/27

The Grey-Line ceiling area must be separated from all perimeter surfaces with a minimum 10mm joint. A 3mm PVC end profile is used at the end of all ceilings and movement joints. This is mitred at the corners and must be glued to the

Base Boards using Knauf POWER-ELAST. The correct position of the end profiles is marked beforehand with a chalk or laser line.
The flexible profile must be additionally fixed with stainless steel staples.



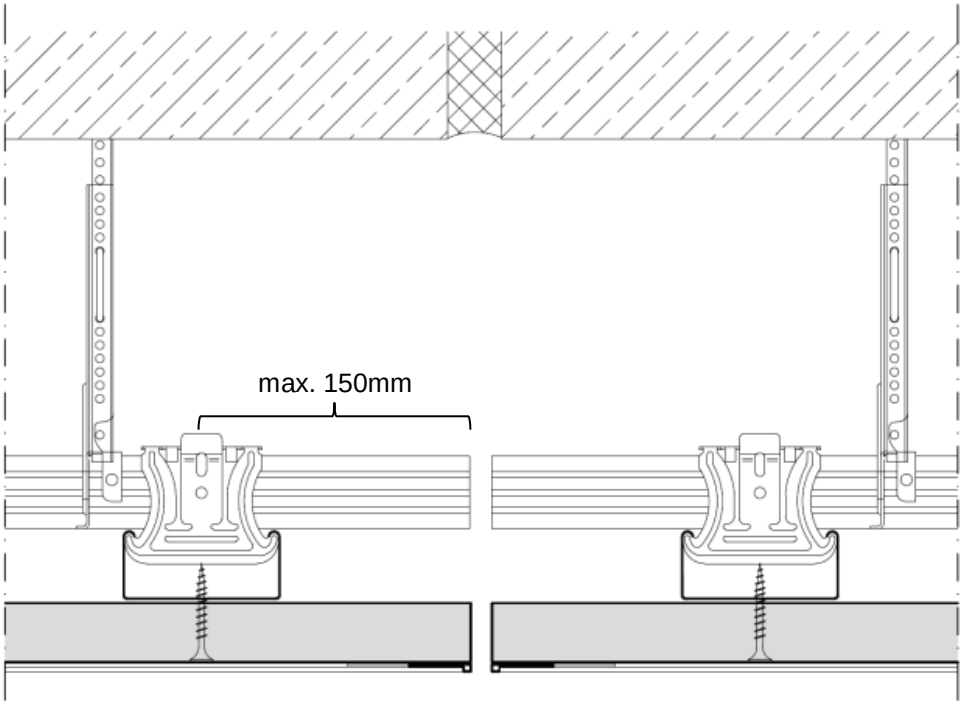

The profile is then used as the starting edge for both plaster applications. To achieve a clean finish, it is possible to select a 12mm distance from the tile to the wall and have the end profile protrude 2mm over the edge of the tile. Any possible irregularities from cut tiles are therefore concealed.



Key

1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Knauf POWER-ELAST
5. PVC end profile 3mm

All movement joints in the shell construction should be continued in the grid and the acoustic ceiling. In addition, movement joints should be set out for significantly narrow ceiling areas (e.g. constrictions from wall protrusions). For irregular shaped spaces with internal corners, the ceiling surface should be divided into uniform rectangles to create a visually appealing appearance.



Connections to components made of other building materials, in particular columns, or thermally highly stressed components such as recessed lights are also separated with shadow gaps or flexible profiles. Movement joints should be a minimum of 10 mm. In order to avoid that the ceiling cavity is visible, a UD profile, preferably in black, can be installed on the primary grid above the joint. The air exchange between the room and ceiling cavity is therefore not hindered.

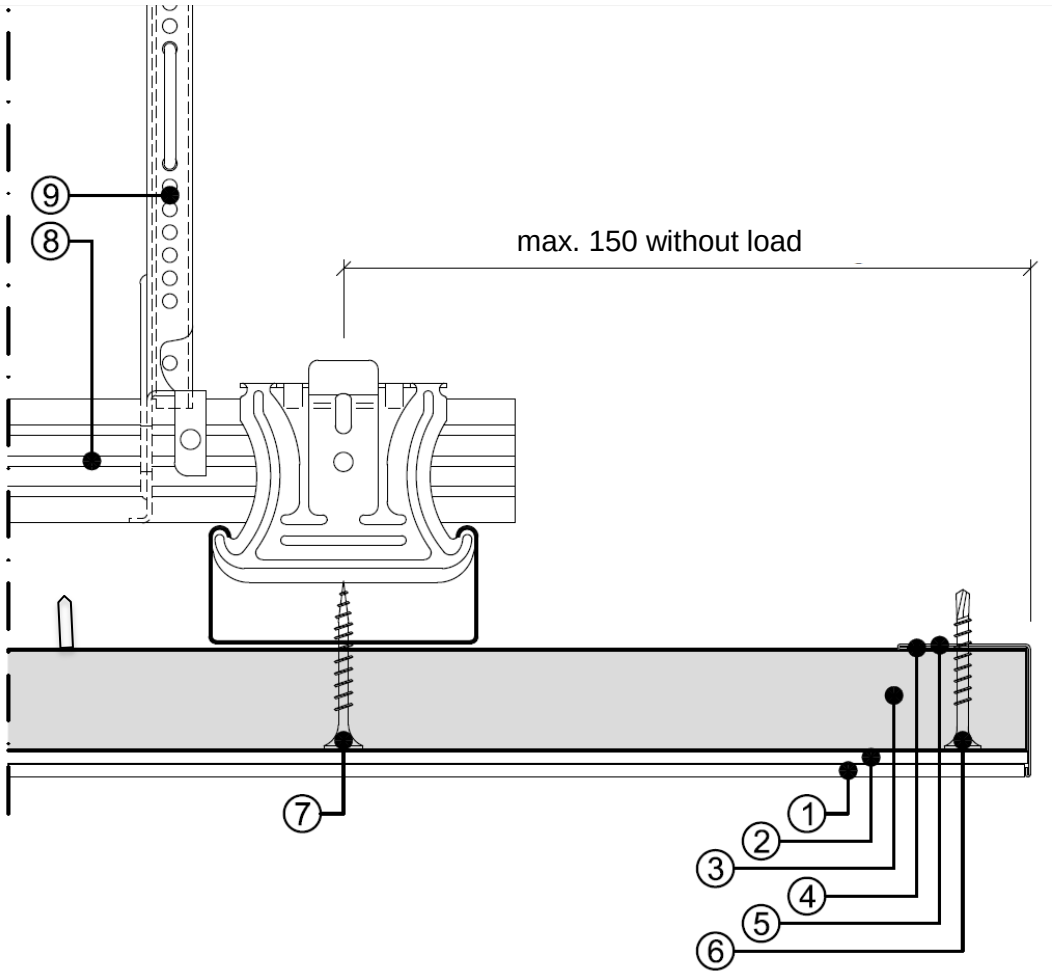
- The maximum length of a continuous ceiling area is 15m.
- The recommended maximum surface area for uniform appearance of the acoustic plaster is 100m². Larger areas should be subdivided with movement joints.
- Movement joints should not be covered behind in order to ensure the exchange of air between the room and the ceiling void.

B. Version with exposed edges

For applications with visible edges, such as ceiling islands or wider joints, a 30x30mm end angle in white is used to create a harmonic appearance.

This is fixed to the Base Boards with Knauf POWER-ELAST and additionally screwed at least every 400mm with self-tapping, stainless steel screws. The edge groove of the tiles must be cut before applying adhesive, so that a flat edge is produced. The edges must be free of dust before applying adhesive.

The distance of the screw joints from the CD profile to the edge should be maximum 150mm without loading.



Key

1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Knauf POWER-ELAST
5. Aluminium end angle
6. Aquapanel Maxi screws SB39 with drill bit
7. Aquapanel Maxi screws SN39
8. Primary and main profiles CD60/27
9. Nonius hanger

8. Application of the acoustic plaster

1. Application of the S.A.C. Basic plaster

Once the tiles have been installed, the layer of base plaster is applied.

The first layer of plaster is called Basic. This can be applied either by hand or with an acoustic plaster spray machine. Experience has shown that application with a spray machine is worthwhile for areas over 50 m².

It is important that the tiles are free from dust before the plaster is applied.

1.1 Mix the material

For the application, the base plaster is mixed with approximately 3.0 – 3.5 litres of water with a suitable, non-abrasive mixer for five minutes, directly in the container. The plaster should be used within 30 minutes after mixing.

1.2 Application of the base plaster

The Basic plaster is applied directly to the tiles using a 4 x 4 mm notched trowel. Areas of approximately one metre in width should be applied at one time. The main focus is to ensure that an even amount of material is applied. The trowel should not scratch the tiles, but should glide over them.

The end profile serves as a starting edge for the plaster application. The same applies to the edge of installations such as access panels.

1.3 Scrape cross-wise

The applied base plaster is scraped in a cross-wise direction with a 4 x 4 mm notched trowel, whereby the trowel should be at an angle of 15 degrees to the ceiling surface. The second scrape should be at right angles to the first and in the direction of the main incidence of light. If excess material accrues, this should not be reused. To ensure even layer thickness, the scraping should always be carried in one direction by the same person. The layer thickness should be 2.0 mm. If after scraping the material appears irregular, material application should be repeated.

1.4 Smoothing

The surface is then smoothed twice with a 500mm smoothing trowel. The trowel should be at an angle of 3 to 10 degrees, or almost parallel to the ceiling surface. The first smoothing procedure should be done at right angles to the second scrape, and the second smoothing carried out at right angles to the first. If possible, the smoothing trowel should always be placed on the edges and the perimeters smoothed first. In order to facilitate the work, the corners of the smoothing trowel are bent slightly upwards to avoid destroying the already smoothed surface. The trowel is cleaned before every new start point.

This is followed by a drying time of at least 48 hours. The requirements of the climatic conditions according to section 4 must be observed.

1.5 Finishing

For the final step, the entire surface is smoothed with an 800mm smoothing trowel. The smoothing trowel should be kept at an angle of approx. 3 degrees, practically horizontal to the ceiling surface. With light pressure, all unevenness is smoothed out. Again, it should be noted that the trowel is clean before each application. Dried remnants of plaster can destroy the finished surface.

1.6 Control the evenness

After the base plaster has completely dried, it must be checked for evenness. If in doubt, the residual moisture of the Basic plaster can be checked with a material humidity measuring device before going any further. The value should be below 10%. If the base plaster is not dry, there is a risk that it will be damaged by sanding and the Top Coat application.

Sanding of the base plaster is best carried out with the aid of a headlamp or spot light which can highlight the surface. All irregularities and ridges must be sanded flat. A sanding board with 60 grit sand paper or a dry wall sander is used. The use of a dry wall sander is only recommended for experienced installers as the risk of destroying the plaster is very high.

Unevenness greater than 1mm must be improved with Basic plaster. The final finish coating makes it impossible for later improvements and it is important for a perfect finished appearance that the base plaster is completely even and smooth.

At the perimeters or transitions, the Basic plaster should be sanded so that the end profile can again serve as the starting edge for the Top Coat application. This must always be carried out by hand.

After sanding, the surface should be cleaned with a soft broom or vacuumed. Wearing a dust mask and goggles is recommended.

2. Application of the S.A.C. Topcoat acoustic plaster

The Topcoat acoustic plaster is applied as a final finish. This has a grain size of 0.2 mm and is therefore finer than the base plaster. The standard colour of the top layer is natural white, but it is possible to produce a coloured surface in pastel or more intense shades. Unlike Basic, Topcoat is always applied by hand, never with a machine.

2.1 Mix the material

The top plaster coating is mixed with approximately 3.5 – 4.0 litres of clean water with a suitable, non-abrasive mixer for five minutes, directly in the container. The plaster should be used within 30 minutes after mixing.

Note:
The use of a non-abrasive mixer is essential when processing the Topcoat plaster. The abrasion can lead to discolouration of the ceiling surface.

The standard colour of the final coating is white, similar to NCS S 0500-N. If the finished surface should be coloured and not white, the supplied colour pastes are additionally added to the Topcoat bucket. For even colouring, mix at least 3 buckets of Top Coat and then pour 1/3 of each into a clean, new bucket and mix again. This ensures homogeneous colour mixing.

Note:
To minimise the risks related to colour differences, cloud formation, pigment and filler breakage:

- *If the acoustic ceiling is to be created with a coloured finish, it is advisable to have an A4 plaster sample in accordance with the NCS / RAL colour palette made. This sample must then be approved by planning / construction management in advance.*
- *Note that the colours are always similar to an NCS or RAL tone.*
- *Before the start of the project, a sample ceiling of at least five square metres should be created by the contractor and approved by the planning / construction management.*
- *For coloured finishes, please refer to the separate leaflet "Processing Instructions for Coloured Top Coat Acoustic Plaster"*

2.2 Application of the Topcoat acoustic plaster

The Topcoat layer is applied over the whole area with a notched trowel. The application should also be done in strips and should be started on one edge.

2.3 Scrape cross-wise

The applied Topcoat plaster is scraped in a cross-wise direction with a 4 x 4 mm notched trowel, whereby the trowel should be at an angle of 15 degrees to the ceiling surface. The second scrape should be at right angles to the first and in the direction of the main incidence of light. Care should be taken that the trowel does not damage the

Basic base plaster. To ensure even layer thickness, the scraping should always be carried out in one direction by the same person. The layer thickness should be 1.5 - 2.0 mm. If after scraping the material appears irregular, material application should be repeated.

2.4 Smoothing

The surface is then smoothed twice with a 500mm smoothing trowel at an angle of 3 to 10 degrees. The first smoothing procedure should be done at right angles to the second scrape, and the second smoothing carried out at right angles to the first. If possible, the smoothing trowel should always be placed on the edges and the perimeters smoothed first. The same amount of pressure must always be applied to achieve a smooth and even surface. Excess plaster must be wiped off the trowel with a sponge or brush before every new start point.

Important:
If a coloured Topcoat plaster is being applied, the trowel must be dry before restarting. Water on the ceiling surface can lead to spotting or washed-out pigments.

2.5 Finishing

For the final step, the entire surface is smoothed with an 800mm smoothing trowel. The smoothing trowel should be kept at an angle of approx. 3 degrees, practically horizontal to the ceiling surface. With light pressure, all unevenness is smoothed out. Again, it should be noted that the trowel is clean before each application. Dried remnants of plaster can destroy the finished surface.

Note:
Too frequent smoothing of the Topcoat plaster can result in grey abrasion (grey spots) on the finished surface.

The drying time for the Topcoat plaster is approximately 48 hours. No installation work or other ceiling work can be carried out until the acoustic plaster is completely dry.

Important:
The sound-permeable plaster must not be painted with a brush or roller, as this will close the pores of the surface and the absorption properties will be lost.

9. Repair and refurbishment work

9.1 Repair work

Small damage (impacts to the ceiling, drilling in the wrong place) can be repaired. It should be noted that this is only possible for new ceilings, otherwise colour differences may occur.

In order to repair small defects, the acoustic plaster is mixed in a diluted form (so that it still adheres to the ceiling) and carefully repaired without damaging the adjoining surface. To do this, work with the small smoothing trowel.

Important:

Despite careful work, the repaired areas may remain visible after drying.

9.2 Refurbishment work

The ceilings cannot be cleaned or painted over. Only minor soiling can be carefully removed with a damp sponge. In order to refurbish the ceiling over a large area, it is necessary to sand the ceiling, vacuum and then apply a new 1 - 2mm thick layer of Topcoat. This preserves the acoustic effectiveness of the ceiling.

10. Ceiling fixtures and fittings

Ceiling fixtures, such as lamps, loudspeakers and fire detectors, etc., can be integrated into the jointless ceiling.

The cut-outs must be cut into the Base Boards with, for example, a keyhole saw or jigsaw, before the plaster is applied. When plastering, the cut-outs are simply plastered over. If after the application, plaster remains in the cut-outs, these can be easily cut off. For a visually appealing appearance, the use of fittings with a cover edge of at least 5 mm wide is advisable. The maximum loads for fixtures and fittings are shown in the table below.

Note: It is recommended to wear clean, non-abrasive gloves when installing and maintaining fixtures and fittings.

Loads	Fixing material	Note
≤ 1.0 kg/m² (as point load)	Cavity fixing	max. 2 point loads /m²
≤ 10 kg/m² (as point load)	Direct fixing	Directly to the metal grid structure or using a replacement CD profile
> 10 kg/m² (as point load)	Direct fixing	Directly fixed to the soffit

The maximum permissible deflection of the ceiling is $\ell/500$.

11. Further construction details

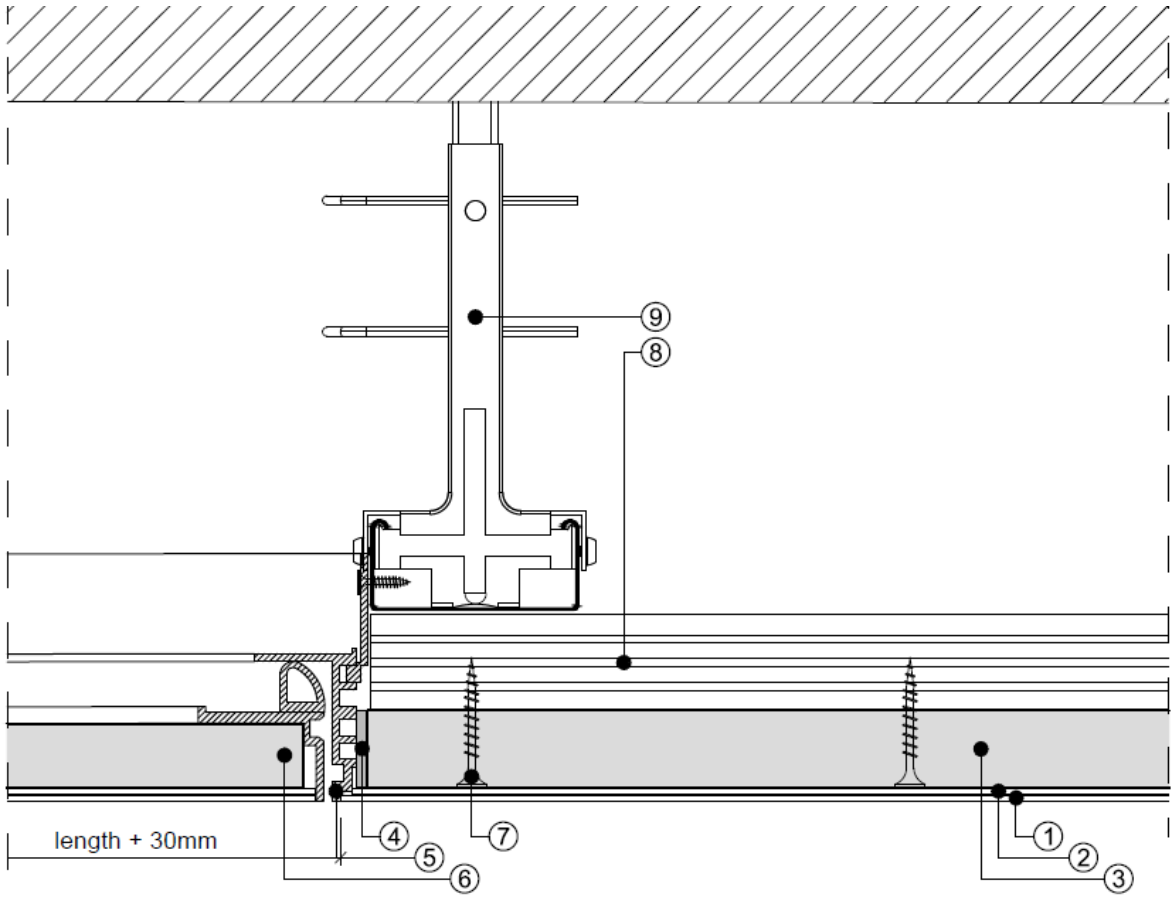
11.1 Access panels

Alu-Top access panels for the Grey-Line System are to be installed as shown in the example below. The substructure must be adapted accordingly. At each corner of the panel, an additional hanger is to be installed.

The frame of the access panel must be inserted with the tiles before the plaster is applied. The edge of the access panel is set 4mm lower than the lower side of the Base Board. This edge is used as the finishing profile for plastering.

The cover of the access panel is coated on the floor. The surface is first filled with Knauf Uniflott, primed with Knauf Quarzgrund and then plastered twice as usual.

Note: It is strongly recommended to wear clean, non-abrasive gloves when installing and using access panels.

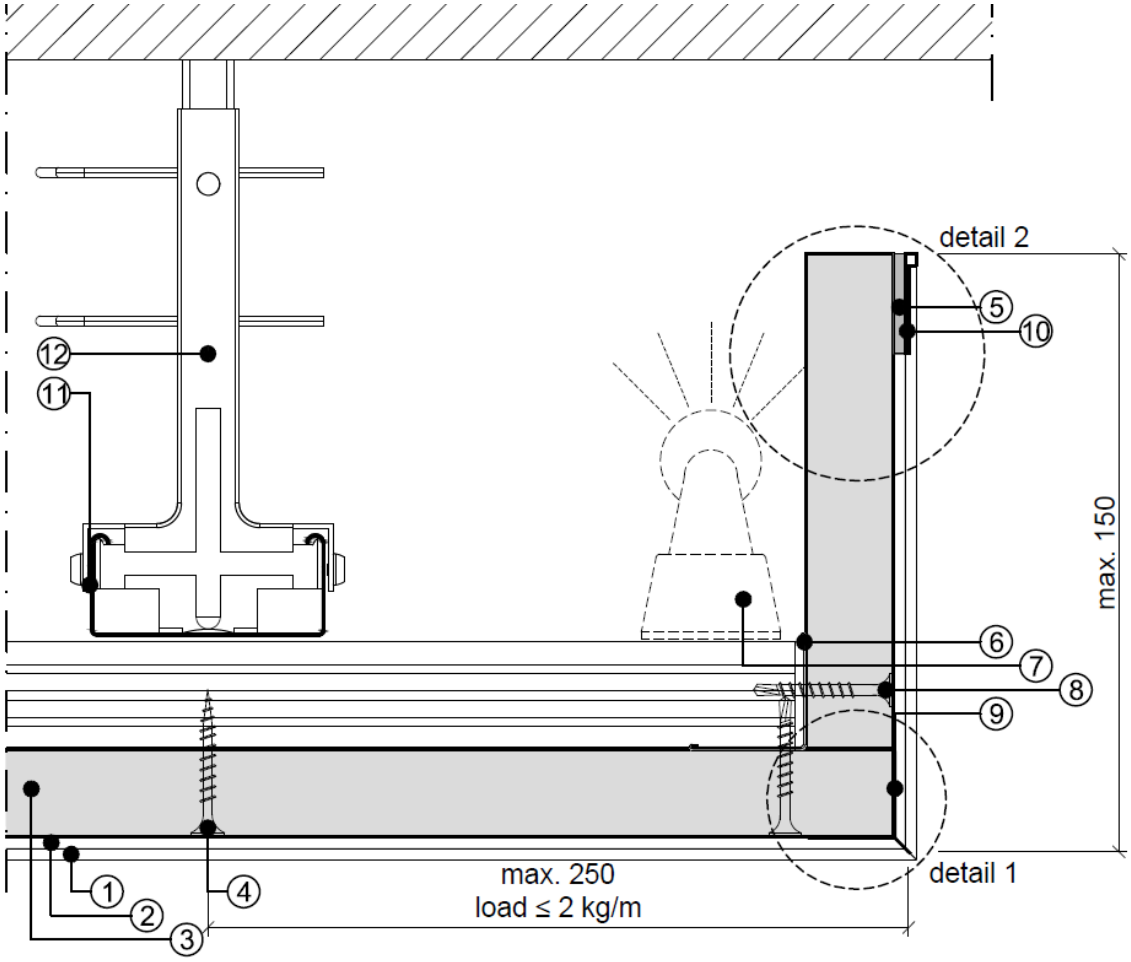


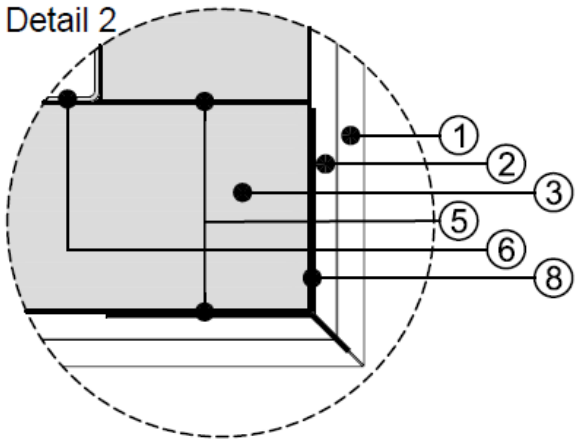
Key

1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Knauf POWER-ELAST
5. Alu-Top access panel
6. Knauf Diamant board, plastered
7. Aquapanel Maxi screws SN39
8. Primary and main profiles CD60/27
9. Nonius hanger

11.2 Lighting coves

Lighting coves are to be carried out according to the example shown below. For plastered edges, such as this, the 25x25mm PVC corner protection angle for the ceiling is used. This is glued with Knauf POWER-ELAST, just like the end profile, and then used as a starting edge for plaster application.
To prevent the plaster splitting at the butt joints of the tiles, the joints are also generously glued and additionally a glass fibre band is applied with Knauf Uniflott on the visible side.





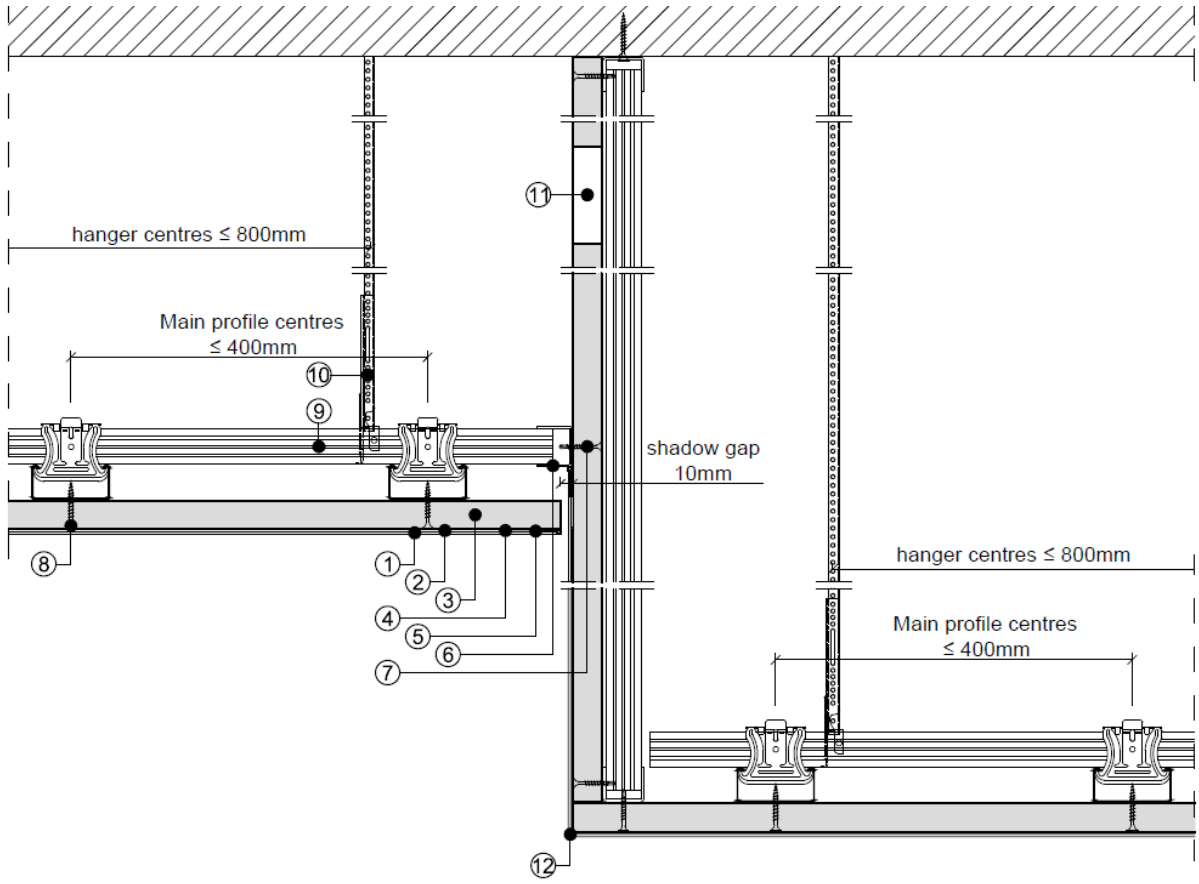
Key

1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Aquapanel Maxi screws SN39
5. Knauf POWER-ELAST
6. Aluminium end angle
7. Spacer bar for fixing point
8. Aquapanel Maxi screws SB39 with drill bit
9. PVC corner protection angle 3mm
10. PVC end profile 3mm
11. Primary and main profiles CD60/27
12. Nonius hanger
13. UD perimeter profile 27/28/27

11.3 Split-level ceilings

Due to different ceiling levels, it may be necessary to create split-level ceilings. One possible version of this is shown in the following figure. For plastered edges, such as this, the 25x25mm PVC corner protection angle for Grey-Line is used. This is glued with Knauf POWER-ELAST, just like the end profile, and then used as a starting edge for plaster application.

To prevent the plaster splitting at the butt joints of the tiles, the joints are also generously glued and additionally a glass fibre band is applied with Knauf Uniflott on the visible side. For back ventilation, as shown below, holes are drilled in the vertical tiles, or the vertical tiles above the ceiling are left out.



Key

1. S.A.C. Topcoat acoustic plaster
2. S.A.C. Basic acoustic plaster
3. AMF Base Board
4. Knauf POWER-ELAST
5. PVC end profile 3mm
6. UD perimeter profile 27/28/27
7. Aquapanel Maxi screws SB39 with drill bit
8. Aquapanel Maxi screws SN39
9. Primary and main profiles CD60/27
10. Nonius hanger
11. Hole for back ventilation
12. PVC corner protection angle 3mm

If you have questions about further construction details, please contact S.A.C. Silent AG directly.
The current version of the installation instructions applies. Errors, changes and omissions excepted.