DX

DX ceiling system

Installation instructions

Dennert DX ceiling
Dennert DX-THERM ceiling
Dennert DX-AIR ceiling

DENNERT
BUILDING IDEAS

DX ceiling system installation instructions

Dear customers,

These installation instructions with important general and product-specific information are aimed at you and your responsible planner/ static engineer/building contractor/site manager (who you must inform, etc. accordingly).

Dennert building materials meet the standards and their quality is certified and monitored.

We ask you to closely adhere to all instructions to avoid causing deadline issues or any other complications during delivery and assembly.

Please also note the contractual delivery/ service specifications, etc. as well as our General Terms and Conditions which you have already received.

Building materials/pre-cast concrete components must be installed/processed as per these installation instructions and generally accepted, technical standards (DIN/other relevant directives, etc.).

Any liability on behalf of Dennert shall be rendered void in the event these instructions are not observed.

General instructions

Your contact persons

Please refer to our correspondence for your contact persons regarding potential technical variants, deadlines, etc. (order confirmation, installation/production plans, etc.).

Installation plans – checking dimensions – delivery deadlines

You must individually verify the installation/production plans we created according to your planning specifications for products within the scope of delivery with your responsible site manager, planner/static engineer, building contractor, etc. according to elements including technical and static properties.

You are obliged to particularly verify the position, design (dimensions, reinforcements, etc.) and variants (recesses, etc.) of the respective products and their compliance with your overall plans/static calculations. Please sign and return the installation/production plans after having verified/checked them and after potentially having made changes, amendments or corrections.

Please note

We are only able to start production once we have received your verified, signed and binding installation/production plans. Delivery terms shall only commence once we have received the plans you approved.

Building site organisation

A host of important preparatory work is required before being able to install DX ceilings.

Deliveries – access routes – storage space

Ensure the site is wide enough, access routes to the building site are clear and make sure they are suitable for 40-tonne trucks, fixed cranes and mobile cranes with a weight of up to 100 tonnes. If you use cranes, you must also create a suitably sized and secure site for the telescopic crane (depending on its size) directly adjacent and in parallel to the outside wall next to the foundation pit (at a distance of approximately 1 m from the top edge of the foundation pit). Obtain all public and private permissions regarding the use of roads, pavements, adjacent sites, etc. including potential road blocks from local councils, neighbours and road maintenance authorities, etc. in due time.

Cutting the power supply

Please also ensure in due time that any potential power/telephone lines within the operating area of the crane are switched off during the usage period. Please apply for lines to be deactivated in due time from local councils or energy suppliers, etc.

Building site equipment and securing the building site

You and your site manager are independently responsible to ensure a sufficient degree of building site equipment/safety is provided. You must provide elements including the following free of charge:

- Building site supply 230 V/380 V (light power and power current) 32 A fuse
- Building site WC and building site water supply including connections, shut-off valves, etc.
- Batter boards, certified and secured
- Scaffolding, rigger and safety scaffolding, any other safety/protective equipment as per accident prevention guidelines
- Fencing and protection for the building site
- Two assistants to move the components

Protection from humidity and heat

You must protect all supplied building materials, components, etc. (including after installation) from weathering (humidity, frost, etc.).

As per your architect's plans, taking into account the used building materials/components and site-specific conditions (ground/water properties, etc.), you must protect the building (with appropriately required drainage measures) from weathering and humidity and provide for thermal insulation as per your planner's specification in line with the energy savings directive (ENEV) certificate, whereby standards including DIN 4108, Annex 2, as well as the thermal bridge catalogue must be taken into account. All components, etc. in contact with the base slab/foundation must have been protected from rising humidity by suitable measures in advance (e.g. insulation paint, etc.).

1. Supports, masonry and support beams

Structurally and statically correct support walls, support surfaces or support structures to securely bear the loads are paramount when installing ceiling elements. A suitably strong and stable installation support must have also been installed in areas where no direct supports are planned (e. g. protruding iron beams with in-situ concrete components, etc.). The positions of installation supports are indicated in the installation plans.

Please clarify this on site with building owners, site managers or architects.

As is the case with any precast ceiling element, the Dennert DX ceiling system requires absolutely level, support surfaces that are parallel in height, flush and have sufficiently cured.

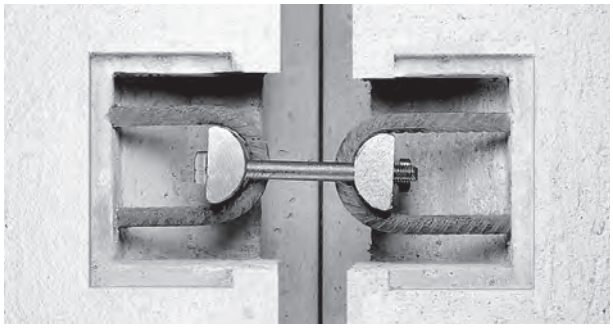
Ensure that loads are transferred from the DX ceiling system with steel beams, ceiling joists, window lintels, etc. according to the static requirements. These also include reinforced masonry, concrete pads, reinforced steel supports or steel supports.

Walls and chimneys that are not load-bearing must only be installed once the ceiling elements have been installed. The upper edges of all other wall components, such as supports and shutter boxes must not protrude and be flush with the reinforced masonry.

Apply a bitumen support layer (usually supplied by the Dennert team) or a layer of mortar around the ceiling supports. The support layer must not be applied flush with the inside masonry edge, it must be offset towards the rear by a minimum of 1 cm.

2. Dimensional tolerance values

DIN 18202, table 1 or 18203-1 apply to the specification of the permissible tolerance range (tolerances in building construction, part 1, precast concrete, reinforced concrete and prestressed concrete elements). We reserve the right to make system-specific deviations that may result for static reasons, due to the iron supports, plain sheets, suspender beams, etc. as well as technical modifications (including regarding the product, processing instructions, regulations, etc.) and said modifications must be complied with.



3. Integrated system

Individual ceiling slabs are braced to the DX ceiling system directly after having positioned them. Two semi-circular bars (including bores and threads) are inserted into the dedicated, recessed steel loops on the long sides of the slabs and secured using two steel screws (one below the loop, one above). Insert one wedge each directly in front of and directly behind the connection (wedges inserted inversely) once you have slightly tightened the screws and secure the wedges by hammering them down slightly.

Subsequently tighten both screws evenly from both sides.

IMPORTANT!
Always comply with accident prevention regulations.

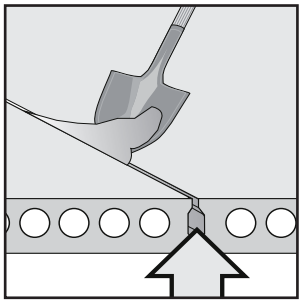
4. Accessibility

Dennert DX ceiling systems are comprehensive ceiling systems. They may be accessed immediately following their positioning.

5. Grouting gaps between DX ceiling slabs

Check the ceiling void insulation prior to grouting. Use C 25/30 grouting concrete (0/8 screed concrete) to grout the slab gaps. It is important to clean the slab gaps from dirt and building waste and sufficiently moisten them prior to grouting. Ensure the areas are evenly sealed upon applying the grouting concrete.

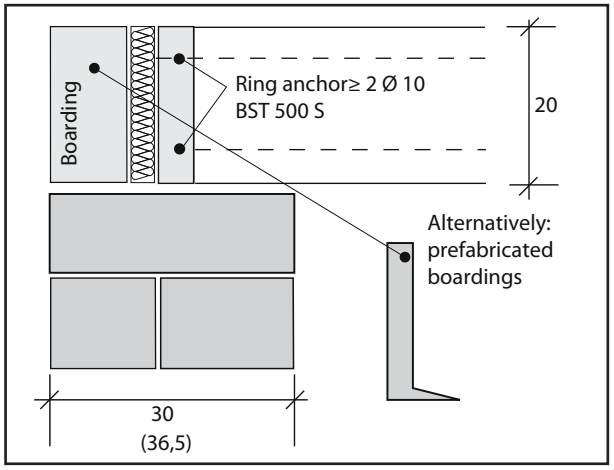
Prevent building waste from penetrating the slab gaps and do not use concrete with a lower quality for grouting. Aligning individual DX ceiling slabs may result in exposed gaps between the upper edge of the masonry and the bottom edge of the ceiling elements. Said gaps between masonry and ceiling slabs must be immediately and fully sealed using cement mortar. Check drainage openings for obstructions and rework (if necessary) after having grouted the ceiling elements. This applies in



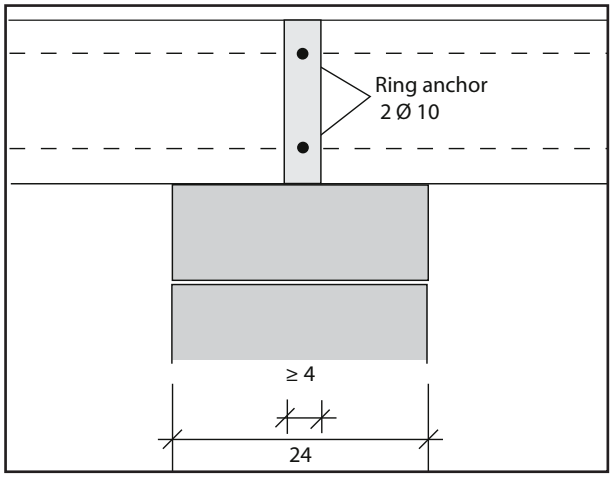
particular if water may penetrate from the top and bores may freeze at the bottom (exposed building sites).

6. Ring anchors

Ring anchors must be installed in each ceiling as per DIN 1045-1, Section 13.12.2 (1); DIN 1053-1, Section 8.2.1 masonry directive and as per DIN 1045, Section 19.7.4. We recommend inserting a mineral fibre insulation panel between the edges of the ceiling (such as ceiling edge boarding) and the ring anchor grouting concrete as an on-site pressure buffer. Please refer to the installation plan for the quantity of grouting concrete. It is paramount you observe the following detailed drawings for the support surfaces or DX ceiling system installation as well as the data in the installation plan.



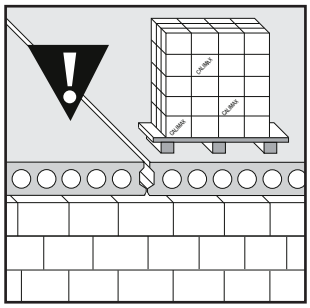
Normal ring anchor on external wall



Normal ring anchor on internal wall

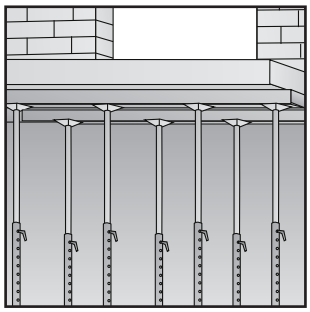
7. Load-bearing capacities

Under all circumstances must you safeguard that your DX ceiling system is not loaded beyond its load capacity by temporarily stored building materials. As a result, a ceiling slab with a size of 2 x 5 = 10 square metres must not be loaded with more than around two tonnes of evenly distributed materials; smaller surfaces demonstrate correspondingly lower load-bearing capacities.

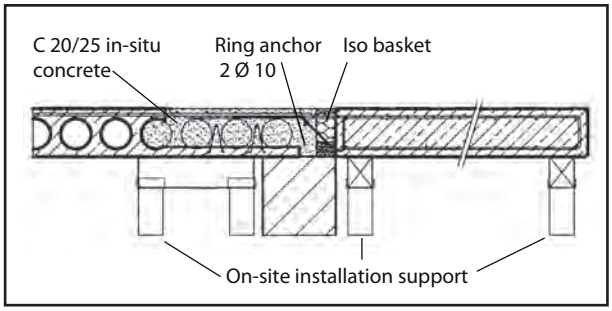


Non-observance of this specification may cause subsequent damage, such as capillary cracks in the ceiling slabs or permanent deformations of the ceiling elements.

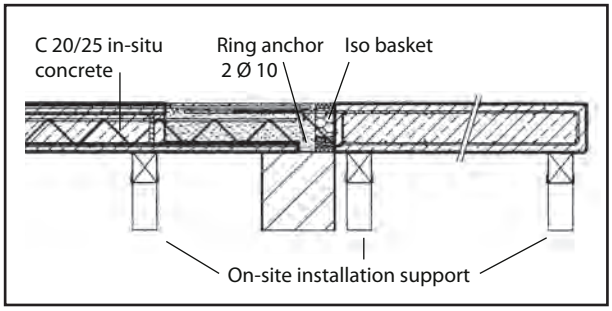
8. Preparations for cantilever plates



If you have ordered cantilever plates for your building project (e.g. balconies), you as the building owner and your responsible site manager must ensure that the corresponding materials to support the installation are available on your building site upon delivery of DX ceiling slabs. You must provide this material to support installation in adequate quantities as well as in the correct height and it must comply with the safety regulations for support structures as specified by the building trade association.



Installation support for cantilever plates, in parallel to the ceiling tension direction



Installation support for cantilever plates, in ceiling tension direction

9. DX installation balcony

Dear customers,

We now provide you with yet another innovative Dennert product in conjunction with our tried and tested DX ceiling system to allow you to continue to cut construction costs and advance much quicker.

Basic requirements to install the suspended DX installation balcony

1. Direct support required, masonry or load-bearing lintels, shutter boxes, no lintels that are flush with the ceiling.
2. Schöck ISO basket is always installed approximately in the centre of the wall. Building owner and site manager must have agreed to this installation variant.
3. 28 day curing period following grouting.

10. Installation

The installation connection between the suspended installation balcony and the ceiling slab is safeguarded by the patented Dennert sealing system (DX lock).

Important information
After installation the suspended installation balcony must only be loaded with the imposed installation load of 100 kg/m²!

After having precisely installed the component, the first batch of grouting concrete is applied (around the scraped gaps). Provide for an on-site recess (height: 25 cm, width: 50 cm) around the designed DX lock connections as part of additional building services and as a working area for lock disassembly.

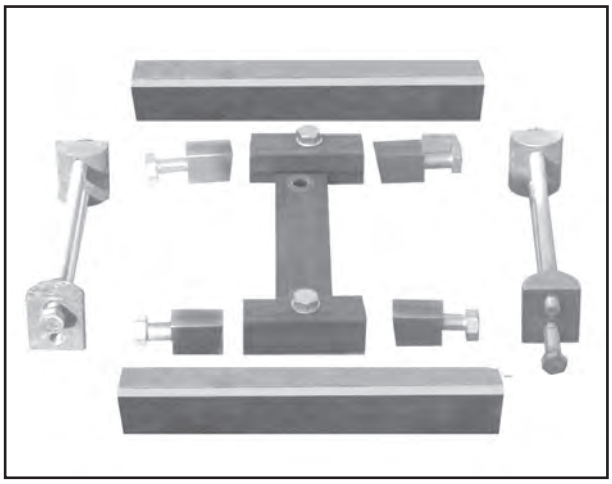
Important information
The lock connections must be disassembled from the site at the earliest 28 days following the grouting of the cantilever reinforcements (C 20/25 concrete quality curing time as per DIN 1045-1) (on-site service). For static and design reasons the lock connections must not be grouted when installed.

Important information
Seal the exposed duct using an EPS panel provided by Dennert and then grout the second batch of concrete on site. See illustration.

11. Removing locks and remuneration

Dennert will remunerate you for the following on site expenses:

- Credit upon completely returning the installation case to the manufacturer plant – including removal
  € 153.40/unit.
- Credit if customers/you remove the lock connections, but Dennert picks them up and returns them
  € 78.00/unit.
- Credit if Dennert removes the lock connections and returns them € 0.00/unit.



12. Grouting gaps on the bottom side of the ceiling

Ceiling gaps and iron supports must only be grouted after screed and (heavy) flooring have been installed.

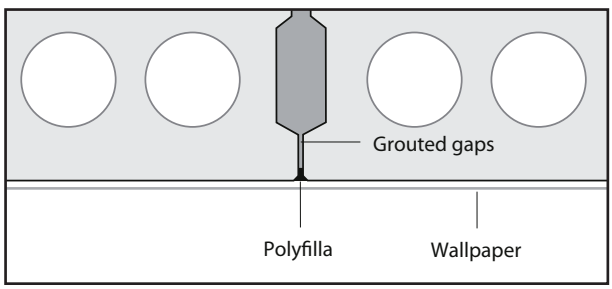
We recommend:
Dennert SIL-DX polyfilla

Properties:
Dennert SIL-DX in conjunction with Dennert primer is a joint filler for DX ceiling gaps on the inside.
Dennert SIL-DX is not suitable as a surface filler.
Dennert SIL-DX is ready-for-use, easy to apply, remains elastic (even after curing) and can be sanded down once it has cured. Dennert primer is required as a bonding course.

Processing:
Preparatory work:
- Check ceiling gaps are suitable.
- Remove all loose parts from ceiling gaps.
- Gaps must be dry, suitable to bear loads, free from dust, oil and grease.
- We recommend brushing them off using a steel brush.

Priming:
- Apply **Dennert primer** to the flanks of the gaps as a bonding course.
- Allow **Dennert primer** to cure (for a minimum of approximately 12 hours, depending on the ambient temperature).

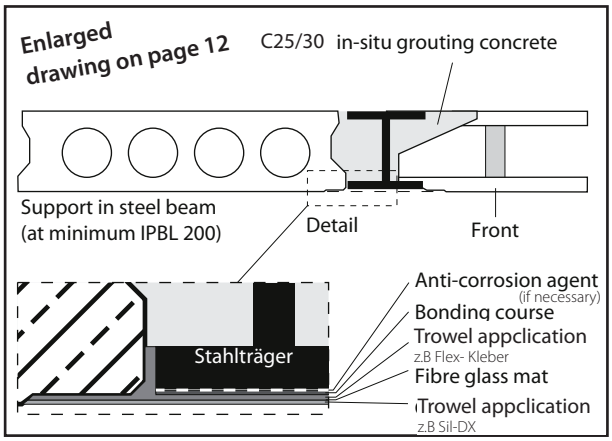
Filling:
- Open the **Dennert SIL-DX container** and stir.
- Remove only as much material as you can process within approximately 5 minutes.
- Immediately close the container to prevent a skin from forming.
- Press **Dennert SIL-DX** into the gap using suitable tools (e.g. scraper), immediately remove excess material.
- Apply **Dennert SIL-DX** to the gaps in a minimum of two stages.
- Only start the second stage once the first layer has cured as well as stabilised and beads no longer develop.
- The curing time for **Dennert SIL-DX** depends on the thickness of the layer, temperature and humidity.



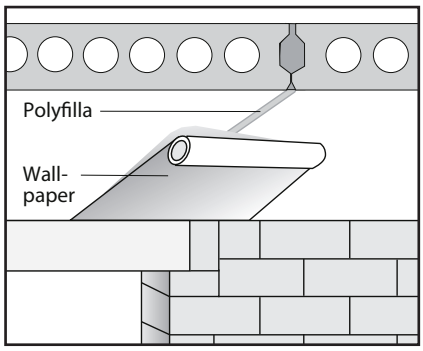
Reworking:
- **Dennert SIL-DX** is suitable for sanding once cured (if necessary).
- **Dennert SIL-DX** is suitable for wallpaper (wood-chip wallpaper).
- Apply painter and decorator mats to the entire surface if you intend to paint the area (glass fibre mats, 45 g/m²). We recommend using Dennert DX glass fibre mats with matching DX dispersion binder.
- If you intend to apply plaster, you must observe the plaster manufacturer's instructions for use on precast concrete components.

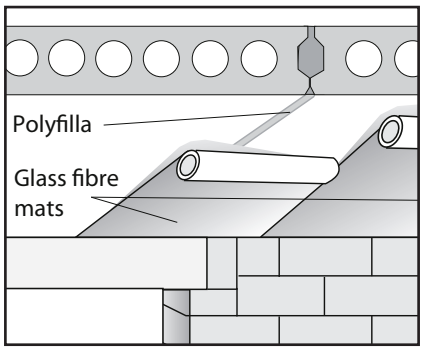
Covering iron supports installed in DX ceiling elements:
Preparatory work:
- Apply anti-corrosion agent on steel beam if it is necessary.
- Apply Dennert primer or suitable bonding course to DX ceiling elements and steel beams.
- Apply reinforcement plaster (must not contain gypsum) up to a residual depth of approximately 3-5 mm.
- In this process integrate plaster fibres into the recesses of the concrete slabs and allow to cure properly.
- Then apply Dennert SIL-DX as described above.

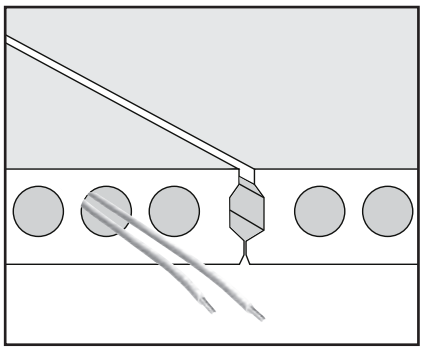
Important information:



- Cracks due to tension in the building structure cannot be fully excluded, even when using this optimised, elastic material (e.g. as a consequence of setting, sloping, dissolving, etc.).
- Do not apply materials containing gypsum or cement to **Dennert SIL-DX**.
- Store **Dennert SIL-DX** in a frost-free environment.
- Do not expose **Dennert SIL-DX** containers to direct sunlight.
- Do not process **Dennert SIL-DX** in temperatures below +10°C. Observe a ceiling temperature of 20 °C for DX-THERM ceilings.
- The shelf life of **Dennert SIL-DX** is 12 months from the delivery date (if stored as specified).
- Clean tools with water immediately after having used them.







13.1. Applying wallpaper to the bottom of the slabs

Fill DX ceiling system gaps from below so that you achieve a smooth, even bottom ceiling surface (e.g. using Dennert SIL-DX polyfilla). We recommend you use normal wood-chip wallpaper that has the ability to ideally conceal potential cracks in the plaster or polyfilla. In exceptional cases, cracks cannot be absolutely prevented in any ceiling type.

Based on the smoothness of the ceiling surface we do not recommend you use conventional wallpaper adhesive agent, but an adhesive agent with a high adhesive strength, usually used for heavy wallpaper.

Do not grout the gaps if you plaster the ceiling, either partly or entirely (in exceptional cases only). Treat gaps accordingly (fibre inserts).

We recommend "Knauf-Betokontakt" as the bonding agent between ceiling and plaster.

13.2. Decorating the bottom side of the slabs

Fill DX ceiling system gaps from below using Dennert SIL-DX polyfilla. Fill shrinkage cavities, pores, uneven areas and defects using polyfilla. Prime the entire ceiling surface using Dennert Prim-Plex primer as a bonding course. Evenly apply Dennert DX dispersion binder using lamb wool rollers or similar tools. Vertically apply Dennert DX fibre glass mats to the adhesive layer and press on without leaving bubbles. Please note DX ceiling gaps and the DX fibre glass mats must be offset by approximately 10 cm.

Apply paint as per DIN EN 13300 after curing.

When using paint or plaster we recommend using Dennert DX glass fibre mats with matching DX dispersion binder.

14. Electrical installation

Ducts for electrical cables may be routed in the tube-shaped cavities in Dennert DX ceiling systems and installed on supporting walls to the distribution board.

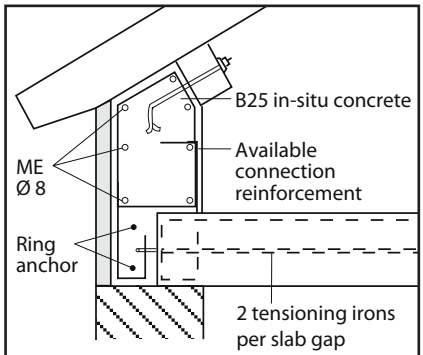
You can still route electrical cables through the cavities in DX ceiling systems after having completed structural building by drilling into one of the pipes at the beginning of a support and around the lamp and subsequently introducing the desired cable.

Suitable cavities to route electrical cables or ducts are each situated at the following distances from the next slab: 14 cm, 30 cm, 47 cm, 63 cm, 80 cm, 96 cm, 113 cm, etc.

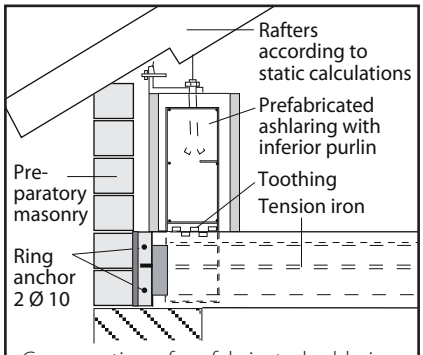
15. Roof frame abutments

a) In in-situ concrete:
Using roof frame abutments.

b) As prefabricated components:
Only apply loads to the prefabricated abutment structure after the gaps, ring anchors and ashlaring grouting concrete has cured. It is paramount to underpin the prefabricated ashlaring bridge around the stairs. We will send you technical details, for instance on the transmission of tensile force from the ashlaring bridge to the gable wall as required. Please refer to our ceiling installation plans for more detailed information.



Formation of in-situ concrete abutments for horizontal roof frames

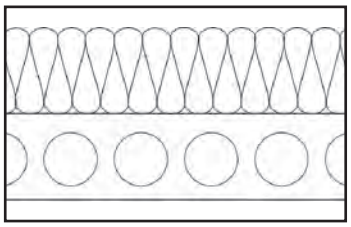


Cross-section of prefabricated ashlaring – on the front of the slab, with preparatory masonry for horizontal roof frames

16. Recesses

Any subsequent recesses must be clarified with Dennert. As a rule, mortising is not permitted on the ceiling slabs.

DX-THERM ceiling system installation instructions



Insulation measures

DX-THERM ceiling systems must be insulated from the top side of the ceiling if there is a "cold room" located above the ceiling, i.e. uninsulated loft, flat roof, area with a low ceiling. Determine the insulation thickness on site. The thickness of the material depends on the material used and its insulation characteristics.

Calculating pipe lengths (hydraulic resistance)

The ceiling features ~ 6.0 lineal metres of heating pipes per m^2 of heated area. Please enquire with the pipe manufacturer to obtain data on how to calculate the hydraulic resistance.

Arrangement of ceiling areas featuring heating/cooling pipes

As a rule, observe the heating surface plan provided with the ceiling system, as there may be deviations to the system drawings, e. g. smaller distances at the edges in certain rooms or for certain iron supports.

Treating surfaces on the bottom (heated area)

We recommend "Sil-DX" polyfilla to fill the ceiling gaps (observe instructions). The ceiling temperature for processing ceiling surfaces and gaps must be ~ +20°C. The DX-THERM ceiling system produces the best heat emission values when painted or with wallpaper. The heat emission values of plastered ceilings are slightly lower. Exclusively use plaster that is suitable for fluctuating temperatures (enquire with manufacturer). Wooden ceilings and suspended ceiling systems are unsuitable on the basis of their high emission losses.

Pipe connections in the top side of the ceiling

The EPS panels on the top side of the ceiling (highlighted in red) protect connectors from penetrating water and must be protected during the building period (e.g. by wooden planks). The EPS panels must be removed by the heating technician only.

Drilling and recesses

Drilling in the bottom side of the ceiling, e.g. for cable outlets, lamp hooks, etc. is permitted only in the areas indicated as suitable for drilling, see next page.

> Recommendation: use adhesive anchors for lamps <
see next page

"Pipe position system drawings and cross-section". Please also observe the heating surface plan.

Important!
Dennert DX-THERM ceiling

Do not drill into ceiling slabs!
Heating pipes installed in slabs. Read the installation instructions prior to drilling.

Recesses and blank electrical sockets in the ceiling

The heating pipes have been routed around recesses. Determine the position of heating pipes before drilling or reworking around the recesses. It is paramount that you clarify any subsequent installations of recesses.

Localising heating pipes

Localise heating pipes during operation of the heating system using thermal film or a thermal imaging camera.

Repairs

Use commercially available crimp or screw connections to repair cables routed in the ceiling.

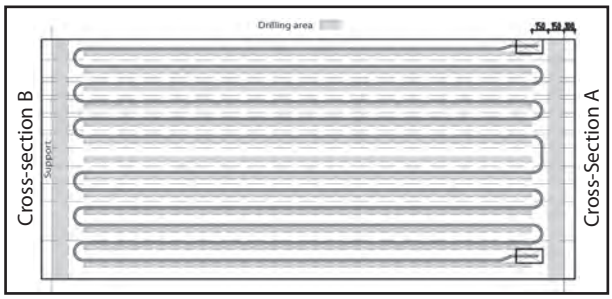
Technical data

Pipe type: Multitubo compound tube PE-RT 16 x 2 mm
t max: 60 °C
p max: 6 bar

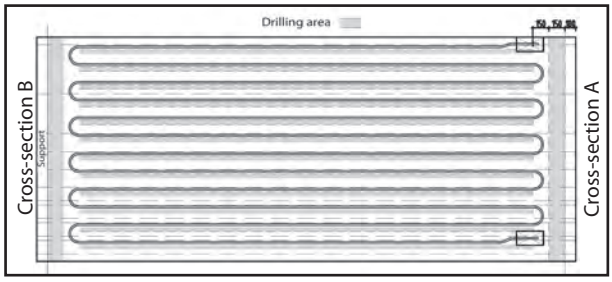
Frost protection:
Heating pipes must be protected from frost. Do not fill the heating/cooling system with water to prevent frost damage during the building phase.

Pipe position system drawings

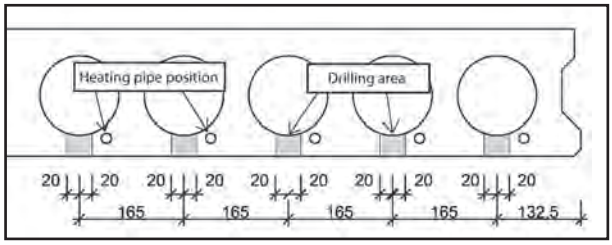
DX slab, odd, number of holes (13-11-9-7-5-3 holes)



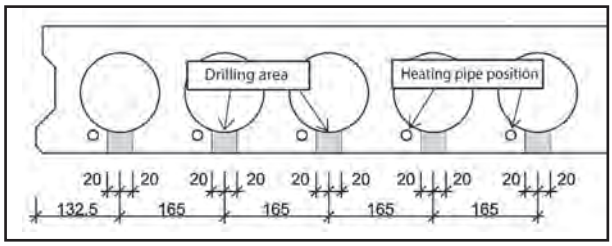
DX slab, even, number of holes (12-10-8-6-4-2 holes)



Cross-section A

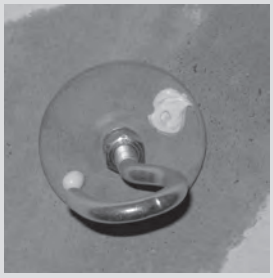


Cross-section B



Recommendation

Adhesive anchors to secure lampsAvailable on the Internet at **www.niewiederbohren.de**



Pipe connections

The supply and return connections for the heating pipes are concealed within a layer of EPS (⊗) (Figures 1 and 2). Additionally protect the connections from damage during the building phase, e.g. using wooden panels.

Exposing connections

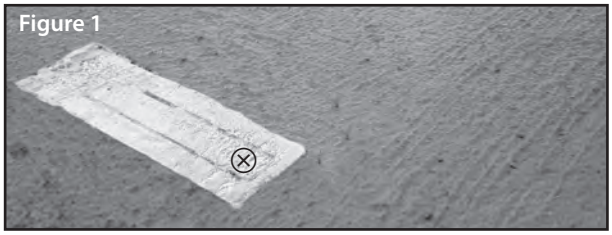
The EPS component is perforated so you must only expose the area required for connecting the pipes.

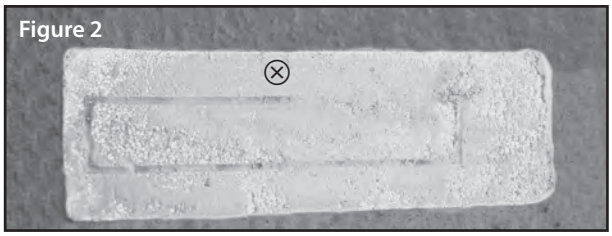
Procedure

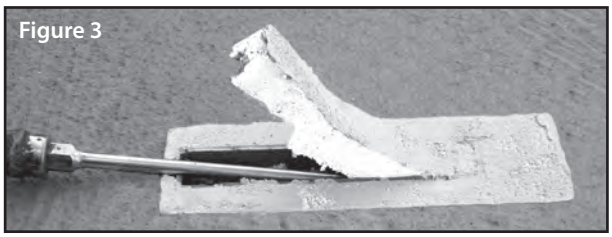
Lever out the inside part using a screwdriver and remove it (Figure 3).

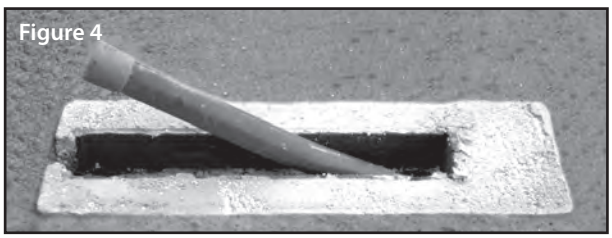
Remove the heating pipes from the slots to an extent that allows additional processing (Figure 4).

Important:
Do not pull pipes vertically upwards – crushing hazard!









Routing and assembly guidelines

Adhere to the installation instructions!

System components (pipes, fittings, tools, etc.) have been coordinated and tested. Any work must exclusively be performed using the genuine tools for the pipe type/system stated on the routing/heating surface plan and using the tools approved by the manufacturer for the corresponding system. This applies in particular to preparing pipes for all available connection types. We do not assume any liability for third-party components.

Cutting 16 mm pipes (Figure 1)

Cut the connecting pipe in a right angle using a suitable pair of scissors.

Centring and deburring 16 mm tubes (Figures 2+3)

Process the connecting pipe using the deburring tool and the replacement attachment in combination with the replacement handle until you produce a chamfer all around.

Check the chamfer before installing the fittings (Figure 4+5)

Visually check the processed pipe end for an even chamfer.

Positioning the fittings (Figure 6)

Slide the fitting onto the connecting pipe up to the stop; the insertion depth is correct once the pipe is visible through the sight glass in the press sleeve.

Crimping (Figure 7+8)

Open the clamping jaws and position them on the steel sleeve between the stops. Close the clamping jaws to start crimping.

Using clamping jaws

If you use compatible clamping jaws with a U-profile you must make sure that the inserted clamping jaws are suitable for the application and are in a technically sound condition.

This applies particularly to compliance with the following crimping dimensions: Ø 16 moulded dimensions 16.0–16.3 mm.

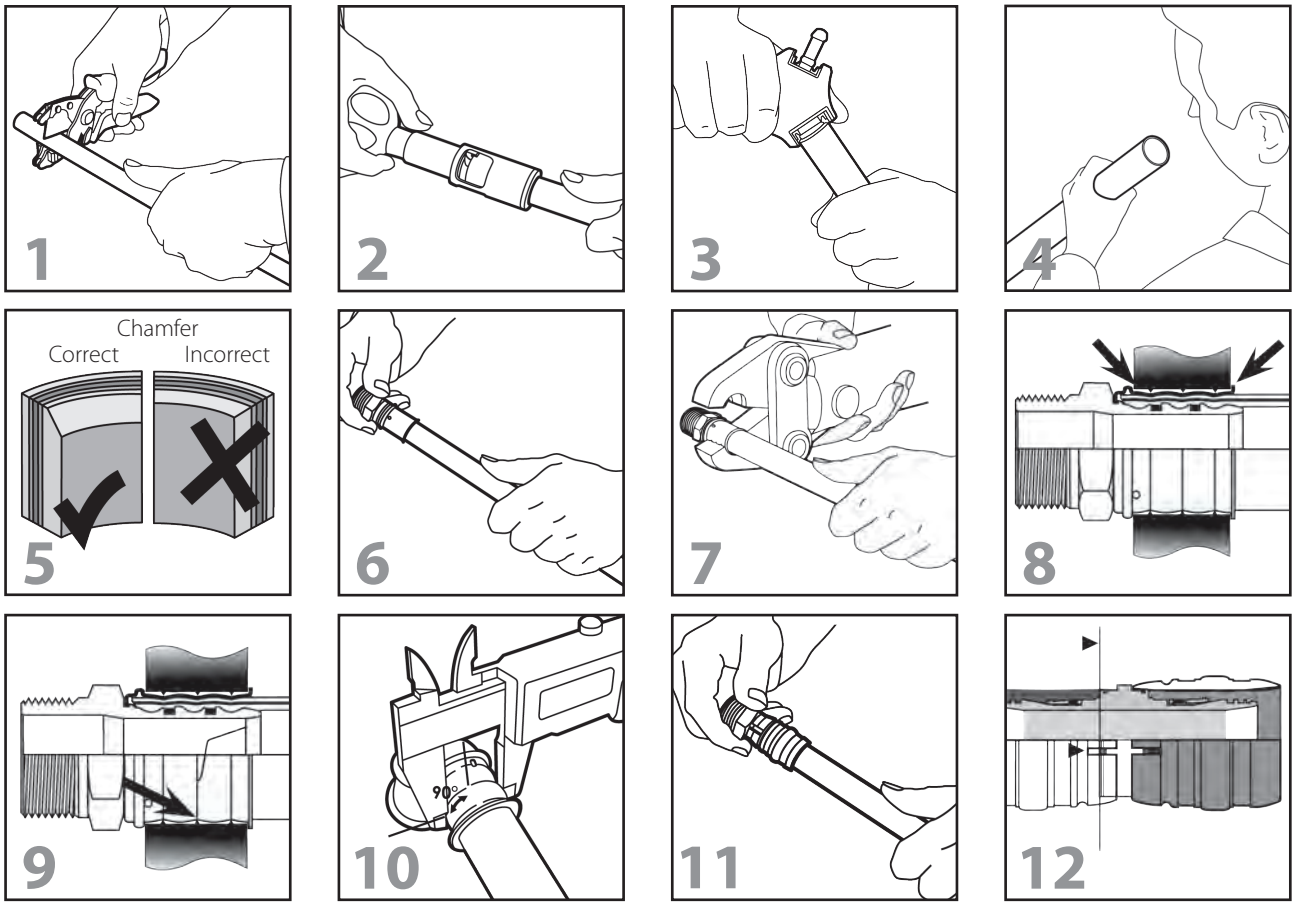
The moulded dimensions are determined in the middle crimping groove after crimping (Figure 9), 90° from where the clamping jaws are applied (Figure 10).

Installing plug-in fittings

Prepare the connecting pipe as described.

Important: Exclusively use the original deburring tool provided by the pipe manufacturer (see heating surface plan) using an external guide sleeve.

Slide the fitting onto the connecting pipe up to the stop (Figure 11); the insertion depth is correct once the pipe is visible through the sight glass in the plastic sleeve (Figure 12).



Installing screw-in fittings (Figures 13 +14)

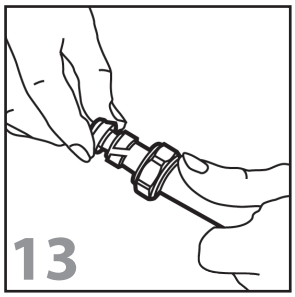
a) Prepare the MULTITUBO connecting tube as described above.

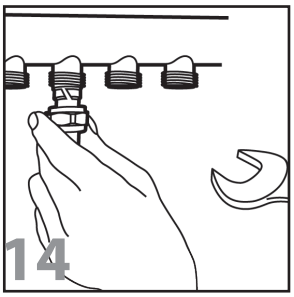
b) Slide the sleeve nut onto the pipe.

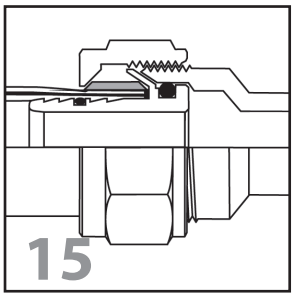
c) Slide the clamping ring onto the pipe.

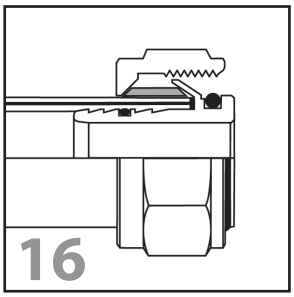
d) Insert the supporting panel into the pipe up to the stop (Figure 15).

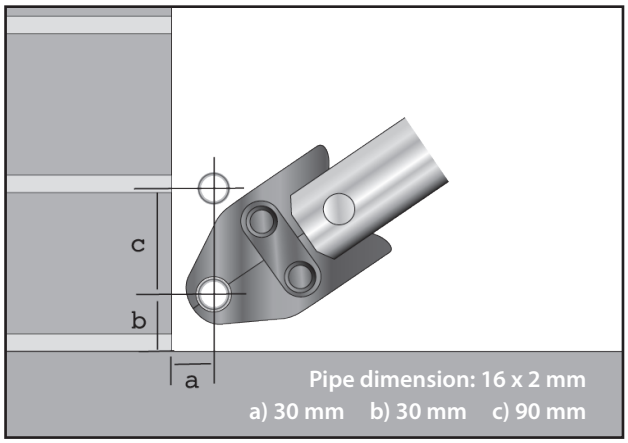
e) Insert screw connections in the opposite part and fasten the sleeve nut to a tightening torque of 40 Nm (Figure 16). In this process, make sure that the pipe is not removed from the supporting sleeve.

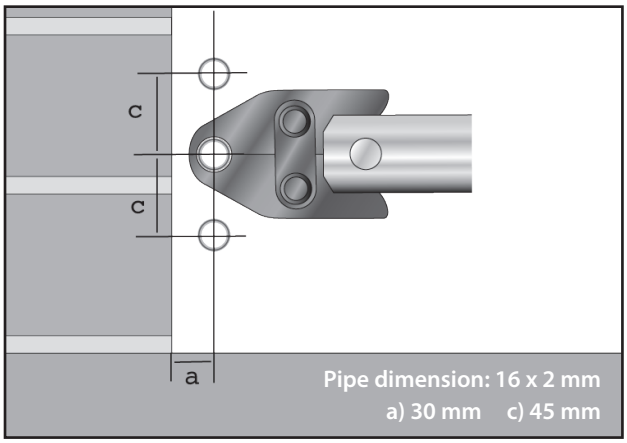




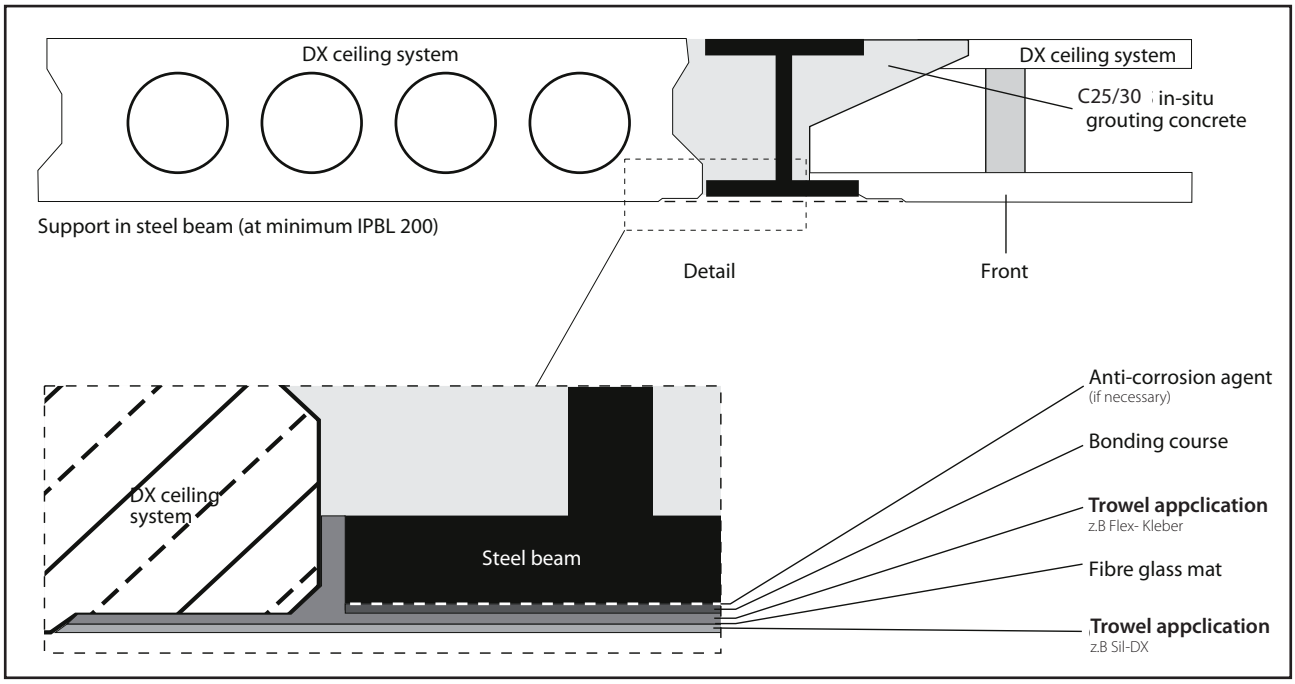








Detailed drawing of the iron supports on page 7



DX-AIR ceiling installation instructions

Installing ventilation piping in ducts within the DX ceiling system

The ventilation piping can be retrospectively installed in Dennert DX comprehensive ceiling systems. After having completed structural building the piping system can be routed through the ceiling area through the dedicated ducts. A sleeve installed in the bottom side of the ceiling (Figure 1-1) and an EPS displacement component inserted from the top (Figure 1-2) enable installation. The DX-AIR pipe elbow supplied by Dennert enables to correctly connect the outlet/inlet valves. The following section illustrates the installation of ventilation piping in DX ceiling systems:

Procedure:

- Remove EPS panel (Figure 1-2)
- Push the DN 75 hose (e.g. Valloflex type VFS 7563) from the wall towards the ceiling opening
- Pull the hose out of the ceiling opening by approximately 30 cm (Figure 2-1)
- Press in the locking clamps on the DX-AIR pipe elbow, insert the hose into the pipe elbow, secure the hose and seal the transition and locking clamp holes using sealing tape (Figure 2-2)
- Push back the hose and pipe elbow into the slab (Figure 3-1)
- Attach the edge of the pipe elbow to the recess sleeve using the provided screws (4 units) (Figure 3-2)

Figure 1

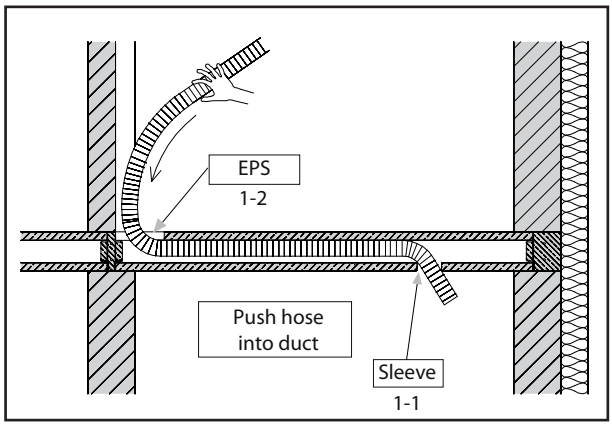


Figure 2

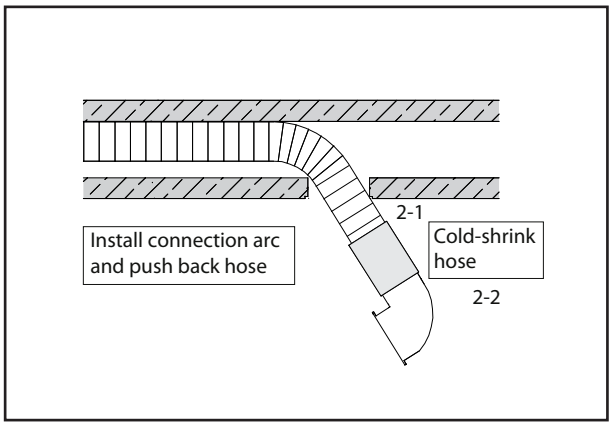
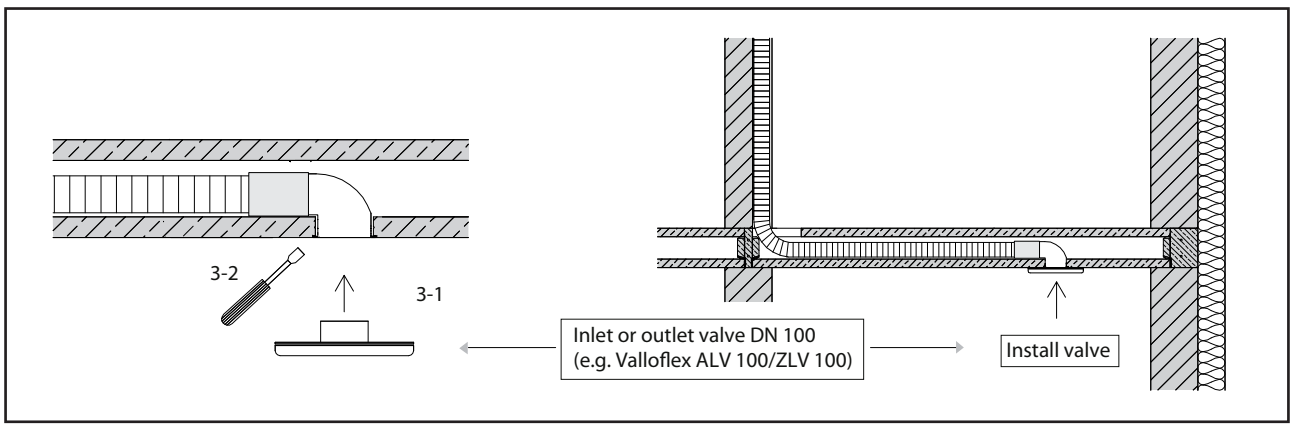


Figure 3



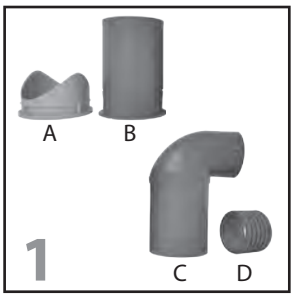
Installing Dennert DX-AIR – ducts with telescopic pipe elbows for cable ducts on the ceiling

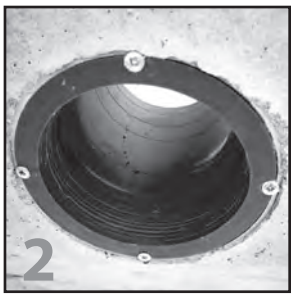
DX-AIR ceiling ductsconsist of several parts:

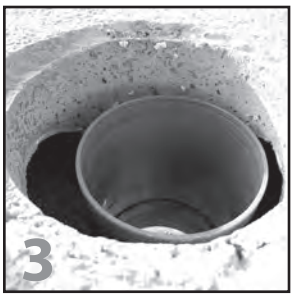
- (A) Recess sleeve fitted in DX slab
- (B) Bottom part with edge to attach it using four screws
- (C) Top part with DX-AIR pipe elbows
- (D) Reducer (optional)

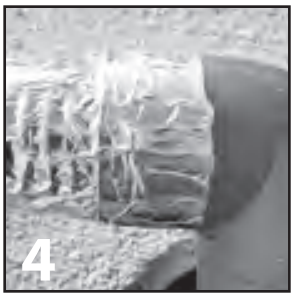
Installation:

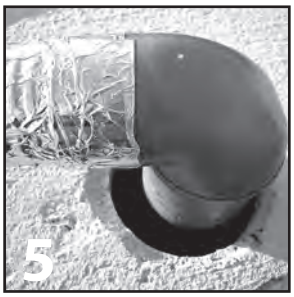
- Remove the EPS component from the top ceiling surface
- Push the bottom part including attachment edge into the recess sleeve from the bottom (fitted to DX slabs ex works) and attach using four, provided screws (Figure 2-3).
- Press the locking clamps into the DX-AIR pipe elbow of the top part. Insert DN75 hose (e.g. Valloflex type VFS 7563) into the pipe elbow, secure the hose and seal the transition and locking clamp holes using cold-shrinking tape (Figure 4).
- Then position the top part on the fitted bottom part (Figure 3) and insert as part of a slight rotating motion (Figure 5).
- Press in the top part until the pipe is in contact with the top part of the ceiling (Figure 6).
- Use a reducing sleeve with hoses d = 63 mm (Figure 7).
- Use pipe manufacturer reducer with slim ducts (Figure 8).

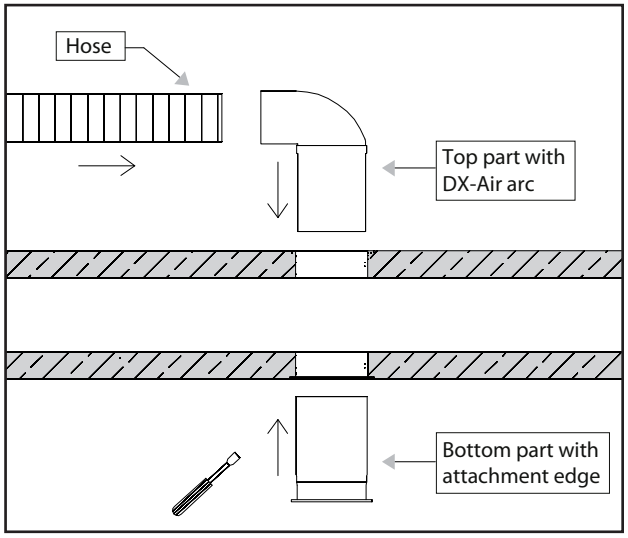


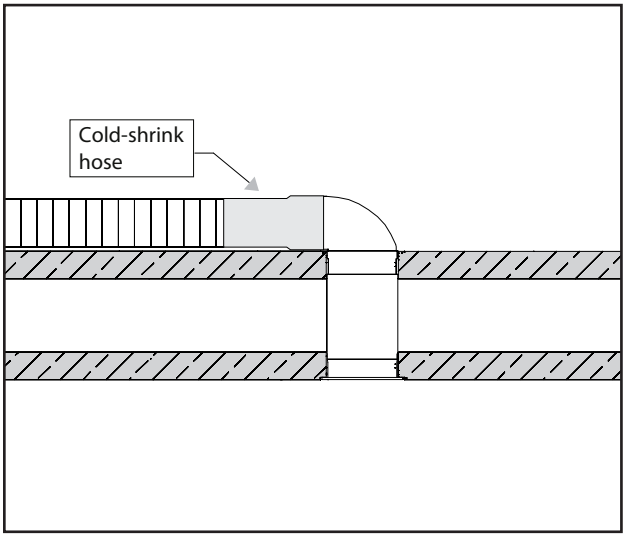












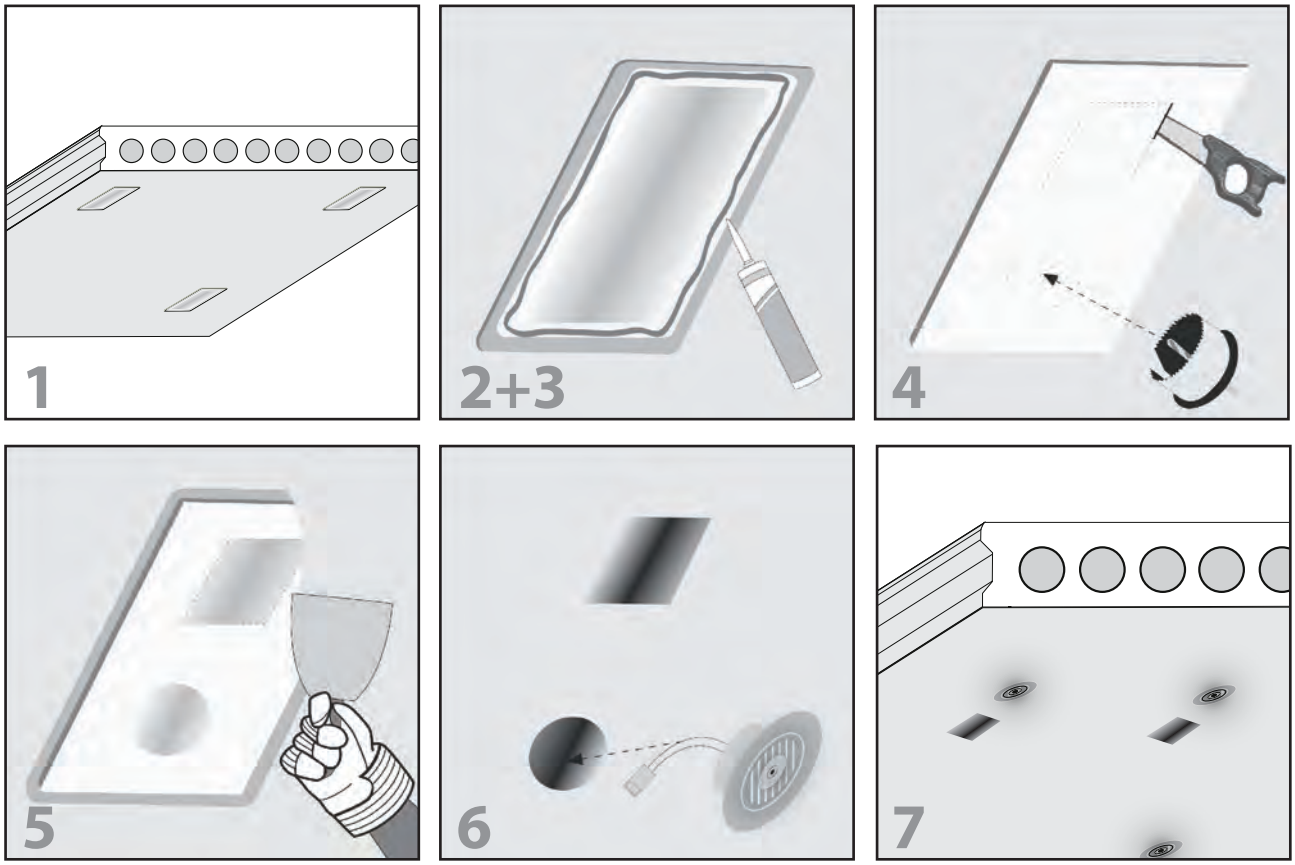
Recess on the bottom part of the ceiling (DX pipe opening)

DX-AIR ceiling ducts "bottom recess" consist of several parts:

- Recesses on the bottom of the ceiling, clear size: approx. 100 x 155 mm; with approx. 15 mm deep attachment rebate.
- Mineral fibre panels, approx. 105 x 165 mm for variable, on-site openings/bores.
- One tube of rapid adhesive agent, grey (sufficient for five openings).

Installation:

1 Clean the attachment rebate
2 Open the rapid adhesive agent tube and evenly apply to the attachment rebate.
3 Firmly press fibre panels into the adhesive agent and allow to cure.
4 Cut the desired openings/bores into the mineral fibre panels using suitable tools.
5 Fill the fibre panels on the bottom side of the ceiling using a suitable filler agent.
6 Route any potentially required connections/supply cables or piping.
7 Install the specified components for installation.



IMPORTANT!

Please note the following when installing ceiling spots:

- Series circuits are possible exclusively within the same duct.
- Transverse connections to other spots and/or the transformer are possible only on the top side of the ceiling (drill into the ceiling slab from the top for this purpose).
- Socket installations may be restricted depending on the make. Exactly check the socket height in advance.

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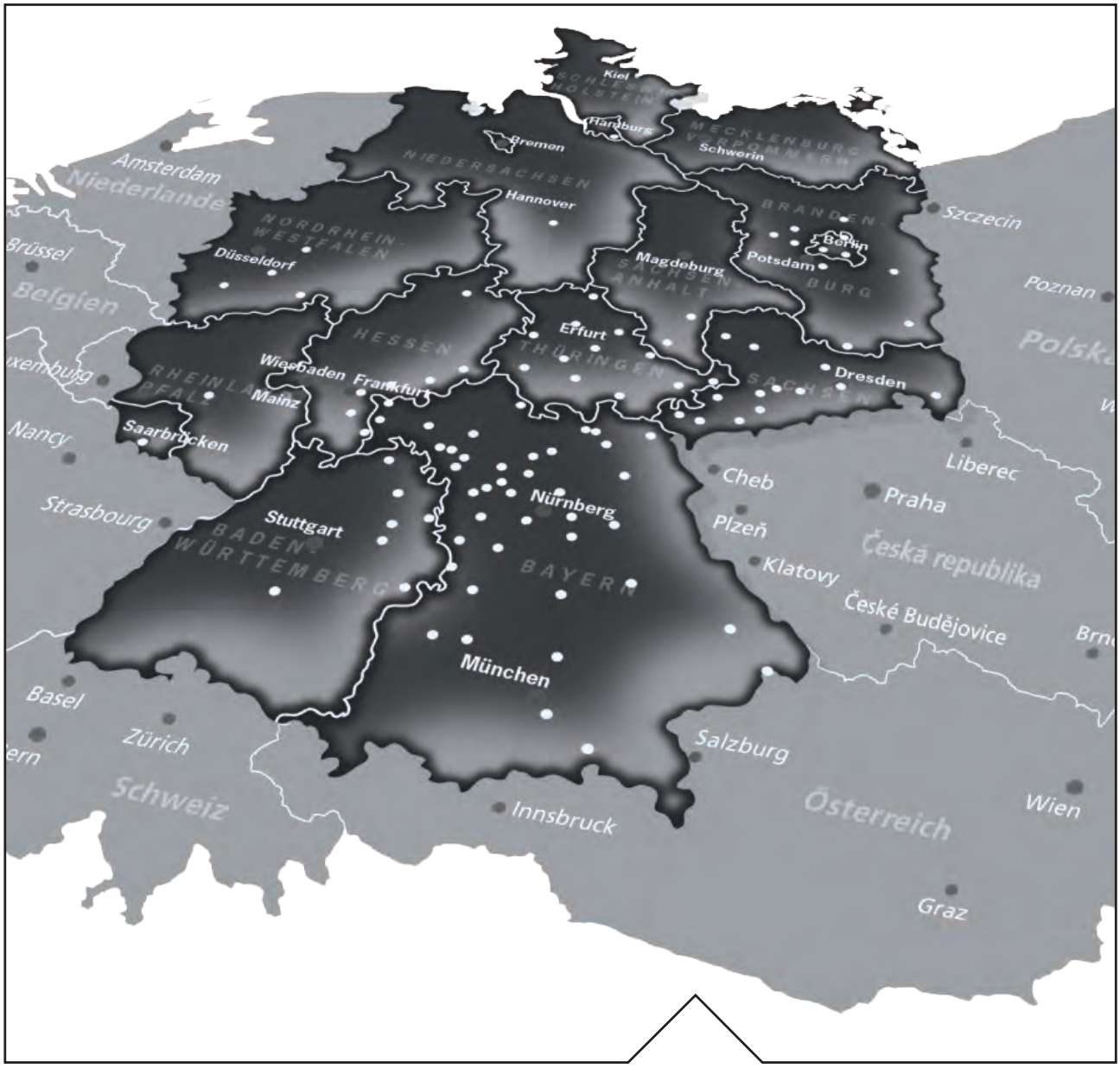

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