METALL DECKEN

GP COOL SPEED
Unternehmenszweig der Baustoff + Metall Gruppe

PANEL CEILING HEATING AND COOLING SYSTEM

SUPPLEMENTARY INSTALLATION GUIDELINE FOR THE GP-COOL SPEED CEILING HEATING AND COOLING SYSTEM

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CONTENT

SUPPLEMENTARY INSTALLATION GUIDELINES

FOR THE INSTALLATION OF GP-COOL SPEED COOLING MEANDERS IN A NE PANEL CEILING

INSTALLATION REQUIREMENTS

In order to be able to install this panel ceiling heating and cooling system, you have to be familiar with the state of the art in dry construction, as well as the relevant standards and legal regulations applicable at the installation site. Therefore, the following supplementary installation notes only describe additional information which is not necessarily inferred from the state of technology, and additional information which is important because it refers to a special feature of the system. This information is to be understood as supplementary guidelines and does not override the installation guidelines for NE panel ceilings and the installation guidelines for B+M GP-Cool-Speed. Should this information conflict with any standards and regulations at the place of installation, you must in any case consult the respective manufacturer.

All System components mentioned in these instructions must be mounted according to the installation guidelines. In the event of any noncomlpiance with the above, or if unapproved components are used, any and all legal claims against Baustoff + Metall GmbH and NE-Paneeldecken – Nagelstutz and Eichler GmbH & CO.KG shall be extinguished.

Note: All information corresponds to the state of the art at the time of printing. The installer is obliged to inform himself about the up-to-datedness of the instructions prior to installation and to work only in accordance with the current version. These guidelines are available at any Baustoff + Metall GmbH branch.

REQUIRED SITE CONDITIONS

A dry, clean, wind- and water-protected room with closed facade or windows and a building and air temperature from +7 ° C at a relative air humidity between 40 and 70%, is required to install the panel ceiling heating and cooling system. All installation work that causes dust, dirt and moisture, and where chemical agents are used, must be completed before installation of the ceiling is started.

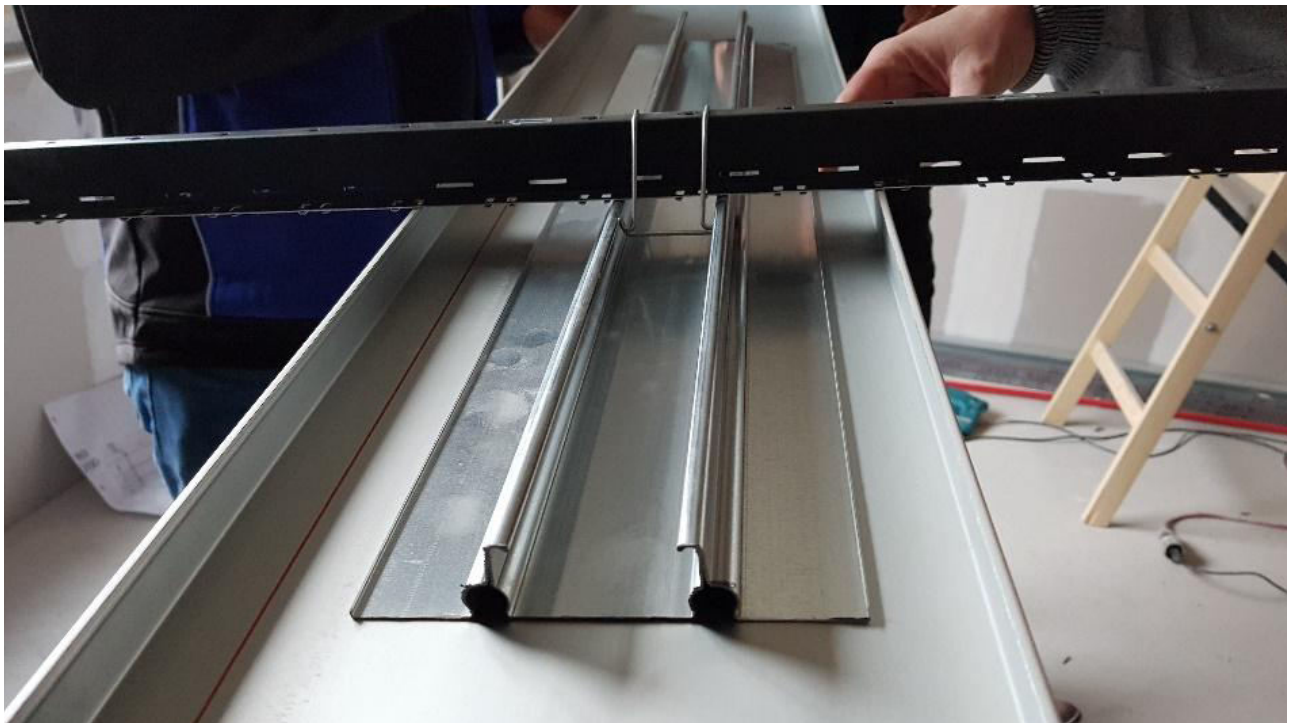
The system components must be kept dry and dust-free during transport and storage and must always be stored horizontally and installed on a level surface until installation. For detailed information, please refer to the guidelines for storage and transport of the individual system parts or the respective packaging insert.

PREPARATION FOR INSTALLATION

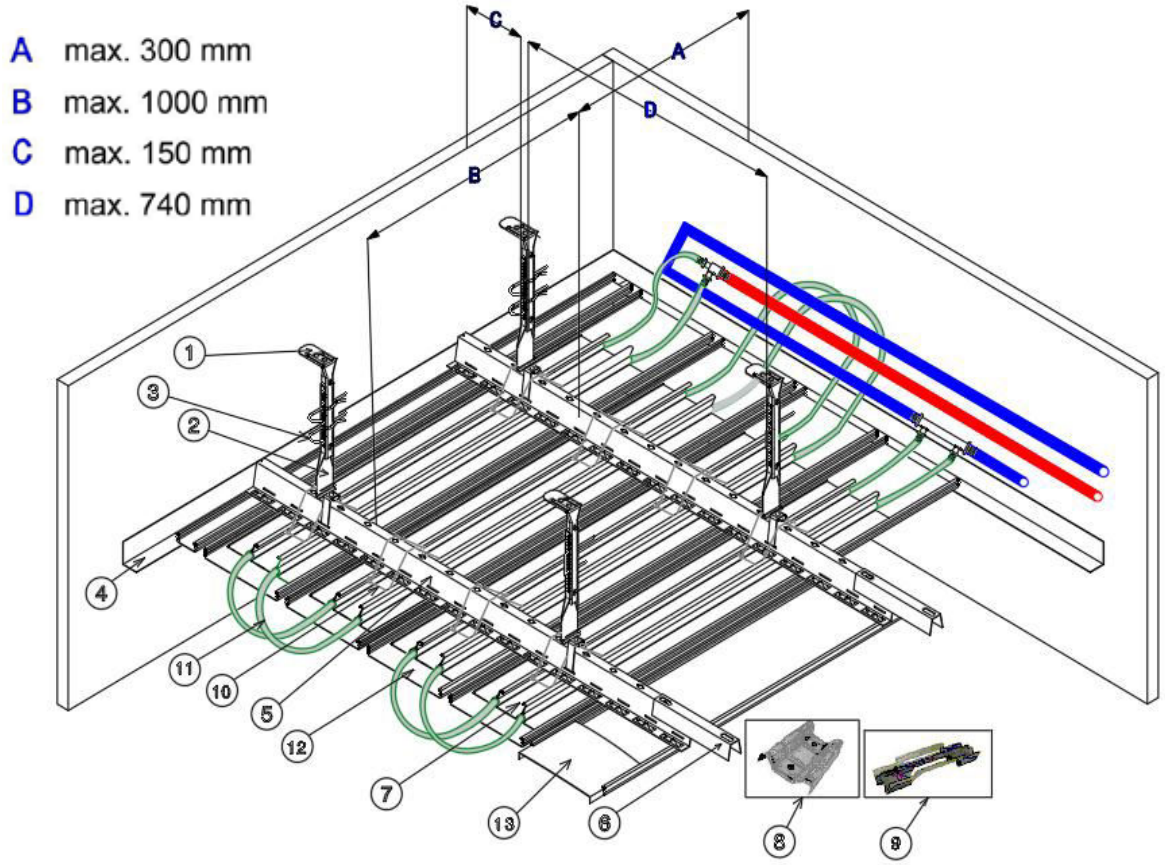
Before starting the installation work, the installation drawings must be checked for completeness and conformity with the structural conditions, and the installer must familiarize himself with the design details.

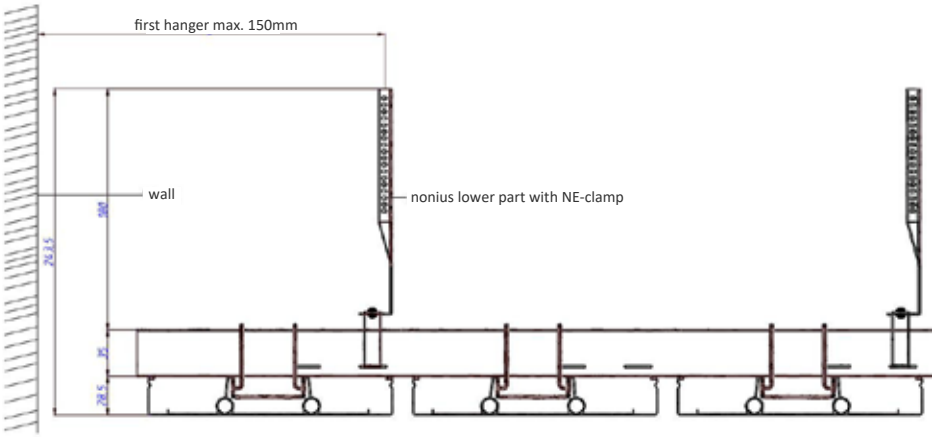
PLEASE ENSURE THAT:

- All wiring work has been completed.
- All built-in units are shown correctly in the ceiling drawings.
- Agreements on working together during installation were reached for the integration of other systems in the ceiling (light, ventilation, etc.)
- All materials and safety equipment required for installation are available.



SYSTEM COMPONENTS AND DISTANCES OF THE SUBSTRUCTURE





MATERIAL NEEDED PER M²

	ITEM NUMBER	M200	M250	M300	M327,5
1. Nonius hanger top (length as required)	NA110	1.65 each	1.65 each	1.65 each	1.65 each
2. Nonius lower part with NE-clamp (length 17 cm)	NENUP	1.65 each	1.65 each	1.65 each	1.65 each
3. Nonius split pin (U fixing pin)	NSPLINT	1.65 each	1.65 each	1.65 each	1.65 each
4.Edge angle bracket, non-load-bearing	NERW2525UMBDW	0.4 rmt.	0.4 rmt.	0.4 rmt.	0.4 rmt.
5. Mounting rail, type H	NETRAGHPZF08ALU NETRAGHPZF15ALU NETRAGHPZF31208 NETRAGHPZF31215	1.1 rmt.	1.1 rmt.	1.1 rmt.	1.1 rmt.
6. Mounting rail connector, type H	NETRAGVV	0.1 each	0.1 each	0.1 each	0.1 each
7. GP-Cool Speed profile	GPCOOLSPEED4	5 rmt.	4 rmt.	3,2 rmt.	6 rmt.
8. GP-Cool Speed integral splice	GPCOOLCDLÄNGSV	0.5 each	0.4 each	0.33 each	0.3 each
9. GP-Cool Speed transition connector	GPCOOLÜBERGANGS	upon request	upon request	upon request	upon request
10. GP-Cool Speed NE cross connector	GPCOOLNEKREUZV	5 each	4 each	3 each	6 each
11. GP-Cool Speed system pipe 12 x 2,0	ROHRPE1220240	10 rmt.	8 rmt.	6.4 rmt.	12.4 rmt.
12. NE Panel Type (in different colors)	NE2808ZF192DIV NE2815ZF185DIV	5 rmt.			
	NE2808ZF242DIV NE2815ZF235DIV		4 rmt.		
	NE2808ZF292DIV NE2815ZF285DIV			3.2 rmt.	
	NE2815ZF312DIV				3.1 rmt.
13. Panel connector	NEVER2808ZF192, 242, 292 NEVER2815ZF182, 235, 285 NEVER2815ZF312	0.5 each 0.5 each	0.4 each 0.4 each	0.33 each 0.33 each	0.3 each

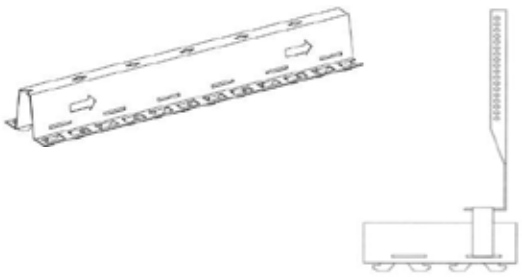
PREPARATION OF THE SUSPENSION GRID SYSTEM

PREPARATION:

- At the beginning of the work, check the room dimensions and the right angularity of the room.
- The specified panel direction determines the mounting rail positions (suspension grid system always 90 ° to the panel direction) and thus with non-right-angular rooms, any cut surfaces of the panels.
- It must be checked whether the ceiling complies with the specified ceiling height. The ceiling must be checked for any obstruction caused by joists, ducts, etc., taking into account the height of the panel system, in order to verify that the ceiling height is complied with.

THE DESIGN OF THE SUPPORTING STRUCTURE:

As long as the applicable standards and regulations at the place of installation do not require smaller distances (ceiling weight without built-in parts 15 kg), the maximum distances shown in the drawing on the right must be observed.

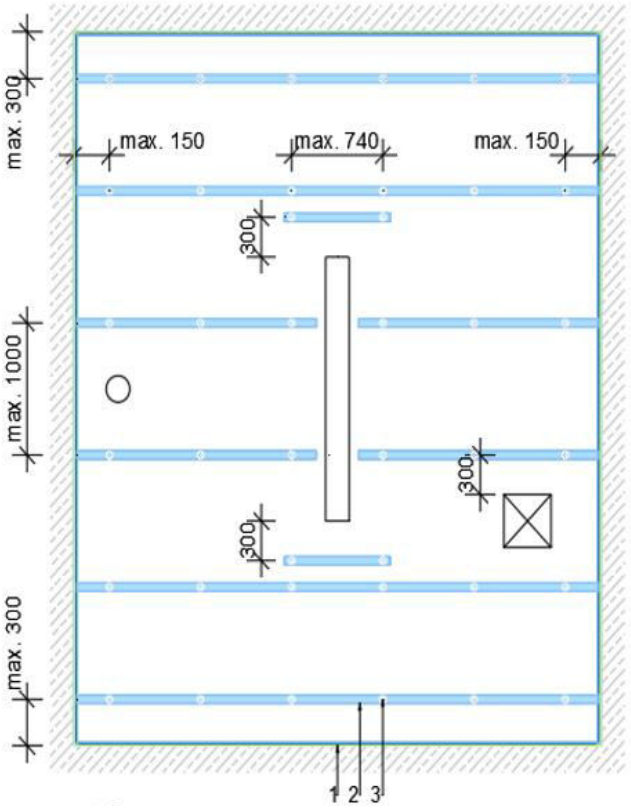


H-rail +
NE-Nonius hangers

Figure 1

ALIGNMENT OF THE SUPPORTING STRUCTURE:

1. The stamped arrows on the mounting rails must point in the same direction.
2. The panel hang axes on the bottom of the mounting rails are to be aligned according to the desired position of the panels to each other in a 90 ° angle. Using a straightening panel to align the structure is recommended.



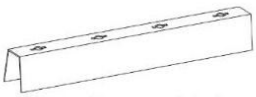
1 RW2525 2 Panel mounting rail 3 Hanger parts

3. Depending on the selected detail, the wall brackets are to be fastened.
4. The mounting rail connections are made with a snap rivet each in the key holes of mounting rails and mounting rail connector on the mounting rails to be connected. This type of connection ensures a necessary compliance of the module, even if the connection of the mounting rails leaves a narrow joint between the mouning rails.

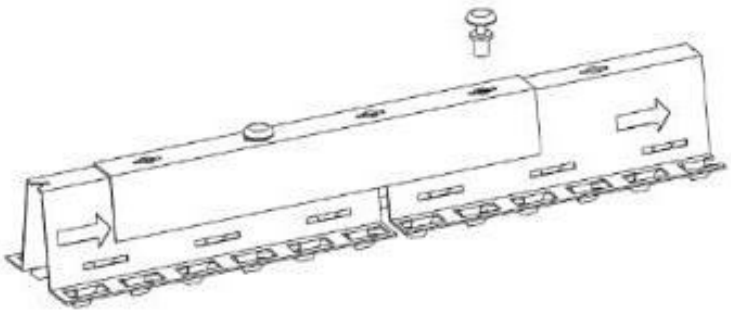
   NOTE: In the case of mounting rail connections, a hanger must always be provided at a distance of 150 mm from the connection point.

Please note:

- Only a compression-rigid suspension assembly with the listed system components is permitted.
- The L-brackets must be fastened to the wall in a friction-locked manner.
- The Nonius hanger lower part must lock audibly and firmly engaged in the cutouts of the mounting rail. (See **Figure 1**)
- Never use damaged Nonius pieces!
- Use two split pins or a double clamp between Nonius hanger top and lower parts, according to the manufacturer‘s guidelines.
- Design and position the building expansion joints accurately according to expected movement.
- Only metal anchors with corresponding approvals are to be used. Pullout tests with safety factor must be performed and a record of it made.



Support rail connector



5. Mounting rails must never be installed or fastened tightly between limiting components because of thermal expansion. They must be free to move, so that when the panels are mounted, all mounting rails can align within the module.

NOTE:

Perform an anchor pullout test and make a record of it. Re-check the fit of the Nonius hanger lower parts and Nonius pin and center-to-center distances of the support structure and distances to any built-in units after completion.

MOUNTING OF GP-COOL SPEED PROFILES

PREPARATION:

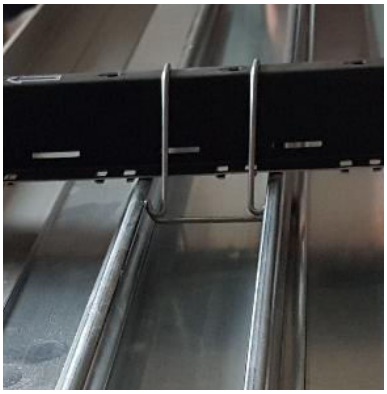
Like C channels, the heat transfer profiles can be extended as desired using integral splices (item no. CDECKENPROFVERB), which prevents waste. Keep a minimum plate length of 30cm and an offset of joints of 100cm profile minimum.

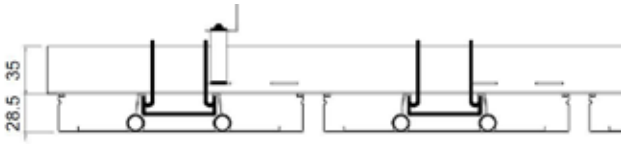
When cutting the profiles, the following specifications and tool recommendations must be observed:

1. To cut the profiles, use a cutting saw for metal sections. We recommend the Makita type LC1230 cutting saw. It is always necessary to use a suitable saw blade for metal sections. The model Makita 305mm SAWBLADE combined with the recommended cutting saw is an optimum combination. Observe the work safety regulations of saws and always fix the profile before cutting.
2. Check the burr formation on the profile after cutting and deburr specifically the pipe channel as required. For deburring, the item with the item no. PROFILENTGRAT16 is recommended.
3. Clean the profile from dust and chips after cutting.

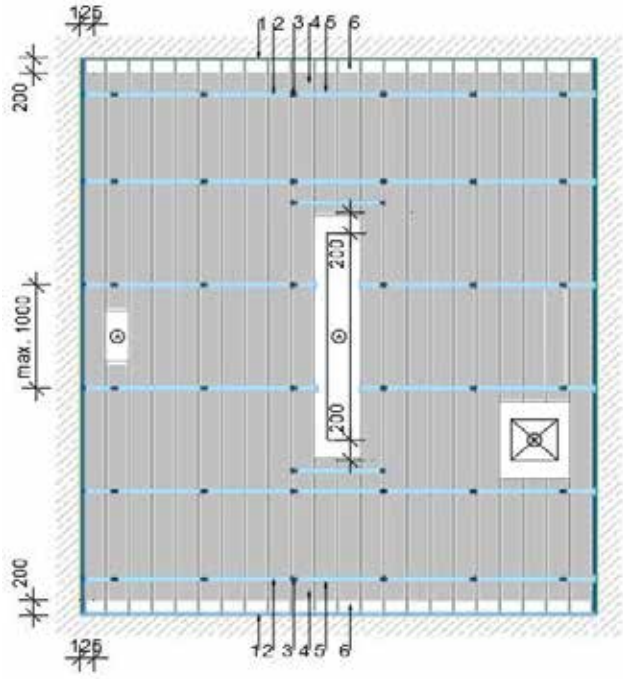
MOUNTING OF PROFILES:

Mount the heat transfer profiles to the support structure using a system wire anchor according to the system requirements shown in the illustration on the right (item no. GPCDRAHTANK). Make sure that all 4 hooking lugs of the wire anchor are hooked into the hook of the profile.





The profiles should always be centered along the panel axis, with a distance of 200mm to the wall and the components.



Key:
1 RW2525
2 Panel mounting rail
3 Hanger part
4 GPCS Profile
5 Wire brackets
6 Panel

NOTE:

First plan where to route the supply and return pipework for the heating and cooling ceilings before mounting the heat transfer profiles. Mount the supply and return pipework in the above-ceiling plenum space first, if necessary.

B + M GP-COOL SPEED PANEL CEILING COOLING CAPACITY

COOLING CAPACITY MEASUREMENT ACCORDING TO DIN EN 14240 (TEST REPORT FTZ_2017_KF2337, FTZ E.V. ISSUED AT THE WESTSÄCHSISCHE HOCHSCHULE ZWICKAU)

TEST SPECIMEN:

Panel ceiling *B + M GP-Cool Speed Panel Alu*, open panel ceiling made of non-perforated aluminum panels, heat transfer profiles made of galvanized sheet steel 0.7mm, 150mm wide; plastic pipes 12 x 2.0mm, 2 pipes each clamped into profile from below.

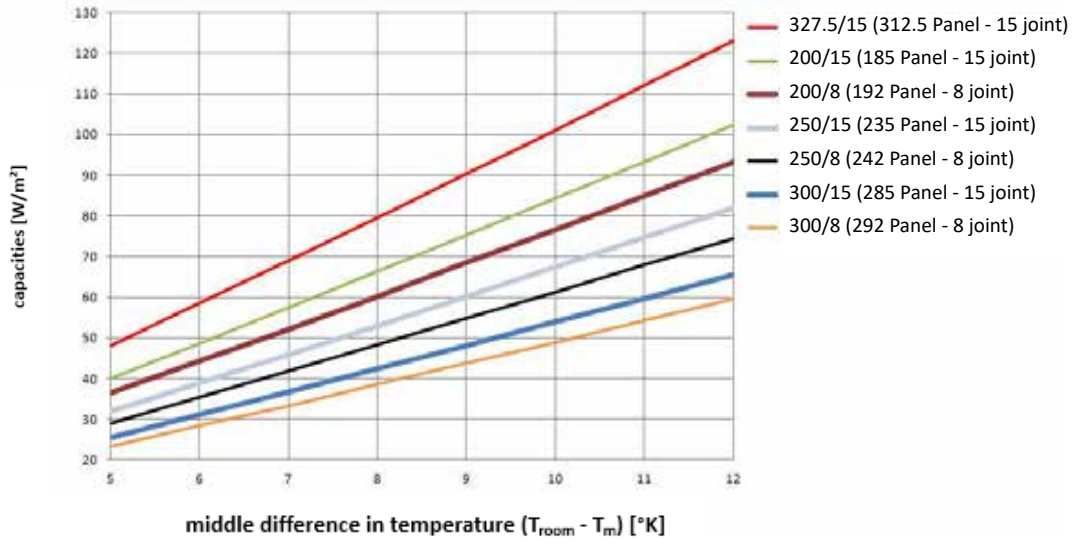
- Alu Panel 200/8 (192 Panel – 8 joint)
- Alu Panel 250/8 (242 Panel – 8 joint)
- Alu Panel 300/8 (292 Panel – 8 joint)
- Alu Panel 200/15 (185 Panel – 15 joint)
- Alu Panel 250/15 (235 Panel – 15 joint)
- Alu Panel 300/15 (285 Panel – 15 joint)
- Alu Panel 327.5/15 (312.5 Panel – 15 joint)

CONSTRUCTION TYPE OF TEST SPECIMEN:

open ceiling

ACTIVE SURFACE CAPACITY:

Rated cooling capacity with temperature difference ΔθN =	8,0 K	:	80.4 W/m²
Rated cooling capacity with temperature difference ΔθN =	10,0 K	:	102.1 W/m²



Rated cooling capacities: (determined by calculation concerning the active area)

o Alu Panel 200/8 (192 Panel – 8 joint)

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	60.3 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	76.6 W/m²

o Alu Panel 250/8 (242 Panel – 8 joint)

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	48.3 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	61.3 W/m²

o Alu Panel 300/8 (292 Panel – 8 joint)

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	38.6 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	49.1 W/m²

o Alu Panel 200/15 (185 Panel – 15 joint)

determined by calculation

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	66.3 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	84.3 W/m²

o Alu Panel 250/15 (235 Panel – 15 joint)

determined by calculation

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	53.1 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	67.4 W/m²

o Alu Panel 300/15 (285 Panel – 15 joint)

determined by calculation

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	42.4 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	53.9 W/m²

o Alu Panel 327,5/15 (312,5 Panel – 15 joint)

determined by calculation

Rated cooling capacity with temperature difference ΔθN = 8.0 K	:	79.5 W/m²
Rated cooling capacity with temperature difference ΔθN = 10.0 K	:	101.1 W/m²

B + M GP-COOL SPEED PANEL CEILING HEATING CAPACITY

HEATING CAPACITY CALCULATIONS IN KEEPING WITH DIN 14037-5

(TEST REPORTS FTZ 2017_HF1093, FTZ E.V. ISSUED AT WESTSÄCHSISCHE HOCHSCHULE ZWICKAU)

TEST SPECIMEN:

Panel ceiling *B + M GP-Cool Speed Panel Alu*, open panel ceiling made of non-perforated aluminum panels, heat transfer profiles made of galvanized sheet steel 0.7mm thick, 150mm wide; plastic pipes 12 x 2.0mm, 2 pipes each clamped into profile from below.

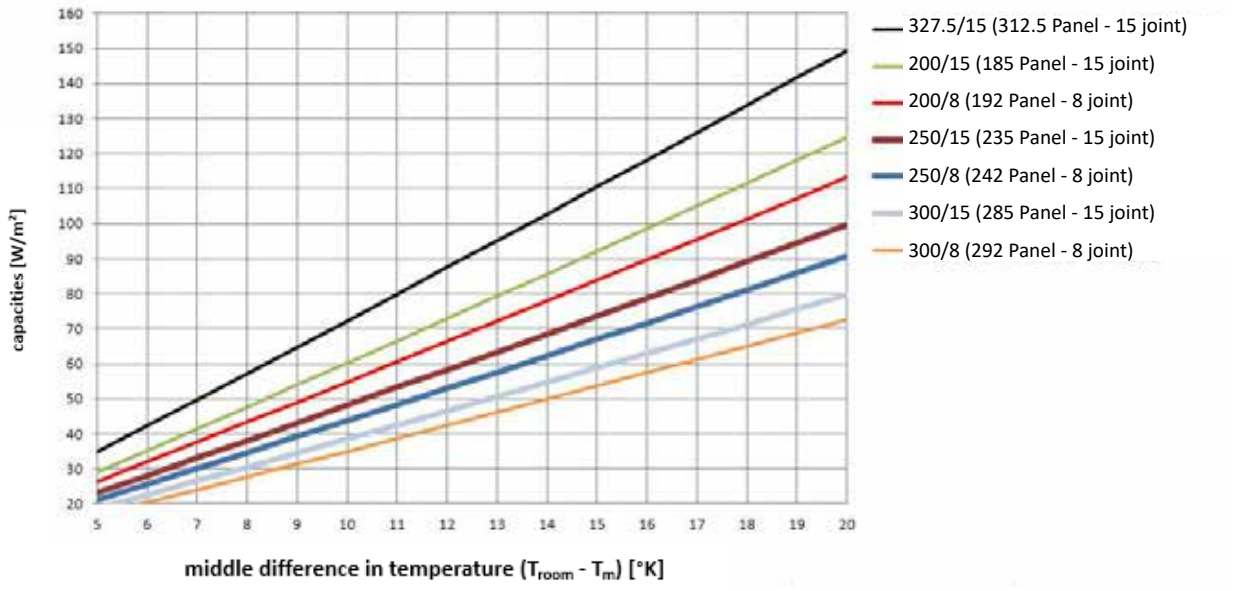
- Alu Panel 200/8 (192 Panel – 8 joint)
- Alu Panel 250/8 (242 Panel – 8 joint)
- Alu Panel 300/8 (292 Panel – 8 joint)
- Alu Panel 200/15 (185 Panel – 15 joint)
- Alu Panel 250/15 (235 Panel – 15 joint)
- Alu Panel 300/15 (285 Panel – 15 joint)
- Alu Panel 327.5/15 (312.5 Panel – 15 joint)

CONSTRUCTION TYPE OF TEST SPECIMEN:

open ceiling

ACTIVE SURFACE CAPACITY:

Rated heating capacity with temperature difference ΔθN = 15.0 K :111.6 W/m²



Rated heating capacities: (determined by calculation concerning the active area)

- Alu Panel 200/8 (192 Panel – 8 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 83.7 W/m²

- Alu Panel 250/8 (242 Panel – 8 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 66.9 W/m²

- Alu Panel 300/8 (292 Panel – 8 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 53.6 W/m²

- Alu Panel 200/15 (185 Panel – 15 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 92.1 W/m²

- Alu Panel 250/15 (235 Panel – 15 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 73.7 W/m²

- Alu Panel 300/15 (285 Panel – 15 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 58.9 W/m²

- Alu Panel 327,5/15 (312,5 Panel – 15 joint)
  Rated heating capacity with temperature difference ΔθN = 15.0 K : 110.5 W/m²

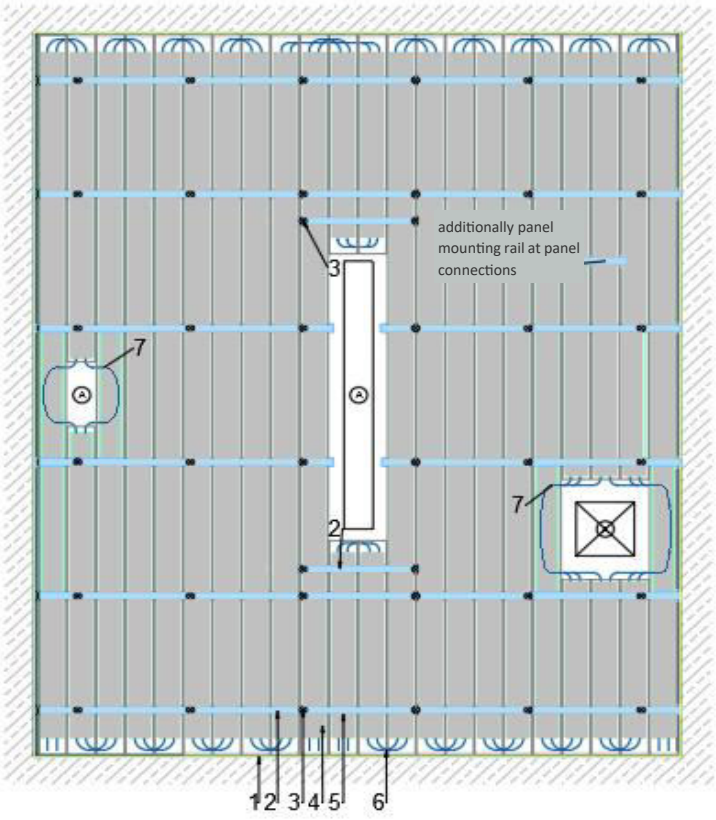
PIPE INSTALLATION METHOD

Regarding the capacity calculations and the design and work with pipes, please refer to the Chapter on planning contained in the GP Cool Speed Manual.

When the pipes are installed in the panel ceiling heating and cooling system, the pipes must be crossed at the end of the profiles and deflected generously into the ceiling plenum space before the pipes are pressed-fitted into the next profile.

IMPORTANT:

In the cases where there is no wall to support the pipe at the end of the profile or with built-in units, a support bracket for the pipes loops must be produced with the bridging connector and with U channels, so that the pipes do not hinder the panel mounting later.



Key:

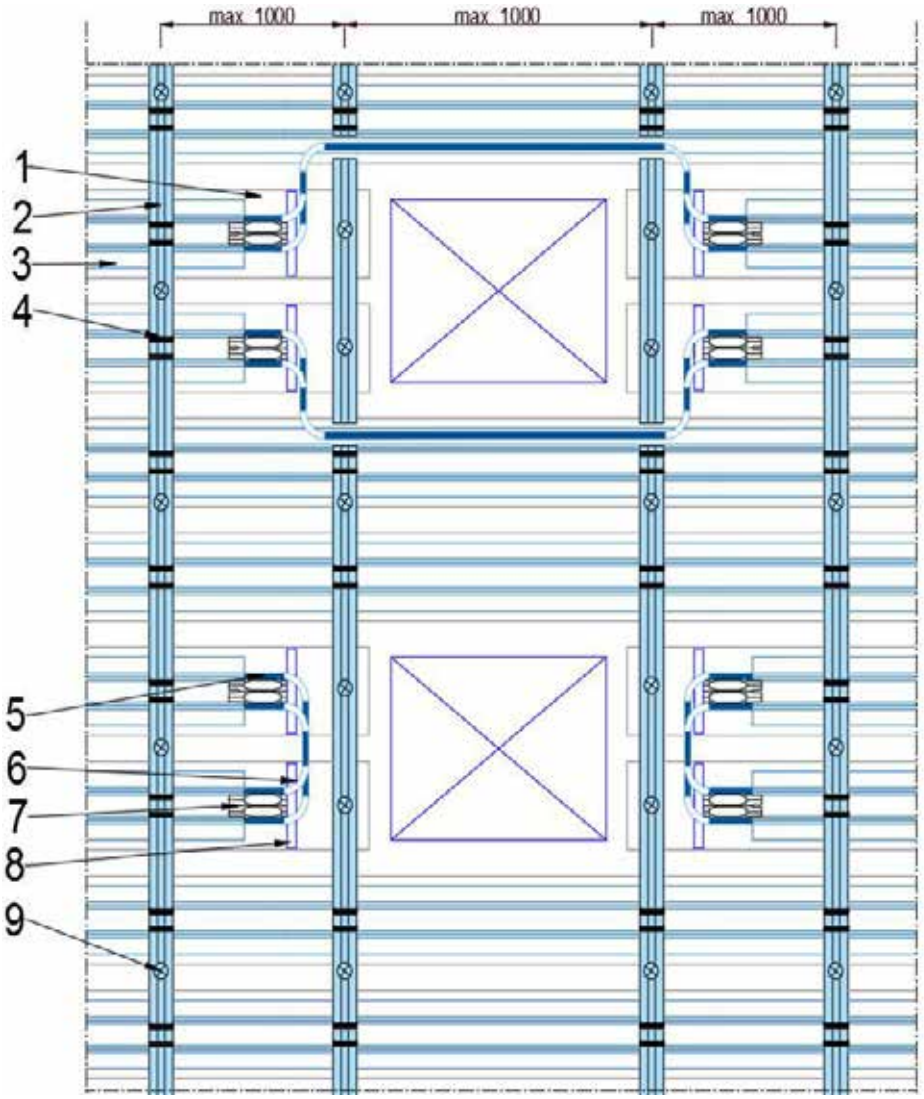
1. RW2525
2. Panel mounting rail
3. Hanger part
4. GPCS profile
5. Wire bracket
6. PB-Pipe
7. Curved guide pipe

WORKING AROUND BUILT-IN UNITS

Always take account of built-in units when installing the piping and the support structure. To protect the pipes where the pipe elbows are tight, use curved guide pipes (item no. ROHRFÜHRUNGSBOG).

VARIANT 1

VARIANT 2



Key:

1. Panel
2. Panel mounting rail
3. GP cooling plate
4. Wire bracket
5. GPCS profile
6. Curved guide pipe
7. Transition connections
8. UD30
9. Hanger part

INFORMATION ON THE INSTALLATION OF PIPES

1. Connect the register rows according to the reverse return system. The pipe length per register circuit is limited to a maximum of 40 meters (depending on output and pressure loss).
2. You must ensure that all register circuits have pipes of the same length.
3. The pipes are pressed into the profile grooves easily and rapidly by use of the self-propelled Cool Racer. For handling, please refer to the operating instructions in the machine case.
4. The pipes may be routed in various ways around interruptions for build-in units. The installation drawing (illustration on previous page) shows various possibilities, but it must always be ensured that all pipes are of the same length and the two pipe reverse return system is observed.

Var. 1 above:
Pipes can be deflected around built-in units. This applies regardless of the number of registers.

Var. 2 middle:
A hairpin design is an alternative to Variant 1 with paired profile interruptions.

Please note:

- Before installing the pipes, check that the pipe channels are without burr.
- After installation of the pipes, perform a pressure test and document it with a Pressure Test Record. Only then may the ceiling be approved and the panels be mounted.

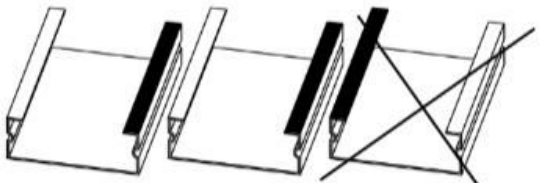
MOUNTING OF PANELS

After completion of the support structure and the cooling elements, and after the pressure test has been performed and the built-in units have been fully connected, the panels can be mounted. The installation procedure corresponds to that of a standard panel ceiling. Panels are carefully hung into the mounting rail modules.

Particular attention should be paid to the following points:

1. The panels are to be installed in an order as marked by directional arrows or texts on the inside or by black or red lines on the upper C channel edges by the manufacturer. It is important to ensure that all panels (including cut-to-size panels) always point in the same direction according to the markings.
2. During the installation of the panels, care must be taken to ensure a perfect ceiling appearance and that the ceiling surface is always at the same level - when the panels can be slid.
3. During the installation of the panels, the final mounting rail longitudinal connections are to be made. Once the panels have been hung, there must always be an exact system module consisting of a certain panel and joint width across all mounting rails running in parallel.
4. Panels must never be installed or fastened tightly between limiting components because of thermal expansion. Generally, this play is also needed for mounting or dismantling the panels and should be slightly less than half the support surface of the support bracket.

- Installation direction -

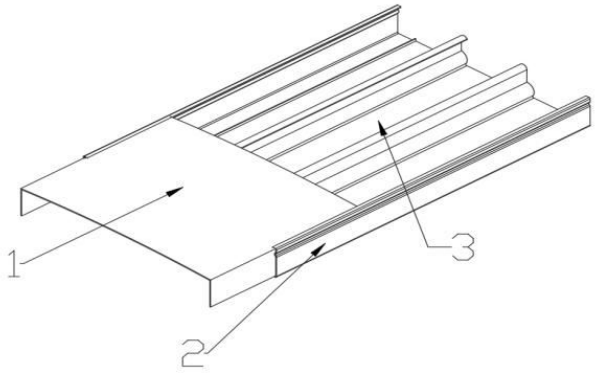


5. Panels should be cut exactly to size with tools suitable for the material (aluminum panels). For supporting the panel on edge trims, make a clean cut with a profile shear to ensure that the panel is supported on an even surface. In the wall bracket area, corrugation can be prevented by a clean upstand or by mounting a double bracket. The permissible tolerances according to TAIM must be observed. For higher demands of the building planner regarding the flatness

of the edge bracket support, the NE product range offers flatness angle brackets are that can be inserted. The flatness angle brackets are to be inserted at the panel end before the panel is mounted. For this, the separate NE Panel Mounting Information D1 must be observed.

6. For cutouts in the exposed panel surface, a distance of 10mm to the panel edge/ridge must be observed. The tools are to be chosen according to the visual requirements.

7. Longitudinal panel connections are to be made with panel connectors from the manufacturer and are to be defined when the measurements are taken and before installation. (Inserting the connector, see illustration below)



1. Panel connector
2. Panel
3. GPCS profile

8. It may be necessary to integrate built-in units in the panels or in the ceiling surface of the panel ceiling. In this context, please refer to the NE Panel Mounting Instructions A1 for built-in units and equipment installed on top or bottom.

9. For further instructions on edge angle bracket mounting or basic interior construction, please refer to NE Panel Mounting Instructions A2 and Basic Interior Construction Mounting Instructions.